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				Operational Test Report				
				(OTR) with Attached				
				OTP & Ladder Diagram				

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2		Design Authority W. F. Zuroff	<i>[Signature]</i>	2/11/00	57-24						
2		Design Agent F. M. Maiden	<i>[Signature]</i>	2-11-00	57-17						
2		Cog. Eng. J. E. Lamphere	<i>[Signature]</i>	2/23/00	57-17						
2		Cog. Mgr. M. R. Koch	<i>[Signature]</i>	2/23/00	57-24						
		QA									
		Safety									
		Env.									

18. <i>[Signature]</i> FM Maiden Signature of EDT Originator	2-11-00 Date	19. MR Koch <i>[Signature]</i> Authorized Representative for Receiving Organization	2/23/00 Date	20. MR Koch <i>[Signature]</i> Design Authority/Cognizant Manager	2/23/00 Date	21. DOE APPROVAL (if required) Ctrl No. _____ <input type="radio"/> Approved <input type="radio"/> Approved w/comments <input type="radio"/> Disapproved w/comments
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OPERATIONAL TEST REPORT (OTR) FOR U-102 PUMPING, INSTRUMENTATION AND CONTROL (PIC) SKID

Mike Koch

Prepared by CH2MHILL Hanford Group, Inc.
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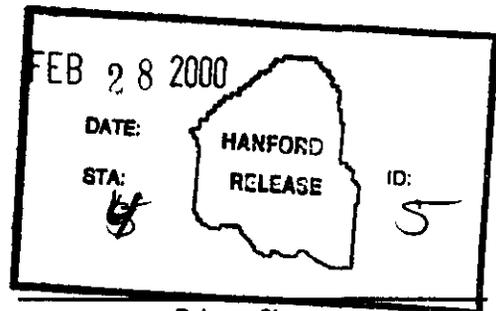
Key Words: U-102, OTR, OTP, LADDER DIAGRAM

Abstract: Attached is the completed Operation Test Procedure (OTP-200-004, Rev. A-19 and Rev. A-20). OTP includes a print out of the Programmable Logic Controller (PLC) Ladder Diagram. Ladder Diagram was designed for installation in the PLC used to monitor and control pumping activity for Tank Farm 241-U-102. The completed OTP and OTR are referenced in the IS PIC Skid Configuration Drawing (H-2-829998).

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Approved For Public Release

**OPERATIONAL TEST REPORT (OTR) FOR U-102 PUMPING,
INSTRUMENTATION AND CONTROL (PIC) SKID**

1. PURPOSE

The purpose of this test report is to document the operational test results and conclusions from the completed Operational Test Procedure (OTP-200-004 Rev. A-19 and Rev. A-20) that was performed on PIC Skid U-102. IS PIC Skid Configuration Drawing H-2-829998 provides traceability for U-102 PIC skid hardware, software, and test documentation

2. SCOPE

The scope of this operational test included testing of system parameters and functions. The systems checked are listed in Section 2.1 of the OTP and include process instrumentation, System electrical, process air, water drip and more. The attachment to this test report is a copy of the actual test that was performed. The test was conducted by Interim Stabilization and witnessed by the Cognizant Engineer.

3. TEST RESULTS

The test was completed and signed off on January 13, 2000. There were three test exceptions noted during the performance of the test. The first two exception were documented in OTP Rev. A-19. The third exception was documented in OTP Rev. A-20, this OTP was issued to complete the section for Combustible Gas Monitoring (CGM).

OTP-200-004 Rev. A-19

The first exception documented that in section 4.3 two gages (SALW-PI-6011* and SALW-PI-6012*) are calibrated but not listed in the table. Resolution of the exception required 1) recording the calibration data in the table 2) at the completion of the OTP a PCA was written to the procedures (PCA # WTF-2000-044) to add these gages to the instrument calibration data. This was not a prerequisite for continuing the OTP.

The second exception (OTP sections 5.1.6) documented that the air compressor did not shut off with in the specified pressure range. Resolution of exception involved troubleshooting the pressure switch with a note to replace pressure switch if necessary and recalibrate. Pressure switch was replaced and recalibrated.

OTP-200-004 Rev. A-20

The third exception is listed as exception #1 in OTP Rev. A-20 (OTP section 5.6.15) documented that the analog percent LFL reading was not available at the Operator Control Station (OCS). The reading was available locally at the transmitter and the DTAM. Resolution of the exception found the problem to be an OCS problem not a CGM or PIC skid issue.

4. CONCLUSION

The test demonstrated the proper operation of U-102 PIC Skid. All test exceptions were resolved and documented in the OTP exceptions records attached to the OTP.

5. ATTACHMENT

Attached to this report as Appendix A and Appendix B are copies of the completed and signed OTPs (Rev. A-19 and Rev. A-20.)

OPERATIONAL TEST PROCEDURE FOR 6000 SERIES PUMPING AND INSTRUMENTATION CONTROL SKIDS

Last Full Revision: A-0		
Release Date: 5/29/97		
USQ Screening Number:		
Approval Designator: SQ		
Current Modification: A-19		
USQ Screening Number: TF-98-1201, Rev 1		
Approval Designator: NA		
PCA Incorporated: WTF-99-0518		
POSITION/ORG	DELEGATE	DATE
NCO/IS	<u>G. S. Seidel</u>	<u>12/01/99</u>
SM/IS	<u>R. P. Raven</u>	<u>12/01/99</u>
SR ENG/ISE	<u>T. M. Horner</u>	<u>12/01/99</u>
Acceptance Review	<u>S. E. Bevans</u>	<u>12/01/99</u>
Approval Authority	<u>R. P. Raven</u>	<u>12/01/99</u>
Justification: Engineering Request		
Summary of Changes:		
Pages 3, 16, & 32:	Update "Flammable Gas" to "Flammable/Combustible Gas, IF applicable".	
Pages 12, 15, & 78:	Add PERFORMER signature sheet back into the procedure.	
Page 32, Step 5.3.49	Bold and Capitalize "or" when connecting FGM model 4.0.	

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1.0 PURPOSE

This Operational Test Procedure (OTP) will test and verify that the equipment required for Saltwell pumping of specified tank meets the specified Functional Requirements, Safety Requirements, Radiological Requirements, Operations Requirements, and provides a record of the functional test results. The systems/functions that will be tested are listed in the Scope section that follows.

2.0 INFORMATION

2.1 SCOPE

The following systems will be tested by this Operational Test Procedure:

- Process Instrumentation and Control System Electrical and Process Air System
- Process Instrumentation and Control System Water Drip System
- Weight Factor and Specific Gravity System
- Diaphragm Operated Valve Automatic and Manual Operation
- Jet pump Flowmeter Operation
- Water Tank Level Transmitter
- Jet pump Heat Trace
- Leak Detection Interlock
- Jet Pump Valving Interlock
- Flammable/Combustible Gas Monitor Interface
- Exhauster Interface
- Receiver Tank Interlocks

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2.2 TERMS AND DEFINITIONS

- 2.2.1 LCV - Level Control Valve
- 2.2.2 GPM - Gallons Per Minute
- 2.2.3 IA - Instrument Air
- 2.2.4 LDE - Leak Detection Element
- 2.2.5 OCS - Operator Control Station
- 2.2.6 PRV - Pressure Relief Valve
- 2.2.7 SGI - Specific Gravty Indicator
- 2.2.8 WFIE - Weight Factor Instrument Enclosure

2.3 RESPONSIBILITIES

- 2.3.1 Quality Control is responsible for:
 - Witnessing and signing steps as identified in Operational Test Procedure.
 - Verifying that the procedure sections were performed correctly.
- 2.3.2 Test Director is responsible for:
 - Providing the equipment found in step 4.1 of this procedure.
 - Recording equipment status and data per this procedure.
 - Conducting pre-job planning meeting as necessary.
 - Conducting pre-job system walkdown.
 - Scheduling/rescheduling of the test as required.
 - Recording data, exceptions and other notes as required.
- 2.3.3 Engineering personnel are responsible for:
 - Providing technical support during testing.
 - Providing programming support during testing.
 - Forcing data in Programmable Logic Controller program during testing.

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2.3 RESPONSIBILITIES (Cont.)

2.3.4 Maintenance personnel are responsible for:

- Providing assistance during testing.

2.3.5 Operations personnel are responsible for:

- Performing valving manipulations on Pumping and Instrumentation Control Skid Systems and Test equipment.
- Starting, stopping, and controlling equipment related to Saltwell operations.
- Controlling and monitoring parameters from the Data Table Access Module, or Operator Control Station.

2.3.6 Health Physics personnel are responsible for:

- Ensuring RWP requirements are met during field portion of testing.
- Surveying tools and equipment out of the Farm.
- Providing guidance to craft personnel in maintaining good health physics practices.

2.4 REFERENCES

2.4.1 The following documents were used to write or are referenced in this procedure:

- HNF-PRO-079, "PRE-JOB SAFETY PLANNING"
- WHC-IP-1026 APPX L, "ENGINEERING PRACTICES GUIDELINES"
- H-14-100538 Rev 0, SALTWELL JET PUMP
- H-14-100542 Rev 0, SALTWELL JUMPER ASSEMBLY
- H-2-85621 Rev 0, INSTRUMENT AIR AND WATER SYSTEM DETAILS
- H-2-85625 Rev 0, INSTRUMENTATION WEIGHT FACTOR ENCLOSURE ARRANGEMENT
- H-2-85626 Rev 0, PUMPING AND INSTRUMENTATION CONTROL SKID
- H-14-023960 Rev 0, SALTWELL CONTROL EQUIPMENT (SALW) O&M SYSTEM P&ID
- JOHNSON YOKOGAWA ADMAG AM SERIES VENDOR INFORMATION
- FOXBORO 823 DP SERIES ELECTRONIC DIFFERENTIAL PRESSURE CELL VENDOR INFORMATION
- T0-060-085, OPERATE THE PORTABLE 500 CFM EXHAUSTER FOR TANK 241-A-101 SALTWELL PUMPING
- Controlotron System 990 Uniflow Universal Clamp-On NEMA Flowmeter Vendor Field Manual

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2.5 SAFETY

- Warning - 120 VAC energized circuits and leads will be encountered during test if access to Programmable Logic Controller input/output terminals or serial communication port is required at any time. Observe appropriate electrical precautions as directed by HNF-PRO-088, Electrical Work Safety.
- Warning - Circuit boards are energized. Terminal strips in the Instrument Enclosure have 120 VAC exposed leads. Use appropriate electrical precautions as directed by HNF-PRO-088, Electrical Work Safety.
- Warning - Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with HNF-PRO-088, Electrical Work Safety.

2.5.1 Work will be performed in this Operational Test Procedure on energized circuits.

2.5.2 The following administrative procedures control work performed in this procedure:

- Building Emergency Plan, WHC-IP-0263-TF
- Industrial Hygiene Manual, WHC-CM-4-40
- HNF-PRO-074, Safety Responsibilities
- Tank Farm Health and Safety Plan (HASP), WHC-SD-WM-HSP-002

2.6 RADIATION AND CONTAMINATION CONTROL

2.6.1 Health Physics Technician assistance is required in accordance with Radiation Work Permit.

2.6.2 The following administrative procedures control work performed in this procedure:

- Hanford Site Radiological Control Manual (HSRCM)

2.6.3 The test shall be STOPPED and the Shift Manager immediately notified, if radiation levels significantly increase as determined by a radiation monitor.

2.6.4 Work in Radiological Areas will be performed using a Radiation Work Permit, following review by Radiological Control per the ALARA program (HNF-IP-0842, Vol 7, Section 1.1).

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2.7 QUALITY ASSURANCE

Ensure that the test(s) are performed per the procedure. The Quality Control Inspector shall sign and date each procedure section verifying the data obtained, and verifying that the procedure section has been performed correctly.

2.8 GENERAL INFORMATION

- 2.8.1 After completion of Sections 5.1 and 5.2, subsequent sections may be performed out of order, as directed by the Test Director.
- 2.8.2 All entries recorded in this procedure shall be made in black ink.
- 2.8.3 Editorial changes required to this Operational Test Procedure may be made per the Procedure Change Authorization method by the Test Director and Cognizant Engineer as long as they do not impact personnel safety, or operational facility safety function or performance; and will not compromise or influence the test data.
- 2.8.4 Any non-conformance of the instrumentation or unexpected results during testing shall be logged in the Operational Test Procedure EXCEPTION LOG and thoroughly documented on a Operational Test Procedure EXCEPTION RECORD.
- 2.8.5 Do not perform any part of this procedure on faulty equipment. If faulty equipment is discovered, STOP the execution of that section of this procedure and resolve the problem and/or continue with a different section.
- 2.8.6 If the performance of this procedure is suspended for any reason, ensure the equipment is left in a safe and de-energized state as necessary.
- 2.8.7 This procedure DOES NOT contain any separate data/verification sheets. Verification of procedural steps and validity of the data is incorporated into the specific section.
- 2.8.8 If performance of this procedure is suspended for any reason and if necessary, ensure the requirements of the Lock and Tag system are met before leaving the test site.
- 2.8.9 A Job Hazard Analysis form will be used in conjunction with the pre-job safety meeting form when any unusual hazards are identified. The PRE-JOB MEETING FORM will be used to document all attendees.

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2.8 GENERAL INFORMATION (Cont.)

- 2.8.10 Tests interrupted due to work breaks, personnel support, faulty equipment or other reasons may require performing equipment manipulations such as valving, power down or alarm acknowledgement in order to leave the equipment in a safe condition. The Test Director may deviate from test steps in order to assure safe equipment configuration. Configuration shall be noted so the equipment may be restored at the resumption of testing. Shift Management shall be kept apprised of test status and equipment condition.
- 2.8.11 Acknowledge applicable alarms per Test Director.
- 2.8.12 Sections 5.1 through 5.9 of this procedure are generally performed in the shop prior to equipment placement in the field. Daily release requirements through the Shift office must be met for field portions of testing.
- 2.8.13 In some instances, such as Emergency Pumping Skid testing, the Operator Control Station will be untested or not required. Test sections 5.6 and 5.10 will not be performed. Blanks representing OCS data shall be completed with an "NA" in other test sections.

2.9 LIMITS AND PRECAUTIONS

DO NOT perform any tank intrusive work without the express authorization of the Shift Manager.

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3.0 RECORDS

3.1 The completed Working Copy of this procedure, including all exception logs and exception records generated by this procedure, will be kept as permanent records.

3.2 This procedure is designed to be re-usable for many skid installations. Each skid will replace the asterisk (*) in device names used throughout this procedure.

3.3 RECORD the following information for this procedure:

Tank Number: 241-U-102

Skid Designator: "M"

3.4 RECORD the following information or "NA" if an Operator Control Station is not tested.

Operator Control Station Location (building number): 271-U

4.0 PREREQUISITES

NOTE - Equipment shall be available before the step associated with that piece of equipment.

4.1 The following supplies shall be available at the work place:

- Volt/ohm meter (VOM): Portable, 0-600 volts ac, ± 2% accuracy.
Calibration No. 819-45-08-018 Expiration Date 11-19-00 QC KW 1-3-00
- Transmation current (milliamp) simulator or equivalent
Calibration No. 681-13-20-001 Expiration Date 4-7-00 QC KW 1-3-00
- Manometer - minimum range 0-500" water gauge. Must have a read out of variable test pressure.
Calibration No. 820-35-40-003 Expiration Date 7-8-00 QC KW 1-3-00
- Manometer - minimum range 0-50" water gauge. Must have a read out of variable test pressure.
Calibration No. 812-35-40-006 Expiration Date 10-25-00 QC KW 1-3-00

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4.0 PREREQUISITES (Cont.)

- Jumper Test Assembly PI-2 (suction) pressure gauge (Required for shop run-ins only - NA lines for field only OTPs)
 Calibration No. 817-35-40-038 Expiration Date 9-30-00 QC KW 1-3-00
- Jumper Test Assembly PI-1 (discharge) pressure gauge (Required for shop run-ins only - NA lines for field only OTPs)
 Calibration No. 817-35-40-039 Expiration Date 9-29-00 QC KW 1-3-00
- Flowmeter Calibrator (Required for Brooks flowmeters only - NA lines for skids with Yokogawa flowmeters)
 Calibration No. N/A Expiration Date N/A QC KW 1-3-00
- Saltwell Jet pump Jumper (see H-14-100725 Sheet 18)
- Rotameter or Flowmeter
- Jumper Test Assembly
- 2 way radios for communication between Tank Farm and local control room
- 480V 3 Phase Power Source
- Controlotron 995T Control and Display Unit

NOTE - Test sections may commence prior to assembly of all test equipment. Test Director is responsible to assure all equipment necessary for a given section is available.

4.2 The following conditions must be met before this test may commence:

- 4.2.1 The Jet Pump Jumper and Jumper assembly have been placed on the pump recirculation apparatus.
- 4.2.2 The Pumping and Instrumentation Control Skid water tank and run-in tank have been adequately filled for testing.
- 4.2.3 The Jet Pump Jumper AND Jumper Assembly have been electrically AND pneumatically connected to the Pumping and Instrumentation Control Skid.

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4.0 PREREQUISITES (Cont.)

4.2.4 A pre-job safety meeting has been held before performing this procedure in accordance with WHC-IP-0842, Vol V Section 4.1. PRE-JOB SAFETY MEETING FORM.

4.2.5 The Pumping and Instrumentation Control Skid has been grounded in preparation for shop testing. *SKID GROUNDED IN FIELD TH 1-3-00*

4.2.6 Test gauges AND rotameter have been installed in correct locations as indicated by the Test Director.

4.2.7 Ensure the following Pumping and Instrumentation Control Skid Valves are OPEN prior to starting this OTP.
 SALW-V-6035* (equalizing) SALW-V-6036* (equaling)

4.2.8 ENSURE the following Pumping and Instrumentation Control Skid valves are CLOSED prior to starting this Operational Test Procedure:

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> SALW-V-6034* | <input checked="" type="checkbox"/> SALW-V-6026* | <input checked="" type="checkbox"/> SALW-V-6001* |
| <input checked="" type="checkbox"/> SALW-V-6004* | <input checked="" type="checkbox"/> SALW-V-6002* | <input checked="" type="checkbox"/> SALW-V-6003* |
| <input checked="" type="checkbox"/> SALW-V-6021* | <input checked="" type="checkbox"/> SALW-V-6020* | <input checked="" type="checkbox"/> SALW-V-6036* (hi) |
| <input checked="" type="checkbox"/> SALW-V-6036* (low) | <input checked="" type="checkbox"/> SALW-V-6035* (hi) | <input checked="" type="checkbox"/> SALW-V-6025* |
| <input checked="" type="checkbox"/> SALW-V-6035* (low) | <input checked="" type="checkbox"/> SALW-V-6019* | <input checked="" type="checkbox"/> SALW-V-6029* |
| <input checked="" type="checkbox"/> SALW-V-6027* | <input checked="" type="checkbox"/> SALW-V-6028* | <input checked="" type="checkbox"/> SALW-V-6032* |
| <input checked="" type="checkbox"/> SALW-V-6031* | <input checked="" type="checkbox"/> SALW-V-6030* | <input checked="" type="checkbox"/> SALW-V-6016* |
| <input checked="" type="checkbox"/> SALW-V-6018* | <input checked="" type="checkbox"/> SALW-V-6017* | <input checked="" type="checkbox"/> SALW-V-6013* |
| <input checked="" type="checkbox"/> SALW-V-6015* | <input checked="" type="checkbox"/> SALW-V-6014* | <input checked="" type="checkbox"/> SALW-V-6012* |
| <input checked="" type="checkbox"/> SALW-V-6008* | <input checked="" type="checkbox"/> SALW-V-6011* | <input checked="" type="checkbox"/> SALW-V-6005* |
| <input checked="" type="checkbox"/> SALW-V-6006* | <input checked="" type="checkbox"/> SALW-V-6007* | <input checked="" type="checkbox"/> SALW-V-6037* |
| <input checked="" type="checkbox"/> SALW-V-6044* | <input checked="" type="checkbox"/> SALW-V-6046* | <input checked="" type="checkbox"/> SALW-V-6047* |
| <input checked="" type="checkbox"/> SALW-V-6048* | <input checked="" type="checkbox"/> SALW-V-6049* | |
| <input checked="" type="checkbox"/> SALW-V-6043* | | |



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4.0 PREREQUISITES (Cont.)

4.2.9 ENSURE the following Pumping and Instrumentation Control Skid circuit disconnects and breakers are OPEN (OFF) prior to starting this Operational Test Procedure. Refer to H-2-85327, Sheet 7 for circuit breakers.

- SALW-DS-6002*
- SALW-DS-6003*
- SALW-DS-6004*
- SALW-DS-6005*

NOTE - . The following breakers are located in SALW-DP-6001*.

- | | |
|---|--|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Breaker "MAIN" <input checked="" type="checkbox"/> Breaker 1 <input checked="" type="checkbox"/> Breaker 3 <input checked="" type="checkbox"/> Breaker 5 <input checked="" type="checkbox"/> Breaker 7 <input checked="" type="checkbox"/> Breaker 9 <input checked="" type="checkbox"/> Breaker 11 <input checked="" type="checkbox"/> Breaker 13 | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Breaker 2 <input checked="" type="checkbox"/> Breaker 4 <input checked="" type="checkbox"/> Breaker 6 <input checked="" type="checkbox"/> Breaker 8 <input checked="" type="checkbox"/> Breaker 10 <input checked="" type="checkbox"/> Breaker 12 <input checked="" type="checkbox"/> Breaker 14 |
|---|--|



4.2.10 A printed copy of Ladder Logic and Alarm Table for the Pump Instrumentation and Control Skid is available at the work site. Copies may be kept outside of Radiological areas until necessary.



4.2.11 All personnel initialling or signing this procedure must also enter signature/initials on the PROCEDURE PERFORMER SIGNATURE SHEET maintained at the Shift Office.



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4.0 PREREQUISITES (Cont.)

NOTE - Verification of instrument calibration must be performed before the step associated with that instrument.

4.3 Verify the current calibration. Record the calibration date and calibration due date on the table below.

INSTRUMENT	CALIBR/FUNCT CHECK DATE	NEXT DUE DATE
SALW-PS-6004* <i>CHANGED PER EXCEPTION #2</i>	11-19-99 1-4-00	11-19-00 1-4-01
SALW-WFT-6002*	11-16-99	11-16-00
SALW-LT-6003*	11-30-99	11-30-00
SALW-SGT-6001*	11-16-99	11-16-00
SALW-CONV-6001*	11-16-99	11-16-00
SALW-FQIT-6001*	12-2-99	12-2-99
SALW-PI-6006*	11-18-99	11-18-00
SALW-PI-6001*	11-17-99	11-17-00
SALW-PI-6005*	11-17-99	11-17-00
SALW-FI-6001*	N/A	N/A
SALW-PI-6002*	11-17-99	11-17-00
SALW-PI-6003*	11-17-99	11-17-00
SALW-PI-6004*	11-17-99	11-17-00
SALW-PI-6007*	11-18-99	11-18-00
SALW-PI-6008*	11-17-99	11-17-00
SALW-PI-6011*	11-22-99	11-22-00
SALW-PI-6012*	11-22-99	11-22-00

Test exception #1

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5.0 PROCEDURE

NOTE - This Operational Test Procedure will be used for more than one skid. An asterisk (*) is used to identify the skid LETTER.

NOTE - All personnel performing this procedure, who will be initialing and signing the procedure, shall enter their printed name, signature and initials on the PROCEDURE PERFORMER SIGNATURE SHEET ~~maintained at the Shift Office.~~

5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP

5.1.1 ENERGIZE the Pumping and Instrumentation Control Skid by CLOSING the following DISCONNECT SWITCHES in the order found below:

DISCONNECT SWITCH	ENERGIZED (✓)
SALW-DS-6002*	✓
SALW-DS-6003*	✓
SALW-DS-6004*	✓
SALW-DS-6005*	✓

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP (CONT.)

NOTE - The following circuit breakers are located in SALW-DP-6001* "SALW SKID DIST PNL".

5.1.2 ENERGIZE the Pumping and Instrumentation Control Skid by CLOSING the following Circuit Breakers in the order found below:

DISCONNECT SWITCH	ENERGIZED (✓)
"MAIN"	✓
7, (WEIGHT FACTOR INSTRUMENT ENCLOSURE)	✓
3, (LEAK DETECTION/HEAT TRACE)	✓
8, (WATER TANK HEATER)	✓
5, (INSTRUMENT ENCLOSURE [PLC])	✓
4, (AIR COMPRESSOR CABINET HEATER & [1] RECEPTACLE)	✓
9, (RECEPTACLE)	✓
11, (FGM PUMP AND HEATER)(PIT)(IF APPLICABLE)	✓
6, (INTRINSICALLY SAFE PANEL)	✓
10, (HEAT TRACE FOR DIPTUBES AND IA LINE, HEAT TRACE SAMPLE/RETURN)	✓
1, (FGM PUMP AND HEATER)(DOME)(IF APPLICABLE)	✓
2, (HEAT TRACE SAMPLE/RETURN)(DOME)	✓
12, (INSTR CABINET AC AND HEATER RCPT.)	✓
13, (FGM HEATER TRACE) (DOME)(IF APPLICABLE)	✓
14, (FGM HEATER TRACE) (PIT)(IF APPLICABLE)	✓

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP (CONT.)

5.1.3 ACKNOWLEDGE any initial skid or FGM alarms.

5.1.4 OPEN valve SALW-V-6034* (located in the Air COMP Cabinet).

5.1.5 START air compressor SALW-CMP-6001* "SALW SKID IA COMP" by POSITIONING switch on the SALW-DS-6004* to the HAND or ON position.

EXCEPTION # 2 5.1.6 VERIFY that Air Compressor starts and builds up pressure AND shuts off at 86 to 94 psig, as indicated by pressure gauge SALW-PI-6006* (AIR DRYER INLET PRESS).

John Hanley 1-4-00
Test Director Signature Date

5.1.7 VALVE in air to the Pumping and Instrumentation Control Skid Water Tank by SLOWLY PERFORMING the following (Refer to H-14-023960 Sheet 1):

5.1.7.1 SLOWLY OPEN valve SALW-V-6025* (located in the air compressor cabinet).

5.1.7.2 SLOWLY OPEN valve SALW-V-6027* (located near the water tank).

5.1.7.3 SLOWLY OPEN valve SALW-V-6028* (located near the water tank).

5.1.7.4 ADJUST Pressure Regulator Valve SALW-PCV-6006* to 30 psi (\pm 3 psig) as indicated by pressure gauge SALW-PI-6008* (WTR TK PRESS).

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP (CONT.)

5.1.8 VALVE IN air to SALW-PNL-6002* (WFIE Cabinet) by PERFORMING the following (Refer to H-14-023960 Sheet 1):

- 5.1.8.1 SLOWLY OPEN valve SALW-V-6026* (located in the Air Compressor Cabinet).
- 5.1.8.2 SLOWLY OPEN valve SALW-V-6001*, located in the bottom of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.3 ADJUST pressure control valve SALW-PCV-6001* in SALW-PNL-6002* (WFIE Cabinet) to 20 psi (± 2.5 psi) as indicated by the pressure gauge located on the face of the valve.
- 5.1.8.4 SLOWLY OPEN valve SALW-V-6004*, located in the middle of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.5 SLOWLY OPEN valve SALW-V-6003*, located in the middle of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.6 SLOWLY OPEN valve SALW-V-6005*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.7 SLOWLY OPEN valve SALW-V-6006*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.8 SLOWLY OPEN valve SALW-V-6007*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet).

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**5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND
PROCESS AIR POWER UP (CONT.)**

5.1.10 VALVE IN SALW-WFT-6002* AND SALW-SGT-6001* by PERFORMING the following:

5.1.10.1 ENSURE the LOW side AND HIGH side isolation valves, located on SALW-V-6036* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.

5.1.10.2 ENSURE SALW-WFT-6002* EQUALIZING valve on valve manifold SALW-V-6036* in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.

5.1.10.3 ENSURE the LOW side AND the HIGH side isolation valves, located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.

5.1.10.4 ENSURE SALW-SGT-6001* equalizing valve on valve manifold SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER UP (CONT.)

5.1.11 CONFIRM that a signal is present between SALW-PNL-6002* (WFIE Cabinet) Instruments and the Programmable Logic Controller by PERFORMING the following:

5.1.11.1 VERIFY Weight Factor is approximately 0.0" (± 0.5 ") Water Gauge as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

John Hanly Test Director Signature 1-4-00 Date

5.1.11.2 VERIFY Specific Gravity is approximately 0.0" (± 0.5 ") Water Gauge as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

John Hanly Test Director Signature 1-4-00 Date

5.1.11.3 VERIFY Flow rate is approximately 0.0 (± 0.5 gpm) Gallons Per Minute as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

John Hanly Test Director Signature 1-4-00 Date

5.1.12 Test Director VERIFY that section 5.1 is complete by SIGNING below.

John Hanly Test Director Signature 1-4-00 Date

5.1.13 Quality Control Inspector VERIFY that section 5.1 is complete by signing below.

* *Kay...* Quality Control Inspector Signature 1-7-00 Date

* SEE EXCEPTION #2.

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5.2 PUMPING AND INSTRUMENTATION CONTROL SKID WATER DRIP SYSTEM

NOTE - If Driptubes are not installed in test area, process air and drip water will be expelled from the side of SALW-PNL-6002* (WFIE Cabinet).

5.2.1 If necessary, ATTACH temporary portable hose from diptube outlet to high and medium diptubes from the bottom of the weight factor enclosure, (from valves SALW-V-6005* and SALW-V-6007*).

- ROUTE the flexible hose to a suitable drain AND SECURE.



5.2.2 ACTUATE the Dip Tube Drip system by SLOWLY OPENING the following valves:

VALVES	OPEN (✓)
SALW-V-6018* located in the bottom right of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6016* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6013* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓
SALW-V-6008* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	✓

CAUTION

Relief valve (SALW-PRV-6001*) will actuate and relieve pressure at 25 psig.

5.2.3 CAREFULLY ADJUST Pressure Regulator SALW-PCV-6005*, located in the bottom of SALW-PNL-6002* (WFIE Cabinet) to 20 psig (± 2 psig) as indicated by SALW-PI-6001* in the middle of SALW-PNL-6002* (WFIE Cabinet).



5.2.4 ADJUST valve SALW-V-6014* to allow APPROXIMATELY 2 drops/second as indicated by sight glass SALW-FG-6001* (± 1 drop/second).



5.2.5 ADJUST valve SALW-V-6015* to allow APPROXIMATELY 2 drops/second as indicated by sight glass SALW-FG-6002* (± 1 drop/second).



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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS

WATER TANK LEVEL

5.3.1 **PREPARE** the Water Tank Level Transmitter SALW-LT-6003* for test signals by **PERFORMING** the following:

5.3.1.1 **ENSURE** valve SALW-V-6029*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL), is **CLOSED**.

5.3.1.2 **ENSURE** valve SALW-V-6031*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL), is **CLOSED**.

5.3.2 **CONNECT** 0-50" test Manometer pressure source to the **HIGH PRESSURE** vent/test port of the level transmitter SALW-LT-6003*.

5.3.3 **VERIFY** the **LOW PRESSURE** vent/test port of the level transmitter SALW-LT-6003* is **OPEN** to atmosphere.

5.3.4 **ADJUST** the test Manometer on the SALW-LT-6003* to a pressure of 31" Water Gauge (± 1 ").

5.3.5 **RECORD** the following:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)
31.2	31

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

NOTE - Alarm should annunciate between 11.7" and 12.7" Water Gauge.

5.3.6 VERY SLOWLY DECREASE the Level Transmitter test Manometer pressure UNTIL the Data Table Access Module "PIC WATER LEVEL LOW" alarm (alarm 9) annunciates.

5.3.7 VERIFY that the Water Tank Low Level alarm is displayed at the Operator Control Station.

5.3.8 ACKNOWLEDGE the Water Tank Low Level alarm at the Operator Control Station and at the Data Table Access Module.

5.3.9 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the water tank level readings below:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE 11.7 to 12.7 inches Water Gauge)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE 11.7 to 12.7 inches Water Gauge)
12.1	12.2

5.3.10 SLOWLY INCREASE the Level Transmitter test Manometer pressure to 15.5" Water Gauge.

5.3.11 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the water tank level readings below:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 14.5 to 16.5 inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE 14.5 to 16.5 inches)
15.5	15.5

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

- 5.3.12 VERIFY that the Water Tank Low Level alarm CLEARS at the Operator Control Station.
- 5.3.13 REMOVE the test manometer from the SALW-LT-6003* high pressure vent/test port, AND RE-INSTALL vent plugs.
- 5.3.14 RESTORE the Water Tank Level Transmitter SALW-LT-6003* by PERFORMING the following:
- 5.3.14.1 OPEN valve SALW-V-6029*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL).
- 5.3.14.2 OPEN valve SALW-V-6031*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL).

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)

WEIGHT FACTOR TEST

- 5.3.15 VERIFY that NO Programmable Logic Controller input signals are FORCED and that the forcing function is DISABLED.
- 5.3.16 CONNECT the 0-500" Water Gauge test Manometer pressure source to the HIGH PRESSURE dip tube on the side of the "WFIE Cabinet".
- 5.3.17 ENSURE SALW-V-6001* is CLOSED.
- 5.3.18 ENSURE SALW-V-6005* is OPEN.
- 5.3.19 ENSURE SALW-V-6006* is OPEN.
- 5.3.20 ENSURE adjustment valves on SALW-FIV-6002*, SALW-FIV-6003*, SALW-FIV-6004* are CLOSED.
- 5.3.21 ENSURE SALW-WFT-6002* EQUALIZING valve located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.
- 5.3.22 ENSURE the LOW side and HIGH side isolation valves, located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

5.3.23 SET the test Manometer to 125" Water Gauge.



5.3.24 OBSERVE Operator Control Station and Data Table Access Module AND RECORD the Weight Factor on the table below.

OPERATOR CONTROL STATION WEIGHT FACTOR READING (RANGE 120 to 130 inches)	DATA TABLE ACCESS MODULE WEIGHT FACTOR READING (RANGE 120 to 130 inches)
128	128

5.3.25 BLEED off pressure from the manometer.



5.3.26 DISCONNECT the 0-500" test Manometer pressure source.



5.3.27 CLOSE SALW-V-6006*.



5.3.28 OPEN SALW-WFT-6002* equalizing valve, located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet).



5.3.29 CLOSE the LOW side and HIGH side isolation valves, located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet).



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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

SPECIFIC GRAVITY TEST

NOTE - A mock signal to the specific gravity transmitter is required to keep a low saltwell level alarm from preventing testing of other instrumentation.

- 5.3.30 CONNECT the 0-50" Water Gauge test Manometer pressure source to the HIGH PRESSURE dip tube.
- 5.3.31 ENSURE SALW-V-6007* is OPEN.
- 5.3.32 ENSURE SALW-V-6005* is OPEN.
- 5.3.33 ENSURE the LOW side and the HIGH side isolation valves, located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.
- 5.3.34 CLOSE the Specific Gravity Transmitter equalizing valve located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet).
- 5.3.35 SET the test Manometer to 5" Water Gauge (± 0.3 ").
- 5.3.36 OBSERVE Operator Control Station and Data Table Access Module AND RECORD the Specific Gravity reading on the table below.

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 4.6 to 5.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 4.65 to 5.35 inches)
5.1	5.1

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

FLOW METER TEST

5.3.37 IF necessary to configure the flowmeter, UNPLUG the power cord to the SALW-FQIT-6001* (SUPERNATANT FLOW XMIT), located in cabinet SALW-PNL-6002* (WFIE Cabinet).

5.3.38 IF a Brooks flowmeter is used, CONFIGURE SALW-FQIT-6001*, located in cabinet SALW-PNL-6002* (WFIE Cabinet), to receive signals from a hand held calibrator.

5.3.39 ENSURE SALW-FQIT-6001* is powered and configured for simulated flow signals.

5.3.40 SIMULATE a flow signal of 2.0 gpm with the hand held calibrator, or from flowmeter face plate.

5.3.41 VERIFY the SALW-FQIT-6001* transmitter is operating properly by RECORDING the following:

OPERATOR CONTROL STATION SUPERNATANT FLOW (RANGE: 1.8 to 2.2 GPM)	DATA TABLE ACCESS MODULE SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 GPM)	SUPERNATANT FLOW XMIT SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 GPM)
2.0	1.99	2.0

5.3.42 RESTORE the SALW-FQIT-6001* (SUPERNATANT FLOW TRANSMITTER) to its original configuration.

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

NOTE - This test section only performed when jet pump jumper and pump are physically mated in the shop on the run-in stand or in the field when run in-stand is available.

DISCHARGE PRESSURE TEST

5.3.43 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.

5.3.44 PLACE JR-1 valve in the PROCESS position.

5.3.45 At the discretion of the Test Director, INSTALL temporary interlock jumpers, OR INITIATE a software force on pump permissive interlocks for equipment not installed or out of service.

5.3.46 USING the Data Table Access Module, START the Jet Pump.

5.3.47 RECORD the following pressures on the table below:

SALW-PI-6012* JET PUMP SUCTION PRESSURE	TEST GAUGE PI-1	DTAM DISCHARGE PRESSURE	SALW-PI-6011* JET PUMP DISCHARGE PRESSURE	TEST GAUGE PI-2
76.3 psi	76 psi	110 psi	110.8 psi	110 psi

5.3.48 Using the Data Table Access Module, STOP the Jet Pump.

STOPPED
Kw
1-5-00

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

PIT FLAMMABLE/COMBUSTIBLE GAS MONITOR TEST

- 5.3.49 CONNECT a current source to model 4.0 FGM TB2 terminals 15(+) and 16(-) OR model 4.46 FGM wires 501(+) and 502(-) at PLC-A0, located in the pit flammable gas monitor electrical cabinet OR in the PICS Instrument Enclosure, PLC MODULE 1, IN 0(+) and IN 0(-).
- 5.3.50 SET current source to 4 mA (\pm 0.25 mA).
- 5.3.51 RECORD the Data Table Access Module Flammable Gas DISPLAY on the "Pit FGM/CGM Input/Output Table" below.
- 5.3.52 SET current source to 10 mA (\pm 0.25 mA).
- 5.3.53 RECORD the Data Table Access Module Flammable Gas display on the "Pit FGM/CGM Input/Output Table" below.
- 5.3.54 SET current source to 20 mA (\pm 0.25 mA).
- 5.3.55 RECORD the Data Table Access Module Flammable Gas display on the "Pit FGM/CGM Input/Output Table" below.

Pit FGM/CGM Input/Output Table	
Input (mA)	Output (as displayed on Data Table Access Module)
4	0%
10	11.3%
20	30%

- 5.3.56 DISCONNECT the current source, AND if necessary RESTORE loop intercepted in step 5.3.49 (located in pit FGM).

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

NOTE - This test section only performed if a dome space FGM is installed

DOMESPACE FLAMMABLE GAS MONITOR TEST

5.3.57 CONNECT a current source to model 4.0 FGM TB2 terminals 15(+) and 16(-) or model 4.46 FGM wires 501(+) and 502(-) at PLC-A0, located in the dome space flammable gas monitor electrical cabinet or in the PICS Instrument Enclosure, PLC MODULE 6, IN 0(+) and IN 0(-).

5.3.58 SET current source to 4 mA (± 0.25 mA).

5.3.59 RECORD the Data Table Access Module Flammable Gas DISPLAY on the "Dome Space FGM Input/Output Table" below.

5.3.60 SET current source to 10 mA (± 0.25 mA).

5.3.61 RECORD the Data Table Access Module Flammable Gas display on the "Dome Space FGM Input/Output Table" below.

5.3.62 SET current source to 20 mA (± 0.25 mA).

5.3.63 RECORD the Data Table Access Module Flammable Gas display on the "Dome Space FGM Input/Output Table" below.

Dome Space FGM Input/Output Table	
Input (mA)	Output (as displayed on Data Table Access Module)
4	
10	
20	

5.3.64 DISCONNECT the current source, AND if necessary RESTORE loop intercepted in step 5.3.57 (located in dome space FGM).

*u/a TNA
1-6-00*

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

THERMOCOUPLE TEST

5.3.65 WARM thermocouple SALW-TE-6004*, located in the Instrument Enclosure.

5.3.66 VERIFY Data Table Access Module and Operator Control Station display a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^\circ$ F).

[Signature] 1-5-00
Test Director Signature Date

5.3.67 ALLOW SALW-TE-6004* to return to ambient temperature.

5.3.68 WARM thermocouple SALW-TE-6001*, located in SALW-PNL-6001* INSTRUMENT AIR ENCLOSURE.

5.3.69 VERIFY Data Table Access Module and Operator Control Station DISPLAY a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^\circ$ F).

[Signature] 1-5-00
Test Director Signature Date

5.3.70 ALLOW SALW-TE-6001* to return to ambient temperature.

5.3.71 WARM thermocouple SALW-TE-6002*, located on the Jet Pump.

5.3.72 VERIFY Data Table Access Module and Operator Control Station DISPLAY a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^\circ$ F).

[Signature] 1-5-00
Test Director Signature Date

5.3.73 ALLOW SALW-TE-6002* to return to ambient temperature.

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

5.3.74 WARM thermocouple SALW-TE-6003* (Jet Pump over temperature thermocouple located on the saltwell Jet Pump jumper).

5.3.75 VERIFY Data Table Access Module and Operator Control Station DISPLAY a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^{\circ}$ F).

[Signature]
Test Director Signature

1-5-00
Date

5.3.76 ALLOW SALW-TE-6003* to return to ambient temperature.

5.3.77 REMOVE any jumpers or forces NOT required for the next test section.

5.3.78 Test Director VERIFY that section 5.3 is complete by SIGNING below.

[Signature]
Test Director Signature

1-6-00
Date

5.3.79 Quality Control Inspector VERIFY that section 5.3 is complete by signing below.

[Signature]
Quality Control Inspector Signature

1-10-00
Date

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTSVALVE POSITION TEST

- 5.4.1 ENSURE the JR-1 valve is in the PROCESS position.
- 5.4.2 VERIFY the JR-1 valve indicates "norm" at the Data Table Access Module AND "PROCESS" position at the Operator Control Station.
- 5.4.3 PLACE the JR-1 valve in the FLUSH position.
- 5.4.4 VERIFY the JR-1 valve indicates "NON-PROCESS" at the Data Table Access Module AND "FLUSH" position at the Operator Control Station.
- 5.4.5 PLACE the JR-1 valve in the PRIME position.
- 5.4.6 VERIFY the JR-1 valve indicates "NON-PROCESS" at the Data Table Access Module AND "PRIME" position at the Operator Control Station.

FLUSH LINE PRESSURE TEST

- 5.4.7 PLACE the JR-1 valve in the PROCESS position.
- 5.4.8 VERIFY a water supply is connected to the jumper flush hose.
- 5.4.9 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

- 5.4.10 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.4.11 USING the Data Table Access Module, START the Jet Pump.
- 5.4.12 VERIFY the Jet Pump OPERATION at the Operator Control Station.
- 5.4.13 ACTUATE pressure transducer SALW-PT-6014* (old name "PS-2") by PRESSURIZING the flush line with water.
- 5.4.14 VERIFY the Jet Pump IMMEDIATELY shuts down at the Data Table Access Module and Operator Control Station.
- 5.4.15 VERIFY flush line high pressure alarm *3, "FLUSH PRESSURE HI" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.16 SHUT OFF the water supply to the flush line.
- 5.4.17 CYCLE the JR-1 valve to CLEAR the flush line high pressure alarm.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)**LOW PRESSURE INTERLOCK**

- 5.4.18 PLACE the JR-1 valve in the PROCESS position.
- 5.4.19 ENSURE ALL alarms have been acknowledged at Data Table Access Module and Operator Control Station.
- 5.4.20 ENSURE the pump is NOT primed.
- 5.4.21 ENSURE the Diaphragm Operated Valve is CLOSED.
- 5.4.22 USING the Data Table Access Module, START the Jet Pump.
- 5.4.23 VERIFY the Jet Pump shuts down in approximately thirty (30) seconds (± 5 seconds).
- 5.4.24 VERIFY transfer line low pressure alarm #1 "XFR Pressure LOW" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.25 ACKNOWLEDGE alarms at Data Table Access Module and Operator Control Station.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

NOTE - This test section only performed when jet pump jumper and pump are physically mated in the shop on the run-in stand or in the field when run in-stand is available.

HIGH PRESSURE INTERLOCK

5.4.26 PLACE the JR-1 valve in the PRIME position.

5.4.27 IF a water ram will be used, using skill of the craft CONNECT a water ram to the jet pump jumper AND SLOWLY PRESSURIZE the pump and jumper to 140 psi using water. *W/A*

5.4.28 IF pump will develop 140 psi. START jet pump with JR-2. BYPASS valve and DOV closed.

5.4.29 VERIFY that the "XFR Pressure HIGH" alarms at Data Table Access Module (Alarm *2) and Operator Control Station when pressure reaches 140 psi (± 10 psi).

5.4.30 ACKNOWLEDGE alarms at Data Table Access Module and Operator Control Station.

RECIRCULATION FLOWMETER TEST

5.4.31 PLACE the JR-1 valve in the PROCESS position.

5.4.32 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.

5.4.33 CONFIGURE SALW-FI-6001* (PMP RECIRC FLOW) to receive signals from a control and display unit.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

- 5.4.34 CONFIGURE the control and display unit to simulate flow signals using the Installation, Diagnostics, Test/Control Mode, AN CAL function.
- 5.4.35 SIMULATE a flow signal of 0.6 gpm with the control and display unit.
- 5.4.36 At the discretion of the Test Director, ENSURE temporary interlock jumpers OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.4.37 USING the Data Table Access Module, START the Jet Pump.
- 5.4.38 VERIFY the Jet Pump OPERATION at the Operator Control Station.
- 5.4.39 SIMULATE a flow signal of 0.4 gpm with the control and display unit.
- 5.4.40 VERIFY the Jet Pump shuts down (after 30 ± 5 sec.) at the Data Table Access Module and Operator Control Station.
- 5.4.41 VERIFY Jet Pump recirculation line low flow alarm *21, "RECIRCULATION FAILURE" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.42 RESTORE SALW-FI-6001* to its original configuration.
- 5.4.43 CYCLE the JR-1 valve to CLEAR the Jet Pump recirculation line low flow alarm.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

RECIRCULATION FLUSH LINE PRESSURE TEST

- 5.4.44 PLACE the JR-1 valve in the PROCESS position.
- 5.4.45 VERIFY a water supply is connected to the recirculation flush line.
- 5.4.46 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.
- 5.4.47 At the discretion of the Test Director, ENSURE temporary interlock jumpers OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.4.48 USING the Data Table Access Module, START the Jet Pump.
- 5.4.49 VERIFY the Jet Pump OPERATION at the Operator Control Station.
- 5.4.50 ACTUATE pressure transducer SALW-PT-6013* (RECIRC FLUSH PRESS) by PRESSURIZING the recirculation flush line with water.
- 5.4.51 VERIFY the Jet Pump IMMEDIATELY shuts down at the Data Table Access Module and Operator Control Station.
- 5.4.52 VERIFY recirculation flush line high pressure alarm *39, "RECIRC FLUSH PRSS HI" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.53 SHUT OFF the water supply to the recirculation flush line.
- 5.4.54 CYCLE the JR-1 valve to CLEAR the recirculation flush line high pressure alarm.

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5.5 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION MONITOR/ALARM FUNCTIONS

5.5.1 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces are in place for uninstalled equipment.

5.5.2 SET the test manometer on the specific gravity transmitter to 13" Water Gauge.

5.5.3 ENSURE the following valves are OPEN:

Valve Number	
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.5.4 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.

5.5.5 START the Jet Pump using the Data Table Access Module, AND PLACE the system in automatic.

5.5.6 VERIFY the DIAPHRAGM OPERATED VALVE moves OPEN.

5.5.7 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 12.6 to 13.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 12.65 to 13.35 inches)
12.9	12.92

5.5 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION MONITOR/ALARM FUNCTIONS (CONT.)

5.5.8 VERY SLOWLY DECREASE the test manometer pressure until the Data Table Access Module "SGT LOW" alarm (alarm *13) annunciates.

NOTE - SALW-PI-6005* pressure is to be read IMMEDIATELY when the "SGT LOW" alarm occurs.

5.5.9 VERIFY AND ACKNOWLEDGE the Specific Gravity Low Alarm (Saltwell LOW Level) at the Data Table Access Module and Operator Control Station.

5.5.10 RECORD the following:

PARAMETER	READING
OPERATOR CONTROL STATION SPECIFIC GRAVITY (RANGE 3 to 4)	3.7
DATA TABLE ACCESS MODULE SPECIFIC GRAVITY (RANGE 3 to 4)	3.3
SPECIFIC GRAVITY MANOMETER READING (RANGE 3 to 4 inches Water Gauge)	3.7
DOV POSITION (% OPEN) [RANGE - FULLY CLOSED]	Closed
SALW-PI-6005* PRESSURE (RANGE 2 to 4 psig)	2.1

5.5.11 VERY SLOWLY INCREASE the test manometer pressure to 10 inches Water Gauge.

5.5.12 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 9 to 11 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 9 to 11 inches)
9.9	9.94

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5.6 REMOTE SETPOINT CHANGE USING THE OPERATOR CONTROL STATION

5.6.1 PLACE the saltwell jumper JR-1 valve in the PROCESS position.

5.6.2 ENSURE pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.

5.6.3 START the Jet Pump using the Data Table Access Module.

5.6.4 SET the "DOV" Specific Gravity setpoint to 8 inches at the Operator Control Station.

5.6.5 VERIFY that the "DOV" Specific Gravity setpoint is 8 inches at the Data Table Access Module AND the Operator Control Station.

[Signature] 1-5-00
Test Director Signature Date

5.6.6 SET the "DOV" Specific Gravity setpoint to 6 inches at the Data Table Access Module.

5.6.7 VERIFY that the "DOV" Specific Gravity setpoint is 6 inches at the Operator Control Station.

[Signature] 1-5-00
Test Director Signature Date

5.6.8 USING Data Table Access Module, STOP the Jet Pump.

5.6.9 Test Director VERIFY that section 5.6 is complete by SIGNING below.

[Signature] 1-5-00
Test Director Signature Date

5.6.10 Quality Control Inspector VERIFY that section 5.6 is complete by signing below.

[Signature] 1-5-00
Quality Control Inspector Signature Date

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**5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION**

NOTE - This system is a Proportional Integral Derivative controller for controlling the liquid level in the saltwell screen. The Specific Gravity Transmitter reads unadjusted liquid level once the middle diptube leg is uncovered by declining liquid levels.

The system uses the signal from the Specific Gravity Transmitter as the Process Variable. The controller compares the process variable to the setpoint and adjusts the Diaphragm Operated Valve position accordingly (manipulated variable).

The purpose of this test section is to verify that the Diaphragm Operated Valve trend is toward achieving the setpoint while different process variables are simulated.

DATA TABLE ACCESS MODULE (AUTOMATIC)

5.7.1 ENSURE the Saltwell Pump and Jumper Assembly, AND the Pumping and Instrumentation Control Skid are configured for AUTOMATIC Diaphragm Operated Valve level control by PERFORMING the following:

5.7.1.1 SET the test manometer on the Specific Gravity Transmitter to a pressure of 0" Water Gauge.

5.7.1.2 ENSURE the following valves are OPEN:

Valve Number	✓
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.7.1.3 PLACE the saltwell jumper JR-1 valve in the PROCESS position.

5.7.1.4 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

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**5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

- 5.7.1.5 ENSURE that only alarms "JET PUMP SHUTDOWN" (Alarm 12) and "SGT LOW" (Alarm 13) on the Data Table Access Module are displayed.
- 5.7.1.6 ENSURE pump recirculation apparatus is filled with water AND CONFIGURED to circulate water through the saltwell Jet Pump.
- 5.7.1.7 START the Jet Pump using the Data Table Access Module.
- 5.7.1.8 SET DIAPHRAGM OPERATED VALVE Specific Gravity Controller to AUTO with setpoint of seven (7) inches USING the Data Table Access Module.
- 5.7.1.9 SET the test manometer to a pressure of 14" Water Gauge.
- 5.7.1.10 VERIFY that the Diaphragm Operated Valve moves to a more OPEN position.
- 5.7.1.11 SET the test manometer to a pressure of 6" Water Gauge.
- 5.7.1.12 VERIFY that the Diaphragm Operated Valve moves to a more CLOSED position.

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5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)

DATA TABLE ACCESS MODULE (MANUAL)

5.7.2 VERIFY that the MANUAL CONTROL of the Diaphragm Operated Valve is operational by PERFORMING the following steps:

5.7.2.1 SET the test manometer on the Specific Gravity Transmitter to a pressure of 15" (± 1") Water Gauge.

5.7.2.2 SET "DOV" Specific Gravity Controller to MANUAL CONTROL USING the Data Table Access Module.

5.7.3 SET the Diaphragm Operated Valve to 0% Open USING the manual control on the Data Table Access Module.

NOTE - DIAPHRAGM OPERATED VALVE position is read from a metal pointer mounted on the valve stem. Indication is approximate valve position only, and is NOT intended to be readable to a high degree of precision.

5.7.4 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE - FULLY CLOSED (0 - 10% on needle graduations)]	SALW-PI-6005* PRESSURE (RANGE 2 to 4 psig)
0%	2.9

5.7.5 SET the Diaphragm Operated Valve to 25% OPEN USING the manual control on the Data Table Access Module.

5.7.6 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 15% to 35%]	SALW-PI-6005* PRESSURE (RANGE: 5 to 7 psig)
25%	5.4

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5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)

5.7.7 SET the Diaphragm Operated Valve to 75% OPEN USING the manual control on the Data Table Access Module.

5.7.8 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 65% to 85%]	SALW-PI-6005* PRESSURE (RANGE: 11 to 13 psig)
75%	11.5

5.7.9 SET the Diaphragm Operated Valve to 100% OPEN using the manual control on the Data Table Access Module.

5.7.10 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 90% to 110%]	SALW-PI-6005* PRESSURE RANGE: 14 to 16 psig
100%	14.5

5.7.11 VERY SLOWLY DECREASE the test manometer pressure while OBSERVING the Diaphragm Operated Valve.

5.7.12 VERIFY that the Diaphragm Operated Valve remains FULLY OPEN while the test manometer is DECREASED until the "SGT LOW" alarm (Data Table Access Module alarm *13) annunciates.

5.7.13 VERIFY that the Diaphragm Operated Valve IMMEDIATELY CLOSES when the "SGT LOW" alarm (Data Table Access Module alarm *13) annunciates.

5.7.14 SHUT DOWN the Jet Pump with the DTAM AND ACKNOWLEDGE the shutdown alarms.

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**5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

OPERATOR CONTROL STATION (AUTO)

5.7.15 ENSURE the Saltwell Pump and Jumper Assembly AND Pumping and Instrumentation Control Skid are CONFIGURED for AUTOMATIC Diaphragm Operated Valve level control by PERFORMING the following:

5.7.15.1 SET the test manometer to a pressure of 0" Water Gauge.

5.7.15.2 ENSURE the following valves are OPEN:

Valve Number	✓
SALW-V-6034*	✓
SALW-V-6026*	✓
SALW-V-6001*	✓
SALW-V-6004*	✓
SALW-V-6002*	✓

5.7.15.3 ENSURE the saltwell jumper JR-1 valve is in the PROCESS position.

5.7.15.4 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

5.7.15.5 ENSURE that only alarms "SHUTDOWN" and "SGT LOW" are displayed on the Operator Control Station.

5.7.15.6 ENSURE pump recirculation apparatus is filled with water AND CONFIGURED to circulate water through the saltwell Jet Pump.

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**5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

- 5.7.15.7 START the Jet Pump USING the Data Table Access Module.
- 5.7.15.8 SET the Specific Gravity Controller to AUTO with setpoint of 7.0 inches USING the Operator Control Station.
- 5.7.15.9 SET the test manometer to a pressure of 14" Water Gauge (± 1 ").
- 5.7.15.10 VERIFY that the Diaphragm Operated Valve moves to a more OPEN position.
- 5.7.15.11 SET the test manometer to a pressure of 6" Water Gauge.
- 5.7.15.12 VERIFY that the Diaphragm Operated Valve moves to a more CLOSED position.
- 5.7.16 VERIFY that the MANUAL CONTROL of the Diaphragm Operated Valve is operational by PERFORMING the following steps:
 - 5.7.16.1 SET the test manometer to a pressure of 15" Water Gauge (± 1 ").
 - 5.7.16.2 SET the "DOV" Specific Gravity Controller to MANUAL CONTROL USING the Operator Control Station.

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5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)

5.7.17 SET the Diaphragm Operated Valve to 0% Open USING the manual control on the Operator Control Station.

5.7.18 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE - FULLY CLOSED (0-10% OPEN)]	SALW-PI-6005* PRESSURE (RANGE 2 to 4 psig)
0%	2.3

5.7.19 SET the Diaphragm Operated Valve to 30% OPEN using the manual control on the Operator Control Station.

5.7.20 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 15% to 35%]	SALW-PI-6005* PRESSURE (RANGE: 5 to 7 psig)
25%	5.4

5.7.21 SET the Diaphragm Operated Valve to 80% OPEN using the manual control on the Operator Control Station.

5.7.22 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 65% to 85%]	SALW-PI-6005* PRESSURE (RANGE: 11 to 13 psig)
75%	11.5

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5.7 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)

5.7.23 SET the Diaphragm Operated Valve to 100% OPEN using the manual control on the Operator Control Station.

5.7.24 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 90% to 110%]	SALW-PI-6005* PRESSURE RANGE: 14 to 16 psig
100%	14.1

5.7.25 VERY SLOWLY DECREASE the test manometer pressure while OBSERVING the Diaphragm Operated Valve.

5.7.26 VERIFY that the Diaphragm Operated Valve remains FULLY OPEN while the test manometer is DECREASED UNTIL the Operator Control Station "SGT LOW" annunciates.

5.7.27 VERIFY that the Diaphragm Operated Valve IMMEDIATELY CLOSES when the Operator Control Station "SGT LOW" annunciates.

5.7.28 SHUTDOWN the Jet Pump with the Operator Control Station.

5.7.29 VERIFY the Jet Pump SHUT DOWN at the Operator Control Station.

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5.8 JET PUMP FLOWMETER OPERATION

5.8.1 ENSURE that the Saltwell Jumper Flow Element is communicating properly with the FQIT SALW-FQIT-6001* (SUPERNATANT FLOW XMIT) and Data Table Access Module by PERFORMING the following:

5.8.1.1 PLACE the saltwell jumper JR-1 valve in the PROCESS position.

5.8.1.2 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.

5.8.1.3 ENSURE the 0 - 50 inch test manometer is still attached to the high pressure dip tube AND set to 15" Water Gauge (± 1 ").

5.8.1.4 ENSURE a rotameter has been installed in series with the jumper flow element.

5.8.1.5 ENSURE that both the Data Table Access Module and Operator Control Station are configured for MANUAL CONTROL.

5.8.1.6 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces are in place for uninstalled equipment.

