S

# ENGINEERING CHANGE NOTICE

Page 1 of 3

1. ECN 667416

Proj. ECN

| 2. ECN Category (mark one) | 3. Originator's Name, Organization, MSIN, and Telephone No. | 4. USQ Required? | 5. Date |
|---|---|---|---|
| Supplemental ☐ Direct Revision ☐ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐ | B. R. Johns, ISE, S7-24, 373-3429 | ☒ Yes ☐ No | 06/05/01 |

| 6. Project Title/No./Work Order No. | 7. Bldg./Sys./Fac. No. | 8. Approval Designator |
|---|---|---|
| Interim Stabilization, PIC skids, 113340 | 241-G/200-GEN | Q |

| 9. Document Numbers Changed by this ECN (includes sheet no. and rev.) | 10. Related ECN No(s). | 11. Related PO No. |
|---|---|---|
| RPP-5775, REVISION 0 | N/A | N/A |

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

| 14a. Justification (mark one) | 14b. Justification Details |
|---|---|
| Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const. ☐ Const. Error/Omission ☐ Design Error/Omission ☐ | This ECN updates the PIC skid "P" software document for A-101 to incorporate work completed ECNs. Design verification by Informal review per HNF-IC-0842, volume IV, section 4.24. USQ tracking #TF-01-0436, revision 0. This direct revision will not change collective dose since it has no impact on radiological sources, contamination control or shielding. |

15. Distribution (include name,

| | |
|---|---|
| B. R. Johns | S7-24 |
| T. M. Horner | S7-24 |
| W. F. Zuroff | 57-24 |
| T. J. Volkman | 57-34 |
| T. H. Nguyen | 57-24 |
| F. M. Maiden | S7-24 |
| J. E. Lamphere | S7-24 |

DATE: JUL 19 2001
STA: 4
HANFORD RELEASE
ID: 2

A-7900-013-2 (10197)

A-7800-012-1

# ENGINEERING CHANGE NOTICE



1. ECN (use no. from pg. 1)
667416

6. Design Verification Required
☒ Yes
☐ No

17. Cost Impact

| | ENGINEERING | CONSTRUCTION |
|---|---|---|
| Additional | ☐ $ N/A | ☐ $ N/A |
| Savings | ☐ $ N/A | ☐ $ N/A |

18. Schedule Impact (days)
Improvement ☐ N/A
Delay ☐ N/A

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

| | | | | | |
|---|---|---|---|---|---|
| SDD/DD | ☐ | Seismic/Stress Analysis | ☐ | Tank Calibration Manual | ☐ |
| Functional Design Criteria | ☐ | Stress/Design Report | ☐ | Health Physics Procedure | ☐ |
| Operating Specification | ☐ | Interface Control Drawing | ☐ | Spares Multiple Unit Listing | ☐ |
| Criticality Specification | ☐ | Calibration Procedure | ☐ | Test Procedures/Specification | ☐ |
| Conceptual Design Report | ☐ | installation Procedure | ☐ | Component index | ☐ |
| Equipment Spec. | ☐ | Maintenance Procedure | ☐ | ASME Coded Item | ☐ |
| Const. Spec. | ☐ | Engineering Procedure | ☐ | Human Factor Consideration | ☐ |
| Procurement Spec. | ☐ | Operating Instruction | ☐ | Computer Software | ☐ |
| Vendor Information | ☐ | Operating Procedure | ☐ | Electric Circuit Schedule | ☐ |
| OM Manual | ☐ | Operational Safety Requirement | ☐ | ICRS Procedure | ☐ |
| FSAR/SAR | ☐ | IEFD Drawing | ☐ | Process Control Manual/Plan | ☐ |
| Safety Equipment List | ☐ | Cell Arrangement Drawing | ☐ | Process Flow Chart | ☐ |
| Radiation Work Permit | ☐ | Essential Material Specification | ☐ | Purchase Requisition | ☐ |
| Environmental Impact Statement | ☐ | Fac. Proc. Samp. Schedule | ☐ | Tickler File | ☐ |
| Environmental Report | ☐ | Inspection Plan | ☐ | NONE | ☒ |
| Environmental Permit | ☐ | Inventory Adjustment Request | ☐ | | ☐ |

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

| Document Number/Revision | Document Number/Revision | Dowment Number/Revision |
|---|---|---|
| N/A | N/A | N/A |

1. Approvals

| | Signature | Date |
|---|---|---|
| Design Authority | WF ZUROFF | 7/13/01 |
| Cog. Eng. | BR JOHNS | 6/13/01 |
| Cog. Mgr. | TM HORNER | 6/27/01 |
| QA | TJ VOLKMAN | 2/18/01 |
| Safety | N/A | |
| Environ. | N/A | |
| Other | Informal Review: M Naidu | 6/13/01 |

| | Signature | Date |
|---|---|---|
| Design Agent | | |
| PE | | |
| QA | | |
| Safety | | |
| Design | | |
| Environ. | | |
| Other | | |

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

Paragraph two was inserted in section 1.1 to explain that the document was being updated due to the new pumping system.

Paragraph **2.1.5** is added to section **2.1** for the injection pump controls. Reference revisions were also updated.

In section **2.2.3**, the raw water, pump bearing, power monitor, RTD, and seal water are added.

Paragraphs **2.3.1.7** through **2.3.1.11** were added to correspond to the sections added in section **2.2.3**.

Paragraph **3.1.3** was inserted to explain the injection pump controls added to the software.

Paragraph **3.2.2.6** was corrected from **8** to **14** gallons per minute.

In section **3.3.2**, items 10, **12** and 13 were added for the new system.

In section **3.4.2**, items **13** and **14** were added for the new system.

Paragraph **4.2.18** was added for new subroutine **21**.

Paragraph **4.6** was rewritten to explain the new start sequence for the new pumping system.

# PLC/DTAM SOFTWARE PROGRAMS FOR PUMPING INSTRUMENTATION AND CONTROL SKID "P"

**T. M. Horner**
CH2MHILL HANFORD GROUP, INC
Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-99RL14047

EDT/ECN: 667416 UC:
Cost Center: 74D00 Charge Code: 103361
B&R Code: EW3120071 Total Pages: 170

Keywords: PLC, DTAM, LADDER LOGIC, PICS, SKID, INTERIM STABILIZATION, SALT WELL

Abstract:
This document describe the software programs for the Programmable Logic Controller and the Datable Access Module for Pumping Instrumentation and Control skid "P". The Appendices contains copies of the printouts of these software programs.
*Allen-Bradley is a registered trademark of the Allen-Bradley Company, Inc.

---

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product. process. or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation. or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: Dowment Control Services, P.O. Box 950. Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

7/19/01
Release Approval Date



Release Stamp

**Approved For Public Release**

# RECORD OF REVISION

(1) Document Number: RPP-5775



(2) Title: PLC/DTAM SOFTWARE PROGRAMS FOR PUMPING INSTRUMENTATION AND CONTROL SKID "P"

| (3) Revision | (4) Description of Change - Replace, Add, and Delete Pages | Authorized for Release | |
|---|---|---|---|
| | | (5) Cog Engr | (6) Cog Mgr Date |
| 0 | (7) EDT 618003, (ORIGINAL) | BR JOHNS | M.R.KOCH 5/08/00 |
| 1 | ECN 667416: Incorporates ECN's 658842, 659226, 659230, 665275, 665330, 665333, 666115, 666139, | BR Johns | T.W. Warner 6/27/0 |
| 1 RS | (cont.) 666172 | XXXXXXXXXXX | XXXXXXXXXXXXXXX |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# TABLE OF CONTENTS

1.0 INTRODUCTION ..... 1
1.1 BACKGROUND ..... 1
1.2 SOFTWARE PROGRAM CONTROL ..... 1
2.0 FUNCTIONAL REQUIREMENTS ..... 2
2.1 BASICS ..... 2
2.2 FSAR REQUIREMENTS ..... 3
2.3 COMPLIANCE WITH FSAR FUNCTIONAL REQUIREMENTS AND CONTROLS ..... 5
2.4 TSR REQUIREMENTS ..... 8
3.0 SOFTWARE DESCRIPTION ..... 9
3.1 A-I01 SOFTWARE ..... 9
3.2 PLC INPUTS/OUTPUTS ..... 9
3.3 DTAM DISPLAYS, DATA ENTRY AND ALARMS ..... 11
3.4 JET PUMP INTERLOCKS ..... 13
3.5 INTERLOCK and ALARM CONDITIONS ..... 14
3.6 PIC SKID COMMUNICATIONS ..... 16
4.0 SOFTWARE PROGRAM DESCRIPTION ..... 17
4.1 Program locations ..... 17
4.2 Program layout ..... 17
4.3 Inputs and Outputs ..... 18
4.4 Temperature ..... 19
4.5 Alarms ..... 19
4.6 Pump Control ..... 20
4.7 Program Set Points ..... 20
4.8 Other A/AX-farm Skids ..... 21
APPENDICES ..... 23

## ACRONYMS AND ABBREVIATIONS

PLC - Programmable Logic Controller
DTAM - Data Table Access Module
OCS - Operator Control Station
FSAR - Final Safety Analysis Report
TSR - Technical Safety Requirements
COB - Clean Out Box
LFL - Lower Flammability Limit
LCO - Limiting Condition for Operation
DOV - Diaphragm Operated Valve
JFPT - Jumper Flush Pressure Transducer
FGM - Flammable Gas Monitor
CGM - Combustible Gas Monitor
PXPT - Pump Transfer Pressure Transducer
OTP - Operational Test Procedure
ATP - Acceptance Test Procedure

# PLC/DTAM SOFTWARE PROGRAMS FOR PUMPING INSTRUMENTATION AND CONTROL SKID "P"

## 1.0 INTRODUCTION

### 1.1 BACKGROUND

This document describes the software programs for the Allen-Bradley SLC 500 programmable logic controller (PLC) and the Allen-Bradley DTAM PLUS operator interface module used on Pumping Instrumentation and Control (PIC) skid "P". The software programs for the SLC 500 and DTAM Plus are based on the core programs provided by Allen-Bradley. The PLC and DTAM software programs on skid "D" for SX-104 are the baseline programs. These baselines have been tailored for A/AX-farm skids. An Acceptance Test Procedure (ATP) and an Operational Test Procedure (OTP) verify that the software programs meet the specific requirements for A-I01 pumping.

Revision **1** to the PLC and DTAM software programs is for operation of a new pumping system. This new pumping system uses filtered water to circulate through the pump bearings for cooling. Additional interlocks and controls are required that were programmed into the PLC logic.

This document represents the final PLC and DTAM programs for PIC skid " P at A-101. These programs were printed out after the performance of the OTP. The OTP acts as the final qualification test for the software programs. Functional requirements and details of the PLC ladder logic are described in this document. The final programs entered into the PLC and DTAM Plus are included as Appendices to this document.

### 1.2 SOFTWARE PROGRAM CONTROL

This is the official software control document for the PLC and DTAM program for PIC skid "P". Changes to the programs shall be documented as changes and/or revisions to this document. This is to comply with HNF-5034 for software configuration control for the PIC skid software programs.

# 2.0 FUNCTIONAL REQUIREMENTS

## 2.1 BASICS

The basic functional requirements for the software program are identified below.

2.1.1 Control the jet pump and dilution pump

2.1.2 Monitor conditions and provide alarm and pump shutdown for off normal conditions

2.1.3 Provide PIC status information to the Operator Control Station (OCS) and other PIC skids that are on the same transfer line

2.1.4 Provide flow information on the amount of waste being pumped

2.1.5 Interlock to shut down the injection water pump

Functional requirements PIC skid "P" must meet are in the Authorization Basis documents which include the Final Safety Analysis Report, HNF-SD-WM-SAR-067, Revision 2; and Technical Safety Requirements, HNF-SD-WM-TSR-006, Revision 2. The applicable sections of the FSAR and TSR are listed below along with the requirements for the PIC skid controls.

## 2.2 FSAR REQUIREMENTS

FSAR chapter 2, Section 2.5.2, Waste Transfer identifies the following for PIC skid functional characteristics and controls and monitoring that impact the software program for the PIC skid PLC.

2.2.1 Section 2.5.2.1 states the salt well pump is allowed to run in an automatic mode.

2.2.2 Section 2.5.2.1.3 states the JR-1 valve has position indication that is monitored by the control system.

2.2.3 Section 2.5.2.1.4 has the following requirements for instrumentation and control.

PUMP DISCHARGE PRESSURE SENSORS: One discharge header pressure sensor provides a signal to the PLC for monitoring low and high pressures. A low or high pressure determined by the PLC will cause an alarm and pump shutdown. (See USQ evaluation TF-99-0830, rev. 0)

FLUSH WATER SUPPLY PRESSURE DETECTION SYSTEM: A pressure switch on the flush water line is activated upon change in pressure in the supply line, which results in an alarm and pump trip.

PROCESS FLOW TRANSMITTER AND TOTALIZER: A flow totalizer displays flow rates and totals gallons pumped.

PUMP SUCTION AND DISCHARGE PRESSURE TRANSMITTERS: Pump suction and discharge pressure transmitters provide pressure readings. The transmitters are connected to the control systems and can be used as a backup to the pressure switches for pressure interlocks.

RAW WATER FLOW TO PUMP TRANSMITTER: A flow transmitter or switch is installed to ensure flush water is flowing to the canned motor pump.

PUMP BEARING MOTOR: A bearing motor may be installed on the canned motor pump to monitor bearing wear.

PUMP POWER MONITOR: A power monitor may be installed on a phase leg of the motor electrical connection.

PUMP RESISTANCE TEMPERATURE DETECTORS (RTDs): Generally, RTDs are installed in the canned motor pump windings.

SEAL WATER TEMPERATURE WELL: The canned motor pump may include a thermal well that monitors and provides indication of the flush water temperature.

2.2.4 Section 2.5.2.1.5 states that salt well pumps on different tanks pumping into a common line are interlocked with each other. The control is to provide a safe and orderly shutdown of the group of pumps in the event a single pump shuts down.

2.2.5 Section 2.5.2.1.5.5 states that leak detectors connected to the skid control system are interlocked such that upon detection of a leak, a pump shutdown occurs along with audible and visual alarms.

## 2.3 COMPLIANCE WITH FSAR FUNCTIONAL REQUIREMENTS AND CONTROLS

**2.3.1** *Software design requirements must meet the functional requirements and controls stated above. The paragraphs below describe how these are met.*

2.3.1.1 *Salt well pump automatic mode:*
*An Auto/Manual selection is provided on the DTAM, which interfaces, with the PLC ladder logic.*

**2.3.1.2** JR-1 *valve position indication:*
*Transducers LS-1 and LS-2 input to the PLC. The PLC logic interprets these inputs and the DTAM displays the JR-I valve position as "PROCESS" or as "NON-PROCESS" when JR-1 is in the flush or prime positions.*

**2.3.1.3** *Low discharge pressure causes alarm and pump shutdown:*
*Pressure sensor SALW-PT-6015P inputs to the PLC. The PLC processes an alarm for pressures below 15psig or above 140psig. The alarm signal goes to the DTAM and strobe light. A low-pressure condition opens the pump motor control interlock circuit after a 30 second delay causing the pump to shutdown. The high-pressure condition opens the pump motor control interlock circuit after a 3 second delay causing the pump to shutdown.*

**2.3.1.4** **A** *pressure transducer on the* flush *water line causes alarm and pump shutdown:*
*Pressure transducer SALW-PT-6014P inputs to the PLC. The PLC processes an alarm for pressure in the jumper flush line. The alarm must actuate before the pressure reaches 18 psig. The alarm signal goes to the DTAM and strobe light. The high flush pressure opens the pump motor control interlock circuit after a 3 second delay causing the pump to shutdown.*

**2.3.1.5** **A** *flow totalizer displays flow rate and total gallons pumped:*
*A flow head measures the flow in the pump jumper and sends the information to a flow converter inside the Instrument Enclosure. The flow converter sends a 4 to 20mA signal to the PLC. The PLC processes the signal and the flow rate and total gallons are displayed on the DTAM.*

*2.3.1.6 Pump suction and discharge pressures are displayed:*
*Signals from transducers are sent to digital display units in the Instrument Enclosure. The discharge pressure signal is also processed by the PLC and displayed on the DTAM.*

*2.3.1.7* A flow *switch ensures flow to the pump:*
*A flow switch monitors the injection cooling water to the jet pump. This flow switch is an interlock to the motor control logic to shut down the jet pump upon low injection water flow.*

*2.3.1.8* A *bearing monitor may be installed:*
*A bearing monitor device is located on the jet pump. Electrical contacts open upon the pump's bearings reaching a certain wear point and cause an alarm only on the PIC skid.*

*2.3.1.9* A *power monitor may be installed:*
*A power monitor device monitors the pump power in horsepower. Should the motor power drop below or rise above the programmed levels, the pump will shut down.*

*2.3.1.10 Generally, RTDs are installed:*
*The motor winding temperature is monitored by a RTD. The output resistance is input to the PLC. High temperature alarms and shuts down the jet pump.*

*2.3.1.11 The canned motor pump may include a thermal well:*
*The cooling water temperature to the pump bearing is monitored by the PLC. A temperature indication is displayed at the skid. There are no associated alarms or interlocks.*

*2.3.1.12 Salt well pumps on different tanks that pump into a common line are interlocked with each other:*
*Both A-101 and AX-101 tanks will pump into a common line going to tank AN-101. The Following interlocks will be set up between the skids.*

*2.3.1.12.1 A 30-minute timer starts when any skid is shutdown and has JR-1* ***not*** *in the prime position and. Upon timing out, the other skid will shutdown.*

*2.3.1.12.2 High jumper flush pressure on any skid starts a 20-minute timer and shuts down the other skid upon timing out.*

*2.3.1.12.3 Skids with JR-1 in flush position; leak detection; and leak detector trouble, or loss of jumper flush signal after a 3-second delay, will cause pump shutdowns.*

2.3.1.13 Leak detectors connected to the skid are interlocked to cause visual and audible alarms upon leak detection: Leak detector relays provide discrete inputs to the PLC. Upon detection of a leak or leak detector trouble, alarms and pump shutdown occur after a 3 second delay. *For A-101,* PLC at the skid monitors the ***A-101*** pump pit and the AN-101 pump pit. The leak detector relays at the skid are not used. Tank farm leak detection systems are used and a signal is fed to the PLC on the A-101 skid.

2.3.1.14 There are other conditions that will cause an individual skid to shutdown. These conditions are communications failure with the software, signal loss from the jumper flush transducer, and high temperature on the jet pump motor. There are other conditions that will be monitored by both A-I01 and AX-I01 skids on a common line causing pump shut downs. These conditions for A/AX-farm are leaks or detector troubles at Leak Detector station 1 (valve pits A-A, A-B, AX-A, and AX-B); no dilution water flow; and leaks or trouble at the AN-I01 valve pit. These conditions for the skids are tied into the interlock circuit in the PLC ladder logic for the pump permissive.

## 2.4 TSR REQUIREMENTS

2.4.1 The software program meets the following Technical Safety Requirements. A description of how the program meets the requirements is explained.

LCO 3.1.2: Service Water Pressure Detection System. The jumper flush pressure signal from the transducer is fed to the PLC. Upon the jumper flush line pressure reaching 15psig, an alarm activates and the jet pump shuts down.

LCO 3.1.3: Transfer Leak Detection Systems. The primary leak detector for the pump pit is monitored for leaks and/or trouble with the signals being sent to the PLC. The PLC logic activates an alarm and shuts down the jet pump upon receiving leak or trouble signals from the leak detection systems. Leak detection signals from other leak detection systems along the transfer route are also fed to the PLC and cause a jet pump shut down.

# 3.0 SOFTWARE DESCRIPTION

## 3.1 A-I01 SOFTWARE

The software programs for the PLC and DTAM at A-I01 are based upon the program for U-109. Software changes made specifically for A-I01 are identified below.

3.1.1 Jet pump motor shutdown upon high motor winding temperature. The PLC monitors the motor winding temperature. The high temperature setpoint is 390 degrees F and the reset temperature is at 370 degrees F.

3.1.2 Leak detection for the A-I01 and AN-I01 pump pits uses farm leak detection systems. A single input from each leak detection system is fed to the PLC. Upon a leak or trouble signal from these detection systems, the pump will shut down. When AX-I01 skid is installed, the leak detection system signal for the pump pit will be fed to the A-I01 skid over the DH-485 link.

3.1.3 The injection pump is partially controlled from the PLC software. The injection pump motor receives permission to start from the PLC. After the injection pump starts, the jet pump must be started within 40 minutes or the injection pump will shut down. Should the jet pump shut down after having been running, the injection pump will shut down 30 minutes later. Upon a high transfer pressure trip of the jet pump, the injection pump will shut down 5 seconds later.

## 3.2 PLC INPUTS/OUTPUTS

3.2.1 Outputs:

- 3.2.1.1 Current to Pneumatic (I/P) converter control consisting of a 4 to 20mA signal to control airflow to the DOV.
- 3.2.1.2 Dilution metering pump control consisting of a **4** to 20mA signal.
- 3.2.1.3 Motor starter permissive is 120vac power to the jet pump motor contactor to allow the pump to start.
- 3.2.1.4 A 120vac-output power signal is sent as appropriate to the four indicator lights (red, green, blue and amber) on the instrument panel.
- 3.2.1.5 A 120vac-output power to the pump and jumper heat trace relays.
- 3.2.1.6 An 120vac-output signal to the dilution-metering pump control circuit.
- 3.2.1.7 An 120vac-output signal to the dilution contactor.
- 3.2.1.a A 120vac output power to the strobe when alarms occur.

3.2.1.9 A 120vac-output power to the horn when the jet pump shuts down.

3.2.1.10 A 120vac-output to the injection pump motor contactor.

3.2.1.11 Output to the DH-485 line as to skid status for JR-1 prime and flush positions, leak detection alarms, skid shutdown, loss of recirculation and/or jumper flush signals, and high jumper flush pressures.

3.2.2 Inputs:

3.2.2.1 Combustible gas monitor flammability levels are received on a 4 to 20mA signal representing a 0 to 100 percent range of the lower flammability limit.

3.2.2.2 Discharge pressure signal of 4 to 20mA from transducer on jumper representing 0 to 300-psig.

3.2.2.3 Specific gravity signal of 4 to 20mA from transmitter in WFIE cabinet representing 0 to 20 inches.

3.2.2.4 Weight factor signal of 4 to 20mA from transmitter in WFIE cabinet representing 0 to 500 inches.

3.2.2.5 Water tank level signal of 4 to 20mA from transmitter in Water cabinet representing 0 to 62 inches.

3.2.2.6 Flow converter signal of 4 to 20mA from transmitter in Instrument cabinet representing 0 to 14gpm.

3.2.2.7 Flush line pressure from transducer (old PS-2) of 4 to 20mA representing 0 to30psig.

3.2.2.8 Discrete input from dilution system. Contact opens on no dilution water flow to provide alarm.

3.2.2.9 Discrete input from Combustible Gas Monitor (CGM) instruments. Two inputs are received. One for flammable gas levels greater than 20% of the LFL and one for CGM trouble. **NOT USED**

3.2.2.10 Discrete inputs from the leak detection relays. Contacts from the A-I01 and AN-I01 leak detection systems open upon leak detection circuit trouble or detection of a leak to cause an alarm and jet pump shutdown.

3.2.2.11 Discrete inputs from transducers LS-1 and LS-2 located on the pump assembly. These transducers monitor the position of the JR-1 three-way valve. The inputs feed into displays, alarms and/or pump permissive inputs.

3.2.2.12 A 4 to 20mA signal from the transfer line pressure transducer. The PLC uses this signal to monitor for low and high pressures on the transfer line.

3.2.2.13 Discrete input MR-1 from the jet pump motor starter. This contact closes when the motor contactor is energized.

3.2.2.14 Thermocouple inputs from the PLC enclosure, air compressor enclosure, water cabinet, WFIE cabinet, pump bearing flush water, and pump jumper assembly. RTD inputs from the pump motor windings.

3.2.2.15 Inputs from the DH-485 line as to the status of the AX-101 skid when connected and leak detector station 1 along the waste line transfer path. These inputs are used for alarms and jet pump shutdown when appropriate.

3.2.2.16 Discrete inputs from the new pumping system that include power monitor high/low power shutdown, bearing water low flow shutdown, and bearing monitor alarm.

## 3.3 DTAM DISPLAYS, DATA ENTRY AND ALARMS

### 3.3.1 DTAM DISPLAYS

3.3.1.1 Alarm signals from the PLC.

3.3.1.2 Analog data inputs from the PLC for specific gravity, discharge pressure, jumper flush pressure, Diaphragm Operated Valve (DOV) parameters, and dilution ratio.

3.3.1.3 Temperatures for the Instrument Enclosure, the Air compressor cabinet, WFIE cabinet, Water cabinet, Pump motor winding, pump bearing flush water, and jumper assembly

### 3.3.2 DTAM DATA ENTRY

3.3.2.1 Signal to turn jumper and pump heat trace ON or OFF.

3.3.2.2 Signal to set pump operation to Manual or Automatic.

3.3.2.3 Alarm acknowledge signal.

3.3.2.4 DOV set point and parameters.

3.3.2.5 Pump ON or OFF input.

3.3.2.6 Jumper temperature setpoint.

3.3.2.7 Pump temperature high and very high setpoints.

3.3.2.8 Dilution ratio setpoint input.

3.3.2.9 Dilution minimum flow input.

3.3.2.10 Dilution maximum flow input.

3.3.2.11 Pump bump start sequence ON or OFF.

3.3.2.12 Injection water flow rate.

3.3.2.13 Injection water volume reset.

3.3.3 DTAM ALARMS

3.3.3.1 Individual alarm screens for each incoming alarm.
3.3.3.2 Screens 101 to 159 for individual alarm acknowledge.

## 3.4 JET PUMP INTERLOCKS

There are two jet pump interlock strings in the ladder diagram. One string is for equipment along the transfer path that monitors or feed into the transfer route. The other interlock string consists of the local PIC skid conditions. These two interlock strings are identified below for the A-I01 ladder logic. All the interlock conditions must be satisfied for the jet pump to run or if the pump is running and a condition becomes unsatisfied, the pump is shut down.

3.4.1 Interlock string for other equipment along the transfer route:

- 3.4.1.1 AX-I01 leakortrouble
- 3.4.1.2 AN-I01 leak or trouble
- 3.4.1.3 Dilution tank no flow
- 3.4.1.4 AX-I01 skid with JR-1 in flush position
- 3.4.1.5 Leak detector station #1 trouble
- 3.4.1.6 The 30 minute time out by the AX-I01 skid being shutdown and JR-1 not in the prime position
- 3.4.1.7 Valve pit A-A, A-B leak or trouble
- 3.4.1.8 A-I01 pit leak or trouble
- 3.4.1.9 Valve pit AX-A, AX-B leak or trouble
- 3.4.1.10 AX-I01 PIC skid with high jumper flush pressure
- 3.4.1.11 AX-I01 PIC skid with loss of jumper flush pressure signal

3.4.2 Interlock string monitoring the A-I01 PIC skid conditions:

- 3.4.2.1 Low pressure from the PXPT transducer while pump is running
- 3.4.2.2 High pressure from the PXPT transducer
- 3.4.2.3 High jumper flush pressure
- 3.4.2.4 JR-1 in the flush or prime position
- 3.4.2.5 Pump pit leak or trouble (Not used)*
- 3.4.2.6 Data communications failure on the DH-485 link
- 3.4.2.7 Motor high winding temperature
- 3.4.2.8 FGM greater than 25% of LFL (Not used, replaced by CGM interlocks.)
- 3.4.2.9 Jumper flush pressure signal loss
- 3.4.2.10 CGM greater than 20% of LFL **NOT USED**
- 3.4.2.11 CGM trouble **NOT USED**
- 3.4.2.12 Leak detector #1 leak or trouble (Not used)*
- 3.4.2.13 Motor high or low power
- 3.4.2.14 Injection water low flow
- 3.4.2.15 Other equipment interlock (the above string)

*Leak detectors jumpered at terminal block.

## 3.5 INTERLOCK and ALARM CONDITIONS

Alarms occur at the PIC skid when the above interlocks are not satisfied. Some alarms are immediate while some are delayed. The alarm conditions are listed below along with the response time for the alarm to occur and whether the jet pump shuts down.

| | | |
|---|---|---|
| Low transfer pressure | 30 seconds | Yes |
| Communications failure | 60 seconds | Yes |
| High flush press on AX-IO1 skid | 20 minutes | Yes |
| AX-I01 skid shutdown and in JR-1 not in prime position | 30 minute, then 3 second delay | Yes |
| JR-1 in flush # o r prime* | None | Yes |
| **Pump shutdown*** | None | - - |
| FGM greater than 25% LFL | None(not used) | Yes(not used) |
| High transfer pressure | 3 seconds | Yes |
| Jumper flush pressure greater than 15-psig # | 3 seconds | Yes |
| Pump trouble | 3 seconds | Yes |
| Pit leak # (NOT USED) | 3 seconds | (NOT USED) |
| Pit leak detector trouble (NOT USED) | 3 seconds | (NOT USED) |
| Leak detector 1 (NOT USED) | 3 seconds | (NOT USED) |
| Leak detector 1 trouble (NOT USED) | 3 seconds | (NOT USED) |
| Pump Bearing Water Low Flow | 3 seconds delay on low flow; 10 minute delay on reset | Yes |
| AX-101 skid with JR-1 in flush position | 3 seconds | Yes |
| Jumper flush pressure signal loss # | 3 seconds | Yes |
| AX-101 skid with leak alarms | 3 seconds | Yes |
| AX-101 skid with loss of jumper flush pressure signal | 3 seconds | Yes |
| Leak Station 1 trouble | 3 seconds | Yes |
| Valve Pits A-A, A-B Leak or trouble | 3 seconds | Yes |
| A-101 Valve Pit leak or trouble | 3 seconds | Yes |
| Valve Pits AX-A, AX-B Leak or trouble | 3 seconds | Yes |
| AN-101 Leak or trouble | 3 seconds | Yes |
| Dilution tank no flow | 5 minutes | Yes |
| CGM high LFL | None **Not Used** | Yes **Not Used** |
| CGM trouble | 3 seconds **Not** | Yes **Not Used** |

| CONDITION | TIME DELAY Used | PUMP SHUTDOWN |
|---|---|---|
| Pump is less than 40 degrees F or the jumper is greater than 225 degrees F | 3 seconds | No |
| Motor Winding High Temp Shutdown | None | Yes |
| Power Monitor Hi/Lo Shutdown | None (delay internal to power monitor) | Yes |
| Water tank low level | None | No |
| Pump Worn Bearing Alert | None | No |
| Motor Bearing Hi Temp Warning | None | No |
| Instrument enclosure greater than 130 degrees F | None | No |
| Air compressor enclosure greater than 130 degrees F | None | No |
| Water cabinet less than 35 degrees F | None | No |
| WFIE cabinet less than 35 degrees F | None | No |
| Salt well low level | None | No. DOV closes |

30-minute timer starts. Upon timing out, any other skids on the same transfer route will shut down.

#These alarms will also cause any other skids on the same transfer route to shut down.

## 3.6 PIC SKID COMMUNICATIONS

The PIC skid at A-I01 communicates with the computer at 241/271-A over a DH-485 link. The PLC monitors the link to verify the communications link is functional. This communications link monitoring ties into the interlock circuit for the jet pump control.

PIC skid status information is sent over the link to the 241/271-A computer. Skid status information monitored is listed below.

3.6.1 JR-1 in prime position
3.6.2 JR-1 in flush position
3.6.3 PIC skid shut down
3.6.4 Leak detected or leak detector trouble in pump pit
3.6.5 Skid high flush pressure
3.6.6 JFPT signal loss
3.6.7 AN-I01 leak or trouble

When the AX-I01 PIC skid is installed in AX-farm, the above information will affect that skid's operation. The skid connected in AX-farm will shut down either immediately or after some delay should the A-I01 skid be shut down for conditions 3.6.2, or 3.6.4 through 3.6.7 listed above. Should the A-I01 skid shut down and JR-1 is not placed in the prime position within 30 minutes, then the skid connected in AX-farm will shut down. A similar type of condition will exist for the skid at A-I01 which will shutdown upon shut down of the AX-farm skid.

The software is written such if other skids are not connected, no alarm or shut down conditions exist. Fault conditions from the AX-farm skid are provided to the A-I01 skid over the DH-485 link. As explained in the interlock section above, a loss of the DH-485 communications causes jet pump to shut down.

# 4.0 SOFTWARE PROGRAM DESCRIPTION

This section explains the input and output requirements of the PLC; alarm set points and control system functions. These requirements are used to develop the ladder logic for pump control and alarm actuation. The complete ladder logic is in Appendix B for the PLC and Appendix C for the DTAM program.

## 4.1 Program locations

The program for the PLC is stored in the CPU located in the PIC skid Instrument Enclosure. The DTAM program is stored in the DTAM unit located on the door of the Instrument Enclosure. The programs for the PLC and DTAM are developed from software on a laptop computer. After the program is written on the laptop, it is downloaded to the PLC and DTAM through an interface link.

Backup copies of the PLC and DTAM programs are stored on 3-1/2" disks. There are two backup copies, one for the design agent and one for file. The backup copies represent the final program in the PLC and DTAM. The PLC file "A101NEWP is changed to "AIOINEWPSUNDYNE" and the DTAM file "A101SKP" is changed to "A101PHTR."

## 4.2 Program layout

4.2.1 The program is written where ladder 2 is the main program. Ladders 3 through 20 are subroutines. The main program uses the subroutines as required during running of the program. The subroutines are listed below as to what function each performs,

4.2.2 Subroutine 3: Program initial conditions are set including initializing the thermocouple module to receive inputs.

4.2.3 Subroutine 4: Inputs to the PLC modules are gathered and placed into an N60:*/* address location. The rest of the program when needing that particular input uses this address.

4.2.4 Subroutine 5: Checks for alarm conditions and has the logic for the main interlock for jet pump control.

4.2.5 Subroutine 6: Contains the logic for the interlock logic for other equipment connected to the transfer route.

4.2.6 Subroutine 7: Contains the logic for the jet pump and dilution pump controls to run these pumps. The logic for the total flow calculation to be displayed on the DTAM is this subroutine.

4.2.7 Subroutine 8: This subroutine is the master alarm acknowledge logic.

4.2.8 Subroutine 9: Heat trace control logic

4.2.9 Subroutines 10 and 14: These subroutines are for the DH-485 communications link.

4.2.10 Subroutine 11: This subroutine is only used if the jet and dilution pumps are to be run by control from the 271-A computer. (This is not used nor was this function tested.)

4.2.11 Subroutine 12: This subroutine handles the inputs for the other equipment status on the transfer route.

4.2.12 Subroutines 13 and 16: Flow meter output routines.

4.2.13 Subroutine 15: This subroutine is the 30-minute time for the other skids in A/AX-farm when a skid is shut down and in the process position. When the 30-minute timer times out, the skid shuts down unless JR-1 of the shut down skid is placed in the prime position.

4.2.14 Subroutine 17: Individual alarm acknowledge routine

4.2.15 Subroutine 18: Alarm output to the strobe light, horn and/or instrument panel amber, blue, green or red indicator lights.

4.2.16 Subroutine 19: Sends outputs to the PLC output modules.

4.2.17 Subroutine 20: Sends an output to the dilution metering pump controls.

4.2.18 Subroutine 21: Estimates the amount of injection water injected into the pump bearing cavity to the nearest gallon.

## 4.3 Inputs and Outputs

Inputs are brought into the PLC through modules 1 through 12. For A-I01 the inputs are assigned addresses N60:*. Appendix A lists the addressing for the inputs to the PLC. Outputs are also assigned an N60:* address and can be found in Appendix A.

## 4.4 Temperature

The jumper temperature is to remain below 225 degrees F when the heat trace is ON. An alarm actuates for temperatures above this limit. The pump is monitored for high winding temperature and will shutdown the pump when the high winding temperature setpoint at 390 degrees F is exceeded. The temperature interlock resets at 370 degrees F. An alarm actuates at 380 degrees F to warn of approach to a high temperature shutdown. The temperature is monitored by the PLC through an RTD input from the motor. The temperature of the flush water for the pump bearings is monitored and an indication is read out on the DTAM.

The temperature of the Instrument Enclosure is not to exceed 130 degrees F. An alarm actuates for temperatures equal to or greater than 130 degrees F. The alarm resets when the temperature drops below 125 degrees F.

The temperature of the Air Compressor Enclosure is not to exceed 130 degrees F. An alarm actuates for temperatures equal to or greater than 130 degrees F. The alarm resets when the temperature drops below 125 degrees F.

The temperature of the WFIE Cabinet is not to decrease below 35 degrees F. An alarm actuates for temperatures less than 35 degrees F. The alarm resets when the temperature rises above 40 degrees F.

The temperature of the Water Cabinet is not to decrease below 35 degrees F. An alarm actuates for temperatures less than 35 degrees F. The alarm resets when the temperature rises above 40 degrees F.

## 4.5 Alarms

Various inputs to the PLC provide information to determine if an alarm condition exists. Alarm conditions are processed in subroutine 5 in the PLC ladder logic program. Addresses N20:15/*, N20:16/*, N20;55/* and N20:56/* are actuated upon alarm conditions and turn on the strobe light (subroutine 18 of the PLC ladder logic) at the Instrument Enclosure. The horn is turned on when a pump shutdown occurs. Addresses N20:24/*, N20:25/*, N20:51/* and N20:52/* provide alarm input to the DTAM.

Alarms are acknowledged at the DTAM on screen #23. Acknowledging the alarm clears the signal to the strobe and horn only (subroutine 17 of the PLC ladder logic). The visual alarm remains on the DTAM screen until the alarm condition clears in the field.

Appendix A lists all the alarm conditions monitored, the addresses and alarm messages. Appendix C is a copy of the DTAM program containing all the alarm screens.

## 4.6 Pump Control

Subroutine 7 outputs to the motor starter for the jet pump. Three conditions in the software logic must be satisfied to provide the signal for the motor contactor to close. These are: 1) the interlocks must be satisfied. These interlocks include the skid interlocks in subroutine 5 and interlocks to any other tanks on the same transfer line as required in subroutine 6. 2) Pump to the ON position from the DTAM and 3) pump trouble cleared in subroutine 5. Pump trouble clears when the pump is ON from the DTAM and the auxiliary contact at the motor starter is closed. The new pumping system requires a "bump" start upon initial cooling water flow to the pump bearings to ensure air is dispelled from the bearing cavity. This injection water must flow to activate the flow switch. Water flow must be continuous for 10 minutes before the jet pump is allowed to start. The "bump" start consists of 3 cycles on one second ON and 10 seconds OFF prior to the jet pump running in the normal continuous mode. The "bump" start is initiated upon starting each time the flow switch is reset. The jet pump is tied to the injection pump start/stop control. The jet pump must be started within 40 minutes after the injection pump is started or the injection pump shuts down. After the jet pump has been running and then stops, the injection pump will shut down within 30 minutes if the jet pump is not restarted. Upon a high transfer pressure trip of the jet pump, the injection pump shuts down 5 seconds later.

## 4.7 Program Set Points

The set points for A-I01 are the same as U-109. Each set points is identified below along with the PLC logic values.

4.7.1 Jumper flush pressure alarm point: The jumper flush pressure is set to alarm at pressures greater than 15PSI. This is to meet the requirements of LCO 3.1.2 that requires the service water pressure to be less than 20psi. The pressure transducer range is 0 to 30psi, with a 4 to 20mA output signal to the PLC. The internal logic value of the PLC for a 4 to 20mA signal is 3277 to 16384. The PLC logic value for an alarm set point of 15psi is 9830.

4.7.2 Jumper flush pressure signal loss: The input signal from the jumper and recirculation flush pressure transducers is not fail-safe. Therefore, the 4 to 20mA signal is monitored to a signal loss due to a failed transducer, broken wire or failure of the intrinsic safe module. The PLC logic value is set at 2500. This value is selected because the steady state value of the transducer is below the 3277 when the piping has no liquid inside. The 2500 value will prevent nuance alarms and pump shutdowns.

4.7.3 Water tank level: PIC skid "P" has a 62-inch high water tank. The set points for low water level and reset were calculated to correspond to the relative volume as in the older skids with a 50-inch high tank. The alarm level is set at 12.25 inches and the reset level is set at 15.5 inches. The level transmitter outputs a 4 to 20mA signal to the PLC. The corresponding PLC logic value for 12.25 inches is 5867 and for 15.5 inches is 6554.

4.7.4 Low and High pressure: a pressure transducer monitors the pressure on the pump and jumper assembly transfer line. A 4 to 20mA signal is sent to the PLC. The PLC program determines a low and a high pressure alarm point. The low pressure is set at 30psig and the high pressure is set at 140psig. The PLC logic value for 30psig is 4588 and for 140psig is 9394.

## 4.8 Other A/AX-farm Skids

Other NAX-farm skids when installed will interface over the DH-485 data link to the A-I01 skid "P. The PLC ladder logic is set up for these future interfaces. Future skids in NAX-farm will be at tank AX-101 and the emergency skid. The types of interfaces are identified below. The PLC logic is an open contact, which is monitored for a closed condition causing a timer to start and/or the skid to shut down.

4.8.1 Skid JR-1 alarm conditions: When the AX-I01 skid has JR-1 in the flush position, the A-I01 skid will shut down after 3 second delay upon receiving the signal over the DH-485 link. If them-I01 skid has JR-1 in the process position and that skid is in the shut down mode, a 30-minute timer starts. Upon timing out of the timer, the A-101 skid will shut down after a 3-second delay. The 30-minute timer allows operations personnel time to move the JR-1 to the prime position upon skid shut down.

4.8.2 High flush pressure: Upon high flush pressure in the jumper of an on-line skid, a 20-minute timer starts. Timing out of the timer will cause the A-I01 skid to shut down. The 20-minute timer allows operations personnel time to perform work on an on-line skid without immediately shutting down the other on-line skids.

4.8.3 Leak detection or leak detector trouble: Leak detection or trouble at AX-I01 will cause the A-I01 skid to shut down after a 3 second delay upon receiving the signal over the DH-485 link.

**4.8.4** Flush pressure signal loss: The loss of signal to the PLC from the jumper flush pressure transducer on the AX-farm skid, will cause the A-I01 skid to shutdown after a 3-second delay upon receiving the signal over the DH-485 link.

