S

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 659202

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	DT Vladimiroff, CHG, ISPO, S7-20	☐ Yes ☒ No	5/16/00
	6. Project Title/No./Work Order No. SST Interim Stabilizaion Project	7. Bldg./Sys./Fac. No. NA	8. Approval Designator NA
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-2358, Rev. ~~A~~ 3A 4-22-01	10. Related ECN No(s). NA	11. Related PO No. NA

12a. Modification Work	12b. Work Package No.	12c. Modification Work Completed	12d. Restored to Original Condition (Temp. or Standby ECNs only)
☐ Yes (fill out Blk. 12b) ☒ No (NA Blks. 12b, 12c, 12d)	NA	NA Design Authority/Cog. Engineer Signature & Date	NA Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? ☐ Yes ☒ No

This revision of the Single-Shell Tank Project Plan replaces Revision 3a in its entirety.

It refects status through September 1999 including the MYWP 2000. The estimated volume of waste has been reduced from 6 million gallons to 4 million gallons. It also reflect the transfer of this work to CH2MHILL Hanford Group Inc.

14a. Justification (mark one)	14b. Justification Details
Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const. ☐ Const. Error/Omission ☐ Design Error/Omission ☐	This revision was necessary to document the changes in the in the estimated volume of pumpable waste, and the status of the project at the end of fiscal year 1999.

15. Distribution (include name, MSIN, and no. of copies)

See attached list.

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1. ECN (use no. from pg. 1): 659202

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
☐ Yes	Additional ☐	$ NA	Additional ☐	$ NA	Improvement ☐	NA
☒ No	Savings ☐	$ NA	Savings ☐	$ NA	Delay ☐	NA

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐
Equipment Spec.	☐	Maintenance Procedure	☐	ASME Coded Item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☐	Operating Procedure	☐	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	Tickler File	☐
Environmental Report	☐	Inspection Plan	☐	HNF-2358	☒
Environmental Permit	☐	Inventory Adjustment Request	☐		☐

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision

21. Approvals

	Signature	Date		Signature	Date
Design Authority	NA		Design Agent		
Cog. Eng.	DT Vladimiroff	5-17-00	PE		
Cog. Mgr.	TE Hissong	5-19-00	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other			Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

NA

ADDITIONAL

Single-Shell Tank Interim Stabilization Project Plan

David T. Vladimiroff
CH2MHILL Hanford Group, Inc.
Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-99RL14047

EDT/ECN: 659202 UC:
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Key Words: TWRS; RPP; Single-ShellTank; Interim Stabilization; Salt Well Pumping

Abstract: This project plan establishes the management framework for the conduct of the CHG Single-Shell Tank Interim Stabilization completion program. Specifically, this plan defines the mission needs and requirements; technical objectives and approach; organization structure, roles, responsibilities, and interfaces; and operational methods. This plan serves as the project executional baseline.

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RECORD OF REVISION	(1) Document Number HNF-~~2538~~ 2358	Page 1

(2) Title
Single-Shell Tank Interim Stabilization Project Plan

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) EDT-624124 , 5/11/98	WE Ross	DI Allen
RS 1	Replaces Rev. 0 and establishes fourth case as baseline scenario, per ECN-648127.	WE Ross	DI Allen
2	Rev 2 was drafted but not approved.ECN-648333	JG LEWIS	WE ROSS for WE Ross 11/25/9
3 RS	Replaces REV 2 & 3 entirely. ECN-638454	JG Lewis	WE Ross 2/8/9
3a RS	Clarifies total volumes of pumpable waste, ECN: 634819	J. G. Lewis	W. E. Ross 3/3/99
4 RS	Updates data and status to September 30, 1999. ECN 659202	D. Vladmiroff	T. L. Hissong 5-1-99

HNF-2358
Revision 4

Single-Shell Tank Interim Stabilization Project Plan

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-AC06-99RL14047

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HNF-2358
Revision 4

Single-Shell Tank Interim Stabilization Project Plan

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EXECUTIVE SUMMARY

Solid and liquid radioactive waste continues to be stored in 149 single-shell tanks at the Hanford Site. To date, 119 tanks have been declared to be interim stabilized, and 30 tanks remain to be stabilized. One of these tanks (C-106) will be stabilized by retrieving the tank contents. The remaining 29 tanks will be interim stabilized by saltwell pumping. In the summer of 1997, the U.S. Department of Energy (DOE) placed a moratorium on the startup of additional saltwell pumping systems because of funding constraints and proposed modifications to the *Hanford Federal Facility Agreement and Consent Order*[1] (Tri-Party Agreement) milestones to the Washington State Department of Ecology.

In a letter dated February 10, 1998, *Final Determination Pursuant to Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) in the Matter of the Disapproval of the DOE's Change Control Form #M-41-97-01*,[2] the Washington State Department of Ecology disapproved the Department of Energy Change Control Form M-41-97-01. In response, Fluor Daniel Hanford, Inc., directed the Lockheed Martin Hanford Corporation to initiate the development of a project plan in a letter dated February 25, 1998, *Direction for Development of an Aggressive Single-Shell Tank (SST) Interim Stabilization Completion Project Plan in Support of Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone M-41*.[3]

---

[1]Ecology, EPA, and DOE, 1996, *Hanford Federal Facility Agreement and Consent Order*, (Tri-Party Agreement), Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

[2]Fitzsimmons, T., 1998, *Final Determination Pursuant to Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) in the Matter of the Disapproval of the DOE's Change Control Form #M-41-97-01*, (letter to J. D. Wagoner, February 10), Washington State Department of Ecology, Olympia, Washington.

[3]Hoogendoorn, W., 1998, *Direction for Development of an Aggressive Single-Shell Tank (SST) Interim Stabilization Completion Project Plan in Support of Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone M-41*, (letter 9851714 to R. F. Woods, February 25), Fluor Daniel Hanford, Inc., Richland, Washington.

In a letter dated March 2, 1998, *Request for an Aggressive Single-Shell Tank (SST) Interim Stabilization Completion Project Plan*,[4] the DOE reaffirmed the need for an aggressive single-shell tank interim stabilization completion project plan to support a finalized *Hanford Federal Facility Agreement and Consent Order* M-41-00 recovery plan. It was directed that this project plan be based on realistic assumptions and that it consider three separate funding scenarios.

Revision 0 of this project plan was transmitted by Fluor Daniel Hanford, Inc. to the Department of Energy, Richland Operations Office (RL), on March 31, 1998. Subsequent discussions indicated that none of the three funding scenarios met the needs of the program.

Based on feedback from these discussions and documented in Allen,[5] Sieracki, and Umek,[6] the Project Hanford Management Contractor developed a project plan.[7] Several conservative assumptions were relaxed, and a more realistic staff ramp up was used. This case, Revision 1, was transmitted to RL in May 1998. The major changes were as follows:

- Approval to commingle all liquid waste types (noncomplexed, complexed, and complexed transuranic)
- Pump tank C-103 with the organic layer in place.

---

[4]Sieracki, S. A., 1998, *Request for an Aggressive Single-Shell Tank (SST) Interim Stabilization Completion Project Plan*, (letter 98-WSD-034 to H. J. Hatch, March 2), U.S. Department of Energy, Richland Operations Office, Richland, Washington.

[5]Allen, D. I., 1998, *Subcontract Number 80232764-9-K001; Proposal Path Forward for Hanford Federal Facility Agreement and Consent Order Milestone M-41-00, Interim Stabilization*, (letter LMHC-9851940 R3 to A. M. Umek, April 7) Lockheed Martin Hanford Corp., Richland, Washington.

[6]Umek, A. M., 1998, *Contract Number DE-AC06-96RL13200; Proposed Path Forward for Hanford Federal Facility Agreement and Consent Order Milestone M-41-00, Interim Stabilization*, (letter FDH-9851919A R3 to J. E. Kinzer, April 8), Fluor Daniel Hanford, Inc., Richland, Washington.

[7]Ross, W. E., J. R. Biggs, V. C, Boyles, D. V. Freeman, J. O. Honeyman, J. R. Kriskovich, K. Parnell, R. P. Raven, D. J. Saueressig, S. E. Seeman, R. D. Smith, W. R. Swita, and D. T. Vladimiroff, 1998, *Single-Shell Tank Interim Stabilization Project Plan*, HNF-2358, Rev. 1, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

As noted in the transmittal of the Revision 1 Project Plan, a business risk and independent management assessment had not been completed because of the compressed development cycle. Those activities were completed and a Revision 2 of the Project Plan was drafted to incorporate changes to reduce cost and schedule risk to an acceptable level, and to correct some errors that had been identified by the independent reviews. The total project cost increased from $145 million to $162 million. Revision 2 was superseded by events, and was not issued.

The State of Washington notified the DOE of its intent to sue for failure to meet the Tri-Party Agreement (schedule). The DOE and the State agreed on a Consent Decree that would set new criteria, schedule, and funding for the Interim Stabilization program.

As a result of the agreement to a Consent Decree, a technical team was formed with representatives from DOE-Headquarters, RL, Washington State Department of Ecology (Ecology), FDH, and Lockheed Martin Hanford Corporation (LMHC). This team reviewed both Revision 1 and Revision 2 (draft) of the Project Plan in considerable detail. This review team developed a criteria for assessing environmental risk which resulted in a different tank pumping sequence to reduce the environmental risk. A second significant conclusion was the recommendation to use three (3) simultaneous pumping crews, rather than the two-crew scenario that was used in Revisions 1 and 2.

In the same time frame, RL had mobilized an independent cost and schedule review team (ICST) to critically review, in detail the schedule and costs provided in Revision 1. Their report identified a number of areas where the documentation needed to be restructured and strengthened, as well as costs and philosophies that needed to be reevaluated.

LMHC was directed to revise the Project Plan (Revision 3)[8] to address the changes recommended by the above events, as well as the lessons learned from the first four (4) months of experience in implementing Revision 1 on the preparations for pumping tank SX-106.

---

[8]Umek, A. M., 1998, *Subcontract No. 80232764-K001; U.S. Department of Energy, Richland Operations office Direction to Immediately Transition into U-Farm and Revise the Single-Shell Tank Interim Stabilization project Plan, Basis of Estimate, to Reflect the Technical Team Recommended Tank Sequence for Optimized Environmental Risk Reduction* (letter FDH-9859351A to L. E. Hall, Lockheed Martin Hanford Corporation, October 29), Fluor Daniel Hanford, Inc., Richland, Washington.

The schedule and estimates have been substantially restructured and each of the estimates has been reevaluated.

The schedule for completion is estimated to be February 2005. The total project cost is $181 million. The budget required by each fiscal year for the Revision 3 Project Plan is shown in Table ES-1.

Table ES-1. Single-Shell Tank Interim Stabilization
Escalated Fiscal Year Cost ($000s).

	Total	1998	1999	2000	2001	2002	2003	2004	2005
Multi Year Work Plan FY 2000	180,887	9,500*	31,687*	35,000	33,800	31,200	24,200	7,000	8,500

*Actual Costs

Changes to the Single-Shell Tank Interim Stabilization Project cost and schedule can be expected during the project due to the difficulty in predicting tank volume of pumpable liquid and pumping duration for each tank. While pump volumes have been predicted based on the best information available, the actual amount of liquid and rate that may be removed varies significantly because of a variety of factors such as waste porosity. Longer pumping durations than predicted may increase costs due to added maintenance and operations costs, and equipment that is being transferred to other pumps, which may not be available to meet the schedule. Some of this risk has been mitigated through the purchase of spare equipment, and through the addition of schedule risk costs. The cost and schedule will be reviewed and updated each year during the Multi-Year Work Plan development in response to actual pumping performance.

New milestones have been developed for the Single-Shell Tank Interim Stabilization Project and are referenced in the Consent Decree. These milestones are presented in Table ES-2. There are provisions to revise the estimated volumes annually.

Table ES-2. Single-Shell Tank Interim Stabilization Milestones included in the Consent Decree.

Milestone number	Milestone date	Milestone
1	Initiated	Start 4 tanks (SX-104, SX-106, T-104, T-110)
2	7/31/99	Start 3 tanks (S-102, S-103, S-106)
3	6/15/00	Start 4 tanks (U-102, U-103, U-105, U-109)
4	10/30/00	Start 2 tanks (A-101, AX-101)
5	3/15/01	Start 4 tanks (SX-101, SX-103, SX-105, U-106)
6	7/15/01	Start 2 tanks (BY-105, BY-106)
7	12/30/01	Start 4 tanks (S-111, SX-102, U-107, U-108)
8	11/30/02	Start 5 tanks (S-101, S-107, S-109, S-112, U-111)
9	12/30/00	DOE to establish need to remove organic layer from C-103. Milestone for pumping will then be established.
11	9/30/99	Reduce total waste remaining to be removed to 93% of total estimated waste
12	9/30/00	Reduce organic waste remaining to be removed to 38% of organic estimated waste
13	9/30/01	Reduce organic waste remaining to be removed to 5% of organic estimated waste
14	9/30/02	Reduce total waste remaining to be removed to 18% of total estimated waste
15	9/30/03	Reduce total waste remaining to be removed to 2% of total estimated waste
16	9/30/04	Complete interim stabilization of all 29 tanks

This plan represents the technical and programmatic basis for meeting the regulatory and performance milestones for the Single-Shell Tank Interim Stabilization Project. It represents an achievable schedule at an acceptable level of execution risk. The risk mitigation elements incorporated into the program mitigate the exposure to cost growth and failure to meet the schedule. It should be noted that the estimated volumes will be reviewed annually as new information becomes available and there are provisions for renegotiating the volume related schedule if the tank physics will not support the assumed pumping rates. For example, a 1999

reevaluation of the available data resulted in reducing the total estimated volume from 6.2 million gallons to 4.0 million gallons.

As of September 30, 1999, all of the scheduled milestones (1, 2, and 11) have been met, and the project is on schedule to meet the rest of the milestones.

It should also be noted that there has been a restructuring with in the Department of Energy, and that the Interim Stabilization Project is now under a new organization, the Office of River Protection. LMHC has also restructured and TWRS has been renamed the Tank Farm Contractor (TFC). The management of the TFC was transferred from LHMC to a subsidiary of CH2M HILL Hanford Group, Inc. (CHG) in December, 1999.

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LIST OF TERMS

ALARA	as low as reasonably achievable
Ba	barium
BCR	baseline change request
BIO	Basis for Interim Operation
CAPN	cost account plan number
CEIS	cost-estimating input sheet
CHG	CH2M HILL Hanford Group, Inc.
DCRT	double-contained receiver tank
DOE	U.S. Department of Energy
DOE-HQ	DOE Headquarters
DST	double-shell tank
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERMI	Environmental Requirements Management Interface (database)
ES&H	Environmental, Safety, and Health
ESH&QA	Environmental, Safety, and Health, and Quality Assurance
FDH	Fluor Daniel Hanford, Inc.
FG	facility group
FGM	flammable gas monitor
FTE	full-time equivalent
FY	fiscal year
HANDI	Hanford Data Integration 2000 System
HSTD	Hanford Site Technical Baseline Database
ICST	independent cost and schedule review team
IS	interim stabilization
LMHC	Lockheed Martin Hanford Corporation
MYWP	multi-year work plan
NOC	notice of construction
ORP	U.S. Department of Energy, Office of River Protection
OGT	over ground transfer
OWVP	Operations Waste Volume Projection
P3	Primavera Project Planner
PHMC	Project Hanford Management Contract
PIC	Pump Instrumentation Control (Skid)
QAPP	Quality Assurance Program Plan
R&D	research and development
RL	U.S. Department of Energy, Richland Operations Office
RPP	River Protection Project (Replaces TWRS)
SER	safety evaluation report
SHMS	Standard Hydrogen Monitoring System
SST	single-shell tank
TBR	technical basis review

Tc	technetium
TENS	TWRS Engineering and Nuclear Safety
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TRU	transuranic
TWO	Tank Waste Operations
TWRS	Tank Waste Remediation System (now RPP)
WFIE	weight factor instrument enclosure
WBS	Work Breakdown Structure

Construction Projects:

Project W-058	Cross-Site Transfer Line (Project W-058) provided for a new cross-site waste transfer line between East and West tank farms.
Project W-151	Tank AZ-101 Mixer Pump Test (Project W-151) provides a waste mixing system in double-shell tank AZ-101 and performs a demonstration test of this system in support of waste retrieval and sludge washing activities.
Project W-211	Initial Tank Retrieval Systems (Project W-211) provides waste mixing and retrieval systems in 10 double-shell tanks to prepare waste feed for delivery to private contractors.
Project W-314	Tank Farm Restoration and Safe Operations (Project W-314) provides upgrades to the waste transfer system necessary to ensure safe, reliable transfer capability to support feed delivery.
Project W-320	Tank C-106 Waste Retrieval Sluicing system (Project W-320) provides a retrieval system in tank C-106 for retrieving tank C-106 sludge as part of the high-level waste feed.

Terms:

Saltwell Pumping	Single-shell tank interim stabilization, removing pumpable liquid from single-shell tanks using a jet or submersible pump.
Saltwell System	Configuration consisting of piping with an inlet screen and containing either a submersible pump or a jet pump with a foot valve assembly at the lower end.
System Availability	Represents the percentage of time that the saltwell system is operating during a period that it was scheduled to be operating, i.e., the total number of hours that the system has operated divided by the total number of hours in the time period (e.g., 24 hours per day, 168 hours per week etc.) less "approved" down time for external activities (e.g. transfer of 242-SY-101 waste into 241-SY-102).

SINGLE-SHELL TANK INTERIM STABILIZATION PROJECT PLAN

1.0 INTRODUCTION

In a letter dated February 10, 1998, *Final Determination Pursuant to Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) in the Matter of the Disapproval of the DOE's Change Control Form #M-41-97-01* (Fitzsimmons 1998), the Washington State Department of Ecology (Ecology) disapproved the U.S. Department of Energy (DOE) Change Control Form #M-41-97-01. In response, Fluor Daniel Hanford, Inc. (FDH), directed Lockheed Martin Hanford Corporation (LMHC) to initiate development of a project plan in a letter dated February 25, 1998, *Direction for Development of an Aggressive Single-Shell Tank (SST) Interim Stabilization Completion Project Plan in Support of Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone M-41* (Hoogendoorn 1998).

In a letter dated March 2, 1998, *Request for an Aggressive Single-Shell Tank (SST) Interim Stabilization Completion Project Plan* (Sieracki 1998c), the DOE reaffirmed the direction that FDH and LMHC develop an aggressive single-shell tank (SST) interim stabilization (IS) completion project plan to support a finalized *Hanford Federal Facility Agreement and Consent Order (*Tri-Party Agreement) (Ecology et al. 1996) Milestone M-41-00 recovery plan. It was directed that this project plan be based on realistic assumptions and that it consider three separate funding scenarios: Case 1, Maximum Ramp Up; Case 2, Additional $18.9 Million in Fiscal Year 1998; and Case 3, Additional $5.6 Million in Fiscal Year 1998.

Revision 0 of this project plan was transmitted by FDH to the U.S. Department of Energy, Richland Operations Office (RL), on March 31, 1998. Subsequent discussions indicated that none of the three cases met the needs of the program. The near-term funding requirements of Case 1 were deemed not achievable. Cases 2 and 3 were unacceptably long, and neither would be completed before 2010.

Based on feedback from these discussions and documented in Allen (1998), Sieracki (1998c), and Umek (1998a), the Project Hanford Management Contract (PHMC) team developed the project plan described in Revision 1 of the *Single-Shell Tank Interim Stabilization Project Plan* (Ross et al. 1998). Several conservative assumptions were relaxed, and a more realistic funding profile was suggested. Revision 1, of the project plan was distributed to RL in May 1998. The major changes were as follows:

- Approval to commingle all liquid waste type (noncomplexed, complexed, and complexed transuranic [TRU])
- Pump tank 241-C-103 with the organic layer in place.

The *Single-Shell Tank Interim Stabilization Project Plan*, Revision 1 (Ross et al. 1998) was submitted to DOE before a required financial risk assessment and an independent management assessment were completed. These assessments have now been completed and documented in

Single-Shell Tank Interim Stabilization Risk Analysis (LMHC 1998a). A number of scope exclusive and unacceptable risks were identified.

As noted in the transmittal of the Revision 1 Project Plan, a business risk and independent management assessment had not been completed because of the compressed development cycle. Those activities were completed and a Revision 2 of the Project Plan was drafted to incorporate changes to reduce cost and schedule risk to an acceptable level, and to correct some errors that had been identified by the independent reviews. The total project cost increased from $145 million to $162 million. Revision 2 has been superseded by events and will not be issued.

The State of Washington notified the DOE of its intent to sue for failure to meet the Tri-Party Agreement schedule. The DOE and the State agreed on a Consent Decree that would set new criteria, schedule, and funding for the SST IS Project.

As a result of the agreement to a Consent Order, the Interim Stabilization Technical Team was formed with representatives from DOE Headquarters (DOE-HQ), RL, Ecology, FDH, and LMHC. This team reviewed both Revision 1 and Revision 2 (draft) of the Project Plan in considerable detail. The review team developed a criteria for assessing environmental risk and reached agreement on a different tank pumping sequence to reduce environmental risk. A second significant conclusion was the recommendation to use three (3) simultaneous pumping crews, rather than the two-crew scenario that was used in Revisions 1 and 2.

In the same time frame, RL mobilized an independent cost and schedule review team (ICST) to critically review, in detail, the schedule and costs provided in Revision 1. Their report identified a number of areas where the documentation needed to be restructured and strengthened, as well as costs and philosophies that needed to be reevaluated.

LMHC was directed (Umek 1998b) to revise the Project Plan to address the changes recommended to the above events, as well as the lessons learned from the first four (4) months experience in implementing Revision 1 on the preparations for pumping tank SX-106. The schedule and estimates have been substantially restructured and each of the estimates has been reevaluated. The significant changes include the following:

- Deletion for preparation of putting the 4,000 L LR56 waste transportation cask into service
- Incorporation of bypass piping system around 244-S system double-contained receiver tank (DCRT)
- Addition of a third pumping crew
- Revised pumping sequence.

This project plan establishes the management framework for conducting an aggressive SST IS/isolation program. Lockheed Martin Hanford Corporation used a plan-development process modeled after the Tank Waste Remediation System (TWRS) Waste Feed Delivery Readiness-to-Proceed certification process completed in January 1998.

In fiscal year (FY) 1999, the basis for the volume estimate was carefully reviewed, and the waste volume estimates were refined. The revised estimate was 15.1 million liters (4 million gallons) including 1.9 million liters (500 thousand gallons) of complexed waste. In addition, the requirements for standby exhausters has been modified, and a decision to bypass the 244-U DCRT had been implemented. This revision of the project plan reflects the actual performance through September 30, 1999, and the revised volumes and requirements that were known at that time.

The Project Plan documents mission requirements and schedules, resource requirements, and management strategies and policies for accomplishing the SST IS Project mission. It defines the systems and practices that will be used to establish consistency for business practices, engineering, physical configuration, and facility documentation; and to maintain consistency throughout the project life cycle, particularly as changes are made. Specifically, this plan defines mission needs and requirements; technical objectives and approach; organizational structure, roles, responsibilities, and interfaces; and operational methods.

This plan represents the technical and programmatic basis for meeting the regulatory and performance milestones for the SST IS Project. It represents an achievable schedule at an acceptable level of execution risk. The risk mitigation elements incorporated into the program mitigate the exposure to cost growth and failure to meet the schedule.

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2.0 MISSION ANALYSIS

2.1 INTRODUCTION

2.1.1 Purpose

As required by the CH2M HILL Hanford Group, Inc. (CHG), overall systems approach, this section evaluates the problem and establishes boundaries and interfaces, initial and end states, program life cycle, requirements, goals, objectives, and measures of success for the SST IS Project mission.

2.1.2 Mission Scope

As defined by the *Tank Waste Remediation System Mission Analysis Report* (Acree 1998), the SST IS Project mission includes activities needed to accomplish the following:

- Provide an Authorization Basis and associated controls to enable safe completion of IS tasks associated with safety issues
- Obtain approvals from regulatory agencies as required
- Construct and maintain the equipment necessary to safely remove pumpable liquid from the waste contained in the SSTs including jumpers, necessary temporary overground lines, flammable gas monitors (FGM), exhausters, and other instruments and controls
- Remove pumpable liquid from the SSTs and transfer this liquid to the double-shell tanks (DST)
- Operate the pumping systems until the stabilization criteria are met
- Perform the necessary analysis and produce the necessary documentation
- Interim isolated the stabilized SSTs to avoid inadvertent liquid addition.

2.1.3 Mission Timing

The pumping of liquids from the SSTs has been ongoing since 1976. The present Tri-Party Agreement major Milestone M-41-00 currently requires the completion of pumping and isolation of the tanks by September 30, 2000. This project plan will complete SST IS and isolation in February 2005. The scheduled targets for this plan are consistent with the proposed Consent Decree milestone that will replace the Tri-Party Agreement milestones.

2.2 SINGLE-SHELL TANK INTERIM STABILIZATION PROJECT PROBLEM

2.2.1 Background

Large volumes of radioactive waste, a legacy from the Hanford Site's mission of producing weapons-grade plutonium, were stored in 149 underground SSTs, constructed from 1943 to 1964; and 28 underground DSTs, constructed from 1968 to 1980. To limit the number of new DSTs that had to be constructed to store liquid radioactive waste, DOE authorized the concentration of waste liquids until the soluble salts were precipitated. These precipitated salts were allowed to settle in the SSTs. Significant free supernatants were pumped from most of the SSTs by 1980, and were concentrated and stored in DSTs. No new waste additions were made to SSTs after 1980. However, the SSTs have seen severe service and are well beyond their design life. Leakage of waste from 67 SSTs to the tank farm vadose zone is assumed or has been confirmed.

To reduce the potential of further SST leakage, an approach was developed using a central screen well and a low-capacity jet pump installed in the well to remove drainable liquid. Liquid in the tank is drained to this central well, driven by the pressure of the interstitial liquid in the bed (head height). To maximize the drainage rate, the liquid in the well is maintained at the lowest possible level. This ensures the maximum drainable liquid is removed as quickly as possible. This process is defined as "interim stabilization."

The solids remaining in the SSTs consist of porous beds, with interstices filled with the remaining radioactive waste liquids. Depending on the particle sizes in the solid beds, varying amounts of liquid are trapped. For beds having relatively large particle sizes, the capillary potential of the bed is low, and much of the interstitial liquid can drain or leak. For beds having very fine particles, the capillary potential is very high, and little of the interstitial liquid can drain or leak. On average, 4 liters (1 gallon) of saltcake may contain 1 liter to 3 liters (1/3 to 2/3 gallon) of drainable liquid, while 4 liters (1 gallon) of sludge may contain 0.4 liter to 1 liter (1/10 to 1/4 gallon) of drainable liquid (Vasquez 1994).

The time to remove interstitial liquid can be as much as several years depending on solution properties, solids porosity, surface tension of the liquid on the wetted solids, head height, well diameter, and solution viscosity. Pumping generally continues until the inflow into the central well decreases to 3.2×10^{-3} liter per second (0.05 gallon per minute or less than 1 cup). The flush water needed to keep the pump and screen clear exceeds the 3.2×10^{-3} liter per second (0.05 gallon per minute) criterion, so continuous pumping would result only in removing the water added to the system, rather than removing liquid waste from the solids.

2.2.2 Definition

Sixty-seven of the 149 SSTs are assumed to have leaked liquid to the vadose zone. The liquid from all tanks that have not been interim stabilized to date must, therefore, be removed to reduce the potential for further leakage. The SST IS mission covers 29 tanks that still contain pumpable

liquid, including tanks 241-BY-105, 241-BY-106, and 241-SX-104, which are assumed leakers. Another tank, 241-C-106, will be stabilized by another project (W-320).

2.2.3 Major Issues Overview

Major issues currently dominating the removal of liquid waste from the SSTs include the following.

- **Pumping Rate**—There is uncertainty about the pumpable volume, uncertainty about the pumping rate for each tank, and uncertainty about the total operating efficiency for pumping operations. The "system availability" probably is more uncertain than previously calculated because of the increase in safety equipment and regulations, including additional shutdown interlocks on pumping tanks. The result of the two uncertainties is an uncertainty in the overall pumping duration. This uncertainty is discussed in Section 4.4.

- **Project Priority**—Completion of this project will require continuous, focused effort and appropriate and stable funding.

2.3 MISSION STATEMENT

The mission of the SST IS Project is to reduce the probability and consequence of SST leaks to the vadose zone by removing sufficient pumpable liquid from the tanks in a safe, compliant, and efficient manner to meet the defined IS criteria and to isolate the tanks to the maximum extent possible.

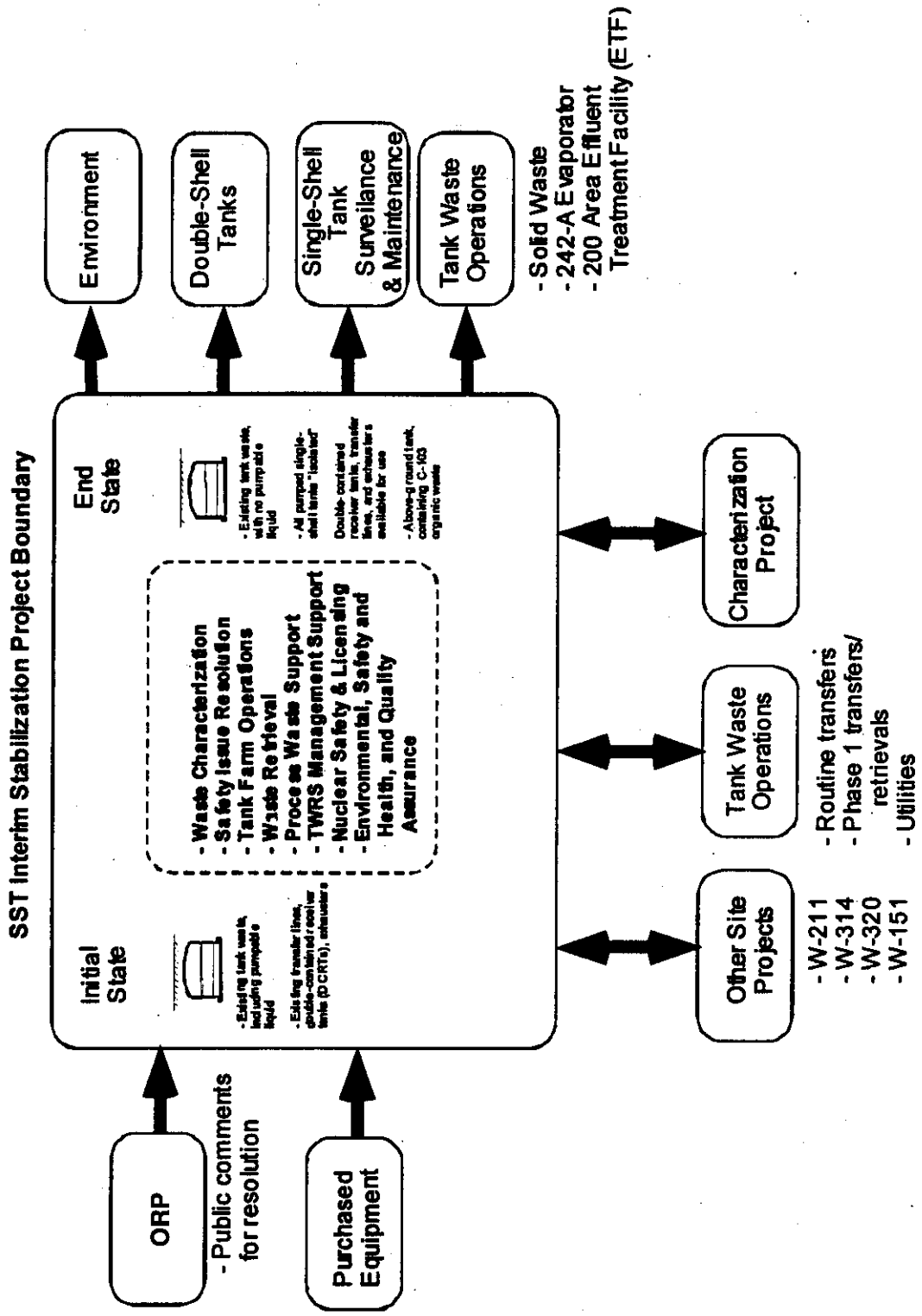
2.4 SINGLE-SHELL TANK INTERIM STABILIZATION PROJECT BOUNDARY AND INTERFACES

Figure 2-1 shows the SST IS Project system boundary and interfaces. The sections following the figure describe the programmatic and physical and internal interfaces, and inputs identified on the figure.

2.4.1 Programmatic Interfaces

U.S. Department of Energy, Office of River Protection (ORP)—The ORP provides overall direction and funding for the SST IS Project. The contractor responsible for executing the project is CHG.

Figure 2-1. Single-Shell Tank Interim Stabilization Project System Boundary and Interfaces.



- **Tank Waste Operations**—As part of the Tank Farm Contractor (TFC) Project safe-storage objective, "Conduct Waste Consolidation and Reduction Activities," Tank Waste Operations (TWO) is responsible for managing tank waste including the reduction of waste volume. Operations also is responsible for ensuring that systems and equipment used in common by Operations and the SST IS Project remain in operating order. Operations will be responsible for the routine surveillance of the tanks being stabilized and will continue surveillance activities until the waste is retrieved. The IS Project will manage the surveillance activities needed for its operation of equipment, for example, liquid-level instrumentation.

- **Evaporator Operations**—Evaporator Operations, managed by Waste Management Federal Services, is responsible for reducing the volume of waste, identified by DST operations, to maintain sufficient free volume to carry out transfers for the SST IS Project and other operations. In support of this objective, the *Tank Waste Remediation Fiscal Year 2000 Multi-Year Work Plan* (MYWP) (LMHC 1999) and the *Operations Waste Volume Projection* (OWVP) (Strode and Boyles) identify seven evaporator campaigns to be performed during the years 2000 through 2003. Approximately 15.2 x 10^6 liters (4.0 million gallons) of liquid waste from the SSTs must be processed by the evaporator to ensure that DST space is available. An additional 28 percent, or 4.3 x 10^6 liters (1.1 million gallons) of dilution and flush water, used to complete the waste transfers, also must be processed by the evaporator.

- **Characterization**—The Characterization Project is responsible for sampling and characterizing tank waste for numerous projects. The SST IS Project and the Characterization Project must ensure their work is integrated. Sampling and characterization efforts in support of the SST IS Project will be consistent with the activities and practices discussed in the annual sampling plans.

- **Tank Waste Retrieval Construction Projects**—Several construction projects (W-211, W-314, and W-151) will occur in the tank farms at the same time as the SST IS Project. A number of interfaces between these construction projects and the SST IS Project is likely.

- **Tank Waste Retrieval Operations**—Depending on its final schedule, the SST IS Project may begin to intersect with the Phase 1 retrieval of waste. It is especially important that transfers by the SST IS Project do not impact the waste feed envelopes defined for Phase 1. In addition, some of the product of the SST IS Project may be used in preparing Phase 1 feed.

2.4.2 Physical Interfaces

- **Tank Waste Operations**—Tank Waste Operations' management of tank waste, pending waste retrieval operations, includes transfer of waste between tanks using the same tank farms, tanks, pipelines, and other equipment that will be used by the SST IS Project.

2.4.3 Internal Interfaces

- **Waste Characterization**—An important part of the SST IS Project is the sampling, characterization, and analysis of tank waste to ensure reliable pumping times and waste compatibility.

- **Safety Issue Resolution**—Safety Issue Resolution will evaluate flammable gas evolution during IS to review the appropriateness of flammable gas controls.

- **Nuclear Safety and Licensing**—Nuclear Safety and Licensing is responsible for ensuring the safety Authorization Basis is in place for the operations required to carry out the SST IS Project.

- **Tank Farm Contractor Environmental Group**—The TFC environmental group is responsible for ensuring that proper permits and notices of construction (NOC) are written and transmitted to ORP to the proper state and regulatory agencies. The group also is responsible for informing the SST IS Project of any permit conditions that must be incorporated into their procedures before start up.

- **Tank Waste Operations**—Tank Waste Operations is responsible for carrying out the day-to-day operations, maintenance, and surveillance and monitoring of the DST, SST, and DCRT systems and transfer systems.

- **Tank Farm Contractor Management**—The TFC management structure is responsible for establishing priorities and providing management direction and oversight to the SST IS Project.

- **Process Engineering**—Process Engineering is responsible for projecting pump rates and durations, determining the probable behavior of waste during pumping and transfer, and conducting waste compatibility assessments. Process Engineering also will perform engineering studies or analyses to provide recommendations for improving pumping performance.

2.4.4 Inputs and Outputs

2.4.4.1 Inputs

- **Public Review**—A Consent Decree is proposed to replace the Tri-Party Agreement milestones currently in the Tri-Party Agreement. Completion of interim stabilization will be controlled under terms and conditions acceptable to the state of Washington and the Federal government.

- **Management Direction and Support**—The ORP provides direction and funding for this project.

- **Purchased Equipment**—New equipment and materials from outside sources, as well as fabrication of equipment from DynCorp, are an input to this project.

2.4.4.2 Outputs

- **Saltwell Liquid to Double-Shell Tanks**—Approximately 15.2 x 10^6 liters (4.0 million gallons) of liquid waste from the SSTs will be output to DSTs during the project. An additional 28 percent, or 4.3 x 10^6 liters (1.1 million gallons), of dilution and flush water is estimated to be used to complete the waste transfers.

- **Gaseous Effluents**—The exhausters are not routinely connected to the SSTs, and will only operate for brief periods while a tank's vapor space exceeds 25 percent of the lower flammability limit. This operation is expected to produce a limited quantity of filtered gaseous effluents to the atmosphere, and is addressed within the appropriate NOC.

- **Solid Waste**—Some contaminated equipment used on the SST IS Project is expected to fail. Some existing equipment will have to be removed to enable the installation of equipment required to support the SST IS Project. Current procedures exist to determine whether contaminated equipment is reusable or needs to be disposed of as waste. If the equipment is designated as waste, these procedures will be used to properly categorize the waste and determine the disposal method.

2.5 SINGLE-SHELL TANK INTERIM STABILIZATION PROJECT INITIAL STATES AND END STATES

2.5.1 Initial States

Single-Shell Tanks to be Interim Stabilized. Twenty-nine SSTs are to be interim stabilized during the SST IS Project. Table 2-1 lists these tanks, their original volumes, and best-basis characteristics of their contents. The tanks contain varying amounts of supernatant, saltcake, and sludge. The saltcake and sludge contain varying amounts of pumpable liquid. Figure 2-2 identifies the current status of SSTs.

Table 2-1. Initial Contents of Single-Shelled Tanks to be Pumped.

Tank No.	Total Operating Volume of Tank (gals.)	Supernate Volume (gals.)	Saltcake Volume (gals.)	Sludge Volume (gals.)	Total Non-pumpable Liquid	Supernate (gals.)	Saltcake Liquid (gals.)	Sludge Liquid (gals.)	Total Pumpable Liquid Remaining (gal)	Estimated Duration Days
EAST AREA										
241-A-101	1,000,000	414,000	475,000	3,000	16,200	414,000	103,000	0	517,000	870
241-AX-10	1,000,000	386,000	359,000	3,000	16,200	386,000	74,000	0	460,000	648
241-BY-10	758,000	0	345,000	150,000	14,750	0	86,000	8,000	94,000	380
241-BY-10	758,000	0	547,000	95,000	14,000	0	137,000	0	137,000	408
241-C-103	530,000	79,000	0	119,000	13,850	79,000	0	4,000	83,000	113
WEST AREA										
241-S-101	758,000	12,000	204,000	211,000	14,650	12,000	51,000	17,000	80,000	250
241-S-102	758,000	26,000	519,000	4,000	11,350	26,000	119,000	0	145,000	520
241-S-103	758,000	17,000	222,000	9,000	12,370	17,000	50,000	0	67,000	604
241-S-106	758,000	53,000	426,000	0	9,460	53,000	80,000	0	133,000	557
241-S-107	758,000	14,000	69,000	293,000	14,200	14,000	17,000	30,000	61,000	208
241-S-109	758,000	0	494,000	13,000	10,395	0	83,000	0	83,000	256
241-S-111	758,000	111,000	244,000	117,000	14,550	111,000	61,000	3,000	175,000	335
241-S-112	758,000	0	517,000	6,000	10,876	0	70,000	0	70,000	216
241-SX-101	1,000,000	165,000	277,000	0	13,250	165,000	56,000	0	221,000	306
241-SX-102	1,000,000	0	426,000	117,000	15,050	0	107,000	2,000	109,000	413
241-SX-103	1,000,000	0	519,000	115,000	15,000	0	130,000	2,000	132,000	410
241-SX-104	1,000,000	0	478,000	136,000	23,766	0	105,000	8,000	113,000	710
241-SX-105	1,000,000	0	572,000	65,000	11,750	0	141,000	0	141,000	441
241-SX-106	1,000,000	215,000	323,000	0	12,750	215,000	68,000	0	283,000	658
241-T-104	530,000	3,000	0	442,000	14,300	3,000	0	52,000	55,000	421
241-T-110	530,000	0	0	376,000	14,400	0	0	42,000	42,000	625
241-U-102	530,000	18,000	314,000	43,000	9,950	18,000	75,000	0	93,000	280
241-U-103	530,000	13,000	443,000	12,000	10,550	13,000	102,000	0	115,000	376
241-U-105	530,000	37,000	349,000	32,000	9,050	37,000	83,000	0	120,000	342
241-U-106	530,000	15,000	185,000	26,000	9,150	15,000	41,000	0	56,000	143
241-U-107	530,000	31,000	360,000	15,000	10,250	31,000	82,000	0	113,000	292
241-U-108	530,000	24,000	415,000	29,000	8,100	24,000	100,000	0	124,000	338
241-U-109	530,000	19,000	409,000	35,000	9,500	19,000	98,000	0	117,000	346
241-U-111	530,000	0	303,000	26,000	8,650	0	71,000	0	71,000	220
TOTALS	**21,410,000**	**1,652,000**	**9,794,000**	**2,492,000**	**368,318**	**1,652,000**	**2,190,000**	**168,000**	**4,010,000**	**11,686**

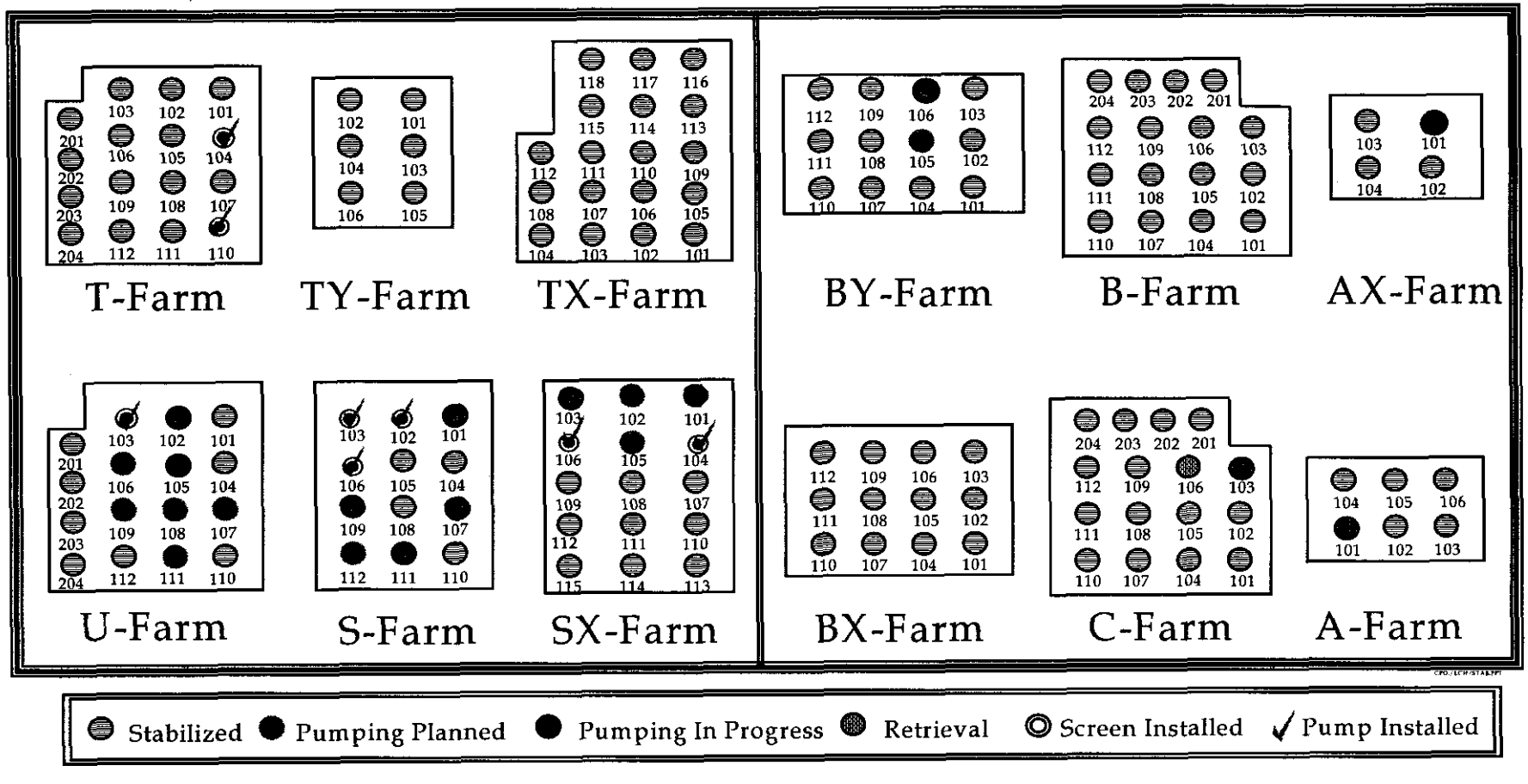
1 Gallon = 3.785 Liters.

Figure 2-2. Single-Shell Tank Farms Interim Stabilization Progress Status.

SINGLE SHELL TANK FARMS
Interim Stabilization Progress Status

Interim Stabilized	119
Pumping In Progress	8
Retrieval	1
Pumping Planned	21
TOTAL SSTs	**149**

Status as of October 6, 1999



Interim stabilization of tanks requires certain equipment and pretesting, which may include the following:

- Standard Hydrogen Monitoring System (SHMS)
- FGM
- Exhauster
- Saltwell screen
- Saltwell pump assembly
- Valve pit jumpers
- Cleanout box
- Qualified transfer lines (May require installation of Over Ground Transfer Lines)
- Weight factor instrument and equipment cabinet
- Portable instrument control skid
- Double-contained receiver tank
- Tank waste sampling
- Dilution system.

Figure 2-3 shows the basic equipment to support pumping. Not shown is the specific equipment necessary to control and support the operation (e.g., pump instrumentation control [PIC] skid, pit FGM, tank hydrogen monitor, standby exhauster).

2.5.1.1 Double-Shell Tanks. The DSTs that will receive liquid from SSTs include tanks 241-SY-102 in the 200 West Area, 241-AP-106, and 241-AP-107 in the 200 East Area. Tanks 241-AP-104 and 241-AP-107 will receive the cross-site transfer liquids. Other DSTs may be used as required. These tanks contain various types and amounts of waste as described in *Waste Tank Summary Report for Month Ending November 30, 1998* (Hanlon 1998). The quantity of waste in individual tanks changes from time to time. As liquids accumulate, they are staged for evaporator feed.

2.5.1.2 Tank Equipment and Waste Materials. Table 2-2 identifies the present physical status and requirements of equipment and processes for the 29 SSTs to be pumped during the SST IS Project.

Figure 2-3. Saltwell Pumping System.

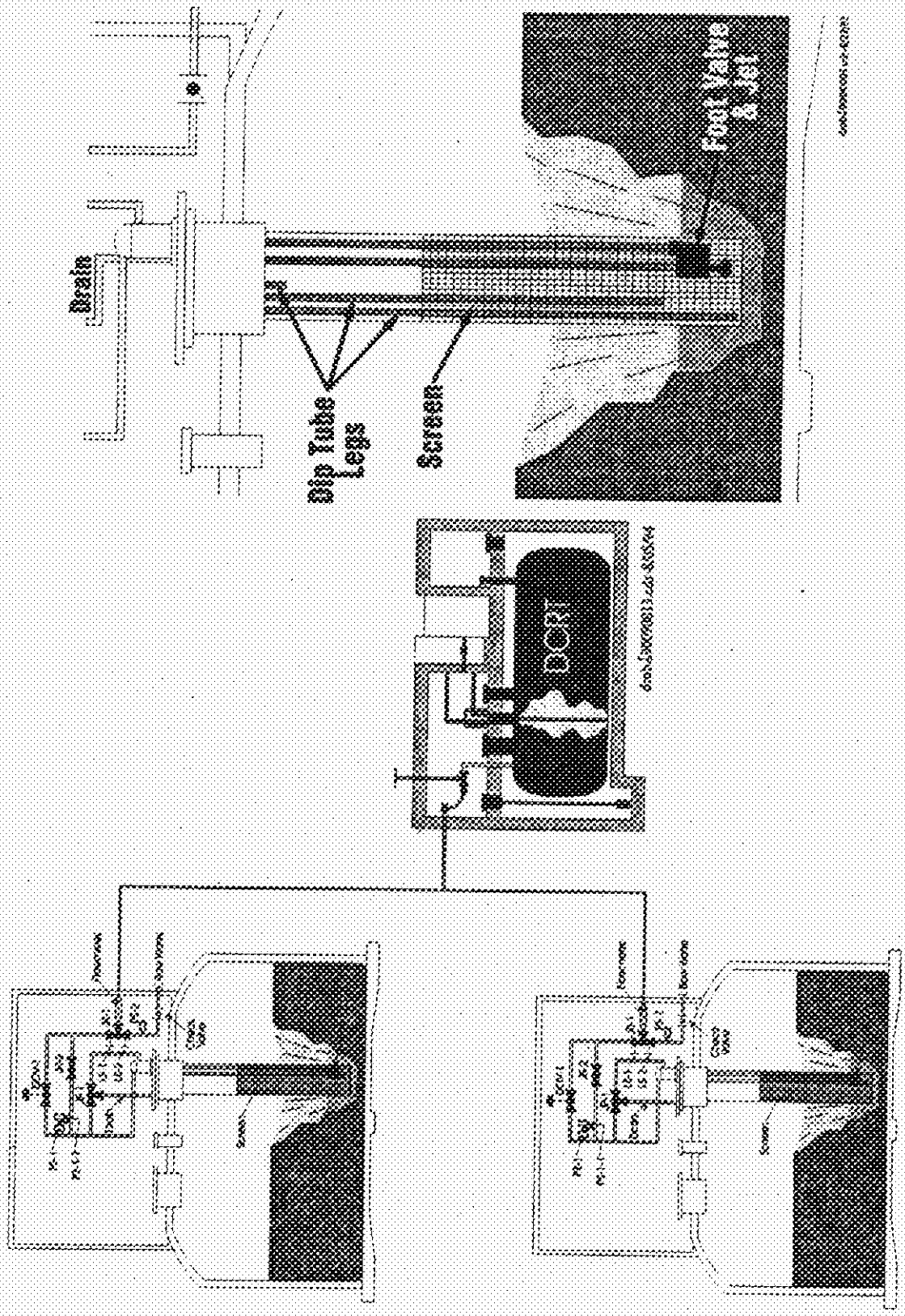


Table 2-2. Equipment Status/Requirements (updated to 9/30/99) for Single-Shell Tank Interim Stabilization Project. (2 sheets)

Tank Number	SHMS	FGM	Saltwell Screen	Saltwell Pump	Valve Pit Jumper[1]	Cover Blocks	Transfer Lines Hydro'd[1]	WFIE Cabinet	PIC Skid	DCRT	Sampling	Dilution System
A-101	C	R	C	R	C	R	R(2)	N/A	C	N/A	C	R
AX-101	R	R	C	R	C	C	R(1)	N/A	C	N/A	C	R
BY-105	C	R	R	R	N/A	R	R (1)	R	N/A	C	R	R
BY-106	C	R	C	R [2]	R(1)	R	R (1)	R	N/A	C	R	R
C-103	NR [3]	R(2)	C	R	R (1)	R	R(3)	N/A	R	N/A	R	R
S-101	C	R	C	R	R(1)	R	R (3) OGT	N/A	R	N/A	R	R
S-102	C	C	C	C	C (5)	C	C (1) OGT	N/A	C	N/A	C	C
S-103	NR [3]	C(2)	C	C	C(1)	C	C (1) OGT	N/A	C	N/A	C	N/A
S-106	C	C	C	C	C (1)	C	C (1) OGT	N/A	C	N/A	C	N/A
S-107	R	R	C	R	R (1)	R	R (1)	N/A	R	N/A	R	R
S-109	C	R	C	R	R (1)	R	R (1)	N/A	R	N/A	R	N/A
S-111	C	R	C	R	R (1)	R	R (1)	N/A	R	N/A	R	N/A
S-112	C	R	R	R	R (1)	R	R (1)	N/A	R	N/A	R	N/A
SX-101	C	R	R	R	R (1)	R	R (1)	N/A	R	N/A	R	R
SX-102	R	R	R	R	R (1)	R	R (1)	N/A	R	N/A	R	R
SX-103	R	R	C	R	R (7)	R	R (1)	N/A	R	N/A	R	R
SX-104	C	C	C	C	C	C	C	N/A	C	C	C	C
SX-105	C	R	R	R	R (6)	R	R (1)	N/A	R	N/A	R	R
SX-106	C	C	C	C	C	C	C	N/A	C	C	C	C
T-104	NR	C	C	C	C	C	C	N/A	C	C	C	N/A
T-110	C (NR)	C	C	C	C	C	C	N/A	C	C	C	N/A

Table 2-2. Equipment Status/Requirements (updated to 9/30/99) for Single-Shell Tank Interim Stabilization Project. (2 sheets)

Tank Number	SHMS	FGM	Saltwell Screen	Saltwell Pump	Valve Pit Jumper[1]	Cover Blocks	Transfer Lines Hydro'd[1]	WFIE Cabinet	PIC Skid	DCRT	Sampling	Dilution System
U-102	R	R	C	R	R (1)	R	R (1)	N/A	R	N/A	C	R
U-103	C	C	C	C	C (6)	C	C (3)	N/A	C	N/A	C	R
U-105	C	R	C	R	R (8)	R	R (4)	N/A	R	N/A	C	R
U-106	NR [3]	R (2)	R	R	R (1)	R	R (1)	N/A	R	N/A	R	R
U-107	C	R	R	R	R (1)	R	R (2)	N/A	R	N/A	R	R
U-108	C	R	R	R	R (1)	R	R (1)	N/A	R	N/A	R	R
U-109	C	R	R	R	R (1)	R	R (1)	N/A	R	N/A	R	R
U-111	NR [3]	R	R	R	R (2)	R	R (2)	N/A	R	N/A	R	R

[1]Numbers in parentheses indicate quantity of item in that tank.
[2]Saltwell pump currently installed, however stabilization expects it needs to be changed out.
[3]A second FGM will be installed to monitor the dome space instead of the SHMS.
[4]Sludge cooler sufficient to fulfill exhauster requirement.

C = completed.
DCRT = double-contained receiver tank.
FGM = flammable gas monitor.
OGT = overground transfer.
N/A = not applicable.
NR = not required.
PIC = programmable instrumentation control.
R = required.
SHMS = standard hydrogen monitoring system.
WFIE = weight factor instrument enclosure.

2.5.1.3 Ancillary Systems. A portable water heating system may be used for several tanks to dilute the waste that has characteristics for plugging transfer lines. The water-heating systems for the cross-site transfer line (or equivalent) will be available as a source of hot water for transfer line flushes.

2.5.2 End States

2.5.2.1 Single-Shell Tanks. All 29 SSTs listed in Table 2-1 will have had their pumpable liquid removed to satisfy the IS criteria defined in Section 2.7. In some cases it may be determined that a tank currently meets the criteria and no pumping is required. Further, the SSTs will be isolated, meeting the isolation requirement of Section 2.7. The tanks will still contain saltcake, sludge, and residual liquids. The tanks will remain in this state until retrieval activities are initiated.

2.5.2.2 Double-Shell Tanks. The DSTs will contain additional liquids pumped from the SSTs (less the amount of water removed by the 242-A Evaporator) as a result of successful conclusion of the SST IS Project.

2.5.2.3 Tank Equipment and Waste Materials. Noncontaminated or decontaminated external tank equipment, such as exhausters, SHMSs, and pumping control systems, will be available for other operational uses. In-tank contaminated equipment, such as pumps and saltwell screens, will remain in-tank until the onset of retrieval of the remaining tank contents. External equipment that cannot be decontaminated and reused will be transferred to Operations for ultimate disposal in the Solid Waste Program.

2.6 MISSION LIFE CYCLE

Although the SST IS Project life cycle is concerned primarily with "operation," some design, procurement, and installation functions are required for a number of the SSTs. In addition, the tanks will be "isolated" following completion of pumping. Because many of the tanks must be pumped simultaneously to maintain schedules, it is expected that each tank will go through its own life cycle. The phases of the life cycle include the following: specification, procurement, installation, operations, removal of the surface equipment, and isolation.

2.6.1 Specification

Only minimum analysis will be necessary for "replacement-in-kind" specifications, such as those needed for exhausters and FGMs.

2.6.2 Procurement

This project may depend on the timely procurement or fabrication of a number of major pieces of equipment (for example, PIC skids), FGMs, and exhausters); minor equipment (for example, centrifugal pumps, jet pumps, and jumpers); and consumables.

It is anticipated that some miscellaneous equipment, such as saltwell screens, jumper assemblies, pump assemblies, and similar items, will be procured; the rest will be fabricated at Hanford Site shops. Onsite and offsite vendors will be used for procurement activities.

2.6.3 Installation

Twenty one SSTs will require installation of the equipment necessary to pump and transfer the liquids. The other eight tanks have completed this process and have initiated pumping.

2.6.4 Operation

The operation phase represents most of the life cycle for this project. Section 4.0 describes the technical strategy for this phase. Tank pumping durations will vary from less than 6 months to more than 30 months.

2.6.5 Removal of the Surface Equipment

Following the determination that a tank has met the interim stabilization criteria, the surface equipment, (PIC skid, FGM, exhauster, and dilution system) will be disconnected and staged for reuse or disposal.

2.6.6 Isolation

Following pumping, each tank will be isolated according to the requirements in Section 2.7.

2.7 MISSION-LEVEL REQUIREMENTS

The basic mission-level requirement for the SST IS Project is to remove the pumpable liquid from the 29 SSTs referenced in Section 2.5.1. The criteria for removal, excerpted from the July 1984 letter from RL to the General Manager of Rockwell Hanford Operations, are as follows:

> Proceed with removal of interstitial liquid (saltwell pumping) from those single-shell tanks containing ≥ 50,000 gallons of interstitial liquid.
>
> Once a saltwell system is installed, pumping will continue until the 0.05 gpm pumping limitation is achieved. In the event the system experiences a major

maintenance failure and the tank contains more than 50,000 gallons, the system will be repaired/replaced and restarted. If the tank contains less than 50,000 gallons and the 0.05 pumping limit has not yet been achieved, an engineering evaluation of the problem, economics of repair, and personnel radiation exposure will be conducted to determine the feasibility of further pumping. The decision to continue or not continue pumping will be based upon what is considered technically and economically practicable and consistent with as low as reasonably achievable (ALARA) principles.

If a single-shell tank is not scheduled for saltwell pumping, it will be supernate pumped if it has ≥ 5,000 gallons of supernatant liquid. (The criterion for free standing supernatant is 5,000 gallons). (Lawrence 1984).

This requirement is prescribed in *RPP Administration*, "Tank Farm Facility Interim Stabilization Evaluation," Volume IV, Section 4.1, (CHG 2000).

An additional major requirement is that each SST shall be "interim isolated" following successful IS. Isolation for this project is defined as that condition reached after placing at least one physical barrier between an interim stabilized SST, other TFC facilities, and the general plant environment. Specific requirements are called out in the *Criteria for Interim Isolation of Radioactively Contaminated Tank Farm Facilities at Hanford* (Alstad 1990) and are prescribed in *RPP Administration*, "Tank Farm Facility Interim Isolation," Volume IV, Section 4.2, (CHG 2000).

The SST IS Project (systems and processes) must also satisfy numerous externally imposed requirements and guidelines. The requirements dictate, in part, the work scope, schedule, and budget for tasks supporting the SST IS Project mission. The sources of these requirements include promulgated laws and regulations, orders and directives, implementing procedures, contractual documents, and other planning guidelines. Table 2-3 lists these requirements in 20 functional areas.

The requirements and guidelines from all sources are considered when developing the SST IS Project technical baseline, when defining mission work scope, and when establishing administrative systems. The *Tank Waste Remediation System Program Plan* (Freeman 1998) provides additional detail on requirements and guidance, and Appendix C identifies externally imposed requirements that specifically affect the SST IS Project.

Table 2-3. Standards and Requirements Identification Documents for Functional Areas.

1.	Management Systems	11.	Radiation Protection
2.	Quality Assurance	12.	Fire Protection
3.	Configuration Management	13.	Packaging and Transportation
4.	Training and Qualification	14.	Environmental Restoration
5.	Emergency Management	15.	Decontamination and Decommissioning
6.	Safeguards and Security	16.	Waste Management
7.	Engineering Project	17.	R&D and Experimental Activities
8.	Construction Project	18.	Nuclear Safety
9.	Operations	19.	Occupational Safety and Health
10.	Maintenance	20.	Environmental Protection

R&D = Research and Development.

2.8 SINGLE-SHELL TANK INTERIM STABILIZATION PROJECT GOALS AND OBJECTIVES AND MEASURES OF SUCCESS

2.8.1 Goals and Objectives

Table 2-4 lists the primary goals and objectives for the SST IS Project mission. They are derived from the Tri-Party Agreement and objectives negotiated with the state of Washington under the Consent Decree.

Table 2-4. Single-Shell Tank Interim Stabilization Project Goals and Objectives.

Goal	Objective
Reduce environmental risk as rapidly as possible.	Prioritize tanks containing organic complexants, tanks with high supernatant volume, and tanks that pump quickly.
Operate and maintain facilities to provide continued safe and environmentally sound storage.	Remove pumpable liquid from 29 remaining single-shell tanks.
Reduce operating costs to acceptable levels necessary to safely manage the tank waste.	Isolate 40 remaining single-shell tanks.

2.8.2 Measures of Success

The measures of success for the SST IS Project are based on the desired end state for the project. These measures will be used to verify the SST IS Project is effectively executing its mission. Table 2-5 summarizes the measures of success for the SST IS Project end state.

Table 2-5. Measures of Success for Single-Shell Tank Interim Stabilization Project End State.

Single-Shell Tank Interim Stabilization End State	Measure of Success
Single-shell tanks are pumped to meet interim stabilization criteria.	Interim stabilization criteria of CHG 2000 are met.
Project is within schedule.	Pumping starts on schedule, total schedule variance is within tolerance, and pumping volume for total waste and organic complexant waste is met.
Project is within budget.	Cost variance is within tolerance.
Single-shell tanks are isolated.	Isolation documentation is complete according to CHG 2000.

3.0 KEY ENABLING ASSUMPTIONS, RISKS, AND RECOMMENDATION

3.1 ENABLING ASSUMPTIONS

The following assumptions relate to the SST IS Project, operations, technology and equipment, and permitting. The project schedule uses these assumptions as a basis for the program logic. The assumptions were developed on the basis of the relative level of risk. If assumptions are not valid, cost, schedule, and scope will be affected.

3.1.1 Project Assumptions

3.1.1.1 Department of Energy Orders. The DOE will continue to manage the Hanford Site and the SST IS Project. Department of Energy Orders are assumed to remain as they are with no critical changes affecting the project.

3.1.1.2 Safety/Environmental Issues. It is assumed no new safety or environmental requirements will be imposed that will affect the SST IS Project.

3.1.1.3 Tank C-106. Because tank 241-C-106 will be stabilized by Sluicing Operations and is separately funded, pumping of that tank is not included in the SST IS Project scope. However, the interim isolation of tank 241-C-106 is included in the SST IS Project scope.

3.1.1.4 244-U DCRT Bypass. A transfer line bypassing the 244-U DCRT has been installed but adds to the risk of transfer lines being plugged. It is assumed that the dilutions recommended by Process Engineering will be adequate to mitigate the line plugging potential.

3.1.1.5 Support Systems. It is assumed that the 242-A Evaporator; Effluent Treatment Facility; cross-site transfer system; Analytical Services Facilities; and the DCRT, SST, and DST tank farm support infrastructures can be maintained and scheduled to support this plan.

3.1.1.6 Funding Levels. Funding to meet the proposed baseline will be available to support project ramp up and sustained operations.

3.1.2 Operating Assumptions

3.1.2.1 Tank SY-102 Availability. Tank 241-SY-102 is the only DST available to receive SST liquid waste in the 200 West Area. This plan assumes that waste from 241-SY-101 will be diluted and transferred to 241-SY-102, beginning in FY 2000. This baseline accommodates a 200 West Area pumping shutdown of up to two weeks to support this effort in FY 1999. Additional transfers from 241-SY-101 and related interim stabilization shutdowns are being considered, but those potential impacts are *not* included in this plan and schedule.

3.1.2.2 East Area Facilities. There are a number of DSTs in 200 East Area. The availability of space is dependent, in part, on staging criteria for future processing and on scheduled evaporator campaigns to reduce the total volume. The plan assumes that sufficient DST space will be available to receive all SST transfers and cross-site transfers from tank 241-SY-102.

In addition, the plan assumes that construction and other activities in the East Area Tank Farms can be accommodated without serious schedule or cost impacts.

3.1.2.3 Leaking Single-Shell Tanks. Historical data indicate it should be assumed that one new leaker will be declared each year. However, a new leaker has not been declared in more than four years and the population of remaining tanks continues to decrease. A PIC skid, pump, FGM, and other miscellaneous equipment are maintained for installation in a leaker. It is assumed that any additional leaking tanks will be able to use equipment already available. No additional resources beyond the equipment already discussed are provided to expedite the pumping of a leaker. There is no provision for the use of the 4000 liter LR-56 waste transportation cask to begin pumping a leaking tank without a viable transfer line.

3.1.2.4 Previously Stabilized Single-Shell Tanks. It is assumed that once an SST is declared stabilized, no additional emergency pumping will be required if a leak is subsequently declared.

3.1.2.5 Existing Single-Shell Tank Farm Transfer Lines. The existing piping in the SST farms and the transfer lines to the DST receiver tanks are primarily single-wall, direct-buried piping. It is currently acceptable to use that piping to remove SST liquid waste. It is assumed the piping will remain available for use by this project. The majority of the piping will be disconnected or capped during the isolation phase of the project.

3.1.2.6 Transfer Line Integrity or Plugging. Existing piping for transferring SST liquid waste requires hydrostatic testing before it can be used; if the transfer lines fail the test, new routes must be found. Lines also may become plugged during pumping; if the line cannot be cleared, another transfer line must be found. Typical options for alternative transfer lines include the following: line repair, alternate routing, and above-ground transfer piping. One spare above-ground transfer piping system is funded to replace a line that cannot be repaired or rerouted.

3.1.2.7 Commingling of Waste. DOE has approved commingling of IS complexed, non-complexed, and transuranic complexed wastes with each other and other saltwell liquids in tank 241-SY-102, the cross-site transfer system, and the 200 East receiver DSTs.

Standby Exhausters. Standby exhausters are defined as exhausters that are available to be transported to a tank if needed and connected to a preinstalled isolation valve. Two standby exhausters will be available to be deployed if necessary.

3.1.2.8 Probability of Flammable Gas Release Requiring Mitigation. Because the probability of flammable gas release requiring mitigation by operation of exhausters is expected to be low, it is assumed that IS activities will not result in flammable gas levels approaching 25 percent lower flammability limit. There are no provisions in the schedule or budget for any

mitigating or recovery actions that might result from such an event, other than installation and short-term operation of the portable exhausters.

3.1.2.9 Waste Compatibility. While sampling and compatibility analysis are scheduled for each tank, it is assumed that all future transfers will be compatible, including the organic nitrate end-state analysis.

3.1.2.10 244-S DCRT Bypass. The 244-S DCRT has been bypassed. The bypass was placed in service in July 1999. Bypass of the DCRT will mitigate calculated flammable gas accumulations within the DCRT and avoid impacts of additional controls, such as waste inflow rate or waste dilution.

3.1.2.11 Single-Shell Tank Pumping Performance. Historical data were used to set anticipated volumes, pumping rates, durations, and efficiencies. Pumping rate estimates use waste type and characterization data. This program plan is based on engineering estimates of pumpable liquid volume, waste types, and liquid drainage rates, which are documented in HNF-2978, Revision 1 (Field and Vladimiroff 1999).

Overall system availability is defined as the number of actual operating hours of a given pump divided by the number of scheduled hours since the pump was started. Overall system availability is assumed to be 45 percent for systems that must pump through a DCRT, and 50 percent for systems pumping directly to DSTs. The downtime accounted for here includes downtime for equipment failure and maintenance, downtime caused by transfers, and other systematic shutdowns. (Some down time, such as when the tank is being evaluated against the stabilization criteria and other approved external events, will be excluded from the denominator.) While this level of performance exceeds recent pumping performance, it is expected that bypass of the 244-S DCRT and the 244-U DCRT, in concert with dedicated IS operating and maintenance staff, will allow these levels of pumping performance to be achieved.

Tank 241-A-101 has the longest estimated pumping durations of the remaining 29 tanks. It contains about 1.9 million liters (508,000 gallons) of supernate liquid (free liquid not trapped in salt cake interstices) and about 300,000 liters (79,000 gallons) of pumpable liquid contained in salt cake. Because the majority of the liquid is present as supernate, it is assumed that the variability of the pumping durations for this tank is bounded by a range of -20 to +10 percent for the schedule risk analysis.

An additional PIC skid and FGM have been planned in case a tank pumps longer than scheduled and shared equipment is not available for the next tank.

3.1.2.12 Operator Turnover. As a result of the ongoing and projected downsizing of CHG facilities, an excess of facility operators and other crafts workers has been declared under the 1997 Labor Agreement between FDH and the Hanford Atomic Metal Trades Council. These bargaining unit personnel could potentially displace the bargaining unit personnel currently assigned to the SST IS organization. The turnover rate resulting from the operator displacements is assumed to be no more than 25 percent annually (CHG 1999).

3.1.2.13 Operator Transition at Conclusion of Interim Stabilization. At the conclusion of interim stabilization and isolation, it is assumed operators will either transition to other Hanford Site activities or leave through attrition. No termination costs are included.

3.1.3 Technology and Equipment Assumptions

3.1.3.1 Tank 241-BY-105 Cement. In 1966, 57.2 metric tons (63.0 short tons) of portland cement were added to tank 241-BY-105 to test its properties as an immobilization agent for liquid waste. The consistency or configuration of the resulting cement mixture has not been established. Sampling was completed in late fiscal year 1998. It is assumed that the high-pressure water jet technology currently being tested will be adequate to cut through the cement mixture during installation of the salt well screen.

3.1.3.2 Tank C-103 Organic Layer. DOE will charter a study to establish the future plan for CHG management and disposition of organics contained in the tank waste. One part of that plan will establish the path forward for the separable layer contained in tank 241-C-103. The detailed plan assumes the organic layer in tank 241-C-103 will not be removed separately and stored for future disposition. This decision is required by September 2000.

3.1.3.3 Hot Water Dilution Systems. Several tanks remaining to be stabilized contain waste that requires dilution to minimize the potential of transfer line plugging, or gelling during transfer or within a DCRT before delivery to the DST. Twenty tanks are expected to require dilution during pumping. Dilution systems are being designed to meet the requirements of each tank farm.

3.1.4 Permitting Assumptions

3.1.4.1 Stabilization and Isolation (Intrusion Prevention) Criteria. The criteria for completion of interim stabilization and isolation of SSTs remains unchanged (CHG 2000).

3.1.4.2 Passively Ventilated Tanks. As is the current practice, passively ventilated tanks will not require an NOC.

3.1.4.3 Notice of Construction Review Cycles. The Washington State Department of Health 60-day review cycle will not result in comment rework that will require an additional 60-day review cycle.

3.2 MAJOR RISKS

The risk analysis was performed in two parts. The first part identified the cost variation inherent in the budgeted activities and the costs associated with identified risks. The second part identifies the schedule delays associated with these areas of uncertainty. Many of the greatest risks to the project have now been categorized as key assumptions and are excluded from the risk analysis (Table 3-1).

Risk management lists are dynamic by nature. As a program progresses, new risks are identified, others are closed, and still others must be readdressed because of changing circumstances. Changes to the Interim Stabilization Project have been made because of additional data obtained from the risk analysis as well as from newly completed technical analyses and knowledge gained from continued project activities. Accordingly, Table 3-1, Interim Stabilization Critical Risk Management List, has been updated to reflect the impacts of these changes.

Table 3-1. Interim Stabilization Critical Risk Management List. (2 sheets)

Risk Event #	Risk Title	Risk Owner	Enabling Assumption	Risk Statement
STA2-1a	Leaking Tank - Year 1	T.L. Hissong	3.1.2.2	N/A
STA2-1b	Leaking Tank - Year 2	T.L. Hissong	3.1.2.2	If more than 1 leaking tank is identified, additional costs for emergency cleanup will accrue. (Year 2)
STA2-1c	Leaking Tank - Year 3	T.L. Hissong	3.1.2.2	If more than 1 leaking tank is identified, additional costs for emergency cleanup will accrue. (Year 3)
STA2-1d	Leaking Tank - Year 4	T.L. Hissong	3.1.2.2	If more than 1 leaking tank is identified, additional costs for emergency cleanup will accrue. (Year 4)
STA2-2	Pumping Rates	T.L. Hissong	3.1.2.12	If pumping rates/durations/volumetric projections prove to be inaccurate (low), then schedule delays will occur.
STA2-3	Control System Failure	T.L. Hissong	N/A	If the complexity of control systems results in large number of trips of master shutdown interlocks (reducing the projected pumping efficiencies), then the total operating efficiency will decrease due to downtime and restart evaluation.
STA2-4	Line Pluggage	T.L. Hissong	3.1.3.3; 3.1.2.5	If excessive line pluggage results, due to nature of saturated salt solutions, then additional delays and budget overruns will result.
STA2-5	Cement Layer	T.L. Hissong	3.1.3.1	If water jet technology does not adequately cut through the cement layer in Tank 241-BY-105, then additional resources will be required to determine an adequate technology.

Table 3-1. Interim Stabilization Critical Risk Management List. (2 sheets)

Risk Event #	Risk Title	Risk Owner	Enabling Assumption	Risk Statement
STA2-6	Transfer Line Failure	T.L. Hissong	3.1.2.5	If more than one transfer line fails, then significant cost and schedule impacts will result.
STA2-7	Stand-By Exhausters	T.L. Hissong	3.1.2.7	This in not applicable under the revised exhauster requirements.
STA2-8	Schedule Delays	T.L. Hissong	N/A	If schedule slips occur, then added costs will result.

3.3 RECOMMENDATIONS FOR RISK MITIGATION

To reduce project uncertainty, many of the handling actions necessary to mitigate program risk were included within the baseline project scope, schedules, and estimates (technical basis review packages). Because of the magnitude and complexity of this project, aggressive risk management is required to maintain the baseline schedule and cost. Each item on Table 3-1, The Interim Stabilization Critical Risk Management List, identifies a residual risk after inclusion of mitigation actions.

The overall escalated budget impact of risk (at 80 percent probability of success) is less than 7.5 percent with a schedule impact of approximately 6 months. Critical risk items and risk handling activities will be statused on a regular basis. Maintenance of risk status is the responsibility of the SST IS Project.

4.0 TECHNICAL STRATEGY

4.1 PRIMARY TECHNICAL OBJECTIVES AND STRATEGY

The top-level strategy for this project plan was developed using the assumptions discussed in Section 3.0, the reality of physical conditions in the field, and existing staffing levels. The following primary technical objectives were used to determine the pumping sequence and target start dates for each of the remaining 21 tanks (8 tanks are currently being pumped). Achievement of these objectives forms the structural backbone for the Project Plan critical-path schedule.

4.1.1 Expedite Schedule

The IS Technical Team, identified earlier, established criteria for determining the pumping sequence based on the potential risk to the environment. The tanks containing complexed waste were to be started first, followed by the high volume tanks in the A and AX farms, with the remaining tanks to be prioritized based on estimated pumping rates. Minor adjustments were made to accommodate operational considerations.

4.1.2 Keep Pumping Systems Already Operating Running

Pumping has been initiated in eight (8) tanks as of 9/30/99. Three (3) tanks are being evaluated to determine whether the interim stabilization criteria have been met. The strategy keeps these running until completed.

4.1.3 Maintain Current Operations

Preparations are well under way to initiate pumping on three additional tanks in U Farm as well as tanks in the A/AX Farms. Work is to continue on these tanks and pumping will start as planned in FY 2000.

4.1.4 Staff Ramp Up

Significant staffing for operations and engineering staff is required to meet the overall program schedule objectives for this project plan. The number of new starts will be constrained in the schedule to match realistic and aggressive staff planning.

4.1.5 Tanks With Specific Technical Issues Cannot Start Until Those Issues Are Resolved

Tank 241-BY-105 pumping cannot start until the new technology for saltwell screen installation is demonstrated, and the new screen is in place. The start up of pumping of tank 241-BY-105 is constrained by the completion of this development work.

Tanks 241-BY-105 and 241-BY-106 share a failed transfer line. Third-crew staffing and construction of an overground transfer line or repair of the failed line constrain the start-up of pumping. Economic considerations favor pumping tanks 241-BY-105 and 241-BY-106 simultaneously.

Tank 241-C-103 has a floating layer of organic liquid on top of the aqueous waste. CHG previously recommended that the organic layer be transferred to the DST system with the aqueous waste, rather than being pumped to a separate storage tank. DOE is to charter a study to establish the future plans for management and disposal of the organic waste contained in the ORP complex. The basis for this plan is that the organic layer will not be separated, but will be pumped with the rest of the tank 241-C-103 waste. DOE also directed CHG to provide a plan to pump 241-C-103 organic separately (Kinzer 1999).

A preliminary screening identified nine tanks with waste temperatures over 38° C (100° F). When the waste solutions cool down in the direct-buried single-contained transfer lines, solids can precipitate and plug transfer lines. Experience with tank 241-SX-104 and with laboratory and solution chemistry modeling indicate that hot-water dilution is an effective technique to avoid line pluggage and solids dropout in the DCRTs. Subsequent analysis in U-farm and elsewhere has expanded the preliminary list of nine (9) to a total of 20 tanks that are expected to require dilution systems. Designs are being prepared to support the requirements of each tank farm. Process Engineering is continuing to evaluate expected pumping performance, and the dilution requirements may change as a result of these studies.

4.1.6 Geographical Location

Efficient use of operating crews favor concurrent scheduling of operation of saltwell systems that are in or near the same farms. Surveillance and operation of systems within one farm are much more effective than pumping one system in each of several farms. Travel time and inefficiencies that result from subdividing the crew means that few total systems can be operated by a fixed crew if they are geographically dispersed. Similar efficiencies will result during pump preparatory work as well.

4.1.7 Pumping Sequence and Timing

The technical objectives defined in Section 4.1 establishes the preparation and start-up sequence for the saltwell pumping plan. Application of realistic resource ramp up constraints and consideration of field weather conditions establish the target start dates for the project schedule. After combining the start dates with projected pumping durations, the individual tank pumping

schedules were estimated. Detailed equipment requirements were developed, accounting for reuse of equipment where practical. Detailed logics were developed for each tank, with a critical path schedule developed for each tank system startup. The resulting master schedule is presented in Figure 4-1.

4.2 TECHNICAL APPROACH

The approaches used to achieve the primary technical objectives are based on the assumptions in Section 3.1. The approaches include removing pumpable liquid and using and modifying the existing technology and infrastructure as required to meet the objectives. These approaches are discussed below. Funds for developing the technology and for removing and storing the organic layer from tank 241-C-103 are not included in the project baseline.

4.2.1 Remove Pumpable Liquid

The SST IS Project's primary mission will be accomplished by removing pumpable liquid from the remaining SSTs and transferring the liquid to the DST system for storage and volume management pending its use for immobilization feed. The remaining solids will be stored in the SSTs until retrieved for feed delivery to the pretreatment and immobilization facilities. To prevent intrusion of water, the SST piping and other access points will be cut, capped, and sealed pending waste retrieval for treatment and disposal. The nozzles in the pump pit or interconnected valve pit will be sealed so that a misrouted waste transfer from another source cannot occur.

4.2.2 Use Existing Technology

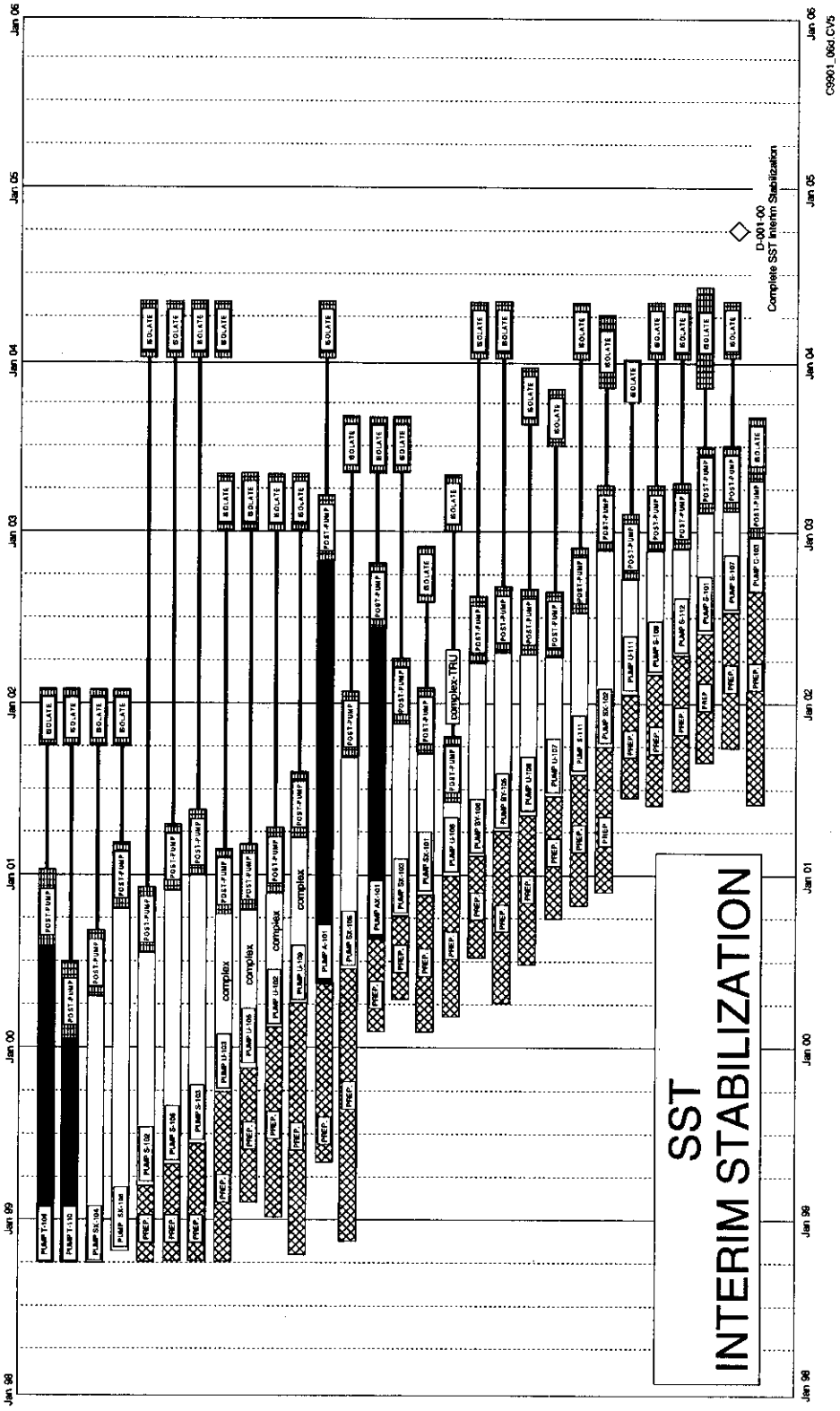
Use of the existing saltwell pumping technology will continue with the addition of necessary transfer, safety, and control systems needed to meet the approved Authorization Basis. In certain cases, additional risk-reduction technologies will be pursued to improve the likelihood of achieving the baseline schedule or improving overall performance, that is, cost, schedule, and effectiveness (see Appendix B). Given the limited duration of the program, it is not expected that dramatic performance improvement of the saltwell systems will be achieved.

Deployment of supplemental techniques or development and deployment of new technology will be required to complete the stabilization of tank 241-BY-105 (see Section 4.3).

4.2.3 Use Existing Infrastructure

The SST IS Project will maximize use of the existing tank farm infrastructure including pumping systems, single-contained lines, DCRTs, valve and transfer boxes, and the new cross-site transfer line. The 242-A Evaporator and the 200 East Area Effluent Treatment Facility will be used to

Figure 4-1. Single-Shell Tank Interim Stabilization Activities.



manage the DST tank space. Where necessary, the project will use sections of radiation-shielded, above-ground waste transfer lines to facilitate the transfer of pumped liquid to the DST system. If existing transfer lines fail or do not pass pressure tests, alternative routings will be examined and, if necessary, temporary overground double-encased transfer lines will be installed and used.

4.3 TECHNICAL DEVELOPMENT

To pump the waste from tank 241-BY-105, additional technical development work is required because the tank has a very hard surface layer of portland cement (depth unknown).

In 1995, SST IS Project personnel attempted to install a saltwell pump into an existing saltwell screen in tank 241-BY-105. As the screen was being cleared with a water lance, a very hard layer of material was found near the waste surface. The normal system of water lancing could not penetrate the material. Subsequent investigation identified that portland cement had been added to this tank in 1966. Recent core sampling activities also have encountered the hard material.

Additional technologies are needed to support the installation of a new saltwell screen and subsequent pumping. These technologies will need to develop and test equipment that can cut through the hard surface and allow a saltwell screen and pump to be lowered into the tank. Tasks include design, manufacturing, testing, obtaining safety approvals, and training Hanford Site craft personnel to use the equipment. A tool using very high pressure water has been designed and is being tested to determine whether it is adequate to install the saltwell screen.

4.4 MASTER PROJECT SCHEDULE

An integrated SST IS Project master schedule was developed using the pumping durations identified in Table 4-1, the technical objectives discussed in Section 4.1, and the logistical limits imposed by the existing physical systems—enhanced by limited additional construction. The primary schedule constraint is the pumping duration on individual tanks. In the 200 East Area, the schedule durations are dominated by projected long pumping durations of tanks 241-AX-101 and 241-A-101 and the "special cases" of tanks 241-BY-105 and 241-C-103, which require installation of additional equipment before saltwell pumping can be initiated. In the 200 West Area, the primary consideration is the large number of tanks that must be stabilized.

The pumping durations listed in Table 4-1 assumes 45 percent "system availability" for each tank pumping to a DCRT and 50 percent system availability for each tank pumping directly to the DST. (Average efficiencies in FY 1999 were somewhat less than this as the SST IS Project works to overcome some of the historic problems and incorporate design changes into the pumping equipment.) These numbers were selected based on past pumping experience. Previous revisions used 60 percent "operating efficiency" and added an allowance for DCRT transfers that reduced the system availability to about 50 percent. Efficiencies previously documented for earlier saltwell pumping excluded many work stoppages that were not directly associated with the pumping activities. The 45 to 50 percent system availability provides an

Table 4-1. Pumping Durations (Days).[1]

Area	Tank Farm	Tank	Total Pumping Durations	Waste Type
West	S Farm	S-101	250	Noncomplexed
		S-102	520	Noncomplexed
		S-103	604	Noncomplexed
		S-106	557	Noncomplexed
		S-107	208	Noncomplexed
		S-109	256	Noncomplexed
		S-111	335	Noncomplexed
		S-112	216	Noncomplexed
	SX Farm	SX-101	306	Noncomplexed
		SX-102	413	Noncomplexed
		SX-103	410	Noncomplexed
		SX-104	710	Noncomplexed
		SX-105	441	Noncomplexed
		SX-106	658	Noncomplexed
	T Farm	T-104	421	Noncomplexed
		T-110	625	Noncomplexed
	U Farm	U-102	280	Complexed
		U-103	376	Complexed
		U-105	342	Complexed
		U-106	143	Complexed-TRU
		U-107	292	Noncomplexed
		U-108	338	Noncomplexed
		U-109	346	Complexed
		U-111	220	Noncomplexed
East	A Farm	A-101	870	Noncomplexed
	AX Farm	AX-101	648	Noncomplexed
	BY Farm	BY-105	380	Noncomplexed
		BY-106	408	Noncomplexed
	C Farm	C-103	113	Complexed

[1]Assumes 45 to 50 percent system availability.

allowance for routine shutdowns for maintenance and other short-term nonscheduled outages. The pumping durations also include an allowance for the estimated time that pumping must be interrupted for emptying the DCRTs. In many cases, this DCRT emptying time adds substantially to the overall length of the individual tank pumping campaigns.

Figure 4-1 is a summary schedule of the major activities required to complete interim stabilization. In general, each tank remaining to be stabilized requires the following: preparation for pumping, including the installation of exhausters, FGM, and PIC skids; pumping; and post-pumping and isolation. Pumping durations incorporate an assumed 45 or 50 percent system availability.

The schedule results in a stabilization program completion date of December 2004. This date is based on the estimated duration of activities associated with tank pumping and isolation, as well as a schedule risk allowance required to increase the probability of completing the program by the scheduled completion date to 80 percent. The scheduled risk allowance, which lengthens the stabilization program by approximately 6 months is based on a risk analysis of various task duration uncertainties associated with the program.

The schedule risk allowance, which is not shown in Figure 4-1, is assumed as a delay in completing the isolation activities for tank 241-U-107, the last tank scheduled to complete pumping. The activities shown in Figure 4-1 are scheduled to begin on their early start dates and to be completed on their early finish dates, without any individual allowance for risk. The scheduling of activities according to early start and finish dates (except for the final isolation step for tank 241-U-109) is aggressive and enables a conservative calculation of maximum loads that will be placed on such tank farm infrastructure components as DCRTs and pipelines. Actual performance schedule milestones will not necessarily be early start/early finish dates, but will meet the overall schedule end dates. Tabulations of some DCRT through-put volumes are provided in Section 4.6.

Changes to the SST IS Project cost and schedule can be expected during the project due to the difficulty in predicting tank volume of pumpable liquid and pumping duration for each tank. While pump volumes have been predicted based on the best information available, the actual amount of liquid and rate that may be removed varies significantly because of a variety of factors such as waste porosity. Longer pumping durations than predicted may increase costs due to added maintenance and operations costs, and equipment that is being transferred to other pumps, which may not be available to meet the schedule. Some of this risk has been mitigated through the purchase of spare equipment and through the addition of schedule risk costs. The cost and schedule will be reviewed and updated each year during the Multi-Year Work Plan development in response to actual pumping performance.

New milestones have been developed for the SST IS Project under Revision 3. These milestones are presented in Table 4-2.

Table 4-2. Single-Shell Tank Interim Stabilization Milestones Included in the Consent Decree.

Milestone number	Milestone date	Milestone
1	Initiated	Start 4 tanks (SX-104, SX-106, T-104, T-110)
2	7/31/99	Start 3 tanks (S-102, S-103, S-106)
3	6/15/00	Start 4 tanks (U-102, U-103, U-105, U-109)
4	10/30/00	Start 2 tanks (A-101, AX-101)
5	3/15/01	Start 4 tanks (SX-101, SX-103, SX-105, U-106)
6	7/15/01	Start 2 tanks (BY-105, BY-106)
7	12/30/01	Start 4 tanks (S-111, SX-102, U-107, U-108)
8	11/30/02	Start 5 tanks (S-101, S-107, S-109, S-112, U-111)
9	12/30/00	DOE to establish need to remove organic layer from 241-C-103. Milestone for pumping will then be established.
11	9/30/99	Reduce total waste remaining to be removed to 93% of total estimated waste
12	9/30/00	Reduce organic waste remaining to be removed to 38% of organic estimated waste
13	9/30/01	Reduce organic waste remaining to be removed to 5% of organic estimated waste
14	9/30/02	Reduce total waste remaining to be removed to 18% of total estimated waste
15	9/30/03	Reduce total waste remaining to be removed to 2% of total estimated waste
16	9/30/04	Complete interim stabilization of all 29 tanks

Additional milestones are in negotiation with ORP and will be added to the SST IS Project schedule. Some of the milestones under negotiation require completing a specified volume or volume percentage by a specified date. Volume remaining to be pumped will be reestimated each year to support milestone completion.

4.5 FACILITY CONFIGURATION

Figure 4-2 categorizes the 29 SSTs by farm and shows the primary interconnections to the DCRTs, the supporting DSTs, and the cross-site transfer lines.

The piping for each DCRT and SST that requires pumping have been identified and are shown in summary form on Figure 4-3. Figure 4-3 (a through e) identifies the piping for each DCRT and SST that requires pumping. The assessment of current piping systems and supporting control and leak detection was developed and included in the Level 1 logic developed for each SST.

Figure 4-2. Waste Flow for Single-Shell Tank Interim Stabilization System Flow Program.

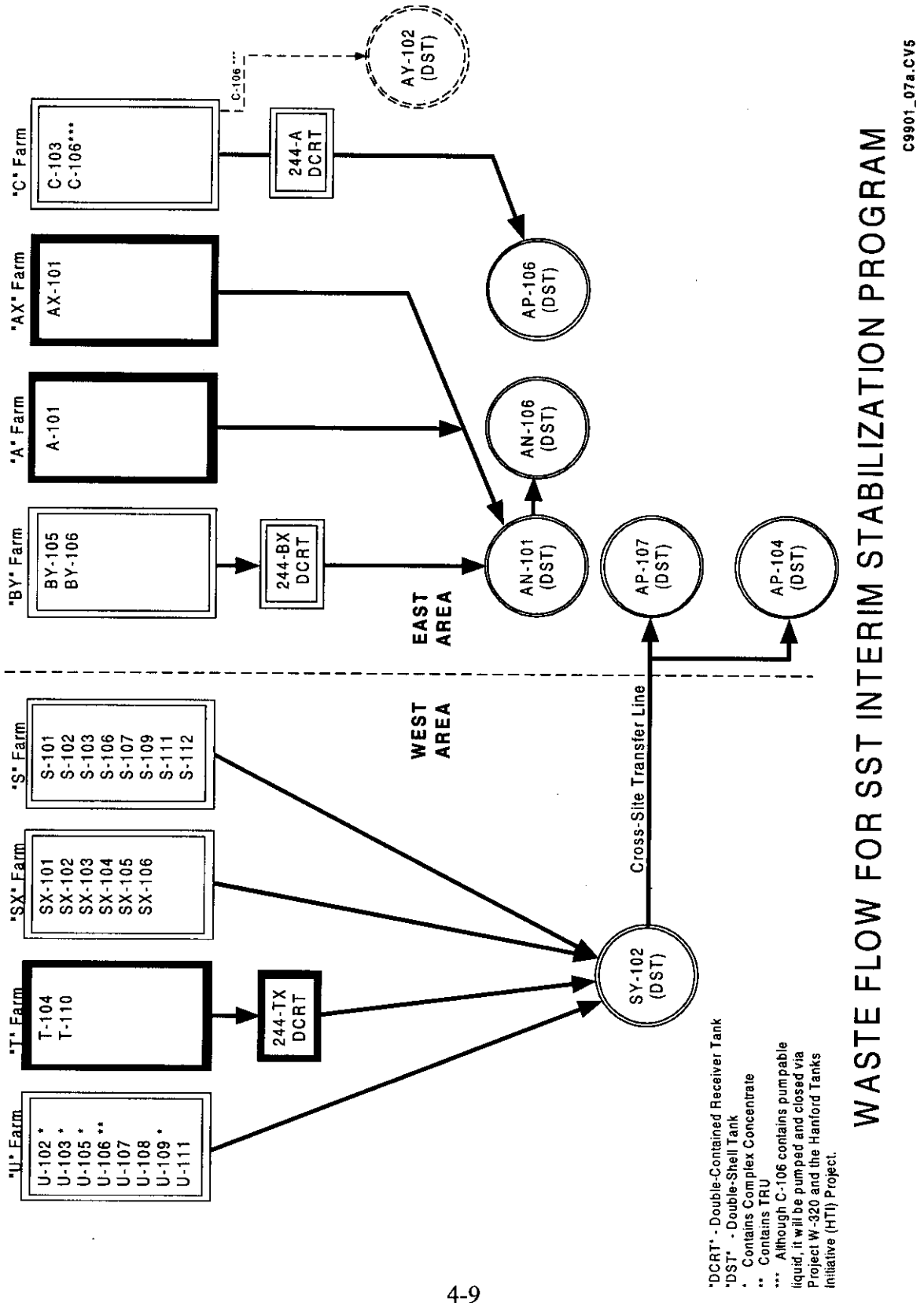


Figure 4-3a. A and AX Farm Piping Configuration.

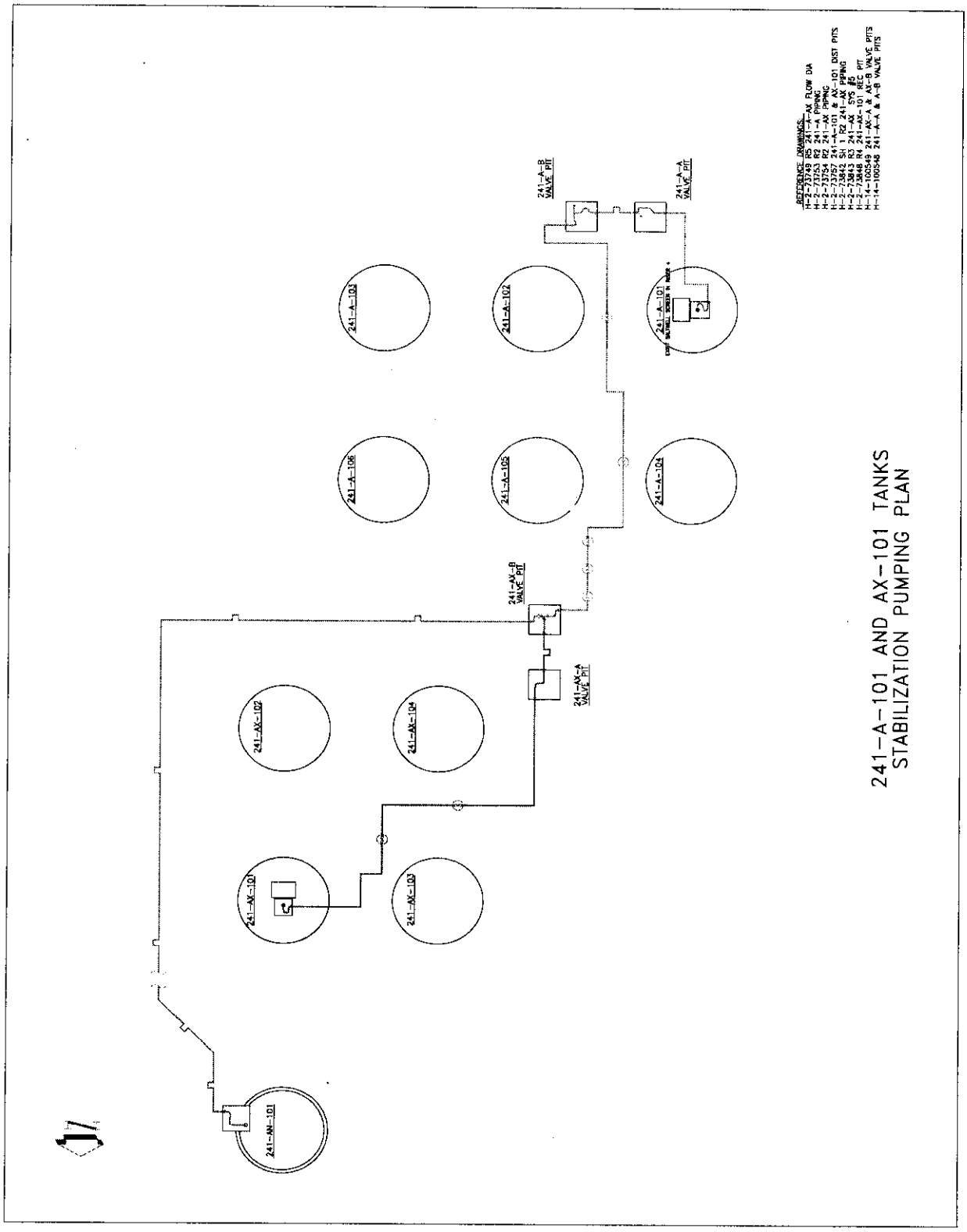


Figure 4-3b. BY Farm Piping Configuration.

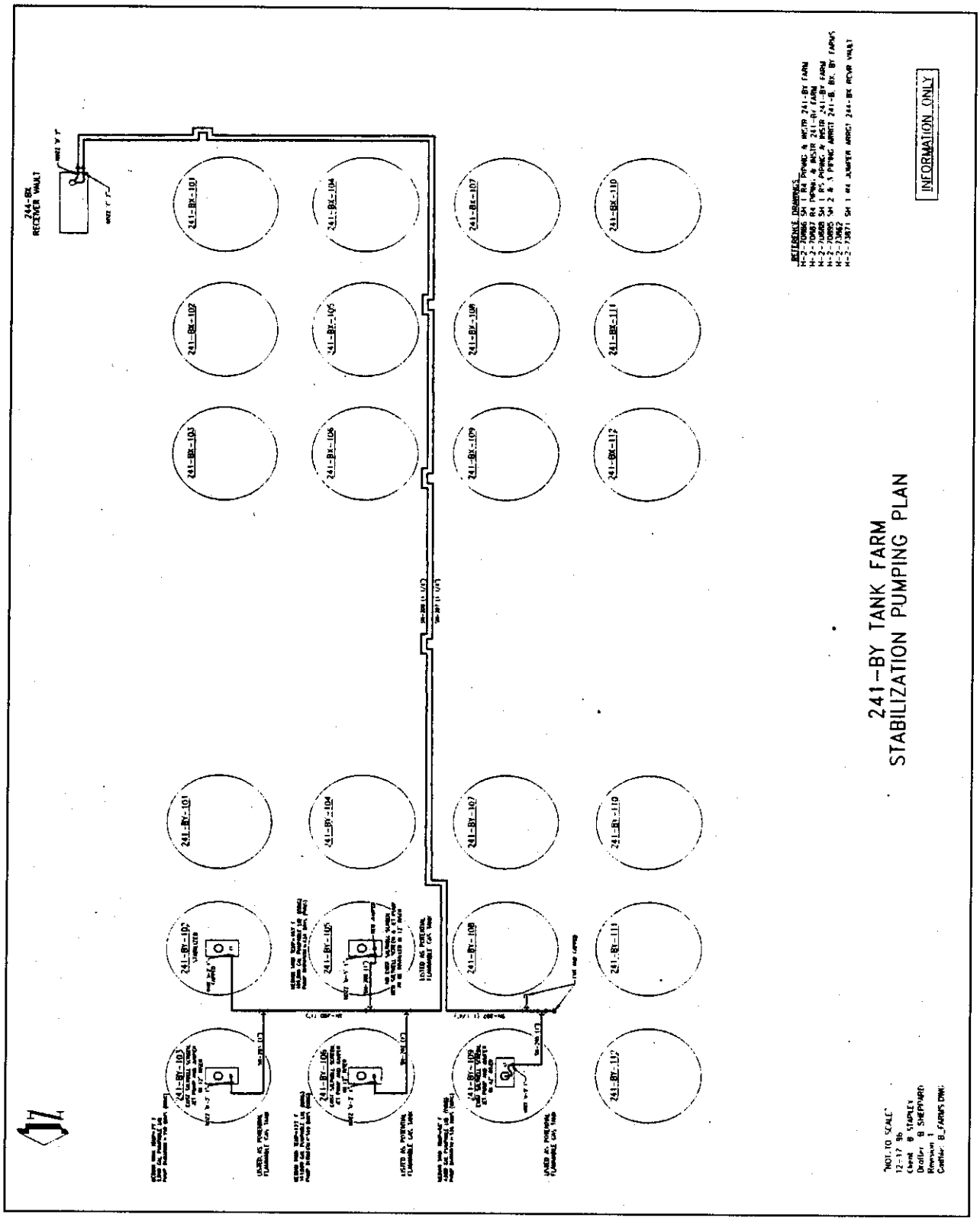


Figure 4-3c. S and SX Farm Piping Configuration.

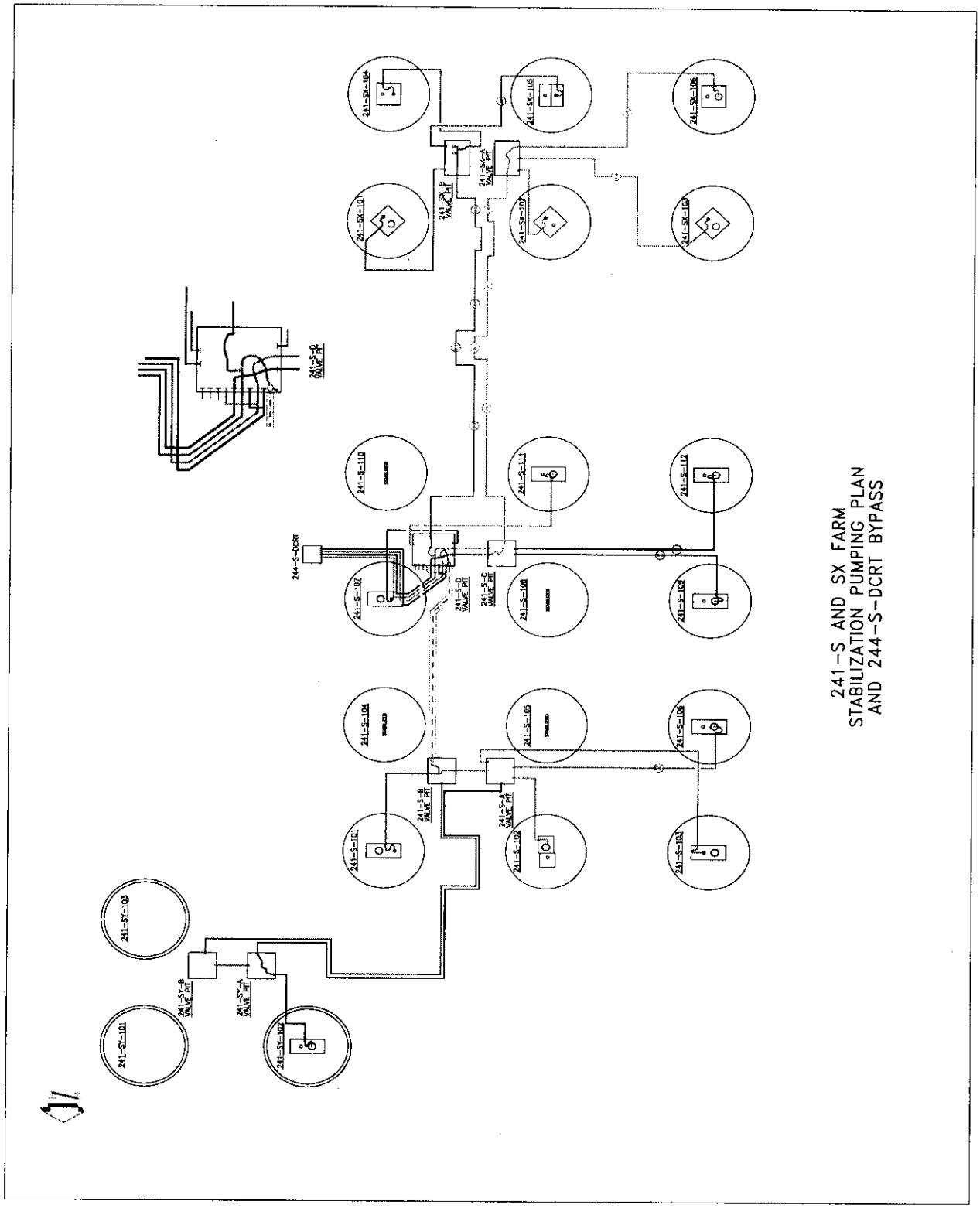


Figure 4-3d. T Farm Piping Configuration.

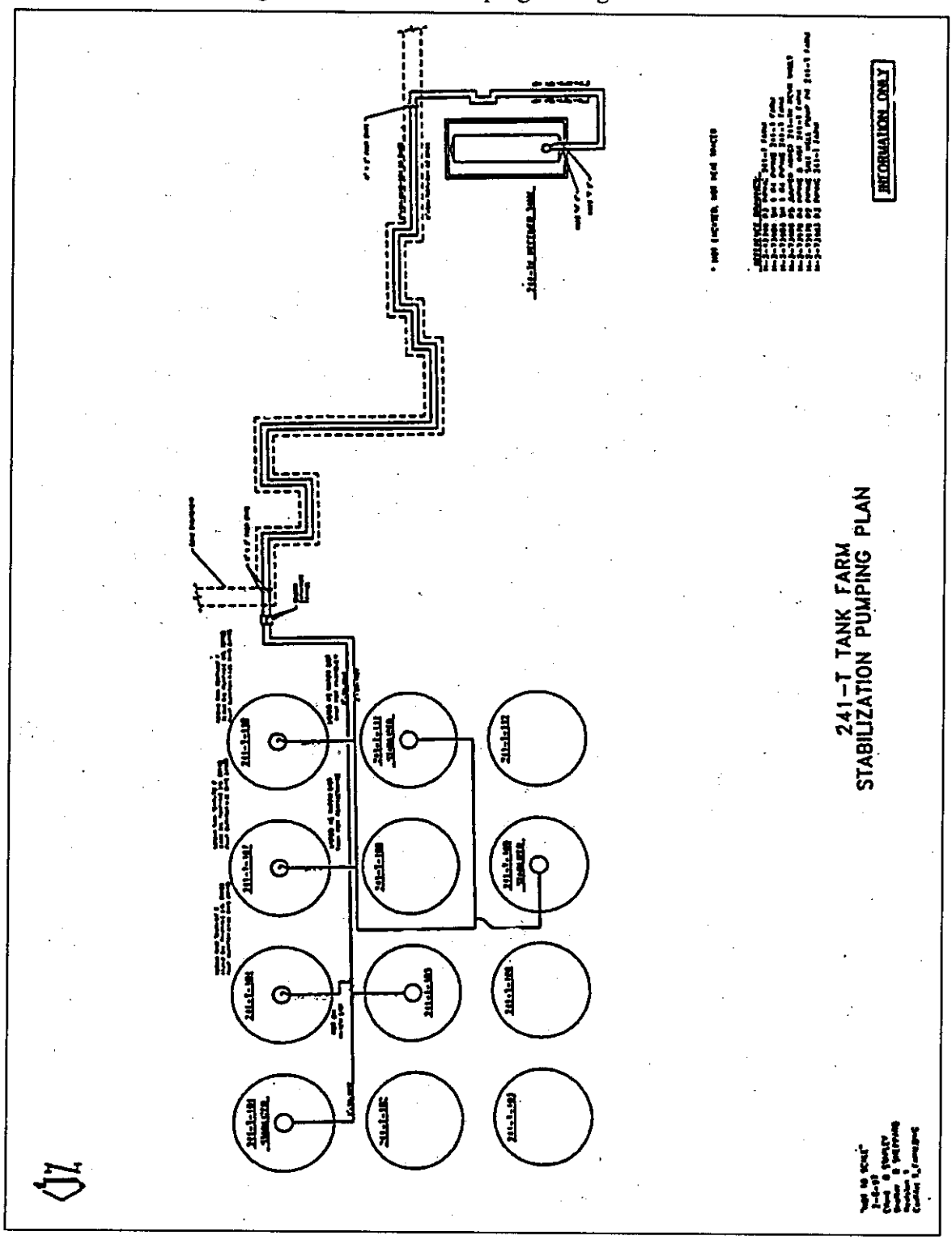
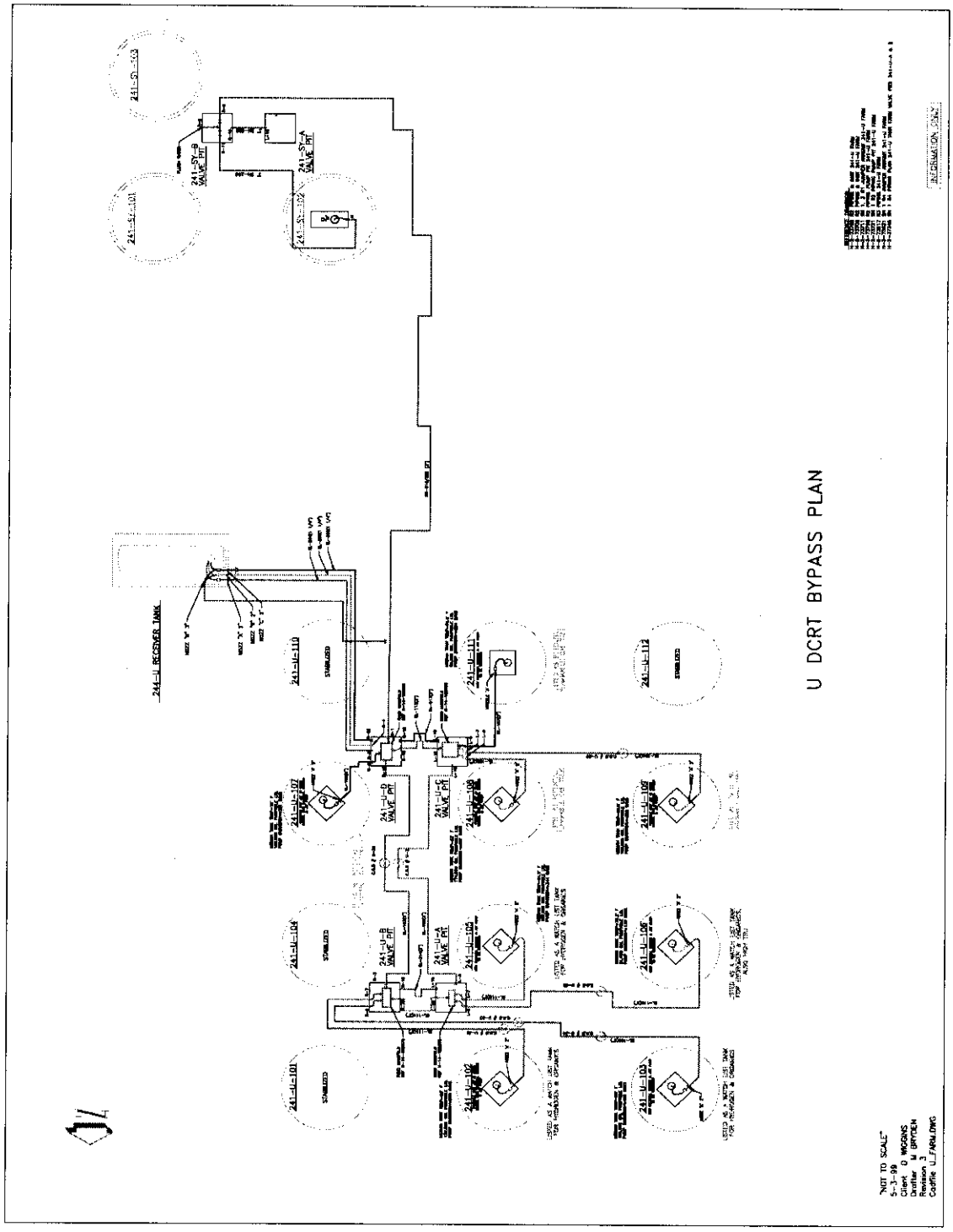


Figure 4-3e. U Farm Piping Configuration.



4.6 REQUIREMENTS FOR THE TECHNICAL STRATEGY

A model of the technical strategy was constructed using updated initial inventories, projected pumping durations and yields, and DCRT and DST system configurations. Overall system performance as a function of time and individual subsystem performance were evaluated using typical average and peak requirements. These requirements were compared to reasonable subsystem capabilities. Some key performance requirements and results are shown in Figures 4-4 through 4-8 and Tables 4-2 and 4-3 and are described below. The results presented in the figures and in Table 4-1 include an allowance for dilution water equal to 50 percent of waste volume when dilution is required, and 10 percent of waste volume for all other tanks. These curves have not been adjusted for risk.

Figure 4-4 presents the cumulative pumping requirements for the DCRT and farm subsystems as a function of time. The bulk of the waste volume is removed from the S and SX Farm system; the U Tank Farm system is the next highest producer.

Figure 4-5 shows the total liquid pumped versus time for the project baseline strategy. A total of 15.2 million liters (4.0 million gallons) of liquid waste remains to be pumped. Over 80 percent of the total pumpable volume are scheduled for removal by September 2002, and 99 percent are scheduled for removal by December 2003.

Bypassing DCRT 244-S and 244-U is planned, which eliminates these as the limiting variable.

Figure 4-8 indicates that nine cross-site transfers of saltwell liquid will be required over the life of the project.

Table 4-3 shows the peak and average performance requirements for major subsystems. These performance requirements were estimated and compared to the normal capacity of the DCRTs and cross-site transfer system. This comparison indicates that the 244-S DCRT will require more than one emptying cycle per week until it is bypassed.

To support liquid-volume reduction during the SST IS Project, the 242-A Evaporator will be scheduled to run 10 evaporator campaigns through the year 2003. Table 4-4 identifies the evaporator schedule.

This analysis is based on the best available estimates for waste volume, required dilution rates, and liquid waste removal rates. These estimates must be updated as production information becomes available.

Figure 4-4. Double-Contained Receiver Tank and Tank Farm Subsystem Cumulative Pumping Performance Requirements.

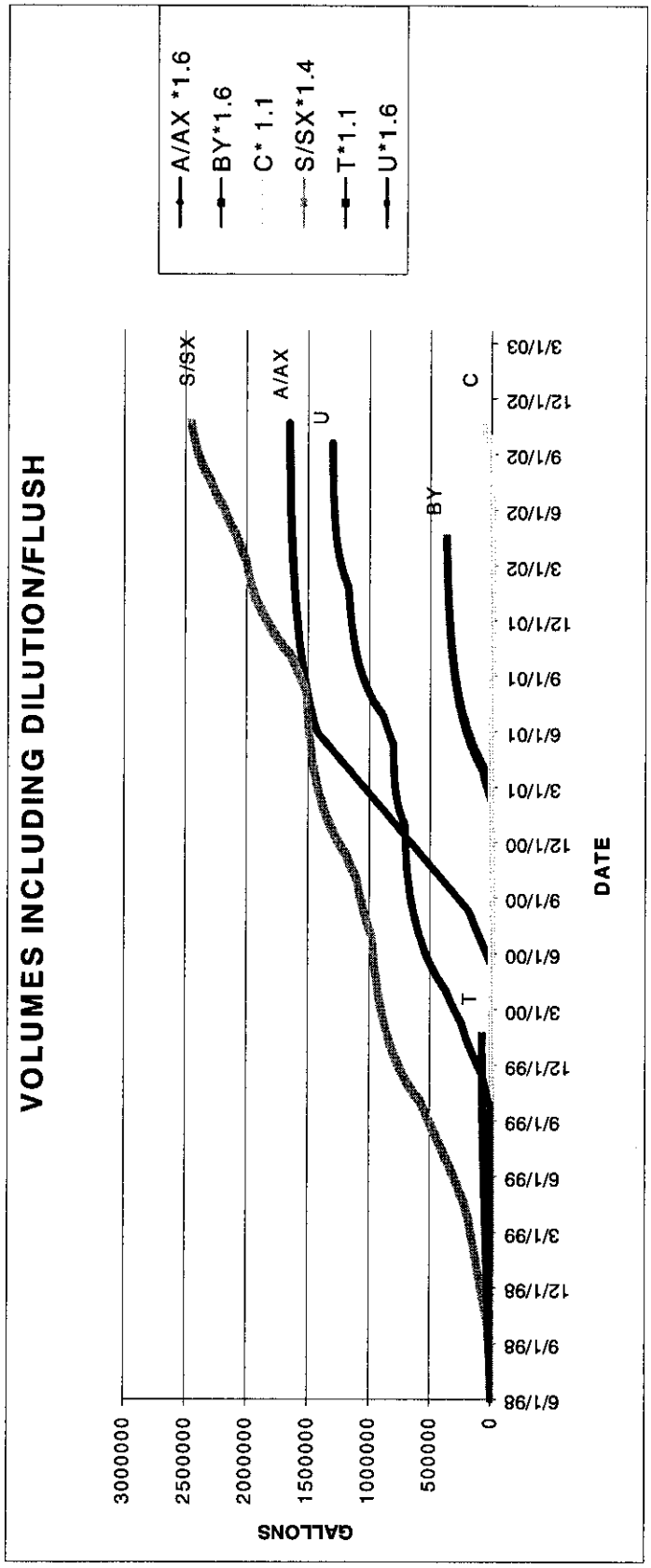


Figure 4-5. Total Waste Volume Transferred.

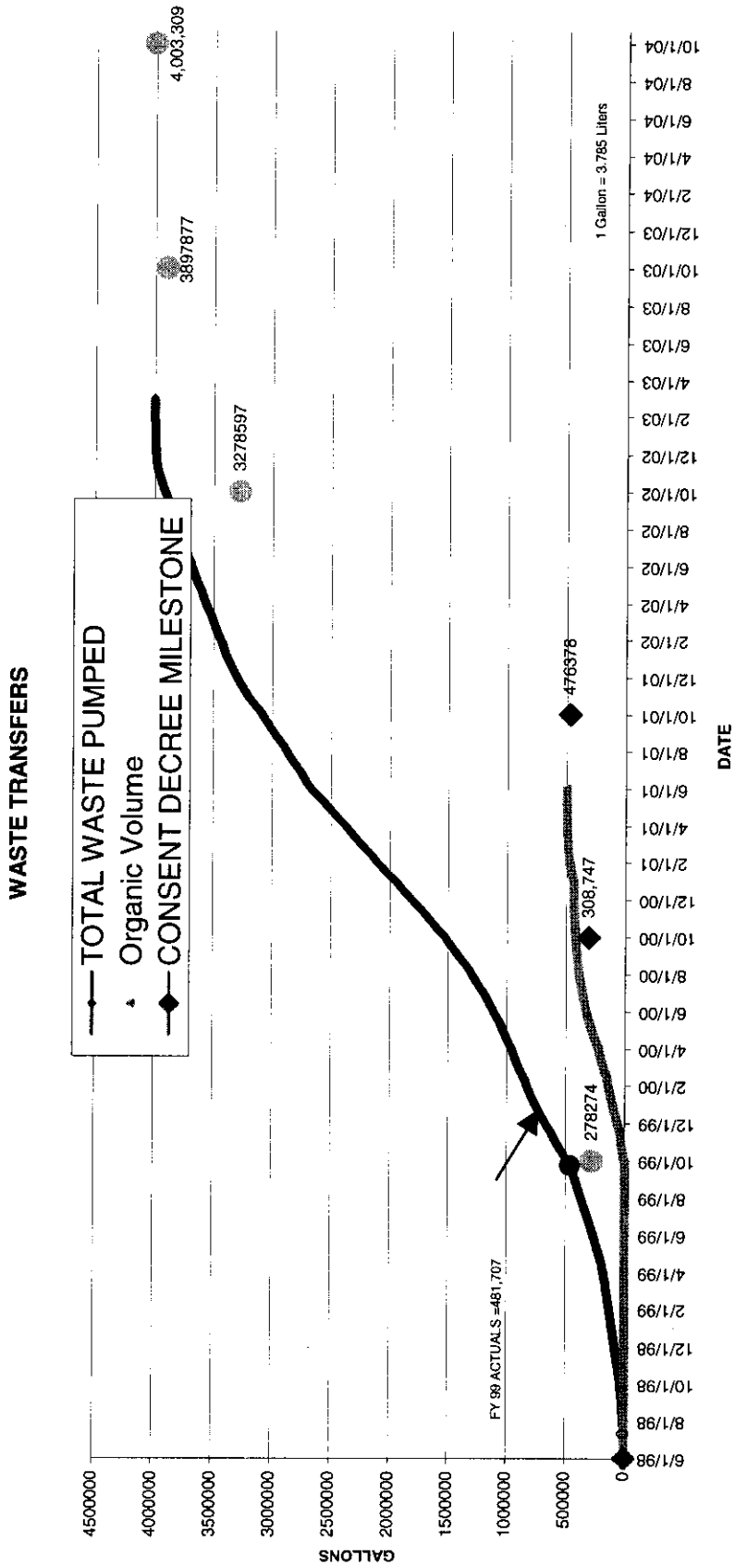


Figure 4-6. Cross-Site Transfers.

