

Item # QD TO
FOIA 88-165

49

RCA
MEMO

NOV 10 1987

MEMORANDUM FOR: Hubert J. Miller, Director, Division of Reactor Safety
FROM: Edward G. Greenman, Deputy Director, Division of Reactor Projects
SUBJECT: TRANSFER OF LEAD RESPONSIBILITIES - MAIN STEAM ISOLATION VALVES (MSIV) AT PERRY

Based on discussions between Messrs. E. G. Greenman and N. J. Chrissotimos on November 9, 1987, we request that DRS assume lead responsibility for resolving the MSIV failures on October 29, 1987 and November 3, 1987 at the Perry plant.

The responsibility should include determining the adequacy of technical justifications for establishment of root cause and a determination of what steps should be taken by the licensee prior to restart of the unit.

Should you have any questions, please contact R. C. Knop at (Ext. 547).

ORIGINAL SIGNED BY E. G. GREENMAN

Edward G. Greenman, Deputy Director
Division of Reactor Projects

cc: A. B. Davis
C. J. Paperiello
C. E. Norelius
N. J. Chrissotimos
G. C. Wright
SRI Perry
D. M. Crutchfield, NRR
M. J. Virgilio, NRR

YES RK
RIII 45
KNOP/p1b
11/09/87

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FORNEY RIII
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GREENMAN
11/10/87

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PDR FOIA
MAXWELL 8-165 PDR



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
795 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

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D-87



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

NOTICE OF SIGNIFICANT LICENSEE MEETING

Name of Licensee: The Cleveland Electric Illuminating Company

Name of Facility: Perry Unit 1

Docket No. 50-440

Date and Time of Meeting: November 10, 1987 at approximately 11:00 a.m.

Location of Meeting: Region III Office
Glen Ellyn, IL 60137

Purpose of Meeting: Meeting is to discuss findings of the recent AIT with regard to the MSIV failures occurring on October 29 and November 3, 1987.

RIII Attendees:

C. J. Paperiello, Deputy Regional Administrator
H. J. Miller, Director, Division of Reactor Safety
G. C. Wright, Chief, Operations Branch, DRS
Others as designated.

Licensee Attendees:

A. Kaplan, Vice President, Nuclear Operations Division
Others as designated.

NOTE: Attendance by NRC personnel at the meeting should be made known by COB November 10 1987, via telephone call to R. Knop, Region III, FTS 388-5547.

Distribution:

J. M. Taylor, Deputy Executive Director for Regional Operations
J. G. Partlow, Director, Division of Reactor Inspection and Safeguards
D. M. Crutchfield, Director, Division of Reactor Projects III/IV/V, NRR
F. Miraglia, Associate Director for Projects, NRR
R. W. Starostecki, Associate Director for Inspection and Technical Assessment, NRR
G. Holahan, Assistant Director for Region III and V, NRR
R. W. Cooper, RIII Coordinator, EDO
M. J. Virgilio, Director, Project Directorate III-1, NRR
T. Colburn, Licensing Project Manager

D-88
18

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11-8-87

ROOT CAUSE ANALYSIS

EXECUTIVE SUMMARY

This document describes the evaluations performed to determine the cause of events on October 29 and November 3, 1987 when Perry I Main Steam Isolation Valves (MSIVs) failed to fast close on command. The most probable root cause, based on data currently available, is failure of an Automatic Switch Company (ASCO) Model 8323 3-way dual solenoid valve. The primary suspected cause is hardening and dimpling of the EPDM rubber disc seat material and other EPDM seals, causing the disc holder assembly to wedge in place when the solenoid was de-energized. Several mechanisms have been proposed that might lead to EPDM degradation, the most probable of which is a local high temperature environment.

The document is organized in four sections. Section 1 describes the most probable root cause, and the basis for its selection as such. Section 2 gives an overview of how the root cause analysis team reached its conclusions. Section 3 describes potential component failure modes that could lead to MSIV failure to close, and finally, Section 4 describes specific failures within the ASCO Model 8323 valve that could lead to the observed conditions, and discusses environmental conditions that could lead to the failure.

2
3

D-41

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SECTION 1 MOST PROBABLE ROOT CAUSE

The most probable root cause of the observed MSIV failure to close is failure of the Automatic Signal Company (ASCO) Model 8323 3-way dual solenoid valve to shift from the energized to de-energized position. Within the component, the Ethylene Propylene Diene Monomer (EPDM) rubber disc seat material was found to be deformed. A "dimple" (see figure 1 and 2) was found in the EPDM seat material on the disc holder. This is also indicative of a general hardening and degradation of the rubber seals within the valve. If the disc holder sticks to the orifice the MSIV will not close. Delayed closure is consistent with de-energizing of the solenoid, followed by sticking of the disc holder to the orifice for some period of time, when the disc holder breaks loose and allows the air pressure to relieve through the orifice. Once the air pressure is relieved, the MSIV will close.

Sticky valve sign of hydrocarbon?

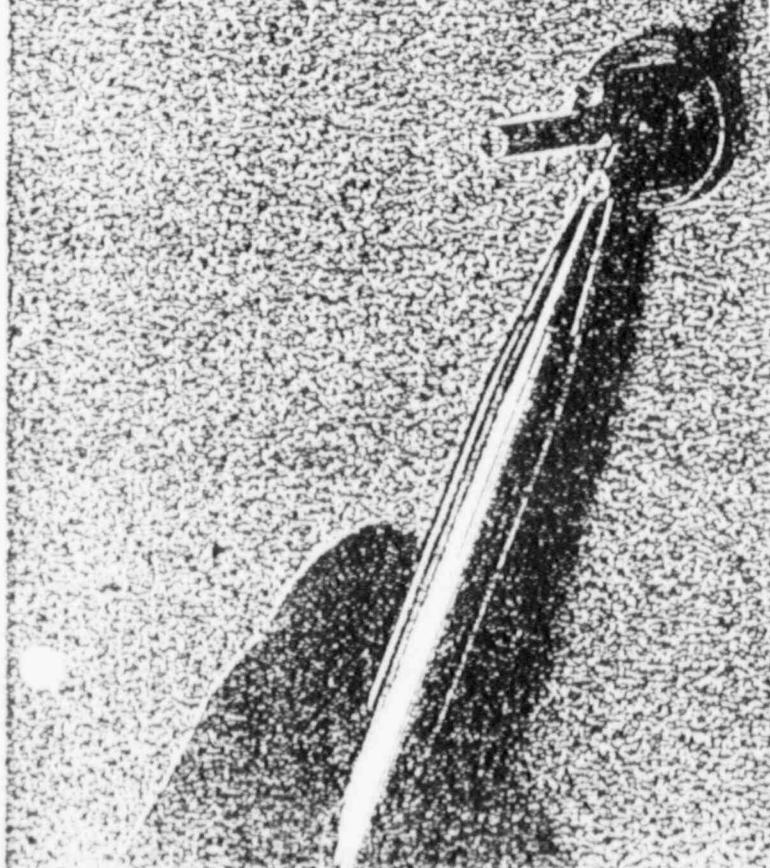
Failure of this component is the only failure that is consistent with the observed failure. No other single component failure will result in a delayed MSIV closure.

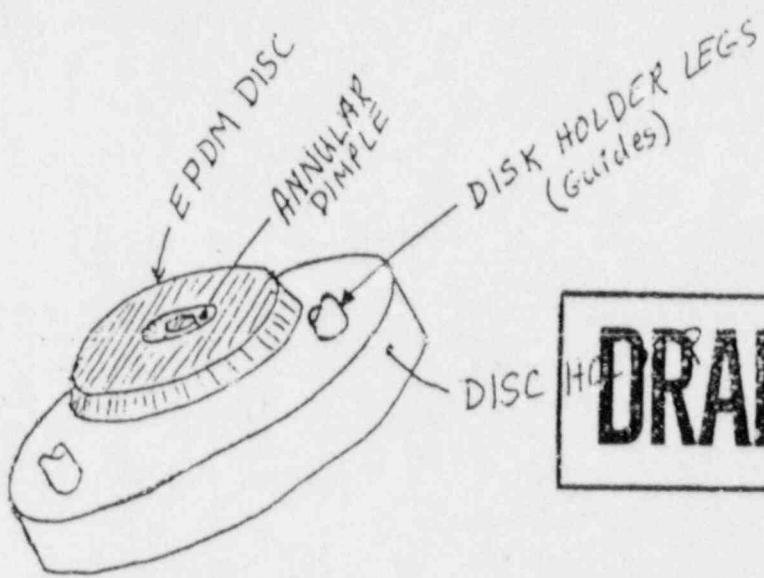
*BS-7
13*
The EPDM degradation is most probably caused by exceeding the temperature limits of the EPDM material. EPDM was chosen for this application because of its radiation resistance from an equipment qualification standpoint. It is qualified to a temperature of ~~(140 F)~~ Perry has experienced bulk drywell and steam tunnel temperatures which have approached tech spec limits during much of the startup test program. Additionally, steam leaks have occurred in the vicinity of the affected MSIV solenoids. While no data exists to actually confirm that the local temperatures have exceeded the capability of the EPDM rubber, a good correlation exists between the location of steam leaks and the affected valves.

Several other mechanisms have been postulated for the EPDM degradation, and sufficient data does not currently exist to absolutely prove or disprove any hypothesis. It is true, however, that the temperatures near the valves have been close to the maximum allowable for EPDM material, and this is the most likely cause.

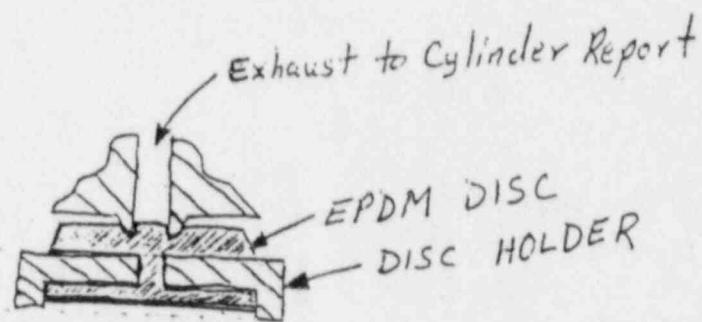
DRYER

Disc Holder
Assembly
Figure 1





SKETCH SHOWING DISC HOLDER GENERAL APPEARANCE



SKETCH SHOWING CROSS-SECTION OF
DISC IN ITS SEATED POSITION

Figure 2

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2-1

SECTION 2 ANALYSIS TECHNIQUES AND OVERVIEW

Following the failure of the B21-F022 "B" and "D" Main Steam Isolation Valves, a multi-discipline team was convened with the charter to determine the most likely cause of the problem. This activity would be useful prior to actuator disassembly and inspection. The team consisted of senior engineers from the CEI mechanical and electric engineering, and CEI technical departments, as well as the architect engineer (Gilbert) and NSSS supplier (General Electric).

Problems analysis proceeded using standard Kepner-Tregoe (KT) Problem Analysis techniques. The initial thrust of the team was to determine which equipment failures would cause the failure of a MSIV to close in the delayed manner observed. An initial brainstorming session was held to determine potential component failure which might cause the observed behavior. These potential failures were then compared with known facts and design conditions, using "is/is-not" techniques to rate the postulated failures as to probability.

Twenty four (24) potential failures were initially postulated as to component failures. Of these, 19 were rated as unlikely, one (1) as potential, and four (4) as probable causes. All five of the potential and highly likely candidates involved either the ASCO Model 8323 3-way Dual Solenoid Valve, or the air supply to these components. Specific work items and inspection steps were thus incorporated in other site action plans to address these components in detail.

Section 3 of this report documents each of the 24 original component failures. It is organized in order of highest to lowest probability. Each potential cause is described, discussed and conclusions drawn with regard to root component failure.

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2-2

Following disassembly of the actuator air packs and diagnostic tests on the air supply system, it was determined that the most likely failure mode was, in fact, the ASCO Model 8323 3-way dual solenoid valve. The suspected cause was dimpling of the EPDM rubber disc seat material, causing the disc holder assembly to wedge in place when the solenoid was de-energized. The team was again convinced, this time to evaluate the environmental and design conditions which might be responsible for the observed component failure.

Analysis techniques similar to those utilized in the component evaluation were used to screen the potential causes. Absolute determination of the root cause is difficult, however, the most likely conditions leading to the failure was local high temperatures leading to EPDM degradation. Analysis results are given in Section 4, again describing each of the nine (9) postulated root cause conditions and discussion of the evidence to confirm or deny the postulated condition as root cause.

In 4-8 case not be include introduction of hydrocarbon from
other source? Would seem to be a likely 2nd candidate.
Generally agree with 3-2 case analysis but on 11/6/87 sample (in)
does not preclude a problem with hydrocarbon analysis earlier.

Need 3-4 explained!

See

3-2

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SECTION 3

COMPONENT FAILURE DESCRIPTIONS

DRAFT

3-1

Potential Cause

Failure of the Part #4 ASCO Model 8323 3-way Dual Solenoid Valve

Discussion

Failure of the ASCO Model 8323 3-way dual solenoid valve to shift from the energized to de-energized position could cause the delayed closure event experienced by Perry.

This failure mode has happened in the past due to various reasons as evidenced by IE Notices 85-17 and 86-57, and INPO SER 57-85.

Conclusion

This failure mode is the most likely candidate for root component failure of the problem. The post-disassembly inspection has found dimpling of the EPDM rubber disc seat material. This could cause the disc holder assembly to wedge in place when the solenoid is de-energized. This would in turn not allow air pressure to relieve through the #3 air port, and preclude MSIV closure.

DRAFTPotential Cause

Instrument Air System Quality
(oils, moisture, particulates)

Discussion

This potential cause has been experienced at other plants. This is evidenced by IE Information Notices No. 86-57 and 85-17.

In the likelihood that poor instrument air quality, such as; moisture, particulate, and/or oils been present, the possibility of failure related to several Mainsteam Isolation Valve components would be highly likely. The main concerns would resolve around the Automatic Switch Company (ASCO) solenoid valves. Since the seal and discs internal to these valves are Ethylene propylene, any intrusion of oil into the instrument air system could cause degradation. Degradation of the seals and discs would, in this case be caused by hydrocarbon contamination that would distort them and could result in sticking of the valves. Although at Perry this is unlikely because of our "oil free air system". Disassembly and inspection of the ASCO NP8323-20E dual solenoid valve from MSIV F022D did not reveal any hydrocarbon substance which could have been borne from the instrument air. Additionally, a sample of the instrument air showed no signs of hydrocarbon contamination.

*Wig &
Tape out
for all
as required
only down*

The possible intrusion of water or moisture into the air system could cause residue to form on the ASCO valve internals and cause sticking of the valves over a period of time. The moisture may collect during outage periods and become residue during plant operation when the ambient temperatures are higher. Particulate intrusion greater than the 40 micron allowables would be a major concern since they could plate out on the solenoid valve core and/or base sub-assembly resulting in slow operation of the solenoid valve. The disassembly and inspection of the ASCO NP8323-20E dual solenoid valve revealed no traces of moisture or particulate contamination.

The concerns addressed above also apply to the C.A. Norgren Shuttle Valves; however, the solenoid valves are much more susceptible to instrument air quality.

Conclusion

This item was initially considered to be a high potential, but following analysis of air samples, this item was changed to low probability.

Potential Cause

Obstructions/Foreign Materials
in Air Lines/Accumulators

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Discussion

This potential cause has been experienced at other plants as evidenced by IE Information Notice 86-57 and 85-17. Obstructions/Foreign Materials in the air lines/accumulators is a likely cause since it would permit valve failures as experienced. The obstructions may permit periodic operation of the valves and depending on the instrument air cycling could temporarily become dislodged. This could result in the same characteristics discussed in the write-up on "Poor Air Quality".

Conclusion

This item was initially considered to have a high potential as root component failure. Inspections of the air lines and accumulators found no defect that could cause the observed operational pattern, however, so this potential cause is unlikely to be a root component failure.

DRAFTPotential Cause

One or both of the pilot solenoid valves for each of the MSIVs failed to de-couple (mechanical action) upon de-energization.

Discussion

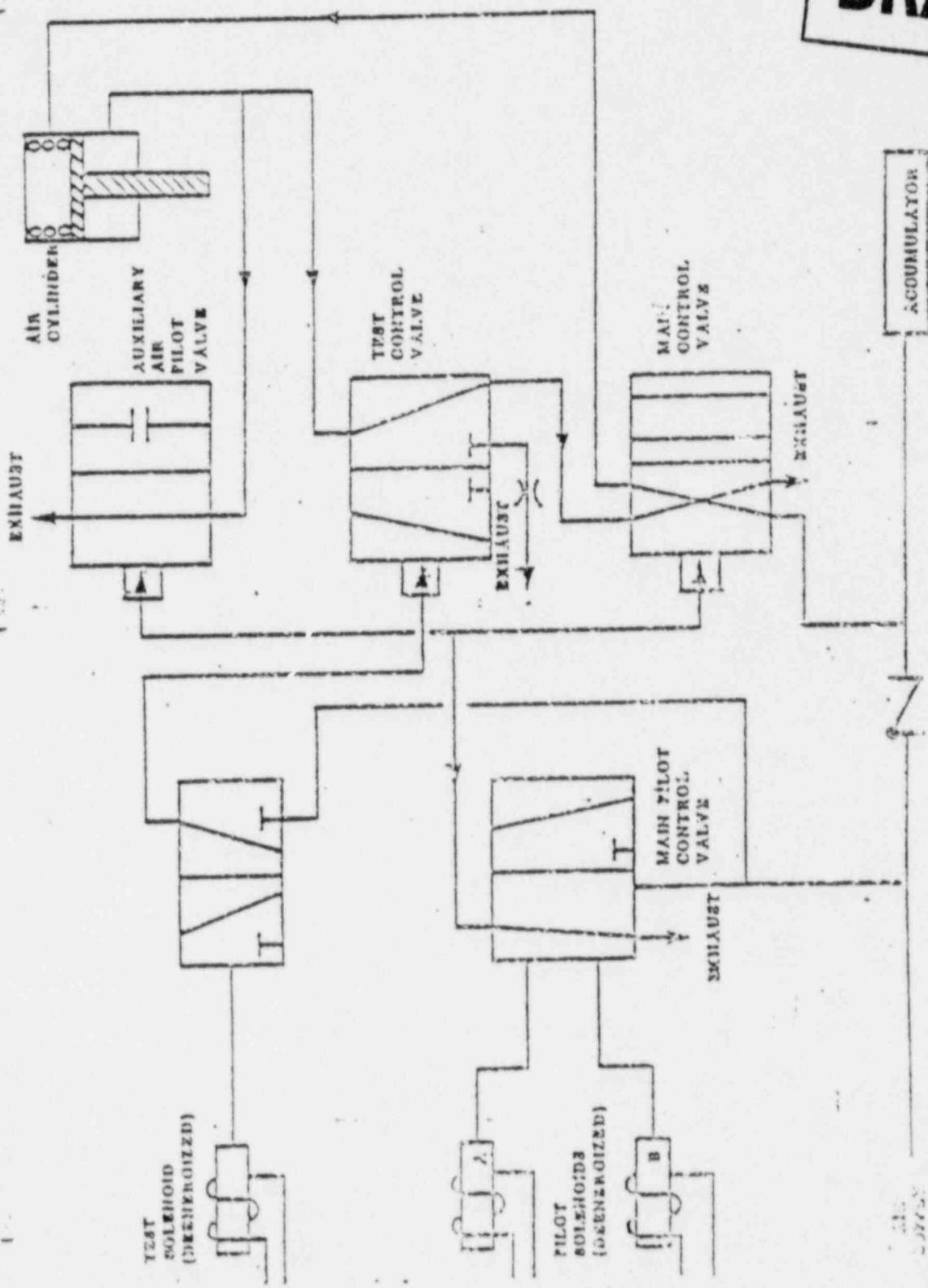
Electrical control circuits identify positive de-energization of the respective pilot solenoids. This is verified via the indicating light and any meters as shown per elementary diagrams per B-208-013 H011 and H036. The testing sequence and visual verification has identified that the solenoids have been de-energized, although the valves failed to open or delayed opening. If either solenoids fails to de-couple then the valves will not operate. No method exists to remotely determine whether one or both of the solenoids for a particular valve failed to de-couple.

The mis-operation (erratic) closure or deferred closure may possibly be attributed to this occurrence. As such it may be a highly susceptible cause. Further evaluation identified that each of the pilot solenoids were sealed with Bisco LOCA Seal at the conduit entry point. This design change implemented per DCP 850618 is the only change initiated recently. The degradation and/or migration of foreign matter could also be a cause to prevent de-coupling of the solenoids.

Conclusion

This item was initially classified as a high potential, and condition of the Bisco LOCA seal was evaluated upon solenoid disassembly. Since no interference with the valve operation was noted, this cause has been eliminated from consideration.

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Closing Operation

Figure B21-12B
RSVV Pneumatic Control

DRAWING UNIT
CONFIGURATION
ASSOC BEV

Partial Due
D209-013 sheet 2

NUCLEAE 31

D2
D1

NOTES.

1. FOR GENERAL NOTES, SEE DWG. D-209-001, SHEETS 1 AND 2.
 2. TERMINAL BOX LAYOUT, SEE DWG. D-209-001, SHEET 1.
 3. FOR PHYSICAL LAYOUT AND WIRING INFORMATION, SEE ATWOOD & MORRILL COMPANY DWG. 13560-01-H, SHEETS 1 THRU 4. (FLD40-003, SHEETS 1 THRU 4) OR G.E. DWG. 10505220.
 4. WIRED BY VENDOR.
 5. JUMPERS FIELD TO INSTALL, COLOR PER FIELD CABLE DIVISION.
 6. FOR CONAX CONDUIT SEAL ASSEMBLY WIRING DETAILS, SEE DWG. D-209-001 SHEETS 7, 8, 9, & 10.
 7. DISCO TYPE LOCA SEAL INSTALLED IN CONDUIT ASSEMBLY FOR EACH SOLENOID TO SERVE AS AN ENVIRONMENTAL SEAL (DCP 85-0618).

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IB21-FOOZZA
Solenoids valves NOTE 5-

NOTE 6

SOLENOID # 1

WIRE MARK	COLOR CODE
1 B21H3613A	6
2 B21H3615A	5

PARTIAL DWG #
D209-013 sheet 2

SOLENOID # 2

WIRE MARK	COLOR CODE
1 B21H3613A	4
2 B21H3611A	3

NOTE 4
AND
NOTE 7

SOLENOID # 3

WIRE MARK	COLOR CODE
1 B21H3603A	2
2 B21H3601A	1

NOTE 4
AND
NOTE 7

DRAFTPotential Cause

Solenoid valve exhaust port blocked.

Discussion

Blockage of the exhaust port could occur through internal or external contamination. The port is open to the ambient. Particles may fall below the disc preventing shifting of the solenoid valve from its normally energized to normally de-energized position. Subsequent actuation could blow the blockage out of the valve allowing normal operation thereafter. This is considered a potential cause for the Perry delayed MSIV closure experience.

Conclusion

This was initially considered to be a potential cause for the Perry delayed MSIV closure experience. Inspection for blockage was performed, and on one solenoid a piece of tape was discovered to be blocking one port. Subsequent testing determined that this blockage was insufficient to preclude MSIV actuation.

DRAFTPotential Cause

Failure of the Part #3 Norgren Model B0004A 2-way shuttle valve.

Discussion

The 2-way shuttle valve works in conjunction with the Part #1 4-way shuttle valve to open and close the MSIV. The 4-way shuttle valve provides the primary logic for pressurization and venting of the actuator cylinder. The potential failure mode description is the same as that for the 4-way shuttle valve operation.

The 2-way shuttle valve cannot by itself open or maintain the actuator in the open position unless the 4-way valve is energized or stuck in the energized position.

Conclusion

The delayed closure event experienced at Perry is unlikely to have been caused by the 2-way valve failure, since it requires dual mode failure.

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Potential Cause

Hydraulic Speed Control Failure

Discussion

The hydraulic cylinder function is to slow the closing speed of the MSIV to specification limits under a wide variation of applied forces.

The closing speed of the MSIV is accomplished through adjustment of the Monatrol needle flow control valves Parts #6 and #7 has shown in the drawing 13560-01-4 hydraulic flow logic schematic.

Should either or both flow control valve(s) become totally blocked and also all other fluid leak paths (e.g. ring gaps in piston) motion would be prevented.

Such a situation is unlikely because:

1. The amount of contamination would need to be so large that it would not disappear after one cycle.
2. The hydraulic fluid was installed under clean controlled conditions. The system is closed and pressurized, preventing contamination from external sources.
3. Such a failure mechanism is not supported by historical experience.

NOTE: The flow control valves are designed to provide a flow path even at the maximum choked condition.

Conclusion

Unlikely to be occurring.

DRAFTPotential Cause

MSIV internal binding.

Discussion

Poppet binding against the upper body ribs due to poppet rotation is very unlikely due to poppet concentricity and long length of rib engagement. Binding of the stem against the packing gland edge is considered extremely unlikely by the valve manufacturer. Potential for the lantern ring to cock and bind to the stem is a possibility with inadequate packing compression but is also considered unlikely. The packing compression used in the reassembled valves is estimated to be adequate to prevent lantern ring movement.

Conclusion

The low probability of binding and lack of reported industry cases, is inconsistent with the multiple valve failures or the time factor seen in the free up of some valves. This is unlikely to be occurring.

DRAFTPotential Cause

Swagelok fittings improper installation/assembly/leakage

Discussion

Excessive fitting leakage would not cause an irregular operation of the valve. This type of leakage would induce a constant operational characteristic i.e. slow rate of change.

Likewise if leakage exists accumulator would close valve in case of leakage on ASCO pilot control valve tubing.

Conclusion

Unlikely to be occurring.

DRAFTPotential Cause

Failure of the Part #5 ASCO Model 8320 3-way solenoid valve

Discussion

The model 8320 3-way solenoid valve is used to slowly stroke the MSIV (close MSIV when energized). When the solenoid valve is energized (opened) pneumatic pressure is routed to the Part #2 3-way air valve. This causes the 3-way air valve to vent the rod side of the actuator through a flow control orifice, while blocking the inlet air from air valve Part #1. The gradual loss of pressure from beneath the piston allows the actuator springs to slowly close the MSIV (up to 60 seconds).

The potential failure modes of the valve are:

- a. Stuck open (failure to close when de-energized)
- b. Stuck closed (failure to open when energized)
- c. Stuck partially opened
- d. Catastrophic failure of valve body

The effects of these failure modes are as follows:

- a. A stuck open valve prevents reopening of the MSIV.
- b. A stuck closed valve prevents operation of the MSIV in the slow closure mode. This is the normal (nontest) mode of the valve and does not affect the normal closure functions of the other subcomponents.
- c. A partially opened valve will tend to close the MSIV; however more slowly than the normal fully opened condition. This effect can be visualized in the drawing 13560-01-H schematic. The 3-way solenoid valve, partially opened, would bleed inlet air from the system exhausting it. Additionally it could pressurize the 3-way air valve resulting in further exhausting of both inlet and air pressure.
- d. A catastrophic failure of the valve body would result in loss of pneumatic pressure resulting in MSIV closure.

None of the above failure modes support the delayed closure event at Perry.

Conclusion

Unlikely to be occurring.

DRAFTPotential Cause

Valve packing too tight.

Discussion

Grafoil packing has replaced earlier asbestos packing on 7 of 8 MSIVs. While it is likely that the grafoil packing has greater breakaway friction due to increased compression of the softer material, the circumstances of the events showing quick closure after initial release make this somewhat unlikely as the cause.

Conclusion

Because other valves with grafoil packing and equal packing compression requirement showed no effect during fast or slow speed testing and the lack of industry experience of an MSIV being held up due to packing, this cause must be considered unlikely.

DRAFTPotential Cause

Failure of the Norgren Model F0013A 4-way shuttle valve.

Discussion

The 4-way shuttle valve is energized by the Part #4 3-way dual solenoid valve. Upon energization it routes pneumatic pressure to the rod (bottom) side of the actuator cylinder piston and vents the blind (top) side of the piston. The resulting pressure differential across the piston forces the rod up, opening the MSIV.

The 3-way dual solenoid valve when de-energized, vents (de-energizes) the 4-way shuttle valve, venting the rod side and pressurizing the blind side. The resulting pressure differential across the piston in conjunction with the springs force the MSIV closed.

The Part #3 2-way air valve is provided in the circuit to eliminate a single mode failure of the 4-way valve.

The failure mode of interest concerns failure of the MSIV to close when the 3-way dual solenoid valve is de-energized. Should the pressure leg of the 4-way valve stick, the pressure is still vented by the Part #3 2-way valve. If the exhaust leg sticks upon de-energization of the valve, the springs alone are capable of closing the MSIVs although at a slower rate.

If either leg partially sticks, the inlet pressure is exhausted, promoting closure of the MSIV.

Conclusion

The only failure of the 4-way valve which can result in delayed closure of the MSIVs as experienced at Perry is sticking of the pressure leg with a concurrent failure of the Part #3 2-way air valve. This is unlikely as it is a double mode failure - requiring failure of two separate subcomponents. Thus this is unlikely to be occurring.

DRAFTPotential Cause

Valve line-up of instrument air header system.

Discussion

Had an improper valve line-up in the instrument air header system occurred, numerous other air users throughout the plant would have been affected. Below are listed valves and the possible consequences had they been inadvertently closed.

- 1) 1P52-F640 (manual drywell isolation) Improper line-up of this valve would have prevented repeated actuation of B21-F022A, B, C, and D. This valve would also isolate the MSR valves as well as the personnel air lock at 599'-0" Elevation.
- 2) 1P52-MCV-F646 (drywell isolation) Had this valve closed, it would have been indicated by status lights on both H13-P601 and H13-P870 panels in the control room. ERIS points EC-007 and 008 would have also indicated closed.
- 3) 1P52-MCV-F200 (containment isolation) (A) Had this valve been closed the entire air supply into containment would have been isolated which in turn would have affected instrument air supply to all the air users off of the air distribution manifolds P52-J600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, and 612. (B) Also had this valve been closed it would have been indicated by status lights on both the H13-P601 and H13-P870 panels in the control room.
- 4) Manual valves P52-F554 and F605 - Had these valves been closed they would have isolated a large number of the air users throughout the containment.

With all of the discussion above the fact remains that the valves did operate as observed. This would not have been the cause since the valves would not have repeatedly functioned.

Conclusion

Unlikely to be occurring.

DRAFTPotential Cause

Air pack wiring and termination failure resulting in a hot short.

Discussion

The air pack units are self contained for each solenoid and wired to a common junction box. This wiring and associated hardware is provided by the manufacturer. The field wiring is terminated at the respective solenoid valve junction boxes. Refer to drawings D-209-013 Sheets 2 through 9 for each of the MSIV assemblies.

Per review of the interconnection wiring diagrams and corresponding elementary schematics, the wiring and termination information is correct.

The control schematic for operation of the respective solenoids is "fail safe" by design basis, which requires the solenoid coil to be energized to prevent an isolation. De-energization would result in closure of the valve.

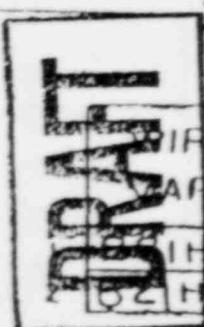
The wiring to each valve is classified as Class 1E. Although the 120VAC power to each of the A & B pilot solenoid valves pairs if continued in a common cable, each conductor is properly sized and meets the separation requirements. The cables are rated for 600 volt insulation, besides having minimum current draw. Therefore, the potential for a hot short is improbable.

References

D-209-013 Sheets 2 through 9.

Conclusion

Unlikely that wiring or hot short is a potential cause.



SOLENOID * 1

NOTE 5

NOTE 6

WIRE
MARK

1 B2IH3613A
2 B2IH3611A

COLOR
CODE

4
3

SOLENOID * 2

IB2I Forza
SOLENOID VALUES

(IB2I-F460)

JUN

NOTE 4
AND
NOTE 7

WIRE
MARK

1 B2IH3603A
2 B2IH3601A

COLOR
CODE

2
1

6	B2
5	B2
4	B2
3	B2
2	B2
1	B2

NOTE 4
AND
NOTE 7

PARTIAL DWG'S
P209-013 sheet 2

NOTE 6



(IB21-F460) SOLENOID VALVE JCT. BOX

JUNCTION EOX A

IB21 F022 A
SOLENOID VALVE

NOTE 4
AND
NOTE 7

NOTE 4
AND
NOTE 7

NOTE 4

6	B21H3613A
5	B21H3615A
4	B21H3613A
3	B21H3611A
2	B21H3603A
1	B21H3601A

G
O
W
R
BK

NOT

PARTIAL DWG#
D209-013 sheet 2

NOTES

DRAFT

MIN5

13-2523 F33A 2X1

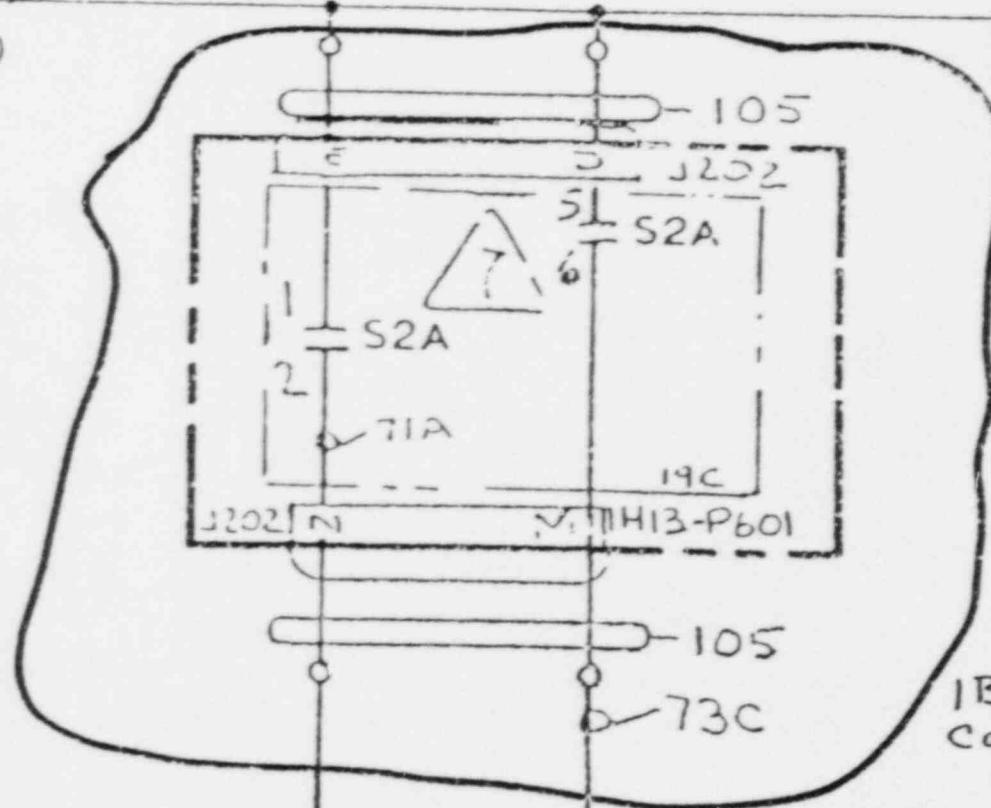
(REF)

120VAC
SH5 FIG 9

71

73

7



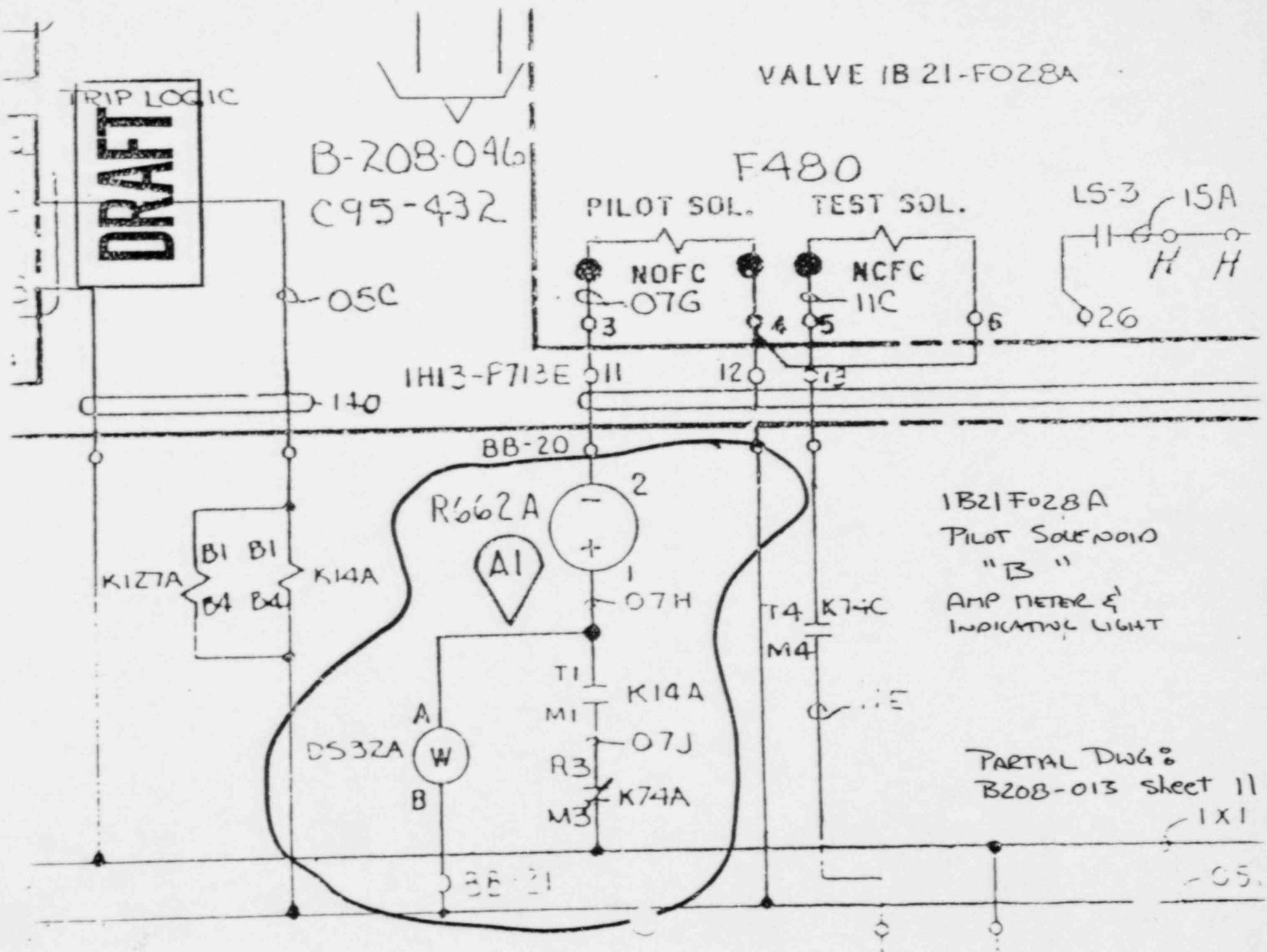
1B21F028A
CONTROL SWITCH

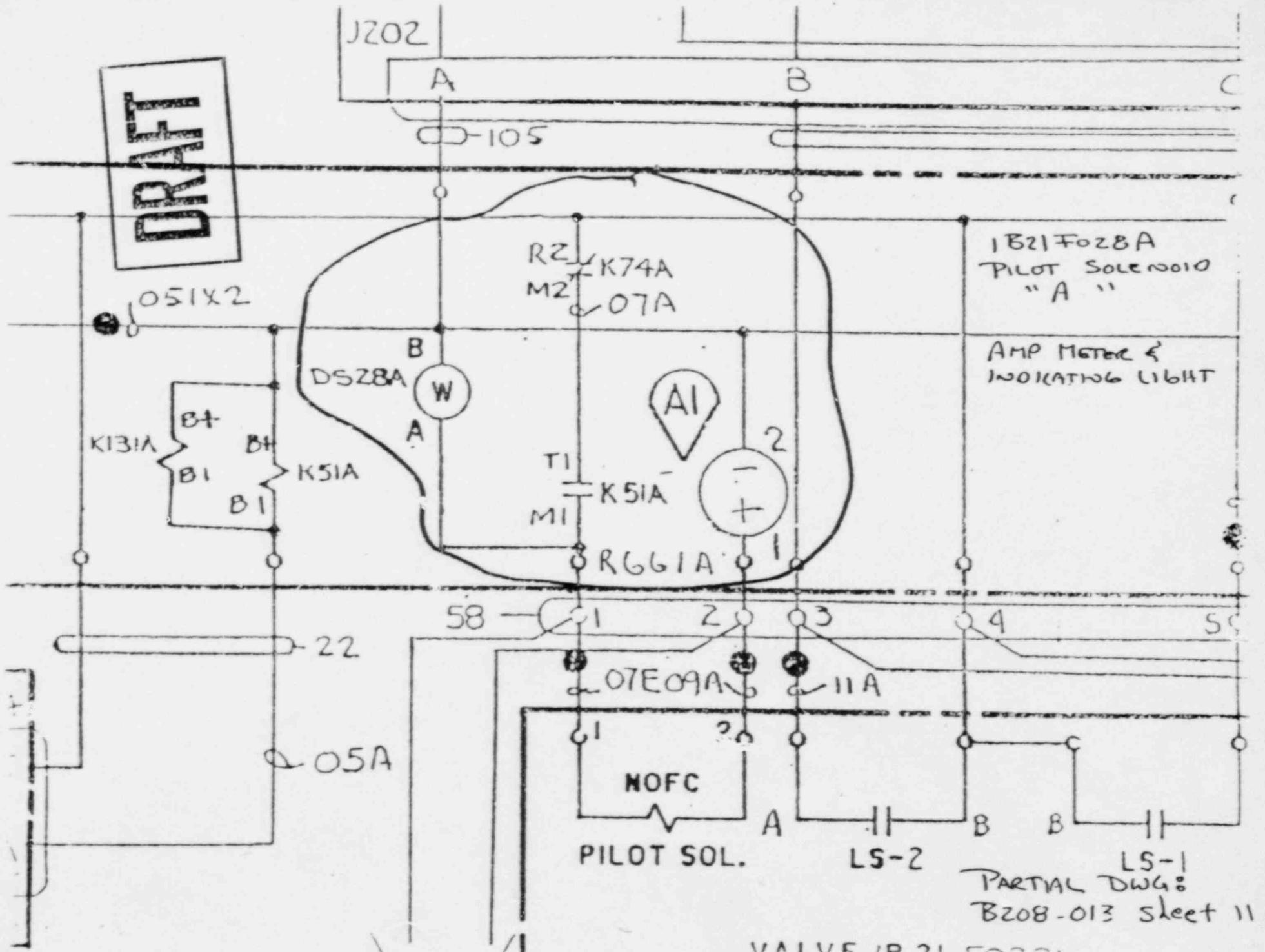
25
K75A

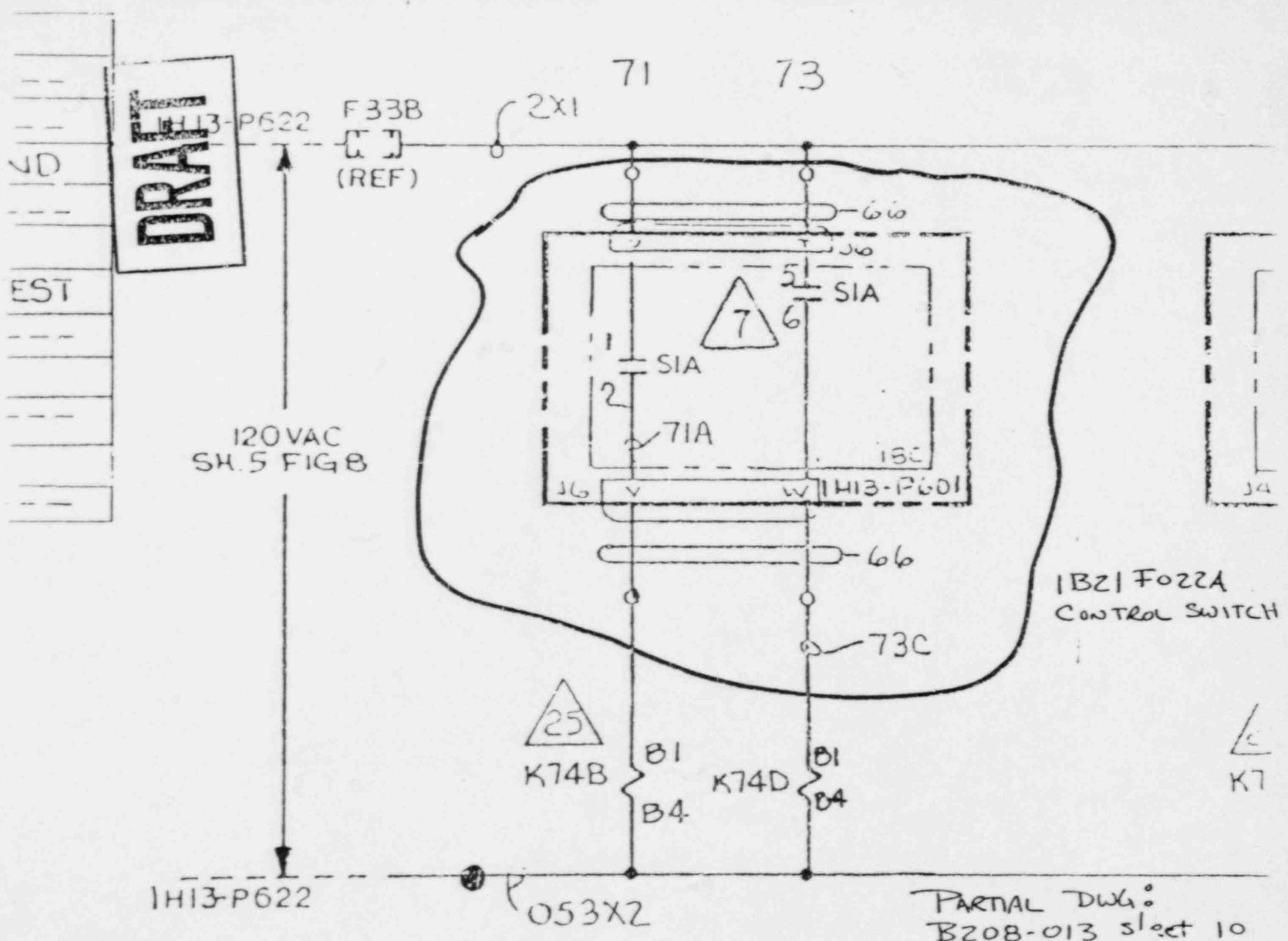
H13-P623

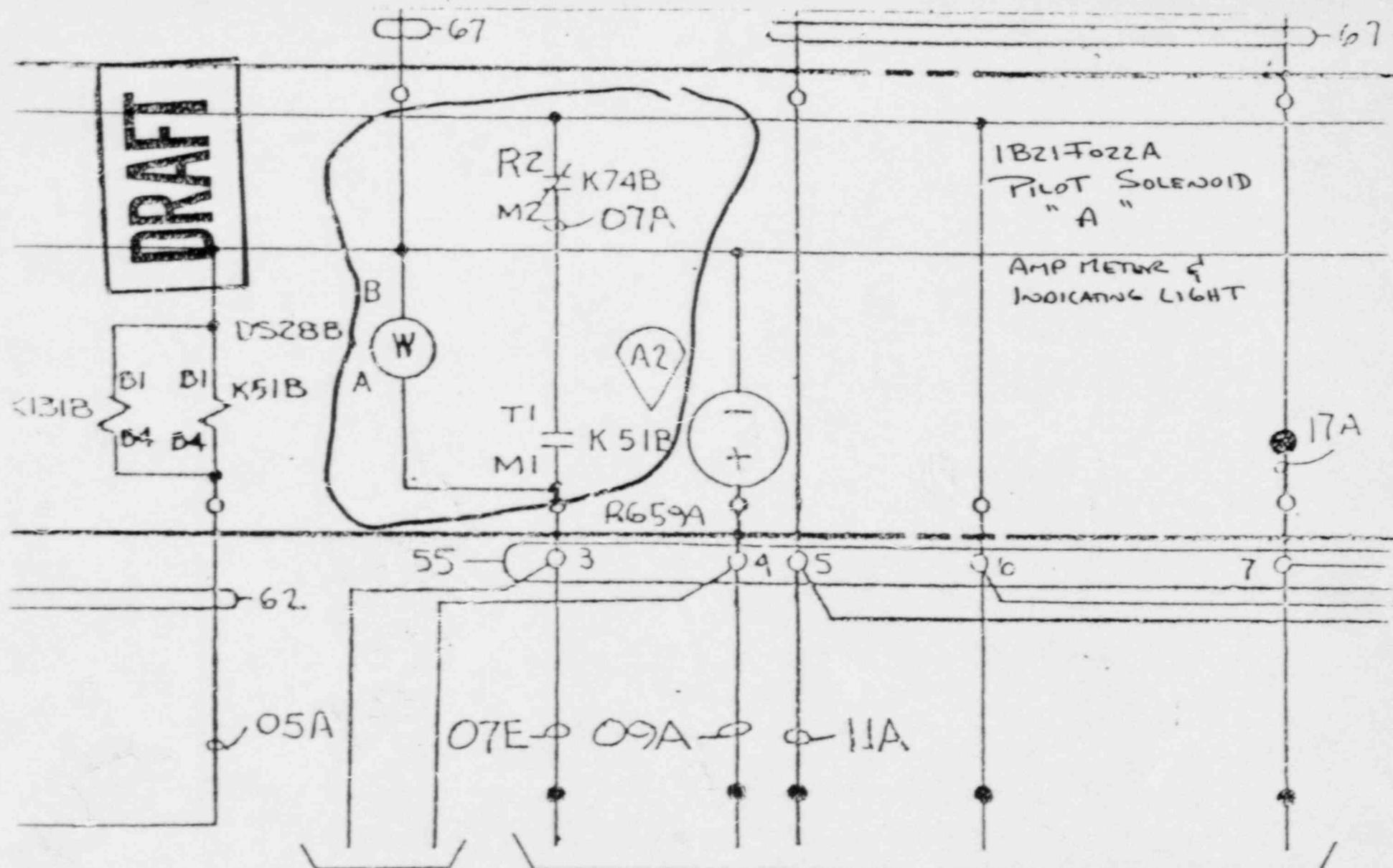
051X2

PARTIAL DWG:
B203 013 sheet 11









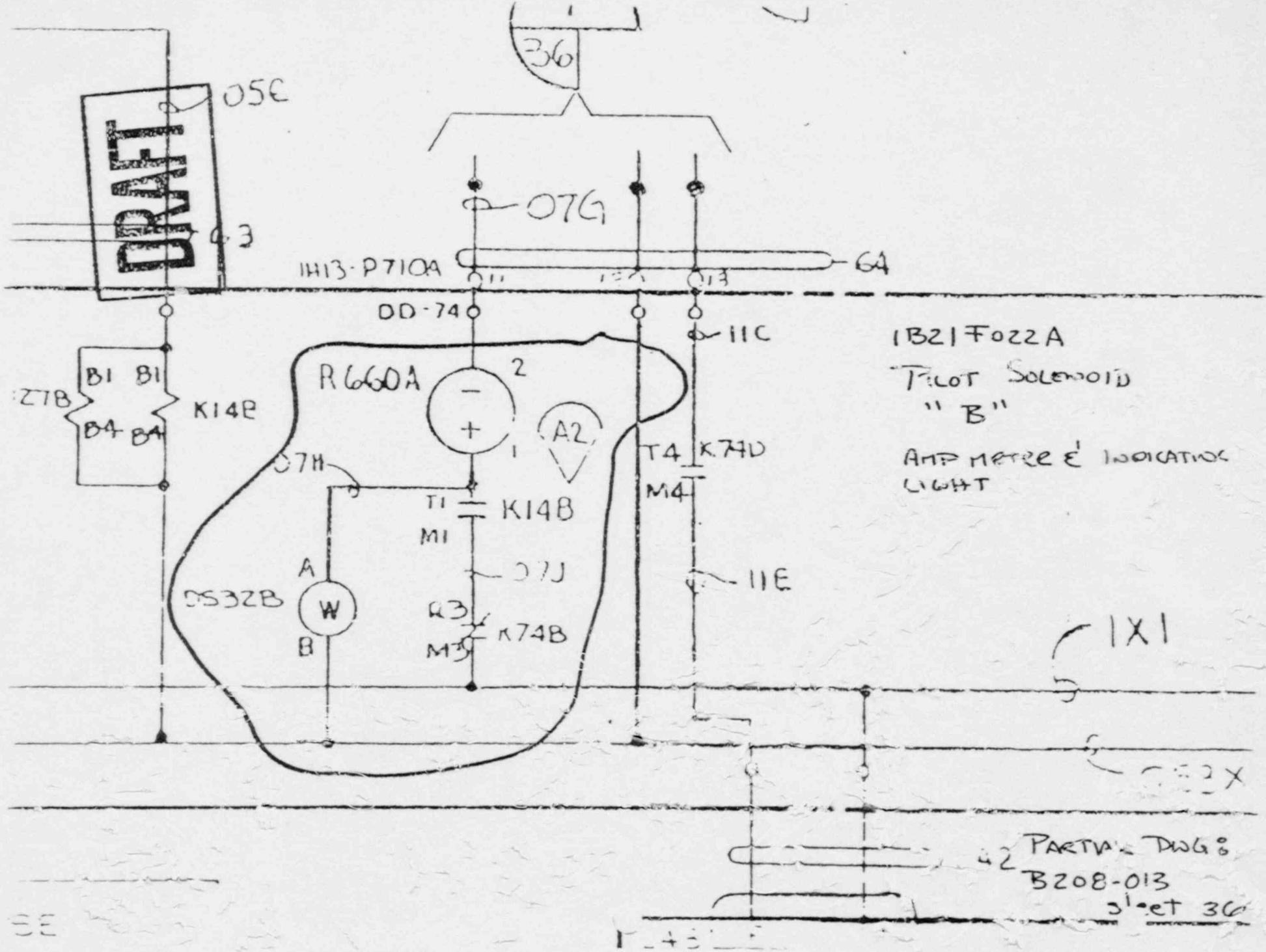
PIP LOGIC

B-208-046
C95-521

7

1
36

PARTIAL DUG 8
B208-013
sheet 36





Potential Cause

Glazed contacts on control and relay components creating a high resistance which would result in discontinuity and potential mis-operation of the MSIV circuitry.

Discussion

Contact integrity and circuit continuity of the respective solenoid valve coils is constantly monitored by measuring the coil circuit current, in addition to an indicating light (white) which relies on actuating contact integrity to remain energized. Refer to attached partial of drawing B-209-013, Sheet 10 and Sheet 11.

The isolation control circuit(s) are a "fail safe" design, which requires the solenoid coil to be energized to prevent an isolation. If contact glazing had occurred resulting in a discontinuity (high resistance at connection or contact points) in the control circuit(s), the resulting effects would cause the lack of voltage to the coil(s). This condition due to the "fail safe" design basis, would cause an undesirable isolation (closure of the MSIV valves), rather than a failure to isolate.

References

D-208, Sheets H05, H10, H11 and H36.

Conclusion

Evidence of repetitive tasks to cycle these valves along with the proper configuration for power and control indication does not suggest any potential failure. Also, the control circuitry and electrical components for each of the inboard and outboard MSIVs is identical. In that there is no past or present evidence to support this cause scenario, it is highly unlikely that this is the root cause of the problem.

DRAFTPotential Cause

Relay failure or incorrect operation resulting in mis-operation of the MSIV valves.

Discussion

The associated control and relay components are located in the PGCC which is designated as a non-harsh environment and is also seismically designed. Furthermore this area is controlled for relative humidity and temperature. The likelihood of a failure or incorrect operation due to component failure is highly impractical in that this failure would have to occur on three (3) different MSIV logic/control circuits. The proper operation and closure of these valves and repetitive testing positively indicates that relay failure is not the cause. Also as shown through testing and verification the control functions and indication was correct.

Conclusion

(Unlikely and highly impractical that relay failure is a potential cause.

DRAFTPotential Cause

Panel control switch failure or mis-operation.

Discussion

The control switches nos. S1A-D and S2A-D are General Electric type CR2940, 3 position maintained contact. All of which are located in the PGCC. The control schematics as shown per drawing B-208-013 Sheet 10 (inboard) and B-208-013 Sheet 11 (outboard) are identical. No test data or evidence has been identified to suggest a failure of the switches. Repetitive testing has demonstrated the proper operation of each of these control switches.

References

B-208-013 Sheet H04, H10, and H11.

Conclusion

Evidence of repeated acceptable testing to cycle these valves does not suggest any potential failure. As such it is highly unlikely that this is a potential root cause of the problem.

DRAFTPotential Cause

Limit switch settings incorrect or inoperable.

Discussion

The limit switches (total of 6 each) for each of the MSIV inboard and outboard valves are NAMCO type as furnished by Atwood & Morrill Company. These limit switches are not an active component in the control scheme which initiates opening or closure of the respective MSIV valves, rather they monitor and provide local indication in the control room for valve position. Refer to elementary drawings B-208-013 Sheets H10, H11, and H36.

The potential for inaccurate limit switch settings is possible, but other independent sources can verify and provide indication for closure or opening of the valves via instantaneous steam flow and steam line pressure. Again this issue would not impact the actual operation of the valves.

References

B-208-013 Sheets H10, H11, and H36.

Conclusion

In that the limit switches are not part of the control circuits, mis-operation would not affect valve closure.

DRAFTPotential Cause

Mis-wiring for indication of instrumentation or switches.

Discussion

This potential cause was recently a problem wherein the "A" and "B" solenoid valves were wired to a common Reactor Protection System (RPS) bus. The basis of the design requires that each of the trip solenoids A and B for each of the MSIVs be wired to different RPS buses. This issue was corrected via the preparation and issue of Design Change Package (DCP) 870414. As part of this design package and a prerequisite for start-up, each of the MSIVs were verified and tested for applicable power sources and functional operations. The probability of additional wiring errors is highly unlikely in that repetitive testing of these valves did not indicate mis-operation.

References

B-208-013 Sheets H05, H10, H11, and H36.

Conclusion

Although this item was a problem previously, it is highly unlikely that a similar type of problem could be the root cause. The efforts to resolve this RPS problem, retesting and management exposure significantly rule out this potential cause. Also, recent testing of the specific valves in question indicate that the instrumentation and switches are correct.

DRAFTPotential Cause

Data acquisition failure.

Discussion

Failure in the data acquisition and recording system could lead to improper assumptions on closing speed being drawn.

Valve speed data is taken and recorded using the TRA subsystem of ERIS. This system has the capability to sample data from a wide variety of signals for later analysis. Data on reactor power, steam flow, reactor pressure, limit switch position, and solenoid current are all consistent. Measurements exterior to ERIS, main control panel and back panel indicating lights, for example, are also consistent with the ERIS data. In summary, multiple concurrent failures necessary for this scenario to occur make it incredible.

Conclusion

(Highly unlikely to be occurring.

DRAFTPotential Cause

Procedural error for testing. Most previous fast speed MSIV closures have been performed using SVI B21-T2001. The first failure was noted while performing the test per STI-B21-025A section 8.3 and the remaining failures were noted while performing the MSIV strokes using the system operating instruction (S.O.I.)

Discussion

Although most previous tests have been performed using the SVI, this is not the first time that an STI has been performed. As early as 10/12/86 an STI-B21-025A section 8.1 was used to fast stroke the valves. Additionally, the use of the SOI has been demonstrated before and after the failures. During the B21-F022D, B21-F028B, and B21-F028D failure on 10/29/87 and the B21-F022D and B21-F028D failure on 11/3/87 the SOI was used, however this is the same SOI that was used for the remaining valves which passed their stroke time.

Conclusion

It is highly unlikely that there is a procedure problem.

DRAFT

3-22

Potential Cause

High Steam Flow/High Reactor Power Interaction. All previous low and high speed MSIV closure tests have been performed at low to medium reactor power. The potential exists that the higher steam flows associated with high reactor power could interfere with MSIV closure.

Discussion

Although all previous tests have been run at low power, the valve design basis is closure at full flow, and the capability of the valve to close under full power conditions has been demonstrated numerous times at numerous operating BWRs. The valves that showed delayed closure are identical in design to valves that closed within specifications, and the affected valves closed successfully following cycling. The valve design is such that pressure drop associated with steam flow will actually assist in closing the valve.

Conclusion

(It is highly unlikely that this is the cause of the problem.

DRAFTPotential Cause

Incorrect reassembly and installation of the air pack. The air packs were all removed, however not disassembled, during the September 22, 1987 forced MSIV outage. The purpose for removing all of the air packs was to allow for temporary air supply to be installed and allow local stroking of the MSIV to check stroke measurements.

Discussion

During the September 1987 outage all air packs were removed from the MSIVs to facilitate local stroking of each valve to set the stroke length. After final reinstallation of the air packs there were several fast and slow strokes performed. These strokes were performed using SVI C71-T0039 and SVI P21-T2001. Even though SVI C71-T0039 (slow stroke testing) does not test the same valves as SVI B21T2001 (fast stroke testing) the same air pack is used and the mating surface between the air pack and actuator remains the same as does all hose connections.

Conclusion

It is highly unlikely that this is the problem due to the number of strokes performed after reassembly.

DRAFTPotential Cause

Actuator binding/stem binding

Discussion

Binding of the actuator internals for both the hydraulic and pneumatic assemblies is highly unlikely. Neither assembly is subject to external loads to cause stem bending. The hydraulics are not subject to external particulate contamination and contamination within the main air cylinder may score the cylinder but could not likely stop the movement by resisting the air pressure force.

Conclusion

This cause would likely have shown up during prior history of stroking the valves and would not likely apply to multiple valves at one time. Nor would such binding likely apply to the top of stroke only. Thus this cause is estimated to be highly improbable.

C

DRAFT

SECTION 4

FAILURE ROOT CAUSE DESCRIPTIONS

DRAFT

4-1

Potential Cause:

High Temperature

Discussion:

Localized high temperature conditions existed during the plant cycle due to reported steam leakage and elevated area temperature indications. Steam leakage is known to have occurred in MSIV 1B21-F022B packing and the MSIV leakage control system isolation valves. This leakage was in the direct vicinity of the MSIV's affected by slow closure. Steam in excess of 300 degrees F is suspected of being directed toward the subject MSIV air packs.

The observed hardened dimples on the disc holder assembly and core assembly hardened elastomer seals in the dual solenoid valves is consistent with high temperature conditions. Other evidence of steam conditions include degradation of the solenoid valve O-rings and observed rust/moisture discoloration of the 1B21-F022D solenoid coil, implying a steam environment.

Conclusion:

The high temperature is considered to be highly probable in the vicinity of the 1B21-F022D, 1B21-F028B, and 1B21-F028D MSIVs.

DRAFTPotential Cause

Blockage of the dual solenoid valve exhaust port with tape.

Discussion

During the previous MSIV refurbishment where the air packs were removed, duct tape was used to cover exposed ports including the solenoid valve exhaust port. On F028D the exhaust port tape had apparently not been removed following the refurbishment. Blockage of the solenoid valve exhaust port could delay the closure of the MSIV.

However, the strength of the tape adhesive is considered weak compared to the pneumatic pressure forces. Typically the tape will blow outward remaining connected on one side during de-energization and fall back in place like a flap. Further tests of the F028D valve has verified the tape is not an effective block.

Conclusion

Very unlikely to be occurring.

DRAFTPotential Cause

Jamming of kinematic components.

Discussion

In order for the valve to shift to the de-energized condition, both solenoid movable cores must slide within their guides. The disc holder assembly is also a guided component which must shift for the valve to operate.

Failure of the components to shift may be caused by foreign material contamination of the sliding surfaces, either particulate or fluid (adhesive in nature), or by physical damage to the valve parts.

Examination of the F022D valve, and the air supply system has not identified any unusual substances or damage which could explain the MSIV delayed closure condition. Considering the proportion of valves which demonstrated the delayed closure (3 of 8), an extremely dirty system would be expected for this effect.

Conclusion

Unlikely to be occurring.

DRAFTPotential Cause

Oxidation of EPDM rubber compound used in gaskets, seals and disc seal materials.

Discussion

Oxidation of EPDM rubber in the presence of a brass catalyst has been suggested as cause for a similar incident at Brunswick-2. This has been documented in IE Bulletins 85-17 and 80-11, and in INPO Significant Event Report 57-85. Review of SER 57-85 indicates that although catalytic oxidation is a potential cause for the Brunswick situation, that utility was never able to determine the exact cause for EPDM degradation. There is, however, a relatively large data base for use of EPDM elastomer in brass valve bodies with acceptable results.

Conclusion

Catalytic oxidation of EPDM in the presence of brass cannot be completely ruled out as the root cause for pilot valve failure. While postulated as a failure mechanism, its validity has not been proven. If catalytic oxidation does play a part, it is most likely as a contributing factor, in the high temperature scenario, for example.

{ wly }

DRAFTPotential Cause

Residual magnetism following coil de-energization

Discussion

Sufficient residual magnetism of the ferritic steel materials in the region of the coil could cause the valve to remain open following de-energization.

The probability of this is considered low. The valve does not show repeatable effects which would be expected from residual magnetism.

Also, while theoretically possible, no similar experience has been found elsewhere. Any residual magnetic forces would be low compared to the closure force unless additional magnetic mass was added to the coil vicinity.

Conclusion

Unlikely to be occurring.

DRAFTPotential Cause

Wrong materials.

Discussion

This failure root cause description considers the use of wrong materials for the disc holder elastomer seal. The potential for wrong lubricant is considered separately.

Dimpling of the disc holder seal in the dual solenoid valve is postulated to result in wedging of the seal in the exhaust to cylinder ports. The use of a wrong material could result in the observed dimpling. The proper disc material is an ASCO proprietary EPDM, utilized in their nuclear qualified valves. Material problems may include the following:

- Wrong material of lower strength or thermal capability.
- Improperly cured EPDM.
- Improperly formulated EPDM.

An analysis of the disc material may be performed to identify the material or formulation; however, it is unlikely to determine the relative cure of the compound.

Conclusion

Moderate potential.

DRAFTPotential Cause

LOCA seal vapors

Discussion

In order to seal the solenoid housings on the solenoid valves a LOCA seal is poured in the opening and allowed to cure. The cure reaction reportedly produces hydrogen gas. Hydrogen is a reducing agent which might result in softening of some elastomer materials under certain conditions. Hydrogen's effect on EPDM is probably unlikely due to its hydrocarbon (Ethylene Propylene) structure.

Additionally, hydrogen being very light would tend to rise from its point of application, which is several inches away from the valve body.

Conclusion

Unlikely to be occurring.

DRAFTPotential Cause

O-ring/lubricant interaction

Discussion

During the disassembly and inspection of the ASCO dual solenoid valves, the three body gaskets (o-rings) were found to be significantly degraded. Degradation included hardening, flattening and adherence to the mating valve body.

The observed condition of the gaskets is consistent with the effects of an improper lubricant. The EPDM gaskets are susceptible to hydrocarbon oils. Normally a silicone oil (Dow Corning 550) is used as a gasket lubricant. EPDM is compatible with silicone fluids.

The degradation of the gaskets could not affect the valve itself, as they are located away from the moving components. However, vapors from the lubricant (no signs of fluid migration were observed) could result in softening of the disc pads resulting in the dimple effect suspected as being the physical cause of sticking.

Other potential causes of the observed gasket degradation are high heat conditions, wrong o-ring material (silicone rubber is affected similarly by silicone fluids) and brass/EPDM interaction.

Conclusion

Possible. The o-rings should be investigated for proper material and lubricant.

DRAFTPotential Cause

Corrosion within solenoid enclosure.

Discussion

The "B" coil housing in the F028 MSIV dual solenoid valve was found to contain moisture and corrosion. Corrosion within the solenoid coil housing cannot affect the valve internals as the valve body is protected from external contamination through body gasket seals in the vicinity of the coil. The subject coil ("B" side) is the lower coil, such that any corrosion products escaping the coil enclosure would fall down away from the solenoid valve body. Additionally, corrosion products were not found within the valve body.

Conclusion

Very unlikely to affect performance.

DRAFT A - 11/4/87

STEP BY STEP TROUBLESHOOTING PLAN

FIELD

- A) INSPECT INBOARD/OUTBOARD MSIV'S
 - ✓1. INSIT-U INSPECTION (LOOSE BOLTS/EXHAUST PORT)
 - 2. ENERGIZE (SEE B) AND SLOW CLOSE TO WITHIN 10% OF FULL CLOSE. COMPLETE VALVE CLOSURE BY FAST CLOSING AND NOTE SOLENOID CHANGE STATE. EXHAUST PORT EXAMINATION.
 - B) TAKE VOLTAGE READINGS TO ENSURE PROPER VOLTAGE SUPPLY
 - C) TAKE LINE PRESSURE READINGS OFF OF ACCUMULATOR DRAINS
 - D) REMOVE B21-F028D AIR PACK
 - 1. INSPECT SUPPLY PORTS
 - 2. INSPECT SUPPLY LINES. TAKE AN AIR SAMPLE (INSPECT FOR OBSTRUCTION/DEBRIS)
- Resistance Checks?*
- Low down down.*
- ~ Black light.*

SHOP

- A) TAKE AIR PACK TO I&C SHOP
 - 1. PERFORM AIR BLOWS WHILE CYCLING AIR PACK AND SAMPLE (UTILIZING NITROGEN)
 - 2. EXERCISE AND NOTE FREE OPERATION

- B) REMOVE AND DISASSEMBLE 4 WAY SHUTTLE VALVE
 - 1. INSPECT FOR CLEANLINESS
 - 2. INSPECT FOR FREE MOVEMENT
 - 3. INSPECT FOR DAMAGED PARTS
 - 4. REINSTALL THE NEW 4 WAY VALVE
- C) REMOVE AND DISASSEMBLE 3 WAY SHUTTLE VALVE
 - 1. INSPECT FOR CLEANLINESS
 - 2. INSPECT FOR FREE MOVEMENT
 - 3. INSPECT FOR DAMAGED PARTS
 - 4. REINSTALL NEW 3 WAY VALVE
- D) REMOVE AND DISASSEMBLE 2 WAY SHUTTLE VALVE
 - 1. INSPECT FOR CLEANLINESS
 - 2. INSPECT FOR FREE MOVEMENT
 - 3. INSPECT FOR DAMAGED PARTS
 - 4. REINSTALL NEW 2 WAY VALVE
- E) DISASSEMBLE AND INSPECT ASCO 8323 SOLENOID
 - 2. INSPECT FOR DAMAGED PARTS
 - 3. INSPECT FOR CLEANLINESS

DRAFT
11-5-87

AIR SYSTEM TROUBLESHOOTING PLAN

A. INBOARD MSIV 1B21F0022D.

1. PERFORM AIR BLOW INTO PILLOWCASE FROM ACCUMULATOR DRAIN VALVE (COMPLETE) FOR ONE MINUTE. (WO 87-9323).
2. AFTER AIR PACK REMOVAL:
 - INSTALL FITTING TO LIMIT AIR FLOW AT FLEX HOSE TO AIR PACK CONNECTION.
 - OPEN AIR SUPPLY ISOLATION VALVE TO DRYWELL ACCUMULATORS.
 - PERFORM AIR BLOW INTO PILLOWCASE FROM FLEX HOSE FOR 5 TO 10 MINUTES (QUALITATIVE).
 - PERFORM PARTICLE COUNT CHECK (QUANTITATIVE).
 - PERFORM DEW POINT MEASUREMENT (QUANTITATIVE).

B. OUTBOARD MSIV 1B21F0028D.

1. PERFORM AIR BLOW INTO PILLOWCASE FROM ACCUMULATOR DRAIN VALVE FOR ONE MINUTE.
2. AFTER AIR PACK REMOVAL:
 - INSTALL FITTING TO LIMIT AIR FLOW AT FLEX HOSE TO AIR PACK CONNECTION.
 - OPEN AIR SUPPLY ISOLATION VALVE TO STEAM TUNNEL ACCUMULATORS.
 - PERFORM AIR BLOW INTO PILLOWCASE FROM FLEX HOSE FOR 5 TO 10 MINUTES (QUALITATIVE).
 - PERFORM PARTICLE COUNT CHECK (QUANTITATIVE).
 - PERFORM DEW POINT MEASUREMENT (QUANTITATIVE).

C. PERFORM THE FOLLOWING AS NECESSARY:

1. IF AIR QUALITY PROBLEMS ARE FOUND AT F022D AIR PACK, PERFORM ADDITIONAL SAMPLING (PILLOWCASE, PARTICLE COUNT, DEW POINT) AT DRYWELL PENETRATION (F643).
2. IF AIR QUALITY PROBLEMS ARE FOUND AT F028D AIR PACK, PERFORM ADDITIONAL SAMPLING (PILLOWCASE, PARTICLE COUNT, DEW POINT) AT DRAIN VALVE (F781) IN 2" SUPPLY LINE TO OUTBOARD MSIV'S.

DOC. 100/hq

Perry MSIV Stroke Time Failure

Augmented Inspection Team (AIT) Charter

Investigate:

1. Failure of MSIVs to close/close within Technical Specification limits.
2. Interaction of prior maintenance activities to the event.
3. Implications if actual Group I isolation signal had been generated.
4. History of any previous problems.
5. Broaden Implications e.g. other system, other valve/components.
6. Safety Significance, Root Cause(s).
7. Event Reporting.
8. Conclusions.
9. Actions required before startup.

Questions for Perry AIT

1. Failure of MSIVs to close/close within Technical Specification limits.
(10/29/87 and 11/03/87)
 - 1.1 What was the sequence of events?
 - 1.2 What were the closure times generated during the surveillance?
 - 1.3 What operator actions were taken during the event?

1.4 Is there a history of previous problems (e.g. 10/29 event, etc) with the MSIVs?

1.5 Did the RPS logic makeup per design during the surveillances?

1.6 What additional testing was being performed?

2. Interactions of maintenance activities to the event.

2.1 What is the maintenance history of the MSIVs?

2.2. What is the maintenance history of the Service Air (SA) and Instrument Air (IA).

2.3 What testing was performed as the result of maintenance activities?

3. Implications if actual Group I isolation signal had been generated.

3.1 Does the licensee have procedure in place to handle this event?

3.2 Are they adequate?

3.3 Have the operators been trained on them?

→ 3.4 Does the accident analysis bound this event?

3.5 What actions were taken by the operators?

→ 3.6 Was the event properly categorized?

→ 3.7 Was the event reported as required?

4. History of any previous problems.

4.1 Have there been previous events similar to this?

4.2. If there were previous events was the licensee aware of them?

- 4.3 If not, why not?
- 4.4 Is there information available on other similar events?
- 4.5 Have there been any IEIN's or IEB's issued or similar subjects?
- 4.6 Is there information available from other sites of similar problems?

5. Broader Implications.

- 5.1 Is a IEIN or IEB warranted or a result of this event?
- 5.2 Are there other valves or instruments that require investigation?
- 5.3 If the problem lies external to the MSIV's, are there generic implications? e.g. for other systems or other plants.

6. Safety Significance, Root Cause(s).

- 6.1 Was there any immediate safety significance from this event? If so, what was significant?
- 6.2 What was the root cause of the event?

7. Conclusion.

- 7.1 What corrective actions are proposed, and are they adequate?
- 7.2 What should be the effect on the startup of Perry?
- 7.3 Examine generic implications to other plants.



CONFIRMATORY ACTION LETTER
UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
798 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

DRAFT

CAL-RIT-87-019

Docket No. 50-440
Docket No. 50-441

The Cleveland Electric Illuminating
Company

ATTN: Mr. Murray E. Edelman
Vice President
Nuclear Group
Post Office Box 5000
Cleveland, OH 44101

Gentlemen:

This letter confirms the telephone conversation on November 3, 1987, between Mr. Greenman and others of this office and Mr. A. Kaplan of your staff regarding the Main Steam Isolation Valve (MSIV) failures occurring at the Perry Nuclear Power Plant Unit 1 on November 3, 1987. With regard to the matters discussed, we understand that you will:

1. Take those actions necessary to ensure that complete documentary evidence of the "as found" condition of equipment being inspected is maintained.
2. Provide a step by step troubleshooting program to establish the root cause of the MSIVs failure to meet acceptance criteria.
3. Not disturb any components that offer a potential for being the root cause including power sources, switches, solenoids, and the air system directly feeding the MSIVs until that action is approved by the NRC AST team leader.
4. Except as dictated by plant safety, advise the NRC AST Leader prior to conducting any troubleshooting activities. Such notification should be provided soon enough to allow time for the team leader to assign an inspector to observe activities.
5. Submit to NRC Region III a formal report of your findings and conclusions within 30 days of receipt of this letter.

We also understand that Perry Nuclear Power Plant Unit 1 will not be made critical without the concurrence of the Region III Regional Administrator or his designee.

CONFIRMATORY ACTION LETTER

CONFIRMATORY ACTION LETTER

The Cleveland Electric Illuminating 2
Company

Please let me know immediately if your understanding differs from that set out above.

Sincerely,

A. Bert Davis
Regional Administrator

cc: F. R. Stead, Manager, Perry
Plant Technical Department
M. D. Lyster, Manager, Perry Plant
Operations Department
Ms. E. M. Buzzelli, General
Supervising Engineer, Licensing
and Compliance Section
DCD/DCB (RIDS)
Licensing Fee Management Branch
Resident Inspector, RIII
Harold W. Kohn, Ohio EPA
Terry J. Lodge, Esq.
James W. Harris, State of Ohio
Robert M. Quillin, Ohio
Department of Health
State of Ohio, Public
Utilities Commission
R. Cooper, EDO
W. Lanning, NRR
F. Miraglia, NRR
G. Holahan, NRR
M. Virgilio, NRR
J. Partlow, NRR
K. Connaughton, SRI
J. Strasma, RIII

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PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 01/07/86
TIME 20139155
REV 0

M151B01

HO NUMBER 860000522	RESP SECT NCB6M	MPL NUMBER 1B21	MAINTENANCE TYPE MECHANICAL	PLANT LOCATION CI/620
------------------------	--------------------	--------------------	--------------------------------	--------------------------

ROC	ROC	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAQ OUT
		CAT	CODE	M/E	M/E		REQ'D
1 2 3	1 2 3 4 5	ULV	2B	1 /	/	YES	YES

SPECIAL PERMIT NO	RETEST REQ'D NO	HOUSE- KEEPING YES	ALAR A REVIEW NO	RWP REQ'D NO	TECH SPEC NO	EQ. MATERIALS NOT N/A NO
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SYSTEM NAME: NUCLEAR BOILER (NSSL)
SUMMARY: REPL SOLENOID VLVS W/SPARES
MPL NAME:

CLEARED
11/11/86
PM

PLANNER REMARKS

THIS IS A TEMPORARY WORK INSTRUCTION TO REPLACE THE INBOARD MSIV TEST SOLENOID VALVES IN ORDER TO SUPPORT THE IMPLEMENTATION OF DCP 85-618 BEING PERFORMED PER W.O. 85-11943 BY NC98.

POWER SUPPLY: **** * * * *

PHR SUPPLY LOCATION: *****

CORRECTIVE ACTION

REMOVE EXISTING SOLENOID VALVES @ 1B21-F022A,B,C & D AND REPLACE WITH SPARES FROM WHSE AFTER NC98 APPLIES MOISTURE SEALANT TO THEM PER

THEIR W.O. 85-11943.
SUBMIT COMPLETED PKG TO DDC FOR FAXED CLOSURE

RELATED REPETITIVE TASKS

RECEIVED
2115
JAN 07 1956
GPR

NAME

PLANNED BY
REVIEWED BY NOAD/AN

APPROVAL TO COMMENCE WORK
APPROVAL TO COMMENCE TEST

WORK COMPLETE
REVIEW BY NOAD/ANI
ACCEPTED BY UNIT SUPV.

DATE 01/03/85
DATE 01/03/86
DATE 01/03/86
DATE 01/03/86
DATE / /

DATE 8/1/21 86
DATE 8/1/21 86
DATE - - / - -

PAGE 2

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

01/07/86
20139156

M151B03

REV NO: 0
LAST CHG: 01/07/86
SAFETY: M/E
SEISMIC: M/E

WO NUMBER	RESP SECT	MPL NUMBER	COMP CAT CODE	WO LOCATION	M/E	M/E
860000522	NC86M	1B21	VLV	CI/620	1	7

STEP	DESCRIPTION	RESP SECT	QA H/W	JOB CLASS	# OF PERS
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010 PRECAUTIONS NC86M

1. MAINTAIN CLASS B COMPONENT CLEANLINESS.

020 PREREQUISITES NC86M

1. OBTAIN REPLACEMENT SPARE VALVES FROM WHSE. MAINT ENG

SIGN/DATE.....*R.H. Smith*.....1/7/86..

2. PROVIDE THE REPLACEMENT VALVES TO NC98 FOR THEM TO APPLY MOISTURE SEALANT.

SIGN/DATE.....*R.H. Smith*.....1/7/86..

3. VALVES ARE ALREADY DETERMINED AND PER MIKE MANLEY NC98 WILL NOTIFY ELEC TO RETERM.

030 PREPARATION NC86M

1. SAFETY TAGS ARE REQUIRED.

2. OBSERVE APPLICABLE ZONE HOUSEKEEPING REQUIREMENTS.

040 PROCEDURE NC86M

AFTER NC98 HAS APPLIED THE MOISTURE SEALANT TO THE VALVES, PROCEED AS FOLLOWS:

1. DISASSEMBLE THE UNIONS & THE ELBOWS CONNECTING TO THE VALVE AND REMOVE THE VALVES AND ELBOWS AS A UNIT.

CRAFT

02

F022A-SIGN/DATE.....*Roland Smith*.....1/7/86..

F022B-SIGN/DATE.....*Roland Smith*.....1/7/86..

F022C-SIGN/DATE.....*Roland Smith*.....1/7/86..

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

M151B03

01/07/86
20139156

REV NO: 0
LAST CHG: 01/07/86
SAFETY: SEISMIC
M/E: M/E

WO NUMBER	RESP SECT	MPL NUMBER	COMP CAT	WO LOCATION	M/E	M/E
860000522	NC86M	1B21	VLV	CI/620	1	1

STEP	DESCRIPTION	RESP SECT	DA H/W	JOB CLASS	# OF PERS
------	-------------	-----------	--------	-----------	-----------

F022D-SIGN/DATE. Roland Smith 11-8-86.

2. REMOVE THE ELBOWS FROM THE OLD VALVE AND INSTALL THEM IN THE REPLACEMENT VALVE. CRAFT C2

F022A-SIGN/DATE. Roland Smith 11-8-86.

F022B-SIGN/DATE. Roland Smith 11-8-86.

F022C-SIGN/DATE. Roland Smith 11-8-86.

F022D-SIGN/DATE. Roland Smith 11-8-86.

3. RECONNECT THE UNIONS TO THE ELBOWS. MAINTAIN COMPONENT CLASS B CLEANLINESS. CRAFT 02

F022A-SIGN/DATE. John O. Kegar 11-9-86.

F022B-SIGN/DATE. John O. Kegar 11-9-86.

F022C-SIGN/DATE. John O. Kegar 11-9-86.

F022D-SIGN/DATE. John O. Kegar 11-9-86.

050 ACCEPT CRITERIA NC86M

1. WORK IS COMPLETE AND HOUSEKEEPING REQUIREMENTS HAVE BEEN MET. FLD SUPT

SIGN/DATE. Ed Suddeth 11-9-86

2. ORIGINAL VALVES HAVE BEEN RETURNED TO SALVAGE WAREHOUSE. MAINT ENG

SIGN/DATE. G.R. Funk 11-13-86.