5.8.1.7 SET the Diaphragm Operated Valve to 0% OPEN using the manual control on the Data Table Access Module.

5.8.1.8 ADJUST Jet Pump Jumper Valve JR-2 as directed by the Test Director to achieve the required flow rates in the following steps.

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5.8 JET PUMP FLOWMETER OPERATION (Cont.)

5.8.1.9 START the Jet Pump using the Data Table Access Module.

5.8.1.10 VERIFY the start of the Jet Pump at the Operator Control Station.

5.8.2 RECORD initial readings, and the time reading were taken.

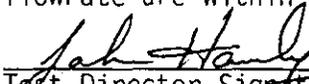
DATA TABLE ACCESS MODULE TOTALIZER (Gallons)	FQIT TOTALIZER GALLONS	TIME
8449	20494	11:00

5.8.3 SET the Diaphragm Operated Valve Controller to MANUAL AND ADJUST Controller at the Data Table Access Module to obtain a flowrate of APPROXIMATELY 1.0 GPM (± 0.05 gpm) through the jumper.

5.8.4 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
67	67	50	.99	.96	.96	.96	8452	20498

5.8.5 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate are within ± 0.1 gpm.


Test Director Signature

1-6-00
Date

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5.8 JET PUMP FLOWMETER OPERATION (Cont.)

5.8.6 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 3 gallons



5.8.7 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: 4 gallons



5.8.8 VERIFY results from the above two steps are within ± 5.0 gallons.



5.8.9 ADJUST the Diaphragm Operated Valve Controller to obtain a flowrate of APPROXIMATELY 2.5 GPM (± 0.125 gpm) through the jumper.



5.8.10 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
97	97	100%	2.411	2.51	2.51	2.51	8455	20500

5.8.11 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate are within ± 0.25 gpm.



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5.8 JET PUMP FLOWMETER OPERATION (Cont.)

5.8.12 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 6 gallons



5.8.13 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: 6 gallons



5.8.14 VERIFY results from the above two steps are within ± 5.0 gallons.



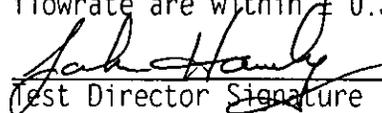
5.8.15 ADJUST the Diaphragm Operated Valve Controller to obtain a flowrate of APPROXIMATELY 3.0 GPM (± 0.15 gpm) through the jumper.



5.8.16 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
100	100	100	3.0	3.1	3.1	3.14	8466	20512

5.8.17 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate are within ± 0.3 gpm.


Test Director Signature

1-6-00
Date

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5.8 JET PUMP FLOWMETER OPERATION (Cont.)

5.8.18 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 17 gallons



5.8.19 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: 18 gallons



5.8.20 VERIFY results from the above two steps are within ± 5.0 gallons.



5.8.21 ADJUST the Diaphragm Operated Valve Controller to obtain a flowrate of APPROXIMATELY 7.0 GPM (± 0.35 gpm) through the jumper.



5.8.22 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
100	100	100	6.9	7.2	7.2	7.23	8484	20531

5.8.23 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate are within ± 0.7 gpm.

John Hawley
Test Director Signature

1-6-00
Date

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5.8 JET PUMP FLOWMETER OPERATION (Cont.)

5.8.24 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 35 gallons



5.8.25 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: 37 gallons



5.8.26 VERIFY results from the above two steps are within ± 5.0 gallons.



5.8.27 CLOSE the Diaphragm Operated Valve (to 0%) using the manual Diaphragm Operated Valve control.



5.8.28 VERIFY JR-2 is CLOSED.



5.8.29 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)
0	0	0	0	0	0	854	8500	20548

5.8.30 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate all indicate 0.0 gpm (± 0.1 gpm).

John H. Harty
 Test Director Signature

1-6-00
 Date

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5.8 JET PUMP FLOWMETER OPERATION (Cont.)

5.8.31 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: 51 gallons



5.8.32 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: 54 gallons



5.8.33 VERIFY results from the above two steps are within ± 5.0 gallons.



5.8.34 USING the Data Table Access Module, STOP the Jet Pump.



5.8.35 REMOVE the test manometer.



5.8.36 ISOLATE the Specific Gravity Transmitter from the system.

NOTE - All three valves are located on the Specific Gravity Transmitter three valve manifold SALW-V-6035*.

5.8.36.1 OPEN the equalization valve for the Specific Gravity Transmitter.



5.8.36.2 CLOSE the two (2) isolation valves.



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5.9 JET PUMP VALVING INTERLOCK FOR THE JET PUMP

- 5.9.1 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.
- 5.9.2 ENSURE all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.
- 5.9.3 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.9.4 USING the Data Table Access Module, START the Jet Pump.
- 5.9.5 VERIFY Jet Pump operation at the Operator Control Station.
- 5.9.6 PLACE the JR-1 Valve, on the Jet Pump jumper, in the FLUSH position.
- 5.9.7 VERIFY the following:
- Jet Pump IMMEDIATELY shuts down.
 - "JR-1 NON-PROCESS" is displayed at Data Table Access Module AND "FLUSH" is displayed operator control Station.
 - "Jet Pump SHUTDOWN" is displayed at Data Table Access Module and "SHUTDOWN" at Operator Control Station.
- NOTE - "Flush Pressure HI" may be received.
- 5.9.8 VERIFY the Jet Pump can not be re-started with the JR-1 valve in the FLUSH position.

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5.9 JET PUMP VALVING INTERLOCK FOR THE JET PUMP (Cont.)

- 5.9.9 PLACE the JR-1 Valve in the PROCESS position.
- 5.9.10 ENSURE all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.
- 5.9.11 RESTART the Jet Pump using the Data Table Access Module.
- 5.9.12 VERIFY Jet Pump operation at the Operator Control Station.
- 5.9.13 PLACE the JR-1 Valve in the PRIME position.
- 5.9.14 VERIFY the following:
- Jet Pump IMMEDIATELY shuts down.
 - "JR-1 NON-PROCESS" is displayed at Data Table Access Module (ALARM *5) AND "PRIME" at Operator Control Station.
 - "Jet Pump SHUTDOWN" is displayed at Data Table Access Module (ALARM *12) AND "SHUTDOWN" at Operator Control Station.
- NOTE - "FLUSH Pressure HI" may be received.
- 5.9.15 VERIFY the Jet Pump can not be re-started with the JR-1 valve in the PRIME position.
- 5.9.16 ENSURE all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.

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5.10 OPERATOR CONTROL STATION JET PUMP SHUTDOWN TEST

- 5.10.1 PLACE the Jet Pump JR-1 valve in the PROCESS position.
- 5.10.2 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.
- 5.10.3 ENSURE no interlocks are present that will prevent pump operation.
- At the discretion of the Test Director, jumper or force interlocks if necessary.
- 5.10.4 Using the Data Table Access Module, START the Jet Pump.
- 5.10.5 VERIFY Jet Pump operation at the Operator Control Station.
- 5.10.6 Using the Operator Control Station, SHUT DOWN the Jet Pump.
- 5.10.7 VERIFY the SHUTDOWN alarm at the Operator Control Station.
- 5.10.8 Test Director VERIFY that section 5.10 is complete by SIGNING below.
- John Hanley* 1-6-00
Test Director Signature Date
- 5.10.9 Quality Control Inspector VERIFY that section 5.10 is complete by signing below.
- Ker Wilcox* 1-10-00
Quality Control Inspector Signature Date

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5.11 LEAK DETECTION INTERLOCK CHECK

5.11.1 Cognizant Engineer shall LIST all relevant leak detectors in pump pit, valve pits, clean out boxes, and encasements along transfer route in the table below. Any unused lines in the table shall be marked with an "N/A".

- NOTE - Leak Detector Interlock checks can be performed in any sequence.
- Operator Control Station wording of alarms may be different than Data Table Access Module, but must have the same general meaning.
 - Pump operation will be simulated during the remainder of the OTP.

5.11.2 VERIFY current functional check, AND RECORD the due date on the table below.

NOTE - Leak detectors not associated with the skid being tested shall be marked as "N/A".

INSTRUMENT	FUNCTIONAL CHECK DATE	NEXT DUE DATE
1) SALW-LDE-6001 M	1-10-00	4-10-00
2) SALW-LDE-6002 M	1-10-00	4-10-00
3) SALW-LDE-6001 K	1-10-00	4-10-00
4) SALW-LDE-6002 K	1-10-00	4-10-00
5) SALW-LDE-6001 L	1-10-00	4-10-00
6) SALW-LDE-U-A	1-10-00	4-10-00
7) SALW-LDE-U-B	1-10-00	4-10-00
8) SALW-LDE-COB #33	1-10-00	4-10-00
9) SALW-LDE-U-D	1-10-00	4-10-00
10) SALW-LDE-COB U-30	1-10-00	4-10-00
11) LDE-OZA-1	1-10-00	4-10-00
12) LDE-VP-SY-B	1-10-00	4-10-00
13)		
14)		
15)		

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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

NOTE - 242-A Evaporator Operator only needs to be notified for East Area transfers.

5.11.3 IF required, NOTIFY the Tank Monitoring and Control System Operator, 242-A Evaporator Operator and Shift Manager that this section is about to commence.



5.11.4 REQUEST Test Director to VERIFY that field installation of the Saltwell equipment per applicable work package is completed for testing.

NOTE - For EMERGENCY PUMPING SKID, or testing of skid prior to field installation, Test Director shall "NA" the work package number line and sign and date where requested.

Enter work package number N/A
John Hardy 1-10-00
Test Director Signature Date

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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

5.11.5 CHECK the leak detector interlocks corresponding to the leak detectors entered in the previous Table by the Cognizant Engineer by PERFORMING step 5.11.5.1 through step 5.11.5.11 AND CHECKING the appropriate space when complete:

LEAK DETECTOR	CHECK COMPLETE (✓)
1) SEE TABLE ON PAGE 68	
2) 5.11.2	
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	

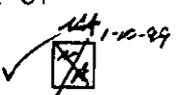
5.11.5.1 IF REQUIRED, ENSURE the Pump Instrument and Control Skid is configured and ready to receive leak detector signal.



5.11.5.2 MONITOR the status of the Pump Starter to VERIFY pump status.



5.11.5.3 IF test is to be performed after pump installation. ENSURE Jet Pump motor leads have been determined from the load side of the starter while performing this section.



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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

5.11.5.4 ENSURE no interlocks are present that will prevent pump operation.

- At the discretion of the Test Director, force or jumper unused interlocks.



5.11.5.5 Using Data Table Access Module, START the Jet Pump.



NOTE - Programmer may need to force limit switches and pressure switches to simulate recirculate flow.

5.11.5.6 VERIFY Jet Pump start at Operator Control Station.



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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical. Comply with WHC-CM-1-10, WKS-15. ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

5.11.5.7 TEST leak detector using Leak Detector Test Circuit OR jumper, or by emerging probe, as required. VERIFY and ACKNOWLEDGE the following:

- IMMEDIATE Jet Pump shutdown.
- "JET PUMP SHUTDOWN" is annunciating at the Data Table Access Module (ALARM #12).
- A Leak Detection Alarm is annunciating at the Data Table Access Module AND at the Operator Control Station.



5.11.5.8 ACKNOWLEDGE the Leak Detector Alarm at the Operator Control Station.



5.11.5.9 ACKNOWLEDGE the Leak Detector Alarm at the Data Table Access Module.



5.11.5.10 VERIFY that the Jet Pump CAN NOT be re-started at the Data Table Access Module when the alarm is ACTIVE.



5.11.5.11 RETURN the leak detector to a condition of operation by PERFORMING the following:

- IF a jumper was installed in step 5.11.5.7, REMOVE jumper.
- VERIFY the Leak Detection Alarm at the Data Table Access Module and Operator Control Station resets.
- RESET the remote Master Pump Shutdown if required.



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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

NOTE - Steps 5.11.6 through 5.11.15 only need to be performed if remote Master Pump Shutdown exists.

- 5.11.6 RESTART the Jet Pump using Data Table Access Module.
- 5.11.7 SHUTDOWN the Jet Pump using the manual Master Pump Shutdown.
- 5.11.8 VERIFY that the Jet Pump stops AND the Leak Detection Alarm appears.
- 5.11.9 ACKNOWLEDGE alarms at the Data Table Access Module and Operator Control Station.
- 5.11.10 RESET the Master Pump Shutdown.
- 5.11.11 RESTART the Jet Pump using the Data Table Access Module.
- 5.11.12 SHUTDOWN the Jet Pump using the manual Master Pump Shutdown at a second location (if it exists).
- 5.11.13 VERIFY that the Jet Pump stops AND Leak Detection Alarm appears.
- 5.11.14 RESET the Master Pump Shutdown.
- 5.11.15 ACKNOWLEDGE alarms at the Data Table Access Module and Operator Control Station.

N/A
1-10-00

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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

INTERLOCK TEST

NOTE - It is the intent of this section to test all transfer system and FGM interlocks not previously tested in the leak detector section. Included would be DCRT high level alarms, dilution tank low level alarms, FGM alarms, and leak detection not previously tested. Also included would be encasement and receiver tank pressurization alarms.

The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.11.16 Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) DILUTION TANK LOW FLOW	✓	DTAM DILUTION NO FLOW SHUT DOWN
		OCS SHUTDOWN
2) U-102 JR-1 FLUSH U-103 U-105 S/D	✓	DTAM JR-1 NON PROCESS S/D
		OCS S/D IN FLUSH S/D ¹⁰² ₁₀₃₋₁₀₅
3) U-103 JR-1 FLUSH U-102 U-105 S/D	✓	DTAM JR-1 NON PROCESS S/D
		OCS S/D IN FLUSH S/D ¹⁰² ₁₀₃₋₁₀₅
4) U-105 JR-1 FLUSH U-102 U-103 S/D	✓	DTAM JR-1 NON PROCESS S/D
		OCS S/D IN FLUSH S/D ¹⁰² ₁₀₃₋₁₀₅
5) U-102 JR-1 PROCESS U-103 U-105 S/D AFTER T/D	✓	DTAM SHUTDOWN
		OCS U-102 S/D U-103 U-105 } TIMER ACT.
6) U-103 JR-1 PROCESS U-102 U-105 S/D AFTER T/D	✓	DTAM SHUTDOWN
		OCS U-103 S/D U-102 U-105 } TIMER ACT
7) U-105 JR-1 PROCESS U-102 U-103 S/D AFTER T/D	✓	DTAM SHUTDOWN
		OCS U-105 S/D U-102 U-103 } TIMER ACT

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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

INTERLOCK TEST

NOTE - It is the intent of this section to test all transfer system and FGM interlocks not previously tested in the leak detector section. Included would be DCRT high level alarms, dilution tank low level alarms, FGM alarms, and leak detection not previously tested. Also included would be encasement and receiver tank pressurization alarms.

The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.11.16 Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) U-102 High Flush PRESS - U103 U105 S/D T/D	✓	DTAM FLUSH PRES. HIGH S/D
		OCS S/D PS-2 H/P FLUSH ¹⁰³ ¹⁰⁵ } S/D
2) U-103 High Flush PRESS - 102 + 105 S/D T/D	✓	DTAM FLUSH PRES HIGH S/D
		OCS S/D PS-2 H/P FLUSH ¹⁰² ¹⁰⁵ } S/D
3) U-105 High Flush PRESS - 102 + 103 S/D T/D	✓	DTAM FLUSH PRES High S/D
		OCS S/D PS-2 H/P FLUSH ¹⁰² ¹⁰³ } S/D
4) U-102 High Flush SIG. LOSS 103 + 105 S/D T/D	✓	DTAM JFPT SIG LOSS S/D
		OCS JUMPER FLUSH PRES SIG LOSS ¹⁰³ ¹⁰⁵ } S/D
5) U-103 High Flush SIG LOSS 102 + 105 S/D T/D	✓	DTAM JFPT SIG. LOSS S/D
		OCS JUMPER FLUSH PRES SIG LOSS ¹⁰² ¹⁰⁵ } S/D
6) U-105 High Flush SIG LOSS 102 + 103 S/D T/D	✓	DTAM JFPT SIG. LOSS S/D
		OCS JUMPER FLUSH PRES SIG LOSS ¹⁰² ¹⁰³ } S/D
7) U-102 High Recir PRESS 103 + 105 S/D T/D	✓	DTAM RECIR FLUSH PRES HIGH S/D
		OCS RECIR PRESS HIGH - S/D ¹⁰³ ¹⁰⁵ } S/D

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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

INTERLOCK TEST

NOTE - It is the intent of this section to test all transfer system and FGM interlocks not previously tested in the leak detector section. Included would be DCRT high level alarms, dilution tank low level alarms, FGM alarms, and leak detection not previously tested. Also included would be encasement and receiver tank pressurization alarms.

The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.11.16 Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) U-103 High RECIR PRES 102 + 105 S/D T/D	✓	DTAM RECIR FLUSH PRES High S/D
		OCS RECIR PRESS High - S/D ¹⁰² 105 } S/D
2) U-105 High RECIR PRES 102 + 103 S/D T/D	✓	DTAM RECIR FLUSH PRES High S/D
		OCS RECIR PRESS High - S/D ¹⁰² 103 } S/D
3) U-102 High RECIR Sig. loss 103 + 105 S/D T/D	✓	DTAM JPPT Sig. loss S/D
		OCS RECIR FLUSH Sig. loss S/D ¹⁰³ 105 } S/D
4) U-103 High RECIR Sig. loss 102 + 105 S/D T/D	✓	DTAM JPPT Sig. loss S/D
		OCS RECIR FLUSH Sig. loss S/D ¹⁰² 105 } S/D
5) U-105 High RECIR Sig. loss 102 + 103 S/D T/D	✓	DTAM JPPT Sig. loss S/D
		OCS RECIR FLUSH Sig. loss S/D ¹⁰² 103 } S/D
6) U-102 DATA COM FAILURE 103 + 105 S/D	✓	DTAM S/D - PLC COM FAIL
		OCS S/D - OFF LINE ¹⁰³ 105 } S/D
7) U-103 DATA COM FAILURE 102 + 105 S/D	✓	DTAM S/D - PLC COM FAIL
		OCS S/D - OFF LINE ¹⁰² 105 } S/D

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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

INTERLOCK TEST

NOTE - It is the intent of this section to test all transfer system and FGM interlocks not previously tested in the leak detector section. Included would be DCRT high level alarms, dilution tank low level alarms, FGM alarms, and leak detection not previously tested. Also included would be encasement and receiver tank pressurization alarms.

The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.11.16 Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) U-105 DATA COM FAILURE 102+103 S/D	✓	DTAM S/D - PLC COM FAIL
		OCS S/D OFFLINE 102 103 } SD
2)		DTAM
		OCS
3)		DTAM
		OCS
4)		DTAM
		OCS
5)		DTAM
		OCS
6)		DTAM
		OCS
7)		DTAM
		OCS

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5.11 LEAK DETECTION INTERLOCK CHECK (Cont.)

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical. Comply with WHC-CM-1-10, WKS-15, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

5.11.17 NOTIFY Tank Monitoring and Control System Operator, 242-A Evaporator Operator (if transfer is in east Area), and Shift Manager that this section is about to begin.

5.11.18 For each relay listed in the Table above, PERFORM the following:

5.11.18.1 Using the Data Table Access Module, START the Jet Pump, AND OBSERVE that the pump run light is ON.

5.11.18.2 DEACTIVATE the relay to simulate an alarm condition.

NOTE - Craft will determine a safe method of deactivating each device. Test pushbuttons, mock input signals, shorting across secondary of induction relay coils, lifting coil leads, or pulling device from socket may be used.

5.11.18.3 VERIFY Data Table Access Module and Operator Control Station display "JET PUMP SHUTDOWN" AND an interlock message.

5.11.18.4 RECORD a check mark in the Table if Jet Pump shutdown occurs.

5.11.18.5 RECORD the interlock alarm messages received at Data Table Access Module and Operator Control Station in the Table.

5.11.18.6 VERIFY that the Jet Pump CAN NOT be re-started at the Data Table Access Module when the alarm is ACTIVE.

5.11.18.7 RESTORE the circuit (remove simulated alarm condition).

5.11.18.8 ACKNOWLEDGE the alarms at Data Table Access Module and Operator Control Station.

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5.12 SOFTWARE DOCUMENTATION

5.12.1 REQUEST Engineering to PRINT out a Ladder Logic and Alarm Table for the Pump Instrumentation and Control Skid AND ATTACH it to this procedure.



5.12.2 Test Director VERIFY that section 5.13 is complete by SIGNING below.

John H. ... 1-13-00
Test Director Signature Date

5.12.3 Quality Control Inspector VERIFY that section 5.13 is complete by signing below.

Frank ... 1-13-00
Quality Control Inspector Signature Date

K. Williams 1-16-00
SECTION 5.12 ONLY

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OPERATIONAL TEST PROCEDURE EXCEPTION RECORD

This page may be reproduced as necessary.

OTP step number: 4.3	OTP Exception Log Number /
Description of Exception: two gages (SALW-PI-6011* and SALW-PI-6012*) are calibrated but not listed in the table.	
Resolution of Exception: ① Record calibration DATA in the table ② At completion of OTP write PCA to the procedure to add these gages to the instrument calibration DATA. This is not a prerequisite for continuing the OTP PCA# WTF-2000-04W	
Date of Resolution:	1-4-00
Test Director signature:	<i>[Signature]</i>
Cognizant Engineer signature:	<i>[Signature]</i> 1-4-00
Quality Assurance signature:	<i>[Signature]</i> 1-4-00
Tank Farm Operations signature:	<i>[Signature]</i> 1-4-00

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OPERATIONAL TEST PROCEDURE EXCEPTION RECORD

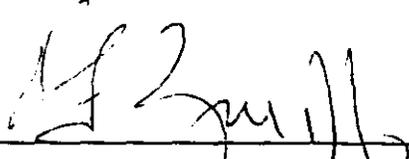
This page may be reproduced as necessary.

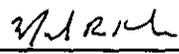
OTP step number: <i>5.1.6</i>	OTP Exception Log Number <i>2</i>
Description of Exception: <i>Air compressor did not shut off within the specified pressure range.</i>	
Resolution of Exception: <i>Trouble shoot the pressure switch. If necessary replace and recalibrate the pressure switch. Do not continue until the Air Compressor control is functioning properly.</i>	
Date of Resolution:	<i>1-4-00</i>
Test Director signature:	<i>[Signature]</i>
Cognizant Engineer signature:	<i>[Signature] 1-4-00</i>
Quality Assurance signature:	<i>[Signature] 1-4-00</i>
Tank Farm Operations signature:	<i>[Signature] 1-4-00</i>

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OPERATIONAL TEST PROCEDURE ACCEPTANCE RECORD

This Operational Test Procedure has been completed and the results, including red-line changes, exceptions, and exception resolutions, have been reviewed for compliance with the intent of the Purpose (Section 1.0). The test results are accepted by the undersigned:

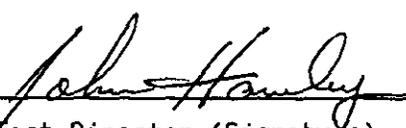
 W.F. ZURHOFF 1/12/00
Cognizant Engineer (Signature) (Print Name) Date

 M. R. KOCH 1/19/00
Engineering Manager (Signature) (Print Name) Date

 Mark Johnson 1-19-00
Tank Farm Operations (Signature) (Print Name) Date

 FRED A. ZAK 1/19/00
Safety (Signature) (Print Name) Date

 T.J. VOLKMAN 1/19/00
Quality Assurance (Signature) (Print Name) Date

 JOHN HAWLEY 1-19-00
Test Director (Signature) (Print Name) Date

Type	Document No.	Rev/Mod	Release Date	Page
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PROCEDURE HISTORY SIGNATURE SHEET

PCA Incorporated: WTF-97-113		<u>MOD</u>	<u>Q</u>
Procedure Signatures for OTP-200-004. R1		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-0390			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>R.L. Sharp</u>	<u>6/25/97</u>	
Shift Manager	<u>R. Malhan</u>	<u>6/13/97</u>	
QA Engineer	<u>M.C. Tipps</u>	<u>6/25/97</u>	
Shift Manager	<u>M.S. Garrett</u>	<u>6/25/97</u>	
Cog Engineer	<u>M.R. Koch</u>	<u>6/13/97</u>	
Acceptance Review	<u>D.C. Ashworth</u>	<u>6/26/97</u>	
Approval Authority	<u>D.J. Sauressiq</u>	<u>6/26/97</u>	
Pages Affected	Reason for Change	Summary of Change	
Step 2.8.1	Revert liberal interpretation of procedure steps.	Reword to specify sections which may be performed out of order.	
Various steps	Consistency with procedure standards.	Add Test Director signature and Date line.	
Step 5.11.5	Re-pagination of procedure caused reference to be incorrect.	Correct step number reference.	
Step 2.8.14	Clarify use for Faac. Group 2 Tanks.	Explain when section 5.12 is performed.	
Steps 4.2.7 and 4.2.8	Procedure writer's guide compliance	List specific value and breaker numbers.	
Various steps	Clarity	Add tolerance	
Step 5.11.4	Traceability for all uses of procedure	Add step to record JCS package number	
Page 82	Engineering verification	Add COG Manager signature	

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REFERENCE	OTP-200-004	A-19	12/01/99	82 of 100

PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

PCA Incorporated:		<u>NEW</u>	<u>SQ</u>
Procedure Signatures for OTP-200-004. R0		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>D. Dudley</u>	<u>4/8/97</u>	
Shift Manager	<u>D.J. Sauressiq</u>	<u>4/7/97</u>	
QA Engineer	<u>T.J. Volkman</u>	<u>5/22/97</u>	
Safety Engineer	<u>L.S. Krogsrud</u>	<u>5/20/97</u>	
Rad. Control Eng.	<u>J. Pieper</u>	<u>5/29/97</u>	
Cog Engineer	<u>M.R. Koch</u>	<u>4/7/97</u>	
Acceptance Review	<u>D.C. Ashworth</u>	<u>5/29/97</u>	
Approval Authority	<u>D.J. Sauressiq</u>	<u>5/28/97</u>	
Pages Affected	Reason for Change	Summary of Change	
All	Engineering Request	New Procedure	

Type	Document No.	Rev/Mod	Release Date	Page
REFERENCE	OTP-200-004	A-19	12/01/99	83 of 100

PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

PCA Incorporated: WTF-97-178		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-2		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-0390			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>S.A. Ham-Huebner</u>	<u>9/10/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/10/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/11/97</u>	
Approval Authority	<u>D.J. Sauressiq</u>	<u>9/11/97</u>	
Pages Affected	Reason for Change	Summary of Change	
62	Allow for specific package number entry.	Added work package entry line.	

PCA Incorporated: WTF-97-184		<u>MOD</u>	<u>Q</u>
Procedure Signatures for OTP-200-004. A-2		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-583			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>B.D. Foreman</u>	<u>9/11/97</u>	
QE/WTFQA	<u>M.C. Tipps</u>	<u>9/11/97</u>	
Mgr/Stab	<u>D.J. Sauressiq</u>	<u>9/11/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/11/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/11/97</u>	
Approval Authority	<u>D.J. Sauressiq</u>	<u>9/11/97</u>	
Pages Affected	Reason for Change	Summary of Change	
10 12,14 13,61 15 28 29,36 30 31 34,38,42,44,45,48,57,58, 61,64,65	Clarify for field use. Issuance of Standing Order controls. Some instruments require functional check only Clear alarms received on power up. Equipment improvement. Repeat of test in field not necessary or practicable. Tests entire loop. Intrinsic safety changes prompted wiring changes. Reviewed OTP against final software alarm messages. Corrected to match.	Specified when test equipment is shop only. Added FGM and intrinsic safety circuit power. Changed "CALIBR" to "CAL/FUNCTIONAL CHECK" Added alarm acknowledgement on power up. Allowed for use of new flowmeters. Qualify section as shop work only. Specify FGM test signal at beginning of loop. Correct thermocouple labels. Correct wording, punctuation, and spelling of alarm windows, and ordering of alarms.	

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

PCA Incorporated: WTF-97-186		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-3		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-583			
POSITION/ORG	DELEGATE	DATE	
NPO/Stab	<u>B. Foreman</u>	<u>9/15/97</u>	
SOM/WTFO	<u>Del Scott</u>	<u>9/16/97</u>	
Eng/Stab	<u>T.H. Nguyen</u>	<u>9/15/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/15/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/17/97</u>	
Approval Authority	<u>D.J. Sauressiq</u>	<u>9/15/97</u>	
Pages Affected	Reason for Change	Summary of Change	
12 (4.2.7) 18 (5.1.10.1) 20 (5.2.3-5.2.5) 30 (5.3.49)	Ensure closed configuration at start of OTP. Correct to match field. Regulator fluctuates with flow and may need to be readjusted. Changed to match field.	Added valves to checklist. Change LT to WFT. Changed order of steps. Allow regulator to be readjusted after flows established. Corrected terminal numbers	

PCA Incorporated: WTF-97-188		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-3		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-583			
POSITION/ORG	DELEGATE	DATE	
NPO/Stab	<u>B. Foreman</u>	<u>9/16/97</u>	
Eng/Stab	<u>T.H. Nguyen</u>	<u>9/16/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/16/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/17/97</u>	
Approval Authority	<u>D.J. Sauressiq</u>	<u>9/16/97</u>	
Pages Affected	Reason for Change	Summary of Change	
25 (5.3.21-22) 27 (5.3.33-34) 30 (5.3.49)	Allows for field configuration conditions. Allows for field configuration conditions. Clarified step.	Added ENSURE valve positions for instrument transmitters. Added ENSURE valve positions for instrument transmitters. Added remove FGM leads.	

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REFERENCE	OTP-200-004	A-19	12/01/99	85 of 100

PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

PCA Incorporated: WTF-97-189		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-4		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-0583			
POSITION/ORG	DELEGATE	DATE	
NPO/Stab	<u>B.A. Foreman</u>	<u>9/17/97</u>	
Eng/Stab	<u>T.H. Nguyen</u>	<u>9/17/97</u>	
SOM/WTF	<u>M. Garret</u>	<u>9/17/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/19/97</u>	
Approval Authority	<u>D.J. Sauressig</u>	<u>9/18/97</u>	
Pages Affected	Reason for Change	Summary of Change	
41, 45	Setpoint must be passed to witness change on DOV.	Change 6" to 7".	
43	Allowed to exit section correctly.	Added step to shut off pump.	
46	Added clarity.	Added tolerance.	
54	Generic procedure; correct for use on all skids.	Remove "A"	
60	Consistency with LD tests.	Change calibration to functional check.	

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Current Modification: A-5
 USQ Screening Number: TF-96-583
 Approval Designator: SQ
 PCA Incorporated: WTF-98-0123

POSITION/ORG	DELEGATE	DATE
NPO/STAB	<u>B.D. Foreman</u>	<u>4/17/98</u>
QAE/SST	<u>M.C. Tipps</u>	<u>4/20/98</u>
Safety/SST	<u>L.S. Krogsrud</u>	<u>4/20/98</u>
SOM/WTF	<u>D.W. Strasser</u>	<u>4/20/98</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>4/20/98</u>
Acceptance Review	<u>K.W. Johnson</u>	<u>4/22/98</u>
Approval Authority	<u>D. Scott</u>	<u>4/21/98</u>

Justification: Updated requirements and references. Made clarifications and corrected omissions.

Summary of Changes:

Corrected canceled references (2.4, 2.5); deleted allowance to perform sections out of order (2.8.2); added step explaining OCS steps during shop OTPs and field installation prerequisites, and relief from notifying CASS and control room for shop tests (2.8.15, 3.4, 5.11); removed thermocouple voltage source (4.1); added previously omitted valves to lineup (4.2.7); deleted leak detector functional sticker check (4.3); clarified switch position (5.1.5); added ENSURE to steps (5.1.10, 5.3, 5.7); added tolerances (5.3, 5.7, 5.8); specified analog signal interface (5.3.49, 5.3.56); allow use of pump to achieve high pressure (5.4, 5.5.15).

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: R0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-6 USQ Screening Number: TF-96-583 Rev 3 Approval Designator: SQ PCA Incorporated: WTF-98-0125		
POSITION/ORG	DELEGATE	DATE
NPO	<u>S. Ham-Huebner</u>	<u>4/24/98</u>
QAE/SST	<u>M.C. Tipps</u>	<u>4/24/98</u>
Safety	<u>D. Abramson</u>	<u>4/24/98</u>
Team Lead/Stab	<u>M. Johnson</u>	<u>4/23/98</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>4/23/98</u>
	<u>T. Nguyen</u>	<u>4/23/98</u>
Acceptance Review	<u>K.W. Johnson</u>	<u>4/27/98</u>
Approval Authority	<u>K.J. Freeman</u>	<u>4/24/98</u>
Justification: Corrections for typographical errors and equipment modifications.		
Summary of Changes: Changed "filed" to "field" (paragraph 2.8.12); added valves to lineup (step 4.2.7); added pressure indicator to calibration verification table (4.3); corrected valve number (5.1.10.3)		

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: R0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-7 USQ Screening Number: TF-98-0836 Approval Designator: SQ PCA Incorporated: WTF-98-0207		
POSITION/ORG	DELEGATE	DATE
NPO	<u>B.D. Foreman</u>	<u>8/20/98</u>
QAE/SST	<u>M.C. Tipps</u>	<u>8/20/98</u>
Safety	<u>L.S. Krogsrud</u>	<u>8/20/98</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>8/20/98</u>
Cognizant Engineer	<u>W.F. Zurhoff</u>	<u>8/20/98</u>
Acceptance Review	<u>M.F. Wahl</u>	<u>8/22/98</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>8/20/98</u>
Justification: Engineering and Operations request.		
Summary of Changes: Step 2.8.13 - Clarified that Section 5.12 is only applicable to A-101. Step 4.2.3 - Added "Jumper" to jet pump. Page 11 - added new step for verification that valves SALW-V-6035* and -6036* are open. Step 4.3 - added three pressure indicators to the table to ensure the indicators are calibrated prior to performing the OTP. 5.1.10.1 and 5.1.10.2 - reversed order of steps. 5.1.10.3 and 5.1.10.4 - reversed the order of steps. 5.3.9 - changed "range" to 9.5 to 10.5. 5.3.33 and 5.3.34 - reversed the order of steps.		

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: A0		
Release Date: 5/29/97		
USQ Screening Number:		
Approval Designator: SQ		
Current Modification: A-8		
USQ Screening Number: TF-98-0836, Rev. 1		
Approval Designator: N/A		
PCA Incorporated: WTF-98-0222		
POSITION/ORG	DELEGATE	DATE
NPO	<u>T.E. Brighton</u>	<u>9/14/98</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>9/14/98</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>9/14/98</u>
Acceptance Review	<u>S.L. Lindberg</u>	<u>9/15/98</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>9/14/98</u>
Justification: Change ensures the pump assembly is filled with water and primed before starting the pump. The pump was deprimed in the previous procedure section.		
Summary of Changes:		
pg. 37: Added new step 5.5.4 to include instructions to ensure the pump is primed prior to starting.		

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: A-0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-9 USQ Screening Number: TF-98-0836, Rev. 2 Approval Designator: Q PCA Incorporated: WTF-98-0274		
POSITION/ORG	DELEGATE	DATE
NPO/ISO	<u>B.D. Foreman</u>	<u>12/28/98</u>
QA	<u>T.J. Volkman</u>	<u>1/20/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>1/20/99</u>
Cognizant Engineer	<u>W.F. Zuroff</u>	<u>1/4/99</u>
Acceptance Review	<u>B.E. Raymond</u>	<u>1/21/99</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>1/21/99</u>
Justification: ISO operations update info.		
Summary of Changes: Page 3, Add PROCEDURE PERFORMER SIGNATURE SHEET and re-number. Step 2.4.1, Add recirculation flowmeter manual. Step 2.5.2, Delete Environmental Compliance Manual. Step 2.8.1, Change director to "Test Director." Step 2.8.5, Edit to continue different section. Step 2.8.8, Add "if necessary." Step 4.1, Add Control and Display Unit. Step 4.2.11, Add PROCEDURE PERFORMER SIGNATURE SHEET Note 5.0, Add PROCEDURE PERFORMER SIGNATURE SHEET Step 5.1.11.1, Add continuity check. Step 5.1.11.2, Add continuity check. Step 5.1.11.3, Add continuity check. Step 5.3.47, Add DTAM column to table. Step 5.3.63, Edit for thermocouple identifier. Step 5.3.65, Edit for thermocouple identifier. Step 5.4.13, Correct pressurizing typo. Step 5.4.31 - 5.4.43, Add recirculation flowmeter steps. Step 5.4.44 - 5.4.54, Add recirculation flush pressure transmitter steps. Step 5.8.6, 5.8.7, 5.8.12, 5.8.13, 5.8.18, 5.8.19, 5.8.25, 5.8.26, Capitalize and bold INITIAL. Step 5.11.6, Include FGM and dilution tank level. Add PROCEDURE PERFORMER SIGNATURE SHEET.		

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: A-0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-10 USQ Screening Number: TF-96-0390 Approval Designator: N/A PCA Incorporated: WTF-99-108		
POSITION/ORG	DELEGATE	DATE
NPO	<u>S.R. Davis</u>	<u>2/26/96</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>2/26/99</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>2/26/99</u>
Acceptance Review	<u>B.E. Raymond</u>	<u>3/1/99</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>2/26/99</u>
Justification: Clarification		
Summary of Changes: Note prior to step 5.4.26 and 5.3.43. Added ability to perform test in field.		

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REFERENCE	OTP-200-004	A-19	12/01/99	92 of 100

PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: A-0		
Release Date: 5/29/97		
USQ Screening Number:		
Approval Designator: SQ		
Current Modification: A-11		
USQ Screening Number: TF-98-0207, Rev 0		
Approval Designator: Q		
PCA Incorporated: WTF-99-128		
POSITION/ORG	DELEGATE	DATE
NCO	<u>S.R. Davis</u>	<u>3/11/99</u>
QA	<u>T. Volkman</u>	<u>3/11/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>3/11/99</u>
Cog Engineer	<u>W.F. Zuroff</u>	<u>3/11/99</u>
Acceptance Review	<u>B.E. Raymond</u>	<u>3/12/99</u>
Approval Authority	<u>Q. Ravencraft</u>	<u>3/11/99</u>
Justification: Engineering Request		
Summary of Changes:		
Page 38, step 5.4.40. added a 30 second time delay for the required action to occur.		
Page 42, step 5.5.8. Added note addressing when gage SALW-PI-6005* is to be read.		
Page 45, step 5.5.9. Added DTAM to the action statement.		
Page 72, step 5.11.18.6. New step for verification.		

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OPERATIONAL TEST PROCEDURE FOR 6000 SERIES PUMPING AND INSTRUMENTATION CONTROL SKIDS

U-102 OTP WAS STARTED AS REV A-19. REVISION 20 WAS ISSUED TO COMPLETE SECTION 5.12 FOR CGM TESTING. SECTION 5.12 PERFORMED ONLY.

4.4, 4.5

Last Full Revision: A-0
 Release Date: 5/29/97
 USQ Screening Number:
 Approval Designator: SQ

Current Modification: A-20
 USQ Screening Number: TF-99-0943, Rev 1
 Approval Designator: SQ
 PCA Incorporated: WTF-2000-027

NOTE PREREQUISITES. 4.2.11, 4.3, WHICH WERE SPECIFIC TO CGM.

POSITION/ORG	DELEGATE	DATE
NCO/SALTWELLS	<u>D. O. Dudley</u>	<u>01/11/00</u>
QAE	<u>T. J. Volkman</u>	<u>01/11/00</u>
SAFETY	<u>F. A. Zak</u>	<u>01/11/00</u>
SM/IS	<u>D. J. Saueressig</u>	<u>01/11/00</u>
SR ENG/ISE	<u>T. M. Horner</u>	<u>01/11/2000</u>
Acceptance Review	<u>D. D. Barkost</u>	<u>01/11/2000</u>
Approval Authority	<u>D. J. Saueressig</u>	<u>01/11/00</u>

Justification: Engineering Request

Summary of Changes:
 Page 8, 2.8.14 Add new statement for Cognizant Engineer to define applicable sections of procedure to perform.
 Page 9, 3.5 Add new statement for Cognizant Engineer to indicate applicable section numbers.
 Page 10, 4.1 Add new bullet for calibration gas.
 Page 13, 4.3 Add SALW-CGT-6001* to Table.
 Page 46-49, Section 5.6 Add section to test CGM.
 Sections 5.7 thru 5.13 Update section number references in headings and steps.

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OPERATIONAL TEST PROCEDURE ACCEPTANCE RECORD 85

PROCEDURE HISTORY SIGNATURE SHEET 86

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1.0 PURPOSE

This Operational Test Procedure (OTP) will test and verify that the equipment required for Saltwell pumping of specified tank meets the specified Functional Requirements, Safety Requirements, Radiological Requirements, Operations Requirements, and provides a record of the functional test results. The systems/functions that will be tested are listed in the Scope section that follows.

2.0 INFORMATION

2.1 SCOPE

The following systems will be tested by this Operational Test Procedure:

- Process Instrumentation and Control System Electrical and Process Air System
- Process Instrumentation and Control System Water Drip System
- Weight Factor and Specific Gravity System
- Diaphragm Operated Valve Automatic and Manual Operation
- Jet pump Flowmeter Operation
- Water Tank Level Transmitter
- Jet pump Heat Trace
- Leak Detection Interlock
- Jet Pump Valving Interlock
- Flammable/Combustible Gas Monitor Interface
- Exhauster Interface
- Receiver Tank Interlocks

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2.2 TERMS AND DEFINITIONS

- 2.2.1 LCV - Level Control Valve
- 2.2.2 GPM - Gallons Per Minute
- 2.2.3 IA - Instrument Air
- 2.2.4 LDE - Leak Detection Element
- 2.2.5 OCS - Operator Control Station
- 2.2.6 PRV - Pressure Relief Valve
- 2.2.7 SGI - Specific Gravty Indicator
- 2.2.8 WFIE - Weight Factor Instrument Enclosure

2.3 RESPONSIBILITIES

- 2.3.1 Quality Control is responsible for:
 - Witnessing and signing steps as identified in Operational Test Procedure.
 - Verifying that the procedure sections were performed correctly.
- 2.3.2 Test Director is responsible for:
 - Providing the equipment found in step 4.1 of this procedure.
 - Recording equipment status and data per this procedure.
 - Conducting pre-job planning meeting as necessary.
 - Conducting pre-job system walkdown.
 - Scheduling/rescheduling of the test as required.
 - Recording data, exceptions and other notes as required.
- 2.3.3 Engineering personnel are responsible for:
 - Providing technical support during testing.
 - Providing programming support during testing.
 - Forcing data in Programmable Logic Controller program during testing.

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2.3 RESPONSIBILITIES (Cont.)

2.3.4 Maintenance personnel are responsible for:

- Providing assistance during testing.

2.3.5 Operations personnel are responsible for:

- Performing valving manipulations on Pumping and Instrumentation Control Skid Systems and Test equipment.
- Starting, stopping, and controlling equipment related to Saltwell operations.
- Controlling and monitoring parameters from the Data Table Access Module, or Operator Control Station.

2.3.6 Health Physics personnel are responsible for:

- Ensuring RWP requirements are met during field portion of testing.
- Surveying tools and equipment out of the Farm.
- Providing guidance to craft personnel in maintaining good health physics practices.

2.4 REFERENCES

2.4.1 The following documents were used to write or are referenced in this procedure:

- HNF-PRO-079, "PRE-JOB SAFETY PLANNING"
- WHC-IP-1026 APPX L, "ENGINEERING PRACTICES GUIDELINES"
- H-14-100538 Rev 0, SALTWELL JET PUMP
- H-14-100542 Rev 0, SALTWELL JUMPER ASSEMBLY
- H-2-85621 Rev 0, INSTRUMENT AIR AND WATER SYSTEM DETAILS
- H-2-85625 Rev 0, INSTRUMENTATION WEIGHT FACTOR ENCLOSURE ARRANGEMENT
- H-2-85626 Rev 0, PUMPING AND INSTRUMENTATION CONTROL SKID
- H-14-023960 Rev 0, SALTWELL CONTROL EQUIPMENT (SALW) O&M SYSTEM P&ID
- JOHNSON YOKOGAWA ADMAG AM SERIES VENDOR INFORMATION
- FOXBORO 823 DP SERIES ELECTRONIC DIFFERENTIAL PRESSURE CELL VENDOR INFORMATION
- TO-060-085, OPERATE THE PORTABLE 500 CFM EXHAUSTER FOR TANK 241-A-101 SALTWELL PUMPING
- Controlotron System 990 Uniflow Universal Clamp-On NEMA Flowmeter Vendor Field Manual

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2.5 SAFETY

- Warning - 120 VAC energized circuits and leads will be encountered during test if access to Programmable Logic Controller input/output terminals or serial communication port is required at any time. Observe appropriate electrical precautions as directed by HNF-PRO-088, Electrical Work Safety.
- Warning - Circuit boards are energized. Terminal strips in the Instrument Enclosure have 120 VAC exposed leads. Use appropriate electrical precautions as directed by HNF-PRO-088, Electrical Work Safety.
- Warning - Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical precautions. Comply with HNF-PRO-088, Electrical Work Safety.

2.5.1 Work will be performed in this Operational Test Procedure on energized circuits.

2.5.2 The following administrative procedures control work performed in this procedure:

- Building Emergency Plan, WHC-IP-0263-TF
- Industrial Hygiene Manual, WHC-CM-4-40
- HNF-PRO-074, Safety Responsibilities
- Tank Farm Health and Safety Plan (HASP), WHC-SD-WM-HSP-002

2.6 RADIATION AND CONTAMINATION CONTROL

2.6.1 Health Physics Technician assistance is required in accordance with Radiation Work Permit.

2.6.2 The following administrative procedures control work performed in this procedure:

- Hanford Site Radiological Control Manual (HSRCM)

2.6.3 The test shall be STOPPED and the Shift Manager immediately notified, if radiation levels significantly increase as determined by a radiation monitor.

2.6.4 Work in Radiological Areas will be performed using a Radiation Work Permit, following review by Radiological Control per the ALARA program (HNF-IP-0842, Vol 7, Section 1.1).

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2.7 QUALITY ASSURANCE

Ensure that the test(s) are performed per the procedure. The Quality Control Inspector shall sign and date each procedure section verifying the data obtained, and verifying that the procedure section has been performed correctly.

2.8 GENERAL INFORMATION

- 2.8.1 After completion of Sections 5.1 and 5.2, subsequent sections may be performed out of order, as directed by the Test Director.
- 2.8.2 All entries recorded in this procedure shall be made in black ink.
- 2.8.3 Editorial changes required to this Operational Test Procedure may be made per the Procedure Change Authorization method by the Test Director and Cognizant Engineer as long as they do not impact personnel safety, or operational facility safety function or performance; and will not compromise or influence the test data.
- 2.8.4 Any non-conformance of the instrumentation or unexpected results during testing shall be logged in the Operational Test Procedure EXCEPTION LOG and thoroughly documented on a Operational Test Procedure EXCEPTION RECORD.
- 2.8.5 Do not perform any part of this procedure on faulty equipment. If faulty equipment is discovered, STOP the execution of that section of this procedure and resolve the problem and/or continue with a different section.
- 2.8.6 If the performance of this procedure is suspended for any reason, ensure the equipment is left in a safe and de-energized state as necessary.
- 2.8.7 This procedure DOES NOT contain any separate data/verification sheets. Verification of procedural steps and validity of the data is incorporated into the specific section.
- 2.8.8 If performance of this procedure is suspended for any reason and if necessary, ensure the requirements of the Lock and Tag system are met before leaving the test site.
- 2.8.9 A Job Hazard Analysis form will be used in conjunction with the pre-job safety meeting form when any unusual hazards are identified. The PRE-JOB MEETING FORM will be used to document all attendees.

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2.8 GENERAL INFORMATION (Cont.)

- 2.8.10 Tests interrupted due to work breaks, personnel support, faulty equipment or other reasons may require performing equipment manipulations such as valving, power down or alarm acknowledgement in order to leave the equipment in a safe condition. The Test Director may deviate from test steps in order to assure safe equipment configuration. Configuration shall be noted so the equipment may be restored at the resumption of testing. Shift Management shall be kept apprised of test status and equipment condition.
- 2.8.11 Acknowledge applicable alarms per Test Director.
- 2.8.12 Sections 5.1 through 5.9 of this procedure are generally performed in the shop prior to equipment placement in the field. Daily release requirements through the Shift office must be met for field portions of testing.
- 2.8.13 In some instances, such as Emergency Pumping Skid testing, the Operator Control Station will be untested or not required. Test sections 5.7 and 5.11 will not be performed. Blanks representing OCS data shall be completed with an "NA" in other test sections.
- 2.8.14 If this test procedure is to be used to verify operability after major corrective maintenance on either the Pumping and Instrumentation Control Skid (PIC Skid) or saltwell pump/jumper assembly, the Cognizant Engineer shall define the applicable sections of the procedure. Blanks in all other test sections shall be completed with an "N/A"

2.9 LIMITS AND PRECAUTIONS

DO NOT perform any tank intrusive work without the express authorization of the Shift Manager.

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3.0 RECORDS

- 3.1 The completed Working Copy of this procedure, including all exception logs and exception records generated by this procedure, will be kept as permanent records.
- 3.2 This procedure is designed to be re-usable for many skid installations. Each skid will replace the asterisk (*) in device names used throughout this procedure.

3.3 RECORD the following information for this procedure:

Tank Number: _____
 Skid Designator: _____

3.4 RECORD the following information or "NA" if an Operator Control Station is not tested.

Operator Control Station Location (building number): _____

3.5 IF the procedure is to be used for post-maintenance testing, Cognizant Engineer RECORD applicable section numbers. "N/A" sections which will NOT be used.

____ 5.1 ____ 5.2 ____ 5.3 ____ 5.4 ____ 5.5 ____ 5.6
 ____ 5.7 ____ 5.8 ____ 5.9 ____ 5.10 ____ 5.11 ____ 5.12
 ____ 5.13

4.0 PREREQUISITES

NOTE - Equipment shall be available before the step associated with that piece of equipment.

4.1 The following supplies shall be available at the work place:

- Volt/ohm meter (VOM): Portable, 0-600 volts ac, ± 2% accuracy.
 Calibration No. _____ Expiration Date _____ QC _____
- Transmation current (milliamp) simulator or equivalent
 Calibration No. _____ Expiration Date _____ QC _____
- Manometer - minimum range 0-50" water gauge. Must have a read out of variable test pressure.
 Calibration No. _____ Expiration Date _____ QC _____
- Manometer - minimum range 0-50" water gauge. Must have a read out of variable test pressure.
 Calibration No. _____ Expiration Date _____ QC _____

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4.0 PREREQUISITES (Cont.)

- Jumper Test Assembly PI-2 (suction) pressure gauge (Required for shop run-ins only - NA lines for field only OTPs)

Calibration No. _____ Expiration Date _____ QC _____

- Jumper Test Assembly PI-1 (discharge) pressure gauge (Required for shop run-ins only - NA lines for field only OTPs)

Calibration No. _____ Expiration Date _____ QC _____

- Flowmeter Calibrator (Required for Brooks flowmeters only - NA lines for skids with Yokogawa flowmeters)

Calibration No. _____ Expiration Date _____ QC _____

N/A

- Calibration gas - methane 1.5% in air (30% Lower Flammability Limit) (Required for Combustible Gas Monitors - NA lines for Flammable Gas Monitors)

Gas Bottle Lot No. 93629 Concentration 1.5 % Methane QC KW

1-18-00

- Saltwell Jet pump Jumper (see H-14-100725 Sheet 18)
- Rotameter or Flowmeter
- Jumper Test Assembly
- 2 way radios for communication between Tank Farm and local control room
- 480V 3 Phase Power Source
- Controlotron 995T Control and Display Unit

NOTE - Test sections may commence prior to assembly of all test equipment. Test Director is responsible to assure all equipment necessary for a given section is available.

4.2 The following conditions must be met before this test may commence:

- 4.2.1 The Jet Pump Jumper and Jumper assembly have been placed on the pump recirculation apparatus.
- 4.2.2 The Pumping and Instrumentation Control Skid water tank and run-in tank have been adequately filled for testing.
- 4.2.3 The Jet Pump Jumper AND Jumper Assembly have been electrically AND pneumatically connected to the Pumping and Instrumentation Control Skid.

N/A

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4.0 PREREQUISITES (Cont.)

- 4.2.4 A pre-job safety meeting has been held before performing this procedure in accordance with WHC-IP-0842, Vol V Section 4.1. PRE-JOB SAFETY MEETING FORM.

- 4.2.5 The Pumping and Instrumentation Control Skid has been grounded in preparation for shop testing.

- 4.2.6 Test gauges AND rotameter have been installed in correct locations as indicated by the Test Director.

- 4.2.7 Ensure the following Pumping and Instrumentation Control Skid Valves are OPEN prior to starting this OTP
___ SALW-V-6035* (equalizing) ___ SALW-V-6036* (equaling)

- 4.2.8 ENSURE the following Pumping and Instrumentation Control Skid valves are CLOSED prior to starting this Operational Test Procedure:

___ SALW-V-6034*	___ SALW-V-6026*	___ SALW-V-6001*
___ SALW-V-6004*	___ SALW-V-6002*	___ SALW-V-6003*
___ SALW-V-6021*	___ SALW-V-6020*	___ SALW-V-6036* (hi)
___ SALW-V-6036* (low)	___ SALW-V-6035* (hi)	___ SALW-V-6025*
___ SALW-V-6035* (low)	___ SALW-V-6019*	___ SALW-V-6029*
___ SALW-V-6027*	___ SALW-V-6028*	___ SALW-V-6032*
___ SALW-V-6031*	___ SALW-V-6030*	___ SALW-V-6016*
___ SALW-V-6018*	___ SALW-V-6017*	___ SALW-V-6013*
___ SALW-V-6015*	___ SALW-V-6014*	___ SALW-V-6012*
___ SALW-V-6009*	___ SALW-V-6011*	___ SALW-V-6005*
___ SALW-V-6006*	___ SALW-V-6007*	___ SALW-V-6037*
___ SALW-V-6044*	___ SALW-V-6046*	___ SALW-V-6047*
___ SALW-V-6048*	___ SALW-V-6049*	
___ SALW-V-6043*		

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4.0 PREREQUISITES (Cont.)

4.2.9 ENSURE the following Pumping and Instrumentation Control Skid circuit disconnects and breakers are OPEN (OFF) prior to starting this Operational Test Procedure. Refer to H-2-85327, Sheet 7 for circuit breakers.

- SALW-DS-6002* SALW-DS-6003* SALW-DS-6004*
- SALW-DS-6005*

NOTE - The following breakers are located in SALW-DP-6001*.

- Breaker "MAIN" Breaker 2
- Breaker 1 Breaker 4
- Breaker 3 Breaker 6
- Breaker 5 Breaker 8
- Breaker 7 Breaker 10
- Breaker 9 Breaker 12
- Breaker 11 Breaker 14
- Breaker 13

4.2.10 ~~4/11~~ A printed copy of Ladder Logic and Alarm Table for the Pump Instrumentation and Control Skid is available at the work site. Copies may be kept outside of Radiological areas until necessary.

4.2.11 All personnel initialling or signing this procedure must also enter signature/initials on the PROCEDURE PERFORMER SIGNATURE SHEET.

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4.0 PREREQUISITES (Cont.)

NOTE - Verification of instrument calibration must be performed before the step associated with that instrument.

4.3 Verify the current calibration. Record the calibration date and calibration due date on the table below.

INSTRUMENT	CALIBR/FUNCT CHECK DATE	NEXT DUE DATE
SALW-PS-6004*		
SALW-WFT-6002*		
SALW-LT-6003*		
SALW-SGT-6001*		
SALW-CONV-6001*		
SALW-FQIT-6001*		
SALW-PI-6006*		
SALW-PI-6001*		
SALW-PI-6005*		
SALW-FI-6001*		
SALW-PI-6002*		
SALW-PI-6003*		
SALW-PI-6004*		
SALW-PI-6007*		
SALW-PI-6008*		
SALW-CGT-6001* (IF APPLICABLE)	1-18-00	2-18-00

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5.0 PROCEDURE

NOTE - This Operational Test Procedure will be used for more than one skid. An asterisk (*) is used to identify the skid LETTER.

NOTE - All personnel performing this procedure, who will be initialing and signing the procedure, shall enter their printed name, signature and initials on the PROCEDURE PERFORMER SIGNATURE SHEET.

5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP

5.1.1 ENERGIZE the Pumping and Instrumentation Control Skid by CLOSING the following DISCONNECT SWITCHES in the order found below:

DISCONNECT SWITCH	ENERGIZED (✓)
SALW-DS-6002*	
SALW-DS-6003*	
SALW-DS-6004*	
SALW-DS-6005*	

Handwritten initials

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP (CONT.)

NOTE - The following circuit breakers are located in SALW-DP-6001* "SALW SKID DIST PNL".

5.1.2 ENERGIZE the Pumping and Instrumentation Control Skid by CLOSING the following Circuit Breakers in the order found below:

DISCONNECT SWITCH	ENERGIZED (✓)
"MAIN"	
7, (WEIGHT FACTOR INSTRUMENT ENCLOSURE)	
3, (LEAK DETECTION/HEAT TRACE)	
8, (WATER TANK HEATER)	
5, (INSTRUMENT ENCLOSURE [PLC])	
4, (AIR COMPRESSOR CABINET HEATER & [1] RECEPTACLE)	
9, (RECEPTACLE)	
11, (FGM PUMP AND HEATER)(PIT)(IF APPLICABLE)	
6, (INTRINSICALLY SAFE PANEL)	
10, (HEAT TRACE FOR DIPTUBES AND IA LINE, HEAT TRACE SAMPLE/RETURN)	
1, (FGM PUMP AND HEATER)(DOME)(IF APPLICABLE)	
2, (HEAT TRACE SAMPLE/RETURN)(DOME)	
12, (INSTR CABINET AC AND HEATER RCPT.)	
13, (FGM HEATER TRACE) (DOME)(IF APPLICABLE)	
14, (FGM HEATER TRACE) (PIT)(IF APPLICABLE)	

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP (CONT.)

5.1.8 VALVE IN air to SALW-PNL-6002* (WFIE Cabinet) by PERFORMING the following (Refer to H-14-023960 Sheet 1):

- 5.1.8.1 SLOWLY OPEN valve SALW-V-6026* (located in the Air Compressor Cabinet).
- 5.1.8.2 SLOWLY OPEN valve SALW-V-6001*, located in the bottom of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.3 ADJUST pressure control valve SALW-PCV-6001* in SALW-PNL-6002* (WFIE Cabinet) to 20 psi (± 2.5 psi) as indicated by the pressure gauge located on the face of the valve.
- 5.1.8.4 SLOWLY OPEN valve SALW-V-6004*, located in the middle of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.5 SLOWLY OPEN valve SALW-V-6003*, located in the middle of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.6 SLOWLY OPEN valve SALW-V-6005*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.7 SLOWLY OPEN valve SALW-V-6006*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet).
- 5.1.8.8 SLOWLY OPEN valve SALW-V-6007*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet).