# APPENDICES

**APPENDIX A:** PLC AND DTAM ADDRESSING

**APPENDIX B:** PLC LADDER LOGIC PROGRAM

**APPENDIX C:** DTAM PROGRAM

## A-101 PLC ADDRESSES

| TERMINATION | SIGNAL | TAG | ADDRESS | DESCRIPTION |
|---|---|---|---|---|
| O:1.0 | ANALOG OUTPUT | | N60:0 | |
| O:1.1 | ANALOG OUTPUT | | N60:1 | |
| I:1.0 | ANALOG INPUT | CGM | N60:2 | CGM ANALOG (PIT)**(NOT USED)** |
| I:1.1 | ANALOG INPUT | FGM | N60:3 | FGM ANALOG (DOME)**(RESERVED)** |
| O:2.0 | ANALOG OUTPUT | EPC | N60:4 | OUTPUT TO DOV |
| O:2.1 | ANALOG OUTPUT | DIL | N60:5 | OUTPUT TO METERING PUMP |
| I:2.0 | ANALOG INPUT | PDPT | N60:6 | PUMP DISCHARGE PRESSURE |
| I:2.1 | ANALOG INPUT | | N60:7 | |
| O:3.0 | ANALOG OUTPUT | | N60:8 | |
| O:3.1 | ANALOG OUTPUT | | N60:9 | |
| I:3.0 | ANALOG INPUT | | N60:10 | |
| I:3.1 | ANALOG INPUT | | N60:11 | |
| I:4.0 | 4-20mA | SGT | N60:12 | SPECIFIC GRAVITY 0-20 IN H20 |
| I:4.1 | 4-20mA | WFT | N60:13 | WEIGHT FACTOR 0-500 IN H20 |
| I:4.2 | 4-20mA | LT | N60:14 | WATER TANK LEVEL 0-62 INCHES |
| I:4.3 | 4-2OmA | CNV | N60:15 | FLOW METER 0-14GPM |
| I:5.0 | 4-20mA | MRTD | N60:16 | MOTOR WINDING TEMPERATURE |
| I:5.1 | 4-20mA | JFPT | N60:17 | JUMPER FLUSH PRESSURE (PS-2) |
| I:5.2 | 4-20mA | PXPT | N60:18 | TRANSFER PRESSURE (PS-1) |
| I:5.3 | | | N60:19 | |
| O:6.0 | DISCRETE OUTPUT | | N60:20/0 | |
| O:6.1 | DISCRETE OUTPUT | 1A | N60:20/1 | INJECTION WATER PUMP |
| O:6.2 | DISCRETE OUTPUT | | N60:20/2 | |
| O:6.3 | DISCRETE OUTPUT | | N60:20/3 | |
| O:6.4 | DISCRETE OUTPUT | | N60:20/4 | |
| O:6.5 | DISCRETE OUTPUT | | N60:20/5 | |
| I:6.0 | DISCRETE INPUT | X2 | N60:20/6 | 'INJECTION PUMP ON |
| I:6.1 | DISCRETE INPUT | | N60:20/7 | |
| I:6.2 | DISCRETE INPUT | | N60:20/8 | |
| I:6.3 | DISCRETE INPUT | | N60:20/9 | |
| I:6.4 | DISCRETE INPUT | | N60:20/10 | |
| I:6.5 | DISCRETE INPUT | | N60:20/11 | |
| I:7.0 | TIC | | N60:24 | |
| I:7.1 | TIC | TE-6003 | N60:25 | JUMPER TEMPERATURE |
| I:7.2 | TIC | TE-6001 | N60:26 | AIR COMPR CABINET TEMPERATURE |
| I:7.3 | TIC | TE-6004 | N60 27 | INSTRU CABINET TEMPERATURE |
| O:8.0 | DISCRETE OUTPUT | | N60:28/0 | |
| O:8.1 | DISCRETE OUTPUT | DIL-P | N60 28/1 | DILUTION SOLENOID |
| O:8.2 | DISCRETE OUTPUT | | N60:28/2 | |
| O:8.3 | 'DISCRETE OUTPUT | DIL-C | N60:28/3 | DILUTION METERING PUMP |

## A-101 PLC ADDRESSES

| TERMINATION | SIGNAL | TAG | ADDRESS | DESCRIPTION |
|---|---|---|---|---|
| O:8.4 | DISCRETE OUTPUT | | N60:28/4 | |
| O:8.5 | DISCRETE OUTPUT | | N60:28/5 | |
| I:8.0 | DISCRETE INPUT | AN101 | N60:28/6 | LEAK DET SIGNAL FROM AN-I01 |
| I:8.1 | DISCRETE INPUT | DIL-F | N60:28/7 | DILUTION TANK FLOW |
| I:8.2 | DISCRETE INPUT | CGM-AX | N60:28/8 | CGM HIGH LFL (NOT USED) |
| I:8.3 | DISCRETE INPUT | FGM | N60:28/9 | FGM INTERLOCK (RESERVED) |
| I:8.4 | DISCRETE INPUT | CGM-F | N60:28/10 | CGM FAULT (NOT USED) |
| I:8.5 | DISCRETE INPUT | A101 | N60:28/11 | 'LEAK DET SIGNAL FROM A-I01 |
| | | | | |
| O:9.0 | DISCRETE OUTPUT | DO5 | N60:29/0 | PUMP PIPING HEAT TRACE CONTROL |
| O:9.1 | DISCRETE OUTPUT | DO2 | N60:29/1 | JUMPER HEAT TRACE CONTROL |
| O:9.2 | DISCRETE OUTPUT | DO6 | N60:29/2 | 'SPARE |
| O:9.3 | DISCRETE OUTPUT | DO3 | N60:29/3 | JUMPER HEAT TRACE CONTROL |
| O:9.4 | DISCRETE OUTPUT | D07 | N60:29/4 | 'SPARE |
| O:9.5 | DISCRETE OUTPUT | DO4 | N60:29/5 | PUMP PIPING HEAT TRACE CONTROL |
| I:9.0 | DISCRETE INPUT | LD3-2 | N60:29/6 | LEAK DETECTOR #1 TROUBLE |
| I:9.1 | DISCRETE INPUT | LD1-1 | N60:29/7 | PIT LEAK DETECTOR |
| I:9.2 | DISCRETE INPUT | | N60:29/8 | |
| I:9.3 | DISCRETE INPUT | LD3-1 | N60:29/9 | PIT LEAK DETECTOR TROUBLE |
| I:9.4 | DISCRETE INPUT | | N60:29/10 | |
| I:9.5 | DISCRETE INPUT | LD1-2 | N60:29/11 | LEAK DETECTOR #1 |
| | | | | |
| O:10.0 | DISCRETE OUTPUT | | N60:30/0 | |
| O:10.1 | DISCRETE OUTPUT | BUZZ | N60:30/1 | OUTPUT TO HORN |
| O:10.2 | DISCRETE OUTPUT | | N60:30/2 | |
| O:10.3 | 'DISCRETE OUTPUT | STRB | N60:30/3 | OUTPUT TO STROBE LIGHT |
| O:10.4 | DISCRETE OUTPUT | | N60:30/4 | |
| O:10.5 | DISCRETE OUTPUT | | N60:30/5 | |
| I:10.0 | DISCRETE INPUT | LS-1 | N60:30/6 | 'PROXIMITY LS-1 |
| I:10.1 | DISCRETE INPUT | BM-4 | N60:30/7 | BEARING MONITOR |
| I:10.2 | DISCRETE INPUT | LS-2 | N60:30/8 | PROXIMITY LS-2 |
| I:10.3 | DISCRETE INPUT | | N60:30/9 | |
| I:10.4 | DISCRETE INPUT | FWFS-1 | N60:30/10 | 'INJECTION WATER FLOW SWITCH |
| I:10.5 | DISCRETE INPUT | | N60:30/11 | |
| | | | | |
| O:11.0 | DISCRETE OUTPUT | LGTR | N60:31/0 | OUTPUT TO RED LIGHT |
| O:11.1 | DISCRETE OUTPUT | LGTA | N60:31/1 | OUTPUT TO AMBER LIGHT |
| O:11.2 | DISCRETE OUTPUT | MS-1 | N60:31/2 | PUMP MOTOR SWITCH ON |
| O:11.3 | DISCRETE OUTPUT | LGTB | N60:31/3 | ,OUTPUT TO BLUE LIGHT |
| O:11.4 | DISCRETE OUTPUT | | N60:31/4 | |
| O:11.5 | DISCRETE OUTPUT | LGTG | N60:31/5 | .OUTPUT TO GREEN LIGHT |
| I:11.0 | DISCRETE INPUT | MR-1 | N60:31/6 | 'MOTOR POWER MONITOR |
| I:11.1 | DISCRETE INPUT | | N60:31/7 | |
| I:11.2 | DISCRETE INPUT | NC1 | N60:31/8 | POWER MONITOR |
| I:11.3 | DISCRETE INPUT | | N60:31/9 | |
| I:11.4 | DISCRETE INPUT | | N60:31/10 | |
| I:11.5 | DISCRETE INPUT | | N60:31/11 | |

A-I01 PLC ADDRESSES

| TERMINATION | SIGNAL | TAG | ADDRESS | DESCRIPTION |
|---|---|---|---|---|
| I:12.0 | TIC | TE-6005 | N60:32 | 'WATER CAB TEMP |
| I:12.1 | TIC | TE-6006 | N60:33 | WFIE TEMP |
| I:12.2 | T/C | 'TE-6007 | N60:34 | PUMP PIPING TEMP |
| I:12.3 | 'TIC | TE-6009 | N60:35 | FLUSH WATER TEMP |

A-101 PLC/DTAM ALARM ADDRESSES

| ALARM ADDRESS | ALARM ACK. ADDRESS | DATA DISPLAY MESSAGE | ALARM WINDOW MESSAGE | INPUT/OUTPUT SOURCE | DTAM ACK. ADDRESS | DTAM DIS. SCREEN # | DTAM ALARM SCREEN | ALARM # |
|---|---|---|---|---|---|---|---|---|
| N20:24/0 | N20:15/0 | | ACKNOWLEDGE STROBE | | N12:0/0 | | 100 ACK. | |
| N20:24/1 | N20:15/1 | XFR PRESSURE LOW | XFR PRESSURE LOW | I:5.2 | N12:0/1 | 41/1 | 101 | 1 |
| N20:24/2 | N20:15/2 | XFR PRESSURE HIGH | XFR PRESSURE HIGH | I:5.2 | N12:0/2 | 41/2 | 102 | 2 |
| N20:24/3 | N20:15/3 | FLUSH PRESSURE HIGH | FLUSH PRESSURE HI | I:5.1 | N12:0/3 | 41/3 | 103 | 3 |
| N20:24/4 | N20:15/4 | PUMP TROUBLE | JET PUMP TROUBLE | I:11.0 | N12:0/4 | 41/4 | 104 | 4 |
| N20:24/5 | N20:15/5 | JR-1 NON-PROCESS | JR-1 POSITION, NON-PROCESS | I:10.2 | N12:0/5 | 42/1 | 105 | 5 |
| N20:24/6 | N20:15/6 | PUMP PIT LEAK | PUMP PIT LEAK | I:9.1 | N12:0/6 | 42/2 | 106 | 6 |
| N20:24/7 | N20:15/7 | PUMP PIT TROUBLE | PUMP PIT LEAK TROUBLE | | N12:0/7 | 42/3 | 107 | 7 |
| N20:24/8 | N20:15/8 | JMPR HT TROUBLE | JMPR HEAT TRACE TROUBLE | | N12:0/8 | 42/4 | 108 | 8 |
| N20:24/9 | N20:15/9 | PIC WATER LOW | PIC WATER LEVEL LOW | I:4.2 | N12:0/9 | 43/1 | 109 | 9 |
| N20:24/10 | N20:15/10 | PLC TEMP HIGH | PLC ENCLOSURE HI | I:7.3 | N12:0/10 | 43/2 | 110 | 10 |
| N20:24/11 | N20:15/11 | CMPRSR TEMP HIGH | AIR COMPRESSOR TEMP HI | I:7.2 | N12:0/11 | 43/3 | 111 | 11 |
| N20:24/12 | N20:15/12 | JET PUMP SHUTDOWN | JET PUMP SHUTDOWN | I:11.0 | N12:0/12 | 43/4 | 112 | 12 |
| N20:24/13 | N20:15/13 | SGT LEVEL LOW | SGT LOW | I:4.1 | N12:0/13 | 44/1 | 113 | 13 |
| N20:24/14 | N20:15/14 | MTR TEMP (norm or HIGH) | MOTOR WINDING HIGH TEMP SHUTDOWN | I:5.0 | N12:0/14 | | 114 | 14 |
| N20:24/15 | N20:15/15 | NETWORK FAILURE | PLC COMMUNICATIONS FAILURE | S:9/2 | N12:0/15 | 44/2 | 115 | 15 |
| | | | | | | | | |
| N20:25/0 | N20:16/0 | JFPT SIGNAL LOST | JFPT SIGNAL LOSS ALARM | I:5.1 | N12:1/0 | 44/3 | 116 | 16 |
| N20:25/1 | N20:16/1 | AX-FARM LEAK ALARM | AX FARM LEAK ALARM | DH-485 | N12:1/1 | 45/1 | 117 | 17 |
| N20:25/2 | N20:16/2 | LEAK 1 ALARM | LEAK DETECTOR No 1 LEAK DETECTED | | N12:1/2 | 45/2 | 118 | 18 |
| N20:25/3 | N20:16/3 | LEAK 1 CK ALARM | LEAK DETECTOR No 1 TROUBLE | | N12:1/3 | 45/3 | 119 | 19 |
| N20:25/4 | N20:16/4 | AX FLUSH POS ALARM | AX TANK IN FLUSH | DH-485 | N12:1/4 | 45/4 | 120 | 20 |
| N20:25/5 | N20:16/5 | | | | N12:1/5 | 46/1 | 121 | 21 |
| N20:25/6 | N20:16/6 | FGM ALARM | FLAMMABLE GAS HIGH | I:8.3 | N12:1/6 | 46/2 | 122 | 22 |
| N20:25/7 | N20:16/7 | LEAK ST #1 ALARM | LEAK STATION 1 TROUBLE | DH-485 | N12:1/7 | 46/3 | 123 | 23 |
| N20:25/8 | N20:16/8 | AX SHTDOWN ALARM | AX TANK SHUTDOWN TIMER ACTIVATED | DH-485 | N12:1/8 | 46/4 | 124 | 24 |
| N20:25/9 | N20:16/9 | HI LFL CGM ALARM **(NOT USED)** | HIGH LFL ON CGM | I:8.2 | N12:1/9 | 50/2 | 125 | 25 |
| N20:25/10 | N20:16/10 | PIT A-A, A-B LK LEAK | VALVE PIT A-A, A-B LEAK | N20:49/0 | N12:1/10 | 48/1 | 126 | 26 |
| N20:25/11 | N20:16/11 | | | | N12:1/11 | 48/2 | 127 | 27 |
| N20:25/12 | N20:16/12 | PIT AX-A, B LK LEAK | VALVE PIT AX-A, AX-B LEAK | N20:49/1 | N12:1/12 | 48/3 | 128 | 28 |
| N20:25/13 | N20:16/13 | | | | N12:1/13 | 50/1 | 129 | 29 |
| N20:25/14 | N20:16/14 | CGM TROUBLE **(NOT USED)** | CGM TROUBLE | I:8.4 | N12:1/14 | 50/2 | 131 | 31 |
| N20:25/15 | N20:16/15 | AN101 LK/TB | AN-101 LEAK OR TROUBLE | I:8.0 | N12:1/15 | 50/3 | 132 | 32 |
| | | | | | | | | |
| N20:51/0 | N20:55/0 | A-101 LK/TB ALARM | A-101 LEAK DETECTOR LEAK OR TROUBLE | I:8.5 | N12:2/0 | 52/1 | 133 | 33 |
| N20:51/1 | N20:55/1 | | | | N12:2/1 | 52/2 | 134 | 34 |
| N20:51/2 | N20:55/2 | DILUTION TK ALARM | DILUTION TANK NO FLOW | I:8.1 | N12:2/2 | 52/3 | 135 | 35 |
| N20:51/3 | N20:55/3 | | | | N12:2/3 | 52/4 | 136 | 36 |
| N20:51/4 | N20:55/4 | AX FLUSH PRES ALARM | AX FARM HIGH FLUSH PRESS | DH-485 | N12:2/4 | 53/1 | 137 | 37 |
| N20:51/5 | N20:55/5 | | | | N12:2/5 | 53/2 | 138 | 38 |
| N20:51/6 | N20:55/6 | INJECTION WTR | PUMP INJECTION WATER LOW FLOW | I:10.4 | N12:2/6 | 53/3 | 139 | 39 |
| N20:51/7 | N20:55/7 | POWER MONITOR | POWER MONITOR HI/LO SHUTDOWN | I:11.2 | N12:2/7 | 53/4 | 140 | 40 |
| N20:51/8 | N20:55/8 | | | | N12:2/8 | 54/1 | 141 | 41 |
| N20:51/9 | N20:55/9 | | | | N12:2/9 | 54/2 | 142 | 42 |
| N20:51/10 | N20:55/10 | | | | N12:2/10 | 54/3 | 143 | 43 |

A-101 PLC/DTAM ALARM ADDRESSES

| ALARM | ALARM ACK. | DATA DISPLAY MESSAGE | ALARM WINDOW MESSAGE | INPUT/OUTPUT | DTAM ACK. | DTAM DIS. | DTAM ALARM | ALARM # |
|---|---|---|---|---|---|---|---|---|
| N20:51/11 | N20:55/11 | | | | N12:2/11 | 54/4 | 144 | 44 |
| N20:51/12 | N20:55/12 | | | | N12:2/12 | 55/1 | 145 | 45 |
| N20:51/13 | N20:55/13 | | | | N12:2/13 | 55/2 | 146 | 46 |
| N20:51/14 | N20:55/14 | AX FLUSH LOSS ALARM | AX-FARM JUMPER FLUSH SIGNAL LOSS | DH-485 | N12:2/14 | 55/3 | 147 | 47 |
| N20:51/15 | N20:55/15 | | | | N12:2/15 | 55/4 | 148 | 48 |
| N20:52/0 | N20:56/0 | WTR CAB TEMP LOW | WATER CAB TEMP LOW | I:12.0 | N12:3/0 | 56/1 | 149 | 49 |
| N20:52/1 | N20:56/1 | WFIE TEMP LOW | WFIE TEMP LOW | I:12.1 | N12:3/1 | 56/2 | 150 | 50 |
| N20:52/2 | N20:56/2 | | | | N12:3/2 | 56/3 | 151 | 51 |
| N20:52/3 | N20:56/3 | | | | N12:3/3 | 56/4 | 152 | 52 |
| N20:52/4 | N20:56/4 | | | | N12:3/4 | 57/1 | 153 | 53 |
| N20:52/5 | N20:56/5 | | | | N12:3/5 | 57/2 | 154 | 54 |
| N20:52/6 | N20:56/6 | | | | N12:3/6 | 57/3 | 155 | 55 |
| N20:52/7 | N20:56/7 | | | | N12:3/7 | 57/4 | 156 | 56 |
| N20:52/8 | N20:56/8 | | | | N12:3/8 | 58/1 | 157 | 57 |
| N20:52/9 | N20:56/9 | PUMP BEARING | PUMP WORN BEARING ALERT | I:10.1 | N12:3/9 | 58/2 | 158 | 58 |
| N20:52/10 | N20:56/10 | MTR WINDING TEMP | MOTOR WINDING HI TEMP WARNING | I:5.0 | N12:3/10 | 58/3 | 159 | 59 |
| N20:52/11 | N20:56/11 | | | | N12:3/11 | | | |
| N20:52/12 | N20:56/12 | | | | N12:3/12 | | | |
| N20:52/13 | N20:56/13 | | | | N12:3/13 | | | |
| N20:52/14 | N20:56/14 | | | | N12:3/14 | | | |
| N20:52/15 | N20:56/15 | | | | N12:3/15 | | | |

## A/AX-FARM NODE ADDRESSES

| NODE # | LOCATION |
|---|---|
| 0 | |
| 1 | |
| 2 | A-101, SKID P |
| 3 | EMERG SKID |
| 4 | Ax-101, SKID Q |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | LEAK DET. STATION 1 |
| 13 | |

| ONTROL ADD. | CONTROL ADD. | DESCRIPTION | DTAM SCREEN/POSITION |
|---|---|---|---|
| | N20:17/0 | MOTOR PERMISSIVE | |
| | N20:17/1 | SUB INTERLOCK | |
| | N20:17/2 | ,INTERLOCK | |
| | N20:17/3 | SUB INTERLOCK | |
| | N20:17/4 | HEATER ON | 31/1 AND 2 |
| | N20:17/5 | CLEAR COUNTER | |
| | N20:17/6 | AUTO/MANUAL | 13/1, 15/1 AND 2, 22/1 |
| | N20:17/7 | SIMULATE | |
| | N20:17/8 | SEND MESSAGE | |
| | N20:17/9 | | |
| | N20:17/10 | MASTER ACKNOWLEDGE | 23/1 |
| | N20:17/11 | TRANSMIT TROUBLE | |
| | N20:17/12 | RETRY MESSAGE | |
| | N20:17/13 | | |
| | N20:17/14 | RESET COUNTER | |
| | N20:17/15 | | |
| 10:2 | N20:18 | PID SET POINT | 14/3 AND 4 |
| 10:3 | N20:19 | PID GAIN | 18/2 AND 3 |
| 10:4 | N20:20 | PID RESET | 19/2 AND 3 |
| 10:5 | N20:21 | PID RATE | 21/2 AND 3 |
| 10:28 | N20:22 | PROCESS VARIABLE | |
| 10:29 | N20:23 | PID OUTPUT | 13/3, 14/1, 18/1, 19/1, 21/1, 22/2 AND 3 |
| 10:13 | N20:26 | LOOP UPDATE | |
| :9 | N20:27 | STATION ON DH485 | |
| 15:0 | N20:28 | | |
| 15:5 | N20:29 | | |
| 5:1,ACC | N20:30 | TOTAL 1 | 26/4, 27/5 |
| 5:2,ACC | N20:31 | TOTAL 2 | 26/3, 27/6 |
| :10 | | WATCH FOR EXHAUST SKID | |
| | N20:32/0 | SKID PRIME | |
| | N20:32/1 | SKID FLUSH | |
| | N20:32/2 | SKID SHUTDOWN | |
| | N20:32/3 | SKID PIT LEAK (NOT USED) | |
| | N20:32/4 | SKID LEAK #1 (NOT USED) | |
| | N20:32/5 | SKID HI PRESS FLUSH | |
| | N20:32/6 | | |
| | N20:32/7 | | |
| | N20:32/8 | JFPT SIGNAL LOSS | |
| | N20:32/9 | LEAK DET SIGNAL FROM AN-101 | FOR SKID PAT A-I01 ONLY |
| | N20:32/10 | LEAK DET SIGNAL FROMA-101 | FOR SKID PATA-101 ONLY |
| | N20:32/11 | | |
| | N20:32/12 | | |
| | N20:32/13 | | |
| | N20:32/14 | | |
| | N20:32/15 | | |

| ONTROL ADD. | CONTROL ADD. | DESCRIPTION | DTAM SCREEN/POSITION |
|---|---|---|---|
| ODE#1 | N20:33/0 | SPARE | |
| | N20:33/1 | | |
| | N20:33/2 | | |
| | N20:33/3 | | |
| | N20:33/4 | | |
| | N20:33/5 | | |
| | N20:33/6 | | |
| | N20:33/7 | | |
| | N20:33/8 | | |
| | N20:33/9 | | |
| | N20:33/10 | | |
| | N20:33/11 | | |
| | N20:33/12 | | |
| | N20:33/13 | | |
| | N20:33/14 | | |
| | N20:33/15 | | |
| ODE#2 | N20:34/0 | A-101 PRIME | |
| | N20:34/1 | A-101 FLUSH | |
| | N20:34/2 | A-101 SHUTDOWN | |
| | N20:34/3 | A-101 PIT LEAK | |
| | N20:34/4 | A-101 LEAK #1 | |
| | N20:34/5 | A-I01 HI PRESS FLUSH | |
| | N20:34/6 | | |
| | N20:34/7 | | |
| | N20:34/8 | A-I01 JFPT SIGNAL LOSS | |
| | N20:34/9 | LEAK DET SIGNAL FROM AN-101 | |
| | N20:34/10 | LEAK DET SIGNAL FROM A-I01 | |
| | N20:34/11 | | |
| | N20:34/12 | | |
| | N20:34/13 | | |
| | N20:34/14 | | |
| | N20:34/15 | | |
| ODE#3 | N20:35/0 | EMERG PRIME | |
| | N20:35/1 | EMERG FLUSH | |
| | N20:35/2 | EMERG SHUTDOWN | |
| | N20:35/3 | EMERG PIT LEAK | |
| | N20:35/4 | EMERG LEAK 1 | |
| | N20:35/5 | EMERG HI PRESS FLUSH | |
| | N20:35/6 | EMERG HI PRESS RECIRC | |
| | N20:35/7 | EMERG RFPT SIGNAL LOSS | |
| | N20:35/8 | EMERG JFPT SIGNAL LOSS | |
| | N20:35/9 | | |
| | N20:35/10 | | |
| | N20:35/11 | | |
| | N20:35/12 | | |

| ONTROL ADD | CONTROL ADD. | DESCRIPTION | DTAM SCREEN/POSITION |
|---|---|---|---|
| | N20:35/13 | | |
| | N20:35/14 | | |
| | N20:35/15 | | |
| | | | |
| ODE#4 | N20:36/0 | **AX-101** PRIME | |
| | N20:36/1 | AX-I01 FLUSH | |
| | N20:36/2 | **AX-101** SHUTDOWN | |
| | N20:36/3 | AX-101 PIT LEAK | |
| | N20:36/4 | **AX-101** LEAK 1 | |
| | N20:36/5 | AX-I01 HI PRESS FLUSH | |
| | N20:36/6 | | |
| | N20:36/7 | | |
| | N20:36/8 | AX-I01 JFPT SIGNAL LOSS | |
| | N20:36/9 | | |
| | N20:36/10 | | |
| | N20:36/11 | | |
| | N20:36/12 | | |
| | N20:36/13 | | |
| | N20:36/14 | | |
| | N20:36/15 | | |
| | | | |
| ODE#5 | N20:37/0 | | |
| | N20:37/1 | | |
| | N20:37/2 | | |
| | N20:37/3 | | |
| | N20:37/4 | | |
| | N20:37/5 | | |
| | N20:37/6 | | |
| | N20:37/7 | | |
| | N20:37/8 | | |
| | N20:37/9 | | |
| | N20:37/10 | | |
| | N20:37/11 | | |
| | N20:37/12 | | |
| | N20:37/13 | | |
| | N20:37/14 | | |
| | N20:37/15 | | |
| | | | |
| ODE#6 | N20:38/0 | | |
| | N20:38/1 | | |
| | N20:38/2 | | |
| | N20:38/3 | | |
| | N20:38/4 | | |
| | N20:38/5 | | |
| | N20:38/6 | | |
| | N20:38/7 | | |
| | N20:38/8 | | |
| | N20:38/9 | | |

| :ONTROL ADD | 'CONTROL ADD | DESCRIPTION | DTAM SCREEN/POSITION |
|---|---|---|---|
| | N20:38/10 | | |
| | N20:38/11 | | |
| | N20:38/12 | | |
| | N20:38/13 | | |
| | N20:38/14 | | |
| | N20:38/15 | | |
| | | | |
| IODE#7 | N20:39/0 | | |
| | N20:39/1 | | |
| | N20:39/2 | | |
| | N20:39/3 | | |
| | N20:39/4 | | |
| | N20:39/5 | | |
| | N20:39/6 | | |
| | N20:39/7 | | |
| | N20:39/8 | | |
| | N20:39/9 | | |
| | N20:39/10 | | |
| | N20:39/11 | | |
| | N20:39/12 | | |
| | N20:39/13 | | |
| | N20:39/14 | | |
| | N20:39/15 | | |
| | | | |
| IODE#8 | N20:40/0 | | |
| | N20:40/1 | | |
| | N20:40/2 | | |
| | N20:40/3 | | |
| | N20:40/4 | | |
| | N20:40/5 | | |
| | N20:40/6 | | |
| | N20:40/7 | | |
| | N20:40/8 | | |
| | N20:40/9 | | |
| | N20:40/10 | | |
| | N20:40/11 | | |
| | N20:40/12 | | |
| | N20:40/13 | | |
| | N20:40/14 | | |
| | N20:40/15 | | |
| | | | |
| IODE#9 | N20:41/0 | | |
| | N20:41/1 | | |
| | N20:41/2 | | |
| | N20:41/3 | | |
| | N20:41/4 | | |
| | N20:41/5 | | |
| | N20:41/6 | | |

| ONTROL ADD. | CONTROL ADD | DESCRIPTION | DTAM SCREEN/POSITION |
|---|---|---|---|
| | N20:41/7 | | |
| | N20:41/8 | | |
| | N20:41/9 | | |
| | N20:41/10 | | |
| | N20:41/11 | | |
| | N20:41/12 | | |
| | N20:41/13 | | |
| | N20:41/14 | | |
| | N20:41/15 | | |
| | | | |
| ODE#10 | N20:42/0 | | |
| | N20:42/1 | | |
| | N20:42/2 | | |
| | N20:42/3 | | |
| | N20:42/4 | | |
| | N20:42/5 | | |
| | N20:42/6 | | |
| | N20:42/7 | | |
| | N20:42/8 | | |
| | N20:42/9 | | |
| | N20:42/10 | | |
| | N20:42/11 | | |
| | N20:42/12 | | |
| | N20:42/13 | | |
| | N20:42/14 | | |
| | N20:42/15 | | |
| | | | |
| ODE#11 | N20:43/0 | | |
| | N20:43/1 | | |
| | N20:43/2 | | |
| | N20:43/3 | | |
| | N20:43/4 | | |
| | N20:43/5 | | |
| | N20:43/6 | | |
| | N20:43/7 | | |
| | N20:43/8 | | |
| | N20:43/9 | | |
| | N20:43/10 | | |
| | N20:43/11 | | |
| | N20:43/12 | | |
| | N20:43/13 | | |
| | N20:43/14 | | |
| | N20:43/15 | | |
| | | LEAK DETECTOR STATION 1 | |
| ODE#12 | N20:49/0 | VALVE PIT A-A, A-B LEAK | |
| | N20:49/1 | | |

| CONTROL ADD. | CONTROL ADD. | DESCRIPTION | DTAM SCREEN/POSITION |
|---|---|---|---|
| | N20:49/2 | VALVE PIT AX-A, AX-B TROUBLE | |
| | N20:49/3 | | |
| | N20:49/4 | | |
| | N20:49/5 | | |
| | N20:49/6 | | |
| | N20:49/7 | | |
| | N20:49/8 | | |
| | N20:49/9 | | |
| | N20:49/10 | | |
| | N20:49/11 | | |
| | N20:49/12 | | |
| | N20:49/13 | | |
| | N20:49/14 | | |
| | N20:49/15 | | |
| | | | |
| NODE#13 | N20:50/0 | | |
| | N20:50/1 | | |
| | N20:50/2 | | |
| | N20:50/3 | | |
| | N20:50/4 | | |
| | N20:50/5 | | |
| | N20:50/6 | | |
| | N20:50/7 | | |
| | N20:50/8 | | |
| | N20:50/9 | | |
| | N20:50/10 | | |
| | N20:50/11 | | |
| | N20:50/12 | | |
| | N20:50/13 | | |
| | N20:50/14 | | |
| | N20:50/15 | | |

LAD 2 ~ **--- Total Rungs in** File = 19

W00 N20:17 7 N16:6 OSR 8 — COP Copy File Source #N14:0 Dest #N60:4 Length 15

INITIALIZE THERMOCOUPLES

0001 Fint Pass S:1 15 — JSR Jump To Subroutine SBR File Number U:3

GATHER **INPUTS** FROM ALL 12 MODULES

0002 N20:17 7 — JSR Jump To Subroutine SBR File Number U:4

CHECKS FOR ALARM CONDITIONS **AND** SENDS SIGNAL TO DTAM, STROBE, LIGHTS, HORN **MOTOR** INTERLOCK CIRCUIT

0003 — JSR lump To Subroutine SBR File Number U:5

INTERLOCK TO OTHER U-FARM TANKS

0004 — JSR Jump To Subroutine SBR File Number U:6

PID CONTROL AND COUNT FLOW

0005 — JSR Jump To Subroutine SBR File Number U:7

MASTER ACKNOWLEDGE

0006 — JSR Jump To Subroutine SBR File Number U:8

HEAT TRACE CONTROL

W07 — JSR Jump To Subroutine SBR File Number U:9

DH-485 INPUTS/OUTPUTS

0008

JSR
Jump To Subroutine
SBR File Number U:12

MR-I MONITOR POWER ON JET PUMP MOTOR STARTER - 1 SEC. DELAY

0009

MR-I CONTACT
N60 31

TON
Timer On Delay T4:33
Time Base 0.01
preset 100<
Accum 0<
EN
DN

FLOWMETER ROUTINE WHEN OUTPUT GREATER THAN 4mA

0010

1 SEC DELAY
T4:33
DN

GRT
Greater Than (A>B)
Source A N60 15
3281<
Source B 3277
3277<

JSR
Jump To Subroutine
SBR File Number U 13

T4:33
RES

NETWORK INTERLOCK

0011

JSR
Jump To Subroutine
SBR File Number U:15

ALARM ACKNOWLEDGE

0012

JSR
Jump To Subroutine
SBR File Number U:17

OUTPUT TO STROBE AND LIGHTS

0013

JSR
Jump To Subroutine
SBR File Number U:18

DILUTION SYSTEM ROUTINE

0014

JSR
Jump To Subroutine
SBR File Number U:20

SEND OUTPUTS

0015

N20 17

JSR
Jump To Subroutine
SBR File Number U:19

RESET TOTAL FLOW COUNTER

0016

JSR
Jump To Subroutine
SBR File Number U:21

RESET TOTALIZER (FLOW METER)

0017

N20:17

CLR
Clear
Dest C5:1.ACC
9233<

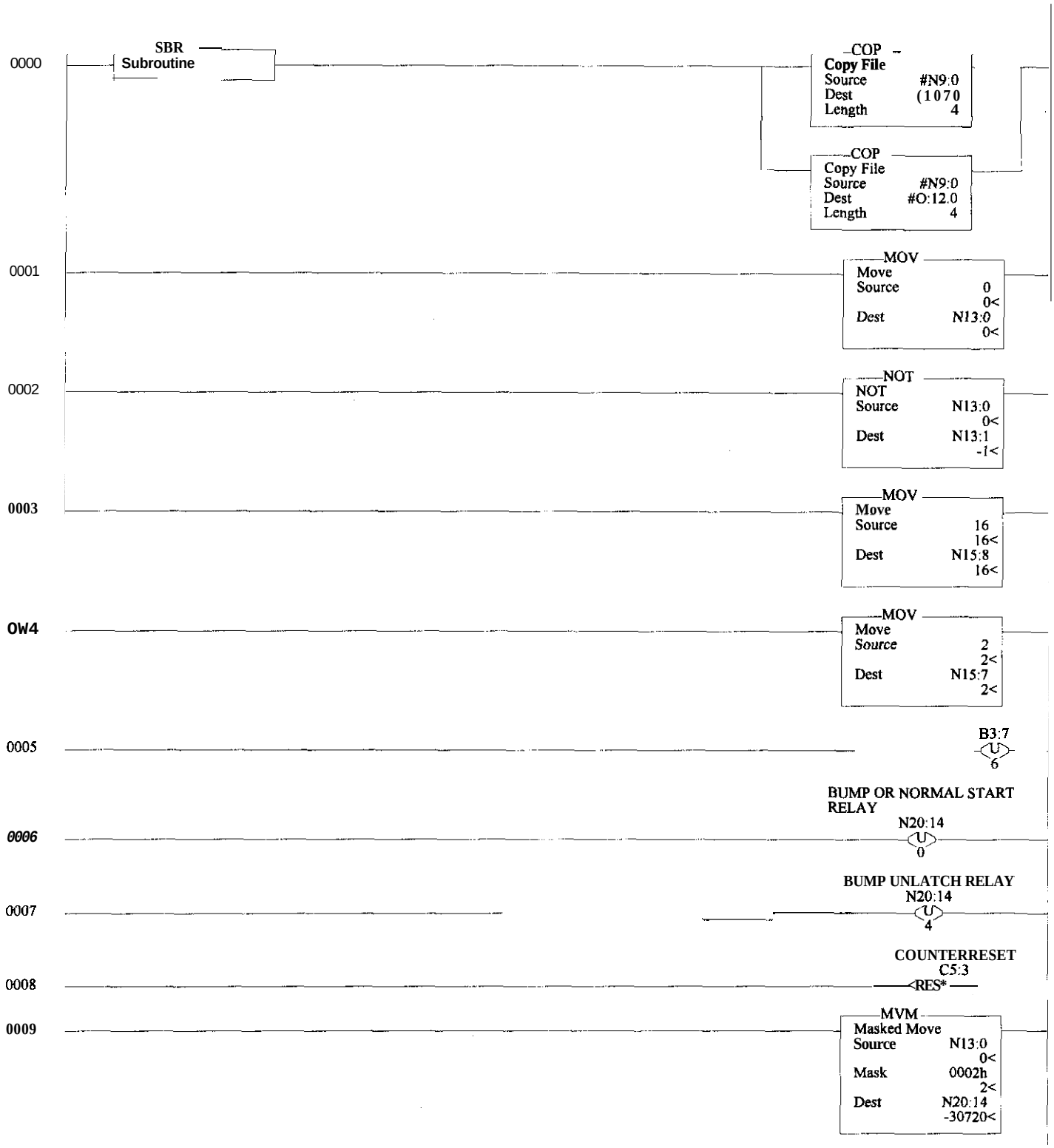
CLR
Clear
Dest C5:2.ACC
0<

0018

END

**LAD 3 -** --- *Total* Rungs *in File ≈ 20*

| INITIALIZE THERMOCOUPLE MODULE IN SLOT 7 TO READ IN DEGREES F



LAD 3 - --- Total Rungs in File = 20

SKID P, NODE 2, A-I01

0010

MOV
Move
Source 2
2<
Dest N7:50
2<

Node
Address/
Baud Rate

MVM
Masked Move
Source N7:50
2<
Mask 00FFh
255<
Dest S:15
1026<

0011

JSR
Jump To Subroutine
SBR File Number U:10

0012

CLR
Clear
Dest N20 32
5<

Move
Source N13:1
-1<
Dest N40:15
5<

0013

CLR
Clear
Dest N15:2
4112<

0014

N13:1
1

N12:0
12

0015

MOV
Move
Source 34
34<
Dest N15:10
34<

LAD **3** - **--- Total Rungs** in File = 20

0016

MOV
Move
Source N15:10
34<
DeSt N7:5
34<

MOV
Move
Source N15 10
34<
Dest N7 25
34<

MOV
Move
Source N
<
Dest N7.45
34<

MOV
Move
Source N15 10
34<
Dest N7 65
34<

MOV
Move
Source N15:10
34<
Dest N7:85
34<

MOV
Move
Source N15:10
34<
Dest N7:105
34<

MOV
Move
Source N15:10
34<
Dest N7:125
34<

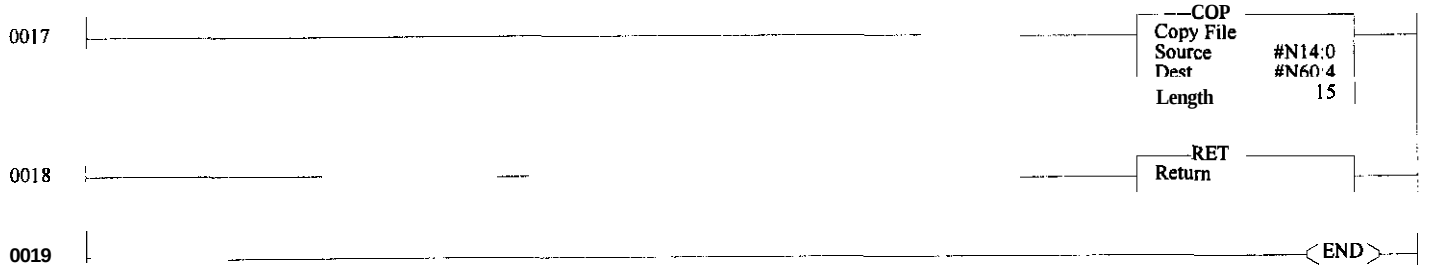
MOV
Move
Source N15 10
34<
Dest N7 145
34<

MOV
MOW
Source N15 10
34<
Dest N7 165
34<

MOV
Move
Source N15:10
34<
Dest N7:185
34<

LAD 3 - --- Total Rungs in File = 20

| COPY FILE TO DOV ADDRESS



GET INPUTS FROM MODULES 1,2 AND 3

0000

SBR
Subroutine

COP
Copy File
Source #I:1.0
Dest #N60:2
Length 2

COP
Copy File
Source #I:2.0
De #N60:6
Length 2

COP
Copy File
source #I:3.0
Dest #N60 10
Length 2

GET INPUTS FROM MODULES 4 AND 5

0001

COP
copy File
Source #I:4.0
Dest #N60:12
Length 4 1

COP
Copy File
source #I:5.0
Dest #N60:16
Length 4

GET INPUTS FROM MODULE 6

0002

MVM
Masked Move
Source 1 6 0
4096<
Mask 003Fh
63<
N17:8
0<

MUL
Multiply
Source A N17:8
0<
Source B 64
64<
Dest N17:9
0<

MVM
Masked Move
Source N17:9
0<
Mask 0FC0h
4032<
Dest N60:20
-4033<

LAD 4 - --- Total Rungs in File = 11

;ET TEMPERATURE INPUTS FROM MODULE 7

0003

COP
Copy File
source #I:7.0
Dest #N60:24
Length 4

;ET INPUTS FROM MODULE 8

0004

MVM
Masked Move
source I:8.0
-459<
Mask 003Fh
63<
Dest N17 0
53<

MUL
Multiply
Source A N17:0
53<
Source B 64
64<
Dest N17:1
3392<

MVM
Masked Move
source N17 I
3392<
Mask 0FC0h
4032<
Dest N60 28
3392<

;ET INPUTS FROM MODULE 9

0005

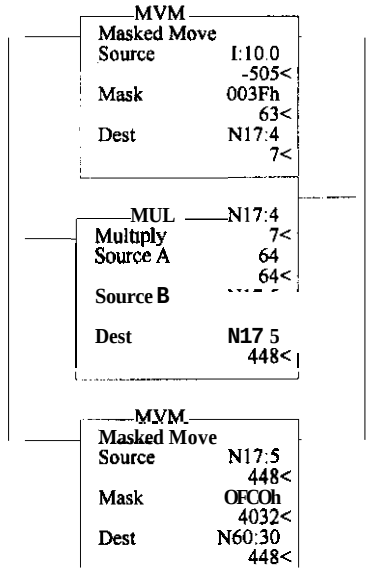
MVM
Masked Move
Source
-469<
Mark 003Fh
Dest N17:2
43<