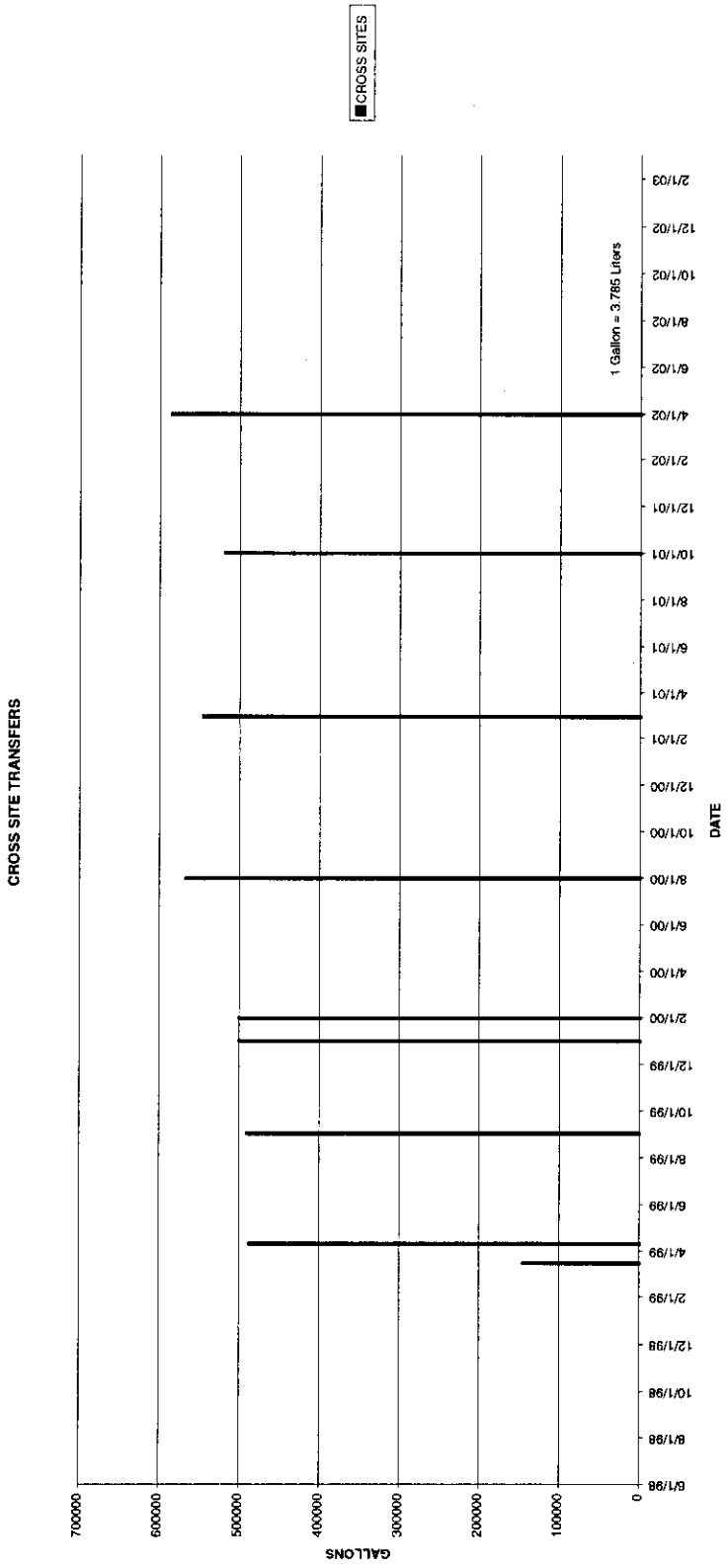


Table 4-3. Performance Requirements of Major Subsystems.

Equipment	Average Use[1, 2]	Peak Use[1]	Nominal Rating[1]
244-S DCRT[3]	This facility was bypassed in June 1999	14,400 gal/week	16,000 gal/transfer
244-TX DCRT	2,300 gal/week over 40-week period	5,700 gal/week	20,000 gal/transfer
244-BX DCRT	6000 gal/week over 62week period	12300 gal/week	20,000 gal/transfer
Cross-Site Transfer Line	626,600 gal/ transfer, 8 transfers	626,600 gal transfer in 1 week	680,000 gal/transfer

[1]1 gallon = 3.785 liters.
[2]Over a time period of concentrated use.
[3]DCRT 244-S is scheduled to be bypassed and not used after October 1999.
Volumes include dilution water.

DCRT = double-contained receiver tank.

Table 4-4. Evaporator Campaign Schedule for Projection L9901A--DRAFT 1/11/99.[1] (2 sheets)

Campaign	Start Date	Staging Tank(s)	Source	Waste Feed Type	Feed Volume (Kgal)	Receiver Tank
00-1	3/2000	241-AP-107	241-SY-102 to 241-AP-107-- 4/1999 and 8/1999	DN	~950	241-AP-105
01-1	1/2001	241-AP-107	241-SY-102 to 241-AP-107-- 7/2000 241-AP-108 to 241-AP-107-- 8/2000	DC from 241-SY-101 DN	~950	241-AP-103
01-2	9/2001	Direct to 241-AW-102	241-AW-104 to 241-AW-102-- 8/2001	DN	~800	241-AP-105
02-1	5/2002	241-AP-107	241-SY-102 to 241-AP-107-- 2/2001 241-SY-102 to	DN/DC-SWL DN/DC-SWL	~950	TBD

Table 4-4. Evaporator Campaign Schedule for Projection L9901A--DRAFT 1/11/99.[1] (2 sheets)

Campaign	Start Date	Staging Tank(s)	Source	Waste Feed Type	Feed Volume (Kgal)	Receiver Tank
			241-AP-107--9/2001			
03-1	1/2003	241-AP-107	241-SY-102 to 241-AP-107--3/2002 241-AP-108 to 241-AP-107--4/2002	DN/DC-SWL DN	~950	TBD
	2/2003	Direct to 241-AW-102	241-AN-106 to 241-AW-102--2/2003	DN-SWL	~950	TBD
03-2	9/2003	241-AP-107	241-SY-102 to 241-AP-107--4/2003 241-AP-108 to 241-AP-107--4/2003	DN/DC-SWL DN/DC-SWL	~950	TBD
FY-04	Evaporator outage is scheduled for FY 2004					

[1]gallon = 3.785 liters.
DC = dilute complexed waste.
DN = dilute non-complexed waste.
SWL = saltwell liquor.
TBD = to be determined.

5.0 PROJECT STRATEGY

5.1 OPERATIONS AND MAINTENANCE STRATEGY

The ramp up and the extent of the field activities necessary to execute this baseline schedule are unprecedented. As a result, substantial upgrades to the operations and maintenance strategy are required.

5.1.1 Operations Strategy

The SST IS Project operations strategy is based on the applicable requirements established in DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities* (DOE 1990). The applicability matrix for DOE Order 5480.19 is defined in CHG (2000), Volume II, Section 4.1.1, "Operations Organization and Administration."

The SST IS Project operations strategy consists of a dedicated 24-hour-per-day, 7-day-per-week shift to monitor and control SSTs that are actively being pumped. This consists of four rotating shifts plus a "T" shift, which backfills the rotating shift for training, vacations, and other absences. It also includes a normal dedicated 5-day-per-week (Monday through Friday) day shift to prepare interim stabilization equipment, isolate tanks, and conduct intrusion prevention activities.

In addition, the SST IS Project will achieve and maintain the capability to initiate the pumping of a declared leaking SST within 30 days except for tank 241-BY-105. Pumping of this tank requires the development and deployment of technology not now available to CHG.

Standard operating practices and procedures will be performed in accordance with CHG (2000).

5.1.2 Maintenance Strategy

The duration of the SST IS Project is directly affected by the total system availability of the pumping system. The project plan projects an average of 45 to 50 percent availability of the saltwell pumping system. For tanks with long pumping durations, increased operating efficiency can result in dramatic improvements to the overall completion schedule.

The SST IS Project maintenance strategy is based on the requirements established in DOE Order 4330.4B, *Maintenance Management Program*, Chapter 2 (DOE 1994); *Maintenance Optimization Plan for Essential Equipment Reliability* (Steffen 1996); *Preventive Maintenance*, Good Practice MA-307, (INPO 85-032); *Plant Predictive Maintenance*, Good Practice MA-316, (INPO 89-009).

The strategy consists of an effective preventive and predictive maintenance program including the proper skill mix of crafts to install and remove equipment and to provide preventive, predictive, and corrective maintenance. The strategy is designed to balance early detection of

conditions with actions that will ensure reliability and ALARA consideration of maintenance personnel. The strategy will continue to "run to failure" the equipment in high-radiation and high-contamination areas.

The SST IS Project maintenance program will continue to work a dedicated 5-day-per-week (Monday through Friday) day shift operation. If necessary, shift support, and/or weekend overtime will be used to maintain pumping performance for specific tank operations.

Maintenance practices and procedures will be performed in accordance with CHG (2000).

5.2 NUCLEAR SAFETY AND LICENSING STRATEGY

The 30 SSTs remaining to be interim stabilized (including tank 241-C-106) have been separated into two categories as defined in *Tank Waste Remediation System Final Safety Analysis*, (FDH 1999): Facility Group 2 and Facility Group 3. Facility Group 2 is made up of SSTs that are postulated to have the potential for a large *induced* gas release event but only a small *spontaneous* gas release event. The large gas release events postulated for Facility Group 2 SSTs are those *induced* by globally waste-disturbing operation. Facility Group 3 SSTs are those postulated to have no *spontaneous* gas release events and to be subject only to small *induced* gas release events.

The approved safety evaluation report that authorizes saltwell pumping for Facility Group 2 and 3 SSTs (including tank A-101) are the *Tank Waste Remediation System Final Safety Analysis* (FDH 1999) and the *Tank Waste Remediation System Technical Safety Requirements* (FDH 1997d). The RL direction in Wagoner (1998a and 1998b) has been implemented into the basis of interim operation and the technical safety requirements according to Engineering Change Notice 610880.

5.3 ENVIRONMENTAL PERMITTING STRATEGY

Table 5-1 identifies relationships between the tanks to be pumped and their regulatory status.

Table 5-1. Single-Shell Interim Stabilization Permitting Strategy. (2 sheets)

Tank	System Description	NOC Status	Fiscal Year to Initiate Pumping
241-SX-104	FG-3, on 241-SX use sludge cooler for standby requirements	Short form complete	1998
241-SX-106	FG-2, on 241-SX use sludge cooler for standby requirements	Short form complete	1998
241-T-104	FG-3, no standby exhauster required	No NOC required	1998
241-T-110	FG-3, no standby exhauster required	No NOC required	1998
241-A-101	FG-2, standby exhauster required	Separate NOC complete but requires revision	1999
241-S-102	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	1999
241-S-103	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	1999
241-S-106	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	1999
241-AX-101	FG-3, no standby exhauster needed	Radiological and Non-Radiological NOCs approved	2000
241-SX-101	FG-2, on 241-SX use sludge cooler for standby requirements	Concurrence needed from WDOH[1]	2000
241-SX-105	FG-2, on 241-SX use sludge cooler for standby requirements	Concurrence needed from WDOH[1]	2000
241-U-102	FG-2, standby exhauster required	Not in current Radiological NOC, sampling required (Non-Radiological NOC approved)	2000
241-U-103	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2000
241-U-105	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2000
241-U-106	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2000

Table 5-1. Single-Shell Interim Stabilization Permitting Strategy. (2 sheets)

Tank	System Description	NOC Status	Fiscal Year to Initiate Pumping
241-U-109	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2000
241-BY-105	FG-2, standby exhauster required Concrete layer penetration	Radiological and Non-Radiological NOCs approved NOC is drafted	2001
241-BY-106	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2001
241-S-111	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2001
241-SX-103	FG-2, on 241-SX use sludge cooler for standby requirements	Concurrence needed from WDOH[1]	2001
241-U-107	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2001
241-U-108	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2001
241-C-103	FG-3, no standby exhauster needed	Three separate NOCs required, radiological, nonradiological and organic	2002
241-S-101	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2002
241-S-107	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2002
241-S-109	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2002
241-S-112	FG-2, standby exhauster required	NOC submitted	2002
241-SX-102	FG-2, on 241-SX use sludge cooler for standby requirements	Concurrence needed from WDOH[1]	2002
241-U-111	FG-2, standby exhauster required	Radiological and Non-Radiological NOCs approved	2002

[1]WDOH concurrence needed to pump the remainder of SX Tank Farm.

FG = facility group.
NOC = Notice of Construction.
WDOH = Washington State Department of Health.

5.3.1 Assumptions

- All tanks (except 241-T-104 and 241-T-110) will require active ventilation (SX-farm) or standby ventilation (all other tanks) to mitigate flammable gas accumulation concerns. The standby ventilation systems will be operated only at flammable gas concentrations of 25 percent of the lower flammability limit or above.

- The SX-tank farm ventilation system (sludge cooler) will be used to satisfy the safety evaluation report ventilation requirement.

- Facility group 3 tanks with passive filters only do not need a separate NOC.

- An NOC for tank 241-C-103 will be written at a later date because of the organic content.

- Tanks 241-A-101 and 241-SX-104 have separate NOCs currently approved.

- The standby exhaust stacks will meet compliance requirements to provide the maximum operational flexibility to TFC activities.

5.3.2 Notices of Construction Strategy

- In addition to separate NOCs for tanks 241-A-101 and 241-SX-104, another "generic" NOC has been approved for minor stacks (potential to emit less than 1×10^{-6} sieverts per year [0.1 mrem/yr]). All SSTs remaining to be stabilized are included in this NOC except for SX tanks (ventilated by the sludge cooler), tank 241-U-102 (inadequate sampling data currently exist) and tank 241-C-103 (organic layer issue).

- If tanks or activities emerge that exceed the "minor" stack criteria, another NOC may have to be submitted for tanks with a potential to emit greater than 1×10^{-6} sieverts per year (0.1 mrem/yr).

5.3.3 Schedule Impacts

- The SX tanks will require concurrence from the Washington State Department of Health that the remaining SX saltwell activities do not increase the potential to emit, following the logic of the tank 241-SX-104 NOC. If this concurrence is not given, an NOC will have to be submitted.

- The additional tanks in the out years would be permitted using this same strategy.

- The NOC for U-farm tanks requires expedited preparation, review, and approval cycles to support the scheduled tank startups in this project plan.

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6.0 SINGLE-SHELL TANK INTERIM STABILIZATION PROJECT BASELINE

6.1 BASELINE PLANNING PROCESS

This section provides a revised summary of the baseline (scope, schedule, and cost) to complete the SST IS Project. The revision of the project plan incorporates changes and meets the objectives recommended by the independent management assessment, the *Single-Shell Tank Interim Stabilization Risk Analysis* (LMHC 1998a), and the IS Technical Team after their review of Revision 1 of this document. Significant project plan improvements have been made to reduce the program cost and schedule risk to a level acceptable to TFC. Changes include

- Acceleration of SSTs containing organic complexed waste in U Farm
- Bypassing of the 244-U DCRT
- Modification of exhauster requirements
- Incorporation of risk mitigation actions to control exposure to cost growth and schedule extensions
- Additions for scope omissions in previous project plan revisions.

The systematic and controlled baseline planning process developed and implemented during the TWRS Retrieval and Disposal Mission Readiness-To-Proceed Assessment was used to develop the baseline for the SST IS Project.

To conduct the SST IS planning process, senior-level, multifunctional planning teams were formed with technically knowledgeable representatives from the following: Operations; Characterization; SST IS; Nuclear Safety; Environmental, Safety, Health, and Quality Assurance; Engineering; Maintenance; the Management and Integration Contractor (FDH); Business Management (scheduling and cost estimating); and the Chief Financial Officer. Team leads with expertise in the type of work being planned were assigned. These multifunctional planning teams ensured that interfaces between performing organizations were identified for each activity and activity series and that programs, projects, and operations work were integrated.

To define the scope of work, Level 1 logic diagrams were prepared to address all required activities to complete the SST IS Project. Definition of scope through logic development ensured consistency with technical requirements and mission and validated the need for the work. A generic project activities logic diagram was developed identifying the typical activities (and the relationships) needed to perform safe and compliant tank stabilization and isolation. This logic diagram included reference, project-unique, and tank-unique activities. Using this logic diagram and other technical and engineering data, tank-specific Level 1 logic diagrams were fully prepared to define the scope of work for each of the 29 tanks in the project.

Once the tank-specific logic diagrams were developed, the SST IS Project Work Breakdown Structure (WBS) was prepared reflecting the remaining project workscope.

The activities identified on the Level 1 logic diagrams and the WBS were used to prepare technical basis review narratives to fully define and document the technical basis, assumptions, risks, and interfaces for each activity. The technical basis review narratives include the following:

- Header information including activity identification, title, responsible organization, responsible manager, technical contact
- Scope description and technical basis
- Reference documents, reports, and requirements
- Enabling assumptions
- Completion criteria and deliverables
- Connection with other activities and/or organizations
- Trade studies or alternative generation analysis considered, alternative selected, and reasons why
- Decisions required and/or made
- Risk (program, scope, schedule, cost)
- Risk mitigation plan and path forward
- Contacts
- Further action recommended
- Approval signatures.

Using the scope and activity definition provided by the Level 1 logics and technical basis review narratives, the planning teams broke down each activity and its logic to the next level of detail necessary to prepare the essential components for technical basis review packages. Technical basis review packages consist of the following:

- Technical basis review (Level 1 logic activity) control logs
- Technical basis review narratives

- Primavera[1] Project Planner (P3)-generated subactivity (task) logic networks
- Subactivity (task) cost-estimating input sheets (CEIS)
- P3-generated resource-loading report.

This level of detail was necessary to define and document the basis for the scope, schedule, and resource estimate at an executable task level. The subactivity (task) logic diagrams provided task titles, predecessor and successor activities, durations, and logic ties. The CEISs defined the subactivity (task) scope, resources, basis of estimate, and assumptions. The following data are documented:

- Header information: subactivity (task) title, reference technical basis review number, activity owner, preparer, date prepared, revision number, schedule activity identification number, RL WBS number and overall estimate of duration
- Scope description
- Estimating assumptions and exclusions
- Risks and mitigrating actions
- Basis of estimate
- Estimate stage and method
- Legal drivers and reference documents
- P3 activity code
- Subtask activity number
- P3 resource code
- Resource type
- Fiscal year
- Subtask description
- Organization code
- Resource identification (curve codes)

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[1]Primavera is a trademark of Primavera Systems, Inc.

- P3 cost account
- Note reference
- Budget quantity (resources)
- Quantity type (budget)
- Note description.

The CEISs were prepared by the planning teams with the assistance of professional schedulers and cost estimators using detailed desk instructions and guidelines. The completed estimates were activity based and represented a well-documented, traceable scope and basis for the estimate at the executable task level, commensurate with the stage of the work and the level of scope definition available.

Using the Level 1 logic diagrams, data from the draft technical basis review packages, and other information as required, a detailed integrated schedule was developed in P3. This base case schedule is task oriented, resource loaded, and logic driven. This schedule is traceable to the logic diagrams, WBS, activity owners (performing organizations), and technical basis review data, including the CEISs. This schedule was reviewed and revised to refine logic, durations, and float. Resources from the CEISs were loaded and priced in P3 to produce the cost and labor resource (full-time equivalent [FTE]) summaries for work defined in the TBR packages. Fiscal year 1998 FDH-approved labor-rate tables were used in P3 for initial pricing. Fluor Daniel Hanford, Inc., and DOE-approved forward pricing rates issued for preparation each multi-year work plan (MYWP), including standard labor rate tables in effect at the time this project plan was issued (FY 1999), were used for pricing.

The final technical basis review packages were prepared from the approved schedule and consist of and are supported by the technical basis review package control logs, technical basis review narratives, subactivity logic diagrams, P3 resource-loading reports, and CEISs. These packages were approved by the activity owners and project management.

A cost-effective and efficient approach was used to prepare SST IS project technical basis review data packages or files. The Level 1 project activities logic diagram was prepared to show all reference, project-unique, and task-unique activities necessary to complete the work. Individual technical basis review data packages were prepared for reference and project-unique activities. For each of the 29 tank-specific logic diagrams, a "folder" was prepared to document the technical basis review data for tank-unique and similar and equivalent activities. Estimates and schedules for similar and equivalent activities were developed from the reference data packages through the selection of applicable subactivity scope and resources for each tank. A tank-specific logic matrix is included in each tank folder showing the traceability between the reference and similar and equivalent activities. The approach provides for the integration of all data for a tank in one folder and avoids the need to prepare separate technical basis review data packages for each activity in the logics.

6.2 WORK BREAKDOWN STRUCTURE

Figure 6-1 shows the CHG WBS to Level 6, SST IS (1.1.3.1.1.9). Figure 6-2 shows the SST IS Project scope of work to WBS Level 8. This WBS is based on the tank-specific logic diagrams for the remaining scope of work and is used as the framework for scope definition, scheduling, estimating, budgeting, and managing the work.

Figures 6-1 and 6-2 reflect the FY 2000 TWRS WBS.

6.3 LEVEL 1 LOGIC

The Level 1 logic diagrams were developed to define the scope of work required to complete the SST IS Project. The logic diagrams are tools for translating the project mission requirements identified in Section 2.0 into a sequence of activities and logical interdependencies necessary to achieve the mission objectives. Using the process described in Section 6.1, a generic project activities Level 1 logic diagram (see Figure 6-3) was developed to cover the typical activities and their relationships. This figure includes reference activities and project-unique and tank-unique activities.

Twenty-nine tank-specific Level 1 logic diagrams (see Appendix E) were developed to identify tank-specific activities including tank-unique activities and similar and equivalent activities. The similar and equivalent activities are defined by their relationships to the reference activities on the Figure 6-3 logic diagram. The logic diagrams are traceable to the CHG program Level 0 logic that is used to identify the structure of activities necessary to achieve the entire integrated CHG mission (life cycle). The SST IS Project is represented on the program Level 0 logic by box #23, "Perform Saltwell Pumping and Intrusion Prevention," consistent with the activity coding on the Level 1 logic diagrams (230.XXX).

The Level 1 logic diagrams were used as the basis for preparing the technical basis review packages. These packages define and document the scope, schedule, and cost-estimate baseline data and are under configuration control. The Level 1 logic diagrams identify the primary activity owners, including the owners responsible for SST IS Project, Environmental, Nuclear Safety/Licensing, Characterization, Operations, Projects, and RL. The diagrams also show the logic ties and completed activities. Breakdown of the Level 1 logic diagrams through the technical basis review planning process results in the logic-driven, resource-loaded schedule (see Section 6.4).

The Level 1 logic diagrams and schedule are integrated with the WBS. Table 6-1 is a crosswalk of the Level 1 logic diagram activities to the WBS.

Figure 6-1. Tank Waste Remediation System Work Breakdown Structure.

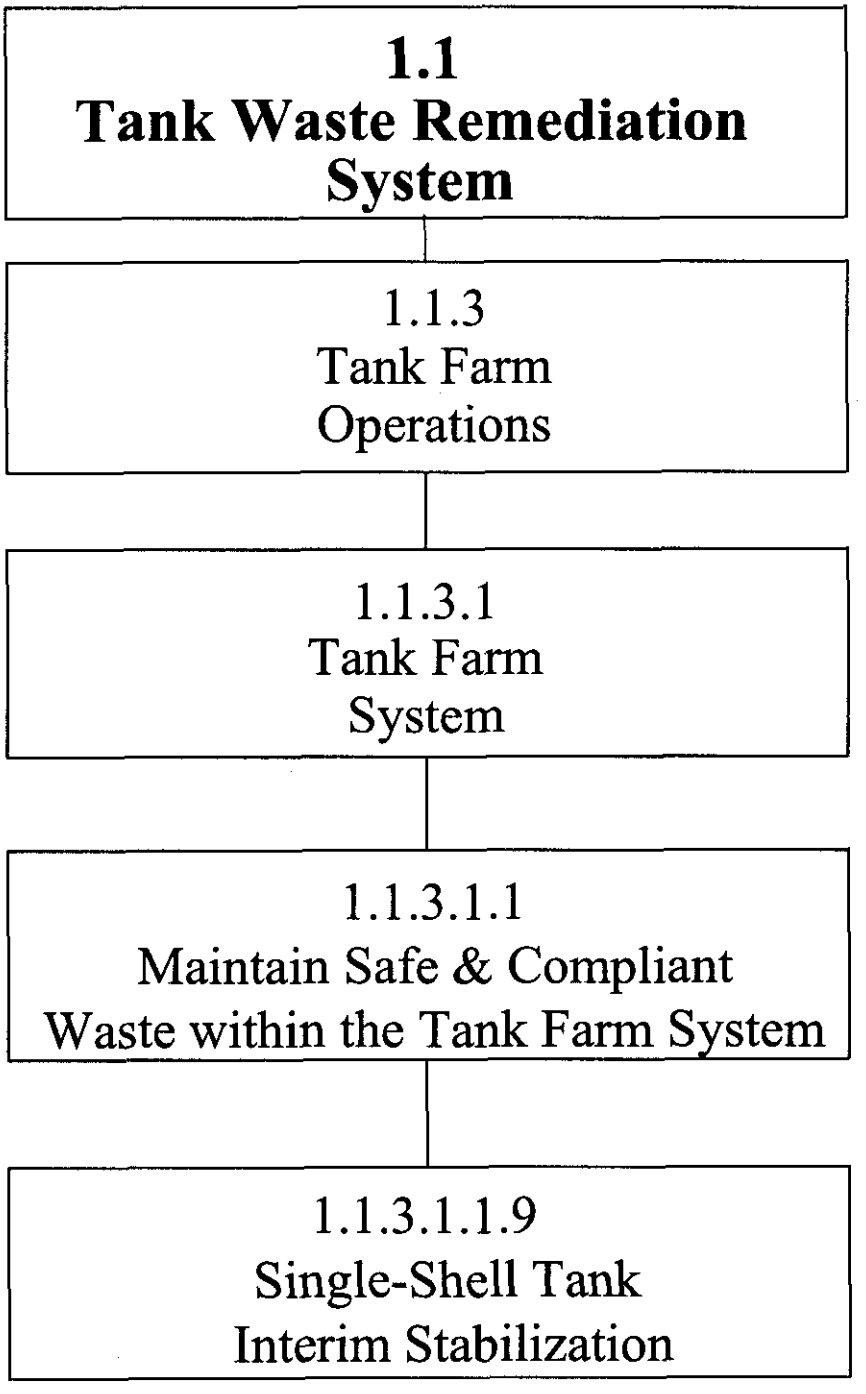


Figure 6-2. Single-Shell Tank Interim Stabilization Project Work Breakdown Structure.

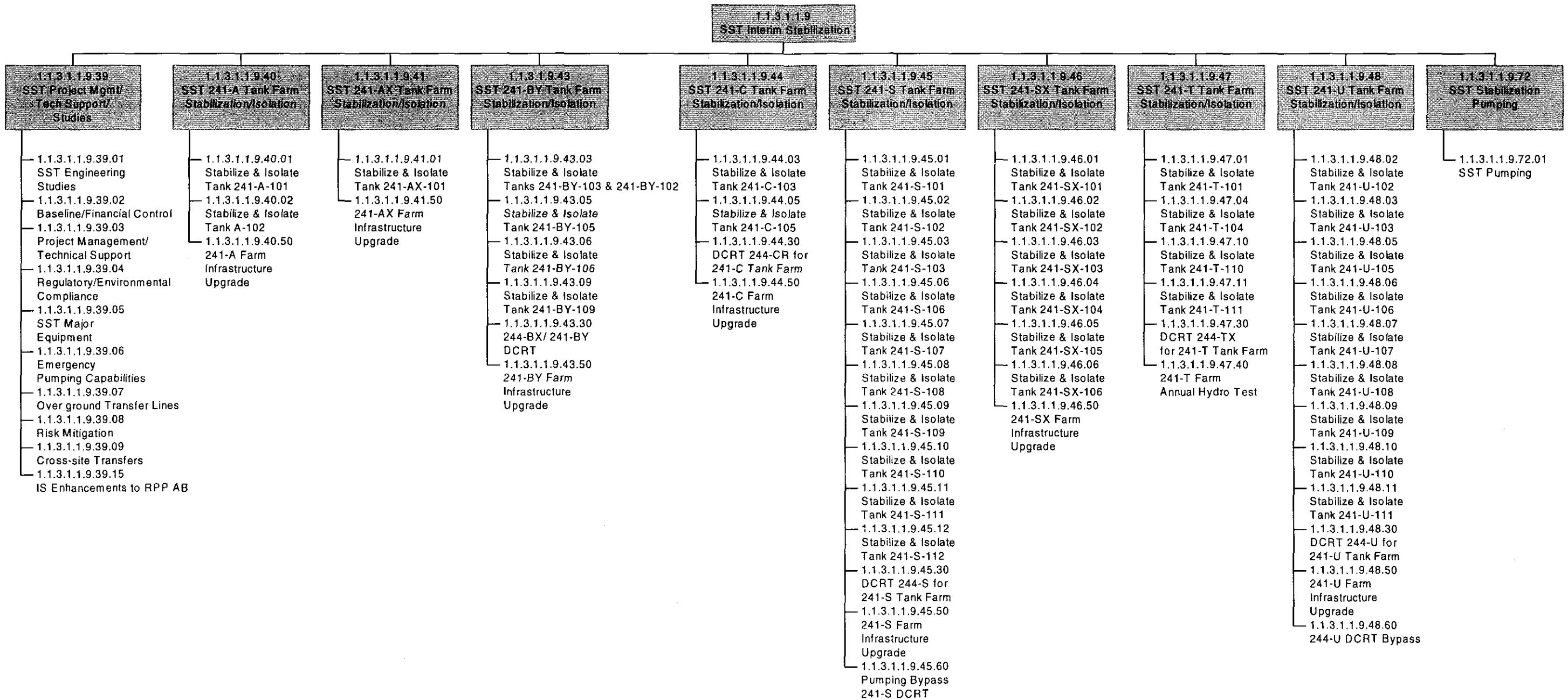


Figure 6-3. Single-Shell Tank Interim Stabilization Project Activities.

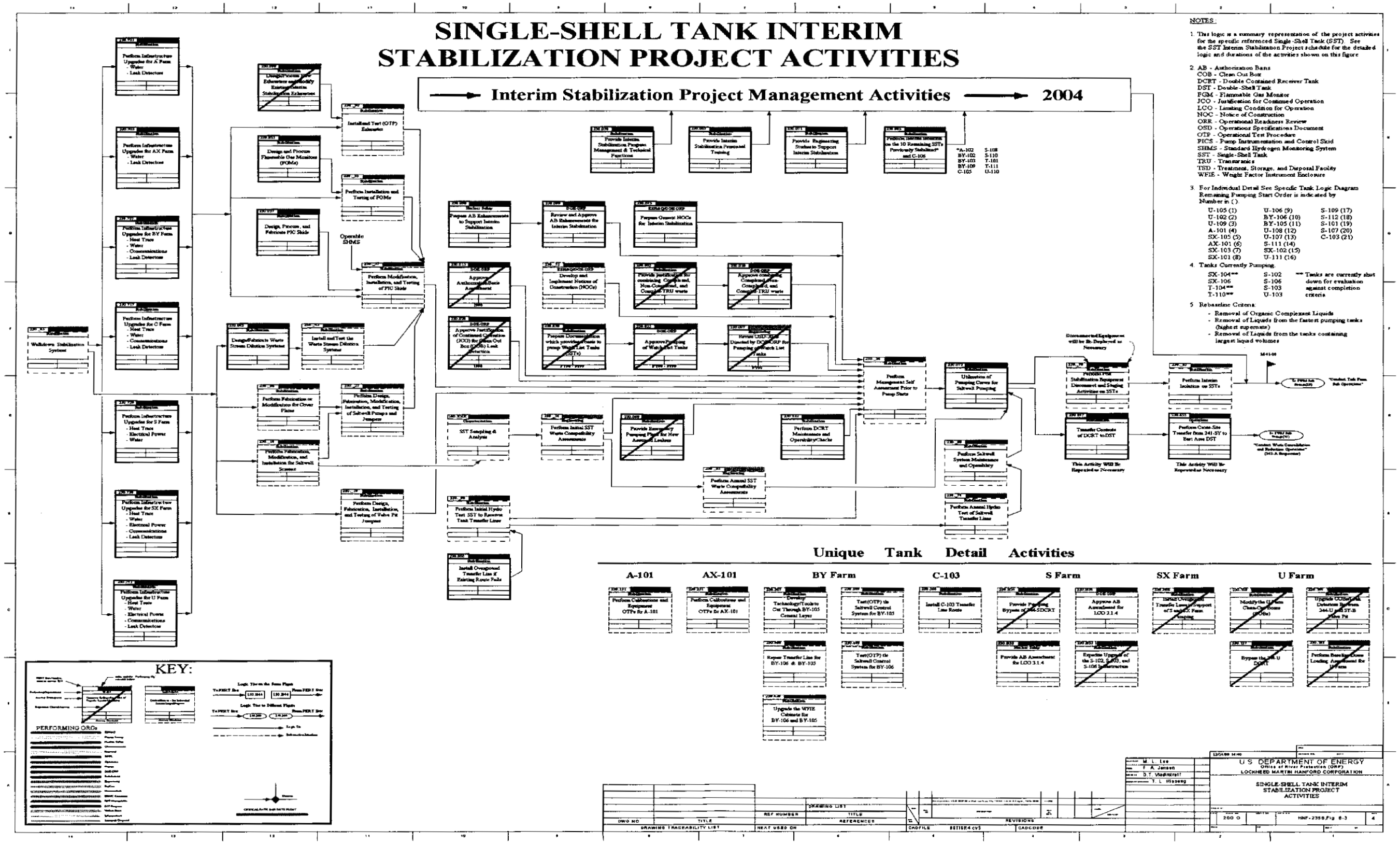


Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Title	Logic #	Logic Title
1.01.03.01.01.09.39.01.01	SW Screen Diameter Engineering Study	230.071	Provide Engineering Studies to Support I. S.
1.01.03.01.01.09.39.01.04	RAM Analysis Engineering Study	230.071	Provide Engineering Studies to Support I. S.
1.01.03.01.01.09.39.01.08	DCRT/FG Controls Flow Rate Study	230.071	Provide Engineering Studies to Support I. S.
1.01.03.01.01.09.39.01.11	Unplugging Tools Study	230.071	Provide Engineering Studies to Support I. S.
1.01.03.01.01.09.39.01.13	Tech Evaluation & Data Review Study	230.071	Provide Engineering Studies to Support I. S.
1.01.03.01.01.09.39.01.14	U Farm Waste Boildown Study	230.071	Provide Engineering Studies to Support I. S.
1.01.03.01.01.09.39.02.01	Baseline/Financial Control	230.070	Provide I.S. Program Mgt & Tech Functions
1.01.03.01.01.09.39.03.01	Project Mgmt/Technical Support	230.070	Provide I.S. Program Mgt & Tech Functions
	Project Mgmt/Technical Support	230.075	Prepare Generic NOC for Interim Stabilization
1.01.03.01.01.09.39.03.04	Usage Fees for Interim Stabilization	230.070	Provide I.S. Program Mgt & Tech Functions
1.01.03.01.01.09.39.03.05	Interim Stabilization Personnel Training	230.067	Provide Interim Stabilization Personnel Training
1.01.03.01.01.09.39.04.01	FEB Support	230.070	Provide I.S. Program Mgt & Tech Functions
1.01.03.01.01.09.39.04.02	ESH&Q Oversite	230.070	Provide I.S. Program Mgt & Tech Functions
1.01.03.01.01.09.39.04.05	Environmental Compliance	230.070	Provide I.S. Program Mgt & Tech Functions
1.01.03.01.01.09.39.04.07	Tech Ops/Procedures	230.070	Provide I.S. Program Mgt & Tech Functions
1.01.03.01.01.09.39.05.01	Major Equipment	230.042	Design/Fabricate Waste Stream Dilution Systems
	Major Equipment	230.055	Design and Procure Flammable Gas Monitors (FGMs)
	Major Equipment	230.057	Design, Procure and Fabricate PIC Skids
	Major Equipment	230.090	Design/Procure New Exhausters/Mod Existing
1.01.03.01.01.09.39.06.01	Emergency Pumping Plans for Assumed Leak	230.060	Prov Emrgcy Pumpg Plans for New Assumed Leakers
1.01.03.01.01.09.39.07.01	Install OGT Lines	230.066	Instl Overground Xfrs Line if Existing Rte Fails
	Install OGT Lines	230.466	Repair Transfer Line for BY-106 and BY-105
	Install OGT Lines	230.566	Install C-103 Transfer Line Route
	Install OGT Lines	230.N66	Instl Overgr Xfr Lines in Sppt of S/SX Farm Pmpg
1.01.03.01.01.09.39.08.01	Perform Risk Mitigation	230.001	Perform Risk Mitigation

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.39.09.01	Cross-Site Transfers	230.655	Perf Cross Site Xfr from 241-SY to East Area DST
1.01.03.01.01.09.39.11.01	Saltwell Program Rebaseline	230.070	Provide I.S. Program Mgt & Tech Functions
1.01.03.01.01.09.39.13.01	Revise OSD-30 Watchlist Tanks	230.097	Revise OSD-30 for DOE-RL Appr of Pumping WL Tks
1.01.03.01.01.09.39.15.01	IS Enhancements to TWRS Authorization Ba	230.098	Prepare Auth. Basis Enhancements to Sppt I. S.
1.01.03.01.01.09.40.01.01	A-101 Pumping Preparations	230.105	Walkdown A-Farm
	A-101 Pumping Preparations	230.108	Perf Fabrication or Mod for Cover Plates A-101
	A-101 Pumping Preparations	230.127	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers A-101
	A-101 Pumping Preparations	230.131	Perf Calibrations and Eqpt OTPs for A-101
	A-101 Pumping Preparations	230.136	Perf Mgmt Self Assmt Prior to Pump Starts A-101
	A-101 Pumping Preparations	230.142	Install/Test Waste Stream Dilution Sys for A-101
	A-101 Pumping Preparations	230.154	Perf Initial SST Waste Capability Assmts A-101
	A-101 Pumping Preparations	230.155	Perform Installation/Testing of FGMs A-101
	A-101 Pumping Preparations	230.160	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln A-101
	A-101 Pumping Preparations	230.175	Develop/Impl Notices of Contruction (NOCs) A-101
	A-101 Pumping Preparations	230.175	Develop/Impl Notices of Contruction (NOCs) A-101
	A-101 Pumping Preparations	230.190	Install and Test (OTP) Exhauster A-101
1.01.03.01.01.09.40.01.03	A-101 System Maintenance & Operability	230.168	Perf SW System Maint and Operability A-101
	A-101 System Maintenance & Operability	230.183	Perf Annual SST Waste Compat Assmts A-101
1.01.03.01.01.09.40.01.04	A-101 Isolation	230.178	Perf Post Stab Eqpt Discon/Staging on SST A-101
	A-101 Isolation	230.185	Perf Interim Isolation SSTs A-101
1.01.03.01.01.09.40.02.04	A-102 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.40.40.01	241-A Farm Annual Hydro Test	230.174	Perform Annual Hydro on Transfer Lines A-101
1.01.03.01.01.09.40.50.01	241-A Farm Infrastructure Upgrade	230.701	Perform Infrastructure Upgrades for A-Farm
1.01.03.01.01.09.41.01.01	AX-101 Pumping Preparations	230.205	Walkdown AX-Farm
	AX-101 Pumping Preparations	230.227	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jmpers AX-101
	AX-101 Pumping Preparations	230.231	Perf Calibrations and Eqpt OTPs for AX-101
	AX-101 Pumping Preparations	230.236	Perf Mgmt Self Assmt Prior to Pump Starts AX-101
	AX-101 Pumping Preparations	230.242	Instll/Test Waste Stream Dilution Sys for AX-101
	AX-101 Pumping Preparations	230.254	Perf Initial SST Waste Capability Assmts AX-101
	AX-101 Pumping Preparations	230.255	Perform Installation/Testing of FGMs AX-101
	AX-101 Pumping Preparations	230.260	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln AX-101
	AX-101 Pumping Preparations	230.290	Install and Test (OTP) Exhauster AX-101

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Title	Logic #	Logic Title
1.01.03.01.01.09.41.01.03	AX-101 System Maintenance & Operability	230.268	Perf SW System Maint and Operability AX-101
	AX-101 System Maintenance & Operability	230.283	Perf Annual SST Waste Compat Assmts AX-101
1.01.03.01.01.09.41.01.04	AX-101 Isolation	230.278	Perf Post Stab Eqpt Discon/Staging on SST AX-101
	AX-101 Isolation	230.285	Perf Interim Isolation SSTs AX-101
1.01.03.01.01.09.41.40.01	241-AX Farm Annual Hydro Test	230.274	Perform Annual Hydro on Transfer Lines AX-101
1.01.03.01.01.09.41.50.01	241-AX Farm Infrastructure Upgrade	230.703	Perform Infrastructure Upgrades for AX-Farm
1.01.03.01.01.09.43.03.04	BY-103 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.43.05.01	BY-105 Pumping Preparations	230.307	Devel Tech/Tool to Cut Thru BY-105 Cement Layer
	BY-105 Pumping Preparations	230.316	Perf Fab/Mod/Install for SW Screen for BY-105
	BY-105 Pumping Preparations	230.327	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jmpers BY-105
	BY-105 Pumping Preparations	230.336	Perf Mgmt Self Assmt Prior to Pump Starts BY-105
	BY-105 Pumping Preparations	230.349	Test (OTP) the SW Control System for BY-105
	BY-105 Pumping Preparations	230.354	Perf Initial SST Waste Capability Assmts BY-105
	BY-105 Pumping Preparations	230.355	Perform Installation/Testing of FGMs BY-105
	BY-105 Pumping Preparations	230.360	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln BY-105
	BY-105 Pumping Preparations	230.375	Devel/Impl Notices of Contruction (NOCs) BY-105
1.01.03.01.01.09.43.05.03	BY-105 System Maintenance & Operability	230.368	Perf SW System Maint and Operability BY-105
	BY-105 System Maintenance & Operability	230.383	Perf Annual SST Waste Compat Assmts BY-105
1.01.03.01.01.09.43.05.04	BY-105 Isolation	230.378	Perf Post Stab Eqpt Discon/Staging on SST BY-105
	BY-105 Isolation	230.385	Perf Interim Isolation SSTs BY-105
1.01.03.01.01.09.43.06.01	BY-106 Pumping Preparations	230.405	Walkdown BY-Farm and BY-106 Systems
	BY-106 Pumping Preparations	230.408	Perf Fabrication or Mod for Cover Plates BY-106
	BY-106 Pumping Preparations	230.419	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers BY-106
	BY-106 Pumping Preparations	230.427	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jmpers BY-106
	BY-106 Pumping Preparations	230.428	Upgrade the WFIE Cabinets for BY-106 and 105
	BY-106 Pumping Preparations	230.436	Perf Mgmt Self Assmt Prior to Pump Starts BY-106
	BY-106 Pumping Preparations	230.449	Test (OTP) the SW Control System for BY-106
	BY-106 Pumping Preparations	230.454	Perf Initial SST Waste Capability Assmts BY-106
	BY-106 Pumping Preparations	230.455	Perform Installation/Testing of FGMs BY-106
	BY-106 Pumping Preparations	230.460	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln BY-106
	BY-106 Pumping Preparations	230.460	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln BY-106
	BY-106 Pumping Preparations	230.490	Install and Test (OTP) Exhauster BY-106
1.01.03.01.01.09.43.06.03	BY-106 System Maintenance & Operability	230.468	Perf SW System Maint and Operability BY-106
	BY-106 System Maintenance & Operability	230.483	Perf Annual SST Waste Compat Assmts BY-106

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.43.06.04	BY-106 Isolation	230.478	Perf Post Stab Eqpt Discon/Staging on SST BY-106
	BY-106 Isolation	230.485	Perf Interim Isolation SSTs BY-106
1.01.03.01.01.09.43.09.04	BY-109 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.43.30.01	244-BX/241-BY DCRT	230.032	Perform DCRT Maintenance and Operability Checks
1.01.03.01.01.09.43.40.01	241-BY Farm Annual Hydro Test	230.374	Perform Annual Hydro on Transfer Lines BY-105
	241-BY Farm Annual Hydro Test	230.474	Perform Annual Hydro on Transfer Lines BY-106
1.01.03.01.01.09.43.50.01	241-BY Farm Infrastructure Upgrade	230.707	Perform Infrastructure Upgrades for BY-Farm
1.01.03.01.01.09.44.03.01	C-103 Pumping Preparations	230.505	Walkdown C-Farm and C-105 Systems
	C-103 Pumping Preparations	230.508	Perf Fabrication or Mod for Cover Plates C-103
	C-103 Pumping Preparations	230.519	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers C-103
	C-103 Pumping Preparations	230.527	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers C-103
	C-103 Pumping Preparations	230.536	Perf Mgmt Self Assmt Prior to Pump Starts C-103
	C-103 Pumping Preparations	230.542	Install/Test Waste Stream Dilution Sys for C-103
	C-103 Pumping Preparations	230.554	Perf Initial SST Waste Capability Assmts C-103
	C-103 Pumping Preparations	230.555	Perform Installation/Testing of FGMs C-103
	C-103 Pumping Preparations	230.557	Perform Mod/Install/Testing PIC Skids C-103
	C-103 Pumping Preparations	230.560	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln C-103
	C-103 Pumping Preparations	230.575	Develop/Impl Notices of Contruction (NOCs) C-103
	C-103 Pumping Preparations	230.590	Install and Test (OTP) Exhauster C-103
1.01.03.01.01.09.44.03.03	C-103 System Maintenance & Operability	230.568	Perf SW System Maint and Operability C-103
1.01.03.01.01.09.44.03.04	C-103 Isolation	230.578	Perf Post Stab Eqpt Discon/Staging on SST C-103
	C-103 Isolation	230.585	Perf Interim Isolation SSTs C-103
1.01.03.01.01.09.44.05.04	C-105 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.44.06.04	C-106 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.44.50.01	241-C Farm Infrastructure Upgrade	230.717	Perform Infrastructure Upgrades for C-Farm
1.01.03.01.01.09.45.01.01	S-101 Pumping Preparations	230.A08	Perf Fabrication or Mod for Cover Plates S-101
	S-101 Pumping Preparations	230.A27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-101
	S-101 Pumping Preparations	230.A36	Perf Mgmt Self Assmt Prior to Pump Starts S-101
	S-101 Pumping Preparations	230.A54	Perf Initial SST Waste Capability Assmts S-101
	S-101 Pumping Preparations	230.A55	Perform Installation/Testing of FGMs S-101
	S-101 Pumping Preparations	230.A57	Perform Mod/Install/Testing PIC Skids S-101
	S-101 Pumping Preparations	230.A60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-101
	S-101 Pumping Preparations	230.A90	Install and Test (OTP) Exhauster S-101

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.45.01.03	S-101 System Maintenance & Operability	230.A68	Perf SW System Maint and Operability S-101
	S-101 System Maintenance & Operability	230.A83	Perf Annual SST Waste Compat Assmts S-101
1.01.03.01.01.09.45.01.04	S-101 Isolation	230.A78	Perf Post Stab Eqpt Discon/Staging on SST S-101
	S-101 Isolation	230.A85	Perf Interim Isolation SSTs S-101
1.01.03.01.01.09.45.02.01	S-102 Pumping Preparations	230.B08	Perf Fabrication or Mod for Cover Plates S-102
	S-102 Pumping Preparations	230.B19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers S-102
	S-102 Pumping Preparations	230.B27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-102
	S-102 Pumping Preparations	230.B33	Provide Auth Basis Amendment for LCO 3.1.4
	S-102 Pumping Preparations	230.B36	Perf Mgmt Self Assmt Prior to Pump Starts S-102
	S-102 Pumping Preparations	230.B42	Install/Test Waste Stream Dilution Sys for S-102
	S-102 Pumping Preparations	230.B53	Expedite Upgr of S-102/103/106 Infrastructure
	S-102 Pumping Preparations	230.B54	Perf Initial SST Waste Capability Assmts S-102
	S-102 Pumping Preparations	230.B55	Perform Installation/Testing of FGMs S-102
	S-102 Pumping Preparations	230.B57	Perform Mod/Install/Testing PIC Skids S-102
	S-102 Pumping Preparations	230.B60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-102
	S-102 Pumping Preparations	230.B90	Install and Test (OTP) Exhauster S-102
1.01.03.01.01.09.45.02.03	S-102 System Maintenance & Operability	230.B68	Perf SW System Maint and Operability S-102
	S-102 System Maintenance & Operability	230.B83	Perf Annual SST Waste Compat Assmts S-102
1.01.03.01.01.09.45.02.04	S-102 Isolation	230.B78	Perf Post Stab Eqpt Discon/Staging on SST S-102
	S-102 Isolation	230.B85	Perf Interim Isolation SSTs S-102
	S-102 Isolation	230.T78	Perf Post Stab Eqpt Discon/Staging on SST U-103
1.01.03.01.01.09.45.03.01	S-103 Pumping Preparations	230.C08	Perf Fabrication or Mod for Cover Plates S-103
	S-103 Pumping Preparations	230.C19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers S-103
	S-103 Pumping Preparations	230.C36	Perf Mgmt Self Assmt Prior to Pump Starts S-103
	S-103 Pumping Preparations	230.C60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-103
1.01.03.01.01.09.45.03.03	S-103 System Maintenance & Operability	230.C68	Perf SW System Maint and Operability S-103
1.01.03.01.01.09.45.03.04	S-103 Isolation	230.C78	Perf Post Stab Eqpt Discon/Staging on SST S-103
	S-103 Isolation	230.C85	Perf Interim Isolation SSTs S-103
1.01.03.01.01.09.45.03.06	S-103 Pump Procure/Install	230.C27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-103
1.01.03.01.01.09.45.03.08	S-103 Skid/Flammable Gas Monitor	230.C55	Perform Installation/Testing of FGMs S-103
	S-103 Skid/Flammable Gas Monitor	230.C57	Perform Mod/Install/Testing PIC Skids S-103
1.01.03.01.01.09.45.03.11	S-103 Operating Documents	230.C54	Perf Initial SST Waste Capability Assmts S-103

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.45.06.01	S-106 Pumping Preparations	230.D08	Perf Fabrication or Mod for Cover Plates S-106
	S-106 Pumping Preparations	230.D19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers S-106
	S-106 Pumping Preparations	230.D27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-106
	S-106 Pumping Preparations	230.D36	Perf Mgmt Self Assmt Prior to Pump Starts S-106
	S-106 Pumping Preparations	230.D54	Perf Initial SST Waste Capability Assmts S-106
	S-106 Pumping Preparations	230.D55	Perform Installation/Testing of FGMs S-106
	S-106 Pumping Preparations	230.D57	Perform Mod/Install/Testing PIC Skids S-106
	S-106 Pumping Preparations	230.D60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-106
1.01.03.01.01.09.45.06.03	S-106 System Maintenance & Operability	230.D68	Perf SW System Maint and Operability S-106
	S-106 System Maintenance & Operability	230.D83	Perf Annual SST Waste Compat Assmts S-106
1.01.03.01.01.09.45.06.04	S-106 Isolation	230.D78	Perf Post Stab Eqpt Discon/Staging on SST S-106
	S-106 Isolation	230.D85	Perf Interim Isolation SSTs S-106
1.01.03.01.01.09.45.07.01	S-107 Pumping Preparations	230.E08	Perf Fabrication or Mod for Cover Plates S-107
	S-107 Pumping Preparations	230.E19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers S-107
	S-107 Pumping Preparations	230.E27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-107
	S-107 Pumping Preparations	230.E36	Perf Mgmt Self Assmt Prior to Pump Starts S-107
	S-107 Pumping Preparations	230.E54	Perf Initial SST Waste Capability Assmts S-107
	S-107 Pumping Preparations	230.E55	Perform Installation/Testing of FGMs S-107
	S-107 Pumping Preparations	230.E57	Perform Mod/Install/Testing PIC Skids S-107
	S-107 Pumping Preparations	230.E60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-107
1.01.03.01.01.09.45.07.03	S-107 System Maintenance & Operability	230.E68	Perf SW System Maint and Operability S-107
1.01.03.01.01.09.45.07.04	S-107 Isolation	230.E78	Perf Post Stab Eqpt Discon/Staging on SST S-107
	S-107 Isolation	230.E85	Perf Interim Isolation SSTs S-107
1.01.03.01.01.09.45.08.04	S-108 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab: & C-106
1.01.03.01.01.09.45.09.01	S-109 Pumping Preparations	230.F08	Perf Fabrication or Mod for Cover Plates S-109
	S-109 Pumping Preparations	230.F16	Perf Fab/Mod/Install for SaltWell Screens S-109
	S-109 Pumping Preparations	230.F19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers S-109
	S-109 Pumping Preparations	230.F27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-109
	S-109 Pumping Preparations	230.F36	Perf Mgmt Self Assmt Prior to Pump Starts S-109
	S-109 Pumping Preparations	230.F54	Perf Initial SST Waste Capability Assmts S-109
	S-109 Pumping Preparations	230.F55	Perform Installation/Testing of FGMs S-109
	S-109 Pumping Preparations	230.F57	Perform Mod/Install/Testing PIC Skids S-109
	S-109 Pumping Preparations	230.F60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-109

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.45.09.03	S-109 System Maintenance & Operability	230.F68	Perf SW System Maint and Operability S-109
	S-109 System Maintenance & Operability	230.F83	Perf Annual SST Waste Compat Assmts S-109
1.01.03.01.01.09.45.09.04	S-109 Isolation	230.F78	Perf Post Stab Eqpt Discon/Staging on SST S-109
	S-109 Isolation	230.F85	Perf Interim Isolation SSTs S-109
1.01.03.01.01.09.45.10.04	S-110 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.45.11.01	S-111 Pumping Preparations	230.G05	Walkdown S-Farm and S-111 Systems
	S-111 Pumping Preparations	230.G08	Perf Fabrication or Mod for Cover Plates S-111
	S-111 Pumping Preparations	230.G16	Perf Fab/Mod/Install for SaltWell Screens S-111
	S-111 Pumping Preparations	230.G19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers S-111
	S-111 Pumping Preparations	230.G27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-111
	S-111 Pumping Preparations	230.G36	Perf Mgmt Self Assmt Prior to Pump Starts S-111
	S-111 Pumping Preparations	230.G54	Perf Initial SST Waste Capability Assmts S-111
	S-111 Pumping Preparations	230.G55	Perform Installation/Testing of FGMs S-111
	S-111 Pumping Preparations	230.G57	Perform Mod/Install/Testing PIC Skids S-111
	S-111 Pumping Preparations	230.G60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-111
	S-111 Pumping Preparations	230.G60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-111
	S-111 Pumping Preparations	230.G90	Install and Test (OTP) Exhauster S-111
1.01.03.01.01.09.45.11.03	S-111 System Maintenance & Operability	230.G68	Perf SW System Maint and Operability S-111
	S-111 System Maintenance & Operability	230.G83	Perf Annual SST Waste Compat Assmts S-111
1.01.03.01.01.09.45.11.04	S-111 Isolation	230.G78	Perf Post Stab Eqpt Discon/Staging on SST S-111
	S-111 Isolation	230.G85	Perf Interim Isolation SSTs S-111
1.01.03.01.01.09.45.12.01	S-112 Pumping Preparations	230.H08	Perf Fabrication or Mod for Cover Plates S-112
	S-112 Pumping Preparations	230.H16	Perf Fab/Mod/Install for SaltWell Screens S-112
	S-112 Pumping Preparations	230.H19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers S-112
	S-112 Pumping Preparations	230.H27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers S-112
	S-112 Pumping Preparations	230.H36	Perf Mgmt Self Assmt Prior to Pump Starts S-112
	S-112 Pumping Preparations	230.H54	Perf Initial SST Waste Capability Assmts S-112
	S-112 Pumping Preparations	230.H55	Perform Installation/Testing of FGMs S-112
	S-112 Pumping Preparations	230.H57	Perform Mod/Install/Testing PIC Skids S-112
	S-112 Pumping Preparations	230.H60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-112
	S-112 Pumping Preparations	230.H60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln S-112
1.01.03.01.01.09.45.12.03	S-112 System Maintenance & Operability	230.H68	Perf SW System Maint and Operability S-112
	S-112 System Maintenance & Operability	230.H83	Perf Annual SST Waste Compat Assmts S-112

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Title	Logic #	Logic Title
1.01.03.01.01.09.45.12.04	S-112 Isolation	230.H78	Perf Post Stab Eqpt Discon/Staging on SST S-112
	S-112 Isolation	230.H85	Perf Interim Isolation SSTs S-112
1.01.03.01.01.09.45.30.01	DCRT 244-S For SST 241-S Tank	230.032	Perform DCRT Maintenance and Operability Checks
1.01.03.01.01.09.45.40.01	241-S Farm Annual Hydro Test	230.A74	Perform Annual Hydro on Transfer Lines S-101
	241-S Farm Annual Hydro Test	230.B74	Perform Annual Hydro on Transfer Lines S-102
	241-S Farm Annual Hydro Test	230.C74	Perform Annual Hydro on Transfer Lines S-103
	241-S Farm Annual Hydro Test	230.D74	Perform Annual Hydro on Transfer Lines S-106
	241-S Farm Annual Hydro Test	230.E74	Perform Annual Hydro on Transfer Lines S-107
	241-S Farm Annual Hydro Test	230.F74	Perform Annual Hydro on Transfer Lines S-109
	241-S Farm Annual Hydro Test	230.G74	Perform Annual Hydro on Transfer Lines S-111
	241-S Farm Annual Hydro Test	230.H74	Perform Annual Hydro on Transfer Lines S-112
1.01.03.01.01.09.45.50.01	241-S Farm Infrastructure Upgrade	230.729	Perform Infrastructure Upgrades for S-Farm
1.01.03.01.01.09.45.60.01	Provide Pumping Bypass 244-S DCRT	230.B24	Provide Pumping BYpass of 244-S DCRT
1.01.03.01.01.09.46.01.01	SX-101 Pumping Preparations	230.J08	Perf Fabrication or Mod for Cover Plates SX-101
	SX-101 Pumping Preparations	230.J16	Perf Fab/Mod/Install for SaltWell Screens SX-101
	SX-101 Pumping Preparations	230.J19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers SX-101
	SX-101 Pumping Preparations	230.J27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jmpers SX-101
	SX-101 Pumping Preparations	230.J36	Perf Mgmt Self Assmt Prior to Pump Starts SX-101
	SX-101 Pumping Preparations	230.J42	Instll/Test Waste Stream Dilution Sys for SX-101
	SX-101 Pumping Preparations	230.J54	Perf Initial SST Waste Capability Assmts SX-101
	SX-101 Pumping Preparations	230.J55	Perform Installation/Testing of FGMs SX-101
	SX-101 Pumping Preparations	230.J57	Perform Mod/Install/Testing PIC Skids SX-101
	SX-101 Pumping Preparations	230.J57	Perform Mod/Install/Testing PIC Skids SX-101
	SX-101 Pumping Preparations	230.J60	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln SX-101
1.01.03.01.01.09.46.01.03	SX-101 System Maintenance & Operability	230.J68	Perf SW System Maint and Operability SX-101
	SX-101 System Maintenance & Operability	230.J83	Perf Annual SST Waste Compat Assmts SX-101
1.01.03.01.01.09.46.01.04	SX-101 Isolation	230.J78	Perf Post Stab Eqpt Discon/Staging on SST SX-101
	SX-101 Isolation	230.J85	Perf Interim Isolation SSTs SX-101

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.46.02.01	SX-102 Pumping Preparations	230.K08	Perf Fabrication or Mod for Cover Plates SX-102
	SX-102 Pumping Preparations	230.K16	Perf Fab/Mod/Install for SaltWell Screens SX-102
	SX-102 Pumping Preparations	230.K19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers SX-102
	SX-102 Pumping Preparations	230.K27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jmpers SX-102
	SX-102 Pumping Preparations	230.K36	Perf Mgmt Self Assmt Prior to Pump Starts SX-102
	SX-102 Pumping Preparations	230.K42	Instll/Test Waste Stream Dilution Sys for SX-102
	SX-102 Pumping Preparations	230.K54	Perf Initial SST Waste Capability Assmts SX-102
	SX-102 Pumping Preparations	230.K55	Perform Installation/Testing of FGMs SX-102
	SX-102 Pumping Preparations	230.K57	Perform Mod/Install/Testing PIC Skids SX-102
	SX-102 Pumping Preparations	230.K60	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln SX-102
1.01.03.01.01.09.46.02.03	SX-102 System Maintenance & Operability	230.K68	Perf SW System Maint and Operability SX-102
	SX-102 System Maintenance & Operability	230.K83	Perf Annual SST Waste Compat Assmts SX-102
1.01.03.01.01.09.46.02.04	SX-102 Isolation	230.K78	Perf Post Stab Eqpt Discon/Staging on SST SX-102
	SX-102 Isolation	230.K85	Perf Interim Isolation SSTs SX-102
1.01.03.01.01.09.46.03.01	SX-103 Pumping Preparations	230.L08	Perf Fabrication or Mod for Cover Plates SX-103
	SX-103 Pumping Preparations	230.L19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers SX-103
	SX-103 Pumping Preparations	230.L27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jmpers SX-103
	SX-103 Pumping Preparations	230.L36	Perf Mgmt Self Assmt Prior to Pump Starts SX-103
	SX-103 Pumping Preparations	230.L42	Instll/Test Waste Stream Dilution Sys for SX-103
	SX-103 Pumping Preparations	230.L54	Perf Initial SST Waste Capability Assmts SX-103
	SX-103 Pumping Preparations	230.L55	Perform Installation/Testing of FGMs SX-103
	SX-103 Pumping Preparations	230.L57	Perform Mod/Install/Testing PIC Skids SX-103
	SX-103 Pumping Preparations	230.L60	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln SX-103
	SX-103 Pumping Preparations	230.L60	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln SX-103
1.01.03.01.01.09.46.03.03	SX-103 System Maintenance & Operability	230.L68	Perf SW System Maint and Operability SX-103
	SX-103 System Maintenance & Operability	230.L83	Perf Annual SST Waste Compat Assmts SX-103
1.01.03.01.01.09.46.03.04	SX-103 Isolation	230.L78	Perf Post Stab Eqpt Discon/Staging on SST SX-103
	SX-103 Isolation	230.L85	Perf Interim Isolation SSTs SX-103
1.01.03.01.01.09.46.04.03	SX-104 System Maintenance & Operability	230.M68	Perf SW System Maint and Operability SX-104
	SX-104 System Maintenance & Operability	230.M83	Perf Annual SST Waste Compat Assmts SX-104
1.01.03.01.01.09.46.04.04	SX-104 Isolation	230.M78	Perf Post Stab Eqpt Discon/Staging on SST SX-104
	SX-104 Isolation	230.M85	Perf Interim Isolation SSTs SX-104

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.46.05.01	SX-105 Pumping Preparations	230.N05	Walkdown SX Farm
	SX-105 Pumping Preparations	230.N08	Perf Fabrication or Mod for Cover Plates SX-105
	SX-105 Pumping Preparations	230.N16	Perf Fab/Mod/Install for SaltWell Screens SX-105
	SX-105 Pumping Preparations	230.N19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers SX-105
	SX-105 Pumping Preparations	230.N27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jmpers SX-105
	SX-105 Pumping Preparations	230.N36	Perf Mgmt Self Assmt Prior to Pump Starts SX-105
	SX-105 Pumping Preparations	230.N42	Instll/Test Waste Stream Dilution Sys for SX-105
	SX-105 Pumping Preparations	230.N54	Perf Initial SST Waste Capability Assmts SX-105
	SX-105 Pumping Preparations	230.N55	Perform Installation/Testing of FGMs SX-105
	SX-105 Pumping Preparations	230.N57	
	SX-105 Pumping Preparations	230.N60	Perf Init Hydro Tst SST to Rcvr Tk Xfr Ln SX-105
	SX-105 Pumping Preparations	230.N75	Devel/Impl Notices of Contruction (NOCs) SX-105
1.01.03.01.01.09.46.05.03	SX-105 System Maintenance & Operability	230.N68	Perf SW System Maint and Operability SX-105
	SX-105 System Maintenance & Operability	230.N83	Perf Annual SST Waste Compat Assmts SX-105
1.01.03.01.01.09.46.05.04	SX-105 Isolation	230.N78	Perf Post Stab Eqpt Discon/Staging on SST SX-105
	SX-105 Isolation	230.N85	Perf Interim Isolation SSTs SX-105
1.01.03.01.01.09.46.06.03	SX-106 System Maintenance & Operability	230.P68	Perf SW System Maint and Operability SX-106
	SX-106 System Maintenance & Operability	230.P83	Perf Annual SST Waste Compat Assmts SX-106
1.01.03.01.01.09.46.06.04	SX-106 Isolation	230.P78	Perf Post Stab Eqpt Discon/Staging on SST SX-106
	SX-106 Isolation	230.P85	Perf Interim Isolation SSTs SX-106
1.01.03.01.01.09.46.40.01	241-SX Farm Annual Hydro Test	230.J74	Perform Annual Hydro on Transfer Lines SX-101
	241-SX Farm Annual Hydro Test	230.K74	Perform Annual Hydro on Transfer Lines SX-102
	241-SX Farm Annual Hydro Test	230.L74	Perform Annual Hydro on Transfer Lines SX-103
	241-SX Farm Annual Hydro Test	230.M74	Perform Annual Hydro on Transfer Lines SX-104
	241-SX Farm Annual Hydro Test	230.N74	Perform Annual Hydro on Transfer Lines SX-105
	241-SX Farm Annual Hydro Test	230.P74	Perform Annual Hydro on Transfer Lines SX-106
1.01.03.01.01.09.46.50.01	241-SX Farm Infrastructure Upgrade	230.738	Perform Infrastructure Upgrades for SX-Farm
1.01.03.01.01.09.47.01.04	T-101 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.47.04.03	T-104 System Maintenance & Operability	230.Q68	Perf SW System Maint and Operability T-104
1.01.03.01.01.09.47.04.04	T-104 Isolation	230.Q78	Perf Post Stab Eqpt Discon/Staging on SST T-104
	T-104 Isolation	230.Q85	Perf Interim Isolation SSTs T-104
	T-104 Isolation	230.R78	Perf Post Stab Eqpt Discon/Staging on SST T-110
	T-104 Isolation	230.R85	Perf Interim Isolation SSTs T-110

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.47.10.03	T-110 System Maintenance & Operability	230.R68	Perf SW System Maint and Operability T-110
	T-110 System Maintenance & Operability	230.R83	Perf Annual SST Waste Compat Assmts T-110
1.01.03.01.01.09.47.11.04	T-111 Isolation	230.085	Perf Isol on Rem SSTs Previously Stab. & C-106
1.01.03.01.01.09.47.30.01	DCRT 244-TX for SST 241-T Tank Farm	230.032	Perform DCRT Maintenance and Operability Checks
1.01.03.01.01.09.47.40.01	241-T Farm Annual Hydro Test	230.R74	Perform Annual Hydro on Transfer Lines T-110
1.01.03.01.01.09.48.02.01	U-102 Pumping Preparations	230.S08	Perf Fabrication or Mod for Cover Plates U-102
	U-102 Pumping Preparations	230.S16	Perf Fab/Mod/Install for SaltWell Screens U-102
	U-102 Pumping Preparations	230.S19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers U-102
	U-102 Pumping Preparations	230.S27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers U-102
	U-102 Pumping Preparations	230.S36	Perf Mgmt Self Assmt Prior to Pump Starts U-102
	U-102 Pumping Preparations	230.S54	Perf Initial SST Waste Capability Assmts U-102
	U-102 Pumping Preparations	230.S55	Perform Installation/Testing of FGMs U-102
	U-102 Pumping Preparations	230.S57	Perform Mod/Install/Testing PIC Skids U-102
	U-102 Pumping Preparations	230.S60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-102
	U-102 Pumping Preparations	230.S60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-102
	U-102 Pumping Preparations	230.S75	Develop/Impl Notices of Contruction (NOCs) U-102
1.01.03.01.01.09.48.02.03	U-102 System Maintenance & Operability	230.S68	Perf SW System Maint and Operability U-102
	U-102 System Maintenance & Operability	230.S83	Perf Annual SST Waste Compat Assmts U-102
1.01.03.01.01.09.48.02.04	U-102 Isolation	230.S78	Perf Post Stab Eqpt Discon/Staging on SST U-102
	U-102 Isolation	230.S85	Perf Interim Isolation SSTs U-102
1.01.03.01.01.09.48.03.01	U-103 Pumping Preparations	230.T04	Upgr COBs/Leak Detectors 244-U and SY-B Vlv Pit
	U-103 Pumping Preparations	230.T05	Walkdown U Farm Systems
	U-103 Pumping Preparations	230.T08	Perf Fabrication or Mod for Cover Plates U-103
	U-103 Pumping Preparations	230.T16	Perf Fab/Mod/Install for SaltWell Screens U-103
	U-103 Pumping Preparations	230.T18	Modify the U Farm Clean-Out Boxes (COBs)
	U-103 Pumping Preparations	230.T19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers U-103
	U-103 Pumping Preparations	230.T27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers U-103
	U-103 Pumping Preparations	230.T36	Perf Mgmt Self Assmt Prior to Pump Starts U-103
	U-103 Pumping Preparations	230.T54	Perf Initial SST Waste Capability Assmts U-103
	U-103 Pumping Preparations	230.T55	Perform Installation/Testing of FGMs U-103
	U-103 Pumping Preparations	230.T57	Perform Mod/Install/Testing PIC Skids U-103
	U-103 Pumping Preparations	230.T60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-103
	U-103 Pumping Preparations	230.T75	Develop/Impl 244-U DCRT Rad/NonRad NOC's
	U-103 Pumping Preparations	230.T90	Install and Test (OTP) Exhauster U-103

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.48.03.03	U-103 System Maintenance & Operability	230.T68	Perf SW System Maint and Operability U-103
	U-103 System Maintenance & Operability	230.T83	Perf Annual SST Waste Compat Assmts U-103
1.01.03.01.01.09.48.03.04	U-103 Isolation	230.T78	Perf Post Stab Eqpt Discon/Staging on SST U-103
	U-103 Isolation	230.T85	Perf Interim Isolation SSTs U-103
1.01.03.01.01.09.48.05.01	U-105 Pumping Preparations	230.U08	Perf Fabrication or Mod for Cover Plates U-105
	U-105 Pumping Preparations	230.U16	Perf Fab/Mod/Install for SaltWell Screens U-105
	U-105 Pumping Preparations	230.U19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers U-105
	U-105 Pumping Preparations	230.U27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers U-105
	U-105 Pumping Preparations	230.U36	Perf Mgmt Self Assmt Prior to Pump Starts U-105
	U-105 Pumping Preparations	230.U54	Perf Initial SST Waste Capability Assmts U-105
	U-105 Pumping Preparations	230.U55	Perform Installation/Testing of FGMs U-105
	U-105 Pumping Preparations	230.U57	Perform Mod/Install/Testing PIC Skids U-105
	U-105 Pumping Preparations	230.U60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-105
1.01.03.01.01.09.48.05.03	U-105 System Maintenance & Operability	230.U68	Perf SW System Maint and Operability U-105
	U-105 System Maintenance & Operability	230.U83	Perf Annual SST Waste Compat Assmts U-105
1.01.03.01.01.09.48.05.04	U-105 Isolation	230.U78	Perf Post Stab Eqpt Discon/Staging on SST U-105
	U-105 Isolation	230.U85	Perf Interim Isolation SSTs U-105
1.01.03.01.01.09.48.06.01	U-106 Pumping Preparations	230.V08	Perf Fabrication or Mod for Cover Plates U-106
	U-106 Pumping Preparations	230.V16	Perf Fab/Mod/Install for SaltWell Screens U-106
	U-106 Pumping Preparations	230.V19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers U-106
	U-106 Pumping Preparations	230.V27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers U-106
	U-106 Pumping Preparations	230.V36	Perf Mgmt Self Assmt Prior to Pump Starts U-106
	U-106 Pumping Preparations	230.V54	Perf Initial SST Waste Capability Assmts U-106
	U-106 Pumping Preparations	230.V55	Perform Installation/Testing of FGMs U-106
	U-106 Pumping Preparations	230.V57	Perform Mod/Install/Testing PIC Skids U-106
	U-106 Pumping Preparations	230.V60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-106
	U-106 Pumping Preparations	230.V60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-106
1.01.03.01.01.09.48.06.03	U-106 System Maintenance & Operability	230.V68	Perf SW System Maint and Operability U-106
1.01.03.01.01.09.48.06.04	U-106 Isolation	230.V78	Perf Post Stab Eqpt Discon/Staging on SST U-106
	U-106 Isolation	230.V85	Perf Interim Isolation SSTs U-106

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.48.07.01	U-107 Pumping Preparations	230.W08	Perf Fabrication or Mod for Cover Plates U-107
	U-107 Pumping Preparations	230.W16	Perf Fab/Mod/Install for SaltWell Screens U-107
	U-107 Pumping Preparations	230.W19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers U-107
	U-107 Pumping Preparations	230.W27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers U-107
	U-107 Pumping Preparations	230.W36	Perf Mgmt Self Assmt Prior to Pump Starts U-107
	U-107 Pumping Preparations	230.W54	Perf Initial SST Waste Capability Assmts U-107
	U-107 Pumping Preparations	230.W55	Perform Installation/Testing of FGMs U-107
	U-107 Pumping Preparations	230.W57	Perform Mod/Install/Testing PIC Skids U-107
	U-107 Pumping Preparations	230.W60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-107
	U-107 Pumping Preparations	230.W60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-107
1.01.03.01.01.09.48.07.03	U-107 System Maintenance & Operability	230.W68	Perf SW System Maint and Operability U-107
	U-107 System Maintenance & Operability	230.W83	Perf Annual SST Waste Compat Assmts U-107
1.01.03.01.01.09.48.07.04	U-107 Isolation	230.W78	Perf Post Stab Eqpt Discon/Staging on SST U-107
	U-107 Isolation	230.W85	Perf Interim Isolation SSTs U-107
1.01.03.01.01.09.48.08.01	U-108 Pumping Preparations	230.X08	Perf Fabrication or Mod for Cover Plates U-108
	U-108 Pumping Preparations	230.X16	Perf Fab/Mod/Install for SaltWell Screens U-108
	U-108 Pumping Preparations	230.X19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers U-108
	U-108 Pumping Preparations	230.X27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers U-108
	U-108 Pumping Preparations	230.X36	Perf Mgmt Self Assmt Prior to Pump Starts U-108
	U-108 Pumping Preparations	230.X54	Perf Initial SST Waste Capability Assmts U-108
	U-108 Pumping Preparations	230.X55	Perform Installation/Testing of FGMs U-108
	U-108 Pumping Preparations	230.X57	Perform Mod/Install/Testing PIC Skids U-108
	U-108 Pumping Preparations	230.X60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-108
	U-108 Pumping Preparations	230.X60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-108
	U-108 Pumping Preparations	230.X90	Install and Test (OTP) Exhauster U-108
1.01.03.01.01.09.48.08.03	U-108 System Maintenance & Operability	230.X68	Perf SW System Maint and Operability U-108
	U-108 System Maintenance & Operability	230.X83	Perf Annual SST Waste Compat Assmts U-108
1.01.03.01.01.09.48.08.04	U-108 Isolation	230.X78	Perf Post Stab Eqpt Discon/Staging on SST U-108
	U-108 Isolation	230.X85	Perf Interim Isolation SSTs U-108

Table 6-1. Single-Shell Tank Interim Stabilization Level 1 Logic/ Work Breakdown Structure Crosswalk. (14 sheets)

WBS	WBS Ttitle	Logic #	Logic Title
1.01.03.01.01.09.48.09.01	U-109 Pumping Preparations	230.Y08	Perf Fabrication or Mod for Cover Plates U-109
	U-109 Pumping Preparations	230.Y16	Perf Fab/Mod/Install for SaltWell Screens U-109
	U-109 Pumping Preparations	230.Y19	Perf Dsn/Fab/Inst/Tstg of Vlv Pit Jumpers U-109
	U-109 Pumping Preparations	230.Y27	Perf Dsn/Fab/Mod/Inst/Tst SW Pumps/Jumpers U-109
	U-109 Pumping Preparations	230.Y36	Perf Mgmt Self Assmt Prior to Pump Starts U-109
	U-109 Pumping Preparations	230.Y54	Perf Initial SST Waste Capability Assmts U-109
	U-109 Pumping Preparations	230.Y55	Perform Installation/Testing of FGMs U-109
	U-109 Pumping Preparations	230.Y57	Perform Mod/Install/Testing PIC Skids U-109
	U-109 Pumping Preparations	230.Y60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-109
	U-109 Pumping Preparations	230.Y60	Perf Init Hydro Tst SST to Rcv'r Tk Xfr Ln U-109
	U-109 Pumping Preparations	230.Y90	Install and Test (OTP) Exhauster U-109
1.01.03.01.01.09.48.09.03	U-109 System Maintenance & Operability	230.Y68	Perf SW System Maint and Operability U-109
	U-109 System Maintenance & Operability	230.Y83	Perf Annual SST Waste Compat Assmts U-109
1.01.03.01.01.09.48.09.04	U-109 Isolation	230.Y78	Perf Post Stab Eqpt Discon/Staging on SST U-109
	U-109 Isolation	230.Y85	Perf Interim Isolation SSTs U-109

6.4 SCHEDULE

6.4.1 Baseline Schedule

Using the process described in Section 6.1, a detailed base-case SST IS integrated detail schedule (see Appendix D) was developed. Figure 6-4 identifies the pumping durations and early completion dates from the schedule for stabilization of each tank. Figure 6-4 was generated from the Appendix D detailed schedule.

The schedule is formatted to identify Level 1 logic activities within each WBS Level 8 element. The schedule was developed from, and is traceable to, the Level 1 logic diagrams, technical basis review package data, and WBS developed to define the scope, schedule, and cost for the remainder of the SST IS Project, effective October 1, 1998. The schedule, prepared in P3, is task oriented, logically driven, and resource loaded. Resources from the technical basis review package CEISs were loaded and priced in P3 to produce cost and full-time-equivalent summaries discussed in Section 6.5.1.

The schedule was developed using a manageable ramp up to full operations, funding as shown for the duration of the project, and an orderly demobilization at the completion of the work in FY 2005. It is constrained by the availability of trained personnel, equipment, and other technical and regulatory issues as follows.

- Personnel limits were based on the availability of existing staff and the time required to train additional personnel in specific categories.

- Technical issues were incorporated into logical steps for pumping specific tanks, for example, the installation of a saltwell screen in tank 241-BY-105, which contains 62 tons of portland cement.

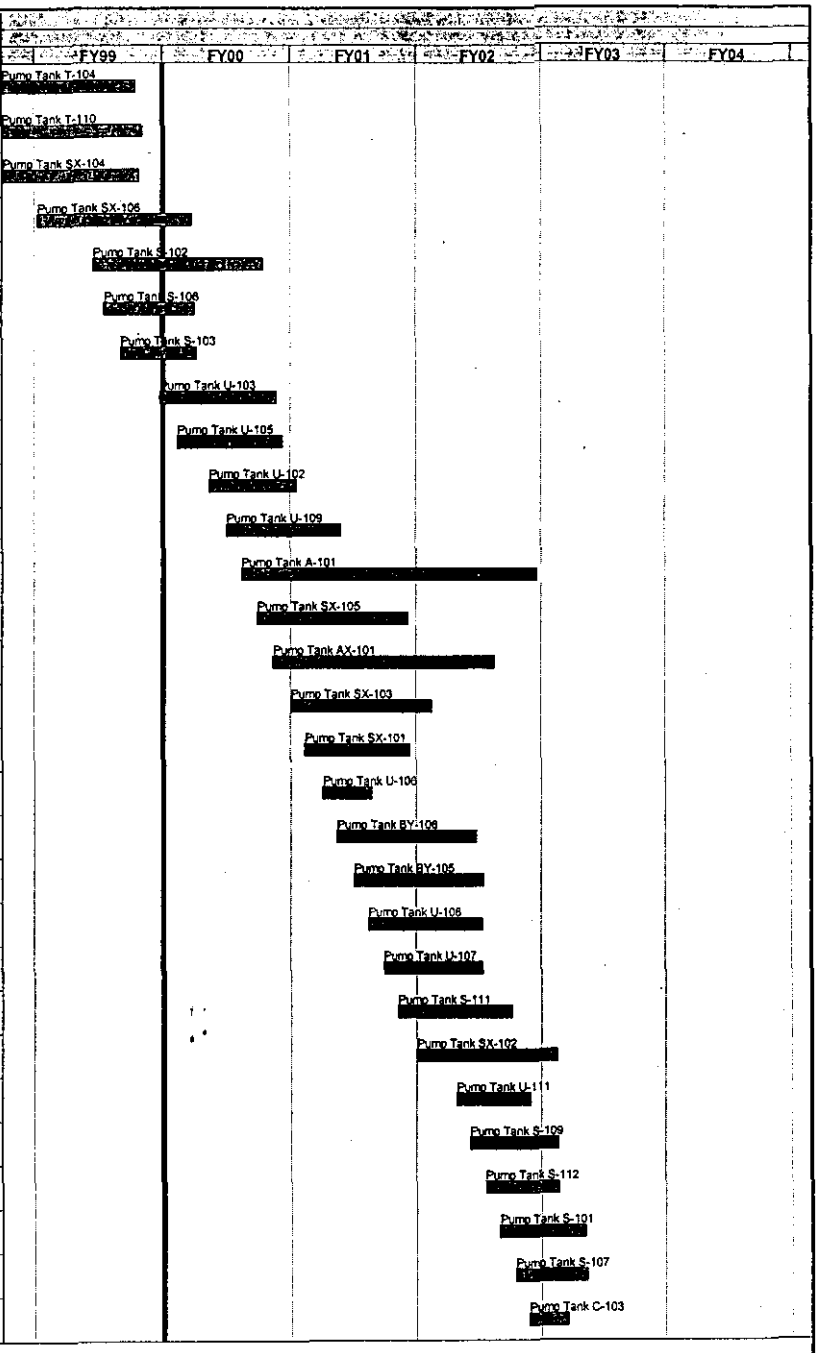
- The regulatory issues addressed in the schedule are the NOCs for installation of exhausters in the tanks and the approval of amendments to the Authorization Basis documents.

To reduce the environmental risk posed by the pumpable liquid remaining in SSTs, the schedule was prioritized to focus on tanks that are currently pumping, those with the greatest liquid volume, and accelerating the SSTs containing organic complexed waste.

Initially, pumping will continue in tanks 241-T-104, 241-T-10, 241-SX-104, 241-SX-106 and is initiated in tanks 241-S-102, 241-S-106, and 241-S-103 during FY 1999. The pumping of the tanks in U-Farm was accelerated to start early in FY 2000, and pumping of the high volume tanks 241-A-101 and 241-AX-101 is scheduled as early as achievable, also in FY 2000. The pumping of tanks 241-BY-105 (concrete layer) and 241-C-103 (organic layer) carry special technical concerns, and their schedules have been adjusted to provide time for technical resolution. Tank 241-BY-105 is scheduled to start pumping in FY 2001. Tank 241-C-103 is scheduled to start pumping in FY 2003 as the last tank to be pumped.

Figure 6-4. Single-Shell Tank Interim Stabilization Integrated Summary Pumping Schedule.

Activity ID	Orig Dur	Early Start	Early Finish
SS23Q72D1	407	07JUN98	18JUL99
SS23R72D1	397	02JUL98	02AUG99
SS23M72D1	388	03JUL98	25JUL99
SS23P72D1	441	07OCT98	21DEC99
SS23B72D1	484	18MAR99	13JUL00
SS23D72D1	263	16APR99	03JAN00
SS23C72D1	216	04JUN99	05JAN00
SS23T72D1	330	26SEP99	20AUG00
SS23U72D1	300	15NOV99	09SEP00
SS23S72D1	254	10FEB00	20OCT00
SS23Y72D1	328	01APR00	22FEB01
SS23172D1	858	13MAY00	17SEP02
SS23N72D1	436	27JUN00	05SEP01
SS23272D1	646	10AUG00	17MAY02
SS23L72D1	410	01OCT00*	14NOV01
SS23J72D1	306	11NOV00	12SEP01
SS23V72D1	144	29DEC00	21MAY01
SS23472D1	409	10FEB01	25MAR02
SS23372D1	380	01APR01	15APR02
SS23X72D1	338	12MAY01	14APR02
SS23W72D1	292	26JUN01	13APR02
SS23G72D1	336	08AUG01	09JUL02
SS23K72D1	414	01OCT01	18NOV02
SS23Z72D1	220	25JAN02	01SEP02
SS23F72D1	256	09MAR02	19NOV02
SS23H72D1	216	20APR02	21NOV02
SS23A72D1	250	04JUN02	08FEB03
SS23E72D1	208	18JUL02	10FEB03
SS23572D1	114	29AUG02	20DEC02



Start Date	01OCT99	Early Bar	
Finish Date	30SEP05	Progress Bar	
Data Date	01OCT99	Critical Activity	
Run Date	18MAY00 13:22		

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Figure 6-4

SST Interim Stabilization Tank Pumping Schedule. Rev. 4

6.5 RESOURCES

6.5.1 Cost by Work Breakdown Structure

Table 6-2 summarizes the escalated costs by fiscal year (1998 through 2005) that are necessary to complete the remainder of the SST IS Project scope of work defined in the detailed P3 schedule. Table 6-3 provides the unescalated costs by WBS. Pricing for these spreadsheets was performed in P3 using the current FDH-approved labor-rate tables and pricing data (for example, labor and material adders, General and Administrative, material procurement rate). The costs in Tables 6-2 and 6-3 are consistent with the detailed schedule discussed in Section 6.4.1 and are supported by the technical basis review package data including the CEIS estimates used to resource-load the activities in the schedule.

Table 6-2. Single-Shell Tank Interim Stabilization Project (TWO3), Escalated Costs by Fiscal Year ($000s).

Cost	Total	1998	1999	2000	2001	2002	2003	2004	2005
Total cost unescalated		9,500[1]	31,687[1]	35,000	33,104	29,930	22,737	6,442	7,661
Total escalation	4,826	0	0	0	696	1,270	1,463	588	839
Total escalated cost	180,887	9,500[1]	31,687[1]	35,000	33,800	31,200	24,000	7,000	8,500

[1]These are fiscal year actual costs.

6.5.2 Labor Resources

Table 6-4 summarizes FTEs by WBS and fiscal year that are necessary to complete the remainder of the SST IS Project scope of work as defined in the P3 detailed schedule. This FTE spreadsheet was generated in P3, based on the work hour resource loading. The number of work hours assumed per year is 1,805. The labor resources have been coded in the CEIS's and scheduled by P3 resource code, and resource type.

Existing staff availability and ramp up (hiring and training) was evaluated to verify that the plan is achievable. Tank pumping operations have been logically grouped and scheduled to provide for the most efficient use of resources.

Table 6-3. Single-Shell Tank Interim Stabilization Base Case Cost by Work Breakdown Structure (Unescalated) Total Cost ($000) for Year. (5 sheets)

RL WBS	RL WBS TITLE	TOTAL	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.39.01.01	SW Screen Diameter Engineering Study	52	52						
1.01.03.01.01.09.39.01.04	RAM Analysis Engineering Study	79	79						
1.01.03.01.01.09.39.01.08	DCRT/FG Controls Flow Rate Study	271	162	109					
1.01.03.01.01.09.39.01.11	Unplugging Tools Study	77	77						
1.01.03.01.01.09.39.01.13	Tech Evaluation & Data Review Study	694		232	232	232			
1.01.03.01.01.09.39.01.14	U Farm Waste Boildown Study	62	62						
1.01.03.01.01.09.39.02.01	Baseline/Financial Control	1,934	442	316	351	316	351	158	
1.01.03.01.01.09.39.03.01	Project Mgmt/Technical Support	9,950	1,969	1,896	1,846	1,961	1,928	351	
1.01.03.01.01.09.39.03.04	Usage Fees for Interim Stabilization	1,019	151	492	126	126	126		
1.01.03.01.01.09.39.03.05	Interim Stabilization Personnel Training	13,081	2,718	3,322	2,347	2,347	2,347		
1.01.03.01.01.09.39.04.01	FEB Support	827	166	165	165	165	165		
1.01.03.01.01.09.39.04.02	ESH&Q Oversite	633	116	115	115	115	115	57	
1.01.03.01.01.09.39.04.05	Environmental Compliance	253	57	56	56	56	28		
1.01.03.01.01.09.39.04.07	Tech Ops/Procedures	1,670	336	334	334	334	334		
1.01.03.01.01.09.39.05.01	Major Equipment	11,007	3,426	5,043	1,375	1,162			
1.01.03.01.01.09.39.06.01	Emergency Pumping Plans for Assumed Leak	324	231	23	23	23	23		
1.01.03.01.01.09.39.07.01	Install OGT Lines	1,241	142	184	107	367	441		
1.01.03.01.01.09.39.08.01	Perform Risk Mitigation	10,833		223	447	670	558	1,526	7,409
1.01.03.01.01.09.39.09.01	Cross-Site Transfers	2,617	1,152	419	419	419	209		
1.01.03.01.01.09.39.11.01	Saltwell Program Rebaseline	682	682						
1.01.03.01.01.09.39.13.01	Revise OSD-30 Watchlist Tanks	7	7						
1.01.03.01.01.09.39.15.01	IS Enhancements to TWRS Authorization Ba	183	86	22	22	26	26		
1.01.03.01.01.09.40.01.01	A-101 Pumping Preparations	712	19	693					
1.01.03.01.01.09.40.01.03	A-101 System Maintenance & Operability	1,267		165	377	368	358		
1.01.03.01.01.09.40.01.04	A-101 Isolation	186					9	177	
1.01.03.01.01.09.40.02.04	A-102 Isolation	115						115	
1.01.03.01.01.09.40.40.01	241-A Farm Annual Hydro Test	200			67	67	67		
1.01.03.01.01.09.40.50.01	241-A Farm Infrastructure Upgrade	293		293					
1.01.03.01.01.09.41.01.01	AX-101 Pumping Preparations	677		629	48				
1.01.03.01.01.09.41.01.03	AX-101 System Maintenance & Operability	1,094		153	368	368	206		
1.01.03.01.01.09.41.01.04	AX-101 Isolation	205					202	3	

Table 6-3. Single-Shell Tank Interim Stabilization Base Case Cost by Work Breakdown Structure (Unescalated)Total Cost ($000) for Year. (5 sheets)

RL WBS	RL WBS TITLE	TOTAL	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.41.40.01	241-AX Farm Annual Hydro Test	133			67	67			
1.01.03.01.01.09.41.50.01	241-AX Farm Infrastructure Upgrade	251		251					
1.01.03.01.01.09.43.03.04	BY-103 Isolation	212						212	
1.01.03.01.01.09.43.05.01	BY-105 Pumping Preparations	1,228		613	615				
1.01.03.01.01.09.43.05.03	BY-105 System Maintenance & Operability	834			303	348	184		
1.01.03.01.01.09.43.05.04	BY-105 Isolation	138					42	97	
1.01.03.01.01.09.43.06.01	BY-106 Pumping Preparations	1,027		743	285				
1.01.03.01.01.09.43.06.03	BY-106 System Maintenance & Operability	1,028			303	371	354		
1.01.03.01.01.09.43.06.04	BY-106 Isolation	167					38	129	
1.01.03.01.01.09.43.09.04	BY-109 Isolation	97						97	
1.01.03.01.01.09.43.30.01	244-BX/241-BY DCRT	717		369	116	116	116		
1.01.03.01.01.09.43.40.01	241-BY Farm Annual Hydro Test	267			78	165	24		
1.01.03.01.01.09.43.50.01	241-BY Farm Infrastructure Upgrade	660		186	474				
1.01.03.01.01.09.44.03.01	C-103 Pumping Preparations	1,185			30	1,155			
1.01.03.01.01.09.44.03.03	C-103 System Maintenance & Operability	306				153	153		
1.01.03.01.01.09.44.03.04	C-103 Isolation	186					186		
1.01.03.01.01.09.44.05.04	C-105 Isolation	115					115		
1.01.03.01.01.09.44.06.04	C-106 Isolation	115					115		
1.01.03.01.01.09.44.50.01	241-C Farm Infrastructure Upgrade	569				569			
1.01.03.01.01.09.45.01.01	S-101 Pumping Preparations	756			180	576			
1.01.03.01.01.09.45.01.03	S-101 System Maintenance & Operability	532				174	358		
1.01.03.01.01.09.45.01.04	S-101 Isolation	545					9	536	
1.01.03.01.01.09.45.02.01	S-102 Pumping Preparations	1,359	1,359						
1.01.03.01.01.09.45.02.03	S-102 System Maintenance & Operability	855	293	368	194				
1.01.03.01.01.09.45.02.04	S-102 Isolation	186			61	29		97	
1.01.03.01.01.09.45.03.01	S-103 Pumping Preparations	290	290						
1.01.03.01.01.09.45.03.03	S-103 System Maintenance & Operability	348	153	196					
1.01.03.01.01.09.45.03.04	S-103 Isolation	138		42				97	
1.01.03.01.01.09.45.03.06	S-103 Pump Procure/Install	239	239						
1.01.03.01.01.09.45.03.08	S-103 Skid/Flammable Gas Monitor	418	418						
1.01.03.01.01.09.45.03.11	S-103 Operating Documents	18	18						

Table 6-3. Single-Shell Tank Interim Stabilization Base Case Cost by Work Breakdown Structure (Unescalated)Total Cost ($000) for Year. (5 sheets)

RL WBS	RL WBS TITLE	TOTAL	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.45.06.01	S-106 Pumping Preparations	816	816						
1.01.03.01.01.09.45.06.03	S-106 System Maintenance & Operability	694	165	357	172				
1.01.03.01.01.09.45.06.04	S-106 Isolation	167			70			97	
1.01.03.01.01.09.45.07.01	S-107 Pumping Preparations	720				720			
1.01.03.01.01.09.45.07.03	S-107 System Maintenance & Operability	489				153	336		
1.01.03.01.01.09.45.07.04	S-107 Isolation	138					13	125	
1.01.03.01.01.09.45.08.04	S-108 Isolation	115						115	
1.01.03.01.01.09.45.09.01	S-109 Pumping Preparations	770			687	83			
1.01.03.01.01.09.45.09.03	S-109 System Maintenance & Operability	662				305	357		
1.01.03.01.01.09.45.09.04	S-109 Isolation	167					10	157	
1.01.03.01.01.09.45.10.04	S-110 Isolation	97						97	
1.01.03.01.01.09.45.11.01	S-111 Pumping Preparations	842			842				
1.01.03.01.01.09.45.11.03	S-111 System Maintenance & Operability	867			153	368	347		
1.01.03.01.01.09.45.11.04	S-111 Isolation	138					16	122	
1.01.03.01.01.09.45.12.01	S-112 Pumping Preparations	886			638	248			
1.01.03.01.01.09.45.12.03	S-112 System Maintenance & Operability	639				293	345		
1.01.03.01.01.09.45.12.04	S-112 Isolation	138					11	127	
1.01.03.01.01.09.45.30.01	DCRT 244-S For SST 241-S Tank	140	140						
1.01.03.01.01.09.45.40.01	241-S Farm Annual Hydro Test	734		218	183	133	200		
1.01.03.01.01.09.45.50.01	241-S Farm Infrastructure Upgrade	354			354				
1.01.03.01.01.09.45.60.01	Provide Pumping Bypass 244-S DCRT	295	295						
1.01.03.01.01.09.46.01.01	SX-101 Pumping Preparations	958		901	57				
1.01.03.01.01.09.46.01.03	SX-101 System Maintenance & Operability	522			326	196			
1.01.03.01.01.09.46.01.04	SX-101 Isolation	157				61		97	
1.01.03.01.01.09.46.02.01	SX-102 Pumping Preparations	898			898				
1.01.03.01.01.09.46.02.03	SX-102 System Maintenance & Operability	662			9	317	336		
1.01.03.01.01.09.46.02.04	SX-102 Isolation	347					10	338	
1.01.03.01.01.09.46.03.01	SX-103 Pumping Preparations	1,013		1,013					
1.01.03.01.01.09.46.03.03	SX-103 System Maintenance & Operability	867			326	357	184		
1.01.03.01.01.09.46.03.04	SX-103 Isolation	157					61	97	
1.01.03.01.01.09.46.04.03	SX-104 System Maintenance & Operability	898	357	357	184				

Table 6-3. Single-Shell Tank Interim Stabilization Base Case Cost by Work Breakdown Structure (Unescalated)Total Cost ($000) for Year. (5 sheets)

RL WBS	RL WBS TITLE	TOTAL	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.46.04.04	SX-104 Isolation	176			61			115	
1.01.03.01.01.09.46.05.01	SX-105 Pumping Preparations	1,396	787	610					
1.01.03.01.01.09.46.05.03	SX-105 System Maintenance & Operability	1,051		162	357	348	184		
1.01.03.01.01.09.46.05.04	SX-105 Isolation	157					61	97	
1.01.03.01.01.09.46.06.03	SX-106 System Maintenance & Operability	683	326	337	20				
1.01.03.01.01.09.46.06.04	SX-106 Isolation	157			61			97	
1.01.03.01.01.09.46.40.01	241-SX Farm Annual Hydro Test	733	133	200	200	133	67		
1.01.03.01.01.09.46.50.01	241-SX Farm Infrastructure Upgrade	463	463						
1.01.03.01.01.09.47.01.04	T-101 Isolation	115			115				
1.01.03.01.01.09.47.04.03	T-104 System Maintenance & Operability	196	196						
1.01.03.01.01.09.47.04.04	T-104 Isolation	276	68	15		193			
1.01.03.01.01.09.47.10.03	T-110 System Maintenance & Operability	205	205						
1.01.03.01.01.09.47.11.04	T-111 Isolation	97			97				
1.01.03.01.01.09.47.30.01	DCRT 244-TX for SST 241-T Tank Farm	194	194						
1.01.03.01.01.09.47.40.01	241-T Farm Annual Hydro Test	66	66						
1.01.03.01.01.09.48.02.01	U-102 Pumping Preparations	901	685	216					
1.01.03.01.01.09.48.02.03	U-102 System Maintenance & Operability	650		292	358				
1.01.03.01.01.09.48.02.04	U-102 Isolation	138			10	32	97		
1.01.03.01.01.09.48.03.01	U-103 Pumping Preparations	1,758	1,758						
1.01.03.01.01.09.48.03.03	U-103 System Maintenance & Operability	693		326	368				
1.01.03.01.01.09.48.03.04	U-103 Isolation	138			3	39	97		
1.01.03.01.01.09.48.05.01	U-105 Pumping Preparations	1,239	1,117	121					
1.01.03.01.01.09.48.05.03	U-105 System Maintenance & Operability	674		326	348				
1.01.03.01.01.09.48.05.04	U-105 Isolation	138			10	32	97		
1.01.03.01.01.09.48.06.01	U-106 Pumping Preparations	923		832	90				
1.01.03.01.01.09.48.06.03	U-106 System Maintenance & Operability	317			287	30			
1.01.03.01.01.09.48.06.04	U-106 Isolation	138				42	97		
1.01.03.01.01.09.48.07.01	U-107 Pumping Preparations	893		2	891				
1.01.03.01.01.09.48.07.03	U-107 System Maintenance & Operability	717			165	357	196		
1.01.03.01.01.09.48.07.04	U-107 Isolation	138					137	1	
1.01.03.01.01.09.48.08.01	U-108 Pumping Preparations	920		647	272				

Table 6-3. Single-Shell Tank Interim Stabilization Base Case Cost by Work Breakdown Structure (Unescalated)Total Cost ($000) for Year. (5 sheets)

RL WBS	RL WBS TITLE	TOTAL	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.48.08.03	U-108 System Maintenance & Operability	888			176	368	344		
1.01.03.01.01.09.48.08.04	U-108 Isolation	138					51	87	
1.01.03.01.01.09.48.09.01	U-109 Pumping Preparations	922	634	288					
1.01.03.01.01.09.48.09.03	U-109 System Maintenance & Operability	747		174	368	206			
1.01.03.01.01.09.48.09.04	U-109 Isolation	167				70	97		
1.01.03.01.01.09.48.10.04	U-110 Isolation	115					115		
1.01.03.01.01.09.48.11.01	U-111 Pumping Preparations	947			879	68			
1.01.03.01.01.09.48.11.03	U-111 System Maintenance & Operability	650				314	336		
1.01.03.01.01.09.48.11.04	U-111 Isolation	545					33	511	
1.01.03.01.01.09.48.30.01	DCRT 244-U for SST 241-U Tank Farm	1,922	1,034	174	174	367	174		
1.01.03.01.01.09.48.40.01	241-U Farm Annual Hydro Test	667		267	267	133			
1.01.03.01.01.09.48.50.01	241-U Farm Infrastructure Upgrade	692	692						
1.01.03.01.01.09.48.50.02	Baseline Dome Load Calcs - U Farm	149	149						
1.01.03.01.01.09.72.01.01	SST Pumping	41,610	4,362	8,905	9,974	9,998	8,268	103	
	REPORT TOTAL	**160,000**	**29,539**	**34,388**	**31,973**	**28,804**	**21,856**	**6,031**	**7,409**

Table 6-4. Single-Shell Tank Interim Stabilization Rev. 3 Full-Time Equivalents by Work Breakdown Structure. (5 sheets)

RL WBS	RL WBS TITLE	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.39.01.01	SW Screen Diameter Engineering Study	0.09						
1.01.03.01.01.09.39.01.04	RAM Analysis Engineering Study	0.03						
1.01.03.01.01.09.39.01.08	DCRT/FG Controls Flow Rate Study	0.32	0.88					
1.01.03.01.01.09.39.01.11	Unplugging Tools Study	0.09						
1.01.03.01.01.09.39.01.13	Tech Evaluation & Data Review Study		2.21	2.21	2.21			
1.01.03.01.01.09.39.01.14	U Farm Waste Boildown Study	0.55						
1.01.03.01.01.09.39.02.01	Baseline/Financial Control	3.14	3.14	3.6	3.14	3.6	1.57	
1.01.03.01.01.09.39.03.01	Project Mgmt/Technical Support	11.6	11.41	10.42	11.58	10.93	3.07	
1.01.03.01.01.09.39.03.04	Usage Fees for Interim Stabilization	0.09	0.09	0.09	0.09	0.09		
1.01.03.01.01.09.39.03.05	Interim Stabilization Personnel Training	21.58	28.8	19.35	19.35	19.35		
1.01.03.01.01.09.39.04.01	FEB Support	1.6	1.6	1.6	1.6	1.6		
1.01.03.01.01.09.39.04.02	ESH&Q Oversite	1	1	1	1	1	0.5	
1.01.03.01.01.09.39.04.05	Environmental Compliance	0.5	0.5	0.5	0.5	0.25		
1.01.03.01.01.09.39.04.07	Tech Ops/Procedures	3.36	3.36	3.36	3.36	3.36		
1.01.03.01.01.09.39.05.01	Major Equipment	7.25	7.53	2.08	1.37			
1.01.03.01.01.09.39.06.01	Emergency Pumping Plans for Assumed Leak	0.71	0.22	0.22	0.22	0.22		
1.01.03.01.01.09.39.07.01	Install OGT Lines	0.57	0.66	0.74	0.21	0.42		
1.01.03.01.01.09.39.09.01	Cross-Site Transfers	6.74	3.21	3.21	3.21	1.61		
1.01.03.01.01.09.39.11.01	Saltwell Program Rebaseline	1.76						
1.01.03.01.01.09.39.13.01	Revise OSD-30 Watchlist Tanks	0.06						
1.01.03.01.01.09.39.15.01	IS Enhancements to TWRS Authorization Ba	0.72	0.18	0.18	0.18	0.18		
1.01.03.01.01.09.40.01.01	A-101 Pumping Preparations	0.17	5.74					
1.01.03.01.01.09.40.01.03	A-101 System Maintenance & Operability		1.47	3.4	3.33	3.26		
1.01.03.01.01.09.40.01.04	A-101 Isolation					0.07	1.65	
1.01.03.01.01.09.40.02.04	A-102 Isolation						1.04	
1.01.03.01.01.09.40.40.01	241-A Farm Annual Hydro Test			0.66	0.66	0.66		
1.01.03.01.01.09.40.50.01	241-A Farm Infrastructure Upgrade		1.94					
1.01.03.01.01.09.41.01.01	AX-101 Pumping Preparations		4.83	0.23				
1.01.03.01.01.09.41.01.03	AX-101 System Maintenance & Operability		1.36	3.33	3.33	1.89		
1.01.03.01.01.09.41.01.04	AX-101 Isolation					1.85	0.02	
1.01.03.01.01.09.41.40.01	241-AX Farm Annual Hydro Test			0.66	0.66			

Table 6-4. Single-Shell Tank Interim Stabilization Rev. 3 Full-Time Equivalents by Work Breakdown Structure. (5 sheets)

RL WBS	RL WBS TITLE	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.43.03.04	BY-103 Isolation						1.92	
1.01.03.01.01.09.43.05.01	BY-105 Pumping Preparations		4.73	3.39				
1.01.03.01.01.09.43.05.03	BY-105 System Maintenance & Operability			2.69	3.16	1.67		
1.01.03.01.01.09.43.05.04	BY-105 Isolation					0.38	0.88	
1.01.03.01.01.09.43.06.01	BY-106 Pumping Preparations		4.35	2.8				
1.01.03.01.01.09.43.06.03	BY-106 System Maintenance & Operability			2.7	3.36	3.21		
1.01.03.01.01.09.43.06.04	BY-106 Isolation					0.31	1.23	
1.01.03.01.01.09.43.09.04	BY-109 Isolation						0.88	
1.01.03.01.01.09.43.30.01	244-BX/241-BY DCRT		1.94	0.92	0.92	0.92		
1.01.03.01.01.09.43.40.01	241-BY Farm Annual Hydro Test			0.78	1.63	0.25		
1.01.03.01.01.09.43.50.01	241-BY Farm Infrastructure Upgrade		1.02	3.07				
1.01.03.01.01.09.44.03.01	C-103 Pumping Preparations			0.27	8.55			
1.01.03.01.01.09.44.03.03	C-103 System Maintenance & Operability				1.36	1.36		
1.01.03.01.01.09.44.03.04	C-103 Isolation					1.72		
1.01.03.01.01.09.44.05.04	C-105 Isolation					1.04		
1.01.03.01.01.09.44.06.04	C-106 Isolation					1.04		
1.01.03.01.01.09.44.50.01	241-C Farm Infrastructure Upgrade				3.86			
1.01.03.01.01.09.45.01.01	S-101 Pumping Preparations			1.1	5.07			
1.01.03.01.01.09.45.01.03	S-101 System Maintenance & Operability				1.55	3.26		
1.01.03.01.01.09.45.01.04	S-101 Isolation					0.07	4.94	
1.01.03.01.01.09.45.02.01	S-102 Pumping Preparations	10.04						
1.01.03.01.01.09.45.02.03	S-102 System Maintenance & Operability	2.62	3.33	1.77				
1.01.03.01.01.09.45.02.04	S-102 Isolation			0.55	0.28		0.88	
1.01.03.01.01.09.45.03.01	S-103 Pumping Preparations	2.14						
1.01.03.01.01.09.45.03.03	S-103 System Maintenance & Operability	1.36	1.79					
1.01.03.01.01.09.45.03.04	S-103 Isolation		0.38				0.88	
1.01.03.01.01.09.45.03.06	S-103 Pump Procure/Install	1.08						
1.01.03.01.01.09.45.03.08	S-103 Skid/Flammable Gas Monitor	3.42						
1.01.03.01.01.09.45.03.11	S-103 Operating Documents	0.14						
1.01.03.01.01.09.45.06.01	S-106 Pumping Preparations	6.34						
1.01.03.01.01.09.45.06.03	S-106 System Maintenance & Operability	1.47	3.23	1.56				

Table 6-4. Single-Shell Tank Interim Stabilization Rev. 3 Full-Time Equivalents by Work Breakdown Structure. (5 sheets)

RL WBS	RL WBS TITLE	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.45.07.01	S-107 Pumping Preparations				5.91			
1.01.03.01.01.09.45.07.03	S-107 System Maintenance & Operability				1.36	3.04		
1.01.03.01.01.09.45.07.04	S-107 Isolation					0.1	1.16	
1.01.03.01.01.09.45.08.04	S-108 Isolation						1.04	
1.01.03.01.01.09.45.09.01	S-109 Pumping Preparations			5.55	0.82			
1.01.03.01.01.09.45.09.03	S-109 System Maintenance & Operability				2.73	3.23		
1.01.03.01.01.09.45.09.04	S-109 Isolation					0.07	1.46	
1.01.03.01.01.09.45.10.04	S-110 Isolation						0.88	
1.01.03.01.01.09.45.11.01	S-111 Pumping Preparations			6.8				
1.01.03.01.01.09.45.11.03	S-111 System Maintenance & Operability			1.36	3.33	3.14		
1.01.03.01.01.09.45.11.04	S-111 Isolation					0.12	1.13	
1.01.03.01.01.09.45.12.01	S-112 Pumping Preparations			3.88	2.46			
1.01.03.01.01.09.45.12.03	S-112 System Maintenance & Operability				2.62	3.12		
1.01.03.01.01.09.45.12.04	S-112 Isolation					0.08	1.18	
1.01.03.01.01.09.45.30.01	DCRT 244-S For SST 241-S Tank	0.96						
1.01.03.01.01.09.45.40.01	241-S Farm Annual Hydro Test		2.17	1.81	1.33	1.99		
1.01.03.01.01.09.45.50.01	241-S Farm Infrastructure Upgrade			2.62				
1.01.03.01.01.09.45.60.01	Provide Pumping Bypass 244-S DCRT	2.29						
1.01.03.01.01.09.46.01.01	SX-101 Pumping Preparations		6.53	0.6				
1.01.03.01.01.09.46.01.03	SX-101 System Maintenance & Operability			2.92	1.79			
1.01.03.01.01.09.46.01.04	SX-101 Isolation				0.55		0.88	
1.01.03.01.01.09.46.02.01	SX-102 Pumping Preparations			7.4				
1.01.03.01.01.09.46.02.03	SX-102 System Maintenance & Operability			0.07	2.85	3.04		
1.01.03.01.01.09.46.02.04	SX-102 Isolation					0.08	3.1	
1.01.03.01.01.09.46.03.01	SX-103 Pumping Preparations		7.69					
1.01.03.01.01.09.46.03.03	SX-103 System Maintenance & Operability			2.92	3.23	1.67		
1.01.03.01.01.09.46.03.04	SX-103 Isolation					0.55	0.88	
1.01.03.01.01.09.46.04.03	SX-104 System Maintenance & Operability	3.23	3.23	1.67				
1.01.03.01.01.09.46.04.04	SX-104 Isolation			0.55			1.04	
1.01.03.01.01.09.46.05.01	SX-105 Pumping Preparations	4.2	5.94					
1.01.03.01.01.09.46.05.03	SX-105 System Maintenance & Operability		1.43	3.23	3.16	1.67		

Table 6-4. Single-Shell Tank Interim Stabilization Rev. 3 Full-Time Equivalents by Work Breakdown Structure. (5 sheets)

RL WBS	RL WBS TITLE	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.46.06.03	SX-106 System Maintenance & Operability	2.92	3.05	0.18				
1.01.03.01.01.09.46.06.04	SX-106 Isolation			0.55			0.88	
1.01.03.01.01.09.46.40.01	241-SX Farm Annual Hydro Test	1.33	1.99	1.99	1.33	0.66		
1.01.03.01.01.09.46.50.01	241-SX Farm Infrastructure Upgrade	3.5						
1.01.03.01.01.09.47.01.04	T-101 Isolation			1.04				
1.01.03.01.01.09.47.04.03	T-104 System Maintenance & Operability	1.79						
1.01.03.01.01.09.47.04.04	T-104 Isolation	0.59	0.16		1.77			
1.01.03.01.01.09.47.10.03	T-110 System Maintenance & Operability	1.86						
1.01.03.01.01.09.47.11.04	T-111 Isolation			0.88				
1.01.03.01.01.09.47.30.01	DCRT 244-TX for SST 241-T Tank Farm	1.39						
1.01.03.01.01.09.47.40.01	241-T Farm Annual Hydro Test	0.66						
1.01.03.01.01.09.48.02.01	U-102 Pumping Preparations	4.59	2.13					
1.01.03.01.01.09.48.02.03	U-102 System Maintenance & Operability		2.62	3.23				
1.01.03.01.01.09.48.02.04	U-102 Isolation			0.07	0.3	0.88		
1.01.03.01.01.09.48.03.01	U-103 Pumping Preparations	11.94						
1.01.03.01.01.09.48.03.03	U-103 System Maintenance & Operability		2.92	3.33				
1.01.03.01.01.09.48.03.04	U-103 Isolation			0.03	0.35	0.88		
1.01.03.01.01.09.48.05.01	U-105 Pumping Preparations	7.76	1.24					
1.01.03.01.01.09.48.05.03	U-105 System Maintenance & Operability		2.92	3.16				
1.01.03.01.01.09.48.05.04	U-105 Isolation			0.08	0.3	0.88		
1.01.03.01.01.09.48.06.01	U-106 Pumping Preparations		6.04	0.94				
1.01.03.01.01.09.48.06.03	U-106 System Maintenance & Operability			2.58	0.27			
1.01.03.01.01.09.48.06.04	U-106 Isolation				0.38	0.88		
1.01.03.01.01.09.48.07.01	U-107 Pumping Preparations		0.02	6.61				
1.01.03.01.01.09.48.07.03	U-107 System Maintenance & Operability			1.47	3.23	1.79		
1.01.03.01.01.09.48.07.04	U-107 Isolation					1.25	0.01	
1.01.03.01.01.09.48.08.01	U-108 Pumping Preparations		4.27	2.44				
1.01.03.01.01.09.48.08.03	U-108 System Maintenance & Operability			1.59	3.33	3.1		
1.01.03.01.01.09.48.08.04	U-108 Isolation					0.43	0.83	
1.01.03.01.01.09.48.09.01	U-109 Pumping Preparations	4.07	2.64					
1.01.03.01.01.09.48.09.03	U-109 System Maintenance & Operability		1.55	3.33	1.89			

Table 6-4. Single-Shell Tank Interim Stabilization Rev. 3 Full-Time Equivalents by Work Breakdown Structure. (5 sheets)

RL WBS	RL WBS TITLE	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
1.01.03.01.01.09.48.10.04	U-110 Isolation					1.04		
1.01.03.01.01.09.48.11.01	U-111 Pumping Preparations			6.43	0.68			
1.01.03.01.01.09.48.11.03	U-111 System Maintenance & Operability				2.8	3.04		
1.01.03.01.01.09.48.11.04	U-111 Isolation					0.27	4.74	
1.01.03.01.01.09.48.30.01	DCRT 244-U for SST 241-U Tank Farm	8.16	1.2	1.2	1.91	1.2		
1.01.03.01.01.09.48.40.01	241-U Farm Annual Hydro Test		2.65	2.65	1.33			
1.01.03.01.01.09.48.50.01	241-U Farm Infrastructure Upgrade	4.91						
1.01.03.01.01.09.48.50.02	Baseline Dome Load Calcs - U Farm	0.16						
1.01.03.01.01.09.72.01.01	SST Pumping	36.71	74.75	84.11	84.32	69.67	0.95	
	REPORT TOTAL	**193.55**	**239.69**	**248.37**	**222.67**	**174.91**	**41.42**	**0.00**

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7.0 ORGANIZATION

The ramp up and extent of the field activities necessary to execute the baseline mission are unprecedented in the history of the SST IS Project. To effectively manage this level of activity, the creation of a focused operational team is required—a team that commands the operations, maintenance, engineering, and resources needed to meet the day-to-day demands of the schedule. CHG has established such a team to meet the baseline.

7.1 ORGANIZATIONAL STRUCTURE

CHG has established an organizational structure (see Figure 7-1) to manage SST IS as a project and to provide requisite corporate support. This structure is designed to support all SST IS Project mission objectives (for example, resolve safety issues, safe storage, characterization, retrieval/disposal), and it is aligned with the CHG WBS. The organization is flexible, and a matrix management approach is used to support individual projects such as the SST IS Project. The organizational elements supporting the SST IS Project are described in this section.

7.1.1 Tank Waste Operations Organization

Tank Waste Operations manages and directs operations, characterization, maintenance, and radiological control of tank activities pertaining to CHG permitted treatment, storage, and disposal facilities (see Figure 7-2). The Characterization and Stabilization Project element of this organization (see Figure 7-3) is responsible for characterization activities and the activities of the SST IS Project.

7.1.2 Single-Shell Tank Interim Stabilization Project Organization

The SST IS Project organization (see Figure 7-3) was reconstituted in mid 1998, and manages and directs activities for removing as much pumpable supernatant and interstitial liquid as practicable from the remaining 29 non-interim-stabilized SSTs, for transferring this liquid to the DSTs, and for performing SST intrusion prevention to avoid inadvertent liquid addition.

7.2 ROLES AND RESPONSIBILITIES

7.2.1 Tank Waste Operations

Tank Waste Operations is responsible for managing 177 underground storage tanks (149 SSTs and 28 DSTs) to comply with DOE orders and Federal, state, and local laws and regulations; and to achieve the mission goals and objectives of DOE, CHG, and the SST IS Project. The TWO shift managers are responsible for safely executing field activities. The shift managers report directly to the Shift Operations Manager, who reports to the director of TWO.

Figure 7-1. CH2M HILL Hanford Group, Inc./Tank Waste Remediation System Organization.

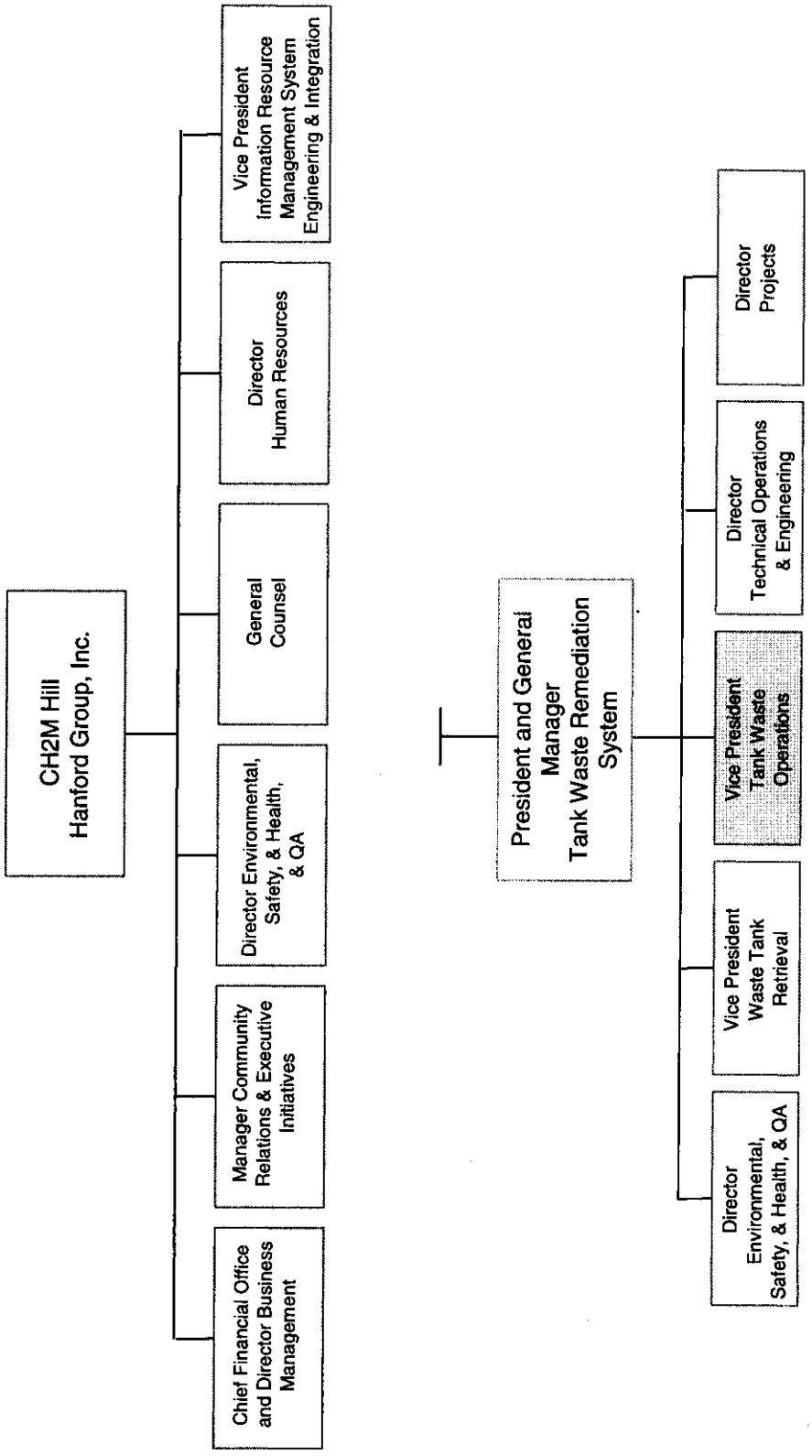
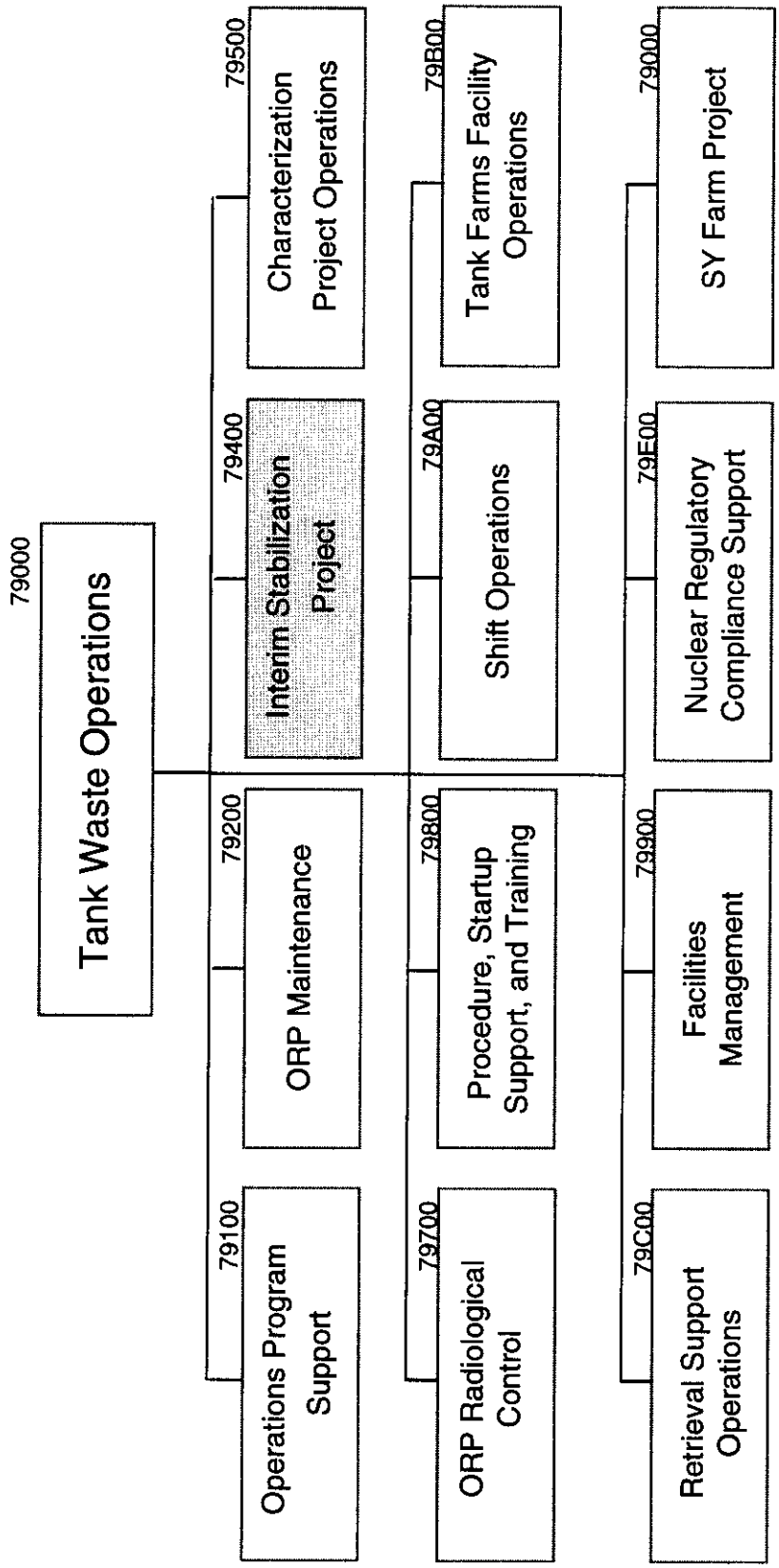
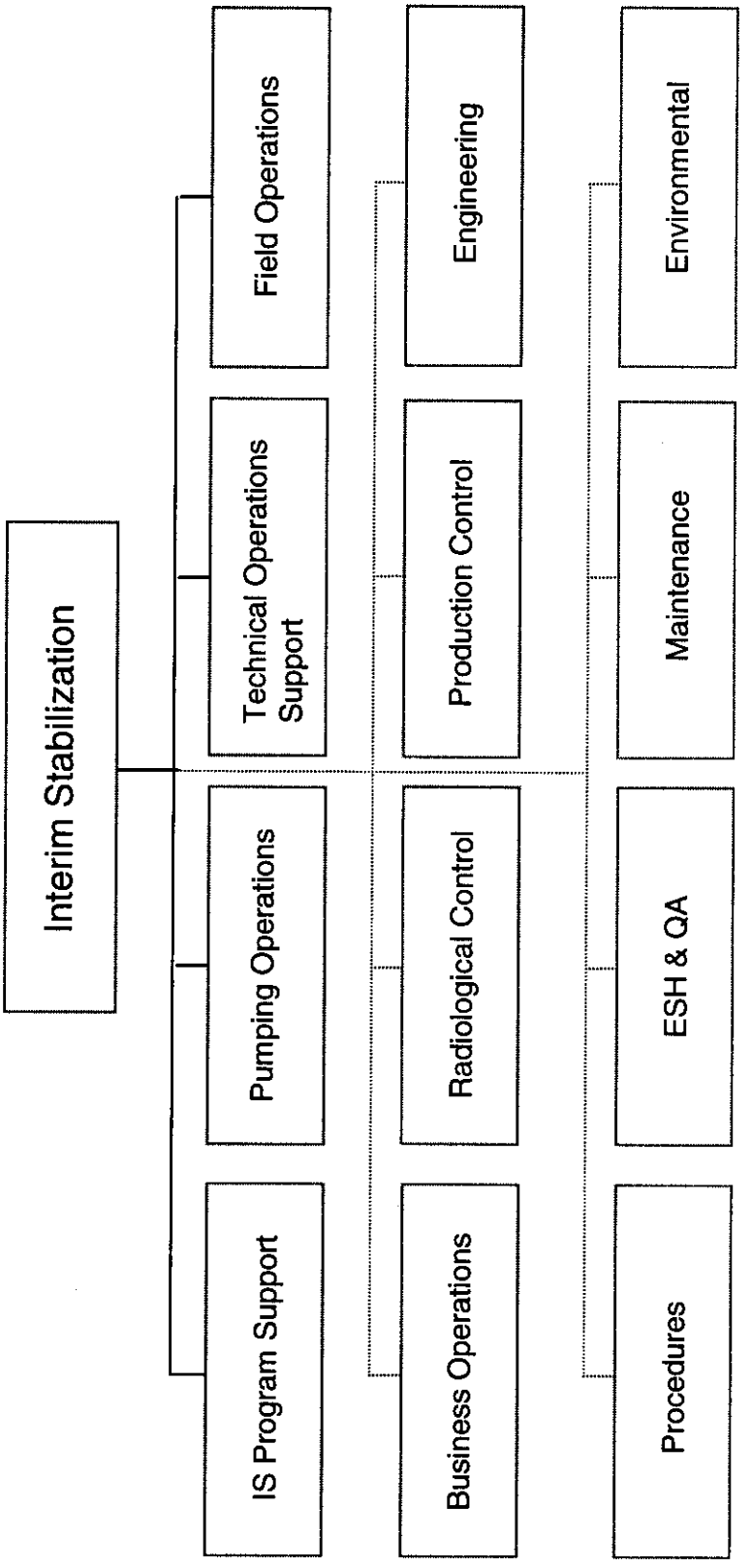


Figure 7-2. Tank Waste Operations.