H/A

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER-UP (CONT.)

5.1.8.9 SLOWLY OPEN valve SALW-V-6002*, located in the bottom left of SALW-PNL-6002* (WFIE Cabinet).

5.1.8.10 SLOWLY OPEN valve SALW-V-6020*, located in the middle left of SALW-PNL-6002* (WFIE Cabinet).

5.1.8.11 SLOWLY OPEN valve SALW-V-6021*, located in the middle left of SALW-PNL-6002* (WFIE Cabinet).

5.1.8.12 SLOWLY OPEN valve SALW-V-6019*, located in the middle left of SALW-PNL-6002* (WFIE Cabinet).

5.1.9 ADJUST the air flow through the diptubes by PERFORMING the following:

5.1.9.1 ADJUST flow to dip tubes to 1.5 CFH (\pm 0.5 CFH) as indicated by SALW-FIV-6002*.

Test Director Signature Date

5.1.9.2 ADJUST flow to dip tubes to 1.5 CFH (\pm 0.5 CFH) as indicated by SALW-FIV-6003*.

Test Director Signature Date

5.1.9.3 ADJUST flow to dip tubes to 1.5 CFH (\pm 0.5 CFH) as indicated by SALW-FIV-6004*.

Test Director Signature Date

5.1.9.4 ENSURE flows obtained in steps are all within 0.25 cfh of each other.

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER UP (CONT.)

5.1.10 VALVE IN SALW-WFT-6002* AND SALW-SGT-6001* by PERFORMING the following:

5.1.10.1 ENSURE the LOW side AND HIGH side isolation valves, located on SALW-V-6036* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.

5.1.10.2 ENSURE SALW-WFT-6002* EQUALIZING valve on valve manifold SALW-V-6036* in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.

5.1.10.3 ENSURE the LOW side AND the HIGH side isolation valves, located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.

5.1.10.4 ENSURE SALW-SGT-6001* equalizing valve on valve manifold SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.

W/A

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5.1 PUMPING AND INSTRUMENTATION CONTROL SKID ELECTRICAL AND PROCESS AIR POWER UP (CONT.)

5.1.11 CONFIRM that a signal is present between SALW-PNL-6002* (WFIE Cabinet) Instruments and the Programmable Logic Controller by PERFORMING the following:

5.1.11.1 VERIFY Weight Factor is approximately 0.0" (± 0.5 ") Water Gauge as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

Test Director Signature Date

5.1.11.2 VERIFY Specific Gravity is approximately 0.0" (± 0.5 ") Water Gauge as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

Test Director Signature Date

5.1.11.3 VERIFY Flow rate is approximately 0.0 (± 0.5 gpm) Gallons Per Minute as indicated by Data Table Access Module. If DTAM displays "<<<<" indicating less than zero, verify continuity between the transmitter and the Programmable Logic Controller and proceed with the test.

Test Director Signature Date

5.1.12 Test Director VERIFY that section 5.1 is complete by SIGNING below.

Test Director Signature Date

5.1.13 Quality Control Inspector VERIFY that section 5.1 is complete by signing below.

Quality Control Inspector Signature Date

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5.2 PUMPING AND INSTRUMENTATION CONTROL SKID WATER DRIP SYSTEM

NOTE - If Diptubes are not installed in test area, process air and drip water will be expelled from the side of SALW-PNL-6002* (WFIE Cabinet).

5.2.1 If necessary, ATTACH temporary portable hose from diptube outlet to high and medium diptubes from the bottom of the weight factor enclosure, (from valves SALW-V-6005* and SALW-V-6007*).

- ROUTE the flexible hose to a suitable drain AND SECURE.

5.2.2 ACTUATE the Dip Tube Drip system by SLOWLY OPENING the following valves:

VALVES	OPEN (✓)
SALW-V-6018* located in the bottom right of SALW-PNL-6002* (WFIE Cabinet)	<input type="checkbox"/>
SALW-V-6016* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	<input type="checkbox"/>
SALW-V-6013* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	<input type="checkbox"/>
SALW-V-6008* located in the middle of SALW-PNL-6002* (WFIE Cabinet)	<input type="checkbox"/>

CAUTION

Relief valve (SALW-PRV-6001*) will actuate and relieve pressure at 25 psig.

5.2.3 CAREFULLY ADJUST Pressure Regulator SALW-PCV-6005*, located in the bottom of SALW-PNL-6002* (WFIE Cabinet) to 20 psig (± 2 psig) as indicated by SALW-PI-6001* in the middle of SALW-PNL-6002* (WFIE Cabinet).

5.2.4 ADJUST valve SALW-V-6014* to allow APPROXIMATELY 2 drops/second as indicated by sight glass SALW-FG-6001* (± 1 drop/second).

5.2.5 ADJUST valve SALW-V-6015* to allow APPROXIMATELY 2 drops/second as indicated by sight glass SALW-FG-6002* (± 1 drop/second).

W/A

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS**

WATER TANK LEVEL

5.3.1 **PREPARE** the Water Tank Level Transmitter SALW-LT-6003* for test signals by **PERFORMING** the following:

5.3.1.1 **ENSURE** valve SALW-V-6029*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL), is **CLOSED**.

5.3.1.2 **ENSURE** valve SALW-V-6031*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL), is **CLOSED**.

5.3.2 **CONNECT** 0-50" test Manometer pressure source to the **HIGH PRESSURE** vent/test port of the level transmitter SALW-LT-6003*.

5.3.3 **VERIFY** the **LOW PRESSURE** vent/test port of the level transmitter SALW-LT-6003* is **OPEN** to atmosphere.

5.3.4 **ADJUST** the test Manometer on the SALW-LT-6003* to a pressure of 31" Water Gauge (± 1 ").

5.3.5 **RECORD** the following:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE: 28.5 TO 33.5 Inches)

W/A

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

NOTE - Alarm should annunciate between 11.7" and 12.7" Water Gauge.

5.3.6 VERY SLOWLY DECREASE the Level Transmitter test Manometer pressure UNTIL the Data Table Access Module "PIC WATER LEVEL LOW" alarm (alarm 9) annunciates.

5.3.7 VERIFY that the Water Tank Low Level alarm is displayed at the Operator Control Station.

5.3.8 ACKNOWLEDGE the Water Tank Low Level alarm at the Operator Control Station and at the Data Table Access Module.

5.3.9 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the water tank level readings below:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE 11.7 to 12.7 inches Water Gauge)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE 11.7 to 12.7 inches Water Gauge)

5.3.10 SLOWLY INCREASE the Level Transmitter test Manometer pressure to 15.5" Water Gauge.

5.3.11 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the water tank level readings below:

OPERATOR CONTROL STATION WATER TANK LEVEL (RANGE: 14.5 to 16.5 inches)	DATA TABLE ACCESS MODULE WATER TANK LEVEL (RANGE 14.5 to 16.5 inches)

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

5.3.12 VERIFY that the Water Tank Low Level alarm CLEARS at the Operator Control Station.

5.3.13 REMOVE the test manometer from the SALW-LT-6003* high pressure vent/test port, AND RE-INSTALL vent plugs.

5.3.14 RESTORE the Water Tank Level Transmitter SALW-LT-6003* by PERFORMING the following:

5.3.14.1 OPEN valve SALW-V-6029*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL).

5.3.14.2 OPEN valve SALW-V-6031*, located in the bottom of SALW-PNL-6003* (WATER TANK ENCL).

W/A

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

WEIGHT FACTOR TEST

- 5.3.15 VERIFY that NO Programmable Logic Controller input signals are FORCED and that the forcing function is DISABLED.
- 5.3.16 CONNECT the 0-500" Water Gauge test Manometer pressure source to the HIGH PRESSURE dip tube on the side of the "WFIE Cabinet".
- 5.3.17 ENSURE SALW-V-6001* is CLOSED.
- 5.3.18 ENSURE SALW-V-6005* is OPEN.
- 5.3.19 ENSURE SALW-V-6006* is OPEN.
- 5.3.20 ENSURE adjustment valves on SALW-FIV-6002*, SALW-FIV-6003*, SALW-FIV-6004* are CLOSED.
- 5.3.21 ENSURE SALW-WFT-6002* EQUALIZING valve located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet) is CLOSED.
- 5.3.22 ENSURE the LOW side and HIGH side isolation valves, located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.

W/A

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

5.3.23 SET the test Manometer to 125" Water Gauge.

5.3.24 OBSERVE Operator Control Station and Data Table Access Module AND RECORD the Weight Factor on the table below.

OPERATOR CONTROL STATION WEIGHT FACTOR READING (RANGE 120 to 130 inches)	DATA TABLE ACCESS MODULE WEIGHT FACTOR READING (RANGE 120 to 130 inches)

5.3.25 BLEED off pressure from the manometer.

5.3.26 DISCONNECT the 0-500" test Manometer pressure source.

5.3.27 CLOSE SALW-V-6006*.

5.3.28 OPEN SALW-WFT-6002* equalizing valve, located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet).

5.3.29 CLOSE the LOW side and HIGH side isolation valves, located on SALW-V-6036* 3-Valve Manifold in cabinet SALW-PNL-6002* (WFIE Cabinet).

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

SPECIFIC GRAVITY TEST

NOTE - A mock signal to the specific gravity transmitter is required to keep a low saltwell level alarm from preventing testing of other instrumentation.

- 5.3.30 CONNECT the 0-50" Water Gauge test Manometer pressure source to the HIGH PRESSURE dip tube.
- 5.3.31 ENSURE SALW-V-6007* is OPEN.
- 5.3.32 ENSURE SALW-V-6005* is OPEN.
- 5.3.33 ENSURE the LOW side and the HIGH side isolation valves, located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet) are OPEN.
- 5.3.34 CLOSE the Specific Gravity Transmitter equalizing valve located on SALW-V-6035* in cabinet SALW-PNL-6002* (WFIE Cabinet).
- 5.3.35 SET the test Manometer to 5" Water Gauge (± 0.3 ").
- 5.3.36 OBSERVE Operator Control Station and Data Table Access Module AND RECORD the Specific Gravity reading on the table below.

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 4.6 to 5.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 4.65 to 5.35 inches)

R/A

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

FLOW METER TEST

5.3.37 IF necessary to configure the flowmeter, **UNPLUG** the power cord to the SALW-FQIT-6001* (SUPERNATANT FLOW XMIT), located in cabinet SALW-PNL-6002* (WFIE Cabinet).

5.3.38 IF a Brooks flowmeter is used, **CONFIGURE** SALW-FQIT-6001*, located in cabinet SALW-PNL-6002* (WFIE Cabinet), to receive signals from a hand held calibrator.

5.3.39 **ENSURE** SALW-FQIT-6001* is powered and configured for simulated flow signals.

5.3.40 **SIMULATE** a flow signal of 2.0 gpm with the hand held calibrator, or from flowmeter face plate.

5.3.41 **VERIFY** the SALW-FQIT-6001* transmitter is operating properly by **RECORDING** the following:

OPERATOR CONTROL STATION SUPERNATANT FLOW (RANGE: 1.8 to 2.2 GPM)	DATA TABLE ACCESS MODULE SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 GPM)	SUPERNATANT FLOW XMIT SUPERNATANT FLOW (RANGE: 1.8 TO 2.2 GPM)

5.3.42 ***RESTORE** the SALW-FQIT-6001* (SUPERNATANT FLOW TRANSMITTER) to its original configuration.

SLA

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

NOTE - This test section only performed when jet pump jumper and pump are physically mated in the shop on the run-in stand or in the field when run in-stand is available.

DISCHARGE PRESSURE TEST

5.3.43 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.

5.3.44 PLACE JR-1 valve in the PROCESS position.

5.3.45 At the discretion of the Test Director, INSTALL temporary interlock jumpers, OR INITIATE a software force on pump permissive interlocks for equipment not installed or out of service.

5.3.46 USING the Data Table Access Module, START the Jet Pump.

5.3.47 RECORD the following pressures on the table below:

SALW-PI-6012* JET PUMP SUCTION PRESSURE	TEST GAUGE PI-1	DTAM DISCHARGE PRESSURE	SALW-PI-6011* JET PUMP DISCHARGE PRESSURE	TEST GAUGE PI-2

5.3.48 Using the Data Table Access Module, STOP the Jet Pump.

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)

PIT FLAMMABLE/COMBUSTIBLE GAS MONITOR TEST

5.3.49 CONNECT a current source to model 4.0 FGM TB2 terminals 15(+) and 16(-) OR model 4.46 FGM wires 501(+) and 502(-) at PLC-A0, located in the pit flammable gas monitor electrical cabinet OR in the PICS Instrument Enclosure, PLC MODULE 1, IN 0(+) and IN 0(-).

5.3.50 SET current source to 4 mA (\pm 0.25 mA).

5.3.51 RECORD the Data Table Access Module Flammable Gas DISPLAY on the "Pit FGM/CGM Input/Output Table" below.

5.3.52 SET current source to 10 mA (\pm 0.25 mA).

5.3.53 RECORD the Data Table Access Module Flammable Gas display on the "Pit FGM/CGM Input/Output Table" below.

5.3.54 SET current source to 20 mA (\pm 0.25 mA).

5.3.55 RECORD the Data Table Access Module Flammable Gas display on the "Pit FGM/CGM Input/Output Table" below.

Pit FGM/CGM Input/Output Table	
Input (mA)	Output (as displayed on Data Table Access Module)
4	
10	
20	

5.3.56 DISCONNECT the current source, AND if necessary RESTORE loop intercepted in step 5.3.49 (located in pit FGM).

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

NOTE - This test section only performed if a dome space FGM is installed.

DOMESPACE FLAMMABLE GAS MONITOR TEST

5.3.57 CONNECT a current source to model 4.0 FGM TB2 terminals 15(+) and 16(-) or model 4.46 FGM wires 501(+) and 502(-) at PLC-A0, located in the dome space flammable gas monitor electrical cabinet or in the PICS Instrument Enclosure, PLC MODULE 6, IN 0(+) and IN 0(-).

5.3.58 SET current source to 4 mA (± 0.25 mA)

5.3.59 RECORD the Data Table Access Module Flammable Gas DISPLAY on the "Dome Space FGM Input/Output Table" below.

5.3.60 SET current source to 10 mA (± 0.25 mA).

5.3.61 RECORD the Data Table Access Module Flammable Gas display on the "Dome Space FGM Input/Output Table" below.

5.3.62 SET current source to 20 mA (± 0.25 mA).

5.3.63 RECORD the Data Table Access Module Flammable Gas display on the "Dome Space FGM Input/Output Table" below.

Dome Space FGM Input/Output Table	
Input (mA)	Output (as displayed on Data Table Access Module)
4	
10	
20	

5.3.64 DISCONNECT the current source, AND if necessary RESTORE loop intercepted in step 5.3.57 (located in dome space FGM).

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**5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
ANALOG INPUT SIGNALS (CONT.)**

THERMOCOUPLE TEST

5.3.65 WARM thermocouple SALW-TE-6004*, located in the Instrument Enclosure.

5.3.66 VERIFY Data Table Access Module and Operator Control Station display a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^\circ$ F).

Test Director Signature Date

5.3.67 ALLOW SALW-TE-6004* to return to ambient temperature.

5.3.68 WARM thermocouple SALW-TE-6001*, located in SALW-PNL-6001* INSTRUMENT AIR ENCLOSURE.

5.3.69 VERIFY Data Table Access Module and Operator Control Station DISPLAY a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^\circ$ F).

Test Director Signature Date

5.3.70 ALLOW SALW-TE-6001* to return to ambient temperature.

5.3.71 WARM thermocouple SALW-TE-6002*, located on the Jet Pump.

5.3.72 VERIFY Data Table Access Module and Operator Control Station DISPLAY a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^\circ$ F).

Test Director Signature Date

5.3.73 ALLOW SALW-TE-6002* to return to ambient temperature.

N/A

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5.3 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION ANALOG INPUT SIGNALS (CONT.)

5.3.74 WARM thermocouple SALW-TE-6003* (Jet Pump over temperature thermocouple located on the saltwell Jet Pump jumper).

5.3.75 VERIFY Data Table Access Module and Operator Control Station DISPLAY a changed temperature (Operator Control Station and Data Table Access Module should match $\pm 2^{\circ}$ F).

Test Director Signature Date

5.3.76 ALLOW SALW-TE-6003* to return to ambient temperature.

5.3.77 REMOVE any jumpers or forces NOT required for the next test section.

5.3.78 Test Director VERIFY that section 5.3 is complete by SIGNING below.

Test Director Signature Date

5.3.79 Quality Control Inspector VERIFY that section 5.3 is complete by signing below.

Quality Control Inspector Signature Date

W/A

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS

VALVE POSITION TEST

- 5.4.1 ENSURE the JR-1 valve is in the PROCESS position.
- 5.4.2 VERIFY the JR-1 valve indicates "norm" at the Data Table Access Module AND "PROCESS" position at the Operator Control Station.
- 5.4.3 PLACE the JR-1 valve in the FLUSH position.
- 5.4.4 VERIFY the JR-1 valve indicates "NON-PROCESS" at the Data Table Access Module AND "FLUSH" position at the Operator Control Station.
- 5.4.5 PLACE the JR-1 valve in the PRIME position.
- 5.4.6 VERIFY the JR-1 valve indicates "NON-PROCESS" at the Data Table Access Module AND "PRIME" position at the Operator Control Station.

FLUSH LINE PRESSURE TEST

- 5.4.7 PLACE the JR-1 valve in the PROCESS position.
- 5.4.8 VERIFY a water supply is connected to the jumper flush hose.
- 5.4.9 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

- 5.4.10 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.4.11 USING the Data Table Access Module, START the Jet Pump.
- 5.4.12 VERIFY the Jet Pump OPERATION at the Operator Control Station.
- 5.4.13 ACTUATE pressure transducer SALW-PT-6014* (old name "PS-2") by PRESSURIZING the flush line with water.
- 5.4.14 VERIFY the Jet Pump IMMEDIATELY shuts down at the Data Table Access Module and Operator Control Station.
- 5.4.15 VERIFY flush line high pressure alarm *3, "FLUSH PRESSURE HI" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.16 SHUT OFF the water supply to the flush line.
- 5.4.17 CYCLE the JR-1 valve to CLEAR the flush line high pressure alarm.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

LOW PRESSURE INTERLOCK

- 5.4.18 PLACE the JR-1 valve in the PROCESS position.
- 5.4.19 ENSURE ALL alarms have been acknowledged at Data Table Access Module and Operator Control Station.
- 5.4.20 ENSURE the pump is NOT primed.
- 5.4.21 ENSURE the Diaphragm Operated Valve is CLOSED.
- 5.4.22 USING the Data Table Access Module, START the Jet Pump.
- 5.4.23 VERIFY the Jet Pump shuts down in approximately thirty (30) seconds (\pm 5 seconds).
- 5.4.24 VERIFY transfer line low pressure alarm #1 "XFR Pressure LOW" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.25 ACKNOWLEDGE alarms at Data Table Access Module and Operator Control Station.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

NOTE - This test section only performed when jet pump jumper and pump are physically mated in the shop on the run-in stand or in the field when run in-stand is available.

HIGH PRESSURE INTERLOCK

- 5.4.26 PLACE the JR-1 valve in the PRIME position.
- 5.4.27 IF a water ram will be used, using skill of the craft CONNECT a water ram to the jet pump jumper AND SLOWLY PRESSURIZE the pump and jumper to 140 psi using water.
- 5.4.28 IF pump will develop 140 psi, START jet pump with JR-2. BYPASS valve and DOV closed.
- 5.4.29 VERIFY that the "XFR Pressure HIGH" alarms at Data Table Access Module (Alarm *2) and Operator Control Station when pressure reaches 140 psi (± 10 psi).
- 5.4.30 ACKNOWLEDGE alarms at Data Table Access Module and Operator Control Station.

RECIRCULATION FLOWMETER TEST

- 5.4.31 PLACE the JR-1 valve in the PROCESS position.
- 5.4.32 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.
- 5.4.33 CONFIGURE SALW-FI-6001* (PMP RECIRC FLOW) to receive signals from a control and display unit.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

- 5.4.34 CONFIGURE the control and display unit to simulate flow signals using the Installation, Diagnostics, Test/Control Mode, AN CAL function.
- 5.4.35 SIMULATE a flow signal of 0.6 gpm with the control and display unit.
- 5.4.36 At the discretion of the Test Director, ENSURE temporary interlock jumpers OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.4.37 USING the Data Table Access Module, START the Jet Pump.
- 5.4.38 VERIFY the Jet Pump OPERATION at the Operator Control Station.
- 5.4.39 SIMULATE a flow signal of 0.4 gpm with the control and display unit.
- 5.4.40 VERIFY the Jet Pump shuts down (after 30 ± 5 sec.) at the Data Table Access Module and Operator Control Station.
- 5.4.41 VERIFY Jet Pump recirculation line low flow alarm *21, "RECIRCULATION FAILURE" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.42 RESTORE SALW-FI-6001* to its original configuration.
- 5.4.43 CYCLE the JR-1 valve to CLEAR the Jet Pump recirculation line low flow alarm.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION DISCRETE SIGNAL INPUTS (Cont.)

RECIRCULATION FLUSH LINE PRESSURE TEST

- 5.4.44 PLACE the JR-1 valve in the PROCESS position.
- 5.4.45 VERIFY a water supply is connected to the recirculation flush line.
- 5.4.46 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump jumper.
- 5.4.47 At the discretion of the Test Director, ENSURE temporary interlock jumpers OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.4.48 USING the Data Table Access Module, START the Jet Pump.
- 5.4.49 VERIFY the Jet Pump OPERATION at the Operator Control Station.
- 5.4.50 ACTUATE pressure transducer SALW-PT-6013* (RECIRC FLUSH PRESS) by PRESSURIZING the recirculation flush line with water.
- 5.4.51 VERIFY the Jet Pump IMMEDIATELY shuts down at the Data Table Access Module and Operator Control Station.
- 5.4.52 VERIFY recirculation flush line high pressure alarm *39, "RECIRC FLUSH PRSS HI" annunciates at the Data Table Access Module and Operator Control Station.
- 5.4.53 SHUT OFF the water supply to the recirculation flush line.
- 5.4.54 CYCLE the JR-1 valve to CLEAR the recirculation flush line high pressure alarm.

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5.4 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DISCRETE SIGNAL INPUTS (Cont.)

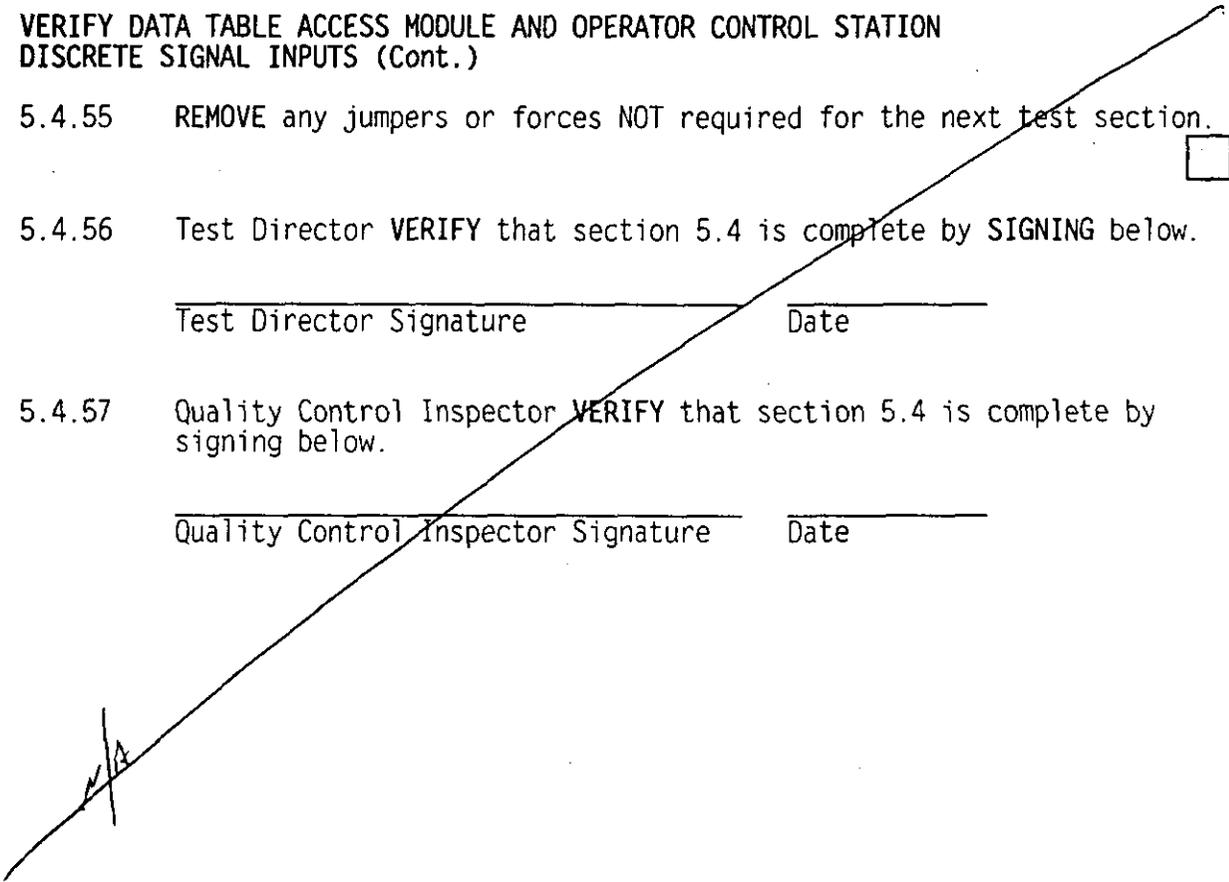
5.4.55 REMOVE any jumpers or forces NOT required for the next test section.

5.4.56 Test Director VERIFY that section 5.4 is complete by SIGNING below.

Test Director Signature Date

5.4.57 Quality Control Inspector VERIFY that section 5.4 is complete by signing below.

Quality Control Inspector Signature Date



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5.5 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION MONITOR/ALARM FUNCTIONS

5.5.1 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces are in place for uninstalled equipment.

5.5.2 SET the test manometer on the specific gravity transmitter to 13" Water Gauge.

5.5.3 ENSURE the following valves are OPEN:

Valve Number	✓
SALW-V-6034*	
SALW-V-6026*	
SALW-V-6001*	
SALW-V-6004*	
SALW-V-6002*	

5.5.4 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.

5.5.5 START the Jet Pump using the Data Table Access Module, AND PLACE the system in automatic.

5.5.6 VERIFY the DIAPHRAGM OPERATED VALVE moves OPEN.

5.5.7 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 12.6 to 13.4 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 12.65 to 13.35 inches)

5.5 VERIFY DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION MONITOR/ALARM FUNCTIONS (CONT.)

5.5.8 VERY SLOWLY DECREASE the test manometer pressure until the Data Table Access Module "SGT LOW" alarm (alarm *13) annunciates.

NOTE - SALW-PI-6005* pressure is to be read IMMEDIATELY when the "SGT LOW" alarm occurs.

5.5.9 VERIFY AND ACKNOWLEDGE the Specific Gravity Low Alarm (Saltwell LOW Level) at the Data Table Access Module and Operator Control Station.

5.5.10 RECORD the following:

PARAMETER	READING
OPERATOR CONTROL STATION SPECIFIC GRAVITY (RANGE 3 to 4)	
DATA TABLE ACCESS MODULE SPECIFIC GRAVITY (RANGE 3 to 4)	
SPECIFIC GRAVITY MANOMETER READING (RANGE 3 to 4 inches Water Gauge)	
DOV POSITION (% OPEN) [RANGE - FULLY CLOSED]	
SALW-PI-6005* PRESSURE (RANGE 2 to 4 psig)	

5.5.11 VERY SLOWLY INCREASE the test manometer pressure to 10 inches Water Gauge.

5.5.12 OBSERVE the Operator Control Station and Data Table Access Module AND RECORD the specific gravity readings below:

OPERATOR CONTROL STATION SPECIFIC GRAVITY READING (RANGE 9 to 11 inches)	DATA TABLE ACCESS MODULE SPECIFIC GRAVITY READING (RANGE 9 to 11 inches)

N/A

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5.6 COMBUSTIBLE GAS MONITOR OPERATION

NOTE - This test section only performed if a Combustible Gas Monitor is installed.

5.6.1 ENSURE SALW-FCV-6001* is CLOSED.



5.6.2 OPEN the calibration gas bottle isolation valve and SALW-V-6055*.



5.6.3 CRACK OPEN SALW-FCV-6001* to initiate test gas flow and OBSERVE percent Lower Flammability Limit reading on Data Table Access Module.



NOTE - Alarm 25, "CGM HIGH LFL" should annunciate at 20% Lower Flammability Limit.

5.6.4 Continue to SLOWLY OPEN SALW-FCV-6001* UNTIL Data Table Access Module alarm 25, "CGM HIGH LFL" annunciates.



5.6.5 VERIFY that alarm 25, "CGM HIGH LFL" is displayed at the Operator Control Station.



5.6.6 RECORD the percent Lower Flammability Limit displayed at the Data Table Access Module at the point of alarm.

DATA TABLE ACCESS MODULE * Lower Flammability Limit
20.2

5.6.7 ACKNOWLEDGE alarm 25, "CGM HIGH LFL" at the Operator Control Station and at the Data Table Access Module.



5.6.8 CLOSE SALW-FCV-6001*.



5.6.9 WAIT until the gas surrounding the sensor dissipates and the gas concentration reading returns to normal.



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5.6 COMBUSTIBLE GAS MONITOR OPERATION (CONT.)

5.6.10 SIMULTANEOUSLY OPEN SALW-FCV-6001* to provide test gas flow of one liter per minute AND START a stopwatch.

5.6.11 STOP the stopwatch when Data Table Access Module indicates 27% Lower Flammability Limit.

5.6.12 RECORD the elapsed time.

SALW-CGT-6001* Response Time
23

5.6.13 VERIFY that the elapsed time is less than ninety (90) seconds.

NOTE - Test gas concentration is 30% Lower Flammability Limit.

5.6.14 WAIT until Data Table Access Module reaches a stable maximum value for percent Lower Flammability Limit.

5.6.15 RECORD the percent Lower Flammability Limit displayed at the Data Table Access Module and at the Operator Control Station

*
EXCEPTED 31

OPERATOR CONTROL STATION Maximum % Lower Flammability Limit	DATA TABLE ACCESS MODULE Maximum % Lower Flammability Limit
* LITCH 25.7 11/1-14-00	-24.2 25.7 11/1-14-00

5.6.16 CLOSE the calibration gas bottle isolation valve. SALW-FCV-6001*, and SALW-V-6055*.

5.6.17 WAIT until the gas surrounding the sensor dissipates and the gas concentration reading returns to normal.

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5.6 COMBUSTIBLE GAS MONITOR OPERATION (CONT.)

- 5.6.18 VERIFY that the Jet Pump can not be started using the Data Table Access Module because alarm 25, "CGM HIGH LFL" is latched.
- 5.6.19 ACKNOWLEDGE alarm at SALW-CGT-6001* located in the instrument enclosure by placing a magnet to the base of the transmitter at the point indicated until the "RSET" message is displayed.
- 5.6.20 VERIFY that alarm 25, "CGM HIGH LFL" CLEARS at the Operator Control Station and at the Data Table Access Module.
- 5.6.21 REMOVE Combustible Gas Transmitter SALW-CGT-6001* housing.
- 5.6.22 UNPLUG the black keyed plug inside transmitter to simulate a loss of sensor.
- 5.6.23 VERIFY that alarm 31, "CGM TROUBLE" annunciates at the Data Table Access Module.
- 5.6.24 ACKNOWLEDGE alarm 31, "CGM TROUBLE" at the Data Table Access Module.
- 5.6.25 VERIFY that the Jet Pump can not be started using the Data Table Access Module because of alarm 31, "CGM TROUBLE."
- 5.6.26 REPLACE the keyed plug and the transmitter housing.
- 5.6.27 VERIFY that alarm 31, "CGM TROUBLE" CLEARS at the Data Table Access Module.

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5.6 COMBUSTIBLE GAS MONITOR OPERATION (CONT.)

5.6.28 Test Director VERIFY that section 5.6 is complete by SIGNING below.

[Signature] 1-18-00
Test Director Signature Date

5.6.29 Quality Control Inspector VERIFY that section 5.6 is complete by signing below.

* *[Signature]* 1/18/00
Quality Control Inspector Signature Date

* SEE EXCEPTION #1 Kw 1-18-00
ONLY FOR EXCEPTION #1, CLEAR Final G. Grant 1-19-00

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5.7 REMOTE SETPOINT CHANGE USING THE OPERATOR CONTROL STATION

5.7.1 PLACE the saltwell jumper JR-1 valve in the PROCESS position.

5.7.2 ENSURE pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.

5.7.3 START the Jet Pump using the Data Table Access Module.

5.7.4 SET the "DOV" Specific Gravity setpoint to 8 inches at the Operator Control Station.

5.7.5 VERIFY that the "DOV" Specific Gravity setpoint is 8 inches at the Data Table Access Module AND the Operator Control Station.

Test Director Signature Date

5.7.6 SET the "DOV" Specific Gravity setpoint to 6 inches at the Data Table Access Module.

5.7.7 VERIFY that the "DOV" Specific Gravity setpoint is 6 inches at the Operator Control Station.

Test Director Signature Date

5.7.8 USING Data Table Access Module, STOP the Jet Pump.

5.7.9 Test Director VERIFY that section 5.7 is complete by SIGNING below.

Test Director Signature Date

5.7.10 Quality Control Inspector VERIFY that section 5.7 is complete by signing below.

Quality Control Inspector Signature Date

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**5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION**

NOTE - This system is a Proportional Integral Derivative controller for controlling the liquid level in the saltwell screen. The Specific Gravity Transmitter reads unadjusted liquid level once the middle diptube leg is uncovered by declining liquid levels.

The system uses the signal from the Specific Gravity Transmitter as the Process Variable. The controller compares the process variable to the setpoint and adjusts the Diaphragm Operated Valve position accordingly (manipulated variable).

The purpose of this test section is to verify that the Diaphragm Operated Valve trend is toward achieving the setpoint while different process variables are simulated.

DATA TABLE ACCESS MODULE (AUTOMATIC)

5.8.1 ENSURE the Saltwell Pump and Jumper Assembly, AND the Pumping and Instrumentation Control Skid are configured for AUTOMATIC Diaphragm Operated Valve level control by PERFORMING the following:

5.8.1.1 SET the test manometer on the Specific Gravity Transmitter to a pressure of 0" Water Gauge.

5.8.1.2 ENSURE the following valves are OPEN:

Valve Number	✓
SALW-V-6034*	
SALW-V-6026*	
SALW-V-6001*	
SALW-V-6004*	
SALW-V-6002*	

5.8.1.3 PLACE the saltwell jumper JR-1 valve in the PROCESS position.

5.8.1.4 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

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**5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

- 5.8.1.5 ENSURE that only alarms "JET PUMP SHUTDOWN" (Alarm 12) and "SGT LOW" (Alarm 13) on the Data Table Access Module are displayed.
- 5.8.1.6 ENSURE pump recirculation apparatus is filled with water AND CONFIGURED to circulate water through the saltwell Jet Pump.
- 5.8.1.7 START the Jet Pump using the Data Table Access Module.
- 5.8.1.8 SET DIAPHRAGM OPERATED VALVE Specific Gravity Controller to AUTO with setpoint of seven (7) inches USING the Data Table Access Module.
- 5.8.1.9 SET the test manometer to a pressure of 14" Water Gauge.
- 5.8.1.10 VERIFY that the Diaphragm Operated Valve moves to a more OPEN position.
- 5.8.1.11 SET the test manometer to a pressure of 6" Water Gauge.
- 5.8.1.12 VERIFY that the Diaphragm Operated Valve moves to a more CLOSED position.

N/A

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**5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

DATA TABLE ACCESS MODULE (MANUAL)

5.8.2 **VERIFY** that the **MANUAL CONTROL** of the Diaphragm Operated Valve is operational by **PERFORMING** the following steps:

5.8.2.1 **SET** the test manometer on the Specific Gravity Transmitter to a pressure of 15" (± 1 ") Water Gauge.

5.8.2.2 **SET** "DOV" Specific Gravity Controller to **MANUAL CONTROL USING** the Data Table Access Module.

5.8.3 **SET** the Diaphragm Operated Valve to 0% Open **USING** the manual control on the Data Table Access Module.

NOTE - DIAPHRAGM OPERATED VALVE position is read from a metal pointer mounted on the valve stem. Indication is approximate valve position only, and is **NOT** intended to be readable to a high degree of precision.

5.8.4 **RECORD** the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE - FULLY CLOSED (0 - 10% on needle graduations)]	SALW-PI-6005* PRESSURE (RANGE 2 to 4 psig)

5.8.5 **SET** the Diaphragm Operated Valve to 25% OPEN **USING** the manual control on the Data Table Access Module.

5.8.6 **RECORD** the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 15% to 35%]	SALW-PI-6005* PRESSURE (RANGE: 5 to 7 psig)

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5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)

5.8.7 SET the Diaphragm Operated Valve to 75% OPEN USING the manual control on the Data Table Access Module.

5.8.8 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 65% to 85%]	SALW-PI-6005* PRESSURE (RANGE: 11 to 13 psig)

5.8.9 SET the Diaphragm Operated Valve to 100% OPEN using the manual control on the Data Table Access Module.

5.8.10 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 90% to 110%]	SALW-PI-6005* PRESSURE RANGE: 14 to 16 psig

5.8.11 VERY SLOWLY DECREASE the test manometer pressure while OBSERVING the Diaphragm Operated Valve.

5.8.12 VERIFY that the Diaphragm Operated Valve remains FULLY OPEN while the test manometer is DECREASED until the "SGT LOW" alarm (Data Table Access Module alarm *13) annunciates.

5.8.13 VERIFY that the Diaphragm Operated Valve IMMEDIATELY CLOSES when the "SGT LOW" alarm (Data Table Access Module alarm *13) annunciates.

5.8.14 SHUT DOWN the Jet Pump with the DTAM AND ACKNOWLEDGE the shutdown alarms.

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**5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

OPERATOR CONTROL STATION (AUTO)

5.8.15 ENSURE the Saltwell Pump and Jumper Assembly AND Pumping and Instrumentation Control Skid are CONFIGURED for AUTOMATIC Diaphragm Operated Valve level control by PERFORMING the following:

5.8.15.1 SET the test manometer to a pressure of 0" Water Gauge.

5.8.15.2 ENSURE the following valves are OPEN:

Valve Number	✓
SALW-V-6034*	
SALW-V-6026*	
SALW-V-6001*	
SALW-V-6004*	
SALW-V-6002*	

5.8.15.3 ENSURE the saltwell jumper JR-1 valve is in the PROCESS position.

5.8.15.4 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.

5.8.15.5 ENSURE that only alarms "SHUTDOWN" and "SGT LOW" are displayed on the Operator Control Station.

5.8.15.6 ENSURE pump recirculation apparatus is filled with water AND CONFIGURED to circulate water through the saltwell Jet Pump.

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**5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

5.8.15.7 START the Jet Pump USING the Data Table Access Module.

5.8.15.8 SET the Specific Gravity Controller to AUTO with setpoint of 7.0 inches USING the Operator Control Station.

5.8.15.9 SET the test manometer to a pressure of 14" Water Gauge (± 1 ").

5.8.15.10 VERIFY that the Diaphragm Operated Valve moves to a more OPEN position.

5.8.15.11 SET the test manometer to a pressure of 6" Water Gauge.

5.8.15.12 VERIFY that the Diaphragm Operated Valve moves to a more CLOSED position.

5.8.16 VERIFY that the MANUAL CONTROL of the Diaphragm Operated Valve is operational by PERFORMING the following steps:

5.8.16.1 SET the test manometer to a pressure of 15" Water Gauge (± 1 ").

5.8.16.2 SET the "DOV" Specific Gravity Controller to MANUAL CONTROL USING the Operator Control Station.

N/A

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**5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)**

5.8.17 SET the Diaphragm Operated Valve to 0% Open USING the manual control on the Operator Control Station.

5.8.18 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE - FULLY CLOSED (0-10% OPEN)]	SALW-PI-6005* PRESSURE (RANGE 2 to 4 psig)

5.8.19 SET the Diaphragm Operated Valve to 30% OPEN using the manual control on the Operator Control Station.

5.8.20 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 15% to 35%]	SALW-PI-6005* PRESSURE (RANGE: 5 to 7 psig)

5.8.21 SET the Diaphragm Operated Valve to 80% OPEN using the manual control on the Operator Control Station.

5.8.22 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 65% to 85%]	SALW-PI-6005* PRESSURE (RANGE: 11 to 13 psig)

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5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)

5.8.23 SET the Diaphragm Operated Valve to 100% OPEN using the manual control on the Operator Control Station.

5.8.24 RECORD the following:

DIAPHRAGM OPERATED VALVE POSITION (% OPEN) [RANGE: 90% to 110%]	SALW-PI-6005* PRESSURE RANGE: 14 to 16 psig

5.8.25 VERY SLOWLY DECREASE the test manometer pressure while OBSERVING the Diaphragm Operated Valve.

5.8.26 VERIFY that the Diaphragm Operated Valve remains FULLY OPEN while the test manometer is DECREASED UNTIL the Operator Control Station "SGT LOW" annunciates.

5.8.27 VERIFY that the Diaphragm Operated Valve IMMEDIATELY CLOSES when the Operator Control Station "SGT LOW" annunciates.

5.8.28 SHUTDOWN the Jet Pump with the Operator Control Station.

5.8.29 VERIFY the Jet Pump SHUT DOWN at the Operator Control Station.

N/A

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5.8 DATA TABLE ACCESS MODULE AND OPERATOR CONTROL STATION
DIAPHRAGM OPERATED VALVE AUTOMATIC/MANUAL OPERATION (Cont.)

5.8.30 REMOVE any jumpers or forces NOT required for the next test section.

5.8.31 Test Director VERIFY that section 5.8 is complete by SIGNING below.

Test Director Signature Date

5.8.32 Quality Control Inspector VERIFY that section 5.8 is complete by signing below.

Quality Control Inspector Signature Date

W/A

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5.9 JET PUMP FLOWMETER OPERATION

5.9.1 ENSURE that the Saltwell Jumper Flow Element is communicating properly with the FOIT SALW-FOIT-6001* (SUPERNATANT FLOW XMIT) and Data Table Access Module by PERFORMING the following:

- 5.9.1.1 PLACE the saltwell jumper JR-1 valve in the PROCESS position.
- 5.9.1.2 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.
- 5.9.1.3 ENSURE the 0 - 50 inch test manometer is still attached to the high pressure dip tube AND set to 15" Water Gauge (± 1 ").
- 5.9.1.4 ENSURE a rotameter has been installed in series with the jumper flow element.
- 5.9.1.5 ENSURE that both the Data Table Access Module and Operator Control Station are configured for MANUAL CONTROL.
- 5.9.1.6 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces are in place for uninstalled equipment.
- 5.9.1.7 SET the Diaphragm Operated Valve to 0% OPEN using the manual control on the Data Table Access Module.
- 5.9.1.8 ADJUST Jet Pump Jumper Valve JR-2 as directed by the Test Director to achieve the required flow rates in the following steps.

2/1/00

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5.9 JET PUMP FLOWMETER OPERATION (Cont.)

5.9.1.9 START the Jet Pump using the Data Table Access Module.

5.9.1.10 VERIFY the start of the Jet Pump at the Operator Control Station.

5.9.2 RECORD initial readings, and the time reading were taken.

DATA TABLE ACCESS MODULE TOTALIZER (Gallons)	FQIT TOTALIZER GALLONS	TIME

5.9.3 SET the Diaphragm Operated Valve Controller to MANUAL AND ADJUST Controller at the Data Table Access Module to obtain a flowrate of APPROXIMATELY 1.0 GPM (± 0.05 gpm) through the jumper.

5.9.4 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)

5.9.5 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate are within ± 0.1 gpm.

Test Director Signature

Date

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5.9 JET PUMP FLOWMETER OPERATION (Cont.)

5.9.6 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: _____ gallons

5.9.7 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: _____ gallons

5.9.8 VERIFY results from the above two steps are within ± 5.0 gallons.

5.9.9 ADJUST the Diaphragm Operated Valve Controller to obtain a flowrate of APPROXIMATELY 2.5 GPM (± 0.125 gpm) through the jumper.

5.9.10 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)

5.9.11 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate are within ± 0.25 gpm.

Handwritten signature/initials

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5.9 JET PUMP FLOWMETER OPERATION (Cont.)

5.9.12 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: _____ gallons

5.9.13 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: _____ gallons

5.9.14 VERIFY results from the above two steps are within ± 5.0 gallons.

5.9.15 ADJUST the Diaphragm Operated Valve Controller to obtain a flowrate of APPROXIMATELY 3.0 GPM (± 0.15 gpm) through the jumper.

5.9.16 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)

5.9.17 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate are within ± 0.3 gpm.

Test Director Signature

Date

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5.9 JET PUMP FLOWMETER OPERATION (Cont.)

5.9.24 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: _____ gallons

5.9.25 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: _____ gallons

5.9.26 VERIFY results from the above two steps are within ± 5.0 gallons.

5.9.27 CLOSE the Diaphragm Operated Valve (to 0%) using the manual Diaphragm Operated Valve control.

5.9.28 VERIFY JR-2 is CLOSED.

5.9.29 RECORD the following:

DTAM MANUAL CONTROL DOV POSITION (%)	OCS MANUAL CONTROL DOV POSITION (%)	DOV POSITION (% OPEN)	TEST ROTAMETER FLOWRATE (GPM)	(INSTR) FQIT FLOWRATE (GPM)	DTAM FLOWRATE (GPM)	OCS FLOWRATE (GPM)	DTAM TOTALIZER (GALLONS)	FQIT TOTALIZER (GALLONS)

5.9.30 VERIFY that Test Rotameter flowrate, FQIT SALW-FQIT-6001* flowrate, Data Table Access Module flowrate, AND Operator Control Station flowrate all indicate 0.0 gpm (± 0.1 gpm).

Test Director Signature _____ Date _____

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5.9 JET PUMP FLOWMETER OPERATION (Cont.)

5.9.31 SUBTRACT totalizer INITIAL reading for Data Table Access Module from the current totalizer reading for Data Table Access Module.

RECORD result: _____ gallons

5.9.32 SUBTRACT INITIAL totalizer reading for FQIT from the current totalizer reading for the FQIT.

RECORD result: _____ gallons

5.9.33 VERIFY results from the above two steps are within ± 5.0 gallons.

5.9.34 USING the Data Table Access Module, STOP the Jet Pump.

5.9.35 REMOVE the test manometer.

5.9.36 ISOLATE the Specific Gravity Transmitter from the system.

NOTE - All three valves are located on the Specific Gravity Transmitter three valve manifold SALW-V-6035*.

5.9.36.1 OPEN the equalization valve for the Specific Gravity Transmitter.

5.9.36.2 CLOSE the two (2) isolation valves.

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5.9 JET PUMP FLOWMETER OPERATION (Cont.)

5.9.37 REMOVE any jumpers or forces NOT required for the next test section.

5.9.38 Test Director VERIFY that section 5.9 is complete by SIGNING below.

Test Director Signature Date

5.9.39 Quality Control Inspector VERIFY that section 5.9 is complete by signing below.

Quality Control Inspector Signature Date

MA

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5.10 JET PUMP VALVING INTERLOCK FOR THE JET PUMP

- 5.10.1 ENSURE Pump recirculation apparatus is filled with water AND configured to circulate water through the saltwell Jet Pump.
- 5.10.2 ENSURE all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.
- 5.10.3 At the discretion of the Test Director, ENSURE temporary interlock jumpers, OR software forces have been installed on pump permissive interlocks for equipment not installed or out of service.
- 5.10.4 USING the Data Table Access Module, START the Jet Pump.
- 5.10.5 VERIFY Jet Pump operation at the Operator Control Station.
- 5.10.6 PLACE the JR-1 Valve, on the Jet Pump jumper, in the FLUSH position.
- 5.10.7 VERIFY the following:
 - Jet Pump IMMEDIATELY shuts down.
 - "JR-1 NON-PROCESS" is displayed at Data Table Access Module AND "FLUSH" is displayed operator control Station.
 - "Jet Pump SHUTDOWN" is displayed at Data Table Access Module and "SHUTDOWN" at Operator Control Station.
- NOTE - "Flush Pressure HI" may be received.
- 5.10.8 VERIFY the Jet Pump can not be re-started with the JR-1 valve in the FLUSH position.

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5.10 JET PUMP VALVING INTERLOCK FOR THE JET PUMP (Cont.)

- 5.10.9 PLACE the JR-1 Valve in the PROCESS position.
- 5.10.10 ENSURE all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.
- 5.10.11 RESTART the Jet Pump using the Data Table Access Module.
- 5.10.12 VERIFY Jet Pump operation at the Operator Control Station.
- 5.10.13 PLACE the JR-1 Valve in the PRIME position.
- 5.10.14 VERIFY the following:
 - Jet Pump IMMEDIATELY shuts down.
 - "JR-1 NON-PROCESS" is displayed at Data Table Access Module (ALARM *5) AND "PRIME" at Operator Control Station.
 - "Jet Pump SHUTDOWN" is displayed at Data Table Access Module (ALARM *12) AND "SHUTDOWN" at Operator Control Station.
- NOTE - "FLUSH Pressure HI" may be received.
- 5.10.15 VERIFY the Jet Pump can not be re-started with the JR-1 valve in the PRIME position.
- 5.10.16 ENSURE all alarms have been acknowledged at the Data Table Access Module and Operator Control Station.

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5.12 LEAK DETECTION INTERLOCK CHECK

5.12.1 Cognizant Engineer shall LIST all relevant leak detectors in pump pit, valve pits, clean out boxes, and encasements along transfer route in the table below. Any unused lines in the table shall be marked with an "N/A".

- NOTE - Leak Detector Interlock checks can be performed in any sequence.
- Operator Control Station wording of alarms may be different than Data Table Access Module, but must have the same general meaning.
 - Pump operation will be simulated during the remainder of the OTP.

5.12.2 VERIFY current functional check, AND RECORD the due date on the table below.

NOTE - Leak detectors not associated with the skid being tested shall be marked as "N/A".

INSTRUMENT	FUNCTIONAL CHECK DATE	NEXT DUE DATE
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		

N/A

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5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

NOTE - 242-A Evaporator Operator only needs to be notified for East Area transfers.

5.12.3 IF required, NOTIFY the Tank Monitoring and Control System Operator, 242-A Evaporator Operator and Shift Manager that this section is about to commence.



5.12.4 REQUEST Test Director to VERIFY that field installation of the Saltwell equipment per applicable work package is completed for testing.

NOTE - For EMERGENCY PUMPING SKID, or testing of skid prior to field installation, Test Director shall "NA" the work package number line and sign and date where requested.

Enter work package number _____

Test Director Signature Date

NA

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5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

5.12.5 CHECK the leak detector interlocks corresponding to the leak detectors entered in the previous Table by the Cognizant Engineer by PERFORMING step 5.12.5.1 through step 5.12.5.11 AND CHECKING the appropriate space when complete:

LEAK DETECTOR	CHECK COMPLETE (✓)
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	

5.12.5.1 IF REQUIRED, ENSURE the Pump Instrument and Control Skid is configured and ready to receive leak detector signal.

5.12.5.2 MONITOR the status of the Pump Starter to VERIFY pump status.

5.12.5.3 IF test is to be performed after pump installation, ENSURE Jet Pump motor leads have been determined from the load side of the starter while performing this section.

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5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

5.12.5.4 ENSURE no interlocks are present that will prevent pump operation.

- At the discretion of the Test Director force or jumper unused interlocks.

5.12.5.5 Using Data Table Access Module, START the Jet Pump.

NOTE - Programmer may need to force limit switches and pressure switches to simulate recirculate flow.

5.12.5.6 VERIFY Jet Pump start at Operator Control Station.

Handwritten signature/initials

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REFERENCE	OTP-200-004	A-20	01/11/2000	75 of 105

5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical. Comply with WHC-CM-1-10, WKS-15, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

5.12.5.7 TEST leak detector using Leak Detector Test Circuit OR jumper, or by emerging probe, as required. VERIFY and ACKNOWLEDGE the following:

- IMMEDIATE Jet Pump shutdown.
- "JET PUMP SHUTDOWN" is annunciating at the Data Table Access Module (ALARM #12).
- A Leak Detection Alarm is annunciating at the Data Table Access Module AND at the Operator Control Station.

5.12.5.8 ACKNOWLEDGE the Leak Detector Alarm at the Operator Control Station.

5.12.5.9 ACKNOWLEDGE the Leak Detector Alarm at the Data Table Access Module.

5.12.5.10 VERIFY that the Jet Pump CAN NOT be re-started at the Data Table Access Module when the alarm is ACTIVE.

5.12.5.11 RETURN the leak detector to a condition of operation by PERFORMING the following:

- IF a jumper was installed in step 5.12.5.7. REMOVE jumper.
- VERIFY the Leak Detection Alarm at the Data Table Access Module and Operator Control Station resets.
- RESET the remote Master Pump Shutdown if required.

N/A

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5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

NOTE - Steps 5.12.6 through 5.12.15 only need to be performed if remote Master Pump Shutdown exists.

- 5.12.6 RESTART the Jet Pump using Data Table Access Module.
- 5.12.7 SHUTDOWN the Jet Pump using the manual Master Pump Shutdown.
- 5.12.8 VERIFY that the Jet Pump stops AND the Leak Detection Alarm appears.
- 5.12.9 ACKNOWLEDGE alarms at the Data Table Access Module and Operator Control Station.
- 5.12.10 RESET the Master Pump Shutdown.
- 5.12.11 RESTART the Jet Pump using the Data Table Access Module.
- 5.12.12 SHUTDOWN the Jet Pump using the manual Master Pump Shutdown at a second location (if it exists).
- 5.12.13 VERIFY that the Jet Pump stops AND Leak Detection Alarm appears.
- 5.12.14 RESET the Master Pump Shutdown.
- 5.12.15 ACKNOWLEDGE alarms at the Data Table Access Module and Operator Control Station.

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5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

INTERLOCK TEST

NOTE - It is the intent of this section to test all transfer system and FGM interlocks not previously tested in the leak detector section. Included would be DCRT high level alarms, dilution tank low level alarms, FGM alarms, and leak detection not previously tested. Also included would be encasement and receiver tank pressurization alarms.

The Cognizant Engineer is responsible for reviewing the installation design and identifying all appropriate interlocks to be tested.

5.12.16 Cognizant Engineer shall ENTER all interlocks (by relay or device designation) not tested by a separate section in the Table below.

RELAY/DEVICE DESIGNATION	JET PUMP SHUTDOWN (✓)	ALARM MESSAGE RECEIVED
1) CGM TRIPPED BY FAULT	✓	DTAM SHUTDOWN - CGM TROUBLE
		OCS SHUTDOWN - CGM FAULT
2) CGM TRIPPED BY GAS	✓	DTAM SHUTDOWN - CGM TROUBLE ^{HIGH HA 1-16-00}
		OCS SHUTDOWN - CGM HIGH
3) FA		DTAM
		OCS
4)		DTAM
		OCS
5)		DTAM
		OCS
6)		DTAM
		OCS
7)		DTAM
		OCS

u/a
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5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

WARNING

Energized circuits and leads are contained inside the cabinet. Observe appropriate electrical. Comply with WHC-CM-1-10, WKS-15, ELECTRICAL WORK SAFETY to avoid personnel electrical shock hazards.

5.12.17 NOTIFY Tank Monitoring and Control System Operator, 242-A Evaporator Operator (if transfer is in east Area), and Shift Manager that this section is about to begin.

5.12.18 For each relay listed in the Table above, PERFORM the following:

5.12.18.1 Using the Data Table Access Module, START the Jet Pump, AND OBSERVE that the pump run light is ON.

5.12.18.2 DEACTIVATE the relay to simulate an alarm condition.

NOTE - Craft will determine a safe method of deactivating each device. Test pushbuttons, mock input signals, shorting across secondary of induction relay coils, lifting coil leads, or pulling device from socket may be used.

5.12.18.3 VERIFY Data Table Access Module and Operator Control Station display "JET PUMP SHUTDOWN" AND an interlock message.

5.12.18.4 RECORD a check mark in the Table if Jet Pump shutdown occurs.

5.12.18.5 RECORD the interlock alarm messages received at Data Table Access Module and Operator Control Station in the Table.

5.12.18.6 VERIFY that the Jet Pump CAN NOT be re-started at the Data Table Access Module when the alarm is ACTIVE.

5.12.18.7 RESTORE the circuit (remove simulated alarm condition).

5.12.18.8 ACKNOWLEDGE the alarms at Data Table Access Module and Operator Control Station.

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5.12 LEAK DETECTION INTERLOCK CHECK (Cont.)

5.12.19 NOTIFY Tank Monitoring and Control System Operator, 242-A Evaporator Operator (if transfer is in east Area), and Shift Manager that this section is complete.

5.12.20 REMOVE any jumpers or forces NOT required for the next test section.

5.12.21 Test Director VERIFY that section 5.12 is complete by SIGNING below.

N/A
[Signature] 1-18-00
Test Director Signature Date

5.12.22 Quality Control Inspector VERIFY that section 5.12 is complete by signing below.

PER TELECON WITH KEW WITHOUT BY WORKING OFF THIS STEP? 1-19-00
[Signature] 1-19-00
Quality Control Inspector Signature Date

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PROCEDURE PERFORMER SIGNATURE SHEET

All Operators and Shift Managers performing this Procedure who will be initialing and signing this procedure shall enter their printed name, signature and initials below.

<u>NAME (PRINT)</u>	<u>SIGNATURE</u>	<u>INITIALS</u>
KEN WILLOUGHBY	<i>Ken Willoughby</i>	KW
T M HORNER	<i>T.M. Horner</i>	TH
JOHN HAWLEY	<i>John Hawley</i>	JH
HARVEY EMERSON	<i>Harvey Emerson</i>	HE
DEAN D. DUDLEY	<i>Dean D. Dudley</i>	DD
STEVEN H. LEWIS	<i>Steven H. Lewis</i>	SL
LOUIS ALCALA	<i>Lou Alcala</i>	LA
DWEINBERGER	<i>D. Weinger</i>	DW
GANDA PUTRA	<i>G. Putra</i>	GP
RONALD J. HENDERSON	<i>Ronald J. Henderson</i>	RH
M. R. KOCH	<i>M.R. Koch</i>	MRK
FRED A. ZAK	<i>F. A. Zak</i>	FAZ
ED VOLKMAN	<i>Ed Volkman</i>	EV
Mark Johnson	<i>Mark Johnson</i>	MJ

OPERATIONAL TEST PROCEDURE EXCEPTION RECORD

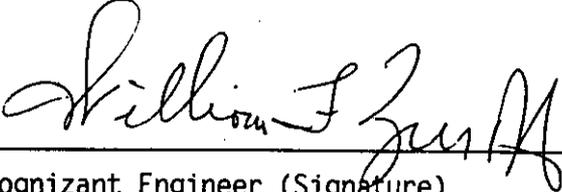
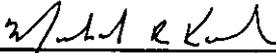
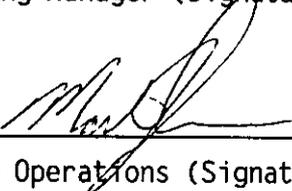
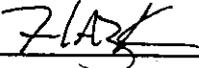
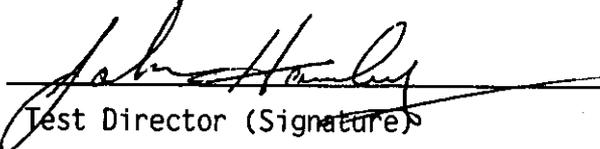
This page may be reproduced as necessary.