MUL
Multiply
Source A N17:2
43<
Source B 64
64<
Dest N17:3
2752<

MVM
Masked Move
source N17 3
2752<
Mask 0FC0h
4032<
Dest N60 29
2762<

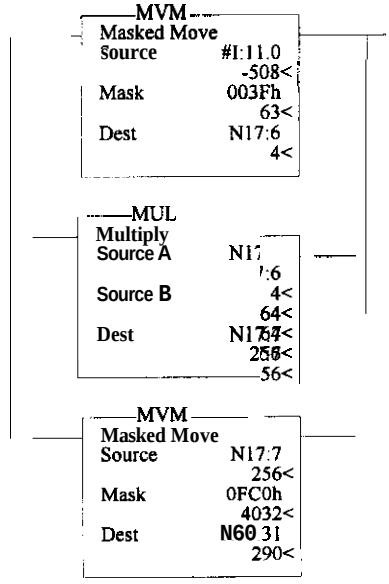
GET INPUTS FROM MODULE 10

OW6



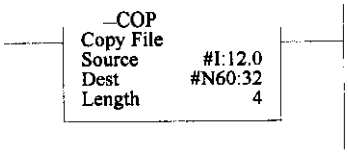

;ET INPUTS FROM MODULE 11

0007




GET TEMPERATURES FROM MODULE 12

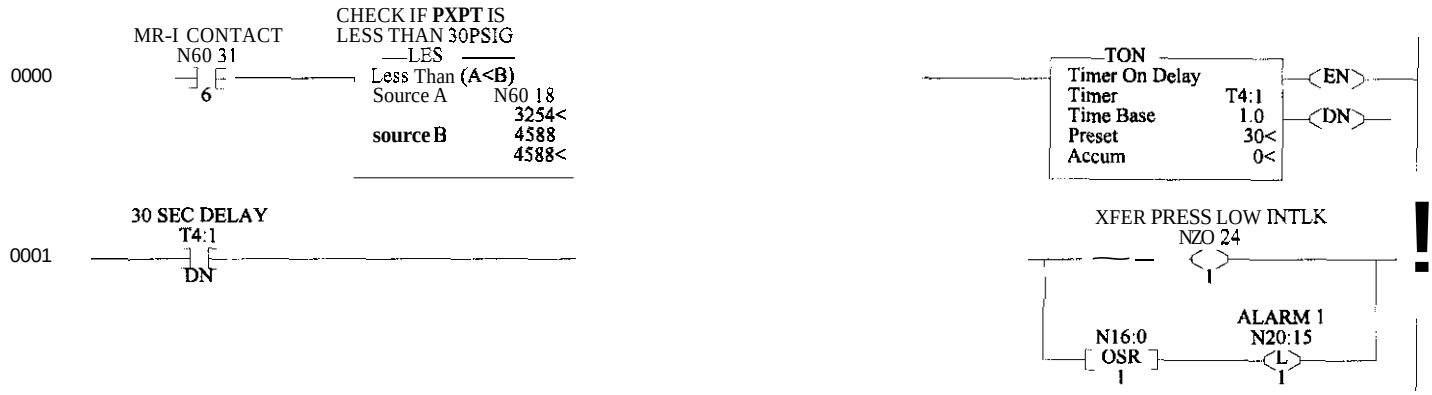
0008



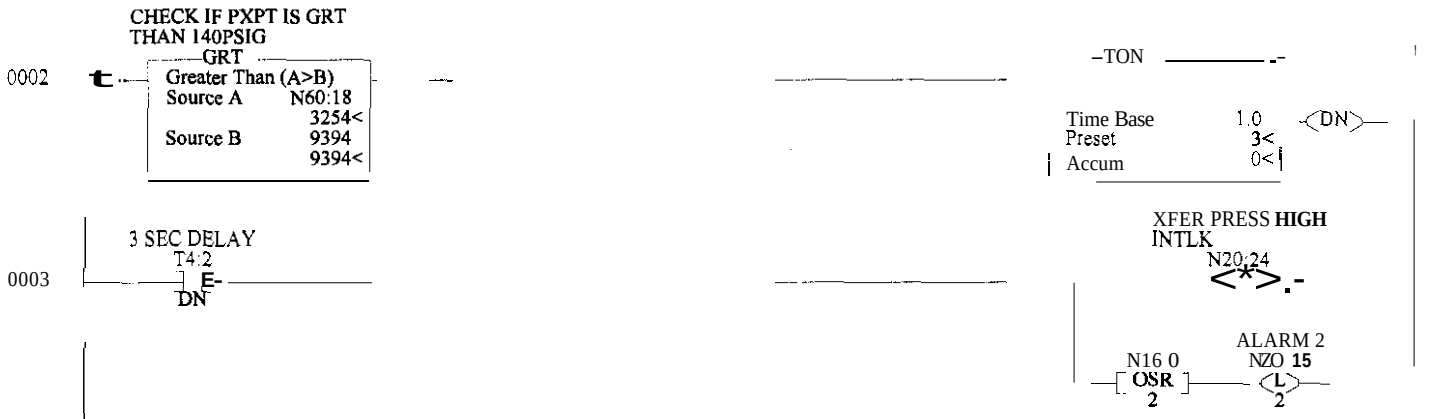
LAD 4 - Total Rungs in File = 11



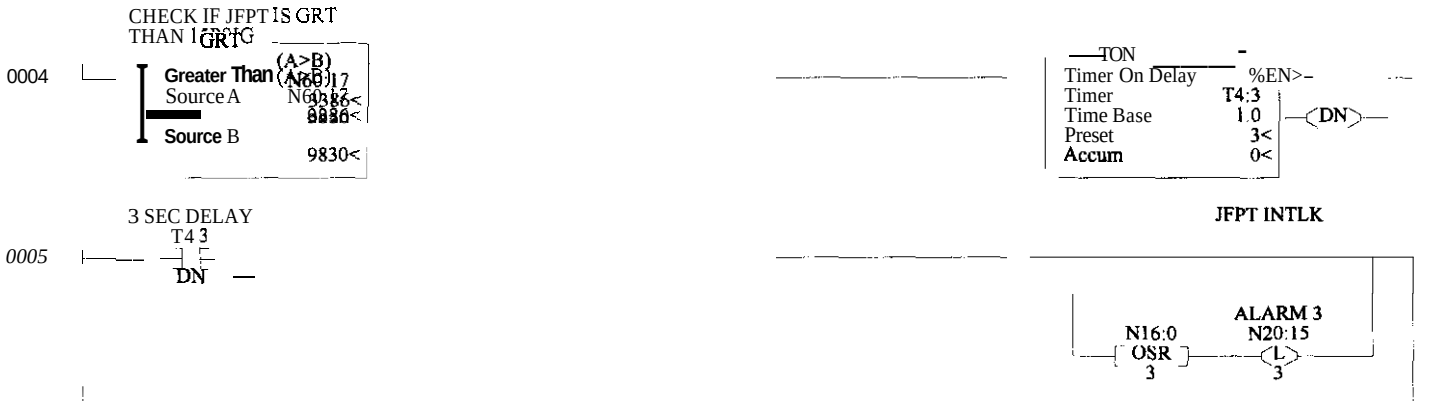
I TRANSFER LOW PRESSURE WHEN **PUMP** ON STARTS TIMER AT 30 PSIG



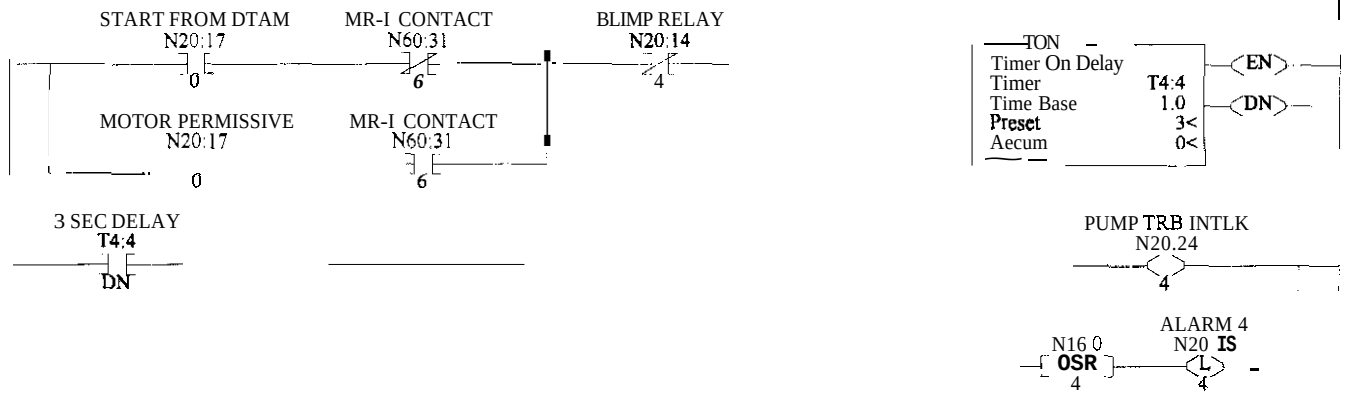

TRANSFER HIGH PRESSURE STARTS TIMER AT 140PSIG



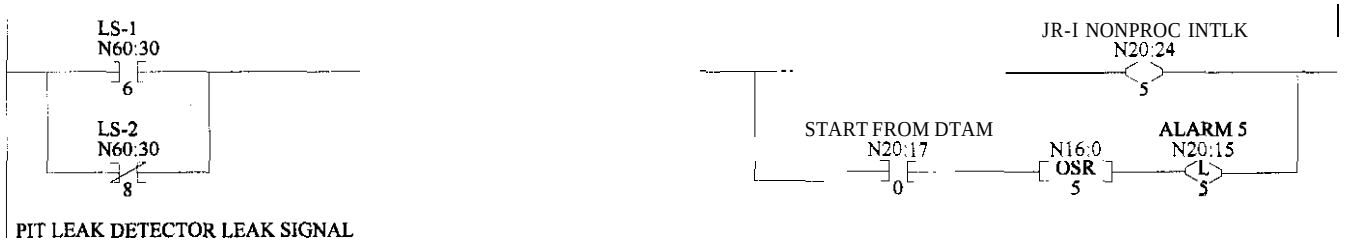

JFPT **(PS-2), HIGH** PRESS FLUSH, GREATER THAN 15PSIG STARTS TIMER



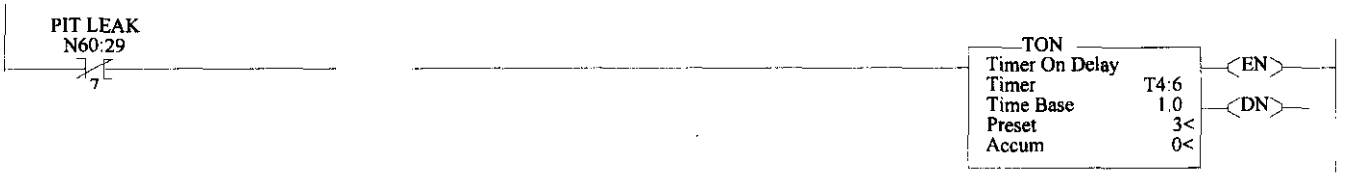
MOTOR PERMISSIVE AND MR-I TIMER STARTS EITHER ON PERMISSIVE AND NO PUMP POWER **OR** PUMP POWER ON AND NO PERMISSIVE

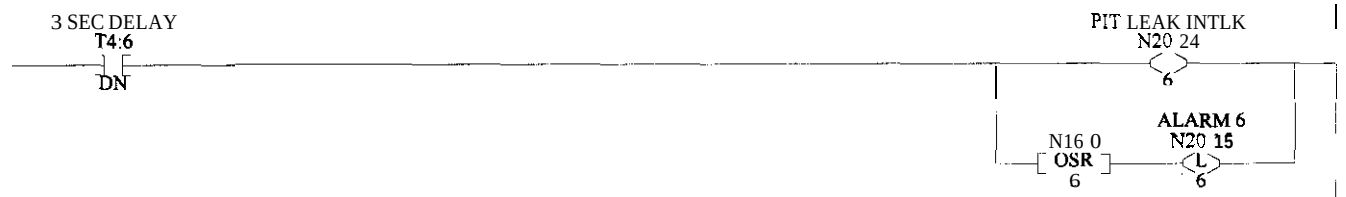



LS-I, LS-2 ALARM WHEN JR-I INPRIME AND/OR FLUSH POSITION

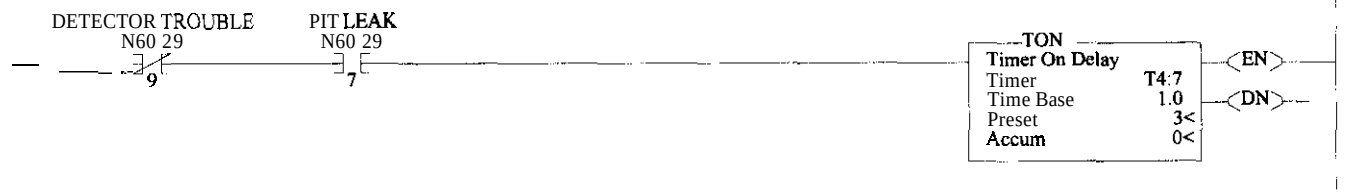



PIT LEAK DETECTOR LEAK SIGNAL

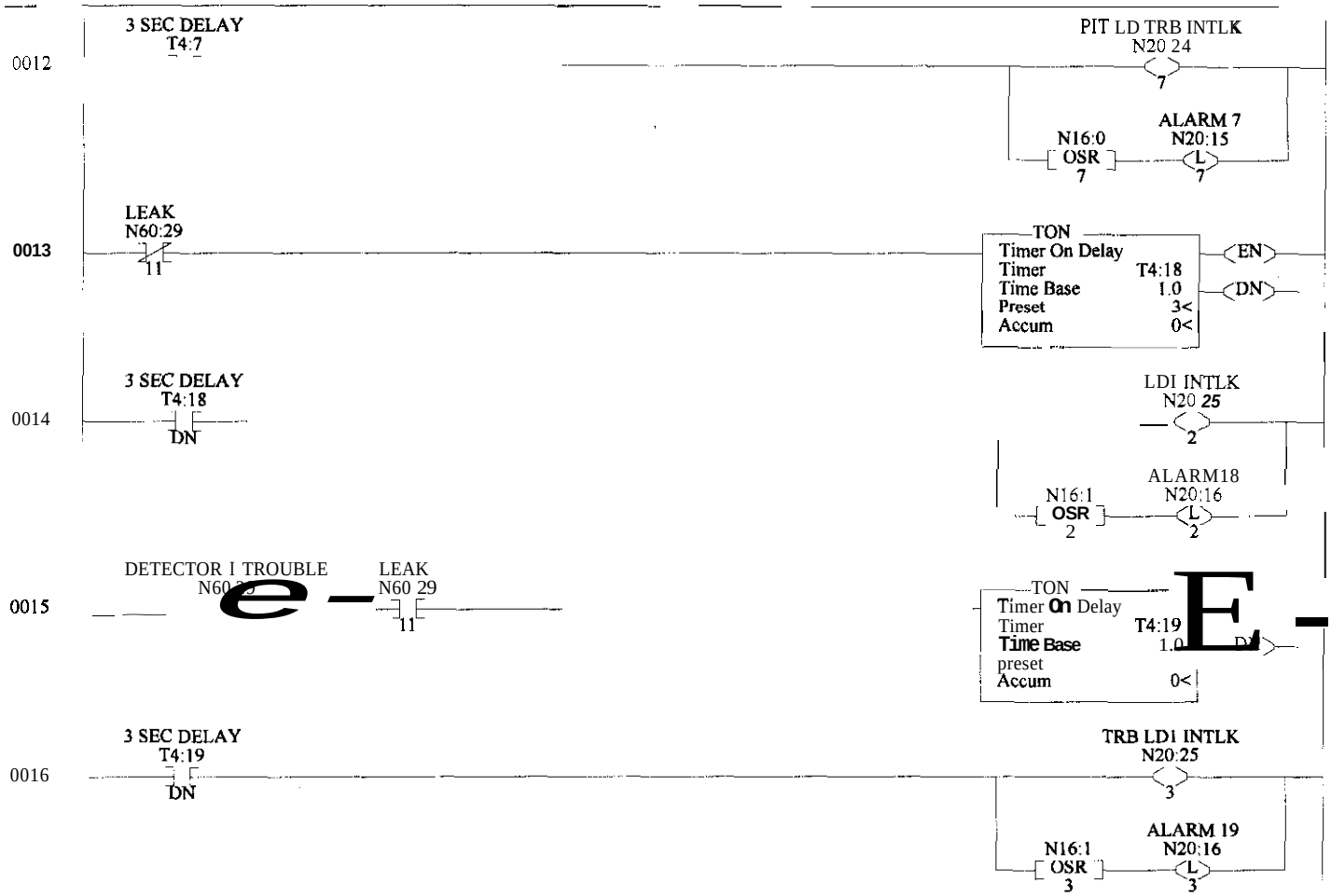


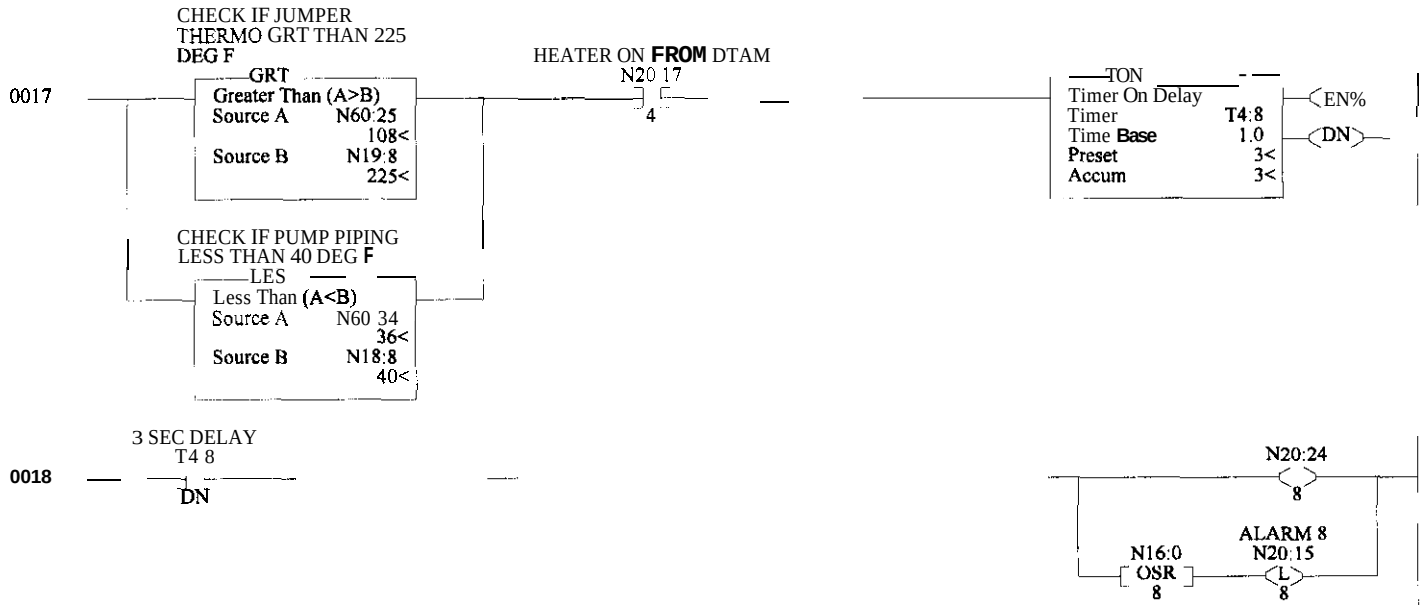

PIT LEAK DETECTOR TROUBLE SIGNAL



LAD 5 - --- Total Rungs in File = 83

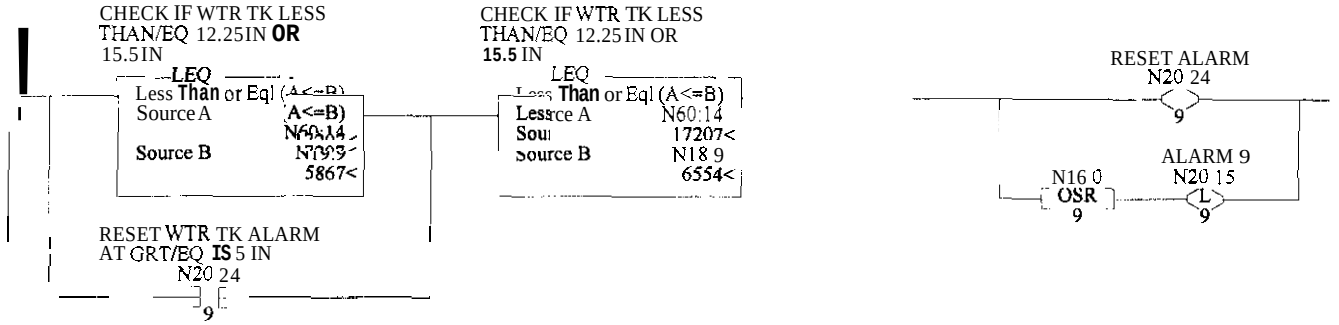



PUMP AND NMPER HEAT TRACE TROUBLE, TEMP LESS THAN 40 DEG F OR GREATER THAN 225 DEG F WHEN HEAT TRACE ON



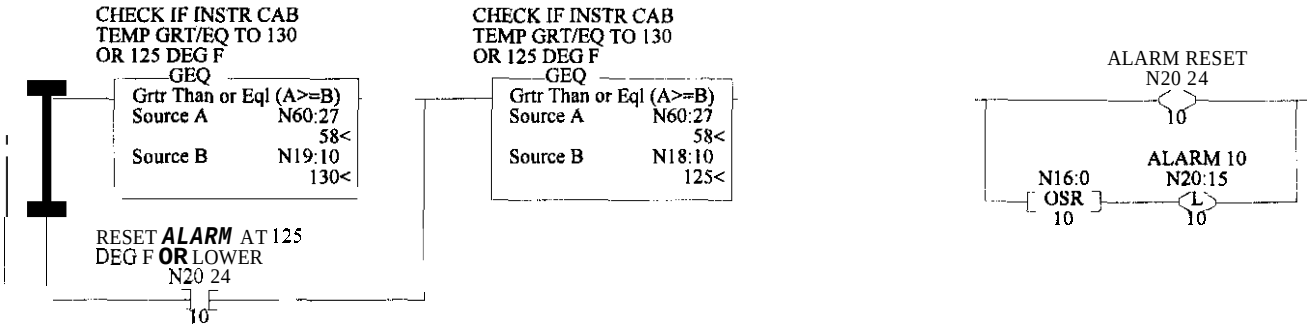
WATER TANK LOW LEVEL, ALARMS AT LESS THAN 12 25 INCHES, RESETS ABOVE **IS 5** INCHES

0019



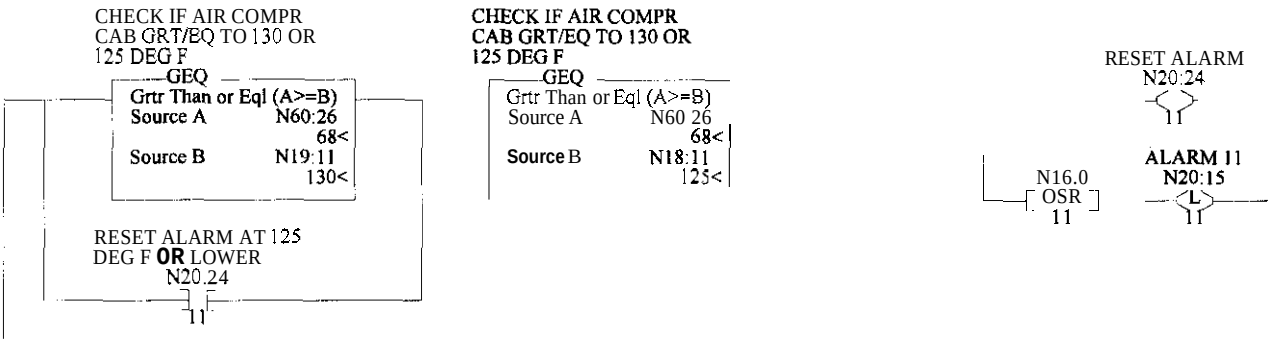

INSTRUMENT CABINET TEMPERATURE **HIGH,** GREATER THAN 130 DEG F, RESETS BELOW 125 DEG F

0020




AIRCOMPRESSORCABINET TEMPERATURE **HIGH,** GREATERTHAN 130 **DEG** F, RESETS BELOW 125 DEG **F**

0021



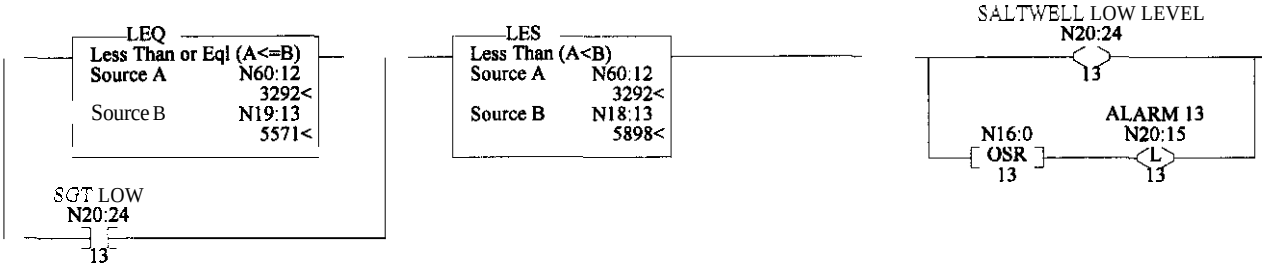

JET **PUMP** MOTOR SHUTDOWN

0022

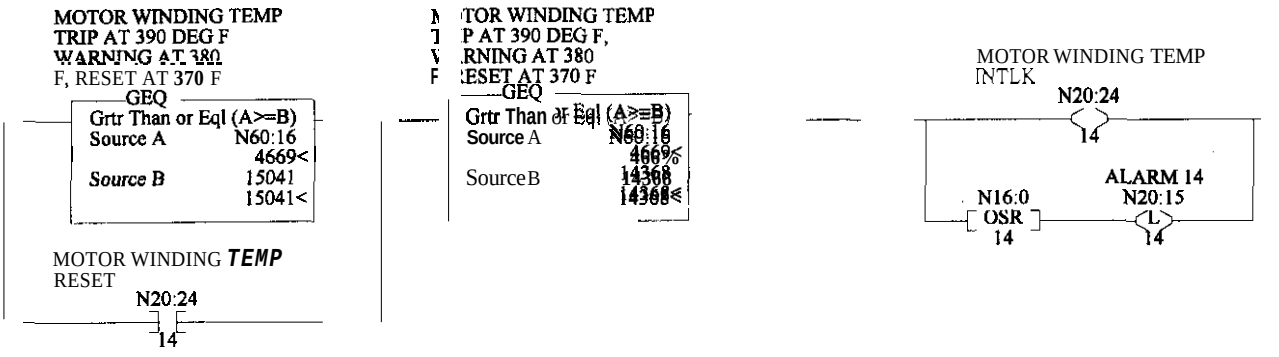


PECIFIC GRAVITY SGI. SALTWELL LOW LEVEL

0023

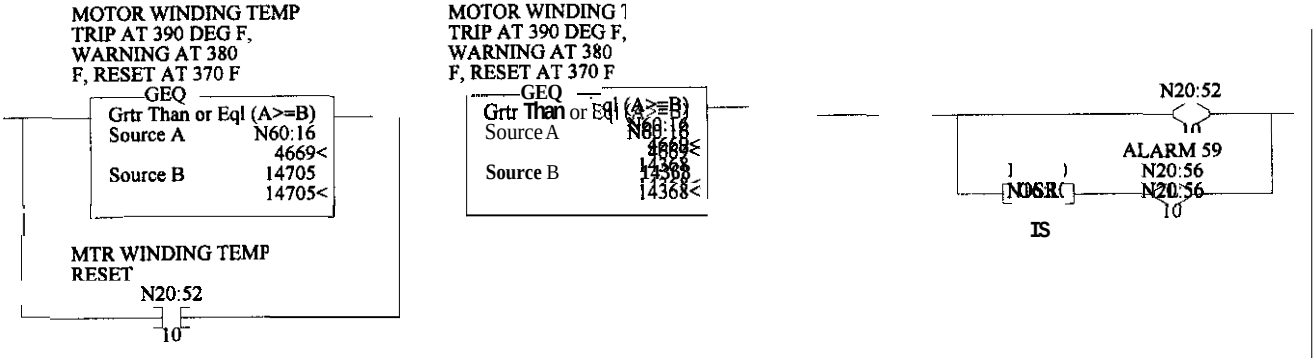



0024



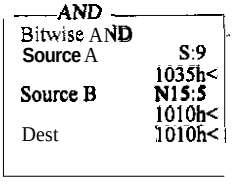

/ARNING FOR MOTOR WINDING TEMPERATURE APPROACHING HIGH TRIP **POINT**

0025




TATION **ON DH-485** (PRESENT)

0026



STATION ON DH-485 (PREVIOUS)

0027

MVM
Masked Move
Source N15:0 4112<
Mask N15:5 1010h<
Dest N15:3 4112<

COMPARE PRESENT AND PREVIOUS STATION DATA, TIMER STARTS IF NOT THE SAME

0028

NEQ
Not Equal
Source A N15:2 4112<
Source B N15:3 4112<

TON
Timer On Delay
Timer T4:15
Time Base 1.0
Preset 60<
Accum 0<
EN
DN

60 SEC DELAY
T4 15
DN

0029

DH485 COMM INTLK
N2024

ALARM 15
N20 15
N16:0 OSR 15
L 15

AX101
N20:36
1

0030

TON
Timer On Delay
Timer T4:84
Time Base 1.0
Preset 3<
Accum 0<
EN
DN

3 SEC DELAY
T4:84
DN

0031

*OTHER SKID IN FLUSH INTLK*
N20:25
4

ALARM 20
N20:16
N16:1 OSR 4
L 4

CHECK IF JFPT SIGNAL LESS THAN 4mA

0032

LES
Less Than (A<B)
SourceA N60 17 3386<
Source B 2500 2500<

TON
Timer On Delay
TimerBase T4:10
Time l 1.0
Preset 3<
Accum 0<
DN

3 SEC DELAY
T4:10
DN

0033

JFPT SIGNAL LOSS INTLK
N20:25
0

ALARM16
N16 I OSR 0
N20.16 L 0

LAD 5 - --- Total **Rungs in File** = *83*

0034
AX-101 LEAK
N20 36
3

TON
Timer On Delay
Timer T4:17
Time Base 1.0
Preset 3<
Accum 0<
EN
DN

0035
3 SEC DELAY
T4:17
DN

AXlOl SKIDLEAK MTLK
N20 25
1

ALARM 17
N161 OSR 5
N20 16 L 1

GET ALL ACTIVE NODE

0036

MOV
Move
Source S:9 4149<
Dest N20:27 4149<

CHECK IF STATION 1 IS ON LINE

0037

AND
Bitwise AND
ource A N20:27 1035h<
Source B 4096 4096<
Dest N30.10 1000h<

LEAK STATION 1TROUBLE

0038

EQU
Equal
Source A N30:10 4096<
Source B 0 0<

TON
Timer On Delay
Timer T4:79
Time Base 1.0
Preset 3<
Accum 0<
EN
DN

0039
3 SEC DELAY
T4:79
DN

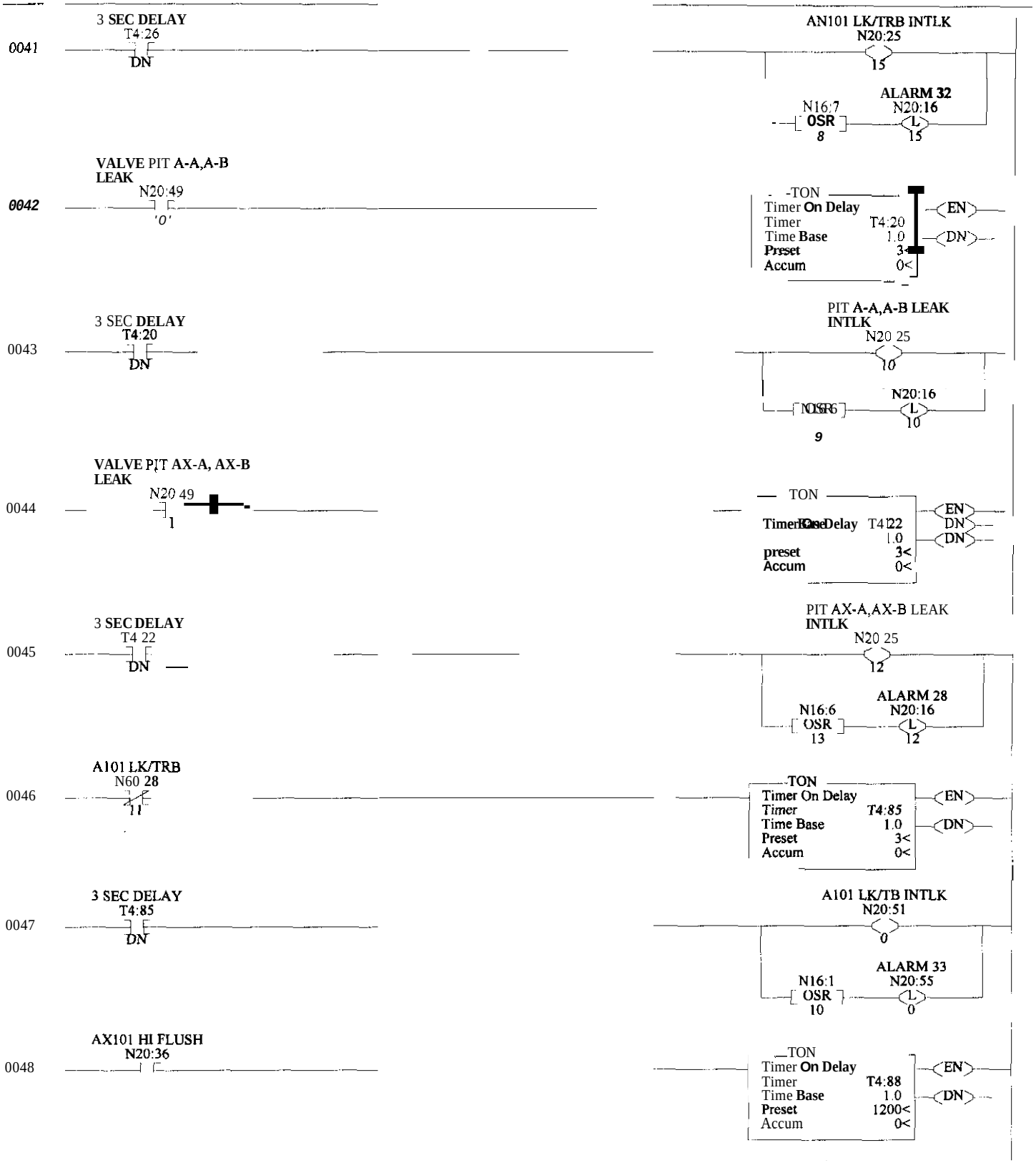
LEAK STATION 1 TRB INTLK
N20:25
7

ALARM 23
N16:1 OSR 7
N20:16 L 7

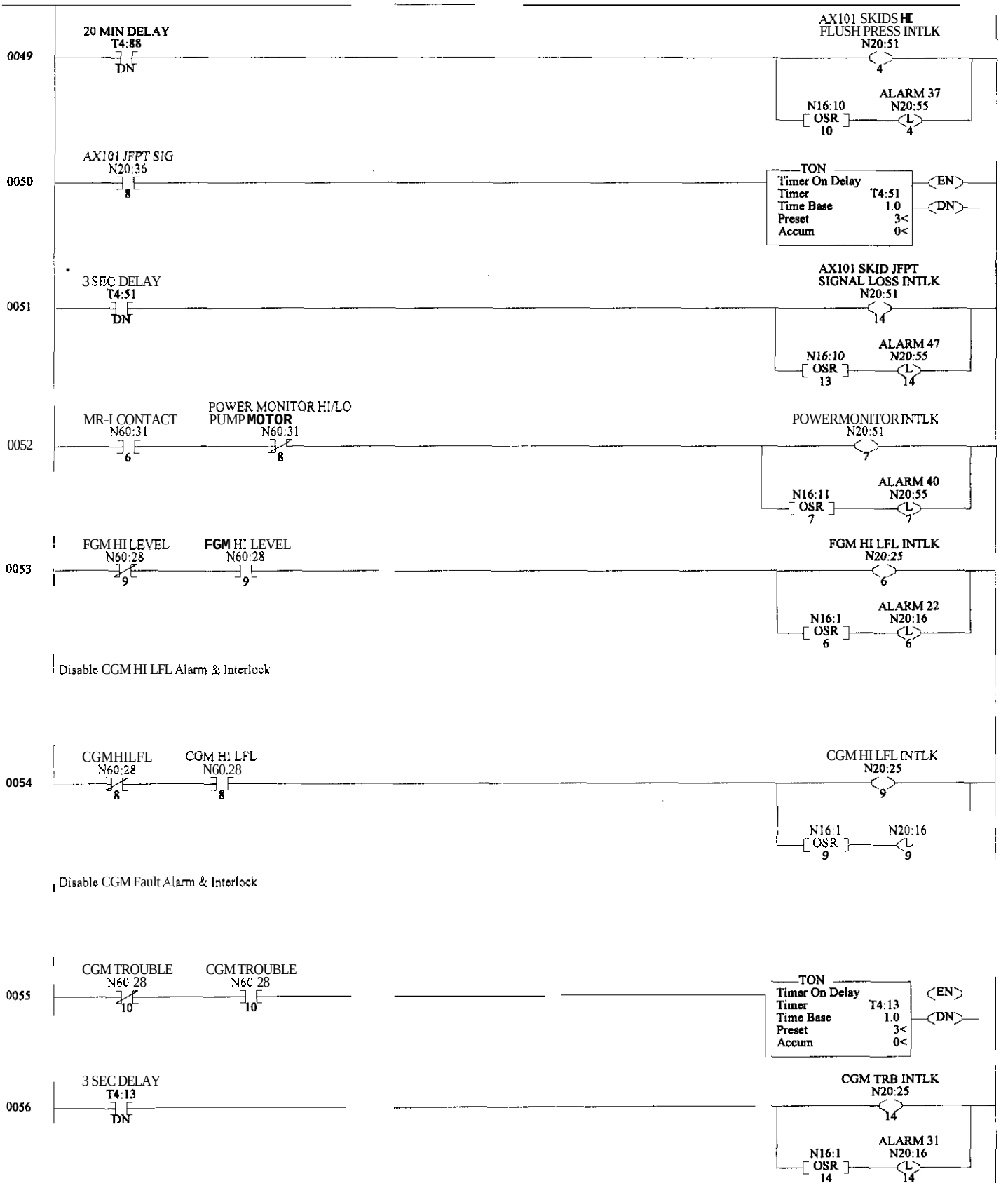
0040
AN101 SIG
N60 28
6

TON
Timer On Delay
Timer T4:26
Time Base 1.0
Preset 3<
Accum 0<
EN
DN

LAD 5 - --- ***Totai Rungs*** *in File = 83*



LAD 5 - ___ Total Rungs in File = 83



0057
MR-I CONTACT N60:31 6
DIL CONTACTOR 1
DIL FLOW N60:28 7
TON Timer On Delay Timer T4:52 Time Base 1.0 Preset 300< Accum 0< EN DN

0058
5 M M DELAY T4:52 DN
DIL NO FLOW INTLK N20:51 2
N16:1 OSR 12
ALARM 35 N20:55 L 2

0059
AX101 T4:36 DN
TON Timer On Delay Timer T4:87 Time Base 1.0 Preset 3< Accum 0< EN DN

0060
3 SEC DELAY T4:87 DN
AX101 SKID 30 MIN TIMER INTLK N20:25 8
N16:1 OSR 8
ALARM 24 N20:16 L 8

ONITORS PUMP BEARINGS. THIS IS ALARM ONLY.

0061
WORN BEARING ALERT N60:30 7
WORN BEARING N20:52 9
N16:10 OSR 14
ALARM 58 N20:56 L 9

DETECTS WATER FLOW TO PUMP BEARINGS. 2 SECOND TIMER IN PLACE TO PREVENT WATER TRANSIENTS FROM TRIPPING INTERLOCK,

W62
INJECTION WATER ACTUATE ON FLOW N60:30 10
TON Timer On Delay Timer T4:62 Time Base 1.0 Preset 2< Accum 2< EN DN

THE 2 SEC TIMER TIMES OUT ON LOW FLOW AND THE 10 M M TIMER IS RESET. (OR ON NORMAL FLOW, THE 2 SEC TIMER RESETS AND STARTS THE 10 MIN TIMER.)

0063
2 SECOND DELAY CLEAR ON LOW FLOW ACTUATE ON NORM FI T4:62 DN
TON Timer On Delay Timer T4:89 Time Base 1.0 Preset 600< Accum 0< EN DN

HE 10 MIN TIMER **RESETS** ON LOW FLOW MAKING THE CONTACT TRUE AND BREAKING THE INTERLOCK AND ACTUATING THE ALARM. **(OR** THE 10 MIN IMER TIMES OUT ON NORMAL FLOW, RESETTING THE **INTERLOCK** AND ALARM.)

10 MIN DELAY
CLEAR ON NORM FLOW
ACTUATE ON LOW FLOW
T4:89
DN

BEARING WTR **INTLK**
N20:51
6

ALARM 39
N16:2 OSR
N20:55 L 6

0064

**CHECK WTR CAB TEMP**
**LESS/EQ TO 35 OR 40**
**DEG F**

LEQ
Less Than or Eql (A<=B)
Source A N60:32 67<
Source B N19:14 35<

CHECK **WTR** CAB TEMP
LESS/EQ TO 35 OR 40
DEG F

LEQ
Less Than or Eql (A<=B)
Source A N60:32 67<
Source B N18:14 40<

ALARM RESET
N20:52
0

ALARM 49
N16:0 OSR 0
N20.56 L 0

**RESET** ALARM ABOVE 40
**DEG F**
N20:52
0

0065

CHECK IF WFIE TEMP
LESS/EQ **TO** 35 **OR** 40
DEG F

LEQ
Less Than or Eql (A<=B)
Source A N60:33 77<
Source B N19:15 35<

**CHECK IF WFIE TEMP**
**LESS/EQ TO 35 OR 40**
**DEG F**

LEQ
Less Than or Eql (A<=B)
Source A N60:33 77<
Source B N18:15 40<

ALARM **RESET**
N20:52
1

ALARM 50
N16:1 OSR 15
N20 56 L 1

**RESET** ALARM ABOVE 40
DEGF
N20:52
1

0066

JR-1 PRIME POS
OUTPUT TO DH485
N20:32

LS-2 N60:30 8
LS-1 N60:30 6

W67

0068

Timer On Delay
Timer
Time Base

**JR-1 FLUSH POS**
**OUTPUT TO DH485**

**3 SEC DELAY**

0069

PUMP SHUTDOWN **OUTPUT**
TO DH485
N20 32

MR-I CONTACT N60:31 6
BUMP PERMISSIVE T4:95

**0070**

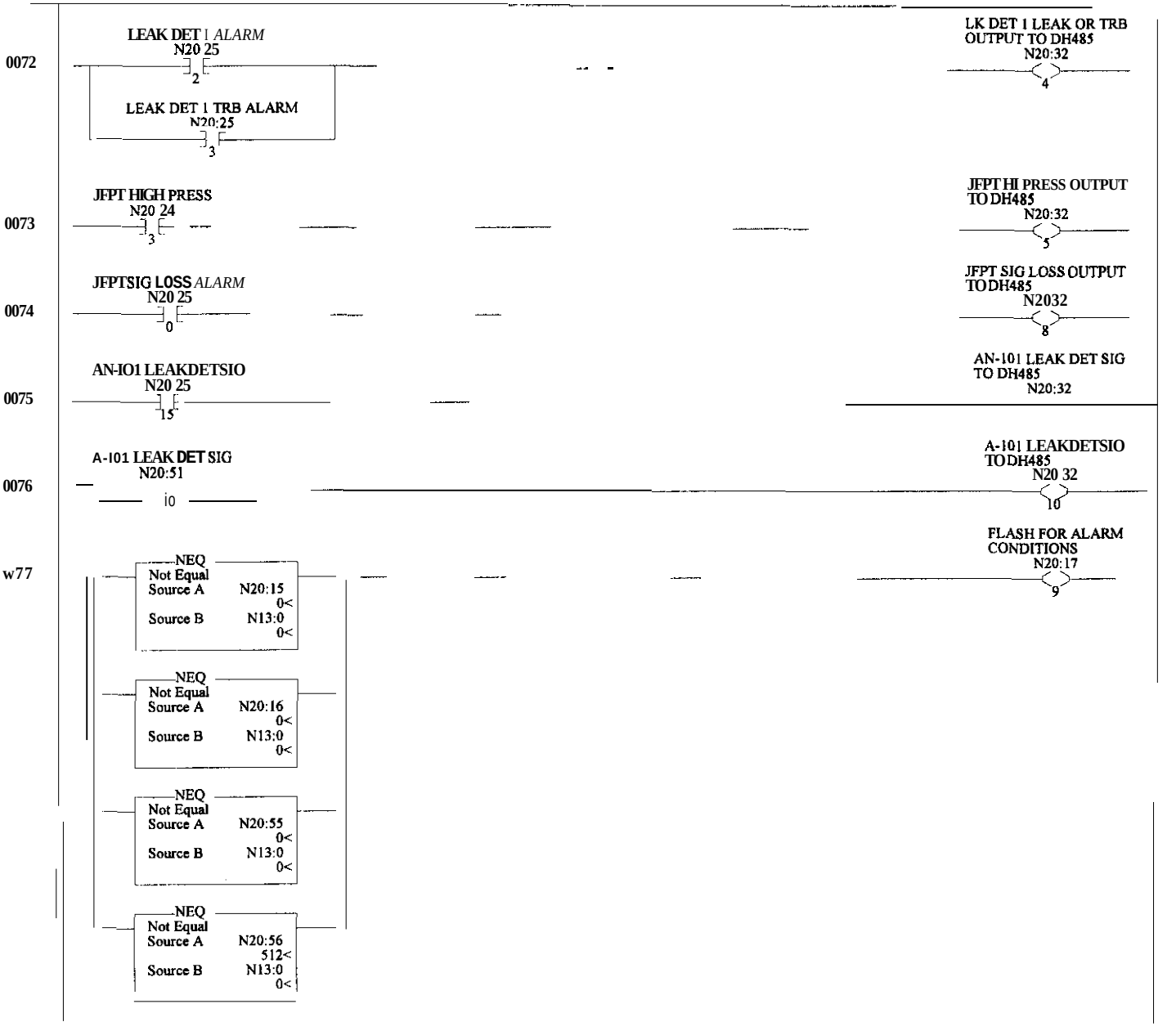
PIT LD LEAK OR TRB
**OUTPUT TO** DH485
N20 32
3

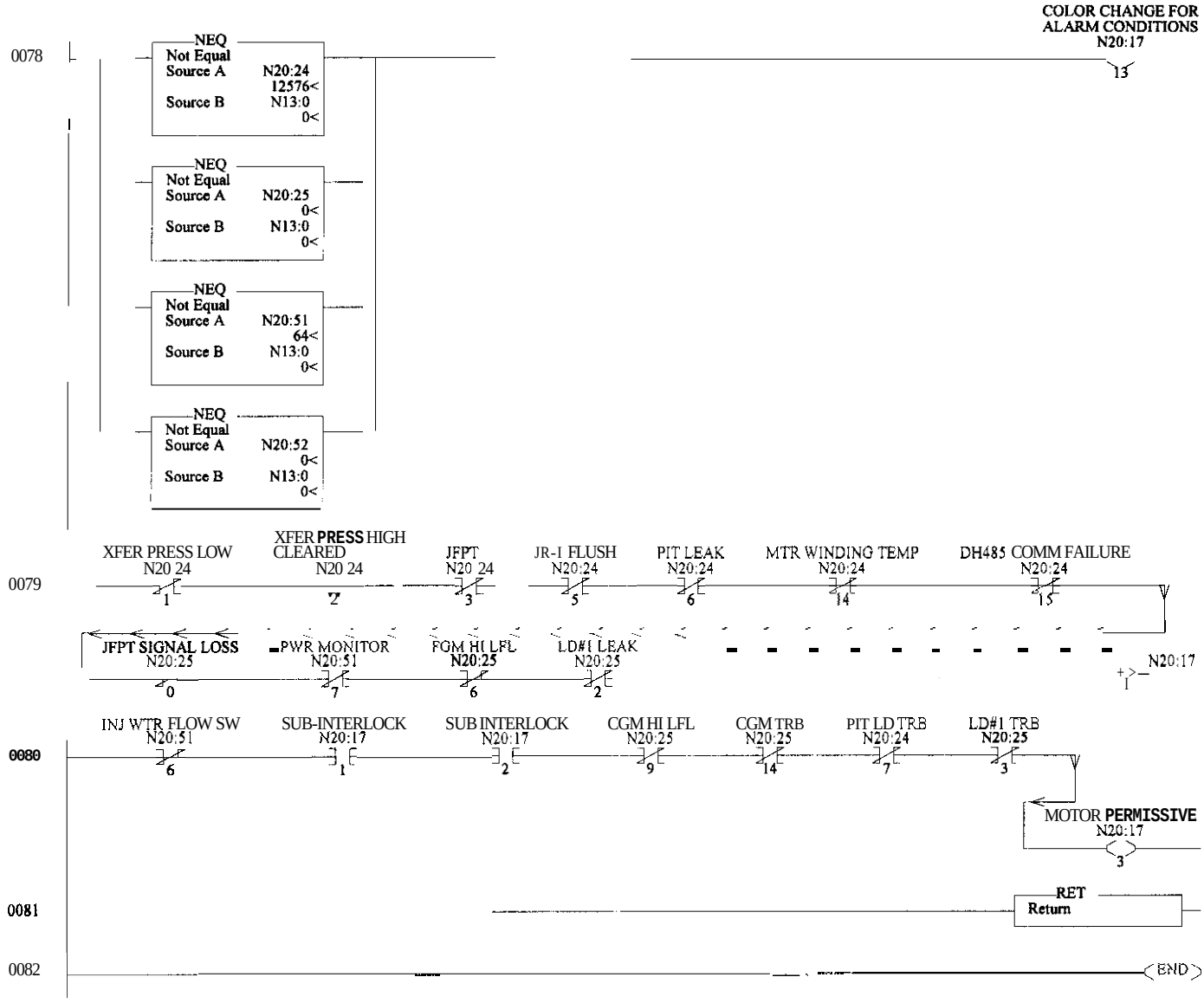
PIT LEAK ALARM
N20.24
6

**PIT LD TRB ALARM**
**N20:24**
7

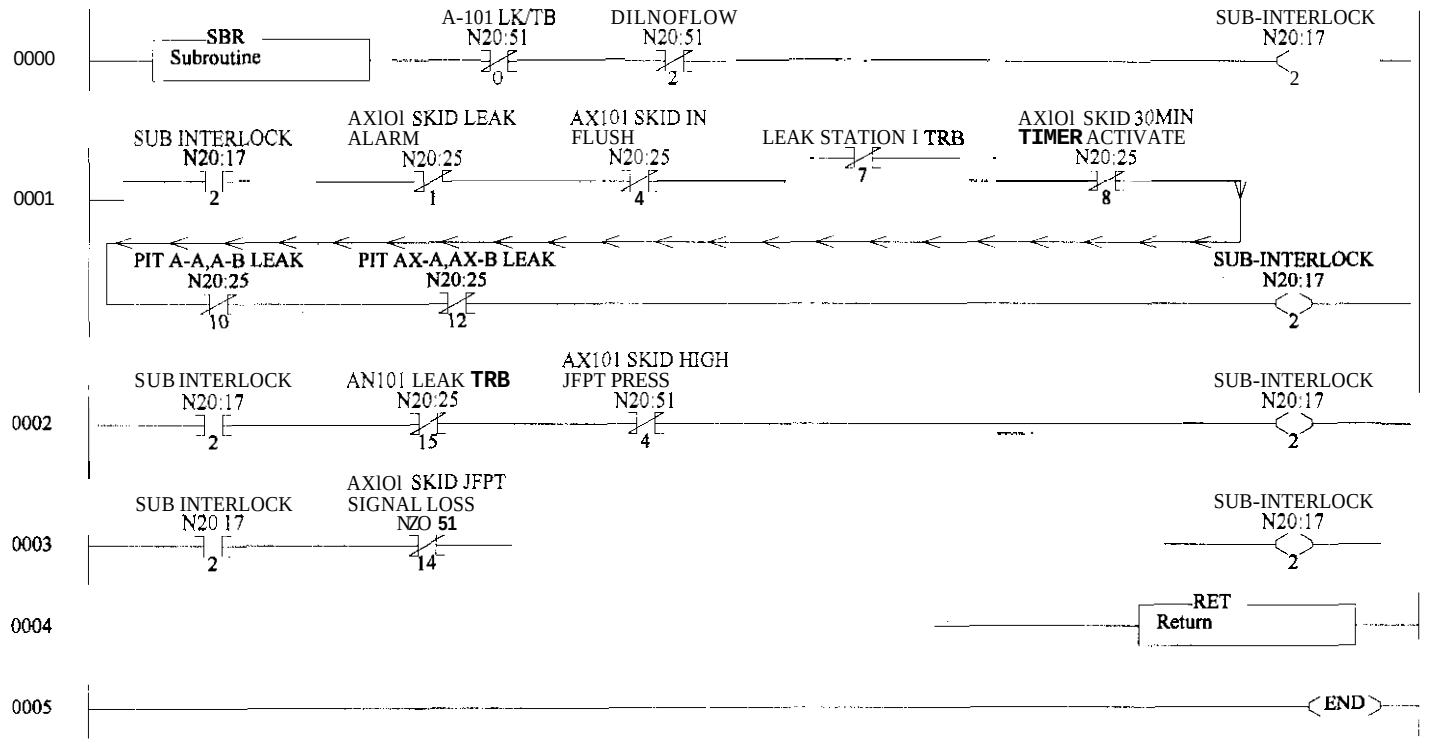
**0071**

LAD 5 - --- Total Rungs in File'= 83




0078
NEQ
Not Equal
Source A N20:24
12576<
Source B N13:0
0<
NEQ
Not Equal
Source A N20:25
0<
Source B N13:0
0<
NEQ
Not Equal
Source A N20:51
64<
Source B N13:0
0<
NEQ
Not Equal
Source A N20:52
0<
Source B N13:0
0<
COLOR CHANGE FOR ALARM CONDITIONS
N20:17
13
0079
XFER PRESS LOW N20 24
1
XFER PRESS HIGH CLEARED N20 24
2
JFPT N20 24
3
JR-1 FLUSH N20:24
5
PIT LEAK N20:24
6
MTR WINDING TEMP N20:24
14
DH485 COMM FAILURE N20:24
15
JFPT SIGNAL LOSS N20:25
0
PWR MONITOR N20:51
7
FGM HI LFL N20:25
6
LD#1 LEAK N20:25
2
N20:17
0080
INJ WTR FLOW SW N20:51
6
SUB-INTERLOCK N20:17
1
SUB INTERLOCK N20:17
2
CGM HI LFL N20:25
9
CGM TRB N20:25
14
PIT LD TRB N20:24
7
LD#1 TRB N20:25
3
MOTOR PERMISSIVE
N20:17
3
0081
RET
Return
0082
END

LAD **6** - --- Total Rungs in **File** = 6



LAD 7 - --- Total Rungs in File = 36

ELAY LATCHES M ALLOW NORMAL START PROVIDED INJECTION FLOW HAS REMAINED NORMAL AND A BUMP START HAS BEEN COMPLETED.