ORP = Office of River Protection.

Figure 7-3. Interim Stabilization Project Organization.



Specifically, TWO is responsible for the safe handling, separating, storing, and monitoring of highly radioactive liquid waste stored in the underground tanks. Radioactive liquid wastes are received for interim storage into the DST system by truck, rail car, or transfer lines from external sources such as B Plant, Plutonium Finishing Plant, and the 222-S Laboratory. Liquid wastes are staged as feed for 242-A Evaporator campaigns to conserve DST space through waste volume reduction, and the 242-A Evaporator output slurries are returned to the DST system for interim storage.

Tank Waste Operations maintains a standard of performance for the conduct of operations, maintenance, and radiological control in accordance with approved tank farm and evaporator standards and requirements identification documents. Surveillance activities to support the safe storage mission, including SST IS, are performed using approved procedures.

7.2.2 Single-Shell Tank Interim Stabilization Project

The SST IS Project organization is responsible for managing assigned facilities, equipment, and activities to comply with DOE orders and Federal, state, and local laws and regulations; and to achieve the mission goals and objectives of the SST IS Project.

Specifically, the SST IS Project is responsible for safely removing (transferring) and monitoring the pumpable supernatant and interstitial liquid from the remaining 29 SSTs into the DST system. These activities include the following: designing, procuring, installing, and maintaining equipment; and, after pumping is completed, removing surface equipment. The SST IS Project is also responsible for performing the following intrusion prevention activities: disconnecting, blanking, or capping pipelines from tank systems and installing barriers to avoid liquid's being added into interim-stabilized SSTs.

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8.0 MANAGEMENT APPROACH

Managing the growth of field and budget activities requires establishing a structured and disciplined management process. The SST IS Project plan establishes management rules that rigorously adhere to well-defined work logics and a solid estimating basis. This section discusses the management approach for executing the project baseline.

8.1 BUSINESS OPERATIONS

Business operations includes the principal activities necessary to establish and maintain the SST IS Project baseline. These activities include developing the project baseline, including work scope and work schedules; authorizing and subcontracting work; measuring, reporting, and improving performance; and acquiring and analyzing management information.

8.1.1 Project Baseline Development

The integrated baseline development process is defined in Section 6.1. Once this work definition is validated, detailed schedules are developed; activities are assigned resources; and adjustments are made to meet the resource, schedule, and budget constraints imposed on the project. The final work scope, schedule, and supporting cost estimates make up the SST IS Project baseline and serve as the basis for developing the MYWP (LMHC 1999) and reporting performance.

The development of the project baseline is a mature iterative process that considers customer needs, determines organization priorities, defines technical approaches, establishes schedules, and develops annual budgets. This annual process refines planning and refines and validates the technical baseline and out year planning (including budgets).

In preparation for each upcoming fiscal year, the technical basis reviews (TBR) are reviewed, updated, and incorporated into the new baseline target schedule. Any changes to the current baseline are documented by approved baseline change requests (BCR).

8.1.1.1 Work Scope. The general work description for the SST IS Project is established in SST IS Level 1 logics (see Appendix E). The logics consist of enhanced program evaluation and review techniques charts showing major activities, relationships and dependencies, predecessor and successor activities, and projected durations. The logics, derived from the Level 0 logics for the TFC Project and other SST IS Project-related work logics, are developed and maintained in a computer-based, project-planning system referred to as the P3. Input to and modification of the P3 database is subject to configuration control, thereby ensuring that the SST IS Project scope cannot be altered without the authorization of appropriate managers.

The SST IS Project Level 1 logic activities are broken down into sets of tasks. Each task set is analyzed by duration and cost. Technical basis reviews are generated for each Level 1 logic activity and include the following: background summaries; information about enabling assumptions, responsible organizations, technical contacts for activities, interfaces and links to

other activities, predecessor and successor activities, and risks; and other information that describe the essential attributes of each activity and its supporting tasks. The TBRs are subject to configuration control.

The annual SST IS mission plan for the MYWP is developed using these technical basis reviews as well as related requirements, enabling assumptions, risks, decisions, approved technical baseline documents, and DOE guidance. The MYWP describes the purpose, objectives, and scope of work for each task, and it is aligned with the WBS work activities. The plan includes the activities to be implemented, the required work products and deliverables, customer and quality expectations for the work, work product dependencies, product interface agreements, and key assumptions that are necessary for the work to proceed. The plan establishes schedules for work product delivery consistent with project schedules. Finally, the plans identify resource needs (estimated by discipline and type) and estimated costs based on these projected resource needs. Once resources are agreed to by the responsible project managers, the plans are subject to configuration control.

8.1.1.2 Schedule. The baseline schedule for the SST IS Project is derived by integrating the detailed work schedules identified in the individual plans. The work schedules are reviewed and adapted, if necessary, to ensure consistency with direction and guidance from ORP directives and guidelines for preparing the annual MYWP. The SST IS Project mission schedules are aligned with the WBS and are subsequently integrated into the *Tank Waste Remediation Fiscal Year 2000 Multi-Year Work Plan* (LMHC 1999).

8.1.1.3 Cost. A primary SST IS Project objective is achieving cost effectiveness while meeting or exceeding technical and schedule objectives. To meet this objective, the project has implemented a management system to continue improving productivity and optimizing resources. Risk assessments are incorporated into project decisions. Activity-based cost estimates are the basis for establishing budgets and ultimately cost performance measurements. These estimates will help ensure the appropriate evaluation of work scope, schedule, cost, and business risk. The pricing rates and factors used to support the budget planning process are directed by FDH. Changes to these rates and factors will be addressed through the formal change-control process.

The manager of the SST IS Project will ensure that cost estimates and revised estimates are based on current plans and work authorizations and that the basis for cost estimates is consistent with the documented project scope and schedule baselines. Periodic reviews will be conducted on the financial status and variance reports prepared by the Business Management Office. Based on these reviews, management will identify workarounds or other actions to eliminate variances or mitigate the impact of such variances.

A monthly status meeting will be held with senior management to examine the schedule, cost, performance, and variances of the previous month. Project accomplishments, issues, concerns, impacts, corrective measures, and milestones will also be reviewed. Status meetings have proven to be essential to the success of the integration of the stabilization project and other SST operations and project support functions. Reports will be issued after the monthly status meeting to provide essential cost account, schedule, and commitment data to cost account managers, CHG managers, and the customer.

8.1.2 Work Authorization and Subcontracting

The process used to authorize and fund TFC activities is summarized in Freeman (1998) and detailed in subordinate procedures. The subsections below briefly describe this process as it relates to the SST IS Project.

8.1.2.1 Work Authorization. The TFC tank farm work and the SST IS Project work are authorized by division directors and project baseline summary managers at WBS Level 5 through suboperations directives. These division directors and project baseline summary managers authorize work at WBS Level 6 (cost account) using work authorization flow down process. The forms are prepared and approved at the beginning of each fiscal year and are retained in the project management plan, cost account records in the Business Management Office.

Cost account managers issue documentation that defines work at the levels. At each level (e.g., activity and cost account), the assigned managers have the responsibility and authority to perform and complete assigned work within defined schedule, cost, and regulatory constraints.

8.1.2.2 Subcontracting. The cost account manager determines the work scope to be subcontracted when offsite support is required. The manager is also responsible for the development of task orders, specifications, statements of work, and/or acceptance criteria. The CHG contracts and procurement personnel support the cost account manager in developing a request for proposal and for other functions.

8.1.3 Performance Assurance

8.1.3.1 Performance Measurement and Reporting. Performance measures are developed at all management levels (for example, activity, and cost account) to achieve best-in-class performance in cost, schedule, quality, and workforce productivity. Performance versus plan is measured, and performance variances are monitored and controlled. Recovery plans are developed by the responsible manager for variances that exceed identified threshold tolerances. Performance measures are also used to develop trends and predict future performance. Responsible managers will monitor the performance of internal support service personnel and resolve noted deficiencies with appropriate support service managers. The responsible managers also have authority to reject erroneous costs charged to their work accounts.

Monthly performance measures are based on the actual costs as reported in the financial system.

8.1.3.2 Continuous Process Improvement. The SST IS Project commits all organizations to continuous process improvement. Process improvement is achieved when key processes are understood and examined for improvement opportunities. All SST IS Project managers are required to plan, schedule, and conduct assessments of their management systems and processes. The *RPP Administration*, "Quality Assurance," Volume XI, Section 1.1, "TWRS Quality Assurance Program Plan" (CHG 2000) identifies implementing procedures for management assessment and other evaluative processes. The CHG Quality Assurance organization oversees the SST IS Project self-assessment processes. In addition, SST IS Project facilities are regularly reviewed by other organizations external to CHG.

8.1.4 Management Systems

The following subsections describe the information resource management and decision modeling systems and tools used by the SST IS Project.

8.1.4.1 Information Resource Management Systems. Much of the success of the SST IS Project management approach relies on the ability to acquire and analyze management information. Currently, the SST IS Project uses several sitewide systems (for example, the FDH Hanford Data Integration 2000 System [HANDI 2000], P3, and Job Control System) and in-house systems (for example, process monitoring and control systems) to manage information. Most of these systems are standalone systems that need improvements in integration and data sharing to be effective management tools.

The SST IS Project uses HANDI 2000 to assist its management processes. The HANDI 2000 Plan, which is described in the *Integrated Hanford Communications Plan* (FDH 1997b), will integrate major Hanford Site business processes and their supporting information systems. It will establish industry-standard work processes by implementing a set of integrated, commercial off-the-shelf enterprise resource planning software products. This integration system will reduce costs, provide better control, reduce the risk of nonconformance, improve safety, improve productivity, and improve overall process integrity.

The core business processes that HANDI 2000 will address include the following: project management; financial management; supply management; human resources; Environmental, Safety, and Health; and work management. Current plans are to implement these processes sitewide, except for work management, by FY 2000. Work management has not received sitewide implementation approval.

8.1.4.2 Decision Models. The SST IS Project uses process models and analysis tools to assist in decision-making processes. The most popular models are the scheduling and resource planning tools for project planning, particularly the P3 application, that will produce schedules with logic ties defining activity interdependence. These tools help ensure resources are available to perform timely work.

8.2 ENGINEERING

The SST IS Project engineering process uses a systems approach that ensures the technical baseline supports the identified mission needs and requirements. Requirements are determined; the system is assessed; the existing technical baseline is verified; new hardware is designed, constructed or procured, installed and tested; and operations and maintenance are supported.

The engineering process acknowledges a majority of the SST IS Project system already exists, and needed modifications and maintenance are being performed. The engineering process assesses the existing system and ongoing activities to ensure they will perform the required functions and meet performance requirements. The systems engineering focus is on developing the functions, requirements, concepts, and integration of activities; the engineering focus is on the existing technical baseline/system, design/construct/test, and operations and maintenance support.

8.2.1 Systems Engineering

Systems engineering is the fundamental tool for understanding and developing complexed systems. The systems engineering process is described in *Tank Waste Remediation System Systems Engineering Management Plan* (Peck 1998), and the implementing procedures contained in *TWRS Administration* (CHG 2000). This engineering process has been implemented on the SST IS Project.

The top-level elements of this process include a mission analysis and a definition of an operations and maintenance concept for the SST IS Project. The SST IS mission has been analyzed with a particular focus on identifying the requirements associated with top-level functions, major facilities, the Authorization Basis, regulations and DOE orders, records of decisions, and the Tri-Party Agreement (Ecology et al. 1996).

The existing facilities and ongoing projects are being assessed to determine the applicability of existing systems and components, to identify any new systems and components that need to be deployed, and to identify requirements for documentation (for example, new specifications or updates of existing functional design criteria). Technical performance measures are being established, based on the specifications and risk evaluations, to gain insight into the evolving capability of the system and to manage risk. Testing and evaluation will be planned and conducted as required to verify that systems and components meet the specified requirements and support integration.

8.2.2 Engineering Process

The engineering process is documented in *Tank Waste Remediation System Engineering Plan* (Rifaey 1998). This plan describes the engineering process and the controls to support the technical baseline definition and to manage its control, evolution, and implementation of field operations. The engineering plan provides the vision for the engineering required to support the SST IS Project mission, which includes integrated data management of the technical baseline.

Further, this plan describes the approach for moving from the "as-is" condition of engineering practice, systems, and facilities to the desired "to-be" configuration.

The systems engineering process described in Section 8.2.1 is an integral part of the overall engineering process. Existing systems are analyzed to ensure that their functionality and operability will meet mission needs and system specifications. New systems are defined through alternative generation analysis, trade studies, engineering studies, and specialty engineering analysis against the requirements and projects defined. Conceptual designs are generated, and project baselines are established. Technical authorities (design authorities and cognizant engineers) direct this process once the formal assessment/evaluation ensures the need for new or modified hardware. Design, construction, and testing activities follow conceptual design. The engineering organization supports Operations and Maintenance by managing technical information (for example, drawings, analysis, vendor information, and equipment).

8.2.3 Technical Baseline

The technical baseline generated by this process is summarized in Section 6.0.

8.2.4 Alternatives Management

Alternatives management generally can be categorized into three major areas:

- Evaluating technical alternatives for processes, system designs and specifications, and equipment selection
- Contingency planning
- Identifying and developing optimization opportunities.

Technical alternatives are evaluated in accordance with alternatives generation and analysis practices described in the *Tank Waste Remediation System Systems Engineering Management Plan* (Peck 1998). The existing alternatives generation and analysis studies and those that are planned in support of the SST IS Project are described in Section 6.0. For an analysis of the alternatives and technology being considered, see Appendix B.

8.3 INTEGRATED SAFETY MANAGEMENT SYSTEM

The CHG organization and the SST IS Project are committed to performing work safely and efficiently to protect the public, workers, and environment. This is accomplished through the Integrated Safety Management System.

The Integrated Safety Management System has established an environmental, safety, and health management system that integrates requirements into all aspects of work planning and execution,

and it identifies requirements that reflect DOE's commitment to a "standards-based" safety program and safety concepts.

The Integrated Safety Management System provides a mechanism for increasing worker involvement in work planning (including hazard and environmental impact identification), for analysis and control, and for feedback and improvement processes. Effective implementation of this mechanism incorporates the best practices of, and supports the accomplishment of, the Voluntary Protection Program, the enhanced work planning/Hanford occupational health process, and other similar environmental, safety, and health improvement initiatives.

Freeman (1998) provides additional detail on Integrated Safety Management System objectives and the roles and responsibilities of the integrated organizations supporting this effort. The following section summarizes this detail and describes the relevance to the SST IS Project.

8.3.1 CH2M HILL Hanford Group, Inc., Safety Organizations

The CHG Environmental, Safety, and Health, and Quality Assurance organization, CHG Radiological Control, and CHG Engineering and Nuclear Safety provide health and safety services to the SST IS Project. These organizations use the Integrated Safety Management System to integrate safety and health functions into work planning, execution, and follow up. Programs are in place to do the following: oversee implementation of DOE orders and Federal, state, and local laws and regulations; perform audits to verify compliance with regulatory and legal operational requirements; and provide guidance and policy direction for continuous improvement in the conduct of work.

8.3.1.1 CH2M HILL Hanford Group, Inc., Environmental, Safety, and Health, and Quality Assurance.

- **Environmental.** The environmental program facilitates SST IS Project compliance by defining and overseeing environmental regulatory requirements. Stabilization activities are components of the Tri-Party Agreement (Ecology et al. 1996) under Milestone M-41-00. The unit processes of stabilization are evaluated to determine permitting requirements. The *Tank Waste Remediation System Environmental Program Plan* (Borneman 1998) provides additional detail on the processes, roles, and responsibilities of the environmental program.

- **Safety and Health.** CHG has a multidisciplined safety program that encompasses industrial safety, industrial hygiene, and fire protection. The safety program is implemented through numerous Project Hanford policies and procedures for Occupational Safety and Health and Fire Protection; *Tank Farm Health and Safety Plan* (Mickle 1995); Freeman (1998); and CHG-specific administrative procedures that cover stabilization activities. Safety is integrated through the work planning process and the safety oversight function.

- **Quality Assurance.** The CHG SST IS Project implements a quality assurance program through *RPP Administration*, "RPP Quality Assurance Program Plan," Volume XI,

Section 1.1 (CHG 2000) and the quality assurance organization. An implementation matrix in the CHG Quality Assurance Program Plan summarizes the flow down of requirements to procedures that control the quality assurance process for the entire SST IS Project. The program plan and subordinate procedures cover stabilization activities.

- **Nuclear Safety.** Nuclear safety encompasses systems and activities that minimize the potential for a criticality and release of fission products or other radioactive materials that could adversely affect the environment, workers, and the public. The CHG Engineering and Nuclear Safety organization is responsible for performing the engineering and nuclear safety analyses to support this objective. The Environmental, Safety, and Health, and Quality Assurance organization is responsible for overseeing these analyses and reviewing the documents produced. This ensures that the integrity of an independent technical review is preserved. Communication ensures that the roles of the two groups are clearly defined and that work duplication is avoided. Stabilization activities and work are evaluated in the same manner as all TFC activities to ensure that authorization basis requirements are met.

- **Emergency Preparedness.** The Emergency Preparedness Program is an integral element of the Integrated Safety Management System. It is described in *Tank Waste Remediation System Emergency Preparedness Program Plan*, Rev. 1 (Rowland 1997). This program, which works in conjunction with the sitewide emergency preparedness organization, including DOE and Project Hanford Management Team subcontractors, identifies and implements CHG SST IS Project facility-specific requirements. The CHG Emergency Preparedness organization oversees stabilization activities, which are addressed by the current hazards assessment.

8.3.1.2 Radiological Control. The *Hanford Site Radiological Control Manual* (HSRCM-1 1994) outlines the compliance program for 10 CFR 835, "Occupational Radiation Protection." The radiological control organization uses this document as a basis for integrating safety and health functions into all phases of the CHG SST IS Project. The organization supports and oversees SST IS Project activities, generates radiation work permits, and assigns radiological control technicians.

8.3.1.3 CH2M HILL Hanford Group, Inc., System Engineering and Nuclear Safety and Licensing. For the CHG SST IS Project, the nuclear safety activities are executed by the nuclear safety and licensing organization, reporting to the CHG Engineering and Nuclear Safety director. This functional support group ensures consistency in hazard identification; control development; structures, systems, and components specification; authorization basis document preparation; DOE order compliance; and approaches to dealing with technical uncertainty. Stabilization activities are evaluated for compliance with the authorization basis and other requirements through applicable CHG procedures.

8.4 DECISION MANAGEMENT

Decision management provides traceability for affected decisions through the graded use of a rigorous and methodical decision-making process. The SST IS Project management process implements the requirements of *RPP Administration*, "RPP Systems Engineering Management Policy," Volume X, Section 2.2 (CHG 2000); *Tank Waste Remediation System Systems Engineering Management Plan* (Peck 1998); and *RPP Administration*, "RPP Decision Management Procedure," Volume IV, Section 2.7, in (CHG 2000). In accordance with these references, a fully implemented decision-management process will be followed for major SST IS Project mission decisions.

A graded approach to implementing this process is allowed for decisions of lesser impact. It is the responsibility of the designated decision maker to determine the degree to which the full decision management process is applied to individual decisions. The "RPP Decision Management" procedure (CHG 2000) provides specific guidance on the basis for establishing a graded approach.

8.5 RISK MANAGEMENT

The SST IS Project has implemented a disciplined approach to project risk management to ensure that risks are identified and managed in a manner that eliminates or satisfactorily mitigates their impact. Risk evaluation activities are embedded in the SST IS Project management processes and constitute a fundamental input to decision-making processes.

The SST IS Project risk management process is intended to reduce risks to an acceptable level through a process of risk assessment, analysis, and handling. It is also intended that risks be communicated to appropriate decisions makers. The SST IS Project risk management approach is based on the requirements of *RPP Administration*, "RPP Systems Engineering Management Policy," Volume X, Section 2.2 (CHG 2000), and the *Tank Waste Remediation System Systems Engineering Management Plan* (Peck 1998). These requirements cover risk assessment, risk analysis, and risk handling.

The SST IS Project will implement these requirements through *RPP Administration,* "TWRS Project Risk Management," Volume IV, Section 2.6 (CHG 2000), *Tank Waste Remediation System Risk Management Plan* (Zimmerman 1998), and risk management implementation plans, as required. In response to this guidance, the SST IS Project will do the following:

- Identify and analyze potential technical, schedule, and cost risks for activities
- Develop and maintain risk management lists identifying risks, possible risk consequences and their relative importance, and planned mitigation actions
- Control and track completion of assigned risk management mitigation activities

- Communicate risk project status through the roll up of risks to the appropriate management levels and cross communication with the appropriate client counterparts at each level.

The SST IS Project technical basis report documentation (see Section 6.1) and the Single-Shell Tank Interim Stabilization Critical Risk Management List in Appendix B are the principal management tools used to identify, analyze, and track project risks and their related issues. Technical basis report documents are developed for each key activity identified on the SST IS Project Level 1 logics in Appendix E and incorporate an assessment of technical, schedule, and cost risks relating to that activity. Risk lists are used to compile, communicate, and track risks and actions taken to mitigate such risks.

8.6 CONFIGURATION MANAGEMENT

Configuration management is an integrated approach to controlling the technical, cost, schedule, and administrative information necessary to manage the SST IS Project activities to achieve an end product which meets the mission requirements. It provides the mechanisms to identify, document, and control the functional and physical characteristics of the SST IS Project products, particularly as changes are being made.

Configuration management focuses on five principal functions: configuration management system management, configuration identification, configuration status accounting, change control, and configuration management assessments. These functions are tailored to project requirements and objectives that remain the same throughout the project life cycle; to identify configuration items and configuration information to be controlled for each item, and to control that information. Critical to this process is identifying the as-built configuration of project structures, systems, and components; the change control thresholds for modifying this configuration; and the level of authority required for such changes.

Configuration management policy and requirements are defined and described in *Tank Waste Remediation System Configuration Management Plan* (Vann et al. 1998). This document describes the information management, document control, and records management systems and processes used to establish and maintain configuration control. The implementation requirements of configuration management are identified in *Tank Waste Remediation Configuration Plan* (Vann 1998).

TWO has appointed a configuration management representative, who is responsible for identifying configuration items and configuration information and maintaining its traceability and consistency with source requirements. This effort covers the configuration management requirements for all activities within TWO including those of the SST IS Project.

8.7 INTERFACE MANAGEMENT

A major objective of interface management and control is to form agreements that allow organizations to design adjoining physical systems. Proper application of interface management

and control processes result in structures, systems, and components that physically fit and function together without mismatch, omission, interferences, or disposition. Interface management and control also must be imposed when an organizational interface is identified. Typically, identified interfaces are to other internal CHG projects (e.g., Waste Retrieval and Disposal, TWO, or Characterization) or to external projects (e.g., Waste Management Project).

The requirement that a project's interfaces be identified, controlled, and integrated with other projects and activities is found in *Tank Waste Remediation System Systems Engineering Management Plan* (Peck 1998) and *RPP Administration*, "Interface Control," Volume IV, Section 2.8 (CHG 2000).

The SST IS Project interfaces will be documented in the MYWP (LMHC 1999) and other supporting documents such as the *Operations Waste Volume Projection (OWVP)* (Strode and Boyles 1998). The Waste Management Project uses the *Operations Waste Volume Projection* as its basis for planning. In accordance with the requirements of *RPP Administration*, "Interface Control," Volume IV, Section 2.8 (CHG 2000), the SST IS Project will establish formal agreements with the performing organization (for example, the Waste Management Project on the availability of the 242-A Evaporator to process accumulated liquid waste in the DSTs). Performance against interface requirements will be monitored. Table 8-1 lists the key interfaces that affect the SST IS Project.

Table 8-1. Single-Shell Tank Interim Stabilization Interfaces.

Programmatic	Internal	Physical
ORP Tank Waste Operations Evaporator Operations Waste Characterization TWR Construction Projects TWR Operations	Waste Characterization Safety Issue Resolution Nuclear Safety and Licensing CHG Environmental Tank Waste Operations CHG Management Process Engineering	Tank Waste Operations

ORP = U.S. Department of Energy, Office of River Protection.
CHG = CH2M HILL Hanford Group, Inc.
TWR = Tank Waste Retrieval.

The management of the above interfaces is coordinated through routine meetings with the affected parties. The meetings provide information on activities to affected organizations, discuss issues and conflicts, and resolve interface problems that may arise.

A DST waste inventory control group meeting is conducted monthly. The waste inventory control group discusses waste transfers, waste volume projections, saltwell pumping schedules, evaporator campaigns, construction project interferences, and privatization issues. It discusses action items from prior meetings and closes them when applicable. It also identifies and documents new action items.

The charter for the Waste Inventory Control group is documented in CHG (2000), Volume I, Section 3.12.

8.8 STAKEHOLDER AFFAIRS

8.8.1 Regulator Participation

The ORP has requested regular meetings with the CHG team and the Washington Department of Ecology to discuss stabilization issues.

8.8.2 Public Participation

Public participation will be handled according to the *Integrated Hanford Communications Plan* (FDH 1997b). The plan identifies key Hanford Site stakeholders and provides a framework for integrated communications and public involvement for the Hanford Site. The CHG support DOE in the communication of the CHG activities to stakeholders, tribes, and other interested parties.

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APPENDIX A

INTERIM STABILIZATION HISTORY

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APPENDIX A

INTERIM STABILIZATION HISTORY

A1.0 INTRODUCTION

The U.S. Department of Energy (DOE) has shifted its main objective from producing special nuclear material to cleaning up facilities and restoring the Hanford Site. With approximately 50 years of spent nuclear material production at the Hanford Site, large volumes of liquid waste by-products, consisting of radioactive and toxic chemical mixtures, have accumulated. Liquid wastes are stored in large underground waste storage tanks that are clustered in rectangular arrays identified as tank farms. The tank farms are located in the 200 West and 200 East Areas of the Hanford Site.

Between 1943 and 1964, 149 single-shell tanks (SST) were designed and constructed in the 200 Areas. Wastes were added to these tanks from 1943 until November 1980. Each of the 12 tank farms contains 4 to 18 SSTs. To provide additional space and to eliminate the potential for tank leakage to the vadose zone, a double-shell tank (DST) construction program commenced in 1968.

To limit the number of new DSTs that had to be constructed to store liquid radioactive waste, DOE authorized concentration of the waste liquids in SSTs until the soluble salts precipitated and settled. Significant free supernatants were pumped from most of the SSTs by 1980, concentrated, and stored in DSTs. No new waste additions were made to the SSTs after 1980. However, the SSTs have seen heavy service and are well beyond their design life. Waste leakage from 67 of the SSTs has been assumed or confirmed.

To reduce the potential of further leakage, an approach was developed using a central screen well with a low-capacity jet pump to remove the drainable liquid. Liquid in the tank drains to this central well, driven by the pressure of the interstitial liquid in the bed (head height). To maximize the rate of drainage at all times, the liquid in the well is maintained at the lowest possible level. This ensures the maximum drainable liquid is removed as quickly as possible. This process has been defined as "interim stabilization."

The solids remaining in the SSTs consist of porous beds whose interstices are filled with the remaining radioactive waste liquids. Depending on the particle sizes of the solid beds, varying amounts of liquid are trapped. For beds having relatively large particle sizes, the capillary potential of the bed is low, and much of the interstitial liquid can drain or leak. For beds having very fine particles, the capillary potential is very high, and little interstitial liquid can drain or leak. On average, 4 liters (1 gallon) of saltcake may contain 1 liter to 2 liters (¼ to ½ of a gallon) of drainable liquid, while 4 liters (1 gallon) of sludge may contain 0.4 liter to 1 liter (1/10 to 1/4 of a gallon) of drainable liquid.

The time it takes to remove interstitial liquid can be several years depending on solution properties, solids porosity, surface tension on the liquid on the wetted solids, head height, well diameter, and solution viscosity. Pumping generally continues until the inflow into the central well is 3.2×10^{-3} liters per second (0.05 gallon per minute or less than 1 cup per minute). The flush water needed to keep the pump and screen clear exceeds the 3.2×10^{-3} liters per second (0.05 gallon per minute) criterion, so continuous pumping would result in removing the water added to the system, rather than removing liquid waste from the solids.

Prototypical operation of saltwells began in 1976 and continued intermittently through 1978. A larger scale commitment to install and operate saltwells began in 1979.

A2.0 INTERIM STABILIZATION

Of the 149 SSTs, 119 have been interim stabilized as of September 30, 1999. This includes removing pumpable liquids in accordance with the identified criteria, concentrating the liquid through evaporation, and transferring the concentrate to DSTs. This interim stabilization step was taken to mitigate the consequences of a leaking tank. Each of the 30 SSTs awaiting interim stabilization contains between 174,100 liters (46,000 gallons) and 3,607,000 liters (953,000 gallons) of waste, some of which is pumpable liquid. Figure A-1 reflects the number of tanks pumped per year. Figure A-2 reflects the volume pumped per year.

Based on the design life, the heavy service, and the number of tanks currently identified as assumed or confirmed leakers, there is no technical or engineering reason to believe that the tanks remaining to be interim stabilized will not fail in the future. Therefore, the remaining 30 tanks will be interim stabilized to minimize future leak potential and as an integral part of the ongoing DOE cleanup objective.

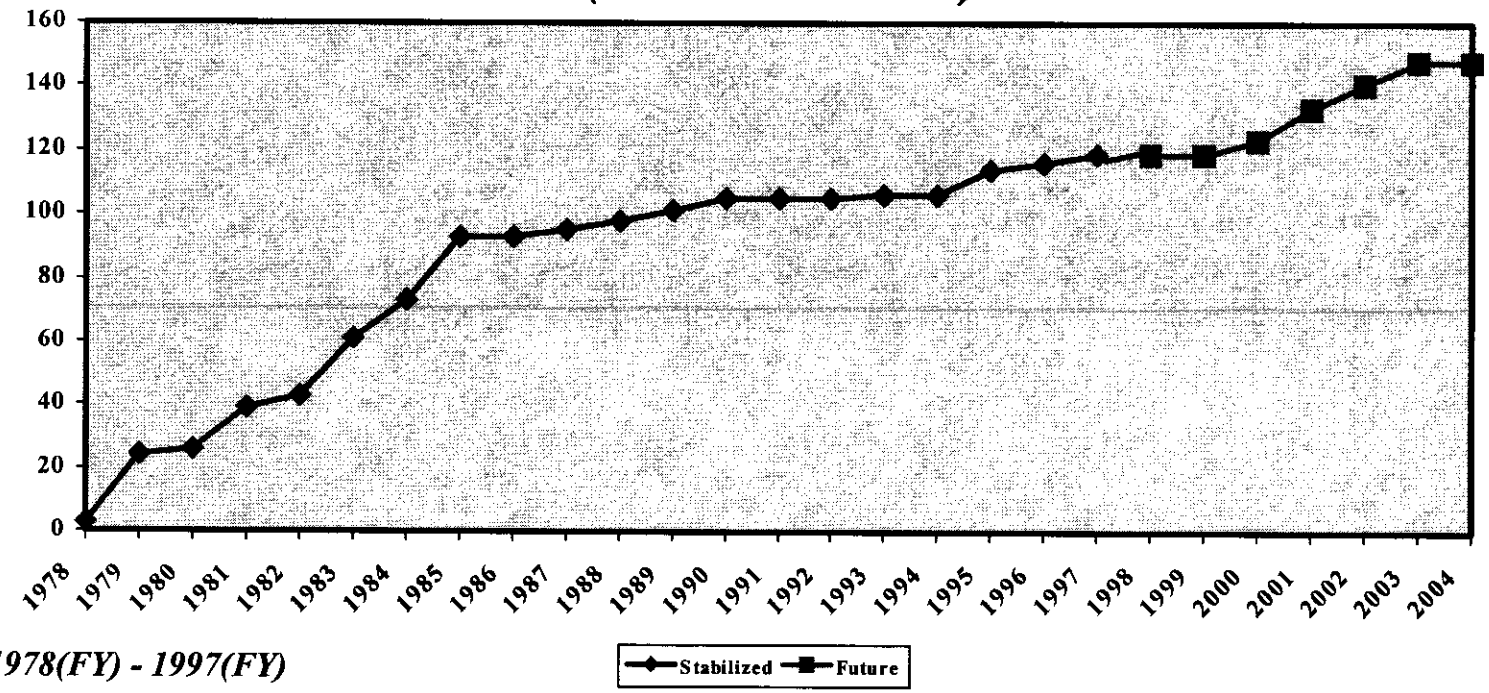
Interim stabilization of the SSTs is a DOE objective and a critical step in the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al 1996) and the more recent Consent Decree (Ecology et al, 1999). Stabilization is required to support retrieval and ultimate waste disposal objectives. With the likely possibility of tank failure, the goal is to minimize the impact on the environment by sequentially stabilizing the tanks.

End-point criteria for interim stabilization of SSTs are reached when all of the following are achieved.

1. Each tank contains less than 189,200 liters (50,000 gallons) of drainable interstitial liquid, based on an average percent porosity (25% for salt cake, or 15% for sludge), or the porosity determined during actual pumping.

2. Each tank contains less than 18,920 liters (5,000 gallons) of supernatant (the liquid above the solids in waste storage tanks).

Figure A-1. Interim 119 Stabilized Tanks.



1978(FY) - 1997(FY)
119 Stabilized Tanks

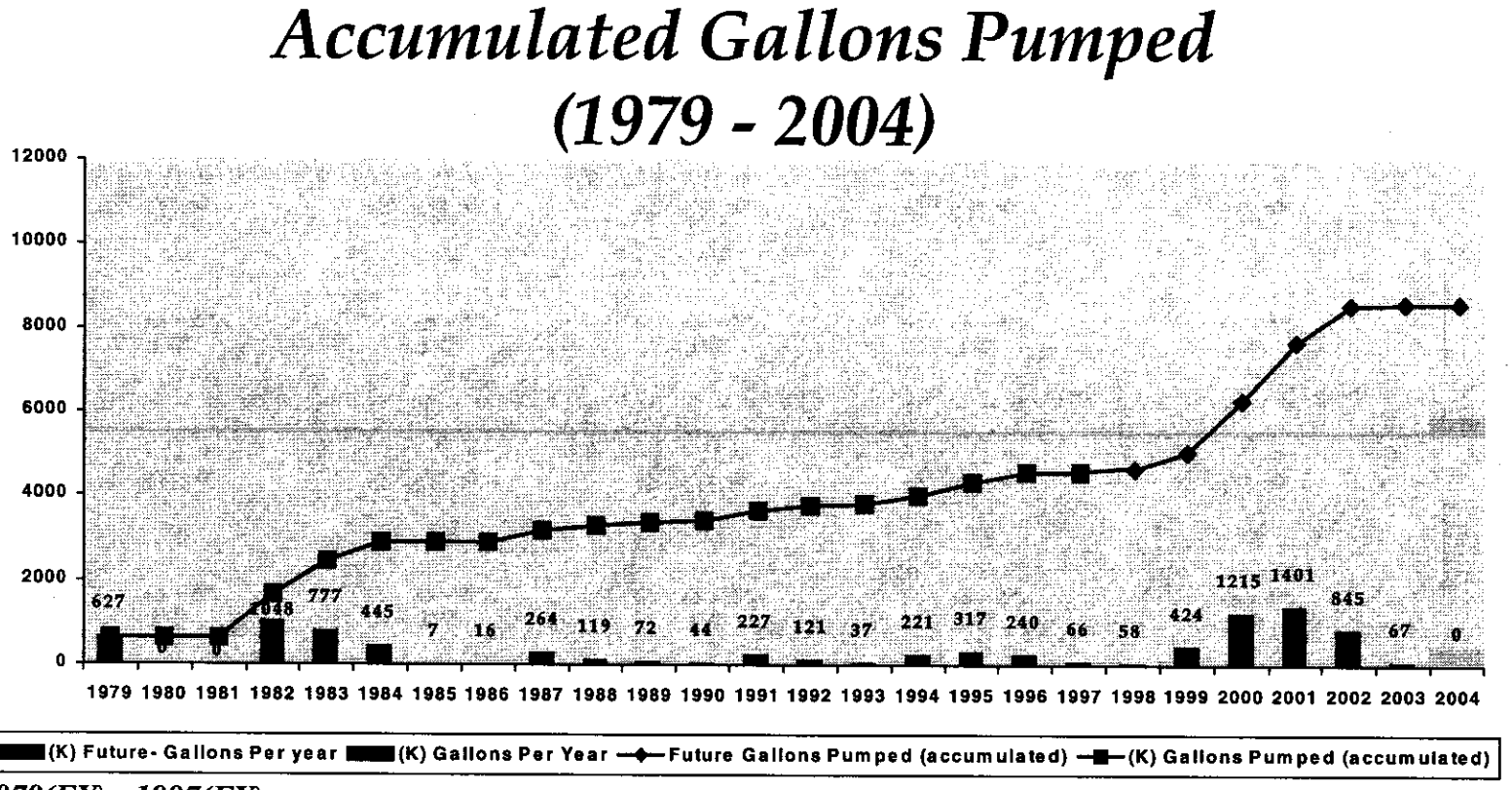
Fiscal Year	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Number of Tanks Stabilized	3	21	2	13	4	18	12	20	0	2

Fiscal Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Number of Tanks Stabilized	3	3	4	0	0	1	0	8	2	3

Fiscal Year	1998	1999	2000	2001	2002	2003	2004
Number of Tanks Stabilized	0	0	4	10	8	7	0

SST:LCH2430\FIG1&2
3/29/99

Figure A-2. Gallons Pumped Per Fiscal Year.



1979(FY) - 1997(FY)
4,648(K) Gallons Pumped

Fiscal Year	1979	1980	1981	1982	1983	1984	1985	1986	1987
Gallons (K) Pumped	627	0	0	1,048	777	445	7	16	264

Fiscal Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Gallons (K) Pumped	119	72	44	227	121	37	221	317	240	66

Fiscal Year	1998	1999	2000	2001	2002	2003	2004
Gallons (K) Pumped	58	424	1,215	1,401	845	67	0

1998(FY) - 2004(FY)
4,010 (K) Gallons to be Pumped

SST LCH\2430\Fig1&2
3/29/00

1 Gallon = 3.785 Liters

3. If a 3.2 x 10-3 liters per minute (0.05 gallon per minute) or less pumping rate has been reached or if inflow in the saltwell screen is less than 3.2 x 10-3 liters per second (0.05 gallon per minute).

A3.0 INTRUSION PREVENTION (INTERIM ISOLATION)

The *Hanford Federal Facility Agreement and Consent Order (*Tri-Party Agreement) (Ecology et al. 1996) defines intrusion prevention (interim isolation) as disconnecting and blanking or capping pipelines from tank systems and installing barriers to avoid inadvertent liquid addition. Intrusion prevention is complete when the necessary system components are sealed to prevent tank intrusion. Required tank surveillance instrumentation devices are not disconnected or disabled during the intrusion prevention process.

End-point criteria for intrusion prevention of SSTs are reached when all of the following are achieved.

1. Risers terminating abovegrade or less than 0.91 meter (3 feet) belowgrade are sealed.

2. Confinement cover for pits, cells, and vaults are sealed for tanks that have risers terminating in a confined area.

3. Pipelines entering any tank or abovegrade structure connected to a tank are sealed with closure devices.

4. If a major piece of equipment fails and the tank contains less than 189,250 liters (50,000 gallons) of drainable interstitial liquid and less than 18,925 liters (5,000 gallons) of supernatant, and the flowrate/inflow rate is greater than 0.19 liters per minute (0.05 gallons per minute), a cost/benefit analysis may be performed and a letter of justification may be written to declare the tank interim stabilized.

A4.0 REFERENCES

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APPENDIX B

ALTERNATIVES AND TECHNOLOGY CONSIDERED

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APPENDIX B

ALTERNATIVES AND TECHNOLOGY CONSIDERED

A summary of alternatives and a technology screening review was conducted to identify promising alternatives that should be evaluated as part of the accelerated Single-Shell Tank (SST) Interim Stabilization Project. The review was conducted at three levels. First, broad technical alternatives to the current technical baseline approach to prevent leakage of the interstitial liquid to the environment were developed. Secondly, technology enhancements to the existing saltwell pumping system technology were identified and evaluated. Finally, specific tools and technologies to address specific technical problems or logistical weaknesses in the saltwell pumping systems were identified.

The alternatives were qualitatively evaluated with respect to potential cost or schedule impact, the feasibility of the alternative, the likely deployment schedule, and potential impacts to downstream retrieval and immobilization processing. Evaluation of items that appeared to have significant potential for risk reduction of the baseline cost and schedule were included in the program schedule.

B1.0 TECHNICAL DESCRIPTION OF THE PROBLEM

When evaluating potential alternatives, it is important to understand the technical aspects of the problem. As a result of previous production history, various waste slurries were transferred to the SSTs. Through settling, concentration, or subsequent precipitation, solids were deposited in various layers, usually in relatively small particle sizes. Most recently, vacuum evaporator-crystallizers were operated in both the 200 East and 200 West Areas, producing slurries with relatively large particle sizes to reduce overall waste volume. The slurries produced by the evaporator-crystallizers were deposited in SSTs that had significant available space.

Once the solids settled from the waste slurries, the clarified supernatant waste was transferred into the double-shell tank (DST) system. No new waste additions have been made to the SSTs since 1980.

The solids remaining in the SSTs are porous, and the pores are filled with interstitial liquid. The various layers of precipitated solids have widely differing particle sizes and, as a result, varying pore sizes. The interstitial liquid is of varying chemical and physical characteristics. The solutions are generally in chemical equilibrium with the solids they contact at the solution temperature. The pore sizes of the porous bed are small enough to exhibit significant capillary potential, ranging from a few inches of head for some large solids to tens of feet for fine sludge solids. Whenever the saturated liquid level is higher than the capillary potential, the interstitial liquid can flow to areas of lower potential.

Any time an SST develops a leak, the interstitial liquid at a pressure above the capillary potential of the solids bed can flow out of the tank.

To reduce the potential for liquid leakage from of any failed SST, the U.S. Department of Energy (DOE) has developed and deployed saltwell pumping systems to drain and remove this interstitial liquid. A central screened well is installed in the center of the tank, and a specially designed jet pump is installed in the well. The pump removes liquid from the central well at the same rate that it drains to the well. In doing so, the saltwell removes the drainable liquid at the fastest rate possible. After enough liquid is removed, the hydraulic head is reduced to the point where inflow into the well is reduced to less than 0.19 liter per minute (0.05 gallon per minute). At this rate, the vast majority of the drainable liquid is removed, and flush water additions necessary to keep the system running may exceed the waste drainage into the well. At this point saltwell pumping is declared complete, and the tank is isolated to ensure that water intrusion does not occur until the tank is prepared for retrieval.

At the completion of the saltwell pumping activities, a small heel of interstitial liquid will remain that is below the suction of the pump. In addition, the solids remaining in the tank still contain liquid on the surface of the particles, along with saturated solids areas that still retain liquid by the capillary potential of the solids bed. The liquid cannot leak unless water is added to the system.

B2.0 ALTERNATIVE APPROACHES

Simply stated, the mission is to prevent the interstitial liquid contained in the SSTs from leaking to the environment until the waste can be retrieved and immobilized. Because the waste in many of the SSTs will not be retrieved until the period 2011-2018, the liquid must be either removed or contained for 10 to 20 more years.

The alternatives are to remove the liquid from the tank, solidify the liquid in the tank to prevent its leaking, or establish a supplemental barrier outside the tank to hold the liquid in the tank pending retrieval. The following sections briefly describe the alternatives.

B2.1 ENHANCED SALTWELL PUMPING

Enhanced saltwell pumping is a continuation of the baseline technology, enhanced by some improvements (see Section B3.0).

B2.2 IN-TANK CAPILLARY PUMPING OR ABSORPTION

In-tank capillary pumping or absorption would use a very fine and absorbent material installed in cored holes in the waste. The absorbent material has a much higher capillary head and will extract interstitial liquid at a slow rate from drainable saltcakes and nondrainable sludges. As the material becomes saturated, it is removed and replaced with fresh material. Typical materials would be clays that are compatible with downstream immobilization to the extent practical. This technique was evaluated by engineering studies and cold bench-scale demonstration in the late 1970s. At that time, the amount of inert material added to the tank was determined to be very

large, which resulted in significant increases in the volume of immobilized low-activity waste and high-level waste glass. The time to achieve any significant liquid removal was very long. The only identified feasible application was after the drainable liquid was removed or as part of an in-tank closure technique.

B2.3 ACCELERATED RETRIEVAL

Accelerated retrieval would use baseline sluicing technology or some other technology to remove the interstitial liquid and the remaining waste from an SST. This effectively "leapfrogs" the saltwell completion schedule by accelerating retrieval, as is occurring with the tank C-106 sluicing system. However, based on the current state of sluicing technology and the limited DST volume, it is very unlikely that one or more retrieval systems could be deployed in the time it would take to complete saltwell pumping because of the amount of capital construction required ($20 to $80 million).

One alternative would be to add a solids-leaching element to the existing saltwell system—similar to that in the ore-leaching industry. Small amounts of leach water would be distributed on the surface of the solids in the tank. This leach water would dissolve the salt, flow to the central well, and be transferred to the DST system. The amount of water added would be adjusted to match the amount of solution removed. The leach water may also open up channels within the pore structure and accelerate the drainage of the interstitial liquid, as well as diluting the interstitial liquid. It appears the salt could be completely dissolved within a one-year period, with the liquid and soluble contents of the tank removed. Deployment of this "rainbird retrieval" concept has relatively low capital costs because it uses the existing saltwell pumping infrastructure. For tanks containing a majority of soluble solids and having a long projected pumping time, this alternative might be feasible in cutting the pumping duration and program costs. Principal issues include whether an increased DST volume can be managed and significant levels of concern on the part of regulators and stakeholders.

B2.4 ELECTRO-OSMOSIS

Electro-osmosis would accelerate the rate of drainage by adding an electrical potential to drive liquid drainage. This would be in addition to the gravity head that drives drainage in the baseline approach. Electrodes would be installed around the perimeter of the waste, and a direct-current electric voltage would be established between these electrodes and the central saltwell screen. The electrical voltage would cause the interstitial liquid to flow to the central well at a higher rate. The technology is widely used in civil engineering and environmental remediation to dewater soils and sludges.

Laboratory and bench-scale work was conducted at Arizona State University and at the Hanford Site in the late 1970s. Electro-osmosis was not feasible in the highly conductive solution environment when the solids were soluble in the liquid. So much current flowed that the solutions heated up, dissolved the solids, and plugged the removal system. Once current was removed, the solution cooled and formed a large salt mass that was very difficult to dissolve or mechanically break up for retrieval. Other safety concerns involved the amount of hydrogen generated and the potential for electrochemical corrosion of the tank itself.

B2.5 ALTERNATING-CURRENT HEATING

Alternating-current heating is a technique to remove water from the interstitial liquid of the tanks, thereby reducing the volume of liquid that can leak. Electrodes would be installed around the waste interior, with a central electrode to complete the alternating-current circuit. A high-voltage, alternating-current source is connected between the perimeter electrodes and the central electrode. The current flow heats the solution and the waste, causing evaporation of the solution in the tanks. The vapor is removed by the tank ventilation system. Condensers and offgas filtration would need to be provided. The condensate from this operation might need to be re-evaporated by the evaporator before being discharged to the 200 Area Effluent Treatment Facility because of entrainment.

This alternative was tested at the cold bench scale at the Hanford Site in the late 1970s. As expected, significant heat was generated. However, heating the solution resulted in the dissolution of the soluble constituents and, in some cases, resulted in melting the salt itself. Upon cooling, the waste set up into a solid block of salt that was very difficult redissolve or retrieve. Safety issues regarding the high-temperature effects on the tank structures include stray electrical currents, electrochemical corrosion, hydrogen generation, and propagation of fires in some tanks with organics made the application of this technique problematic.

B2.6 MICROWAVE HEATING

Microwave heating of the wastes for drying was investigated on the bench scale at commercial laboratories in Canada and at the Hanford Site in the late 1970s. While adjustment of the radio frequencies to couple with the tank waste to generate heat was possible, results were similar to the alternating-current heating discussed above. Additional safety concerns with the high-energy, radio-frequency generators, wave guides, and radiation exposure to personnel also were significant.

B2.7 WIPED-FILM EVAPORATION

In this alternative, a wiped-film evaporation system would be installed in an SST riser. Waste would be transferred from the tank to the wiped-film evaporator and undergo substantial concentration. The concentrated salt melt would discharge back into the tank, cool, and solidify. Upon completion, the waste would be in a smaller waste volume, and the solids would exist as a solid block of salt. Full-scale prototype cold testing on both Savannah River and Hanford Site

waste types was completed in 1976 at Savannah River. Both sites determined that the waste form was too difficult to retrieve and decided against deployment.

B2.8 IN-TANK SOLIDIFICATION

In-tank solidification by adding concrete or clay has been tested and demonstrated at both Savannah River and the Hanford Site. The simple addition of concrete or clay has not been effective at Hanford. Engineering evaluations show that substantial mixing of the concrete or clay is required to effectively immobilize the wastes. This can be accomplished by a jet-mixing injection of concrete, recently demonstrated at Savannah River for tank closure, or by using a tank-top waste extruder that mechanically mixes the waste with the solidification medium. Similar techniques are being evaluated for tank closure at Oak Ridge, Savannah River, and Hanford. In-tank solidification would essentially eliminate the ability to easily retrieve the waste for subsequent immobilization and would be suitable only if disposal of the waste in-tank were determined to be desirable.

Other techniques such as in situ vitrification have been considered (DOE and Ecology 1996). The current state of technology of in situ vitrification does not appear to support the immobilization of an entire tank. If in situ disposal was feasible, it would be desirable to develop the technology for this alternative because the glass waste form generally is superior to cement or clay forms.

B2.9 CLOSE-COUPLED BARRIERS

Close-coupled barriers installed underneath the tanks to contain any leaking wastes have been proposed numerous times to meet a variety of programmatic goals. Previous engineering evaluations concluded that the cost to construct a membrane (either injection or freeze barrier) was too great for the benefit achieved. Demonstrating that the barrier is truly containing the waste is problematic. Technology to construct an impermeable membrane beneath the complex tank and farm structure is not available now, although promising techniques are being evaluated by the Hanford Tanks Initiative Program. Development and deployment of barriers is likely to take much longer than completion of saltwell pumping, at a order-of-magnitude-greater cost per tank ($10-$100 million per tank).

B2.10 RECOMMENDATIONS

Table B-1 indicates that only enhancement of the existing saltwell-pumping technology and "rainbird retrieval" appear to have programmatic benefit in a time frame comparable to the baseline, without compromising future retrieval and immobilization. This suggests that technical activities to increase the effectiveness of saltwell pumping and consideration of the feasibility of accelerated retrieval by controlled water additions should be conducted early in the program to improve the cost and schedule performance of the baseline. Because of the extensive regulatory concerns associated with water additions to SSTs, this study is not being pursued at this time.

Table B-1. Alternative Approaches for Interstitial Liquid Containment.

Alternative	Existing Technology	Technology Available by 2005	Deployment Feasibility	Cost per Tank (rough order of magnitude)	Impact on Disposal
Saltwell pumping	X		Current baseline	$1-5 million	Not significant
Internal capillary pumping or absorption	X		Time required for liquid removal excessive	N/A	Large increase in low-activity waste and high-level waste immobilized waste volume
Accelerated retrieval					
-Sluicing	X		Current retrieval baseline	$20-$80 million	None
-"Rainbird retrieval"	X		Significant regulatory issues	$1-$2 million Incremental to SWP installation	Accelerated schedule, reduced cost
Electro-osmosis	X		Not effective with soluble salts	$5-$10 million	Retrieval much more difficult
Alternating current heating (drying)		X	Not effective with soluble salts	$5-$10 million	Retrieval much more difficult
Microwave heating (drying)		X	Not effective with soluble salts	$10-$20 million	Retrieval much more difficult
Wiped-film evaporation	X		Unacceptable interim waste form	$5-$10 million	Retrieval very difficult
In-tank immobilization					
-Concrete	X		Unacceptable interim waste form	$1-$10 million	Retrieval not feasible
-Clay	X		Unacceptable interim waste form	$1-$5 million	Retrieval not feasible
-In situ vitrification		X	Unacceptable interim waste form	$10-$50 million	Retrieval not feasible
Close-coupled barriers		Maybe	Installation of impermeable barrier currently not feasible	$10-$100 million	Assists in application of past- practice sluicing. May be required to complete SST waste retrieval.

N/A = not applicable. SST = single-shell tank. SWP = saltwell pump.

B3.0 ENHANCEMENT TO THE SALTWELL PUMPING TECHNOLOGY BASELINE

A number of initiatives were identified that could enhance the current program baseline technology, either by increasing the pumping rate for tanks that have significant supernatant or by increasing the rate at which liquids drain to the central saltwell. These initiatives are described in the sections below.

B3.1 MULTIPLE PUMPS/WELLS

In some tanks, the installation of a second screen and saltwell pump may be feasible. Analysis is required to determine whether there is a net improvement in solids drainage rate or whether the second pump effectively "starves" the primary pump. Access to risers with adequate diameter and pump pits is also problematic. In cases where no risers exist, installing a new entry into the tank could easily cost in excess of $1 million per pump. An analysis was completed to determine the net cost/benefit of additional pumps and wells in selected single-shell tanks.

The analysis concluded that the data available to characterize the mechanics of waste flow through the tanks was insufficient to determine the benefits of using multiple pumps. The report recommended against further modeling unless additional data on flow characteristics was available. There is no program to obtain such data so this study is considered complete. No further action is anticipated.

B3.2 INCREASED WELL DIAMETER

Reviewing the basic equations that describe the radial flow through porous media, one can derive that the flow into the central well is proportional to the ratio of the outer reservoir diameter to the central well diameter. The pseudo-steady-state equation describing this radial flow is given in *Practical Petroleum Reservoir Engineering Methods* (Slider 1976) as

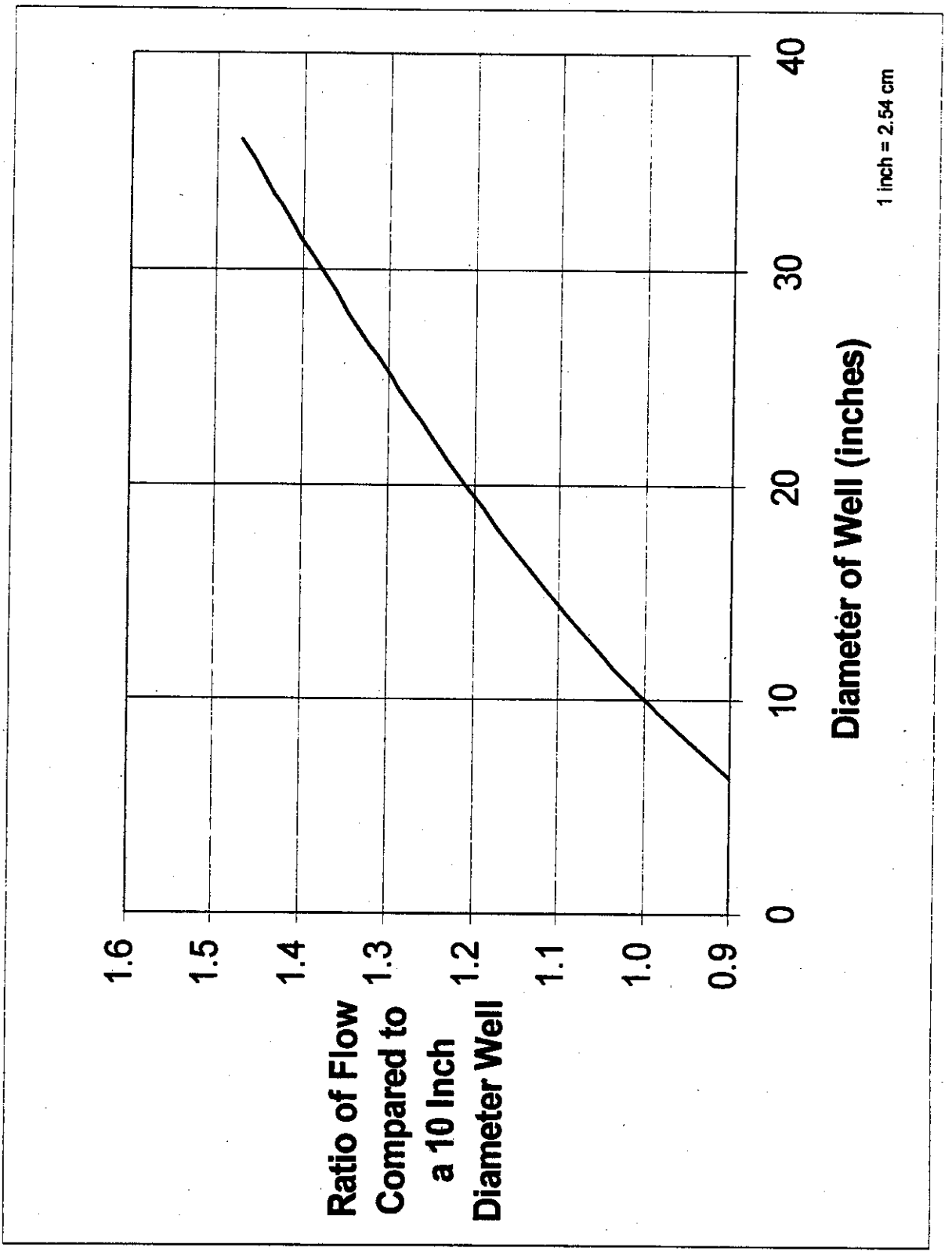
$$q_w = 7.08kh / \mu[(p_e - p_w)/(\ln r_e / r_w - 1/2)]$$

where

q_w	= flow rate into well (barrels)	p_e	= pressure at tank wall (psig)
k	= constant	p_w	= pressure at salt well (psig)
h	= height of solids layer (ft)	r_e	= radius at tank wall (feet)
μ	= fluid viscosity (centipoise)	r_w	= radius at salt well (feet).

Plotting the comparison of well ratios and the expected flow indicate that a doubling of the well size could increase the instantaneous flow rate into the central well by 20 percent (see Figure B-1).

Figure B-1. Comparative Saltwell Inflow Compared to 10-Inch Screen.



Not all remaining SSTs require installation of saltwells, and many will not allow the installation of dramatically increased well diameters. An engineering analysis of the potential is planned.

B3.3 ALTERNATIVE PUMPS

When a tank contains significant free supernatant, installing a submersible pump may be effective for the removing this liquid initially. Although this will not accelerate the drainage of the solids, it will reduce the leakable inventory in the shortest period of time. Installing submersible pumps appears to be most effective in tanks A-101 and AX-101. No current Authorization Basis approval exists to allow use of submersible pumps in these tanks. An engineering analysis has been conducted to evaluate the benefit and feasibility of this installation. Timing and logistics involved with changing the equipment and authorization basis do not support this option.

An alternative approach which bears investigation is modifying components of the existing system to increase the maximum pumping rates. This can be done within the existing authorization basis and with a minimum of design, equipment or procedural modifications being required. It is likely that implementation of a modified system could be done quickly, once testing had verified the potential benefits.

Because the requirements for flammable gas controls are being applied to many of the remaining tanks, the application of an alternative pump design may be desirable. One example of a technology of this type might be the AEA, Inc. fluidic pump. A fluidic pump uses compressed air as motive force and has no movable parts in the tank or the pump pit. The Tank Focus Area has demonstrated this type of pump in the gunnite and associated tanks at Oak Ridge, and it is currently developing a tank sampling system at Savannah River and the Hanford Site using this technology. An initial engineering evaluation of the development and deployment of a fluidic application to the saltwell pumping program will be performed. Although the fluidic pump may alleviate some safety and operational concerns, the period of development may be too long to be effective for this application.

B3.4 WATER ADDITIONS TO OPEN PORE STRUCTURE

For tanks that contain soluble salts, adding small amounts of water to the surface of the solids will dissolve some waste solids, thereby opening drainage channels within the solids and increasing the drainage rate of the contained liquids. Although there may be significant regulatory concerns about adding water to the SSTs, accelerating the completion of saltwell pumping may outweigh the concerns.

An engineering evaluation has been recommended to determine whether a test of this process should be completed. Engineering judgment suggests that the pumping duration could be reduced by 20 to 40 percent by this initiative. Because of the extensive regulatory concerns associated with water additions to SSTs, this study is not being pursued at this time.

B3.5 "MINING" OF RADIAL CHANNELS TO INCREASE WELL PRODUCTION RATE

Because the distance that the liquid must flow through the porous solid bed controls the rate of drainage of the solids, it appears that mining radial channels could shorten the drainage time dramatically. A study of the effectiveness of the radial channels has been recommended. Techniques for mining the channels should be evaluated. The light duty utility arm may be useful for this application, using some of the retrieval end effectors developed by the Tank Force Area and demonstrated at Oak Ridge. Some of the technology being demonstrated by the Hanford Tank Initiative also may be directly applicable. No specific work for this alternative has been included in the IS baseline.

B3.6 RECOMMENDATIONS

The use of larger diameter salt may have some merit. Identify the tanks for which larger diameter screens would be feasible. Evaluate the cost and schedule impact for each tank.

B4.0 SALTWELL PUMPING SYSTEMS LOGISTIC ENHANCEMENTS AND CONTINGENCY

The systems analysis of the saltwell pumping physical system identified several pinch points and potential contingency capabilities. Technology and engineering activities were recommended to address these operational issues.

B4.1 DOUBLE-CONTAINED RECEIVER TANK LOGISTICS AND WORKAROUNDS

As discussed in the mission analysis contained in Section 2.0, the 244-S and 244-U double-contained receiver tanks (DCRT) have several extended periods of operation well above historical production averages. The Tank Waste Operations organization has identified several concerns including the ability to sustain two or three weekly transfers from the DCRTs and maintain the necessary material balances to keep the system operating while multiple saltwells are operating.

It has been determined that it is feasible to bypass the 244-S DCRT and transfer the pumped liquid directly to tank SY-102. This will reduce the downtime of the saltwell systems in S and SX Farms, which must be shut down whenever the DCRT is full and is transferring to tank SY-102. Because the plan required 2 to 3 weekly transfers from the 244-S DCRT for over 100 weeks, direct transfer to tank SY-102 substantially reduces S and SX Farms pump downtime. A new approach is needed to establish the controls necessary to monitor for single contained line leakage in S and SX Farms, but it should be feasible. The 244-U DCRT provides a similar problem and opportunity for improvements.

In fiscal year 1999, work was initiated to bypass both of these facilities. This was an extensive effort which required modifying existing transfer lines and building new lines, installing

additional communication highways, installing new equipment, and revising all transfer procedures to accommodate a more complex control system. This has been accomplished and both bypass systems were operational by the end of the year.

The only other DCRT that is planned to be used is 244-BX. A technical review has been completed that determined that it is not practical to bypass this DCRT because of the length of the transfer lines and the elevation changes involved in the transfer.

B4.2 LINE-UNPLUGGING TOOLS

The baseline plan assumes that 20 percent of the single contained lines will fail a hydro test or will be plugged, thereby preventing their use. In these cases, an overground line will be installed to work around these occurrences.

The Federal Energy Technology Center is currently soliciting private sector technology demonstrations of line-unplugging technology. The specifications for this technology will contain requirements for both Savannah River and Hanford Site line configurations. Demonstration of selected technologies will be conducted at Savannah River in 1998 or early 1999. Successful demonstration of this technology may allow unplugging of saltwell and transfer lines. This could avoid the need to install so many replacement lines. Specific engineering studies of the applicability of line unplugging tools are included in the IS baseline.

B4.3 ADDITIONAL WASTE-VOLUME STORAGE CONTINGENCY

Dilution of saltwell liquid to control plugged lines and the dissolution of salts will increase the volume of liquids produced by the saltwell project. The volume of liquid resulting from saltwell pumping is one of the largest factors in the management of DST space. Producing too much liquid could result in delaying the completion of saltwell pumping or impacting the preparation of feed to the immobilization contractors.

The evaporator is used as the primary technique to remove water from the 200 East Area DST system, but limitations in the level of concentration of the 200 West Area will limit its effectiveness.

To keep both the saltwell pumping project and the feed delivery mission on track, particularly as changes occur in the current baseline for both, additional volume management techniques may need to be available.

Since the cancellation of the Multifunction Waste Tank Facility tank construction project, short-term options are very limited. Other than eliminating segregation and compatibility rules or using required spare space, there do not appear to be any easy answers. The construction of new DST space will take too long to solve the near-term potential problems. Reusing empty SSTs is not allowed under current regulations and agreements. However, using a containment bladder inside an empty SST may be acceptable to the regulators and could give substantial breathing room for the completion of the saltwell pumping project and the feed delivery mission. An engineering evaluation of the feasibility of a bladder approach has been recommended.

Specific consideration is underway as part of broader TWRS volume management activities and is not included in the IS baseline.

B4.4 RECOMMENDATION

Bypassing the DCRTs is now complete no further work is required. It does however carry an increased risk that transfer lines will become because the longer transfers are now at lower flow rates. It is recommended that additional methods for clearing plugs out of long lengths of transfer lines be thoroughly investigated and tested.

In addition alternate methods of building compliant replacement lines should be developed to be implemented in the cases when plugs can not be cleared or when transfer lines fail.

B5.0 "SPECIAL CASE" TECHNOLOGY

Several specific issues require development, deployment, or assessment of technologies not currently available to the SST stabilization project. This section discusses the alternatives that will need to be evaluated to meet the baseline project requirements or to address significant schedule drivers.

B5.1 TANK BY-105 "CONCRETE" TANK

In 1995, the interim stabilization project attempted to install a saltwell pump into an existing saltwell screen in tank BY-105. In attempting to clear the screen with a water lance, employees found a very hard layer of material near the waste surface. Subsequent investigation identified that Portland cement had been added in the mid-1960s. Recently, core sampling was attempted, and very hard material was encountered near the waste surface. The normal system of water lancing was not successful in penetrating the material in the saltwell screen.

Technology needs to be developed and tested to allow the installation of a new saltwell screen and pump into this tank. A high-pressure lancing system has been proposed for this task. Existing small-diameter, high-pressure lances have been used at the Hanford Site and a larger system is being demonstrated. Once the system has completed testing, it will be used to install the pump and saltwell screen.

Because there is a significant amount of Portland cement in tank BY-105, pumping will have to be monitored very closely. One concern is that as the liquid waste is pumped out of the tank, the cement will stay attached to equipment suspended from the tank dome. Monitoring of the tank dome deflection will be required to ensure that the concrete does not cause a problem with the tank.

B6.0 POTENTIAL COST AND SCHEDULE PERFORMANCE ENHANCEMENT

A summary of the potential benefits of the above-discussed alternatives is summarized in Table B-2. In each case, the recommended activities have been considered for inclusion in the baseline plan. When a significant potential to substantially reduce program cost and schedule exists, the activities were included in the project baseline.

B7.0 REFERENCES

DOE and Ecology, 1996, *Tank Waste Remediation System, Hanford Site, Richland, Washington, Final Environmental Impact Statement*, DOE/EIS-0189, Washington State Department of Ecology, Olympia, Washington, and U.S. Department of Energy, Washington, D.C.

Slider, H. C., 1976, *Practical Petroleum Reservoir Engineering Methods*, Petroleum Publishing Company, Tulsa, Oklahoma.

Table B-2. Potential Risk Reduction, Cost, and Schedule Benefits from Technology and Risk Reduction Activities.

Initiative	Applicability (#tanks/29) (#lines/total) (#transfers/total)	Risk Reduction Schedule Enhancement Cost Reduction (Include all that apply)	Potential Schedule Enhancement (Months to Completion)	Potential Cost Impacts (if any)
Submersible pumps	2 tanks/29 tanks	Schedule enhancement Risk reduction	(Applicable tanks are not on critical path to completion)	$0.5-1.0M
S and SX direct transfer to tank SY-102	14 tanks/29 180 DCRT transfers/ 260 Total	Risk reduction Schedule enhancement	6-12 months	$6-12M
Multiple pumps/wells	20 tanks/29 tanks	Risk reduction	Unknown	Probable cost increase
Increase saltwell screen diameter	20 tanks/29 tanks	Schedule enhancement Risk reduction	Up 20% reduction in pumping duration (up to 10 months)	$5-10M
Water additions to enhance pore sizes and structure (saltcake tanks only)	20 saltcake tanks/29	Risk reduction Schedule enhancement	Up to 20 % reduction in pumping durations (up to 10 months)	$5-10M
Use of LR-56 for contingency pumping of TRU/complexed tanks	5 tanks/29	Risk reduction	Helps maintain baseline schedule in case of complexed tank leaking	
Line unplugging tools	40 sections of direct buried routes	Risk reduction Cost reduction	Maintain baseline schedule, avoid installation of overground lines	TBD Cost of replacement of 20% line plugged by overground transfers
Additional waste volume storage contingency	N/A	Risk reduction	Maintain baseline schedule, avoid pumping outages due to waste space limitations	Increased cost to implement contingency
Accelerated retrieval (applicable to long pumping saltcake tanks only)	20 saltcake tanks/29 (Created volume will likely limit application to one tank only.)	Schedule enhancement Risk reduction	Accelerate completion of one tank by 12-14 months	Reduces baseline retrieval program cost by $20-80M (one less tank to sluice)

DCRT = double-contained receiver tank. N/A = not applicable. TRU = transuranic.
M = million. TBD = to be determined.

APPENDIX C

SINGLE-SHELL TANK INTERIM STABILIZATION EXTERNALLY IMPOSED REQUIREMENTS

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APPENDIX C

SINGLE-SHELL TANK INTERIM STABILIZATION EXTERNALLY IMPOSED REQUIREMENTS

C1.0 EXTERNALLY IMPOSED REQUIREMENTS

Table C-1. Single-Shell Tank Interim Stabilization Project Externally Imposed Requirements - *Code of Federal Regulations*. (4 sheets)

	Title	Comment (Significant Interest Areas)
External Code or Regulation	Standards for Protection Against Radiation	– Access controls.
10 CFR 61	Licensing Requirements for Land Disposal of Radioactive Waste	– Protection of the general population from releases of radiation. Equivalent annual dose limits for public exposure to contaminated groundwater, surface water, air, soil, plants, and animals. – Protection of individuals from inadvertent intrusion. – Burial requirements for Class A and Class C waste. Specifies pertinent onsite immobilized low-level waste burial requirements. – Classification of wastes – Classification specifications for Class A and Class C waste. Designates whether immobilized waste may be in general buried onsite or whether it is necessary to dispose of in an isolated deep repository. – Minimum requirements for all waste classes and are intended to facilitate handling at the disposal site and provide protection of health and safety of personnel at the disposal site.
10 CFR 830	Nuclear Safety Management	– Applicable to Quality Assurance Program, personnel training, quality improvement.
10 CFR 835	Occupational Radiation Protection	– Occupational exposure limits for general employees.

Table C-1. Single-Shell Tank Interim Stabilization Project Externally Imposed Requirements - *Code of Federal Regulations*. (4 sheets)

	Title	Comment (Significant Interest Areas)
10 CFR 962	By-Product Material	– DOE obligation to RCRA - Defines DOE's obligations to the RCRA with regard to radioactive waste substances.
29 CFR 1910	Occupational Safety and Health Standards	– Occupational Safety and Health Standards regulations.
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards	– Ambient air quality standards – primary limits for sulfur oxides. – Ambient air quality standards – secondary limits for sulfur oxides. – Ambient air quality standards – primary and secondary limits of particulate matter. – Ambient air quality standards – primary limits for carbon monoxide. – Ambient air quality standards – primary and secondary limits for ozone. – Ambient air quality standards – primary and secondary for nitrogen dioxide. – Ambient air quality standards – primary and secondary standards for lead.
40 CFR 61	National Emission Standards for Hazardous Air Pollutants	– Dose limit from DOE facility. Emissions to ambient air from DOE facilities will not exceed limit to any member of the public in 1 year.
40 CFR 191	Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes	– Public dose limits. Management and storage of spent nuclear fuel, high-level, or transuranic radioactive wastes annual dose equivalents to any member of the public in the general environment.

Table C-1. Single-Shell Tank Interim Stabilization Project Externally Imposed Requirements - *Code of Federal Regulations*. (4 sheets)

	Title	**Comment (Significant Interest Areas)**
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	– Storage requirements – Hazardous wastes must not be placed in tank system if they could cause the tank or associated ancillary equipment and containment system to rupture, leak, corrode, or otherwise fail. – Storage requirements – The owner or operator must use appropriate controls and practices to prevent spills and overflows from tank to containment systems. – Storage requirements – Ignitable or reactive waste must not be placed in tank systems, unless: (1) the waste is treated, rendered, or mixed so that the waste is protected from a material or condition that may cause the waste to ignite or react or 40 CFR 264.17(b) is complied with, or (2) the tank system is used solely for emergencies. Stored ignitable or reactive wastes must comply with requirement for protective distances from the public. – Storage requirements – Incompatible wastes or incompatible wastes and materials must not be placed in same tank system, unless 40 CFR 264.17(b) is complied with. – Closure requirement – Decontamination at closure of a containment building. Owner/operator must decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste and leachate, and manage as a hazardous waste.

Table C-1. Single-Shell Tank Interim Stabilization Project Externally Imposed Requirements - *Code of Federal Regulations*. (4 sheets)

	Title	Comment (Significant Interest Areas)
40 CFR 264 (continued)		– Waste containment system closure requirements. At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or residues must be decontaminated or removed.
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	– Secondary containment. – Spill convention and controls. – Incompatible/ignitable wastes.
40 CFR 268	Land Disposal Restrictions	– Applicable exceptions for which otherwise prohibited wastes may be disposed of in a landfill. – Certain wastes prohibited from land disposal. – Applicability of treatment standards.

CFR = Code of Federal Regulations.
DOE = U.S. Department of Energy.
RCRA = *Resource Conservation and Recovery Act of 1976.*

Table C-2. Single-Shell Tank Interim Stabilization Project Externally Imposed Requirements – *Washington Administrative Code.*

External Code or Regulation	Title	Comment (Significant Interest Areas)
WAC 173-200	Water Quality Standards for Ground Waters of the State of Washington	– Liquid effluent discharge to the environment.
WAC 173-201A	Water Quality Standards for Surface Waters of the State of Washington	– Liquid effluent discharge to the environment.
WAC 173-303	Dangerous Waste Regulations	--
WAC 173-400	General Regulations for Air Pollution Sources	– Nonradioactive air emissions, new source review/notice of construction, source registration.
WAC 173-401	Operating Permit Regulation	--
WAC 173-460	Controls for New Sources of Toxic Air Pollutants	– Nonradioactive air emissions, toxic air pollutants.
WAC 173-480	Ambient Air Quality Standards and Emission Limits for Radionuclides	--
WAC 246-247	Radiation Protection—Air Emissions	– Ambient air quality standards and emission standards will be those promulgated by Ecology in WAC 173-480.

Table C-3. Single-Shell Tank Interim Stabilization Project Externally Imposed Requirements - U.S. Department of Energy Orders and Other Federal Regulations.

External Code or Regulation	Title	Comment (Significant Interest Areas)
See the PHMC contract,[1] Appendix C, Section J, Part III - List of Documents Exhibits and Other Attachments, DOE Orders and Directives. (NOTE: This list is still undergoing change so it is necessary to refer to the latest list from Contracting to obtain a complete listing of all the codes.)		
Other Regulations and Requirements		
External Code or Regulation	**Title**	**Comment (Significant Interest Areas)**
RCRA-B(DW)(940829)	Dangerous Waste Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Hazardous Waste	– Standards for hazardous treatment, storage, and/or disposal facilities
Project Hanford policies and procedures	(Numerous)	--
Hanford Site Radiological Control Manual, HSRM-1 Sections 111, 112	--	– Summary of health and safety regulations

[1]RL (1996b).

RCRA = *Resource Conservation and Recovery Act of 1976.*

Table C-4. Source Document: DOE/RL-96-92, *Hanford Strategic Plan.*

HSTD Reference	Extracted Requirement
HSP.CP. EM.AREA. GOAL	**Area Goal - Central Plateau** The 200 Areas and Central Plateau will be used for the management of nuclear materials and the collection and disposal of waste materials that remain onsite and for other related and compatible uses. Cleanup levels and disposal standards will be established that are consistent with these long-term uses.
HSP.ET.4.B	**Endpoint Target - Facilities** (B) Transition high-cost surplus facilities in the Central Plateau and south 600 Areas to a low-cost, stable, deactivated condition.
HSP.ET.6.A	**Endpoint Target - Tank Waste** (A) Retrieve tank wastes to the extent needed for tank closure, divide into high-level and low-activity fractions and immobilize.
HSP.ET.6.E	**Endpoint Target - Tank Waste** (E) After the waste has been retrieved from the tanks, the tank farms (including the tanks) will be closed.
HSP.TW.A	**Material Category Goal - Tank Waste** (A) Tank waste from SSTs and DSTs will be retrieved for immobilization.
HSP.FAC.C	**Material Category Goal - Facilities (C)** Surplus facilities will be decommissioned and decontaminated sufficiently to enable removal or closure through entombment.

RL (1996a).

DST = double-shell tank.
HSTD = Hanford Site Technical Baseline Database.
SST = single-shell tank.

Table C-5. Source Document: DOE/EIS-0222D, Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land Use Plan.

HSTD Reference	Extracted Reference
CLU P.5.3.2 200	**Area/Central Plateau EM Goal** The 200 Area and the Central Plateau will be used for management of nuclear materials, collection and disposal of waste materials that remain onsite, and other related and compatible uses. Remediation levels and disposal standards that are consistent with long-term uses will be established.
CLUP.5.3.2.1NT.3 200	**Area/Central Plateau EM Goal** (C) The 200 Area and the Central Plateau will be used for disposal of waste materials that remain onsite and other related and compatible uses.
CLUP.5.3.2.1NT.4 200	**Area/Central Plateau EM Goal** (D) Remediation levels and disposal standards consistent with long-term uses for the Central Plateau will be established
CLUP.5.3.2.b	**200 Area/Central Plateau EM Goal - Tank Waste** Retrieve and vitrify. Dispose of HLW offsite. Dispose of LLW onsite. Close tank farms.
CLUP.5.3.2.b.1NT.	**200 Area/Central Plateau EM Goal - Tank Waste** (A) Tank waste will be retrieved from 200 Area underground waste storage tanks.
CLUP.5.3.2.b.1NT.2	**200 Area/Central Plateau EM Goal - Tank Waste** (B) Retrieved tank waste will be vitrified to make disposal ready.
CLUP.5.3.2.b.1NT.3	**200 Area/Central Plateau EM Goal - Tank Waste** (C) Vitrified HLW will be disposed of offsite.
CLUP.5.3.2.f	**200 Area/Central Plateau EM Goal - Facilities** Transition production facilities to stable deactivated conditions. Entomb process facilities in place with co-disposal of waste materials. Dismantle other facilities.

DOE (1996).

EM = U.S. Department of Energy, Office of Environmental Restoration and Management.
HLW = high-level waste.
HSTD = Hanford Site Technical Baseline Database.
LLW = low-level waste.

Table C-6. Source Document: DE-AC06-96RL13200, *Project Hanford Management Contract*, Fluor Daniel Hanford, Inc.

HSTD Reference	Extracted Reference
TWP.6.4.1	Initiate interim stabilization pumping of TBD single-shell tanks by September 30, 1999.

RL (1996b).

HSTD = Hanford Site Technical Baseline Database.
TBD = to be determined.

Table C-7. Consent Decree Schedule A. (2 sheets)

Tank Designation	Pumping Initiated
T-104	Already initiated
T-110	Already initiated
SX-104	Already initiated
SX-106	Already initiated
S-102	July 31, 1999 (Completed)
S-106	July 31, 1999 (Completed)
S-103	July 31, 1999 (Completed)
U-103*	June 15, 2000
U-105*	June 15, 2000
U-102*	June 15, 2000
U-109*	June 15, 2000
A-101	October 30, 2000
AX-101	October 30, 2000
SX-105	March 15, 2001
SX-103	March 15, 2001
SX-101	March 15, 2001
U-106*	March 15, 2001
BY-106	July 15, 2001
BY-105	July 15, 2001

Table C-7. Consent Decree Schedule A. (2 sheets)

Tank Designation	Pumping Initiated
U-108	December 30, 2001
U-107	December 30, 2001
S-111	December 30, 2001
SX-102	December 30, 2001
U-111	November 30, 2002
S-109	November 30, 2002
S-112	November 30, 2002
S-101	November 30, 2002
S-107	November 30, 2002
C-103	No later that December 30, 2000, DOE will determine whether the organic layer and pumpable liquids will be pumped from Tank C-103 together or separately, and will establish a deadline for initiating pumping of this tank. The parties will incorporate the initiation deadline into this schedule as provided in Section VI of the Decree.

*Tanks containing organic complexants.

Completion of Interim Stabilization. DOE will complete interim stabilization of all 29 single-shell tanks listed above by September 30, 2004.

Percentage of Pumpable Liquid Remaining to be Removed.

93% of Total Liquid	9/30/1999
38% of Organic Complexed Pumpable Liquids	9/30/2000
5% of Organic Complexed Pumpable Liquids	9/30/2001
18% of Total Liquid	9/30/2002
2% of Total Liquid	9/30/2003
100% of Total Liquid	9/30/2004

C2.0 REFERENCES

10 CFR 61, 1997, "Licensing Requirements for Land Disposal of Radioactive Wastes," *Code of Federal Regulations*, as amended.

10 CFR 830, 1997, "Nuclear Safety Management," *Code of Federal Regulations* as amended.

10 CFR 835, 1993, "Occupational Radiation Protection," *Code of Federal Regulations* as amended.

10 CFR 962, 1997, "By-Product Material," *Code of Federal Regulations,* as amended.

29 CFR 1910, 1997, "Occupational Safety and Health Standards," *Code of Federal Regulations*, as amended.

40 CFR 50, 1996, "National Primary and Secondary Ambient Air Quality Standards," *Code of Federal Regulations*, as amended.

40 CFR 61, 1997, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, as amended.

40 CFR 191, 1996, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes," *Code of Federal Regulations*, as amended.

40 CFR 264, 1996, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.

40 CFR 265, 1996, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.

40 CFR 268, 1996, "Land Disposal Restrictions," *Code of Federal Regulations*, as amended.

DOE, 1996, *Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land Use Plan*, DOE/EIS-0222D, U.S. Department of Energy, Washington, D.C.

Ecology, EPA, and DOE, 1996, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

HSTD, Hanford Site Technical Baseline Database, maintained by Lockheed Martin Hanford Corporation for Fluor Daniel Hanford, Inc., Richland, Washington.

HSRCM-1, 1994, *Hanford Site Radiological Control Manual*, Rev. 2, prepared for the U.S. Department of Energy, Richland Operations Office, by the Hanford Site Contractors and managed by Pacific Northwest National laboratory Records Management Office, Richland, Washington.

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WAC 173-201A, "Water Quality Standards for Surface Waters of the State of Washington," *Washington Administrative Code*, as amended.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

WAC 173-400, "General Regulations for Air Pollution Sources," *Washington Administrative Code*, as amended.

WAC 173-401, "Operating Permit Regulation," *Washington Administrative Code*, as amended.

WAC 173-460, "Controls for New Sources of Toxic Air Pollutants," *Washington Administrative Code*, as amended.

WAC 173-480, "Ambient Air Quality Standards and Emission Limits for Radionuclides," *Washington Administrative Code*, as amended.

WAC 246-247, "Radiation Protection--Air Emissions," *Washington Administrative Code*, as amended.

APPENDIX D

SINGLE-SHELL TANK INTERIM STABILIZATION INTEGRATED SCHEDULE DETAIL

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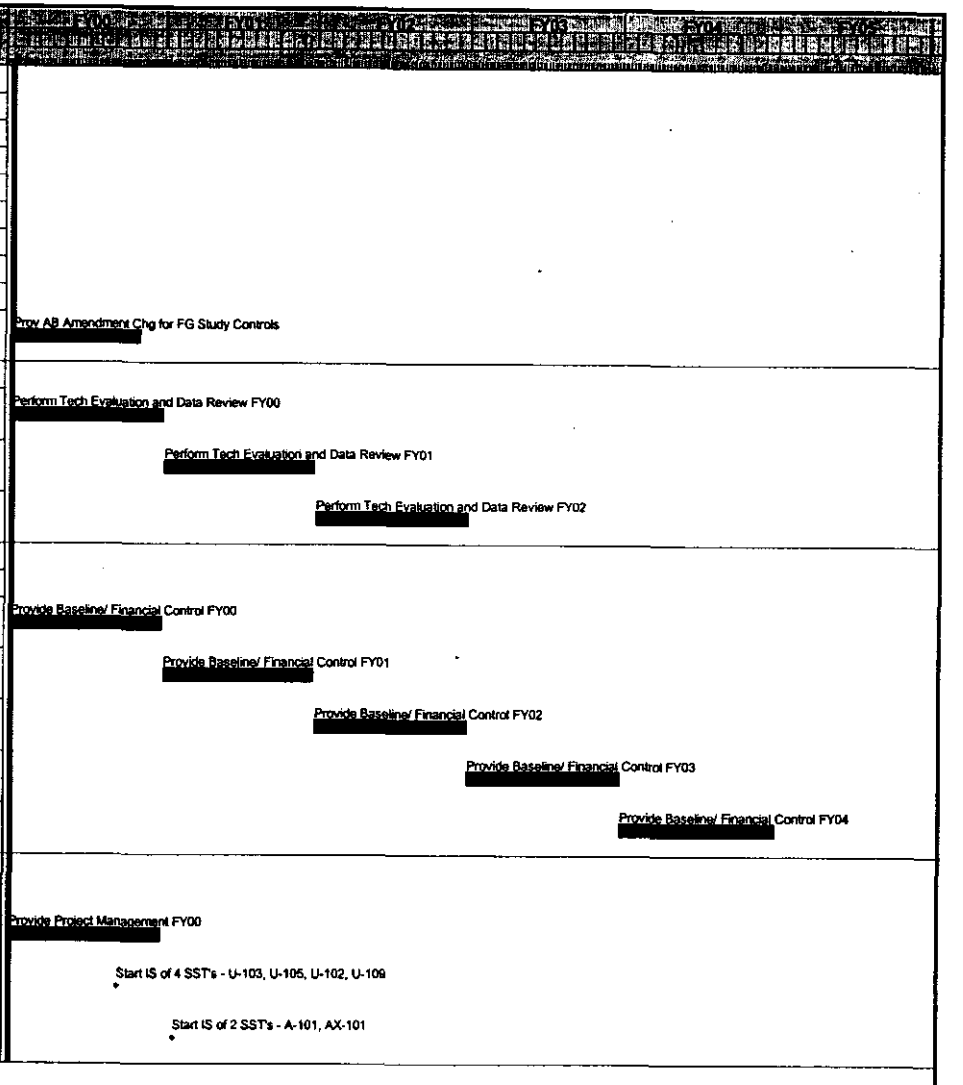
Activity ID	Orig Dur	Early Start	Early Finish
1 Hanford Environmental Management			
1.01			
1.01.03			
1.01.03.01			
1.01.03.01.01			
1.01.03.01.01.09			
1.01.03.01.01.09.39			
1.01.03.01.01.09.39.01 SST Engineering Studies			
1.01.03.01.01.09.39.01.08 AB Amendment Study			
SS23071C1	210	01OCT99	01AUG00
1.01.03.01.01.09.39.01.13 Technology Eval & Data Review Study			
SS23071D2	252	01OCT99	29SEP00
SS23071D3	251	02OCT00	28SEP01
SS23071D4	252	01OCT01	30SEP02
1.01.03.01.01.09.39.02 Baseline Financial Control			
1.01.03.01.01.09.39.02.01 Baseline/Financial Control			
SS23070B3	252	01OCT99	29SEP00
SS23070B4	251	02OCT00	28SEP01
SS23070B5	252	01OCT01	30SEP02
SS23070B6	252	01OCT02	30SEP03
SS23070B7	252	01OCT03	29SEP04
1.01.03.01.01.09.39.03 Project Mgmt/Tech Support			
1.01.03.01.01.09.39.03.01 Project Mgmt/Tech Support			
SS23070N2	252	01OCT99	29SEP00
SS23070N2J	0	15JUN00*	
SS23070N2K	0	30OCT00*	



Start Date	01OCT99
Finish Date	30SEP05
Data Date	01OCT99
Run Date	07MAR00 11:46

Early Bar
Progress Bar
Critical Activity

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RP0A - SS0A **Sheet 1 of 116**

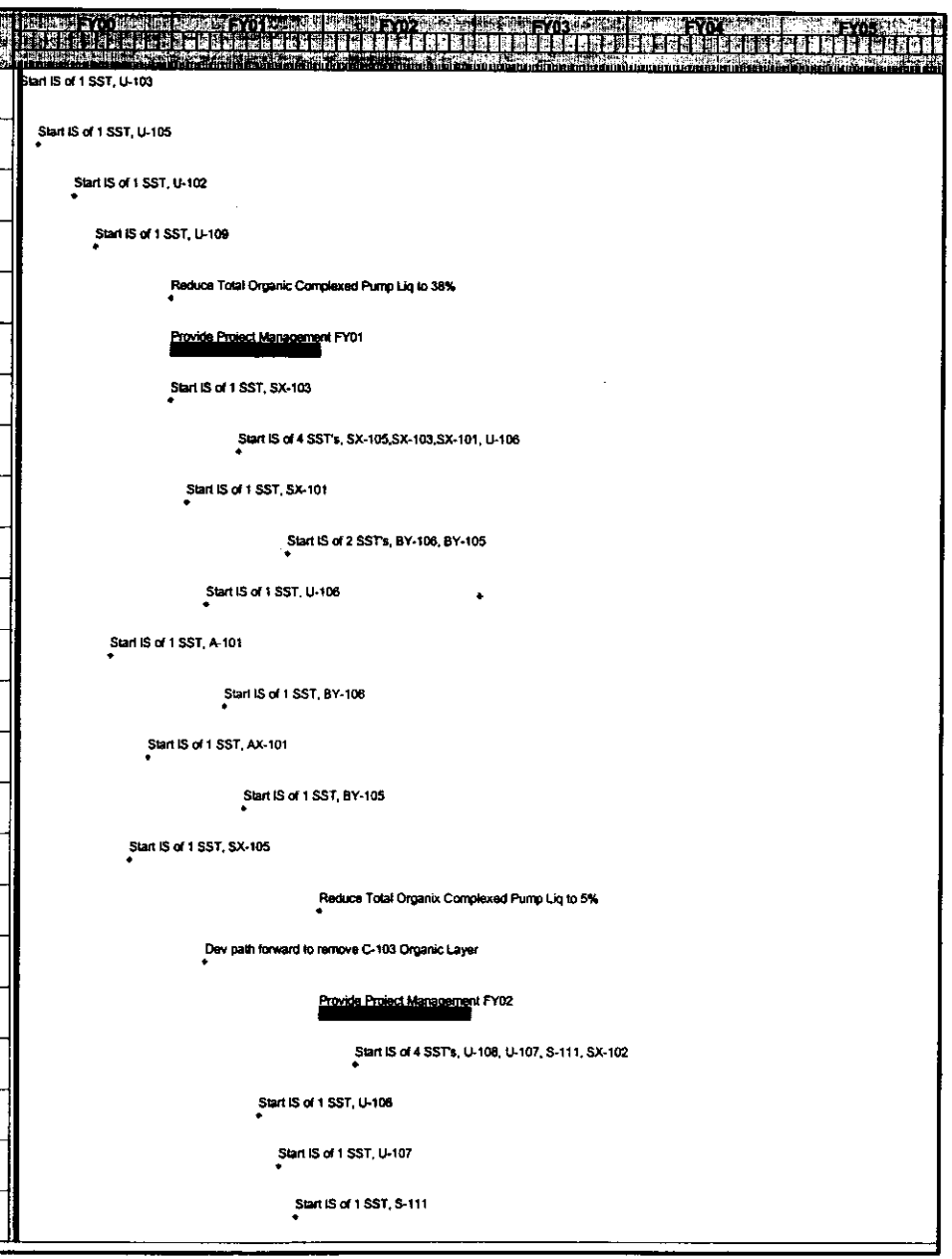
SST IS FY00 MYWP Schedule

5 Year Look

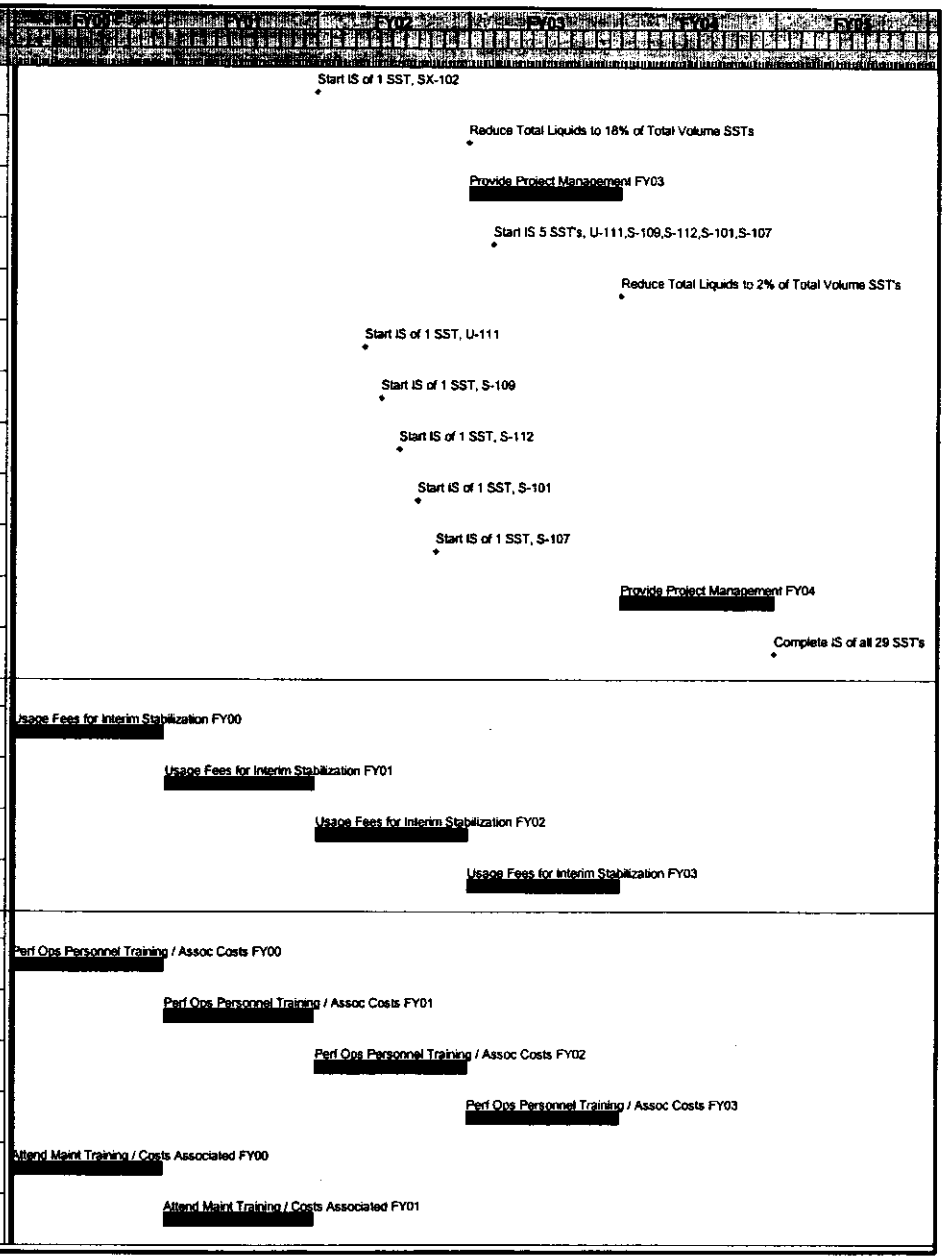
Prepared by LaVonda Kellogg 376-2101

Date	Revision	Checked	Approved

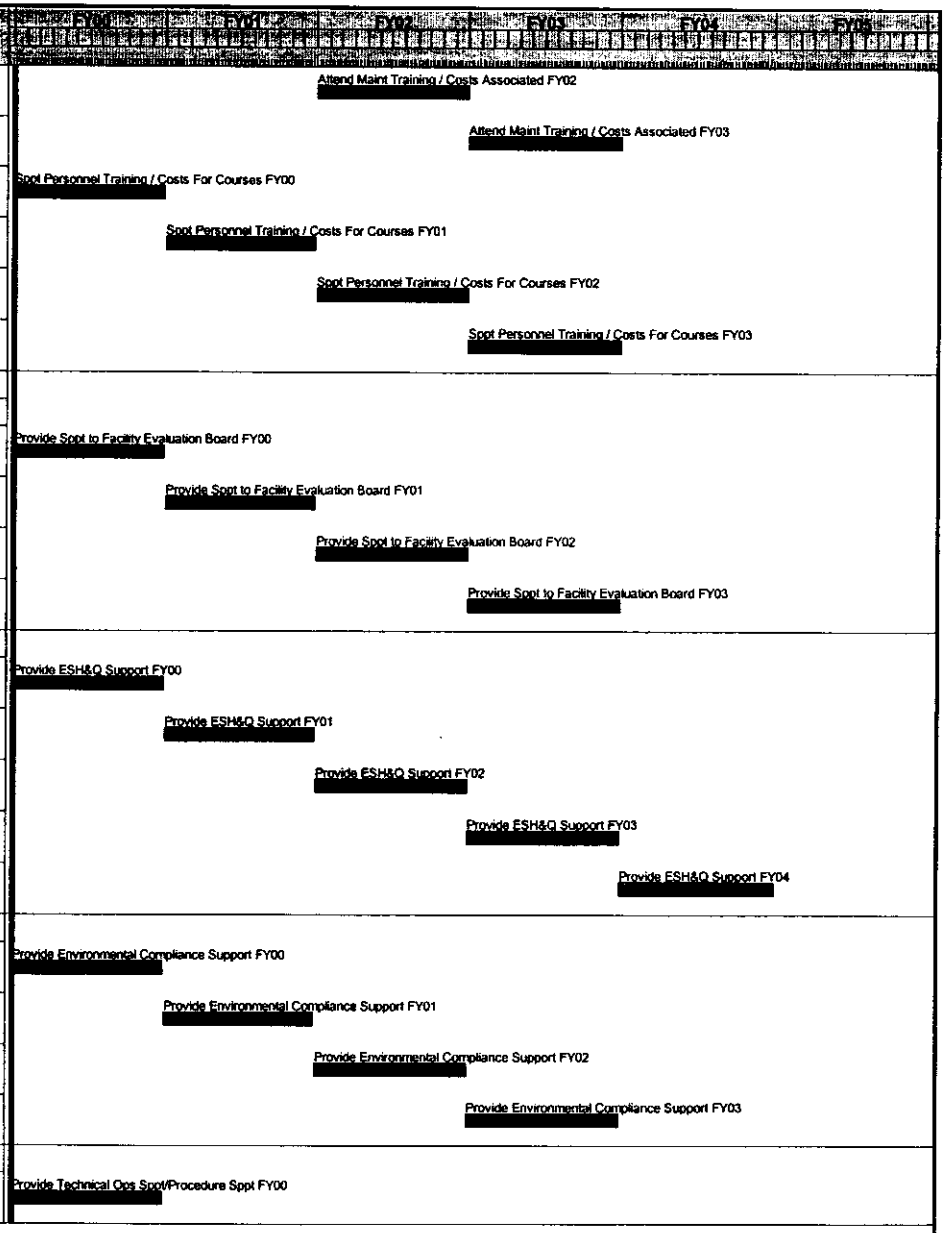
Activity ID	Rem. Dur.	Early Start	Early Finish
SS23070N2L	0	01OCT99	
SS23070N2M	0	15NOV99	
SS23070N2N	0	10FEB00	
SS23070N2P	0	01APR00	
SS23070N2Q	0		30SEP00*
SS23070N3	251	02OCT00	28SEP01
SS23070N3D	0	01OCT00	
SS23070N3E	0	15MAR01*	
SS23070N3F	0	11NOV00	
SS23070N3G	0	15JUL01*	
SS23070N3H	0	29DEC00	
SS23070N3J	0	13MAY00	
SS23070N3K	0	10FEB01	
SS23070N3L	0	10AUG00	
SS23070N3M	0	01APR01	
SS23070N3N	0	27JUN00	
SS23070N3P	0		30SEP01*
SS23070N3Q	0		30DEC00*
SS23070N4	252	01OCT01	30SEP02
SS23070N4A	0	30DEC01*	
SS23070N4B	0	12MAY01	
SS23070N4C	0	26JUN01	
SS23070N4D	0	08AUG01	



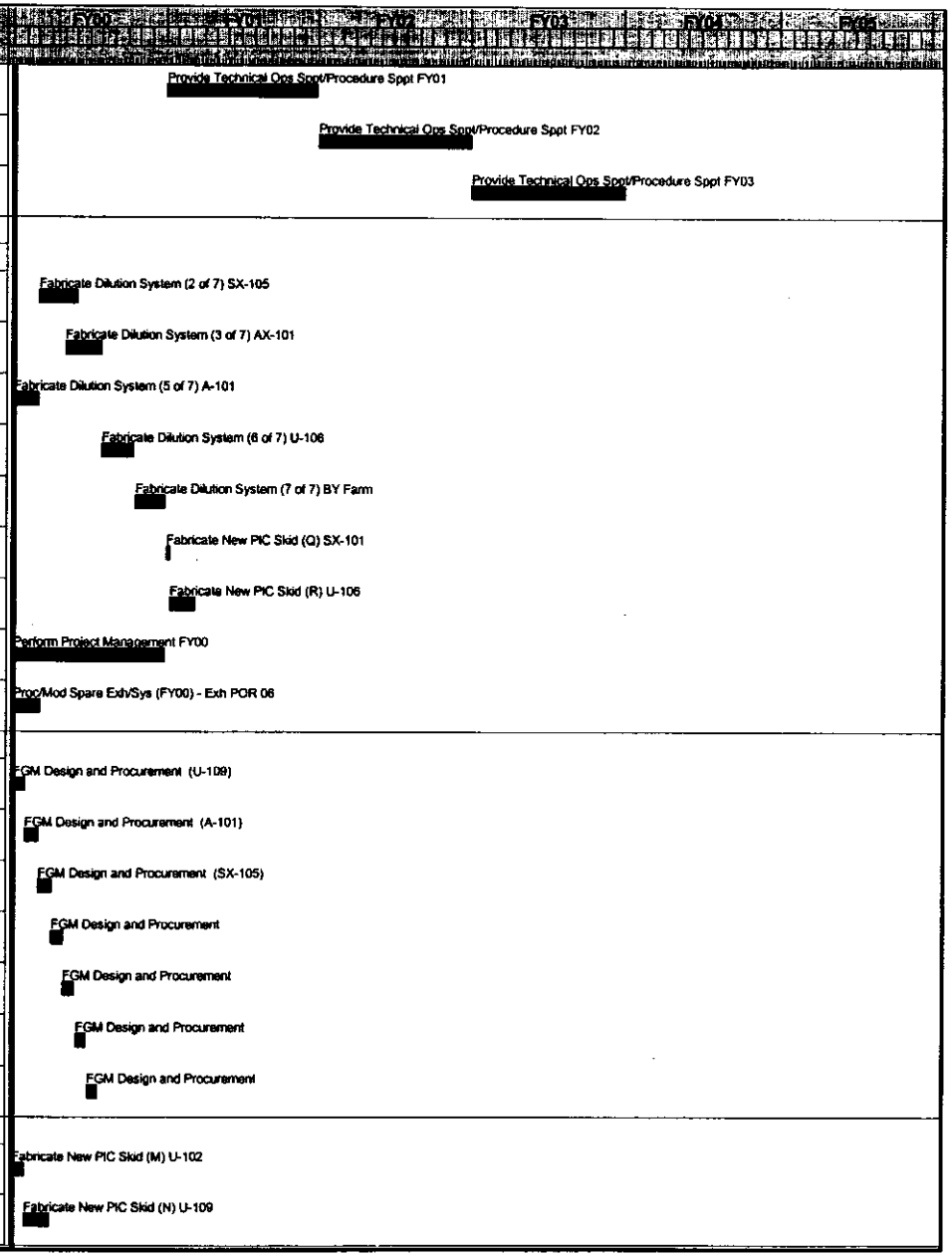
Activity ID	Rem Dur	Early Start	Early Finish
SS23070N4E	0	01OCT01	
SS23070N4F	0		30SEP02*
SS23070N5	252	01OCT02	30SEP03
SS23070N5A	0	30NOV02*	
SS23070N5B	0		30SEP03*
SS23070N5C	0	24JAN02	
SS23070N5D	0	08MAR02	
SS23070N5E	0	19APR02	
SS23070N5F	0	03JUN02	
SS23070N5G	0	16JUL02	
SS23070N6	253	01OCT03	30SEP04
SS23070N6A	0		30SEP04*
1.01.03.01.01.09.39.03.04 Usage Fees for Int Stab			
SS23070Q3	252	01OCT99	29SEP00
SS23070Q4	251	02OCT00	28SEP01
SS23070Q5	252	01OCT01	30SEP02
SS23070Q6	251	01OCT02	29SEP03
1.01.03.01.01.09.39.03.05 Int Stab Personnel Training			
SS23067A2	252	01OCT99	29SEP00
SS23067A3	251	02OCT00	28SEP01
SS23067A4	252	01OCT01	30SEP02
SS23067A5	251	01OCT02	29SEP03
SS23067B2	252	01OCT99	29SEP00
SS23067B3	251	02OCT00	28SEP01



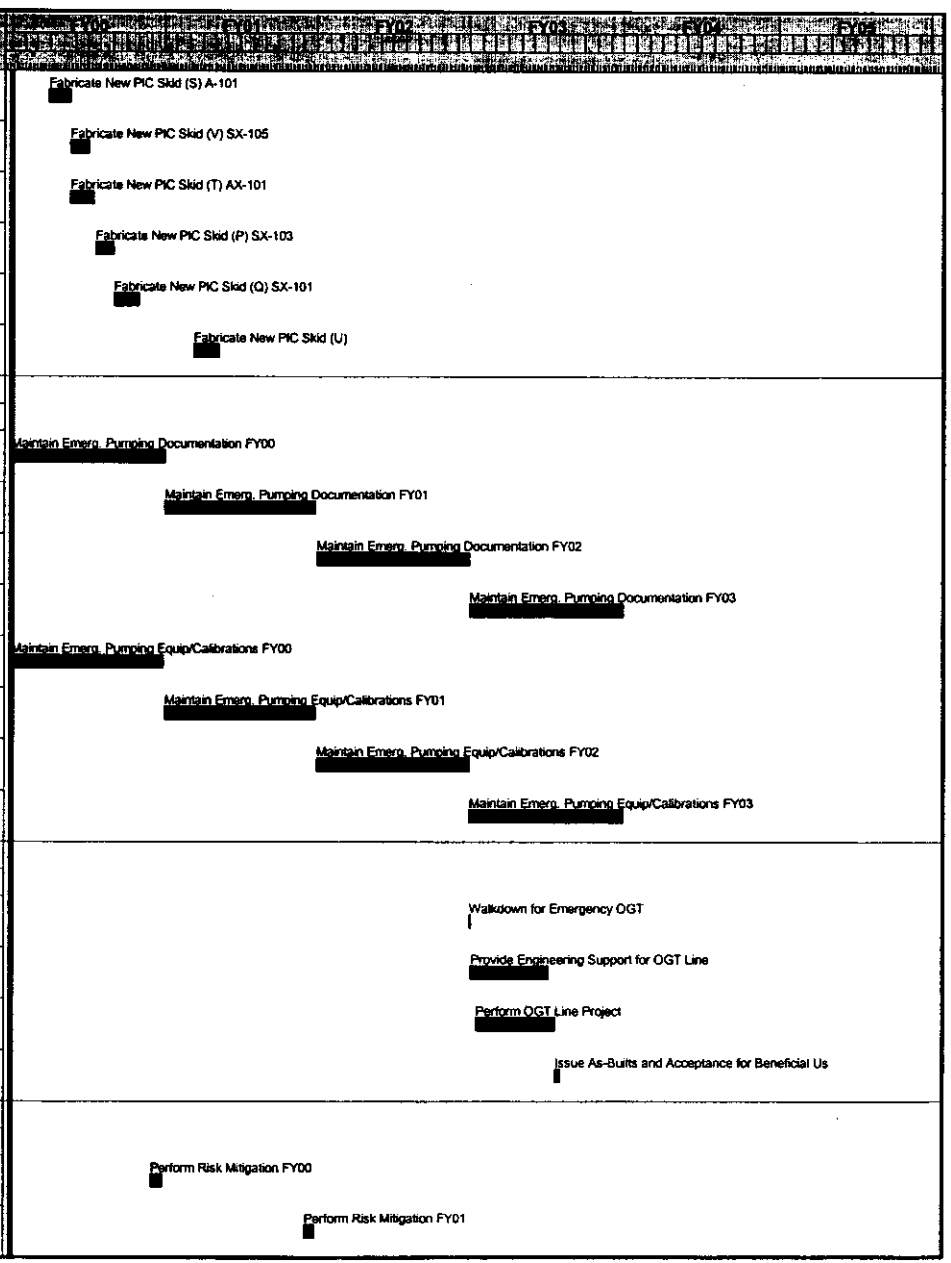
Activity ID	Rem Dur	Early Start	Early Finish
SS23067B4	252	01OCT01	30SEP02
SS23067B5	251	01OCT02	29SEP03
SS23067C2	252	01OCT99	29SEP00
SS23067C3	251	02OCT00	28SEP01
SS23067C4	252	01OCT01	30SEP02
SS23067C5	251	01OCT02	29SEP03
1.01.03.01.01.09.39.04 Regulatory/Environmental Compliance			
1.01.03.01.01.09.39.04.01 FEB Support			
SS23070C3	252	01OCT99	29SEP00
SS23070C4	251	02OCT00	28SEP01
SS23070C5	252	01OCT01	30SEP02
SS23070C6	251	01OCT02	29SEP03
1.01.03.01.01.09.39.04.02 ESH&Q Oversite			
SS23070J3	252	01OCT99	29SEP00
SS23070J4	251	02OCT00	28SEP01
SS23070J5	252	01OCT01	30SEP02
SS23070J6	252	01OCT02	30SEP03
SS23070J7	252	01OCT03	29SEP04
1.01.03.01.01.09.39.04.05 Environmental Compliance			
SS23070F3	252	01OCT99	29SEP00
SS23070F4	251	02OCT00	28SEP01
SS23070F5	252	01OCT01	30SEP02
SS23070F6	251	01OCT02	29SEP03
1.01.03.01.01.09.39.04.07 Tech Ops/Procedures			
SS23070P3	252	01OCT99	29SEP00



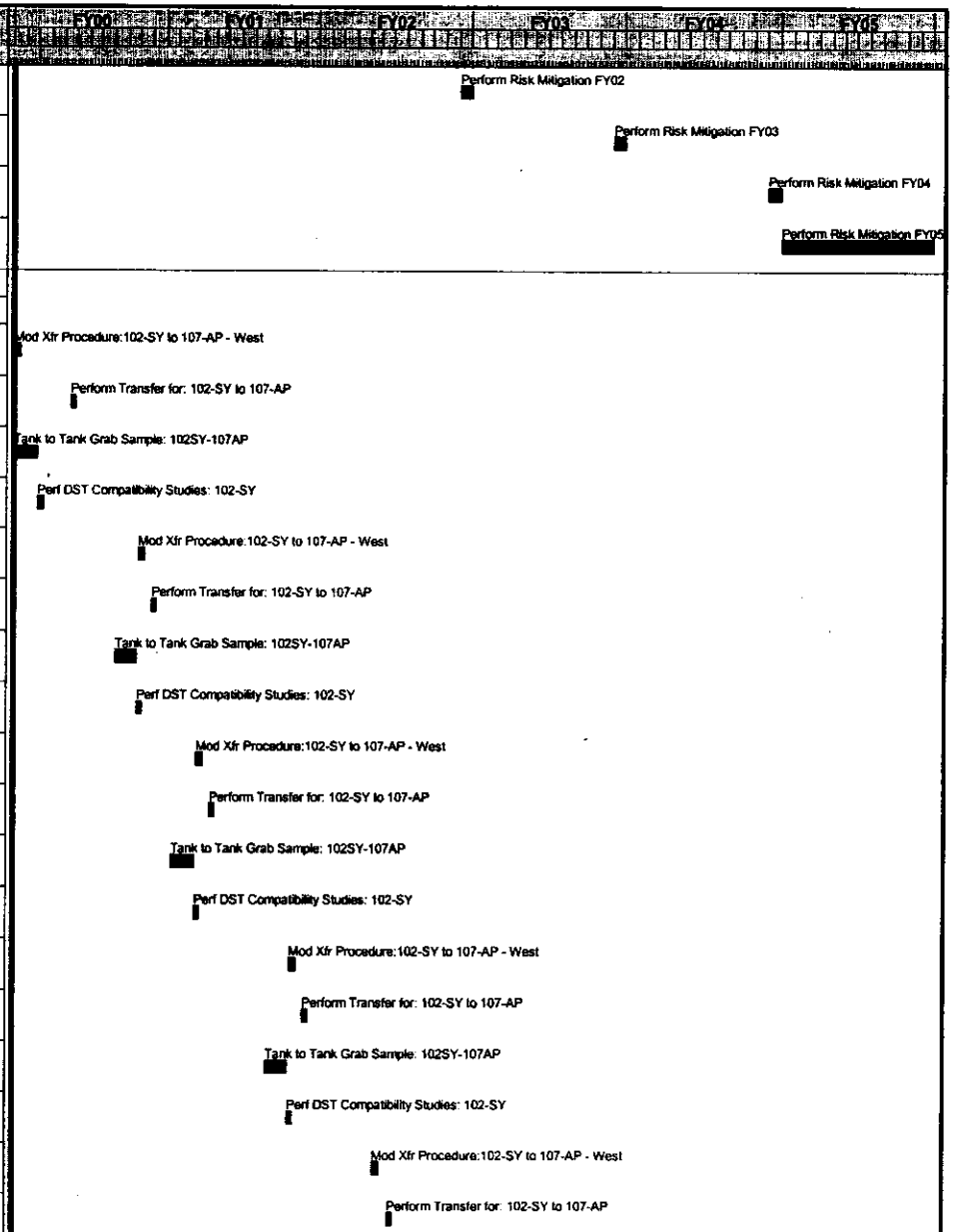
Activity ID	Rem Dur	Early Start	Early Finish
SS23070P4	251	02OCT00	28SEP01
SS23070P5	252	01OCT01	30SEP02
SS23070P6	251	01OCT02	29SEP03
1.01.03.01.01.09.39.05 SST Major Equipment			
1.01.03.01.01.09.39.05.01 SST Major Equipment			
SS23042D2	60	01DEC99*	28FEB00
SS23042D3	63	01FEB00*	28APR00
SS23042D5	41	01OCT99*	30NOV99
SS23042D6	52	01MAY00*	13JUL00
SS23042D7	54	17JUL00*	29SEP00
SS23057C91	8	02OCT00*	11OCT00
SS23057CA	40	12OCT00	08DEC00
SS23090F2	251	01OCT99	28SEP00
SS23090N31	44	01OCT99	03DEC99
1.01.03.01.01.09.39.05.55 Design & Procure FGMs			
SS23055C1	20	01OCT99*	28OCT99
SS23055C2	20	29OCT99	29NOV99
SS23055C3	20	30NOV99	29DEC99
SS23055C4	20	30DEC99	27JAN00
SS23055C5	20	28JAN00	25FEB00
SS23055C6	20	28FEB00	24MAR00
SS23055C7	20	27MAR00	21APR00
1.01.03.01.01.09.39.05.57 Design & Procure PIC Skids			
SS23057C32	19	01OCT99*	27OCT99
SS23057C4	40	28OCT99	28DEC99



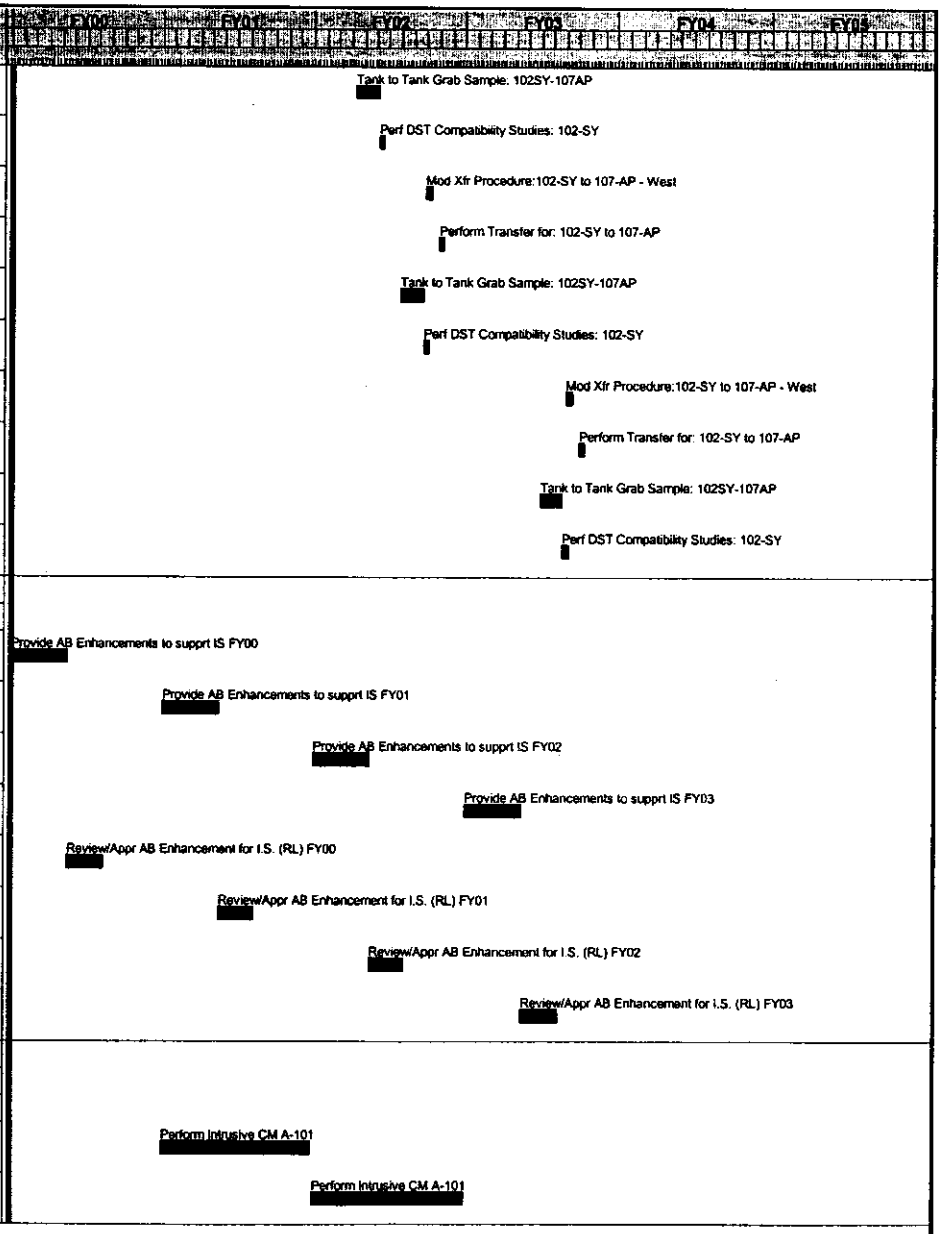
Activity ID	Early Dur	Early Start	Early Finish
SS23057C5	34	29DEC99	15FEB00
SS23057C6	32	16FEB00	31MAR00
SS23057C7	42	16FEB00	14APR00
SS23057C8	31	17APR00	30MAY00
SS23057C9	42	31MAY00	28JUL00
SS23057CB	40	11DEC00	07FEB01
1.01.03.01.01.09.39.06 Emergency Pumping Capability			
1.01.03.01.01.09.39.06.01 Emrg Pump Pins for Assmd Leakers			
SS23060A2	366	01OCT99	30SEP00
SS23060A3	251	02OCT00	28SEP01
SS23060A4	252	01OCT01	30SEP02
SS23060A5	251	01OCT02	29SEP03
SS23060B2	252	01OCT99	29SEP00
SS23060B3	251	02OCT00	28SEP01
SS23060B4	252	01OCT01	30SEP02
SS23060B5	251	01OCT02	29SEP03
1.01.03.01.01.09.39.07 Overground Transfer Lines			
1.01.03.01.01.09.39.07.01 Install Overground Transfer Lines			
SS23066A	3	01OCT02*	03OCT02
SS23066B	126	04OCT02	07APR03
SS23066C	126	18OCT02	21APR03
SS23066D	10	22APR03	05MAY03
1.01.03.01.01.09.39.08 Risk Mitigation			
1.01.03.01.01.09.39.08.01 Risk Mitigation			
SS23001A2	20	01SEP00*	29SEP00
SS23001A3	19	04SEP01*	28SEP01



