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ECN - 10
DOCUMENT CHANGE REQUEST FORM
(Direct Revision Only)

Document Number	RPP-10006	*Rev.*	1
Electronic File Name (Optional):			
Document Title	Methodology and Calculations for the Assignment of Waste for the Large Underground Waste Storage Tanks at Hanford Site		
Change Description	The changes to this document include a number of expansions in the description of the assumptions in the methodology and improved explainations with the discussion. In addition, some inconsistencies are removed. Two new appendices are included supporting the derivation of Void Fraction and Retained Gas composition distributions as used in the report. Recalculation of the report is not included, but will be performed Revision 2 of the document.		
Change Justification	This revision responds to comments from the DOE-ORP Independent Review Team for the Documented Safety Analysis.		

Approvals:

Author (Print/Sign) S. A. Barker	*Date:* 8/28/03
Responsible Manager (Print/Sign) R. J. Stevens	*Date:* 8/28/03
Reviewer (Optional, Print/Sign)	Date:

Distribution

Name	MSIN	Name	MSIN

Release Stamp

AUG 28 2003
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STA: 4
ID: 25

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RPP-10006, Rev. 1, Methodology and Calculations for the Assignment of Waste for the Large Underground Waste Storage Tanks at Hanford Site		ECN No. N. A.

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Methodology and Calculations for the Assignment of Waste for the Large Underground Waste Storage Tanks at Hanford Site

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EDT/ECN: N. A. UC: N. A.
Cost Center: 7B300 Charge Code: 501027
B&R Code: N. A. Total Pages: 534

Key Words: Tank farms, gas retention, energy ratio, bouyancy ratio, lower flammability limit, bouyant displacement, gas release event, GRE, LFL, tank classification, flammable gas hazard

Abstract: This document categorizes each of the large waste storage tanks into one of several categories based on each tank's waste and characteristics. These waste group assignments reflect a tank's propensity to retain a significant volume of flammable gases and the potential of the waste to release retained gas by a buoyant displacement event.

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RPP-10006
Revision 1

Methodology and Calculations for the Assignment of Waste Groups for the Large Underground Waste Storage Tanks at the Hanford Site

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.
Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-99RL14047

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RPP-10006
Revision 1

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Date Published
August 2003

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

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Office of River Protection under Contract DE-AC27-99RL14047

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RECORD OF REVISION	(1) Document Number RPP-10006, Rev. 1	Page 1

(2) Title
Methodology and Calculations for the Assignment of Waste for the Large Underground Waste Storage Tanks at Hanford Site

Change Control Record

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release (5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) Original Release via EDT 636634, March 22, 2003	S.A. Barker	J. Grigsby3/22/3
1 RS	Revision to address comments resulting from review of the Tank Farms DSA supporting documents	S.A. Barker SA Barker	R. J. Stevens R.J. Stevens 8/28/03

A-7320-005 (10/97)

EXECUTIVE SUMMARY

The Hanford Site contains 177 large (28 double-shell tanks and 149 single-shell tanks) underground radioactive-waste storage tanks that are categorized into one of three waste groups (A, B, and C) based on their waste and tank characteristics. These waste group assignments reflect a tank's propensity to retain a significant volume of flammable gases and the potential of the waste to release retained gas by a buoyant displacement gas release event. These waste categories replace the current four waste tank facility groups. Current assignments of facility groups depend on whether the waste in each of these tanks is postulated to present a hazard from large or small gas release events and whether they are spontaneous or induced. Assignments of waste groups to tank wastes in the 177 double-shell tanks and single-shell tanks, as reported in this document, are based on three criteria.

The first criterion estimates the ability of the wetted solids in a tank to retain sufficient flammable gases that if all of the gases were released instantaneously into the tank headspace, would the headspace flammable gas concentration equal or exceed 100% of the lower flammability limit. If all of the retained gas in a tank's wetted solids were instantaneously released into the tank's headspace and resulted in a flammable gas mixture below 100% of the lower flammability limit, the tank is classified as a waste group "C" tank. This assignment is independent of whatever gas release mechanisms the tank may exhibit including buoyant displacement gas release events. In other words, a waste group "C" tank is not expected to reach 100% of the lower flammability limit from the total instantaneous release of all of the gas retained in its wetted solids.

The second criterion considers whether there is sufficient supernate on top of the saturated solids such that gas-bearing solids have the potential energy required to break up the material and release gas. Tanks that are not waste group C tanks that do not have sufficient supernate on top of solids (energy ratio < 3.0) are assigned to waste group "B." Tanks that are not waste group "C" tanks that do have sufficient supernate on top of solids (energy ratio ≥ 3.0), but that pass the third criterion (buoyancy ratio < 1.0, see below) are also assigned to waste group "B."

The third criterion addresses tanks that are not waste group "C" double-shell tanks that have sufficient supernate on top of solids (energy ratio ≥ 3.0). For these DSTs, the third criterion

considers whether the saturated solids can retain sufficient gas to exceed neutral buoyancy relative to the supernatant layer. If neutral buoyancy can be exceeded (buoyancy ratio $\geq$ 1.0), that double-shell tank is assigned to waste group "A." Sensitivity studies of waste group assignments were also performed for the cases of water and caustic additions to the waste tanks and the special cases of the addition of waste to some of the tanks.

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LIST OF TERMS

BBI	Best Basis Inventory
BDGRE	buoyant displacement gas release event
BPE	Barometric Pressure Effect
BR	Calculated Buoyancy Ratio, which is the average saturated settled solids layer gas fraction divided by the neutral buoyancy gas fraction. This ratio predicts whether there is sufficient gas build up in the saturated settled solids layer in a DST to make gobs of waste buoyant and produce BDGREs
DST	double-shell tank
ER	Calculated Energy Ratio, which is the ratio of buoyant potential energy of the gas bearing gobs to the energy required to yield the waste and release gas from those gobs participating in buoyant displacements.
GRE	gas release event
LFL	lower flammability limit
PNNL	Pacific Northwest National Laboratory
RGS	Retained Gas Sampler
SACS	Surveillance Analysis Computer System
SpG_L*H_S	product of the specific gravity of the liquid layer and the height in inches of the sediment or settled solids layer
SST	single-shell tank
VFI	Void Fraction Instrument

1.0 INTRODUCTION

Waste stored within tank farm double-shell tanks (DST) and single-shell tanks (SST) generates flammable gas (principally hydrogen) to varying degrees depending on the type, amount, geometry, and condition of the waste. The waste generates hydrogen through the radiolysis of water, thermolytic decomposition of organic compounds, and corrosion of a tank's carbon steel walls. Radiolysis and thermolytic decomposition also generate ammonia. Nonflammable gases, which act as dilutents (such as nitrous oxide), are also produced. Additional flammable gases (e.g., methane) are generated by chemical reactions between various degradation products of organic chemicals present in the tanks. Volatile and semivolatile organic chemicals in tanks also produce organic vapors. The generated gases in tank waste are either released continuously to the tank headspace or are retained in the waste matrix. Retained gas may be released in a spontaneous or induced gas release event (GRE) that can significantly increase the flammable gas concentration in tank headspace as described in RPP-7771, *Flammable Gas Safety Issue Resolution*. Appendices A through L provide supporting information.

1.1 GAS RETENTION IN SINGLE-SHELL TANKS AND DOUBLE-SHELL TANKS

Studies have shown that some tanks store significant volumes of gas in their waste. Free gas can accumulate in submerged solids, which are wetted. Convective fluid layers of waste do not retain significant amounts of insoluble gases (e.g., hydrogen and methane) because bubbles rise through liquid waste as fast as they are generated. Soluble gases (primarily ammonia) are also dissolved in liquid waste; however, evaporation of dissolved ammonia is pronounced only when a free liquid surface is freshly exposed or agitated.

Direct measurements of retained gas are not available for most tanks. Estimates of the amount of retained gas stored in each DST and SST were made based on two indirect methods provided in WHC-SD-WM-ER-526, *Evaluation of Hanford Tanks for Trapped Gas*. Only 58 of the 177 SSTs and DSTs were determined to have trapped gas by the barometric pressure effect method and, of these, only 15 tanks, including six DSTs (241-AN-103, 241-AN-104, 241-AN-105, 241-AW-101, 241-SY-101, and 241-SY-103) stored relatively large volumes of gas, greater than 9% of the solid waste volume. (Note that gas retention in DST 241-SY-101 has since been remediated leaving only five DSTs with relatively large volumes of stored gas.) About 50 tanks have so little waste that gas retention is of little concern when released and mixed in the headspace because of the large headspace dilution factor. However, both of the indirect methods include significant uncertainties, as described in WHC-SD-WM-ER-594, *Evaluation of Recommendation for Addition of Tanks to the Flammable Gas Watch List.*

Uncertainties arise because the models are simplified and approximate the physical condition of the waste in all DSTs and SSTs and because the data used lacks the precision necessary to make estimates of the retained gas. Therefore, given the uncertainty in the methods and data, a conservative assumption is that all the DSTs and SSTs retain gas in their solid layers, and the retained gas amounts have previously not been specified for "evaluation basis" accidents. Current estimates of retained gas used in this document are based on the void fraction in the wetted solids of each tank considered. The bases for these void fractions are the void fraction

instrument measurements in selected tanks and waste similarities in the other tanks as described in SNL-000198, *Flammable Gas Safety Analysis Data Review*.

1.2 GAS RELEASE EVENTS

Gases released from the waste in a DST or SST in a nearly continuous manner can be managed effectively by ventilation. However, it is much more difficult to manage when a significant amount of the gas retained within waste is released relatively rapidly in a buoyant displacement gas release event (BDGRE). The BDGREs were observed in six of the DSTs (241-AN-103, 241-AN-104, 241-AN-105, 241-AW-101, 241-SY-101, and 241-SY-103). Data regarding the physics of GRE in the tanks is provided in Pacific Northwest National Laboratory (PNNL) PNNL-11296, *In Situ Rheology and Gas Volume in Hanford Double-Shell Waste Tanks* and PNNL-11536, *Gas Retention and Release Behavior in Double-Shell Waste Tanks*. The most recent estimations of released gas volumes are found in RPP-6655, *Data Observations on Double-Shell Flammable Gas Watchlist Tank Behavior*. The large GREs that occurred in DST 241-SY-101 before they were mitigated by the mixer pump, and then remediated by transfers and dilution, were unique in size and frequency. The largest release was the12/4/91 GRE of 130 to 260 m^3 of gas, or 35 to 70% of its retained gas inventory, RPP-6517, *Evaluation of Hanford High-Level Waste Tank 241-SY-101* and RPP-6655. The observed frequency of GREs in 241-SY-101, prior to remediation, was every 80 to 150 days, RPP-6517. In contrast, the total retained gas volumes and corresponding release fractions as determined from the maximum observed gas release are given for the other five GRE DSTs based on Void Fraction Instrument (VFI) and Retained Gas Sampler (RGS) data for these tanks as follows:

Tank	Total Retained Gas Volume (Std. m^3)	Release Fraction
241-AN-103	393±64	0.02
241-AN-104	259±48	0.07
241-AN-105	202±68	0.15
241-AW-101	153±38	0.19
241-SY-103	198±86	0.12

The uncertainties for the total retained gas volumes represent a 95% confidence bound. The release fractions were calculated by dividing maximum observed hydrogen release by retained hydrogen volume (RPP-7771, *Flammable Gas Safety Issue Resolution*). None of the gas releases in the DSTs, other than DST 241-SY-101 prior to remediation, have been large enough to create flammable mixtures after mixing in the tank headspace as described in RPP-6517 and RPP-7771.

The ongoing study of gas retention behavior of SST waste forms has narrowed the number of plausible spontaneous release mechanisms to a few possibilities that are capable of only small releases (less than 10 m^3 compared with 100 to 200 m^3 in DST 241-SY-101) and is discussed in HNF-SP-1193, *Flammable Gas Project Topical Report*. Observation of a number of the most active flammable-gas-retaining SSTs indicates that no large BDGREs are occurring and that only a few SSTs experience small spontaneous GREs. The typical spontaneous GRE in an SST has a

small release volume of tens of cubic feet of hydrogen and no release in the SSTs has been observed with the "classic" BDGRE properties as described in RPP-7771 and RPP-7249, *Data and Observations of Single-Shell Flammable Gas Watch List Tank Behavior*. The variation in gas release volumes and fractions within the same tank are a good indication of tank waste inhomogeneity and supports the use of uncertainty distributions for the modeling of this type of behavior.

1.3 WASTE GROUPS FOR SINGLE-SHELL TANKS AND DOUBLE-SHELL TANKS

Waste group assignments have been developed to replace the existing Facility Group designations for the 177 DSTs and SSTs for application of flammable gas controls. The SST and DST groupings are based on waste tank characteristics and the propensity of the waste to experience a large BDGRE. Waste group selection criteria were developed based on both empirical data and analytical concepts with the objective of identifying and separating waste tanks into groups that posed similar GRE risks.

The SSTs and DSTs are assigned to one of three groups based on the following:

- **Waste Group A**: Includes DSTs that have a propensity to undergo a large BDGRE and have sufficient retained gas to achieve 100% of the lower flammability limit (LFL) if all of their respective retained gas were released instantaneously. The selection criteria for this waste group are that DSTs have sufficient retained gas and satisfy the two other selection criteria pertaining to a propensity for BDGREs (discussed in the next section).

- **Waste Group B**: Includes tanks that do not have a propensity for a large BDGRE, but have sufficient retained gas to achieve 100% LFL if all of their respective retained gas were released instantaneously. Given the level of retained gas, these tanks may experience increases in headspace flammable gas concentrations during operations that induce disturbances in the solid portion of the waste.

- **Waste Group C**: All DSTs and SSTs not included in waste groups A or B (i.e., those that do not have sufficient retained gas to achieve 100% LFL if all of their respective retained gas were released).

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2.0 WASTE GROUP SELECTION CRITERIA

2.1 CRITERIA USED TO ASSIGN TANKS TO A WASTE GROUP

The waste parameters or combinations of waste parameters that are used to assign individual SSTs and DSTs to waste groups are as follows.

- **Retained Gas Volume**: Wetted settled solids depth and gas volume fraction distribution can be used to determine whether there is sufficient retained gas in the waste to cause the tank headspace to become flammable if the gas was all released at once. The sediment gas volume fraction may be determined using gas fraction data, assigned conservative bounding values, or conservatively calculated as the neutral buoyancy gas fraction (for tanks with liquid-over-sediment waste configuration). This calculation can be used as a quick screen for determining whether a tank poses a potential GRE hazard. This criterion determines whether a flammable mixture of gases can be achieved in the tank's headspace if all of the tank's retained gas were released instantaneously. In other words, is the volume of retained gas in the waste of a tank, adjusted to tank headspace pressure and temperature, less than the minimum volume of gas at these same conditions and composition required to create a flammable mixture in the tank's headspace? If there is less retained gas than that required to achieve a flammable mixture in the tank's headspace, then flammable conditions cannot be reached. As a result, the tank is classified as a waste group C tank independent of the method the gas is released. Equations (1), (2), and (3) are used to make these calculations relating to retained gas volume criterion.

Retained Gas Volume Criterion: $VG_{WNCL} < VG_{LFL}$

$$VG_{WNCL} = H_{WNCL} * VF_{WNCL} * A * \left(\frac{P_{WNCL}}{1\text{atm.}}\right) * \left(\frac{T_{VS}}{T_{WNCL}}\right) \tag{1}$$

where:

$$P_{WNCL} = 1\text{atm} + \left(\frac{9.806\frac{\text{m}}{\text{sec}^2}}{101{,}325\frac{\text{Pa}}{\text{atm.}}}\right) * \{\rho_{CL} * [H_{CL} + H_C] + [0.5 * \rho_{WNCL} * (2 * H_{TNCL} - H_{WNCL})]\} \tag{2}$$

$$VG_{LFL} = V_{VS} * \left(\frac{F_{LFL} * \left(1 - \frac{F_{CH4}}{\%\,LFL_{CH4}} - \frac{F_{NH3}}{\%\,LFL_{NH3}}\right)}{F_{WNCL}}\right) \tag{3}$$

where:

A	=	cross sectional area of the tank (m^2)
F_{CH4}	=	methane concentration in the headspace following gas release (volume %)
F_{LFL}	=	hydrogen concentrations at 100% LFL (4.0 volume %)
F_{NH3}	=	ammonia concentration in the headspace following gas release (volume %)
F_{WNCL}	=	retained hydrogen gas concentration in the saturated settled solids layer (volume %)
H_C	=	height of the crust layer (m)
H_{CL}	=	height of the liquid (convective) layer (m)
H_{TNCL}	=	height of total settled solids (non-convective) layer (m)
H_{WNCL}	=	height of liquid saturated (wetted) non-convective layer (m)
P_{WNCL}	=	calculated representative retained gas pressure in saturated settled solids layer (atm)
T_{VS}	=	representative temperature of headspace of waste tank (K)
T_{WNCL}	=	representative temperature of wetted settled solids layer (K)
V_{VS}	=	volume of headspace of waste tank (m^3)
VF_{WNCL}	=	representative void fraction in saturated settled solids layer
VG_{LFL}	=	calculated volume of gas from saturated settled solids layer required to produce 100% LFL in headspace of waste tank (m^3)
VG_{WNCL}	=	calculated volume of gas retained in the saturated settled solids layer (m^3)
$\%LFL_{CH4}$	=	methane concentration at 100% LFL (5.0 volume %)
$\%LFL_{NH3}$	=	ammonia concentration at 100% LFL (15.0 volume %)
ρ_{CL}	=	density of convective layer (kg/m^3)
ρ_{WNCL}	=	density of wetted non-convective layer (kg/m^3).

Notes: Temperatures used are the maximum temperatures recorded over the previous 12 months within the solid waste or within the vapor space as appropriate.

The dilution of released gases by water vapor is not considered.

Uncertainty distributions are utilized to account for the scatter of retained gas volumes in the waste and uncertainty in the solid volumes. Void fraction distributions are based on all available VFI data, RGS data, and appropriate Barometric Pressure Effect (BPE) data.

- **Energy Ratio**: The presence of a significant supernatant layer introduces the possibility of BDGREs. The supernatant layer depth can be utilized as a criterion for determining susceptibility to BDGREs by using a term called "energy ratio" as described in PNNL-11391, *Gas Retention and Release Behavior in Hanford Single-Shell Waste Tanks*. The waste in tanks with supernatant layers below an energy ratio threshold of about 3 is not expected to contain sufficient energy to release gas during a buoyant displacement event.

If a tank's waste fails the criterion "retained gas volume criterion," the "energy ratio criterion" is applied. The process of gas release from a gob undergoing buoyant

displacement requires that sufficient energy be released to disrupt the waste surrounding the bubbles to allow them to escape as the gob reaches the waste surface. The amount of energy available is directly proportional to the depth of the supernate through which the gob rises. The energy ratio is the ratio of the buoyant potential energy of the gas-bearing gobs to the energy required to yield the waste and release gas from those gobs participating in buoyant displacements. The depth of the convective layer above a non-convective layer in a tank's waste determines whether most of the gas retained in gobs from the wetted non-convective layer will be released. The release of gas is related to the kinetic energy gobs received as they rise through the convective waste layer.

Equations (4) and (5) are used to make energy ratio calculations. If the energy ratio for the waste in a DST or SST, which does not meet the criterion to be first classified as a waste group C tank, is not less than 3, then that tank is classified as a waste group B tank. The DSTs that fail both the retained gas volume criterion and the energy ratio criterion are examined for tendencies to have spontaneous BDGREs. The criterion comparison value of three accounts for the energy needed to overcome the yield stress, plus a factor to account for energy lost through other processes during the gas release. Based on experimental observations and tank behavior, some gas can be released when the energy ratio exceeds 3, and release of a large fraction of stored gas occurs when the energy ratio exceeds 5.

Only saltcake/saltslurry tanks have exhibited BDGRE behavior. For reasons given in Section 2.4, Application of Data to Sludge Tanks, the energy ratio is considered valid for both saltcake/saltslurry and sludge tanks.

<u>Energy Ratio Criterion</u>: ER < 3

$$ER = \left(\frac{NB_{WNCL} * \gamma * 101325 \frac{Pa}{atm.}}{(1 - NB_{WNCL}) * \tau_{WNCL} * \varepsilon_y} \right) * \left(\left(1 + \frac{1}{\gamma} \right) * \ln(1 + \gamma) - 1 \right) \tag{4}$$

where:

$$\gamma = \left(\frac{\rho_{CL} * H_{CL}}{1\,atm.} \right) * \left(\frac{9.806 \frac{m}{sec^2}}{101325 \frac{Pa}{atm.}} \right) \tag{5}$$

where:

atm.	=	atmosphere
ER	=	energy ratio, the ratio of the buoyant potential energy of the gas-bearing gobs to the energy required to yield the waste and release gas from those gobs participating in buoyant displacements
F_{WNCL}	=	retained hydrogen gas concentration in the saturated settled solids layer
H_{CL}		height of the liquid (convective) layer
NB_{WNCL}	=	calculated or measured neutral buoyancy of saturated settled solids layer relative to the convective layer on top of it (calculated neutral buoyancy is one minus the ratio of convective layer density to wetted non-convective layer density)

Pa	=	Pascal
ρ_{CL}	=	density of convective layer
γ	=	calculated ratio of pressure head of convective layer in a waste tank to the headspace pressure, which is assumed to be one atmosphere
τ_{WNCL}	=	representative yield stress of wetted non-convective layer (Pa)
ε_y	=	Strain at failure (assumed to be 1).

- **Buoyancy Ratio**: This is a semi-empirical relation presented in PNNL-13337, *Preventing Buoyant Displacement Gas Release Events in Hanford Double-Shell Waste Tanks*, which estimates the average waste gas fraction based on a balance of gas generation and background release. The buoyancy ratio (BR) represents the average saturated settled solids (non-convective) layer gas fraction divided by the neutral buoyancy gas fraction. This physically based buoyancy model was developed from the theory of bubble transport. This model predicts whether there is sufficient gas build up in the saturated settled solids layer in a DST to make gobs of waste buoyant and produce BDGREs (PNNL-13337). If the average void fraction in the saturated settled solids layer of waste is less than the neutral buoyant void fraction, a BDGRE cannot occur. Conversely, an average void fraction greater than the neutral buoyant void fraction predicts that BDGREs will occur prior to reaching steady state. The ratio of average steady-state void fraction to neutral buoyant void fraction for the case of constant nucleation is given by Equation (6). The constant in the numerator of the first factor is adjusted so that the minimum BR for DSTs experiencing BDGREs is 1.00. In this report, DST 241-AN-103 is used to calculate the constant.

  The BR includes as input parameters the layer depths and densities making up the average specific gravity of the waste and the Estey criterion as described in WHC-SD-WM-TI-755, *An Analysis of Parameters Describing Gas Retention/Release Behavior in Double Shell Tank Waste*. However, it also includes the other terms that model the underlying physics of BDGRE behavior (PNNL-13337). In application, this model accurately separates the known BDGRE and non-BDGRE tanks with current data. For these reasons, the BR is considered the best discriminator for BDGRE behavior. Use of the other criteria along with the BR does not improve the overall accuracy of the prediction. The DSTs that fail both the retained gas volume criterion and the energy ratio criterion and that fail the buoyancy ratio criterion are classified as waste group A tanks (failure in this instance indicates that the given waste criteria was not met, causing the tank to be classified as a member of the more hazardous waste tank group). The BR is not calculated for SSTs. Because there is very little supernatant liquid in the SSTs, the BR criteria that the tanks have a deep layer (greater than 1 m) of supernatant liquid are not met.

Buoyancy Ratio Criterion: **BR < 1.00**

$$BR = \left(\frac{CF}{\rho_{WNCL} - \rho_{CL}}\right) * \left(\frac{G_{WNCL} * T_{WNCL}}{F_{WNCL} * \left(101325 \frac{Pa}{atm.}\right) * P_{WNCL}}\right)^{\frac{1}{3}} * H_{WNCL}^{\ 2} \qquad (7)$$

where:

BR	=	buoyancy ratio, the average saturated settled solids layer gas fraction divided by the neutral buoyancy gas fraction. This ratio predicts whether there is sufficient gas build up in the saturated settled solids layer in a DST to make gobs of waste buoyant and produces BDGREs
CF	=	calibration factor (set to 1334.3 for this analysis)
F_{WNCL}	=	retained hydrogen gas concentration in the saturated settled solids layer
G_{WNCL}	=	hydrogen generation rate in saturated settled solids layer (moles/m^3/day).
H_{WNCL}	=	height of liquid saturated (wetted) non-convective layer
P_{WNCL}	=	calculated representative retained gas pressure in saturated settled solids layer
T_{WNCL}	=	representative temperature of wetted settled solids layer.

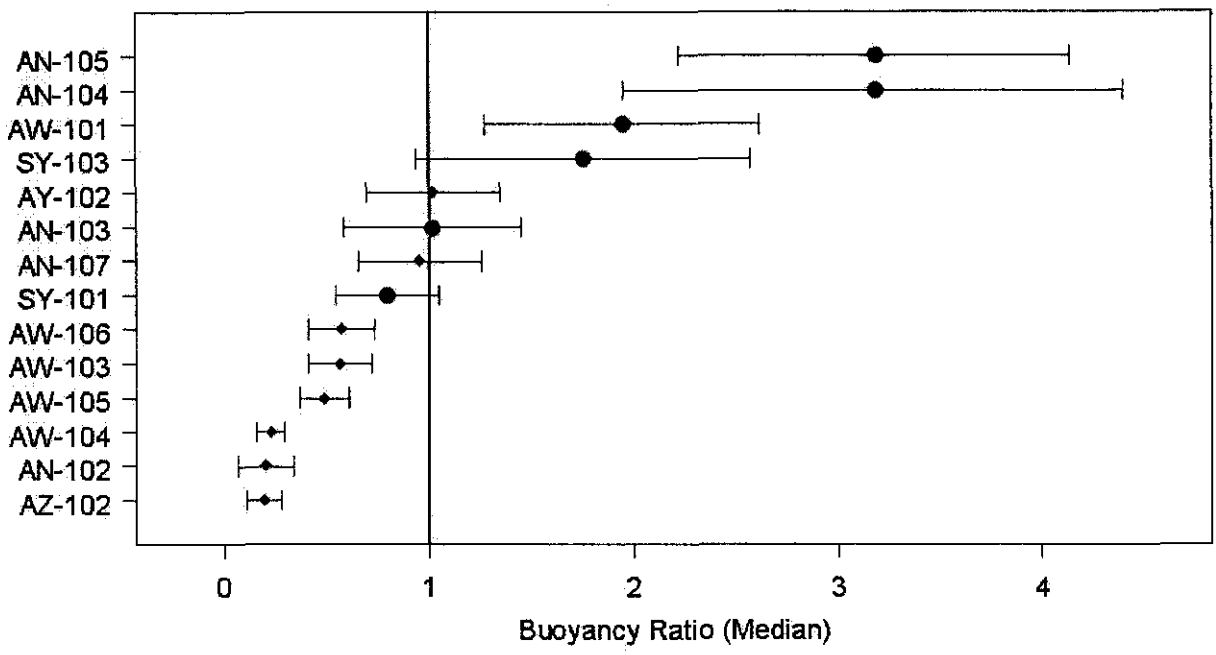
2.2 SELECTION OF BUOYANCY RATIO CALIBRATION FACTOR

The BR was developed to describe the relationship between DSTs that historically exhibited BDGRE behavior. It was found that tanks exhibiting BDGRE behavior have a relationship between the average "saturated settled solids layer gas fraction" and the "neutral buoyancy gas fraction" that is greater than the ratio of these values determined for tanks that never exhibited BDGREs. This BR is used to predict whether there is sufficient gas build up in the saturated settled solids layer in a DST to make gobs of waste buoyant and produce BDGREs. It was determined that tanks with documented BDGREs would have BRs greater than 1 (where the calibration factor was set such that the lowest BR for a tank exhibiting BDGRE behavior would be unity) (PNNL-13337). In the past, the BR calibration was set using mean values of the properties or other measurements for the specific tank and its waste.

2.2.1 Determining the BDGRE Tank with the Minimum Buoyancy Ratio

When calibrating the BR, the first step is to determine which tanks exhibit BDGRE behavior. Historically, the tanks are DSTs 241-AN-103, 241-AN-104, 241-AN-105, 241-AW-101, 241-SY-101, and 241-SY-103. The relationship of the BRs for the BDGRE tanks and closely related tanks are illustrated in Figure 1. In this evaluation, the median values of the BR calculation were used and as a result DST 241-AN-103 has the minimum BR.

Figure 1. Comparison of Buoyancy Ratios.



DSTs 241-AN-107, 241-AY-102, and 241-SY-101 are the closest tanks to having a BR equal to 1, but do not fall within the region of tanks that exhibit BDGREs.

In Figure 1 the circles indicate tanks that exhibit BDGREs, and the diamonds indicate tanks that do not have BDGREs, but are close to the BDGRE conditions. The vertical separation does not have any meaning and is included to improve clarity.

However, over the past several years, three GREs were observed in DST 241-AN-107 (HNF-SD-WM-TI-797), which were large enough to suggest that they were BDGREs, and if so, then the tank would be classified as a BDGRE tank. Also concluding in October 2000, DST 241-SY-101 waste was diluted and partially transferred to DST 241-AY-102. Following the conclusion of DST 241-SY-101 remediation, RPP-6517 was released, which found that the properties of the remaining waste in the tank would not exhibit BDGRE behavior (Figure 1). Due to the uncertainty of the properties for these two tanks, and the uncertainty to which tank the BR calibration factor should be calibrated for, additional studies were required to evaluate these two tanks. This uncertainty was caused by recent GREs from DST 241-AN-107, which needs to be evaluated to determine if they were BDGREs, and by the short time period (6 months) between the ending of the remediation operations and the evaluation provided in RPP-6517. Because an additional 1.5 years have passed since the evaluation provided in RPP-6517, it was useful to reevaluate gas retention in DST 241-SY-101. Finally, since April 2000, when DST 241-SY-101 was remediated, there have been no BDGRE's observed in DST 241-SY-101.

2.2.1.1 Additional Evaluation of DST 241-AN-107. As reported in TWS02.025, *Investigation of Gas Retention and Release Issues in Tanks AN-107 and SY-101 Supporting Waste Group Determination* (Appendix H):

> "Application of the Buoyant Displacement Gas Release Event (BDGRE) predictive indicators has [sic] historically shown that tank 241-AN-107 was close to exhibiting BDGRE behavior (Meyer and Stewart, 2001 and Johnson et al. 2000). Since the predictive model of BDGRE behavior is based on the group of tanks exhibiting this behavior, inclusion of DST 241-AN-107 in the group has the potential to affect the waste group determinations for the remaining tanks. The three gas release events observed recently in tank 241-AN-107 (McCain 2001) were investigated in detail to determine if the tank indeed belongs in the BDGRE group. The retained gas volume in AN-107 was also evaluated."

The TWS02.025 evaluation (Appendix H) found that two of the three GREs were the result of a calibration or intrusive pumping activities. The third GRE was determined to be a small GRE that did not have the characteristics of a BDGRE. Therefore, DST 241-AN-107 is not considered to be a BDGRE tank.

The retained gas volume may be estimated using changes in the waste surface level in response to barometric pressure changes. The barometric pressure effect model is described in RPP-6655, Appendix B. The model estimates the retained gas volume based on the response of the waste surface level to fluctuations in the barometric pressure due to compression and expansion of stored gas.

Report TWS02.025 (Appendix H) found that there was a correlation between atmospheric pressure and the surface level in DST 241-AN-107. At the 95% confidence level, it is estimated that the in situ retained gas volume in the tank is 2,100 ft^3 at 2 atmospheres of pressure (4,200 ft^3 at atmospheric pressure). The truncation of the distribution is defined by 0 and 4,000 ft^3, where 4,000 ft^3 is the volume of gas retained at the neutral buoyancy void fraction for the waste.

In conclusion, TWS02-025 did not find any indication that BDGREs have occurred in DST 241-AN-107; however, there is sufficient retained gas in the tank to allow the waste surface to react proportionally with changes in barometric pressure and for a determination to be made of the volume of retained gas in the sediment.

2.2.1.2 Additional Evaluation of DST 241-SY-101. As reported in TWS02.025 (Appendix H), the potential for large BDGREs in DST 241-SY-101 (PNNL-11536) was eliminated by a series of waste transfers and water dilutions in 1999 and 2000 (RPP-6517). However, like DST 241-AN-107, DST 241-SY-101 in its new configuration is relatively close (in terms of the BDGRE predictive indicators) to the group of tanks exhibiting BDGREs. The last evaluation of its waste configuration was done in August 2000 (RPP-6517). For this document, a re-evaluation of the waste configuration within the tank was performed. DST 241-SY-101 data were updated by an investigation of potential gas retention and a refinement of the sediment layer depth (a significant parameter for identifying the potential of BDGRE behavior).

The barometric pressure effect model was once again used to estimate the retained gas volume based on the response of the waste surface level to fluctuations in the barometric pressure due to compression and expansion of retained gas. For DST 241-SY-101, no significant correlation

was found between atmospheric pressure and surface level fluctuations. This can be attributed to a low void fraction, a layer of "scum" on the waste surface that inhibits surface movement, or the masking effect of evaporation. If there is no correlation between the atmospheric pressure and surface level fluctuations (and the waste surface is free to move) the retained gas volume is determined to be less than 1,000 ft^3.

The waste level in DST 241-SY-101 rose 2 in. from October 2000 to March 2002 after correction for evaporation. This corresponds to an increase in retained gas of 750 ft^3 at in situ conditions (1,500 ft^3 at atmospheric pressure). Because the operations in DST 241-SY-101 performed during the transfer and dilution activities would have degassed the waste, it is assumed that the current retained gas inventory is 750 ft^3 at in situ conditions. An additional observation of note is that there appears to be no additional retained gas accumulation from January 2002 through March 2002 indicating that steady-state gas releases now equal the gas generation rate.

In addition, TWS02.025 reports that the current sediment or non-convective layer depth is 90 in. This evaluation is based on information from temperature profiles, and neutron and gamma scans. This is a reduction in the non-convective layer depth since the time of RPP-6517, evidence of continuing compaction of the non-convective layer supporting the above finding that the retained gas volume is small compared to the pre-mitigation retained gas volume.

2.3 EXPLANATION OF HOW CRITERIA ARE USED

First the retained gas criterion is applied. If there is not enough retained gas in the waste to allow the tank headspace to reach 100% of the LFL, the tank "passes" and is classified as a C tank. No further calculations are performed. If there is sufficient retained gas in the waste to allow the tank headspace to reach 100% of the LFL, the tank "fails." The energy ratio criterion is used next. The retained gas criterion determines either that a tank is a C tank (passes criterion) or it is an A/B tank and the next criterion must be used.

The energy ratio criterion is the ratio of the buoyant potential energy for gas-bearing gobs to the energy required to yield the waste and release gas from those gobs participating in buoyant displacements. If the ratio is less than 3, the tank "passes" the criterion, the tank is classified as a B tank and no further calculations are performed. If the energy ratio is equal to or greater than 3, the buoyancy ratio criterion is applied. Failing the energy ratio criterion does not make a tank a BDGRE tank. It only says that there is enough buoyant potential energy to support a BDGRE if all the other factors are present. A tank that fails the energy ratio criterion is still an A/B tank and the next criterion is used.

The buoyancy ratio criteria separates the A and B tanks. This criteria predicts whether there is sufficient gas build up in the saturated settled solids layer in a DST to make gobs of waste buoyant and produce BDGREs. If the answer is yes, the tank "fails" and is classified as an A tank. If the answer is no, the tank passes and is classified as a B tank.

2.4 APPLICATION OF DATA TO SLUDGE TANKS

In 1996 PNNL-11391 reported the results of investigations into the gas retention and release behavior of SSTs. It was reported that given the proper configuration of the materials in the tank a buoyant displacement was possible in sludge-type materials. In practical experience at Hanford, BDGREs have been observed in tanks containing saltcake/salt slurry wastes.

The findings were based on bench-scale experiments using Bentonite clay as a simulant for SST sludge materials. The tank used in the experiments was 27 cm in diameter. In the experiment, gases retained in the solids and driving the BDGREs were generated relatively quickly using the decomposition of hydrogen peroxide. The bench-scale observations were then used to develop the energy ratio criterion, which was found to be applicable to tanks with a significant supernatant layer, a layer greater than 1 meter in depth. When the energy ratio was applied to Hanford DST waste, it was found to be a good predictor of the energetics of the buoyant displacements.

As it turns out, the only Hanford tanks with the propensity to exhibit BDGRE behavior are tanks containing saltcake/salt slurry wastes. Because the Hanford tanks containing sludge materials have not historically warranted additional investigation in their behavior with respect to flammable gas retention and release, there is very little data pertaining to these tanks. It has not been demonstrated that the BDGRE prediction criteria, the energy ratio and the buoyancy ratio, apply to the sludge tanks. However, because the original experiments from which the theory of buoyant displacements was developed used sludge simulants, it is assumed that applying the energy criteria and buoyancy ratio will provide a conservative estimation of the propensity of the sludge wastes to exhibit BDGRE behavior.

Recently, DST-241-AW-106, a sludge tank, was evaluated to determine if its supernatant layer could be replaced with a deep supernatant layer (6.46 m vs. 0.55 m prior to transfer) with a specific gravity of 1.47 (vs. 1.32 prior to transfer) (7G600-SAB-03-008). Using the criteria presented in this document, it was found that DST 241-AW-106 would not retain sufficient gas at the new conditions to pose a flammable gas hazard due to spontaneous gas releases. The tank's past behavior and a prediction of the void fraction within the waste using the Barometric Pressure Effect (BPE) model verifies that the sludge does not retain sufficient gas to be a hazard. Based on the results of the evaluation shown in Table 1, the tank would remain a waste group C tank.

Table 1. Results of the Evaluation of DST 241-AW-106 Post-Transfer Conditions*.

Post Transfer	%A	%B	%C	Buoyancy Ratio (minimum)	Buoyancy Ratio (mean)	Buoyancy Ratio (95% CL)	Energy Ratio (mean)	Energy Ratio (95% CL)
AW-106	1.0	0.3	98.6	0.38	1.38	4.03	1.27	50.2

Note:

Source: 7G600-SAB-03-008, 2003, *Analysis of Waste Transfer to Double-Shell Tank 241-AW-106*, CH2M HILL Hanford Group, Inc., Richland, Washington.

2.5 OTHER CRITERIA RELATED TO SELECTION CRITERIA

Two additional criteria were traditionally used to discriminate BDGRE tanks: the Estey and the Specific Gravity Criteria. The Estey criteria, provided in WHC-SD-WM-TI-755, is an empirical relation developed as a discriminator for tanks with BDGRE behavior. It is defined by the product of the specific gravity of the liquid layer and the height in inches of the sediment or settled solids layer (hereafter denoted SpG_L*H_S). Historically, a limit of 150 in. has been used to differentiate between BDGRE and non-BDGRE tanks (PNNL-13337 and RPP-6517). The Specific Gravity Criteria was developed to differential BDGRE tanks based on specific gravity. Typically, BDGRE tanks have specific gravities greater than 1.4.

Report WHC-SD-WM-TI-755 states that no BDGREs were recorded in those tanks with SpG_L*H_S less than 150 in., and that all tanks that exhibit BDGREs have SpG_L*H_S greater than 230-in. (crust thickness is included in the height of the sediment). The input data and results are included in Table 2. The limit for BDGRE tanks considering only the sediment layer depth (not including the crust) is 193 in. (DST 241-AW-101). Note also that the highest actual value in non-BDGRE tanks is 141 in. (DSTs 241-AW-104 and 241-AW-106).

The input data for the current analysis is given in Table 3 and illustrated in Figure 2. The limit for BDGRE tanks is now 162 in. (DST 241-AW-101), while the highest mean value in non-BDGRE tanks is 140 in. (DST 241-AW-103). In Figure 2, the filled circles indicate tanks that exhibit BDGREs, and the open circles indicate tanks that do not have BDGREs, but are close to the BDGRE conditions.

As a result of this analysis it was determined that recalibration of the Estey criteria limit provided in WHC-SD-WM-TI-755 is not possible (highest non-BDGRE tank value is equivalent to original analysis) and the Estey criteria is no longer a good discriminator. The uncertainty of the results (due to property uncertainties) produces overlap between BDGRE and non-BDGRE tanks at the 95% confidence level, therefore providing no clear discrimination of behavior. This is especially true when the value of the SpG_L*H_S for DST 241-AW-103 is 159 in. at a 95% confidence level. This change in the value for SpG_L*H_S for DST 241-AW-103 came about with the filling of the tank with additional supernate to the tank operating level of 400 in. There has been no corresponding change in the behavior of the tank.

Table 2. Estey Criteria Inputs and Results*.

Tank	H_S (in)	H_C (in)	SpG_L [1]	SpG_L*H_S (in)	$SpG_L*(H_S+H_C)$ (in)	Average
AN-101	0	0	1.24	0	0	0
AN-102	32	0	1.39	44	44	44
AN-103	150	51	1.6	240	322	281
AN-104	180	55	1.46	263	343	303
AN-105	204	2	1.43	292	295	293
AN-106	6	0	1.19	7	7	7
AN-107	49	0	1.4	69	69	69
AP-101	0	0	0.99	0	0	0
AP-102	0	0	1.2	0	0	0
AP-103	0	0	1	0	0	0
AP-104	0	0	1.03	0	0	0
AP-105	56	0	1.33	74	74	74
AP-106	0	0	1	0	0	0
AP-107	0	0	1.01	0	0	0
AP-108	0	0	0.99	0	0	0
AW-101	125	51	1.54	193	271	232
AW-102	20	0	1.16	23	23	23
AW-103	132	0	1.04	137	137	137
AW-104	142	0	0.99	141	141	141
AW-105	108	0	1.01	109	109	109
AW-106	108	0	1.31	141	141	141
AY-101	30	0	1.09	33	33	33
AY-102	12	0	1	12	12	12
AZ-101	13	0	1.2	16	16	16
AZ-102	35	0	1.1	39	39	39
SY-101 [2]	220	47	1.49	328	398	363
SY-102	26	0	1.03	27	27	27
SY-103	140	24	1.47	206	241	223

Notes:

BDGRE = buoyant displacement gas release event.

BDGRE tanks are denoted in **Bold**.

1 – Specific gravities do not necessarily reflect current tank conditions, especially in active tanks.

2 - SY-101 is in pre-remediation condition.

*WHC-SD-WM-TI-755, 1996, *An Analysis of Parameters Describing Gas Retention/Release Behavior in Double Shell Tank Waste*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Table 3. Estey Criteria Inputs and Results (Mean Values).

Tank	H_S (in)	H_C (in)	SpG_L[1]	$SpG_L * H_S$ (in)
AN-101	0	92	1.17	0
AN-102	32	362	1.43	46
AN-103	149	164	1.45	216
AN-104	159	207	1.44	230
AN-105	177	215	1.43	253
AN-106	6	8	1.18	7
AN-107	90	288	1.37	123
AP-101	0	404	1.31	0
AP-102	0	395	1.20	0
AP-103	0	102	1.31	0
AP-104	0	403	1.25	0
AP-105	32	380	1.35	44
AP-106	0	226	1.26	0
AP-107	0	356	1.25	0
AP-108	0	280	1.25	0
AW-101	113	234	1.43	161
AW-102	11	20	1.01	11
AW-103	114	286	1.24	141
AW-104	81	34	1.07	87
AW-105	93	62	1.07	99
AW-106	87	22	1.32	115
AY-101	30	39	1.22	36
AY-102	62	186	1.15	71
AZ-101	19	334	1.24	23
AZ-102	38	324	1.14	43
SY-101[2]	90	341	1.36	122
SY-102	26	350	1.25	32
SY-103	113	148	1.47	166

Notes:

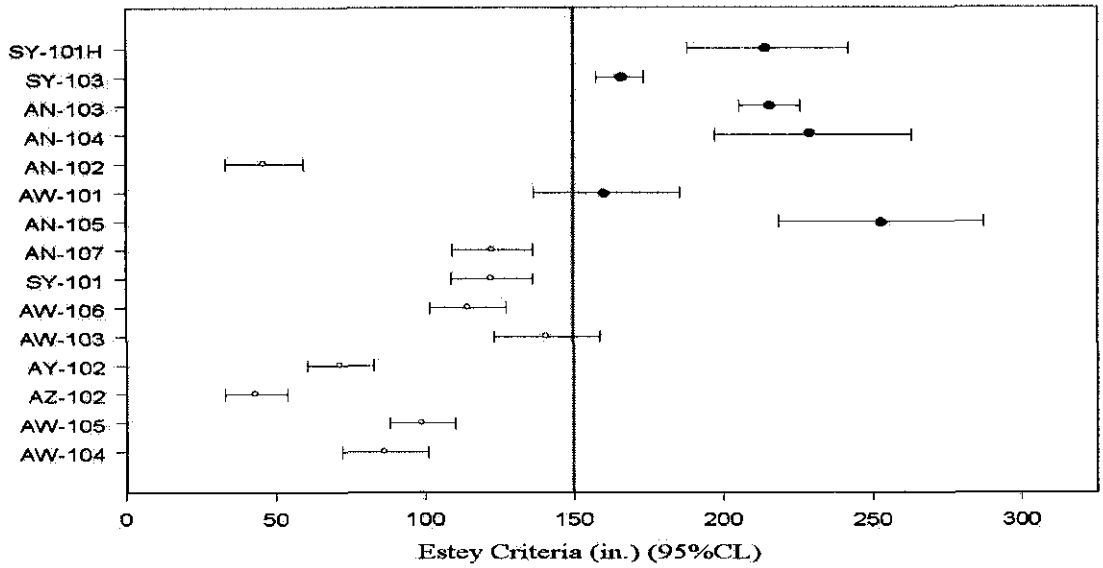
BDGRE = buoyant displacement gas release event.

BDGRE Tanks are Denoted in **Bold**.

1 – Specific gravities do not necessarily reflect current tank conditions, especially in active tanks.

2 - SY-101 is in pre-remediation condition.

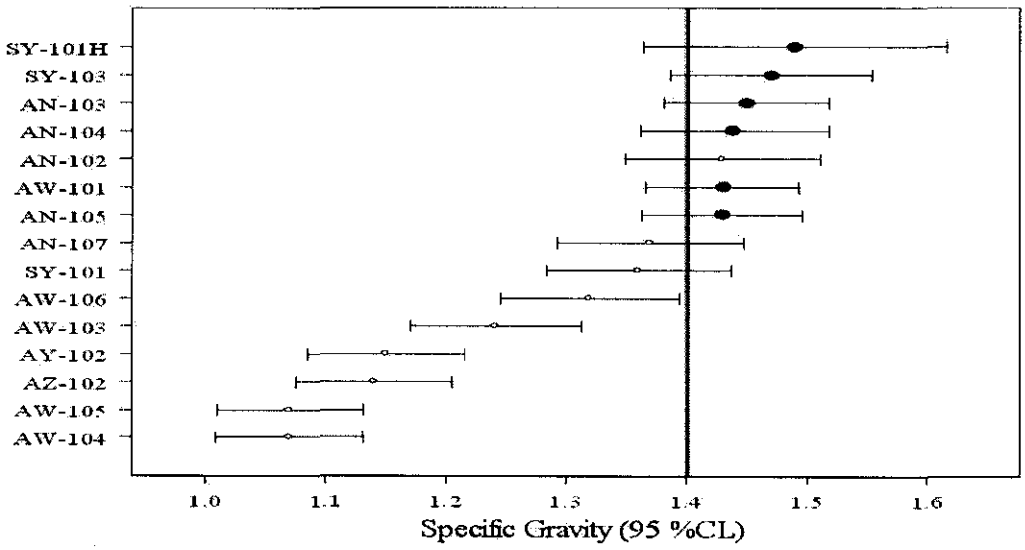
Figure 2. Comparison of the Estey Criteria for Selected Double-Shell Tanks.



Note: SY-101H refers to the historic (pre-remediation) condition of DST 241-SY-101

The Specific Gravity Criteria historically was developed to indicate that BDGREs only occur in tanks with liquid specific gravities greater than 1.4. As shown in Figure 3, all BDGRE tanks have liquid specific gravities greater than 1.4, but several tanks without BDGREs also have tanks in the same range of liquid specific gravities. As a result, the Specific Gravity Criterion is of little value.

Figure 3. Comparison of Specific Gravity for Selected Double-Shell Tanks.



Note: SY-101H refers to the historic (pre-remediation) condition of DST 241-SY-101

In Figure 3, the circles indicate tanks that exhibit BDGREs, and the squares indicate tanks that do not have BDGREs, but are close to the BDGRE conditions based on recent tank analyses.

3.0 CALCULATIONAL METHODOLOGY

Data on tank wastes is available from a variety of sources. Regardless of the database where data is extracted, tank waste information has a degree of uncertainty associated with its value. The size of property or measurement uncertainty is affected by a number of factors, such as the heterogeneous nature of the waste, uncertainties due to the analysis methodology and measuring devices, and incomplete or missing data. In order to account for this uncertainty in data, the values used in this study have been assigned distributions that reflect the uncertainty in the estimation of the various tank waste information. To perform the calculations necessary to utilize data expressed as distributions, a statistical method known as the Monte Carlo methodology was utilized in this study.

3.1 MONTE CARLO METHODOLOGY

The Monte Carlo Methodology is a statistical calculation method. In this method, parameters expressed as distributions are sampled repeatedly and the single-point calculation is run many times to produce a result that is a distribution that accounts for the ranges of all of the individual data parameters. In the Monte Carlo analysis, the analyst selects a number of simulation runs to perform 'n'. A random number table is produced, which allows the calculation to select 'n' discrete values from a given input distribution. These values are then used in 'sampled' order to perform the calculation. This process is repeated for each distribution in the calculation. After this selection is completed 'n' values have been selected from each distribution. If 'n' is sufficiently large, the frequency of the selected values mirrors the frequency of the values in the original distribution. The 'sampled' values are then used in order of their selection (not in numerical order) in the single-point calculation. The results of the 'n' single-point calculations form a distribution that will reflect the combined uncertainties from the original data.

This evaluation includes distributions for 13 parameters to account for uncertainty in waste measurements, waste properties, and retained gas volumes and compositions. Each analysis is performed with 5,000 trials. This involves 5,000 randomly sampled values from each distribution for a total of 65,000 data points. These values are then combined in the order they are sampled and are used in the model calculation to create a population of results with 5,000 answers that are combined to produce the result distributions. If the number of runs selected is large enough, the results of the Monte Carlo simulation can be rerun many times with different sets of randomly selected values and the resulting distribution will vary within limits acceptable to the analysis. To test the stability or reproducibility of the model SST 241-U-106 was selected for evaluation. SST 241-U-106 is the tank closest to the boundary between waste groups B and C.

The stability test checks the operation of the model using different "seed" numbers for the random number generation algorithm. This study ran the SST 241-U-106 model 50 times, with 5,000 trials per run. Fifty runs equates to 250,000 trials using 3,250,000 data points. The initial analysis (5,000 trials) for tank U-106 gave a confidence level of 94.5 that the tank is a waste group C tank. The stability test gave a mean value of the confidence level of 94.44 and a median

value of 94.43. This is not a significant variance and confirms that 5,000 trials is adequate. Table 4 presents the results of the 50 trial stability tests for this tank. Based on the stability test, 47 times the SST 241-U-106 would be classified as a waste group B tank, three times the tank would initially be classified as a waste group C tank. In all cases, the waste addition sensitivity test classified the tank as a waste group B tank.

Table 4. Stability Test Results.

Tank	SST 241-U-106
Value tracked	Confidence level tank is a waste group C tank
Reported value (run #1)	94.5 (this value is less than the 95 required to classify this tank as a waste group c tank)
Number of repetitions	50
Number of trials per repetition	5,000
Mean	94.44
Median	94.43
Standard deviation	0.37
Minimum	93.6
Maximum	95.2

Note:
SST = single-shell tank.

Based on the results presented in Table 4 and because of the conservatisms built into the assumption that 100% of the gas is released simultaneously, it is not expected that there is a misclassification of any of the waste group C tanks and no additional evaluation is required.

3.2 APPLICATION OF CRYSTAL BALL[1]

Crystal Ball is an EXCEL[2] add-in, which performs the data sampling and handling for the Monte Carlo simulation. Appropriate distributions are selected and defined as assumptions in the Crystal Ball analysis. The model-calculated results of interest are determined and defined as forecast values. The number of runs and random number seed value (optional) is also selected to control the selection of random numbers and termination of the program. Crystal Ball will generate a table of random numbers sufficiently large to randomly sample all distributions once for each run. The number of random numbers in the table is the product of the number of distributions times the number of runs. Crystal Ball will then sample each distribution based on its random number and perform the model calculation once for each run. The individual run results are kept and a product or forecast distribution is calculated at the completion of the simulation. Crystal Ball can graphically display the forecast distributions as the runs are performed and then produces a report as desired.

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[1] Crystal Ball is a trademark of Decisioneering, Inc., Denver, Colorado.

[2] EXCEL is a trademark of Microsoft Corporation, Redmond, Washington.

3.3 ASSUMPTIONS

The following assumptions are used in this methodology.

- Gas releases are instantaneous. Although this assumption is considered to be conservative, especially in actively ventilated tanks, the conditions of the release timing are not as important in passively ventilated tanks, where experience indicates that slow gas releases have a significant impact on headspace flammable gas concentrations.
- 100% of the gas is released.
- BDGRE behavior has been modeled based on small-scale tests with sludge-type materials. The models have only been validated based on observations on the existing BDGRE tanks, which are all saltcake/saltslurry tanks. The BDGRE models have not been confirmed based on behavior in sludge-waste tanks, other than we know that at the current tank conditions we do not observe BDGRE behavior in these tanks, which happens to be consistent with the model predictions.
- An Energy Ratio (ER) of 3 indicates that a BDGRE is capable of releasing a portion of its retained gas. Experimental data and tank observations indicate that an Energy ration of 5 or greater is required to produce a significant gas release from a given gob.
- In-situ measurements of Yield Stress are not readily available. The distribution for yield stress is conservative towards favoring BDGRE behavior as indicated by the ER.
- Assuming that the gas is retained under lithostatic conditions rather than hydrostatic conditions may produce conservative results (i.e. indicate larger amounts of retained gas).
- Assuming headspace gas concentrations are proportional to retained gas concentrations may be a conservative assumption.
- Available void fraction information for sludge tanks with at least 1 m of supernatant is not sufficient for the creation of a distribution for this tank configuration. The default void fraction derived for saltcake/saltslurry tanks with 1 m of liquid is assumed to be conservative for this tank configuration.
- Void fractions are considered constant in tanks that have been saltwell pumped when compared to the pre-pumping condition of the tank.
- Retained gas void fractions are bound by the neutral buoyancy void fraction in DSTs only.
- There is no correlation assumed between H_2 and NH_3 gas concentrations.

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4.0 SOURCES OF INPUT DATA AND HIERARCHY

The BBI database is the preferred database for waste characterization information. This database is used whenever possible to help keep consistency between various engineering documents produced by Hanford Site contractors. For this evaluation, the BBI database was queried on November 15, 2001. This data is the same data used in the preparation of RPP-5926, *Steady-State Flammable Gas Release Rate Calculation and Lower Flammability Level Evaluation for Hanford Tank Waste*. Data not available in the BBI, such as vapor data, were obtained from other sources as described below. All data used in these analyses are presented in Appendix A, Tables A-1 through A-7. All data sources documented in Appendix B, Tables B-1 through B-7 provide the data sources on an individual data point basis. Table B-8 provides the key to the references. A summary of the input data required for this evaluation and the primary source for that information is presented in Table 5.

4.1 POINT VALUES

The November 15, 2001, BBI database is the default source of data for the waste and tank characteristic information. The information obtained from the BBI database includes the waste layer depth information and the layer waste density information. The hydrogen generation rates, waste temperatures, and headspace temperatures were obtained from RPP-5926. Another primary source of temperature data is the *Surveillance Analysis Computer System* (SACS). Uncertainty information on the BBI data was obtained from an email to S. A. Barker (Wilmarth 2002) (Appendix I). In future releases of the BBI, the uncertainty data will be included and may be used as a primary source. Data pertaining to the tanks that display buoyant displacement behavior were obtained from RPP-6655. Updates of waste characteristics for these tanks can be obtained from the BBI database. However, the time the sample was taken for analysis in relationship to the BDGRE event can affect the results of the analysis. Retained gas volumes may be reduced in BDGRE tanks following a BDGRE, where the property data can cause misleading results in a waste tank grouping evaluation. Tank dimensions are based on updated tank volume calculations presented in 74B40-99-116, *Tank Volume Adjustments* (Appendix F).

Table 5. Data Source Summary Table. (2 sheets)

Variable	Variable type	Primary source of information
Total non-convective waste depth (m)	Distribution	Ref 7
Wetted non-convective waste depth (m)	Distribution	Ref 7
Convective waste depth (m)	Distribution	Ref 7
Crust depth (m)	Distribution	Ref 8
Non-convective waste density (kg/m^3)	Distribution	Ref 7
Convective waste density (kg/m^3)	Distribution	Ref 7
Non-convective waste average temperature (K)	Single point value	Ref 6
Tank headspace average temperature (K)	Single point value	Ref 6

Table 5. Data Source Summary Table. (2 sheets)

Variable	Variable type	Primary source of information
Tank type group	Single point value	Ref 2
Total tank volume (m^3)	Single point value	Ref 2
Tank operating capacity (m)	Single point value	Ref 2
Tank headspace volume (m^3)	Single point value	Ref 2
Dish type	Single point value	Ref 2
Dish height (m)	Single point value	Ref 2
Dish volume (kL)	Single point value	Ref 2
Tank capacity (kL/m)	Single point value	Ref 2
Void fraction or maximum wetted solids void fraction (%)	Distribution	Ref 4
Non-convective waste yield stress dist (Pa)	Distribution	Ref 5
Headspace gas ratio CH_4 dist	Distribution	Ref 3
Headspace gas ratio N_2O dist	Distribution	Ref 3
Retained gas composition N_2 (%)	Distribution	Ref 3
Retained gas composition NH_3 (%)	Distribution	Ref 3
Hydrogen generation rate in non-convective waste (moles/m^3/day)	Distribution	Ref 6
Cross sectional area of tank (m^2)	Single point value	Ref 2

Notes:

Ref 2, 74B40-99-116, 1999, *Tank Volume Adjustments*, CH2MHILL Hanford Group, Inc., Richland, Washington.

Ref 3, Appendix J – Derivation Of Retained Gas Compositions

Ref 4, Appendix K – Derivation Of Void Fraction

Ref 5, Wells, B. E., Jan 24, 2002, Personal Email to S. A. Barker, Pacific Northwest National Laboratory, Richland, Washington.

Ref 6, RPP-5926, *Steady-State Flammable Gas Release Rate Calculation and Lower Flammability Level Evaluation for Hanford Tank Waste*, Rev 2A, CH2MHILL Hanford Group, Inc., Richland, Washington.

Ref 7, *Best Basis Inventory*, [database accessed November 15, 2001], internet address: http://twins.pnl.gov:8001.

Ref 8, RPP-6655, 2000, *Data Observations On Double-Shell Flammable Gas Watchlist Tank Behavior*, Rev 0, CH2MHILL Hanford Group, Inc., Richland, Washington.

4.2 DISTRIBUTIONS

A number of important waste characterization properties was needed to properly determine the classification of the tanks. For characterization information that is not included in the BBI database, or for information with values that are uncertain, the information is expressed as distributions. PNNL reported yield stress for five tanks (DSTs 241-AN-103, 241-AN-104, 241-AN-105, 241-AW-101, 241-SY-103, and 241-SY-101 [pre-mitigation]) based on in situ ball rheometer testing (RPP-6655). A suitable distribution for yield stress based on this data was suggested by PNNL (Appendix G) (see also discussion below). Finally, due to the recent activities in DSTs 241-AN-107 and 241-SY-101, the void fractions were reevaluated for this analysis. The results of this evaluation are reported in TWS02.025 (Appendix H). Gas composition data and void fraction information is not available in the BBI database and data distributions from retained gas sampler results were used from Appendices J – Derivation Of

Retained Gas Compositions and K – Derivation Of Void Fraction. Information from these appendices also reports the results of a statistical evaluation that estimates a distribution for the void fraction and retained gas composition for tanks where no data is available.

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5.0 RESULTS OF CALCULATIONS

An evaluation of the SSTs and DSTs at the Hanford Site has been completed using the methodology presented in Section 3.0, the data presented in Appendices A and B, and the model presented in Appendices C, D, and E. Each tank was evaluated based on the waste conditions on November 15, 2001, except for SST 241-A-101, which is being saltwell pumped. SST 241-A-101 was base-lined as of February 28, 2002. Three conditions were then evaluated for each tank:

- Base condition as of the selected data date (AS IS case)
- Base case with an addition of 10,000 gal of water (10,000-gal water addition case)
- Base case with an addition of 10,000 gal of caustic (10,000-gal caustic addition case).

The last two cases were performed to determine if any tanks changed classification as the result of the addition of modest amounts of water or caustic. These two cases demonstrate what can happen to the tank classification during normal operations as the result of a number of water flushes over time, or if caustic is added to the water flush in order to condition the water. An additional constraint was placed on the tanks relating to these additions. Near-full tanks were not allowed to exceed the tank operating limit for waste volume.

Appendix E contains a sample output file from the program. The sample output contains the Monte Carlo results for all variables that were tracked, the input distributions (or assumptions) for the given tank, and a table summarizing key variables that were used to verify proper operation of the model (this table is located at the top of the file so that the user did not have to search the 130+ pages of output for the desired results). A compact disk is available from the authors that contain the complete set of output files, as well as the model.

5.1 WASTE GROUP ASSIGNMENTS

The methodology used in this waste classification evaluation indicates that if the tank exhibits class C behavior at the 95% confidence level (the 95% confidence level can also be expressed as 95% of the trials), the waste tank is classified as waste group C. If the tank waste exhibits class C behavior at less than the 95% confidence level, but exhibits combined class C and class B behavior at more than 95% confidence level, the tank is then classified as a waste group B tank. For all remaining tanks, those that exhibit class A behavior, over more than 5% of the trials are placed in waste group A.

A confidence level of 95% was chosen for the selection criteria prior to the start of the evaluation in order not to pre-suppose the result of this analysis. Selecting a confidence level is necessary when performing a Monte Carlo analysis because the property distribution used (especially the lognormal distributions) can insert unrealistic property values at the tail of the distribution. By selecting a decision point at the 95% confidence level, the effect of the individual distribution tails is minimized and a realistic estimate of the true result can be obtained. The possibility of making a non-conservative waste group assignment is reduced by the problem definition, which states that 100% of the gas is released instantaneously, a very conservative assumption. Past experience with all tanks, indicates that the largest observed gas release is on the order of 70% of

the retained gas. Except for releases from DST 241-SY-101 (pre-remediation) the largest gas release was 26% (mean estimate of the largest release for DST 241-AN-105).

This classification strategy can be demonstrated using examples from Table 6.

- DST 241-AN-101 exhibits class C characteristics for 100% of the trials – it is classified in waste group C.
- DST 241-AN-102 exhibits class C characteristics for 98.9% of the trials, and class B characteristics for 1.1% of the trials – it is classified in waste group C.
- DST 241-AW-101 exhibits class C characteristics for 97.7% of the trials and class A characteristics for 2.3% of the trials – it is classified in waste group C.
- DST 241-AN-107 exhibits class C characteristics for 90.3% of the trials, class B characteristics for 6.2% of the trials, and class A characteristics for 3.5% of the trials - because it exhibits class B and C characteristics for 96.5% of the trials, it is classified in waste group B.
- DST 241-AW-103 exhibits class C characteristics for 35.1% of the trials, class B characteristics for 64.5% of the trials, and class A characteristics for 0.4% of the trials – because it exhibits class B and C characteristics for 99.6% of the trials, it is classified in waste group B.
- DST 241-AN-103 exhibits class C characteristics for 0.0% of the trials, class B characteristics for 47.9% of the trials, and class A characteristics for 52.1% of the trials – it is classified in waste group A.
- DST 241-AN-104 exhibits class C characteristics for 8.7% of the trials, class B characteristics for 0.0% of the trials, and class A characteristics for 91.3% of the trials – it is classified in waste group A.

Table 6. Determination of Classification. (6 sheets)

As Is	Type	Category A (%)	Category B (%)	Category C (%)	"As Is" Condition
241-AN-101	DST	0.0	0.0	100.0	C
241-AN-102	DST	0.0	1.1	98.9	C
241-AN-103	DST	52.1	47.9	0.0	A
241-AN-104	DST	91.3	0.0	8.7	A
241-AN-105	DST	97.8	0.0	2.2	A
241-AN-106	DST	0.0	0.0	100.0	C
241-AN-107	DST	3.5	6.2	90.3	B
241-AP-101	DST	0.0	0.0	100.0	C
241-AP-102	DST	0.0	0.0	100.0	C
241-AP-103	DST	0.0	0.0	100.0	C
241-AP-104	DST	0.0	0.0	100.0	C

Table 6. Determination of Classification. (6 sheets)

As Is	Type	Category A (%)	Category B (%)	Category C (%)	"As Is" Condition
241-AP-105	DST	0.0	8.6	91.4	B
241-AP-106	DST	0.0	0.0	100.0	C
241-AP-107	DST	0.0	0.0	100.0	C
241-AP-108	DST	0.0	0.0	100.0	C
241-AW-101	DST		0.0		A
241-AW-102	DST	0.0	0.0	100.0	C
241-AW-103	DST	0.4	64.5	35.1	B
241-AW-104	DST	0.0	0.0	100.0	C
241-AW-105	DST	0.0	0.1	99.9	C
241-AW-106	DST	0.0	0.0	100.0	C
241-AY-101	DST	0.0	0.0	100.0	C
241-AY-102	DST	0.0	0.1	99.9	C
241-AZ-101	DST	0.0	0.1	99.9	C
241-AZ-102	DST	0.0	1.1	98.9	C
241-SY-101	DST	0.0	0.0	100.0	C
241-SY-102	DST	0.0	0.4	99.6	C
241-SY-103	DST	3.9	0.3	95.8	C
241-A-101	SST	NA	92.4	7.6	B
241-A-102	SST	NA	0.0	100.0	C
241-A-103	SST	NA	1.7	98.3	C
241-A-104	SST	NA	0.0	100.0	C
241-A-105	SST	NA	0.0	100.0	C
241-A-106	SST	NA	0.0	100.0	C
241-AX-101	SST	NA	80.7	19.3	B
241-AX-102	SST	NA	0.0	100.0	C
241-AX-103	SST	NA	0.0	100.0	C
241-AX-104	SST	NA	0.0	100.0	C
241-B-101	SST	NA	0.0	100.0	C
241-B-102	SST	NA	0.0	100.0	C
241-B-103	SST	NA	0.0	100.0	C
241-B-104	SST	NA	5.7	94.3	B
241-B-105	SST	NA	46.8	53.2	B
241-B-106	SST	NA	0.4	99.6	C
241-B-107	SST	NA	2.5	97.5	C
241-B-108	SST	NA	0.0	100.0	C
241-B-109	SST	NA	0.2	99.8	C
241-B-110	SST	NA	2.3	97.7	C
241-B-111	SST	NA	1.7	98.3	C

Table 6. Determination of Classification. (6 sheets)

As Is	Type	Category A (%)	Category B (%)	Category C (%)	"As Is" Condition
241-B-112	SST	NA	0.1	99.9	C
241-B-201	SST	NA	9.0	91.0	B
241-B-202	SST	NA	7.7	92.3	B
241-B-203	SST	NA	42.6	57.4	B
241-B-204	SST	NA	40.7	59.3	B
241-BX-101	SST	NA	0.0	100.0	C
241-BX-102	SST	NA	0.2	99.8	C
241-BX103	SST	NA	0.1	99.9	C
241-BX-104	SST	NA	0.3	99.7	C
241-BX-105	SST	NA	0.0	100.0	C
241-BX-106	SST	NA	0.0	100.0	C
241-BX-107	SST	NA	4.3	95.7	C
241-BX-108	SST	NA	0.0	100.0	C
241-BX-109	SST	NA	1.0	99.0	C
241-BX-110	SST	NA	17.9	82.1	B
241-BX-111	SST	NA	1.0	99.0	C
241-BX-112	SST	NA	0.7	99.3	C
241-BY-101	SST	NA	52.0	48.0	B
241-BY-102	SST	NA	19.3	80.7	B
241-BY-103	SST	NA	51.9	48.1	B
241-BY-104	SST	NA	24.4	75.6	B
241-BY-105	SST	NA	81.1	18.9	B
241-BY-106	SST	NA	86.2	13.8	B
241-BY-107	SST	NA	5.9	94.1	B
241-BY-108	SST	NA	3.5	96.5	C
241-BY-109	SST	NA	24.3	75.7	B
241-BY-110	SST	NA	28.4	71.6	B
241-BY-111	SST	NA	8.3	91.7	B
241-BY-112	SST	NA	0.1	99.9	C
241-C-101	SST	NA	0.0	100.0	C
241-C-102	SST	NA	2.8	97.2	C
241-C-103	SST	NA	0.0	100.0	C
241-C-104	SST	NA	1.6	98.4	C
241-C-105	SST	NA	0.0	100.0	C
241-C-106	SST	NA	0.0	100.0	C
241-C-107	SST	NA	1.2	98.8	C
241-C-108	SST	NA	0.0	100.0	C
241-C-109	SST	NA	0.0	100.0	C

Table 6. Determination of Classification. (6 sheets)

As Is	Type	Category A (%)	Category B (%)	Category C (%)	"As Is" Condition
241-C-110	SST	NA	0.2	99.8	C
241-C-111	SST	NA	0.0	100.0	C
241-C-112	SST	NA	0.0	100.0	C
241-C-201	SST	NA	0.0	100.0	C
241-C-202	SST	NA	0.0	100.0	C
241-C-203	SST	NA	0.0	100.0	C
241-C-204	SST	NA	0.0	100.0	C
241-S-101	SST	NA	63.3	36.7	B
241-S-102	SST	NA	10.7	89.3	B
241-S-103	SST	NA	10.9	89.1	B
241-S-104	SST	NA	0.9	99.1	C
241-S-105	SST	NA	10.8	89.2	B
241-S-106	SST	NA	24.9	75.1	B
241-S-107	SST	NA	2.7	97.3	C
241-S-108	SST	NA	34.3	65.7	B
241-S-109	SST	NA	29.4	70.6	B
241-S-110	SST	NA	50.0	50.0	B
241-S-111	SST	NA	93.9	6.1	B
241-S-112	SST	NA	68.5	31.5	B
241-SX-101	SST	NA	35.6	64.4	B
241-SX-102	SST	NA	67.5	32.5	B
241-SX-103	SST	NA	7.0	93.0	B
241-SX-104	SST	NA	23.6	76.4	B
241-SX-105	SST	NA	10.4	89.6	B
241-SX-106	SST	NA	0.0	100.0	C
241-SX-107	SST	NA	0.0	100.0	C
241-SX-108	SST	NA	0.0	100.0	C
241-SX-109	SST	NA	3.5	96.5	C
241-SX-110	SST	NA	0.0	100.0	C
241-SX-111	SST	NA	0.0	100.0	C
241-SX-112	SST	NA	0.0	100.0	C
241-SX-113	SST	NA	0.0	100.0	C
241-SX-114	SST	NA	0.0	100.0	C
241-SX-115	SST	NA	0.0	100.0	C
241-T-101	SST	NA	0.0	100.0	C
241-T-102	SST	NA	0.0	100.0	C
241-T-103	SST	NA	0.0	100.0	C
241-T-104	SST	NA	2.7	97.3	C

Table 6. Determination of Classification. (6 sheets)

As Is	Type	Category A (%)	Category B (%)	Category C (%)	"As Is" Condition
241-T-105	SST	NA	0.0	100.0	C
241-T-106	SST	NA	0.0	100.0	C
241-T-107	SST	NA	0.2	99.8	C
241-T-108	SST	NA	0.0	100.0	C
241-T-109	SST	NA	0.0	100.0	C
241-T-110	SST	NA	5.6	94.4	B
241-T-111	SST	NA	9.1	90.9	B
241-T-112	SST	NA	0.0	100.0	C
241-T-201	SST	NA	7.8	92.2	B
241-T-202	SST	NA	3.1	96.9	C
241-T-203	SST	NA	15.1	84.9	B
241-T-204	SST	NA	15.1	84.9	B
241-TX-101	SST	NA	0.0	100.0	C
241-TX-102	SST	NA	0.8	99.2	C
241-TX-103	SST	NA	0.1	99.9	C
241-TX-104	SST	NA	0.0	100.0	C
241-TX-105	SST	NA	88.9	11.1	B
241-TX-106	SST	NA	28.5	71.5	B
241-TX-107	SST	NA	0.0	100.0	C
241-TX-108	SST	NA	0.0	100.0	C
241-TX-109	SST	NA	2.3	97.7	C
241-TX-110	SST	NA	18.9	81.1	B
241-TX-111	SST	NA	15.0	85.0	B
241-TX-112	SST	NA	84.7	15.3	B
241-TX-113	SST	NA	59.3	40.7	B
241-TX-114	SST	NA	46.3	53.7	B
241-TX-115	SST	NA	65.5	34.5	B
241-TX-116	SST	NA	90.2	9.8	B
241-TX-117	SST	NA	9.1	90.9	B
241-TX-118	SST	NA	8.9	91.1	B
241-TY-101	SST	NA	0.0	100.0	C
241-TY-102	SST	NA	0.0	100.0	C
241-TY-103	SST	NA	0.0	100.0	C
241-TY-104	SST	NA	0.0	100.0	C
241-TY-105	SST	NA	0.3	99.7	C
241-TY-106	SST	NA	0.0	100.0	C
241-U-101	SST	NA	0.0	100.0	C
241-U-102	SST	NA	24.7	75.3	B

Table 6. Determination of Classification. (6 sheets)

As Is	Type	Category A (%)	Category B (%)	Category C (%)	"As Is" Condition
241-U-103	SST	NA	0.7	99.3	C
241-U-104	SST	NA	0.1	99.9	C
241-U-105	SST	NA	59.3	40.7	B
241-U-106	SST	NA	5.5	94.5	B
241-U-107	SST	NA	73.7	26.3	B
241-U-108	SST	NA	86.8	13.2	B
241-U-109	SST	NA	0.7	99.3	C
241-U-110	SST	NA	0.3	99.7	C
241-U-111	SST	NA	63.3	36.7	B
241-U-112	SST	NA	0.0	100.0	C
241-U-201	SST	NA	0.0	100.0	C
241-U-202	SST	NA	0.0	100.0	C
241-U-203	SST	NA	0.0	100.0	C
241-U-204	SST	NA	0.0	100.0	C

Notes:

DST = double-shell tank.
NA = not applicable.
SST = single-shell tank.

The following DSTs either exhibit BDGRE behavior or have waste properties similar to tanks exhibiting BDGRE behavior based on the calculated values of the Energy Ratio and/or Buoyancy Ratio. DSTs 241-AN-103, 241-AN-104, 241-AN-105, and 241-AW-101 exhibit BDGRE behavior and are waste group A tanks. DST 241-SY-103 has properties and observations which indicate BDGRE releases probably occur within the tanks, but have too little retained gas for the headspace to reach 100 %LFL if 100% of the retained gas was released instantaneously and as a result is classified as a waste group C tank. DSTs 241-AY-102 and 241-SY-101 have too little waste or too low a gas retention rate and are classified as waste group C tanks. DSTs 241-AN-107 and 241-AW-103 have sufficient retained gas to exceed the class C criteria, but meet the 95% confidence limit criteria for the sum of class C and B trials and are placed in waste group B. It should be noted that historically only DSTs 241-AN-103, 241-AN-104, 241-AN-105, 241-AW-101, 241-SY-101 (pre-mitigation), and 241-SY-103 have documented BDGRE behavior (RPP-6655).

5.1.1 Double-Shell Tanks

As seen in Table 7, 22 of the 28 DSTs are classified as waste group C tanks. That is, even if 100% of the retained gas is released from these tanks, the headspace flammable gas concentration will not exceed 100% LFL. This includes DSTs 241-SY-101, and 241-SY-103. Three DSTs, 241-AN-107, 241-AP-105, and 241-AW-103, are classified as waste group B tanks, and the headspace flammable gas concentration can exceed 100% LFL if 100% of the retained gas is released instantaneously, but do not exhibit BDGRE behavior. The four remaining DSTs, 241-AN-103, 241-AN-104, 241-AN-105, and 241-AW-101, have exhibited BDGRE behavior, and based on this evaluation are classified as waste group A tanks.

In all cases, additional liquids up to 10,000-gal water or caustic can be added to the DSTs during routine operations without affecting the waste groupings as summarized in Table 7.

Table 7. Waste Group Assignments for Double-Shell Tanks.

Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition	Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition
241-AN-101	DST	C	C	C	241-AW-101	DST	C	C	C
241-AN-102	DST	C	C	C	241-AW-102	DST	C	C	C
241-AN-103	DST	A	A	A	241-AW-103	DST	B	B	B
241-AN-104	DST	A	A	A	241-AW-104	DST	C	C	C
241-AN-105	DST	A	A	A	241-AW-105	DST	C	C	C
241-AN-106	DST	C	C	C	241-AW-106	DST	C	C	C
241-AN-107	DST	B	B	B	241-AY-101	DST	C	C	C
241-AP-101	DST	C	C	C	241-AY-102	DST	C	C	C
241-AP-102	DST	C	C	C	241-AZ-101	DST	C	C	C
241-AP-103	DST	C	C	C	241-AZ-102	DST	C	C	C
241-AP-104	DST	C	C	C	241-SY-101	DST	C	C	C
241-AP-105	DST	B	B	B	241-SY-102	DST	C	C	C
241-AP-106	DST	C	C	C	241-SY-103	DST	C	C	C
241-AP-107	DST	C	C	C					
241-AP-108	DST	C	C	C					

Note:
DST = double-shell tank.

5.1.2 Single-Shell Tanks

As provided in Table 8, 93 of the 149 SSTs are classified as waste group C tanks. That is, even if 100% of the retained gas is released from these tanks, the headspace flammable gas concentration will not exceed 100% LFL. Fifty-six tanks are classified as waste group B tanks,

and the headspace flammable gas concentration can exceed 100% LFL if 100% of the retained gas is released instantaneously, but do not exhibit BDGRE behavior. None of the SSTs have tank/waste configurations that support BDGREs and none of the SSTs which could reach 100% LFL in the headspace have energy ratios > 1, therefore, the BDGRE calculation is not applicable.

Table 8. Waste Group Assignments for Single-Shell Tanks. (3 sheets)

Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition	Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition
241-A-101	SST	B	B	B	241-S-110	SST	B	B	B
241-A-102	SST	C	C	C	241-S-111	SST	B	B	B
241-A-103	SST	C	C	C	241-S-112	SST	B	B	B
241-A-104	SST	C	C	C	241-SX-101	SST	B	B	B
241-A-105	SST	C	C	C	241-SX-102	SST	B	B	B
241-A-106	SST	C	C	C	241-SX-103	SST	B	B	B
241-AX-101	SST	B	B	B	241-SX-104	SST	B	B	B
241-AX-102	SST	C	C	C	241-SX-105	SST	B	B	B
241-AX-103	SST	C	C	C	241-SX-106	SST	C	C	C
241-AX-104	SST	C	C	C	241-SX-107	SST	C	C	C
241-B-101	SST	C	C	C	241-SX-108	SST	C	C	C
241-B-102	SST	C	C	C	241-SX-109	SST	C	C	C
241-B-103	SST	C	C	C	241-SX-110	SST	C	C	C
241-B-104	SST	B	B	B	241-SX-111	SST	C	C	C
241-B-105	SST	B	B	B	241-SX-112	SST	C	C	C
241-B-106	SST	C	C	C	241-SX-113	SST	C	C	C
241-B-107	SST	C	C	C	241-SX-114	SST	C	C	C
241-B-108	SST	C	C	C	241-SX-115	SST	C	C	C
241-B-109	SST	C	C	C	241-T-101	SST	C	C	C
241-B-110	SST	C	C	C	241-T-102	SST	C	C	C
241-B-111	SST	C	C	C	241-T-103	SST	C	C	C
241-B-112	SST	C	C	C	241-T-104	SST	C	C	C
241-B-201	SST	B	B	B	241-T-105	SST	C	C	C
241-B-202	SST	B	B	B	241-T-106	SST	C	C	C
241-B-203[1]	SST	B	B	B	241-T-107	SST	C	C	C
241-B-204[1]	SST	B	B	B	241-T-108	SST	C	C	C
241-BX-101	SST	C	C	C	241-T-109	SST	C	C	C
241-BX-102	SST	C	C	C	241-T-110	SST	B	B	B
241-BX103	SST	C	C	C	241-T-111	SST	B	B	B
241-BX-104	SST	C	C	C	241-T-112	SST	C	C	C
241-BX-105	SST	C	C	C	241-T-201	SST	B	B	B
241-BX-106	SST	C	C	C	241-T-202	SST	C	C	C

Table 8. Waste Group Assignments for Single-Shell Tanks. (3 sheets)

Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition	Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition
241-BX-107	SST	C	C	C	241-T-203	SST	B	B	B
241-BX-108	SST	C	C	C	241-T-204	SST	B	B	B
241-BX-109	SST	C	C	C	241-TX-101	SST	C	C	C
241-BX-110	SST	B	B	B	241-TX-102	SST	C	C	C
241-BX-111	SST	C	C	C	241-TX-103	SST	C	C	C
241-BX-112	SST	C	C	C	241-TX-104	SST	C	C	C
241-BY-101	SST	B	B	B	241-TX-105	SST	B	B	B
241-BY-102	SST	B	B	B	241-TX-106	SST	B	B	B
241-BY-103	SST	B	B	B	241-TX-107	SST	C	C	C
241-BY-104	SST	B	B	B	241-TX-108	SST	C	C	C
241-BY-105	SST	B	B	B	241-TX-109	SST	C	C	C
241-BY-106	SST	B	B	B	241-TX-110	SST	B	B	B
241-BY-107	SST	B	B	B	241-TX-111	SST	B	B	B
241-BY-108	SST	C	C	C	241-TX-112	SST	B	B	B
241-BY-109	SST	B	B	B	241-TX-113	SST	B	B	B
241-BY-110	SST	B	B	B	241-TX-114	SST	B	B	B
241-BY-111	SST	B	B	B	241-TX-115	SST	B	B	B
241-BY-112	SST	C	C	C	241-TX-116	SST	B	B	B
241-C-101	SST	C	C	C	241-TX-117	SST	B	B	B
241-C-102	SST	C	C	C	241-TX-118	SST	B	B	B
241-C-103	SST	C	C	C	241-TY-101	SST	C	C	C
241-C-104	SST	C	C	C	241-TY-102	SST	C	C	C
241-C-105	SST	C	C	C	241-TY-103	SST	C	C	C
241-C-106	SST	C	C	C	241-TY-104	SST	C	C	C
241-C-107	SST	C	C	C	241-TY-105	SST	C	C	C
241-C-108	SST	C	C	C	241-TY-106	SST	C	C	C
241-C-109	SST	C	C	C	241-U-101	SST	C	C	C
241-C-110	SST	C	C	C	241-U-102	SST	B	B	B
241-C-111	SST	C	C	C	241-U-103	SST	C	C	C
241-C-112	SST	C	C	C	241-U-104	SST	C	C	C
241-C-201	SST	C	C	C	241-U-105	SST	B	B	B
241-C-202	SST	C	C	C	241-U-106	SST	B	B	B
241-C-203	SST	C	C	C	241-U-107	SST	B	B	B
241-C-204	SST	C	C	C	241-U-108	SST	B	B	B
241-S-101	SST	B	B	B	241-U-109	SST	C	C	C
241-S-102	SST	B	B	B	241-U-110	SST	C	C	C

Table 8. Waste Group Assignments for Single-Shell Tanks. (3 sheets)

Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition	Tank	Type	"As Is" condition	10,000 gal H_2O addition	10,000 gal caustic addition
241-S-103	SST	B	B	B	241-U-111	SST	B	B	B
241-S-104	SST	C	C	C	241-U-112	SST	C	C	C
241-S-105	SST	B	B	B	241-U-201	SST	C	C	C
241-S-106	SST	B	B	B	241-U-202	SST	C	C	C
241-S-107	SST	C	C	C	241-U-203	SST	C	C	C
241-S-108	SST	B	B	B	241-U-204	SST	C	C	C
241-S-109	SST	B	B	B					

Notes:

SST = single-shell tank.

[1]Tanks where only 3,000 gal of water or caustic are added.

In all cases, additional liquids up to 10,000-gal water or caustic (less if the operating limit is exceeded) can be added to the SSTs, if additions were authorized, without affecting the waste groupings.

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6.0 REFERENCES

7G600-SAB-03-008, 2003, *Analysis of Waste Transfer to Double-Shell Tank 241-AW-106*, CH2M HILL Hanford Group, Inc., Richland, Washington.

74B40-99-116, 1999, *Tank Volume Adjustments*, CH2MHILL Hanford Group, Inc., Richland, Washington.

BBI, *Best Basis Inventory*, [database accessed November 15, 2001], internet address: http://twins.pnl.gov:8001.

HNF-8862, 2002, *Particle Property Analyses of High-Level Waste Tank Sludges*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

HNF-SD-WM-TI-797, 2001, *Results of Vapor Space Monitoring of Flammable Gas Watch List Tanks*, Rev. 6, CH2M HILL Hanford Group, Inc., Richland, Washington.

HNF-SP-1193, 1997, *Flammable Gas Project Topical Report,* Rev. 2, DE&S Hanford Company, Inc., Richland, Washington.

PNNL-11296, *In Situ Rheology and Gas Volume in Hanford Double-Shell Waste Tanks*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-11391, 1996, *Gas Retention and Release Behavior in Hanford Single-Shell Waste Tanks*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-11536, 1997, *Gas Retention and Release Behavior in Double–Shell Waste Tanks*, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-11706, 1997, *Waste Behavior During Horizontal Extrusion: Effect of Waste Strength for Bentonite and Kaolin/Ludox Simulants and Strength Estimates for Wastes from Hanford Waste Tanks 241-SY-103, AW-101, AN-103, and S-102*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-13337, 2001, *Preventing Buoyant Displacement Gas Release Events in Hanford Double-Shell Waste Tanks,* Pacific Northwest National Laboratory, Richland, Washington.

PNNL-13781, 2002, *Effects of Globally Waste-Disturbing Activities on Gas Generation, Retention, and Release in Hanford Waste Tanks*, Pacific Northwest National Laboratory, Richland, Washington.

RPP-5926, 2002, *Steady-State Flammable Gas Release Rate Calculation and Lower Flammability Level Evaluation for Hanford Tank Waste*, Rev. 2A, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-6517, 2000, *Evaluation of Hanford High-Level Waste Tank 241-SY-101*, Rev. 0, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-6548, 2001, *Test Report, 241-AZ-101 Mixer Pump Test*, Rev. 1, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-6655, 2000, *Data Observations on Double-Shell Flammable Gas Watchlist Tank Behavior*, Rev 0, CH2MHILL Hanford Group, Inc., Richland, Washington.

RPP-7249, 2001, *Data and Observations of Single-Shell Flammable Gas Watch List Tank Behavior,* CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-7771, 2001, *Flammable Gas Safety Issue Resolution,* Rev. 0-A, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-9805, 2002, *Values of Particle Size, Particle Density, and Slurry Viscosity to Use in Waste Feed Delivery Transfer System Analysis*, Rev. 1A, CH2M HILL Hanford Group, Inc., Richland, Washington.

SACS, *Surveillance Analysis Computer System*, [database accessed November 15, 2001], internet address: \\SACSROD\.

SNL-000198, 1999, *Flammable Gas Safety Analysis Data Review*, Lockheed Martin Hanford Company, Inc., Richland, Washington.

TWS02.025, 2002, *Investigation of Gas Retention and Release Issues in Tanks AN-107 and SY-101 Supporting Waste Group Determination*, Pacific Northwest National Laboratory, Richland, Washington.