060 FIRE/VAPOR BARRIERS NC86M

NA ODR 01/07/86

STORES REQUISITION

Perry Nuclear Power Plant

STORES REQUISITION

SP-11940

SAFETY RELATED

RE-ARMED BY	ARMED BY	RECEIVED BY	ISSUED BY	INSPECTION
Stard. Board	U.S. Tican	Stard. Board	U.S. Tican	1-7-86

DISTRIBUTION - WHITE - STORES
COUNCIL - SUBDIVISIONS

Original

FIELD RETURN FORM

Rev. No. 4400
MAY 1975

				F.R. NO.							
				8 6 0 1 3 0				NO. CONT. SHEETS:			
QTY	UNIT OF ISSUE	ORIG. ISSUE TICKET NO.	STOCK CODE	DESCRIPTION	SRNS	MPN NO.	PART NO.	MR. NO.	LOCATION	DISPOSITION	TRANS-ACTION
/	ea		93415075	ASCO Solenoid VALVE	✓	Y182/14926	Y182-1	033975-19			
RETURNED BY				DATE	EST.	PRIG. SPEC.		RE-JACKET DOCUMENT (NO. 100, 101, 102, 103)			
<i>G. H. Hansen</i>				<i>11/13/86</i>	<i>6986</i>	<i>88</i>		<i>10/05-05522</i>			
RECEIVED BY				DATE	SERVICE FACILITY/LOCATION						
<i>D. J. H.</i>				<i>1-13-86</i>							
REASON FOR RETURN				<i>Danaco Motocore, Inc.</i>							
COMMENTS				<i>Aug/86-0522</i>							
ORIGINAL ISSUE TICKET NO.				W.R. NO.	W.O. NO.	ATTACHMENTS					
TRAVELER NO.											
STORES UNIT AUTHORIZATION				DATE	SPU AUTHORIZATION	DATE					
PSC AUTHORIZATION				DATE							
CONSTRUCTION WAREHOUSE						SPARE PARTS WAREHOUSE					
RETURNED BY					RETURNED BY						
RECEIVED BY					RECEIVED BY						
CREDIT NO.					CREDIT NO.						
LOCATION					LOCATION						
E.L.L.				DISPOSITION	FIRST QUALIFIED	SECOND QUALIFIED		TRANS QUALIFIED			
				5 - Scrap	98 - Safety Defected	1 - Off-Site		105 - Return to Spire Parts			
				A - As-Is	96 - Non-Safety	0 - On-Site		106 - Return to Client, Wash			
				B - Repair				107 - Return to Spire Parts			
				O - Disassemble				108 - Return to Client, Wash			
				S - Sell				109 - Sell			

CONSTRUCTION

ORIGINAL

F. R. CONTINUATION SHEET PR 86-0130

PAGE 4

PNPP WORK ORDER CLOSING AND SUMMARY SHEET

M151B14

W.O. 860000522 SUMMARY REPL. SOLENOID VLVS H/SPARES

MPL 1B21

01/07/86
20139157

WORK SUMMARY

Repaired old solenoids and placed in class "C" storage RCS 1-8-86 INSTALLED NEW SOLENOID VALUES SUPPLIED BY MAINT. ENG. B&L 1-10-86
Planned original 4 valves to vent system.

RETEST SUMMARY

Rebast-sinkel-and-the-w/o

1

FOLLOW UP FAIL CAT - CORR ACT D. TYP OF FAIL CAUSE OF FAIL

ACCEPTED BY: BADGE 1009? NAME J. D. COLE DATE 1/17/86

CLOSED BY: BADGE 9530 NAME J. M. T. DATE 1/18/96

PAGE

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
850011943	NC98	1B21	MECHANICAL	RB/IDW

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E	I/B	REQ'D
5	1 2 3 4 5	PEN	3B	<i>SR from works</i>	<i>SR from works</i>	NO	NO YES
SPECIAL PERMIT	RETEST REQ'D	HOUSE-KEEPING	ALARA REVIEW	RWP	TECH	EQ	
NO YES	NO	YES	NO	REQ'D	SPEC	AFFECTED	

SYSTEM NAME: NUCLEAR BOILER (NSSS)
 SUMMARY: IMPLEMENT DCP 85-618.
 MPL NAME: MSIV ACTUATOR ASSYS & MCT'S

CLEARED
11/11/86
KM

PLANNER REMARKS

NC 98 TO PERFORM WORK.

REFERENCE: MDL 1B21-W2914 W.A. 85-12675.

REFERENCE: MDL 100-03-W0214 E.C.N. 27245-98-33/F.

IMPLEMENT DCP 85-618. RBG FILE ECRAN PERMIT REQUIRED (PER CRANES - MAX 1000 LBS) *10/10/86*

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.:
 1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT)
 PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO FPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

J.L. Dye
3D
H. H. Johnson
H. H. Johnson

TIME: 09:22
10/9/86

DATE 12/1/85
 DATE 12/22/85
 DATE 12/21/85
 DATE 12/28/85 11:56
 DATE 12/1/86

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT SUPER.

Krisse
Krisse
Fieldman

DATE 01/13/86
 DATE 01/24/86
 DATE 1/15/86

503C1207

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
850011943	NC98	1B21	MECHANICAL	RB/IDW

RO C	PO C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
5	1 2 3 4 5	PEN	3B	X	I/B	NO	NO YES
SPECIAL PERMIT	RETLST REQ'D	HOUSE-KEEPING		ALAR	RWP	TECH	EQ
NO YES	NO	YES		REVIEW	REQ'D	SPCC	AFFECTED

SYSTEM NAME: NUCLEAR BOILER (NSSS)

SUMMARY: IMPLEMENT DCP 85-618.

MPL NAME: MSIV ACTUATOR ASSYS & MCT'S

PLANNER REMARKS

NC 98 TO PERFORM WORK.

REFERENCE: MDL 1B21-#291 (W.A. 85-12675)

REFERENCE: MDL CO-03-M02 (E.C.N. 27245-98-337/F3)

IMPLEMENT DCP 85-618. RBG FIRE BARRIER REMOVAL PERMIT REQUIRED (PER FEBRUARY 1985 DRAFT) from 12/10/85

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.: 1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT) PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

J.L. Dyer
*John Dyer**J.L. Dyer**J.L. Dyer**J.L. Dyer**J.L. Dyer*

DATE 12/1/85

DATE 12/23/85

DATE 12/1/85

DATE 12/23/85 *AN*

DATE 12/1/85

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT SUPV.

TIME: 0925

TIME: 0925

TIME: _____

DATE 12/1/85

DATE 12/1/85

DATE 12/1/85

50321200



PAGE 1 OF 25

SOFTWARE CLOSEOUT
LIST OF ATTACHMENTSPERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-98/4293
UNIT 1 AND COMMON

PENETRATION NO. 1021F022A

629/01

1.	bGIA Sheet 1		21.	NR 101 Sheet 1	
2.	NO 11943		22.	NR 101 Sheet 2	
3.	ECI 27245-98-33F Sheet 1		23.	NR 101 Sheet 3	
4.	ECI 27245-98-33F Sheet 2		24.	NR 101 Sheet 4	
5.	ECI 27245-98-33F Sheet 3		25.		
6.	ECI 27245-98-33F Sheet 4		26.		
7.	ECI 27245-98-33F Sheet 5		27.		
8.	ECI 27245-98-33F Sheet 6		28.		
9.	ECI 27245-98-33F Sheet 7		29.		
10.	GCT 1 Locaseal		30.		
11.	GCT 2 Locaseal		31.		
12.	Certification of Calibration		32.		
13.	Certification of Calibration		33.		
14.	GOC Locaseal		34.		
15.	TT Locaseal		35.		
16.	TT Locaseal		36.		
17.	TT Locaseal		37.		
18.	GOC Ceramic Blanket		38.		
19.	TT Ceramic Blanket		39.		
20.	TT Ceramic Blanket		40.		

BY: D. Beahan
(O.C. INSPECTOR)OWNERS REVIEW: Paul E. DohertyREVISED BY: D. Beahan
(O.C. INSPECTOR)

50321210

15-67

FIRE BARRIER REMOVAL PERMIT

1. Date of Removal 10/12/85
2. WO No. BS-7785 85-11943 L
3. Specific Type of Barrier or Seal FIRE
4. Location: Building IRB (OD) Elev. 642' Room 1
location in room EL 647' A# 305* penetration I.O. no. 1ERB4050 (R1)
5. Time Barrier to be out of service 10 days
6. Permit Prepared by Scott H. Connor 10/31/85
7. Fire Watch Required: Yes No MOM 141185
- *Begin Fire Watch
at Fuel Load Continuum Patrol
8. Requirement to comply with T.S 3.7.7 None
9. Fire Watch established Date _____ Time _____
10. Detector operability verified Date _____ Time _____
11. Fire Watch _____
12. Approval to Remove Fire Barrier: John Pressine
Operations Section Unit Supervisor
13. Work Completion Cert.: Kenyon Monroe _____ Date 1/13/86
Responsible Supervisor
14. Fire Barrier Restoration Confirmed:
Operations Section Unit Supervisor

Date Restored _____ Time _____

50-3212-1

NPP No. 5663

FIRE BARRIER REMOVAL PERMIT

15-66

1. Date of Removal 10/12/85 2. WO No. 85-7785-85-11942 L
3. Specific Type of Barrier or Seal Fire
4. Location: Building 1RB (OD) Elev. 642 Room 1
location in room EL.650' A#305° penetration I.D. no. 1ERB4049 (R1)
5. Time Barrier to be out of service 10 days
6. Permit Prepared by David H. Connor 10/12/85
7. Fire Watch Required: / Yes No 10/12/85
- * Begin FIRE WATCH
at Fuel Load. Continuous Patrol
8. Requirement to comply with T.S.3.7.7. Noae
9. Fire Watch established Date 10/12/85 Time 0000
10. Detector operability verified Date 10/12/85 Time 0000
11. Fire Watch 10/12/85
12. Approval to Remove Fire Barrier: John Gressen
Operations Section Unit Supervisor
13. Work Completion Cert.: Kenneth Monroe Date 10/13/85
Responsible Supervisor
14. Fire Barrier Restoration Confirmed: John Gressen
Operations Section Unit Supervisor

Date Restored 1/25/96 Time 0010

5032 12-12

216/259-3737
Ext: 6843

PAGE 15 OF 25



November 8, 1985

Cleveland Electric Illuminating Co.
Perry Nuclear Power Generating Station
10 Center Street
Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191, Rev. O, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A

Bisco Job #: 3133

Bisco D.T. #: 6261

Customer P.O.# : P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

Dolores A. Lott
Quality Control Supervisor

brand industrial services, inc.
construction group
2207 trolley Blvd., elk grove village, Illinois 60007. (312) 228-6670

* subsidiary of brand insulations, inc.

5032 12 13

ORIGINAL

PAGE 14 OF 35

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # A-188
SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard,
(Certificate verified by NBS 2028)

Date of Verification: 9-9-85 Date Due: 3-9-86

10 gram Dial Accuracy:

Standard: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Readings: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Deviation: 0 0 0 0 0 0 0 0 0 0 0

100 gram Beam Accuracy:

Standard: 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00

Readings: 0.00 10.00 20.00 30.00 40.00 49.90 60.00 70.00 80.20 99.20 100.00

Deviation: 0 0 0 0 0 -10 0 0 +20 +20 0

500 gram Beam Accuracy:

Standard: 0.00 100.00 200.00 300.00 400.00 500.00

Readings: 0 100.20 200.10 300.10 400.00 500.00

Deviation: 0 +20 +10 +10 0 0

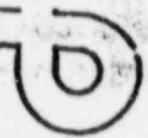
It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

Name

Title

50321214

bisco



PAGE 13 OF 20

ORIGINAL

CERTIFICATION OF CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-143
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
(Certificate verified by Ill. Dept. of Lab. to NBS 2028)

Date of Verification: 9-19-85 Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	0	0	0	0	0	+.01
------------	---	---	---	---	---	---	---	---	---	---	------

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0.00	99.80	200.00	300.02	400.05	500.03
-----------	------	-------	--------	--------	--------	--------

Deviation:	0	-.20	0	+.02	+.05	+.03
------------	---	------	---	------	------	------

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Mackay

QC Supervisor

Title

50321215

ILLUMINATING COMPANY
P.O. NO. SP98/4233
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMON

Laxdours

Laxdipura

bisco

PAGE 12 OF 50

OCT.-2
REV.-8

REV. - 8

• SYSTEM VERIFICATION LOG •

PROJECT NAME PERRY NUCLEAR POWER PLANT

JOB NO. 3134

PRODUCT NAME — Local Seal

DENSITY RANGE 10 TO 170 P.C.F.

50321216

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SP98/4293
HICKORY NUCLEAR POWER
PLANT - UNIT 1 & COM'N

bisco



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85PROJECT NO. 3134 LAST ENTRY DATE 1-7-86MACHINE NO. NA PRODUCT Locaseal

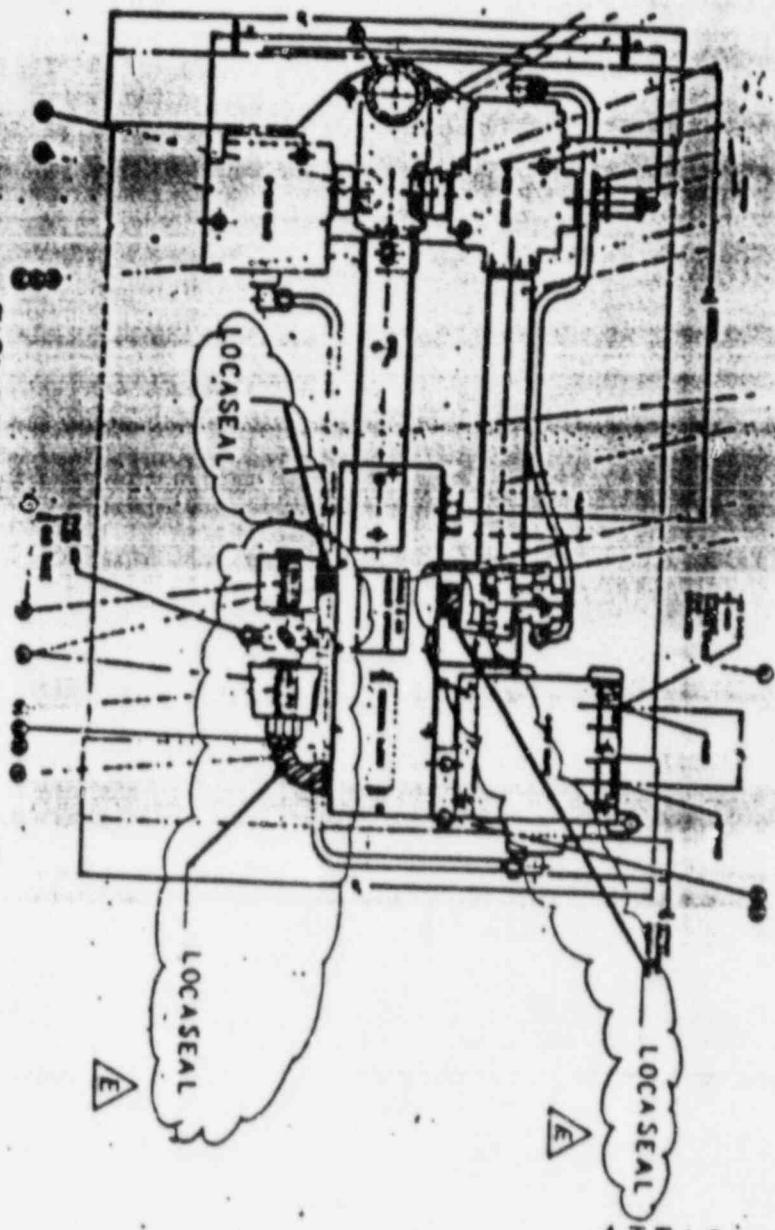
System	Lot Number Part A	Weight or Quantity	Lot Number Part B	Weight or Quantity	Lot Number Part A	Weight or Quantity	Lot Number Part B	Weight or Quantity	Comments
007	2325	63.5	2331	36.5					6-4-85
007	2325	63.5	2331	36.5					6-4-85
008	2560L	63.5	2580L	36.5					1-5-86
008	2560L	63.5	2580L	36.5					1-6-86
008	2560L	63.5	2580L	36.5					1-7-86
*									

Weight or Quantity column on this form refers to WEIGHT
 (weight or quantity)
 and is expressed in LBS
 (lbs., gallons, etc.)

Entries reviewed by G. Bechtel Date 1/15/86

50321217

FIGURE 2-2
MSIV ACTUATOR ASSEMBLY



ATTACHMENT 2 PG. 1 OF 1
ECN 27245-98-33 REV. F

50321218

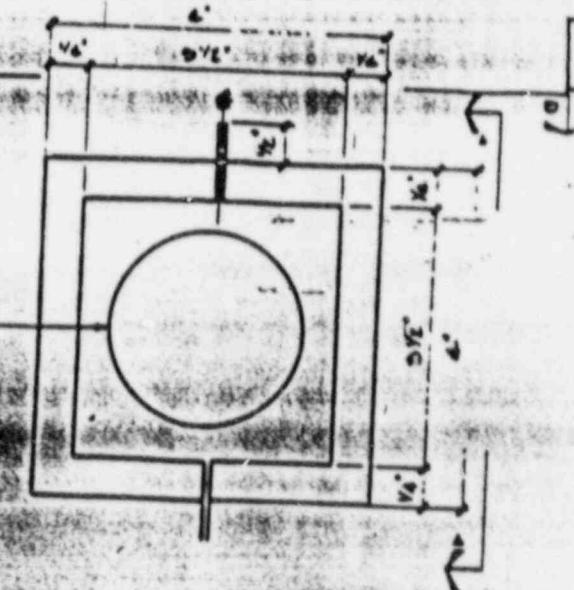
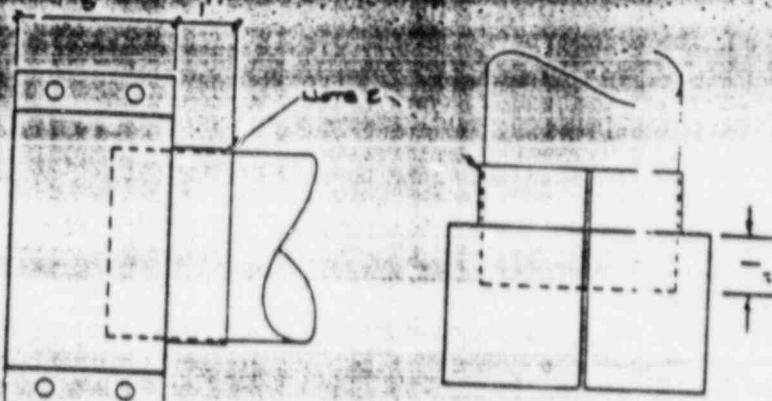
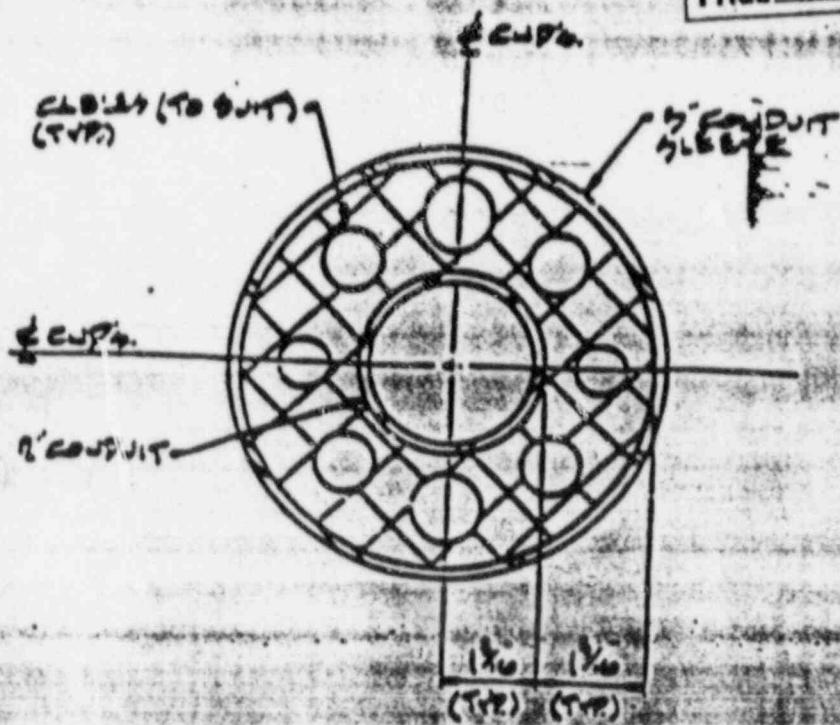


FIGURE F
MCT 4C49 3 4050

SECTION A-ASECTION B-B

- NOTES:
1. B-200 TO FIT SIZING CONDUIT (1 1/2" min).
 2. ATTACH TO CONDUIT WITH DG-732 ZTV CLAMP.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ #20 EQLTS,
GRADE 113 87 EC-78 AND HEAVY HEAD 1/4" DS NUTS.
 4. ASSEMBLY TO BE FABRICATED FROM 14G GALVANIZED
SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED
WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW
PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

5032 12 19



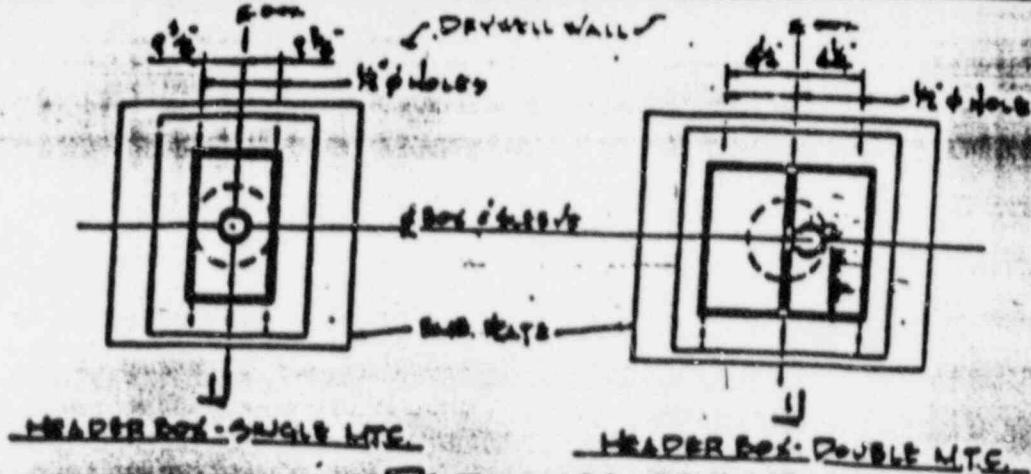
DETAIL 'C'

NOTE:

THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS

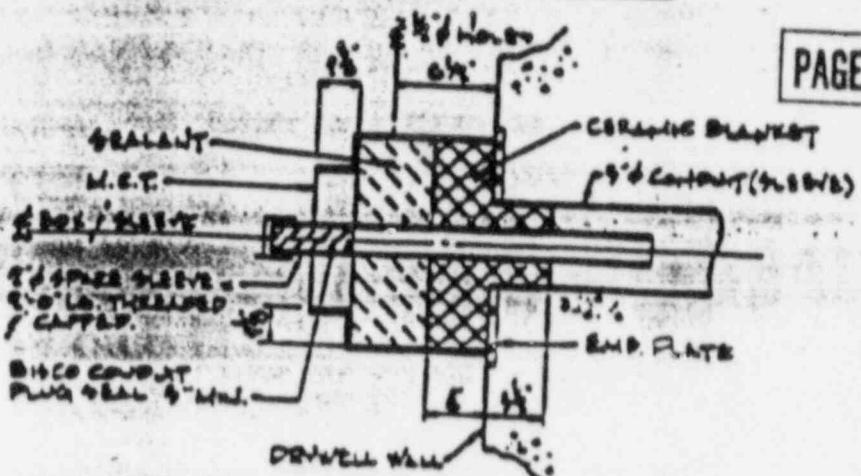
ATTACHMENT PAGE 1 OF 3
ECU # 67245-98-33
REV. F

50321220



DETAIL 'B'

PAGE 7 OF 25



SECTION 1-1

Notes:

1. MATERIAL AS SPECIFIED IN SP. 98
2. SLEEVE SHALL EXTEND $8\frac{1}{2}'' \pm \frac{1}{2}''$ PAST THE FACE OF THE M.T.C.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE M.T.C. WITH A TOLERANCE OF $\pm 2.00''$ ABOVE OR BELOW THE HORIZONTAL \varnothing . (REF. DETAIL B)
4. BLANKET THICKNESS FOR CERAMIC FIBRE 4" NOM. $+1.00'' -0.00''$ OF THAT SPECIFIED IN SECTION 6-1: E.R.B.-3013, E.R.B.-3021, E.R.B.-3022, E.R.B.-3024
5. THE FOLLOWING M.T.C'S SHALL RECEIVE A $1\frac{1}{2}''$ SLEEVE IN LIEU E.R.B.-3013, E.R.B.-3016, E.R.B.-3017, E.R.B.-3018, E.R.B.-3019, E.R.B.-3021, E.R.B.-3022, E.R.B.-3024
6. THE FOLLOWING ILLUSTRATIONS DON'T REQUIRE SLEEVES: E.R.B.-3013, E.R.B.-3014, E.R.B.-4029 E.R.B.-3020, E.R.B.-3023, E.R.B.-4030, E.R.B.-4033, E.R.B.-4035, E.R.B.-4037, E.R.B.-4038, E.R.B.-4046, E.R.B.-4032, E.R.B.-4022, E.R.B.-3019

ATTACHMENT/PAGE 3 OF 5
E.C.N. 27249-98-93
REV. F

50-32-122-1



6:11.1 Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.

6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in the MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

50321222

SECTION 6:02

ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.

8. The installations of moisture seals in the MSIV actuator assemblies.

6.11 MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of locaseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR

1ERB 3013	1ERB 4028	1ERB 4042	1ERB4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A	F	1B21F028A
F022B		F028B
F022C		F028C
F022D		F028D

5032-1223

ENGINEERING CHANGE NOTICE

PERRY NUCLEAR POWER PLANT

 SPEC DWG/ECN

A	SUBJECT SP-96 PRESSURE / MOISTURE SEALS	D	ECN NUMBER 27246-46-33 REV F
ORIGINATOR	Henry B Schmid	CR NUMBER	510H
(Signature)	11-20-85	AFFECTS	9/ II
DEPARTMENT	SITE DESIGN TEAM	E	DOCUMENTS TO BE REVISED BY THIS ECN
SP-98-4549-00 REV. E			
B DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE:			
REV. F: REVISES VALVE ID. FROM F020 TO F022 ATTACHMENT I			
REV. E: ADDS THE CRITERIA ATTACHMENT I PG. 1 OF 3 FOR MOISTURE SEALS ON THE PNEUM ACTUATOR ASSEMBLIES AND ATTACHMENT I PG. 5 OF 3, AND ATTACHMENT I			
REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B": NOTE 7 - SLEEVES IN WHICH THE EXISTING PLUG SEAL WAS REMOVED TO ALLOW CIRCUIT PULLS, SHALL BE SEALED USING A MODIFIED PLUG SEAL. THE SEAL SHALL BE BORED IN SUCH A FASHION SO AS TO ACCOMMODATE A TIGHT CABLE FIT OVER REINSTALLED. WHEN THIS TYPE OF INSTALLATION IS NOT POSSIBLE THE SLEEVE SHALL BE FILLED WITH LOCASEAL TO A DEPTH OF 5/8".			
REV. C: ADDED ERB 4020 TO M-2-C, PG. 3 OF 4 - DETAIL "B"			
REV. B: REVISED NOTE 3 AND ADDED NOTES 5 AND 6 TO DETAIL "B" (PG. 3 OF 4)			
REV. A: ADDED 'NOTES' TO DETAILS ('B' AND 'C')			
REV. -: ADDED SECTION G.02 ITEM 7; SECTION G.8 FOR MCT PRESSURE SEALS.			
REASON FOR CHANGE CODE: 7, 14 (S)			
EXPLANATION (IF RECD): FDR KL RECEIVED			
DEC 08 1985			
DOCUMENT CONTROL PAGE			
ATTACHMENTS: ATTACHMENT 1 (5-PAGES) ATTACHMENT 2 (1-PAGE)			
C	INTERFACING DEPARTMENTS ORGANIZATIONS OR GROUPS		
<input type="checkbox"/> PIPING	<input type="checkbox"/> STRUCTURAL		
<input checked="" type="checkbox"/> ELECTRICAL	<input checked="" type="checkbox"/> QUALITY ASSURANCE (See G)		
<input type="checkbox"/> BUILDING SERVICE	<input type="checkbox"/> MSSS		
<input type="checkbox"/> CONTROL SYSTEMS	<input type="checkbox"/> OTHER		
<input checked="" type="checkbox"/> MECH. NUCLEAR	<input checked="" type="checkbox"/> EOC/ODR EB/CLW		
NOTE: *NOT REQUIRED IF FOR DRAWING CHANGES ONLY			
N/A			
Gilbert Common-Interest			
I			
FACILITY AFFECTED			
TEST SPEC CHANGE REQUIRED?			
EQUIP. OWN. AFFECTED?			
SAR CHANGE REQUIRED?			
UNIT 2 AFFECTED?			
J SYSTEM AFFECTED			
N/A			
K MATERIAL TO BE PURCHASED			
<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES			
L DESIGN REVIEWER APPROVAL			
BY: <u>J. Anthony Murray</u> DATE: <u>11-20-85</u> (Design Reviewer)			
M QA APPROVAL OR REQUIRED?			
BY: <u>R. Garschall</u> DATE: <u>11/21/85</u> (QA Manager)			
N PROJECT ENGINEERING APPROVAL			
BY: <u>Whitney F.C. Nall</u> DATE: <u>11/21/85</u> (Project Engineer)			
O CEI ACCEPTANCE			
BY: <u>C. Sulikowski</u> DATE: <u>12/6/85</u> (Responsible Engineer)			
P QA REVIEW REQUIRED? <input checked="" type="checkbox"/> NOT REQUIRED <input type="checkbox"/>			
REVIEWED BY: <u>P-4X13-Ac-246</u> DATE: <u>1205 ER</u> BILL OF MATERIAL NUMBER(S): <u>ISSUED</u>			
SPEC. NO. <u>98</u> AND CONT. PONO. <u>4293</u>			
Q DESIGN CHANGE INCORPORATED			
BY: <u>EB/CLW</u> DATE: <u>N/A</u> (Project Engineer)			

Figure H-2
Revised: 7-22-85

50321P24

JMG



Bisco Industrial Controls, Inc.
The Bisco company produces
over 1000 products price \$25-\$1000
one of the largest manufacturers.

delivery ticket

Bisco Construction

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Perryville, MO 64472

SHIP TO ADDRESS Vicky A.	PHONE EGY	DATE 11-7-85	ITEM Air-It there	ITEM NO. 13133-180M-C-476
QUANTITY 1,000	ITEM Locaseal (100)	ITEM NO. 10-E-85VM	D O N O T W R I T E O S E R E 	
Please acknowledge receipt of the material listed on this Delivery Ticket by signature and return Job File and Acknowledgment copies.				
To: BISCO Construction Group 2207 Lively Blvd. Elk Grove Village, IL 60007 Thank You.				

All claims MUST be made
within 5 days from date of delivery.

Received By Vickie McCafferty

5032 1225

bisco

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantENFOR Bisco ConstitutionMATERIAL RECEIVED LOCA Seal Part A

LOT/BATCH no.

QUANTITY 10 pails x 63.5 lbs ea

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>na</u>	Dimensional Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Material Accepted
 Rejected

Remarks:

* VERIFIED DT. AGAINST
MATERIAL RECEIVED

G.C. Inspector

11-12-85
Date

50321226



PAGE 10 OF 25

FORM RIL
REV-3RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. NADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED Locaseal Part BLOT / BATCH no. 2580 LQUANTITY 10 pails x 36.5 lbs

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>na</u>	
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received		
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual inspection	<input checked="" type="checkbox"/>	
<u>na</u>	Dimensional Inspection	<u>na</u>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected

Remarks:

*verified DT against
material received.

O.C. Inspector

11-12-85

Date

Jackie McCafferty

50321227

BUCCARZUS

PENETRATION		PENETRATING ITEM		BARRIER RATINGS		SEAL INFORMATION	
1	CO	YES	NO	SEE BCWA FOR PENETRATING ITEMS	SIZE		
MATERIALS		IN PROCESS		FINAL INSPECTION		TURN-OVER	
DC 3-6548	SYLGARD 170	SF 150 NH	BOOT MAT'L	BISCO-FLEX150	BISCO-SEAL 1	DC 732	DC 790
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
INSTRUCTIONS		INSTRUCTIONS		INSTRUCTIONS		INSTRUCTIONS	
SEAL POR ACU ZT245-98-23 RAVET to rear H-PILL INTERNAL CONDUITS FULL DEPTH X REACEMENT LOCATION IOW O°		SEAL POR ACU ZT245-98-23 RAVET to rear H-PILL INTERNAL CONDUITS FULL DEPTH X REACEMENT LOCATION IOW O°		SEAL POR ACU ZT245-98-23 RAVET to rear H-PILL INTERNAL CONDUITS FULL DEPTH X REACEMENT LOCATION IOW O°		SEAL POR ACU ZT245-98-23 RAVET to rear H-PILL INTERNAL CONDUITS FULL DEPTH X REACEMENT LOCATION IOW O°	
PRODUCTION AUTHORIZATION		PRODUCTION AUTHORIZATION		PRODUCTION AUTHORIZATION		PRODUCTION AUTHORIZATION	
INITIAL RELEASE	HOLD	REF.	RE-RELEASE	REF.	DATE	REF.	DATE
PREPARED BY	APP. B	OC. INSPECTOR	REF.	REF.	DATE	REF.	DATE
DATE PREPARED	11/17/85	OC. SUPERVISOR	REF.	REF.	DATE	REF.	DATE
REF. DRAWING	D-101-052	REF. DRAWING	REF.	REF.	DATE	REF.	DATE
SHEET / OF /		BUILDING / ELEV/ROOM		TEST REPORT NUMBER		ANI ACCEPTANCE LETTER NUMBER	
1021/02/03		229/01		11186		11186	
PAGE 2 OF 2							



PAGE / OF 22

SOFTWARE CLOSEOUT

LIST OF ATTACHMENTS

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. EP-98/4293
UNIT 1 AND COMMON

PENETRATION NO. 1H21F022D

629/01

1. DCGA Sheet 1	21. NR 101 Sheet 1
2. 40 11943	22. NR 101 Sheet 2
3. FC1 27245-98-33F Sheet 1	23. NR 101 Sheet 3
4. FC1 27245-98-33F Sheet 2	24. NR 101 Sheet 4
5. FC1 27245-98-33F Sheet 3	25.
6. FC1 27245-98-33F Sheet 4	26.
7. DCG 27245-98-33F Sheet 5	27.
8. FC1 27245-98-33F Sheet 6	28.
9. FC1 27245-98-33F Sheet 7	29.
10. QCT 1 Locaseal	30.
11. QCT 2 Locaseal	31.
12. Certification of Calibration	32.
13. Certification of Calibration	33.
14. CGC Locaseal	34.
15. RT Locaseal	35.
16. PI Locaseal	36.
17. DT Locaseal	37.
18. CGC Ceramic Blanket	38.
19. PI Ceramic Blanket	39.
20. DT Ceramic Blanket	40.

BY: D. Beaton
(O.C. INSPECTOR)

OWNERS REVIEW: James R. Smith

REVIEWED BY R. Richard
(SPEAKER'S SIGN)

50321229



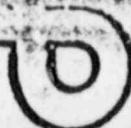
broad industrial services, Inc.
1420 renaisance drive
park ridge, illinois 60066
(312) 268 1200
(312) 262 482 broad prod

PROCEDURE	DATED	REVISION
(See Attached)		

INSTRUCTOR	DATE REVIEWED	INSTRUCTOR	SIGNATURE
Foreman			
Dennis Lavelle	2-17-85	Alan M. Murn	Dennis Lavelle
J. T. Sweeny	2-14-85	Alan M. Murn	JT Sweeny
Marty H. Lavelle	2-13-85	Alan M. Murn	Marty Lavelle
M. G. Delaney	2-13-85	Alan M. Murn	MG DELANEY
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka
Dave Rittenhouse	2-7-85	Alan M. Murn	Dave Rittenhouse
George Filla	2-14-85	Alan M. Murn	George Filla
John Halovasic	2-7-85	Alan M. Murn	John Halovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin

50321230

bisco



FORM IR C-1-1B-80
Rev. 0 Page 2 of 2
Attachment to NR 0101

ORIGINAL

INSPECTION REPORT

I.R. No. 109Date 1-29-85Project Name, Perry Nuclear Power PlantBisco Project No. 3134Item of Activity Inspected ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.
There were no deviations in documentation.

See NR # 0101HOLD TAG No. _____ O.C. Inspector D. von Lais Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Acceptance
 Reject Tag No. _____

50321231

LIN NO.	DATE	PERRY NUCLEAR POWER PLANT	NONCONFORMANCE REPORT		PAGE NO. 01-15%
ITEM	1/29/85	N/A			
NO. 7002 REV. A					
1	NCR NO.: Bisco 0101	REVENT. OF ITEM: 0 1 2 Sec Attachment	IDENT NO.: 500 Attachment	ITEM NAME: Top Attachment	QUANTITY: 1
2	ISSUED BY: Deborah VonParis DUF	NAME: Bisco	UNIT: BISCO	ORGANIZATION: BISCO	DATE: 01-29-85
3	ITEM / MATERIAL: SOURCE Bisco	CURRENT STATUS: Hold	LOCATION: CC CL. 12/B EL. 654'		
4	RESPONSIBLE ORGANIZATION: Bisco	SPEC. NO. SP-2	REV./E.C.M. 2		
5	NCR TYPE: CATEOGY: 1 (POSSIBLE SIGNIFICANCE) 2 (MAJOR) 3 (MINOR)				
6	TYPE: (I) EQUIP./MATERIAL (II) INSTALLATION (III) PROGRAM				
7	GOVERNING REQUIREMENT: INCLUDE ACCEPTANCE CRITERIA AND DOC'NT. NO.: Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by QC				
8	DESCRIPTION OF NONCONFORMANCE: Bisco Craft used controlled material - ceramic bulk fiber P.O. #4128 prior to its release.	NC CODE: 105	RELATE TO LINE NO.: 654	CER. USES	
9	CAUSE OF NONCONFORMANCE: Bisco Craft worked over a hold for inspection tag. Bisco QC had not received the certificate of compliance for the ceramic bulk fiber.	CAUSE CODE: P01	Bisco Craft worked over a hold for inspection tag. Bisco QC had not received the certificate of compliance for the ceramic bulk fiber.		
10	PROPOSED DISPOSITION: SCRAP (1) REWORK (2) REPAIR (3) USE AS IS (4)				
11	JUSTIFICATION: Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CG test, which is considered a non-quality seal.				
12	STEPS TO PREVENT RECURRANCE: Craft General Foreman and Foreman to be trained on material holds.				
13	RESP. ORG. APPROVAL: ENG./CONST. T.S. T. Williams N/A DATE: 01-29-85				
14	PNPP REVIEW BOARD: REVIEW REQ'D. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> DECISION: <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT DATE: 01-29-85				
15	VERIFIED: M. L. Agarwal 1-29-85 R. Cygnerus DATE: 01-29-85				
COPY DISTRIBUTION: 1 - DOCUMENT CENTER 2 - ENGINEERING					

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION

PAQS JUN 29 1985

NR No. B1SC - 0101 F10

Issue Date 1-29-85

Current Date 1-29-85

Review Required:

 CAI Eng. GE Other

Review Comments:

Proposed disposition to "Use As Is" is acceptable to engineering.

Attach documented training upon close-out of this NR.

P.C. #4128 material cannot be used until all documentation is obtained.

AFFECTS AS-BUILT Yes DRAWINGS? No AFFECTS EQUIPMENT Yes IN OPERATION? No

DRAWINGS Contractor / Vendor _____

AFFECTED CAI _____

CAI Engineer _____

Date _____

Quality Engineer _____

Date _____

Other _____

Date _____

ATTACHMENTS YES NO

LIST OF ATTACHMENTS

1 pg

IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.

DISPOSITION REVISION NO. _____

1. PROPOSED DISPOSITION

2. REJECT

3. REMOVE

4. REPAIR

JUSTIFICATION:

10. STEPS TO PREVENT RECURRANCE

11. RESP. ORG. APPROVAL

ENG/CONST.

QA/QC

AIA

DATE

12. PHPP REVIEW BOARD

REVIEW REQ'D.

YES NO

DECISION

 ACCEPT REJECT

ENGINEER

DATE

ee7ec

DATE

13. DISPOSITION

NAME

TITLE

DATE

50321232

PAGE 31 OF 25

DT 4433

JMG

delivery ticket

Babcock & Wilcox
245 W. Roosevelt Road
W. Chicago, Illinois 60185

Bisco
10 Center Street
Perry, Ohio 44081

ITEM ORDER NO. P.R.N. DATE VIA
6. Hamilton Drop Ship 12-19-84 Direct Shipment 3133-100M 10-491

QUANTITY ISSUED	QUANTITY RECEIVED	MATERIAL	SHIP TO
30 BX	30 BX	Ceramic Fiber Bulk	D
30 BX	30 BX	Ceramic Blanket 4" Strips	O
		Partial Order	

Shipped direct from manufacturer.

Bisco P.O. # 4128

N
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Please acknowledge receipt of the material listed on this Delivery Ticket by signature and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You.

All claims MUST be made within 5 days from date of delivery

10% handling charge on all returns
Only full packaged units returnable

Received By

Leslie von Parin

1-24-85

JOB FILE COPY

50321234



PAGE 20 OF 25

FORM N-3
REV-3

ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. 4128DATE 1-24-85JOB no. 3153PROJECT NAME Lewy Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30.04 x 150' Ea

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Material Accepted
 RejectedS. D. L.
O. C. Inspector1-29-85
DateRemarks: Verify D.T. against
material received
See NR # 0101, REF.I.R # 109, Sh 7/16/85

50321235

bisco



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.

DATE January 25, 1985

C/U Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH 44081

CUSTOMER P. O. NO P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133
Material P. O. No. 4128

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores O. Hott

Dolores A. Lott
Utility Control Supervisor

50321236



2387 Party Blvd., oak grove village, Illinois 60521 phone 5715-2876
one of the brand companies

PAGE 18 OF 25

DT 6261

delivery ticket

Bisco Construction

Bisco

2207 Lively Blvd.

10 Center Street

Elk Grove Village, Illinois 60007

Perry, Ohio 44081

Vicky A. EGV 11-7-85 Air-it there 3133-180M-C-476

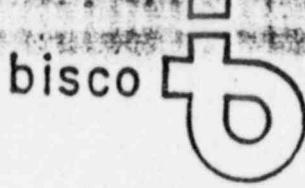
Please acknowledge receipt of the material listed on this Delivery Ticket by signature and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You

All claims MUST be made
within 5 days from date of delivery.

Received by Vickie McCafferty

50321237



PAGE 17 OF 25

FORM RI-1
REV-3RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED Locaseal Part ALOT / BATCH no. 2560 LQUANTITY 10 PALS X 63.5 lbs ea

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>na</u>	
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<u>na</u>	Dimensional Inspection	<u>na</u>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected

Remarks:

* VERIFIED DT. AGAINST
MATERIAL RECEIVED

Chick McCafferty
O.C. Inspector
11-12-85
Date

50321230

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. NADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED Locaseal Part BLOT / BATCH no. 2580 LQUANTITY 10 pails x 36.5 lbs

Required	Inspection Instruction	Accept	Reject
na	Verify P. O. Against Material Received	na	
✓	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings	✓	
✓	Visual Inspection	✓	
na	Dimensional Inspection	✓	
*✓	Special Instructions per Attached	na	✓

Material Accepted Rejected

Remarks:

*verified DT against
material received.

O. C. Inspector

11-12-85

Date

50321239

216/259-3737
Ext: 6843



November 8, 1985

Cleveland Electric Illuminating Co.
Perry Nuclear Power Generating Station
10 Center Street
Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191 Rev. 0, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A

Bisco Job #: 3133

Bisco D.T. #: 6261

Customer P.O.# : P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

A handwritten signature in cursive ink that reads "Dolores A. Lott".

Dolores A. Lott
Quality Control Supervisor

brand industrial services, inc.
construction group
2207 lively blvd., elk grove village, illinois 60007. (312) 228-6670

* Subsidiary of brand insulations, inc.

50321240

ORIGINAL

PAGE 14 OF 25

CERTIFICATION OF CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # A-188
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard,
(Certificate verified by Mrs. A. A. M.
to NBS 2028)

Date of Verification: 9-9-85 Date Due: 3-9-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	49.90	60.00	70.00	80.20	99.20	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	-10	0	0	+20	+20	0
------------	---	---	---	---	---	-----	---	---	-----	-----	---

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0	100.20	200.10	300.10	400.00	500.00
-----------	---	--------	--------	--------	--------	--------

Deviation:	0	+20	+10	+10	0	0
------------	---	-----	-----	-----	---	---

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. L. DeMarkis
Name

QC Supervisor
Title

50321241

bisco



PAGE 13 OF 25

ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-0-Gram Model 2610 Serial # B-143
SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
verified by Ill. Dept. of Lab.
(Certificate to NBS 2028)

Date of Verification: 9-19-85 Date Due: 3-19-86

10 gram Dial Accuracy:

Standard: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Readings: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Deviation: 0 0 0 0 0 0 0 0 0 0 0

100 gram Beam Accuracy:

Standard: 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00

Readings: 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.01

Deviation: 0 0 0 0 0 0 0 0 0 0 +.01

500 gram Beam Accuracy:

Standard: 0.00 100.0 200.00 300.00 400.00 500.00

Readings: 0.00 99.80 200.00 300.02 400.05 500.03

Deviation: 0 -.20 0 +.02 +.05 +.03

It is hereby certified that the described equipment has been inspected and tested
as indicated above, and that the Standard used in obtaining data is calibrated
and traceable to the National Bureau of Standards.

D. Marchais
Name
QC Supervisor
Title

50321242

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SP98/4293
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMISSION



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 3184 LAST ENTRY DATE 1-7-86

MACHINE NO. WA PRODUCT Locaseal

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

Entries reviewed by W. Binkley

Date 1-18-56

PAGE 10 OF 25

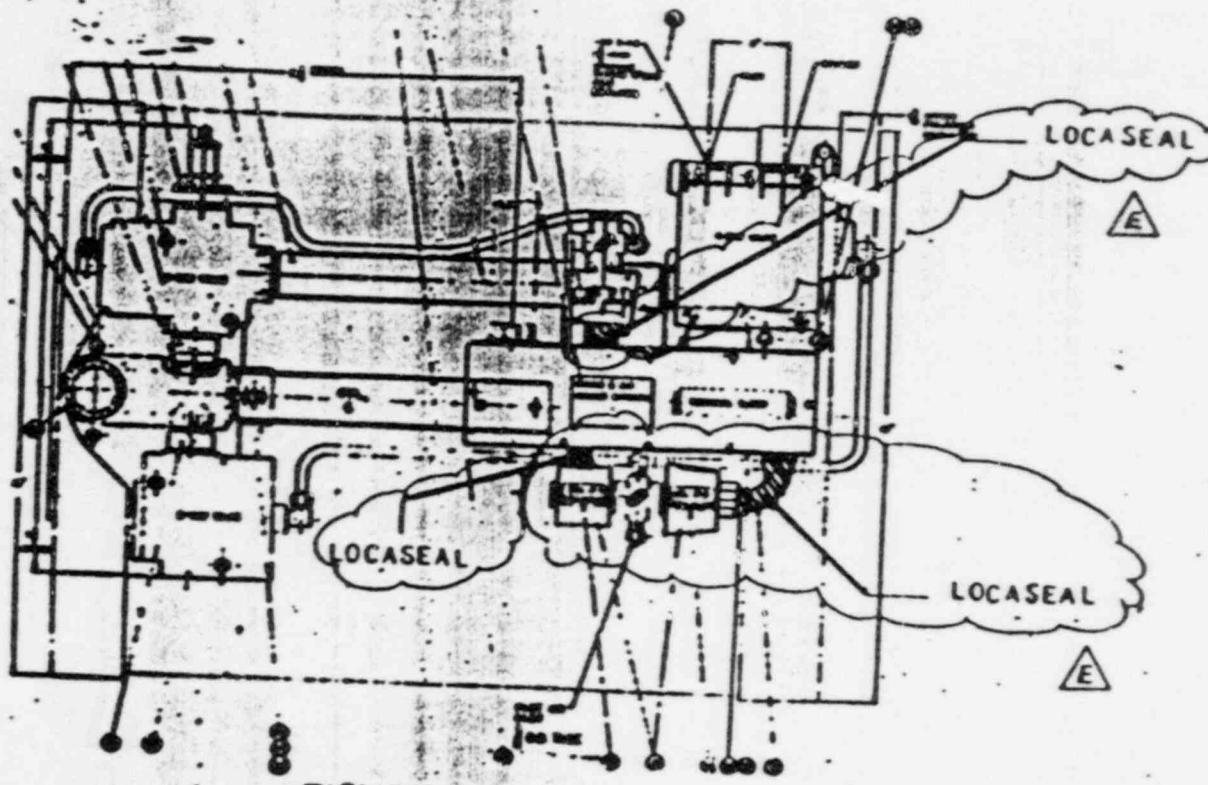


FIGURE 2-2
MSIV ACTUATOR ASSEMBLY

ATTACHMENT 2 PG. 1 OF 1
ECN 27245-98-33 REV. F

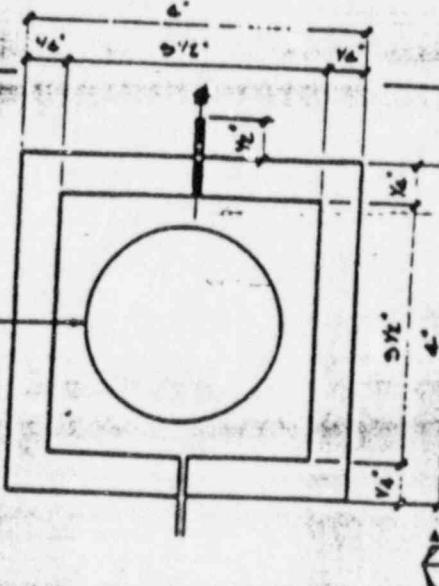
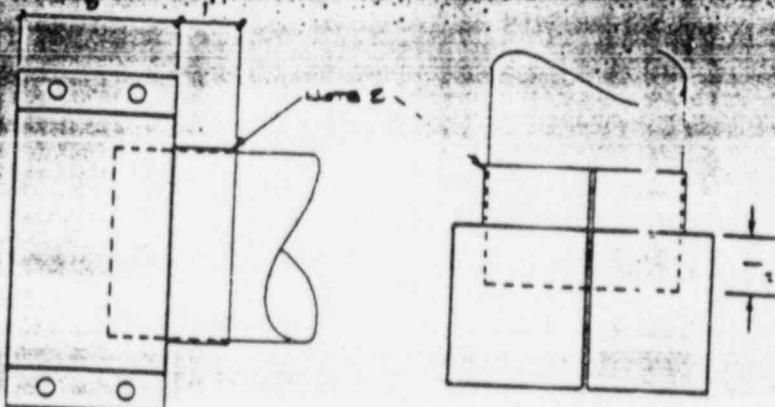


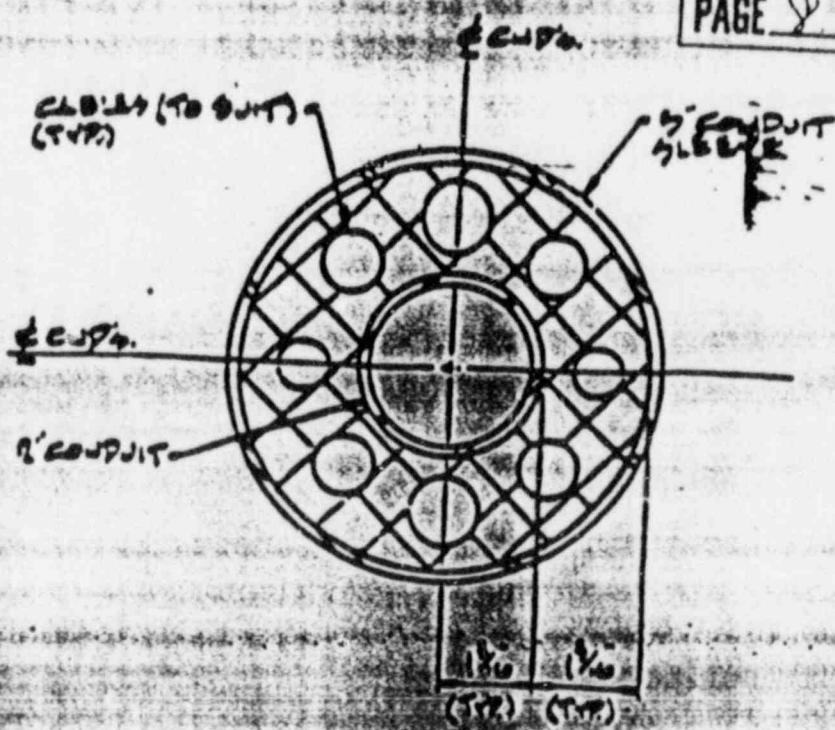
FIGURE E
MCT 4C49 34050

ECN	27-45-2C-32
DWG	27-2E-27-1C-3-2C-2
ATTACHMENT L	

SECTION A-ASECTION B-B

- NOTES:
1. SIZED TO FIT EXISTING CONDUIT (1 1/2" OD).
 2. ATTACH TO CONDUIT WITH DC-732 ZTV CABLE AND 8G CLAMP.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ B20 ECLTS, GRADE 153 87 SC-TB AND HEAVYDUTY 17W OR NUTS, SHEETMETAL.
 4. ASSEMBLY TO BE FABRICATED FROM 14GA GALVANIZED SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

50321246



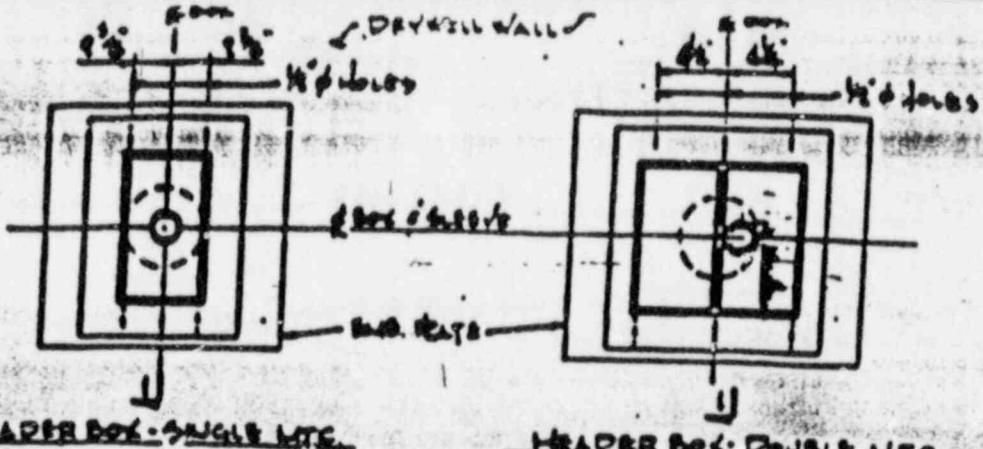
DETAIL "C"

NOTE:

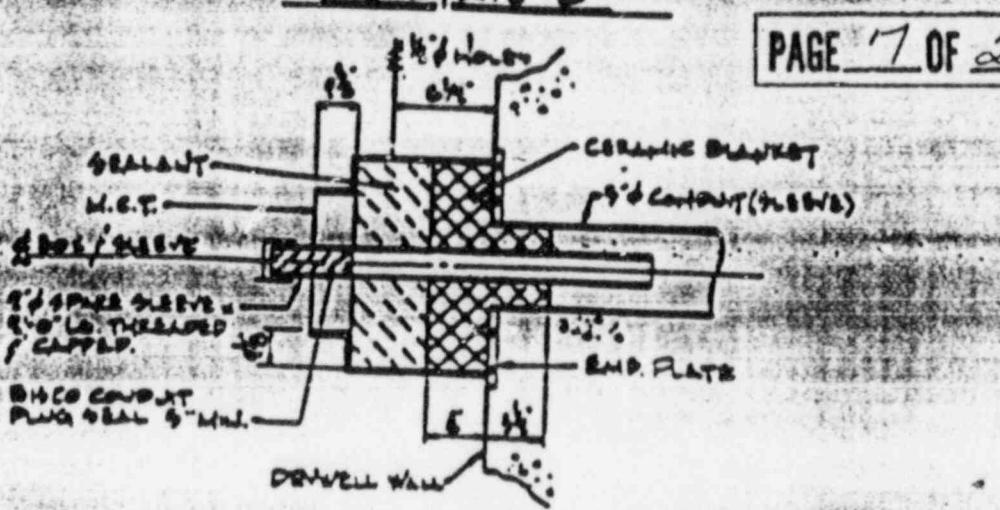
THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS.

ATTACHMENT PAGE 1 OF 5
ECU # 27245-98-33
REV. F

50321247



DETAIL 'B'



PAGE 7 OF 25

SECTION 1-1

Notes:

1. MATERIAL AS SPECIFIED IN SP. 98
2. SLEEVE SHALL EXTEND $2\frac{1}{2} \pm \frac{1}{2}$ " PAST THE FACE OF THE M.C.T.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE M.C.T. WITH A TOLERANCE OF ± 2.00 " ABOVE OR BELOW THE HORIZONTAL Φ . (REF. DETAIL B)
4. BLANKET THICKNESS FOR CERAMIC FIBERS 4" NOM. + (.00" - 0.00"
5. THE FOLLOWING M.C.T.'S SHALL RECEIVE A $1\frac{1}{2}$ " SLEEVE IN LIEU ERB-3013, ERB-3021, ERB-3022, ERB-3024
6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES ERB-3015, ERB-3014, ERB-4029, ERB-3020, ERB-3023, ERB-4030, ERB-4033, ERB-4035, ERB-4037, ERB-4038, ERB-4040, ERB-4032, ERB-4041, ERB-3019

(C)

ATTACHMENT/PAGE 3 OF 5
FCN# 27249-98-33
REV. F

5032-1248

PAGE 6 OF 25

6:11.1 Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.

6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm .1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in them MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

5032 1249

an
1-13-96

PAGE 5 OF 22

SECTION 6:02

- ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.
8. The installations of moisture seals in the MSIV actuator assemblies.

6.11

MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of lccaseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR

1ERB 3013	1ERB 4028	1ERB 4042	1ERB 4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A
F022B
F022C
F022D

1B21F028A
F028B
F028C
F028D

5032 1250

ENGINEERING CHANGE NOTICE

PERRY NUCLEAR POWER PLANT

 SPEC DWG ECH

A SUBJECT SP-98 PRESSURE / MOISTURE SEALS	D ECH NUMBER 27246-98-33 REV F
ORIGINATOR Harry B Schmidbauer (Signature)	CR NUMBER 5410B
DEPARTMENT SITE DESIGN TEAM	AFFECTS SP. 3 / II
B DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE: REV. F: REVISES VALVE ID FROM FO 20 TO FO 22 ATTACHMENT I. REV. E: ADDS THE CRITERIA ATTACHMENT 1 PG. 1 OF 5 FOR MOISTURE SEALS ON THE MTSIV ACTUATOR ASSEMBLIES AND ATTACHMENT 1 PG. 5 OF 5, AND ATTACHMENT 2. REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B": NOTE 7 - SLEEVES IN WHICH THE EXISTING PLUG SEAL WAS REMOVED TO ALLOW CIRCUIT PULLS, SHALL BE SEALED USING A MODIFIED PLUG SEAL. THE SEAL SHALL BE BORED IN SUCH A FASHION SO AS TO ACCOMMODATE A TIGHT CABLE FIT ONCE REINSTALLED. WHEN THIS TYPE OF INSTALLATION IS NOT POSSIBLE THE SLEEVE SHALL BE FILLED WITH LOCASEAL TO A DEPTH OF 5/8". REV. C: ADDED ERB 4036 TO NY 4, G, PG. 3 OF 4 DETAIL "B". REV. B: REVISED NOTE 3 AND ADDED NOTES 5 AND 6 TO DETAIL "B" (PG. 3 OF 4). REV. A: ADDED "NOTES" TO DETAILS ("B" AND "C"). REV. -: ADDED SECTION G.02 ITEM 7; SECTION G.08 FOR MCT PRESSURE SEALS.	E DOCUMENTS TO BE REVISED BY THIS ECH SP-98-4949-00 REV. ZE
Q-LIST AFFECTED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
TEST SPEC CHANGE REQUIRED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
EQUIP. QUA. AFFECTED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	
SAR CHANGE REQUIRED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
UNIT 2 AFFECTED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	
F SYSTEM AFFECTED N/A	
G MATERIAL TO BE PURCHASED <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
H DESIGN REVIEWER APPROVAL BY: <u>H. Anthony Murray</u> DATE: 11-20-05 (Design Reviewer)	
I QA APPROVAL (IF REQUIRED) BY: <u>R. Casper</u> DATE: 11/21/05 (QA Manager)	
J PROJECT ENGINEERING APPROVAL BY: <u>M. Chippert / CC Nall</u> DATE: 11/21/05 (Project Engineer)	
K CEI ACCEPTANCE BY: <u>F. Schmidbauer</u> DATE: 12/6/05 (Responsible Engineer)	
L QA REVIEW REQUIRED <input type="checkbox"/> NOT REQUIRED <input checked="" type="checkbox"/>	
REVIEWED BY: <u>P-4X13 - Pg. 246</u> DATE: 12/6/05 BILL OF MATERIAL NUMBER(S): <u>4293</u> ISSUED	
M SPEC. NO. 98 AND CONT. PONO # 4293	
N DESIGN CHANGE INCORPORATED BY: <u>E. B. (Elmer) Schmidbauer</u> DATE: <u>12/6/05</u> (Project Engineer)	
O NOTE: *NOT REQUIRED IF FOR DRAWING CHANGES ONLY. N/A	
P Gilbert Commonwealth _____ N/A	

Figure N-2
Revised: 7-22-85

5032 1251

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 5133PROJECT NAME Perry Nuclear Power PlantVENDOR Bisco ConstructionMATERIAL RECEIVED LOCA Seal Part ALOT / BATCH no. 2560QUANTITY 10 PAILS X 23.5 LB

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>✓</u>	Check Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>✓</u>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>✓</u>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>✓</u>	Initial Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>na</u>	Completion of Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>*</u> <input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Material Accepted Rejected

Remarks:

* VERIFIED DT. AGAINST
TRANSPORTER REQUESTED

O.C. Inspector

11-12-85

Date

5032 1252



PAGE 16 OF 25

FORM RI-1
REV-3RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. NADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED Loc Seal PART BLOT / BATCH no. 258CQUANTITY 10 pails x 365 lbs ea

Required	Inspection Instruction	Accept	Reject
no	Verify P.O. Against Material Received	na	
✓	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings	✓	
✓	Visual Inspection	✓	
no	Dimensional Inspection	na	
*✓	Special Instructions per Attached	✓	

Material Accepted
 Rejected

Remarks:

*verified DT against
material received.

O.C. Inspector

11-12-85

Date

Licci McCafferty

50321253

216/259-3737
Ext: 6843

PAGE 15 OF 95

bisco

November 8, 1985

Cleveland Electric Illuminating Co.
Perry Nuclear Power Generating Station
10 Center Street
Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco pressure test #748-191, Rev. O, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A
Bisco Job #: 3133
Bisco D.T. #: 6261
Customer P.O.# : P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

Dolores A. Lott
Quality Control Supervisor

brand industrial services, inc.
construction group
2207 Keweenaw Blvd., Elk Grove Village, Illinois 60007, (312) 226-6670

* subsidiary of brand insulations, inc.

50321254

DISCU L
D)

ORIGINAL

PAGE 14 OF 25

CERTIFICATION OF CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-Gram Model 2610 Serial # A-188
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set, 6 as Standard, verified by _____
(Certificate to NBS 2028)

Date of Verification: 9-9-85 Date Due: 3-9-86

10 gram Dial Accuracy:

Standard: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Readings: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Deviation: 0 0 0 0 0 0 0 0 0 0 0

100 gram Beam Accuracy:

Standard: 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00

Readings: 0.00 10.00 20.00 30.00 40.00 49.90 60.00 70.00 80.20 89.20 100.00

Deviation: 0 0 0 0 0 -10 0 0 +20 +20 0

500 gram Beam Accuracy:

Standard: 0.00 100.00 200.00 300.00 400.00 500.00

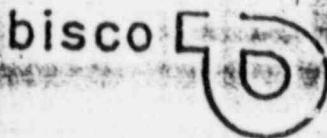
Readings: 0 100.20 200.10 300.10 400.00 500.00

Deviation: 0 +20 +10 +10 0 0

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

J. Enasios
Name:
QC Supervisor
Title

50321255



ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610, Serial # B-143
 SIZE or RANGE:
 CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
 verified by Ill. Dept. of Lab.
 (Certificate to NBS 2028)

Date of Verification: 9-19-85 Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	0	0	0	0	0	+.01
------------	---	---	---	---	---	---	---	---	---	---	------

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0.00	99.80	200.00	300.02	400.05	500.03
-----------	------	-------	--------	--------	--------	--------

Deviation:	0	-.20	0	+.02	+.05	+.03
------------	---	------	---	------	------	------

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Macias
 Name
QC Supervisor
 Title

50321255

ILLUMINATING COMPANY
P.O. NO. SP98-1293
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMON

laxdours

taxpayers

bisco 5

PAGE 12 OF 25

GCT-2
REV.-8

REV.⁶
ORIGINAL

• SYSTEM VERIFICATION LOG •

PROJECT NAME PERRY NUCLEAR POWER PLANT

JOB NO. 3134

PRODUCT NAME Lac-A-Seal

DENSITY RANGE 10 TO 170 P.C.F.

5032125-7

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SP98/4293
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COALITION

PAGE 11 OF 25

FORM OCT-
REV-

bisco



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 3134

LAST ENTRY DATE 1-7-86

MACHINE NO. 1A

PRODUCT Locaseal

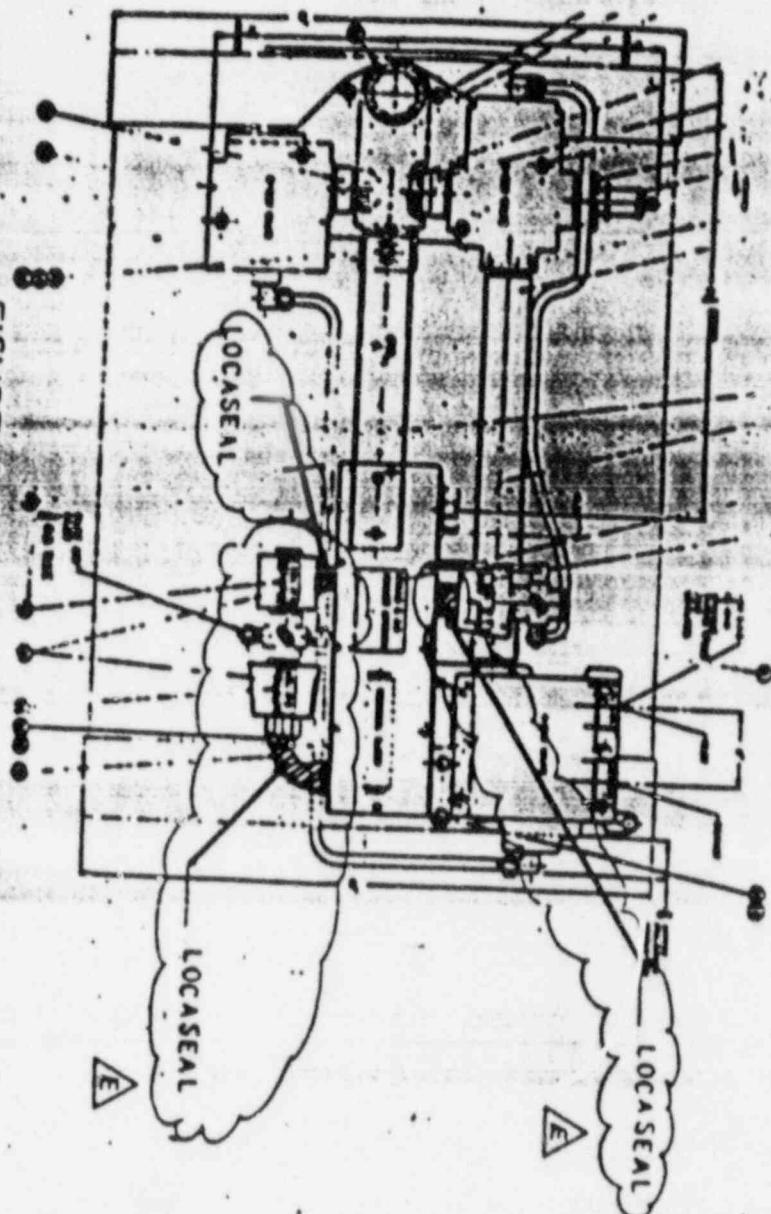
Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

~~Entries, reviewed by~~

Reviewed by K. Berthon Date 4-18-86

50321258

FIGURE 2-2
MSIV ACTUATOR ASSEMBLY



ATTACHMENT 2 PG. 1 OF 1
ECN 27245-98-33 REV. F

50321259

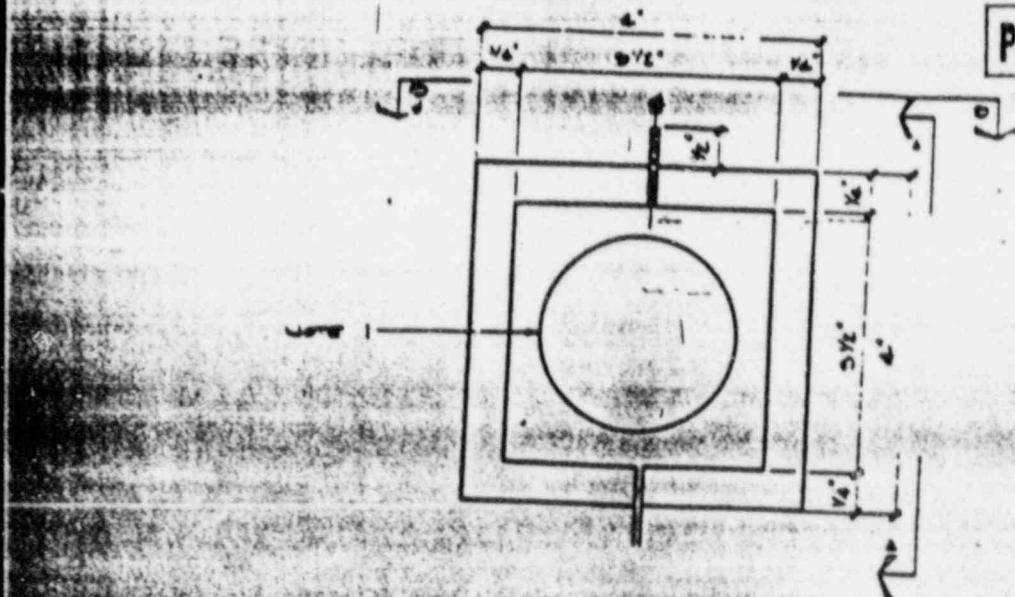
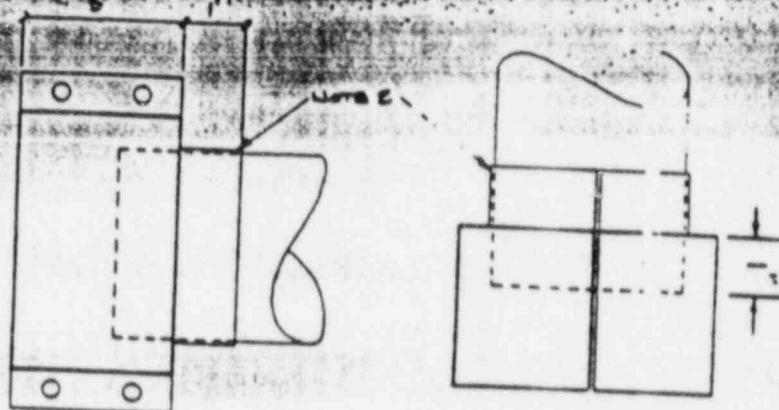


FIGURE E
MCT 4C49 3 4050

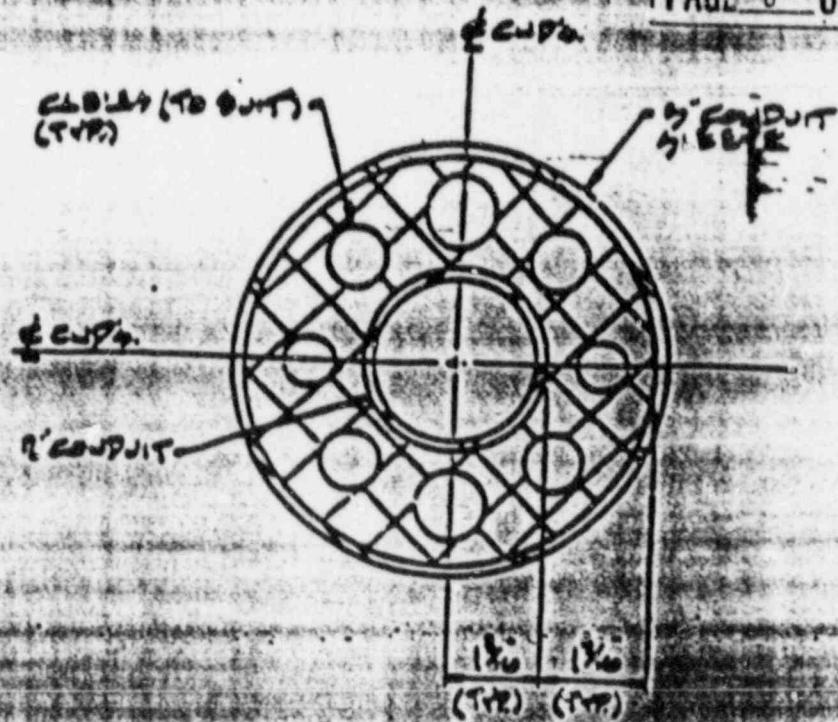


SECRET A.A.

Schedule

- NOTES: 1. \$1.00 TO FIT SHOTWING CONDUIT (1 1/2" OR 2").
 2. ATTACH TO CONDUIT WITH DC-732 ZTV CULK
 AND BB CLAMPS.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ #20 ECDTS,
 GRADE 1/3 87 BC-78 AND HEAVYDUTY 1/4" ZP NUTS.
 4. ASSEMBLY TO BE FABRICATED FROM 10GA GALVANIZED
 SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED
 WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW
 PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

50321250



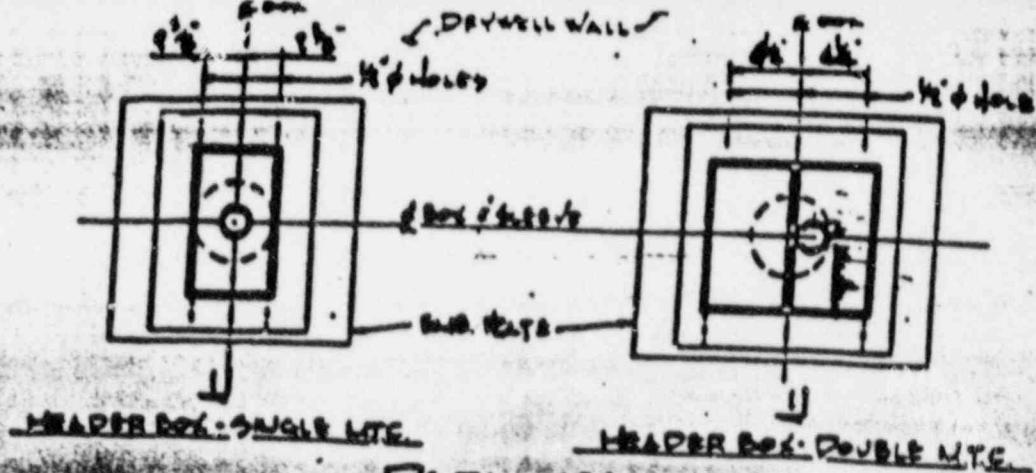
DETAIL 'C'

Note:

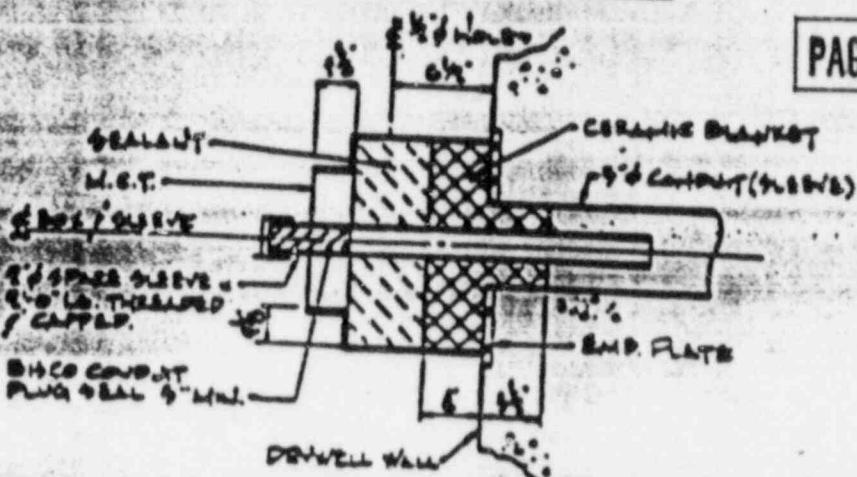
THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS. □

ATTACHMENT PAGE 1 OF 5
ECN # 27245-98-33
REV. F

50321261



DETAIL 'B'



PAGE 7 OF 20

SECTION 1-1

NOTES:

1. MATERIAL AS SPECIFIED IN SP.98
 2. SLEEVE SHALL EXTEND $8\frac{1}{2}'' \pm \frac{1}{2}''$ PAST THE FACE OF THE M.C.T.
 3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE M.C.T. WITH A TOLERANCE OF $\pm 2.00''$ ABOVE OR BELOW THE HORIZONTAL C. (REF. DETAIL B)
 4. BLANKET THICKNESS FOR CERAMIC FIBRE 4" NOM. $+1.00'' -0.00''$ OF THAT SPECIFIED IN SECTION 1-1: ERB-3016, ERB-3017, ERB-3018, ERB-3019, ERB-3021, ERB-3022, ERB-3024
 5. THE FOLLOWING M.C.T'S SHALL RECEIVE A $1\frac{1}{2}''$ SLEEVE IN LIEU ERB-3013, ERB-3014, ERB-4029, ERB-3020, ERB-3023, ERB-4030, ERB-4033, ERB-4037, ERB-4039, ERB-4036, ERB-4045, ERB-4032, ERB-4031, ERB-3012
 6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES
ERB-3013, ERB-3014, ERB-4029, ERB-3020, ERB-3023, ERB-4030, ERB-4033, ERB-4037, ERB-4039, ERB-4036, ERB-4045, ERB-4032, ERB-4031, ERB-3012
- ERB 4036

ATTACHMENT/PAGE 3 OF 5
FCN# 27249-98-33
REV. F

50321252

PAGE 11 OF 25

6:11.1 Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.

6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in them MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

5032 1263

An 1-13-88

PAGE 2 OF 3

SECTION 6:02

ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.

8. The installations of moisture seals in the MSIV actuator assemblies.

6.11 MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of locaseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR

1ERB 3013	1ERB 4028	1ERB 4042	1ERB 4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A
F022B
F022C
F022D

1B21F028A
F028B
F028C
F028D

50321264

ENGINEERING CHANGE NOTICE

PERRY NUCLEAR POWER PLANT

 SPECN DWG. TO C

A SUBJECT SP-98 PRESSURE / MOISTURE SEALS		D ECH NUMBER 27245-98-33 REV F
ORIGINATOR Harry B Schreider 11-20-85 (Signature) (Date)		CN NUMBER 5108
DEPARTMENT SITE DESIGN TEAM		AFFECTS SP. 98/II
B DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE:		
REV. F: REVISES VALVE ID FROM F020 TO F022 ATTACHMENT I		
REV. E: ADDS THE CRITERIA ATTACHMENT I PG. 1 OF 3 FOR MOISTURE SEALS ON THE MTSIV ACTUATOR ASSEMBLIES AND ATTACHMENT I PG. 5 OF 3, AND ATTACHMENT II		
REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B": NOTE 7 - SLEEVES IN WHICH THE EXISTING PLUG SEAL WAS REMOVED TO ALLOW CIRCUIT PULLS, SHALL BE SEALED USING A MODIFIED PLUG SEAL. THE SEAL SHALL BE BORED IN SUCH A FASHION SO AS TO ACCOMMODATE A TIGHT CABLE FIT ONCE REINSTALLED. WHEN THIS TYPE OF INSTALLATION IS NOT POSSIBLE THE SLEEVE SHALL BE FILLED WITH LOCASEAL TO A DEPTH OF 5.00"		
REV. C: ADDED ERB 4036 TO N. 6, G, PG. 3 & 4 - DETAIL "B"		
REV. B: REVISED NOTE 3 AND ADDED NOTES 5 AND 6 TO DETAIL "B" (PG. 3 OF 4)		
REV. A: ADDED 'NOTES' TO DETAILS ('B' AND 'C')		
REV. -: ADDED SECTION G.02 ITEM 7; SECTION G.08 FOR MCT PRESSURE SEALS.		
REASON FOR CHANGE CODE: 7, 14 (S)		
EXPLANATION (IF REQ'D): FDDR XL RECEIVED DEC 08 1985		
DOCUMENT CONTROL		
ATTACHMENTS: ATTACHMENT 1 (5-PAGES) ATTACHMENT 2 (1-PAGE)		
C INTERFACING DEPARTMENTS ORGANIZATIONS OR GROUPS		
<input type="checkbox"/> PIPING <input type="checkbox"/> STRUCTURAL <input checked="" type="checkbox"/> ELECTRICAL 11-21-85 <input checked="" type="checkbox"/> QUALITY ASSURANCE (S+G) <input type="checkbox"/> BUILDING SERVICE <input type="checkbox"/> MSSS <input type="checkbox"/> CONTROL SYSTEMS <input type="checkbox"/> OTHER <input checked="" type="checkbox"/> MECH. NUCLEAR * F022 <input type="checkbox"/> ECOCRD EFB (Labeled)		
NOTE: * NOT REQUIRED IF FOR DRAWING CHANGES ONLY. N/A		
Gilbert Commonwealth _____		

Figure N-2
Revised: 7-22-85

50321265

PAGE 3 OF 25

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
850011943	NC98	1B21	MECHANICAL	RB/IDW			
R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
S	1 2 3 4 5	CAT PEN	CODE 3B	M/E <i>1/4 hours</i>	M/E <i>1/4 hours</i>	NO	REQ'D <i>IN/OUT</i>
SPECIAL PERMIT	RETEST REQ'D	HOUSE-KEEPING	ALARA REVIEW	RWP	TECH	EQ	15-4944
<i>No Yes</i>	<i>No</i>	<i>Yes</i>			NO	SPEC	AFFECTED
					NO	NO	

SYSTEM NAME: NUCLEAR BOILER (NSSS)

SUMMARY: IMPLEMENT DCP 85-618.