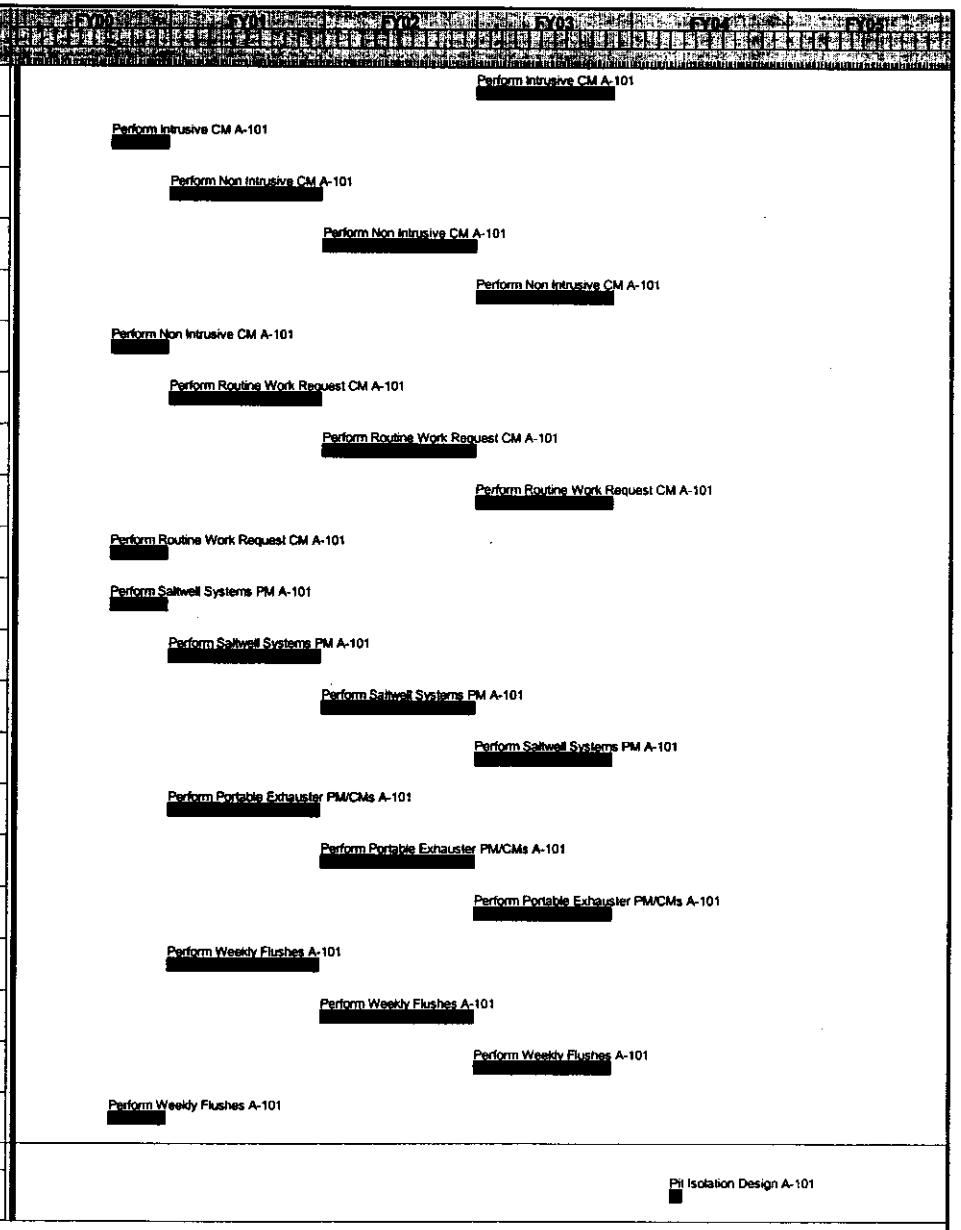
Activity ID	Rem Dur	Early Start	Early Finish
SS23001A4	20	03SEP02*	30SEP02
SS23001A5	21	02SEP03*	30SEP03
SS23001A6	21	01SEP04*	30SEP04
SS23001A7	252	01OCT04	30SEP05
1.01.03.01.01.09.39.09 Cross-Site Transfers			
1.01.03.01.01.09.39.09.01 Cross-Site Transfers			
SS23655H1	10	01OCT99	14OCT99
SS23655H2	8	14FEB00*	24FEB00
SS23655H3	38	01OCT99	23NOV99
SS23655H4	10	24NOV99	09DEC99
SS23655J1	10	27JUL00*	09AUG00
SS23655J2	8	28AUG00*	07SEP00
SS23655J3	38	30MAY00*	21JUL00
SS23655J4	10	24JUL00	04AUG00
SS23655K1	10	14DEC00*	29DEC00
SS23655K2	8	15JAN01*	24JAN01
SS23655K3	38	16OCT00*	08DEC00
SS23655K4	10	11DEC00	22DEC00
SS23655L1	10	26JUL01*	08AUG01
SS23655L2	8	27AUG01*	06SEP01
SS23655L3	38	29MAY01*	20JUL01
SS23655L4	10	23JUL01	03AUG01
SS23655M1	10	11FEB02*	25FEB02
SS23655M2	8	20MAR02*	29MAR02



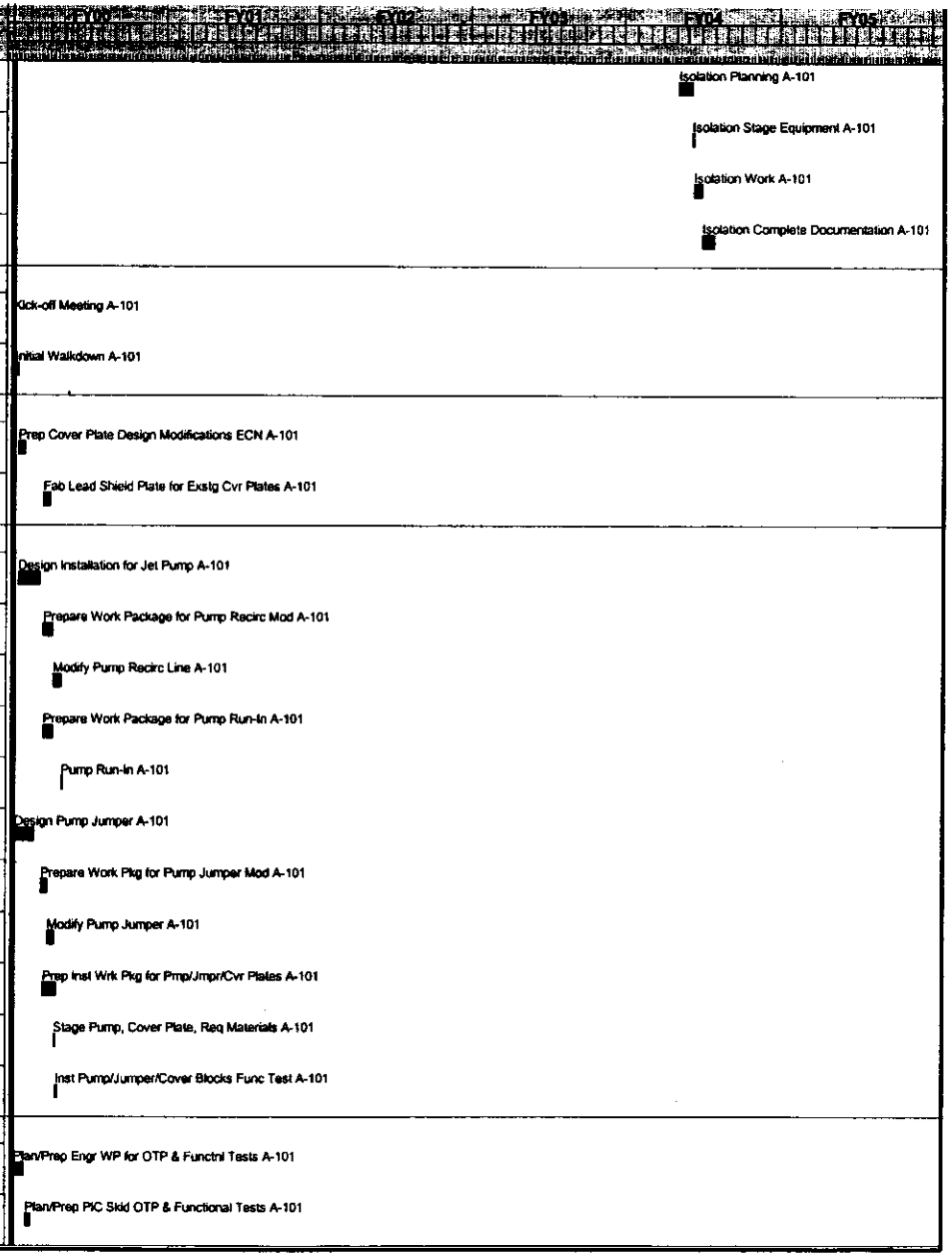
Activity ID	Rem Dur	Early Start	Early Finish
SS23655M3	38	10JAN02*	05MAR02
SS23655M4	10	06MAR02	19MAR02
SS23655N1	10	28JUN02*	12JUL02
SS23655N2	8	29JUL02*	07AUG02
SS23655N3	38	29APR02*	20JUN02
SS23655N4	10	21JUN02	05JUL02
SS23655P1	10	29MAY03*	11JUN03
SS23655P2	8	30JUN03*	10JUL03
SS23655P3	38	31MAR03*	21MAY03
SS23655P4	10	22MAY03	05JUN03
1.01.03.01.01.09.39.15 IS Enhancements to TWRS AB			
1.01.03.01.01.09.39.15.01 IS Enhancements to TWRS AB			
SS23098A2	92	01OCT99	14FEB00
SS23098A3	92	02OCT00*	13FEB01
SS23098A4	92	01OCT01*	12FEB02
SS23098A5	92	01OCT02*	12FEB03
SS23099A2	62	15FEB00	11MAY00
SS23099A3	62	14FEB01	11MAY01
SS23099A4	62	13FEB02	10MAY02
SS23099A5	62	13FEB03	12MAY03
1.01.03.01.01.09.40 SST 241-A TF Stabilization/Isolation			
1.01.03.01.01.09.40.01 Stabilize/Isolate Tank A-101			
1.01.03.01.01.09.40.01.03 A-101 System Maint/Operability			
SS23168A3	251	02OCT00	28SEP01
SS23168A4	252	01OCT01	30SEP02



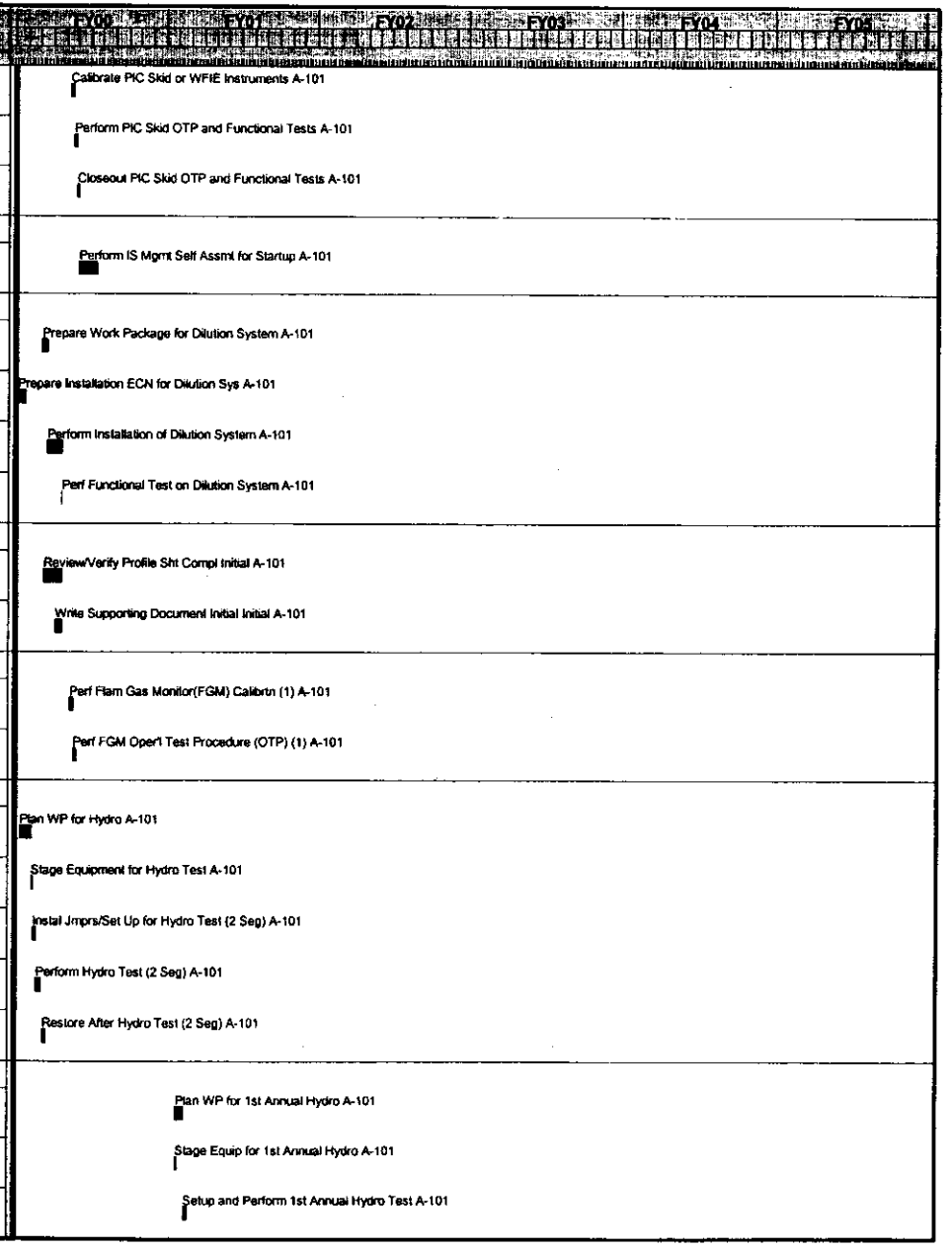
Activity ID	Rem Dur	Early Start	Early Finish
SS23168A5	225	01OCT02	21AUG03
SS23168B2	97	15MAY00	29SEP00
SS23168C3	251	02OCT00	28SEP01
SS23168C4	252	01OCT01	30SEP02
SS23168C5	225	01OCT02	21AUG03
SS23168D2	97	15MAY00	29SEP00
SS23168E3	251	02OCT00	28SEP01
SS23168E4	252	01OCT01	30SEP02
SS23168E5	225	01OCT02	21AUG03
SS23168F2	97	15MAY00	29SEP00
SS23168G2	97	15MAY00	29SEP00
SS23168G3	251	02OCT00	28SEP01
SS23168G4	252	01OCT01	30SEP02
SS23168G5	225	01OCT02	21AUG03
SS23168H3	251	02OCT00	28SEP01
SS23168H4	252	01OCT01	30SEP02
SS23168H5	225	01OCT02	21AUG03
SS23168J3	251	02OCT00	28SEP01
SS23168J4	252	01OCT01	30SEP02
SS23168J5	225	01OCT02	21AUG03
SS23168L2	97	15MAY00	29SEP00
1.01.03.01.01.09.40.01.04 A-101 Isolation			
SS23185B1	20	09JAN04	05FEB04



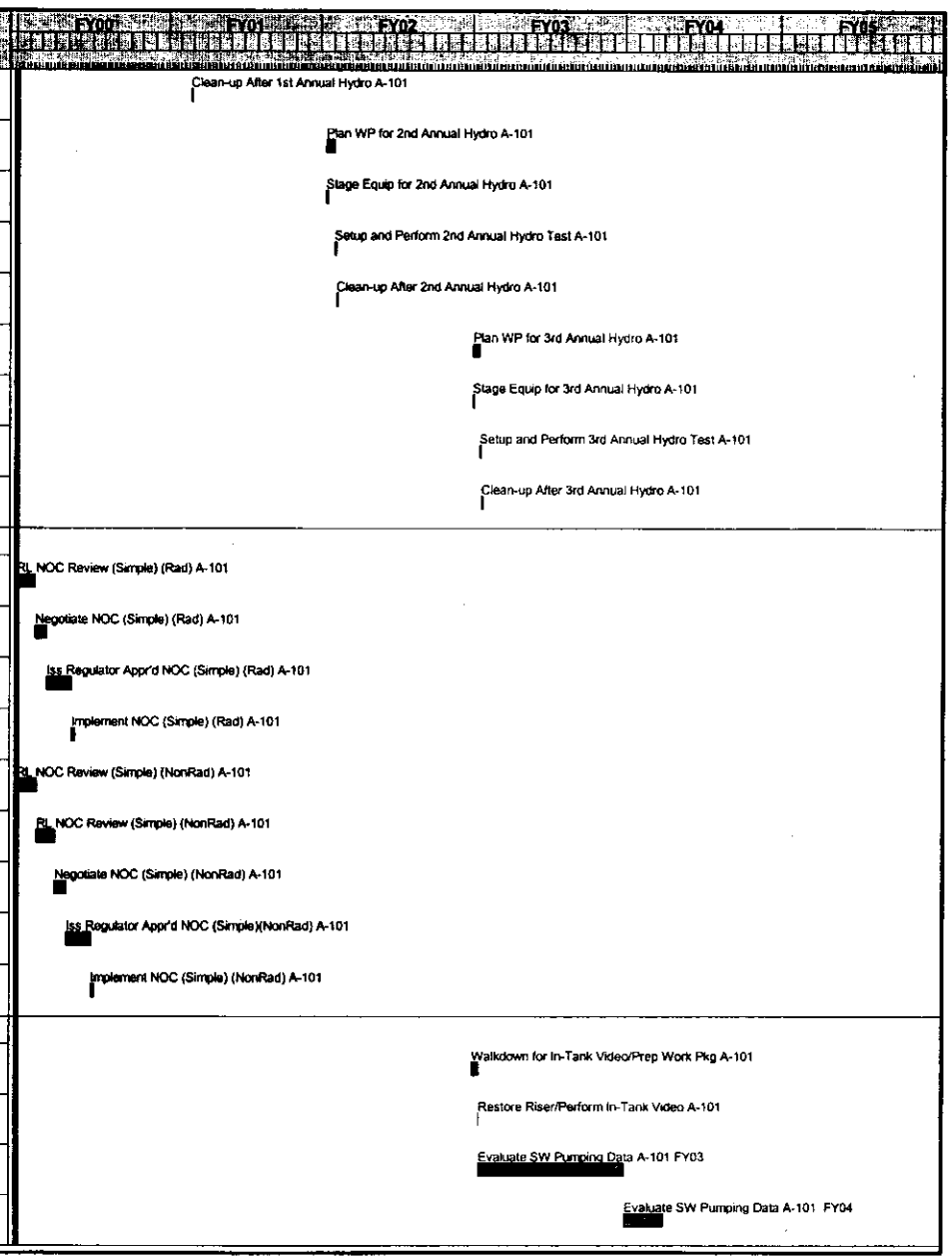
Activity ID	Rem Dur	Early Start	Early Finish
SS23185B2	20	06FEB04	05MAR04
SS23185B3	2	08MAR04	09MAR04
SS23185B4	15	10MAR04	30MAR04
SS23185B5	20	31MAR04	27APR04
1.01.03.01.01.09.40.01.05 Walkdown A-101			
SS23105A	1	01OCT99	01OCT99
SS23105B	7	04OCT99	12OCT99
1.01.03.01.01.09.40.01.08 Fab/Mod Cover Plates A-101			
SS23108B	10	13OCT99	26OCT99
SS23108D	10	10DEC99	27DEC99
1.01.03.01.01.09.40.01.27 SW Jet Pumps/Jumpers A-101			
SS23127A	35	13OCT99	02DEC99
SS23127C1	15	10DEC99	04JAN00
SS23127C2	15	05JAN00	25JAN00
SS23127D1	15	10DEC99	04JAN00
SS23127D2	3	26JAN00	28JAN00
SS23127E	35	04OCT99	19NOV99
SS23127G1	10	08DEC99	21DEC99
SS23127G2	10	22DEC99	07JAN00
SS23127H	20	10DEC99	11JAN00
SS23127J	2	10JAN00	11JAN00
SS23127K	4	12JAN00	17JAN00
1.01.03.01.01.09.40.01.31 Perf Calib & Equip OTPs A-101			
SS23131B1	20	04OCT99	29OCT99
SS23131B2	10	01NOV99	12NOV99



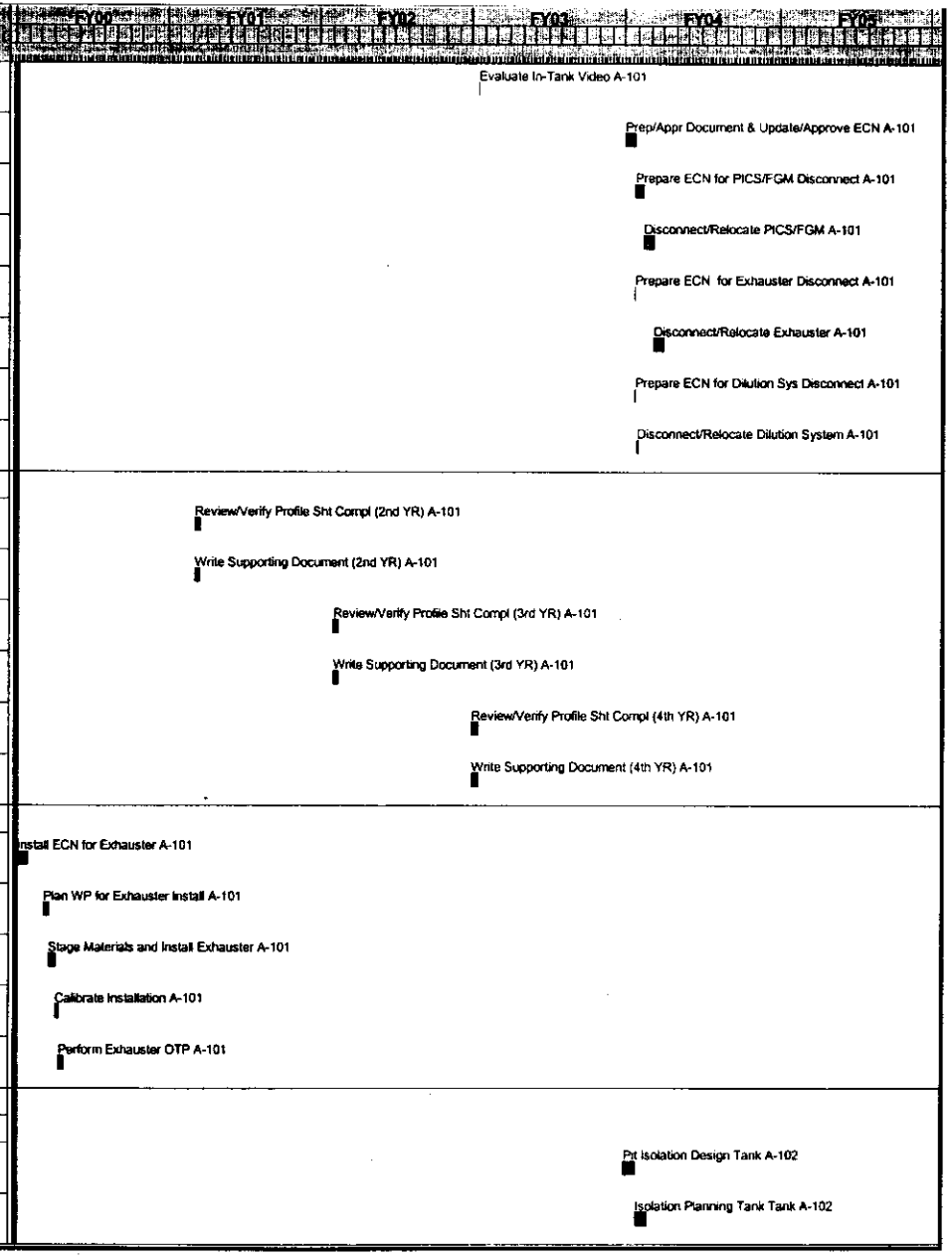
Activity ID	Rem Dur	Early Start	Early Finish
SS23131B3	5	09FEB00	15FEB00
SS23131B4	5	16FEB00	23FEB00
SS23131B5	5	24FEB00	01MAR00
1.01.03.01.01.09.40.01.36 Management/Self-Assessment A-101			
SS23136A	30	01MAR00	11APR00
1.01.03.01.01.09.40.01.42 Install/Test A-101 Waste Dilution System			
SS23142C	10	03DEC99	16DEC99
SS23142F	15	04OCT99	22OCT99
SS23142G	21	17DEC99	19JAN00
SS23142H	2	20JAN00	21JAN00
1.01.03.01.01.09.40.01.54 Initial Waste Capb Assmts A-101			
SS23154A	30	08DEC99	21JAN00
SS23154B	14	04JAN00	21JAN00
1.01.03.01.01.09.40.01.55 Install/Test FGMs A-101			
SS23155E3	5	09FEB00	15FEB00
SS23155F1	5	16FEB00	23FEB00
1.01.03.01.01.09.40.01.60 Intial Hydro Test Transfer Line A-101			
SS23160A	20	13OCT99	09NOV99
SS23160B	2	10NOV99	11NOV99
SS23160C2	7	12NOV99	22NOV99
SS23160D2	7	23NOV99	03DEC99
SS23160E2	7	06DEC99	14DEC99
1.01.03.01.01.09.40.01.74 A-101 Annual Hydro Test			
SS23174A1	15	27OCT00	16NOV00
SS23174A2	2	27OCT00	30OCT00
SS23174A3	3	17NOV00	21NOV00



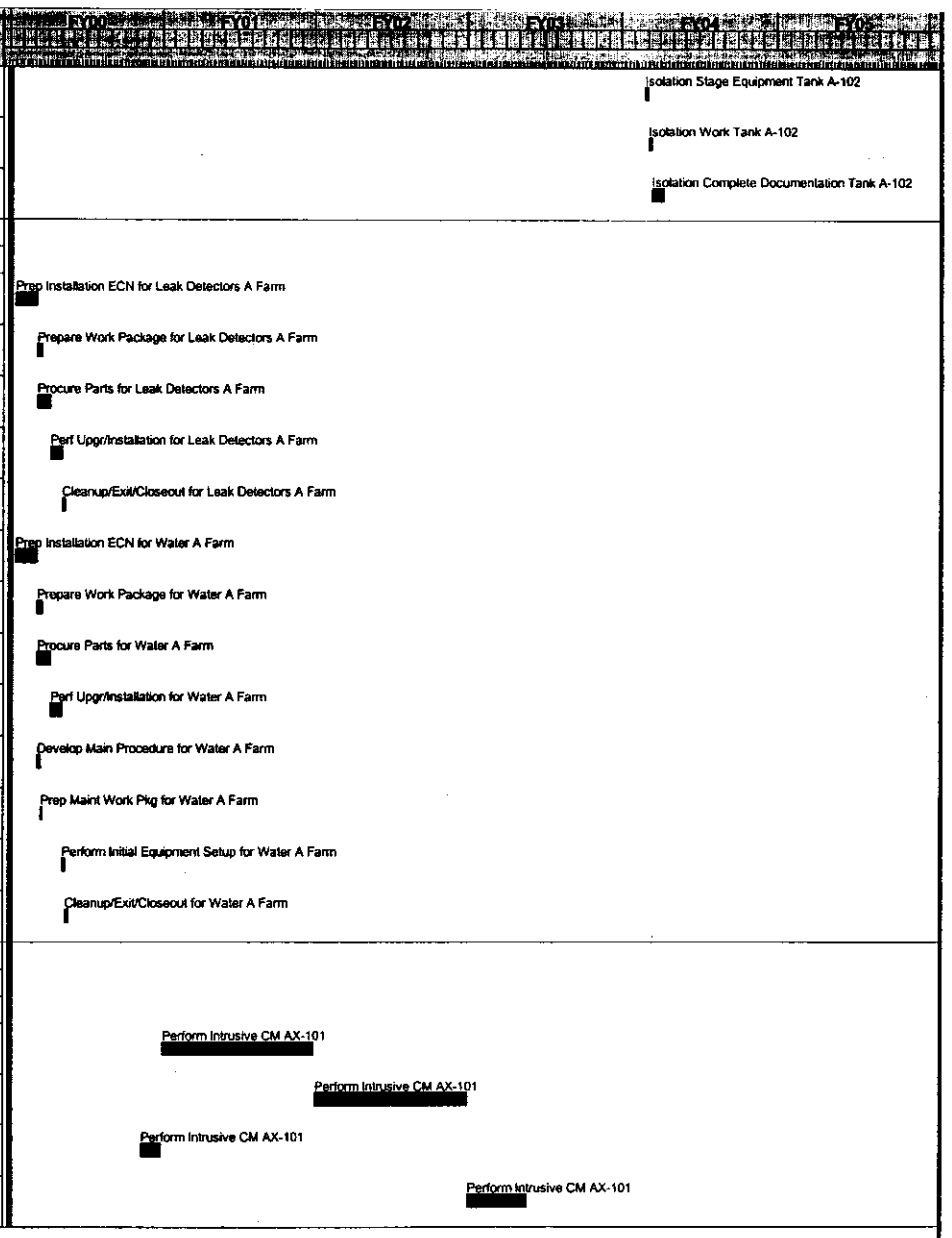
Activity ID	Rem Dur	Early Start	Early Finish
SS23174A4	3	22NOV00	28NOV00
SS23174B1	15	12OCT01	01NOV01
SS23174B2	2	12OCT01	15OCT01
SS23174B3	3	02NOV01	06NOV01
SS23174B4	3	07NOV01	09NOV01
SS23174C1	10	02OCT02	15OCT02
SS23174C2	2	02OCT02	03OCT02
SS23174C3	3	16OCT02	18OCT02
SS23174C4	3	21OCT02	23OCT02
1.01.03.01.01.09.40.01.75 Dev/Implement A-101 NOCs			
SS23175A42	42	01OCT99	11NOV99
SS23175A5	30	12NOV99	11DEC99
SS23175A6	60	12DEC99	09FEB00
SS23175A7	5	10FEB00	16FEB00
SS23175AD	48	01OCT99*	17NOV99
SS23175AD2	42	18NOV99	29DEC99
SS23175AE	30	30DEC99	28JAN00
SS23175AF	60	29JAN00	28MAR00
SS23175AG	5	29MAR00	04APR00
1.01.03.01.01.09.40.01.78 Post Equip Discn/Staging A-101			
SS23178A1	10	01OCT02	14OCT02
SS23178A2	1	15OCT02	15OCT02
SS23178B1	242	15OCT02	30SEP03
SS23178B11	60	01OCT03	29DEC03



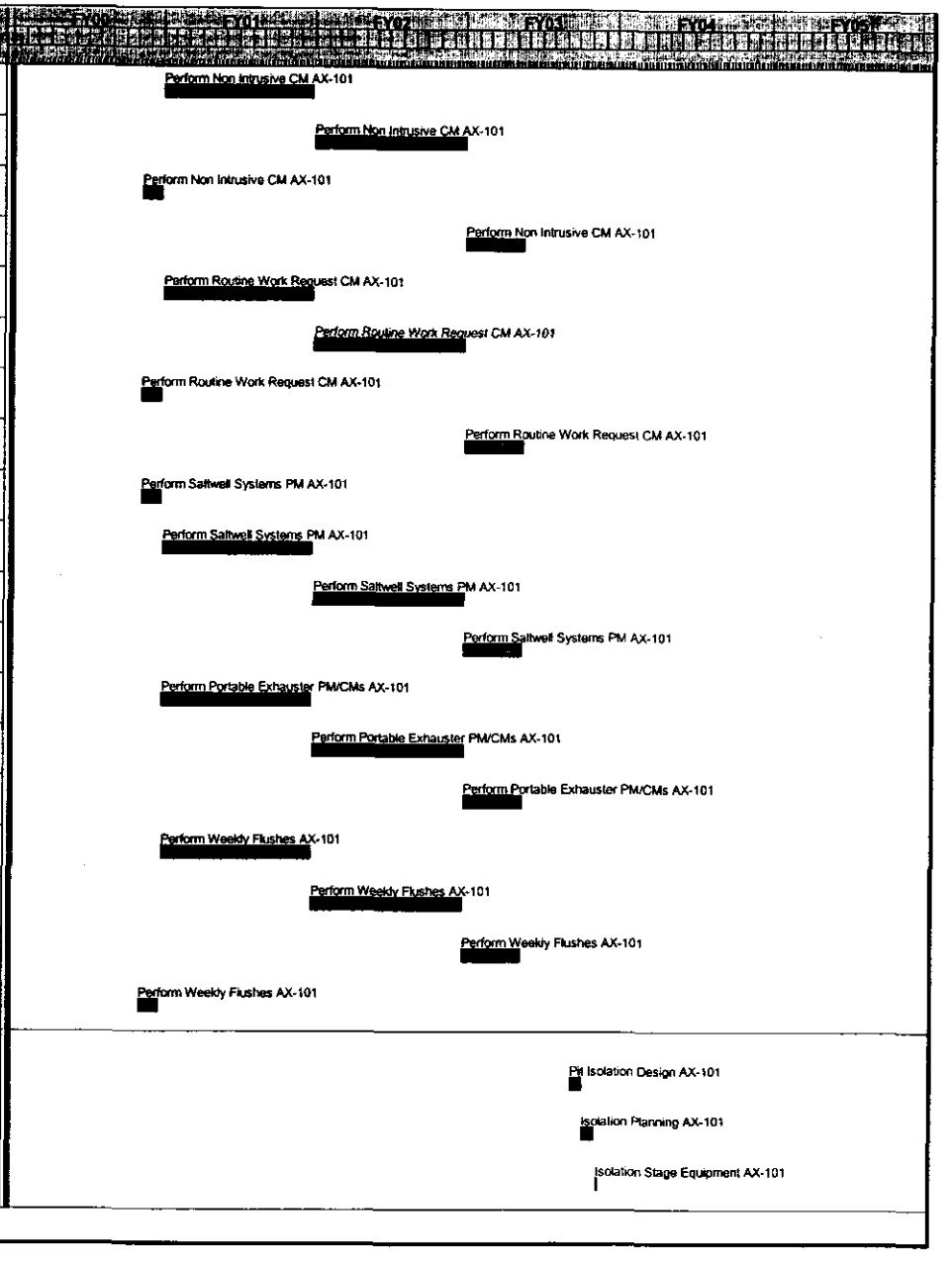
Activity ID	Rem Dur	Early Start	Early Finish
SS23178B2	2	16OCT02	17OCT02
SS23178B3	15	01OCT03	21OCT03
SS23178C1	15	22OCT03	11NOV03
SS23178C2	15	12NOV03	04DEC03
SS23178D1	3	22OCT03	24OCT03
SS23178D2	15	05DEC03	29DEC03
SS23178E1	3	22OCT03	24OCT03
SS23178E2	5	27OCT03	31OCT03
1.01.03.01.01.09.40.01.83 Annual Waste Capb Assmts A-101			
SS23183C	10	05DEC00	18DEC00
SS23183D	10	05DEC00	18DEC00
SS23183E	10	01NOV01	14NOV01
SS23183F	10	01NOV01	14NOV01
SS23183G	10	02OCT02	15OCT02
SS23183H	10	02OCT02	15OCT02
1.01.03.01.01.09.40.01.90 A-101 Exhauster			
SS23190A	20	04OCT99	29OCT99
SS23190B	10	06DEC99	17DEC99
SS23190C	10	20DEC99	05JAN00
SS23190D	4	06JAN00	11JAN00
SS23190E	10	12JAN00	25JAN00
1.01.03.01.01.09.40.02 Stabilize/Isolate A-102			
1.01.03.01.01.09.40.02.04 A-102 Isolation			
SS23085A1	20	01OCT03	28OCT03
SS23085A2	20	29OCT03	25NOV03



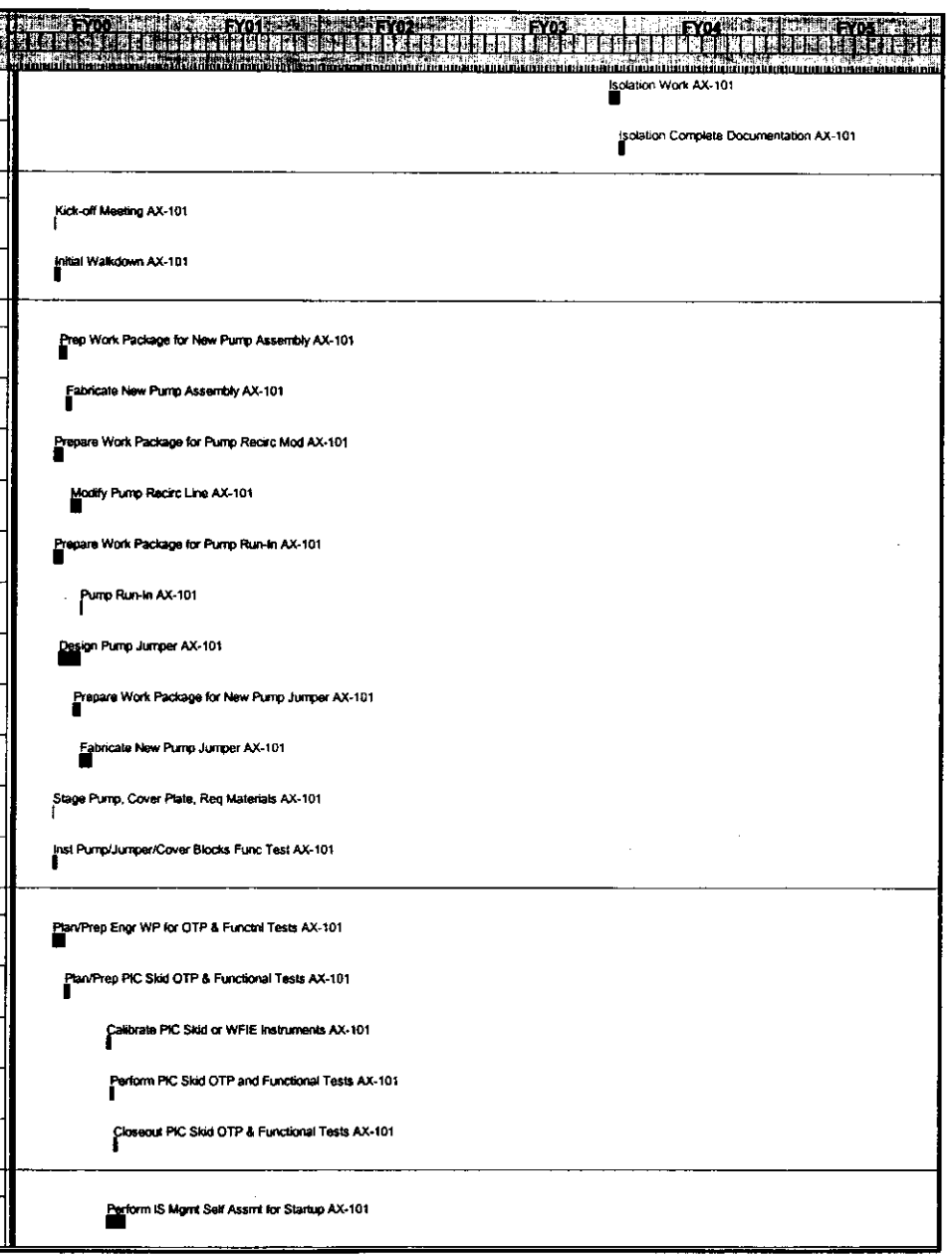
Activity ID	Rem. Dur.	Early Start	Early Finish
SS23085A3	2	26NOV03	01DEC03
SS23085A4	5	02DEC03	08DEC03
SS23085A5	20	09DEC03	08JAN04
1.01.03.01.01.09.40.50 241-A Farm Infrastructure Upgrade			
1.01.03.01.01.09.40.50.01 241-A Insfrastructure Upgrade			
SS23701A1	35	13OCT99	02DEC99
SS23701A2	10	03DEC99	16DEC99
SS23701A3	20	03DEC99	04JAN00
SS23701A4	20	05JAN00	01FEB00
SS23701A8	5	02FEB00	08FEB00
SS23701D1	35	13OCT99	02DEC99
SS23701D2	10	03DEC99	16DEC99
SS23701D3	20	03DEC99	04JAN00
SS23701D4	20	05JAN00	01FEB00
SS23701D5	5	03DEC99	09DEC99
SS23701D6	5	10DEC99	16DEC99
SS23701D7	5	02FEB00	08FEB00
SS23701D8	5	09FEB00	15FEB00
1.01.03.01.01.09.41 SST 241-AX Tank Farm Stabilization/Isolation			
1.01.03.01.01.09.41.01 Stabilize/Isolate Tank AX-101			
1.01.03.01.01.09.41.01.03 AX-101 System Maint/Operability			
SS23268A3	251	02OCT00	28SEP01
SS23268A4	252	01OCT01	30SEP02
SS23268B2	36	10AUG00	29SEP00
SS23268B5	95	01OCT02	18FEB03



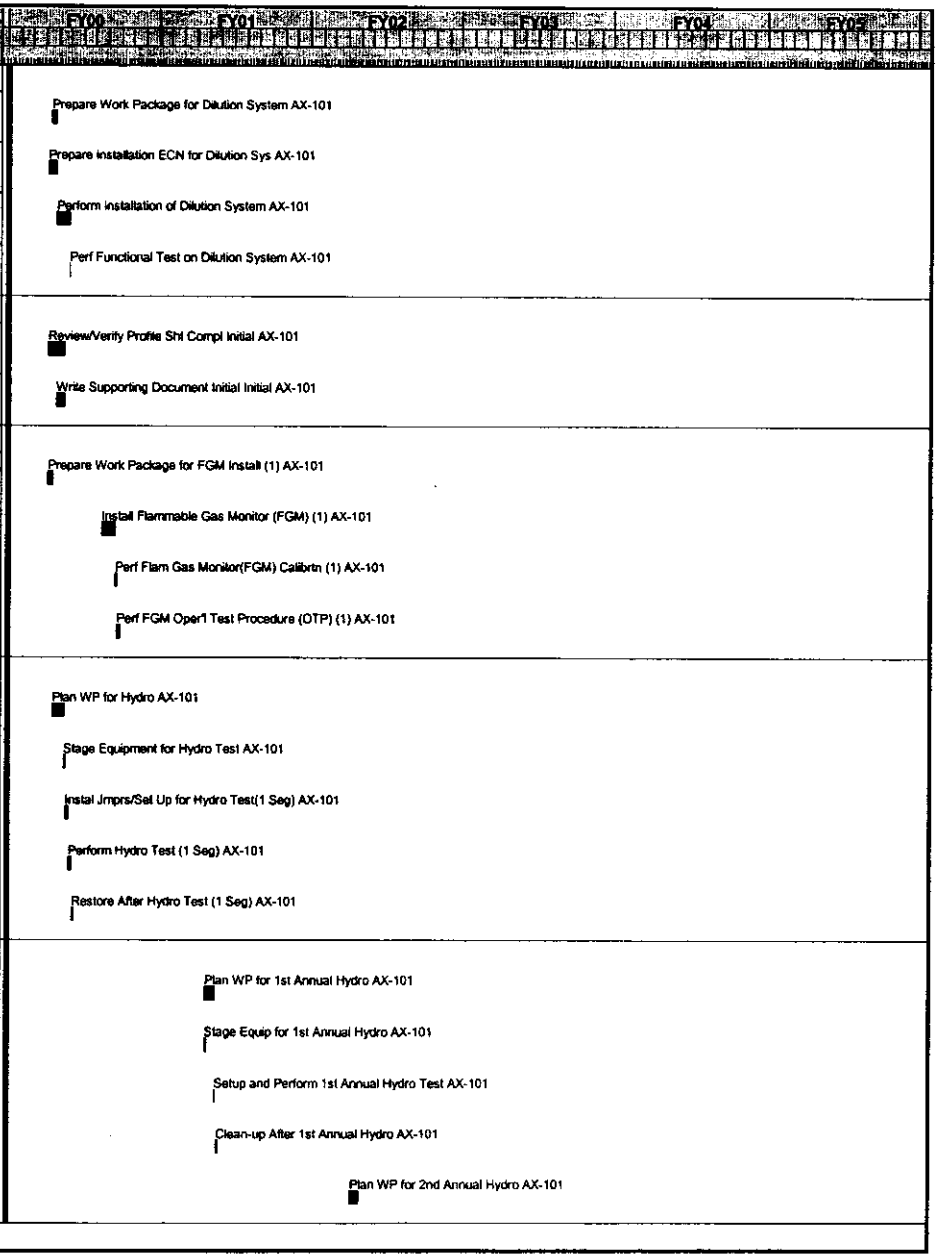
Activity ID	Orig Dur	Early Start	Early Finish
SS23268C3	251	02OCT00	28SEP01
SS23268C4	252	01OCT01	30SEP02
SS23268D2	36	10AUG00	29SEP00
SS23268D5	95	01OCT02	18FEB03
SS23268E3	251	02OCT00	28SEP01
SS23268E4	252	01OCT01	30SEP02
SS23268F2	36	10AUG00	29SEP00
SS23268F5	95	01OCT02	18FEB03
SS23268G2	36	10AUG00	29SEP00
SS23268G3	251	02OCT00	28SEP01
SS23268G4	252	01OCT01	30SEP02
SS23268G5	95	01OCT02	18FEB03
SS23268H3	251	02OCT00	28SEP01
SS23268H4	252	01OCT01	30SEP02
SS23268H5	95	01OCT02	18FEB03
SS23268J3	251	02OCT00	28SEP01
SS23268J4	252	01OCT01	30SEP02
SS23268L5	95	01OCT02	18FEB03
SS23268M2	36	10AUG00	29SEP00
1.01.03.01.01.09.41.01.04 AX-101 Isolation			
SS23285A1	20	18JUN03	16JUL03
SS23285A2	20	17JUL03	13AUG03
SS23285A3	2	21AUG03	22AUG03



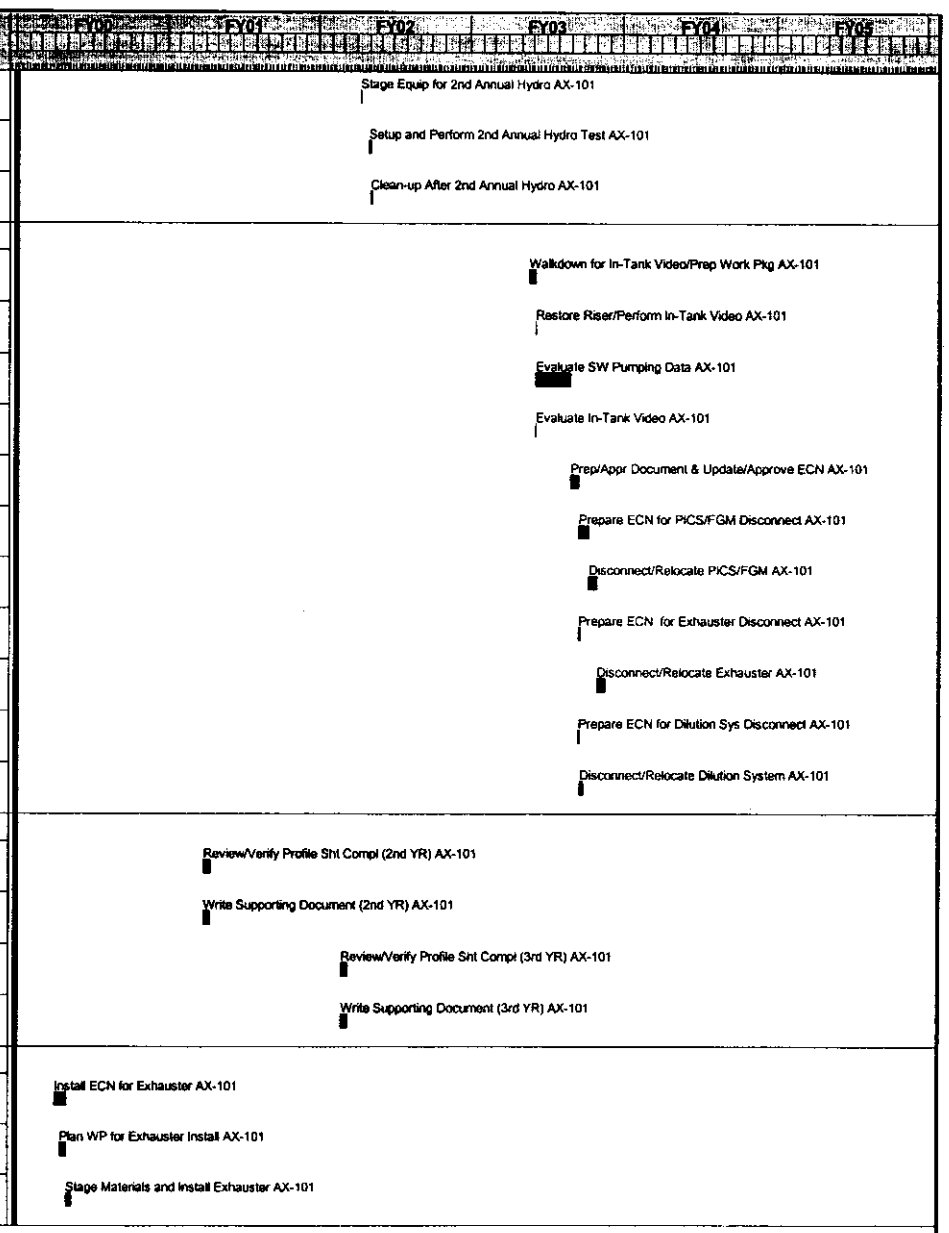
Activity ID	Rem Dur	Early Start	Early Finish
SS23285A4	15	25AUG03	15SEP03
SS23285A5	10	16SEP03	29SEP03
1.01.03.01.01.09.41.01.05 Walkdown AX-101			
SS23205A	1	03JAN00*	03JAN00
SS23205B	10	04JAN00	17JAN00
1.01.03.01.01.09.41.01.27 SW Jet Pumps/Jumpers AX-101			
SS23227B1	10	18JAN00	31JAN00
SS23227B2	10	01FEB00	14FEB00
SS23227C1	15	04JAN00	24JAN00
SS23227C2	15	15FEB00	07MAR00
SS23227D1	15	04JAN00	24JAN00
SS23227D2	3	08MAR00	10MAR00
SS23227E	35	18JAN00	07MAR00
SS23227F1	10	23FEB00	07MAR00
SS23227F2	20	08MAR00	04APR00
SS23227J	2	04JAN00	05JAN00
SS23227K	4	06JAN00	11JAN00
1.01.03.01.01.09.41.01.31 Perf Calib & Equip OTPs AX-101			
SS23231B1	20	04JAN00	31JAN00
SS23231B2	10	01FEB00	14FEB00
SS23231B3	5	17MAY00	23MAY00
SS23231B4	5	24MAY00	31MAY00
SS23231B5	5	01JUN00	07JUN00
1.01.03.01.01.09.41.01.36 Management Self-Assessment AX-101			
SS23236A	30	17MAY00	28JUN00



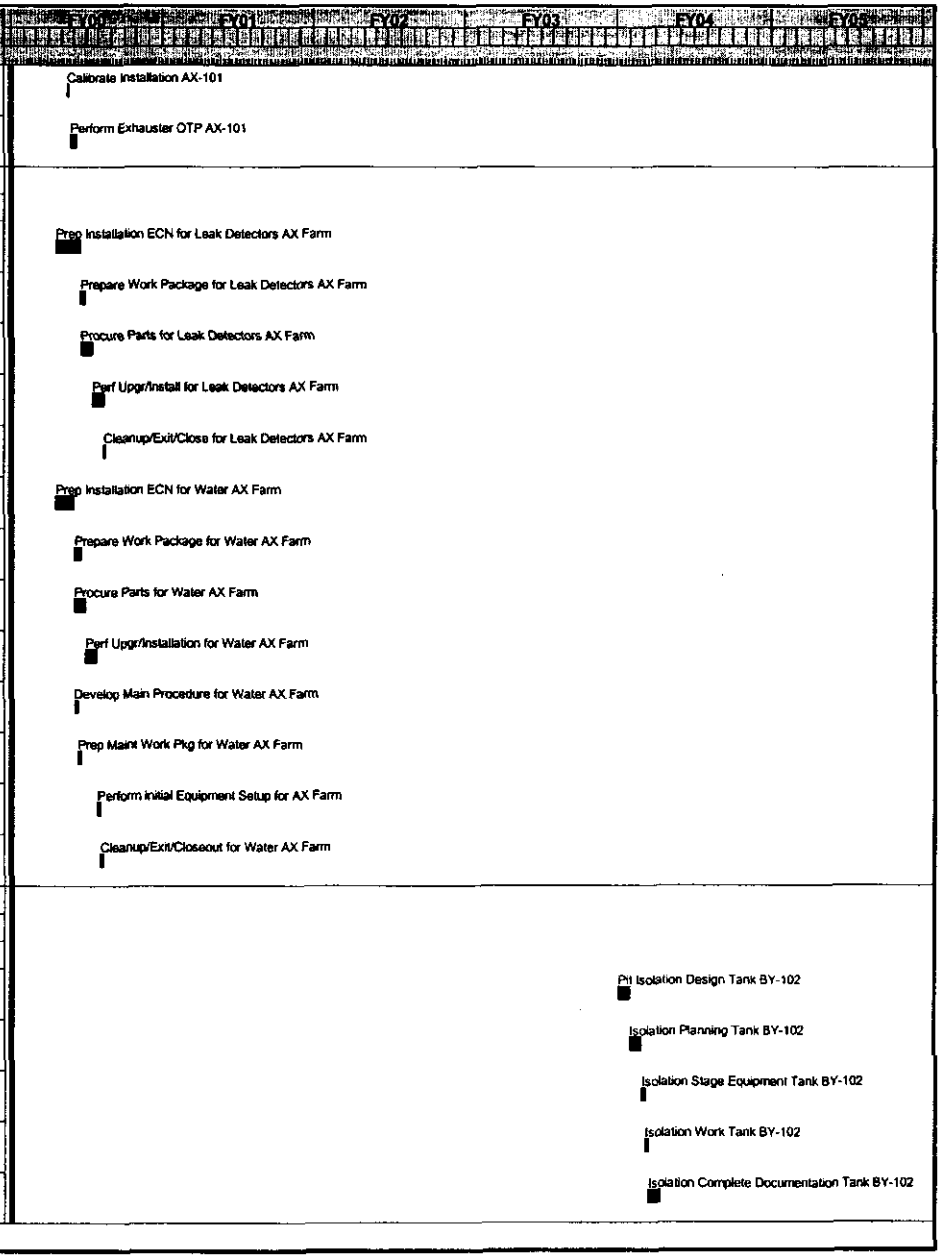
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.41.01.42 Install/Test AX-101 Waste Dilution System			
SS23242C	10	11JAN00	24JAN00
SS23242F	15	04JAN00	24JAN00
SS23242G	21	25JAN00	23FEB00
SS23242H	2	24FEB00	25FEB00
1.01.03.01.01.09.41.01.54 Initial Waste Capb Assmts AX-101			
SS23254A	30	04JAN00	14FEB00
SS23254B	14	26JAN00	14FEB00
1.01.03.01.01.09.41.01.55 Install/Test FGMs AX-101			
SS23255E1	10	04JAN00	17JAN00
SS23255E2	20	17MAY00	14JUN00
SS23255E3	5	15JUN00	21JUN00
SS23255F1	5	22JUN00	28JUN00
1.01.03.01.01.09.41.01.60 Initial Hydro Test Transfer Line AX-101			
SS23260A	20	18JAN00	14FEB00
SS23260B	2	15FEB00	16FEB00
SS23260C1	5	17FEB00	24FEB00
SS23260D1	5	25FEB00	02MAR00
SS23260E1	5	03MAR00	09MAR00
1.01.03.01.01.09.41.01.74 AX-101 Annual Hydro Test			
SS23274A1	15	24JAN01	13FEB01
SS23274A2	2	24JAN01	25JAN01
SS23274A3	3	14FEB01	16FEB01
SS23274A4	3	20FEB01	22FEB01
SS23274B1	15	09JAN02	29JAN02



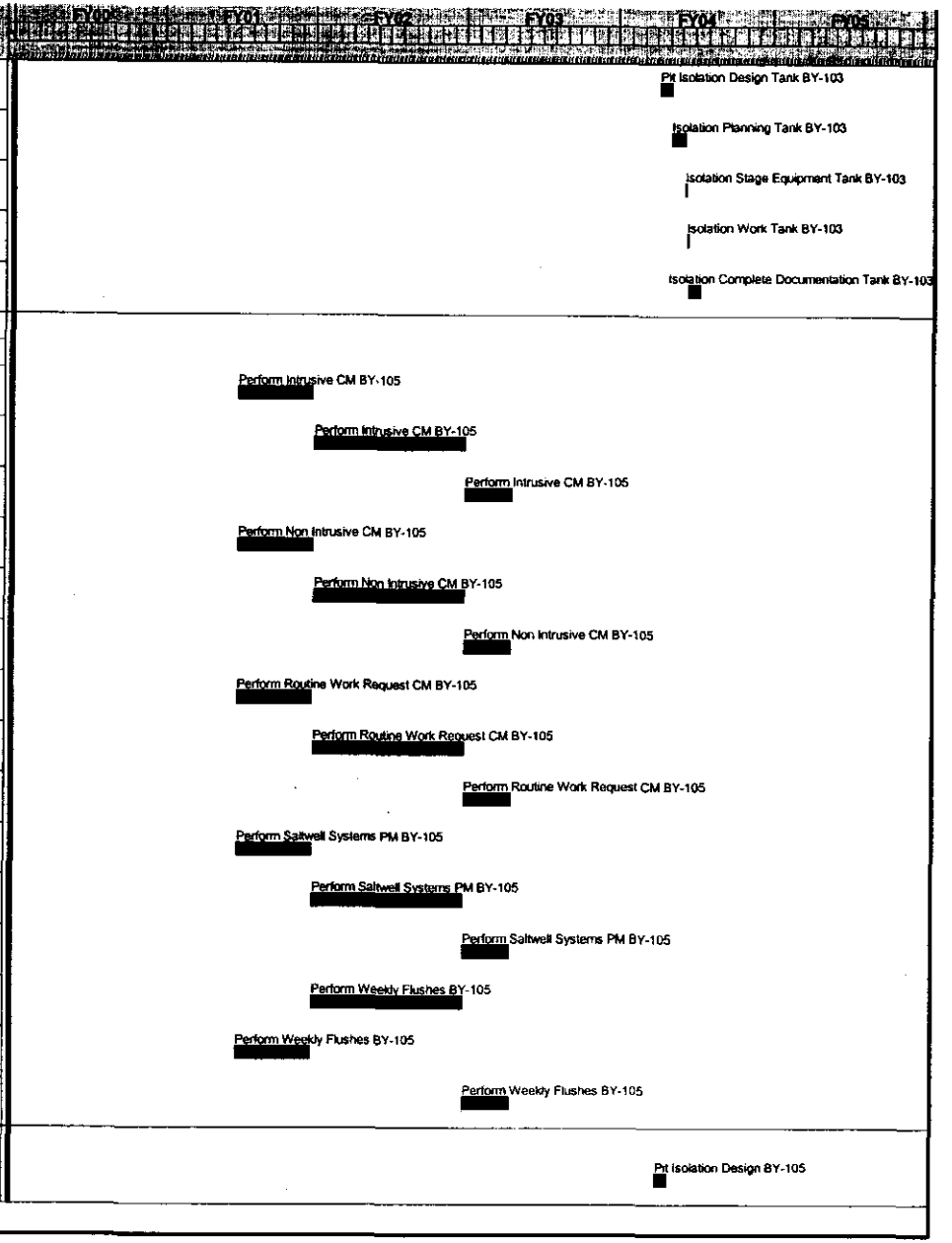
Activity ID	Rem Dur	Early Start	Early Finish
SS23274B2	2	09JAN02	10JAN02
SS23274B3	3	30JAN02	01FEB02
SS23274B4	3	04FEB02	06FEB02
1.01.03.01.01.09.41.01.78 Post Equip Discn/Staging AX-101			
SS23278A1	10	18FEB03	03MAR03
SS23278A2	1	04MAR03	04MAR03
SS23278B1	60	04MAR03	27MAY03
SS23278B2	2	05MAR03	06MAR03
SS23278B3	15	28MAY03	17JUN03
SS23278C1	15	18JUN03	09JUL03
SS23278C2	15	10JUL03	30JUL03
SS23278D1	3	18JUN03	20JUN03
SS23278D2	15	31JUL03	20AUG03
SS23278E1	3	18JUN03	20JUN03
SS23278E2	5	23JUN03	27JUN03
1.01.03.01.01.09.41.01.83 Annual Waste Capb Assmts AX-101			
SS23283C	10	29DEC00	12JAN01
SS23283D	10	29DEC00	12JAN01
SS23283E	10	27NOV01	10DEC01
SS23283F	10	27NOV01	10DEC01
1.01.03.01.01.09.41.01.90 AX-101 Exhauster			
SS23290A	20	04JAN00	31JAN00
SS23290B	10	18JAN00	31JAN00
SS23290C	10	01FEB00	14FEB00



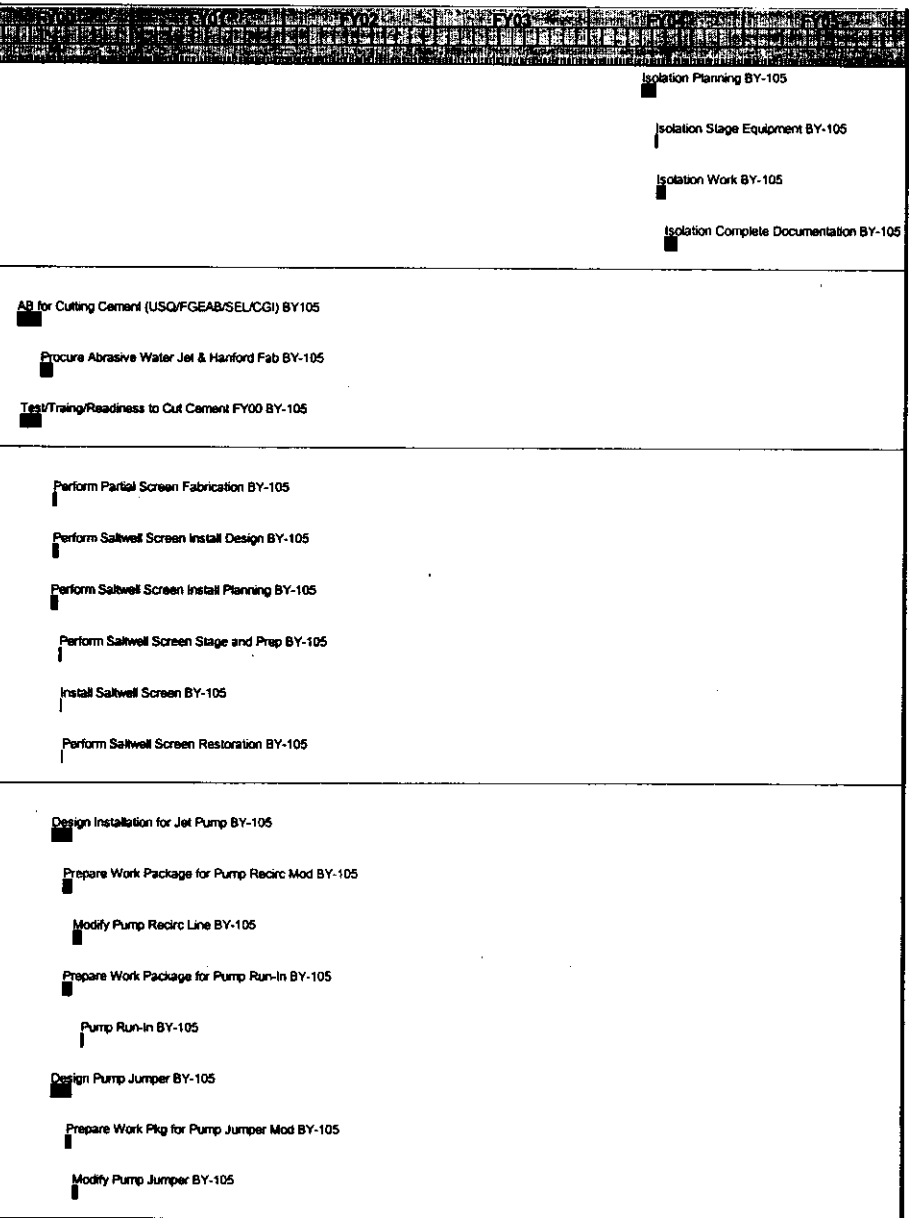
Activity ID	Rem Dur	Early Start	Early Finish
SS23290D	4	15FEB00	18FEB00
SS23290E	10	22FEB00	06MAR00
1.01.03.01.01.09.41.50 241-AX Farm Infrastructure Upgrade			
1.01.03.01.01.09.41.50.01 241-AX Farm Infrastructure Upgrade			
SS23703A1	40	18JAN00	14MAR00
SS23703A2	10	15MAR00	28MAR00
SS23703A3	20	15MAR00	11APR00
SS23703A4	20	12APR00	09MAY00
SS23703A8	5	10MAY00	16MAY00
SS23703D1	30	18JAN00	29FEB00
SS23703D2	10	01MAR00	14MAR00
SS23703D3	20	01MAR00	28MAR00
SS23703D4	20	29MAR00	25APR00
SS23703D5	5	01MAR00	07MAR00
SS23703D6	5	08MAR00	14MAR00
SS23703D7	5	26APR00	02MAY00
SS23703D8	5	03MAY00	09MAY00
1.01.03.01.01.09.43 SST 241-BY Tank Farm Stabilization/Isolation			
1.01.03.01.01.09.43.03 Stabilize/Isolate Tanks BY-102/103			
1.01.03.01.01.09.43.03.04 BY-102/103 Isolation			
SS23085B1	20	01OCT03*	28OCT03
SS23085B2	20	29OCT03	25NOV03
SS23085B3	2	26NOV03	01DEC03
SS23085B4	5	02DEC03	08DEC03
SS23085B5	20	09DEC03	08JAN04



Activity ID	Rem Dur	Early Start	Early Finish
SS23085C1	20	09JAN04	05FEB04
SS23085C2	20	06FEB04	05MAR04
SS23085C3	2	08MAR04	09MAR04
SS23085C4	5	10MAR04	16MAR04
SS23085C5	20	17MAR04	13APR04
1.01.03.01.01.09.43.05 Stabilize/Isolate Tank BY-105			
1.01.03.01.01.09.43.05.03 BY-105 System Maint/Operability			
SS23368A3	127	02APR01	28SEP01
SS23368A4	252	01OCT01	30SEP02
SS23368B5	75	01OCT02	20JAN03
SS23368C3	127	02APR01	28SEP01
SS23368C4	252	01OCT01	30SEP02
SS23368D5	75	01OCT02	20JAN03
SS23368E3	127	02APR01	28SEP01
SS23368E4	252	01OCT01	30SEP02
SS23368F5	75	01OCT02	20JAN03
SS23368G3	127	02APR01	28SEP01
SS23368G4	252	01OCT01	30SEP02
SS23368G5	75	01OCT02	20JAN03
SS23368J4	252	01OCT01	30SEP02
SS23368L3	127	02APR01	28SEP01
SS23368M5	75	01OCT02	20JAN03
1.01.03.01.01.09.43.05.04 BY-105 Isolation			
SS23385B1	20	09JAN04	05FEB04



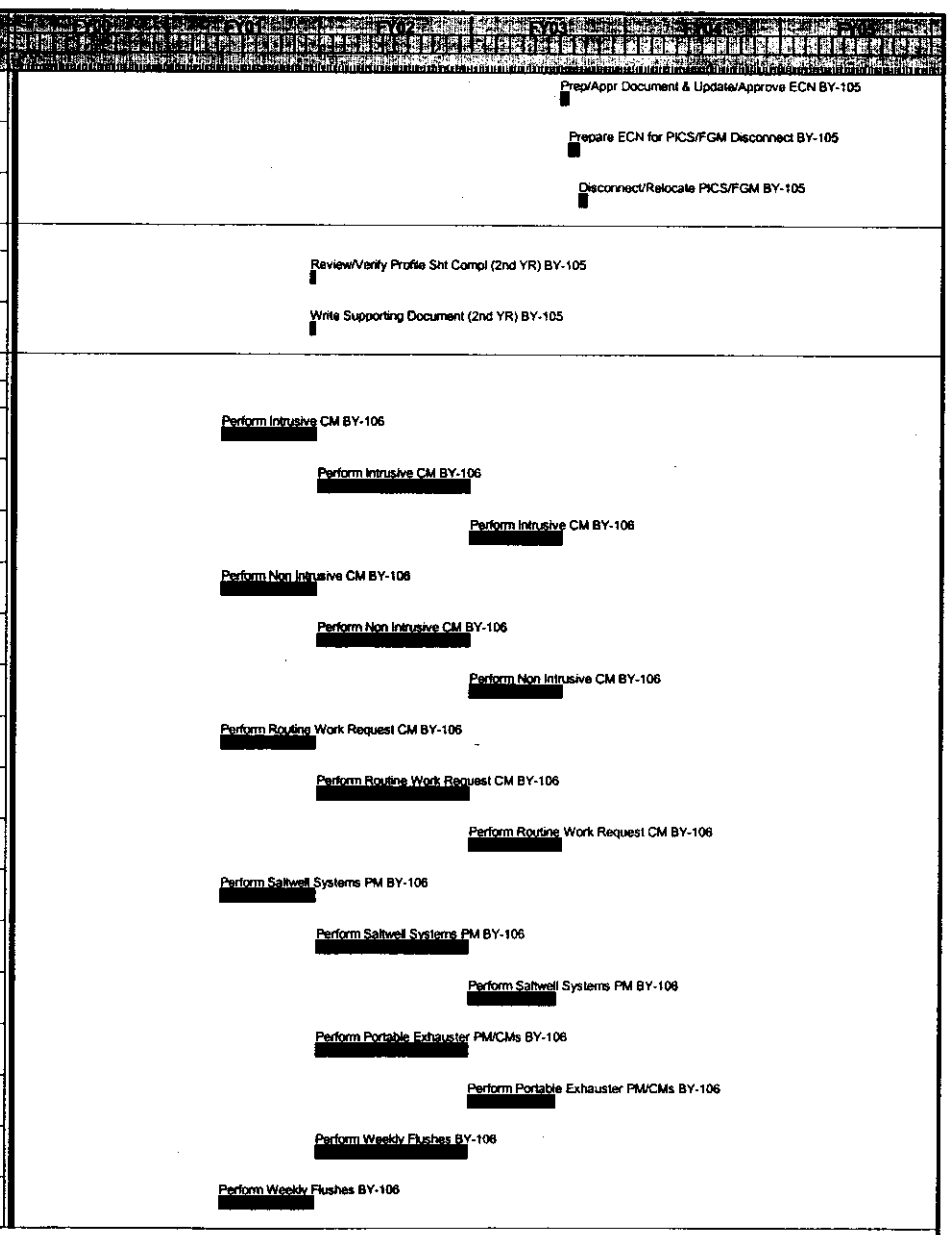
Activity ID	Rem Dur	Start	Finish
SS23385B2	20	06FEB04	05MAR04
SS23385B3	2	08MAR04	09MAR04
SS23385B4	15	10MAR04	30MAR04
SS23385B5	20	31MAR04	27APR04
1.01.03.01.01.09.43.05.07 Dev Techn/Tools to Cut BY-105 Cement Layer			
SS23307B2	41	03JAN00*	29FEB00
SS23307C	20	01MAR00	28MAR00
SS23307D1	35	11JAN00	29FEB00
1.01.03.01.01.09.43.05.16 Saltwell Screen BY-105			
SS23316C1	5	03APR00	07APR00
SS23316D	10	03APR00	14APR00
SS23316E1	12	30MAR00	14APR00
SS23316E2	4	17APR00	20APR00
SS23316E3	1	21APR00	21APR00
SS23316E4	2	24APR00	25APR00
1.01.03.01.01.09.43.05.27 SW Jet Pumps/Jumpers BY-105			
SS23327A	35	03APR00	19MAY00
SS23327C1	15	01MAY00	19MAY00
SS23327C2	15	22MAY00	12JUN00
SS23327D1	15	01MAY00	19MAY00
SS23327D2	3	13JUN00	15JUN00
SS23327E	35	03APR00	19MAY00
SS23327G1	10	08MAY00	19MAY00
SS23327G2	10	22MAY00	05JUN00



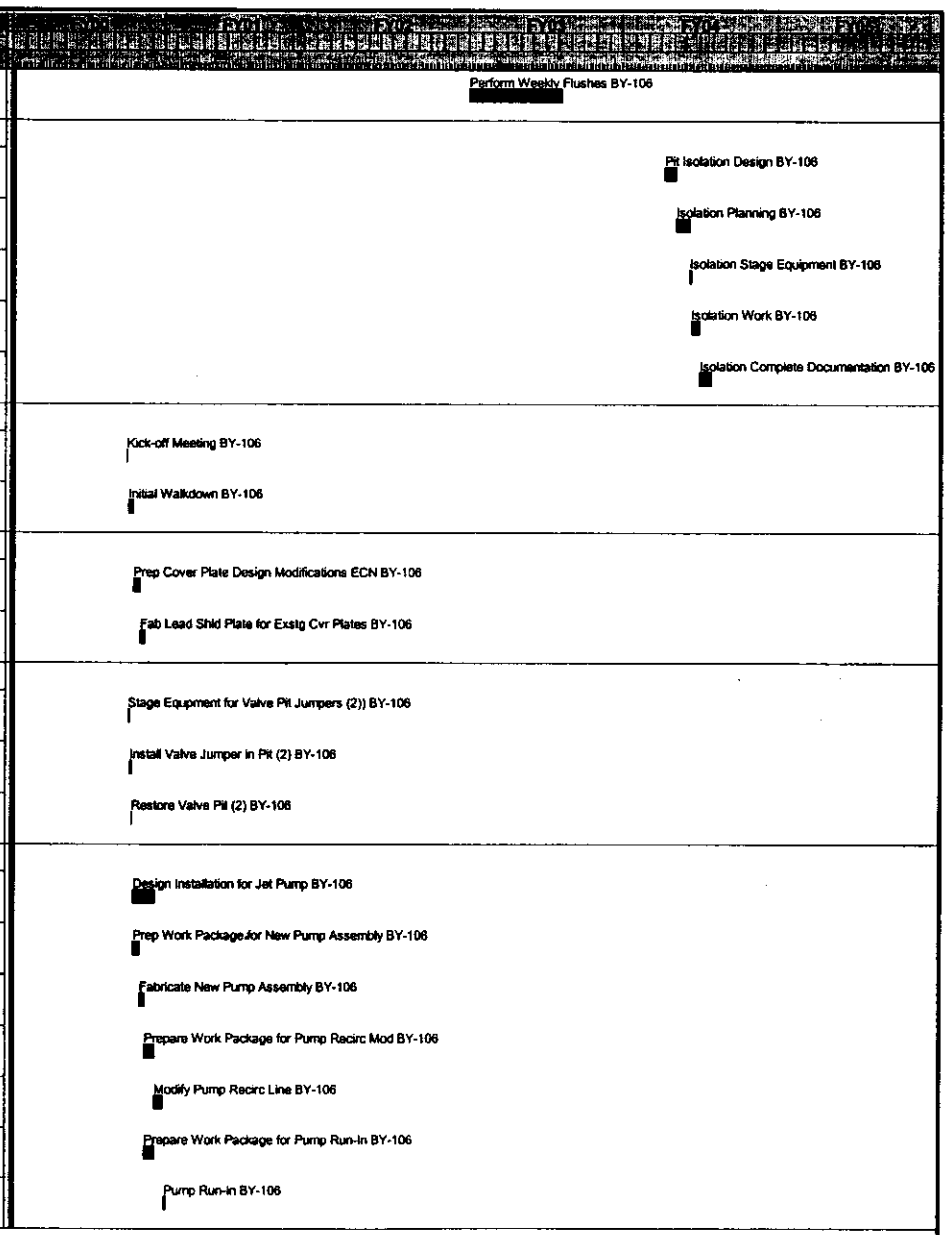
SS23327H	20	24APR00	19MAY00	Prep Inst Wrk Pkg for Pmp/Jmpr/Cvr Plates BY-105
SS23327J	2	14JUN00	15JUN00	Stage Pump, Cover Plate, Req Materials BY-105
SS23327K	4	16JUN00	21JUN00	Inst Pump/Jumper/Cover Blocks Func Test BY-105
1.01.03.01.01.09.43.05.36 Management Self-Assessment BY-105				
SS23336A	83	18OCT00	16FEB01	Perform IS Mgmt Self Assmt for Startup BY-105
1.01.03.01.01.09.43.05.49 Test (OTP) SW Control System for BY-105				
SS23349B1	20	03APR00	28APR00	Plan/Prep Engr WP for OTP & Functnl Tests BY-105
SS23349B2	10	01MAY00	12MAY00	Plan/Prep PIC Skid OTP & Functional Tests BY-105
SS23349B3	5	15MAY00	19MAY00	Calibrate PIC Skid or WFIE Instruments BY-105
SS23349B4	5	22MAY00	26MAY00	Perform PIC Skid OTP and Functional Tests BY-105
SS23349B5	5	30MAY00	05JUN00	Closeout PIC Skid OTP & Functional Tests BY-105
1.01.03.01.01.09.43.05.54 Initial Waste Capb Assmts BY-105				
SS23354A	14	12SEP00	29SEP00	Review/Verify Profile Sht Compl Initial BY-105
SS23354A1	16	02OCT00	23OCT00	Review/Verify Profile Sht Compl Initial BY-105
SS23354B	14	04OCT00	23OCT00	Write Supporting Document Initial BY-105
1.01.03.01.01.09.43.05.55 Install/Test FGMs BY-105				
SS23355D1	35	03APR00	19MAY00	Prepare Installation ECN for FGM (1) BY-105
SS23355E1	10	07SEP00	20SEP00	Prepare Work Package for FGM Install (1) BY-105
SS23355E2	14	02OCT00	19OCT00	Install Flammable Gas Monitor (FGM) (1) BY-105
SS23355E3	5	20OCT00	26OCT00	Perf Flam Gas Monitor(FGM) Calibrtn (1) BY-105
SS23355F1	5	27OCT00	02NOV00	Perf FGM Oper'l Test Procedure (OTP) (1) BY-105
1.01.03.01.01.09.43.05.60 Initial Hydro Test Transfer Line BY-105				
SS23360A	20	03APR00	28APR00	Plan WP for Hydro BY-105
SS23360B	2	01MAY00	02MAY00	Stage Equipment for Hydro Test BY-105
SS23360C1	5	03MAY00	09MAY00	Instal Jmprs/SetUp for Hydro Test (1 Seg) BY-105

Activity ID				
SS23360D1	5	10MAY00	16MAY00	Perform Hydro Test (1 Seg) BY-105
SS23360E1	5	17MAY00	23MAY00	Restore After Hydro Test (1 Seg) BY-105
1.01.03.01.01.09.43.05.74 BY-105 Annual Hydro Test				
SS23374A1	15	10APR01	30APR01	Plan WP for 1st Annual Hydro BY-105
SS23374A2	2	10APR01	11APR01	Stage Equip for 1st Annual Hydro BY-105
SS23374A3	3	01MAY01	03MAY01	Setup and Perform 1st Annual Hydro Test BY-105
SS23374A4	3	04MAY01	08MAY01	Clean-up After 1st Annual Hydro BY-105
SS23374B1	15	26MAR02	15APR02	Plan WP for 2nd Annual Hydro BY-105
SS23374B2	2	26MAR02	27MAR02	Stage Equip for 2nd Annual Hydro BY-105
SS23374B3	3	16APR02	18APR02	Setup and Perform 2nd Annual Hydro Test BY-105
SS23374B4	3	19APR02	23APR02	Clean-up After 2nd Annual Hydro BY-105
1.01.03.01.01.09.43.05.75 Dev/Implement BY-105 NOCs				
SS23375B1	10	03APR00	14APR00	Gather NOC Data (Moderate) (Rad) BY-105
SS23375B3	84	15APR00	07JUL00	Internal PHMC NOC Review (Moderate) (Rad) BY-105
SS23375B4	65	08JUL00	10SEP00	RL NOC Review (Moderate) (Rad) BY-105
SS23375B41	20	11SEP00	30SEP00	RL NOC Review (Moderate) (Rad) BY-105
SS23375B5	60	01OCT00	29NOV00	Negotiate NOC (Moderate) (Rad) BY-105
SS23375B6	60	30NOV00	28JAN01	Iss Regulator Appr'd NOC (Moderate) (Rad) BY-105
SS23375B7	10	29JAN01	09FEB01	Implement NOC (Moderate) (Rad) BY-105
1.01.03.01.01.09.43.05.78 Post Equp/Discn/Staging BY-105				
SS23378A1	10	21JAN03	03FEB03	Walkdown for In-Tank Video/Prep Work Pkg BY-105
SS23378A2	1	04FEB03	04FEB03	Restore Riser/Perform In-Tank Video BY-105
SS23378B1	60	04FEB03	29APR03	Evaluate SW Pumping Data BY-105
SS23378B2	2	05FEB03	06FEB03	Evaluate In-Tank Video BY-105

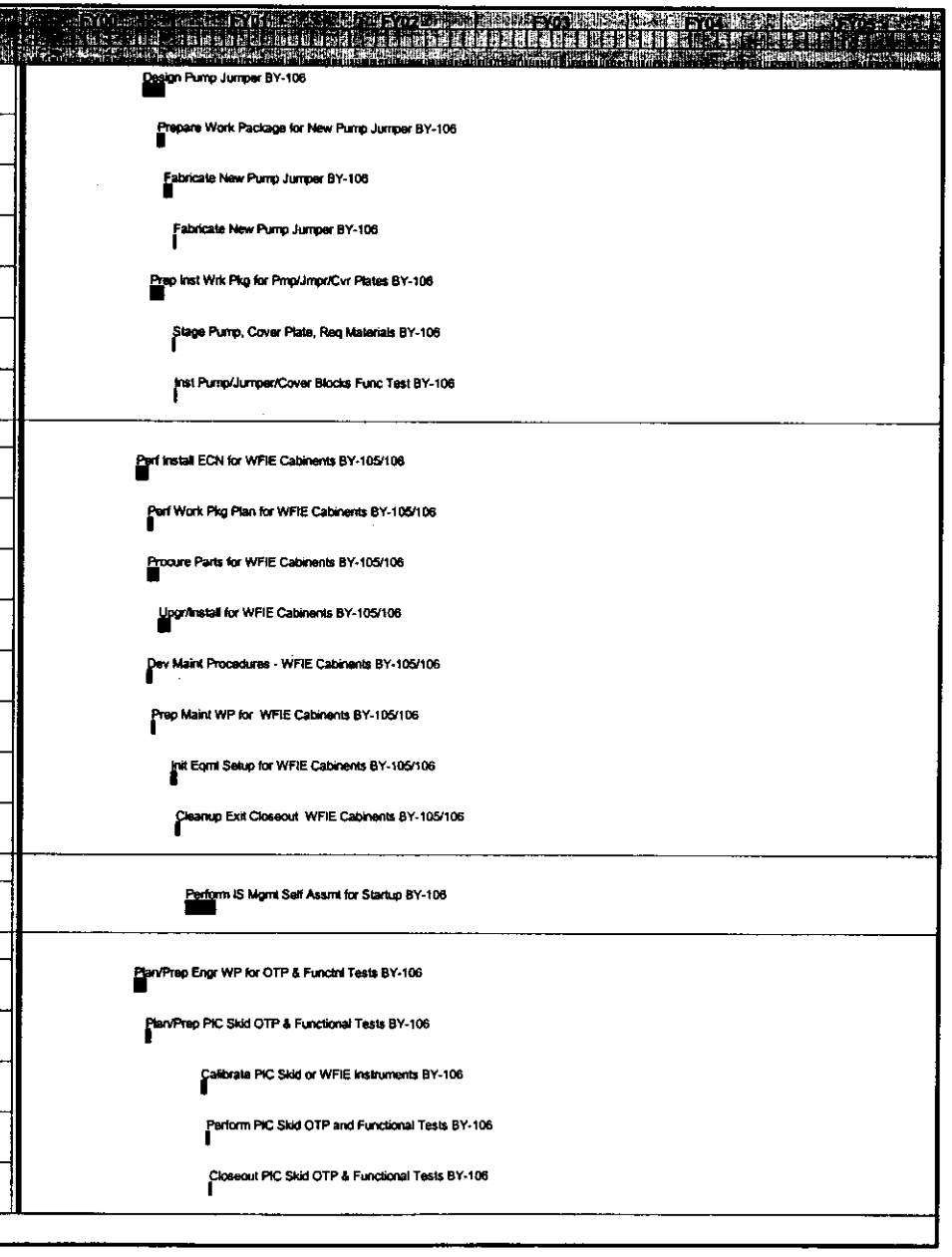
ID	Dur	Start	Finish
SS23378B3	15	30APR03	20MAY03
SS23378C1	15	21MAY03	11JUN03
SS23378C2	15	12JUN03	02JUL03
1.01.03.01.01.09.43.05.83 Annual Waste Capb Assmts BY-105			
SS23383C	10	10SEP01	21SEP01
SS23383D	10	10SEP01	21SEP01
1.01.03.01.01.09.43.06 Stabilize/Isolate Tank BY-106			
1.01.03.01.01.09.43.06.03 BY-106 System Maint/Operability			
SS23468A3	161	12FEB01	28SEP01
SS23468A4	252	01OCT01	30SEP02
SS23468A5	150	01OCT02	06MAY03
SS23468C3	161	12FEB01	28SEP01
SS23468C4	252	01OCT01	30SEP02
SS23468C5	150	01OCT02	06MAY03
SS23468E3	161	12FEB01	28SEP01
SS23468E4	252	01OCT01	30SEP02
SS23468E5	150	01OCT02	06MAY03
SS23468G3	161	12FEB01	28SEP01
SS23468G4	252	01OCT01	30SEP02
SS23468G5	143	01OCT02	25APR03
SS23468H4	252	01OCT01	30SEP02
SS23468H5	143	01OCT02	25APR03
SS23468J4	252	01OCT01	30SEP02
SS23468K3	161	12FEB01	28SEP01



SS23468K5	150	01OCT02	06MAY03
1.01.03.01.01.09.43.06.04 BY-106 Isolation			
SS23485B1	20	09JAN04	05FEB04
SS23485B2	20	06FEB04	05MAR04
SS23485B3	2	08MAR04	09MAR04
SS23485B4	15	10MAR04	30MAR04
SS23485B5	20	31MAR04	27APR04
1.01.03.01.01.09.43.06.05 Walkdown BY-106			
SS23405A	1	03JUL00*	03JUL00
SS23405B	10	05JUL00	18JUL00
1.01.03.01.01.09.43.06.08 Fab/Mod Cover Plates BY-106			
SS23408B	10	19JUL00	01AUG00
SS23408D	10	02AUG00	15AUG00
1.01.03.01.01.09.43.06.19 Valve Pit Jumpers BY-106			
SS23419F2	4	05JUL00	10JUL00
SS23419G2	2	11JUL00	12JUL00
SS23419H2	2	13JUL00	14JUL00
1.01.03.01.01.09.43.06.27 SW Jet Pumps/Jumpers BY-106			
SS23427A	35	19JUL00	06SEP00
SS23427B1	10	19JUL00	01AUG00
SS23427B2	10	02AUG00	15AUG00
SS23427C1	15	16AUG00	06SEP00
SS23427C2	17	07SEP00	29SEP00
SS23427D1	15	16AUG00	06SEP00
SS23427D2	3	02OCT00	04OCT00

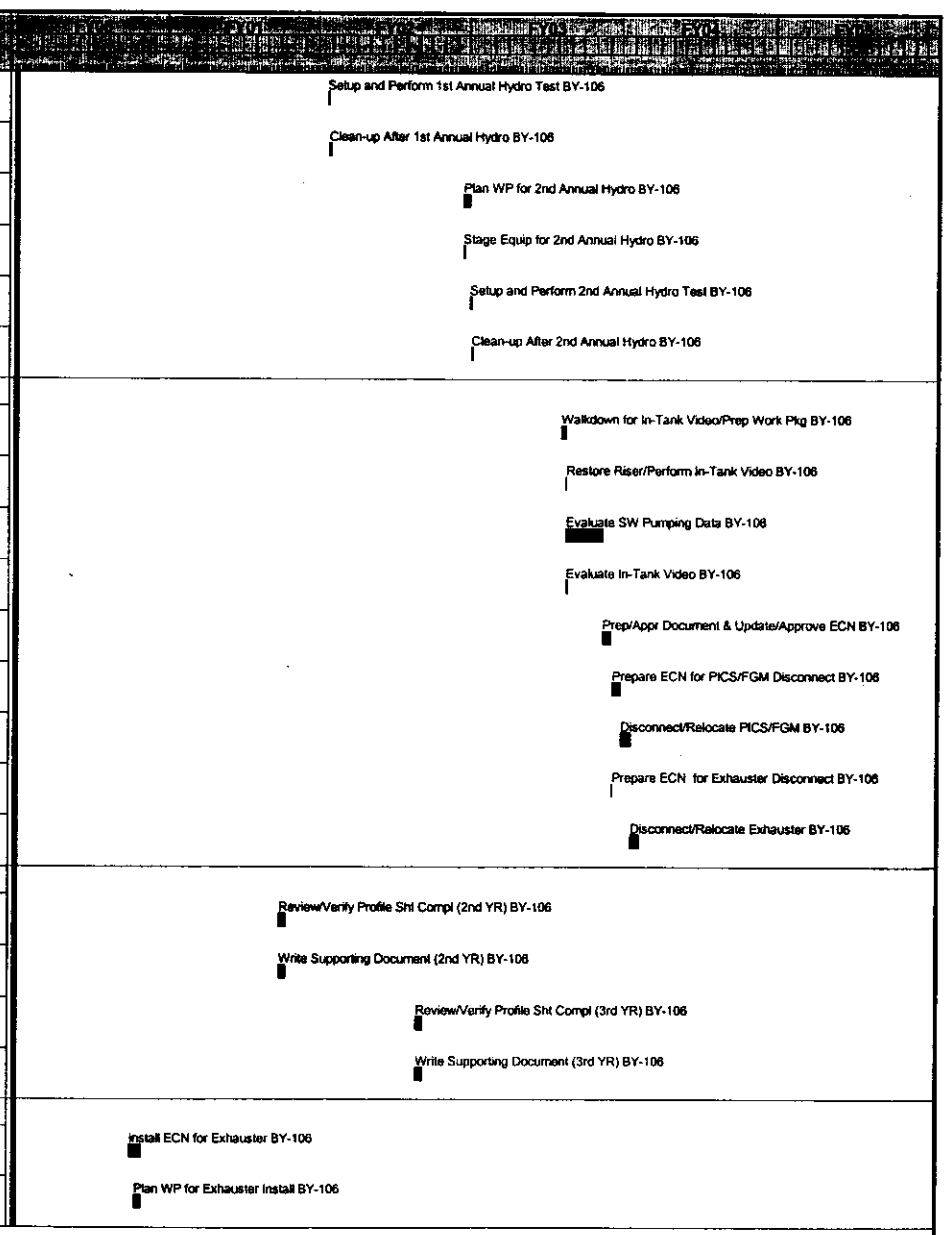


Activity	Dur	Start	Finish
SS23427E	35	19JUL00	06SEP00
SS23427F1	10	23AUG00	06SEP00
SS23427F2	17	07SEP00	29SEP00
SS23427F21	4	02OCT00	05OCT00
SS23427H	20	09AUG00	06SEP00
SS23427J	2	04OCT00	05OCT00
SS23427K	4	06OCT00	11OCT00
1.01.03.01.01.09.43.06.28 Upgrade WFIE Cabinet for BY-106/BY-105			
SS23428A	20	05JUL00	01AUG00
SS23428B	10	02AUG00	15AUG00
SS23428C	20	02AUG00	29AUG00
SS23428D	22	30AUG00	29SEP00
SS23428E	10	02AUG00	15AUG00
SS23428F	5	16AUG00	22AUG00
SS23428G	10	02OCT00	13OCT00
SS23428H	5	16OCT00	20OCT00
1.01.03.01.01.09.43.06.36 Management Self-Assessment BY-106			
SS23436A	46	09NOV00	18JAN01
1.01.03.01.01.09.43.06.49 Test (OTP) SW Control System for BY-106			
SS23449B1	20	05JUL00	01AUG00
SS23449B2	10	02AUG00	15AUG00
SS23449B3	5	19DEC00	27DEC00
SS23449B4	5	28DEC00	04JAN01
SS23449B5	5	05JAN01	11JAN01

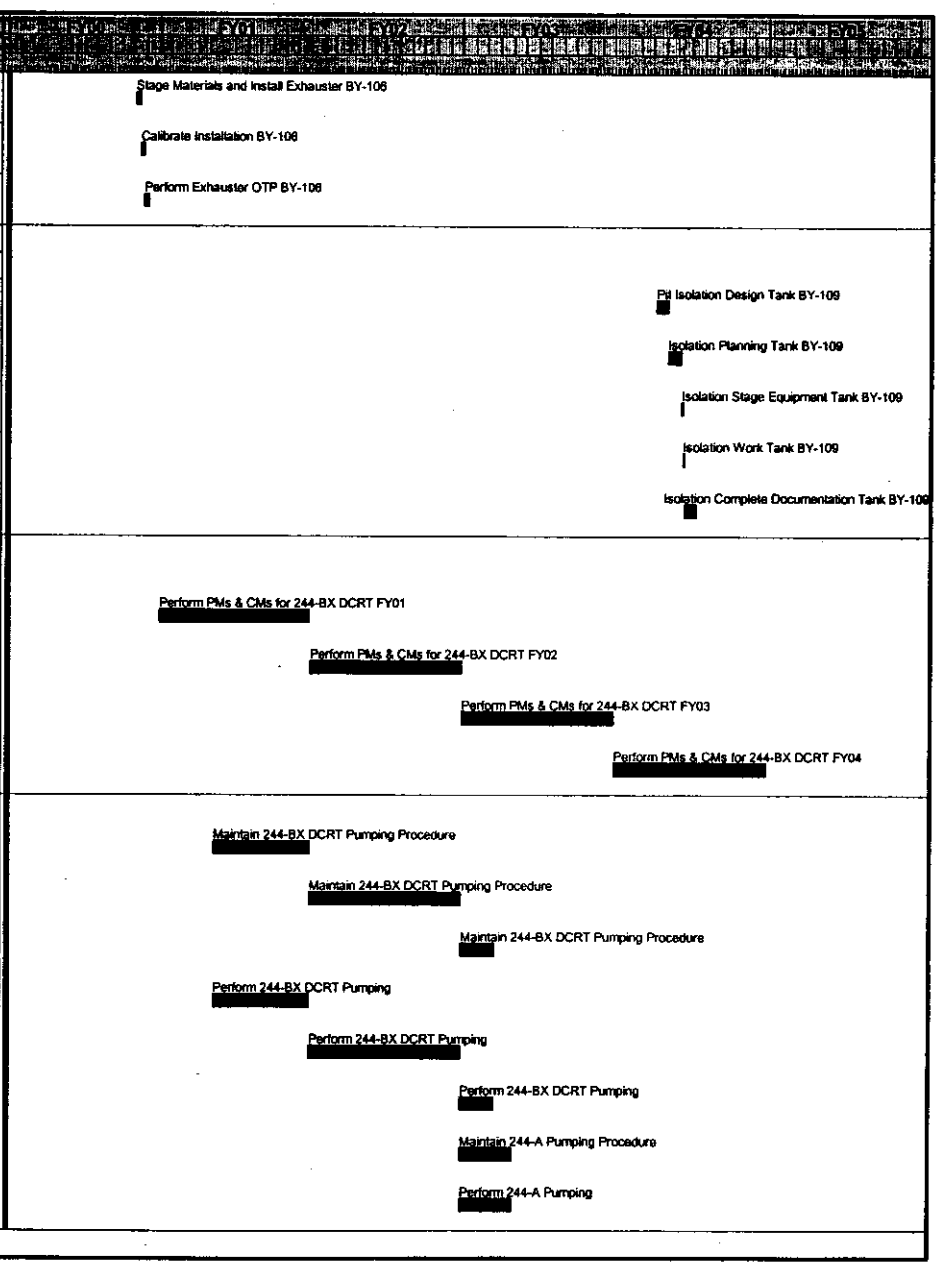


1.01.03.01.01.09.43.06.54 Initial Waste Capb Assmts BY-106				
SS23454A	30	05JUL00	15AUG00	Review/Verify Profile Sht Compl Initial BY-106
SS23454B	14	27JUL00	15AUG00	Write Supporting Document Initial BY-106
1.01.03.01.01.09.43.06.55 Install/Test FGMs BY-106				
SS23455D1	35	19JUL00	06SEP00	Prepare Installation ECN for FGM (1) BY-106
SS23455E1	10	07SEP00	20SEP00	Prepare Work Package for FGM Install (1) BY-106
SS23455E2	20	19DEC00	18JAN01	Install Flammable Gas Monitor (FGM) (1) BY-106
SS23455E3	5	19JAN01	25JAN01	Perf Flam Gas Monitor(FGM) Calibrtn (1) BY-106
SS23455F1	5	26JAN01	01FEB01	Perf FGM Oper'l Test Procedure (OTP) (1) BY-106
1.01.03.01.01.09.43.06.60 Initial Hydro Test Transfer Line BY-106				
SS23460A	20	19JUL00	15AUG00	Plan WP for Hydro BY-106
SS23460B	2	16AUG00	17AUG00	Stage Equipment for Hydro Test BY-106
SS23460C1	5	18AUG00	24AUG00	Install Jumpers / Set Up for Hydro Test BY-106
SS23460D1	5	18OCT00	24OCT00	Perform Hydro Test (1 Seg) BY-106
SS23460E1	5	25OCT00	31OCT00	Restore After Hydro Test (1 Seg) BY-106
1.01.03.01.01.09.43.06.66 Repair Transfer Line for BY-106/BY-105				
SS23466A	3	05JUL00	07JUL00	Walkdown for Repair Xfr Line (OGT) BY-105/106
SS23466B	15	10JUL00	28JUL00	Design Xfr Line Repair Installation BY-105/106
SS23466D	20	31JUL00	25AUG00	Plan WP for Xfr Line Repair BY-105/106
SS23466G	24	28AUG00	29SEP00	Perform Xfr Line Repair for BY-105/106
SS23466G1	7	02OCT00	10OCT00	Perform Xfr Line Repair for BY-105/106
SS23466J	5	11OCT00	17OCT00	Perform Field Hydro Test OGT BY-105/106
1.01.03.01.01.09.43.06.74 BY-106 Annual Hydro Test				
SS23474A1	15	01OCT01*	19OCT01	Plan WP for 1st Annual Hydro BY-106
SS23474A2	2	01OCT01	02OCT01	Stage Equip for 1st Annual Hydro BY-106

SS23474A3	3	22OCT01	24OCT01
SS23474A4	3	25OCT01	29OCT01
SS23474B1	11	16SEP02	30SEP02
SS23474B2	2	16SEP02	17SEP02
SS23474B3	3	01OCT02	03OCT02
SS23474B4	3	04OCT02	08OCT02
1.01.03.01.01.09.43.06.78 Post Equip Discn/Staging BY-106			
SS23478A1	10	07MAY03	20MAY03
SS23478A2	1	21MAY03	21MAY03
SS23478B1	60	21MAY03	14AUG03
SS23478B2	2	22MAY03	23MAY03
SS23478B3	15	15AUG03	05SEP03
SS23478C1	17	08SEP03	30SEP03
SS23478C2	15	01OCT03	21OCT03
SS23478D1	3	08SEP03	10SEP03
SS23478D2	15	22OCT03	11NOV03
1.01.03.01.01.09.43.06.83 Annual Waste Capb Assmts BY-106			
SS23483C	10	02JUL01	16JUL01
SS23483D	10	02JUL01	16JUL01
SS23483E	10	31MAY02	13JUN02
SS23483F	10	31MAY02	13JUN02
1.01.03.01.01.09.43.06.90 BY-106 Exhauster			
SS23490A	20	05JUL00	01AUG00
SS23490B	10	19JUL00	01AUG00



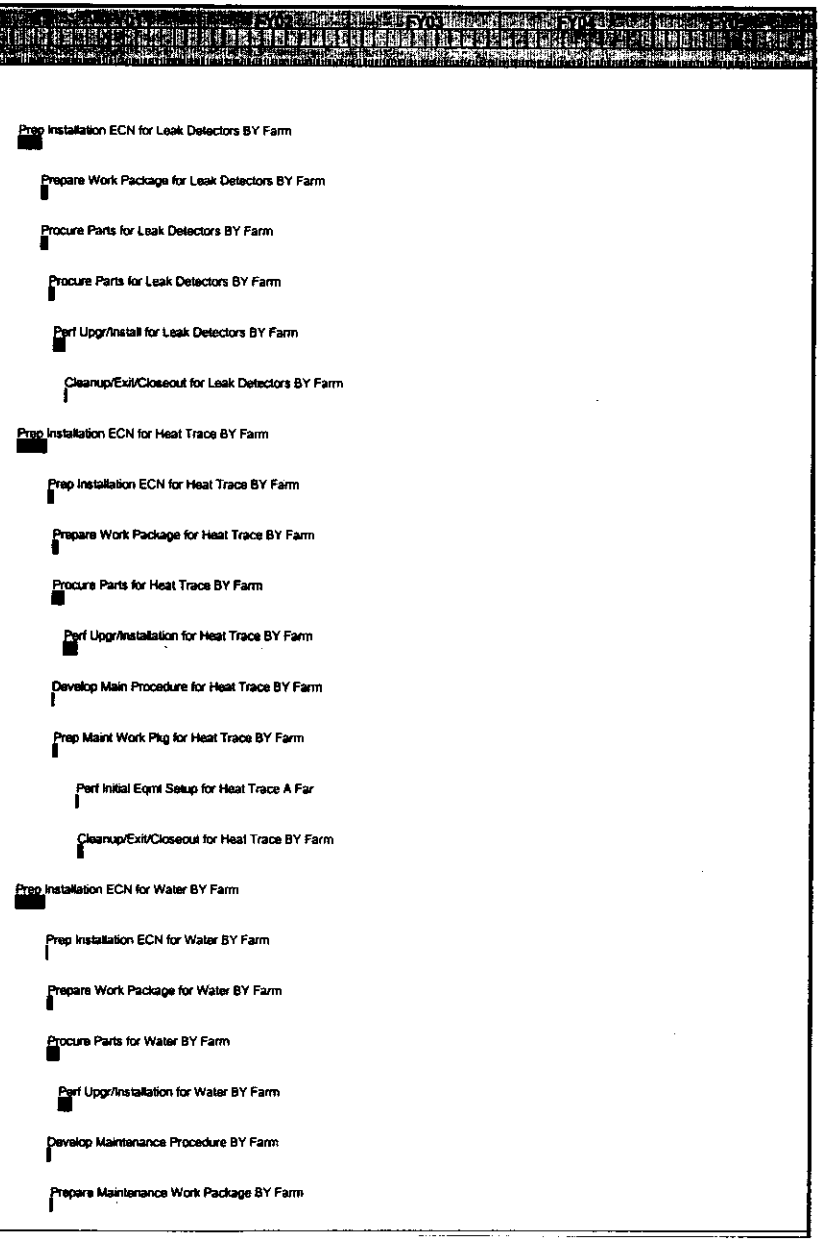
SS23490C	10	02AUG00	15AUG00
SS23490D	4	16AUG00	21AUG00
SS23490E	10	22AUG00	05SEP00
1.01.03.01.01.09.43.09 Stabilize/Isolate Tank BY-109			
1.01.03.01.01.09.43.09.04 BY-109 Isolation			
SS23085D1	20	09JAN04	05FEB04
SS23085D2	20	06FEB04	05MAR04
SS23085D3	2	08MAR04	09MAR04
SS23085D4	5	10MAR04	16MAR04
SS23085D5	20	17MAR04	13APR04
1.01.03.01.01.09.43.30 244-BX/241-BY DCRT			
1.01.03.01.01.09.43.30.32 BX/BY DCRT Maintenance & Operab Checks			
SS23032A2	251	02OCT00	28SEP01
SS23032A3	252	01OCT01	30SEP02
SS23032A4	252	01OCT02	30SEP03
SS23032A5	251	01OCT03	28SEP04
1.01.03.01.01.09.43.30.47 Transfer Contents of BX/BY DCRT to DST			
SS23047A1	233	10FEB01	30SEP01
SS23047A12	365	01OCT01	30SEP02
SS23047A13	78	01OCT02	17DEC02
SS23047A2	233	10FEB01	30SEP01
SS23047A22	365	01OCT01	30SEP02
SS23047A23	78	01OCT02	17DEC02
SS23047F1	124	01OCT02	01FEB03
SS23047F2	124	01OCT02	01FEB03



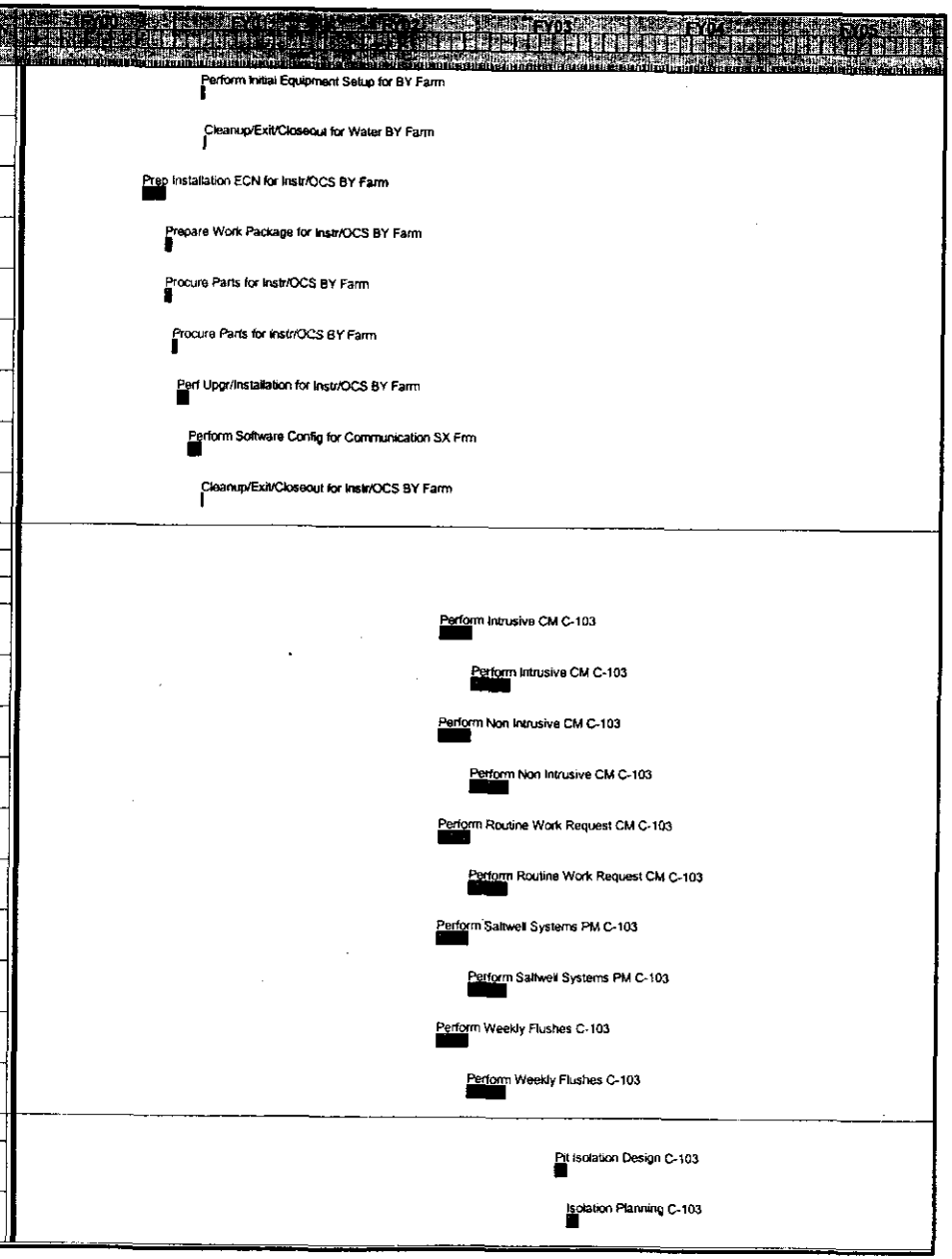
1.01.03.01.01.09.43.50 241-BY Farm Infrastructure Upgrade

1.01.03.01.01.09.43.50.01 241-BY Farm Infrastructure Upgrade

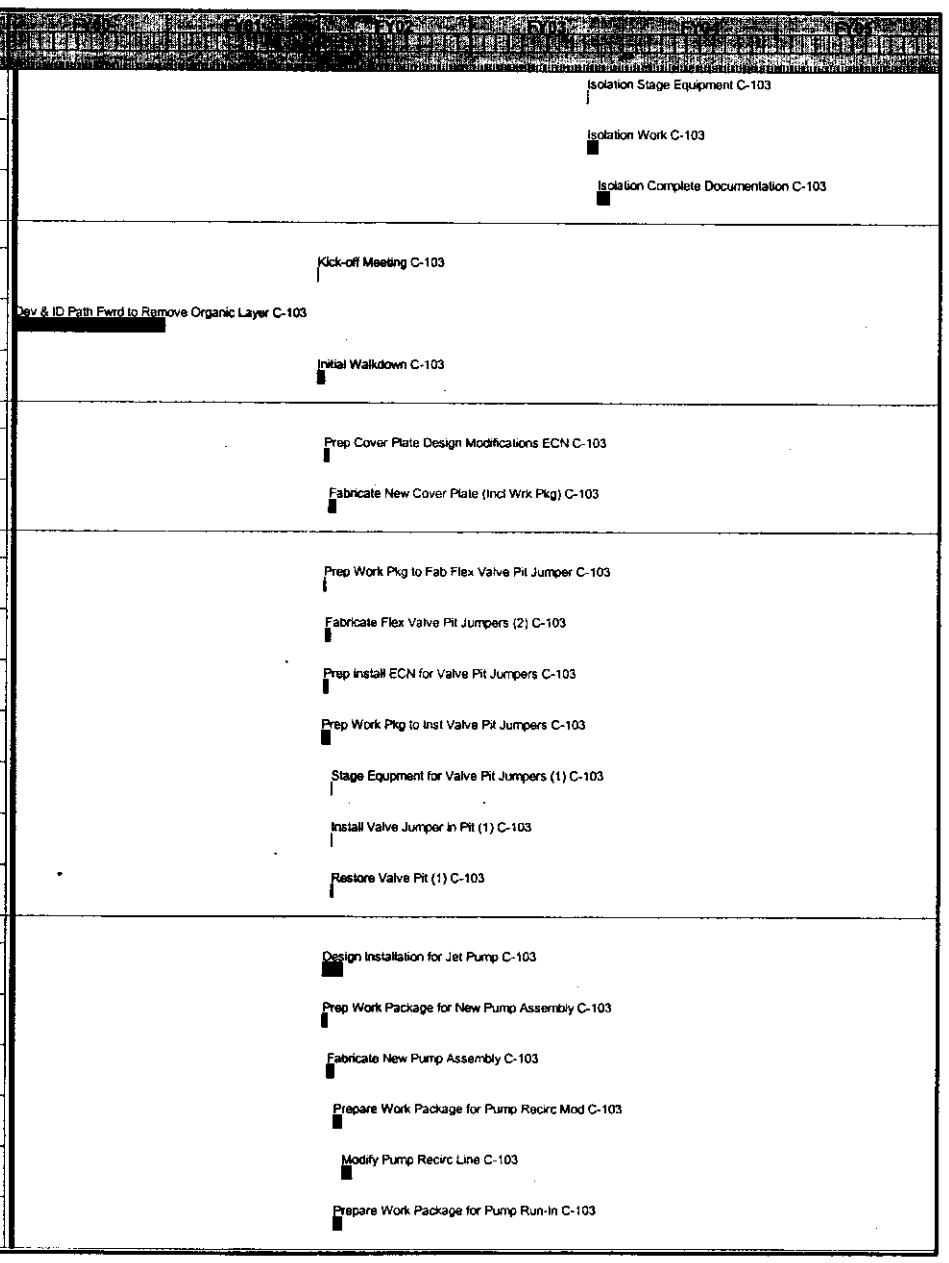
SS23707A1	40	19JUL00	13SEP00
SS23707A2	12	14SEP00	29SEP00
SS23707A3	12	14SEP00	29SEP00
SS23707A31	9	02OCT00	12OCT00
SS23707A4	20	13OCT00	09NOV00
SS23707A8	5	10NOV00	16NOV00
SS23707B1	52	19JUL00	29SEP00
SS23707B12	9	02OCT00	12OCT00
SS23707B2	10	13OCT00	26OCT00
SS23707B3	20	13OCT00	09NOV00
SS23707B4	20	10NOV00	11DEC00
SS23707B5	5	13OCT00	19OCT00
SS23707B6	5	20OCT00	26OCT00
SS23707B7	5	12DEC00	18DEC00
SS23707B8	5	19DEC00	27DEC00
SS23707D1	52	19JUL00	29SEP00
SS23707D12	4	02OCT00	05OCT00
SS23707D2	10	06OCT00	19OCT00
SS23707D3	20	06OCT00	02NOV00
SS23707D4	20	03NOV00	04DEC00
SS23707D5	5	06OCT00	12OCT00
SS23707D6	5	13OCT00	19OCT00



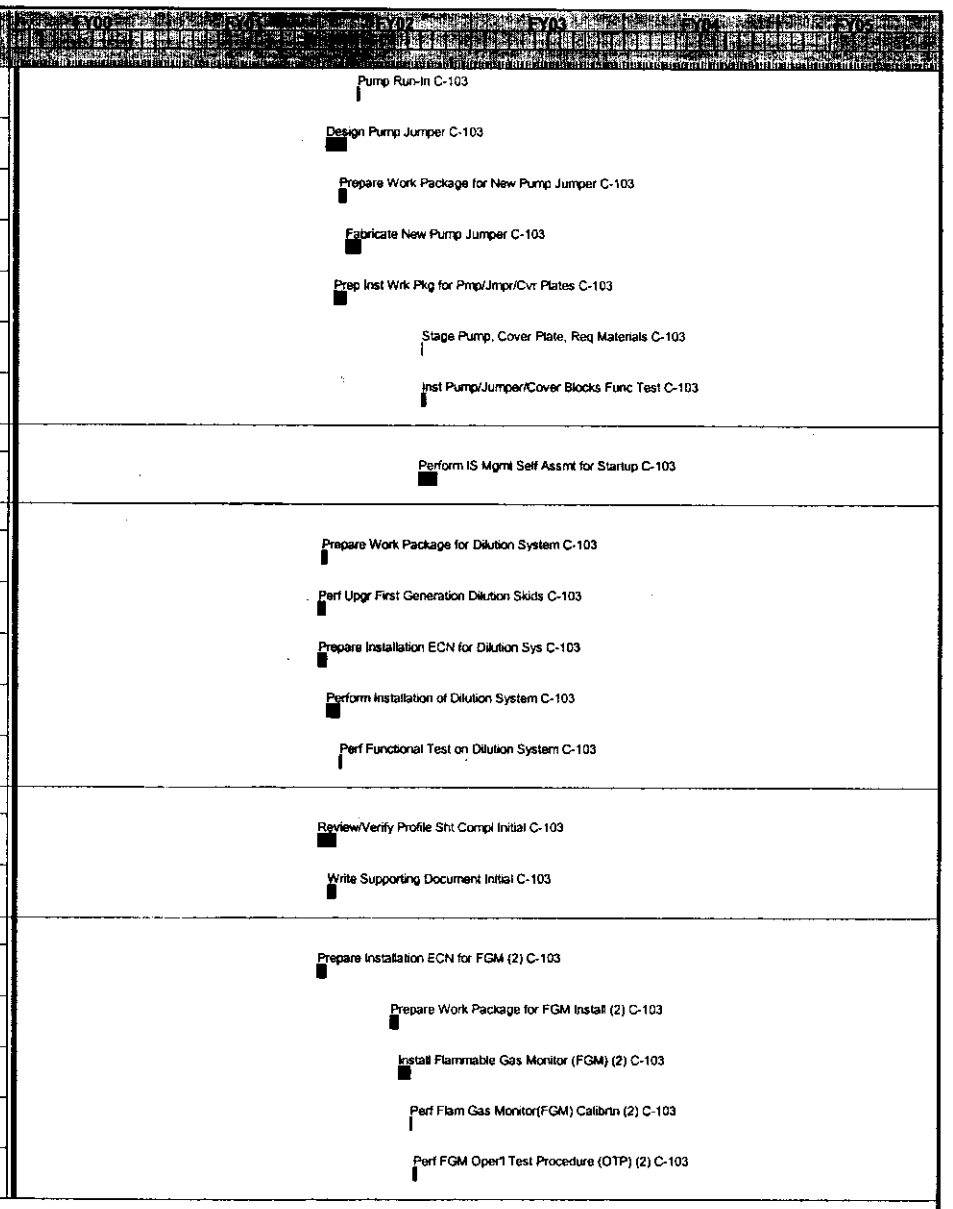
Activity ID	Rem Dur	Early Start	Early Finish
SS23707D7	5	05DEC00	11DEC00
SS23707D8	5	12DEC00	18DEC00
SS23707E1	40	19JUL00	13SEP00
SS23707E2	12	14SEP00	29SEP00
SS23707E3	12	14SEP00	29SEP00
SS23707E31	9	02OCT00	12OCT00
SS23707E4	20	13OCT00	09NOV00
SS23707E7	20	10NOV00	11DEC00
SS23707E8	5	12DEC00	18DEC00
1.01.03.01.01.09.44 SST 241-C Tank Farm Stabilization/Isolation			
1.01.03.01.01.09.44.03 Stabilize/Isolate Tank C-103			
1.01.03.01.01.09.44.03.03 C-103 System Maint/Operability			
SS23568B4	55	15JUL02	30SEP02
SS23568B5	61	01OCT02	30DEC02
SS23568D4	55	15JUL02	30SEP02
SS23568D5	61	01OCT02	30DEC02
SS23568F4	55	15JUL02	30SEP02
SS23568F5	61	01OCT02	30DEC02
SS23568G4	55	15JUL02	30SEP02
SS23568G5	61	01OCT02	30DEC02
SS23568M4	55	15JUL02	30SEP02
SS23568M5	61	01OCT02	30DEC02
1.01.03.01.01.09.44.03.04 C-103 Isolation			
SS23585B1	20	01MAY03	29MAY03
SS23585B2	20	30MAY03	26JUN03



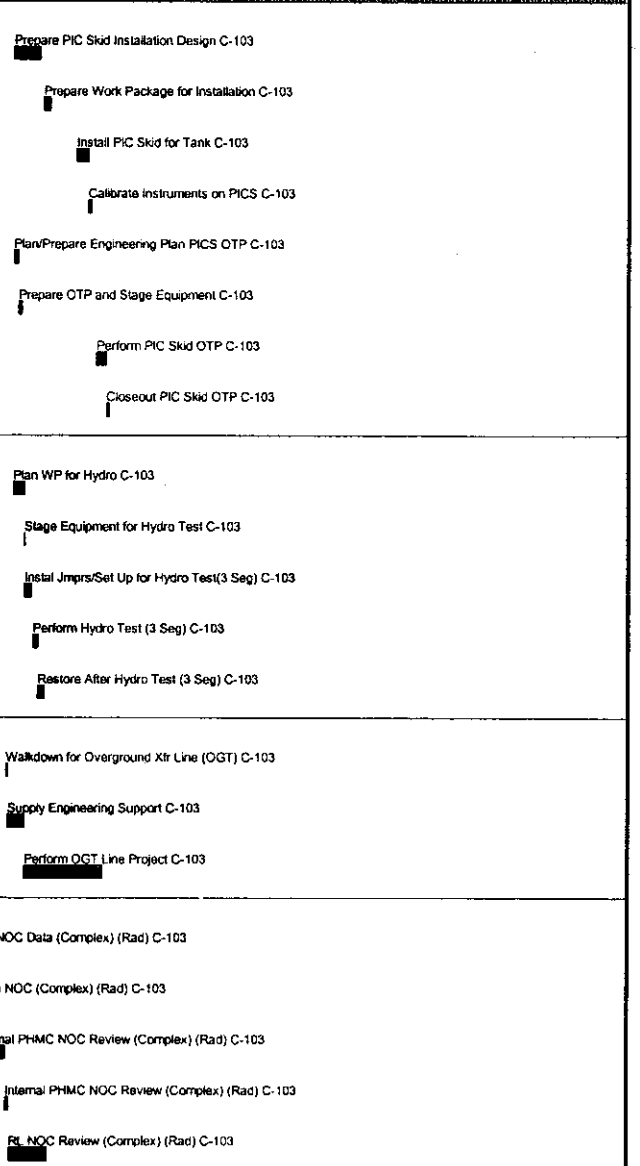
Activity ID	Rem Dur	Early Start	Early Finish
SS23585B3	2	07JUL03	08JUL03
SS23585B4	15	09JUL03	29JUL03
SS23585B5	20	30JUL03	26AUG03
1.01.03.01.01.09.44.03.07 Walkdown C-103			
SS23505A	1	01OCT01	01OCT01
SS23505A1	252	01OCT99	29SEP00
SS23505B	10	02OCT01	15OCT01
1.01.03.01.01.09.44.03.08 Fab/Mod Cover Plates C-103			
SS23508B	10	16OCT01	29OCT01
SS23508C	10	30OCT01	12NOV01
1.01.03.01.01.09.44.03.19 Valve Pit Jumpers C-103			
SS23519B2	5	16OCT01	22OCT01
SS23519CF2	7	23OCT01	31OCT01
SS23519D	10	16OCT01	29OCT01
SS23519E	15	15OCT01	02NOV01
SS23519F1	2	05NOV01	06NOV01
SS23519G1	1	07NOV01	07NOV01
SS23519H1	1	08NOV01	08NOV01
1.01.03.01.01.09.44.03.27 SW Jet Pumps/Jumpers C-103			
SS23527A	35	16OCT01	05DEC01
SS23527B1	10	16OCT01	29OCT01
SS23527B2	10	30OCT01	12NOV01
SS23527C1	15	13NOV01	05DEC01
SS23527C2	15	06DEC01	28DEC01
SS23527D1	15	13NOV01	05DEC01