Wells, B. E., 2002, Personal Email to S. A. Barker, dated January 24, Pacific Northwest National Laboratory, Richland, Washington.

WHC-SD-WM-ER-526, 2001, *Evaluation of Hanford Tanks for Trapped Gas*, Rev. 1-E, CH2M HILL Hanford Group, Inc., Richland, Washington.

WHC-SD-WM-ER-594, 1996, *Evaluation of Recommendation for Addition of Tanks to the Flammable Gas Watch List,* Westinghouse Hanford Company, Richland, Washington.

WHC-SD-WM-TI-755, 1996, *An Analysis of Parameters Describing Gas Retention/Release Behavior in Double Shell Tank Waste*, Rev. 0, CH2M HILL Hanford Group, Inc., Richland, Washington.

Wilmarth, S. L., 2002, Personal Email to S. A. Barker, dated January 16, CH2M HILL Hanford Group, Inc., Richland, Washington.

APPENDIX A

INPUT DATA

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Table A-1. Input Data. (7 sheets)

1	2	3	4	5	6	7	8	9	10
Tank	**Tank type**	**Total waste depth (m)**	**Total waste depth uncertainty (m)**	**Total non-convective waste depth (m)**	**Total non-convective waste depth uncertainty (m)**	**Total non-convective waste depth lower bound (m)**	**Wetted non-convective waste depth (m)**	**Wetted non-convective waste depth uncertainty (m)**	**Wetted non-convective waste depth lower bound (m)**
A-101	SST	7.72	0.165	3.40	0.241	0.010	3.40	0.241	0.010
A-102	SST	0.36	0.165	0.34	0.165	0.010	0.34	0.165	0.010
A-103	SST	3.42	0.165	3.38	0.241	0.010	3.38	0.241	0.010
A-104	SST	0.26	0.165	0.26	0.165	0.010	0.26	0.165	0.010
A-105	SST	0.00	0.165	0.00	0.165	0.000	0.05	0.165	0.010
A-106	SST	0.73	0.241	0.73	0.241	0.010	0.73	0.241	0.010
AN-101	DST	2.33	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AN-102	DST	10.01	0.165	0.82	0.165	0.010	0.82	0.165	0.010
AN-103	DST	8.84	0.180	3.78	0.070	0.010	3.78	0.070	0.010
AN-104	DST	9.73	0.410	4.05	0.400	0.010	4.05	0.400	0.010
AN-105	DST	10.41	0.430	4.50	0.420	0.010	4.50	0.420	0.010
AN-106	DST	0.35	0.165	0.16	0.165	0.010	0.16	0.165	0.010
AN-107	DST	9.60	0.165	2.28	0.165	0.010	2.28	0.165	0.010
AP-101	DST	10.27	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AP-102	DST	10.04	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AP-103	DST	2.60	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AP-104	DST	10.23	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AP-105	DST	10.47	0.165	0.82	0.165	0.010	0.82	0.165	0.010
AP-106	DST	5.75	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AP-107	DST	9.03	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AP-108	DST	7.11	0.006	0.00	0.000	0.000	0.00	0.000	0.000
AW-101	DST	9.60	0.370	2.86	0.300	0.010	2.86	0.300	0.010
AW-102	DST	0.78	0.165	0.28	0.165	0.010	0.28	0.165	0.010
AW-103	DST	10.16	0.165	2.88	0.241	0.010	2.88	0.241	0.010
AW-104	DST	2.91	0.165	2.05	0.241	0.010	2.05	0.241	0.010
AW-105	DST	3.94	0.165	2.35	0.165	0.010	2.35	0.165	0.010
AW-106	DST	2.76	0.165	2.20	0.165	0.010	2.20	0.165	0.010

Table A-1. Input Data. (7 sheets)

1	2	3	4	5	6	7	8	9	10
Tank	**Tank type**	**Total waste depth (m)**	**Total waste depth uncertainty (m)**	**Total non-convective waste depth (m)**	**Total non-convective waste depth uncertainty (m)**	**Total non-convective waste depth lower bound (m)**	**Wetted non-convective waste depth (m)**	**Wetted non-convective waste depth uncertainty (m)**	**Wetted non-convective waste depth lower bound (m)**
AX-101	SST	6.58	0.165	3.72	0.241	0.010	3.31	0.241	0.010
AX-102	SST	0.28	0.241	0.28	0.241	0.010	0.28	0.241	0.010
AX-103	SST	1.00	0.241	1.00	0.241	0.010	1.00	0.241	0.010
AX-104	SST	0.07	0.165	0.07	0.165	0.010	0.07	0.165	0.010
AY-101	DST	1.75	0.165	0.76	0.165	0.010	0.76	0.165	0.010
AY-102	DST	6.30	0.165	1.57	0.165	0.010	1.57	0.165	0.010
AZ-101	DST	8.97	0.165	0.48	0.165	0.010	0.48	0.165	0.010
AZ-102	DST	9.20	0.165	0.97	0.165	0.010	0.97	0.165	0.010
B-101	SST	1.00	0.241	1.00	0.241	0.010	1.00	0.241	0.010
B-102	SST	0.29	0.165	0.26	0.165	0.010	0.26	0.165	0.010
B-103	SST	0.51	0.241	0.51	0.241	0.010	0.51	0.241	0.010
B-104	SST	3.45	0.241	3.45	0.241	0.010	3.45	0.241	0.010
B-105	SST	2.68	0.241	2.68	0.241	0.010	2.68	0.241	0.010
B-106	SST	1.12	0.165	1.12	0.165	0.010	1.12	0.165	0.010
B-107	SST	1.49	0.241	1.49	0.241	0.010	1.49	0.241	0.010
B-108	SST	0.85	0.241	0.85	0.241	0.010	0.85	0.241	0.010
B-109	SST	1.15	0.241	1.15	0.241	0.010	1.15	0.241	0.010
B-110	SST	2.25	0.165	2.25	0.165	0.010	2.25	0.165	0.010
B-111	SST	2.22	0.165	2.22	0.165	0.010	2.22	0.165	0.010
B-112	SST	0.32	0.165	0.29	0.241	0.010	0.29	0.241	0.010
B-201	SST	3.94	0.165	3.94	0.165	0.010	3.94	0.165	0.010
B-202	SST	3.80	0.165	3.80	0.165	0.010	3.80	0.165	0.010
B-203	SST	6.61	0.165	6.61	0.165	0.010	6.61	0.165	0.010
B-204	SST	6.47	0.165	6.47	0.165	0.010	6.47	0.165	0.010
BX-101	SST	0.44	0.165	0.44	0.165	0.010	0.44	0.165	0.010
BX-102	SST	1.03	0.165	1.03	0.165	0.010	1.03	0.165	0.010
BX-103	SST	0.67	0.165	0.57	0.165	0.010	0.57	0.165	0.010

Table A-1. Input Data. (7 sheets)

1	2	3	4	5	6	7	8	9	10
Tank	**Tank type**	**Total waste depth (m)**	**Total waste depth uncertainty (m)**	**Total non-convective waste depth (m)**	**Total non-convective waste depth uncertainty (m)**	**Total non-convective waste depth lower bound (m)**	**Wetted non-convective waste depth (m)**	**Wetted non-convective waste depth uncertainty (m)**	**Wetted non-convective waste depth lower bound (m)**
BX-104	SST	0.92	0.165	0.90	0.165	0.010	0.90	0.165	0.010
BX-105	SST	0.66	0.165	0.62	0.165	0.010	0.62	0.165	0.010
BX-106	SST	0.35	0.165	0.35	0.165	0.010	0.35	0.165	0.010
BX-107	SST	3.20	0.165	3.20	0.165	0.010	3.20	0.165	0.010
BX-108	SST	0.29	0.165	0.29	0.165	0.010	0.29	0.165	0.010
BX-109	SST	1.78	0.165	1.78	0.165	0.010	1.78	0.165	0.010
BX-110	SST	1.89	0.165	1.88	0.241	0.010	1.88	0.241	0.010
BX-111	SST	1.74	0.241	1.74	0.241	0.010	1.09	0.241	0.010
BX-112	SST	1.52	0.165	1.50	0.165	0.010	1.50	0.165	0.010
BY-101	SST	3.41	0.241	3.41	0.241	0.010	3.41	0.241	0.010
BY-102	SST	2.55	0.241	2.55	0.241	0.010	2.55	0.241	0.010
BY-103	SST	3.84	0.241	3.84	0.241	0.010	3.02	0.241	0.010
BY-104	SST	3.30	0.241	3.30	0.241	0.010	2.29	0.241	0.010
BY-105	SST	4.64	0.241	4.64	0.241	0.010	4.64	0.241	0.010
BY-106	SST	5.18	0.241	5.18	0.241	0.010	5.18	0.241	0.010
BY-107	SST	2.50	0.241	2.50	0.241	0.010	1.78	0.241	0.010
BY-108	SST	2.05	0.241	2.05	0.241	0.010	2.05	0.241	0.010
BY-109	SST	2.55	0.241	2.55	0.241	0.010	2.55	0.241	0.010
BY-110	SST	3.37	0.241	3.37	0.241	0.010	2.49	0.241	0.010
BY-111	SST	2.79	0.241	2.79	0.241	0.010	1.78	0.241	0.010
BY-112	SST	2.64	0.241	2.64	0.241	0.010	0.74	0.241	0.010
C-101	SST	0.81	0.165	0.81	0.165	0.010	0.81	0.165	0.010
C-102	SST	2.91	0.165	2.91	0.165	0.010	2.91	0.165	0.010
C-103	SST	1.83	0.165	1.15	0.165	0.010	1.15	0.165	0.010
C-104	SST	2.39	0.165	2.39	0.165	0.010	2.39	0.165	0.010
C-105	SST	1.22	0.165	1.22	0.165	0.010	1.22	0.165	0.010
C-106	SST	0.34	0.165	0.06	0.165	0.010	0.06	0.165	0.010

Table A-1. Input Data. (7 sheets)

1	2	3	4	5	6	7	8	9	10
Tank	**Tank type**	**Total waste depth (m)**	**Total waste depth uncertainty (m)**	**Total non-convective waste depth (m)**	**Total non-convective waste depth uncertainty (m)**	**Total non-convective waste depth lower bound (m)**	**Wetted non-convective waste depth (m)**	**Wetted non-convective waste depth uncertainty (m)**	**Wetted non-convective waste depth lower bound (m)**
C-107	SST	2.29	0.165	2.29	0.165	0.010	2.29	0.165	0.010
C-108	SST	0.61	0.165	0.61	0.165	0.010	0.61	0.165	0.010
C-109	SST	0.58	0.165	0.58	0.165	0.010	0.58	0.165	0.010
C-110	SST	1.63	0.165	1.63	0.165	0.010	1.63	0.165	0.010
C-111	SST	0.53	0.165	0.53	0.165	0.010	0.53	0.165	0.010
C-112	SST	0.96	0.165	0.96	0.165	0.010	0.96	0.165	0.010
C-201	SST	0.14	0.165	0.14	0.165	0.010	0.14	0.165	0.010
C-202	SST	0.14	0.165	0.14	0.165	0.010	0.14	0.165	0.010
C-203	SST	0.34	0.165	0.34	0.165	0.010	0.34	0.165	0.010
C-204	SST	0.34	0.165	0.34	0.165	0.010	0.34	0.165	0.010
S-101	SST	3.91	0.241	3.91	0.241	0.010	3.91	0.241	0.010
S-102	SST	4.12	0.241	4.12	0.241	0.010	3.04	0.241	0.010
S-103	SST	2.19	0.165	2.18	0.241	0.010	2.18	0.241	0.010
S-104	SST	2.66	0.241	2.66	0.241	0.010	2.66	0.241	0.010
S-105	SST	3.74	0.241	3.74	0.241	0.010	1.37	0.241	0.010
S-106	SST	4.20	0.241	4.20	0.241	0.010	1.19	0.241	0.010
S-107	SST	3.47	0.165	3.34	0.241	0.010	3.34	0.241	0.010
S-108	SST	5.07	0.241	5.07	0.241	0.010	1.55	0.241	0.010
S-109	SST	4.91	0.241	4.91	0.241	0.010	1.47	0.241	0.010
S-110	SST	3.59	0.241	3.59	0.241	0.010	3.28	0.241	0.010
S-111	SST	4.99	0.165	4.55	0.241	0.010	3.86	0.241	0.010
S-112	SST	4.75	0.241	4.75	0.241	0.010	3.18	0.241	0.010
SX-101	SST	3.93	0.241	3.93	0.241	0.010	3.05	0.241	0.010
SX-102	SST	4.67	0.241	4.67	0.241	0.010	4.67	0.241	0.010
SX-103	SST	4.70	0.241	4.70	0.241	0.010	1.42	0.241	0.010
SX-104	SST	4.11	0.241	4.11	0.241	0.010	2.41	0.241	0.010
SX-105	SST	3.49	0.241	3.49	0.241	0.010	2.16	0.241	0.010

Table A-1. Input Data. (7 sheets)

1	2	3	4	5	6	7	8	9	10
Tank	**Tank type**	**Total waste depth (m)**	**Total waste depth uncertainty (m)**	**Total non-convective waste depth (m)**	**Total non-convective waste depth uncertainty (m)**	**Total non-convective waste depth lower bound (m)**	**Wetted non-convective waste depth (m)**	**Wetted non-convective waste depth uncertainty (m)**	**Wetted non-convective waste depth lower bound (m)**
SX-106	SST	3.66	0.241	3.66	0.241	0.010	1.93	0.241	0.010
SX-107	SST	0.87	0.241	0.87	0.241	0.010	0.87	0.241	0.010
SX-108	SST	0.67	0.165	0.67	0.165	0.010	0.67	0.165	0.010
SX-109	SST	2.22	0.241	2.22	0.241	0.010	2.22	0.241	0.010
SX-110	SST	0.52	0.241	0.52	0.241	0.010	0.52	0.241	0.010
SX-111	SST	1.06	0.241	1.06	0.241	0.010	1.06	0.241	0.010
SX-112	SST	0.69	0.241	0.69	0.241	0.010	0.69	0.241	0.010
SX-113	SST	0.17	0.165	0.17	0.165	0.010	0.17	0.165	0.010
SX-114	SST	1.45	0.241	1.45	0.241	0.010	1.45	0.241	0.010
SX-115	SST	0.03	0.165	0.03	0.165	0.010	0.03	0.165	0.010
SY-101	DST	8.94	0.165	2.29	0.165	0.010	2.29	0.165	0.010
SY-102	DST	10.94	0.165	2.29	0.165	0.010	2.29	0.165	0.010
SY-103	DST	9.54	0.165	0.66	0.165	0.010	0.66	0.165	0.010
T-101	SST	6.71	0.140	2.87	0.030	0.010	2.87	0.030	0.010
T-102	SST	0.92	0.241	0.92	0.241	0.010	0.92	0.241	0.010
T-103	SST	0.29	0.165	0.18	0.165	0.010	0.18	0.165	0.010
T-104	SST	0.25	0.165	0.21	0.165	0.010	0.21	0.165	0.010
T-105	SST	2.92	0.165	2.92	0.165	0.010	2.72	0.165	0.010
T-106	SST	0.90	0.165	0.90	0.165	0.010	0.90	0.165	0.010
T-107	SST	0.20	0.165	0.20	0.165	0.010	0.20	0.165	0.010
T-108	SST	1.60	0.165	1.60	0.165	0.010	1.60	0.165	0.010
T-109	SST	0.15	0.241	0.15	0.241	0.010	0.15	0.241	0.010
T-110	SST	0.57	0.241	0.57	0.241	0.010	0.57	0.241	0.010
T-111	SST	3.40	0.165	3.40	0.165	0.010	3.40	0.165	0.010
T-112	SST	4.12	0.165	4.12	0.165	0.010	4.12	0.165	0.010
T-201	SST	0.55	0.165	0.55	0.165	0.010	0.55	0.165	0.010
T-202	SST	3.77	0.165	3.77	0.165	0.010	3.77	0.165	0.010

Table A-1. Input Data. (7 sheets)

1	2	3	4	5	6	7	8	9	10
Tank	**Tank type**	**Total waste depth (m)**	**Total waste depth uncertainty (m)**	**Total non-convective waste depth (m)**	**Total non-convective waste depth uncertainty (m)**	**Total non-convective waste depth lower bound (m)**	**Wetted non-convective waste depth (m)**	**Wetted non-convective waste depth uncertainty (m)**	**Wetted non-convective waste depth lower bound (m)**
T-203	SST	4.79	0.165	4.79	0.165	0.010	4.79	0.165	0.010
T-204	SST	4.79	0.165	4.79	0.165	0.010	4.79	0.165	0.010
TX-101	SST	0.84	0.241	0.84	0.241	0.010	0.84	0.241	0.010
TX-102	SST	2.00	0.241	2.00	0.241	0.010	1.40	0.241	0.010
TX-103	SST	1.34	0.241	1.34	0.241	0.010	1.34	0.241	0.010
TX-104	SST	0.62	0.241	0.62	0.241	0.010	0.62	0.241	0.010
TX-105	SST	5.31	0.241	5.31	0.241	0.010	5.31	0.241	0.010
TX-106	SST	3.21	0.241	3.21	0.241	0.010	2.41	0.241	0.010
TX-107	SST	0.27	0.241	0.27	0.241	0.010	0.27	0.241	0.010
TX-108	SST	1.19	0.241	1.19	0.241	0.010	1.19	0.241	0.010
TX-109	SST	3.35	0.165	3.35	0.165	0.010	3.20	0.165	0.010
TX-110	SST	4.31	0.241	4.31	0.241	0.010	1.47	0.241	0.010
TX-111	SST	3.37	0.241	3.37	0.241	0.010	1.78	0.241	0.010
TX-112	SST	5.84	0.241	5.84	0.241	0.010	3.30	0.241	0.010
TX-113	SST	5.89	0.241	5.89	0.241	0.010	1.83	0.241	0.010
TX-114	SST	4.91	0.241	4.91	0.241	0.010	1.96	0.241	0.010
TX-115	SST	5.11	0.241	5.11	0.241	0.010	2.54	0.241	0.010
TX-116	SST	5.50	0.241	5.50	0.241	0.010	5.50	0.241	0.010
TX-117	SST	4.43	0.241	4.43	0.241	0.010	1.10	0.241	0.010
TX-118	SST	2.36	0.241	2.36	0.241	0.010	2.03	0.241	0.010
TY-101	SST	1.09	0.241	1.09	0.241	0.010	1.09	0.241	0.010
TY-102	SST	0.64	0.241	0.64	0.241	0.010	0.64	0.241	0.010
TY-103	SST	1.43	0.241	1.43	0.241	0.010	1.43	0.241	0.010
TY-104	SST	0.41	0.165	0.40	0.165	0.010	0.40	0.165	0.010
TY-105	SST	2.13	0.165	2.13	0.165	0.010	2.13	0.165	0.010
TY-106	SST	0.15	0.165	0.15	0.165	0.010	0.15	0.165	0.010
U-101	SST	0.22	0.165	0.22	0.165	0.010	0.22	0.165	0.010
U-102	SST	2.70	0.241	2.70	0.241	0.010	1.78	0.241	0.010

Table A-1. Input Data. (7 sheets)

1	2	3	4	5	6	7	8	9	10
Tank	**Tank type**	**Total waste depth (m)**	**Total waste depth uncertainty (m)**	**Total non-convective waste depth (m)**	**Total non-convective waste depth uncertainty (m)**	**Total non-convective waste depth lower bound (m)**	**Wetted non-convective waste depth (m)**	**Wetted non-convective waste depth uncertainty (m)**	**Wetted non-convective waste depth lower bound (m)**
U-103	SST	3.84	0.241	3.84	0.241	0.010	1.52	0.241	0.010
U-104	SST	1.13	0.165	1.13	0.165	0.010	1.13	0.165	0.010
U-105	SST	3.26	0.241	3.26	0.241	0.010	2.62	0.241	0.010
U-106	SST	1.57	0.165	1.55	0.165	0.010	1.55	0.165	0.010
U-107	SST	3.46	0.241	3.46	0.241	0.010	3.46	0.241	0.010
U-108	SST	4.10	0.241	4.10	0.241	0.010	4.10	0.241	0.010
U-109	SST	3.80	0.241	3.80	0.241	0.010	2.03	0.241	0.010
U-110	SST	1.62	0.165	1.62	0.165	0.010	1.62	0.165	0.010
U-111	SST	3.14	0.241	3.14	0.241	0.010	3.14	0.241	0.010
U-112	SST	0.42	0.165	0.42	0.165	0.010	0.42	0.165	0.010
U-201	SST	0.51	0.165	0.51	0.165	0.010	0.51	0.165	0.010
U-202	SST	0.45	0.165	0.45	0.165	0.010	0.45	0.165	0.010
U-203	SST	0.45	0.165	0.45	0.165	0.010	0.45	0.165	0.010
U-204	SST	0.38	0.165	0.38	0.165	0.010	0.38	0.165	0.010

Table A-2. Input Data. (7 sheets)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth (m)**	**Convective waste depth uncertainty (m)**	**Crust depth (m)**	**Non-convective waste density (kg/m^3)**	**Non-convective waste density std dev (kg/m^3)**	**Non-convective waste density minimum (kg/m^3)**	**Non-convective waste density maximum (kg/m^3)**	**Convective waste density (kg/m^3)**	**Convective waste density std dev (kg/m^3)**
A-101	4.32	0.165	0.00	1678	0	1566	1790	1,490	0.0
A-102	0.02	0.165	0.00	1667	0	1556	1778	1,570	0.0
A-103	0.04	0.165	0.00	1375	0	1283	1466	1,450	0.0
A-104	0.00	0.000	0.00	1640	0	1531	1749	1,000	0.0
A-105	0.00	0.000	0.00	1540	0	1437	1643	1,000	0.0
A-106	0.00	0.000	0.00	1550	0	1447	1653	1,000	0.0
AN-101	2.33	0.006	0.00	1100	0	1027	1173	1,170	0.0
AN-102	9.19	0.165	0.00	1560	0	1456	1664	1,430	0.0
AN-103	4.17	0.180	0.89	1737	110	1517	1957	1,450	47.0
AN-104	5.27	0.410	0.41	1579	50	1479	1679	1,440	54.0
AN-105	5.46	0.430	0.45	1572	40	1492	1652	1,430	45.0
AN-106	0.19	0.165	0.00	1580	0	1475	1685	1,180	0.0
AN-107	7.32	0.165	0.00	1560	0	1456	1664	1,370	0.0
AP-101	10.27	0.006	0.00	1100	0	1027	1173	1,310	0.0
AP-102	10.04	0.006	0.00	1100	0	1027	1173	1,200	0.0
AP-103	2.60	0.006	0.00	1100	0	1027	1173	1,310	0.0
AP-104	10.23	0.006	0.00	1100	0	1027	1173	1,250	0.0
AP-105	9.65	0.165	0.00	1580	0	1475	1685	1,350	0.0
AP-106	5.75	0.006	0.00	1100	0	1027	1173	1,260	0.0
AP-107	9.03	0.006	0.00	1100	0	1027	1173	1,250	0.0
AP-108	7.11	0.006	0.00	1100	0	1027	1173	1,250	0.0
AW-101	5.94	0.370	0.80	1553	40	1473	1633	1,430	43.0
AW-102	0.51	0.165	0.00	1490	0	1391	1589	1,010	0.0
AW-103	7.28	0.165	0.00	1498	0	1398	1598	1,240	0.0
AW-104	0.86	0.165	0.00	1490	0	1391	1590	1,070	0.0
AW-105	1.59	0.165	0.00	1306	0	1219	1393	1,070	0.0
AW-106	0.55	0.165	0.00	1580	0	1475	1685	1,320	0.0

Table A-2. Input Data. (7 sheets)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth (m)**	**Convective waste depth uncertainty (m)**	**Crust depth (m)**	**Non-convective waste density (kg/m^3)**	**Non-convective waste density std dev (kg/m^3)**	**Non-convective waste density minimum (kg/m^3)**	**Non-convective waste density maximum (kg/m^3)**	**Convective waste density (kg/m^3)**	**Convective waste density std dev (kg/m^3)**
AX-101	2.87	0.165	0.00	1677	0	1565	1789	1,530	0.0
AX-102	0.00	0.000	0.00	1524	0	1423	1626	1,000	0.0
AX-103	0.00	0.000	0.00	1622	0	1513	1730	1,000	0.0
AX-104	0.00	0.000	0.00	1800	0	1680	1920	1,000	0.0
AY-101	0.99	0.165	0.00	1522	0	1421	1624	1,220	0.0
AY-102	4.73	0.165	0.00	1397	0	1304	1491	1,150	0.0
AZ-101	8.49	0.165	0.00	1620	0	1512	1728	1,240	0.0
AZ-102	8.23	0.165	0.00	1380	0	1288	1472	1,140	0.0
B-101	0.00	0.000	0.00	1489	0	1390	1588	1,000	0.0
B-102	0.04	0.165	0.00	1613	0	1505	1720	1,190	0.0
B-103	0.00	0.000	0.00	1613	0	1505	1720	1,000	0.0
B-104	0.00	0.000	0.00	1356	0	1265	1446	1,000	0.0
B-105	0.00	0.000	0.00	1672	0	1560	1783	1,000	0.0
B-106	0.00	0.000	0.00	1381	0	1289	1473	1,190	0.0
B-107	0.00	0.000	0.00	1626	0	1518	1735	1,000	0.0
B-108	0.00	0.000	0.00	1674	0	1562	1785	1,000	0.0
B-109	0.00	0.000	0.00	1769	0	1651	1887	1,000	0.0
B-110	0.00	0.000	0.00	1360	0	1269	1451	1,010	0.0
B-111	0.00	0.000	0.00	1190	0	1111	1269	1,010	0.0
B-112	0.03	0.165	0.00	1465	0	1368	1563	1,010	0.0
B-201	0.00	0.000	0.00	1260	0	1176	1344	1,000	0.0
B-202	0.00	0.000	0.00	1220	0	1139	1301	1,000	0.0
B-203	0.00	0.000	0.00	1190	0	1111	1269	1,000	0.0
B-204	0.00	0.000	0.00	1190	0	1111	1269	1,000	0.0
BX-101	0.00	0.000	0.00	1658	0	1547	1768	1,000	0.0
BX-102	0.00	0.000	0.00	1280	0	1194	1365	1,000	0.0
BX-103	0.10	0.165	0.00	1644	0	1534	1753	1,110	0.0

Table A-2. Input Data. (7 sheets)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth (m)**	**Convective waste depth uncertainty (m)**	**Crust depth (m)**	**Non-convective waste density (kg/m^3)**	**Non-convective waste density std dev (kg/m^3)**	**Non-convective waste density minimum (kg/m^3)**	**Non-convective waste density maximum (kg/m^3)**	**Convective waste density (kg/m^3)**	**Convective waste density std dev (kg/m^3)**
BX-104	0.03	0.165	0.00	1680	0	1568	1792	1,280	0.0
BX-105	0.04	0.165	0.00	1638	0	1529	1747	1,290	0.0
BX-106	0.00	0.000	0.00	1690	0	1577	1803	1,000	0.0
BX-107	0.00	0.000	0.00	1440	0	1344	1536	1,000	0.0
BX-108	0.00	0.000	0.00	1478	0	1380	1577	1,000	0.0
BX-109	0.00	0.000	0.00	1520	0	1419	1621	1,000	0.0
BX-110	0.01	0.165	0.00	1733	0	1617	1848	1,440	0.0
BX-111	0.00	0.000	0.00	1443	0	1347	1539	1,000	0.0
BX-112	0.01	0.165	0.00	1310	0	1223	1397	1,180	0.0
BY-101	0.00	0.000	0.00	1804	0	1684	1924	1,000	0.0
BY-102	0.00	0.000	0.00	1571	0	1467	1676	1,000	0.0
BY-103	0.00	0.000	0.00	1636	0	1527	1745	1,000	0.0
BY-104	0.00	0.000	0.00	1701	0	1587	1814	1,000	0.0
BY-105	0.00	0.000	0.00	1765	0	1647	1883	1,000	0.0
BY-106	0.00	0.000	0.00	1597	0	1491	1704	1,000	0.0
BY-107	0.00	0.000	0.00	1686	0	1573	1798	1,000	0.0
BY-108	0.00	0.000	0.00	1485	0	1386	1584	1,000	0.0
BY-109	0.00	0.000	0.00	1705	0	1592	1819	1,000	0.0
BY-110	0.00	0.000	0.00	1569	0	1464	1673	1,000	0.0
BY-111	0.00	0.000	0.00	1683	0	1571	1796	1,000	0.0
BY-112	0.00	0.000	0.00	1741	0	1625	1857	1,000	0.0
C-101	0.00	0.000	0.00	1498	0	1398	1597	1,000	0.0
C-102	0.00	0.000	0.00	1663	0	1552	1773	1,000	0.0
C-103	0.67	0.165	0.00	1490	0	1391	1589	1,110	0.0
C-104	0.00	0.000	0.00	1690	0	1577	1803	1,000	0.0
C-105	0.00	0.000	0.00	1550	0	1447	1653	1,000	0.0
C-106	0.28	0.165	0.00	1520	0	1419	1621	1,130	0.0

Table A-2. Input Data. (7 sheets)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth (m)**	**Convective waste depth uncertainty (m)**	**Crust depth (m)**	**Non-convective waste density (kg/m^3)**	**Non-convective waste density std dev (kg/m^3)**	**Non-convective waste density minimum (kg/m^3)**	**Non-convective waste density maximum (kg/m^3)**	**Convective waste density (kg/m^3)**	**Convective waste density std dev (kg/m^3)**
C-107	0.00	0.000	0.00	1410	0	1316	1503	1,000	0.0
C-108	0.00	0.000	0.00	1450	0	1353	1547	1,000	0.0
C-109	0.00	0.000	0.00	1444	0	1347	1540	1,000	0.0
C-110	0.00	0.000	0.00	1340	0	1251	1429	1,100	0.0
C-111	0.00	0.000	0.00	1440	0	1344	1536	1,000	0.0
C-112	0.00	0.000	0.00	1600	0	1493	1707	1,000	0.0
C-201	0.00	0.000	0.00	1500	0	1400	1600	1,000	0.0
C-202	0.00	0.000	0.00	1500	0	1400	1600	1,000	0.0
C-203	0.00	0.000	0.00	1500	0	1400	1600	1,000	0.0
C-204	0.00	0.000	0.00	1500	0	1400	1600	1,000	0.0
S-101	0.00	0.000	0.00	1626	0	1517	1734	1,000	0.0
S-102	0.00	0.000	0.00	1585	0	1479	1690	1,000	0.0
S-103	0.01	0.165	0.00	1586	0	1481	1692	1,450	0.0
S-104	0.00	0.000	0.00	1656	0	1545	1766	1,000	0.0
S-105	0.00	0.000	0.00	1648	0	1539	1758	1,000	0.0
S-106	0.00	0.000	0.00	1722	0	1607	1837	1,000	0.0
S-107	0.13	0.165	0.00	1779	0	1660	1898	1,310	0.0
S-108	0.00	0.000	0.00	1651	0	1541	1761	1,000	0.0
S-109	0.00	0.000	0.00	1657	0	1546	1767	1,000	0.0
S-110	0.00	0.000	0.00	1658	0	1547	1768	1,000	0.0
S-111	0.44	0.165	0.00	1545	0	1442	1648	1,450	0.0
S-112	0.00	0.000	0.00	1648	0	1538	1758	1,000	0.0
SX-101	0.00	0.000	0.00	1655	0	1545	1765	1,000	0.0
SX-102	0.00	0.000	0.00	1662	0	1551	1773	1,000	0.0
SX-103	0.00	0.000	0.00	1716	0	1601	1830	1,000	0.0
SX-104	0.00	0.000	0.00	1675	0	1563	1787	1,000	0.0
SX-105	0.00	0.000	0.00	1625	0	1516	1733	1,000	0.0

Table A-2. Input Data. (7 sheets)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth (m)**	**Convective waste depth uncertainty (m)**	**Crust depth (m)**	**Non-convective waste density (kg/m^3)**	**Non-convective waste density std dev (kg/m^3)**	**Non-convective waste density minimum (kg/m^3)**	**Non-convective waste density maximum (kg/m^3)**	**Convective waste density (kg/m^3)**	**Convective waste density std dev (kg/m^3)**
SX-106	0.00	0.000	0.00	1578	0	1473	1683	1,000	0.0
SX-107	0.00	0.000	0.00	1734	0	1618	1849	1,000	0.0
SX-108	0.00	0.000	0.00	1750	0	1633	1867	1,000	0.0
SX-109	0.00	0.000	0.00	1727	0	1612	1842	1,000	0.0
SX-110	0.00	0.000	0.00	1735	0	1620	1851	1,000	0.0
SX-111	0.00	0.000	0.00	1717	0	1603	1831	1,000	0.0
SX-112	0.00	0.000	0.00	1725	0	1610	1840	1,000	0.0
SX-113	0.00	0.000	0.00	1060	0	989	1131	1,000	0.0
SX-114	0.00	0.000	0.00	1678	0	1567	1790	1,000	0.0
SX-115	0.00	0.000	0.00	1750	0	1633	1867	1,000	0.0
SY-101	6.65	0.165	0.00	1520	0	1419	1621	1,360	0.0
SY-102	8.88	0.165	0.00	1440	0	1344	1536	1,250	0.0
SY-103	3.89	0.140	0.08	1600	0	1493	1707	1,470	0.0
T-101	0.00	0.000	0.00	1620	0	1512	1728	1,000	0.0
T-102	0.12	0.165	0.00	1789	0	1670	1908	1,140	0.0
T-103	0.04	0.165	0.00	1694	0	1581	1806	1,181	0.0
T-104	0.00	0.000	0.00	1290	0	1204	1376	1,000	0.0
T-105	0.00	0.000	0.00	1460	0	1362	1557	1,000	0.0
T-106	0.00	0.000	0.00	1523	0	1421	1624	1,000	0.0
T-107	0.00	0.000	0.00	1460	0	1363	1557	1,000	0.0
T-108	0.00	0.000	0.00	1442	0	1346	1538	1,000	0.0
T-109	0.00	0.000	0.00	1457	0	1360	1554	1,000	0.0
T-110	0.00	0.000	0.00	1268	0	1184	1353	1,050	0.0
T-111	0.00	0.000	0.00	1240	0	1157	1323	1,000	0.0
T-112	0.00	0.000	0.00	1280	0	1195	1365	1,100	0.0
T-201	0.00	0.000	0.00	1313	0	1225	1401	1,058	0.0
T-202	0.00	0.000	0.00	1240	0	1157	1323	1,000	0.0

Table A-2. Input Data. (7 sheets)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth (m)**	**Convective waste depth uncertainty (m)**	**Crust depth (m)**	**Non-convective waste density (kg/m^3)**	**Non-convective waste density std dev (kg/m^3)**	**Non-convective waste density minimum (kg/m^3)**	**Non-convective waste density maximum (kg/m^3)**	**Convective waste density (kg/m^3)**	**Convective waste density std dev (kg/m^3)**
T-203	0.00	0.000	0.00	1215	0	1134	1296	1,000	0.0
T-204	0.00	0.000	0.00	1210	0	1129	1291	1,000	0.0
TX-101	0.00	0.000	0.00	1726	0	1611	1842	1,000	0.0
TX-102	0.00	0.000	0.00	1642	0	1532	1751	1,000	0.0
TX-103	0.00	0.000	0.00	1641	0	1532	1751	1,000	0.0
TX-104	0.00	0.000	0.00	1737	0	1621	1852	1,440	0.0
TX-105	0.00	0.000	0.00	1662	0	1551	1773	1,000	0.0
TX-106	0.00	0.000	0.00	1648	0	1538	1758	1,000	0.0
TX-107	0.00	0.000	0.00	1629	0	1520	1737	1,000	0.0
TX-108	0.00	0.000	0.00	1651	0	1541	1761	1,000	0.0
TX-109	0.00	0.000	0.00	1410	0	1316	1504	1,000	0.0
TX-110	0.00	0.000	0.00	1646	0	1536	1755	1,000	0.0
TX-111	0.00	0.000	0.00	1638	0	1528	1747	1,000	0.0
TX-112	0.00	0.000	0.00	1655	0	1545	1766	1,000	0.0
TX-113	0.00	0.000	0.00	1630	0	1522	1739	1,000	0.0
TX-114	0.00	0.000	0.00	1644	0	1534	1753	1,000	0.0
TX-115	0.00	0.000	0.00	1658	0	1547	1768	1,000	0.0
TX-116	0.00	0.000	0.00	1571	0	1466	1675	1,000	0.0
TX-117	0.00	0.000	0.00	1580	0	1475	1685	1,000	0.0
TX-118	0.00	0.000	0.00	1686	0	1573	1798	1,000	0.0
TY-101	0.00	0.000	0.00	1638	0	1529	1747	1,000	0.0
TY-102	0.00	0.000	0.00	1740	0	1624	1856	1,000	0.0
TY-103	0.00	0.000	0.00	1685	0	1573	1797	1,000	0.0
TY-104	0.01	0.165	0.00	1690	0	1577	1803	1,180	0.0
TY-105	0.00	0.000	0.00	1530	0	1428	1632	1,000	0.0
TY-106	0.00	0.000	0.00	1370	0	1279	1461	1,000	0.0
U-101	0.00	0.000	0.00	1750	0	1633	1867	1,000	0.0

Table A-2. Input Data. (7 sheets)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth (m)**	**Convective waste depth uncertainty (m)**	**Crust depth (m)**	**Non-convective waste density (kg/m^3)**	**Non-convective waste density std dev (kg/m^3)**	**Non-convective waste density minimum (kg/m^3)**	**Non-convective waste density maximum (kg/m^3)**	**Convective waste density (kg/m^3)**	**Convective waste density std dev (kg/m^3)**
U-102	0.00	0.000	0.00	1680	0	1568	1792	1,000	0.0
U-103	0.00	0.000	0.00	1702	0	1588	1815	1,440	0.0
U-104	0.00	0.000	0.00	1375	0	1284	1467	1,000	0.0
U-105	0.00	0.000	0.00	1670	0	1559	1781	1,000	0.0
U-106	0.01	0.165	0.00	1550	0	1446	1653	1,340	0.0
U-107	0.00	0.000	0.00	1673	0	1561	1785	1,000	0.0
U-108	0.00	0.000	0.00	1648	0	1538	1758	1,000	0.0
U-109	0.00	0.000	0.00	1655	0	1544	1765	1,000	0.0
U-110	0.00	0.000	0.00	1660	0	1549	1770	1,000	0.0
U-111	0.00	0.000	0.00	1560	0	1456	1664	1,000	0.0
U-112	0.00	0.000	0.00	1737	0	1621	1853	1,000	0.0
U-201	0.00	0.000	0.00	1620	0	1512	1728	1,220	0.0
U-202	0.00	0.000	0.00	1620	0	1512	1728	1,220	0.0
U-203	0.00	0.000	0.00	1620	0	1512	1728	1,220	0.0
U-204	0.00	0.000	0.00	1620	0	1512	1728	1,220	0.0

Table A-3. Input Data. (6 sheets)

	20	21	22	23	24	25	26	27	28	29	30
Tank	Convective waste density minimum (kg/m^3)	Convective waste density maximum (kg/m^3)	Non-convective waste average temperature (°K)	Tank vapor space average temperature (°K)	Tank type group	Total tank volume (m^3)	Tank operating capacity (m)	Dish type	Dish height (m)	Dish volume (kL)	Tank capacity (kL/m)
A-101	1,391	1,589	335	313	a	4,784	9.2	flat	0.000	0.00	410
A-102	1,465	1,675	306	305	a	4,784	9.2	flat	0.000	0.00	410
A-103	1,353	1,547	323	308	a	4,784	9.2	flat	0.000	0.00	410
A-104	933	1,067	349	307	a	4,784	9.2	flat	0.000	0.00	410
A-105	933	1,067	273	273	a	4,784	9.2	flat	0.000	0.00	410
A-106	933	1,067	328	318	a	4,784	9.2	flat	0.000	0.00	410
AN-101	1,092	1,248	273	298	an	5,337	10.7	flat	0.000	0.00	410
AN-102	1,335	1,525	306	305	an	5,337	10.7	flat	0.000	0.00	410
AN-103	1,356	1,544	314	304	an	5,337	10.7	flat	0.000	0.00	410
AN-104	1,332	1,548	314	306	an	5,337	10.7	flat	0.000	0.00	410
AN-105	1,340	1,520	311	305	an	5,337	10.7	flat	0.000	0.00	410
AN-106	1,101	1,259	295	296	an	5,337	10.7	flat	0.000	0.00	410
AN-107	1,279	1,461	305	302	an	5,337	10.7	flat	0.000	0.00	410
AP-101	1,223	1,397	296	296	ap	5,337	10.7	flat	0.000	0.00	410
AP-102	1,120	1,280	297	297	ap	5,337	10.7	flat	0.000	0.00	410
AP-103	1,223	1,397	297	297	ap	5,337	10.7	flat	0.000	0.00	410
AP-104	1,167	1,333	298	298	ap	5,337	10.7	flat	0.000	0.00	410
AP-105	1,260	1,440	298	292	ap	5,337	10.7	flat	0.000	0.00	410
AP-106	1,176	1,344	298	298	ap	5,337	10.7	flat	0.000	0.00	410
AP-107	1,167	1,333	273	299	ap	5,337	10.7	flat	0.000	0.00	410
AP-108	1,167	1,333	296	297	ap	5,337	10.7	flat	0.000	0.00	410
AW-101	1,344	1,516	311	303	aw	5,337	10.7	flat	0.000	0.00	410
AW-102	943	1,077	297	296	aw	5,337	10.7	flat	0.000	0.00	410
AW-103	1,157	1,323	297	299	aw	5,337	10.7	flat	0.000	0.00	410
AW-104	999	1,141	300	295	aw	5,337	10.7	flat	0.000	0.00	410
AW-105	999	1,141	293	294	aw	5,337	10.7	flat	0.000	0.00	410
AW-106	1,232	1,408	315	307	aw	5,337	10.7	flat	0.000	0.00	410
AX-101	1,428	1,632	327	310	ax	4,784	9.2	flat	0.000	0.00	410
AX-102	933	1,067	297	299	ax	4,784	9.2	flat	0.000	0.00	410
AX-103	933	1,067	316	307	ax	4,784	9.2	flat	0.000	0.00	410

Table A-3. Input Data. (6 sheets)

	20	21	22	23	24	25	26	27	28	29	30
Tank	Convective waste density minimum (kg/m^3)	Convective waste density maximum (kg/m^3)	Non-convective waste average temperature (^{o}K)	Tank vapor space average temperature (^{o}K)	Tank type group	Total tank volume (m^3)	Tank operating capacity (m)	Dish type	Dish height (m)	Dish volume (kL)	Tank capacity (kL/m)
AX-104	933	1,067	305	305	ax	4,784	9.2	flat	0.000	0.00	410
AY-101	1,139	1,301	316	314	ay	5,337	9.2	flat	0.000	0.00	410
AY-102	1,073	1,227	345	317	ay	5,337	9.2	flat	0.000	0.00	410
AZ-101	1,157	1,323	348	337	az	5,337	9.2	flat	0.000	0.00	410
AZ-102	1,064	1,216	345	319	az	5,337	9.2	flat	0.000	0.00	410
B-101	933	1,067	312	304	b	3,239	4.9	dished	0.305	47.32	410
B-102	1,111	1,269	291	294	b	3,239	4.9	dished	0.305	47.32	410
B-103	933	1,067	290	293	b	3,239	4.9	dished	0.305	47.32	410
B-104	933	1,067	293	292	b	3,239	4.9	dished	0.305	47.32	410
B-105	933	1,067	291	292	b	3,239	4.9	dished	0.305	47.32	410
B-106	1,111	1,269	291	292	b	3,239	4.9	dished	0.305	47.32	410
B-107	933	1,067	289	289	b	3,239	4.9	dished	0.305	47.32	410
B-108	933	1,067	291	292	b	3,239	4.9	dished	0.305	47.32	410
B-109	933	1,067	291	292	b	3,239	4.9	dished	0.305	47.32	410
B-110	943	1,077	295	294	b	3,239	4.9	dished	0.305	47.32	410
B-111	943	1,077	297	297	b	3,239	4.9	dished	0.305	47.32	410
B-112	943	1,077	290	292	b	3,239	4.9	dished	0.305	47.32	410
B-201	933	1,067	290	291	b2	231	7.1	dished	0.152	2.23	29
B-202	933	1,067	294	294	b2	231	7.1	dished	0.152	2.23	29
B-203	933	1,067	291	285	b2	231	7.1	dished	0.152	2.23	29
B-204	933	1,067	291	292	b2	231	7.1	dished	0.152	2.23	29
BX-101	933	1,067	296	296	bx	3,239	4.9	dished	0.305	47.32	410
BX-102	933	1,067	293	294	bx	3,239	4.9	dished	0.305	47.32	410
BX-103	1,036	1,184	294	295	bx	3,239	4.9	dished	0.305	47.32	410
BX-104	1,195	1,365	303	298	bx	3,239	4.9	dished	0.305	47.32	410
BX-105	1,204	1,376	293	294	bx	3,239	4.9	dished	0.305	47.32	410
BX-106	933	1,067	294	294	bx	3,239	4.9	dished	0.305	47.32	410
BX-107	933	1,067	294	295	bx	3,239	4.9	dished	0.305	47.32	410
BX-108	933	1,067	293	293	bx	3,239	4.9	dished	0.305	47.32	410
BX-109	933	1,067	295	295	bx	3,239	4.9	dished	0.305	47.32	410

Table A-3. Input Data. (6 sheets)

	20	21	22	23	24	25	26	27	28	29	30
Tank	Convective waste density minimum (kg/m^3)	Convective waste density maximum (kg/m^3)	Non-convective waste average temperature (^{o}K)	Tank vapor space average temperature (^{o}K)	Tank type group	Total tank volume (m^3)	Tank operating capacity (m)	Dish type	Dish height (m)	Dish volume (kL)	Tank capacity (kL/m)
BX-110	1,344	1,536	293	294	bx	3,239	4.9	dished	0.305	47.32	410
BX-111	933	1,067	293	293	bx	3,239	4.9	dished	0.305	47.32	410
BX-112	1,101	1,259	292	293	bx	3,239	4.9	dished	0.305	47.32	410
BY-101	933	1,067	300	298	by	4,134	7.0	dished	0.305	47.32	410
BY-102	933	1,067	295	295	by	4,134	7.0	dished	0.305	47.32	410
BY-103	933	1,067	299	299	by	4,134	7.0	dished	0.305	47.32	410
BY-104	933	1,067	323	301	by	4,134	7.0	dished	0.305	47.32	410
BY-105	933	1,067	316	313	by	4,134	7.0	dished	0.305	47.32	410
BY-106	933	1,067	323	298	by	4,134	7.0	dished	0.305	47.32	410
BY-107	933	1,067	311	301	by	4,134	7.0	dished	0.305	47.32	410
BY-108	933	1,067	318	302	by	4,134	7.0	dished	0.305	47.32	410
BY-109	933	1,067	292	290	by	4,134	7.0	dished	0.305	47.32	410
BY-110	933	1,067	318	299	by	4,134	7.0	dished	0.305	47.32	410
BY-111	933	1,067	303	298	by	4,134	7.0	dished	0.305	47.32	410
BY-112	933	1,067	305	298	by	4,134	7.0	dished	0.305	47.32	410
C-101	933	1,067	305	306	c	3,239	4.9	dished	0.305	47.32	410
C-102	933	1,067	302	300	c	3,239	4.9	dished	0.305	47.32	410
C-103	1,036	1,184	319	312	c	3,239	4.9	dished	0.305	47.32	410
C-104	933	1,067	309	307	c	3,239	4.9	dished	0.305	47.32	410
C-105	933	1,067	317	313	c	3,239	4.9	dished	0.305	47.32	410
C-106	1,055	1,205	303	302	c	3,239	4.9	dished	0.305	47.32	410
C-107	933	1,067	321	317	c	3,239	4.9	dished	0.305	47.32	410
C-108	933	1,067	299	299	c	3,239	4.9	dished	0.305	47.32	410
C-109	933	1,067	300	300	c	3,239	4.9	dished	0.305	47.32	410
C-110	1,027	1,173	294	296	c	3,239	4.9	dished	0.305	47.32	410
C-111	933	1,067	298	299	c	3,239	4.9	dished	0.305	47.32	410
C-112	933	1,067	301	301	c	3,239	4.9	dished	0.305	47.32	410
C-201	933	1,067	289	292	c2	231	7.1	dished	0.152	2.23	29
C-202	933	1,067	289	291	c2	231	7.1	dished	0.152	2.23	29
C-203	933	1,067	288	291	c2	231	7.1	dished	0.152	2.23	29

Table A-3. Input Data. (6 sheets)

	20	21	22	23	24	25	26	27	28	29	30
Tank	Convective waste density minimum (kg/m^3)	Convective waste density maximum (kg/m^3)	Non-convective waste average temperature (^oK)	Tank vapor space average temperature (^oK)	Tank type group	Total tank volume (m^3)	Tank operating capacity (m)	Dish type	Dish height (m)	Dish volume (kL)	Tank capacity (kL/m)
C-204	933	1,067	291	289	c2	231	7.1	dished	0.152	2.23	29
S-101	933	1,067	319	307	s	4,134	7.0	dished	0.305	47.32	410
S-102	933	1,067	311	302	s	4,134	7.0	dished	0.305	47.32	410
S-103	1,353	1,547	301	299	s	4,134	7.0	dished	0.305	47.32	410
S-104	933	1,067	313	305	s	4,134	7.0	dished	0.305	47.32	410
S-105	933	1,067	299	298	s	4,134	7.0	dished	0.305	47.32	410
S-106	933	1,067	298	296	s	4,134	7.0	dished	0.305	47.32	410
S-107	1,223	1,397	313	302	s	4,134	7.0	dished	0.305	47.32	410
S-108	933	1,067	301	299	s	4,134	7.0	dished	0.305	47.32	410
S-109	933	1,067	302	298	s	4,134	7.0	dished	0.305	47.32	410
S-110	933	1,067	317	302	s	4,134	7.0	dished	0.305	47.32	410
S-111	1,353	1,547	305	299	s	4,134	7.0	dished	0.305	47.32	410
S-112	933	1,067	309	298	s	4,134	7.0	dished	0.305	47.32	410
SX-101	933	1,067	330	310	sx	4,831	9.2	dished	0.305	70.03	410
SX-102	933	1,067	333	308	sx	4,831	9.2	dished	0.305	70.03	410
SX-103	933	1,067	343	308	sx	4,831	9.2	dished	0.305	70.03	410
SX-104	933	1,067	333	307	sx	4,831	9.2	dished	0.305	70.03	410
SX-105	933	1,067	348	310	sx	4,831	9.2	dished	0.305	70.03	410
SX-106	933	1,067	310	305	sx	4,831	9.2	dished	0.305	70.03	410
SX-107	933	1,067	348	323	sx	4,831	9.2	dished	0.305	70.03	410
SX-108	933	1,067	358	331	sx	4,831	9.2	dished	0.305	70.03	410
SX-109	933	1,067	330	321	sx	4,831	9.2	dished	0.305	70.03	410
SX-110	933	1,067	347	337	sx	4,831	9.2	dished	0.305	70.03	410
SX-111	933	1,067	358	329	sx	4,831	9.2	dished	0.305	70.03	410
SX-112	933	1,067	339	324	sx	4,831	9.2	dished	0.305	70.03	410
SX-113	933	1,067	301	301	sx	4,831	9.2	dished	0.305	70.03	410
SX-114	933	1,067	353	325	sx	4,831	9.2	dished	0.305	70.03	410
SX-115	933	1,067	299	298	sx	4,831	9.2	dished	0.305	70.03	410
SY-101	1,269	1,451	310	304	sy	5,337	10.7	flat	0.000	0.00	410
SY-102	1,167	1,333	314	314	sy	5,337	10.7	flat	0.000	0.00	410

Table A-3. Input Data. (6 sheets)

	20	21	22	23	24	25	26	27	28	29	30
Tank	Convective waste density minimum (kg/m^3)	Convective waste density maximum (kg/m^3)	Non-convective waste average temperature (°K)	Tank vapor space average temperature (°K)	Tank type group	Total tank volume (m^3)	Tank operating capacity (m)	Dish type	Dish height (m)	Dish volume (kL)	Tank capacity (kL/m)
SY-103	1,372	1,568	308	304	sy	5,337	10.7	flat	0.000	0.00	410
T-101	933	1,067	295	295	t	3,239	4.9	dished	0.305	47.32	410
T-102	1,064	1,216	291	291	t	3,239	4.9	dished	0.305	47.32	410
T-103	1,103	1,260	292	293	t	3,239	4.9	dished	0.305	47.32	410
T-104	933	1,067	293	294	t	3,239	4.9	dished	0.305	47.32	410
T-105	933	1,067	290	289	t	3,239	4.9	dished	0.305	47.32	410
T-106	933	1,067	293	294	t	3,239	4.9	dished	0.305	47.32	410
T-107	933	1,067	294	295	t	3,239	4.9	dished	0.305	47.32	410
T-108	933	1,067	289	295	t	3,239	4.9	dished	0.305	47.32	410
T-109	933	1,067	292	293	t	3,239	4.9	dished	0.305	47.32	410
T-110	980	1,120	292	294	t	3,239	4.9	dished	0.305	47.32	410
T-111	933	1,067	294	296	t	3,239	4.9	dished	0.305	47.32	410
T-112	1,027	1,173	292	294	t	3,239	4.9	dished	0.305	47.32	410
T-201	987	1,128	292	293	t2	231	7.1	dished	0.152	2.23	29
T-202	933	1,067	291	293	t2	231	7.1	dished	0.152	2.23	29
T-203	933	1,067	292	293	t2	231	7.1	dished	0.152	2.23	29
T-204	933	1,067	292	293	t2	231	7.1	dished	0.152	2.23	29
TX-101	933	1,067	298	297	tx	4,134	7.0	dished	0.305	47.32	410
TX-102	933	1,067	301	300	tx	4,134	7.0	dished	0.305	47.32	410
TX-103	933	1,067	295	295	tx	4,134	7.0	dished	0.305	47.32	410
TX-104	1,344	1,536	294	294	tx	4,134	7.0	dished	0.305	47.32	410
TX-105	933	1,067	309	297	tx	4,134	7.0	dished	0.305	47.32	410
TX-106	933	1,067	300	298	tx	4,134	7.0	dished	0.305	47.32	410
TX-107	933	1,067	295	295	tx	4,134	7.0	dished	0.305	47.32	410
TX-108	933	1,067	293	293	tx	4,134	7.0	dished	0.305	47.32	410
TX-109	933	1,067	297	295	tx	4,134	7.0	dished	0.305	47.32	410
TX-110	933	1,067	301	295	tx	4,134	7.0	dished	0.305	47.32	410
TX-111	933	1,067	300	296	tx	4,134	7.0	dished	0.305	47.32	410
TX-112	933	1,067	296	294	tx	4,134	7.0	dished	0.305	47.32	410
TX-113	933	1,067	296	295	tx	4,134	7.0	dished	0.305	47.32	410

Table A-3. Input Data. (6 sheets)

	20	21	22	23	24	25	26	27	28	29	30
Tank	**Convective waste density minimum (kg/m^3)**	**Convective waste density maximum (kg/m^3)**	**Non-convective waste average temperature (°K)**	**Tank vapor space average temperature (°K)**	**Tank type group**	**Total tank volume (m^3)**	**Tank operating capacity (m)**	**Dish type**	**Dish height (m)**	**Dish volume (kL)**	**Tank capacity (kL/m)**
TX-114	933	1,067	294	291	tx	4,134	7.0	dished	0.305	47.32	410
TX-115	933	1,067	295	294	tx	4,134	7.0	dished	0.305	47.32	410
TX-116	933	1,067	294	293	tx	4,134	7.0	dished	0.305	47.32	410
TX-117	933	1,067	294	293	tx	4,134	7.0	dished	0.305	47.32	410
TX-118	933	1,067	297	296	tx	4,134	7.0	dished	0.305	47.32	410
TY-101	933	1,067	293	294	ty	4,134	7.0	dished	0.305	47.32	410
TY-102	933	1,067	289	292	ty	4,134	7.0	dished	0.305	47.32	410
TY-103	933	1,067	303	295	ty	4,134	7.0	dished	0.305	47.32	410
TY-104	1,101	1,259	293	293	ty	4,134	7.0	dished	0.305	47.32	410
TY-105	933	1,067	299	296	ty	4,134	7.0	dished	0.305	47.32	410
TY-106	933	1,067	289	292	ty	4,134	7.0	dished	0.305	47.32	410
U-101	933	1,067	292	295	u	3,239	4.9	dished	0.305	47.32	410
U-102	933	1,067	304	302	u	3,239	4.9	dished	0.305	47.32	410
U-103	1,344	1,536	304	302	u	3,239	4.9	dished	0.305	47.32	410
U-104	933	1,067	301	298	u	3,239	4.9	dished	0.305	47.32	410
U-105	933	1,067	305	302	u	3,239	4.9	dished	0.305	47.32	410
U-106	1,251	1,429	301	300	u	3,239	4.9	dished	0.305	47.32	410
U-107	933	1,067	299	298	u	3,239	4.9	dished	0.305	47.32	410
U-108	933	1,067	303	300	u	3,239	4.9	dished	0.305	47.32	410
U-109	933	1,067	303	303	u	3,239	4.9	dished	0.305	47.32	410
U-110	933	1,067	299	299	u	3,239	4.9	dished	0.305	47.32	410
U-111	933	1,067	300	299	u	3,239	4.9	dished	0.305	47.32	410
U-112	933	1,067	294	294	u	3,239	4.9	dished	0.305	47.32	410
U-201	1,139	1,301	292	293	u2	231	7.1	dished	0.152	2.23	29
U-202	1,139	1,301	292	292	u2	231	7.1	dished	0.152	2.23	29
U-203	1,139	1,301	291	292	u2	231	7.1	dished	0.152	2.23	29
U-204	1,139	1,301	291	292	u2	231	7.1	dished	0.152	2.23	29

Table A-4. Input Data. (7 sheets)

	31	32	33	34	35	36	37	38	39
Tank	Void fraction or maximum wetted solids void fraction mean (%)	Void fraction or maximum wetted solids void fraction uncertainty (%)	Void fraction or maximum wetted solids void fraction minimum (%)	Void fraction or maximum wetted solids void fraction maximum (%)	Void fraction or maximum wetted solids void fraction distribution type	Non-convective waste yield stress minimum (Pa)	Non-convective waste yield stress maximum (Pa)	Non-convective waste yield stress distribution type	Headspace gas ratio CH_4 distribution Mean
A-101	14.500	7.250	0.010	40.000	Normal	50	350	uniform	0.021
A-102	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
A-103	0.433	0.216	0.010	26.500	Normal	50	500	uniform	0.053
A-104	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
A-105	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
A-106	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
AN-101	6.476	2.958	0.010	15.110	LogNorm	50	250	uniform	0.053
AN-102	6.476	2.958	0.010	15.110	LogNorm	50	250	uniform	0.053
AN-103	11.000	0.700	0.100	20.000	Normal	50	250	uniform	0.086
AN-104	6.600	0.800	0.100	20.000	Normal	50	250	uniform	0.059
AN-105	4.400	0.900	0.100	20.000	Normal	50	250	uniform	0.022
AN-106	14.320	6.390	0.010	40.000	Normal	50	250	uniform	0.053
AN-107	0.707	3.482	0.010	12.179	LogNorm	50	250	uniform	0.053
AP-101	-	-	-	-	0.0000	50	500	uniform	0.053
AP-102	-	-	-	-	0.0000	50	500	uniform	0.053
AP-103	-	-	-	-	0.0000	50	500	uniform	0.053
AP-104	-	-	-	-	0.0000	50	500	uniform	0.053
AP-105	6.476	2.958	0.010	15.110	LogNorm	50	500	uniform	0.053
AP-106	-	-	-	-	0.0000	50	500	uniform	0.053
AP-107	-	-	-	-	0.0000	50	500	uniform	0.053
AP-108	-	-	-	-	0.0000	50	500	uniform	0.053
AW-101	3.800	0.400	0.100	20.000	Normal	50	250	uniform	0.214
AW-102	6.476	2.958	0.010	15.110	LogNorm	50	250	uniform	0.053
AW-103	6.476	2.958	0.010	15.110	LogNorm	50	500	uniform	0.053
AW-104	6.476	2.958	0.010	15.110	LogNorm	50	250	uniform	0.053
AW-105	6.476	2.958	0.010	15.110	LogNorm	50	500	uniform	0.053
AW-106	14.320	6.390	0.010	40.000	Normal	50	250	uniform	0.053

Table A-4. Input Data. (7 sheets)

	31	32	33	34	35	36	37	38	39
Tank	Void fraction or maximum wetted solids void fraction mean (%)	Void fraction or maximum wetted solids void fraction uncertainty (%)	Void fraction or maximum wetted solids void fraction minimum (%)	Void fraction or maximum wetted solids void fraction maximum (%)	Void fraction or maximum wetted solids void fraction distribution type	Non-convective waste yield stress minimum (Pa)	Non-convective waste yield stress maximum (Pa)	Non-convective waste yield stress distribution type	Headspace gas ratio CH_4 distribution Mean
AX-101	17.000	8.500	0.010	40.000	Normal	50	350	uniform	0.057
AX-102	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
AX-103	0.174	0.087	0.010	40.000	Normal	50	350	uniform	0.053
AX-104	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
AY-101	5.921	2.961	0.010	26.500	Normal	50	500	uniform	0.053
AY-102	10.628	5.314	0.010	40.000	Normal	50	500	uniform	0.053
AZ-101	6.476	2.958	0.010	15.110	LogNorm	50	500	uniform	0.053
AZ-102	6.476	2.958	0.010	15.110	LogNorm	50	500	uniform	0.053
B-101	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
B-102	0.279	0.140	0.010	40.000	Normal	50	350	uniform	0.053
B-103	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
B-104	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
B-105	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
B-106	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
B-107	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
B-108	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
B-109	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
B-110	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
B-111	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
B-112	0.571	0.286	0.010	26.500	Normal	50	500	uniform	0.053
B-201	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
B-202	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
B-203	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
B-204	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
BX-101	1.968	0.984	0.010	26.500	Normal	50	500	uniform	0.053
BX-102	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
BX-103	0.416	0.208	0.010	26.500	Normal	50	500	uniform	0.053

Table A-4. Input Data. (7 sheets)

	31	32	33	34	35	36	37	38	39
Tank	Void fraction or maximum wetted solids void fraction mean (%)	Void fraction or maximum wetted solids void fraction uncertainty (%)	Void fraction or maximum wetted solids void fraction minimum (%)	Void fraction or maximum wetted solids void fraction maximum (%)	Void fraction or maximum wetted solids void fraction distribution type	Non-convective waste yield stress minimum (Pa)	Non-convective waste yield stress maximum (Pa)	Non-convective waste yield stress distribution type	Headspace gas ratio CH_4 distribution Mean
BX-104	11.903	5.952	0.010	26.500	Normal	50	500	uniform	0.053
BX-105	0.276	0.138	0.010	26.500	Normal	50	500	uniform	0.053
BX-106	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
BX-107	3.116	1.558	0.010	26.500	Normal	50	500	uniform	0.053
BX-108	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
BX-109	0.331	0.166	0.010	26.500	Normal	50	500	uniform	0.053
BX-110	4.864	2.432	0.010	40.000	Normal	50	350	uniform	0.053
BX-111	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BX-112	0.568	0.284	0.010	26.500	Normal	50	500	uniform	0.053
BY-101	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-102	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-103	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-104	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-105	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-106	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-107	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-108	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-109	9.200	4.600	0.010	40.000	Normal	50	350	uniform	0.086
BY-110	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-111	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
BY-112	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
C-101	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-102	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-103	0.107	0.053	0.010	26.500	Normal	50	500	uniform	0.053
C-104	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-105	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-106	2.500	1.250	0.010	26.500	Normal	50	500	uniform	0.053

Table A-4. Input Data. (7 sheets)

	31	32	33	34	35	36	37	38	39
Tank	Void fraction or maximum wetted solids void fraction mean (%)	Void fraction or maximum wetted solids void fraction uncertainty (%)	Void fraction or maximum wetted solids void fraction minimum (%)	Void fraction or maximum wetted solids void fraction maximum (%)	Void fraction or maximum wetted solids void fraction distribution type	Non-convective waste yield stress minimum (Pa)	Non-convective waste yield stress maximum (Pa)	Non-convective waste yield stress distribution type	Headspace gas ratio CH_4 distribution Mean
C-107	0.422	0.211	0.010	26.500	Normal	50	500	uniform	0.053
C-108	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-109	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-110	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-111	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-112	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-201	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-202	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-203	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
C-204	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
S-101	5.280	2.640	0.010	40.000	Normal	50	350	uniform	0.053
S-102	19.600	9.800	0.010	40.000	Normal	50	350	uniform	0.020
S-103	15.727	7.864	0.010	40.000	Normal	50	350	uniform	0.053
S-104	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
S-105	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
S-106	17.800	8.900	0.010	40.000	Normal	50	350	uniform	0.013
S-107	3.505	1.752	0.010	26.500	Normal	50	500	uniform	0.053
S-108	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
S-109	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
S-110	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
S-111	17.700	8.850	0.010	40.000	Normal	50	350	uniform	0.014
S-112	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
SX-101	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
SX-102	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
SX-103	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
SX-104	1.662	0.831	0.010	40.000	Normal	50	350	uniform	0.053
SX-105	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053

Table A-4. Input Data. (7 sheets)

	31	32	33	34	35	36	37	38	39
Tank	Void fraction or maximum wetted solids void fraction mean (%)	Void fraction or maximum wetted solids void fraction uncertainty (%)	Void fraction or maximum wetted solids void fraction minimum (%)	Void fraction or maximum wetted solids void fraction maximum (%)	Void fraction or maximum wetted solids void fraction distribution type	Non-convective waste yield stress minimum (Pa)	Non-convective waste yield stress maximum (Pa)	Non-convective waste yield stress distribution type	Headspace gas ratio CH_4 distribution Mean
SX-106	19.000	9.500	0.010	40.000	LogNorm	50	350	uniform	0.017
SX-107	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SX-108	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SX-109	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
SX-110	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SX-111	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SX-112	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SX-113	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SX-114	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SX-115	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
SY-101	3.044	0.214	0.100	10.000	Normal	50	250	uniform	0.065
SY-102	0.707	3.482	0.010	12.179	LogNorm	50	250	uniform	0.065
SY-103	1.299	0.649	0.010	40.000	Normal	50	500	uniform	0.053
T-101	7.000	1.900	0.100	20.000	Normal	50	250	uniform	0.053
T-102	0.099	0.050	0.010	40.000	Normal	50	350	uniform	0.053
T-103	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-104	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-105	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-106	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-107	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-108	3.478	1.739	0.010	26.500	Normal	50	500	uniform	0.053
T-109	7.316	3.658	0.010	40.000	Normal	50	350	uniform	0.053
T-110	0.446	0.223	0.010	40.000	Normal	50	350	uniform	0.053
T-111	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-112	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-201	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-202	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053

Table A-4. Input Data. (7 sheets)

	31	32	33	34	35	36	37	38	39
Tank	Void fraction or maximum wetted solids void fraction mean (%)	Void fraction or maximum wetted solids void fraction uncertainty (%)	Void fraction or maximum wetted solids void fraction minimum (%)	Void fraction or maximum wetted solids void fraction maximum (%)	Void fraction or maximum wetted solids void fraction distribution type	Non-convective waste yield stress minimum (Pa)	Non-convective waste yield stress maximum (Pa)	Non-convective waste yield stress distribution type	Headspace gas ratio CH_4 distribution Mean
T-203	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
T-204	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
TX-101	0.213	0.106	0.010	26.500	Normal	50	500	uniform	0.053
TX-102	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-103	9.598	4.799	0.010	40.000	Normal	50	350	uniform	0.053
TX-104	0.265	0.132	0.010	40.000	Normal	50	350	uniform	0.053
TX-105	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-106	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-107	0.905	0.452	0.010	40.000	Normal	50	350	uniform	0.053
TX-108	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-109	0.099	0.050	0.010	26.500	Normal	50	500	uniform	0.053
TX-110	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-111	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-112	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-113	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-114	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-115	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-116	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-117	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TX-118	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TY-101	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TY-102	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
TY-103	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
TY-104	0.446	0.223	0.010	26.500	Normal	50	500	uniform	0.053
TY-105	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
TY-106	1.493	0.746	0.010	26.500	Normal	50	500	uniform	0.053
U-101	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053

Table A-4. Input Data. (7 sheets)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction mean (%)**	**Void fraction or maximum wetted solids void fraction uncertainty (%)**	**Void fraction or maximum wetted solids void fraction minimum (%)**	**Void fraction or maximum wetted solids void fraction maximum (%)**	**Void fraction or maximum wetted solids void fraction distribution type**	**Non-convective waste yield stress minimum (Pa)**	**Non-convective waste yield stress maximum (Pa)**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
U-102	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
U-103	15.500	7.750	0.010	40.000	Normal	50	350	uniform	0.057
U-104	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
U-105	9.696	4.848	0.010	40.000	Normal	50	350	uniform	0.053
U-106	2.304	1.152	0.010	40.000	Normal	50	350	uniform	0.053
U-107	9.247	4.624	0.010	40.000	Normal	50	350	uniform	0.053
U-108	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
U-109	14.800	7.400	0.010	40.000	Normal	50	350	uniform	0.049
U-110	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
U-111	14.320	6.390	0.010	40.000	Normal	50	350	uniform	0.053
U-112	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
U-201	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
U-202	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
U-203	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053
U-204	2.976	7.638	0.010	26.500	LogNorm	50	500	uniform	0.053

Table A-5. Input Data (7 sheets)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
A-101	0.021	0.001	0.018	0.024	Normal	0.071	0.071	0.005	0.058	0.084
A-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
A-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
A-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
A-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
A-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AN-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AN-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AN-103	0.086	0.036	0.022	0.164	Normal	0.053	0.053	0.007	0.037	0.077
AN-104	0.059	0.014	0.027	0.099	Normal	0.308	0.308	0.032	0.223	0.401
AN-105	0.022	0.006	0.011	0.036	Normal	0.169	0.169	0.018	0.125	0.220
AN-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AN-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AP-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AW-101	0.214	0.021	0.156	0.275	Normal	0.126	0.126	0.021	0.078	0.174
AW-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AW-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AW-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AW-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AW-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619

Table A-5. Input Data (7 sheets)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
AX-101	0.057	0.007	0.040	0.076	Normal	0.142	0.142	0.008	0.122	0.163
AX-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AX-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AX-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AY-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AY-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AZ-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
AZ-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-109	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-201	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-202	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-203	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
B-204	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619

Table A-5. Input Data (7 sheets)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
BX-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-109	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BX-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-109	0.086	0.031	0.028	0.161	Normal	0.236	0.236	0.021	0.178	0.305
BY-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
BY-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619

Table A-5. Input Data (7 sheets)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
C-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-109	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-201	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-202	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-203	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
C-204	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-102	0.020	0.004	0.012	0.031	Normal	0.481	0.481	0.022	0.414	0.549
S-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-106	0.013	0.006	0.000	0.030	Normal	0.131	0.131	0.015	0.098	0.169
S-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-109	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
S-111	0.014	0.002	0.010	0.019	Normal	0.135	0.135	0.017	0.092	0.190
S-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619

Table A-5. Input Data (7 sheets)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
SX-106	0.017	0.007	0.005	0.034	Normal	0.315	0.315	0.015	0.275	0.360
SX-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-109	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-113	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-114	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SX-115	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
SY-101	0.065	0.026	0.015	0.150	Normal	0.361	0.361	0.049	0.226	0.501
SY-102	0.065	0.026	0.015	0.150	Normal	0.361	0.361	0.049	0.226	0.501
SY-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-109	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-201	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-202	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619

Table A-5. Input Data (7 sheets)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
T-203	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
T-204	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-109	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-113	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-114	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-115	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-116	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-117	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TX-118	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TY-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TY-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TY-103	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TY-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TY-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
TY-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-101	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619

Table A-5. Input Data (7 sheets)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
U-102	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-103	0.057	0.011	0.034	0.082	Normal	0.603	0.603	0.015	0.561	0.645
U-104	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-105	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-106	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-107	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-108	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-109	0.049	0.013	0.024	0.087	Normal	0.489	0.489	0.031	0.402	0.577
U-110	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-111	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-112	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-201	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-202	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-203	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619
U-204	0.053	0.056	0.001	0.318	LogNorm	0.253	0.253	0.176	0.001	0.619

Table A-6. Input Data. (7 sheets)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 (%) distribution Mean**	**Retained gas composition N_2 mean (%)**	**Retained gas composition N_2 std dev (%)**	**Retained gas composition N_2 minimum (%)**	**Retained gas composition N_2 maximum (%)**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean (%)**
A-101	Normal	19.001	19.001	2.326	11.352	26.594	Normal	2.457	2.457
A-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
A-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
A-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
A-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
A-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AN-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AN-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AN-103	Normal	28.660	28.660	5.153	14.912	42.804	Normal	0.597	0.597
AN-104	Normal	29.173	29.173	4.918	14.334	41.436	Normal	0.882	0.882
AN-105	Normal	24.571	24.571	3.635	14.166	34.339	Normal	0.500	0.500
AN-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AN-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AP-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AW-101	Normal	53.550	53.550	2.707	45.453	62.012	Normal	0.571	0.571
AW-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AW-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AW-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AW-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AW-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250

Table A-6. Input Data. (7 sheets)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 (%) distribution Mean**	**Retained gas composition N_2 mean (%)**	**Retained gas composition N_2 std dev (%)**	**Retained gas composition N_2 minimum (%)**	**Retained gas composition N_2 maximum (%)**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean (%)**
AX-101	Normal	16.683	16.683	4.284	4.648	27.392	Normal	6.585	6.585
AX-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AX-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AX-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AY-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AY-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AZ-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
AZ-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-109	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-201	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-202	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-203	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
B-204	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250

Table A-6. Input Data. (7 sheets)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 (%) distribution Mean**	**Retained gas composition N_2 mean (%)**	**Retained gas composition N_2 std dev (%)**	**Retained gas composition N_2 minimum (%)**	**Retained gas composition N_2 maximum (%)**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean (%)**
BX-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-109	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BX-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-109	Normal	29.045	29.045	4.437	16.678	42.377	Normal	0.191	0.191
BY-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
BY-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250

Table A-6. Input Data. (7 sheets)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 (%) distribution Mean**	**Retained gas composition N_2 *mean* (%)**	**Retained gas composition N_2 std dev (%)**	**Retained gas composition N_2 minimum (%)**	**Retained gas composition N_2 maximum (%)**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 *mean* (%)**
C-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-109	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-201	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-202	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-203	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
C-204	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-102	Normal	32.246	32.246	3.074	23.974	40.719	Normal	0.932	0.932
S-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-106	Normal	25.217	25.217	3.789	15.249	34.922	Normal	0.299	0.299
S-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-109	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
S-111	Normal	20.990	20.990	5.953	4.556	34.751	Normal	0.929	0.929
S-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250

Table A-6. Input Data. (7 sheets)

	50	51	52	53	54	55	56	57	58
Tank	Headspace gas ratio N_2O distribution type	Retained gas composition N_2 (%) distribution Mean	Retained gas composition N_2 mean (%)	Retained gas composition N_2 std dev (%)	Retained gas composition N_2 minimum (%)	Retained gas composition N_2 maximum (%)	Retained gas composition N_2 distribution type	Retained gas composition NH_3 distribution Mean	Retained gas composition NH_3 mean (%)
SX-106	Normal	20.203	20.203	3.446	10.198	29.551	Normal	4.202	4.202
SX-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-109	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-113	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-114	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SX-115	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
SY-101	Normal	33.875	33.875	6.784	13.360	53.313	Normal	9.172	9.172
SY-102	Normal	33.875	33.875	6.784	13.360	53.313	Normal	9.172	9.172
SY-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-109	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-201	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-202	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250

Table A-6. Input Data. (7 sheets)

	50	51	52	53	54	55	56	57	58
Tank	Headspace gas ratio N_2O distribution type	Retained gas composition N_2 (%) distribution Mean	Retained gas composition N_2 mean (%)	Retained gas composition N_2 std dev (%)	Retained gas composition N_2 minimum (%)	Retained gas composition N_2 maximum (%)	Retained gas composition N_2 distribution type	Retained gas composition NH_3 distribution Mean	Retained gas composition NH_3 mean (%)
T-203	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
T-204	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-109	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-113	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-114	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-115	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-116	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-117	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TX-118	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TY-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TY-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TY-103	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TY-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TY-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
TY-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-101	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250

Table A-6. Input Data. (7 sheets)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 (%) distribution Mean**	**Retained gas composition N_2 mean (%)**	**Retained gas composition N_2 std dev (%)**	**Retained gas composition N_2 minimum (%)**	**Retained gas composition N_2 maximum (%)**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean (%)**
U-102	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-103	Normal	36.711	36.711	2.018	30.945	42.561	Normal	0.596	0.596
U-104	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-105	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-106	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-107	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-108	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-109	Normal	46.777	46.777	3.188	36.854	56.618	Normal	1.007	1.007
U-110	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-111	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-112	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-201	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-202	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-203	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250
U-204	LogNorm	29.840	29.840	12.010	4.500	80.000	LogNorm	0.250	0.250

Table A-7. Input Data. (7 sheets)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev (%)**	**Retained gas composition NH_3 minimum (%)**	**Retained gas composition NH_3 maximum (%)**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste (moles/m^3/day)**	**Hydrogen generation rate in non-convective waste uncertainty (moles/m^3/day)**
A-101	0.295	1.242	3.347	Normal	6.03E-03	3.01E-03
A-102	0.000	0.010	18.318	ContLin	8.38E-03	4.19E-03
A-103	0.000	0.010	18.318	ContLin	4.43E-03	2.22E-03
A-104	0.000	0.010	18.318	ContLin	7.04E-02	3.52E-02
A-105	0.000	0.010	18.318	ContLin	1.00E-06	5.00E-07
A-106	0.000	0.010	18.318	ContLin	1.28E-02	6.42E-03
AN-101	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AN-102	0.000	0.010	18.318	ContLin	6.63E-03	3.32E-03
AN-103	0.066	0.400	0.782	Normal	1.36E-03	6.81E-04
AN-104	0.134	0.377	1.293	Normal	2.21E-03	1.11E-03
AN-105	0.065	0.303	0.762	Normal	1.84E-03	9.21E-04
AN-106	0.000	0.010	18.318	ContLin	7.32E-03	3.66E-03
AN-107	0.000	0.010	18.318	ContLin	4.67E-03	2.34E-03
AP-101	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AP-102	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AP-103	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AP-104	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AP-105	0.000	0.010	18.318	ContLin	1.72E-03	8.61E-04
AP-106	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AP-107	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AP-108	0.000	0.010	18.318	ContLin	0.00E+00	0.00E+00
AW-101	0.100	0.272	0.959	Normal	2.15E-03	1.07E-03
AW-102	0.000	0.010	18.318	ContLin	6.32E-03	3.16E-03
AW-103	0.000	0.010	18.318	ContLin	6.33E-04	3.17E-04
AW-104	0.000	0.010	18.318	ContLin	7.76E-04	3.88E-04
AW-105	0.000	0.010	18.318	ContLin	6.85E-04	3.42E-04
AW-106	0.000	0.010	18.318	ContLin	1.79E-03	8.93E-04

Table A-7. Input Data. (7 sheets)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev (%)**	**Retained gas composition NH_3 minimum (%)**	**Retained gas composition NH_3 maximum (%)**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste (moles/m^3/day)**	**Hydrogen generation rate in non-convective waste uncertainty (moles/m^3/day)**
AX-101	1.759	3.094	10.784	Normal	4.40E-03	2.20E-03
AX-102	0.000	0.010	18.318	ContLin	1.15E-02	5.75E-03
AX-103	0.000	0.010	18.318	ContLin	1.28E-02	6.42E-03
AX-104	0.000	0.010	18.318	ContLin	3.74E-02	1.87E-02
AY-101	0.000	0.010	18.318	ContLin	3.68E-03	1.84E-03
AY-102	0.000	0.010	18.318	ContLin	7.54E-02	3.77E-02
AZ-101	0.000	0.010	18.318	ContLin	2.19E-02	1.09E-02
AZ-102	0.000	0.010	18.318	ContLin	1.15E-02	5.75E-03
B-101	0.000	0.010	18.318	ContLin	2.96E-03	1.48E-03
B-102	0.000	0.010	18.318	ContLin	8.78E-03	4.39E-03
B-103	0.000	0.010	18.318	ContLin	4.61E-03	2.30E-03
B-104	0.000	0.010	18.318	ContLin	1.03E-03	5.13E-04
B-105	0.000	0.010	18.318	ContLin	1.19E-03	5.96E-04
B-106	0.000	0.010	18.318	ContLin	2.34E-03	1.17E-03
B-107	0.000	0.010	18.318	ContLin	1.88E-03	9.40E-04
B-108	0.000	0.010	18.318	ContLin	2.93E-03	1.47E-03
B-109	0.000	0.010	18.318	ContLin	2.44E-03	1.22E-03
B-110	0.000	0.010	18.318	ContLin	1.44E-03	7.22E-04
B-111	0.000	0.010	18.318	ContLin	1.63E-03	8.14E-04
B-112	0.000	0.010	18.318	ContLin	7.79E-03	3.89E-03
B-201	0.000	0.010	18.318	ContLin	1.98E-03	9.92E-04
B-202	0.000	0.010	18.318	ContLin	2.02E-03	1.01E-03
B-203	0.000	0.010	18.318	ContLin	1.75E-03	8.76E-04
B-204	0.000	0.010	18.318	ContLin	1.76E-03	8.79E-04
BX-101	0.000	0.010	18.318	ContLin	5.61E-03	2.80E-03
BX-102	0.000	0.010	18.318	ContLin	2.74E-03	1.37E-03
BX-103	0.000	0.010	18.318	ContLin	4.65E-03	2.32E-03

Table A-7. Input Data. (7 sheets)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev (%)**	**Retained gas composition NH_3 minimum (%)**	**Retained gas composition NH_3 maximum (%)**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste (moles/m^3/day)**	**Hydrogen generation rate in non-convective waste uncertainty (moles/m^3/day)**
BX-104	0.000	0.010	18.318	ContLin	3.01E-03	1.51E-03
BX-105	0.000	0.010	18.318	ContLin	3.96E-03	1.98E-03
BX-106	0.000	0.010	18.318	ContLin	6.75E-03	3.37E-03
BX-107	0.000	0.010	18.318	ContLin	1.09E-03	5.46E-04
BX-108	0.000	0.010	18.318	ContLin	7.93E-03	3.96E-03
BX-109	0.000	0.010	18.318	ContLin	1.70E-03	8.50E-04
BX-110	0.000	0.010	18.318	ContLin	1.65E-03	8.25E-04
BX-111	0.000	0.010	18.318	ContLin	1.63E-03	8.16E-04
BX-112	0.000	0.010	18.318	ContLin	1.83E-03	9.17E-04
BY-101	0.000	0.010	18.318	ContLin	1.29E-03	6.44E-04
BY-102	0.000	0.010	18.318	ContLin	1.26E-03	6.30E-04
BY-103	0.000	0.010	18.318	ContLin	1.02E-03	5.08E-04
BY-104	0.000	0.010	18.318	ContLin	1.74E-03	8.69E-04
BY-105	0.000	0.010	18.318	ContLin	1.17E-03	5.84E-04
BY-106	0.000	0.010	18.318	ContLin	1.72E-03	8.61E-04
BY-107	0.000	0.010	18.318	ContLin	2.11E-03	1.05E-03
BY-108	0.000	0.010	18.318	ContLin	2.02E-03	1.01E-03
BY-109	0.034	0.081	0.321	Normal	1.28E-03	6.40E-04
BY-110	0.000	0.010	18.318	ContLin	2.63E-03	1.31E-03
BY-111	0.000	0.010	18.318	ContLin	1.17E-03	5.87E-04
BY-112	0.000	0.010	18.318	ContLin	1.23E-03	6.16E-04
C-101	0.000	0.010	18.318	ContLin	3.35E-03	1.68E-03
C-102	0.000	0.010	18.318	ContLin	1.29E-03	6.44E-04
C-103	0.000	0.010	18.318	ContLin	1.20E-02	6.01E-03
C-104	0.000	0.010	18.318	ContLin	2.05E-03	1.02E-03
C-105	0.000	0.010	18.318	ContLin	2.57E-03	1.29E-03
C-106	0.000	0.010	18.318	ContLin	5.64E-02	2.82E-02

Table A-7. Input Data. (7 sheets)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev (%)**	**Retained gas composition NH_3 minimum (%)**	**Retained gas composition NH_3 maximum (%)**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste (moles/m^3/day)**	**Hydrogen generation rate in non-convective waste uncertainty (moles/m^3/day)**
C-107	0.000	0.010	18.318	ContLin	2.90E-03	1.45E-03
C-108	0.000	0.010	18.318	ContLin	4.07E-03	2.04E-03
C-109	0.000	0.010	18.318	ContLin	4.66E-03	2.33E-03
C-110	0.000	0.010	18.318	ContLin	1.71E-03	8.57E-04
C-111	0.000	0.010	18.318	ContLin	5.26E-03	2.63E-03
C-112	0.000	0.010	18.318	ContLin	3.48E-03	1.74E-03
C-201	0.000	0.010	18.318	ContLin	1.73E-02	8.65E-03
C-202	0.000	0.010	18.318	ContLin	1.73E-02	8.63E-03
C-203	0.000	0.010	18.318	ContLin	7.79E-03	3.89E-03
C-204	0.000	0.010	18.318	ContLin	7.79E-03	3.89E-03
S-101	0.000	0.010	18.318	ContLin	1.59E-03	7.93E-04
S-102	0.288	0.347	1.624	Normal	1.64E-03	8.19E-04
S-103	0.000	0.010	18.318	ContLin	1.63E-03	8.16E-04
S-104	0.000	0.010	18.318	ContLin	1.35E-03	6.75E-04
S-105	0.000	0.010	18.318	ContLin	1.10E-03	5.49E-04
S-106	0.067	0.094	0.520	Normal	9.80E-04	4.90E-04
S-107	0.000	0.010	18.318	ContLin	1.22E-03	6.10E-04
S-108	0.000	0.010	18.318	ContLin	8.32E-04	4.16E-04
S-109	0.000	0.010	18.318	ContLin	8.39E-04	4.19E-04
S-110	0.000	0.010	18.318	ContLin	1.29E-03	6.45E-04
S-111	0.285	0.355	1.603	Normal	1.12E-03	5.62E-04
S-112	0.000	0.010	18.318	ContLin	2.18E-03	1.09E-03
SX-101	0.000	0.010	18.318	ContLin	1.45E-03	7.23E-04
SX-102	0.000	0.010	18.318	ContLin	3.44E-03	1.72E-03
SX-103	0.000	0.010	18.318	ContLin	1.23E-02	6.17E-03
SX-104	0.000	0.010	18.318	ContLin	3.72E-03	1.86E-03
SX-105	0.000	0.010	18.318	ContLin	2.12E-02	1.06E-02