0000 Subroutine — OSR (L)

0001 10 MIN DELAY
CLEAR ON NORM FLOW
ACTUATE ON LOW FLOW
T4:89 DN — N16:11 OSR 3
BUMP OR NORMAL START RELAY
N20:14 (U) 0

ILUTION SYSTEM STARTS UPON NORMAL START OF PUMP.

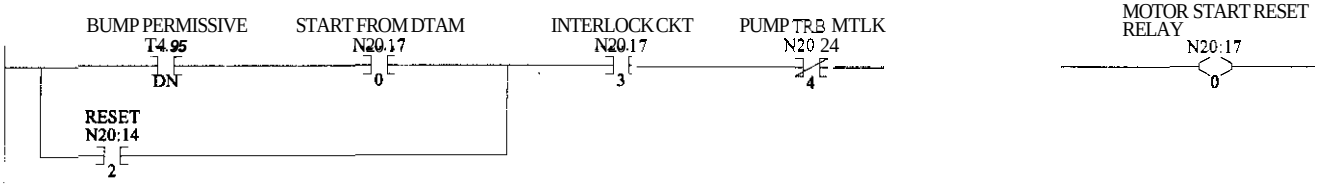
0002 START FROM DTAM N20:17 0 — PERMIT NORMAL START WHEN TRUE N20:14 0 — INTERLOCK CKT N20:17 3 — PUMP TRB INTLK N20:24 4 — DIL METERING PUMP N60:28 (3)
DIL CONTACMR N60:28 (1)
MR-I CONTACT N60:31 6 — PUMP RUN N20:14 (7)
RESET RELAY NZO I4 (2)

BUMP INPUT FROM DTAM ACTIVATES PERMISSIVE

OW3 START FROM DTAM N20:17 0 — BUMP START WHEN TRUE N20:14 0 — INTERLOCK CKT N20:17 3 — PUMP TRB INTLK N20:24 4 — BUMP PERMISSIVE N20:14 (6)
TOF
Timer Off Delay
Timer T4:95
Time Base 0.01
Preset 2<
Accum 2<
(EN) (DN)

THIS RUNG SEALS IN THE START BIT FROM THE DTAM

0004



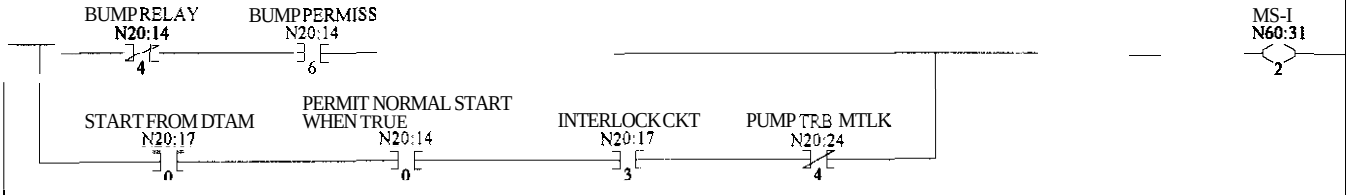

WHEN BUMP IS COMPLETED OR ABORTED, COUNTER IS RESET

0005




BUMP STARTS WHEN PERMISSIVE RECEIVED. WILL BUMP ONLY THE SUNDYNE PUMP MOTOR

0006



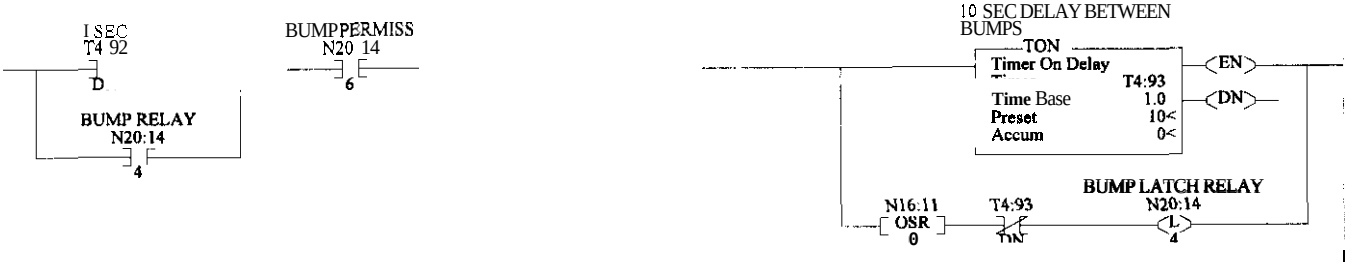

ONCE THE PUMP STARTS, THE AUX MR-I CONTACT CLOSES TO START THE 1 SEC. TIMER AND TO INCREMENT THE COUNTER BY 1.

0007



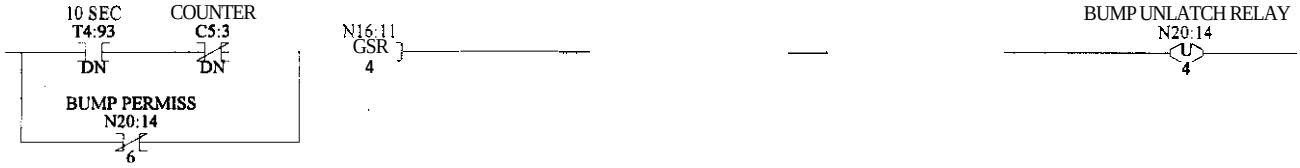

WHEN THE 1 SEC TIMER TIMES OUT, THE 10 SEC TIMER STARTS, THE BUMP RELAY CONTACT CLEARS IN RUNG 3 TO STOP THE PUMP AND THE MR-I CONTACT CLEARS TO RESET 1 SEC TIMER

0008



? THE COUNTER IS LESS THAN 3, THE BUMP START RELAY IS UNLATCHED TO ACTIVATE THE BUMP RELAY CONTACT IN RUNG 3 TO RESTART THE PUMP IOTOR AND TO RESET THE 10 SECOND TIMER.

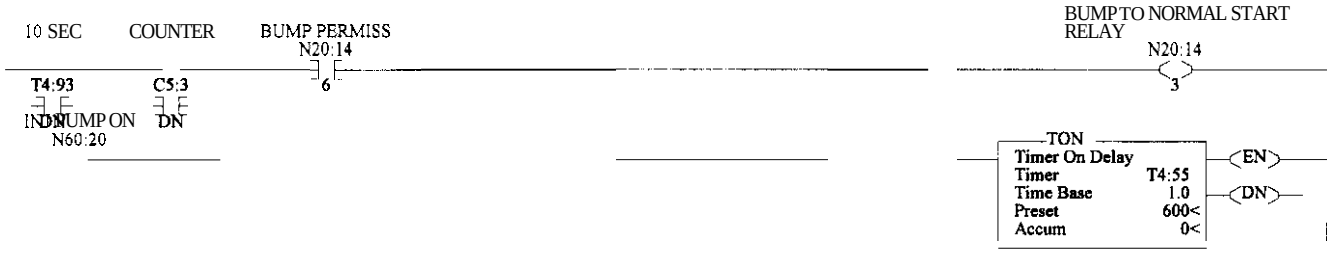
0009




? THE COUNTER IS 3, THEN NORMAL START IS ACTUATED IN RUNG 0.

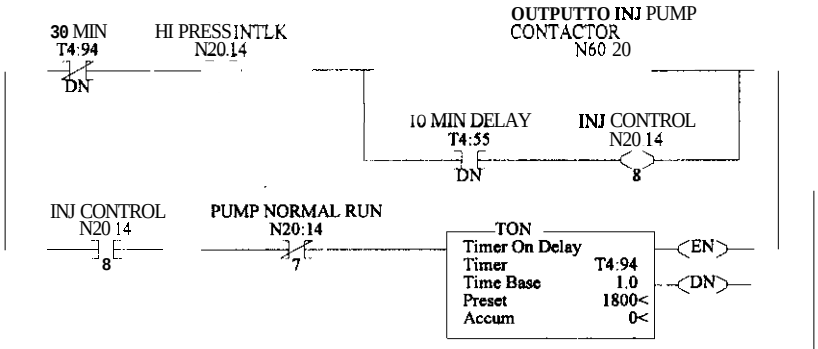
0010

0011




HIS RUNG CONTROLS THE INJECTION PUMP SHUTDOWN. THE INJECTION PUMP WILL SHUT DOWN 30 MINS. AFTER THE SALTWELL PUMP SHUTS DOWN OR ) MINS AFTER THE INJECTION PUMP STARTS AND THE SALTWELL PUMP HAS NOT STARTED OR WITHIN 5 SEC UPON A HIGH TRANSFER PRESSURE TRIP OF HE SALTWELL PUMP.

0012




0013



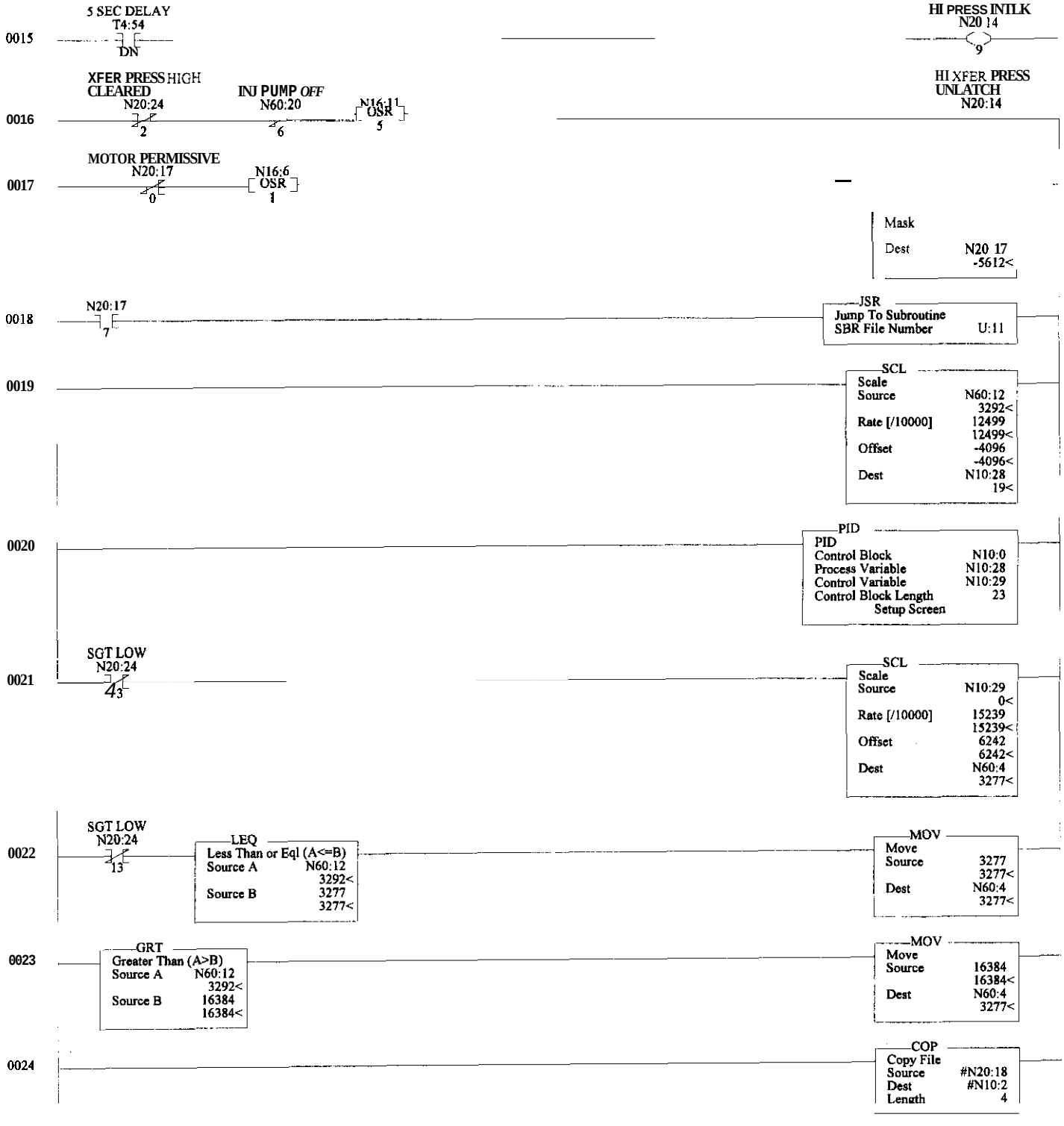

THIS RUNG STARTS THE 5 SEC TIMER UPON A HIGH TRANSFER PRESSURE TRIP

0014

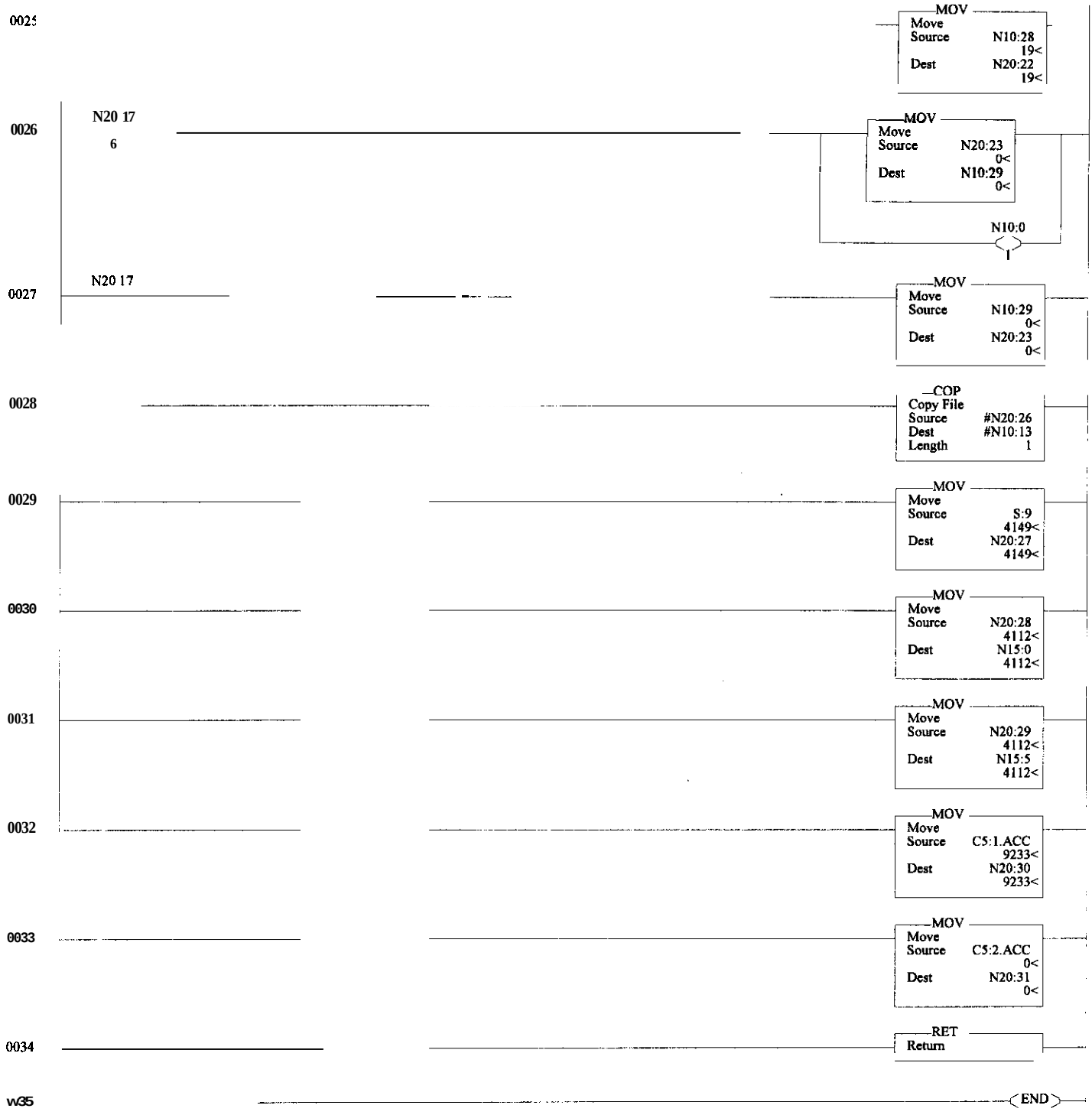


LAD 7 - --- **Total Rungs in File = 36**

UPON TIMING OUT OF THE 5 SEC TIMER, THE INJECTION PUMP WILL SHUTDOWN

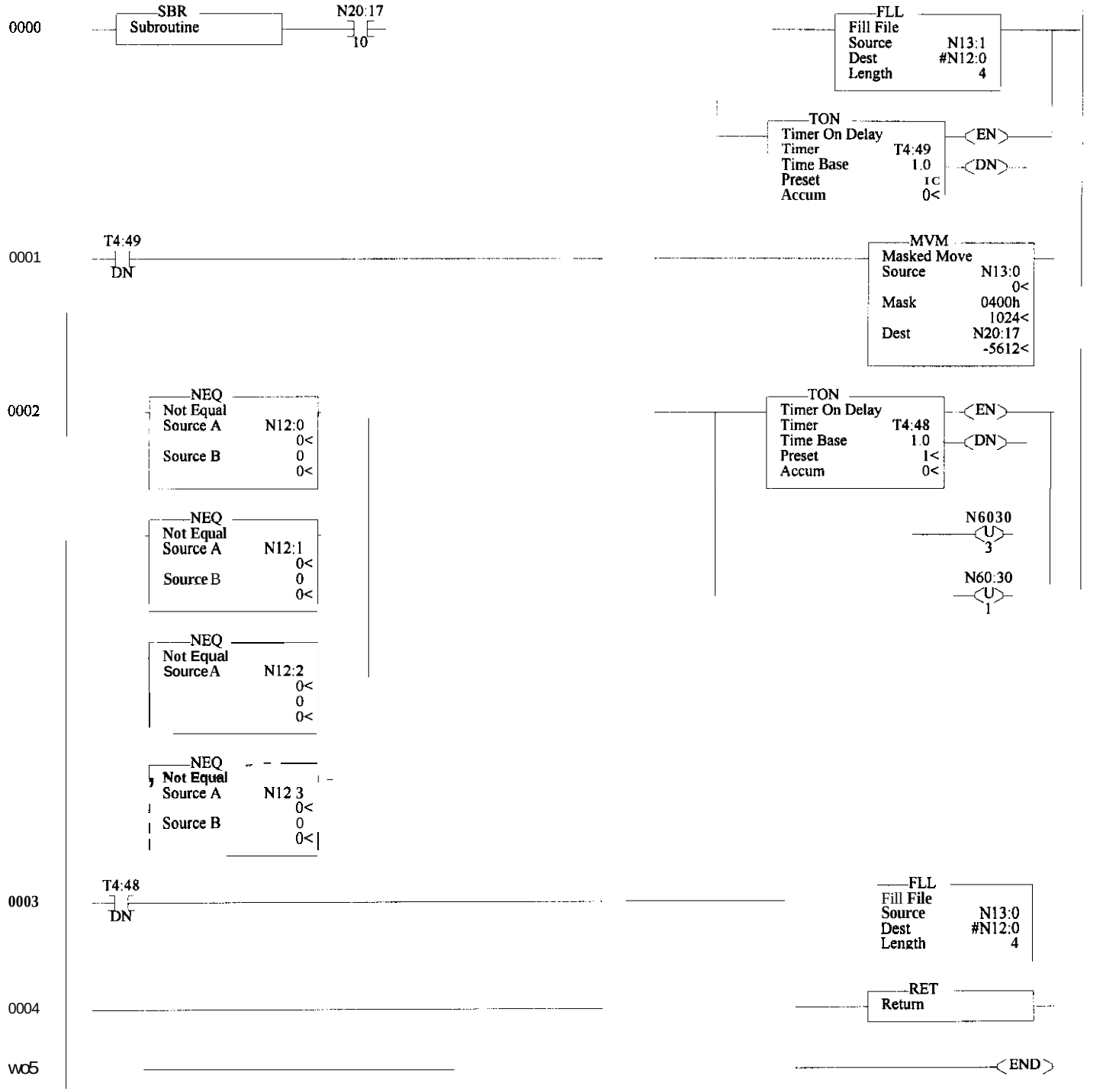


LAD 7 - --- Total Rungs in File = 36



LAD 8 - --- Total Rungs in File = 6

| ALARM ACKNOWLEDGE FROM DTAM



**LAD 9 - --- Total Rungs in File** = 10

**I JUMPER HEAT TRACE**

00W

SBR
Subroutine

0001

ADD
Add
Source A N31.4
145<
Source B 5
5<
Dest N18.32
150<

SUB
Subtract
Source A N31:4
145<
source B 5
5<
Dest N18:33
140<

0002

LES
Less Than (A<B)
Source A N60:25
108<
Source B N18:33
140<

Less Tha
Less Than (A<N60:2
108<
Source B N18:32
Source B N18:32<
150<

N16:9
5

N16:9
5

**IUMPER HEAT TRACE CONTROL LESS THAN 195 DEG F, ON/OFF FROM DTAM, FGM**

0003

N16:9
5

HEATER ON FROM DTAM
N20:17
4

FGM HI LFL
N20:25
6

CGM HI LFL
N20:25
9

CGM TRB
N20:25
14

N6029
1

N60:29
3

**PUMP ASSEMBLY HEAT TRACE**

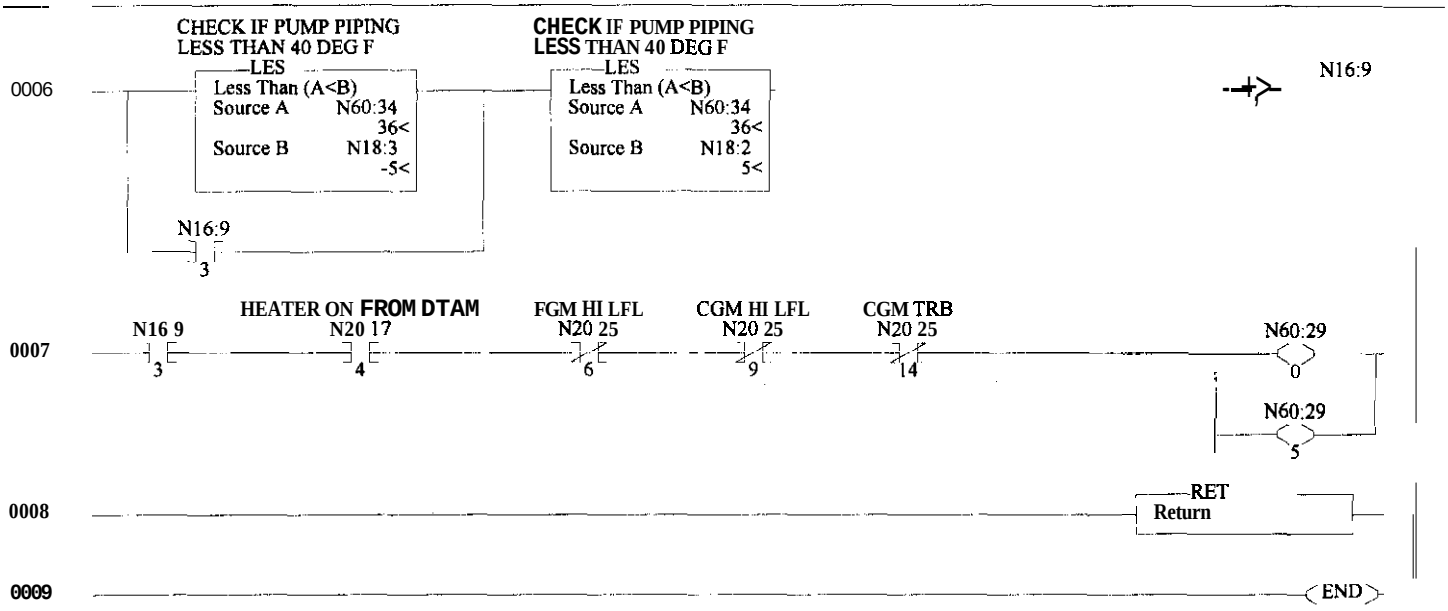
0004

ADD
Add
Source A N31:17
0<
Source B 5
5<
Dest N18:2
5<

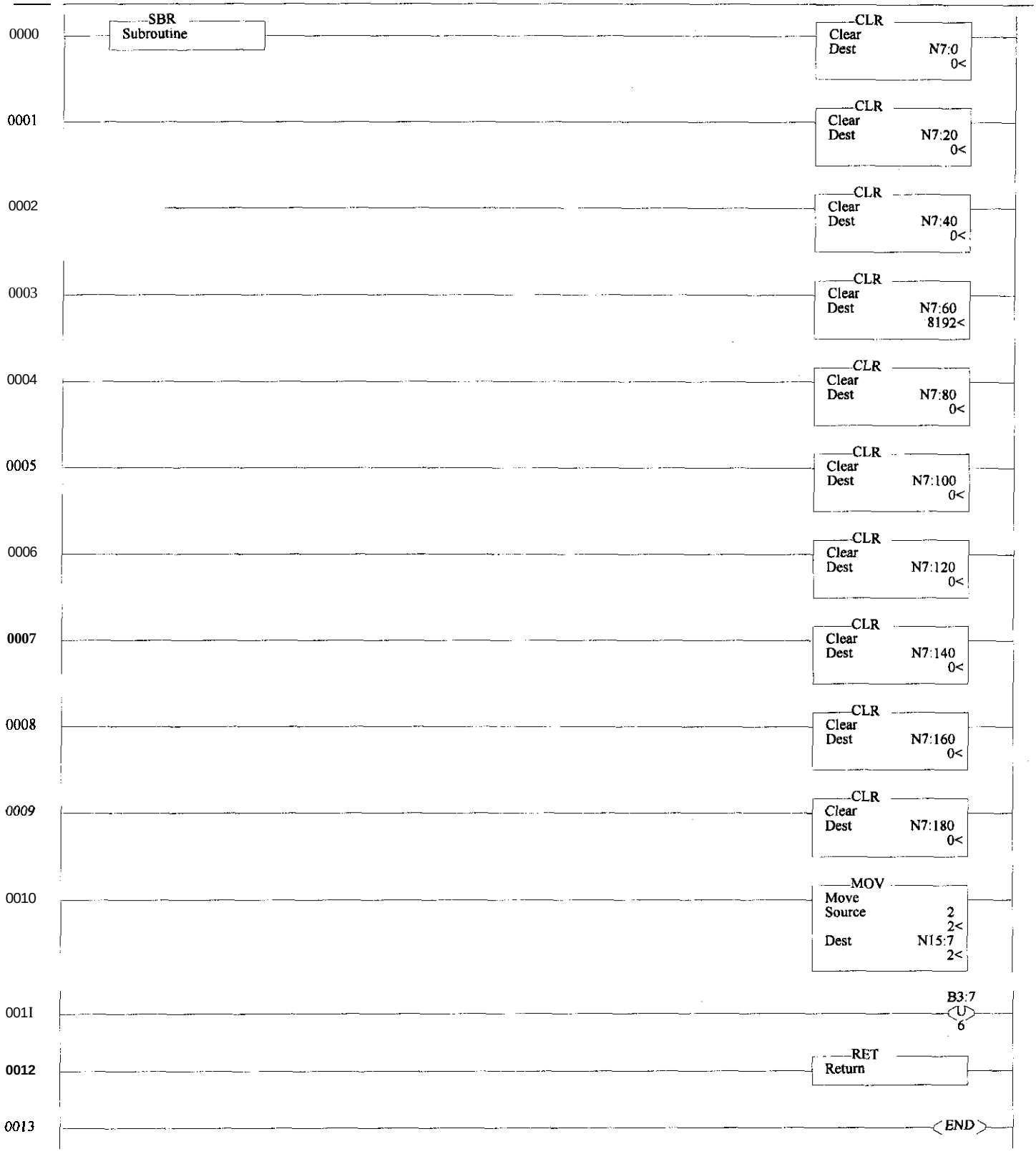
0005

SUB
Subtract
Source A N31 17
0<
Source B 5
5<
Dest N18 3
-5<

LAD 9 - --- Total Rungs in File = 10

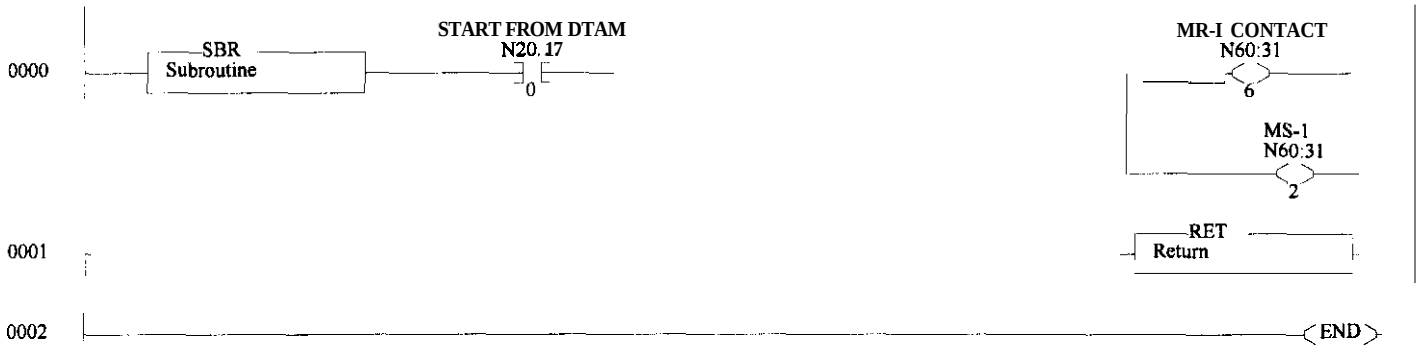


LAD 10 - --- Total *Rungs* in File = 14

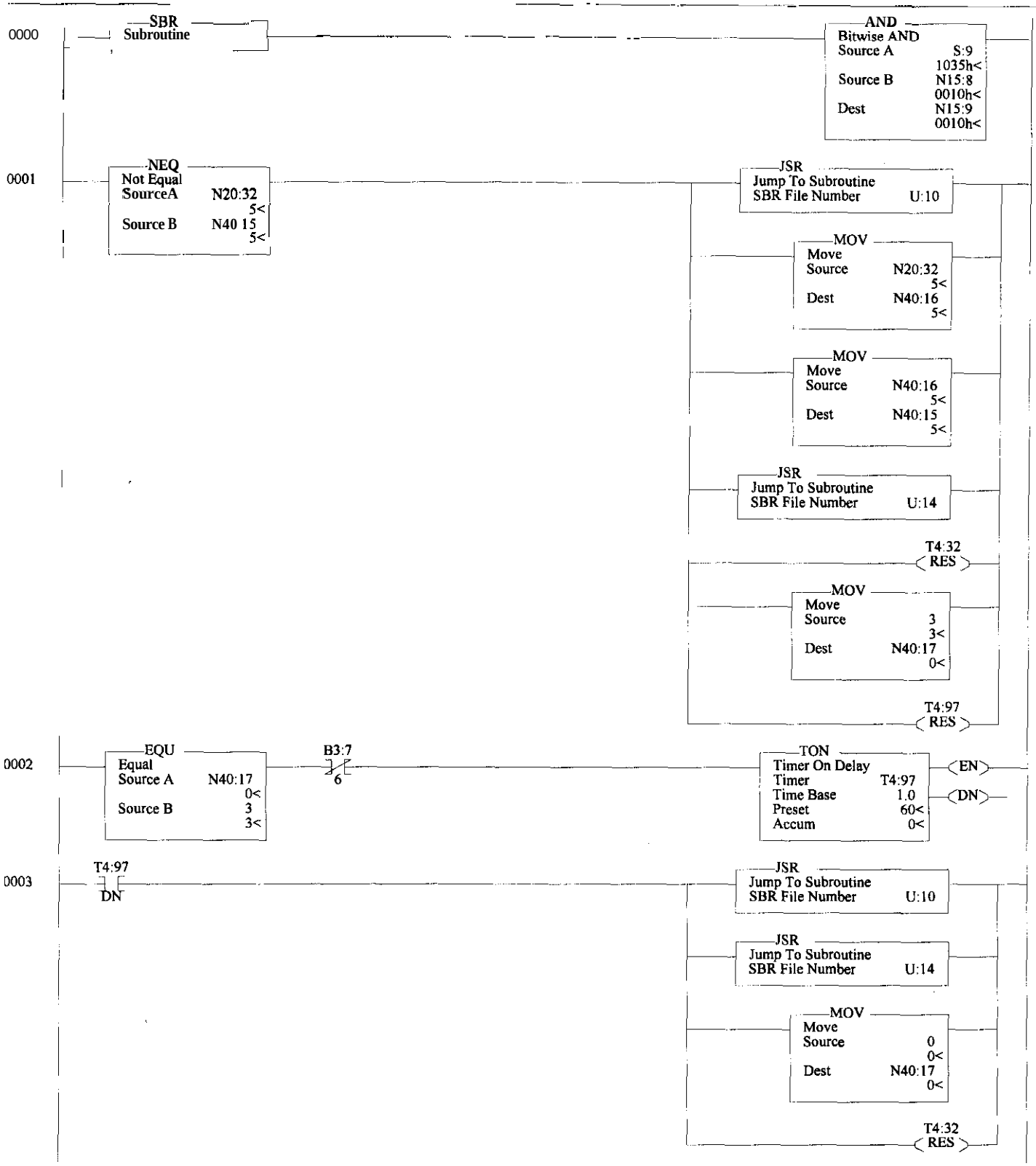


LAD **11** - **---** Total **Rungs** in **File** = 3

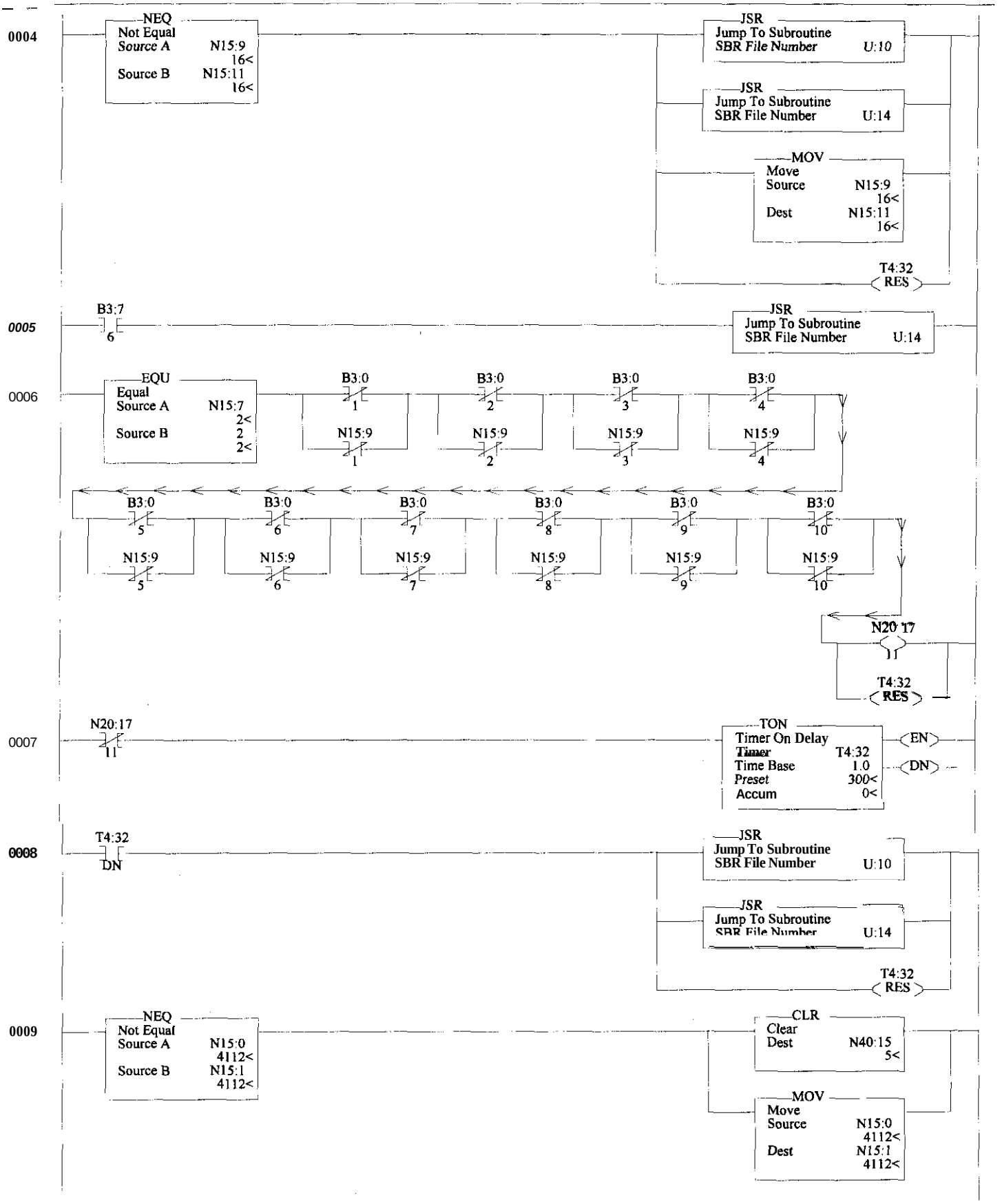
| PUMP ON/OFF FROM DTAM



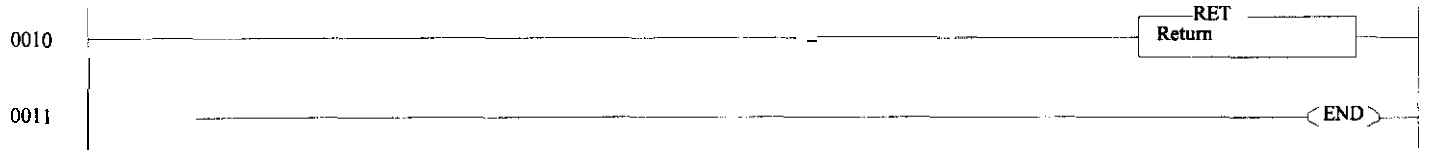
LAD 12 - --- Total Rungs in File = 12



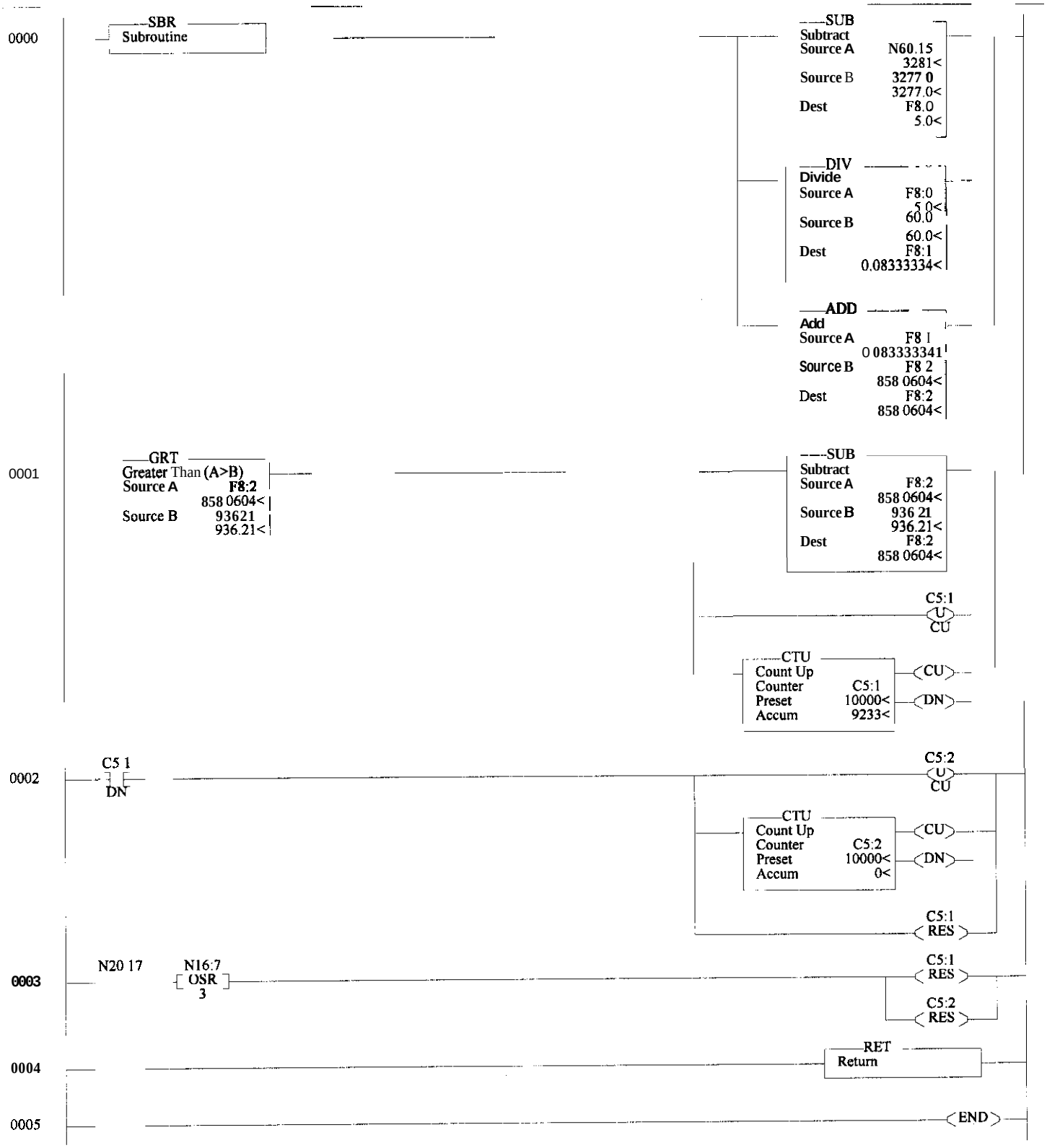
LAD 12 - --- Total Rungs in **File** = 12