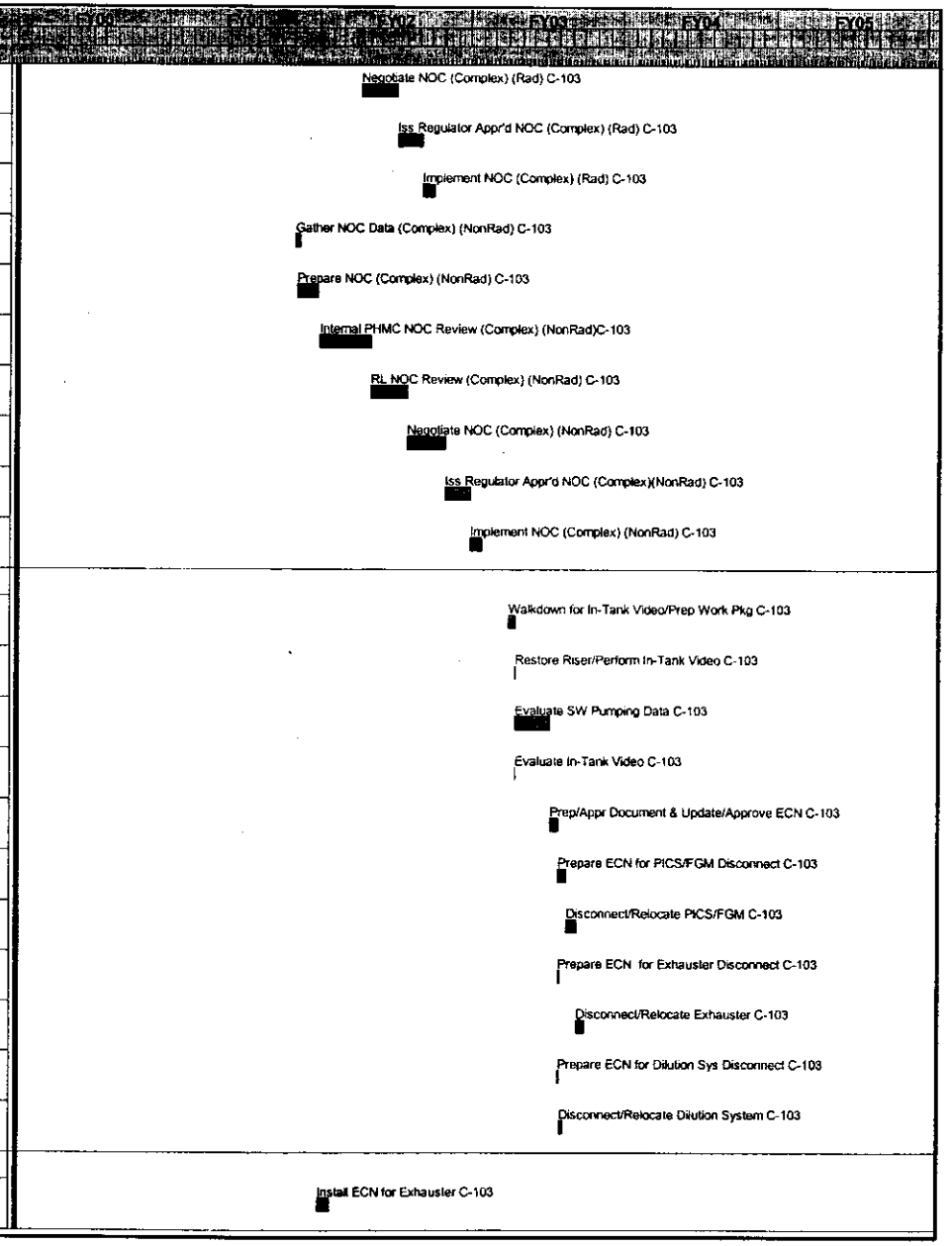
Activity ID	Rem Dur	Early Start	Early Finish
SS23527D2	3	31DEC01	03JAN02
SS23527E	35	16OCT01	05DEC01
SS23527F1	10	20NOV01	05DEC01
SS23527F2	20	06DEC01	07JAN02
SS23527H	20	06NOV01	05DEC01
SS23527J	2	05JUN02	06JUN02
SS23527K	4	07JUN02	12JUN02
1.01.03.01.01.09.44.03.36 Management Self-Assessment C-103			
SS23536A	30	31MAY02	12JUL02
1.01.03.01.01.09.44.03.42 Install/Test C-103 Waste Dilution System			
SS23542C	10	09OCT01	22OCT01
SS23542E	10	02OCT01	15OCT01
SS23542F	15	02OCT01	22OCT01
SS23542G	21	23OCT01	20NOV01
SS23542H	2	21NOV01	26NOV01
1.01.03.01.01.09.44.03.54 Initial Waste Capb Assmts C-103			
SS23554A	30	02OCT01	12NOV01
SS23554B	14	24OCT01	12NOV01
1.01.03.01.01.09.44.03.55 Install/Test FGMs C-103			
SS23555D2	15	02OCT01	22OCT01
SS23555E4	15	26MAR02	15APR02
SS23555E5	20	16APR02	13MAY02
SS23555E6	4	14MAY02	17MAY02
SS23555F2	6	20MAY02	28MAY02



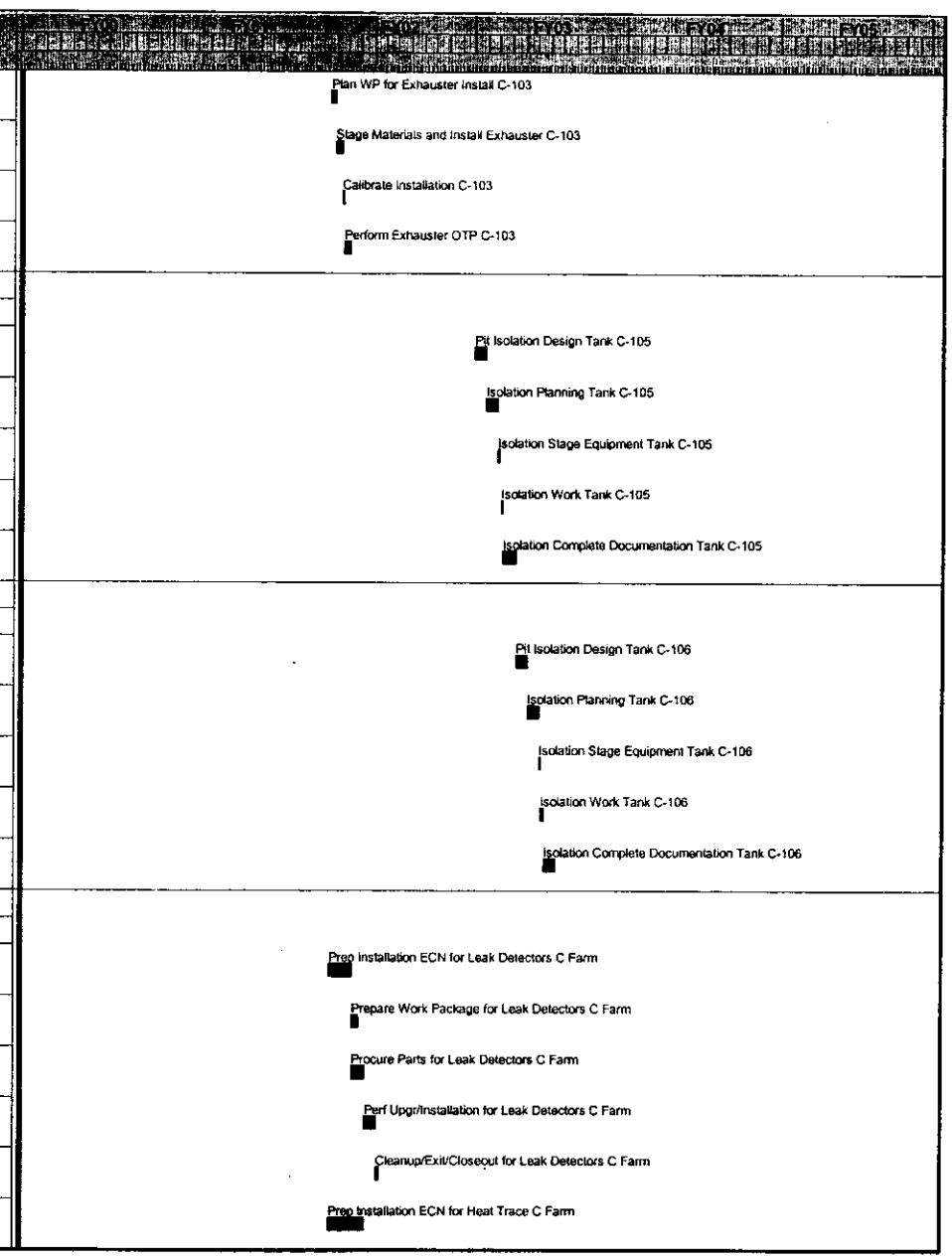
Activity ID	Rem Dur	Start	Finish
1.01.03.01.01.09.44.03.57 PIC Skids C-103			
SS23557D	45	16OCT01	19DEC01
SS23557E1	10	28DEC01	11JAN02
SS23557E2	20	20MAR02	16APR02
SS23557E3	5	17APR02	23APR02
SS23557F1	10	16OCT01	29OCT01
SS23557F2	5	30OCT01*	05NOV01
SS23557F3	15	07MAY02	28MAY02
SS23557F4	5	29MAY02	04JUN02
1.01.03.01.01.09.44.03.60 Initial Hydro Test Transfer Line C-103			
SS23560A	20	16OCT01	12NOV01
SS23560B	2	13NOV01	14NOV01
SS23560C3	10	15NOV01	30NOV01
SS23560D3	10	03DEC01	14DEC01
SS23560E3	10	17DEC01	02JAN02
1.01.03.01.01.09.44.03.66 Install C-103 Transfer Line Route			
SS23566A	3	02OCT01	04OCT01
SS23566B	30	05OCT01	15NOV01
SS23566C	126	16NOV01	20MAY02
1.01.03.01.01.09.44.03.75 Dev/Implement C-103 NOCs			
SS23575C1	10	01JUN01*	14JUN01
SS23575C2	27	08JUN01	17JUL01
SS23575C3	75	18JUL01	30SEP01
SS23575C31	9	01OCT01	09OCT01
SS23575C4	90	10OCT01	07JAN02



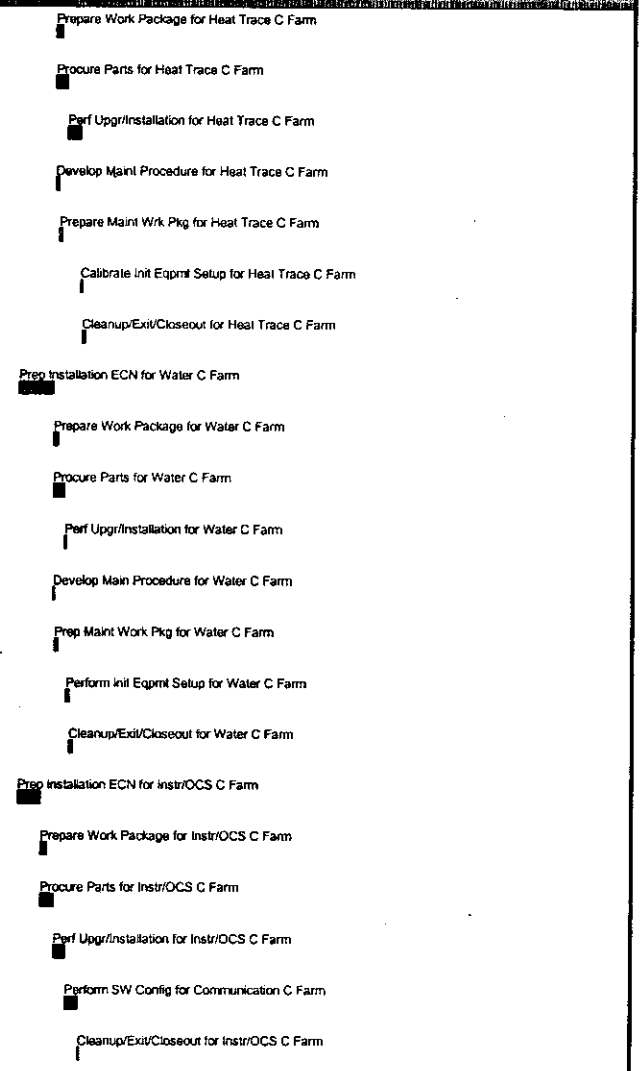
Activity ID	Rem Dur	Early Start	Early Finish
SS23575C5	90	08JAN02	07APR02
SS23575C6	60	08APR02	06JUN02
SS23575C7	20	07JUN02	05JUL02
SS23575CA	10	01AUG01*	14AUG01
SS23575CB	37	08AUG01	28SEP01
SS23575CC	84	01OCT01	31JAN02
SS23575CD	90	01FEB02	01MAY02
SS23575CE	90	02MAY02	30JUL02
SS23575CF	62	31JUL02	30SEP02
SS23575CG	20	01OCT02	28OCT02
1.01.03.01.01.09.44.03.78 Post Equip Discn/Staging C-103			
SS23578A1	10	31DEC02	14JAN03
SS23578A2	1	15JAN03	15JAN03
SS23578B1	60	15JAN03	09APR03
SS23578B2	2	16JAN03	17JAN03
SS23578B3	15	10APR03	30APR03
SS23578C1	15	01MAY03	21MAY03
SS23578C2	15	22MAY03	12JUN03
SS23578D1	3	01MAY03	05MAY03
SS23578D2	15	13JUN03	03JUL03
SS23578E1	3	01MAY03	05MAY03
SS23578E2	5	06MAY03	12MAY03
1.01.03.01.01.09.44.03.90 C-103 Exhauster			
SS23590A	20	02OCT01	29OCT01



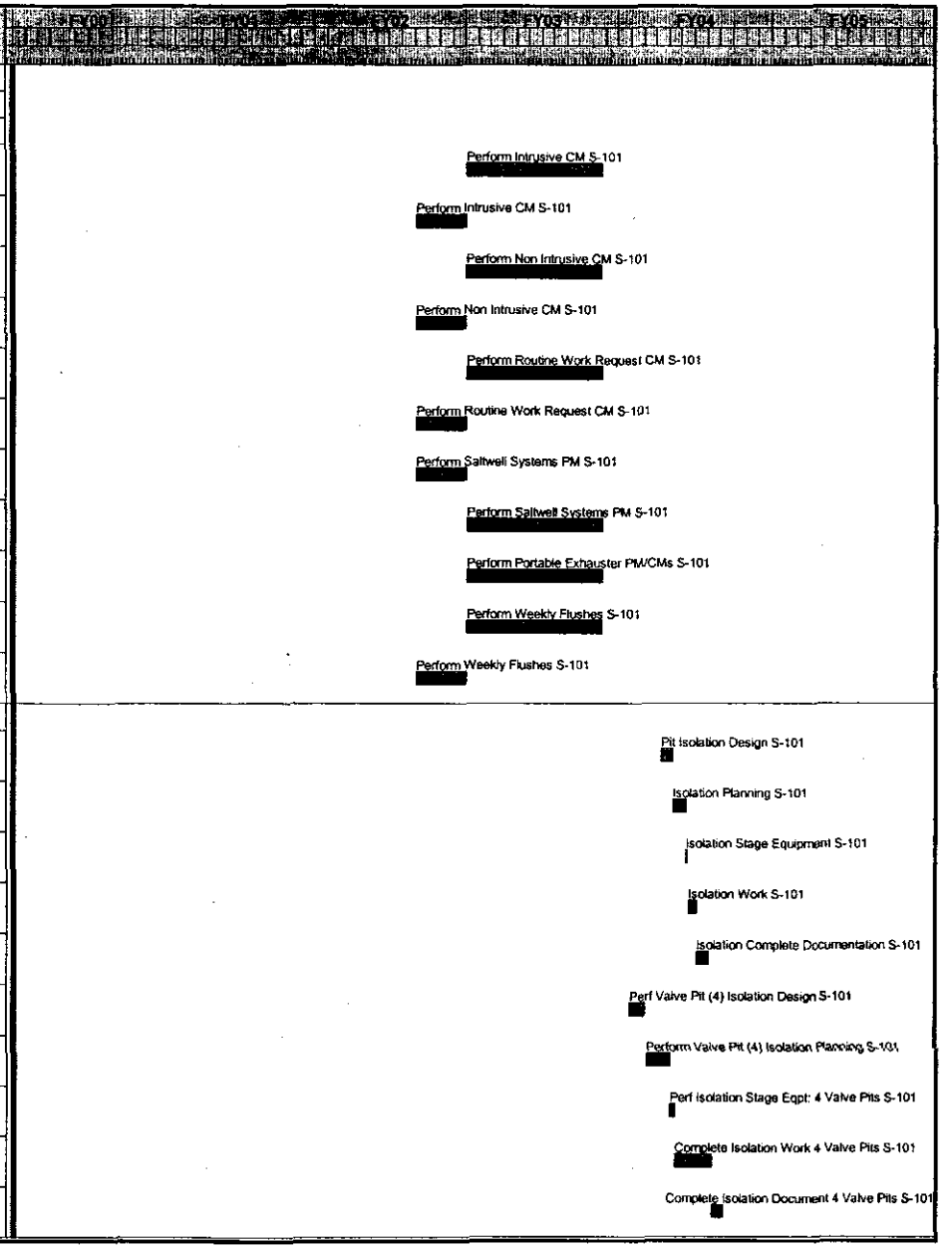
Activity ID	Rem Dur	Early Start	Early Finish
SS23590B	10	16OCT01	29OCT01
SS23590C	10	30OCT01	12NOV01
SS23590D	4	13NOV01	16NOV01
SS23590E	10	19NOV01	04DEC01
1.01.03.01.01.09.44.05 Stabilize/Isolate Tank C-105			
1.01.03.01.01.09.44.05.04 C-105 Isolation			
SS23085E1	20	01OCT02*	28OCT02
SS23085E2	20	29OCT02	25NOV02
SS23085E3	2	26NOV02	27NOV02
SS23085E4	5	02DEC02	06DEC02
SS23085E5	20	09DEC02	08JAN03
1.01.03.01.01.09.44.06 Stabilize/Isolate Tank C-106			
1.01.03.01.01.09.44.06.04 C-106 Isolation			
SS23085F1	20	09JAN03*	05FEB03
SS23085F2	20	06FEB03	06MAR03
SS23085F3	2	07MAR03	10MAR03
SS23085F4	5	11MAR03	17MAR03
SS23085F5	20	18MAR03	14APR03
1.01.03.01.01.09.44.50 241-C Farm Infrastructure Upgrade			
1.01.03.01.01.09.44.50.01 241-C Farm Infrastructure Upgrade			
SS23717A1	40	16OCT01	12DEC01
SS23717A2	10	13DEC01	28DEC01
SS23717A3	20	13DEC01	14JAN02
SS23717A4	20	15JAN02	11FEB02
SS23717A8	5	12FEB02	19FEB02
SS23717B1	60	16OCT01	14JAN02



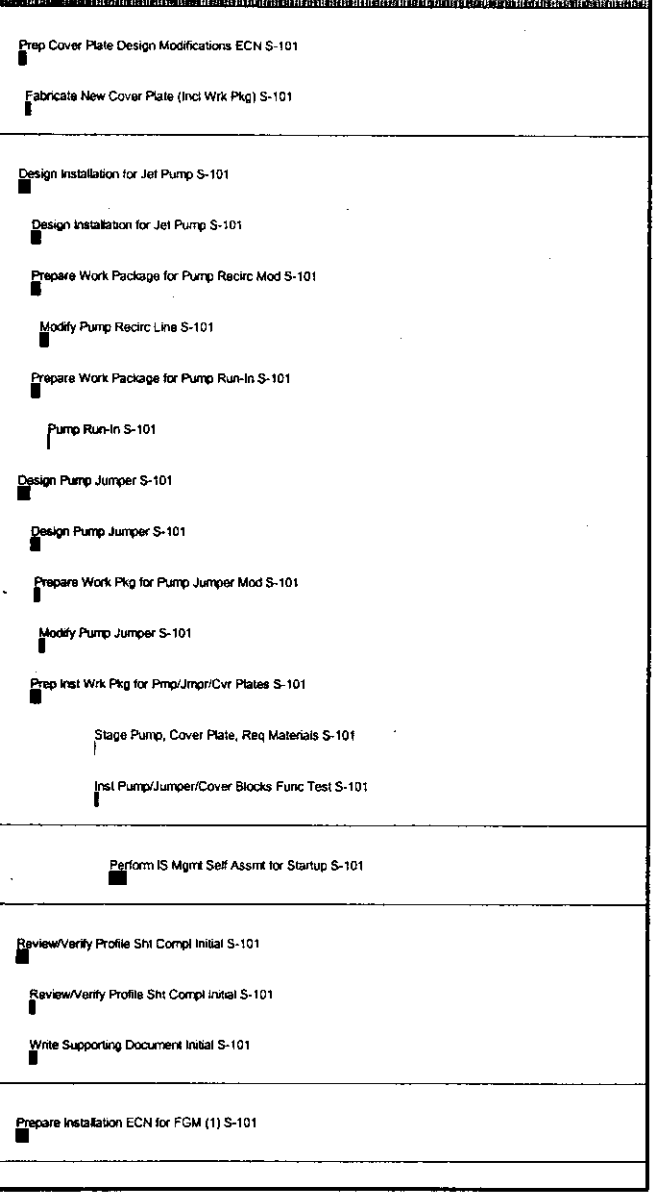
Activity ID	Orig Dur	Start	Finish
SS23717B2	10	15JAN02	28JAN02
SS23717B3	20	15JAN02	11FEB02
SS23717B4	20	12FEB02	12MAR02
SS23717B5	5	15JAN02	21JAN02
SS23717B6	5	22JAN02	28JAN02
SS23717B7	5	13MAR02	19MAR02
SS23717B8	5	20MAR02	26MAR02
SS23717D1	55	16OCT01	07JAN02
SS23717D2	10	08JAN02	21JAN02
SS23717D3	20	08JAN02	04FEB02
SS23717D4	5	05FEB02	11FEB02
SS23717D5	5	08JAN02	14JAN02
SS23717D6	5	15JAN02	21JAN02
SS23717D7	5	12FEB02	19FEB02
SS23717D8	5	20FEB02	26FEB02
SS23717E1	40	16OCT01	12DEC01
SS23717E2	10	13DEC01	28DEC01
SS23717E3	20	13DEC01	14JAN02
SS23717E4	20	15JAN02	11FEB02
SS23717E7	20	12FEB02	12MAR02
SS23717E8	5	13MAR02	19MAR02



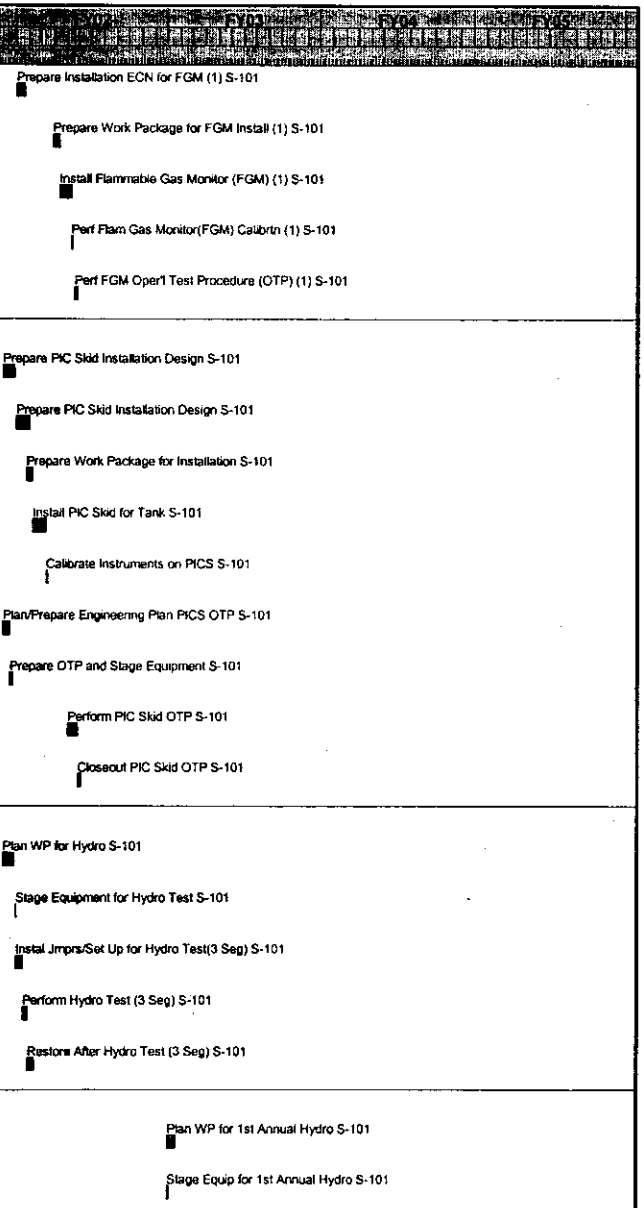
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.45 SST 241-S Tank Farm Stabilization/Isolation			
1.01.03.01.01.09.45.01 Stabilize/Isolate Tank S-101			
1.01.03.01.01.09.45.01.03 S-101 System Maint/Operability			
SS23A68A5	222	01OCT02	18AUG03
SS23A68B4	84	03JUN02	30SEP02
SS23A68C5	222	01OCT02	18AUG03
SS23A68D4	84	03JUN02	30SEP02
SS23A68E5	222	01OCT02	18AUG03
SS23A68F4	84	03JUN02	30SEP02
SS23A68G4	84	03JUN02	30SEP02
SS23A68G5	222	01OCT02	18AUG03
SS23A68H5	222	01OCT02	18AUG03
SS23A68J5	222	01OCT02	18AUG03
SS23A68L4	84	03JUN02	30SEP02
1.01.03.01.01.09.45.01.04 S-101 Isolation			
SS23A85B1	20	09JAN04	05FEB04
SS23A85B2	20	06FEB04	05MAR04
SS23A85B3	2	08MAR04	09MAR04
SS23A85B4	15	10MAR04	30MAR04
SS23A85B5	20	31MAR04	27APR04
SS23A85D1	26	22OCT03	26NOV03
SS23A85D2	40	01DEC03	28JAN04
SS23A85D3	8	29JAN04	09FEB04
SS23A85D4	60	10FEB04	04MAY04
SS23A85D5	20	05MAY04	02JUN04



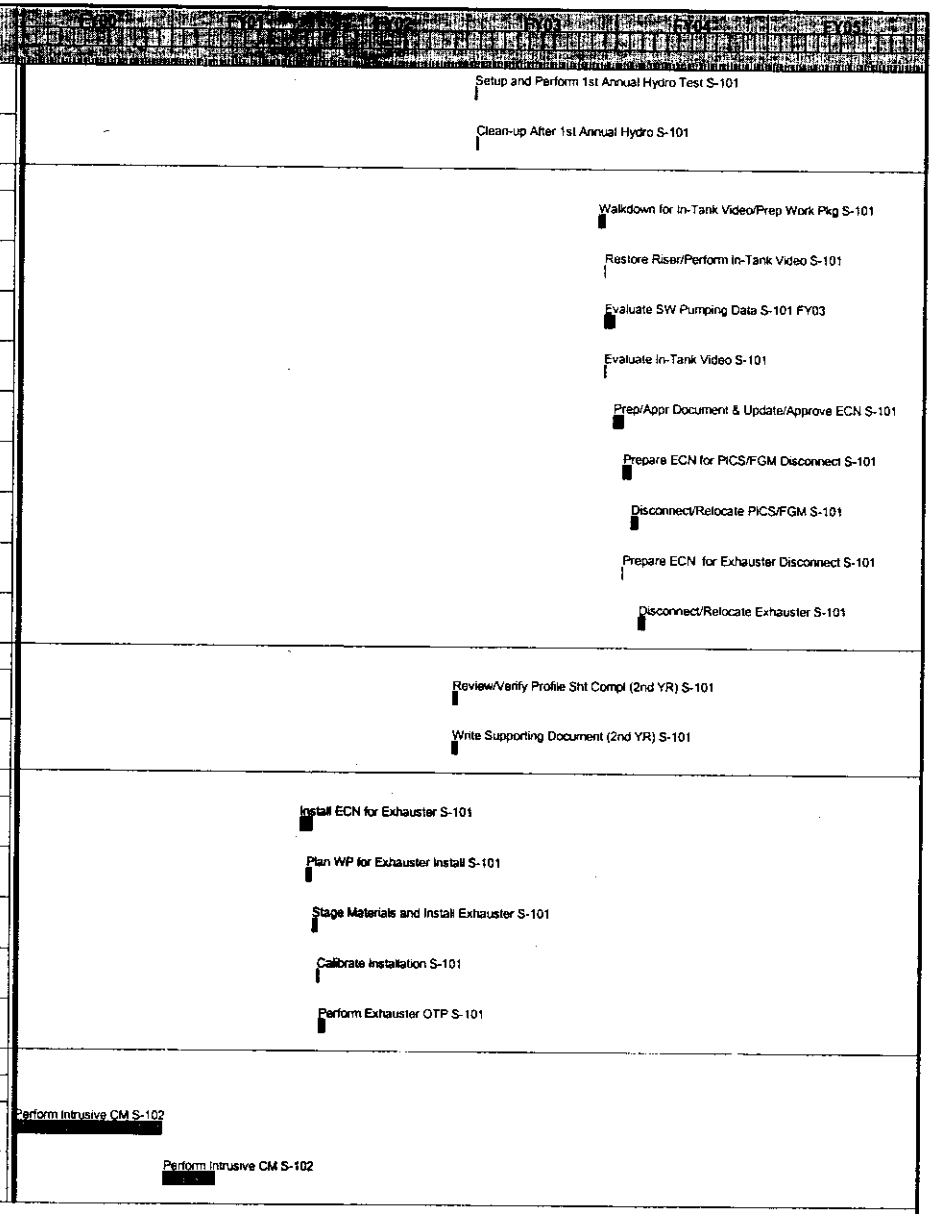
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.45.01.08 Fab/Mod Cover Plates S-101			
SS23A08B	10	31AUG01	14SEP01
SS23A08C	10	17SEP01	28SEP01
1.01.03.01.01.09.45.01.27 SW Jet Pumps/Jumpers S-101			
SS23A27A	20	31AUG01	28SEP01
SS23A27A2	15	01OCT01	19OCT01
SS23A27C1	15	01OCT01	19OCT01
SS23A27C2	15	22OCT01	09NOV01
SS23A27D1	15	01OCT01	19OCT01
SS23A27D2	3	12NOV01	14NOV01
SS23A27E	20	31AUG01	28SEP01
SS23A27E2	15	01OCT01	19OCT01
SS23A27G1	10	08OCT01	19OCT01
SS23A27G2	10	22OCT01	02NOV01
SS23A27H	20	01OCT01*	26OCT01
SS23A27J	2	05MAR02	06MAR02
SS23A27K	4	07MAR02	12MAR02
1.01.03.01.01.09.45.01.36 Management Self-Assessment S-101			
SS23A36A	30	11APR02	22MAY02
1.01.03.01.01.09.45.01.54 Initial Waste Capb Assmts S-101			
SS23A54A	20	31AUG01	28SEP01
SS23A54A2	10	01OCT01	12OCT01
SS23A54B	14	01OCT01	18OCT01
1.01.03.01.01.09.45.01.55 Install/Test FGMs S-101			
SS23A55D1	20	31AUG01	28SEP01



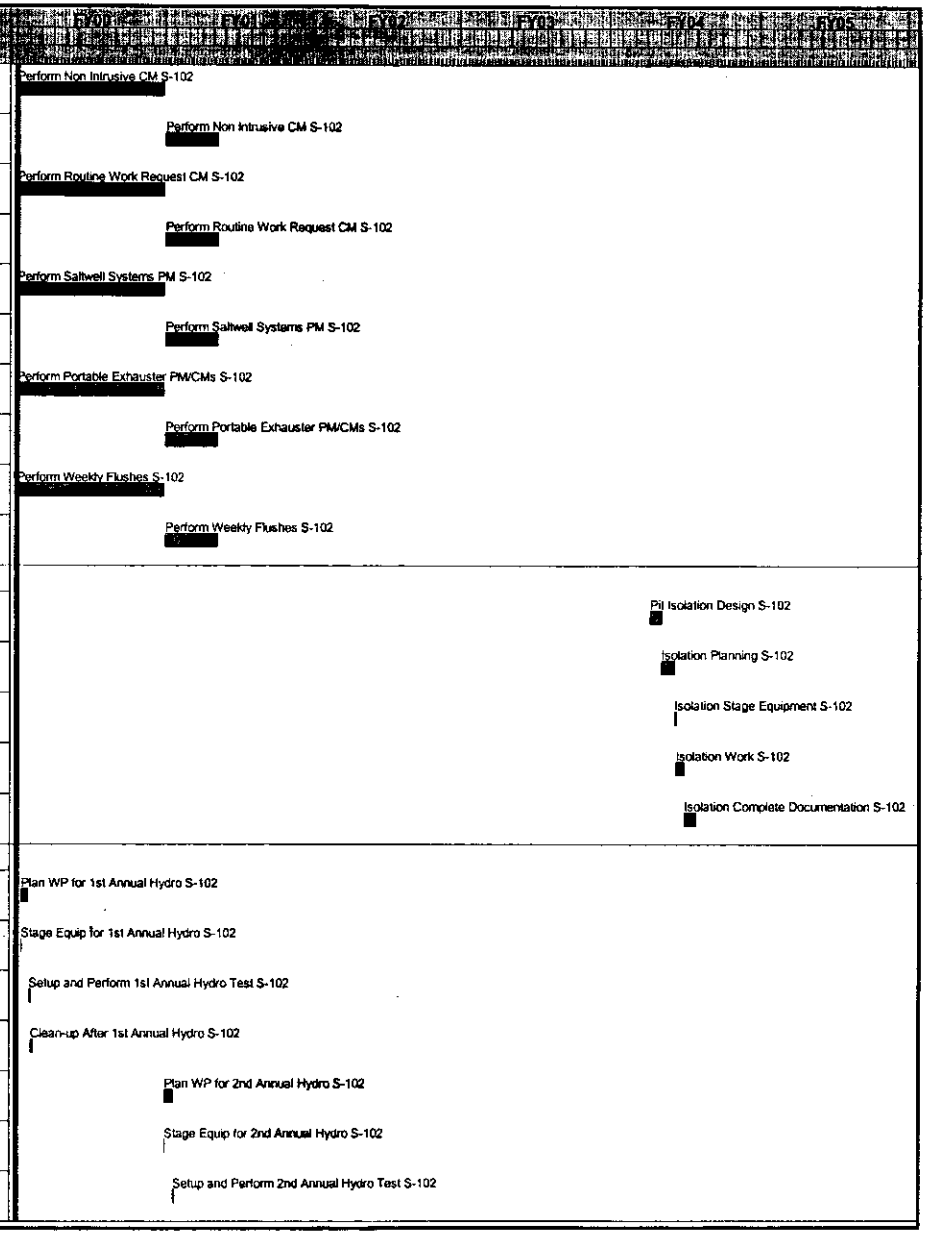
Activity ID	Rem Dur	Early Start	Early Finish
SS23A55D2	15	01OCT01	19OCT01
SS23A55E1	10	28DEC01	11JAN02
SS23A55E2	20	14JAN02	08FEB02
SS23A55E3	5	11FEB02	15FEB02
SS23A55F1	5	19FEB02	25FEB02
1.01.03.01.01.09.45.01.57 PIC Skids S-101			
SS23A57D	20	31AUG01	28SEP01
SS23A57D2	25	01OCT01	02NOV01
SS23A57E1	10	26OCT01	08NOV01
SS23A57E2	20	09NOV01	10DEC01
SS23A57E3	5	11DEC01	17DEC01
SS23A57F1	10	31AUG01	14SEP01
SS23A57F2	5	17SEP01	21SEP01
SS23A57F3	15	04FEB02	25FEB02
SS23A57F4	5	26FEB02	04MAR02
1.01.03.01.01.09.45.01.60 Initial Hydro Test Transfer Line S-101			
SS23A60A	20	31AUG01	28SEP01
SS23A60B	2	01OCT01	02OCT01
SS23A60C3	10	03OCT01	16OCT01
SS23A60D3	10	17OCT01	30OCT01
SS23A60E3	10	31OCT01	13NOV01
1.01.03.01.01.09.45.01.74 S-101 Annual Hydro Test			
SS23A74A1	15	01OCT02	21OCT02
SS23A74A2	2	01OCT02	02OCT02



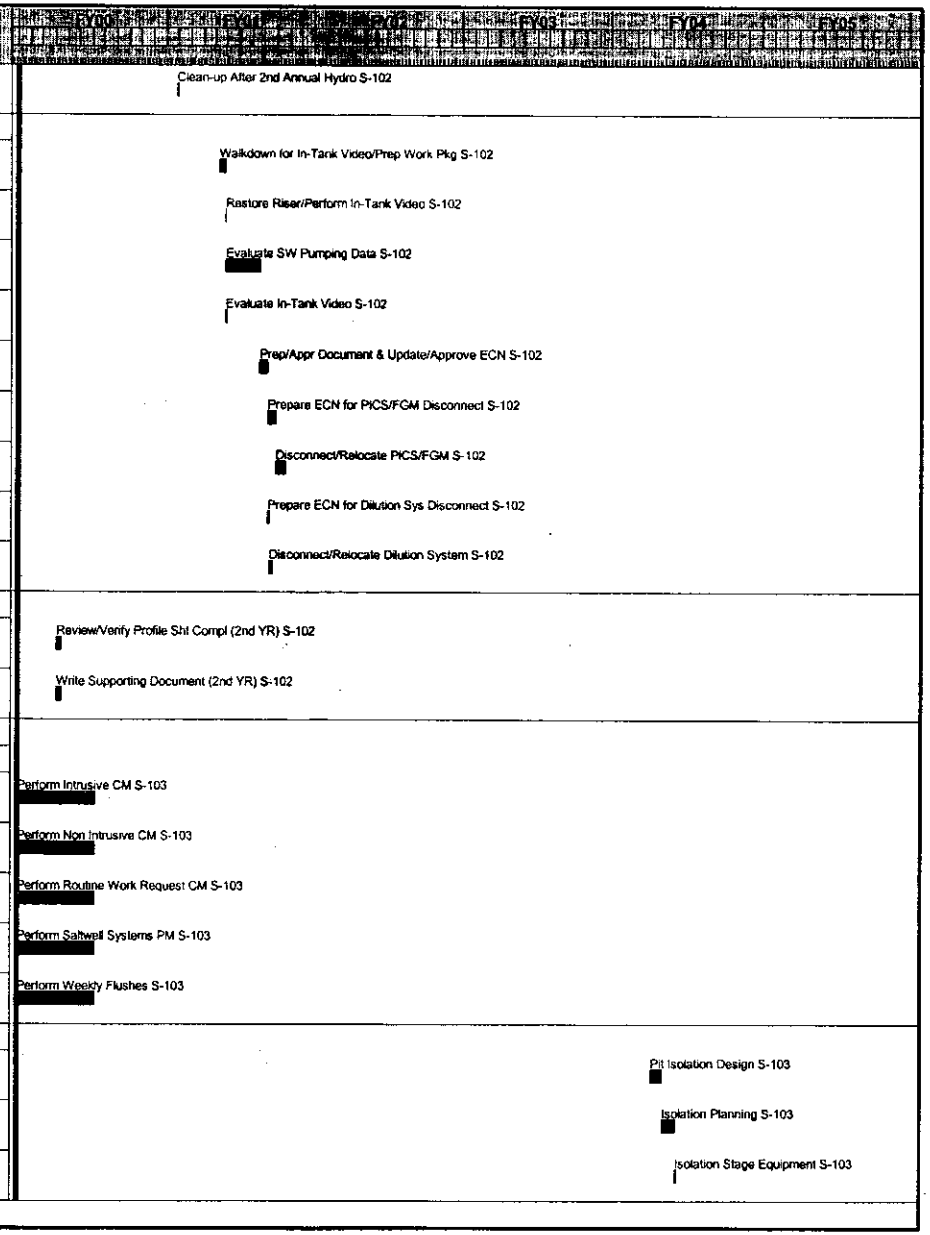
Activity ID	Rem Dur	Early Start	Early Finish
SS23A74A3	3	22OCT02	24OCT02
SS23A74A4	3	25OCT02	29OCT02
1.01.03.01.01.09.45.01.78 Post Equip Discn/Staging S-101			
SS23A78A1	10	20AUG03	03SEP03
SS23A78A2	1	04SEP03	04SEP03
SS23A78B1	19	04SEP03	30SEP03
SS23A78B2	2	05SEP03	08SEP03
SS23A78B3	15	01OCT03	21OCT03
SS23A78C1	15	22OCT03	11NOV03
SS23A78C2	11	12NOV03	26NOV03
SS23A78D1	3	22OCT03	24OCT03
SS23A78D2	15	01DEC03	19DEC03
1.01.03.01.01.09.45.01.83 Annual Waste Capb Assmts S-101			
SS23A83C	10	05SEP02	18SEP02
SS23A83D	10	05SEP02	18SEP02
1.01.03.01.01.09.45.01.90 S-101 Exhauster			
SS23A90A	20	31AUG01	28SEP01
SS23A90B	10	17SEP01	28SEP01
SS23A90C	10	01OCT01	12OCT01
SS23A90D	4	15OCT01	18OCT01
SS23A90E	10	19OCT01	01NOV01
1.01.03.01.01.09.45.02 Stabilize/Isolate Tank S-102			
1.01.03.01.01.09.45.02.03 S-102 System Maint/Operability			
SS23B68A2	252	01OCT99	29SEP00
SS23B68B3	87	02OCT00	06FEB01



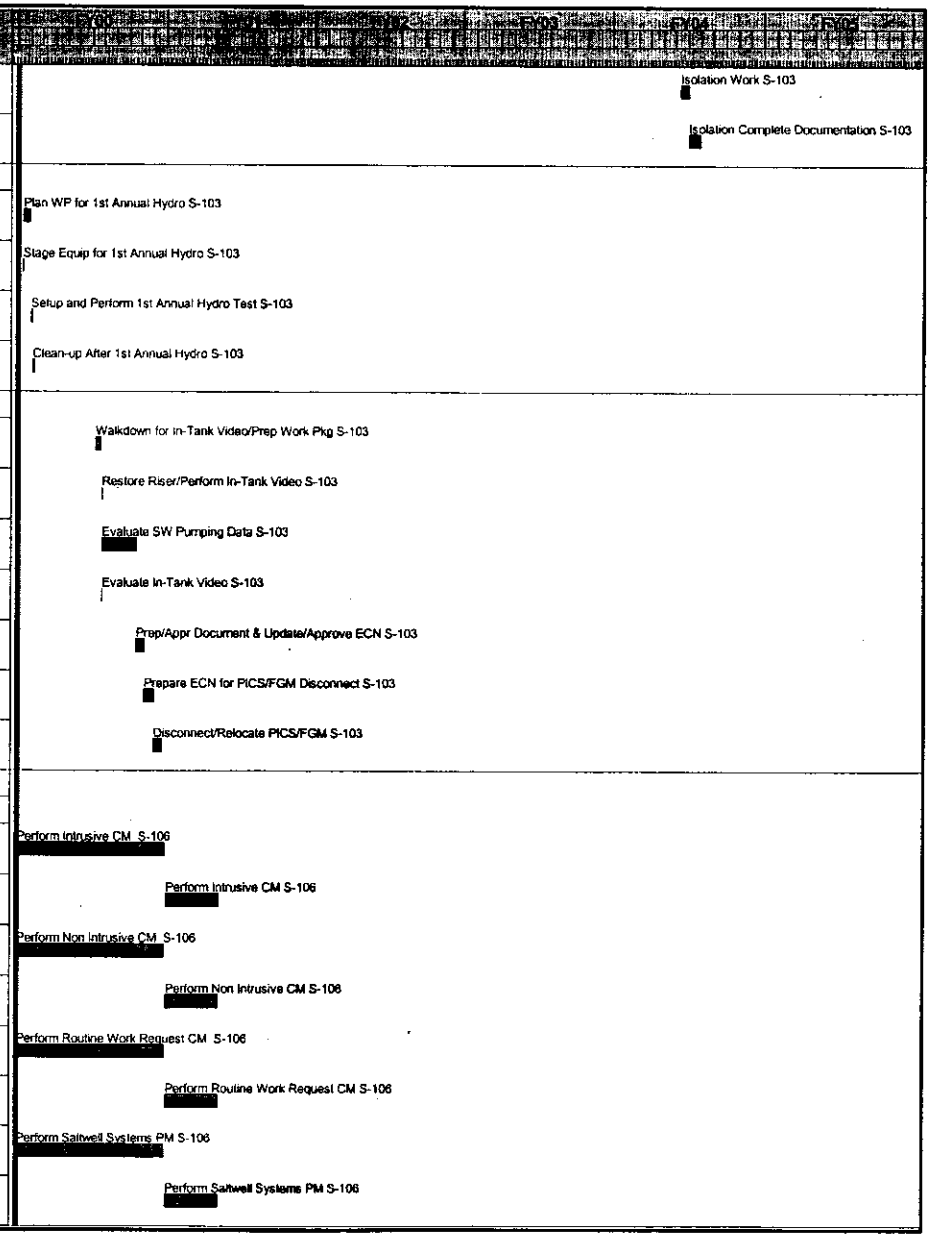
Activity ID	Rem Dur	Early Start	Early Finish
SS23B68C2	252	01OCT99	29SEP00
SS23B68D3	87	02OCT00	06FEB01
SS23B68E2	252	01OCT99	29SEP00
SS23B68F3	87	02OCT00	06FEB01
SS23B68G2	252	01OCT99	29SEP00
SS23B68G3	87	02OCT00	06FEB01
SS23B68H2	252	01OCT99	29SEP00
SS23B68H3	87	02OCT00	06FEB01
SS23B68J2	252	01OCT99	29SEP00
SS23B68M3	87	02OCT00	06FEB01
1.01.03.01.01.09.45.02.04 S-102 Isolation			
SS23B85B1	20	09JAN04*	05FEB04
SS23B85B2	20	06FEB04	05MAR04
SS23B85B3	2	08MAR04	09MAR04
SS23B85B4	15	10MAR04	30MAR04
SS23B85B5	20	31MAR04	27APR04
1.01.03.01.01.09.45.02.74 S-102 Annual Hydro Test			
SS23B74A1	15	11OCT99*	29OCT99
SS23B74A2	2	11OCT99	12OCT99
SS23B74A3	3	01NOV99	03NOV99
SS23B74A4	3	04NOV99	08NOV99
SS23B74B1	15	02OCT00*	20OCT00
SS23B74B2	2	02OCT00	03OCT00
SS23B74B3	3	23OCT00	25OCT00



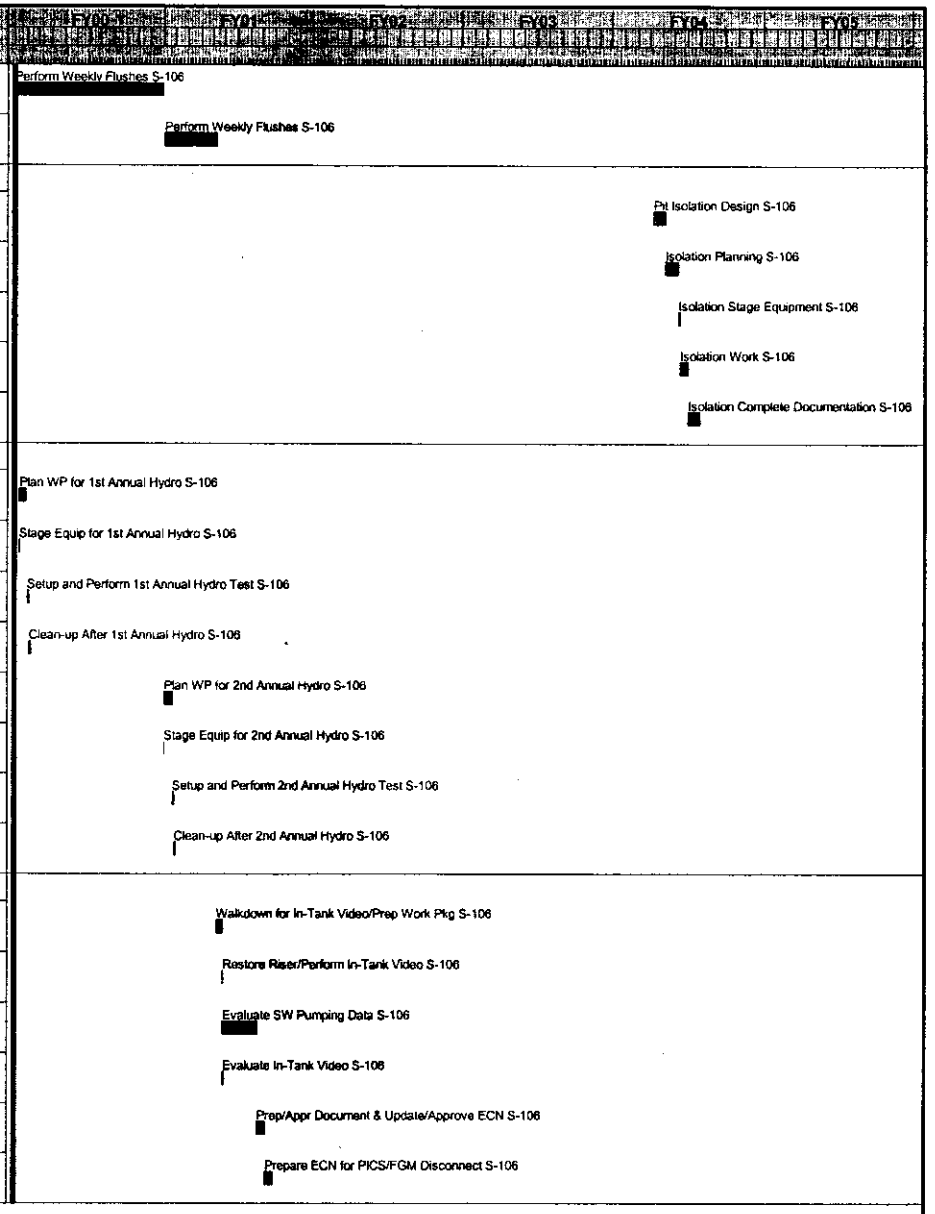
Activity ID	Rem Dur	Early Start	Early Finish
SS23B74B4	3	26OCT00	30OCT00
1.01.03.01.01.09.45.02.78 Post Equip Discn/Staging S-102			
SS23B78A1	10	07FEB01	21FEB01
SS23B78A2	1	22FEB01	22FEB01
SS23B78B1	60	22FEB01	16MAY01
SS23B78B2	2	23FEB01	26FEB01
SS23B78B3	15	17MAY01	07JUN01
SS23B78C1	15	08JUN01	28JUN01
SS23B78C2	15	29JUN01	20JUL01
SS23B78E1	3	08JUN01	12JUN01
SS23B78E2	5	13JUN01	19JUN01
1.01.03.01.01.09.45.02.83 Annual Waste Capb Assmts S-102			
SS23B83C	10	03JAN00*	14JAN00
SS23B83D	10	03JAN00	14JAN00
1.01.03.01.01.09.45.03 Stabilize/Isolate Tank S-103			
1.01.03.01.01.09.45.03.03 S-103 System Maint/Operability			
SS23C68B2	130*	01OCT99	07APR00
SS23C68D2	130	01OCT99	07APR00
SS23C68F2	130	01OCT99	07APR00
SS23C68G2	130	01OCT99	07APR00
SS23C68L2	130	01OCT99	07APR00
1.01.03.01.01.09.45.03.04 S-103 Isolation			
SS23C85B1	20	09JAN04*	05FEB04
SS23C85B2	20	06FEB04	05MAR04
SS23C85B3	2	08MAR04	09MAR04



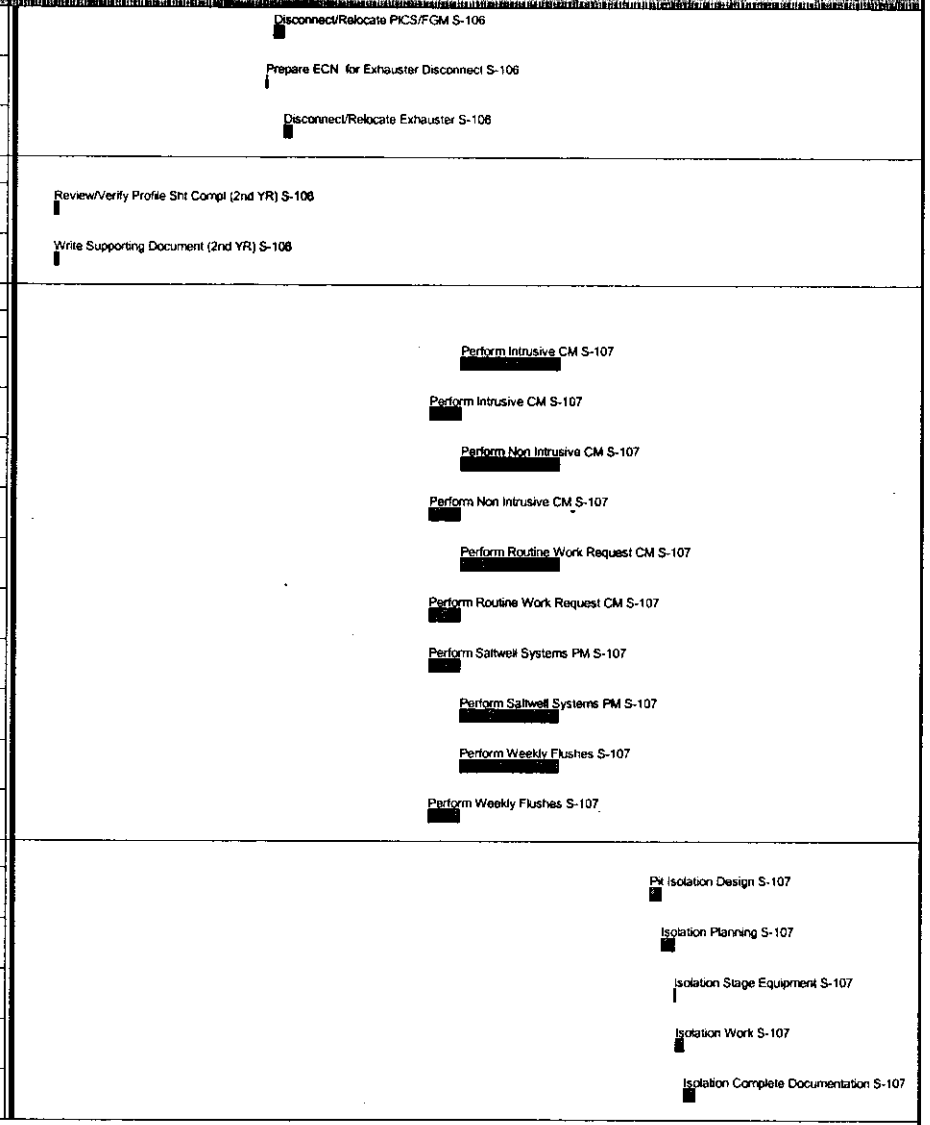
Activity ID	Rem Dur	Start	Finish
SS23C85B4	15	10MAR04	30MAR04
SS23C85B5	20	31MAR04	27APR04
1.01.03.01.01.09.45.03.74 S-103 Annual Hydro Test			
SS23C74A1	15	11OCT99*	29OCT99
SS23C74A2	2	11OCT99	12OCT99
SS23C74A3	3	01NOV99	03NOV99
SS23C74A4	3	04NOV99	08NOV99
1.01.03.01.01.09.45.03.78 Post Equip Discn/Staging S-103			
SS23C78A1	10	10APR00	21APR00
SS23C78A2	1	24APR00	24APR00
SS23C78B1	60	24APR00	18JUL00
SS23C78B2	2	25APR00	26APR00
SS23C78B3	15	19JUL00	08AUG00
SS23C78C1	15	09AUG00	29AUG00
SS23C78C2	15	30AUG00	20SEP00
1.01.03.01.01.09.45.06 Stabilize/Isolate Tank S-106			
1.01.03.01.01.09.45.06.03 S-106 System Maint/Operability			
SS23D68A2	252	01OCT99	29SEP00
SS23D68B3	87	02OCT00	06FEB01
SS23D68C2	252	01OCT99	29SEP00
SS23D68D3	87	02OCT00	06FEB01
SS23D68E2	252	01OCT99	29SEP00
SS23D68F3	87	02OCT00	06FEB01
SS23D68G2	252	01OCT99	29SEP00
SS23D68G3	87	02OCT00	06FEB01



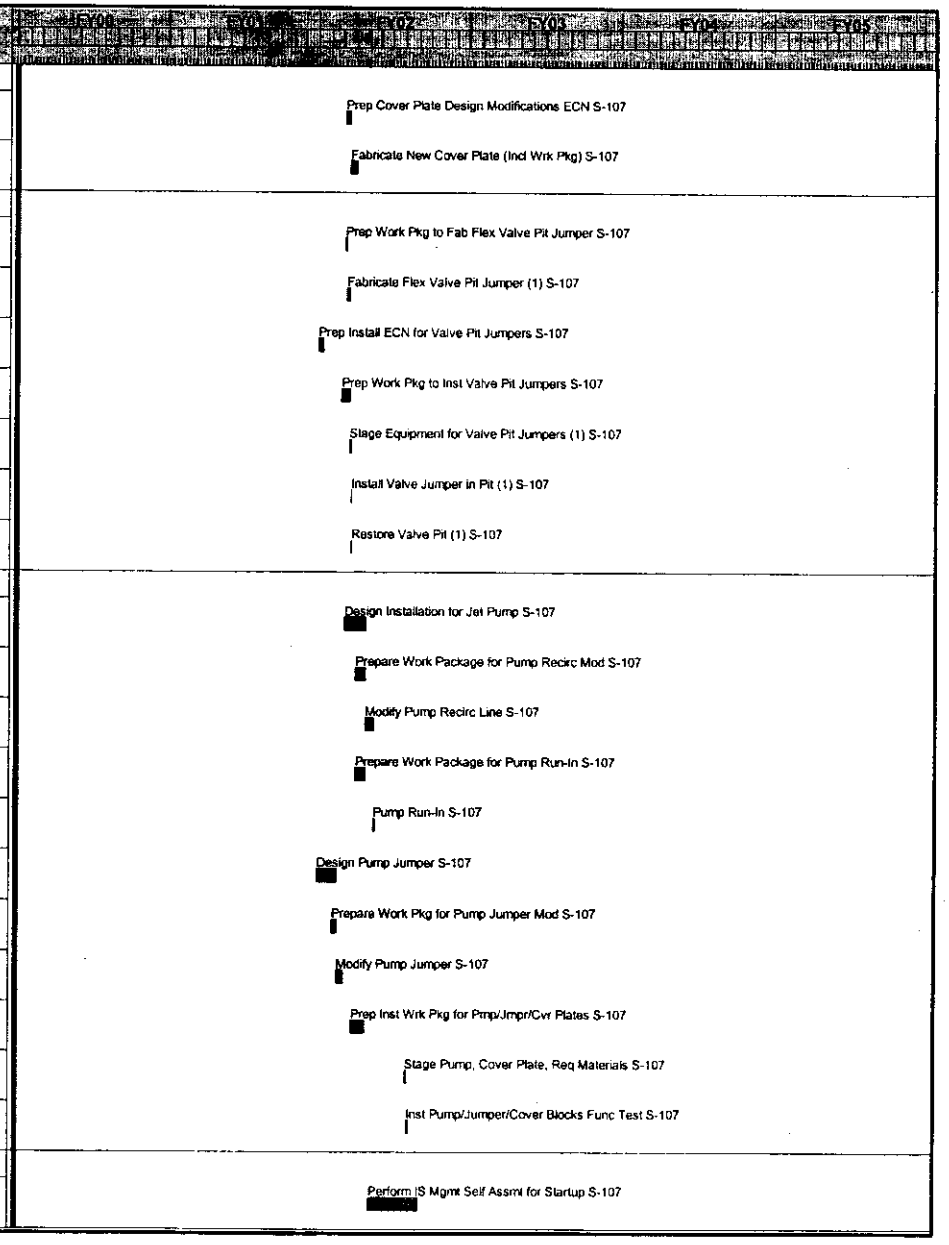
Activity ID	Remaining Dur	Early Start	Early Finish
SS23D68J2	252	01OCT99	29SEP00
SS23D68M3	87	02OCT00	06FEB01
1.01.03.01.01.09.45.06.04 S-106 Isolation			
SS23D85B1	20	09JAN04*	05FEB04
SS23D85B2	20	06FEB04	05MAR04
SS23D85B3	2	08MAR04	09MAR04
SS23D85B4	15	10MAR04	30MAR04
SS23D85B5	20	31MAR04	27APR04
1.01.03.01.01.09.45.06.74 S-106 Annual Hydro Test			
SS23D74A1	15	11OCT99*	29OCT99
SS23D74A2	2	11OCT99	12OCT99
SS23D74A3	3	01NOV99	03NOV99
SS23D74A4	3	04NOV99	08NOV99
SS23D74B1	15	02OCT00	20OCT00
SS23D74B2	2	02OCT00	03OCT00
SS23D74B3	3	23OCT00	25OCT00
SS23D74B4	3	26OCT00	30OCT00
1.01.03.01.01.09.45.06.78 Post Equip Discn/Staging S-106			
SS23D78A1	10	07FEB01	21FEB01
SS23D78A2	1	22FEB01	22FEB01
SS23D78B1	60	22FEB01	16MAY01
SS23D78B2	2	23FEB01	26FEB01
SS23D78B3	15	17MAY01	07JUN01
SS23D78C1	15	08JUN01	28JUN01



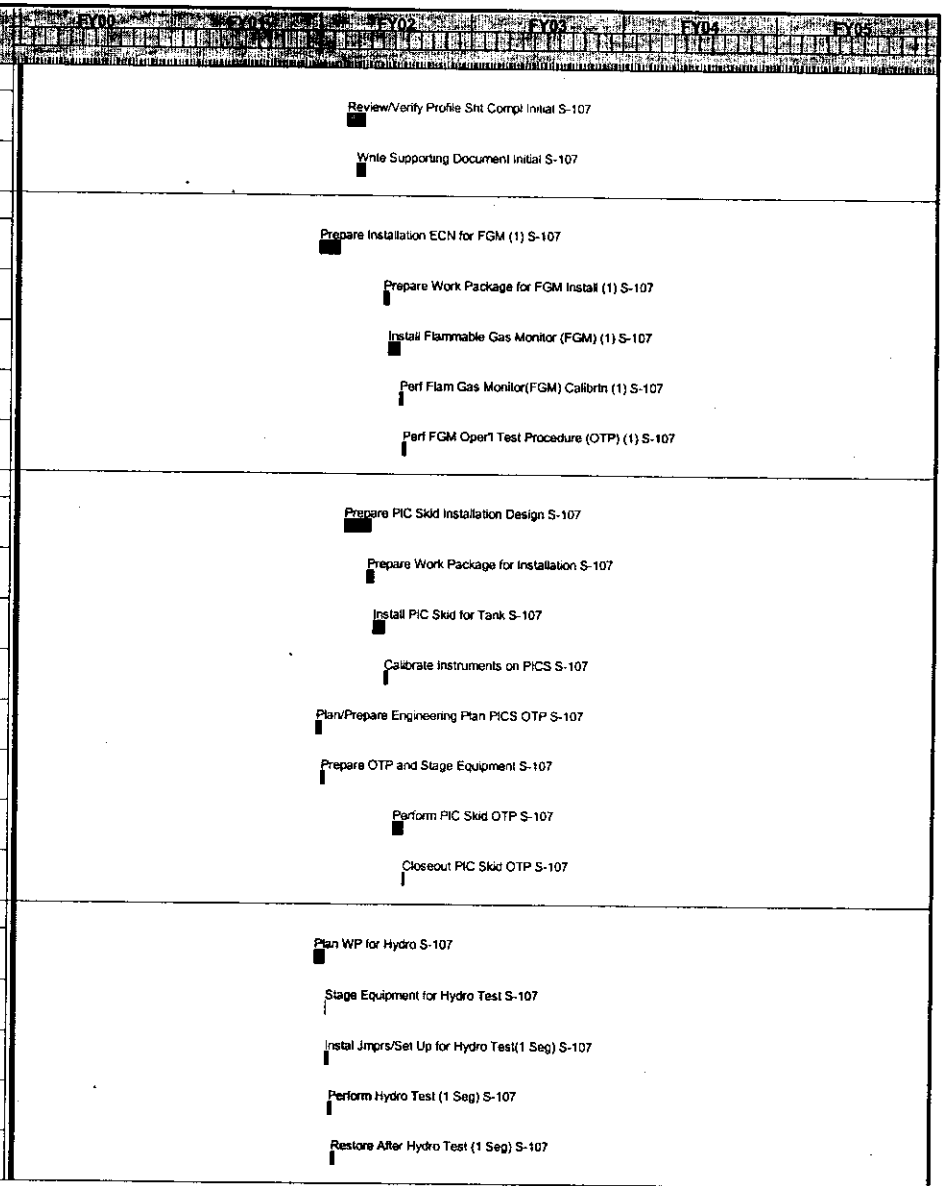
Activity ID	Rem Dur	Early Start	Early Finish
SS23D78C2	15	29JUN01	20JUL01
SS23D78D1	3	08JUN01	12JUN01
SS23D78D2	15	23JUL01	10AUG01
1.01.03.01.01.09.45.06.83 Annual Waste Capb Assmts S-106			
SS23D83C	10	03JAN00*	14JAN00
SS23D83D	10	03JAN00	14JAN00
1.01.03.01.01.09.45.07 Stabilize/Isolate Tank S-107			
1.01.03.01.01.09.45.07.03 S-107 System Maint/Operability			
SS23E68A5	166	01OCT02	29MAY03
SS23E68B4	54	16JUL02	30SEP02
SS23E68C5	166	01OCT02	29MAY03
SS23E68D4	54	16JUL02	30SEP02
SS23E68E5	166	01OCT02	29MAY03
SS23E68F4	54	16JUL02	30SEP02
SS23E68G4	54	16JUL02	30SEP02
SS23E68G5	166	01OCT02	29MAY03
SS23E68K5	166	01OCT02	29MAY03
SS23E68M4	54	16JUL02	30SEP02
1.01.03.01.01.09.45.07.04 S-107 Isolation			
SS23E85B1	20	09JAN04	05FEB04
SS23E85B2	20	06FEB04	05MAR04
SS23E85B3	2	08MAR04	09MAR04
SS23E85B4	15	10MAR04	30MAR04
SS23E85B5	20	31MAR04	27APR04



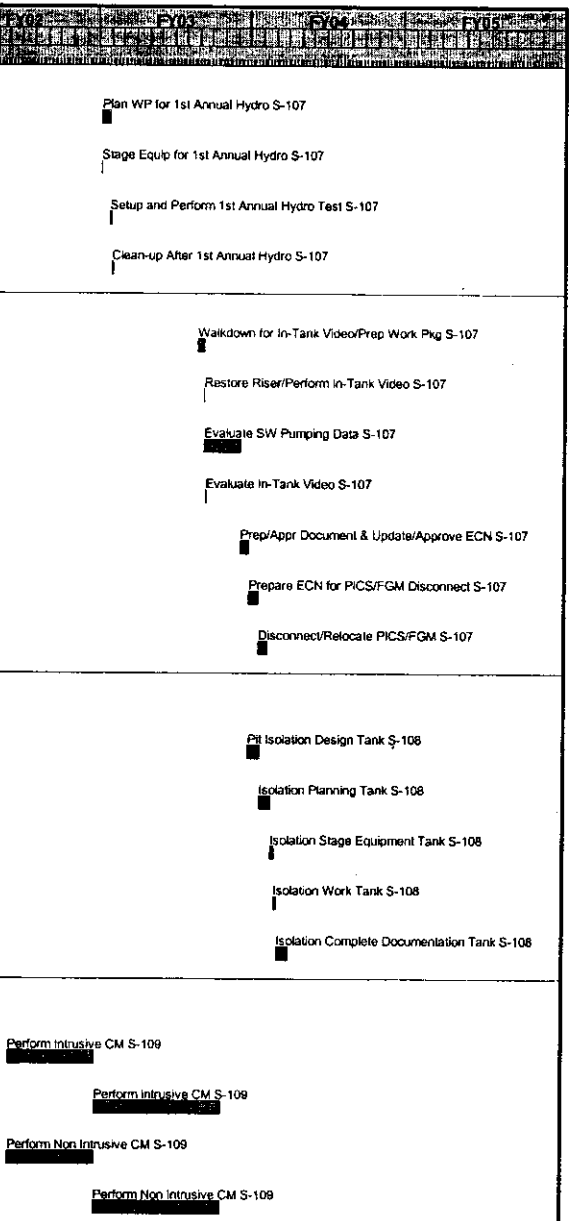
Activity ID	Remaining Dur	Early Start	Early Finish
1.01.03.01.01.09.45.07.08 Fab/Mod Cover Plates S-107			
SS23E08B	10	03DEC01*	14DEC01
SS23E08C	10	17DEC01	02JAN02
1.01.03.01.01.09.45.07.19 Valve Pit Jumpers S-107			
SS23E19B2	5	03DEC01*	07DEC01
SS23E19CF1	5	10DEC01	14DEC01
SS23E19D	10	01OCT01	12OCT01
SS23E19E	15	26NOV01	14DEC01
SS23E19F1	2	17DEC01	18DEC01
SS23E19G1	1	19DEC01	19DEC01
SS23E19H1	1	20DEC01	20DEC01
1.01.03.01.01.09.45.07.27 SW Jet Pumps/Jumpers S-107			
SS23E27A	35	03DEC01*	23JAN02
SS23E27C1	15	03JAN02	23JAN02
SS23E27C2	15	24JAN02	13FEB02
SS23E27D1	15	03JAN02	23JAN02
SS23E27D2	3	14FEB02	19FEB02
SS23E27E	35	01OCT01	16NOV01
SS23E27G1	10	05NOV01	16NOV01
SS23E27G2	10	19NOV01	04DEC01
SS23E27H	20	26DEC01	23JAN02
SS23E27J	2	07MAY02	08MAY02
SS23E27K	4	09MAY02	14MAY02
1.01.03.01.01.09.45.07.36 Management Self-Assessment S-107			
SS23E36A	84	06FEB02	05JUN02



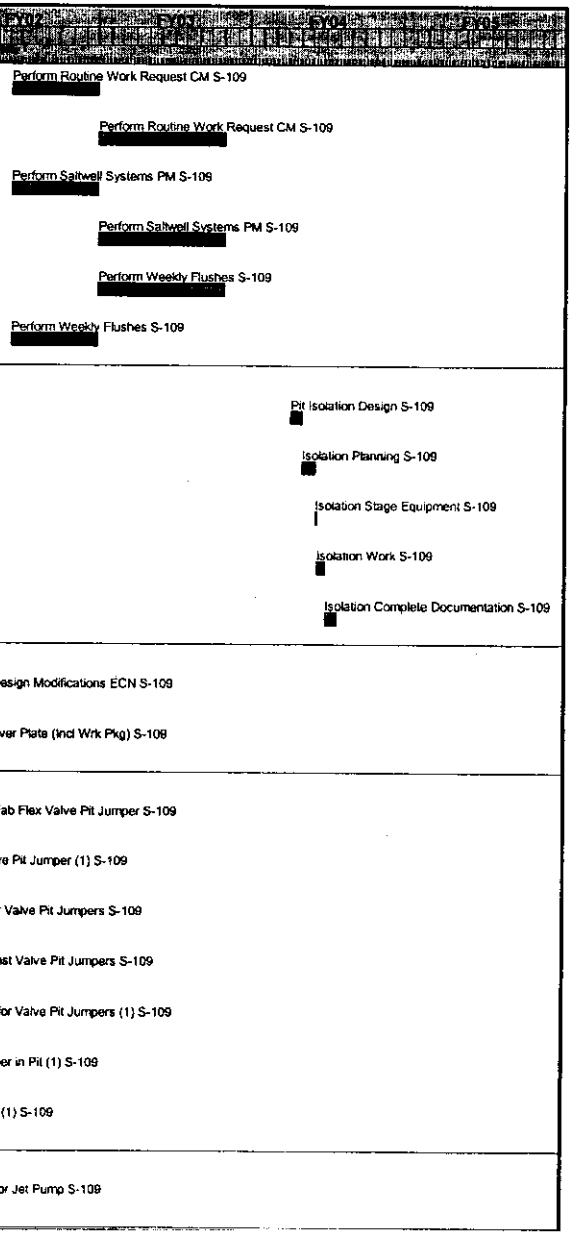
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.45.07.54 Initial Waste Capb Assmts S-107			
SS23E54A	30	03DEC01*	16JAN02
SS23E54B	14	27DEC01	16JAN02
1.01.03.01.01.09.45.07.55 Install/Test FGMs S-107			
SS23E55D1	35	01OCT01	16NOV01
SS23E55E1	10	05MAR02	18MAR02
SS23E55E2	20	19MAR02	15APR02
SS23E55E3	5	16APR02	22APR02
SS23E55F1	5	23APR02	29APR02
1.01.03.01.01.09.45.07.57 PIC Skids S-107			
SS23E57D	45	03DEC01*	06FEB02
SS23E57E1	10	30JAN02	12FEB02
SS23E57E2	20	13FEB02	13MAR02
SS23E57E3	5	14MAR02	20MAR02
SS23E57F1	10	01OCT01	12OCT01
SS23E57F2	5	15OCT01	19OCT01
SS23E57F3	15	09APR02	29APR02
SS23E57F4	5	30APR02	06MAY02
1.01.03.01.01.09.45.07.60 Initial Hydro Test Transfer Line S-107			
SS23E60A	20	01OCT01	26OCT01
SS23E60B	2	29OCT01	30OCT01
SS23E60C1	5	31OCT01	06NOV01
SS23E60D1	5	07NOV01	13NOV01
SS23E60E1	5	14NOV01	20NOV01



Activity ID	Rem. Dur.	Early Start	Early Finish
1.01.03.01.01.09.45.07.74 S-107 Annual Hydro Test			
SS23E74A1	15	08OCT02	28OCT02
SS23E74A2	2	08OCT02	09OCT02
SS23E74A3	3	29OCT02	31OCT02
SS23E74A4	3	01NOV02	05NOV02
1.01.03.01.01.09.45.07.78 Post Equip Discn/Staging S-107			
SS23E78A1	10	30MAY03	12JUN03
SS23E78A2	1	13JUN03	13JUN03
SS23E78B1	60	13JUN03	08SEP03
SS23E78B2	2	16JUN03	17JUN03
SS23E78B3	16	09SEP03	30SEP03
SS23E78C1	15	01OCT03	21OCT03
SS23E78C2	15	22OCT03	11NOV03
1.01.03.01.01.09.45.08 Stabilize/Isolate Tank S-108			
1.01.03.01.01.09.45.08.04 S-108 Isolation			
SS23085G1	20	01OCT03*	28OCT03
SS23085G2	20	29OCT03	25NOV03
SS23085G3	2	26NOV03	01DEC03
SS23085G4	5	02DEC03	08DEC03
SS23085G5	20	09DEC03	08JAN04
1.01.03.01.01.09.45.09 Stabilize/Isolate Tank S-109			
1.01.03.01.01.09.45.09.03 S-109 System Maint/Operability			
SS23F68A4	144	08MAR02	30SEP02
SS23F68A5	211	01OCT02	01AUG03
SS23F68C4	144	08MAR02	30SEP02
SS23F68C5	211	01OCT02	01AUG03



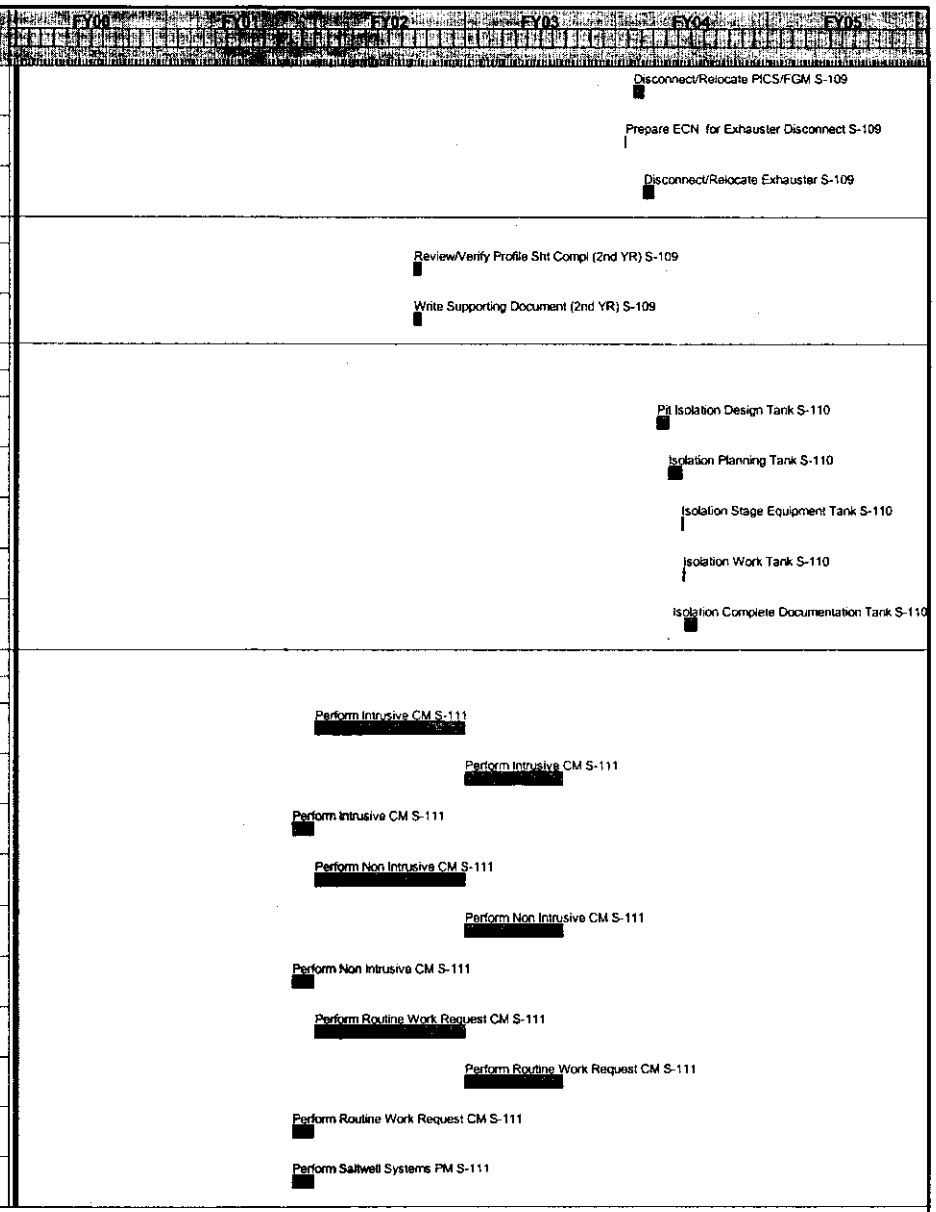
Activity ID	Rem Dur	Early Start	Early Finish
SS23F68E4	144	08MAR02	30SEP02
SS23F68E5	211	01OCT02	01AUG03
SS23F68G4	144	08MAR02	30SEP02
SS23F68G5	211	01OCT02	01AUG03
SS23F68J5	211	01OCT02	01AUG03
SS23F68K4	144	08MAR02	30SEP02
1.01.03.01.01.09.45.09.04 S-109 Isolation			
SS23F85B1	20	09JAN04	05FEB04
SS23F85B2	20	06FEB04	05MAR04
SS23F85B3	2	08MAR04	09MAR04
SS23F85B4	15	10MAR04	30MAR04
SS23F85B5	20	31MAR04	27APR04
1.01.03.01.01.09.45.09.08 Fab/Mod Cover Plates S-109			
SS23F08B	10	01JUN01	14JUN01
SS23F08C	10	15JUN01	28JUN01
1.01.03.01.01.09.45.09.19 Valve Pit Jumpers S-109			
SS23F19B2	5	01JUN01	07JUN01
SS23F19CF1	5	08JUN01	14JUN01
SS23F19D	10	01JUN01	14JUN01
SS23F19E	15	31MAY01	20JUN01
SS23F19F1	2	21JUN01	22JUN01
SS23F19G1	1	25JUN01	25JUN01
SS23F19H1	1	26JUN01	26JUN01
1.01.03.01.01.09.45.09.27 SW Jet Pumps/Jumpers S-109			
SS23F27A	35	01JUN01	20JUL01



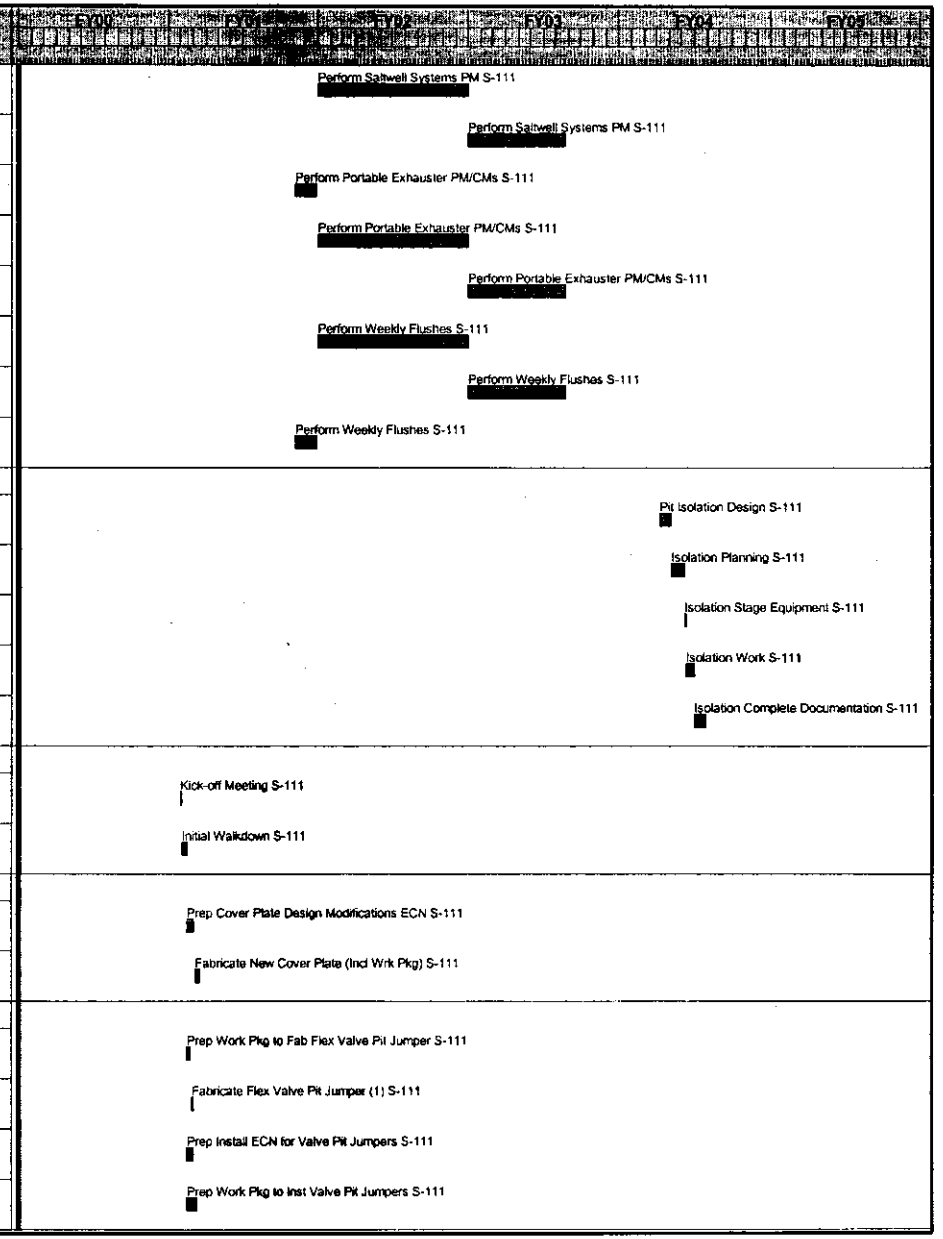
Activity ID	Rem Dur	Early Start	Early Finish	
SS23F27C1	15	29JUN01	20JUL01	Prepare Work Package for Pump Recirc Mod S-109
SS23F27C2	15	23JUL01	10AUG01	Modify Pump Recirc Line S-109
SS23F27D1	15	29JUN01	20JUL01	Prepare Work Package for Pump Run-In S-109
SS23F27D2	3	13AUG01	15AUG01	Pump Run-In S-109
SS23F27E	35	01JUN01	20JUL01	Design Pump Jumper S-109
SS23F27G1	10	09JUL01	20JUL01	Prepare Work Pkg for Pump Jumper Mod S-109
SS23F27G2	10	23JUL01	03AUG01	Modify Pump Jumper S-109
SS23F27H	20	22JUN01	20JUL01	Prep Inst Wrk Pkg for Pmp/Jmpr/Cvr Plates S-109
SS23F27J	2	24SEP01	25SEP01	Stage Pump, Cover Plate, Req Materials S-109
SS23F27K	3	26SEP01	28SEP01	Inst Pump/Jumper/Cover Blocks Func Test S-109
1.01.03.01.01.09.45.09.36 Management Self-Assessment S-109				
SS23F36A	30	24JAN02	07MAR02	Perform IS Mgmt Self Assmt for Startup S-109
1.01.03.01.01.09.45.09.54 Initial Waste Capb Assmts S-109				
SS23F54A	30	01JUN01	13JUL01	Review/Verify Profile Sht Compl Initial S-109
SS23F54B	14	25JUN01	13JUL01	Write Supporting Document Initial S-109
1.01.03.01.01.09.45.09.55 Install/Test FGMs S-109				
SS23F55D1	35	01JUN01	20JUL01	Prepare Installation ECN for FGM (1) S-109
SS23F55E1	10	13JUL01	26JUL01	Prepare Work Package for FGM Install (1) S-109
SS23F55E2	20	27JUL01	23AUG01	Install Flammable Gas Monitor (FGM) (1) S-109
SS23F55E3	5	24AUG01	30AUG01	Perf Flam Gas Monitor(FGM) Calibrtn (1) S-109
SS23F55F1	5	31AUG01	07SEP01	Perf FGM Oper'l Test Procedure (OTP) (1) S-109
1.01.03.01.01.09.45.09.57 PIC Skids S-109				
SS23F57D	45	01JUN01	03AUG01	Prepare PIC Skid Installation Design S-109
SS23F57E1	10	27JUL01	09AUG01	Prepare Work Package for Installation S-109
SS23F57E2	20	10AUG01	07SEP01	Install PIC Skid for Tank S-109

Activity ID	Rem Dur	Early Start	Early Finish	
SS23F57E3	5	10SEP01	14SEP01	Calibrate Instruments on PICS S-109
SS23F57F1	10	01JUN01	14JUN01	Plan/Prepare Engineering Plan PICS OTP S-109
SS23F57F2	5	15JUN01	21JUN01	Prepare OTP and Stage Equipment S-109
SS23F57F3	15	24AUG01	14SEP01	Perform PIC Skid OTP S-109
SS23F57F4	5	17SEP01	21SEP01	Closeout PIC Skid OTP S-109
1.01.03.01.01.09.45.09.60 Initial Hydro Test Transfer Line S-109				
SS23F60A	20	01JUN01	28JUN01	Plan WP for Hydro S-109
SS23F60B	2	29JUN01	02JUL01	Stage Equipment for Hydro Test S-109
SS23F60C1	5	03JUL01	10JUL01	Instal Jmprs/Set Up for Hydro Test(1 Seg) S-109
SS23F60D1	5	11JUL01	17JUL01	Perform Hydro Test (1 Seg) S-109
SS23F60E1	5	18JUL01	24JUL01	Restore After Hydro Test (1 Seg) S-109
1.01.03.01.01.09.45.09.74 S-109 Annual Hydro Test				
SS23F74A1	15	01JUN01	21JUN01	Plan WP for 1st Annual Hydro S-109
SS23F74A2	2	01JUN01	04JUN01	Stage Equip for 1st Annual Hydro S-109
SS23F74A3	3	22JUN01	26JUN01	Setup and Perform 1st Annual Hydro Test S-109
SS23F74A4	3	27JUN01	29JUN01	Clean-up After 1st Annual Hydro S-109
1.01.03.01.01.09.45.09.78 Post Equip Discn/Staging S-109				
SS23F78A1	10	05AUG03	18AUG03	Walkdown for In-Tank Video/Prep Work Pkg S-109
SS23F78A2	1	19AUG03	19AUG03	Restore Riser/Perform In-Tank Video S-109
SS23F78B1	30	19AUG03	30SEP03	Evaluate SW Pumping Data S-109
SS23F78B1A	36	01OCT03	19NOV03	Evaluate SW Pumping Data S-109
SS23F78B2	2	20AUG03	21AUG03	Evaluate In-Tank Video S-109
SS23F78B3	15	01OCT03	21OCT03	Prep/Appr Document & Update/Approve ECN S-109
SS23F78C1	15	22OCT03	11NOV03	Prepare ECN for PICS/FGM Disconnect S-109

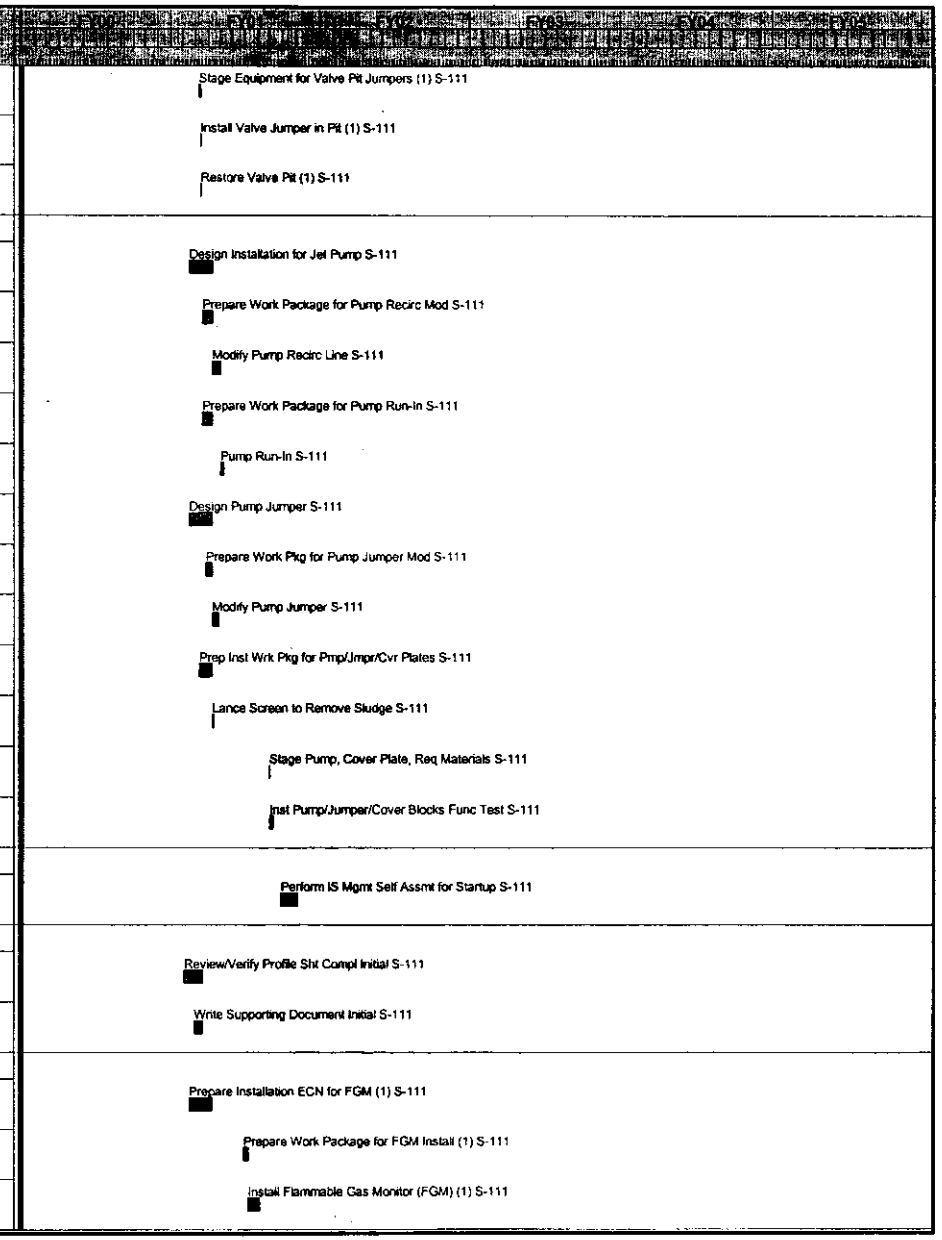
Activity ID	Rem Dur	Early Start	Early Finish
SS23F78C2	15	12NOV03	04DEC03
SS23F78D1	3	22OCT03	24OCT03
SS23F78D2	15	05DEC03	29DEC03
1.01.03.01.01.09.45.09.83 Annual Waste Capb Assmts S-109			
SS23F83C	10	30MAY02	12JUN02
SS23F83D	10	30MAY02	12JUN02
1.01.03.01.01.09.45.10 Stabilize/Isolate Tank S-110			
1.01.03.01.01.09.45.10.04 S-110 Isolation			
SS23085H1	20	09JAN04*	05FEB04
SS23085H2	20	06FEB04	05MAR04
SS23085H3	2	08MAR04	09MAR04
SS23085H4	5	10MAR04	16MAR04
SS23085H5	20	17MAR04	13APR04
1.01.03.01.01.09.45.11 Stabilize/Isolate Tank S-111			
1.01.03.01.01.09.45.11.03 S-111 System Maint/Operability			
SS23G68A4	252	01OCT01	30SEP02
SS23G68A5	163	01OCT02	23MAY03
SS23G68B3	37	08AUG01	28SEP01
SS23G68C4	252	01OCT01	30SEP02
SS23G68C5	163	01OCT02	23MAY03
SS23G68D3	37	08AUG01	28SEP01
SS23G68E4	252	01OCT01	30SEP02
SS23G68E5	163	01OCT02	23MAY03
SS23G68F3	37	08AUG01	28SEP01
SS23G68G3	37	08AUG01	28SEP01



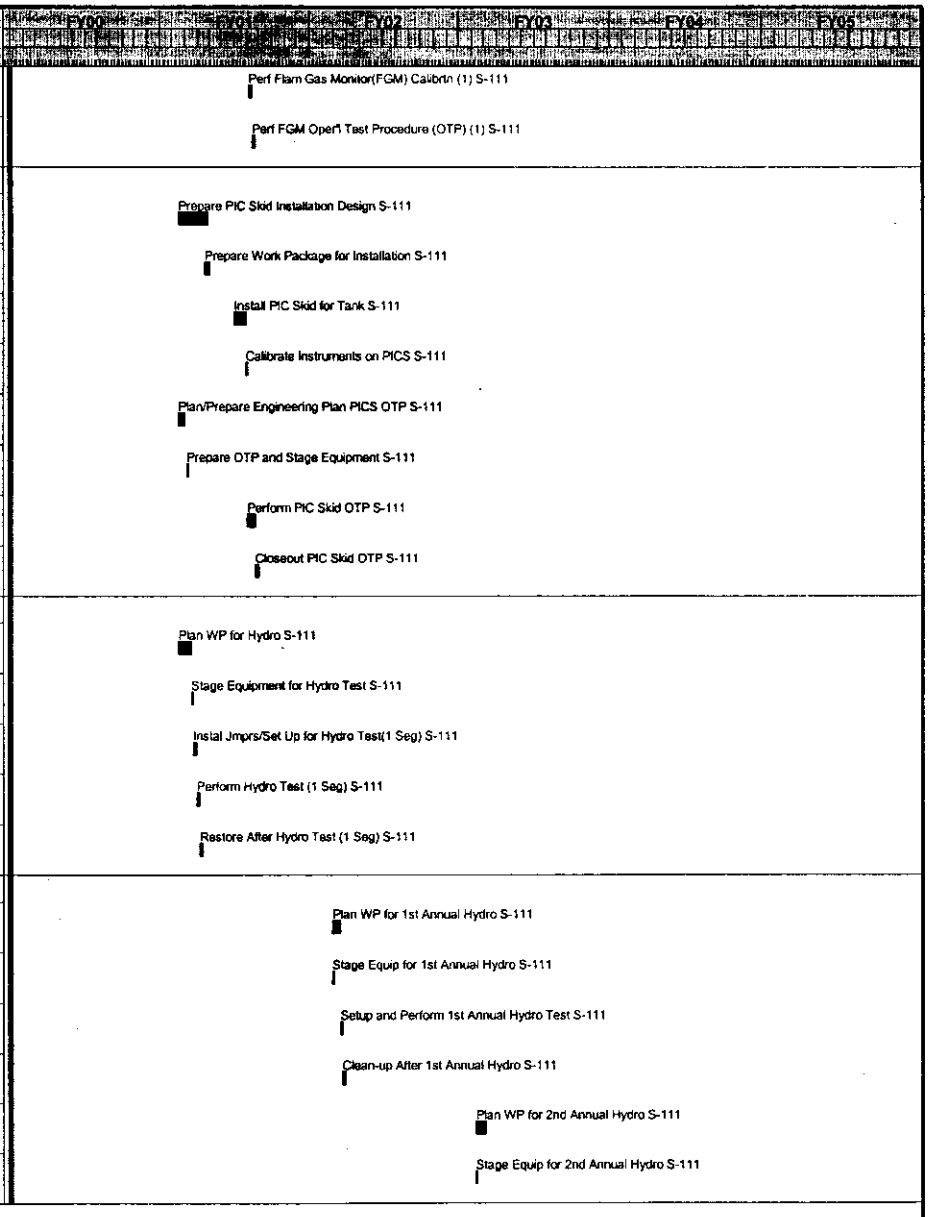
Activity ID	Rem Dur	Early Start	Early Finish
SS23G68G4	252	01OCT01	30SEP02
SS23G68G5	163	01OCT02	23MAY03
SS23G68H3	37	08AUG01	28SEP01
SS23G68H4	252	01OCT01	30SEP02
SS23G68H5	163	01OCT02	23MAY03
SS23G68J4	252	01OCT01	30SEP02
SS23G68K5	163	01OCT02	23MAY03
SS23G68M3	37	08AUG01	28SEP01
1.01.03.01.01.09.45.11.04 S-111 Isolation			
SS23G85B1	20	09JAN04	05FEB04
SS23G85B2	20	06FEB04	05MAR04
SS23G85B3	2	08MAR04	09MAR04
SS23G85B4	15	10MAR04	30MAR04
SS23G85B5	20	31MAR04	27APR04
1.01.03.01.01.09.45.11.05 Walkdown S-111			
SS23G05A	1	01NOV00*	01NOV00
SS23G05B	10	02NOV00	15NOV00
1.01.03.01.01.09.45.11.08 Fab/Mod Cover Plates S-111			
SS23G08B	10	16NOV00	01DEC00
SS23G08C	10	04DEC00	15DEC00
1.01.03.01.01.09.45.11.19 Valve Pit Jumpers S-111			
SS23G19B2	5	16NOV00	22NOV00
SS23G19CF1	5	27NOV00	01DEC00
SS23G19D	10	16NOV00	01DEC00
SS23G19E	15	15NOV00	07DEC00



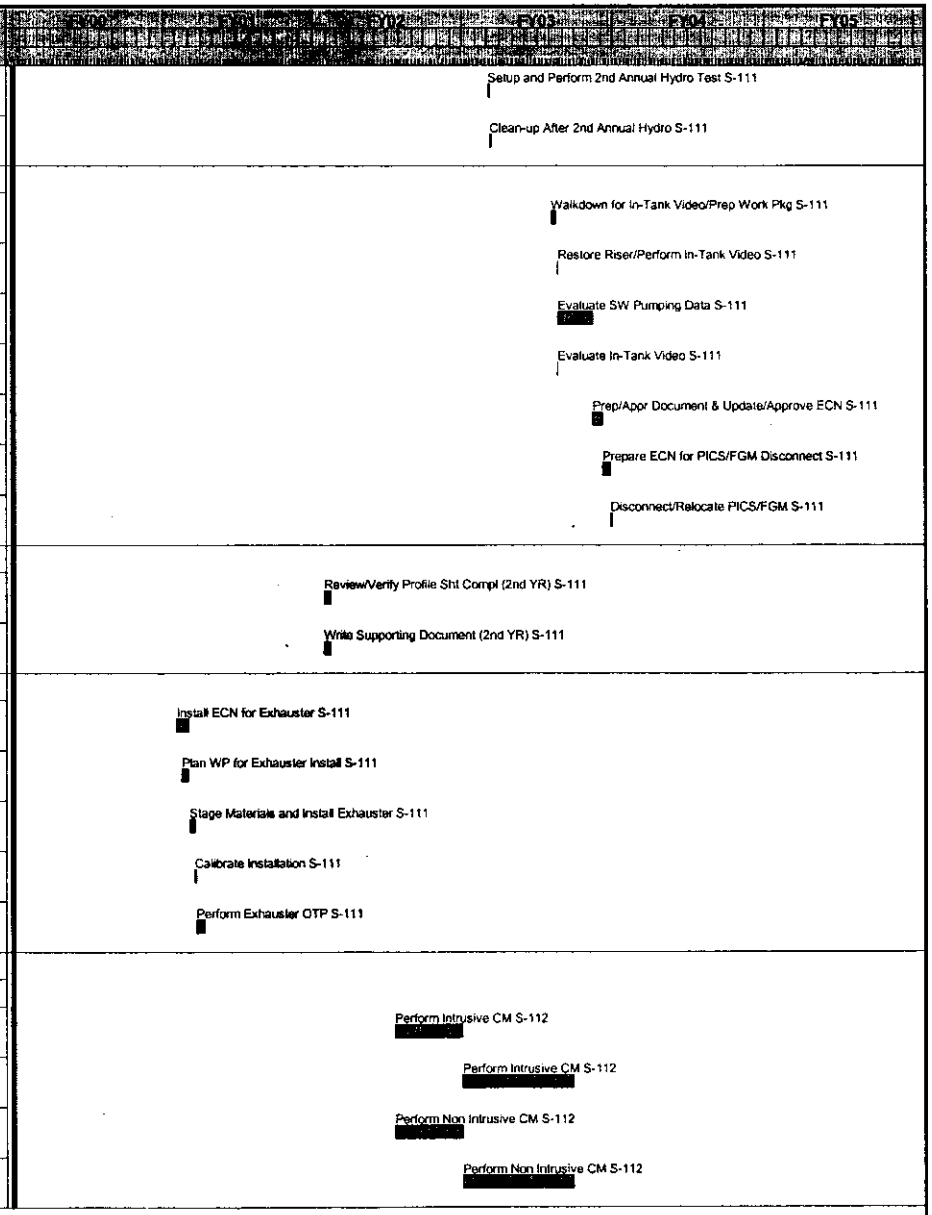
Activity ID	Work Dur	Early Start	Early Finish
SS23G19F1	2	08DEC00	11DEC00
SS23G19G1	1	12DEC00	12DEC00
SS23G19H1	1	13DEC00	13DEC00
1.01.03.01.01.09.45.11.27 SW Jet Pumps/Jumpers S-111			
SS23G27A	35	16NOV00	10JAN01
SS23G27C1	15	18DEC00	10JAN01
SS23G27C2	15	11JAN01	31JAN01
SS23G27D1	15	18DEC00	10JAN01
SS23G27D2	3	01FEB01	05FEB01
SS23G27E	35	16NOV00	10JAN01
SS23G27G1	10	27DEC00	10JAN01
SS23G27G2	10	11JAN01	24JAN01
SS23G27H	20	11DEC00	10JAN01
SS23G27H1	3	11JAN01	15JAN01
SS23G27J	2	30MAY01	31MAY01
SS23G27K	4	01JUN01	06JUN01
1.01.03.01.01.09.45.11.36 Management Self-Assessment S-111			
SS23G36A	30	26JUN01	07AUG01
1.01.03.01.01.09.45.11.54 Initial Waste Capb Assmts S-111			
SS23G54A	30	02NOV00	15DEC00
SS23G54B	14	28NOV00	15DEC00
1.01.03.01.01.09.45.11.55 Install/Test FGMs S-111			
SS23G55D1	35	16NOV00	10JAN01
SS23G55E1	10	27MAR01	09APR01
SS23G55E2	20	10APR01	07MAY01



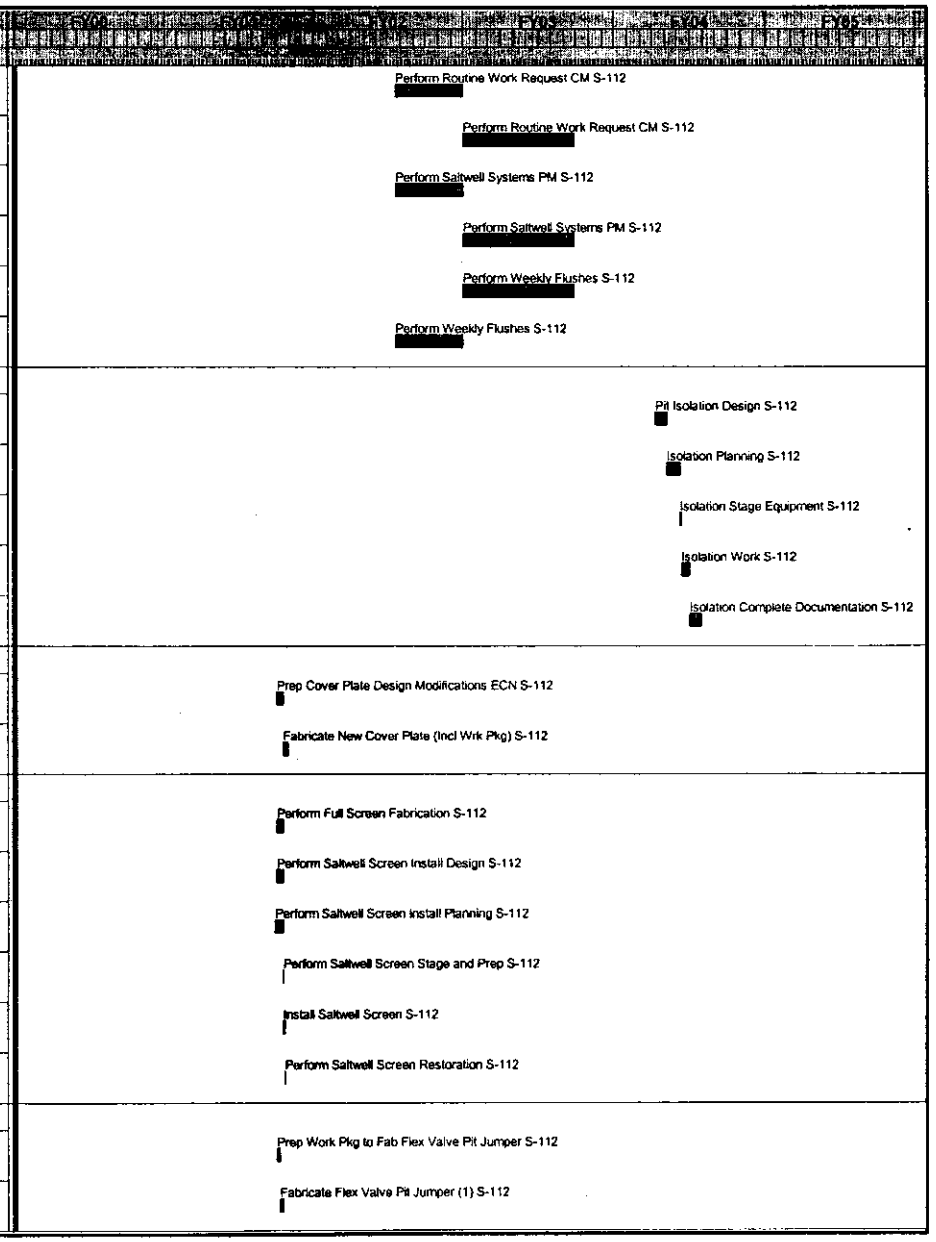
Activity ID	Rem Dur	Early Start	Early Finish
SS23G55E3	5	08MAY01	14MAY01
SS23G55F1	5	15MAY01	21MAY01
1.01.03.01.01.09.45.11.57 PIC Skids S-111			
SS23G57D	45	16NOV00	24JAN01
SS23G57E1	10	17JAN01	30JAN01
SS23G57E2	20	30MAR01	26APR01
SS23G57E3	5	27APR01	03MAY01
SS23G57F1	10	16NOV00	01DEC00
SS23G57F2	5	04DEC00	08DEC00
SS23G57F3	15	01MAY01	21MAY01
SS23G57F4	5	22MAY01	29MAY01
1.01.03.01.01.09.45.11.60 Initial Hydro Test Transfer Line S-111			
SS23G60A	20	16NOV00	15DEC00
SS23G60B	2	18DEC00	19DEC00
SS23G60C1	5	20DEC00	28DEC00
SS23G60D1	5	29DEC00	05JAN01
SS23G60E1	5	08JAN01	12JAN01
1.01.03.01.01.09.45.11.74 S-111 Annual Hydro Test			
SS23G74A1	15	27NOV01	17DEC01
SS23G74A2	2	27NOV01	28NOV01
SS23G74A3	3	18DEC01	20DEC01
SS23G74A4	3	21DEC01	27DEC01
SS23G74B1	15	08NOV02	02DEC02
SS23G74B2	2	08NOV02	11NOV02



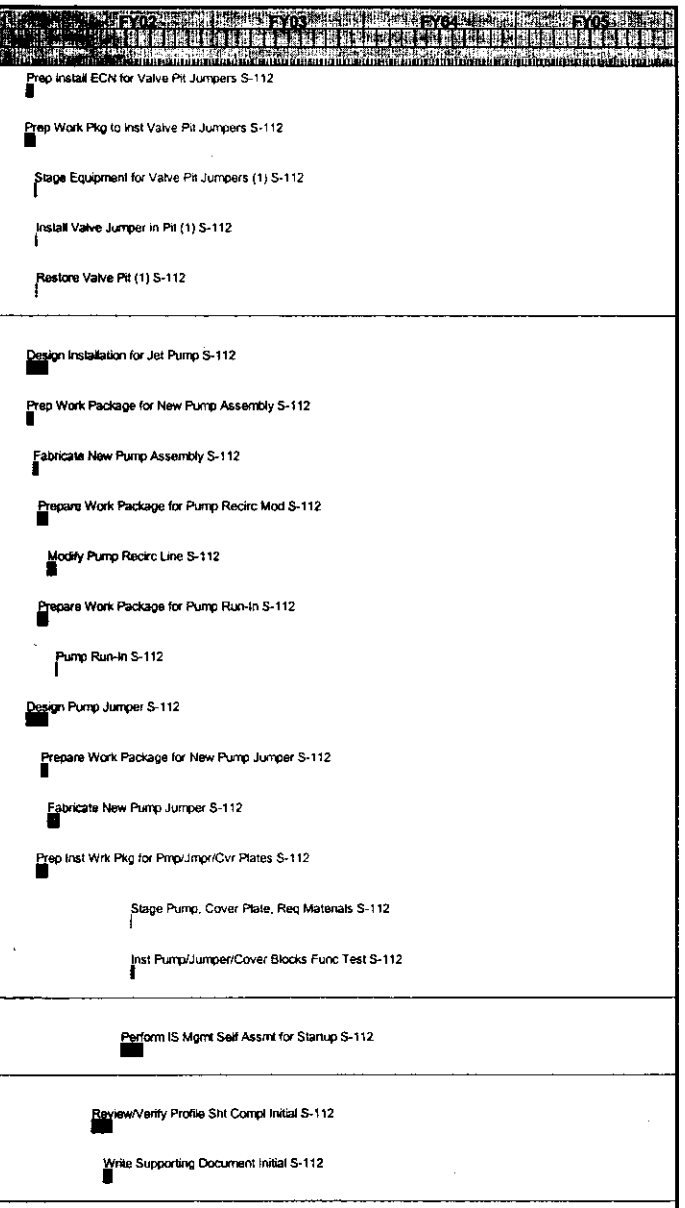
Activity ID	Rem Dur	Early Start	Early Finish
SS23G74B3	3	03DEC02	05DEC02
SS23G74B4	3	06DEC02	10DEC02
1.01.03.01.01.09.45.11.78 Post Equip Discn/Staging S-111			
SS23G78A1	10	05MAY03	16MAY03
SS23G78A2	1	19MAY03	19MAY03
SS23G78B1	60	19MAY03	12AUG03
SS23G78B2	2	20MAY03	21MAY03
SS23G78B3	15	13AUG03	03SEP03
SS23G78C1	15	04SEP03	24SEP03
SS23G78C2	3	25SEP03	29SEP03
1.01.03.01.01.09.45.11.83 Annual Waste Capb Assmts S-111			
SS23G83C	10	31OCT01	13NOV01
SS23G83D	10	31OCT01	13NOV01
1.01.03.01.01.09.45.11.90 S-111 Exhauster			
SS23G90A	20	02NOV00	01DEC00
SS23G90B	10	16NOV00	01DEC00
SS23G90C	10	04DEC00	15DEC00
SS23G90D	4	18DEC00	21DEC00
SS23G90E	10	22DEC00	09JAN01
1.01.03.01.01.09.45.12 Stabilize/Isolate Tank S-112			
1.01.03.01.01.09.45.12.03 S-112 System Maint/Operability			
SS23H68A4	114	19APR02	30SEP02
SS23H68A5	185	01OCT02	25JUN03
SS23H68C4	114	19APR02	30SEP02
SS23H68C5	185	01OCT02	25JUN03



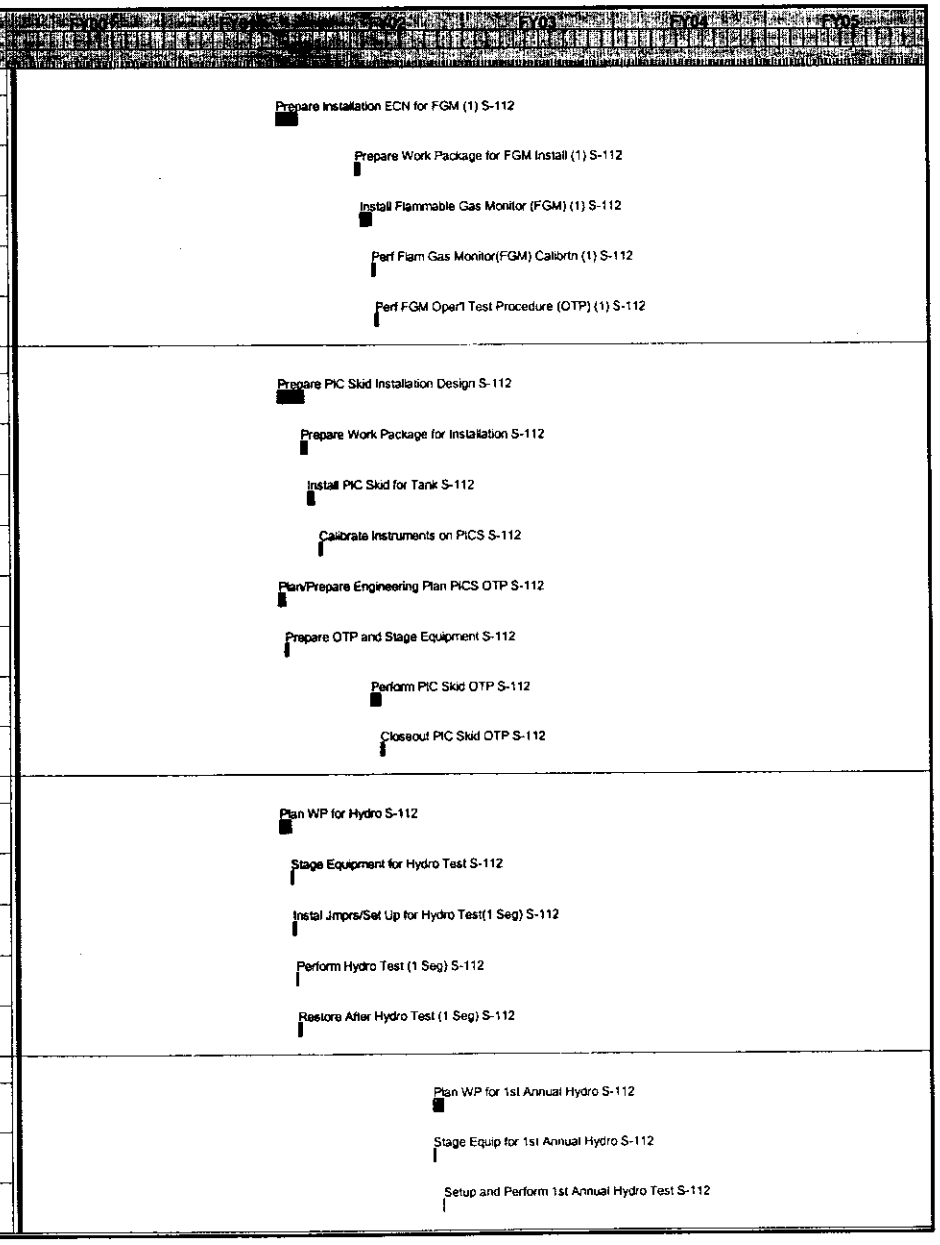
Activity ID	Rem Dur	Early Start	Early Finish
SS23H68E4	114	19APR02	30SEP02
SS23H68E5	185	01OCT02	25JUN03
SS23H68G4	114	19APR02	30SEP02
SS23H68G5	185	01OCT02	25JUN03
SS23H68K5	185	01OCT02	25JUN03
SS23H68L4	114	19APR02	30SEP02
1.01.03.01.01.09.45.12.04 S-112 Isolation			
SS23H85B1	20	09JAN04	05FEB04
SS23H85B2	20	06FEB04	05MAR04
SS23H85B3	2	08MAR04	09MAR04
SS23H85B4	15	10MAR04	30MAR04
SS23H85B5	20	31MAR04	27APR04
1.01.03.01.01.09.45.12.08 Fab/Mod Cover Plates S-112			
SS23H08B	10	02JUL01	16JUL01
SS23H08C	10	17JUL01	30JUL01
1.01.03.01.01.09.45.12.16 Saltwell Screen S-112			
SS23H16C2	10	02JUL01	16JUL01
SS23H16D	10	02JUL01	16JUL01
SS23H16E1	12	28JUN01	16JUL01
SS23H16E2	2	17JUL01	18JUL01
SS23H16E3	1	19JUL01	19JUL01
SS23H16E4	1	20JUL01	20JUL01
1.01.03.01.01.09.45.12.19 Valve Pit Jumpers S-112			
SS23H19B2	5	02JUL01	09JUL01
SS23H19CF1	5	10JUL01	16JUL01



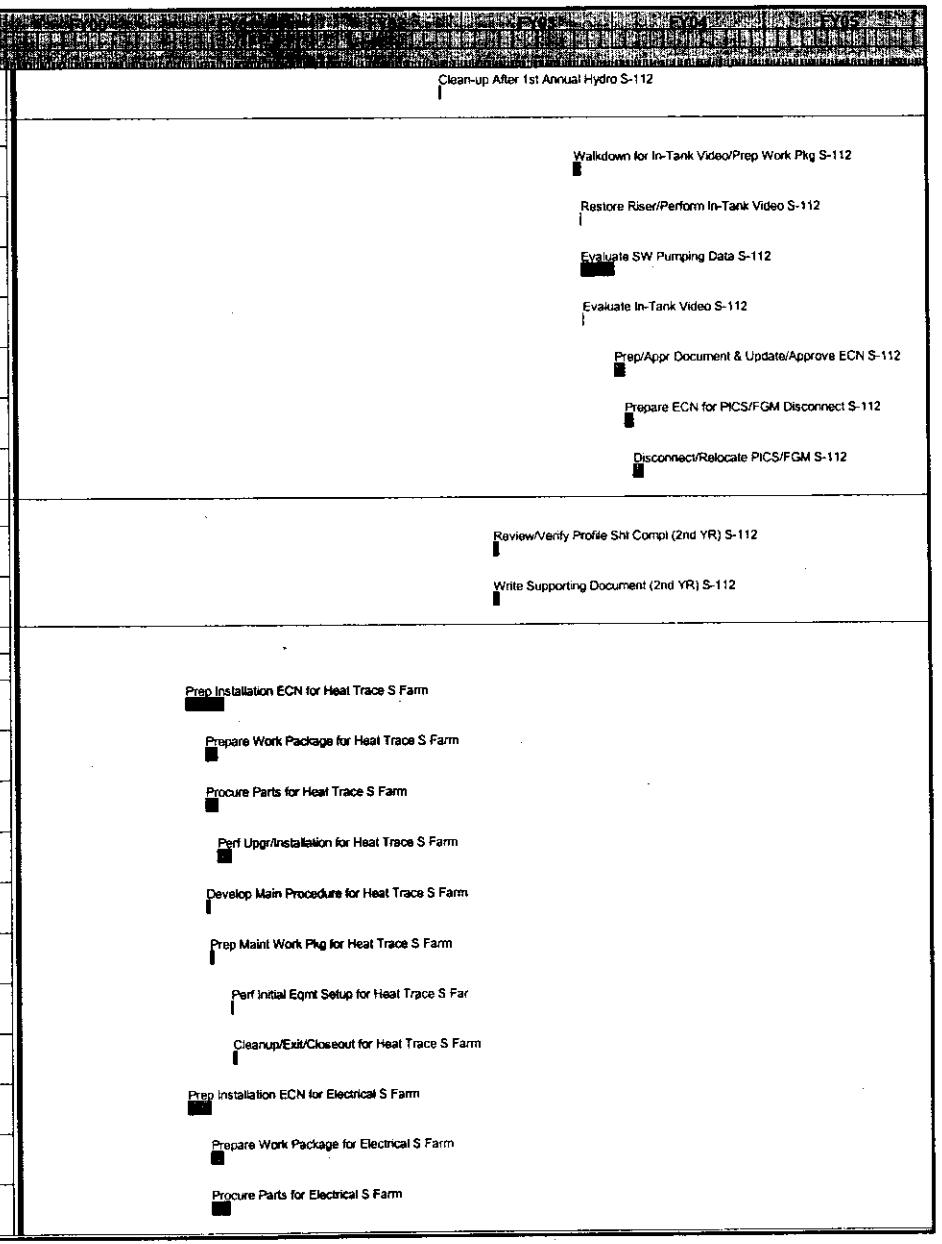
Activity ID	Rem Dur	Early Start	Early Finish
SS23H19D	10	02JUL01	16JUL01
SS23H19E	15	29JUN01	20JUL01
SS23H19F1	2	23JUL01	24JUL01
SS23H19G1	1	25JUL01	25JUL01
SS23H19H1	1	26JUL01	26JUL01
1.01.03.01.01.09.45.12.27 SW Jet Pumps/Jumpers S-112			
SS23H27A	35	02JUL01	20AUG01
SS23H27B1	10	02JUL01	16JUL01
SS23H27B2	10	17JUL01	30JUL01
SS23H27C1	15	31JUL01	20AUG01
SS23H27C2	15	21AUG01	11SEP01
SS23H27D1	15	31JUL01	20AUG01
SS23H27D2	3	12SEP01	14SEP01
SS23H27E	35	02JUL01	20AUG01
SS23H27F1	10	07AUG01	20AUG01
SS23H27F2	20	21AUG01	18SEP01
SS23H27H	20	24JUL01	20AUG01
SS23H27J	2	13MAR02	14MAR02
SS23H27K	4	15MAR02	20MAR02
1.01.03.01.01.09.45.12.36 Management Self-Assessment S-112			
SS23H36A	36	20FEB02	10APR02
1.01.03.01.01.09.45.12.54 Initial Waste Capb Assmts S-112			
SS23H54A	30	10DEC01	23JAN02
SS23H54B	14	04JAN02	23JAN02