MPL NAME: MSIV ACTUATOR ASSYS & MCT's

PLANNER REMARKS

NC 98 TO PERFORM WORK.

REFERENCE: MDL 1B21-#291 (W.A. 85-12675)

REFERENCE: MDL CO-03-#02 (E.C.D.N. 27245-98-33/F)

IMPLEMENT DCP 85-618. RBO FIRE BARRIER REMOVAL PERMIT REQUIRED (FOR REWORK - NO WORK ON) *from 1/10/86*

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.:
1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT)
PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

JLJ 3/2/85
3/2/85
JLJ 3/2/85
3/2/85

DATE 1/1/85
DATE 1/1/85
DATE 1/1/85
DATE 1/1/85
DATE 1/1/85

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT SUPV.

TIME: 0922
D/C 1/2/85 TIME: -----

DATE 1/1/85
DATE 1/1/85
DATE 1/1/85

50321266

SEAL INFORMATION		PENETRATION	PENETRATING ITEM	BARRIER RATINGS
ITEM	DESCRIPTION			
1	SIZE			
2	TYPE			
3	BARRIER MATERIAL			
4	DEPTH			
5	SEE BCWA _____ THRU _____ FOR PENETRATING ITEMS			
6	SIZE			
7	TYPE			
8	REFERENCE NUMBER			
9	MOVEMENT			
10	INSULATION			
11	3 HOUR FIRE			
12	RADIATION			
13	MOISTURE			
14	NO SEAL REQUIRED			
15	TYPICAL DETAIL			
16	TEST REPORT NUMBER			
17	ANI ACCEPTANCE LETTER NUMBER			
18	PAGE 2 OF 3			
IN PROCESS		23-85 FINAL INSPECTION	TURN-OVER	
1	DC 3-6548	1-5-96	1-5-96	
2	SYLGARD 170	1-5-96	1-5-96	
3	SF 150 NH	1-5-96	1-5-96	
4	BOOT MATL	1-5-96	1-5-96	
5	BISCO-FLEX150	1-5-96	1-5-96	
6	BISCO-SEAL 1	1-5-96	1-5-96	
7	DC 732	1-5-96	1-5-96	
8	DC 790	1-5-96	1-5-96	
9	C/FIBER 4128	1-5-96	1-5-96	
10	C/BOARD	1-5-96	1-5-96	
11	LOCATE	1-5-96	1-5-96	
12	INSTRUCTIONS	1-5-96	1-5-96	
13	SEAL PORE SEAL 27245-R0-32 REVERSE ROLL	1-5-96	1-5-96	
14	4. FILL INTERNAL CONDUITS FULL DEPTH	1-5-96	1-5-96	
15	X REPAIRMENT	1-5-96	1-5-96	
16	LOCATION	1-5-96	1-5-96	
17	DATE	1-5-96	1-5-96	
18	TIME	1-5-96	1-5-96	
19	INSP. BY	1-5-96	1-5-96	
20	REMARKS	1-5-96	1-5-96	
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248	REMARKS	1-5-96	1-5-96	
249	REMARKS	1-5-96	1-5-96	
250	REMARKS	1-5-		

PRODUCTION AUTHORIZATION					
INITIAL RELEASE	HOLD	RE-RELEASE			
REF.	DATE	REF.	DATE	REF.	DATE
PREPARED BY <u>PK</u> APP. BY <u>ES</u>	O.C. INSPECTOR <u>J. T. 11/11/96</u>				
DATE PREPARED <u>11/17/95</u>	O.C. SUPERVISOR <u>J. T. 11/11/96</u>				
REF. DRAWING D-101-052					

Q 12-12-95

PENETRANT
LIFECODE



SOFTWARE CLOSEOUT
LIST OF ATTACHMENTS

PAGE 1 OF 20

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. EP-98/4293
UNIT I AND COMMON

PENETRATION NO. 1B21F022C
629/01

1. <u>RCJA Sheet 1</u>	21. <u>TR 101 Sheet 1</u>
2. <u>IM 11943</u>	22. <u>TR 101 Sheet 2</u>
3. <u>ECI 27245-98-33F Sheet 1</u>	23. <u>TR 101 Sheet 3</u>
4. <u>ECI 27245-98-33F Sheet 2</u>	24. <u>TR 101 Sheet 4</u>
5. <u>ECN 27245-98-33F Sheet 3</u>	25.
6. <u>ECI 27245-98-33F Sheet 4</u>	26.
7. <u>ECN 27245-98-33F Sheet 5</u>	27.
8. <u>ECI 27245-98-33F Sheet 6</u>	28.
9. <u>ECN 27245-98-33F Sheet 7</u>	29.
10. <u>OCT 1 Locaseal</u>	30.
11. <u>OCT 2 Locaseal</u>	31.
12. <u>Certification of Calibration</u>	32.
13. <u>Certification of Cleihration</u>	33.
14. <u>COC Locaseal</u>	34.
15. <u>PI Locaseal</u>	35.
16. <u>PI Locaseal</u>	36.
17. <u>DT Locaseal</u>	37.
18. <u>COC Ceramic Blanket</u>	38.
19. <u>PI Ceramic Blanket</u>	39.
20. <u>DT Ceramic Blanket</u>	40.

BY: D. Beahon
(O.C. INSPECTOR)

OWNERS REVIEW: Paul Eul Jr.

REVIEWED BY D. Beahon
(O.C. INSPECTOR)

50321268

bisco 5

Broad Industrial Services, Inc.
1420 Renaissance Drive
Park Ridge, Illinois 60068
(312) 268-1200
Tele: 262-482 Broad Prod

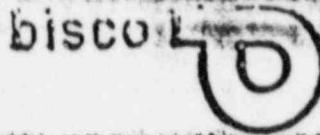
PROCEDURE	DATED	REVISION
(See Attached)		

DESIGNATOR	DATE REVIEWED	DESIGNATOR	CHARGE	SIGNATURE
I Foreman				
Dennis Lavelle	2-17-85	Alan M. Murn		Dennis Lavelle
J. T. Sweeny	2-14-85	Alan M. Murn		J. T. Sweeny
Marty H. Lavelle	2-13-85	Alan M. Murn		Marty H. Lavelle
M. G. Delaney	2-13-85	Alan M. Murn		M. G. Delaney
Russell Zabilka	2-6-85	Alan M. Murn		R. Zabilka
DAVE RITTENHOUSE	2-7-85	Alan M. Murn		DAVE RITTENHOUSE
George Filla	2-14-85	Alan M. Murn		George Filla
John Halovasic	2-13-85	Alan M. Murn		John Halovasic
Bill Galvin	2-14-85	Alan M. Murn		Bill Galvin

50321269

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FORM IR CLASSIFICATION
Rev. 6 Page 201
Attachment to NR 0101



ORIGINAL

INSPECTION REPORT

I.R. No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85

Bisco Project No. 3134

Item of Activity Inspected Ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.
There were no deviations in documentation.

See NR # 0101

HOLD TAG No. _____ Q.C. Inspector Dawn Paus Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Acceptance _____

Accept Tag No. _____ Reject Tag No. _____

50321270

FCL 01/29/85 A/A
PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT

ITEM NO.		REV. DHT.		OF	ITEM	IDENT NO.	ITEM NAME		QUANTITY	DATE			
NO. 0101		0 1 2		500 Attachment		500 Attachment	1		01/29/85				
ISSUED BY		NAME		INIT.	ORGANIZATION								
ITEM / MATERIAL		SOURCE		CURRENT STATUS		LOCATION							
RESPONSIBLE ORGANIZATION		NAME				CC CL. 12/B EL. 654'							
NCR TYPE		CATEGORY:		<input checked="" type="checkbox"/> 1 (POSSIBLE SIGNIFICANCE)		<input type="checkbox"/> 2 (MAJOR)		<input type="checkbox"/> 3 (MINOR)					
TYPE		TYPE:		<input checked="" type="checkbox"/> (I) EQUIP./MATERIAL		<input type="checkbox"/> (II) INSTALLATION		<input type="checkbox"/> (III) PROGRAM					
GOVERNING REQUIREMENT		INCLUDE ACCEPTANCE CRITERIA AND DOC.MT. NO.:		Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by QC									
DESCRIPTION OF NONCONFORMANCE		MC CODE		105		RELATE TO LINE NO. 61		Bisco Craft used controlled material					
								CF 1/29/85					
CAUSE OF NONCONFORMANCE		CAUSE CODE		P01		Bisco Craft worked over a hold for inspection tag. Bisco QC had not received the certificate of compliance for the ceramic bulk fiber.							
PROPOSED DISPOSITION						<input type="checkbox"/> SCRAP		<input type="checkbox"/> REWORK	<input type="checkbox"/> REPAIR	<input type="checkbox"/> USE AS IS			
JUSTIFICATION						Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.							
STEPS TO PREVENT RECURRENCE						Craft General Foreman and Foreman to be trained on material holds.							
RESP. ORG. APPROVAL		ENG./COST		01/29/85		AIA		DATE		01/29/85			
NPMP REVIEW BOARD		REVIEW REQ'D.		<input checked="" type="checkbox"/> YES		<input type="checkbox"/> NO		DECISION		<input checked="" type="checkbox"/> ACCEPT			
		ENGINEER		DATE 1-29-85		DEC REC				DATE 01/29/85			
VERIFIED										01/29/85			
COPY DISTRIBUTION										01/29/85			
DOCUMENT CENTER													

50321271

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION

PAQS JUN 29 85

E-NR-1823-A REV. 1/84

NR No. B1SC - 0101 A/0

Issue Date 1-29-85

Current Date 1-29-85

Review Required: CAI Easy. NE Other _____

Review Comments:

Proposed Disposition to "Use As Is" is acceptable to engineering.

Attach documented training upon close-out of this NR.
P.O. #4128 material cannot be used until all documentation
is obtained.

AFFECTS AS-BUILT DRAWINGS? AFFECTS EQUIPMENT MANUFACTURER? CAI Engineered Y-No Y-No DRAWINGS Contractor/Vendor AFFECTED CAI Other

Date

CAI Engineered

Date

Quality Engineer

Date

Other

Date

ATTACHMENTS YES NO

LIST OF ATTACHMENTS

1 pg

IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.

DISPOSITION REVISION NO. _____

7	1. PROPOSED DISPOSITION	2. REJECTION	3. REJECTION	4. REJECTION	
JUSTIFICATION: 					
9	STEPS TO PREVENT RECURRENCE				
10	RESP. ORG. APPROVAL	ENG./COMIT.	DATE	QA	
11	PNNP REVIEW BOARD	REVIEW PERIOD	YES <input type="checkbox"/> NO <input type="checkbox"/>	DECISION	ACCEPT <input type="checkbox"/> REJECT <input type="checkbox"/>
12		ENGINEER	DATE	QA/QC	DATE
13	DISPOSITION	NAME	TITLE	DATE	

50321272

RT 4433

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PAGE 21 OF 25

bisco
bisco services, inc.
communications group
one 910 esplanade
newport beach

delivery ticket

Babcock & Wilcox

8150

245 W. Roosevelt Road

10 Center Street

W. Chicago, Illinois 60185

Perry, Ohio 44081

All claims MUST be made
within 5 days from date of delivery.

**10% handling charge on all returns
Only full packed units returnable**

Received by

卷之三

bisco



PAGE 20 OF 25

FORM NO. 100-1
REV. 3

ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. 4128DATE 1-24-85JOB no. 3153PROJECT NAME Perry Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30.04 K150 lbs

Required	Inspection Instruction	Accept	Reject
<u>no</u>	Verify P.O. Against Material Received	<u>no</u>	
<u>-</u>	Certificate of Compliance for Material Received	<u>-</u>	
<u>-</u>	Inspect for Shipping Damage	<u>-</u>	
<u>-</u>	Inspect for Proper Markings	<u>-</u>	
<u>-</u>	Visual Inspection	<u>-</u>	
<u>no</u>	Dimensional Inspection	<u>no</u>	
<u>*</u>	Special Instructions per Attached	<u>*</u>	

Material Accepted
 Rejected

N. von Plini
O.C. Inspector

1-29-85

Remarks: * Verify D.T. against
material received
per NF + o/o, REF.I.R #709, Sh 11/1/85

50321274

bisco



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating S
10 Center Street
Perry, OH. 44081

DATE January 25, 1985

CUSTOMER P. O. NO. P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-0U

BISCO PROJECT NO. 3133
Material P. O. No. 4128

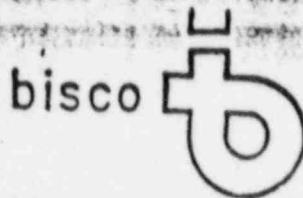
D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores B. Holt

Dolores A. Jott
Quality Control Supervisor

50321275



**RECEIVING INSPECTION CHECKLIST
(SITE)**

P.O. No. N/A

DATE 11-12-85

JOB no. 5133

PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco Construction

MATERIAL RECEIVED LOCA Seal Part A

LOT / BATCH no. 256C L

QUANTITY 10 pails x 63.5 lbs ea

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>X</u>	
<u>✓</u>	Certificate of Compliance for Material Received	<u>✓</u>	
<u>✓</u>	Inspect for Shipping Damage	<u>✓</u>	
<u>✓</u>	Inspect for Proper Markings	<u>✓</u>	
<u>✓</u>	Visual Inspection	<u>✓</u>	
<u>na</u>	Dimensional Inspection	<u>✓</u>	
<u>✓</u>	Special Instructions per Attached	<u>✓</u>	

Material Accepted
 Rejected

Remarks:

* VERIFIED DT. AGAINST
MATERIAL RECEIVED

Licki McAffety
Q.C. Inspector

11-12-85

Date

50321275

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. NADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED Locaseal™ Part BLOT / BATCH no. 2580 LQUANTITY 10 pails x 36.5 lbs

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>na</u>	
<u>✓</u>	Certificate of Compliance for Material Received	<u>✓</u>	
<u>✓</u>	Inspect for Shipping Damage	<u>✓</u>	
<u>✓</u>	Inspect for Proper Markings	<u>✓</u>	
<u>✓</u>	Visual Inspection	<u>✓</u>	
<u>na</u>	Dimensional Inspection	<u>✓</u>	
<u>*✓</u>	Special Instructions per Attached	<u>na</u>	

Material Accepted
 Rejected

Remarks:

*verified DT against material received.

O.C. Inspector

11-12-85

Date

5032 1277

216/259-3737
Ext: 5843

bisco

PAGE 15 OF 25

November 8, 1985

Cleveland Electric Illuminating Co.
Perry Nuclear Power Generating Station
20 Center Street
Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191, Rev. D, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A

Bisco Job #: 3133

Bisco D.T. #: 6261

Customer P.O. #: P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

Dolores A. Lott
Quality Control Supervisor

brand industrial services, inc.
construction group
2207 Twenty Blvd., elk grove village, illinois 60007, (312) 226-8870

® subsidiary of brand insulations, inc.

50321278

ORIGINAL

PAGE 14 OF 25

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-188
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard, verified by _____
(Certificate to NBS 2028)

Date of Verification: 9-9-85 Date Due: 3-9-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	49.90	60.00	70.00	80.20	99.20	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	-10	0	0	+20	+20	0
------------	---	---	---	---	---	-----	---	---	-----	-----	---

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0	100.20	200.10	300.10	400.00	500.00
-----------	---	--------	--------	--------	--------	--------

Deviation:	0	+20	+10	+10	0	0
------------	---	-----	-----	-----	---	---

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. L. Maihess
Name
QC Supervisor
Title

50321279

bisco 50

ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-143
SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
(Certificate verified by Ill. Dept. of Lab.
to NBS 2028)Date of Verification: 9-19-85 Date Due: 3-19-8610 gram Dial Accuracy:

Standard: 0.00 1.00 2.00 3.00 4.00 ~5:00 6.00 7.00 8.00 9.00 10.00

Readings: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Deviation: 0 0 0 0 0 0 0 0 0 0 0

100 gram Beam Accuracy:

Standard: 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00

Readings: 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.01

Deviation: 0 0 0 0 0 0 0 0 0 0 +.01

500 gram Beam Accuracy:

Standard: 0.00 100.00 200.00 300.00 400.00 500.00

Readings: 0.00 99.80 200.00 300.02 400.05 500.03

Deviation: 0 -.20 0 +.02 +.05 +.03

It is hereby certified that the described equipment has been inspected and tested
 as indicated above, and that the Standard used in obtaining data is calibrated
 and traceable to the National Bureau of Standards.

D. Macias
QC Supervisor
 Title

50321200

ILLUMINATING COMPANY
P.O. #40, SP98-6233
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMON
10 x dpcure



PAGE 12 OF 25

OCT.-2
REV.-8

ORIGINAL

• SYSTEM VERIFICATION LOG •

PROJECT NAME PERRY NUCLEAR POWER PLANT

JOB NO. 3134

PRODUCT NAME LUGGAGE

DENSITY RANGE 10 TO 170 P.C.F.

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SP98/4293
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COM'N'ON



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 3134

LAST ENTRY DATE 1-7-86

MACHINE NO. 10

PRODUCT Locaseal

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

Entries reviewed by D. Walker

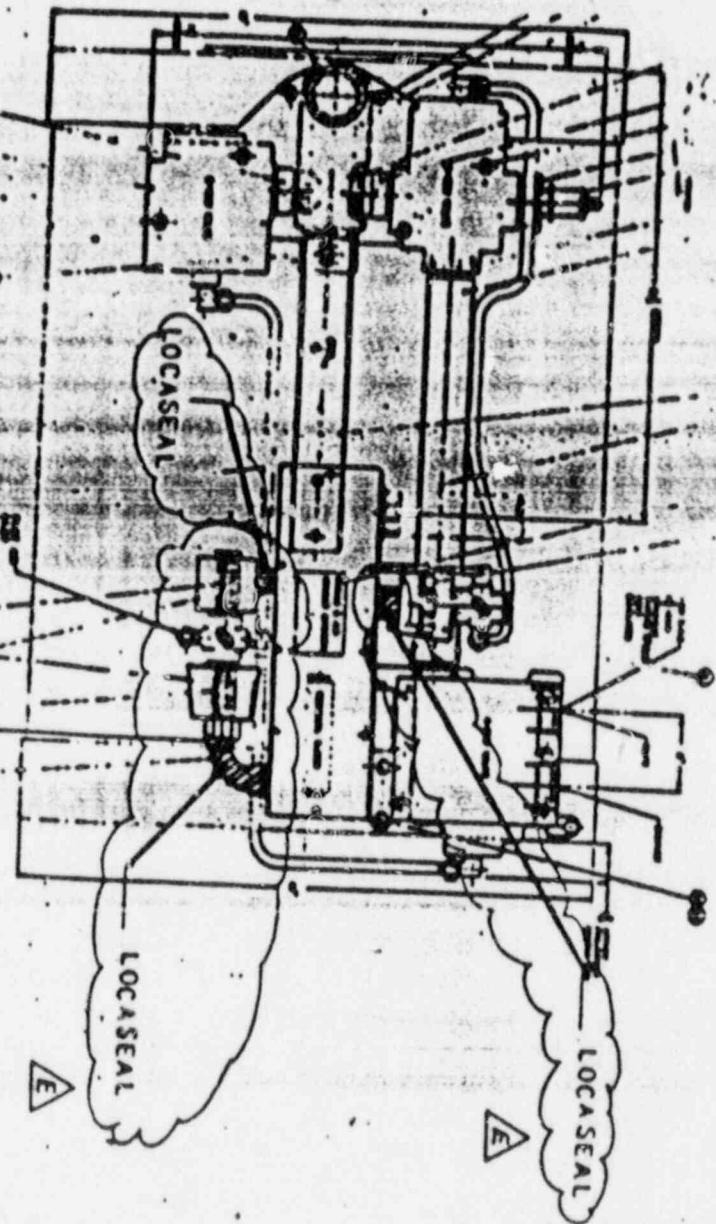
Date

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PAGE 10 OF 50

Cu 1-13845

FIGURE 2-2
MSIV ACTUATOR ASSEMBLY



ATTACHMENT 2 PG. 1 OF 1
ECN 27245-98-33 REV. F

50321283

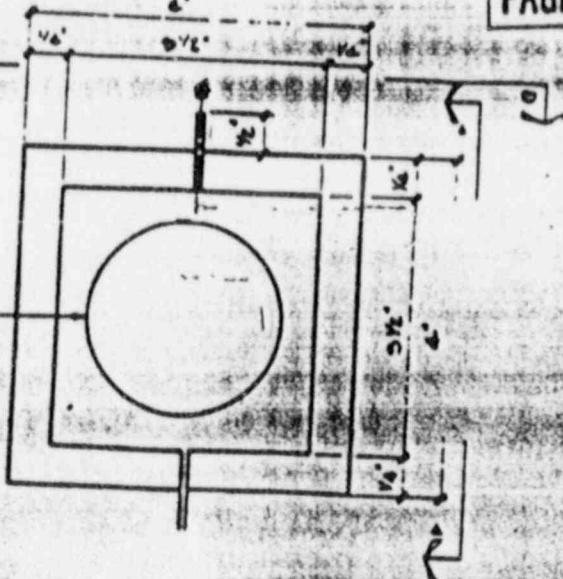
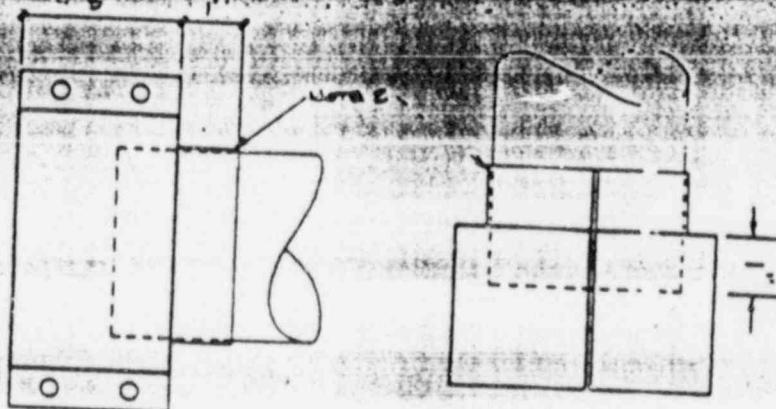
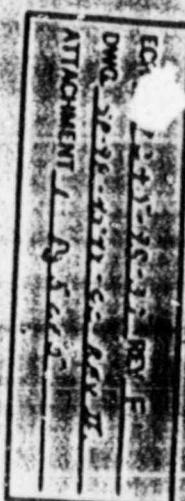


FIGURE E'
MCT 4C49.3 4050



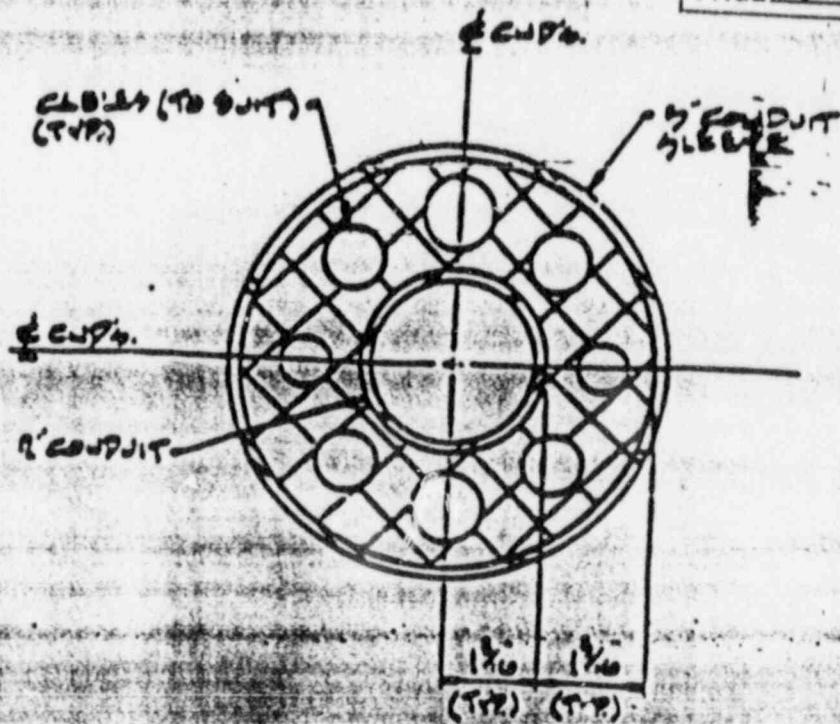
SECTION A-A

SECTION B-B

- NOTES:
1. SIZED TO FIT SWING CONDUIT (1 1/2" O.D.).
 2. ATTACH TO CONDUIT WITH DC-732 Z-N CLAMP.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{8}$ " #20 BOLTS,
GRADE 153 87 SC-TS AND HEAVYDUTY 30 NYTS.
 4. ASSEMBLY TO BE FABRICATED FROM 14ga GALVANIZED
SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED
WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW
PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

50321284

AN 1-13805
PAGE 8 OF 34



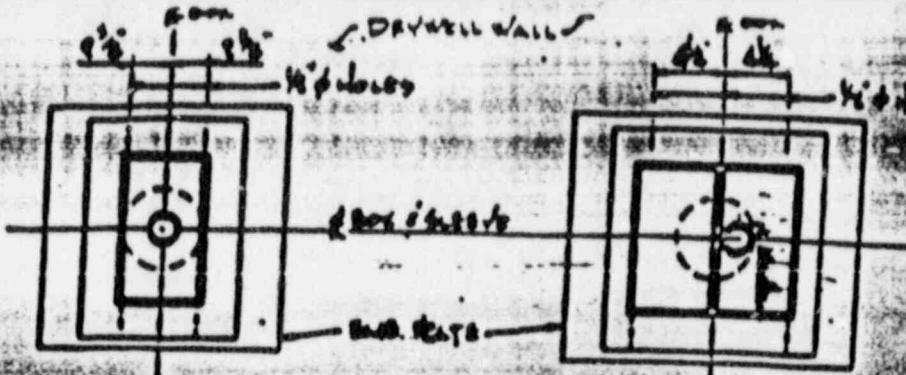
DETAIL 'C'

NOTE:

THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS.

ATTACHMENT PAGE 4 OF 5
ECU # 27245-98-33
REV. F

50321285



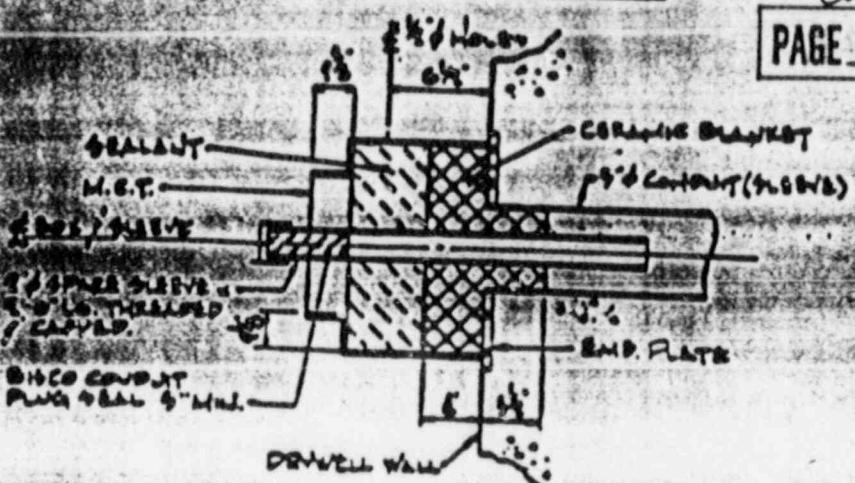
HEADER BOX - SINGLE M.T.C.

HEADER BOX - DOUBLE M.T.C.

DETAIL "B"

Cu 1-13-86 5

PAGE 7 OF 24



SECTION 1-1

Notes:

1. MATERIAL AS SPECIFIED IN SP.98
2. SLEEVE SHALL EXTEND $8\frac{1}{2}'' \pm \frac{1}{2}''$ PAST THE FACE OF THE M.C.T.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE M.C.T. WITH A TOLERANCE OF $\pm 2.00''$ ABOVE OR BELOW THE HORIZONTAL \varnothing . (REF. DETAIL B)
4. BLANKET THICKNESS FOR CERAMIC FIBRE 4" NOM. $+ (.00, .00)$
5. THE FOLLOWING M.C.T'S SHALL RECEIVE A $1\frac{1}{2}'' \phi$ SLEEVE IN LIGU ERB-3013, ERB-3021, ERB-3022, ERB-3024
6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES ERB-3013, ERB-3014, ERB-4029, ERB-3020, ERB-3023, ERB-4030, ERB-4033, ERB-4037, ERB-4039, ERB-4036, ERB-4046, ERB-4032, ERB-4031, ERB-4032, ERB-4031

△

ATTACHMENT/PAGE 3 OF 3
FCN# 27249-98-33
REV. F

50321286

Cu
1-1384

PAGE 16 OF 26

A

6:11.1 Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.

6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in them MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

50321287

On
1-13-SYp

PAGE 5 OF 25

SECTION 6:02

ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.

8. The installations of moisture seals in the MSIV actuator assemblies.

6.11

MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of locaseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR

1ERB 3013	1ERB 4028	1ERB 4042	1ERB 4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A
F022B
F022C
F022D

1B21F028A
F028B
F028C
F028D

5032-1288

ENGINEERING CHANGE NOTICE

PERRY NUCLEAR POWER PLANT

 SPECN DWG ECH

A	SUBJECT SP-98 PRESSURE / MOISTURE SEALS	D	ECN NUMBER 27246-98-33 REV F CR NUMBER S10CH AFFECTS SP. 98 / II
ORIGINATOR Harry B. Schmid (Signature)		(Date)	
DEPARTMENT SITE DESIGN TEAM			
B	DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE: REV. F: REVISES VALVE ID FROM FO 20 TO FO 22 ATTACHMENT I REV. E: ADDS THE CRITERIA ATTACHMENT I PG. 1 OF 5 FOR MOISTURE SEALS ON THE MSIV ACTUATOR ASSEMBLIES AND ATTACHMENT I PG. 5 OF 5, AND ATTACHMENT 2. REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B": NOTE 7 - SLEEVES IN WHICH THE EXISTING PLUG SEAL WAS REMOVED TO ALLOW CIRCUIT PULLS, SHALL BE SEALED USING A MODIFIED PLUG SEAL. THE SEAL SHALL BE BORED IN SUCH A FASHION SO AS TO ACCOMMODATE A TIGHT CABLE FIT ONCE REINSTALLED. WHEN THIS TYPE OF INSTALLATION IS NOT POSSIBLE THE SLEEVE SHALL BE FILLED WITH LOCASEAL TO A DEPTH OF 5.00". REV. C: ADDED ERB 4034 TO APP. G, PG. 3 OF 4 DETAIL "B". REV. B: REVISED NOTE 3 AND ADDED NOTES 5 AND 6 TO DETAIL "B" (PG. 3 OF 4) REV. A: ADDED 'NOTES' TO DETAILS ("B" AND "C") REV. -: ADDED SECTION G102 ITEM 7; SECTION G11 FOR MCT PRESSURE SEALS.		
E DOCUMENTS TO BE REVISED BY THIS ECH SP-98-4549-00 REV. II			
F Q-LIST AFFECTED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES TEST SPEC CHANGE REQUIRED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES EQUIP. QUA'L AFFECTED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES SAR CHANGE REQUIRED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES UNIT 2 AFFECTED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES			
G SYSTEM AFFECTED N/A			
H MATERIAL TO BE PURCHASED <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES			
I DESIGN REVIEWER APPROVAL By: Anthony Murray DATE: 11-20-85 (Design Reviewer)			
J QA APPROVAL (IF REQUIRED) By: R. Gagnon DATE: 11/21/85 (QA Manager)			
K PROJECT ENGINEERING APPROVAL By: J. Chippert / RC Nall DATE: 11/21/85 (Project Engineer)			
L QA ACCEPTANCE By: C. Saliberry DATE: 11/24/85 (Responsible Engineer)			
M QA REVIEW REQUIRED <input checked="" type="checkbox"/> NOT REQUIRED X			
REVIEWED BY: P-4X12 - Pg. 246 DATE: 12/03/85 (QA Representative) ISSUED Bill of Material Number(s)			
SPEC. NO. 98 AND CONT. PONO P-4293			
N DESIGN CHANGE INCORPORATED By: _____ DATE: _____ (Project Engineer)			
O NOTE: *NOT REQUIRED IF FOR DRAWING CHANGES ONLY. N/A			
Gibson Commonwealth _____ N/A			

Figure N-2
Revised: 7-22-85

50321289

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
850011943	NC98	1B21	MECHANICAL	RB/IDW

R O C	P O C	COMP CAT	PRIORITY CODE	SAFETY M/E	SEISMIC I/E	ASME NO	TAG OUT REQ'D
5	1 2 3 4 5	PEN	3B	SR 30 weeks	NO	NO	NO

SPECIAL PERMIT	RETEST REQ'D	HOUSE-KEEPING	ALARAS	RWP	TECH REQ'D	EQ SPEC	AFFECTED
NO YES	NO	YES	REVIEW	REQ'D	NO	NO	NO

SYSTEM NAME: NUCLEAR BOILER (NSSS)

SUMMARY : IMPLEMENT DCP 85-618.

MPL NAME : MSIV ACTUATOR ASSYS & MCT'S

PLANNER REMARKS

NC 98 TO PERFORM WORK ON MSIV ACTUATOR ASSYS & MCT'S.
 REFERENCE: MDL-1B21-#291 (H.A. #5-12675)
 REFERENCE: MDL-CO-03-#02 (E.C.N. 27245-98-33/F)
 IMPLEMENT DCP 85-618. RBG FIRE RADIATION REMOVAL PERMIT REQUIRED (FOR EXCavAT - ORIG INSD 001) from 10/16/85
 POWER SUPPLY: ***** PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.: 1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT) PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

DATE 12/1/85

REVIEWED BY NOAD/ANI

DATE 12/13/85

APPROVED BY

DATE 12/1/85

APPROVAL TO COMMENCE WORK

DATE 12/12/85 PM 0000

APPROVAL TO COMMENCE TEST

DATE 12/1/85

WORK COMPLETE

DATE --/--/--

REVIEW BY NOAD/ANI

DATE --/--/--

ACCEPTED BY UNIT SUPV.

DATE --/--/--

50321290

1 OCTOBER



PAGE 1 OF 25

SOFTWARE CLOSEOUT
LIST OF ATTACHMENTSPERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-98/4293
UNIT 1 AND COMMON

PENETRATION NO. 1B21F028R

616/01

1. <u>RECH1 Sheet 1</u>	21. <u>MR 101 Sheet 1</u>
2. <u>IM 11043</u>	22. <u>MR 101 Sheet 2</u>
3. <u>TCI 27245-98-33F Sheet 1</u>	23. <u>MR 101 Sheet 3</u>
4. <u>TCI 27245-98-33F Sheet 2</u>	24. <u>MR 101 Sheet 4</u>
5. <u>ECI 27245-98-33F Sheet 3</u>	25. _____
6. <u>ECI 27245-98-33F Sheet 4</u>	26. _____
7. <u>ECI 27245-98-33F Sheet 5</u>	27. _____
8. <u>TCI 27245-98-33F Sheet 6</u>	28. _____
9. <u>TCI 27245-98-33F Sheet 7</u>	29. _____
10. <u>OCT 1 Locaseal</u>	30. _____
11. <u>OCT 2 Locaseal</u>	31. _____
12. <u>Certification of Calibration</u>	32. _____
13. <u>Certification of Calibration</u>	33. _____
14. <u>COC Locaseal</u>	34. _____
15. <u>PI Locaseal</u>	35. _____
16. <u>RT Locaseal</u>	36. _____
17. <u>TT Locaseal</u>	37. _____
18. <u>COC Ceramic Blanket</u>	38. _____
19. <u>PI Ceramic Blanket</u>	39. _____
20. <u>RT Ceramic Blanket</u>	40. _____

BY: D. Berthon

(O.C. INSPECTOR)

OWNERS REVIEW: Paul A. O'Dell

REVIEWED BY

J. Cirino
(SUPERVISOR)

5032 1292



Broad Industrial Services, Inc.
1420 Monksessor Drive
Portage, Illinois 60074
(708) 262-4200
Sales 262-422 Broad Prod

PROCEDURE	DATED	REVISION
(See Attached)		
General		

INSPECTOR Foreman	DATE REVISED	CONSTRUCTOR Foreman	SIGNATURE Foreman
Dennis LaVelle	2-19-85	Alan M. Murn	Dennis LaVelle
J. T. Sweeny	2-14-85	Alan M. Murn	J. T. Sweeny
Marty H. LaVelle	2-19-85	Alan M. Murn	Marty H. LaVelle
M. G. Delaney	2-19-85	Alan M. Murn	M. G. DELANEY
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka
Dave Kittenhouse	2-7-85	Alan M. Murn	Dave Kittenhouse
George Filla	2-14-85	Alan M. Murn	George Filla
John Halovasic	2-2-85	Alan M. Murn	John R. Halovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin

50321293

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bisco

FORM IR
REV. 0 Page 2 of 2
Attachment to NR 0101

ORIGINAL

INSPECTION REPORT

IR No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85

Bisco Project No 3134

Item of Activity Inspected Ceramie fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.
There were no deviations or documentation.

See NR # 0101

HOLD TAG No. O.C. Inspector D. von Paus Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Acceptance

Acc. Tag No. _____ Reject Tag No. _____

50321294

LIN NO. CDE	1/29/85	N/A	PERRY NUCLEAR POWER PLANT NONCONFORMANCE REPORT	PAOS 012985	PAGE 23 OF 25
NO. 7423 REV 01					
1	ITEM NO.	REVIWED BY	ITEM NO.	ITEM NAME	QUANTITY
2	ISSUED BY	NAME	ITEM NO.	ITEM NAME	QUANTITY
3	ITEM / MATERIAL	SOURCE	ITEM NO.	ITEM NAME	QUANTITY
4	RESPONSIBLE ORGANIZATION	NAME	ITEM NO.	ITEM NAME	QUANTITY
5	MCR TYPE	CATEGORY	ITEM NO.	ITEM NAME	QUANTITY
6	GOVERNING REQUIREMENT	INCLUDE ACCEPTANCE CRITERIA AND DOCUMENT NO.:	Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by Dept.		
7	DESCRIPTION OF NONCONFORMANCE	MC CODE	RELATE TO LINE NO. 6	Bisco Craft used controlled material	
	ceramic bulk fiber P.O. #4128 prior to its release.				
8	CAUSE OF NONCONFORMANCE	CAUSE CODE	Bisco Craft worked over a hold for inspection tag. Bisco DC had not received the certificate of compliance for the ceramic bulk fiber.		
9	PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP (1)	<input type="checkbox"/> REWORK (2)	<input type="checkbox"/> REPAIR (3)	<input type="checkbox"/> USE AS IS (4)
JUSTIFICATION	Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.				
10	STEPS TO PREVENT RECURRANCE	Craft General Foreman and Foreman to be trained on material holds.			
11	RESP. ORG. APPROVAL	ENG./CONST.	EX/OC	EX/OC	DATE 01/29/85
12	PHD REVIEW BOARD	REVIEW REQ'D.	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	DECISION <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT
13	VERIFIED	1-29-85 R Cygnus			
COPY DISTRIBUTION: 1 - DOCUMENT CENTER					

50321295

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION PAQS JN 29 85

FORM NO. 1623-A, REV. 1/84

NRN B15C-0101A/0 Issue Date 1-29-85 Current Date 1-29-85

Review Required CAI Eng. DE Other _____

Review Comments:

Proposed Disposition to "Use As Is" is ACCEPTABLE TO ENGINEERING.

Attach documented training upon close-out of this NR.
P.O. #4128 material cannot be used until all documentation is obtained.

AFFECTS AS BUILT Yes DRAWINGS No DRAWINGS Contractor / Vendor _____AFFECTS EQUIPMENT Yes AFFECTED CAI _____IN ALLOCATION No IN ALLOCATION _____

1/29/85 R Cimarelli 1/29/85

CAI Engineer

Date

Quality Engineer

Date

Other

Date

ATTACHMENTS

YES

LIST OF ATTACHMENTS

NO

102

IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.

DISPOSITION REVISION NO. _____

10	PROPOSED DISPOSITION	REASON FOR PROPOSED DISPOSITION	REVIEW DATE	DECISION	DATE
JUSTIFICATION:					
11	RESP. ORG. APPROVAL	ENG/CHMST.	QA/OC	AIA	DATE
12	PNSP REVIEW BOARD	REVIEW PERIOD: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> ENGINEER	DECISION: <input type="checkbox"/> ACCEPT <input checked="" type="checkbox"/> REJECT	NAME	DATE
DISPOSITION					

5032-1295

RT 4433

PAGE 21 OF 25

306

delivery ticket

Sabcock & Wilco

8150

245 W. Roosevelt Road

10 Center Street

W. Chicago, Illinois 60185

Perry, Ohio 44081

G. Hamilton | Drop Ship

12-19-84

12-19-84 Direct shipment

3133-100M C-48

All claims MUST be made
within 5 days from date of delivery.

1.5% handling charge on all returns
Only full packaged units returnable

Received By

1-2485

100-FILE-POLY

50321297



PAGE 20 OF 25

FORM RI-7
REV. 1-25-78
PSW-3

ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. 4128DATE 1-24-85JOB no. 3133PROJECT NAME Perug Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30.04 x 150' per

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Material Accepted Rejected

Remarks:

* Verify D.T. against
material received

See NR # 0101, REF.I.R #109, M 11/1/85

O.C. Inspector

1-29-85

Date

5032-1200

PAGE 19 OF 25



FORM CC-1
Rev. 4

ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH 44081

DATE January 25, 1985

CUSTOMER P. O. NO P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133

Material P. O. No. 4128

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase-order specification requirements.

Dolores A. Gott

Dolores A. Jott
Quality Control Supervisor

50321299



Bisco Industrial Services, Inc.
One Bisco Construction Group
1000 South Blvd., Elk Grove Village, Illinois 60007 phone 312 528-6070
one of the Bisco Companies

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DT 5261

JMG

delivery ticket

Bisco Construction

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Perry, Ohio 44081

ITEM NUMBER	FROM	DATE	AIR-IT THERE	3133-1804-C-476
QUANTITY DESCRIPTION	QUANTITY DESCRIPTION	MATERIAL		
1,000#	1,000#	Locaseal (ABB)	10-8-85 VM	D
				O
				N
				O
				T
				W
				R
				I
				T
				E
				Y
				O
				N
				D
				H
				E
				R
				E

Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007

Thank You.

All claims MUST be made
within 5 days from date of delivery

Received By Vicki McCafferty

60321300



PAGE 17 OF 25

FORM RI-1
REV-3RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Bisco ConstructionMATERIAL RECEIVED Locaseal Paint ALOT/BATCH no. 256CLQUANTITY 10 pails x 63.5 lbs ea.

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>na</u>	Dimensional Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Material Accepted Rejected

Remarks:

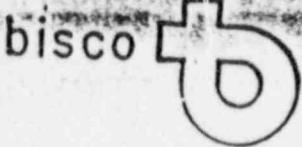
* VERIFIED DT. AGAINST
MATERIAL RECEIVED.

O.C. Inspector

11-12-85

Date

50321301



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FORM RI-1
REV-3

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. NA

DATE 11-12-85

JOB no. 3133

PROJECT NAME Perry Nuclear Power Plant

VENDOR Bisco Construction

MATERIAL RECEIVED Locaseal Part B

LOT / BATCH no. 25801

QUANTITY 10 pails x 36.5 lbs

Required	Inspection Instruction	Accept	Reject
no	Verify P.O. Against Material Received	na	
✓	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings	✓	
✓	Visual Inspection	✓	
na	Dimensional Inspection	na	
*✓	Special Instructions per Attached	✓	

Material Accepted
 Rejected

Remarks:

*verified DT against
material received.

O.C. Inspector

11-12-85

Date

Licki McCafferty

6032 1302

216/259-3737
Ext: 6843

November 8, 1985

Cleveland Electric Illuminating Co.
 Perry Nuclear Power Generating Station
 10 Center Street
 Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191, Rev. 0, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A
 Bisco Job #: 3133
 Bisco D.T. #: 6261
 Customer P.O.# : P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

Dolores A. Lott
 Quality Control Supervisor

brand industrial services, inc.
 construction group
 2207 lively blvd., elk grove village, illinois 60007, (312) 226-8670

a subsidiary of brand insulations, inc.

50321203

WISCU 70

ORIGINAL

PAGE 14 OF 25

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-188
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard, verified by MBS
(Certificate to MBS 2028)

Date of Verification: 9-9-85

Date Due: 3-9-86

10 gram Dial Accuracy:

Standard: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Readings: 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00

Deviation: 0 0 0 0 0 0 0 0 0 0 0

100 gram Beam Accuracy:

Standard: 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00

Readings: 0.00 10.00 20.00 30.00 40.00 49.90 60.00 70.00 80.20 99.20 100.00

Deviation: 0 0 0 0 0 -10 0 0 +20 +20 0

500 gram Beam Accuracy:

Standard: 0.00 100.00 200.00 300.00 400.00 500.00

Readings: 0 100.20 200.10 300.10 400.00 500.00

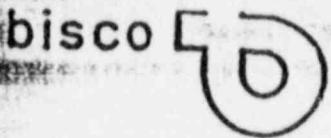
Deviation: 0 +20 +10 +10 0 0

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

Name

Title

5032 1304



PAGE 13 OF 25

ORIGINAL

CERTIFICATION OF CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # 8-143
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
(Certificate verified by Ill. Dept. of Lab.
to NBS 2028)

Date of Verification: 9-19-85

Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	0	0	0	0	0	+.01
------------	---	---	---	---	---	---	---	---	---	---	------

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00					
-----------	------	--------	--------	--------	--------	--------	--	--	--	--	--

Readings:	0.00	99.80	200.00	300.02	400.05	500.03					
-----------	------	-------	--------	--------	--------	--------	--	--	--	--	--

Deviation:	0	-.20	0	+.02	+.05	+.03					
------------	---	------	---	------	------	------	--	--	--	--	--

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Mackay
Name
QC Supervisor
Title

50321205

ILLUMINATING COMPANY
P.O. NO. SP98/4/83
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMON

Laxdipuro

PAGE 13 OF 25

QCT-2
REV.-8



REV. - 8
ORIGINAL

• SYSTEM VERIFICATION LOG •

PROJECT NAME PERRY NUCLEAR POWER PLANT

JOB NO. 3134

PRODUCT NAME "Locospal"

DENSITY RANGE 140 TO 170 - P.C.F.

5032 1306

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SF98/4293
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMISSION

bisco



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 3134 LAST ENTRY DATE 1-7-86

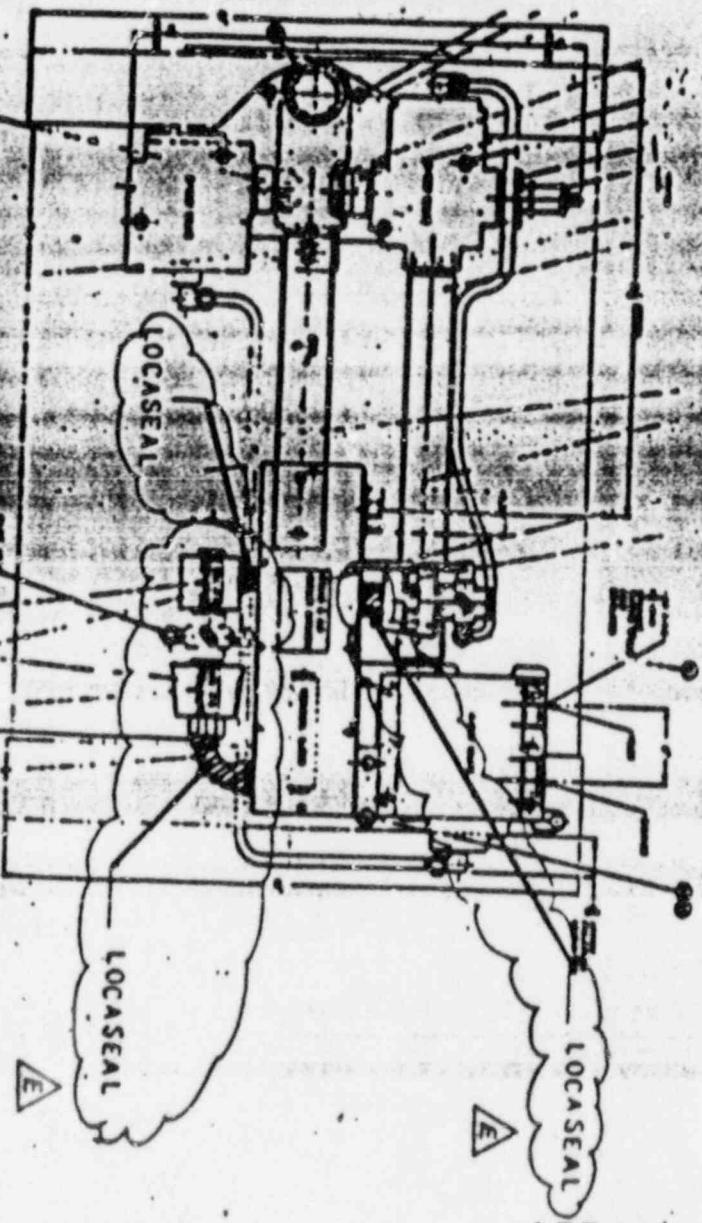
MACHINE NO. NA PRODUCT Lccaseal

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

Entries reviewed by

50321303

FIGURE 2-2
MSIV ACTUATOR ASSEMBLY



ATTACHMENT 2 PG. 1 OF 1
ECN 27245-98-33 REV. F

50321300

PAGE 9 OF 25

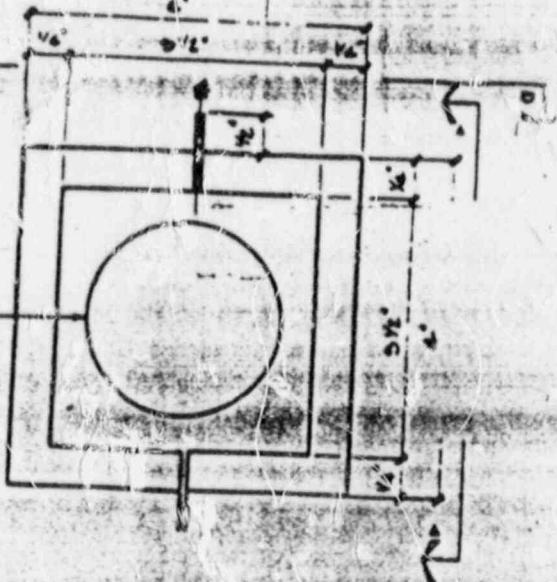
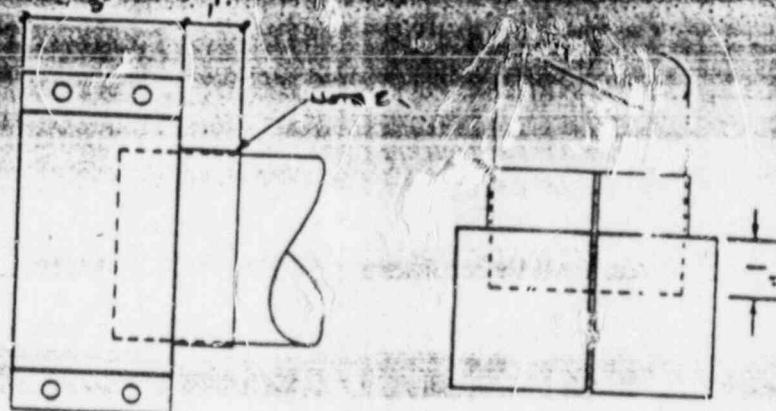


FIGURE F
MCT 4C49 B 4050

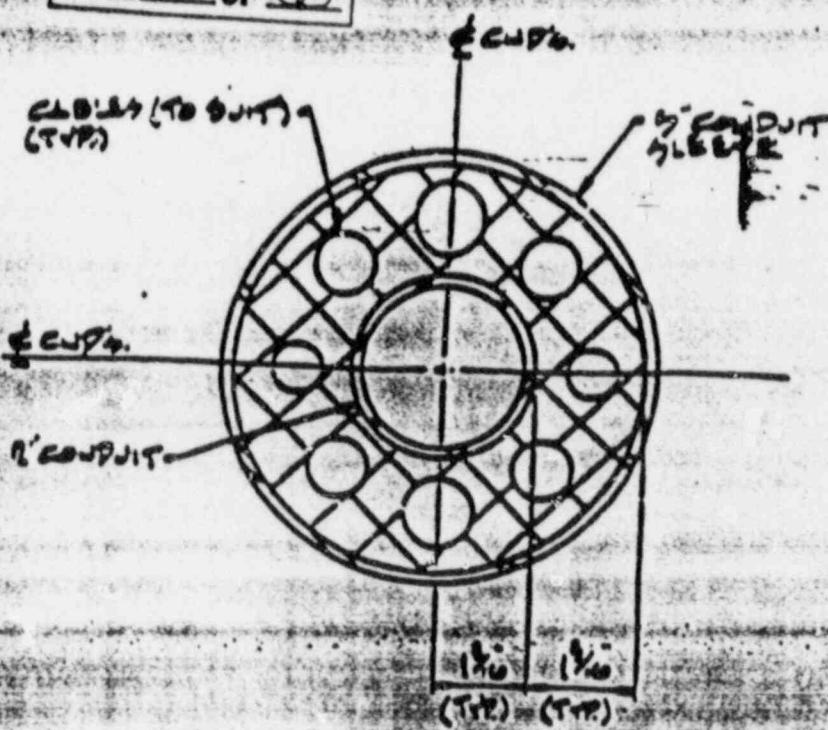


SECTION A-A

SECTION B-B

- NOTES: 1. SIZED TO FIT EXISTING CONDUIT (1 1/2" OD X 1").
2. ATTACH TO CONDUIT WITH DC-732 ZTV CABLE AND BE FLAMED.
3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ IN. #20, 8 FT, GRADE 153 87 SC-PK AND HEAVY WIRE 1/4" X 2" NUTS.
4. ASSEMBLY TO BE FABRICATED FROM 14 ga GALVANIZED SHEETMETAL.
5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED WITH LOCASEAL.
6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW PROPER INSTALLATION OF LOCASEAL.
7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

50-327309



DETAIL 'C'

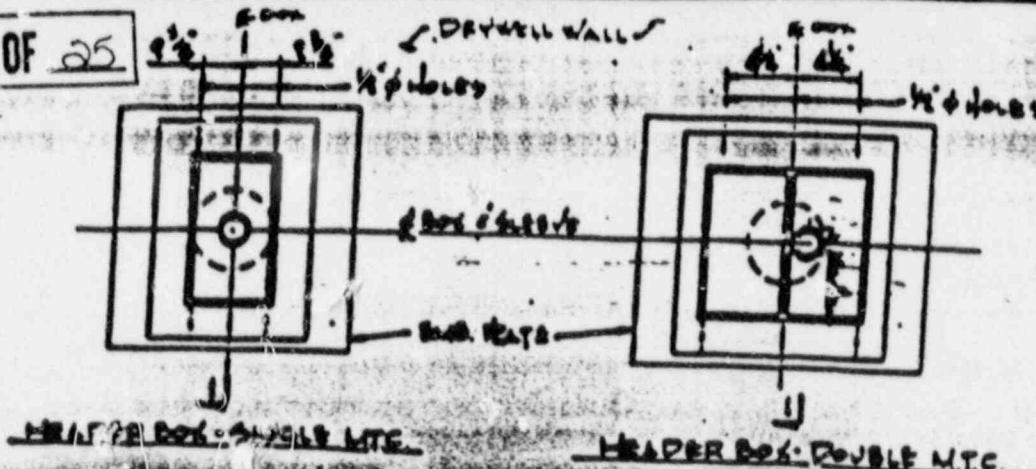
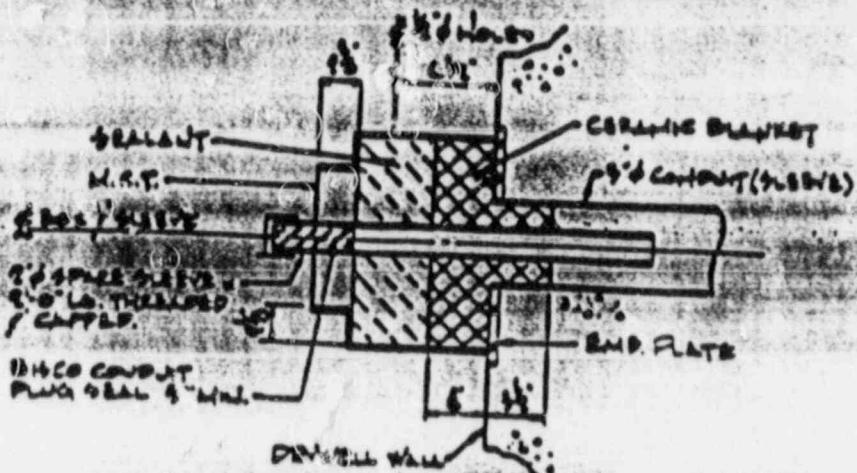
NOTE:

THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS.

ATTACHMENT | PAGE 1 OF 5
ECL # 27245-96-33
REV. F

50321910

S. DRYWELL WALLS

DETAIL "B"SECTION 1-1Notes:

1. MATERIAL AS SPECIFIED IN SP.98
2. SLEEVE SHALL EXTEND $9\frac{1}{2} \pm \frac{1}{2}$ " PAST THE EDGE OF THE MCT.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE MCT WITH A TOLERANCE OF ± 2.00 " ABOVE OR BELOW THE HORIZONTAL C. (REF. DETAIL B)
4. BLANKET THICKNESS FOR CERAMIC FIBRE 4" NOM. $+1.00 \cdot -0.00$ "
5. THE FOLLOWING MCT'S SHALL RECEIVE A $1\frac{1}{2}$ " SLEEVE IN LIEU ERB-3013, EBB-3016, EBB-3017, ERB-3018, EBB-3019, EBB-3021, EBB-3022, EBB-3024
6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES ERB-3015, EBB-3014, EBB-4029, EBB-3020, EBB-3023, EBB-4030, EBB-4033, EBB-4035, EBB-4037, EBB-4039, EBB-4036, EBB-4040, EBB-4032, EBB-4042, EBB-3021, ERB-4036

ATTACHMENT/PAGE 3 OF 5
ECD# 27249-48-93
REV. F

50-3-2-13



6:11.1 Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.

6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in them MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

50321312

PAGE 5 OF 26

25 BB 11/86

SECTION 6:02

- ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.
8. The installations of moisture seals in the MSIV actuator assemblies.

6.11 MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of locaseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR

1ERB 3013	1ERB 4028	1ERB 4042	1ERB4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A-F
F022B
F022C
F022D

1B21F028A
F028B
F028C
F028D

50321313

PAGE 4 OF 25

ENGINEERING CHANGE NOTICE

PERRY NUCLEAR POWER PLANT

 SPEC DWG/ECN

A	SUBJECT SP-98 PRESSURE / MOISTURE SEALS	B	ECN NUMBER 27246-98-33 REV F
ORIGINATOR Harry B. Johnson	11-2C DS (Signature)	CR NUMBER 5108	
DEPARTMENT SITE DESIGN TEAM		APPECTS SP: 98/II	
B DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE:		DOCUMENTS TO BE REVISED BY THIS ECN	
REV. F: REVISES VALVE ID FROM FO 20 TO FO 22 ATTACHMENT 1.		SP-98-4549-00 REV. II.	
REV. E: ADDS THE CRITERIA ATTACHMENT 1 PG. 1 OF 5 FOR MOISTURE SEALS ON THE MAIN ACTUATOR ASSEMBLIES AND ATTACHMENT 1 PG. 5 OF 5, AND ATTACHMENT 2.		Q-LIST AFFECTED?	
REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B": NOTE 7 - SLEEVES IN WHICH THE EXISTING PLUG SEAL WAS REMOVED TO ALLOW CIRCUIT PULLS, SHALL BE SEALED USING A MODIFIED PLUG SEAL. THE SEAL SHALL BE BORED IN SUCH A FASHION SO AS TO ACCOMMODATE A TIGHT CABLE FIT ONCE REINSTALLED. WHEN THIS TYPE OF INSTALLATION IS NOT POSSIBLE THE SLEEVE SHALL BE FILLED WITH LOCASEAL TO A DEPTH OF 5.00"		<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES
REV. C: ADDED ERD 4036 TO W-64 PG. 3 OF 4 DETAIL "B".		<input checked="" type="checkbox"/> TEST SPEC CHANGE REQUIRED?	<input checked="" type="checkbox"/> YES
REV. B: REVISED NOTE 3 AND ADDED NOTES 5 AND 6 TO DETAIL "B" (PG. 3 OF 4).		<input checked="" type="checkbox"/> EQUIP. QUA. AFFECTED?	<input checked="" type="checkbox"/> YES
REV. A: ADDED NOTES TO DETAILS ("B" AND "C")		<input checked="" type="checkbox"/> SAR CHANGE REQUIRED?	<input checked="" type="checkbox"/> YES
REV. -: ADDED SECTION G:02 ITEM 7; SECTION G:8 FOR MCT PRESSURE SEALS.		<input checked="" type="checkbox"/> UNIT 2 AFFECTED?	<input checked="" type="checkbox"/> YES
E SYSTEM AFFECTED N/A			
F MATERIAL TO BE PURCHASED <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES			
G DESIGN REVIEWER APPROVAL			
BY: <u>H. Anthony Macaray</u> DATE: 11/21/85 (Design Reviewer)			
H QA APPROVAL (IF REQUIRED)			
BY: <u>R. Gaggenau</u> DATE: 11/21/85 (QA Management)			
I PROJECT ENGINEERING APPROVAL			
BY: <u>W. Chippert / F.C. Nall</u> DATE: 11/21/85 (Project Engineer)			
J CEI ACCEPTANCE			
BY: <u>F. Subbarao</u> DATE: 11/21/85 (Responsible Engineer)			
K QA REVIEW REQUIRED <input checked="" type="checkbox"/> NOT REQUIRED <input type="checkbox"/>			
L REVIEWED BY: <u>P-4X13 - PR. 240</u> DATE: 12/03/85 FOR: <u>11-21-85</u> BILL OF MATERIAL NUMBER(S) <u>Issued</u>			
M SPEC. NO. <u>98</u> AND CONT. P.O. NO. <u>P-4293</u>			
N DESIGN CHANGE INCORPORATED			
BY <u>EBO/CHM</u> DATE: <u>N/A</u> (Project Engineer)			
O NOTE: *NOT REQUIRED IF FOR DRAWING CHANGES ONLY. N/A			

Gilbert Commonwealth Inc.

Figure X-2
Revised: 7-22-85

50321314

STEI CEUS

C.E.I.	bisco
SPN 16/PD 4213	
PERRY NUCLEAR UNIT 1 POWER PLANT	COMMISSION

PRODUCTION AUTHORIZATION			
INITIAL RELEASE	HOLD	RE-RELEASE	
REF	DATE	REF	DATE
PREPARED BY	APR 24, 1986	REF	DATE
DATE PREPARED	11/17/85		
REF DRAWING	D-101-052		

SHEET	OF
1	1
BUILDING	ELEV/ROOM
25	616/01
PENETRATION NUMBER	
1021002A	

ZON-HAN-POICA		ZON-HOCPHSZOC		XDON			
PENETRATION		PENETRATING ITEM		BARRIER RATINGS			
				INFORMATION			
SIZE		TYPE		SEE BCWA — THRU —			
BARRIER MATERIAL		DEPTH		FOR PENETRATING ITEMS			
YES		NO		SIZE			
				TYPE			
				REFERENCE NUMBER			
				MOVEMENT			
				INSULATION			
				3 HOUR FIRE			
				RADIATION			
				MOISTURE			
				NO SEAL REQUIRED			
				TYPICAL DETAIL			
				TEST REPORT NUMBER			
				ANI ACCEPTANCE LETTER NUMBER			
				PAGE 2 OF 25			
MATERIALS		IN PROCESS		FINAL INSPECTION		TURN-OVER	
REF ID: P101002A		DATE: 04/24/86		DATE: 04/24/86		DATE: 04/24/86	
ITEM NO:		DESCRIPTION		TEST DATE		TEST DATE	
SYLGARD 170		SF 150 NH		04/24/86		04/24/86	
BOOT MATL		BISCO-FLEX150		04/24/86		04/24/86	
BISCO-SEAL 1		DC 732		04/24/86		04/24/86	
DC 790		C/FIBER 4128		04/24/86		04/24/86	
C/BOARD		LOCASBAL		04/24/86		04/24/86	
INSTRUCTIONS		TOTAL PERZ ARE 27246-98-33 REV. SET F * FILL INTERNAL CONDUITS FULL DEPTH.		LOCATION		CONT. STA. TUNIS.	
		04/24/86		04/24/86		04/24/86	

PAGE 3 OF 25

PAGE 1 PERRY NUCLEAR POWER PLANT WORK ORDER
M151B01

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
850011943	NC98	1B21	MECHANICAL	RB/IDW			
R O C	P O C	COMP CAT	PRIORITY CODE	SAFETY M/E	SEISMIC X/	ASME NO	TAG OUT REQ'D
5	1 2 3 4 5	PEN	3B	3A <i>3mm WELDS</i>			NOT YES <i>11/16</i>
SPECIAL PERMIT	RETEST REQ'D	HOUSE-KEEPING	ALARA REVIEW	RWP	TECH	EQ 15-4944	SPEC
NO YES <i>3mm</i>	NO	YES	NO	REQ'D	NO	NO	NO

SYSTEM NAME: NUCLEAR BOILER (NSSS)

SUMMARY: IMPLEMENT DCP 85-618.

MPL NAME: MSIV ACTUATOR ASSYS & MCT *2m out of 85*

PLANNER REMARKS

NC 98 TO PERFORM WORK.

REFERENCE: MDL 1B21-#291 (H.A. 85-12675)

REFERENCE: MDL ECO-03-802 (E.C.N. 27245-98-33(F))

IMPLEMENT DCP 85-618. RBG FIRE BARRIER REMOVAL PERMIT REQUIRED (PER PROJ. 85-12675) *Permit issued*

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS. 1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT) PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

JLH/DJS

SD/AB

BB

TIME: 2222

TIME: ---

DATE 12/12/85

DATE 12/12/85

DATE 12/12/85

DATE 12/12/85 *12/12/85*

DATE ---/---/---

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT. SUPV.

DATE ---/---/---

DATE ---/---/---

DATE ---/---/---

50 32 13 15



SOFTWARE CLOSEOUT
LIST OF ATTACHMENTS

PAGE 1 OF 25

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. EP-98/4293
UNIT I AND COMMON

PENETRATION NO. 1521F02SA

616/01

1.	SCIA Sheet 1	21.	IP 101 Sheet 1
2.	'N 11943	22.	IP 101 Sheet 2
3.	ECI 27245-98-33F Sheet 1	23.	IP 101 Sheet 3
4.	ECI 27245-98-33F Sheet 2	24.	IP 101 Sheet 4
5.	ECI 27245-98-33F Sheet 3	25.	
6.	ECI 27245-98-33F Sheet 4	26.	
7.	ECI 27245-98-33F Sheet 5	27.	
8.	TCI 27245-98-33F Sheet 6	28.	
9.	TCI 27245-98-33F Sheet 7	29.	
10.	TCI 1 Locseal	30.	
11.	TCI 2 Locseal	31.	
12.	Certification of Calibration	32.	
13.	Certification of Calibration	33.	
14.	COC Locseal	34.	
15.	PT Locseal	35.	
16.	PT Locseal	36.	
17.	PT Locseal	37.	
18.	COC Ceramic Blanket	38.	
19.	PT Ceramic "Inlet	39.	
20.	PT Ceramic Blanket	40.	

BY: L. Becker
(O.C. INSPECTOR)

OWNERS REVIEWED Paul Eul

REVIEWED BY D. Richardson
(SUPERVISOR)

50321317



broad industrial services, Inc.
1420 Renaissance Drive
Park Ridge, Illinois 60068
(312) 298-1200
Toll 800 262-4622 broad prod

PROCEDURE	DATED	REVISION
(See Attached)		

CONTRACTOR Foreman	DATE APPROVED REVISED	CONSTRUCTOR Foreman	SUPERVISOR Foreman
Dennis LaVelle	2-17-85	Alan M. Murn	Dennis LaVelle
J. T. Sweeny	2-14-85	Alan M. Murn	J. T. Sweeny
Marty H. LaVelle	2-19-85	Alan M. Murn	Marty H. LaVelle
M. G. Delaney	2-17-85	Alan M. Murn	M. G. Delaney
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka
Dave Rittenhouse	2-7-85	Alan M. Murn	Dave Rittenhouse
George Filla	2-14-85	Alan M. Murn	George Filla
John Halovasic	2-2-85	Alan M. Murn	John Halovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin

50321318

PAGE 24 OF 55

bisco L

FORM IR Cir 1-73 BL
Rev. D Page 2 of 2
attachment to NR 0101

ORIGINAL

INSPECTION REPORT

I.R. No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85

Bisco Project No. 3134

Item of Activity Inspected Ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.
There were no deviations in documentation.

See NR # 0101

HOLD TAG No. _____ Q.C. Inspector D. van Pelt Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Accept
Accept Tag No. _____ Reject Tag No. _____

503213-19

LINN NO.	DATE	PERRY NUCLEAR POWER PLANT NONCONFORMANCE REPORT				PAOS-NW 32-254		
1	NCR NO. NO. 73823 REV. A	REV. NT.	OF	ITEM	ITEM NO.	ITEM NAME	QUANTITY	
2	ISSUED BY	NAME		INITIALS	ORGANIZATION		DATE	
3	ITEM / MATERIAL	SOURCE	BISCO		CURRENT STATUS	HOLD	LOCATION	
4	RESPONSIBLE ORGANIZATION	NAME		BISCO	SPEC. NO.	SP- 0101	REV./ECH. 2	
5	NCR TYPE	CATEGORY:		<input type="checkbox"/> 1 (POSSIBLE SIGNIFICANCE)	<input type="checkbox"/> 2 (MAJOR)	<input checked="" type="checkbox"/> 3 (MINOR)		
6	GOVERNING REQUIREMENT	INCLUDE ACCEPTANCE CRITERIA AND DOCUMENT. NO.:		Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by Dept.				
7	DESCRIPTION OF NONCONFORMANCE	NC CODE	105	RELATE TO LINE NO. 6: Bisco Craft used controlled material - ceramic bulk fiber P.O. #4128 prior to its release.				
8	CAUSE OF NONCONFORMANCE	CAUSE CODE	P01	Bisco Craft worked over a hold for inspection tag. Bisco QC had not received the certificate of compliance for the ceramic bulk fiber.				
9	PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP (1) <input type="checkbox"/> REWORK (2) <input type="checkbox"/> REPAIR (3) <input checked="" type="checkbox"/> USE AS IS (4)						
10	JUSTIFICATION	Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.						
11	RESP. ORG. APPROVAL	ENG./CRAFT	04/05	B. Williams		WA	DATE 01/29/85	
12	PHPP REVIEW BOARD	REVIEW REQ'D.	YES <input type="checkbox"/>	NO <input type="checkbox"/>	DECISION <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT		DATE 01/29/85	
13	VERIFIED	M. L. Caputo 1-29-85 R. Cygnus 1-29-85						
14	COPY DISTRIBUTION	H. Deborah von Paris W.C. 10-21-85						

5032 1320

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION PAQS JAN 29 '85

HNO. 1823-A REV. 1/84

NR No.	B1SC - 0101 F/0	Issue Date	1-29-85	Current Date	1-29-85
Review Required:	<input checked="" type="checkbox"/> CAI Eng.	<input type="checkbox"/> DE	<input type="checkbox"/> Other _____		
Review Comments: <i>Proposed Disposition to "Use As Is" is acceptable to engineering.</i>					
Attach documented training upon close-out of this NR. P.O. #4128 material cannot be used until all documentation is obtained.					
AFFECTS AS-BUILT	Yes <input type="checkbox"/>	DRAWINGS?	No <input checked="" type="checkbox"/>	DRAWINGS	Contractor / Vendor _____
AFFECTS EQUIPMENT	Yes <input type="checkbox"/>	AFFECTED	CAI		
QUALIFICATION	<i>R. Cyrenski 1/29/85</i>				
CAI Engineer	Date	Quality Engineer	Date	Other	Date
ATTACHMENTS	YES <input checked="" type="checkbox"/>	LIST OF ATTACHMENTS <i>1 pg</i>			
IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.					
DISPOSITION REVISION NO. _____					
7	1. PROPOSED DISPOSITION	<input checked="" type="checkbox"/> REJECT <input type="checkbox"/> APPROVE <input type="checkbox"/> DEFER <input type="checkbox"/> REOPEN <input type="checkbox"/> REOPEN WITH CHANGES			
JUSTIFICATION: _____ _____					
10	STEPS TO PREVENT RECURRENCE				
11	RESP. ORG. APPROVAL	EHS/COMIT.	QA/RC	AIA	DATE
12	PNPP REVIEW BOARD	REV'D - REQ'D. <input type="checkbox"/> YES <input type="checkbox"/> NO	DECISION: <input type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	DATE	
13	DISPOSITION	NAME	TITLE	DATE	

50321321

DT 4433

JMG



bisco
bisco industrial services, inc.
the bisco construction group
2207 lively Blvd., Elk Grove Village, Illinois 60007 phone (312) 238-0875
one of the bisco companies

delivery ticket

Babcock & Wilcox

Bisco

245 W. Roosevelt Road

10 Center Street

W. Chicago, Illinois 60185

Perry, Ohio 44081

ITEM NUMBER	P.O.	DATE	FROM	TO
G. Hamilton	Drop Ship	12-19-84	Direct Shipment	3133-100M C-491

QUANTITY SHIPPED	QUANTITY SHIPPED	MATERIAL	
30 BX	30 BX	Ceramic Fiber Bulk	D 1-24-85
30 BX	30 BX	Ceramic Blanket 4" Strips	O 1-24-85
		Partial Order	

Shipped direct from manufacturer

Bisco P.O.# 4128

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Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You.

All claims MUST be made
within 5 days from date of delivery

10% handling charge on all returns
Only full packaged units returnable

Received By

Reuben von Paris
1-24-85

JOB FILE COPY

50321322

bisco



PAGE 20 OF 25

FORM RI-1
REV-3

ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITES)

P.O. No. 4128DATE 1-24-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 128QUANTITY 30.04 x 150' ea

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected

Remarks:

* Verify D.T. against
 material received

see NR # 0101, REF.I.R # 109, Sh 7/1/85

O.C. Inspector

1-29-85

5032 1323

PAGE 19 OF 25

FORM CC-1
Rev. 4.



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH. 44081

DATE January 25, 1985

CUSTOMER P. O. NO P-1293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133
Material P. O. No. 4128

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores B. Holt

Dolores A. Lott
Quality Control Supervisor

50321324



Bisco Industrial Services, Inc.
The Bisco Construction Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone 312 522-2676
one of the Bisco Companies

delivery ticket

Bisco Construction

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Perry, Ohio 44081

ITEM NUMBER	ITEM	DATE	TIME	REMARKS	
Vicky A.	EGV	11-7-85	Air-fit there		3133-180W-C-476
QUANTITY ORDERED	QUANTITY SHIPPED	MATERIAL			
1,000#	1,000#	Locases (AEB) 10-8-85 VM			
<p>D O N O T W R I T E B E Y O N D M E R E</p> <p>Please acknowledge receipt of the material listed on this Delivery Ticket by signature and return Job File and Acknowledgment copies.</p> <p>BISCO Construction Group 2207 Lively Blvd. Elk Grove Village, IL 60007 Thank You</p>					

All claims MUST be made
within 5 days from date of delivery

Received by

Vicky McCafferty

50321325

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED LOCA Seal Part ALOT / BATCH no. 2560-LQUANTITY 10 pails x 63.5 lb ea

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>na</u>	
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<u>na</u>	Dimensional Inspection	<u>na</u>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected

Remarks:

* VERIFIED DT. AGAINST
MATERIAL RECEIVED.

Licki McAffety
Q.C. Inspector

11-12-85

Date

5032 1326

bisco

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. NADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED LOCA Seal Part BLOT / BATCH no. 2580 LQUANTITY 10 parts, 36.5 lbs ea

Required	Inspection Instruction	Accept	Reject
na	Verify P.O. Against Material Received	na	
✓	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings	✓	
✓	Visual Inspection	✓	
na	Dimensional Inspection	na	
*✓	Special Instructions per Attached	✓	

Material Accepted
 Rejected

Remarks:

*verified DT against
material received.

O.C. Inspector

11-12-85
Date

50321327

216/259-3737
Ext: 6843

November 8, 1985

Cleveland Electric Illuminating Co.
 Perry Nuclear Power Generating Station
 10 Center Street
 Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191, Rev. O, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A

Bisco Job #: 3133

Bisco D.T. #: 6261

Customer P.O. #: P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

Dolores A. Lott
Quality Control Supervisor

brand industrial services, inc.
 construction group
 2207 Keweenaw Blvd., Elk Grove Village, Illinois 60007, (312) 228-6670

* subsidiary of brand installations, inc.

5032 1328

ORIGINAL

PAGE 14 OF 25

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-188
SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard.

verified by _____
(Certificate to NBS 2028)

Date of Verification: 9-9-85 Date Due: 3-9-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	49.90	60.00	70.00	80.20	99.20	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	-10	0	0	+20	+20	0
------------	---	---	---	---	---	-----	---	---	-----	-----	---

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0	100.20	200.10	300.10	400.00	500.00
-----------	---	--------	--------	--------	--------	--------

Deviation:	0	+20	+10	+10	0	0
------------	---	-----	-----	-----	---	---

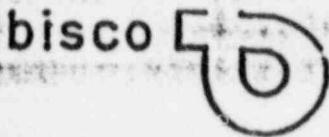
It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. L. Maibis
Name

QC Supervisor
Title

5032 1329

ORIGINAL



CERTIFICATION OF CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-143
 SIZE or RANGE:
 CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
 verified by Ill. Dept. of Labo
 (Certificate to NBS 2028)

Date of Verification: 9-19-85

Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	0	0	0	0	0	+.01
------------	---	---	---	---	---	---	---	---	---	---	------

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0.00	99.80	200.00	300.02	400.05	500.03
-----------	------	-------	--------	--------	--------	--------

Deviation:	0	-.20	0	+.02	+.05	+.03
------------	---	------	---	------	------	------

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Macias
QC Supervisor
 Title

50321330

ILLUMINATING COMPANY
P.O. NO. SP98-4233
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMON

Laxdipura

bisco

PAGE 12 OF 55

OCT.- 2

REV.- 9

ORIGINAL

• SYSTEM VERIFICATION LOG •

PROJECT NAME PERRY NUCLEAR POWER PLANT

JOB NO. 3134

PRODUCT NAME Lecadeal

DENSITY RANGE 140 TO 170 P.C.F.