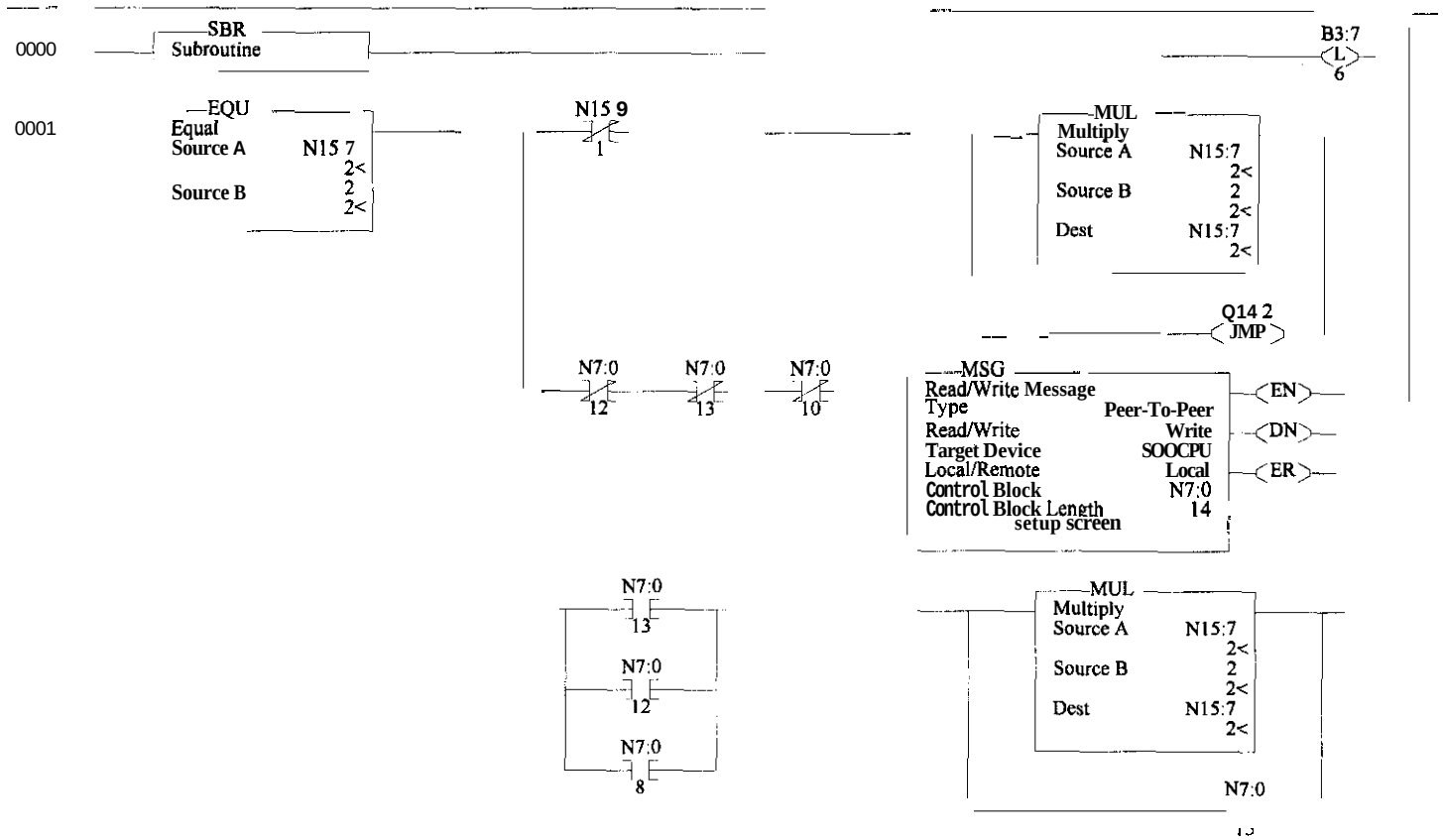
LAD 12 - --- Total Rungs in **File** = 12



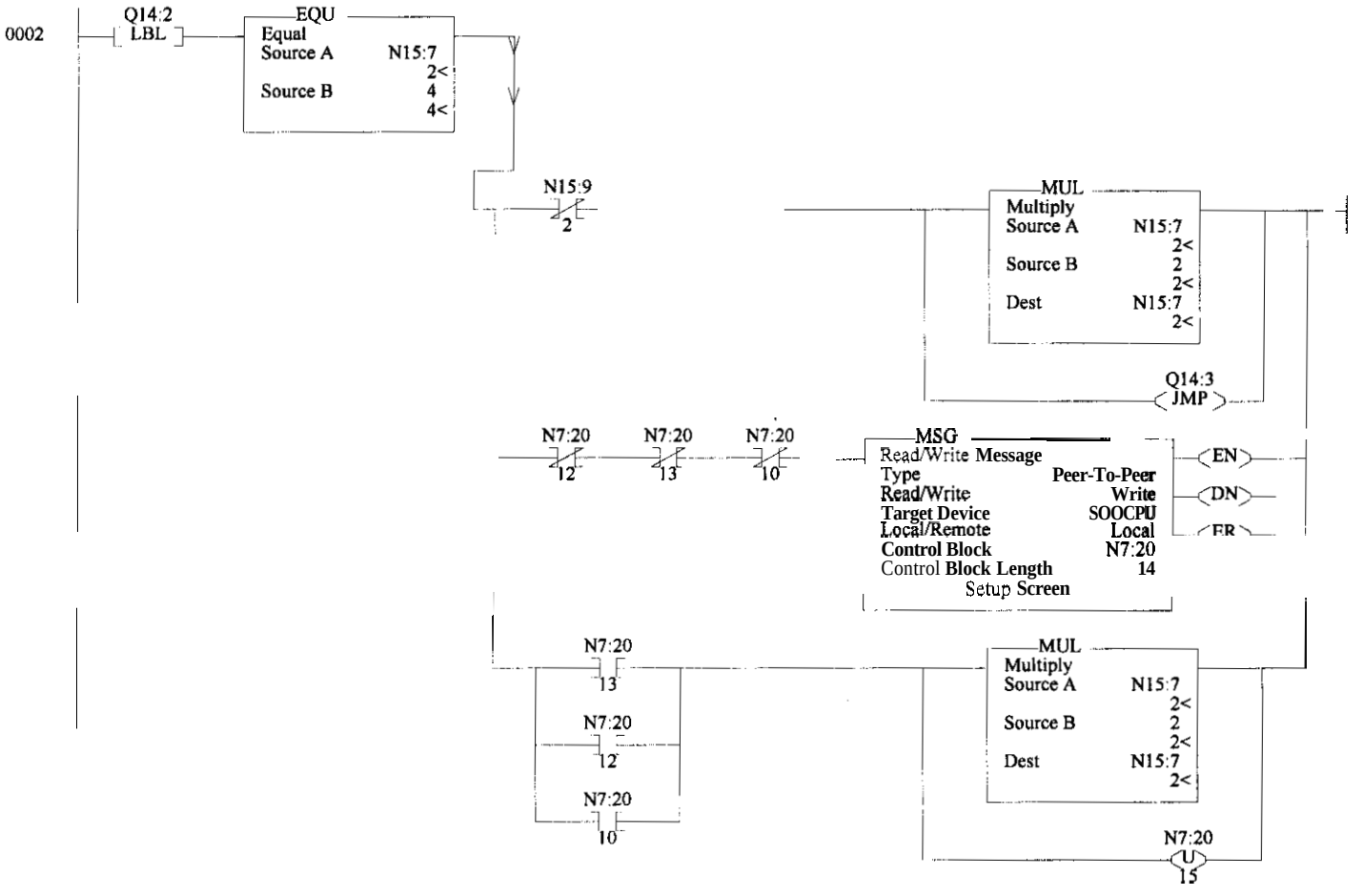
LAD 13 - --- Total Rungs in File = 6



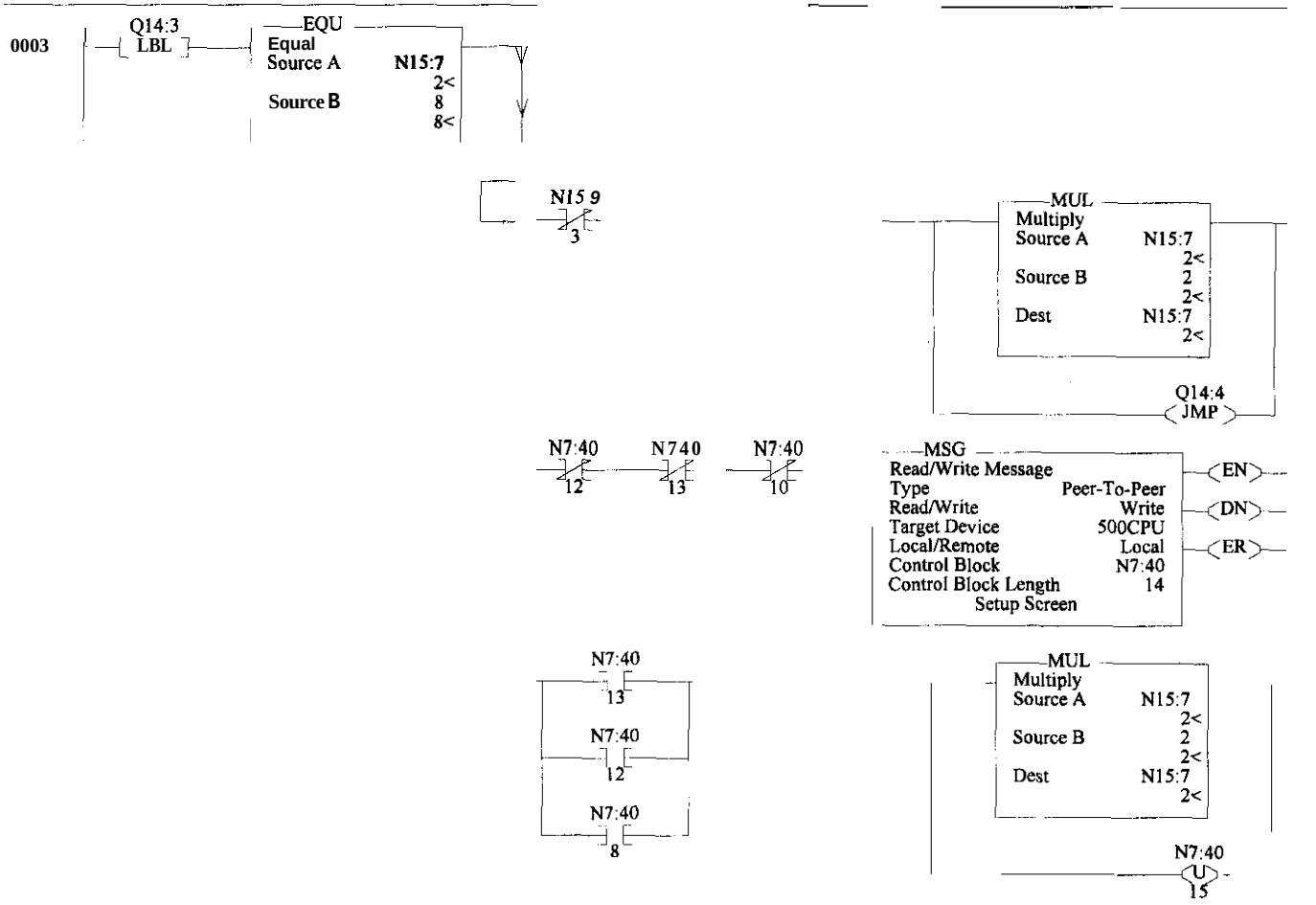
LAD 14 - --- Total Rungs in File = 14



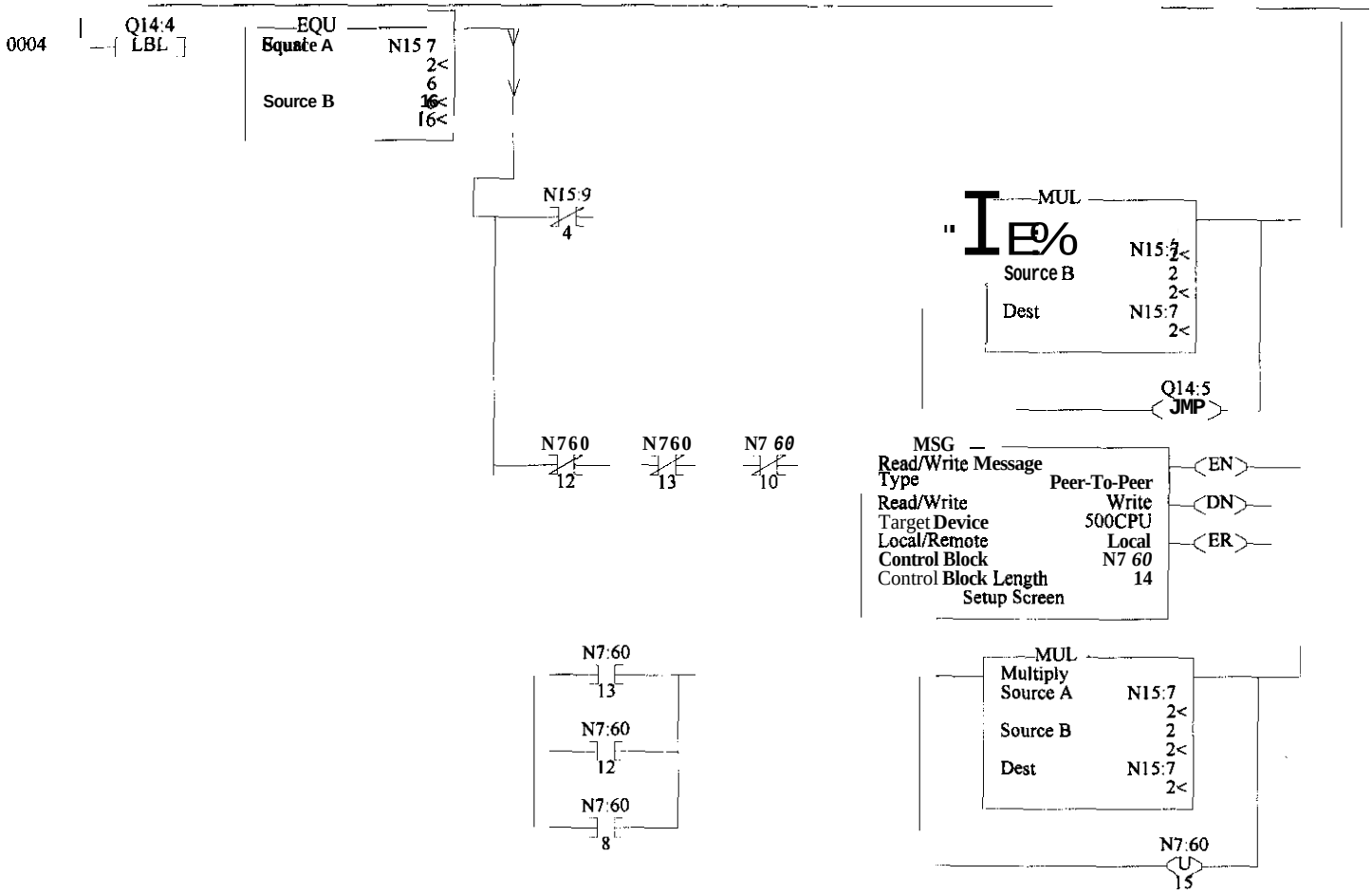
LAD 14 - --- Total **Rungs in File** = **14**



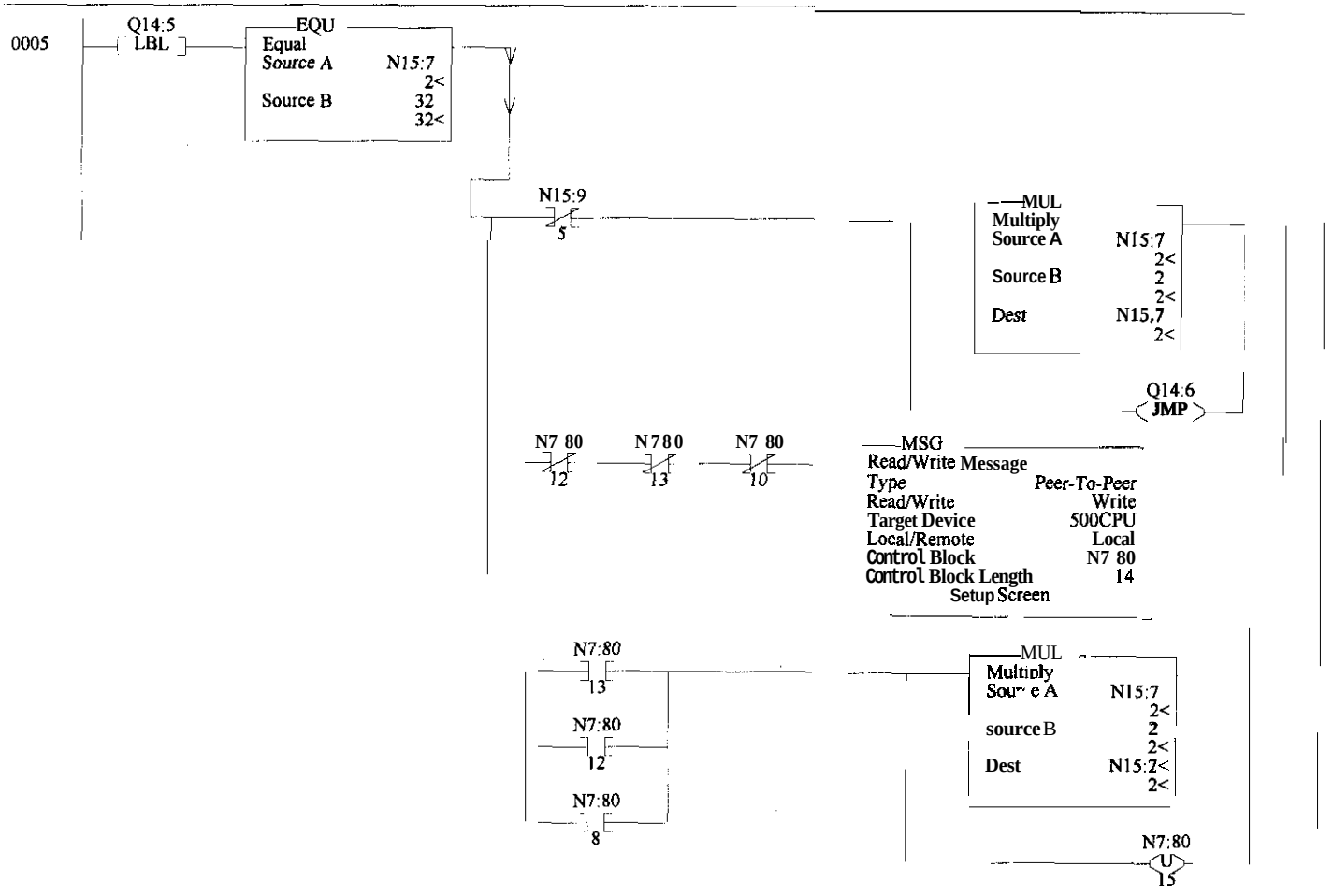
LAD 14 - --- Total **Rungs** in File = 14



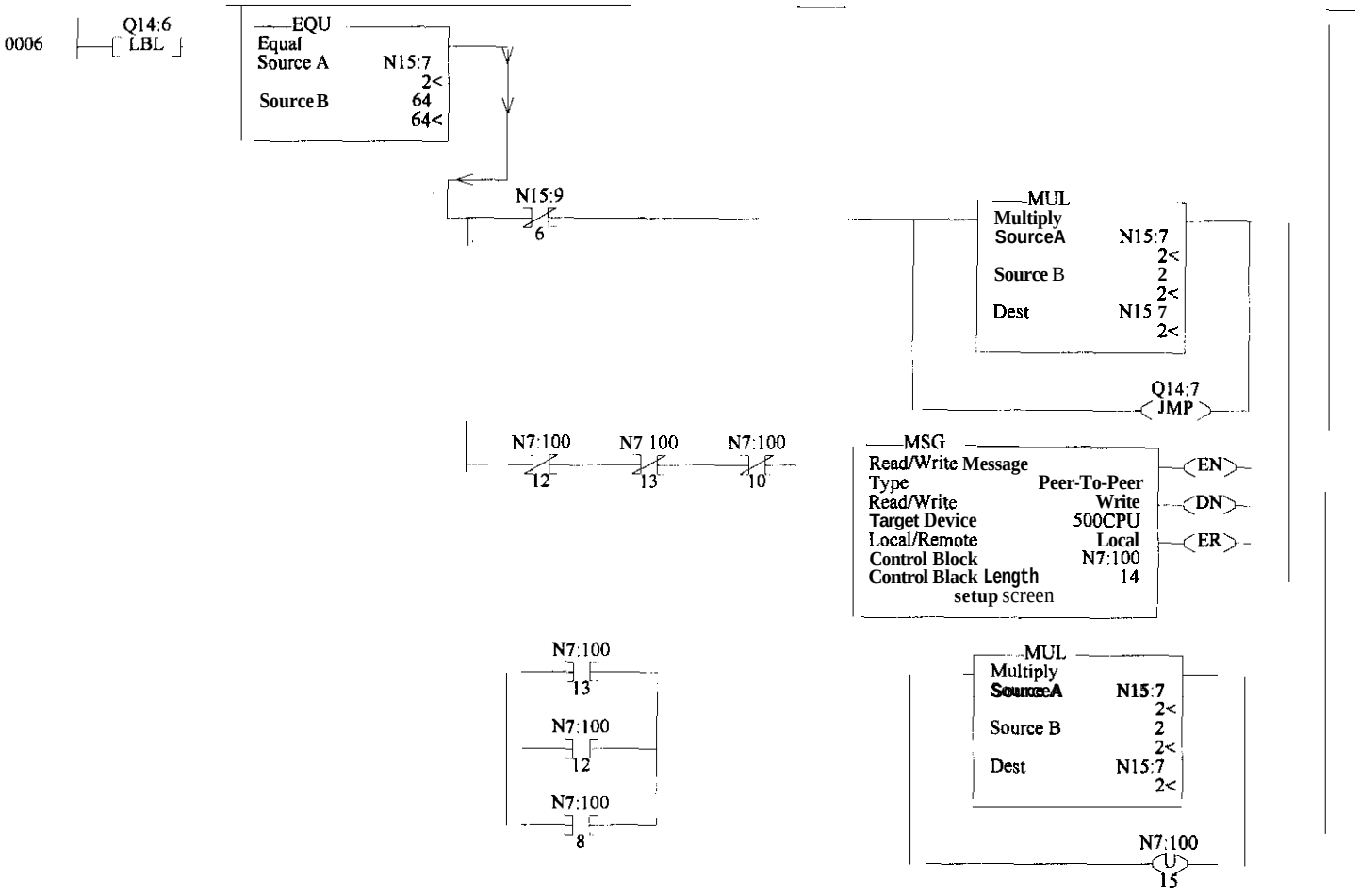
LAD 14 - --- Total Rungs in File = 14

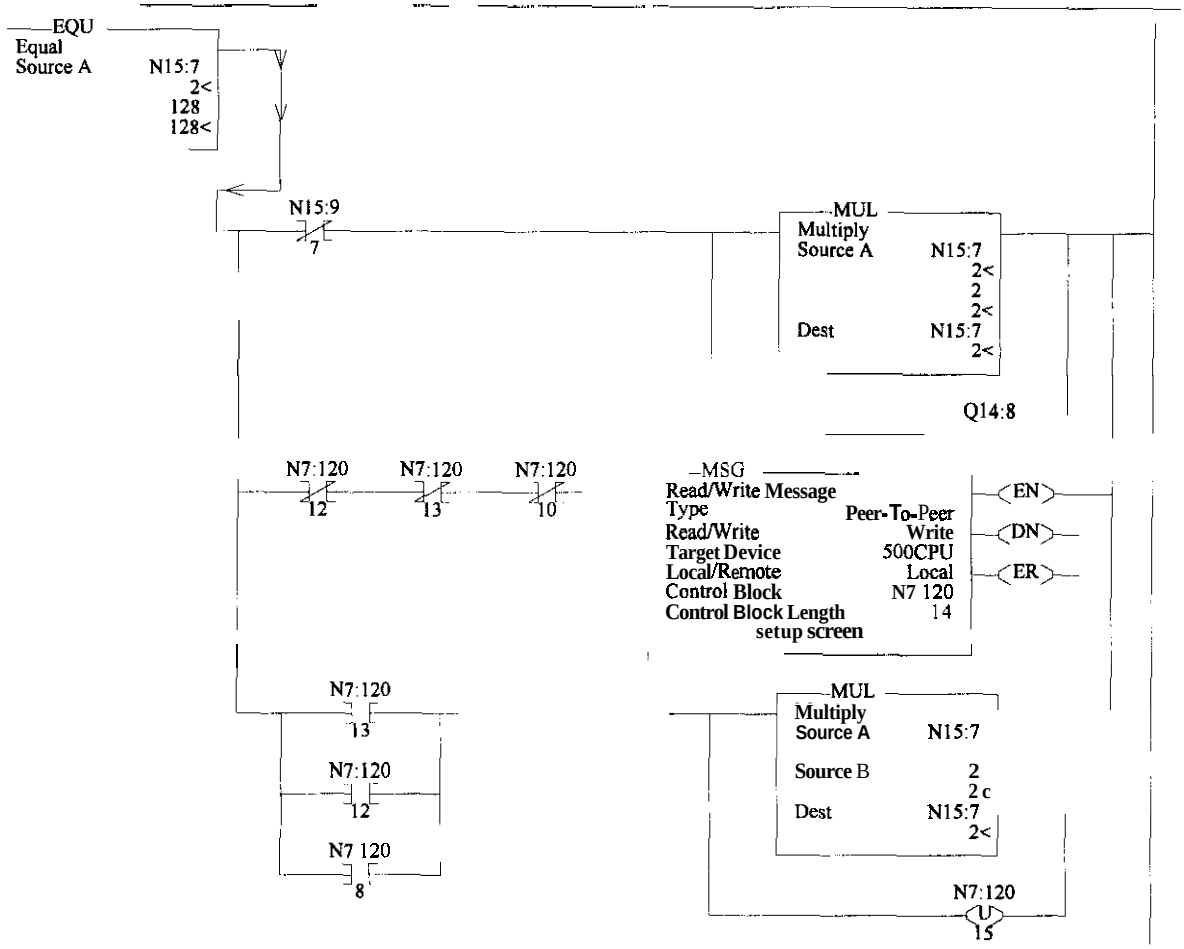


LAD 14 - --- *Total Rungs in File* = 14

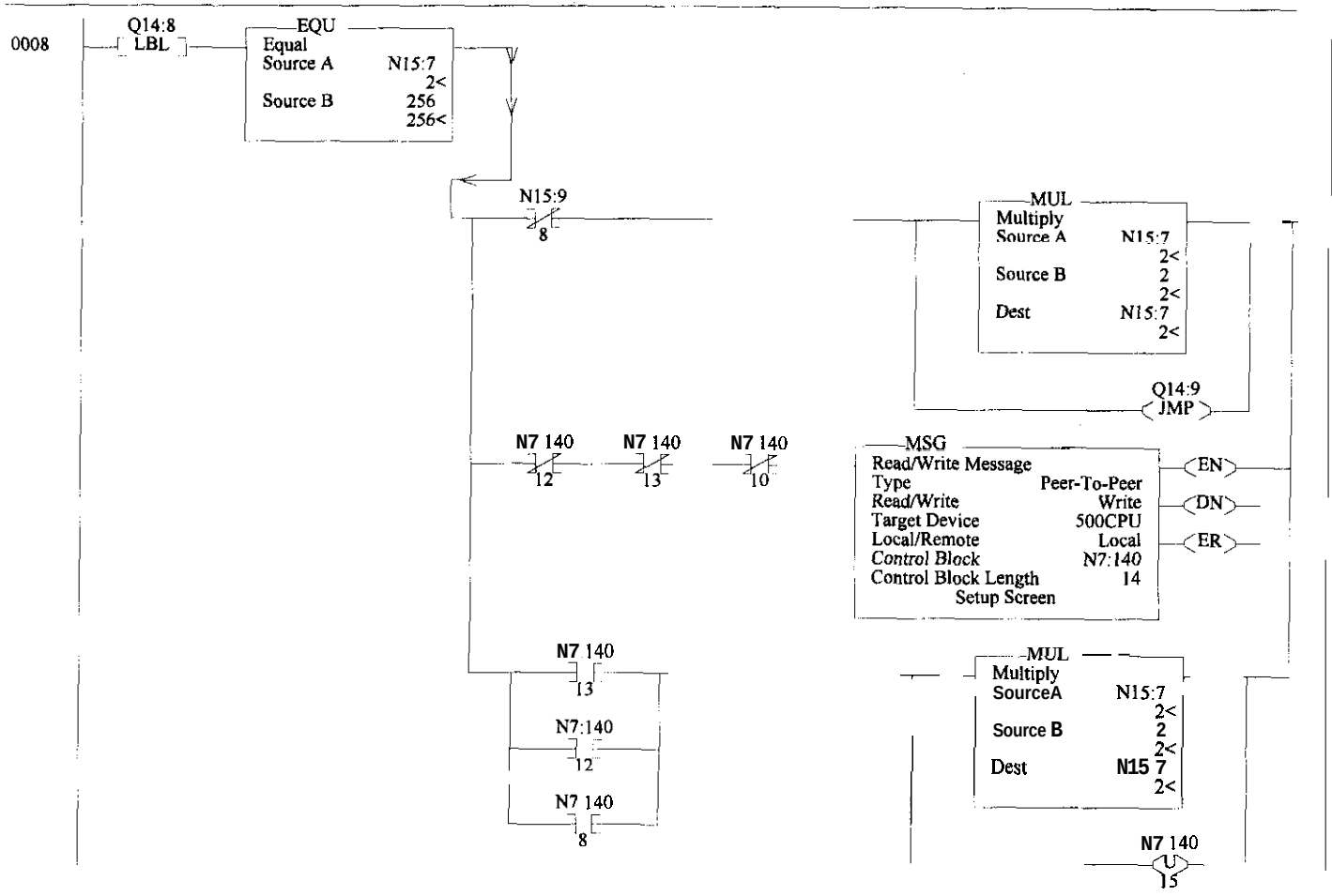


LAD 14 - --- Total Rungs in File = 14

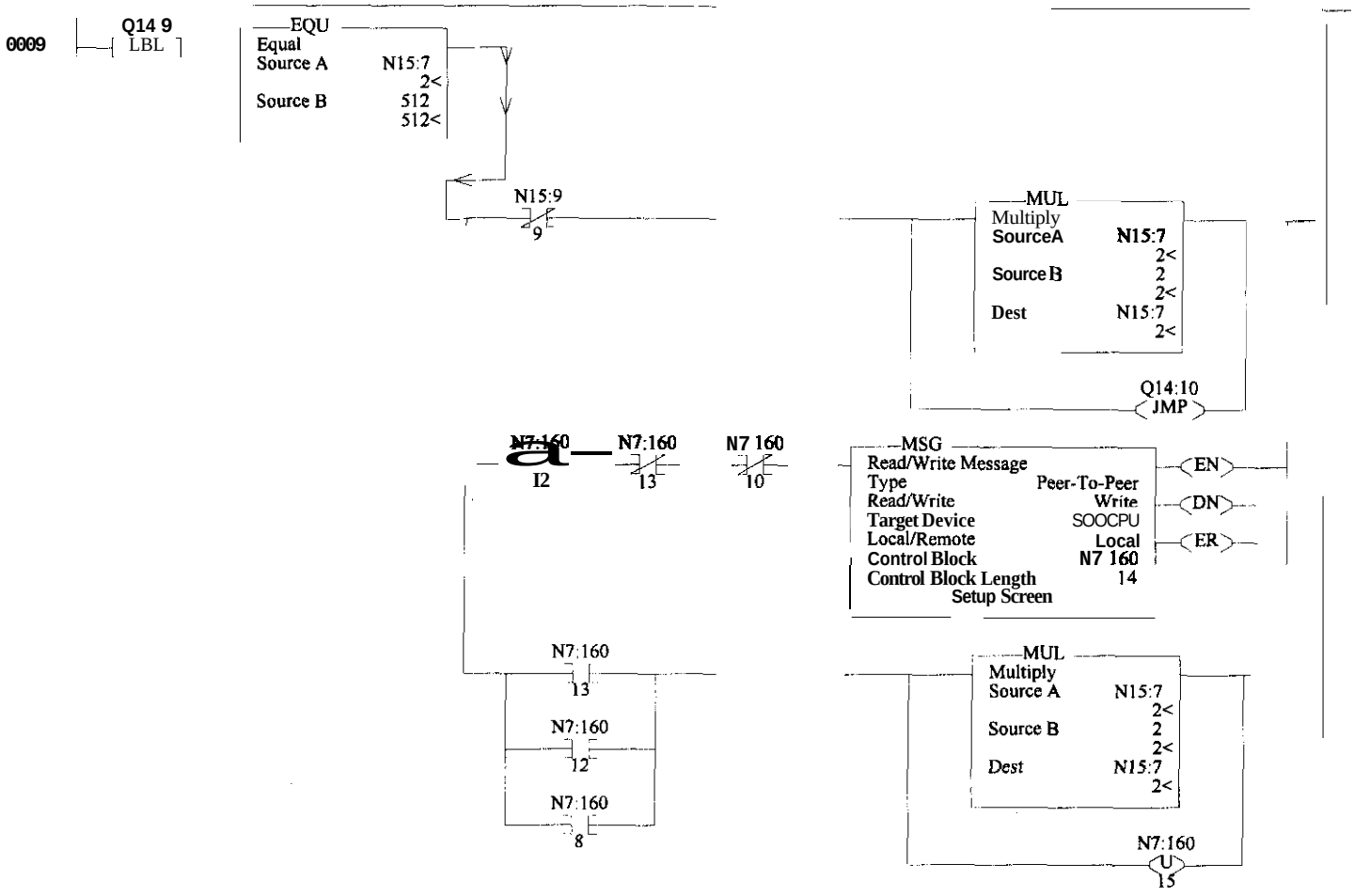



EQU
Equal
Source A
N15:7
2<
128
128<
N15:9
7
MUL
Multiply
Source A
N15:7
2<
2
2<
Dest
N15:7
2<
Q14:8
N7:120
12
N7:120
13
N7:120
10
MSG
Read/Write Message
Type
Peer-To-Peer
Read/Write
Write
Target Device
500CPU
Local/Remote
Local
Control Block
N7 120
Control Block Length
14
setup screen
EN
DN
ER
N7:120
13
N7:120
12
N7 120
8
MUL
Multiply
Source A
N15:7
Source B
2
2 c
Dest
N15:7
2<
N7:120
U
15