OTP step number: 5.6.15	OTP Exception Log Number 01
Description of Exception: The analog percent LFL reading was not available at the Operator Control Station. The reading was available locally at the transmitter and the DTAM. ^{KW} 1-18-00	
Resolution of Exception: Determine the cause of the ocs problem, fix and rerun step 5.6.15.	
Notes: this is an OCS problem and not CGM or PICS SKID ISSUE.	
Date of Resolution:	1-19-00
Test Director signature:	<i>[Signature]</i>
Cognizant Engineer signature:	<i>[Signature]</i> 1-19-00
Quality Assurance signature:	<i>[Signature]</i> 1/19/00
Tank Farm Operations signature:	<i>[Signature]</i> 1-19-00

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OPERATIONAL TEST PROCEDURE ACCEPTANCE RECORD

This Operational Test Procedure has been completed and the results, including red-line changes, exceptions, and exception resolutions, have been reviewed for compliance with the intent of the Purpose (Section 1.0). The test results are accepted by the undersigned:

	W.F. ZUROFF	1-19-00
Cognizant Engineer (Signature)	(Print Name)	Date
	M.R. KOCH	1-19-00
Engineering Manager (Signature)	(Print Name)	Date
	Mark Johnson	1-19-00
Tank Farm Operations (Signature)	(Print Name)	Date
	FRED A. ZAK	1/19/00
Safety (Signature)	(Print Name)	Date
	T.J. VOLKMAN	1/19/00
Quality Assurance (Signature)	(Print Name)	Date
	JOHN HAWLEY	1-19-00
Test Director (Signature)	(Print Name)	Date

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PROCEDURE HISTORY SIGNATURE SHEET

PCA Incorporated: WTF-97-113		<u>MOD</u>	<u>Q</u>
Procedure Signatures for OTP-200-004. R1		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-0390			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>R.L. Sharp</u>	<u>6/25/97</u>	
Shift Manager	<u>R. Malhan</u>	<u>6/13/97</u>	
QA Engineer	<u>M.C. Tipps</u>	<u>6/25/97</u>	
Shift Manager	<u>M.S. Garrett</u>	<u>6/25/97</u>	
Cog Engineer	<u>M.R. Koch</u>	<u>6/13/97</u>	
Acceptance Review	<u>D.C. Ashworth</u>	<u>6/26/97</u>	
Approval Authority	<u>D.J. Sauressiq</u>	<u>6/26/97</u>	
Pages Affected	Reason for Change	Summary of Change	
Step 2.8.1	Revert liberal interpretation of procedure steps.	Reword to specify sections which may be performed out of order.	
Various steps	Consistency with procedure standards.	Add Test Director signature and Date line.	
Step 5.11.5	Re-pagination of procedure caused reference to be incorrect.	Correct step number reference.	
Step 2.8.14	Clarify use for Faac. Group 2 Tanks.	Explain when section 5.12 is performed.	
Steps 4.2.7 and 4.2.8	Procedure writer's guide compliance	List specific value and breaker numbers.	
Various steps	Clarity	Add tolerance	
Step 5.11.4	Traceability for all uses of procedure	Add step to record JCS package number	
Page 82	Engineering verification	Add COG Manager signature	

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

PCA Incorporated:		<u>NEW</u>	<u>SQ</u>
Procedure Signatures for OTP-200-004. R0		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>D. Dudley</u>	<u>4/8/97</u>	
Shift Manager	<u>D.J. Sauressig</u>	<u>4/7/97</u>	
QA Engineer	<u>T.J. Volkman</u>	<u>5/22/97</u>	
Safety Engineer	<u>L.S. Krogsrud</u>	<u>5/20/97</u>	
Rad. Control Eng.	<u>J. Pieper</u>	<u>5/29/97</u>	
Cog Engineer	<u>M.R. Koch</u>	<u>4/7/97</u>	
Acceptance Review	<u>D.C. Ashworth</u>	<u>5/29/97</u>	
Approval Authority	<u>D.J. Sauressig</u>	<u>5/28/97</u>	
Pages Affected	Reason for Change	Summary of Change	
All	Engineering Request	New Procedure	

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

PCA Incorporated: WTF-97-178		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-2		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-0390			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>S.A. Ham-Huebner</u>	<u>9/10/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/10/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/11/97</u>	
Approval Authority	<u>D.J. Sauressig</u>	<u>9/11/97</u>	
Pages Affected	Reason for Change	Summary of Change	
62	Allow for specific package number entry.	Added work package entry line.	

PCA Incorporated: WTF-97-184		<u>MOD</u>	<u>Q</u>
Procedure Signatures for OTP-200-004. A-2		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-583			
POSITION/ORG	DELEGATE	DATE	
NPO	<u>B.D. Foreman</u>	<u>9/11/97</u>	
QE/WTFQA	<u>M.C. Tipps</u>	<u>9/11/97</u>	
Mgr/Stab	<u>D.J. Saueressig</u>	<u>9/11/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/11/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/11/97</u>	
Approval Authority	<u>D.J. Sauressig</u>	<u>9/11/97</u>	
Pages Affected	Reason for Change	Summary of Change	
10 12,14 13,61	Clarify for field use. Issuance of Standing Order controls. Some instruments require functional check only	Specified when test equipment is shop only. Added FGM and intrinsic safety circuit power. Changed "CALIBR" to "CAL/FUNCTIONAL CHECK"	
15 28 29,36	Clear alarms received on power up. Equipment improvement. Repeat of test in field not necessary or practicable.	Added alarm acknowledgement on power up. Allowed for use of new flowmeters. Qualify section as shop work only. Specify FGM test signal at beginning of loop.	
30 31	Tests entire loop. Intrinsic safety changes prompted wiring changes.	Correct thermocouple labels.	
34,38,42,44,45,48,57,58, 61,64,65	Reviewed DTP against final software alarm messages. Corrected to match.	Correct wording, punctuation, and spelling of alarm windows, and ordering of alarms.	

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

PCA Incorporated: WTF-97-186		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-3		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-583			
POSITION/ORG	DELEGATE	DATE	
NPO/Stab	<u>B. Foreman</u>	<u>9/15/97</u>	
SOM/WTFO	<u>Del Scott</u>	<u>9/16/97</u>	
Eng/Stab	<u>T.H. Nguyen</u>	<u>9/15/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/15/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/17/97</u>	
Approval Authority	<u>D.J. Sauressig</u>	<u>9/15/97</u>	
Pages Affected	Reason for Change	Summary of Change	
12 (4.2.7) 18 (5.1.10.1) 20 (5.2.3-5.2.5) 30 (5.3.49)	Ensure closed configuration at start of OTP. Correct to match field. Regulator fluctuates with flow and may need to be readjusted. Changed to match field.	Added valves to checklist. Change LT to WFT. Changed order of steps. Allow regulator to be readjusted after flows established. Corrected terminal numbers	

PCA Incorporated: WTF-97-188		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-3		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-583			
POSITION/ORG	DELEGATE	DATE	
NPO/Stab	<u>B. Foreman</u>	<u>9/16/97</u>	
Eng/Stab	<u>T.H. Nguyen</u>	<u>9/16/97</u>	
Eng/Stab	<u>M.R. Koch</u>	<u>9/16/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/17/97</u>	
Approval Authority	<u>D.J. Sauressig</u>	<u>9/16/97</u>	
Pages Affected	Reason for Change	Summary of Change	
25 (5.3.21-22) 27 (5.3.33-34) 30 (5.3.49)	Allows for field configuration conditions. Allows for field configuration conditions. Clarified step.	Added ENSURE valve positions for instrument transmitters. Added ENSURE valve positions for instrument transmitters. Added remove FGM leads.	

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PCA Incorporated: WTF-97-189		<u>MOD</u>	<u>N/A</u>
Procedure Signatures for OTP-200-004. A-4		TYPE OF CHANGE	REVIEW DESIGNATOR
USQ Screening Number TF-96-0583			
POSITION/ORG	DELEGATE	DATE	
NPO/Stab	<u>B.A. Foreman</u>	<u>9/17/97</u>	
Eng/Stab	<u>T.H. Nguyen</u>	<u>9/17/97</u>	
SOM/WTF	<u>M. Garret</u>	<u>9/17/97</u>	
Acceptance Review	<u>K.W. Johnson</u>	<u>9/19/97</u>	
Approval Authority	<u>D.J. Sauressig</u>	<u>9/18/97</u>	
Pages Affected	Reason for Change	Summary of Change	
41, 45	Setpoint must be passed to witness change on DOV.	Change 6" to 7".	
43	Allowed to exit section correctly.	Added step to shut off pump.	
46	Added clarity.	Added tolerance.	
54	Generic procedure; correct for use on all skids.	Remove "A"	
60	Consistency with LD tests.	Change calibration to functional check.	

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Current Modification: A-5
 USQ Screening Number: TF-96-583
 Approval Designator: SQ
 PCA Incorporated: WTF-98-0123

POSITION/ORG	DELEGATE	DATE
NPO/STAB	<u>B.D. Foreman</u>	<u>4/17/98</u>
QAE/SST	<u>M.C. Tipps</u>	<u>4/20/98</u>
Safety/SST	<u>L.S. Krogsrud</u>	<u>4/20/98</u>
SOM/WTF	<u>D.W. Strasser</u>	<u>4/20/98</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>4/20/98</u>
Acceptance Review	<u>K.W. Johnson</u>	<u>4/22/98</u>
Approval Authority	<u>D. Scott</u>	<u>4/21/98</u>

Justification: Updated requirements and references. Made clarifications and corrected omissions.

Summary of Changes:

Corrected canceled references (2.4, 2.5); deleted allowance to perform sections out of order (2.8.2); added step explaining OCS steps during shop OTPs and field installation prerequisites, and relief from notifying CASS and control room for shop tests (2.8.15, 3.4, 5.11); removed thermocouple voltage source (4.1); added previously omitted valves to lineup (4.2.7); deleted leak detector functional sticker check (4.3); clarified switch position (5.1.5); added ENSURE to steps (5.1.10, 5.3, 5.7); added tolerances (5.3, 5.7, 5.8); specified analog signal interface (5.3.49, 5.3.56); allow use of pump to achieve high pressure (5.4, 5.5.15).

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: R0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-6 USQ Screening Number: TF-96-583 Rev 3 Approval Designator: SQ PCA Incorporated: WTF-98-0125		
POSITION/ORG	DELEGATE	DATE
NPO	<u>S. Ham-Huebner</u>	<u>4/24/98</u>
QAE/SST	<u>M.C. Tipps</u>	<u>4/24/98</u>
Safety	<u>D. Abramson</u>	<u>4/24/98</u>
Team Lead/Stab	<u>M. Johnson</u>	<u>4/23/98</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>4/23/98</u>
	<u>T. Nguyen</u>	<u>4/23/98</u>
Acceptance Review	<u>K.W. Johnson</u>	<u>4/27/98</u>
Approval Authority	<u>K.J. Freeman</u>	<u>4/24/98</u>
Justification: Corrections for typographical errors and equipment modifications.		
Summary of Changes: Changed "filed" to "field" (paragraph 2.8.12); added valves to lineup (step 4.2.7); added pressure indicator to calibration verification table (4.3); corrected valve number (5.1.10.3)		

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: R0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-7 USQ Screening Number: TF-98-0836 Approval Designator: SQ PCA Incorporated: WTF-98-0207		
POSITION/ORG	DELEGATE	DATE
NPO	<u>B.D. Foreman</u>	<u>8/20/98</u>
QAE/SST	<u>M.C. Tipps</u>	<u>8/20/98</u>
Safety	<u>L.S. Krogsrud</u>	<u>8/20/98</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>8/20/98</u>
Cognizant Engineer	<u>W.F. Zuroff</u>	<u>8/20/98</u>
Acceptance Review	<u>M.F. Wahl</u>	<u>8/22/98</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>8/20/98</u>
Justification: Engineering and Operations request.		
Summary of Changes: Step 2.8.13 - Clarified that Section 5.12 is only applicable to A-101. Step 4.2.3 - Added "Jumper" to jet pump. Page 11 - added new step for verification that valves SALW-V-6035* and -6036* are open. Step 4.3 - added three pressure indicators to the table to ensure the indicators are calibrated prior to performing the OTP. 5.1.10.1 and 5.1.10.2 - reversed order of steps. 5.1.10.3 and 5.1.10.4 - reversed the order of steps. 5.3.9 - changed "range" to 9.5 to 10.5. 5.3.33 and 5.3.34 - reversed the order of steps.		

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: A0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-8 USQ Screening Number: TF-98-0836, Rev. 1 Approval Designator: N/A PCA Incorporated: WTF-98-0222		
POSITION/ORG	DELEGATE	DATE
NPO	<u>T.E. Brighton</u>	<u>9/14/98</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>9/14/98</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>9/14/98</u>
Acceptance Review	<u>S.L. Lindberg</u>	<u>9/15/98</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>9/14/98</u>
Justification: Change ensures the pump assembly is filled with water and primed before starting the pump. The pump was deprimed in the previous procedure section.		
Summary of Changes: pg. 37: Added new step 5.5.4 to include instructions to ensure the pump is primed prior to starting.		

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PROCEDURE HISTORY SIGNATURE SHEET (Cont.)

Last Full Revision: A-0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-9 USQ Screening Number: TF-98-0836, Rev. 2 Approval Designator: Q PCA Incorporated: WTF-98-0274		
POSITION/ORG	DELEGATE	DATE
NPO/ISO	<u>B.D. Foreman</u>	<u>12/28/98</u>
QA	<u>T.J. Volkman</u>	<u>1/20/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>1/20/99</u>
Cognizant Engineer	<u>W.F. Zurhoff</u>	<u>1/4/99</u>
Acceptance Review	<u>B.E. Raymond</u>	<u>1/21/99</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>1/21/99</u>
Justification: ISO operations update info.		
Summary of Changes: Page 3, Add PROCEDURE PERFORMER SIGNATURE SHEET and re-number. Step 2.4.1, Add recirculation flowmeter manual. Step 2.5.2, Delete Environmental Compliance Manual. Step 2.8.1, Change director to "Test Director." Step 2.8.5, Edit to continue different section. Step 2.8.8, Add "if necessary." Step 4.1, Add Control and Display Unit. Step 4.2.11, Add PROCEDURE PERFORMER SIGNATURE SHEET Note 5.0, Add PROCEDURE PERFORMER SIGNATURE SHEET Step 5.1.11.1, Add continuity check. Step 5.1.11.2, Add continuity check. Step 5.1.11.3, Add continuity check. Step 5.3.47, Add DTAM column to table. Step 5.3.63, Edit for thermocouple identifier. Step 5.3.65, Edit for thermocouple identifier. Step 5.4.13, Correct pressurizing typo. Step 5.4.31 - 5.4.43, Add recirculation flowmeter steps. Step 5.4.44 - 5.4.54, Add recirculation flush pressure transmitter steps. Step 5.8.6, 5.8.7, 5.8.12, 5.8.13, 5.8.18, 5.8.19, 5.8.25, 5.8.26, Capitalize and bold INITIAL. Step 5.11.6, Include FGM and dilution tank level. Add PROCEDURE PERFORMER SIGNATURE SHEET.		

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Current Modification: A-10 USQ Screening Number: TF-96-0390 Approval Designator: N/A PCA Incorporated: WTF-99-108		
POSITION/ORG	DELEGATE	DATE
NPO	<u>S.R. Davis</u>	<u>2/26/96</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>2/26/99</u>
Cognizant Engineer	<u>M.R. Koch</u>	<u>2/26/99</u>
Acceptance Review	<u>B.E. Raymond</u>	<u>3/1/99</u>
Approval Authority	<u>D.J. Saueressig</u>	<u>2/26/99</u>
Justification: Clarification		
Summary of Changes: Note prior to step 5.4.26 and 5.3.43. Added ability to perform test in field.		

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Last Full Revision: A-0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-11 USQ Screening Number: TF-98-0207, Rev 0 Approval Designator: Q PCA Incorporated: WTF-99-128		
POSITION/ORG	DELEGATE	DATE
NCO	<u>S.R. Davis</u>	<u>3/11/99</u>
QA	<u>T. Volkman</u>	<u>3/11/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>3/11/99</u>
Cog Engineer	<u>W.F. Zuroff</u>	<u>3/11/99</u>
Acceptance Review	<u>B.E. Raymond</u>	<u>3/12/99</u>
Approval Authority	<u>Q. Ravencraft</u>	<u>3/11/99</u>
Justification: Engineering Request		
Summary of Changes: Page 38, step 5.4.40, added a 30 second time delay for the required action to occur. Page 42, step 5.5.8, Added note addressing when gage SALW-PI-6005* is to be read. Page 45, step 5.5.9, Added DTAM to the action statement. Page 72, step 5.11.18.6, New step for verification.		

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Last Full Revision: A-0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-12 USQ Screening Number: TF-96-0390, Rev 0 Approval Designator: NA PCA Incorporated: WTF-99-138		
POSITION/ORG	DELEGATE	DATE
NCO	<u>D Garza</u>	<u>3/16/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>3/16/99</u>
Mgr/ISE	<u>MR Koch</u>	<u>3/16/99</u>
Acceptance Review	<u>PF Johnston</u>	<u>3/22/99</u>
Approval Authority	<u>DJ Saueressig</u>	<u>3/16/99</u>
Justification: CASS system removed from service		
Summary of Changes: pages - 66,72,73,80,81,82 - Delete CASS and replace with TMACS		

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Last Full Revision: A-0 Release Date: 5/29/97 USQ Screening Number: Approval Designator: SQ		
Current Modification: A-13 USQ Screening Number: TF-98-0836, Rev 3 Approval Designator: SQ PCA Incorporated: WTF-99-198		
POSITION/ORG	DELEGATE	DATE
NCO/IS	<u>T.E. Brighton</u>	<u>4/20/99</u>
QA	<u>T.J. Volkman</u>	<u>4/20/99</u>
ENGR/II/SAFETY	<u>M. Omar Jaka</u>	<u>4/20/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>4/21/99</u>
CogEng/ISE	<u>W.F. Zuroff</u>	<u>4/21/99</u>
Acceptance Review	<u>S.E. Bevans</u>	<u>4/21/99</u>
Approval Authority	<u>DJ Saueressig</u>	<u>4/21/99</u>
Justification: Update for model 4.46 FGMs and dome space FGMs.		
Summary of Changes: page 31 - Edit title and steps to include model 4.46 and clarify pit FGMs page 32 - Add new page for dome space installed FGMs, steps 5.3.57 through 5.3.64		

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Current Modification: A-14 USQ Screening Number: TF-98-1201, Rev 1 Approval Designator: NA PCA Incorporated: WTF-99-0218		
POSITION/ORG	DELEGATE	DATE
NCO/IS	<u>T.E. Brighton</u>	<u>05/07/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>05/07/99</u>
CogEng/ISE	<u>W.F. Zuroff</u>	<u>05/07/99</u>
Acceptance Review	<u>S.E. Bevans</u>	<u>05/07/99</u>
Approval Authority	<u>DJ Saueressig</u>	<u>05/07/99</u>
Justification: Engineering request, incorporate PS-2 change.		
Summary of Changes: Page 36 - 5.4.13 Add "or SALW-PI-6014" - 5.4.15 Capitalize alarm and spell out hi(gh), "FLUSH PRESSURE HIGH"		

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USQ Screening Number:		
Approval Designator: SQ		
Current Modification: A-15		
USQ Screening Number: TF-98-1201, Rev 1		
Approval Designator: NA		
PCA Incorporated: WTF-99-0230		
POSITION/ORG	DELEGATE	DATE
NCO	<u>Greg Seidel</u>	<u>5/13/99</u>
Stab. Mgr	<u>D.J. Saueressig</u>	<u>5/13/99</u>
SR Eng/I.S.	<u>B.R. Johns</u>	<u>5/13/99</u>
Acceptance Review	<u>L. Ross</u>	<u>5/18/99</u>
Approval Authority	<u>DJ Saueressig</u>	<u>5/13/99</u>
Justification: Correct breaker list and add missing breakers.		
Summary of Changes:		
Page 12: Added breaker 11 and corrected order of list.		
Page 15, step 5.1.2: Corrected order of breaker list. Added breakers 6, 1, 2 and 12 to list. Edited breaker descriptions.		

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USQ Screening Number:		
Approval Designator: SQ		
Current Modification: A-16		
USQ Screening Number: TF-98-1201, Rev 1		
Approval Designator: NA		
PCA Incorporated: WTF-99-0384		
POSITION/ORG	DELEGATE	DATE
NCO/IS	<u>D. O. Dudley</u>	<u>8/23/99</u>
STAB. MGR	<u>D. J. Saueressig</u>	<u>8/23/99</u>
SR ENG/IS	<u>B. R. Johns</u>	<u>8/23/99</u>
Acceptance Review	<u>S. E. Bevans</u>	<u>8/23/99</u>
Approval Authority	<u>D. J. Saueressig</u>	<u>8/23/99</u>
Justification: Engineering Request based on Operations Feedback		
Summary of Changes: Add missed valves, and breakers, Change terminology and ranges to match current field conditions See Change Summary and Signature Sheet		

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USQ Screening Number:		
Approval Designator: SQ		
Current Modification: A-17		
USQ Screening Number: TF-98-0836, Rev 4		
Approval Designator: NA		
PCA Incorporated: WTF-99-0457		
POSITION/ORG	DELEGATE	DATE
NCO/IS	<u>D. O. Dudley</u>	<u>10/11/99</u>
STAB. MGR	<u>D. J. Saueressig</u>	<u>10/11/99</u>
SR ENG/ISE	<u>B. R. Johns</u>	<u>10/11/99</u>
Acceptance Review	<u>S. E. Bevans</u>	<u>10/11/99</u>
Approval Authority	<u>D. J. Saueressig</u>	<u>10/11/99</u>
Justification: Engineering Request based on Operations Feedback		
Summary of Changes: Update for 241-U-105		
See Change Summary and Signature Sheet		

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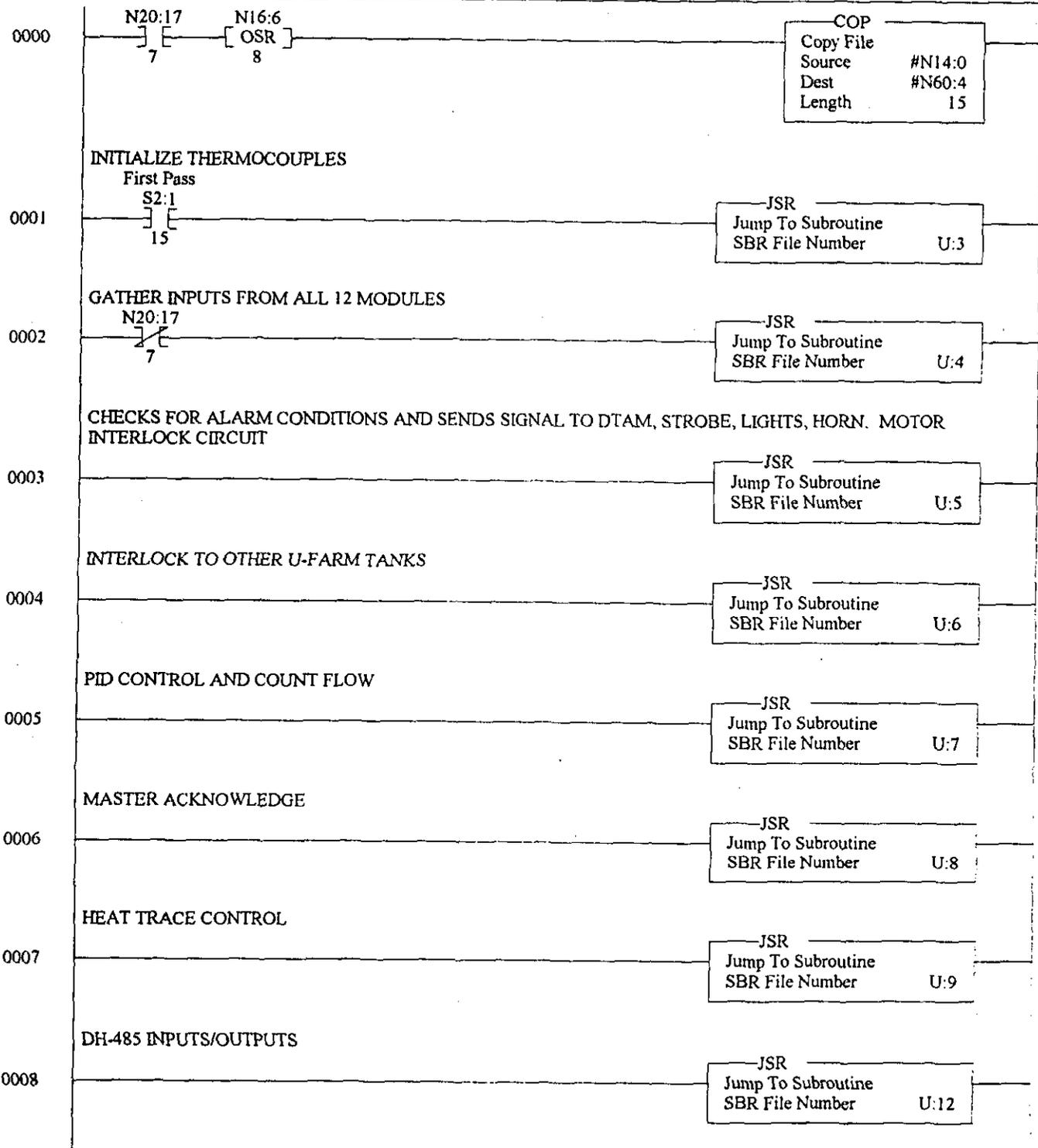
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Approval Designator: SQ		
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Approval Designator: S		
PCA Incorporated: WTF-99-0474		
POSITION/ORG	DELEGATE	DATE
NCO/IS	<u>B. D. Foreman</u>	<u>10/27/99</u>
SAFETY	<u>F. A. Zak</u>	<u>10/27/99</u>
STAB. MGR	<u>D. J. Saueressig</u>	<u>10/27/99</u>
SR ENG/ISE	<u>B. R. Johns</u>	<u>10/27/99</u>
Acceptance Review	<u>S. E. Bevans</u>	<u>10/27/99</u>
Approval Authority	<u>D. J. Saueressig</u>	<u>10/27/99</u>
Justification: Engineering Request based on Operations Feedback		
Summary of Changes: Expand flowmeter range and delete outdated shutdown circuit check See Change Summary and Signature Sheet		

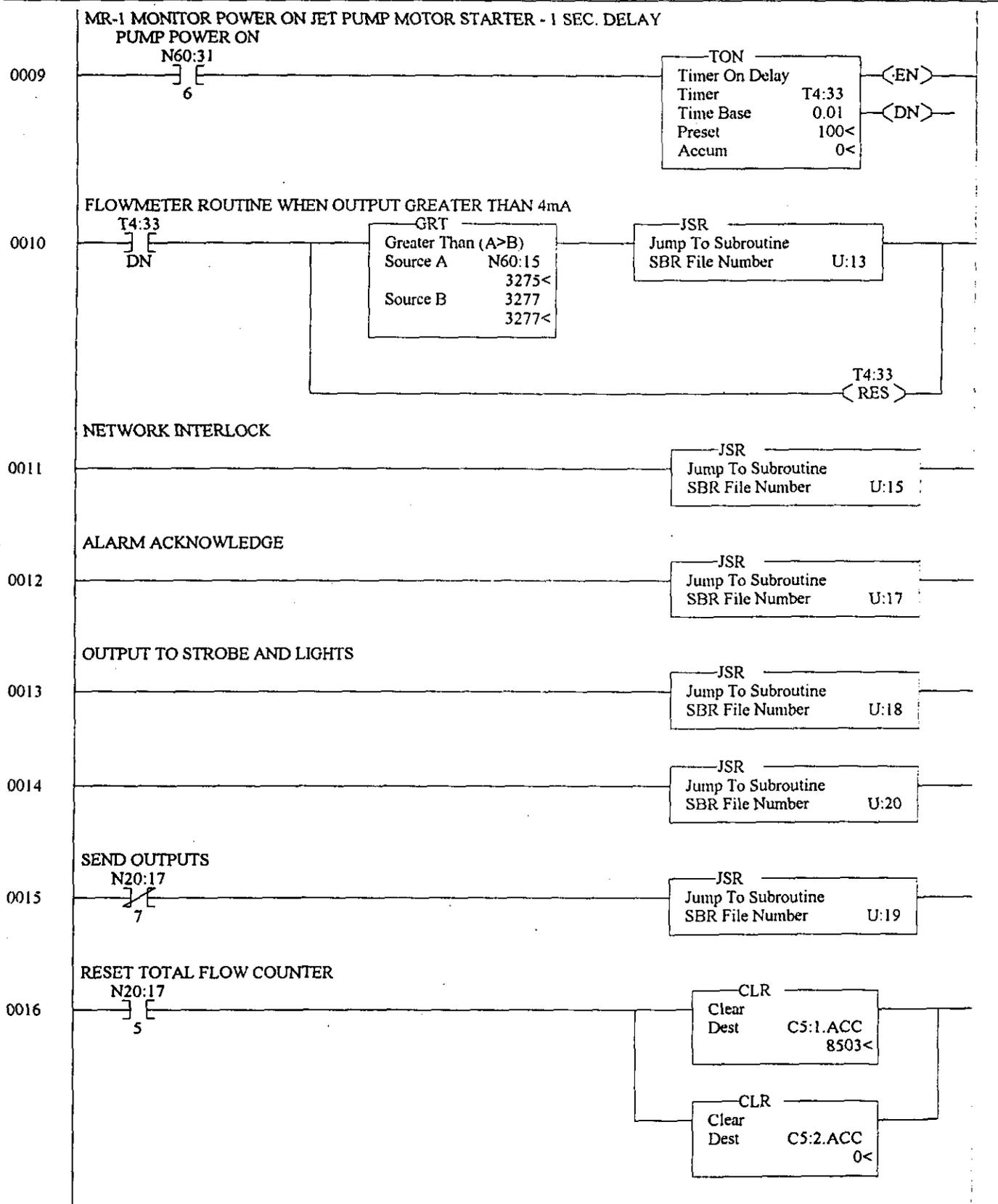
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Last Full Revision: A-0		
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USQ Screening Number:		
Approval Designator: SQ		
Current Modification: A-19		
USQ Screening Number: TF-98-1201, Rev 1		
Approval Designator: NA		
PCA Incorporated: WTF-99-0518		
POSITION/ORG	DELEGATE	DATE
NCO/IS	<u>G. S. Seidel</u>	<u>12/01/99</u>
SM/IS	<u>R. P. Raven</u>	<u>12/01/99</u>
SR ENG/ISE	<u>T. M. Horner</u>	<u>12/01/99</u>
Acceptance Review	<u>S. E. Bevans</u>	<u>12/01/99</u>
Approval Authority	<u>R. P. Raven</u>	<u>12/01/99</u>
Justification: Engineering Request		
Summary of Changes:		
Pages 3, 16, & 32:	Update "Flammable Gas" to "Flammable/Combustible Gas, IF applicable".	
Pages 12, 15, & 78:	Add PERFORMER signature sheet back into the procedure.	
Page 32, Step 5.3.49	Bold and Capitalize "or" when connecting FGM model 4.0.	

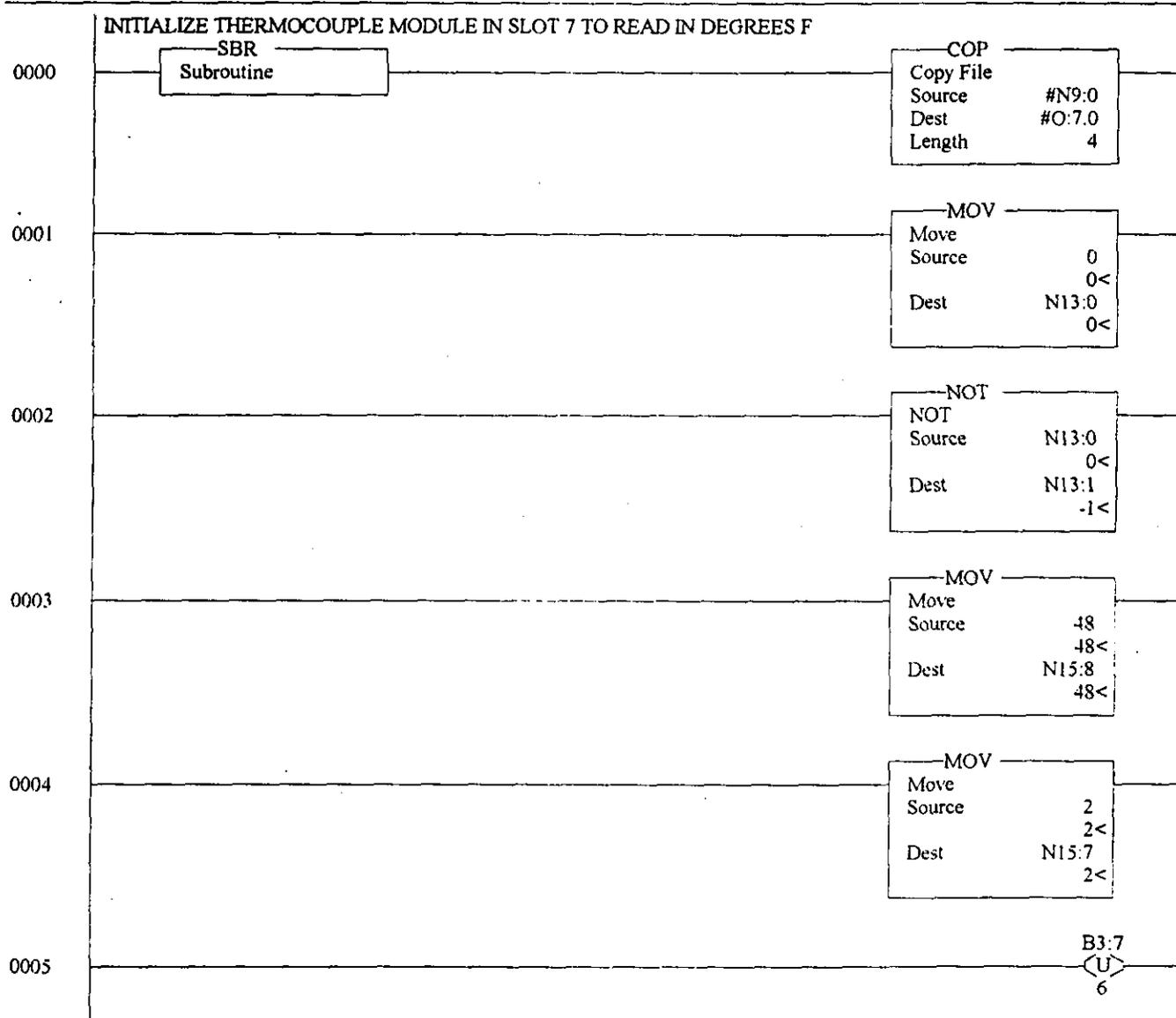
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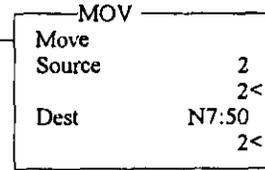
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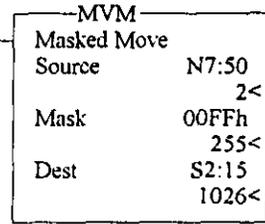


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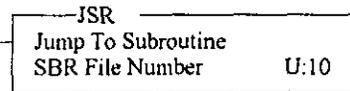
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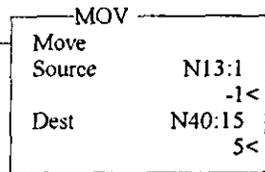
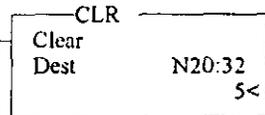
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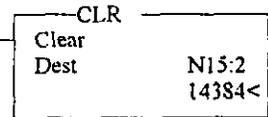
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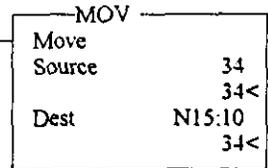
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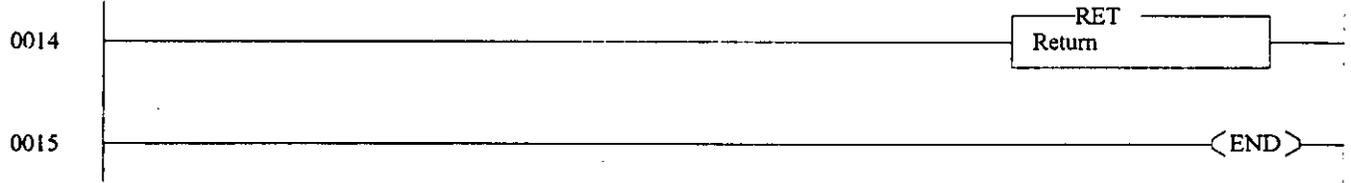
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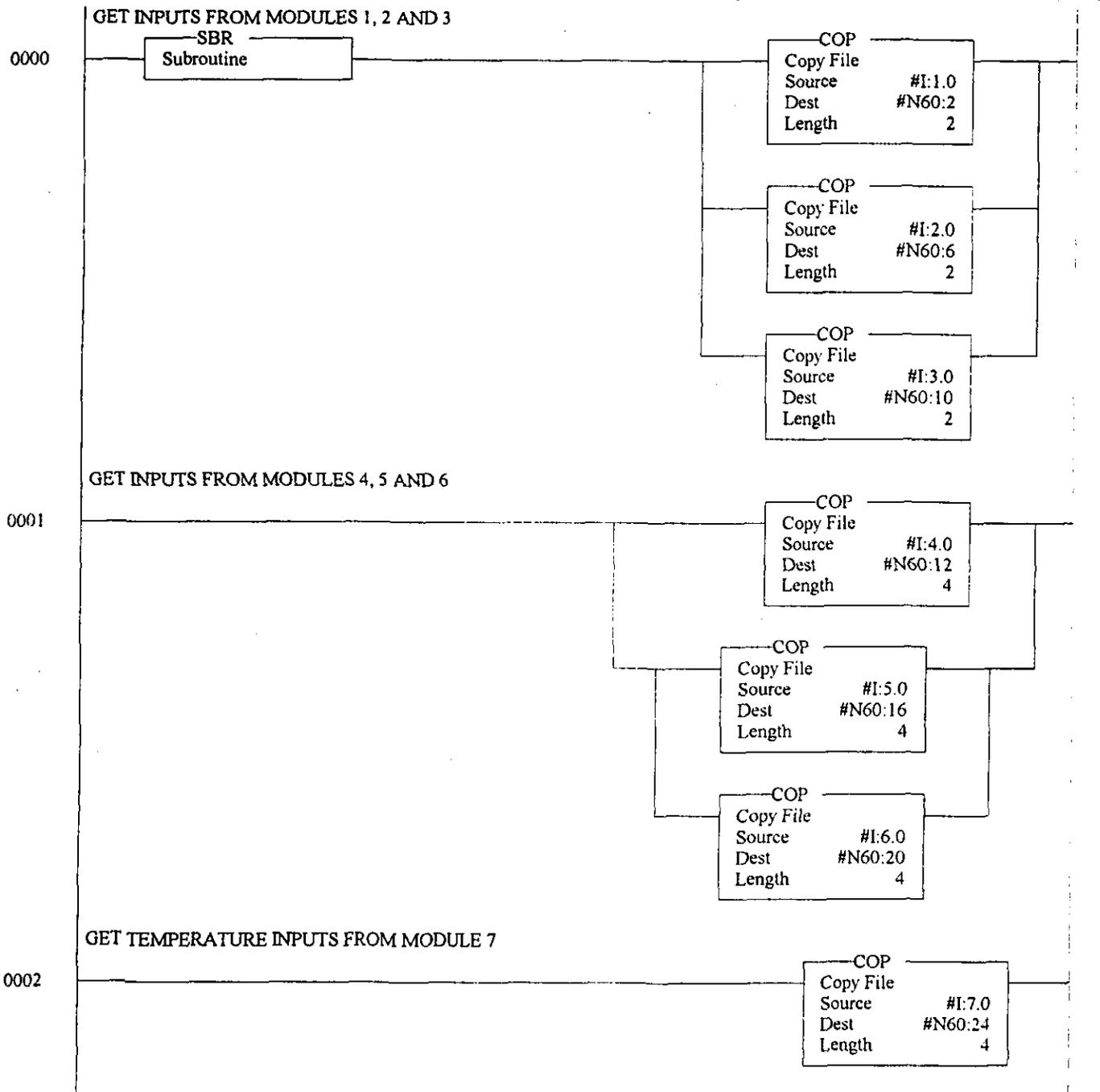
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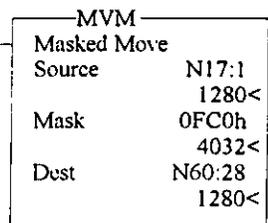
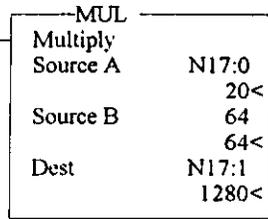
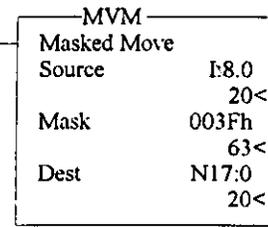
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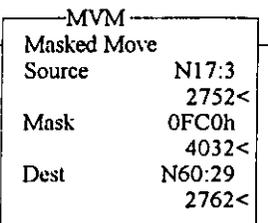
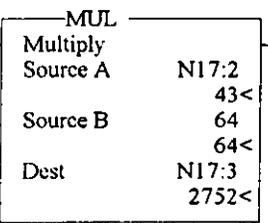
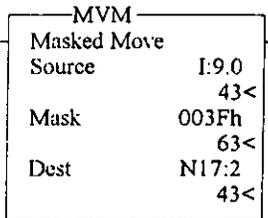
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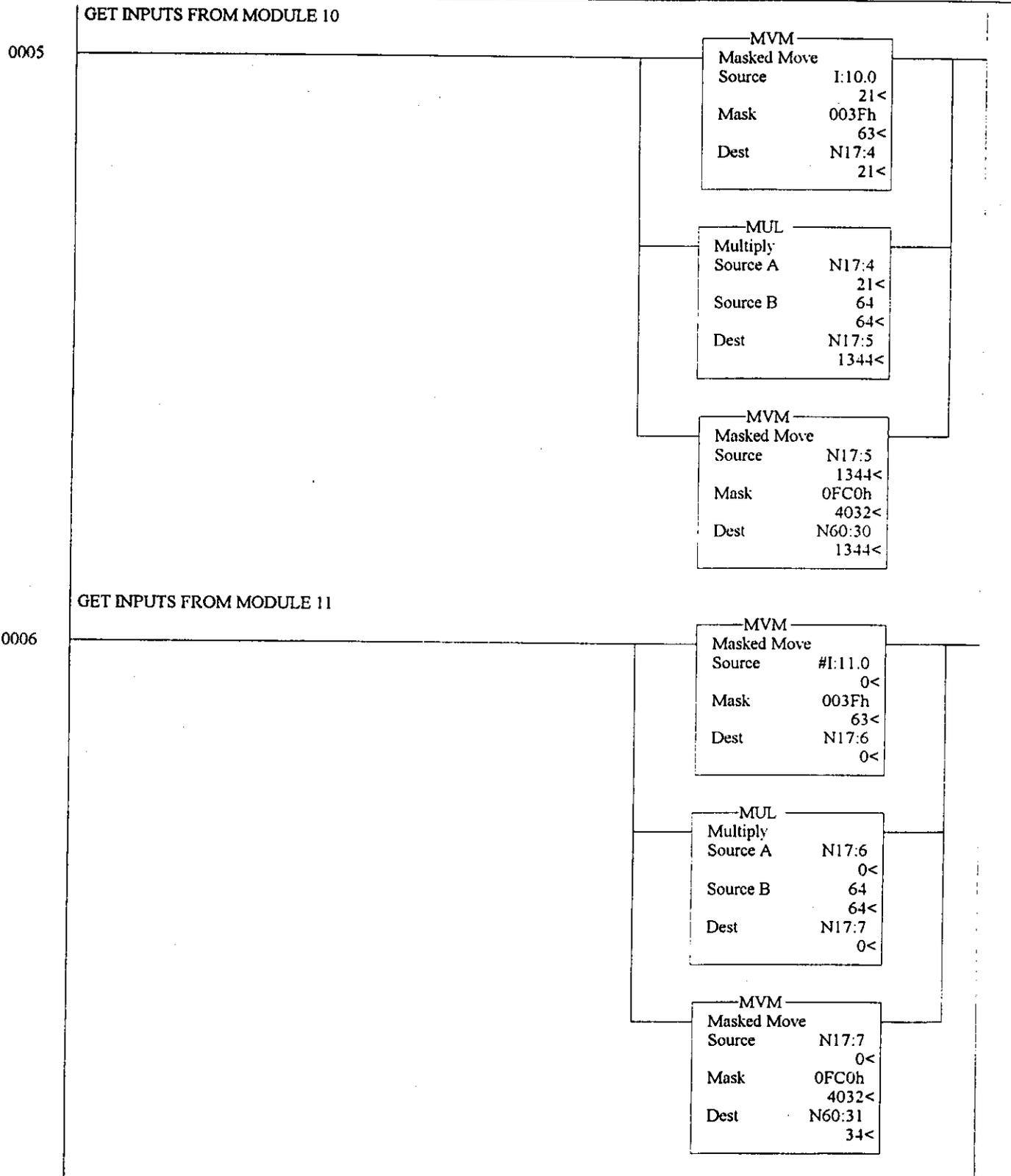
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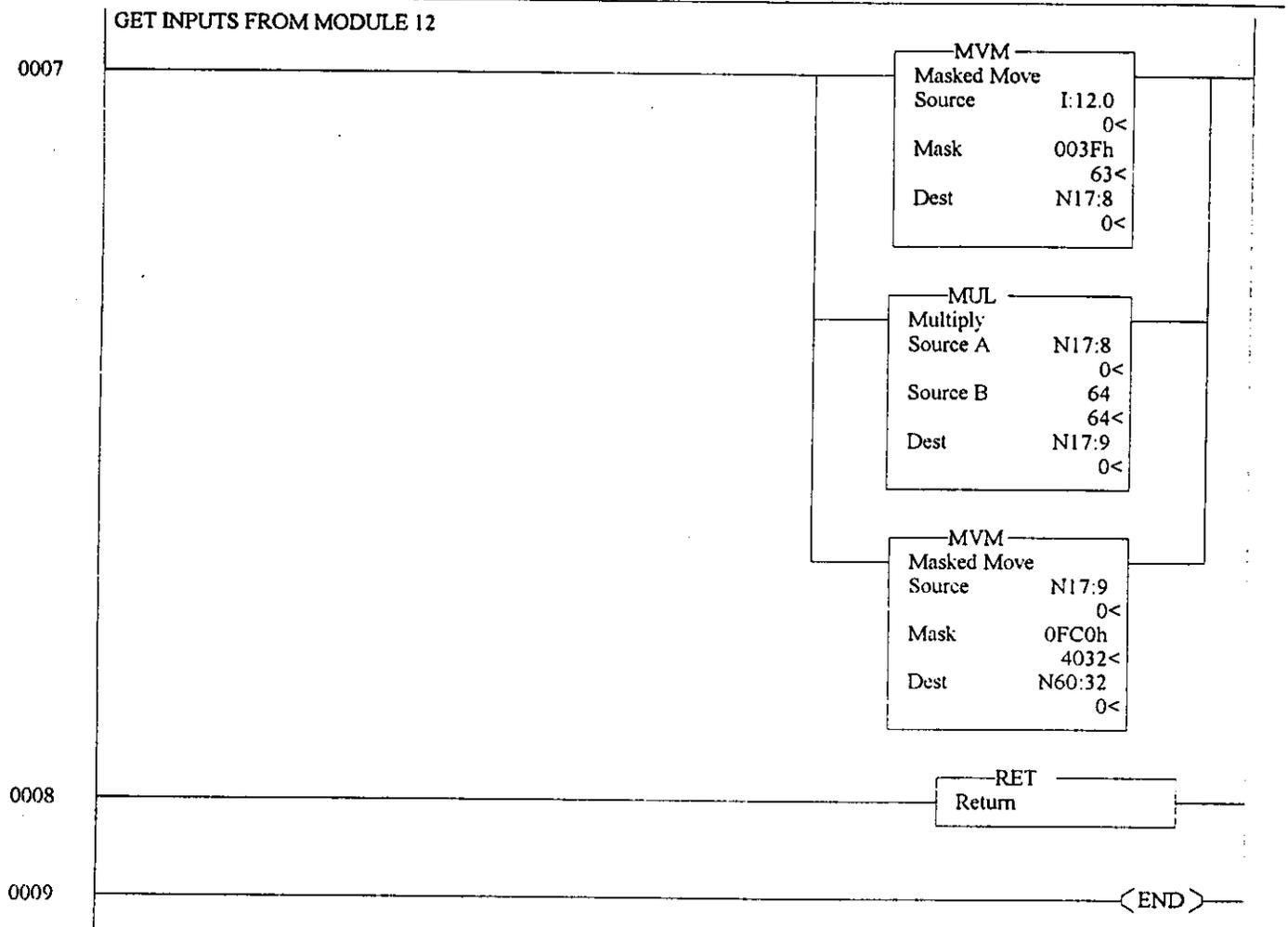


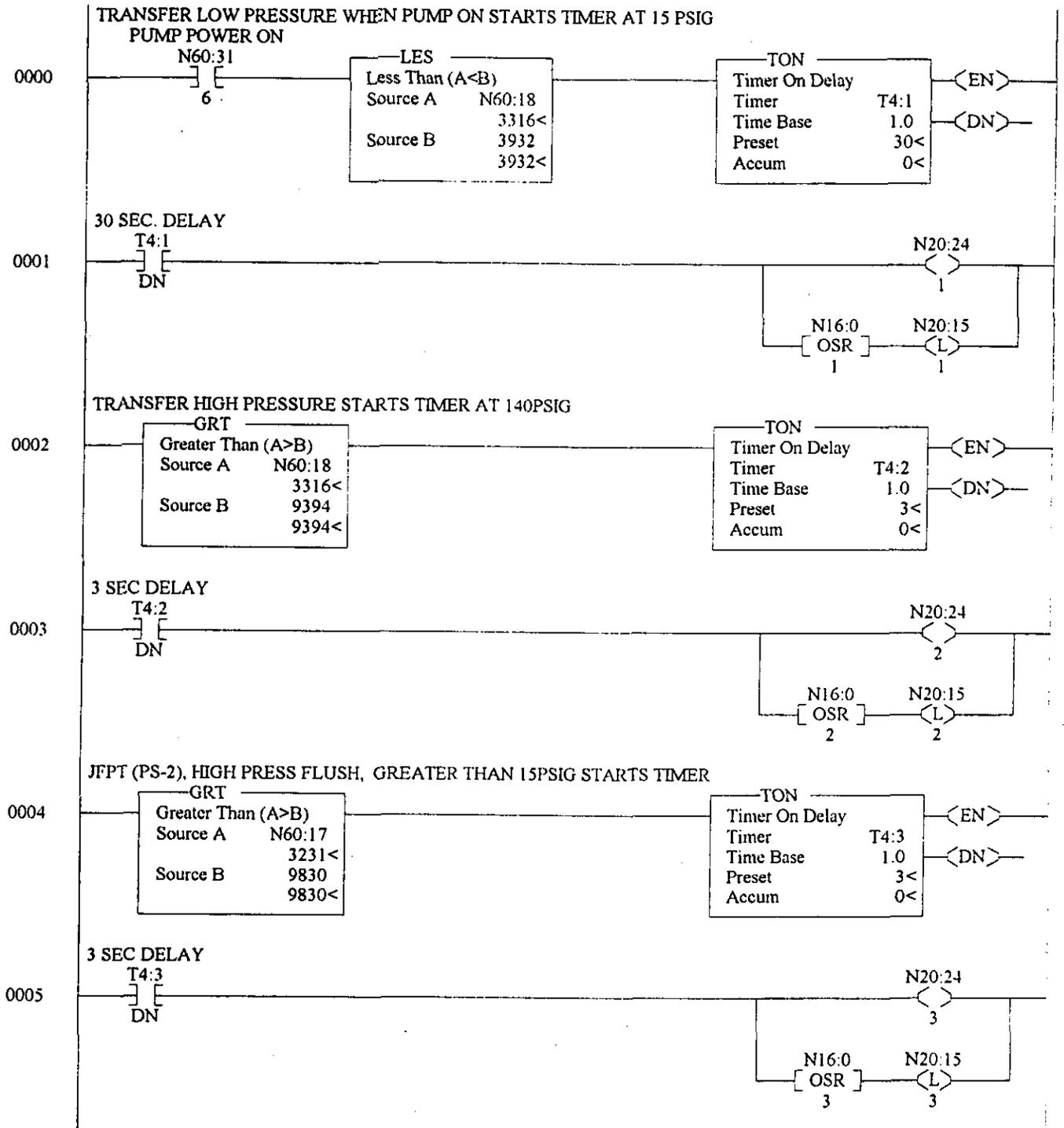
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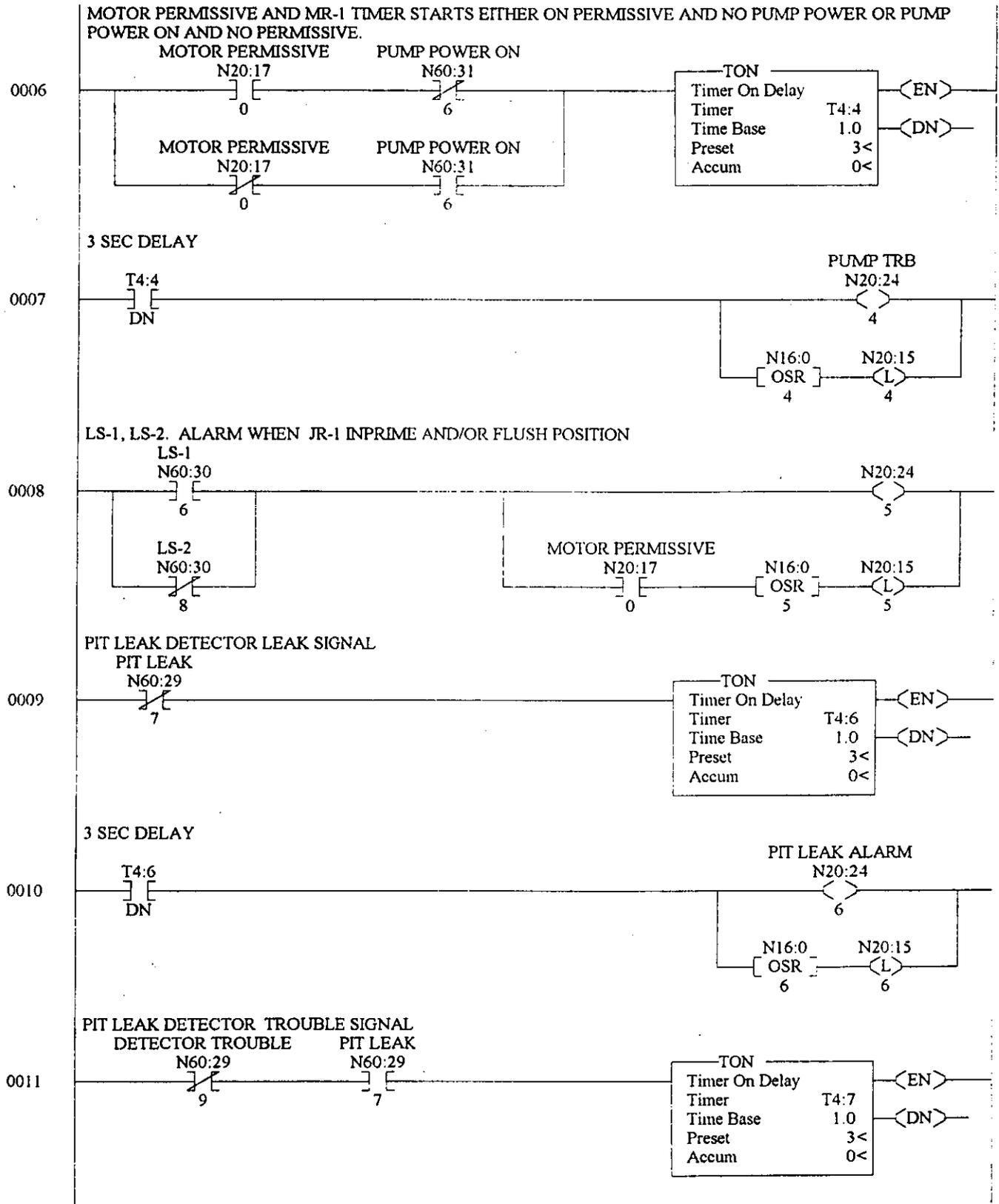
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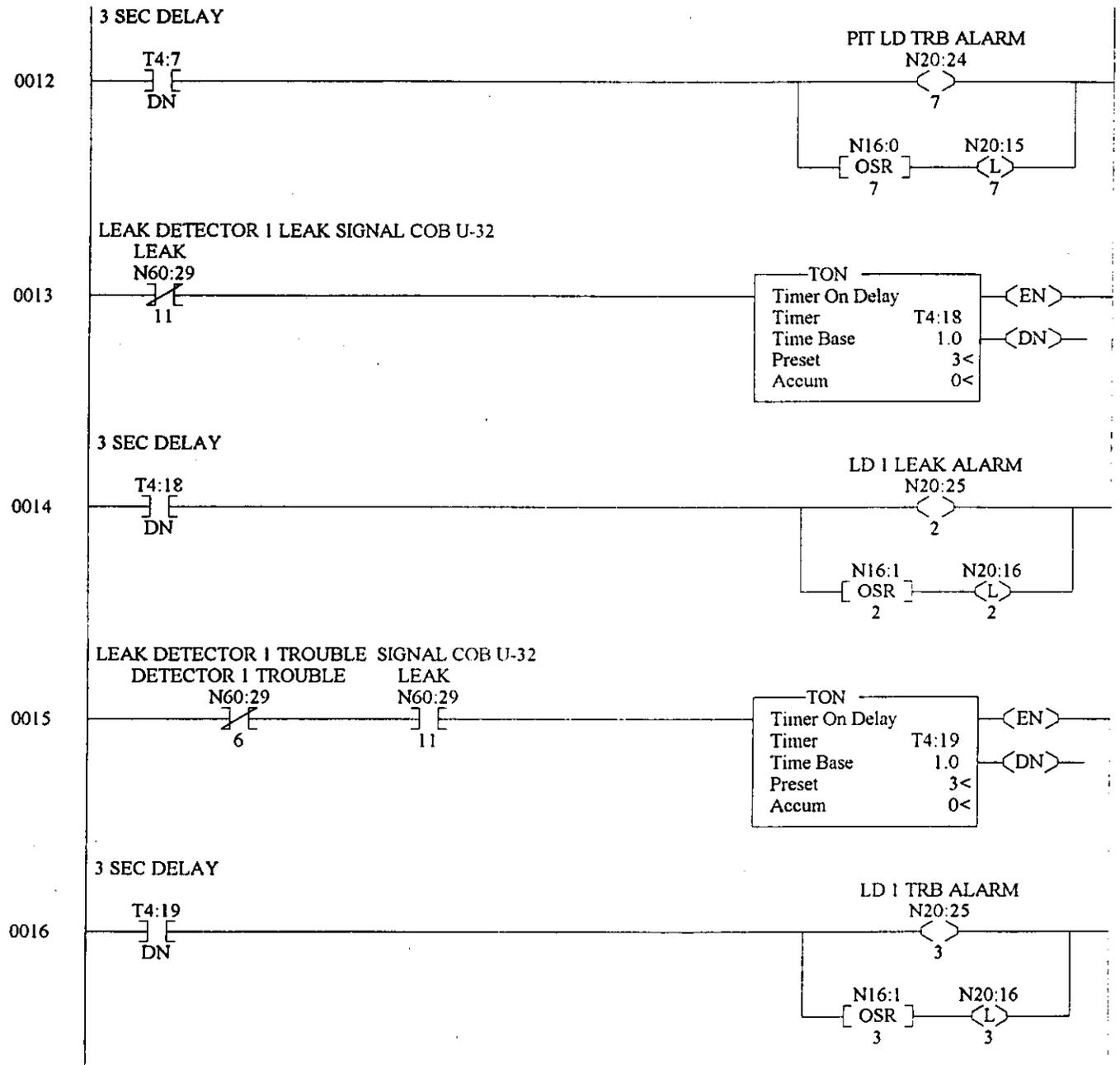