5032133

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SPS8/4293
PIERRY NUCLEAR POWER
PLANT - UNIT 1 & COM'N



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85PROJECT NO. 3134 LAST ENTRY DATE MACHINE NO. WA PRODUCT Loxaseal

System	Lot Number Part A	Weight or Quantity	Lot Number Part B	Weight or Quantity	Lot Number Part	Weight or Quantity	Lot Number Part	Weight or Quantity	Comments
007	2325	63.5	2331	36.5					6-4-85
007	2325	63.5	2331	36.5					6-4-85
008	2560L	63.5	2580L	36.5					1-5-86
	2560L	63.5	2580L	36.5					1-6-86
008	2560L	63.5	2580L	36.5					1-7-86
*									

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

Entries reviewed by _____ Date _____

5032-1332

PAGE 10 OF 25

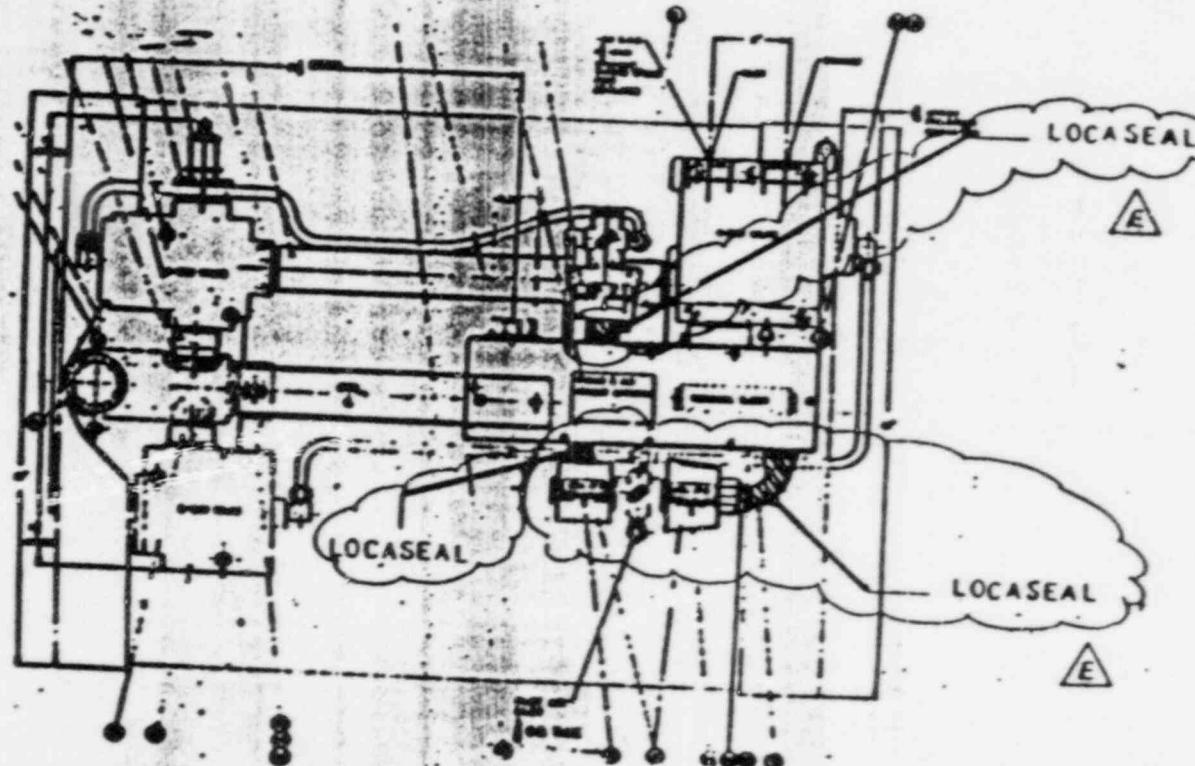


FIGURE 2-2
MSIV ACTUATOR ASSEMBLY

ATTACHMENT 2 PG. 1 OF 1
ECN 27245-98-33 REV. F

E E E E E

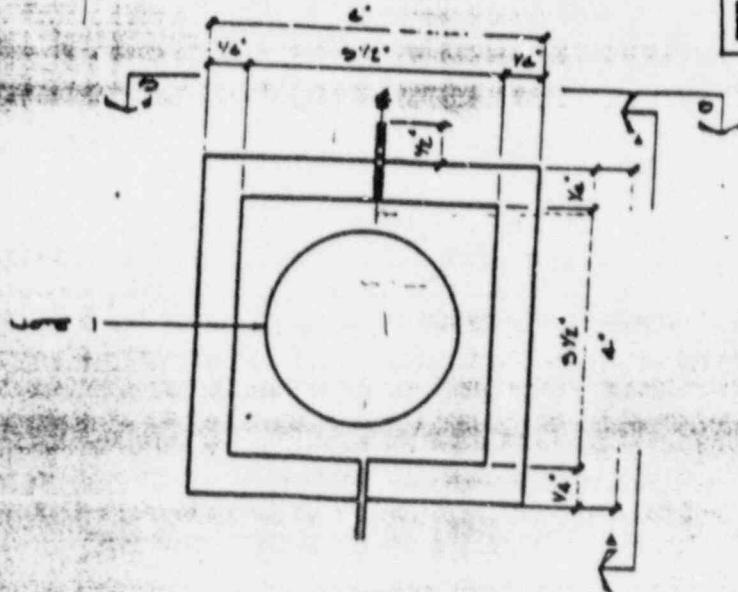
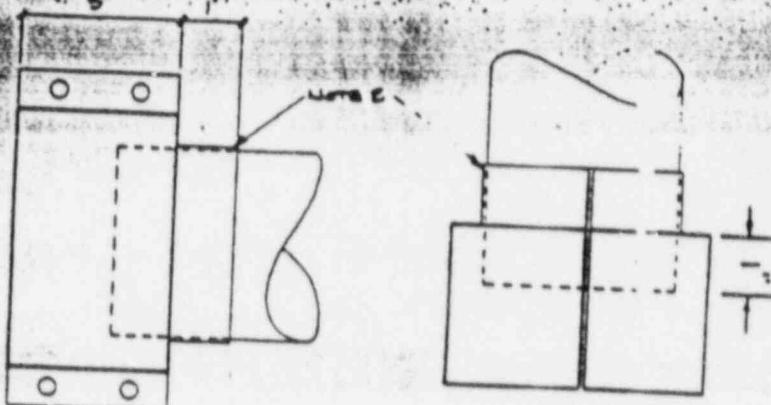


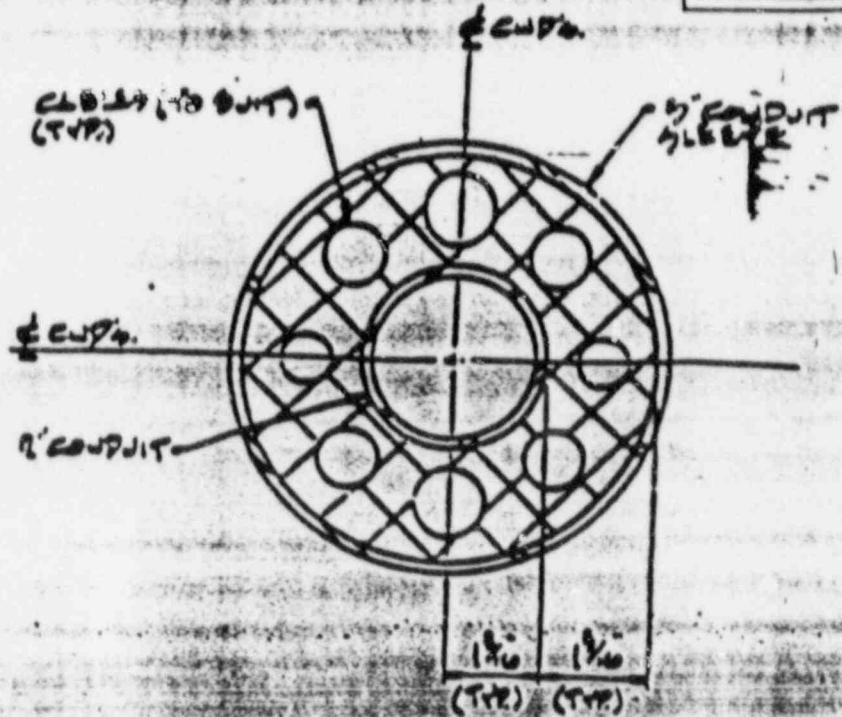
FIGURE F'
MCT 4C49 3 4050

SECTION A-ASECTION B-B

- NOTES:
1. SIZED TO FIT EXISTING CONDUIT (1 1/2" OD).
 2. ATTACH TO CONDUIT WITH DC-732 Z-N CLAMP AND 96 CLEVIS.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ #20 BOLTS, GRADE 153 BY AC-FB AND HEAVY HEAD (1/4" SHW NUTS).
 4. ASSEMBLY TO BE FABRICATED FROM 14 ga GALVANIZED SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

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ECN	2-27-95-3	REV E
DWG	22-26-12-22-6	REV Z
ATTACHMENT		Q545



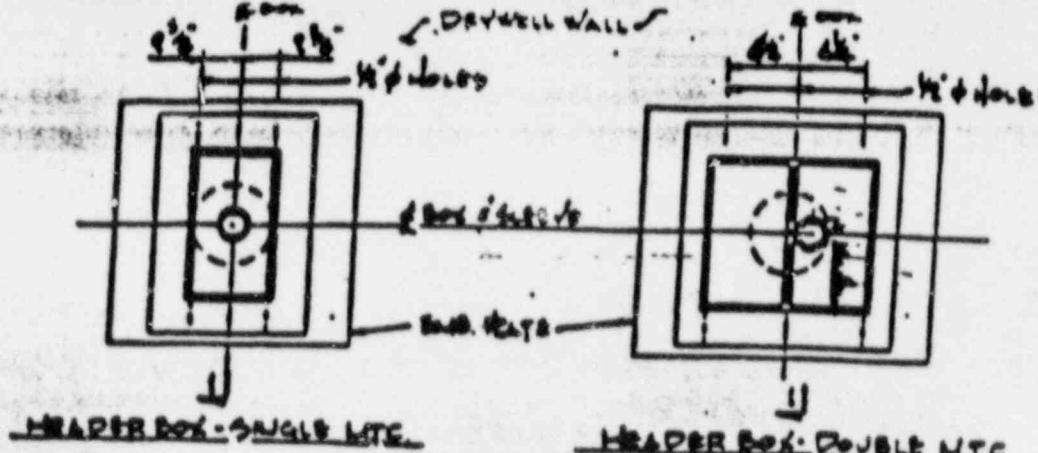
DETAIL 'C'

NOTE:

THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS □

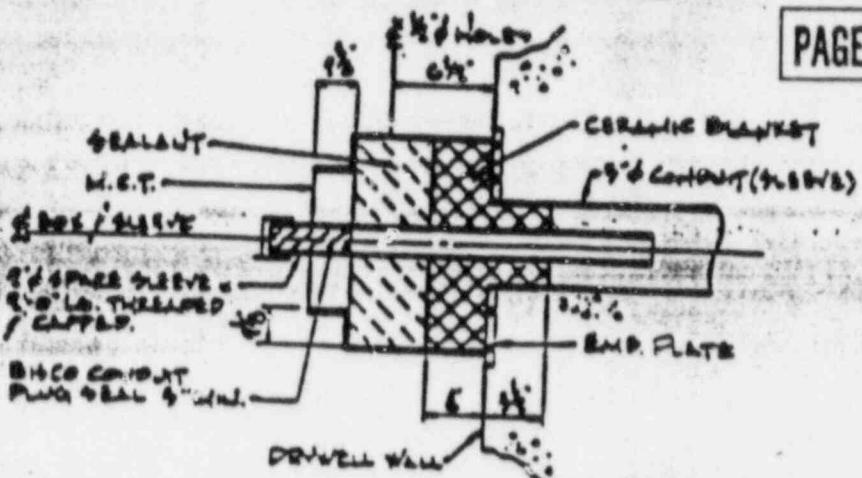
ATTACHMENT PAGE 1 OF 5
ECU # 27245-98-33
REV. F

50321335



DETAIL 'B'

PAGE 7 OF 25



SECTION 1-1

Notes:

1. MATERIAL AS SPECIFIED IN SP.98
2. SLEEVE SHALL EXTEND $8\frac{1}{2}'' \pm \frac{1}{2}''$ PAST THE FLANGE OF THE M.C.T.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE M.C.T. WITH A TOLERANCE OF $\pm 2.00''$ ABOVE OR BELOW THE HORIZONTAL ℓ . (REF. DETAIL B)
4. BLANKET THICKNESS FOR ORGANIC FIBER 4" NOM. $+ (.00" - 0.00")$
5. THE FOLLOWING M.C.T.'S SHALL RECEIVE A $1\frac{1}{2}''$ SLEEVE IN LIEU OF THAT SPECIFIED IN SECTION L-1: ERB-3013, ERB-3021, ERB-3022, ERB-3024, ERB-3018, ERB-3016, ERB-3017, ERB-3018, ERB-4035, ERB-4037, ERB-4039, ERB-4036, ERB-4040, ERB-4032, ERB-4031, ERB-4030.
6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES: ERB-3013, ERB-3014, ERB-4029, ERB-3020, ERB-3023, ERB-4030, ERB-4033, ERB-4035, ERB-4037, ERB-4039, ERB-4036, ERB-4040, ERB-4032, ERB-4031, ERB-4030.



ATTACHMENT/PAGE 3 OF 5
ECS 27249-98-33
REV. F

50321335

Cu
1-13-84

PAGE 16 OF 25



6:11.1

Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.

6:11.2

Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in the MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3

Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

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1-13-82

PAGE 5 OF 25

SECTION 6:02

- ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.
8. The installations of moisture seals in the MSIV actuator assemblies.

6.11 MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of locaseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR

1ERB 3013	1ERP 4028	1ERB 4047	1ERB4056
3014	4029	4048	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A	F	1B21F028A
F022B		F028B
F022C		F028C
F022D		F028D

5032 1338

ENGINEERING CHANGE NOTICE			
PERRY NUCLEAR POWER PLANT		<input checked="" type="checkbox"/> SPECN	<input type="checkbox"/> DWG. ECH
A SUBJECT SP-98 PRESSURE / MOISTURE SEALS ORIGINATOR <u>Henry B. Schmidau</u> 11-20-05 <small>(Signature) (Date)</small> DEPARTMENT SITE DESIGN TEAM		D ECH NUMBER 27246-4H-33 REV F CR NUMBER 510H AFFECTS SP. 98 / II	
B DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE: REV. F: REVISES VALVE ED FROM ED20 TO ED22 ATTACHMENT 1 REV. E: ADDS THE CRITERIA ATTACHMENT 1 PG. 1 OF 5 FOR MOISTURE SEALS ON THE INSV ACTUATOR ASSEMBLIES AND ATTACHMENT 1 PG. 5 OF 5, AND ATTACHMENT 2 REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B": NOTE 7 - SLEEVES IN WHICH THE EXISTING PLUG SEAL WAS REMOVED TO ALLOW CIRCUIT PULLS, SHALL BE SEALED USING A MODIFIED PLUG SEAL. THE SEAL SHALL BE FACED IN SUCH A FASHION SO AS TO ACCOMMODATE A TIGHT CABLE FIT ONCE REINSTALLED. WHEN THIS TYPE OF INSTALLATION IS NOT POSSIBLE THE SLEEVE SHALL BE FILLED WITH LOCASOL TO A DEPTH OF 5.00" REV. C: ADDED ERB 4030 TO N. 5, PG. 3 OF 4 DETAIL "B" REV. B: REVISED NOTE 3 AND ADDED NOTES 5 AND 6 TO DETAIL "B" (PG. 3 OF 4) REV. A: ADDED 'NOTES' TO DETAILS ("B" AND "C") REV. -: ADDED SECTION G102 ITEM 7; SECTION G104 FOR MCT PRESSURE SEALS.		I DOCUMENTS TO BE REVISED BY THIS ECH SP98-4549-00 REV. II	
		Q-UNIT AFFECTED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES TEST SPEC CHANGE REQUIRED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES EQUIP. QUA LFFECTED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES SAR CHANGE REQUIRED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES UNIFR AFFECTED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	
		E , SYSTEM AFFECTED <u>N/A</u>	
		F , MATERIAL TO BE PURCHASED <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
		G , DESIGN REVIEWER APPROVAL BY: <u>Hofatony Massey</u> DATE <u>11-20-05</u> <small>(Design Reviewer)</small>	
		G , QA APPROVAL (IF REQUIRED) BY: <u>R. Augenbach</u> DATE <u>11/21/05</u> <small>(QA Manager)</small>	
		H , PROJECT ENGINEERING APPROVAL BY: <u>W. J. Knoll</u> DATE <u>11/21/05</u> <small>(Project Engineer)</small>	
		I , CEI ACCEPTANCE BY: <u>L. Schmidau</u> DATE <u>11/21/05</u> <small>(Responsible Engineer)</small>	
		DOCUMENT CONTROL ATTACHMENTS: ATTACHMENT 1 (5-PAGES) ATTACHMENT 2 (1-PAGE)	
		J , QA REVIEW REQUIRED <input type="checkbox"/> NOT REQUIRED <input checked="" type="checkbox"/>	
		REVIEWED BY <u>P. 42013 - P. 244</u> DATE <u>12/05/05</u> <small>(QA Representative)</small> Bill of Material Number(s) <u>ISSUED</u>	
		SPEC. NO. <u>98</u> AND CONT. PNO. <u>P. 4293</u>	
		K , DESIGN CHANGE INCORPORATED BY <u>E. B. Schmidau</u> DATE <u>N/A</u> <small>(Project Engineer)</small>	
NOTE: *NOT REQUIRED IF FOR DRAWING CHANGES ONLY <u>N/A</u>		Gilbert Commonwealth <u>N/A</u>	

Figure X-2
 Revised: 7-22-05

50321339

PAGE 3 OF 25

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

MIS1801

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER 850011943	RESP SECT NC98	MPL NUMBER 1B21	MAINTENANCE TYPE MECHANICAL			PLANT LOCATION RB/IDW	
R O C 5	P O C 1 2 3 4 5	COMP CAT PEN	PRIORITY CODE 3B	SAFETY M/E <i>5R from valves</i>	SEISMIC M/E <i>I/bars</i>	ASME NO	TAG OUT REQ'D <i>NO YES</i> <i>15-4944</i>
SPECIAL PERMIT <i>NO</i>	RETEST REQ'D NO	HOUSE- KEEPING YES	ALARA REVIEW NO	RWP REQ'D NO	TECH SPEC NO	EQ SPEC NO	

SYSTEM NAME : NUCLEAR BOILER (NSSS)
SUMMARY : IMPLEMENT DCP 85-618.
MPL NAME : M&IR ACTIVATED ASSYS B mcs 1 June 1978

PLANNER REMARKS

NC 98 TO PERFORM WORK.

REFERENCE: MDL 1B21-#291 (W.A. 85-12675)

REFERENCE: MDL CO-03-#02 (EIN N 27245-99-32/E)

IMPLEMENT DCP 85-618. RGB FIRE EXTINGUISHERS REQUIRED (FOR PROVENT - PROWNO ONLY) FROM DISTRICT
POWER SUPPLY: ***** EUR SUPPLY LOCATION: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSG VALUATOR ASSYS.:
1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-61

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MUL. CABLE TRANSIT) PENETRATIONS FRB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO FED UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NINE

PLANNED BY

REVIEWED BY MRAD/ANT

REVIEWED BY
APPROVED BY

APPROVED BY
APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE WORK

WORK COMPLETE

WORK COMPLETE
REVIEW BY NOAD/ANT

REVIEWED BY HQAB/ANI
ACCEPTED BY UNIT SUPER

~~500~~ 500 500
TIME: 0225

DATE 1-1-85
DATE 1-23-85
DATE 1-21-85
DATE 1-28-85 7A
DATE / /

DATE ____/____/____
DATE ____/____/____
DATE ____/____/____

50321340

INTERCEUS

PRODUCTION AUTHORIZATION					
INITIAL RELEASE		HOLD		RE-RELEASE	
REF	DATE	REF	DATE	REF	DATE
PERRY NUCLEAR UNIT 1 POWER PLANT	COMMISSION	PREPARED BY <u>EZ</u>	APP BY <u>EZ</u>	OC INSPECTOR <u>H. L. K. Phillips</u>	BUILDING <u>25</u>
		DATE PREPARED <u>11/17/85</u>		OC SUPERVISOR <u>J. K. Schaeffer</u>	ELEV ROOM <u>629101</u>
		REF DRAWING <u>D-101-052</u>			PENETRATION NUMBER <u>1B21E028D /</u>

SEAL INFORMATION		PENETRATING ITEM		PENETRATION		BARRIER RATINGS		SEAL INFORMATION	
MATERIALS		SIZE		TYPE		BARRIER MATERIAL		DEPTH	
<input type="radio"/> DC 3-6548 <input type="radio"/> SYLGARD 170 <input type="radio"/> SF 150 NH <input type="radio"/> BOOT MATL <input type="radio"/> BISCO-FLEX150 <input type="radio"/> BISCO-SEAL1 <input type="radio"/> DC 732 <input type="radio"/> DC 790 <input checked="" type="radio"/> C/FIBER $\frac{1}{2}$ " <input type="radio"/> C/BOARD <input type="radio"/> LOCASEAL		<input type="radio"/> 1 <input type="radio"/> CO		<input type="radio"/> YES <input type="radio"/> NO		<input type="radio"/> SEE BCWA — THRU — FOR PENETRATING ITEMS			
		SIZE		TYPE		REFERENCE NUMBER			
		MOVEMENT		INSULATION					
		<input type="radio"/> ○ <input type="radio"/> ○ <input checked="" type="radio"/> □ <input type="radio"/> ○		<input type="radio"/> ○ <input type="radio"/> ○ <input type="radio"/> □ <input type="radio"/> ○		3 HOUR FIRE RADIATION MOISTURE			
INSTRUCTIONS		FINAL INSPECTION		TURN-OVER					
SEAL DUE DEC 27 1983 REV F * FULL DEPTH (INTERIOR CONDUITS) * REPLACEMENT STOR		IN PROGRESS 12-23-85 12-23-85		TURN-OVER 12-23-85					

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PAGE 1 OF 25

SOFTWARE CLOSEOUT
LIST OF ATTACHMENTS

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-98/4293
UNIT I AND COMMON

PENETRATION NO. 1B21F022D

629/01

1. DCM Sheet 1	21. TR 101 Sheet 1
2. NO 11943	22. TR 101 Sheet 2
3. ECI 27245-93-33F Sheet 1	23. TR 101 Sheet 3
4. ECI 27245-93-33F Sheet 2	24. TR 101 Sheet 4
5. ECI 27245-93-33F Sheet 3	25.
6. ECI 27245-93-33F Sheet 4	26.
7. ECI 27245-93-33F Sheet 5	27.
8. ECI 27245-93-33F Sheet 6	28.
9. ECI 27245-93-33F Sheet 7	29.
10. CCT 1 Incaseal	30.
11. CCT 2 Incaseal	31.
12. Certification of Calibration	32.
13. Certification of Calibration	33.
14. CIC Incaseal	34.
15. CT Incaseal	35.
16. DT Incaseal	36.
17. DT Incaseal	37.
18. CIC Ceramic Blanket	38.
19. CT Ceramic Blanket	39.
20. DT Ceramic Blanket	40.

BY: D. Bechon
(O.C. INSPECTOR)OWNERS REVIEW Paul S. S.REVIEWED BY D. Z. Carr
(INSPECTOR)

50321342

bisco



brend Industrial services, Inc.
1420 Renaissance Drive
Park Ridge, Illinois 60068
(312) 268-1200
Telex 242442 brennd prod

PROCEDURE	DATED	REVISION
(See Attached)		

INSPECTOR Foreman	DATE REVIEWED	INSTRUCTOR Foreman	REMARKS Foreman
Dennis LaVelle	2-17-85	Alan M. Murn	LaVelle
J. T. Sweeny	2-14-85	Alan M. Murn	JT Sweeny
Marty M. LaVelle	2-17-85	Alan M. Murn	Marty LaVelle
H. G. Delaney	2-17-85	Alan M. Murn	HG DELANEY
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka
Dave Rittenhouse	2-7-85	Alan M. Murn	Dave Rittenhouse
George Filla	2-14-85	Alan M. Murn	George Filla
John Malovasic	2-7-85	Alan M. Murn*	John Malovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin
-	-	-	-

50321343

bisco



FORM IR CII-1384
REV. D Page 2 of 2
Attachment to NR-0101

ORIGINAL

INSPECTION REPORT

I.R. No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85Bisco Project No. 3134Item of Activity Inspected Ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.
There were no deviations in documentation.

See NR # 0101HOLD TAG No. _____ Q.C. Inspector D. W. Fair Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Acceptance
Accept Tag No. _____ Reject Tag No. _____

50321344

LINE NO. CAT.	R1C 1/29/85 N/A			PERRY NUCLEAR POWER PLANT NONCONFORMANCE REPORT				
NO. 0101 REVIEWED				PAOS-NM-29-85-V				
1	NCR NO. ISSUED BY	REV. BHT. NAME	OF ITEM ITEM	IDENT NO. INIT.	ITEM NAME ORGANIZATION	QUANTITY	DATE 01/01	
2	ITEM / MATERIAL	SOURCE		CURRENT STATUS		LOCATION	DATE 01/29/85	
3	RESPONSIBLE ORGANIZATION	NAME	Bisco				SPEC. NO. SP- 00983	
4	NCR TYPE	CATEGORY:	<input type="checkbox"/> 1 (POSSIBLE SIGNIF.) <input type="checkbox"/> 2 (MAJOR) <input type="checkbox"/> 3 (MINOR)				REV./ECH. 2	
5	TYPE	(E) EQUIP./MAT'L. (I) INSTALLATION (P) PROGRAM						
6	GOVERNING REQUIREMENT	INCLUDE ACCEPTANCE CRITERIA AND DOC'MT. NO.:	Paza. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by Dept.					
7	DESCRIPTION OF NONCONFORMANCE	NC CODE	105	RELATE TO LINE NO. 61	Bisco Craft used controlled material - ceramic bulk fiber P.O. #4128 prior to its release.			
8	CAUSE OF NONCONFORMANCE	CAUSE CODE	POL	Bisco Craft worked over a hold for inspection tag. Bisco DC had not received the certificate of compliance for the ceramic bulk fiber.				
9	PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP (1) <input type="checkbox"/> REWORK (2) <input type="checkbox"/> REPAIR (3) <input checked="" type="checkbox"/> USE AS IS (4)						
JUSTIFICATION: Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.								
10	STEPS TO PREVENT RECURRENCE	Craft General Foreman and Foreman to be trained on material holds.						
11	RESP. ORG. APPROVAL	ENG./CONST.	QA/QC	R&D	DATE 01/29/85			
12	PHPP REVIEW, BOARD	REVIEW REQ'D. EXEMPT	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DECISION QA/QC	<input checked="" type="checkbox"/> ACCEPT REJECT	DATE 01/29/85		
13	VERIFIED BY	H. B. Williamson 1/29/85 R. Cypress 1/29/85 Deborah VonParis 1/29/85						
COPY DISTRIBUTION: 1 - DOCUMENT CENTER 1 - QC								

50321345

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION

PAGE 22 OF 25

PAQS JUN 29 85

PHO 1822-A REV. 1/84

NR No.	B1SC - 0101 A/0	Issue Date	1-29-85	Current Date	1-29-85	
Review Required:	<input checked="" type="checkbox"/> CAI EASY. <input checked="" type="checkbox"/> NE				<input type="checkbox"/> Other _____	
Review Comments: <i>Proposed Disposition to "Use As Is" is acceptable to engineering.</i>						
Attach documented training upon close-out of this NR. P.O. #4128 material cannot be used until all documentation is obtained.						
AFFECTS AS-BUILT DRAWINGS?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	DRAWINGS	Contractor / Vendor _____			
AFFECTS EQUIPMENT QUALIFICATION?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	AFFECTED	CAI _____			
W.H. Carpenter 1-29-85 CAI Engineer	Date	R. Cymenski 1/29/85 Quality Engineer	Date	Other	Date	
ATTACHMENTS YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	LIST OF ATTACHMENTS <i>1 pg</i>					
IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.						
DISPOSITION REVISION NO. _____						
9	PROPOSED DISPOSITION	<input checked="" type="checkbox"/> REPAIR <input type="checkbox"/> REPLACE <input type="checkbox"/> RELOCATE <input type="checkbox"/> DOWNGRADING OF EQUIPMENT				
JUSTIFICATION:						
10	STEPS TO PREVENT RECURRENCE					
11	RESP. ORG. APPROVAL	ENG/CONST.	QA/QC	ATA	DATE	
12	PNPP REVIEW BOARD	REVIEW REQ'D. ENGINEER	YES <input type="checkbox"/> NO <input type="checkbox"/>	DECISION: <input type="checkbox"/> ACCEPT <input checked="" type="checkbox"/> REJECT	DATE	
	DISPOSITION	NAME	NAME	NAME	DATE	

50321346

DT 4433

JMG

PAGE 21 OF 25

bisco

Brand Industrial Services, Inc.
Bisco Construction Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone 312 236-6876
one of the brand companies



delivery ticket

Babcock & Wilcox

Bisco

245 W. Roosevelt Road

10 Center Street

W. Chicago, Illinois 60185

Perry, Ohio 44081

ITEM ORDER NO.	PO#	DATE	VIA	REMARKS
QUANTITY SHIPPED	QUANTITY SHIPPED			MATERIAL
30 BX	30 BX	Ceramic Fiber Bulk	1-24-85	D
30 BX	30 BX	Ceramic Blanket 4" Strips	1-24-85	O
		Partial Order		
		Shipped direct from manufacturer		N
		Bisco P.O. # 4128		O
				T
				W
				R
				I
				T
				E
				Y
				O
				N
				D
		Please acknowledge receipt of the material listed on this Delivery Ticket by signature and return Job File and Acknowledgment copies		H
to:	BISCO Construction Group 2207 Lively Blvd. Elk Grove Village, IL 60007 Thank You.			E
				R
				E

All claims MUST be made
within 5 days from date of delivery

.5% handling charge on all returns
Only full packaged units returnable

Received By

Rebbie von Paris
1-24-85

JOB FILE COPY

50321347



PAGE 20 OF 25

FORM 12-1
REV-3

ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. 4128DATE 1-24-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30.04 x 150 ea

Required	Inspection Instruction	Accept	Reject
<u>/</u>	Verify P.O. Against Material Received	<u>/</u>	
<u>/</u>	Certificate of Compliance for Material Received	<u>/</u>	
<u>/</u>	Inspect for Shipping Damage	<u>/</u>	
<u>/</u>	Inspect for Proper Markings	<u>/</u>	
<u>/</u>	Visual Inspection	<u>/</u>	
<u>/</u>	Dimensional Inspection	<u>/</u>	
<u>*</u> <u>/</u>	Special Instructions per Attached	<u>/</u>	<u>/</u>

Material Accepted Rejected

Remarks:

* Verify D.T. against
material received

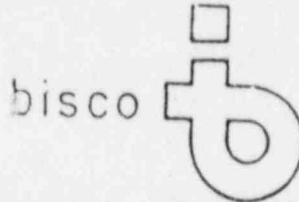
see NR # 0101, REF.I.R # 709, 1/11/85

O.C. Inspector

1-29-85

50321340

PAGE 19 OF 25



FORM CC-1
Rev. 4

ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH 44081

DATE January 25, 1985

CUSTOMER P. O. NO P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO 3133
Material-P. O. No. 4128

D. T. No. 4433 - - -

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores O. Hott

Dolores A. Lott
Quality Control Supervisor

50321349

PAGE 18 OF 25

DT 6261

JMG



Bisco Industrial Services, Inc.
One Lanes & Associates Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone 312-427-0270
one of the largest companies

delivery ticket

Bisco Construction

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Perry, Ohio 44081

ITEM NUMBER	ITEM	DATE	ITEM DESCRIPTION	ITEM NUMBER
Vicky A.	EGV	11-7-85	Air-fit thre	3133-180H-C-476
QUANTITY SHIPPED	QUANTITY SHIPPED		MATERIAL	
1,000#	1,000#		Locaseal (A&B) 10-8-85 VM	D
				O
				N
				O
				T
				E
				R
				I
				Y
				O
				N
				D
				H
				E
				R
				E

Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to:
BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You

All claims MUST be made
within 5 days from date of delivery

Received By Vicky McCafferty

50321350

ORIGINAL
PNPP PENETRATION SEAL REMOVAL REQUEST

REMOVAL CONTROL NO.
① 831

② INITIATED BY: DAN GALLU

③ COMPANY: LKC

④ DATE: 10-9-85

⑤ PHONE NUMBER: 6335

⑥ SP. NUMBER: 33

⑦ PENETRATION NUMBER: JBI-3703 } MCT
JBI-3704 }

⑧ BUILDING/ELEV: RB651 ⑨ LOCATION: 310°

⑩ REASON FOR REMOVAL: Routing Numerous C-95 CABLES INTO REACTOR

BUILDING ref: W/A# 11776

DB 1:20:36

PAGE 36 OF 37

⑪ DESCRIPTION OF REMOVAL: REMOVE ENTIRE FRANK SECTIONS OF 535P
BOTH MCT'S COMPLETELY

see
4444

⑫

SKETCH OF PENETRATION IF NEEDED

BISCO TO INSTALL 5" OF LOCASEAL PER APPROPRIATE APPROVED
PROCEDURES PER CONVERSATION WITH RONALD SALKIEWICZ.

R1 PRINTED 10-11-85

DB 10-10-85

⑬

SEND REQUEST TO CA PETE BURGRAFF

NAME

MAIL ZONE W140

⑭

REMOVAL APPROVED: Johnna for Ronald Salkiewicz

DATE: 10-10-85

RESPONSIBLE ENGINEER

⑮

REQUEST ACKNOWLEDGED: Abner

DATE: 10-11-85

CONTRACTOR Q.C.

⑯

REMOVAL COMPLETED: Abner

DATE: 10-12-85

CONTRACTOR ENGINEER

⑰

ADDITION OR DELETION OF PENETRATING ITEM COMPLETE: Johnna for John Janak

DATE: 10-27-85

INITIATOR

5032 1351

PAGE 4 OF 21

S 5358
BG 1:20:26
DATE 12/09/85
TIME 09:33:14
REV 0

PAGE 1 FERRY NUCLEAR POWER PLANT WORK ORDER
M151801

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
850011943	NC98	1B21	MECHANICAL	RB/IDW			
R O C	P O C	COMP CAT	PRIORITY CODE	SAFETY M/E	SEISMIC I/E	ASME NO	TAG OUT REQ'D NO
S	1 2 3 4 5	PEN	3B	5A <i>for 1B21</i>	I/E		<i>15-4944</i>
SPECIAL PERMIT	RETEST REQ'D	HOUSE-KEEPING	ALARMA REVIEW	RWP	TECH SPEC	EQ	AFFECTED NO
<i>NO YES</i> <i>for 1B21</i>	NO	YES	NO	REQ'D	NO	15-4944	NO

SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : IMPLEMENT DCP 85-618.
MPL NAME : MSIV ACTUATOR ASSYS & MC's *done 1B21*

PLANNER REMARKS

NC 98 TO PERFORM WORK,
REFERENCE: MDL 1B21-#291 (W.A. 85-12675)
REFERENCE: MDL CO-03-#02 (E.C.N. 27245-98-33/F)
IMPLEMENT DCP 85-618. *RBG FIRE BARRIER REMOVAL PERMIT REQUIRED (FOR PROVANT - PREVIOUS OWNER)* *done 1B21*
POWER SUPPLY: ***** PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.:
1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.
NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MC'S (MULTI-CABLE TRANSIT)
PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.
TEST REQUIREMENTS: NONE.
SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

JLH/SJS

SLH/JLH

JLH

DATE 12/18/85

DATE 12/23/85

DATE 12/24/85

DATE 12/24/85 *MAN*

DATE 12/24/85 *PSR*

DATE 12/24/85

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT SUPER.

DATE 12/18/85

DATE 12/23/85

DATE 12/24/85

PRODUCTION AUTHORIZATION				SHEET 2 OF 2
INITIAL RELEASE REF	HOLD DATE	REF	RE RELEASE DATE	BUILDING #B
32115 94285				ELEV ROOM 62901
PREPARED BY <u>R. B.</u> APPROVED BY <u>R.</u> DATE PREPARED 10/11/77 REF DRAWING 4-11-137		OC INSPECTOR OC SUPERVISOR		PENETRATION NUMBER 12345678 / <u> </u> B629014552A

PENETRATION	TYPE	SIZE	SEE BCWA	FOR PENETRATING ITEMS		
				DEPTH	BARRIER MATERIAL	NO YES
PENETRATING ITEM	TYPE	SIZE				
BARRIER RATINGS	MOVEMENT	INSULATION	3 HOUR FIRE	RADIATION	NO	○
SEAL INFORMATION	NO SEAL REQUIRED	TYPIICAL DETAIL	TEST REPORT NUMBER	AN/ACCPFTANC 98-06-1-00	LETTER NUMBER	3
					CAT	EEF

IN PROCESS		FINISHED		TURN-OVER	
SYSTEM NO.	SIGHTED DEPTH	OC. INSPECTION DATE	CE. INSPECTION DATE	DATE SEALED	TURN-OVER INSPECTION DATE
		ACTUAL DEPTH	OC. INSPECTION DATE	PRODUCTION ACCEPTANCE	CE. INSPECTION DATE
HP 008	564' 5"	1-18-54	-	1-28-54	1-29-54
HP 008	564' 0"	1-18-54	-	1-28-54	1-29-54

SHEET	1	OF	2
BUILDING	B	ELEV ROOM	62901
		PENETRATION NUMBER	62901622
1E284049 1:			/

PRODUCTION AUTHORIZATION					
INITIAL RELEASE		HOLD		RE-RELEASE	
REF	DATE	REF	DATE	REF	DATE
2204	04-05-88				
PREPARED BY 10115		O.C. INSPECTOR 11182		O.C. SUPERVISOR 11182	
DATE PREPARED 04-11-88					
REF DRAWING 04-11-13					



C. E. I.
SP98/P.0. 4293
PERRY NUCLEAR
POWER PLANT



SOFTWARE CLOSEOUT
LIST OF ATTACHMENTS

1/2/84
PAGE 2 OF 55

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-98/4293
UNIT I AND COMMON

PENETRATION NO. IERB4049 RI
629/01

41	COC Sheet Metal Sheet 1
42	COC Sheet Metal Sheet 2
43	COC Sheet Metal Sheet 3
44	COC Sheet Metal Sheet 4
45	COC Sheet Metal Sheet 5
46	COC Sheet Metal Sheet 6
47	COC Sheet Metal Sheet 7
48	COC Sheet Metal Sheet 8
49	COC Hose Clamps
50	RI Hose Clamps
51	DT Hose Clamps
52	AR-936 PAGE 1
53	AR-936 PAGE 2
54	AR-936 PAGE 3
55	AR-936 PAGE 4
56	AR-936 PAGES 5
57	AC-936 PAGE 6 thru 12 in.
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BY: D. Mueller
(O.C. INSPECTOR)

REVISED BY: J. Hartman
(SUPERVISOR)

50321355



SOFTWARE CLOSEOUT
LIST OF ATTACHMENTS

PAGE 1 OF 22 *Rev. 1/12*

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-98/4293
UNIT I AND COMMON

PENETRATION NO. IERB4049 RI

629/01

1. BCWA Sheet 1	21 OCT 2 Locaseal
2. BCWA Sheet 2	22 Certification of Calibration
3. WO 85-11943	23 Certification of Calibration
4. Removal Request 831	24 COC Locaseal
5. D.C.P. Sheet 1	25 RI Locaseal
6. D.C.P. Sheet 1	26 RI Locaseal
7. D.C.P. Sheet 3	27 DT Locaseal
8. D.C.P. Sheet 4	28 COC 632 Caulk
9. D.C.P. Sheet 5	29 RI 732 Caulk
10. D.C.P. Sheet 6	30 DT 732 Caulk
11. D.C.P. Sheet 7	31 COC Ceramic Blanket
12. D.C.P. Sheet 8	32 RI Ceramic Blanket
13. D.C.P. Sheet 9	33 DT Ceramic Blanket
14. D.C.P. Sheet 10	34 NR 101 Sheet 1
15. D.C.P. Sheet 11	35 NR 101 Sheet 2
16. Work Authorization Sheet 1	36 NR 101 Sheet 3
17. Work Authorization Sheet 2	37 NR 101 Sheet 4
18. Work Authorization Sheet 3	38 Receipt Inspection Report 1999 Rev. 1
19. Work Authorization Sheet 4	39 RI Bolts, Nuts
20. OCT 1 Locaseal	40 Storage Requisition

REVIEWED BY: L. Mathias
(QC INSPECTOR)

BY: L. Mathias
(SUPERVISOR)

OWNER'S REVIEW James E. O'Brien

50321356

bisco



Broad Industrial Services, Inc.
1420 Meissner Avenue
Park Ridge, Illinois 60064
(312) 268-1200
Sales 262-482 Broad Prod

PROCEDURE	DATED	REVISION
(See Attached)		

REVISOR Foreman	DATE REVISED	REVISOR Foreman	SIGNATURE Foreman
Dennis LaVelle	2-17-85	Alan M. Murn	James J. Suttle
J. T. Sweeny	2-14-85	Alan M. Murn	John T. Sweeney
Marty M. LaVelle	2-17-85	Alan M. Murn	Marty M. LaVelle
H. G. Delaney	2-17-85	Alan M. Murn	H. G. DELANEY
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka
Dave Rittenhouse	2-7-85	Alan M. Murn	D. R. Rittenhouse
George Filla	2-14-85	Alan M. Murn	George Filla
John Malovasic	2-9-85	Alan M. Murn	John R. Malovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin

50321357

bisco

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FORM 5A
Rev. 0 Page 24 of 55

attachment to NR-0101

ORIGINAL Cu-1-13-84

INSPECTION REPORT

I.R. No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85

Bisco Project No. 3134

Item of Activity Inspected. ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.

There were no deviations or documentation.

See NR # 0101

HOLD TAG No. 3134 Inspector D. von Lais Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance

NCR No. Issued _____

Reinspect Acceptance

Accept Tag No. _____

Reject Tag No. _____

5032 1358

PAGE 23 OF 25

LIN. NO. COT.	R/C 1/29/85 N/A			PERRY NUCLEAR POWER PLANT NONCONFORMANCE REPORT				PAOS-NW 29854	
NOTE: THIS REPORT IS FOR INFORMATIONAL PURPOSES ONLY.									
1	NCR NO. ISSUED BY	REV. NT. NAME	OF ITEM SOURCE	IDENT. NO. ITEM	ITEM NAME ORGANIZATION	QUANTITY	DATE	TAB	
2				SC9 Attachment	SC9 Attachment	1	01/29/85	0101	
3	ITEM / MATERIAL								
4	RESPONSIBLE ORGANIZATION	NAME: Bisco			SPEC. NO. SP-	REV./ECH. 2			
5	NCR TYPE	CATEGORY: <input type="checkbox"/> 1 (POSSIBLE SIGNIFICANT) <input type="checkbox"/> 2 (MAJOR) <input checked="" type="checkbox"/> 3 (MINOR)							
6	GOVERNING REQUIREMENT	PROPERTY TYPE: <input checked="" type="checkbox"/> H/E EQUIP./MATERIAL <input type="checkbox"/> (I) INSTALLATION <input type="checkbox"/> (P) PROGRAM							
7	DESCRIPTION OF NONCONFORMANCE	MC CODE	105	RELATE TO LINE NO. 61	Bisco Craft used controlled material - ceramic bulk fiber P.O. #4128 prior to its release.				
8	CAUSE OF NONCONFORMANCE	CAUSE CODE	P01	Bisco Craft worked over a hold for inspection tag. Bisco DC had not received the certificate of compliance for the ceramic bulk fiber.					
9	PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP <input type="checkbox"/> REWORK <input type="checkbox"/> REPAIR <input type="checkbox"/> USE AS IS							
10	JUSTIFICATION	Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.							
11	STEPS TO PREVENT RECURRANCE	Craft General Foreman and Foreman to be trained on material holds.							
12	RESP. / ACQ. APPROVAL	ENG./CONST.	QA/QC	AIA	DATE	J.B. Williams N/A 01/29/85			
13	PHPP REVIEW BOARD	REVIEW REQ'D.	YES <input type="checkbox"/> NO <input type="checkbox"/>	DECISION	<input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	DATE	01/29/85		
14	VERIFIED	Nelbaud von Paris I.W.C.			01/29/85				
COPY DISTRIBUTION: 1 - DOCUMENT CENTER									

50321359

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION

PAGE 22 OF 25

PAOS JUN 29 1985

4 - 200-1001-A REV. 1/94

MRN: B.I.S.C - C101 FQ Issue Date 1-29-85 Current Date 1-29-85
Review Required: GAI Eng. GSE Other

Review Co-authors:

Comments:
Proposed Disposition to "Use As Is" is ACCEPTABLE
TO ENGINEERING.

Attach documented training upon close-out of this NR.

P.C. #4128 material cannot be used until all documentation is obtained.

AFFECTS AS BUILT Yes

DRAWINGS? No.

ANESTHESI EQUIPMENT Yes

Classification No. 5

DRAWINGS Contractor / Vendor

AFFECTED - EAI

卷之三

WAI_Engineer_Signature Date

Digitized by srujanika@gmail.com

ATTACHMENTS

卷之三

60

58

15 THE BORG

13

LIST OF ATTACHMENTS

IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW
AND RESUBMIT THE HR TO COS QUALITY ADMINISTRATION.

DISPOSITION REVISION NO.

10 PROPOSED DISPOSITION		<input checked="" type="checkbox"/> RECOMMENDED TO APPROVAL	<input checked="" type="checkbox"/> APPROVAL
JUSTIFICATION:			
<p>RECOMMENDATION: RECOMMENDATION:</p> <p>RECOMMENDATION: RECOMMENDATION:</p> <p>RECOMMENDATION: RECOMMENDATION:</p>			
11 STEPS TO PREVENT RECURRENCE			
12 RESP. ORG. APPROVAL		ENG/COMET.	DATE
PNPP REVIEW BOARD		REVIEW PERIOD: YES NO DECISION: ACCEPT REJECT	DATE
DISPOSITION		NAME	TITLE DATE

50321360

RT 4433

JMG

PAGE 81 OF 25

bisco

Bisco Industrial Services, Inc.
One bisco construction group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone (312) 228-0870
one of the bisco companies

delivery ticket

Babcock & Wilcox

245 W. Roosevelt Road

W. Chicago, Illinois 60185

Bisco

10 Center Street

Perry, Ohio 44081

ITEM ORDERED	PER	DATE	ITEM	ITEM
G. Hamilton	Drop Ship	12-19-84	Direct Shipment	3133-100M C-491

QUANTITY ORDERED	QUANTITY SHIPPED	MATERIAL	DATE	ITEM
30 BX	30 BX	Ceramic Fiber Bulk	1-24-85	D
30 BX	30 BX	Ceramic Blanket 4" Strips	1-24-85	O
		Partial Order		

Shipped direct from manufacturer

Bisco P.O. #4128

N
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Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007

Thank You.

All claims MUST be made
within 5 days from date of delivery

10% handling charge on all returns
Only full packaged units returnable

Received by

Rebbi von Perin

1-24-85

JOB FILE COPY

5032 1361

bisco

PAGE 20 OF 25

FORM RI-7
REV. 3/86

ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. 4128DATE 1-24-85JOB no. 3153PROJECT NAME Perry Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30 04 x 150' ea

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted Rejected

Remarks:

* Verify D.T. against
material received

see NR # 010, REF.I.R # 109, dt 7/11/85

O.C. Inspector

1-29-85
Date

50321362



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH 44081

DATE January 25, 1985

CUSTOMER P. O. NO P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO 3133

Material P. O. No. 4128

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores O. Holt

Dolores A. Lott
Quality Control Supervisor

50321363

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 7133PROJECT NAME Perry Nuclear Power PlantVENDOR Bisco ConstructionMATERIAL RECEIVED Loca Seal Part ALOT / BATCH no. 2560 LQUANTITY 10 PAILS X 63 5 lbs ea

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Spec Instructions per Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Material Accepted Rejected

Remarks:

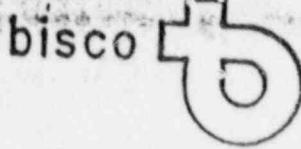
* VERIFIED DT. AGAINST
MATERIAL RECEIVED.

Vicki McCafferty
O.C. Inspector

11-12-85

Date

5032 1365

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. NADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED Locaseal Part BLOT / BATCH no. 2580 LQUANTITY 10 pails 365 lbs

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>na</u>	
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<u>na</u>	Dimensional Inspection	<input checked="" type="checkbox"/>	<u>na</u>
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected

Remarks:

*verified DT against material received.

O.C. Inspector

11-12-85

Date

5032 1366

216/259-3737
Ext: 6843

PAGE 15 OF 50



November 8, 1985

Cleveland Electric Illuminating Co.
Perry Nuclear Power Generating Station
10 Center Street
Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191, Rev. O, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A

Bisco Job #: 3133

Bisco D.T. #: 6761

Customer P.O.# : P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

* Dolores A. Lott
Quality Control Supervisor

brand industrial services, inc.
construction group
2207 lively Blvd., Elk Grove Village, Illinois 60007, (312) 228-6670

* subsidiary of brand insulations, inc.

50321367

ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # A-188
 SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set, 6 as Standard, verified by NBS
 (Certificate to NBS 2028)

Date of Verification: 9-9-85

Date Due: 3-9-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	.2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	-------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	49.90	60.00	70.00	80.20	99.20	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	-10	0	0	+20	+20	0
------------	---	---	---	---	---	-----	---	---	-----	-----	---

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0	100.20	200.10	300.10	400.00	500.00
-----------	---	--------	--------	--------	--------	--------

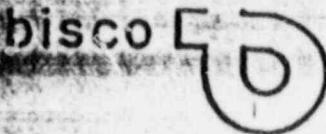
Deviation:	0	+20	+10	+10	0	0
------------	---	-----	-----	-----	---	---

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. L. Maibis
Name

QC Supervisor
Title

50321368



PAGE 13 OF 25
ORIGINAL

CERTIFICATION OF CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-143
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
(Certificate to NBS 2028) verified by Ill. Dept. of Lab.

Date of Verification: 9-19-85 Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	-1.00	+2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	-------	-------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	0	0	0	0	0	+.01
------------	---	---	---	---	---	---	---	---	---	---	------

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00					
-----------	------	--------	--------	--------	--------	--------	--	--	--	--	--

Readings:	0.00	99.80	200.00	300.02	400.03	500.03					
-----------	------	-------	--------	--------	--------	--------	--	--	--	--	--

Deviation:	0	-.20	0	+.02	+.05	+.03					
------------	---	------	---	------	------	------	--	--	--	--	--

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Macias
Name
QC Supervisor
Title

50321369

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SP98/4293
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COM'N



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 3184 LAST ENTRY DATE 1-7-86

MACHINE NO. NA PRODUCT Lacaseal

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

Entered - reviewed by

דָּבָר מְלֵא קָרְבָּן

PAGE 10 OF 25

ATTACHMENT 2 PG. 1, OF 1
ECN 272C5-98-33 REV. F

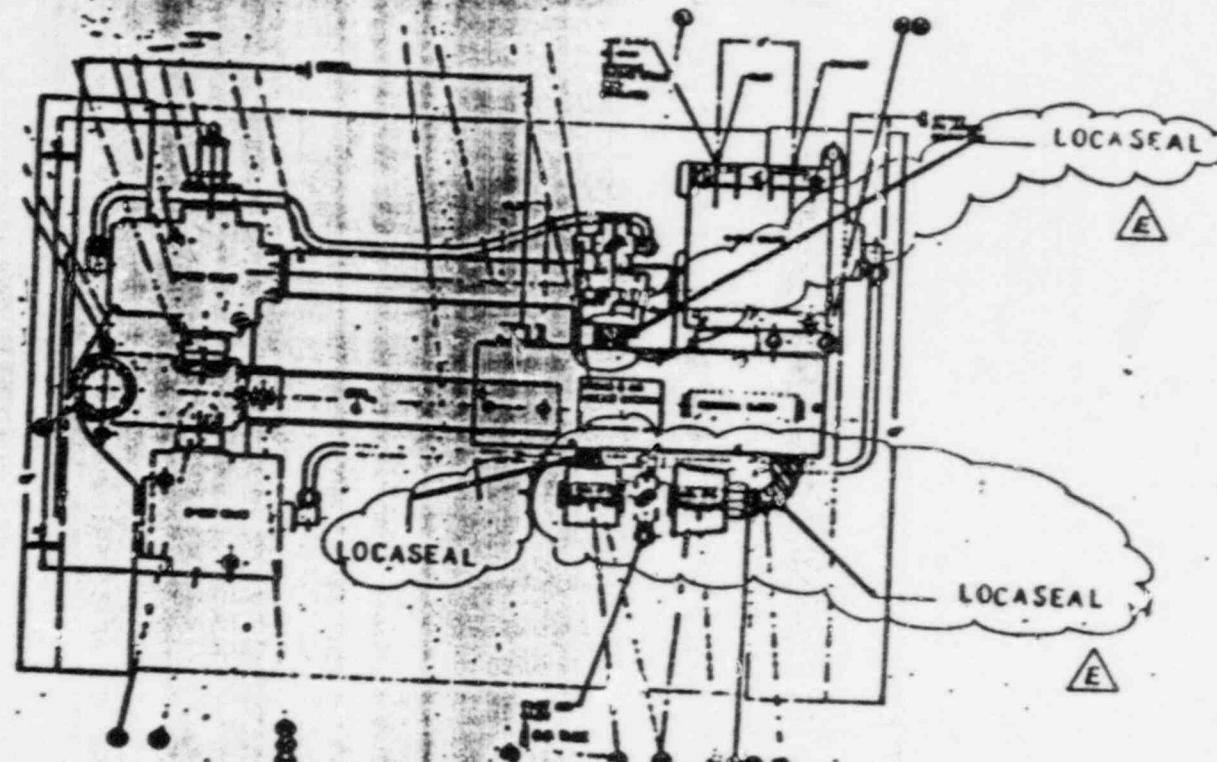


FIGURE 2-2
MSIV ACTUATOR ASSEMBLY

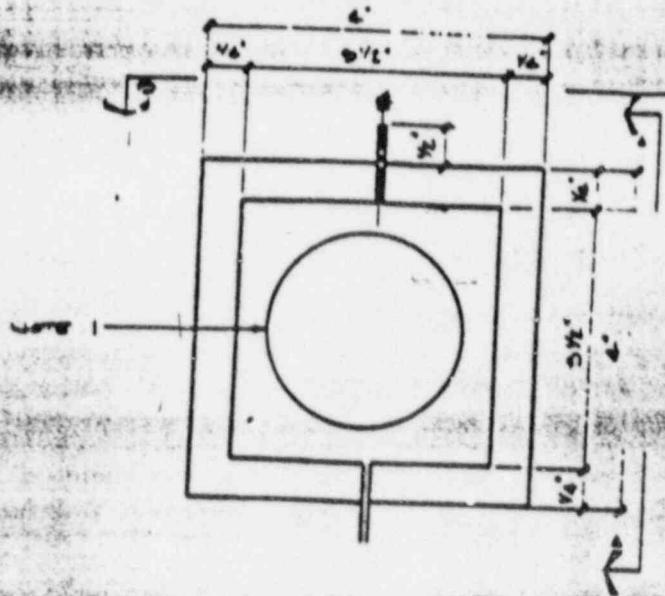
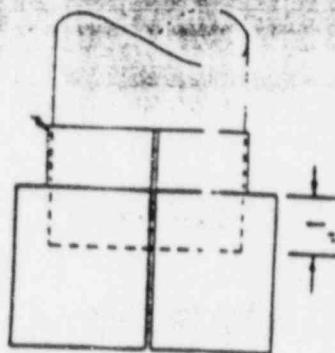
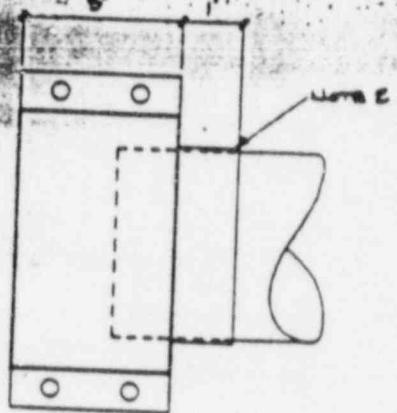


FIGURE 'E'
MCT 4C49 3 4050

ECN	22-245-2C-3	REV F
DWG	22-245-2C-3	REV F
ATTACHMENT	L	Q5445

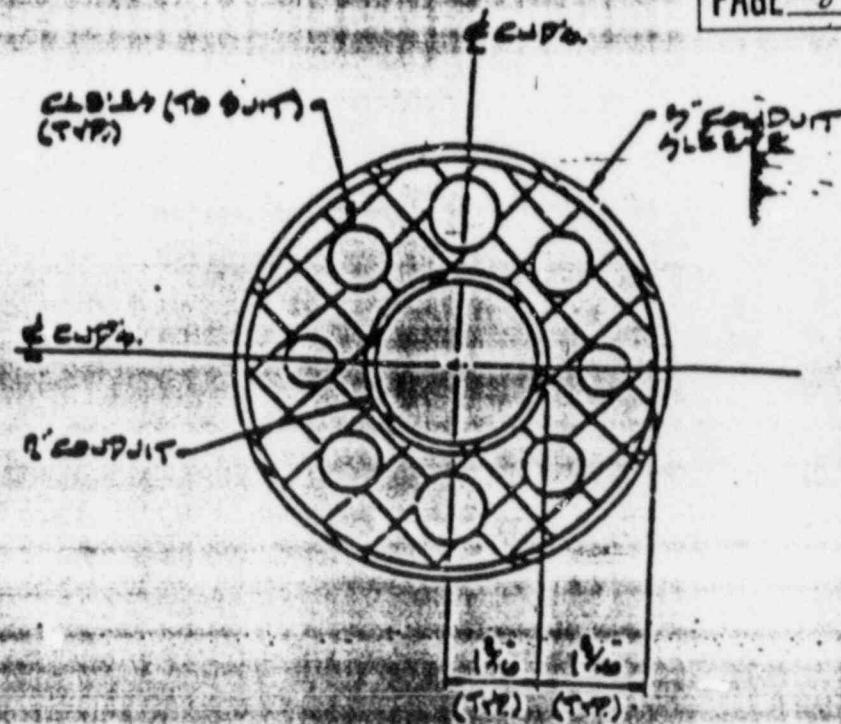


SECTION A-A

SECTION B-B

- NOTES:
1. SIZE TO FIT SIZING CONDUIT (1½" MIN).
 2. ATTACH TO CONDUIT WITH DC-732 ZTV CLAMP.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ #20 ECLTS,
GRADE IT3 87 QC-T8 AND HEAVYDUTY 174 OR 144PS.
 4. ASSEMBLY TO BE FABRICATED FROM 14ga GALVANIZED
SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED
WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW
PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

50321373

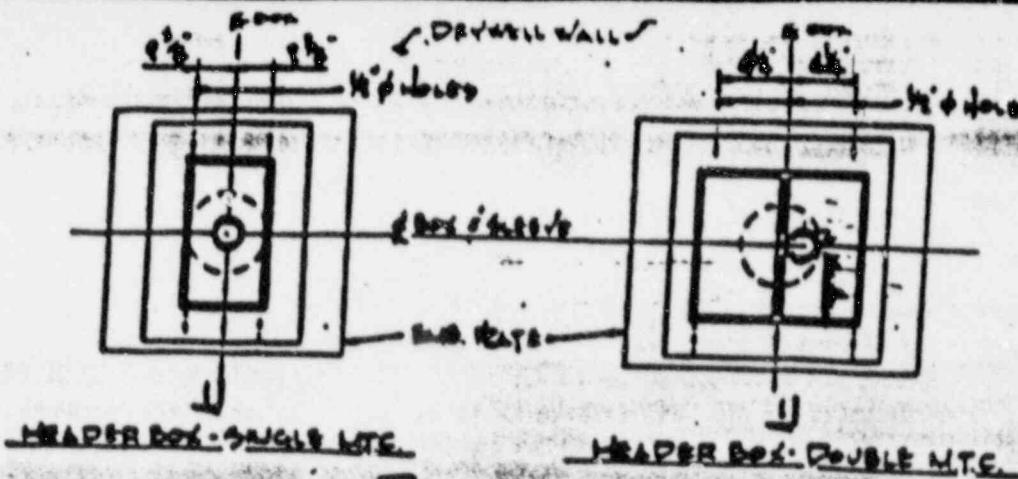


NOTE:

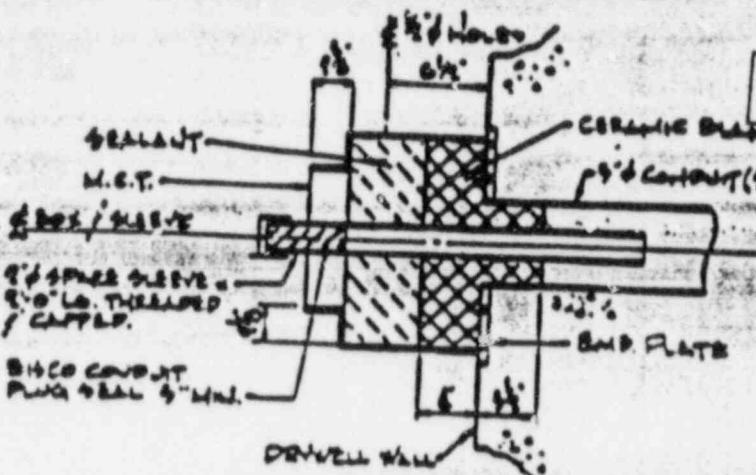
THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS

ATTACHMENT PAGE 4 OF 5
ECU # 27245-98-33
REV. F

50321374



DETAIL 'B'



PAGE 7 OF 25

SECTION 1.1

לען:

1. MATERIAL AS SPECIFIED IN SP.98
 2. SLEEVE SHALL EXTEND $2\frac{1}{2}$ " + $\frac{1}{2}$ " PAST THE FACE OF THE MCT.
 3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER
OF THE MCT WITH A TOLERANCE OF ± 2.00 " ABOVE
OR BELOW THE HORIZONTAL LINE. (REF. DETAIL B)
 4. BLANKET THICKNESS FOR CERAMIC FIBRE 4" NOM. +1.00", -0.00"
 5. THE FOLLOWING MCT'S SHALL RECEIVE A $1\frac{1}{2}$ " SLEEVE IN LIEU
OF THAT SPECIFIED IN SECTION 6-1: ERB-3010, ERB-3017, ERB-3018,
ERB-3019, ERB-3021, ERB-3022, ERB-3024
 6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES:
ERB-3013, ERB-3014, ERB-4029, ERB-3020, ERB-3025, ERB-4030, ERB-4032,
ERB-4033, ERB-4037, ERB-4039, ERB-4036, ERB-4040, ERB-4031, ERB-3026, ERB-3027,

ATTACHMENT/PAGE 3 OF 5
FCN# 27245-98-33
REV. F

PAGE 11 OF 25

6:11.1 Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.



6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in them MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

5032 1376

PAGE 5 OF 25

SECTION 6:02

- ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.
8. The installations of moisture seals in the MSIV actuator assemblies.

6.11 MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of localseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP/5R

1ERB 3013	1ERB 4028	1ERB 4042	1ERB 4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A	F	1B21F028A
F022B		F028B
F022C		F028C
F022D		F028D

50321377

ENGINEERING CHANGE NOTICE

PAGE 4 OF 25

PERRY NUCLEAR POWER PLANT

 SP ECH DWG ECH

A SUBJECT SP-98 PRESSURE / MOISTURE SEALS
 ORIGINATOR Harry B Schmidow 11-20-05
 (Signature) (Date)
 DEPARTMENT SITE DESIGN TEAM

B ECH NUMBER 27246-96-33 REV F
 CR NUMBER S-108
 AFFECTS SP- 9/II

C DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE:
 REV. F: REVISES VALVE ID FROM FO 20 TO
 FO 22 ATTACHMENT 1
 REV. E: ADDS THE CRITERIA ATTACHMENT 1
 PG. 1 OF 5 FOR MOISTURE SEALS ON THE
 MSIV ACTUATOR ASSEMBLIES AND
 ATTACHMENT 1 PG. 5 OF 5, AND ATTACHMENT 2
 REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B":
 NOTE 7 - SLEEVES IN WHICH THE EXISTING
 PLUG SEAL WAS REMOVED TO ALLOW
 CIRCUIT PULLS, SHALL BE SEALED USING A
 MODIFIED PLUG SEAL. THE SEAL SHALL BE
 BORED IN SUCH A FASHION SO AS TO
 ACCOMMODATE A TIGHT CABLE FIT ONCE
 REINSTALLED. WHEN THIS TYPE OF INSTALLATION
 IS NOT POSSIBLE THE SLEEVE SHALL BE
 FILLED WITH LOCASEAL TO A DEPTH OF
 5.00".
 REV. C: CHANGED EBB 4036 TO W ". 6, PG.
 3 OF 4 DETAIL "B"
 REV. B: REVISED NOTE 3 AND ADDED NOTES
 5 AND 6 TO DETAIL "B" (PG. 3 OF 4)
 REV. A: ADDED 'NOTES' TO DETAILS ("B" AND "C")
 REV. -: ADDED SECTION G.02 ITEM 7; SECTION
 G.8 FOR MXT PRESSURE SEALS.

D DOCUMENTS TO BE REVISED BY THIS ECH
 SP98-4549-00 REV. X
 CHART AFFECTED? NO YES
 TEST SPEC CHANGE REQUIRED? NO YES
 EQUIP. QUAFFECTED? NO YES
 BAR CHANGE REQUIRED? NO YES
 UNIT 2 AFFECTED? NO YES

E SYSTEM AFFECTED ---
N/A

F MATERIAL TO BE PURCHASED
 NO YES

G DESIGN REVIEWER APPROVAL
By: H. Anthony Murray DATE: 11-20-05
(Design Reviewer)

H QA APPROVAL (IF REQUIRED)
By: R. Gagnon DATE: 11/21/05
(QA Manager)

I PROJECT ENGINEERING APPROVAL
By: V. V. Kippert/EC Null DATE: 11/21/05
(Project Engineer)

J CEI ACCEPTANCE
By: C. J. Schmidow DATE: 11/21/05
(Responsible Engineer)

K QA REVIEW REQUIRED NOT REQUIRED

L REVIEWED BY P-4213-02-246 DATE: 12/03/05
BIL OF Material Number(s) ISSUED

M SPEC. NO. 98 AND CONT. PG. NO. P-4293

N DESIGN CHANGE INCORPORATED
By: (Project Engineer) DATE: _____

REASON FOR CHANGE CODE: 7, 16 (S)

EXPLANATION (IF REQ'D): EDDR XL RECEIVED

DEC 08 1985

DOCUMENT CONTROL
PAGE

ATTACHMENTS: ATTACHMENT 1 (5-PAGES)

ATTACHMENT 2 (1-PAGE)

O INTERFACING DEPARTMENTS ORGANIZATIONS OR GROUPS

- | | |
|--|--|
| <input type="checkbox"/> MPNG | <input type="checkbox"/> STRUCTURAL |
| <input checked="" type="checkbox"/> ELECTRICAL <u>W.M.H 11-21-05</u> | <input checked="" type="checkbox"/> QUALITY ASSURANCE (S+T G) |
| <input type="checkbox"/> BUILDING SERVICE | <input type="checkbox"/> NSSS |
| <input type="checkbox"/> CONTROL SYSTEMS | <input type="checkbox"/> OTHER |
| <input checked="" type="checkbox"/> MECH. NUCLEAR <u>K.B. Schmidow</u> | <input checked="" type="checkbox"/> EOCOGRO <u>K.B. Schmidow</u> |

NOTE: * NOT REQUIRED IF FOR DRAWING CHANGES ONLY.

N/A

Gilbert Commonwealth

N/A

Figure 3-2
Revised: 7-22-05

50321370

PAGE 1

FERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER 850011943	RESP SECT NC98	MPL NUMBER 1B21	MAINTENANCE TYPE MECHANICAL	PLANT LOCATION RB/IDW			
R O C 5	P O C 1 2 3 4 5	COMP CAT PEN 3B	PRIORITY CODE 1/100 HOURS	SAFETY M/E I/LIC	SEISMIC M/E	ASME NO	TAG OUT REQ'D
SPECIAL PERMIT NO YES HAWK	RETEST REQ'D NO	HOUSE-KEEPING YES	ALARAS REVIEW	RWP REQ'D NO	TECH SPEC	EQ 15-4944 AFFECTED	

SYSTEM NAME: NUCLEAR BOILER (NSSS)
 SUMMARY : IMPLEMENT DCP 85-618.
 MPL NAME : MSIV ACTUATOR ASSYS & MCT's

PLANNER REMARKS

NC 98 TO PERFORM WORK.

REFERENCE: MDL 1B21-#291 (W.A. 85-12675)

REFERENCE: MDL CO-03-#02 (E.C.N. 27245-98-33/F1)

IMPLEMENT DCP 85-618. RBO FIRE BALANCE REMOVAL PERMIT REQUIRED (PER ALLOWED - DRAWN ONCE) DUE 12/10/85

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.: 1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT) PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

John Doe
Bob Johnson
John Doe
N/A

TIME: 0222

TIME: -----

DATE 12/1-85

DATE 12/12/85

DATE 12/1-85

DATE 12/28/85

DATE -----

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT SUPER.

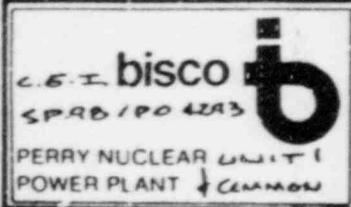
DATE -----

DATE -----

DATE -----

50321379

CONSTRUCTION WORK AUTHORIZATION	PENETRATION					PENETRATING ITEM					BARRIER RATINGS			SEAL INFORMATION					
	SIZE	TYPE	BARRIER MATERIAL	DEPTH		SEE BCWA — THRU — FOR PENETRATING ITEMS	SIZE	TYPE	REFERENCE NUMBER	MOVEMENT	INSULATION	RADIATION	Moisture	NO SEAL REQUIRED	TYPICAL DETAIL	TEST REPORT NUMBER	ANI ACCEPTANCE LETTER NUMBER		
	I	CO			YES	NO										PAGE 8 OF 32			
MATERIALS																			
DC 3-6548 SYL GARD 110 SF 150 NH BOOT MATL BISCO-FLEX150 BISCO-SEAL I DC 732 DC 790 C/FIBER 4128 C/BOARD CLASSGOL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
INSTRUCTIONS																			
SEAL FOR BCW 21245-98-33 REV. B * FILL INTERNAL CONDUITS FULL DEPTH.																			
LOCATION																			
CONT. STA. TUNN. -0° 46 85-11943																			
IN PROCESS																			
MACHINE NO.	SPECIFIED DEPTH	OC INSPECTION DATE	GTI REF.	DATE SEALED	OC INSPECTION DATE	GTI REF.	TURN-OVER INSPECTION DATE												
SP-1000	ACTUAL DEPTH	OC INSPECTION	GTI REF.	INSPECTOR SIGN	OC INSPECTION	GTI REF.	OC INSPECTOR												
H.P-008	FO 2'	1-5-86 1.0"		1-5-86															
H.P-008				1-9-86	RZ	1-11-86	10"												
FINAL INSPECTION																			
H.P-008																			
1-9-86																			
RZ																			
1-11-86																			
10"																			



PRODUCTION AUTHORIZATION					
INITIAL RELEASE		HOLD		RE-RELEASE	
REF	DATE	REF	DATE	REF	DATE
PREPARED BY APP BY		O.C. INSPECTOR		1-11-86	
DATE PREPARED 111785		O.C. SUPERVISOR		W. Krabach	
REF DRAWING D-1A-052					

SHEET / OF /	
BUILDING	ELEV/ROOM
RB	606/101
PENETRATION NUMBER	
1521F0280 /	



PAGE 1 OF 25

SOFTWARE CLOSEOUT

LIST OF ATTACHMENTS

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. EP-98/4293
UNIT I AND COMMON

PENETRATION NO. 1321E023C
616/01

1. NCWA Sheet 1
2. LN 11943
3. FCT 27245-98-33F Sheet 1
4. FCT 27245-98-33F Sheet 2
5. FCT 27245-98-33F Sheet 3
6. FCT 27245-98-33F Sheet 4
7. FCT 27245-98-33F Sheet 5
8. FCT 27245-98-33F Sheet 6
9. FCT 27245-98-33F Sheet 7
10. OCT 1 Locaseal
11. OCT 2 Locaseal
12. Certification of Calibration
13. Certification of Calibration
14. COC Locaseal
15. PT Locaseal
16. PT Locaseal
17. PT Locaseal
18. COC Ceramic Blanket
19. PT Ceramic Blanket
20. PT Ceramic Blanket

21. NR 101 Sheet 1
22. NR 101 Sheet 2
23. NR 101 Sheet 3
24. TM 101 Sheet 4
- 25.
- 26.
- 27.
- 28.
- 29.
- 30.
- 31.
- 32.
- 33.
- 34.
- 35.
- 36.
- 37.
- 38.
- 39.
- 40.

BY: D. Berkman
(O.C. INSPECTOR)

OWNERS REVIEW: Frank D. O'Neil

REVIEWED BY: D. Berkman
(SUPERVISOR)

50321381

bisco

SOFTWARE CLOSEOUT

PAGE 1 OF 25

LIST OF ATTACHMENTS

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-58/4293
UNIT I AND COMMON

PENETRATION NO. 1R21F028D

616/01

1. DCIA Sheet 1
2. NO 11943
3. ECI 27245-98-33F Sheet 1
4. ECV 27245-98-33F Sheet 2
5. ECN 27245-98-33F Sheet 3
6. TCN 27245-98-33F Sheet 4
7. ECN 27245-98-33F Sheet 5
8. TCN 27245-98-33F Sheet 6
9. TCN 27245-98-33T Sheet 7
10. OCT 1 Locaseal
11. OCT 2 Locaseal
12. Certification of Calibration
13. Certification of Calibration
14. COC Locaseal
15. PI Locaseal
16. PT Locaseal
17. DT Locaseal
18. COC Ceramic Blanket
19. PT Ceramic Blanket
20. DT Ceramic Blanket

21. MR 101 Sheet 1
22. MR 101 Sheet 2
23. MR 101 Sheet 3
24. MR 101 Sheet 4
- 25.
- 26.
- 27.
- 28.
- 29.
- 30.
- 31.
- 32.
- 33.
- 34.
- 35.
- 36.
- 37.
- 38.
- 39.
- 40.

BY: S. Beale
(O.C. INSPECTOR)OWNERS REVIEW: PaulREVIEWED BY D. Binkin
(SUPERVISOR)

50321382

PAGE 25 OF 25



broad industrial services, inc.
1420 rennaissance drive
park ridge, illinois 60066
(312) 268-1200
telex 262482 broad prod

PROCEDURE	DATED	REVISION
(See Attached)		

INSTRUCTOR Foreman	DATE REVIEWED	INSTRUCTOR	DATE REVIEWED Foreman
Dennis Lavelle	2-17-85	Alan M. Murn	Dennis Lavelle
J. T. Sweeny	2-14-85	Alan M. Murn	J. T. Sweeny
Marty M. Lavelle	2-19-85	Alan M. Murn	Marty M. Lavelle
M. G. Delaney	2-17-85	Alan M. Murn	MG DELANEY
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka
Dave Rittenhouse	2-7-85	Alan M. Murn	Dave Rittenhouse
George Filla	2-14-85	Alan M. Murn	George Filla
John Halovasic	2-7-85	Alan M. Murn	John R. Halovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin

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bisco

FORM IR-A 1-29-85
REV. 0 Page 24 of 25
attachment to NR 0101

ORIGINAL

INSPECTION REPORT

I.R. No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85Bisco Project No. 3134Item of Activity Inspected Ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.
There were no deviations in documentation.

See NR # 0101HOLD TAG No. _____ Q.C. Inspector D. von Faus Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Acceptance

Accept Tag No. _____ Reject Tag No. _____

50321384

LINE NO.	1	REV. DHT.	OP	ITEM IDENT NO.	ITEM NAME	QUANTITY	TAJIT
NO. 70023 REVIEWED	1/29/85 N/A	DATE ISSUED	1/29/85	Scp attachment	Scp Attachment	1	0101
ISSUED BY	Deborah VonParis DVP	NAME	INITIALS	ORGANIZATION			DATE
ITEM / MATERIAL	BISCO	SOURCE	DFP:	BISCO			01/29/85
RESPONSIBLE ORGANIZATION	Bisco	CURRENT STATUS	HOLD	LOCATION	CC CL. 12/B EL. 654'		
NCR TYPE	CATEGORY: <input checked="" type="checkbox"/> 1 (POSSIBLE SIGNIFICANCE) <input type="checkbox"/> 2 (MAJOR) <input type="checkbox"/> 3 (MINOR)	SPC:	REV./ECH.				
PROPERTY TYPE	<input checked="" type="checkbox"/> EQUIP./MATERIAL <input type="checkbox"/> INSTALLATION <input type="checkbox"/> PROGRAM		2				
GOVERNING REQUIREMENT	INCLUDE ACCEPTANCE CRITERIA AND DOC'MT. NO.: Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by QC						
DESCRIPTION OF NONCONFORMANCE	NC CODE	RELATE TO LINE NO. 6	Bisco Craft used controlled material - ceramic bulk fiber P.O. #4128 prior to its g release.				
CAUSE OF NONCONFORMANCE	CAUSE CODE	Bisco Craft worked over a hold for inspection tag. Bisco QC had not received the certificate of compliance for the ceramic bulk fiber.					
PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP (1) <input type="checkbox"/> REWORK (2) <input type="checkbox"/> REPAIR (3) <input type="checkbox"/> USE AS IS (4)						
JUSTIFICATION	Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.						
STEPS TO PREVENT RECURRANCE	Craft General Foreman and Foreman to be trained on material holds.						
RESP. ORG. APPROVAL	ZNE / CORST.	QA/QC	B. Williamson via		DATE		
PNSP REVIEW BOARD	REVIEW REQ'D.	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	DECISION	ACCEPT <input checked="" type="checkbox"/> REJECT <input type="checkbox"/>	DATE		
VERIFIED	M. L. Cappuccino 1-29-85 R. Cygnus 1-29-85						
COPY DISTRIBUTION: 1 - DOCUMENT CENTER 2 - FOLLOW UP							

50321385

PAGE 22 OF 25

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION PAQS JUN 29 1985

NHO-1622-A REV. 1/84

NR No. B1SC-0101 Hq Issue Date 1-29-85 Current Date 1-29-85
Review Required CAI Eng. GE Other

Review Comments:

Proposed disposition to "Use As Is" is acceptable to engineering.

Attach documented training upon close-out of this NR.
P.C. #4128 material cannot be used until all documentation is obtained.

AFFECTS AS-BUILT Yes

DRAWINGS? No DRAWINGS Contractor / Vendor _____

AFFECTS EQUIPMENT Yes

AFFECTED CAI _____

QUALIFICATION? No

CAI Engineer _____

Date _____

Quality Engineer _____

Date _____

Other _____

Date _____

ATTACHMENTS YES LIST OF ATTACHMENTS

NO 102

IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.

DISPOSITION REVISION NO. _____

10 PROPOSED DISPOSITION

REJECTION

REPAIR

JUSTIFICATION:

11 STEPS TO PREVENT RECURRANCE

12 RESP. ORG. APPROVAL

ENGR/CONST.

DATE

PNPP REVIEW BOARD

REVIEW REQ'D. YES NO

DECISION: ACCEPT REJECT

DISPOSITION:

ENGINEER

DATE

NAME

TITLE

DATE

50321385

N.D.T. 4433

JMG

bisco
Bisco Industrial Services, Inc.
One Bisco Corporation Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone (312) 526-8079
one of the Bisco Companies

delivery ticket

Babcock & Wilcox

Bisco

245 W. Roosevelt Road

10 Center Street

W. Chicago, Illinois 60185

Perry, Ohio 44081

ITEM ORDERED	G-Hamilton Drop Ship	DATE	12-19-84	TYPE	Direct Shipment	ITEM NUMBER	3133-100M C-491
--------------	----------------------	------	----------	------	-----------------	-------------	-----------------

QUANTITY SHIPPED	QUANTITY SHIPPED	MATERIAL	SHIP DATE	STATUS
30 BX	30 BX	Ceramic Fiber Bulk	1-24-85	D
30 BX	30 BX	Ceramic Blanket 4" Strips	1-24-85	O
		Partial Order		

Shipped direct from manufacturer.

Bisco P.O. #14128

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Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You.

All claims MUST be made
within 5 days from date of delivery

10% handling charge on all returns
Only full packaged units returnable

Received By

JOB FILE COPY

Rebibie von Peir

1-24-85

5032 1381



PAGE 20 OF 25

FORM RJ-1
REV-3

ORIGINAL

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. 4128DATE 1-24-85JOB no. 3133PROJECT NAME Lerry Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30 by 150'ea

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Material Accepted
 RejectedN. von, Par.
O.C. Inspector1-29-85
DateRemarks: * Verify D.T. against
material received
see NR # 0101, REFI.R # 109, Sh 11/1/85

50321300



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, Oh. 44081

DATE January 25, 1985

CUSTOMER P. O. NO P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133
Material P. O. No. 4128

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores A. Holt

Dolores A. Lott
Quality Control Supervisor

50321389

PAGE 18 OF 25

DT. 6261

JMG



Bisco Industrial Services, Inc.
One Bisco Construction Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 Phone (312) 545-0274
one of the Bisco companies

delivery ticket

Bisco Construction

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Perry, Ohio 44081

SHIPMENT NUMBER	F.O.B.	DATE	TIME	SHIPPING INSTRUCTIONS	TRAILER NUMBER
Vicky A.	EGY	11-7-85		Air-freight	3133-1800-C-476
QUANTITY PACKAGED	QUANTITY SHIPPED			Locaseal (A&B)	10-8-85 VM

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Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to:
BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You.

All claims MUST be made
within 5 days from date of delivery

Received by Vicky McCafferty

50321390

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Bisco ConstructionMATERIAL RECEIVED LOCA Seal Part ALOT / BATCH no. 2560 LQUANTITY 10 pails x 63.5 lbs ea

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/> <u>na</u>
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<u>na</u>	Dimensional Inspection	<input checked="" type="checkbox"/>	<u>na</u>
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected

Remarks:

* VERIFIED DT. AGAINST
MATERIAL RECEIVED

O.C. Inspector

11-12-85
Date

50321391

bisco



PAGE 16 OF 25

FORM RI-1
REV-3

RECEIVING INSPECTION CHECKLIST
(SITE)

P.O. No. NA

DATE 11-12-85

JOB no. 3133

PROJECT NAME Perry Nuclear Power Plant
VENDOR BISCO CONSTRUCTION

MATERIAL RECEIVED Locaseal Part B

LOT / BATCH no. 2580 L

QUANTITY 10 pails x 365 lbs

Required	Inspection Instruction	Accept	Reject
na	Verify P.O. Against Material Received	na	
✓	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings	✓	
✓	Visual Inspection	✓	
na	Dimensional Inspection	na	
*✓	Special Instructions per Attached	✓	

Material Accepted
 Rejected

Remarks:

*verified DT against
material received.

Jackie McCafferty
O.C. Inspector

11-12-85

Date

50321302

216/259-3737
Ext: 6843

November 8, 1985

Cleveland Electric Illuminating Co.
 Perry Nuclear Power Generating Station
 10 Center Street
 Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191, Rev. 0, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 33.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A

Bisco Job #: 3133

Bisco D.T. #: 6261

Customer P.O. #: P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores O. Lott

Dolores A. Lott
 Quality Control Supervisor

brand industrial services, inc.
 construction group
 2207 lively Blvd., elk grove village, illinois 60007, (312) 228-8670

a subsidiary of brand insulations, inc.

50321393

ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # A-189
SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard,
(Certificate verified by NBS 2028)

Date of Verification: 9-9-85 Date Due: 3-9-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	49.90	60.00	70.00	80.20	99.20	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	-10	0	0	+20	+20	0
------------	---	---	---	---	---	-----	---	---	-----	-----	---

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0	100.20	200.10	300.10	400.00	500.00
-----------	---	--------	--------	--------	--------	--------

Deviation:	0	+20	+10	+10	0	0
------------	---	-----	-----	-----	---	---

I hereby certify that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

Name

Title

50321394

bisco FD

PAGE 13 OF 25
ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-143
SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
(Certificate verified by Ill. Dept. of Labo
to NBS 2028)

Date of Verification: 9-19-85 Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	0	0	0	0	0	+.01
------------	---	---	---	---	---	---	---	---	---	---	------

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0.00	99.80	200.00	300.02	400.05	500.03
-----------	------	-------	--------	--------	--------	--------

Deviation:	0	-.20	0	+.02	+.05	+.03
------------	---	------	---	------	------	------

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Machacek
QC Supervisor
Title

50321305

PAGE 12 OF 25

ILLUMINATING COMPANY
P.O. NO. SP98/6233
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COMMON

10 x dpouro

bisco

5

QCT-2
REV.-B

REV.-8

**REVISED
ORIGINAL**

• SYSTEM VERIFICATION LOG •

PROJECT NAME PERRY NUCLEAR POWER PLANT

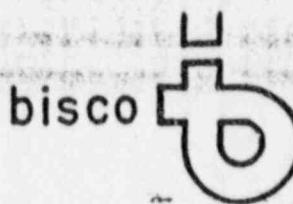
JOB NO. 3134

PRODUCT NAME Lex-A-Spal.

DENSITY RANGE MOTO 170 P.C.F.