Table A-7. Input Data. (7 sheets)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev (%)**	**Retained gas composition NH_3 minimum (%)**	**Retained gas composition NH_3 maximum (%)**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste (moles/m^3/day)**	**Hydrogen generation rate in non-convective waste uncertainty (moles/m^3/day)**
SX-106	1.255	1.790	6.805	Normal	1.51E-03	7.56E-04
SX-107	0.000	0.010	18.318	ContLin	3.62E-03	1.81E-03
SX-108	0.000	0.010	18.318	ContLin	5.03E-03	2.52E-03
SX-109	0.000	0.010	18.318	ContLin	6.89E-03	3.45E-03
SX-110	0.000	0.010	18.318	ContLin	1.31E-02	6.55E-03
SX-111	0.000	0.010	18.318	ContLin	3.93E-03	1.97E-03
SX-112	0.000	0.010	18.318	ContLin	3.94E-03	1.97E-03
SX-113	0.000	0.010	18.318	ContLin	1.30E-02	6.51E-03
SX-114	0.000	0.010	18.318	ContLin	2.80E-03	1.40E-03
SX-115	0.000	0.010	18.318	ContLin	7.27E-02	3.63E-02
SY-101	2.987	3.274	15.767	Normal	1.95E-03	9.74E-04
SY-102	2.987	3.274	15.767	Normal	2.21E-03	1.10E-03
SY-103	0.000	0.010	18.318	ContLin	1.93E-03	9.65E-04
T-101	0.000	0.010	18.318	ContLin	2.99E-03	1.50E-03
T-102	0.000	0.010	18.318	ContLin	1.28E-02	6.41E-03
T-103	0.000	0.010	18.318	ContLin	1.09E-02	5.45E-03
T-104	0.000	0.010	18.318	ContLin	1.15E-03	5.73E-04
T-105	0.000	0.010	18.318	ContLin	2.84E-03	1.42E-03
T-106	0.000	0.010	18.318	ContLin	1.13E-02	5.63E-03
T-107	0.000	0.010	18.318	ContLin	1.80E-03	9.02E-04
T-108	0.000	0.010	18.318	ContLin	1.52E-02	7.61E-03
T-109	0.000	0.010	18.318	ContLin	4.17E-03	2.09E-03
T-110	0.000	0.010	18.318	ContLin	1.09E-03	5.46E-04
T-111	0.000	0.010	18.318	ContLin	9.34E-04	4.67E-04
T-112	0.000	0.010	18.318	ContLin	4.33E-03	2.16E-03
T-201	0.000	0.010	18.318	ContLin	2.00E-03	9.99E-04
T-202	0.000	0.010	18.318	ContLin	2.23E-03	1.11E-03

Table A-7. Input Data. (7 sheets)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev (%)**	**Retained gas composition NH_3 minimum (%)**	**Retained gas composition NH_3 maximum (%)**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste (moles/m^3/day)**	**Hydrogen generation rate in non-convective waste uncertainty (moles/m^3/day)**
T-203	0.000	0.010	18.318	ContLin	1.90E-03	9.48E-04
T-204	0.000	0.010	18.318	ContLin	1.90E-03	9.50E-04
TX-101	0.000	0.010	18.318	ContLin	3.75E-03	1.87E-03
TX-102	0.000	0.010	18.318	ContLin	1.62E-03	8.11E-04
TX-103	0.000	0.010	18.318	ContLin	2.14E-03	1.07E-03
TX-104	0.000	0.010	18.318	ContLin	4.07E-03	2.03E-03
TX-105	0.000	0.010	18.318	ContLin	9.13E-04	4.57E-04
TX-106	0.000	0.010	18.318	ContLin	1.25E-03	6.24E-04
TX-107	0.000	0.010	18.318	ContLin	8.50E-03	4.25E-03
TX-108	0.000	0.010	18.318	ContLin	2.25E-03	1.13E-03
TX-109	0.000	0.010	18.318	ContLin	1.06E-03	5.31E-04
TX-110	0.000	0.010	18.318	ContLin	9.51E-04	4.76E-04
TX-111	0.000	0.010	18.318	ContLin	1.09E-03	5.45E-04
TX-112	0.000	0.010	18.318	ContLin	8.08E-04	4.04E-04
TX-113	0.000	0.010	18.318	ContLin	7.84E-04	3.92E-04
TX-114	0.000	0.010	18.318	ContLin	8.35E-04	4.18E-04
TX-115	0.000	0.010	18.318	ContLin	8.41E-04	4.20E-04
TX-116	0.000	0.010	18.318	ContLin	7.76E-04	3.88E-04
TX-117	0.000	0.010	18.318	ContLin	8.71E-04	4.36E-04
TX-118	0.000	0.010	18.318	ContLin	1.49E-03	7.46E-04
TY-101	0.000	0.010	18.318	ContLin	2.37E-03	1.19E-03
TY-102	0.000	0.010	18.318	ContLin	3.85E-03	1.93E-03
TY-103	0.000	0.010	18.318	ContLin	2.39E-03	1.20E-03
TY-104	0.000	0.010	18.318	ContLin	5.91E-03	2.95E-03
TY-105	0.000	0.010	18.318	ContLin	1.50E-03	7.48E-04
TY-106	0.000	0.010	18.318	ContLin	1.48E-02	7.39E-03
U-101	0.000	0.010	18.318	ContLin	1.06E-02	5.29E-03

Table A-7. Input Data. (7 sheets)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev (%)**	**Retained gas composition NH_3 minimum (%)**	**Retained gas composition NH_3 maximum (%)**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste (moles/m^3/day)**	**Hydrogen generation rate in non-convective waste uncertainty (moles/m^3/day)**
U-102	0.000	0.010	18.318	ContLin	2.17E-03	1.08E-03
U-103	0.156	0.246	0.963	Normal	2.11E-03	1.05E-03
U-104	0.000	0.010	18.318	ContLin	2.83E-03	1.42E-03
U-105	0.000	0.010	18.318	ContLin	1.84E-03	9.21E-04
U-106	0.000	0.010	18.318	ContLin	3.99E-03	1.99E-03
U-107	0.000	0.010	18.318	ContLin	1.14E-03	5.69E-04
U-108	0.000	0.010	18.318	ContLin	1.41E-03	7.05E-04
U-109	0.328	0.354	1.812	Normal	1.48E-03	7.42E-04
U-110	0.000	0.010	18.318	ContLin	1.84E-03	9.19E-04
U-111	0.000	0.010	18.318	ContLin	1.34E-03	6.71E-04
U-112	0.000	0.010	18.318	ContLin	5.65E-03	2.82E-03
U-201	0.000	0.010	18.318	ContLin	5.65E-03	2.82E-03
U-202	0.000	0.010	18.318	ContLin	6.30E-03	3.15E-03
U-203	0.000	0.010	18.318	ContLin	6.30E-03	3.15E-03
U-204	0.000	0.010	18.318	ContLin	7.18E-03	3.59E-03

APPENDIX B

INPUT DATA SOURCE

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Table B-1. Input Data Sources (7 pages)
(References Presented in Table B-8)

Tank #	Tank Type	Total waste depth	Total waste depth uncertainty	Total non-convective waste depth	Total non-convective waste depth uncertainty	Total non-convective waste depth lower bound	Wetted non-convective waste depth	Wetted non-convective waste depth uncertainty	Wetted non-convective waste depth lower bound
A-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
A-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
A-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
A-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
A-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
A-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AN-101	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AN-102	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AN-103	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AN-104	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AN-105	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AN-106	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AN-107	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-101	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-102	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-103	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-104	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-105	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-106	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-107	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AP-108	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AW-101	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AW-102	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AW-103	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AW-104	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AW-105	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AW-106	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption

Table B-1. Input Data Sources (7 pages)
(References Presented in Table B-8)

Tank #	Tank Type	Total waste depth	Total waste depth uncertainty	Total non-convective waste depth	Total non-convective waste depth uncertainty	Total non-convective waste depth lower bound	Wetted non-convective waste depth	Wetted non-convective waste depth uncertainty	Wetted non-convective waste depth lower bound
AX-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AX-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AX-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AX-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AY-101	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AY-102	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AZ-101	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
AZ-102	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-201	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-202	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-203	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
B-204	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption

Table B-1. Input Data Sources (7 pages)
(References Presented in Table B-8)

Tank #	Tank Type	Total waste depth	Total waste depth uncertainty	Total non-convective waste depth	Total non-convective waste depth uncertainty	Total non-convective waste depth lower bound	Wetted non-convective waste depth	Wetted non-convective waste depth uncertainty	Wetted non-convective waste depth lower bound
BX-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BX-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
BY-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption

Table B-1. Input Data Sources (7 pages)
(References Presented in Table B-8)

Tank #	Tank Type	Total waste depth	Total waste depth uncertainty	Total non-convective waste depth	Total non-convective waste depth uncertainty	Total non-convective waste depth lower bound	Wetted non-convective waste depth	Wetted non-convective waste depth uncertainty	Wetted non-convective waste depth lower bound
C-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-201	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-202	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-203	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
C-204	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
S-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption

Table B-1. Input Data Sources (7 pages)
(References Presented in Table B-8)

Tank #	Tank Type	Total waste depth	Total waste depth uncertainty	Total non-convective waste depth	Total non-convective waste depth uncertainty	Total non-convective waste depth lower bound	Wetted non-convective waste depth	Wetted non-convective waste depth uncertainty	Wetted non-convective waste depth lower bound
SX-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-113	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-114	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SX-115	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SY-101	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SY-102	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
SY-103	DST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-201	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-202	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption

Table B-1. Input Data Sources (7 pages)
(References Presented in Table B-8)

Tank #	Tank Type	Total waste depth	Total waste depth uncertainty	Total non-convective waste depth	Total non-convective waste depth uncertainty	Total non-convective waste depth lower bound	Wetted non-convective waste depth	Wetted non-convective waste depth uncertainty	Wetted non-convective waste depth lower bound
T-203	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
T-204	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-113	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-114	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-115	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-116	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-117	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TX-118	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TY-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TY-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TY-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TY-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TY-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
TY-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-101	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption

Table B-1. Input Data Sources (7 pages)
(References Presented in Table B-8)

Tank #	Tank Type	Total waste depth	Total waste depth uncertainty	Total non-convective waste depth	Total non-convective waste depth uncertainty	Total non-convective waste depth lower bound	Wetted non-convective waste depth	Wetted non-convective waste depth uncertainty	Wetted non-convective waste depth lower bound
U-102	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-103	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-104	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-105	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-106	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-107	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-108	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-109	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-110	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-111	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-112	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-201	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-202	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-203	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption
U-204	SST	Calc	Ref 1	Ref 7	Ref 1	Boundary Assumption	Ref 7	Ref 1	Boundary Assumption

Table B-2. Input Data Sources (7 pages)
(References Presented in Table B-8)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth**	**Convective waste depth uncertainty**	**Crust depth**	**Non-convective waste density**	**Non-convective waste density std dev**	**Non-convective waste density minimum**	**Non-convective waste density maximum**	**Convective waste density**	**Convective waste density std dev**
A-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
A-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
A-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
A-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
A-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
A-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AN-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AN-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AN-103	Ref 7	Ref 1	Ref 8	Ref 7	Ref 8	calc	calc	Ref 7	Ref 8
AN-104	Ref 7	Ref 1	Ref 8	Ref 7	Ref 8	calc	calc	Ref 7	Ref 8
AN-105	Ref 7	Ref 1	Ref 8	Ref 7	Ref 8	calc	calc	Ref 7	Ref 8
AN-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AN-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AP-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AW-101	Ref 7	Ref 1	Ref 8	Ref 7	Ref 8	calc	calc	Ref 7	Ref 8
AW-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AW-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AW-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AW-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AW-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na

Table B-2. Input Data Sources (7 pages)
(References Presented in Table B-8)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth**	**Convective waste depth uncertainty**	**Crust depth**	**Non-convective waste density**	**Non-convective waste density std dev**	**Non-convective waste density minimum**	**Non-convective waste density maximum**	**Convective waste density**	**Convective waste density std dev**
AX-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AX-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AX-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AX-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AY-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AY-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AZ-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
AZ-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-201	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-202	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-203	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
B-204	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na

Table B-2. Input Data Sources (7 pages)
(References Presented in Table B-8)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth**	**Convective waste depth uncertainty**	**Crust depth**	**Non-convective waste density**	**Non-convective waste density std dev**	**Non-convective waste density minimum**	**Non-convective waste density maximum**	**Convective waste density**	**Convective waste density std dev**
BX-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BX-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
BY-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na

Table B-2. Input Data Sources (7 pages)
(References Presented in Table B-8)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth**	**Convective waste depth uncertainty**	**Crust depth**	**Non-convective waste density**	**Non-convective waste density std dev**	**Non-convective waste density minimum**	**Non-convective waste density maximum**	**Convective waste density**	**Convective waste density std dev**
C-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-201	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-202	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-203	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
C-204	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
S-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na

Table B-2. Input Data Sources (7 pages)
(References Presented in Table B-8)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth**	**Convective waste depth uncertainty**	**Crust depth**	**Non-convective waste density**	**Non-convective waste density std dev**	**Non-convective waste density minimum**	**Non-convective waste density maximum**	**Convective waste density**	**Convective waste density std dev**
SX-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-113	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-114	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SX-115	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SY-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SY-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
SY-103	Ref 7	Ref 1	Ref 8	Ref 7	Ref 8	calc	calc	Ref 7	Ref 8
T-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-201	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-202	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na

Table B-2. Input Data Sources (7 pages)
(References Presented in Table B-8)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth**	**Convective waste depth uncertainty**	**Crust depth**	**Non-convective waste density**	**Non-convective waste density std dev**	**Non-convective waste density minimum**	**Non-convective waste density maximum**	**Convective waste density**	**Convective waste density std dev**
T-203	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
T-204	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-113	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-114	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-115	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-116	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-117	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TX-118	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TY-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TY-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TY-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TY-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TY-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
TY-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-101	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na

Table B-2. Input Data Sources (7 pages)
(References Presented in Table B-8)

	11	12	13	14	15	16	17	18	19
Tank	**Convective waste depth**	**Convective waste depth uncertainty**	**Crust depth**	**Non-convective waste density**	**Non-convective waste density std dev**	**Non-convective waste density minimum**	**Non-convective waste density maximum**	**Convective waste density**	**Convective waste density std dev**
U-102	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-103	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-104	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-105	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-106	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-107	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-108	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-109	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-110	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-111	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-112	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-201	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-202	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-203	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na
U-204	Ref 7	Ref 1	na	Ref 7	na	calc	calc	Ref 7	na

Table B-3. Input Data Sources (6 sheets)
(References Presented in Table B-8)

	20	21	22	23	24	25	26	27	28	29	30
Tank	**Convective waste density minimum**	**Convective waste density maximum**	**Non-convective waste average temperature**	**Tank vapor space average temperature**	**Tank type group**	**Total tank volume**	**Tank operating capacity**	**Dish type**	**Dish height**	**Dish volume**	**Tank capacity**
A-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
A-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
A-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
A-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
A-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
A-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AN-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AN-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AN-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AN-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AN-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AN-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AN-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AP-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AW-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AW-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AW-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AW-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AW-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AW-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AX-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AX-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AX-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2

Table B-3. Input Data Sources (6 sheets)
(References Presented in Table B-8)

	20	21	22	23	24	25	26	27	28	29	30
Tank	**Convective waste density minimum**	**Convective waste density maximum**	**Non-convective waste average temperature**	**Tank vapor space average temperature**	**Tank type group**	**Total tank volume**	**Tank operating capacity**	**Dish type**	**Dish height**	**Dish volume**	**Tank capacity**
AX-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AY-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AY-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AZ-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
AZ-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-201	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-202	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-203	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
B-204	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2

Table B-3. Input Data Sources (6 sheets)
(References Presented in Table B-8)

	20	21	22	23	24	25	26	27	28	29	30
Tank	**Convective waste density minimum**	**Convective waste density maximum**	**Non-convective waste average temperature**	**Tank vapor space average temperature**	**Tank type group**	**Total tank volume**	**Tank operating capacity**	**Dish type**	**Dish height**	**Dish volume**	**Tank capacity**
BX-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BX-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
BY-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-201	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-202	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
C-203	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2

Table B-3. Input Data Sources (6 sheets)
(References Presented in Table B-8)

	20	21	22	23	24	25	26	27	28	29	30
Tank	**Convective waste density minimum**	**Convective waste density maximum**	**Non-convective waste average temperature**	**Tank vapor space average temperature**	**Tank type group**	**Total tank volume**	**Tank operating capacity**	**Dish type**	**Dish height**	**Dish volume**	**Tank capacity**
C-204	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
S-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-113	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-114	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SX-115	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SY-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
SY-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2

Table B-3. Input Data Sources (6 sheets)
(References Presented in Table B-8)

	20	21	22	23	24	25	26	27	28	29	30
Tank	**Convective waste density minimum**	**Convective waste density maximum**	**Non-convective waste average temperature**	**Tank vapor space average temperature**	**Tank type group**	**Total tank volume**	**Tank operating capacity**	**Dish type**	**Dish height**	**Dish volume**	**Tank capacity**
SY-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-201	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-202	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-203	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
T-204	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-113	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2

Table B-3. Input Data Sources (6 sheets)
(References Presented in Table B-8)

	20	21	22	23	24	25	26	27	28	29	30
Tank	**Convective waste density minimum**	**Convective waste density maximum**	**Non-convective waste average temperature**	**Tank vapor space average temperature**	**Tank type group**	**Total tank volume**	**Tank operating capacity**	**Dish type**	**Dish height**	**Dish volume**	**Tank capacity**
TX-114	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-115	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-116	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-117	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TX-118	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TY-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TY-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TY-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TY-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TY-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
TY-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-101	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-102	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-103	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-104	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-105	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-106	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-107	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-108	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-109	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-110	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-111	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-112	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-201	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-202	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-203	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2
U-204	calc	calc	Ref 6	Ref 6	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2	Ref 2

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
A-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
A-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
A-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
A-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
A-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
A-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AN-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AN-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AN-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AN-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AN-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AN-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AN-107	Ref 9	Ref 9	Ref 9	Ref 9	Ref 9	Ref 5	Ref 5	Ref 5	Ref 3
AP-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AP-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AP-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AP-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AP-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AP-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AP-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AP-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AW-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AW-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AW-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
AW-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AW-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AW-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AX-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AX-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AX-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AX-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AY-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AY-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AZ-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
AZ-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-201	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
B-202	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-203	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
B-204	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BX-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
BY-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
BY-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-201	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-202	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-203	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
C-204	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
S-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
S-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-113	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-114	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SX-115	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
SY-101	Ref 9	Ref 9	Ref 9	Ref 9	Ref 9	Ref 5	Ref 5	Ref 5	Ref 3
SY-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
SY-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-201	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-202	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-203	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
T-204	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
TX-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-113	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-114	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-115	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-116	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-117	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TX-118	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TY-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TY-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TY-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TY-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TY-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
TY-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-101	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-102	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-103	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-104	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-105	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-106	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-107	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-4. Input Data Sources (8 pages)
(References Presented in Table B-8)

	31	32	33	34	35	36	37	38	39
Tank	**Void fraction or maximum wetted solids void fraction**	**Void fraction or maximum wetted solids void fraction mean**	**Void fraction or maximum wetted solids void fraction uncertainty**	**Void fraction or maximum wetted solids void fraction minimum**	**Void fraction or maximum wetted solids void fraction maximum**	**Non-convective waste yield stress minimum**	**Non-convective waste yield stress maximum**	**Non-convective waste yield stress distribution type**	**Headspace gas ratio CH_4 distribution Mean**
U-108	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-109	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-110	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-111	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-112	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-201	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-202	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-203	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3
U-204	Ref 4	Ref 4	Ref 4	Ref 4	Ref 4	Ref 5	Ref 5	Ref 5	Ref 3

Table B-5. Input Data Sources (7 pages)
(References Presented in Table B-8)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 *mean***	**Headspace gas ratio CH_4 *std dev***	**Headspace gas ratio CH_4 *minimum***	**Headspace gas ratio CH_4 *maximum***	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O *minimum***	**Headspace gas ratio N_2O *maximum***
A-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-5. Input Data Sources (7 pages)
(References Presented in Table B-8)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
AX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AZ-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AZ-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-5. Input Data Sources (7 pages)
(References Presented in Table B-8)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
BX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-5. Input Data Sources (7 pages)
(References Presented in Table B-8)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
C-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-5. Input Data Sources (7 pages)
(References Presented in Table B-8)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
SX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-113	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-114	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-115	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-5. Input Data Sources (7 pages)
(References Presented in Table B-8)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
T-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-113	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-114	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-115	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-116	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-117	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-118	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-5. Input Data Sources (7 pages)
(References Presented in Table B-8)

	40	41	42	43	44	45	46	47	48	49
Tank	**Headspace gas ratio CH_4 mean**	**Headspace gas ratio CH_4 std dev**	**Headspace gas ratio CH_4 minimum**	**Headspace gas ratio CH_4 maximum**	**Headspace gas ratio CH_4 distribution type**	**Headspace gas ratio N_2O distribution Mean**	**Headspace gas ratio N_2O mean**	**Headspace gas ratio N_2O std dev**	**Headspace gas ratio N_2O minimum**	**Headspace gas ratio N_2O maximum**
U-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 distribution Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean**
A-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
A-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AN-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AP-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 distribution Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean**
AW-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AW-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AZ-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
AZ-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O *distribution* type**	**Retained gas composition N_2 *distribution* Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 *distribution* type**	**Retained gas composition NH_3 *distribution* Mean**	**Retained gas composition NH_3 mean**
B-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
B-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 distribution Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean**
BY-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
BY-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
C-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 distribution Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean**
S-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
S-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-113	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-114	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SX-115	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
SY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 distribution Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean**
SY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
T-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 distribution Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean**
TX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-113	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-114	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-115	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-116	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-117	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TX-118	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
TY-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-6. Input Data Sources (8 pages)
(References Presented in Table B-8)

	50	51	52	53	54	55	56	57	58
Tank	**Headspace gas ratio N_2O distribution type**	**Retained gas composition N_2 distribution Mean**	**Retained gas composition N_2 mean**	**Retained gas composition N_2 std dev**	**Retained gas composition N_2 minimum**	**Retained gas composition N_2 maximum**	**Retained gas composition N_2 distribution type**	**Retained gas composition NH_3 distribution Mean**	**Retained gas composition NH_3 mean**
U-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3
U-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3	Ref 3

Table B-7. Input Data Sources (7 pages)
(References Presented in Table B-8)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev**	**Retained gas composition NH_3 minimum**	**Retained gas composition NH_3 maximum**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste**	**Hydrogen generation rate in non-convective waste uncertainty**
A-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
A-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
A-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
A-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
A-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
A-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AN-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AN-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AN-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AN-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AN-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AN-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AN-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AP-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AW-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AW-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AW-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AW-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AW-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AW-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc

Table B-7. Input Data Sources (7 pages)
(References Presented in Table B-8)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev**	**Retained gas composition NH_3 minimum**	**Retained gas composition NH_3 maximum**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste**	**Hydrogen generation rate in non-convective waste uncertainty**
AX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AZ-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
AZ-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
B-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc

Table B-7. Input Data Sources (7 pages)
(References Presented in Table B-8)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev**	**Retained gas composition NH_3 minimum**	**Retained gas composition NH_3 maximum**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste**	**Hydrogen generation rate in non-convective waste uncertainty**
BX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
BY-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc

Table B-7. Input Data Sources (7 pages)
(References Presented in Table B-8)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev**	**Retained gas composition NH_3 minimum**	**Retained gas composition NH_3 maximum**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste**	**Hydrogen generation rate in non-convective waste uncertainty**
C-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
C-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
S-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc

Table B-7. Input Data Sources (7 pages)
(References Presented in Table B-8)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev**	**Retained gas composition NH_3 minimum**	**Retained gas composition NH_3 maximum**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste**	**Hydrogen generation rate in non-convective waste uncertainty**
SX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-113	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-114	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SX-115	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
SY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc

Table B-7. Input Data Sources (7 pages)
(References Presented in Table B-8)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev**	**Retained gas composition NH_3 minimum**	**Retained gas composition NH_3 maximum**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste**	**Hydrogen generation rate in non-convective waste uncertainty**
T-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
T-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-113	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-114	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-115	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-116	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-117	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TX-118	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TY-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TY-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TY-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TY-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TY-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
TY-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-101	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc

Table B-7. Input Data Sources (7 pages)
(References Presented in Table B-8)

	59	60	61	62	63	64
Tank	**Retained gas composition NH_3 std dev**	**Retained gas composition NH_3 minimum**	**Retained gas composition NH_3 maximum**	**Retained gas composition NH_3 distribution type**	**Hydrogen generation rate in non-convective waste**	**Hydrogen generation rate in non-convective waste uncertainty**
U-102	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-103	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-104	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-105	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-106	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-107	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-108	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-109	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-110	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-111	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-112	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-201	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-202	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-203	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc
U-204	Ref 3	Ref 3	Ref 3	Ref 3	Ref 6	Calc

Table B-8. Input Data Source Key.

Boundary Assumption	Assumed value to constrain lognormal distribution so that minimums do not go less than zero or greater than 6 sigma. Required due to nature of lognormal distributions.
Calc	Calculated value
na	Not applicable
Ref 1	Willmarth, S. L., Jan 16, 2002, Personal Email to S. A. Barker, CH2MHILL Hanford Group, Inc., Richland, WA.
Ref 2	Hendershot, R., 1999, "Tank Volume Adjustments", 74B40-99-116, CH2MHILL Hanford Group, Inc., Richland, WA.
Ref 3	Appendix J – Derivation Of Retained Gas Compositions
Ref 4	Appendix K – Derivation Of Void Fraction
Ref 5	Wells, B. E., Jan 24, 2002, Personal Email to S. A. Barker, Pacific Northwest National Laboratory, Richland, WA
Ref 6	Hu, T. A., and S. A. Barker, 2002, "Steady-State Flammble Gas Release Rate Calculation and Lower Flammability Level Evaluation for Hanford Tank Waste", RPP-5926, Rev 2, CH2MHILL Hanford Group, Inc., Richland, WA.
Ref 7	CHG, 2001a, Best Basis Inventory, [database accessed November 15, 2001], internet address: http://twins.pnl.gov:8001.
Ref 8	Hedengren, D. C., K. M. Hodgson, W. B. Barton, C. W. Stewart (PNNL), J. M. Cuta (PNNL), and B. E. Wells (PNNL), 2000, "Data Observations On Double-Shell Flammable Gas Watchlist Tank Behavior", RPP-6655, Rev 0, CH2MHILL Hanford Group, Inc., Richland, WA.
Ref 9	Wells, B. E., 2002b, "*Investigation of Gas Retention and Release Issues in Tanks AN-107 and SY-101 Supporting Waste Group Determination*", TWS02.025, Pacific Northwest National Laboratory, Richland, Washington.

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APPENDIX C

CALCULATION MODEL

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Calculation Review Checklist.

Calculation Reviewed: Calculation Model for Assignment of Waste Groups

Scope of Review: Appendix C Monte Carlo Simulation was not reproduced.
(e.g., document section or portion of calculation)

Engineer/Analyst: Steven A. Barker Date: 8/28/03

Organizational Mgr: Ronald J. Stevens Date: 8/28/03

This document consists of 10 pages and the following attachments (if applicable):

Yes	No	NA*		
[ ]	[ ]	X	1.	Analytical and technical approaches and results are reasonable and appropriate.
[ ]	[ ]	X	2.	Necessary assumptions are reasonable, explicitly stated, and supported.
[ ]	[ ]	X	3.	Ensure calculations that use software include a paper printout, microfiche, CD ROM, or other electronic file of the input data and identification to the computer codes and versions used, or provide alternate documentation to uniquely and clearly identify the exact coding and execution process.
[ ]	[ ]	X	4.	Input data were checked for consistency with original source information.
[ ]	[ ]	X	5.	For both qualitative and quantitative data, uncertainties are recognized and discussed.
X	[ ]	[ ]	6.	Mathematical derivations were checked including dimensional consistency of results.
X	[ ]	[ ]	7.	Calculations are sufficiently detailed such that a technically qualified person can understand the analysis without requiring outside information.
[ ]	[ ]	X	8.	Software verification and validation are addressed adequately.
[ ]	[ ]	X	9.	Limits/criteria/guidelines applied to the analysis results are appropriate and referenced. Limits/criteria/guidelines were checked against references.
[ ]	[ ]	X	10.	Conclusions are consistent with analytical results and applicable limits.
[ ]	[ ]	X	11.	Results and conclusions address all points in the purpose.
[ ]	[ ]	X	12.	Referenced documents are retrievable or otherwise available.
[ ]	[ ]	X	13.	The version or revision of each reference is cited.
[ ]	[ ]	X	14.	The document was prepared in accordance with Attachment A, "Calculation Format and Preparation Instructions."
X	[ ]	[ ]	15.	All checker comments have been dispositioned and the design media matches the calculations.

Bert E Wells 8/28/03
Checker (Printed Name and Signature) Date

* If No or NA is chosen, an explanation must be provided on or attached to this form.

NA - Not within scope of this review or not applicable to this Appendix.

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	A	B	C	D	E	F	G	H	I
2						Program Version Date:		08-Jun-03	
3								<==== Warning if Tank Goes over Operating Limit	
4						Porosity (fraction)	0.4	0.4	
5						Over Tank Limit Forecast	0	"=IF (OR (G8>G20, G84>G20, G162>G20) , 1, 0)	Mean
6	1					Tank ID	AN-107	AN - 107	
7	2					Tank Type	DST	"=VLOOKUP ($G$6, InData, $A7, FALSE)	
8	3					Total Waste Depth (m)	9.60	"= + G9 + G11 + G12	0.165
9	5	6	7			Total Non-Convective Waste Depth (m)	2.28	"= + W9	2.28
10	8	9	10			Wetted Non-Convective Waste Depth (m)	2.28	"=IF (I11>0.001, G9, IF (ZA101R1>ZA120R1, ZA120R1, ZA101R1))	2.28
11	11	12				Convective Waste Depth (m)	7.32	"= + ZA102R1	
12	13					Crust Depth (m)	0.00	"= + I12	0.00
13	14	15	16	17		Non-Convective Waste Density (kg/m³)	1,560	"=IF (G16<0.5, ZA125R1, ZA121R1)	1,560.00
14	18	19	20	21		Convective Waste Density (kg/m³)	1,370.00	"=IF ($G$16<0.5, IF ($G$13 - ZA126R1<$W$4, $G$13 - $W$4, ZA126R1) , IF ($G$13 - ZA122R1<$W$4, $G$13 - $W$4, ZA122R1))	1,370.00
15	22					Non-Convective Waste Ave Temp (K)	305	"=VLOOKUP ($G$6, InData, $A15, FALSE)	
16						Simulation Count	1	"= + W17	

	A	B	C	D	E	F	G	H	I
17	23					Tank Vapor Space Ave Temp (K)	302	"=VLOOKUP ($G$6, InData, $A17, FALSE)	
18	24					Tank Type Group	an	"=VLOOKUP ($G$6, InData, $A18, FALSE)	
19	25					Total Tank Volume (m^3)	5,337	"=VLOOKUP ($G$6, InData, $A19, FALSE)	
20	26					Tank Operating Capacity (m)	10.72	"=VLOOKUP ($G$6, InData, $A20, FALSE)	
21						Tank Vapor Space Volume (m3)	1,404	"= + G19 - G26	
22	27					dish type	flat	"=VLOOKUP ($G$6, InData, $A22, FALSE)	
23	28					Dish Height (m)	0.0000	"=VLOOKUP ($G$6, InData, $A23, FALSE)	
24	29					Dish Volume (kL)	-	"=VLOOKUP ($G$6, InData, $A24, FALSE)	
25	30					Tank Capacity (kL/m)	409.79	"=VLOOKUP ($G$6, InData, $A25, FALSE)	
26						Total Waste Volume (m^3)	3,933.86	"=IF (G8>G23, G24 + (G8 - G23) *G25, + G24*G8 / G23)	
27	31	32	33	34	35	Void Fraction (Dimensionless)	2.554495598	"=IF (Q27"="normal", + W27, IF (Q27"="Gamma", W26, + W28))	0.71
28						Neutral Buoyancy Void Fraction (na)	1.22E-01	"=IF (G13>0, 1 - (G14 / G13) , 1 - (G14 / G14 - 0.000001))	
29	36	37	38			Non-Convective Waste Yield Stress (Pa)	50.00	"= + W29	
30	39					Ave Gas Pressure in NCL Waste (atm)	2.14	"=IF (OR (G6"="A - 101", G6"="ax - 101") , 1 + (9.806 / 101325) * ((G14* (0.001)) + (0.5*G13* (2*G9 - G10))) , 1 + (9.806 / 101325) * ((G14* (G11 + G12)) + (0.5*G13* (2*G9 - G10))))	
31	40	41	42	43	44	headspace Gas Ratio CH4	1.907697262	"=IF (Q31"="normal", + W31, + W32)	0.05

	A	B	C	D	E	F	G	H	I
32	46	47	48	49	50	headspace Gas Ratio N2O	1.016311399	"=IF (Q32"="normal", + W33, + W34)	0.25
33	52	53	54	55	56	retained Gas Composition N2	29.8400	"= + W35	29.84
34	58	59	60	61	62	retained Gas Composition NH3 (%)	15	"=IF (Q34"="normal", + W37, + W38)	0.25
35						CH4 Term	-2.101688903	"= + G31 / (1 - G31)	
36						N2O Term	-62.30682011	"= + G32 / (1 - G32)	
37						Retained [H2] Calc'd (%)	0.816688598	"= (100 - (G33 + G34)) / (1 + G35 + G35*G36 + G36)	
38						Retained [CH4] Calc'd (%)	-1.716425363	"= + G37*G35	
39						Retained [N2O] Calc'd (%)	56.05973677	"= + (G37 + G38) *G36	100.00
40	63	64				HGR in NCL Waste (moles/m ^{3}/day)	4.67E-03	"= + W41	4.67E-03
41						Tank ID	AN-107	"= + G6	
42	65					Cross Sectional Area of Tank (m^2)	410.43	"=VLOOKUP ($G$6, InData, $A42, FALSE)	
43						Discounted H2 Fraction for 100% LFL (na)	0.039084387	"=0.04* (1 - G52 / 0.05 - G53 / 0.15)	
44						Vol Gas Released (m3)	51	"=G10*G27 / 100*G42* (G30 / 1) * (G17 / G15)	
45						Gas Release for LFL (m3)	6,959.72373409	"=G47* (G43 / (G37 / 100))	
46						Wncl Depth Criterion	137.3003936	"= + G45 / G44	

	A	B	C	D	E	F	G	H	I
47						Vol Headspace After Release (m3)	1,454	"=IF (G11>2, + G21 + G44, G21)	
48						Vol H2 Released (m3)	0.4	"= + G44*G37 / 100	
49						Vol CH4 Released (m3)	(0.87)	"= + G44*G38 / 100	
50						Vol NH3 Released (m3)	7.60	"= + G44*G34 / 100	
51						Headspace [H2] (%)	0.0003	"= + G48 / G$47	
52						Headspace [CH4] (%)	(0.0006)	"= + G49 / G$47	
53						Headspace [NH3] (%)	0.0052	"= + G50 / G$47	
54						Headspace [H2] (%LFL)	0.71%	"= + G51 / 0.04	
55						Headspace [CH4] (%LFL)	-1.20%	"= + G52 / 0.05	
56						Headspace [NH3] (%LFL)	3.49%	"= + G53 / 0.15	
57						Headspace Flam Gas Conc (%LFL)	3.0007%	"= + G51 / 0.04 + G52 / 0.05 + G53 / 0.15	
58						Waste Category	3	"=IF (G57<1, 3, IF (G11<0.01, 2, IF (G61<3, 2, IF (G64<1, 2, 1))))	
59	1					Tank ID	AN-107	"=VLOOKUP ($G$6, InData, $A59, FALSE)	
60						Gamma for Energy Ratio Calc (na)	0.97	"=IF (OR (G6"="A - 101", G6"="AX - 101") , G14*9.806*0.001 / 101325, IF (G11>0, G14*9.806*G11 / 101325, 0.000000001))	
61						Energy Ratio (Dimensionless)	102.92547	"=G28*G60*101325 / (1 - G28) / G29* ((1 + 1 / G60) *LN (1 + G60) - 1)	

	A	B	C	D	E	F	G	H	I
62						Waste Ave Specific Gravity (na)	1.42	"= (G13*G9 + G14*G11) / G8 / 1000	
63						"Specific Gravity (CL)" X "NCL Depth" (in)	122.87	"= (G14 / 1000) * (G10*39.37)	
64						Buoyancy Ratio (Dimensionless)	3.387	"= (+ W3) / (G13 - G14) * (((G40 / (G37 / 100)) *G15 / (G30*101325)) ^ (1 / 3)) *G10*G10	
65						Special Buoyancy Test	1	"=IF (AND (G64>1, G61>3) , 1, 0)	
66									
67									
68						Water Addition Case			
69									
70	1					Tank ID	AN-107	"= + G6	
71	2					Tank Type	DST	"=VLOOKUP ($G$6, InData, $A71, FALSE)	
72						WA - Liquid Added (gallons)	10,000	10000	
73						WA - Liquid Density (kg/m3)	1,000.00	"=IF (+ G90<1, 1, G90)	
74						WA - Liquid added (kL)	37.85	"= + G72*0.003785411784	
75						WA - Void Fraction	0.025544956	"= + $G$27 / 100	
76						WA - Possible change in height of wetted solids (m)	0.23	"= (+ G74 / $G$25) / ($G$4)	

	A	B	C	D	E	F	G	H	I
77						WA - Total Non-Convective Waste Depth (m)	2.28	"= + G9	
78						WA - Wetted Non-Convective Waste Depth Before WA (m)	2.28	"= + G10	
79						WA - Convective Waste Depth (m)	7.32	"= + G11	
80						WA - Revised Wetted Non-Convective Waste Depth (m)	2.28	"=IF (G78 + G76>G77, G77, G78 + G76)	
81						WA - Liquid remaining after wetting solids (kL)	37.86	"=+G74-(G80-G78)*G100*G4	11,380.31
82						WA - Liquid remaining after wetting solids (m)	0.092	"= + G81 / $G$25	
83						WA - Revised Convective Waste Depth (m)	7.41	"= + G79 + G82	
84	3					WA - Total Waste Depth (m)	9.69	"=G85 + G87 + G88	
85	5	6	7			WA - Total Non-Convective Waste Depth (m)	2.28	"= + G9	2.28
86	8	9	10			WA - Wetted Non-Convective Waste Depth (m)	2.28	"= + G80	2.28
87	11	12				WA - Convective Waste Depth (m)	7.41	"= + G83	7.32
88	13					WA - Crust Depth (m)	0.00	"= + I88	0.00
89	14	15	16	17		WA - Non-Convective Waste Density (kg/m3)	1,500	"= + G13	1,500.00
90	18	19	20	21		WA - Convective Waste Density (kg/m3)	1,366	"= + ((G10*(G4 - G27 / 100) + G11)*G25*G14 + G73*G74)/((G10*(G4 - G27 / 100) + G11)*G25 + G74)	1,370.00
91	22					WA - Non-Convective Waste Ave Temp (K)	305	"=VLOOKUP ($G$6, InData, $A91, FALSE)	

	A	B	C	D	E	F	G	H	I
92	23					WA - Tank Vapor Space Ave Temp (K)	302	"=VLOOKUP ($G$6, InData, $A92, FALSE)	
93	24					WA - Tank Type Group	an	"=VLOOKUP ($G$6, InData, $A93, FALSE)	
94	25					WA - Total Tank Volume (m3)	5,337	"=VLOOKUP ($G$6, InData, $A94, FALSE)	
95	26					Tank Operating Capacity (m)	10.72	"=VLOOKUP ($G$6, InData, $A95, FALSE)	
96						WA - Tank Vapor Space Volume (m3)	1,366	"= + G94 - G101	
97	27					WA - dish type	flat	"=VLOOKUP ($G$6, InData, $A97, FALSE)	
98	28					WA - Dish Height (m)	0.0000	"=VLOOKUP ($G$6, InData, $A98, FALSE)	
99	29					WA - Dish Volume (kL)	-	"=VLOOKUP ($G$6, InData, $A99, FALSE)	
100	30					WA - Tank Capacity (kL/m)	409.79	"=VLOOKUP ($G$6, InData, $A100, FALSE)	
101						WA - Total Waste Volume (m3)	3,971.72	"=IF (G84>G96, G99 + (G84 - G98) *G100, + G99*G84 / G98)	
102	31	32	33	34	35	WA - Void Fraction (Dimensionless)	2.554495598	"= + G27	0.71
103						WA - Neutral Buoyancy Void Fraction (na)	0.12	"=IF (G89>0, 1 - (G90 / G89) , 1 - (G90 / G90 - 0.000001))	
104	36	37	38			WA - Non-Convective Waste Yield Stress (Pa)	50.00	"= + G29	
105						WA - Ave Gas Pressure in NCL Waste (atm)	2.15	"=IF (OR (G70"="A - 101", G70"="ux - 101") , 1 + (9.806 / 101325) * ((G90* (0.001)) + (0.5*G89* (2*G85 - G86))) , 1 + (9.806 / 101325) * ((G90* (G87 + G88)) + (0.5*G89* (2*G85 - G86))))	
106	40	41	42	43	44	WA - headspace Gas Ratio CH4	1.907697262	"= + G31	0.05

	A	B	C	D	E	F	G	H	I
107	46	47	48	49	50	WA - headspace Gas Ratio N2O	1.016311399	"= + G32	0.25
108	52	53	54	55	56	WA - retained Gas Composition N2	29.8400	"= + G33	29.84
109	58	59	60	61	62	WA - retained Gas Composition NH3 (%)	15	"= + G34	0.25
110						WA - CH4 Term	-2.101688903	"= + G35	
111						WA - N2O Term	-62.30682011	"= + G36	
112						WA - Retained [H2] Calc'd (%)	0.816688598	"= + G37	
113						WA - Retained [CH4] Calc'd (%)	-1.718425363	"= + G38	
114						WA - Retained [N2O] Calc'd (%)	56.05973677	"= + G39	
115	63	64				WA - HGR in NCL Waste (moles/m3/day)	4.67E-03	"= + G40	0.00
116	1					WA - Tank ID	AN-107	"=VLOOKUP ($G$6, InData, $A116)	
117	65					WA - Cross Sectional Area of Tank (m2)	410.43	"=VLOOKUP ($G$6, InData, $A117, FALSE)	
118						WA - Discounted H2 Fraction for 100% LFL (na)	0.039080421	"=0.04* (1 - G127 / 0.05 - G128 / 0.15)	
119						WA - Vol Gas Released (m3)	51	"=G86*G102 / 100*G117* (G105 / 1) * (G92 / G91)	
120						WA - Gas Release for LFL (m3)	6,778.9275	"=G122* (G118 / (G112 / 100))	
121						WA - Wnd Depth Criterion	133.1569078	"= + G120 / G119	

	A	B	C	D	E	F	G	H	I
122						WA - Vol Headspace After Release (m3)	1,417	"=IF (G71"="DST", + G96 + G119, G96)	
123						WA - Vol H2 Released (m3)	0.4	"= + G119*G112 / 100	
124						WA - Vol CH4 Released (m3)	(0.87)	"= + G119*G113 / 100	
125						WA - Vol NH3 Released (m3)	7.64	"= + G119*G109 / 100	
126						WA - Headspace [H2] (%)	0.0003	"= + G123 / G$47	
127						WA - Headspace [CH4] (%)	(0.0006)	"= + G124 / G$47	
128						WA - Headspace [NH3] (%)	0.0053	"= + G125 / G$47	
129						WA - Headspace [H2] (%LFL)	0.007147409	"= + G126 / 0.04	
130						WA - Headspace [CH4] (%LFL)	-0.012017303	"= + G127 / 0.05	
131						WA - Headspace [NH3] (%LFL)	0.035006775	"= + G128 / 0.15	
132						WA - Headspace Flam Gas Conc (%LFL)	0.03	"= + G126 / 0.04 + G127 / 0.05 + G128 / 0.15	
133						WA - Waste Category	3	"=IF (G132<1, 3, IF (G87<0.01, 2, IF (G136<3, 2, IF (G139<1, 2, 1))))	
134	1					WA - Tank ID	AN-107	"=VLOOKUP ($G$6, InData, $A134)	
135						WA - Gamma for Energy Ratio Calc (na)	0.98	"=IF (OR (G70"="A - 101", G70"="AX - 101") , G90*9.806*0.001 / 101325, IF (G87>0, G90*9.806*G87 / 101325, 0.000000001))	
136						WA - Energy Ratio (Dimensionless)	107.30323	"=G103*G135*101325 / (1 - G103) / G104* ((1 + 1 / G135) *LN (1 + G135) - 1)	

	A	B	C	D	E	F	G	H	I
137						WA - Waste Ave Specific Gravity (na)	1.41	"= (G89*G85 + G90*G87) / G84 / 1000	
138						WA - "Specific Gravity (CL)" X "NCL Depth" (in)	122.50	"= (G90 / 1000) * (G86*39.37)	
139	1					WA - Buoyancy Ratio (Dimensionless)	3.310	"= + W3 / (G89 - G90) * (((I115 / (G112 / 100)) *G91 / (G105*101325)) ^ (1 / 3)) *G86*G86	
140									
141									
142									
143						Caustic Addition Case			
144									
145									
146									
147									
148	1					Tank ID	AN-107	"= + G6	
149	2					Tank Type	DST	"=VLOOKUP ($G$6, InData, $A149, FALSE)	
150						CA - Liquid Added (gallons)	10,000	10000	
151						CA - Liquid Density (kg/m3)	1,525	1525	

	A	B	C	D	E	F	G	H	I
152						CA - Liquid added (kL)	37.85	"= + G150*0.003785411784	
153						CA - Void Fraction	0.025544958	"= + $G$27 / 100	
154						CA - Possible change in height of wetted solids (m)	0.16	"= (+ G152 / $G$25) / (1 - $G$4) / (1 - $G$153)	
155						CA - Total Non-Convective Waste Depth (m)	2.28	"= + G9	
156						CA - Wetted Non-Convective Waste Depth Before WA (m)	2.28	"= + G10	
157						CA - Convective Waste Depth (m)	7.32	"= + G11	
158						CA - Revised Wetted Non-Convective Waste Depth (m)	2.28	"=IF (G156 + G154>G155, G155, G156 + G154)	
159						CA - Liquid remaining after wetting solids (kL)	37.85	"= + G152 - (G158 - G156) *G154	
160						CA - Liquid remaining after wetting solids (m)	0.092	"= + G159 / $G$25	
161						CA - Revised Convective Waste Depth (m)	7.41	"= + G157 + G160	
162	3					CA - Total Waste Depth (m)	9.69	"=G163 + G165 + G166	0.165
163	5	6	7			CA - Total Non-Convective Waste Depth (m)	2.28	"= + G9	2.28
164	8	9	10			CA - Wetted Non-Convective Waste Depth (m)	2.28	"= + G158	2.28
165	11	12				CA - Convective Waste Depth (m)	7.41	"= + G161	7.32
166	13					CA - Crust Depth (m)	0.00	"= + I166	0.00

	A	B	C	D	E	F	G	H	I
167	14	15	16	17		CA - Non-Convective Waste Density (kg/m3)	1,560	"= + G13	1,560.00
168	18	19	20	21		CA - Convective Waste Density (kg/m3)	1,371.93	"=IF ($G$16<0.5, IF ($G$13 - ZA127R1<$W$4, $G$13 - $W$4, ZA127R1) , IF ($G$13 - ZA123R1<$W$4, $G$13 - $W$4, ZA123R1))	1,372
169	22					CA - Non-Convective Waste Ave Temp (K)	305	"=VLOOKUP ($G$6, InData, $A169, FALSE)	
170	23					CA - Tank Vapor Space Ave Temp (K)	302	"=VLOOKUP ($G$6, InData, $A170, FALSE)	
171	24					CA - Tank Type Group	an	"=VLOOKUP ($G$6, InData, $A171, FALSE)	
172	25					CA - Total Tank Volume (m3)	5,337	"=VLOOKUP ($G$6, InData, $A172, FALSE)	
173	26					Tank Operating Capacity (m)	10.72	"=VLOOKUP ($G$6, InData, $A173, FALSE)	
174						CA - Tank Vapor Space Volume (m3)	1,366	"= + G172 - G179	
175	27					CA - dish type	flat	"=VLOOKUP ($G$6, InData, $A175, FALSE)	
176	28					CA - Dish Height (m)	0.0000	"=VLOOKUP ($G$6, InData, $A176, FALSE)	
177	29					CA - Dish Volume (kL)	-	"=VLOOKUP ($G$6, InData, $A177, FALSE)	
178	30					CA - Tank Capacity (kL/m)	409.79	"=VLOOKUP ($G$6, InData, $A178, FALSE)	
179						CA - Total Waste Volume (m3)	3,971.72	"=IF (G162>G176, G177 + (G162 - G176) *G178, + G177*G162 / G176)	
180	31	32	33	34	35	CA - Void Fraction (Dimensionless)	2.554495598	"=IF (+ G27>O180, O180, G27)	0.71
181						CA - Neutral Buoyancy Void Fraction (na)	0.1206	"=IF (G167>0, 1 - (G168 / G167) , 1 - (G168 / G168 - 0.000001))	

	A	B	C	D	E	F	G	H	I
182	36	37	38			CA - Non-Convective Waste Yield Stress (Pa)	50.00	"= + G29	
183						CA - Ave Gas Pressure in NCL Waste (atm)	2.16	=IF (OR (G164d = R * 101 ; G164d = ax * 101) ; 1 + (9.806 / 101325) * ((G168* (0.001)) + (0.5*G167* (2*G163 - G164))) , 1 + (9.806 / 101325) * ((G168* (G165 + G166)) + (0.5*G167* (2*G163 - G164))))	
184	40	41	42	43	44	CA - headspace Gas Ratio CH4	1.907697262	"= + G31	0.05
185	46	47	48	49	50	CA - headspace Gas Ratio N2O	1.018311399	"= + G32	0.25
186	52	53	54	55	56	CA - retained Gas Composition N2	29.8400	"= + G33	29.84
187	58	59	60	61	62	CA - retained Gas Composition NH3 (%)	15	"= + G34	0.25
188						CA - CH4 Term	-2.101688903	"= + G184 / (1 - G184)	
189						CA - N2O Term	-62.30682011	"= + G185 / (1 - G185)	
190						CA - Retained [H2] Calc'd (%)	0.816688598	"= + G37	
191						CA - Retained [CH4] Calc'd (%)	-1.716425363	"= + G38	
192						CA - Retained [N2O] Calc'd (%)	56.05973677	"= + G39	
193	63	64				CA - HGR in NCL Waste (moles/m3/day)	4.87E-03	"= + W41	0.00
194	1					CA - Tank ID	AN-107	"=VLOOKUP ($G$6, InData, $A194)	
195	65					CA - Cross Sectional Area of Tank (m2)	410.43	"=VLOOKUP ($G$6, InData, $A195, FALSE)	
196						CA - Discounted H2 Fraction for 100% LFL (na)	0.039076562	"=0.04* (1 - G205 / 0.05 - G206 / 0.15)	

	A	B	C	D	E	F	G	H	I
197						CA - Vol Gas Released (m3)	51	"=G164*G180 / 100*G195* (G183 / 1) * (G170 / G169)	
198						CA - Gas Release for LFL (m3)	6,779.0975	"=G200* (G196 / (G190 / 100))	
199						CA - Wncl Depth Criterion	10.71534753	"=IF (G148"="DST", + G173 + G196, G173)	
200						CA - Vol Headspace After Release (m3)	1,417	"=IF (G149"="DST", + G174 + G197, G174)	
201						CA - Vol H2 Released (m3)	0.4	"= + G197*G190 / 100	
202						CA - Vol CH4 Released (m3)	(0.88)	"= + G197*G191 / 100	
203						CA - Vol NH3 Released (m3)	7.65	"= + G197*G187 / 100	
204						CA - Headspace [H2] (%)	0.0003	"= + G201 / G$47	
205						CA - Headspace [CH4] (%)	(0.0006)	"= + G202 / G$47	
206						CA - Headspace [NH3] (%)	0.0053	"= + G203 / G$47	
207						CA - Headspace [H2] (%LFL)	0.007161856	"= + G204 / 0.04	
208						CA - Headspace [CH4] (%LFL)	-0.012041595	"= + G205 / 0.05	
209						CA - Headspace [NH3] (%LFL)	0.035077536	"= + G206 / 0.15	
210						CA - Headspace Flam Gas Conc (%LFL)	0.03	"= + G204 / 0.04 + G205 / 0.05 + G206 / 0.15	
211						CA - Waste Category	3	"=IF (G210<1, 3, IF (G165<0.01, 2, IF (G214<3, 2, IF (G217<1, 2, 1))))	

	A	B	C	D	E	F	G	H	I
212	1					CA - Tank ID	AN-107	"=VLOOKUP ($G$6, InData, $A212)	
213						CA - Gamma for Energy Ratio Calc (ne)	0.98	"=IF (OR (G148"="A - 101", G148"="AX - 101") , G168*9.806*0.001 / 101325, IF (G165>0, G168*9.806*G165 / 101325, 0.000000001))	
214						CA - Energy Ratio (Dimensionless)	104.31972	"=G181*G213*101325 / (1 - G181) / G182* ((1 + 1 / G213) *LN (1 + G213) - 1)	
215						CA - Waste Ave Specific Gravity (na)	1.42	"= (G167*G163 + G168*G165) / G162 / 1000	
216						CA - "Specific Gravity (CL)" X "NCL Depth" (in)	123.05	"= (G168 / 1000) * (G164*39.37)	
217						CA - Buoyancy Ratio (Dimensionless)	3.415	"= + W3 / (G167 - G168) * (((I193 / (G190 / 100)) *G169 / (G183*101325)) ^ (1 / 3)) *G164*G164	

	J	K	L	M
2		Copy Check:	Copy OK	
3			"=IF(OR(G8>G20,G95>G20,G185>G20),"Warning: Tank Operating Capacity Exceeded","")	
4				
5		Uncertainty		Min
6				
7				
8	"=IF(I11>0.00001,K11,K9)			
9	"=VLOOKUP($G$6,InData,$A9, FALSE)	0.17	"=VLOOKUP($G$6,InData,B9,FALSE)	0.01
10	"=VLOOKUP($G$6,InData,$A10,FALSE)	0.17	"=VLOOKUP($G$6,InData,B10,FALSE)	0.01
11	"=VLOOKUP($G$6,InData,$A11,FALSE)	0.17	"=VLOOKUP($G$6,InData,B11,FALSE)	1.00E-09
12	"=VLOOKUP($G$6,InData,$A12,FALSE)			
13	"=VLOOKUP($G$6,InData,$A13,FALSE)	0.00E+00	"=IF(VLOOKUP($G$6,InData,B13,FALSE)>0,VLOOKUP($G$6,InData,B13,FALSE),VLOOKUP($G$6,InData,A13,FALSE)*$W$2)	1,456.00
14	"=IF(VLOOKUP($G$6,InData,$A14,FALSE)>900,VLOOKUP($G$6,InData,$A14,FALSE),1000)	-	"=IF(VLOOKUP($G$6,InData,B14,FALSE)>1,VLOOKUP($G$6,InData,B14,FALSE),I14*$W$2)	1,278.67
15				
16	8.44			

	J	K	L	M
17				
18	in	m		
19	420.00	#VALUE!	#VALUE!	
20				
21	421.86	10.72		
22				
23				
24				
25				
26				
27	"=VLOOKUP($G$6,InData,$A29)	3.48	"=VLOOKUP($G$6,InData,$B27,FALSE)	0.01
28				
29				50.00
30				
31	"=VLOOKUP($G$6,InData,$A34)	0.0563	"=VLOOKUP($G$6,InData,$B31,FALSE)	0.0010

	J	K	L	M
32	"=VLOOKUP($G$6,InData,$A36)	0.18	"=VLOOKUP($G$6,InData,$B32,FALSE)	0.00
33	"=VLOOKUP($G$6,InData,$A38)	12.01	"=VLOOKUP($G$6,InData,$B33,FALSE)	4.50
34	"=VLOOKUP($G$6,InData,$A40)		"=VLOOKUP($G$6,InData,$B34,FALSE)	0.01
35				
36				
37				
38				x
39	"=+G45+G44+G43+G40+G38			
40	"=VLOOKUP($G$6,InData,$A48)	2.34E-03	"=VLOOKUP($G$6,InData,$B40,FALSE)	
41				
42				
43				
44				
45				
46				

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	J	K	L	M
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63				
64				
65				
66				
67				
68				x
69				
70				
71				
72				
73				
74				
75				
76				

	J	K	L	M
77				
78				
79				
80				
81	"=(+G98-(+G95-G107))/G94*G83			
82				
83				
84		0.165	"=IF(I87>0.00001,K87,K85)	
85	"=VLOOKUP($G$6,InData,$A96)	0.17	"=VLOOKUP($G$6,InData,B85,FALSE)	0.01
86	"=VLOOKUP($G$6,InData,$A97)	0.17	"=VLOOKUP($G$6,InData,B86,FALSE)	0.01
87	"=VLOOKUP($G$6,InData,$A98)	0.17	"=VLOOKUP($G$6,InData,B87,FALSE)	1.00E-09
88	"=VLOOKUP($G$6,InData,$A99)			
89	"=VLOOKUP($G$6,InData,$A100)	1,560.00	"=VLOOKUP($G$6,InData,$A89,FALSE)	1,456.00
90	"=IF(VLOOKUP($G$6,InData,$A101)>900,VLOOKUP($G$6,InData,$A101),1000)	68.50	"=IF(VLOOKUP($G$6,InData,B90,FALSE)>1,VLOOKUP($G$6,InData,B90,FALSE),I90*0.05)	1,278.67
91				

	J	K	L	M
92				
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94				
95				
96				
97				
98				
99				
100				
101				
102	"=VLOOKUP($G$6,InData,$A116)	3.48	"=VLOOKUP($G$6,InData,$B102,FALSE)	0.01
103				
104				50.00
105				
106	"=VLOOKUP($G$6,InData,$A121)	0.06	"=VLOOKUP($G$6,InData,$B106,FALSE)	0.00

	J	K	L	M
107	"=VLOOKUP($G$6,InData,$A123)	0.18	"=VLOOKUP($G$6,InData,$B107,FALSE)	0.00
108	"=VLOOKUP($G$6,InData,$A125)	12.01	"=VLOOKUP($G$6,InData,$B108,FALSE)	4.50
109	"=VLOOKUP($G$6,InData,$A127)		"=VLOOKUP($G$6,InData,$B109,FALSE)	0.01
110				
111				
112				
113				
114				
115	"=VLOOKUP($G$6,InData,$A135)	0.00	"=VLOOKUP($G$6,InData,$B115,FALSE)	
116				
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161				
162	"=IF(I188>0.00001,K188,K186)			
163	"=VLOOKUP($G$6,InData,$A186)	0.17	"=VLOOKUP($G$6,InData,B163,FALSE)	0.01
164	"=VLOOKUP($G$6,InData,$A187)	0.17	"=VLOOKUP($G$6,InData,B164,FALSE)	0.01
165	"=VLOOKUP($G$6,InData,$A188)	0.17	"=VLOOKUP($G$6,InData,B165,FALSE)	1.00E-09
166	"=VLOOKUP($G$6,InData,$A189)			

	J	K	L	M
167	"=VLOOKUP($G$6,InData,$A190)	78.00	"=IF(VLOOKUP($G$6,InData,B167,FALSE)>0,VLOOKUP($G$6,InData,B167,FALSE),VLOOKUP($G$6,InData,A167,FALSE)*0.05)	1,456.00
168	"=+(G11*G14+G173*0.0000092229484386 35*G174)/(G11+G173*0.0000092229484386 35)	68.5964123	"=IF(VLOOKUP($G$6,InData,B168,FALSE)>0,VLOOKUP($G$6,InData,B168,FALSE),I168*$Y$2)	1,234.74
169				
170				
171				
172				
173				
174				
175				
176				
177				
178				
179				
180	"=VLOOKUP($G$6,InData,$A206)	3.48	"=VLOOKUP($G$6,InData,$B180,FALSE)	0.01
181				

	J	K	L	M
182				50.00
183				
184	"=VLOOKUP($G$6,InData,$A211)	0.06	"=VLOOKUP($G$6,InData,$B184,FALSE)	0.00
185	"=VLOOKUP($G$6,InData,$A213)	0.18	"=VLOOKUP($G$6,InData,$B185,FALSE)	0.00
186	"=VLOOKUP($G$6,InData,$A215)	12.01	"=VLOOKUP($G$6,InData,$B186,FALSE)	4.50
187	"=VLOOKUP($G$6,InData,$A217)		"=VLOOKUP($G$6,InData,$B187,FALSE)	0.01
188				
189				
190				
191				
192				
193	"=VLOOKUP($G$6,InData,$A225)	0.00	"=VLOOKUP($G$6,InData,$B193,FALSE)	
194				
195				
196				

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	J	K	L	M
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	N	O	P	Q
2	"=IF(AJ4>0,"Copy Bad", "Copy OK")			
3				
4				
5		Max		Dist Type
6				
7				
8				
9	"=VLOOKUP($G$6,InData,C9,FALSE)	10.715	"=+$G$20	Normal
10	"=VLOOKUP($G$6,InData,C10,FALSE)	10.715	"=+$G$20	Normal
11	0.000000001	10.715	"=+$G$20	Normal
12				Normal
13	"=IF(VLOOKUP($G$6,InData,C13,FALSE)>0,VLOOKUP($G$6,InDa ta,C13,FALSE),$I13-2*$K13)	1,664.00	"=IF(VLOOKUP($G$6,InData,D13,FALSE)>0,VLOOKUP($G$6,InDa ta,D13,FALSE),$I13+2*$K13)	Normal
14	"=IF(VLOOKUP($G$6,InData,C14,FALSE)>1,VLOOKUP($G$6,InDa ta,C14,FALSE),$I14-2*$K14)	1,461.33	"=IF(VLOOKUP($G$6,InData,D14,FALSE)>1,VLOOKUP($G$6,InDa ta,D14,FALSE),$I14+2*$K14)	Normal
15				
16				

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26				
27	"=VLOOKUP($G$6,InData,$C27,FALSE)	12.18	"=IF($G$7"="dST",IF(G28>0.02,+G28*100,VLOOKUP($G$6,InData,$D27,FALSE)),VLOOKUP($G$6,InData,$D27,FALSE))	LogNorm
28				
29	"=VLOOKUP($G$6,InData,$A29,FALSE)	250.00	"=VLOOKUP($G$6,InData,$B29,FALSE)	uniform
30				
31	"=VLOOKUP($G$6,InData,$C31,FALSE)	0.32	"=VLOOKUP($G$6,InData,$D31,FALSE)	LogNorm

	N	O	P	Q
32	"=VLOOKUP($G$6,InData,$C32,FALSE)	0.62	"=VLOOKUP($G$6,InData,$D32,FALSE)	LogNorm
33	"=VLOOKUP($G$6,InData,$C33,FALSE)	80.00	"=VLOOKUP($G$6,InData,$D33,FALSE)	LogNorm
34	"=VLOOKUP($G$6,InData,$C34,FALSE)	18.32	"=VLOOKUP($G$6,InData,$D34,FALSE)	ContLin
35				
36				
37				
38	x			
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79				
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81				
82				
83				
84				
85	"=VLOOKUP($G$6,InData,C85,FALSE)	11.000	11.000	Normal
86	"=VLOOKUP($G$6,InData,C86,FALSE)	11.000	11.000	Normal
87	0.000000001	11.000	11.000	Normal
88				Normal
89	"=IF(VLOOKUP($G$6,InData,C89,FALSE)>0,VLOOKUP($G$6,InDa ta,C89,FALSE),$I89-2*$K89)	1,664.00	"=IF(VLOOKUP($G$6,InData,D89,FALSE)>0,VLOOKUP($G$6,InDa ta,D89,FALSE),$I89+2*$K89)	Normal
90	"=IF(VLOOKUP($G$6,InData,C90,FALSE)>1,VLOOKUP($G$6,InDa ta,C90,FALSE),$I90-2*$K90)	1,461.33	"=IF(VLOOKUP($G$6,InData,D90,FALSE)>1,VLOOKUP($G$6,InDa ta,D90,FALSE),$I90+2*$K90)	Normal
91				

	N	O	P	Q
92				
93				
94				
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96				
97				
98				
99				
100				
101				
102	"=VLOOKUP($G$6,InData,$C102,FALSE)	12.44	"=IF($G$7"="dST",IF(G103>0.02,+G103*100,VLOOKUP($G$6,InDat a,$D102,FALSE)),VLOOKUP($G$6,InData,$D102,FALSE))	LogNorm
103				
104	"=VLOOKUP($G$6,InData,$A104,FALSE)	250.00	"=VLOOKUP($G$6,InData,$B104,FALSE)	uniform
105				
106	"=VLOOKUP($G$6,InData,$C106,FALSE)	0.32	"=VLOOKUP($G$6,InData,$D106,FALSE)	LogNorm

	N	O	P	Q
107	"=VLOOKUP($G$6,InData,$C107,FALSE)	0.62	"=VLOOKUP($G$6,InData,$D107,FALSE)	LogNorm
108	"=VLOOKUP($G$6,InData,$C108,FALSE)	80.00	"=VLOOKUP($G$6,InData,$D108,FALSE)	LogNorm
109	"=VLOOKUP($G$6,InData,$C109,FALSE)	18.32	"=VLOOKUP($G$6,InData,$D109,FALSE)	ContLin
110				
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112				
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161				
162				
163	"=VLOOKUP($G$6,InData,C163,FALSE)	11.000	11.000	Normal
164	"=VLOOKUP($G$6,InData,C164,FALSE)	11.000	11.000	Normal
165	0.000000001	11.000	11.000	Normal
166				Normal

	N	O	P	Q
167	"=IF(VLOOKUP($G$6,InData,C167,FALSE)>0,VLOOKUP($G$6,InData,C167,FALSE),$I167-2*$K167)	1,664.00	"=IF(VLOOKUP($G$6,InData,D167,FALSE)>0,VLOOKUP($G$6,InData,D167,FALSE),$I167+2*$K167)	Normal
168	"=IF(I168>900,+I168-2*K168,900)	1,509.12	"=IF(I168>900,+I168+2*K168,1100)	Normal
169				
170				
171				
172				
173				
174				
175				
176				
177				
178				
179				
180	"=VLOOKUP($G$6,InData,$C180,FALSE)	12.06	"=IF($G$7"="DST",IF(G181>0.02,+G181*100,VLOOKUP($G$6,InData,$D180,FALSE)),VLOOKUP($G$6,InData,$D180,FALSE))	LogNorm
181				

	N	O	P	Q
182	"=VLOOKUP($G$6,InData,$A182,FALSE)	250.00	"=VLOOKUP($G$6,InData,$B182,FALSE)	uniform
183				
184	"=VLOOKUP($G$6,InData,$C184,FALSE)	0.32	"=VLOOKUP($G$6,InData,$D184,FALSE)	LogNorm
185	"=VLOOKUP($G$6,InData,$C185,FALSE)	0.62	"=VLOOKUP($G$6,InData,$D185,FALSE)	LogNorm
186	"=VLOOKUP($G$6,InData,$C186,FALSE)	80.00	"=VLOOKUP($G$6,InData,$D186,FALSE)	LogNorm
187	"=VLOOKUP($G$6,InData,$C187,FALSE)	18.32	"=VLOOKUP($G$6,InData,$D187,FALSE)	ContLin
188				
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3						
4						
5						
6			Distribution		Calculated	
7			Type		Value	
8						
9	Normal		Normal	Normal	2.28	"=IF(+I9<0.001,0.000001,I9)
10	Normal		Normal	Normal	2.28	"=IF(+I10<0.001,0.000001,I10)
11	Normal		Normal	Normal	7.32	"=+I11
12	Normal		Normal	Normal	0.00	"=+I12
13	Normal		Normal	Normal	1,560.00	"=+I13
14	Normal		Normal	Normal	1,560.00	"=+I13
15			Normal	Normal	1,370.00	"=+I14
16			Normal	Normal	1,370.00	"=+I14

	R	S	T	U	V	W
17			Uniform	Uniform	0.5	0.5
18						
19						
20						
21						
22						
23						
24						
25						
26			Gamma	Gamma	0.00	"=IF(Q27"="Gamma",+I27,0.00031)
27	"=VLOOKUP($G$6,InData,$E27,FALSE)		Normal	Normal	15.00	"=IF(Q27"="normal",+I27,15)
28			LogNormal	LogNormal	0.7067	"=IF(Q27"="LogNorm",+I27,0.0776)
29	"=VLOOKUP($G$6,InData,$C29,FALSE)		uniform	$G$6,InData,	50.00	"=+M29
30						
31	"=VLOOKUP($G$6,InData,$E31,FALSE)		Normal	Normal	15.00	"=IF(Q31"="normal",+I31,15)

	R	S	T	U	V	W
32	"=VLOOKUP($G$6,InData,$E32,FALSE)		LogNormal	LogNormal	0.05	"=IF(Q31"="LogNorm",+I31,-2.12)
33	"=VLOOKUP($G$6,InData,$E33,FALSE)		Normal	Normal	15.00	"=IF(Q32"="normal",+I32,15)
34	"=VLOOKUP($G$6,InData,$E34,FALSE)		LogNormal	LogNormal	0.25	"=IF(Q32"="LogNorm",+I32,-1.28)
35			Normal	Normal	29.84	"=+I33
36						
37			Normal	Normal	15.00	"=IF(Q34"="normal",+I34,15)
38			ContLin	ContLin	15.00	"=IF(Q34"="ContLin",+V37,3.4)
39						
40						
41			Normal	Normal	4.67E-03	"=IF(+I40<0.00001,0.000001,I40)
42						
43						
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86	Normal					
87	Normal					
88	Normal					
89	Normal					
90	Normal					
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102	"=VLOOKUP($G$6,InData,$E102,FALSE)					
103						
104	"=VLOOKUP($G$6,InData,$C104,FALSE)					
105						
106	"=VLOOKUP($G$6,InData,$E106,FALSE)					

	R	S	T	U	V	W
107	"=VLOOKUP($G$6,InData,$E107,FALSE)					
108	"=VLOOKUP($G$6,InData,$E108,FALSE)					
109	"=VLOOKUP($G$6,InData,$E109,FALSE)					
110						
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	R	S	T	U	V	W
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160						
161						
162						
163	Normal					
164	Normal					
165	Normal					
166	Normal					

	R	S	T	U	V	W
167	Normal		Normal	Normal	1,371.93	"=+I168
168	Normal		Normal	Normal	1,371.93	"=+I168
169						
170						
171						
172						
173						
174						
175						
176						
177						
178						
179						
180	"=VLOOKUP($G$6,InData,$E180,FALSE)					
181						

	R	S	T	U	V	W
182	"=VLOOKUP($G$6,InData,$C182,FALSE)					
183						
184	"=VLOOKUP($G$6,InData,$E184,FALSE)					
185	"=VLOOKUP($G$6,InData,$E185,FALSE)					
186	"=VLOOKUP($G$6,InData,$E186,FALSE)					
187	"=VLOOKUP($G$6,InData,$E187,FALSE)					
188						
189						
190						
191						
192						
193						
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196						

	R	S	T	U	V	W
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	R	S	T	U	V	W
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	X	Y	Z	AA	AB
2	Density RSD (when estimated) =	0.05	AN-103		AN-107
3	Buoyancy Ratio Factor =	1334.3	1334.3		1401.8692
4	Density Constraint (kg/m^3) =	1			
5		188			
6	Description	Mean	St Dev		truncate
7					low
8					
9	Total Non-Convective Waste Depth (m)	2.28	0.17	"=IF (+ $I$9<0.001, 0.00000001, K9)	0.01
10	Wetted Non-Convective Waste Depth (m)	2.28	0.17	"=IF (+ I10<0.001, 0.00000001, K10)	0.01
11	Convective Waste Depth (m)	7.32	0.17	"= + K11	0.00
12	Crust Depth (m)	0.00	0.00	"= + K12	0.00
13	Non-Convective Waste Density - High (kg/m^3)	1,560.00	0.00	"= + K13	1,560.00
14	Non-Convective Waste Density - Low (kg/m^3)	1,560.00	0.00	"= + K13	1,456.00
15	Convective Waste Density - High (kg/m^3)	1,370.00	0.00	"= + K14	1,370.00
16	Convective Waste Density - Low (kg/m^3)	1,370.00	0.00	"= + K14	1,278.67

	X	Y	Z	AA	AB
17	Random Number 0 to 1	0.5			0
18					
19					
20					
21					
22					
23					
24					
25					
26	Void Fraction (na) (Gamma)	0.00	-0.0003	"=IF ($Q27"="Gamma", + I27, - 0.00031)	0.0093
27	Void Fraction (na) (Normal)	15.00	6.2000	"=IF ($Q27"="normal", + K27, 6.2)	0.0000
28	Void Fraction (na) (LogNormal)	2.5545	3.4822	"=IF ($Q27"="LogNorm", + K27, 1.49)	0.0100
29	Non-Convective Waste Yield Stress (Pa)	50.00			50
30					
31	headspace Gas Ratio CH4 (Normal)	15.00	6.2000	"=IF ($Q31"="normal", + K31, 6.2)	0.0000

	X	Y	Z	AA	AB
32	headspace Gas Ratio CH4 (LogNorm)	1.91	0.0563	"=IF ($Q31"="LogNorm", + K31, 1.49)	0.0010
33	headspace Gas Ratio N2O (Normal)	15.00	6.2000	"=IF ($Q32"="normal", + K32, 6.2)	0.0000
34	headspace Gas Ratio N2O (LogNorm)	1.02	0.1758	"=IF ($Q32"="LogNorm", + K32, 0.9)	0.0010
35	retained Gas Composition N2	29.84	0.0000	"=IF ($Q33"="normal", + K33, 0.00001)	0.0000
36					
37	retained Gas Composition NH3 (%) (Normal	15.00	6.2000	"=IF ($Q34"="normal", + K34, 6.2)	0.0000
38	retained Gas Composition NH3 (%) (contLin)	15.00			w14:y68
39					x11..x65
40					x11..y65
41	HGR in NCL Waste (moles/m ^{3}/day)	4.67E-03	0.00	"=IF (+ I40<0.001, 0.00000001, K40)	2.34E-03
42					
43					
44					
45					
46					

	X	Y	Z	AA	AB
47					
48					
49					
50					
51					
52					
53					
54					
55					
56	Wncl Depth Criterion		1	"=IF (G46>1, 1, 0)	
57					
58					
59					
60					
61					

	X	Y	Z	AA	AB
62					
63					
64					
65					
66					
67	Headspace FG Criterion		1	"=IF (G57<1.000001, 1, 0)	
68					
69					
70					
71					
72					
73					
74					
75					
76					

	X	Y	Z	AA	AB
77					
78					
79					
80					
81					
82	coversion factor (gallons to m)		9.22295E-06	9.22295E-06	
83	coversion factor (inches to m)		0.0254	0.0254	
84					
85					
86					
87					
88					
89					
90					
91					

	X	Y	Z	AA	AB
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	X	Y	Z	AA	AB
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	X	Y	Z	AA	AB
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	X	Y	Z	AA	AB
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	X	Y	Z	AA	AB
167	CA - Convective Waste Density - High (kg/m^3)	1,371.93	68.60	"= + K168	1,371.93
168	CA - Convective Waste Density - Low (kg/m^3)	1,371.93	68.60	"= + K168	1,234.74
169					
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	X	Y	Z	AA	AB
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	X	Y	Z	AA	AB
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213					
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215					
216					
217					

	AC	AD	AE	AF
2				
3				
4				
5				
6		truncate		
7		high		
8				
9	"=IF (+ I9<0.001, 0.000000001, M9)	10.72	"= + O9	
10	"=IF (+ I10<0.001, 0.000000001, M10)	10.72	"= + O10	
11	"= + M11	10.72	"= + O11	
12	"= + M12	0.00	"= + O12	
13	"= + V13	1,664.00	"= + O13	
14	"= + M13	1,560.00	"= + V14	
15	"= + V15	1,461.33	"= + O14	
16	"= + M14	1,370.00	"= + V16	

	AC	AD	AE	AF
17	0	1.1		
18				
19				
20				
21				
22				
23				
24				
25				
26	"=IF ($Q27"="Gamma", + K27, 0.0093)	0.1700	"=IF ($Q27"="Gamma", + M27, 0.17)	0.2
27	"=IF ($Q27"="normal", + M27, 0.00000001)	20.0000	"=IF ($Q27"="normal", + O27, 20)	
28	"=IF ($Q27"="LogNorm", + M27, 0.1)	12.1795	"=IF ($Q27"="LogNorm", + O27, 26)	
29	"= + M29	250	"= + O29	
30				
31	"=IF ($Q31"="normal", + M31, 0.00000001)	20.0000	"=IF ($Q31"="normal", + O31, 20)	

	AC	AD	AE	AF
32	"=IF ($Q31"="LogNorm", + M31, 0.00001)	0.3178	"=IF ($Q31"="LogNorm", + O31, 0.4)	
33	"=IF ($Q32"="normal", + M32, 0.00000001)	20.0000	"=IF ($Q32"="normal", + O32, 20)	
34	"=IF ($Q32"="LogNorm", + M32, 0.00001)	0.6189	"=IF ($Q32"="LogNorm", + O32, 0.7)	
35	"=IF ($Q33"="normal", + M33, 0.00000001)	0.0010	"=IF ($Q33"="normal", + O33, 0.001)	
36				
37	"=IF ($Q34"="normal", + M34, 0.00000001)	20.0000	"=IF ($Q34"="normal", + O34, 20)	
38	w14:y68			
39	x11..x65			
40	x11..y65			
41	"= + V41*0.5	0.0093445	"= + V41^2	
42				
43				
44				
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	AC	AD	AE	AF
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	AC	AD	AE	AF
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	AC	AD	AE	AF
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	AC	AD	AE	AF
167	"= + V167	1,509.12	"= + O168	
168	"= + M168	1,371.93	"= + V168	
169				
170				
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	AC	AD	AE	AF
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22	
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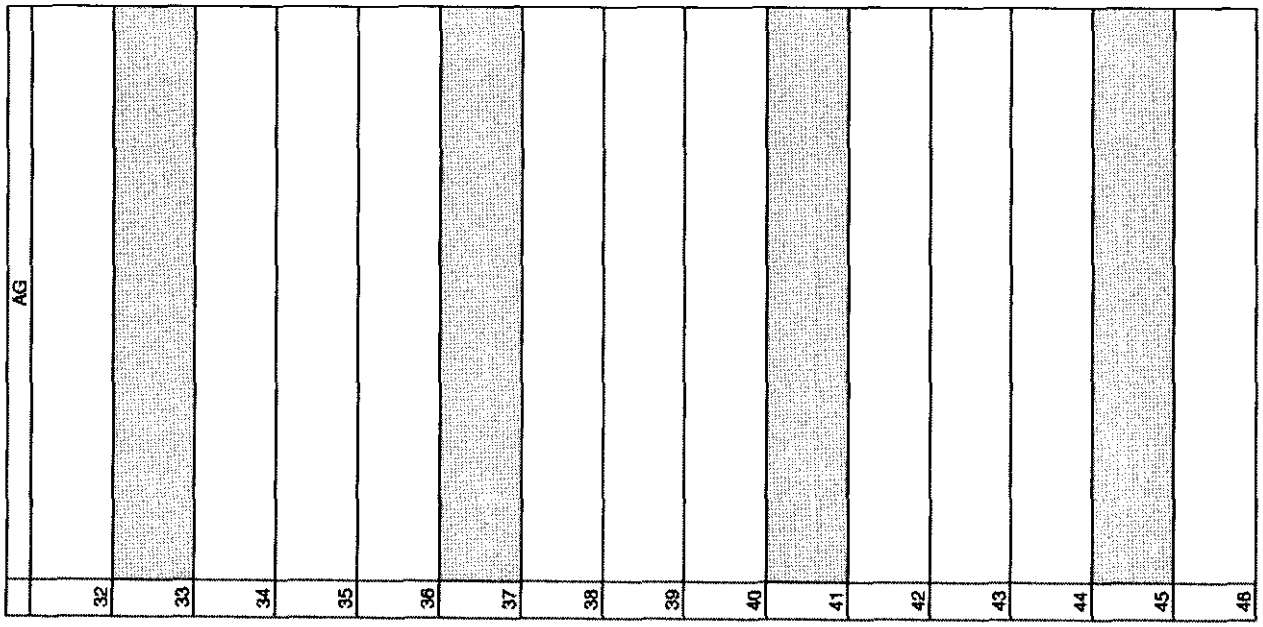
25	
26	"=IF ($Q27="Gamma", Q27, 0.2)
27	
28	
29	
30	
31	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APPENDIX D

CALCULATION INSTRUCTIONS

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Instructions for the Monte Carlo Evaluation -- Tab MC

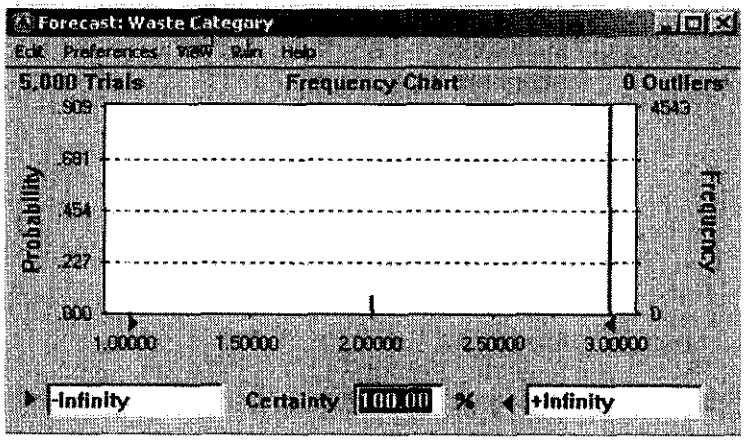
by: SA Barker

Step	Instruction
1	Update any data for tank on Tab "Data"
2	Enter Tank ID in cell "G6"
3	If required, Update Waste Porosity in cell "G4"
4	If required, Update Sensitivity analysis for Water Addition "Volume" in cell "G72"
5	If required, Update Sensitivity analysis for Caustic Addition "Volume" in cell "G150"
6	If required, Update Sensitivity analysis for Caustic Addition "Density" in cell "G151"
7	Copy range "UO9..U20" to cell "W9", use special paste "values only"!!
8	Verify that the cell "L2" indicates the Copy is successful by presenting the message "Copy OK". If the cell "L2" says "Copy Bad" repeat the copy until the message is changed to "Copy OK"
9	Clear Previous Crystal Ball Simulation. Use icon or the menu sequence "Run", "Reset"
10	Run Crystal Ball, 5000 iterations
11	Create the Crystal Ball Report (use the Icon or from the menu "Run" "Create Report".
12	Copy cells "K3..AF27" from "" to the newly created report in cell "K3"
13	Enter tank ID in cell "K6" in new report
14	From the Crystal Ball Graph "Forecast: Waste Category"...

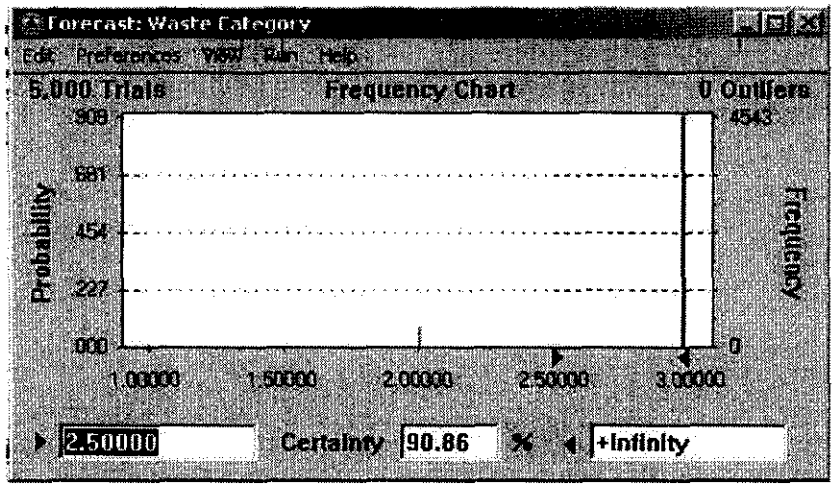
If you have problems finding the report you can use the following procedure to find it...

"Run", "Forecast Windows", "Close All Forecasts"

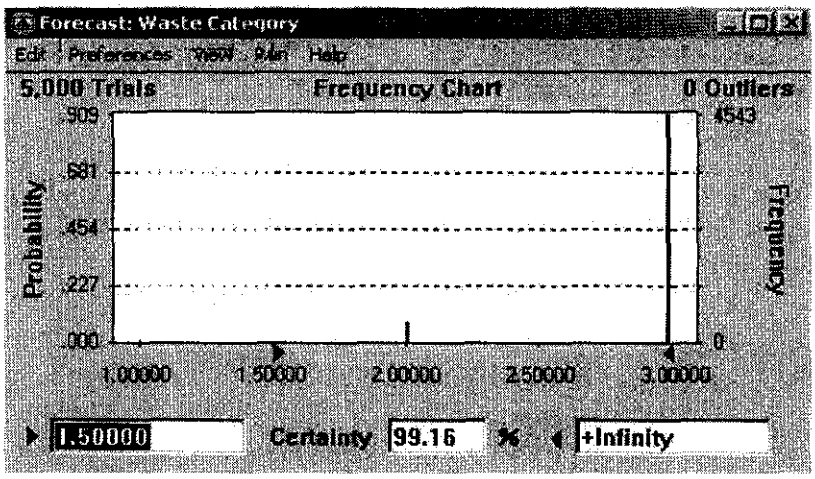
"Run", "Forecast Windows", Select the appropriate forecast(s) in the scrolling window on the left, then select "Opens Selected Forecasts".



enter 2.5 in the "CB Results graph" lower left cell and press <Enter>.



The certainty, 90.86 in this case, is now the Percent of runs for this tank that were classified as class "C". Enter this number in the Monte Carlo Report spreadsheet in cell "N26". Next enter 1.5 in the "CB Results graph" lower left cell and press <Enter>.

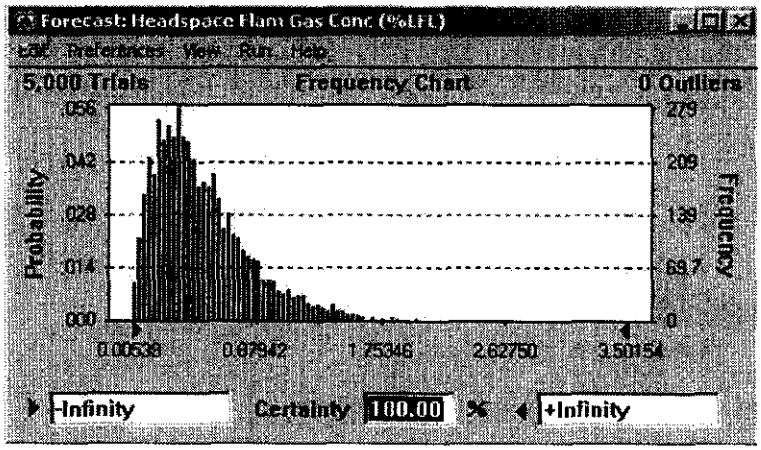


The certainty, 99.16 in this case, is now the Percent of runs for this tank that were classified as class "C" or "B". Enter this number in the Monte Carlo Report spreadsheet in cell "M26". Use a formula structured as follows --

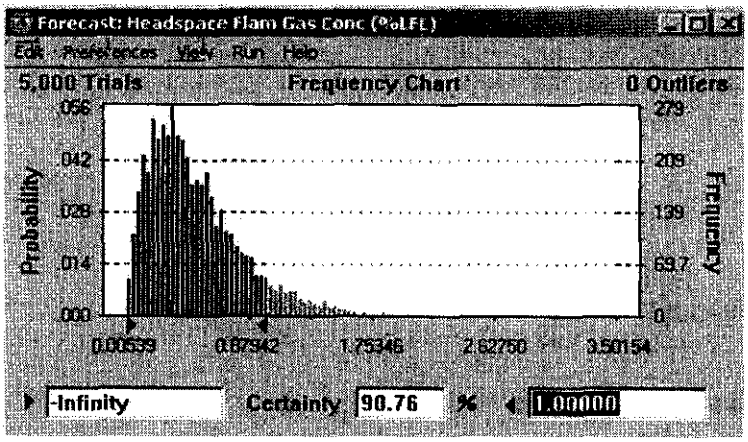
=99.16 - N26

This will calculate the Percent of runs for this tank that were classified as class "B". The formula in cell "L26" will now automatically calculate the Percent of runs for this tank that were classified as class "A", 0.84 in this case.