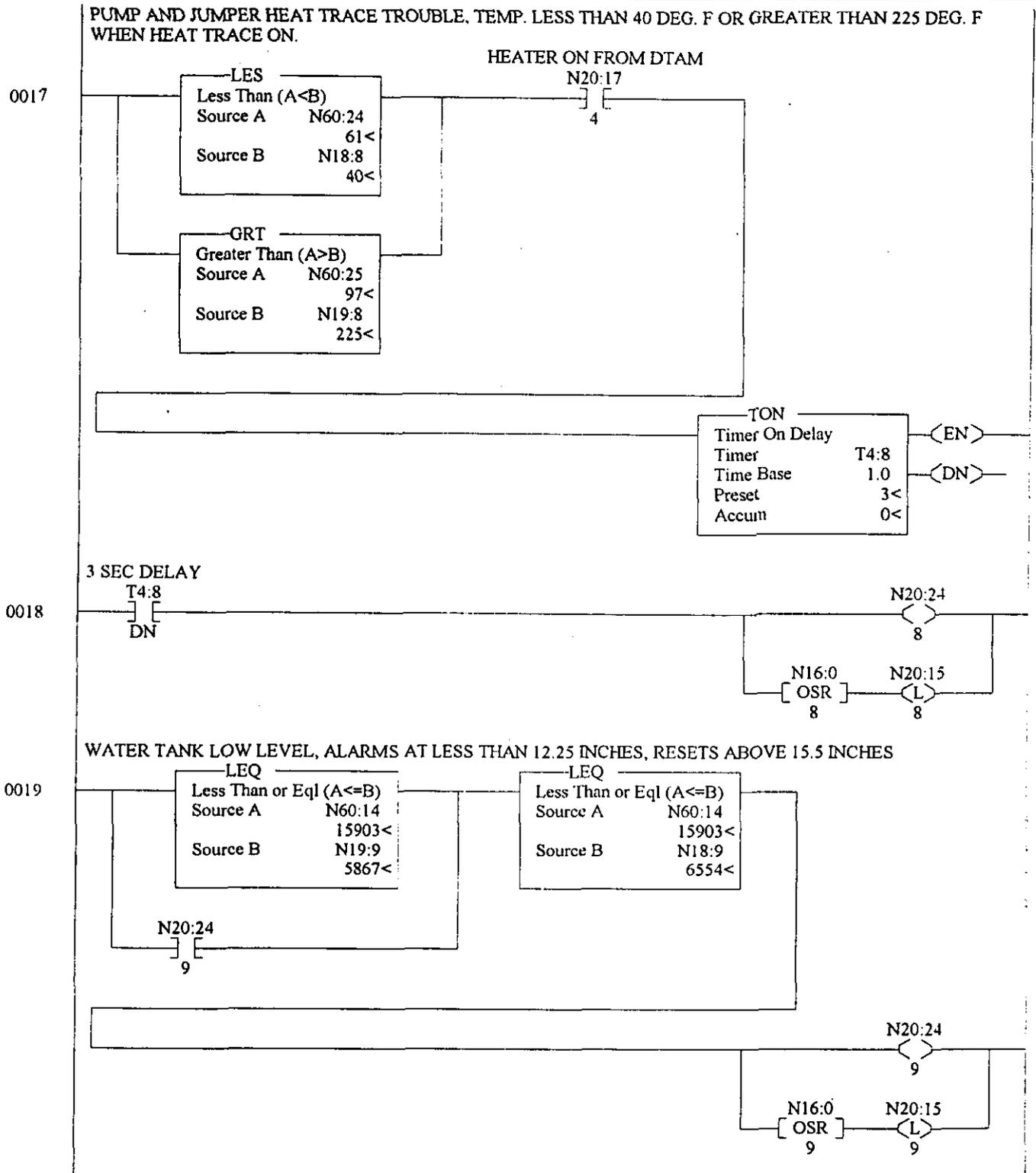


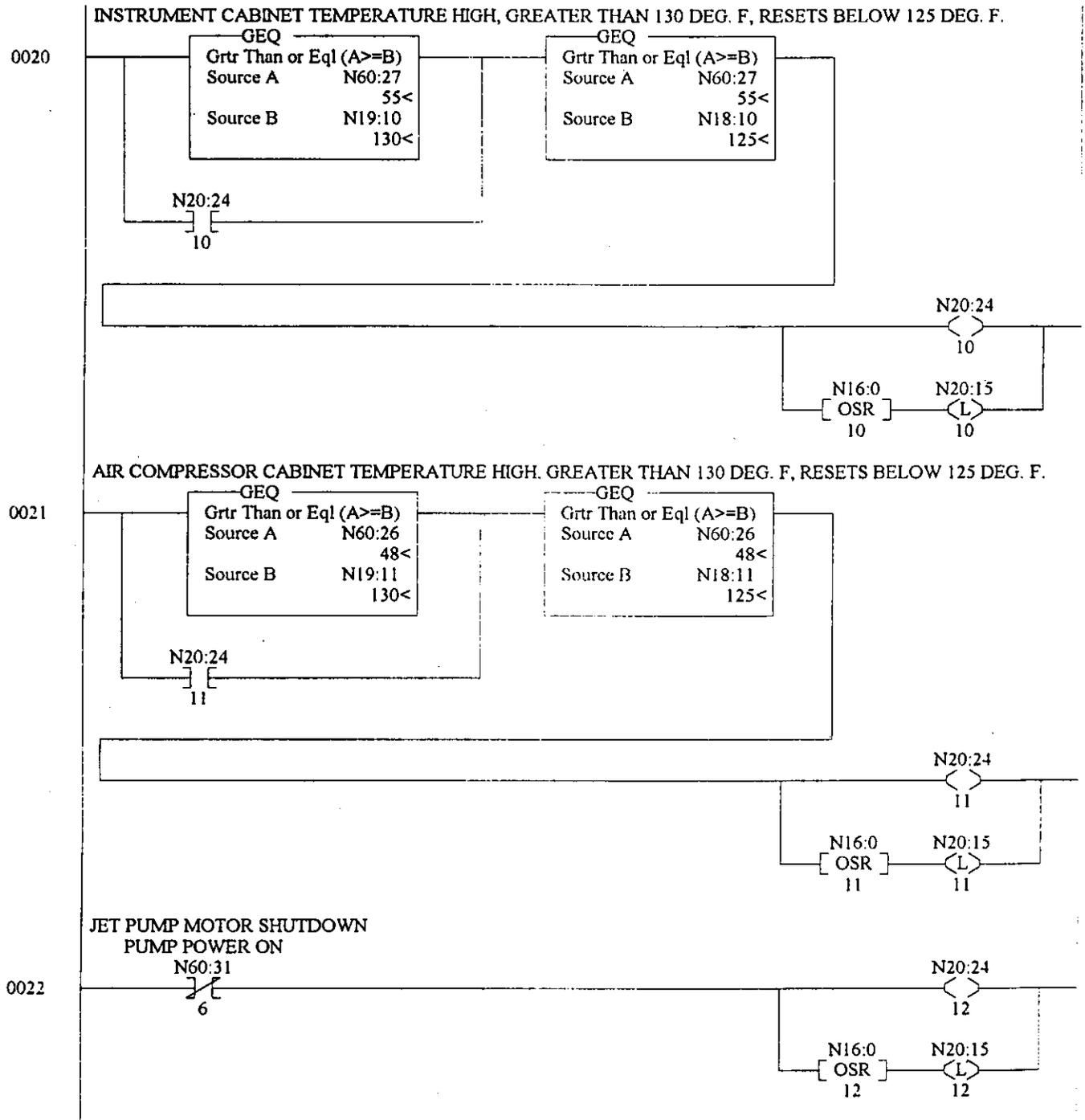


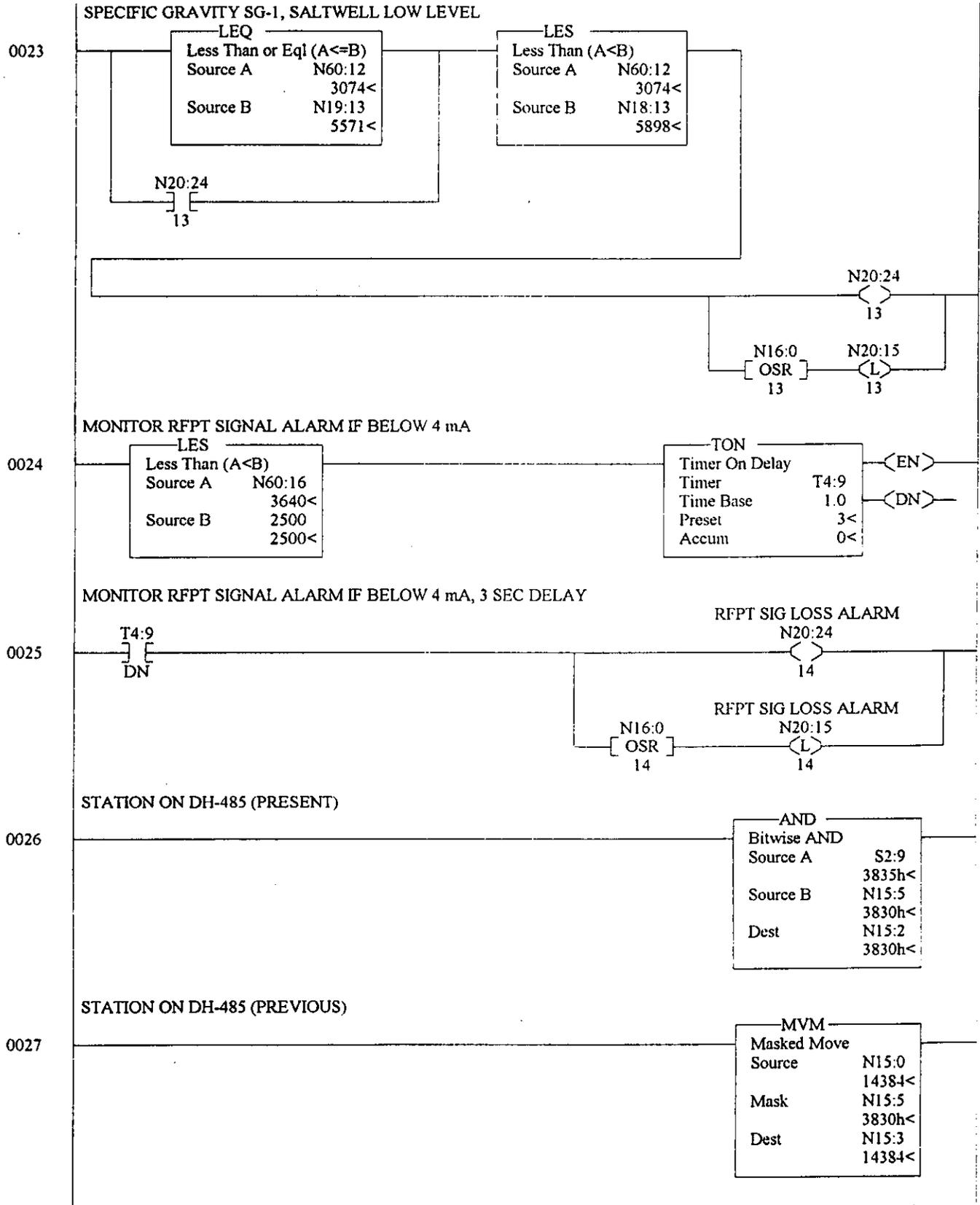


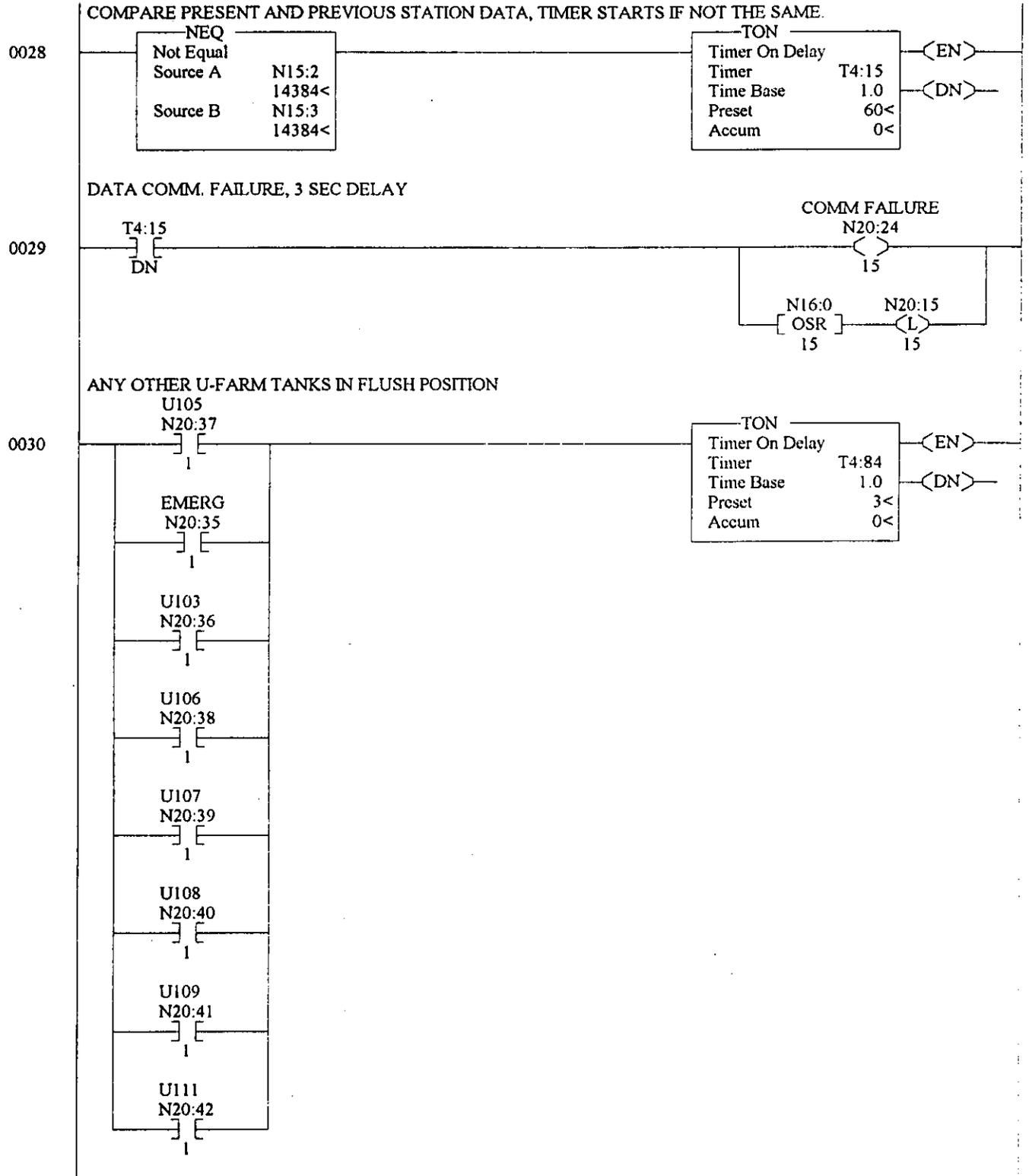


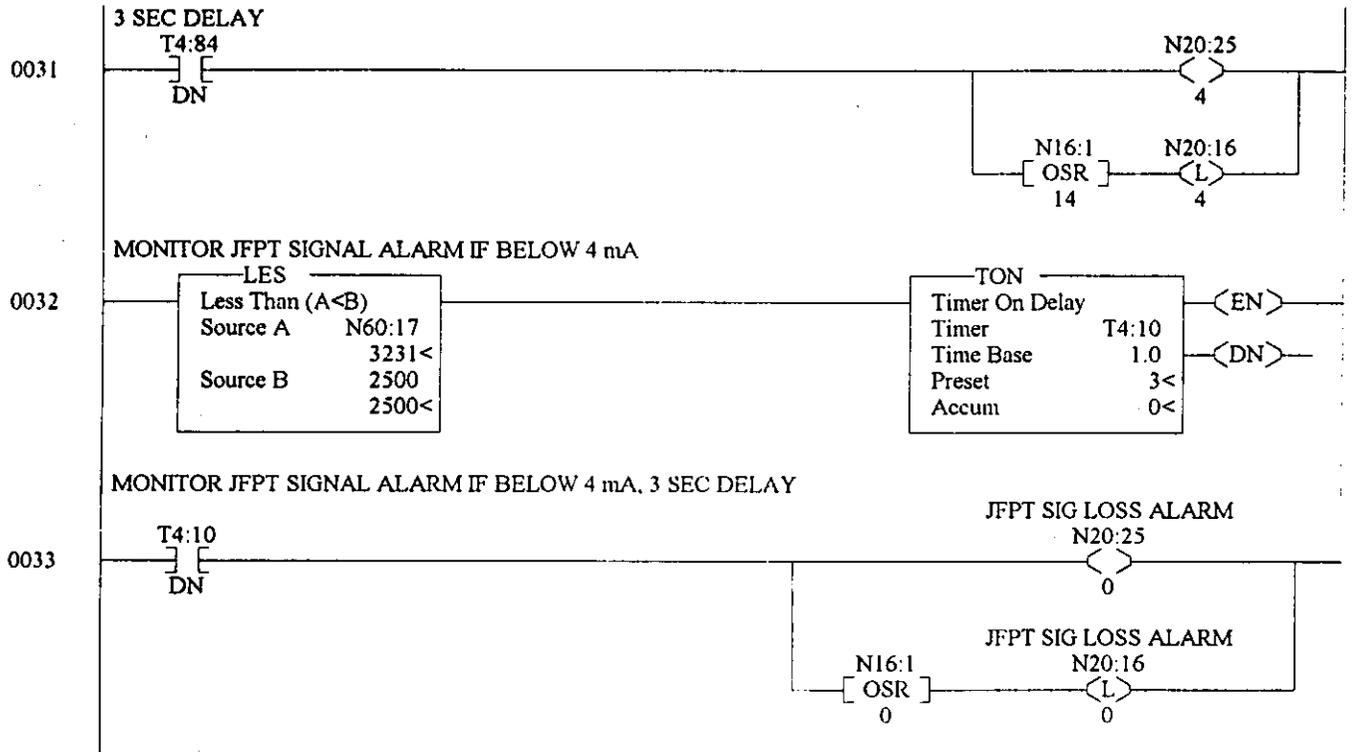


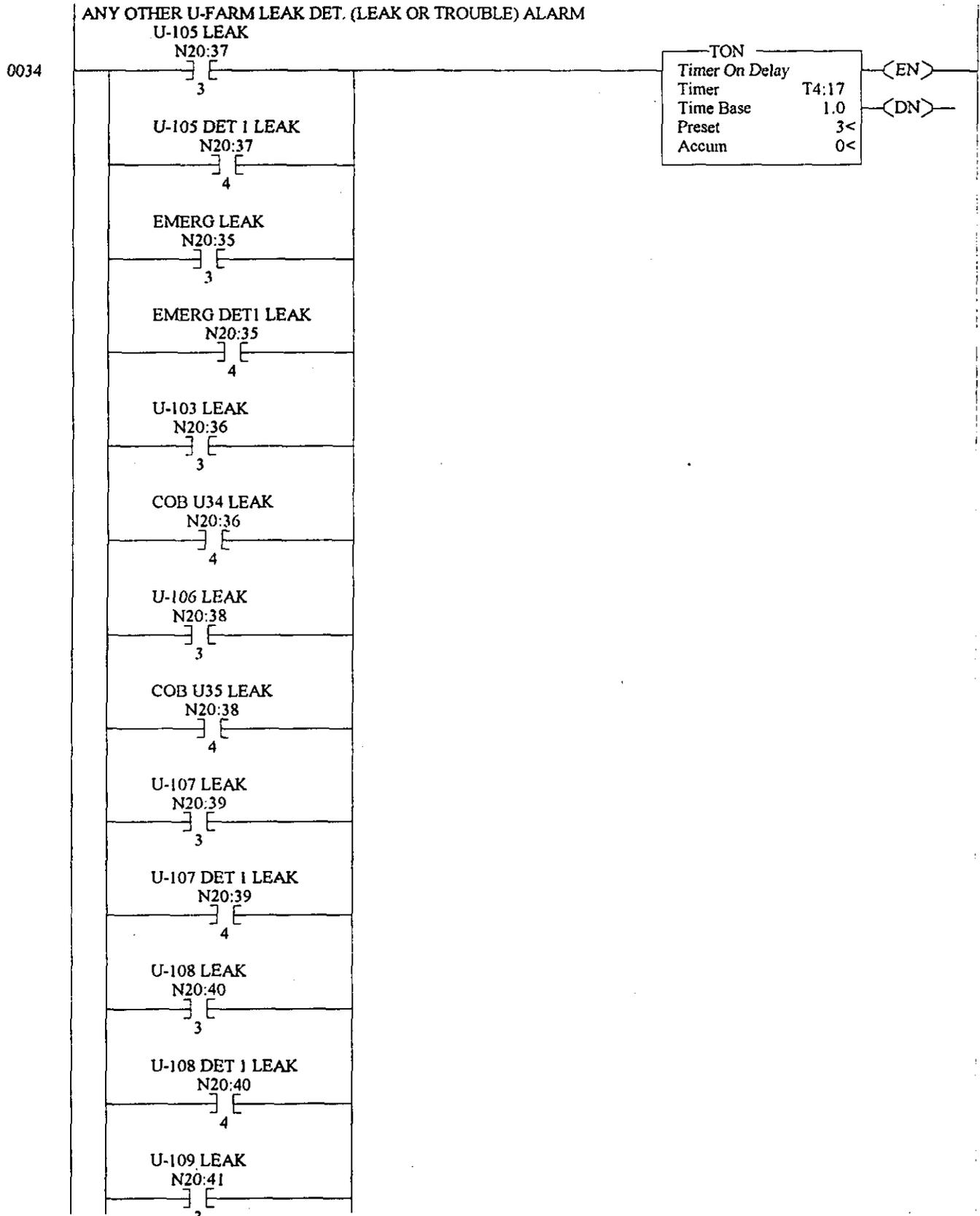


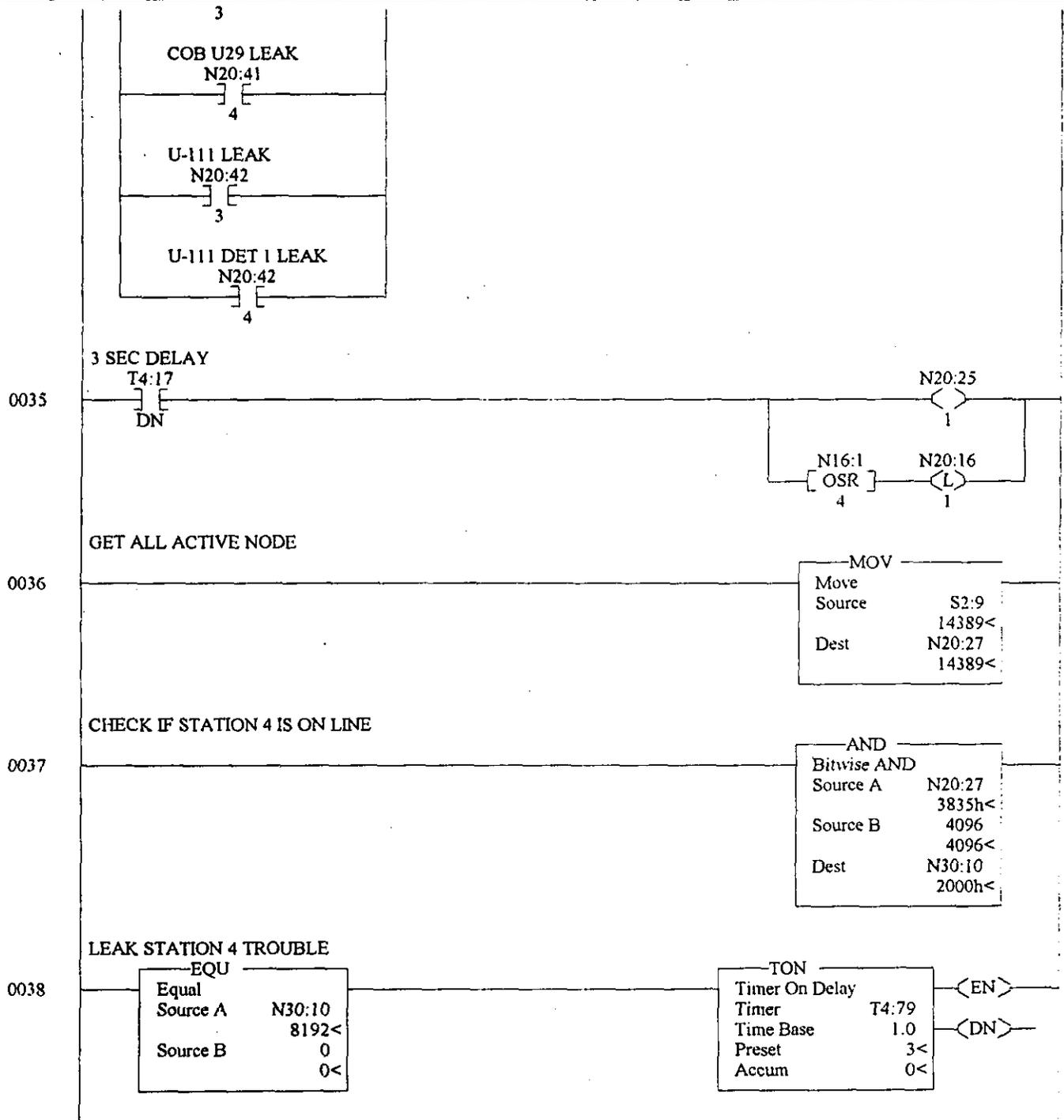


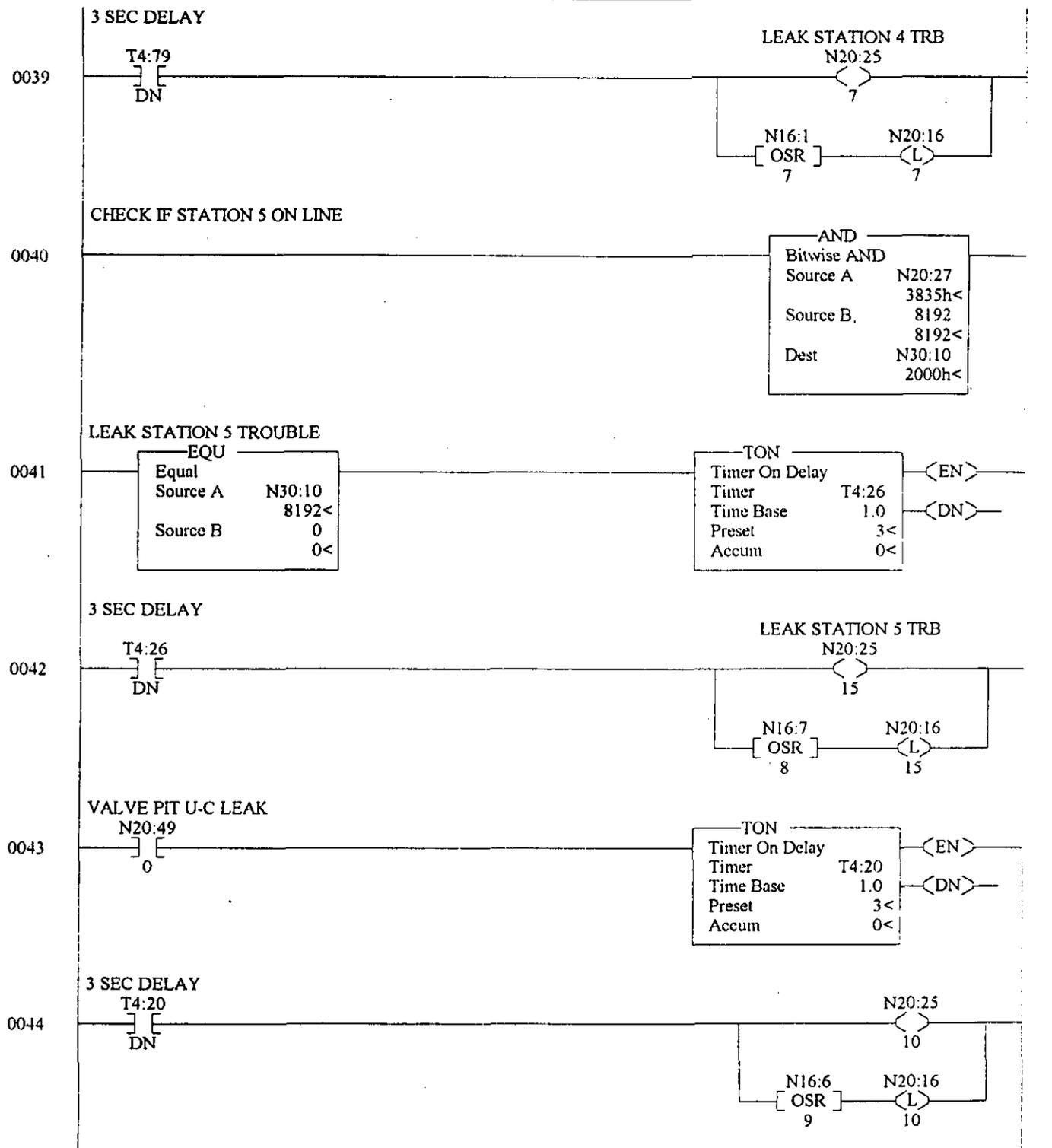


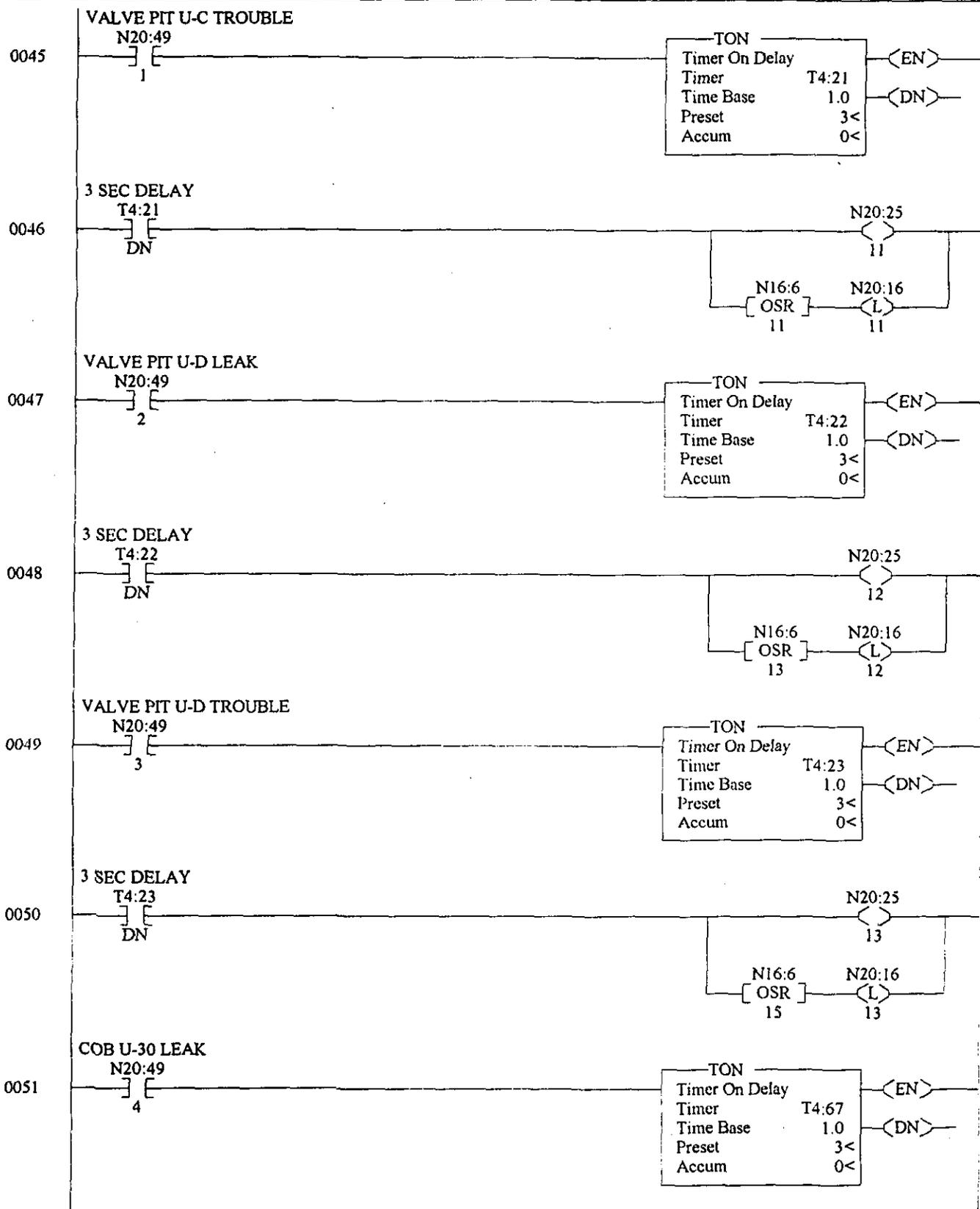


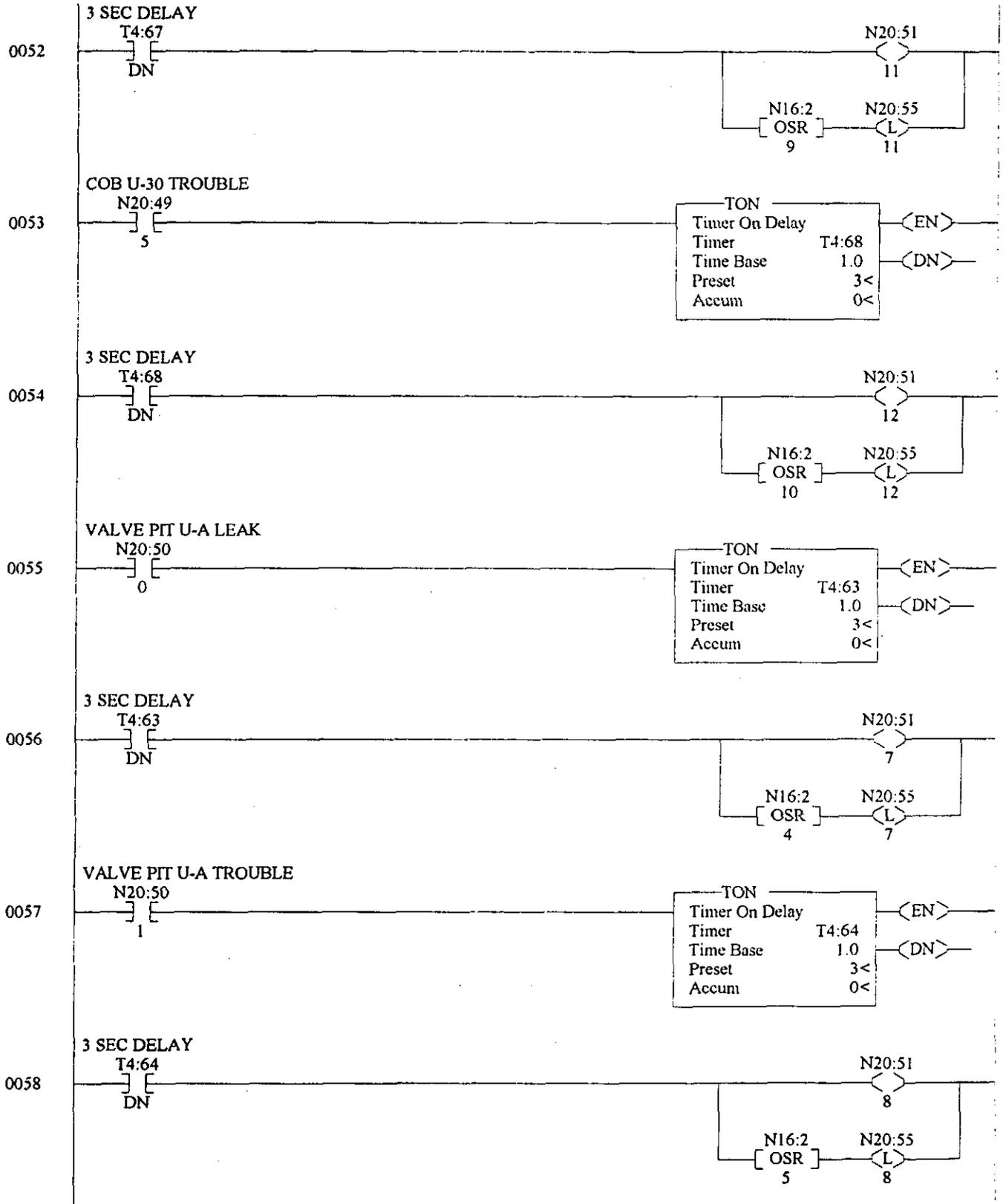


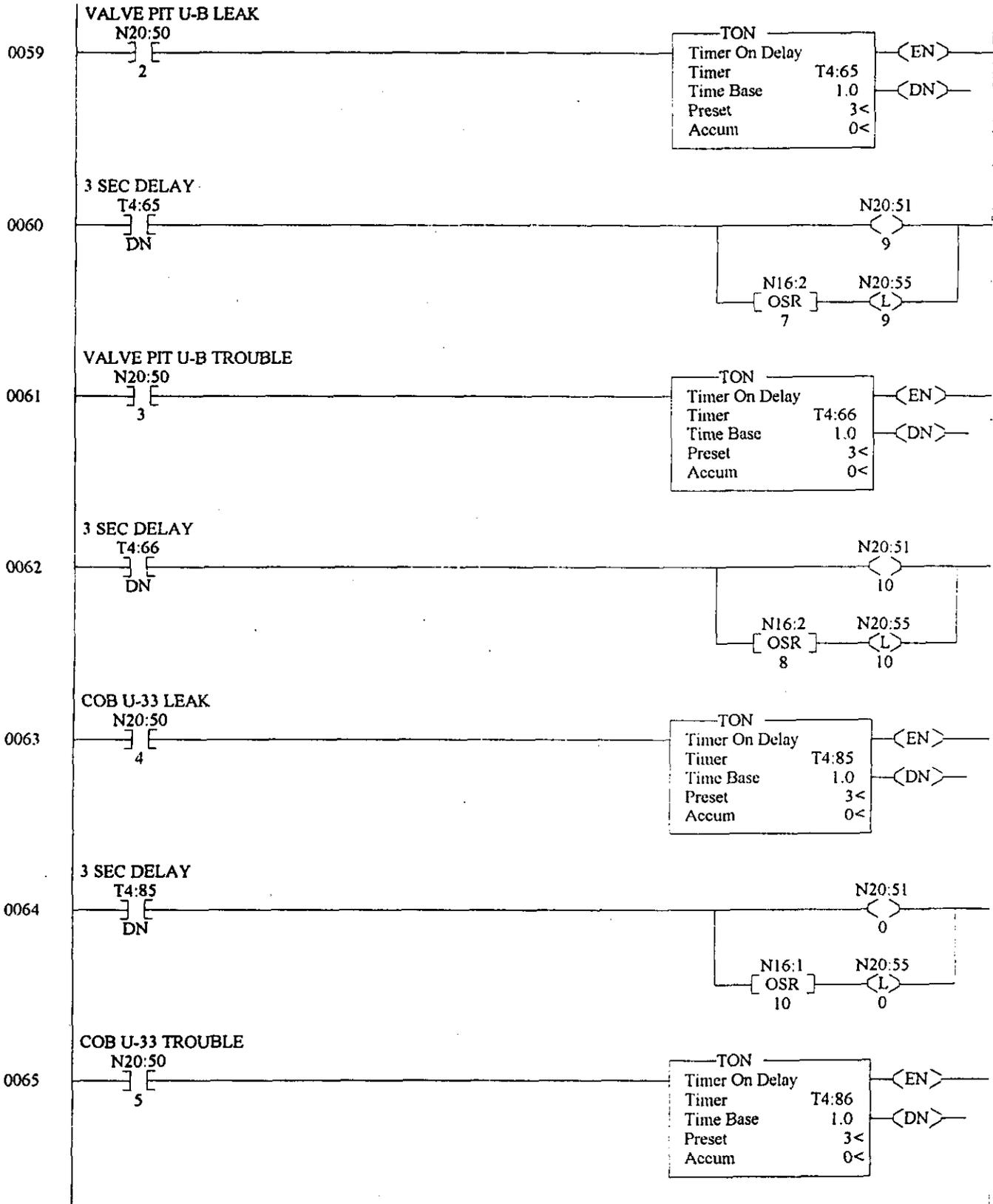


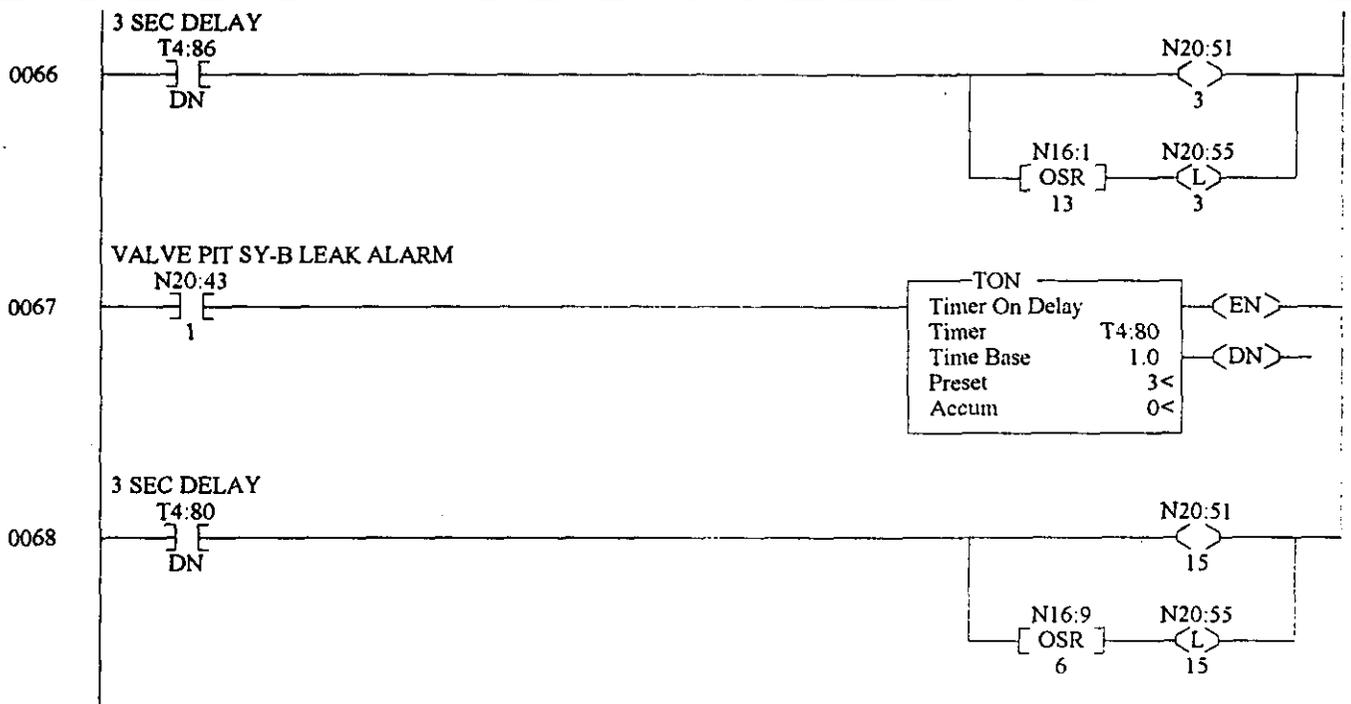


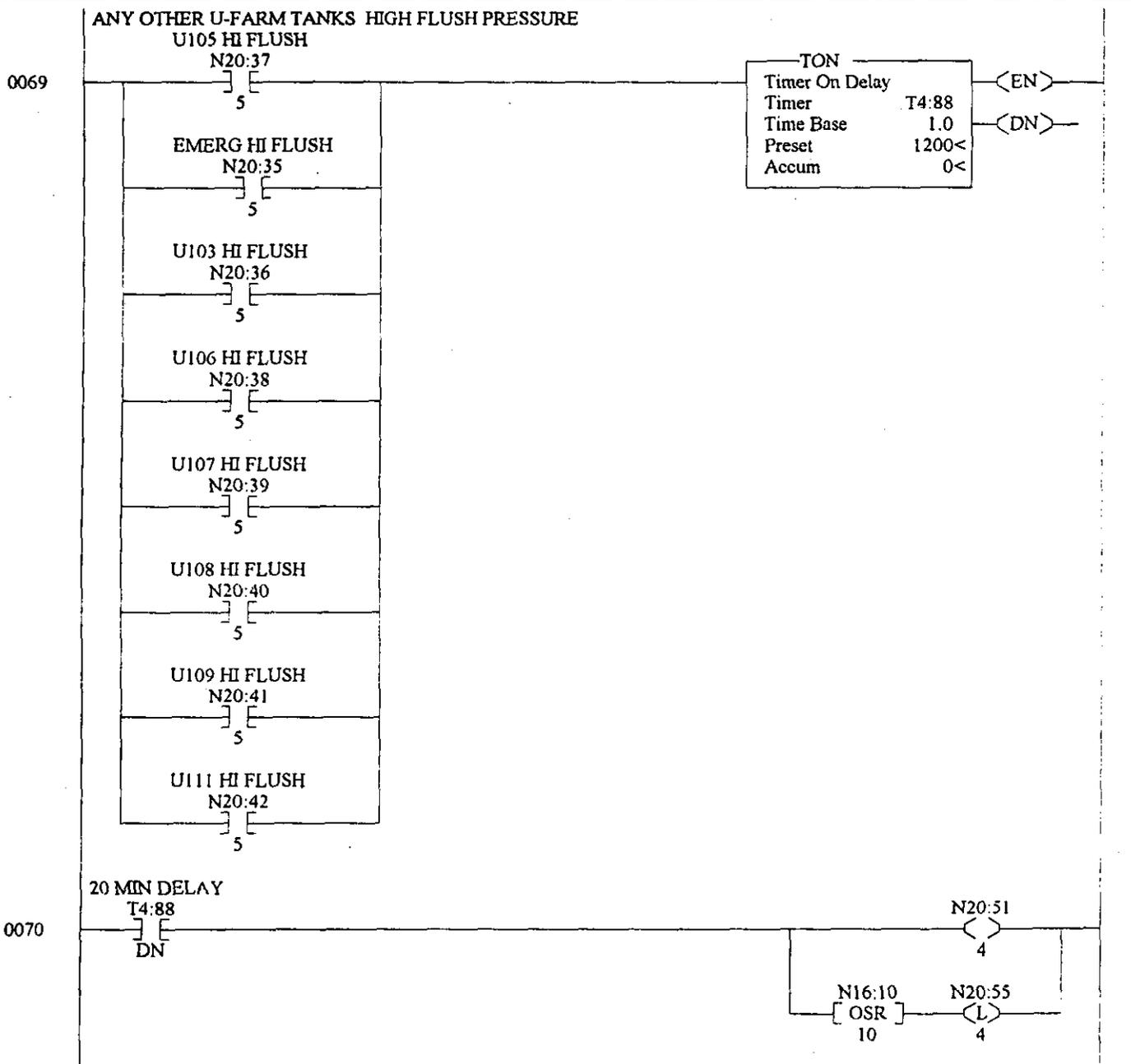


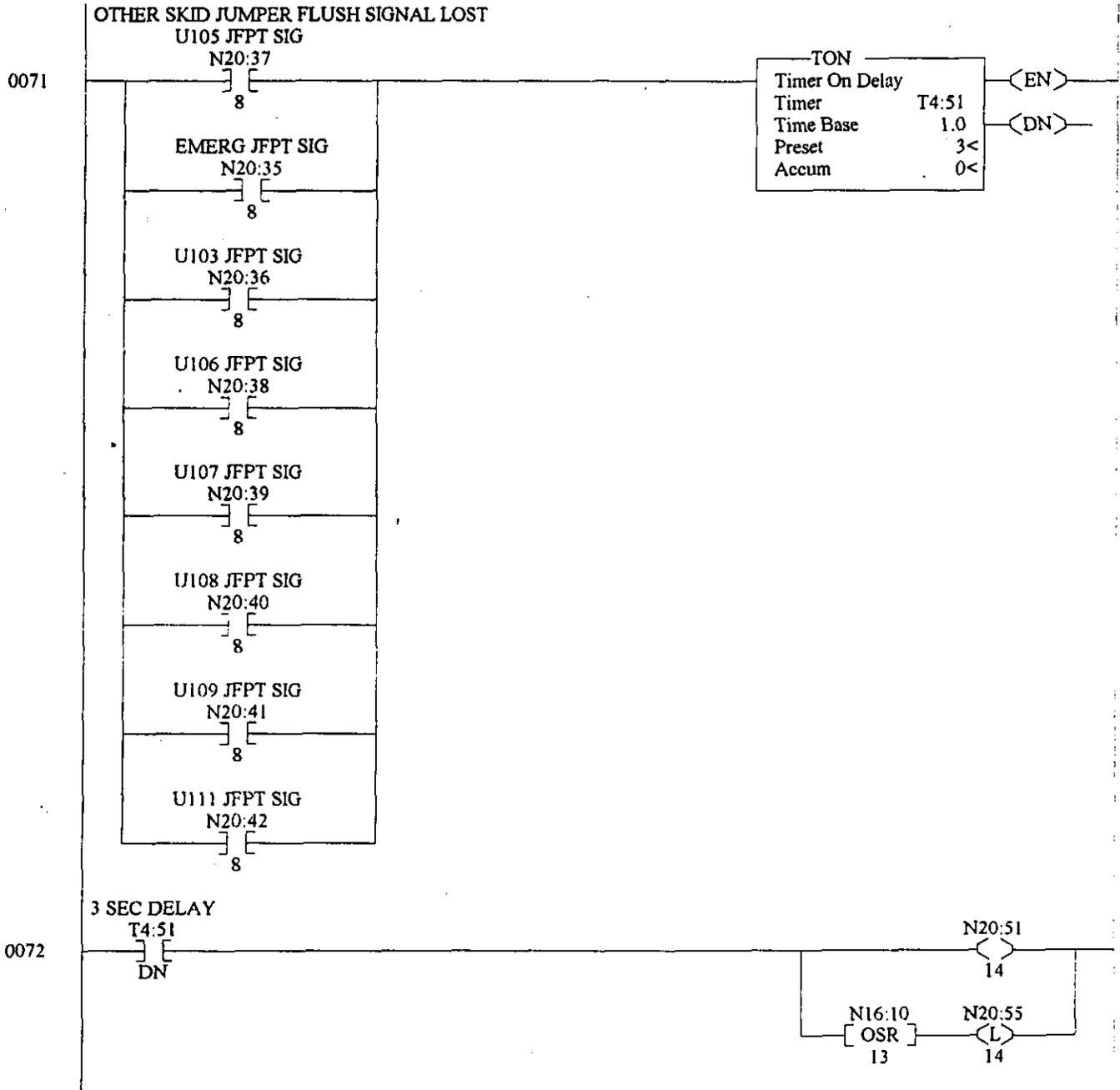


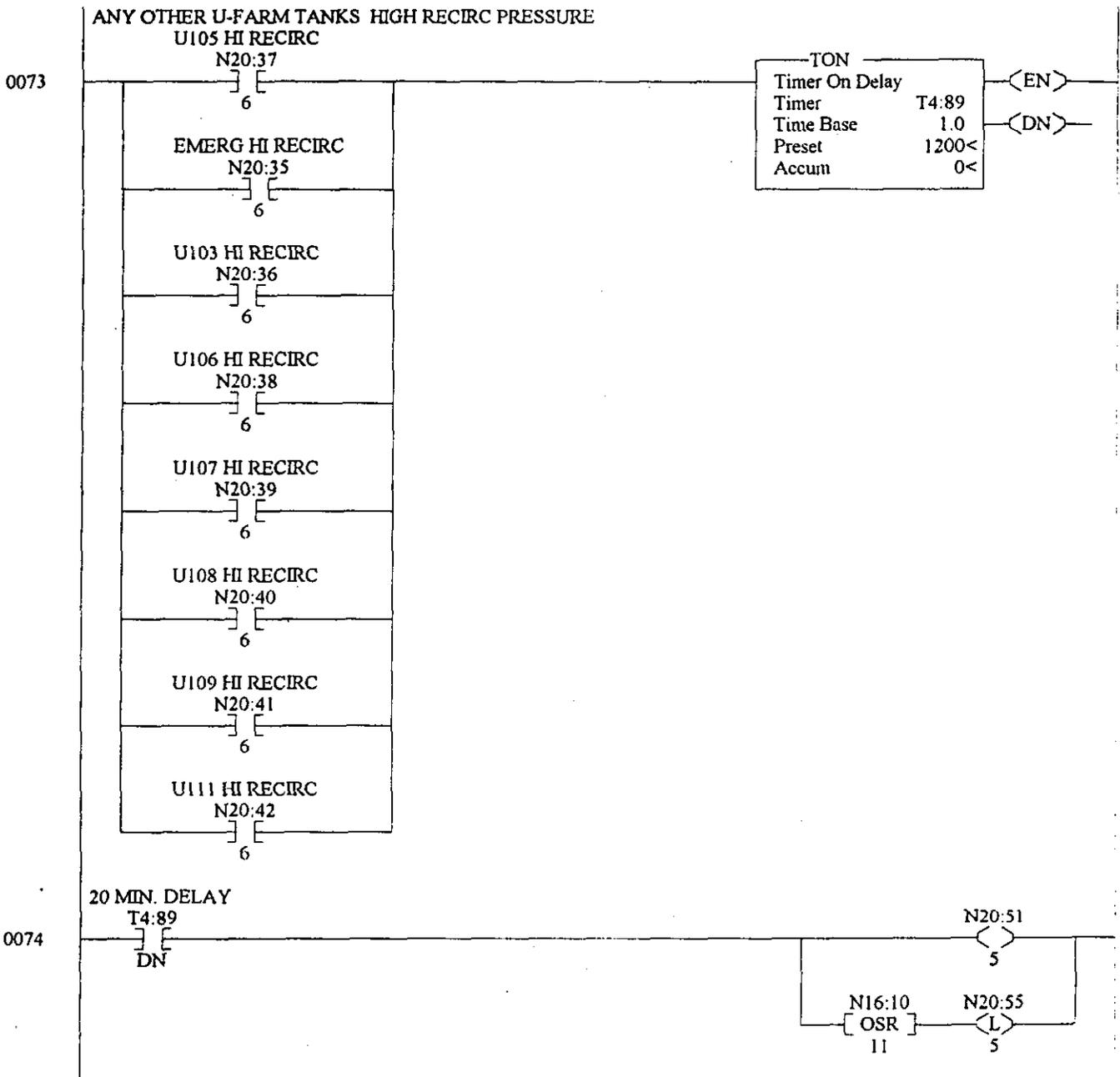


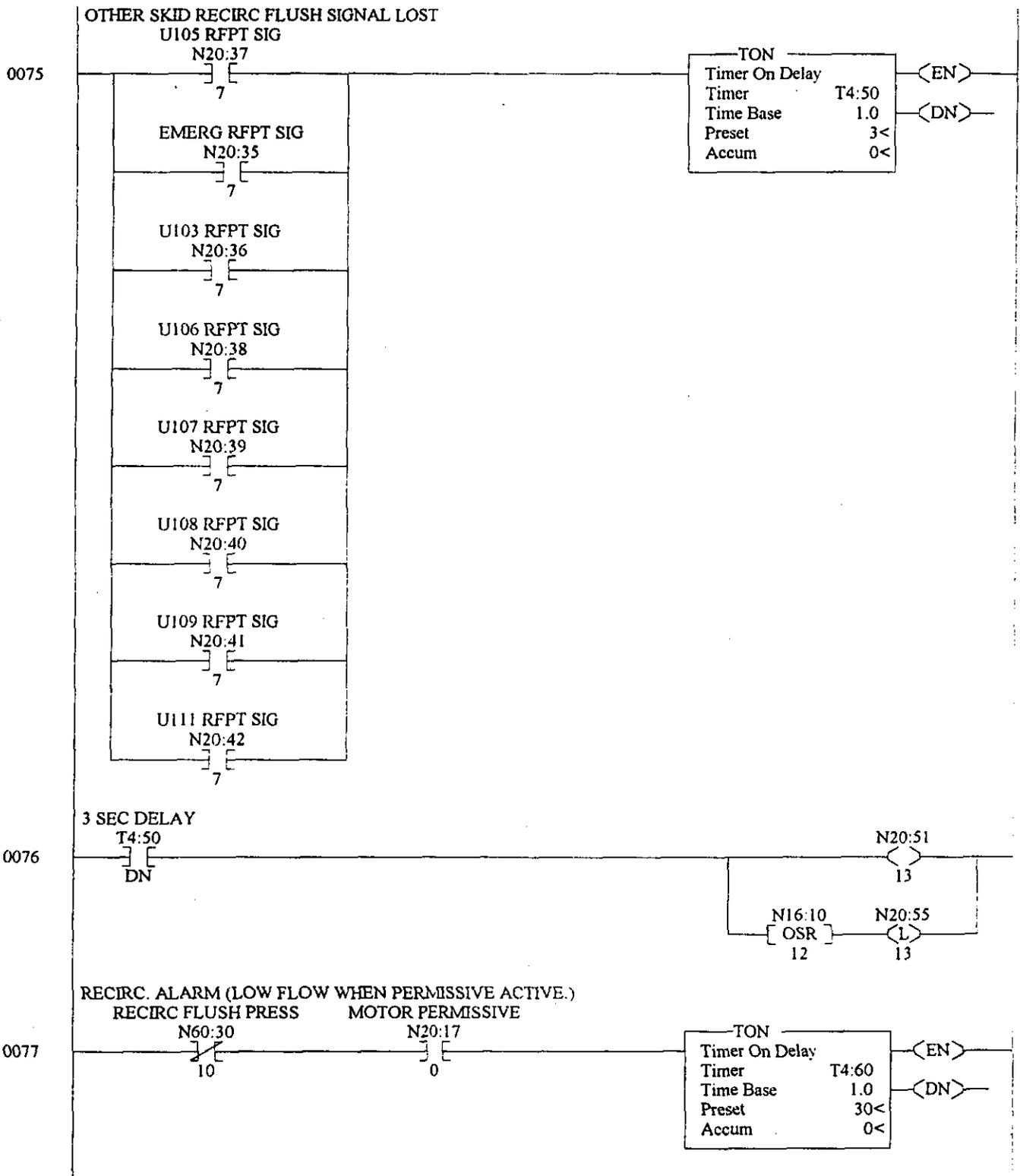


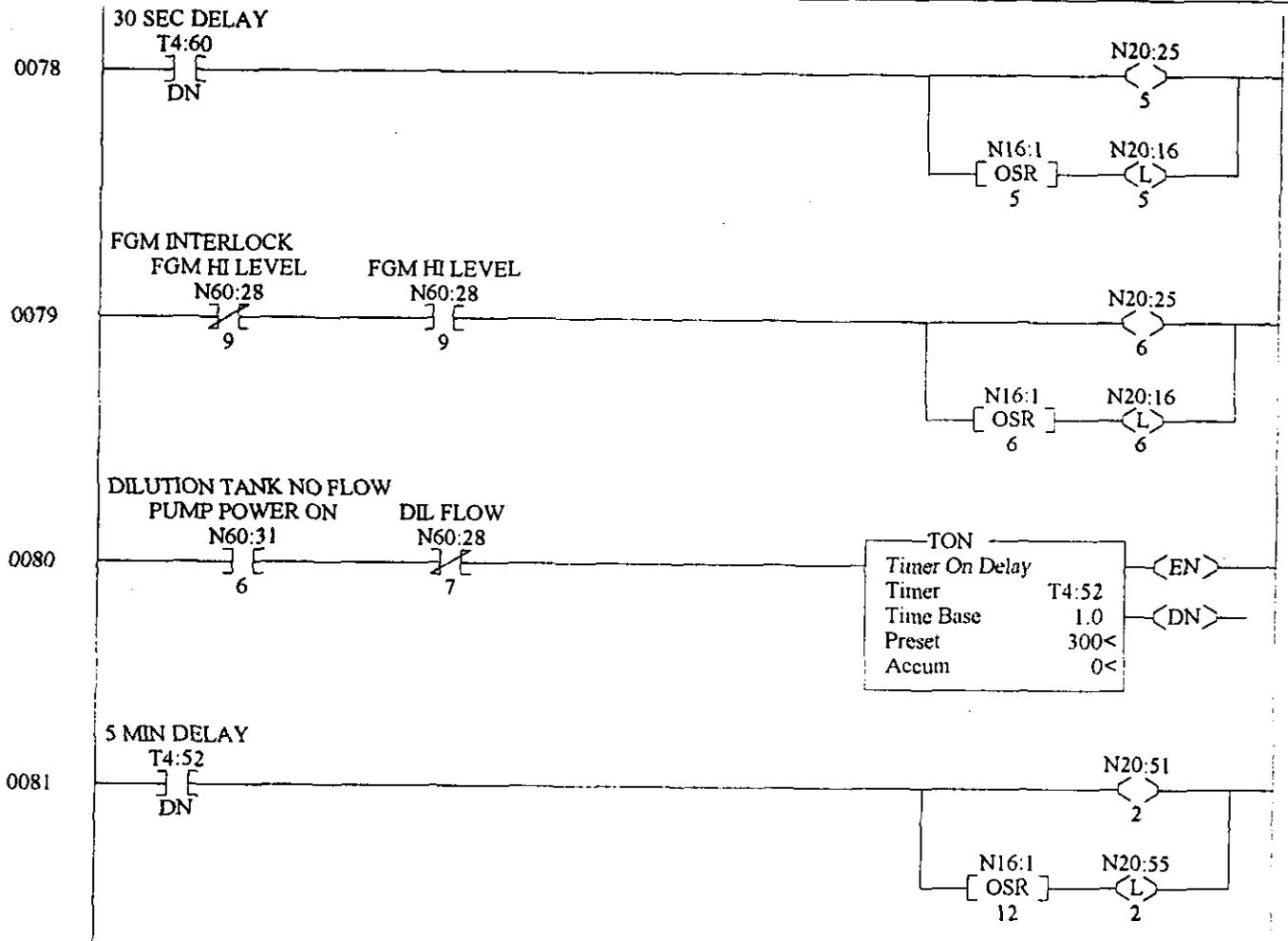