5032 1395

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
P.O. NO. SP98/4293
PERRY NUCLEAR POWER
PLANT - UNIT 1 & COALITION



ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 3134 LAST ENTRY DATE 1-7-56

MACHINE NO. NA PRODUCT Loxaseal

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

Entries reviewed by G. Kitcher Date 1-11-86

Entries reviewed by K. Kitchin Date 1-11-86

50321397

PAGE 10 OF 22

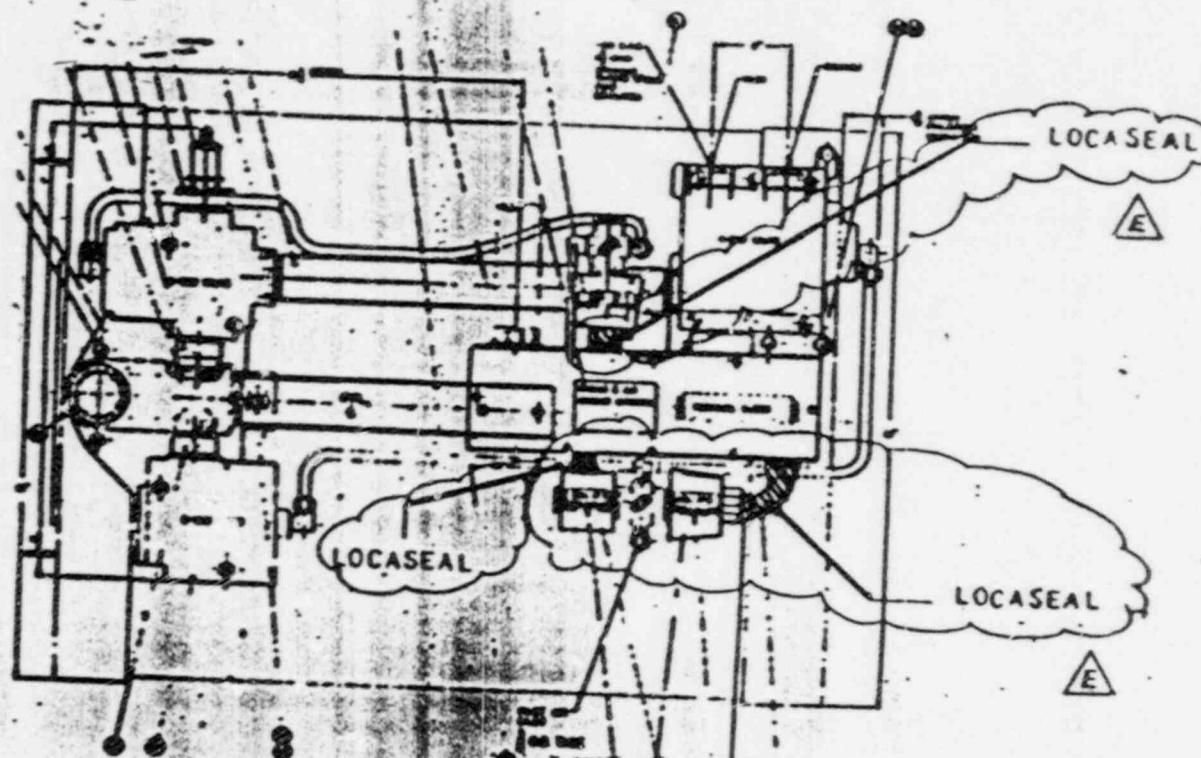


FIGURE 2-2
MSIV ACTUATOR ASSEMBLY

ATTACHMENT 2 PG. 1 OF 1
ECN 27245-98-33 REV. F

PAGE 9 OF 25

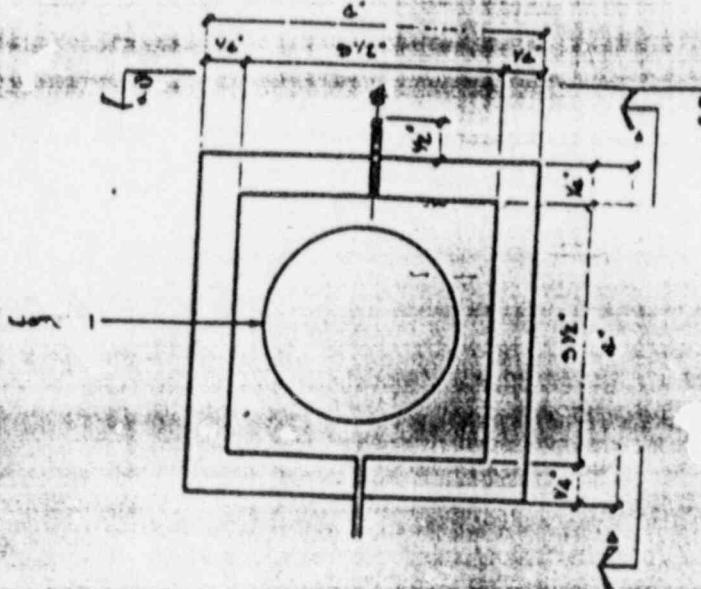
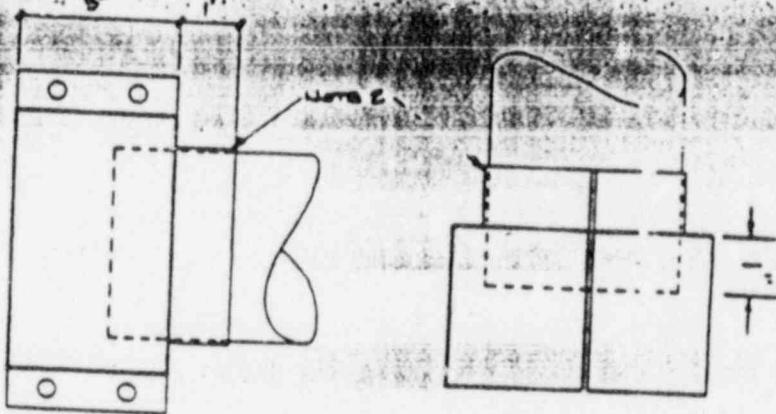


FIGURE 'E'
MCT 4C49 3 4050

ECN 22-25-2S-3 REV E
DWG 22-25-2S-3 REV E
ATTACHMENT 1

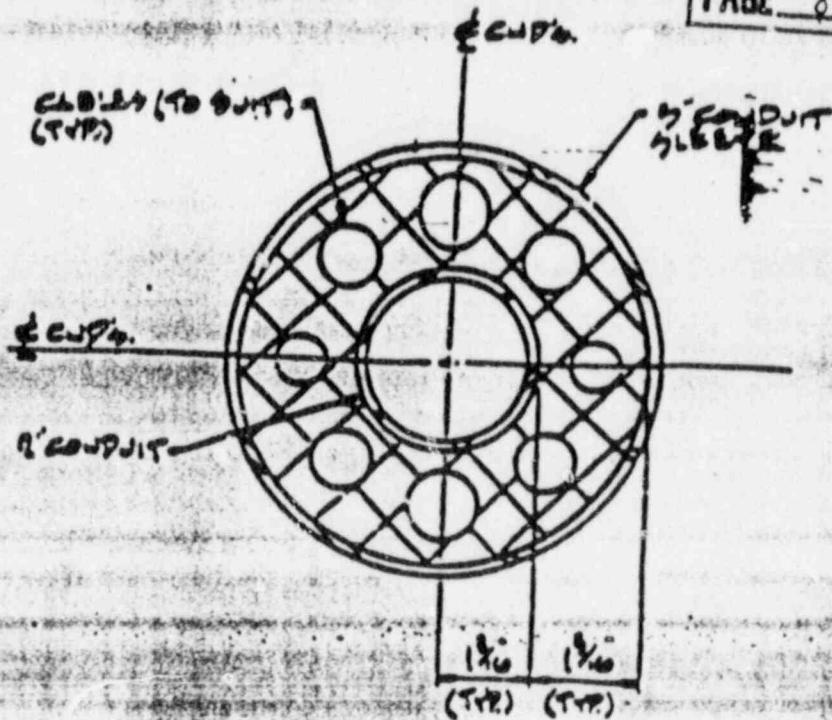


SECTION A-A

SECTION B-B

- NOTES: 1. S.800 TO FIT SWING CONDUIT (.175" O.D.).
2. ATTACH TO CONDUIT WITH DC-732 ZTV CAULK
AND BB CLAMP.
3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ #20, GRADE 1/3 87 SC-FB AND HEA HEAD 1/4" SH NUTS.
4. ASSEMBLY TO BE FABRICATED FROM 14ga GALVANIZED
SHEETMETAL.
5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED
WITH LOCASEAL.
6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW
PROPER INSTALLATION OF LOCASEAL.
7. ALL DIMENSIONS GIVEN $\pm \frac{1}{8}$ ".

5.032 1399



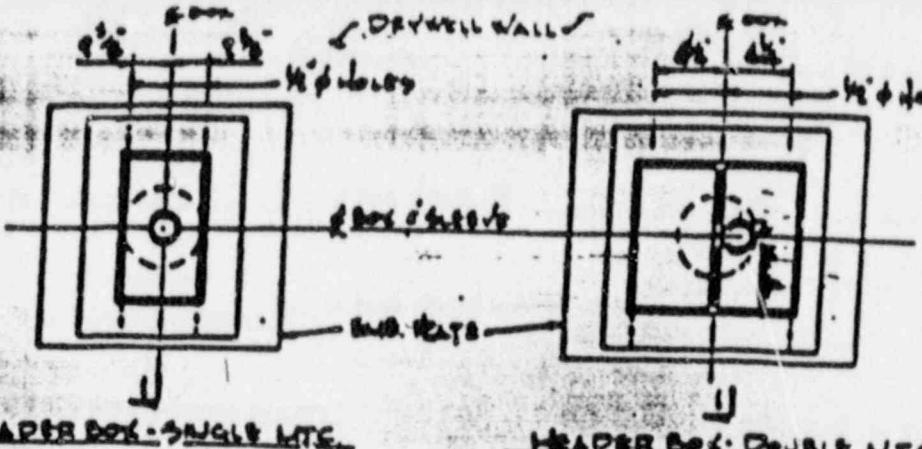
DETAIL C

NOTE:

THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS.

ATTACHMENT | PAGE 4 OF 5
ECU # 27245-98-33
REV. F

50321400

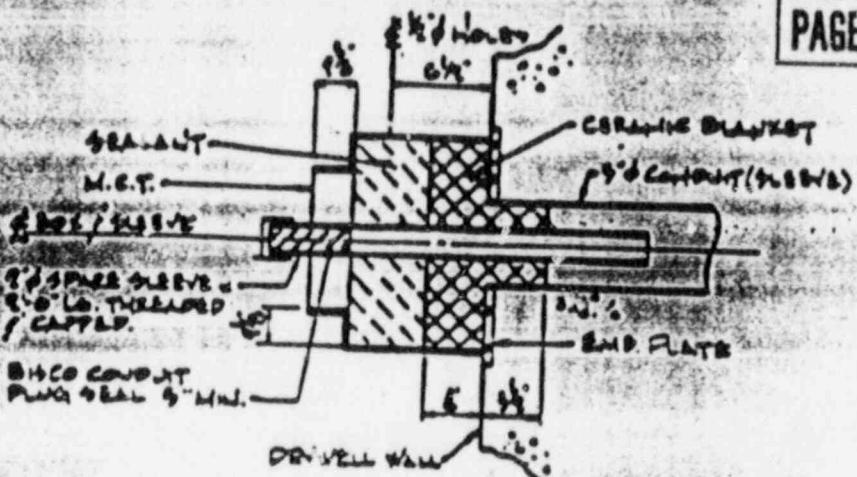


HEADER BOX - SINGLE MTC

HEADER BOX - DOUBLE MTC

DETAIL 'B'

PAGE 7 OF 25



SECTION 1-1

NOTED:

1. MATERIAL AS SPECIFIED IN SP.98
2. SLEEVE SHALL EXTEND $9\frac{1}{2}'' \pm \frac{1}{2}''$ PAST THE FACE OF THE M.C.T.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE M.C.T. WITH A TOLERANCE OF $\pm 2.00''$ ABOVE OR BELOW THE HORIZONTAL C. (REF. DETAIL B)
4. BLANKET THICKNESS FOR ORGANIC FIBRE 4" NOM. $+ (.00'' - 0.00''$ OF THAT SPECIFIED IN SECTION 6-1 : ERB-3013, ERB-3021, ERB-3022, ERB-3024
5. THE FOLLOWING M.C.T.'S SHALL RECEIVE A $1\frac{1}{4}''$ SLEEVE IN LIEU ERB-3013, ERB-3021, ERB-3022, ERB-3016, ERB-3017, ERB-3018, ERB-3019, ERB-3020, ERB-3023, ERB-4030, ERB-4033, ERB-4035, ERB-4037, ERB-4039, ERB-4036, ERB-4040, ERB-4032, ERB-4021, ERB-4022
6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES ERB-3013, ERB-3014, ERB-4029, ERB-3020, ERB-3023, ERB-4030, ERB-4033, ERB-4035, ERB-4037, ERB-4039, ERB-4036, ERB-4040, ERB-4032, ERB-4021, ERB-4022

C

ATTACHMENT/PAGE 3 OF 5
EFCN# 27249-98-33
REV. F

50321401

a
1-11-96

PAGE 10 OF 25



6:11.1 Materials

- 1.. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fibre.
4. 2" Sch. 40 sleeve supplied by others.

6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywall structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.
4. The moisture seals installed in them MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

50321402

2
1-11-84

PAGE 5 OF 25

SECTION 6:02

- ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.
8. The installations of moisture seals in the MSIV actuator assemblies.

6.11 MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of locaseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR F

1ERB 3013	1ERB 4028	1ERB 4042	1ERB 4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A F
F022B
F022C
F022D

1B21F028A
F028B
F028C
F028D

5032 1403

ENGINEERING CHANGE NOTICE

PAGE 4 OF 25

PERRY NUCLEAR POWER PLANT

 SPEC DWG. ECH

A SUBJECT SP-98 PRESSURE / MOISTURE SEALS

ORIGINATOR Harley B. Smitzler 11-20-05

(Signature)

(Date)

DEPARTMENT SITE DESIGN TEAM

ECH NUMBER 27246-9A-33 REV F

CR NUMBER 510B

AFFECTS SP. 98 / II

E DOCUMENTS TO BE REVISED BY THIS ECH

SP-98-4549-00 REV. X

Q-LIST AFFECTED? NO YES
 TEST SPEC CHANGE REQUIRED? NO YES
 EQUIP. QUA'L AFFECTED? NO YES
 SAR CHANGE REQUIRED? NO YES
 UNIT 2 AFFECTED? NO YES

F SYSTEM AFFECTED

N/A

G MATERIAL TO BE PURCHASED

 NO YES

H DESIGN REVIEWER APPROVAL

BY: Hofstetter/Mauray DATE: 11-20-05
(Design Reviewer)

I QA APPROVAL (IF REQUIRED)

BY: R. Gagnon DATE: 11/21/05
(QA Manager)

J PROJECT ENGINEERING APPROVAL

BY: W. Higginbotham/FC Nall DATE: 11/21/05
(Project Engineer)

K CEI ACCEPTANCE

BY: L. Zelis DATE: 11/21/05
(Responsible Engineer)QA REVIEW REQUIRED NOT REQUIRED REVIEWED BY P. 4X13 - PC 24U DATE: 120505
Bill of Material Number(s) ISSUEDSPEC. NO. 98 AND CONT. PONO. P-4293

L DESIGN CHANGE INCORPORATED

BY E. B. Smitzler DATE: N/A
(Project Engineer)REASON FOR CHANGE CODE: 7, 16 (S)EXPLANATION (IF REQ'D): EDDR KL RECEIVED

DEC 08 1985

DOCUMENT CONTROL

PRINT

ATTACHMENTS: ATTACHMENT 1 (5-PAGES)

ATTACHMENT 2 (1-PAGE)

C INTERFACING DEPARTMENTS ORGANIZATIONS OR GROUPS

- PIPING
- STRUCTURAL
- ELECTRICAL 11-21-05
- QUALITY ASSURANCE (SAR)
- BUILDING SERVICE
- NSSS
- CONTROL SYSTEMS
- OTHER
- MECH. NUCLEAR 11-21-05
- EOCOCD EBC 11-21-05

NOTE: *NOT REQUIRED IF FOR DRAWING CHANGES ONLY.

N/A

Gibson Commonwealth

N/A

Figure N-2
Revised: 7-22-05

50321404

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
850011943	NC98	1B2.	MECHANICAL	RB/IDW			
R O C	P U C	COMP CAT	PRIORI.Y CODE	SAFETY M/E	SEISMIC M/E	ASME I/ ^{1 hour} <i>5A sum works</i>	TAG OUT REQ'D
5	1 2 3 4 5	PEN	3B			NO	NO YES ^{1 hour}
SPECIAL PERMIT	RETEST REQ'D	HOUSE-KEEPING		ALAR A REVIEW	RWP REQ'D	TECH SPEC	EQ 15-4944 Affected
NO YES ^{from hours}	NO	YES		NO	NO	NO	NO

SYSTEM NAME: NUCLEAR BOILER (NSSS)

SUMMARY : IMPLEMENT DCP 85-618.

MPL NAME : MSIV ACTUATOR ASSYS & MCT'S

PLANNER REMARKS

NC 98 TO PERFORM WORK

REFERENCE: MDL 1B21-#291 (W.A. 85-12575)

REFERENCE: MDL CO-05-#02 (E.C.N. 27245-98-33/F)

IMPLEMENT DCP 85-618. RBG FIRE BARRIER REMOVAL PERMIT NUMBER (PER EXC-1000-00000000) from 10/10/85

POWER SUPPLY: *****

PHR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.: 1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT) PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

John J. Dugan
John J. Dugan
John J. Dugan
John J. Dugan
John J. Dugan

TIME: 09:33
12/09/85 TIME: 09:33
12/09/85 TIME: 09:33
12/09/85 TIME: 09:33
12/09/85 TIME: 09:33

DATE 12/09/85

DATE 12/09/85

DATE 12/09/85

DATE 12/09/85

DATE 12/09/85

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT SUPERV.

DATE 12/09/85

DATE 12/09/85

DATE 12/09/85

50321405

SOURCEUS

PENETRATION		PENETRATING ITEM		BARRIER RATINGS		SEAL INFORMATION	
SIZE	TYPE	BARRIER MATERIAL	DEPTH	SEE BCWA — THRU —	FOR PENETRATING ITEMS	REFERENCE NUMBER	MOVEMENT
YES	NO						INSULATION
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3 HOUR FIRE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	RADIATION
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	MOISTURE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	NO SEAL REQUIRED
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	TYPICAL DETAIL
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	TEST REPORT NUMBER
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	ANL ACCEPTANCE LETTER NUMBER
PRODUCTION AUTHORIZATION		SHEET / OF /					
INITIAL RELEASE	HOLD						
REF.	DATE	REF.	DATE	REF.	DATE		
PREPARED BY <input checked="" type="checkbox"/>	APP. BY <input checked="" type="checkbox"/>						
DATE PREPARED <input checked="" type="checkbox"/>	11785	O.C. INSPECTOR <input checked="" type="checkbox"/>	1-1181	BUILDING	ELEVATOR		
REF. DRAWING	D-101-052	O.C. SUPERVISOR <input checked="" type="checkbox"/>	1-1182			2-16101	
PENETRATION NUMBER 16212026C							
MATERIALS							
DC 3-6548 SYLGARD 170 SF 150 NH BOOT MAT'L BISCO-FLEX150 BISCO-SEAL I DC 702 DC 790 C/FIBER <i>Y122</i> C/BOARD <i>LOOSEAL</i>							
* SEAL PER E&W 24-27245-96-33 REV. D * FILL INTERNAL CONDUITS FULL DEPTH. LOCATION							
6" <i>40 PS-11943</i>							
IN PROCESS		FINAL INSPECTION		TURN-OVER			
MATERIAL	APPROVAL DATE	INVESTIGATOR	DATE	QUALITY	INVESTIGATOR	DATE	TESTING DATE
SYLGARD 170	APR 11 1985	DC 702	APR 11 1985	OK	DC 790	APR 11 1985	OK
DC 702	APR 11 1985	DC 790	APR 11 1985	OK	DC 790	APR 11 1985	OK
DC 790	APR 11 1985	DC 790	APR 11 1985	OK	DC 790	APR 11 1985	OK
C/FIBER Y122	APR 11 1985	DC 790	APR 11 1985	OK	DC 790	APR 11 1985	OK
C/BOARD	APR 11 1985	DC 790	APR 11 1985	OK	DC 790	APR 11 1985	OK
<i>LOOSEAL</i>	APR 11 1985	DC 790	APR 11 1985	OK	DC 790	APR 11 1985	OK
INSTRUCTIONS							
* SEAL PER E&W 24-27245-96-33 REV. D * FILL INTERNAL CONDUITS FULL DEPTH. LOCATION							
6" <i>40 PS-11943</i>							
CONT. STA. TURN.							
PRODUCTION AUTHORIZATION		SHEET / OF /					
INITIAL RELEASE	HOLD						
REF.	DATE	REF.	DATE	REF.	DATE		
PREPARED BY <input checked="" type="checkbox"/>	APP. BY <input checked="" type="checkbox"/>						
DATE PREPARED <input checked="" type="checkbox"/>	11785	O.C. INSPECTOR <input checked="" type="checkbox"/>	1-1181	BUILDING	ELEVATOR		
REF. DRAWING	D-101-052	O.C. SUPERVISOR <input checked="" type="checkbox"/>	1-1182			2-16101	
PENETRATION NUMBER 16212026C							
PAGE 2 OF 28							



C.E.I. bisco
S.P.-48 / P.O. 4293
PERRY NUCLEAR UNIT I
POWER PLANT, OHIO



Brend Industrial Services, Inc.
1420 Renaissance Drive
Portage, Illinois 60072
(708) 298-1200
(708) 282-4622 (brend prod)

PROCEDURE	DATED	REVISION
(See Attached)		

Foreman	DATE REVIEWED	INSTRUCTOR	Signature
Dennis LaVelle	2-17-85	Alan M. Murn	Dennis LaVelle
J. T. Sweeny	2-14-85	Alan M. Murn	J. T. Sweeny
Marty H. LaVelle	2-13-85	Alan M. Murn	Marty H. LaVelle
M. G. Delaney	2-13-85	Alan M. Murn	M. G. Delaney
Russell Zabilka	2-6-85	Alan M. Murn	Russell Zabilka
Dave Rittenhouse	2-7-85	Alan M. Murn	Dave Rittenhouse
George Filak	2-14-85	Alan M. Murn	George Filak
John Halovasic	2-7-85	Alan M. Murn	John Halovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin

503271407

PAGE 24 OF 25

bisco

FORM IR CII 1-13-84
Rev. 0 Page 2 of 2
attachment to NR 0101

ORIGINAL

INSPECTION REPORT

IR. No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85

Bisco Project No. 3134

Item of Activity Inspected Ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
Po # 4418 is complete and undamaged.
There were no deviations in documentation.

See NR # 0101

HOLD TAG No. 000 Inspector D. van Pelt Date 1-29-85

Disposition

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Acceptance _____

Accept Tag No. _____ Reject Tag No. _____

50321408

PAGE 23 OF 25

LINN NO. CST	1/29/85	N/A	PERRY NUCLEAR POWER PLANT NONCONFORMANCE REPORT	PAOS-NW-29-85-6			
NO. 105 REVISION							
1	HCR NO.	REV. MTH.	OF ITEM	ITEM NO.	ITEM NAME	QUANTITY	DATE
2	ISSUED BY	NAME		ITEM NO.	ITEM NAME	QUANTITY	DATE
3	ITEM / MATERIAL	SOURCE	Bisco	CURRENT STATUS	Hold	LOCATION	CC CL. 12/B EL. 654'
4	RESPONSIBLE ORGANIZATION	NAME	Bisco	SPEC. NO.	SP-	REV./ECH.	2
5	HCR TYPE	CATEGORY:	<input type="checkbox"/> 1 (POSSIBLE SIGNIFICANT)	<input type="checkbox"/> 2 (MAJOR)	<input checked="" type="checkbox"/> 3 (MINOR)		
6	GOVERNING REQUIREMENT	INCLUDE ACCEPTANCE CRITERIA AND DOC'NT. NO.:	Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by Dept				
7	DESCRIPTION OF NONCONFORMANCE	NC CODE	105	RELATE TO LINE NO. 6: Bisco Craft used controlled material			
- ceramic bulk fiber P.O. #4128 prior to its release.							
8	CAUSE OF NONCONFORMANCE	CAUSE CODE	F01	Bisco Craft worked over a hold for inspection tag. Bisco QC had not received the certificate of compliance for the ceramic bulk fiber.			
9	PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP (1)	<input type="checkbox"/> REMAKE (2)	<input type="checkbox"/> REPAIR (3)	<input type="checkbox"/> USE AS IS (4)		
JUSTIFICATION Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.							
10	STEPS TO PREVENT RECURRANCE	Craft General Foreman and Foreman to be trained on material holds.					
11	RESP. ORG. APPROVAL	ENR./CREDIT	04/05	DECISION	A/C	DATE	01/29/85
12	PNPP REVIEW BOARD	REVIEW REQ'D.	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	DECISION	<input checked="" type="checkbox"/> ACCEPT	<input type="checkbox"/> REJECT
13 VERIFIED COPY DISTRIBUTION							

1/29/85 R Cygnerus
M. L. Cappuccino
Nelboek von Paris I.C.

105-105-105-105

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION PAQS JUN 29 85

MO. 1823-A REV. 1/84

NR No. B6SC-0101 F/0		Issue Date 1-29-85	Current Date 1-29-85	
Review Required. <input checked="" type="checkbox"/> CAI Eng. <input checked="" type="checkbox"/> GE <input type="checkbox"/> Other _____				
Review Comments: <i>Proposed Disposition to "Use As Is" is ACCEPTABLE TO ENGINEERING.</i>				
Attach documented training upon close-out of this NR. P.C. #4128 material cannot be used until all documentation is obtained.				
AFFECTS AS BUILT	Yes <input type="checkbox"/>	DRAWINGS	Contractor/Vendor _____	
STRUCTURES?	No <input checked="" type="checkbox"/>	AFFECTED	CAI _____	
AFFECTS EQUIPMENT	Yes <input type="checkbox"/>	QUALIFICATION?	No <input checked="" type="checkbox"/>	
<i>M.J. Caputo 1-29-85</i>		<i>R. Cwynarsh 1/29/85</i>		
CAI Engineer	Date	Quality Control	Date	
Other	Date			
ATTACHMENTS	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	LIST OF ATTACHMENTS <i>1 pg</i>		
IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECT. 10 BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.				
DISPOSITION REVISION NO. _____				
<input checked="" type="checkbox"/> PROPOSED DISPOSITION <input type="checkbox"/> BACKUP DOCUMENTATION FOR PROPOSAL <input type="checkbox"/> OTHER INFORMATION				
JUSTIFICATION:				
STEPS TO PREVENT RECURRENCE				
11	RESP. ORG. APPROVAL	ENG/CONST.	QA/QC	ATA
12	PNPP REVIEW BOARD	REVIEW PERIOD: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	DECISION: <input type="checkbox"/> ACCEPT <input checked="" type="checkbox"/> REJECT	DATE
ENGINEER: NAME: TITLE: DATE:				
DISPOSITION: NAME: TITLE: DATE:				

50321410

NRT 4433

JHG

bisco
Bisco Industrial Services, Inc.
a division of the Bisco Corporation Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone 312-547-7676
one of the brands of the Bisco Corporation

delivery ticket

Babcock & Wilcox

Bisco

245 W. Roosevelt Road

10 Center Street

W. Chicago, Illinois 60185

Perry, Ohio 44081

ITEM NUMBER	ITEM NAME	QTY.	SHIP TO	DATE	METHOD	NOTES
G. Hamilton	Drop Ship			12-19-84	Direct Shipment	3133-100M C-491
30 BX	30 BX	Ceramic Fiber Bulk		1-24-85	D/P	D
30 BX	30 BX	Ceramic Blanket 4" Strips		1-24-85	D/P	O

Partial Order

Shipped direct from manufacturer

BISCO P.O. #4128

N
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Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007

Thank You.

All claims MUST be made
within 5 days from date of delivery

10% handling charge on all returns
Only full packaged units returnable

Received By

1-24-85

JOB FILE COPY

50321411

bisco 5

PAGE ____ OF ____

ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. 4128DATE 1-24-85JOB no. 3133PROJECT NAME Penn Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30.04 x 150' ea

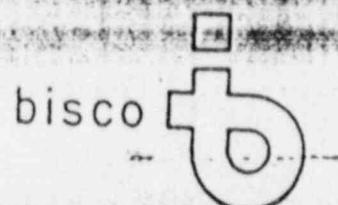
Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected*S. von Kain*
O.C. Inspector

1-29-85

Remarks: Verify D.T. against
material received
see NR # 010, REF.I.R # 109, DR 1116/85

50321412



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH. 44081

DATE January 25, 1985

CUSTOMER P. O. NO P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133
Material P. O. No. 4126

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase-order specification requirements.

Dolores J. Hott

Dolores A. Lott
Quality Control Supervisor

50-321413

DT 6261

JMG



Bisco Industrial Services, Inc.
The Bisco construction group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone (312) 268-0776
one of the Bisco companies

delivery ticket

Bisco Construction

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Parma, Ohio 44081

TO WHOM SHIPPED	P.O.#	DATE	TIME	REMARKS
Vicky A.	EGV	11-7-95	Air-It there	3133-180N-C-476
QUANTITY SHIPPED	QUANTITY RECEIVED	MATERIAL		
1,000#	1,000#	Locaseal (ABB) 10-8-85 VM		
<p>Please acknowledge receipt of the material listed on this Delivery Ticket by signature and return Job File and Acknowledgment copies to:</p> <p>BISCO Construction Group 2207 Lively Blvd. Elk Grove Village, IL 60007</p> <p>Thank You.</p>				
D O N O T W R I T E B E Y O N D H E R E				

All claims MUST be made
within 5 days from date of delivery

Received By Vicky McCafferty

50321414

PAGE
M151B14

PNPP WORK ORDER CLOSING AND SUMMARY SHEET

12/09/85
09:33:22

W.O. 850011943 SUMMARY IMPLEMENT DCP 85-618.
MPL 1B21 NAME N/A *bm* 12/29/12

ATTACHMENTS	
NUMBER	DESCRIPTION
SL 122	Installation of Zinc lead

WORK SUMMARY : Installation of floor slabs with massive sole
in Mulby Colliery Transvaal Coal Mine
on Access road south contractor exposed
procedures

RETEST SUMMARY: N/A for 10/21/85 Retest per w/o's 86-14388
86-4439 System Engineer

FOLLOW UP A FAIL CAT P CORR ACT AH TYP OF FAIL - CAUSE OF FAIL 4/29/82
ACCEPTED BY: BADGE 8666 NAME G. L. MASTERS DATE 1/15/86
CLOSED BY: BADGE 9530 NAME J. M. MURRAY DATE 1/27/86

TRAINING RECORD

AR-936

It shall be understood that:

- a. No controlled materials can be provided from any suppliers that are not currently on BISCO's AVL.
- b. No materials can be provided by another on-site contractor unless they are received through C.E.I. contracts dept. and accompanying documentation is present IE: Certificate of Conformance. Any materials provided by C.E.I. must be receipt inspected prior to use.
- c. Any materials received from an on-site contractor who are on BISCO AVL must be in accordance with QCP-101 and be purchased with a purchase order approved by BISCO's Quality Assurance Dept.

Please sign and date that you understand the requirements as stated.

SUSAN MATHIAS

NAME

Susan Mathias

1-21-86

DATE

DARRELL BEAHON

D Beahon

1-22-86

WILLIAM NEWCOMB

William Newcomb

1-22-86

KATHY RAYMOND

Kathy Raymond

1-22-86

TRINA SINES

Trina Sines

1-22-86

JOSEPH PERLIS

Joseph Perlis

1-22-86

JOHN ORNSTON

John Ormston

1-22-86

*copy provided
copy sent*

PETER MAIETTA

Peter Maietta

1-22-86

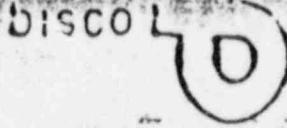
BRAD WILLIAMS

Brad Williams

1-22-86

50321416

DISCO



Oct. 0

INSPECTION REPORT

LR. No 1515Project Name PERRY NUCLEAR POWER PLANTDate 10-7-85Bisco Project No. 3134Item of Activity Inspected IPTB1040 / B577053002

Description and Inspection Report:

THE "A" SLEEVE IS 18 GAUGE.

THE "B" SLEEVE IS 18 GAUGE.

HOLD TAG No. 41 O.C. Inspector Jim Hall II Date 11-7-85

Disposition

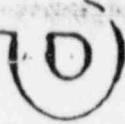
Dispositioned by NA Title NA Date _____

Inspection Report Closeout

Inspect Acceptance NCR No. Issued NA Reinspect AcceptanceAccept Tag No. NA Reject Tag No. NACloseout by NA

50321417

DISCO



SA 10/08/85

12
REV C

INSPECTION REPORT

LR. No 1526

Project Name. PERRY NUCLEAR POWER PLANT

Date 10-8-85Bisco Project No. 3134Item of Activity Inspected IPTB1D41 R2 / R57053003

Description and Inspection Report

The A Sleeve is 16 gauge

The B Sleeve is 16 gauge

The C Sleeve is 16 gauge

All installation criteria were met prior to
AC inspection for sleeve annular space inspection.HOLD TAG No. N/A O.C. Inspector Lin Hall II Date 10-8-85

Disposition

N/ADispositioned by N/A Title N/A Date

Inspection Report Closeout

Inspect Acceptance NCR No Issued N/A Reinspect Accepton
Accept Tag No. N/A Reject Tag No. N/A

SEP 14 1985

RESPONSE:

In light of the misinterpretation of the requirements established in SP-709 section 1:05.7 Paragraph 4 "Material Furnished by the Owner" Sub-paragraph (A) or any of the owners agents. BISCO was furnished with the material by an on-site owner approved contractor who in fact procured the material in accordance with the above referenced specification and provided all necessary documents, therefore, it was determined that procurement documents per the contractor (BISCO) Quality Assurance Program would not be required.

BISCO did however provide a inspection/examination during the installation of the material supplied (see Inspection Documents I.R. 1999 Rev. 1, 1526, and 1515 which provide justification of the material installed along with procurement documents supplied by R. Irsay Company, therefore, requirements as a minimum were met.

BISCO will indoctrinate appropriate personnel IE: Engineering, Procurement persons, Q.C. Inspectors of requirements of Receipt Inspection of on-site contractors who provide materials for Safety-Related installations no later than 1-22-86.

It shall be noted that any future installations of this nature shall be handled accordingly.

- 1.) Material procured shall be in accordance with B.Q.A.M. Section III.
- 2.) In the event of material supplied by an on-site contractor they shall be added to the AVL and material procured in accordance with established program prior to material acceptance.
- 3.) In the event the owner supplies/furnishes material it shall be handled per the guidelines established in SP_709 section 1:05.7 Para. 4.

5032 1419

W.O. 2810
Rev. 6-22Perry Nuclear Power Plant
ACTION REQUEST

AR 936

File No. C.O.A.0.1.1.1

Appendix B
Criteria No. 0.4

PAGE 54 OF 58

Responsible Organization B.I.S.C.O.9.B.

OBS Number 0.0.0

Initiated By: David Siedlarczyk Initials D.E.S. Issue Date 0.1.2.0.8.6.

Governing Requirement: BQAM Section III 2.0, 3.0

OCP-101 Receiving Inspection, Procurement Document Control
Receiving Inspection, Procurement Document Control

Observation: During the review of M.C.T. documentation (W.O. 85-11943), the following quality assurance program deficiencies were noted. Similar conditions exist for pressure seals.

1. Contractor installed controlled material without having proper procurement documents.
2. Material received was not receipt inspected.
3. Vendor supplying material is not on approved vendor list.

Potentially Reportable Per 10CFR21 or 50.55 e Yes No DAR No. N/AUpgraded to CAR Yes No

Reviewed for Significance By: Russ Mathias

Recommendation: 1. Provide justification that the material installed meets the specification requirements of ECN 27245-98-33 and ECN 28870-98-56B.
2. In the future, comply with established program requirements of the BQAM and OCP-101 when obtaining any material from outside contractors.
3. Provide cause, training, completion date.

Response Due Date 1-23-86

Cause: Misinterpretation of the intended interface between R.O.A.M., PARENT Specification (SP-98-4549) and SP-709-4549

Response (include corrective action and steps to prevent recurrence)

SEE ATTACHED

Completion Date 0.1.22.86

Response Prepared By: Susan Lorraine

Response Date 0.1.23.86

Response Evaluation: PROCUREMENT DOCUMENTS PROVIDED TO THE SP98 CONTRACTOR BY R. ILLY COMPANY FOR THE ABOVE REFERENCED MATERIAL HAVE BEEN ASSEMBLED WITHIN THE SP98 CONTRACTOR DOCUMENTATION. THIS IS NOT THE DUE DATE TO THE OWNER.

Evaluation: Accept Reject

CAUSE CODE E01

Evaluation By: David Siedlarczyk

Evaluation Date: 0.1.22.86

Verified By: Brian Kullberg

Verification Date: 0.1.22.86

Remarks: Response ACCEPTED, SEE ATTACHED DOCUMENTS AND TRAINING SHEETS

50321420

DISCO

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. 4361DATE 5-30-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Murray Corp.MATERIAL RECEIVED S.S. Hex Head Hose ClampsLOT / BATCH no. 361QUANTITY 4001561H2055H965550047440

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Material Accepted Reject

Remarks:

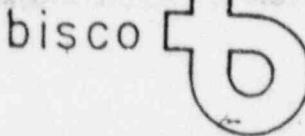
Verify L7.21
received

O.C. Inspector

Date

5-30-85

40321422



100% INSPECTED

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH. 44081

DATE May 24, 1985

CUSTOMER P. O. NO. P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3153

Material P. O. No. 4361

D. T. No. 5068

PRODUCT	LOT, BATCH	start shelf-life	QUANTITY
Stainless Steel Hex Head Hose Clamps H24SS	NA 4361	N/A	10 Boxes x 10 Clamps Each
Stainless Steel Hex Head Hose Clamps H96SS	NA 4361	N/A	10 Boxes x 10 Clamps Each
	SLN 6/25/85		

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores A. LottDolores A. Lott
Quality Control Supervisor

50381423

PAGE 50 OF 83

UNITED STATES STEEL CORPORATION INTRA CORPORATE TRANSFER SHIPPING NOTICE



9839003052

37

PURCHASE ORDER DATE PURCHASE ORDER NO.

11/19/84

01

021

REMIT
S 1-1-0 TO

USS CONTROL NO.
00905
00823-0015-170

USS ORDER NO.
SD32718

INVOICE NO.
170-48204

PLEASE REFER TO THE ABOVE INVOICE NO. ON YOUR BILL

U S STEEL SUPPLY DIV
4700 ROCKSIDE RD
ROOM 625
INDEPENDENCE OH 44131

AMERICAN STEEL SUPPLIERS INC
17001 SARAHAC RD
CLEVELAND OH 44110

SHIPPER NO.	DATE SHIPPED	FROM	ROUTING AREA	VEHICLE	Quantity	Unit Price	Amount
347221	01/08/85	IRVING PENNSYLVANIA 170	GREAT AMERICAN LINES INC	A43789 ME			
SHIP MODE	TIME	POB DESTINATION					
TL	0040M						
GALV SHEET CARBON ASTM A526-80 REST SPEC REQ WC.10 MAX CO REGULAR SPANGLE G90 CHEM TREAT NO OIL							
ITEM #	DESCRIPTION	FT LENGTH IN					
01	0705 MIN X 48 COIL						
	ID 24						
	OD MAX 65						
1740-0000-0000/06219/ COIL NO HEAT NO	COILS LIN. FT.	POUNDS THEO-LB					
0980 F83301	1 3100	36350	35662				
0980 R85451							
	1 3100	36350	35662				
HEAT NO	C	MH	P	S			
F83301	.07	:38	.009	.019			
R85451	.07	:37	.008	.025			

CUE 55313

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-1527-V
PERRY NUCLEAR POWER PLANT UNITS 1 & 2

RELEASED FOR Q-LIST

ITEM 14 GA SHEETS ASTM A526 C.0

Control No. PS8

01/12/85

PS8

COILS ACT-LB THEO-LB
1 36350 35662
D/L 36350

COALS OF LABOR WHICH WERE PRODUCED OR RENDERED IN THE UNITED STATES SECURED BY THE UNIONS ARE PRO-
TECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE Fair Labor Standards Act of 1938, AS AMENDED.

FATIGUE IN U.S. DO
COUNTRY OF ORIG.

#0132

50321424



FHPP NO. 213E Rev. 8/85 000

**FOLLOWING
DOCUMENT/DOCUMENTS**

DOES/DO NOT MEET LEGIBILITY/REPRODUCIBILITY REQUIREMENTS AND IS THE

**BEST
AVAILABLE
COPY**

AS TRANSFERRED TO THE RECORDS MANAGEMENT UNIT

50321425

Certification OF TEST RESULTS

Lakewood Machine Prods. Co.
P.O. Box 388
Carleton, MI 48117

Date November 15, 1985
Customer Order Number

1909
U.S. Steel Supply Order
DET 07506
Specification Number

ASTM A526-80

GALV SHEET CARBON REST SPEC REQ C.10 MAX CO
REGULAR SPANGLE G90 CHEM TREAT NO OIL
14G x 48 x 120 1 Pcs - HT# F83301

This is to certify that the material
shipped against your order is
represented by the attached
test results from the producer.

The original report is contained in our files.



U. S. Steel Supply

Division of United States Steel

ROMAIN A STEWART
Notary Public, Wayne County, Michigan
My Commission Expires September 19, 1989

UBO-138 8/78

RELEASED FOR Q-LINE	
ITEM: 14 GA SHEETS ASTM A526 E70	Q-LINE INVENTORY
Control Number	P6-8
Q.C. Tech	Date: 11-15-85

Brent H. McCormick

50321426

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-152/V
FERRY NUCLEAR POWER PLANT • UNITS 1 & 2

PHONE CARLETON 54-0877

PAGE 48 OF 53 1/2/81

12425 MAXWELL ROAD

LAKEWOOD MACHINE PRODUCTS COMPANY

Tools, Special Machinery
General Machining & Repairs
Certified Welding & Steel Fabrication

CARLETON, MICHIGAN 48117

November 15, 1985

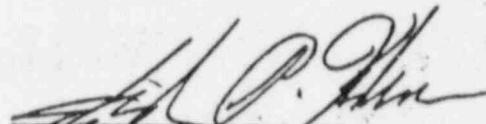
The Robert Issay Company
Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081

Attn: Q/C Dept.

Subject: P.O. PO-707-109- 88 and 89
See Documentation Identification Index
Job # 2748

Gentlemen:

IT IS HEREBY CERTIFIED THAT ALL MATERIALS USED IN THE MANUFACTURE OF PARTS IN THE QUANTITY CALLED FOR ON THE SUBJECT PURCHASE ORDER CONFORM TO THE MATERIAL AND/OR MANUFACTURING SPECIFICATIONS INDICATED ON DRAWINGS OR SPECIFICATIONS AS CALLED FOR ON SAID PURCHASE ORDER.



E. Patrick Kehoe
President

RELEASED FOR Q-LIST	
ITEM: 14CA THINER ASTM A526 690	
Q-List Inventory	
Control Number PS-8	
Q.C.Tech. Rel. 11-16-85	Date: 11-16-85

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-1527-V
PERRY NUCLEAR POWER PLANT - UNITS 1 & 2

50321427

THE ROBERT IRSAY COMPANY
SHEET METAL CONTRACTORS

BOX 1018
 SKOKIE, ILLINOIS 60076

(312) 674-8500

LOCATION
 8130 N. ST. LOUIS AVENUE
 SKOKIE, ILLINOIS 60076

Lakewood Machine Products Company
 P. O. Box 388
 Carleton, MI 43117
 Attn: Mr. Pat Kehoe
 (313) 654-6677

SAFETY-RELATED

IMPORTANT
 MARK PURCHASE ORDER
 NUMBER ON ALL INVOICES,
 PACKAGES AND CORRESPONDENCE
 INVOICE IN TRIPPLICATE

PURCHASE ORDER	DATE OF ORDER	NAME OF JOB	COPIES TO BE MADE ON OR DUE NO.	DATE TO BE DELIVERED	SHIP VIA
PO-707-109-89	11/15/85	PNPF	P050	ASAP	B/W POB - DELIVERED

SHIPPING ADDRESS
 The Robert Irsay Co.
 Perry Nuclear Power Plant
 10 Center Road
 Perry, OH 44081

Invoice: The Robert Irsay Co.
 P.O. Box 205
 Perry, OH 44081

Confirming Order PLEASE FURNISH SUBJECT TO CONDITIONS ON REVERSE SIDE

Do Not Duplicate

Item No.	Quantity	Description	Price	Amount
	2	48" x 56" x 14 Gauge Galvanized Sheet		

TOTAL LOT CHARGE

This material is to be fabricated to meet the requirement of ASTM A-526, coated to ASTM A-525, coating designation G90. Certificate of Conformance (COC) and Mill Test Reports must accompany shipment.

By acceptance of this purchase order, the Seller agrees to allow The Robert Irsay Company, the Project Owner, the Owner's agents including representatives of regulatory agencies, access to the Seller's facilities and QA records for purposes of inspection, witnessing of tests and audits.

Reviewed by: John P. Yemma for

John P. Yemma, Lead QC Technician

Please acknowledge receipt and acceptance of this order by signed return of attached copy.

Accepted by: _____ Date:
 This order is tax exempt under Direct Payment Permit No. OH98-001843

NOTE: Pricing reflects premium for accelerated overnight delivery to the Perry Nuclear Power Plant on Saturday, November 16, 1985.

(_____) sets of certified drawings and descriptive matter to be submitted to us at once for approval. Each set to have the following:
 Job date and identifying tag number.
 Customer's Name and Order Number.
 Project Name and Location.
 Description of Equipment involved.
 Architects and Engineer's Name and Job Number.

ENDOR:

THE CONDITIONS ON THE REVERSE SIDE
 FORM A PART OF THIS ORDER.

THE ROBERT IRSAY COMPANY

BY S E O'Connell

THE CLEVELAND ELECTRIC ILLUMINATING CO.
 PERRY NUCLEAR POWER PLANT, UNITS 1 & 2

50321428

P.O./Req# FO-707-709-89 Date 11-15-85

Supplier: LAKE WOOD MACHINE PRODUCTS

Item or Service Procured: 2 48" x 56" x 14ga galv. sheet

Technical Requirement Ref.: ASTM A 526, ASTM A-525 G90

Q.A. Requirement Ref.: SP-709

Checkpoint	Sat.	Unsat.	Remarks
1. Is scope of procurement clearly and adequately defined? Quantity Description	✓		
2. Are applicable contract drawings/specifications referenced?	N/A		
3. Are applicable performance and material codes and standards referenced?	✓		
4. Are QA/QC requirements referenced?	✓		
5. Are safety class and regulatory standards referenced?	✓		
6. Other:			

Q.A./Q.C. Follow-up Actions Required in conjunction with this purchase order:

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-1527-4
PERRY NUCLEAR POWER PLANT - UNITS 1 & 2

The above procurement document has been reviewed for quality requirements and is acceptable.

Reviewer: *Robert IRSAY*
ROBERT IRSAY COMPANY
QAMS 11-15-78Title: Q.C. 7091 Date: 11-16-85
CHECKLIST FOR Q.A. REVIEW OF
PROCUREMENT DOCUMENTS

50321429

THE ROBERT IRSAY COMPANY
SHEET METAL CONTRACTORS

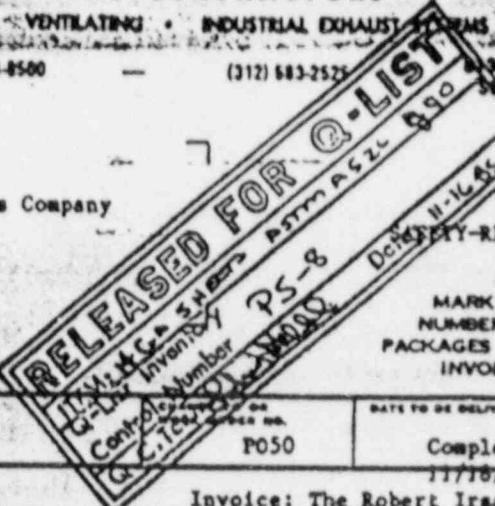
• AIR CONDITIONING • VENTILATING • INDUSTRIAL EXHAUST SYSTEMS

MAILING ADDRESS:
 BOX 1015
 SKOKIE, ILLINOIS 60076

(312) 674-8500 (312) 683-2525

LOCATION:
 830 N. ST. LOUIS AVENUE
 SKOKIE, ILLINOIS 60076

Lakewood Machine Products Company
 P. O. Box 388
 Carleton, MI 48117
 Attn: Mr. Pat Kehoe
 (313) 654-6677



IMPORTANT
 MARK PURCHASE ORDER
 NUMBER ON ALL INVOICES,
 PACKAGES AND CORRESPONDENCE
 INVOICE IN TRIPPLICATE

PURCHASE ORDER NO.	DATE OF ORDER	NAME OF JOB	ITEM NO.	QTY	UNIT	DESCRIPTION	GROSS WEIGHT	NET WEIGHT	CARTON	CONTAINER	SHIP TO	DATE TO BE DELIVERED	SHIP VIA
PO-707-109-88	11/15/85	PNPP	PO50								Complete	11/16/85	B/W POB - DELIVERED

DELIVER OR SHIP TO:
 The Robert Irsay Co.
 Perry Nuclear Power Plant
 10. Center Road
 Perry, OH 44081

Invoice: The Robert Irsay Co.
 P.O. Box 205
 Perry, OH 44081

Perry, OH 44081 PLEASE FURNISH SUBJECT TO CONDITIONS ON REVERSE SIDE

Do Not Duplicate

Confining Order
 Item No. Quantity Description Price Amount
 This shall serve as your authorization to furnish the below cut-to-size items:

1	3	1" x 8" x 14 Gauge - Galvanized Sheet		
2	3	3-1/2" x 3-1/2" x 14 Gauge - Galvanized Sheet		
3	5	3-1/4" x 4" x 14 Gauge - Galvanized Sheet		
4	5	3-1/4" x 6" x 14 Gauge - Galvanized Sheet Material - Steel		

Specification - Steel - ASTM A-526

Galvanize - ASTM A-525 with G-90 Finish

TOTAL LOT CHARGE

This material is to be fabricated to meet the requirement of ASTM A-526, coated to ASTM A-525, coating designation G90. Certificate of Conformance (COC) and Mill Test Reports must accompany shipment.

By acceptance of this purchase order, the Seller agrees to allow The Robert Irsay Company, the Project Owner, the Owner's agents including representatives of regulatory agencies, access to the Seller's facilities and QA records for purposes of inspection, witnessing of tests and audits.

Reviewed by: John F. Yemans

John F. Yemans Lead QC Technician

Please acknowledge receipt and acceptance of this order by signed return of attached copy.

Accepted by: _____

Date: _____

This order is tax exempt under Direct Payment Permit No. OH98-001843

Note: Pricing reflects premium for accelerated overnight delivery to the Perry Nuclear Power Plant on Saturday November 16, 1985.

(_____) sets of certified drawings and descriptive matter to be submitted to us at once for approval. Each set to have the following data and identifying key numbers:

Customer's Name and Order Number.

Project Name and Location.

Description of Equipment involved.

Architects and Engineer's Name and Job Number.

VENDOR:

THE CONDITIONS ON THE REVERSE SIDE
 FORM A PART OF THIS ORDER.

THE ROBERT IRSAY COMPANY

St. O'Connell

THE CLEVELAND ELECTRIC ILLUMINATING CO.
 CONTRACT NO. P-1527-V
 PERENNIAL POWER PLANT - UNITS 1 & 2

50321430

P.O./Requirement No.: FO-707-109-BB Date: 11-15-85

Supplier: LAKESIDE MACHINE PRODUCTS

Item or Service Procured: 3-1"x8"x14GA, 3-3½"x3½"x14GA, 5-3¼"x4"x14GA, 5-3¼"x6"x14GA. GAW, S4000

Technical Requirement Ref.: ASTM-A526 & ASTM-A525 G90

Q.A. Requirement Ref.: SP-709

Checkpoint	Sat.	Unsat.	Remarks
1. Is scope of procurement clearly and adequately defined? Quantity Description	/	X	
2. Are applicable contract drawings/specifications referenced?	X		
3. Are applicable performance and material codes and standards referenced?	/		
4. Are QA/QC requirements referenced?	/		
5. Are safety class and regulatory standards referenced?	/		
6. Other:			

Q.A./Q.C. Follow-up Actions Required in conjunction with this purchase order:
 THE CLEVELAND ELECTRIC ILLUMINATING CO.
 CONTRACT NO. P-1527-V
 PERRY NUCLEAR POWER PLANT - UNITS 1&2



The above procurement document has been reviewed for quality requirements and is acceptable.

Reviewer: ROBERT IRSAY COMPANY
QAMS-707 (11-15-78)Title: SGT Date: 11-16-85
CHECKLIST FOR Q.A. REVIEW OF
PROCUREMENT DOCUMENTS

50021434

Perry Nuclear Power Plant
STORES REQUISITION

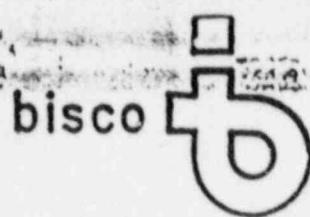
DNR NO. 3565 Rev. 7/83

REQUIRING SECTION

NEED DATE WORK ORDER NO./SAE NO. FUNCTION NO.

DATE ISSUED NO. PRIME LOCATION

ITEM	STOCK CODE	ART. NO.	LOC.	IN QTY	UNIT OF MEAS.	PRIME ISSUE QTY.	DESCRIPTION	ISSUE QTY.
1	SP-4049	9342756	3977	WII-SO-61-2X	E	5	4" Ø 1/2" GL. 193 B7 BOLTS	8
2	SP-4050	9342293	3227	NR 50-66-17X	E	3	1/4" X 2 1/4" HEX HEAD NUTS	328
3								
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PAGE 41 OF 53

58
SL 1/30/66
FORM RI-1
REV-3RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. L.E.I. Q-4103
Q-3286

DATE 1/10/66 JOB no. 3134

PROJECT NAME Perry Nuclear Power Plant.

VENDOR L.E.I. Requisition # SP-11684

MATERIAL RECEIVED 1/4" x 20 - CS 193 BT Bolts
1/4" x 20 CS 100 EA HEX HEAD NUTS

LOT / BATCH no. QUANTITY

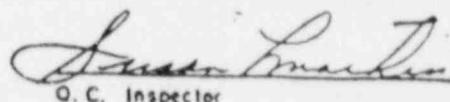
SP0-3927 8 each

SP0-3227 8 each

Required	Inspection Instruction	Accept	Reject
✓	Verify P.O. Against Material Received CEC more than req.	✓	
✓ *	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings Bolts ARE ENDSHAFTED	✓	
✓	Visual Inspection	✓	
✓	Dimensional Inspection 1/4" x 20 THREAD PER INCH ACCEPT SWIN	✓	
Na	Special Instructions per Attached	Na	

Material Accepted
 Rejected

Remarks:

* COPIES ON FILE WITHIN CEC
NO BISCO COPIES REQUIRED OR DELIVERY TICKET
O.C. Inspector

1/10/66

50321434



INSPECTION REPORT

I.R. No. 1999/REV.1

Project Name PERRY NUCLEAR POWER PLANT

Date 1-21-86

Bisco Project No. 3134

Item of Activity Inspected Clarification of materials used in IERB-4049R1 & 4050 R1

Description and Inspection Report

Upon final acceptance of the turnover package for the above mentioned penetrations it was identified that the sheet metal boxes, bolts, and nuts used to construct the repair portion of these seals did not meet the requirements set forth in ECR 27245-98-33F. Specifically they were installed without the proper documentation i.e. Receipt Inspection and Certificate of Conformance. Verification of the materials used cannot be performed on the bolts and nuts however the sheet metal boxes can be verified in-place as it was previously identified that they are in fact 14 ga. and accessibility to these for outside measurements is possible.

RECOMMENDED DISPOSITION: Reinspect sheet metal boxes for proper dimensions per ECR.

Remove non-traceable bolts and reinstall bolts and nuts which conform to specification.. Certifications provided

Robert Ursay Co. are to be inserted within the package for traceability methods.

BISCO to justify in response to Action Request # 936.

ch.1/21/86

~~AN is not required in traceability methods of again no hardware is accountable.~~

HOLD TAG No. 10 Q.C Inspector Dave Siedlarczyk Date 1-21-86

Disposition Bolts were removed and approved for use bolts and nuts were reinstalled on 1-18-86. Installation of these bolts was witnessed and verified by myself on 1-18-86. Re-inspection of sheet metal boxes was performed on 1-20-86 and dimensions were found to be acceptable. Boxes were gauged prior to installation and were found to be 14 ga. this was performed by myself with C.Q.S. Dave Siedlarczyk. All documentation regarding this was reviewed and found to be in order.

Dispositioned by Dave Siedlarczyk Title Quality Assurance Date 1-21-86

Above stated MCT's were re-inspected and found to be acceptable.

Inspection Report Closeout

Inspect Acceptance NCR No. Issued na Reinspect Acceptance.

Accept Tag No. na Reject Tag No. na

Closeout by Dave Siedlarczyk Title Quality Assurance Date 1-21-86

50321435

- 1/20/83 99 58-53

SL PAGE 38 OF 38

bisco

Brand Knives & Services, Inc.
1420 Knoblesherne Drive
Portage, Indiana 46368
(312) 266-1200
Sales 267-482 Brand Pro

PROCEDURE	DATED	REVISION
(See Attached)		

REVIEWED BY - INSPECTOR	DATE REVIEWED	INSTRUCTOR	SUPERVISOR SIGNATURE
Foreman			Foreman
Dennis LaVelle	2-17-85	Alan M. Murn	George J. Fettle
J. T. Sweeny	2-14-85	Alan M. Murn	J. T. Sweeny
Marty H. LaVelle	2-13-85	Alan M. Murn	Marty H. LaVelle
M. G. Delaney	2-13-85	Alan M. Murn	M. G. DELANEY
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka
Dave Rittenhouse	2-7-85	Alan M. Murn	David W. Rittenhouse
George Filla	2-14-85	Alan M. Murn	George Filla
John Malovasic	2-7-85	Alan M. Murn	John A. Malovasic
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin

50321436

SF
1/21/85

PAGE 38 OF 38

FORM IR-CU 1-13-82
Rev. D Dec 9 1982
Attachment to NR 0101

bisco E O

ORIGINAL

INSPECTION REPORT

I.R. No. 109

Date 1-29-85

Project Name Perry Nuclear Power Plant

Bisco Project No. 3134

Item of Activity Inspected ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P/N # 4138 is complete and undamaged.
There were no deviations or documentation.

See NL # 0101

HOLD TAG No. _____ O.C. Inspector Dawn Fair Date 1-29-85

Disposition _____

Dispositioned by _____ Title _____ Date _____

Inspection Report Closeout

Inspect Acceptance

NCR No. Issued _____

Reinspect Accepted _____

Reject Tag No. _____

Reject Tag No. _____

50321437

37 1358
PAGE 30 OF 38

PLC 1/29/85 N/A PERRY NUCLEAR POWER PLANT
NO. 3871 REV. 0A NONCONFORMANCE REPORT

PAGE 30 OF 38
CH 7/30/85

2	ISSUED BY	Deborah VonParis DUF	RESPONSIBLE ORGANIZATION	Bisco	DATE	01/29/85		
3	ITEM / MATERIAL	SOURCE	Bisco	CURRENT STATUS	HOLD	LOCATION	CC CL. 12/B EL. 654	
4	RESPONSIBLE ORGANIZATION	NAME			Bisco	SPEC. NO.	SP- 100987	
5	NCR TYPE	CATEGORY	1 (POSSIBLE SIGNIFICANCE) 2 (MAJOR) 2 (EQUIP./MATERIAL) 3 (INSTALLATION)			REV. TECH.	2	
6	GOVERNING REQUIREMENT	INCLUDE ACCEPTANCE CRITERIA AND DOCUMENT NUMBER	Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by QC					
7	DESCRIPTION OF NONCONFORMANCE	NC CODE	105	RELATE TO	LINE NO. 61 Disco Craft used controlled material			
- ceramic bulk fiber P.O. #4128 prior to its release.								
8	PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP 10 <input type="checkbox"/> REWORK 12 <input type="checkbox"/> REPAIR 13 <input type="checkbox"/> USE AS IS 14						
9	JUSTIFICATION	Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.						
10	STEPS TO PREVENT RECURRANCE	Craft General Foreman and Foreman to be trained on material holds.						
11	REVIEWED BY	DATE	RECORDED BY	DATE	APPROVED BY	DATE	RELEASER	
12	REVIEWED BY	1-07-85	RECORDED BY	1-07-85	APPROVED BY	1-07-85	RELEASER	
13	VERIFIED BY	1-07-85	RECORDED BY	1-07-85	APPROVED BY	1-07-85	RELEASER	
COPIES DISTRIBUTED: [Signature]								

50321428

PERRY NUCLEAR POWER PLANT
NONCONFORMANCE REPORT REVIEW/REVISION

NO. 1523-A REV. 1/84

26 5859
PAGE 35 OF 58
1/20/86

PAQS JR 29 85

Review Required

GAI Eng.

QL

Other

1/20/85

Review Comments:

Proposed Disposition to "Use As Is" is ACCEPTABLE TO ENGINEERING.

Attach documented training upon close-out of this NR.
P.C. #4128 material cannot be used until all documentation is obtained.

AFFECTS AS BUILT

YES

DRAWINGS Contract / Vendor

AFFECTS EQUIPMENT

YES

AFFECTED GAI

CHARTERED?

NO

N

1/20/85

R. Cymasi

1/24/85

Date

Date

ATTACHMENTS

YES

LIST OF ATTACHMENTS

NO

1 pg

IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.

DISPOSITION REVISION NO.

1. PROPOSED DISPOSITION

2. RECOMMENDATION

3. APPROVAL BY QUALITY ADMINISTRATION

JUSTIFICATION

10. STEPS TO PREVENT RECURRENCE

11. RESP. ORG. APPROVAL

ENGINNER

DATE

RA

DATE

12. PHPR REVIEW FINISHED

REVIEW PHPR

DATE

DECISION

DATE

13. APPROVAL BY QUALITY ADMINISTRATION

NAME

DATE

RA

DATE

50321439

12-20-85 63-58 ph
PAGE 34 OF 38
1/2/86

DISCO

Bond Industrial Services, Inc.
disc bisco construction group
2207 lively Blvd., Elk Grove Village, Illinois 60007 phone 070 228-6870
one of the largest companies

DT 4433

JMG

delivery ticket

Babcock & Wilcox

245 W. Roosevelt Road

W. Chicago, Illinois 60185

Bisco

10 Center Street

Perry, Ohio 44081

G. Hamilton Drop Ship 12-19-84 Direct Shipment 3133-100M C-4918

Quantity Description	Quantity Description	MATERIAL	
30 BX	30 BX	Ceramic Fiber Bulk	1-24-85 D
30 BX	30 BX	Ceramic Blanket 4" Strips	1-24-85 O

Partial Order

Shipped direct from manufacturer

Bisco P.O. #4128

N
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Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

To: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You.

All claims MUST be made
within 5 days from date of delivery.

10% handling charge on all returns
Only full amount will be paid.

Received By

Rebibie von + erin

1-24-85

50321440

bisco

3412h 1/20/86
5758

PAGE 33 OF 38

FORM RY
REV. 3

ORIGINAL

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. 4128

PAGE ____ OF ____

DATE 1-21-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30 by x 150 each

Required	Inspection Instruction	Except	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Material Accepted Rejected

Remarks: Verify DT against

material received

See AIF # 010, REF I.R. 109, 1/26/85

S. Von, P.
O.C. Inspector1-29-85
Date

50321441

33-1116

PAGE 32 OF 38

FORM CC-1
REV A



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
110 Center Street
Perry, OH 44081

DATE January 25, 1985

CUSTOMER P. O. NO. P-4291/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-UU

BISCO PROJECT NO 3133

Material P. O. No. 4128

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores O. Scott

Dollars A Dozen

50321442

Ph 1/31/16 32 5055
PAGE ~~31~~ **OF** ~~38~~
D 5050



delivery ticket

Bisco Construction

Bisco

2207 Lively Blvd.

10 Center Street

Elk Grove Village, IL. 60007

Perry, Ohio 44081

YOUR ORDER NO.		ITEM	DATE	VIA	HALLS		3133-100M C-176	
G. Hamilton Elk Grove			5.10.85					
QUANTITY INCHED	QUANTITY SHIPPED	MATERIAL						
10 BX	10 BX	Ceramic1" Blanket 4" Strips						D
								O
24 CS	24 CS	Silicone Adhesive 732 Black S-16-1F OM						
5 Sets	5 Sets	Biscoseal Trowellable TP-28 (500#)						N
1,500#	1,500#	Locaseal						O
		Shipment Complete						T
<i>10-4788</i>								
RECEIVED DATE : =								
W R I T E								
B E Y O N D								
H E R E								
<p>Please acknowledge receipt of the material listed on this Delivery Ticket by signature and return Job File and Acknowledgment copies</p> <p>to: BISCO Construction Group 2207 Lively Blvd. Elk Grove Village, IL 60007 Thank You</p>								

All claims MUST be made
within 3 days from date of delivery.

Received by Kottichalur

50321443

bisco



5059
PAGE 30 OF 38

FORM RI-1
REV-3

ORIGINAL

RECEIVING INSPECTION CHECKLIST
(SITE)

P.O. No. 1-154

DATE 5/10/75

JOB no. 3133

PROJECT NAME Perry Nuclear Power Plant

VENDOR im Colvin

MATERIAL RECEIVED 752 Cans

LOT / BATCH no. QPC35454

QUANTITY 20 Boxes x 12 Cans

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	
<input type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input type="checkbox"/>	

Material Accepted

Rejected

Remarks:

* Verify DT against material received

S. von Paris
O.C. Inspector

Date 5-23-75

5032 1444

5/30/30 55 58
PAGE 29 OF 38

$$\frac{P(Y_t \in S_t)}{P(Y_t \in S_0)}$$



CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, Oh. 44081

DATE May 10, 1985

ORIGINAL

CUSTOMER P. O. NO. P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133
Material P. O. No. 438

D. T. No. 5010

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores B. Hell

Dolores A. Lott
Quality Control Supervisor

50321445

29 53 58
PAGE 28 OF 38

DT 6261

JMG



bisco
General Industrial Services, Inc.
One Bisco Corporation Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone (312) 228-0776
one of the Bisco companies

delivery ticket

BISCO INSTRUCTION

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Perry, Ohio 44081

Vicky A.	EGV	11-7-85	Air-fit there	3133-180M-C-476
QTY	QUANTITY	ITEM	MATERIAL	
1,000	1,000	Locaseal (ABB)	10-8-85VM	D
				O
				N
				O
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Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies.

To: BISCO
Consevations Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You

All claims MUST be made
within 5 days from date of delivery

Received by Lorraine McCafferty

50321446

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Bisco ConstructionMATERIAL RECEIVED Loca Seal Part ALOT / BATCH no. 2560 LQUANTITY 10 PALS X 6.35 lbs

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>na</u>	
<u>✓</u>	Certificate of Compliance for Material Received	<u>✓</u>	
<u>✓</u>	Inspect for Shipping Damage	<u>✓</u>	
<u>✓</u>	Inspect for Proper Markings	<u>✓</u>	
<u>✓</u>	Visual Inspection	<u>✓</u>	
<u>na</u>	Dimensional Inspection	<u>na</u>	
<u>* ✓</u>	Special Instructions per Attached	<u>✓</u>	

Material Accepted
 Rejected

Remarks:

* VERIFIED DT. AGAINST
 MATERIAL RECEIVED

O.C. Inspector

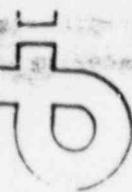
11-12-85

Date

5032 1447

PAGE 20 OF 38

DISCO



ph 27 33
1/20/86 FORM RI-1
REV-3

RECEIVING INSPECTION CHECKLIST
(SITE)

P.O. No. NA

DATE 11-12-85

JOB no. 3133

PROJECT NAME Perry Nuclear Power Plant
VENDOR DISCO CONSTRUCTION

MATERIAL RECEIVED LOCA Seal Part B

LOT / BATCH no. 2580 L

QUANTITY 10 pails x 36.5 lbs

Required	Inspection Instruction	Accept	Reject
na	Verify P.O. Against Material Received	na	
✓	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings	✓	
✓	Visual Inspection	✓	
na	Dimensional Inspection	na	
*✓	Special Instructions per Attached	✓	

Material Accepted
 Rejected

Remarks:

*verified DT against
material received.

O.C. Inspector

Nicki McCafferty

11-12-85

Date

50321448

216/259-3737
Ext: 6843



1/3/86
1/36 26 158
PAGE 5 OF 5

RECEIVED 2/1/86

Cleveland Electric Illuminating Co.
Perry Nuclear Power Generating Station
10 Center Street
Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-98 is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #TIN-1918 Rev. B, Quality Control test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A

Bisco Job #: 3133

Bisco D.T. #: 6261

Customer P.O.# : P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

Dolores A. Lott
Quality Control Supervisor

brand industrial services, inc.
construction group
2207 forty-third street, green village, illinois 60047, (312) 228-6670

a subsidiary of brand insulations, inc.

50321449

sh/brc 25 853

PAGE 24 OF 38

ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # A-188

SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard,

(Certificate verified by NBS to NBS 2028)

Date of Verification: 9-9-85

Date Due: 3-9-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	-1	+1	0	0	0	0	0	0	0	0
------------	---	----	----	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	49.90	60.00	70.00	80.20	99.20	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	-10	0	0	+20	+20	0
------------	---	---	---	---	---	-----	---	---	-----	-----	---

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0	100.20	200.10	300.10	400.00	500.00
-----------	---	--------	--------	--------	--------	--------

Deviation:	0	+20	+10	+10	0	0
------------	---	-----	-----	-----	---	---

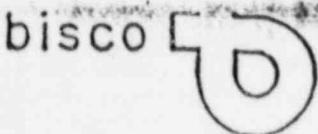
It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

Name

Title

50321450

04/24/86
PAGE 23 OF 38



ORIGINAL

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-143

SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
(Certificate verified by Ill. Dept. of Labo
to NBS 2028)

Date of Verification: 9-19-85

Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
Deviation:	0	0	0	0	0	0	0	0	0	0	0

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
Deviation:	0	0	0	0	0	0	0	0	0	0	+.01

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
Readings:	0.00	99.80	200.00	300.02	400.05	500.03
Deviation:	0	-.20	0	+.02	+.05	+.03

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Malpassi
Name
QC Supervisor
Title

50321451

22 5/20/65 5328

FORM OCT-1
REV-3

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
NO. SP98-2293
NUCLEAR POWER
UNIT 1 & COALITION

bisco

5

ORIGINAL

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 334 LAST ENTRY DATE 1-1-86

MACHINE NO. NA PRODUCT Locaseal

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)

and is expressed in LBS
(lbs., gallons, etc.)

Entries reviewed by

Oleander

Date 1-10-96

50321453

1/30/14 21 28
PAGE 20 OF 38



FIELD DEVIATION
DISPOSITION REQUEST

DATE OF ISSUE

FILE NO. KLI-6244

REVISION 1

PAGE 2 OF 2

SUGGESTED DISPOSITION CONTINUED

OR OPEN CIRCUIT, THE MSIV'S WILL CLOSE AUTOMATICALLY. THIS IS A SAFE CONDITION. (FOR THE SAME REASON THE CUSTOMER MAY ALSO WIRE TO THE TERMINAL BLOCKS). THE SOLENOID VALVE COILS SHOULD BE SEALED FROM THE ENVIRONMENT USING A QUALIFIED MOISTURE TIGHT SEAL. BISCO LOCASEAL, A PROPRIETARY SEALING COMPOUND FOR WHICH GE HAS NEITHER MATERIAL SPECIFICATIONS NOR APPLICATION EXPERIENCE. ACEI'S CHOICE OF SEAL TO BE INSTALLED ON THE SOLENOID VALVE COIL HOUSING. CEI MUST ASSUME RESPONSIBILITY FOR THE INSTALLATION AND INTEGRITY OF THE SEAL.

NTS
WORKING COPY

50 32 1454

20 Sh/58
PAGE 19 OF 38

Reviewed For Nonconformance Applicability

Reviewed By *Jack*

Date *10/3/85*

GENERAL ELECTRIC CO.

DATE OF ISSUE

10-7-85 RECEIVED

DOOR NO. KL1-6244

SITE ENGINEERED

OCT 09 1985

EDITION 1

FIELD DEVIATION
DISPOSITION REQUEST

PERRY PROJECT
ELECTRICAL

SCHEET 1 OF 2

PROJECT PERRY NUCLEAR POWER PLANT UNIT 1
EQUIPMENT IMPL OR DESCRIPTION OR BOTH IB21-F022/F028

FOOR ORIGINATOR A Carson

DATE 10/3/85

DOCUMENT NO. 105D4935 SH NO. 2 REV. -- TITLE MSIV AIR SOLENOID VALVE

SYSTEM B21

PANEL N/A

CHARGE # BY614

DEVIATION DESCRIPTION

MSIV SOLENOID COILS ARE NOT ENVIRONMENTALLY SEALED.

REVIEWED FOR NONCONFORMANCE
APPLICABILITY

NR# NR

4911-1444-10-01
REVIEWED BY *W.A. Bryan* DATE *10/3/85*

NTS WORKING COPY

DATE *10/3/85* FIELD CONCURRENCE *Joe Buceta*

SUGGESTED DISPOSITION EXPEDITED DISPOSITION

KL1-6244 REV 1 SUPERCEDES KL1-6244 REV 0 IN ITS ENTIRETY. THE INTERPRETATION OF THE REQUIREMENTS BASED ON GE TEST REPORT NEDC-30800 FOR THE MSIV WIRING ARE FOR THE SOLENOID VALVE COILS TO BE SEALED FROM THE ENVIRONMENT USING A QUALIFIED MOISTURE TIGHT SEAL. DURING THE TESTING OF THE MSIV SOLENOID VALVES, IT WAS DETERMINED THAT THE JUNCTION BOX COULD NOT BE QUALIFIED. IF THE AMBIENT CONDITIONS ENTER INTO THE JUNCTION BOX AND CAUSE A SHORT

EXPEDITED DISPOSITION APPROVAL BY (CONTINUED ON SHEET 2)

DISPOSITION NEED DATE

FINAL DISPOSITION

SUGGESTED DISPOSITION ACCEPTED

MATERIAL REQUIRED: NONE
QUALITY REQUIREMENTS: VISUAL PER GE/CRI SITE APPROVAL PROCEDURES

ECN/CH

N/A

10-40 A/H/A

JUSTIFICATION OF DISPOSITION DECISION (SAFETY, RELIABILITY)

The need for a qualified moisture tight seal for the solenoid valve coil will not degrade safety or reliability.

DESIGN VERIFICATION STATEMENT VERIFIED BY REVIEW OF GE MSIV TEST REPORT NEDC-30800 SECTION II AND DIRECT EXAMINATION OF THIS FDR. THIS FDR DOES NOT CHANGE ORIGINAL DESIGN INTENT.

APPROVALS	DATE	DRF NO. IF APPLICABLE	THE EQUIPMENT IS IN AN OPERATIONAL STATE ROUTINE MAINTENANCE HAS BEEN PERFORMED	
<i>W.A. Bryan</i>	<i>10/4/85</i>		<input checked="" type="checkbox"/> COMPLETION RECORD	SUPPLIER ACTED
QUALITY			<input type="checkbox"/> APPROXIMATELY	COMPONENT IS ONLY
NR <i>JM</i>			<input type="checkbox"/> APPROVED AS <i>NO</i> NO DRF NO. SET	ORIGINAL DESIGN AND
NR <i>W.H.</i>	<i>10/4/85</i>		<input type="checkbox"/> NOT FIELD WORK ORDERED	NOTIFICATION OF DELIVERY
INTERNAL <i>W.A. Bryan</i>	<i>10/4/85</i>		<input type="checkbox"/> RETURNED FOR	AS LIAISON WITH
INTERNAL <i>W.A. Bryan</i>	<i>10/4/85</i>		<input type="checkbox"/> CONSIDERATION OF COMPENSATION	MANUFACTURER
DISTRIBUTION CODE		INTERNAL <i>G. Gilbert / COMMONWEALTH</i> EXTERNAL <i>W.A. Bryan</i>		
INTERNAL <i>W.A. Bryan</i>	<i>10/4/85</i>	<i>920</i>		

GA14549-97-449602

50321455

PNTP No. 5510
Rev. 1-85

FDI/FDDR AUTHORIZATION

ab
1/20/16 PAGE 18 OF 38

1021-5022-4031

SUBJECT: FDI - 1451V NLS Sorenson, Valde
 FDDR KLI-68447 Rev. 1 4549-97-4962-1
(GE Number) (GAI Number)

From: Roger HICKER
(P/O Responsible Engineer)

Date: 10-11-85

- A. GE EWR (GE-Cost)
B. Maintenance
C. Nuclear Test John.
D. Warehouse
E. Contractor SP- _____ (PCVA _____)

is authorized to perform the work described in the subject approved FDI/FDDR, its attachments and replacement drawings. This work shall be done in accordance with a Project Organization approved QA Program.

Drawing Issue Instructions (Not applicable to "E" above):

PO/DC is hereby requested to issue copies of the subject FDI/FDDR, its attachments, and the following drawings to the above organization:

See attached list. Reproducible Drawings as transmitted on PY-K&H/SO _____

Others: N/A

NTS

WORKING COPY

Procedure Submittal Request:

The following special process procedures, work procedures/instructions, and/or installation sequencing documents shall be submitted by the above organization to the Project Organization for review and approval, in accordance with the established procedure submittal requirements prior to performance of work:

For additional Records see:
NCR # _____; or ECH # _____; or FVA # _____

Qualification of Equipment Affected? Yes No Initials: SGIV Date: 10-10-85

Charge Check: Initials: _____ Date: _____

Nonconformance Report No.: N/A Initials: _____ Date: _____

Is Quality Item List Affected? Yes No Subscope: _____

cc: NDS File
Site Manager - GE/MEJO
NTS - Admin - TA7
Document Control Center R260

CQS - TQ8 (For E)
PAQS - TW1 (For D)
CQS - S150 (For B or C)

MDL # 1B21C-00-11
W.A. # 45-12475
DATE 10-24-A
SPEC. # IS

LA6/R/1/sb

50321456

WORK AL. HORIZATION

(3363)

 Contingency on back

WA NO	NTS-85-12675	DATE	10-22-85

SURSCPE	MPL NO	F022	ITEM DESCRIPTION	RESTRAINT	MPL NO
IB21C	IB21-F028	MSIV	1.7	OK	
LOCATION	REASON/INITIATING DOCUMENT				
Containment	FODR-KLI-6244 R-1				
<input type="checkbox"/> NSR	<input checked="" type="checkbox"/> SR	<input type="checkbox"/> AUG	<input type="checkbox"/> ASME	<input type="checkbox"/> SEISMIC	<input type="checkbox"/> OTHER
INITIATOR	EXT. NO	DATE	RESPONSIBLE ORG.	REQUIRED DATE	
Bob Holatka	6616	10-22-85	NCS-3398	AIS/A/P	

DESCRIPTION OF WORK ACCESS ONLY RDG 10241/S5

Install Busco Locaseal sealing compound on the solenoid valve coil housing per the approved disposition of FODR-KLI-6244 R-1.

PAGE 17 OF 38

To S. Phelps
11/16/85PRELIMINARY COPY FOR PLANNING
PURPOSES ONLY

LIMITS/PRECAUTIONS/SPECIAL INSTRUCTIONS

Work group is to establish tagging requirements

SAFETY TAGS REQUIRED

 YES NO

1 SITE CONCURRENCE	DATE	QA REVIEW (SAFETY RELATED, QUALITY AUGMENTED ONLY)	DATE
2 SITE CONCURRENCE	DATE		
3 AUTHORIZATION TO PROCEED	DATE	A SAFETY TAG OUT ESTABLISHED NO. _____ SIGNATURE _____	DATE

WORK COMPLETE-DOCUMENTATION ACCEPTABLE

4 RESP. WORK ORG./SAFETY TAGS REMOVED	DATE	A DOCUMENTATION PKG. NO. _____ RESP. QA _____	DATE
5 OTHER (ASME)	DATE	C	

RETEST REQUIREMENTS

5 LLRT RETEST YES - NO <input type="checkbox"/>	B RETEST COMPLETE ACCEPTABLE	C RETEST NO.
<input type="checkbox"/> LLRT REVIEW REQUIRED	B DATE	C DATE

ATTACHMENTS

6	FINAL REVIEW AND CLOSEOUT		
	DOS (SAFETY RELATED, QUALITY AUGMENTED ONLY)	DATE	
	E	DATE	

50321457

19.6/1458
PAGE 62 OF 38

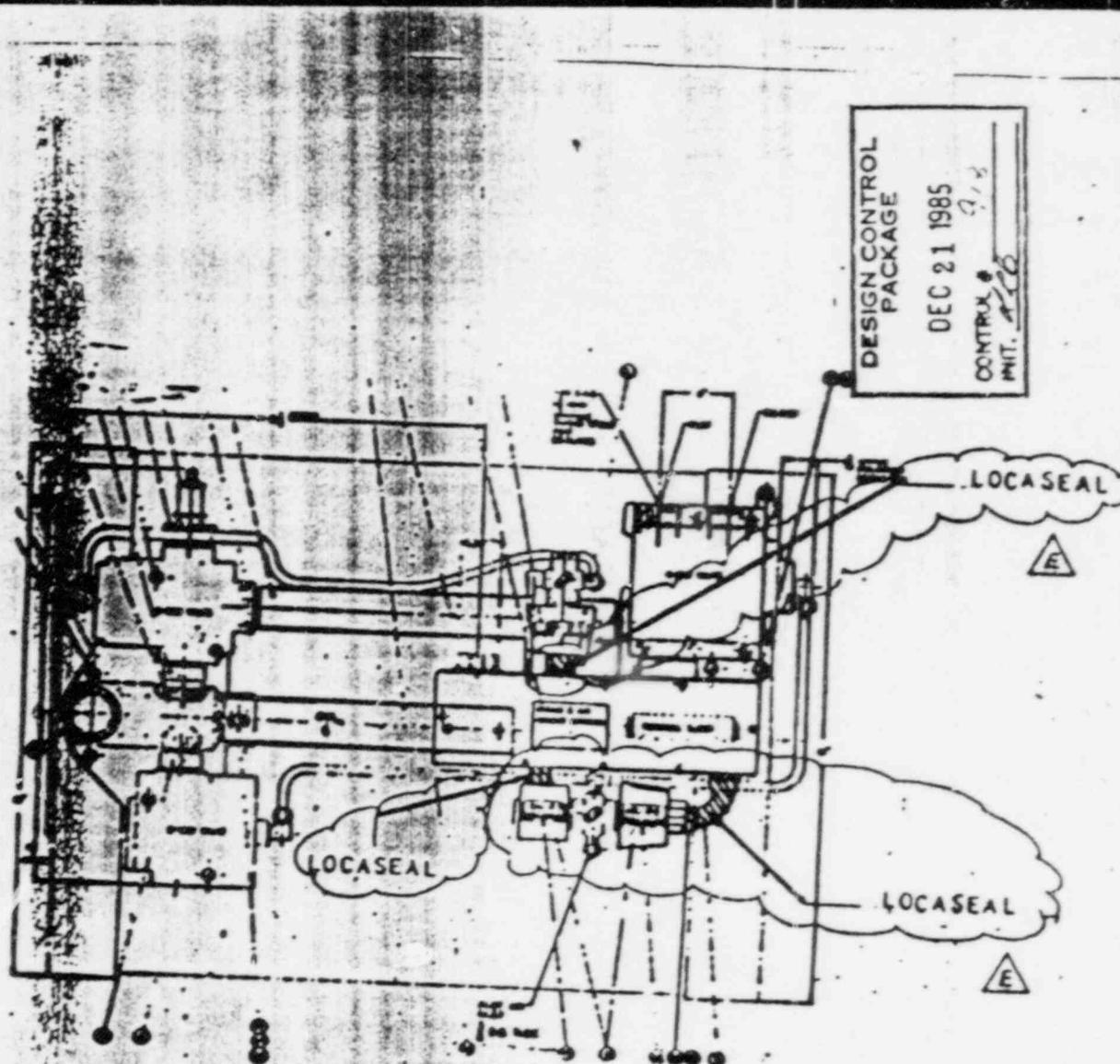


FIGURE 2-2
MSIV ACTUATOR ASSEMBLY

ATTACHMENT 2 PG. 1 OF 1
FCH 27245-98-35 REV. F

1458

16 55
PAGE 15 OF 38

1/20/86

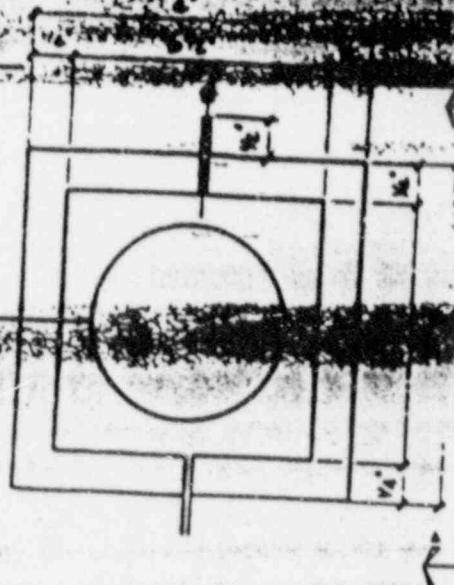
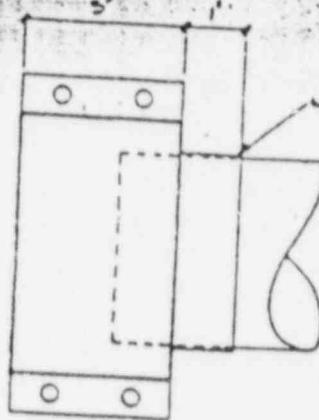
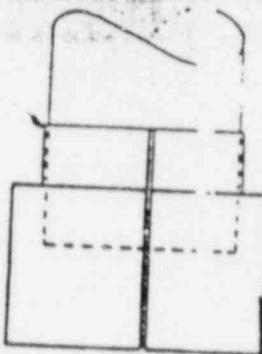


FIGURE E
MCT 4049 3 4050



SECTION A-A

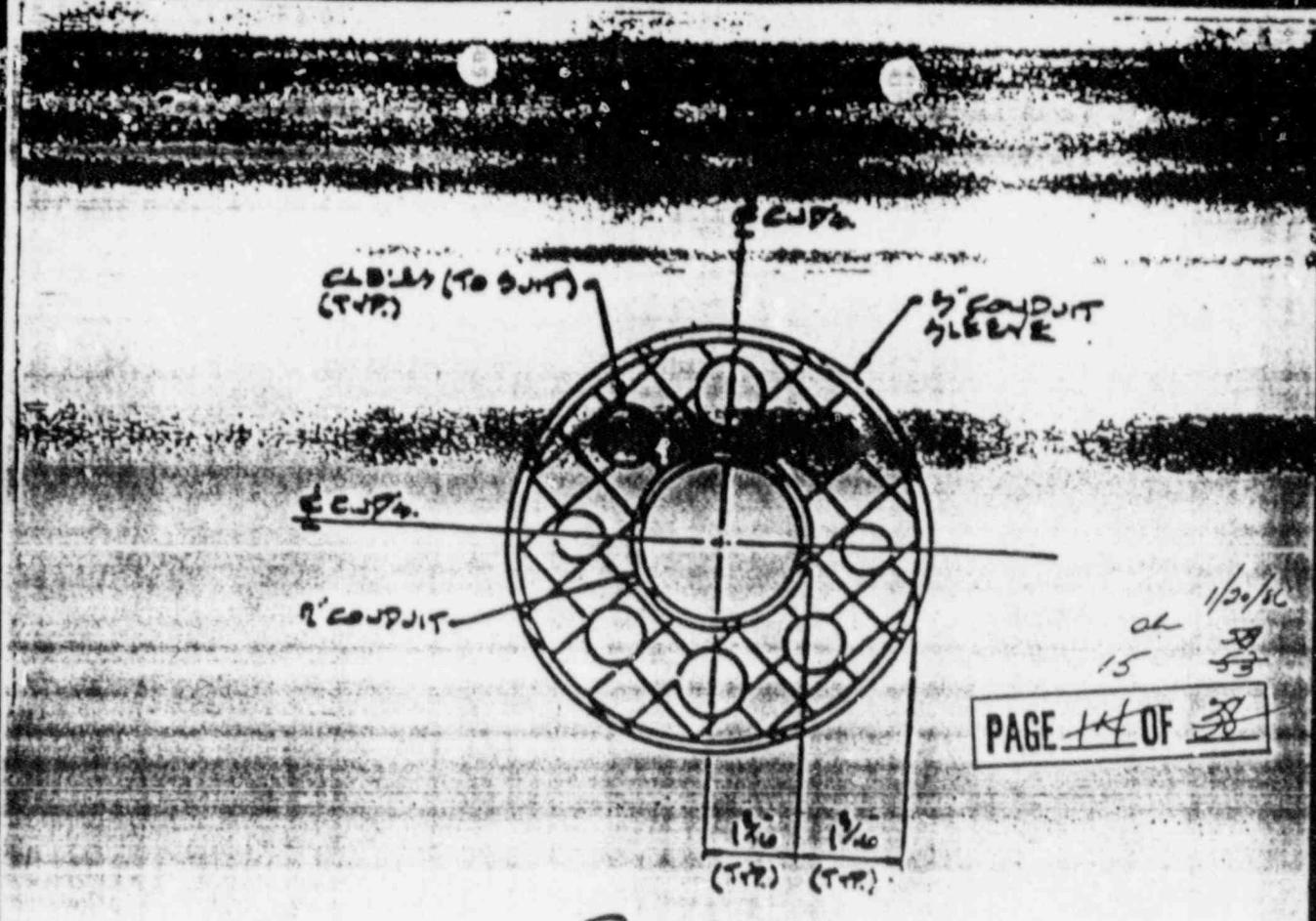


SECTION B-B



- NOTES:
1. SIZED TO FIT SWINGING CONDUIT (1 1/2" OD).
 2. ATTACH TO CONDUIT WITH DC-732 RTV CAULK AND SS CLAMP.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ B20 BOLTS, GRADE 8.8 87 AL-FB AND HEAD 1/4 IN. NUTS.
 4. ASSEMBLY TO BE FABRICATED FROM 16 GA GALVANIZED SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS ARE IN - $\frac{1}{16}$ "

5032-1459



DETAIL 'C'

NOTE:

THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS.