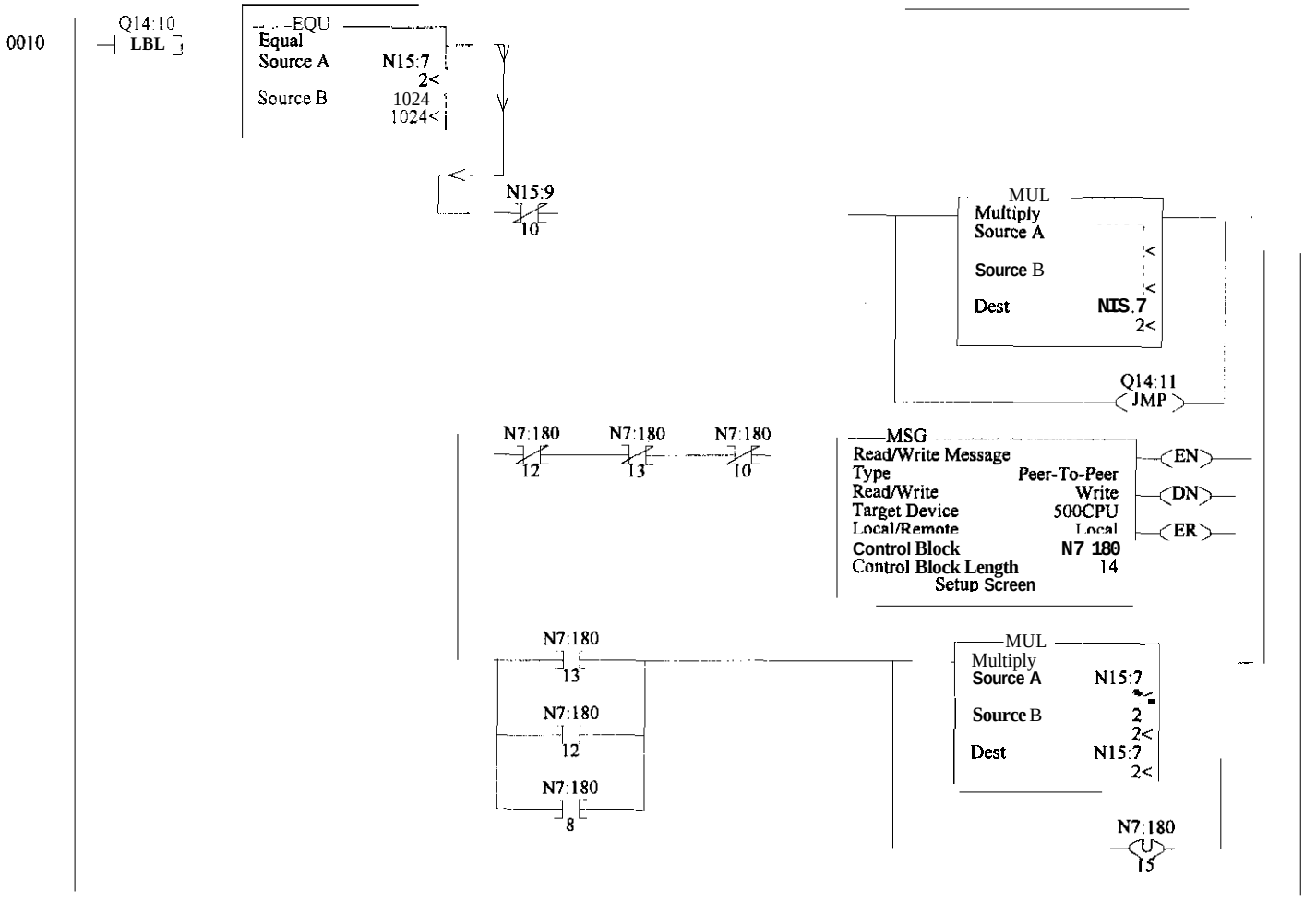
LAD 14 - --- Total Rungs in File = 14



LAD **14** - **--- Total** Rungs in **File** = 14

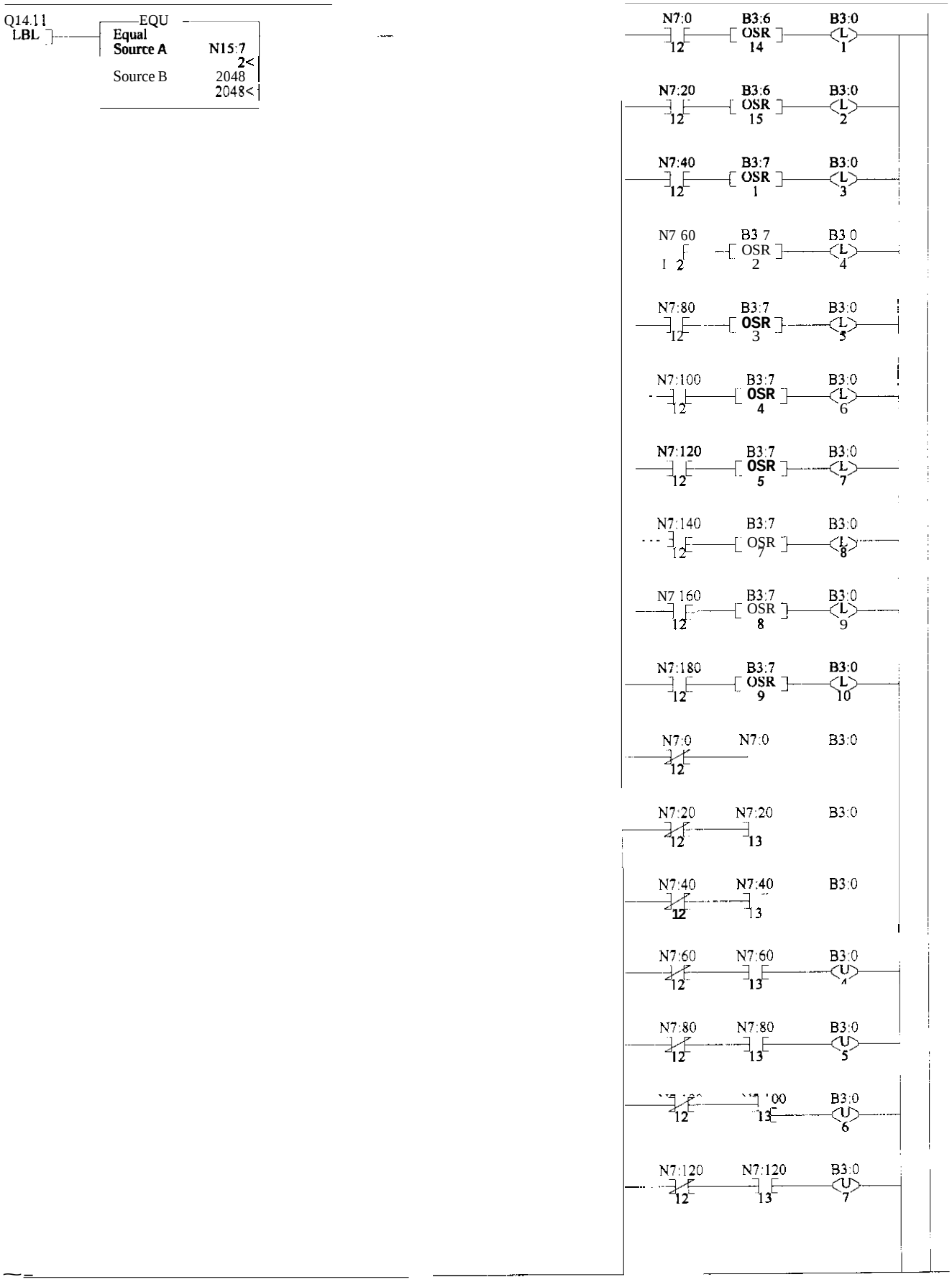


LAD 14 - **--- Total** Rungs in File = 14

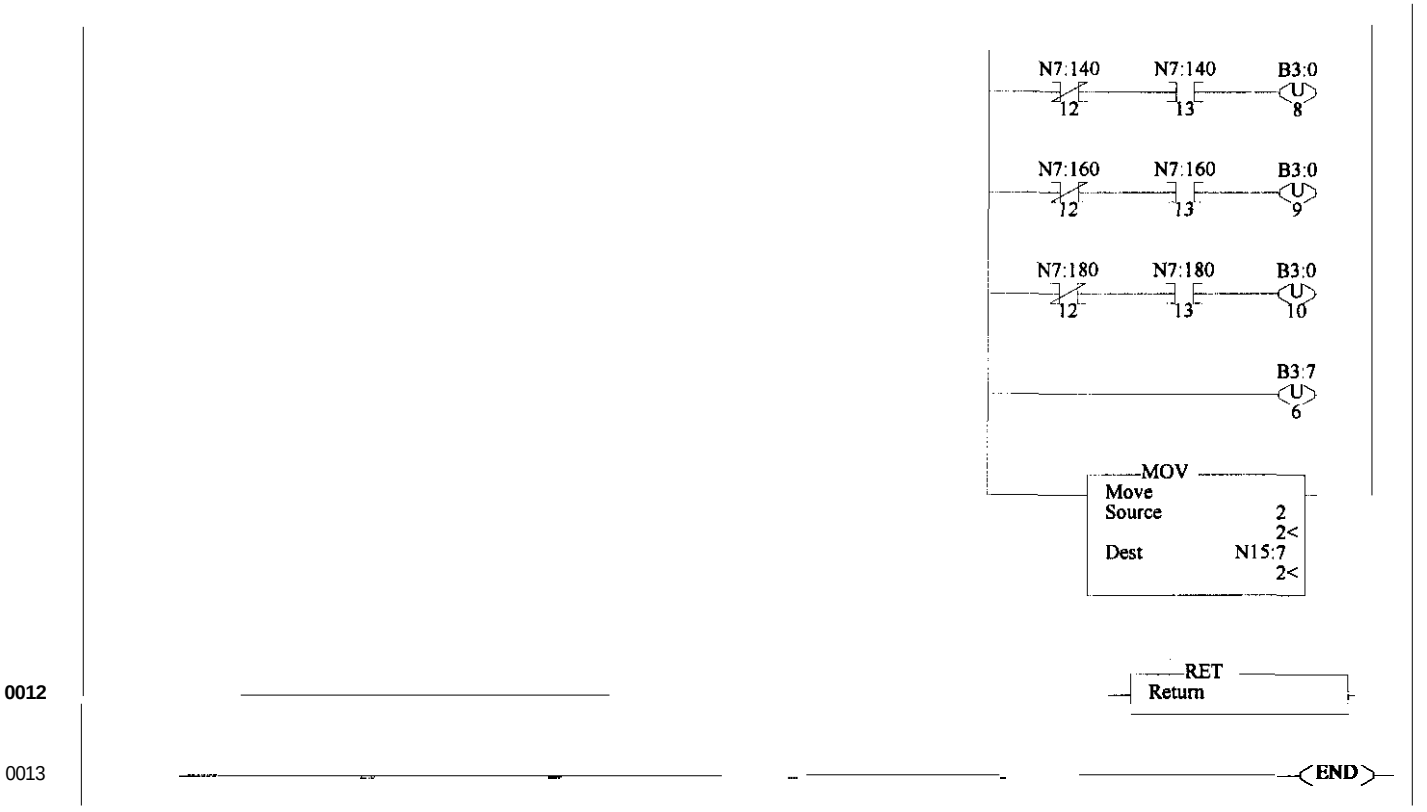


LAD 14 - **--- Total Rungs** in **File** = 14

0011



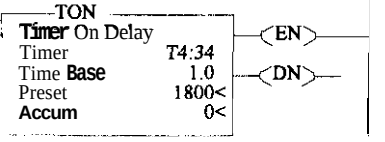
LAD 14 - --- Total Rungs in File = 14



\-101 **SHUTDOWN** AND JR-I NOT IN PRIME POSITION, START 30 MIN TIMER

0000

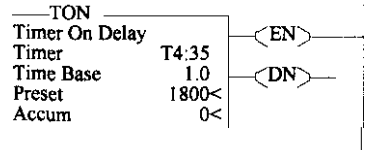



:MERG SKID SHUTDOWN AND JR-1 NOT IN PRIME POSITION, START 30 MIN TIMER

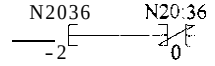
0001

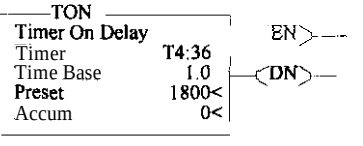


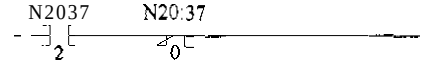

.X-101 SHUTDOWN AND JR-1 NOT IN PRIME POSITION, START 30 MIN TIMER

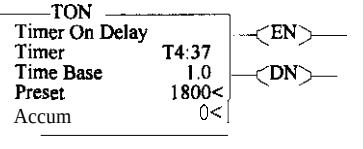
0002



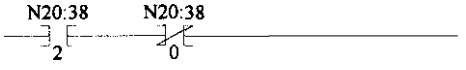



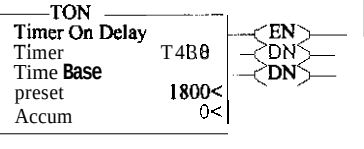

0003



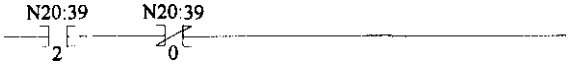



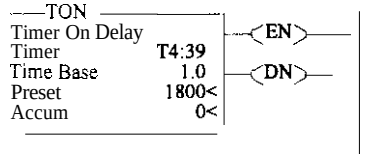

0004



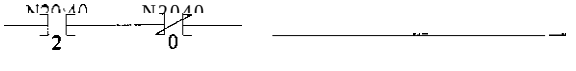



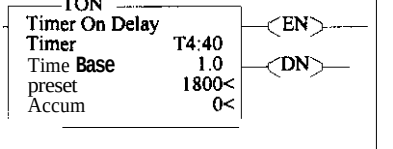

0005



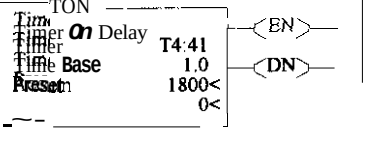

0006



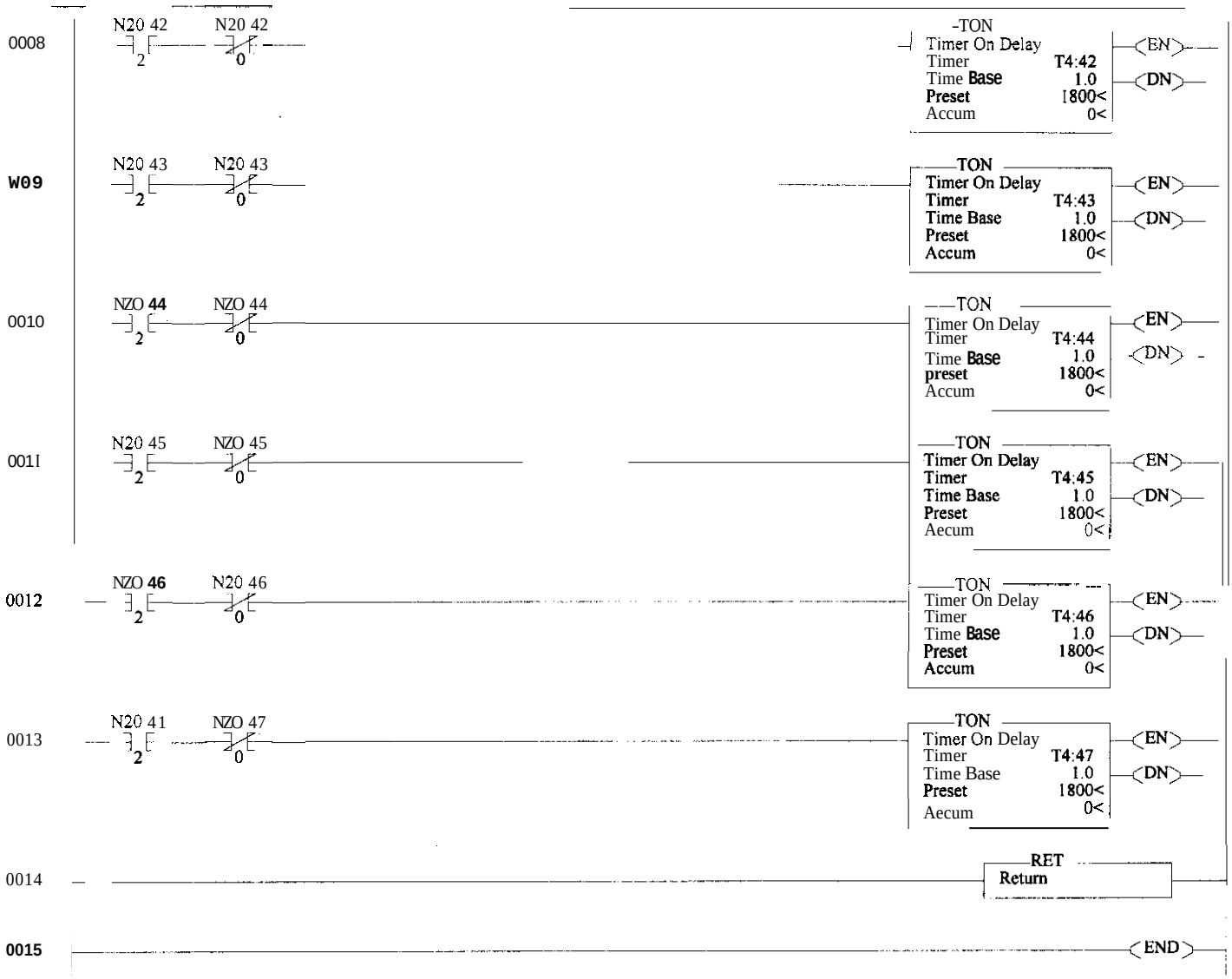




0007

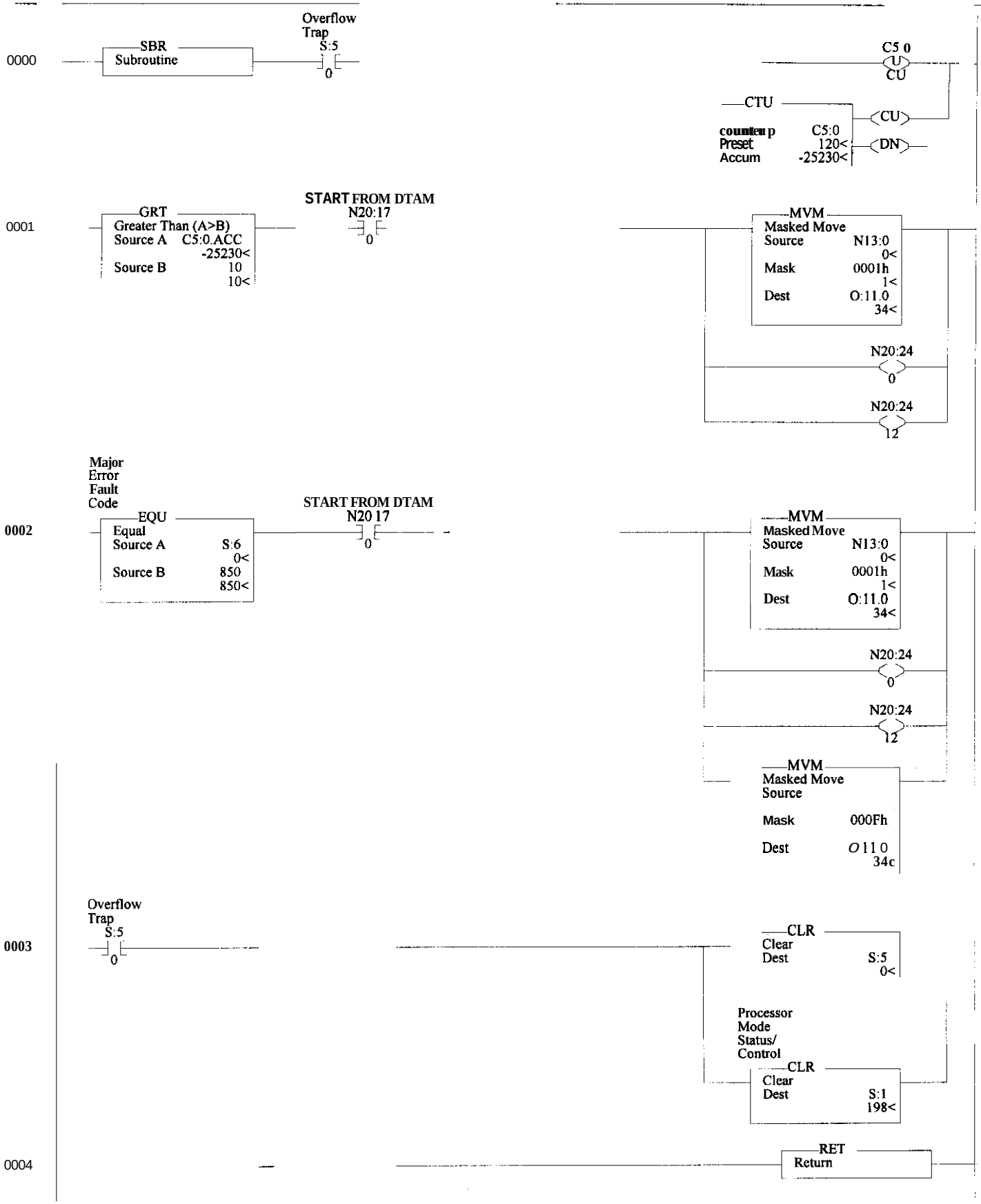


LAD 15 - --- Total Rungs *in* File = 16



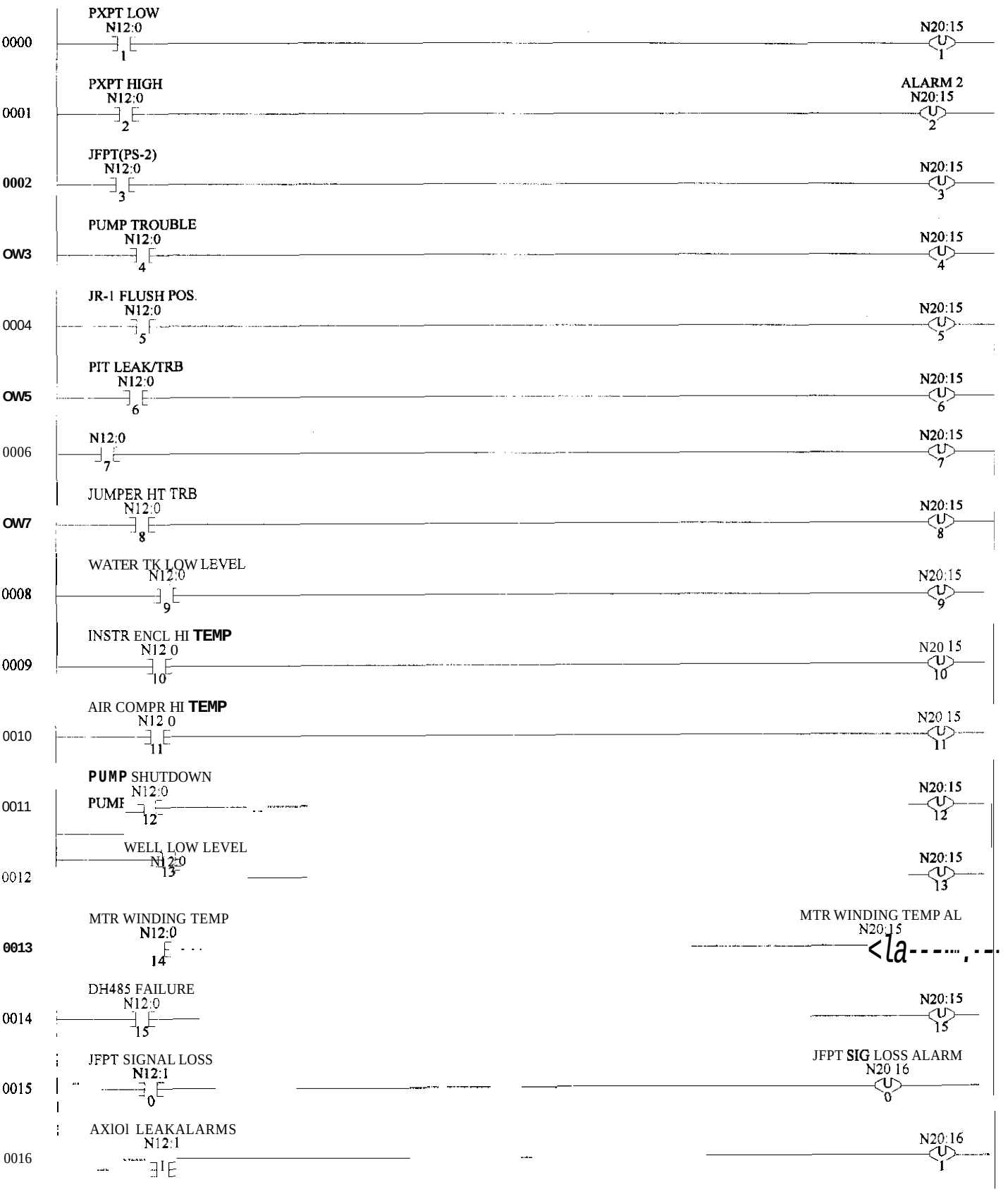
LAD 16 - --- Total Rungs in File = 6

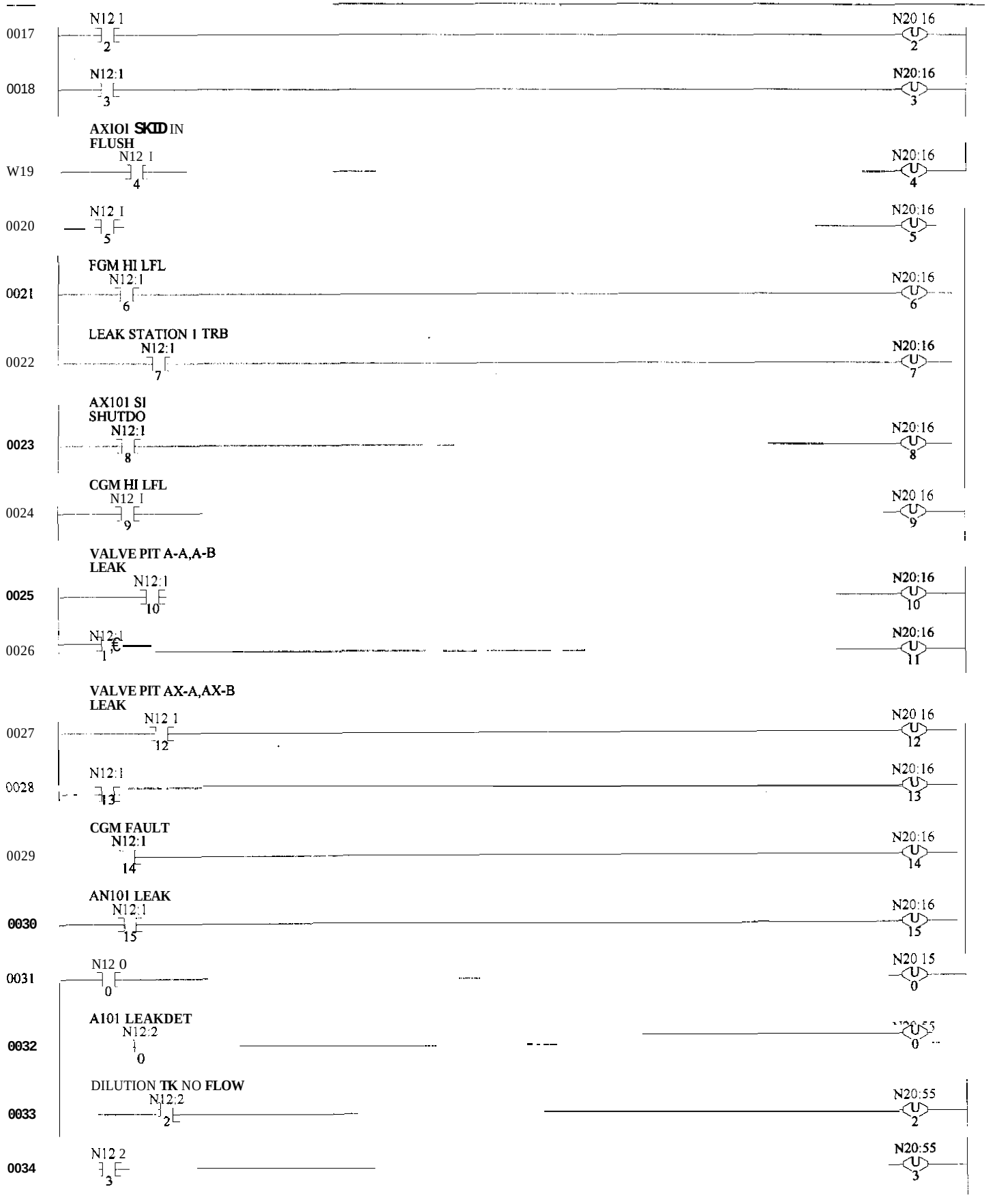


LAD **16** - **---** Total Rungs in **File** = *6*

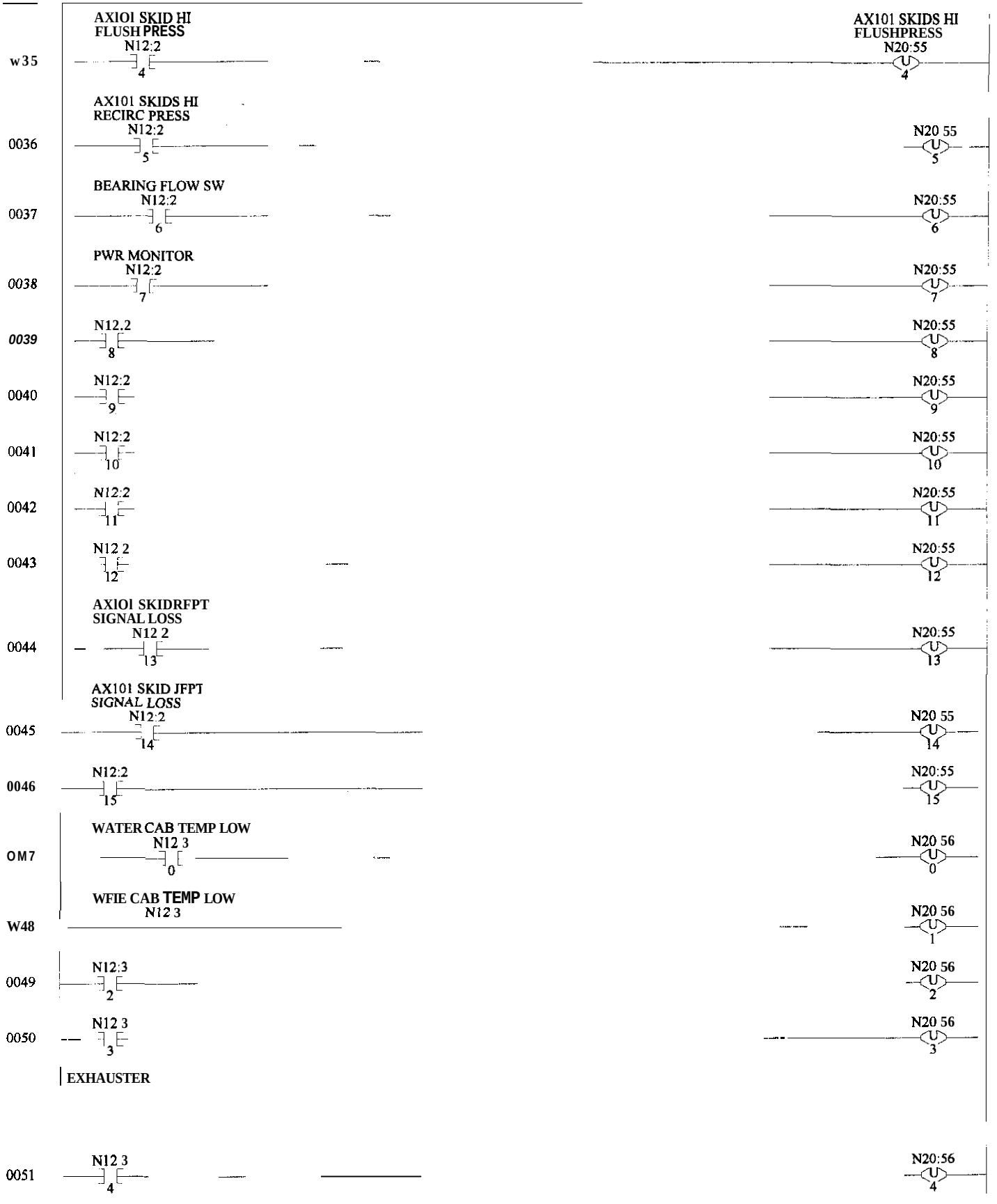


LAD 17 - --- Total **Rungs in File** = *65*

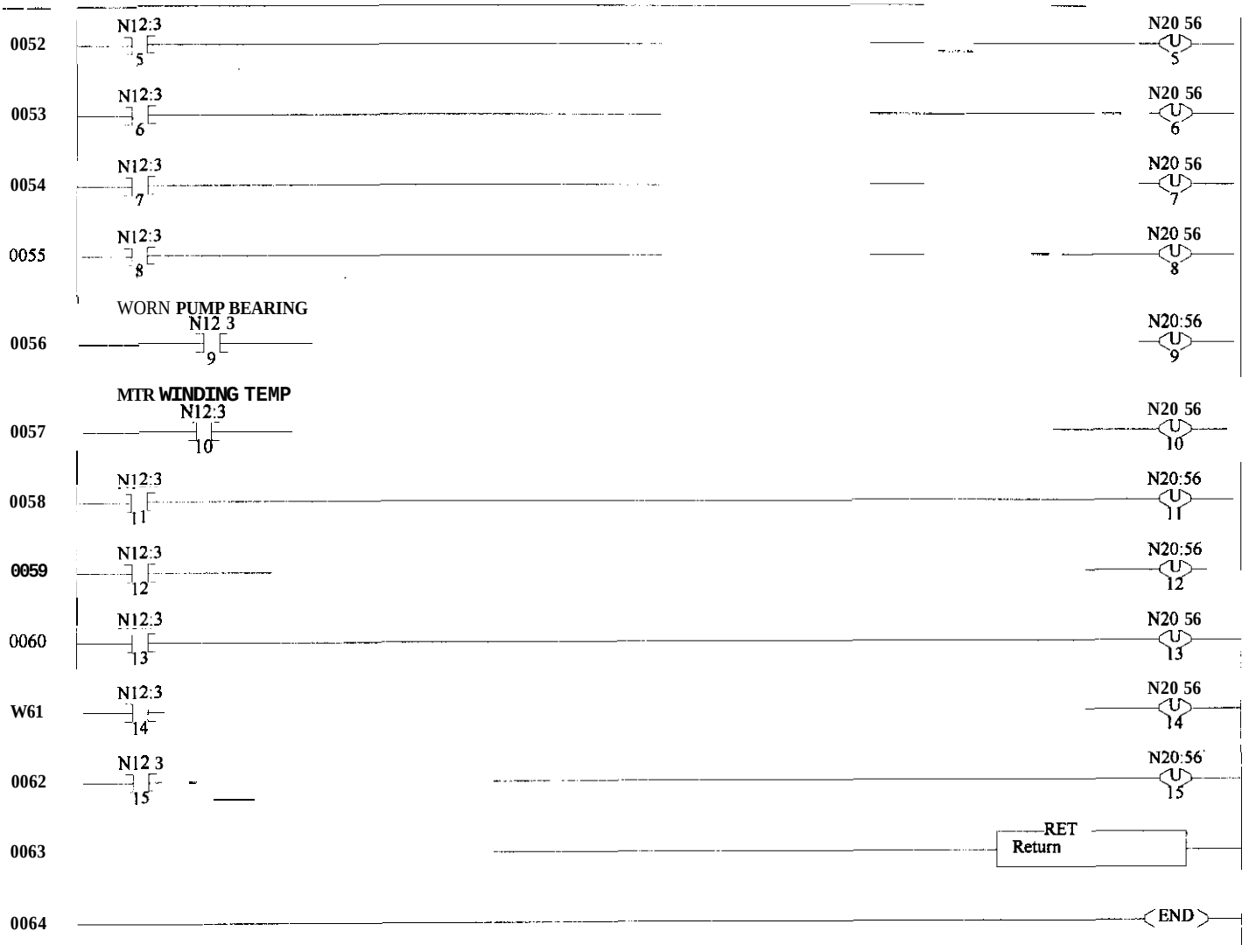



0017
N12 1
2
N20 16
2
0018
N12:1
3
N20:16
3
AX101 SKID IN FLUSH
W19
N12 I
4
N20:16
4
0020
N12 I
5
N20:16
5
FGM HI LFL
0021
N12:1
6
N20:16
6
LEAK STATION 1 TRB
0022
N12:1
7
N20:16
7
AX101 SI SHUTDO
0023
N12:1
8
N20:16
8
CGM HI LFL
0024
N12 I
9
N20 16
9
VALVE PIT A-A,A-B LEAK
0025
N12:1
10
N20:16
10
0026
N12:1
11
N20:16
11
VALVE PIT AX-A,AX-B LEAK
0027
N12 1
12
N20 16
12
0028
N12:1
13
N20:16
13
CGM FAULT
0029
N12:1
14
N20:16
14
AN101 LEAK
0030
N12:1
15
N20:16
15
0031
N12 0
0
N20 15
0
A101 LEAKDET
0032
N12:2
0
0
DILUTION TK NO FLOW
0033
N12:2
2
N20:55
2
0034
N12 2
3
N20:55
3

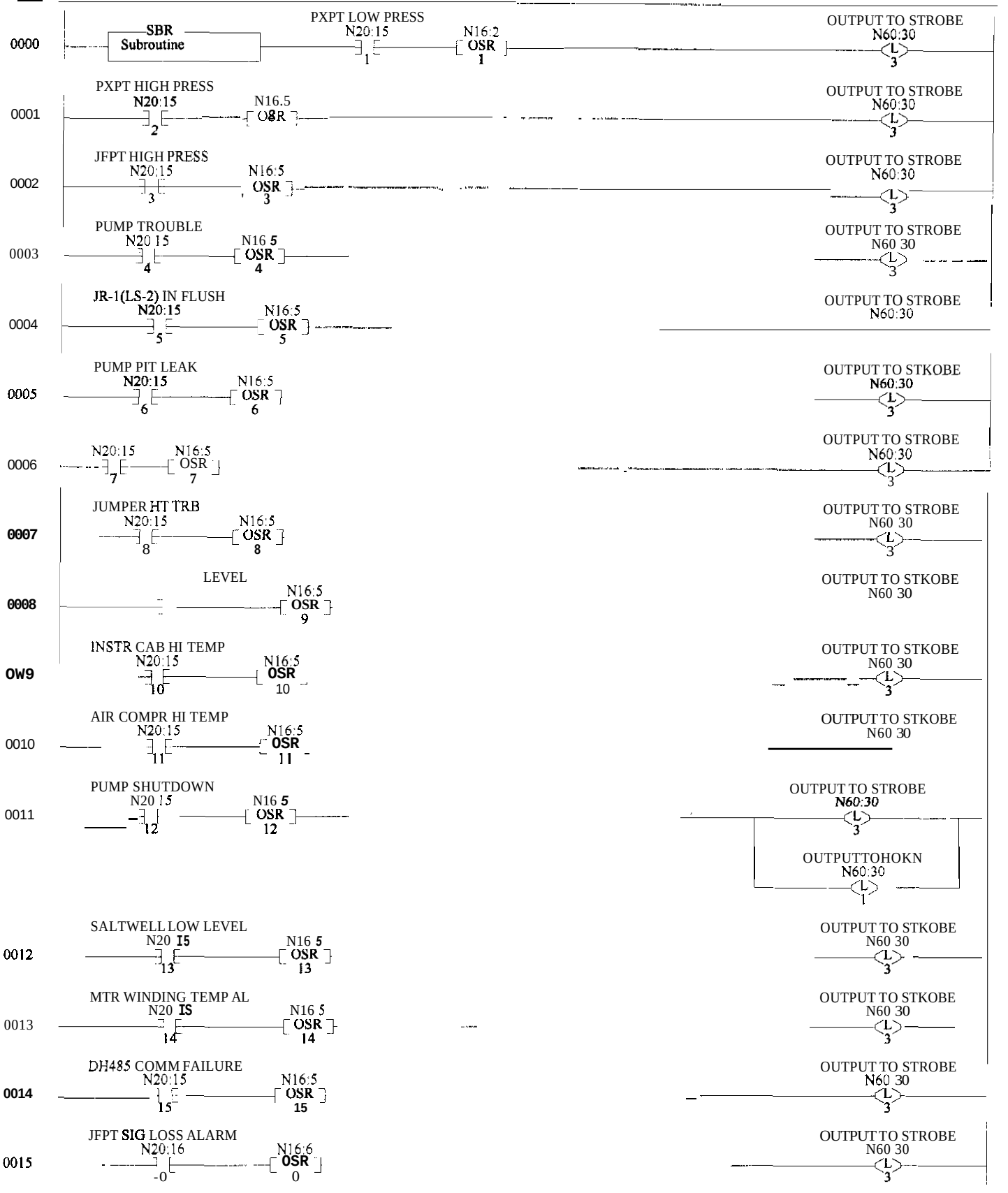
LAD 17 - --- Total Rungs in File = 65

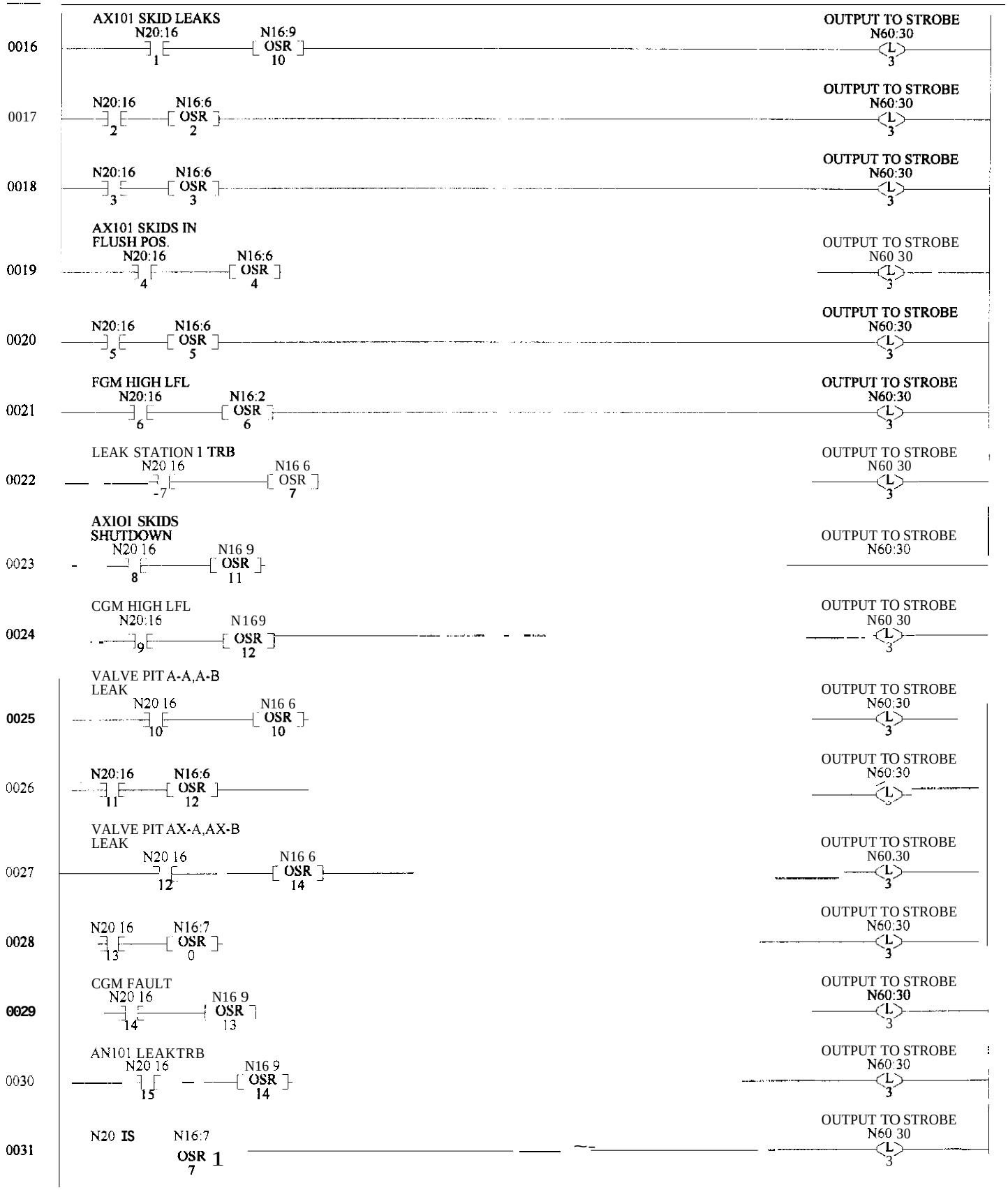


LAD 17 - --- Total Rungs in File = 65

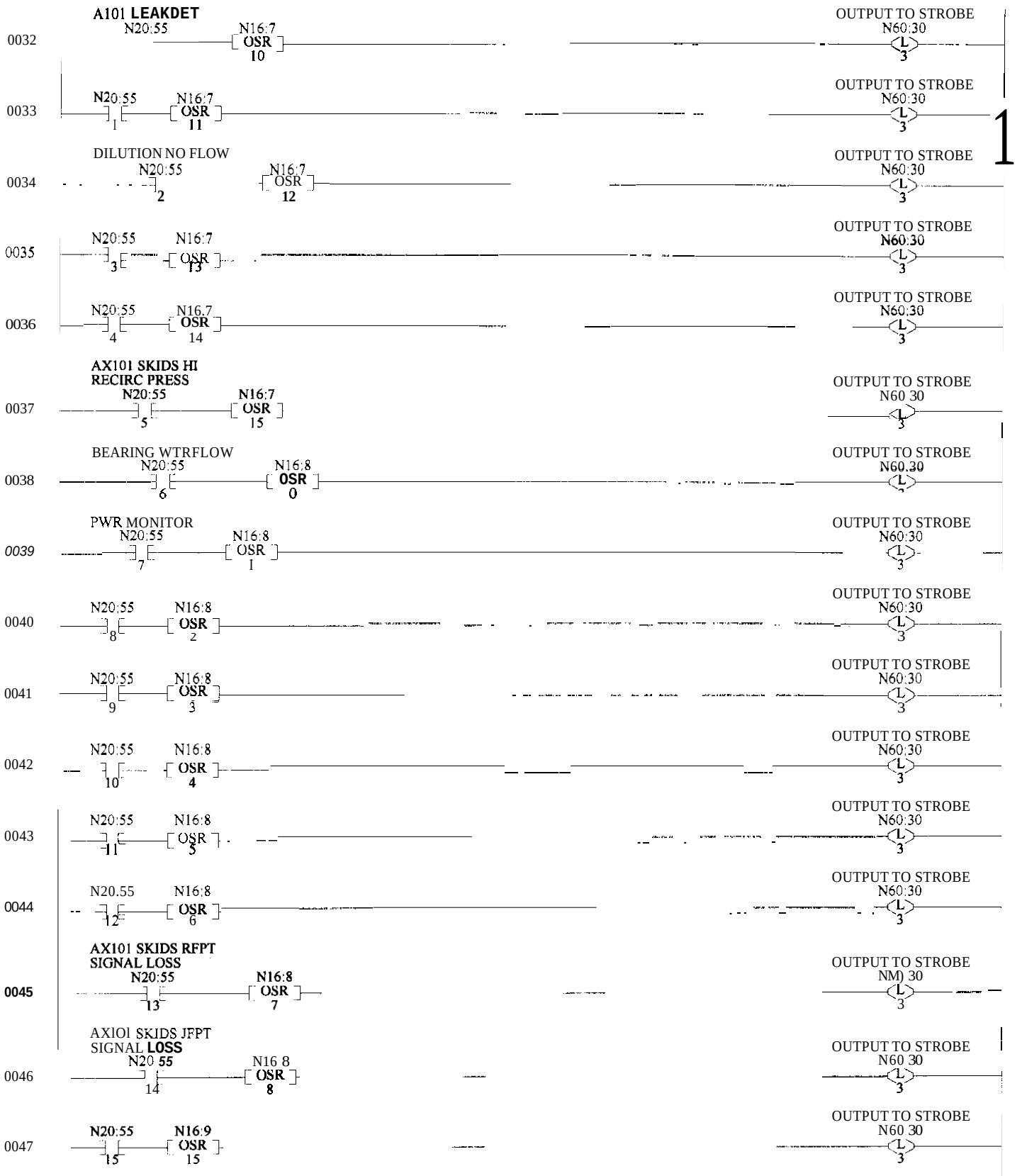


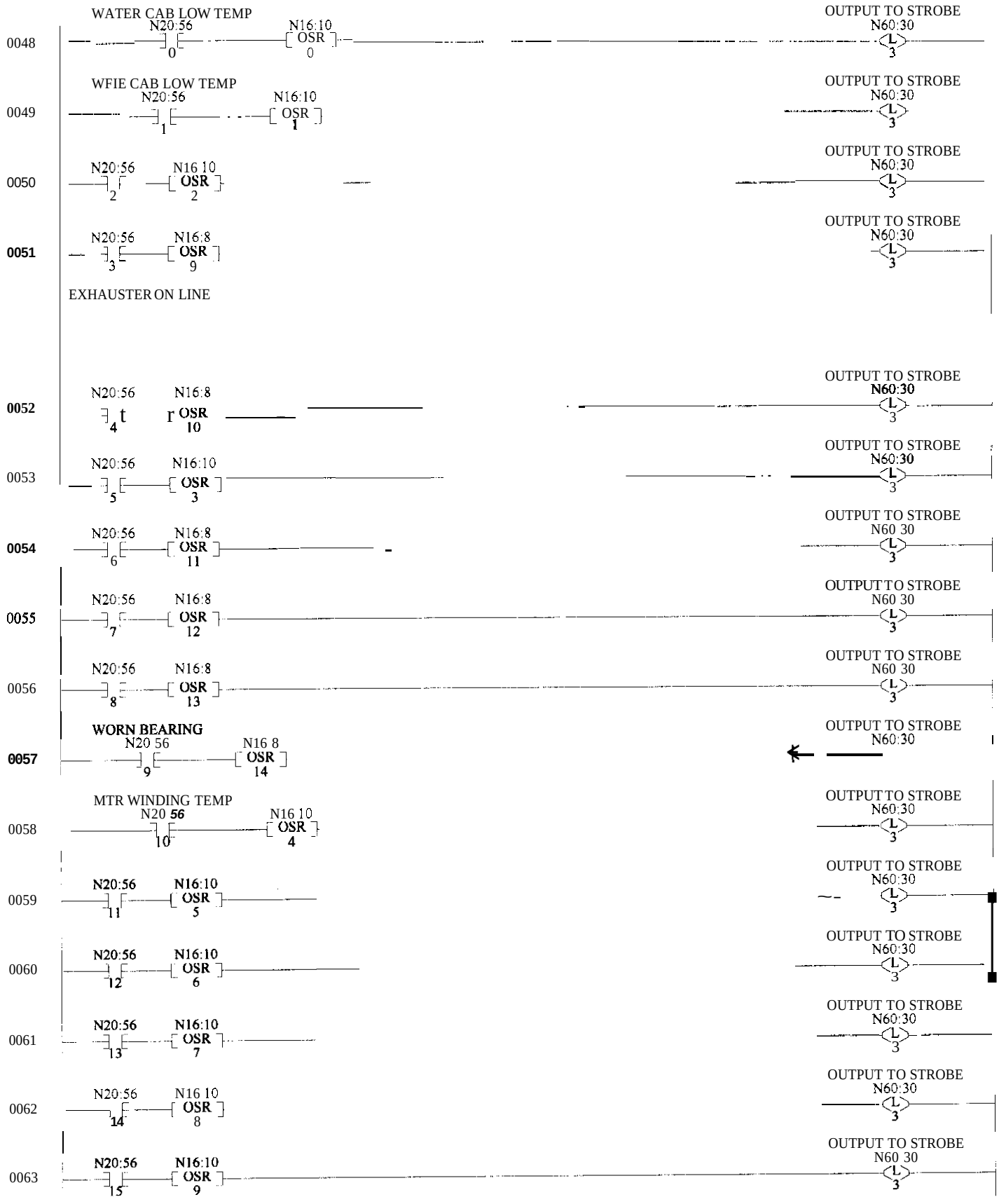
LAD 18 - --- Total Rungs in File = 70




0016
AX101 SKID LEAKS
N20:16
1
N16:9
OSR
10
OUTPUT TO STROBE
N60:30
L
3
0017
N20:16
2
N16:6
OSR
2
OUTPUT TO STROBE
N60:30
L
3
0018
N20:16
3
N16:6
OSR
3
OUTPUT TO STROBE
N60:30
L
3
0019
AX101 SKIDS IN
FLUSH POS.
N20:16
4
N16:6
OSR
4
OUTPUT TO STROBE
N60 30
L
3
0020
N20:16
5
N16:6
OSR
5
OUTPUT TO STROBE
N60:30
L
3
0021
FGM HIGH LFL
N20:16
6
N16:2
OSR
6
OUTPUT TO STROBE
N60:30
L
3
0022
LEAK STATION 1 TRB
N20 16
7
N16 6
OSR
7
OUTPUT TO STROBE
N60 30
L
3
0023
AXIOI SKIDS
SHUTDOWN
N20 16
8
N16 9
OSR
11
OUTPUT TO STROBE
N60:30
0024
CGM HIGH LFL
N20:16
9
N169
OSR
12
OUTPUT TO STROBE
N60 30
L
3
0025
VALVE PIT A-A,A-B
LEAK
N20 16
10
N16 6
OSR
10
OUTPUT TO STROBE
N60:30
L
3
0026
N20:16
11
N16:6
OSR
12
OUTPUT TO STROBE
N60:30
L
0027
VALVE PIT AX-A,AX-B
LEAK
N20 16
12
N16 6
OSR
14
OUTPUT TO STROBE
N60.30
L
3
0028
N20 16
13
N16:7
OSR
0
OUTPUT TO STROBE
N60:30
L
3
0029
CGM FAULT
N20 16
14
N16 9
OSR
13
OUTPUT TO STROBE
N60:30
L
3
0030
AN101 LEAKTRB
N20 16
15
N16 9
OSR
14
OUTPUT TO STROBE
N60:30
L
3
0031
N20 IS
N16:7
OSR 1
7
OUTPUT TO STROBE
N60 30
L
3