15 From the Crystal Ball Graph "Forecast: Headspace Flam Gas Conc"...

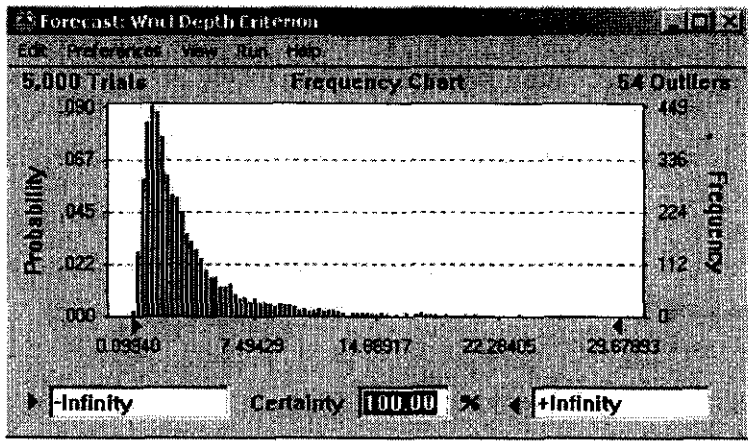


enter 1 in the "CB Results graph" lower right cell and press <Enter>.

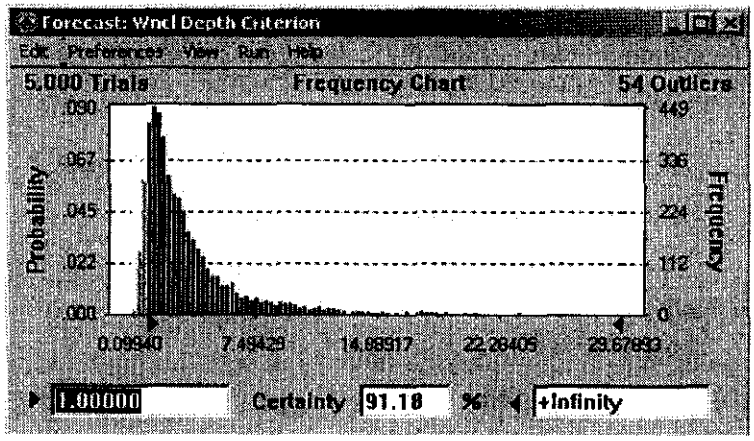


The certainty, 90.76 in this case, is now the Percent of runs for this tank that passed this criteria and are classified as class "C". Enter this number in the Monte Carlo Report spreadsheet in cell "W26".

16 From the Crystal Ball Graph "Forecast: Wncl Depth Criterion"...



enter 1 in the "CB Results graph" lower left cell and press <Enter>.



The certainty, 91.18 in this case, is now the Percent of runs for this tank that passed this criteria and are classified as class "C". Enter this number in the Monte Carlo Report spreadsheet in cell "V26".

17 Name, Save, and Close the Crystal Ball report

APPENDIX E

SAMPLE OUTPUT REPORT

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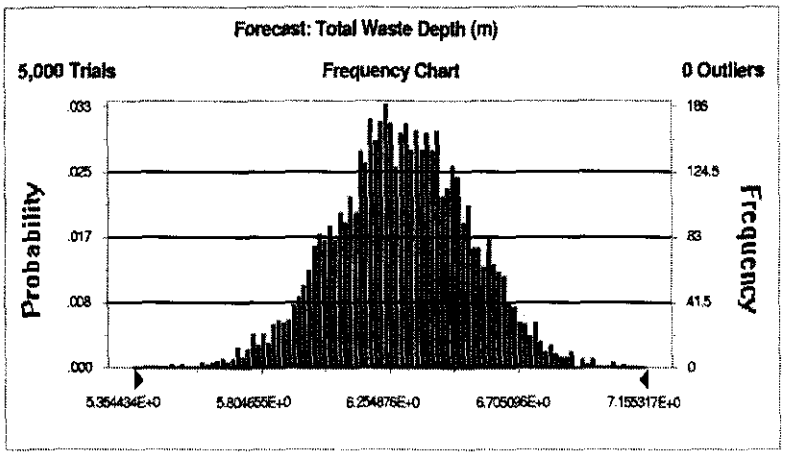
AY-102 mc report 020422 .xls

Crystal Ball Report
Simulation started on 4/22/02 at 15:52:51
Simulation stopped on 4/22/02 at 15:53:45

Forecast: Total Waste Depth (m) **Cell: G8**

Summary:
Display Range is from 5.354434E+0 to 7.155317E+0
Entire Range is from 5.354434E+0 to 7.155317E+0
After 5,000 Trials, the Std. Error of the Mean is 3.345002E-3

Statistics:	Value
Trials	5000
Mean	6.300378E+00
Median	6.301012E+00
Mode	---
Standard Deviation	2.365274E-01
Variance	5.594519E-02
Skewness	-3.872719E-02
Kurtosis	3.028611E+00
Coeff. of Variability	3.754177E-02
Range Minimum	5.354434E+00
Range Maximum	7.155317E+00
Range Width	1.800883E+00
Mean Std. Error	3.345002E-03



AY-102 mc report 020422 .xls

Forecast: Total Waste Depth (m) (cont'd) **Cell: G8**

Percentiles:

Percentile	Value
0.0%	5.354434E+00
2.5%	5.826376E+00
5.0%	5.911785E+00
50.0%	6.301012E+00
95.0%	6.681432E+00
97.5%	6.758512E+00
100.0%	7.155317E+00

End of Forecast

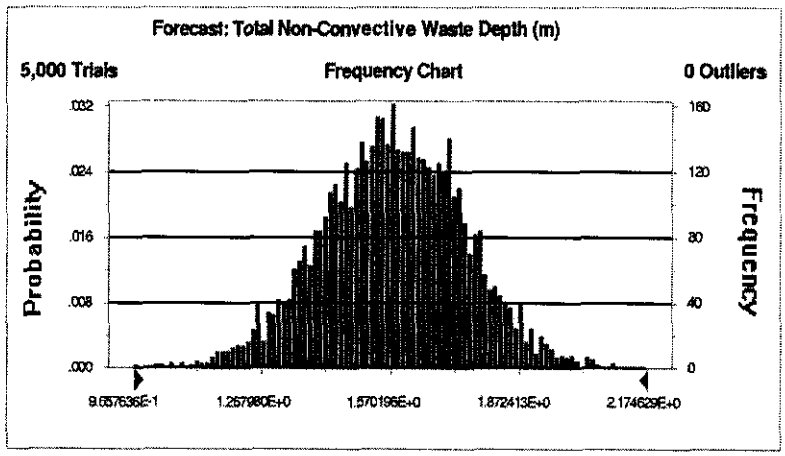
AY-102 mc report 020422 .xls

Forecast: Total Non-Convective Waste Depth (m) **Cell: G9**

Summary:

Display Range is from 9.657636E-1 to 2.174629E+0
Entire Range is from 9.657636E-1 to 2.174629E+0
After 5,000 Trials, the Std. Error of the Mean is 2.360737E-3

Statistics:	Value
Trials	5000
Mean	1.577178E+00
Median	1.578034E+00
Mode	---
Standard Deviation	1.669293E-01
Variance	2.786540E-02
Skewness	-5.478491E-02
Kurtosis	3.028870E+00
Coeff. of Variability	1.058405E-01
Range Minimum	9.657636E-01
Range Maximum	2.174629E+00
Range Width	1.208866E+00
Mean Std. Error	2.360737E-03



AY-102 mc report 020422 .xls

Forecast: Total Non-Convective Waste Depth (m) (cont'd) **Cell: G9**

Percentiles:

Percentile	Value
0.0%	9.657636E-01
2.5%	1.248345E+00
5.0%	1.299586E+00
50.0%	1.578034E+00
95.0%	1.846985E+00
97.5%	1.898759E+00
100.0%	2.174629E+00

End of Forecast

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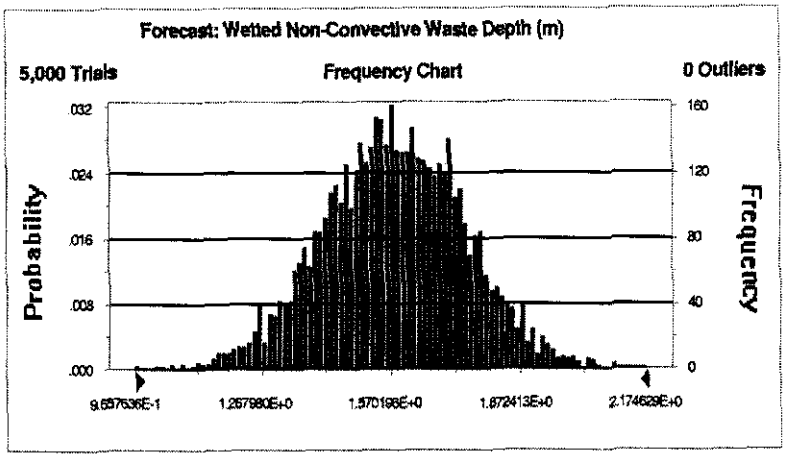
Forecast: Wetted Non-Convective Waste Depth (m) **Cell: G10**

Summary:
Display Range is from 9.657636E-1 to 2.174629E+0
Entire Range is from 9.657636E-1 to 2.174629E+0
After 5,000 Trials, the Std. Error of the Mean is 2.360737E-3

Statistics:	Value
Trials	5000
Mean	1.577178E+00
Median	1.578034E+00
Mode	---
Standard Deviation	1.669293E-01
Variance	2.786540E-02
Skewness	-5.478491E-02
Kurtosis	3.028870E+00
Coeff. of Variability	1.058405E-01
Range Minimum	9.657636E-01
Range Maximum	2.174629E+00
Range Width	1.208866E+00
Mean Std. Error	2.360737E-03



AY-102 mc report 020422 .xls

Forecast: Wetted Non-Convective Waste Depth (m) (cont'd) **Cell: G10**

Percentiles:

Percentile	Value
0.0%	9.657636E-01
2.5%	1.248345E+00
5.0%	1.299586E+00
50.0%	1.578034E+00
95.0%	1.846985E+00
97.5%	1.898759E+00
100.0%	2.174629E+00

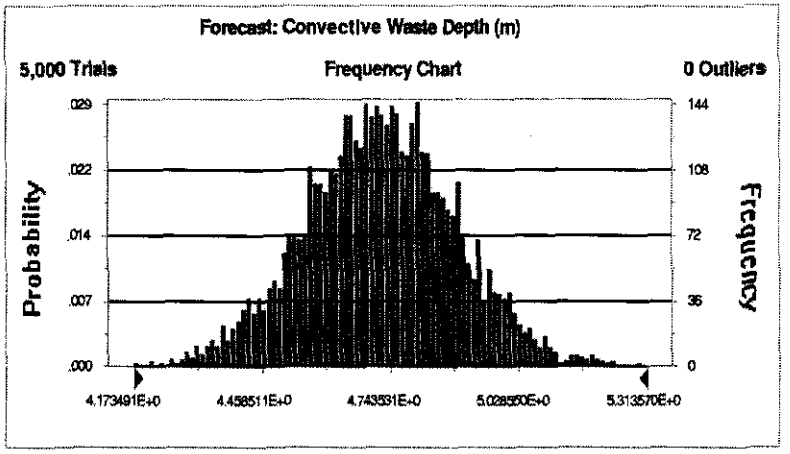
End of Forecast

AY-102 mc report 020422 .xls

Forecast: Convective Waste Depth (m) **Cell: G11**

Summary:
Display Range is from 4.173491E+0 to 5.313570E+0
Entire Range is from 4.173491E+0 to 5.313570E+0
After 5,000 Trials, the Std. Error of the Mean is 2.369185E-3

Statistics:	Value
Trials	5000
Mean	4.723199E+00
Median	4.722643E+00
Mode	---
Standard Deviation	1.675267E-01
Variance	2.806519E-02
Skewness	3.149074E-02
Kurtosis	3.011388E+00
Coeff. of Variability	3.546890E-02
Range Minimum	4.173491E+00
Range Maximum	5.313570E+00
Range Width	1.140079E+00
Mean Std. Error	2.369185E-03



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Forecast: Convective Waste Depth (m) (cont'd) **Cell: G11**

Percentiles:

Percentile	Value
0.0%	4.173491E+00
2.5%	4.391002E+00
5.0%	4.440742E+00
50.0%	4.722643E+00
95.0%	5.000140E+00
97.5%	5.051651E+00
100.0%	5.313570E+00

End of Forecast

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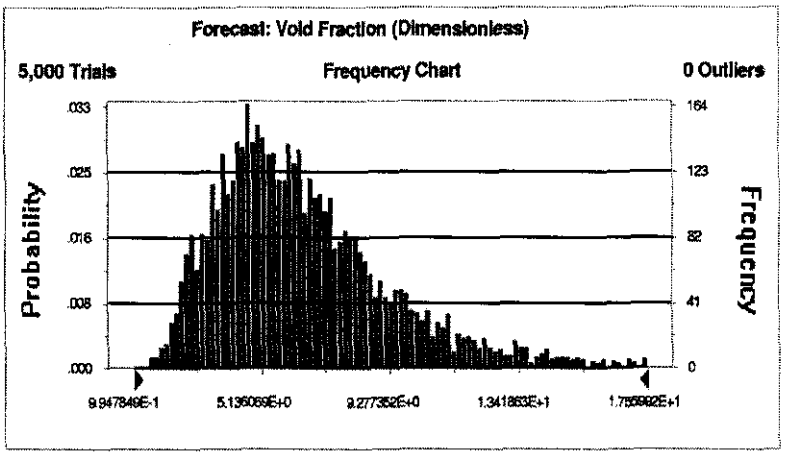
Forecast: Void Fraction (Dimensionless) **Cell: G27**

Summary:
Display Range is from 9.947849E-1 to 1.755992E+1
Entire Range is from 9.947849E-1 to 1.755992E+1
After 5,000 Trials, the Std. Error of the Mean is 3.919097E-2

Statistics:	Value
Trials	5000
Mean	6.460761E+00
Median	5.978227E+00
Mode	---
Standard Deviation	2.771220E+00
Variance	7.679661E+00
Skewness	1.024556E+00
Kurtosis	4.153574E+00
Coeff. of Variability	4.289309E-01
Range Minimum	9.947849E-01
Range Maximum	1.755992E+01
Range Width	1.656513E+01
Mean Std. Error	3.919097E-02



Forecast: Void Fraction (Dimensionless) (cont'd) **Cell: G27**

Percentiles:

Percentile	Value
0.0%	9.947849E-01
2.5%	2.550529E+00
5.0%	2.848612E+00
50.0%	5.978227E+00
95.0%	1.185415E+01
97.5%	1.354886E+01
100.0%	1.755992E+01

End of Forecast

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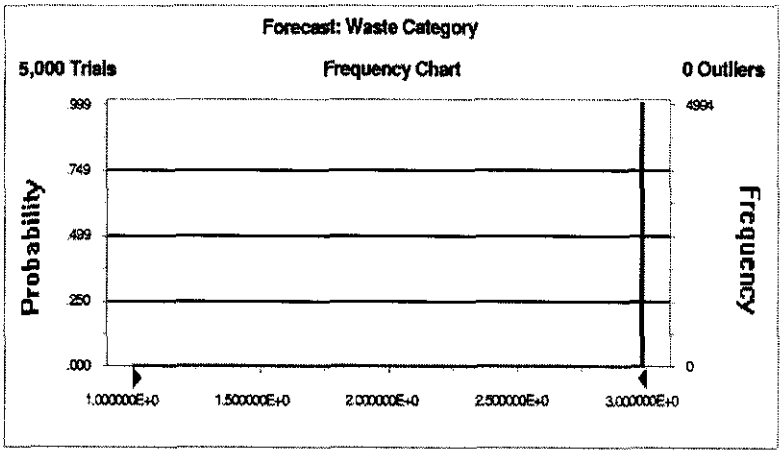
Forecast: Waste Category **Cell: G59**

Summary:
Display Range is from 1.000000E+0 to 3.000000E+0
Entire Range is from 1.000000E+0 to 3.000000E+0
After 5,000 Trials, the Std. Error of the Mean is 6.925200E-4

Statistics:	Value
Trials	5000
Mean	2.998400E+00
Median	3.000000E+00
Mode	3.000000E+00
Standard Deviation	4.896856E-02
Variance	2.397920E-03
Skewness	-3.396694E+01
Kurtosis	1.247724E+03
Coeff. of Variability	1.633156E-02
Range Minimum	1.000000E+00
Range Maximum	3.000000E+00
Range Width	2.000000E+00
Mean Std. Error	6.925200E-04



Forecast: Waste Category (cont'd) **Cell: G59**

Percentiles:

Percentile	Value
0.0%	1.000000E+00
2.5%	3.000000E+00
5.0%	3.000000E+00
50.0%	3.000000E+00
95.0%	3.000000E+00
97.5%	3.000000E+00
100.0%	3.000000E+00

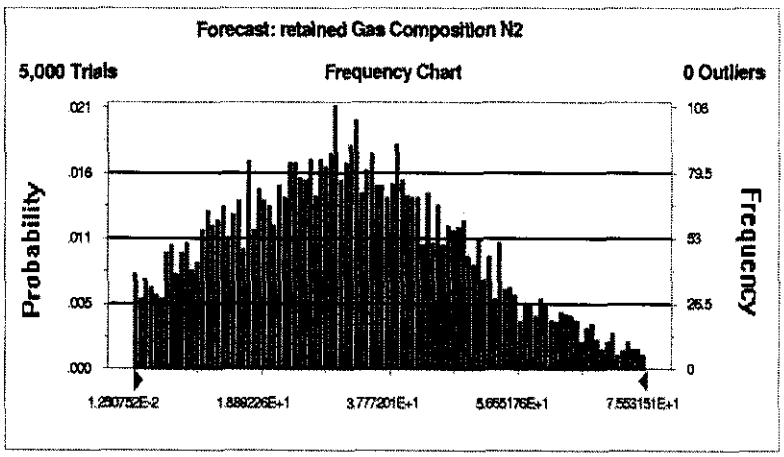
End of Forecast

AY-102 mc report 020422 .xls

Forecast: retained Gas Composition N2 **Cell: G33**

Summary:
Display Range is from 1.250752E-2 to 7.553151E+1
Entire Range is from 1.250752E-2 to 7.553151E+1
After 5,000 Trials, the Std. Error of the Mean is 2.372139E-1

Statistics:	Value
Trials	5000
Mean	3.170035E+01
Median	3.097721E+01
Mode	---
Standard Deviation	1.677356E+01
Variance	2.813522E+02
Skewness	2.511286E-01
Kurtosis	2.437281E+00
Coeff. of Variability	5.291285E-01
Range Minimum	1.250752E-02
Range Maximum	7.553151E+01
Range Width	7.551901E+01
Mean Std. Error	2.372139E-01



Forecast: retained Gas Composition N2 (cont'd) **Cell: G33**

Percentiles:

Percentile	Value
0.0%	1.250752E-02
2.5%	2.807148E+00
5.0%	5.539169E+00
50.0%	3.097721E+01
95.0%	6.146840E+01
97.5%	6.648151E+01
100.0%	7.553151E+01

End of Forecast

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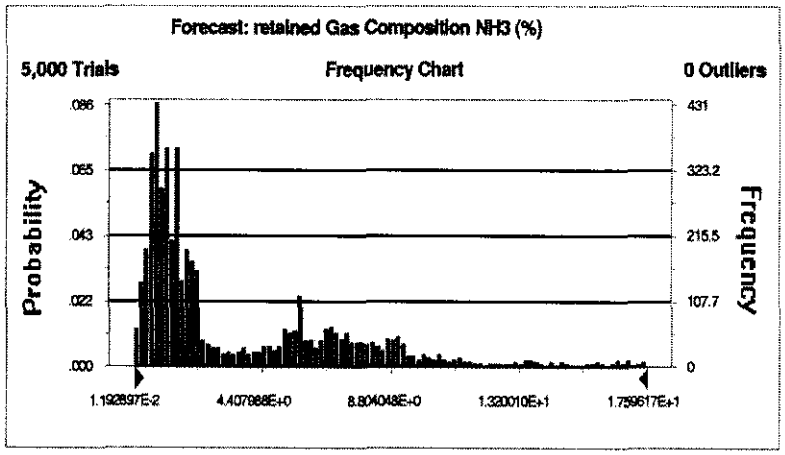
Forecast: retained Gas Composition NH3 (%) **Cell: G34**

Summary:

Display Range is from 1.192897E-2 to 1.759617E+1
Entire Range is from 1.192897E-2 to 1.759617E+1
After 5,000 Trials, the Std. Error of the Mean is 5.106011E-2

Statistics:	Value
Trials	5000
Mean	3.535408E+00
Median	1.760154E+00
Mode	---
Standard Deviation	3.610495E+00
Variance	1.303567E+01
Skewness	1.450594E+00
Kurtosis	4.687957E+00
Coeff. of Variability	1.021238E+00
Range Minimum	1.192897E-02
Range Maximum	1.759617E+01
Range Width	1.758424E+01
Mean Std. Error	5.106011E-02



Forecast: retained Gas Composition NH3 (%) (cont'd) **Cell: G34**

Percentiles:

Percentile	Value
0.0%	1.192897E-02
2.5%	3.164551E-01
5.0%	4.069008E-01
50.0%	1.760154E+00
95.0%	1.049286E+01
97.5%	1.353502E+01
100.0%	1.759617E+01

End of Forecast

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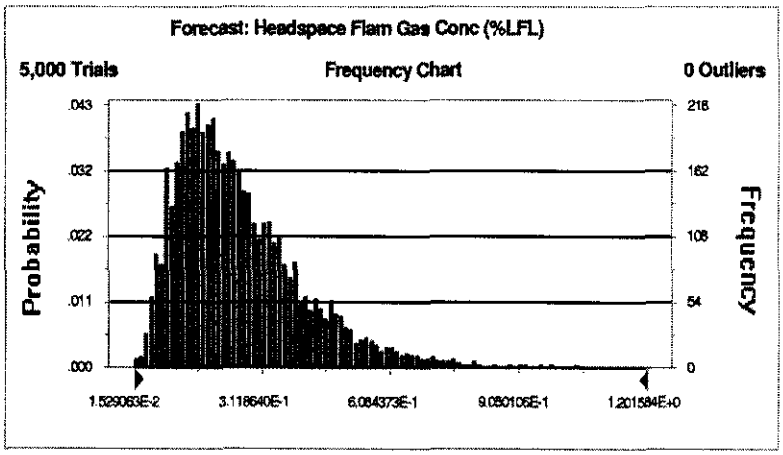
Forecast: Headspace Flam Gas Conc (%LFL) **Cell: G58**

Summary:

Display Range is from 1.529063E-2 to 1.201584E+0
Entire Range is from 1.529063E-2 to 1.201584E+0
After 5,000 Trials, the Std. Error of the Mean is 2.130271E-3

Statistics:	Value
Trials	5000
Mean	2.615282E-01
Median	2.292450E-01
Mode	---
Standard Deviation	1.506329E-01
Variance	2.269026E-02
Skewness	1.357656E+00
Kurtosis	5.688608E+00
Coeff. of Variability	5.759719E-01
Range Minimum	1.529064E-02
Range Maximum	1.201584E+00
Range Width	1.186293E+00
Mean Std. Error	2.130271E-03



Forecast: Headspace Flam Gas Conc (%LFL) (cont'd) **Cell: G58**

Percentiles:

Percentile	Value
0.0%	1.529064E-02
2.5%	6.608034E-02
5.0%	8.350796E-02
50.0%	2.292450E-01
95.0%	5.508396E-01
97.5%	6.430139E-01
100.0%	1.201584E+00

End of Forecast

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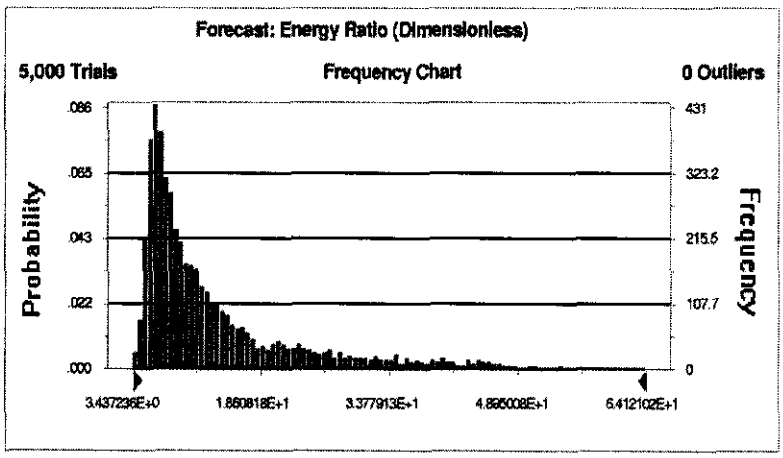
Forecast: Energy Ratio (Dimensionless) **Cell: G62**

Summary:
Display Range is from 3.437236E+0 to 6.412102E+1
Entire Range is from 3.437236E+0 to 6.412102E+1
After 5,000 Trials, the Std. Error of the Mean is 1.392594E-1

Statistics:	Value
Trials	5000
Mean	1.315303E+01
Median	9.352151E+00
Mode	---
Standard Deviation	9.847124E+00
Variance	9.696586E+01
Skewness	1.931530E+00
Kurtosis	6.617107E+00
Coeff. of Variability	7.486581E-01
Range Minimum	3.437236E+00
Range Maximum	6.412102E+01
Range Width	6.068379E+01
Mean Std. Error	1.392594E-01



Forecast: Energy Ratio (Dimensionless) (cont'd) **Cell: G62**

Percentiles:

Percentile	Value
0.0%	3.437236E+00
2.5%	4.750552E+00
5.0%	5.104291E+00
50.0%	9.352151E+00
95.0%	3.603891E+01
97.5%	4.290956E+01
100.0%	6.412102E+01

End of Forecast

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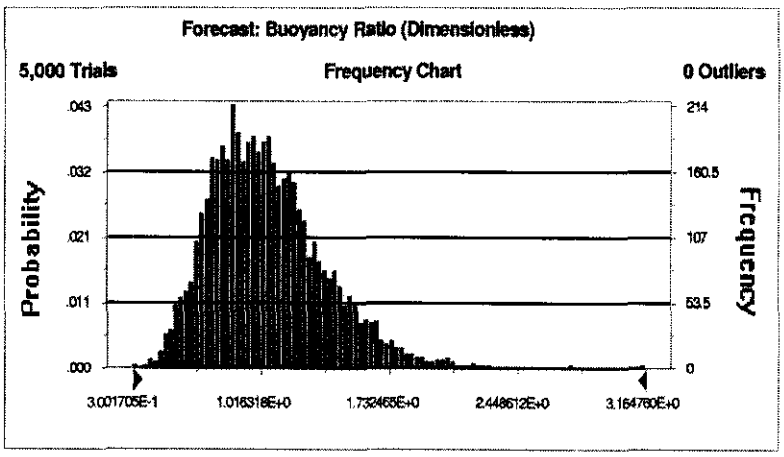
Forecast: Buoyancy Ratio (Dimensionless) **Cell: G65**

Summary:

Display Range is from 3.001705E-1 to 3.164760E+0
Entire Range is from 3.001705E-1 to 3.164760E+0
After 5,000 Trials, the Std. Error of the Mean is 4.599121E-3

Statistics:	Value
Trials	5000
Mean	1.057492E+00
Median	1.015665E+00
Mode	---
Standard Deviation	3.252069E-01
Variance	1.057595E-01
Skewness	9.270969E-01
Kurtosis	4.743387E+00
Coeff. of Variability	3.075266E-01
Range Minimum	3.001705E-01
Range Maximum	3.164760E+00
Range Width	2.864589E+00
Mean Std. Error	4.599121E-03



AY-102 mc report 020422 .xls

Forecast: Buoyancy Ratio (Dimensionless) (cont'd) **Cell: G65**

Percentiles:

Percentile	Value
0.0%	3.001705E-01
2.5%	5.491175E-01
5.0%	6.125733E-01
50.0%	1.015665E+00
95.0%	1.646889E+00
97.5%	1.795880E+00
100.0%	3.164760E+00

End of Forecast

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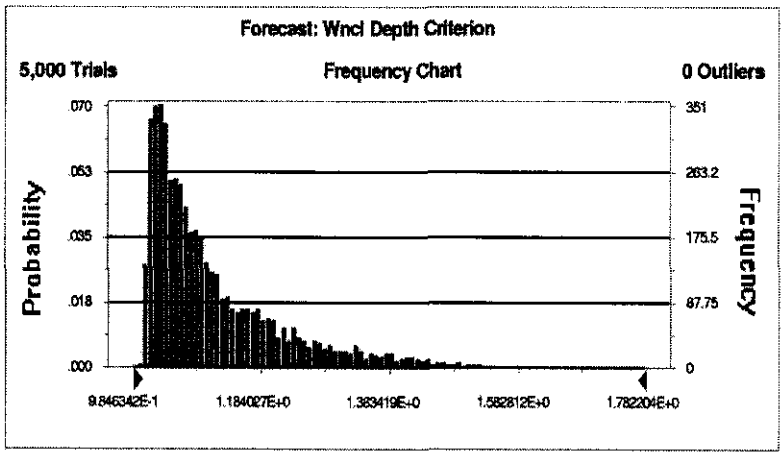
Forecast: Wncl Depth Criterion **Cell: G47**

Summary:

Display Range is from 9.846342E-1 to 1.782204E+0
Entire Range is from 9.846342E-1 to 1.782204E+0
After 5,000 Trials, the Std. Error of the Mean is 1.491397E-3

Statistics:	Value
Trials	5000
Mean	1.110450E+00
Median	1.074405E+00
Mode	---
Standard Deviation	1.054577E-01
Variance	1.112133E-02
Skewness	1.657017E+00
Kurtosis	6.009730E+00
Coeff. of Variability	9.496841E-02
Range Minimum	9.846342E-01
Range Maximum	1.782204E+00
Range Width	7.975700E-01
Mean Std. Error	1.491397E-03



Forecast: Wncl Depth Criterion (cont'd) **Cell: G47**

Percentiles:

Percentile	Value
0.0%	9.846342E-01
2.5%	1.007996E+00
5.0%	1.011118E+00
50.0%	1.074405E+00
95.0%	1.337881E+00
97.5%	1.399655E+00
100.0%	1.782204E+00

End of Forecast

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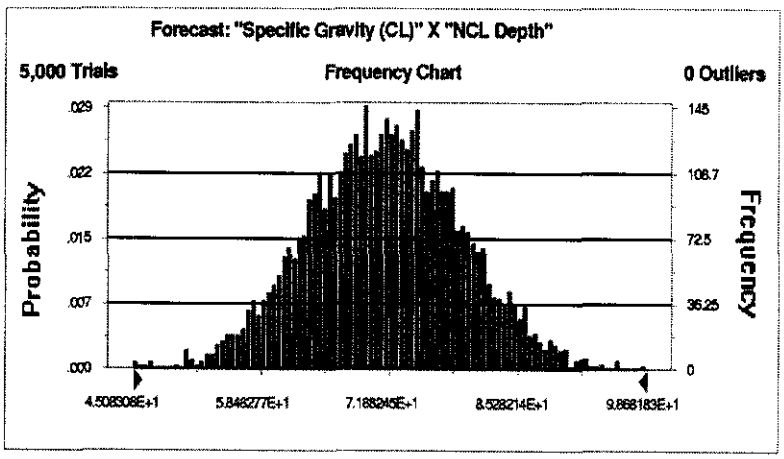
Forecast: "Specific Gravity (CL)" X "NCL Depth" **Cell: G64**

Summary:

Display Range is from 4.508308E+1 to 9.868183E+1
Entire Range is from 4.508308E+1 to 9.868183E+1
After 5,000 Trials, the Std. Error of the Mean is 1.130690E-1

Statistics:	Value
Trials	5000
Mean	7.142483E+01
Median	7.144392E+01
Mode	---
Standard Deviation	7.995192E+00
Variance	6.392309E+01
Skewness	2.356021E-03
Kurtosis	2.946095E+00
Coeff. of Variability	1.119386E-01
Range Minimum	4.508308E+01
Range Maximum	9.868183E+01
Range Width	5.359874E+01
Mean Std. Error	1.130691E-01



Forecast: "Specific Gravity (CL)" X "NCL Depth" (cont'd) **Cell: G64**

Percentiles:

Percentile	Value
0.0%	4.508308E+01
2.5%	5.589887E+01
5.0%	5.829549E+01
50.0%	7.144392E+01
95.0%	8.471224E+01
97.5%	8.699356E+01
100.0%	9.868183E+01

End of Forecast

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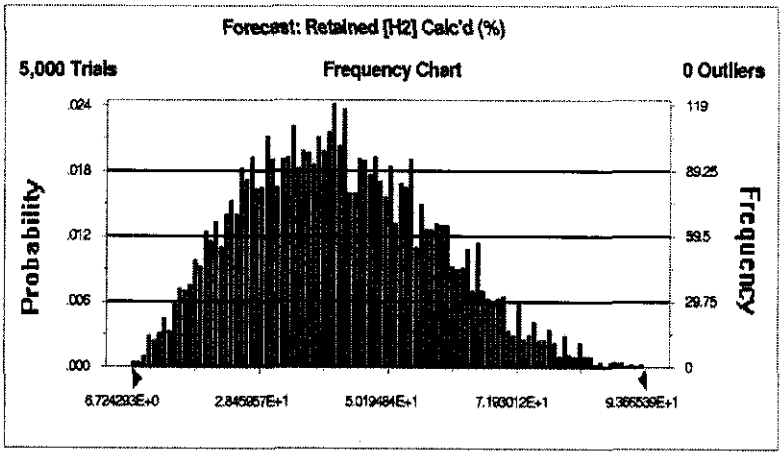
Forecast: Retained [H2] Calc'd (%) **Cell: G37**

Summary:

Display Range is from 6.724293E+0 to 9.366539E+1
Entire Range is from 6.724293E+0 to 9.366539E+1
After 5,000 Trials, the Std. Error of the Mean is 2.245526E-1

Statistics:	Value
Trials	5000
Mean	4.189702E+01
Median	4.097255E+01
Mode	---
Standard Deviation	1.587827E+01
Variance	2.521194E+02
Skewness	2.917192E-01
Kurtosis	2.542001E+00
Coeff. of Variability	3.789833E-01
Range Minimum	6.724293E+00
Range Maximum	9.366539E+01
Range Width	8.694110E+01
Mean Std. Error	2.245526E-01



Forecast: Retained [H2] Calc'd (%) (cont'd) **Cell: G37**

Percentiles:

Percentile	Value
0.0%	6.724293E+00
2.5%	1.493131E+01
5.0%	1.756688E+01
50.0%	4.097255E+01
95.0%	6.935769E+01
97.5%	7.483335E+01
100.0%	9.366539E+01

End of Forecast

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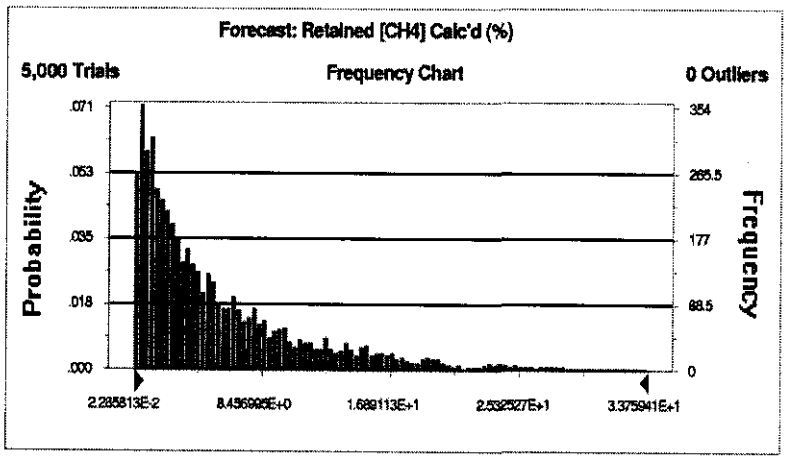
Forecast: Retained [CH4] Calc'd (%) **Cell: G38**

Summary:

Display Range is from 2.285813E-2 to 3.375941E+1
Entire Range is from 2.285813E-2 to 3.375941E+1
After 5,000 Trials, the Std. Error of the Mean is 7.773840E-2

Statistics:	Value
Trials	5000
Mean	5.467129E+00
Median	3.561370E+00
Mode	---
Standard Deviation	5.496935E+00
Variance	3.021629E+01
Skewness	1.596500E+00
Kurtosis	5.515036E+00
Coeff. of Variability	1.005452E+00
Range Minimum	2.285813E-02
Range Maximum	3.375941E+01
Range Width	3.373655E+01
Mean Std. Error	7.773840E-02



Forecast: Retained [CH4] Calc'd (%) (cont'd) **Cell: G38**

Percentiles:

Percentile	Value
0.0%	2.285813E-02
2.5%	2.263522E-01
5.0%	3.491497E-01
50.0%	3.561370E+00
95.0%	1.698324E+01
97.5%	2.013836E+01
100.0%	3.375941E+01

End of Forecast

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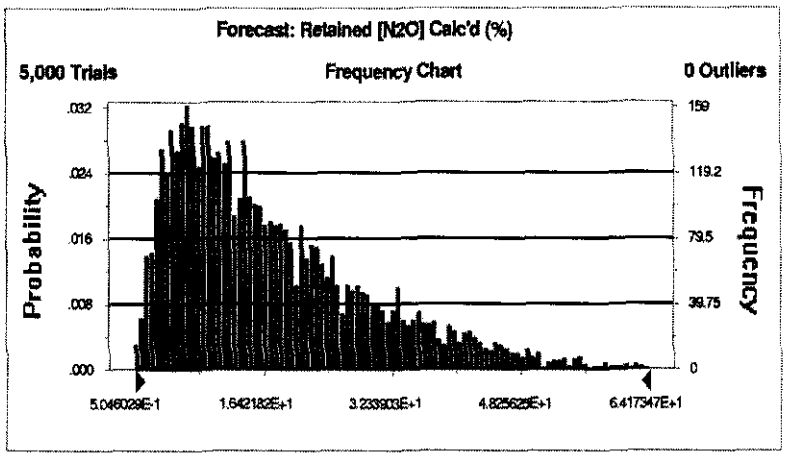
Forecast: Retained [N2O] Calc'd (%) **Cell: G39**

Summary:
Display Range is from 5.046029E-1 to 6.417347E+1
Entire Range is from 5.046029E-1 to 6.417347E+1
After 5,000 Trials, the Std. Error of the Mean is 1.694663E-1

Statistics:	Value
Trials	5000
Mean	1.740010E+01
Median	1.437389E+01
Mode	---
Standard Deviation	1.198307E+01
Variance	1.435941E+02
Skewness	1.053029E+00
Kurtosis	3.702945E+00
Coeff. of Variability	6.886786E-01
Range Minimum	5.046029E-01
Range Maximum	6.417347E+01
Range Width	6.366886E+01
Mean Std. Error	1.694663E-01



Forecast: Retained [N2O] Calc'd (%) (cont'd) **Cell: G39**

Percentiles:

Percentile	Value
0.0%	5.046029E-01
2.5%	2.511754E+00
5.0%	3.502906E+00
50.0%	1.437389E+01
95.0%	4.175480E+01
97.5%	4.678089E+01
100.0%	6.417347E+01

End of Forecast

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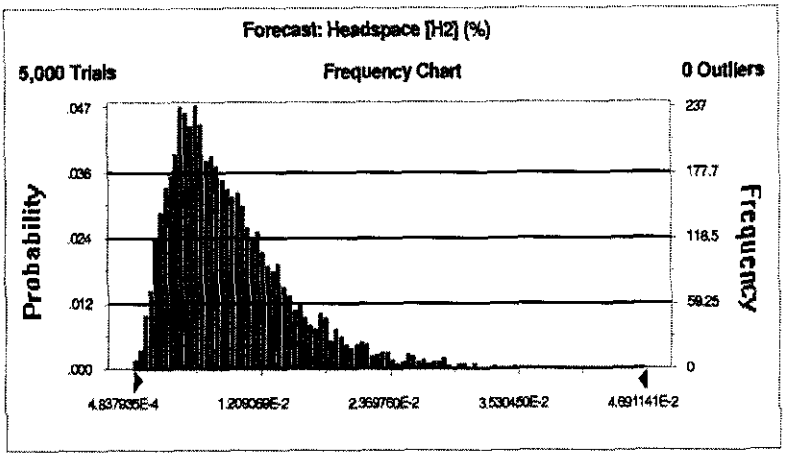
Forecast: Headspace [H2] (%) **Cell: G52**

Summary:
Display Range is from 4.837935E-4 to 4.691141E-2
Entire Range is from 4.837935E-4 to 4.691141E-2
After 5,000 Trials, the Std. Error of the Mean is 7.830735E-5

Statistics:	Value
Trials	5000
Mean	9.279357E-03
Median	8.036897E-03
Mode	---
Standard Deviation	5.537166E-03
Variance	3.066021E-05
Skewness	1.420917E+00
Kurtosis	6.007092E+00
Coeff. of Variability	5.967187E-01
Range Minimum	4.837935E-04
Range Maximum	4.691141E-02
Range Width	4.642761E-02
Mean Std. Error	7.830735E-05



Forecast: Headspace [H2] (%) (cont'd) **Cell: G52**

Percentiles:

Percentile	Value
0.0%	4.837935E-04
2.5%	2.208415E-03
5.0%	2.771539E-03
50.0%	8.036897E-03
95.0%	2.004220E-02
97.5%	2.334778E-02
100.0%	4.691141E-02

End of Forecast

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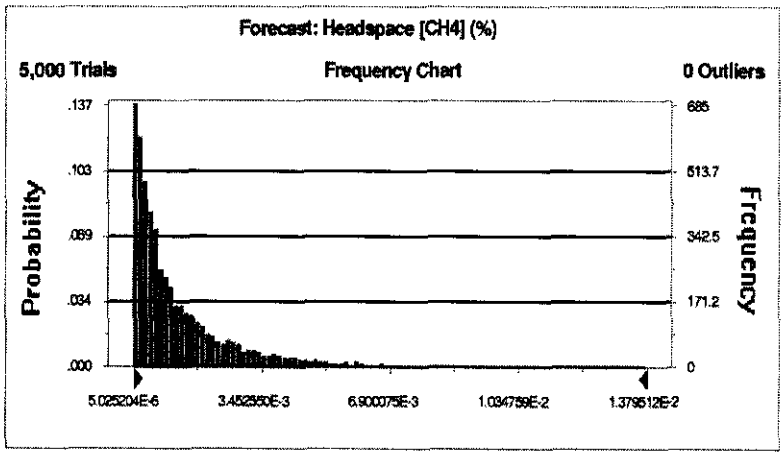
Forecast: Headspace [CH4] (%) **Cell: G53**

Summary:

Display Range is from 5.025204E-6 to 1.379512E-2
Entire Range is from 5.025204E-6 to 1.379512E-2
After 5,000 Trials, the Std. Error of the Mean is 2.023842E-5

Statistics:	Value
Trials	5000
Mean	1.213631E-03
Median	6.896263E-04
Mode	---
Standard Deviation	1.431073E-03
Variance	2.047969E-06
Skewness	2.512413E+00
Kurtosis	1.237447E+01
Coeff. of Variability	1.179166E+00
Range Minimum	5.025204E-06
Range Maximum	1.379512E-02
Range Width	1.379010E-02
Mean Std. Error	2.023842E-05



Forecast: Headspace [CH4] (%) (cont'd) **Cell: G53**

Percentiles:

Percentile	Value
0.0%	5.025204E-06
2.5%	4.145406E-05
5.0%	6.447876E-05
50.0%	6.896263E-04
95.0%	4.098967E-03
97.5%	5.139785E-03
100.0%	1.379512E-02

End of Forecast

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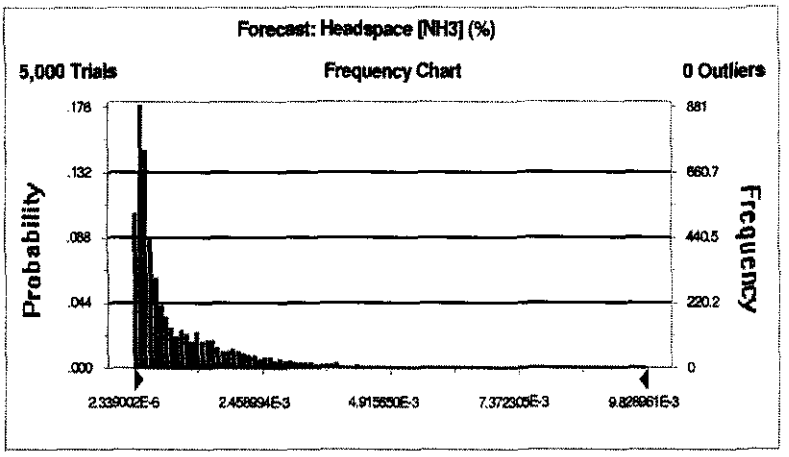
Forecast: Headspace [NH3] (%) **Cell: G54**

Summary:
Display Range is from 2.339002E-6 to 9.828961E-3
Entire Range is from 2.339002E-6 to 9.828961E-3
After 5,000 Trials, the Std. Error of the Mean is 1.338044E-5

Statistics:	Value
Trials	5000
Mean	7.907445E-04
Median	3.762830E-04
Mode	---
Standard Deviation	9.461406E-04
Variance	8.951821E-07
Skewness	2.364881E+00
Kurtosis	1.107627E+01
Coeff. of Variability	1.196519E+00
Range Minimum	2.339002E-06
Range Maximum	9.828961E-03
Range Width	9.826622E-03
Mean Std. Error	1.338045E-05



Forecast: Headspace [NH3] (%) (cont'd) **Cell: G54**

Percentiles:

Percentile	Value
0.0%	2.339002E-06
2.5%	5.158267E-05
5.0%	6.982449E-05
50.0%	3.762830E-04
95.0%	2.724365E-03
97.5%	3.329183E-03
100.0%	9.828961E-03

End of Forecast

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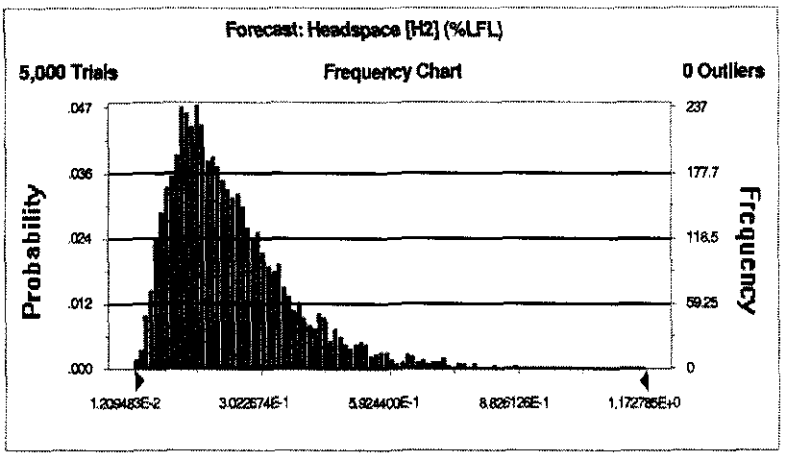
Forecast: Headspace [H2] (%LFL) **Cell: G55**

Summary:

Display Range is from 1.209483E-2 to 1.172785E+0
Entire Range is from 1.209483E-2 to 1.172785E+0
After 5,000 Trials, the Std. Error of the Mean is 1.957684E-3

Statistics:	Value
Trials	5000
Mean	2.319839E-01
Median	2.009224E-01
Mode	---
Standard Deviation	1.384291E-01
Variance	1.916263E-02
Skewness	1.420917E+00
Kurtosis	6.007092E+00
Coeff. of Variability	5.967187E-01
Range Minimum	1.209484E-02
Range Maximum	1.172785E+00
Range Width	1.160690E+00
Mean Std. Error	1.957684E-03



Forecast: Headspace [H2] (%LFL) (cont'd) **Cell: G55**

Percentiles:

Percentile	Value
0.0%	1.209484E-02
2.5%	5.521038E-02
5.0%	6.928848E-02
50.0%	2.009224E-01
95.0%	5.010549E-01
97.5%	5.836945E-01
100.0%	1.172785E+00

End of Forecast

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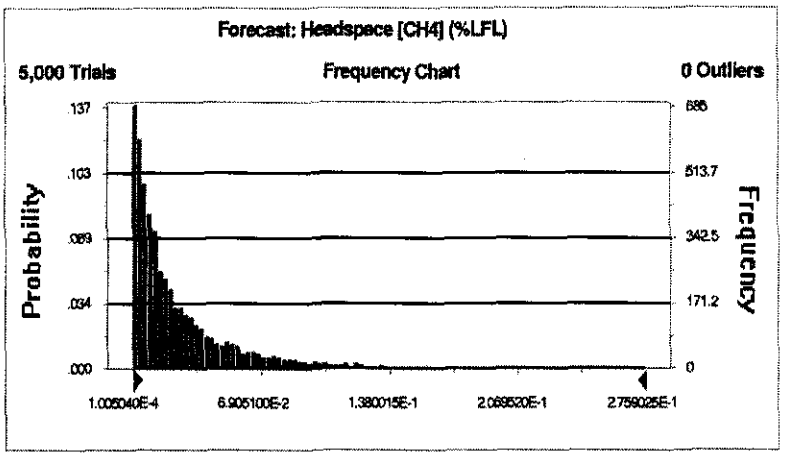
Forecast: Headspace [CH4] (%LFL) **Cell: G56**

Summary:

Display Range is from 1.005040E-4 to 2.759025E-1
Entire Range is from 1.005040E-4 to 2.759025E-1
After 5,000 Trials, the Std. Error of the Mean is 4.047685E-4

Statistics:	Value
Trials	5000
Mean	2.427263E-02
Median	1.379253E-02
Mode	---
Standard Deviation	2.862145E-02
Variance	8.191875E-04
Skewness	2.512413E+00
Kurtosis	1.237447E+01
Coeff. of Variability	1.179166E+00
Range Minimum	1.005041E-04
Range Maximum	2.759025E-01
Range Width	2.758020E-01
Mean Std. Error	4.047685E-04



Forecast: Headspace [CH4] (%LFL) (cont'd) **Cell: G56**

Percentiles:

Percentile	Value
0.0%	1.005041E-04
2.5%	8.290811E-04
5.0%	1.289575E-03
50.0%	1.379253E-02
95.0%	8.197934E-02
97.5%	1.027957E-01
100.0%	2.759025E-01

End of Forecast

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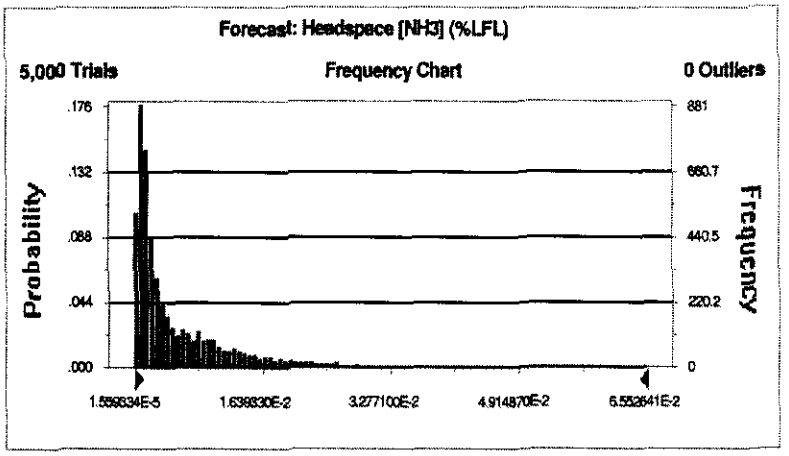
Forecast: Headspace [NH3] (%LFL) **Cell: G57**

Summary:
Display Range is from 1.559334E-5 to 6.552641E-2
Entire Range is from 1.559334E-5 to 6.552641E-2
After 5,000 Trials, the Std. Error of the Mean is 8.920299E-5

Statistics:	Value
Trials	5000
Mean	5.271630E-03
Median	2.508553E-03
Mode	---
Standard Deviation	6.307604E-03
Variance	3.978587E-05
Skewness	2.364881E+00
Kurtosis	1.107627E+01
Coeff. of Variability	1.196519E+00
Range Minimum	1.559334E-05
Range Maximum	6.552641E-02
Range Width	6.551081E-02
Mean Std. Error	8.920299E-05



Forecast: Headspace [NH3] (%LFL) (cont'd) **Cell: G57**

Percentiles:

Percentile	Value
0.0%	1.559334E-05
2.5%	3.438845E-04
5.0%	4.654966E-04
50.0%	2.508553E-03
95.0%	1.816243E-02
97.5%	2.219455E-02
100.0%	6.552641E-02

End of Forecast

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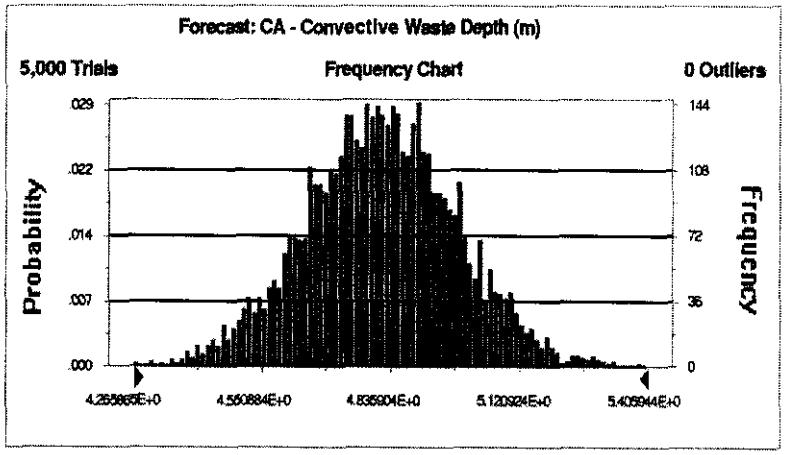
Forecast: CA - Convective Waste Depth (m) **Cell: G170**

Summary:

Display Range is from 4.265865E+0 to 5.405944E+0
Entire Range is from 4.265865E+0 to 5.405944E+0
After 5,000 Trials, the Std. Error of the Mean is 2.369185E-3

Statistics:	Value
Trials	5000
Mean	4.815573E+00
Median	4.815017E+00
Mode	---
Standard Deviation	1.675267E-01
Variance	2.806519E-02
Skewness	3.149074E-02
Kurtosis	3.011388E+00
Coeff. of Variability	3.478852E-02
Range Minimum	4.265865E+00
Range Maximum	5.405944E+00
Range Width	1.140079E+00
Mean Std. Error	2.369185E-03



Forecast: CA - Convective Waste Depth (m) (cont'd) **Cell: G170**

Percentiles:

Percentile	Value
0.0%	4.265865E+00
2.5%	4.483376E+00
5.0%	4.533116E+00
50.0%	4.815017E+00
95.0%	5.092513E+00
97.5%	5.144025E+00
100.0%	5.405944E+00

End of Forecast

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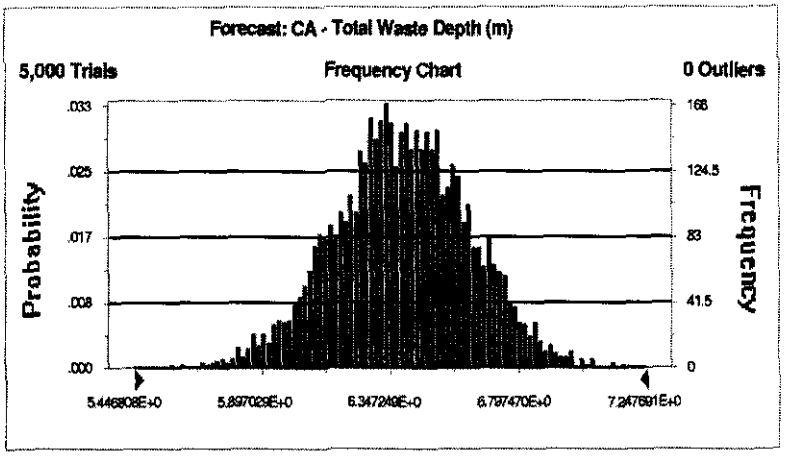
Forecast: CA - Total Waste Depth (m) **Cell: G167**

Summary:
Display Range is from 5.446808E+0 to 7.247691E+0
Entire Range is from 5.446808E+0 to 7.247691E+0
After 5,000 Trials, the Std. Error of the Mean is 3.345002E-3

Statistics:	Value
Trials	5000
Mean	6.392751E+00
Median	6.393386E+00
Mode	---
Standard Deviation	2.365274E-01
Variance	5.594519E-02
Skewness	-3.872719E-02
Kurtosis	3.028611E+00
Coeff. of Variability	3.699930E-02
Range Minimum	5.446808E+00
Range Maximum	7.247691E+00
Range Width	1.800883E+00
Mean Std. Error	3.345002E-03



Forecast: CA - Total Waste Depth (m) (cont'd) **Cell: G167**

Percentiles:

Percentile	Value
0.0%	5.446808E+00
2.5%	5.918750E+00
5.0%	6.004159E+00
50.0%	6.393386E+00
95.0%	6.773806E+00
97.5%	6.850885E+00
100.0%	7.247691E+00

End of Forecast

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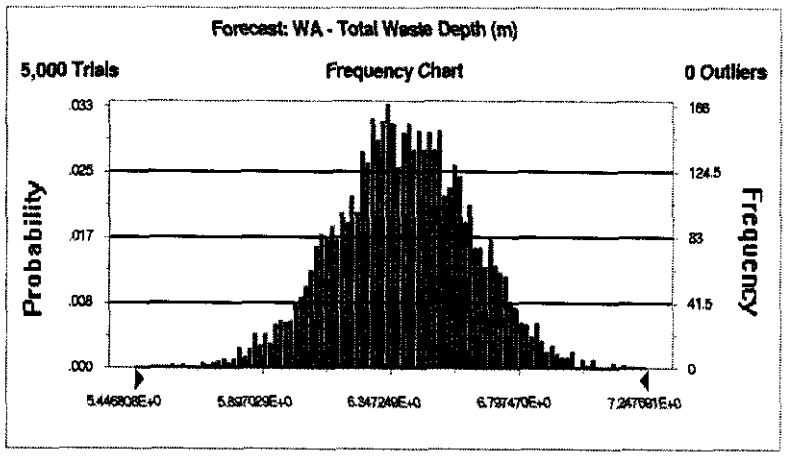
Forecast: WA - Total Waste Depth (m) **Cell: G85**

Summary:

Display Range is from 5.446808E+0 to 7.247691E+0
Entire Range is from 5.446808E+0 to 7.247691E+0
After 5,000 Trials, the Std. Error of the Mean is 3.345002E-3

Statistics:	Value
Trials	5000
Mean	6.392751E+00
Median	6.393386E+00
Mode	---
Standard Deviation	2.365274E-01
Variance	5.594519E-02
Skewness	-3.872719E-02
Kurtosis	3.028611E+00
Coeff. of Variability	3.699930E-02
Range Minimum	5.446808E+00
Range Maximum	7.247691E+00
Range Width	1.800883E+00
Mean Std. Error	3.345002E-03



Forecast: WA - Total Waste Depth (m) (cont'd) **Cell: G85**

Percentiles:

Percentile	Value
0.0%	5.446808E+00
2.5%	5.918750E+00
5.0%	6.004159E+00
50.0%	6.393386E+00
95.0%	6.773806E+00
97.5%	6.850885E+00
100.0%	7.247691E+00

End of Forecast

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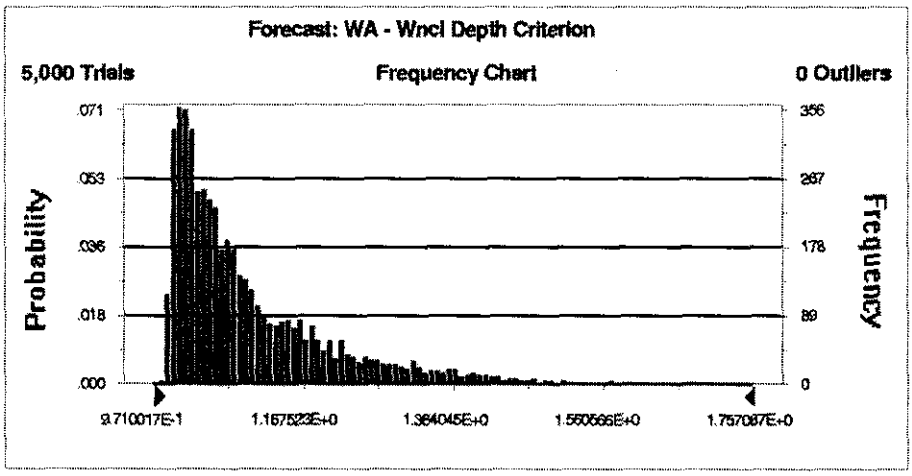
Forecast: WA - Wncl Depth Criterion **Cell: G126**

Summary:
Display Range is from 9.710017E-1 to 1.757087E+0
Entire Range is from 9.710017E-1 to 1.757087E+0
After 5,000 Trials, the Std. Error of the Mean is 1.469520E-3

Statistics:	Value
Trials	5000
Mean	1.095445E+00
Median	1.060035E+00
Mode	---
Standard Deviation	1.039108E-01
Variance	1.079745E-02
Skewness	1.658553E+00
Kurtosis	6.016762E+00
Coeff. of Variability	9.485710E-02
Range Minimum	9.710017E-01
Range Maximum	1.757087E+00
Range Width	7.860857E-01
Mean Std. Error	1.469520E-03



Forecast: WA - Wncl Depth Criterion (cont'd) **Cell: G126**

Percentiles:

Percentile	Value
0.0%	9.710017E-01
2.5%	9.946060E-01
5.0%	9.975495E-01
50.0%	1.060035E+00
95.0%	1.319456E+00
97.5%	1.379843E+00
100.0%	1.757087E+00

End of Forecast

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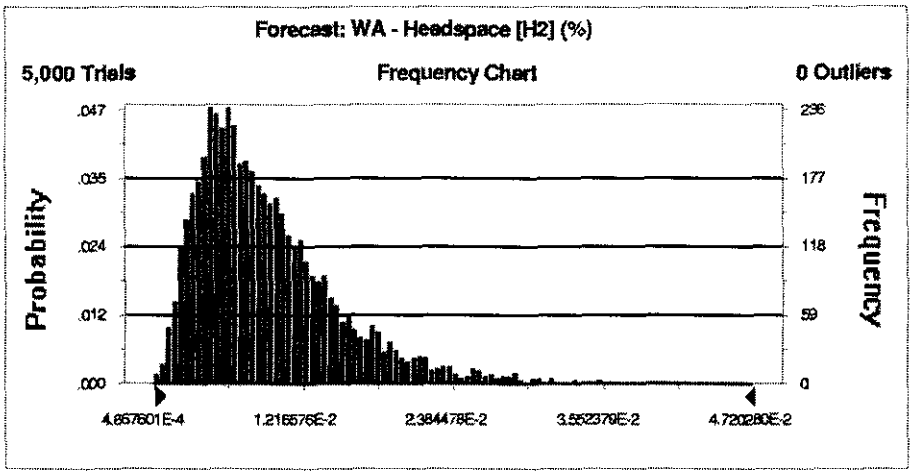
Forecast: WA - Headspace [H2] (%) **Cell: G131**

Summary:
Display Range is from 4.867601E-4 to 4.720280E-2
Entire Range is from 4.867601E-4 to 4.720280E-2
After 5,000 Trials, the Std. Error of the Mean is 7.879887E-5

Statistics:	Value
Trials	5000
Mean	9.337760E-03
Median	8.087794E-03
Mode	---
Standard Deviation	5.571921E-03
Variance	3.104631E-05
Skewness	1.420843E+00
Kurtosis	6.006610E+00
Coeff. of Variability	5.967085E-01
Range Minimum	4.867601E-04
Range Maximum	4.720280E-02
Range Width	4.671604E-02
Mean Std. Error	7.879887E-05



Forecast: WA - Headspace [H2] (%) (cont'd) **Cell: G131**

Percentiles:

Percentile	Value
0.0%	4.867601E-04
2.5%	2.221989E-03
5.0%	2.789253E-03
50.0%	8.087794E-03
95.0%	2.016615E-02
97.5%	2.349155E-02
100.0%	4.720280E-02

End of Forecast

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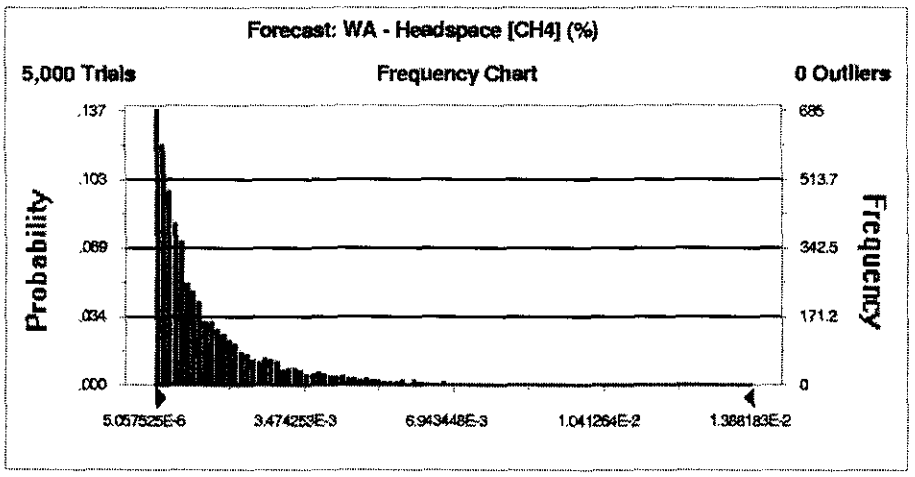
Forecast: WA - Headspace [CH4] (%) **Cell: G132**

Summary:

Display Range is from 5.057525E-6 to 1.388183E-2
Entire Range is from 5.057525E-6 to 1.388183E-2
After 5,000 Trials, the Std. Error of the Mean is 2.036573E-5

Statistics:	Value
Trials	5000
Mean	1.221269E-03
Median	6.940731E-04
Mode	---
Standard Deviation	1.440075E-03
Variance	2.073815E-06
Skewness	2.512444E+00
Kurtosis	1.237472E+01
Coeff. of Variability	1.179162E+00
Range Minimum	5.057525E-06
Range Maximum	1.388184E-02
Range Width	1.387678E-02
Mean Std. Error	2.036573E-05



Forecast: WA - Headspace [CH4] (%) (cont'd) **Cell: G132**

Percentiles:

Percentile	Value
0.0%	5.057525E-06
2.5%	4.171315E-05
5.0%	6.487739E-05
50.0%	6.940731E-04
95.0%	4.125120E-03
97.5%	5.173127E-03
100.0%	1.388184E-02

End of Forecast

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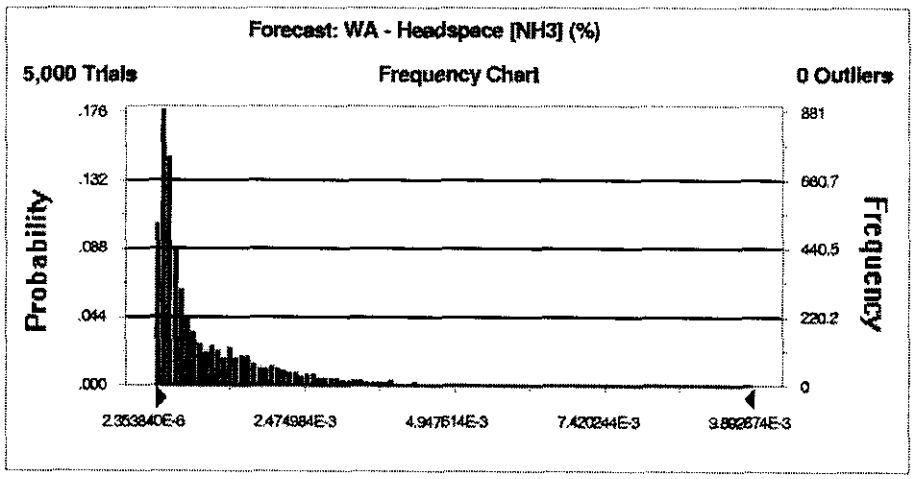
Forecast: WA - Headspace [NH3] (%) **Cell: G133**

Summary:

Display Range is from 2.353840E-6 to 9.892874E-3
Entire Range is from 2.353840E-6 to 9.892874E-3
After 5,000 Trials, the Std. Error of the Mean is 1.346476E-5

Statistics:	Value
Trials	5000
Mean	7.957239E-04
Median	3.786606E-04
Mode	---
Standard Deviation	9.521024E-04
Variance	9.064990E-07
Skewness	2.364982E+00
Kurtosis	1.107765E+01
Coeff. of Variability	1.196524E+00
Range Minimum	2.353840E-06
Range Maximum	9.892874E-03
Range Width	9.890520E-03
Mean Std. Error	1.346476E-05



Forecast: WA - Headspace [NH3] (%) (cont'd) **Cell: G133**

Percentiles:

Percentile	Value
0.0%	2.353840E-06
2.5%	5.192769E-05
5.0%	7.027381E-05
50.0%	3.786606E-04
95.0%	2.741130E-03
97.5%	3.350719E-03
100.0%	9.892874E-03

End of Forecast

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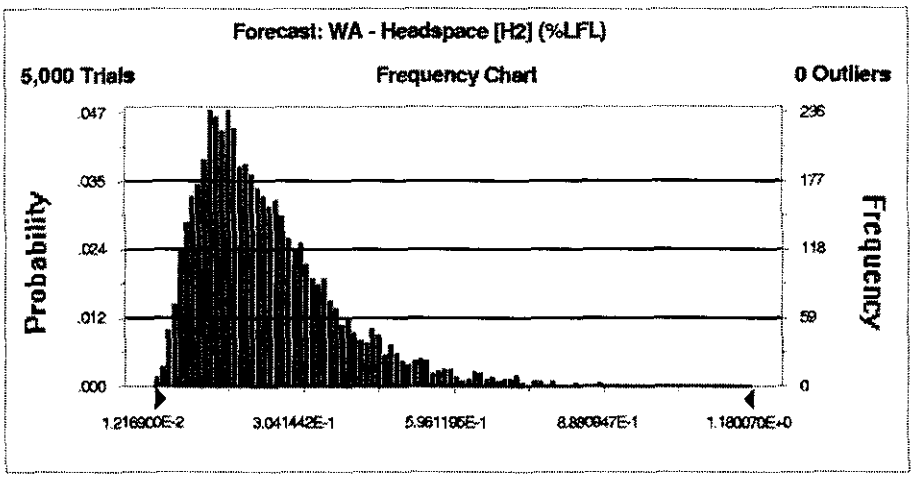
Forecast: WA - Headspace [H2] (%LFL) **Cell: G134**

Summary:
Display Range is from 1.216900E-2 to 1.180070E+0
Entire Range is from 1.216900E-2 to 1.180070E+0
After 5,000 Trials, the Std. Error of the Mean is 1.969972E-3

Statistics:	Value
Trials	5000
Mean	2.334440E-01
Median	2.021948E-01
Mode	---
Standard Deviation	1.392980E-01
Variance	1.940394E-02
Skewness	1.420843E+00
Kurtosis	6.006610E+00
Coeff. of Variability	5.967085E-01
Range Minimum	1.216900E-02
Range Maximum	1.180070E+00
Range Width	1.167901E+00
Mean Std. Error	1.969972E-03



Forecast: WA - Headspace [H2] (%LFL) (cont'd) **Cell: G134**

Percentiles:

Percentile	Value
0.0%	1.216900E-02
2.5%	5.554972E-02
5.0%	6.973134E-02
50.0%	2.021948E-01
95.0%	5.041537E-01
97.5%	5.872888E-01
100.0%	1.180070E+00

End of Forecast

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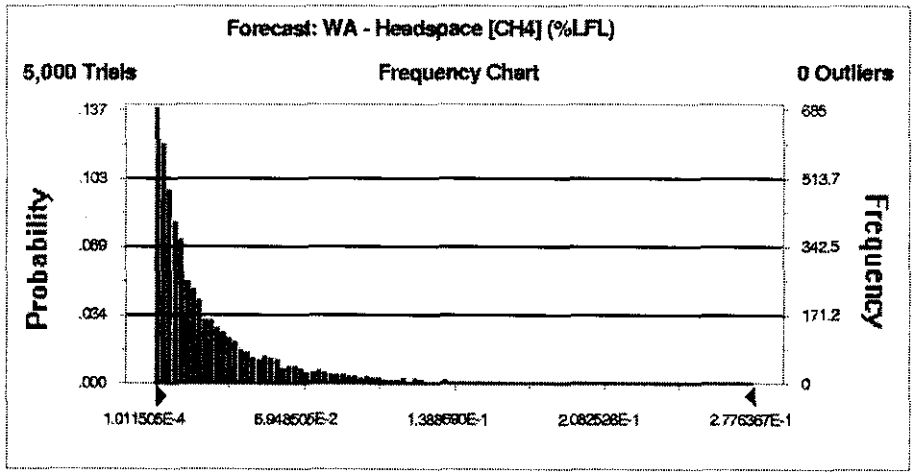
Forecast: WA - Headspace [CH4] (%LFL) **Cell: G135**

Summary:

Display Range is from 1.011505E-4 to 2.776367E-1
Entire Range is from 1.011505E-4 to 2.776367E-1
After 5,000 Trials, the Std. Error of the Mean is 4.073146E-4

Statistics:	Value
Trials	5000
Mean	2.442539E-02
Median	1.388146E-02
Mode	---
Standard Deviation	2.880149E-02
Variance	8.295259E-04
Skewness	2.512444E+00
Kurtosis	1.237472E+01
Coeff. of Variability	1.179162E+00
Range Minimum	1.011505E-04
Range Maximum	2.776367E-01
Range Width	2.775356E-01
Mean Std. Error	4.073146E-04



Forecast: WA - Headspace [CH4] (%LFL) (cont'd) **Cell: G135**

Percentiles:

Percentile	Value
0.0%	1.011505E-04
2.5%	8.342630E-04
5.0%	1.297548E-03
50.0%	1.388146E-02
95.0%	8.250241E-02
97.5%	1.034625E-01
100.0%	2.776367E-01

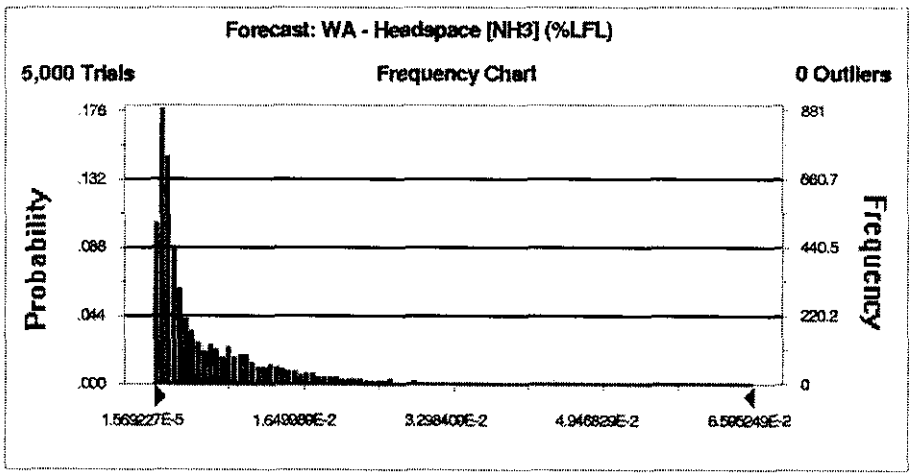
End of Forecast

Forecast: WA - Headspace [NH3] (%LFL) **Cell: G136**

Summary:

Display Range is from 1.569227E-5 to 6.595249E-2
Entire Range is from 1.569227E-5 to 6.595249E-2
After 5,000 Trials, the Std. Error of the Mean is 8.976508E-5

Statistics:	Value
Trials	5000
Mean	5.304826E-03
Median	2.524404E-03
Mode	---
Standard Deviation	6.347350E-03
Variance	4.028885E-05
Skewness	2.364982E+00
Kurtosis	1.107765E+01
Coeff. of Variability	1.196524E+00
Range Minimum	1.569227E-05
Range Maximum	6.595249E-02
Range Width	6.593680E-02
Mean Std. Error	8.976508E-05



Forecast: WA - Headspace [NH3] (%LFL) (cont'd) **Cell: G136**

Percentiles:

Percentile	Value
0.0%	1.569227E-05
2.5%	3.461846E-04
5.0%	4.684921E-04
50.0%	2.524404E-03
95.0%	1.827420E-02
97.5%	2.233813E-02
100.0%	6.595249E-02

End of Forecast

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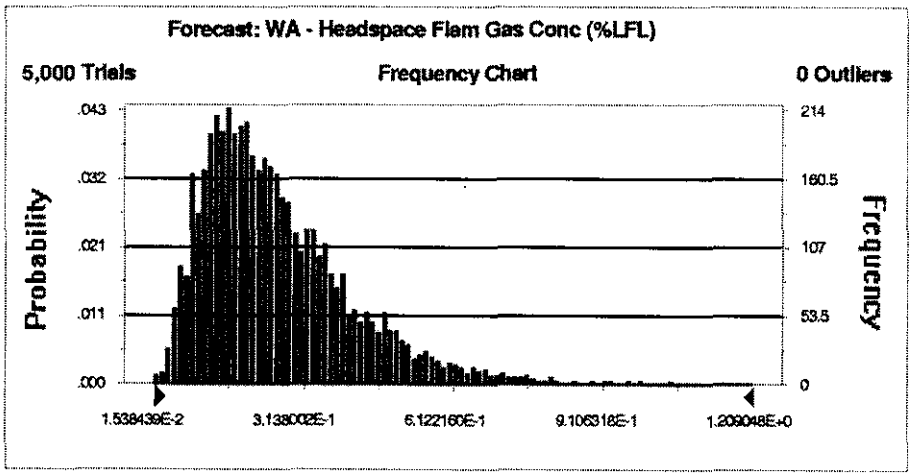
Forecast: WA - Headspace Flam Gas Conc (%LFL) **Cell: G137**

Summary:

Display Range is from 1.538439E-2 to 1.209048E+0
Entire Range is from 1.538439E-2 to 1.209048E+0
After 5,000 Trials, the Std. Error of the Mean is 2.143640E-3

Statistics:	Value
Trials	5000
Mean	2.631742E-01
Median	2.306730E-01
Mode	---
Standard Deviation	1.515783E-01
Variance	2.297597E-02
Skewness	1.357579E+00
Kurtosis	5.688105E+00
Coeff. of Variability	5.759617E-01
Range Minimum	1.538440E-02
Range Maximum	1.209048E+00
Range Width	1.193663E+00
Mean Std. Error	2.143640E-03



Forecast: WA - Headspace Flam Gas Conc (%LFL) (cont'd) **Cell: G137**

Percentiles:

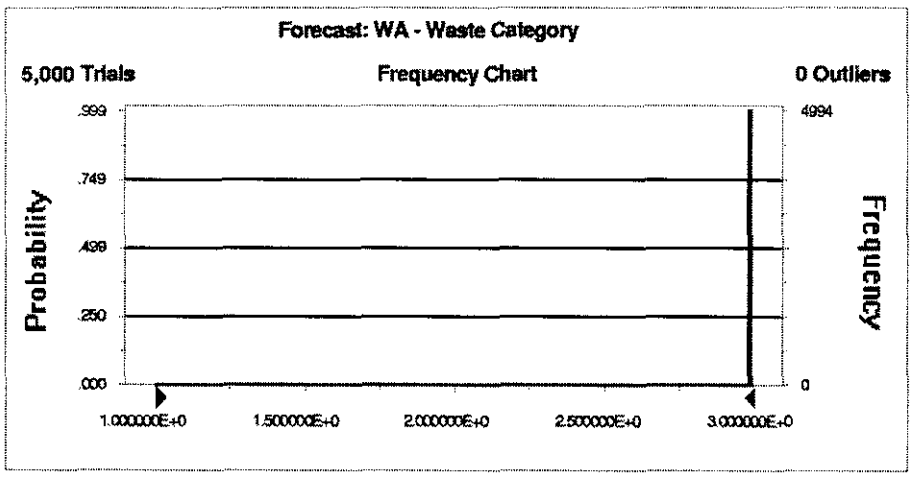
Percentile	Value
0.0%	1.538440E-02
2.5%	6.650266E-02
5.0%	8.403103E-02
50.0%	2.306730E-01
95.0%	5.543411E-01
97.5%	6.471054E-01
100.0%	1.209048E+00

End of Forecast

Forecast: WA - Waste Category **Cell: G138**

Summary:
Display Range is from 1.000000E+0 to 3.000000E+0
Entire Range is from 1.000000E+0 to 3.000000E+0
After 5,000 Trials, the Std. Error of the Mean is 6.925200E-4

Statistics:	Value
Trials	5000
Mean	2.998400E+00
Median	3.000000E+00
Mode	3.000000E+00
Standard Deviation	4.896856E-02
Variance	2.397920E-03
Skewness	-3.396694E+01
Kurtosis	1.247724E+03
Coeff. of Variability	1.633156E-02
Range Minimum	1.000000E+00
Range Maximum	3.000000E+00
Range Width	2.000000E+00
Mean Std. Error	6.925200E-04



Forecast: WA - Waste Category (cont'd) **Cell: G138**

Percentiles:

Percentile	Value
0.0%	1.000000E+00
2.5%	3.000000E+00
5.0%	3.000000E+00
50.0%	3.000000E+00
95.0%	3.000000E+00
97.5%	3.000000E+00
100.0%	3.000000E+00

End of Forecast

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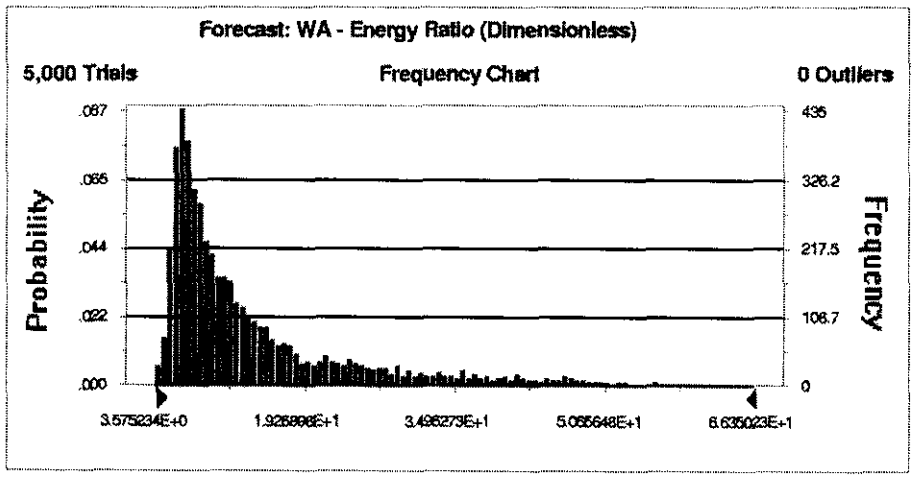
Forecast: WA - Energy Ratio (Dimensionless) **Cell: G141**

Summary:

Display Range is from 3.575234E+0 to 6.635023E+1
Entire Range is from 3.575234E+0 to 6.635023E+1
After 5,000 Trials, the Std. Error of the Mean is 1.443439E-1

Statistics:	Value
Trials	5000
Mean	1.363691E+01
Median	9.713406E+00
Mode	---
Standard Deviation	1.020666E+01
Variance	1.041758E+02
Skewness	1.930579E+00
Kurtosis	6.609519E+00
Coeff. of Variability	7.484582E-01
Range Minimum	3.575234E+00
Range Maximum	6.635023E+01
Range Width	6.277500E+01
Mean Std. Error	1.443439E-01



Forecast: WA - Energy Ratio (Dimensionless) (cont'd) **Cell: G141**

Percentiles:

Percentile	Value
0.0%	3.575234E+00
2.5%	4.931562E+00
5.0%	5.295935E+00
50.0%	9.713406E+00
95.0%	3.727649E+01
97.5%	4.450119E+01
100.0%	6.635023E+01

End of Forecast

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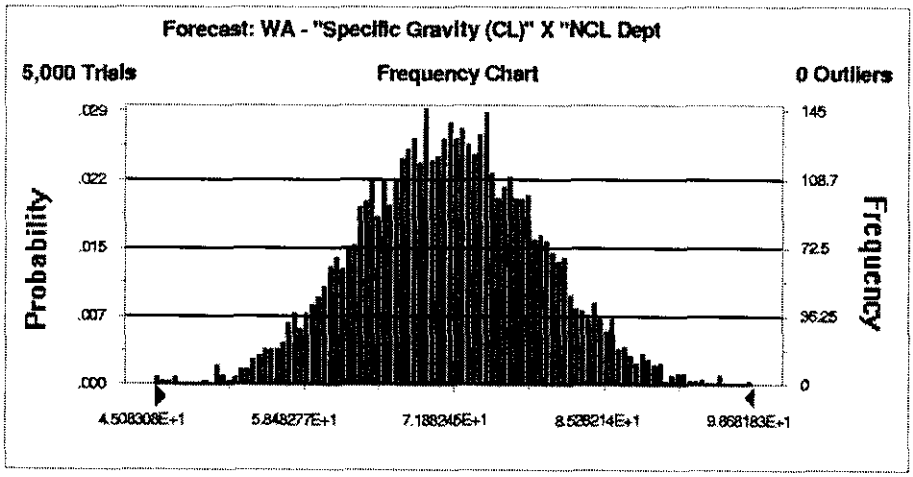
Forecast: WA - "Specific Gravity (CL)" X "NCL Dept **Cell: G143**

Summary:
Display Range is from 4.508308E+1 to 9.868183E+1
Entire Range is from 4.508308E+1 to 9.868183E+1
After 5,000 Trials, the Std. Error of the Mean is 1.130690E-1

Statistics:	Value
Trials	5000
Mean	7.142483E+01
Median	7.144392E+01
Mode	---
Standard Deviation	7.995192E+00
Variance	6.392309E+01
Skewness	2.356021E-03
Kurtosis	2.946095E+00
Coeff. of Variability	1.119386E-01
Range Minimum	4.508308E+01
Range Maximum	9.868183E+01
Range Width	5.359874E+01
Mean Std. Error	1.130691E-01



Forecast: WA - "Specific Gravity (CL)" X "NCL Dept (cont'd) **Cell: G143**

Percentiles:

Percentile	Value
0.0%	4.508308E+01
2.5%	5.589887E+01
5.0%	5.829549E+01
50.0%	7.144392E+01
95.0%	8.471224E+01
97.5%	8.699356E+01
100.0%	9.868183E+01

End of Forecast

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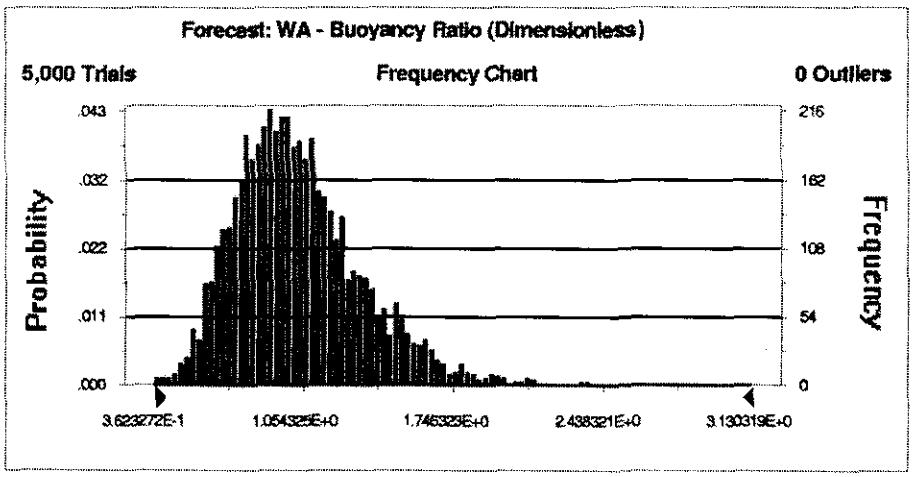
Forecast: WA - Buoyancy Ratio (Dimensionless) **Cell: G144**