DESIGN CONTROL PACKAGE
DEC 21 1985
CONTROL NO. 018
INIT. <i>[Signature]</i>

ATTACHMENT PAGE 1 OF 5
ECN # 27245-98-33

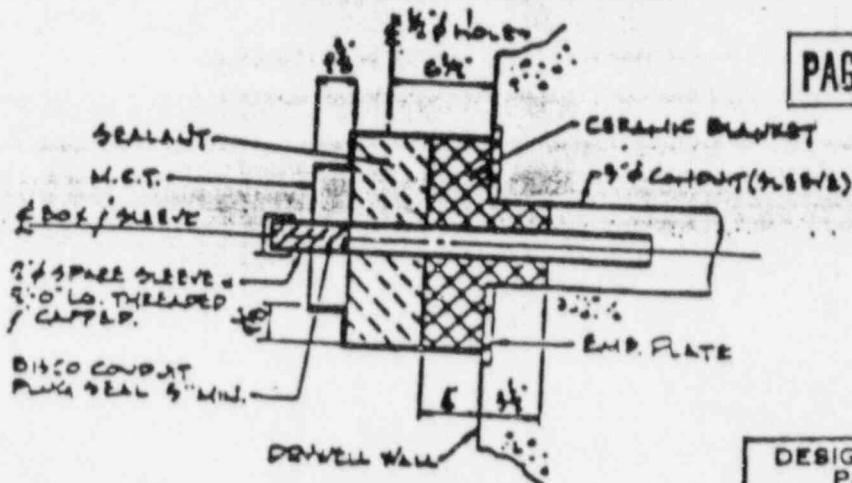
50321460



HEADER BOX - SINGLE MTC

HEADER BOX - DOUBLE MTC

DETAIL 'B'



PAGE 13 OF 38

14/12/85

DESIGN CONTROL PACKAGE

DEC 21 1985

CONTR. # 918
INIT. 9/22

NOTES:

1. MTC shall be specified in SP.98
2. SLEEVE SHALL EXTEND $2\frac{1}{2}'' + \frac{1}{2}''$ PAST THE FACE OF THE MTC.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE MTC WITH A TOLERANCE OF $\pm 2.00''$ ABOVE OR BELOW THE HORIZONTAL ϕ . (REF. DETAIL B)
4. BLANKET THICKNESS FOR CERAMIC FIBRE 4" NOM. $+ (.00" - .00")$ OF THAT SPECIFIED IN SECTION 6-1: ERB-3019, ERB-3021, ERB-3022, ERB-3024
5. THE FOLLOWING MTC'S SHALL RECEIVE A $1\frac{1}{2}''$ SLEEVE IN LIBU ERB-3019, ERB-3021, ERB-3022, ERB-3024
6. THE FOLLOWING PENETRATIONS DON'T REQUIRE SLEEVES ERB-3015, ERB-3014, ERB-4029, ERB-3020, ERB-3025, ERB-4032, ERB-4033, ERB-4037, ERB-4038, ERB-4046, ERB-4051, ERB-4052, ERB-4053

ATT: CHIEF ENGINEER

50321461

208172-1-13-80
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13 - 5938
oh
1/21/86 | A

6:11.1

Materials

1. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fiber.
4. ~~4 1/2" stainless steel sleeves supplied by the contractor.~~

6:11.2

Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:
 - a. No permanent deformation of the material after depressurization.
 - b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.

The moisture seals installed in them MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3

Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SP-709-4549-00.

DESIGN CONTROL
PACKAGE

DEC 21 1985

CONTROL # 918
INIT. DAB

SNAP-UP

3h 1/20/86

SECTION 6:02

ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall.

8. The installations of moisture seals in the MSIV actuator assembly.

6.11

MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of localseal.

MCT PENETRATIONS AT DRYWELLSEAL EP SR

1ERB 3013	1ERB 4028	1ERB 4042	1ERB 4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A
F022B
F022C
F022D

1B21F028A
F028B
F028C
F028D

DESIGN CONTROL PACKAGE	
DEC 21 1985	
CONTROL	778
INIT.	dcb

5032 1463

St. 1/16 PAGE 10 OF 38

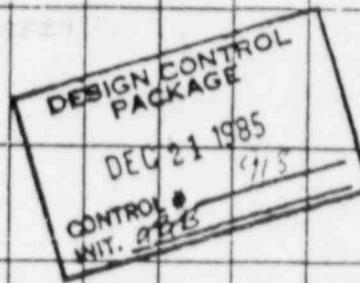
SUBJECT SP-98 PRESSURE / MOISTURE SEALS		EON NUMBER 27245-9A-35	
ORIGINATOR <u>Henry B. S. Prinsloo</u> 11-20-85 (Signature) (Date)		CR NUMBER S-10B S-10B AFFECTS SP. 98/II	
DEPARTMENT SITE DESIGN TEAM		I DOCUMENTS TO BE REVISED BY THIS EON SP-98-4549-00 REV. II	
B DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE: REV. F: REVISES VALVE ID FROM F020 TO F022 ATTACHMENT I REV. E: ADDS THE CRITERIA ATTACHMENT I PG. 1 OF 5 FOR MOISTURE SEAL. REV. D: ADDS ACTUATOR ASSEMBLIES AND RELATED ATTACHMENT I PG. 6 OF 5, AND ATTACHMENT REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B": NOTE 7 - SLEEVES IN WHICH THE EXISTING PLUG SEAL WAS REMOVED TO ALLOW CIRCUIT PULLS, SHALL BE SEALED USING A MODIFIED PLUG SEAL. THE SEAL SHALL BE BORED IN SUCH A FASHION SO AS TO ACCOMMODATE A TIGHT CABLE FIT ONCE REINSTALLED. WHEN THIS TYPE OF INSTALLATION IS NOT POSSIBLE THE SLEEVE SHALL BE ILLED WITH LOCASEAL TO A DEPTH OF 5.00". REV. C: ADDED ERB 4036 TO NOTE 6, PG. 3 OF 4 "DETAIL "B" REV. B: REVISED NOTE 3 AND ADDED NOTES 5 AND 6 TO DETAIL "B" (PG. 3 OF 4) REV. A: ADDED "NOTES" TO DETAILS ("B" AND "C") REV. -: ADDED SECTION G.02 ITEM 7; SECTION G.0 FOR MCT PRESSURE SEALS.		C QUAL AFFECTED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES TEST SPEC CHANGED REQUIRED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES EQUIP. QUAFFECTED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES SAR CHANGE REQUIRED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES UNIT 2 AFFECTED? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	
D SYSTEM AFFECTED N/A		E MATERIAL TO BE PURCHASED <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
F DESIGN REVIEWER APPROVAL BY: <u>H. Anthony Massey</u> DATE: 11-20-85 (Design Reviewer)		G QA APPROVAL (IF REQUIRED) BY: <u>R. Carpenter</u> DATE: 11/21/85 (QA Manager)	
H PROJECT ENGINEERING APPROVAL BY: <u>J. R. Nall</u> DATE: 11/21/85 (Project Engineer)		I QA REVIEW REQUIRED <input type="checkbox"/> NOT REQUIRED <input checked="" type="checkbox"/>	
J REVIEWED BY: <u>IUA Representative</u> DATE: _____ Bill of Material Number(s): _____ ISSUED _____ SPEC NO. _____ AND CONT. FONO. P. _____		K DESIGN CHANGE INCORPORATED BY: _____ DATE: _____ (Project Engineer)	
L ATTACHMENTS: ATTACHMENT 1 (5-PAGES) ATTACHMENT 2 (1-PAGE)		M N/A	
C INTERFACING DEPARTMENTS ORGANIZATIONS OR GROUPS <input type="checkbox"/> PIPING _____ <input checked="" type="checkbox"/> ELECTRICAL <u>W/M 11-21-85</u> <input type="checkbox"/> STRUCTURAL _____ <input type="checkbox"/> BUILDING SERVICE _____ <input checked="" type="checkbox"/> QUALITY ASSURANCE (See G) _____ <input type="checkbox"/> CONTROL SYSTEMS _____ <input type="checkbox"/> MSSS _____ <input checked="" type="checkbox"/> MECH. NUCLEAR <u>W/M 11-21-85</u> <input type="checkbox"/> OTHER _____ <input checked="" type="checkbox"/> ECOORD <u>E. B. Prinsloo</u>		N Gilbert Commonwealth _____ N/A	
O NOTE: *NOT REQUIRED IF FOR DRAWING CHANGES ONLY		P 50321464	

1227 Rev 1/85

CHANGE DOCUMENT LIST

N	DOCUMENT CHANGE DESCRIPTION DETAIL	9.303 CLASS	10. DMC CLASS	11. SAFETY CLASS	12. SUPPORTING DOCUMENTS	13. ACTUAL CREED	13A - ACTUAL RESPONSE	13B - CHARGE DISCIP	13C - SCHEDULED DISCIP	13D - ISSUE DATE	14. COMPLETION DATE	15. COMMENTS
1	JR98-4344-200 REV 003 REV 003 FOR 021 REV 003 FOR 021 REV 003 FOR 021 REV 003 FOR 021	A/A	A/A	A/A	JR-98-4344-200 REV 003 FOR 021	10/10/88	10/10/88	10/10/88	10/10/88	10/10/88	10/10/88	10/10/88

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a/
1/2/8610 55 58
1/12/86
10 55 58
1/12/86

50321465

DESIGN CHANGE PACKAGE COVERSHEET			1. Page <u>1</u> of <u>58</u> 2. DCP No. <u>850618 Rev.</u> 3. Sch. Priority <u>4</u>		
4. TITLE <u>DRYWELL WALL PENETRATIONS CRITERIA FOR MOISTURE SEALS ON THE MSIV ACTUATOR ASSEMBLIES.</u>					
5. SAFETY-RELATED <input checked="" type="checkbox"/>	AUGMENTED QUALITY <input type="checkbox"/>	NONSAFETY <input type="checkbox"/>	6. CIRCLE UNIT APPLICABILITY <u>0 1 2 3</u>		
6. III-XI					
7. Affected Sys. Nos. <u>B21 / MCT</u>	8. Plant Mode <u>N/A</u>				
9. Brief Description:	Design Approach	NDGAS <input type="checkbox"/>	A/E <input type="checkbox"/>		
10. THIS DCP ADDS THE CRITERIA FOR MOISTURE SEALS ON THE MSIV ACTUATOR ASSEMBLIES. REF. (ECN # 27245-98-33 REV. F) THIS DCP ALSO ADDS REQUIREMENTS FOR MCT3 (MULTIPLE CABLE TRANSITS) INSTALLED ON DRYWELL WALL. (ECN # 27245-98-33/F SEARCHED) ATTACHMENT 3 pg. 5 of 5					
10. AFFECTED GROUPS <input type="checkbox"/> CIVIL <input checked="" type="checkbox"/> ELECTRICAL <input type="checkbox"/> MECHANICAL <input type="checkbox"/> I&C <input type="checkbox"/> HUMAN FACTORS <input type="checkbox"/> LICENSING <input checked="" type="checkbox"/> EQUIP. QUAL. <input type="checkbox"/> PIPING <input checked="" type="checkbox"/> OTHER <u>ALBRA</u>	Init. <u>Jungin</u> Design Eng. Assigned	Safety Evaluation <input type="checkbox"/> <u>N/A</u> Project Coordinator <u>N/A</u> NDGAS SPE <u>N/A</u>	11. PRELIMINARY DCP APPROVAL Yes No <u>AS-RECEIVED</u>	12. DCP APPROVAL DESIGN CONTROL PACKAGE DEC 21 1985 CONTROL # <u>718</u> INIT. <u>ABK</u> Project Coordinator <u>Henry B. Shirey</u> 12-2-85 Date <u>ABK</u> 12-5-85 Project Eng. <u>NEGAS Senior</u> Date <u>ABK</u> 12-5-85	
13. PPTD/PPOD Approval of Preliminary DCP By <u>N/A</u> Date <u>-----</u>	15. "As-Built" Rec'd By <u>-----</u> Drawings Updated <u>-----</u>				
14. PPTD <u>12-10-85</u> or <u>Oct 10/85</u> By <u>ABK</u> Date <u>12-10-85</u>	16. WORK/TESTING COMPLETE By PPTD/PPOD <u>-----</u> Date <u>-----</u>				
17. PROJECT COMPLETION Project Coordinator <u>-----</u> Date <u>-----</u>					

DW137/L2/ba

5032 1466

TABLE OF CONTENTS - DCP 85061B

PAGE ~~7~~ ~~14~~ ~~28~~

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at 1/20/86 58
REV.



ATTACHMENT 1 : ECN 27285-98-37

F

50321467

P₁/S₀/SL

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Prop. No. 6225
Aug. 7/83

PEARY NUCLEAR POWER PLANT

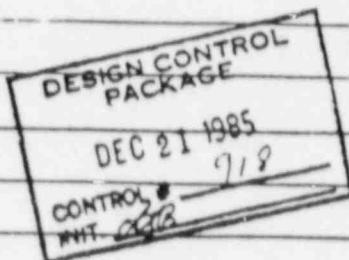
ENGINEERING DESIGN CHANGE NOTICE

SYSTEM: B21 / MET

DCP NO. 850618

Page 1

INSTALLING ORGANIZATION: BISCO / SP-9B



RECEIVED
DEC 21 1985

04 SIGN 000000
PBOC 4.3.140

DEC 21 1960

RECEIVED
DEC 21 1985

RECEIVED
DEC 21 1985

ORIGINAL**PNPP PENETRATION SEAL REMOVAL REQUEST**REMOVAL CONTROL NO.
831① INITIATED BY: DAN GALLU③ COMPANY: LKC④ DATE: 10-9-85⑤ PHONE NUMBER: 6335⑥ SP. NUMBER: 33⑦ PENETRATION NUMBER: E&G 4058 JBI-3703 } MCT
JBI-3704 }⑧ BUILDING/ELEV: RB651 ⑨ LOCATION: 310°⑩ REASON FOR REMOVAL: ROUTING NUMEROUS C-95 CABLES INTO REACTOR
BUILDING REF: W/A# 11776⑪ DESCRIPTION OF REMOVAL: REMOVE ENTIRE FRANK SECTIONS OF
BOTH MCT'S COMPLETELY

⑫ SKETCH OF PENETRATION IF NEEDED

BISCO TO INSTALL 5" OF LOCASEAL PER APPROPRIATE APPROVED
PROCEDURES PER CONVERSATION WITH RONALD SALFIREWICZ.

RI PRINTED 10-11-85

DPA 10-10-85

ph 1/24/86
L 85.00

PAGE 5 OF 38

⑬ SEND REQUEST TO QA Pete Burgraff NAME MAIL ZONE W140⑭ REMOVAL APPROVED: John for Ronald Salkinow DATE: 10-10-85
RESPONSIBLE ENGINEER⑮ REQUEST ACKNOWLEDGED: John CONTRACTOR Q.C. DATE: 10-11-85⑯ REMOVAL COMPLETED: John CONTRACTOR ENGINEER DATE: 10-12-85⑰ ADDITION OR DELETION OF PENETRATING ITEM COMPLETE: John INITIATOR DATE: 10-27-85

50321460

ch 5 5958
1/24/80 PAGE 4 OF 38

PAGE 1 FERRY NUCLEAR POWER PLANT WORK ORDER

M151801

DATE 12/09/85
TIME 09:33:14
REV 0

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
850011943	NC98	1B21	MECHANICAL	FB/IDW			
R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
5	1 2 3 4 5	CAT PEN	CODE 3B	M/E	M/E	REQ'D	NO YES
SPECIAL PERMIT	RETEST REQ'D	HOUSE-KEEPING	ALARA REVIEW	RWP	TECH	EQ	15-4944
NO YES	NO	YES	NO	REQ'D	SPEC	AFFECTED	NO

SYSTEM NAME: NUCLEAR BOILER (NSSS)

SUMMARY : IMPLEMENT DCP 85-618.

MPL NAME : MSIV ACTUATOR ASSYS & MCT's

PLANNER REMARKS

NC 98 TO PERFORM WORK.

REFERENCE: MDL 1B21-#291 (W.A. 85-12675)

REFERENCE: MDL CO-03-#02 (E.C.N. 27245-98-33/F4)
IMPLEMENT DCP 85-618. RBG FIRE BARRIER REMOVAL PERMIT REQUIRED (PER PROVENT - NOV 1980 issue) from 12/10/80

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

NC 98 TO INSTALL ENVIRONMENTAL MOISTURE SEALS ON MSIV ACTUATOR ASSYS.: 1B21-F022 A,B,C,D & 1B21-F028 A,B,C,D PER DCP 85-618.

NC 98 TO INSTALL MODIFIED PRESSURE SEALS ON MCT (MULTI-CABLE TRANSIT) PENETRATIONS ERB4049 & ERB4050 PER DCP 85-618.

TEST REQUIREMENTS: NONE.

SUBMIT ORIGINAL WORK PACKAGE TO PPD UPON COMPLETION FOR FINAL CLOSING.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NOAD/ANI

APPROVED BY

APPROVAL TO COMMENCE WORK

APPROVAL TO COMMENCE TEST

J.L. Davis

J.C. Harpster

H. P. Miller

TIME: 0800

DATE: 12/23/85

TIME: 0800

DATE: 12/23/85

TIME: 0800

DATE: 12/23/85

DATE 12/1-85

DATE 12/23/85

DATE 12/23/85

DATE 12/23/85

DATE 12/23/85

DATE 12/23/85

WORK COMPLETE

REVIEW BY NOAD/ANI

ACCEPTED BY UNIT SUPV.

DATE --/--/--

DATE --/--/--

DATE --/--/--

50321470

ZO-42N-DOI-1CA

大刀口

ZO-400345200



5

E. E. I.
SP-8/P.O. 4293
PERRY NUCLEAR UNIT 1
POWER PLANT | CONN

PRODUCTION AUTHORIZATION						SHEET	OF	2
INITIAL RELEASE	HOLD	RE-RELEASE	REF	DATE	REF	DATE	BUILDING	ELEV/ROOM
REF	DATE	REF	DATE	REF	DATE			
2215	0405							
PREPARED BY	NO APP BY	O.C. INSPECTOR	J. L. KELLY					
DATE PREPARED	10/15/75	O.C. SUPERVISOR	J. Bunker					
REF DRAWING	10-11-157	PENETRATION NUMBER	1010050 II					



SOFTWARE CLOSEOUT
LIST OF ATTACHMENTS

102/86
PAGE 2 OF 58

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-98/4293
UNIT 1 AND COMMON

PENETRATION NO. IERB4050 RI
629/01

41	COC Sheet Metal Sheet 1
42	COC Sheet Metal Sheet 2
43	COC Sheet Metal Sheet 3
44	COC Sheet Metal Sheet 4
45	COC Sheet Metal Sheet 5
46	COC Sheet Metal Sheet 6
47	COC Sheet Metal Sheet 7
48	COC Sheet Metal Sheet 8
49	COC Hose Clamps
50	RI Hose Clamps
51	DT Hose Clamps
52	AR-936 PAGE 1
52	AR-936 PAGE 2
53	AR-936 PAGE 3
53	AR-936 PAGE 4
56	AR-936 PAGE 5
57	AR-936 Page 6 ohn, 1/31/86
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BY A. Smachios
(A.C. INSPECTOR)

RECEIVED BY A. Smachios
(SUPERVISOR)

5032 1473



SOFTWARE CLOSEOUT
LIST OF ATTACHMENTS

5R 1/22/96

PAGE 1 OF 25

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
P.O. NO. SP-98/4293
UNIT I AND COMMON

PENETRATION NO. IERB4050 RI

629/01

1. BCWA Sheet 1	21. OCT 2 Locaseal
2. BCWA Sheet 2	22. Certification of Calibration
3. WO 85-11943	23. Cer. of Calibration
4. Removal Request 831	24. COC
5. D.C.P. Sheet 1	25. RI Locaseal
6. D.C.P. Sheet 2	26. RI Locaseal
7. D.C.P. Sheet 3	27. DT Locaseal
8. D.C.P. Sheet 4	28. COC 732 Caulk
9. D.C.P. Sheet 5	29. RI 732 Caulk
10. D.C.P. Sheet 6	30. DT 732 Caulk
11. D.C.P. Sheet 7	31. COC Ceramic Blanket
12. D.C.P. Sheet 8	32. RI Ceramic Blanket
13. D.C.P. Sheet 9	33. DT Ceramic Blanket
14. D.C.P. Sheet 10	34. NR 101 Sheet 1
15. D.C.P. Sheet 11	35. NR 101 Sheet 2
16. Work Authorization Sheet 1	36. NR 101 Sheet 3
17. Work Authorization Sheet 2	37. NR 101 Sheet 4
18. Work Authorization Sheet 3	38. Receipt Inspection Report 1999 Rev.
19. Work Authorization Sheet 4	39. RI Bolts, Nuts
20. OCT 1 Locaseal	40. Storage Requisition

REVIEWED BY: J. Strachan
(QC INSPECTOR)

BY: J. Strachan
(SUPERVISOR)

OWNERS RPT: Paul E. Stroh

50321474

TRAINING RECORD

AR-936

It shall be understood that:

- a. No controlled materials can be provided from any suppliers that are not currently on BISCO's AVL.
- b. No materials can be provided by another on-site contractor unless they are received through C.E.I. contracts dept. and accompanying documentation is present IE: Certificate of Conformance. Any materials provided by C.E.I. must be receipt inspected prior to use.
- c. Any materials received from an on-site contractor who are on BISCO AVL must be in accordance with QCP-101 and be purchased with a purchase order approved by BISCO's Quality Assurance Dept.

Please sign and date that you understand the requirements as stated.

SUSAN MATHIAS

Susan Mathias
NAME1-21-86
DATE

DARRELL BEAUMON

*D. Beaumont*1-22-86

WILLIAM NEWCOMB

*William Newcomb*1-22-86

KATHY RAYMOND

*Kathy Raymond*1/22/86

TRIMA SINES

*Trima Sines*1-22-86

JOSEPH PERLIS

*Joseph Perlis*1-22-86

JOHN ORMSTON

*John Ormston*1-22-86

PETER MAIETTA

*Peter Maietta*1-22-86

BRAD WILLIAMS

*Brad Williams*1-22-86*copy provided
SBR*

50321475

PAGE 57 OF 58

PAGE 11 OF 12

DISCO

Rev. 0

INSPECTION REPORT

LR. No 1515

Project Name. PERRY NUCLEAR POWER PLANT

Date 10-7-85

Disco Project No. 3134

Item of Activity Inspected IPTB1040/B577053002

Description and Inspection Report:

THE "A" SLEEVE IS 18 GAUGE.

THE "B" SLEEVE IS 18 GAUGE.

HOLD TAG No. 44 Q.C. Inspector Jim Hall II Date 10-7-85

Disposition

Dispositioned by NA Title NO Date

Inspection Report - Closeout

Inspect Acceptance NCR No. Issued NA Reinspect Acceptance
Accept Tag No. NA Reject Tag No. NA

Closeout by

50321476

PAGE 56 OF 58

PAGE 10 OF 49

BISCO L
U

Rev. 6

Sh. 10/10/85

IE
RCV C

INSPECTION REPORT

LR. No 1526

Date 10-8-85

Project Name. PERRY NUCLEAR POWER PLANT

Bisco Project No. 3134

Item of Activity Inspected IPTB1D41 RZ / RSM053003

Description and Inspection Report.

The A Sleeve is 16 gauge

The B Sleeve is 16 gauge

The C Sleeve is 16 gauge

All installation criteria were met prior to AC inspection for sleeve annular space inspection.

HOLD TAG No. N/A O.C. Inspector Linfell II Date 10-8-85

Disposition

N/A

Dispositioned by N/A Title N/A Date

Inspection Report Closeout

Inspect Acceptance NCR No Issued N/A Reinspect Acceptance
Accept Tag No. N/A Reject Tag No. N/A

50321477

ATTACHMENT A: 936

RESPONSE:

In light of the misinterpretation of the requirements established in SP-709 Section 1:05.7 Paragraph 4 "Material Furnished by the Owner" Sub-paragraph (A) or any of the owners agents. BISCO was furnished with the material by an on-site owner approved contractor who in fact procured the material in accordance with the above referenced specification and provided all necessary documents, therefore, it was determined that procurement documents per the contractor (BISCO) Quality Assurance Program would not be required.

BISCO did however provide a inspection/examination during the installation of the material supplied (see Inspection Documents I.R. 1999 Rev. 1,1526, and 1515 which provide justification of the material installed along with procurement documents supplied by R. Irsey Company, therefore, requirements as a minimum were met.

BISCO will indoctrinate appropriate personnel IE: Engineering, Procurement persons, Q.C. Inspectors of requirements of Receipt Inspection of on-site contractors who provide materials for Safety-Related installations no later than 1-22-86.

It shall be noted that any future installations of this nature shall be handled accordingly.

- 1.) Material procured shall be in accordance with B.Q.A.M. Section III.
- 2.) In the event of material supplied by an on-site contractor they shall be added to the AVL and material procured in accordance with established program prior to material acceptance.
- 3.) In the event the owner supplies/furnishes material it shall be handled per the guidelines established in SP_709 section 1:05.7 Para. 4.

50321478

NO. 2610
Rev. 5-82Perry Nuclear Power Plant
ACTION REQUEST

PAGE 54 OF 58

AR 936

File No. C O A 0 1 1 1

OBS Number 0 0 0

Appendix B
Criteria No. 0 4Responsible
Organization B I S C O 9 8

Initiated By: David Siedlarczyk

Initials D E S

Issue Date

0 1 2 0 8 6

Governing Requirement: BOAM Section III 2.0, 3.0

QCP-101 Receiving Inspection, Procurement Document Control
Receiving Inspection, Procurement Document Control

Observation: During the review of M.C.T. documentation (W.O. 85-11943), the following quality assurance program deficiencies were noted. Similar conditions exist for pressure seals.

1. Contractor installed controlled material without having proper procurement documents.
2. Material received was not receipt inspected.
3. Vendor supplying material is not on approved vendor list.

Potentially Reportable Per 10CFR21 or 50.55 e

 Yes

No: DAR No. N.A.

Upgraded to CAR Yes No

Reviewed for Significance By: Russ Matthes

Recommendation: 1. Provide justification that the material installed meets the specification requirements of ECN 27245-98-33 and ECN 28870-98-56B.
2. In the future, comply with established program requirements of the BOAM and QCP-101 when obtaining any material from outside contractors.
3. Provide cause, training, completion date.

Response Due Date 1-23-86

Acknowledged By: Russ L. Matthes

Cause: Misinterpretation of the intended interface between B.U.A.M. PARENT Specification (SP-98-4549) and SP-709-4549

Response (include corrective action and steps to prevent recurrence)

SEE ATTACHED

Completion Date 01 22 86

Response Prepared By: Russ Matthes

Response Date 01 21 86

Response Evaluation: Procurement documents provided to the SP98 Contractor by R. Ivey Company for the above referenced material have been assembled within the SP98 Contractor Documentation Passes and turned over to the owner.

Evaluation:

 Accept Reject

CAUSE CODE FQ1

Evaluation By: Russ Matthes

Evaluation Date: 01 22 86

Verified By: Russ Matthes

Verification Date: 01 22 86

Remarks: Response ACCEPTED, SEE ATTACHED DOCUMENTS AND TRAINING SHEETS

50321479

delivery ticket

Bisco Construction

Bisco

2207 Lively Blvd.

10 Center Street

Elk Grove Village, IL 60007

Perry, Ohio 44081

ITEM ORDER NO.	QTY.	DATE	UPS	NOTES
G. Hamilton	Elk Grove	5-24-85		3133-100M C-192
QUANTITY ORDERED	QUANTITY SHIPPED	MATERIAL		
100 EA.	100 EA.	Worm Drive S.S. Hose Clamps # 24	D 5-29-85	DVP
100 EA.	100 EA.	Worm Drive S.S. Hose Clamps # 36	O 5-29-85	DVP
100 EA.	100 EA.	Worm Drive S.S. Hose Clamps # 96	S 5-29-85	DVP
Order Complete				N O T E
P.O. #361				W R I T E B E Y O N D H E R E
Please acknowledge receipt of the material listed on this Delivery TICKET by signature and return Job File and Acknowledgment copies.				
to: BISCO Construction Group 2207 Lively Blvd. Elk Grove Village, IL 60007 Thank You				

All claims MUST be made
within 5 days from date of delivery

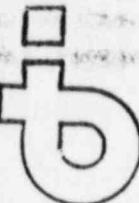
10% handling charge on all returns
Only full packaged units returned

Received By

Dawn Fair

50321480

bisco



PAGE 52 OF 53

58
1/21/86

FORM RI-1
REV-3

RECEIVING INSPECTION CHECKLIST
(SITE)

P.O. No. 4361

DATE 5-30-85

JOB no. 3133

PROJECT NAME Perry Nuclear Power Plant

VENDOR Murray Corp.

MATERIAL RECEIVED S S Hex Head Hose Clamps

LOT / BATCH no. 4361

QUANTITY 10 Box

4361

H2USS

H9655

ACI-0000000000000000

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>	
<input type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted

Rejected

— Remarks:

* Description right, not material received

O.C. Inspector

Date 5-30-85

50321491



PAGE 51 OF 53

58 sh
PORN CC-1 1/21/86
REV. 4.

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH. 44081

DATE May 24, 1985

CUSTOMER P. O. NO. P-1293/SR-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133

Material P. O. No. 4361

D. T. No. 5068

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Douglas A. Host

Dolores A. Lott
Quality Control Supervisor

50321482

PAGE 50 OF 58

58
58, 10/10/86



UNITED STATES STEEL CORPORATION INTRA CORPORATE TRANSFER SHIPPING NOTICE

01

02

9839003052

37

PURCHASE ORDER DATE PURCHASE ORDER NO.

11/19/84

11/19/84

USA CONTROL NO.

00905

USA ORDER NO.

SD32718

00823-0015-170

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T O

11/19/84

11/19/84

11/19/84

11/19/84

PAGE

U S STEEL SUPPLY DIV
4700 ROCKSIDE RD
ROOM 625
INDEPENDENCE OH 44131

AMERICAN STEEL SUPPLIERS INC
17001 SARANAC RD
CLEVELAND OH 44110

SHIPPER'S NO.	DATE SHIPPED	FROM	ROUTE/CARRIER
4347221	01/08/85	IRVING PENNSYLVANIA	GREAT AMERICAN LINES INC
TL	0040M	DESTINATION	A43789 ME

GALV SHEET CARBON ASTM A526-80 REST SPEC REQ C.10
MAX CO REGULAR SPANGLE G90 CHEM TREAT NO OIL

ITEM 146 DESCRIPTION FT LENGTH IN
01 0705 MIN X 48 COIL

ID 24
OD MAX 65

1740-0000-0000/06219/
COIL NO HEAT NO COILS LIN. FT. POUNDS THEO-LB
9980 F83301 1 3100 36350 35662
0980 R85451

HEAT NO	C	MN	P	S
F83301	.07	.38	.009	.019
R85451	.07	.37	.008	.025

CUE 55313

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-152/V
PERRY NUCLEAR POWER PLANT, UNITS 1 & 2

RELEASED FOR Q-LIST
ITEM 146A SHEETS ASTM A526 G90
Q-LIST NUMBER PS-8
Control No. 146-A-11-1685

COILS ACT-LB THEO-LB
1 36350 35662
D/L 36350

Goods or services which were performed or furnished in compliance with the minimum standards required by the Fair Labor Standards Act of 1938, as amended.

In the United States operated by the employer were provided the minimum standards required by the Fair Labor Standards Act of 1938, as amended.

PAYABLE IN U.S. DOLLARS
COUNTRY OF ORIGIN

#0132

50321403



PHPP NO. 213E Rev. 6/85

FOLLOWING
DOCUMENT/DOCUMENTS

DOES/DO NOT MEET LEGIBILITY/REPRODUCIBILITY REQUIREMENTS AND IS THE

**BEST
AVAILABLE
COPY**

AS TRANSFERRED TO THE RECORDS MANAGEMENT UNIT

5032 1484

Certification 58, b, 1/e OF TEST RESULTS

Lakewood Machine Prods. Co.
P.O. Box 388
Carleton, MI 48117

Date November 15, 1985
Customer Order Number
1909

U.S. Steel Supply Order
DET 07506
Specification Number
ASTM A526-80

Item
GALV. SHEET CARBON REST SPEC REQ C-10 MAX CO
REGULAR SPANGLE G90 CHEM TREAT NO OIL
14G x 48 x 120 1 Pcs - HT# F83301

THE CLEVELAND ELECTRIC ILLUMINATING CO
CONTRACT NO. P-1527V
ENERGY NUCLEAR POWER PLANT UNITS 1 & 2

This is to certify that the material
shipped against your order is
represented by the attached
test results from the producer.

The original report is contained in our files.



RELEASED FOR Q-LIT	
ITEM: 14G SHEETS ASTM A526 670	
Q-LIT Inventory	
Control Number PS-8	
Q.C. Tech [Signature]	
Date: 11-15-85	

Romain A. Stewart

ROMAIN A. STEWART
Notary Public, Wayne County, Michigan
My Commission Expires September 19, 1989

USD-158 8/78

U. S. Steel Supply

Division of United States Steel

Brent A. McCormick

50321485

PHONE CARLETON 654-6677

PAGE 48 OF 55

58
St. 1/2/86

12429 MAXWELL ROAD

LAKEWOOD MACHINE PRODUCTS COMPANY

Tools, Special Machinery
General Machining & Repairs
Certified Welding & Steel Fabrication

CARLETON, MICHIGAN 48117

November 15, 1985

The Reliant Irsay Company
Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081

Attn: Q/C Dept.

Subject: P.O. #O-707-109- 88 and 89
See Documentation Identification Index
Job # 2748

Gentlemen:

IT IS HEREBY CERTIFIED THAT ALL MATERIALS USED IN THE MANUFACTURE OF PARTS IN THE QUANTITY CALLED FOR ON THE SUBJECT PURCHASE ORDER CONFORM TO THE MATERIAL AND/OR MANUFACTURING SPECIFICATIONS INDICATED ON DRAWINGS OR SPECIFICATIONS AS CALLED FOR ON SAID PURCHASE ORDER.



E. Patrick Kehoe
President

RELEASED FOR Q-LIST	
ITEM: 14 GA THINNT ASTMA526 G90	
Q-List Inventory	
Control Number PS-8	
Q.C.Tech. Reliant 10/20 Date: 11-16-85	

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-1527-V
PERRY NUCLEAR POWER PLANT - UNITS 1 & 2

5032 1486

THE ROBERT IRSAY COMPANY
SHEET METAL CONTRACTORS

A ~~COMPANY~~ COMPANY

BOX 1018
SKOKIE, ILLINOIS 60076

(312) 674-8500

LOCATION
8130 N. ST. LOUIS AVENUE
SKOKIE, ILLINOIS 60076

PAGE 47 OF 55

Lakewood Machine Products Company
P. O. Box 388
Carleton, MI 48117
Attn: Mr. Pat Kehoe

(313) 654-6677

SAFETY-RELATED

IMPORTANT
MARK PURCHASE ORDER
NUMBER ON ALL INVOICES,
PACKAGES AND CORRESPONDENCE
INVOICE IN TRIPPLICATE

PURCHASE ORDER NO.	DATE OF ORDER	NAME OF JOB	CLASS	DATE TO BE DELIVERED	SHIP VIA
PO-707-109-89	11/15/85	PNPP	PO50	ASAP	B/W POB
DELIVER OR SHIP TO:					Invoice: The Robert Irsay Co. P.O. Box 205 Perry, OH 44081

Confirming Order

PLEASE FURNISH SUBJECT TO CONDITIONS ON REVERSE SIDE

Do Not Duplicate

Item No.	Quantity	Description	Price	Amount
1	2	48" x 56" x 14 Gauge Galvanized Sheet		

TOTAL LOT CHARGE

This material is to be fabricated to meet the requirement of ASTM A-526, coated to ASTM A-525, coating designation C90. Certificate of Conformance (COC) and Mill Test Reports must accompany shipment.

By acceptance of this purchase order, the Seller agrees to allow The Robert Irsay Company, the Project Owner, the Owner's agents including representatives of regulatory agencies, access to the Seller's facilities and QA records for purposes of inspection, witnessing of tests and audits.

Reviewed by: John F. Yemma

John F. Yemma, Lead QC Technician

Please acknowledge receipt and acceptance of this order by signed return of attached copy.

Accepted by:

Date:

This order is tax exempt under Direct Payment Permit No. OH98-001843

NOTE: Pricing reflects premium for accelerated overnight delivery to the Perry Nuclear Power Plant on Saturday, November 16, 1985.

() sets of certified drawings and descriptive matter to be submitted to us at once for approval. Each set to bear the following:
 Job date and identifying job number.
 Customer's Name and Order Number.
 Project Name and Location.

Description of Equipment involved.
 Architect and Engineer's Name and Job Number.

ENDOR:

THE CONDITIONS ON THE REVERSE SIDE
 FORM A PART OF THIS ORDER.

THE ROBERT IRSAY COMPANY

By SC O'Connell

THE CLEVELAND ELECTRIC ILLUMINATING CO.
 PERRY NUCLEAR POWER PLANT - UNITS 1 & 2

50321487

P.O./Reqn. No.: FO-200-109-1289

Date: 1/11/86

Supplier: LAKEWOOD MACHINE PRODUCTS

Item or Service Procured: 2 48" x 56" x 14 ga galv. sheet

Technical Requirement Ref.: ASTM A 526, ASTM A-525 G90

Q.A. Requirement Ref.: SP-709

Checkpoint	Sat.	Unsat.	Remarks
1. Is scope of procurement clearly and adequately defined? Quantity Description	✓		
2. Are applicable contract drawings/specifications referenced?	N/A		
3. Are applicable performance and material codes and standards referenced?	✓		
4. Are QA/QC requirements referenced?	✓		
5. Are safety class and regulatory standards referenced?	✓		
6. Other:			

Q.A./Q.C. Follow-up Actions Required in conjunction with this purchase order:

THE CLEVELAND ELECTRIC ILLUMINATING CO.
 CONTRACT NO. P-15274
 PERRY NUCLEAR POWER PLANT - UNITS 1 & 2

<input type="checkbox"/>	The above procurement document has been reviewed for quality requirements and is acceptable.
Reviewer: <i>Robert Irsay</i>	Title: Q.C. TSKH Date: 11/11/86
ROBERT IRSAY COMPANY QAMS-707 (11-15-78)	CHECKLIST FOR Q.A. REVIEW OF PROCUREMENT DOCUMENTS

50321408

**THE ROBERT IRVING COMPANY
SHEET METAL CONTRACTORS**

THE BUILDING AIR CONDITIONING • VENTILATING • INDUSTRIAL EXHAUST SYSTEMS
BOX 1015 (312) 674-8500 — (312) 683-2625

A JURRY COMPANY

LOCATION ~~CHICAGO~~
ST. LOUIS AVENUE
ILLINOIS 60076

PAGE 45 OF 55

58
81
-7/21/16

Lakewood Machine Products Company
P. O. Box 388
Carleton, MI 48117
Attn: Mr. Pat Kehoe
(313) 654-6677

DEFINITY-RELATED
11-16-92

IMPORTANT
MARK PURCHASE ORDER
NUMBER ON ALL INVOICES,
PACKAGES AND CORRESPONDENCE
INVOICE IN TRIPPLICATE.

PURCHASE ORDER NO.	DATE OF ORDER	NAME OF JOB	ITEM NO.	DATE TO BE DELIVERED	SHIP VIA
PO-707-109-88	11/15/85	PNPP	G-11 Cont'd G-11	PO50 Complete	B/W POB DELIVERED
DELIVER OR SHIP TO:					

The Robert Irsay Co.
Perry Nuclear Power Plant
10.Center,Road
Invoice: The Robert Irsay Co.
P.O. Box 205
Perry, Oh. 44081

CONFIRMING ORDER **DO NOT FURNISH SUBJECT TO CONDITIONS ON REVERSE SIDE**

Item No.	Quantity	Description	Price	Amount
This shall serve as your authorization to furnish the below cut-to-size items:				
1	1	1" x 8" x 14 Gauge - Galvanized Sheet		
2	1	3-1/2" x 3-1/2" x 14 Gauge - Galvanized Sheet		
3	5	3-1/4" x 4" x 14 Gauge - Galvanized Sheet		
4	5	3-1/4" x 6" x 14 Gauge - Galvanized Sheet		
		Material - Steel		

TOTAL LOT CHARGE Galvanize - ASTM A-525 with G-90 Finish

- This material is to be fabricated to meet the requirement of ASTM A-526, coated to ASTM A-525, coating designation C90. Certificate of Conformance (COC) and Mill Test Reports must accompany shipment.

By acceptance of this purchase order, the Seller agrees to allow The Robert Irsay Company, the Project Owner, the Owner's agents including representatives of regulatory agencies, access to the Seller's facilities and QA records for purposes of inspection, witnessing of tests and audits.

Reviewed by:

1961 F.Y.

John F. Yemna Lead QC Technician
Please acknowledge receipt and acceptance of this order by signed return of copy to:

Accepted by:

By 81

This order is tax exempt under Direct Payment Permit No. QHQB 0006/3 Date:

Note: Pricing reflects premium for accelerated overnight delivery.

() copy of certified documents and documents of record.

Custodian's Name and Order Number. Description of Drawing and Identifying Log Number.

Project Name and Location.

Description of Equipment Required.
Architects and Engineers Name and Job Number.

VENDOR

THE CONDITIONS ON THE REVERSE SIDE
FORM A PART OF THIS ORDER.

THE ROBERT IRSAY COMPANY

TE O'Connell

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-1527-V
PERSYNUCLEAR POWER PLANT - UNITS 1 & 2

P.O./Reqn. No.: FO-707-109-88 Date: 11-15-85

Supplier: Lakewood Machine Products

Item or Service Procured: 3-1" x 8" x 14GA, 3-3½" x 3½" x 14GA, 5-3¼" x 4" x 14GA, 5-3¾" x 6" x 14GA. GAW. SHIMS

Technical Requirement Ref.: ASTM-A526 & ASTM-A525 690

Q.A. Requirement Ref.: SP-709

Checkpoint	Sat.	Unsat.	Remarks
1. Is scope of procurement clearly and adequately defined?	✓	✗	
Quantity	✗	✓	
Description	✗	✓	
2. Are applicable contract drawings/specifications referenced?	✗	✓	
3. Are applicable performance and material codes and standards referenced?	✓	✗	
4. Are QA/QC requirements referenced?	✓	✗	
5. Are safety class and regulatory standards referenced?	✓	✗	
6. Other:			

Q.A./Q.C. Follow-up Actions Required in conjunction with this purchase order:
 THE CLEVELAND ELECTRIC ILLUMINATING CO.
 CONTRACT NO. P-1527-V
 PERRY NUCLEAR POWER PLANT - UNITS 1&2

<input type="checkbox"/>	The above procurement document has been reviewed for quality requirements and is acceptable.
ROBERT IRSAY COMPANY	Reviewer: <u>Robert Irsay</u>
QAMS-707 (11-15-78)	

Title: SP-709 Date: 11-16-85
 CHECKLIST FOR Q.A. REVIEW OF
 PROCUREMENT DOCUMENTS

50321490

PAGE 3 OF 3 RECEIVING RECORD

THE CLEVELAND ELECTRIC ILLUMINATING CO.
CONTRACT NO. P-1527-V

10133

RECEIVED PERRY NUCLEAR POWER PLANT - UNITS 1 & 2 DATE
FROM LAWBWOOD MACHINE PRODUCTS 11/16/85
12429 MAXWELL RD FO-707-109-88
CARLETON, MICH. FO-707-109-89
ADDRESS AK MILE
VIA THEIR TRUCK

1 3 HR F 85301 1" x 8" x 14" 8A SHT ASTM A526
2 3 3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x 14" 8A SHT. ASTM A526
3 5 3 $\frac{1}{4}$ " x 4" x 14" 8A SHT ASTM A526
4 5 3 $\frac{1}{4}$ " x 6" x 14" 8A SHT ASTM A526
5 2 48" x 56" x 14" 8A SHT ASTM A526

RELEASED FOR Q-LIST

ITEM: 14" 8A SHEETS ASTM A526 G90
Q-LIST NUMBER: PS-8
Control #: 11-16-85
C.G.C. code: R-11-16-85

NUMBER OF PACKAGES

NA

NA GOOD

PNPP

REMARKS

CHICKEN WITH
PURCHASE ORDER BY

Rf

ORIGINAL

© 1985 EFCO SYSTEMS INCORPORATED

50321491

Perry Nuclear Power Plant
STORES REQUISITION

Perry Nuclear Power Plant

5812 May 2006 Environ

WEEKLY RELATED

PAGE 45 OF 55
1/2

Size MP2 $\frac{1}{2}$ are smth or
Similar to size C & D?
MP2 is east coast.
J. S. James
1/8/14

REQUESTED BY	APPROVED BY	RECEIVED BY	ISSUED BY	INSPECTION
<i>Clark G.</i>	<i>John J.</i>	<i>John J.</i>	<i>John J.</i>	<i>Charlie Sheen</i>

DISTRIBUTION OF SITE STORIES

CANARY ACQUISITIONS

50321492



PAGE 41 OF 58

sh
1/12/86RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. C.E.I. Q-4103
Q-3286DATE 1/12/86 JOB no. 3134PROJECT NAME Perry Nuclear Power PlantVENDOR C.E.I. Requisition # SP-11684MATERIAL RECEIVED 1/4" x 20 Ge 193-B7 Bolts
1/4" x 20 Ge 193-B7-N HCR Head Nuts

LOT / BATCH no. _____ QUANTITY _____

SP0-3927 8 eachSP0-3227 8 each

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received <i>C.E.I. More in Req.</i>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings <i>BOLTS ARE END SHOT</i>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection <i>1/4" x 20 threads per inch ACCEPT 5MM</i>	<input checked="" type="checkbox"/>	
<i>na</i>	Special Instructions per Attached	<i>na</i>	

Material Accepted
 Rejected

Remarks:

* CofC on file within C.E.I.
NO BISCO COFC REQUIRED OR DELIVERY TICKET*James Brubaker*
O.C. InspectorDate 1/12/86

50321493

SAC
1/21/86

INSPECTION REPORT

I.R. No. 1999/REV.1

Project Name PERRY NUCLEAR POWER PLANT

Date 1-21-86

Bisco Project No. 3134

Item of Activity Inspected clarification of materials used in IERB-4049R1 & 4050 R1Description and Inspection Report

Upon final acceptance of the turnover package for the above mentioned penetrations it was identified that the sheet metal boxes, bolts, and nuts used to construct the repair portion of these seals did not meet the requirements set forth in ECN 27245-98-33F. Specifically, they were installed without the proper documentation IE: Receipt Inspection and Certificate of Conformance. Verification of the materials used cannot be performed on the bolts and nuts. However the sheet metal boxes can be verified in-place as it was previously identified that they are in fact 14 ga. and accessibility to these for outside measurements is possible.

RECOMMENDED DISPOSITION: Reinspect sheet metal boxes for proper dimensions per ECN.

Remove non-traceable bolts and reinstall bolts and nuts which conform to specification. Certifications provided Robert Ursay Co. are to be inserted within the package for traceability methods.

BISCO to justify in response to Action Request # 936.

~~An is not required in traceability packages of sonic or hardware is acceptable.~~

sh. 1/21/86

HOLD TAG No. 2A Q.C. Inspector Susan Siedlarczyk Date 1-21-86

Disposition Bolts were removed and approved for use bolts and nuts were reinstalled on 1-18-86. Installation of these bolts was witnessed and verified by myself on 1-18-86. Re-inspection of sheet metal boxes was performed on 1-20-86 and dimensions were found to be acceptable. Boxes were gauged prior to installation and were found to be 14 ga. this was performed by myself with C.O.S. Dave Siedlarczyk. All documentation regarding this was reviewed and found to be in order.

Dispositioned by Susan Siedlarczyk Title Field Quality Assurance Date 1-21-86

Above stated MCT's were reinspected and found to be acceptable.
Inspection Report Closeout

Inspect Acceptance NCR No. Issued Na Reinspect Acceptance.

Accept Tag No. Na Reject Tag No. Na

Closeout by Susan Siedlarczyk Title Field Quality Assurance Date 1-21-86

50321494

39 538
PAGE 39 OF 39

03 1-20-86

SL 1/31/86

bisco 5

Brand Industrial Services, Inc.

1420 Renaissance Drive
Park Ridge, Illinois 60068
(312) 968-1200
(312) 962-4422 Brand Prod

PROCEDURE	DATED	REVISION
(See Attached)		

INSTRUCTOR Foreman	DATE REVISED	INSTRUCTOR MURKIN	CHIEF Foreman	SIGNATURE
Dennis LaVelle	2-17-85	Alan M. Murn	Dennis LaVelle	
J. T. Sweeny	2-14-85	Alan M. Murn	J. T. Sweeny	
Marty H. LaVelle	2-13-85	Alan M. Murn	Marty H. LaVelle	
M. G. Delaney	2-13-85	Alan M. Murn	M. G. DELANEY	
Russell Zabilka	2-6-85	Alan M. Murn	R. Zabilka	
Dave Rittenhouse	2-7-85	Alan M. Murn	Dave Rittenhouse	
George Filla	2-14-85	Alan M. Murn	George Filla	
John Halovasic	2-7-85	Alan M. Murn	John Halovasic	
Bill Galvin	2-14-85	Alan M. Murn	Bill Galvin	

50321495

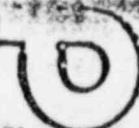
38 59 E5
PAGE 30 OF 39

1-20-86

1/1/86

FORM IR CII 1-13-80
Rev. D Page 2 of 2
Attachment to NR-0101

bisco



ORIGINAL

INSPECTION REPORT

I.R. No. 109

Project Name. Perry Nuclear Power Plant

Date 1-29-85

Bisco Project No. 3134

Item of Activity Inspected Ceramic fiber bulk

Description and Inspection Report

The shipment of ceramic fiber bulk on
P.O. # 4128 is complete and undamaged.
There were no deviations or documentation.

See NR # 0101

HOLD TAG No. _____ O.C. Inspector D. von Lais Date 1-29-85

Disposition

Dispositioned by Na Title Na Date

Inspection Report Closeout

Inspect Acceptance NCR No. Issued _____ Reinspect Acceptance

Reject Tag No. _____

50321496

03-120-86 37 ⁵⁸ 55
PAGE ~~36~~ OF ~~37~~

ITEM NO.	1	DATE ISSUED	1/29/85	ENCL	A/A	PERRY NUCLEAR POWER PLANT NONCONFORMANCE REPORT	PAGE 36 OF 37					
NO. 70023 REV. 7A						PAGE NO. 39/85	501/29/85					
1	ITEM NO.	REV. NO.	TYPE OF ITEM	IDENT. NO.	ITEM NAME	QUANTITY	TO, # 0101					
2	ISSUED BY	Deborah VonParis DPF	ITEM NO.	105	ITEM NAME	1	DATE 01/29/85					
3	ITEM / MATERIAL SOURCE	BISCO	CURRENT STATUS	Hold	LOCATION	CC CL. 12/B EL. 654'						
4	RESPONSIBLE ORGANIZATION	BISCO	SPEC. NO.	SP- 000987	REV./ECH.	2						
5	HCR TYPE	CATEGORY: <input checked="" type="checkbox"/> 1 (POSSIBLE SIGNIFICANCE) <input type="checkbox"/> 2 (MAJOR) <input type="checkbox"/> 3 (MINOR)	TYPE: <input checked="" type="checkbox"/> (E) EQUIP./MATERIAL <input type="checkbox"/> (I) INSTALLATION <input type="checkbox"/> (P) PROGRAM									
6	GOVERNING REQUIREMENTS	(INCLUDE ACCEPTANCE CRITERIA AND DOCUMENT. NO.) Para. 6.1.3 all controlled materials shall not be used by Production until inspected, accepted, & released by Dept. of Quality Control.										
7	DESCRIPTION OF NONCONFORMANCE	NC CODE	105	RELATE TO LINE NO. 6	Bisco Craft used controlled material - ceramic bulk fiber P.O. #4128 prior to its release.							
8	CAUSE OF NONCONFORMANCE	CAUSE CODE	P01	Bisco Craft worked over a hold for inspection day. Bisco QC had not received the certificate of compliance for the ceramic bulk fiber.								
9	PROPOSED DISPOSITION	<input type="checkbox"/> SCRAP (1) <input type="checkbox"/> REWORK (2) <input type="checkbox"/> REPAIR (3) <input checked="" type="checkbox"/> USE AS IS (4)										
10	JUSTIFICATION	Material was used in the control room 654' elevation for sealing the front of the electrical cabinets for a CO ₂ test, which is considered a non-quality seal.										
11	STEPS TO PREVENT RECURRANCE	Craft General Foreman and Foreman to be trained on material holds.										
12	RESP. ORG APPROVALS	ENG./ECON.	QA/QC	DATE	01/29/85	REVIEWED	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	DECISION	APPLIED <input checked="" type="checkbox"/> REJECT <input type="checkbox"/>	DATE	01/29/85	
13	REVIEW BOARD	REVIEW RECD.	DATE	1/29/85	REVIEWER	Supervisor	INITIALS	DECISION	APPLIED <input checked="" type="checkbox"/> REJECT <input type="checkbox"/>	DATE	01/29/85	
14	VERIFIED	Neophyte vonParis 14/C						INITIALS	DECISION	APPLIED <input checked="" type="checkbox"/> REJECT <input type="checkbox"/>	DATE	01/29/85
COPY DISTRIBUTION: 1- DOCUMENT CONTROL												

PERRY NUCLEAR POWER PLANT

NONCONFORMANCE REPORT REVIEW/REVISION

PAQS JUN 29 85

CB 1-29-85

MO. 1823-A REV. 1/84

N-N B18C, G11/B6 Issue Date 1/29/85 Current Date 1/29/85

Review Required

 CAI Eng. JE Other _____

Review Comments:

*Proposed Disposition to "Use As Is" is ACCEPTABLE
TO ENGINEERING.*

Attach documented training upon close-out of this NR.

P.C. #4128 material cannot be used until all documentation is obtained.

AFFECTS AS BUILT

Yes

DRAWINGS?

No

DRAWINGS

Contractor/Vendor _____

AFFECTS EQUIPMENT

Yes

QUALIFICATION?

No

AFFECTED

CAI _____

J. L. Czerniak 1/29/85

Date

R. Cyzewski

Date 1/29/85

Date

Date

ATTACHMENTS

YES

LIST OF ATTACHMENTS

NO *1 pg*

IF THE PROPOSED DISPOSITION WAS REJECTED, THE RESPONSIBLE ORGANIZATION SHALL COMPLETE THE SECTION BELOW AND RESUBMIT THE NR TO COS QUALITY ADMINISTRATION.

DISPOSITION REVISION NO. _____

7A	PROPOSED DISPOSITION
----	----------------------

<input type="checkbox"/> REPAIR	<input type="checkbox"/> REMOVE	<input type="checkbox"/> REPLACE	<input type="checkbox"/> DEFER
---------------------------------	---------------------------------	----------------------------------	--------------------------------

JUSTIFICATION

10 STEPS TO PREVENT RECURRENCE

11 RESP. ORG. APPROVAL	ENG/CONST.	QA/QC	AIA	DATE
	REVIEW PERIOD: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	DECISION: <input type="checkbox"/> ACCEPT <input checked="" type="checkbox"/> REJECT	DATE	
	ENGINEER: NAME _____	QA/QC: NAME _____		

SN 32149 A

D.T. 4433

JMG

PAGE 34 OF 371

35 53

BB 1:00:86

Brand Industrial Services, Inc.
Bisco Construction Group
2207 Lively Blvd., Elk Grove Village, Illinois 60007 phone (312) 236-8876

58
SL 1/1/86

bisco



delivery ticket

Babcock & Wilcox

245 W. Roosevelt Road

W. Chicago, Illinois 60185

Bisco

10 Center Street

Perry, Ohio 44081

TRUE ORDER NO.	ITEM #	DATE	VIA	SHIP TO
G. Hamilton	Drop Ship	12-19-84	Direct Shipment	3133-100M C-491

QUANTITY SHIPPED	QUANTITY SHIPPED	MATERIAL	
30 BX	30 BX	Ceramic Fiber Bulk	D/P 1-24-85 D
30 BX	30 BX	Ceramic Blanket 4" Strips	D/P 1-24-85 O
		Partial Order	

N
O
T
E
W
R
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E

Shipped direct from manufacturer

Bisco P.O. #74128

Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

to: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You.

All claims MUST be made
within 5 days from date of delivery.

10% handling charge on all returns
Only full packed units relivable.

Received By

Ruthie von Paris

1-24-85

JOB FILE NUMBER

50321499

bisco



PAGE 30 OF 31

58 FORM RP-1
REV-3
BB 1-20-86

34 ORIGINAL

RECEIVING INSPECTION CHECKLIST

(SITE)

P.O. No. 4128DATE 1-24-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Babcock & WilcoxMATERIAL RECEIVED Ceramic fiber blanket (4 strips)LOT / BATCH no. 4128QUANTITY 30 by x 150' ea

Required	Inspection Instruction	Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/>
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Certificate of Compliance for Material Received	<input type="checkbox"/>
<input type="checkbox"/>	Inspect for Shipping Damage	<input type="checkbox"/>
<input type="checkbox"/>	Inspect for Proper Markings	<input type="checkbox"/>
<input type="checkbox"/>	Visual Inspection	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>

Material Accepted Rejected

Remarks:

Verify D.T. against

material received

See NR # 0101, REF.I.R # 109, 1st page

O.C. Inspector

1-29-85

Date

50321500

PAGE 32 OF 37

BB 1-30-84

33 53

FORM CC-
Rev. 4



ORIGINAL

CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Station
10 Center Street
Perry, OH. 44081

DATE January 25, 1985

CUSTOMER P. O. NO P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-0U

BISCO PROJECT NO 3133
Material P. O. No. 4128

D. T. No. 4433

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores A. Jott
Dolores A. Jott

Dolores A. Lott
Audrey Gurnell



2227 South Blvd., off Grove Village, Illinois 60621 phone (312) 226-0224
the basic transportation group

PAGE 31 OF 31

32 53
GB 1-20-86

SB 1/2/1950
DT 5030

JMG

delivery tick

Bisco Construction

Bisco

2207 Lively Blvd.

10 Center Street

Elk Grove Village, IL. 60007

Perry, Ohio 44081

All claims MUST be made
within 5 days from date of delivery.

Received by Keller

50321502



PAGE 30 OF 37

CD 1-20-86 FORM RI-1
31 5358
REV-3/2/84

ORIGINAL

RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. 4380DATE 5 10 85JOB no. 3130PROJECT NAME Perry Mexico Plastics PlantVENDOR in CodingMATERIAL RECEIVED 732 Can. L.LOT / BATCH no. QPO359-4QUANTITY 24 Boxes X 12 Lbs.

Required	Inspection Instruction	Accept	Reject
<input checked="" type="checkbox"/>	Verify P.O. Against Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Dimensional Inspection	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted RejectedRemarks: —Verify PO against material received

O.C. Inspector

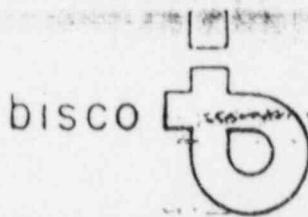
Date

5.23.85

50321503

PAGE 29 OF 31

00-12026 FORM 00-1 1/21/80
RTV, A.



CERTIFICATE OF COMPLIANCE

SHIPPED TO: Cleveland Elec. Illuminating Co.
C/O Bisco
Perry Nuclear Power Generating Stat
10 Center Street
Perry, Oh. 44081

DATE May 10, 1985

ORIGINAL

CUSTOMER P. O. NO. P-4293/SP-98

CUSTOMER SPECIFICATION
SP-98-4549-00

BISCO PROJECT NO. 3133

D. T. No. 5030

Material P. O. No. 4388

It is hereby certified that the articles listed above comply with all applicable purchase order specification requirements.

Dolores B. Yell

Dolores A. Lott—
Quality Control Supervisor

50321504

59 53
BB 1-20-86

1/2/86

DT 6261

JMG



bisco
bisco industrial services, inc.
the bisco construction group
2207 lively blvd., elk grove village, illinois 60007 phone (312) 288-0676
one of the bisco companies

delivery ticket

bisco construction

2207 Lively Blvd.

Elk Grove Village, Illinois 60007

Bisco

10 Center Street

Perry, Ohio 44081

ITEM NUMBER	F.O.B.	DATE	TIME	ROUTE	SHIP TO
QUANTITY	QUANTITY				
ITEM NO.	DESCRIPTION				
1,000#	1,000#	Locaseal (ABB)	10-8-85 VM	Air-It There	3133-180M-C-476
				D	
				O	
				N	
				O	
				T	
				W	
				R	
				I	
				E	
				Y	
				O	
				N	
				D	
				H	
				E	
				R	

Please acknowledge receipt of the material
listed on this Delivery Ticket by signature
and return Job File and Acknowledgment copies

To: BISCO
Construction Group
2207 Lively Blvd.
Elk Grove Village, IL 60007
Thank You

All claims MUST be made
written 5 days from date of delivery

Received by *Lisicka McCafferty*

50321505



PAGE 20 OF 30

28 58
08 120-86 FORM RI-1 sl
REV-3
1/2/86RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. N/ADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power PlantVENDOR Bisco ConstructionMATERIAL RECEIVED LOCA SEAL Part ALOT / BATCH no. 2560 LQUANTITY 10 PAILS X 435 lbs

Required	Inspection Instruction	Accept	Reject
<u>na</u>	Verify P.O. Against Material Received	<u>na</u>	
<input checked="" type="checkbox"/>	Certificate of Compliance for Material Received	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Shipping Damage	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Inspect for Proper Markings	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	Visual Inspection	<input checked="" type="checkbox"/>	
<u>na</u>	Dimensional Inspection	<u>na</u>	
<input checked="" type="checkbox"/> *	Special Instructions per Attached	<input checked="" type="checkbox"/>	

Material Accepted
 Rejected

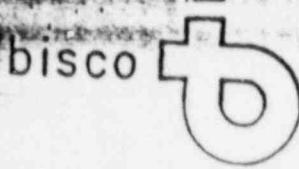
Remarks:

* VERIFIED DT. AGAINST
MATERIAL RECEIVEDClell McCafferty
O.C. Inspector

11-12-85

Date

50321506

PAGE 26 OF 37

DD 1-20-80 27

FORM RI-1
REV-3
*[Handwritten notes: 58, 5c, sc]*RECEIVING INSPECTION CHECKLIST
(SITE)P.O. No. NADATE 11-12-85JOB no. 3133PROJECT NAME Perry Nuclear Power Plant
VENDOR Bisco ConstructionMATERIAL RECEIVED Locaseal Part BLOT / BATCH no. 2580 LQUANTITY 10 pails x 36.5 lbs

Required	Inspection Instruction	Accept	Reject
na	Verify P.O. Against Material Received	na	
✓	Certificate of Compliance for Material Received	✓	
✓	Inspect for Shipping Damage	✓	
✓	Inspect for Proper Markings	✓	
✓	Visual Inspection	✓	
na	Dimensional Inspection	na	
*✓	Special Instructions per Attached	✓	

Material Accepted
 Rejected

Remarks:

*verified DT against
material received.

O.C. Inspector

11-12-85
Date*Nicki McCafferty*

50321507

216/259-3737
Ext: 6843

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26-58
00 1-20-26 58
1/21/86

November 8, 1985

Cleveland Electric Illuminating Co.
Perry Nuclear Power Generating Station
10 Center Street
Perry, Ohio 44081

Subject: Bisco Certificate of Compliance for Bisco Locaseal Material

Dear Sir,

This is to certify that the below listed material furnished to Cleveland Electric Illuminating Co., Purchase Order #P-4293/SP-9R is Bisco Locaseal material and has been formulated and manufactured to the same standards as the material furnished to Bisco, pressure test #748-191 Rev. D, Qualification test conducted by Brand Industrial Services, Inc.

PRODUCT NAME	LOT NUMBER	SHELF LIFE	QUANTITY
BISCO LOCASEAL PART A	2560L	11/8/85	10 pails x 63.5 lbs. each
BISCO LOCASEAL PART B	2580L	11/8/85	10 pails x 36.5 lbs. each

Material P.O. #: N/A
Bisco Job #: 3133
Bisco D.T. #: 6261
Customer P.O.# : P-4293/SP-98

Sincerely,

BRAND INDUSTRIAL SERVICES, INC.

Dolores A. Lott

Dolores A. Lott
Quality Control Supervisor

brand industrial services inc
construction group
2207 lively road, elk grove village, illinois 60007, (312) 228-6670

A subsidiary of Brand Insulations, Inc.

5032 150A

7
8
ORIGINAL

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25 58 58
03 1-20-86 1/24/86

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # 3-188
SIZE or RANGE:
CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set 6 as Standard,
(Certificate verified by NBS to NBS 2028)

Date of Verification: 9-9-85

Date Due: 3-9-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	.2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	-------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	-0	+0	-0	-0	-0	-0	-0	-0	-0	-0	-0
------------	----	----	----	----	----	----	----	----	----	----	----

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	49.90	60.00	70.00	80.20	99.20	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	-10	0	0	+20	+20	0
------------	---	---	---	---	---	-----	---	---	-----	-----	---

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0	100.20	200.10	300.10	400.00	500.00
-----------	---	--------	--------	--------	--------	--------

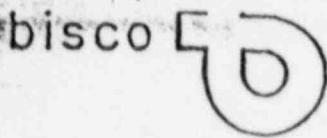
Deviation:	0	+20	+10	+10	0	0
------------	---	-----	-----	-----	---	---

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

J. L. Masters
Name

D. Stevenson
Title

50321509



42/45
PAGE 25 OF 31

24 5358
ORIGINAL CC
1-20-86

CERTIFICATION of CALIBRATION

EQUIPMENT TESTED: Balance Ohaus Dial-O-Gram Model 2610 Serial # B-143
SIZE or RANGE:

CALIBRATION FREQUENCY: 6 months

TRACEABILITY: BISCO Standard Weight Set #6 as Standard,
(Certificate verified by Ill. Dept. of Labo
to NBS 2028)

Date of Verification: 9-19-85

Date Due: 3-19-86

10 gram Dial Accuracy:

Standard:	0.00	1.00	.2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	-------	------	------	------	------	------	------	------	-------

Readings:	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
-----------	------	------	------	------	------	------	------	------	------	------	-------

Deviation:	0	0	0	0	0	0	0	0	0	0	0
------------	---	---	---	---	---	---	---	---	---	---	---

100 gram Beam Accuracy:

Standard:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Readings:	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.01
-----------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------

Deviation:	0	0	0	0	0	0	0	0	0	0	+.01
------------	---	---	---	---	---	---	---	---	---	---	------

500 gram Beam Accuracy:

Standard:	0.00	100.00	200.00	300.00	400.00	500.00
-----------	------	--------	--------	--------	--------	--------

Readings:	0.00	99.80	200.00	300.02	400.05	500.03
-----------	------	-------	--------	--------	--------	--------

Deviation:	0	-.20	0	+.02	+.05	+.03
------------	---	------	---	------	------	------

It is hereby certified that the described equipment has been inspected and tested as indicated above, and that the Standard used in obtaining data is calibrated and traceable to the National Bureau of Standards.

D. Mackay
Name
QC Supervisor
Title

50321510

ILLUMINATING COMPANY
P.O. NO. SP981-293

ILLUMINATING COMPANY
P.O. NO. SP-281-4293

PERRY NUCLEAR POWER

PLATE - UNIT 16 COMING

bisco

• SYSTEM VERIFICATION LOG •

PROJECT NAME Perry Nuclear Power Plant **JOB NO.** 3134
PRODUCT NAME L-6A SEAL **DENSITY RANGE** 10 to 110 P.C.F.

PRODUCT NAME	DENSITY RANGE					JOB NO.
	SCALE NO.	SYSTEM NO.	INSPECTION DATE	DENSITY (PCF)	DENSITY WITHIN RANGE	
					SAMPLING REASON	O. C. INSPECTOR INITIALS
B-143	008	1-5-86	143.74	✓	✓	START SHIFT BW/JO
B-143	008	1-5-86	140.53	✓	✓	START SHIFT BW/JO
B-143	008	1-6-86	140.13	✓	✓	START SHIFT BW/JO
B-143	008	1-6-86	140.33	✓	✓	START SHIFT BW/JO
B-143	008	1-7-86	141.35	✓	✓	START SHIFT BW/JO
B-143	008	1-7-86	140.13	✓	✓	START SHIFT BW/JO
B-143	008	1-8-86	140.53	✓	✓	START SHIFT BW/JO
B-143	008	1-8-86	140.75	✓	✓	START SHIFT BW/JO
B-108	008	1-9-86	150.76	✓	✓	START SHIFT BW/JO
B-108	008	1-9-86	146.75	✓	✓	START SHIFT BW/JO

PAGE 33 OF 33

THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY
PO NO. SP98/4293
PERRY NUCLEAR POWER
PLANT UNIT 1 & COMMISSION

FORM OCT-1
REV-3

bisco

ORIGINAL

PAGE 21 OF 31

COMPONENT TRACEABILITY LOG

PROJECT NAME Perry Nuclear Power Plant FIRST ENTRY DATE 6-4-85

PROJECT NO. 3134

LAST ENTRY DATE 1-7-86

MACHINE NO. 4A

PRODUCT Lacaseal

Weight or Quantity column on this form refers to WEIGHT
(weight or quantity)
and is expressed in LBS
(lbs., gallons, etc.)

Entries reviewed by

Reviewed by D. Zinkow Date 1/11/86

PAGE 20 OF 31

BB 120-26 21 202830
FLOOR NO. KLI-6244 1/1/k
REVISION 1
SHEET 1 OF 2

GENERAL  ELECTRIC

FIELD DEVIATION
DISPOSITION REQUEST

DATE OF ISSUE

SUGGESTED DISPOSITION CONTINUED

OR OPEN CIRCUIT, THE MSIV'S WILL CLOSE AUTOMATICALLY. THIS IS A SAFE CONDITION. (FOR THE SAME REASON THE CUSTOMER MAY ALSO WIRE TO THE TERMINAL BLOCKS). THE SOLENOID VALVE COILS SHOULD BE SEALED FROM THE ENVIRONMENT USING A QUALIFIED MOISTURE TIGHT SEAL. BISCO LOCASEAL, A PROPRIETARY SEALING COMPOUND FOR WHICH GE HAS NEITHER MATERIAL SPECIFICATIONS NOR APPLICATION EXPERIENCE. CEI'S CHOICE OF SEAL TO BE INSTALLED ON THE SOLENOID VALVE COIL HOUSING. CEI MUST ASSUME RESPONSIBILITY FOR THE INSTALLATION AND INTEGRITY OF THE SEAL.

NTS-
WORKING COPY

50-3215-13

TNP7 No. 5610
Rev. 1-85

FDI/FDDR AUTHORIZATION

1021-5033-5038

10/12/86

SUBJECT: FDI WIV Air Solenoid Valve
 FDDR KU-62447-K011 4549-49-4902-1

(GE Number)

(GAI Number)

From: Roger Parker
(S/O Responsible Engineer)Date: 10-11-85

- A. GE BVR (GE-Cost)
- B. Maintenance
- C. Nuclear Test John.
- D. Warehouse
- E. Contractor SP- _____ (PCVA _____)

is authorized to perform the work described in the subject approved FDI/FDDR, its attachments and replacement drawings. This work shall be done in accordance with a Project Organization approved QA program.

Drawing Issue Instructions (Not applicable to "E" above):

PO/DC is hereby requested to issue copies of the subject FDI/FDDR, its attachments, and the following drawings to the above organization:

See attached list. Reproducible Drawings as transmitted on PY-K&H/SO _____.

Others: NPK

NTS

WORKING COPY

Procedure Submittal Request:

The following special process procedures, work procedures/instructions, and/or installation sequencing documents shall be submitted by the above organization to the Project Organization for review and approval, in accordance with the established procedure submittal requirements prior to performance of work:

For additional Records see:

NCR # _____; or ECN # _____; or FVA # _____

Qualification of Equipment Affected? Yes No Initials: SGV Date: 10-12-85

Charge Check:

Initials: Date:

Nonconformance Report No.:

Initials: NA Date:

Is Quality Item List Affected?

 Yes NoSubscope:

cc: NDS File
 Site Manager - GE/NEDC
 NTS - Admin - TA7
 Document Control Center R290

CQS - TQ8 (For E)
 PAQS - TW1 (For D)
 OQS - S150 (For B or C)

MDL # 1B-1C-6244WA # 4549-12675DATE 10-24-85SPEC. # 18

446/R/1/sb

50321515

WHT NO. 3392 Rev. 21E5

WORK AUTHORIZATION

(3363)

 Continued on backWA NO 1 - 00 1-2086
1175-85-12675 10-22-85

DATE

53
58
R
st
1/2/k

SUBSCOM	HPN NO	F022	ITEM DESCRIPTION	RESTR	RESTRAINT	HPN NO	OK
IB21C	IB21-F020		MSIV		1.7		291
LOCATION	REASON/INITIATING DOCUMENT						
Containment	FDDR-KL1-6244 R-1						
<input type="checkbox"/> NSR	<input checked="" type="checkbox"/> SR	<input type="checkbox"/> AUC	<input type="checkbox"/> ASME	<input type="checkbox"/> SEISMIC	<input type="checkbox"/> OTHER		
INITIATOR	EXT. NO	DATE	RESPONSIBLE ORG.				
Bob Stolatka	6616	10-22-85	NCS-3398				
DESCRIPTION OF WORK	REQUIRED DATE						
<input type="checkbox"/> ACCESS ONLY	RDG 1024/85						
AIS/A/P							

Install Bisco Locaseal sealing compound on the solenoid valve coil housing per the approved disposition of FDDR-KL1-6244 R-1.

to S. Phillips
11/16/85

PRELIMINARY COPY FOR PLANNING
PURPOSES ONLY

LIMITS/PRECAUTIONS/SPECIAL INSTRUCTIONS

Work group is to establish storage requirements

SAFETY TAGS REQUIRED	<input type="checkbox"/> YES	<input type="checkbox"/> NO
1. SITE CONCURRENCE <i>Mike Jones Spike</i>	DATE 10/24/85	QA REVIEW (SAFETY RELATED, QUALITY AUGMENTED ONLY) DATE
2. RLT CONCURRENCE <i>Don Gena</i>	DATE 10/24/85	A SAFETY TAG OUT ESTABLISHED NO. _____ SIGNATURE _____ DATE
3. AUTHORIZATION TO PROCEED	DATE	A NO. _____ SIGNATURE _____ DATE
WORK COMPLETE-DOCUMENTATION ACCEPTABLE		
4. RESP. WORK ORG./SAFETY TAGS REMOVED	DATE	DOCUMENTATION PHC NO. _____ RESP. QA _____ DATE
5. OTHER (ASME)	DATE	C NO. _____ RESP. QA _____ DATE
RETEST REQUIREMENTS		
5. LLRT RETEST YES - NO <input type="checkbox"/>	RETEST COMPLETE ACCEPTABLE	RETEST NO. DATE
<input type="checkbox"/> LLRT REVIEW REQUIRED	RLTE	DATE
DOES (SAFETY RELATED, QUALITY AUGMENTED ONLY) DATE		
FINAL REVIEW AND CLOSURE RLTE DATE		
DOES (SAFETY RELATED, QUALITY AUGMENTED ONLY) DATE		
ANII DATE		

50321516

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17

1/21/86

1/21/86

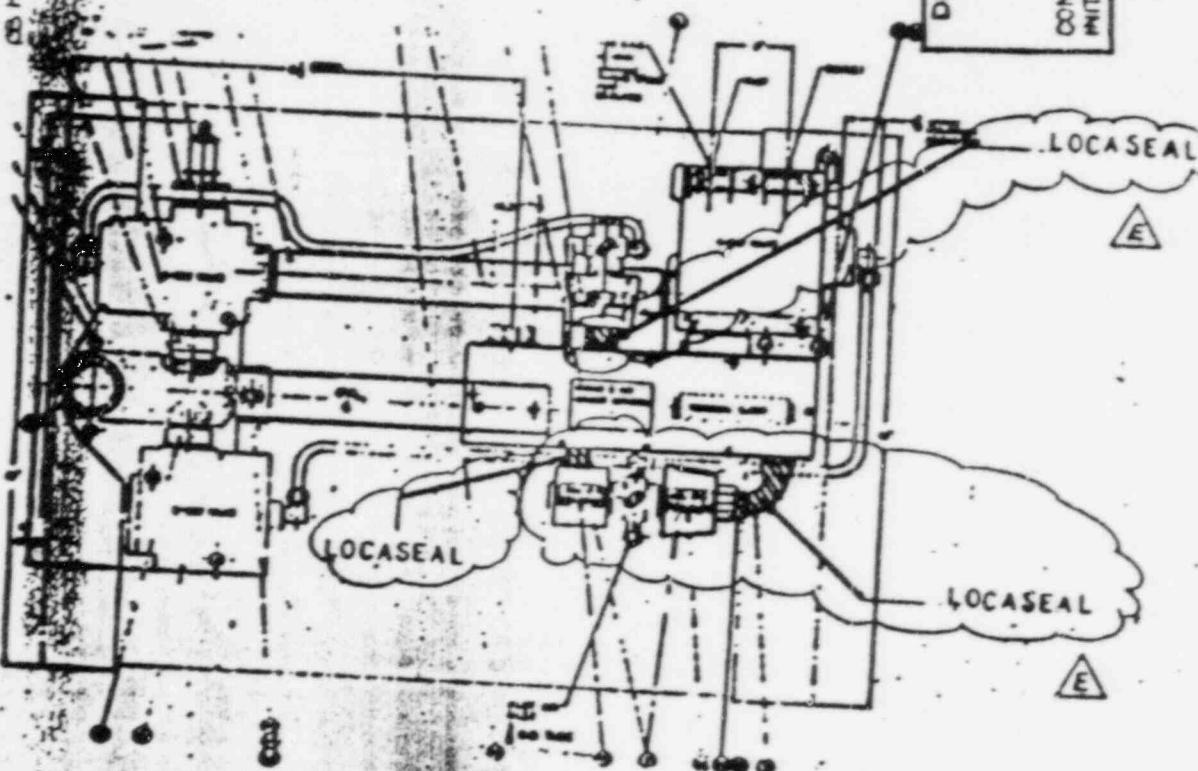


FIGURE 2-2
MSIV ACTUATOR ASSEMBLY

ATTACHMENT 2 PG. 1 OF 1
ECN 27245-96-33 REV. F

SL 1/2/84
58
PAGE 15 OF 301

08 1-20-80 16 58

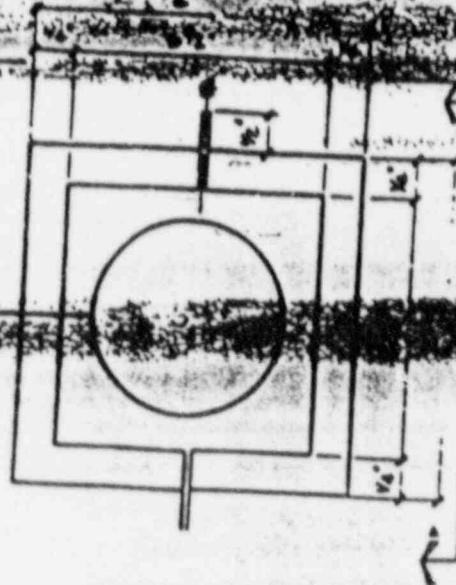
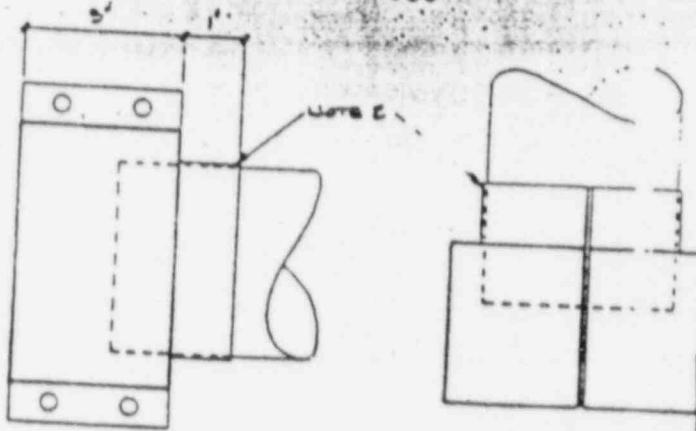


FIGURE E
MCT 4049 3 4050



ECN	12-4-1-20-3	REV E
DMG	32-2-12-2-6-1	REV E
ATTACHMENT	L	5-1

DESIGN CONTROL PACKAGE

DEC 21 1985

CONTROL # 918
INIT. AMG

SECTION A-A

SECTION B-B

- NOTES:
1. SIZED TO FIT SWING CONDUIT (1½" OD).
 2. ATTACH TO CONDUIT WITH DC-732 RTV CAULK AND #8 CLAMP.
 3. BOX HALVES TO BE ATTACHED USING $\frac{1}{4}$ #20 BOLTS, GRADE 183 87 SC-78 AND HEAD SIZE OR NUTS.
 4. ASSEMBLY TO BE FABRICATED FROM 14GA GALVANIZED SHEETMETAL.
 5. ASSEMBLY + CONDUIT (DEPTH 2" MIN) TO BE FILLED WITH LOCASEAL.
 6. CABLES TO BE SPREAD SUFFICIENTLY TO ALLOW PROPER INSTALLATION OF LOCASEAL.
 7. ALL DIMENSIONS ARE - 1"

5032-151A

CUP

CLIPS (TO SLEEVES)
(TYP.)