LAD 18 - --- Total Rungs in File = 70




0048
WATER CAB LOW TEMP
N20:56
0
N16:10
OSR
0
OUTPUT TO STROBE
N60:30
L
3
0049
WFIE CAB LOW TEMP
N20:56
1
N16:10
OSR
1
OUTPUT TO STROBE
N60:30
L
3
0050
N20:56
2
N16 10
OSR
2
OUTPUT TO STROBE
N60:30
L
3
0051
N20:56
3
N16:8
OSR
9
OUTPUT TO STROBE
N60:30
L
3
EXHAUSTER ON LINE
0052
N20:56
4
N16:8
OSR
10
OUTPUT TO STROBE
N60:30
L
3
0053
N20:56
5
N16:10
OSR
3
OUTPUT TO STROBE
N60:30
L
3
0054
N20:56
6
N16:8
OSR
11
OUTPUT TO STROBE
N60 30
L
3
0055
N20:56
7
N16:8
OSR
12
OUTPUT TO STROBE
N60 30
L
3
0056
N20:56
8
N16:8
OSR
13
OUTPUT TO STROBE
N60 30
L
3
WORN BEARING
0057
N20 56
9
N16 8
OSR
14
OUTPUT TO STROBE
N60:30
L
3
MTR WINDING TEMP
0058
N20 56
10
N16 10
OSR
4
OUTPUT TO STROBE
N60:30
L
3
0059
N20:56
11
N16:10
OSR
5
OUTPUT TO STROBE
N60:30
L
3
0060
N20:56
12
N16:10
OSR
6
OUTPUT TO STROBE
N60:30
L
3
0061
N20:56
13
N16:10
OSR
7
OUTPUT TO STROBE
N60:30
L
3
0062
N20:56
14
N16 10
OSR
8
OUTPUT TO STROBE
N60:30
L
3
0063
N20:56
15
N16:10
OSR
9
OUTPUT TO STROBE
N60 30
L
3

AMBER LIGHT CONTROL, LOW PRESS. TRANSFER SHUTDOWN

0064

CHECK IF PXPT IS LESS THAN 30PSIG

LES

Less Than (A<B)

Source A N60:18 3254<

Source B 4588 4588<

OUTPUT TO AMBER LAMP N60:31 1

RED LIGHT CONTROL, MR-I POWER ON

0065

MR-I CONTACT NM 31 6

OUTPUT TO RED LAMP N60:31 0

BLUE LIGHT CONTROL, PS-2

0066

CHECK IF IFPT IS GRT THAN 15PSIG

GRT

Greater Than (A>B)

Source A N60 17 3386<

Source B 9830 9830<

OUTPUT TO BLUE LAMP N60 31 3

GREEN LIGHT CONTROL, MR-I POWER OFF

0067

MR-I CONTACT N60 31 6

OUTPUT TO GREEN LAMP N60:31 5

0068

RET

Return

W69

LAD 19 - --- Total Rungs in File = 9

0000

SBR
Subroutine

COP
Copy File
Source #N60:4
Dest #O:2.0
Length 2

MOVE **OUTPUT** TO MODULE 2 FOR DOV

0001

SGT LOW
N20 24
13

MOV
Move
Source N13:0
0<
Dest O:2.0
0<

MOV
MOW
source N13:0
0<
DeSt N20 23
0<

MOVE **OUTPUTS** TO MODULE 6

0002

MVM
Masked Move
Source N60:20
-4033
Mask 003Fh
63<
Dest 0 6 0
63<

MOVE OUTPUTS **TO** MODULE 8

0003

MVM
Masked Move
Source N60:28
3392<
Mask 003Fh
Dest 0 8 0
0<

MOVE OUTPUTS TO MODULE 9

0004

MVM
Masked Move
Source N60:29
2762<
Mask 003Fh
63<
Dest 0 9 0
10<

LAD 19 - --- Total Rungs in File = 9

MOVE OUTPUTS TO MODULE 10

0005

MVM
Masked Move
Source N60:30 448<
Mask 003Fh 63<
Dest O:10.0 0<

MOVE OUTPUTS TO MODULE 11

0006

MVM
Masked Move
Source N60:31 290<
Mask 003Fh 63<
Dest O:11.0 34<

0007

RET
Return

0008

END

LAD 20 - ___ Total Rungs in File = 13

0000

SBR
Subroutine

MOV
Move
Source N60:15
3281<
Dest N30:0
3280<

0001

SCP
Input w/Parameters
N30 0
3280<
Input Min. 3277 00
3277.0<
Input Max. 16384 00
16384.0<
Scaled Min. 0 00
0.0<
Scaled Max. 14.0
14.0<
Output F8:20
0.003204395<

Calculate Total dilution ratio.

0002

MUL
Multiply
Source A F8:20
0.003204395<
Source B N30:3
50<
Dest F8:21
0.0<

Calculate total dilution ratio

0003

DIV
Divide
Source A
Source B 100 0
100.0<
Dest F8.21
0.0<

Metering pump flaw range will not be less than min. total dilution flow

0004

LES
Less Than (A<B)
Source A F8:21
0.0<
Source B F8:23
0.0<

MOV
Move
Source F823
0.0<
Dest F8:21
0.0<

Metering pump flow range will not be greater than Max total dilution flow.

0005

GRT
Greater Than (A>B)
Source A F8:21
0.0<
Source B F824
0.0<

MOV
Move
Source F8:24
0.0<
Dest F8:21
0.0<

Metering pump flow=Dilution flow - injection flaw.

0006

SUB
Subtract
Source A F8:21 0.0<
Source B F90:3 0.35<
Dest F8:22 -0.35<

If metering pump flow is greater than 0.04gpm then turn on metering pump.

0007

GEQ
Grtr Than or Eql (A>=B)
Source A F8:22 -0.35<
Source B 0.04 0.04<

DIL CONTACTOR
N60 28
1

Metering pump flaw max is 4.0gpm.

WOn

GEQ
Grtr Than or Eql (A>=B)
Source A F8:22 -0 35<
Source B 4 0 4 0<

MOV
Move
Source 4.0 4.0<
Dest F8:22 -0.35<

Scaling output for metering pump flow

0009

SCP
Scale w/Parameters
Input F8:22 -0.35<
Input Min. 0.04 0.04<
Input Max. 4.0 4.0<
Scaled Min. 6242.0 6242.0<
Scaled Max. 31208.0 31208.0<
Output N30:2 3783<

0010

MOV
Move
Source N30:2 3783<
Dest N60:5 3783<

001I

RET
Return

0012

END

LAD **21** - - INJECTION FLOW TOTALIZER --- Total Rungs in File = 9

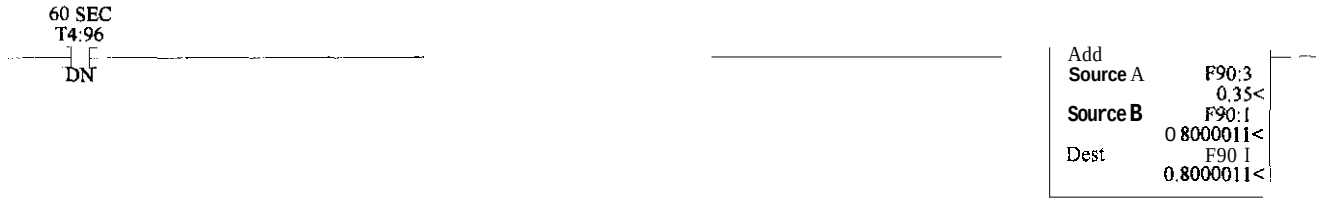
THIS RUNG STARTS TOTALIZER FOR INJECTION WATER UPON CLOSURE OF THE INJECTION WATER FLOW SWITCH. SINCE THE FLOW WILL BE IN GALLONS PER MINUTE, THE FLOW IS CALCULATED EACH MINUTE.

0000




**THIS RUNG** WILL TAKE THE VARIABLE STORED FROM THE DTAM WHICH IS THE GPM FLOW RATE AND ADD THIS TO THE ACCUM. VALUE IN F90:I AND **STORE** BACK INTO F90:1

0001



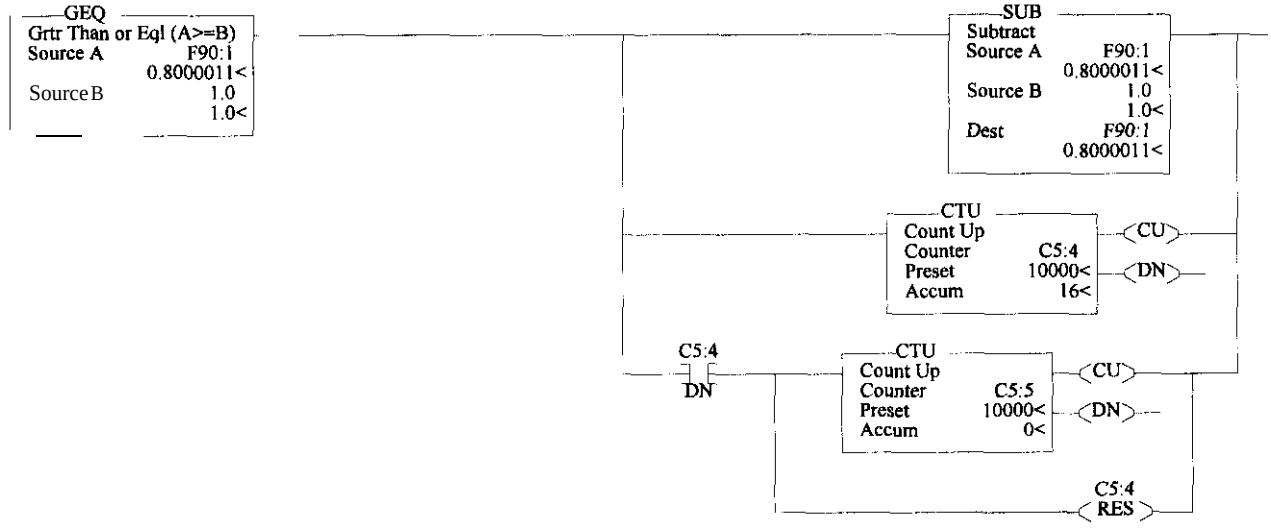

RESET 60 SEC TIMER

0002




WHEN THE ACCUM. VALUE IN F90:1 IS EQUAL OR GREATER THAN 1, THEN 1 IS SUBTRACTED FROM THE VALUE AND STORES THE RESULTS BACK IN F90:1 AND THE COUNTER COUNTS 1 FOR 1 GPM. WHEN 10000 GPM IS REACHED, THEN COUNTER 2 COUNTS 1 AND COUNTER 1 RESETS TO 0. THIS ALLOWS FOR LARGE VALUES GREATER THAN 32,767 TO BE READ.

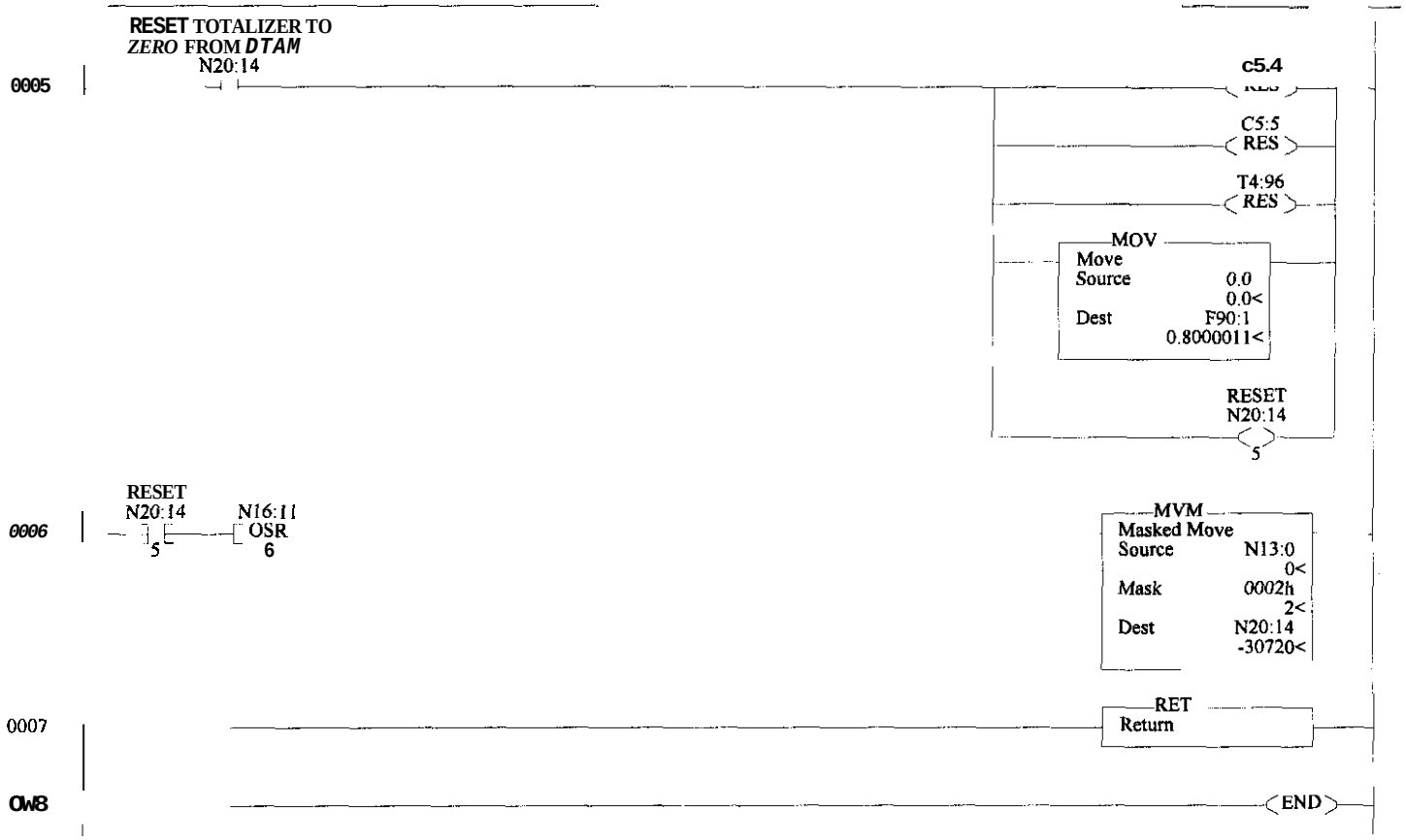
0003




0004



LAD 21 - - INJECTION FLOW TOTALIZER --- Total **Rungs** in File = 9



Jun 03 01 FILE: A101PHTR.CFG PAGE 1

DTAM Plus
PROGRAM FILE DOCUMENTATION
Allen-Bradley Company, Inc.

| | |
|---|---|
| SLC TYPE: | DTAM Plus AB DH485 |
| PROGRAM MEMORY USED: | 14111 BYTES |
| NUMBER OF SCREENS USED: | **118** |

CONFIGURATION PARAMETERS

| | |
|---|---|
| UPDATE DELAY: | **2.00** Seconds |
| MASTER SECURITY CODE: | 00000000 |
| COM PORT PARAMETERS: | **19200** Baud, EVEN Parity, EIGHT Data Bits |
| PRINTER PORT PARAMETERS: | **9600** Baud, EVEN Parity, EIGHT Data Bits |

SLC 500 CONFIGURATION OPTIONS

| | |
|---|---|
| SLC 500 NODE ADDRESS: | 1 |
| DTAM Plus NODE ADDRESS: | 0 |
| MAX NODE ADDRESS: | **3** |
| ADVISOR UPDATE RATE: | 2.00 Seconds |
| DTAM Plus ADVISOR: | NOT USED |
| TIME SYNC REGISTER: | NOT USED |

BACKGROUND REGISTER USAGE

| | |
|---|---|
| BACKGROUND REGISTER 1: | MONITORS BIT DATA. **16** OF **16** BITS ARE USED. |
| BACKGROUND REGISTER **2**: | MONITORS BIT DATA. **16** OF **16** BITS ARE USED. |
| BACKGROUND REGISTER **3**: | MONITORS BIT DATA. **16** OF **16** BITS ARE USED. |
| BACKGROUND REGISTER 4: | MONITORS BIT DATA. 11 OF **16** BITS ARE USED. |

BACKGROUND REGISTER 1: BIT DATA

MONITOR REGISTER NUMBER: N20:15

| BIT# | ALARM STATE | GOTO SCREEN# | BIT# | ALARM STATE | GOTO SCREEN# |
|---|---|---|---|---|---|
| 0 | ON (1) | 100 | 8 | ON (1) | 108 |
| 1 | ON (1) | 101 | 9 | ON (1) | 109 |
| 2 | ON (1) | 102 | 10 | ON (1) | 110 |
| 3 | ON (1) | 103 | 11 | ON (1) | 111 |
| 4 | ON (1) | 104 | 12 | ON (1) | 112 |
| 5 | ON (1) | 105 | 13 | ON (1) | 113 |
| 6 | ON (1) | 106 | 14 | ON (1) | 114 |
| 7 | ON (1) | 107 | 15 | ON (1) | 115 |

BACKGROUND REGISTER 2: BIT DATA

MONITOR REGISTER NUMBER: N20:16

| BIT# | ALARM STATE | GOTO SCREEN# | BIT# | ALARM STATE | GOTO SCREEN# |
|---|---|---|---|---|---|
| 0 | ON (1) | 116 | 8 | ON (1) | 124 |
| 1 | ON (1) | 117 | 9 | ON (1) | 125 |
| 2 | ON (1) | 118 | 10 | ON (1) | 126 |
| 3 | ON (1) | 119 | 11 | ON (1) | 127 |
| 4 | ON (1) | 120 | 12 | ON (1) | 128 |
| 5 | ON (1) | 121 | 13 | ON (1) | 129 |
| 6 | ON (1) | 122 | 14 | ON (1) | 131 |
| 7 | ON (1) | 123 | 15 | ON (1) | 132 |

BACKGROUND REGISTER 3: BIT DATA

MONITOR REGISTER NUMBER: N20:55

| BIT# | ALARM STATE | GOTO SCREEN# | BIT# | ALARM STATE | GOTO SCREEN# |
|---|---|---|---|---|---|
| 0 | ON (1) | 133 | 8 | ON (1) | 141 |
| 1 | ON (1) | 134 | 9 | ON (1) | 142 |
| 2 | ON (1) | 135 | 10 | ON (1) | 143 |
| 3 | ON (1) | 136 | 11 | ON (1) | 144 |
| 4 | ON (1) | 137 | 12 | ON (1) | 145 |
| 5 | ON (1) | 138 | 13 | ON (1) | 146 |
| 6 | ON (1) | 139 | 14 | ON (1) | 147 |
| 7 | ON (1) | 140 | 15 | ON (1) | 148 |

6~6666666666666666666666666666666666666666666666~6666~6666666666666666

BACKGROUND REGISTER 4: BIT DATA

MONITOR REGISTER NUMBER: N20:56

| BIT# | ALARM STATE | GOTO SCREEN# | BIT# | ALARM STATE | GOTO SCREEN# |
|---|---|---|---|---|---|
| 0 | ON (1) | 149 | 8 | ON (1) | 158 |
| 1 | ON (1) | 150 | 9 | ON (1) | 158 |
| 2 | ON (1) | 151 | 10 | ON (1) | 159 |
| 3 | ON (1) | 152 | 11 | THIS BIT IS NOT MONITORED | |
| 4 | ON (1) | 153 | 12 | THIS BIT IS NOT MONITORED | |
| 5 | ON (1) | 154 | 13 | THIS BIT IS NOT MONITORED | |

| | | | | |
|---|---|---|---|---|
| 6 | ON (1) | 155 | 14 | THIS BIT IS NOT MONITORED |
| 7 | ON (1) | 156 | 15 | THIS BIT IS NOT MONITORED |

Jun 03 01 FILE: A101PHTR.CFG PAGE 3

| SCREEN# | TYPE | SCREEN# | TYPE |
|---|---|---|---|
| 001 | MAIN MENU | 104 | ALARM |
| 006 | DATA DISPLAY | 105 | ALARM |
| 008 | SUB-MENU | 106 | ALARM |
| 009 | SECURITY | 107 | ALARM |
| 010 | SUB-MENU | 108 | ALARM |
| 011 | DATA ENTRY | 109 | ALARM |
| 012 | SUB-MENU | 110 | ALARM |
| 013 | DATA DISPLAY | 111 | ALARM |
| 014 | DATA ENTRY | 112 | ALARM |
| 015 | DATA ENTRY | 113 | ALARM |
| 016 | SECURITY | 114 | ALARM |
| 017 | SUB-MENU | 115 | ALARM |
| 018 | DATA ENTRY | 116 | ALARM |
| 019 | DATA ENTRY | 117 | ALARM |
| 020 | DATA DISPLAY | 118 | ALARM |
| 021 | DATA ENTRY | 119 | ALARM |
| 022 | DATA ENTRY | 120 | ALARM |
| 023 | DATA ENTRY | 121 | ALARM |
| 024 | DATA DISPLAY | 122 | ALARM |
| 025 | DATA DISPLAY | 123 | ALARM |
| 026 | DATA DISPLAY | 124 | ALARM |
| 027 | DATA DISPLAY | 125 | ALARM |
| 028 | DATA DISPLAY | 126 | ALARM |
| 029 | DATA DISPLAY | 127 | ALARM |
| 030 | SUB-MENU | 128 | ALARM |
| 031 | DATA ENTRY | 129 | ALARM |
| 032 | DATA ENTRY | 130 | ALARM |
| 033 | DATA DISPLAY | 131 | ALARM |
| 034 | SUB-MENU | 132 | ALARM |
| 035 | DATA ENTRY | 133 | ALARM |
| 036 | DATA ENTRY | 134 | ALARM |
| 037 | DATA DISPLAY | 135 | ALARM |
| 038 | DATA ENTRY | 136 | ALARM |
| 039 | DATA DISPLAY | 137 | ALARM |
| 040 | SUB-MENU | 138 | ALARM |
| 041 | DATA DISPLAY | 139 | ALARM |
| 042 | DATA DISPLAY | 140 | ALARM |
| 043 | DATA DISPLAY | 141 | ALARM |
| 044 | DATA DISPLAY | 142 | ALARM |
| 045 | DATA DISPLAY | 143 | ALARM |
| 046 | DATA DISPLAY | 144 | ALARM |
| 048 | DATA DISPLAY | 145 | ALARM |
| 050 | DATA DISPLAY | 146 | ALARM |
| 052 | DATA DISPLAY | 147 | ALARM |
| 053 | DATA DISPLAY | 148 | ALARM |
| 054 | DATA DISPLAY | 149 | ALARM |
| 055 | DATA DISPLAY | 150 | ALARM |
| 056 | DATA DISPLAY | 151 | ALARM |
| 057 | DATA DISPLAY | 152 | ALARM |
| 058 | DATA DISPLAY | 153 | ALARM |
| 080 | DATA ENTRY | 154 | ALARM |
| 082 | DATA DISPLAY | 155 | ALARM |
| 083 | SUB-MENU | 156 | ALARM |
| 084 | DATA ENTRY | 157 | ALARM |
| 085 | SUB-MENU | 158 | ALARM |
| 086 | SECURITY | 159 | ALARM |
| 087 | DATA ENTRY | 200 | ALARM |

**100** ALARM
**101** ALARM
**102** ALARM

P-A/D SECURITY

SCREEN MEMORY USED: 61 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: UNLINKED
PREVIOUS SCREEN: UNLINKED
SECURITY CODE #1: 12??????
SECURITY CODE #2: 34??????
SECURITY CODE #3: 87??????

```
*RESTRICTED ACCESS*
     ENTER CODE
```

SCREEN #001: MAIN MENU

SCREEN MEMORY USED: 88 BYTES

```
A-101
1. PUMP    4. ALARMS
2. UTIL    5. CLEAR
3. HtTRACE 6. DL/TMP
```

Item/Key # 1 links to screen 010
Item/Key # 2 links to screen 020
Item/Key # 3 links to screen 030
Item/Key # 4 links to screen 040
Item/Key # 5 links to screen 023
Item/Key # 6 links to screen 008
Item/Key # 7 links to screen 024
Item/Key # 8 is unlinked

SCREEN #006: DATA DISPLAY

SCREEN MEMORY USED: 65 BYTES

PREVIOUS MENU: 008
NEXT SCREEN: UNLINKED
PREVIOUS SCREEN: UNLINKED

```
INJECTION PUMP

INJ PUMP IS: Þ1Þ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N60:20
BIT NUMBER: 6
TEXT LENGTH: 3
OFF BIT TEXT: OFF
ON BIT TEXT: ON

SCREEN #008: SUB-MENLJ

SCREEN MEMORY USED: 82 BYTES
PREVIOUS MENU: 001

```
1 DILUTION RATIO
2 INJECTION PUMP
3 INJECT FLOW RATE
4 INJECT TOTAL
```

Item/Key # 1 links to screen 034
Item/Key # 2 links to screen 006
Item/Key # 3 links to screen 009
Item/Key # 4 links to screen 083
Item/Key # 5 is unlinked
Item/Key # 6 is unlinked
Item/Key # 7 is unlinked
Item/Key # 8 is unlinked

SCREEN #009: SECURITY

SCREEN MEMORY USED: 61 BYTES

PREVIOUS MENU: 008
NEXT SCREEN: 038
PREVIOUS SCREEN: UNLINKED
SECURITY CODE #1: 11??????
SECURITY CODE #2: 23??????
SECURITY CODE #3: 47??????

```
*RESTRICTED ACCESS*
ENTER CODE
```

SCREEN #010: SUB-MENU

SCREEN MEMORY USED: 86 BYTES
PREVIOUS MENU: 001

```
ÍËËËËËËËËËËËËËËËËËËËËËËËÍ
º1 Pump On/Off º
º2 DOV Sub-Menu º
º3 CVT, WFT, & SPGT º
º4 DOV Manual Output º
ÈËËËËËËËËËËËËËËËËËËËËËËËÍ
```

Item/Key # 1 links to screen 011
Item/Key # 2 links to screen 012
Item/Key # 3 links to screen 013
Item/Key # 4 links to screen 022
Item/Key # 5 is unlinked
Item/Key # 6 is unlinked
Item/Key # 7 is unlinked
Item/Key # 8 is unlinked

SCREEN #011: DATA ENTRY

SCREEN MEMORY USED: 143 BYTES

PREVIOUS MENU: 010
NEXT SCREEN: 015
PREVIOUS SCREEN: UNLINKED

```
ÍËËËËËËËËËËËËËËËËËËËËËËËÍ
ºPump Norm Start þ1þº
º Bump Start þ2þº
º Enter 1 for On º
º 0 for Off º
ÈËËËËËËËËËËËËËËËËËËËËËËËÍ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:14
BIT NUMBER: 7
TEXT LENGTH: 3
OFF BIT TEXT: OFF
ON BIT TEXT: ON

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:14
BIT NUMBER: 6
TEXT LENGTH: 3
OFF BIT TEXT: OFF
ON BIT TEXT: ON

DATA POSITION #3: BIT ENTRY

REGISTER: N20:17
BIT NUMBER: 0
ENTRY FORMAT: 1 & 0 KEYS
DEFAULT: NONE

SCREEN #012: SUB-MENU

SCREEN MEMORY USED: 76 BYTES
PREVIOUS MENU: 010

```
ÍËËËËËËËËËËËËËËËËËËËËËËËÍ
º1 Auto/Manual º
º2 DOV Setpoint º
º3 PID Tuning º
º4 Manual Output º
ÈËËËËËËËËËËËËËËËËËËËËËËËÍ
```

Item/Key # 1 links to screen 015
Item/Key # 2 links to screen 014
Item/Ke # 3 links to screen 016
Item/Key # 4 is unlinked
Item/Key # 5 is unlinked
Item/Key # 6 is unlinked
Item/Key # 7 is unlinked
Item/Key # 8 is unlinked

SCREEN #013: DATA DISPLAY

SCREEN MEMORY USED: 238 BYTES

PREVIOUS MENU: 010
NEXT SCREEN: 022
PREVIOUS SCREEN: UNLINKED

```
íëëëëëëëëëëëëëëëëëëëëëëëë¡
°DOV   ÞÞ1Þ  % D2D 3 °
°(CVT) ÞÞÞ4ÞÞgpm      °
°WFT  ÞÞ5ÞÞ  in      °
°SPGR:ÞÞÞ6ÞÞ in      °
åëëëëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:23 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0 |
| SHOW SIGN | | DISPLAY HIGH: | 100 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: BIT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:31 | OFF BIT TEXT: | Off |
| BIT NUMBER: | ***6*** | ON BIT TEXT: | On |
| TEXT LENGTH: | 3 | | |

DATA POSITION #3: ***BIT*** DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:17 | OFF BIT TEXT: | M |
| BIT NUMBER: | ***6*** | ON BIT TEXT: | A |
| TEXT LENGTH: | 1 | | |

DATA POSITION #4: **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:15 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 3 | REGISTER HIGH: | 16384 |
| DECIMAL LEFT: | 2 | DISPLAY LOW: | 0.000 |
| NO SIGN PLACE | | DISPLAY HIGH: | 14.000 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #5: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:13 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 1 | REGISTER HIGH: | 16384 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0.0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 500.0 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #6: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:12 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 2 | REGISTER HIGH: | 16384 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0.00 |
| NO SIGN PLACE | | DISPLAY HIGH: | 20.00 |
| LEADING ZEROS NOT SHOWN | | | |

áááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááá

```
SCREEN #014: DATA ENTRY                               íëëëëëëëëëëëëëëëëëëëë¡
                                                      º   DOV: Þ1Þ %       º
SCREEN MEMORY USED:   207 BYTES                       º  SPGR:ÞÞÞ2ÞÞ in    º
                                                      ºOld Setpoint ÞÞ3Þin º
PREVIOUS MENU:        012                             ºNew Setpoint ÞÞ4Þin º
NEXT SCREEN:          001                             åëëëëëëëëëëëëëëëëëëëëƒ
PREVIOUS SCREEN:      UNLINKED
DATA POSITION #1:  16 BIT UNSIGNED INTEGER DISPLAY

REGISTER:            N20:23                  REGISTER LOW:      0
DECIMAL RIGHT:       0                       REGISTER HIGH:     100
DECIMAL LEFT:        3                       DISPLAY LOW:       0
NO SIGN PLACE                                DISPLAY HIGH:      100
LEADING ZEROS NOT SHOWN

DATA POSITION #2:  16 BIT UNSIGNED INTEGER DISPLAY

REGISTER:            N60:12                  REGISTER LOW:      3277
DECIMAL RIGHT:       2                       REGISTER HIGH:     16384
DECIMAL LEFT:        3                       DISPLAY LOW:       0.00
NO SIGN PLACE                                DISPLAY HIGH:      20.00
LEADING ZEROS NOT SHOWN

DATA POSITION #3:  16 BIT UNSIGNED INTEGER DISPLAY

REGISTER:            N20:18                  REGISTER LOW:      0
DECIMAL RIGHT:       1                       REGISTER HIGH:     16383
DECIMAL LEFT:        2                       DISPLAY LOW:       0.0
NO SIGN PLACE                                DISPLAY HIGH:      20.0
LEADING ZEROS NOT SHOWN

DATA POSITION #4:  16 BIT UNSIGNED INTEGER ENTRY

REGISTER:            N20:18                  REGISTER LOW:      0
DECIMAL RIGHT:       1                       REGISTER HIGH:     16383
DECIMAL LEFT:        2                       DISPLAY LOW:       0.0
NO SIGN PLACE                                DISPLAY HIGH:      20.0
DEFAULT:             NONE                    LOW INPUT LIMIT:   4.0
                                             HIGH INPUT LIMIT:  9.0
```

áááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááá

```
SCREEN #015: DATA ENTRY                               íëëëëëëëëëëëëëëëëëëëë¡
                                                      º  DOV is in ÞÞÞ1ÞÞ  º
SCREEN MEMORY USED:   114 BYTES                       ºEnter 1 for Auto    º
                                                      º      0 for Manual  º
PREVIOUS MENU:        012                             'Enter:  2           º
NEXT SCREEN:          013                             åëëëëëëëëëëëëëëëëëëëëƒ
PREVIOUS SCREEN:      UNLINKED
DATA POSITION #1:  BIT DISPLAY

REGISTER:            N20:17                  OFF BIT TEXT:      Manual
BIT NUMBER:          6                       ON BIT TEXT:       Auto
TEXT LENGTH:         6

DATA POSITION #2: BIT ENTRY
```

| | | | |
|---|---|---|---|
| REGISTER: | N20 : 17 | ENTRY FORMAT: | 1 & 0 KEYS |
| BIT NUMBER: | 6 | DEFAULT : | NONE |

SCREEN #016: SECURITY

SCREEN MEMORY USED: 61 BYTES

PREVIOUS MENU: 012
NEXT SCREEN: 017
PREVIOUS SCREEN: UNLINKED
SECURITY CODE #1: 18??????
SECURITY CODE #2: 22??????
SECURITY CODE #3: 44??????

```
'*RESTRICTED ACCESS*
º ENTER CODE º
```

SCREEN #017: SUB-MENU

SCREEN MEMORY USED: 70 BYTES
PREVIOUS MENU: 012

```
º DOV PID SUBMENU º
º1 Prop Gain º
º2 Reset º
º3 Derivative º
```

Item/Key # 1 links to screen 018
Item/Key # 2 links to screen 019
Item/Key # 3 links to screen 021
Item/Key # 4 is unlinked
Item/Key # 5 is unlinked
Item/Key # 6 is unlinked
Item/Key # 7 is unlinked
Item/Key # 8 is unlinked

SCREEN #018: DATA ENTRY

SCREEN MEMORY USED: 185 BYTES

PREVIOUS MENU: 017
NEXT SCREEN: 019
PREVIOUS SCREEN: UNLINKED

```
º Gain (0.01-327.67) º
ºDOV OUTPUT: Þ1Þ% º
ºProp. Gain ÞÞÞ2ÞÞº
ºEnter ÞÞÞ3ÞÞº
```

DATA POSITION #1: 16 BIT UNSIGNED INTEGER DISPLAY

REGISTER: N20:23
DECIMAL RIGHT: 0
DECIMAL LEFT: 3
NO SIGN PLACE
LEADING ZEROS NOT SHOWN

REGISTER LOW: 0
REGISTER HIGH: 16383
DISPLAY LOW: 0
DISPLAY HIGH: 100

DATA POSITION #2: 16 BIT UNSIGNED INTEGER DISPLAY

REGISTER: N20:19
DECIMAL RIGHT: 2
DECIMAL LEFT: 3
NO SIGN PLACE
LEADING ZEROS NOT SHOWN

REGISTER LOW: 1
REGISTER HIGH: 16383
DISPLAY LOW: 0.01
DISPLAY HIGH: 327.67

DATA POSITION #3: 16 BIT UNSIGNED INTEGER ENTRY

REGISTER: N20:19
DECIMAL RIGHT: 2
DECIMAL LEFT: 3
NO SIGN PLACE
DEFAULT: NONE

REGISTER LOW: 1
REGISTER HIGH: 16383
DISPLAY LOW: 0.01
DISPLAY HIGH: 327.67
LOW INPUT LIMIT: 0.01
HIGH INPUT LIMIT: 327.67

SCREEN #019: DATA ENTRY

SCREEN MEMORY USED: 177 BYTES

PREVIOUS MENU: 017
NEXT SCREEN: 021
PREVIOUS SCREEN: UNLINKED

```
°Reset 0.1 to 327.67 °
°DOV OUTPUT: Þ1Þ%    °
°Reset:  ÞÞ2ÞÞ in/rp°
°Enter:  ÞÞ3ÞÞ       °
```

DATA POSITION #1: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:23 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 100 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:20 | REGISTER LOW: | 1 |
| DECIMAL RIGHT: | 2 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0.01 |
| NO SIGN PLACE | | DISPLAY HIGH: | 327.67 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT UNSIGNED INTEGER ENTRY

| | | | |
|---|---|---|---|
| REGISTER: | **N20**:20 | REGISTER LOW: | 1 |
| DECIMAL RIGHT: | 2 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0.01 |
| NO SIGN PLACE | | DISPLAY HIGH: | 327.67 |
| DEFAULT: | NONE | LOW INPUT LIMIT: | 0.01 |
| | | HIGH INPUT LIMIT: | 327.67 |

SCREEN #020: DATA DISPLAY

SCREEN MEMORY USED: 203 BYTES

PREVIOUS MENU: 001
NEXT SCREEN: 027
PREVIOUS SCREEN: UNLINKED

```
°Water Tank ÞÞ1Þ in  °
°PLC Temp   ÞÞ2Þ F   °
°Compr Temp ÞÞ3Þ F   °
°F WtrTemp  ÞÞ4Þ F   °
```

DATA POSITION #1: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:14 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | **1** | REGISTER HIGH: | 16384 |
| DECIMAL LEFT: | 2 | DISPLAY LOW: | 0.0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 62.0 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:27 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | *3* | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION *#3:* **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:26 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:35 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | *3* | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

SCREEN #021: DATA ENTRY

SCREEN MEMORY USED: 185 BYTES

PREVIOUS MENU: 017
NEXT SCREEN: 018
PREVIOUS SCREEN: UNLINKED

```
°Derv 0.01 to 327.61 °
"DOV OUTPUT:  ÞÞ1ÞÞ% °
°Derivative:  ÞÞÞ2ÞÞ °
°Enter:       ÞÞÞ3ÞÞ °
```

DATA POSITION #1: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:23 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | **100** |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:21 | REGISTER LOW: | **1** |
| DECIMAL RIGHT: | 2 | REGISTER HIGH: | **16383** |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0.01 |
| NO SIGN PLACE | | DISPLAY HIGH: | 327.61 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT UNSIGNED INTEGER ENTRY

| | | | |
|---|---|---|---|
| REGISTER: | N20:21 | REGISTER LOW: | **1** |
| DECIMAL RIGHT: | 2 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | **0.01** |
| NO SIGN PLACE | | DISPLAY HIGH: | 327.67 |
| DEFAULT: | NONE | LOW INPUT LIMIT: | 0.01 |
| | | HIGH INPUT LIMIT: | 327.61 |

SCREEN #022: DATA ENTRY

SCREEN MEMORY USED: 157 BYTES

PREVIOUS MENU: 010
NEXT SCREEN: 013
PREVIOUS SCREEN: UNLINKED

```
ÍËËËËËËËËËËËËËËËËËËËËËËËÍ
º   DOV in ÞÞÞ1ÞÞ    º
ºCurrent Output:Þ2Þ% º
ºNew Output:    Þ3Þ% º
º                     º
ÅËËËËËËËËËËËËËËËËËËËËËËÆ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:**17**
BIT NUMBER: 6
TEXT LENGTH: 6

OFF BIT TEXT: Manual
ON BIT TEXT: AUTO

DATA POSITION #2: 16 BIT UNSIGNED INTEGER DISPLAY

REGISTER: N20:23
DECIMAL RIGHT: 0
DECIMAL LEFT: 3
NO SIGN PLACE
LEADING ZEROS NOT SHOWN

REGISTER LOW: 0
REGISTER HIGH: 16383
DISPLAY LOW: 0
DISPLAY HIGH: 100

DATA POSITION #3: **16** BIT UNSIGNED INTEGER ENTRY

REGISTER: N20:23
DECIMAL RIGHT: 0
DECIMAL LEFT: 3
NO SIGN PLACE
DEFAULT: NONE

REGISTER LOW: 0
REGISTER HIGH: 16384
DISPLAY LOW: 0
DISPLAY HIGH: 100
LOW INPUT LIMIT: 0
HIGH INPUT LIMIT: 100

SCREEN #023: DATA ENTRY

SCREEN MEMORY USED: ***94*** BYTES

PREVIOUS MENU: 001
NEXT SCREEN: 001
PREVIOUS SCREEN: UNLINKED

```
íËËËËËËËËËËËËËËËËËËËËËËÍ
º  Universal Alarm    º
º    ACKNOWLEDGE      º
º  Press 1 to clear   º
º    All Alarms 1     º
ÅËËËËËËËËËËËËËËËËËËËËËÆ
```

DATA POSITION #1: BIT ENTRY

REGISTER: N20:17
BIT NUMBER: **10**

ENTRY FORMAT: 1 & 0 KEYS
DEFAULT: NONE

SCREEN #024: DATA DISPLAY

SCREEN MEMORY USED: **194** BYTES

PREVIOUS MENU: 001
NEXT SCREEN: 025
PREVIOUS SCREEN: UNLINKED

```
Input 1 SGT
Input 2 WFT
Input 3 CVT
Input 4 WTL
```

DATA POSITION #1: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:12 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 32767 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 32767 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:13 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 32767 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 32767 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:**15** | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 32767 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 32767 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:**14** | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 32767 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 32767 |
| LEADING ZEROS NOT SHOWN | | | |

SCREEN #025: DATA DISPLAY

SCREEN MEMORY USED: 210 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 026
PREVIOUS SCREEN: UNLINKED

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³COMPRS temp ÞÞ1Þ F ³
³PMPASY temp ÞÞ2Þ F ³
³JMPR  temp ÞÞ3Þ F ³
³PLC CAB temp ÞÞ4Þ F ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

DATA POSITION #1: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:26 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:34 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:25 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:27 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