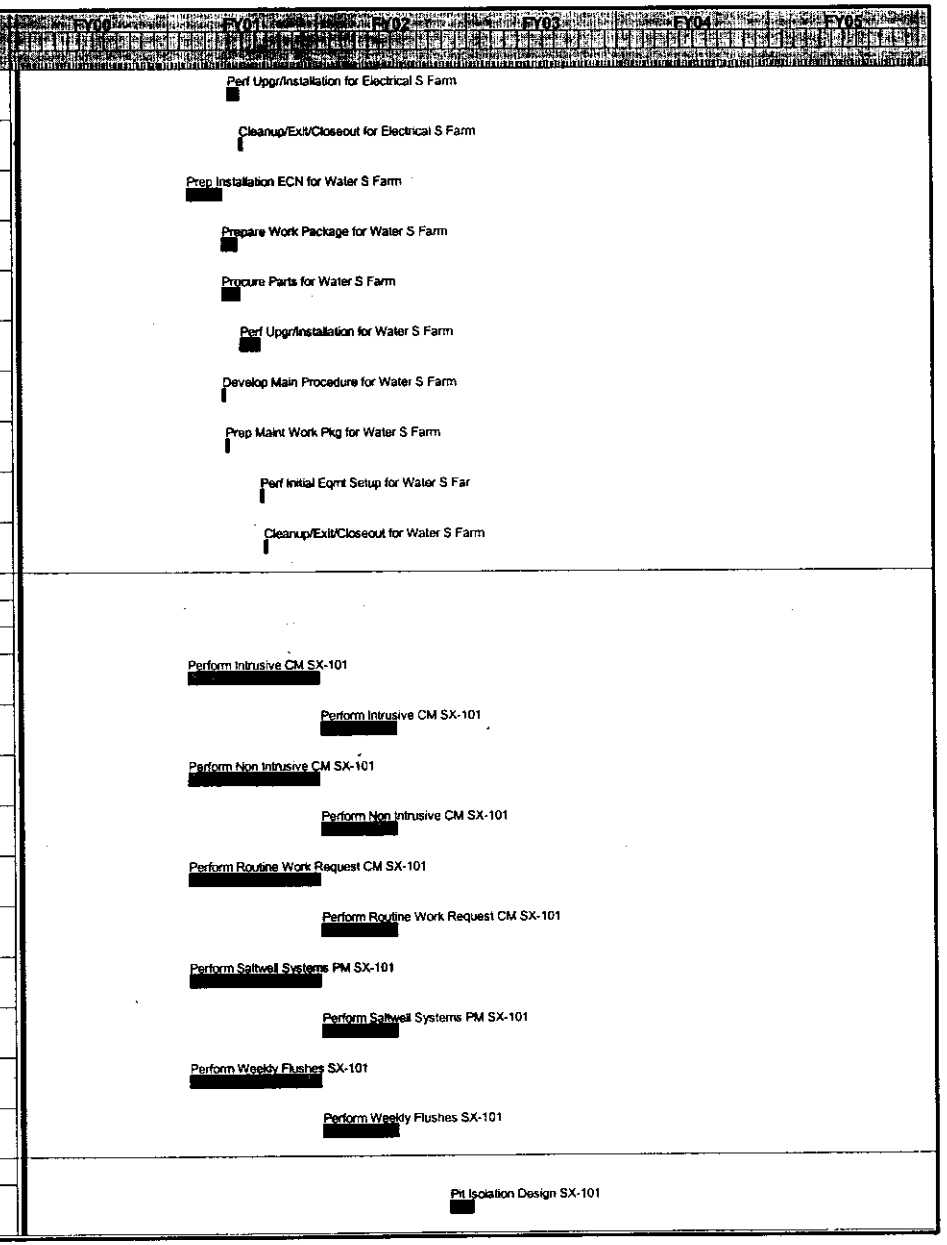
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.45.12.55 Install/Test FGMs S-112			
SS23H55D1	35	02JUL01	20AUG01
SS23H55E1	10	08JAN02	21JAN02
SS23H55E2	20	22JAN02	19FEB02
SS23H55E3	5	20FEB02	26FEB02
SS23H55F1	5	27FEB02	05MAR02
1.01.03.01.01.09.45.12.57 PIC Skids S-112			
SS23H57D	45	02JUL01	04SEP01
SS23H57E1	10	27AUG01	10SEP01
SS23H57E2	14	11SEP01	28SEP01
SS23H57E3	5	09OCT01	15OCT01
SS23H57F1	10	02JUL01	16JUL01
SS23H57F2	5	17JUL01	23JUL01
SS23H57F3	15	12FEB02	05MAR02
SS23H57F4	5	06MAR02	12MAR02
1.01.03.01.01.09.45.12.60 Initial Hydro Test Transfer Line S-112			
SS23H60A	20	02JUL01	30JUL01
SS23H60B	2	31JUL01	01AUG01
SS23H60C1	5	02AUG01	08AUG01
SS23H60D1	5	09AUG01	15AUG01
SS23H60E1	5	16AUG01	22AUG01
1.01.03.01.01.09.45.12.74 S-112 Annual Hydro Test			
SS23H74A1	15	10JUL02	30JUL02
SS23H74A2	2	10JUL02	11JUL02
SS23H74A3	3	31JUL02	02AUG02



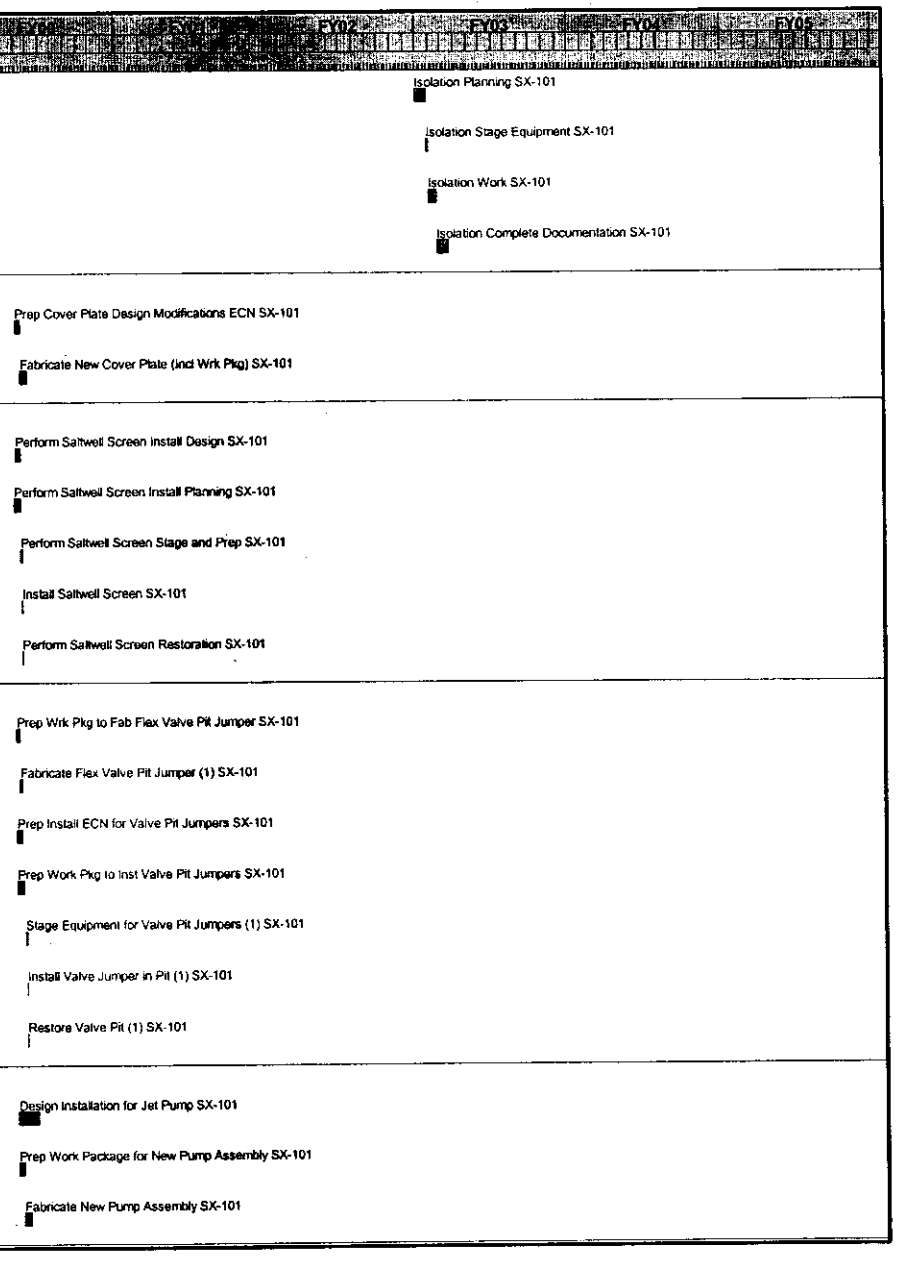
Activity ID	Rem Dur	Early Start	Early Finish
SS23H74A4	3	05AUG02	07AUG02
1.01.03.01.01.09.45.12.78 Post Equip Discn/Staging S-112			
SS23H78A1	10	26JUN03	10JUL03
SS23H78A2	1	11JUL03	11JUL03
SS23H78B1	57	11JUL03	30SEP03
SS23H78B2	2	14JUL03	15JUL03
SS23H78B3	15	01OCT03	21OCT03
SS23H78C1	15	22OCT03	11NOV03
SS23H78C2	15	12NOV03	04DEC03
1.01.03.01.01.09.45.12.83 Annual Waste Capb Assmts S-112			
SS23H83C	10	06DEC02	19DEC02
SS23H83D	10	06DEC02	19DEC02
1.01.03.01.01.09.45.50 241-S Farm Infrastructure Upgrade			
1.01.03.01.01.09.45.50.01 241-S Farm Infrastructure Upgrade			
SS23729B1	60	16NOV00	14FEB01
SS23729B2	20	04JAN01	31JAN01
SS23729B3	20	04JAN01	31JAN01
SS23729B4	20	01FEB01	01MAR01
SS23729B5	5	04JAN01	10JAN01
SS23729B6	5	11JAN01	17JAN01
SS23729B7	5	02MAR01	08MAR01
SS23729B8	5	09MAR01	15MAR01
SS23729C1	35	16NOV00	10JAN01
SS23729C2	20	11JAN01	07FEB01
SS23729C3	30	11JAN01	22FEB01



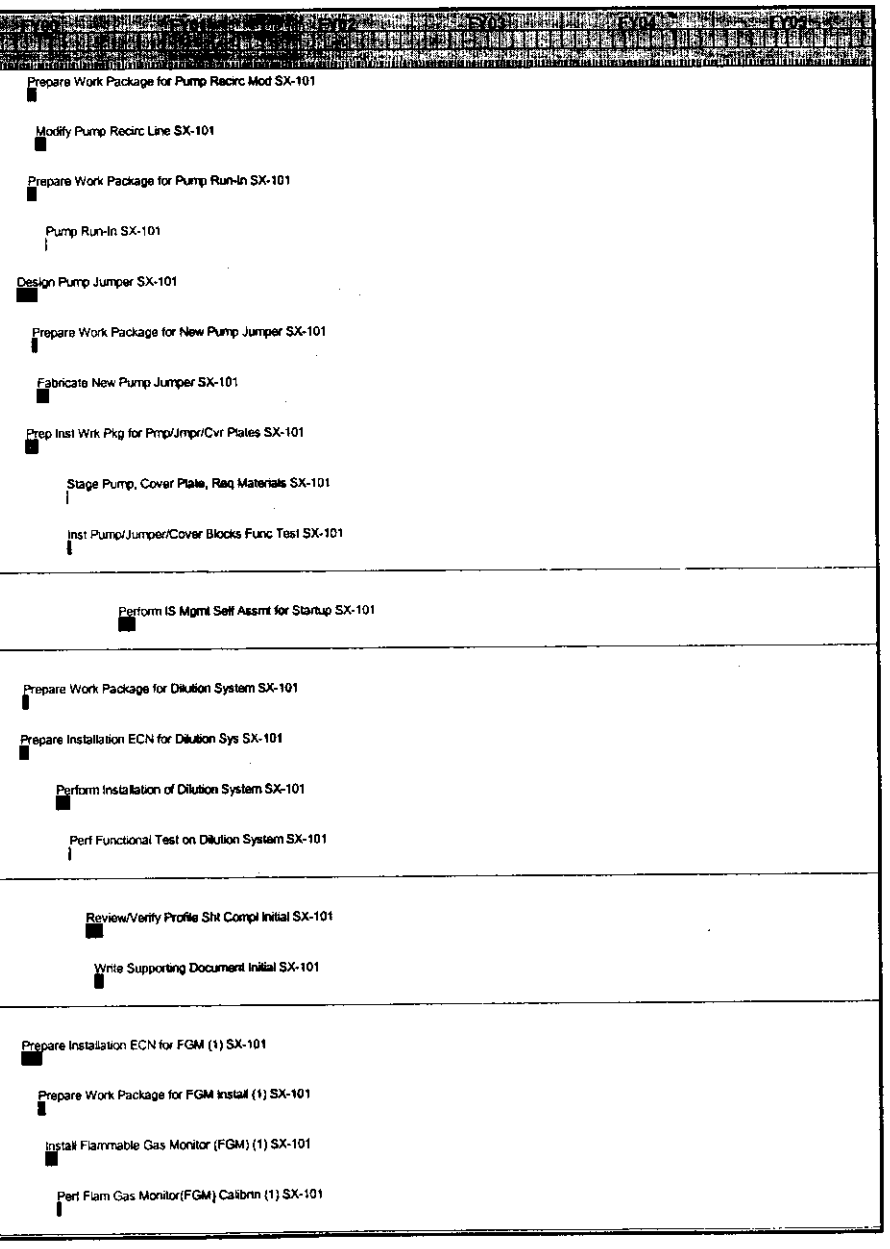
Activity ID	Rem Dur	Early Start	Early Finish
SS23729C4	20	23FEB01	22MAR01
SS23729C8	5	23MAR01	29MAR01
SS23729D1	55	16NOV00	07FEB01
SS23729D2	25	08FEB01	15MAR01
SS23729D3	30	08FEB01	22MAR01
SS23729D4	35	23MAR01	10MAY01
SS23729D5	5	08FEB01	14FEB01
SS23729D6	5	15FEB01	22FEB01
SS23729D7	5	11MAY01	17MAY01
SS23729D8	5	18MAY01	24MAY01
1.01.03.01.01.09.46 SST 241-SX Tank Farm Stabilization/Isolation			
1.01.03.01.01.09.46.01 Stabilize/Isolate Tank SX-101			
1.01.03.01.01.09.46.01.03 SX-101 System Maint/Operability			
SS23J68A3	221	13NOV00	28SEP01
SS23J68B4	127	01OCT01	03APR02
SS23J68C3	221	13NOV00	28SEP01
SS23J68D4	127	01OCT01	03APR02
SS23J68E3	221	13NOV00	28SEP01
SS23J68F4	127	01OCT01	03APR02
SS23J68G3	221	13NOV00	28SEP01
SS23J68G4	127	01OCT01	03APR02
SS23J68J3	221	13NOV00	28SEP01
SS23J68L4	127	01OCT01	03APR02
1.01.03.01.01.09.46.01.04 SX-101 Isolation			
SS23J85B1	39	06AUG02	30SEP02



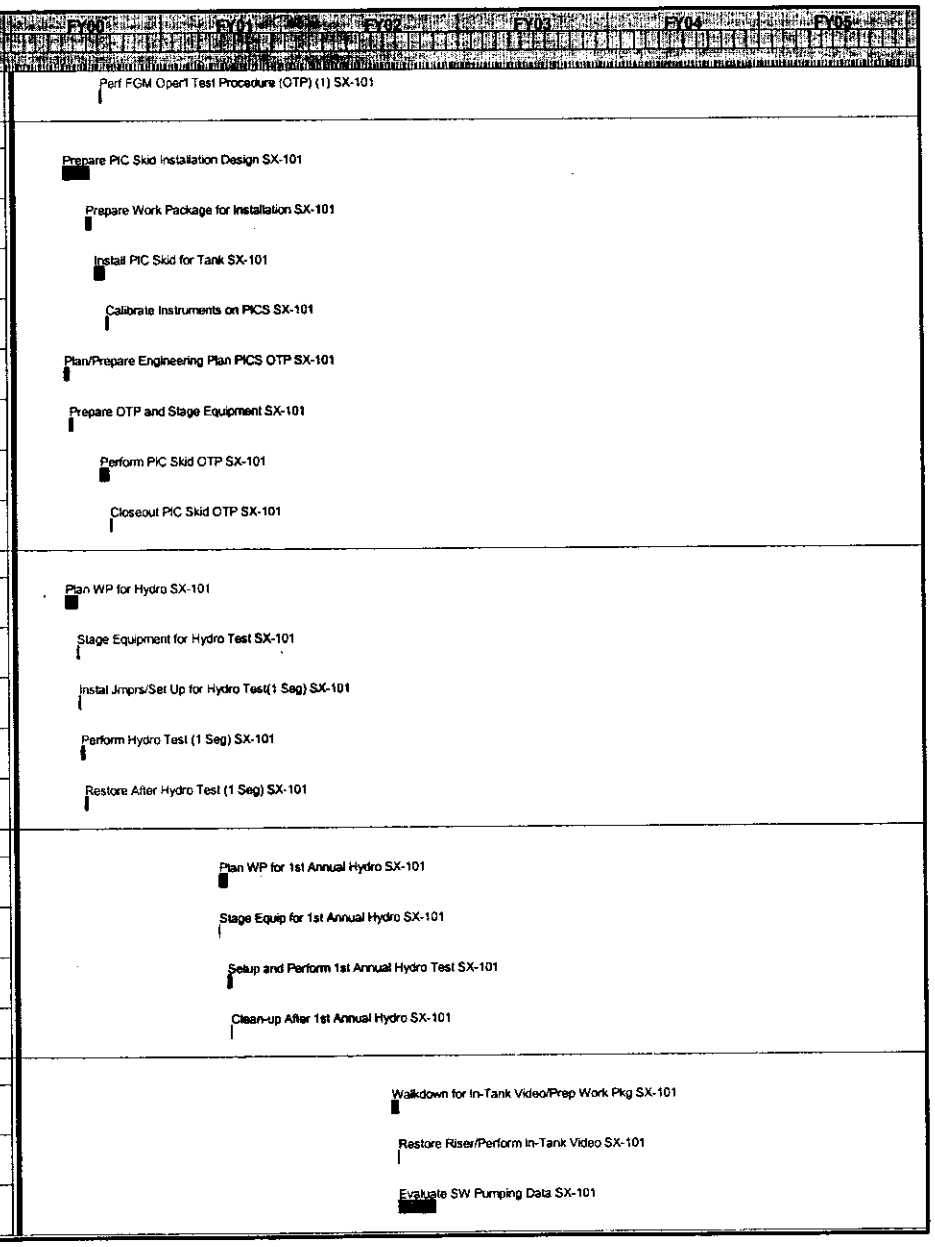
Activity ID	Rem Dur	Early Start	Early Finish
SS23J85B2	20	01OCT02	28OCT02
SS23J85B3	2	29OCT02	30OCT02
SS23J85B4	15	31OCT02	20NOV02
SS23J85B5	20	21NOV02	20DEC02
1.01.03.01.01.09.46.01.08 Fab/Mod Cover Plates SX-101			
SS23J08B	10	01FEB00	14FEB00
SS23J08C	10	15FEB00	29FEB00
1.01.03.01.01.09.46.01.16 Saltwell Screen SX-101			
SS23J16D	10	01FEB00	14FEB00
SS23J16E1	12	28JAN00	14FEB00
SS23J16E2	2	15FEB00	16FEB00
SS23J16E3	1	17FEB00	17FEB00
SS23J16E4	1	18FEB00	18FEB00
1.01.03.01.01.09.46.01.19 Valve Pit Jumpers SX-101			
SS23J19B2	5	01FEB00	07FEB00
SS23J19CF1	5	08FEB00	14FEB00
SS23J19D	10	01FEB00	14FEB00
SS23J19E	15	31JAN00	18FEB00
SS23J19F1	2	22FEB00	23FEB00
SS23J19G1	1	24FEB00	24FEB00
SS23J19H1	1	25FEB00	25FEB00
1.01.03.01.01.09.46.01.27 SW Jet Pumps/Jumpers SX-101			
SS23J27A	35	01FEB00	21MAR00
SS23J27B1	10	01FEB00	14FEB00
SS23J27B2	10	15FEB00	29FEB00



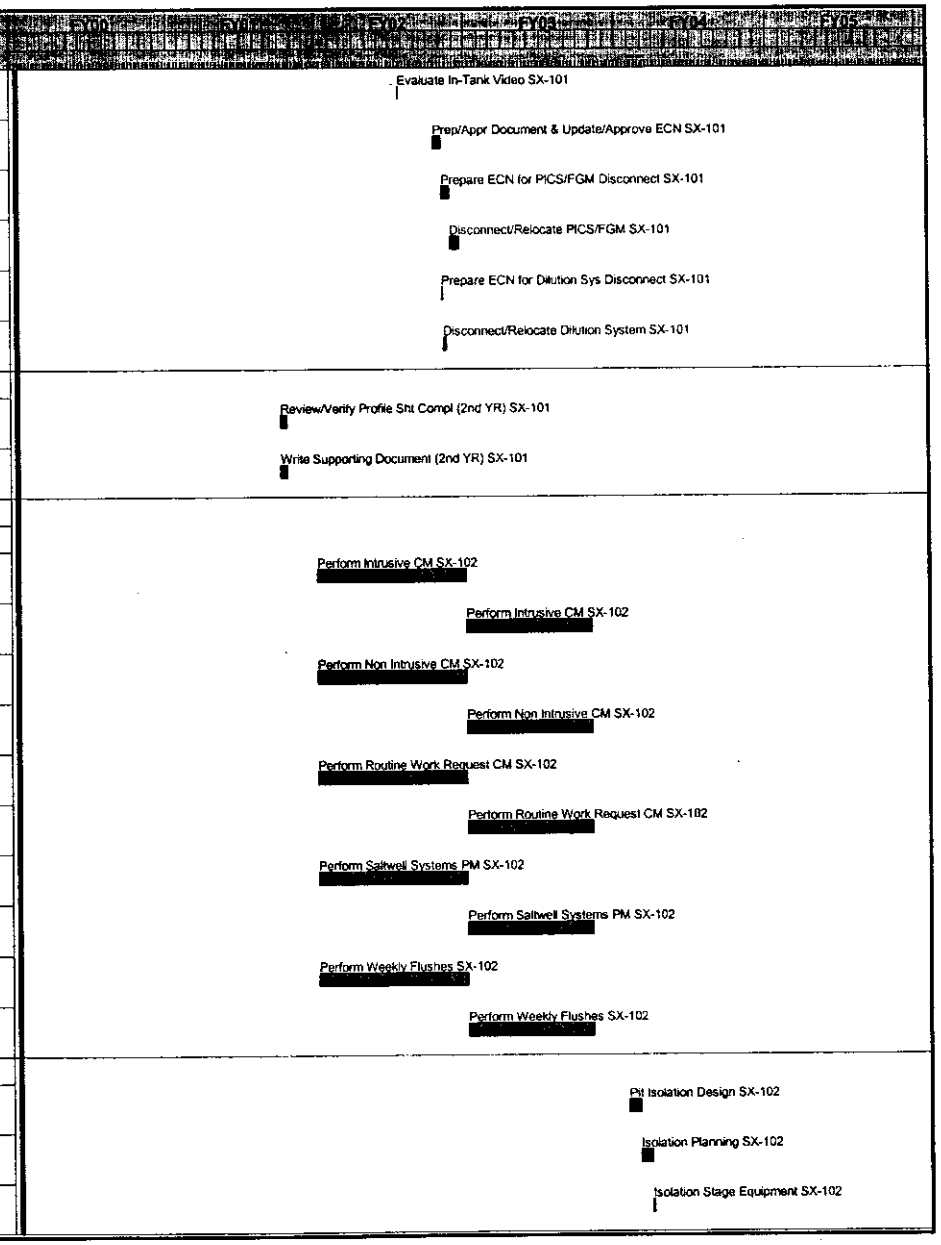
Activity ID	Rem Dur	Early Start	Early Finish
SS23J27C1	15	01MAR00	21MAR00
SS23J27C2	15	22MAR00	11APR00
SS23J27D1	15	01MAR00	21MAR00
SS23J27D2	3	12APR00	14APR00
SS23J27E	35	01FEB00	21MAR00
SS23J27F1	10	08MAR00	21MAR00
SS23J27F2	20	22MAR00	18APR00
SS23J27H	20	23FEB00	21MAR00
SS23J27J	2	30MAY00	31MAY00
SS23J27K	4	01JUN00	06JUN00
1.01.03.01.01.09.46.01.36 Management Self-Assessment SX-101			
SS23J36A	30	02OCT00	10NOV00
1.01.03.01.01.09.46.01.42 Install/Test SX-101 Waste Dilution System			
SS23J42C	10	08FEB00	22FEB00
SS23J42F	15	01FEB00	22FEB00
SS23J42G	21	01MAY00	30MAY00
SS23J42H	2	31MAY00	01JUN00
1.01.03.01.01.09.46.01.54 Initial Waste Capb Assmts SX-101			
SS23J54A	30	10JUL00	18AUG00
SS23J54B	14	01AUG00	18AUG00
1.01.03.01.01.09.46.01.55 Install/Test FGMs SX-101			
SS23J55D1	35	01FEB00	21MAR00
SS23J55E1	10	14MAR00	27MAR00
SS23J55E2	20	28MAR00	24APR00
SS23J55E3	5	25APR00	01MAY00



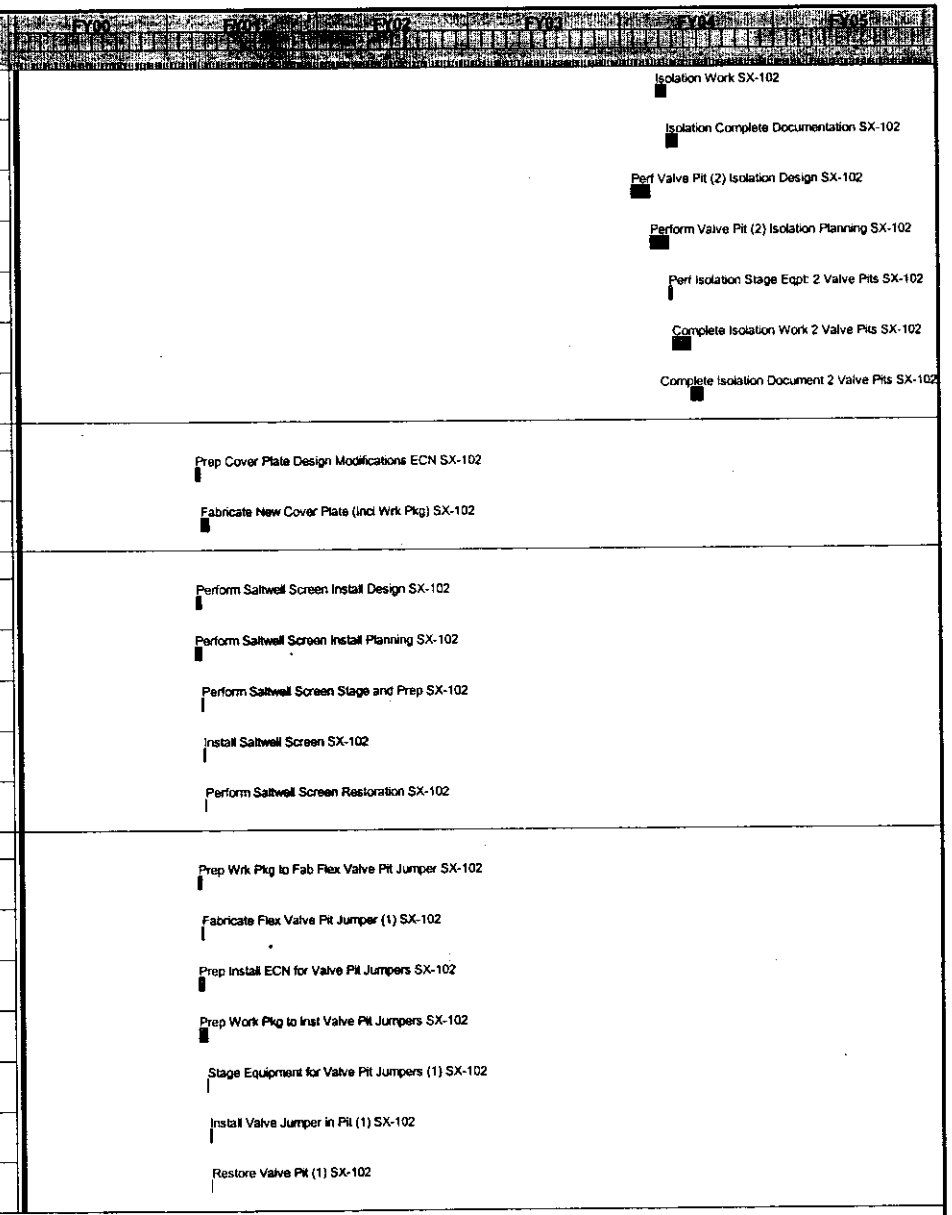
Activity ID	Rem Dur	Early Start	Early Finish
SS23J55F1	5	02MAY00	08MAY00
1.01.03.01.01.09.46.01.57 PIC Skids SX-101			
SS23J57D	45	01FEB00	04APR00
SS23J57E1	10	28MAR00	10APR00
SS23J57E2	20	17APR00	12MAY00
SS23J57E3	5	15MAY00	19MAY00
SS23J57F1	10	01FEB00	14FEB00
SS23J57F2	5	15FEB00	22FEB00
SS23J57F3	15	01MAY00	19MAY00
SS23J57F4	5	22MAY00	26MAY00
1.01.03.01.01.09.46.01.60 Initial Hydro Test Transfer Line SX-101			
SS23J60A	20	01FEB00	29FEB00
SS23J60B	2	01MAR00	02MAR00
SS23J60C1	5	03MAR00	09MAR00
SS23J60D1	5	10MAR00	16MAR00
SS23J60E1	5	17MAR00	23MAR00
1.01.03.01.01.09.46.01.74 SX-101 Annual Hydro Test			
SS23J74A1	15	07FEB01	28FEB01
SS23J74A2	2	07FEB01	08FEB01
SS23J74A3	3	01MAR01	05MAR01
SS23J74A4	3	06MAR01	08MAR01
1.01.03.01.01.09.46.01.78 Post Equip Discn/Staging SX-101			
SS23J78A1	10	05APR02	18APR02
SS23J78A2	1	19APR02	19APR02
SS23J78B1	60	19APR02	15JUL02



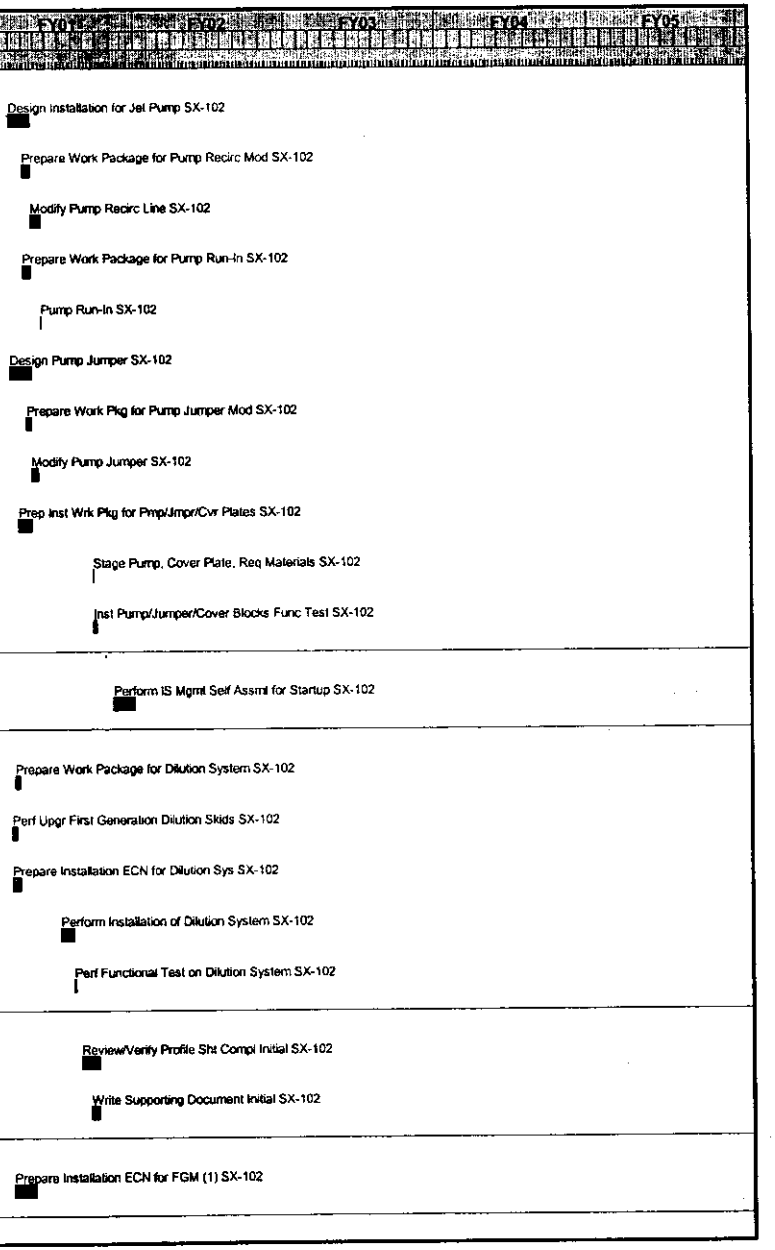
Activity ID	Rem Dur	Early Start	Early Finish
SS23J78B2	2	22APR02	23APR02
SS23J78B3	15	16JUL02	05AUG02
SS23J78C1	15	06AUG02	26AUG02
SS23J78C2	15	27AUG02	17SEP02
SS23J78E1	3	06AUG02	08AUG02
SS23J78E2	5	09AUG02	15AUG02
1.01.03.01.01.09.46.01.83 Annual Waste Capb Assmts SX-101			
SS23J83C	10	06JUL01	19JUL01
SS23J83D	10	06JUL01	19JUL01
1.01.03.01.01.09.46.02 Stabilize/Isolate Tank SX-102			
1.01.03.01.01.09.46.02.03 SX-102 System Maint/Operability			
SS23K68A4	252	01OCT01	30SEP02
SS23K68A5	210	01OCT02	31JUL03
SS23K68C4	252	01OCT01	30SEP02
SS23K68C5	210	01OCT02	31JUL03
SS23K68E4	252	01OCT01	30SEP02
SS23K68E5	210	01OCT02	31JUL03
SS23K68G4	252	01OCT01	30SEP02
SS23K68G5	210	01OCT02	31JUL03
SS23K68J4	252	01OCT01	30SEP02
SS23K68K5	210	01OCT02	31JUL03
1.01.03.01.01.09.46.02.04 SX-102 Isolation			
SS23K85B1	20	22OCT03	18NOV03
SS23K85B2	20	19NOV03	18DEC03
SS23K85B3	2	19DEC03	22DEC03



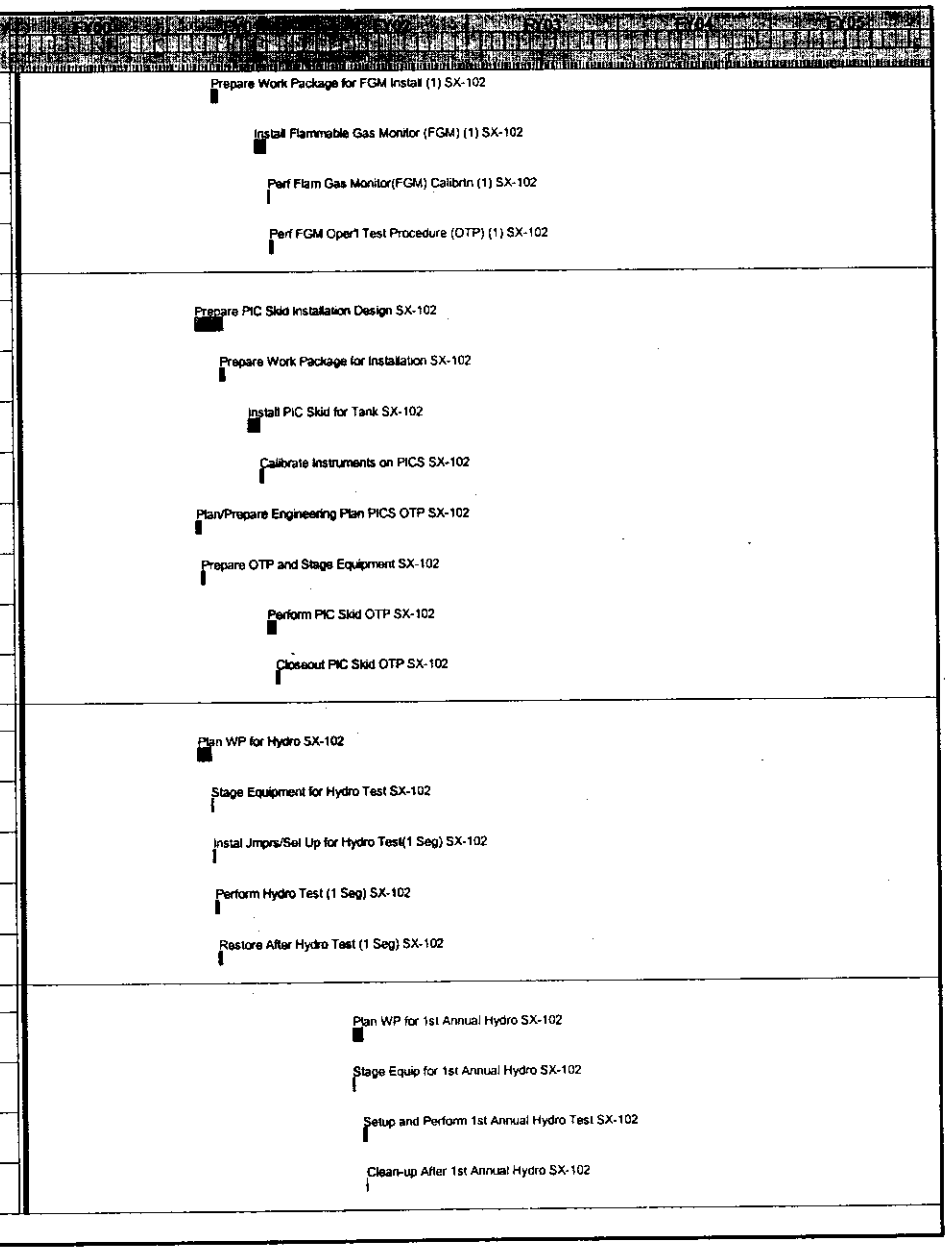
Activity ID	Rem Dur	Early Start	Early Finish
SS23K85B4	15	23DEC03	15JAN04
SS23K85B5	20	16JAN04	12FEB04
SS23K85C1	30	22OCT03	04DEC03
SS23K85C2	30	05DEC03	20JAN04
SS23K85C3	4	21JAN04	26JAN04
SS23K85C4	30	27JAN04	09MAR04
SS23K85C5	20	10MAR04	06APR04
1.01.03.01.01.09.46.02.08 Fab/Mod Cover Plates SX-102			
SS23K08B	10	01DEC00	14DEC00
SS23K08C	10	15DEC00	02JAN01
1.01.03.01.01.09.46.02.16 Saltwell Screen SX-102			
SS23K16D	10	01DEC00	14DEC00
SS23K16E1	12	29NOV00	14DEC00
SS23K16E2	2	15DEC00	18DEC00
SS23K16E3	1	19DEC00	19DEC00
SS23K16E4	1	20DEC00	20DEC00
1.01.03.01.01.09.46.02.19 Valve Pit Jumpers SX-102			
SS23K19B2	5	01DEC00	07DEC00
SS23K19CF1	5	08DEC00	14DEC00
SS23K19D	10	01DEC00	14DEC00
SS23K19E	15	30NOV00	20DEC00
SS23K19F1	2	21DEC00	22DEC00
SS23K19G1	1	27DEC00	27DEC00
SS23K19H1	1	28DEC00	28DEC00



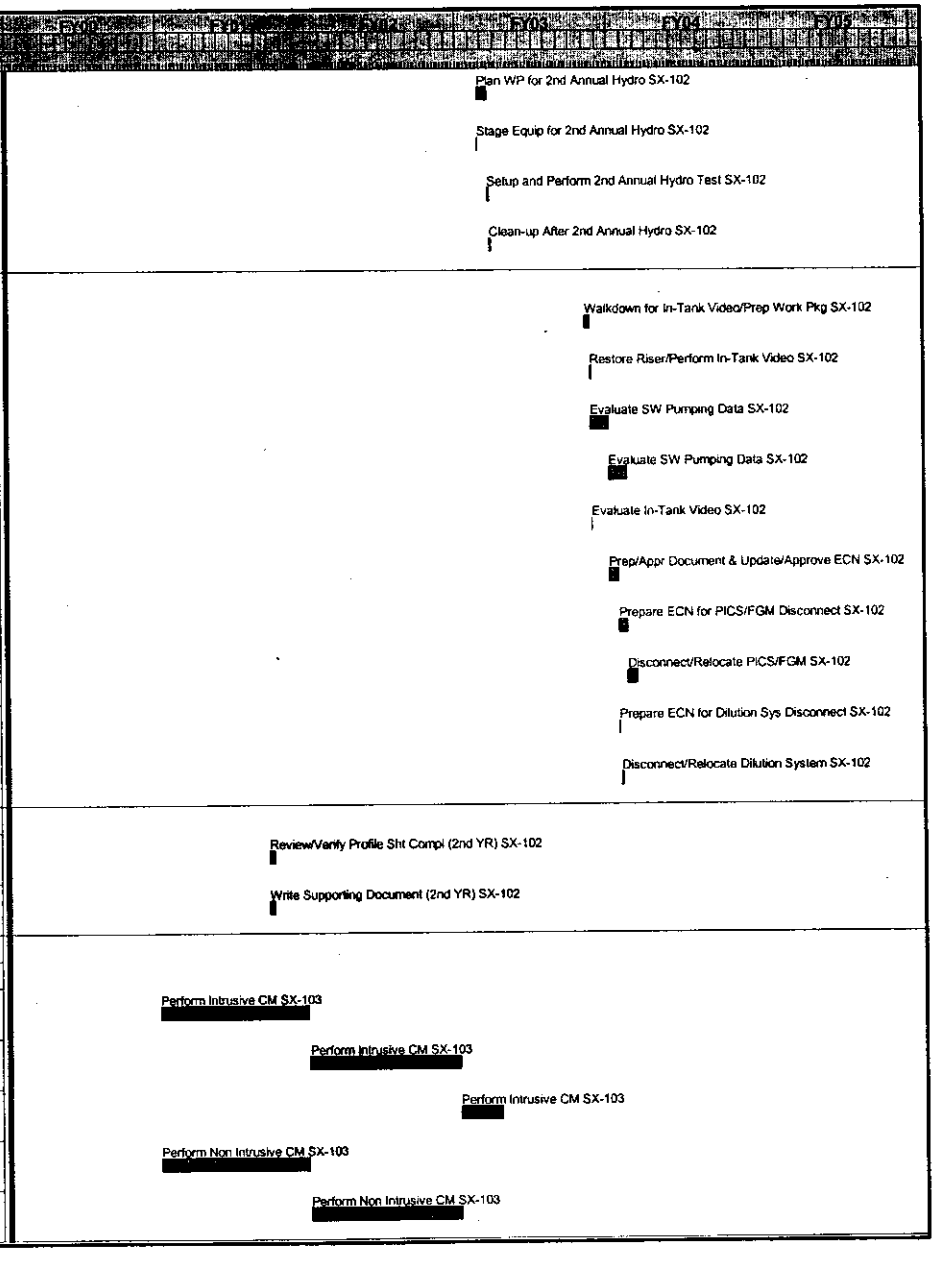
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.46.02.27 SW Jet Pumps/Jumpers SX-102			
SS23K27A	35	01DEC00	23JAN01
SS23K27C1	15	03JAN01	23JAN01
SS23K27C2	15	24JAN01	13FEB01
SS23K27D1	15	03JAN01	23JAN01
SS23K27D2	3	14FEB01	16FEB01
SS23K27E	35	01DEC00	23JAN01
SS23K27G1	10	10JAN01	23JAN01
SS23K27G2	10	24JAN01	06FEB01
SS23K27H	20	22DEC00	23JAN01
SS23K27J	2	19JUN01	20JUN01
SS23K27K	4	21JUN01	26JUN01
1.01.03.01.01.09.46.02.36 Management Self-Assessment SX-102			
SS23K36A	37	08AUG01	28SEP01
1.01.03.01.01.09.46.02.42 Install/Test SX-102 Waste Dilution System			
SS23K42C	10	08DEC00	21DEC00
SS23K42E	10	01DEC00	14DEC00
SS23K42F	15	01DEC00	21DEC00
SS23K42G	21	29MAR01	26APR01
SS23K42H	2	27APR01	30APR01
1.01.03.01.01.09.46.02.54 Initial Waste Capb Assmts SX-102			
SS23K54A	30	14MAY01	25JUN01
SS23K54B	14	06JUN01	25JUN01
1.01.03.01.01.09.46.02.55 Install/Test FGMs SX-102			
SS23K55D1	35	01DEC00	23JAN01



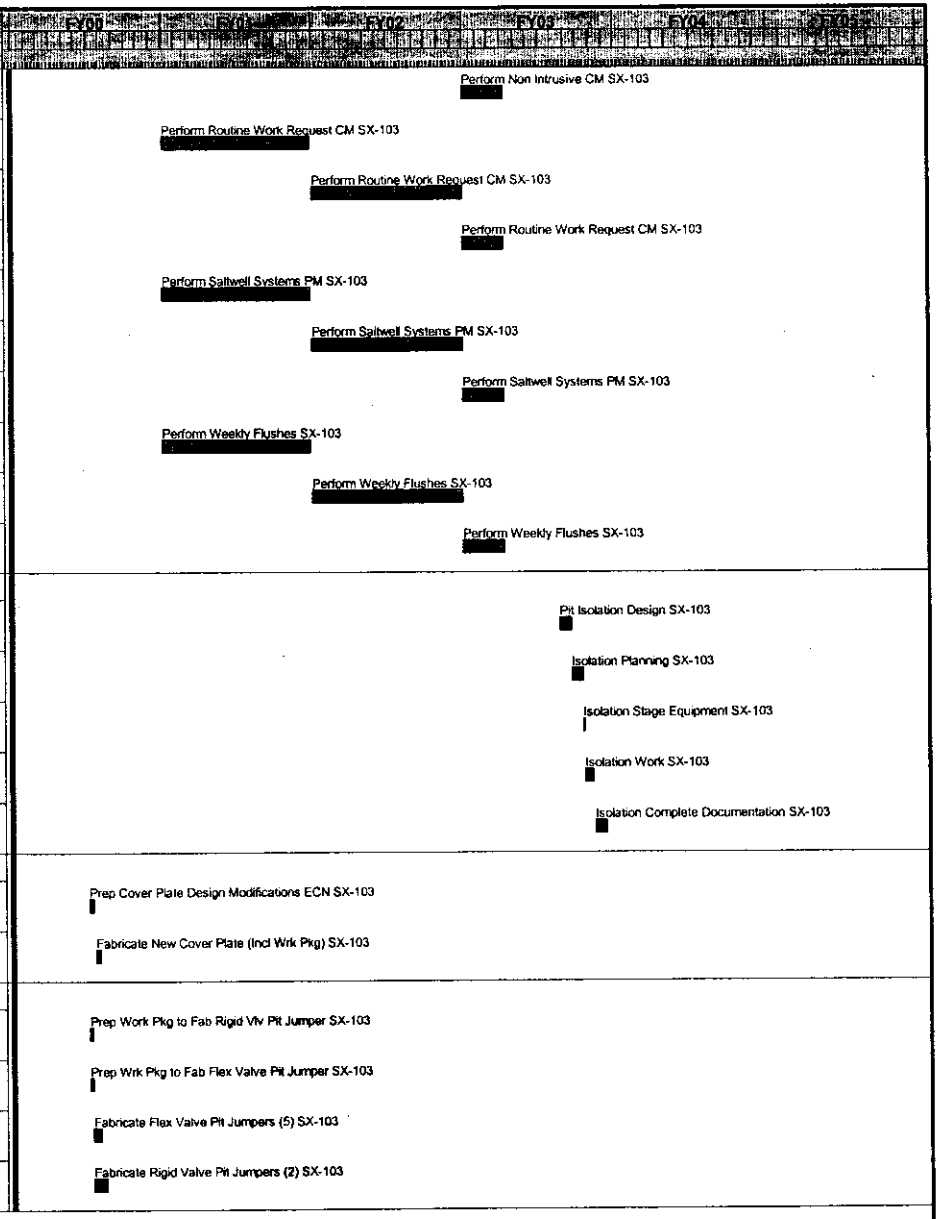
Activity ID	Rem Dur	Act Early Start	Early Finish
SS23K55E1	10	16JAN01	29JAN01
SS23K55E2	20	30APR01	25MAY01
SS23K55E3	5	29MAY01	04JUN01
SS23K55F1	5	05JUN01	11JUN01
1.01.03.01.01.09.46.02.57 PIC Skids SX-102			
SS23K57D	45	01DEC00	06FEB01
SS23K57E1	10	30JAN01	12FEB01
SS23K57E2	20	10APR01	07MAY01
SS23K57E3	5	08MAY01	14MAY01
SS23K57F1	10	01DEC00	14DEC00
SS23K57F2	5	15DEC00	21DEC00
SS23K57F3	15	21MAY01	11JUN01
SS23K57F4	5	12JUN01	18JUN01
1.01.03.01.01.09.46.02.60 Initial Hydro Test Transfer Line SX-102			
SS23K60A	20	01DEC00	02JAN01
SS23K60B	2	03JAN01	04JAN01
SS23K60C1	5	05JAN01	11JAN01
SS23K60D1	5	12JAN01	18JAN01
SS23K60E1	5	19JAN01	25JAN01
1.01.03.01.01.09.46.02.74 SX-102 Annual Hydro Test			
SS23K74A1	15	10DEC01	02JAN02
SS23K74A2	2	10DEC01	11DEC01
SS23K74A3	3	03JAN02	07JAN02
SS23K74A4	3	08JAN02	10JAN02



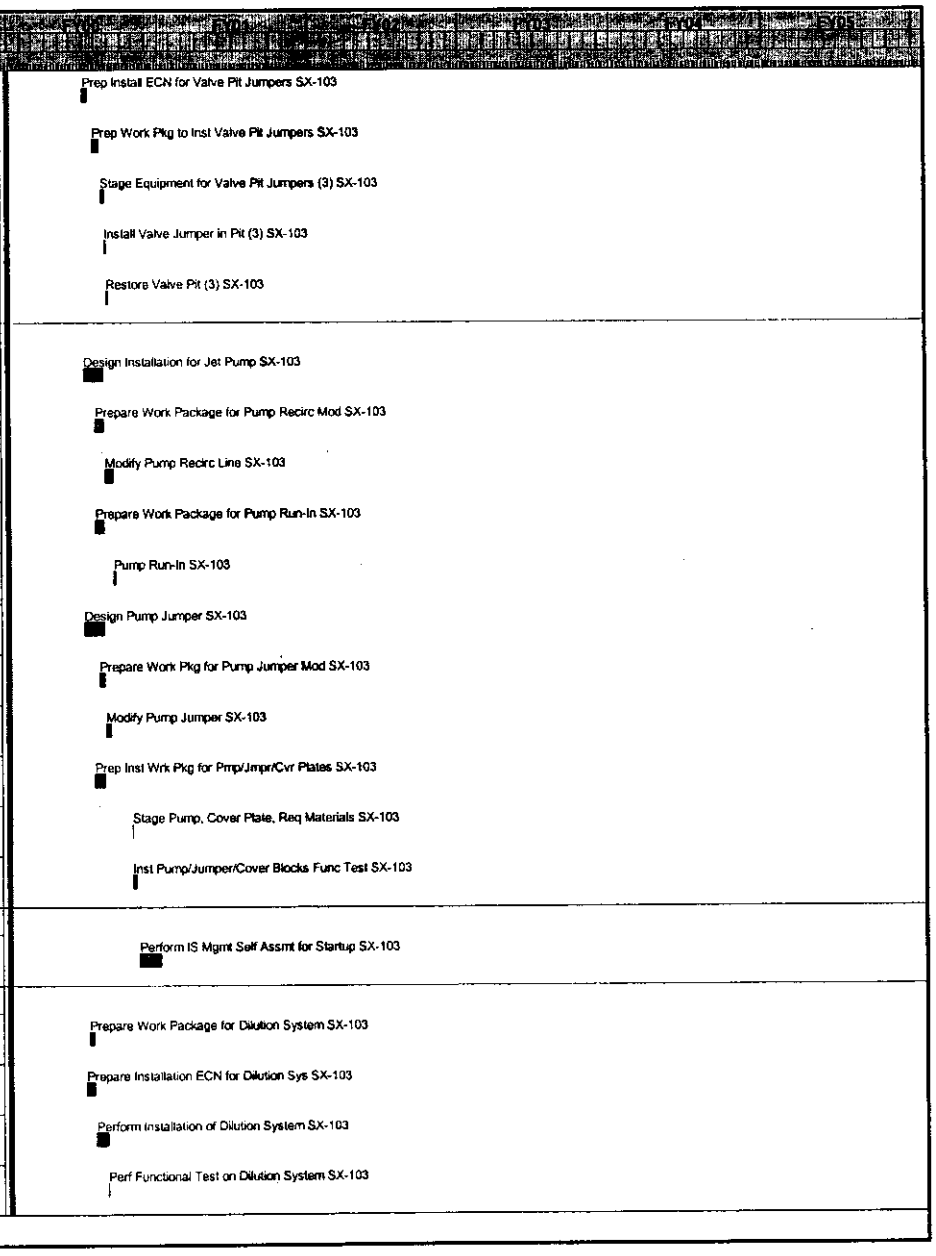
Activity ID	Rem Dur	Early Start	Early Finish
SS23K74B1	15	21NOV02	13DEC02
SS23K74B2	2	21NOV02	22NOV02
SS23K74B3	3	16DEC02	18DEC02
SS23K74B4	3	19DEC02	23DEC02
1.01.03.01.01.09.46.02.78 Post Equip Discn/Staging SX-102			
SS23K78A1	10	04AUG03	15AUG03
SS23K78A2	1	18AUG03	18AUG03
SS23K78B1	31	18AUG03	30SEP03
SS23K78B1A	29	01OCT03	10NOV03
SS23K78B2	2	19AUG03	20AUG03
SS23K78B3	15	01OCT03	21OCT03
SS23K78C1	15	22OCT03	11NOV03
SS23K78C2	15	12NOV03	04DEC03
SS23K78E1	3	22OCT03	24OCT03
SS23K78E2	5	27OCT03	31OCT03
1.01.03.01.01.09.46.02.83 Annual Waste Capb Assmts SX-102			
SS23K83C	10	26JUN01	10JUL01
SS23K83D	10	26JUN01	10JUL01
1.01.03.01.01.09.46.03 Stabilize/Isolate Tank SX-103			
1.01.03.01.01.09.46.03.03 SX-103 System Maint/Operability			
SS23L68A3	251	02OCT00	28SEP01
SS23L68A4	252	01OCT01	30SEP02
SS23L68B5	68	01OCT02	09JAN03
SS23L68C3	251	02OCT00	28SEP01
SS23L68C4	252	01OCT01	30SEP02



Activity ID	Rem. Dur.	Early Start	Early Finish
SS23L68D5	68	01OCT02	09JAN03
SS23L68E3	251	02OCT00	28SEP01
SS23L68E4	252	01OCT01	30SEP02
SS23L68F5	68	01OCT02	09JAN03
SS23L68G3	251	02OCT00	28SEP01
SS23L68G4	252	01OCT01	30SEP02
SS23L68G5	68	01OCT02	09JAN03
SS23L68J3	251	02OCT00	28SEP01
SS23L68J4	252	01OCT01	30SEP02
SS23L68M5	68	01OCT02	09JAN03
1.01.03.01.01.09.46.03.04 SX-103 Isolation			
SS23L85B1	20	20MAY03	17JUN03
SS23L85B2	20	18JUN03	16JUL03
SS23L85B3	2	17JUL03	18JUL03
SS23L85B4	15	21JUL03	08AUG03
SS23L85B5	20	11AUG03	08SEP03
1.01.03.01.01.09.46.03.08 Fab/Mod Cover Plates SX-103			
SS23L08B	10	03APR00	14APR00
SS23L08C	10	17APR00	28APR00
1.01.03.01.01.09.46.03.19 Valve Pit Jumpers SX-103			
SS23L19B1	5	03APR00	07APR00
SS23L19B2	5	03APR00	07APR00
SS23L19CF5	15	10APR00	28APR00
SS23L19CR2	25	10APR00	12MAY00

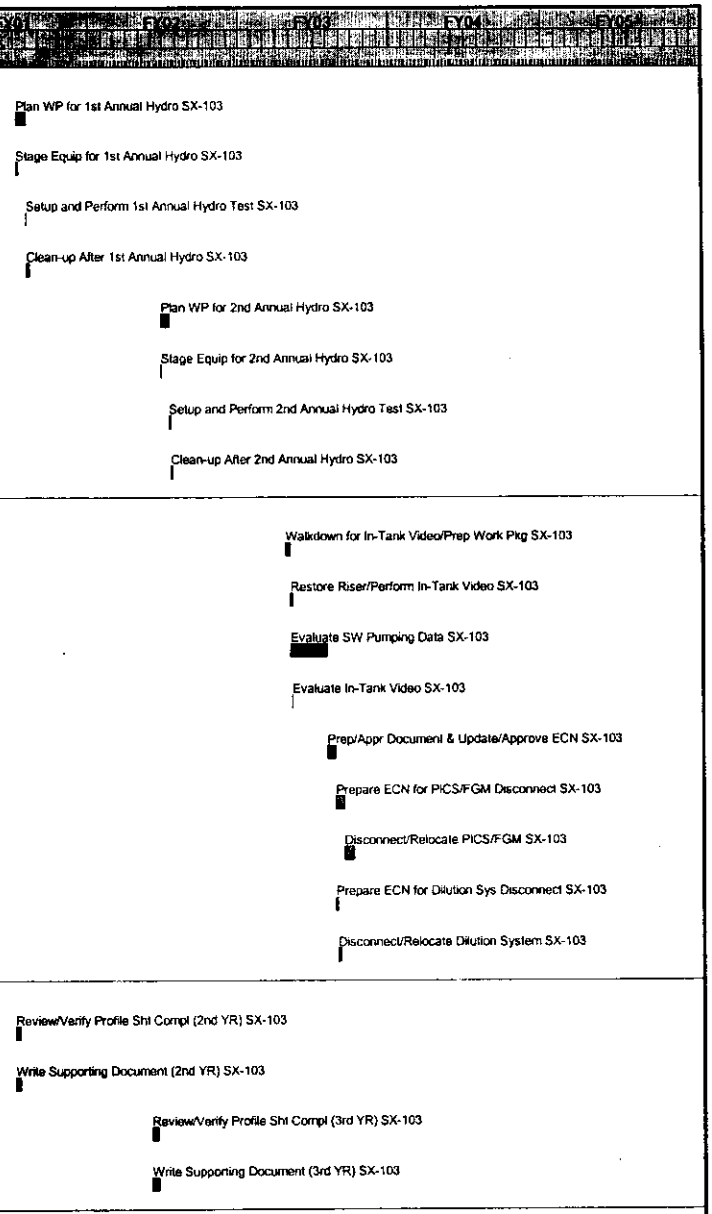


Activity ID	Rem Dur	Early Start	Early Finish
SS23L19D	10	03APR00	14APR00
SS23L19E	15	24APR00	12MAY00
SS23L19F3	6	15MAY00	22MAY00
SS23L19G3	3	23MAY00	25MAY00
SS23L19H3	3	26MAY00	31MAY00
1.01.03.01.01.09.46.03.27 SW Jet Pumps/Jumpers SX-103			
SS23L27A	35	03APR00	19MAY00
SS23L27C1	15	01MAY00	19MAY00
SS23L27C2	15	22MAY00	12JUN00
SS23L27D1	15	01MAY00	19MAY00
SS23L27D2	3	13JUN00	15JUN00
SS23L27E	35	03APR00	19MAY00
SS23L27G1	10	08MAY00	19MAY00
SS23L27G2	10	22MAY00	05JUN00
SS23L27H	20	24APR00	19MAY00
SS23L27J	2	25JUL00	26JUL00
SS23L27K	4	27JUL00	01AUG00
1.01.03.01.01.09.46.03.36 Management Self-Assessment SX-103			
SS23L36A	52	10AUG00	30SEP00
1.01.03.01.01.09.46.03.42 Install/Test SX-103 Waste Dilution System			
SS23L42C	10	10APR00	21APR00
SS23L42F	15	03APR00	21APR00
SS23L42G	21	24APR00	22MAY00
SS23L42H	2	23MAY00	24MAY00

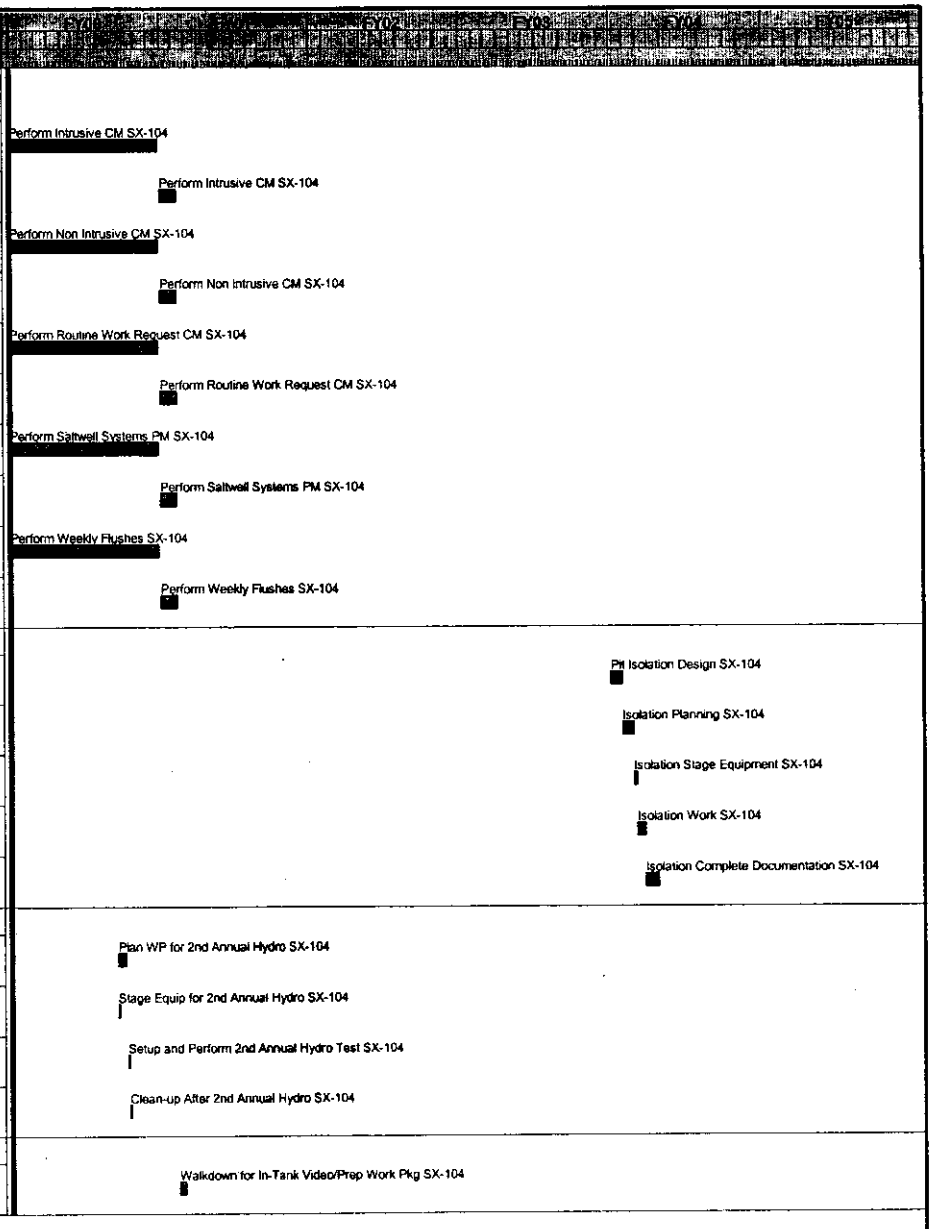


Activity ID	Rem Dur	Early Start	Early Finish	Activity
1.01.03.01.01.09.46.03.54 Initial Waste Capb Assmts SX-103				
SS23L54A	30	03APR00	12MAY00	Review/Verify Profile Sht Compl Initial SX-103
SS23L54B	14	25APR00	12MAY00	Write Supporting Document Initial SX-103
1.01.03.01.01.09.46.03.55 Install/Test FGMs SX-103				
SS23L55D1	35	03APR00	19MAY00	Prepare Installation ECN for FGM (1) SX-103
SS23L55E1	10	12MAY00	25MAY00	Prepare Work Package for FGM Install (1) SX-103
SS23L55E2	20	26MAY00	23JUN00	Install Flammable Gas Monitor (FGM) (1) SX-103
SS23L55E3	5	26JUN00	30JUN00	Perf Flam Gas Monitor(FGM) Calibrtn (1) SX-103
SS23L55F1	5	03JUL00	10JUL00	Perf FGM Oper't Test Procedure (OTP) (1) SX-103
1.01.03.01.01.09.46.03.57 PIC Skids SX-103				
SS23L57D	45	03APR00	05JUN00	Prepare PIC Skid Installation Design SX-103
SS23L57E1	10	26MAY00	09JUN00	Prepare Work Package for installation SX-103
SS23L57E2	20	12JUN00	10JUL00	Install PIC Skid for Tank SX-103
SS23L57E3	5	11JUL00	17JUL00	Calibrate Instruments on PICS SX-103
SS23L57F1	10	03APR00	14APR00	Plan/Prepare Engineering Plan PICS OTP SX-103
SS23L57F2	5	17APR00	21APR00	Prepare OTP and Stage Equipment SX-103
SS23L57F3	15	26JUN00	17JUL00	Perform PIC Skid OTP SX-103
SS23L57F4	5	18JUL00	24JUL00	Closeout PIC Skid OTP SX-103
1.01.03.01.01.09.46.03.60 Initial Hydro Test Transfer Line SX-103				
SS23L60A	20	03APR00	28APR00	Plan WP for Hydro SX-103
SS23L60B	2	01MAY00	02MAY00	Stage Equipment for Hydro Test SX-103
SS23L60C1	5	03MAY00	09MAY00	Instal Jmprs/Set Up for Hydro Test(1 Seg) SX-103
SS23L60D1	5	10MAY00	16MAY00	Perform Hydro Test (1 Seg) SX-103
SS23L60E1	5	17MAY00	23MAY00	Restore After Hydro Test (1 Seg) SX-103

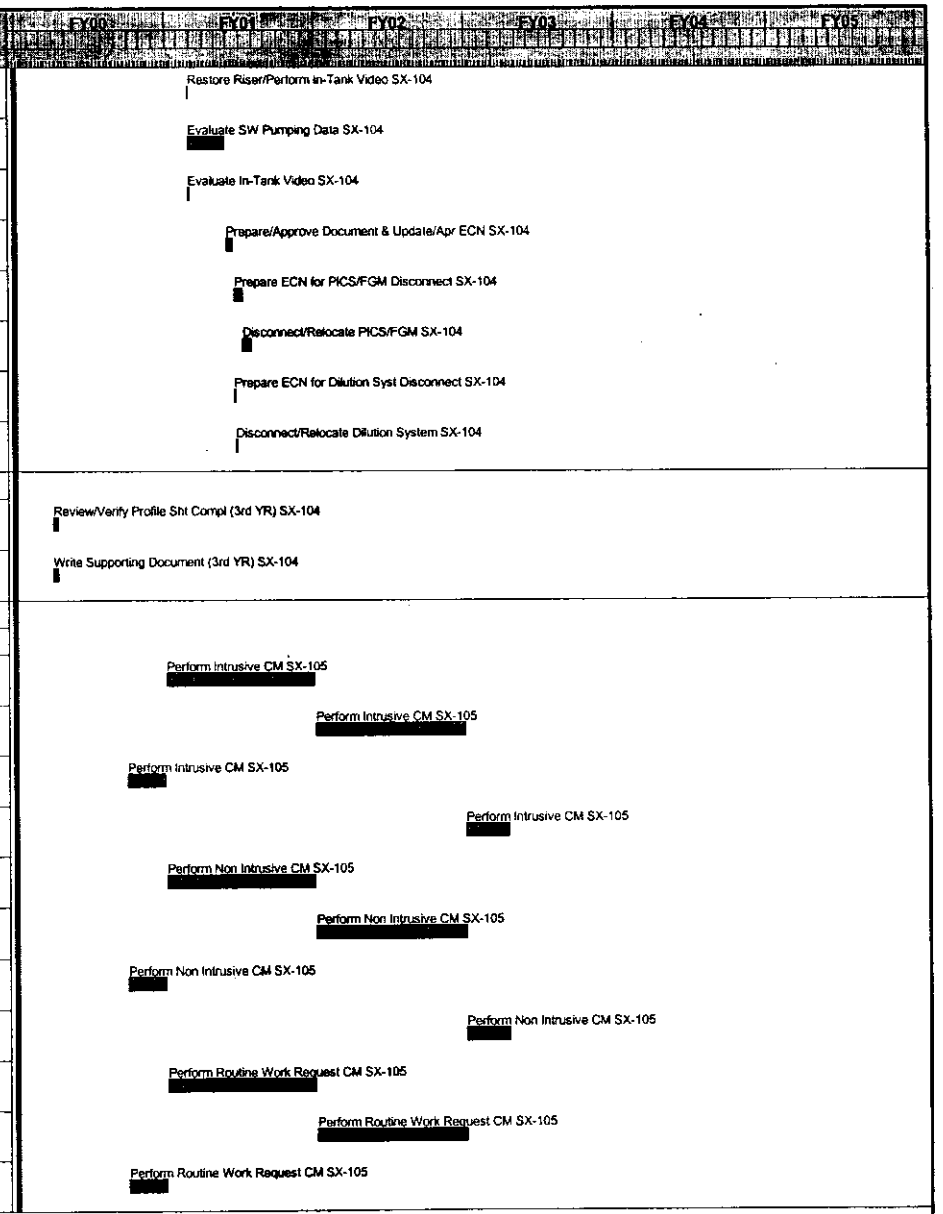
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.46.03.74 SX-103 Annual Hydro Test			
SS23L74A1	15	10APR01	30APR01
SS23L74A2	2	10APR01	11APR01
SS23L74A3	3	01MAY01	03MAY01
SS23L74A4	3	04MAY01	08MAY01
SS23L74B1	15	26MAR02	15APR02
SS23L74B2	2	26MAR02	27MAR02
SS23L74B3	3	16APR02	18APR02
SS23L74B4	3	19APR02	23APR02
1.01.03.01.01.09.46.03.78 Post Equip Discn/Staging SX-103			
SS23L78A1	10	20JAN03	31JAN03
SS23L78A2	1	03FEB03	03FEB03
SS23L78B1	60	03FEB03	28APR03
SS23L78B2	2	04FEB03	05FEB03
SS23L78B3	15	29APR03	19MAY03
SS23L78C1	15	20MAY03	10JUN03
SS23L78C2	15	11JUN03	01JUL03
SS23L78E1	3	20MAY03	22MAY03
SS23L78E2	5	23MAY03	30MAY03
1.01.03.01.01.09.46.03.83 Annual Waste Capb Assmts SX-103			
SS23L83C	10	30MAR01	12APR01
SS23L83D	10	30MAR01	12APR01
SS23L83E	10	28FEB02	13MAR02
SS23L83F	10	28FEB02	13MAR02



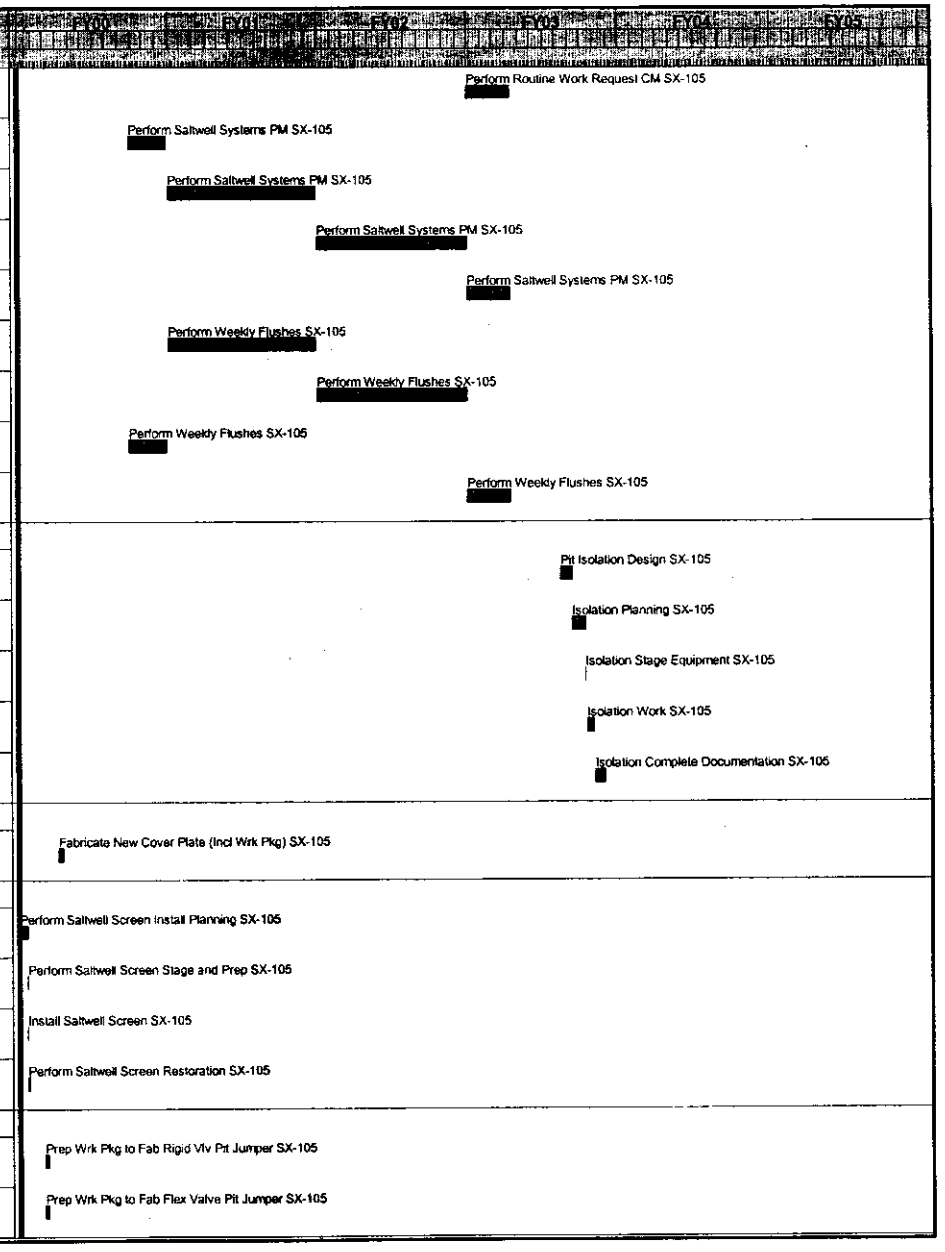
Activity ID	Original Dur	Early Start	Early Finish
1.01.03.01.01.09.46.04 Stabilize/Isolate Tank SX-104			
1.01.03.01.01.09.46.04.03 SX-104 System Maint/Operability			
SS23M68A2	252	01OCT99	29SEP00
SS23M68B3	29	02OCT00	09NOV00
SS23M68C2	252	01OCT99	29SEP00
SS23M68D3	29	02OCT00	09NOV00
SS23M68E2	252	01OCT99	29SEP00
SS23M68F3	29	02OCT00	09NOV00
SS23M68G2	252	01OCT99	29SEP00
SS23M68G3	29	02OCT00	09NOV00
SS23M68J2	252	01OCT99	29SEP00
SS23M68M3	29	02OCT00	09NOV00
1.01.03.01.01.09.46.04.04 SX-104 Isolation			
SS23M85A1	20	01OCT03*	28OCT03
SS23M85A2	20	29OCT03	25NOV03
SS23M85A3	2	26NOV03	01DEC03
SS23M85A4	15	02DEC03	22DEC03
SS23M85A5	20	23DEC03	22JAN04
1.01.03.01.01.09.46.04.74 Annual Hydro Transfer Line SX-104			
SS23M74B1	15	16JUN00*	07JUL00
SS23M74B2	2	16JUN00	19JUN00
SS23M74B3	3	10JUL00	12JUL00
SS23M74B4	3	13JUL00	17JUL00
1.01.03.01.01.09.46.04.78 Post Equip Discn/Staging SX-104			
SS23M78A1	10	10NOV00	27NOV00



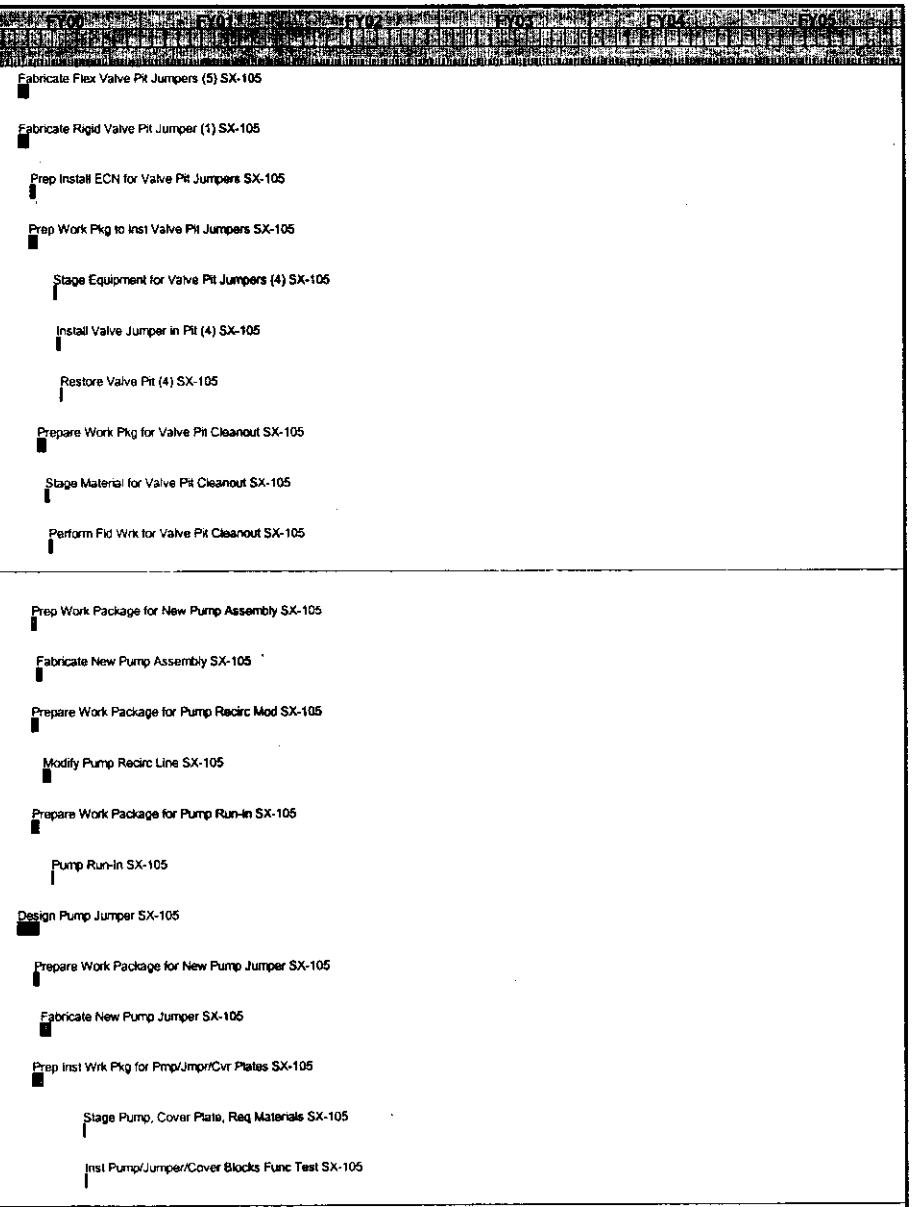
Activity ID	Rem Dur	Early Start	Early Finish
SS23M78A2	1	28NOV00	28NOV00
SS23M78B1	60	28NOV00	23FEB01
SS23M78B2	2	29NOV00	30NOV00
SS23M78B3	15	26FEB01	16MAR01
SS23M78C1	15	19MAR01	06APR01
SS23M78C2	15	09APR01	27APR01
SS23M78E1	3	19MAR01	21MAR01
SS23M78E2	5	22MAR01	28MAR01
1.01.03.01.01.09.46.04.83 Annual Waste Capb Assmts SX-104			
SS23M83E	10	30DEC99*	13JAN00
SS23M83F	10	30DEC99	13JAN00
1.01.03.01.01.09.46.05 Stabilize/Isolate Tank SX-105			
1.01.03.01.01.09.46.05.03 SX-105 System Maint/Operability			
SS23N68A3	251	02OCT00	28SEP01
SS23N68A4	252	01OCT01	30SEP02
SS23N68B2	67	27JUN00*	29SEP00
SS23N68B5	70	01OCT02	13JAN03
SS23N68C3	251	02OCT00	28SEP01
SS23N68C4	252	01OCT01	30SEP02
SS23N68D2	67	27JUN00	29SEP00
SS23N68D5	70	01OCT02	13JAN03
SS23N68E3	251	02OCT00	28SEP01
SS23N68E4	252	01OCT01	30SEP02
SS23N68F2	67	27JUN00	29SEP00



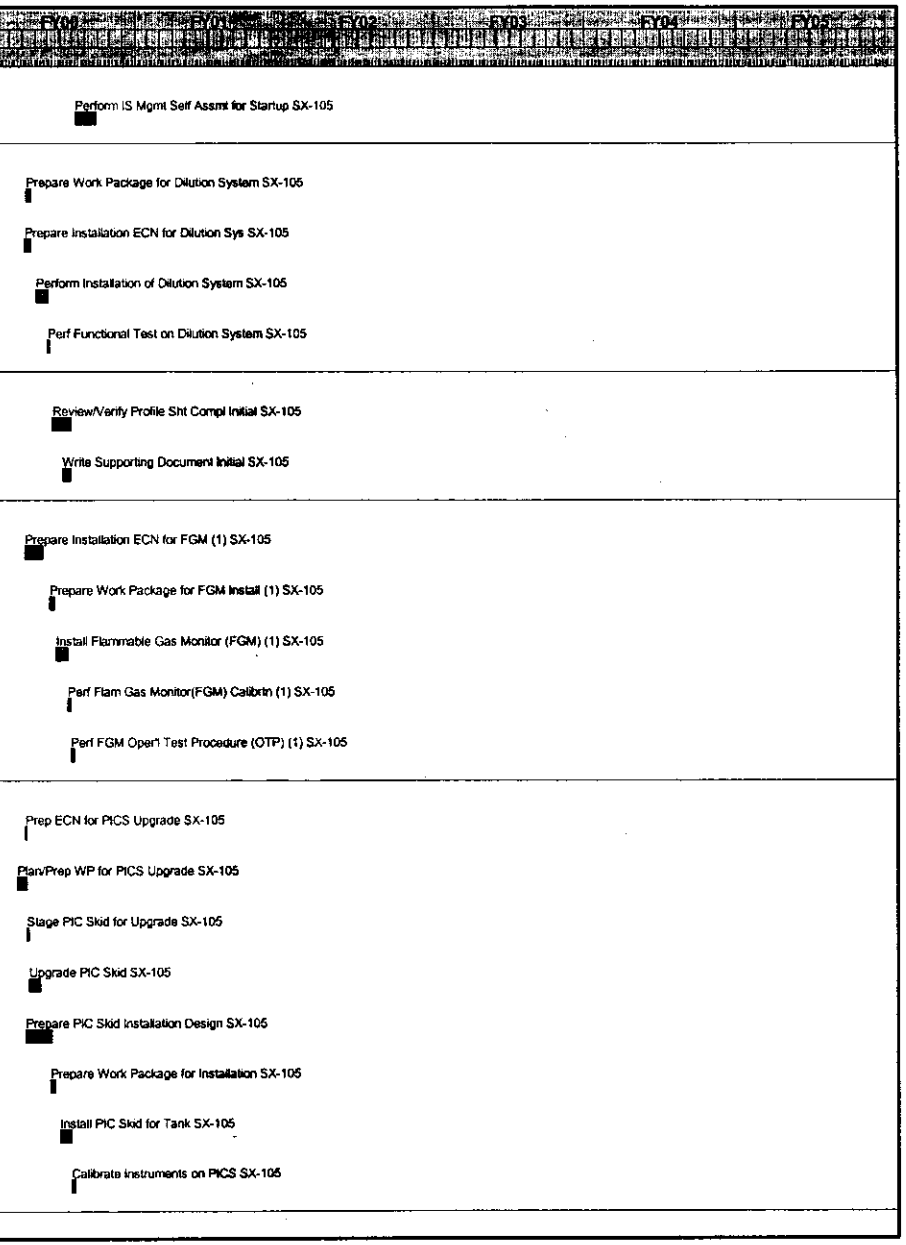
Activity ID	Rem Dur	Early Start	Early Finish
SS23N68F5	70	01OCT02	13JAN03
SS23N68G2	67	27JUN00	29SEP00
SS23N68G3	251	02OCT00	28SEP01
SS23N68G4	252	01OCT01	30SEP02
SS23N68G5	70	01OCT02	13JAN03
SS23N68J3	251	02OCT00	28SEP01
SS23N68J4	252	01OCT01	30SEP02
SS23N68M2	67	27JUN00	29SEP00
SS23N68M5	70	01OCT02	13JAN03
1.01.03.01.01.09.46.05.04 SX-105 Isolation			
SS23N85B1	20	13MAY03	10JUN03
SS23N85B2	20	11JUN03	09JUL03
SS23N85B3	2	10JUL03	11JUL03
SS23N85B4	15	14JUL03	01AUG03
SS23N85B5	20	04AUG03	29AUG03
1.01.03.01.01.09.46.05.08 Fab/Mod Cover Plates SX-105			
SS23N08C	10	03JAN00*	14JAN00
1.01.03.01.01.09.46.05.16 Saltwell Screen SX-105			
SS23N16E1	12	01OCT99*	18OCT99
SS23N16E2	2	19OCT99	20OCT99
SS23N16E3	1	21OCT99	21OCT99
SS23N16E4	1	22OCT99	22OCT99
1.01.03.01.01.09.46.05.19 Valve Pit Jumpers SX-105			
SS23N19B1	5	01DEC99*	07DEC99
SS23N19B2	5	01DEC99	07DEC99



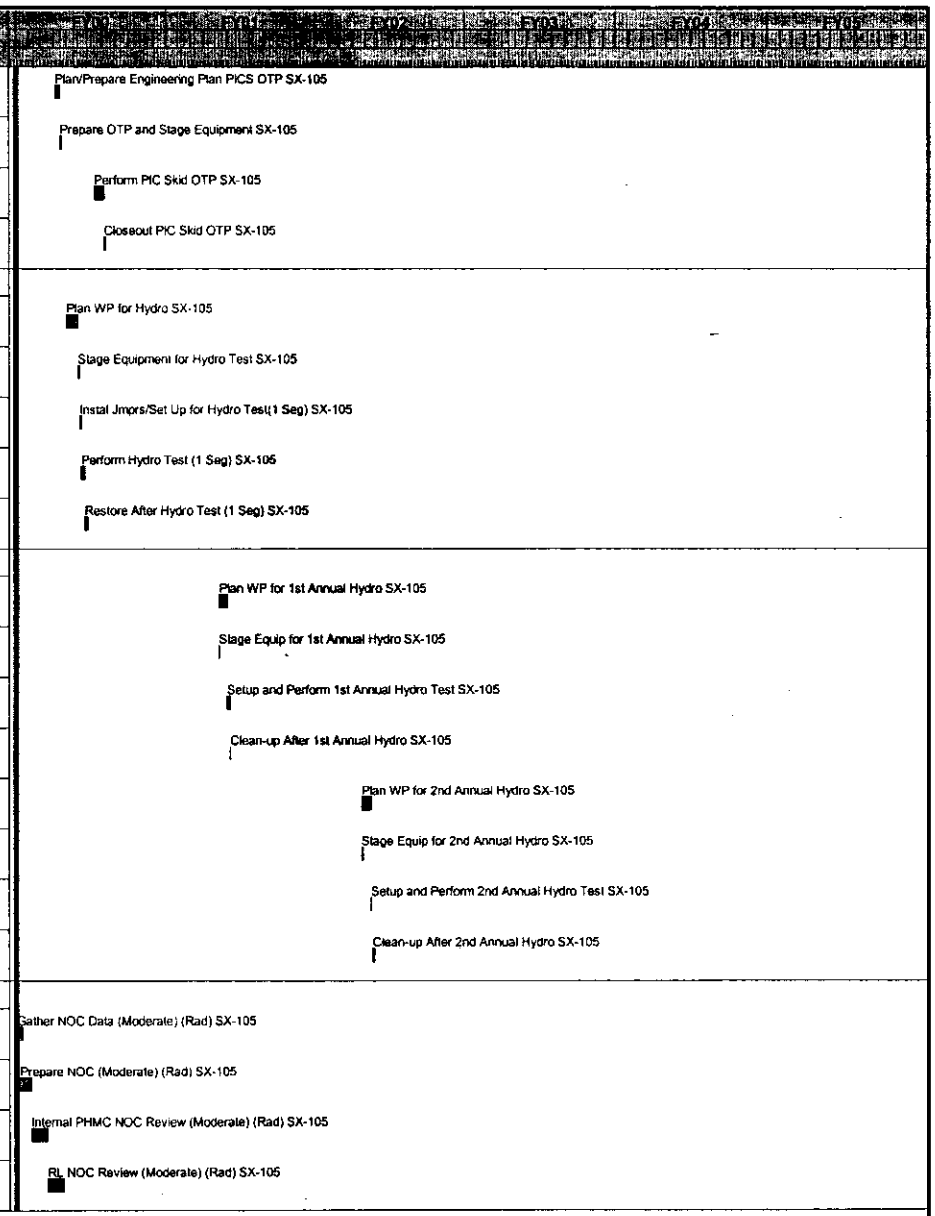
Activity ID	Rem Dur	Early Start	Early Finish
SS23N19CF5	15	08DEC99	30DEC99
SS23N19CR1	15	08DEC99	30DEC99
SS23N19D	10	03JAN00*	14JAN00
SS23N19E	15	30DEC99*	20JAN00
SS23N19F4	8	28FEB00	08MAR00
SS23N19G4	4	09MAR00	14MAR00
SS23N19H4	4	15MAR00	20MAR00
SS23N19J	15	21JAN00	10FEB00
SS23N19K	5	11FEB00	17FEB00
SS23N19L	5	18FEB00	25FEB00
1.01.03.01.01.09.46.05.27 SW Jet Pumps/Jumpers SX-105			
SS23N27B1	10	03JAN00*	14JAN00
SS23N27B2	10	17JAN00	28JAN00
SS23N27C1	15	03JAN00	21JAN00
SS23N27C2	15	31JAN00	18FEB00
SS23N27D1	15	03JAN00	21JAN00
SS23N27D2	3	22FEB00	24FEB00
SS23N27E	35	01DEC99*	21JAN00
SS23N27F1	10	10JAN00	21JAN00
SS23N27F2	20	24JAN00	18FEB00
SS23N27H	20	03JAN00	28JAN00
SS23N27J	2	09MAY00	10MAY00
SS23N27K	4	11MAY00	16MAY00



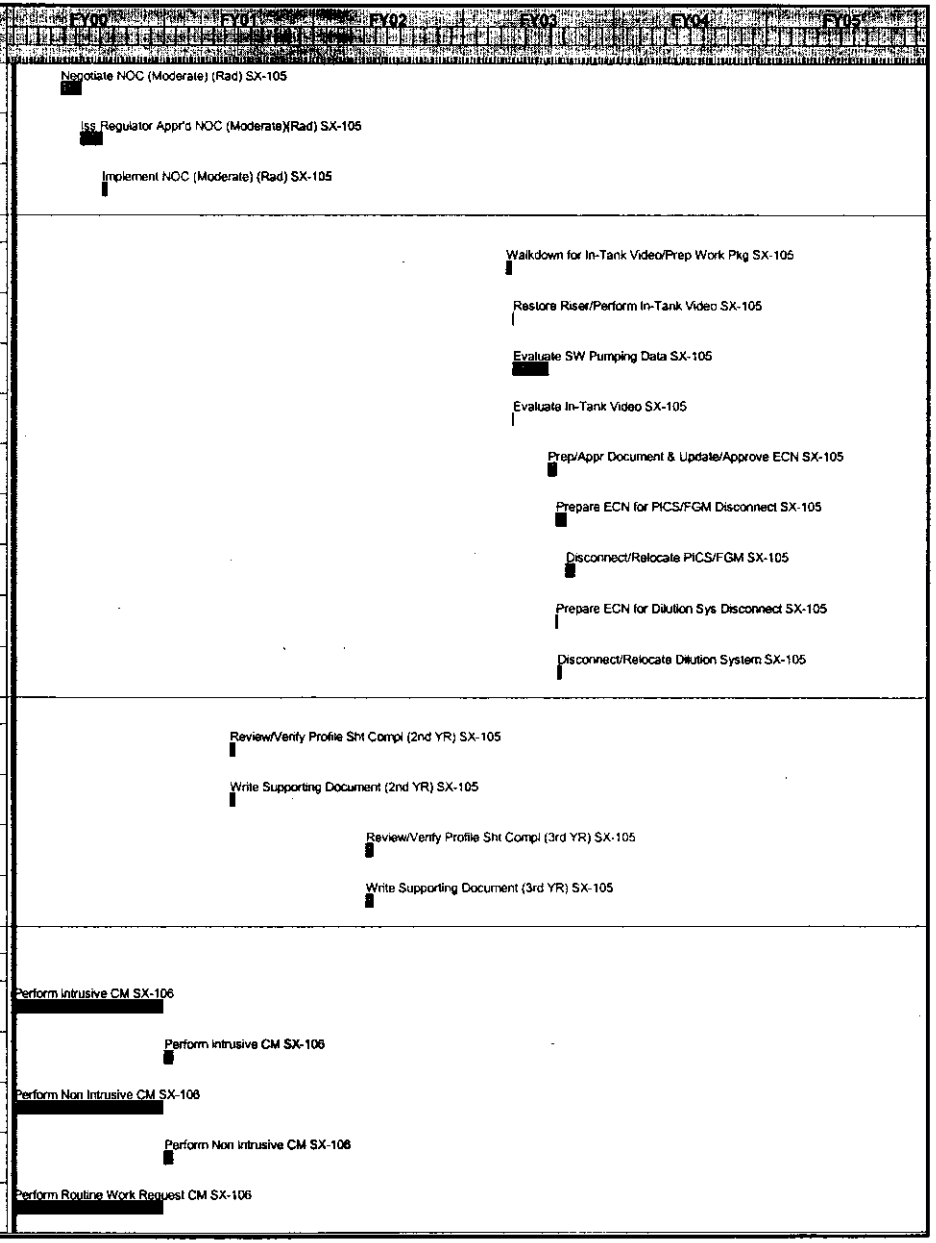
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.46.05.36 Management Self-Assessment SX-105			
SS23N36A	35	08MAY00*	26JUN00
1.01.03.01.01.09.46.05.42 Waste Stream Dilution Sys SX-105			
SS23N42C	10	10JAN00*	21JAN00
SS23N42F	15	03JAN00*	21JAN00
SS23N42G	21	01FEB00	01MAR00
SS23N42H	2	02MAR00	03MAR00
1.01.03.01.01.09.46.05.54 Initial Waste Capb Assmts SX-105			
SS23N54A	30	14MAR00*	24APR00
SS23N54B	14	05APR00	24APR00
1.01.03.01.01.09.46.05.55 Install/Test FGMs SX-105			
SS23N55D1	35	03JAN00*	18FEB00
SS23N55E1	10	06MAR00	17MAR00
SS23N55E2	20	21MAR00	17APR00
SS23N55E3	5	18APR00	24APR00
SS23N55F1	5	25APR00	01MAY00
1.01.03.01.01.09.46.05.57 PIC Skids SX-105			
SS23N57B1	5	03JAN00*	07JAN00
SS23N57B2	15	15DEC99	07JAN00
SS23N57B3	2	10JAN00	11JAN00
SS23N57B4	20	12JAN00	08FEB00
SS23N57D	45	03JAN00	06MAR00
SS23N57E1	10	06MAR00	17MAR00
SS23N57E2	20	28MAR00	24APR00
SS23N57E3	5	25APR00	01MAY00



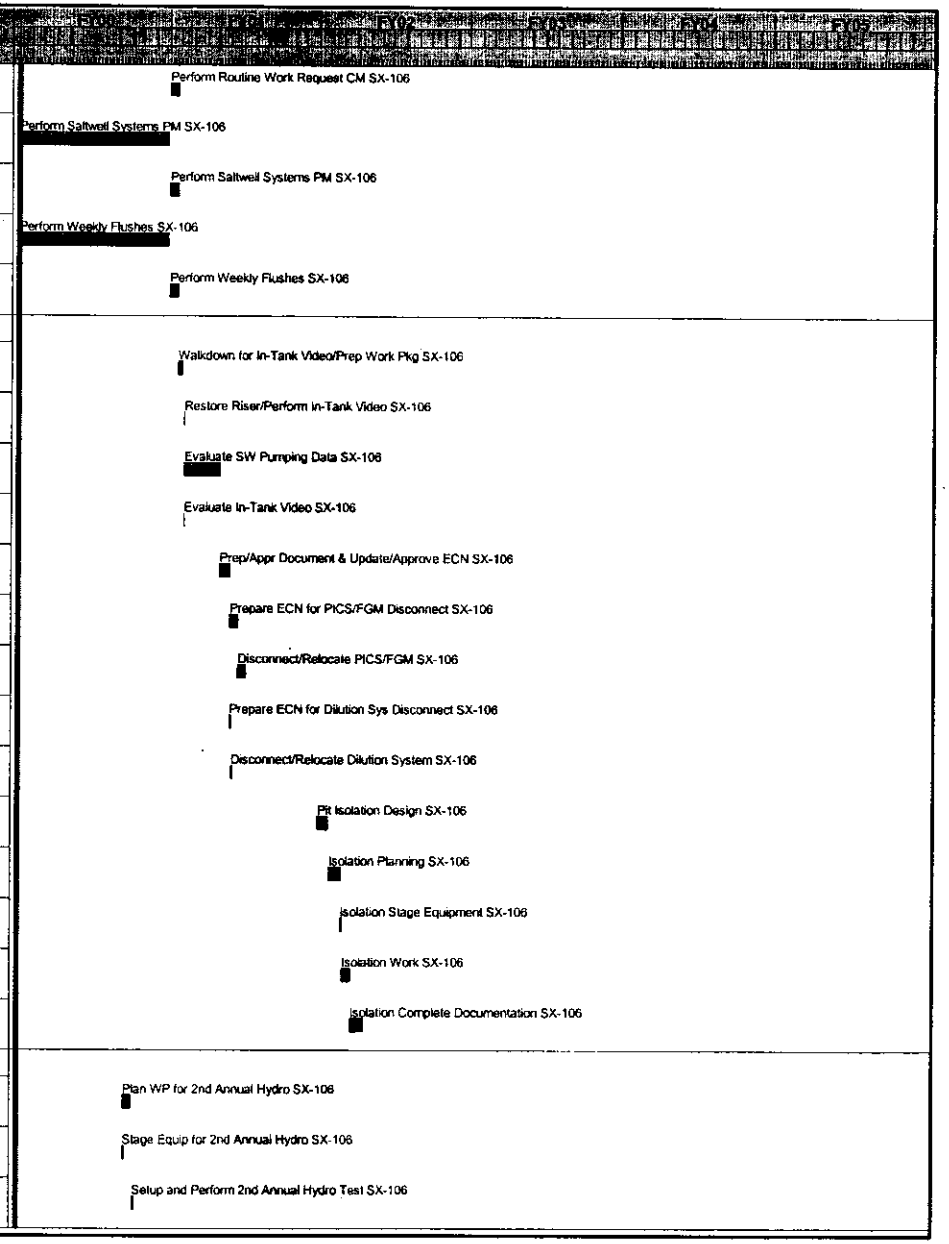
Activity ID	Rem. Dur.	Early Start	Early Finish
SS23N57F1	10	03JAN00	14JAN00
SS23N57F2	5	17JAN00	21JAN00
SS23N57F3	15	11APR00	01MAY00
SS23N57F4	5	02MAY00	08MAY00
1.01.03.01.01.09.46.05.60 Hydro Test Transfer Line SX-105			
SS23N60A	20	01FEB00*	29FEB00
SS23N60B	2	01MAR00	02MAR00
SS23N60C1	5	03MAR00	09MAR00
SS23N60D1	5	10MAR00	16MAR00
SS23N60E1	5	17MAR00	23MAR00
1.01.03.01.01.09.46.05.74 SX-105 Annual Hydro Test			
SS23N74A1	15	07FEB01	28FEB01
SS23N74A2	2	07FEB01	08FEB01
SS23N74A3	3	01MAR01	05MAR01
SS23N74A4	3	06MAR01	08MAR01
SS23N74B1	15	23JAN02	12FEB02
SS23N74B2	2	23JAN02	24JAN02
SS23N74B3	3	13FEB02	15FEB02
SS23N74B4	3	19FEB02	21FEB02
1.01.03.01.01.09.46.05.75 Dev/Implement SX-105 NOCs			
SS23N75B1	10	01OCT99	14OCT99
SS23N75B2	19	08OCT99	03NOV99
SS23N75B3	40	04NOV99	13DEC99
SS23N75B4	40	14DEC99	22JAN00



Activity ID	Rem Dur	Early Start	Early Finish
SS23N75B5	50	23JAN00	12MAR00
SS23N75B6	50	13MAR00	01MAY00
SS23N75B7	10	02MAY00	15MAY00
1.01.03.01.01.09.46.05.78 Post Equip Discn/Staging SX-105			
SS23N78A1	10	13JAN03	24JAN03
SS23N78A2	1	27JAN03	27JAN03
SS23N78B1	60	27JAN03	21APR03
SS23N78B2	2	28JAN03	29JAN03
SS23N78B3	15	22APR03	12MAY03
SS23N78C1	15	13MAY03	03JUN03
SS23N78C2	15	04JUN03	24JUN03
SS23N78E1	3	13MAY03	15MAY03
SS23N78E2	5	16MAY03	22MAY03
1.01.03.01.01.09.46.05.83 Annual Waste Capb Assmts SX-105			
SS23N83C	10	12MAR01	23MAR01
SS23N83D	10	12MAR01	23MAR01
SS23N83E	10	07FEB02	21FEB02
SS23N83F	10	07FEB02	21FEB02
1.01.03.01.01.09.46.06 Stabilze/Isolate Tank SX-106			
1.01.03.01.01.09.46.06.03 SX-106 System Maint/Operability			
SS23P68A2	252	01OCT99	29SEP00
SS23P68A3	15	02OCT00	20OCT00
SS23P68C2	252	01OCT99	29SEP00
SS23P68C3	15	02OCT00	20OCT00
SS23P68E2	252	01OCT99	29SEP00

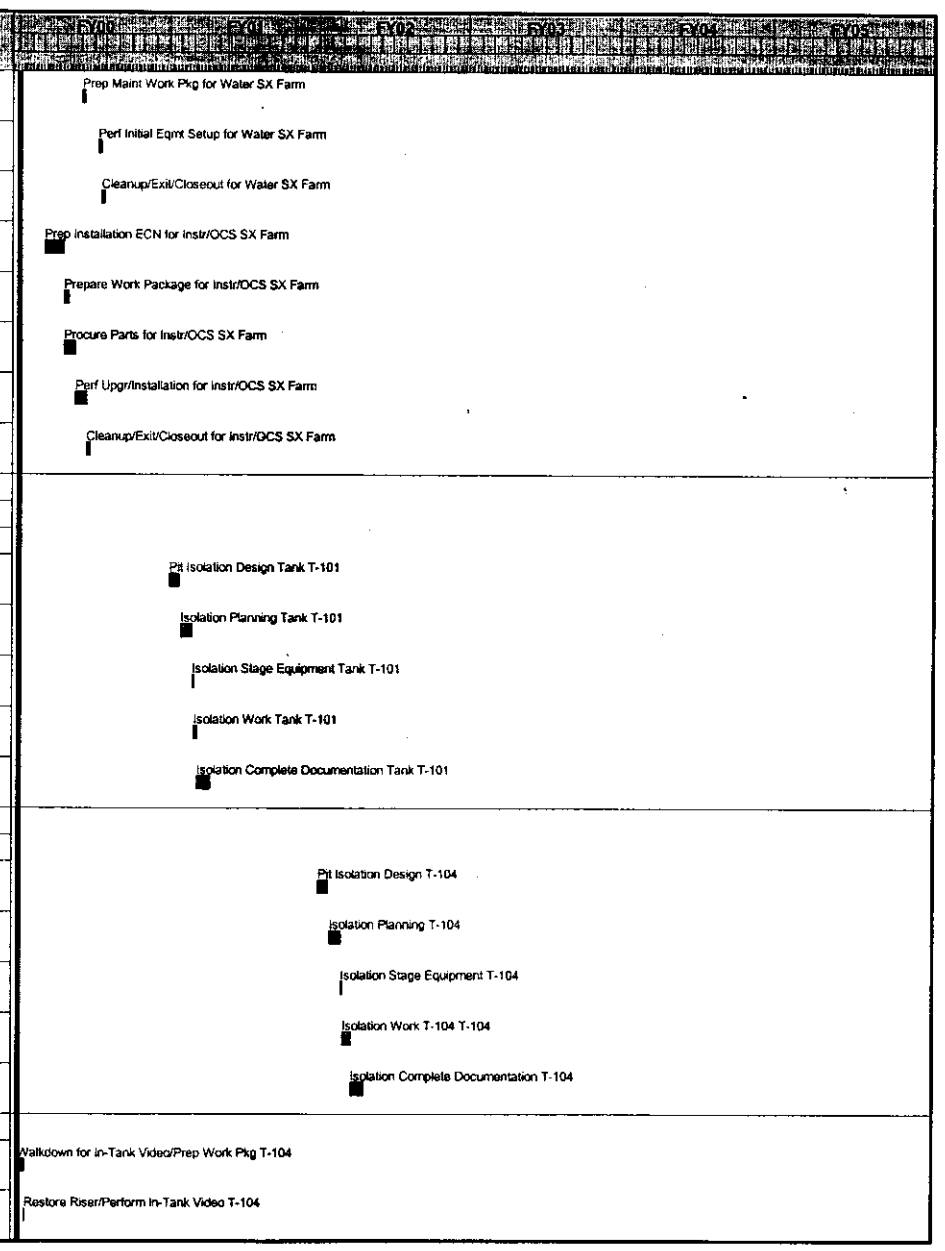


Activity ID	Rem. Dur.	Start	Finish
SS23P68E3	15	02OCT00	20OCT00
SS23P68G21	252	01OCT99	29SEP00
SS23P68G3	15	02OCT00	20OCT00
SS23P68J2	252	01OCT99	29SEP00
SS23P68J3	15	02OCT00	20OCT00
1.01.03.01.01.09.46.06.04 SX-106 Isolation			
SS23P78A1	10	23OCT00	03NOV00
SS23P78A2	1	06NOV00	06NOV00
SS23P78B1	60	06NOV00	02FEB01
SS23P78B2	2	07NOV00	08NOV00
SS23P78B3	15	05FEB01	26FEB01
SS23P78C1	15	27FEB01	19MAR01
SS23P78C2	15	20MAR01	09APR01
SS23P78E1	3	27FEB01	01MAR01
SS23P78E2	5	02MAR01	08MAR01
SS23P85B1	20	01OCT01*	26OCT01
SS23P85B2	20	29OCT01	27NOV01
SS23P85B3	2	28NOV01	29NOV01
SS23P85B4	15	30NOV01	20DEC01
SS23P85B5	20	21DEC01	22JAN02
1.01.03.01.01.09.46.06.76 Annual Hydro Transfer Line SX-106			
SS23P74B1	15	16JUN00*	07JUL00
SS23P74B2	2	16JUN00	19JUN00
SS23P74B3	3	10JUL00	12JUL00

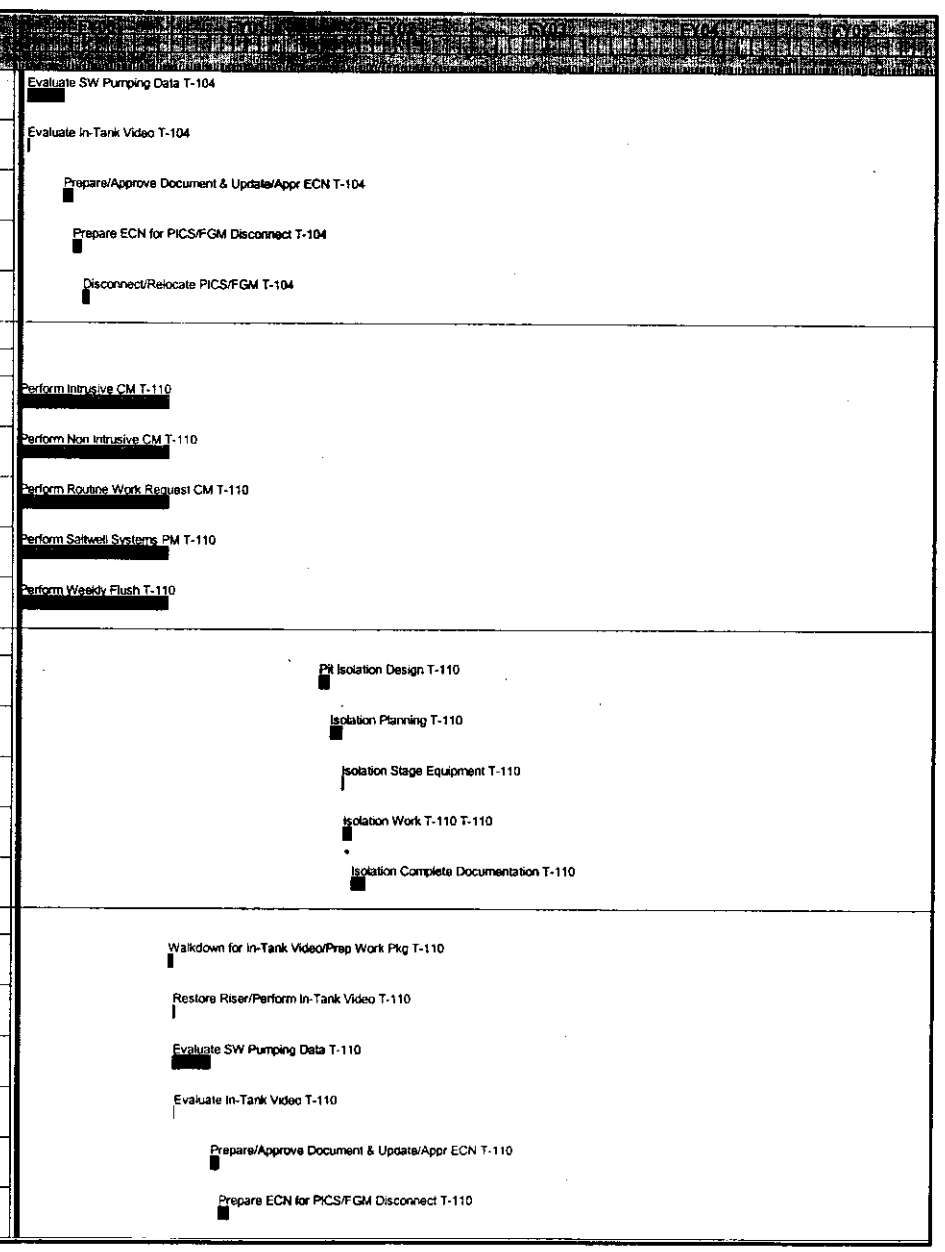


Activity ID	Rem Dur	Early Start	Early Finish	Clean-up After 2nd Annual Hydro SX-106
SS23P74B4	3	13JUL00	17JUL00	
1.01.03.01.01.09.46.06.83 Annual Waste Capb Assmts SX-106				
SS23P83E	10	01AUG00*	14AUG00	Review/Verify Profile Sht Compl (3rd YR) SX-106
SS23P83F	10	01AUG00	14AUG00	Write Supporting Document (3rd YR) SX-106
1.01.03.01.01.09.46.50 241-SX Farm Infrastructure Upgrade				
1.01.03.01.01.09.46.50.01 241-SX Farm Infrastructure Upgrade				
SS23738B1	60	01DEC99*	28FEB00	Prep Installation ECN for Heat Trace SX Farm
SS23738B2	20	29FEB00	27MAR00	Prepare Work Package for Heat Trace SX Farm
SS23738B3	20	29FEB00	27MAR00	Procure Parts for Heat Trace SX Farm
SS23738B4	20	28MAR00	24APR00	Perf Upgr/Installation for Heat Trace SX Farm
SS23738B5	5	29FEB00	06MAR00	Develop Main Procedure for Heat Trace SX Farm
SS23738B6	5	07MAR00	13MAR00	Prep Maint Work Pkg for Heat Trace SX Farm
SS23738B7	5	25APR00	01MAY00	Perf Initial Eqmt Setup for Heat Trace SX Far
SS23738B8	5	02MAY00	08MAY00	Cleanup/Exit/Closeout for Heat Trace SX Farm
SS23738C1	25	01DEC99	07JAN00	Prep Installation ECN for Electrical SX Farm
SS23738C2	20	10JAN00	04FEB00	Prepare Work Package for Electrical SX Farm
SS23738C3	20	10JAN00	04FEB00	Procure Parts for Electrical SX Farm
SS23738C4	20	07FEB00	06MAR00	Perf Upgr/Installation for Electrical SX Farm
SS23738C8	5	07MAR00	13MAR00	Cleanup/Exit/Closeout for Electrical SX Farm
SS23738D1	55	01DEC99	18FEB00	Prep Installation ECN for Water SX Farm
SS23738D2	10	22FEB00	06MAR00	Prepare Work Package for Water SX Farm
SS23738D3	20	22FEB00	20MAR00	Procure Parts for Water SX Farm
SS23738D4	15	21MAR00	10APR00	Perf Upgr/Installation for Water SX Farm
SS23738D5	5	22FEB00	28FEB00	Develop Main Procedure for Water SX Farm

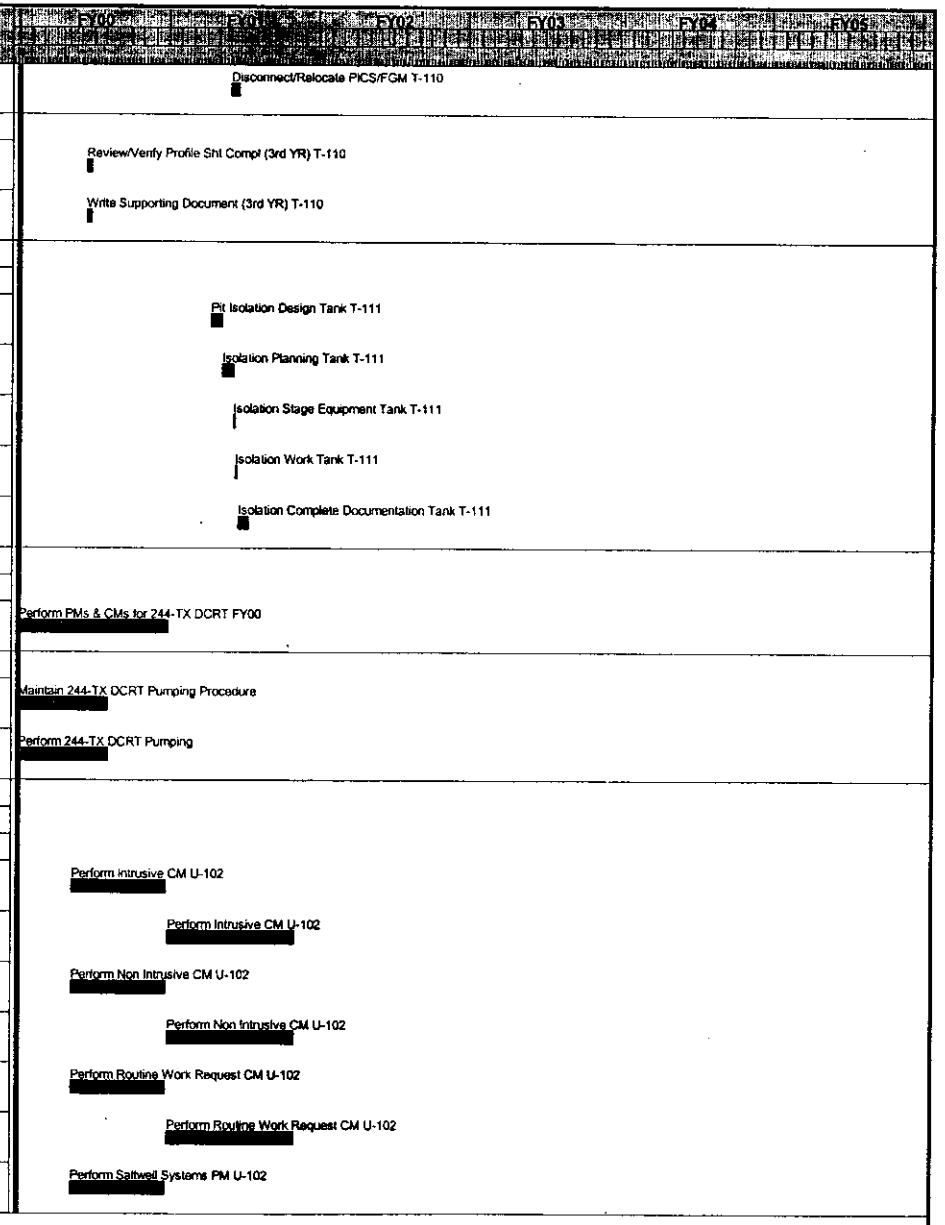
Activity ID	Rem. Dur.	Early Start	Early Finish
SS23738D6	5	29FEB00	06MAR00
SS23738D7	5	11APR00	17APR00
SS23738D8	5	18APR00	24APR00
SS23738E1	30	01DEC99	14JAN00
SS23738E2	10	17JAN00	28JAN00
SS23738E3	20	17JAN00	11FEB00
SS23738E4	20	14FEB00	13MAR00
SS23738E8	5	14MAR00	20MAR00
1.01.03.01.01.09.47 SST 241-T Tank Farm Stabilization/Isolation			
1.01.03.01.01.09.47.01 Stabilize/Isolate Tank T-101			
1.01.03.01.01.09.47.01.04 T-101 Isolation			
SS23085J1	20	02OCT00*	27OCT00
SS23085J2	20	30OCT00	28NOV00
SS23085J3	2	29NOV00	30NOV00
SS23085J4	5	01DEC00	07DEC00
SS23085J5	20	08DEC00	09JAN01
1.01.03.01.01.09.47.04 Stabilize/Isolate Tank T-104			
1.01.03.01.01.09.47.04.04 T-104 Isolation			
SS23Q85B1	20	01OCT01*	26OCT01
SS23Q85B2	20	29OCT01	27NOV01
SS23Q85B3	2	28NOV01	29NOV01
SS23Q85B4	15	30NOV01	20DEC01
SS23Q85B5	20	21DEC01	22JAN02
1.01.03.01.01.09.47.04.78 Post Equip Discn/Staging T-104			
SS23Q78A1	10	01OCT99	14OCT99
SS23Q78A2	1	15OCT99	15OCT99



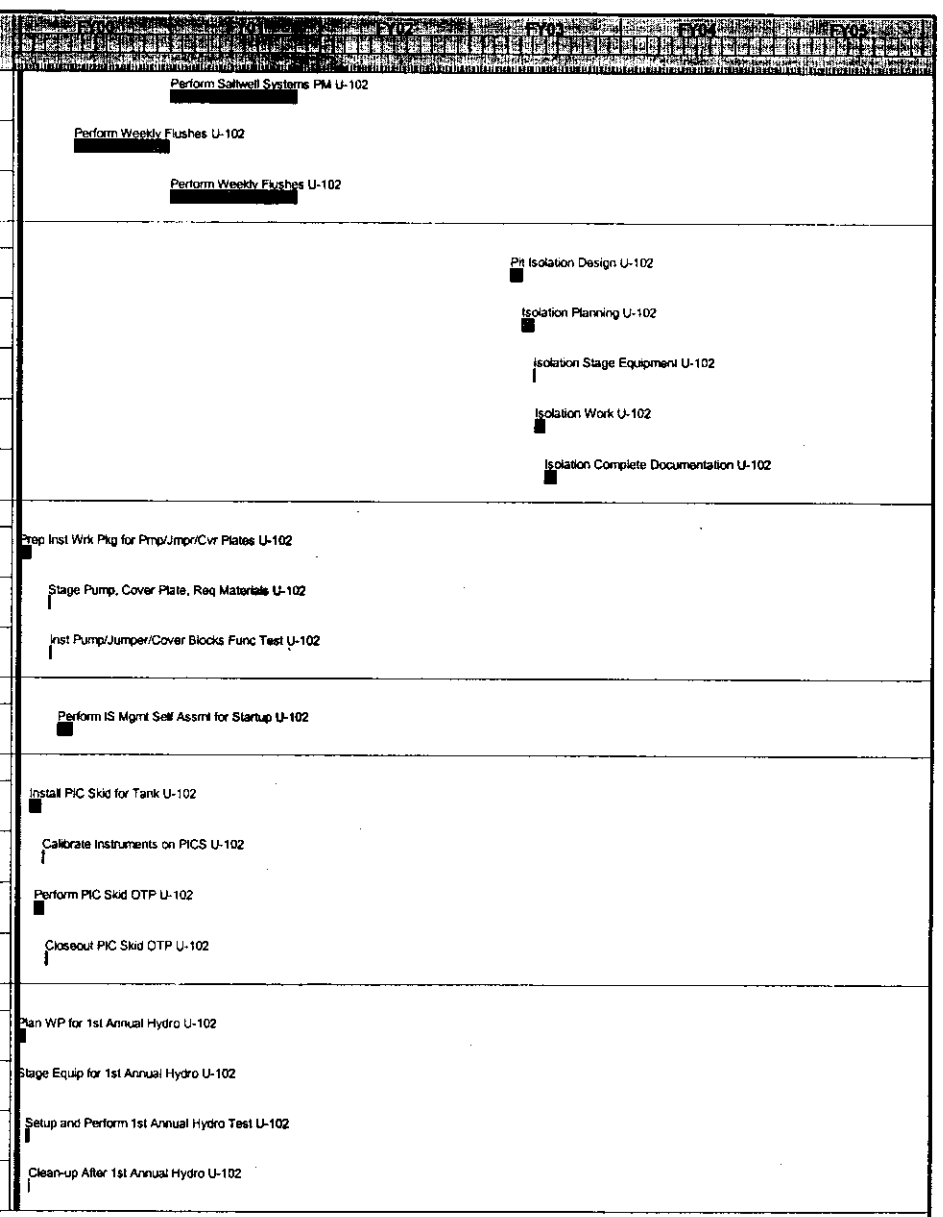
ID	Dur	Start	Finish
SS23Q78B1	60	15OCT99	13JAN00
SS23Q78B2	2	18OCT99	19OCT99
SS23Q78B3	15	14JAN00	03FEB00
SS23Q78C1	15	04FEB00	25FEB00
SS23Q78C2	15	28FEB00	17MAR00
1.01.03.01.01.09.47.10 Stabilize/Isolate Tank T-110			
1.01.03.01.01.09.47.10.03 T-110 System Maint/Operability			
SS23R68B2	251	01OCT99	28SEP00
SS23R68D2	251	01OCT99	28SEP00
SS23R68F2	251	01OCT99	28SEP00
SS23R68G2	251	01OCT99	28SEP00
SS23R68L2	251	01OCT99	28SEP00
1.01.03.01.01.09.47.10.04 T-110 Isolation			
SS23R85B1	20	01OCT01*	26OCT01
SS23R85B2	20	29OCT01	27NOV01
SS23R85B3	2	28NOV01	29NOV01
SS23R85B4	15	30NOV01	20DEC01
SS23R85B5	20	21DEC01	22JAN02
1.01.03.01.01.09.47.10.78 Post Equip Discn/Staging T-110			
SS23R78A1	10	02OCT00	13OCT00
SS23R78A2	1	16OCT00	16OCT00
SS23R78B1	60	16OCT00	12JAN01
SS23R78B2	2	17OCT00	18OCT00
SS23R78B3	15	15JAN01	02FEB01
SS23R78C1	15	05FEB01	26FEB01