SLEEVES

FOUND IT

PAGE 14 OF 31

03-20-86

15

SB
1/2/k
sc

CUP

2' CONDUIT

1½" 1½"
(TYP.) (TYP.)

DETAIL 'C'

NOTE:

THIS DETAIL SHOWS THE PREFERRED METHOD OF CABLE SPREAD.
ACTUAL METHOD WILL BE DETERMINED BY FIELD CONDITIONS.

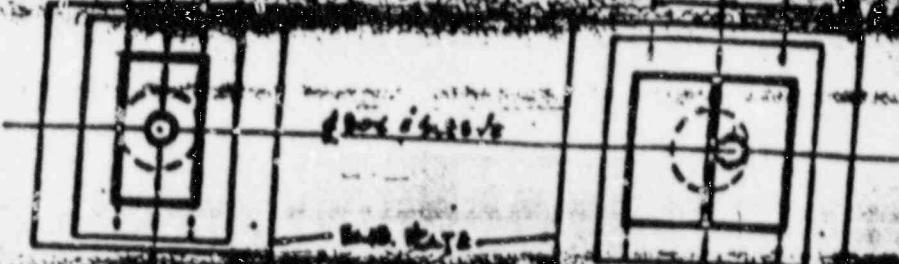
DESIGN CONTROL
PACKAGE

DEC 21 1985

CONTROL 1718
INIT. *BBB*

ATTACHMENT PAGE 4 OF 5
ECU # 27245-98-33

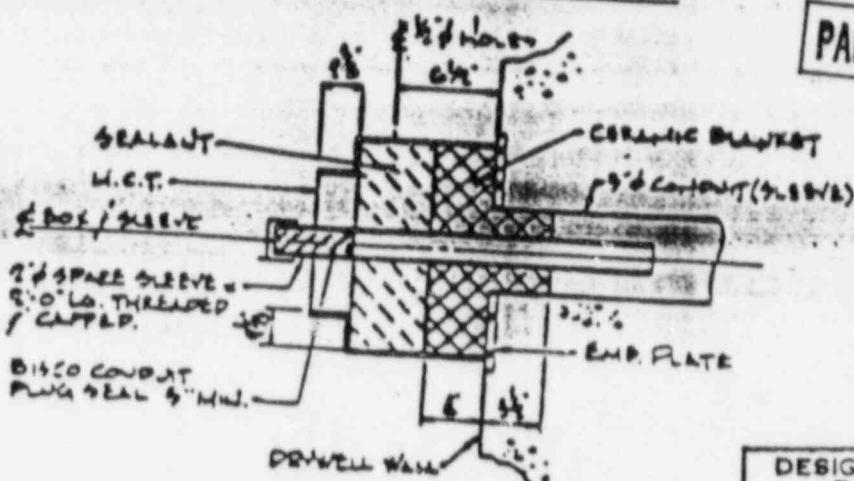
5032 1519



HEADER BOX - SINGLE SITE

HEADER BOX - DOUBLE M.T.C.

DETAIL 'B'



14 58
58
PAGE 15 OF 37

11/11/85 11

DESIGN CONTROL PACKAGE

DEC 21 1985

CONTRX. # 918
INIT. OPTB

SECTION 1-1

NOTES:

1. MATERIAL AS SPECIFIED IN SP. 98
2. SLEEVE SHALL EXTEND $1\frac{1}{2} \pm \frac{1}{2}$ " PAST THE FACE OF THE MCT.
3. SLEEVE SHALL BE PLACED IN THE APPROXIMATE CENTER OF THE MCT WITH A TOLERANCE OF ± 2.00 " ABOVE OR BELOW THE HORIZONTAL $\frac{1}{2}$. (REF. DETAIL B)
4. BLANKET THICKNESS FOR CERAMIC FIBRE 4" NOM. $+1.00$, -0.00 " OF THAT SPECIFIED IN SECTION 6-1: ERB-3013, ERB-3021, ERB-3022, ERB-3024, ERB-3015, ERB-3016, ERB-3017, ERB-3018.
5. THE FOLLOWING MCT'S SHALL RECEIVE A $1\frac{1}{2}$ " SLEEVE IN LIEU ERB-3013, ERB-3021, ERB-3022, ERB-3024, ERB-3015, ERB-3016, ERB-3017, ERB-3018, ERB-4035, ERB-4037, ERB-4039, ERB-4036, ERB-4040, ERB-4032, ERB-4041, ERB-5136

ATTACHMENT D... 1 ...

5A-32-152-A

CR-1-13-86

3 83 00-100-86

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1/21/86
4 A

6:11.1 Materials

1. LOCA Seal manufactured by BISCO.
2. Sylgard 170 conduit plug seal supplied by the contractor.
3. Babcock & Wilcox ceramic blanket and fittings.
4. 1" ID 300 sleeve supplied by the contractor.

6:11.2 Testing and Acceptance

1. The test of a mock-up seal shall be performed before the drywell structural integrity test. Previous test results may be substituted for a mock-up seal as approved by the engineer.
2. The seal material shall be tested using a pressure of 30 psig with pressure increments of approximately 7.5 psig. Pressure gages shall be accurate to $\pm 1\%$. The pressure shall be held for five (5) hours while leak detection is made using soap bubble solution or equal. NOTE: This portion applicable to the MCT seals only.
3. The acceptance criteria shall be:

- a. No permanent deformation of the material after depressurization.
- b. No measurable leakage at 30 psi using the soap bubble method or equal. NOTE: This portion applicable to the MCT seals ONLY.

The moisture seals installed in the MSIV actuator assemblies shall completely fill the conduit connections and exhibit no voids or air spaces. NOTE: No loca seal shall enter the solenoid housing.

6:11.3 Submittals

1. The contractor shall submit pressure test reports on the seal materials.
2. The contractor shall submit installation procedures based on the specified sketch.
3. The contractor shall submit required inspection procedures for the seals.
4. The contractor shall submit documentation to verify that the material and completed work conform to this specification in accordance with the requirements of specification SI-709-4549-00.

DESIGN CONTROL PACKAGE	
DEC 21 1985	
CONTROL	INIT.
DAB	

50321521

CL 1-13-80 58
12 531-20-30

SECTION 6:02

PAGE 11 OF 37

ADD: 7. The installation of pressure seals in the multiple cable transits (MCT) installed on the drywell wall. 1/14/86 SC

8. The installations of modified MCT's with MSIV actuator assemblies.

6.11

MCT pressure/MSIV moisture seals: The assemblies listed below shall receive a safety related seal for either pressure or moisture as designated. Pressure seals shall be installed in the cavity of the existing MCT's with materials approved by the engineer. Where identified, a 2" # conduit shall be installed to facilitate future cable installation. Moisture seals shall be installed in the conduit connections from the MSIV actuator terminal box to the solenoid coils. This seal shall consist of localseal.

MCT PENETRATIONS AT DRYWELL

SEAL EP SR

1ERB 3013	1ERB 4028	1ERB 4042	1ERB 4056
3014	4029	4043	4057
3015	4030	4044	4058
3016	4031	4045	4059
3017	4032	4046	4060
3018	4033	4047	4061
	4034	4048	4062
3020	4035	4049	5009
3021	4036	4050	5011
3022	4037	4051	5012
3023	4038	4052	5013
3024	4039	4053	5014
3025	4040	4054	
	4041	4055	

MSIV ACTUATOR ASSEMBLY SEALS

1B21F022A
F022B
F022C
F022D

1B21F028A
F028B
F028C
F028D

DESIGN CONTROL
PACKAGE

DEC 21 1985

CONTROL # 918
INIT. dcb

50321522

Attachment

SUBJECT SP-96 PRESSURE / MOISTURE SEALS

ORIGINATOR Harry B. S. Brodhead
(Signature) 11-20-85
(Date)

DEPARTMENT SITE DESIGN TEAM

ECN NUMBER 21245-98-33 REV F

CR NUMBER 5-108

AFFECTS SP. 98/II

B DETAILS AND BACKGROUND OF REQUIRED DESIGN CHANGE:
REV. F: REVISES VALVE ID FROM FO 20. TO
FO 22 ATTACHMENT IREV. E: ADDS THE CRITERIA ATTACHMENT A
PG. 1 OF 5 FOR MOISTURE SEALS, PLUG
SEAL ACTUATOR ASSEMBLIES AND MOISTURE
ATTACHMENT 1 PG. 6 OF 5, AND ATTACHMENT 2REV. D: ADDS NOTE 7 AS FOLLOWS TO DETAIL "B":
NOTE 7 - SLEEVES IN WHICH THE EXISTING
PLUG SEAL WAS REMOVED TO ALLOW
CIRCUIT PULLS, SHALL BE SEALED USING A
MODIFIED PLUG SEAL. THE SEAL SHALL BE
BORED IN SUCH A FASHION SO AS TO
ACCOMMOOTIE A TIGHT CABLE FIT ONCE
REINSTALLED. WHEN THIS TYPE OF INSTALLATION
IS NOT POSSIBLE THE SLEEVE SHALL BE
ILLED WITH LOCASEAL TO A DEPTH OF
5.00"REV. C: ADDED ERB 4036 TO NOTE 6, PG.
3084 DETAIL "B"REV. B: REVISED NOTE 3 AND ADDED NOTES
5 AND 6 TO DETAIL "B" (PG. 3084)

REV. A: ADDED 'NOTES' TO DETAILS ("B" AND "C")

REV. -: ADDED SECTION G102 ITEM 7; SECTION
G11 FOR MCT PRESSURE SEALS.

C DOCUMENTS TO BE REVISED BY THIS ECN

SP-98-4549-00 REV. II

D UNIT AFFECTED? NO YES
 ETC. HNC CHANGE REQUIRED? NO YES
 GROUP. QAL AFFECTED? NO YES
 SAR CHANGE REQUIRED? NO YES
 UNIT 2 AFFECTED? NO YES

E SYSTEM AFFECTED

N/A

F MATERIAL TO BE PURCHASED

 NO YES

G DESIGN REVIEWER APPROVAL

BY: Anthony Murray DATE: 11-2-85
(Design Reviewer)

H QA APPROVAL (IF REQUIRED)

BY: R. C. Gagnon DATE 11/21/85
(QA Management)

I PROJECT ENGINEERING APPROVAL

BY: J. C. Hall DATE 11/21/85
(Project Engineer)

J CE ACCEPTANCE

BY: _____ DATE: _____
(Responsible Engineer)K DRAWING REQUIRED NOT REQUIRED L REVIEWED BY: _____ DATE: _____
(IA Representative)

M BILL OF MATERIAL NUMBER(S) _____ ISSUED _____

SPEC. NO. _____ AND CONT. PONO. #. _____

N DESIGN CHANGE INCORPORATED

BY: _____ DATE: _____
(Project Engineer)

REASON FOR CHANGE CODE: 7, 14 (S)

EXPLANATION (IF REQ'D): FDDA XL 16244

DESIGN CONTROL PACKAGE

DEC 21 1985

CONTROLLED BY: _____ DATE: _____
(Responsible Engineer)

ATTACHMENTS: ATTACHMENT 1 (5-PAGES)

ATTACHMENT 2 (1-PAGE)

O INTERFACING DEPARTMENTS ORGANIZATIONS OR GROUPS

- | | |
|--|---|
| <input type="checkbox"/> PIPING | <input type="checkbox"/> STRUCTURAL |
| <input checked="" type="checkbox"/> ELECTRICAL WASH 11-21-85 | <input checked="" type="checkbox"/> QUALITY ASSURANCE (S+G) |
| <input type="checkbox"/> BUILDING SERVICE | <input type="checkbox"/> MSSS |
| <input type="checkbox"/> CONTROL SYSTEMS | <input type="checkbox"/> OTHER |
| <input checked="" type="checkbox"/> MECH. NUCLEAR H/T Power | <input checked="" type="checkbox"/> EOCOORD B18 (11-21-85) |

NOTE:

NOT REQUIRED IF FOR DRAWING CHANGES ONLY

N/A

Gilbert Commonwealth

A/9

50321523

-227 Rev. 1/85

CHANGE DOCUMENT LIST

S - SAFETY-RELATED
A - ASME III & XI
D - AUGMENTED QUAL
N - NONSAFETY

L. PHILIPS NO. 6694

2. PREPARED BY H. SCHNEIDER

3. COGNIZANT DISCIPLINE

Access Crem

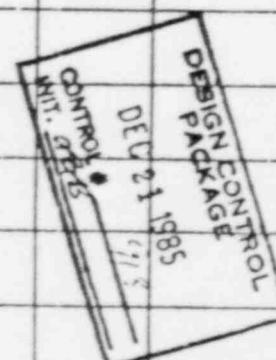
— 10 —

1911 JULY 9

6. FACTS

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M	B. DOCUMENT CHANGE DESCRIPTION DETAIL	9. SYS	10. OWC CLASS	M - NONSAFETY		12. SUPPORTING DOCUMENT REVIS	13. A - ACTUAL S - SCHEDULE	14. RESPON DISCIP	15. CHANCE COMPLETION DATE
				11. SAFETY CLASS	NUMBER	SHT.	REV.		
	10-98-4340-28 DRAFT A003 17800 UMTS FOR B21 MAIN MAINTAINABILITY REV3 EDITION 10 FOR MCT SERIALS	N/A	N/A	A/J/A	JP-98-4585-00	N/A	II	A/J/A	10-98-4340-28 A003 17800 UMTS FOR B21 MAIN MAINTAINABILITY REV3 EDITION 10 FOR MCT SERIALS



10/2/04

PAGE 10 OF 10

112/k

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PAGE 1 OF

DD 1-80-86

58
S/N
1/14/86

DESIGN CHANGE PACKAGE COVERSHEET

1. Page 1 of 28
 2. DCP No. RSQ 618 Rev.
 3. Sch. Priority 4

4. TITLE DRYWELL WALL PENETRATIONS CRITERIA FOR MOISTURE SEALS ON THE MSIV ACTUATOR ASSEMBLIES.

5. SAFETY-RELATED <input checked="" type="checkbox"/>	AUGMENTED QUALITY <input type="checkbox"/>	6. CIRCLE UNIT APPLICABILITY
Safety <input type="checkbox"/> Non-Safety <input type="checkbox"/>	NONSAFETY <input type="checkbox"/>	0 <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3

7. Affected Sys. Nos. B21 / ACT 8. Plant Mode VIA

9. Brief Description: Design Approach NDGAS A/E

THIS DCP ADDS THE CRITERIA FOR MOISTURE SEALS ON THE MSIV ACTUATOR ASSEMBLIES. REF. (ECN # 27245-98-33 REV. F)

THIS DCP ALSO ~~ADDS~~ RAS REQUIREMENTS FOR MCT'S (MULTIPLE CABLE TRANSITS) INSTALLED ON DRYWELL WALL. (ECN # 27245-98-33/F SECTION 4044 AND 4050 AS ATTACHMENT 2 Pg. G-615)

10. AFFECTED GROUPS	Init.	11. PRELIMINARY DCP APPROVAL	12. DCP APPROVAL
CIVIL <input type="checkbox"/>	Design Eng. Assigned	Safety Evaluation <input type="checkbox"/> N/A	DESIGN CONTROL PACKAGE
ELECTRICAL <input checked="" type="checkbox"/>	Jungler	Project Coordinator	DEC 21 1985
MECHANICAL <input type="checkbox"/>		NDGAS SPE	CONTROL # <u>12-2-85</u>
I&C <input type="checkbox"/>		Date	INIT. <u>gk</u>
HUMAN FACTORS <input type="checkbox"/>			Project Coordinator <u>2001 B. Shultz / 12-2-85</u>
LICENSING <input type="checkbox"/>			Project Coordinator <u>gk / 12-2-85</u>
EQUIP. QUA. <input type="checkbox"/>			MEGAS Senior Project Eng. <u>gk / 12-2-85</u>
PIPING <input type="checkbox"/>			Date
OTHER <input type="checkbox"/>			

13. PPTD/PPOD Approval of Preliminary DCP	By <u>N/A</u> Date <u>-----</u>	15. Init. Date
14. PPTD/PPOD Approval or DCP	By <u>gk</u> or <u>gk</u> Date <u>12-20-85</u>	"As-Builts" Rec'd By <u>-----</u> Drawings Updated <u>-----</u>
16. WORK/TESTING COMPLETE	By PPTD/PPOD <u>-----</u> Date <u>-----</u>	17. PROJECT COMPLETION
		Project Coordinator <u>-----</u> Date <u>-----</u>

DW137/L2/b6

50321525

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TABLE OF CONTENTS - DCP 85061B

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~~8-53-58~~
BB 1-20-86 34
REV. 1/1/86

PAGE

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EDCN	1
DCP Table of Contents	ii
DCP Cover Sheet	1
Change Document List	2



ATTACHMENT 1 : EKN 27245-98-37

E

50 32 1526

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PHOTO NO. 4275
Aug. 7/83

PEMBROKE NUCLEAR POWER PLANT

7 53 58
CB 1-20-86 1/21/86
ICE

ENGINEERING DESIGN CHANGE NOTICE

SYSTEM: B21/MCT DCP NO. 850618
INSTALLING ORGANIZATION: B1600 /12-88

Page 1



RECEIVED
DEC 21 1985

DESIGN COMMISSION
PERIOD 45 MIN

DESIGN ENGINEER
PROCE & VHD

Item #16 OF FOIA 85-165

REPORT EVALUATION FORM/RIII TRACKING SYSTEM

PERRY SITE
 NEW ENTRY MODIFY

2

ITEM NUMBER (1/1): 440/87073-LL-L
/YYYYXX-XX-X

PERSON WHO IDENTIFIED (1/16): LICENSEE

FOLLOWUP_DUE_DATE_YY-MM-DD (1/38):

LER_EVENT_DATE_YY-MM-DD (1/52): 87-10-29

LER_REPORT_DATE_YY-MM-DD (1/59): 87-11-25

LER_REVISION# (1/68): 0

RESPONSE_DUE_DATE_YY-MM-DD (1/100): 88-05-02

PERSON_ASSIGNED (1/108): Connaughton

CLOSEOUT_REPORT_NO._DLT/XXXXX (1/121):

INTERIM_REPORT_NO._DLT/XXXXX (2/95):
INSPECTOR (2/106):

BRIEF DESCRIPTION: (31)

Magneto-Air Pilot Valves Stick Due to Excessive Heat Ex- : DO NOT TYPE FAST
sure Resulting in Main Steam Isolation Valves Slow Clo- : THIS POINT
-e and Subsequent Manual Reactor Scream During Shutdown :

1. MODULE 92700 REQUIREMENTS:

2.01 2.02 2.03 2.04 2.05 2.06
(Re: TRIPS)

2. ASSISTANCE NEEDED (YES/NO) DATE/ADDRESSEE OF REQUEST:

3. OTHER FOLLOWUP (HEADQUARTERS, ENFORCEMENT, PART21, ETC.):

4. REMARKS:

COMPLETED BY:

DATE:

Sent to RIII with IR88003

ATTACHMENT 1
RP1105A

D2

NO. 6440
N. 5187

CONDITION REPORT

(use back of page for additional space.)

EVENT DATE/TIME	10-29-87 / 1837	DISCOVERY DATE/TIME	10-29-87 / 1837
EVENT DESCRIPTION	10-29-87		10-30-87

Item #18 of FOIA 88-165 3
UNIT NO. 1 CR-87 - SC3 Page 1 of _____
METHOD OF DISCOVERY 1413-P601 INDICATIONS

DURING PERFORMANCE OF STI-B21-025A WHILE FAST CLOSING 1B21-F022D, OPERATORS OBSERVED AN APPROX. 18 SEC TIME DELAY BEFORE THE VALVE BEGAN TO STROKE ONCE THE CONTROL SWITCH WAS PLACED IN THE "CLOSE" POSITION. THE VALVE THEN STROKED CLOSE IN LESS THAN 3 SEC. AT 2103 THE VALVE WAS STROKED SUCCESSFULLY 2 TIMES, USING SOI-B21.

IMMEDIATE CORRECTIVE ACTION (INCLUDE SVI'S)

REDUCED POWER TO $\approx 75\%$ AND FLOW $\approx 53\%$

TER 451-1 (LEVEL 1 FAILURE)

INFORMATION ONLY

SYSTEM/COMPONENTS AFFECTED (INCLUDE M&P)

1B21-F022D, 1B21-F028D, 1B21-F028B

REDUNDANT EQUIPMENT IN SAME SYSTEM AVAILABLE

1B21-F022 A,B,C

1B21-F028 A,C

ACTIVITIES AND CONDITIONS PRIOR TO EVENT

PERFORMING STI-B21-025A, S.S IN TC 7

OPERATIONAL CONDITION: ① 2 3 4 5

REACTOR POWER (MWHH): 76%

REACTOR PRESSURE:

947 PSIG

RX WATER TEMP (IF NONSATURATED):

INITIATION CRITERIA 1, 4	ORIGINATOR D.G.Phillips	DATE 10-29-87	SECTION POTENTIAL-TECHNICAL
TECH SPEC INVOLVED 3.6.4	LCO INITIATED (ATTACH COPY) <input checked="" type="checkbox"/> ACTUAL <input type="checkbox"/> POTENTIAL	WORK INITIATED* (INCLUDE NO.) <input type="checkbox"/> MR <input checked="" type="checkbox"/> NO 8)-9231 (cont'd)	DATE 10-30-87
US REVIEW Initial Review	DATE 10/30/87	STA REVIEW D.G.Phillips	DATE 10-30-87
NOTIFICATION (INCLUDE REPORTING REQUIREMENT) (ATTACH ENR)	REPORTS <input checked="" type="checkbox"/> POTENTIAL LER (PAP-0603) <input type="checkbox"/> POTENTIAL RSF (PAP-1604) RSF- <input type="checkbox"/> MANAGEMENT PRELIMINARY REPORT (GS-OPERATIONS NOTIFIED)	TECH SPEC VIOLATION? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	REMARKS SEE PLANT AND UNIT LOG FOR STRIKE TIMES
REVIEWED, REQUIRED ACTIONS TAKEN SS R.G. Phillips	DATE 10-30-87		
COMPLIANCE REVIEW DATE	LE NO.	ASSIGNED SECTION	
REVIEW DATE	PORC <input type="checkbox"/> YES <input type="checkbox"/> NO	REVIEW/APPROVED	
PORC REVIEW MEETING NO.	APPROVED	DATE	APPROVED
CR CLOSED DATE	REMARKS	DATE	CAUSE CODE P

EVENT DESCRIPTION (continued)

PER THE SCI AND US(SS DIRECTION (WITH SS OPERATIONS CONCURRENCE) THE REMAINING MSIV'S WERE FAST CLOSED. ALL MSIV'S STROKED SATISFACTORILY EXCEPT 1B21-F028B AND 1B21-F028D. AT 2134 1B21-F028D FAST STROKED CLOSE UNSATISFACTORILY IN 1 MINUTE, 17 SECONDS. AT 2152 THE VALVE WAS RESTROKED WITH A CLOSURE TIME OF APPROX 3 SEC. AT 2216 1B21-F028B FAST STROKED CLOSE UNSATISFACTORILY IN 11.9 SECONDS. AT 2218 THE VALVE WAS RESTROKED WITH A CLOSURE TIME OF APPROX 3 SEC.

DURING ALL MSIV CLOSURES THE SOLENOID LIGHTS ON 1H13-P622 AND 1H13-P623 WERE OBSERVED TO EXTINGUISH IMMEDIATELY, INDICATING THAT POWER WAS DEENERGIZED TO THE SOLENOIDS AT THE AFFECTED VALVE.

ACTIVE LCO TRACKING SHEET 012031
OP-1701-1

Rev L-87

T.S. SECTION	MPL(S)	OPERATIONAL CONDITION
3.6.4 ; 3.4.7	B21	/
ENTRY TIME/DATE	1900	10/29/87
IMPACT TIME/DATE	2300	10/29/87
TECH SPEC 3.0.3	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
TECH SPEC 3.0.4	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
DCP WORK RELATED	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

PROBLEM DESCRIPTION

1 B21 - Failed while closing during the performance of STI 621-025A/8.5 valve closure was slow. (22 sec. by STI calculation)
(Also it appears that valve was too fast when it started moving ~ 2.881 by CRIS.)

ACTION REQUIREMENT

- 3.4.7 with one or more MSIV's open maintain at least one MSIV operable in each affected main steam line that is open and within 8 hrs, either:
- a) restore the msiv valve to operable status, or
 - b) Isolate the affected main steam line by use of a deactivated msiv in the closed position.
- 3.6.4 maintain at least one isolation valve operable in each affected penetration that is open and within 8 hrs either
- i) restore or make
 - ii) Isolate each affected penetration by use of at least one deactivated auto valve secured in the isolated position.

REFERENCE FORMS

CR87-503 pg 3 of

ADDITIONAL INFORMATION	STRIKED OUT
B21 F0028D FAILED 2144 10/29/87	2152 10/29/87
B21 F028B FAILED 2216 10/29/87	2218 10/29/87

ENTRY REVIEW

DRGudue

TS
SS

GSO

CLEARANCE

2310 10/29/87 M
TIME DATE US
R.W. Gudue SS

GSO

TIME

22:11:05

C B21-F22B

22:11:40

O

CLOSURE
TIME

3:07 sec

22:13:20

C B21 F022A

22:13:30

O

3:37

22:15:45

C B21 F022C

22:15:55

O

3:45

22:16:45

C B21 F028B

22:18

O F028B

22:18:10

C F028D

22:18:40

O F028D

22:19:07

C B21 F028D

22:19:55

O

11.9

3.96

3.48

22:20:37

C B21 F028C

22:21:40

O

4.12

Caller's Name: Roger M. Stoffler Title: SSEvent Time: 2144 Zone: EST EDT Event Date: 10-29-87

EVENT CLASSIFICATION		Y	N	EVENT CATEGORY	INITIATION SIGNAL	CAUSE OF FAILURE
GENERAL EMERGENCY				REACTOR TRIP/SCRAM	F022D, F023D and F023D	<input checked="" type="checkbox"/> MECHANICAL
SITE AREA EMERGENCY				ESF ACTUATION	FAST STRIKE D	<input type="checkbox"/> ELECTRICAL
ALERT				ECCS ACTUATION	CLOSE TOO SLOW	<input type="checkbox"/> PERSONNEL ERROR
UNUSUAL EVENT				SAFETY INJECTION FLOW	>5 sec	<input type="checkbox"/> PROCEDURE INADEQUACY
<input checked="" type="checkbox"/> 50.72 NON-EMERGENCY				LCO ACTION STATEMENT		<input type="checkbox"/> OTHER:
SECURITY/SAFEGUARDS				OTHER:		
TRANSPORTATION EVENT						
OTHER:						
SYSTEM: <u>B21</u> COMPONENT: <u>F022D, F023D A023B</u>						

EVENT DESCRIPTION
(Use CR if completed) (see CR)

POWER PRIOR TO EVENT(S): <u>64%</u>	DID ALL SYSTEMS FUNCTION AS REQUIRED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF "NO", EXPLAIN ABOVE	
CURRENT POWER OR MODE: <u>111 64%</u>	ANYTHING "UNUSUAL" OR NOT UNDERSTOOD? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF "YES", EXPLAIN ABOVE	
OUTSIDE AGENCY OR PERSONNEL NOTIFIED		
STATE(S): <u>NO</u>	CORRECTIVE ACTION(S)	
LOCAL: <u>NO</u>	<p>① RESTRIKED ALL VVLS-SAT-, FREED UP SOL/PNEUMATIC JW WHICH CAUSED INSIV STRIKING.</p> <p>② LOOKING AT POSSIBILITY OF INCREASING SWI FREQ. & STRIKING INSIV.</p>	
RESIDENT <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <u>WILL BE</u>	MODE OF OPERATION UNTIL CORRECTION: <u>(1)</u>	ESTIMATE TIME TO RESTART: <u>NA</u>
OTHER: <u>NO</u>		
PRESS RELEASE <input type="checkbox"/> NO		

OTHER INFORMATION REQUESTED BY NRC:

- ① what was cause of slow stroke? ① POSSIBLY SOL/PNEUMATIC VVLS JUNG
UP B/T ON SUBSEQUENT STROKES FREED UP
COULD REPEAT INITIAL CONDITION ON
SUBSEQUENT STROKES

TIME/DATE OF CALL: <u>10/30/87</u>	CR NO.: <u>CR- 87 - 503 pg. 5 of</u>
NAME OF INDIVIDUAL CONTACTED: <u>MARSHALL GARRY</u>	CALLER'S SIGNATURE: <u>R. M. Stoffler</u>

EVENT NOTIFICATION WORKSHEET

U.S. Nuclear Regulatory Commission
Region III

4

EVENT NUMBER (ASSIGNED BY NRC) 10515			DATE 10 29 87
TIME OF NOTIFICATION (EDT) 0010 EST	EVENT TIME AND ZONE 2144 EST	TIME OF NOTIFICATION (EDT) 2350 CST	
FACILITY OR ORGANIZATION PERRY	CALLER'S NAME		
(CHECK) EVENT CLASS	(CHECK) EVENT CATEGORY	INITIATION SIGNAL	(CHECK) CAUSE OF FAILURE
GENERAL EMER.	TRIP		MECHANICAL
SITE AREA EMER.	ESF ACTUATION		ELECTRICAL
ALERT	SAFETY INJECT. OR ECCS		PERSONNEL ERROR
UNUSUAL EVENT	CORE INJECT.		PROCEDURE INADEQUACY
TRANSPORTATION ACCIDENT	LEO ACTION STATEMENT		OTHER
OTHER	OTHER		
1 HR. & MR. 50-72 NON-EMERGENCY	POWER PRIOR TO EVENT (%)		SYSTEM
1 HR. 24 HR. SECURITY/SAFE GUARDS	POWER AT TIME OF REPORT 62%		COMPONENT
RADIONACTIVE RELEASES (QUANTIFY)			
OTHER MAJOR PROBLEMS			
EVENT DESCRIPTION/CAUSE Full closure stroke tests on MSIV' on D line inboard valve. Took 22 sec instead of 5 to close. Cycled voltage ^{several times} got it down to 3-5 sec. Looked at Outboard MSIV on same & took 77 sec to close. Exercised it & it took 3-5 sec. Looked at all MTV's & found one other on outboard D line which took 12 sec. Cycled it & got it down to 3-5 sec. Then			
OUTSIDE AGENCY/PERSONNEL NOTIFIED BY LICENSEE		CORRECTIVE ACTION(S) report that water got into the air system (in the cylinder valves) & after exercising them, they were freed. They could not duplicate original test on each of the 3 valves. They are allowing one time	
STATES LOCAL			
RESIDENT YES NO WILL BE HAVE TESTED			
PRESS RELEASE		ADDITIONAL INFORMATION ON BACK OVER	
MODE OF OPERATION UNTIL CORRECTED:		EST. TIME FOR RESTART	
EXECUTIVE OFFICER NOTIFIED BY NRC?			
(CROSS) SUPERVISOR FOLLOWUP		NOTIFICATIONS MADE BY NRC:	
MORNING REPORT	BR/CH	SECTION CHIEF	
PH WRITTEN	INSF	BRANCH CHIEF/DIVISION DIRECTOR	
TEAR TO SITE	DIV/BIR	REGIONAL ADMINISTRATOR	
RA, PAD, BR/CH, HQ, ETC. NOTIFIED	NRC SIGNATURE: W. Snell		
PLEASE CALL BACK WITH ANY CHANGES OR ADDITIONAL INFORMATION			

they are consistently increasing the frequency of testing which is 92 days.

DAILY REPORT REGION III

DATE: 10-30-87

5

LICENSEE/FACILITY

CLEVELAND ELECTRIC ILLUMINATING CO./
PERRY UNIT 1

NOTIFICATION/SUBJECT

SRI-PC/
EXCESSIVE MAIN STEAM ISULATION VALVE
(MSIV) STROKE TIMES

EVENT

EVENT NO. 10515

AT 6:37 P.M. ON OCTOBER 29, 1987 WHILE OPERARTING AT 76% POWER, THE LICENSEE PERFORMED A FAST CLOSURE OF THE INBOARD MSIV ON THE "D" STEAMLINE, 1B21-F022D, IN ACCORDANCE WITH STARTUP TEST INSTRUCTION (STI) 1B21-025A, SECTION 8.4, "FULL CLOSURE OF THE FASTEST MSIV AT MAXIMUM PERMISSIBLE POWER." THE VALVE DID NOT BEGIN TO STROKE CLOSED UNTIL APPROXIMATELY 18 SECONDS AFTER IT'S CONTROL SWITCH WAS PLACED IN THE "CLOSED" POSITION. THE VALVE THEN STROKED CLOSED IN LESS THAN 3 SECONDS. THE LICENSEE DECLARED THE VALVE INOPERABLE AND IMMEDIATELY BEGAN TO REDUCE REACTOR POWER TO BELOW 75%. SUBSEQUENTLY, AT APPROXIMATELY 9:03 P.M., THE VALVE WAS RESTROKED TWICE WITH SATISFACTORY STROKE TIMES. BASED UPON THE INITIAL FAILURE, THE LICENSEE PERFORMED FAST CLOSURE TESTING OF THE REMAINING MSIVs. AT 9:44 P.M., MSIV 1B21-F028D WAS STROKED CLOSED WITH AN UNSATISFACTORY STROKE TIME OF 1 MINUTE AND 17 SECONDS AND AT 9:52 P.M. WAS RESTROKED WITH AN ACCEPTABLE STROKE TIME. AT 10:16 P.H., MSIV 1B21-F028B WAS STROKED CLOSED WITH AN UNSATISFACTORY STROKE TIME OF 11.9 SECONDS AND AT 10:18 P.M. WAS RESTROKED WITH AN ACCEPTABLE STROKE TIME. VALVES 1B21-F028D AND 1B21-F028B WERE ALSO DECLARED INOPERABLE PENDING EVALUATION. THE REMAINIG VALVES STROKED ACCEPTABLY. THE EXCESSIVE INITIAL CLOSURE TIMES OF VALVES 1B21F022D AND 2B21F028D (BOTH ON THE "D" STEAMLINE) WERE DETERMINED BY THE LICENSEE TO BE REPORTABLE IN ACCORDANCE WITH 10 CFR 50.72 (b) (2) (iii). DURING ALL MSIV CLOSURES, THE PILOT SOLENOID STATUS LIGHTS WERE OBSERVED TO EXTINGUISH, INDICATING THAT THE MSIV PILOT VALVE SOLENOIDS DEENERGIZED. THE LICENSEE CURRENTLY BELIEVES THAT DURING INITIAL CLOSURE TESTS, MSIV PILOT VALVES ASSOCIATED WITH VALVES 1B21-F022D, 1B21-F028D, AND 1B21-F028B DID NOT FREELY STROKE OPEN UPON PILOT SOLENOID DEENERGIZATION. BASED UPON THE INABILITY TO RECREATE THE FAILURES AND SUBSEQUENT SATISFACTORY MSIV PERFORMANCE, THE LICENSEE DECLARED THE MSIVs OPERABLE AT 10:40 P.M.. THE LICENSEE IS CONTINUING TO EVALUATE THE EXCESSIVE MSIV STROKE TIMES IN CONSULTATION WITH GENERAL ELECTRIC AND IS CONSIDERING INCREASING MSIV SURVEILLANCE TEST FREQUENCY TO PROVIDE ADDITIONAL ASSURANCES OF MSIV OPERABILITY.

REGIONAL FOLLOWUP: THE RESIDENT INSPECTORS EVALUATE THE LICENSEE'S ROOT CAUSE DETERMINATION AND WILL MONITOR MSIV PERFORMANCE DURING FUTURE MSIV SURVEILLANCE TESTING.

BS

Reportable Event Number 10515
Unevaluated Information

Facility : PERRY	Date Notified : 10/30/87
Unit : 1	Time Notified : 00:10
Region : 3	Date of Event : 10/30/87
Vendor : GE,GE	Time of Event : 21:44
Operallis Officer : Don Marksberry	Classification : 10 CFR 50.72
NRC Notified By : ROGER STIFFLER	Category 1 : LCO Action Statement
Rad Release : No	Category 2 :
Cause : Unknown	Category 3 :
Component :	Category 4 :

WITH THE REACTOR AT 62%, FULL CLOSURE TESTS ON MSIVs FOUND THREE VALVES WITH CLOSURE TIMES EXCEEDING THE 5 SECOND LIMIT. THE FIRST MSIV, FO22-D (INBOARD), CLOSED 22 SECONDS. AFTER FURTHER TESTS THE CLOSURE TIMES WERE WITHIN 3-5 SECONDS. AS THE RESULT OF THE TEST, THE OUTBOARD MSIV, FO-28-D, WAS TESTED WITH A CLOSURE TIME OF 77 SECONDS. THE VALVE WAS CYCLED SEVERAL TIMES WITH STROKE TIMES WITHIN 3-5 SECONDS. ALL OTHER MSIVs WERE TESTED WITH ONLY ONE OTHER VALVE, FO-28-B, CLOSING AT 12 SECONDS AND FURTHER TESTS RESULTED IN CLOSURE TIMES WITHIN 3-5 SECONDS. AFTER THE FIRST TEST ON THE THREE VALVES THE SLOW CLOSURE TIMES SHOULD NOT BE REPEATED. SUSPECT WATER IN AIR SUPPLY AFFECTING THE PNEUMATIC SOLENOIDS WHERE THE CYCLING FREED THE SOLENOIDS. CONSIDERING SHORTENING THE SURVEILLANCE FREQUENCY FOR FULL CLOSURE TEST WHICH IS NOW 92 DAYS. NOTIFIED RDO1SNELL).

Partial Sequence of Events

October 29, 1987

- 1837 Shut 1B21-F022D per STI-B21-025A 22.14 sec
- 1900 1B21-F022D declared inoperable
- 2103 1B21-F022D closed 3.24 seconds
- 2106 1B21-F022D closed 2.94 seconds
- 2144 1B21-F028D closed 1 minute 17 seconds
- 2152 1B21-F028D closed 3.19 seconds
- 2216 1B21-F028B closed 11.9 seconds
- 2219 1B21-F028B closed 3.96 seconds
- 2310 1B21-F022D, F028D, F028B declared Operable

October 30, 1987

- 0010 Notified NRC of slow closure of MSIV's

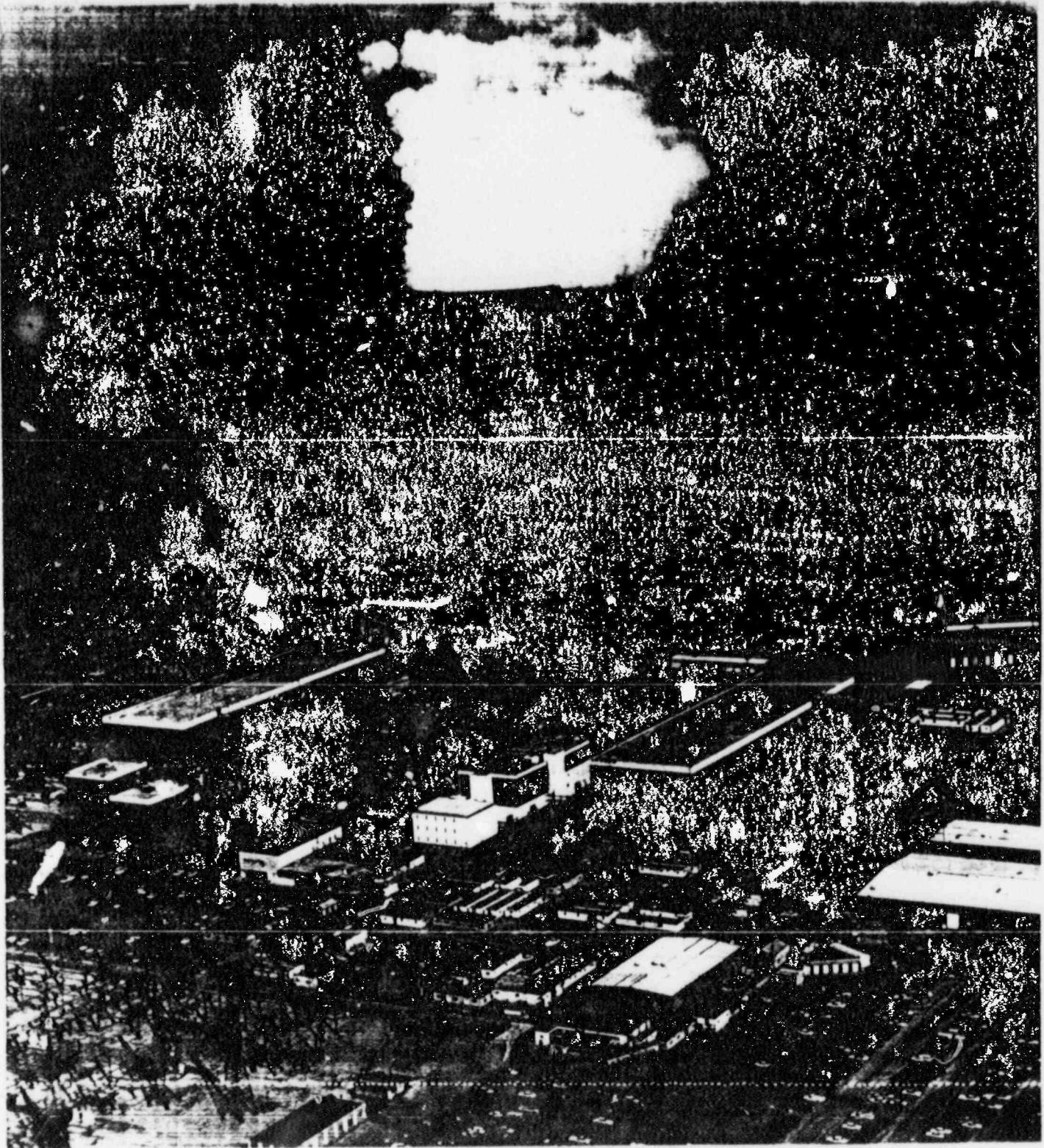
November 3, 1987

- 1150 Commenced stroke timing MSIV's
- 1157 Closed 1B21-F022D 18 seconds
- 1158 Declared 1B21-F022D Inoperable
- 1159 Closed 1B21-F022D 3.0 seconds
- 1200 1B21-F022D declared Operable
- 1208 Attempted to close 1B21-F028D, control switch held in shut position for 2 minutes 49 seconds
- 1212 1B21-F028D declared Inoperable
- 1213 1B21-F028D closed 3.4 seconds
- 1217 1B21-F028D closed 3.4 seconds
- 1330 Commenced plant shutdown
- 1343 Shut 1B21-F022D
- 1344 Shut 1B21-F028D

D-1

November 3, 1987

- 1358 Notified NRC of slow closure of MSIV's
1630 Shifted Reactor Recirculation Pumps to slow speed.
Recessed withdraw and insert Rod Blocks from
Rod Pattern Control System
1819 Manually Scrammed the reactor - Reactor
Power 23 percent of rated.
2130 Notified NRC of reactor scram



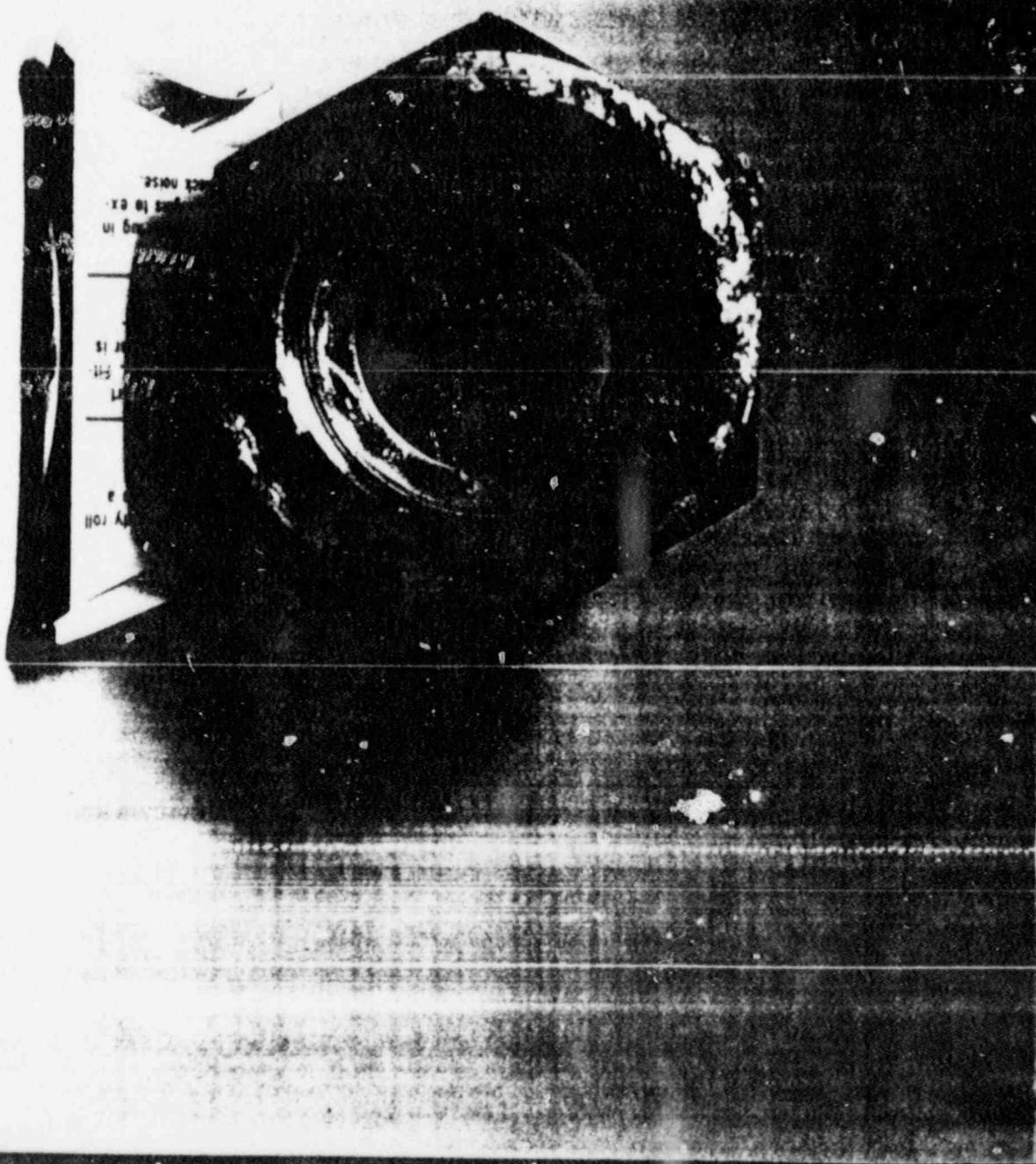
PERRY POWER PLANT
PHOTOS OF MSIV INSPECTION DUE
TO SLOW VALVE CLOSURE
NOVEMBER, 1987

8

8







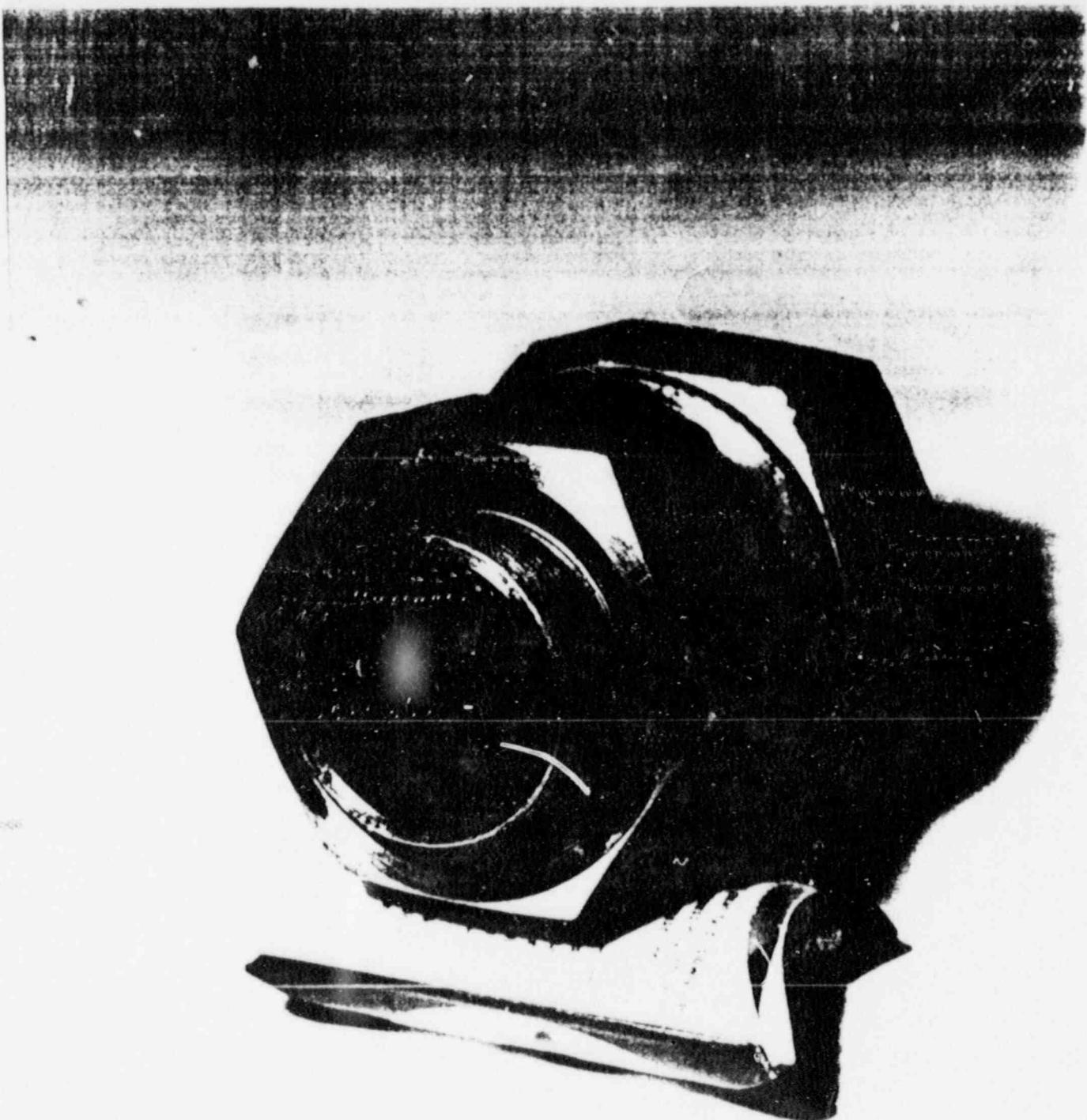


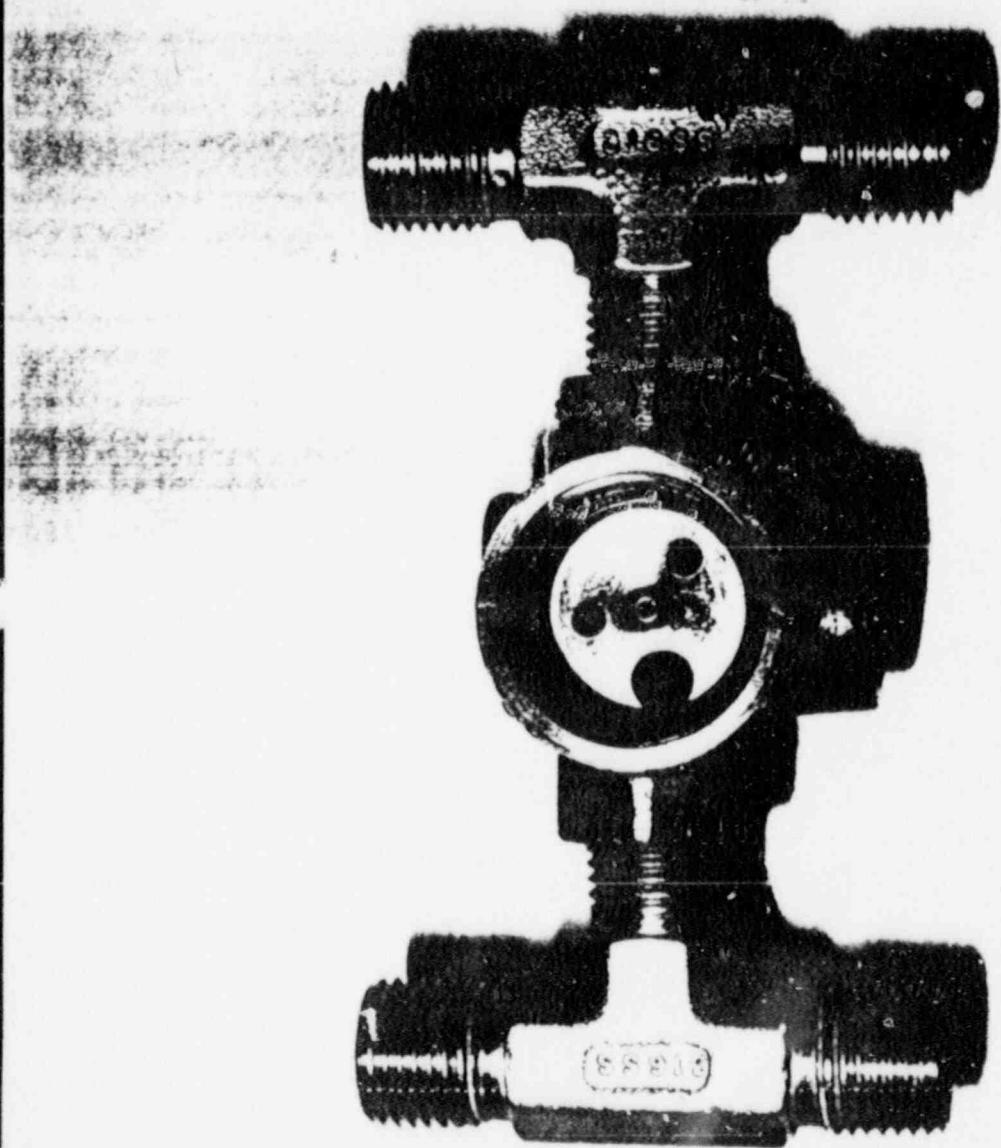
Slowly roll
into a
cone

Insert
cotton. Fit
ear is
open.

Plug in
begins to ex-
hale noise.





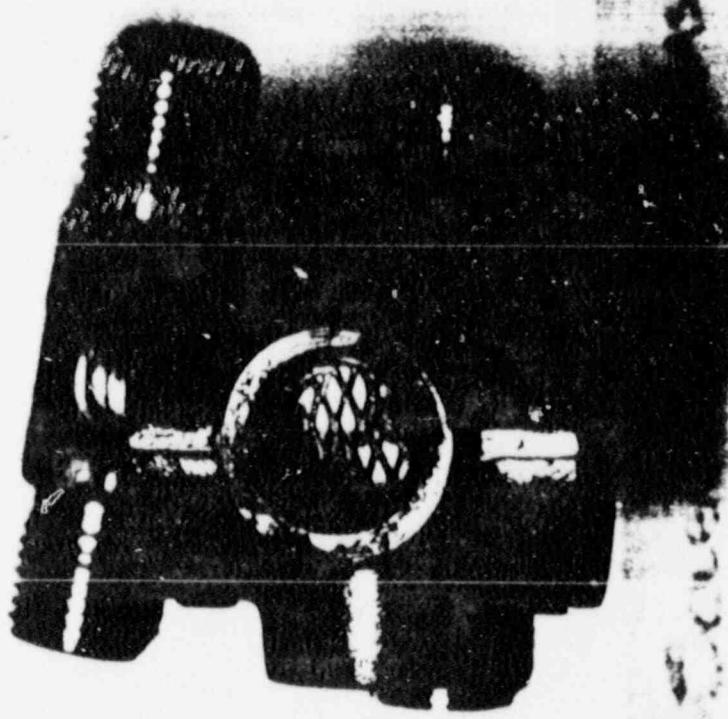


GASKET SEAT

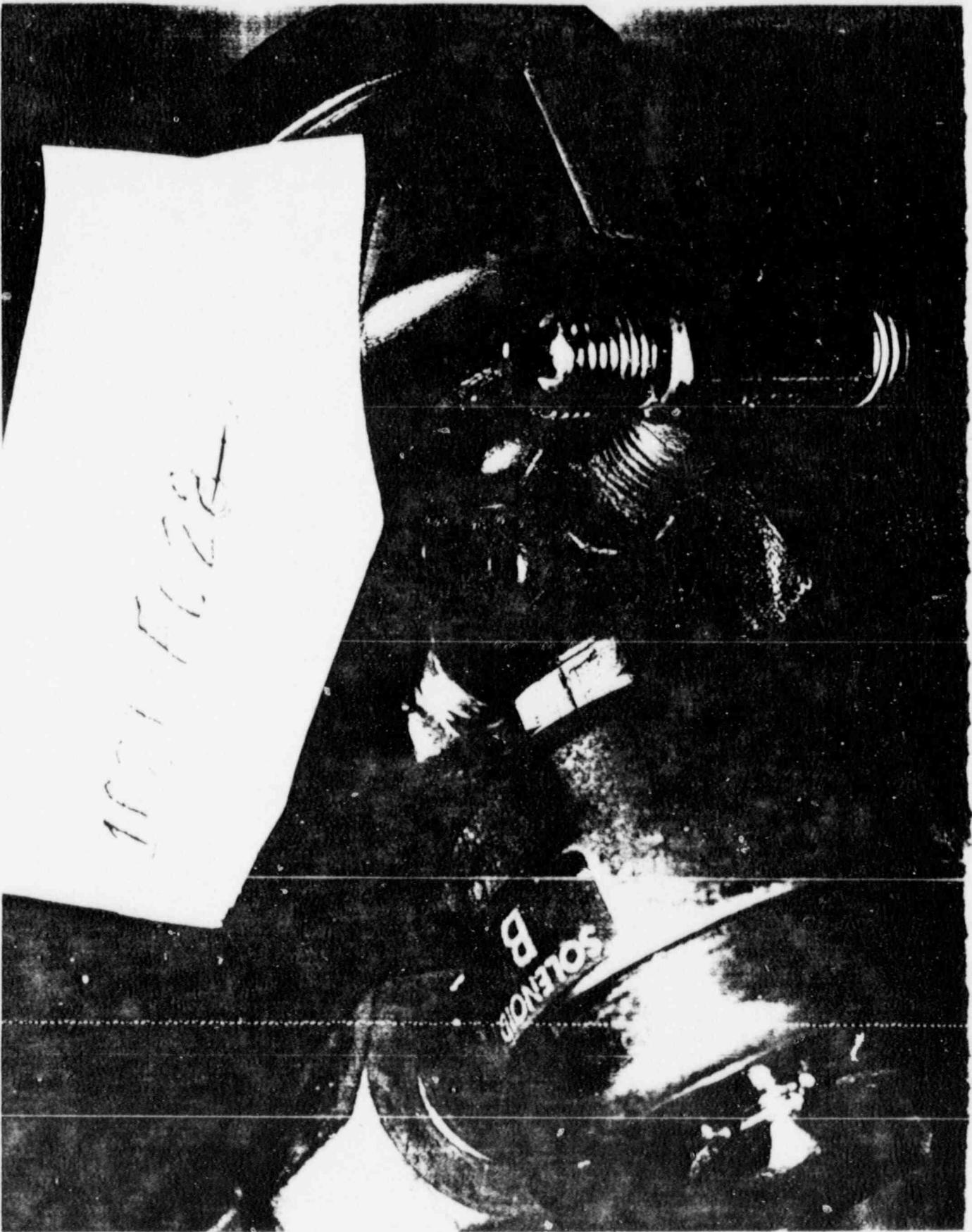
D"

15



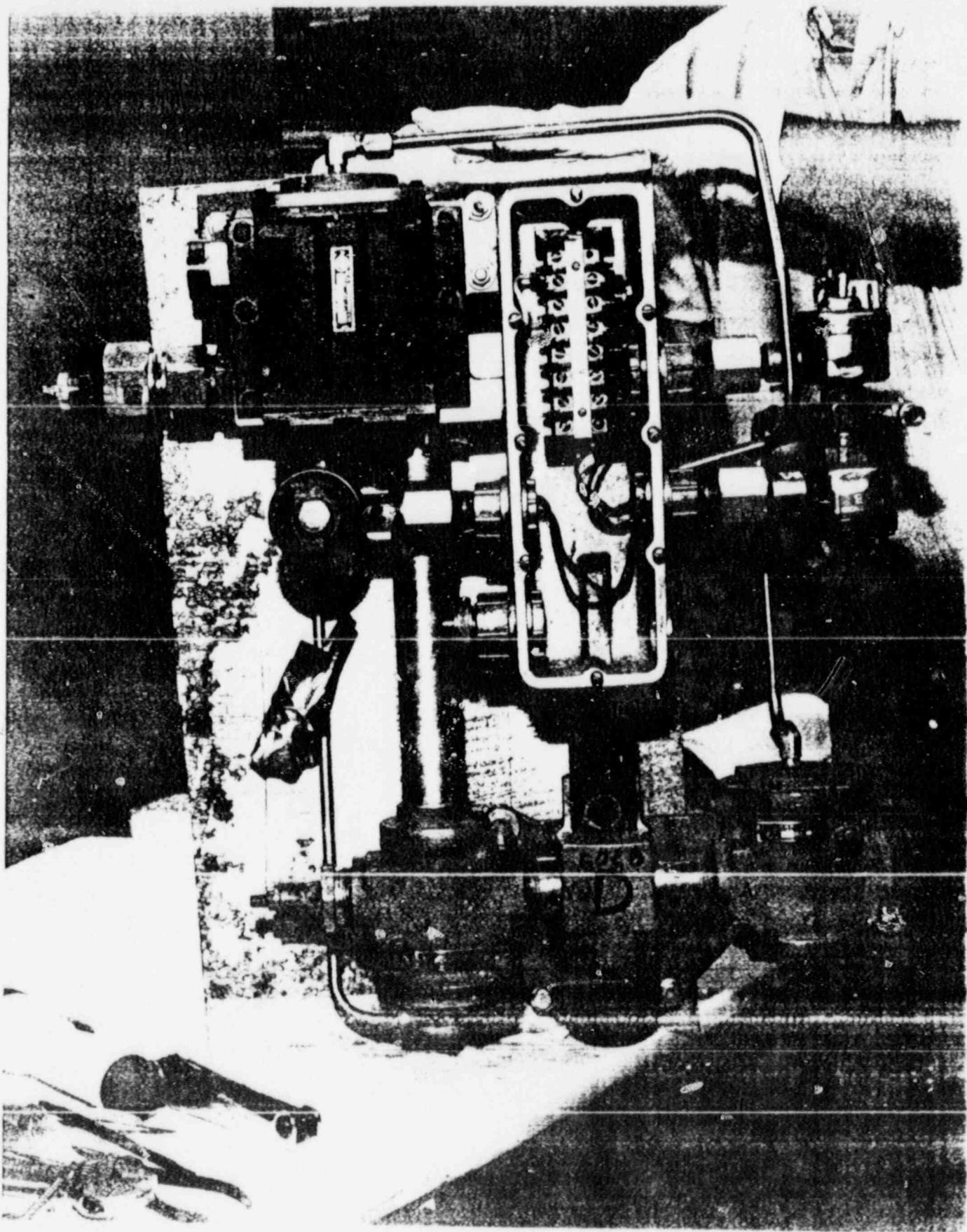


SEAT

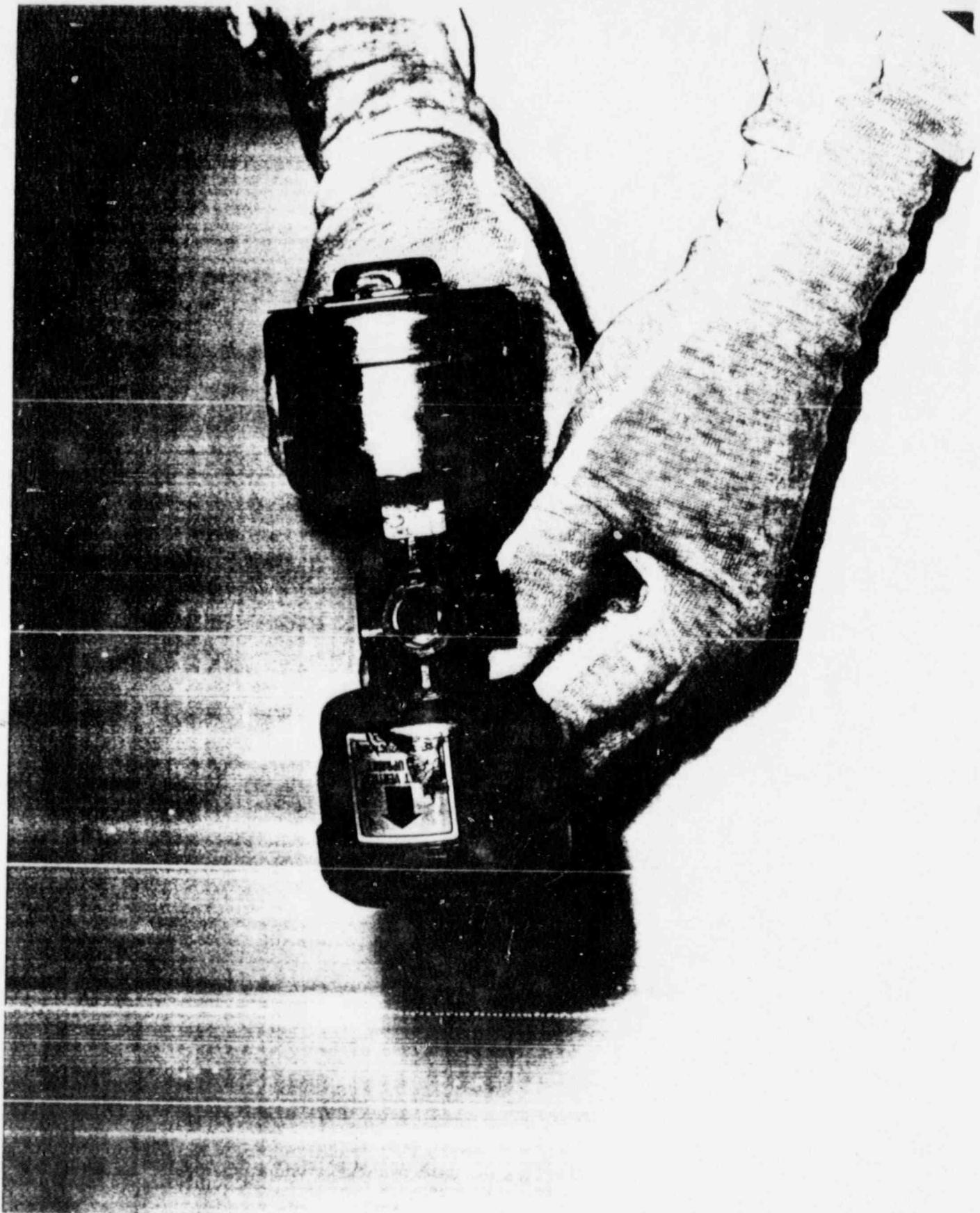


SOLE

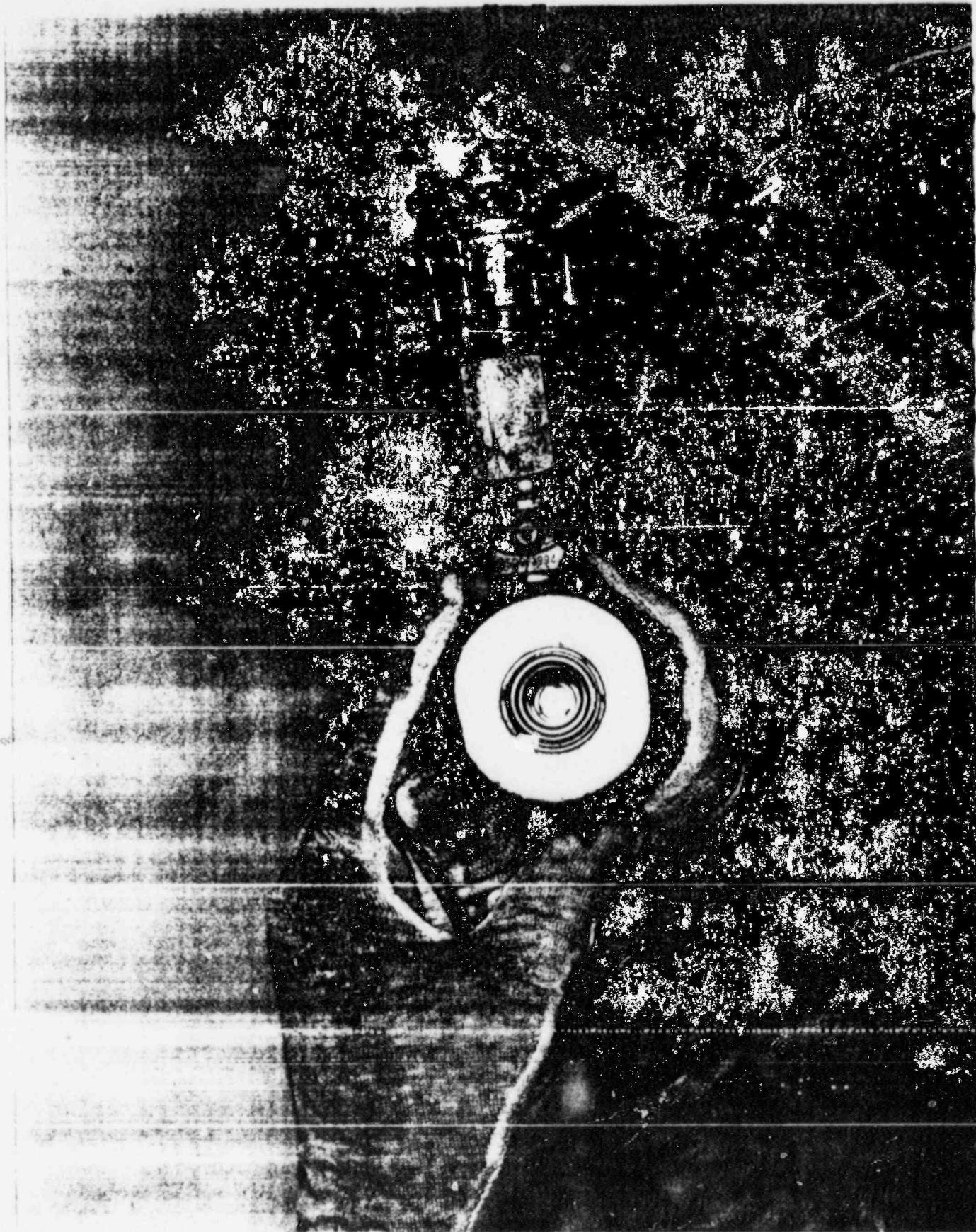
IBZI FG



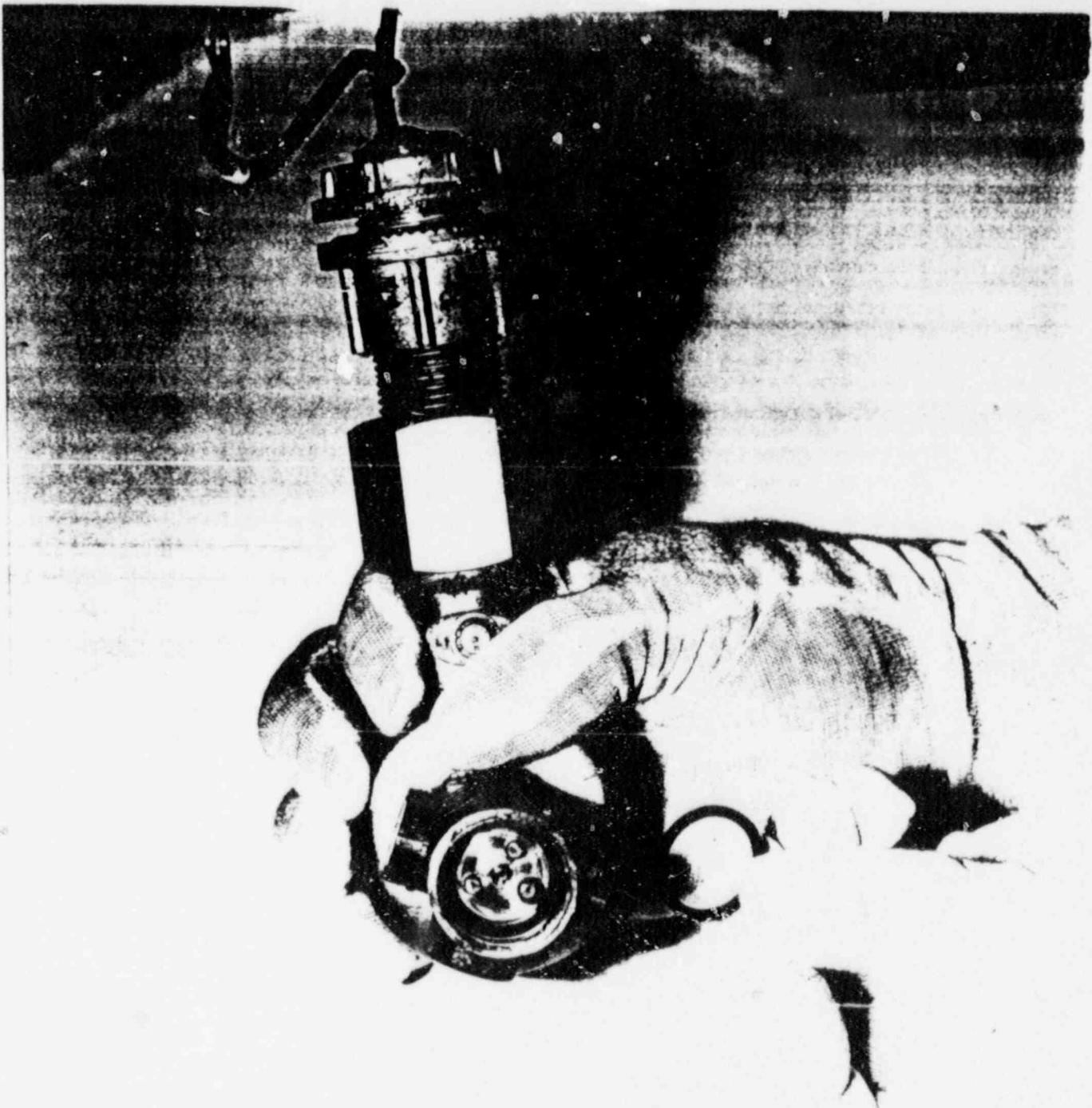








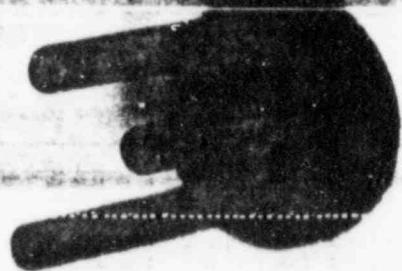
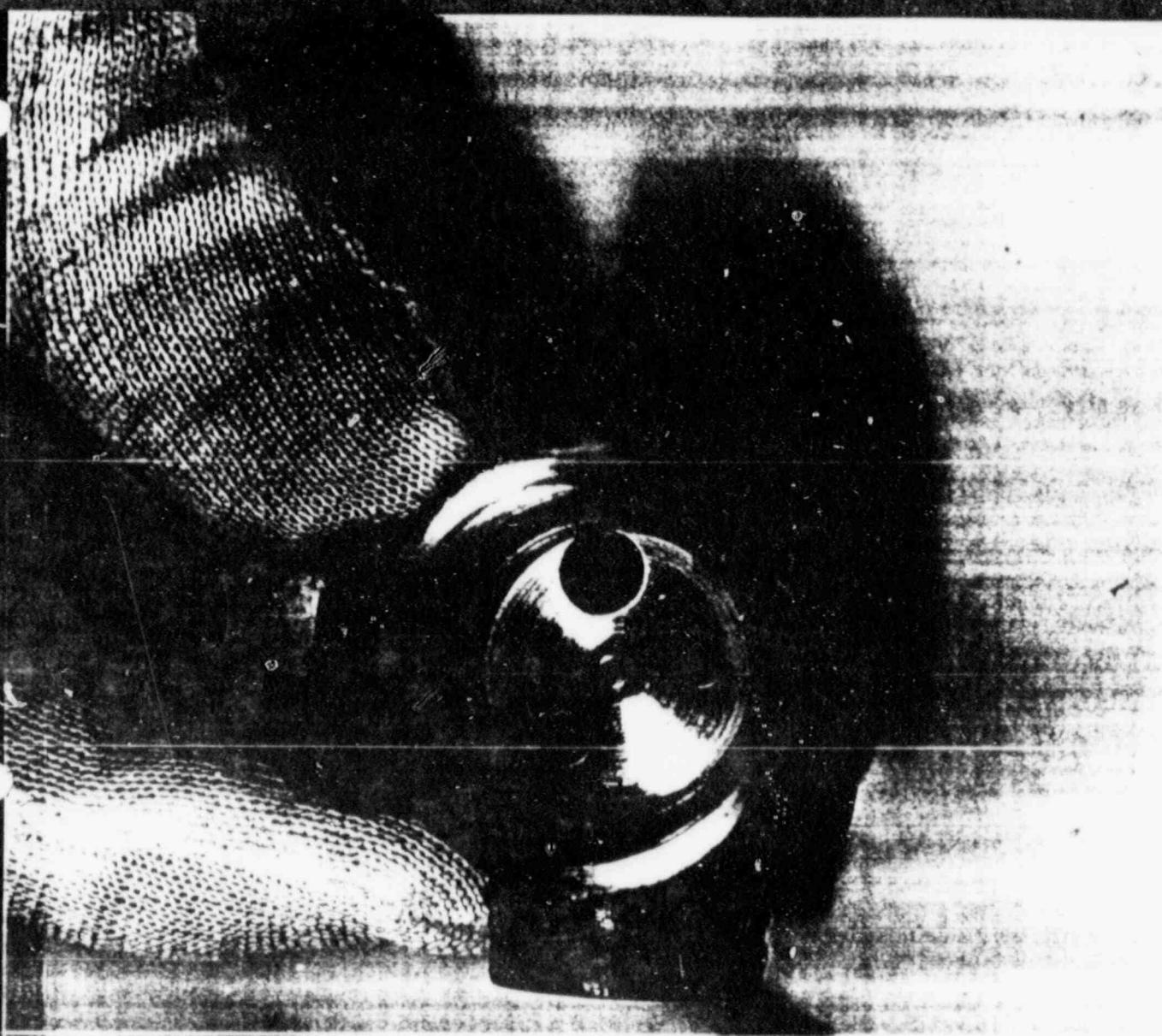