Summary:
Display Range is from 3.623272E-1 to 3.130319E+0
Entire Range is from 3.623272E-1 to 3.130319E+0
After 5,000 Trials, the Std. Error of the Mean is 4.181049E-3

Statistics:	Value
Trials	5000
Mean	1.029170E+00
Median	9.888693E-01
Mode	---
Standard Deviation	2.956448E-01
Variance	8.740586E-02
Skewness	9.033716E-01
Kurtosis	4.671643E+00
Coeff. of Variability	2.872653E-01
Range Minimum	3.623272E-01
Range Maximum	3.130319E+00
Range Width	2.767992E+00
Mean Std. Error	4.181049E-03



Forecast: WA - Buoyancy Ratio (Dimensionless) (cont'd) **Cell: G144**

Percentiles:

Percentile	Value
0.0%	3.623272E-01
2.5%	5.689344E-01
5.0%	6.234351E-01
50.0%	9.888693E-01
95.0%	1.576214E+00
97.5%	1.706114E+00
100.0%	3.130319E+00

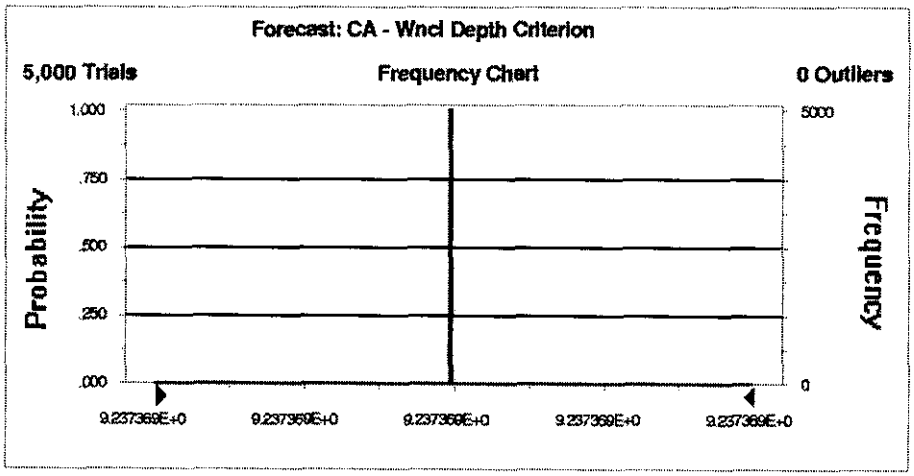
End of Forecast

Forecast: CA - Wncl Depth Criterion **Cell: G208**

Summary:

Display Range is from 9.237369E+0 to 9.237369E+0
Entire Range is from 9.237369E+0 to 9.237369E+0
After 5,000 Trials, the Std. Error of the Mean is 1.730967E-9

Statistics:	Value
Trials	5000
Mean	9.237369E+00
Median	9.237369E+00
Mode	9.237369E+00
Standard Deviation	1.223979E-07
Variance	1.498124E-14
Skewness	0.000000E+00
Kurtosis	+Infinity
Coeff. of Variability	1.325030E-08
Range Minimum	9.237369E+00
Range Maximum	9.237369E+00
Range Width	0.000000E+00
Mean Std. Error	1.730967E-09



Forecast: CA - Wncl Depth Criterion (cont'd) **Cell: G208**

Percentiles:

Percentile	Value
0.0%	9.237369E+00
2.5%	9.237369E+00
5.0%	9.237369E+00
50.0%	9.237369E+00
95.0%	9.237369E+00
97.5%	9.237369E+00
100.0%	9.237369E+00

End of Forecast

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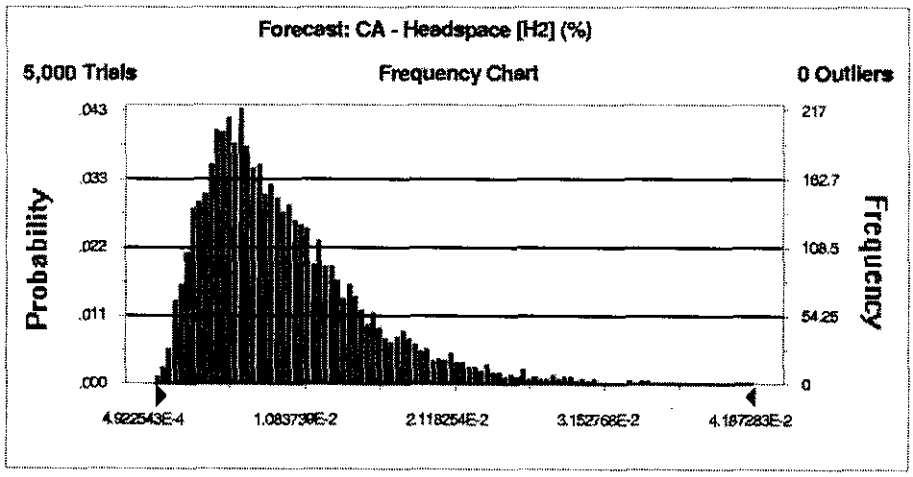
Forecast: CA - Headspace [H2] (%) **Cell: G213**

Summary:

Display Range is from 4.922543E-4 to 4.187283E-2
Entire Range is from 4.922543E-4 to 4.187283E-2
After 5,000 Trials, the Std. Error of the Mean is 7.860226E-5

Statistics:	Value
Trials	5000
Mean	9.349232E-03
Median	8.094384E-03
Mode	---
Standard Deviation	5.558019E-03
Variance	3.089157E-05
Skewness	1.383333E+00
Kurtosis	5.709296E+00
Coeff. of Variability	5.944894E-01
Range Minimum	4.922543E-04
Range Maximum	4.187283E-02
Range Width	4.138057E-02
Mean Std. Error	7.860226E-05



Forecast: CA - Headspace [H2] (%) (cont'd) **Cell: G213**

Percentiles:

Percentile	Value
0.0%	4.922543E-04
2.5%	2.241044E-03
5.0%	2.784441E-03
50.0%	8.094384E-03
95.0%	2.018946E-02
97.5%	2.341048E-02
100.0%	4.187283E-02

End of Forecast

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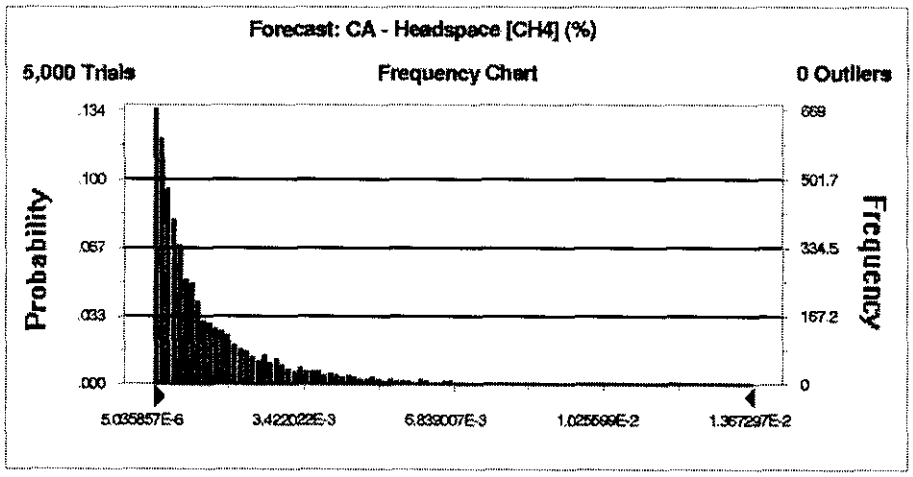
Forecast: CA - Headspace [CH4] (%) **Cell: G214**

Summary:

Display Range is from 5.035857E-6 to 1.367297E-2
Entire Range is from 5.035857E-6 to 1.367297E-2
After 5,000 Trials, the Std. Error of the Mean is 2.037750E-5

Statistics:	Value
Trials	5000
Mean	1.223026E-03
Median	6.939689E-04
Mode	---
Standard Deviation	1.440907E-03
Variance	2.076213E-06
Skewness	2.501828E+00
Kurtosis	1.225290E+01
Coeff. of Variability	1.178149E+00
Range Minimum	5.035857E-06
Range Maximum	1.367298E-02
Range Width	1.366794E-02
Mean Std. Error	2.037750E-05



Forecast: CA - Headspace [CH4] (%) (cont'd) **Cell: G214**

Percentiles:

Percentile	Value
0.0%	5.035857E-06
2.5%	4.156055E-05
5.0%	6.539297E-05
50.0%	6.939689E-04
95.0%	4.156556E-03
97.5%	5.179060E-03
100.0%	1.367298E-02

End of Forecast

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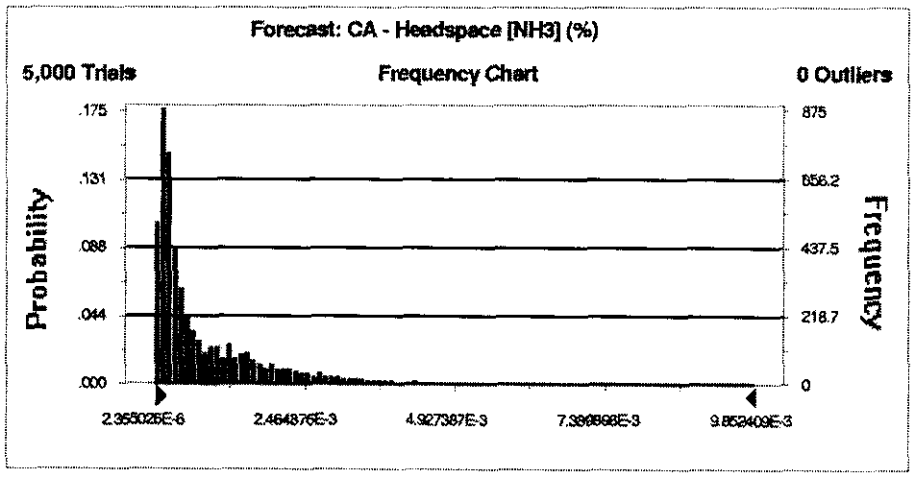
Forecast: CA - Headspace [NH3] (%) **Cell: G215**

Summary:

Display Range is from 2.365026E-6 to 9.852409E-3
Entire Range is from 2.365026E-6 to 9.852409E-3
After 5,000 Trials, the Std. Error of the Mean is 1.345061E-5

Statistics:	Value
Trials	5000
Mean	7.965896E-04
Median	3.790426E-04
Mode	---
Standard Deviation	9.511024E-04
Variance	9.045958E-07
Skewness	2.341635E+00
Kurtosis	1.087740E+01
Coeff. of Variability	1.193968E+00
Range Minimum	2.365026E-06
Range Maximum	9.852409E-03
Range Width	9.850044E-03
Mean Std. Error	1.345062E-05



Forecast: CA - Headspace [NH3] (%) (cont'd) **Cell: G215**

Percentiles:

Percentile	Value
0.0%	2.365026E-06
2.5%	5.186734E-05
5.0%	7.042942E-05
50.0%	3.790426E-04
95.0%	2.727694E-03
97.5%	3.360722E-03
100.0%	9.852409E-03

End of Forecast

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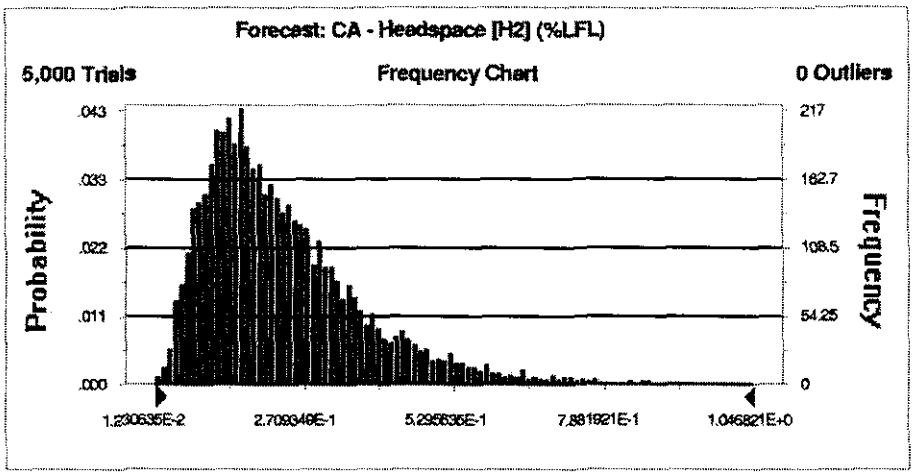
Forecast: CA - Headspace [H2] (%LFL) **Cell: G216**

Summary:

Display Range is from 1.230635E-2 to 1.046821E+0
Entire Range is from 1.230635E-2 to 1.046821E+0
After 5,000 Trials, the Std. Error of the Mean is 1.965056E-3

Statistics:	Value
Trials	5000
Mean	2.337308E-01
Median	2.023596E-01
Mode	---
Standard Deviation	1.389505E-01
Variance	1.930723E-02
Skewness	1.383333E+00
Kurtosis	5.709296E+00
Coeff. of Variability	5.944894E-01
Range Minimum	1.230636E-02
Range Maximum	1.046821E+00
Range Width	1.034514E+00
Mean Std. Error	1.965056E-03



Forecast: CA - Headspace [H2] (%LFL) (cont'd) **Cell: G216**

Percentiles:

Percentile	Value
0.0%	1.230636E-02
2.5%	5.602609E-02
5.0%	6.961102E-02
50.0%	2.023596E-01
95.0%	5.047364E-01
97.5%	5.852620E-01
100.0%	1.046821E+00

End of Forecast

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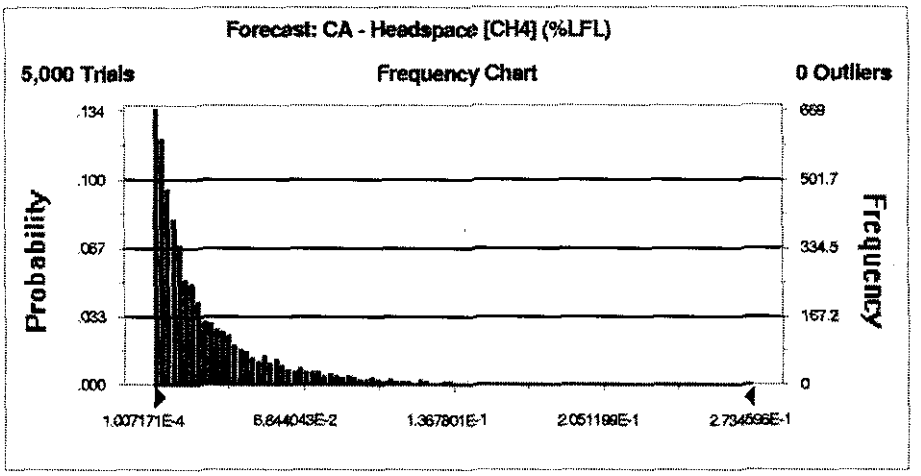
Forecast: CA - Headspace [CH4] (%LFL) **Cell: G217**

Summary:

Display Range is from 1.007171E-4 to 2.734596E-1
Entire Range is from 1.007171E-4 to 2.734596E-1
After 5,000 Trials, the Std. Error of the Mean is 4.075501E-4

Statistics:	Value
Trials	5000
Mean	2.446052E-02
Median	1.387938E-02
Mode	---
Standard Deviation	2.881814E-02
Variance	8.304853E-04
Skewness	2.501828E+00
Kurtosis	1.225290E+01
Coeff. of Variability	1.178149E+00
Range Minimum	1.007171E-04
Range Maximum	2.734596E-01
Range Width	2.733589E-01
Mean Std. Error	4.075501E-04



Forecast: CA - Headspace [CH4] (%LFL) (cont'd) **Cell: G217**

Percentiles:

Percentile	Value
0.0%	1.007171E-04
2.5%	8.312110E-04
5.0%	1.307859E-03
50.0%	1.387938E-02
95.0%	8.313112E-02
97.5%	1.035812E-01
100.0%	2.734596E-01

End of Forecast

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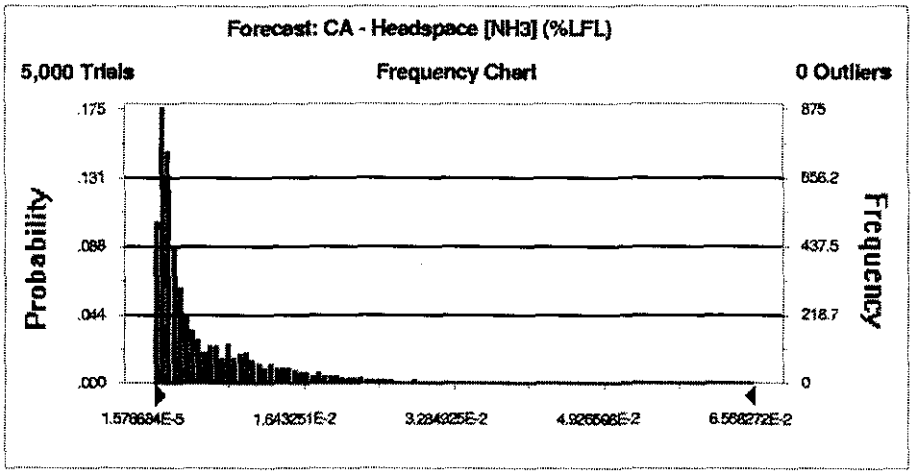
Forecast: CA - Headspace [NH3] (%LFL) **Cell: G218**

Summary:

Display Range is from 1.576684E-5 to 6.568272E-2
Entire Range is from 1.576684E-5 to 6.568272E-2
After 5,000 Trials, the Std. Error of the Mean is 8.967079E-5

Statistics:	Value
Trials	5000
Mean	5.310598E-03
Median	2.526951E-03
Mode	---
Standard Deviation	6.340683E-03
Variance	4.020426E-05
Skewness	2.341635E+00
Kurtosis	1.087740E+01
Coeff. of Variability	1.193968E+00
Range Minimum	1.576684E-05
Range Maximum	6.568272E-02
Range Width	6.566696E-02
Mean Std. Error	8.967079E-05



Forecast: CA - Headspace [NH3] (%LFL) (cont'd) **Cell: G218**

Percentiles:

Percentile	Value
0.0%	1.576684E-05
2.5%	3.457823E-04
5.0%	4.695295E-04
50.0%	2.526951E-03
95.0%	1.818463E-02
97.5%	2.240481E-02
100.0%	6.568272E-02

End of Forecast

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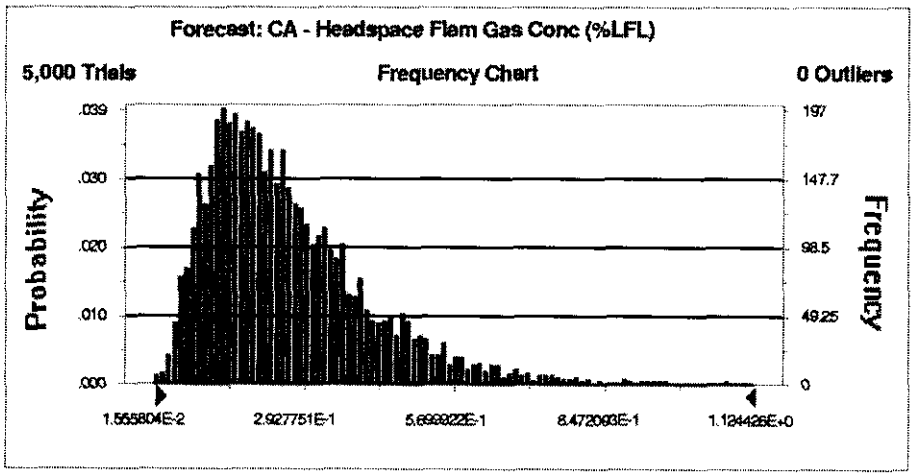
Forecast: CA - Headspace Flam Gas Conc (%LFL) **Cell: G219**

Summary:

Display Range is from 1.555804E-2 to 1.124426E+0
Entire Range is from 1.555804E-2 to 1.124426E+0
After 5,000 Trials, the Std. Error of the Mean is 2.138442E-3

Statistics:	Value
Trials	5000
Mean	2.635019E-01
Median	2.305714E-01
Mode	---
Standard Deviation	1.512107E-01
Variance	2.286467E-02
Skewness	1.324012E+00
Kurtosis	5.452573E+00
Coeff. of Variability	5.738504E-01
Range Minimum	1.555805E-02
Range Maximum	1.124426E+00
Range Width	1.108868E+00
Mean Std. Error	2.138442E-03



Forecast: CA - Headspace Flam Gas Conc (%LFL) (cont'd) **Cell: G219**

Percentiles:

Percentile	Value
0.0%	1.555805E-02
2.5%	6.642011E-02
5.0%	8.439511E-02
50.0%	2.305714E-01
95.0%	5.548213E-01
97.5%	6.436636E-01
100.0%	1.124426E+00

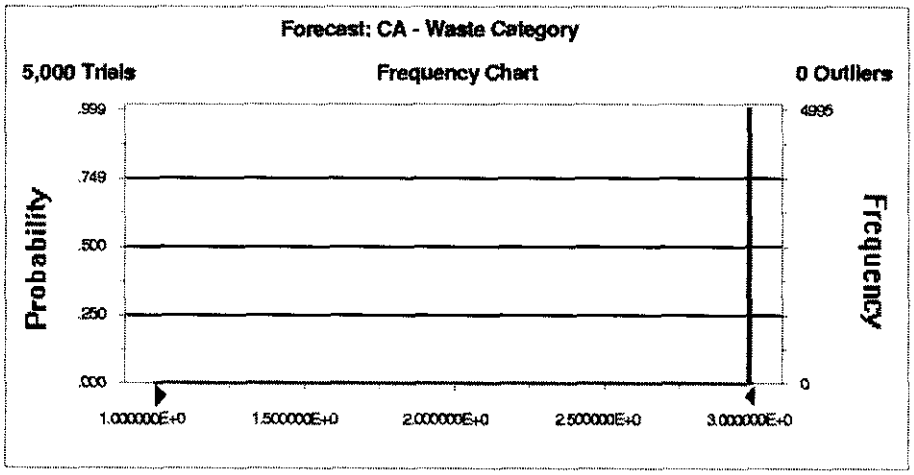
End of Forecast

Forecast: CA - Waste Category **Cell: G220**

Summary:

Display Range is from 1.000000E+0 to 3.000000E+0
Entire Range is from 1.000000E+0 to 3.000000E+0
After 5,000 Trials, the Std. Error of the Mean is 8.940693E-4

Statistics:	Value
Trials	5000
Mean	2.998000E+00
Median	3.000000E+00
Mode	3.000000E+00
Standard Deviation	6.322024E-02
Variance	3.996799E-03
Skewness	-3.156585E+01
Kurtosis	9.976018E+02
Coeff. of Variability	2.108747E-02
Range Minimum	1.000000E+00
Range Maximum	3.000000E+00
Range Width	2.000000E+00
Mean Std. Error	8.940693E-04



Forecast: CA - Waste Category (cont'd) **Cell: G220**

Percentiles:

Percentile	Value
0.0%	1.000000E+00
2.5%	3.000000E+00
5.0%	3.000000E+00
50.0%	3.000000E+00
95.0%	3.000000E+00
97.5%	3.000000E+00
100.0%	3.000000E+00

End of Forecast

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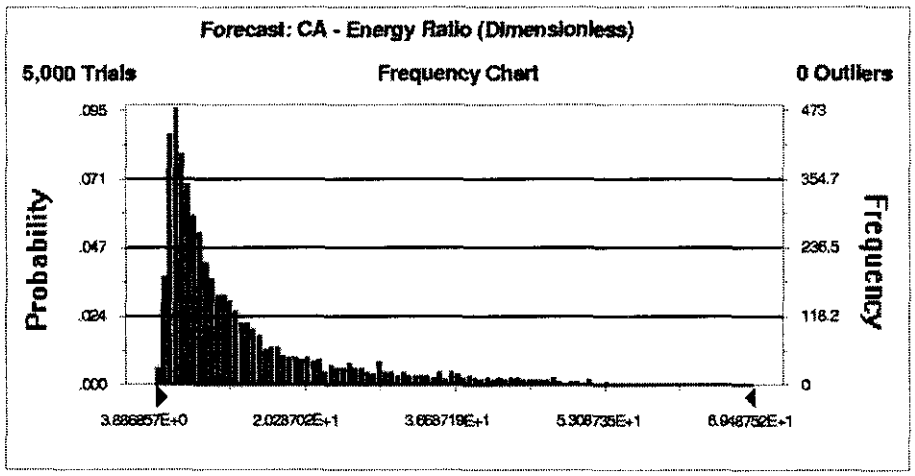
Forecast: CA - Energy Ratio (Dimensionless) **Cell: G223**

Summary:
Display Range is from 3.886857E+0 to 6.948752E+1
Entire Range is from 3.886857E+0 to 6.948752E+1
After 5,000 Trials, the Std. Error of the Mean is 1.384074E-1

Statistics:	Value
Trials	5000
Mean	1.326820E+01
Median	9.427645E+00
Mode	---
Standard Deviation	9.786883E+00
Variance	9.578309E+01
Skewness	1.898851E+00
Kurtosis	6.446816E+00
Coeff. of Variability	7.376198E-01
Range Minimum	3.886857E+00
Range Maximum	6.948752E+01
Range Width	6.560066E+01
Mean Std. Error	1.384074E-01



Forecast: CA - Energy Ratio (Dimensionless) (cont'd) **Cell: G223**

Percentiles:

Percentile	Value
0.0%	3.886857E+00
2.5%	4.958113E+00
5.0%	5.262880E+00
50.0%	9.427645E+00
95.0%	3.639449E+01
97.5%	4.248245E+01
100.0%	6.948752E+01

End of Forecast

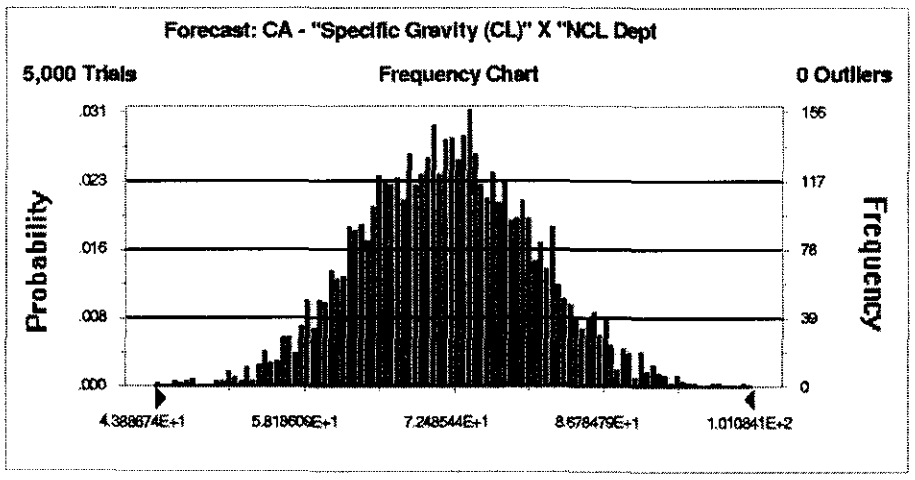
AY-102 mc report 020422 .xls

Forecast: CA - "Specific Gravity (CL)" X "NCL Dept **Cell: G225**

Summary:

Display Range is from 4.388674E+1 to 1.010841E+2
Entire Range is from 4.388674E+1 to 1.010841E+2
After 5,000 Trials, the Std. Error of the Mean is 1.170097E-1

Statistics:	Value
Trials	5000
Mean	7.188251E+01
Median	7.184758E+01
Mode	---
Standard Deviation	8.273836E+00
Variance	6.845636E+01
Skewness	5.187557E-02
Kurtosis	2.935636E+00
Coeff. of Variability	1.151022E-01
Range Minimum	4.388674E+01
Range Maximum	1.010841E+02
Range Width	5.719740E+01
Mean Std. Error	1.170097E-01



Forecast: CA - "Specific Gravity (CL)" X "NCL Dept (cont'd) **Cell: G225**

Percentiles:

Percentile	Value
0.0%	4.388674E+01
2.5%	5.616839E+01
5.0%	5.850138E+01
50.0%	7.184758E+01
95.0%	8.586644E+01
97.5%	8.823841E+01
100.0%	1.010841E+02

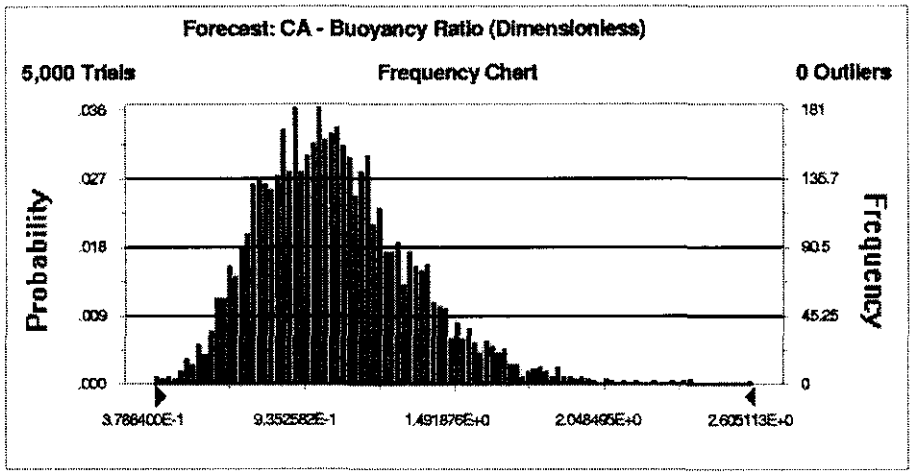
End of Forecast

AY-102 mc report 020422 .xls

Forecast: CA - Buoyancy Ratio (Dimensionless) **Cell: G226**

Summary:
Display Range is from 3.786400E-1 to 2.605113E+0
Entire Range is from 3.786400E-1 to 2.605113E+0
After 5,000 Trials, the Std. Error of the Mean is 4.102137E-3

Statistics:	Value
Trials	5000
Mean	1.054339E+00
Median	1.022918E+00
Mode	---
Standard Deviation	2.900649E-01
Variance	8.413762E-02
Skewness	8.099364E-01
Kurtosis	4.270376E+00
Coeff. of Variability	2.751154E-01
Range Minimum	3.786400E-01
Range Maximum	2.605113E+00
Range Width	2.226473E+00
Mean Std. Error	4.102137E-03



Forecast: CA - Buoyancy Ratio (Dimensionless) (cont'd) **Cell: G226**

Percentiles:

Percentile	Value
0.0%	3.786400E-01
2.5%	5.948157E-01
5.0%	6.489091E-01
50.0%	1.022918E+00
95.0%	1.577409E+00
97.5%	1.702601E+00
100.0%	2.605113E+00

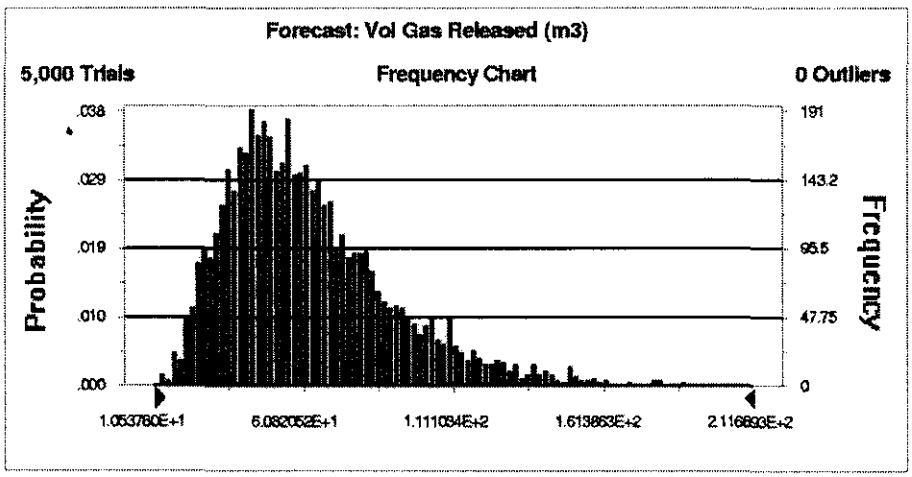
End of Forecast

AY-102 mc report 020422 .xls

Forecast: Vol Gas Released (m3) **Cell: G45**

Summary:
Display Range is from 1.053760E+1 to 2.116693E+2
Entire Range is from 1.053760E+1 to 2.116693E+2
After 5,000 Trials, the Std. Error of the Mean is 3.953726E-1

Statistics:	Value
Trials	5000
Mean	6.269668E+01
Median	5.725527E+01
Mode	---
Standard Deviation	2.795707E+01
Variance	7.815976E+02
Skewness	1.093468E+00
Kurtosis	4.519956E+00
Coeff. of Variability	4.459098E-01
Range Minimum	1.053760E+01
Range Maximum	2.116693E+02
Range Width	2.011317E+02
Mean Std. Error	3.953726E-01



Forecast: Vol Gas Released (m3) (cont'd) **Cell: G45**

Percentiles:

Percentile	Value
0.0%	1.053760E+01
2.5%	2.371129E+01
5.0%	2.697521E+01
50.0%	5.725527E+01
95.0%	1.165428E+02
97.5%	1.315525E+02
100.0%	2.116693E+02

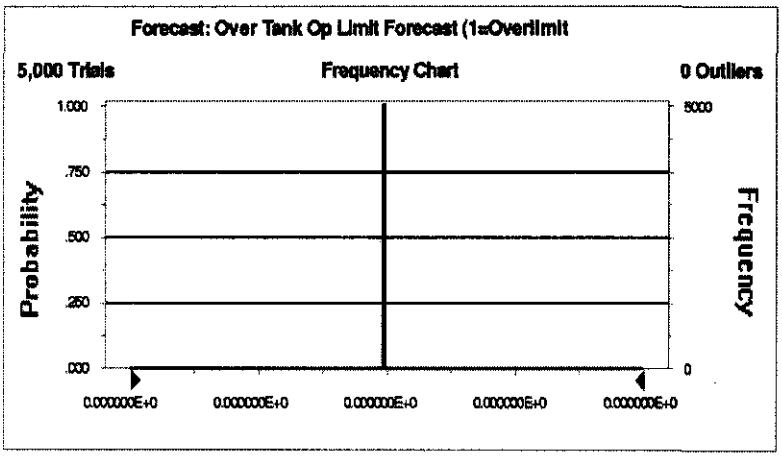
End of Forecast

AY-102 mc report 020422 .xls

Forecast: Over Tank Op Limit Forecast (1=Overlimit **Cell: G5**

Summary:
Display Range is from 0.000000E+0 to 0.000000E+0
Entire Range is from 0.000000E+0 to 0.000000E+0
After 5,000 Trials, the Std. Error of the Mean is 0.000000E+0

Statistics:	Value
Trials	5000
Mean	0.000000E+00
Median	0.000000E+00
Mode	0.000000E+00
Standard Deviation	0.000000E+00
Variance	0.000000E+00
Skewness	0.000000E+00
Kurtosis	+Infinity
Coeff. of Variability	+Infinity
Range Minimum	0.000000E+00
Range Maximum	0.000000E+00
Range Width	0.000000E+00
Mean Std. Error	0.000000E+00



AY-102 mc report 020422 .xls

Forecast: Over Tank Op Limit Forecast (1=Overlimit (cont'd) **Cell: G5**

Percentiles:

Percentile	Value
0.0%	0.000000E+00
2.5%	0.000000E+00
5.0%	0.000000E+00
50.0%	0.000000E+00
95.0%	0.000000E+00
97.5%	0.000000E+00
100.0%	0.000000E+00

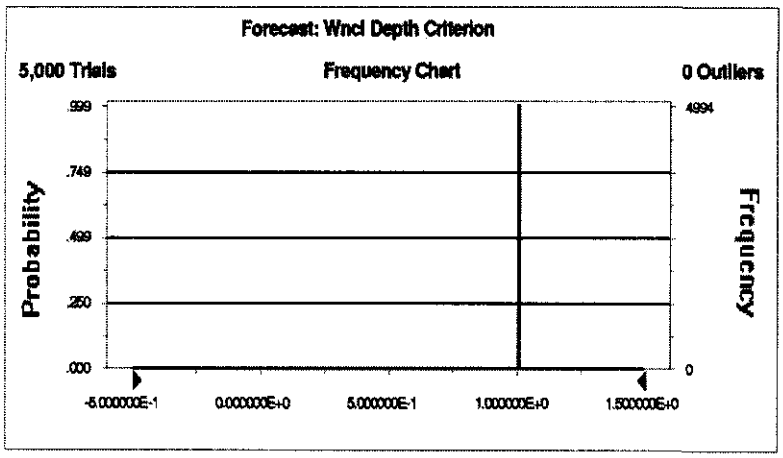
End of Forecast

AY-102 mc report 020422 .xls

Forecast: Wncl Depth Criterion **Cell: X57**

Summary:
Display Range is from -5.000000E-1 to 1.500000E+0
Entire Range is from 0.000000E+0 to 1.000000E+0
After 5,000 Trials, the Std. Error of the Mean is 4.896529E-4

Statistics:	Value
Trials	5000
Mean	9.988000E-01
Median	1.000000E+00
Mode	1.000000E+00
Standard Deviation	3.462369E-02
Variance	1.198800E-03
Skewness	-2.880688E+01
Kurtosis	8.310020E+02
Coeff. of Variability	3.466529E-02
Range Minimum	0.000000E+00
Range Maximum	1.000000E+00
Range Width	1.000000E+00
Mean Std. Error	4.896529E-04



AY-102 mc report 020422 .xls

Forecast: Wncl Depth Criterion (cont'd) **Cell: X57**

Percentiles:

Percentile	Value
0.0%	0.000000E+00
2.5%	1.000000E+00
5.0%	1.000000E+00
50.0%	1.000000E+00
95.0%	1.000000E+00
97.5%	1.000000E+00
100.0%	1.000000E+00

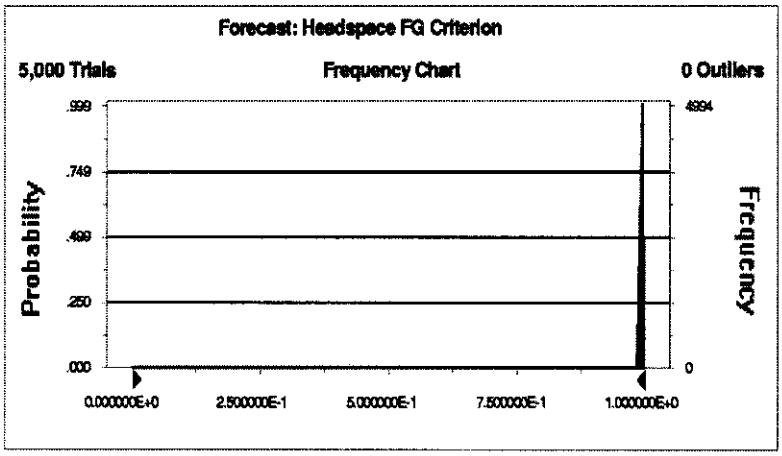
End of Forecast

AY-102 mc report 020422 .xls

Forecast: Headspace FG Criterion **Cell: X68**

Summary:
Display Range is from 0.000000E+0 to 1.000000E+0
Entire Range is from 0.000000E+0 to 1.000000E+0
After 5,000 Trials, the Std. Error of the Mean is 4.896529E-4

Statistics:	Value
Trials	5000
Mean	9.988000E-01
Median	1.000000E+00
Mode	1.000000E+00
Standard Deviation	3.462369E-02
Variance	1.198800E-03
Skewness	-2.880688E+01
Kurtosis	8.310020E+02
Coeff. of Variability	3.466529E-02
Range Minimum	0.000000E+00
Range Maximum	1.000000E+00
Range Width	1.000000E+00
Mean Std. Error	4.896529E-04



AY-102 mc report 020422 .xls

Forecast: Headspace FG Criterion (cont'd) **Cell: X68**

Percentiles:

Percentile	Value
0.0%	0.000000E+00
2.5%	1.000000E+00
5.0%	1.000000E+00
50.0%	1.000000E+00
95.0%	1.000000E+00
97.5%	1.000000E+00
100.0%	1.000000E+00

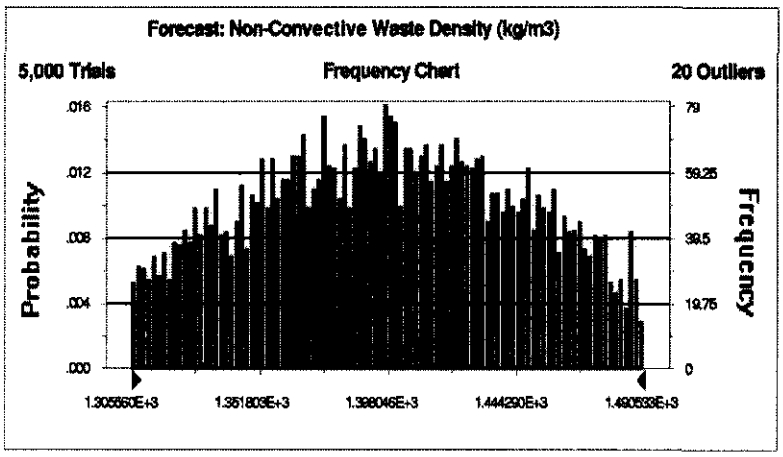
End of Forecast

AY-102 mc report 020422 .xls

Forecast: Non-Convective Waste Density (kg/m3) **Cell: G13**

Summary:
Display Range is from 1.305560E+3 to 1.490533E+3
Entire Range is from 1.304341E+3 to 1.490593E+3
After 5,000 Trials, the Std. Error of the Mean is 6.696106E-1

Statistics:	Value
Trials	5000
Mean	1.397261E+03
Median	1.397516E+03
Mode	---
Standard Deviation	4.734862E+01
Variance	2.241892E+03
Skewness	-8.646637E-03
Kurtosis	2.052051E+00
Coeff. of Variability	3.388674E-02
Range Minimum	1.304341E+03
Range Maximum	1.490593E+03
Range Width	1.862522E+02
Mean Std. Error	6.696106E-01



AY-102 mc report 020422 .xls

Forecast: Non-Convective Waste Density (kg/m3) (cont'd) **Cell: G13**

Percentiles:

Percentile	Value
0.0%	1.304341E+03
2.5%	1.312034E+03
5.0%	1.320065E+03
50.0%	1.397516E+03
95.0%	1.474211E+03
97.5%	1.481912E+03
100.0%	1.490593E+03

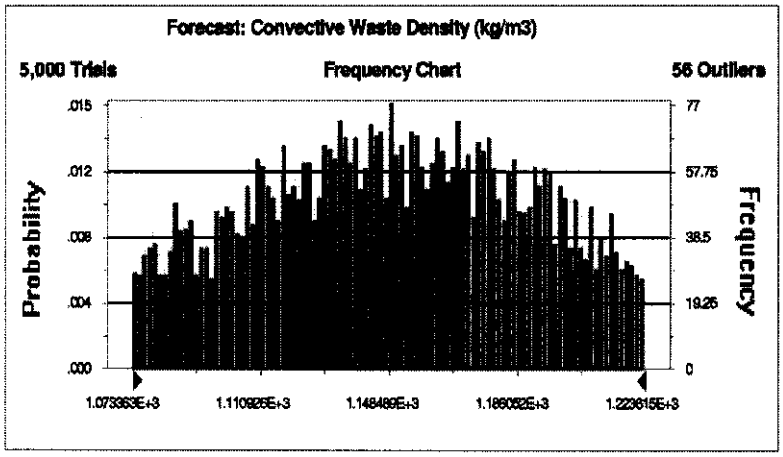
End of Forecast

AY-102 mc report 020422 .xls

Forecast: Convective Waste Density (kg/m3) **Cell: G14**

Summary:
Display Range is from 1.073363E+3 to 1.223615E+3
Entire Range is from 1.073363E+3 to 1.226646E+3
After 5,000 Trials, the Std. Error of the Mean is 5.566191E-1

Statistics:	Value
Trials	5000
Mean	1.150192E+03
Median	1.150186E+03
Mode	---
Standard Deviation	3.935892E+01
Variance	1.549124E+03
Skewness	-2.225238E-02
Kurtosis	2.048221E+00
Coeff. of Variability	3.421944E-02
Range Minimum	1.073363E+03
Range Maximum	1.226646E+03
Range Width	1.532830E+02
Mean Std. Error	5.566191E-01



AY-102 mc report 020422 .xls

Forecast: Convective Waste Density (kg/m3) (cont'd) **Cell: G14**

Percentiles:

Percentile	Value
0.0%	1.073363E+03
2.5%	1.079462E+03
5.0%	1.085453E+03
50.0%	1.150186E+03
95.0%	1.214205E+03
97.5%	1.219810E+03
100.0%	1.226646E+03

End of Forecast

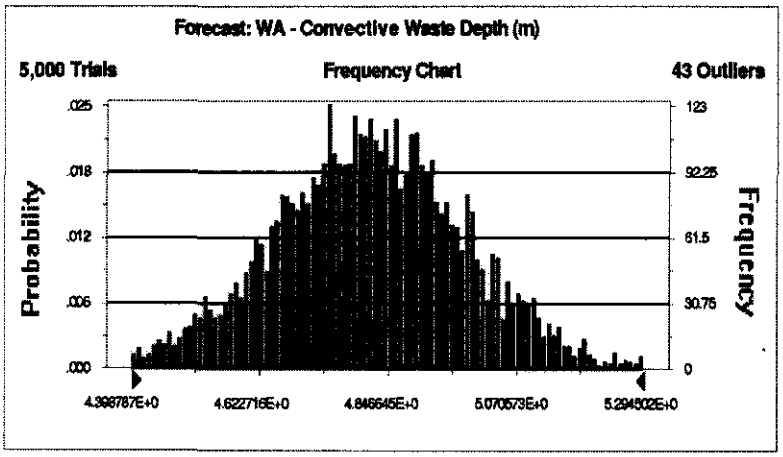
AY-102 mc report 020422 .xls

Forecast: WA - Convective Waste Depth (m) **Cell: G88**

Summary:

Display Range is from 4.398787E+0 to 5.294502E+0
Entire Range is from 4.265865E+0 to 5.405944E+0
After 5,000 Trials, the Std. Error of the Mean is 2.369185E-3

Statistics:	Value
Trials	5000
Mean	4.815573E+00
Median	4.815017E+00
Mode	---
Standard Deviation	1.675267E-01
Variance	2.806519E-02
Skewness	3.149074E-02
Kurtosis	3.011388E+00
Coeff. of Variability	3.478852E-02
Range Minimum	4.265865E+00
Range Maximum	5.405944E+00
Range Width	1.140079E+00
Mean Std. Error	2.369185E-03



AY-102 mc report 020422 .xls

Forecast: WA - Convective Waste Depth (m) (cont'd) **Cell: G88**

Percentiles:

Percentile	Value
0.0%	4.265865E+00
2.5%	4.483376E+00
5.0%	4.533116E+00
50.0%	4.815017E+00
95.0%	5.092513E+00
97.5%	5.144025E+00
100.0%	5.405944E+00

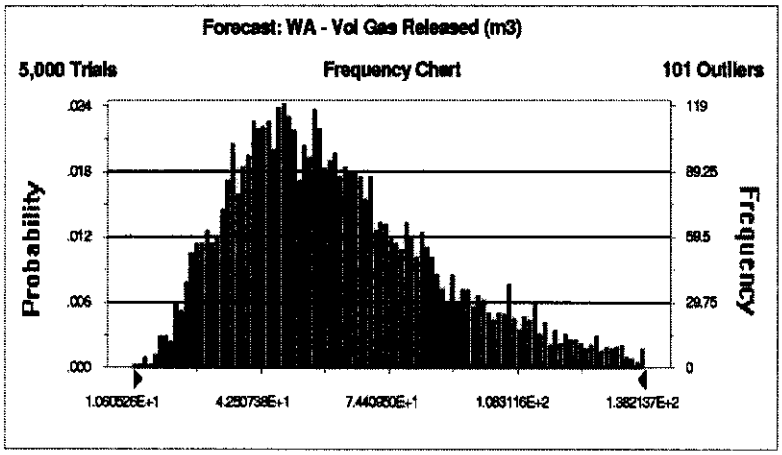
End of Forecast

AY-102 mc report 020422 .xls

Forecast: WA - Vol Gas Released (m3) **Cell: G124**

Summary:
Display Range is from 1.060526E+1 to 1.382137E+2
Entire Range is from 1.060526E+1 to 2.130097E+2
After 5,000 Trials, the Std. Error of the Mean is 3.978590E-1

Statistics:	Value
Trials	5000
Mean	6.309144E+01
Median	5.761847E+01
Mode	---
Standard Deviation	2.813288E+01
Variance	7.914590E+02
Skewness	1.093487E+00
Kurtosis	4.519982E+00
Coeff. of Variability	4.459065E-01
Range Minimum	1.060527E+01
Range Maximum	2.130097E+02
Range Width	2.024044E+02
Mean Std. Error	3.978590E-01



AY-102 mc report 020422 .xls

Forecast: WA - Vol Gas Released (m3) (cont'd) **Cell: G124**

Percentiles:

Percentile	Value
0.0%	1.060527E+01
2.5%	2.385391E+01
5.0%	2.714170E+01
50.0%	5.761847E+01
95.0%	1.173023E+02
97.5%	1.323711E+02
100.0%	2.130097E+02

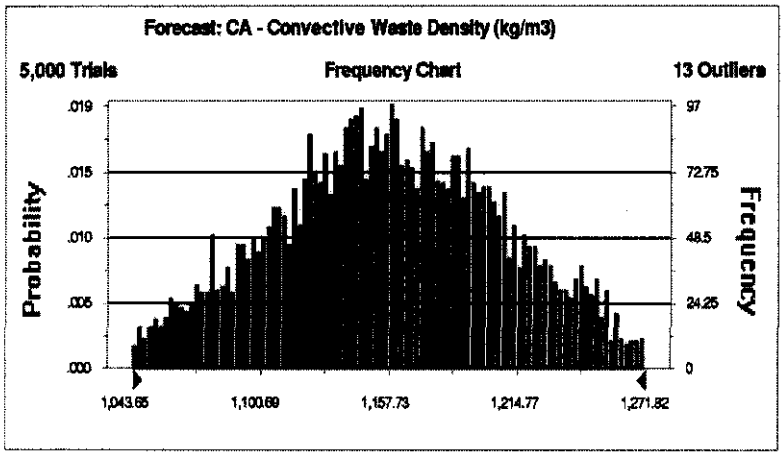
End of Forecast

AY-102 mc report 020422 .xls

Forecast: CA - Convective Waste Density (kg/m3) **Cell: G173**

Summary:
Display Range is from 1,043.65 to 1,271.82
Entire Range is from 1,041.47 to 1,272.81
After 5,000 Trials, the Std. Error of the Mean is 0.71

Statistics:	Value
Trials	5000
Mean	1,157.58
Median	1,157.31
Mode	---
Standard Deviation	50.26
Variance	2,526.14
Skewness	-0.01
Kurtosis	2.38
Coeff. of Variability	0.04
Range Minimum	1,041.47
Range Maximum	1,272.81
Range Width	231.34
Mean Std. Error	0.71



AY-102 mc report 020422 .xls

Forecast: CA - Convective Waste Density (kg/m3) (cont'd) **Cell: G173**

Percentiles:

Percentile	Value
0.0%	1,041.47
2.5%	1,060.94
5.0%	1,072.65
50.0%	1,157.31
95.0%	1,242.81
97.5%	1,251.77
100.0%	1,272.81

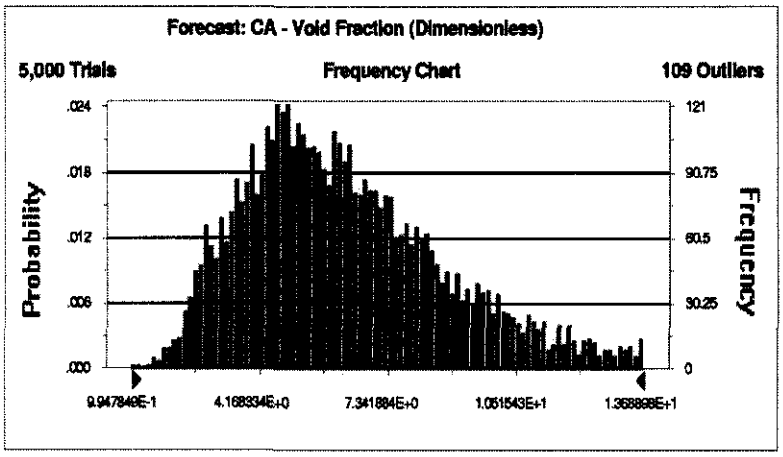
End of Forecast

AY-102 mc report 020422 .xls

Forecast: CA - Void Fraction (Dimensionless) **Cell: G186**

Summary:
Display Range is from 9.947849E-1 to 1.368898E+1
Entire Range is from 9.947849E-1 to 1.729489E+1
After 5,000 Trials, the Std. Error of the Mean is 3.896073E-2

Statistics:	Value
Trials	5000
Mean	6.455877E+00
Median	5.978227E+00
Mode	---
Standard Deviation	2.754940E+00
Variance	7.589693E+00
Skewness	9.879704E-01
Kurtosis	3.984608E+00
Coeff. of Variability	4.267336E-01
Range Minimum	9.947849E-01
Range Maximum	1.729489E+01
Range Width	1.630011E+01
Mean Std. Error	3.896073E-02



AY-102 mc report 020422 .xls

Forecast: CA - Void Fraction (Dimensionless) (cont'd) **Cell: G186**

Percentiles:

Percentile	Value
0.0%	9.947849E-01
2.5%	2.550529E+00
5.0%	2.848612E+00
50.0%	5.978227E+00
95.0%	1.185415E+01
97.5%	1.351590E+01
100.0%	1.729489E+01

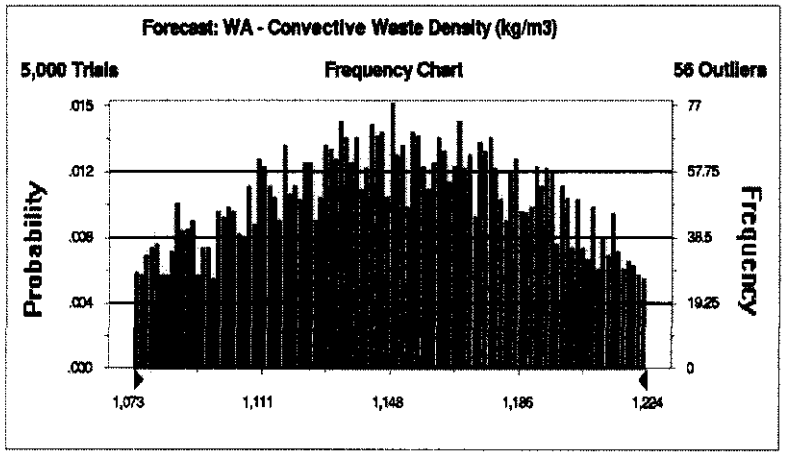
End of Forecast

AY-102 mc report 020422 .xls

Forecast: WA - Convective Waste Density (kg/m3) **Cell: G91**

Summary:
Display Range is from 1,073 to 1,224
Entire Range is from 1,073 to 1,227
After 5,000 Trials, the Std. Error of the Mean is 1

Statistics:	Value
Trials	5000
Mean	1,150
Median	1,150
Mode	---
Standard Deviation	39
Variance	1,549
Skewness	-0.02
Kurtosis	2.05
Coeff. of Variability	0.03
Range Minimum	1,073
Range Maximum	1,227
Range Width	153
Mean Std. Error	0.56



AY-102 mc report 020422 .xls

Forecast: WA - Convective Waste Density (kg/m3) (cont'd) **Cell: G91**

Percentiles:

Percentile	Value
0.0%	1,073
2.5%	1,079
5.0%	1,085
50.0%	1,150
95.0%	1,214
97.5%	1,220
100.0%	1,227

End of Forecast

AY-102 mc report 020422 .xls

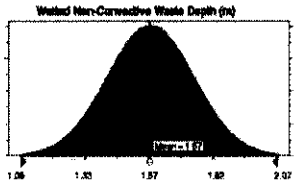
Assumptions

Assumption: Wetted Non-Convective Waste Depth (m) **Cell: W10**

Normal distribution with parameters:

Mean	1.57	(=W10)
Standard Dev.	0.17	(=X10)

Selected range is from 0.01(=Y10) to 9.24(=Z10)

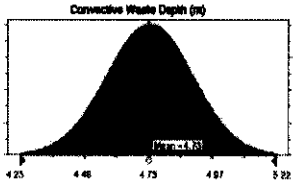


Assumption: Convective Waste Depth (m) **Cell: W11**

Normal distribution with parameters:

Mean	4.73	(=W11)
Standard Dev.	0.17	(=X11)

Selected range is from 0.00(=Y11) to 9.24(=Z11)



Assumption: Void Fraction (na) (Normal) **Cell: W27**

Normal distribution with parameters:

Mean	15.0000	(=W27)
Standard Dev.	6.2000	(=X27)

Selected range is from 0.0000(=Y27) to 20.0000(=Z27)

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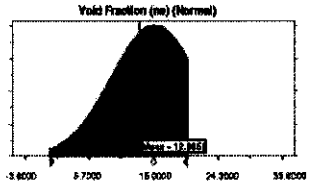
Assumption: Void Fraction (na) (Normal) (cont'd) **Cell: W27**

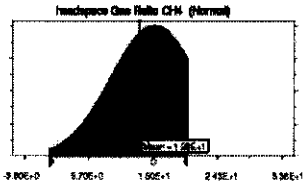


Assumption: headspace Gas Ratio CH4 (Normal) **Cell: W31**

Normal distribution with parameters:

Mean	1.50E+01	(=W31)
Standard Dev.	6.20E+00	(=X31)

Selected range is from 1.00E-8(=Y31) to 2.00E+1(=Z31)

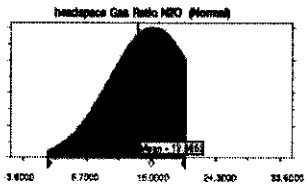


Assumption: headspace Gas Ratio N2O (Normal) **Cell: W33**

Normal distribution with parameters:

Mean	15.0000	(=W33)
Standard Dev.	6.2000	(=X33)

Selected range is from 0.0000(=Y33) to 20.0000(=Z33)



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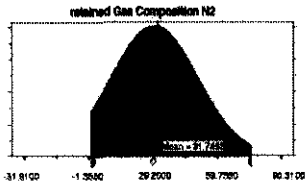
Assumption: retained Gas Composition N2 **Cell: W35**

Normal distribution with parameters:

Mean	29.2000	(=W35)
Standard Dev.	20.3700	(=X35)

Selected range is from 0.0001(=Y35) to 76.0000(=Z35)

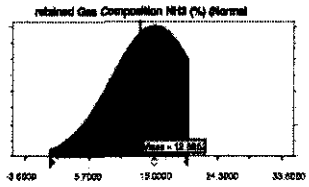


Assumption: retained Gas Composition NH3 (%) (Normal **Cell: W37**

Normal distribution with parameters:

Mean	15.0000	(=W37)
Standard Dev.	6.2000	(=X37)

Selected range is from 0.0000(=Y37) to 20.0000(=Z37)



Assumption: Void Fraction (na) (LogNormal) **Cell: W28**

Lognormal distribution with parameters:

Log Mean	1.7733	(=W28)
Log Std. Dev.	0.4354	(=X28)

Selected range is from 0.0100(=Y28) to 17.7070(=Z28)

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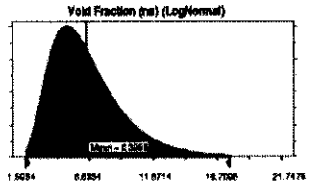
Assumption: Void Fraction (na) (LogNormal) (cont'd) **Cell: W28**

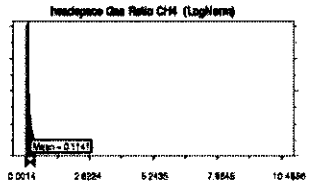


Assumption: headspace Gas Ratio CH4 (LogNorm) **Cell: W32**

Lognormal distribution with parameters:

Log Mean	-2.1200	(=W32)
Log Std. Dev.	1.4900	(=X32)

Selected range is from 0.0001(=Y32) to 0.4000(=Z32)

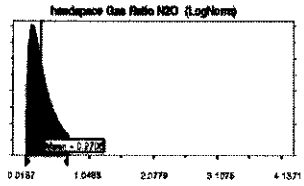


Assumption: headspace Gas Ratio N2O (LogNorm) **Cell: W34**

Lognormal distribution with parameters:

Log Mean	-1.2800	(=W34)
Log Std. Dev.	0.9000	(=X34)

Selected range is from 0.0001(=Y34) to 0.7000(=Z34)



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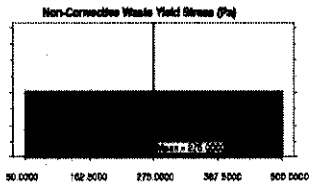
Assumption: Non-Convective Waste Yield Stress (Pa) **Cell: W29**

Uniform distribution with parameters:

Minimum	50.0000	(=Y29)
Maximum	500.0000	(=Z29)

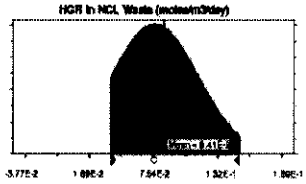


Assumption: HGR in NCL Waste (moles/m3/day) **Cell: W41**

Normal distribution with parameters:

Mean	7.54E-02	(=W41)
Standard Dev.	3.77E-02	(=X41)

Selected range is from 3.77E-2(=Y41) to 1.51E-1(=Z41)



Assumption: retained Gas Composition NH3 (%) (contLi **Cell: W38**

Custom distribution with parameters:

				Relative Prob.
Continuous range	0.0100	to	0.0311	0.02
Continuous range	0.0311	to	0.0695	0.04
Continuous range	0.0695	to	0.1171	0.06
Continuous range	0.1171	to	0.1370	0.07
Continuous range	0.1370	to	0.1920	0.09
Continuous range	0.1920	to	0.2343	0.11
Continuous range	0.2343	to	0.2963	0.13
Continuous range	0.2963	to	0.3346	0.15
Continuous range	0.3346	to	0.3492	0.17

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Assumption: retained Gas Composition NH3 (%) (contLi (cont'd) **Cell: W38**

Continuous range	0.3492	to	0.3760	0.19
Continuous range	0.3760	to	0.3990	0.20
Continuous range	0.3990	to	0.4549	0.22
Continuous range	0.4549	to	0.4919	0.24
Continuous range	0.4919	to	0.5320	0.26
Continuous range	0.5320	to	0.5482	0.28
Continuous range	0.5482	to	0.5792	0.30
Continuous range	0.5792	to	0.5978	0.31
Continuous range	0.5978	to	0.6364	0.33
Continuous range	0.6364	to	0.6717	0.35
Continuous range	0.6717	to	0.7074	0.37
Continuous range	0.7074	to	0.7668	0.39
Continuous range	0.7668	to	0.7772	0.41
Continuous range	0.7772	to	0.8102	0.43
Continuous range	0.8102	to	0.8280	0.44
Continuous range	0.8280	to	0.8595	0.46
Continuous range	0.8595	to	0.9235	0.48
Continuous range	0.9235	to	0.9648	0.50
Continuous range	0.9648	to	1.0291	0.52
Continuous range	1.0291	to	1.0720	0.54
Continuous range	1.0720	to	1.1281	0.56
Continuous range	1.1281	to	1.1597	0.57
Continuous range	1.1597	to	1.2173	0.59
Continuous range	1.2173	to	1.2854	0.61
Continuous range	1.2854	to	1.3978	0.63
Continuous range	1.3978	to	1.4821	0.65
Continuous range	1.4821	to	1.4956	0.67
Continuous range	1.4956	to	1.5774	0.69
Continuous range	1.5774	to	1.7573	0.70
Continuous range	1.7573	to	1.8741	0.72
Continuous range	1.8741	to	2.0080	0.74
Continuous range	2.0080	to	2.1571	0.76
Continuous range	2.1571	to	2.3184	0.78
Continuous range	2.3184	to	3.0867	0.80
Continuous range	3.0867	to	4.1636	0.81
Continuous range	4.1636	to	4.9957	0.83
Continuous range	4.9957	to	5.6075	0.85
Continuous range	5.6075	to	5.8423	0.87
Continuous range	5.8423	to	6.5631	0.89
Continuous range	6.5631	to	7.0487	0.91
Continuous range	7.0487	to	7.7154	0.93
Continuous range	7.7154	to	8.5787	0.94
Continuous range	8.5787	to	9.2357	0.96
Continuous range	9.2357	to	11.5184	0.98

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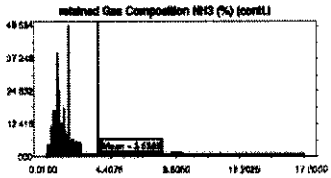
Assumption: retained Gas Composition NH3 (%) (contLi (cont'd) **Cell: W38**

Continuous range	11.5184	to	17.6000	1.00
Total Relative Probability				27.50

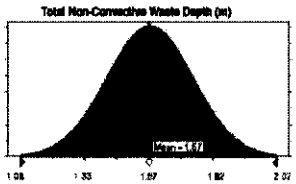


Assumption: Total Non-Convective Waste Depth (m) **Cell: W9**

Normal distribution with parameters:

Mean	1.57	(=W9)
Standard Dev.	0.17	(=X9)

Selected range is from 0.01(=Y9) to 9.24(=Z9)



Assumption: Non-Convective Waste Density (kg/m3) **Cell: W13**

Normal distribution with parameters:

Mean	1.40E+03	(=W13)
Standard Dev.	6.99E+01	(=X13)

Selected range is from 1.40E+3(=Y13) to 1.49E+3(=Z13)

Correlated with:

Convective Waste Density (kg/m3)	(W15)	0.70
CA - Convective Waste Density (kg/m3)	(	0.70

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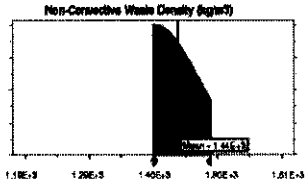
Assumption: Non-Convective Waste Density (kg/m3) (cont'd) **Cell: W13**



Assumption: Convective Waste Density (kg/m3) **Cell: W15**

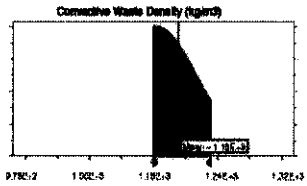
Normal distribution with parameters:

Mean	1.15E+03	(=W15)
Standard Dev.	5.75E+01	(=X15)

Selected range is from 1.15E+3(=Y15) to 1.23E+3(=Z15)

Correlated with:

Non-Convective Waste Density (kg/m3) (V 0.70



Assumption: CA - Convective Waste Density (kg/m3) **Cell: W172**

Normal distribution with parameters:

Mean	1.16E+03	(=W172)
Standard Dev.	5.79E+01	(=X172)

Selected range is from 1.16E+3(=Y172) to 1.27E+3(=Z172)

Correlated with:

Non-Convective Waste Density (kg/m3) (V 0.70

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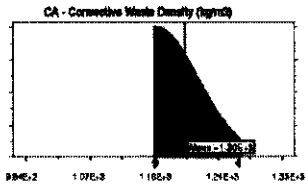
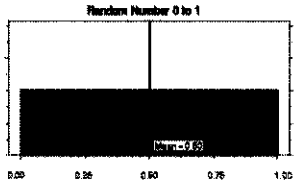
Assumption: CA - Convective Waste Density (kg/m3) (cont'd) **Cell: W172**



Assumption: Random Number 0 to 1 **Cell: W17**

Uniform distribution with parameters:

Minimum	0.00	(=Y17)
Maximum	1.00	(=Z17)



Assumption: Non-Convective Waste Density - Low (kg/m **Cell: W14**

Normal distribution with parameters:

Mean	1.40E+03	(=W14)
Standard Dev.	6.99E+01	(=X14)

Selected range is from 1.30E+3(=Y14) to 1.40E+3(=Z14)

Correlated with:

CA - Convective Waste Density - Low (kg/ 0.70

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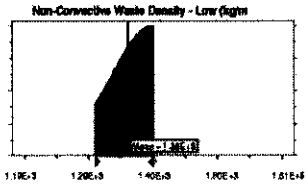
Assumption: Non-Convective Waste Density - Low (kg/m (cont'd) **Cell: W14**

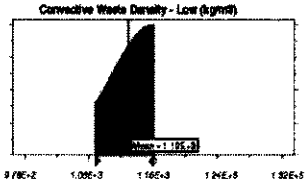


Assumption: Convective Waste Density - Low (kg/m3) **Cell: W16**

Normal distribution with parameters:

Mean	1.15E+03	(=W16)
Standard Dev.	5.75E+01	(=X16)

Selected range is from 1.07E+3(=Y16) to 1.15E+3(=Z16)



Assumption: CA - Convective Waste Density - Low (kg/ **Cell: W173**

Normal distribution with parameters:

Mean	1,157.18	(=W173)
Standard Dev.	57.86	(=X173)

Selected range is from 1,041.46(=Y173) to 1,157.18(=Z173)

Correlated with:

Non-Convective Waste Density - Low (kg/r 0.70

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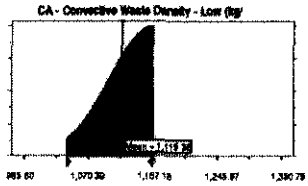
Assumption: CA - Convective Waste Density - Low (kg/ (cont'd) **Cell: W173**



End of Assumptions

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As Is	T. Waste Depth (m)	Tank Class (95% CI)	Tank Class (Mean #)	Tank Class (Min)	Tank Class (Max)	Void Fraction 95%CI	Void Fraction Median	Void Fraction Maximum
AY-102	6.3	C	3.00	A	C	0.119	0.060	0.176
	h15	h322	h285	h293	h294	h270	h232	h240

	WA	WA	WA	WA	WA	WA	WA	WA
Water Addition	T. Waste Depth (m)	Tank Class (95% CI)	Tank Class (Mean #)	Tank Class (Min)	Tank Class (Max)	Void Fraction 95%CI	Void Fraction Median	Void Fraction Maximum
AY-102	6.4	C	3.00	A	C	0.119	0.060	0.176
	h1311	h1834	h1797	h1805	h1806	h270	h232	h240

	CA	CA	CA	CA	CA	CA	CA	CA
Caustic Addition	T. Waste Depth (m)	Tank Class (95% CI)	Tank Class (Mean #)	Tank Class (Min)	Tank Class (Max)	Void Fraction 95%CI	Void Fraction Median	Void Fraction Maximum
AY-102	6.4	C	3.00	A	C	0.119	0.060	0.173
	h1257	h2482	h2445	h2453	h2454	h3186	h3148	h3156

As Is	%A	%B	%C	Estey Criteria (min)	Estey Criteria (95%CI)	Estey Criteria (max)	Buoyancy Ratio (min)	Buoyancy Ratio (Median)
AY-102	0.0	0.1	99.9	45	85	99	0.30	1.02
				h671	h702	H672	h563	h556

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As Is	Rtn'd H2 Conc (%) Mean	HS H2 Conc (%) Mean	HS CH4 Conc (%)	HS NH3 Conc (%)	FG Conc (%LFL) 95%CI	FG Conc (%LFL) Median	Depth Crit Ratio 95%CI	Depth Crit Ratio Median
AY-102	41.9%	0.9%	0.12%	0.08%	55%	23%	1.338	1.074
	h717	h879	h933	h987	h486	h448	h648	h610

Water Addition	WA Rtn'd H2 Conc (%) Mean	WA HS H2 Conc (%) Mean	WA HS CH4 Conc (%)	WA HS NH3 Conc (%)	WA FG Conc (%LFL) 95%CI	WA FG Conc (%LFL) Median	WA Depth Crit Ratio 95%CI	WA Depth Crit Ratio Median
AY-102	41.9%	0.9%	0.12%	0.08%	55%	23%	1.319	1.060
	h717	h1419	h1473	h1527	h1782	h1744	h1404	h1366

Caustic Addition	CA Rtn'd H2 Conc (%) Mean	CA HS H2 Conc (%) Mean	CA HS CH4 Conc (%)	CA HS NH3 Conc (%)	CA FG Conc (%LFL) 95%CI	CA FG Conc (%LFL) Median	CA Depth Crit Ratio 95%CI	CA Depth Crit Ratio Median
AY-102	41.9%	0.9%	0.12%	0.08%	55%	23%	9.237	9.237
	h717	h2067	h2121	h2175	h2430	h2392	h2052	h2014

As Is	Buoyancy Ratio (max)	Energy Ratio (min)	Energy Ratio (max)	Wncl Depth Crit (Pass - >1)	%LFL Depth Criteria (Pass - <1)	AS IS	10,000 gal H2O Addition	10,000 gal Caustic Addition
AY-102	3.16	3.44	64.1	99.88	99.88	C	C	C
	h564	h509	h510			M6	M13	M20

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As Is	Energy Ratio 95%CI	Energy Ratio Median	Estey Criterion 95%CI	Estey Criterion Median	Buoyancy Ratio 95%CI	Buoyancy Ratio Median
AY-102	36.039	9.352	84.712	71.444	1.647	1.016
	h540	h502	h702	h664	h594	h556

Water Addition	WA Energy Ratio 95%CI	WA Energy Ratio Median	WA Estey Criterion 95%CI	WA Estey Criterion Median	WA Buoyancy Ratio 95%CI	WA Buoyancy Ratio Median
AY-102	37.276	9.713	84.712	71.444	1.576	0.989
	h1890	h1852	h1944	h1906	h1998	h1960

Caustic Addition	CA Energy Ratio 95%CI	CA Energy Ratio Median	CA Estey Criterion 95%CI	CA Estey Criterion Median	CA Buoyancy Ratio 95%CI	CA Buoyancy Ratio Median
AY-102	36.394	9.428	85.866	71.848	1.577	1.023
	h2538	h2500	h2592	h2554	h2646	h2608

As Is	Tank Op Limit Exceeded?	Wncl Depth Crit (% Pass)	%LFL Depth Criteria (% Pass)	Bouyancy Ratio Factor	Rtn'd H2 Conc (%) (Median)	HS H2 Conc (%) (Median)
AY-102	No	99.88	99.88	1,334.3	41.0%	0.8%
	h2724				h718	h880

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As Is	T. Waste Depth (m)	Tank Class (95% CI)	Tank Class (Mean #)	Tank Class (Min)	Tank Class (Max)	Void Fraction 95%CI	Void Fraction Median	Void Fraction Maximum
AY-102	6.3	C	3.00	A	C	0.119	0.060	0.176
	h15	h322	h285	h293	h294	h270	h232	h240

Water Addition	WA T. Waste Depth (m)	WA Tank Class (95% CI)	WA Tank Class (Mean #)	WA Tank Class (Min)	WA Tank Class (Max)	WA Void Fraction 95%CI	WA Void Fraction Median	WA Void Fraction Maximum
AY-102	6.4	C	3.00	A	C	0.119	0.060	0.176
	h1311	h1834	h1797	h1805	h1806	h270	h232	h240

Caustic Addition	CA T. Waste Depth (m)	CA Tank Class (95% CI)	CA Tank Class (Mean #)	CA Tank Class (Min)	CA Tank Class (Max)	CA Void Fraction 95%CI	CA Void Fraction Median	CA Void Fraction Maximum
AY-102	6.4	C	3.00	A	C	0.119	0.060	0.173
	h1257	h2482	h2445	h2453	h2454	h3186	h3148	h3156

As Is	%A	%B	%C	Estey Criteria (min)	Estey Criteria (95%CI)	Estey Criteria (max)	Buoyancy Ratio (min)	Buoyancy Ratio (Median)
AY-102	0.0	0.1	99.9	45	85	99	0.30	1.02
				h671	h702	H672	h563	h556

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As Is	Rtn'd H2 Conc (%) Mean	HS H2 Conc (%) Mean	HS CH4 Conc (%)	HS NH3 Conc (%)	FG Conc (%LFL) 95%CI	FG Conc (%LFL) Median	Depth Crit Ratio 95%CI	Depth Crit Ratio Median
AY-102	41.9%	0.9%	0.12%	0.08%	55%	23%	1.338	1.074
	h717	h879	h933	h987	h486	h448	h648	h610

	WA	WA	WA	WA	WA	WA	WA	WA
Water Addition	Rtn'd H2 Conc (%) Mean	HS H2 Conc (%) Mean	HS CH4 Conc (%)	HS NH3 Conc (%)	FG Conc (%LFL) 95%CI	FG Conc (%LFL) Median	Depth Crit Ratio 95%CI	Depth Crit Ratio Median
AY-102	41.9%	0.9%	0.12%	0.08%	55%	23%	1.319	1.060
	h717	h1419	h1473	h1527	h1782	h1744	h1404	h1366

	CA	CA	CA	CA	CA	CA	CA	CA
Caustic Addition	Rtn'd H2 Conc (%) Mean	HS H2 Conc (%) Mean	HS CH4 Conc (%)	HS NH3 Conc (%)	FG Conc (%LFL) 95%CI	FG Conc (%LFL) Median	Depth Crit Ratio 95%CI	Depth Crit Ratio Median
AY-102	41.9%	0.9%	0.12%	0.08%	55%	23%	9.237	9.237
	h717	h2067	h2121	h2175	h2430	h2392	h2052	h2014

As Is	Buoyancy Ratio (max)	Energy Ratio (min)	Energy Ratio (max)	Wncl Depth Crit (Pass - >1)	%LFL Depth Criteria (Pass - <1)	AS IS	10,000 gal H2O Addition	10,000 gal Caustic Addition
AY-102	3.16	3.44	64.1	99.88	99.88	C	C	C
	h564	h509	h510			M6	M13	M20

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As Is	Energy Ratio 95%CI	Energy Ratio Median	Estey Criterion 95%CI	Estey Criterion Median	Buoyancy Ratio 95%CI	Buoyancy Ratio Median
AY-102	36.039	9.352	84.712	71.444	1.647	1.016
	h540	h502	h702	h664	h594	h556

Water Addition	WA Energy Ratio 95%CI	WA Energy Ratio Median	WA Estey Criterion 95%CI	WA Estey Criterion Median	WA Buoyancy Ratio 95%CI	WA Buoyancy Ratio Median
AY-102	37.276	9.713	84.712	71.444	1.576	0.989
	h1890	h1852	h1944	h1906	h1998	h1960

Caustic Addition	CA Energy Ratio 95%CI	CA Energy Ratio Median	CA Estey Criterion 95%CI	CA Estey Criterion Median	CA Buoyancy Ratio 95%CI	CA Buoyancy Ratio Median
AY-102	36.394	9.428	85.866	71.848	1.577	1.023
	h2538	h2500	h2592	h2554	h2646	h2608

As Is	Tank Op Limit Exceeded?	Wncl Depth Crit (% Pass)	%LFL Depth Criteria (% Pass)	Bouyancy Ratio Factor	Rtn'd H2 Conc (%) (Median)	HS H2 Conc (%) (Median)
AY-102	No	99.88	99.88	1,334.3	41.0%	0.8%
	h2724				h718	h880

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APPENDIX F

HENDERSHOT, REED,
1999,
"*TANK VOLUME ADJUSTMENTS*",
7B40-99-116,
CH2MHILL HANFORD GROUP, INC.,
RICHLAND, WASHINGTON

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INTEROFFICE MEMO LOCKHEED MARTIN

From:	Inventory Control and Modeling	74B40-99-116
Phone:	373-3 R2-11	
Date:	August 16, 1999	
Subject:	Tank Volume Adjustments	

To:	K. M. Hodgson	R2-11
cc:	S. A. Barker	R2-11
	W. B. Barton	R2-11
	J. W. Cammann	R2-12
	R. Hendershot File	

Reference: Hill, Julian G. et al, July 1999, "An Assessment of the Uncertainty in the Waste Volume of the Hanford Site Single-Shell and Double-Shell Tanks", Pacific Northwest National Laboratory, Richland, Washington.

Attached are the results of calculations done to more accurately estimate the volume of tank waste at the Hanford site. These calculations were done in response to a report by PNNL stating that the current methods overestimate the waste volume by 460,000 gallons. Our calculations show that the overestimation is approximately ~~16~~ 540,000 gallons.

Attached are the results of our calculations.

If you need any additional information or have any questions please contact me at 372-2349

Reed Hendershot
Summer Engineer

74B40-99-116

ATTACHMENT

Tank Volume Adjustments

Consisting of 3 pages
including this cover sheet

Tank Volume Adjustments

Hendershot, R. J. and Plesha, M. A.
August 16, 1999

Due to recent concerns about the accuracy of waste volume calculations, a detailed analysis of all tank farms in the 200 area of the Hanford site was completed. As a result of this analysis it was found that the current simplifications in tank volume calculations could overestimate the total waste volume by more than 500,000 gallons. It is recommended that the more detailed volumetric calculations developed in this analysis be implemented in future waste volume calculations to correct for current systematic errors.

Method

The twenty-two different tank farms were divided into eight similar types. These divisions segment the tank farms based on physical similarities. It should be noted that the similarities do not include the tank height, since waste volume depends on the height of the waste from the bottom of the tank and not the void space above the waste (see page 3 of reference 1).

Tank Types

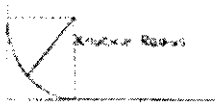
Tank Type	Number of Tanks	Tank Farms	Tank Radius (ft) *	Edge Type	Knuckle Radius (ft)	Bottom Type	Dish Depth (inches)
1	108	B, C, T, U -100 series; BX; BY; S; TX; TY	37.5	Knuckle	4	Dish	12
2	18	AN; AW; AZ; SY	37.46 *	Knuckle	1	Flat	
3	16	B, C, T, U - 200 series	10	Knuckle	3	Dish	6
4	15	SX	37.51	Square	0	Dish	14.88
5	8	AP	37.47 *	Knuckle	1	Flat	
6	6	A	37.51	Square	0	Flat	
7	4	AX	37.51	Knuckle	4-8 inches (nominal value of 6 inches used)	Flat	
8	2	AY	37.5	Knuckle	1	Flat	

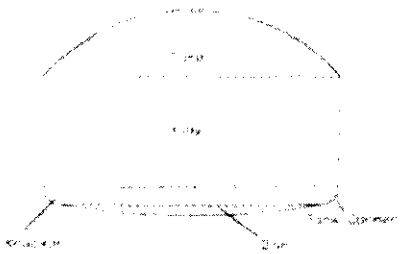
*For tank types 2 and 5 the reported radius is an average over the height of the tank body

Knuckle Error

The largest contribution to overestimation in waste volume calculations is the analysis of the knuckle volume. The current method assumes that the bottom tank corner does not curve, but that it is square. In type 1 tanks where the knuckle radius is four feet, this method overestimates waste volume by 5,844 gallons per tank, assuming that the waste height is above the top of the knuckle. Since type 1 tanks are the most prevalent at Hanford (108 out of 177 tanks), this single error causes an overestimation in volume by 631,152 gallons. In the other tank types the effect is not as large.

Tank Corner





Dish Error

The next largest contribution to volumetric error is the value used for the dish volume. The largest dish error was found to be with type 4 tanks, where the previous volume of 18,500 gallons underestimated the actual

volume of 20,553 gallons by 2,053 gallons. Because of this dish error, type 4 tanks accounted for the largest underestimation in waste volume of any tank type.

Tank Radius Error

The smallest correction dealt with the tank radius. Current calculations assume that all tank radii except for type 3 tanks are 37.5 feet. The actual inside radii on the tank drawings differs slightly from the assumed values. This difference, however, can probably be neglected since the construction tolerances are larger than the differences in tank radii. It should be noted that when the different tank radii are accounted for, the total waste volume estimation for the Hanford site changes by less than 5,000 gallons (assuming an average waste height of 100 inches as suggested on page 6 in reference 1). For completeness, the table below does account for this correction.

Volume Adjustments (in gallons)

Tank Type	Current Knuckle Volume	Revised Knuckle Volume	Volume Change Due to Knuckle	Current Dish Volume	Revised Dish Volume	Volume Change Due to Dish	Actual Tank Radius (ft)	Volume change Due to Radius	Total Volume Change per Tank	Total Volume Change for Tank Type
1	131,861	126,017	-5,844	12,500	13,378	888	37.5	0	-4,966	-536,328
2	33,005	32,608	-396	0	0	0	37.48	-307	-704	-12,670
3	6,989	6,171	-818	590	323	-267	10	0	-1,085	-17,366
4	0		0	18,500	20,553	2,053	37.51	128	2,182	32,723
5	33,003	32,604	-400	0	0	0	37.47	-325	-725	-5,800
6	0		0	0	0	0	37.51	151	151	904
7	16,533	16,439	-94	0	0	0	37.51	142	47	189
8	33,048	32,672	-376	0	0	0	37.5	0	-376	-752

Decrease in Total Waste Volume for all Hanford tanks: **539,101** gallons

Conclusion

The proposed method of calculating waste volumes is more exact than the current method because it factors in tank specific geometry. By calculating waste volumes in this manner the total waste volume estimates for the Hanford site could decrease by over 500,000 gallons.

APPENDIX G

WELLS, B. E.,
JAN 24, 2002A,
PERSONAL EMAIL TO S. A. BARKER,
PACIFIC NORTHWEST NATIONAL LABORATORY,
RICHLAND, WASHINGTON.

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From: Wells, Beric E [Beric.Wells@pnl.gov]
Sent: Thursday, January 24, 2002 7:14 PM
To: Barker, Steven A
Subject: shear strength

Steve:

I spoke with Chuck later in the day...he does not like using the yield stress measurements for two reasons.

1. How well do they actually represent in situ conditions?

2. The models (Energy Ratio, Buoyancy Ratio) were developed from and calibrated to the six old FG1 tanks with BDGREs...yield stress < 250 Pa. Therefore, the applicability of the models is in question in the higher yield stress solids (bubbles change shape, movement physics, etc.)

Although the data (as correct or incorrect as they are) indicate high yield stress, it is more conservative to go with lower values, and the models may not be applicable with higher yield stress anyway. Chuck would probably be OK with 50 to 500 Pa uniform, maybe even only 50 to 400 Pa uniform.

I have enclosed a file of the TWINS yield stress for curiosities sake...

Beric

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APPENDIX H

WELLS, B. E., 2002B,
***"INVESTIGATION OF GAS RETENTION AND RELEASE ISSUES IN TANKS AN-107 AND SY-101 SUPPORTING WASTE GROUP DETERMINATION"*,**
TWS02.025,
PACIFIC NORTHWEST NATIONAL LABORATORY,
RICHLAND, WASHINGTON.

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TWS02.025

Investigation of Gas Retention and Release Issues in Tanks AN-107 and SY-101 Supporting Waste Group Determination

BE Wells

May 2002

Pacific Northwest National Laboratory
Richland, Washington

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1.0 Introduction

A methodology has been developed to categorize Hanford waste tanks into waste groups based on the tank's estimated flammable gas inventory and the potential for that gas to be released by a buoyant displacement gas release event (BDGRE). In support of this categorization, the recent (2000-2002) observed gas release events in AN-107 and the retained gas volume in AN-107 and SY-101 were analyzed in detail. The current sediment depth in SY-101 is also investigated.

Application of the BDGRE predictive indicators has historically shown that AN-107 was close to exhibiting BDGRE behavior (Meyer and Stewart 2001, Johnson et al. 2000). Since the predictive model of BDGRE behavior is based on the group of tanks exhibiting this behavior, inclusion of AN-107 in the group has the potential to affect the waste group determinations for the remaining tanks. The three gas release events observed recently in AN-107 (McCain, 2001) were investigated in detail to determine if the tank indeed belongs in the BDGRE group. The retained gas volume in AN-107 was also evaluated.