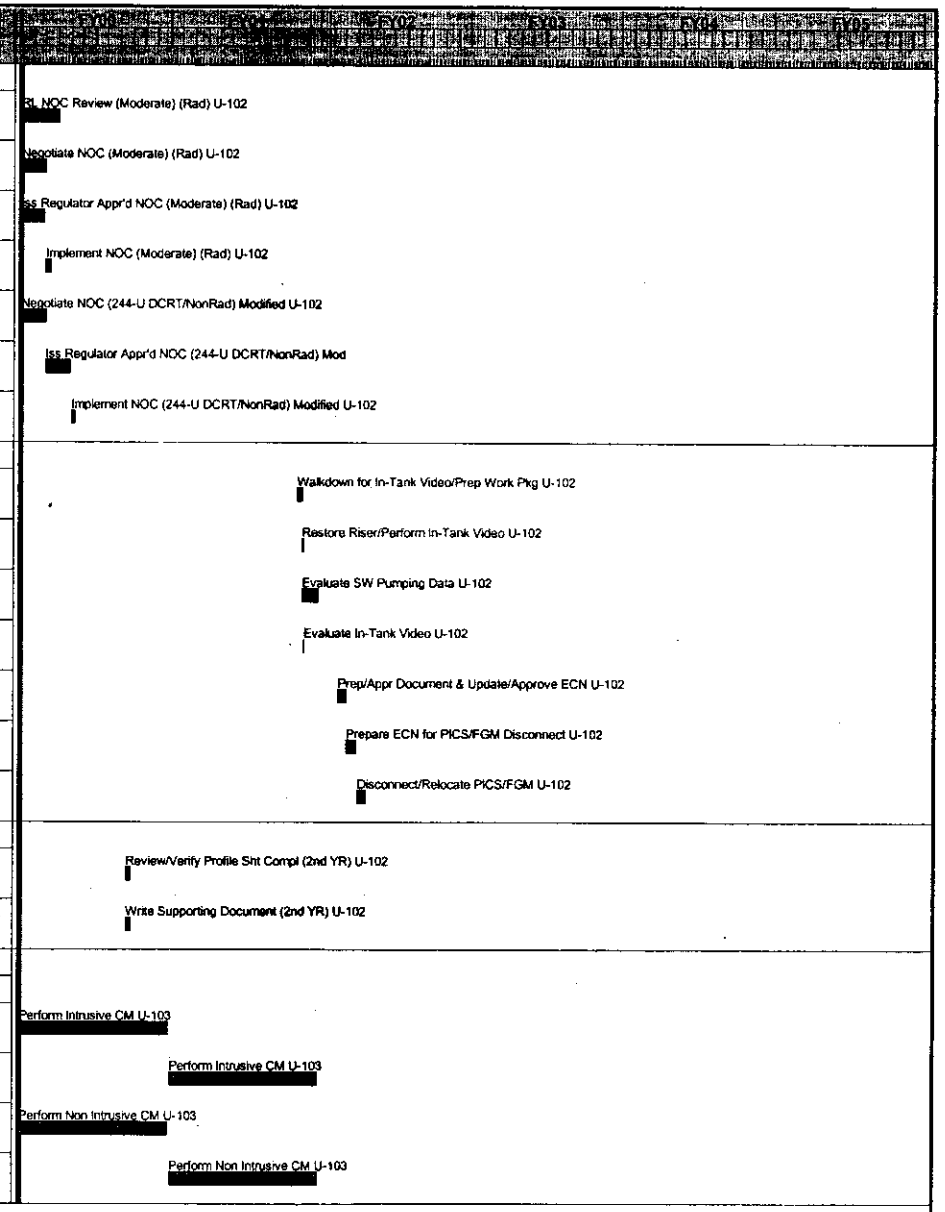
Activity ID	Remaining Duration	Early Start	Early Finish
SS23R78C2	15	27FEB01	19MAR01
1.01.03.01.01.09.47.10.83 Annual Waste Capb Assmts T-110			
SS23R83C2	10	13MAR00*	24MAR00
SS23R83D2	10	13MAR00	24MAR00
1.01.03.01.01.09.47.11 Stabilize/Isolate Tank T-111			
1.01.03.01.01.09.47.11.04 T-111 Isolation			
SS23085K1	20	10JAN01	06FEB01
SS23085K2	20	07FEB01	07MAR01
SS23085K3	2	08MAR01	09MAR01
SS23085K4	5	12MAR01	16MAR01
SS23085K5	20	19MAR01	13APR01
1.01.03.01.01.09.47.30 DCRT 244-TX for SST 241-T Tank Farm			
1.01.03.01.01.09.47.30.32 T/TX Farm DCRT Maint/Operab Checks			
SS23032C2	366	01OCT99*	30SEP00
1.01.03.01.01.09.47.30.47 Transfer Contents of T/TX DCRT to DST			
SS23047C12	220	01OCT99	07MAY00
SS23047C22	220	01OCT99	07MAY00
1.01.03.01.01.09.48 SST 241-U Tank Farm Stabilization/Isolation			
1.01.03.01.01.09.48.02 Stabilize/Isolate Tank U-102			
1.01.03.01.01.09.48.02.03 U-102 System Maint/Operability			
SS23S68A2	163	10FEB00	29SEP00
SS23S68A3	213	02OCT00	06AUG01
SS23S68C2	163	10FEB00	29SEP00
SS23S68C3	213	02OCT00	06AUG01
SS23S68E2	163	10FEB00	29SEP00
SS23S68E3	213	02OCT00	06AUG01
SS23S68G2	163	10FEB00	29SEP00



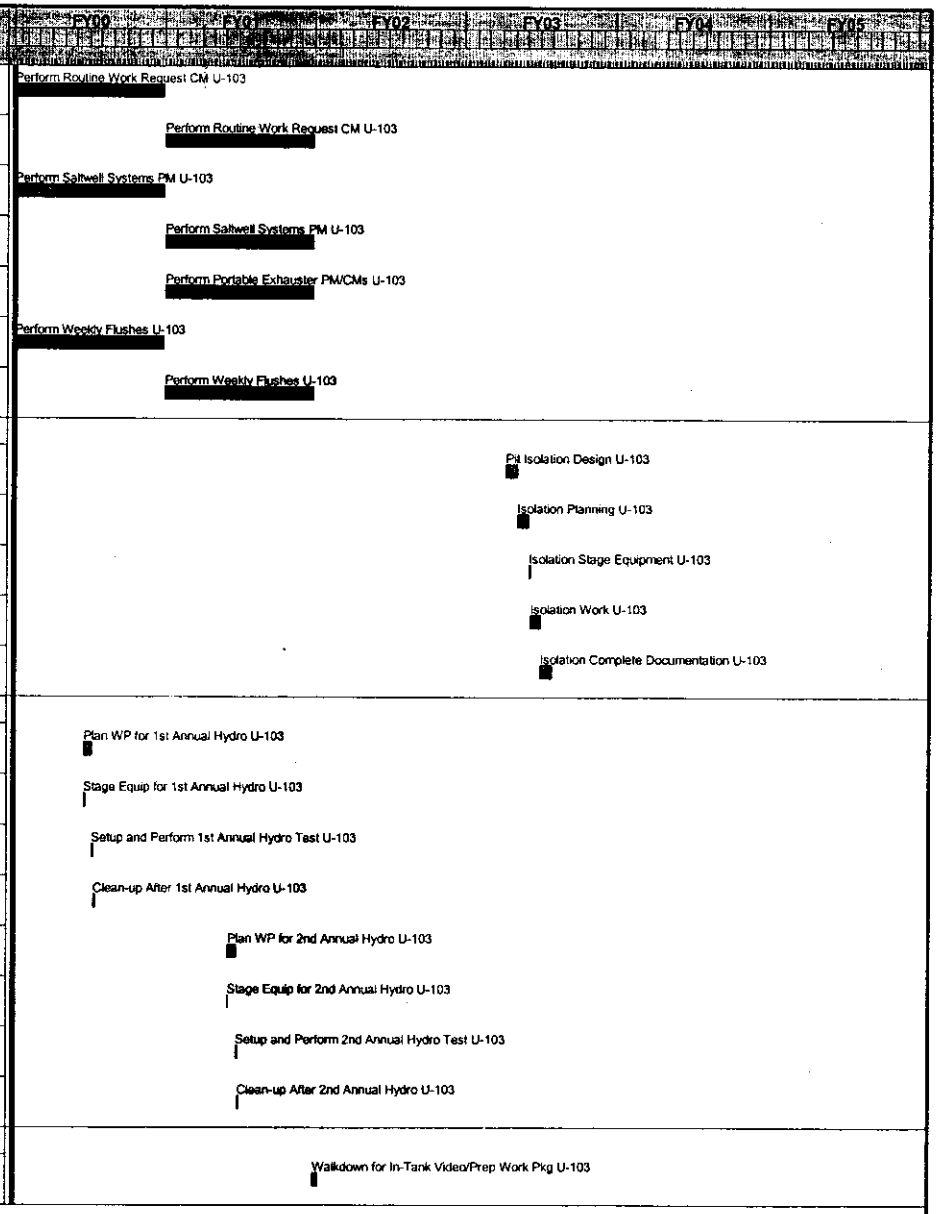
Activity ID	Rem Dur	Early Start	Early Finish
SS23S68G3	213	02OCT00	06AUG01
SS23S68K2	163	10FEB00	29SEP00
SS23S68K3	213	02OCT00	06AUG01
1.01.03.01.01.09.48.02.04 U-102 Isolation			
SS23S85B1	20	09JAN03	05FEB03
SS23S85B2	20	06FEB03	06MAR03
SS23S85B3	2	07MAR03	10MAR03
SS23S85B4	15	11MAR03	31MAR03
SS23S85B5	20	01APR03	28APR03
1.01.03.01.01.09.48.02.27 SW Jet Pumps/Jumpers U-102			
SS23S27H	20	01OCT99	28OCT99
SS23S27J	2	13DEC99	14DEC99
SS23S27K	4	15DEC99	20DEC99
1.01.03.01.01.09.48.02.36 Management Self-Assessment U-102			
SS23S36A	28	03JAN00	09FEB00
1.01.03.01.01.09.48.02.57 PIC Skids U-102			
SS23S57E2	20	28OCT99	24NOV99
SS23S57E3	5	29NOV99	03DEC99
SS23S57F3	15	11NOV99	03DEC99
SS23S57F4	5	06DEC99	10DEC99
1.01.03.01.01.09.48.02.74 U-102 Annual Hydro Test			
SS23S74A1	15	01OCT99	21OCT99
SS23S74A2	2	01OCT99	04OCT99
SS23S74A3	3	22OCT99	26OCT99
SS23S74A4	3	27OCT99	29OCT99



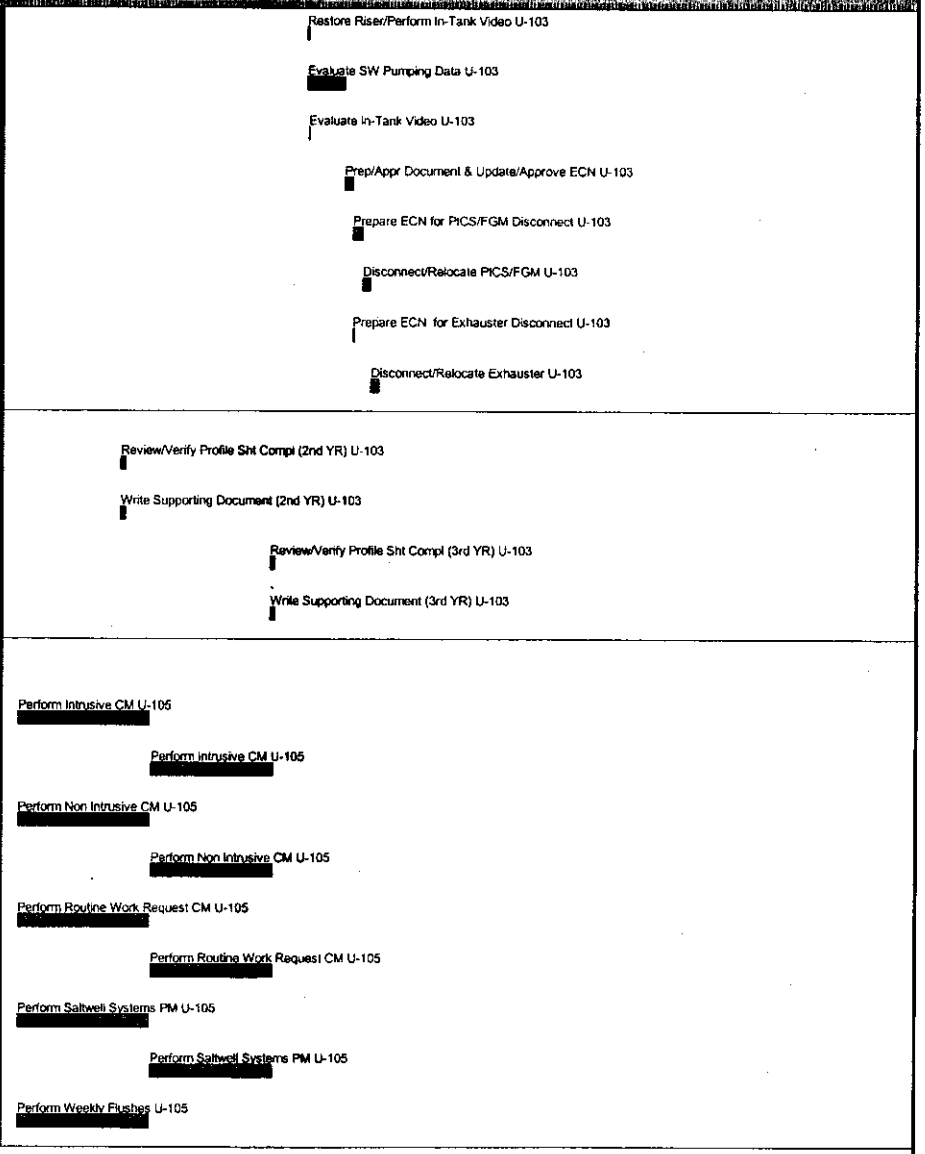
Activity ID	Rem Dur	Early Start	Early Finish
1.01.03.01.01.09.48.02.75 Dev/Implement U-102 NOCs			
SS23S75B41	90	01OCT99	29DEC99
SS23S75B51	59	01OCT99	28NOV99
SS23S75B6	56	01OCT99	25NOV99
SS23S75B7	10	29NOV99	10DEC99
SS23S75BE	60	01OCT99	29NOV99
SS23S75BF	60	30NOV99	28JAN00
SS23S75BG	8	31JAN00	09FEB00
1.01.03.01.01.09.48.02.78 Post Equip Discn/Staging U-102			
SS23S78A1	10	06AUG01	17AUG01
SS23S78A2	1	20AUG01	20AUG01
SS23S78B1	29	20AUG01	28SEP01
SS23S78B2	2	21AUG01	22AUG01
SS23S78B3	15	13NOV01*	05DEC01
SS23S78C1	15	06DEC01	28DEC01
SS23S78C2	15	31DEC01	21JAN02
1.01.03.01.01.09.48.02.83 Annual Waste Capb Assmts U-102			
SS23S83C	10	16JUN00*	29JUN00
SS23S83D	10	16JUN00	29JUN00
1.01.03.01.01.09.48.03 Stabilize/isolate Tank U-103			
1.01.03.01.01.09.48.03.03 U-103 System Maint/Operability			
SS23T68A2	252	01OCT99	29SEP00
SS23T68A3	251	02OCT00	28SEP01
SS23T68C2	252	01OCT99	29SEP00
SS23T68C3	251	02OCT00	28SEP01



Activity ID	Rem Dur	Early Start	Early Finish
SS23T68E2	252	01OCT99	29SEP00
SS23T68E3	251	02OCT00	28SEP01
SS23T68G2	252	01OCT99	29SEP00
SS23T68G3	251	02OCT00	28SEP01
SS23T68H3	251	02OCT00	28SEP01
SS23T68J2	252	01OCT99	29SEP00
SS23T68J3	251	02OCT00	28SEP01
1.01.03.01.01.09.48.03.04 U-103 Isolation			
SS23T85B1	20	09JAN03	05FEB03
SS23T85B2	20	06FEB03	06MAR03
SS23T85B3	2	07MAR03	10MAR03
SS23T85B4	15	11MAR03	31MAR03
SS23T85B5	20	01APR03	28APR03
1.01.03.01.01.09.48.03.74 U-103 Annual Hydro Test			
SS23T74A1	15	21MAR00*	10APR00
SS23T74A2	2	21MAR00	22MAR00
SS23T74A3	3	11APR00	13APR00
SS23T74A4	3	14APR00	18APR00
SS23T74B1	15	06MAR01	26MAR01
SS23T74B2	2	06MAR01	07MAR01
SS23T74B3	3	27MAR01	29MAR01
SS23T74B4	3	30MAR01	03APR01
1.01.03.01.01.09.48.03.78 Post Equip Discn/Staging U-103			
SS23T78A1	10	01OCT01	12OCT01

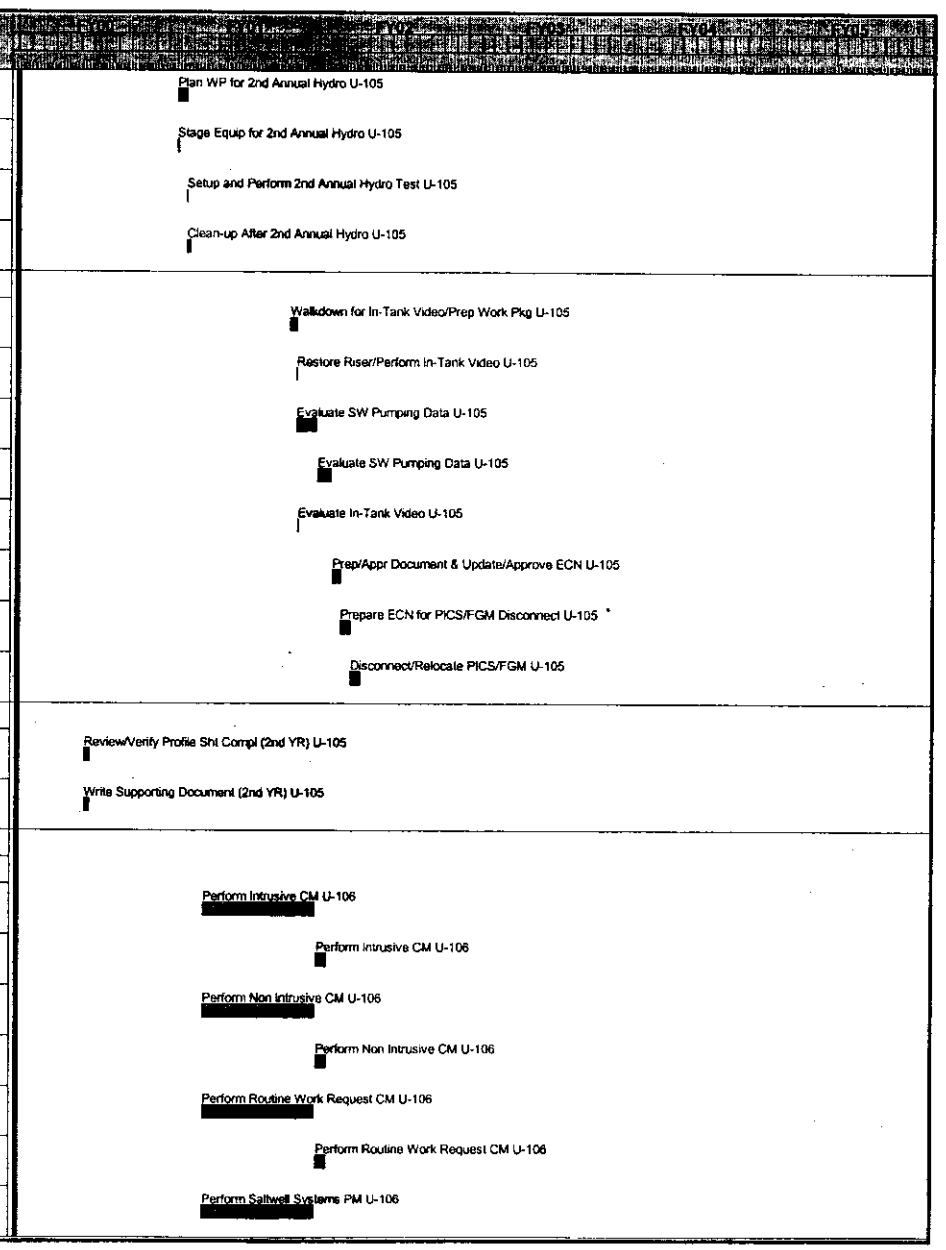


Activity ID	Rem Dur	Early Start	Early Finish
SS23T78A2	1	15OCT01	15OCT01
SS23T78B1	60	15OCT01	11JAN02
SS23T78B2	2	16OCT01	17OCT01
SS23T78B3	15	14JAN02	01FEB02
SS23T78C1	15	04FEB02	25FEB02
SS23T78C2	15	26FEB02	18MAR02
SS23T78D1	3	04FEB02	06FEB02
SS23T78D2	15	19MAR02	08APR02
1.01.03.01.01.09.48.03.83 Annual Waste Capb Assmts U-103			
SS23T83C	10	17JUL00*	28JUL00
SS23T83D	10	17JUL00	28JUL00
SS23T83E	10	16JUL01	27JUL01
SS23T83F	10	16JUL01	27JUL01
1.01.03.01.01.09.48.05 Stabilize/Isolate Tank U-105			
1.01.03.01.01.09.48.05.03 U-105 System Maint/Operability			
SS23U68A2	221	15NOV99	29SEP00
SS23U68A3	206	02OCT00	26JUL01
SS23U68C2	221	15NOV99	29SEP00
SS23U68C3	206	02OCT00	26JUL01
SS23U68E2	221	15NOV99	29SEP00
SS23U68E3	206	02OCT00	26JUL01
SS23U68G2	221	15NOV99	29SEP00
SS23U68G3	206	02OCT00	26JUL01
SS23U68J2	221	15NOV99	29SEP00

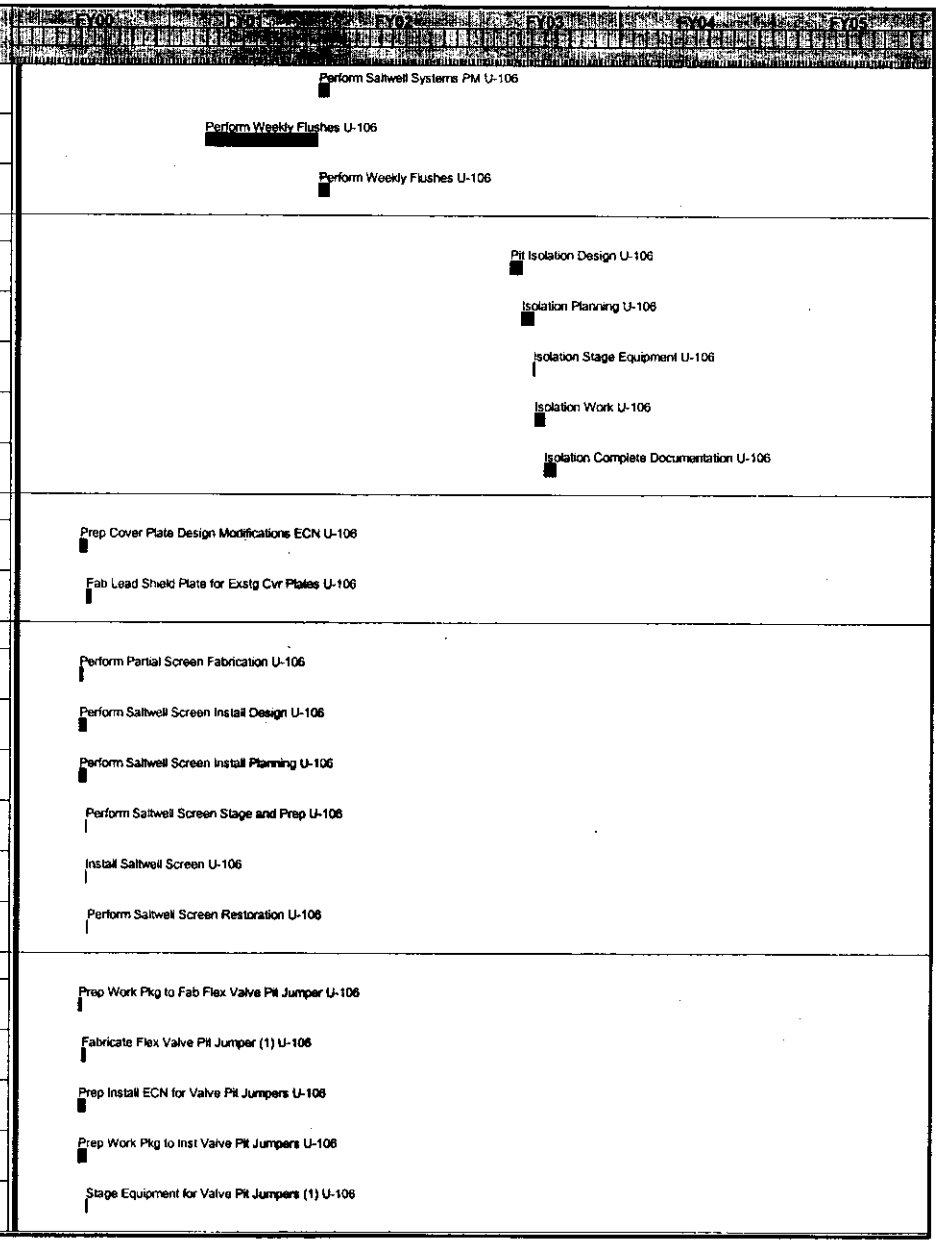


Activity ID	Rem Dur	Early Start	Early Finish	Activity
SS23U68J3	206	02OCT00	26JUL01	Perform Weekly Flushes U-105
1.01.03.01.01.09.48.05.04 U-105 Isolation				
SS23U85B1	20	09JAN03	05FEB03	Pit Isolation Design U-105
SS23U85B2	20	06FEB03	06MAR03	Isolation Planning U-105
SS23U85B3	2	07MAR03	10MAR03	Isolation Stage Equipment U-105
SS23U85B4	15	11MAR03	31MAR03	Isolation Work U-105
SS23U85B5	20	01APR03	28APR03	Isolation Complete Documentation U-105
1.01.03.01.01.09.48.05.07 SW Jet Pumps/Jumpers U-105				
SS23U27H	10	01OCT99	14OCT99	Prep Inst Wrk Pkg for Pmp/Jmpr/Cvr Plates U-105
SS23U27J	2	20OCT99	21OCT99	Stage Pump, Cover Plate, Req Materials U-105
SS23U27K	4	22OCT99	27OCT99	Inst Pump/Jumper/Cover Blocks Func Test U-105
1.01.03.01.01.09.48.05.36 Management Self-Assessment U-105				
SS23U36A	12	19OCT99	03NOV99	Perform IS Mgmt Self Assmt for Startup U-105
1.01.03.01.01.09.48.05.57 PIC Skids U-105				
SS23U57E2	10	01OCT99	14OCT99	Install PIC Skid for Tank U-105
SS23U57E3	5	08OCT99	14OCT99	Calibrate Instruments on PICS U-105
SS23U57F1	10	01OCT99*	14OCT99	Plan/Prepare Engineering Plan PICS OTP U-105
SS23U57F2	5	15OCT99	21OCT99	Prepare OTP and Stage Equipment U-105
SS23U57F3	15	01OCT99	21OCT99	Perform PIC Skid OTP U-105
SS23U57F4	2	22OCT99	25OCT99	Closeout PIC Skid OTP U-105
1.01.03.01.01.09.48.05.74 U-105 Annual Hydro Test				
SS23U74A1	15	09NOV99*	01DEC99	Plan WP for 1st Annual Hydro U-105
SS23U74A2	2	09NOV99	10NOV99	Stage Equip for 1st Annual Hydro U-105
SS23U74A3	3	02DEC99	06DEC99	Setup and Perform 1st Annual Hydro Test U-105
SS23U74A4	3	07DEC99	09DEC99	Clean-up After 1st Annual Hydro U-105

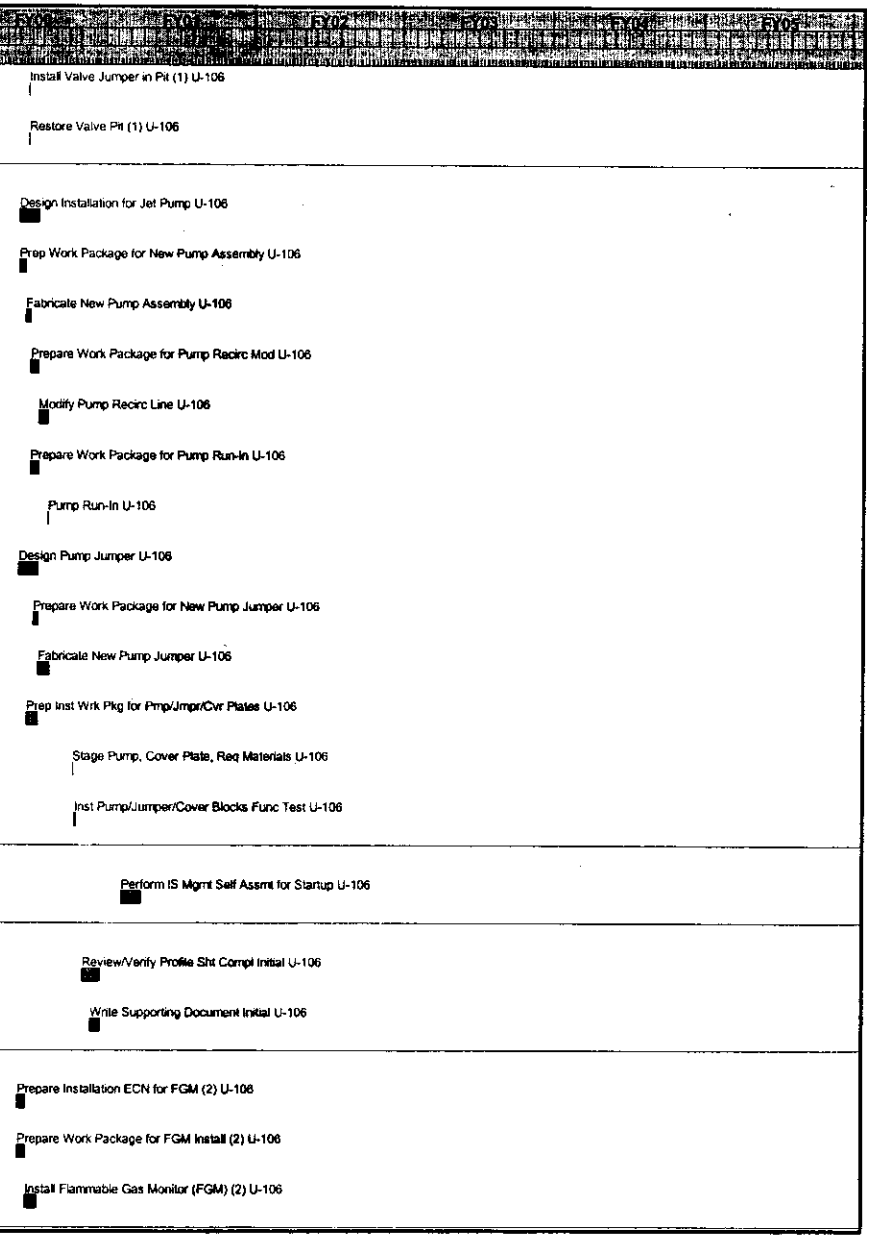
Activity ID	Dur	Early Start	Early Finish
SS23U74B1	15	24OCT00	13NOV00
SS23U74B2	2	24OCT00	25OCT00
SS23U74B3	3	14NOV00	16NOV00
SS23U74B4	3	17NOV00	21NOV00
1.01.03.01.01.09.48.05.78 Post Equip Discn/Staging U-105			
SS23U78A1	10	27JUL01	09AUG01
SS23U78A2	1	10AUG01	10AUG01
SS23U78B1	35	10AUG01	28SEP01
SS23U78B12	25	01OCT01	02NOV01
SS23U78B2	2	13AUG01	14AUG01
SS23U78B3	15	05NOV01	27NOV01
SS23U78C1	15	28NOV01	18DEC01
SS23U78C2	15	19DEC01	11JAN02
1.01.03.01.01.09.48.05.83 Annual Waste Capb Assmts U-105			
SS23U83C	10	13MAR00*	24MAR00
SS23U83D	10	13MAR00	24MAR00
1.01.03.01.01.09.48.06 Stabilize/Isolate Tank U-106			
1.01.03.01.01.09.48.06.03 U-106 System Maint/Operability			
SS23V68A3	191	29DEC00	28SEP01
SS23V68A4	20	01OCT01	26OCT01
SS23V68C3	191	29DEC00	28SEP01
SS23V68C4	20	01OCT01	26OCT01
SS23V68E3	191	29DEC00	28SEP01
SS23V68E4	20	01OCT01	26OCT01
SS23V68G3	191	29DEC00	28SEP01



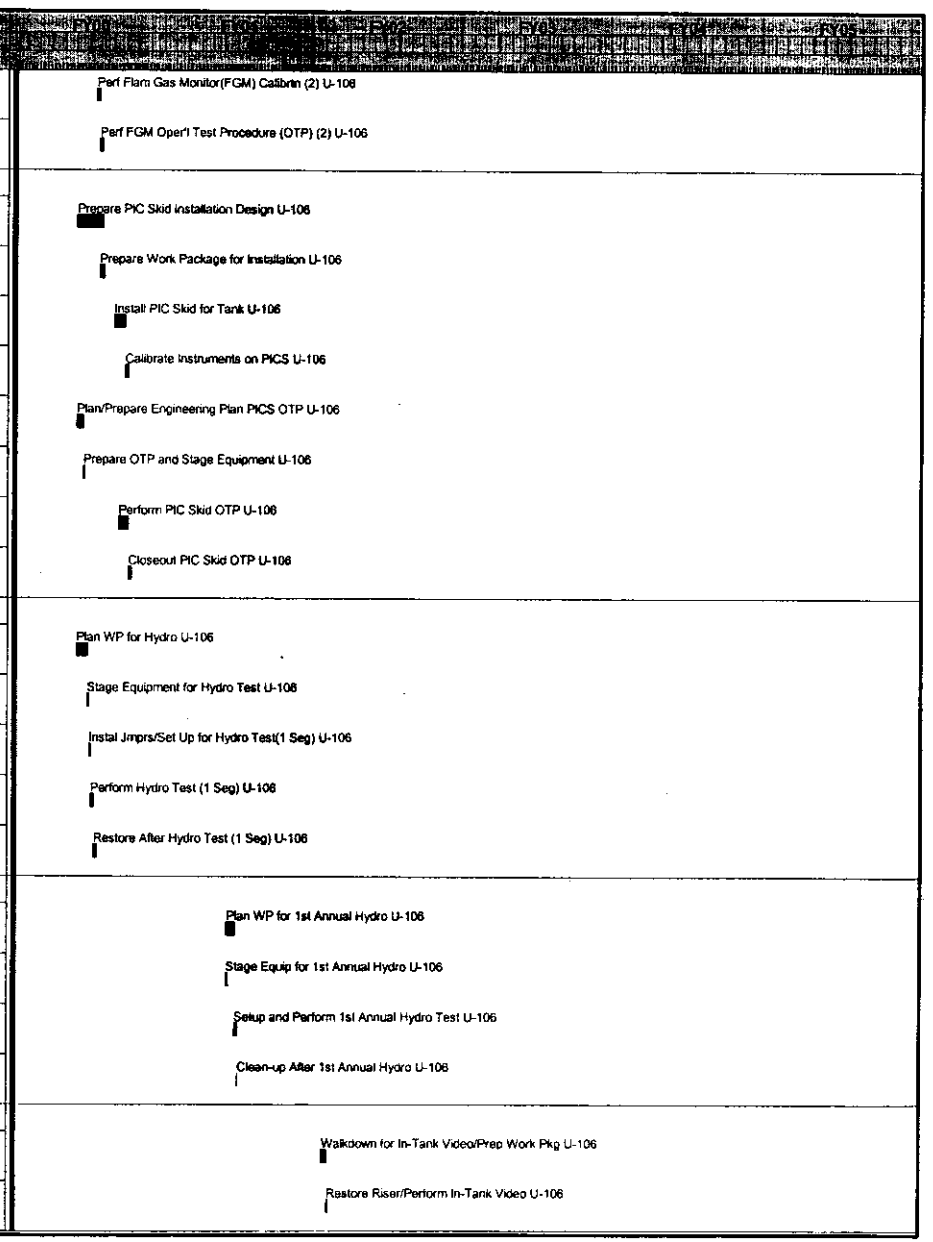
Activity ID	Rem Dur	Early Start	Early Finish
SS23V68G4	20	01OCT01	26OCT01
SS23V68J3	191	29DEC00	28SEP01
SS23V68J4	20	01OCT01	26OCT01
1.01.03.01.01.09.48.06.04 U-106 Isolation			
SS23V85B1	20	09JAN03	05FEB03
SS23V85B2	20	06FEB03	06MAR03
SS23V85B3	2	07MAR03	10MAR03
SS23V85B4	15	11MAR03	31MAR03
SS23V85B5	20	01APR03	28APR03
1.01.03.01.01.09.48.06.08 Fab/Mod Cover Plates U-106			
SS23V08B	10	01MAR00	14MAR00
SS23V08D	10	15MAR00	28MAR00
1.01.03.01.01.09.48.06.16 Saltwell Screen U-106			
SS23V16C1	5	01MAR00	07MAR00
SS23V16D	10	01MAR00	14MAR00
SS23V16E1	12	28FEB00	14MAR00
SS23V16E2	2	15MAR00	16MAR00
SS23V16E3	1	17MAR00	17MAR00
SS23V16E4	1	20MAR00	20MAR00
1.01.03.01.01.09.48.06.19 Valve Pit Jumpers U-106			
SS23V19B2	5	01MAR00	07MAR00
SS23V19CF1	5	08MAR00	14MAR00
SS23V19D	10	01MAR00	14MAR00
SS23V19E	15	29FEB00	20MAR00
SS23V19F1	2	21MAR00	22MAR00



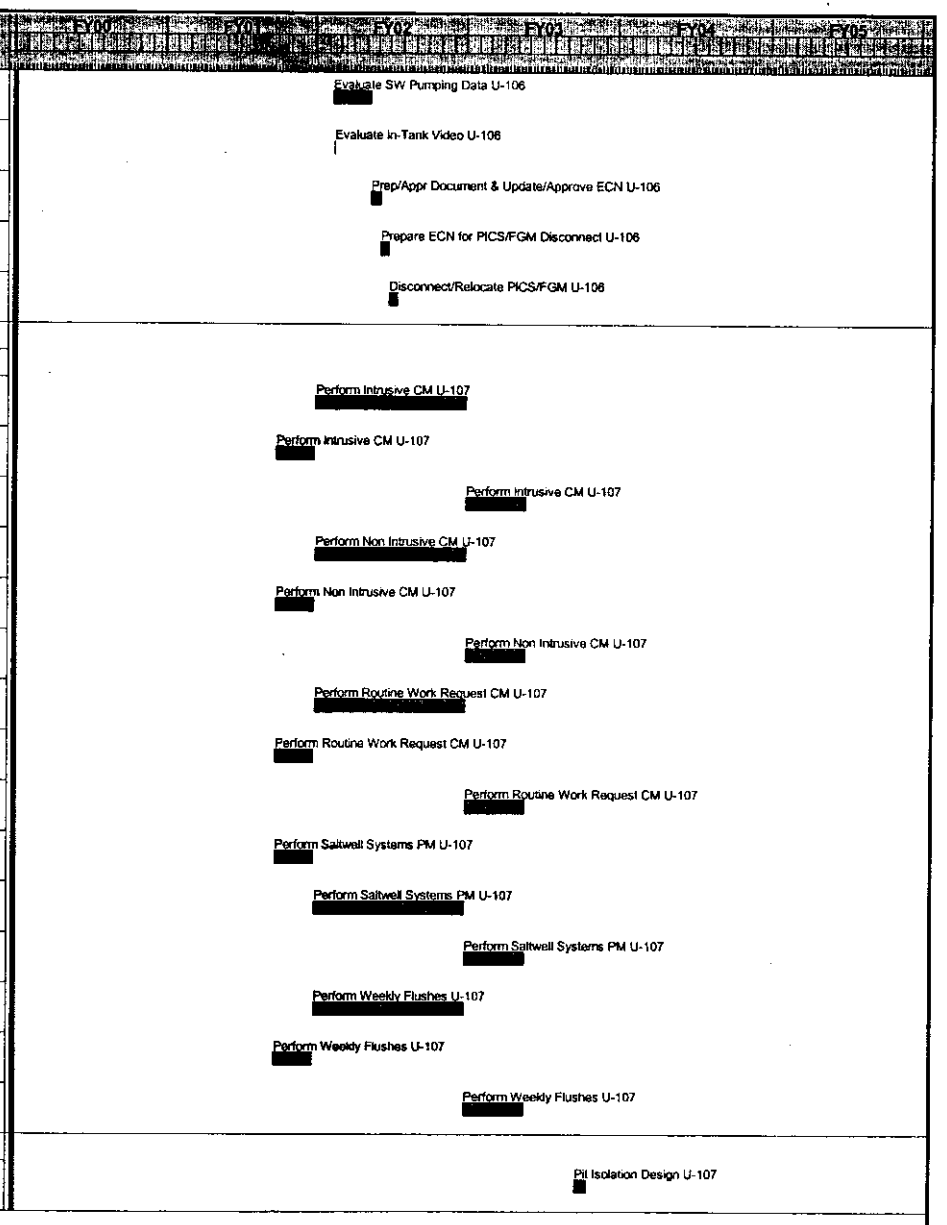
Activity ID	RAM Dur	Early Start	Early Finish
SS23V19G1	1	23MAR00	23MAR00
SS23V19H1	1	24MAR00	24MAR00
1.01.03.01.01.09.48.06.27 SW Jet Pumps/Jumpers U-106			
SS23V27A	35	01MAR00	18APR00
SS23V27B1	10	01MAR00	14MAR00
SS23V27B2	10	15MAR00	28MAR00
SS23V27C1	15	29MAR00	18APR00
SS23V27C2	15	19APR00	09MAY00
SS23V27D1	15	29MAR00	18APR00
SS23V27D2	3	10MAY00	12MAY00
SS23V27E	35	01MAR00	18APR00
SS23V27F1	10	05APR00	18APR00
SS23V27F2	20	19APR00	16MAY00
SS23V27H	20	22MAR00	18APR00
SS23V27J	2	13JUL00	14JUL00
SS23V27K	4	17JUL00	20JUL00
1.01.03.01.01.09.48.06.36 Management Self-Assessment U-106			
SS23V36A	30	13NOV00	28DEC00
1.01.03.01.01.09.48.06.54 Initial Waste Capb Assmts U-106			
SS23V54A	30	07AUG00	18SEP00
SS23V54B	14	29AUG00	18SEP00
1.01.03.01.01.09.48.06.55 Install/Test FGMs U-106			
SS23V55D2	15	01MAR00	21MAR00
SS23V55E4	15	01MAR00	21MAR00
SS23V55E5	20	22MAR00	18APR00



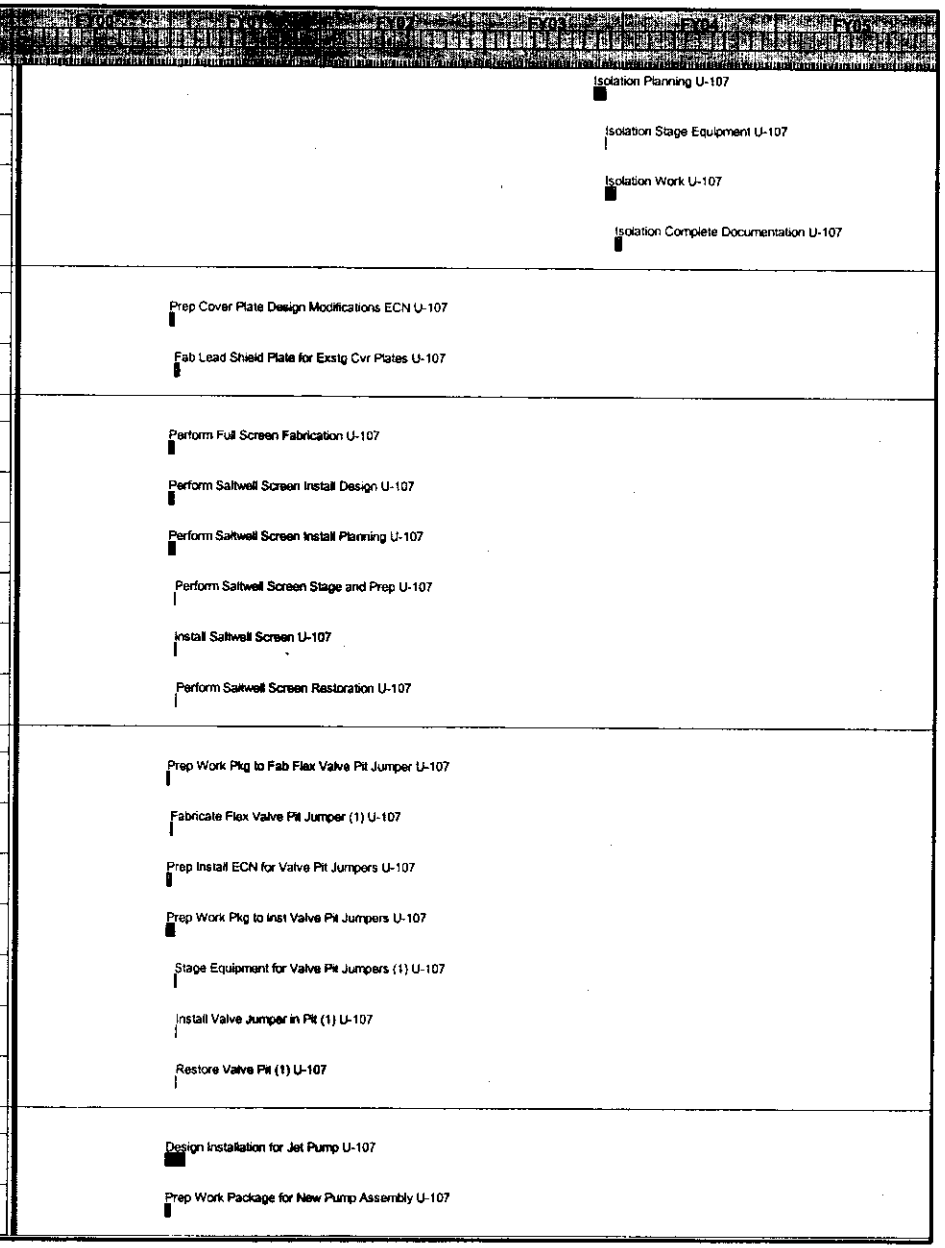
Activity ID	Rem Dur	Early Start	Early Finish
SS23V55E6	4	19APR00	24APR00
SS23V55F2	6	25APR00	02MAY00
1.01.03.01.01.09.48.06.57 PIC Skids U-106			
SS23V57D	45	01MAR00	02MAY00
SS23V57E1	10	25APR00	08MAY00
SS23V57E2	20	31MAY00	27JUN00
SS23V57E3	5	28JUN00	05JUL00
SS23V57F1	10	01MAR00	14MAR00
SS23V57F2	5	15MAR00	21MAR00
SS23V57F3	15	14JUN00	05JUL00
SS23V57F4	5	06JUL00	12JUL00
1.01.03.01.01.09.48.06.60 Hydro Test Transfer Line U-106			
SS23V60A	20	01MAR00	28MAR00
SS23V60B	2	29MAR00	30MAR00
SS23V60C1	5	31MAR00	06APR00
SS23V60D1	5	07APR00	13APR00
SS23V60E1	5	14APR00	20APR00
1.01.03.01.01.09.48.06.74 U-106 Annual Hydro Test			
SS23V74A1	15	08MAR01	28MAR01
SS23V74A2	2	08MAR01	09MAR01
SS23V74A3	3	29MAR01	02APR01
SS23V74A4	3	03APR01	05APR01
1.01.03.01.01.09.48.06.78 Post Equip Discn/Staging U-106			
SS23V78A1	10	29OCT01	09NOV01
SS23V78A2	1	12NOV01	12NOV01



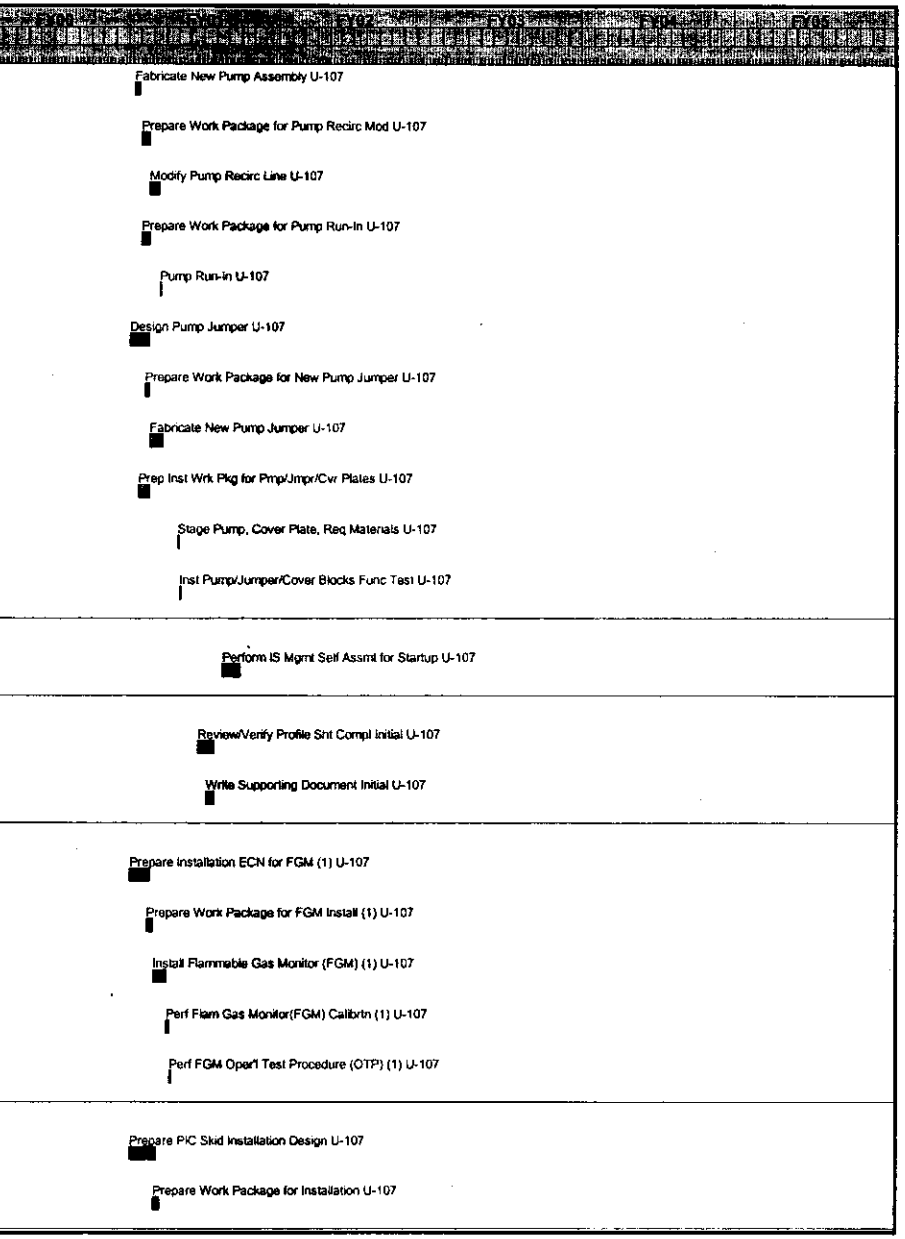
Activity ID	Rem Dur	Early Start	Early Finish
SS23V78B1	60	12NOV01	08FEB02
SS23V78B2	2	13NOV01	14NOV01
SS23V78B3	15	11FEB02	04MAR02
SS23V78C1	15	05MAR02	25MAR02
SS23V78C2	15	26MAR02	15APR02
1.01.03.01.01.09.48.07 Stabilize/Isolate Tank U-107			
1.01.03.01.01.09.48.07.03 U-107 System Maint/Operability			
SS23W68A4	252	01OCT01	30SEP02
SS23W68B3	67	26JUN01	28SEP01
SS23W68B5	98*	01OCT02	21FEB03
SS23W68C4	252	01OCT01	30SEP02
SS23W68D3	67	26JUN01	28SEP01
SS23W68D5	98	01OCT02	21FEB03
SS23W68E4	252	01OCT01	30SEP02
SS23W68F3	67	26JUN01	28SEP01
SS23W68F5	98	01OCT02	21FEB03
SS23W68G3	67	26JUN01	28SEP01
SS23W68G4	252	01OCT01	30SEP02
SS23W68G5	98	01OCT02	21FEB03
SS23W68J4	252	01OCT01	30SEP02
SS23W68L3	67	26JUN01	28SEP01
SS23W68L5	98	01OCT02	21FEB03
1.01.03.01.01.09.48.07.04 U-107 Isolation			
SS23W85B1	20	24JUN03	22JUL03



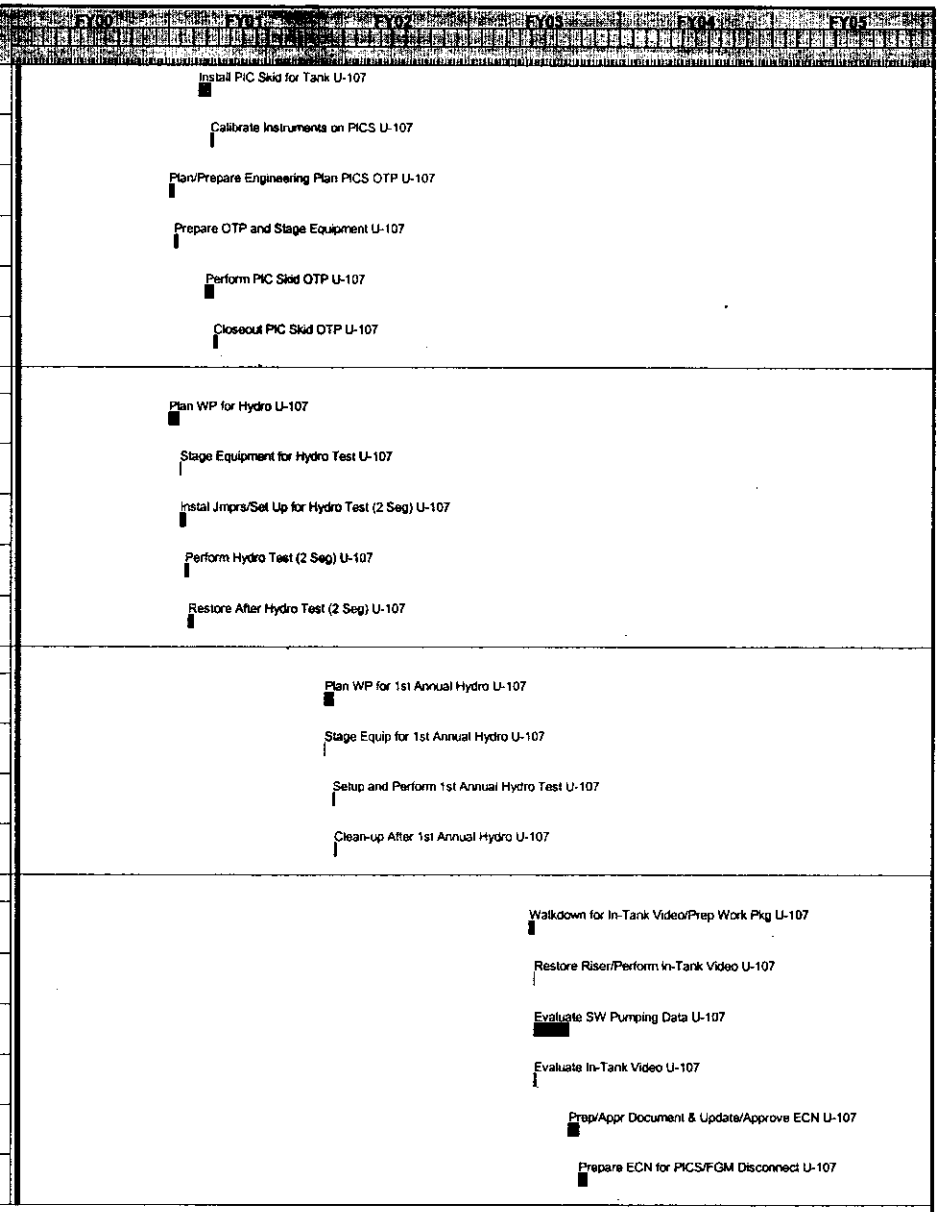
Activity ID	Rem Dur	Early Start	Early Finish
SS23W85B2	20	23JUL03	19AUG03
SS23W85B3	2	20AUG03	21AUG03
SS23W85B4	15	22AUG03	12SEP03
SS23W85B5	11	15SEP03	29SEP03
1.01.03.01.01.09.48.07.08 Fab/Mod Cover Plates U-107			
SS23W08B	10	02OCT00	13OCT00
SS23W08D	10	16OCT00	27OCT00
1.01.03.01.01.09.48.07.16 Saltwell Screen U-107			
SS23W16C2	10	02OCT00	13OCT00
SS23W16D	10	02OCT00	13OCT00
SS23W16E1	12	02OCT00	17OCT00
SS23W16E2	2	18OCT00	19OCT00
SS23W16E3	1	20OCT00	20OCT00
SS23W16E4	1	23OCT00	23OCT00
1.01.03.01.01.09.48.07.19 Valve Pit Jumpers U-107			
SS23W19B2	5	02OCT00	06OCT00
SS23W19CF1	5	09OCT00	13OCT00
SS23W19D	10	02OCT00	13OCT00
SS23W19E	15	02OCT00	20OCT00
SS23W19F1	2	23OCT00	24OCT00
SS23W19G1	1	25OCT00	25OCT00
SS23W19H1	1	26OCT00	26OCT00
1.01.03.01.01.09.48.07.27 SW Jet Pumps/Jumpers U-107			
SS23W27A	35	02OCT00	17NOV00
SS23W27B1	10	02OCT00	13OCT00



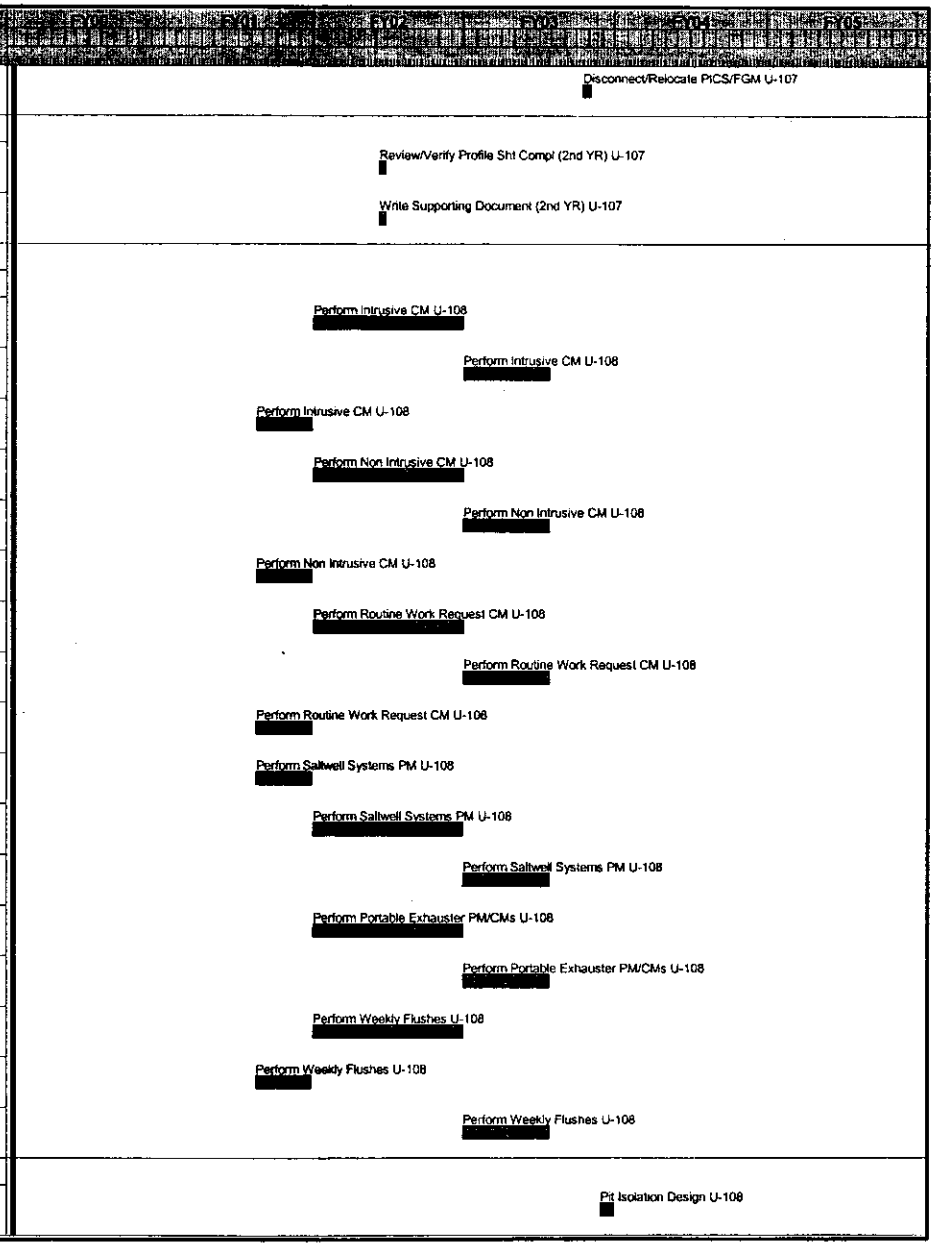
Activity ID	Rem Dur	Early Start	Early Finish
SS23W27B2	10	16OCT00	27OCT00
SS23W27C1	15	30OCT00	17NOV00
SS23W27C2	15	20NOV00	12DEC00
SS23W27D1	15	30OCT00	17NOV00
SS23W27D2	3	13DEC00	15DEC00
SS23W27E	35	02OCT00	17NOV00
SS23W27F1	10	06NOV00	17NOV00
SS23W27F2	20	20NOV00	19DEC00
SS23W27H	20	23OCT00	17NOV00
SS23W27J	2	26JAN01	29JAN01
SS23W27K	4	30JAN01	02FEB01
1.01.03.01.01.09.48.07.36 Management Self-Assessment U-107			
SS23W36A	30	14MAY01	25JUN01
1.01.03.01.01.09.48.07.54 Initial Waste Capb Assmts U-107			
SS23W54A	30	14MAR01	24APR01
SS23W54B	14	05APR01	24APR01
1.01.03.01.01.09.48.07.55 Install/Test FGMs U-107			
SS23W55D1	35	02OCT00	17NOV00
SS23W55E1	10	10NOV00	27NOV00
SS23W55E2	20	28NOV00	27DEC00
SS23W55E3	5	28DEC00	04JAN01
SS23W55F1	5	05JAN01	11JAN01
1.01.03.01.01.09.48.07.57 PIC Skids U-107			
SS23W57D	45	02OCT00	05DEC00
SS23W57E1	10	28NOV00	11DEC00



Activity ID	Rem Dur	Early Start	Early Finish
SS23W57E2	20	12DEC00	11JAN01
SS23W57E3	5	12JAN01	18JAN01
SS23W57F1	10	02OCT00	13OCT00
SS23W57F2	5	16OCT00	20OCT00
SS23W57F3	15	28DEC00	18JAN01
SS23W57F4	5	19JAN01	25JAN01
1.01.03.01.01.09.48.07.60 Hydro Test Transfer Line U-107			
SS23W60A	20	02OCT00	27OCT00
SS23W60B	2	30OCT00	31OCT00
SS23W60C2	7	01NOV00	09NOV00
SS23W60D2	7	10NOV00	20NOV00
SS23W60E2	7	21NOV00	01DEC00
1.01.03.01.01.09.48.07.74 U-107 Annual Hydro Test			
SS23W74A1	15	17OCT01	06NOV01
SS23W74A2	2	17OCT01	18OCT01
SS23W74A3	3	07NOV01	09NOV01
SS23W74A4	3	12NOV01	14NOV01
1.01.03.01.01.09.48.07.78 Post Equip Discn/Staging U-107			
SS23W78A1	10	24FEB03	07MAR03
SS23W78A2	1	10MAR03	10MAR03
SS23W78B1	60	10MAR03	02JUN03
SS23W78B2	2	11MAR03	12MAR03
SS23W78B3	15	03JUN03	23JUN03
SS23W78C1	15	24JUN03	15JUL03

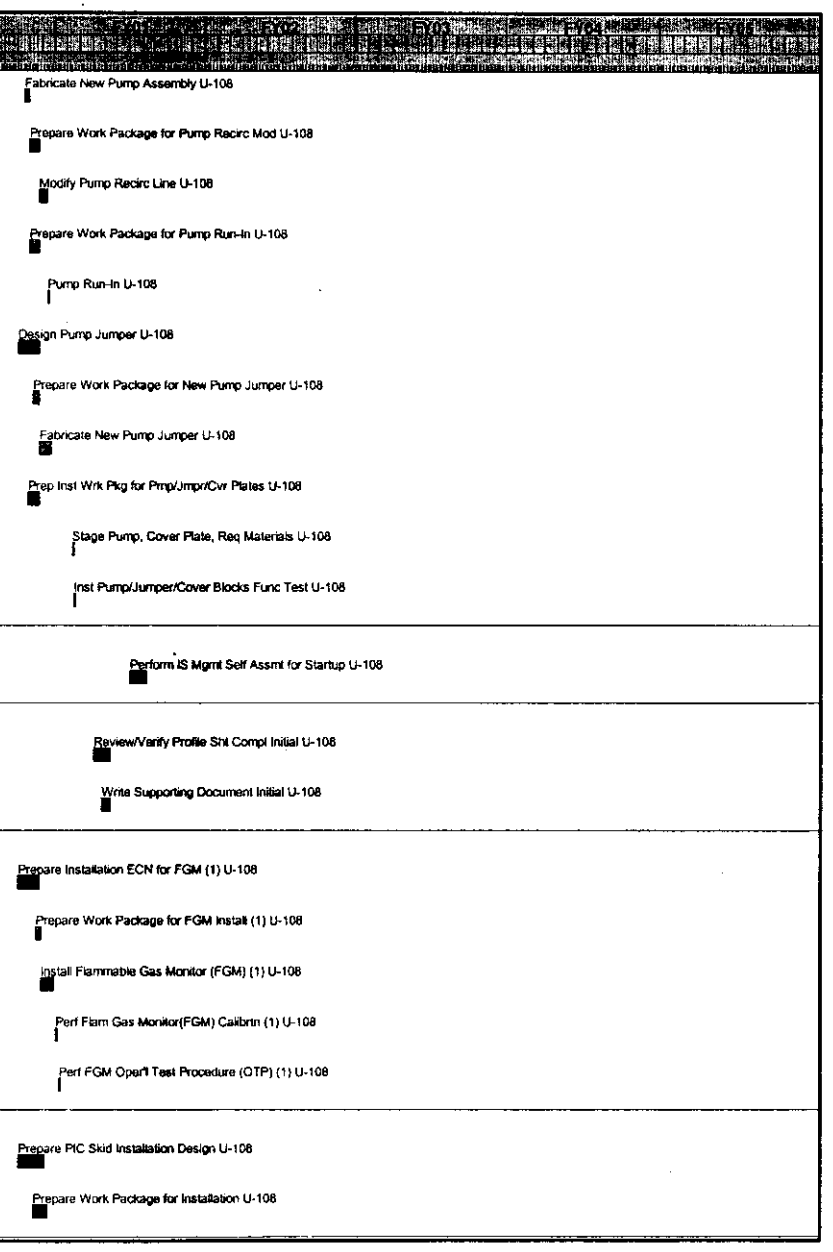


Activity ID	Remain Dur	Early Start	Early Finish
SS23W78C2	15	16JUL03	05AUG03
1.01.03.01.01.09.48.07.83 Annual Waste Capb Assmts U-107			
SS23W83C	10	12MAR02	25MAR02
SS23W83D	10	12MAR02	25MAR02
1.01.03.01.01.09.48.08 Stabilize/Isolate Tank U-108			
1.01.03.01.01.09.48.08.03 U-108 System Maint/Operability			
SS23X68A4	252	01OCT01	30SEP02
SS23X68A5	143	01OCT02	25APR03
SS23X68B3	97	14MAY01	28SEP01
SS23X68C4	252	01OCT01	30SEP02
SS23X68C5	143	01OCT02	25APR03
SS23X68D3	97	14MAY01	28SEP01
SS23X68E4	252	01OCT01	30SEP02
SS23X68E5	143	01OCT02	25APR03
SS23X68F3	97	14MAY01	28SEP01
SS23X68G3	97	14MAY01	28SEP01
SS23X68G4	252	01OCT01	30SEP02
SS23X68G5	143	01OCT02	25APR03
SS23X68H4	252	01OCT01	30SEP02
SS23X68H5	143	01OCT02	25APR03
SS23X68J4	252	01OCT01	30SEP02
SS23X68K3	97	14MAY01	28SEP01
SS23X68L5	143	01OCT02	25APR03
1.01.03.01.01.09.48.08.04 U-108 Isolation			
SS23X85B1	24	27AUG03	30SEP03

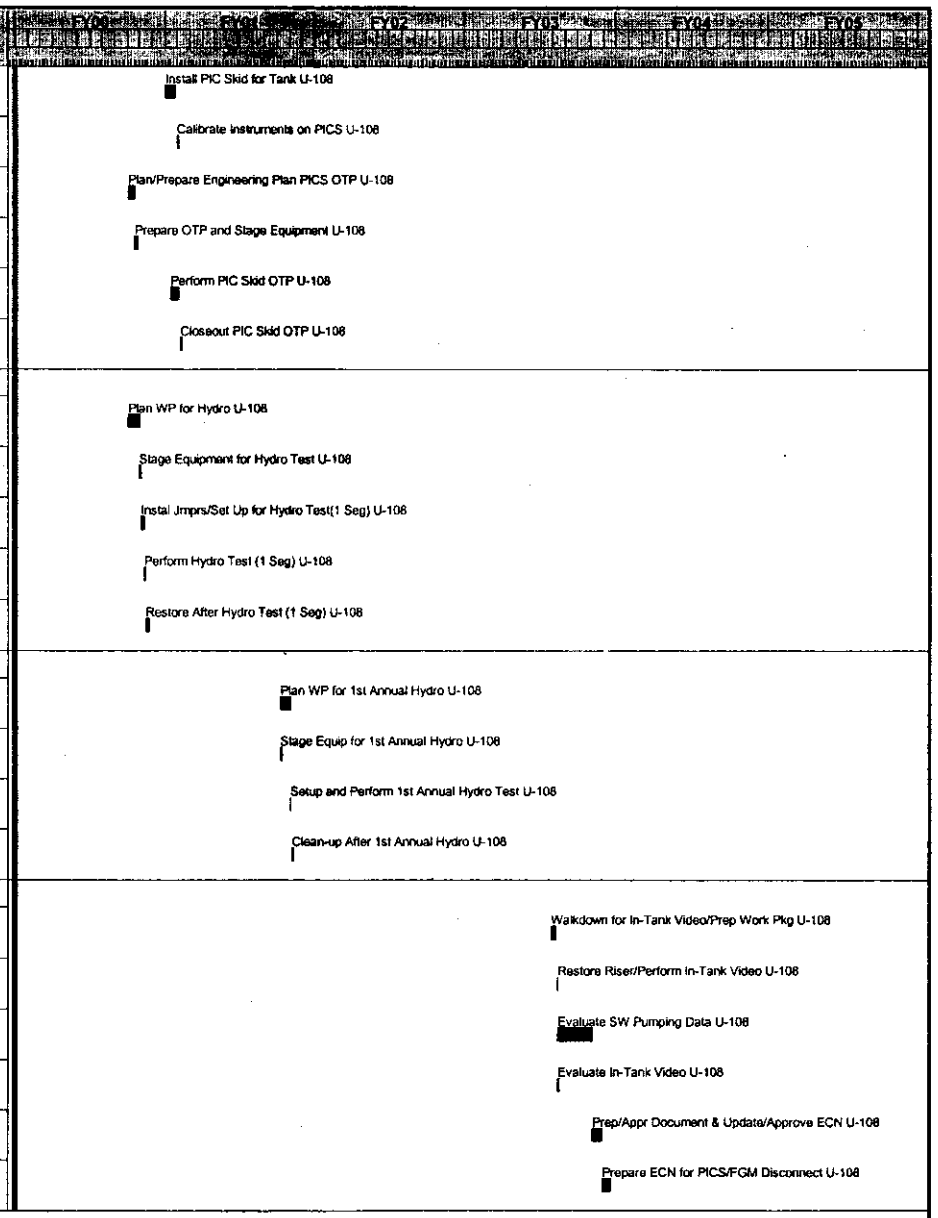


Activity ID	Rem. Dur.	Early Start	Early Finish	Activity
SS23X85B2	20	01OCT03	28OCT03	Isolation Planning U-108
SS23X85B3	2	29OCT03	30OCT03	Isolation Stage Equipment U-108
SS23X85B4	15	31OCT03	20NOV03	Isolation Work U-108
SS23X85B5	20	21NOV03	22DEC03	Isolation Complete Documentation U-108
1.01.03.01.01.09.48.08.08 Fab/Mod Cover Plates U-108				
SS23X08B	10	03JUL00	17JUL00	Prep Cover Plate Design Modifications ECN U-108
SS23X08D	10	18JUL00	31JUL00	Fab Lead Shield Plate for Exstg Cvr Plates U-108
1.01.03.01.01.09.48.08.16 Saltwell Screen U-108				
SS23X16C1	5	03JUL00	10JUL00	Perform Partial Screen Fabrication U-108
SS23X16D	10	03JUL00	17JUL00	Perform Saltwell Screen Install Design U-108
SS23X16E1	12	29JUN00	17JUL00	Perform Saltwell Screen Install Planning U-108
SS23X16E2	2	18JUL00	19JUL00	Perform Saltwell Screen Stage and Prep U-108
SS23X16E3	1	20JUL00	20JUL00	Install Saltwell Screen U-108
SS23X16E4	1	21JUL00	21JUL00	Perform Saltwell Screen Restoration U-108
1.01.03.01.01.09.48.08.19 Valve Pit Jumpers U-108				
SS23X19B2	5	03JUL00	10JUL00	Prep Work Pkg to Fab Flex Valve Pit Jumper U-108
SS23X19CF1	5	11JUL00	17JUL00	Fabricate Flex Valve Pit Jumper (1) U-108
SS23X19D	10	03JUL00	17JUL00	Prep Install ECN for Valve Pit Jumpers U-108
SS23X19E	15	30JUN00	21JUL00	Prep Work Pkg to Inst Valve Pit Jumpers U-108
SS23X19F1	2	24JUL00	25JUL00	Stage Equipment for Valve Pit Jumpers (1) U-108
SS23X19G1	1	26JUL00	26JUL00	Install Valve Jumper in Pit (1) U-108
SS23X19H1	1	27JUL00	27JUL00	Restore Valve Pit (1) U-108
1.01.03.01.01.09.48.08.27 SW Jet Pumps/Jumpers U-108				
SS23X27A	35	03JUL00	21AUG00	Design Installation for Jet Pump U-108
SS23X27B1	10	03JUL00	17JUL00	Prep Work Package for New Pump Assembly U-108

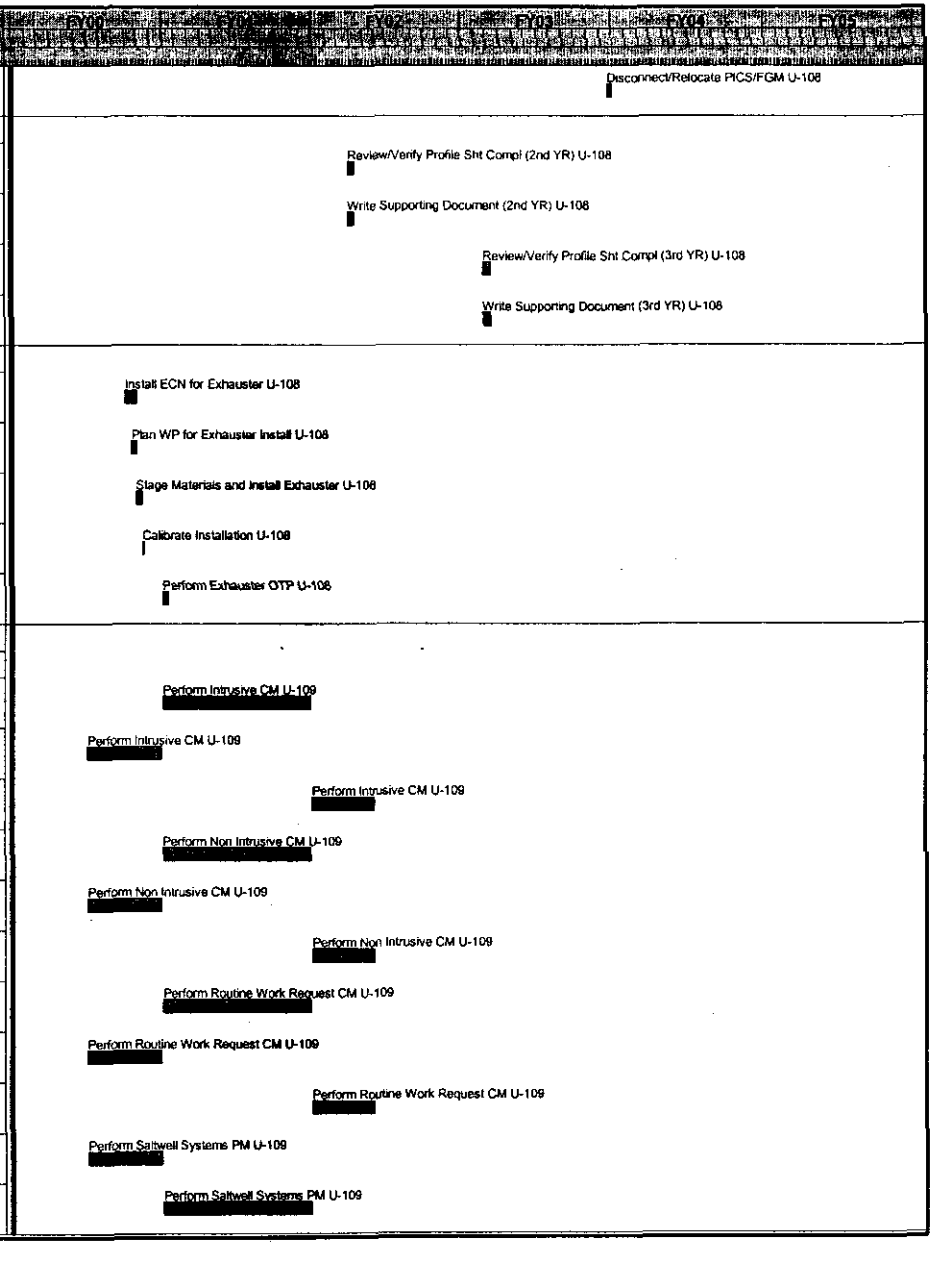
Activity ID	Sim Dur	Early Start	Early Finish
SS23X27B2	10	18JUL00	31JUL00
SS23X27C1	15	01AUG00	21AUG00
SS23X27C2	15	22AUG00	12SEP00
SS23X27D1	15	01AUG00	21AUG00
SS23X27D2	3	13SEP00	15SEP00
SS23X27E	35	03JUL00	21AUG00
SS23X27F1	10	08AUG00	21AUG00
SS23X27F2	20	22AUG00	19SEP00
SS23X27H	20	25JUL00	21AUG00
SS23X27J	2	13NOV00	14NOV00
SS23X27K	4	15NOV00	20NOV00
1.01.03.01.01.09.48.08.36 Management Self-Assessment U-108			
SS23X36A	30	02APR01	11MAY01
1.01.03.01.01.09.48.08.54 Initial Waste Capb Assmts U-108			
SS23X54A	30	02JAN01	12FEB01
SS23X54B	14	24JAN01	12FEB01
1.01.03.01.01.09.48.08.55 Install/Test FGMs U-108			
SS23X55D1	35	03JUL00	21AUG00
SS23X55E1	10	14AUG00	25AUG00
SS23X55E2	24	28AUG00	29SEP00
SS23X55E3	5	02OCT00	06OCT00
SS23X55F1	5	09OCT00	13OCT00
1.01.03.01.01.09.48.08.57 PIC Skids U-108			
SS23X57D	45	03JUL00	05SEP00
SS23X57E1	24	08AUG00	11SEP00



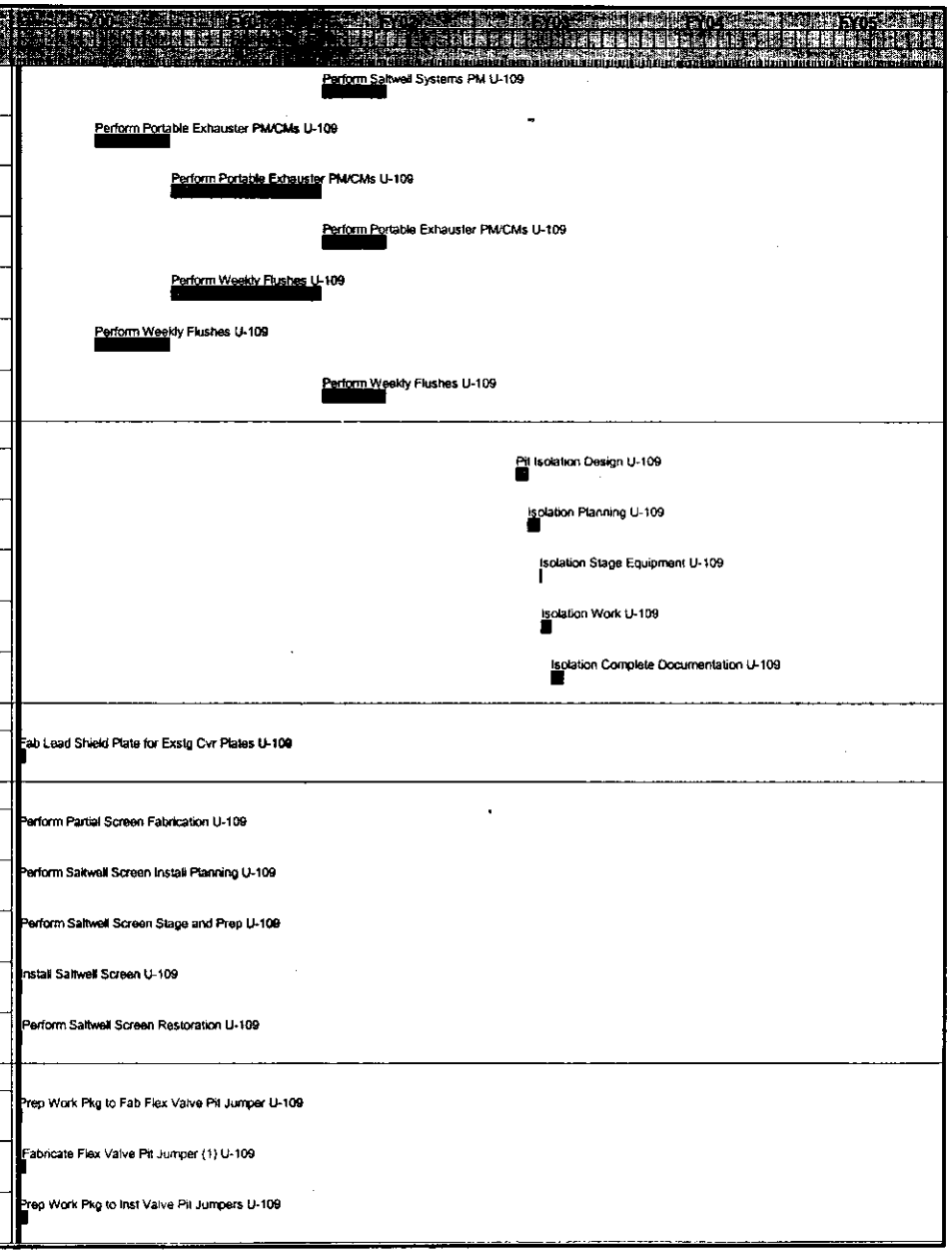
Activity ID	Rem Dur	Early Start	Early Finish
SS23X57E2	20	02OCT00	27OCT00
SS23X57E3	5	30OCT00	03NOV00
SS23X57F1	10	03JUL00	17JUL00
SS23X57F2	5	18JUL00	24JUL00
SS23X57F3	15	16OCT00	03NOV00
SS23X57F4	5	06NOV00	10NOV00
1.01.03.01.01.09.48.08.60 Hydro Test Transfer Line U-108			
SS23X60A	20	03JUL00	31JUL00
SS23X60B	2	01AUG00	02AUG00
SS23X60C1	5	03AUG00	09AUG00
SS23X60D1	5	10AUG00	16AUG00
SS23X60E1	5	17AUG00	23AUG00
1.01.03.01.01.09.48.08.74 U-108 Annual Hydro Test			
SS23X74A1	15	11JUL01	31JUL01
SS23X74A2	2	11JUL01	12JUL01
SS23X74A3	3	01AUG01	03AUG01
SS23X74A4	3	06AUG01	08AUG01
1.01.03.01.01.09.48.08.78 Post Equip Discn/Staging U-108			
SS23X78A1	10	28APR03	09MAY03
SS23X78A2	1	12MAY03	12MAY03
SS23X78B1	60	12MAY03	05AUG03
SS23X78B2	2	13MAY03	14MAY03
SS23X78B3	15	06AUG03	26AUG03
SS23X78C1	15	27AUG03	17SEP03



Activity ID	Rem Dur	Early Start	Early Finish
SS23X78C2	8	18SEP03	29SEP03
1.01.03.01.01.09.48.08.83 Annual Waste Capb Assmts U-108			
SS23X83C	10	28DEC01	11JAN02
SS23X83D	10	28DEC01	11JAN02
SS23X83E	10	22NOV02	09DEC02
SS23X83F	10	22NOV02	09DEC02
1.01.03.01.01.09.48.08.90 OTP Exhauster U-108			
SS23X90A	20	03JUL00	31JUL00
SS23X90B	10	18JUL00	31JUL00
SS23X90C	10	01AUG00	14AUG00
SS23X90D	4	15AUG00	18AUG00
SS23X90E	10	02OCT00	13OCT00
1.01.03.01.01.09.48.09 Stabilize/Isolate Tank U-109			
1.01.03.01.01.09.48.09.03 U-109 System Maint/Operability			
SS23Y68A3	251	02OCT00	28SEP01
SS23Y68B2	127	03APR00	29SEP00
SS23Y68B4	103	01OCT01	28FEB02
SS23Y68C3	251	02OCT00	28SEP01
SS23Y68D2	127	03APR00	29SEP00
SS23Y68D4	103	01OCT01	28FEB02
SS23Y68E3	251	02OCT00	28SEP01
SS23Y68F2	127	03APR00	29SEP00
SS23Y68F4	103	01OCT01	28FEB02
SS23Y68G2	127	03APR00	29SEP00
SS23Y68G3	251	02OCT00	28SEP01

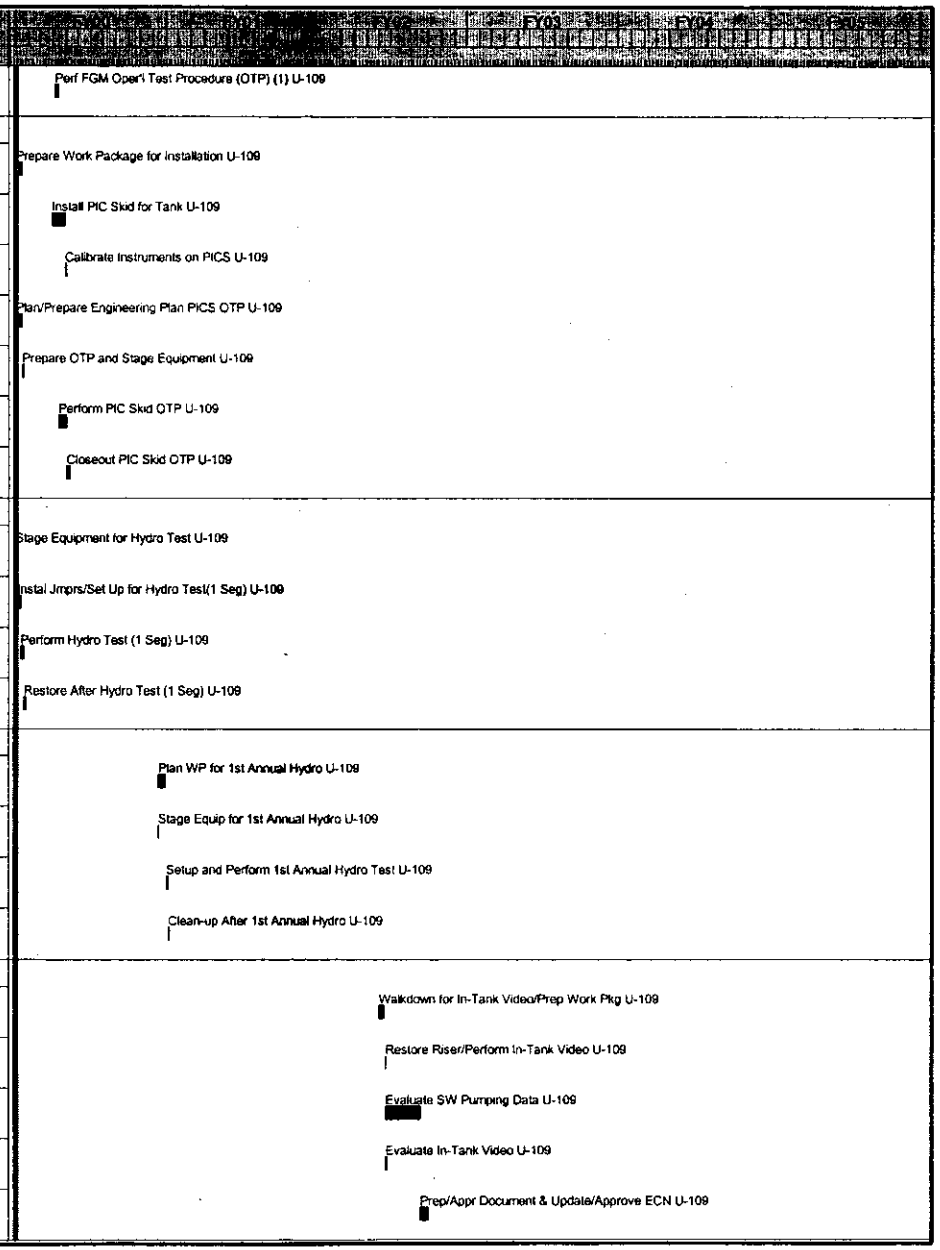


Activity ID	Rem Dur	Start	Finish
SS23Y68G4	103	01OCT01	28FEB02
SS23Y68H2	127	03APR00	29SEP00
SS23Y68H3	251	02OCT00	28SEP01
SS23Y68H4	103	01OCT01	28FEB02
SS23Y68J3	251	02OCT00	28SEP01
SS23Y68L2	127	03APR00	29SEP00
SS23Y68L4	103	01OCT01	28FEB02
1.01.03.01.01.09.48.09.04 U-109 Isolation			
SS23Y85B1	20	09JAN03	05FEB03
SS23Y85B2	20	06FEB03	06MAR03
SS23Y85B3	2	07MAR03	10MAR03
SS23Y85B4	15	11MAR03	31MAR03
SS23Y85B5	20	01APR03	28APR03
1.01.03.01.01.09.48.09.08 Fab/Mod Cover Plates U-109			
SS23Y08D	10	01OCT99	14OCT99
1.01.03.01.01.09.48.09.16 Saltwell Screen U-109			
SS23Y16C1	1	01OCT99	01OCT99
SS23Y16E1	1	01OCT99	01OCT99
SS23Y16E2	2	04OCT99	05OCT99
SS23Y16E3	1	06OCT99	06OCT99
SS23Y16E4	1	07OCT99	07OCT99
1.01.03.01.01.09.48.09.19 Valve Pit Jumpers U-109			
SS23Y19B2	5	01OCT99	07OCT99
SS23Y19CF1	5	08OCT99	14OCT99
SS23Y19E	15	01OCT99*	21OCT99

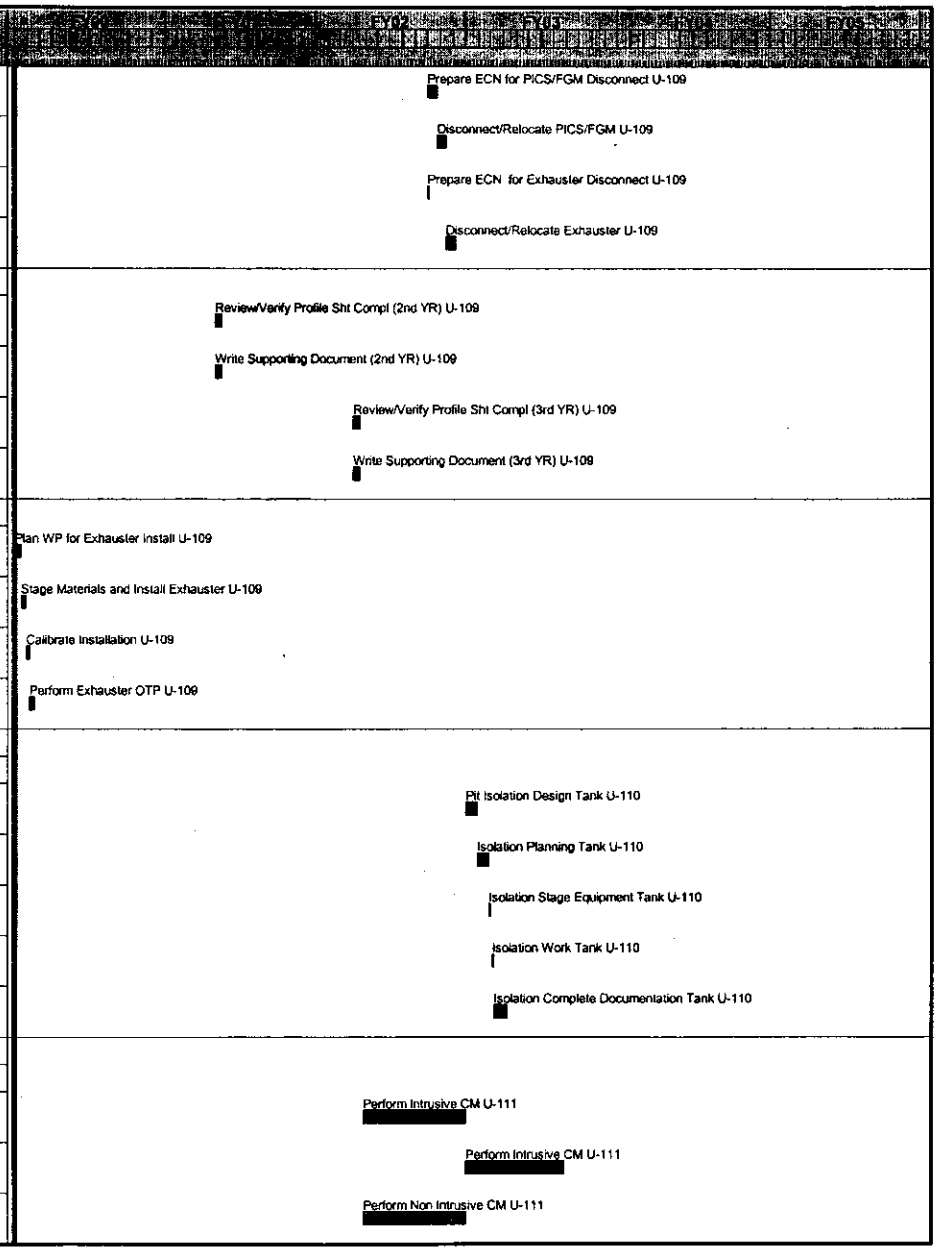


Activity ID	Rem Dur	Early Start	Early Finish	FY00 FY01 FY02 FY03 FY04 FY05
SS23Y19F1	2	22OCT99	25OCT99	Stage Equipment for Valve Pit Jumpers (1) U-109
SS23Y19G1	1	26OCT99	26OCT99	Install Valve Jumper in Pit (1) U-109
SS23Y19H1	1	27OCT99	27OCT99	Restore Valve Pit (1) U-109
1.01.03.01.01.09.48.09.27 SW Jet Pumps/Jumpers U-109				
SS23Y27B1	10	01OCT99	14OCT99	Prep Work Package for New Pump Assembly U-109
SS23Y27B2	10	15OCT99	28OCT99	Fabricate New Pump Assembly U-109
SS23Y27C2	15	29OCT99	18NOV99	Modify Pump Recirc Line U-109
SS23Y27D1	15	01OCT99	21OCT99	Prepare Work Package for Pump Run-In U-109
SS23Y27D2	3	19NOV99	23NOV99	Pump Run-In U-109
SS23Y27E	35	01OCT99	18NOV99	Design Pump Jumper U-109
SS23Y27F1	10	05NOV99	18NOV99	Prepare Work Package for New Pump Jumper U-109
SS23Y27F2	20	19NOV99	20DEC99	Fabricate New Pump Jumper U-109
SS23Y27H	20	01OCT99	28OCT99	Prep Inst Wrk Pkg for Pmp/Jmpr/Cvr Plates U-109
SS23Y27J	2	10FEB00	11FEB00	Stage Pump, Cover Plate, Req Materials U-109
SS23Y27K	4	14FEB00	17FEB00	Inst Pump/Jumper/Cover Blocks Func Test U-109
1.01.03.01.01.09.48.09.36 Management Self-Assessment U-109				
SS23Y36A	30	18FEB00	31MAR00	Perform IS Mgmt Self Assmt for Startup U-109
1.01.03.01.01.09.48.09.54 Initial Waste Capb Assmts U-109				
SS23Y54A	20	18FEB00*	17MAR00	Review/Verify Profile Sht Compl Initial U-109
SS23Y54B	14	29FEB00	17MAR00	Write Supporting Document Initial U-109
1.01.03.01.01.09.48.09.55 Install/Test FGMs U-109				
SS23Y55D1	35	01OCT99	18NOV99	Prepare Installation ECN for FGM (1) U-109
SS23Y55E1	10	11NOV99	24NOV99	Prepare Work Package for FGM Install (1) U-109
SS23Y55E2	20	29NOV99	28DEC99	Install Flammable Gas Monitor (FGM) (1) U-109
SS23Y55E3	5	29DEC99	05JAN00	Perf Flam Gas Monitor(FGM) Calibrtn (1) U-109

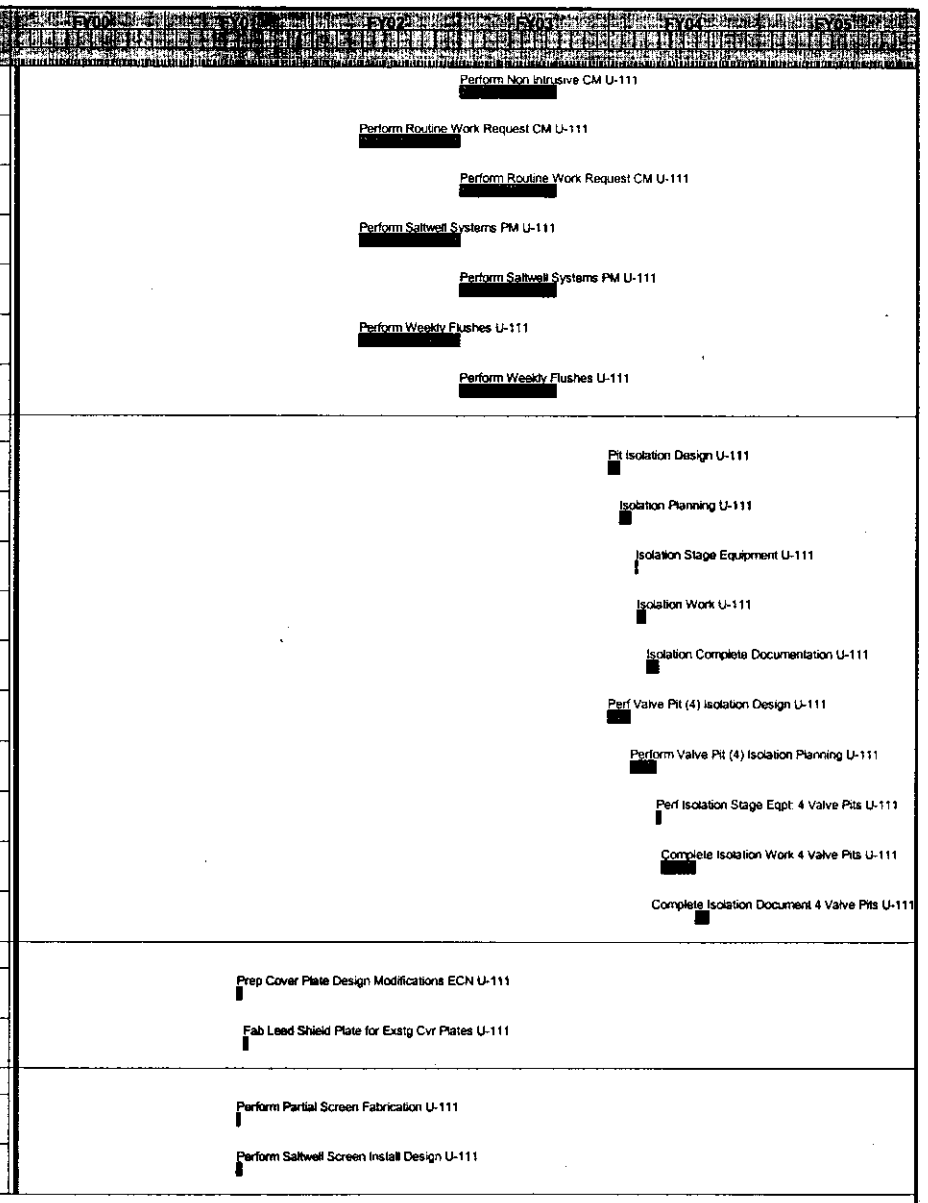
Activity ID	Rem Dur	Early Start	Early Finish
SS23Y55F1	5	06JAN00	12JAN00
1.01.03.01.01.09.48.09.57 PIC SKids U-109			
SS23Y57E1	10	01OCT99	14OCT99
SS23Y57E2	20	29DEC99	26JAN00
SS23Y57E3	5	27JAN00	02FEB00
SS23Y57F1	10	01OCT99	14OCT99
SS23Y57F2	5	15OCT99	21OCT99
SS23Y57F3	15	13JAN00	02FEB00
SS23Y57F4	5	03FEB00	09FEB00
1.01.03.01.01.09.48.09.60 Hydro Test Transfer Line U-109			
SS23Y60B	2	01OCT99	04OCT99
SS23Y60C1	5	05OCT99	11OCT99
SS23Y60D1	5	12OCT99	18OCT99
SS23Y60E1	5	19OCT99	25OCT99
1.01.03.01.01.09.48.09.74 U-109 Annual Hydro Test			
SS23Y74A1	15	11SEP00	29SEP00
SS23Y74A2	2	11SEP00	12SEP00
SS23Y74A3	3	02OCT00	04OCT00
SS23Y74A4	3	05OCT00	09OCT00
1.01.03.01.01.09.48.09.78 Post Equip Discn/Staging U-109			
SS23Y78A1	10	04MAR02	15MAR02
SS23Y78A2	1	18MAR02	18MAR02
SS23Y78B1	60	18MAR02	10JUN02
SS23Y78B2	2	19MAR02	20MAR02
SS23Y78B3	15	11JUN02	01JUL02



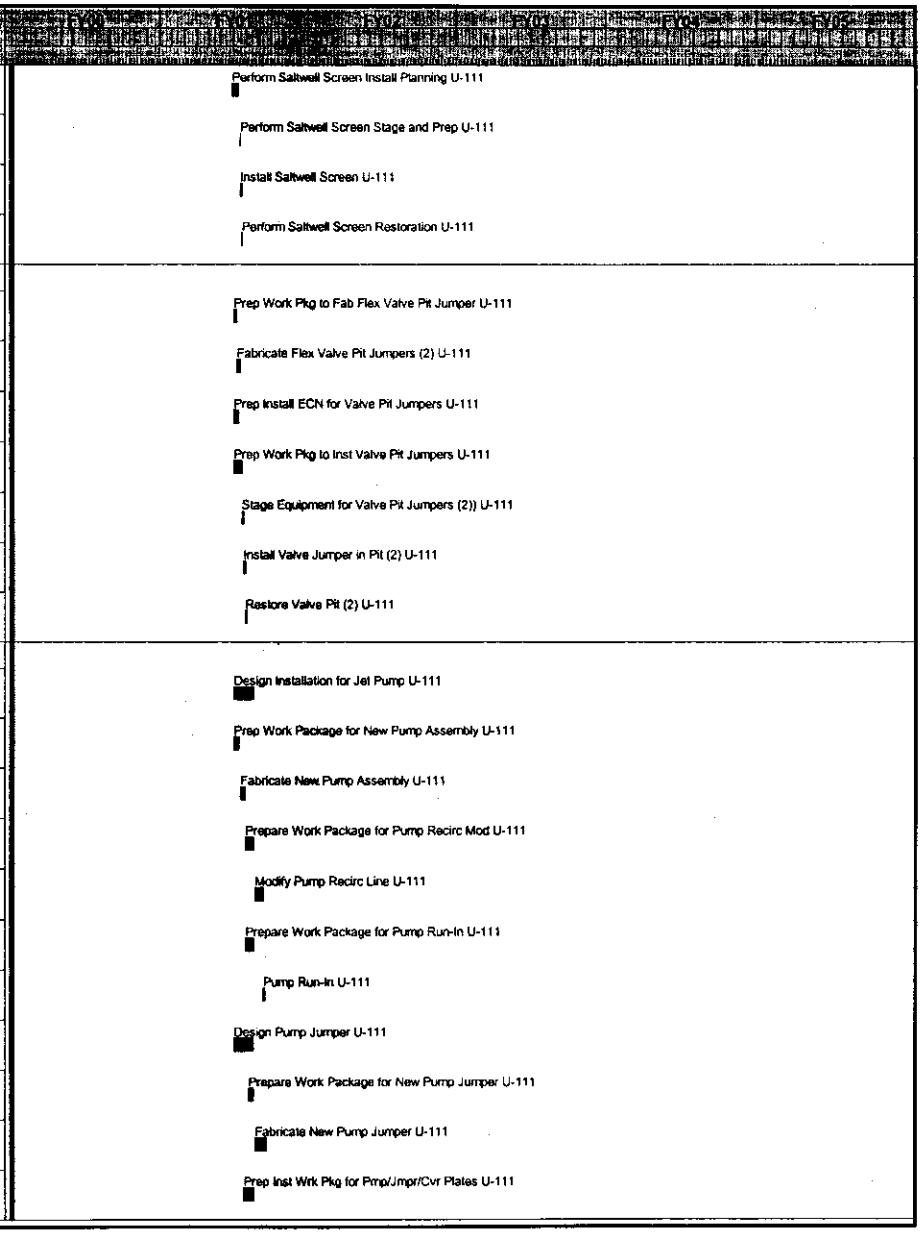
Activity ID	Duration	Start	Finish
SS23Y78C1	15	02JUL02	23JUL02
SS23Y78C2	15	24JUL02	13AUG02
SS23Y78D1	3	02JUL02	05JUL02
SS23Y78D2	15	14AUG02	04SEP02
1.01.03.01.01.09.48.09.83 Annual Waste Capb Assmts U-109			
SS23Y83C	10	01FEB01	14FEB01
SS23Y83D	10	01FEB01	14FEB01
SS23Y83E	10	02JAN02	15JAN02
SS23Y83F	10	02JAN02	15JAN02
1.01.03.01.01.09.48.09.90 OTP Exhauster U-109			
SS23Y90B	10	01OCT99	14OCT99
SS23Y90C	10	15OCT99	28OCT99
SS23Y90D	4	29OCT99	03NOV99
SS23Y90E	10	04NOV99	17NOV99
1.01.03.01.01.09.48.10 Stabilize/Isolate Tank U-110			
1.01.03.01.01.09.48.10.04 U-110 Isolation			
SS23085L1	20	01OCT02*	28OCT02
SS23085L2	20	29OCT02	25NOV02
SS23085L3	2	26NOV02	27NOV02
SS23085L4	5	02DEC02	06DEC02
SS23085L5	20	09DEC02	08JAN03
1.01.03.01.01.09.48.11 Stabilize/Isolate Tank U-111			
1.01.03.01.01.09.48.11.03 U-111 System Maint/Operability			
SS23Z68A4	174	24JAN02	30SEP02
SS23Z68A5	163	01OCT02	23MAY03
SS23Z68C4	174	24JAN02	30SEP02



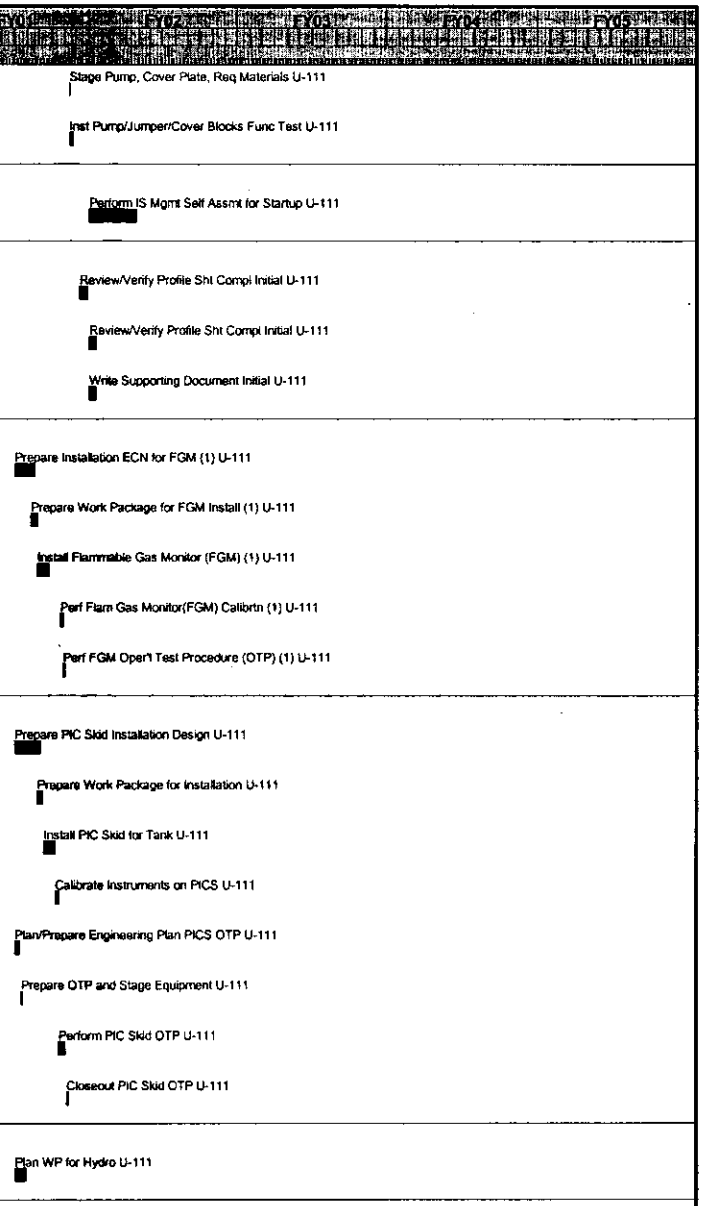
Activity ID	Rem Dur	Early Start	Early Finish
SS23Z68C5	163	01OCT02	23MAY03
SS23Z68E4	174	24JAN02	30SEP02
SS23Z68E5	163	01OCT02	23MAY03
SS23Z68G4	174	24JAN02	30SEP02
SS23Z68G5	163	01OCT02	23MAY03
SS23Z68K4	174	24JAN02	30SEP02
SS23Z68K5	163	01OCT02	23MAY03
1.01.03.01.01.09.48.11.04 U-111 Isolation			
SS23Z85B1	20	01OCT03	28OCT03
SS23Z85B2	20	29OCT03	25NOV03
SS23Z85B3	2	05DEC03	08DEC03
SS23Z85B4	15	09DEC03	31DEC03
SS23Z85B5	20	02JAN04	29JAN04
SS23Z85D1	40	01OCT03	25NOV03
SS23Z85D2	40	26NOV03	27JAN04
SS23Z85D3	8	28JAN04	06FEB04
SS23Z85D4	60	09FEB04	03MAY04
SS23Z85D5	20	04MAY04	01JUN04
1.01.03.01.01.09.48.11.08 Fab/Mod Cover Plates U-111			
SS23Z08B	10	02APR01	13APR01
SS23Z08D	10	16APR01	27APR01
1.01.03.01.01.09.48.11.16 Saltwell Screen U-111			
SS23Z16C1	5	02APR01	06APR01
SS23Z16D	10	02APR01	13APR01



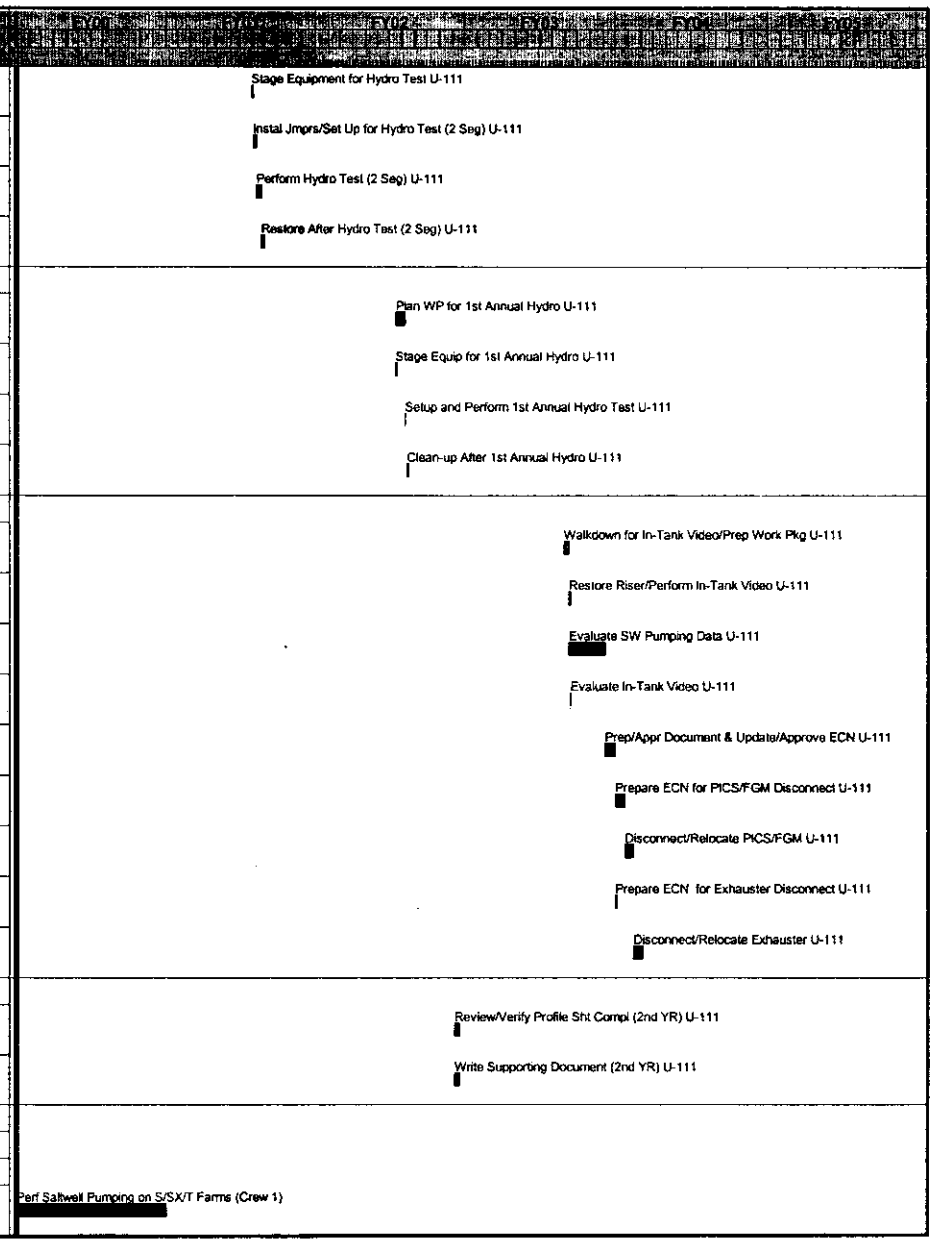
Activity ID	Rem Dur	Early Start	Early Finish
SS23Z16E1	12	29MAR01	13APR01
SS23Z16E2	2	16APR01	17APR01
SS23Z16E3	1	18APR01	18APR01
SS23Z16E4	1	19APR01	19APR01
1.01.03.01.01.09.48.11.19 Valve Pit Jumpers U-111			
SS23Z19B2	5	02APR01	06APR01
SS23Z19CF2	7	09APR01	17APR01
SS23Z19D	10	02APR01	13APR01
SS23Z19E	15	30MAR01	19APR01
SS23Z19F2	4	20APR01	25APR01
SS23Z19G2	2	26APR01	27APR01
SS23Z19H2	2	30APR01	01MAY01
1.01.03.01.01.09.48.11.27 SW Jet Pumps/Jumpers U-111			
SS23Z27A	35	02APR01	18MAY01
SS23Z27B1	10	02APR01	13APR01
SS23Z27B2	10	16APR01	27APR01
SS23Z27C1	15	30APR01	18MAY01
SS23Z27C2	15	21MAY01	11JUN01
SS23Z27D1	15	30APR01	18MAY01
SS23Z27D2	3	12JUN01	14JUN01
SS23Z27E	35	02APR01	18MAY01
SS23Z27F1	10	07MAY01	18MAY01
SS23Z27F2	20	21MAY01	18JUN01
SS23Z27H	20	23APR01	18MAY01



Activity ID	Rem Dur	Early Start	Early Finish
SS23Z27J	2	13AUG01	14AUG01
SS23Z27K	4	15AUG01	20AUG01
1.01.03.01.01.09.48.11.36 Management Self-Assessment U-111			
SS23Z36A	78	01OCT01	23JAN02
1.01.03.01.01.09.48.11.54 Initial Waste Capb Assmts U-111			
SS23Z54A	16	07SEP01	28SEP01
SS23Z54A2	14	01OCT01	18OCT01
SS23Z54B	14	01OCT01	18OCT01
1.01.03.01.01.09.48.11.55 Install/Test FGMs U-111			
SS23Z55D1	35	02APR01	18MAY01
SS23Z55E1	10	11MAY01	24MAY01
SS23Z55E2	20	25MAY01	22JUN01
SS23Z55E3	5	23JUL01	27JUL01
SS23Z55F1	5	30JUL01	03AUG01
1.01.03.01.01.09.48.11.57 PIC Skids U-111			
SS23Z57D	45	02APR01	04JUN01
SS23Z57E1	10	25MAY01	08JUN01
SS23Z57E2	20	11JUN01	09JUL01
SS23Z57E3	5	10JUL01	16JUL01
SS23Z57F1	10	02APR01	13APR01
SS23Z57F2	5	16APR01	20APR01
SS23Z57F3	15	16JUL01	03AUG01
SS23Z57F4	5	06AUG01	10AUG01
1.01.03.01.01.09.48.11.60 Hydro Test Transfer Line U-111			
SS23Z60A	20	02APR01	27APR01

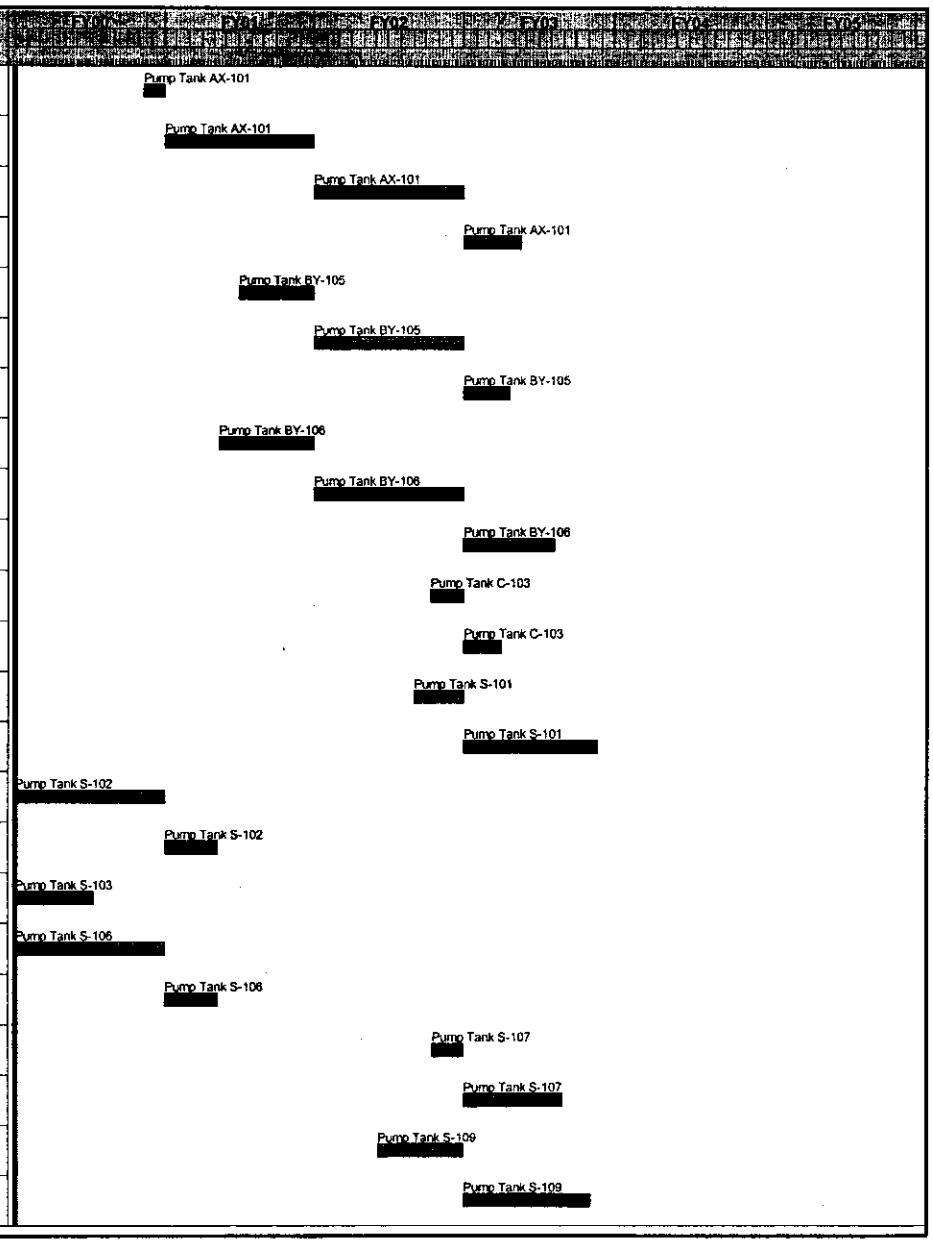


Activity ID	Rem Dur	Early Start	Early Finish
SS23Z60B	2	30APR01	01MAY01
SS23Z60C2	7	02MAY01	10MAY01
SS23Z60D2	7	11MAY01	21MAY01
SS23Z60E2	7	22MAY01	31MAY01
1.01.03.01.01.09.48.11.74 U-111 Annual Hydro Test			
SS23Z74A1	15	17APR02	07MAY02
SS23Z74A2	2	17APR02	18APR02
SS23Z74A3	3	08MAY02	10MAY02
SS23Z74A4	3	13MAY02	15MAY02
1.01.03.01.01.09.48.11.78 Post Equip Discn/Staging U-111			
SS23Z78A1	10	28MAY03	10JUN03
SS23Z78A2	1	11JUN03	11JUN03
SS23Z78B1	60	11JUN03	04SEP03
SS23Z78B2	2	12JUN03	13JUN03
SS23Z78B3	18	05SEP03	30SEP03
SS23Z78C1	15	01OCT03	21OCT03
SS23Z78C2	15	22OCT03	11NOV03
SS23Z78D1	3	01OCT03	03OCT03
SS23Z78D2	15	12NOV03	04DEC03
1.01.03.01.01.09.48.11.83 Annual Waste Capb Assmts U-111			
SS23Z83C	10	05SEP02	18SEP02
SS23Z83D	10	05SEP02	18SEP02
1.01.03.01.01.09.72 SST Stabilization Pumping			
1.01.03.01.01.09.72.01 Pumping for Remaining SSTs (29)			
1.01.03.01.01.09.72.01.01 SST Pumping			
SS23072A2	366	01OCT99	30SEP00