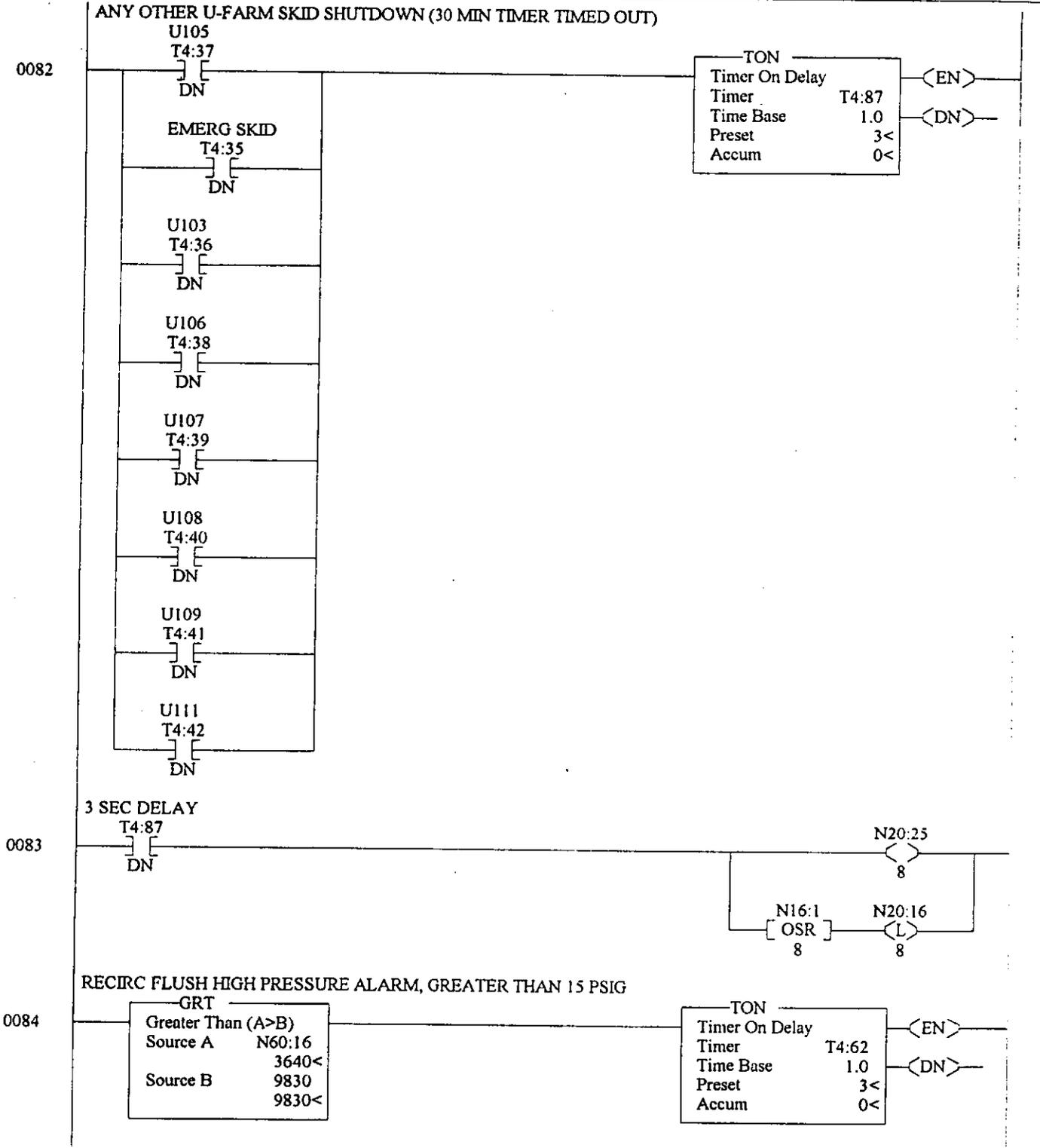


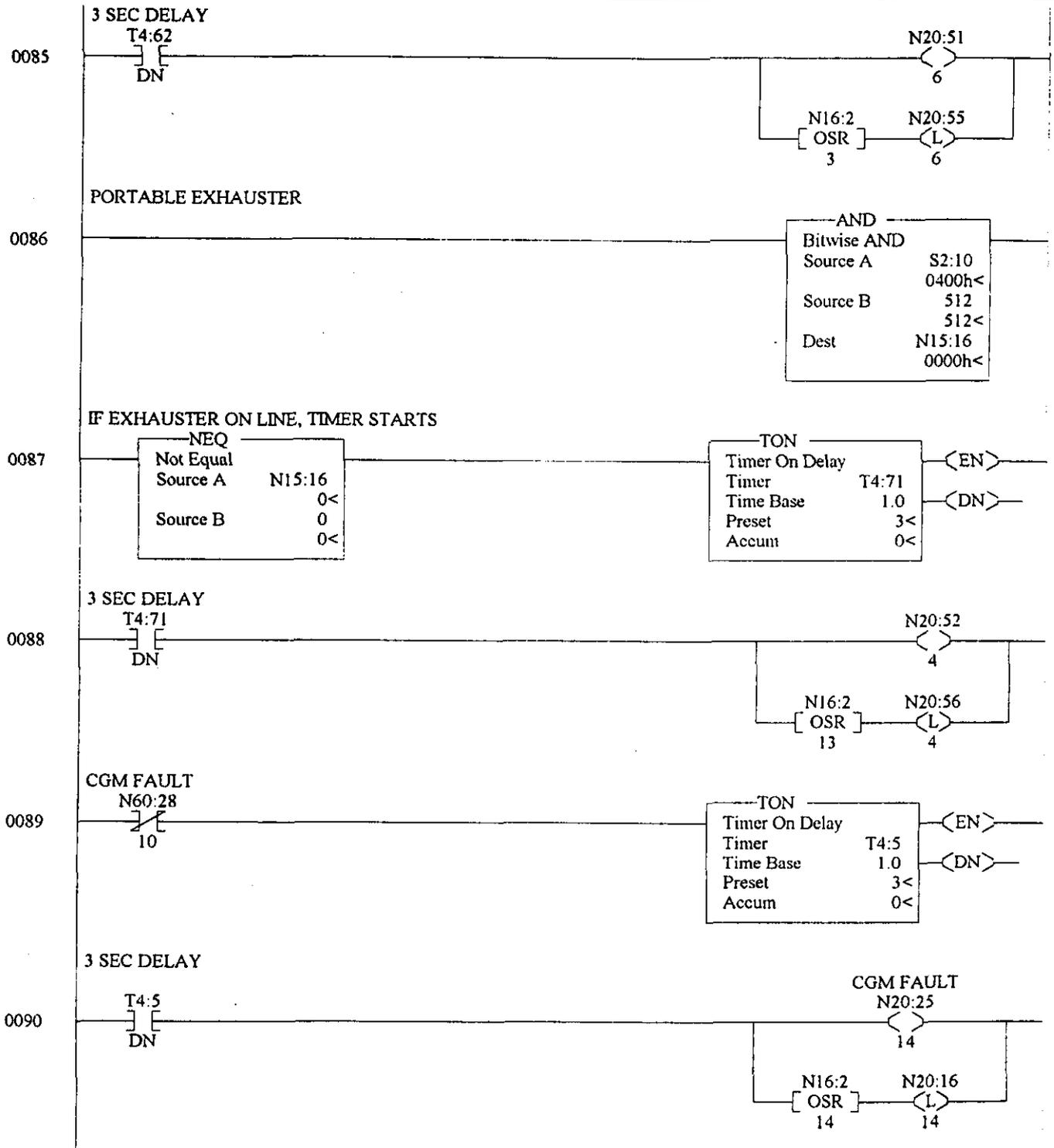


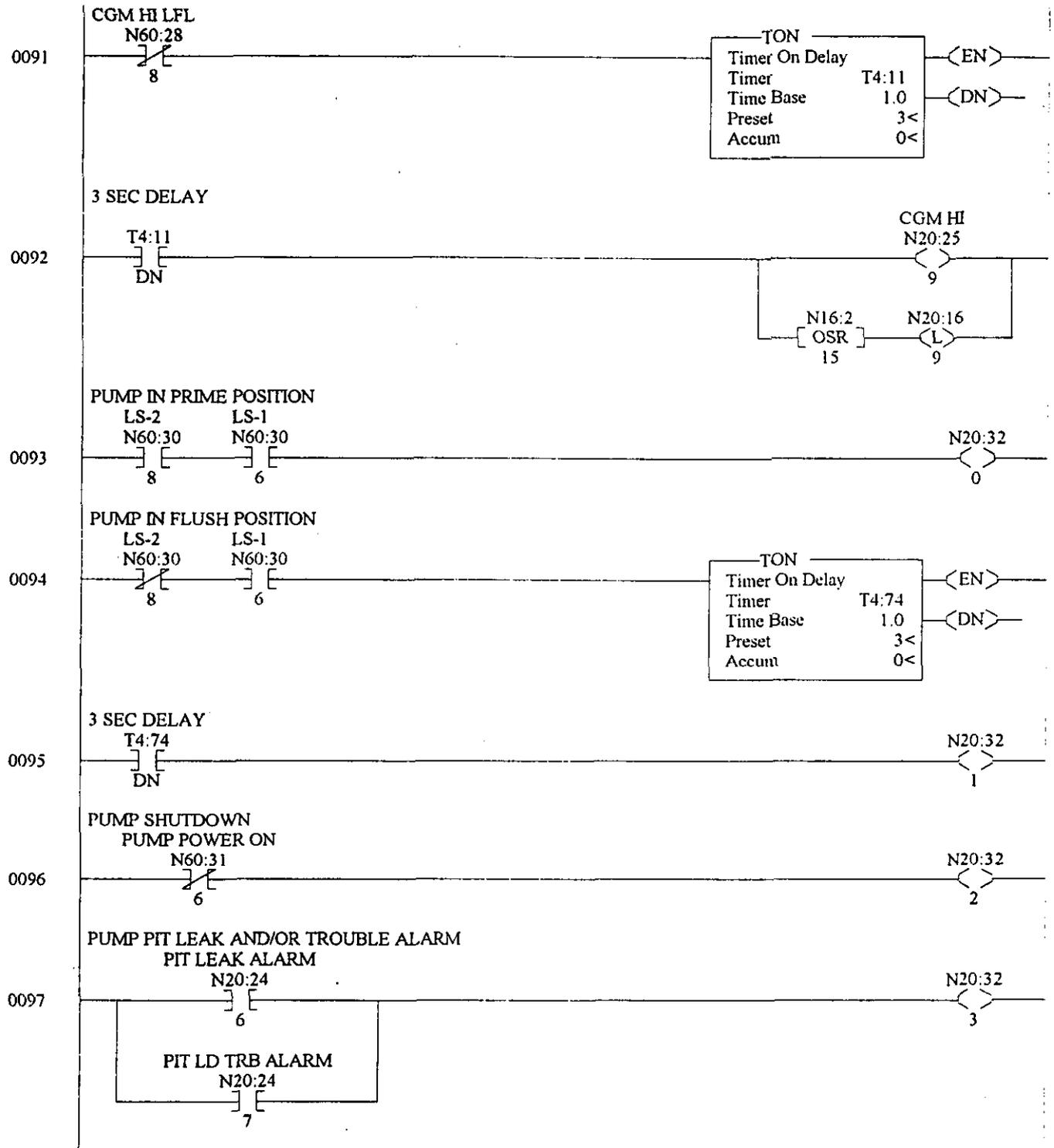


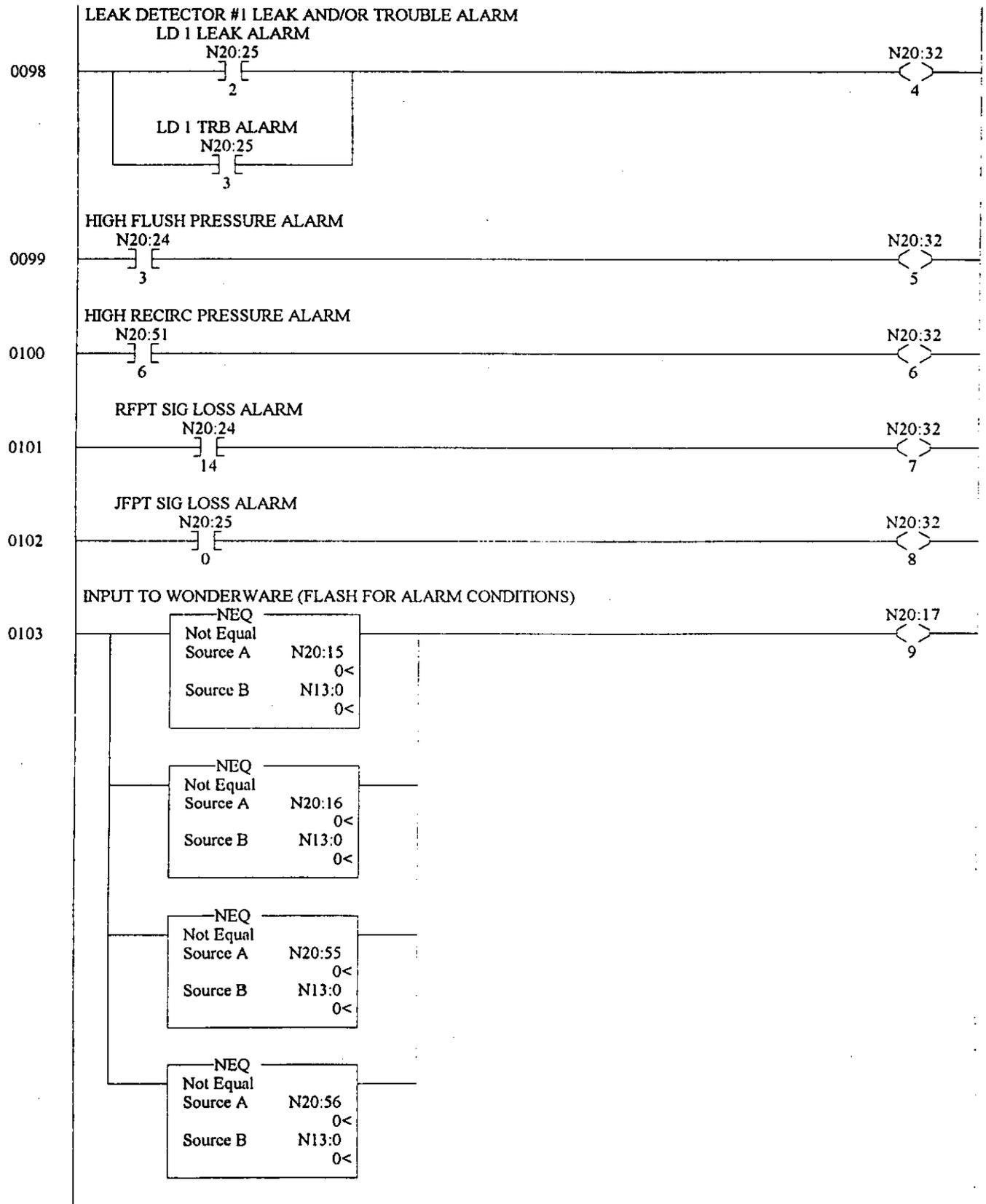


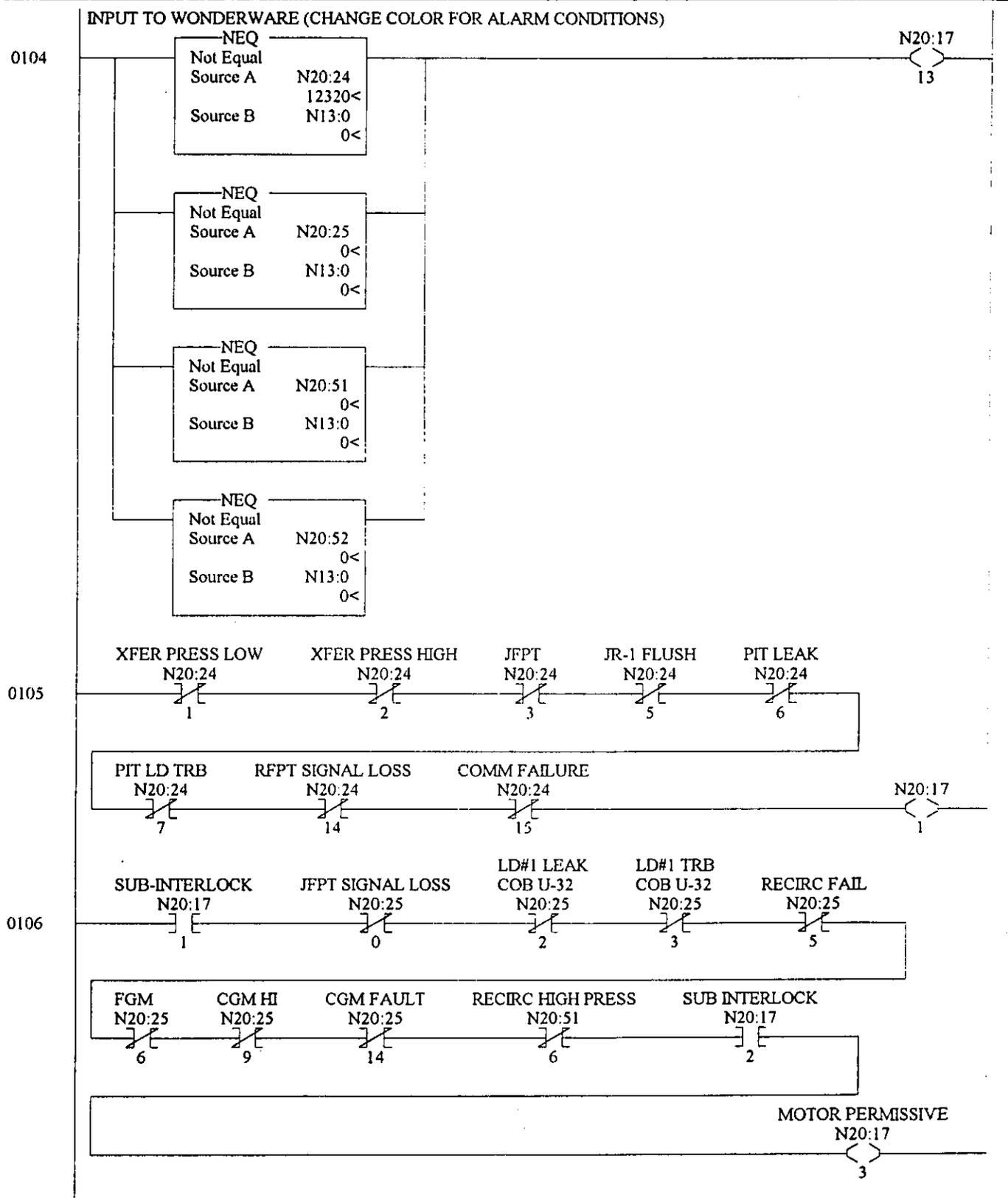


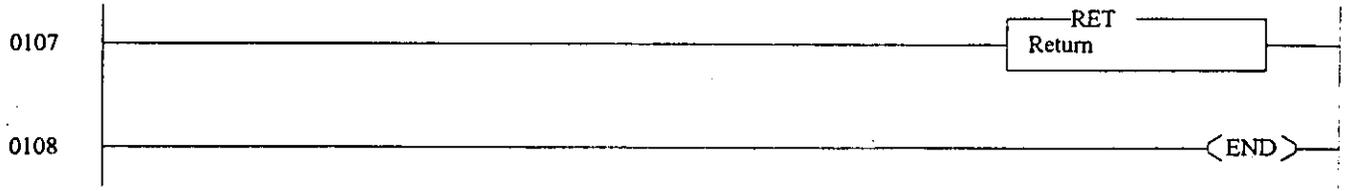


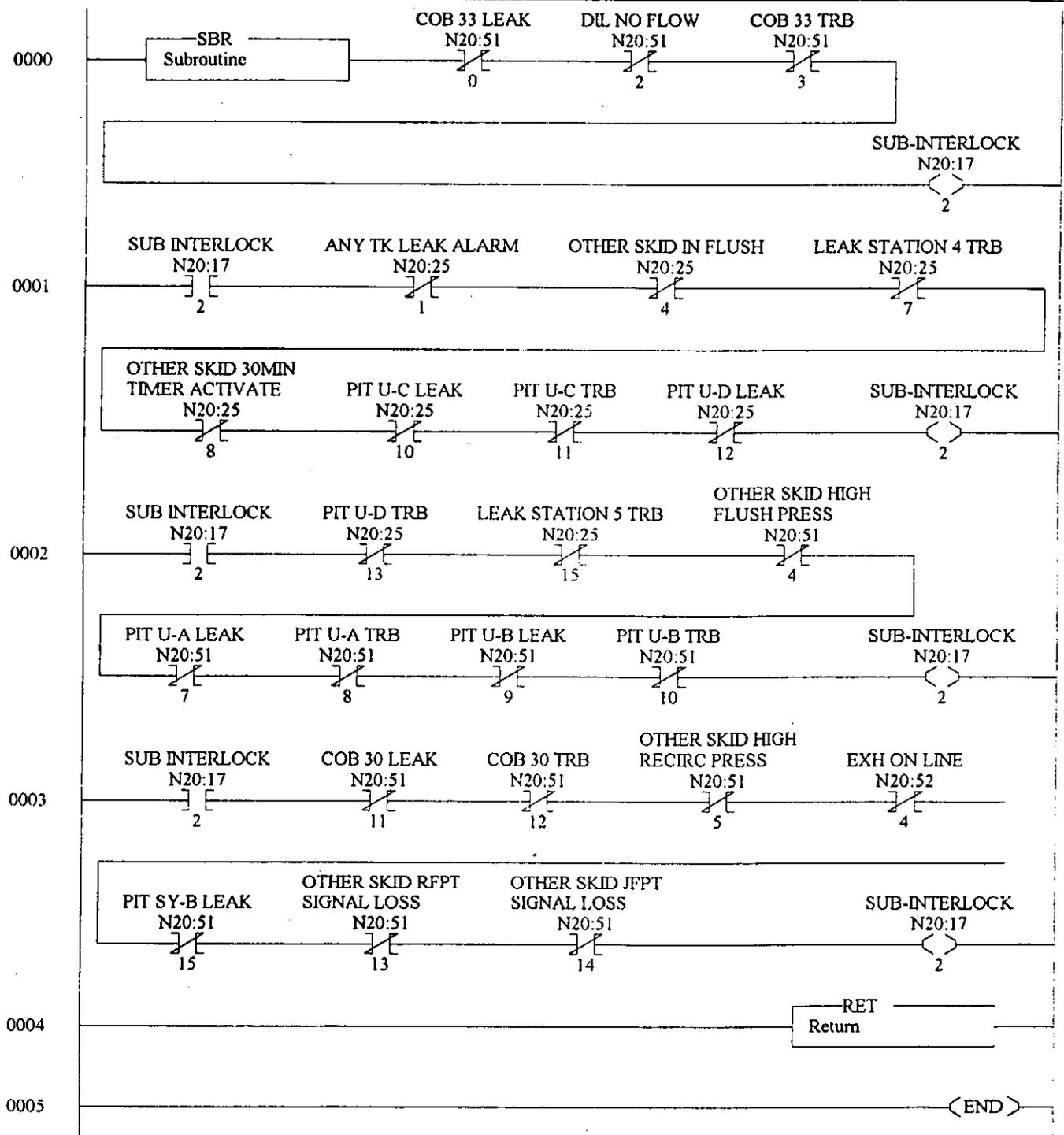


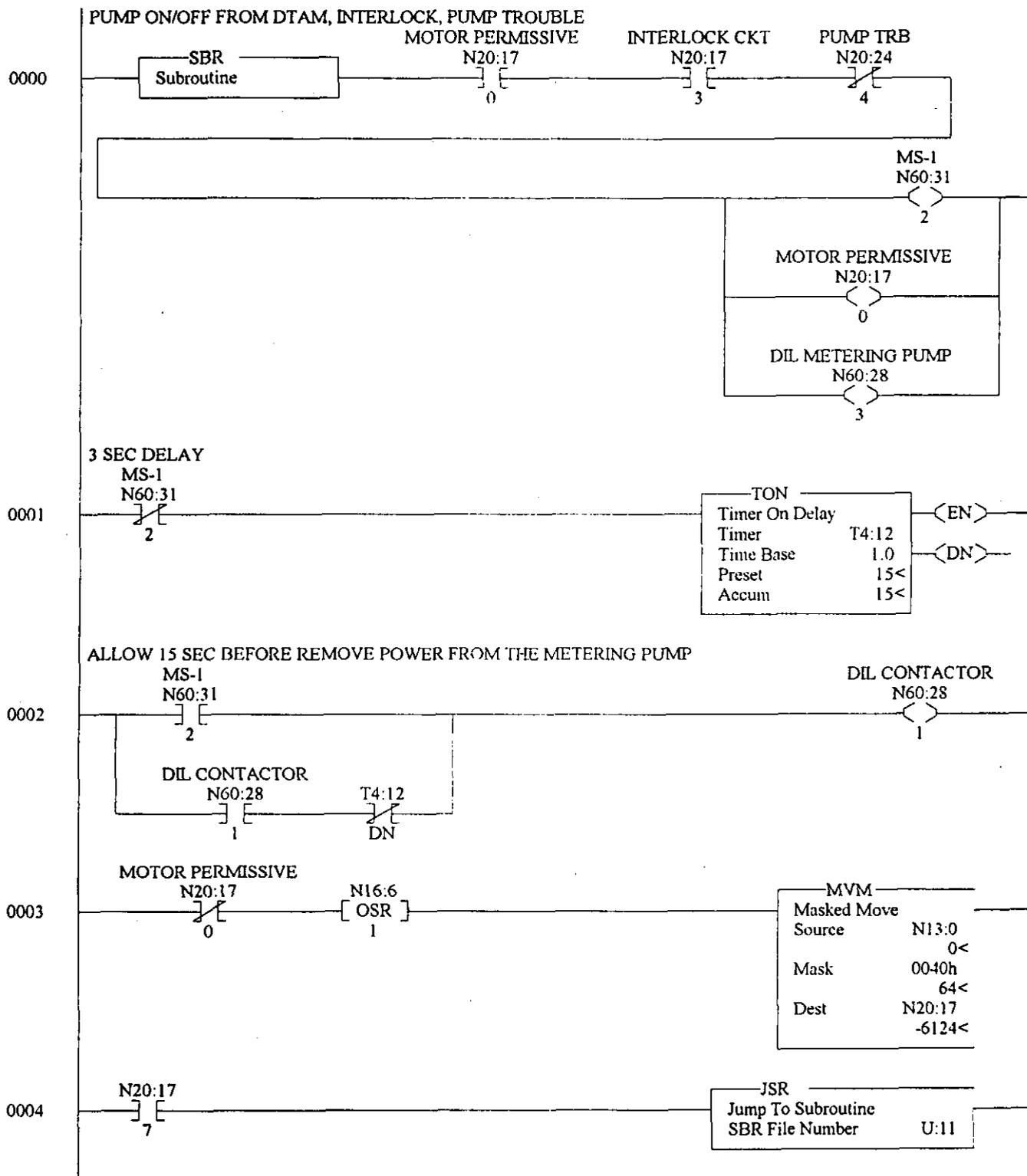


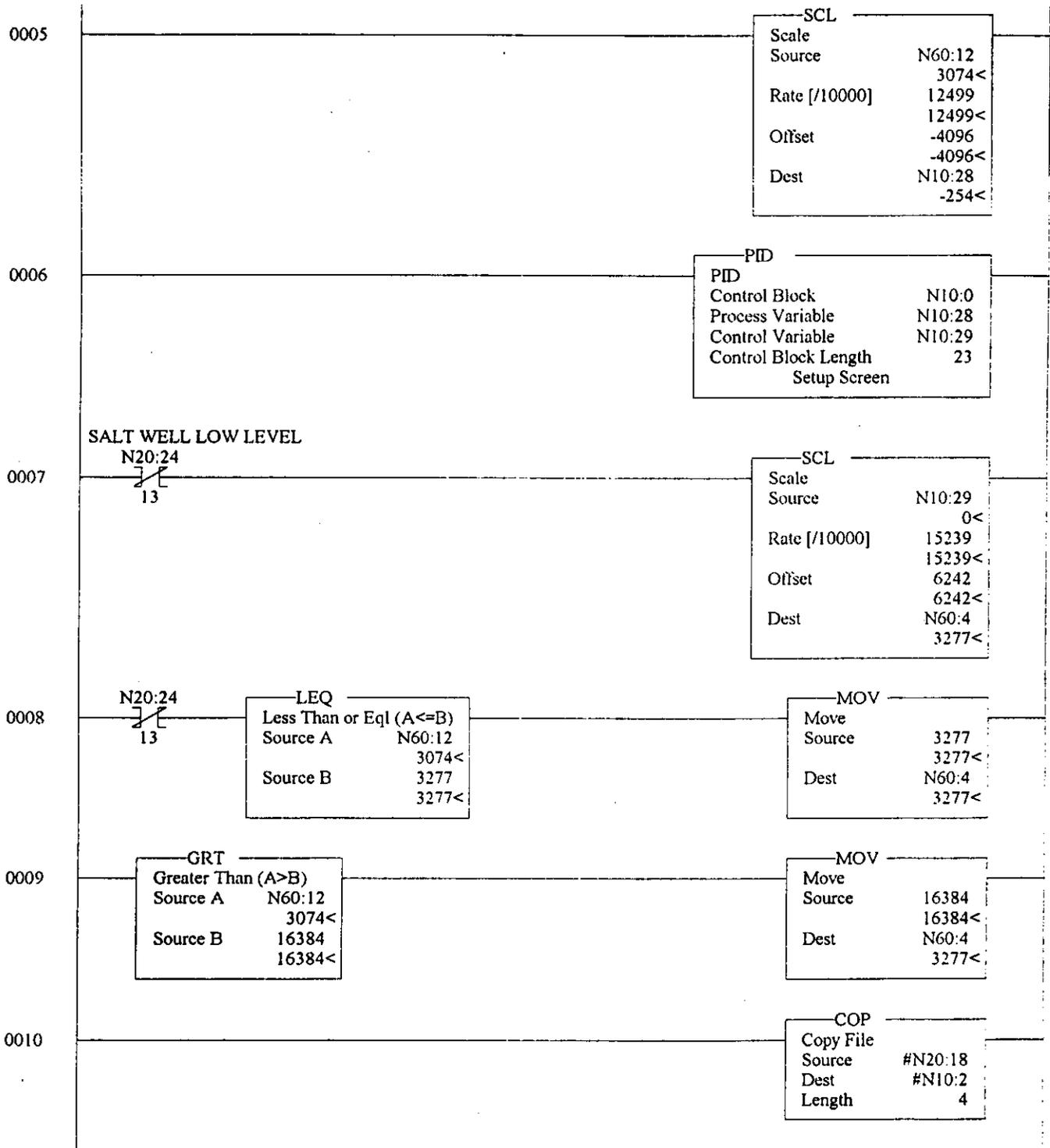


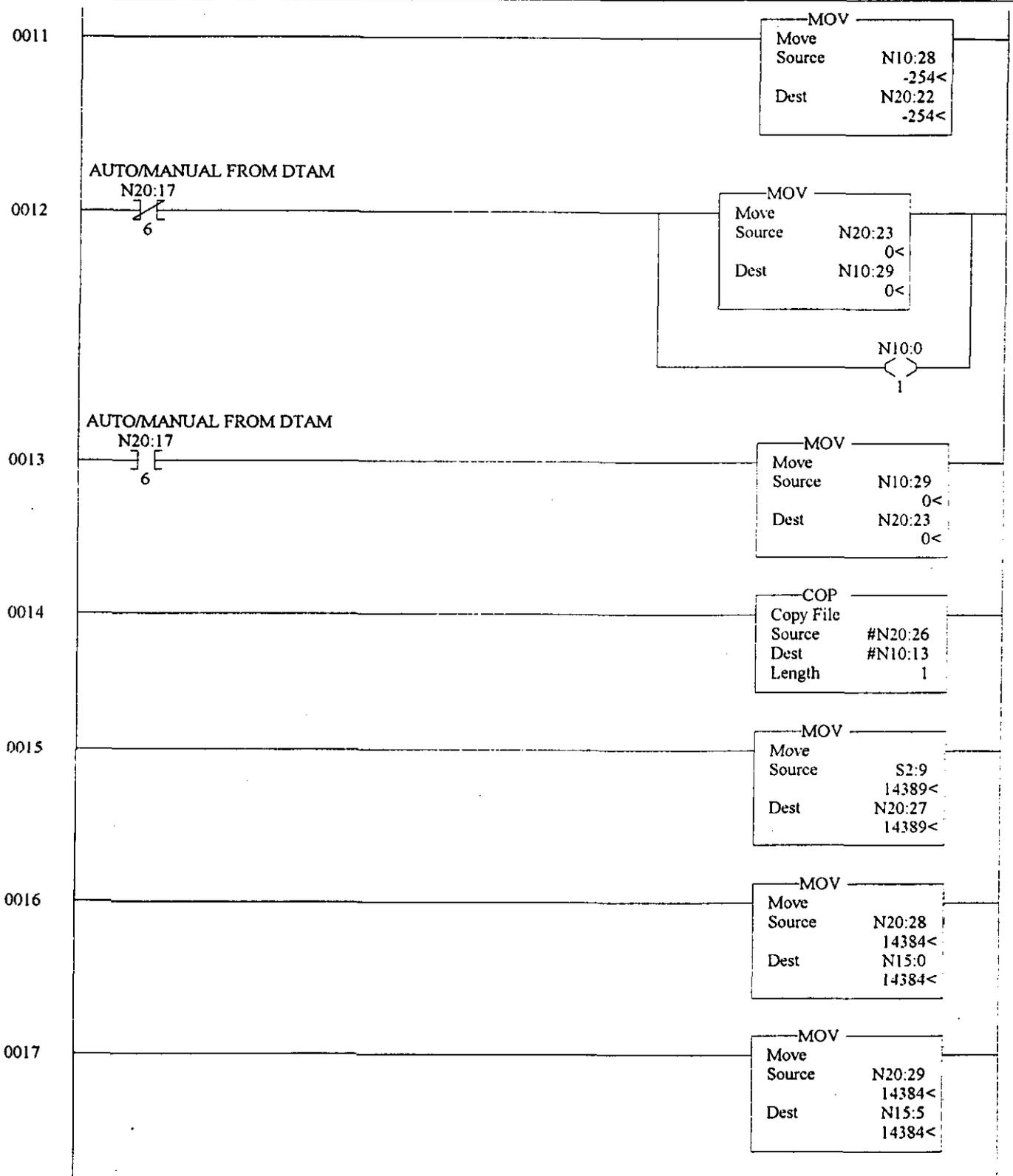


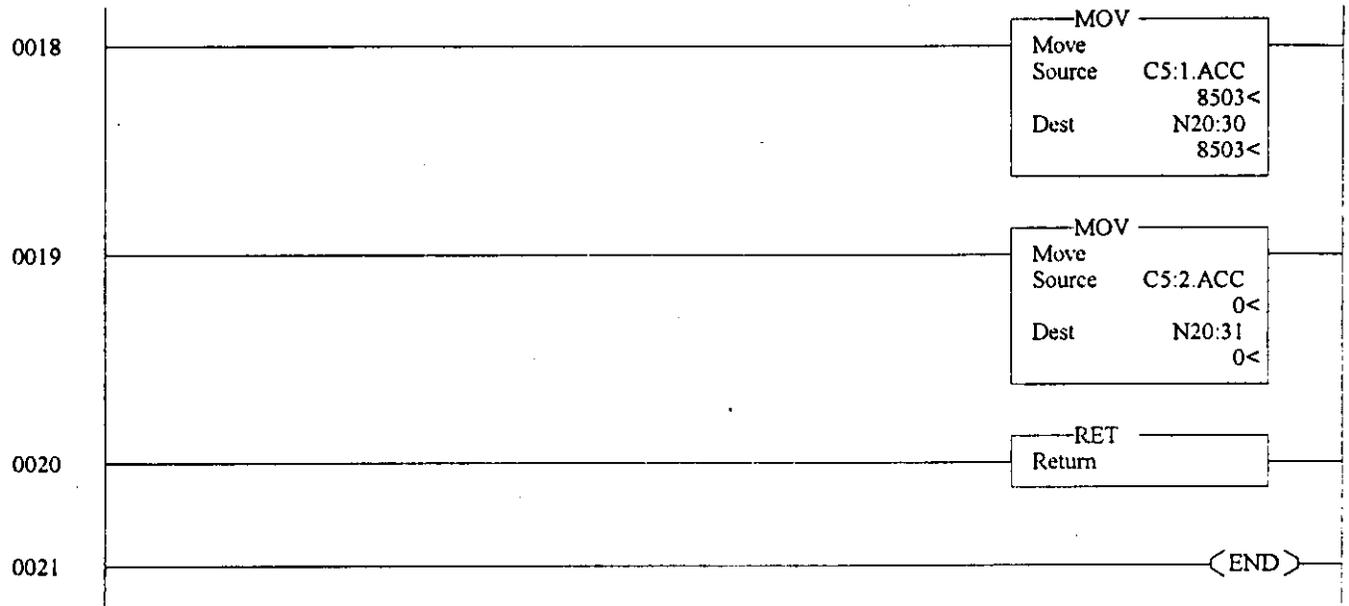


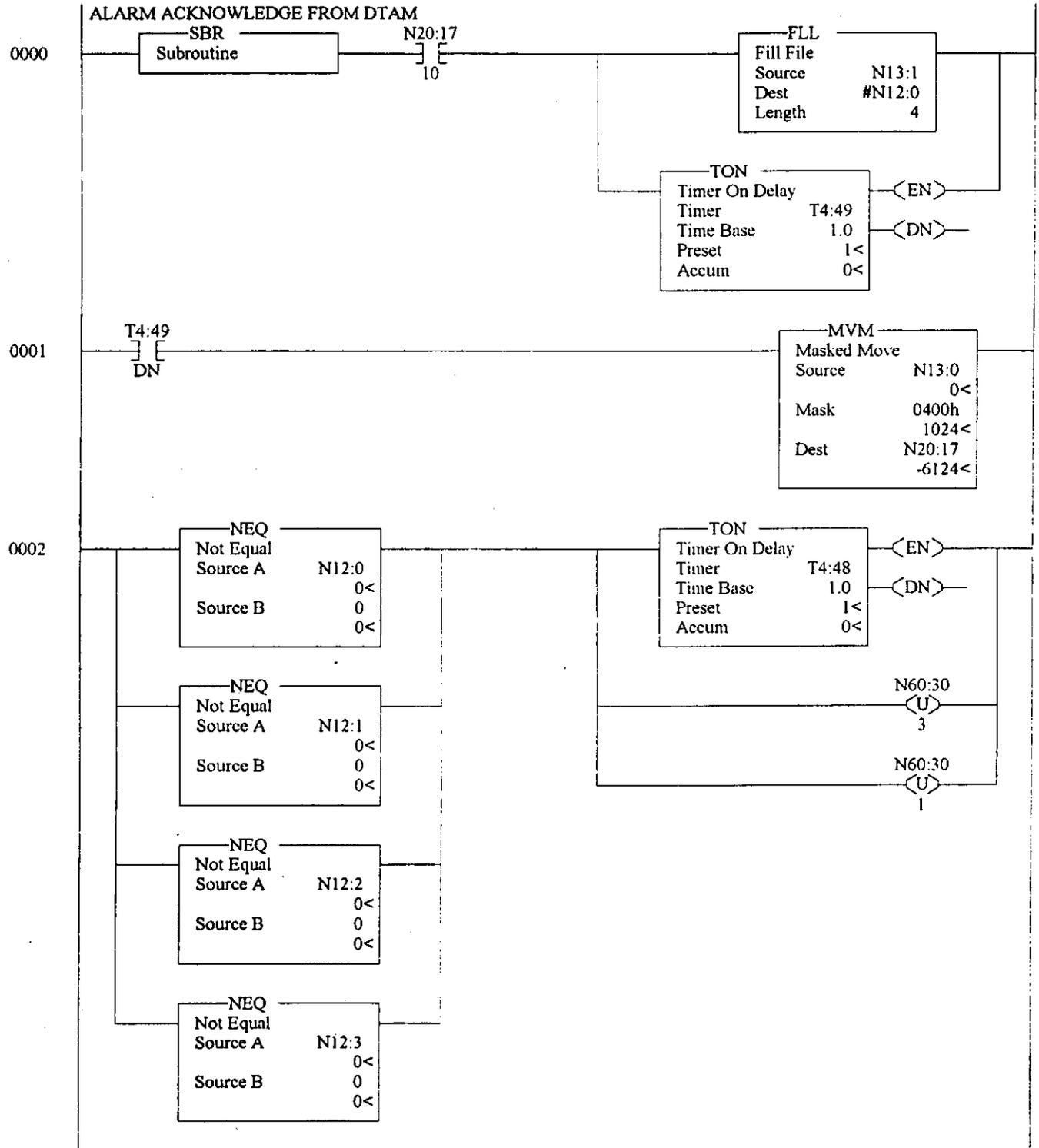


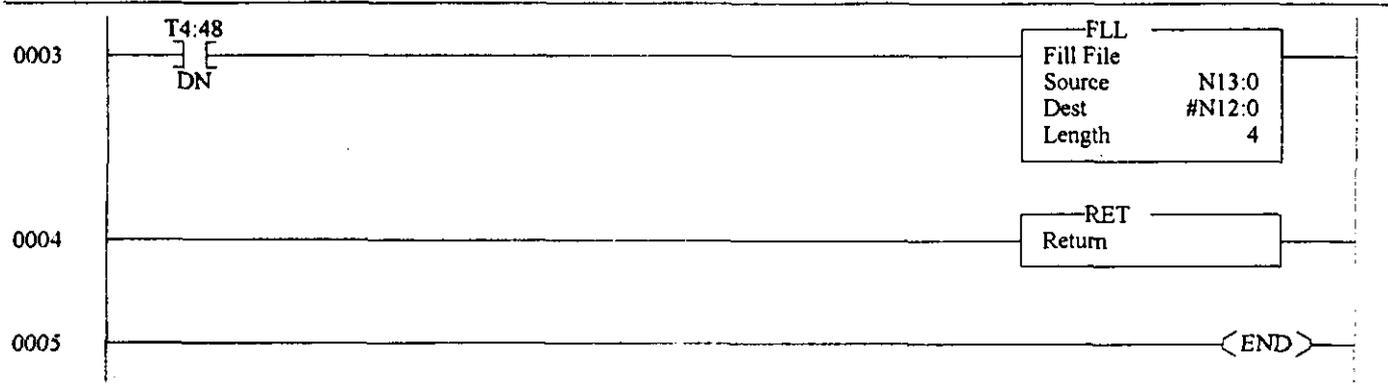


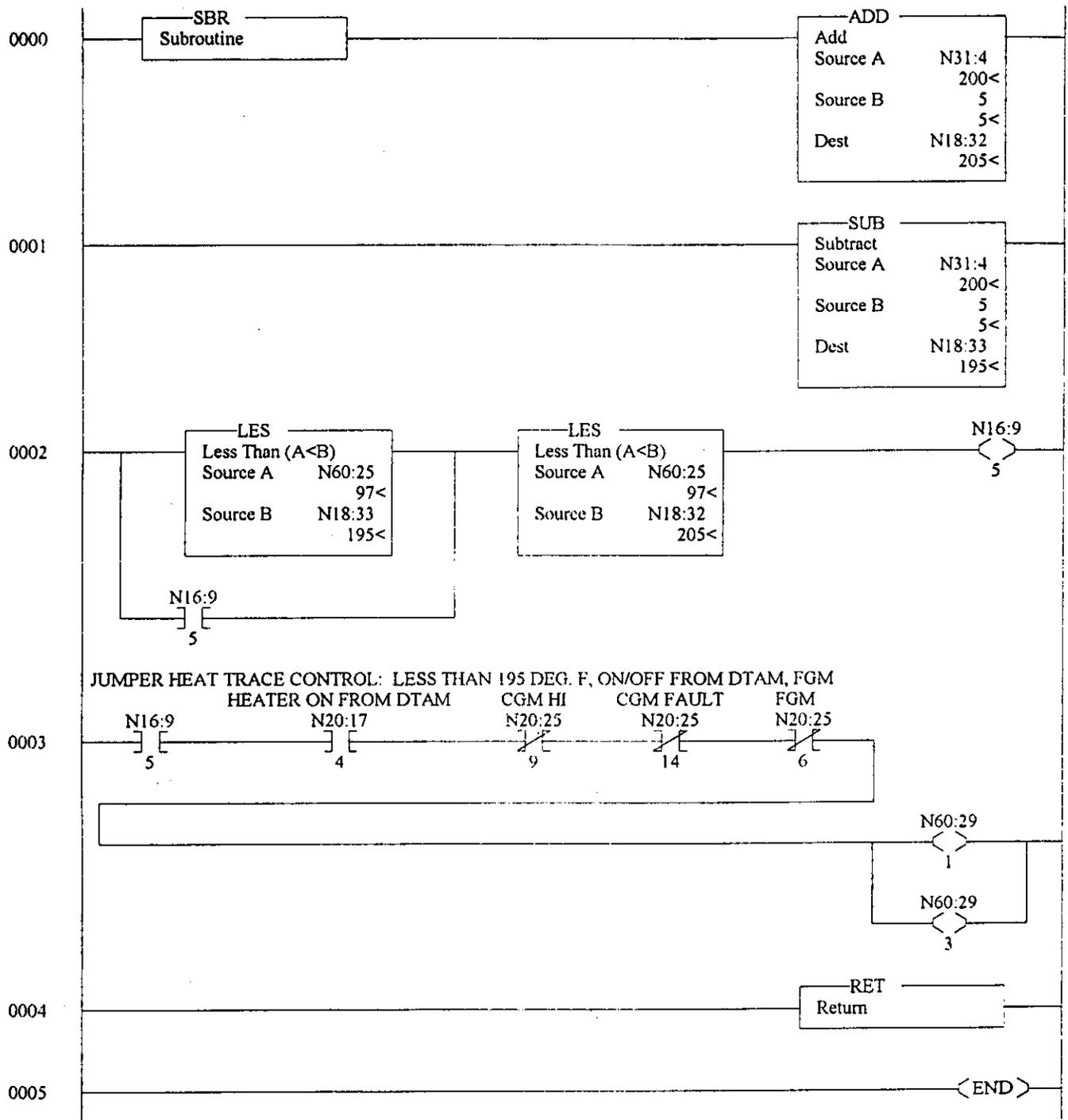


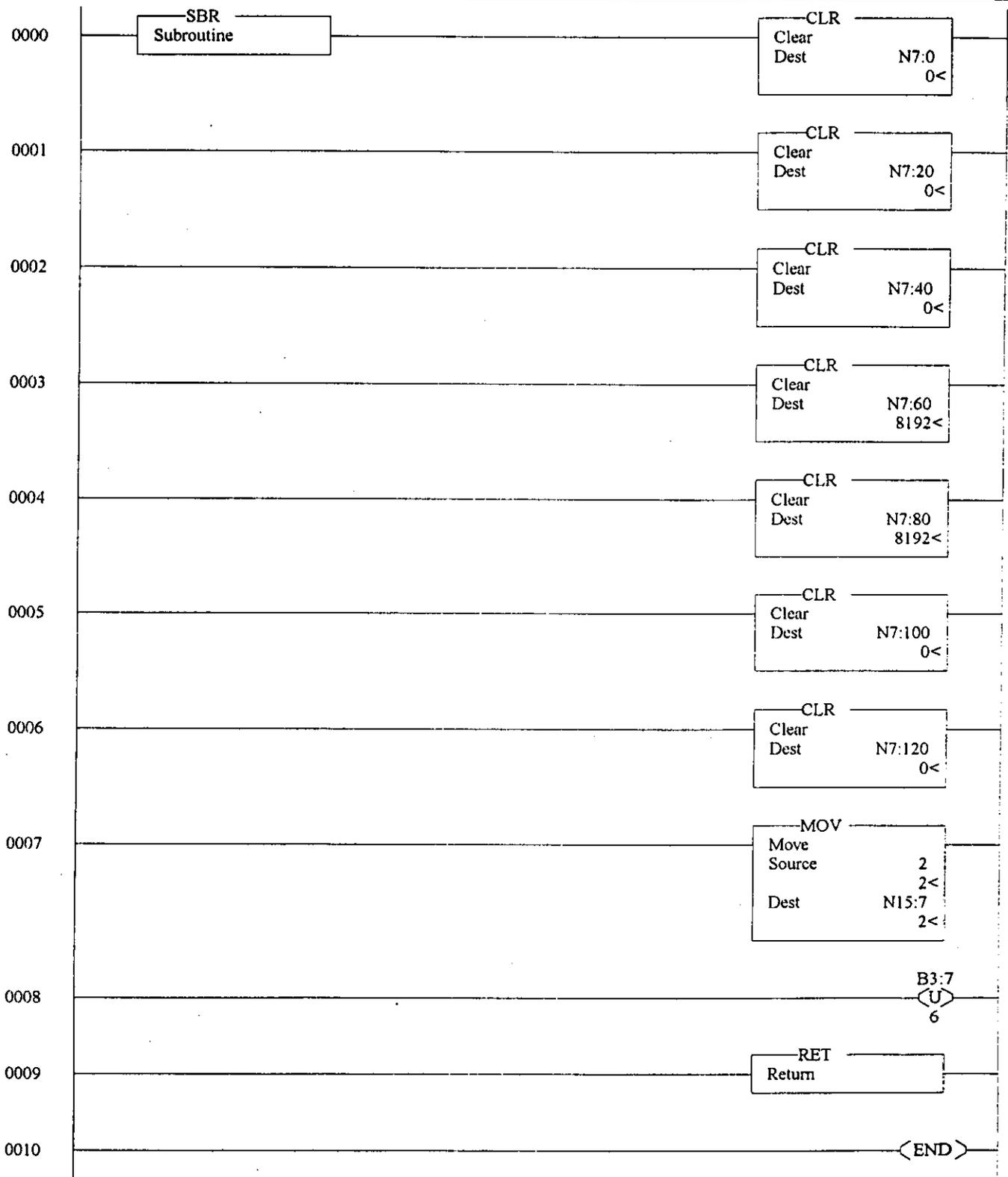


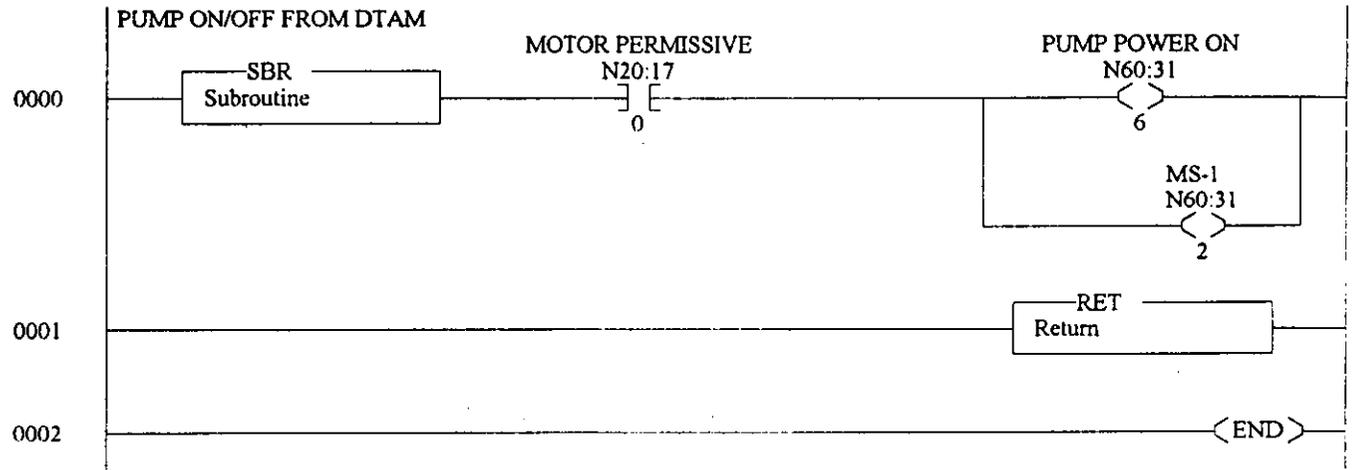


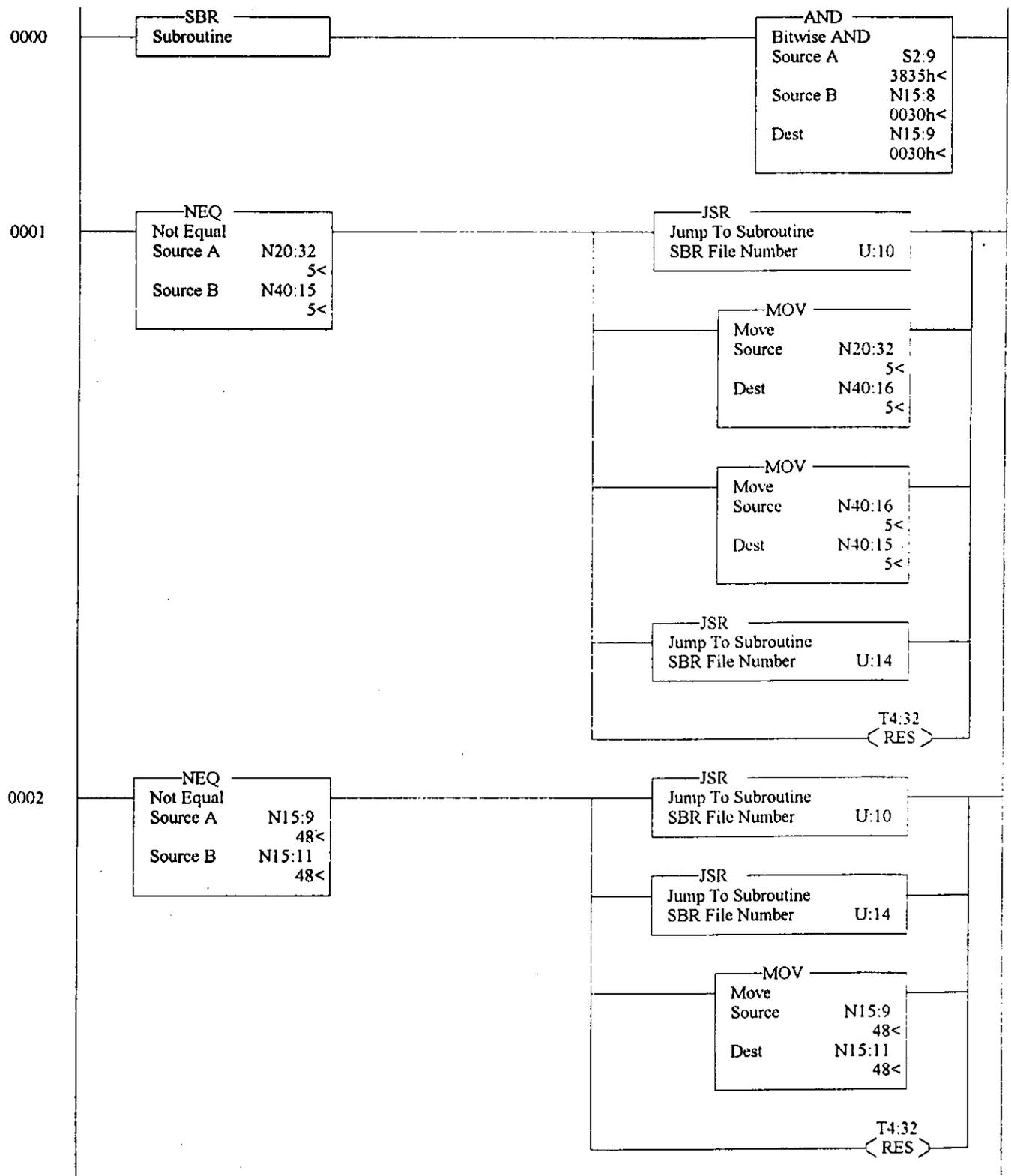