The potential for large BDGREs in SY-101 (Meyer et al. 1997) was eliminated by a series of waste transfers and water dilutions in 1999 and 2000 (Johnson et al. 2000). However, like AN-107, SY-101 in its new configuration is relatively close to (in terms of the BDGRE predictive indicators) the group of tanks exhibiting BDGREs. The last evaluation of if its waste configuration was done in August 2000 (Johnson et al. 2000). SY-101 data were updated by an investigation of potential gas retention and refinement of the sediment layer depth (a significant parameter for identifying the potential of BDGRE behavior) to ensure that the tank is categorized correctly.

In Section 2, the analyses conducted on AN-107 are described, and Section 3 covers the evaluation of SY-101. The findings pertinent to waste group categorization are summarized in Section 4, and cited references are listed in Section 5.

2.0 AN-107 Analyses

Specific gas release behavior and gas retention issues in AN-107 are investigated as they pertain to waste group determination.

2.1 AN-107 Gas Release Events

Three gas release events have been reported in AN-107. These events occurred on April 30, 2000, January 28, 2001, and February 21, 2002, and were identified via monitoring of the headspace hydrogen concentration in the tank (McCain, 2001). The monitoring is performed by two Whittaker™ electrochemical cells in a standard hydrogen monitoring system (SHMS)-B, from which a daily reading is recorded. The SHMS was installed in February 1998. Tank operations (waste intrusive activities, caustic/water additions, instrument re-calibration, etc.) at the time of the reported gas release events and the nature of the events themselves were investigated to establish whether the events were potentially induced by waste disturbance, were artifacts of the instrumentation, or were indeed *spontaneous* BDGREs (Meyer and Stewart 2001).

Figure 1 is a plot of the hydrogen concentration and waste level around the time of the April 30, 2000 event. The release was very minor, having a maximum recorded hydrogen concentration of 290 ppm (baseline at this time was 110 ppm). No tank operations were identified to be associated with this release. The actual rise in hydrogen concentration in this event was very small (180 ppm), and occurred during a time of fluctuating concentration readings. The hydrogen concentration trend also does not show the typical BDGRE shape discussed in Hedengren et al. (2000) and the release is not reflected in the level history. Therefore, this event was not deemed to be evidence of BDGRE behavior in the tank.

Figure 2 shows the hydrogen concentration and waste level history during the January 28, 2001, event. A maximum hydrogen concentration of 470 ppm (130 ppm at "start" of event) was recorded. Although larger in magnitude than the April 2000 event, it is still relatively minor. Calibration work was being performed on the hydrogen monitoring system during this time, which may have caused a spurious hydrogen concentration elevation.[1] Additionally, it is apparent in Figure 2 that the hydrogen concentration trend does not show the typical BDGRE shape, taking approximately 20 days to return to the baseline concentration. Decay to baseline is typically on the order of a day to a few days in an actively ventilated tank (Hedengren et al. 2000). Again, there was no evidence of a gas release in the waste level history at the time of this event (Figure 2). Therefore, this event was also not deemed to be indicative of BDGRE behavior.

[1] Personal Communication with DC Hedengren, CH2M HILL Hanford Group, March 28,2002.

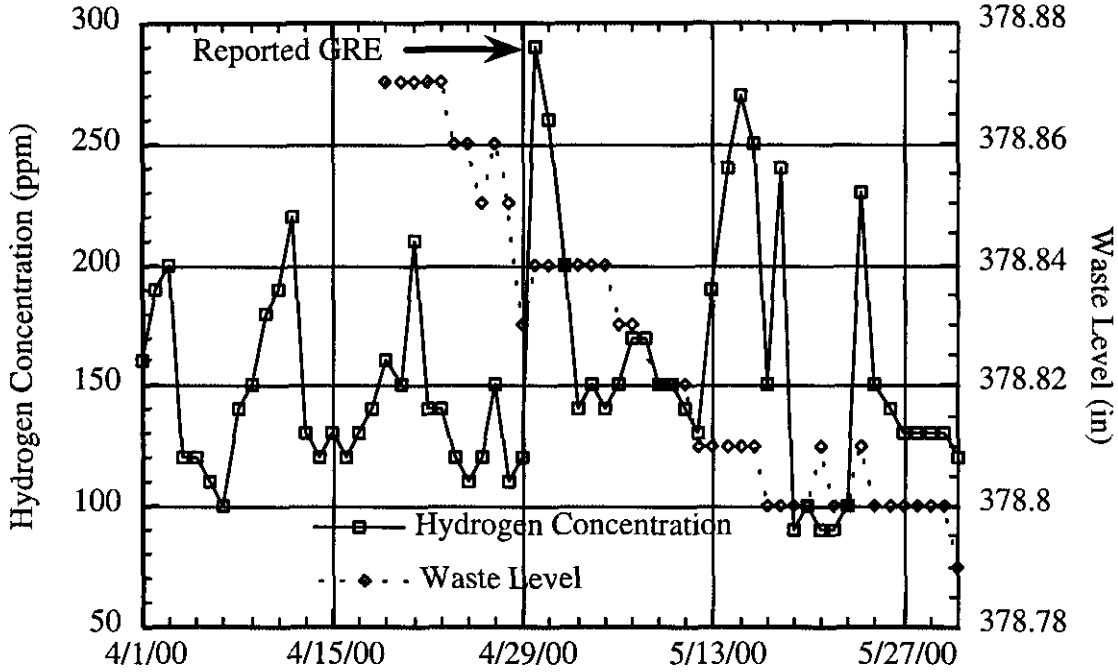

Figure 1. Hydrogen Concentration and Waste Level in AN-107, 4/1/00 to 5/31/00

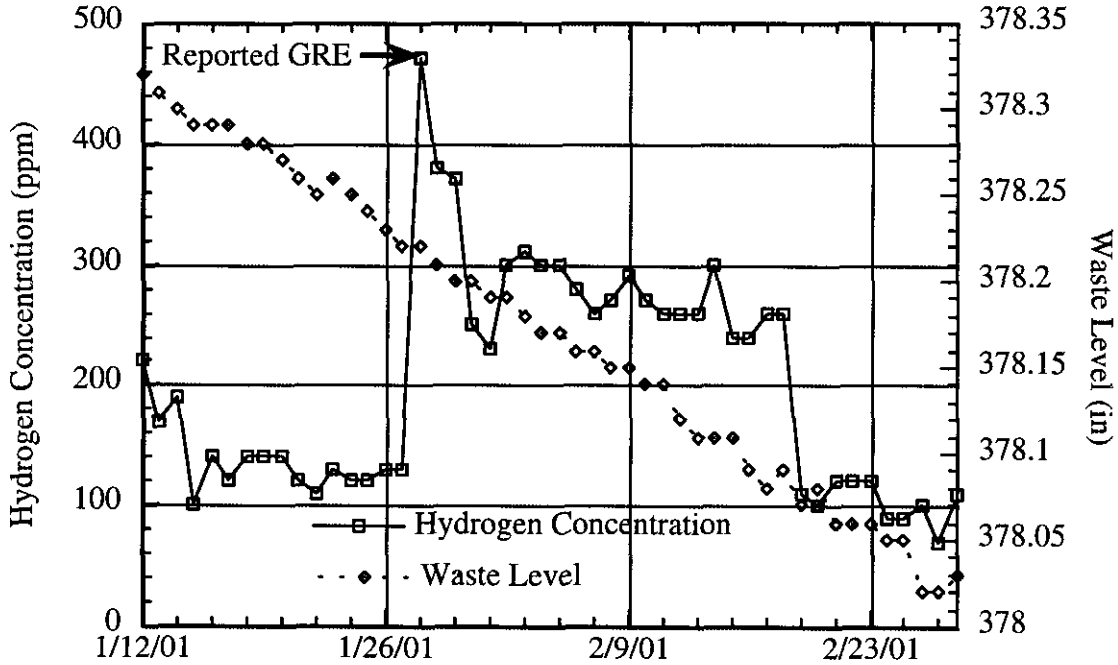

Figure 2. Hydrogen Concentration and Waste Level in AN-107, 1/12/01 to 2/28/01

The final reported event, on February 21, 2002, is illustrated in Figure 3. It also had a maximum recorded hydrogen concentration of 470 ppm. However, it also coincided with the start of the re-circulation pump in preparation for the caustic addition. The pump inlet was just above the sediment layer, and the pump outlet is near the top of the riser above the waste surface. The returned liquid is allowed to freely cascade back into the waste. The recorded release was likely the result of this process, and is therefore not considered indicative of spontaneous BDGRE activity in the tank. The caustic addition to the tank is reflected in the waste level increase beginning on February 21 (Figure 3).

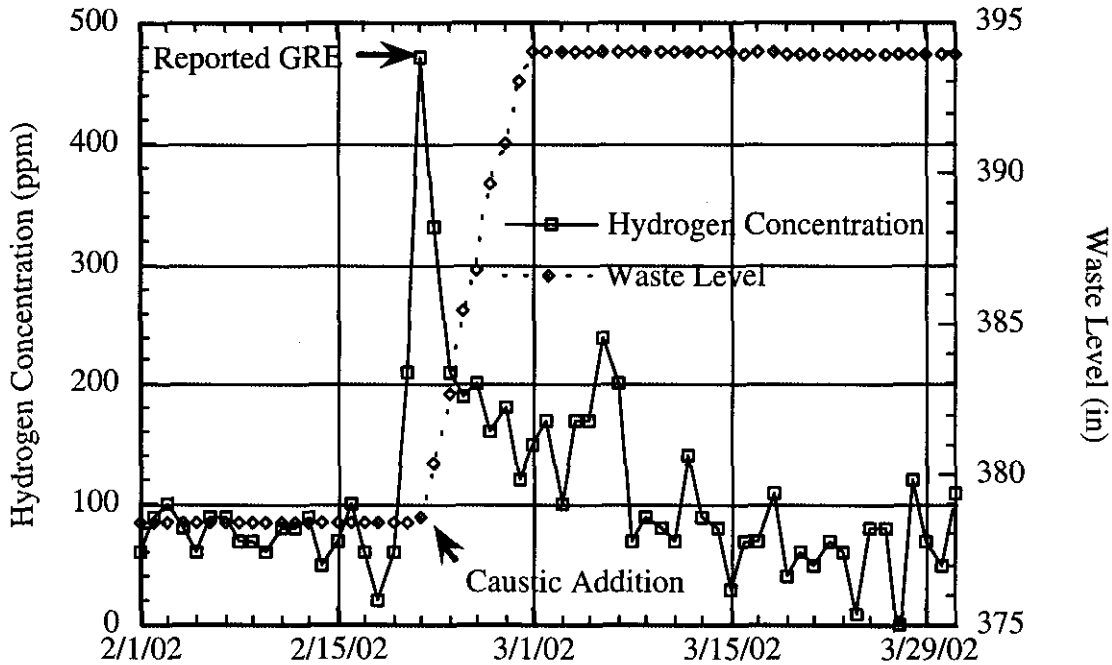

Figure 3. Hydrogen Concentration and Waste Level in AN-107, 2/1/02 to 3/31/02

To summarize, the indicators of BDGRE behavior (gas release signature and magnitude; level history) do not provide clear evidence to indicate that AN-107 is experiencing BDGREs. The one event that can be considered spontaneous was a very small release and the other two are explained by in-tank activities. The BDGRE predictive indicators should not be based on AN-107 (see Meyer and Stewart [2001] for explanation of BDGRE predictive indicator "calibration").

2.2 AN-107 Gas Retention

The retained gas volume may be estimated using changes in the waste surface level in response to barometric pressure changes. The Barometric Pressure Effect (BPE) model is described in Appendix B of Hedengren et al. (2000). The model estimates the retained gas volume based on the response of the waste surface level to fluctuations in the barometric pressure due to compression and expansion of stored gas.

As the model is relatively insensitive to small pressure fluctuations, we are most interested in the waste level response during the winter months when the pressure fluctuations are relatively large. To include two winter seasons, the waste level and barometric pressure correlation was evaluated from June 2000 through March 2002. A histogram of the estimated gas volume from the BPE model in AN-107 is shown in Figure 4. The histogram has been truncated to the physical limits of zero and 4,000 ft^3 imposed by setting the average gas volume fraction in the sediment layer to the neutral buoyancy gas fraction. The in-situ retained gas volume is estimated to be 2,100 ft^3 (4,200 scf for a pressure of 2 atm) at the 95% confidence level (CL) and zero at the median.

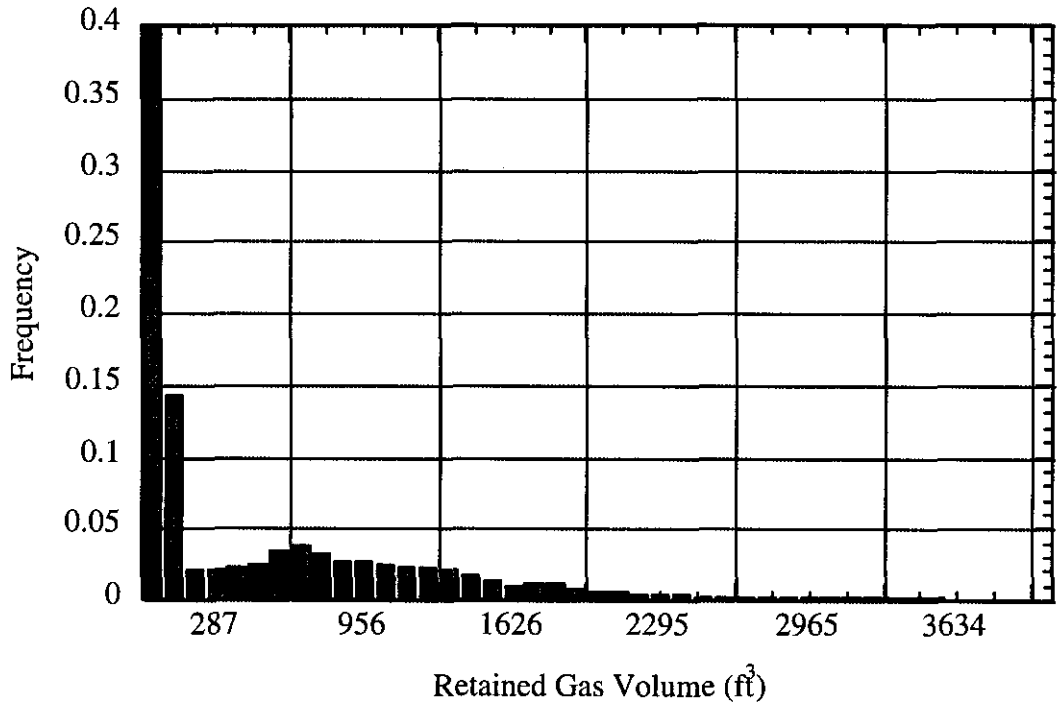

Figure 4. AN-107 Retained Gas Volume (truncated)

The retained gas volumes were also examined as a function of time; i.e. is the tank gaining or loosing gas volume with time? No correlation was identifiable.

3.0 SY-101 Analyses

The two main issues in SY-101 waste group classification were the retained gas inventory and the depth of the sediment layer, an influential parameter in the BDGRE indicator.

3.1 SY-101 Gas Retention

The retained gas volume in SY-101was evaluated using the BPE model as described for AN-107 above. The gas content in SY-101 was also estimated from the waste surface level history accounting for estimated water evaporation as discussed by Johnson et al. (2000).

The waste level and barometric pressure correlation for SY-101 from both of the Enraf™ level instruments was evaluated from June 2000 (post remediation) through March 2002. No meaningful correlation was found. The lack of correlation may be due to the difficulty of the BPE model in detecting a small retained gas volume (Hedengren et al. 2000), or may be a result of the floating "scum" layer (Johnson et al. 2000) affecting the waste surface measurement.

Evaporation of water from the waste can mask a level rise due to gas retention. The evaporation effect in SY-101 was calculated from the difference in specific humidity between the ambient air at the tank inlet and the exhaust air. The evaporation evaluation conducted by Johnson et al. (2000) five months after remediation indicated that gas retention was negligible. The analyses was extended to the present to confirm this was still the case. However, measurements required for this calculation (the tank dome pressure and exhaust air temperature, relative humidity, and flow rate) were not available after October 2000.

In the absence of these data, the exhaust humidity was estimated using the water vapor partial pressure in a concentrated salt solution derived from data for SY-101 simulants as presented in Stewart et al. (2002). The exhaust flow rate was held fixed at the last recorded data point. Using this approximate model, the waste level correction from Johnson et al. (2000) was extrapolated to March 2002. The new model with the alternate sources was "calibrated" to match the results of the "exact" model for the time period during which all data were available. The measured waste level and the corrected waste level trend with the evaporation effect removed are shown in Figure 6. A two-inch waste level rise is shown from October 2000 to March 2002. It is interesting to note that, beginning in January 2002, there has been no continued increase in the corrected waste level, indicating no further gas accumulation. The two-inch level rise corresponds to approximately 750 ft^3 of retained gas in-situ or 1,500 scf accounting for a gas pressure of 2 atm. This relatively minor retained gas volume supports the inability of the BPE model to find meaningful pressure-level correlations (see above).

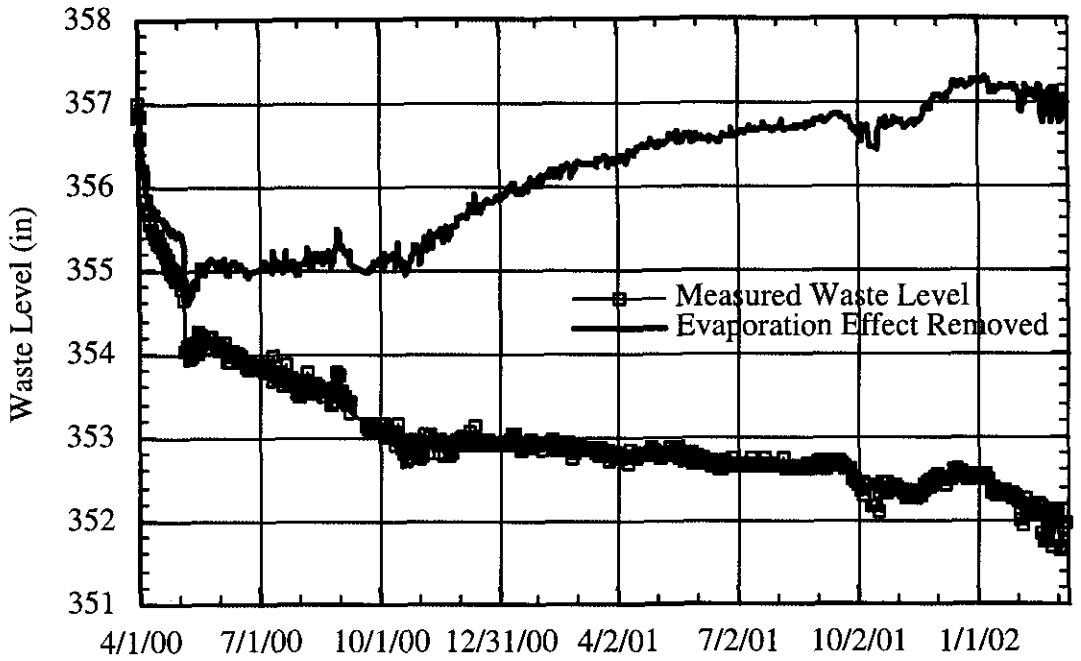

Figure 6. SY-101 Waste Level and Waste Level with Evaporation Effect Removed

3.2 SY-101 Sediment Depth

Determination of a tank's potential for BDGRE behavior is strongly affected by the sediment depth (Meyer and Stewart 2001). The sediment depth in SY-101 was re-examined for the waste group determination since the last evaluation in August 2000 was only five months after mixer pump operations and remediation activities. The available measurements for determining the sediment depth include the neutron and gamma scans and the waste temperature profiles from the multi-function instrument trees (MITs) (see Hedengren et al. [2000] for a detailed description of the waste characterization measurements).

The neutron/gamma logs were last recorded in risers 17B and 17C on June 14, 2001. It is apparent from both the neutron (Figure 7) and gamma (Figure 8) logs that the sediment layer was at or below 100 inches at each riser (the lower count below 100 inches indicates the presence of solids). The gamma log gives the more accurate representation, and indicates that the sediment depth was approximately 95 inches.

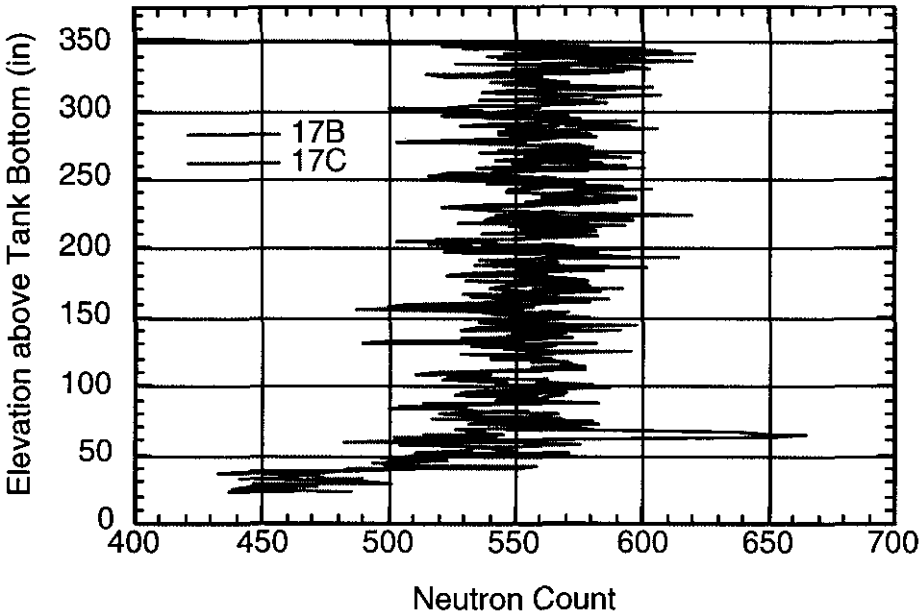

Figure 7. SY-101 Neutron Count Profile, 6/14/01

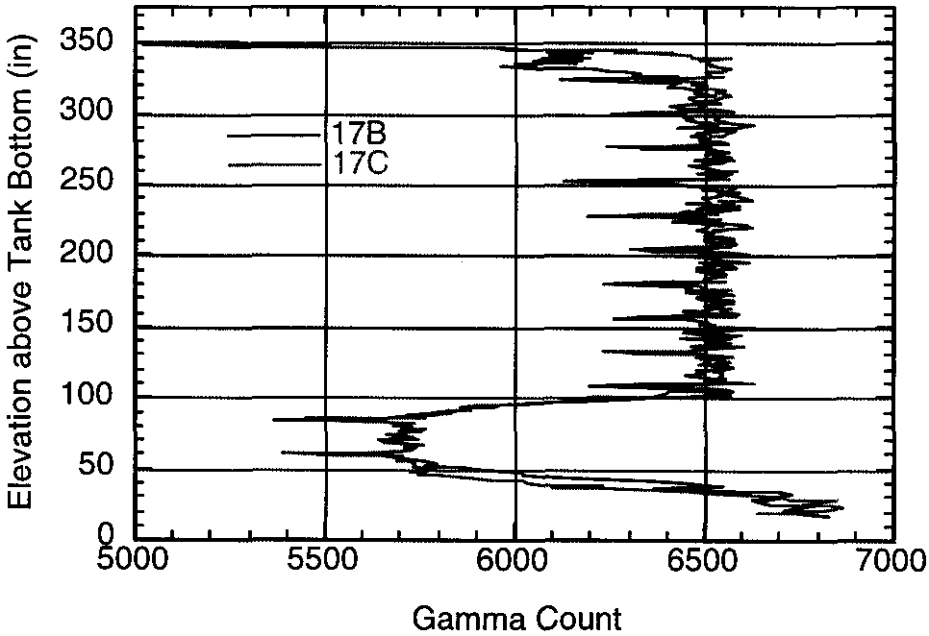

Figure 8. SY-101 Gamma Count Profile, 6/14/01

The waste temperature profiles from risers 17B and 17C, shown in Figures 9 and 10, clearly show the decrease in the settled solid layer height with time after the remediation. Each curve represents a single thermocouple at the specified elevation. The bold black line indicates the 100-inch thermocouple temperature. The upper "cluster" of temperatures represents the thermocouples exposed to the sediment layer; and the lower cluster represents thermocouples

measuring the supernatant liquid. Spikes and jumps in the data are instrumentation artifacts. Note the departure, from left to right on the plots, of subsequently lower thermocouples from the temperature range of the sediment layer into the temperature range of the supernatant liquid. This represents the effect decreasing sediment depth uncovering subsequent thermocouples. The 100-inch thermocouple registered the supernatant liquid temperature in October 2000. The 76-inch thermocouple began to depart from the sediment layer temperature in July 2000 but apparently has not been fully uncovered. The sediment depth is therefore somewhere between 100 and 76 inches.

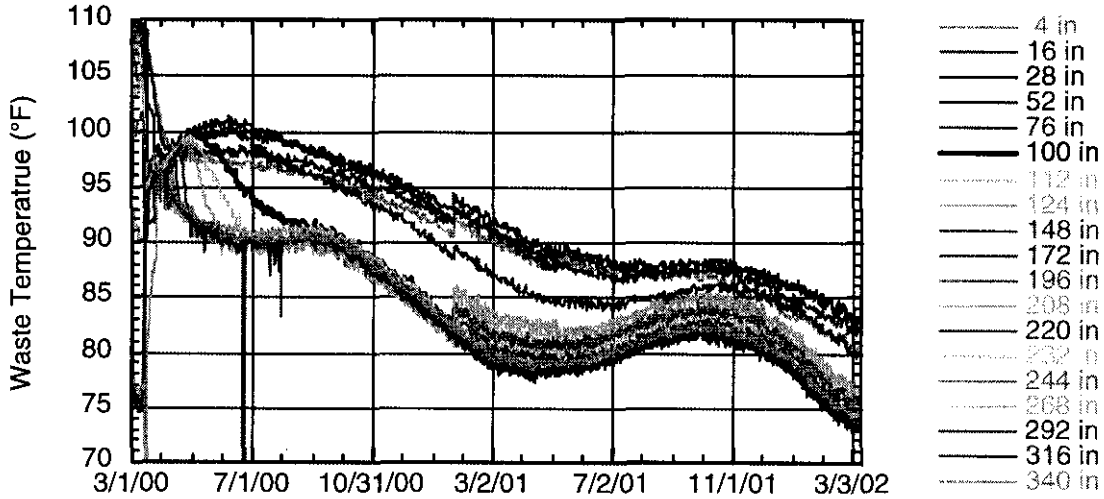

Figure 9. SY-101 Temperature Profile History in Riser 17B

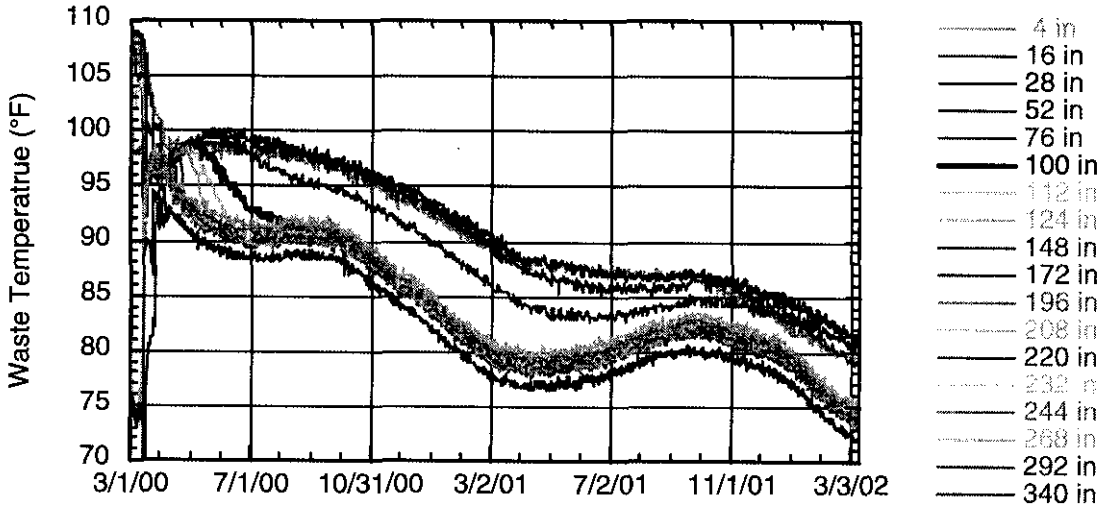

Figure 10. SY-101 Temperature Profile History in Riser 17C

As may be noted in Figures 9 and 10, there are vertical separations of 24 inches between the thermocouples in the region of interest. Validation probe scans, which provide temperature readings every six inches, were completed on April 4, 2002. The resulting

temperature profile is shown in Figure 11. Only the lower portion of the waste is shown in the figure. The sediment layer depth of over 100 inches indicated by the validation probe data in riser 17B is suspect as it does not agree with the thermocouple measurements on the same date. It is believed that either the elevation of the validation probe in 17B was in error, insufficient time was allowed for the probe to equilibrate at each elevation, or there was inadequate contact between the resistance temperature detector and the MIT wall. The validation probe data are consistent with thermocouple readings in 17C. By extrapolating the transition of the uniform supernatant liquid temperature and the sediment layer temperature trend from the April 4, 2002 validation probe scan in riser 17C (as depicted by the bold-dashed-lines in Figure 11), the sediment depth in SY-101 is currently 90 inches.

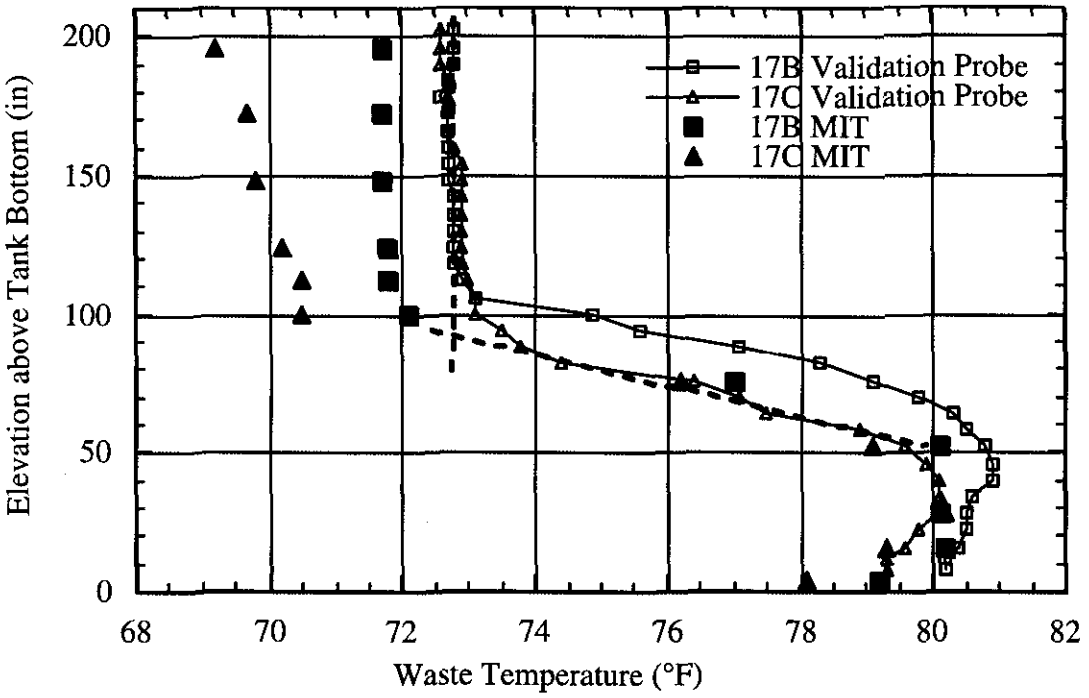

Figure 11. SY-101 Waste Temperature Profile, 4/4/02

4.0 Conclusions

It was determined that none of the three reported gas release events in AN-107 clearly represented a spontaneous BDGRE. Therefore, the BDGRE predictive indicators should not be based on AN-107. The in-situ retained gas volume in AN-107 was estimated to be 2,100 ft^3 at the 95% confidence level using the BPE model.

The in-situ retained gas volume in SY-101 estimated by removing the evaporation effect from the waste surface level is 750 ft^3. Based on the available measurements, the best estimate of the current sediment layer depth in SY-101 is 90 inches.

5.0 References

Hedengren DC, KM Hodgson, WB Barton, CW Stewart, JM Cuta, and BE Wells. 2000. *Data Observations on Double-Shell Flammable Gas Watch List Tank Behavior*. RPP-6655. Rev. 0. CH2M HILL Hanford Group, Inc., Richland, Washington.

Johnson GD, NW Kirch, RE Bauer, JM Conner, CW Stewart, BE Wells, and JM Grigsby. 2000. *Evaluation of Hanford High-Level Waste Tank 241-SY-101*. RPP-6517, Rev. 0. CH2M HILL Hanford Group, Inc., Richland, Washington.

McCain DJ. 2001. *Results of Vapor Space Monitoring of Flammable Gas Watch List Tanks*. HNF-SD-WM-TI-797 Rev. 6, CH2M HILL Hanford Group, Inc., Richland, Washington.

Meyer PA and CW Stewart. 2001. *Preventing Buoyant Displacement Gas Release Events in Hanford Double-Shell Waste Tanks*. PNNL-13337, Pacific Northwest National Laboratory, Richland, Washington.

Meyer PA, ME Brewster, SA Bryan, G Chen, LR Pederson, CW Stewart, G Terrones. 1997. *Gas Retention and Release Behavior in Double–Shell Waste Tanks*. PNNL-11536 Rev. 1, Pacific Northwest National Laboratory, Richland, Washington.

Stewart CW, JL Huckaby, and PA Meyer. 2002. *Effects of Globally Waste-Disturbing Activities on Gas Generation, Retention, and Release in Hanford Waste Tanks*. PNNL-13781, Pacific Northwest National Laboratory, Richland, Washington.

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APPENDIX I

WILLMARTH, S. L.,
JAN 16, 2002,
PERSONAL EMAIL TO S. A. BARKER,
CH2MHILL HANFORD GROUP, INC.,
RICHLAND, WASHINGTON.

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From: Wilmarth, Steven R
Sent: Wednesday, January 16, 2002 1:05 PM
To: Barker, Steven A
Subject: change to best basis volume uncertainty table
Steve,

The 6.0 inch values in the previous file I sent have been changed to 6.5 inches. See the attached files.

Steve W.

File: sludge-SD.doc January 15, 2002

Table cc. Sluge level measurements for ten tanks, units inches, S.D. is standard deviation. Data from TO-040-560, Rev. B-9, Tank Farm Sludge Level Readings.

Tank	Date	Riser No.	Sludge Level	S.D.	Count
241-AN-102	6/29/89	16A	39.25	6.63	3
	6/29/89	1B	32.25		
	6/29/89	1C	26.00		
241-AN-107	6/29/89	16C	46.10	2.78	3
	6/29/89	1C	51.65		
	6/29/89	1A	48.95		
241-AW-101	9/13/87	1B	25.88	9.81	2
	9/13/87	1C	NA		
	9/13/87	16A	NA		
	9/13/87	16C	NA		
	7/8/88	15B	12.00		
241-AW-102	10/20/94	22A	20.50	0.71	2
	10/20/94	22A	19.50		
241-AW-106	7/7/91	1B	99.88	14.71	3
	7/7/91	1C	NA		
	7/7/91	16A	95.50		
	7/7/91	16C	72.50		
	7/7/91	22A	NA		
241-AY-101	7/1/97	15B	39.50	0.88	6
	7/1/97	15J	39.00		
	7/1/97	15N	38.50		
	7/1/97	15R	38.00		
	7/1/97	15F	39.50		
	7/1/97	15C	40.50		
241-AY-102	10/29/88	15B	19.50	4.53	6
	10/29/88	15C	8.00		
	10/29/88	15F	6.50		
	10/29/88	15H	10.25		
	10/29/88	15J	12.00		
	10/29/88	15R	11.00		
241-SY-102	1/30/87	1A	NA	9.96	5
	1/30/87	1B	NA		
	1/30/87	1C	21.00		
	1/30/87	17A	NA		
	1/30/87	17B	NA		
	1/30/87	17C	18.00		
	1/30/87	23A	NA		
	5/12/87	1C	40.00		
	5/12/87	17C	32.00		
	5/12/87	17A	17.25		
241-AZ-101	1/23/89	24B	15.75	3.76	21
	1/23/89	24C	11.25		
	1/23/89	24D	23.00		
	1/23/89	24E	15.50		
	1/23/89	24F	13.00		
	1/23/89	24G	22.50		
	2/28/89	24B	15.50		
	2/28/89	24C	9.75		
	2/28/89	24D	22.50		
	2/28/89	24E	15.25		
	2/28/89	24F	13.00		
	2/28/89	24G	14.50		
	5/30/89	24B	15.50		
	5/30/89	24C	10.25		
	5/30/89	24D	NA		
	5/30/89	24E	14.75		
	5/30/89	24F	12.25		
	5/30/89	24G	15.25		
	12/26/89	24B	NA		
	12/26/89	24C	11.25		
	12/26/89	24D	NA		
	12/26/89	24E	15.25		
	12/26/89	24F	11.75		
	12/26/89	24G	14.75		
241-AZ-102	1/23/89	24C	19.25	7.80	20
	1/23/89	24D	33.25		
	1/23/89	24E	39.25		
	1/23/89	24F	38.75		
	1/23/89	24G	29.25		
	2/28/89	24C	20.25		
	2/28/89	24D	33.25		
	2/28/89	24E	40.75		
	2/28/89	24F	40.25		
	2/28/89	24G	28.25		
	5/30/89	24C	19.75		
	5/30/89	24D	32.75		
	5/30/89	24E	39.25		
	5/30/89	24F	39.25		
	5/30/89	24G	27.25		
	12/26/89	24C	19.75		
	12/26/89	24D	32.25		
	12/26/89	24E	39.25		
	12/26/89	24F	41.45		
	12/26/89	24G	27.95		

Number of Tanks	10	Pooled Variance	42.19
Number of Observations	71	Pooled Standard Deviation	***6.50***

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APPENDIX J

DERIVATION OF RETAINED GAS COMPOSITIONS

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Calculation Review Checklist.

Calculation Reviewed: Derivation of Retained Gas Compositions

Scope of Review: Appendix J, No Statistical Reproduction
(e.g., document section or portion of calculation)

Engineer/Analyst: Steven A Barker Date: 8/28/03

Organizational Mgr: Ronald J. Stevens Date: 8/28/03

This document consists of 62 pages and the following attachments (if applicable):

Yes	No	NA*		
X	[ ]	[ ]	1.	Analytical and technical approaches and results are reasonable and appropriate.
[ ]	[ ]	X	2.	Necessary assumptions are reasonable, explicitly stated, and supported.
[ ]	[ ]	X	3.	Ensure calculations that use software include a paper printout, microfiche, CD ROM, or other electronic file of the input data and identification to the computer codes and versions used, or provide alternate documentation to uniquely and clearly identify the exact coding and execution process.
[ ]	[ ]	X	4.	Input data were checked for consistency with original source information.
X	[ ]	[ ]	5.	For both qualitative and quantitative data, uncertainties are recognized and discussed.
X	[ ]	X	6.	Mathematical derivations were checked including dimensional consistency of results.
X	[ ]	[ ]	7.	Calculations are sufficiently detailed such that a technically qualified person can understand the analysis without requiring outside information.
[ ]	[ ]	X	8.	Software verification and validation are addressed adequately.
[ ]	[ ]	X	9.	Limits/criteria/guidelines applied to the analysis results are appropriate and referenced. Limits/criteria/guidelines were checked against references.
X	[ ]	[ ]	10.	Conclusions are consistent with analytical results and applicable limits.
X	[ ]	[ ]	11.	Results and conclusions address all points in the purpose.
[ ]	[ ]	X	12.	Referenced documents are retrievable or otherwise available.
[ ]	[ ]	X	13.	The version or revision of each reference is cited.
[ ]	[ ]	X	14.	The document was prepared in accordance with Attachment A, "Calculation Format and Preparation Instructions."
X	[ ]	[ ]	15.	All checker comments have been dispositioned and the design media matches the calculations.

Bernie E. Wells 8/28/03
Checker (Printed Name and Signature) Date

* If No or NA is chosen, an explanation must be provided on or attached to this form.

NA 2. Assumptions are presented in main document.
NA 3,4,8,9,12-14. Not within scope of this review.

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INTRODUCTION

This report provides the documentation for the derivation of the Retained Gas composition parameters. The major components for of the flammable gases generated within the Hanford wastes are hydrogen (H_2), nitrogen (N_2), Methane (CH_4), Ammonia (NH_3), and Nitrous Oxide (N_2O). The values for these compositions within a tank are quite variable and are best expressed as a distribution. In order to constrain the compositions in the gas phase during the Monte Carlo simulation, the concentration of N_2O and CH_4 are expressed as ratios with H_2, and the H_2 concentration is determined by difference. The retained gas composition is required in the determination of the Waste Groupings described in the document. This gas composition determined the flammability of the headspace following a release of retained gas.

1.1 OBJECTIVES

The objective of this appendix is to use the available Retained Gas Sampler (RGS) Data for 16 tanks to derive the distributions required to predict the gas composition for the 16 sampled tanks and to prepare default retained gas composition distributions for tanks that have not been sampled.

1.2 DISTRIBUTIONS REQUIRED TO DETERMINE THE RETAINED GAS COMPOSITIONS.

In order to determine the total retained gas composition, the concentration of the five gases, which make up the retained gas must be estimated. These gases are H_2, N_2, CH_4, NH_3, and N_2O. A Monte Carlo simulation picking random values from the individual gas compositions without constrains will rarely pick a set of 5 concentrations that would add up to exactly 100%. In order to constrain the Monte Carlo, the following method for determining the retained gas composition has bee developed. The concentrations of N_2 and NH_3 are determined directly. The compositions for the CH4 and N2O gases are described as ratios to the hydrogen concentrations. Equations 1 and 2 describe these ratios and a solution to the retained gas concentrations is presented.

Given,

Retained gas concentration of N_2	$[N_2] = 29.2\%$
Retained gas concentration of NH_3	$[NH_3] = 0.079\%$
CH_4 gas ratio	$CH_{4ratio\_rg} = 0.114$
N_2O gas ratio	$N_2O_{ratio\_rg} = 0.271$

The CH_4 term is defined as $$t_{CH4} = \frac{CH_{4ratio\_rg}}{1 - CH_{4ratio\_rg}}$$

The N_2O term is defined as $$t_{N20} = \frac{N2O\ ratio\_rg}{1 - N20_{ratio\_rg}}$$

$[H_2]$ is calculated from the equation $$[H_2] = \frac{1 - ([NH_3] + [N_2])}{1 + t_{CH4} + t_{CH4} * t_{N2O} + t_{N2O}}$$

The CH_4 concentration is calculated from the equation

$$[CH_4] = [H_2] * t_{ch4}$$

And finally the N_2O concentration is calculated from the equation

$$[N_2O] = ([H_2] + [CH_4]) * t_{N2O}$$

2.0 CALCULATION PROCEDURE

The procedure for calculating the retained gas compositions is outlined in the following procedure. The retained gas composition is based on the Retained Gas Sampler (RGS) results published in PNNL-13317, "Ammonia Results Review for Retained Gas Sampling". This procedure begins with scanned in images of Table 2.3 of PNNL-13317. All calculations are done in EXCEL[1] with the Crystal Ball[2] Monte Carlo add-in.

2.1 SCAN IN RGS DATA TABLES

Spreadsheet "rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls", Tab "1-Major Components"

---

[1] EXCEL is a trademark of Microsoft Corporation, Redmond, Washington.

[2] Crystal Ball is a trademark of Decisioneering, Inc, Denver, Colorado.

1. Scan Data into digital format from Document and Proof Read.

Tab "2-Minor comps"

Scan unpublished data on minor component compositions and Proof Read. The Minor components are often listed in the tables as "other". This breakdown allows the approximately 3% of the gases listed as other to be broken down and assigned to the appropriate gas. In this case CH_x hydrocarbons are assigned to methane (CH_4) and nitrous oxides (NO_x) are assigned to nitrogen (N_2)

2.2 COMBINE PAIRED DISTRIBUTIONS

Combine Paired Distributions for High and Low Salt Conditions to Make a Single Distribution

Assume that a combined stepwise distribution adequately describes combination of high and low salt compositions

Tab "3-revised comps"

1. Copy values from Tabs 1 and 2 and paste and transpose into appropriate column "C" cells

COMBINE DISTRIBUTIONS FOR ALL TANKS EXCEPT FOR SY-101

2. Create Crystal ball Assumption for components listed below with mean and standard deviation data in Columns "D" nd "H"

H2, N2, N2O, CH4, NH3, C2Hx, C3Hx, Other HC , Other NOx

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls", Tab "1-Major Components"

Tank and Sample (or Layer)	Mole Percent of Constituent in Bubbles						Gas Volume Percent	Elevation (cm , in.)
	H2	N2	N2O	CH4	NH3	Other		
AW-101-24A-6	26±9.4 to 24±6.8	68±32 to 70±34	1.8±0.7 to 0.5±0.2	1.0±0.4	0.4±0.2	3.0±1.4 to 3.6±1.6	0.8±0.1 to 0.7±0.1	700, 276.5
AW-101-24A-17	29±3.9	59±8.9 to 62±9.3	5.5±0.9 to 2.9±0.4	1.8±0.3	0.8±0.3	3.4±0.6 to 3.6±0.6	2.7±0.3 to 2.5±0.3	265, 104.5
AW-101-24B-18	19±3.1	68±14 to 71±14	6.7±1.2 to 3.2±0.6	2.0±0.4	0.3±0.1	4.2±0.7 to 4.6±0.8	2.1±0.4 to 1.9±0.4	217, 85.5
AW-101-24A-19	43±3.5 to 44±3.6	47±4.1 to 48±4.1	6.7±0.5 to 3.9±0.3	1.4±0.1	0.8±0.4	1.9±0.2 to 2.0±0.2	5.2±0.5 to 5.0±0.5	169, 66.5
AW-101-24A-21	30±2.5 to 31±2.6	57±4.8 to 59±5.0	6.0±0.7 to 5.3±0.5	1.8±0.3	0.7±0.3	2.5±0.3 to 2.6±0.3	5.1±0.5 to 4.8±0.5	72.3, 36.5
AW-101-24B-22	13±2.1 to 14±2.1	67±11 to 72±12	12±2.0 to 5.2±0.9	2.2±0.4 to 2.3±0.5	0.3±0.1	5.3±1.3 to 6.0±1.4	2.0±0.4 to 1.8±0.4	24.1, 9.5
AW-101 - C(b)	26±9.4 to 24±8.8	68±32 to 70±34	1.8±0.7 to 0.5±0.2	1.0±0.4	0.4±0.2	3.0±1.4 to 3.6±1.6	0.8±0.3 to 0.7±0.3	673, 265
AW-101 - NC(b)	32±3.2 to 33±3.2	58±6.2 to 58±6.4	7.2±0.8 to 4.4±0.5	1.7±0.2	0.6±0.3	3.0±0.5 to 3.2±0.5	3.7±1.6 to 3.5±1.8	131, 51.6
A-101-24-2	63±5.5 to 64±5.6	26±4.9 to 27±4.9	7.4±0.7 to 6.5±0.6	0.4±0.1	2.1±1.0	0.5±0.07	16±1.4	845, 332.5
A-101-15-5	75±8.1	15±4.8	5.7±0.6 to 5.2±0.6	0.7±0.1	3.5±1.2	0.3±0.06	18±2.1	700, 275.5
A-101-15-8	76±7.8	16±5.4	5.3±0.6 to 5.0±0.5	0.7±0.06	2.0±0.6	0.3±0.04	20±2.1	555, 218.5
A-101-24-9	70±6.1	23±4.6	4.9±0.4 to 4.5±0.4	0.8±0.09	1.7±0.3	0.2±0.03	22±2.1 to 21±2.1	507, 199.5
A-101-15-12	12±4.4	63±29 to 73±34	16±6.7 to 4.9±2.2	3.1±1.7 to 3.2±1.8	3.7±1.9	2.6±1.4 to 3.6±1.9	0.7±0.3 to 0.5±0.3	362, 142.5
A-101-24-16	15±4.2 to 14±4.0	64±20 to 74±24	14±4.4 to 4.1±1.3	0.9±0.3	3.7±1.8	2.2±0.9 to 3.0±1.3	0.6±0.3 to 0.5±0.3	169, 66.5
A-101-24-19	18±4.5	65±20 to 72±23	12±3.4 to 4.2±1.2	0.7±0.2	3.3±1.6	1.3±0.5 to 1.6±0.7	1.0±0.3 to 0.8±0.3	24.1, 9.5
A-101 -NC	72±7.1	19±4.9	5.8±0.6 to 5.3±0.5	0.7±0.1	2.5±0.9	0.3±0.06	18±9.0	641, 252
A-101 - C	15±4.5	84±24 to 73±27	14±4.9 to 4.4±1.6	1.7±0.8	3.5±1.8	2.1±0.9 to 2.8±1.3	0.7±0.3 to 0.6±0.3	186, 73
AN-105-7B-4	25±12 to 24±12	58±42 to 66±49	11±5.6 to 3.4±1.8	1.4±0.9	0.6±0.4	3.2±1.4 to 4.3±2.0	0.7±0.3 to 0.5±0.3	893, 351.5
AN-105-12A-15	20±14 to 16±14	64±64 to 73±73	11±8.1 to 3.1±2.4	1.4±1.1	0.4±0.4	3.0±1.7 to 4.4±2.7	0.5±0.2 to 0.3±0.2	362, 142.5
AN-105-7B-16	19±5.9 to 17±5.6	71±28 to 77±31	7.1±2.6 to 2.1±0.8	0.8±0.4	0.3±0.2	2.1±0.9 to 2.7±1.1	0.7±0.2 to 0.5±0.2	314, 123.5
AN-105-12A-17	65±5.2 to 67±5.3	22±2.0 to 23±2.1	11±1.0 to 7.9±0.7	0.6±0.1	0.6±0.3	0.7±0.1	6.9±0.7 to 6.5±0.7	265, 104.5
AN-105-7B-18	55±7.8 to 57±8.1	31±5.0 to 33±5.3	11±1.9 to 6.3±1.1	0.8±0.2	0.5±0.2	1.7±0.5 to 1.8±0.6	2.7±0.4 to 2.4±0.4	217, 85.5
AN-105-12A-19	65±4.9 to 66±5.0	21±3.4 to 22±3.5	12±1.0 to 10±0.8	0.6±0.06	0.5±0.2	0.4±0.1	12±0.8	169, 66.5
AN-105-12A-21	57±4.0 to 60±4.2	22±1.6 to 24±1.7	19±1.5 to 14±1.2	0.8±0.06	0.3±0.2	0.5±0.1	7.4±0.7 to 6.9±0.7	72.4, 28.5
AN-105 - C	25±12 to 24±12	58±42 to 66±49	11±5.6 to 3.4±1.8	1.4±0.9	0.6±0.4	3.2±1.4 to 4.3±2.0	0.5±0.2 to 0.4±0.2	608, 239
AN-105 - NC	60±5.4 to 62±5.5	24±4.0 to 25±3.9	14±1.5 to 11±1.1	0.7±0.09	0.5±0.2	0.6±0.1	5.1±2.6 to 4.8±2.4	136, 53

High composition error bands result from a combination of relatively small amounts of sample gas and large amounts of air contamination.

The ± values represent the measurement error band. The two central values are, first, the one based on the highest salt effect on gas solubility (lower-bound solubility); second, the one based on the lowest salt effect on gas solubility (upper-bound solubility). Only one central value is given in cases where gas solubility has too little effect to show up in the significant figures.

Tank and Sample (or Layer)	Mole Percent of Constituer	Gas Volume Percent	Elevation (cm , in.)					
	H2	N2	N2O	CH4	NH3	Other		
AN-104-10A-3	25±13	56+49 to 65±58	14±7.6 to 4.0±2.4	1.9±1.3	0.8±0.5	2.6±1.4 to 3.5±1.9	0.9±0.3 to 0.7+0.3	893, 351.5
AN-104-10A-13	41±8.2 to 44±8.6	41±9.7 to 45±11	14±3.7 to 6.7±1.8	1.3±0.5 to 1.4±0.5	0.4±0.2	1.9±0.7 to 2.2±0.8	2.2±0.4 to 1.9±0.4	410, 161.5
AN-104-10A-15	50±8.1 to 52±8.4	32±5.7 to 34±6.0	13±2.5 to 6.8±1.6	1.1±0.3 to 1.2±0.3	1.9±0.9	1.3±0.4 to 1.4±0.5	4.7±0.8 to 4.4±0.8	314, 123.5
AN-104-10A-17	29±6.0 to 30±6.3	53±13 to 55±14	14±3.1 to 10±2.2	1.5±0.3 to 1.6±0.4	0.7±0.3	1.6±0.4 to 1.7±0.4	6.7±0.8 to 6.3±0.8	217, 85.5
AN-104-12A-18	45±3.6 to 47±3.8	37±3.0 to 38±3.2	15±1.5 to 12±1.1	1.1±0.2	0.5±0.2	1.4±0.4 to 1.5±0.4	7.1±0.7 to 6.7±0.7	169, 66.5
AN-104-10A-21	47±7.8 to 49±8.1	21±3.5 to 22±3.6	30±5.1 to 27±4.6	0.6±0.1	0.9±0.4	0.3±0.07	17±1.9 to 16±1.9	24.1, 9.5
AN-104 - C	25±13	56±49 to 65±58	14±7.6 to 4.0±2.4	1.9±1.3	0.8±0.5	2.6±1.4 to 3.5±1.9	0.5±0.2 to 0.4±0.2	895, 274
AN-104 - NC	45±6.9 to 47±7.1	29±4.8 to 31±5.1	23±3.7 to 20±3.2	0.9±0.2	0.9±0.4	0.6±0.2 to 0.9±0.2	8.0±4.0 to 7.5+3.8	115, 45
AN-103-12A-2	62±6.4 to 63±6.4	29±3.2	6.9±0.7 to 6.0±0.6	0.6±0.07	1.4±0.6	0.25±0.04	16±1.4	845, 332.5
AN-103-12A-5	19±10 to 18±10	69±54 to 75±60	7.9±4.7 to 2.3±1.4	1.7±1.3	1.0±0.7	1.4±0.7 to 1.7±0.8	0.8±0.3 to 0.6±0.3	700, 275.5
AN-103-21A-10	20±13 to 18±13	70±70 to 76±76	7.0±4.8 to 1.8±1.3	1.2±0.9 to 1.1±0.9	0.8±0.6	1.4±0.7 to 1.8±0.9	0.6±0.3 to 0.5±0.3	458, 180.5
AN-103-12A-14	55±8.8	38±6.5 to 39±6.6	4.9±0.8 to 3.8+0.6	0.7±0.2	0.7±0.3	0.4±0.1	6.7±1.2 to 6.5±1.2	265, 104.5
AN-103-21A-16	64±7.2	30±3.5 to 31±3.5	3.8±0.4 to 3.3±0.4	0.6±0.1	0.8±0.2	0.4±0.09	12±1.5	169, 66.5
AN-103 crust	62±6.4 to 63±6.4	29±3.2	6.9±0.7 to 6.0±0.6	0.6±0.07	1.4±0.6	0.2±0.03	16±7.9	838, 330

Tank and Sample (or Layer)	Mole Percent of Constituent in Bubbles						Gas Volume Percent	Elevation (cm , in.)
	H2	N2	N2O	CH4	NH3	Other		
AN-103 - C	19±12 to 18±12	70±62 to 76±69	7.5±4.8 to 2.1±1.4	1.4±1.1	0.9±0.6	1.4±0.6 to 1.7±0.8	0.7±0.3 to 0.6±0.3	586, 231
AN-103 - NC	81±7.7 to 62±7.7	33±4.3	4.1±0.6 to 3.4±0.5	0.6±0.1	0.6±0.2	0.4±0.09	9.2±4.6 to 9.0±4.5	160, 63
U-103-7-2	23±1.3	36±2.1 to 37±2.1	40±2.1 to 39±2.1	0.4±0.03	0.13±0.04 to 0.07±0.02	0.5±0.05	42±2.6 to 41±2.6	362, 142.5
U-103-7-5	14±0.9 to 16±1.0	32±2.0 to 36±2.2	51±3.1 to 46±2.8	0.26±0.06	1.6±0.6	0.4±0.1	9.6±0.8 to 8.5±0.8	217, 85.5
U-103-7-7	24±1.5 to 25±1.6	41±2.6 to 44±2.8	32±1.9 to 28±1.7	0.6±0.1	1.1±0.3	1.0±0.1 to 1.1±0.1	11±1.2 to 10±1.2	121, 47.5
U-103-7-8	31±3.1 to 33±3.3	36±3.6 to 39±3.9	29±2.9 to 24±2.4	0.8±0.1	1.1±0.6	1.7±0.2 to 1.8±0.2	7.8±1.0 to 7.1±1.0	72, 28.5
U-103 - NC	23±1.4 to 24±1.5	36±2.3 to 38±2.4	39±2.4 to 37±2.2	0.4±0.05	0.6±0.3 to 0.5±0.2	0.7±0.08	19±9.5 to 18±9.0	277, 109
S-106-7-3	59±5.0 to 60±5.1	32±3.1 to 33±3.2	7.8±0.7 to 5.9±0.5	0.4±0.2	0.3±0.2	0.2±0.1	9.6±0.9 to 9.3±0.9	362, 142.5
S-106-7-5	62±5.5 to 65±5.7	23±3.6	14+1.2 to 11±1.0	0.01±0.01	0.3±0.1	0.5±0.2 to 0.6±0.2	10±1.0	265, 104.5
S-106-8-6	83±8.6 to 85±8.8	25±3.6 to 26±3.7	9.9±1.5 to 7.2±1.1	0.5±0.2	0.5±0.3	0.9±0.5 to 1.0±0.5	7.6±0.8 to 7.3±0.8	217, 85.5
S-106-8-10	65±4.9 to 66±5.1	23±4.2 to 24±4.3	11±0.8 to 9.0±0.7	0.2±0.02	0.2±0.1	0.4±0.2	14±1.2	24, 9.5
S-106 - NC	63±5.7 to 65±5.9	25±3.7 to 26±3.8	11±1.0 to 8.4±0.8	0.3±0.08	0.3±0.2	0.5±0.2	10±5.0	151, 59.5

High composition error bands result from a combination of relatively small amounts of sample gas and large amounts of air contamination.
The ± values represent the measurement error band. The two central values are, first, the one based on the highest salt effect on gas solubility (lower-bound solubility); second, the one based on the lowest salt effect on gas solubility (upper-bound solubility). Only one central value is given in cases where gas solubility has too little effect to show up in the significant figures.

Tank and Sample (or Layer)	Mole Percent of Constituer	Gas Volume Percent	Elevation (cm , in.)					
	H2	N2	N2O	CH4	NH3	Other		
BY-109-12C-4	35±3.6 to 36±3.8	40±7.9 to 42±8.3	21±2.2 to 18±1.9	1.0±0.2	0.3±0.2	2.2±0.3 to 2.3±0.3	6.3±0.4 to 6.1±0.4	121, 47.5
BY-109-10B-5	52±5.5 to 53±5.6	29±5.0	16±1.7 to 15±1.6	0.7±0.1	0.2±0.1	1.8±0.3	8.7±0.8 to 8.4±0.8	121, 47.5
BY-109-10B-6	56±6.4 to 57±6.5	23±3.8	17±3.3 to 16±3.1	0.9±0.1	0.2±0.1	2.6±0.4 to 2.7±0.4	12±1.0	72, 28.5
BY-109 below ILL	50±5.5 to 51±5.6	29±5.1	18±2.5 to 16±2.3	0.9±0.1	0.2±0.1	2.3±0.3	9.4±4.7 to 9.2±4.6	120, 47
SX-106-3-2	22±2.9 to 15±2.4	63±11 to 74±14	11±1.5 to 1.7±0.3	1.4±0.5 to 1.0±0.4	1.0±0.2 to 0.4±0.1	1.9±0.7 to 7.7±2.9	0.1±0.04 to 0.03±0.03	458, 180.5
SX-106-3-4	19±6.1 to 16±5.1	65±26 to 78±34	13±4.8 to 2.2±0.8	0.9±0.4 to 0.7±0.3	0.8±0.3 to 0.4±0.1	1.0±0.4 to 2.5±0.9	0.2±0.07 to 0.07±0.07	362, 142.5
SX-106-6-6	50±5.0 to 53±5.4	23±3.3 to 26±3.5	18±1.9 to 16±1.7	1.9±0.3 to 2.0±0.3	6.7±0.8 to 3.0±0.4	1.0±0.3 to 1.1±0.3	9.1±1.0 to 8.4±1.0	265, 104.5
SX-106-6-6A	51±5.6 to 56±6.2	19±3.3 to 21±3.7	22±2.9 to 17±2.2	2.7±0.9 to 3.0±1.0	4.0±0.6 to 1.8±0.2	1.4±0.4 to 1.6±0.4	4.1±0.6 to 3.6±0.6	265, 104.5
SX-106-3-7	48±8.5 to 50±8.5	19±8.6 to 20±9.0	27±7.1	0.5±0.09	5.7±2.7 to 2.5±1.2	0.3±0.08	30±11 to 29±11	217, 85.5
SX- 106-6-9	60±3.6 to 62±3.6	17±2.0 to 18±2.0	17±1.1	0.4±0.1	4.9±0.8 to 2.2±0.3	0.3±0.09	36±2.2 to 34±2.2	121, 47.5
SX-106-3-10	44±2.8 to 47±2.7	21±2.4 to 22±2.5	28±1.8	0.6±0.05	5.5±0.8 to 2.4±0.4	0.3±0.08	32±2.0 to 31±2.0	72, 28.5
SX-106-C	21±4.9 to 16±4.0	64±21 to 77±26	12±3.4 to 2.1±0.6	1.1±0.4 to 0.8±0.4	0.9±0.2 to 0.4±0.1	1.4±0.5 to 3.9±1.4	0.2±0.1 to 0.05±0.05	418, 164
SX-106 - NC	50±4.5 to 52±4.5	20±3.8 to 21±4.0	24±2.8 to 24±2.7	0.6±0.1	5.5±1.2 to 2.4±0.5	0.3±0.08	26±13 to 25±13	136, 53
AX-101-9D-6	61±5.5 to 64±5.5	17±2.6 to 18±2.7	11±1.0	2.4±0.2 to 2.5±0.2	6.4±1.9 to 4.3±1.0	0.7±0.2	17±1.3 to 16±1.3	362, 142.5
S-102-16-2	36±2.5 to 37±2.5	37±4.4 to 38±4.4	26±1.8 to 24±1.7	0.4±0.05	0.6±0.4 to 0.4±0.2	0.1±0.02	33±4.3 to 32±4.3	458, 180.5
S-102-16 4R	33±2.9 to 37±3.2	31±4.1 to 36±4.7	34±3.4 to 26±2.5	0.2±0.07 to 0.3±0.08	1.3±0.9 to 0.7±0.5	0.3±0.09	7.4±0.7 to 6.4±0.7	362, 142.5
S-102-16-7	27±3.1 to 28±3.2	29±4.2 to 30±4.4	42±4.8 to 41±4.6	0.4±0.06	1.5±0.4 to 0.8±0.2	0.07±0.03	30±1.9 to 29±1.9	217, 85.5
S-102-16-10	43±3.8 to 46±4.1	29±4.3 to 31±4.8	25±2.2 to 21±1.9	0.7±0.08 to 0.8±0.08	1.2±0.3 to 0.6±0.2	0.6±0.1	12±1.1 to 11±1.1	72, 28.5
S-102 tank avg.	33±3.0 to 35±3.1	32±4.3 to 33±4.5	33±3.1 to 31±2.9	0.4±0.06 to 0.5±0.06	1.1±0.4 to 0.6±0.2	0.2±0.04	26±13 to 26±13	292, 115
S-111-6-2	6.3±3.4 to 5.8±3.2	90±68 to 92±70	1.7±1.0 to 0.7±0.4	0.3±0.2	0.2±0.2 to 0.1±0.1	1.0±0.8 to 1.2±0.9	0.8±0.2 to 0.7±0.2	458, 180.5
S-111-6-4	48±24 to 51±26	36±22 to 38±23	14±5.5 to 9.8±4.0	0.6±0.2	0.9±0.4 to 0.5±0.2	0.3±0.06	6.9±2.1 to 6.5±2.1	362, 142.5
S-111-6-6	58±5.1 to 60±5.2	26±3.4 to 27±3.5	14±1.3 to 11±1.1	0.8±0.1	1.2±0.4 to 0.7±0.2	0.5±0.2	16±5	265, 104.5
S-111-6-8	67±7.1 to 68±7.2	20±2.8	12±1.3 to 11±1.2	0.6±0.06	0.7±0.2 to 0.4±0.1	0.2±0.07	20±2.8 to 20±2.9	169, 66.5
S-111-6-10	73±5.6 to 74±5.7	16±2.0 to 16±2.0	9.2±0.8 to 8.5±0.7	0.3±0.04	1.6±0.4 to 0.9±0.3	0.09±0.04	23±3.2 to 22±3.2	72, 28.5

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls", Tab "1-Major Components"

Tank and Sample (or Layer)	Mole Percent of Constituent in Bubbles						Gas Volume Percent	Elevation (cm , in.)
	H2	N2	N2O	CH4	NH3	Other		
S-111 - C	6.3±3.4 to 6.8±3.2	90±68 to 92±70	1.7±1.0 to 0.7±0.4	0.3±0.2	0.2±0.2 to 0.1±0.1	1.0±0.8 to 1.2±0.9	0.6±0.2 to 0.7±0.2	439, 173
S-111 -NC	66±10 to 67±11	21±5.6 to 22±5.8	11±1.7 to 9.6±1.5	0.5±0.06	1.1±0.4 to 0.6±0.2	0.2±0.06	15±7.5 to 14±7.0	139, 55
High composition error bands result from a combination of relatively small amounts of sample gas and large amounts of air contamination.								
The ± values represent the measurement error band. The two central values are, first, the one based on the highest salt effect on gas solubility (lower-bound solubility); second, the one based on the lowest salt effect on gas solubility (upper-bound solubility). Only one central value is given in cases where gas solubility has too little effect to show up in the significant figures.								
Tank and Sample (or Layer)	Mole Percent of Constituer	Gas Volume Percent	Elevation (cm , in.)					
	H2	N2	N2O	CH4	NH3	Other		
U-109-8-2	20±2.9 to 21±3.1	42±7.6 to 45±8.0	3616.3 to 33±5.7	0.5±0.1 to 0.6±0.09	0.8±0.3 to 0.41±0.2	0.4±0.2	20±2.5 to 19±2.5	362, 142.5
U-109-8-4	24±3.2 to 25±3.3	38±6.3 to 40±6.6	35±4.0 to 33±3.7	0.6±0.08	2.2±0.9 to 1.2±0.5	0.3±0.07	23±2.2 to 22±2.2	265, 104.5
U-109-8-6	28±5.0 to 30±5.2	43±11 to 45±11	26±5.1 to 23±4.4	1.1±0.2 to 1.2±0.2	1.0±0.3 to 0.5±0.2	0.7±0.2	15±1.0 to 14±1.0	169, 66.5
U-109-8-8	27±2.4 to 28±2.5	52±7.5 to 53±7.7	19±1.7 to 17±1.6	0.8±0.9	1.10±4 to 0.5±0.2	0.4+0.07	30±1.9 to 29±1.8	72, 28.5
U-109 - NC	25±3.1 to 26±3.2	46±7.6 to 48±8.1	27±3.5 to 24±3.2	0.7±0.1 to 0.8±0.1	1.2±0.5 to 0.6±0.2	0.4±0.1	22±11 to 21±10	204, 80
SY-101-23A-1	22±3.2 to 23±3.3	47±9.4 to 51±10	23±3.4 to 21±3.1	0.8±0.1 to 0.9±0.1	6.2±1.6 to 2.9±0.8	0.7±0.1 to 0.8±0.1	20±1.5 to 18±1.5	1022, 402
SY-101-23A-2	34±4.8 to 38±5.1	27±4.5 to 30±4.8	21±3.0 to 23±3.0	0.6±0.09	16±3.7 to 7.1±1.6	0.9±0.3 to 1.0±0.3	39±2.9 to 35±2.9	974, 383.5
SY-101-22A-3	34±4.4 to 37±4.6	30±4.9 to 33±5.2	24±3.3 to 24±3.2	0.6±0.2 to 0.7±0.2	11±2.6 to 5.0±1.2	0.4±0.2 to 0.5±0.2	33±2.7 to 30±2.7	959, 377.5
SY-101-23A-3	40±4.4 to 45±4.4	23±3.3 to 26±3.4	18±1.9 to 20±1.8	0.5±0.07 to 0.8±0.07	18±4.7 to 7.6±1.9	0.5±0.09 to 0.6±0.1	61±3.9 to 53±3.9	926, 364.5
SY-101-22A-4	35±3.9 to 44±3.6	21±3.2 to 26±3.4	17±1.8 to 20±1.6	0.5±0.08 to 0.7±0.08	26±6.8 to 8.6±2.1	0.5±0.08	73±7 to 58±3.6	911, 358.5
SY-101-4A-5	38±8.7 to 43±10	27±7.9 to 33±9.4	24±6.1 to 17±4.3	1.1±0.3 to 1.2±0.4	8.8±2.4 to 4.2±1.1	1.1±0.4 to 1.3±0.4	6.0±1.8 to 4.9±1.7	845, 332.5
SY-101-23A-8	24±6.6 to 27±7.5	48±14 to 55±17	21±6.3 to 12±3.5	1.4±0.5 to 1.6±0.6	5.9±1.0 to 2.6±0.8	1.4±0.6 to 1.7±0.7	3.5±1.2 to 2.8±1.2	685, 269.5
SY-101-22A-10	29±10 to 35±12	35±14 to 44±17	26±8.7 to 14±4.7	1.4±0.5 to 1.7±0.6	8.0±2.7 to 3.8±1.3	1.4±0.5 to 1.8±0.6	3.2±1.1 to 2.4±1.0	621, 244.5
SY-101-23A-13	29±9.9 to 34±12	37±14 to 46±18	25±8.6 to 13±4.4	1.2±0.4 to 1.4±0.5	6.7±1.5 to 3.2±1.2	1.5±0.6 to 2.0±0.8	2.6±0.9 to 2.1±0.9	443, 174.5
SY-101-22A-17	30±7.5 to 36±9.2	35±11 to 45±14	27±7.0 to 13±3.5	1.5±0.4 to 1.8±0.5	4.8±0.9 to 2.3±0.7	1.3±0.4 to 1.7±0.6	2.5±0.7 to 1.8±0.7	316, 124.5
SY-101-23A-21	29±8.8 to 34±10	40±13 to 49±17	23±6.9 to 11±3.2	1.6±0.5 to 1.8±0.6	4.6±0.9 to 2.2±0.7	1.4±0.5 to 1.9±0.6	2.3±0.7 to 1.7±0.7	76, 29.5
SY-101-22A-23	32+8.7 to 38±10	36±12 to 45±15	26±7.6 to 12±3.6	1.3±0.4 to 1.6±0.5	4.0±0.8 to 1.9±0.6	1.2±0.4 to 1.7±0.6	2.5±0.8 to 1.9±0.8	28, 11
SY-101-23A crust	35±4.4 to 39±4.5	28±4.6 to 32±4.9	20±2.5 to 21±2.4	0.6±0.09	16±3.9 to 6.7±1.6	0.7±0.2	40±20 to 35±18	953, 375
SY-101-23A liq	27±8.3 to 31±9.8	41±14 to 51±17	23±7.2 to 12±3.7	1.4±0.5 to 1.6±0.6	5.8±1.8 to 2.8±0.9	1.4±0.5 to 1.6±0.7	2.8±1.4 to 2.2±1.1	445, 175
SY-101-22A crust	33±3.9 to 38±4.0	27±4.5 to 32±5.0	20±2.4 to 22±2.3	0.6±0.1 to 0.7±0.1	19±4.8 to 6.6±1.6	0.4±0.1 to 0.5±0.1	54±27 to 46±23	942, 371
SY-101-22A liq.	32±8.8 to 38±10	33±11 to 42±14	26±7.3 to 14±4.1	1.3±0.4 to 1.6±0.5	6.4±1.9 to 3.1±0.9	1.2±0.4 to 1.6±0.6	3.1±1.6 to 2.4±1.2	461, 177
High composition error bands result from a combination of relatively small amounts of sample gas and large amounts of air contamination.								
The ± values represent the measurement error band. The two central values are, first, the one based on the highest salt effect on gas solubility (lower-bound solubility); second, the one based on the lowest salt effect on gas solubility (upper-bound solubility). Only one central value is given in cases where gas solubility has too little effect to show up in the significant figures.								

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "2-Minor comps"

Step 2 of 7 - Original Tables for breakdown of "Other" components
Source: "rgs FinalSumTable.doc" Personal Communication from Lenna Mahoney. Not previously published.

Tank and Sample (or Layer)	Mole Percent of Constituent in Bubbles					
		Other				
	CH4	C2Hx	C3Hx	Other HC	Other NOx	Total "Other"
AW-101 solids	1.7±0.2	1.1±0.2 to 1.2±0.2	0.26±0.1 to 0.27±0.1	1.3±0.3 to 1.4±0.3	0.12±0.06 to 0.12±0.07	2.8±0.5 to 2.9±0.6
A-101 upper	0.7±0.1	0.12±0.02	0.07±0.03	0.11±0.03	0.07±0.02	0.3±0.06
AN-105 solids	0.7±0.07	0.11±0.04 to 0.12±0.05	0.05±0.02	0.19±0.06 to 0.20±0.07	0.18±0.04 to 0.21±0.04	0.6±0.1
AN-104 solids	0.9±0.2	0.30±0.10 to 0.31±0.11	0.06±0.03	0.44±0.18 to 0.46±0.19	0.03±0.02	0.8±0.3 to 0.9±0.3
AN-103 crust	0.6±0.07	0.13±0.02	0.04±0.01	0.06±0.01	0.02±0.01	0.2±0.05
AN-103 solids	0.6±0.1	0.15±0.05 to 0.16±0.05	0.07±0.02 to 3.6±0.5	0.15±0.06	0.02±0.02 to 0.03±0.02	0.4±0.1
U-103 slurry	0.4±0.03	0.41±0.04	0±0.02	0.04±0.01	0.01±0.01	0.5±0.06
U-103 solids	0.4±0.06 to 0.5±0.09	0.59±0.10 to 0.64±0.10	0.02±0.02	0.09±0.02	0.14±0.04 to 0.16±0.05	0.8±0.2 to 0.9±0.2
S-106 solids	0.2±0.07	0.24±0.19 to 0.25±0.19	0.13±0.07	0.06±0.03	0.05±0.04 to 0.06±0.04	0.5±0.3
BY-109 below ILL	0.8±0.1	1.0±0.2 to 1.1±0.2	0.15±0.07	1.1±0.2	0.01±0.01 to 0.02±0.01	2.3±0.4
SX-106 solids	0.6±0.1	0.20±0.07 to 0.21±0.07	0.08±0.01	0.06±0.03 to	0.01±0.01 to 0.01±0.01	0.4±0.1
AX-101-9D-6	2.4±0.2 to 2.5±0.2	0.45±0.19 to 0.48±0.20		0.22±0.12 to 0.24±0.13		0.7±0.3
S-102 tank avg.	0.4±0.07	0.10±0.03		0.06±0.03 to 0.07±0.03		0.2±0.06
S-111 solids	0.4±0.07 to 0.5±0.07	0.08±0.03		0.07±0.04		0.2±0.07
U-109 tank avg.	0.7±0.1	0.28±0.06 to 0.29±0.06		0.13±0.07 to		0.4±0.2
SY-101-022 crust	0.6±0.06 to 0.7±0.09	0.56±0.15 to 0.67±0.17		0.06±0.03 to 0.07±0.04		0.6±0.2 to 0.7±0.2
SY-101-021 crust	0.6±0.1 to 0.7±0.1	0.38±0.08 to 0.47±0.10		0.05±0.02 to 0.06±0.03		0.4±0.1 to 0.5±0.1
SY-101-022 liq.	1.3±0.5 to 1.6±0.6	0.70±0.32 to 0.87±0.40		0.67±0.41 to 0.83±0.51		1.4±0.7 to 1.7±0.9
SY-101-021 liq.	1.3±0.4 to 1.6±0.5	0.66±0.27 to 0.83±0.34		0.54±0.31 to 0.67±0.39		1.2±0.6 to 1.5±0.7

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Combine Original and "Other" Component Tables

Tank and Sample (or Layer)		AW-101 solids	cb data high salt	high salt mean	± to high salt range	high salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	range normalize mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	32±3.2 to 33±3.2	31.906	32.000	3.200	1.067	33.000	33.000	3.200	1.067	31.906	32.06	1.08	30.40	1.08	33.000	32.96
	N2	56±6.2 to 58±6.4	55.000	56.000	6.200	2.067	57.000	58.000	6.400	2.133	55.120	56.21	2.08	53.30	2.08	57.120	58.24
	N2O	7.2±0.8 to 4.4±0.5	7.500	7.200	0.800	0.267	5.000	4.400	0.500	0.167	7.500	7.20	0.28	6.83	0.28	5.000	4.40
	CH4	1.7±0.2	1.700	1.700	0.200	0.067		-	-	0.001	9.383	9.39	0.43	8.90	0.43	8.275	8.26
	NH3	0.6±0.3	0.800	0.600	0.300	0.100		-	-	0.001	0.600	0.60	0.10	0.57	0.10	-	-
	Other	2.8±0.5 to 2.9±0.6		2.800	0.500	0.167		2.900	0.600	0.200							
	CH4	1.7±0.2		1.700	0.200	0.067		-	-	0.001							
	C2Hx	1.1±0.2 to 1.2±0.2	1.100	1.100	0.200	0.067	1.200	1.200	0.200	0.067							
	C3Hx	0.26±0.1 to 0.27±0.1	0.260	0.260	0.100	0.033	0.270	0.270	0.100	0.033							
	Other HC	1.3±0.3 to 1.4±0.3	1.300	1.300	0.300	0.100	1.400	1.400	0.300	0.100							
	Other NOx	0.12±0.06 to 0.12±0.07	0.120	0.120	0.060	0.020	0.120	0.120	0.070	0.023							
	Total "Other"	2.8±0.5 to 2.9±0.6		2.800	0.500	0.167		2.900	0.600	0.200							0
				100.28							104.709	105.45		100.00		103.395	103.85

Tank and Sample (or Layer)		A-101 upper	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	range normalize mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	72±7.1	69.000	72.000	7.100	2.367		-	-	0.001	69.000	72.01	2.30	71.37	2.30	-	-
	N2	19±4.9	20.000	19.000	4.900	1.633	-	-	-	0.001	20.070	19.07	1.64	18.90	1.64	-	-
	N2O	5.8±0.6 to 5.3±0.5	5.700	5.800	0.600	0.200	5.500	5.300	0.500	0.167	5.700	5.80	0.20	5.75	0.20	5.500	5.30
	CH4	0.7±0.1	0.700	0.700	0.100	0.033	-	-	-	0.001	1.515	1.51	0.06	1.50	0.06	-	-
	NH3	2.5±0.9	4.400	2.500	0.900	0.300		-	-	0.001	4.400	2.49	0.30	2.47	0.30	-	-
	Other	0.3±0.06		0.300	0.060	0.020		-	-	0.001							
	CH4	0.7±0.1		0.700	0.100	0.033		-	-	0.001							
	C2Hx	0.12±0.02	0.120	0.120	0.020	0.007	-	-	-	0.001							
	C3Hx	0.07±0.03	0.070	0.070	0.030	0.010	-	-	-	0.001							
	Other HC	0.11±0.03	0.110	0.110	0.030	0.010	-	-	-	0.001							
	Other NOx	0.07±0.02	0.070	0.070	0.020	0.007	-	-	-	0.001							
	Total "Other"	0.3±0.06		0.300	0.060	0.020		-	-	0.001							0
				100.37							100.685	100.90		100.00		5.5	5.30

Tank and Sample (or Layer)		AN-105 solids	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	range normalize mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	60±5.4 to 62±5.5	61.000	60.000	5.400	1.800	63.000	62.000	5.500	1.833	61.000	59.96	1.79	59.67	1.79	63.000	61.85
	N2	24±4.0 to 25±3.9	22.000	24.000	4.000	1.333	23.000	25.000	3.900	1.300	22.180	24.24	1.36	24.13	1.36	23.210	25.24
	N2O	14±1.5 to 11±1.1	15.000	14.000	1.500	0.500	12.000	11.000	1.100	0.367	15.000	14.01	0.49	13.94	0.49	12.000	10.99
	CH4	0.7±0.09	0.700	0.700	0.090	0.030	-	-	-	0.001	1.768	1.77	0.09	1.76	0.09	1.000	1.00
	NH3	0.5±0.2	0.600	0.500	0.200	0.067	-	-	-	0.001	0.600	0.50	0.06	0.50	0.06	-	-
	Other	0.6±0.1		0.600	0.100	0.033		-	-	0.001							

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Combine Original and "Other" Component Tables

	CH4	0.7±0.07		0.700	0.070	0.023		-	-	0.001						
	C2Hx	0.11±0.04 to 0.12±0.05	0.110	0.110	0.040	0.013	0.120	0.120	0.050	0.017						
	C3Hx	0.05±0.02	0.050	0.050	0.020	0.007	-	-	-	0.001						
	Other HC	0.19±0.06 to 0.20±0.07	0.190	0.190	0.060	0.020	0.200	0.200	0.070	0.023						
	Other NOx	0.18±0.04 to 0.21±0.04	0.180	0.180	0.040	0.013	0.210	0.210	0.040	0.013						
	Total "Other"	0.6±0.1		0.600	0.100	0.033		-	-	0.001						0
				99.73							100.5483	100.48		100.00	99.21	99.08

Tank and Sample (or Layer)		AN-104 solids	ob data high salt	high salt mean	high salt range	low salt std dev	ob data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	range normalize mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	N2	45±6.9 to 47±7.1	46.000	45.000	6.900	2.300	46.000	47.000	7.100	2.367	45.000	45.01	2.32	44.41	2.32	46.000	46.88
	N2	29±4.8 to 31±5.1	29.000	29.000	4.800	1.600	30.000	31.000	5.100	1.700	29.030	29.06	1.56	28.67	1.56	30.000	30.92
	N2O	23±3.7 to 20±3.2	23.000	23.000	3.700	1.233	21.000	20.000	3.200	1.067	23.000	23.02	1.20	22.72	1.20	21.000	20.05
	CH4	0.9±0.2	0.900	0.900	0.200	0.067	-	-	-	0.001	3.360	3.36	0.24	3.31	0.24	2.357	2.34
	NH3	0.9±0.4	1.400	0.900	0.400	0.133		-	-	0.001	1.400	0.90	0.13	0.88	0.13	-	-
	Other	0.8±0.3 to 0.9±0.3		0.800	0.300	0.100		0.900	0.300	0.100							
	CH4	0.9±0.2		0.900	0.200	0.067		-	-	0.001							
	C2Hx	0.30±0.10 to 0.31±0.11	0.300	0.300	0.100	0.033	0.310	0.310	0.110	0.037							
	C3Hx	0.08±0.03	0.080	0.080	0.030	0.010	-	-	-	0.001							
	Other HC	0.44±0.18 to 0.46±0.19	0.440	0.440	0.180	0.060	0.460	0.460	0.190	0.063							
	Other NOx	0.03±0.02	0.030	0.030	0.020	0.007	-	-	-	0.001							
	Total "Other"	0.8±0.3 to 0.9±0.3		0.800	0.300	0.100		0.900	0.300	0.100							0
				99.85							101.79	101.35		100.00		99.35667	100.19

Tank and Sample (or Layer)		AN-103 solids	ob data high salt	high salt mean	high salt range	low salt std dev	ob data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	high salt range mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	N2	61±7.7 to 62±7.7	61.000	61.000	7.700	2.567	62.000	62.000	7.700	2.567	61.000	61.10	2.59	60.74	2.59	62.000	61.88
	N2	33±4.3	33.000	33.000	4.300	1.433	-	-	-	0.001	33.020	33.15	1.44	32.96	1.44	-	-
	N2O	4.1±0.6 to 3.4±0.5	4.200	4.100	0.600	0.200	3.600	3.400	0.500	0.167	4.200	4.11	0.19	4.08	0.19	3.600	3.39
	CH4	0.6±0.1	0.600	0.600	0.100	0.033	-	-	-	0.001	1.625	1.63	0.09	1.62	0.09	9.267	9.26
	NH3	0.6±0.2	0.900	0.600	0.200	0.067		-	-	0.001	0.900	0.60	0.06	0.60	0.06	-	-
	Other	0.4±0.1		0.400	0.100	0.033		-	-	0.001							
	CH4	0.6±0.1		0.600	0.100	0.033		-	-	0.001							
	C2Hx	0.15±0.05 to 0.16±0.05	0.150	0.150	0.050	0.017	0.160	0.160	0.050	0.017							
	C3Hx	0.07±0.02 to 3.6±0.5	0.070	0.070	0.020	0.007	3.600	3.600	0.500	0.167							
	Other HC	0.15±0.06	0.150	0.150	0.060	0.020	-	-	-	0.001							
	Other NOx	0.02±0.02 to 0.03±0.02	0.020	0.020	0.020	0.007	-	0.030	0.020	0.007							
	Total "Other"	0.4±0.1		0.400	0.100	0.033		-	-	0.001							0
				99.69							100.745	100.58		100.00		74.86667	74.53

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Tank and Sample (or Layer)		U-103 solids	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	forecasts	mean	std dev	mean	std dev	forecasts	mean
Mole Percent of Constituent in Bubbles	H2	23±1.4 to 24±1.5	21.000	23.000	1.400	0.467	22.000	24.000	1.500	0.500	21.000	23.01	0.46	22.67	0.46	22.000	24.01
	N2	36±2.3 to 38±2.4	35.000	36.000	2.300	0.767	36.000	36.000	2.400	0.800	35.140	36.19	0.77	35.97	0.77	38.160	38.12
	N2O	39±2.4 to 37±2.2	41.000	39.000	2.400	0.800	38.000	37.000	2.200	0.733	41.000	39.03	0.79	38.79	0.79	38.000	37.00
	CH4	0.4±0.05	0.400	0.400	0.050	0.017		-	-	0.001	1.793	1.79	0.07	1.78	0.07	1.067	1.06
	NH3	0.6±0.3 to 0.5±0.2	1.500	0.600	0.300	0.100	0.800	0.500	0.200	0.067	1.500	0.60	0.10	0.50	0.10	0.800	0.50
	Other	0.8±0.2 to 0.9±0.2		0.800	0.200	0.067		0.900	0.200	0.067							
	CH4	0.4±0.08 to 0.5±0.09		0.400	0.080	0.027		0.500	0.090	0.030							
	C2Hx	0.59±0.10 to 0.64±0.10	0.590	0.590	0.100	0.033	0.640	0.640	0.100	0.033							
	C3Hx	0.02±0.02	0.020	0.020	0.020	0.007	-	-	-	0.001							
	Other HC	0.09±0.02	0.090	0.090	0.020	0.007	-	-	-	0.001							
	Other NOx	0.14±0.04 to 0.16±0.05	0.140	0.140	0.040	0.013	0.160	0.160	0.050	0.017							
	Total "Other"	0.8±0.2 to 0.9±0.2		0.800	0.200	0.067		0.900	0.200	0.067							1
				99.84							100.4333	100.63		100.00		100.0267	100.70