Activity ID	Remaining Dur	Early Start	Early Finish	
SS23072A3	365	01OCT00	30SEP01	Perf Saltwell Pumping on S/SX/T Farms (Crew 1)
SS23072A4	365	01OCT01	30SEP02	Perf Saltwell Pumping on S/SX/T Farms (Crew 1)
SS23072A5	323	01OCT02	19AUG03	Perf Saltwell Pumping on S/SX/T Farms (Crew 1)
SS23072B	366	01OCT99	30SEP00	Perform Saltwell Pumping on U Farm (Crew 2)
SS23072B2	365	01OCT00	30SEP01	Perform Saltwell Pumping on U Farm (Crew 2)
SS23072B3	365	01OCT01	30SEP02	Perform Saltwell Pumping on U Farm (Crew 2)
SS23072B4	238	01OCT02	26MAY03	Perform Saltwell Pumping on U Farm (Crew 2)
SS23072C	141	13MAY00	30SEP00	Perf Saltwell Pumping on A/AX/C Farms (Crew 3)
SS23072C2	365	01OCT00	30SEP01	Perf Saltwell Pumping on A/AX/C Farms (Crew 3)
SS23072C3	365	01OCT01	30SEP02	Perf Saltwell Pumping on A/AX/C Farms (Crew 3)
SS23072C4	327	01OCT02	23AUG03	Perf Saltwell Pumping on A/AX/C Farms (Crew 3)
SS23072D2	366	01OCT99	30SEP00	Prov Training Sppt Pumping Ops (T-Shift) FY00
SS23072D4	365	01OCT00	30SEP01	Prov Training Sppt Pumping Ops (T-Shift) FY01
SS23072D5	365	01OCT01	30SEP02	Prov Training Sppt Pumping Ops (T-Shift) FY02
SS23072D6	327	01OCT02	23AUG03	Prov Training Sppt Pumping Ops (T-Shift) FY03
SS23072E2	366	01OCT99	30SEP00	Prov Shift Mgr & Ops Engr Sppt Pumping Ops FY00
SS23072E3	365	01OCT00	30SEP01	Prov Shift Mgr & Ops Engr Sppt Pumping Ops FY01
SS23072E4	365	01OCT01	30SEP02	Prov Shift Mgr & Ops Engr Sppt Pumping Ops FY02
SS23072E5	327	01OCT02	23AUG03	Prov Shift Mgr & Ops Engr Sppt Pumping Ops FY03
SS23172D1	141	13MAY00	30SEP00	Pump Tank A-101
SS23172D12	365	01OCT00	30SEP01	Pump Tank A-101
SS23172D13	365	01OCT01	30SEP02	Pump Tank A-101
SS23172D14	327	01OCT02	23AUG03	Pump Tank A-101

Activity ID	Rem Dur	Early Start	Early Finish
SS23272D1	52	10AUG00	30SEP00
SS23272D12	365	01OCT00	30SEP01
SS23272D13	365	01OCT01	30SEP02
SS23272D14	140	01OCT02	17FEB03
SS23372D1	183	01APR01	30SEP01
SS23372D12	365	01OCT01	30SEP02
SS23372D13	112	01OCT02	20JAN03
SS23472D1	233	10FEB01	30SEP01
SS23472D12	365	01OCT01	30SEP02
SS23472D13	218	01OCT02	06MAY03
SS23572D1	80	13JUL02	30SEP02
SS23572D12	91	01OCT02	30DEC02
SS23A72D1	122	01JUN02	30SEP02
SS23A72D2	323	01OCT02	19AUG03
SS23B72D12	366	01OCT99	30SEP00
SS23B72D13	129	01OCT00	06FEB01
SS23C72D12	192	01OCT99	09APR00
SS23D72D12	366	01OCT99	30SEP00
SS23D72D13	129	01OCT00	06FEB01
SS23E72D1	77	16JUL02	30SEP02
SS23E72D2	241	01OCT02	29MAY03
SS23F72D1	207	08MAR02	30SEP02
SS23F72D2	308	01OCT02	04AUG03



Activity ID	Remaining Dur.	Early Start	Early Finish
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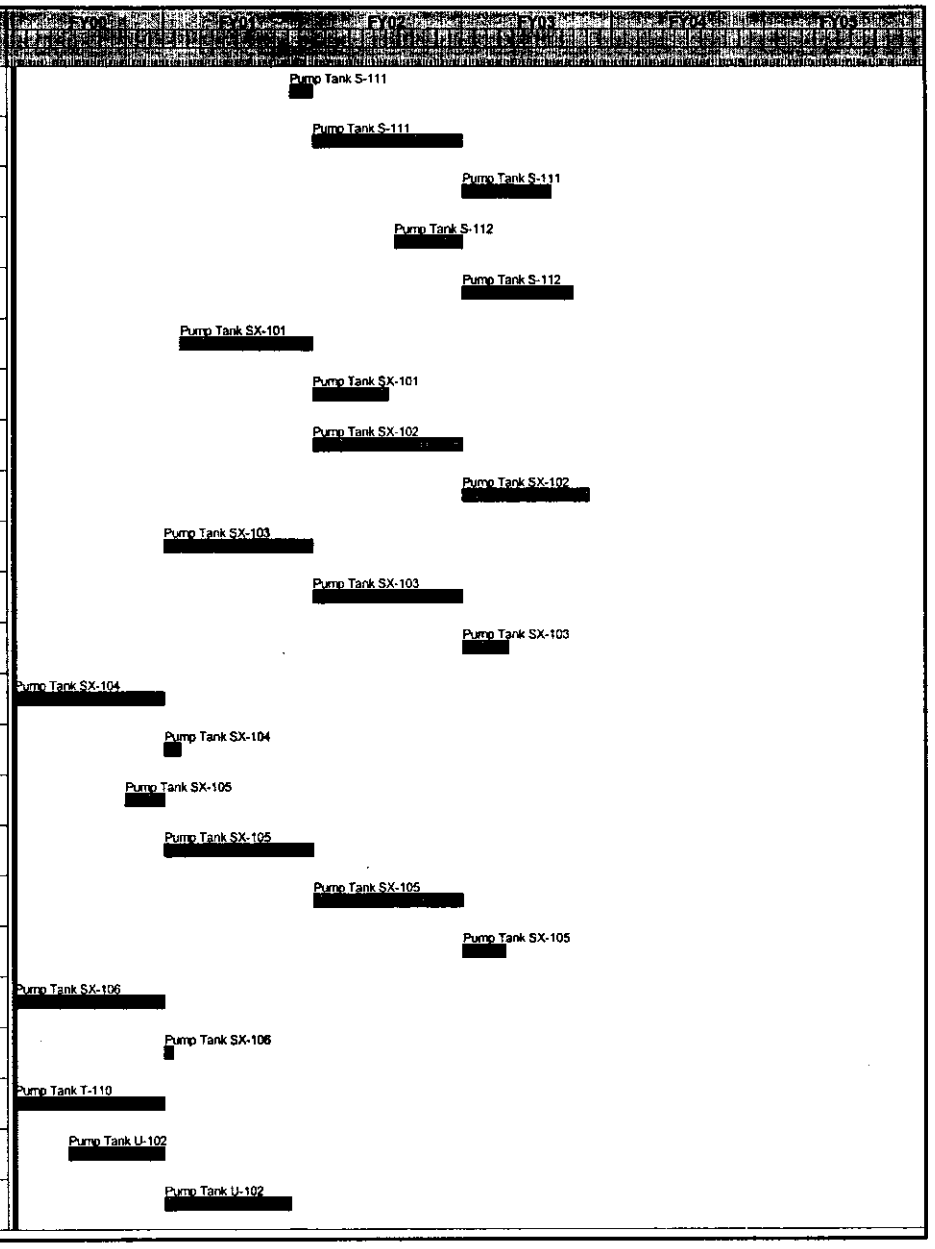
SS23G72D12	365	01OCT01	30SEP02
SS23G72D13	215	01OCT02	03MAY03
SS23H72D1	165	19APR02	30SEP02
SS23H72D2	268	01OCT02	25JUN03
SS23J72D1	324	11NOV00	30SEP01
SS23J72D12	186	01OCT01	04APR02
SS23K72D1	365	01OCT01*	30SEP02
SS23K72D2	307	01OCT02	03AUG03
SS23L72D1	365	01OCT00	30SEP01
SS23L72D12	365	01OCT01	30SEP02
SS23L72D2	110	01OCT02	18JAN03
SS23M72D12	366	01OCT99	30SEP00
SS23M72D13	40	01OCT00	09NOV00
SS23N72D1	96	27JUN00	30SEP00
SS23N72D12	365	01OCT00	30SEP01
SS23N72D13	365	01OCT01	30SEP02
SS23N72D2	104	01OCT02	12JAN03
SS23P72D12	366	01OCT99	30SEP00
SS23P72D13	20	01OCT00	20OCT00
SS23R72D12	366	01OCT99	30SEP00
SS23S72D1	234	10FEB00	30SEP00
SS23S72D12	308	01OCT00	04AUG01



Activity ID	Rem Dur	Early Start	Early Finish
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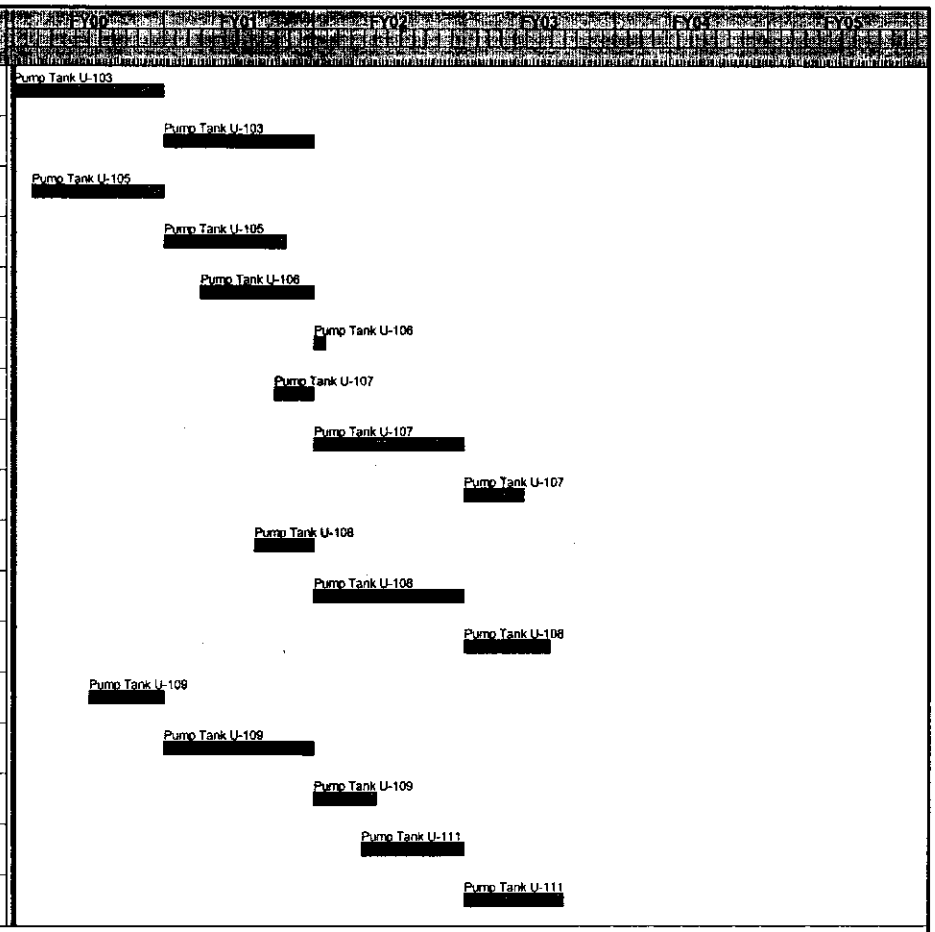
SS23T72D2	365	01OCT00	30SEP01
SS23U72D1	321	15NOV99	30SEP00
SS23U72D12	299	01OCT00	26JUL01
SS23V72D1	276	29DEC00	30SEP01
SS23V72D12	28	01OCT01	28OCT01
SS23W72D1	97	26JUN01	30SEP01
SS23W72D12	365	01OCT01	30SEP02
SS23W72D2	145	01OCT02	22FEB03
SS23X72D1	142	12MAY01	30SEP01
SS23X72D12	365	01OCT01	30SEP02
SS23X72D2	209	01OCT02	27APR03
SS23Y72D1	183	01APR00	30SEP00
SS23Y72D12	365	01OCT00	30SEP01
SS23Y72D13	152	01OCT01	01MAR02
SS23Z72D1	250	24JAN02	30SEP02
SS23Z72D2	239	01OCT02	27MAY03



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SINGLE-SHELL TANK INTERIM STABILIZATION LEVEL 1 LOGICS

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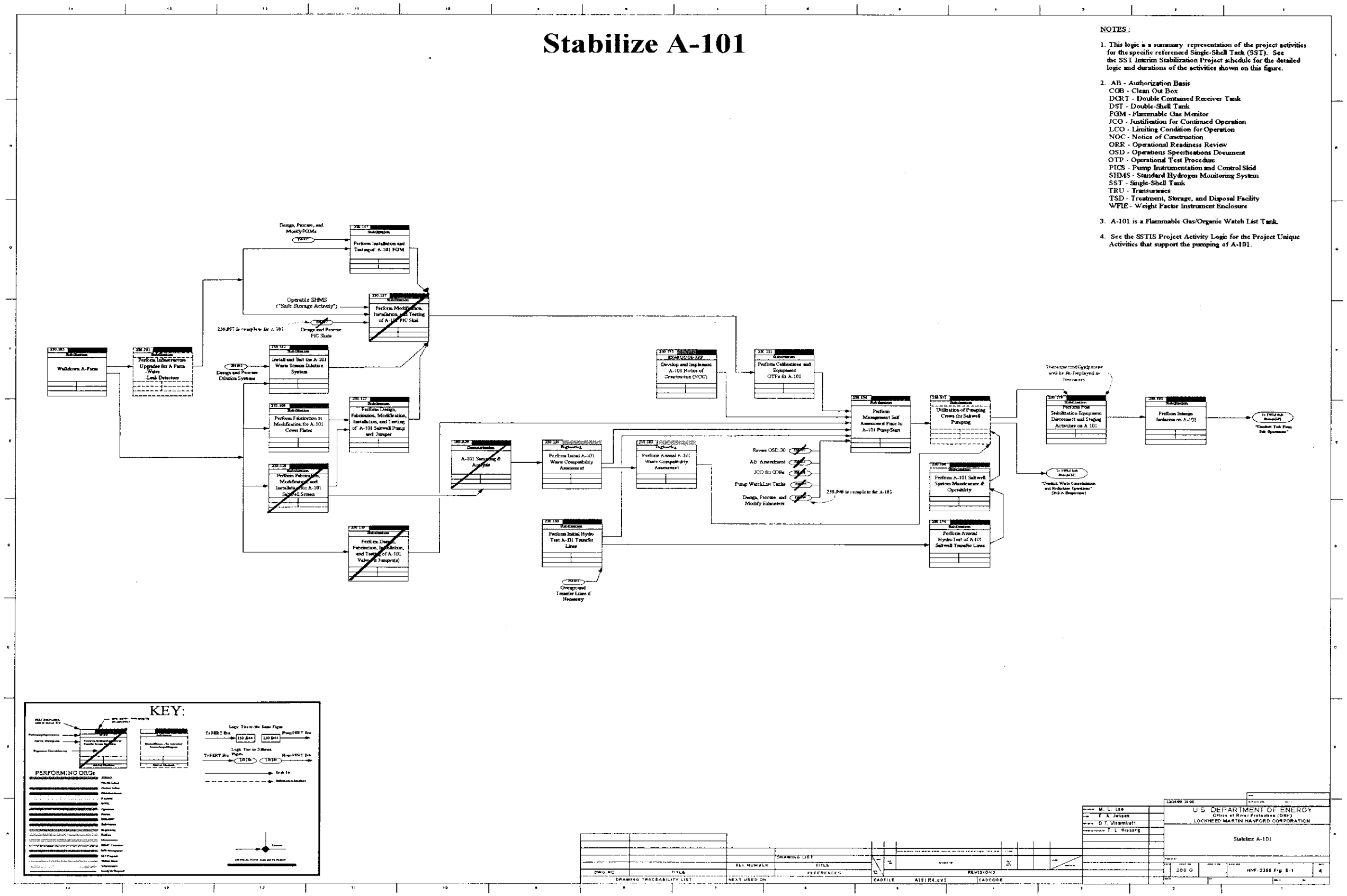
Figure E-1. Stabilize A-101.



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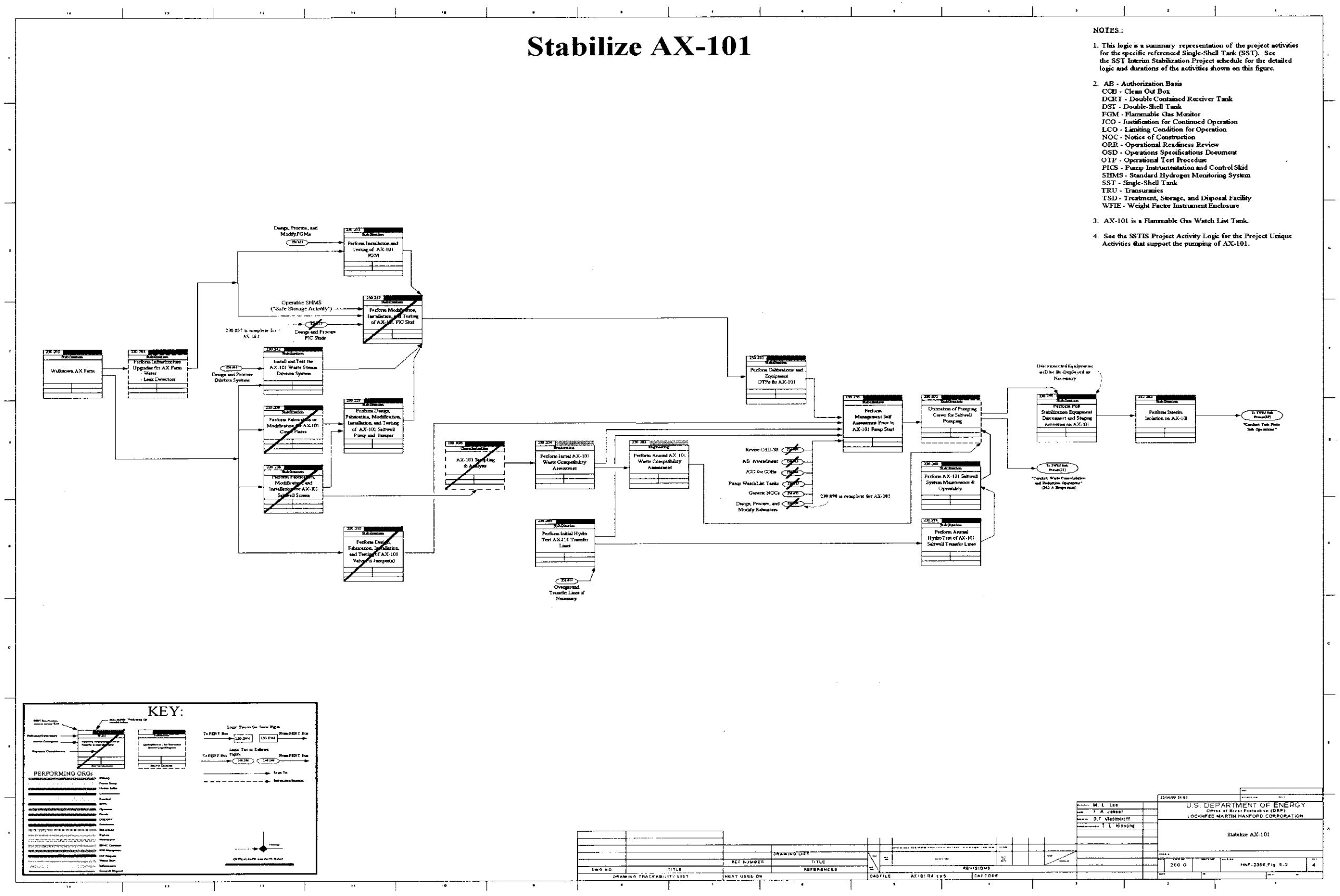

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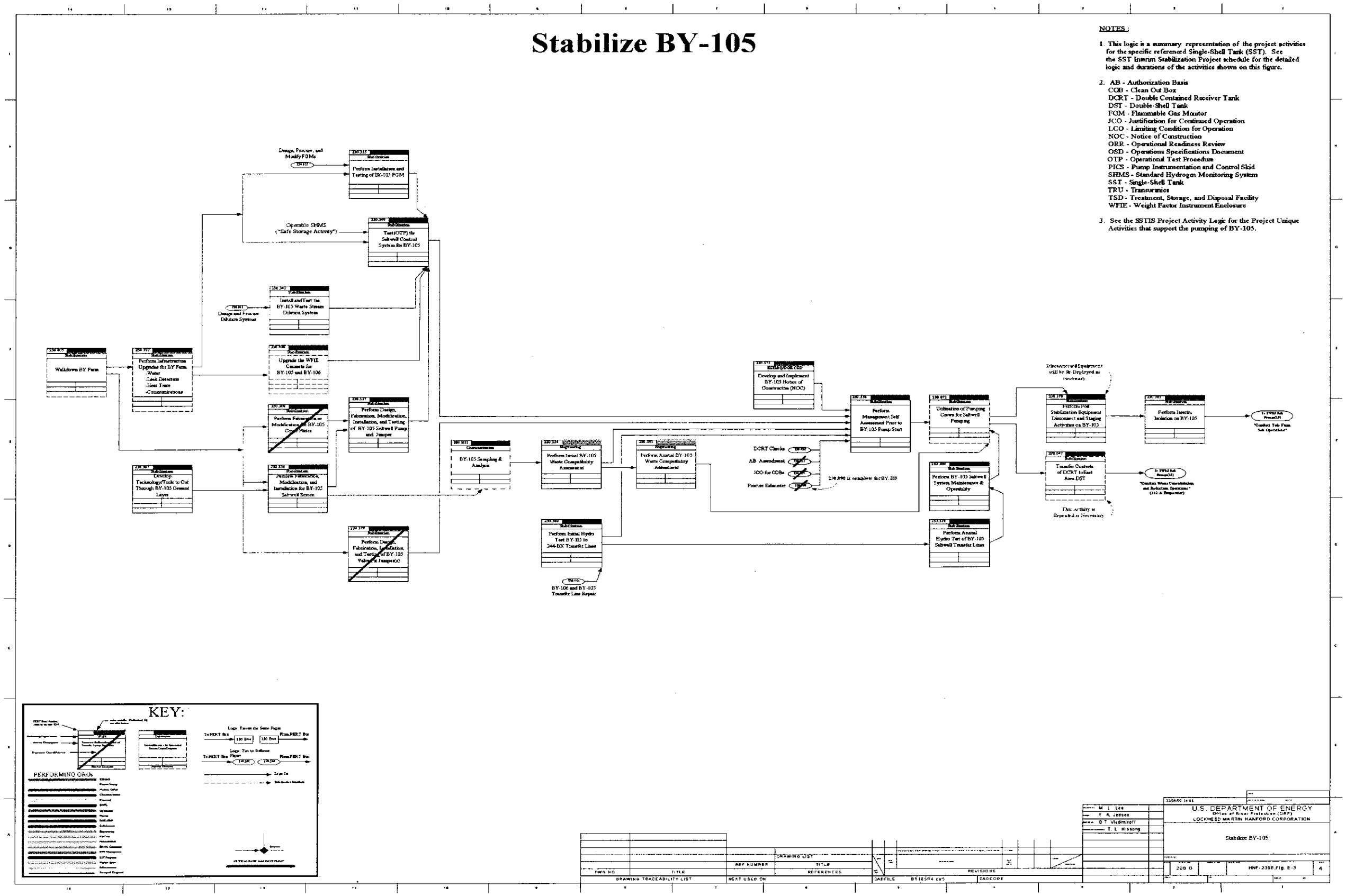


Figure E-4. Stabilize BY-106.

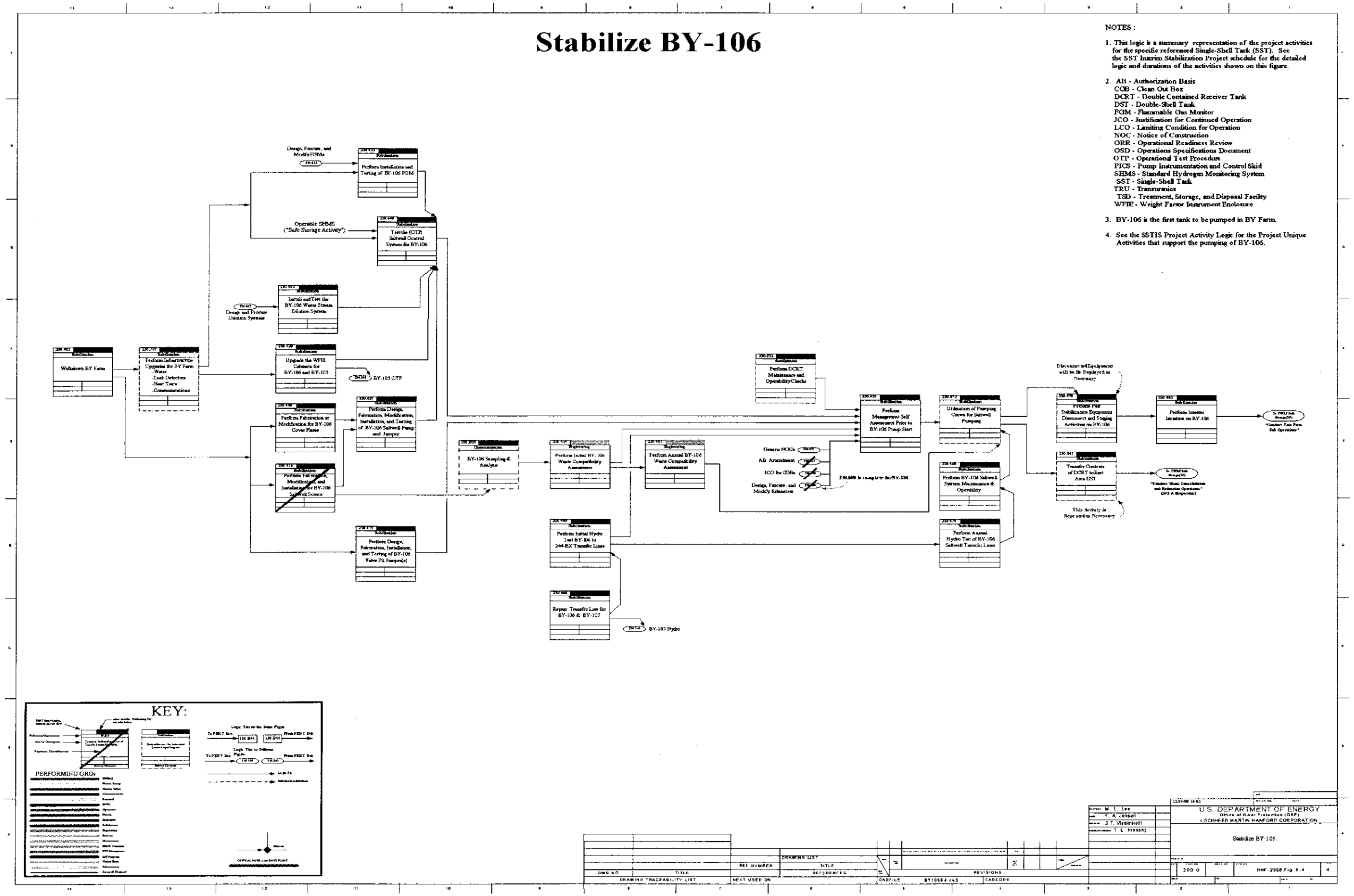
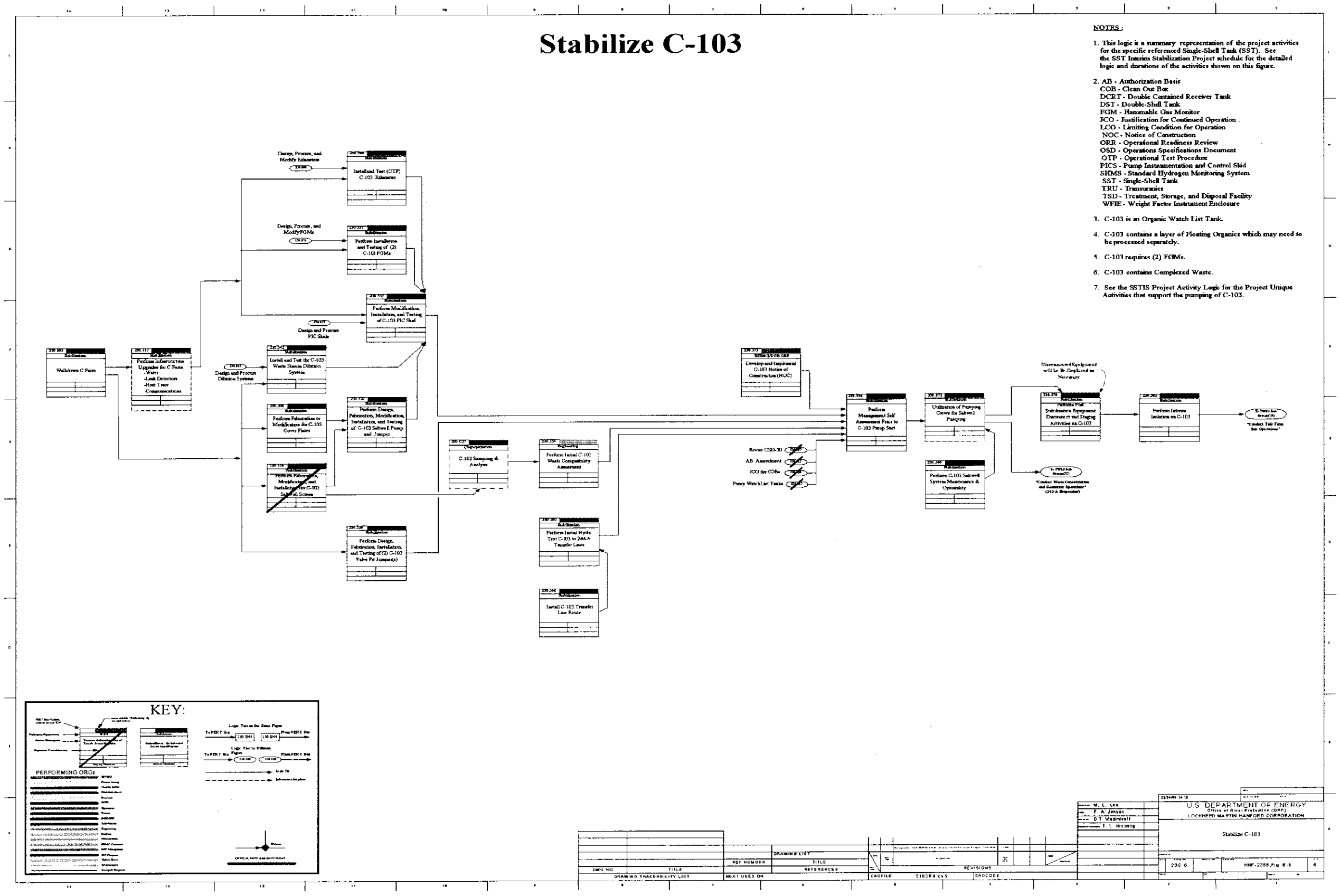


Figure E-5. Stabilize C-103.



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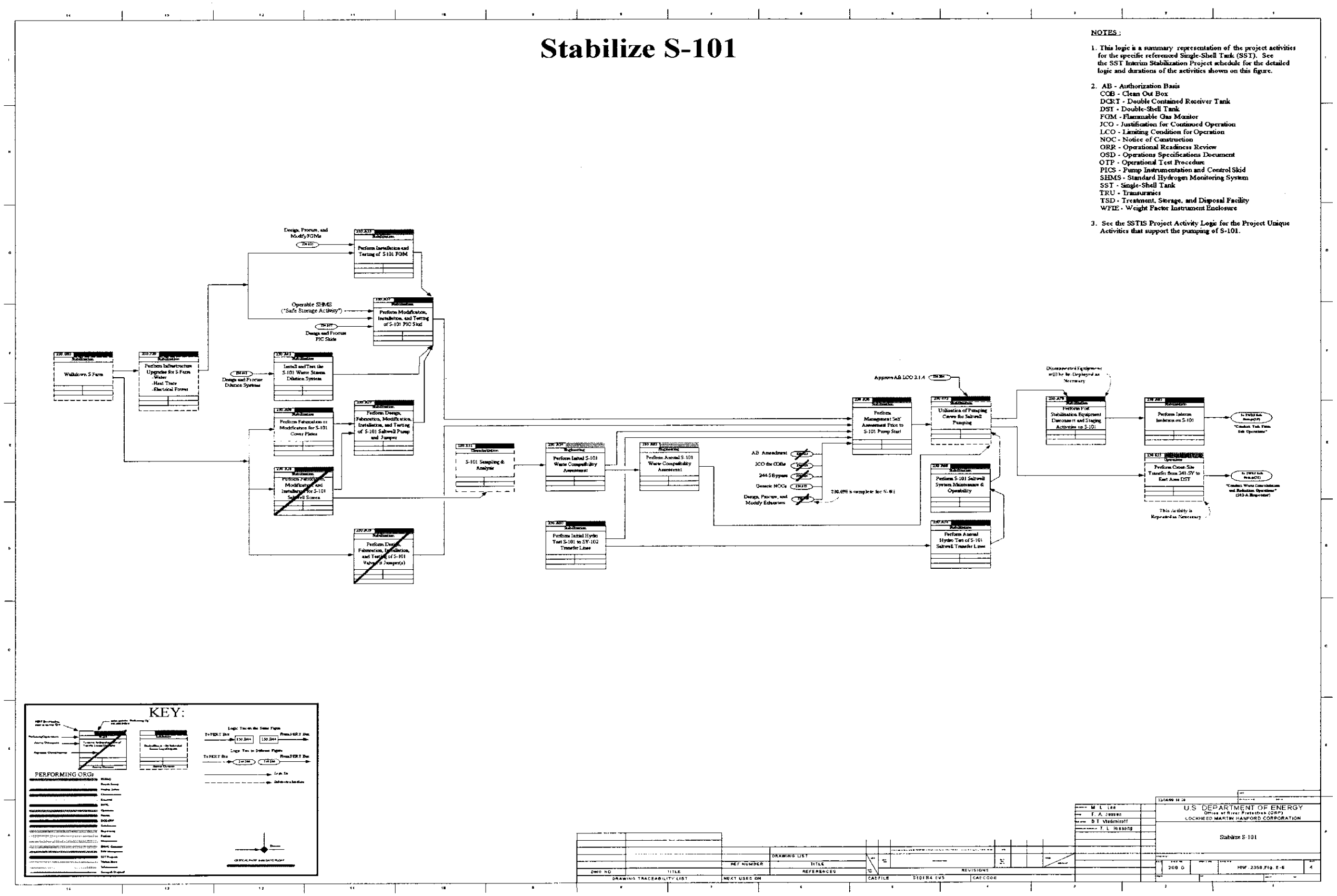

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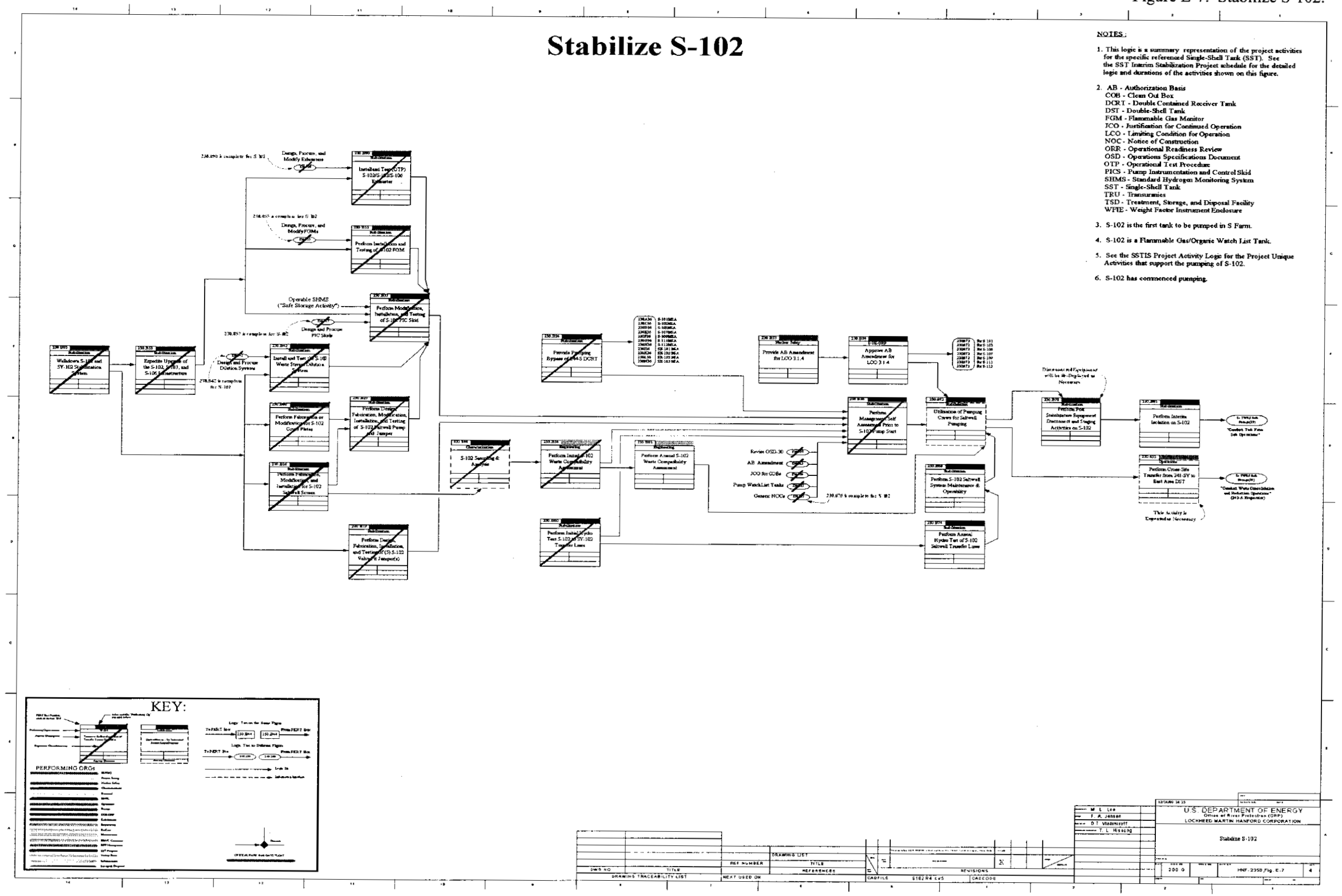

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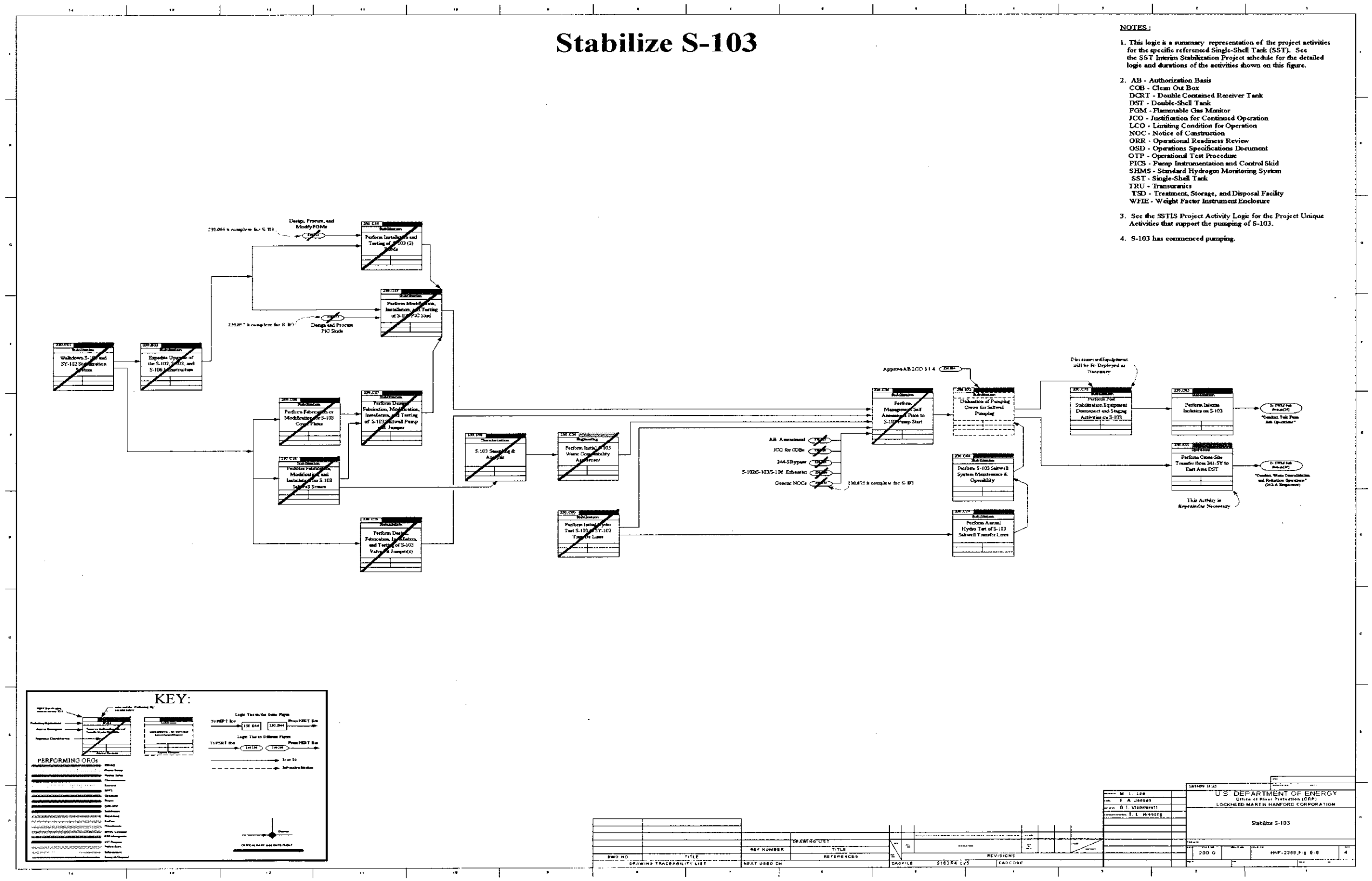

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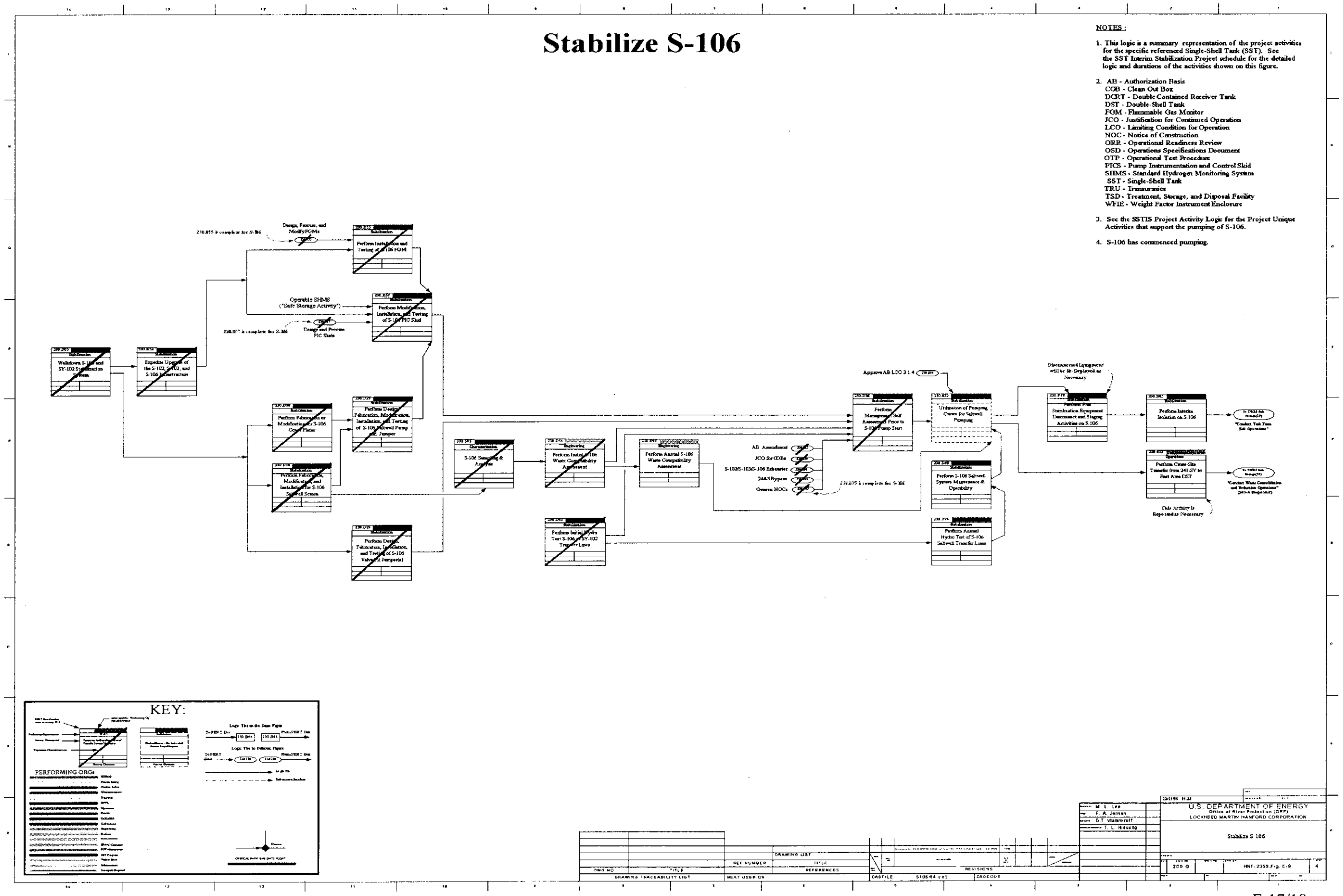

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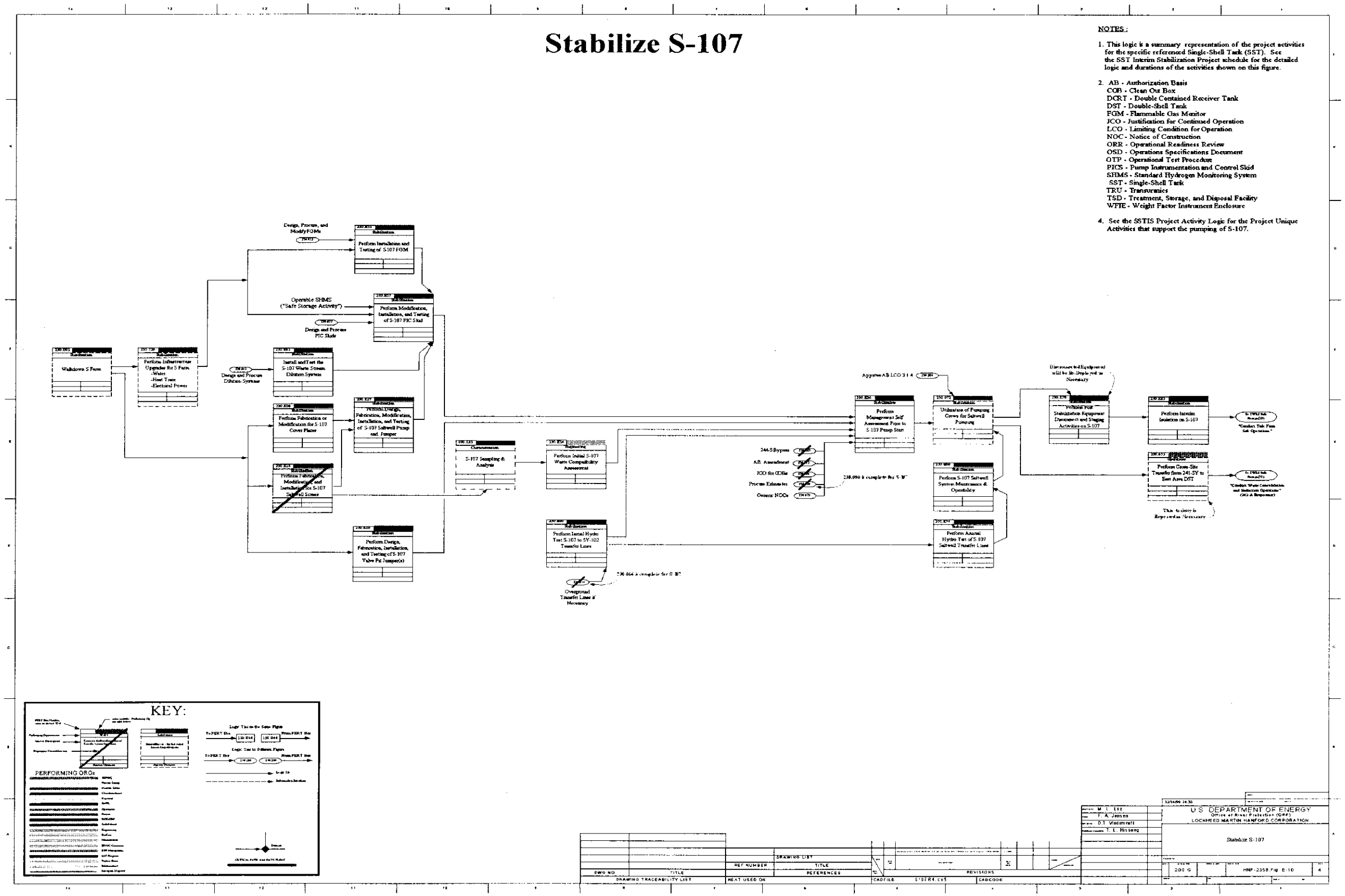

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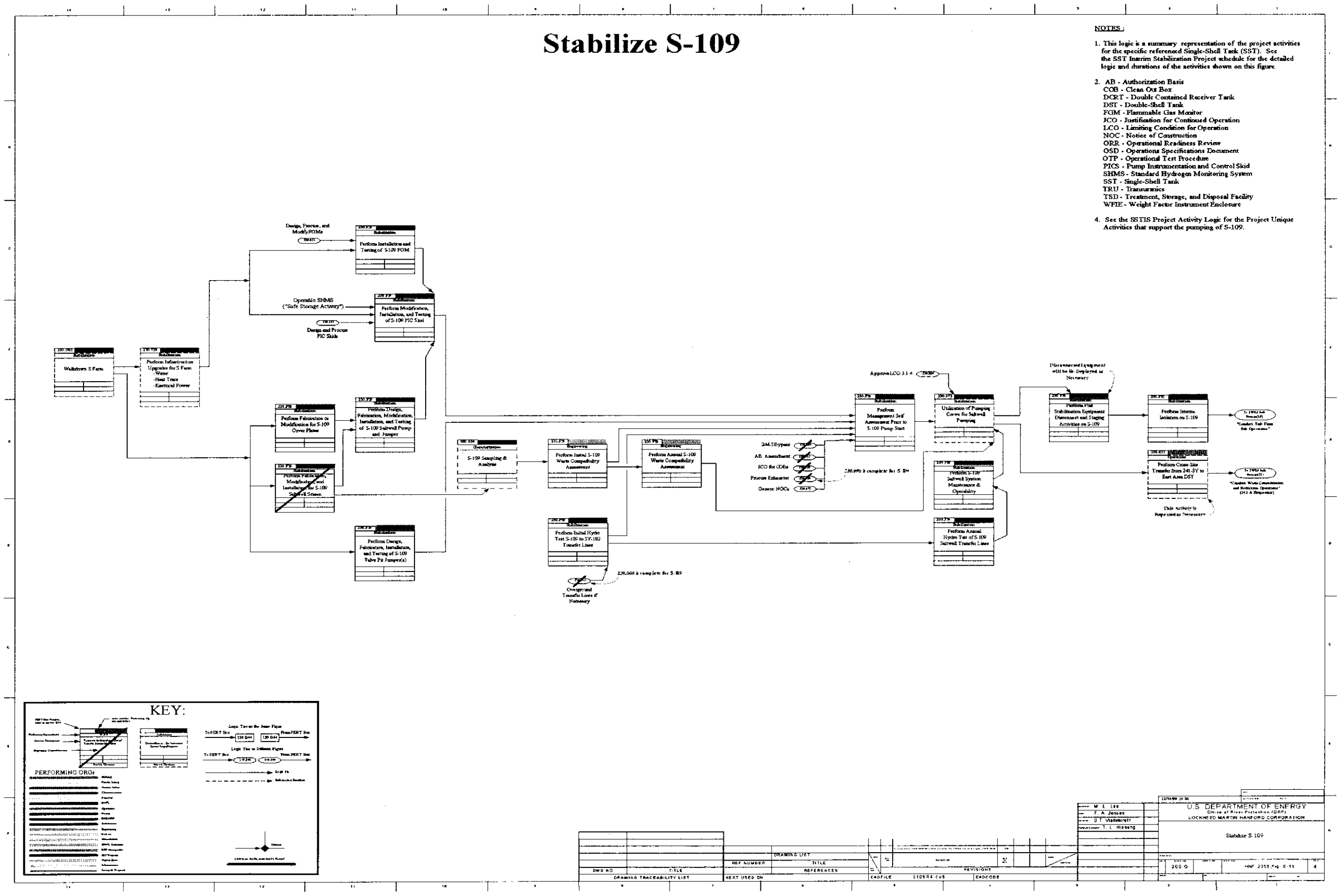


Figure E-12. Stabilize S-111.

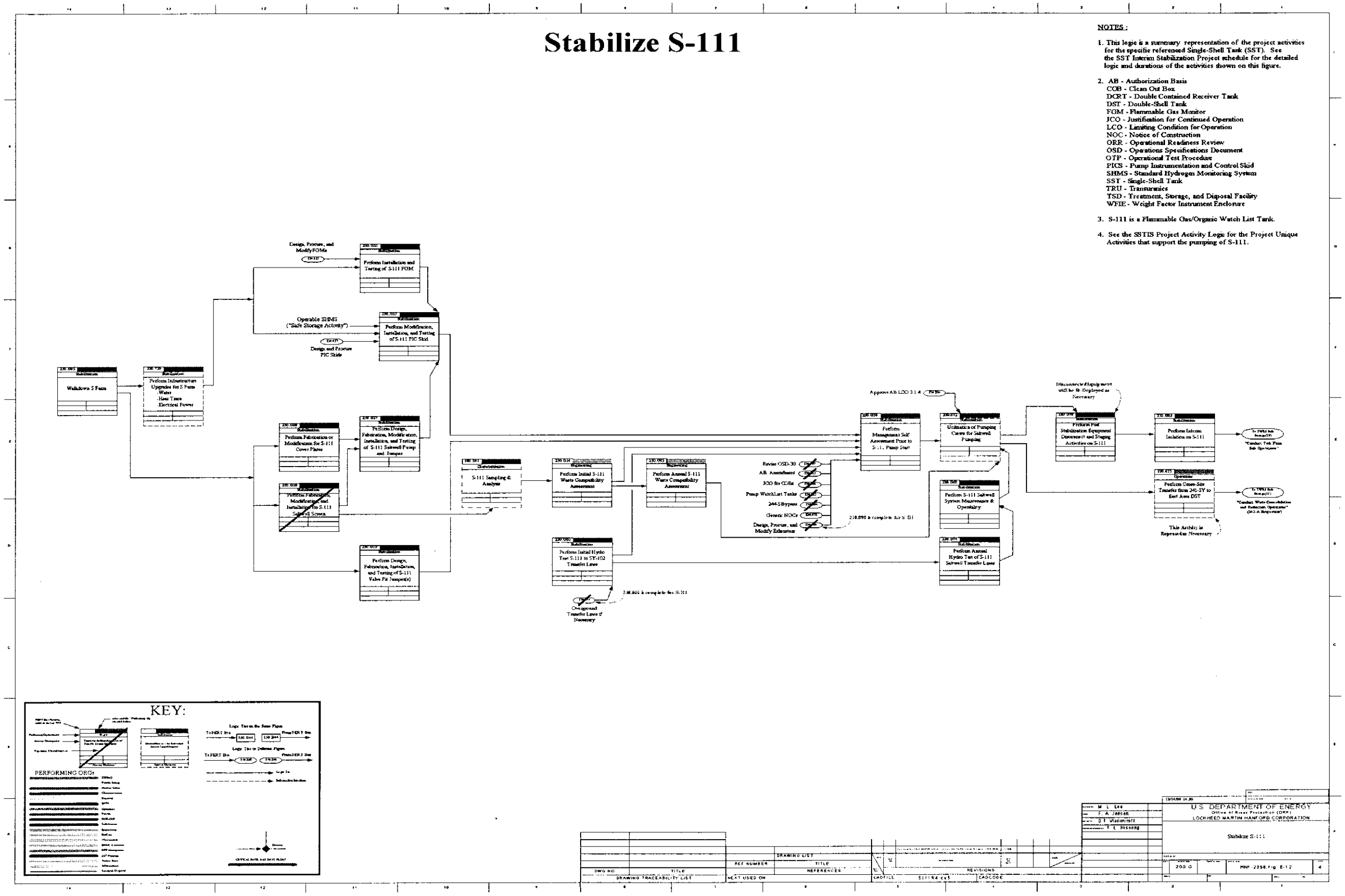


Figure E-13. Stabilize S-112.

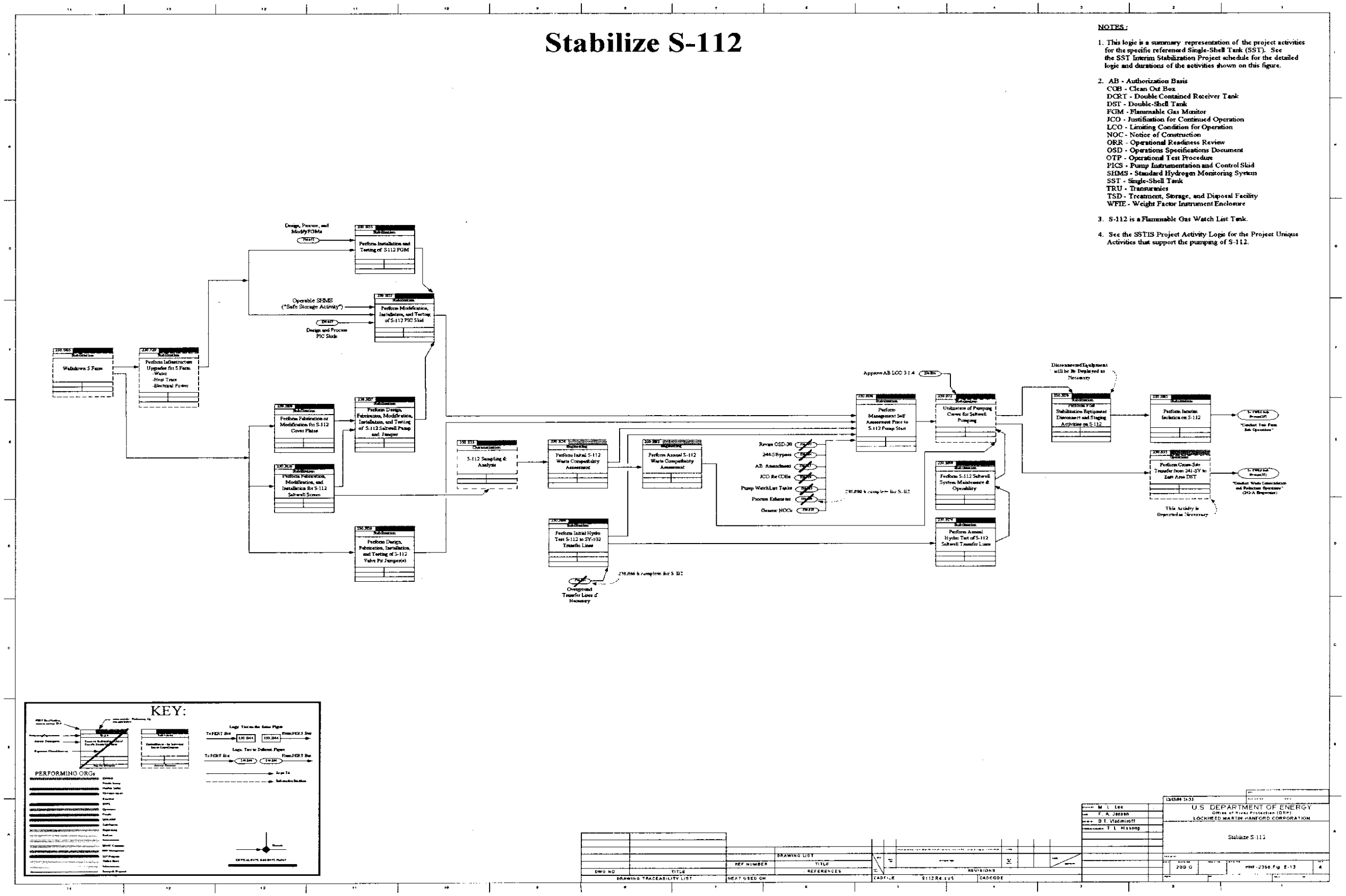
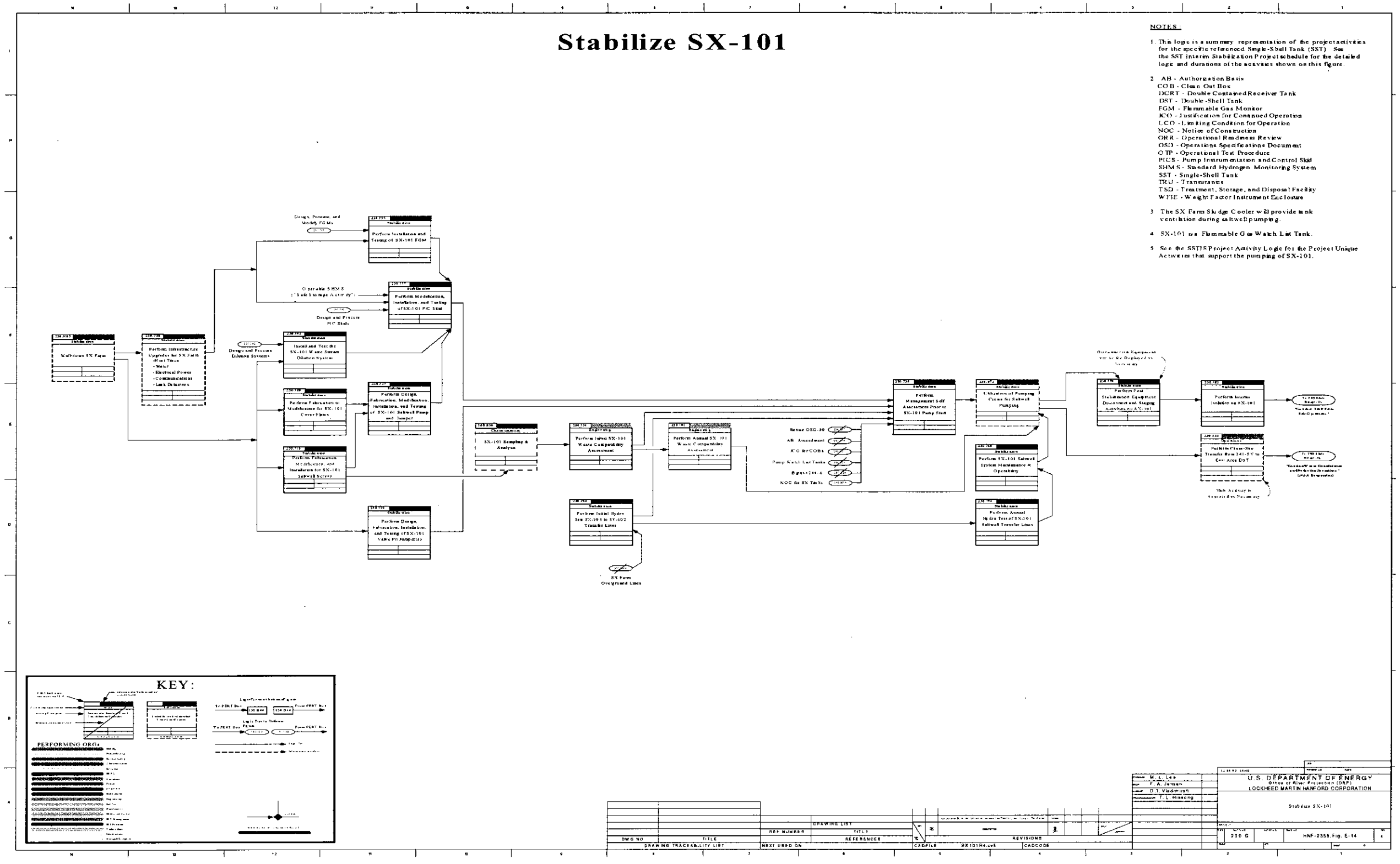


Figure E-14. Stabilize SX-101.



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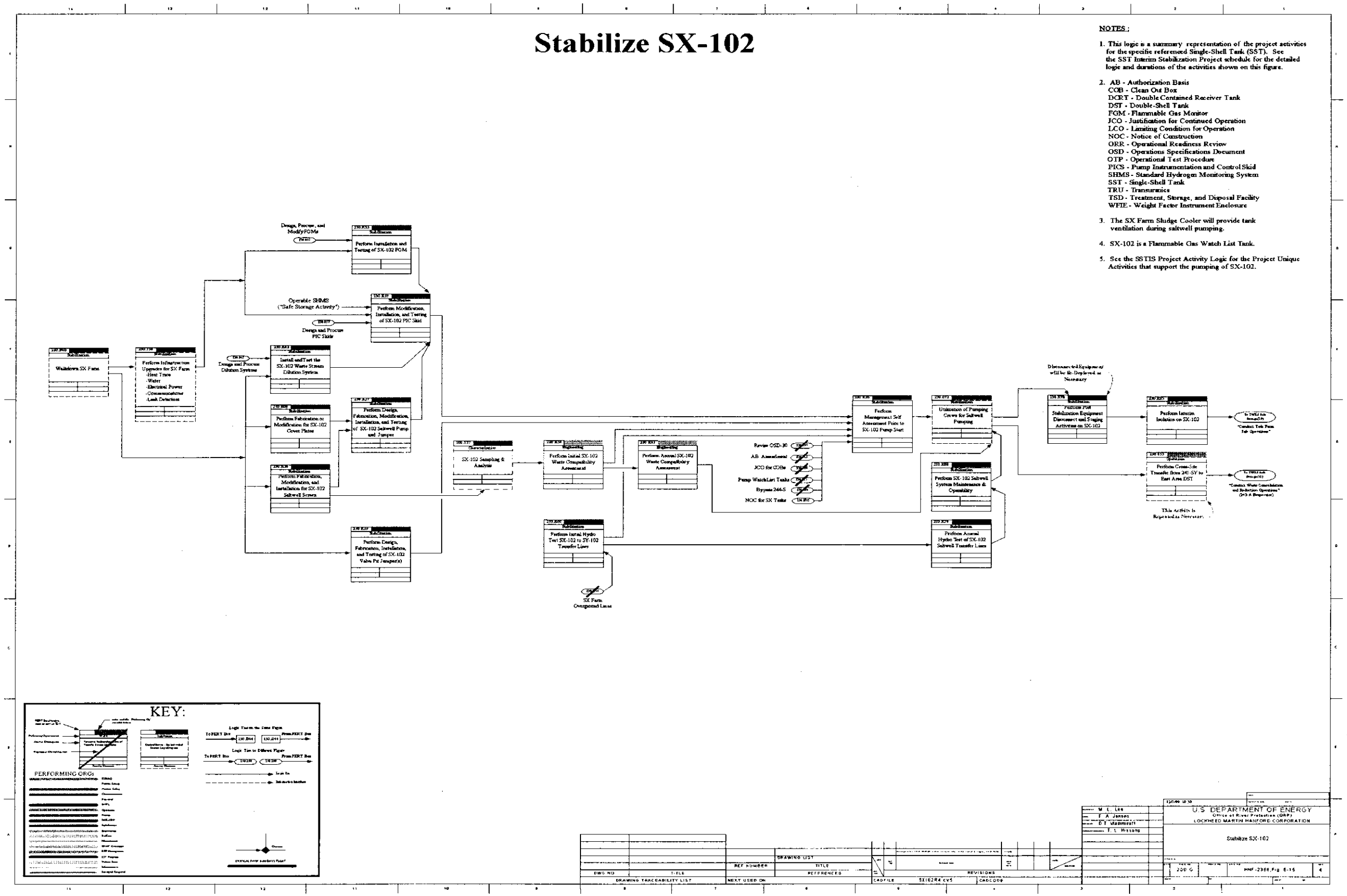

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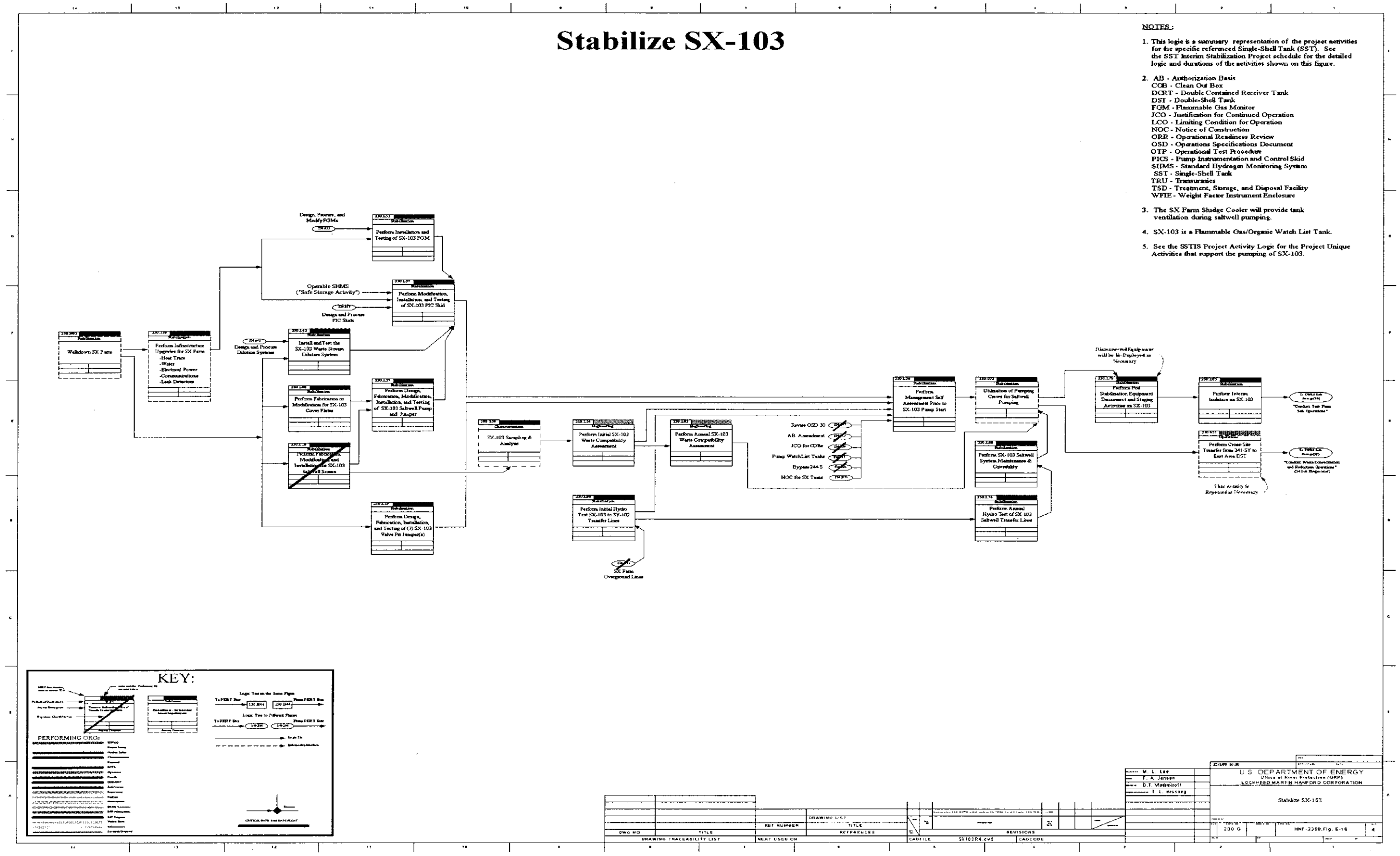
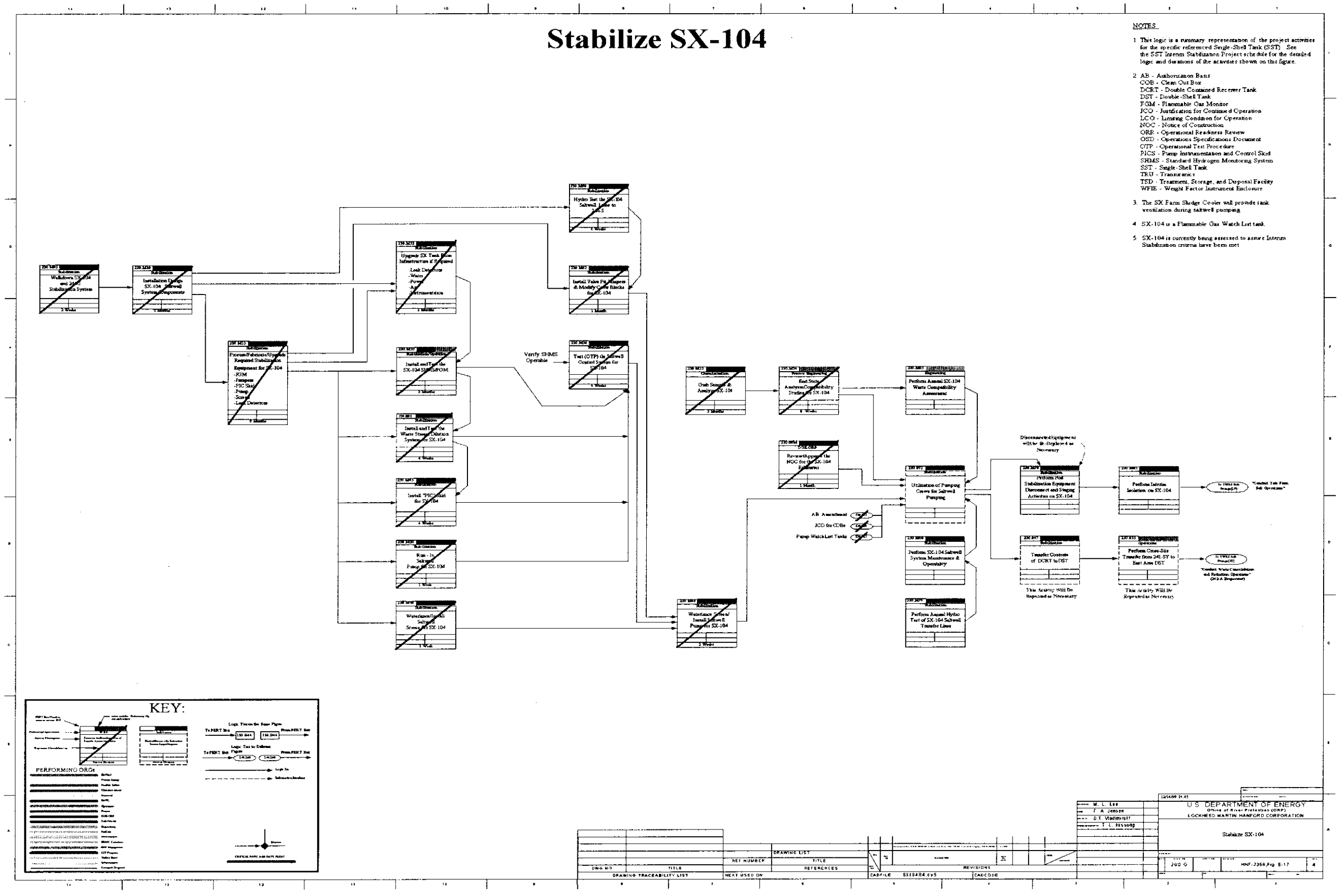


Figure E-17. Stabilize SX-104.



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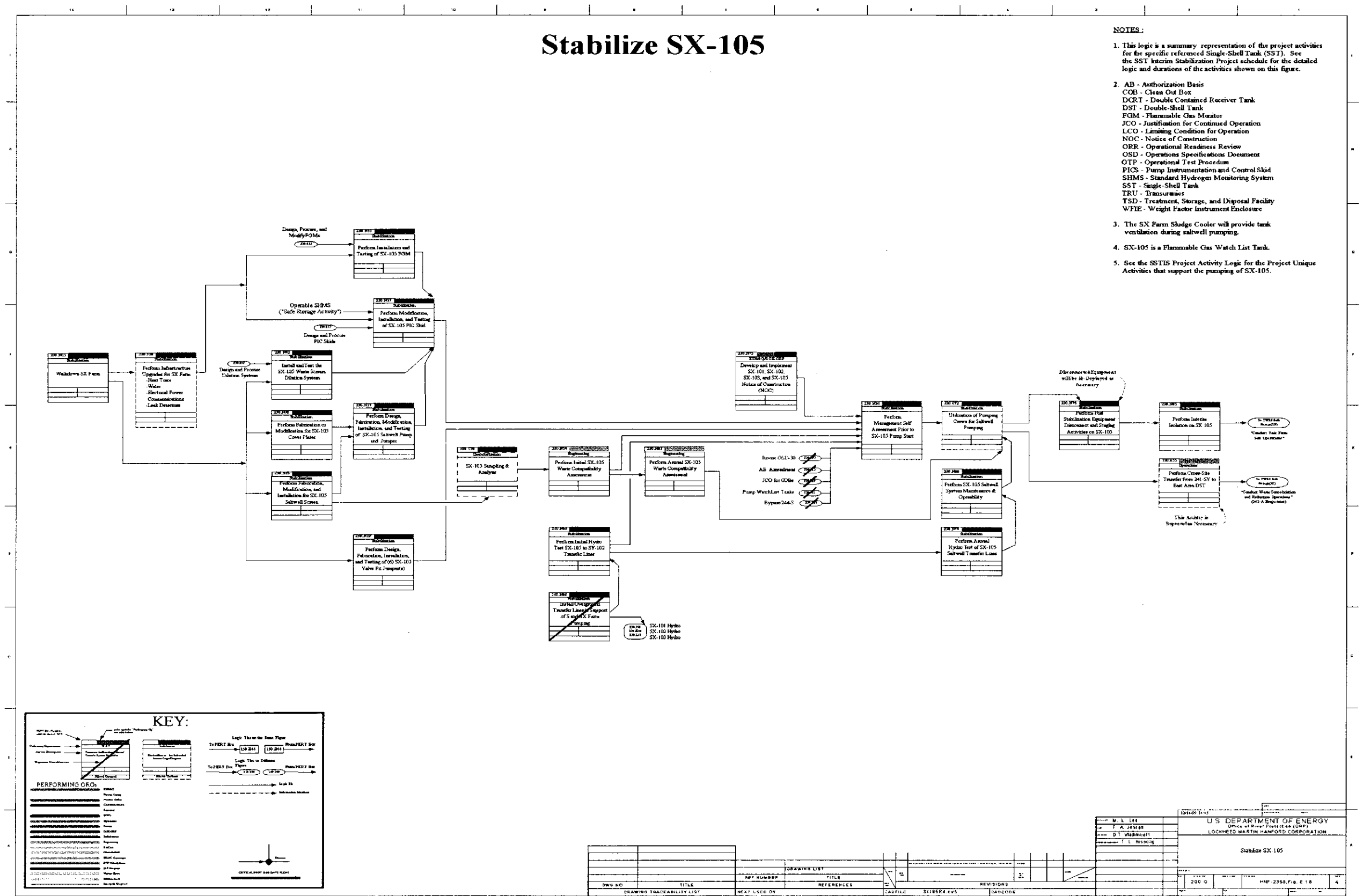

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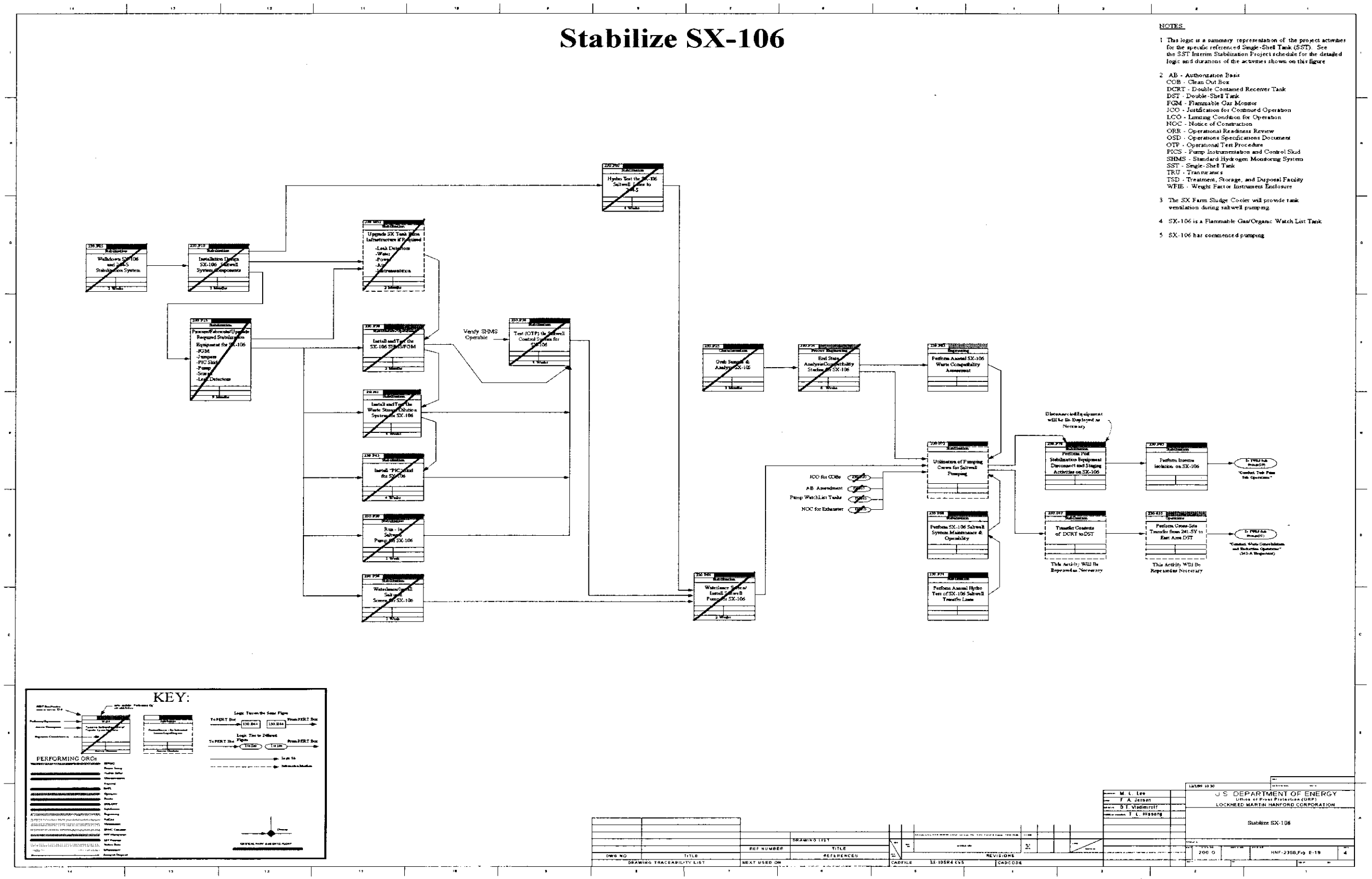


Figure E-20. Stabilize T-104.

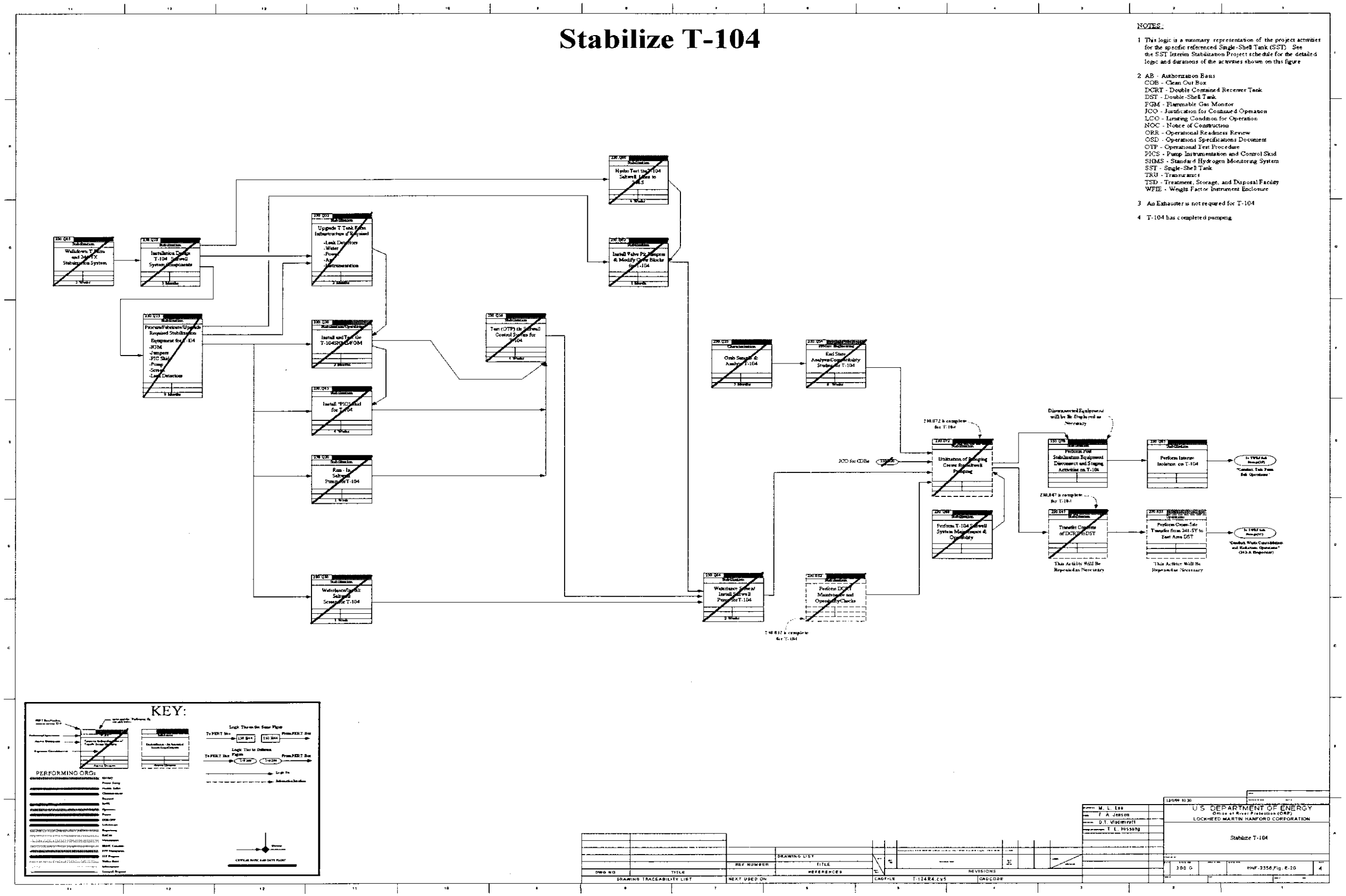


Figure E-21. Stabilize T-110.

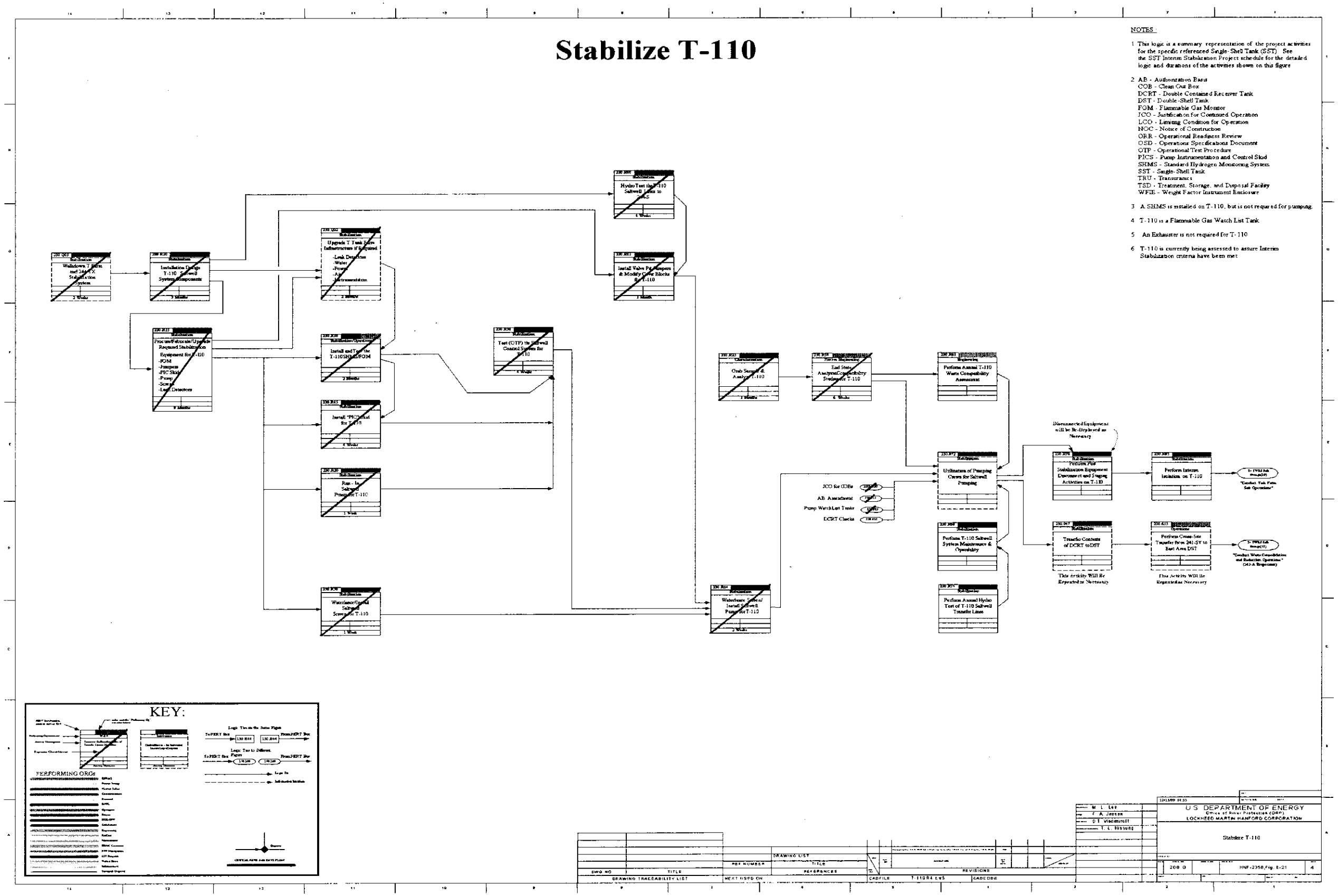
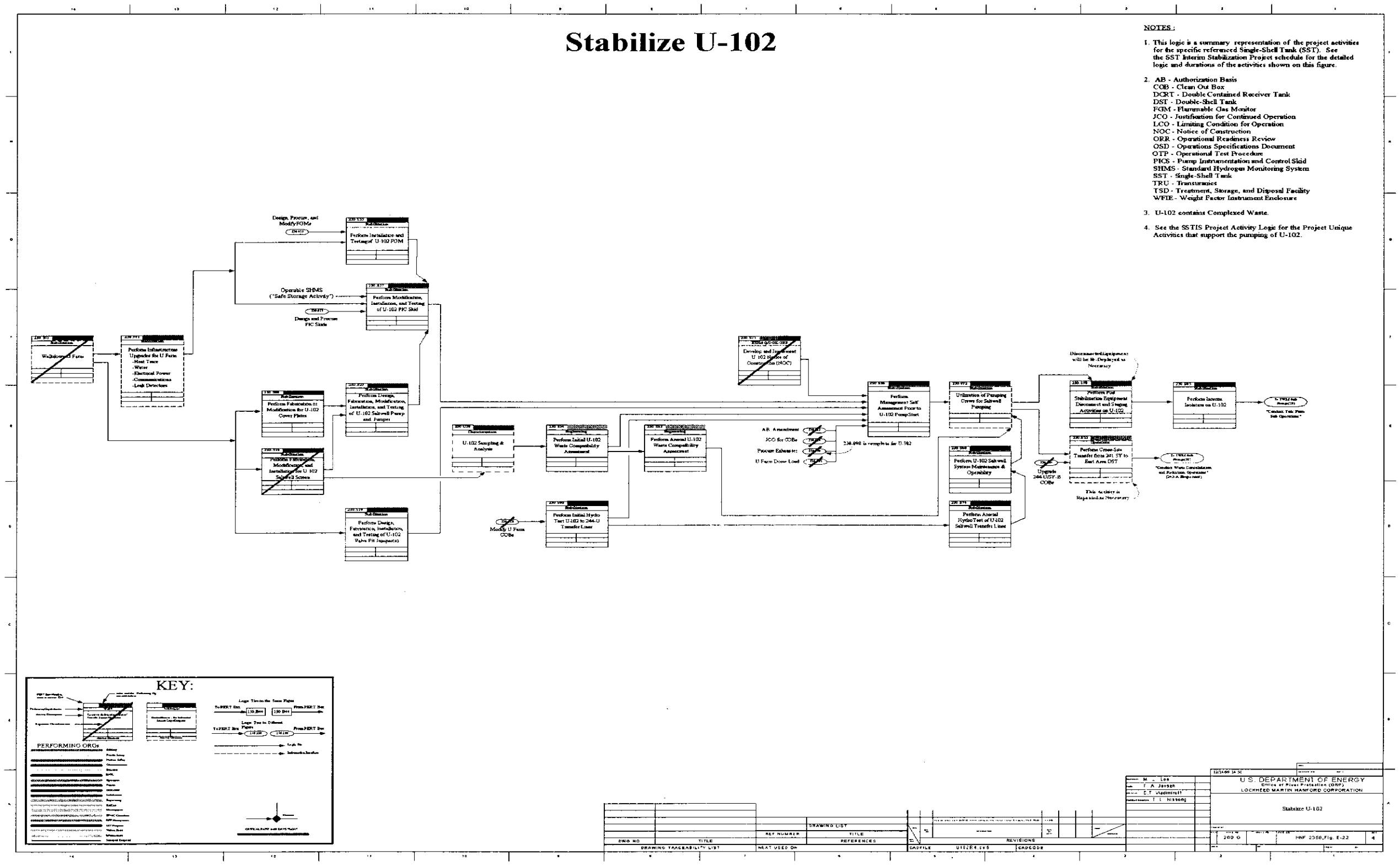


Figure E-22. Stabilize U-102.



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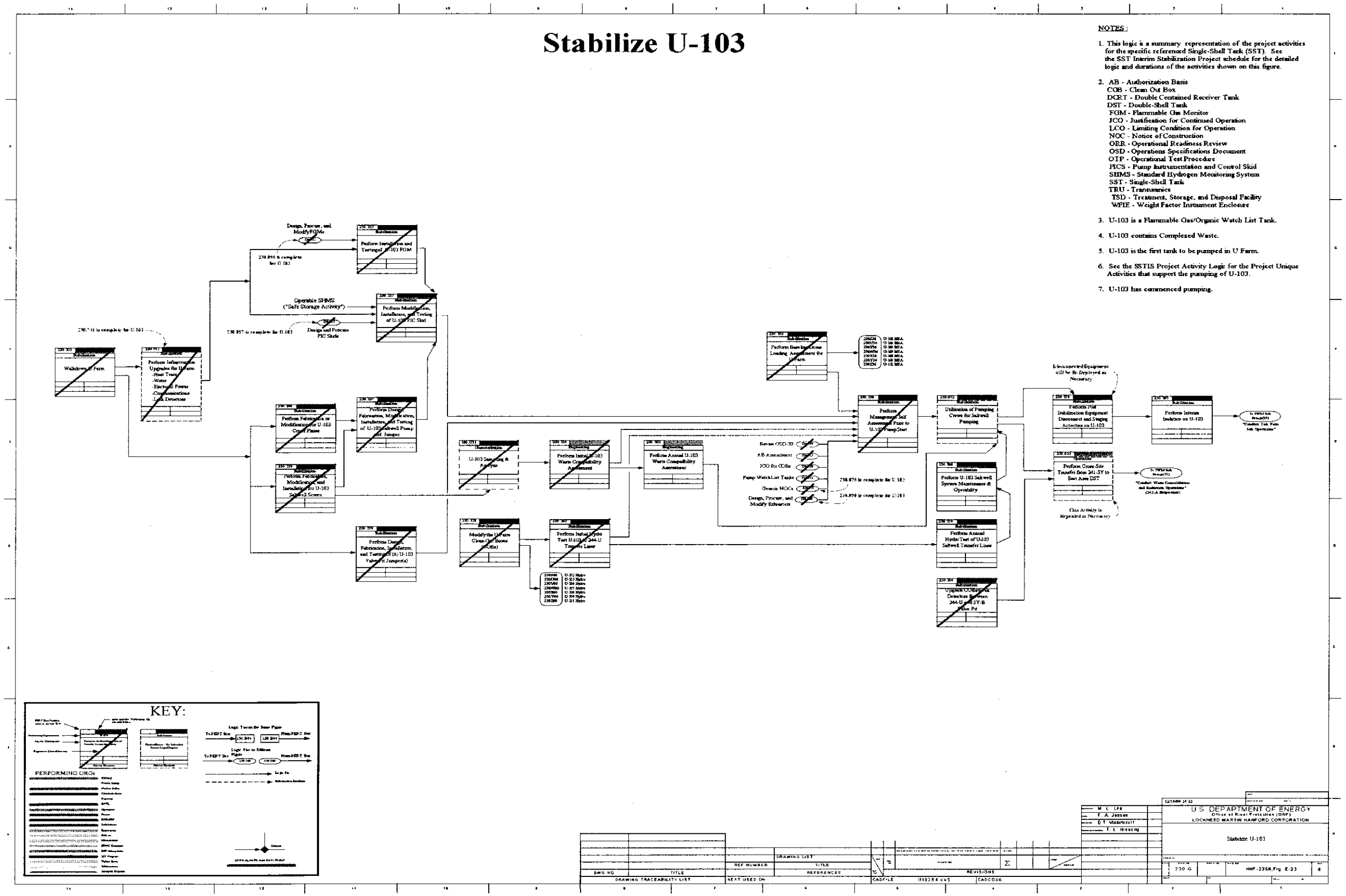

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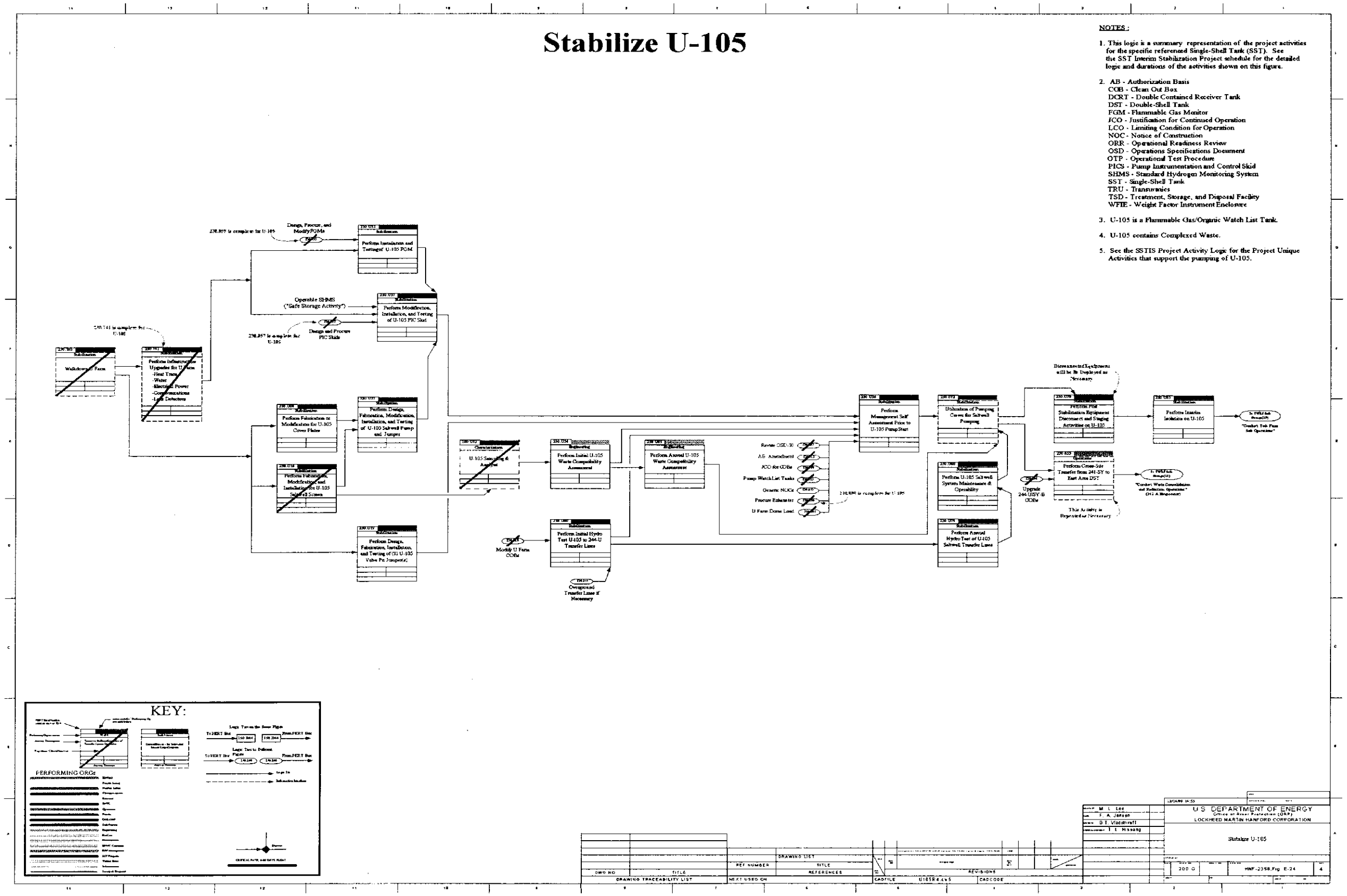


Figure E-25. Stabilize U-106.

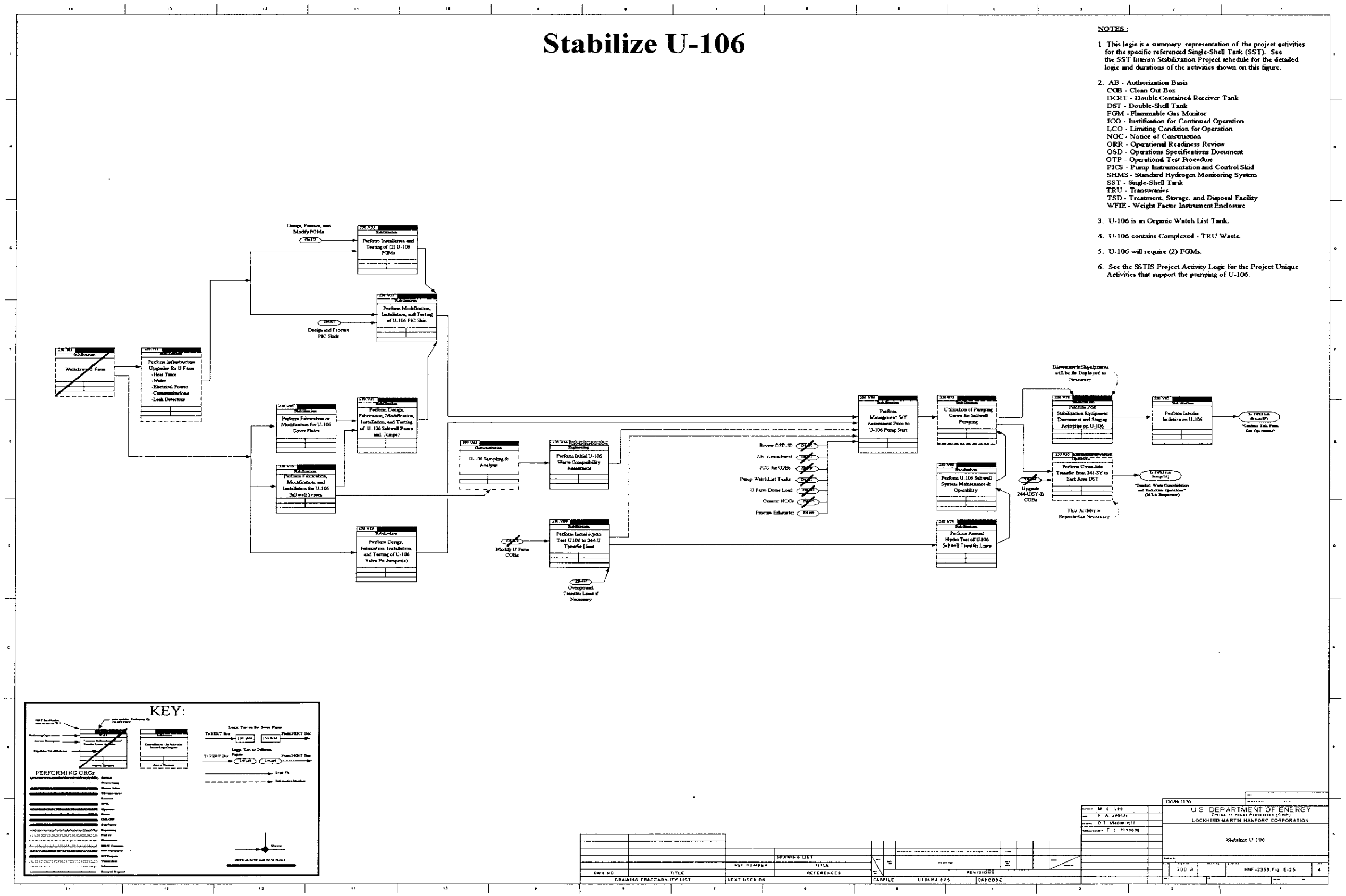


Figure E-26. Stabilize U-107.

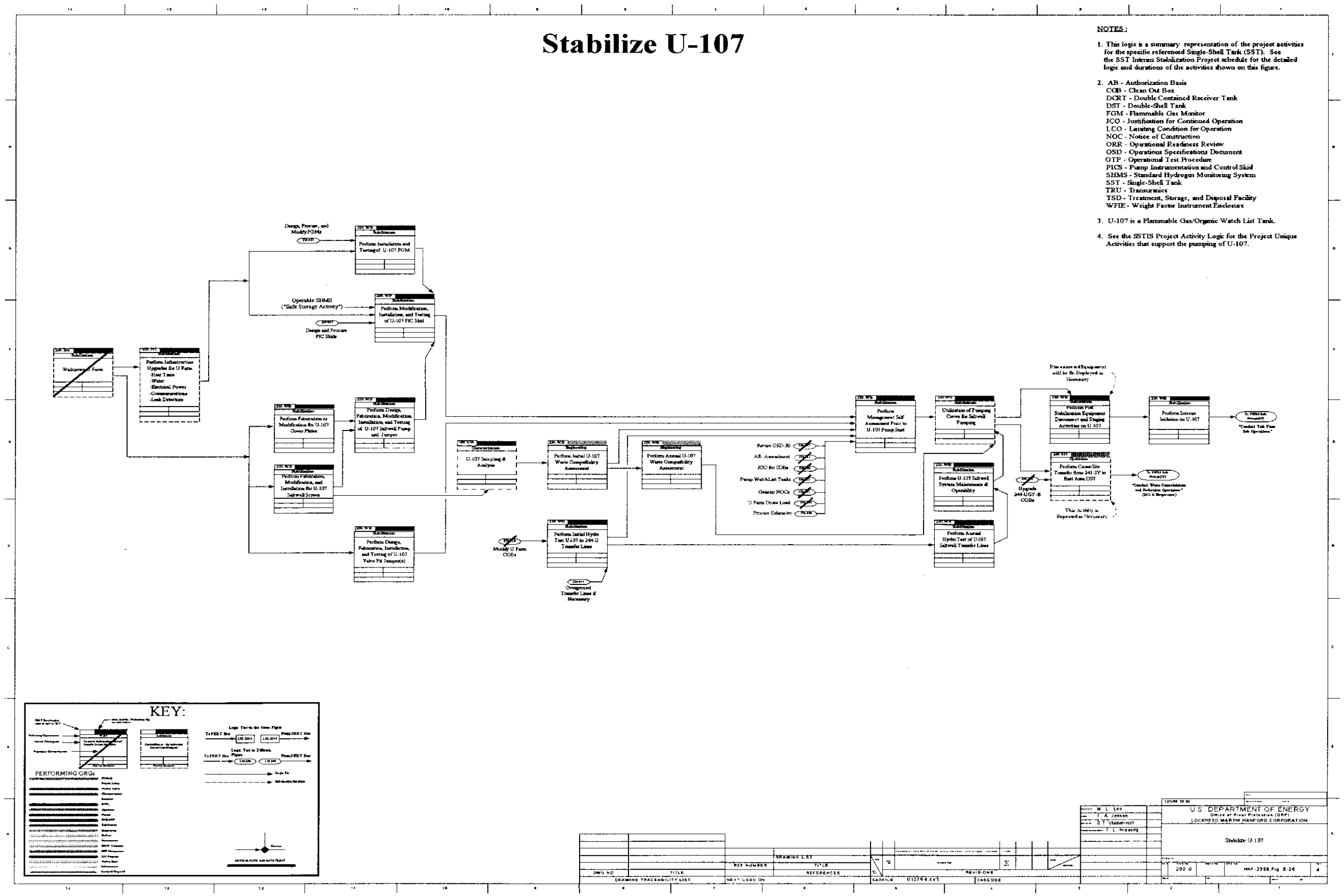


Figure E-27. Stabilize U-108.

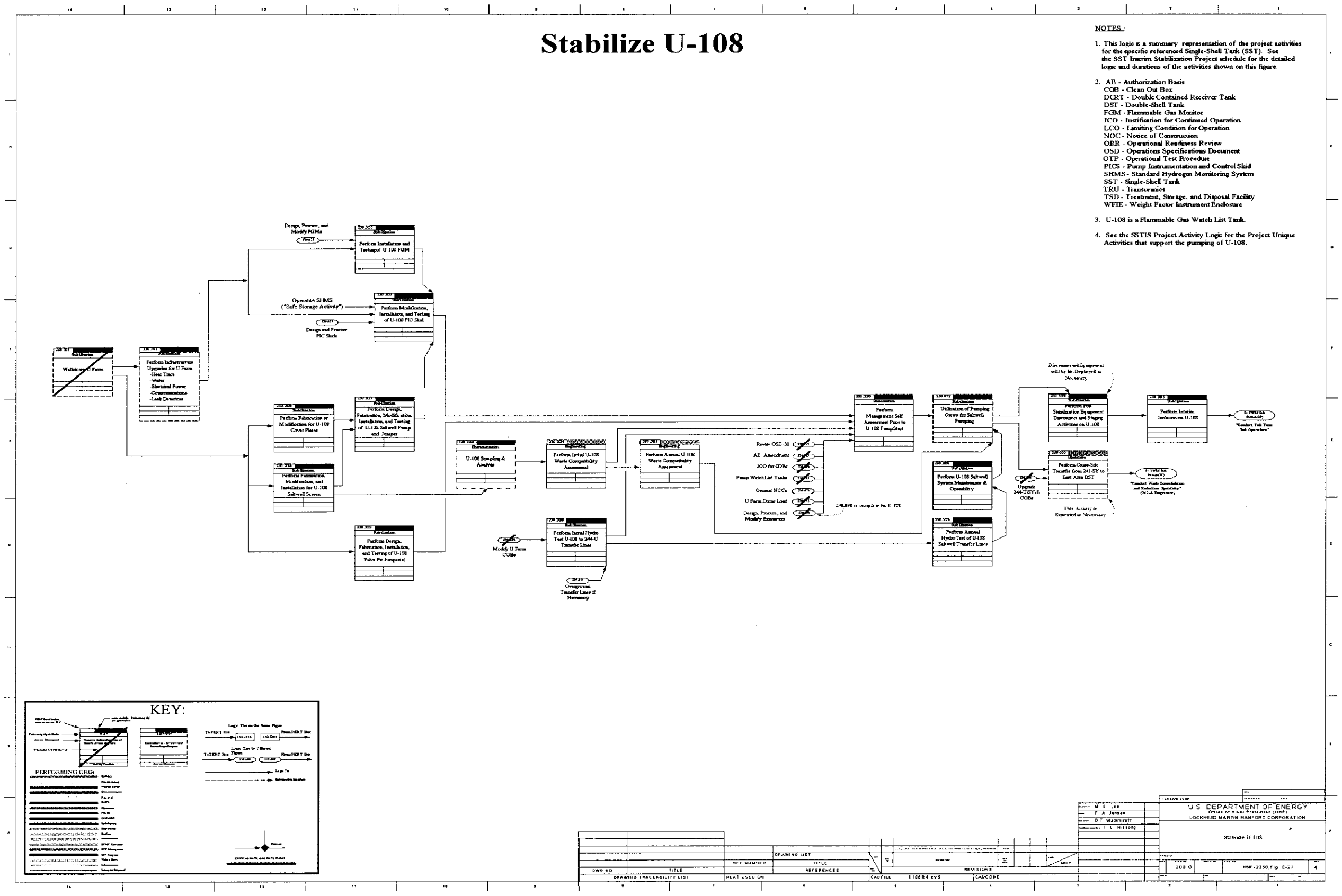


Figure E-28. Stabilize U-109.

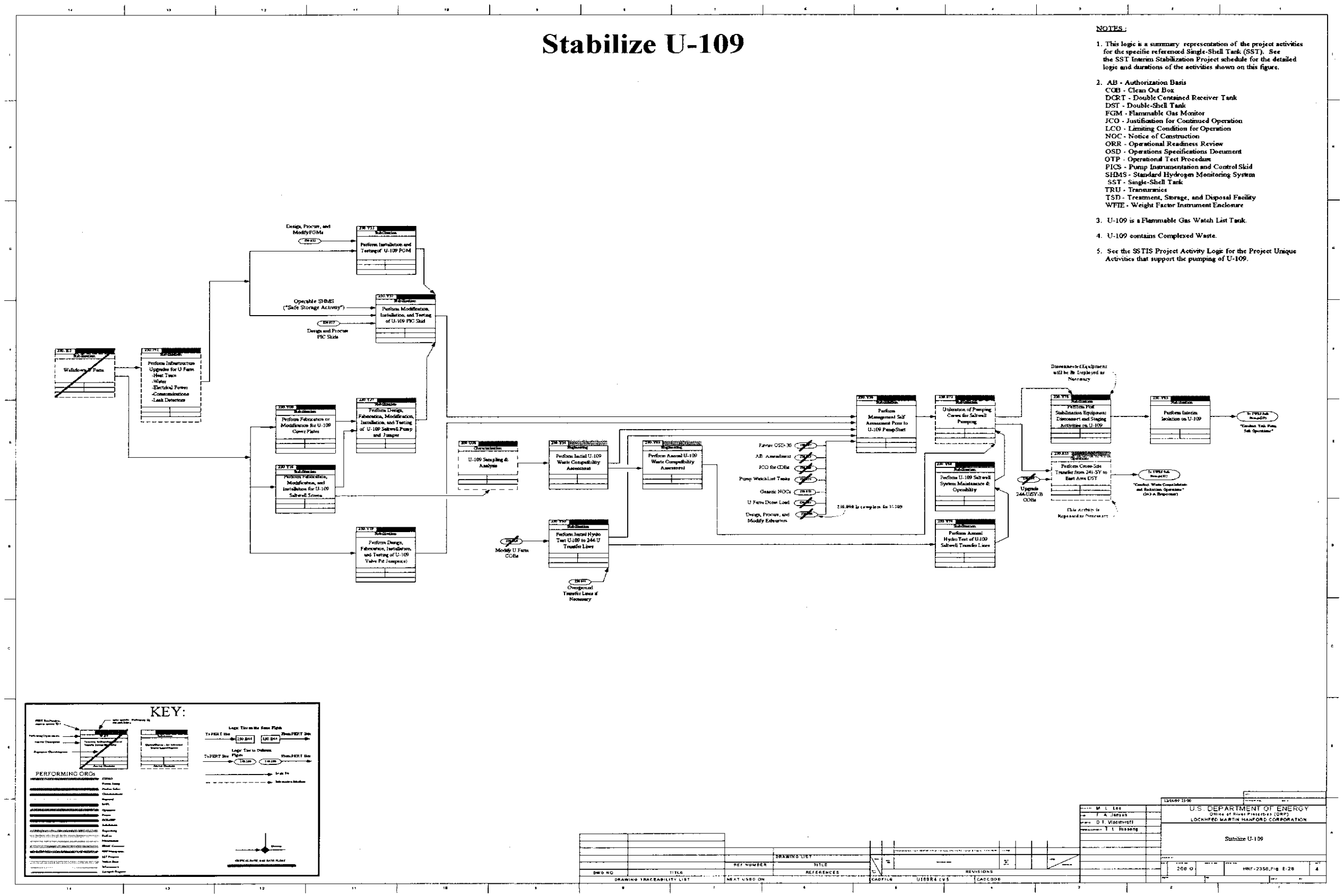
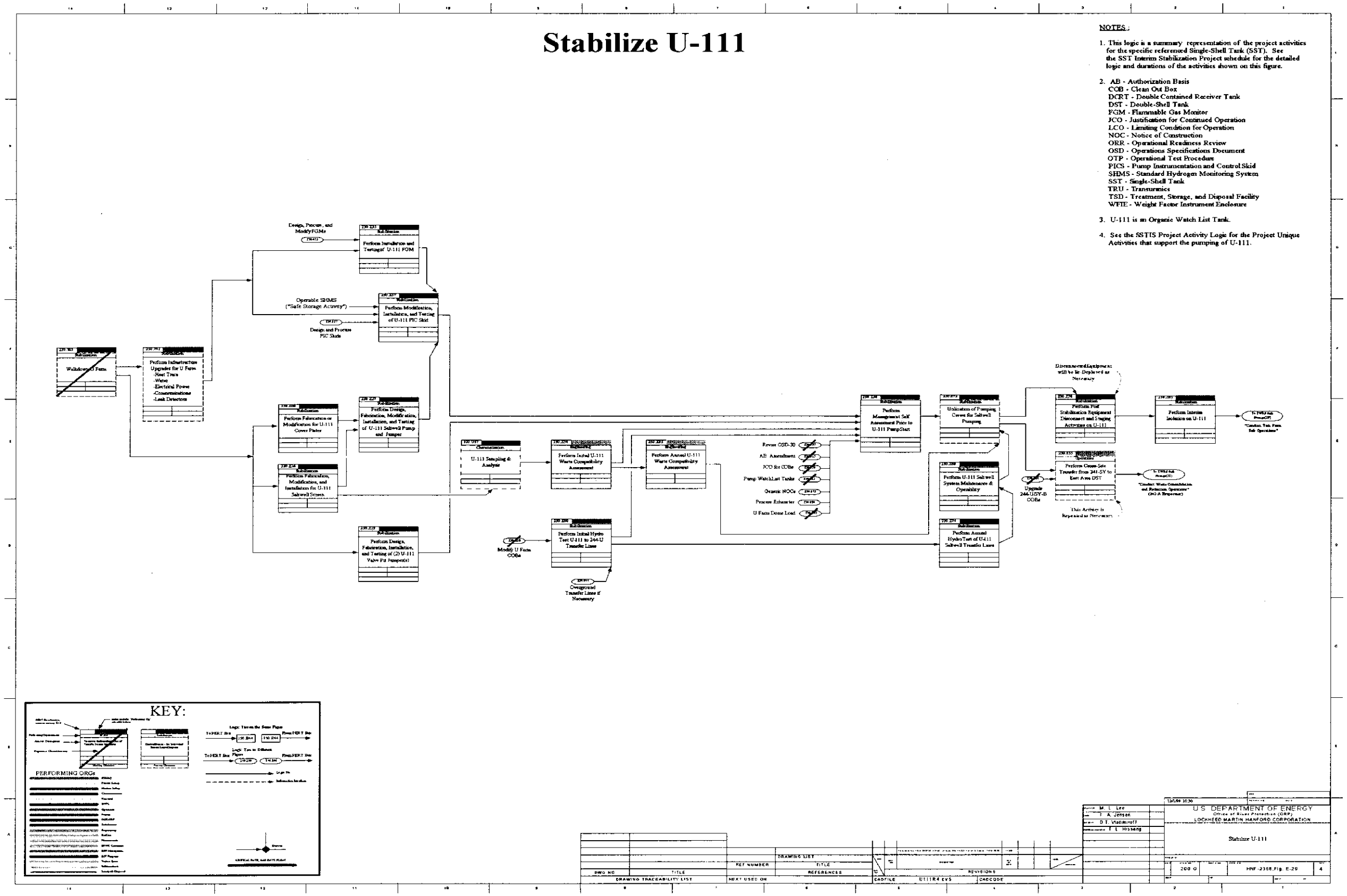


Figure E-29. Stabilize U-111.



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