SCREEN #026: DATA DISPLAY

SCREEN MEMORY USED: 239 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 001
PREVIOUS SCREEN: UNLINKED

```
íëëëëëëëëëëëëëëëëëëëëëëëëë¡
°PMP DISC  Þ1Þ   psi °
°PMP FLOW  ÞÞ2ÞÞ gpm °
'TOTAL ÞÞ3ÞÞÞ4Þ  gal °
°CGM       ÞÞ5ÞÞ  %   °
åëëëëëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:6 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 300 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:15 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 2 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 2 | DISPLAY LOW: | 0.00 |
| NO SIGN PLACE | | DISPLAY HIGH: | 14.00 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | C5:2.2 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 9999 |
| DECIMAL LEFT: | 4 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 9999 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | C5:1.2 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 9999 |
| DECIMAL LEFT: | 4 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 9999 |
| SHOW LEADING ZEROS | | | |

DATA POSITION #5: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:2 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 1 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0.0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 100.0 |
| LEADING ZEROS NOT SHOWN | | | |

SCREEN #027: DATA DISPLAY

SCREEN MEMORY USED: 241 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 028
PREVIOUS SCREEN: UNLINKED

```
íëëëëëëëëëëëëëëëëëëëëëëëëëëë¡
°JMPER TEMP  ÞÞ1Þ F  °
"PUMP DISC    B2P psi°
'PUMP FLOW  ÞÞ3ÞÞ gpm°
°TOTAL   ÞÞ4ÞÞÞ5Þ gal°
åëëëëëëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:25 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:6 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 300 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:15 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 2 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 2 | DISPLAY LOW: | 0.00 |
| NO SIGN PLACE | | DISPLAY HIGH: | 14.00 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | C5:2.2 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 9999 |
| DECIMAL LEFT: | 4 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 9999 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #5: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | C5:1.2 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 9999 |
| DECIMAL LEFT: | 4 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 9999 |
| LEADING ZEROS NOT SHOWN | | | |

SCREEN #028: DATA DISPLAY

SCREEN MEMORY USED: **172** BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: **029**
PREVIOUS SCREEN: UNLINKED

```
íëëëëëëëëëëëëëëëëëëëëëëë¡
°PIT CGM      ÞÞ1ÞÞ % °
°DOME FGM     ÞÞ2ÞÞ % °
°DIL RATIO     D3 %   °
'TIME          23:00  °
åëëëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:**2** | REGISTER LOW: | **3277** |
| DECIMAL RIGHT: | 1 | REGISTER HIGH: | **16383** |
| DECIMAL LEFT: | **3** | DISPLAY LOW: | **0.0** |
| NO SIGN PLACE | | DISPLAY HIGH: | 100.0 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #**2**: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:**3** | REGISTER LOW: | **3277** |
| DECIMAL RIGHT: | 1 | REGISTER HIGH: | **16383** |
| DECIMAL LEFT: | **3** | DISPLAY LOW: | **0.0** |
| NO SIGN PLACE | | DISPLAY HIGH: | 100.0 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #**3**: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N30:3 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | **0** | REGISTER HIGH: | 50 |
| DECIMAL LEFT: | **2** | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 50 |
| SHOW LEADING ZEROS | | | |

SCREEN #029: DATA DISPLAY

SCREEN MEMORY USED: 217 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 037
PREVIOUS SCREEN: 028

```
°MTR WINDNG ÞÞ1Þ Þ F  °
°PS2 FL PR  ÞÞ2Þ PSI °
°XFR PRESS  Þ3Þ  PSI °
"MIN FL ÞÞÞÞÞÞ4ÞÞÞÞÞÞ°
```

DATA POSITION #1: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:**16** | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | **1** | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 40.0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 430.0 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:17 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | **1** | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 2 | DISPLAY LOW: | 0.0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 30.0 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:18 | REGISTER LOW: | 3277 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 16383 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 300 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: 32 BIT FLOATING POINT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | F8:23 | | |
| MIN REGISTER: | 0.32 | MIN DISPLAY: | 0.32 |
| MAX REGISTER: | 4.6 | MAX DISPLAY: | 4.6 |

SCREEN #030: SUB-MENU

SCREEN MEMORY USED: 65 BYTES
PREVIOUS MENU: 001

```
°  Heat Trace Menu   °
°1  Heat Trace On/Off°
°2  Setpoint         °
°                    °
```

| | | | |
|---|---|---|---|
| Item/Key # 1 | links to screen 031 | Item/Key # 5 | is unlinked |
| Item/Key # 2 | links to screen 085 | Item/Key # 6 | is unlinked |
| Item/Key # 3 | links to screen 033 | Item/Key # 7 | is unlinked |
| Item/Key # 4 | is unlinked | Item/Key # 8 | is unlinked |

SCREEN #031: DATA ENTRY

SCREEN MEMORY USED: 106 BYTES

PREVIOUS MENU: 030
NEXT SCREEN: 001
PREVIOUS SCREEN: UNLINKED

```
Heat Trace
Htr is Þ1Þ
Enter 1 for On
0 for OFF:2
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:17
BIT NUMBER: 4
TEXT LENGTH: 3

OFF BIT TEXT: OFF
ON BIT TEXT: ON

DATA POSITION #2: BIT ENTRY

REGISTER: N20:17
BIT NUMBER: 4

ENTRY FORMAT: 1 & 0 KEYS
DEFAULT: NONE

SCREEN #032: DATA ENTRY

SCREEN MEMORY USED: 167 BYTES

PREVIOUS MENU: 085
NEXT SCREEN: 084
PREVIOUS SCREEN: UNLINKED

```
JumperTemp: ÞÞÞ1ÞÞF
Old Setpoint:ÞÞÞ2ÞÞ
New Setpoint:ÞÞÞ3ÞÞF
```

DATA POSITION #1: 16 BIT SIGNED INTEGER DISPLAY

REGISTER: N60:25
DECIMAL RIGHT: 0
DECIMAL LEFT: 5
SHOW SIGN
LEADING ZEROS NOT SHOWN

REGISTER LOW: -454
REGISTER HIGH: 752
DISPLAY LOW: -454
DISPLAY HIGH: 752

DATA POSITION #2: 16 BIT SIGNED INTEGER DISPLAY

REGISTER: N31:4
DECIMAL RIGHT: 0
DECIMAL LEFT: 5
SHOW SIGN
LEADING ZEROS NOT SHOWN

REGISTER LOW: -454
REGISTER HIGH: 752
DISPLAY LOW: -454
DISPLAY HIGH: 752

DATA POSITION #3: 16 BIT SIGNED INTEGER ENTRY

REGISTER: N31:4
DECIMAL RIGHT: 0
DECIMAL LEFT: 5
SHOW SIGN
DEFAULT: NONE

REGISTER LOW: -454
REGISTER HIGH: 752
DISPLAY LOW: -454
DISPLAY HIGH: 752
LOW INPUT LIMIT: 50
HIGH INPUT LIMIT: 200

SCREEN #033: DATA DISPLAY

SCREEN MEMORY USED: 211 BYTES

PREVIOUS MENU: 030
NEXT SCREEN: 001
PREVIOUS SCREEN: UNLINKED

'Shutoff T/C:ÞÞÞ1ÞÞ F°
'Shutoff S.P:ÞÞÞ2ÞÞ F°
'Control T/C:ÞÞÞ3ÞÞ F°
°Control S.P:ÞÞÞ4ÞÞ F°

DATA POSITION #1: **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N31:2 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N31:5 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N31:1 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N31:4 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 5 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

SCREEN #034: SUB-MENLJ

SCREEN MEMORY USED: 84 BYTES
PREVIOUS MENU: 008

° DILUTION MENU °
° 1. DILUTION RATIO °
° 2. MIN DIL FLOW °
° 3. MAX DIL FLOW °

Item/Key # 1 links to screen 035
Item/Key # 2 links to screen 036
Item/Key # 3 links to screen 080
Item/Key # 4 **is** unlinked
Item/Key # 5 is unlinked
Item/Key # 6 is unlinked
Item/Key # 7 is unlinked
Item/Key # 8 is unlinked

SCREEN #035: DATA ENTRY

SCREEN MEMORY USED: 133 BYTES

PREVIOUS MENU: 034
NEXT SCREEN: 001
PREVIOUS SCREEN: UNLINKED

```
Dilution Ratio
Current ratio: ##%
New ratio    : ##%
```

DATA POSITION #1: **16** BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N30:3 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 50 |
| DECIMAL LEFT: | 2 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 50 |
| SHOW LEADING ZEROS | | | |

DATA POSITION #2: **16** BIT SIGNED INTEGER ENTRY

| | | | |
|---|---|---|---|
| REGISTER: | N30:3 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 50 |
| DECIMAL LEFT: | *2* | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 50 |
| DEFAULT: | NONE | LOW INPUT LIMIT: | 0 |
| | | HIGH INPUT LIMIT: | 50 |

SCREEN #036: DATA ENTRY

SCREEN MEMORY USED: **159** BYTES

PREVIOUS MENU: 034
NEXT SCREEN: 034
PREVIOUS SCREEN: UNLINKED

```
MIN FLOW:
 ######1######  GPM
NEW MIN FLOW:
 ######2######  GPM
```

DATA POSITION #1: 32 BIT FLOATING POINT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | F8:23 | | |
| MIN REGISTER: | 0.32 | MIN DISPLAY: | 0.32 |
| MAX REGISTER: | 4.6 | MAX DISPLAY: | 4.6 |

DATA POSITION #2: 32 BIT FLOATING POINT ENTRY

| | | | |
|---|---|---|---|
| REGISTER: | F8:23 | | |
| MIN REGISTER: | 0.32 | LOW INPUT LIMIT: | 0.32 |
| MAX REGISTER: | 4.6 | HIGH INPUT LIMIT: | 4.6 |
| MIN ENTRY: | 0.32 | DEFAULT: | NONE |
| MAX ENTRY: | 4.6 | | |

SCREEN #037: DATA DISPLAY

SCREEN MEMORY USED: 218 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: UNLINKED
PREVIOUS SCREEN: 029

```
°WTR CAB TEMP  ÞÞ1Þ F °
°WFIE TEMP     ÞÞ2Þ F °
°FL WTR TEMP   ÞÞ3Þ F °
°MAX FL ÞÞÞÞÞÞ4ÞÞÞÞÞÞ°
```

DATA POSITION #1: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:32 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:33 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:35 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #4: 32 BIT FLOATING POINT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | F8:24 | | |
| MIN REGISTER: | 0.32 | MIN DISPLAY: | 0.32 |
| MAX REGISTER: | 4.6 | MAX DISPLAY: | 4.6 |

SCREEN #038: DATA ENTRY

SCREEN MEMORY USED: 164 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 001
PREVIOUS SCREEN: UNLINKED

```
°INJ FLOW RATE EXIST °
° ÞÞÞÞÞÞ1ÞÞÞÞÞÞ GPM  °
°NEW RATE            °
° ÞÞÞÞÞÞ2ÞÞÞÞÞÞ GPM  °
```

DATA POSITION #1: 32 BIT FLOATING POINT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | F90:3 | | |
| MIN REGISTER: | **0.3** | MIN DISPLAY: | 0.3 |
| MAX REGISTER: | 1 | MAX DISPLAY: | 1 |

DATA POSITION #2: 32 BIT FLOATING POINT ENTRY

| | | | |
|---|---|---|---|
| REGISTER: | F90:3 | | |
| MIN REGISTER: | 0.3 | LOW INPUT LIMIT: | 0.3 |
| MAX REGISTER: | 1 | HIGH INPUT LIMIT: | 1 |

MIN ENTRY: 0.3 DEFAULT: 0.301
MAX ENTRY: 1

SCREEN #039: DATA DISPLAY

SCREEN MEMORY USED: 179 BYTES

PREVIOUS MENU: 083
NEXT SCREEN: 001
PREVIOUS SCREEN: UNLINKED

```
'INJECTION WATER FLOW°
° ÞÞÞÞÞÞ1ÞÞÞÞÞÞ GPM °
° TOTAL VOLUME: °
° ÞÞ2ÞÞÞ3Þ GALLONS °
```

DATA POSITION #1: 32 BIT FLOATING POINT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | F90:3 | | |
| MIN REGISTER: | 0.3 | MIN DISPLAY: | 0.3 |
| MAX REGISTER: | 1 | MAX DISPLAY: | 1 |

DATA POSITION #2: 16 BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | C5:5.2 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 9999 |
| DECIMAL LEFT: | 4 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 9999 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: **16** BIT UNSIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | C5:4.2 | REGISTER LOW: | 0 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 9999 |
| DECIMAL LEFT: | 4 | DISPLAY LOW: | 0 |
| NO SIGN PLACE | | DISPLAY HIGH: | 9999 |
| SHOW LEADING ZEROS | | | |

SCREEN #040: SUB-MENU

SCREEN MEMORY USED: 88 BYTES
PREVIOUS MENU: 001

```
° ALARMS °
°1. 1-4 4. 13-16 °
°2. 5-8 5. 17-20 °
°3. 9-12 6. 21-UP °
```

Item/Key # 1 links to screen **041**
Item/Key # 2 links to screen 042
Item/Key # **3** links **to** screen **043**
Item/Key # 4 **links** to screen 044
Item/Key # 5 links to screen **045**
Item/Key # 6 links to screen 046
Item/Key # **7** is unlinked
Item/Key # 8 is unlinked

SCREEN #041: DATA DISPLAY

SCREEN MEMORY USED: **181** BYTES

PREVIOUS MENU: 040
NEXT SCREEN: 042
PREVIOUS SCREEN: UNLINKED

```
ÍËËËËËËËËËËËËËËËËËËËËËËÍ»
º XFR Pressure  þþ1þ º
º XFR Pressure  þþ2þ º
º Flush Press   þþ3þ º
º Pump       þþþ4þþþ º
ÅËËËËËËËËËËËËËËËËËËËËËÍ¼
```

DATA POSITION *#1:* BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 1
TEXT LENGTH: 4

OFF BIT TEXT: norm
ON BIT TEXT: **LOW**

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 2
TEXT LENGTH: 4

OFF BIT TEXT: norm
ON BIT TEXT: HIGH

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 3
TEXT LENGTH: 4

OFF BIT TEXT: norm
ON BIT TEXT: HIGH

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 4
TEXT LENGTH: 7

OFF BIT TEXT: norm
ON BIT TEXT: TROUBLE

SCREEN #042: DATA DISPLAY

SCREEN MEMORY USED: **191** BYTES

PREVIOUS MENU: 040
NEXT SCREEN: 043
PREVIOUS SCREEN: UNLINKED

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³ JR-1   ÞÞÞÞÞ1ÞÞÞÞÞ ³
³ Pump Pit      ÞÞ2Þ ³
³ Pump Pit   ÞÞÞ3ÞÞÞ ³
³ JMPR HT    ÞÞÞ4ÞÞÞ ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 5
TEXT LENGTH: 11
OFF BIT TEXT: *norm*
ON BIT TEXT: NON-PROCESS

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 6
TEXT LENGTH: 4
OFF BIT TEXT: norm
ON BIT TEXT: LEAK

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 7
TEXT LENGTH: 7
OFF BIT TEXT: norm
ON BIT TEXT: TROUBLE

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 8
TEXT LENGTH: 7
OFF BIT TEXT: **norm**
ON BIT TEXT: TROUBLE

ááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááá

SCREEN #043: DATA DISPLAY

SCREEN MEMORY USED: 182 BYTES

PREVIOUS MENU: 040
NEXT SCREEN: 044
PREVIOUS SCREEN: UNLINKED

```
íëëëëëëëëëëëëëëëëëëëëë¡
° PIC Water     ÞÞ1Þ °
° PLC Temp      ÞÞ2Þ °
° CMPRSR Temp   ÞÞ3Þ °
° Jet Pump   ÞÞÞÞ4ÞÞÞ °
åëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 9
TEXT LENGTH: 4
OFF BIT TEXT: norm
ON BIT TEXT: LOW

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 10
TEXT LENGTH: 4
OFF BIT TEXT: norm
ON BIT TEXT: HIGH

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 11
TEXT LENGTH: 4
OFF BIT TEXT: norm
ON BIT TEXT: HIGH

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:24
BIT NUMBER: 12
TEXT LENGTH: 8
OFF BIT TEXT: norm
ON BIT TEXT: SHUTDOWN

SCREEN #044: DATA DISPLAY

SCREEN MEMORY USED: 180 BYTES

PREVIOUS MENU: 040
NEXT SCREEN: 045
PREVIOUS SCREEN: UNLINKED

```
íëëëëëëëëëëëëëëëëëëëëëë¸
° SGT Level     ÞÞ1Þ °
° MTR TEMP      ÞÞ2Þ °
° Network     ÞÞÞ3ÞÞÞ°
° JFPT SIGNAL  ÞÞ4Þ  °
åëëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: BIT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:24 | OFF BIT TEXT: | norm |
| BIT NUMBER: | 13 | ON BIT TEXT: | LOW |
| TEXT LENGTH: | 4 | | |

DATA POSITION #2: BIT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:24 | OFF BIT TEXT: | norm |
| BIT NUMBER: | 14 | ON BIT TEXT: | HIGH |
| TEXT LENGTH: | 4 | | |

DATA POSITION #3: BIT DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N20:24 | OFF BIT TEXT: | norm |
| BIT NUMBER: | 15 | ON BIT TEXT: | FAILURE |
| TEXT LENGTH: | 7 | | |

DATA POSITION #4: BIT DISPLAY

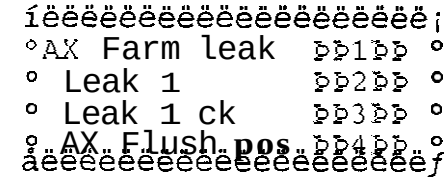
| | | | |
|---|---|---|---|
| REGISTER: | N20:25 | OFF BIT TEXT: | norm |
| BIT NUMBER: | 0 | ON BIT TEXT: | LOST |
| TEXT LENGTH: | 4 | | |

9666666666666666669966666666696696669~9666966696~669~99~666966669966699~69

SCREEN #045: DATA DISPLAY

SCREEN MEMORY USED: **182** BYTES

PREVIOUS MENU: 040
NEXT SCREEN: 046
PREVIOUS SCREEN: UNLINKED




DATA POSITION **#1:** BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 1
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 2
TEXT LENGTH: **5**
OFF BIT TEXT: norm
ON BIT TEXT: alarm

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 3
TEXT LENGTH: **5**
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 4
TEXT LENGTH: **5**
OFF BIT TEXT: norm
ON BIT TEXT: alarm

666666666666666666666666666666~666666666~666~6666666666666666666666666~6~6666666

SCREEN #046: DATA DISPLAY

íëëëëëëëëëëëëëëëëëëëëë¡
° UNUSED ÞÞ1ÞÞ °
° UNUSED ÞÞ2ÞÞ °
° Leak ST#1 ÞÞ3ÞÞ °
° *AX* **Shtdown** ÞÞ4ÞÞ °
åëëëëëëëëëëëëëëëëëëëëëƒ

SCREEN MEMORY USED: 182 BYTES

PREVIOUS MENU: 040
NEXT SCREEN: 048
PREVIOUS SCREEN: UNLINKED

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 5
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 6
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 7
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 8
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

ááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááááá

SCREEN #048: DATA DISPLAY

íëëëëëëëëëëëëëëëëëëëëëë¡
° UNUSED ÞÞ1ÞÞ °
° Pit A-A,B lk ÞÞ2Þ °
° TJNUSED ÞÞ3ÞÞ °
°Pit AX-A,B lk ÞÞ4Þ °
åëëëëëëëëëëëëëëëëëëëëëëƒ

SCREEN MEMORY USED: 178 BYTES

PREVIOUS MENU: 040
NEXT SCREEN: 050
PREVIOUS SCREEN: 046

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 9
TEXT LENGTH: 5

OFF BIT TEXT: NORM
ON BIT TEXT: ALARM

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 10
TEXT LENGTH: 4

OFF BIT TEXT: norm
ON BIT TEXT: Leak

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 11
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:25
BIT NUMBER: 12
TEXT LENGTH: 4

OFF BIT TEXT: norm
ON BIT TEXT: Leak

SCREEN #050: DATA DISPLAY

SCREEN MEMORY USED: 182 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 052
PREVIOUS SCREEN: 048

```
íëëëëëëëëëëëëëëëëëëëë¡
° UNUSED       ÞÞ1ÞÞ °
° UNUSED       ÞÞ2ÞÞ °
° UNUSED       ÞÞ3ÞÞ °
° AN101 LK/TB  ÞÞ4ÞÞ °
åëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:25 OFF BIT TEXT: norm
BIT NUMBER: 13 ON BIT TEXT: Alarm
TEXT LENGTH: 5

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:25 OFF BIT TEXT: norm
BIT NUMBER: 13 ON BIT TEXT: Alarm
TEXT LENGTH: 5

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:25 OFF BIT TEXT: norm
BIT NUMBER: 14 ON BIT TEXT: Alarm
TEXT LENGTH: 5

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:25 OFF BIT TEXT: norm
BIT NUMBER: 15 ON BIT TEXT: Alarm
TEXT LENGTH: 5

SCREEN #052: DATA DISPLAY

SCREEN MEMORY USED: **182** BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 053
PREVIOUS SCREEN: UNLINKED

```
ÍËËËËËËËËËËËËËËËËËËËËËÍ¸
° A-101 LK/TB  ÞÞ1ÞÞ °
° UNUSED       ÞÞ2ÞÞ °
° Dilution tk  ÞÞ3ÞÞ °
° UNUSED       ÞÞ4ÞÞ °
ÅËËËËËËËËËËËËËËËËËËËËËƒ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:**51**
BIT NUMBER: 0
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 1
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION *#3:* BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 2
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 3
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

SCREEN #053: DATA DISPLAY

SCREEN MEMORY USED: 180 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 054
PREVIOUS SCREEN: 052

```
íëëëëëëëëëëëëëëëëëëëëëëëë¡
°AX Flush Pres þþ1þþ °
°              þþ2þþ °
'INJECTION WTR þþ3þ  °
°PWR MONITOR   þþ4þþ °
åëëëëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 4
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 5
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 6
TEXT LENGTH: 4
OFF BIT TEXT: norm
ON BIT TEXT: LOW

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 7
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

SCREEN #054: DATA DISPLAY

SCREEN MEMORY USED: 182 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 055
PREVIOUS SCREEN: 053

```
íëëëëëëëëëëëëëëëëëëëëëëë¡
° UNUSED       ÞÞ1ÞÞ °
° UNUSED       ÞÞ2ÞÞ °
° UNUSED       ÞÞ3ÞÞ °
° UNUSED       ÞÞ4ÞÞ °
åëëëëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 8
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 9
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 10
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 11
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

SCREEN #055: DATA DISPLAY

SCREEN MEMORY USED: 182 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 056
PREVIOUS SCREEN: 054

```
°UNUSED      °
°            °
°AX Flush loss °
°UNUSED      °
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 12
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 13
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 14
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:51
BIT NUMBER: 15
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

SCREEN #056: DATA DISPLAY

SCREEN MEMORY USED: 178 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 057
PREVIOUS SCREEN: 055

```
íëëëëëëëëëëëëëëëëëëëë¡
°WTR CAB TEMP  ÞÞ1Þ  °
°WFIE TEMP     ÞÞ2Þ  °
° UNUSED       ÞÞ3ÞÞ °
° UNUSED       ÞÞ4ÞÞ °
åëëëëëëëëëëëëëëëëëëëëƒ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 0
TEXT LENGTH: 4
OFF BIT TEXT: norm
ON BIT TEXT: LOW

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 1
TEXT LENGTH: 4
OFF BIT TEXT: norm
ON BIT TEXT: LOW

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 2
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 3
TEXT LENGTH: 5
OFF BIT TEXT: norm
ON BIT TEXT: Alarm

SCREEN #057: DATA DISPLAY

SCREEN MEMORY USED: 182 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 058
PREVIOUS SCREEN: 056

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³ UNUSED      ÞÞ1ÞÞ ³
³ UNUSED      ÞÞ2ÞÞ ³
³ UNUSED      ÞÞ3ÞÞ ³
³ UNUSED      ÞÞ4ÞÞ ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 4
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 5
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 6
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #4: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 6
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

SCREEN #058: DATA DISPLAY

SCREEN MEMORY USED: 137 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: UNLINKED
PREVIOUS SCREEN: 057

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³ UNUSED      ÞÞ1ÞÞ ³
³PUMP BEARING ÞÞ2ÞÞ ³
³MTR WNDG TEMP ÞÞ3Þ  ³
³                    ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

DATA POSITION #1: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 8
TEXT LENGTH: 5

OFF BIT TEXT: norm
ON BIT TEXT: Alarm

DATA POSITION #2: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 9
TEXT LENGTH: 5

OFF BIT TEXT: NORM
ON BIT TEXT: ALARM

DATA POSITION #3: BIT DISPLAY

REGISTER: N20:52
BIT NUMBER: 10
TEXT LENGTH: 4

OFF BIT TEXT: NORM
ON BIT TEXT: HIGH

666666666666666666666666666666666666666666666666666666666666666666666666666666666~

SCREEN #080: DATA ENTRY

íëëëëëëëëëëëëëëëëëëëëë¡
°MAX FLOW: °
° ÞÞÞÞÞÞ1ÞÞÞÞÞÞ GPM °
°NEW MAX FLOW: °
° ÞÞÞÞÞÞ2ÞÞÞÞÞÞ GPM °
åëëëëëëëëëëëëëëëëëëëëëƒ

SCREEN MEMORY USED: 159 BYTES

PREVIOUS MENU: 034
NEXT SCREEN: 034
PREVIOUS SCREEN: UNLINKED

DATA POSITION #1: 32 BIT FLOATING POINT DISPLAY

REGISTER: F8:24
MIN REGISTER: 0.32 MIN DISPLAY: 0.32
MAX REGISTER: 4.6 MAX DISPLAY: 4.6

DATA POSITION #2: 32 BIT FLOATING POINT ENTRY

REGISTER: F8:24
MIN REGISTER: 0.32 LOW INPUT LIMIT: 0.32
MAX REGISTER: 4.6 HIGH INPUT LIMIT: 4.6
MIN ENTRY: 0.32 DEFAULT: NONE
MAX ENTRY: 4.6

666666666666666666666666666666666666666666666~666666666666666666666666666666666

SCREEN #082: DATA DISPLAY

íëëëëëëëëëëëëëëëëëëëëë¡
° Setpoints °
°Jumper Htr: ÞÞ1Þ F°
° °
°PumpAssy Htr: ÞÞ2Þ F°
åëëëëëëëëëëëëëëëëëëëëëƒ

SCREEN MEMORY USED: 125 BYTES

PREVIOUS MENU: 085
NEXT SCREEN: 001
PREVIOUS SCREEN: 084

DATA POSITION #1: 16 BIT SIGNED INTEGER DISPLAY

REGISTER: N31:4 REGISTER LOW: -454
DECIMAL RIGHT: 0 REGISTER HIGH: 752
DECIMAL LEFT: 3 DISPLAY LOW: -454
SHOW SIGN DISPLAY HIGH: 752
LEADING ZEROS NOT SHOWN

DATA POSITION #2: 16 BIT SIGNED INTEGER DISPLAY

REGISTER: N31:17 REGISTER LOW: -454
DECIMAL RIGHT: 0 REGISTER HIGH: 752
DECIMAL LEFT: 3 DISPLAY LOW: -454
SHOW SIGN DISPLAY HIGH: 752
LEADING ZEROS NOT SHOWN

ăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăăă

SCREEN #083: SUB-MENU

íëëëëëëëëëëëëëëëëëëëëë¡
°1 VIEW TOTAL INJ WTR°
°2 RESET TOTALIZER °
° °
° °
åëëëëëëëëëëëëëëëëëëëëëƒ

SCREEN MEMORY USED: 54 BYTES
PREVIOUS MENU: 008

Item/Key # 1 links to screen 039
Item/Key # 2 links to screen 086
Item/Key # 5 is unlinked
Item/Key # 6 is unlinked

Item/Key # 3 is unlinked
Item/Key # 4 is unlinked
Item/Key # 7 is unlinked
Item/Key # 8 is unlinked

SCREEN #084: DATA ENTRY

SCREEN MEMORY USED: 167 BYTES

PREVIOUS MENU: 085
NEXT SCREEN: 082

PREVIOUS SCREEN: 032

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³PumpAssy Temp: ÞÞ1ÞF³
³                      ³
³Old Setpoint: ÞÞ2ÞF³
³New Setpoint: ÞÞ3ÞF³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

DATA POSITION #1: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N60:34 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #2: 16 BIT SIGNED INTEGER DISPLAY

| | | | |
|---|---|---|---|
| REGISTER: | N31:17 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| LEADING ZEROS NOT SHOWN | | | |

DATA POSITION #3: 16 BIT SIGNED INTEGER ENTRY

| | | | |
|---|---|---|---|
| REGISTER: | N31:17 | REGISTER LOW: | -454 |
| DECIMAL RIGHT: | 0 | REGISTER HIGH: | 752 |
| DECIMAL LEFT: | 3 | DISPLAY LOW: | -454 |
| SHOW SIGN | | DISPLAY HIGH: | 752 |
| DEFAULT: | NONE | LOW INPUT LIMIT: | 50 |
| | | HIGH INPUT LIMIT: | 200 |

SCREEN #085: SUB-MENU

SCREEN MEMORY USED: 43 BYTES
PREVIOUS MENU: 030

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³     Setpoints      ³
³1 Set               ³
³2 View              ³
³                    ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

| | |
|---|---|
| Item/Key # 1 links to screen 032 | Item/Key # 5 is unlinked |
| Item/Key # 2 links to screen 082 | Item/Key # 6 is unlinked |
| Item/Key # 3 is unlinked | Item/Key # 7 is unlinked |
| Item/Key # 4 is unlinked | Item/Key # 8 is unlinked |

SCREEN #086: SECURITY

SCREEN MEMORY USED: 61 BYTES

PREVIOUS MENU: 083
NEXT SCREEN: 087
PREVIOUS SCREEN: UNLINKED
SECURITY CODE #1: 13??????
SECURITY CODE #2: 27??????
SECURITY CODE #3: 55??????

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³*RESTRICTED ACCESS*³
³     ENTER CODE     ³
³                    ³
³                    ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

SCREEN #087: DATA ENTRY

SCREEN MEMORY USED: 76 BYTES

PREVIOUS MENU: UNLINKED
NEXT SCREEN: 039
PREVIOUS SCREEN: UNLINKED

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³ RESET TOTALIZER TO ³
³       ZERO         ³
³PRESS 1 TO RESET 1  ³
³                    ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

DATA POSITION #1: BIT ENTRY

REGISTER: N20:14
BIT NUMBER: 1
ENTRY FORMAT: 1 & 0 KEYS
DEFAULT: NONE

SCREEN #100: ALARM

SCREEN MEMORY USED: 68 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³ ACKNOWLEDGE STROBE ³
³                    ³
³                    ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 0
BIT WILL BE: SET.

SCREEN #101: ALARM

SCREEN MEMORY USED: 78 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³     Alarm 1        ³
³ XFR Pressure LOW   ³
³                    ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 1
BIT WILL BE: SET.

SCREEN #102: ALARM

SCREEN MEMORY USED: 81 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³      Alarm 2       ³
³ XFR Pressure HIGH  ³
³                    ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 2
BIT WILL BE: SET.

SCREEN #103: ALARM

SCREEN MEMORY USED: 81 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º        Alarm 3        º
º  Flush Pressure HI    º
º                       º
º  PRESS 'Y' TO CLEAR   º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 3
BIT WILL BE: SET.

SCREEN #104: ALARM

SCREEN MEMORY USED: 81 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º        Alarm 4        º
º    JET PUMP TROUBLE   º
º                       º
º  PRESS 'Y' TO CLEAR   º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 4
BIT WILL BE: SET.

SCREEN #105: ALARM

SCREEN MEMORY USED: 93 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º        Alarm 5        º
º    JR-1 Position      º
º     NON-PROCESS       º
º  PRESS 'Y' TO CLEAR   º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 5
BIT WILL BE: SET.

SCREEN #106: ALARM

SCREEN MEMORY USED: 79 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º        Alarm 6        º
º    PUMP PIT  LEAK     º
º                       º
º  PRESS 'Y' TO CLEAR   º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 6
BIT WILL BE: SET.

SCREEN #107: ALARM

SCREEN MEMORY USED: 88 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      Alarm 7      º
º Pump Pit Leak     º
º     Trouble       º
º PRESS 'Y' TO CLEAR º
ÈËËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 7
BIT WILL BE: SET.

SCREEN #108: ALARM

SCREEN MEMORY USED: **92** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      Alarm 8      º
º  JMPR HEAT TRACE  º
º     TROUBLE       º
º PRESS 'Y' TO CLEAR º
ÈËËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 8
BIT WILL BE: SET.

SCREEN #109: ALARM

SCREEN MEMORY USED: 81 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      Alarm 9      º
ºPIC Water Level LOW º
º                   º
º PRESS 'Y' TO CLEAR º
ÈËËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 9
BIT WILL BE: SET.

SCREEN #110: ALARM

SCREEN MEMORY USED: **81** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      Alarm 10     º
º  PLC Enclosure HI  º
º                   º
º PRESS 'Y' TO CLEAR º
ÈËËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: **10**
BIT WILL BE: SET.

SCREEN #111: ALARM

SCREEN MEMORY USED: 92 BYTES

```
ÍËËËËËËËËËËËËËËËËËËÍ
º       Alarm 11      º
ºAir Compressor Temp  º
º          HI         º
º  PRESS 'Y' TO CLEAR º
ÈËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 11
BIT WILL BE: SET.

SCREEN #112: ALARM

SCREEN MEMORY USED: 81 BYTES

```
ÍËËËËËËËËËËËËËËËËËËÍ
º       Alarm 12      º
º  JET PUMP SHUTDOWN  º
º                     º
º  PRESS 'Y' TO CLEAR º
ÈËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 12
BIT WILL BE: SET.

SCREEN #113: ALARM

SCREEN MEMORY USED: 76 BYTES

```
ÍËËËËËËËËËËËËËËËËËËÍ
º       Alarm 13      º
º       SGT LOW       º
º                     º
º  PRESS 'Y' TO CLEAR º
ÈËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 13
BIT WILL BE: SET.

SCREEN #114: ALARM

SCREEN MEMORY USED: 97 BYTES

```
ÍËËËËËËËËËËËËËËËËËËÍ
º       Alarm 14      º
º MOTOR WINDING HIGH  º
º  TEMP. SHUTDOWN     º
ºPress 'Y' to Clear   º
ÈËËËËËËËËËËËËËËËËËËÊ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: 14
BIT WILL BE: SET.

6666666666666666666666666666666666666666666666666666666666666666666666666666666666~66

SCREEN #115: ALARM

SCREEN MEMORY USED: **95** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 15       º
º PLC Communications  º
º      FAILURE        º
º Press 'Y' to Clear  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:0
BIT NUMBER: **15**
BIT WILL BE: SET.

6666666666666666666666666666666666666666666666~6666666666666~66666666666

SCREEN #116: ALARM

SCREEN MEMORY USED: **93** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      Alarm 16       º
º  JFPT SIGNAL LOSS   º
º       ALARM         º
º PRESS 'Y' TO CLEAR  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 0
BIT WILL BE: SET.

6666666666666666666666666666666666666666666666666666666666666666666666666666666666

SCREEN **#117**: ALARM

SCREEN MEMORY USED: **91** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      Alarm 17       º
º    Ax-101 LEAK      º
º       ALARM         º
º PRESS 'Y' TO CLEAR  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 1
BIT WILL BE: SET.

6666666666666666~666~6666666666666666666666~6666666666666666666~666

SCREEN **#118**: ALARM

SCREEN MEMORY USED: **99** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      Alarm 18       º
º Leak Detector No 1  º
º    Leak Detected    º
º PRESS 'Y' TO CLEAR  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 2
BIT WILL BE: SET.

SCREEN #119: ALARM

SCREEN MEMORY USED: **93** BYTES

```
Alarm 19
Leak Detector No 1
Trouble
PRESS Y TO CLEAR
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: **3**
BIT WILL BE: SET.

SCREEN #120: ALARM

SCREEN MEMORY USED: 80 BYTES

```
Alarm 20
AX-101 IN FLUSH
PRESS 'Y' TO CLEAR
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 4
BIT WILL BE: SET.

SCREEN #121: ALARM

SCREEN MEMORY USED: 63 BYTES

```
Alarm 21
PRESS 'Y' TO CLEAR
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 5
BIT WILL BE: SET.

SCREEN #122: ALARM

SCREEN MEMORY USED: 82 BYTES

```
Alarm 22
FLAMMABLE GAS HIGH
PRESS 'Y' TO CLEAR
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 6
BIT WILL BE: SET.

SCREEN #123: ALARM

SCREEN MEMORY USED: 93 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º       ALARM 23      º
º   LEAK STATION 1    º
º       TROUBLE       º
º PRESS 'Y' TO CLEAR  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 7
BIT WILL BE: SET.

SCREEN #124: ALARM

SCREEN MEMORY USED: 99 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º       ALARM 24      º
º  Ax-101 SHUTDOWN    º
º  TIMER ACTIVATED    º
º PRESS 'Y' TO CLEAR  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 8
BIT WILL BE: SET.

SCREEN #125: ALARM

SCREEN MEMORY USED: 79 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º       ALARM 25      º
º    CGM HIGH LFL     º
º                     º
º PRESS 'Y' TO CLEAR  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 9
BIT WILL BE: SET.

SCREEN #126: ALARM

SCREEN MEMORY USED: 93 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º       ALARM 26      º
º VALVE PIT A-A, A-B  º
º       LEAK          º
º PRESS 'Y' TO CLEAR  º
ÈËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 10
BIT WILL BE: SET.

SCREEN #127: ALARM

SCREEN MEMORY USED: **63** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º       ALARM 27        º
º                       º
º                       º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 11
BIT WILL BE: SET.

SCREEN #128: ALARM

SCREEN MEMORY USED: 94 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º       ALARM 28        º
º VALVE PIT AX-A,AX-B   º
º         LEAK          º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 12
BIT WILL BE: SET.

SCREEN #129: ALARM

SCREEN MEMORY USED: **63** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º       ALARM 29        º
º                       º
º                       º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 13
BIT WILL BE: SET.

SCREEN #130: ALARM

SCREEN MEMORY USED: **30** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ»
º                       º
º                       º
º                       º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ¼
```

ALARM ACKNOWLEDGE WILL NOT BE SENT

SCREEN #131: ALARM

SCREEN MEMORY USED: 77 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 31       º
º    CGM TROUBLE      º
º                     º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: 14
BIT WILL BE: SET.

SCREEN #132: ALARM

SCREEN MEMORY USED: **93** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 32       º
º   AN-101 LEAK OR    º
º      TROUBLE        º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:1
BIT NUMBER: **15**
BIT WILL BE: SET.

SCREEN #133: ALARM

SCREEN MEMORY USED: **93** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 33       º
º     A-101 LEAK      º
º     OR TROUBLE      º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 0
BIT WILL BE: SET.

SCREEN #134: ALARM

SCREEN MEMORY USED: **63** BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 34       º
º                     º
º                     º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 1
BIT WILL BE: SET.

SCREEN #135: ALARM

SCREEN MEMORY USED: 97 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 35    ³
³  DILUTION TANK ³
³  WATER NO FLOW ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 2
BIT WILL BE: SET.

SCREEN #136: ALARM

SCREEN MEMORY USED: 62 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 36    ³
³                ³
³                ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 3
BIT WILL BE: SET.

SCREEN #137: ALARM

SCREEN MEMORY USED: 95 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 37    ³
³ AX-101 HIGH    ³
³ FLUSH PRESS    ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 4
BIT WILL BE: SET.

SCREEN #138: ALARM

SCREEN MEMORY USED: 63 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 30    ³
³                ³
³                ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 5
BIT WILL BE: SET.

SCREEN #139: ALARM

SCREEN MEMORY USED: 95 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 39    ³
³ PUMP INJECTION ³
³ WATER LOW FLOW ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 6
BIT WILL BE: SET.

SCREEN #140: ALARM

SCREEN MEMORY USED: 96 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 40    ³
³ POWER MONITOR HI/LO³
³    SHUTDOWN    ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 7
BIT WILL BE: SET.

SCREEN #141: ALARM

SCREEN MEMORY USED: **63** BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 41    ³
³                ³
³                ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 8
BIT WILL BE: SET.

SCREEN #142: ALARM

SCREEN MEMORY USED: 63 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³    ALARM 42    ³
³                ³
³                ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 9
BIT WILL BE: SET.

SCREEN #143: ALARM

SCREEN MEMORY USED: 62 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËËÍ»
º      ALARM 43          º
º                        º
º                        º
º PRESS 'Y' TO CLEAR     º
ÈËËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 10
BIT WILL BE: SET.

SCREEN #144: ALARM

SCREEN MEMORY USED: 63 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËËÍ»
º      ALARM 44          º
º                        º
º                        º
º PRESS 'Y' TO CLEAR     º
ÈËËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 11
BIT WILL BE: SET.

SCREEN #145: ALARM

SCREEN MEMORY USED: 63 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËËÍ»
º      ALARM 45          º
º                        º
º                        º
º PRESS 'Y' TO CLEAR     º
ÈËËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 12
BIT WILL BE: SET.

SCREEN #146: ALARM

SCREEN MEMORY USED: 63 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËËÍ»
º      ALARM 46          º
º                        º
º                        º
º PRESS 'Y' TO CLEAR     º
ÈËËËËËËËËËËËËËËËËËËËËËÍ¼
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 13
BIT WILL BE: SET.

SCREEN #147: ALARM

SCREEN MEMORY USED: 97 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 47         º
º'AX-101 JUMPER FLUSH   º
º      SIGNAL LOSS      º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 14
BIT WILL BE: SET.

SCREEN #148: ALARM

SCREEN MEMORY USED: 62 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 48         º
º                       º
º                       º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:2
BIT NUMBER: 15
BIT WILL BE: SET.

SCREEN #149: ALARM

SCREEN MEMORY USED: 89 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 49         º
º   WATER CAB TEMP      º
º        LOW            º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 0
BIT WILL BE: SET.

SCREEN #150: ALARM

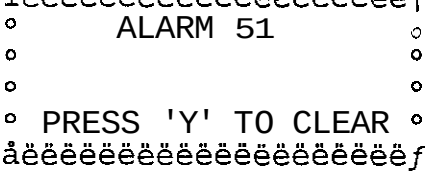
SCREEN MEMORY USED: 86 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 50         º
º      WFIE TEMP        º
º        LOW            º
º PRESS 'Y' TO CLEAR    º
ÈËËËËËËËËËËËËËËËËËËËËÍ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 1
BIT WILL BE: SET.

SCREEN #151: ALARM

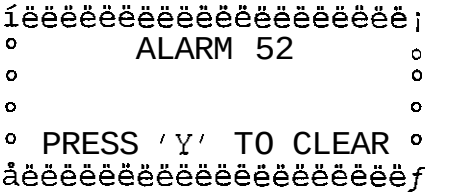
SCREEN MEMORY USED: 62 BYTES




ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 2
BIT WILL BE: SET.

SCREEN #152: ALARM

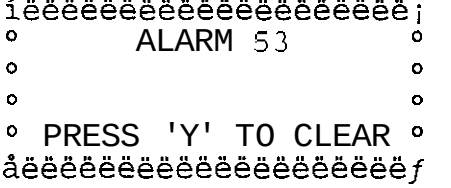
SCREEN MEMORY USED: 63 BYTES




ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 3
BIT WILL BE: SET.

SCREEN #153: ALARM

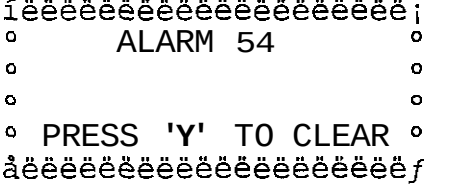
SCREEN MEMORY USED: 63 BYTES




ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 4
BIT WILL BE: SET.

SCREEN #154: ALARM

SCREEN MEMORY USED: 62 BYTES




ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 5
BIT WILL BE: SET.

SCREEN #155: ALARM

SCREEN MEMORY USED: 63 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 55       º
º                     º
º                     º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 6
BIT WILL BE: SET.

SCREEN #156: ALARM

SCREEN MEMORY USED: 63 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 56       º
º                     º
º                     º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 7
BIT WILL BE: SET.

SCREEN #157: ALARM

SCREEN MEMORY USED: 62 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 57       º
º                     º
º                     º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 8
BIT WILL BE: SET.

SCREEN #158: ALARM

SCREEN MEMORY USED: 91 BYTES

```
ÍËËËËËËËËËËËËËËËËËËËÍ
º      ALARM 58       º
º PUMP WORN BEARING   º
º      ALERT          º
º PRESS 'Y' TO CLEAR  º
ÅËËËËËËËËËËËËËËËËËËËÅ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 9
BIT WILL BE: SET.

SCREEN #159: ALARM

SCREEN MEMORY USED: 94 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³      ALARM 59      ³
³ MOTOR WINDING HI   ³
³  TEMP WARNING      ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ACKNOWLEDGE ALARM TO REGISTER: N12:3
BIT NUMBER: 10
BIT WILL BE: SET.

SCREEN #200: ALARM

SCREEN MEMORY USED: 30 BYTES

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿
³                    ³
³                    ³
³                    ³
³ PRESS 'Y' TO CLEAR ³
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

ALARM ACKNOWLEDGE WILL NOT BE SENT