Tank and Sample (or Layer)		S-108 solids	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	high salt mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	63±5.7 to 65±5.9	63.000	63.000	5.700	1.900	65.000	65.000	5.900	1.967	63.000	62.94	1.90	62.57	1.90	65.000	64.96
	N2	25±3.7 to 26±3.8	25.000	25.000	3.700	1.233	-	26.000	3.800	1.267	25.050	25.06	1.24	24.91	1.24	0.060	0.06
	N2O	11±1.0 to 8.4±0.8	11.000	11.000	1.000	0.333	9.000	8.400	0.800	0.267	11.000	11.03	0.34	10.98	0.34	9.000	8.40
	CH4	0.3±0.08	0.200	0.300	0.080	0.027	-	-	-	0.001	1.165	1.27	0.14	1.26	0.14	0.417	0.41
	NH3	0.3±0.2	0.400	0.300	0.200	0.067		-	-	0.001	0.400	0.30	0.07	0.30	0.07	-	-
	Other	0.5±0.3		0.500	0.300	0.100		-	-	0.001							
	CH4	0.2±0.07		0.200	0.070	0.023		-	-	0.001							
	C2Hx	0.24±0.19 to 0.25±0.19	0.240	0.240	0.190	0.063	0.250	0.250	0.190	0.063							
	C3Hx	0.13±0.07	0.130	0.130	0.070	0.023	-	-	-	0.001							
	Other HC	0.06±0.03	0.060	0.060	0.030	0.010	-	-	-	0.001							
	Other NOx	0.05±0.04 to 0.06±0.04	0.050	0.050	0.040	0.013	0.060	0.060	0.040	0.013							
	Total "Other"	0.5±0.3		0.500	0.300	0.100		-	-	0.001							0
				100.08							100.615	100.59		100.00		74.47667	73.83

Tank and Sample (or Layer)		BY-109 below salt ILL	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	high salt range mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	50±5.5 to 51±5.6	50.000	50.000	5.500	1.833	51.000	51.000	5.600	1.867	50.000	50.03	1.87	47.86	1.87	51.000	51.03
	N2	29±5.1	28.000	29.000	5.100	1.700		-	-	0.001	28.010	29.02	1.76	27.77	1.76	0.020	0.02
	N2O	18±2.5 to 16±2.3	18.000	18.000	2.500	0.833	17.000	16.000	2.300	0.767	18.000	17.93	0.84	17.15	0.84	17.000	16.00
	CH4	0.9±0.1	0.800	0.900	0.100	0.033	-	-	-	0.001	7.242	7.35	0.29	7.08	0.29	1.833	1.83
	NH3	0.2±0.1	0.300	0.200	0.100	0.033		-	-	0.001	0.300	0.20	0.03	0.19	0.03	-	-
	Other	2.3±0.4		2.300	0.400	0.133		-	-	0.001							
	CH4	0.8±0.1		0.800	0.100	0.033		-	-	0.001							

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Combine Original and "Other" Component Tables

	C2Hx	1.0±0.2 to 1.1±0.2	1.000	1.000	0.200	0.067	1.100	1.100	0.200	0.067							
	C3Hx	0.15±0.07	0.150	0.150	0.070	0.023	-	-	-	0.001							
	Other HC	1.1±0.2	1.100	1.100	0.200	0.067	-	-	-	0.001							
	Other NOx	0.01±0.01 to 0.02±0.01	0.010	0.010	0.010	0.003	0.020	0.020	0.010	0.003							
	Total "Other"	2.3±0.4		2.300	0.400	0.133		-	-	0.001							0
				100.36							103.5617	104.53		100.00		69.85333	68.88

Tank and Sample (or Layer)		SX-108 solids	ob data high salt	high salt mean	high salt range	low salt std dev	ob data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	high salt range mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	50±4.5 to 52±4.5	51.000	50.000	4.500	1.500	53.000	52.000	4.500	1.500	51.000	50.03	1.48	49.50	1.48	53.000	51.87
	N2	20±3.8 to 21±4.0	20.000	20.000	3.800	1.267	21.000	21.000	4.000	1.333	20.010	19.99	1.24	19.61	1.24	21.020	20.99
	N2O	24±2.6 to 24±2.7	24.000	24.000	2.600	0.933	-	24.000	2.700	0.900	24.000	23.99	0.92	23.78	0.92	-	-
	CH4	0.8±0.1	0.800	0.800	0.100	0.033	-	-	-	0.001	1.373	1.37	0.07	1.38	0.07	1.833	0.35
	NH3	5.5±1.2 to 2.4±0.5	4.400	5.500	1.200	0.400	1.600	2.400	0.500	0.167	4.400	5.49	0.39	5.45	0.39	1.600	2.41
	Other	0.4±0.1		0.400	0.100	0.033		-	-	0.001							
	CH4	0.8±0.1		0.800	0.100	0.033		-	-	0.001							
	C2Hx	0.20±0.07 to 0.21±0.07	0.200	0.200	0.070	0.023	1.100	0.210	0.070	0.023							
	C3Hx	0.08±0.01	0.080	0.080	0.010	0.003	-	-	-	0.001							
	Other HC	0.06±0.03 to	0.060	0.060	0.030	0.010	-	-	-	0.001							
	Other NOx	0.01±0.01 to 0.01±0.01	0.010	0.010	0.010	0.003	0.020	0.010	0.010	0.003							
	Total "Other"	0.4±0.1		0.400	0.100	0.033		-	-	0.001							0
				100.45							100.7833	100.88		100.00		77.45333	75.61

Tank and Sample (or Layer)		AX-101-9D-8	ob data high salt	high salt mean	high salt range	low salt std dev	ob data low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	high salt range mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	61±5.5 to 64±5.6	60.000	61.000	5.500	1.833	64.000	64.000	5.500	1.833	60.000	60.99	1.81	60.10	1.81	64.000	63.98
	N2	17±2.8 to 18±2.7	16.000	17.000	2.600	0.867	18.000	16.000	2.700	0.900	16.000	17.02	0.89	16.77	0.89	18.000	17.99
	N2O	11±1.0	11.000	11.000	1.000	0.333	-	-	-	0.001	11.000	11.01	0.34	10.85	0.34	-	-
	CH4	2.4±0.2 to 2.5±0.2	2.400	2.400	0.200	0.067	2.500	2.500	0.200	0.067	4.030	4.03	0.21	3.97	0.21	3.300	3.29
	NH3	8.4±1.9 to 4.3±1.0	9.200	8.400	1.900	0.633	3.600	4.300	1.000	0.333	9.200	8.43	0.65	8.30	0.65	3.500	4.30
	Other	0.7±0.3		0.700	0.300	0.100		-	-	0.001							
	CH4	2.4±0.2 to 2.5±0.2		2.400	0.200	0.067		2.500	0.200	0.067							
	C2Hx	0.45±0.19 to 0.48±0.20	0.450	0.450	0.190	0.063	0.480	0.480	0.200	0.067							
	C3Hx		-	-	-	0.001	-	-	-	0.001							
	Other HC	0.22±0.12 to 0.24±0.13	0.220	0.220	0.120	0.040	-	-	-	0.001							
	Other NOx		-	-	-	0.001	-	-	-	0.001							
	Total "Other"	0.7±0.3		0.700	0.300	0.100		-	-	0.001							0
				100.47							100.23	101.48		100.00		88.8	89.57

high salt range — range normalize — low salt range

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Combine Original and "Other" Component Tables

Tank and Sample (or Layer)		S-102 tank avg.	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev							
											forecasts	mean	std dev	mean	std dev	forecasts	mean
Mole Percent of Constituent in Bubbles	H2	33±3.0 to 35±3.1	32.000	33.000	3.000	1.000	34.000	35.000	3.100	1.033	32.000	33.05	1.05	33.08	1.05	34.000	35.01
	N2	32±4.3 to 33±4.5	31.000	32.000	4.300	1.433	32.000	33.000	4.500	1.500	31.000	31.97	1.41	31.98	1.41	32.000	33.06
	N2O	33±3.1 to 31±2.9	33.000	33.000	3.100	1.033	32.000	31.000	2.900	0.967	33.000	33.00	1.04	33.03	1.04	32.000	31.02
	CH4	0.4±0.06 to 0.5±0.06	0.400	0.400	0.060	0.020	0.500	0.500	0.060	0.020	0.807	0.81	0.05	0.81	0.05	0.500	0.50
	NH3	1.1±0.4 to 0.6±0.2	3.200	1.100	0.400	0.133	1.300	0.600	0.200	0.067	3.200	1.10	0.14	1.10	0.14	1.300	0.60
	Other	0.2±0.06		0.200	0.060	0.020		-	-	0.001							
	CH4	0.4±0.07		0.400	0.070	0.023		-	-	0.001							
	C2Hx	0.10±0.03	0.100	0.100	0.030	0.010	-	-	-	0.001							
	C3Hx		-	-	-	0.001	-	-	-	0.001							
	Other HC	0.06±0.03 to 0.07±0.03	0.060	0.060	0.030	0.010	-	-	-	0.001							
	Other NOx		-	-	-	0.001	-	-	-	0.001							
	Total "Other"	0.2±0.06		0.200	0.060	0.020		-	-	0.001							1
				99.66							100.0067	99.93		100.00		99.8	100.19

Tank and Sample (or Layer)		S-111 solids	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	high salt range			high salt range	low salt range		
											forecasts	mean	std dev	mean	std dev	forecasts	mean
Mole Percent of Constituent in Bubbles	H2	66±10 to 67±11	68.000	66.000	10.000	3.333	69.000	67.000	11.000	3.667	66.000	65.64	3.21	65.90	3.21	69.000	66.95
	N2	21±5.6 to 22±5.8	20.000	21.000	5.600	1.867	22.000	22.000	5.800	1.933	20.000	21.02	1.91	21.04	1.91	22.000	21.94
	N2O	11±1.7 to 9.6±1.5	11.000	11.000	1.700	0.567	10.000	9.600	1.500	0.500	11.000	11.04	0.59	11.05	0.59	10.000	9.63
	CH4	0.5±0.08	0.400	0.500	0.080	0.027		-	-	0.001	0.813	0.91	0.07	0.91	0.07	-	-
	NH3	1.1±0.4 to 0.6±0.2	1.000	1.100	0.400	0.133	0.600	0.600	0.200	0.067	1.000	1.10	0.13	1.10	0.13	0.600	0.60
	Other	0.2±0.07		0.200	0.070	0.023		-	-	0.001							
	CH4	0.4±0.07 to 0.5±0.07		0.400	0.070	0.023		0.500	0.070	0.023							
	C2Hx	0.08±0.03	0.080	0.080	0.030	0.010	-	-	-	0.001							
	C3Hx		-	-	-	0.001	-	-	-	0.001							
	Other HC	0.07±0.04	0.070	0.070	0.040	0.013	-	-	-	0.001							
	Other NOx		-	-	-	0.001	-	-	-	0.001							
	Total "Other"	0.2±0.07		0.200	0.070	0.023		-	-	0.001							0
				99.75							100.8133	99.91		100.00		101.6	99.12

Tank and Sample (or Layer)		U-108 solids	cb data high salt	high salt mean	high salt range	low salt std dev	cb data low salt	low salt mean	low salt range	low salt std dev	high salt range			high salt range	low salt range		
											forecasts	mean	std dev	mean	std dev	forecasts	mean
Mole Percent of Constituent in Bubbles	H2	25±3.1 to 26±3.2	25.000	25.000	3.100	1.033	26.000	26.000	3.200	1.067	25.000	24.95	1.04	24.75	1.04	26.000	26.03
	N2	46±7.6 to 48±8.1	45.000	46.000	7.600	2.600	47.000	48.000	8.100	2.700	45.000	46.02	2.66	45.85	2.66	47.000	48.19
	N2O	27±3.5 to 24±3.2	28.000	27.000	3.500	1.167	26.000	24.000	3.200	1.067	28.000	26.95	1.17	26.73	1.17	26.000	23.97
	CH4	0.7±0.1 to 0.8±0.1	0.700	0.700	0.100	0.033	0.800	0.800	0.100	0.033	1.687	1.69	0.11	1.69	0.11	0.800	0.80
	NH3	1.2±0.5 to 0.6±0.2	0.800	1.200	0.500	0.167	0.400	0.600	0.200	0.067	0.800	1.19	0.17	1.18	0.17	0.400	0.60
	Other	0.4±0.2		0.400	0.200	0.067		-	-	0.001							

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Combine Original and "Other" Component Tables

	CH4	0.7±0.1		0.700	0.100	0.033		-	-	0.001							
	C2Hx	0.28±0.08 to 0.29±0.08	0.280	0.280	0.080	0.027	-	0.290	0.080	0.027							
	C3Hx		-	-	-	0.001	-	-	-	0.001							
	Other HC	0.13±0.07 to	0.130	0.130	0.070	0.023	-	-	-	0.001							
	Other NOx		-	-	-	0.001	-	-	-	0.001							
	Total "Other"	0.4±0.2		0.400	0.200	0.067		-	-	0.001							1
				100.31							100.4867	100.60		100.00		100.2	99.58

Tank and Sample (or Layer)		SY-101 ave (see below)	cb dists high salt	high salt mean	high salt range	low salt std dev	cb dists low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	high salt range mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	31.75±6.35 to 36.5±7.0	31.750	31.750	6.350	2.117	26.000	36.500	7.075	2.358	31.750	31.69	2.17	31.29	2.17	26.000	36.41
	N2	32.25±8.525 to 39.25±1	45.000	32.250	8.525	2.842	47.000	39.250	10.225	3.408	45.000	32.28	2.62	31.88	2.62	47.000	39.35
	N2O	22.25±4.86 to 17.25±3.	28.000	22.250	4.850	1.617	26.000	17.250	3.125	1.042	28.000	22.20	1.60	21.92	1.60	26.000	17.27
	CH4	0.975±0.2725 to 0.975±	0.700	0.975	0.273	0.091	1.150	0.975	0.300	0.100	1.687	3.25	0.30	3.21	0.30	1.150	0.97
	NH3	11.8±3.1 to 4.8±1.25	0.800	11.800	3.100	1.033	0.400	4.800	1.250	0.417	0.800	11.85	1.06	11.70	1.06	0.400	4.80
	Other	0.9±0.4 to 1.1±0.475		0.900	0.400	0.133		1.100	0.475	0.158							
	CH4	0.95±0.27 to 1.15±0.3225		0.950	0.270	0.090		1.150	0.323	0.108							
	C2Hx	0.575±0.205 to 0.71±0.	0.280	0.575	0.205	0.068	-	0.710	0.253	0.084							
	C3Hx		-	-	-	0.001	-	-	-	0.001							
	Other HC	0.33±0.1925 to 0±0	0.130	0.330	0.193	0.064	-	-	-	0.001							
	Other NOx		-	-	-	0.001	-	-	-	0.001							
	Total "Other"	0.9±0.4 to 1.1±0.475		0.900	0.400	0.133		1.100	0.475	0.158							1
				99.93							107.2367	101.25		100.00		100.55	98.80

Tank and Sample (or Layer)		SY-101-022A crust	cb dists high salt	high salt mean	high salt range	high salt std dev	cb dists low salt	low salt mean	low salt range	low salt std dev	high salt range forecasts	mean	std dev	high salt mean	std dev	low salt range forecasts	mean
Mole Percent of Constituent in Bubbles	H2	33±3.9 to 38±4.0	33.000	33.000	3.900	1.300	38.000	38.000	4.000	1.333	33.000	-	-	#DIV/0!	0.00	38.000	-
	N2	27±4.5 to 32±5.0	27.000	27.000	4.500	1.500	32.000	32.000	5.000	1.667	27.000	-	-	#DIV/0!	0.00	32.000	-
	N2O	20±2.4 to 22±2.3	20.000	20.000	2.400	0.800	22.000	22.000	2.300	0.767	20.000	-	-	#DIV/0!	0.00	22.000	-
	CH4	0.6±0.1 to 0.7±0.1	0.600	0.600	0.100	0.033	0.700	0.700	0.100	0.033	1.773	-	-	#DIV/0!	0.00	0.700	-
	NH3	19±4.8 to 8.6±1.6	19.000	19.000	4.800	1.600	8.600	8.600	1.600	0.533	19.000	-	-	#DIV/0!	0.00	8.600	-
	Other	0.6±0.2 to 0.7±0.2		0.600	0.200	0.067		0.700	0.200	0.067							
	CH4	0.6±0.08 to 0.7±0.09		0.600	0.080	0.027		0.700	0.090	0.030							
	C2Hx	0.56±0.15 to 0.67±0.17	0.560	0.560	0.150	0.050	-	0.670	0.170	0.057							
	C3Hx		-	-	-	-	-	-	-	-							
	Other HC	0.06±0.03 to 0.07±0.04	0.060	0.060	0.030	0.010	-	-	-	-							
	Other NOx		-	-	-	-	-	-	-	-							
	Total "Other"	0.6±0.2 to 0.7±0.2		0.600	0.200	0.067		0.700	0.200	0.067							0
				100.22							100.7733	-		#DIV/0!		99.3	-

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Combine Original and "Other" Component Tables

Tank and Sample (or Layer)		SY-101-023A crust	cb dists high salt	high salt mean	high salt range	high salt std dev	cb dists low salt	low salt mean	low salt range	low salt std dev
Mole Percent of Constituent in Bubbles	H2	35±4.4 to 39±4.5	25.000	35.000	4.400	1.467	26.000	39.000	4.500	1.500
	N2	28±4.6 to 32±4.9	45.000	28.000	4.600	1.533	47.000	32.000	4.900	1.633
	N2O	20±2.5 to 21±2.4	28.000	20.000	2.500	0.833	26.000	21.000	2.400	0.800
	CH4	0.6±0.09	0.700	0.600	0.090	0.030	-	-	-	-
	NH3	16±3.9 to 6.7±1.6	0.800	16.000	3.900	1.300	0.400	6.700	1.600	0.533
	Other	0.4±0.1 to 0.5±0.1		0.400	0.100	0.033		0.500	0.100	0.033
	CH4	0.6±0.1 to 0.7±0.1		0.600	0.100	0.033		0.700	0.100	0.033
	C2Hx	0.38±0.08 to 0.47±0.10	0.280	0.380	0.080	0.027	-	0.470	0.100	0.033
	C3Hx		-	-	-	-	-	-	-	-
	Other HC	0.05±0.02 to 0.08±0.03	0.130	0.050	0.020	0.007	-	-	-	-
	Other NOx		-	-	-	-	-	-	-	-
	Total "Other"	0.4±0.1 to 0.5±0.1		0.400	0.100	0.033		0.500	0.100	0.033
				100.03						

Tank and Sample (or Layer)		SY-101-022A liq.	cb dists high salt	high salt mean	high salt range	high salt std dev	cb dists low salt	low salt mean	low salt range	low salt std dev
Mole Percent of Constituent in Bubbles	H2	32±8.8 to 38±10	25.000	32.000	8.800	2.933	26.000	38.000	10.000	3.333
	N2	33±11 to 42±14	45.000	33.000	11.000	3.667	47.000	42.000	14.000	4.667
	N2O	26±7.3 to 14±4.1	28.000	26.000	7.300	2.433	26.000	14.000	4.100	1.367
	CH4	1.3±0.4 to 1.6±0.5	0.700	1.300	0.400	0.133	-	1.600	0.500	0.167
	NH3	6.4±1.9 to 3.1±0.9	0.800	6.400	1.900	0.633	0.400	3.100	0.900	0.300
	Other	1.4±0.7 to 1.7±0.9		1.400	0.700	0.233		1.700	0.900	0.300
	CH4	1.3±0.5 to 1.6±0.6		1.300	0.500	0.167		1.600	0.600	0.200
	C2Hx	0.70±0.32 to 0.87±0.40	0.280	0.700	0.320	0.107	-	0.870	0.400	0.133
	C3Hx		-	-	-	-	-	-	-	-
	Other HC	0.67±0.41 to 0.83±0.51	0.130	0.670	0.410	0.137	-	-	-	-
	Other NOx		-	-	-	-	-	-	-	-
	Total "Other"	1.4±0.7 to 1.7±0.9		1.400	0.700	0.233		1.700	0.900	0.300
				100.07						

Tank and Sample (or Layer)		SY-101-021 liq.	cb dists high salt	high salt mean	high salt range	high salt std dev	cb dists low salt	low salt mean	low salt range	low salt std dev
Mole Percent of Constituent in Bubbles	H2	27±8.3 to 31±9.8	25.000	27.000	8.300	2.767	26.000	31.000	9.800	3.267
	N2	41±14 to 51±17	45.000	41.000	14.000	4.667	47.000	51.000	17.000	5.667
	N2O	23±7.2 to 12±3.7	28.000	23.000	7.200	2.400	26.000	12.000	3.700	1.233
	CH4	1.4±0.5 to 1.6±0.6	0.700	1.400	0.500	0.167	-	1.600	0.600	0.200
	NH3	5.8±1.8 to 2.8±0.9	0.800	5.800	1.800	0.600	0.400	2.800	0.900	0.300
	Other	1.2±0.6 to 1.5±0.7		1.200	0.600	0.200		1.500	0.700	0.233
	CH4	1.3±0.4 to 1.6±0.5		1.300	0.400	0.133		1.600	0.500	0.167
	C2Hx	0.66±0.27 to 0.83±0.34	0.280	0.660	0.270	0.090	-	0.830	0.340	0.113

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Combine Original and "Other" Component Tables

	C3Hx		-	-	-	-	-	-	-	-
	Other HC	0.54±0.31 to 0.87±0.39	0.130	0.540	0.310	0.103	-	-	-	-
	Other NOx		-	-	-	-	-	-	-	-
	Total "Other"	1.2±0.6 to 1.5±0.7		1.200	0.800	0.200		1.500	0.700	0.233
				99.4						

Tank and Sample (or Layer)		SY-101 ave.	cb diets high salt	high salt mean	high salt range	high salt std dev	cb diets low salt	low salt mean	low salt range	low salt std dev
Mole Percent of Constituent in Bubbles	H2	31.75±0.35 to 36.5±7.075		31.8	6.4			36.5	7.1	
	N2	32.25±8.525 to 39.25±10.225		32.3	8.5			39.3	10.2	
	N2O	22.25±4.85 to 17.25±3.125		22.3	4.9			17.3	3.1	
	CH4	0.975±0.2725 to 0.975±0.3		1.0	0.3			1.0	0.3	
	NH3	11.8±3.1 to 4.8±1.25		11.8	3.1			4.8	1.3	
	Other	0.9±0.4 to 1.1±0.475		0.9	0.4			1.1	0.5	
	CH4	0.95±0.27 to 1.15±0.3225		1.0	0.3			1.2	0.3	
	C2Hx	0.575±0.205 to 0.7±0.2625		0.6	0.2			0.7	0.3	
	C3Hx			-	-			-	-	
	Other HC	0.33±0.1925 to 0±0		0.3	0.2			-	-	
	Other NOx			-	-			-	-	
	Total "Other"	0.9±0.4 to 1.1±0.475		0.9	0.4			1.1	0.5	
				99.93						

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Comt

Tank and Sample (or Layer)		std dev	range normalize mean	std dev
Mole Percent of Constituent in Bubbles	H2	1.07	32.06	1.07
	N2	2.12	56.24	2.12
	N2O	0.18	4.40	0.18
	CH4	0.44	8.26	0.44
	NH3	-	-	0.00
	Other			
	CH4			
	C2Hx			
	C3Hx			
	Other HC			
	Other NOx			
	Total "Other"			
			103.86	

Forecast: i5	i4	i5	i6	i7	i8	q4	q5	q6	q7	q8
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000
Mean	32.06	56.21	7.20	9.39	0.60	32.96	58.24	4.40	8.26	0
Median	32.05	56.20	7.19	9.39	0.60	32.97	58.30	4.40	8.26	0
Mode	—	—	—	—	—	—	—	—	—	—
Standard Deviation	1.08	2.08	0.28	0.43	0.10	1.07	2.12	0.16	0.44	0
Variance	1.17	4.34	0.08	0.19	0.01	1.13	4.50	0.03	0.20	0
Skewness	0.01	0.07	0.15	0.04	(0.04)	(0.01)	(0.09)	0.12	(0.01)	0
Kurtosis	3.08	2.90	2.97	2.96	3.10	3.07	2.83	3.01	2.82	0
Coeff. of Variability	0.03	0.04	0.04	0.05	0.17	0.03	0.04	0.04	0.05	0
Range Minimum	28.59	49.17	6.34	8.07	0.24	29.48	52.31	3.96	6.91	0
Range Maximum	35.50	63.64	8.14	10.66	0.93	36.26	64.08	4.90	9.59	0
Range Width	6.91	14.47	1.80	2.58	0.69	6.78	11.77	0.95	2.67	0
Mean Std. Error	0.03	0.07	0.01	0.01	0.00	0.03	0.07	0.01	0.01	0

Tank and Sample (or Layer)		std dev	range normalize mean	std dev
Mole Percent of Constituent in Bubbles	H2	-	-	0.00
	N2	-	-	0.00
	N2O	0.16	5.30	0.16
	CH4	-	-	0.00
	NH3	-	-	0.00
	Other			
	CH4			
	C2Hx			
	C3Hx			
	Other HC			
	Other NOx			
	Total "Other"			
			5.30	

Forecast: i18	i19	i20	i21	i22	i23	q19	q20	q21	q22	q23
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1,000.00	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Mean	72.01	19.07231	5.804437	1.514441	2.491777	0	0	5.30306	0	0
Median	71.99	19.10886	5.805911	1.513706	2.490027	0	0	5.297358	0	0
Mode	—	—	—	—	—	—	—	—	—	—
Standard Deviation	2.30	1.637624	0.197936	0.056187	0.30377	0	0	0.16398	0	0
Variance	5.29	2.681812	0.039179	0.003157	0.092276	0	0	0.02689	0	0
Skewness	(0.01)	0.002951	0.083533	-0.015194	-0.03119	0	0	0.014966	0	0
Kurtosis	3.00	2.908456	2.75474	3.342326	2.927584	0	0	2.853926	0	0
Coeff. of Variability	0.03	0.085864	0.034101	0.037101	0.121909	0	0	0.030922	0	0
Range Minimum	63.84	14.12633	5.175467	1.264556	1.439239	0	0	4.78108	0	0
Range Maximum	79.51	23.93819	6.379857	1.706606	3.427062	0	0	5.796693	0	0
Range Width	15.66	9.811861	1.20439	0.44205	1.987823	0	0	1.015613	0	0
Mean Std. Error	0.07	0.051786	0.006259	0.001777	0.009606	0	0	0.005186	0	0

Tank and Sample (or Layer)		std dev	range normalize mean	std dev
Mole Percent of Constituent in Bubbles	H2	1.87	61.85	1.87
	N2	1.34	25.24	1.34
	N2O	0.36	10.99	0.36
	CH4	0.10	1.00	0.10
	NH3	-	-	0.00
	Other			

Forecast: i33	i34	i35	i36	i37	i38	q34	q35	q36	q37	q38
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1,000	1,000	1,000	1,000	1,000	1000	1000	1,000	1,000	1,000
Mean	59.95776	24.24491	14.00738	1.770787	0.501593	61.864	25.238	10.98679	0.997884	0
Median	59.95472	24.25552	13.99685	1.767847	0.49809	61.851	25.228	10.98165	1.000063	0
Mode	—	—	—	—	—	—	—	—	—	—
Standard Deviation	1.785854	1.364731	0.493763	0.089343	0.064698	1.870	1.343	0.360386	0.098247	0

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Step 3 of 7 - Comt

CH4				Variance	3.189274	1.86249	0.243602	0.007982	0.004186	3.496	1.804	0.129878	0.009652	0
C2H6				Skewness	-0.005243	-0.174528	-0.017678	0.134001	0.142487	-0.01	0.02	0.049127	-0.091965	0
C3H8				Kurtosis	3.040792	3.195469	2.923574	2.7839	2.962868	2.70	2.70	3.126106	3.213292	0
Other HC				Coeff. of Variability	0.029785	0.056289	0.03525	0.050454	0.12898	0.03	0.05	0.032802	0.098465	0
Other NOx				Range Minimum	54.04147	19.02917	12.41771	1.516806	0.305079	58.699	21.203	9.886958	0.673734	0
Total "Other"				Range Maximum	65.61884	28.23635	15.42897	2.071723	0.702529	68.932	29.468	12.31259	1.305372	0
			99.06	Range Width	11.57736	9.207179	3.011285	0.555117	0.39745	10.233	8.265	2.426627	0.631638	0
				Mean Std. Error	0.056474	0.043157	0.015614	0.002825	0.002046	0.059	0.042	0.011396	0.003107	0

range normalize

Tank and Sample (or Layer)		std dev	mean	std dev	Forecast: forecasts	i50	i51	i52	i53	i54	q50	q51	q52	q53	q54
Mole Percent of Constituent in Bubbles	H2	2.34	46.88	2.34	Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
	N2	1.72	30.92	1.72	Trials	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	N2O	1.07	20.06	1.07	Mean	45.01309	29.06324	23.0237	3.358001	0.896019	46.88424	30.91683	20.05061	2.337768	0
	CH4	0.25	2.34	0.25	Median	44.99726	29.04332	23.05964	3.357393	0.891358	46.97183	30.8613	20.06277	2.339867	0
	NH3	-	-	0.00	Mode	—	—	—	—	—	—	—	—	—	—
	Other				Standard Deviation	2.324819	1.580725	1.199418	0.238141	0.131958	2.342188	1.72249	1.069311	0.254815	0
	CH4				Variance	5.403855	2.435863	1.438603	0.056711	0.017413	5.485845	2.966971	1.143425	0.064931	0
	C2H6				Skewness	0.064836	0.03668	0.072719	0.026606	0.075635	-0.08027	-0.044557	0.035086	0.011753	0
	C3H8				Kurtosis	2.949772	2.884611	2.865125	2.688823	2.734561	3.213638	3.078716	2.842746	3.001134	0
	Other HC				Coeff. of Variability	0.051643	0.053701	0.052095	0.070917	0.147271	0.049957	0.05571	0.053331	0.108999	0
	Other NOx				Range Minimum	38.10845	24.77493	19.28304	2.677887	0.536348	38.86256	24.67646	16.60584	1.536068	0
	Total "Other"				Range Maximum	52.91165	33.78235	26.65321	4.080312	1.296246	53.92881	36.58766	23.88315	3.208745	0
			100.19		Range Width	14.8032	9.007419	7.370176	1.402425	0.759898	15.06624	11.9112	7.277312	1.672657	0
					Mean Std. Error	0.073511	0.049354	0.037929	0.007531	0.004173	0.074066	0.05447	0.033815	0.008058	0

low salt range

Tank and Sample (or Layer)		std dev	mean	std dev	Forecast: forecasts	i66	i67	i68	i69	i70	q66	q67	q68	q69	q70
Mole Percent of Constituent in Bubbles	H2	2.45	61.88	2.46	Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
	N2	-	-	0.00	Trials	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	N2O	0.17	3.39	0.17	Mean	61.09724	33.15394	4.107946	1.826054	0.600153	61.87888	0	3.393619	9.256306	0
	CH4	0.43	9.26	0.43	Median	61.08776	33.19719	4.106573	1.823509	0.602614	61.91958	0	3.390024	9.253442	0
	NH3	-	-	0.00	Mode	—	—	—	—	—	—	—	—	—	—
	Other				Standard Deviation	2.589754	1.443614	0.192837	0.090859	0.064592	2.449459	0	0.169177	0.426529	0
	CH4				Variance	6.706828	2.084022	0.037188	0.008255	0.004172	5.999847	0	0.028621	0.181927	0
	C2H6				Skewness	-0.030381	-0.14043	0.027975	-0.005071	-0.082141	0.008726	0	-0.075192	-0.119742	0
	C3H8				Kurtosis	3.096639	2.995667	3.209291	2.95928	2.87668	2.738604	0	2.895973	2.91889	0
	Other HC				Coeff. of Variability	0.042387	0.043543	0.046943	0.055912	0.107825	0.039586	0	0.049851	0.04608	0
	Other NOx				Range Minimum	51.37039	28.11163	3.337206	1.335281	0.406588	55.24226	0	2.89077	7.875715	0
	Total "Other"				Range Maximum	69.89589	38.28999	4.795109	1.935551	0.774052	68.8558	0	3.926313	10.69459	0
			74.83		Range Width	18.5253	10.17837	1.457902	0.60027	0.367464	13.61353	0	1.037543	2.818879	0
					Mean Std. Error	0.081895	0.045651	0.006096	0.002873	0.002043	0.077459	0	0.00535	0.013488	0

range normalize

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Step 3 of 7 - Comt

Tank and Sample (or Layer)		std dev	mean	std dev
Mole Percent of Constituent in Bubbles	H2	0.51	23.84	0.51
	N2	0.85	37.88	0.85
	N2O	0.73	38.75	0.73
	CH4	0.06	1.06	0.06
	NH3	0.07	0.49	0.07
	Other			
	CH4			
	C2H6			
	C3H8			
	Other HC			
	Other NOx			
	Total "Other"			
			100.00	
			low salt	

Forecast: forecasts	I82	I83	I84	I85	I86	q82	q83	q84	q85	q86
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1,000	1000	1000	1000	1000	1,000	1000	1000	1000	1000
Mean	23.01222	36.191	39.032	1.793	0.596	24.01025	38.123	37.002	1.066	0.498
Median	22.99235	36.218	39.028	1.793	0.599	24.00625	38.129	37.009	1.067	0.497
Mode	—	—	—	—	—	—	—	—	—	—
Standard Deviation	0.463645	0.768	0.793	0.068	0.101	0.513694	0.848	0.726	0.057	0.066
Variance	0.214966	0.590	0.628	0.005	0.010	0.263881	0.719	0.527	0.003	0.004
Skewness	0.037809	-0.04	0.00	0.02	-0.01	0.09577	0.06	-0.06	0.03	0.00
Kurtosis	2.863881	2.86	3.00	3.11	3.07	3.0713	2.90	3.18	2.76	2.90
Coeff. of Variability	0.020148	0.02	0.02	0.04	0.17	0.021395	0.02	0.02	0.05	0.13
Range Minimum	21.47335	33.822	36.456	1.551	0.205	22.56075	35.285	34.324	0.806	0.295
Range Maximum	24.8611	38.750	41.607	2.035	0.985	25.93175	40.818	39.371	1.233	0.684
Range Width	3.187744	4.928	5.151	0.483	0.780	3.370996	5.534	5.047	0.327	0.389
Mean Std. Error	0.014662	0.024	0.025	0.002	0.003	0.016244	0.027	0.023	0.002	0.002

Tank and Sample (or Layer)		std dev	mean	std dev
Mole Percent of Constituent in Bubbles	H2	1.97	64.96	1.97
	N2	0.01	0.06	0.01
	N2O	0.26	8.40	0.26
	CH4	0.10	0.41	0.10
	NH3	-	-	0.00
	Other			
	CH4			
	C2H6			
	C3H8			
	Other HC			
	Other NOx			
	Total "Other"			
			73.83	
			low salt range	

Forecast: forecasts	I98	I99	I100	I101	I102	q98	q99	q100	q101	q102
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1,000	1,000	1,000	1,000	1000	1000	1000	1000	1000	1000
Mean	62.93817	26.06257	11.02674	1.267329	0.300	64.956	0.069	8.401	0.411	0.000
Median	62.94575	25.03602	11.01643	1.270495	0.302	65.037	0.059	8.402	0.408	0.000
Mode	—	—	—	—		—	—	—	—	0.000
Standard Deviation	1.90306	1.238056	0.340172	0.135504	0.066	1.966	0.013	0.260	0.104	0.000
Variance	3.621836	1.532782	0.115717	0.018361	0.004	3.863	0.000	0.067	0.011	0.000
Skewness	-0.031757	0.069583	0.070258	0.024109	-0.10	-0.04	0.01	-0.02	-0.04	0.00
Kurtosis	3.187417	2.961485	2.824637	3.381847	2.87	2.91	2.84	2.96	2.90	+infinity
Coeff. of Variability	0.030237	0.049399	0.030853	0.106921	0.22	0.03	0.22	0.03	0.25	+infinity
Range Minimum	56.74468	21.38698	9.959403	0.808792	0.062	59.155	0.021	7.591	0.036	0.000
Range Maximum	69.74762	29.04999	12.01873	1.711023	0.478	70.761	0.096	9.248	0.710	0.000
Range Width	13.00294	7.684008	2.059326	0.904231	0.396	11.606	0.076	1.655	0.674	0.000
Mean Std. Error	0.06018	0.039151	0.010757	0.004285	0.002	0.062	0.000	0.008	0.003	0.000

Tank and Sample (or Layer)		std dev	mean	std dev
Mole Percent of Constituent in Bubbles	H2	1.87	51.03	1.87
	N2	0.00	0.02	0.00
	N2O	0.75	15.00	0.75
	CH4	0.11	1.83	0.11
	NH3	-	-	0.00
	Other			
	CH4			

Forecast: forecasts	I114	I115	I116	I117	I118	q114	q115	q116	q117	q118
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1,000	1000	1000	1000	1000	1000	1000	1000	1000	1,000
Mean	50.0274	29.025	17.931	7.349	0.199	51.029	0.020	15.995	1.834	0
Median	50.01945	29.012	17.898	7.351	0.199	50.979	0.020	15.980	1.833	0
Mode	—	—	—	—	—	—	—	—	—	0
Standard Deviation	1.865785	1.785	0.838	0.269	0.033	1.873	0.003	0.752	0.109	0
Variance	3.481152	3.185	0.701	0.083	0.001	3.510	0.000	0.565	0.012	0

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Step 3 of 7 - Comb

C2H2				Skewness	0.055144	-0.08	0.03	0.06	0.04	0.09	-0.06	0.03	0.04	0
C3H6				Kurtosis	2.883377	2.87	2.97	2.94	2.98	3.10	2.95	2.95	2.83	+Infinity
Other HC				Coeff. of Variability	0.037295	0.06	0.05	0.04	0.17	0.04	0.17	0.05	0.06	+Infinity
Other NOx				Range Minimum	44.24384	23.386	15.329	6.324	0.091	45.483	0.008	13.721	1.514	0
Total "Other"				Range Maximum	55.60083	34.544	20.507	8.207	0.298	56.993	0.029	18.360	2.147	0
			68.88	Range Width	11.35688	11.158	5.177	1.883	0.207	11.510	0.021	4.639	0.632	0
				Mean Std. Error	0.059001	0.056	0.026	0.009	0.001	0.059	0.000	0.024	0.003	0
			low salt range											

Tank and Sample (or Layer)		std dev	mean	std dev	Forecast: forecasts	I130	I131	I132	I133	I134	q130	q131	q132	q133	q134
Mole Percent of Constituent in Bubbles	H2	1.59	51.87	1.59	Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
	N2	1.36	20.89	1.36	Trials	1000	1000	1000	1,000	1000	1,000	1000	1,000	1000	1,000
	N2O	-	-	0.00	Mean	50.035	19.867	23.993	1.373	5.493	51.88914	20.987	0	0.352	2.406496
	CH4	0.04	0.36	0.04	Median	50.017	19.931	23.969	1.371	5.496	51.84798	21.010	0	0.351	2.405735
	NH3	0.17	2.41	0.17	Mode	—	—	—	—	—	—	—	0	—	—
	Other				Standard Deviation	1.482	1.240	0.924	0.066	0.391	1.589249	1.359	0	0.037	0.167437
	CH4				Variance	2.195	1.538	0.854	0.004	0.153	2.525711	1.846	0	0.001	0.028035
	C2H2				Skewness	0.07	0.00	0.01	0.06	-0.02	0.123631	-0.11	0	0.12	0.08208
	C3H6				Kurtosis	2.87	2.95	2.86	2.82	2.67	3.160258	3.14	+Infinity	2.86	2.753777
	Other HC				Coeff. of Variability	0.03	0.06	0.04	0.05	0.07	0.03064	0.06	+Infinity	0.11	0.069577
	Other NOx				Range Minimum	45.881	15.596	21.324	1.183	4.367	46.48411	16.662	0	0.242	1.916467
	Total "Other"				Range Maximum	55.077	24.147	26.801	1.575	6.570	57.43874	25.374	0	0.476	2.932501
			75.61		Range Width	9.196	8.551	5.477	0.393	2.204	10.95462	8.712	0	0.234	1.016035
					Mean Std. Error	0.047	0.039	0.029	0.002	0.012	0.050256	0.043	0	0.001	0.005295
			low salt range												

Tank and Sample (or Layer)		std dev	mean	std dev	Forecast: forecasts	I146	I147	I148	I149	I150	q146	q147	q148	q149	q150
Mole Percent of Constituent in Bubbles	H2	1.90	63.98	1.90	Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
	N2	0.91	17.98	0.91	Trials	1,000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	N2O	-	-	0.00	Mean	60.99244	17.020	11.012	4.029	8.427	63.982	17.993	0.000	3.292	4.301
	CH4	0.13	3.29	0.13	Median	60.95552	17.046	11.008	4.024	8.428	63.976	17.972	0.000	3.297	4.302
	NH3	0.32	4.30	0.32	Mode	—	—	—	—	—	—	—	0.000	—	—
	Other				Standard Deviation	1.806333	0.886	0.338	0.206	0.647	1.903	0.911	0.000	0.128	0.320
	CH4				Variance	3.262841	0.784	0.114	0.042	0.419	3.622	0.831	0.000	0.016	0.103
	C2H2				Skewness	0.037275	-0.12	0.03	-0.04	0.07	0.08	0.12	0.00	0.01	0.14
	C3H6				Kurtosis	3.02841	2.75	3.02	3.17	3.45	2.83	3.07	+Infinity	3.03	3.00
	Other HC				Coeff. of Variability	0.029616	0.05	0.03	0.05	0.08	0.03	0.05	+Infinity	0.04	0.07
	Other NOx				Range Minimum	54.38262	14.379	9.956	3.293	6.358	58.018	15.082	0.000	2.883	3.496
	Total "Other"				Range Maximum	67.08688	19.280	12.082	4.615	10.966	70.198	21.556	0.000	3.714	5.661
			69.57		Range Width	12.70426	4.901	2.126	1.321	4.607	12.181	6.473	0.000	0.831	2.166
					Mean Std. Error	0.057121	0.028	0.011	0.007	0.020	0.060	0.029	0.000	0.004	0.010
			range normalize												

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Step 3 of 7 - Comt

Tank and Sample (or Layer)		std dev	mean	std dev
Mole Percent of Constituent in Bubbles	H2	1.04	34.94	1.04
	N2	1.51	33.00	1.51
	N2O	0.96	30.98	0.96
	CH4	0.02	0.50	0.02
	NH3	0.07	0.60	0.07
	Other			
	CH4			
	C2Hx			
	C3Hx			
	Other HC			
	Other NOx			
	Total "Other"			
			100.00	
			low salt range	

Forecast: forecasts	I162	I163	I164	I165	I166	q162	q163	q164	q165	q166
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Mean	33.053	31.969	33.003	0.609	1.100	35.011	33.065	31.015	0.500	0.599
Median	33.047	31.949	32.992	0.608	1.098	34.999	33.108	30.978	0.499	0.600
Mode	—	—	—	—	—	—	—	—	—	—
Standard Deviation	1.049	1.409	1.039	0.048	0.135	1.040	1.514	0.955	0.020	0.066
Variance	1.099	1.986	1.080	0.002	0.018	1.081	2.292	0.913	0.000	0.004
Skewness	-0.10	-0.02	0.09	0.09	-0.04	0.00	0.01	0.15	0.08	-0.17
Kurtosis	3.02	2.80	2.95	2.74	2.94	3.15	2.71	3.21	2.90	3.28
Coeff. of Variability	0.03	0.04	0.03	0.08	0.12	0.03	0.05	0.03	0.04	0.11
Range Minimum	29.403	27.568	29.675	0.654	0.679	31.489	29.137	27.623	0.446	0.349
Range Maximum	36.214	36.207	36.434	0.955	1.499	38.221	37.258	35.156	0.566	0.807
Range Width	6.811	8.619	6.760	0.301	0.821	6.733	8.122	7.532	0.120	0.458
Mean Std. Error	0.033	0.045	0.033	0.002	0.004	0.033	0.048	0.030	0.001	0.002

Tank and Sample (or Layer)		std dev	mean	std dev
Mole Percent of Constituent in Bubbles	H2	3.65	66.83	3.65
	N2	1.92	21.94	1.92
	N2O	0.49	9.63	0.49
	CH4	-	-	0.00
	NH3	0.07	0.60	0.07
	Other			
	CH4			
	C2Hx			
	C3Hx			
	Other HC			
	Other NOx			
	Total "Other"			
			98.12	
			low salt range	

Forecast: Q180	I178	I179	I180	I181	I182	q178	q179	q180	q181	q182
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Mean	65.836	21.022	11.037	0.912	1.098	66.945	21.939	9.634	0.000	0.601
Median	65.863	21.062	11.056	0.914	1.092	66.963	22.009	9.618	0.000	0.600
Mode	—	—	—	—	—	—	—	—	0.000	—
Standard Deviation	3.205	1.911	0.586	0.065	0.134	3.651	1.917	0.490	0.000	0.065
Variance	10.274	3.652	0.343	0.004	0.018	13.332	3.674	0.240	0.000	0.004
Skewness	0.02	-0.13	-0.12	-0.02	0.07	-0.08	-0.12	0.16	0.00	-0.01
Kurtosis	3.10	3.20	2.92	2.97	3.06	2.86	2.92	3.20	+Infinity	3.01
Coeff. of Variability	0.05	0.09	0.05	0.07	0.12	0.05	0.09	0.05	+Infinity	0.11
Range Minimum	55.091	13.843	9.250	0.706	0.653	55.800	16.077	7.623	0.000	0.386
Range Maximum	76.886	26.540	12.951	1.121	1.587	77.875	27.331	11.443	0.000	0.791
Range Width	21.795	12.697	3.701	0.415	0.934	22.075	11.254	3.620	0.000	0.406
Mean Std. Error	0.101	0.060	0.019	0.002	0.004	0.115	0.061	0.015	0.000	0.002

Tank and Sample (or Layer)		std dev	mean	std dev
Mole Percent of Constituent in Bubbles	H2	1.08	26.14	1.08
	N2	2.76	48.39	2.76
	N2O	1.05	24.07	1.05
	CH4	0.03	0.80	0.03
	NH3	0.07	0.60	0.07
	Other			

Forecast: forecasts	I194	I195	I196	I197	I198	q194	q195	q196	q197	q198
Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Trials	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Mean	24.950	46.021	26.949	1.689	1.193	26.028	48.185	23.967	0.802	0.598
Median	24.962	46.080	26.978	1.686	1.194	25.986	48.096	23.964	0.800	0.597
Mode	—	—	—	—	—	—	—	—	—	—
Standard Deviation	1.040	2.663	1.167	0.114	0.166	1.063	2.755	1.052	0.035	0.067

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Step 3 of 7 - Comt

	CH4			Variance	1.082	7.091	1.363	0.013	0.028	1.172	7.591	1.107	0.001	0.004
	C2Hx			Skewness	-0.02	-0.06	-0.03	-0.04	0.01	-0.03	0.04	0.10	0.05	-0.06
	C3Hx			Kurtosis	2.76	2.97	3.01	2.98	3.07	3.11	3.06	3.32	2.93	2.94
	Other HC			Coeff. of Variability	0.04	0.06	0.04	0.07	0.14	0.04	0.06	0.04	0.04	0.11
	Other NOx			Range Minimum	21.951	36.041	23.451	1.314	0.648	22.102	39.269	20.321	0.894	0.346
	Total "Other"			Range Maximum	28.293	55.583	31.345	1.997	1.728	29.107	58.391	28.111	0.906	0.787
			100.00	Range Width	6.342	17.542	7.894	0.683	1.080	7.005	19.122	7.790	0.212	0.442
				Mean Std. Error	0.033	0.084	0.037	0.004	0.005	0.034	0.087	0.033	0.001	0.002

Tank and Sample (or Layer)		std dev	low salt range mean	std dev	Forecast: forecasts	l210	l211	l212	l213	l214	q210	q211	q212	q213	q214
Mole Percent of Constituent in Bubbles	H2	2.32	38.85	2.32	Statistic	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
	N2	3.36	39.83	3.36	Trials	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	N2O	1.06	17.49	1.06	Mean	31.687	32.275	22.197	3.249	11.846	36.410	39.352	17.270	0.973	4.799
	CH4	0.10	0.98	0.10	Median	31.720	32.286	22.249	3.256	11.817	36.448	39.233	17.240	0.973	4.790
	NH3	0.41	4.86	0.41	Mode	—	—	—	—	—	—	—	—	—	—
	Other				Standard Deviation	2.171	2.625	1.596	0.301	1.063	2.321	3.358	1.059	0.099	0.413
	CH4				Variance	4.715	6.890	2.548	0.090	1.129	5.385	11.276	1.121	0.010	0.170
	C2Hx				Skewness	-0.01	-0.03	0.00	0.06	0.00	0.05	0.09	0.00	0.01	-0.05
	C3Hx				Kurtosis	2.79	2.91	2.91	2.93	3.04	2.95	3.01	3.05	2.92	3.06
	Other HC				Coeff. of Variability	0.07	0.08	0.07	0.09	0.09	0.06	0.09	0.06	0.10	0.09
	Other NOx				Range Minimum	24.926	25.168	17.544	2.399	8.357	28.634	28.320	13.529	0.655	3.352
	Total "Other"				Range Maximum	38.640	40.524	27.870	4.280	15.561	44.079	51.256	20.510	1.263	6.247
			100.00		Range Width	13.711	15.336	10.326	1.881	7.204	15.444	22.936	6.981	0.609	2.895
					Mean Std. Error	0.069	0.083	0.050	0.010	0.034	0.073	0.106	0.033	0.003	0.013

Tank and Sample (or Layer)		std dev	low salt mean	std dev
Mole Percent of Constituent in Bubbles	H2	-	-	0.00
	N2	-	-	0.00
	N2O	-	-	0.00
	CH4	-	-	0.00
	NH3	-	-	0.00
	Other			
	CH4			
	C2Hx			
	C3Hx			
	Other HC			
	Other NOx			
	Total "Other"			
			-	

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Cell Equations

Cell	Value	Formula
c4	32±3.2 to 33±3.2	32±3.2 to 33±3.2
c5	56±6.2 to 58±6.4	56±6.2 to 58±6.4
c6	7.2±0.8 to 4.4±0.5	7.2±0.8 to 4.4±0.5
c7	1.7±0.2	1.7±0.2
c8	0.6±0.3	0.6±0.3
c9	2.8±0.5 to 2.9±0.6	2.8±0.5 to 2.9±0.6
c10	1.7±0.2	1.7±0.2
c11	1.1±0.2 to 1.2±0.2	1.1±0.2 to 1.2±0.2
c12	0.26±0.1 to 0.27±0.1	0.26±0.1 to 0.27±0.1
c13	1.3±0.3 to 1.4±0.3	1.3±0.3 to 1.4±0.3
c14	0.12±0.06 to 0.12±0.07	0.12±0.06 to 0.12±0.07
c15	2.8±0.5 to 2.9±0.6	2.8±0.5 to 2.9±0.6
c16		
d4	31.90562462	31.90562462
d5	55	55
d6	7.5	7.5
d7	1.7	1.7
d8	0.8	0.8
d9		
d10		
d11	1.1	1.1
d12	0.26	0.26
d13	1.3	1.3
d14	0.12	0.12
d15		
d16		
e4	32	"=IF (ISERR (FIND ($E$2, C307, 1)), 0, VALUE (LEFT (C307, FIND ($E$2, C307, 1) - 1)))
e5	56	"=IF (ISERR (FIND ($E$2, C308, 1)), 0, VALUE (LEFT (C308, FIND ($E$2, C308, 1) - 1)))
e6	7.2	"=IF (ISERR (FIND ($E$2, C309, 1)), 0, VALUE (LEFT (C309, FIND ($E$2, C309, 1) - 1)))
e7	1.7	"=IF (ISERR (FIND ($E$2, C310, 1)), 0, VALUE (LEFT (C310, FIND ($E$2, C310, 1) - 1)))
e8	0.6	"=IF (ISERR (FIND ($E$2, C311, 1)), 0, VALUE (LEFT (C311, FIND ($E$2, C311, 1) - 1)))
e9	2.8	"=IF (ISERR (FIND ($E$2, C312, 1)), 0, VALUE (LEFT (C312, FIND ($E$2, C312, 1) - 1)))
e10	1.7	"=IF (ISERR (FIND ($E$2, C313, 1)), 0, VALUE (LEFT (C313, FIND ($E$2, C313, 1) - 1)))
e11	1.1	"=IF (ISERR (FIND ($E$2, C314, 1)), 0, VALUE (LEFT (C314, FIND ($E$2, C314, 1) - 1)))
e12	0.26	"=IF (ISERR (FIND ($E$2, C315, 1)), 0, VALUE (LEFT (C315, FIND ($E$2, C315, 1) - 1)))
e13	1.3	"=IF (ISERR (FIND ($E$2, C316, 1)), 0, VALUE (LEFT (C316, FIND ($E$2, C316, 1) - 1)))
e14	0.12	"=IF (ISERR (FIND ($E$2, C317, 1)), 0, VALUE (LEFT (C317, FIND ($E$2, C317, 1) - 1)))
e15	2.8	"=IF (ISERR (FIND ($E$2, C318, 1)), 0, VALUE (LEFT (C318, FIND ($E$2, C318, 1) - 1)))
e16	100.28	"=SUM (E307:E318) - E312 - E313 - E316
f4	3.2	"=IF (ISERR (FIND ($E$2, C307)), 0, IF (ISERR (FIND ($F$2, C307)), VALUE (RIGHT (C307, LEN (C307) - FIND ($E$2, C307))), VALUE (MID (C307, FIND ($E$2, C307) + 1, FIND ($F$2, C307) - FIND ($E$2, C307) - 1))))
f5	6.2	"=IF (ISERR (FIND ($E$2, C308)), 0, IF (ISERR (FIND ($F$2, C308)), VALUE (RIGHT (C308, LEN (C308) - FIND ($E$2, C308))), VALUE (MID (C308, FIND ($E$2, C308) + 1, FIND ($F$2, C308) - FIND ($E$2, C308) - 1))))
f6	0.8	"=IF (ISERR (FIND ($E$2, C309)), 0, IF (ISERR (FIND ($F$2, C309)), VALUE (RIGHT (C309, LEN (C309) - FIND ($E$2, C309))), VALUE (MID (C309, FIND ($E$2, C309) + 1, FIND ($F$2, C309) - FIND ($E$2, C309) - 1))))
f7	0.2	"=IF (ISERR (FIND ($E$2, C310)), 0, IF (ISERR (FIND ($F$2, C310)), VALUE (RIGHT (C310, LEN (C310) - FIND ($E$2, C310))), VALUE (MID (C310, FIND ($E$2, C310) + 1, FIND ($F$2, C310) - FIND ($E$2, C310) - 1))))

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Cell Equations

Cell	Value	Formula
f8	0.3	"=IF (ISERR (FIND ($E$2, C311)) , 0, IF (ISERR (FIND ($F$2, C311)) , VALUE (RIGHT (C311, LEN (C311) - FIND ($E$2, C311))) , VALUE (MID (C311, FIND ($E$2, C311) + 1, FIND ($F$2, C311) - FIND ($E$2, C311) - 1))))
f9	0.5	"=IF (ISERR (FIND ($E$2, C312)) , 0, IF (ISERR (FIND ($F$2, C312)) , VALUE (RIGHT (C312, LEN (C312) - FIND ($E$2, C312))) , VALUE (MID (C312, FIND ($E$2, C312) + 1, FIND ($F$2, C312) - FIND ($E$2, C312) - 1))))
f10	0.2	"=IF (ISERR (FIND ($E$2, C313)) , 0, IF (ISERR (FIND ($F$2, C313)) , VALUE (RIGHT (C313, LEN (C313) - FIND ($E$2, C313))) , VALUE (MID (C313, FIND ($E$2, C313) + 1, FIND ($F$2, C313) - FIND ($E$2, C313) - 1))))
f11	0.2	"=IF (ISERR (FIND ($E$2, C314)) , 0, IF (ISERR (FIND ($F$2, C314)) , VALUE (RIGHT (C314, LEN (C314) - FIND ($E$2, C314))) , VALUE (MID (C314, FIND ($E$2, C314) + 1, FIND ($F$2, C314) - FIND ($E$2, C314) - 1))))
f12	0.1	"=IF (ISERR (FIND ($E$2, C315)) , 0, IF (ISERR (FIND ($F$2, C315)) , VALUE (RIGHT (C315, LEN (C315) - FIND ($E$2, C315))) , VALUE (MID (C315, FIND ($E$2, C315) + 1, FIND ($F$2, C315) - FIND ($E$2, C315) - 1))))
f13	0.3	"=IF (ISERR (FIND ($E$2, C316)) , 0, IF (ISERR (FIND ($F$2, C316)) , VALUE (RIGHT (C316, LEN (C316) - FIND ($E$2, C316))) , VALUE (MID (C316, FIND ($E$2, C316) + 1, FIND ($F$2, C316) - FIND ($E$2, C316) - 1))))
f14	0.06	"=IF (ISERR (FIND ($E$2, C317)) , 0, IF (ISERR (FIND ($F$2, C317)) , VALUE (RIGHT (C317, LEN (C317) - FIND ($E$2, C317))) , VALUE (MID (C317, FIND ($E$2, C317) + 1, FIND ($F$2, C317) - FIND ($E$2, C317) - 1))))
f15	0.5	"=IF (ISERR (FIND ($E$2, C318)) , 0, IF (ISERR (FIND ($F$2, C318)) , VALUE (RIGHT (C318, LEN (C318) - FIND ($E$2, C318))) , VALUE (MID (C318, FIND ($E$2, C318) + 1, FIND ($F$2, C318) - FIND ($E$2, C318) - 1))))
f16		
g4	2.366666667	"=IF (ISERR (F307 / 3) , 0.001, MAX (+ F307 / 3, 0.001))
g5	1.633333333	"=IF (ISERR (F308 / 3) , 0.001, MAX (+ F308 / 3, 0.001))
g6	0.2	"=IF (ISERR (F309 / 3) , 0.001, MAX (+ F309 / 3, 0.001))
g7	0.033333333	"=IF (ISERR (F310 / 3) , 0.001, MAX (+ F310 / 3, 0.001))
g8	0.3	"=IF (ISERR (F311 / 3) , 0.001, MAX (+ F311 / 3, 0.001))
g9	0.02	"=IF (ISERR (F312 / 3) , 0.001, MAX (+ F312 / 3, 0.001))
g10	0.033333333	"=IF (ISERR (F313 / 3) , 0.001, MAX (+ F313 / 3, 0.001))
g11	0.006666667	"=IF (ISERR (F314 / 3) , 0.001, MAX (+ F314 / 3, 0.001))
g12	0.01	"=IF (ISERR (F315 / 3) , 0.001, MAX (+ F315 / 3, 0.001))
g13	0.01	"=IF (ISERR (F316 / 3) , 0.001, MAX (+ F316 / 3, 0.001))
g14	0.006666667	"=IF (ISERR (F317 / 3) , 0.001, MAX (+ F317 / 3, 0.001))
g15	0.02	"=IF (ISERR (F318 / 3) , 0.001, MAX (+ F318 / 3, 0.001))
g16		
h4	33	33
h5	57	57
h6	5	5
h7		
h8		
h9		
h10		
h11	1.2	1.2
h12	0.27	0.27
h13	1.4	1.4
h14	0.12	0.12
h15		
h16		
i4	33	"=IF (ISERR (FIND ($F$2, C307)) , 0, VALUE (MID (C307, FIND ($F$2, C307) + LEN ($F$2) , FIND ($E$2, C307, FIND ($F$2, C307) + 1) - (FIND ($F$2, C307) + LEN ($F$2)))))
i5	58	"=IF (ISERR (FIND ($F$2, C308)) , 0, VALUE (MID (C308, FIND ($F$2, C308) + LEN ($F$2) , FIND ($E$2, C308, FIND ($F$2, C308) + 1) - (FIND ($F$2, C308) + LEN ($F$2)))))
i6	4.4	"=IF (ISERR (FIND ($F$2, C309)) , 0, VALUE (MID (C309, FIND ($F$2, C309) + LEN ($F$2) , FIND ($E$2, C309, FIND ($F$2, C309) + 1) - (FIND ($F$2, C309) + LEN ($F$2)))))
i7	0	"=IF (ISERR (FIND ($F$2, C310)) , 0, VALUE (MID (C310, FIND ($F$2, C310) + LEN ($F$2) , FIND ($E$2, C310, FIND ($F$2, C310) + 1) - (FIND ($F$2, C310) + LEN ($F$2)))))

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Cell Equations

Cell	Value	Formula
I8	0	"=IF (ISERR (FIND ($F$2, C311)) , 0, VALUE (MID (C311, FIND ($F$2, C311) + LEN ($F$2) , FIND ($E$2, C311, FIND ($F$2, C311) + 1) - (FIND ($F$2, C311) + LEN ($F$2)))))
I9	2.9	"=IF (ISERR (FIND ($F$2, C312)) , 0, VALUE (MID (C312, FIND ($F$2, C312) + LEN ($F$2) , FIND ($E$2, C312, FIND ($F$2, C312) + 1) - (FIND ($F$2, C312) + LEN ($F$2)))))
I10	0	"=IF (ISERR (FIND ($F$2, C313)) , 0, VALUE (MID (C313, FIND ($F$2, C313) + LEN ($F$2) , FIND ($E$2, C313, FIND ($F$2, C313) + 1) - (FIND ($F$2, C313) + LEN ($F$2)))))
I11	1.2	"=IF (ISERR (FIND ($F$2, C314)) , 0, VALUE (MID (C314, FIND ($F$2, C314) + LEN ($F$2) , FIND ($E$2, C314, FIND ($F$2, C314) + 1) - (FIND ($F$2, C314) + LEN ($F$2)))))
I12	0.27	"=IF (ISERR (FIND ($F$2, C315)) , 0, VALUE (MID (C315, FIND ($F$2, C315) + LEN ($F$2) , FIND ($E$2, C315, FIND ($F$2, C315) + 1) - (FIND ($F$2, C315) + LEN ($F$2)))))
I13	1.4	"=IF (ISERR (FIND ($F$2, C316)) , 0, VALUE (MID (C316, FIND ($F$2, C316) + LEN ($F$2) , FIND ($E$2, C316, FIND ($F$2, C316) + 1) - (FIND ($F$2, C316) + LEN ($F$2)))))
I14	0.12	"=IF (ISERR (FIND ($F$2, C317)) , 0, VALUE (MID (C317, FIND ($F$2, C317) + LEN ($F$2) , FIND ($E$2, C317, FIND ($F$2, C317) + 1) - (FIND ($F$2, C317) + LEN ($F$2)))))
I15	2.9	"=IF (ISERR (FIND ($F$2, C318)) , 0, VALUE (MID (C318, FIND ($F$2, C318) + LEN ($F$2) , FIND ($E$2, C318, FIND ($F$2, C318) + 1) - (FIND ($F$2, C318) + LEN ($F$2)))))
I16		
J4	3.2	"=IF (ISERR (FIND ($F$2, C307)) , 0, VALUE (RIGHT (C307, LEN (C307) - FIND ($E$2, C307, FIND ($F$2, C307) + 1) - (LEN ($E$2) - 1))))
J5	6.4	"=IF (ISERR (FIND ($F$2, C308)) , 0, VALUE (RIGHT (C308, LEN (C308) - FIND ($E$2, C308, FIND ($F$2, C308) + 1) - (LEN ($E$2) - 1))))
J6	0.6	"=IF (ISERR (FIND ($F$2, C309)) , 0, VALUE (RIGHT (C309, LEN (C309) - FIND ($E$2, C309, FIND ($F$2, C309) + 1) - (LEN ($E$2) - 1))))
J7	0	"=IF (ISERR (FIND ($F$2, C310)) , 0, VALUE (RIGHT (C310, LEN (C310) - FIND ($E$2, C310, FIND ($F$2, C310) + 1) - (LEN ($E$2) - 1))))
J8	0	"=IF (ISERR (FIND ($F$2, C311)) , 0, VALUE (RIGHT (C311, LEN (C311) - FIND ($E$2, C311, FIND ($F$2, C311) + 1) - (LEN ($E$2) - 1))))
J9	0.6	"=IF (ISERR (FIND ($F$2, C312)) , 0, VALUE (RIGHT (C312, LEN (C312) - FIND ($E$2, C312, FIND ($F$2, C312) + 1) - (LEN ($E$2) - 1))))
J10	0	"=IF (ISERR (FIND ($F$2, C313)) , 0, VALUE (RIGHT (C313, LEN (C313) - FIND ($E$2, C313, FIND ($F$2, C313) + 1) - (LEN ($E$2) - 1))))
J11	0.2	"=IF (ISERR (FIND ($F$2, C314)) , 0, VALUE (RIGHT (C314, LEN (C314) - FIND ($E$2, C314, FIND ($F$2, C314) + 1) - (LEN ($E$2) - 1))))
J12	0.1	"=IF (ISERR (FIND ($F$2, C315)) , 0, VALUE (RIGHT (C315, LEN (C315) - FIND ($E$2, C315, FIND ($F$2, C315) + 1) - (LEN ($E$2) - 1))))
J13	0.3	"=IF (ISERR (FIND ($F$2, C316)) , 0, VALUE (RIGHT (C316, LEN (C316) - FIND ($E$2, C316, FIND ($F$2, C316) + 1) - (LEN ($E$2) - 1))))
J14	0.07	"=IF (ISERR (FIND ($F$2, C317)) , 0, VALUE (RIGHT (C317, LEN (C317) - FIND ($E$2, C317, FIND ($F$2, C317) + 1) - (LEN ($E$2) - 1))))
J15	0.6	"=IF (ISERR (FIND ($F$2, C318)) , 0, VALUE (RIGHT (C318, LEN (C318) - FIND ($E$2, C318, FIND ($F$2, C318) + 1) - (LEN ($E$2) - 1))))
J16		
K4	1.066666667	"=IF (ISERR (J4 / 3) , 0.001, MAX (+ J4 / 3, 0.001))
K5	2.133333333	"=IF (ISERR (J5 / 3) , 0.001, MAX (+ J5 / 3, 0.001))
K6	0.166666667	"=IF (ISERR (J6 / 3) , 0.001, MAX (+ J6 / 3, 0.001))
K7	0.001	"=IF (ISERR (J7 / 3) , 0.001, MAX (+ J7 / 3, 0.001))
K8	0.001	"=IF (ISERR (J8 / 3) , 0.001, MAX (+ J8 / 3, 0.001))
K9	0.2	"=IF (ISERR (J9 / 3) , 0.001, MAX (+ J9 / 3, 0.001))
K10	0.001	"=IF (ISERR (J10 / 3) , 0.001, MAX (+ J10 / 3, 0.001))
K11	0.066666667	"=IF (ISERR (J11 / 3) , 0.001, MAX (+ J11 / 3, 0.001))
K12	0.033333333	"=IF (ISERR (J12 / 3) , 0.001, MAX (+ J12 / 3, 0.001))
K13	0.1	"=IF (ISERR (J13 / 3) , 0.001, MAX (+ J13 / 3, 0.001))
K14	0.023333333	"=IF (ISERR (J14 / 3) , 0.001, MAX (+ J14 / 3, 0.001))
K15	0.2	"=IF (ISERR (J15 / 3) , 0.001, MAX (+ J15 / 3, 0.001))
K16		

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Cell Equations

Cell	Value	Formula
l4	31.90562462	"= + D307
l5	55.12	"= + D308 + D317
l6	7.5	"= + D309
l7	9.383333333	"= + D310 + D314*5 / 3 + D315*5 / 2 + D316*4
l8	0.8	"= + D311
l9		
l10		
l11		
l12		
l13		
l14		
l15		
l16	104.708958	"=SUM (L307:L318)
m4	32.05737627	"= + X309
m5	56.20912925	"= + Y309
m6	7.199081032	"= + Z309
m7	9.38931521	"= + AA309
m8	0.599613297	"=AB309
m9		
m10		
m11		
m12		
m13		
m14		
m15		
m16	105.4545151	"=SUM (M307:M318)
n4	1.081848013	"= + X312
n5	2.08239897	"= + Y312
n6	0.278946023	"= + Z312
n7	0.431529823	"= + AA312
n8	0.101245517	"= + AB312
n9		
n10		
n11		
n12		
n13		
n14		
n15		
n16		
o4	30.39924488	"= + M307 / M319*100
o5	53.30177586	"= + M308 / M319*100
o6	6.826716739	"= + M309 / M319*100
o7	8.903663541	"= + M310 / M319*100
o8	0.56859898	"= + M311 / M319*100
o9		
o10		
o11		
o12		
o13		
o14		
o15		
o16	100	"=SUM (O307:O318)
p4	1.081848013	"= + N307
p5	2.08239897	"= + N308
p6	0.278946023	"= + N309
p7	0.431529823	"= + N310
p8	0.101245517	"= + N311
p9		
p10		
p11		
p12		
p13		
p14		

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Cell Equations

Cell	Value	Formula
p15		
p16		
q4	33	"= + H307
q5	57.12	"= + H306 + H317
q6	5	"= + H309
q7	8.275	"= + H310 + H314*5 / 3 + H315*5 / 2 + H316*4
q8	0	"= + H311
q9		
q10		
q11		
q12		
q13		
q14		
q15		
q16	103.395	"=SUM (Q307:Q316)
r4	32.95593137	"= + AC309
r5	58.23768653	"= + AD309
r6	4.40194146	"= + AE309
r7	8.256572689	"= + AF309
r8	0	"=AG309
r9		
r10		
r11		
r12		
r13		
r14		
r15	0	"=IF (OR (R307"=0, R308"=0, R309"=0, R310"=0, R311"=0) , 0, 1)
r16	103.852132	"=SUM (R307:R312)
s4	1.065328453	"= + AC312
s5	2.122268326	"= + AD312
s6	0.164811503	"= + AE312
s7	0.442054928	"= + AF312
s8	0	"= + AG312
s9		
s10		
s11		
s12		
s13		
s14		
s15		
s16		
t4	32.95593137	"=IF (R318"=0, + R307, + R307 / R319*100)
t5	58.23768653	"=IF (R318"=0, + R308, + R308 / R319*100)
t6	4.40194146	"=IF (R318"=0, + R309, + R309 / R319*100)
t7	8.256572689	"=IF (R318"=0, + R310, + R310 / R319*100)
t8	0	"=IF (R318"=0, + R311, + R311 / R319*100)
t9		
t10		
t11		
t12		
t13		
t14		
t15		
t16	103.852132	"=SUM (T307:T318)
u4	1.065328453	"= + S307
u5	2.122268326	"= + S308
u6	0.164811503	"= + S309
u7	0.442054928	"= + S310
u8	0	"= + S311
u9		
u10		
u11		
u12		

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "3-Revised comps"

Cell Equations

Cell	Value	Formula
u13		
u14		
u15		
u16		

3. Create Forecasts in Columns "L" and "Q" for the major components. Minor components are added to major components (NOx add to N2 and fuels are added to CH4)

4. Run Crytal Ball for 1000 trials.

5. Prepare Crystal Ball Report

6. Copy summary statistics to Colums "X" through "AG"

COMBINE DISTRIBUTIONS FOR SY-101

7. Copy combined SY-101 values from range "C290 to C301" to "C210 to C221"

8. Repeat Step 2 for SY-101

9. Repeat Step 3 for SY-101

10. Repeat Step 4 for SY-101

11. Repeat Step 5 for SY-101

12. Repeat Step 6 for SY-101

13. Clear all Forecasts and Assumptions from spreadsheet

2.3 CREATE DISTRIBUTIONS FOR RGS TANKS

Create the 4 Distributions Required to Specify the Retained Gas Distributions for Each of the RGS Tanks

Tab "4-Gas comp by tanks"

1. Recalculate Spreadsheet

2. Set up "Step-wise Continuous" assumptions in Cells in rows 8, 20, 32, 45, 58. 71, 84, 97, 110, 123, 136, 149, 162, 175 and Columns "O", "S", "W", "AA"

   a. Clear any existing assumptions

   b. Select custom Distribution

   c. select data, then enter the range of cells listed below the cell where the assumption cells

   d. Rescale to 1.00

   e. Save assumption

   f. If there are not 4 values to choose from use the original normal distribution

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

Tank and Sample (or Layer) AW-101 solids		high salt range normalized mean	high salt range normalized std dev	low salt range normalized mean	low salt range normalized std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	30.40	1.06	32.96	1.07	26.07	30.40	32.96	37.22
	N2	53.30	2.06	58.24	2.12	44.97	53.30	58.24	66.73
	N2O	6.63	0.26	4.40	0.16	3.74	4.40	6.63	7.94
	CH4	8.90	0.43	8.26	0.44	6.49	8.26	8.90	10.63
	NH3	0.57	0.10	-	-	-	-	0.57	0.97
1		100.00		100.00					

AW-101					
H2					N2O
26.0719		-		31.6576	3.7427
30.3992		1.0000		I8:N11	4.4019
32.9559		1.0000			6.6267
37.2172		-			7.9425
		12 AW-101 H2		31.6576	1
retainedGasComposition NH3	0.6000				12 A
retainedGasComposition N2	53.7300	MEAN	AW-101 H2	31.1400	MEAN
headspaceGasRatio CH4	0.2136	STDDEV	AW-101 H2	2.3991	STDDEV
headspaceGasRatio N2O	0.1256				MEAN STDDEV

Tank and Sample (or Layer) A-101 upper		high salt range normal mean	high salt range normal std dev	low salt range normal mean	low salt range normal std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	71.37	2.50	-	-	-	-	71.37	80.58
	N2	18.90	1.64	-	-	-	-	18.90	25.45
	N2O	5.75	0.20	5.30	0.18	4.65	5.30	5.75	6.54
	CH4	1.50	0.08	-	-	-	-	1.50	1.73
	NH3	2.47	0.30	-	-	-	-	2.47	3.68
2		100.00		79.23					

A-101					
H2					N2O
-		-		50.6499	4.6471
-		1.0000		I20:N23	5.3031
71.3740		1.0000		H7:N20	5.7528
80.5757		-			6.5445
		24 A-101 H2		50.6499	
retainedGasComposition NH3	0.6000				24
retainedGasComposition N2	53.7300	MEAN	4 A-101 H2	31.1400	MEAN
headspaceGasRatio CH4	0.2100	STDDEV	4 A-101 H2	2.2719	STDDEV
headspaceGasRatio N2O	0.1300				MEAN STDDEV

Tank and Sample (or Layer) AN-105 solids		high salt range normal mean	high salt range normal std dev	low salt range normalized mean	low salt range normalized std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	59.67	1.79	61.85	1.87	52.53	59.67	61.85	69.33
	N2	24.13	1.36	25.24	1.24	18.67	24.13	25.24	30.61
	N2O	13.94	0.49	10.99	0.38	9.55	10.99	13.94	15.92
	CH4	1.76	0.09	1.00	0.10	0.60	1.00	1.76	2.12

AN-105					
H2					N2O
52.5265		-		60.8674	8.5452
59.6699		1.0000		I32:N36	10.9868
61.8540		1.0000		I25:N28	13.9401
69.3331		-			15.9152

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

NH3	0.50	0.06	-	-	-	-	0.50	0.76	
3	100.00		100.00						

retainedGasCompositionNH3	0.6000		36 AN-105 H2	60.8674	36 /
retainedGasCompositionN2	53.7300	MEAN	AN-105 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	AN-105 H2	3.3698	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Tank and Sample (or Layer) AN-104 solids		high salt range normalized mean	std dev	low salt range normalized mean	std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	44.41	2.32	46.88	2.34	35.11	44.41	46.88	56.25
	N2	28.67	1.58	30.92	1.72	22.43	28.67	30.92	37.81
	N2O	22.72	1.20	20.05	1.07	16.77	20.05	22.72	27.61
	CH4	3.31	0.24	2.34	0.25	1.32	2.34	3.31	4.27
	NH3	0.88	0.13	-	-	-	-	0.88	1.41
4		100.00		100.00					

AN-104

H2			N2O
35.1133	-	45.6702	15.7734
44.4117	1.0000	I46:N48	20.0506
46.8842	1.0000	I34:N37	22.7161
56.2530	-		27.6136
	49 AN-104 H2	45.6702	

retainedGasCompositionNH3	0.6000				49 /
retainedGasCompositionN2	53.7300	MEAN	AN-104 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	AN-104 H2	4.3661	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Tank and Sample (or Layer) AN-103 solids		high salt range normalized mean	std dev	low salt range normalized mean	std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	60.74	2.59	61.88	2.45	50.38	60.74	61.88	71.67
	N2	32.98	1.44	-	-	-	-	32.98	38.74
	N2O	4.08	0.19	3.39	0.17	2.72	3.39	4.08	4.86
	CH4	1.82	0.09	9.26	0.43	1.25	1.82	9.26	10.96
	NH3	0.60	0.06	-	-	-	-	0.60	0.86
5		100.00		75.06					

AN-103

H2			N2O
50.3833	-	61.1273	2.7169
60.7423	1.0000	I58:N61	3.3936
61.8769	1.0000	I43:N46	4.0841
71.6747	-		4.8554
	62 AN-103 H2	61.1273	

retainedGasCompositionNH3	0.6000	62 /

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

retainedGasCompositionN2	53.7300	MEAN	AN-103 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	AN-103 H2	4.3860	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Tank and Sample (or	high salt range		low salt range		assumptions			
U-103 solids	mean	std dev	mean	std dev	low	mean1	mean2	high
Mole Percent of Constituent in Bubbles: H2	22.87	0.48	23.84	0.51	21.01	22.87	23.84	25.90
N2	35.97	0.77	37.88	0.86	32.89	35.97	37.88	41.25
N2O	38.79	0.79	38.75	0.73	33.84	36.75	38.79	41.98
CH4	1.78	0.07	1.06	0.06	0.83	1.06	1.78	2.06
NH3	0.59	0.10	0.49	0.07	0.23	0.49	0.59	1.00
1	100.00		100.00					

U-103

H2			N2O
21.0142	-	23.4174	33.8427
22.8887	1.0000	I71:N74	38.7458
23.8437	1.0000	I52:N55	38.7861
25.8985	-		41.9564
	75 U-103 H2	23.4174	

retainedGasCompositionNH3	0.6000				75
retainedGasCompositionN2	53.7300	MEAN	5 U-103 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	5 U-103 H2	1.0217	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Tank and	high salt range		low salt range		assumptions			
S-106 solids	mean	std dev	mean	std dev	low	mean1	mean2	high
Mole Percent of Constituent in Bubbles: H2	62.57	1.90	64.96	1.97	54.95	62.57	64.96	72.82
N2	24.91	1.24	0.06	0.01	0.01	0.06	24.91	29.87
N2O	10.96	0.34	8.40	0.28	7.36	8.40	10.96	12.32
CH4	1.28	0.14	0.41	0.10	-	0.41	1.28	1.80
NH3	0.30	0.07	-	-	-	-	0.30	0.56
2	100.00		74.87					

S-106

H2			N2O
54.9544	-	63.8400	7.3625
62.5667	1.0000	I84:N87	8.4011
64.9564	1.0000		10.9607
72.8187	-		12.3213
	88 S-106 H2	63.8400	

retainedGasCompositionNH3	0.6000				88
retainedGasCompositionN2	53.7300	MEAN	8 S-106 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	8 S-106 H2	3.6360	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

Tank and Sample (or BY-109 babbin salt		high salt range mean	high salt range std dev	low salt range mean	low salt range std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	47.88	1.87	51.03	1.87	40.40	47.88	51.03	58.52
	N2	27.77	1.78	0.02	0.00	0.01	0.02	27.77	34.91
	N2O	17.15	0.84	16.00	0.76	12.98	16.00	17.15	20.50
	CH4	7.03	0.29	1.83	0.11	1.40	1.83	7.03	8.18
	NH3	0.19	0.03	-	-	-	-	0.19	0.32
3		100.00		100.00					

BY-109					
	H2				N2O
	40.3963		-	49.4537	12.9589
	47.8594		1.0000	I97:N100	15.9951
	51.0282		1.0000		17.1537
	58.5226		-		20.5039
		101	BY-109 H2	49.4537	1(
retainedGasCompositionNH3	0.6000				101
retainedGasCompositionN2	53.7300	MEAN	BY-109 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	BY-109 H2	3.7148	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Tank and Sample (or SX-106 solids		high salt range mean	high salt range std dev	low salt range mean	low salt range std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	49.60	1.45	51.87	1.59	43.67	49.60	51.87	58.23
	N2	19.81	1.24	20.09	1.36	1.74	2.41	5.45	7.01
	N2O	23.78	0.92	-	-	-	-	23.78	27.48
	CH4	1.36	0.07	0.35	0.04	0.20	0.35	1.36	1.63
	NH3	5.45	0.59	2.41	0.17	1.74	2.41	5.45	7.01
4		100.00		75.09					

SX-106					
	H2				N2O
	43.6717		-	50.8674	-
	49.5979		1.0000	I110:N113	-
	51.8691		1.0000		23.7835
	58.2261		-		27.4795
		114	SX-106 H2	50.8674	1
retainedGasCompositionNH3	0.6000				114
retainedGasCompositionN2	53.7300	MEAN	SX-106 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	SX-106 H2	2.9926	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Tank and Sample (or AX-101-9D-5		high salt range mean	high salt range std dev	low salt range mean	low salt range std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	60.10	1.81	63.98	1.90	52.88	60.10	63.98	71.59
	N2	16.77	0.89	17.99	0.91	13.23	16.77	17.99	21.64
	N2O	10.85	0.34	-	-	-	-	10.85	12.20
	CH4	3.97	0.21	3.29	0.13	2.78	3.29	3.97	4.79
	NH3	8.30	0.66	4.30	0.32	3.02	4.30	8.30	10.89

AX-101					
	H2				N2O
	52.8775		-	62.1605	-
	60.1029		1.0000	I123:N126	-
	63.9622		1.0000		10.8512
	71.5947		-		12.2019
		127	AX-101 H2	62.1605	1

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

retainedGasCompositionNH3	0.6000					127
retainedGasCompositionN2	53.7300	MEAN	AX-101 H2	31.1400		MEAN
headspaceGasRatioCH4	0.2100	STDDEV	AX-101 H2	3.8615		STDDEV
headspaceGasRatioN2O	0.1300					MEAN STDDEV

5	100.00	88.80

Tank and Sample (or S-102 tank avg)		high salt range mean	high salt range std dev	low salt range mean	low salt range std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	33.08	1.05	34.94	1.04	28.86	33.08	34.94	39.10
	N2	31.99	1.41	33.00	1.51	28.35	31.99	33.00	39.06
	N2O	33.03	1.04	30.96	0.98	27.14	30.96	33.03	37.18
	CH4	0.81	0.05	0.50	0.02	0.42	0.50	0.81	1.00
	NH3	1.10	0.14	0.80	0.07	0.33	0.80	1.10	1.64

S-102 H2			N2O
28.8610	-	33.9988	27.1357
33.0760	1.0000	I136:N139	30.9687
34.9445	1.0000		33.0252
39.1030	-		37.1824
	140 S-102 H2	33.9988	

6	100.00	99.30

retainedGasCompositionNH3	0.6000					140
retainedGasCompositionN2	53.7300	MEAN	0 S-102 H2	31.1400		MEAN
headspaceGasRatioCH4	0.2100	STDDEV	0 S-102 H2	2.1742		STDDEV
headspaceGasRatioN2O	0.1300					MEAN STDDEV

Tank and Sample (or S-111 solids		high salt range mean	high salt range std dev	low salt range mean	low salt range std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	66.90	3.21	66.95	3.65	53.08	66.90	66.95	81.55
	N2	21.04	1.91	21.94	1.92	13.40	21.04	21.94	29.81
	N2O	11.05	0.59	9.63	0.49	7.68	9.63	11.05	13.39
	CH4	0.91	0.07	-	-	-	-	0.91	1.17
	NH3	1.10	0.13	0.80	0.07	0.34	0.80	1.10	1.64

S-111 H2			N2O
53.0769	-	67.0058	7.6752
65.8981	1.0000	I149:N152	9.6339
68.9453	1.0000		11.0479
81.5507	-		13.3921
	153 S-111 H2	67.0058	

7	100.00	80.10

retainedGasCompositionNH3	0.6000					153
retainedGasCompositionN2	53.7300	MEAN	3 S-111 H2	31.1400		MEAN
headspaceGasRatioCH4	0.2100	STDDEV	3 S-111 H2	5.8283		STDDEV

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

headspaceGasRatioN2O 0.1300 MEAN STDDEV

Tank and Sample (or U-109 tank ave)		high salt range mean	high salt range std dev	low salt range mean	low salt range std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	24.75	1.04	25.14	1.08	20.59	24.75	25.14	30.47
	N2	45.05	2.69	48.28	2.78	0.33	0.80	1.18	1.85
	N2O	26.73	1.17	24.07	1.05	19.86	24.07	26.73	31.40
	CH4	1.68	0.11	0.80	0.03	0.67	0.80	1.68	2.13
	NH3	1.18	0.17	0.84	0.07	0.33	0.80	1.18	1.85
8		100.00		99.40					

U-109

H2			N2O
20.5904	-	25.4975	19.8594
24.7512	1.0000	I162:N165	24.0882
26.1374	1.0000		26.7349
30.4683	-		31.4044
	166 U-109 H2	25.4975	

retainedGasCompositionNH3	0.8000				166
retainedGasCompositionN2	53.7300	MEAN	6 U-109 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	6 U-109 H2	1.9986	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Tank and Sample (or SY-101 ave)		high salt range mean	high salt range std dev	low salt range mean	low salt range std dev	assumptions low	mean1	mean2	high
Mole Percent of Constituent in Bubbles	H2	31.29	2.17	30.86	2.32	22.61	31.29	36.86	46.13
	N2	31.88	2.62	39.83	3.26	21.58	31.88	39.83	53.26
	N2O	21.92	1.60	17.48	1.06	13.24	17.48	21.92	28.31
	CH4	3.21	0.30	0.98	0.10	0.58	0.98	3.21	4.41
	NH3	11.70	1.06	4.88	0.41	3.21	4.88	11.70	15.95
9		100.00		99.40					

SY-101

H2			N2O
22.6097	-	34.2531	13.2448
31.2949	1.0000	H75:N178	17.4790
36.8613	1.0000		21.9224
46.1337	-		28.3075
	179 SY-101 H2	34.2531	1

retainedGasCompositionNH3	0.8000				179
retainedGasCompositionN2	53.7300	MEAN	SY-101 H2	31.1400	MEAN
headspaceGasRatioCH4	0.2100	STDDEV	SY-101 H2	5.1338	STDDEV
headspaceGasRatioN2O	0.1300				MEAN STDDEV

Forecasts

1 AW-101	NH3	AW-101 NH3	AW-101 sol	31.6576
2 A-101	NH3	A-101 NH3	A-101 uppe	50.6499
3 AN-105	NH3	AN-105 NH3	AN-105 soli	60.8674

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

Mole Percent of Constituent in Bubbles

4 AN-104	NH3	AN-104 NH3	AN-104 soll	45.6702	
5 AN-103	NH3	AN-103 NH3	AN-103 soll	61.1273	
6 U-103	NH3	U-103 NH3	U-103 solid	23.4174	
7 S-106	NH3	S-106 NH3	S-106 solid	63.8400	
8 BY-109	NH3	BY-109 NH3	BY-109 bet	49.4537	
9 SX-106	NH3	SX-106 NH3	SX-106 soll	50.8674	
10 AX-101	NH3	AX-101 NH3	AX-101-8D	62.1605	
11 S-102	NH3	S-102 NH3	S-102 tank	33.9988	
12 S-114	NH3	S-114 NH3	S-114 solid	67.0058	
13 U-109	NH3	U-109 NH3	U-109 tank	25.4975	
14 SY-101	NH3	SY-101 NH3	SY-101 ave	34.2531	
		Min -		Min -	
		Max 81.5507		Max 41.9594	
			Min	23.4174	
			Max	67.0058	