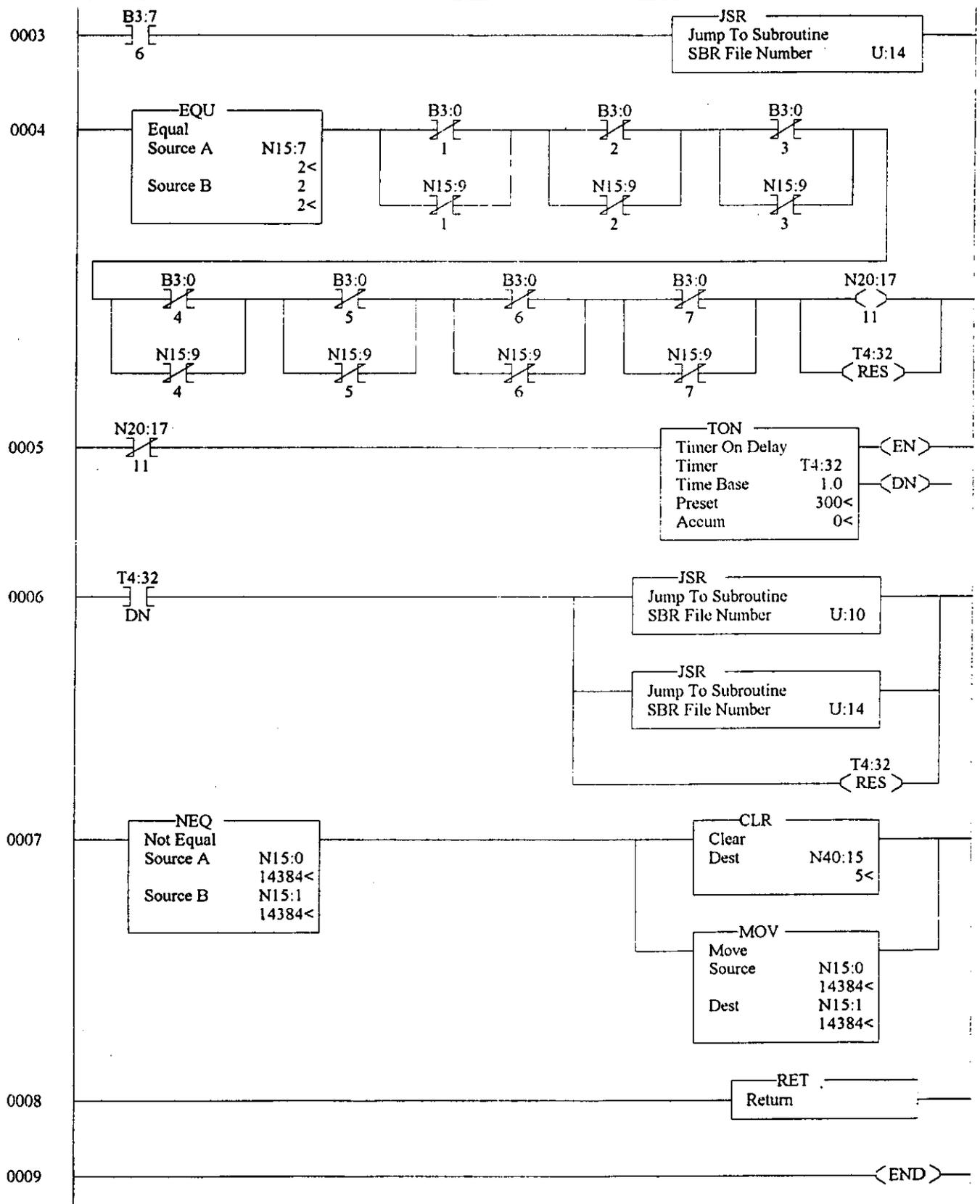


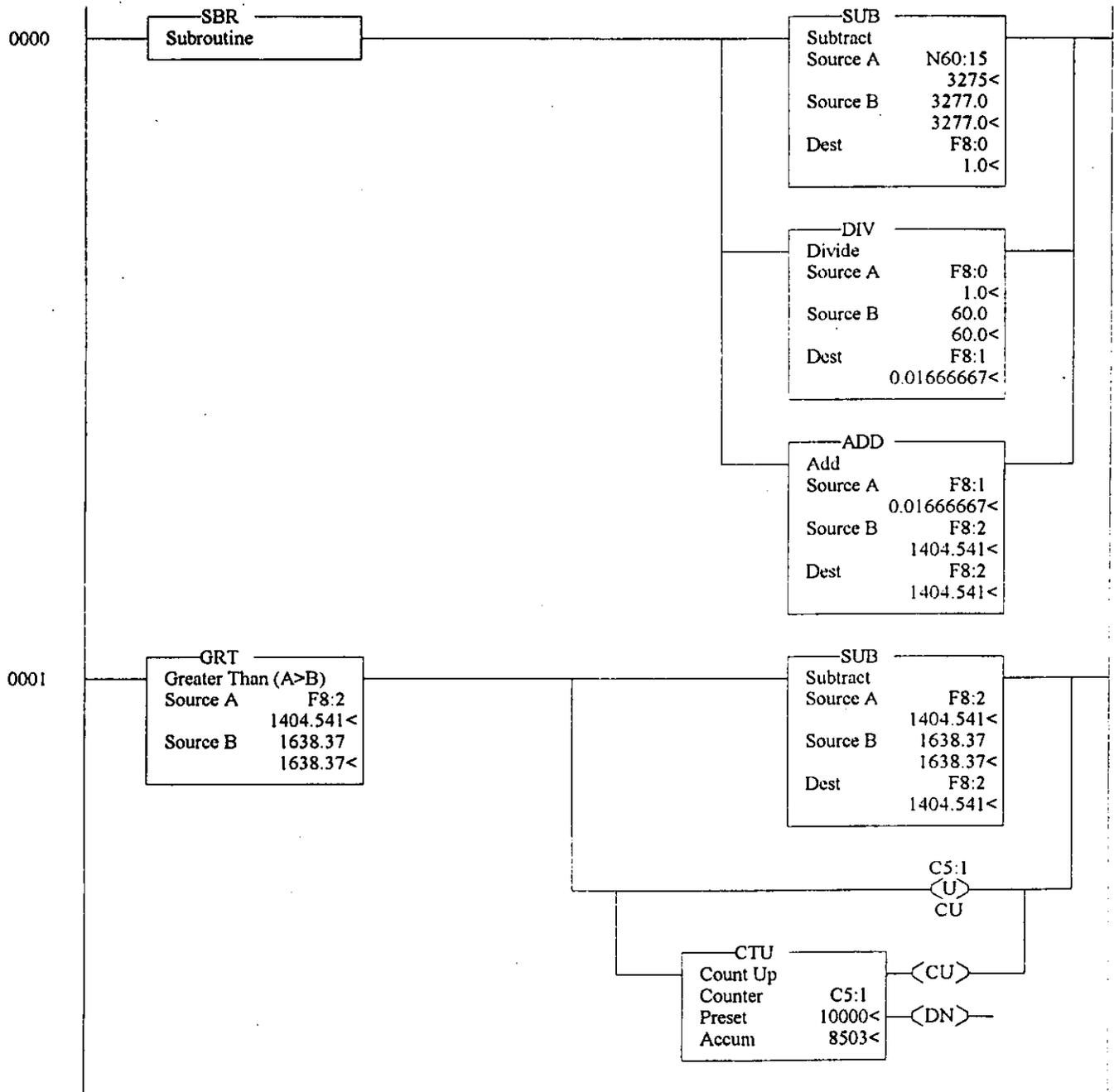


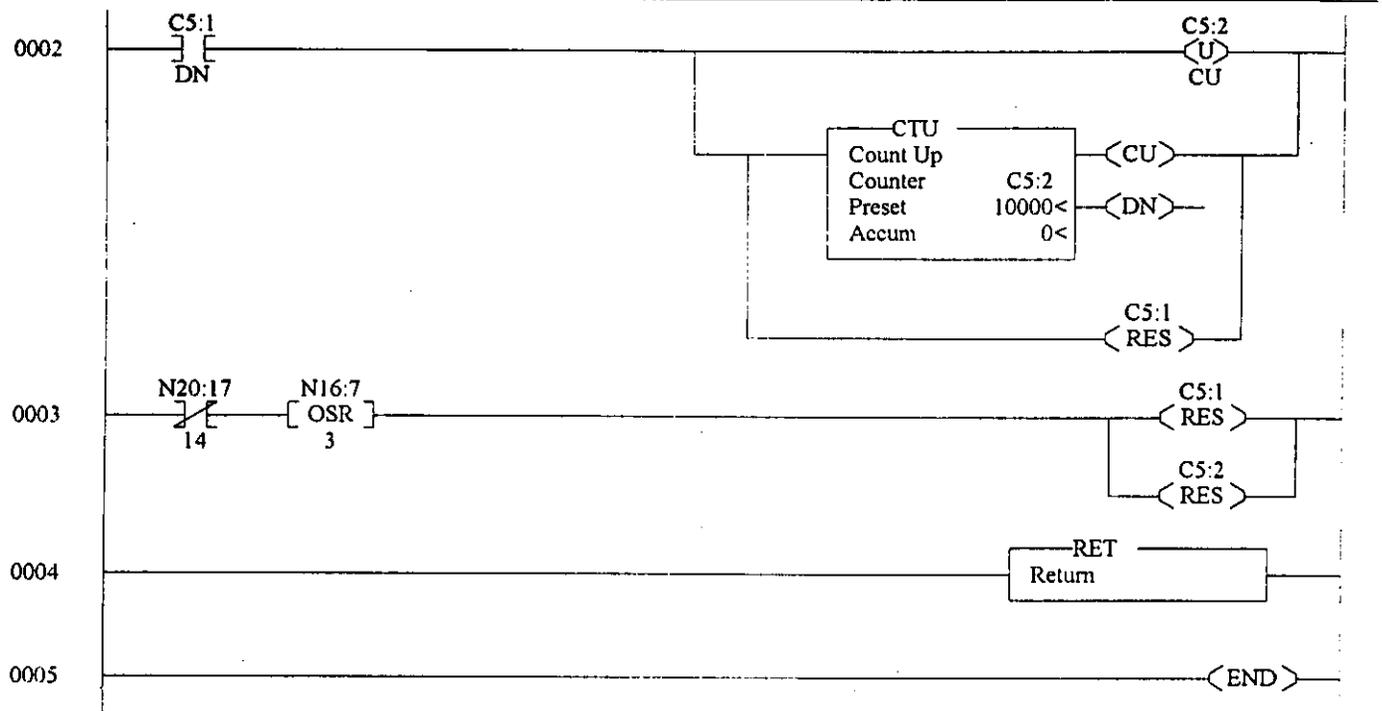


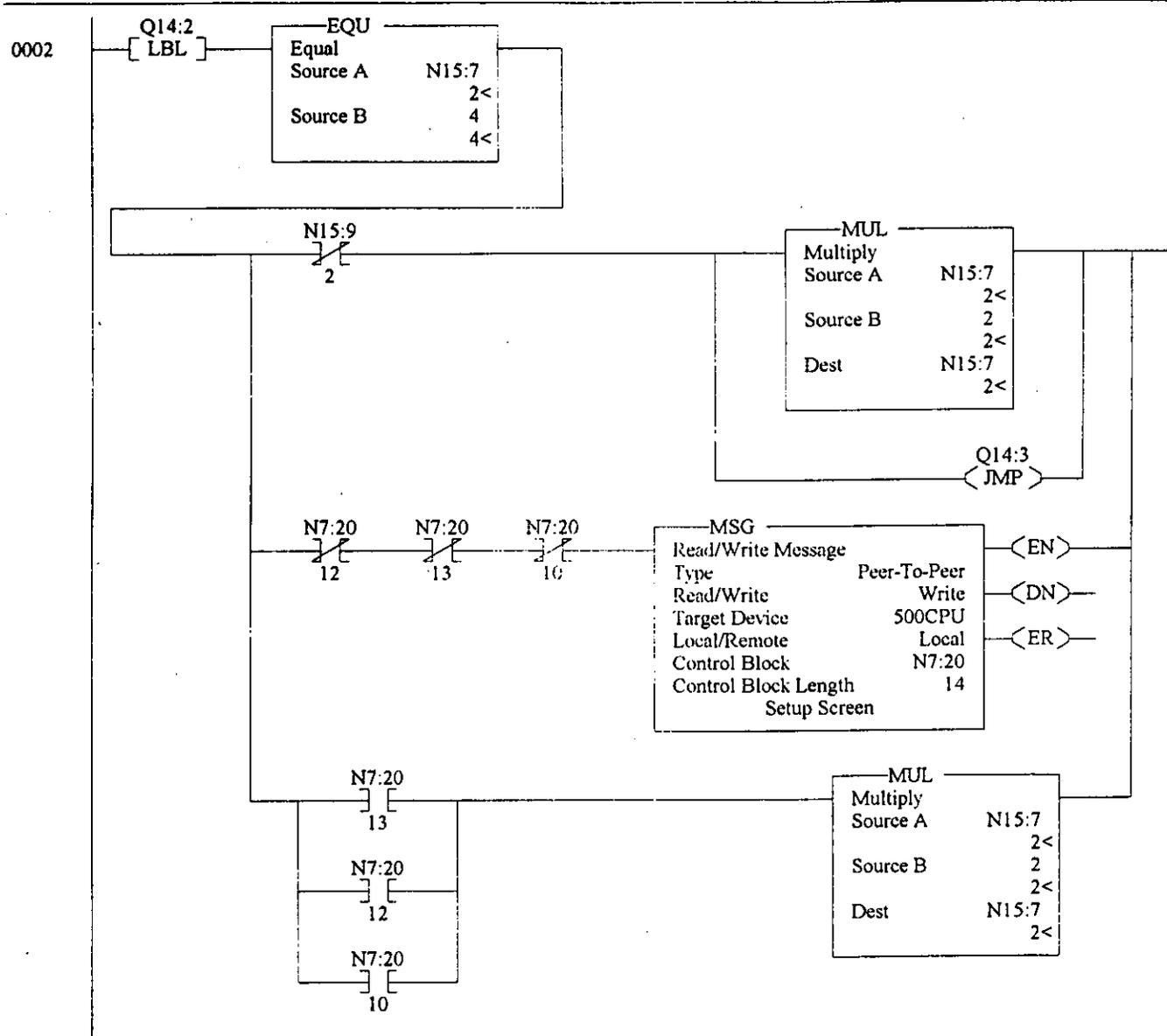


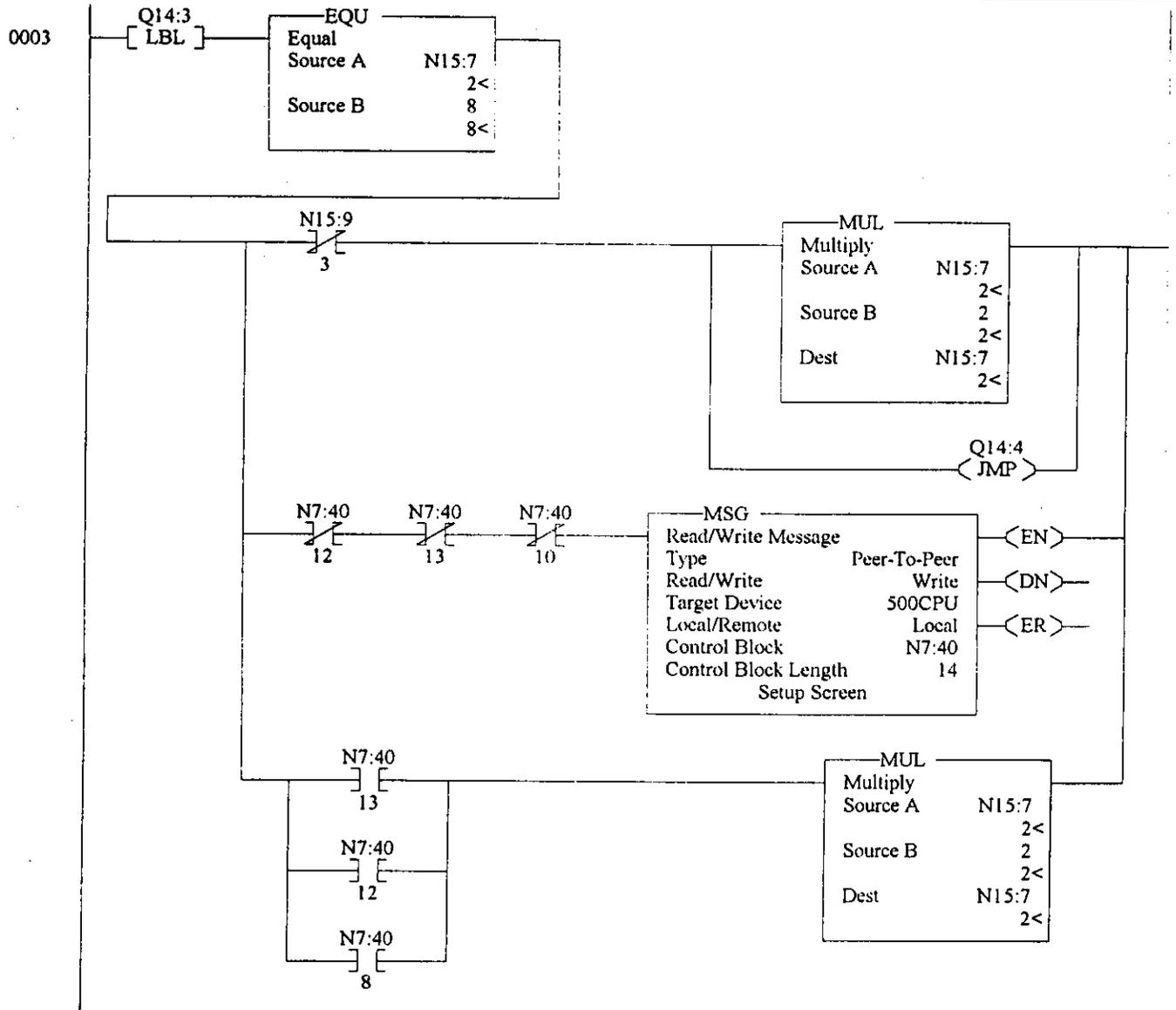


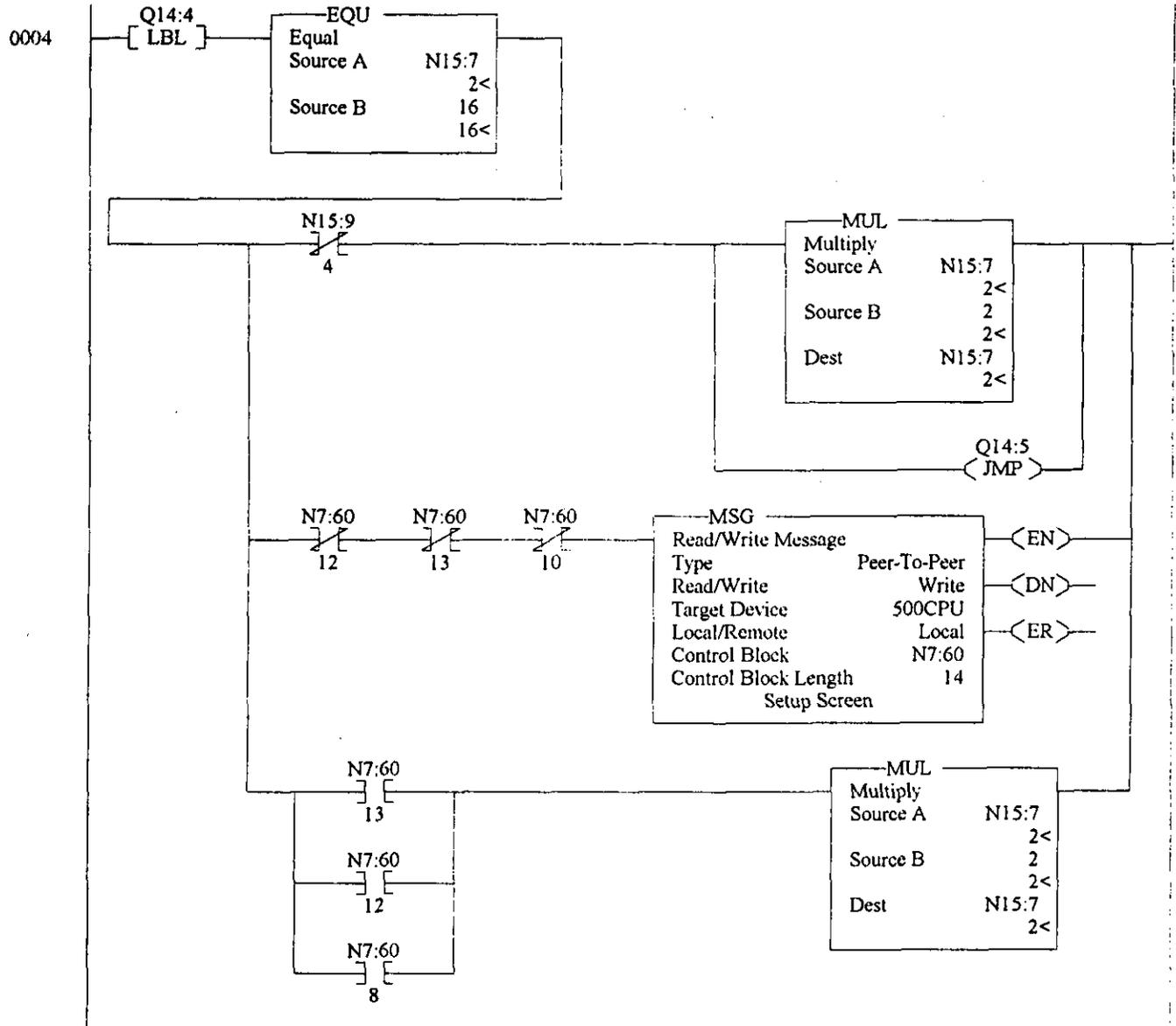


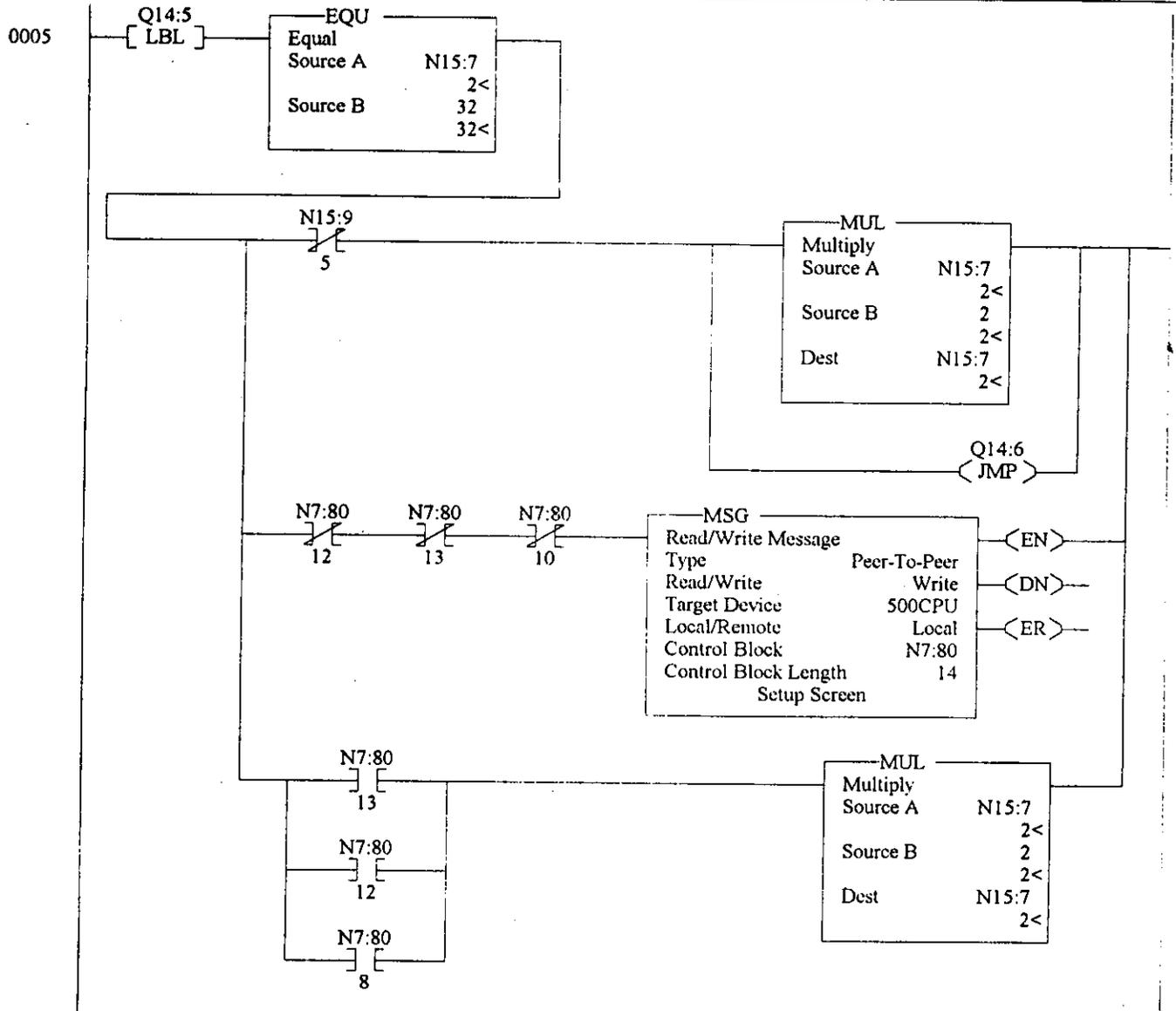


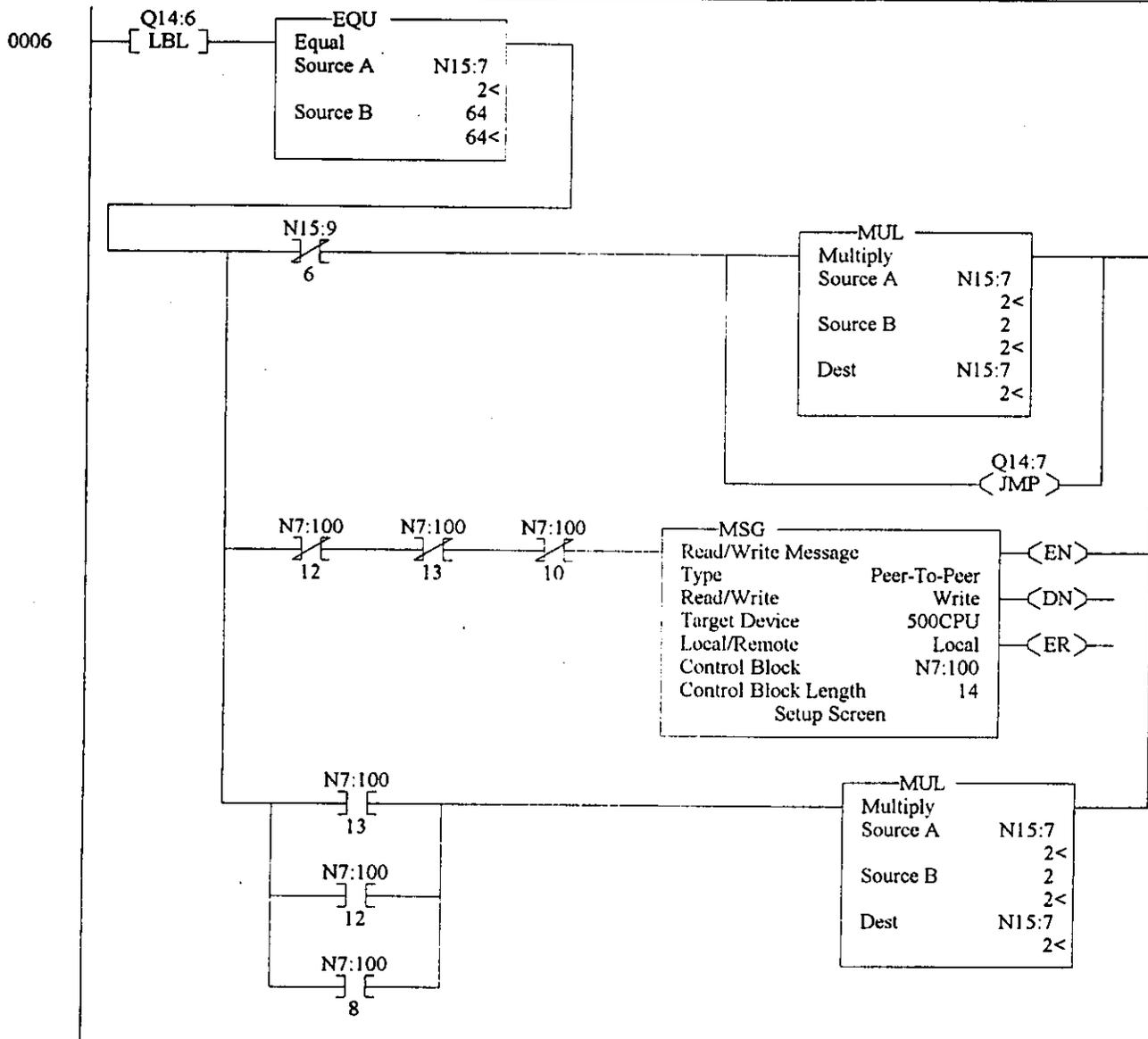


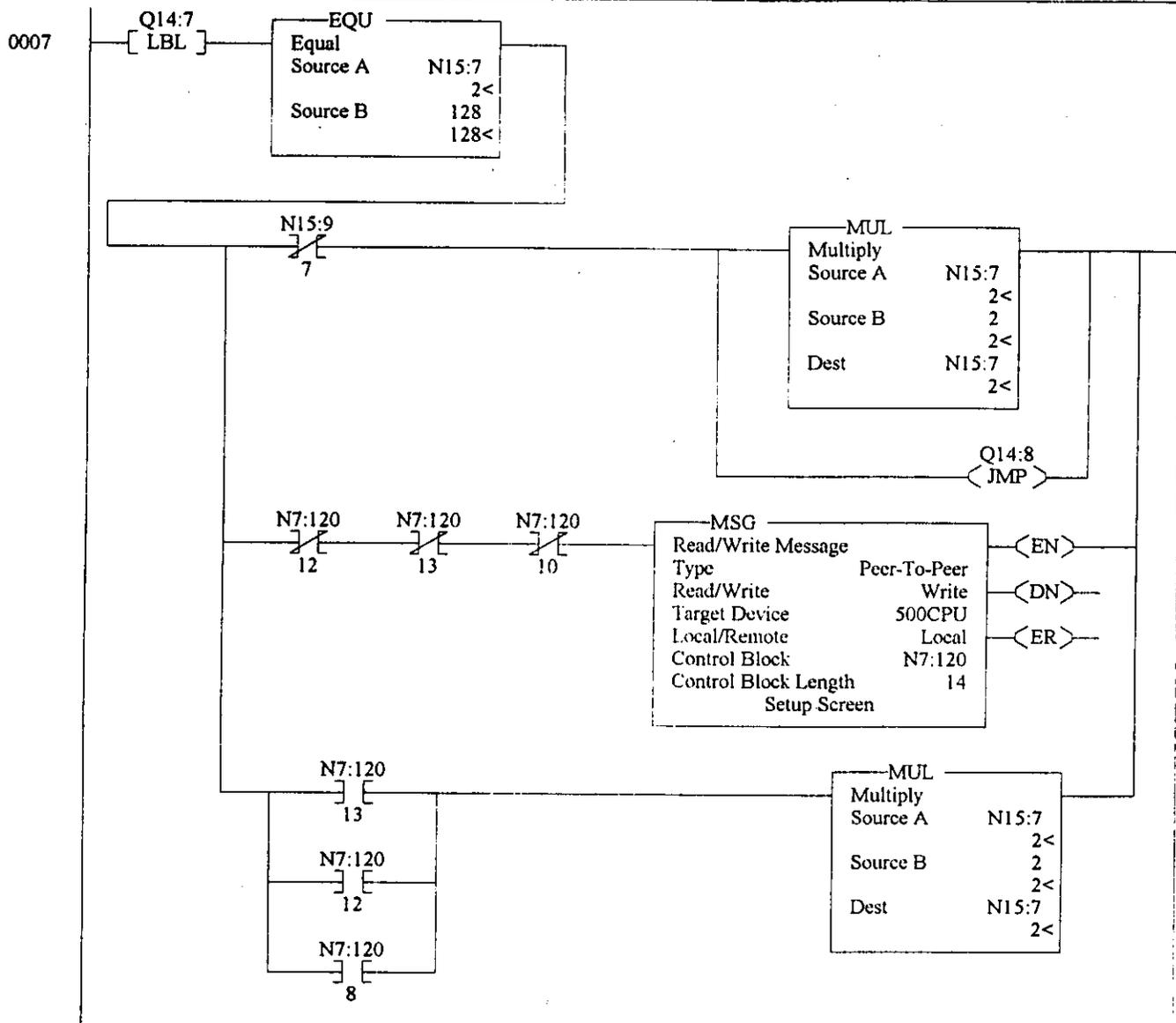








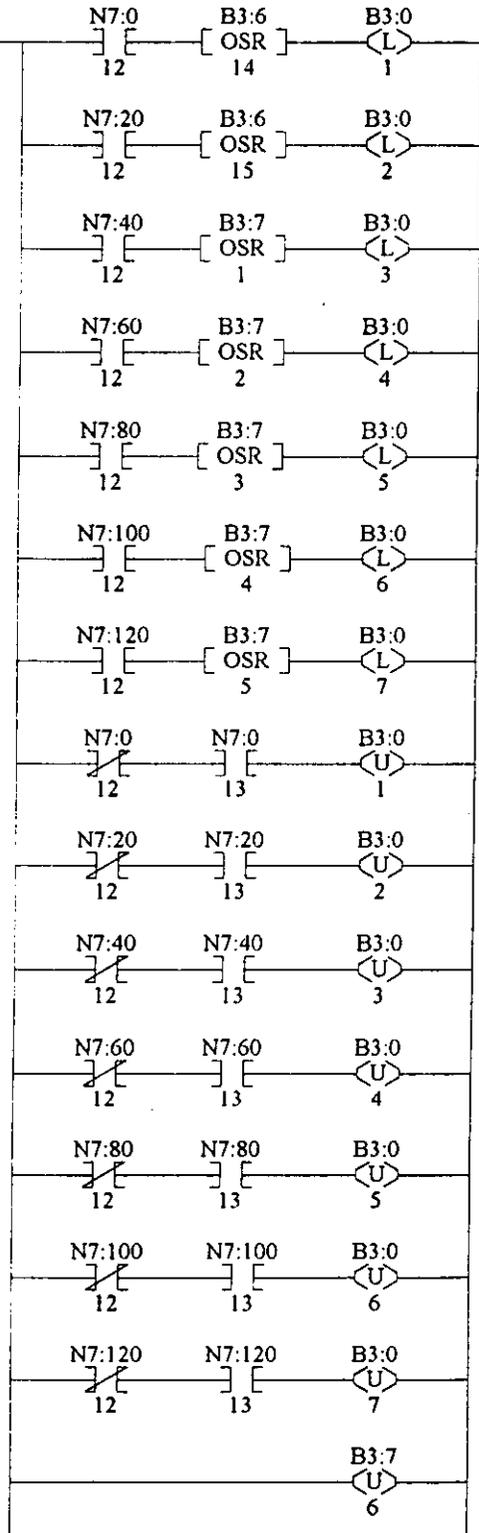




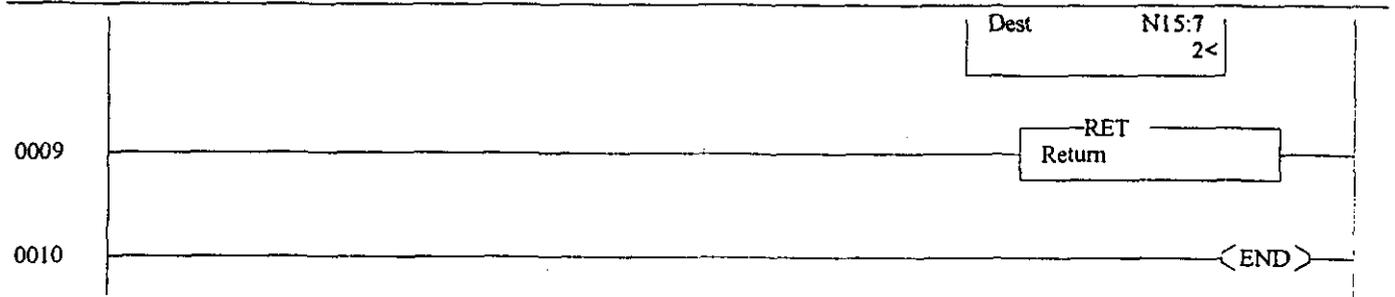
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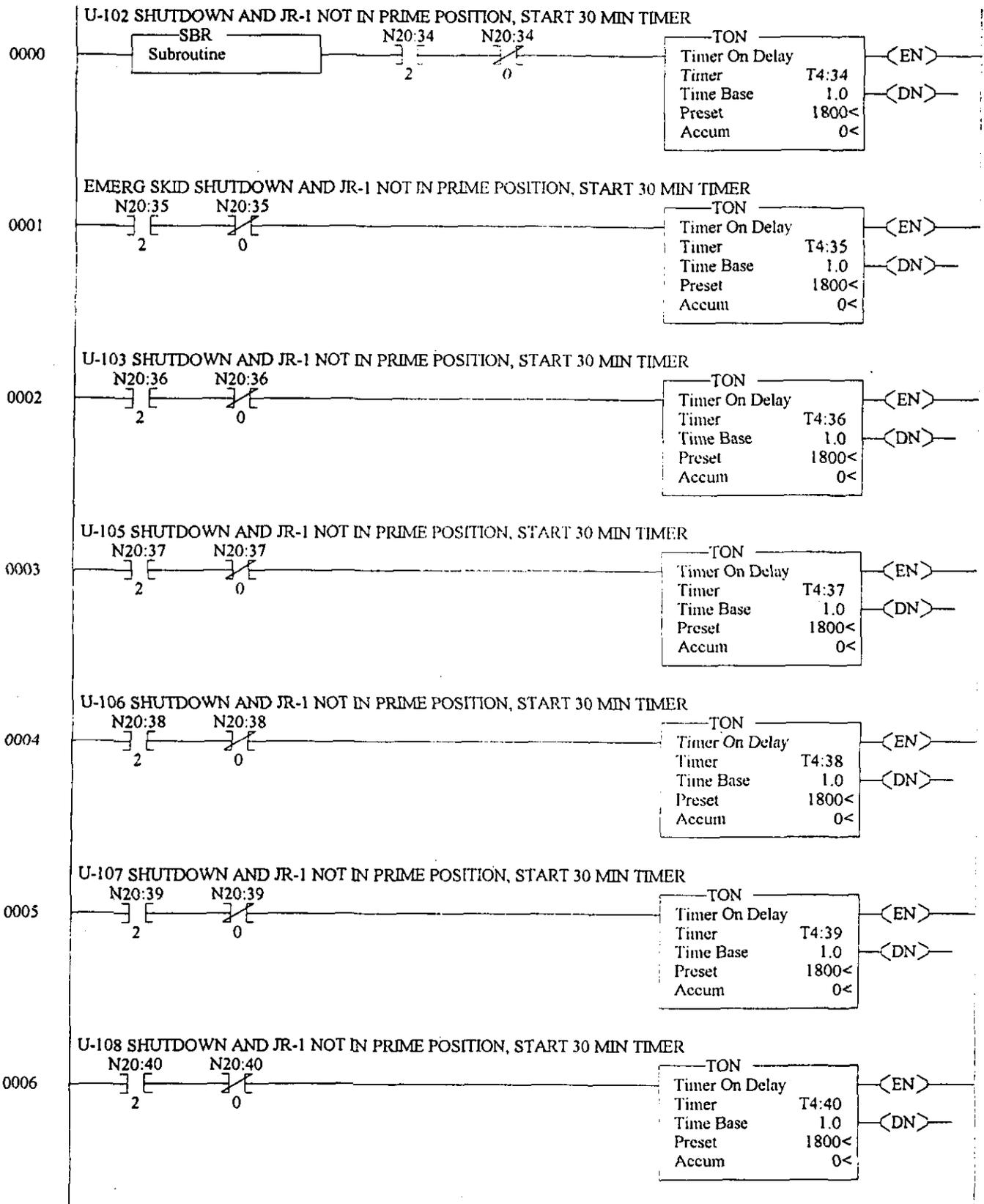
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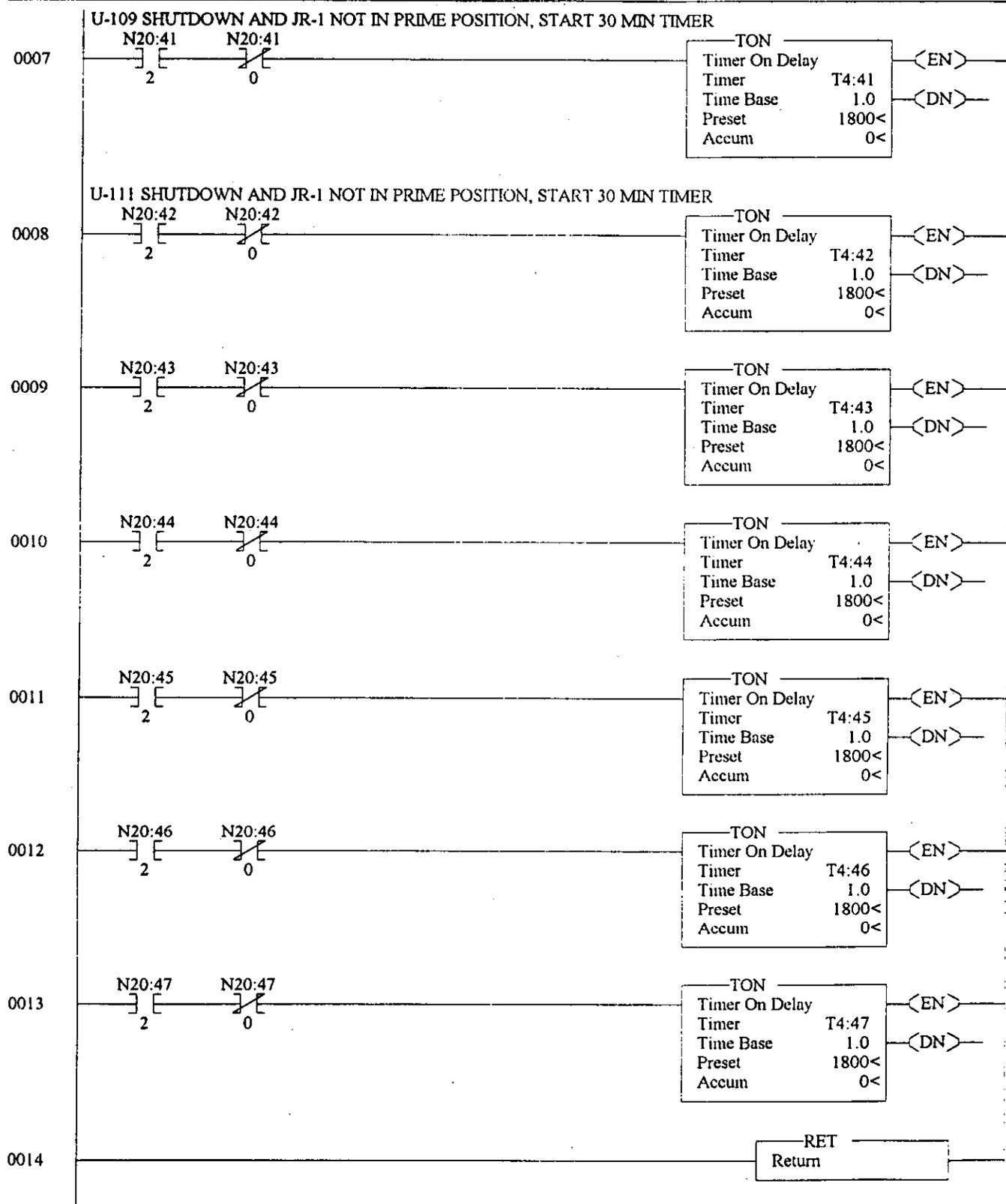
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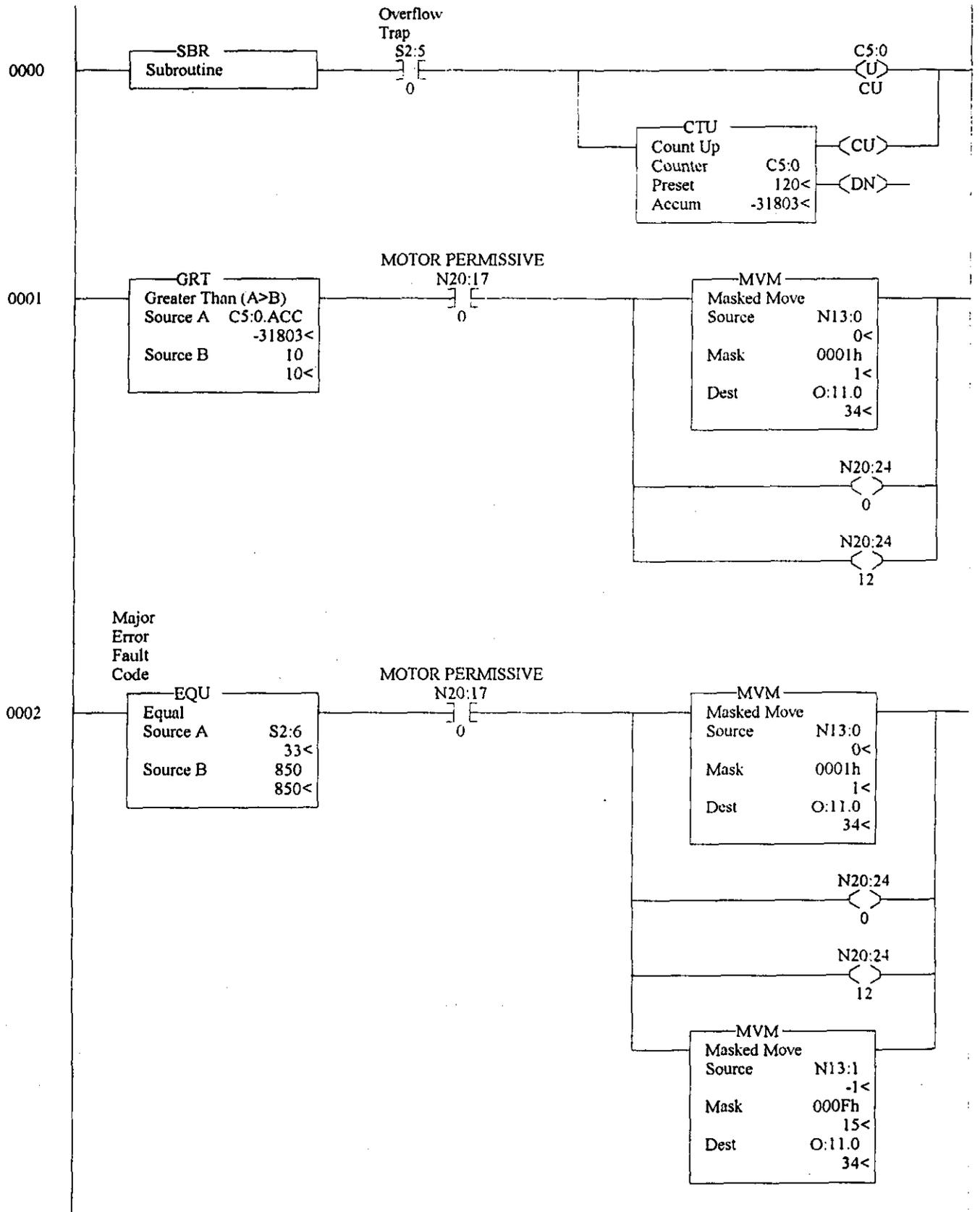


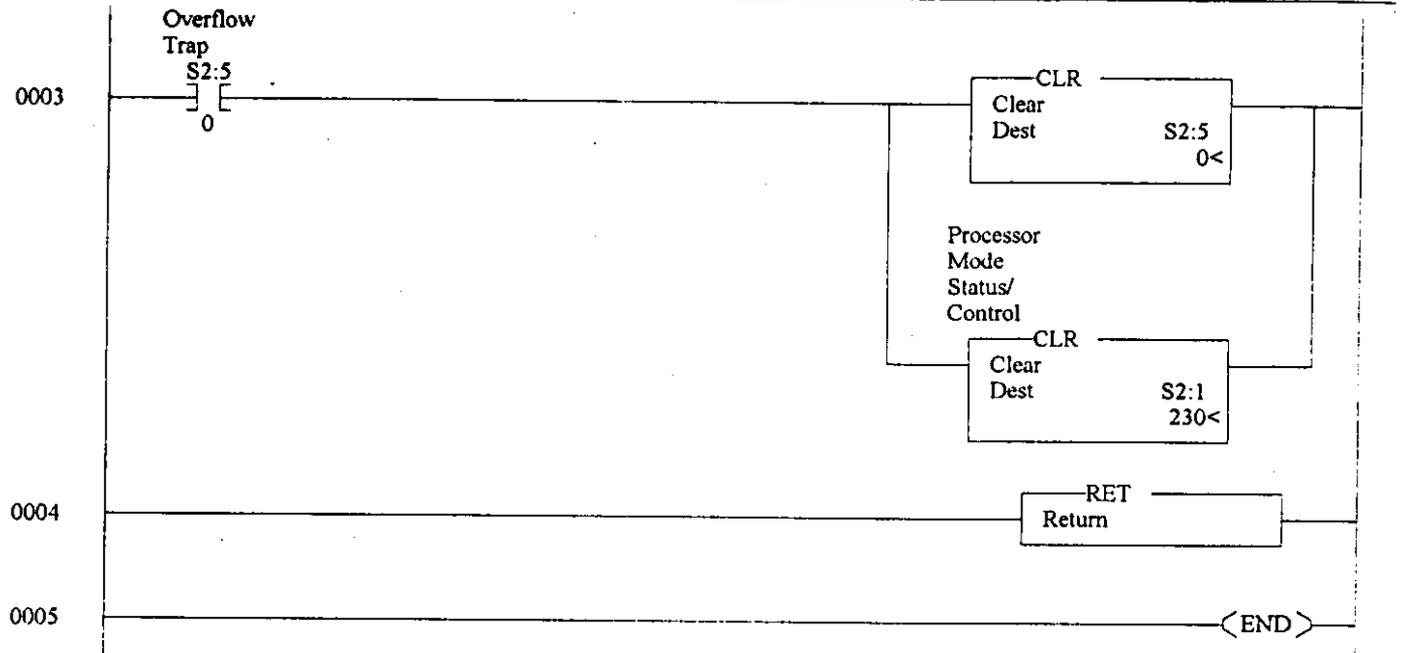


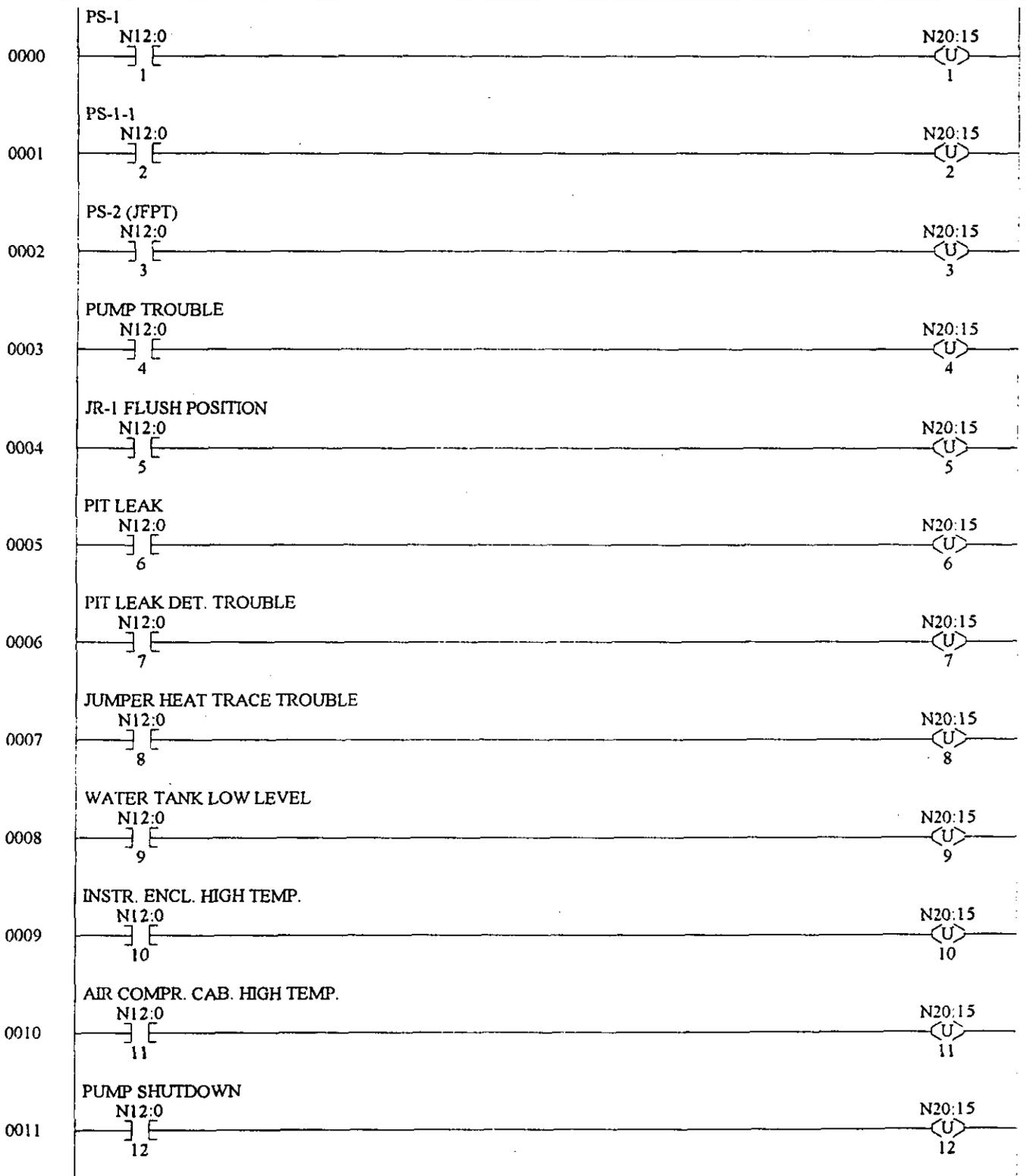


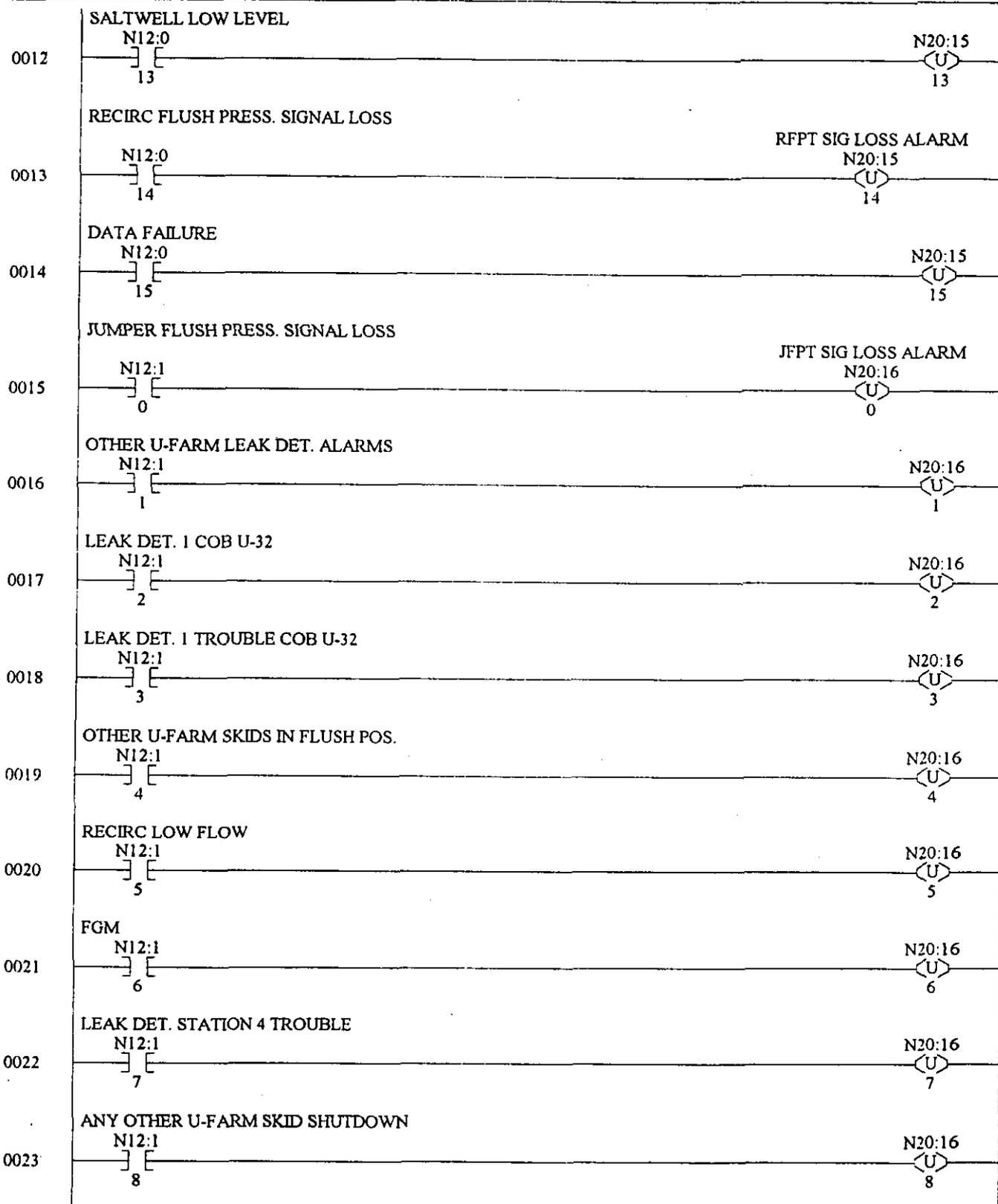
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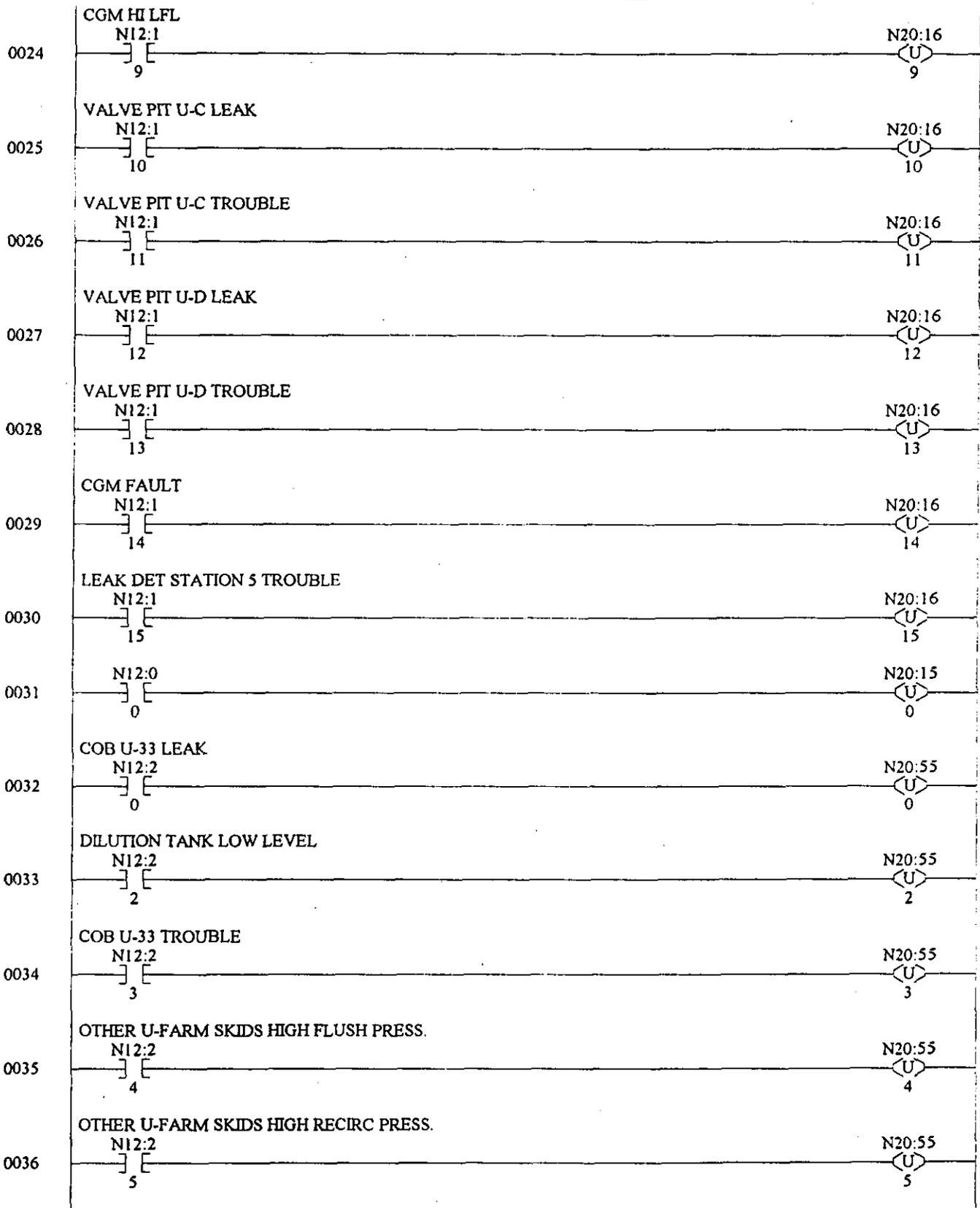
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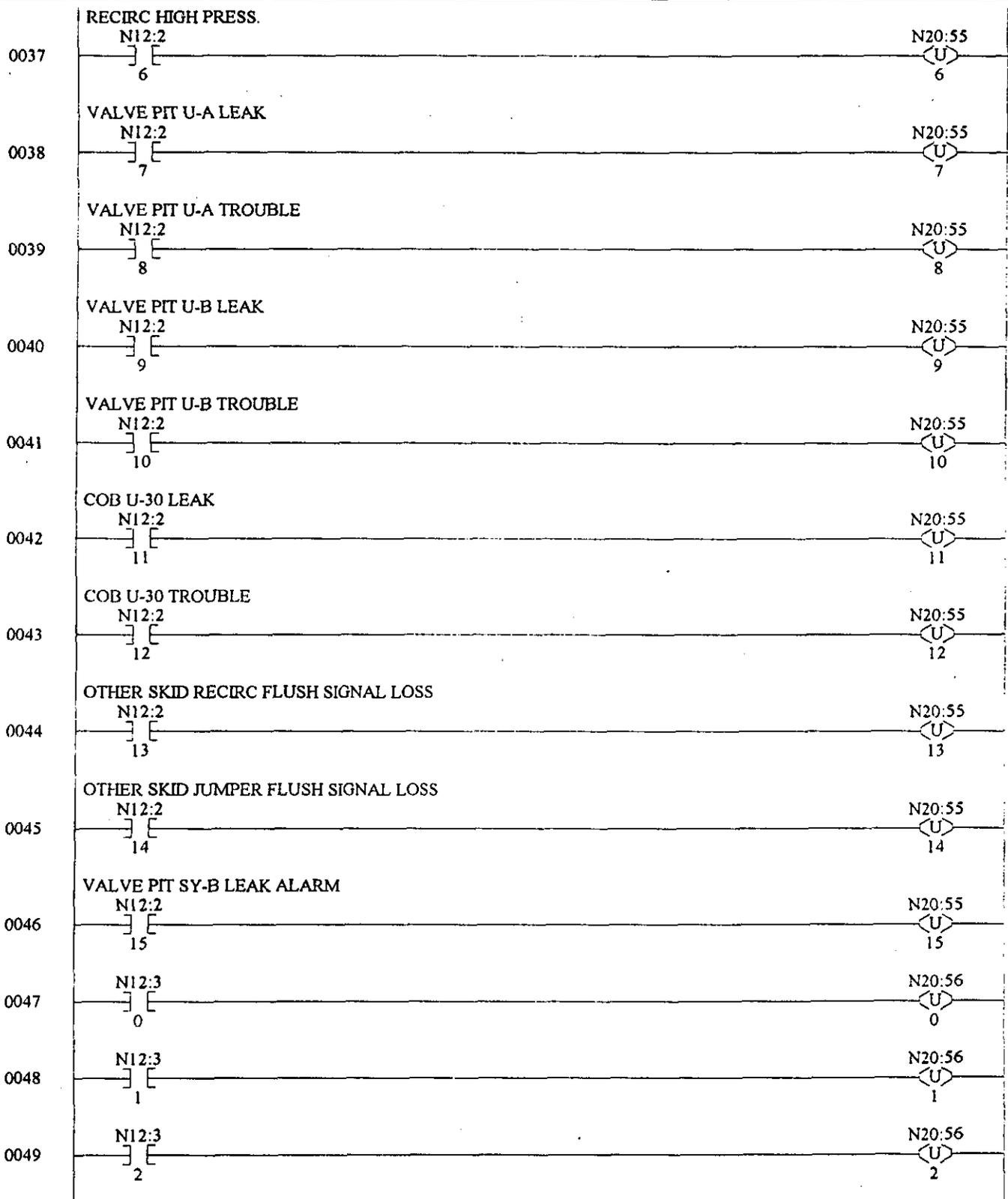


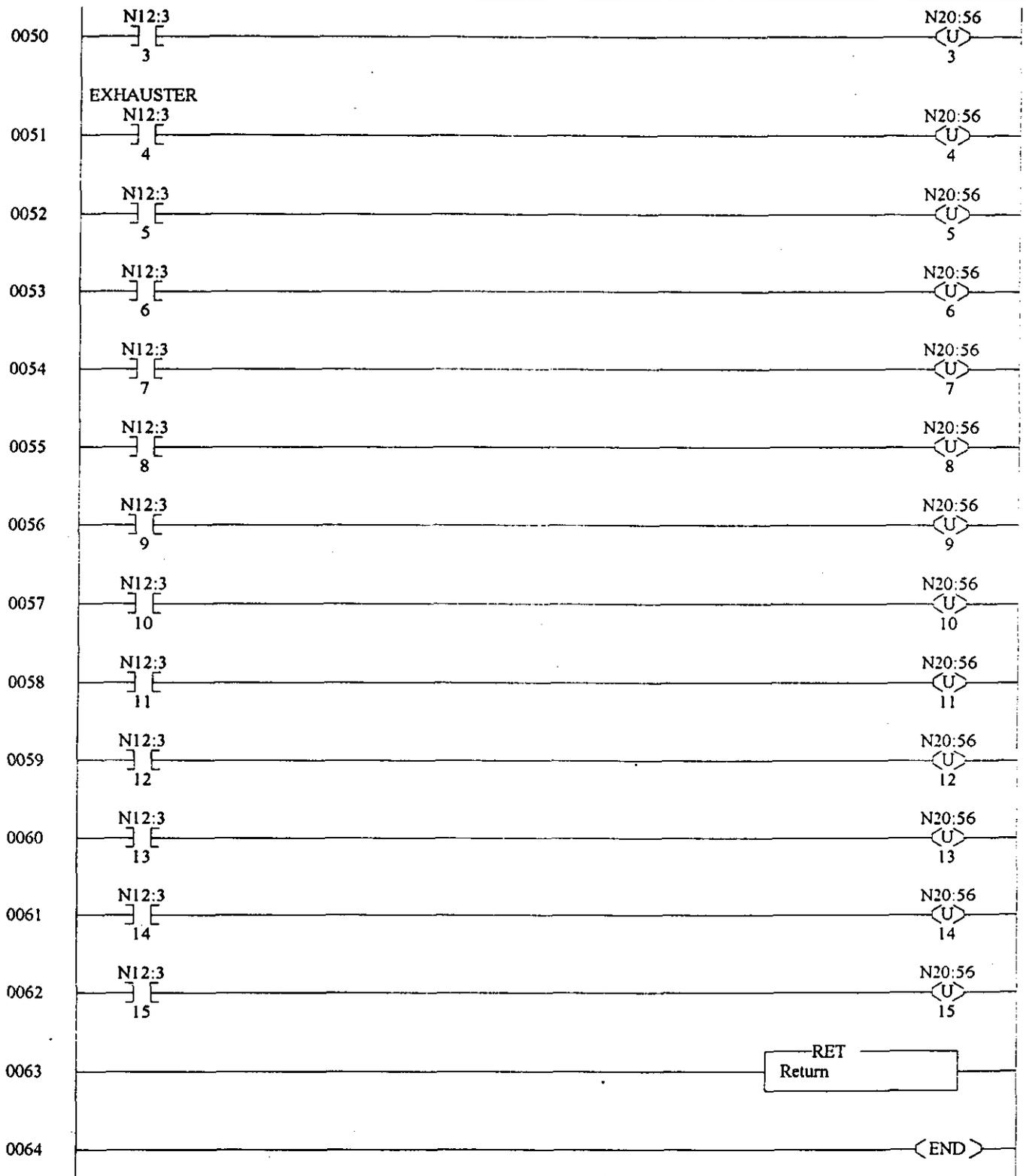


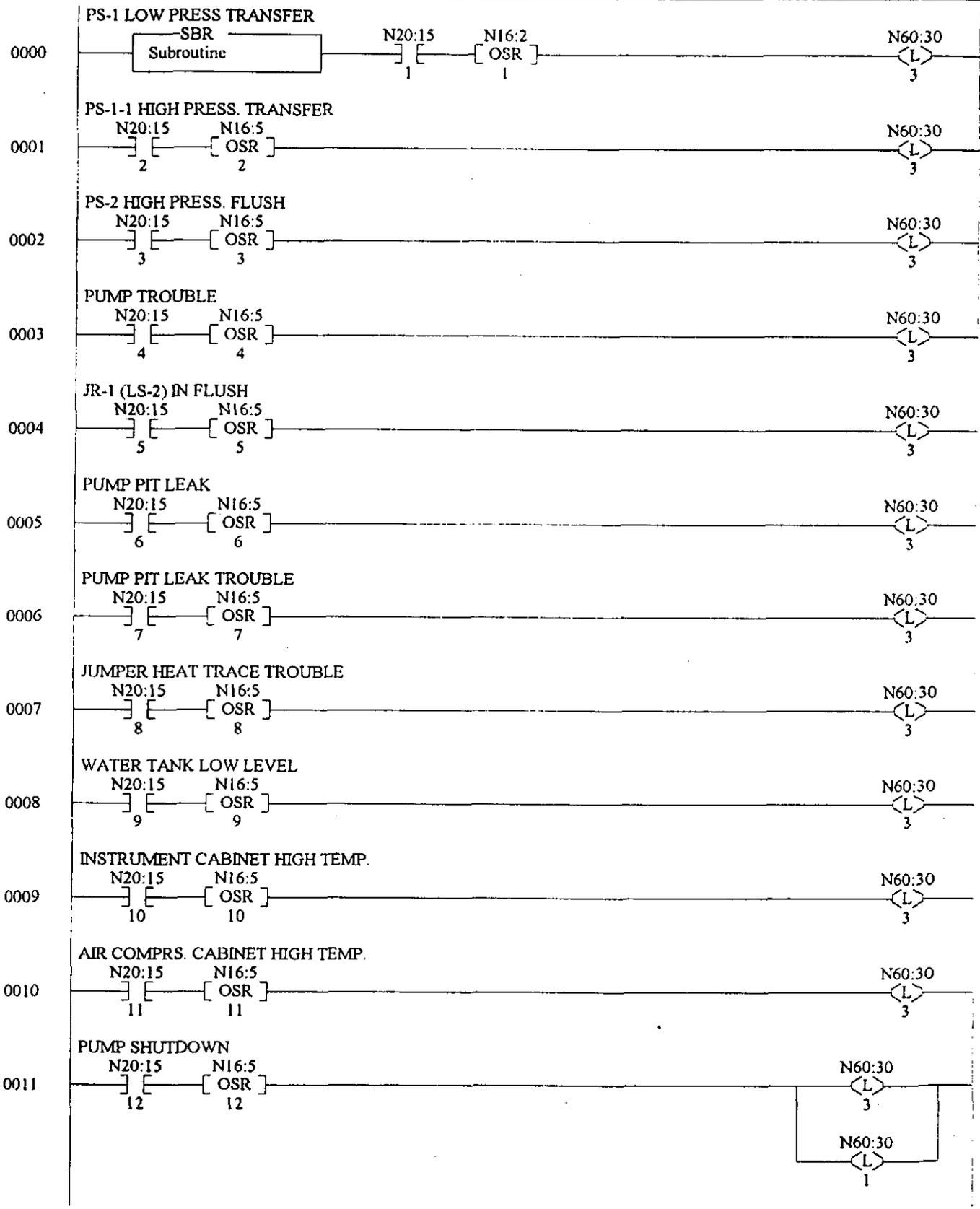


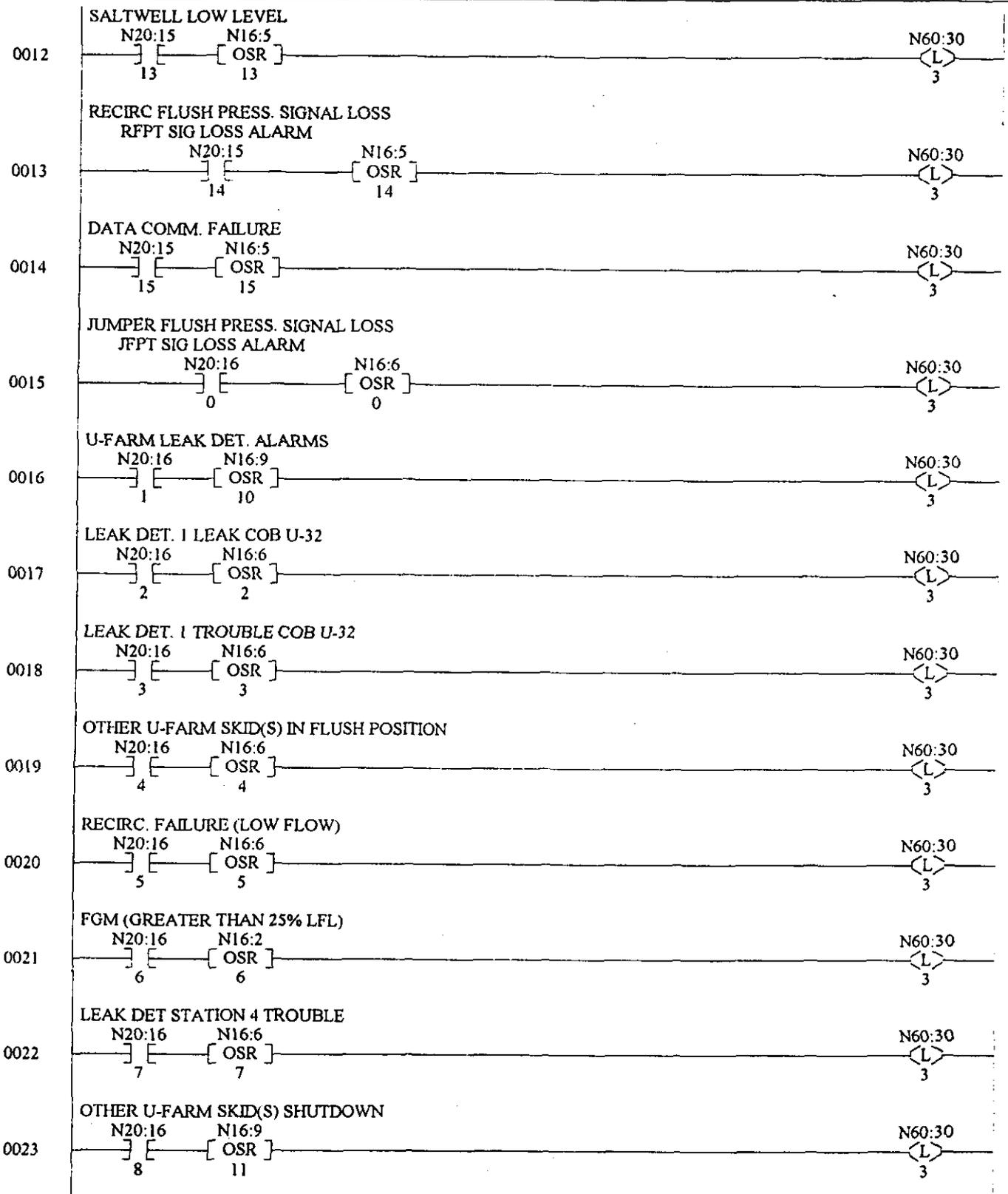


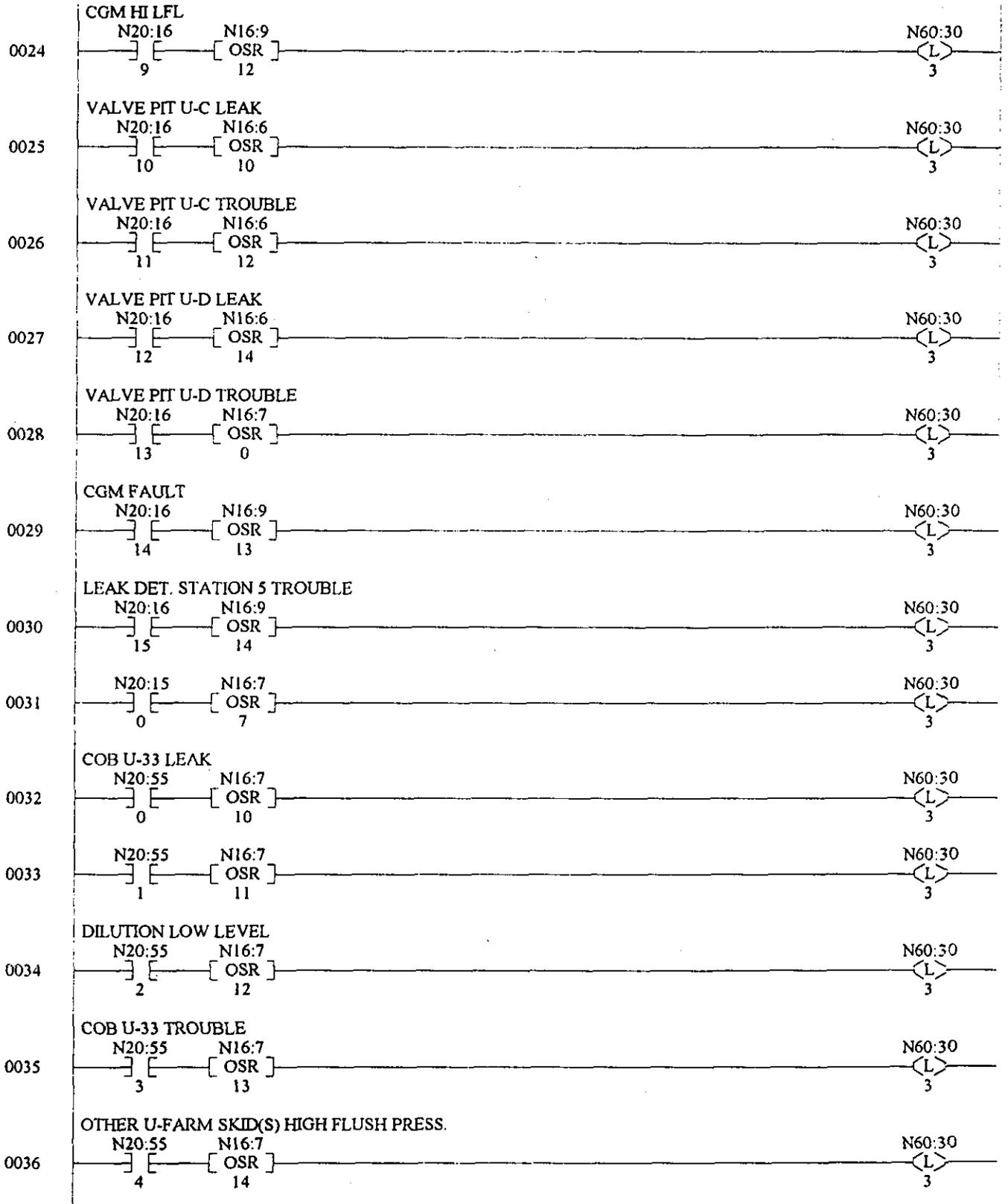


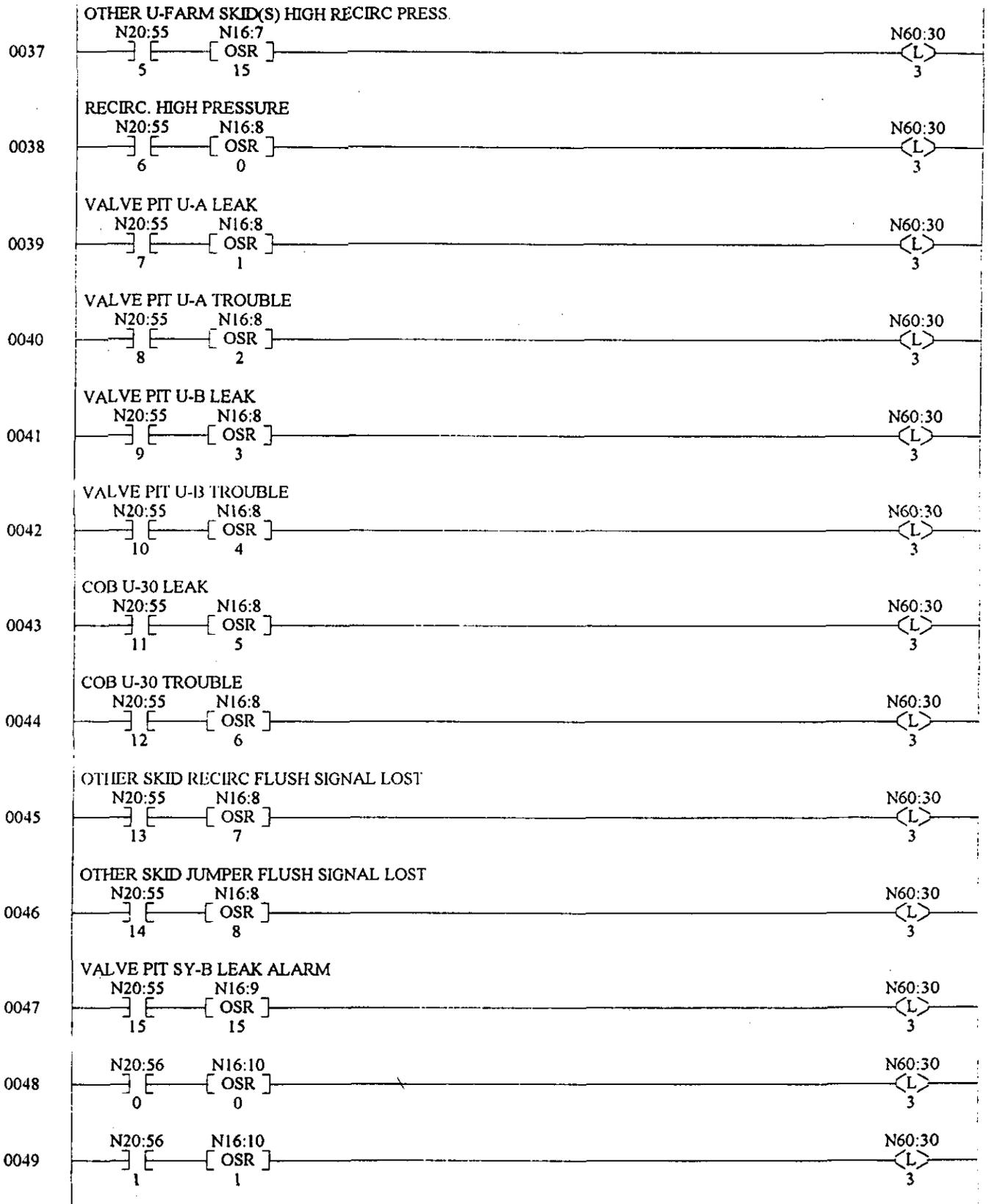


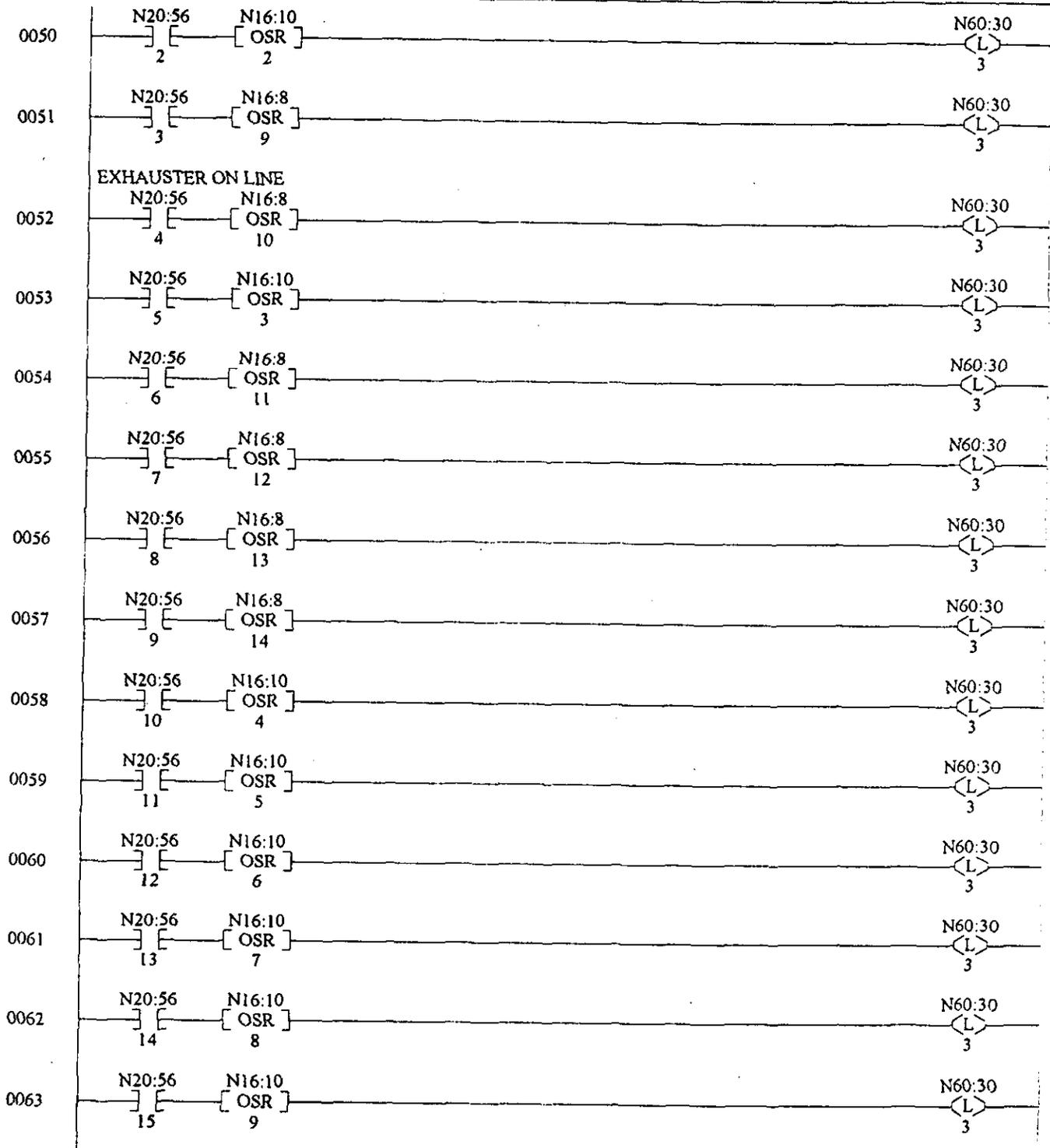


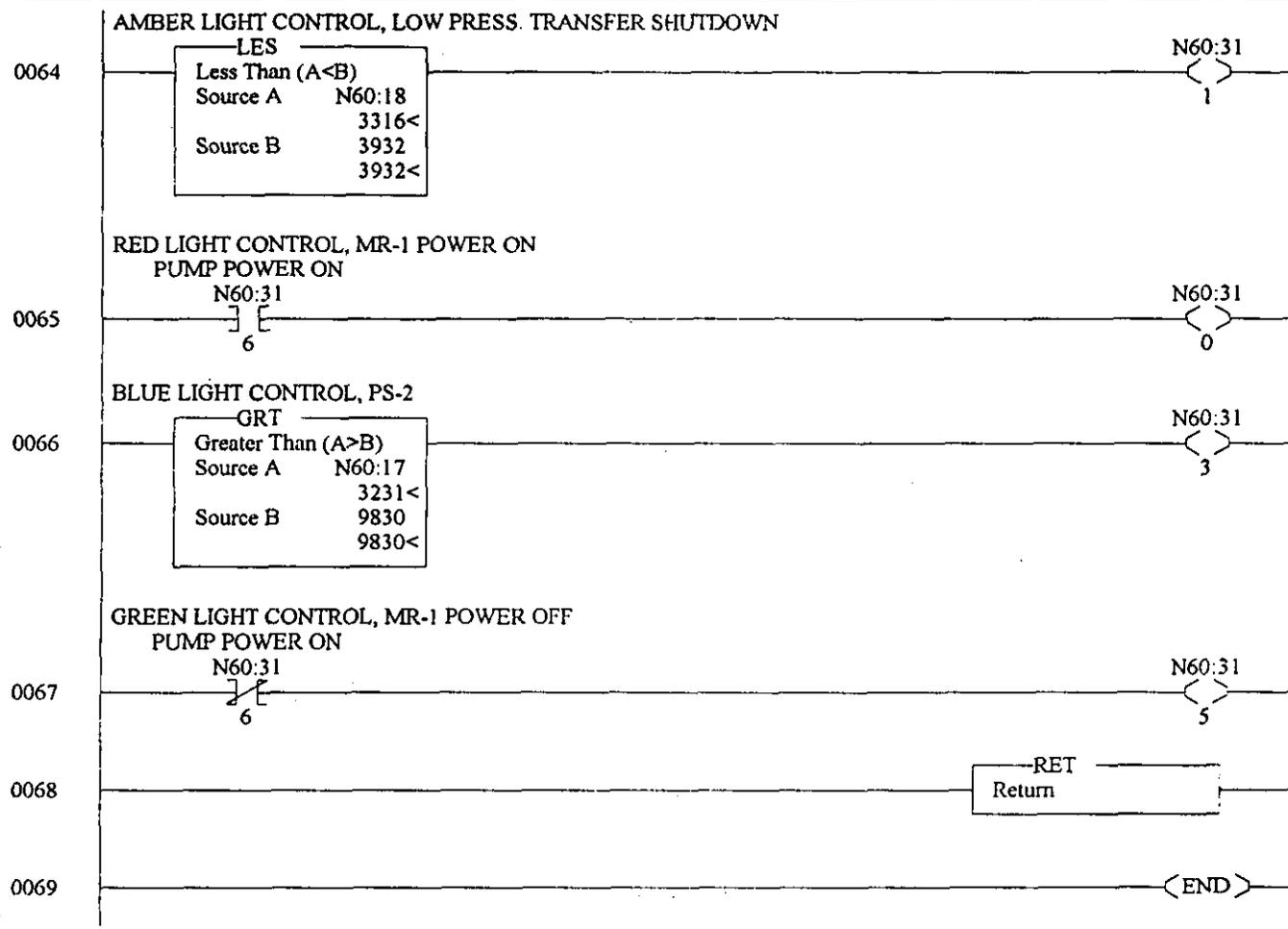


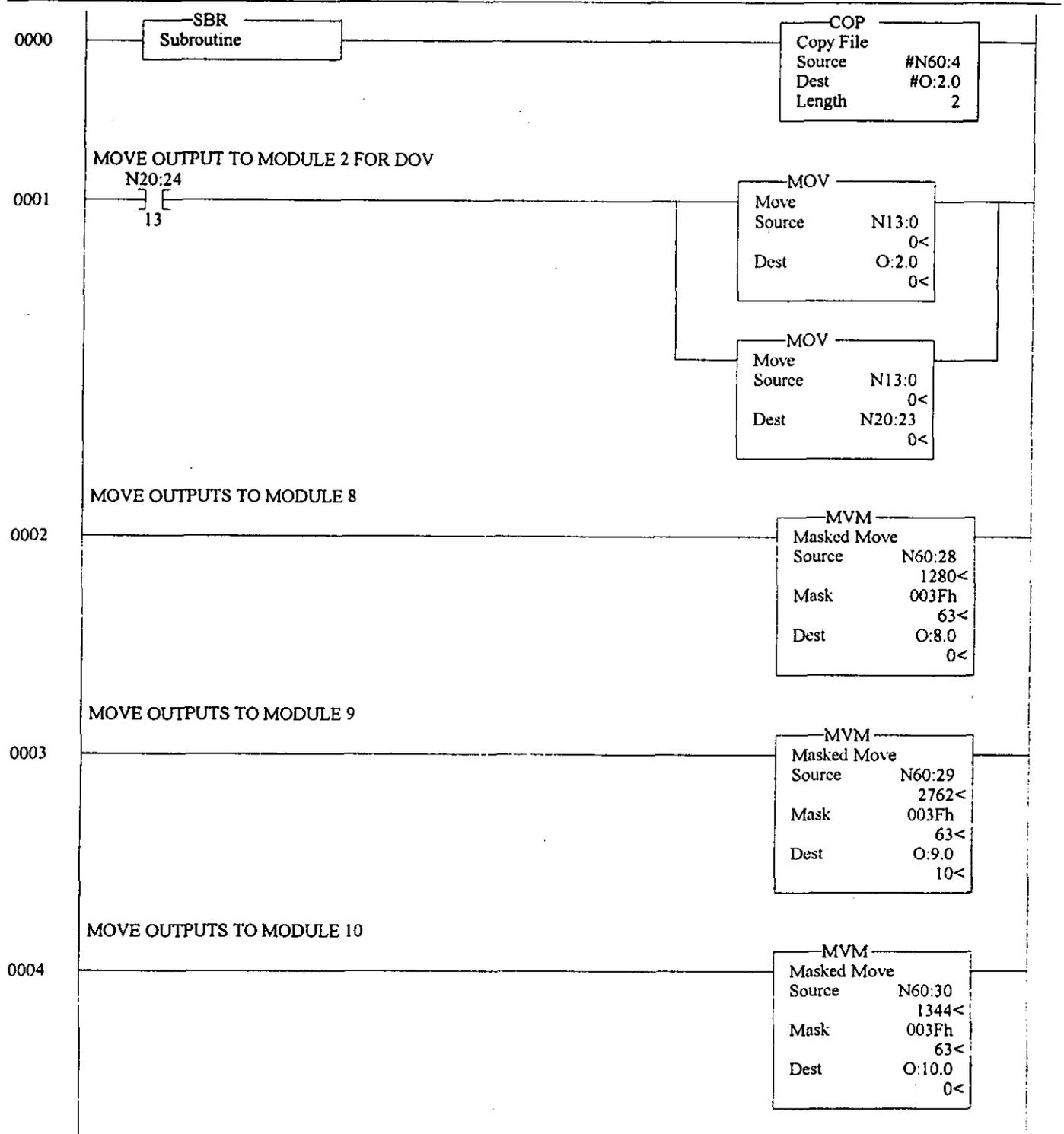


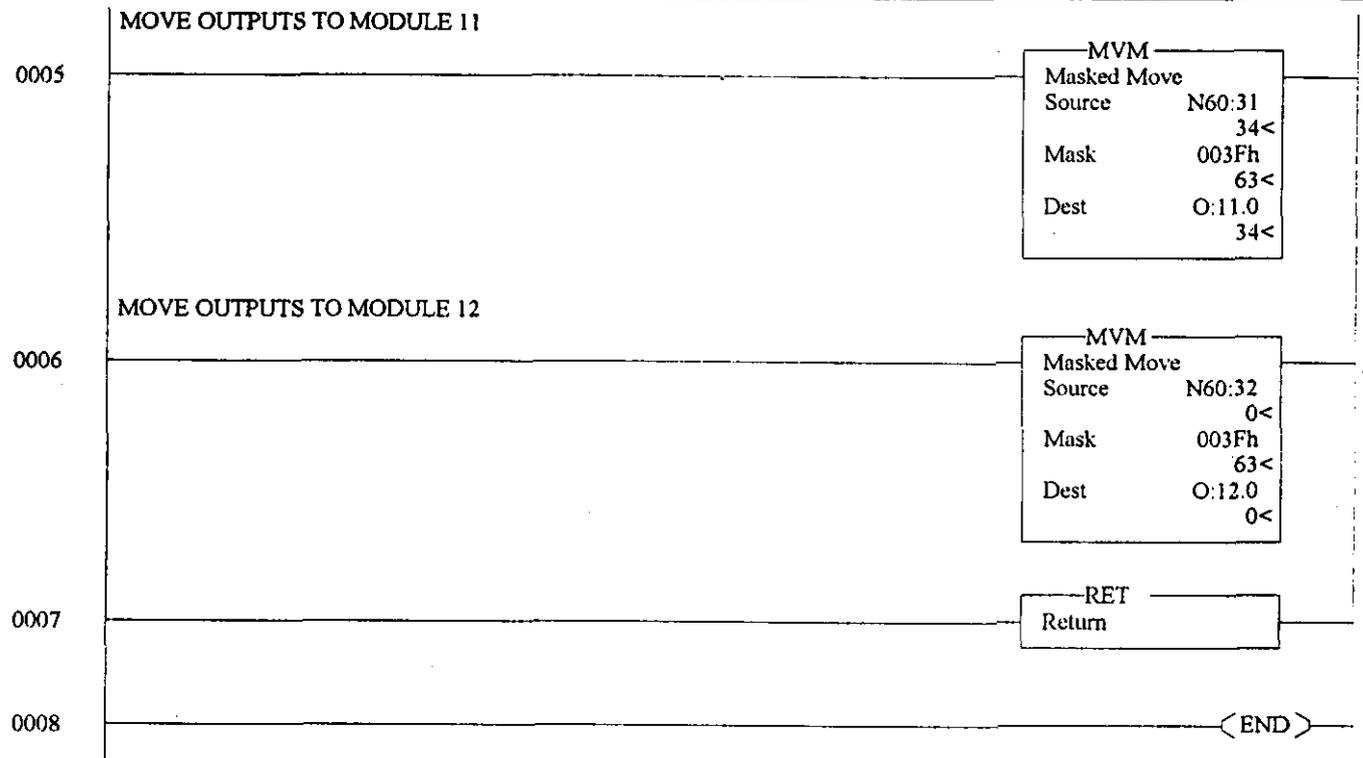


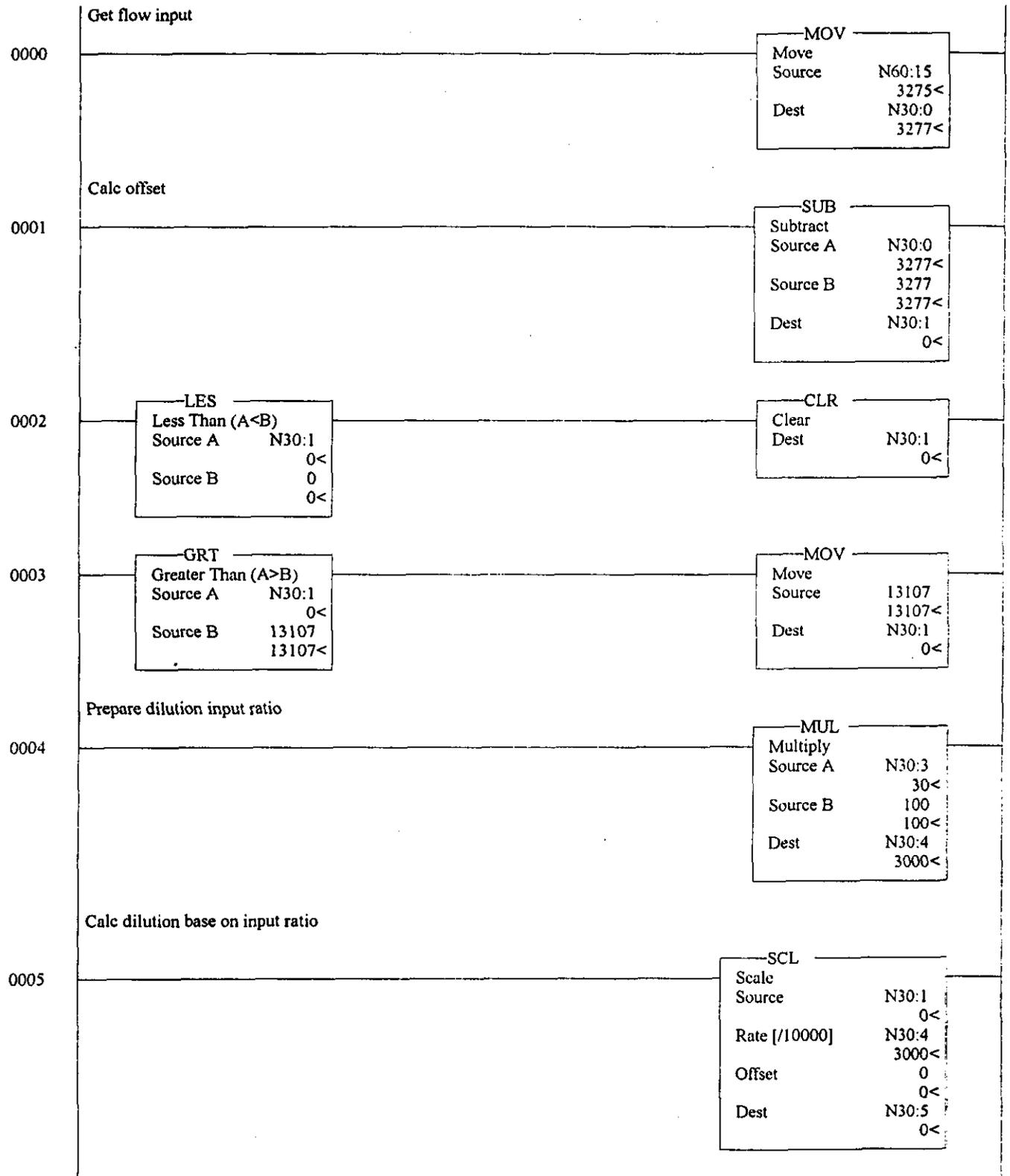


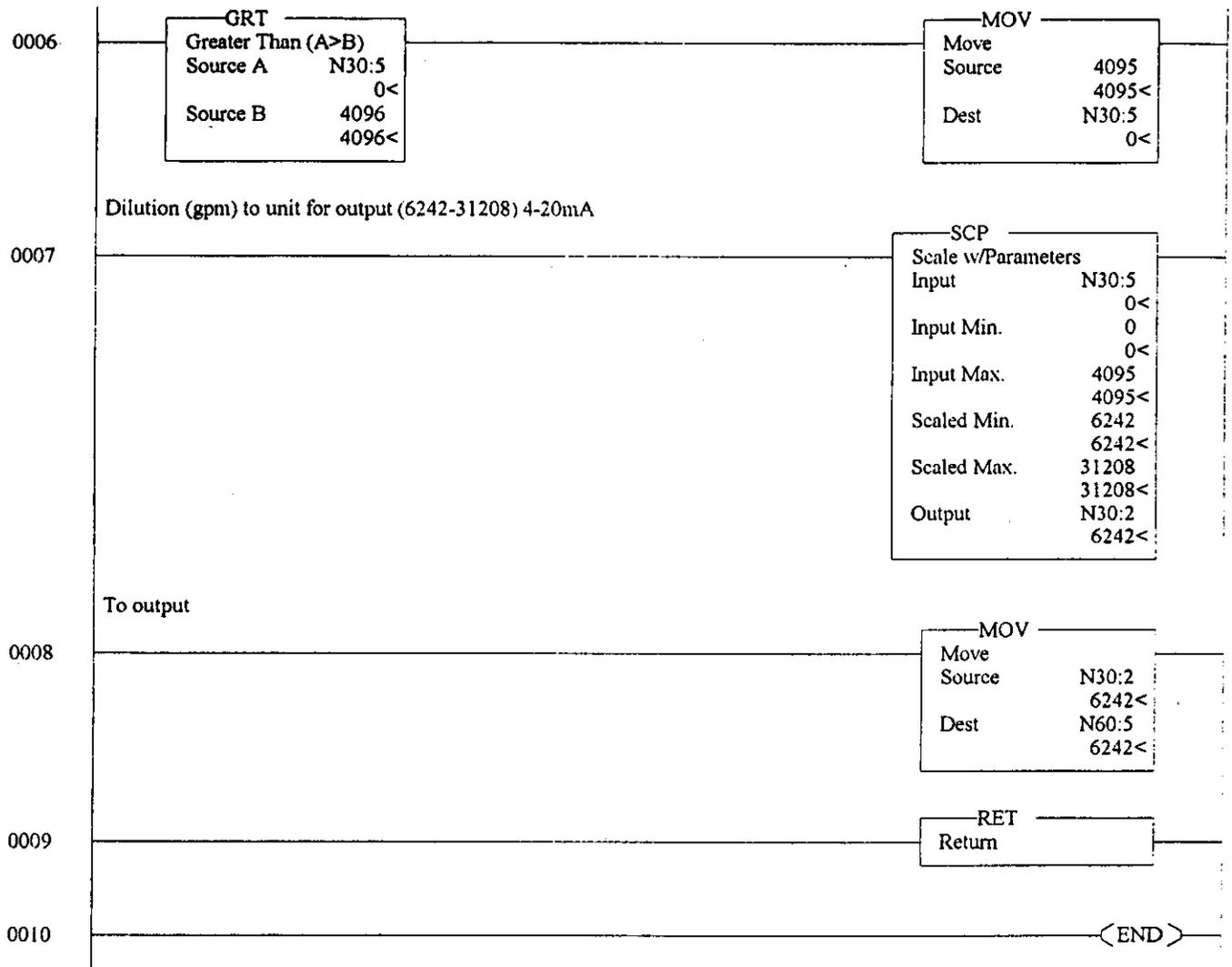


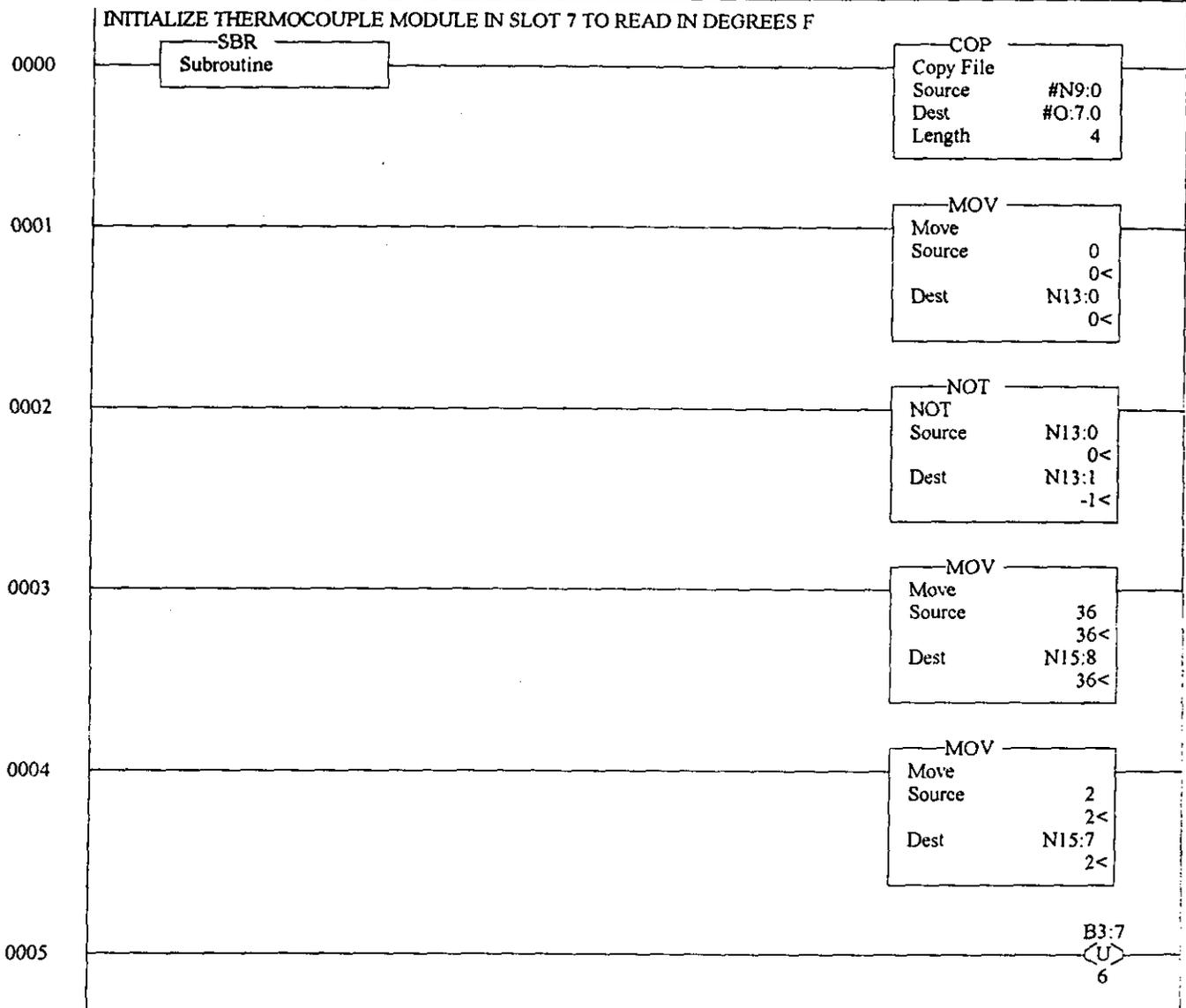








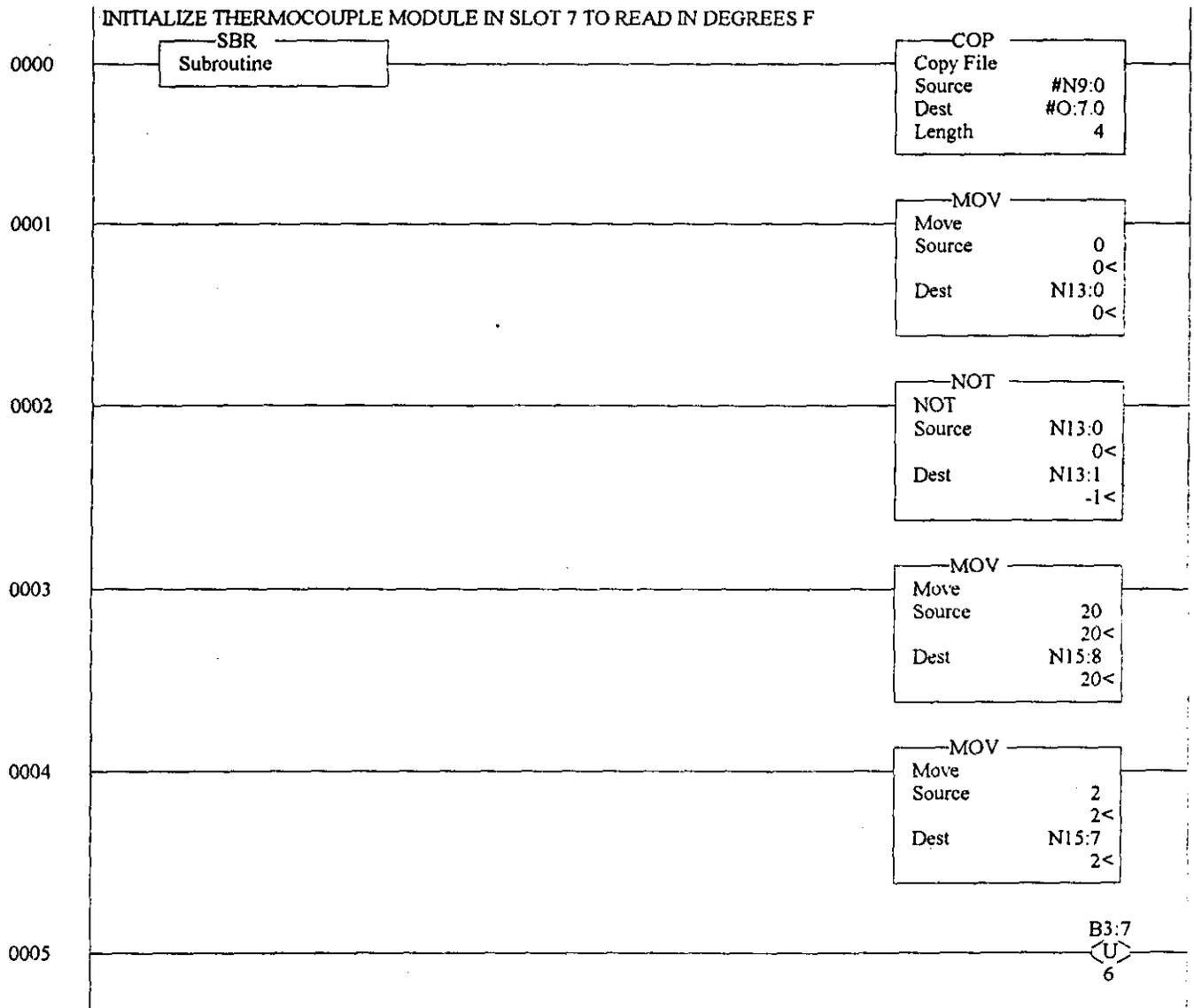




This printout verifies that ECN 66-18541L, 633113
has been completed and the values
have been restored
J. J. Smith 1-19-00

Data File N20 (dec)

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N20:10	124	90	3718	3465	-28992	0	0	-6124	5734	150
N20:20	100	5	7572	0	4128	0	50	14389	14372	14372
N20:30	3192	11	5	16	5	0	5	5	0	5
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N20:60	0	-1								



This printout verifies that ECN's 48544, 633143 has been completed and the values have been restored.

[Signature] 1-19-00

U105NEWIR1.RSS

Data File N20 (dec)

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N20:30	6969	9	5	5	5	5	5	5	5	5
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N20:50	0	0	0	0	0	0	0	0	0	0
N20:60	0	-1								