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

			CH4				NH3				N2								H2
															Row ==>		12 O		
	-	5.7387	8.4884		-	8.5670	-		-	0.5141							Trials		1000
	1.0000	P8:R11	8.2566		1.0000	T8:V11	-		1.0000	X8:Z11							Mean		31.5657
	1.0000		8.9037		1.0000		0.5686		1.0000								Median		31.5002
	-		10.6298		-		0.9736		-								Mode		---
	2 AW-101 N2O	5.7387			12 AW-101 CH4	8.5670			12 AW-101 NH3	0.5141			12 AW-101 N2	53.5226			Standard D		2.3991
	W-101 R_N2O	0.1249			12 R_CH4	0.2130											Variance		5.7556
	12 AW-101 N2(	6.0600		MEAN	12 AW-101 CH4	8.4700		MEAN	12 AW-101 I	0.6000		MEAN	12 AW-101	53.7300			Skewness		0.04
	12 AW-101 N2(	0.9980		STDDEV	12 AW-101 CH4	0.8462		STDDEV	12 AW-101 I	0.0999		STDDEV	12 AW-101	2.7074			Kurtosis		2.29
	W-101 R_N2O	0.1256		MEAN	12 R_CH4	0.2136											Coeff. of V		0.08
	W-101 R_N2O	0.0205		STDDEV	12 R_CH4	0.0210											Range Min		28.1555
																	Range Ma		37.1098
			CH4				NH3				N2				Row ==>		24 O		
	-	5.5689	-		-	4.0991	-		-	2.0514							Trials		1000
	1.0000	P20:R23	-		1.0000	T20:V23	-		1.0000	X20:Z23							Mean		71.4838
	1.0000	P17:R20	1.5010		1.0000	T17:V20	2.4896		1.0000	X17:Z20							Median		71.4515
	-		1.7257		-		3.6847		-								Mode		---
	24 A-101 N2O	5.5689			24 A-101 CH4	4.0991			24 A-101 NH3	2.0514			24 A-101 N2	37.6307			Standard D		2.2719
	A-101 R_N2O	0.0923			24 R_CH4	0.0749											Variance		5.1614
	24 A-101 N2O	6.0600		MEAN	24 A-101 CH4	8.4700		MEAN	24 A-101 NH	0.6000		MEAN	24 A-101 N	53.7300			Skewness		0.06
	24 A-101 N2O	0.4097		STDDEV	24 A-101 CH4	0.0552		STDDEV	24 A-101 NH	0.2953		STDDEV	24 A-101 N	2.3255			Kurtosis		2.98
	A-101 R_N2O	0.1300		MEAN	24 R_CH4	0.2100											Coeff. of V		0.03
	A-101 R_N2O	0.0053		STDDEV	24 R_CH4	0.0010											Range Min		64.3838
																	Range Ma		78.1475
			CH4				NH3				N2				Row ==>		36 O		
	-	12.6131	0.6049		-	1.3702	-		-	1.2940							Trials		1000
	1.0000	P32:R35	0.9979		1.0000	T32:V35	-		1.0000	X32:Z35							Mean		60.8886
	1.0000	P25:R28	1.7623		1.0000	T25:V28	0.4992		1.0000	X25:Z28							Median		60.9210
	-		2.1197		-		0.7580		-								Mode		---

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36 AN-105 N2O	12.6131			36 AN-105 CH4	1.3702			36 AN-105 NH3	1.2940			36 AN-105 N2	23.8553		Standard D	3.3698
AN-105 R_N2O	0.1685			36 R_CH4	0.0220										Variance	11.3556
36 AN-105 N2C	8.0600		MEAN	36 AN-105 CH4	8.4700		MEAN	36 AN-105 N	0.6000		MEAN	36 AN-105	53.7300		Skewness	-0.03
36 AN-105 N2C	1.4296		STDDEV	36 AN-105 CH4	0.3469		STDDEV	36 AN-105 N	0.0649		STDDEV	36 AN-105	3.6349		Kurtosis	2.34
AN-105 R_N2O	0.1300		MEAN	36 R_CH4	0.2100										Coeff. of V	0.06
AN-105 R_N2O	0.0178		STDDEV	36 R_CH4	0.0056										Range Min	52.7813
															Range Ma	58.7882

		CH4				NH3				N2				Row ==>	49 O
-	21.5408	1.3185		-	2.8060	-		-	2.5263						Trials 1000
1.0000	P45:R48	2.3378		1.0000	T45:V48	-		1.0000	X45:Z48						Mean 45.5967
1.0000	P34:R37	3.3131		1.0000	T34:V37	0.8840		1.0000	X34:Z37						Median 45.7040
-		4.2657		-		1.4119		-							Mode —
49 AN-104 N2O	21.5408			49 AN-104 CH4	2.8060			49 AN-104 NH3	2.5263			49 AN-104 N2	27.4568		Standard D	4.3661
AN-104 R_N2O	0.3077			49 R_CH4	0.0579										Variance	19.0632
49 AN-104 N2C	6.0600		MEAN	49 AN-104 CH4	8.4700		MEAN	49 AN-104 N	0.6000		MEAN	49 AN-104	53.7300		Skewness	-0.06
49 AN-104 N2C	2.4500		STDDEV	49 AN-104 CH4	0.6511		STDDEV	49 AN-104 N	0.1337		STDDEV	49 AN-104	4.9184		Kurtosis	2.35
AN-104 R_N2O	0.1300		MEAN	49 R_CH4	0.2100										Coeff. of V	0.10
AN-104 R_N2O	0.0321		STDDEV	49 R_CH4	0.0139										Range Min	35.6334
															Range Ma	56.1041

		CH4				NH3				N2				Row ==>	62 O
-	3.7665	1.2522		-	5.7850	-		-	6.7396						Trials 1000
1.0000	P58:R61	1.6156		1.0000	T58:V61	-		1.0000	X58:Z61						Mean 61.1509
1.0000	P43:R46	9.2563		1.0000	T43:V46	0.5967		1.0000	X43:Z46						Median 61.1759
-		10.9624		-		0.8550		-							Mode —
62 AN-103 N2O	3.7665			62 AN-103 CH4	5.7850			62 AN-103 NH3	6.7396			62 AN-103 N2	22.5816		Standard D	4.3860
AN-103 R_N2O	0.0533			62 R_CH4	0.0865										Variance	19.2373

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62 AN-103 N2C	6.0600	MEAN	62 AN-103 CH4	8.4700	MEAN	62 AN-103 N	0.6000	MEAN	62 AN-103	53.7300		Skewness	0.01
62 AN-103 N2C	0.4416	STDDEV	62 AN-103 CH4	2.5736	STDDEV	62 AN-103 N	0.0861	STDDEV	62 AN-103	5.1532		Kurtosis	2.40
AN-103 R_N2O	0.1300	MEAN	62 R_CH4	0.2100								Coeff. of V:	0.07
AN-103 R_N2O	0.0071	STDDEV	62 R_CH4	0.0356								Range Min	50.5034
												Range Max	71.3726

		CH4			NH3			N2			Row ==>	75 O	
-	37.8475	0.8314	-	1.4322	0.2313	-	0.5892					Trials	1000
1.0000	P71:R74	1.0576	1.0000	T71:V74	0.4944	1.0000	X71:Z74					Mean	23.4438
1.0000	P52:R55	1.7817	1.0000	T52:V55	0.5947	1.0000	X52:Z55					Median	23.4259
-		2.0642	-		1.0001	-						Mode	—
75 U-103 N2O	37.8475		75 U-103 CH4	1.4322		75 U-103 NH3	0.5892		75 U-103 N2	36.7136		Standard D	1.0217
5 U-103 R_N2O	0.6037		75 R_CH4	0.0576								Variance	1.0438
75 U-103 N2O	6.0600	MEAN	75 U-103 CH4	8.4700	MEAN	75 U-103 NH	0.6000	MEAN	75 U-103 N	53.7300		Skewness	0.03
75 U-103 N2O	1.7223	STDDEV	75 U-103 CH4	0.2897	STDDEV	75 U-103 NH	0.1560	STDDEV	75 U-103 N	2.0176		Kurtosis	2.32
U-103 R_N2O	0.1300	MEAN	75 R_CH4	0.2100								Coeff. of V:	0.04
U-103 R_N2O	0.0152	STDDEV	75 R_CH4	0.0111								Range Min	21.1146
												Range Max	25.8652

		CH4			NH3			N2			Row ==>	88 O	
-	9.7700	-	-	0.8721	-	-	0.2866					Trials	1000
1.0000	P84:R87	0.4110	1.0000	T84:V87	-	1.0000	X84:Z87					Mean	63.8677
1.0000	P62:R65	1.2588	1.0000	T62:V65	0.2982	1.0000	X62:Z65					Median	63.8747
-		1.8019	-		0.5615	-						Mode	—
88 S-106 N2O	9.7700		88 S-106 CH4	0.8721		88 S-106 NH3	0.2866		88 S-106 N2	25.2314		Standard D	3.6360
8 S-106 R_N2O	0.1312		88 R_CH4	0.0135								Variance	13.2203
88 S-106 N2O	6.0600	MEAN	88 S-106 CH4	8.4700	MEAN	88 S-106 NH	0.6000	MEAN	88 S-106 N	53.7300		Skewness	0.03
88 S-106 N2O	1.1464	STDDEV	88 S-106 CH4	0.4001	STDDEV	88 S-106 NH	0.0673	STDDEV	88 S-106 N	3.7891		Kurtosis	2.34
S-106 R_N2O	0.1300	MEAN	88 R_CH4	0.2100								Coeff. of V:	0.06
S-106 R_N2O	0.0150	STDDEV	88 R_CH4	0.0062								Range Min	55.4556

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														Range Max	72.6088
		CH4				NH3				N2			Row ==>	101 O	
-	16.8814	1.3998	-	4.6200		-	-	0.1711						Trials	1000
1.0000	P97:R100	1.8340	1.0000	T97:V100		-	1.0000	X97:Z100						Mean	49.4113
1.0000		7.0301	1.0000			0.1900	1.0000							Median	49.2762
-		6.1845	-			0.3232	-							Mode	—
01 BY-109 N2O	16.8814		101 BY-109 CH4	4.6200			101 BY-109 NH3	0.1711			101 BY-109 N2	29.0738		Standard D	3.7146
BY-109 R_N2O	0.2358		101 R_CH4	0.0854										Variance	13.7982
101 BY-109 N2	6.0600	MEAN	101 BY-109 CH4	8.4700		MEAN	101 BY-109	0.6000		MEAN	101 BY-10	53.7300		Skewness	-0.01
101 BY-109 N2	1.5678	STDDEV	101 BY-109 CH4	1.7919		STDDEV	101 BY-109	0.0338		STDDEV	101 BY-10	4.4366		Kurtosis	2.26
BY-109 R_N2O	0.1300	MEAN	101 R_CH4	0.2100										Coeff. of V	0.08
BY-109 R_N2O	0.0213	STDDEV	101 R_CH4	0.0313										Range Min	40.8163
														Range Max	58.0221

		CH4				NH3				N2			Row ==>	114 O	
-	4.1514	0.2028	-	0.8869		1.7367	-	4.1894						Trials	1000
1.0000	P110:R113	0.3521	1.0000	T110:V113		2.4065	1.0000	X110:Z113						Mean	50.89347
1.0000		1.3610	1.0000			5.4454	1.0000							Median	50.75708
-		1.8250	-			7.0089	-							Mode	—
14 SX-106 N2O	4.1514		114 SX-106 CH4	0.8869			114 SX-106 NH3	4.1894			114 SX-106 N2	39.9249		Standard D	2.992561
SX-106 R_N2O	0.0743		114 R_CH4	0.0171										Variance	8.955424
114 SX-106 N2	6.0600	MEAN	114 SX-106 CH4	8.4700		MEAN	114 SX-106	0.6000		MEAN	114 SX-10	53.7300		Skewness	0.089372
114 SX-106 N2	0.9292	STDDEV	114 SX-106 CH4	0.3585		STDDEV	114 SX-106	1.2553		STDDEV	114 SX-10	3.4482		Kurtosis	2.257485
SX-106 R_N2O	0.1300	MEAN	114 R_CH4	0.2100										Coeff. of V	0.0588
SX-106 R_N2O	0.0150	STDDEV	114 R_CH4	0.0069										Range Min	43.90172
														Range Max	57.8058

		CH4				NH3				N2			Row ==>	127 O	
-	7.6844	2.7798	-	3.7220		3.0191	-	6.6846						Trials	1000
1.0000	P123:R126	3.2923	1.0000	T123:V126		4.3011	1.0000	X123:Z126						Mean	62.1478
1.0000		3.9701	1.0000			8.3042	1.0000							Median	62.0682
-		4.7941	-			10.8920	-							Mode	—
27 AX-101 N2O	7.6844		127 AX-101 CH4	3.7220			127 AX-101 NH3	6.6846			127 AX-101 N2	19.7686		Standard D	3.8615

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AX-101 R_N2O	0.1045			127 R_CH4	0.0565								
127 AX-101 N2	6.0600	MEAN	127 AX-101 CH4		8.4700	MEAN	127 AX-101		0.6000	MEAN	127 AX-101		53.7300
127 AX-101 N2	0.3294	STDDEV	127 AX-101 CH4		0.4351	STDDEV	127 AX-101		1.7692	STDDEV	127 AX-101		4.2841
AX-101 R_N2O	0.1300	MEAN	127 R_CH4		0.2100								
AX-101 R_N2O	0.0060	STDDEV	127 R_CH4		0.0073								

Variance	14.9112
Skewness	0.06
Kurtosis	2.25
Coeff. of V	0.06
Range Min	53.4810
Range Max	71.3259

		CH4				NH3				N2			
-	32.0935	0.4201		-	0.6853	0.3326		-	0.9282				
1.0000	P136:R139	0.4987		1.0000	T136:V139	0.5978		1.0000	X136:Z139				
1.0000		0.8095		1.0000		1.1005		1.0000					
-		1.0013		-		1.6408		-					
140 S-102 N2O	32.0935		140 S-102 CH4		0.6853		140 S-102 NH3		0.9282		140 S-102 N2		32.2943
0 S-102 R_N2O	0.4806			140 R_CH4	0.0198								
140 S-102 N2C	6.0600	MEAN	140 S-102 CH4		8.4700	MEAN	140 S-102 N		0.6000	MEAN	140 S-102 I		53.7300
140 S-102 N2C	2.0580	STDDEV	140 S-102 CH4		0.1340	STDDEV	140 S-102 N		0.2880	STDDEV	140 S-102 I		3.0736
) S-102 R_N2O	0.1300	MEAN	140 R_CH4		0.2100								
) S-102 R_N2O	0.0220	STDDEV	140 R_CH4		0.0040								

Row ==>	140 O												
Trials	1000												
Mean	33.9914												
Median	34.0062												
Mode	---												
Standard D	2.1742												
Variance	4.7272												
Skewness	-0.01												
Kurtosis	2.31												
Coeff. of V	0.06												
Range Min	29.1613												
Range Max	38.8988												

		CH4				NH3				N2			
-	10.4567	-		-	0.6959	0.3403		-	0.9292				
1.0000	P149:R152	-		1.0000	T149:V152	0.6014		1.0000	X149:Z152				
1.0000		0.9133		1.0000		1.0986		1.0000					
-		1.1744		-		1.6356		-					
153 S-111 N2O	10.4567		153 S-111 CH4		0.6959		153 S-111 NH3		0.9292		153 S-111 N2		20.9124
3 S-111 R_N2O	0.1338			153 R_CH4	0.0103								
153 S-111 N2C	6.0600	MEAN	153 S-111 CH4		8.4700	MEAN	153 S-111 N		0.6000	MEAN	153 S-111 I		53.7300
153 S-111 N2C	1.1898	STDDEV	153 S-111 CH4		0.0647	STDDEV	153 S-111 N		0.2852	STDDEV	153 S-111 I		5.9532

Row ==>	153 O												
Trials	1000												
Mean	66.7076												
Median	66.5125												
Mode	---												
Standard D	5.8283												
Variance	33.9686												
Skewness	0.09												
Kurtosis	2.45												

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3 S-111 R_N2O	0.1300		MEAN	153 R_CH4	0.2100							Coeff. of V:	0.09
3 S-111 R_N2O	0.0167		STDDEV	153 R_CH4	0.0016							Range Min	53.2953
												Range Ma	81.0810
		CH4				NH3			N2			Row ==>	166 O
-	25.5407	0.6665		-	1.3270	0.3331		-	1.0064			Trials	1000
1.0000	P162:R165	0.8050		1.0000	T162:V165	0.6007		1.0000	X162:Z165			Mean	25.3635
1.0000		1.6758		1.0000		1.1634		1.0000				Median	25.3495
-		2.1337		-		1.8493		-				Mode	—
166 U-109 N2O	25.5407			166 U-109 CH4	1.3270			166 U-109 NH3	1.0064		166 U-109 N2	46.6283	Standard D	1.9986
5 U-109 R_N2O	0.4877			166 R_CH4	0.0495							Variance	3.9945
166 U-109 N2C	6.0600		MEAN	166 U-109 CH4	8.4700	MEAN		166 U-109 N	0.6000	MEAN	166 U-109	53.7300	Skewness	0.01
166 U-109 N2C	2.4395		STDDEV	166 U-109 CH4	0.3575	STDDEV		166 U-109 N	0.3279	STDDEV	166 U-109	3.1853	Kurtosis	2.36
3 U-109 R_N2O	0.1300		MEAN	166 R_CH4	0.2100							Coeff. of V:	0.06
1 U-109 R_N2O	0.0306		STDDEV	166 R_CH4	0.0133							Range Min	20.8141
												Range Ma	30.1725
		CH4				NH3			N2			Row ==>	179 O
-	20.3360	0.5877		-	2.3158	3.2059		-	8.9931			Trials	1000
1.0000	P175:R178	0.9847		1.0000	T175:V178	4.8567		1.0000	X175:Z178			Mean	34.1341
1.0000		3.2083		1.0000		11.6990		1.0000				Median	34.1906
-		4.4115		-		15.9497		-				Mode	—
79 SY-101 N2O	20.3360			179 SY-101 CH4	2.3158			179 SY-101 NH3	8.9931		179 SY-101 N2	34.1020	Standard D	5.1338
SY-101 R_N2O	0.3574			179 R_CH4	0.0833							Variance	26.3559
179 SY-101 N2	6.0600		MEAN	179 SY-101 CH4	8.4700	MEAN		179 SY-101	0.6000	MEAN	179 SY-101	53.7300	Skewness	0.04
179 SY-101 N2	3.2064		STDDEV	179 SY-101 CH4	0.9013	STDDEV		179 SY-101	2.9869	STDDEV	179 SY-101	6.7839	Kurtosis	2.25
SY-101 R_N2O	0.1300		MEAN	179 R_CH4	0.2100							Coeff. of V:	0.15
SY-101 R_N2O	0.0491		STDDEV	179 R_CH4	0.0257							Range Min	22.9031
												Range Ma	45.6397
AW-101 solids	5.7387			AW-101 solids CI	8.5870			AW-101 NH	0.5141				
A-101 upper N	5.5689			A-101 upper CH4	4.0991			A-101 NH3	2.0514				
AN-105 solids I	12.8131			AN-105 solids CI	1.3702			AN-105 NH3	1.2940				

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AN-104 solids N	21.5408		AN-104 solids CH	2.8060		AN-104 NH3	2.5263	
AN-103 solids N	3.7665		AN-103 solids CH	5.7850		AN-103 NH3	6.7396	
U-103 solids N2	37.8476		U-103 solids CH4	1.4322		U-103 NH3	0.5892	
S-106 solids N2	9.7700		S-106 solids CH4	0.8721		S-106 NH3	0.2856	
BY-109 behigh	16.5814		BY-109 behigh sa	4.6200		BY-109 NH3	0.1711	
SX-106 solids N	4.1514		SX-106 solids CH	0.8869		SX-106 NH3	4.1694	
AX-101-9D-8 N	7.6844		AX-101-9D-8 CH4	3.7220		AX-101 NH3	6.6646	
S-102 tank avg	32.0935		S-102 tank avg. C	0.6853		S-102 NH3	0.9282	
S-114 solids N2	10.4567		S-114 solids CH4	0.8959		S-114 NH3	0.9292	
U-109 tank avg	25.5407		U-109 tank avg. C	1.3270		U-109 NH3	1.0064	
SY-101 ave N2	20.3360		SY-101 ave CH4	2.3158		SY-101 NH3	8.9931	
	Min	-		Min	-			
	Max	10.9624		Max	15.9497			
Min	3.7665		Min	0.6853		Min	0.1711	
Max	37.8476		Max	8.5870		Max	8.9931	

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	N2)	CH4	NH3	N2		R_N2O	R_CH4
S	W	AA	AE		13 S	W	
	1000	1000	1000	1000		1000	1000
	5.7806	8.5528	0.5706	53.5503		0.1256	0.2136
	5.8013	8.5615	0.5753	53.5713		0.1256	0.2136
	—	—	—	—		—	—
	0.9980	0.8482	0.0999	2.7074		0.0205	0.0210
	0.9980	0.7160	0.0100	7.3298		0.0004	0.0004
	-0.01	-0.01	0.01	0.00		0.02	0.07
	1.90	2.37	3.07	2.59		2.10	2.63
	0.17	0.10	0.16	0.05		0.16	0.10
	3.8339	6.5431	0.2715	45.4532		0.0779	0.1565
	7.9000	10.5557	0.9587	62.0123		0.1739	0.2751
S	W	AA	AE		25 S	W	
	1000	1000	1000	1000		########	1000
	5.5769	1.5018	2.4569	19.0006		0.071038	0.020601
	5.5857	1.5047	2.4429	19.0320		0.071142	0.020606
	—	—	—	—		—	—
	0.4097	0.0552	0.2953	2.3255		0.005261	0.000975
	0.1878	0.0030	0.0872	5.4081		2.77E-05	9.5E-07
	-0.02	-0.08	0.03	-0.05		0.030571	-0.045602
	2.27	2.84	3.28	3.06		2.509441	2.875621
	0.07	0.04	0.12	0.12		0.074061	0.047322
	4.6557	1.3021	1.2415	11.3516		0.057656	0.017668
	6.5122	1.6906	3.3466	26.5940		0.084372	0.023642
S	W	AA	AE		37 S	W	
	1000	1000	1000	1000		1000	1000
	12.6562	1.3838	0.5001	24.5713		0.16897	0.02226
	12.6099	1.4048	0.4980	24.4745		0.168367	0.022398
	—	—	—	—		—	—

Tank	Gas	Mean	Std Dev	Min	Max	Type
AW-101	N2	53.5503	2.7074	45.4532	62.0123	Normal
AW-101	NH3	0.5706	0.0999	0.2715	0.9587	Normal
AW-101	N2O Ratio	0.1256	0.0205	0.0779	0.1739	Normal
AW-101	CH4 Ratio	0.2136	0.0210	0.1565	0.2751	Normal
A-101	N2	19.0006	2.3255	11.3516	26.5940	Normal
A-101	NH3	2.4569	0.2953	1.2415	3.3466	Normal
A-101	N2O Ratio	0.0710	0.0053	0.0577	0.0844	Normal
A-101	CH4 Ratio	0.0206	0.0010	0.0177	0.0236	Normal
AN-105	N2	24.5713	3.6349	14.1864	34.3390	Normal
AN-105	NH3	0.5001	0.0849	0.3029	0.7618	Normal
AN-105	N2O Ratio	0.1690	0.0178	0.1246	0.2198	Normal
AN-105	CH4 Ratio	0.0223	0.0056	0.0108	0.0359	Normal

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

1.4296	0.3469	0.0649	3.6349	0.017801	0.005617
2.0437	0.1203	0.0042	13.2122	0.000317	3.16E-05
0.07	-0.11	0.12	0.05	0.062049	-0.052725
2.15	2.00	3.04	2.70	2.425953	2.070183
0.11	0.25	0.13	0.15	0.105352	0.252341
9.6383	0.6186	0.3029	14.1684	0.124604	0.010841
15.7712	2.0868	0.7618	34.3390	0.219849	0.035699

S	W	AA	AE	50 S	W
1000	1000	1000	1000	1000	1000
21.5176	2.8291	0.8820	29.1727	0.308064	0.056752
21.4626	2.8698	0.8861	29.0970	0.307336	0.059095
—	—	—	—	—	—
2.4500	0.6511	0.1337	4.9184	0.032057	0.013932
6.0023	0.4240	0.0179	24.1907	0.001028	0.000194
0.09	-0.08	-0.07	0.02	0.130719	0.017435
2.33	2.17	2.98	2.63	2.709604	2.34522
0.11	0.23	0.15	0.17	0.10406	0.237128
16.0419	1.3793	0.3767	14.3337	0.223149	0.026568
27.3782	4.2057	1.2932	41.4358	0.401107	0.0987

AN-104	N2	29.1727	4.9184	14.3337	41.4358	Normal
AN-104	NH3	0.8820	0.1337	0.3767	1.2932	Normal
AN-104	N2O Ratio	0.3081	0.0321	0.2231	0.4011	Normal
AN-104	CH4 Ratio	0.0588	0.0139	0.0266	0.0987	Normal

S	W	AA	AE	63 S	W
1000	1000	1000	1000	1000	1000
3.7613	5.8310	0.5966	28.6602	0.053411	0.086029
3.7417	5.8219	0.5978	28.5760	0.053069	0.087424
—	—	—	—	—	—
0.4416	2.5736	0.0661	5.1532	0.007096	0.035624
0.1950	6.6235	0.0044	26.5559	5.04E-05	0.001269

AN-103	N2	28.6602	5.1532	14.9119	42.8042	Normal
AN-103	NH3	0.5966	0.0661	0.4003	0.7819	Normal
AN-103	N2O Ratio	0.0634	0.0071	0.0374	0.0768	Normal
AN-103	CH4 Ratio	0.0860	0.0356	0.0215	0.1639	Normal

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

0.13	0.01	-0.08	-0.04	0.25907	-0.032474
2.26	1.75	2.83	2.57	2.738004	1.83637
0.12	0.44	0.11	0.18	0.132855	0.414089
2.7635	1.3003	0.4003	14.9119	0.037432	0.021524
4.8238	10.7868	0.7819	42.8042	0.076807	0.163913

S	W	AA	AE	76 S	W
1000	1000	1000	1000	1000	1000
37.8238	1.4250	0.5960	36.7114	0.6032	0.057236
37.8124	1.4164	0.5887	36.7171	0.603535	0.057138
—	—	—	—	—	—
1.7223	0.2897	0.1560	2.0176	0.015214	0.011062
2.9664	0.0839	0.0243	4.0707	0.000231	0.000122
0.01	0.03	0.15	-0.04	-0.002635	0.03366
2.30	1.93	2.33	2.59	2.604428	2.009707
0.05	0.20	0.26	0.05	0.025222	0.193275
33.9731	0.8448	0.2463	30.9455	0.560894	0.03396
41.8525	2.0322	0.9627	42.5608	0.644936	0.062005

U-103	N2	38.7114	2.0176	30.9455	42.5608	Normal
U-103	NH3	0.5960	0.1560	0.2463	0.9627	Normal
U-103	N2O Ratio	0.6032	0.0152	0.5609	0.6449	Normal
U-103	CH4 Ratio	0.0572	0.0111	0.0340	0.0820	Normal

S	W	AA	AE	89 S	W
1000	1000	1000	1000	1000	1000
9.7450	0.8718	0.2968	25.2167	0.130954	0.013483
9.6765	0.8727	0.3006	25.3057	0.130202	0.013615
—	—	—	—	—	—
1.1464	0.4001	0.0673	3.7891	0.01501	0.006204
1.3143	0.1601	0.0045	14.3575	0.000225	3.85E-05
0.11	0.07	-0.06	-0.01	0.140627	0.104516
2.01	2.18	3.03	2.43	2.23079	2.241314
0.12	0.46	0.23	0.15	0.114816	0.460099
7.3941	0.0142	0.0942	15.2492	0.098175	0.000211

S-106	N2	25.2167	3.7891	15.2492	34.9225	Normal
S-106	NH3	0.2968	0.0673	0.0942	0.5200	Normal
S-106	N2O Ratio	0.1310	0.0150	0.0982	0.1695	Normal
S-106	CH4 Ratio	0.0135	0.0062	0.0002	0.0297	Normal

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

12.2462	1.7881	0.5200	34.9225	0.169499	0.029665	
S	W	AA	AE	102 S	W	
1000	1000	1000	1000	1000	1000	
16.6879	4.6650	0.1912	29.0445	0.236212	0.085707	
16.6419	4.7290	0.1902	29.0978	0.236007	0.08591	
—	—	—	—	—	—	
1.5678	1.7919	0.0338	4.4366	0.021337	0.031271	
2.4581	3.2109	0.0011	18.8835	0.000455	0.000978	
0.07	-0.01	0.06	-0.03	0.047368	-0.00373	
2.40	1.82	3.00	2.69	2.740707	1.925684	
0.09	0.38	0.18	0.15	0.090331	0.364864	
13.0703	1.4917	0.0612	16.6779	0.178078	0.027751	
20.3392	8.1345	0.3206	42.3766	0.30608	0.160699	
S	W	AA	AE	115 S	W	
1000	1000	1000	1000	1000	1000	
23.81928	0.88216	4.202221	20.20287	0.315482	0.017059	
23.81457	0.860751	4.197705	20.24646	0.315041	0.018474	
—	—	—	—	—	—	
0.929249	0.358488	1.2553	3.446216	0.015031	0.00695	
0.863503	0.128513	1.575779	11.87641	0.000226	4.83E-05	
0.119374	0.089557	0.025571	-0.130026	0.1494	0.140778	
3.26284	1.846724	1.978149	2.482026	2.607714	1.939413	
0.039012	0.406375	0.298723	0.17058	0.047643	0.407385	
20.45172	0.239585	1.789907	10.19791	0.275264	0.004601	
27.17027	1.594964	6.804736	29.55066	0.360008	0.033974	
S	W	AA	AE	128 S	W	
1000	1000	1000	1000	1000	1000	
10.8483	3.7365	6.5851	18.8825	0.14172	0.056888	
10.8489	3.7218	6.6081	16.8103	0.141378	0.056377	
—	—	—	—	—	—	
0.3294	0.4351	1.7692	4.2841	0.00604	0.00726	

BY-109	N2	29.0445	4.4366	16.6779	42.3766	Normal
BY-109	NH3	0.1912	0.0338	0.0612	0.3206	Normal
BY-109	N2O Ratio	0.2362	0.0213	0.1761	0.3051	Normal
BY-109	CH4 Ratio	0.0857	0.0313	0.0276	0.1609	Normal
SX-106	N2	20.2029	3.4462	10.1979	29.5507	Normal
SX-106	NH3	4.2022	1.2553	1.7899	6.8047	Normal
SX-106	N2O Ratio	0.3155	0.0150	0.2753	0.3600	Normal
SX-106	CH4 Ratio	0.0171	0.0069	0.0046	0.0340	Normal
AX-101	N2	18.8825	4.2841	4.6480	27.3917	Normal
AX-101	NH3	6.5851	1.7692	3.0843	10.7840	Normal
AX-101	N2O Ratio	0.1417	0.0080	0.1219	0.1633	Normal
AX-101	CH4 Ratio	0.0569	0.0073	0.0402	0.0764	Normal

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

0.1085	0.1893	3.1300	18.3533	6.48E-05	5.27E-05
-0.02	0.10	0.08	-0.10	0.1553	0.152108
2.87	2.12	2.11	2.48	2.413915	2.292104
0.03	0.12	0.27	0.26	0.056732	0.127623
9.9324	2.8278	3.0943	4.6480	0.121908	0.040166
11.9319	4.7405	10.7840	27.3917	0.163298	0.078391

S	W	AA	AE	141 S	W
1000	1000	1000	1000	1000	1000
32.1436	0.6872	0.9317	32.2461	0.481049	0.019883
32.1775	0.6856	0.9216	32.1659	0.480987	0.019694
—	—	—	—	—	—
2.0580	0.1340	0.2680	3.0736	0.022026	0.004036
4.2354	0.0180	0.0830	9.4468	0.000485	1.63E-05
0.03	0.11	0.17	0.00	0.087397	0.219662
2.33	2.04	2.15	2.60	2.74117	2.165423
0.06	0.20	0.31	0.10	0.045788	0.202997
27.4178	0.4271	0.3470	23.9737	0.413829	0.011642
37.0568	0.9930	1.6237	40.7194	0.548543	0.030686

S	W	AA	AE	154 S	W
1000	1000	1000	1000	1000	1000
10.4610	0.9128	0.9287	20.9901	0.134526	0.0136
10.4608	0.9136	0.9043	21.1214	0.134671	0.013492
—	—	—	—	—	—
1.1898	0.0647	0.2652	5.9532	0.016671	0.001556
1.4156	0.0042	0.0813	35.4405	0.000278	2.42E-06
0.03	-0.13	0.19	-0.08	0.13788	0.35688
2.31	3.01	2.17	2.40	2.727512	3.003592

S-102	N2	32.2461	3.0736	23.9737	40.7194	Normal
S-102	NH3	0.9317	0.2680	0.3470	1.6237	Normal
S-102	N2O Ratio	0.4810	0.0220	0.4138	0.5485	Normal
S-102	CH4 Ratio	0.0199	0.0040	0.0116	0.0307	Normal

S-111	N2	20.9901	5.9532	4.5555	34.7510	Normal
S-111	NH3	0.9287	0.2652	0.3545	1.6035	Normal
S-111	N2O Ratio	0.1345	0.0167	0.0924	0.1900	Normal
S-111	CH4 Ratio	0.0136	0.0016	0.0088	0.0192	Normal

"rgs FinalSumTable Rev 1 Tab_6MC 030823 .xls",Tab "4-Gas comp by tanks"

0.11	0.07	0.31	0.26		0.123923	0.114375
7.7837	0.7009	0.3545	4.6555		0.092432	0.009773
13.1623	1.1045	1.6035	34.7510		0.190021	0.019236
S	W	AA	AE	167	S	W
1000	1000	1000	1000		1000	1000
25.5498	1.3026	1.0071	46.7771		0.488936	0.048947
25.5228	1.2787	0.9995	46.8855		0.488142	0.048326
—	—	—	—		—	—
2.4385	0.3575	0.3279	3.1883		0.03062	0.013326
5.9511	0.1278	0.1075	10.1855		0.000936	0.000178
0.04	0.18	0.15	-0.09		-0.014956	0.251231
2.23	1.94	2.18	2.70		2.546964	2.172118
0.10	0.27	0.33	0.07		0.062625	0.272249
20.0417	0.5707	0.3542	36.8539		0.402124	0.023892
31.3397	2.0859	1.8118	56.6181		0.576907	0.087352
S	W	AA	AE	180	S	W
1000	1000	1000	1000		1000	1000
20.4748	2.3443	9.1721	33.8747		0.360501	0.065052
20.4076	2.3458	9.2867	33.8499		0.360514	0.063944
—	—	—	—		—	—
3.2064	0.9013	2.9889	6.7839		0.049085	0.025704
10.2810	0.8124	8.9215	46.0215		0.002409	0.000661
0.11	0.03	0.00	0.00		0.072111	0.260266
2.23	2.00	2.00	2.81		2.700979	2.463738
0.16	0.38	0.33	0.20		0.136158	0.395124
13.3765	0.6343	3.2737	13.3597		0.226125	0.014589
28.0281	4.3541	15.7673	53.3132		0.501277	0.14984

U-109	N2	46.7771	3.1883	36.8539	56.6181	Normal
U-109	NH3	1.0071	0.3279	0.3542	1.8118	Normal
U-109	N2O Ratio	0.4889	0.0306	0.4021	0.5769	Normal
U-109	CH4 Ratio	0.0489	0.0133	0.0239	0.0874	Normal
SY-101	N2	33.8747	6.7839	13.3597	53.3132	Normal
SY-101	NH3	9.1721	2.9889	3.2737	15.7673	Normal
SY-101	N2O Ratio	0.3605	0.0491	0.2261	0.5013	Normal
SY-101	CH4 Ratio	0.0651	0.0257	0.0146	0.1498	Normal

3. Setup Forecasts in Cells in Rows 12, 13,24, 25, 36, 37, 49, 50, 62, 63, 75, 76, 88, 89, 101, 102, 114, 115, 127, 128, 140, 141, 153, 154, 166, 167, 179, 180 and Columns "O", "S", "W", "AA"

   a. Clear any existing forecasts

4. Run Crytal Ball for 1000 trials.

5. Prepare Crystal Ball Report

6. Copy summary statistics from Crystall Ball Report to Colums "AH" through "AO"

   a. Save assumption

7. Final Database distributions for the RGS tanks are given in ROWS "AQ" through "AW"

2.4 CREATE DISTRIBUTIONS FOR NON-RGS TANKS

Create the 4 Distributions Required to Specify the Retained Gas Distributions for Non-RGS Tanks

- Capture 1,000 Data points from each RGS Distribution, then reduce data down to 420 points for each gas including 30 points from each RGS tank
- Determine the default N2 distribution for non-RGS tanks
- Assume that the first 30 data points from the 1000 are random and represent the overall distribution for the tank.

Tab "5 - 'CB05all Tab_5mc RGS Forecast Values 030823 .xls'" (Note this tab is in separate spreadsheet)

Note: This spreadsheet is set up for 1,000 trials with the same variables as given in 'CB05all Tab_5mc RGS Forecast Values 030823.xls'

1. Extract Forecast data from Crystal Ball using the menu items "RUN" "EXTRACT DATA"

2. Open Spredsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' or a copy

3. Copy all extracted data to TAB "All Tab_5mc RGS Forecast Values"

4. On the following TABs copy range 'Q5:Q424' to 'R5:R424' and 'S5:S424' using "Paste Special" "values"

   a. Use TABS "H2", "N2O", "CH4", "NH3" and "N2"

5. On Tab "N2" regress all 420 combined data points for N2 to produce a combined distribution using Crystal Ball

a. Create a distribution using Crystal Ball to fit the data by::

1.) Create Assumption

2.) Select fit Data

3.) Enter range of data, S5:S424

4.) Allow Crystal Ball to fit the data to the regression curves

Reduce the 420 data points for "H2", "N2O", "CH4", "NH3" and the minumum and maximum values from all 16,000 datapoints for each gas to produce continuous Linear Distribution made up of 55 data pairs

Use every 8th data point from the 420 combined points, following numerical sorting of the values, to define 53 of the data pairs.

Use the Minimum and Maximum Data points as the bounding values for the Continuous Linear Distributions

Tab "6- Gas Forecast Data"

1. Copy from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' to this spreadsheet, TAB "6- Gas Forecast Data"

a. For H2 - From Range 'S5:S424 in TAB "H2" to 'b5:b424' using "Paste Special" "values"

b. For N2O - From Range 'S5:S424 in TAB "N2O" to 'k5:k424' using "Paste Special" "values"

c. For CH4 - From Range 'S5:S424 in TAB "CH4" to 't5:t424' using "Paste Special" "values"

d. For NH3 - From Range 'S5:S424 in TAB "NH3" to 'ac5:ac424' using "Paste Special" "values"

2. Sort the raw data as given below

a. For H2 - Sort range a5:c424 with sort keys: 1 -- column C decending; 2 -- column A ascending; 3 -- NONE

b. For N2O - Sort range J5:L424 with sort keys: 1 -- column J decending; 2 -- column L ascending; 3 -- NONE

c. For CH4 - Sort range S5:U424 with sort keys: 1 -- column U decending; 2 -- column S ascending; 3 -- NONE

d. For NH3 - Sort range AB5:AD424 with sort keys: 1 -- column AD decending; 2 -- column AB ascending; 3 -- NONE

3. Sort columns based on mask in colmns to the right of the original data

a. For H2 -

1.) Copy range B5:B57 to range D7:D59

2.) Copy H2 minumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O39' in TAB H2 to this spreadsheet in TAB "6- Gas Forecast Data" cell 'D6'

3.) Copy H2 maxumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O40' in TAB H2 to this spreadsheet in TAB "6- Gas Forecast Data" cell 'D60'

b. For N2O -

1.) Copy range K5:K57 to range M7:M59

2.) Copy N2O minumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O39' in TAB N2O to this spreadsheet in TAB "6- Gas Forecast Data" cell 'M6'

3.) Copy N2O maxumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O40' in TAB N2O to this spreadsheet in TAB "6- Gas Forecast Data" cell 'M60'

c. For CH4 -

1.) Copy range T5:T57 to range V7:V59

2.) Copy CH4 minumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O39' in TAB CH4 to this spreadsheet in TAB "6- Gas Forecast Data" cell 'V6'

3.) Copy CH4 maxumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O40' in TAB CH4 to this spreadsheet in TAB "6- Gas Forecast Data" cell 'V60'

a. For NH3 -

1.) Copy range AC5:AC57 to range AE7:AE59

2.) Copy NH3 minumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O39' in TAB NH3 to this spreadsheet in TAB "6- Gas Forecast Data" cell 'AE6'

3.) Copy NH3 maxumum from the spreadsheet 'CB05all Tab_5mc RGS Forecast Values 030823 .xls' cell 'O40' in TAB NH3 to this spreadsheet in TAB "6- Gas Forecast Data" cell 'AE60'

4. Sort the raw data as given below

a. For H2 - Sort range a5:c424 with sort keys: 1 -- column A ascending; 2 -- NONE; 3 -- NONE

b. For N2O - Sort range J5:L424 with sort keys: 1 -- column L ascending; 2 -- NONE; 3 -- NONE

c. For CH4 - Sort range S5:U424 with sort keys: 1 -- column S ascending; 2 -- NONE; 3 -- NONE

d. For NH3 - Sort range AB5:AD424 with sort keys: 1 -- column AB ascending; 2 -- NONE; 3 -- NONE

Calculate the "CH4 Ratio" and "N2O Ratio" distributions

5. Calculate distributions for "CH4 Ratio" and "N2O Ratio"

a. create Assumption Distributions for H2, N2O, CH4, and NH3 in cells H6, Q6, Z6, and AI6

1.) Use the Continuous Linear function....

a). Select Creat Assumption

b.) Select Custom Distribution

c.) Select Data

d.) Enter range of data I.e., d6:e60 for H2 and make sure the "cumaltive data" selection is selected.

e). Select "OK" to create the distribution

b. Create forecasts for "N2", "CH4 Ratio" and "N2O Ratio" values

1.) the formulas behind the forecasts are:

a.) For N2: 100 - [H2] - {N2O] - [CH4] - [NH3]

b.) For "CH4 Ratio": [CH4] / ([CH4] + [H2])

c.) For "N2O Ratio": [N2O] / ([N2O] + [CH4] + [H2])

2.) Extract data for "CH4 Ratio" and "N2O Ratio" and copy to TAB "7-OverallDistributions"

TAB "7-OverallDistributions"

1. Use Crystal Ball to fit 1,000 trails of data into distribution for "CH4 Ratio" and "N2O Ratio"

a. Create a distribution using Crystal Ball to fit the data by::

1.) Create Assumption

2.) Select fit Data

3.) Enter range of data

a.) For "CH4 Ratio" use the range B8:B1007

b.) For "N2O Ratio" use the range C8:C1007

4.) Allow Crystal Ball to fit the data to the regression curves

2.5 REFORMAT RESULTS TO FIT DATABASE

8-RPP-10006 DB values

1. For RGS Tanks copy data values from TAB "4-Gas comp by tanks" range AQ7:AW178 to TAB "8-RPP-10006 DB values" cell A4

2. Remove blank lines and sort by Tank Name

3. When positioned as given in TAB "8-RPP-10006 DB values" the numbers will automatically be rearranged to fit the database format by the imbedded formulas.

4. The same procedure is used for the values for the default gas composition specifications.

3.0 RESULTS

Table J.3.1 presents the distributions obtained by the methodology explained in Section 2. Included in the results are the gas concentration distributions for all 16 RGS tanks as well as the gas concentration distributions for non-RGS tanks, which are labeled "DEFAULT". Following Table J.3.1 are 3 Figures illustrating the distributions overlaying the frequency bins for the DEFAULT distributions, demonstrating the closeness of fit achieved Crystal Ball by its regression algorithm.

Table J.3.1. Retained Gas Concentration Distribution Results (4 pages)

Tank	Gas	Mean	Std Dev	Min	Max	Distribution Type
A-101	CH4 Ratio	0.0206	0.0010	0.0177	0.0236	Normal
A-101	N2	19.0006	2.3255	11.3516	26.5940	Normal
A-101	N2O Ratio	0.0710	0.0053	0.0577	0.0844	Normal
A-101	NH3	2.4569	0.2953	1.2415	3.3466	Normal
AN-103	CH4 Ratio	0.0860	0.0356	0.0215	0.1639	Normal
AN-103	N2	28.6602	5.1532	14.9119	42.8042	Normal
AN-103	N2O Ratio	0.0534	0.0071	0.0374	0.0768	Normal
AN-103	NH3	0.5966	0.0661	0.4003	0.7819	Normal
AN-104	CH4 Ratio	0.0588	0.0139	0.0266	0.0987	Normal
AN-104	N2	29.1727	4.9184	14.3337	41.4358	Normal
AN-104	N2O Ratio	0.3081	0.0321	0.2231	0.4011	Normal
AN-104	NH3	0.8820	0.1337	0.3767	1.2932	Normal
AN-105	CH4 Ratio	0.0223	0.0056	0.0108	0.0359	Normal
AN-105	N2	24.5713	3.6349	14.1664	34.3390	Normal

Table J.3.1. Retained Gas Concentration Distribution Results (4 pages)

Tank	Gas	Mean	Std Dev	Min	Max	Distribution Type
AN-105	N2O Ratio	0.1690	0.0178	0.1246	0.2198	Normal
AN-105	NH3	0.5001	0.0649	0.3029	0.7618	Normal
AW-101	CH4 Ratio	0.2136	0.0210	0.1565	0.2751	Normal
AW-101	N2	53.5503	2.7074	45.4532	62.0123	Normal
AW-101	N2O Ratio	0.1256	0.0205	0.0779	0.1739	Normal
AW-101	NH3	0.5706	0.0999	0.2715	0.9587	Normal
AX-101	CH4 Ratio	0.0568883	0.0072603	0.040168	0.0763907	Normal
AX-101	N2	16.682515	4.2840712	4.6480254	27.391705	Normal
AX-101	N2O Ratio	0.1417203	0.0080401	0.1219057	0.1632994	Normal
AX-101	NH3	6.5851237	1.769175	3.094251	10.784005	Normal
BY-109	CH4 Ratio	0.0857066	0.0312712	0.0277509	0.1608994	Normal
BY-109	N2	29.044525	4.4366125	16.677941	42.376593	Normal
BY-109	N2O Ratio	0.2362124	0.0213373	0.1780785	0.3050799	Normal
BY-109	NH3	0.1912388	0.0337871	0.081167	0.3206144	Normal
S-102	CH4 Ratio	0.0198833	0.0040362	0.0116416	0.0306858	Normal
S-102	N2	32.246089	3.0735677	23.973682	40.719438	Normal
S-102	N2O Ratio	0.4810489	0.0220261	0.4138286	0.5485435	Normal
S-102	NH3	0.9317253	0.2880169	0.3470069	1.6237296	Normal

Table J.3.1. Retained Gas Concentration Distribution Results (4 pages)

Tank	Gas	Mean	Std Dev	Min	Max	Distribution Type
S-106	CH4 Ratio	0.0134833	0.0062037	0.000211	0.0296648	Normal
S-106	N2	25.216722	3.7891284	15.249227	34.922471	Normal
S-106	N2O Ratio	0.1309545	0.0150095	0.0981745	0.1694995	Normal
S-106	NH3	0.2988262	0.0672631	0.0941543	0.5200336	Normal
S-111	CH4 Ratio	0.0136002	0.0015555	0.0097731	0.0192358	Normal
S-111	N2	20.990104	5.9531917	4.5555037	34.751033	Normal
S-111	N2O Ratio	0.1345261	0.0166708	0.0924325	0.1900213	Normal
S-111	NH3	0.9286594	0.2851553	0.354503	1.6034667	Normal
SX-106	CH4 Ratio	0.0170592	0.0069497	0.0046007	0.0339737	Normal
SX-106	N2	20.202874	3.4462161	10.197908	29.550656	Normal
SX-106	N2O Ratio	0.3154821	0.0150306	0.2752638	0.3600094	Normal
SX-106	NH3	4.2022214	1.2553005	1.7899067	6.8047356	Normal
SY-101	CH4 Ratio	0.0650518	0.0257035	0.0145888	0.1498403	Normal
SY-101	N2	33.874694	6.7839154	13.359652	53.313162	Normal
SY-101	N2O Ratio	0.360501	0.0490851	0.226125	0.5012775	Normal
SY-101	NH3	9.1721	2.9868881	3.2737398	15.767285	Normal
U-103	CH4 Ratio	0.0572362	0.0110623	0.0339797	0.0820054	Normal
U-103	N2	36.711397	2.0175933	30.945456	42.560795	Normal
U-103	N2O Ratio	0.6032003	0.015214	0.5608941	0.644936	Normal

Table J.3.1. Retained Gas Concentration Distribution Results (4 pages)

Tank	Gas	Mean	Std Dev	Min	Max	Distribution Type
U-103	NH3	0.5959713	0.1560355	0.2463287	0.9627055	Normal
U-109	CH4 Ratio	0.0489471	0.0133258	0.0238921	0.0873525	Normal
U-109	N2	46.777093	3.1883437	36.853937	56.618098	Normal
U-109	N2O Ratio	0.4889364	0.0306199	0.4021244	0.5769073	Normal
U-109	NH3	1.0070756	0.3279163	0.3542088	1.8118107	Normal
DEFAULT	CH4 Ratio	0.0529	0.0563	0.0010	0.3178	LogNorm
DEFAULT	N2	29.84	12.01	4.5000	80.0000	LogNorml
DEFAULT	N2O Ratio	0.2533	0.1758	0.0010	0.6189	LogNrom

Figure J.3.1. Distribution fit of CH_4 Ratio

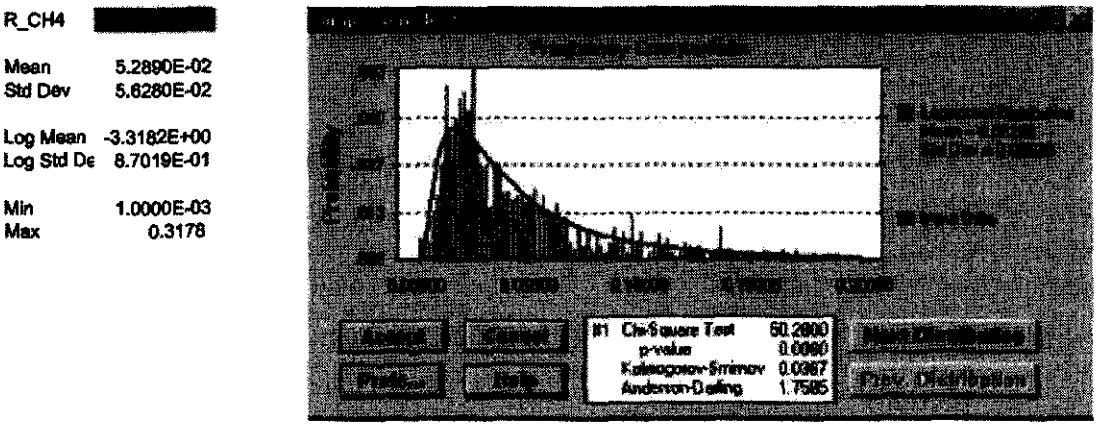


Figure J.3.2. Distribution fit of N_2O Ratio

R_N2O [redacted]

Mean	2.53E-01
Std Dev	1.76E-01
Log Mean	-1.57E+00
Log Std De	6.27E-01
Min	1.0000E-03
Max	0.6189

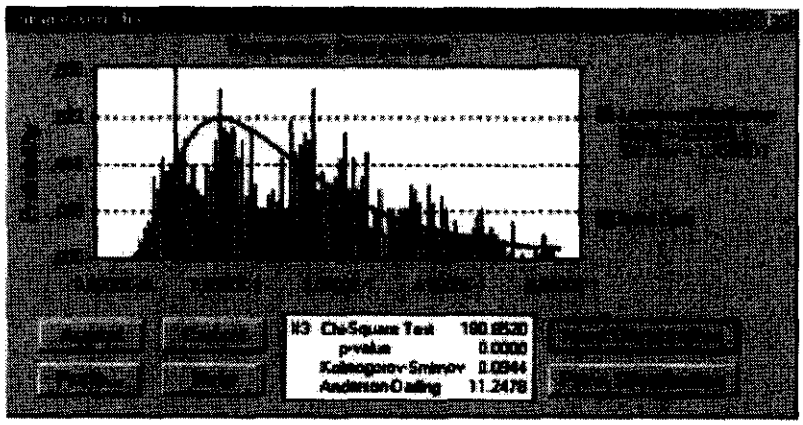
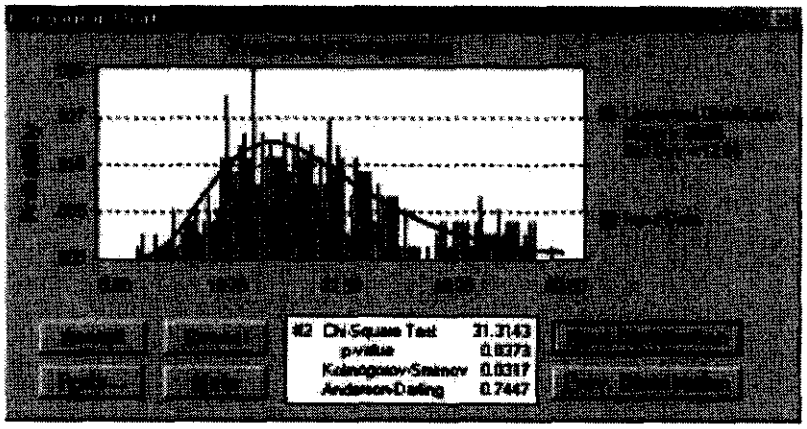


Figure J.3.3. Distribution fit of N_2 Concentration

N2 Distribu [redacted] d8:s427
LogNormal

Mean	29.84
StdDev	12.01
Min	4.5
Max	80



4.0 REFERENCES

Mahoney, L., 2000, "Ammonia Results Review for Retained Gas Sampling", PNNL-13317, Pacific Northwest National Laboratory, Richland, Washington.

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APPENDIX K

DETERMINATION OF VOID FRACTION

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Calculation Review Checklist.

Calculation Reviewed: Determination of Void Fraction

Scope of Review: Appendix K. No Statistical Reproduction
(e.g., document section or portion of calculation)

Engineer/Analyst: Steven A. Barker Date: 8/28/03

Organizational Mgr: Ronald J. Stevens Date: 8/28/03

This document consists of 14 pages and the following attachments (if applicable):

Yes	No	NA*		
X	[]	[]	1.	Analytical and technical approaches and results are reasonable and appropriate.
X (NEW)	[]	X	2.	Necessary assumptions are reasonable, explicitly stated, and supported.
[]	[]	X	3.	Ensure calculations that use software include a paper printout, microfiche, CD ROM, or other electronic file of the input data and identification to the computer codes and versions used, or provide alternate documentation to uniquely and clearly identify the exact coding and execution process.
[]	[]	X	4.	Input data were checked for consistency with original source information.
X	[]	[]	5.	For both qualitative and quantitative data, uncertainties are recognized and discussed.
[]	[]	X	6.	Mathematical derivations were checked including dimensional consistency of results.
X	[]	[]	7.	Calculations are sufficiently detailed such that a technically qualified person can understand the analysis without requiring outside information.
[]	[]	X	8.	Software verification and validation are addressed adequately.
[]	[]	X	9.	Limits/criteria/guidelines applied to the analysis results are appropriate and referenced. Limits/criteria/guidelines were checked against references.
X	[]	[]	10.	Conclusions are consistent with analytical results and applicable limits.
X	[]	[]	11.	Results and conclusions address all points in the purpose.
[]	[]	X	12.	Referenced documents are retrievable or otherwise available.
[]	[]	X	13.	The version or revision of each reference is cited.
[]	[]	X	14.	The document was prepared in accordance with Attachment A, "Calculation Format and Preparation Instructions."
X	[]	[]	15.	All checker comments have been dispositioned and the design media matches the calculations.

Gene E. Wells 8/28/03
Checker (Printed Name and Signature) Date

* If No or NA is chosen, an explanation must be provided on or attached to this form.

NA 3,4,8,9,12-14 - ~~not within~~ Scope of this review.
NA 7. no mathematical derivations are presented.

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LIST OF TERMS

AB	Authorization Basis
BPE	Barometric Pressure Effect
BPE1	Original BPE Model
BPE2	Steep Slope Form of the BPE Model
dL/dP	Change in Tank Level Divided by Corresponding Change in Pressure
DST	Double-Shell Tank
GRE	Gas Release Event
HEPA	High Efficiency Particulate Air Filter
HDW	Hanford Defined Waste
LFL	Lower Flammability Limit
LIQ	Liquid Waste Form
MIX-LIQ	Mixed Waste Form with ≥ 1m Liquid Over Solids
MIX-NL	Mixed Waste Form with < 1m Liquid Over Solids
PNNL	Pacific Northwest National Laboratory
RGS	Retained Gas Sampler
RSA	Refined Safety Analysis
SC/SS	Saltcake/Salt Slurry
SC/SS-LIQ	Saltcake/Salt Slurry Waste Form with ≥ 1m Liquid Over Solids
SC/SS-NL	Saltcake/Salt Slurry Waste Form with < 1m Liquid Over Solids
SHMS	Standard Hydrogen Monitoring System
SL	Sludge
SL-LIQ	Sludge Waste Form with ≥ 1m Liquid Over Solids
SL-NL	Sludge Waste Form with < 1m Liquid Over Solids
SLR	Surface Level Rise
SMM	Supernatant Mixing Model
SST	Single-Shell Tank
TLM	Tank Layer Model
TRU	Transuranic
VFI	Void Fraction Instrument
WSTRS	Waste Status and Transaction Record Summary
vol%	Volume Percent

1.0 INTRODUCTION

When analyzing tank hazards relating to Flammable gas accidents it is important understand the ability of solid wastes to retain gas and then release it due to change in tank characteristics or due to outside influence or waste disturbing activities. This Appendix documents the calculations performed to develop void fraction estimates for the waste tanks at Hanford.

2.0 VOID FRACTION DATA

Void fraction data are available from the following sources:

- Void Fraction Instrument (VFI) & Retained Gas Sampler (RGS): An average gas volume fraction may be estimated from direct measurements of the local gas volume fraction with the VFI and/or the RGS.
- Barometric Pressure Effect (BPE) method: An average void fraction can be computed from the correlation of the changes in waste surface level in response to barometric pressure fluctuations.
- Surface Level Rise (SLR): An increase in global average void fraction may be indicated by a rise in waste surface level.
- Core Sample X-ray: Voids or gaps shown in X-rays of core samples may indicate stored gas. However, these observations are only qualitative and cannot be used to derive an average void fraction value.

2.1.1.1 Void Fraction Instrument

A VFI deployment produces a relatively large number of data points in the vertical direction, but only from two risers. Each measurement is based on sampling a 367 ml waste volume (roughly a cylinder 3 inches in diameter and 3 inches long). A basic assumption made in computing the average void fraction is that data from two risers represent the entire tank. In five of the six DSTs sampled with the VFI, RGS samples from two additional risers and BPE results have provided independent corroboration that this assumption is valid. Uncertainties in the average void fraction derived from VFI data range from 10 - 30% standard deviation due mainly to variability in the data (PNNL-11536). For these reasons the Analyst Team concluded that VFI data, with or without additional data from RGS samples, are sufficiently representative to characterize the average void fraction for a specific tank.

2.1.1.2 Retained Gas Sampler

A single RGS gas fraction measurement is made on a 19-inch core sample segment. The void value from an RGS segment is generally as accurate as a single VFI data point, but there are far fewer RGS data. There are usually only three to six RGS measurements per tank, one to three per riser, compared to 20 - 40 VFI data points. Therefore, it is much more difficult to show that the RGS measurements are representative of the entire tank. In comparing the results for DSTs, the RGS differed with the VFI by about 50% on two tanks (Tanks 241-AN-103 and 241-AW-101) where the sparse RGS data missed the bulk of the stored gas (PNNL-10865). VFI data for single-shell tank (SST) waste are not available. For SSTs, the average gas fraction measurements with the RGS are compared with results from BPE and SLR analyses. Where the latter two support each other, the RGS value may differ by 50% (PNNL-10865, PNNL-11777). Based on these comparisons, where only RGS data are available, Pacific Northwest National Laboratory (PNNL) assigns an uncertainty of ±50% to the RGS value. For these reasons, the Analyst Team concluded that RGS data alone are not sufficiently representative to characterize the average void fraction in the tank waste, but can be used in determining void fraction distributions for the respective waste forms.

2.1.1.3 Barometric Pressure Effect Method

The BPE method is the only means available to directly measure the total gas volume in the tank waste independent of its past history. A correlation between waste level change and barometric pressure indicates the presence of gas. However, the waste and surface level measurement system must meet the following criteria before the correlation can be used as a measurement (PNNL-11536):

- The waste must be wet. The free liquid level must be above or within a few inches of the top of the gas-retaining solids, or the solids must contain sufficient gas to float on the liquid, or both.
- The tank must contain minimal suspended hardware items (that could support the waste and interfere with level change measurements).
- The waste must not be disturbed by mixing (such as done in Tank 241-SY-101) that suspends solids and gas bubbles during the period of the BPE measurement.
- The effective pressure on the stored gas must not change significantly during the BPE measurement (e.g., by transfers).
- The precision of the waste surface level instrument must be within 0.1 inches and the level must be recorded at least daily. Because of an amplification effect that is not fully understood, the BPE method cannot be applied to interstitial liquid level data obtained with the neutron probe.

Ideally, the pressure-level correlation should be developed using data obtained from the period November - February when barometric pressure fluctuations are greatest. The

"steep slope" BPE model, abbreviated here as the BPE2 model, uses only data obtained during these months to correlate barometric pressure and waste level. The BPE2 model also accounts for the effect of waste strength (PNNL-11693), unlike the original, more simplified BPE model (which will be abbreviated here as the BPE1 model). In cases where only BPE1 data are available, they will be included in the development of an average void fraction value on a case-by-case basis.

The overall uncertainty in the void fraction value determined with a BPE model is driven by the uncertainty in determining both the effective pressure of the stored gas and the correlation of waste height change with barometric pressure change (the dL/dP value). The computed uncertainty varies from 20 - 50%, and void fractions determined with a BPE model can differ from RGS and VFI average void values by about the same amount. The BPE method also has a lower detection limit of 1000 - 1500 ft^3 of gas (PNNL-11890). Thus, the Analyst Team concluded that the BPE data alone are not sufficiently accurate to characterize the average void fraction in a specific tank, but in spite of the difficulties mentioned above, the BPE method can be used to assist in determining void fraction distributions for the respective waste forms.

2.1.1.4 Surface Level Rise

A steady, long-term increase in the waste level indicates the accumulation of gas. The total retained gas volume can also be estimated by SLR if the gas volume is known at some prior time. However, unless the volume measured at some point by RGS, VFI or BPE can be used as a base value, the uncertainty in a gas volume estimate by SLR cannot usually be quantified.

The use of SLR data to compute the change in gas volume is subject to fewer conditions than application of the BPE methodology. The Analyst Team concluded gas accumulation is likely the dominant cause of gradual SLR. However, the team recommended quantitative estimates using SLR data should not be made in tanks that have been saltwell pumped or where the liquid level is more than a few inches below the waste surface. No limitation was found on the level measurement system except that neutron probe data for interstitial liquid levels should not be used because they are subject to gradual porosity changes. No correction should be attempted for evaporation, leaks, intrusions, or other second order effects because their uncertainties are typically far larger than the correction. However, because of these potential effects, the Analyst Team concluded the absence of level rise cannot imply the absence of gas.

Because of the broad uncertainties in the SLR methodology, SLR data cannot be used to determine an average void fraction.

2.1.2 Tank Void Fraction Data

Table 3.1 lists the tanks in which void fraction measurements were made with the VFI, RGS or BPE. For each tank the best estimate of the average void fraction determined by each method is listed in Table 3.1. BPE void fractions reported for tanks with RGS measurements (PNNL-10865, PNNL-11777) are calculated with the BPE2 model specifically supporting RGS analysis or taken from PNNL-11693. Whitney (1999) calculated void fractions over the period from 1997 through 1999 using the BPE1 model for tanks meeting BPE requirements, and the results were reported at the Data Review Workshops.

An approximate BPE2 value was derived for those tanks where a BPE2 value was reported in PNNL-11693 by multiplying the current BPE1 value by the ratio BPE2/BPE1 (if BPE2 > BPE1) from the reference. Only BPE2 values are shown in Table 3.1. Tanks for which only BPE1 void fractions are available are listed in Table 3.2.

Table 2.1. Summary of Average Void Fraction Data

TANK	Waste	RGS	VFI + RGS	BPE2	Reference/Comment
AN-103	SC/SS-LIQ	0.08	0.124±0.005	0.11	NCL only. Values computed by Guang Chen, PNNL, for PNNL-11536 Rev. 2. [1]
AN-104	SC/SS-LIQ	0.057	0.056±0.004	0.06	
AN-105	SC/SS-LIQ	0.04	0.037±0.011	0.04	
AW-101	SC/SS-LIQ	0.025	0.04±0.004	0.04	
SY-103	SC/SS-LIQ	-	0.07±0.02	0.06	
SY-101 crust	SC/SS-LIQ	0.35 to 0.46	0.30±0.04	-	VFI: Stewart et al. (1998a). PNNL-13317
SY-101 non-crust	SC/SS-LIQ	0.026± 0.013	0.013±0.001	-	
A-101	SC/SS-NL	0.17		0.12	PNNL-13317
AX-101	SC/SS-NL	0.17		-	
BY-109	SC/SS-NL	0.09		-	
S-102	SC/SS-NL	0.25		0.14	
S-106	SC/SS-NL	0.10		0.26	
S-111	SC/SS-NL	0.16		0.19	
SX-106	SC/SS-NL	0.24		0.14	
U-103	SC/SS-NL	0.20		0.11	
U-109	SC/SS-NL	0.20		0.09	
BX-101	SL-NL			0.02	LMHC Process Engineering Calculation
BX-104	SL-NL			0.12	
BX-107	SL-NL			0.03	
BX-110	MX-NL			0.05	
S-103	SC/SS-NL			0.16	
S-107	SL-NL			0.04	
U-105	SC/SS-NL			0.10	
U-106	SC/SS-NL			0.02	
U-107	SC/SS-NL			0.09	
C-106	SL-NL			0.025±0.01	PNNL-11890 LMHC Process Engineering Calculation
C-107	SL-NL			0.004	
T-107	SL-NL			0.04	
TX-103	SL-NL			0.10	

[1] BPE void fraction value for the DST non-convective layer was determined from the total in-situ gas volume calculated from the measured dL/dP and subtracting the estimated crust and convective layer gas volume.

Table 2.2. Summary of Void Fractions Computed with the BPE1 Method

TANK	Waste	BPE1
AP-105	SL-LIQ	0.06
AY-102	SL-LIQ	0.11
SY-102	SL-LIQ	0.01
A-103	SL-NL	0.004
AY-101	SL-NL	0.06
B-112	SL-NL	0.01
BX-103	SL-NL	0.004
BX-105	SL-NL	0.003
BX-109	SL-NL	0.003
BX-112	SL-NL	0.01
C-103	SL-NL	0.001
T-101	SL-NL	0.001
T-109	SL-NL	0.004
TX-101	SL-NL	0.002
TX-109	SL-NL	0.001
TY-104	SL-NL	0.004
TY-106	SL-NL	0.02
AX-103	SC/SS-NL	0.002
SX-104	SC/SS-NL	0.02
T-108	MX-NL	0.07
TX-104	MX-NL	0.003
TX-107	SC/SS-NL	0.01
B-102	SC/SS-NL	0.003
S-101	MIX-NL	0.05

2.1.3 Tank Average Void Fraction

The distribution of all available tank average void fraction values determined from VFI data (with or without RGS data added) or RGS and BPE data are used to derive an average void fraction distribution for a waste form. When available for a specific tank, RGS and VFI data are combined into a single average. A distribution of individual RGS segment voids is not appropriate to characterize a tank average void since, at present, there are very few data points per tank (e.g., three to six) and they represent local effects.

Therefore, in the cases where RGS data are available, it is only appropriate to use them to develop an average void fraction distribution for each waste form.

The average void fraction distribution determined for a specific tank from VFI data (with or without RGS data added) should be used in preference to the void fraction distribution for the tank waste form.

3.0 RESULTS

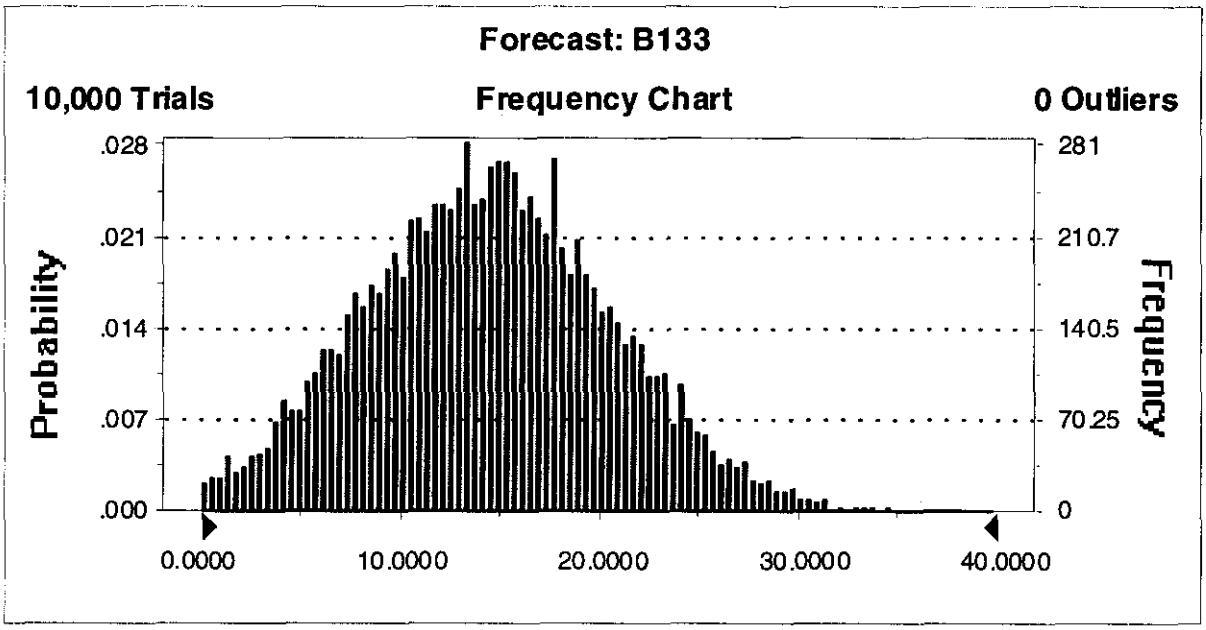
The void fraction analysis was performed based on the type of waste found in the tanks. A full discussion of the waste type classification can be found in RPP-6171, "Determination Of Waste Groupings For Safety Analyses". The results address the following waste categories: saltcake/saltslurry waste without at least 1 m of supernatant liquid (SCSS-NL), sludge waste without at least 1 m of supernatant liquid (SL-NL), saltcake/saltslurry waste with at least 1 m of supernatant liquid (SCSS-LIQ), sludge waste with at least 1 m of supernatant liquid (SL-LIQ), liquid waste (LIQUID), mixed waste without at least 1 m of supernatant liquid (MIX-NL), and mixed waste with at least 1 m of supernatant liquid (MIX-LIQ). The results are grouped together to conservatively estimate void fractions for waste types, which do not have sufficient void fraction data to perform a valid statistical analysis. The analysis in this section does not include the revised void fraction estimates for Tanks 241-SY-101, 241-AN-107, and 241-AW-106 at this time.

3.1 SCSS-NL AND MIX-NL VOID FRACTIONS

The data for SCSS-NL and MIX-NL wastes have been regressed to fit a truncated normal distribution as shown in Figure 3.1. The graph represents a truncated normal distribution with a mean and standard deviation as shown below.

Truncated Normal Distribution	
Mean	14.32
Std Dev	6.39
Trunc low	0.01
Trunc High	40

Figure 3.1. Void Fraction Regression Results for SCSS-NL and MIX-NL wastes



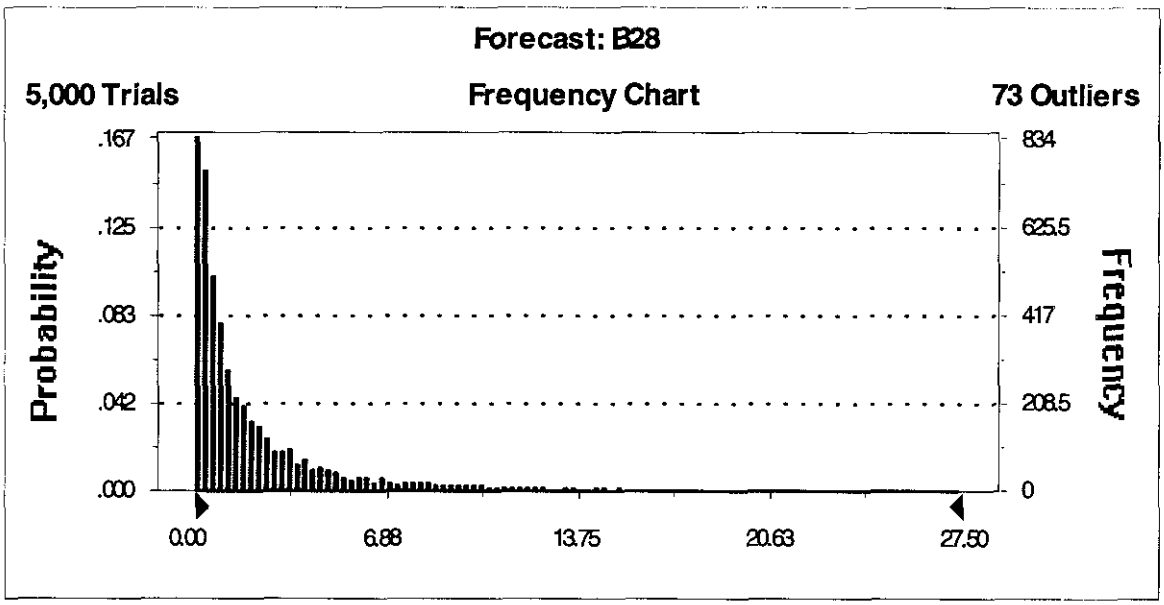
3.2 SL-NL AND MIX-NL VOID FRACTIONS

The data for SL-NL wastes have been regressed to fit a truncated lognormal distribution as shown in Figure 3.2. The graph represents a truncated lognormal distribution with a mean and standard deviation as shown below.

Truncated LogNormal

Mean	2.9764
StdDev	7.6379
Trunc low	0.01
Trunc high	26.5

Figure 3.2. Void Fraction Regression Results for SL-NL wastes



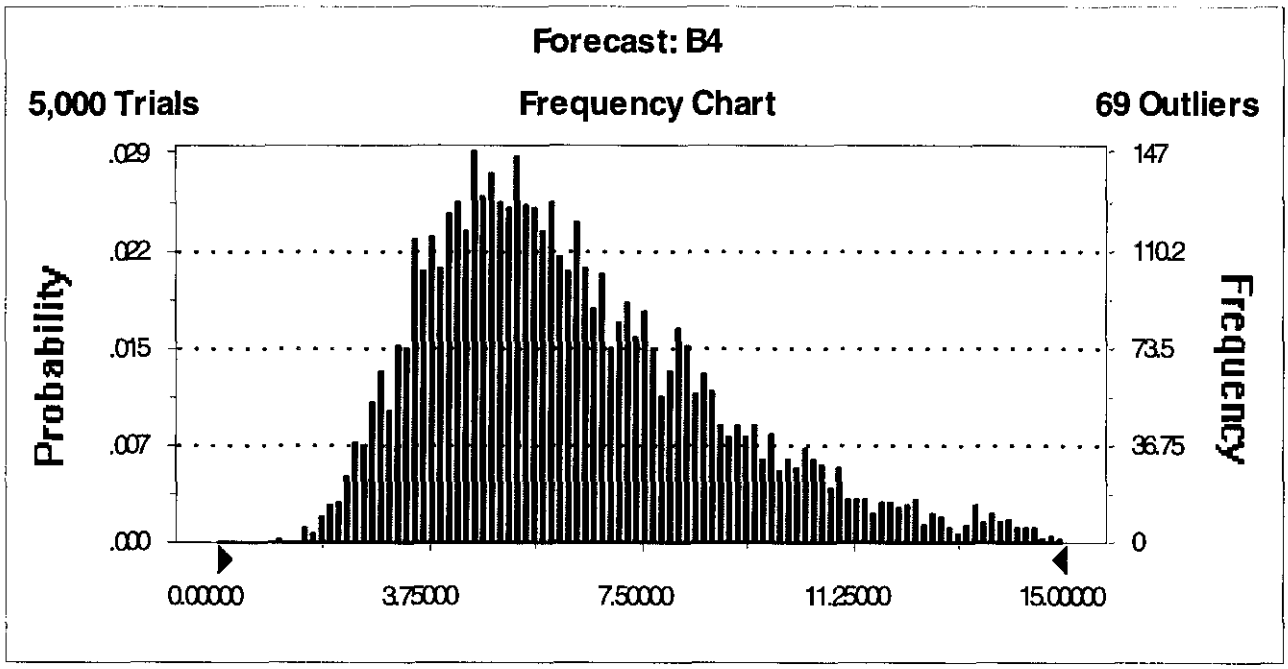
3.3 SCSS-LIQ, SL-LIQ, AND MIX-LIQ VOID FRACTIONS

The data for SCSS-LIQ, SL-LIQ, and MIX-LIQ wastes have been regressed to fit a truncated lognormal distribution as shown in Figure 3.3. The graph represents a truncated lognormal distribution with a mean and standard deviation as shown below. In addition wastes with significant supernatant (greater than 1 m depth) have an upper bound at the neutral buoyancy void fraction for the waste.

Truncated LogNormal

Mean	6.47592
StdDev	2.95836
Trunc low	0.01
Trunc high	15.11

Figure 3.3. Void Fraction Regression Results for SCSS-LIQ, SL-LIQ, and MIX-LIQ wastes



3.4 LIQUID WASTE VOID FRACTIONS

Liquid wastes do no retain gas. Any gas found in the liquid wastes is considered transient and is not considered as trapped or retained gas. Therefore the void fraction for liquid waste is 0.

4.0 REFERENCES

PNNL-11777, 1997, "*Composition and Quantities of Retained Gas Measured in Hanford Waste Tanks 241-U-103, S-106, BY-101, and BY-109*", Revision 1, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-11536, 1997, "*Gas Retention and Release Behavior in Hanford Double-Shell Waste Tanks*", Revision 1, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-10865, 1997, "*Composition and Quantities of Retained Gas Measured in Hanford Waste Tanks 241-AW-101, A-101, AN-105, AN-104, and AN-103*", Pacific Northwest National Laboratory, Richland, Washington.

PNNL-11890, 1998, "*Baseline Estimate of the Retained Gas Volume in Tank 241-C-106*", PNNL-11890, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-11693, 1997, "*Estimating Retained Gas Volumes in the Hanford Tanks using Waste Level Measurements*", Pacific Northwest National Laboratory, Richland, Washington.

PNNL-13317, 2000, "*Ammonia Results Review for Retained Gas Sampling*", Pacific Northwest National Laboratory, Richland, Washington.

Whitney, P. D., 1999, Personal Communication (May 4, 1999) to W.B. Barton and S. A. Barker.

APPENDIX L

CHECKLIST FOR TECHNICAL PEER REVIEW

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CHECKLIST FOR TECHNICAL PEER REVIEW

CHECKLIST FOR TECHNICAL PEER REVIEW

Document Reviewed: RPP-10006, *Methodology and Calculations for the Assignment of Waste Groups for the Large Underground Waste Storage Tanks at the Hanford Site*, Rev. 1

Scope of Review (e.g., document section or portion of calculation): Review solely covered document revisions (i.e., changes from Rev. 0 to Rev. 1) and the calculation results of the selection criteria. The Monte Carlo simulation was not reproduced.

Yes	No	NA*	
[ ]	[ ]	[X]	1. Previous reviews are complete and cover the analysis, up to the scope of this review, with no gaps.
[X]	[ ]	[ ]	2. Problem is completely defined.
[ ]	[ ]	[X]	3. Accident scenarios are developed in a clear and logical manner.
[X]	[ ]	[ ]	4. Analytical and technical approaches and results are reasonable and appropriate. *(ORP QAPP criterion 2.8)*
[X]	[ ]	[ ]	5. Necessary assumptions are reasonable, explicitly stated, and supported. *(ORP QAPP criterion 2.2)*
[ ]	[ ]	[X]	6. Computer codes and data files are documented.
[X]	[ ]	[ ]	7. Data used in calculations are explicitly stated.
[X]	[ ]	[ ]	8. Bases for calculations, including assumptions and data, are consistent with the supported safety basis document (e.g., the Tank Farms Final Safety Analysis Report).
[ ]	[ ]	[X]	9. Data were checked for consistency with original source information as applicable. *(ORP QAPP criterion 2.9)*
[X]	[ ]	[ ]	10. For both qualitative and quantitative data, uncertainties are recognized and discussed, as appropriate. *(ORP QAPP criterion 2.17)*
[ ]	[ ]	[X]	11. Mathematical derivations were checked including dimensional consistency of results. *(ORP QAPP criterion 2.16)*
[X]	[ ]	[ ]	12. Models are appropriate and were used within their established range of validity or adequate justification was provided for use outside their established range of validity.
[X]	[ ]	[ ]	13. Spreadsheet results and all hand calculations were verified.
[X]	[ ]	[ ]	14. Calculations are sufficiently detailed such that a technically qualified person can understand the analysis without requiring outside information. *(ORP QAPP criterion 2.5)*
[ ]	[ ]	[X]	15. Software input is correct and consistent with the document reviewed.
[ ]	[ ]	[X]	16. Software output is consistent with the input and with the results reported in the document reviewed.
[ ]	[ ]	[X]	17. Software verification and validation are addressed adequately. *(ORP QAPP criterion 2.6)*
[ ]	[ ]	[X]	18. Limits/criteria/guidelines applied to the analysis results are appropriate and referenced. Limits/criteria/guidelines were checked against references. *(ORP QAPP criterion 2.9)*
[ ]	[ ]	[X]	19. Safety margins are consistent with good engineering practices.
[X]	[ ]	[ ]	20. Conclusions are consistent with analytical results and applicable limits.
[X]	[ ]	[ ]	21. Results and conclusions address all points in the purpose. *(ORP QAPP criterion 2.3)*

[ ] [ ] [X] 22. All references cited in the text, figures, and tables are contained in the reference list.
[ ] [ ] [X] 23. Reference citations (e.g., title and number) are consistent between the text callout and the reference list.
[ ] [ ] [X] 24. Only released (i.e., not draft) references are cited. *(ORP QAPP criterion 2.1)*
[ ] [ ] [X] 25. Referenced documents are retrievable or otherwise available.
[ ] [ ] [X] 26. The most recent version of each reference is cited, as appropriate. *(ORP QAPP criterion 2.1)*
[ ] [ ] [X] 27. There are no duplicate citations in the reference list.
[ ] [ ] [X] 28. Referenced documents are spelled out (title and number) the first time they are cited.
[ ] [ ] [X] 29. All acronyms are spelled out the first time they are used.
[ ] [ ] [X] 30. The Table of Contents is correct.
[ ] [ ] [X] 31. All figure, table, and section callouts are correct.
[X] [ ] [ ] 32. Unit conversions are correct and consistent.
[ ] [ ] [X] 33. The number of significant digits is appropriate and consistent.
[ ] [ ] [X] 34. Chemical reactions are correct and balanced.
[ ] [ ] [X] 35. All tables are formatted consistently and are free of blank cells.
[ ] [ ] [X] 36. The document is complete (pages, attachments, and appendices) and in the proper order.
[ ] [ ] [X] 37. The document is free of typographical errors.
[ ] [ ] [X] 38. The tables are internally consistent.
[ ] [ ] [X] 39. The document was prepared in accordance with HNF-2353, Section 4.3, Attachment B, "Calculation Note Format and Preparation Instructions".
[X] [ ] [ ] Concurrence

Bert E. Wells 8/28/03
Reviewer (Printed Name and Signature) Date

* If No or NA is chosen, provide an explanation on this form.

NA 1. Review conducted as noted in the comments section of this checklist
NA 3. No accident scenarios were presented in the document within the scope of this review.
NA 6. Verification of documentation of computer codes and data files was not addressed by this review.
NA 9. Consistency of data with original source information was not addressed by this review.
NA 11. No mathematical derivations were presented in the document within the scope of this review.
NA 15-16. Reproduction of the Monte Carlo statistical analysis was not within the scope of this review.
NA 17. Software compliance was not addressed by this review.
NA 18. Limits/criteria/guidelines were not applied to this review.
NA 19. Safety margins were not determined in this review.
NA 22-31, 35-39. Editorial review was not performed as part of this review.
NA 33. Given parameter uncertainties, no attempt was made to verify significant digits.
NA 34. No specific chemical reactions are included in this document.

CHECKLIST FOR TECHNICAL PEER REVIEW

Document Reviewed: RPP-10006, Rev. 1

Yes	No	NA*		
[ ]	[ ]	[X]	1.	Previous reviews are complete and cover the analysis, up to the scope of this review, with no gaps.
[ ]	[ ]	[X]	2.	Problem is completely defined.
[ ]	[ ]	[X]	3.	Accident scenarios are developed in a clear and logical manner.
[ ]	[ ]	[X]	4.	Analytical and technical approaches and results are reasonable and appropriate. *(ORP QAPP criterion 2.8)*
[ ]	[ ]	[X]	5.	Necessary assumptions are reasonable, explicitly stated, and supported. *(ORP QAPP criterion 2.2)*
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[ ]	[ ]	[X]	9.	Data were checked for consistency with original source information as applicable. *(ORP QAPP criterion 2.9)*
[ ]	[ ]	[X]	10.	For both qualitative and quantitative data, uncertainties are recognized and discussed, as appropriate. *(ORP QAPP criterion 2.17)*
[ ]	[ ]	[X]	11.	Mathematical derivations were checked including dimensional consistency of results. *(ORP QAPP criterion 2.16)*
[ ]	[ ]	[X]	12.	Models are appropriate and were used within their established range of validity or adequate justification was provided for use outside their established range of validity.
[ ]	[ ]	[X]	13.	Spreadsheet results and all hand calculations were verified.
[ ]	[ ]	[X]	14.	Calculations are sufficiently detailed such that a technically qualified person can understand the analysis without requiring outside information. *(ORP QAPP criterion 2.5)*
[ ]	[ ]	[X]	15.	Software input is correct and consistent with the document reviewed.
[ ]	[ ]	[X]	16.	Software output is consistent with the input and with the results reported in the document reviewed.
[ ]	[ ]	[X]	17.	Software verification and validation are addressed adequately. *(ORP QAPP criterion 2.6)*
[ ]	[ ]	[X]	18.	Limits/criteria/guidelines applied to the analysis results are appropriate and referenced. Limits/criteria/guidelines were checked against references. *(ORP QAPP criterion 2.9)*
[ ]	[ ]	[X]	19.	Safety margins are consistent with good engineering practices.
[ ]	[ ]	[X]	20.	Conclusions are consistent with analytical results and applicable limits.

[ ] [ ] [X] 21. Results and conclusions address all points in the purpose. *(ORP QAPP criterion 2.3)*
[X][ ] [ ] 22. All references cited in the text, figures, and tables are contained in the reference list.
[X][ ] [ ] 23. Reference citations (e.g., title and number) are consistent between the text callout and the reference list.
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[X][ ] [ ] 37. The document is free of typographical errors.
[X][ ] [ ] 38. The tables are internally consistent.
[ ] [ ] [X] 39. The document was prepared in accordance with HNF-2353, Section 4.3, Attachment B, "Calculation Note Format and Preparation Instructions".

Comments: RPP-10006, Rev. 1

Tech Edit: CJ LYNCH CJ Lynch 8-28-03
Reviewer (Printed Name and Signature) Date

* If No or NA is chosen, an explanation must be provided on this form.