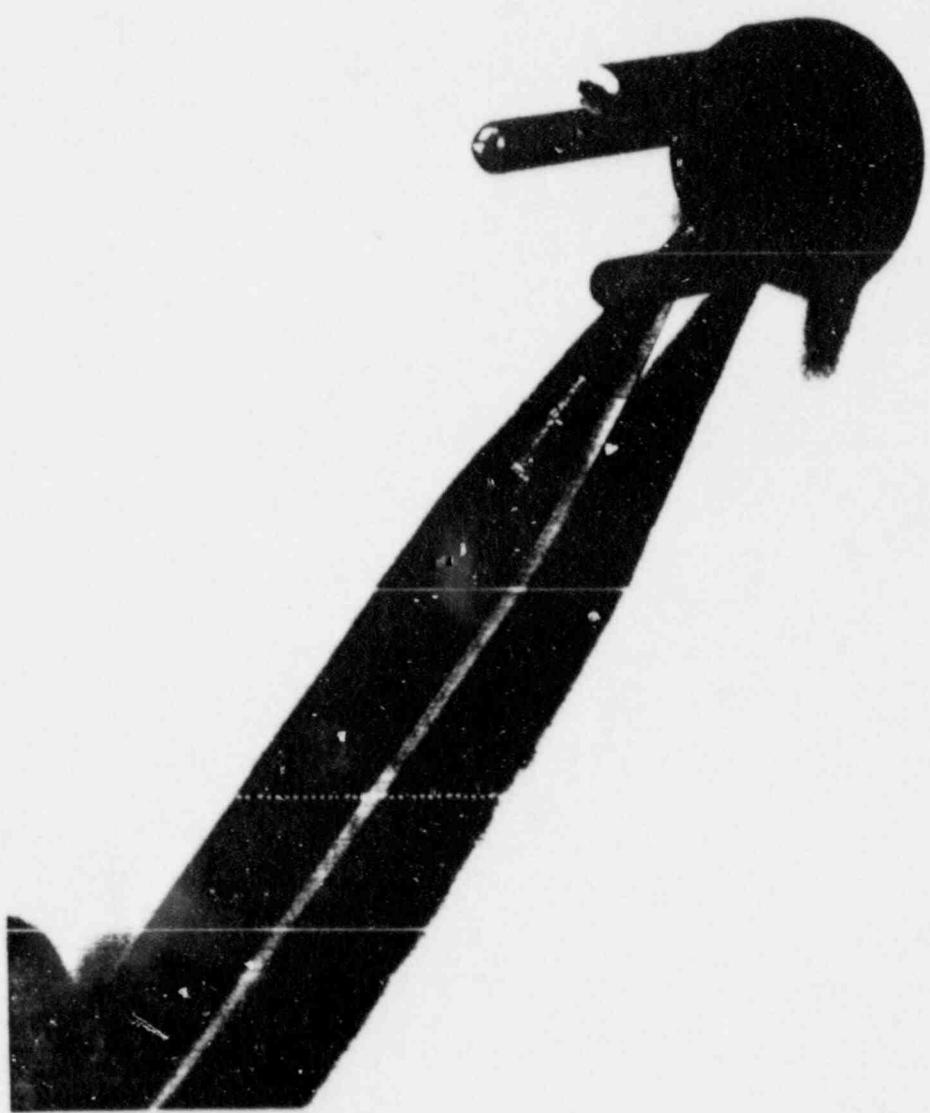




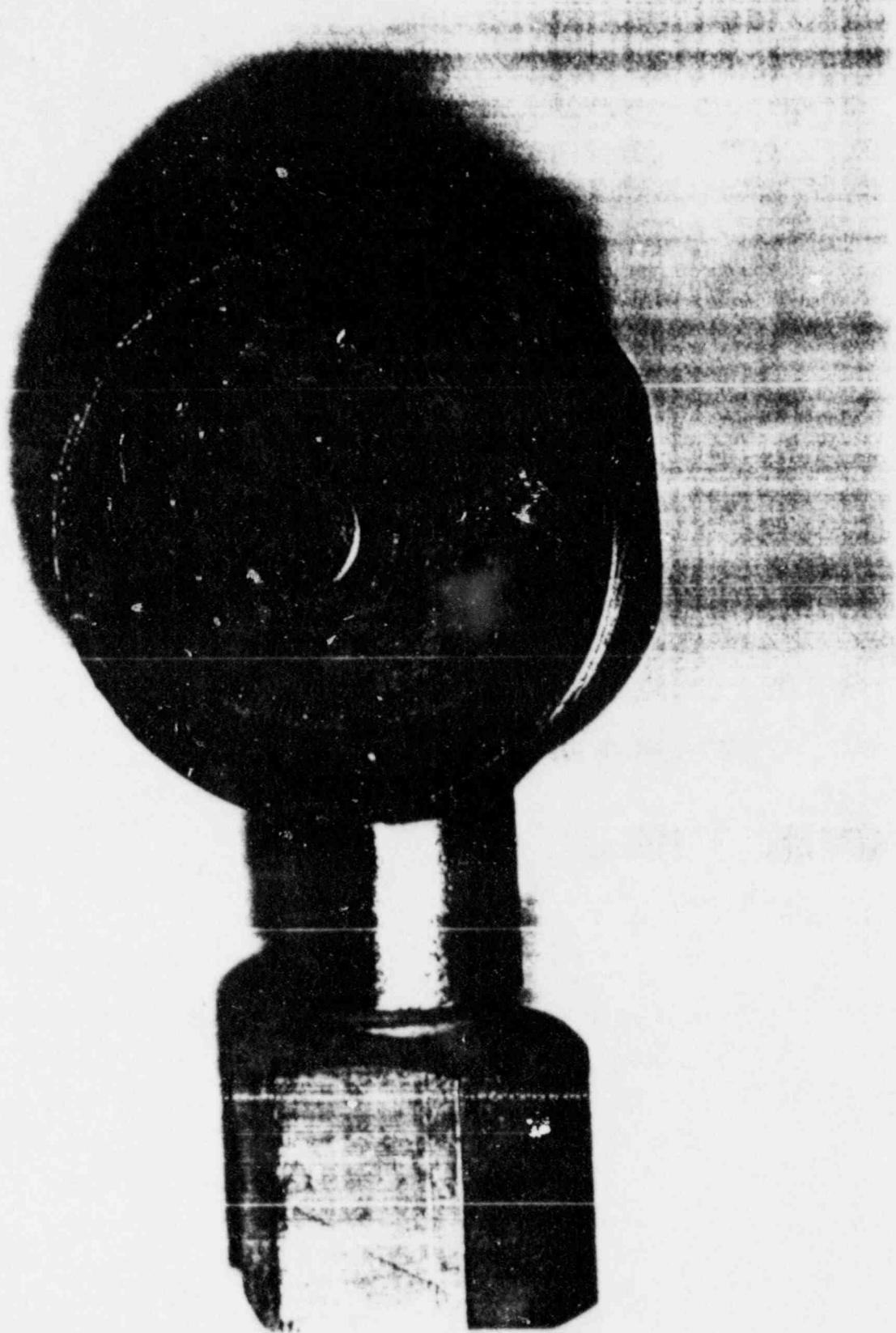


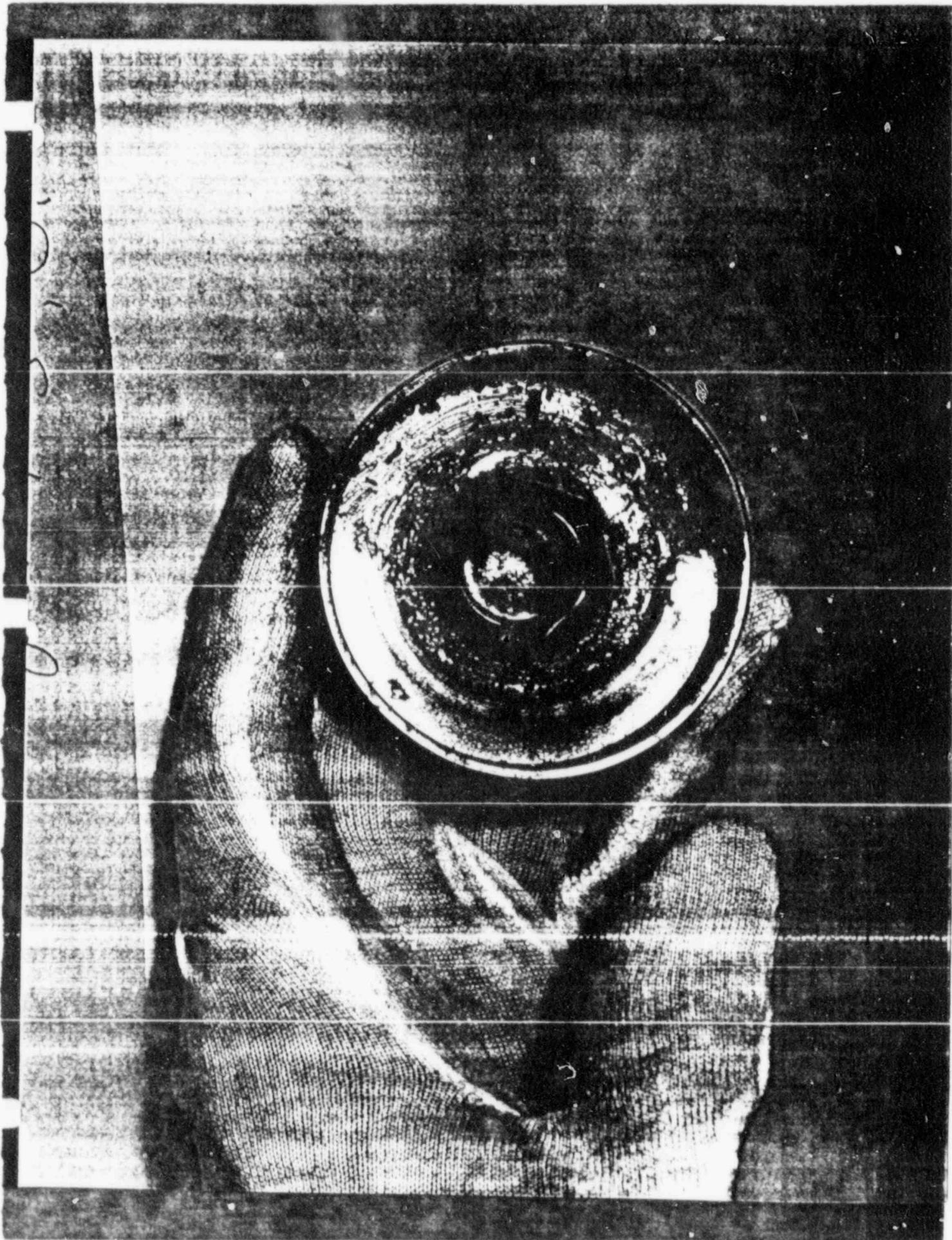
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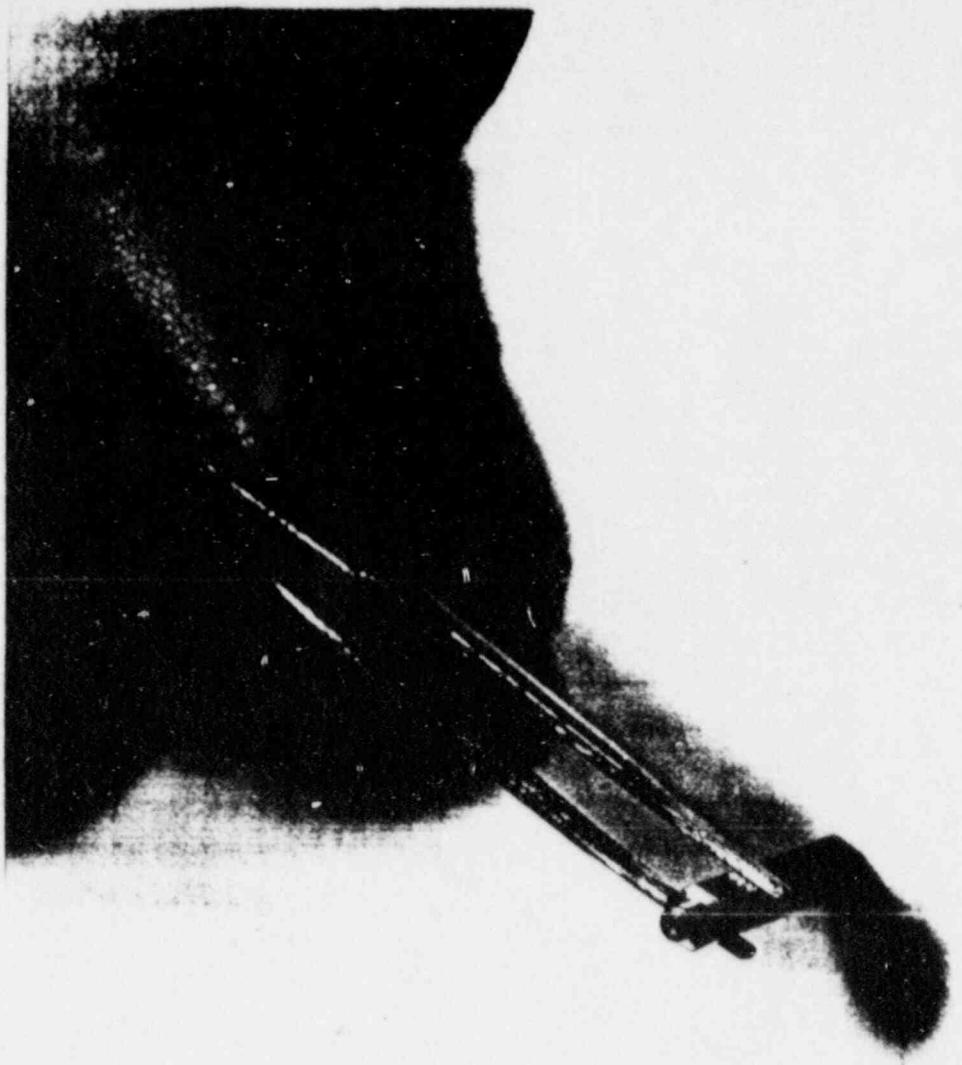


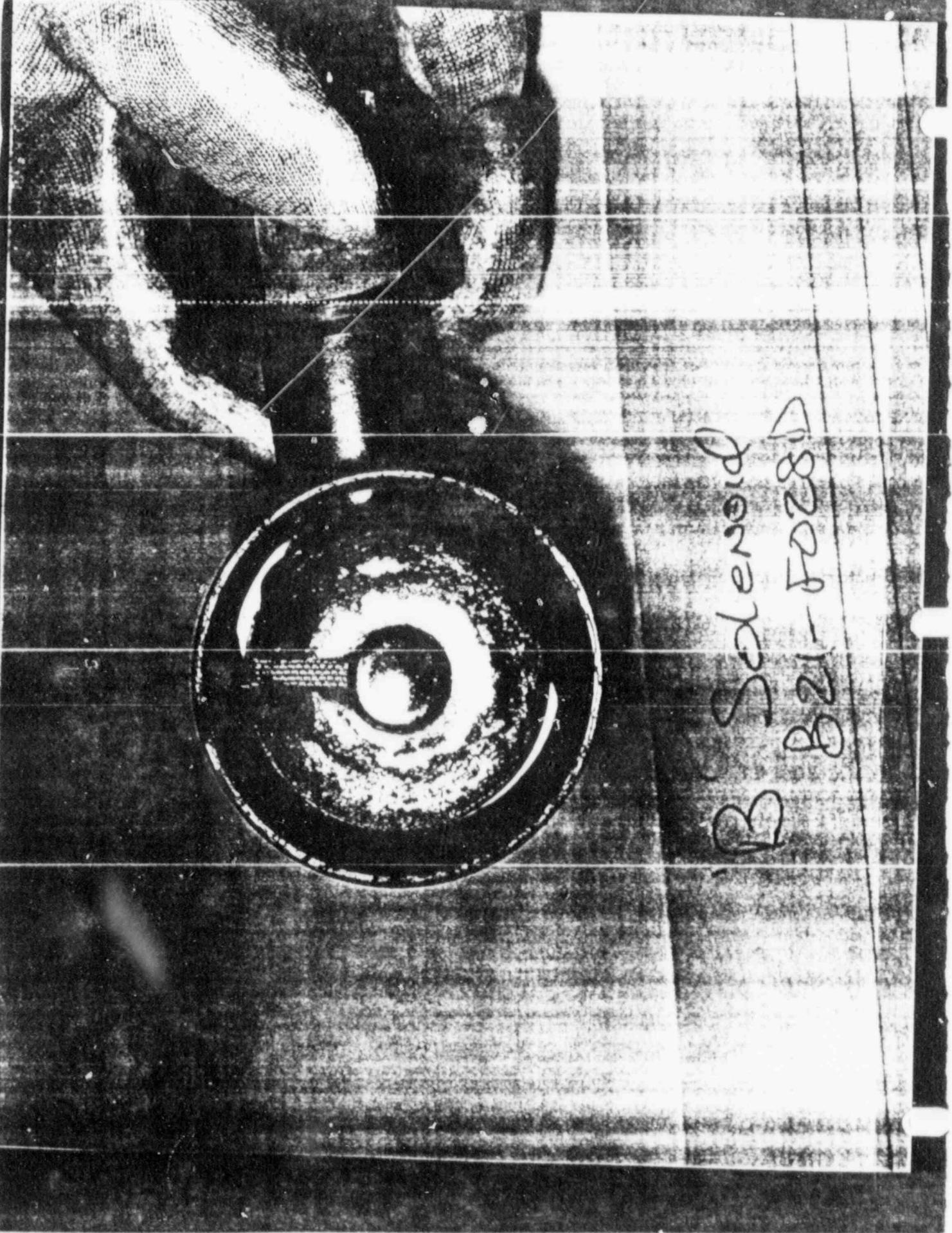






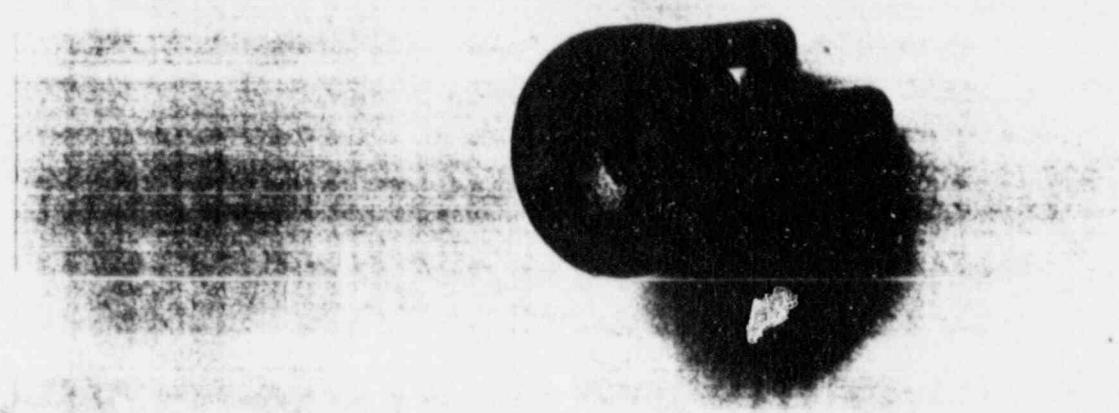




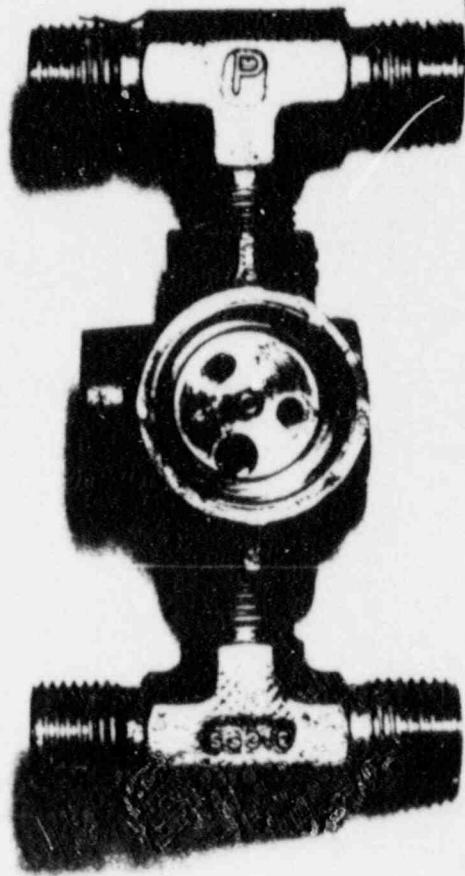


Solenoid
B 21-50280

B



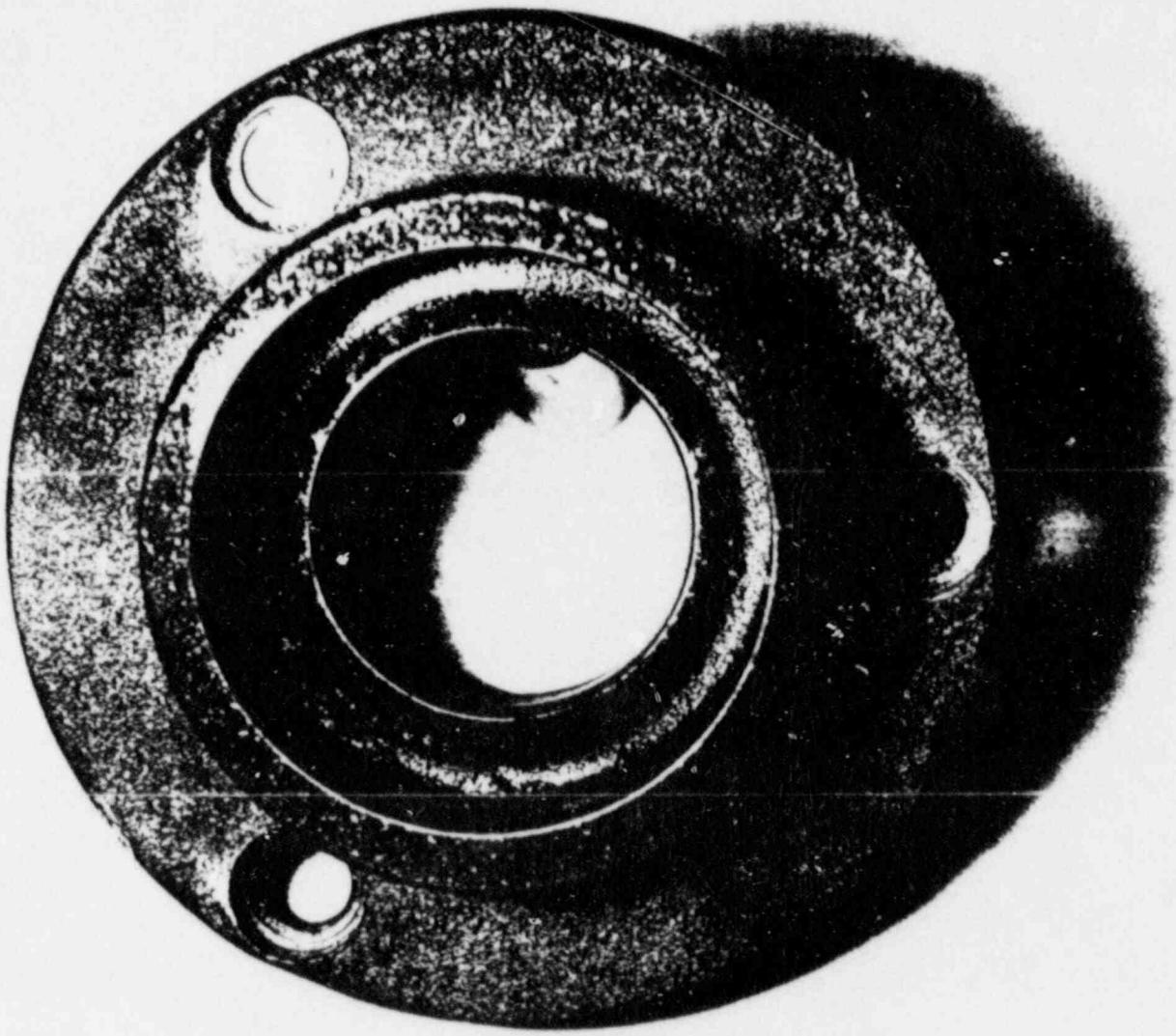




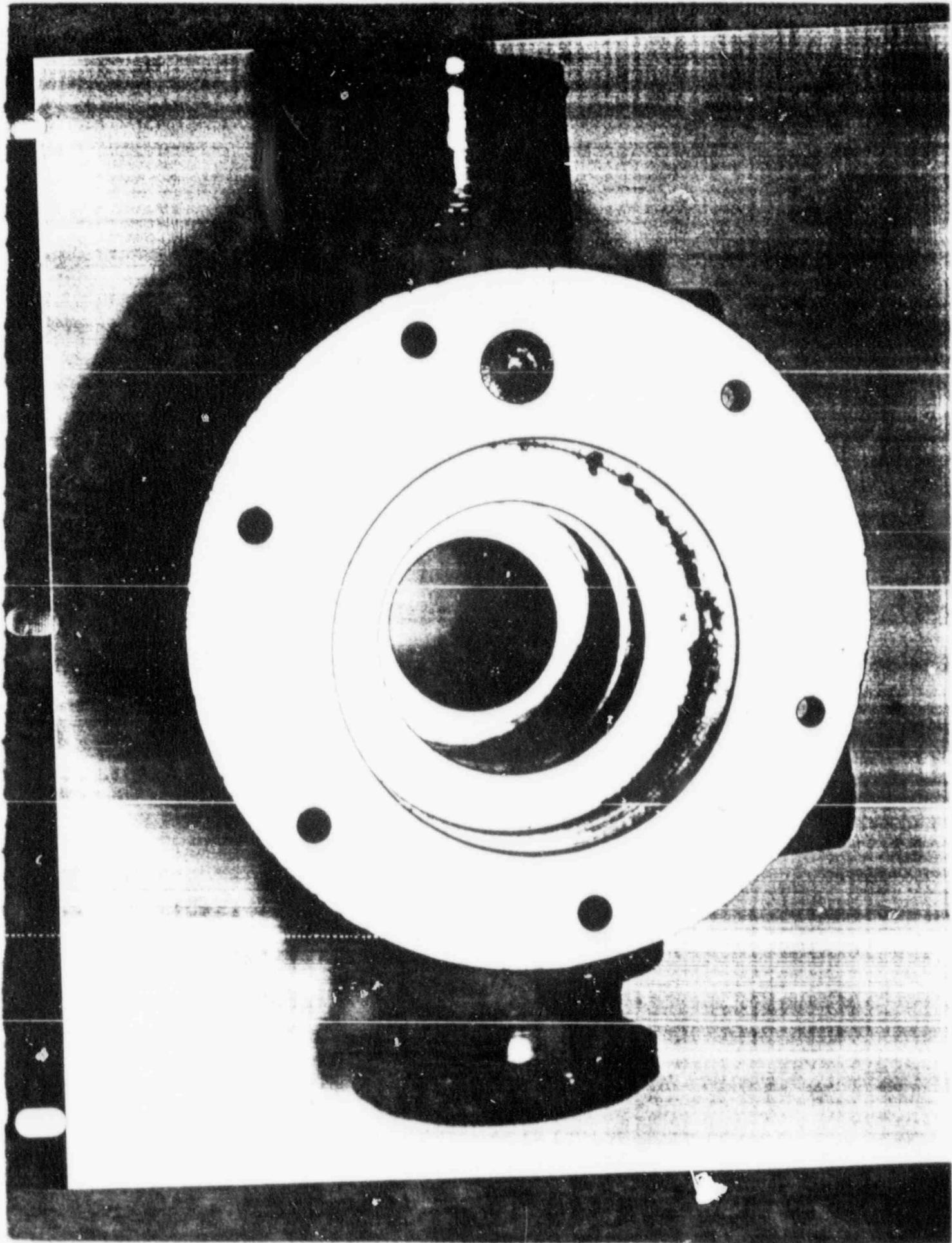
1B-1 - FO28C
Rebuild
no o-ring sticking

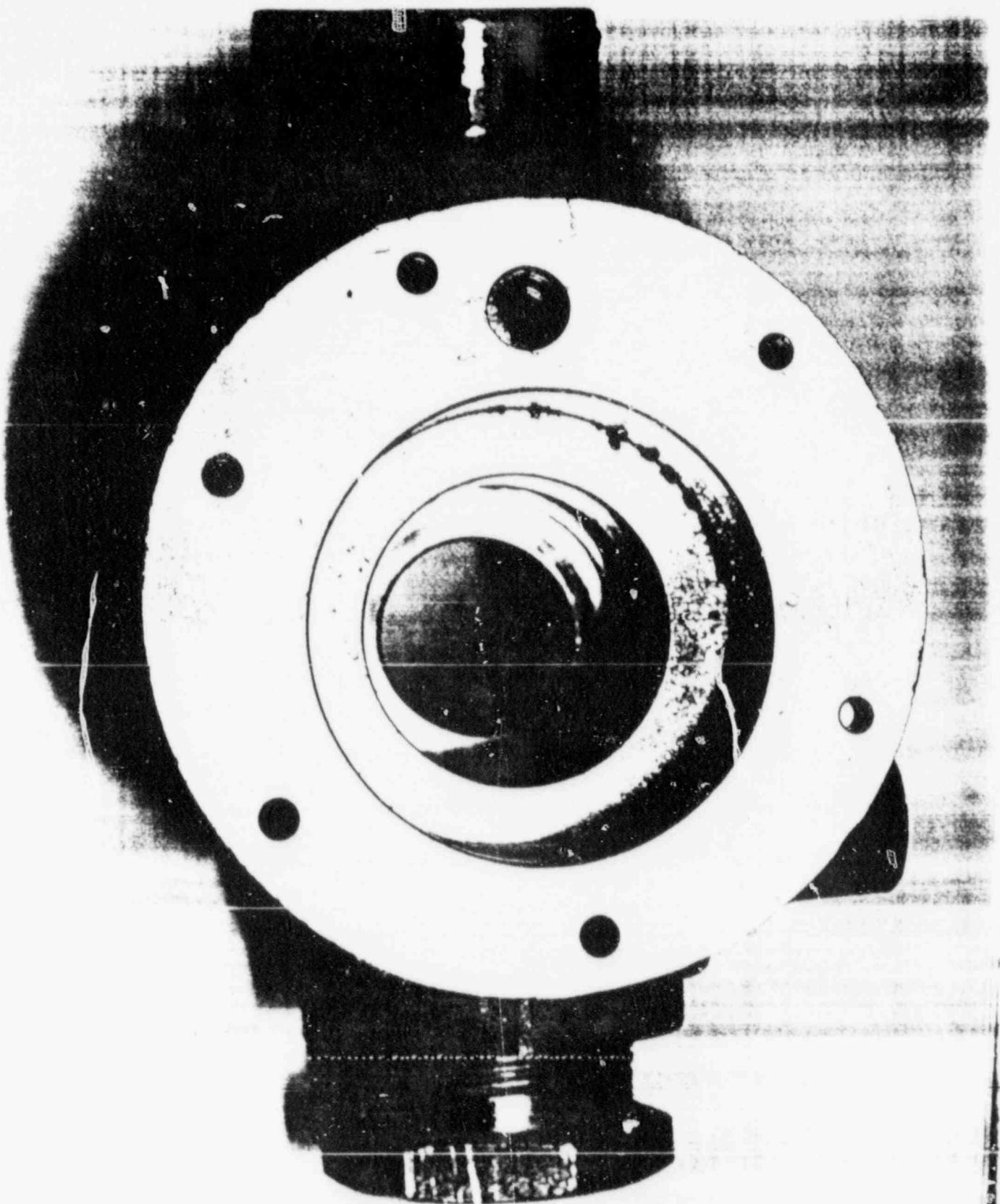


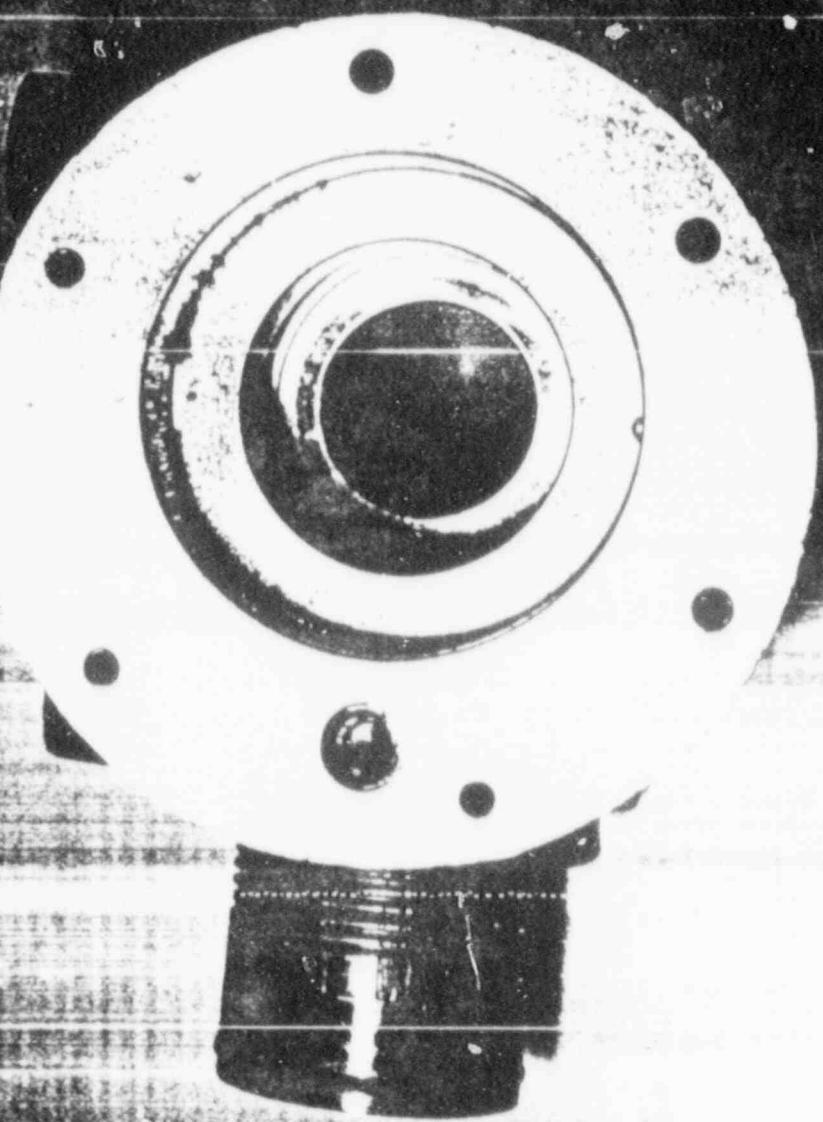
326-5025
Reindeer



1881 - F028D
Bray Valve

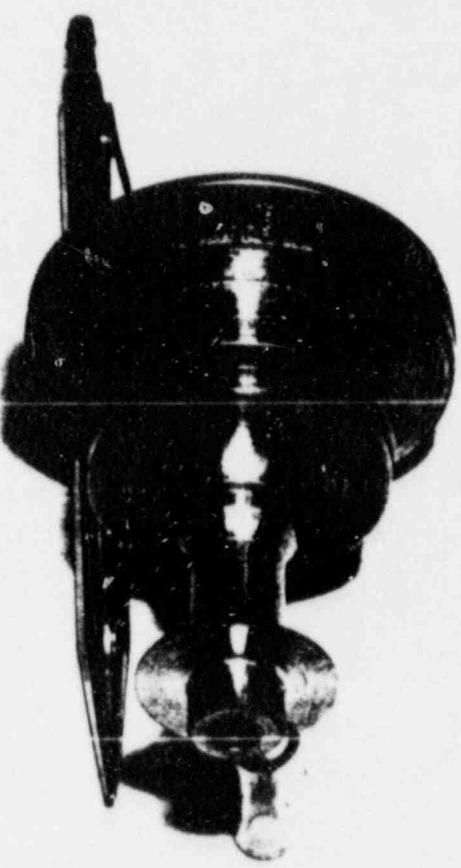




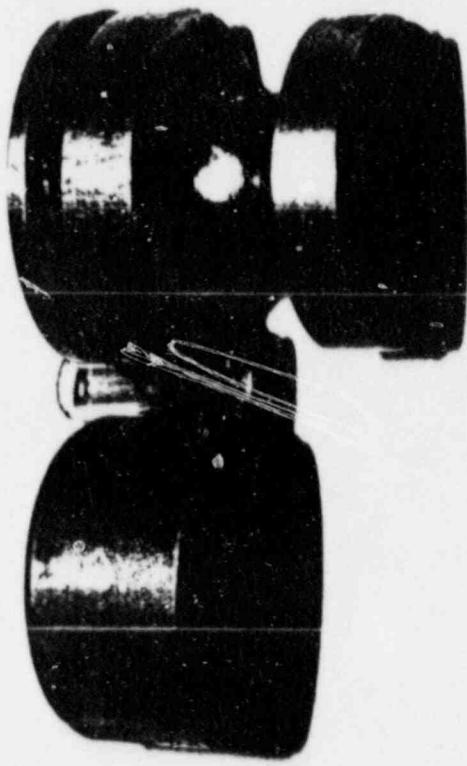


B21
3 way
1

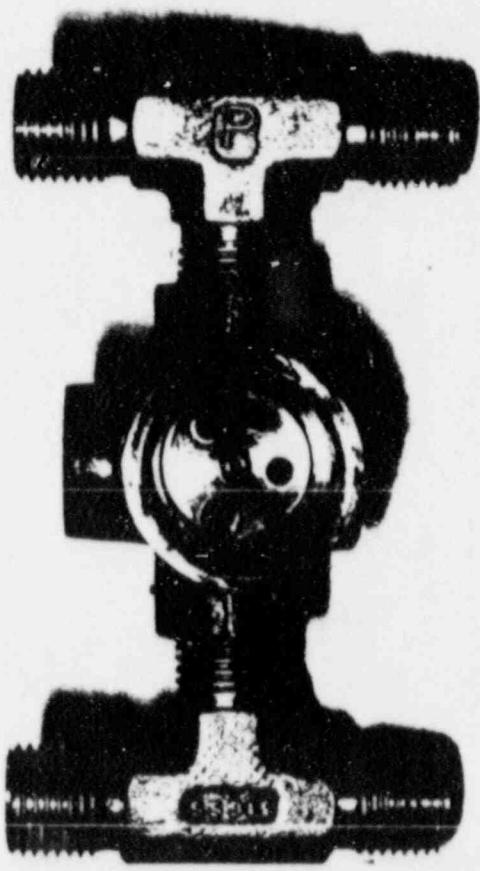
1B21 - F028D
4 way Video



IBZI - FC28D
3 way valve



1B21 - F028D
4 way Valve

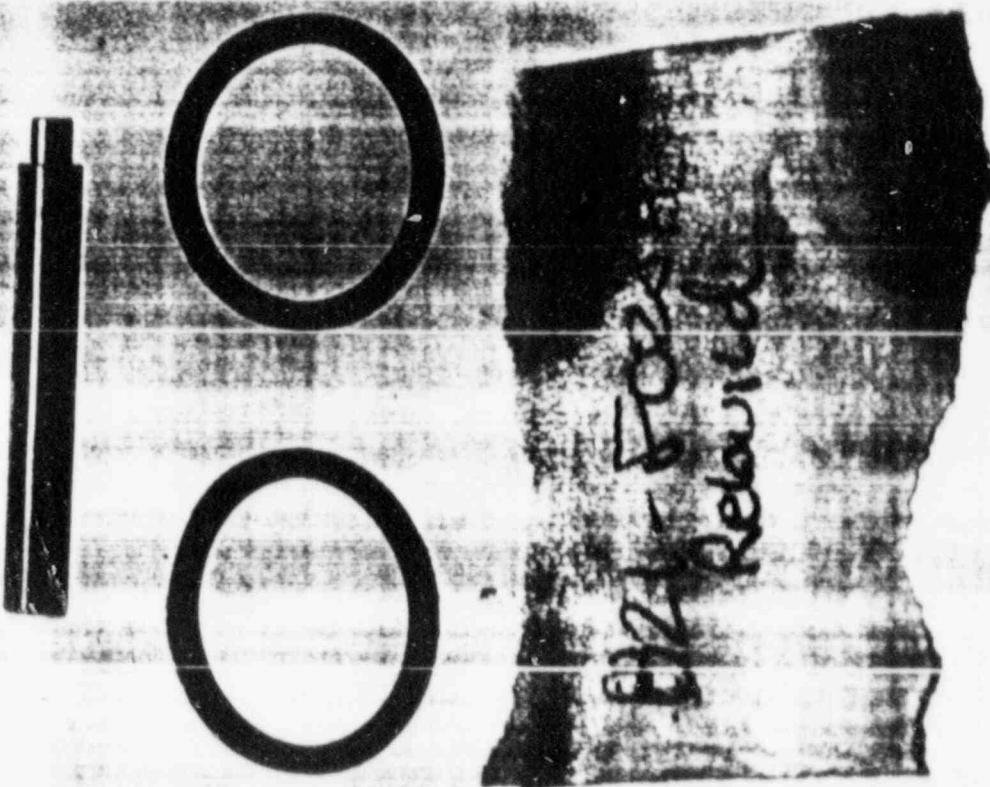


1B21 - FO28C
Rebuild
no O-RING STICKING

821-Forza
Retained



B21-FOZ8A
Released



B21-F022D



Item #6 of FOIA 88-165

9

B. Sequence of Events and Operator Actions

At the AIT's request, a chronology of events related to the MSIV failure on November 29, 1987, was assembled by the licensee. The chronology, which includes MSIV performance data and operator actions, was verified to be accurate by AIT personnel through review of operating logs, condition reports, ERIS plots, Technical Specification Limiting Condition of Operation (LCO) tracking system documentation, and interviews with licensee operating personnel and staff. The chronology was as follows:

NOTE: All times are in Eastern Standard Time.

November 8, 1987	2048	Rebuild work on MSIV 1B21-F022B complete per Work Order (WO) 87-9464
November 10, 1987	2324	MSIV 1B21-F022B was slow closed per System Operating Instruction (SOI)-B21, "Nuclear Steam Supply Shutoff, Automatic Depressurization, and Nuclear Steam Supply Systems (Unit 1)," by placing its control switch in the "Test" position and depressing its Test pushbutton. When the MSIV was fully closed, its control switch was placed in the "Close" position and the Test pushbutton was released. The MSIV was verified to have remained closed indicating that the fast closure solenoids had de-energized and changed state. This was all accomplished in accordance with WO 87-9464, Revision 3, Step 040.2. MSIV 1B21-F022B was fast closed per Surveillance Instruction (SVI)-B21-T2001, "MSIV Full Stroke Operability Test," as a retest for WO 87-9464. It closed satisfactorily in 3.2 seconds.
November 16, 1987	0535	Startup Test Instruction (STI)-B21-0025B, "Full MSIV Closure," was done at 96% power (all MSIVs fast closed satisfactorily including MSIV 1B21-F022B).
November 29, 1987	0157	Commenced SVI-C71-T0039, Revision 1, "Main Steam Line Isolation Valve Closure Channel Functional." All MSIVs cycled properly except MSIV 1B21-F022B, which is described below.
	0239	Slow closed MSIV 1B21-F022B for Surveillance Instruction (SVI)-C71-T0039, step 5.1.36.6.6. Upon reaching the fully closed position, the MSIV control switch was placed in the "Close" position and t

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test pushbutton was released. The MSIV reopened, indicating that the fast-closure solenoid-operated pilot valve did not change state as required when the control switch was placed in the "Close" position. Operators verified that the fast-closure solenoids had de-energized.

- 0242 Slow closed MSIV 1B21-F022B again.
- 0243 Again, upon reaching the fully closed position, the MSIV control switch was placed in the "Close" position and the test pushbutton was released. Again, the MSIV reopened. Operators verified that the fast-closure solenoids had de-energized.
- Operators twice attempted to fast close MSIV 1B21-F022B by placing the MSIV control switch in "Close". The fast-close solenoids de-energized but the valve did not close.
- 0245 Declared 1B21-F022B inoperable and reactor shutdown commenced per a licensee commitment received by Region III following MSIV Fast-Closure pilot valve failures on ~~October 27~~, November 3, 1987.
- 0335 Made a courtesy 4 hour ENS report on failure of 1B21-F022B to remain closed.
- 1303 After reactor shutdown, operators placed the control switch for MSIV 1B21-F022B in "Close" but the MSIV did not close. Personnel verified locally that the fast-close solenoids had de-energized. Approximately 3 minutes after the switch was placed in "Close", MSIV 1B21-F022B was gently tapped and it then closed properly in approximately 3 seconds.
- 1306 Operators opened and fast closed MSIV 1B21-F022B, one more time, and it operated correctly.

Operator actions as delineated in the above chronology, unit logs, and interviews with licensee personnel were reviewed and no inadequate or improper action was identified. The licensee declared MSIV 1B21-F022B inoperable, placed the reactor plant in hot shutdown within 12 hours, cold shutdown within 24 hours, and notified the NRC of the failure and shutdown per a licensee commitment received by Region III following the MSIV fast-closure pilot valve failures on October 29, 1987. The licensee contacted the Senior Resident Inspector (SRI) and made a courtesy Emergency Notification System (ENS) Report.

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DAILY REPORT REGION III

DATE: 11-02-87

LICENSEE/FACILITY	NOTIFICATION/SUBJECT
CLEVELAND ELECTRIC ILLUMINATING CO./ PERRY UNIT 1	SRI-PC/ EXCESSIVE MAIN STEAM ISOLATION VALVE (MSIV) STROKE TIMES

EVENT	EVENT NO. 10515 (UPDATE)
-------	--------------------------

ON OCTOBER 29, 1987, WHILE SHUTTING AT APPROXIMATELY 75% POWER, THE MSIVs WERE INDIVIDUALLY FAST-CLOSURE TESTED. VALVES 1B21-F022D, 1B21-F028D, AND 1B21-F028B EXHIBITED EXCESSIVE STROKE TIMES. SUBSEQUENT FAST-CLOSURE TESTS WERE PERFORMED AND THE VALVES PERFORMED SATISFACTORILY. THE VALVES WERE DECLARED OPERABLE FOLLOWING THE SUCCESSFUL FAST-CLOSURE TESTS. THE LICENSEE BELIEVES THAT THE EXCESSIVE INITIAL STROKE TIMES MAY HAVE BEEN DUE TO IMPURITIES IN THE VALVE ACTUATOR PILOT AIR SYSTEM AND THAT THE IMPURITIES WERE DISLODGED DURING VALVE OPERATION. BASED UPON DISCUSSIONS BETWEEN LICENSEE, NRC REGION III, AND NRR MANAGEMENT PERSONNEL HELD ON OCTOBER 30, 1987, THE LICENSEE WILL PERFORM ADDITIONAL FAST-CLOSURE TESTS ON THE SUBJECT VALVES TO CONFIRM THEIR OPERABILITY SHORTLY BEFORE THE PERFORMANCE OF THE FULL REACTOR ISOLATION STARTUP TEST. THE FULL REACTOR ISOLATION STARTUP TEST IS CURRENTLY SCHEDULED TO BE PERFORMED ON NOVEMBER 6, 1987. THE FULL REACTOR ISOLATION IS THE LAST TEST IN THE LICENSEE'S STARTUP TEST PROGRAM. WHILE SHUT DOWN FOLLOWING THE STARTUP TEST THE LICENSEE WILL EXAMINE THE MSIVs AND MSIV ACTUATORS TO FURTHER ESTABLISH THE ROOT CAUSE OF THE EXCESSIVE STROKE TIMES EXPERIENCED ON OCTOBER 29, 1987.

REGIONAL FOLLOWUP: THE RESIDENT INSPECTORS WILL WITNESS MSIV FAST-CLOSURE TESTING TO BE CONDUCTED PRIOR TO THE FULL REACTOR ISOLATION STARTUP TEST AND WILL INFORM NRC REGION III AND NRR MANAGEMENT OF THE TEST RESULTS.

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PRIORITY ATTENTION REQUIRED

MORNING REPORT - REGION III

NOVEMBER 2, 1987

LICENSEE/FACILITY
CLEVELAND ELECTRIC ILLUMINATING CO./
PERRY UNIT 1

NOTIFICATION/SUBJECT
SENIOR RESIDENT INSPECTOR
EXCESSIVE MAIN STEAM ISOLATION VALVE
(MSIV) STROKE TIMES

EVENT NO. 10515 (UPDATE)

ON OCTOBER 29, 1987, WHILE OPERATING AT APPROXIMATELY 75% POWER, THE MSIVS WERE INDIVIDUALLY FAST-CLOSURE TESTED. VALVES 1821-F0220, 1821-F028D, AND 1821-F028H EXHIBITED EXCESSIVE STROKE TIMES. SUBSEQUENT FAST-CLOSURE TESTS WERE PERFORMED AND THE VALVES PERFORMED SATISFACTORILY. THE VALVES WERE DECLARED OPERABLE FOLLOWING THE SUCCESSFUL FAST-CLOSURE TESTS. THE LICENSEE BELIEVES THAT THE EXCESSIVE INITIAL STROKE TIMES MAY HAVE BEEN DUE TO IMPURITIES IN THE VALVE ACTUATOR PILOT AIR SYSTEM AND THAT THE IMPURITIES WERE DISLODGED DURING VALVE OPERATION. BASED UPON DISCUSSIONS BETWEEN LICENSEE, NRC REGION III, AND NRR MANAGEMENT PERSONNEL HELD ON OCTOBER 30, 1987, THE LICENSEE WILL PERFORM ADDITIONAL INDIVIDUAL FAST-CLOSURE TESTS ON THE SUBJECT VALVES TO CONFIRM THEIR OPERABILITY SHORTLY BEFORE THE PERFORMANCE OF THE FULL REACTOR ISOLATION STARTUP TEST. THE FULL REACTOR ISOLATION STARTUP TEST IS CURRENTLY SCHEDULED TO BE PERFORMED ON NOVEMBER 6, 1987. THE FULL REACTOR ISOLATION IS THE LAST TEST IN THE LICENSEE'S STARTUP TEST PROGRAM. WHILE SHUT DOWN FOLLOWING THE STARTUP TEST THE LICENSEE WILL EXAMINE THE MSIVS AND MSIV ACTUATORS TO FURTHER ESTABLISH THE ROOT CAUSE OF THE EXCESSIVE STROKE TIMES EXPERIENCED ON OCTOBER 29, 1987.

REGIONAL FOLLOWUP: THE RESIDENT INSPECTORS WILL WITNESS MSIV FAST-CLOSURE
TESTING TO BE CONDUCTED PRIOR TO THE FULL REACTOR ISOLATION STARTUP TEST
AND WILL INFORM NRC REGION III AND NRR MANAGEMENT OF THE TEST RESULTS.

EMERGENCY NOTIFICATION WORKSHEET

U.S. Nuclear Regulatory Commission
Region III

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EVENT NUMBER (ASSIGNED BY NRC)	10555	DATE	MONTH	DAY	YEAR
TIME OF NOTIFICATION (EDT)	1410 EST	EVENT TIME AND ZONE	1357 EST	TIME OF NOTIFICATION (EDT)	1321 CST
FACILITY OR ORGANIZATION	Perry 1	CALLER'S NAME	Ho DO	CALL-BACK TELEPHONE NUMBER	
(CHECK) EVENT CLASS	(CHECK) EVENT CATEGORY	INITIATION SIGNAL	(CHECK) CAUSE OF FAILURE		
GENERAL EMER.	TRIP		<input checked="" type="checkbox"/>	MECHANICAL	
SITE AREA EMER.	ESF ACTUATION		<input type="checkbox"/>	ELECTRICAL	
ALERT	SAFETY INJECT. OR ECCS		<input type="checkbox"/>	PERSONNEL ERROR	
UNUSUAL EVENT	CORE INJECT.		<input type="checkbox"/>	PROCEDURE INADEQUACY	
TRANSPORTATION ACCIDENT	LEO ACTION STATEMENT		<input type="checkbox"/>	OTHER	
OTHER	<input checked="" type="checkbox"/> OTHER		<input type="checkbox"/>		
1 HR. 4 HR.	50-72 HOUR-EMERGENCY	POWER PRIOR TO EVENT (%)	80%	SYSTEM	
1 HR. 24 HR.	SECURITY/SAFEGUARDS	POWER AT TIME OF REPORT	68% and decreasing to about 60%	COMPONENT	
RADIONUCLIDE RELEASES (QUANTIFY)					
OTHER MAJOR PROBLEMS					
EVENT DESCRIPTION/CAUSE					
<p>77A is in operation for a full MSIV startup test and since test striking the MSIVs when 2 MSIVs in the "D" steam line failed stroke time (3-5 sec). The island MSIV closed first. There is 18 sec. second attempt closed within 3 sec. The shutdown valve switch was placed in the closed position.</p>					
OUTSIDE AGENCY/PERSONNEL NOTIFIED BY LICENSEE		CORRECTIVE ACTION(S)			
STATE	LOCAL				
RESIDENT	YES <input checked="" type="radio"/> NO <input type="radio"/> WILL BE				
OTHER					
PRESS RELEASE		ADDITIONAL INFORMATION OR BACK			
MODE OF OPERATION UNTIL CORRECTED:		EST. TIME FOR RESTART			
EXECUTIVE OFFICER NOTIFIED BY NRC?					
(CIRCLE) & JR. FOLLOWUP	BISTR	NOTIFICATIONS MADE BY NRC:		DATE	TIME
MORNING REPORT	BR/CH	SECTION CHIEF		11/3/87	1345
PH WRITTEN	INSF	BRANCH CHIEF/DIVISION DIRECTOR			
TEAM TO SITE	DIV/DIR	REGIONAL ADMINISTRATOR			
RA/PAD, BR/CH, HQ, ETC. NOTIFIED	NRC SIGNATURE:		Dr. H. L. Wilson - for JTH		
PLEASE CALL BACK WITH ANY CHANGES OR ADDITIONAL INFORMATION					

and left there 2 min 49 sec but valve still did not close. Switch was taken back to the auto position and then returned to the closed position and the valve then stroked closed in 5.4 sec. This has been a recurrent problem. The licensee was ordered to commence a shutdown at 1337 EST. Also, an AIT will be arriving on site shortly to investigate this problem with the MSIV's. There was an earlier report on 10/30/87 which related to MSIV closure.

Slow Strokes/MSIVs

During Startup Testing:

5/10/87 Following a planned scram (LOOP) all MSIVs were stroked close. B21-F028B stroked slow (5.1 sec). Partial SVI-B21-T2001 performed on 5/12/87. Valve closed in 4 sec. SVI SAT.

During "04" Outage:

8/10/87 During SVI-B21-T2001, B21-F028C stroked slow, 5.3 sec. Item was tracked by V.O. 87-764. This W.O. involved DCP work to F028C. Technicians adjusted the fast stroke-time controller per ICI-B12-O. Valve subsequently restroked, per another SVI-B21-T2001 on 8/12/87. Valve time SAT.

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(3) Previous Studies

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

G-2
REV. 1-82

MEMORANDUM

 I no longer wish to receive this material.

TO: S.F. Kensicki ROOM: SB312 FROM: J. Cantlin *J* DATE: 11-4-87
PHONE: 5112 SUBJECT: MSIV Stroke Times During Startup Tests ROOM: TTBL

The following is a summary of MSIV stroke time results obtained during the Startup Test Program to-date.

<u>Test Serial Number</u>	<u>Date</u>	<u>Test Summary</u>
070	10-12-86	At 3.6% power and ~955 psig each MSIV was manually fast closed for STI-B21-025A-8.1, MSIV Closure Time Measurements. All times were acceptable (see attached data sheet).
169	3-24-87	Subsequent to the planned scram for the Shutdown from Outside the Control Room at 810 psig all MSIV's were automatically fast closed due to low reactor pressure. This was an expected closure for this test. All times were acceptable. (see attached ERIS SOE log).
208	5-10-87	Subsequent to the planned scram for the Loss of Offsite Power test at ~980 psig 6 MSIV's (the "C" line was isolated for the latter part of Test Condition 2) were automatically closed due to the expected loss of leak detection power. The stroke times were: F022A = 3.7 sec F022D = 3.0 sec F028A = 4.8 sec F028D = 3.0 sec F022B = 4.2 sec F028B = 5.1 sec All times were satisfactory except for the F028B which was 0.1 sec too slow. This valve was reset and tested satisfactory. (see attached TD log).

214

5-17-87

At 43% power and ~938 psig each MSIV was manually fast closed for STI-B21-25A-8.1, MSIV Closure Time Measurements. All times were acceptable. (see attached data sheet).

451

10-29-87

The fastest MSIV (B21-F022D based on previous tests) was fast closed manually at 75% power and ~962 psig. The valve failed to move for 19.6 sec then stroked with an acceptable closure time. (see attached ERIS tabular trend report).

In addition to the stroke times available from the preceding Startup Tests, when the loss of one RPS bus (6-17-87) caused the four outboard MSIV's to close they were verified to close within acceptable stroke times. (see scram report #1-87-9).

There have also been numerous stroke time measurements made for retest purposes - the PPTD System Engineer should be able to obtain these results.

If you need further information, please let me know.

cc: L. B. Biddlecome - CC300
B. Liddel - E220

JGC/sc
M.M.-5 #37

000020

OM 5: STI-B21-025A
 Page: 60
 Rev.: 2

Attachment 1
 Form: STI-B21-025A-1

OFFICIAL TEST COPY

NSTV Closure Time

NSTV	NP ₁₀ (1)	NP ₉₀ (1)	t' ₀ (sec)	t ₁₀ (sec)	t ₉₀ (sec)	*t _s (sec)	*t _{sol} (sec)	*t _d (sec)
F022A	13.8	90.0	0.28 sec defn	0.78	0.90	4.02	4.16	4.44
F022B	12.4	90.0	0.28 sec defn	0.71	3.61	3.48	3.68	3.96
F022C	17.1	90.5	0.28 sec defn	0.98	2.13	2.93	3.13	3.41
F022D	14.4	90.0	0.28 sec defn	0.92	2.41	3.29	3.46	3.74
F028A	14.1	89.8	0.28 sec defn	0.75	4.00	3.78	4.11	4.39
F028B	13.2	90.2	0.28 sec defn	0.78	2.55	3.30	3.56	3.84
F028C	7.8	90.3	0.28 sec defn	0.89	2.65	3.35	3.69	3.97
F028D	10.8	90.2	0.28 sec defn	0.87	3.50	3.31	3.54	3.82

Acceptance Criteria 3.1.1: 2.5 sec ≤ t_s ≤ 5.0 sec

$$*t_s = \frac{(t_{90} - t_{10})}{(NP_{90} - NP_{10})} \times 100\%$$

$$*t_{sol} = (t'_{90} - t'_{10}) + \frac{(t_{90} - t_{10})}{(NP_{90} - NP_{10})} (1001 - NP_{90})$$

*t_d = as determined by 1B21C-P-001Date of t_d measurement = 17-8-85

John J. L.
 Performed by date
John J. L.
 Verified by date
 10/12/86

Serial No. 070

SEQUENCE OF EVENTS AUTOMATIC LOG

REPORT TIME: 24-MAR-87 17:34:22.000
 STATION ID: 1

(* INDICATES LOW CONFIDENCE DATA)

DATE	TIME	POINT ID	POINT NAME	STATUS
24-MAR-87	17:34:20.561	B21EC014	RPS CHANNEL ISOLATION B STATUS	ISOLATE
24-MAR-87	17:34:21.964	N32EC001	TURBINE TRIP STATUS	TRIP
24-MAR-87	17:34:21.976	N32EC001	TURBINE TRIP STATUS	NORM
24-MAR-87	17:34:22.064	N32EC001	TURBINE TRIP STATUS	TRIP
24-MAR-87	17:34:22.300	C34EC002	TDFP B TRIP STATUS	TRIP
24-MAR-87	17:34:22.316	N41EC003	GENERATOR TRIP STATUS	TRIP
24-MAR-87	17:34:22.501	R22EC022	L1006 CB POSITION	CLOSED
24-MAR-87	17:34:22.501	R22EC023	L1009 CB POSITION	CLOSED
24-MAR-87	17:34:28.055	B21EC013	RPS CH ISOL A STATUS	ISOL
24-MAR-87	17:34:28.200	B21EC069	INBOARD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.200	B21EC072	INBOARD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.200	B21EC075	INBOARD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.200	B21EC078	INBOARD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.200	B21EC081	OUTBD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.200	B21EC084	OUTBD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.200	B21EC087	OUTBD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.200	B21EC090	OUTBD MSTV SOLENOID STATUS	DE-ENER
24-MAR-87	17:34:28.688	B21EC089	OUTBD MSTV POSITION	CLOSE
24-MAR-87	17:34:28.692	B21EC092	OUTBD MSTV POSITION	CLOSE
24-MAR-87	17:34:28.744	B21EC080	INBOARD MSTV POSITION	CLOSE
24-MAR-87	17:34:28.748	B21EC074	INBOARD MSTV POSITION	CLOSE
24-MAR-87	17:34:28.764	B21EC086	OUTBD MSTV POSITION	CLOSE
24-MAR-87	17:34:28.780	B21EC071	INBOARD MSTV POSITION	CLOSE
24-MAR-87	17:34:28.824	B21EC077	INBOARD MSTV POSITION	CLOSE
24-MAR-87	17:34:28.916	B21EC083	OUTBD MSTV POSITION	CLOSE
24-MAR-87	17:34:29.785	B21EC016	RPS CHANNEL ISOL D STATUS	ISOL
24-MAR-87	17:34:29.901	B21EC001	TSLN VALVE GR-1 A COMMAND	ISOL
24-MAR-87	17:34:30.681	B21EC015	RPS CHANNEL ISOL C STATUS	ISOL
24-MAR-87	17:34:30.801	B21EC002	TSLN VALVE GROUP 1-B COMMAND	ISOLATE
24-MAR-87	17:34:30.988	B21EC076	INBOARD MSTV POSITION	FULLCLOS
24-MAR-87	17:34:31.240	B21EC079	INBOARD MSTV POSITION	FULLCLOS
24-MAR-87	17:34:31.272	B21EC091	OUTBD MSTV POSITION	FULLCLOS
24-MAR-87	17:34:31.308	B21EC085	OUTBD MSTV POSITION	FULLCLOS
24-MAR-87	17:34:31.372	B21EC088	OUTBD MSTV POSITION	FULLCLOS
24-MAR-87	17:34:31.388	B21EC073	INBOARD MSTV POSITION	FULLCLOS
24-MAR-87	17:34:31.804	B21EC070	INBOARD MSTV POSITION	FULLCLOS
24-MAR-87	17:34:31.924	B21EC082	OUTBD MSTV POSITION	FULLCLOS

TSN-169

COO-11

000064



UNIT 1 STARTUP TEST PROGRAM
PERRY NUCLEAR POWER PLANT

 TEST DIRECTOR
 CHRONOLOGICAL TEST LOG
 ST7-RB-031 / *Unit 1 Generator*
Off M. Power(34)

PAGE 5

DATE	TIME	RECORD	REMARKS
5-12-87	1830	C11	SCRAM DISCHARGE VOLUME OBTAIN VALUES 1C11-F04 AND 1C11-F181 (POWER) DUAL INDICATION AFTER THE SCRAM. C.R. EN251 AND W.O.: 87-4150, 87-4149 AND 87-4152 WERE INITIATED TO RESOLVE THIS PROBLEM <i>ATD</i>
5-12-87	1837	MSIV*	REVIEW OF MSIV CLOSING TIMES (THERM TRENO) REVEALED MSIV F0288 REQUIRED GREATER THAN * 5 SECONDS TO CLOSE. A PARTIAL OF SV3-821-T2001 HAS BEEN INITIATED TO FURTHER INVESTIGATE THIS PROBLEM. (<i>n 5.1 sec</i>) <i>ATD</i>
5-12-87	1840	ON204	DURING OPERATION OF THE ON 2 O.G. THE BUS INDICATED FLUCTUATIONS IN WCO THIS DID NOT IMPACT THE TEST BUT W.O. 87-4136 WAS INITIATED TO FURTHER INVESTIGATE. <i>ATD</i>
5-12-87	1843	YH7A	CHILLER 247-0001A TRIPPED ON WCO CONDENSING FLOW. APPARENT PROBLEM IS IN THE LOOP LOCAL SWAPOVER FROM NCL TO ECL AND CHILLER START. W.O. 87-4181 HAS BEEN INITIATED TO INVESTIGATE. <i>ATD</i>
5-12-87	1921	401	Test loop is closed - <i>f Gaffit</i> <i>I WCO</i> <i>n 5-12-87</i>

*MSIV adjusted and
subsequently rotated
september 1/jms/1987

TSN-28

MSTV Closure Time

MSTV	AP ₁₀ (s)	AP ₉₀ (s)	t _{o'} (Hr:Min:Sec)	t ₁₀ (Hr:Min:Sec)	t ₉₀ (Hr:Min:Sec)	*t _s (sec)	**t _{sol} (sec)	***t _d (Max) (sec)	t _{sol} + t _d (sec)
F022A	13.8	90.0	14:33:57.875	14:33:58.350	14:33:59.260	3.95	4.080	0.28	4.360
F022B	12.4	90.0	14:39:56.030	14:39:56.670	14:39:59.290	3.38	3.598	0.28	3.878
F022C	17.1	90.5	15:05:37.360	15:05:38.975	15:05:39.215	2.94	3.155	0.28	3.435
F022D	11.1	90.0	15:09:14.180	15:09:15.120	15:09:17.600	3.28	3.449	0.28	3.728
F028A	11.1	87.8	15:19:49.315	15:19:50.115	15:19:52.195	4.03	4.281	0.28	4.561
F028B	13.2	90.2	15:19:14.610	15:19:16.315	15:19:17.900	3.23	3.611	0.28	3.891
F028C	7.8	90.3	15:26:09.185	15:26:09.745	15:26:12.460	3.29	2.614	0.28	2.904
F028D	10.8	90.2	15:31:09.400	15:31:09.910	15:31:13.600	3.30	3.523	0.28	3.803

$$*t_s = \frac{(t_{90} - t_{10})}{(AP_{90} - AP_{10})} \times 100\%$$

Acceptance Criteria 3.1.1: $2.5 \text{ sec} \leq t_s \leq 5.0 \text{ sec}$

$$t_{sol} + t_d \leq 5.5 \text{ sec}$$

$$**t_{sol} = (t_{90} - t_{o'}) + \frac{(t_{90} - t_{10})}{(AP_{90} - AP_{10})} (100\% - AP_{90})$$

***t_d - as determined by 1B21C-P-001

Date of t_d measurement - 12/8/85

Jeanne Ahern 5/12/87
Performed By/Date
Randy R. P. 5/17/87
Verified By/Date

OFFICIAL TEST COPY

Or. S.: 577-821-025
Page: 54
Rev.: 3
Attachment: 1
Form: STI-321-025

Serial No.
934

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1.67
TAPe451Z1/449

TABULAR TREND REPORT

STL-B2I-025A, TSN 451, STEP 8.3.9/11

REPORT TIME: 29-OCT-87 21:51:08.000 DATA START: 29-OCT-87 18:34:51
STATION ID : PERRY_UNIT_1 0007 DATA END : 29-OCT-87 18:35:21
NUMBER OF VALUES: 250 DATA MODE: HISTORICAL
PROCESSING RATE : 0.100 SECONDS/SAMPLE

POINT ID POINT NAME ANALOG ENG UNITS ANALOG CONV. EQUATION
DIGITAL LOW AND CONVERSION CONSTANTS
HIGH STATE NAMES

1-B2IEC078 INBOARD MSIV SOLENOID STATUS
DE-ENER ENER

2-B2IEC079 INBOARD MSIV POSITION
OPEN FULLCLOSED

3-B2IEC080 INBOARD ASIV POSITION
CLOSE FULLOPEN

4-C34EAO17 STEAMLINE D FLOW
MLB/MR Y=C2X + C1
C1= -0.1065E+01
C2= 0.1625E-03

5-C34EAO28 NARROW RANGE RX DOME PRESSURE
PSIG Y=C2X + C1
C1= 0.8000E+03
C2= 0.7687E-02

DATE	TIME	1	2	3	4	5	6
29-OCT-87	18:34:58.000	ENER	OPEN	FULLOPEN	2.7265	964.00	
	18:34:58.100	ENER	OPEN	FULLOPEN	2.7265	964.00	
	18:34:58.200	ENER	OPEN	FULLOPEN	2.7239	963.87	
	18:34:58.300	ENER	OPEN	FULLOPEN	2.7265	963.87	
	18:34:58.400	ENER	OPEN	FULLOPEN	2.7265	963.87	
	18:34:58.500	ENER	OPEN	FULLOPEN	2.7292	963.87	
	18:34:58.600	ENER	OPEN	FULLOPEN	2.7320	963.87	
	18:34:58.700	ENER	OPEN	FULLOPEN	2.7320	963.87	
	18:34:58.800	ENER	OPEN	FULLOPEN	2.7320	963.73	
	18:34:58.900	DE-ENER	OPEN	FULLOPEN	2.7315	963.73	
	18:34:59.000	DE-ENER	OPEN	FULLOPEN	2.7315	963.60	
	18:34:59.100	DE-ENER	OPEN	FULLOPEN	2.7424	964.00	
	18:34:59.200	DE-ENER	OPEN	FULLOPEN	2.7343	963.87	
	18:34:59.300	DE-ENER	OPEN	FULLOPEN	2.7265	963.60	

TSN-451

TAPE451Z1/449

TP
202TABULAR TREND REPORT
STI-821-025A, TSN 451, STEP 8.3.9/11

REPORT TIME: 29-OCT-87 21:51:08.000 DATA START: 29-OCT-87 18:34:11
STATION ID : PERRY-UNIT-1 0007 DATA END : 29-OCT-87 18:35:11
NUMBER OF VALUES : 250 DATA MODE : HISTORICAL
PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5
	18:34:59.400	DE-ENER	OPEN	FULLOPEN	2.7315	963.87
	18:34:59.500	DE-ENER	OPEN	FULLOPEN	2.7370	963.87
	18:34:59.600	DE-ENER	OPEN	FULLOPEN	2.7315	963.87
	18:34:59.700	DE-ENER	OPEN	FULLOPEN	2.7200	964.00
	18:34:59.800	DE-ENER	OPEN	FULLOPEN	2.7206	963.87
	18:34:59.900	DE-ENER	OPEN	FULLOPEN	2.7260	963.88
	18:35:00.000	DE-ENER	OPEN	FULLOPEN	2.7260	963.75
	18:35:00.100	DE-ENER	OPEN	FULLOPEN	2.7178	963.86
	18:35:00.200	DE-ENER	OPEN	FULLOPEN	2.7200	963.88
	18:35:00.300	DE-ENER	OPEN	FULLOPEN	2.7315	963.83
	18:35:00.400	DE-ENER	OPEN	FULLOPEN	2.7260	963.88
	18:35:00.500	DE-ENER	OPEN	FULLOPEN	2.7178	963.88
	18:35:00.600	DE-ENER	OPEN	FULLOPEN	2.7260	963.88
	18:35:00.700	DE-ENER	OPEN	FULLOPEN	2.7396	964.01
	18:35:00.800	DE-ENER	OPEN	FULLOPEN	2.7424	963.91
	18:35:00.900	DE-ENER	OPEN	FULLOPEN	2.7372	963.91
	18:35:01.000	DE-ENER	OPEN	FULLOPEN	2.7398	963.79
	18:35:01.100	DE-ENER	OPEN	FULLOPEN	2.7481	963.91
	18:35:01.200	DE-ENER	OPEN	FULLOPEN	2.7453	964.04
	18:35:01.300	DE-ENER	OPEN	FULLOPEN	2.7420	964.17
	18:35:01.400	DE-ENER	OPEN	FULLOPEN	2.7372	964.04
	18:35:01.500	DE-ENER	OPEN	FULLOPEN	2.7420	964.04
	18:35:01.600	DE-ENER	OPEN	FULLOPEN	2.7420	963.91
	18:35:01.700	DE-ENER	OPEN	FULLOPEN	2.7317	963.79
	18:35:01.800	DE-ENER	OPEN	FULLOPEN	2.7289	963.79
	18:35:01.900	DE-ENER	OPEN	FULLOPEN	2.7369	963.87
	18:35:02.000	DE-ENER	OPEN	FULLOPEN	2.7315	963.87
	18:35:02.100	DE-ENER	OPEN	FULLOPEN	2.7260	963.87
	18:35:02.200	DE-ENER	OPEN	FULLOPEN	2.7315	964.00
	18:35:02.300	DE-ENER	OPEN	FULLOPEN	2.7315	963.87
	18:35:02.400	DE-ENER	OPEN	FULLOPEN	2.7232	963.87
	18:35:02.500	DE-ENER	OPEN	FULLOPEN	2.7315	964.00
	18:35:02.600	DE-ENER	OPEN	FULLOPEN	2.7315	963.87
	18:35:02.700	DE-ENER	OPEN	FULLOPEN	2.7341	963.87
	18:35:02.800	DE-ENER	OPEN	FULLOPEN	2.7315	963.97
	18:35:02.900	DE-ENER	OPEN	FULLOPEN	2.7309	963.83
	18:35:03.000	DE-ENER	OPEN	FULLOPEN	2.7255	963.70
	18:35:03.100	DE-ENER	OPEN	FULLOPEN	2.7255	963.83
	18:35:03.200	DE-ENER	OPEN	FULLOPEN	2.7227	963.83
	18:35:03.300	DE-ENER	OPEN	FULLOPEN	2.7309	963.97
	18:35:03.400	DE-ENER	OPEN	FULLOPEN	2.7255	963.97
	18:35:03.500	DE-ENER	OPEN	FULLOPEN	2.7255	963.97
	18:35:03.600	DE-ENER	OPEN	FULLOPEN	2.7364	963.83

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TABULAR TREND REPORT

STI-821-025A, TSN 451, STEP 8.3.9/11

REPORT TIME: 29-OCT-87 21:51:08.000 DATA START: 29-OCT-87 18:34:5
 STATION ID : PERRY-UNIT-1 0007 DATA END : 29-OCT-87 18:35:1
 NUMBER OF VALUES : 250 DATA MODE: HISTORICAL
 PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5	6
	18:35:03.700	DE-ENER	OPEN	FULLOPEN	2.7419	963.83	
	18:35:03.800	DE-ENER	OPEN	FULLOPEN	2.7364	963.83	
	18:35:03.900	DE-ENER	OPEN	FULLOPEN	2.7317	963.83	
	18:35:04.000	DE-ENER	OPEN	FULLOPEN	2.7370	963.83	
	18:35:04.100	DE-ENER	OPEN	FULLOPEN	2.7370	963.96	
	18:35:04.200	DE-ENER	OPEN	FULLOPEN	2.7370	963.83	
	18:35:04.300	DE-ENER	OPEN	FULLOPEN	2.7370	964.09	
	18:35:04.400	DE-ENER	OPEN	FULLOPEN	2.7479	963.96	
	18:35:04.500	DE-ENER	OPEN	FULLOPEN	2.7479	963.83	
	18:35:04.600	DE-ENER	OPEN	FULLOPEN	2.7429	963.83	
	18:35:04.700	DE-ENER	OPEN	FULLOPEN	2.7398	963.83	
	18:35:04.800	DE-ENER	OPEN	FULLOPEN	2.7453	963.97	
	18:35:04.900	DE-ENER	OPEN	FULLOPEN	2.7479	963.97	
	18:35:05.000	DE-ENER	OPEN	FULLOPEN	2.7398	963.83	
	18:35:05.100	DE-ENER	OPEN	FULLOPEN	2.7398	963.83	
	18:35:05.200	DE-ENER	OPEN	FULLOPEN	2.7426	963.83	
	18:35:05.300	DE-ENER	OPEN	FULLOPEN	2.7370	963.83	
	18:35:05.400	DE-ENER	OPEN	FULLOPEN	2.7317	963.83	
	18:35:05.500	DE-ENER	OPEN	FULLOPEN	2.7370	963.97	
	18:35:05.600	DE-ENER	OPEN	FULLOPEN	2.7426	963.97	
	18:35:05.700	DE-ENER	OPEN	FULLOPEN	2.7426	964.10	
	18:35:05.800	DE-ENER	OPEN	FULLOPEN	2.7317	963.97	
	18:35:05.900	DE-ENER	OPEN	FULLOPEN	2.7313	963.93	
	18:35:06.000	DE-ENER	OPEN	FULLOPEN	2.7341	963.80	
	18:35:06.100	DE-ENER	OPEN	FULLOPEN	2.7369	964.07	
	18:35:06.200	DE-ENER	OPEN	FULLOPEN	2.7369	964.07	
	18:35:06.300	DE-ENER	OPEN	FULLOPEN	2.7422	963.93	
	18:35:06.400	DE-ENER	OPEN	FULLOPEN	2.7478	963.80	
	18:35:06.500	DE-ENER	OPEN	FULLOPEN	2.7422	963.67	
	18:35:06.600	DE-ENER	OPEN	FULLOPEN	2.7369	963.80	
	18:35:06.700	DE-ENER	OPEN	FULLOPEN	2.7313	963.80	
	18:35:06.800	DE-ENER	OPEN	FULLOPEN	2.7369	964.07	
	18:35:06.900	DE-ENER	OPEN	FULLOPEN	2.7313	963.93	
	18:35:07.000	DE-ENER	OPEN	FULLOPEN	2.7313	963.93	
	18:35:07.100	DE-ENER	OPEN	FULLOPEN	2.7313	964.07	
	18:35:07.200	DE-ENER	OPEN	FULLOPEN	2.7286	963.93	
	18:35:07.300	DE-ENER	OPEN	FULLOPEN	2.7369	963.93	
	18:35:07.400	DE-ENER	OPEN	FULLOPEN	2.7396	963.80	
	18:35:07.500	DE-ENER	OPEN	FULLOPEN	2.7396	963.80	
	18:35:07.600	DE-ENER	OPEN	FULLOPEN	2.7450	963.93	
	18:35:07.700	DE-ENER	OPEN	FULLOPEN	2.7478	964.07	
	18:35:07.800	DE-ENER	OPEN	FULLOPEN	2.7396	963.93	
	18:35:07.900	DE-ENER	OPEN	FULLOPEN	2.7455	963.94	

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TABULAR TREND REPORT
STN-821-025A, TSN 451, STEP 8.3.9/11

REPORT TIME: 29-OCT-87 21:51:08.000 DATA START: 29-OCT-87 18:34:
 STATION ID : PERRY-UNIT-1 0007 DATA END : 29-OCT-87 18:35:
 NUMBER OF VALUES : 250 DATA MODE : HISTORICAL
 PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5
	18:35:08.000	DE-ENER	OPEN	FULLOPEN	2.7455	963.94
	18:35:08.100	DE-ENER	OPEN	FULLOPEN	2.7427	963.62
	18:35:08.200	DE-ENER	OPEN	FULLOPEN	2.7340	963.69
	18:35:08.300	DE-ENER	OPEN	FULLOPEN	2.7374	963.82
	18:35:08.400	DE-ENER	OPEN	FULLOPEN	2.7291	963.82
	18:35:08.500	DE-ENER	OPEN	FULLOPEN	2.7374	963.69
	18:35:08.600	DE-ENER	OPEN	FULLOPEN	2.7340	963.82
	18:35:08.700	DE-ENER	OPEN	FULLOPEN	2.7340	964.07
	18:35:08.800	DE-ENER	OPEN	FULLOPEN	2.7374	964.07
	18:35:08.900	DE-ENER	OPEN	FULLOPEN	2.7349	964.07
	18:35:09.000	DE-ENER	OPEN	FULLOPEN	2.7349	963.94
	18:35:09.100	DE-ENER	OPEN	FULLOPEN	2.7349	963.82
	18:35:09.200	DE-ENER	OPEN	FULLOPEN	2.7377	963.94
	18:35:09.300	DE-ENER	OPEN	FULLOPEN	2.7430	963.94
	18:35:09.400	DE-ENER	OPEN	FULLOPEN	2.7377	964.20
	18:35:09.500	DE-ENER	OPEN	FULLOPEN	2.7260	964.20
	18:35:09.600	DE-ENER	OPEN	FULLOPEN	2.7322	963.94
	18:35:09.700	DE-ENER	OPEN	FULLOPEN	2.7377	963.82
	18:35:09.800	DE-ENER	OPEN	FULLOPEN	2.7349	963.94
	18:35:09.900	DE-ENER	OPEN	FULLOPEN	2.7395	964.06
	18:35:10.000	DE-ENER	OPEN	FULLOPEN	2.7479	964.19
	18:35:10.100	DE-ENER	OPEN	FULLOPEN	2.7424	964.06
	18:35:10.200	DE-ENER	OPEN	FULLOPEN	2.7370	964.06
	18:35:10.300	DE-ENER	OPEN	FULLOPEN	2.7424	964.19
	18:35:10.400	DE-ENER	OPEN	FULLOPEN	2.7424	963.93
	18:35:10.500	DE-ENER	OPEN	FULLOPEN	2.7390	963.93
	18:35:10.600	DE-ENER	OPEN	FULLOPEN	2.7370	964.06
	18:35:10.700	DE-ENER	OPEN	FULLOPEN	2.7424	964.19
	18:35:10.800	DE-ENER	OPEN	FULLOPEN	2.7424	964.03
	18:35:10.900	DE-ENER	OPEN	FULLOPEN	2.7367	964.03
	18:35:11.000	DE-ENER	OPEN	FULLOPEN	2.7313	964.03
	18:35:11.100	DE-ENER	OPEN	FULLOPEN	2.7367	963.90
	18:35:11.200	DE-ENER	OPEN	FULLOPEN	2.7478	964.03
	18:35:11.300	DE-ENER	OPEN	FULLOPEN	2.7450	964.15
	18:35:11.400	DE-ENER	OPEN	FULLOPEN	2.7470	964.15
	18:35:11.500	DE-ENER	OPEN	FULLOPEN	2.7450	964.03
	18:35:11.600	DE-ENER	OPEN	FULLOPEN	2.7531	964.03
	18:35:11.700	DE-ENER	OPEN	FULLOPEN	2.7505	964.03
	18:35:11.800	DE-ENER	OPEN	FULLOPEN	2.7531	964.03
	18:35:11.900	DE-ENER	OPEN	FULLOPEN	2.7538	964.09
	18:35:12.000	DE-ENER	OPEN	FULLOPEN	2.7538	964.09
	18:35:12.100	DE-ENER	OPEN	FULLOPEN	2.7538	964.09
	18:35:12.200	DE-ENER	OPEN	FULLOPEN	2.7538	964.09

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TABULAR TREND REPORT
STI-821-025A, TSN-451; STEP 8.3.9/11

REPORT TIME: 29-OCT-87 21:51:08.000 DATA START: 29-OCT-87 18:34:5
 STATION ID : PERRY-UNIT-1 0007 DATA END : 29-OCT-87 18:35:2
 NUMBER OF VALUES : 250 DATA MODE: HISTORICAL
 PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5	6
	18:35:12.300	DE-ENER	OPEN	FULLOPEN	2.7538	964.09	
	18:35:12.400	DE-ENER	OPEN	FULLOPEN	2.7484	964.09	
	18:35:12.500	DE-ENER	OPEN	FULLOPEN	2.7429	964.09	
	18:35:12.600	DE-ENER	OPEN	FULLOPEN	2.7484	964.09	
	18:35:12.700	DE-ENER	OPEN	FULLOPEN	2.7538	964.09	
	18:35:12.800	DE-ENER	OPEN	FULLOPEN	2.7538	964.13	
	18:35:12.900	DE-ENER	OPEN	FULLOPEN	2.7515	964.13	
	18:35:13.000	DE-ENER	OPEN	FULLOPEN	2.7487	964.13	
	18:35:13.100	DE-ENER	OPEN	FULLOPEN	2.7432	964.25	
	18:35:13.200	DE-ENER	OPEN	FULLOPEN	2.7543	964.13	
	18:35:13.300	DE-ENER	OPEN	FULLOPEN	2.7378	964.13	
	18:35:13.400	DE-ENER	OPEN	FULLOPEN	2.7296	964.00	
	18:35:13.500	DE-ENER	OPEN	FULLOPEN	2.7378	964.25	
	18:35:13.600	DE-ENER	OPEN	FULLOPEN	2.7351	964.13	
	18:35:13.700	DE-ENER	OPEN	FULLOPEN	2.7378	964.00	
	18:35:13.800	DE-ENER	OPEN	FULLOPEN	2.7378	964.13	
	18:35:13.900	DE-ENER	OPEN	FULLOPEN	2.7426	964.13	
	18:35:14.000	DE-ENER	OPEN	FULLOPEN	2.7534	964.25	
	18:35:14.100	DE-ENER	OPEN	FULLOPEN	2.7508	964.13	
	18:35:14.200	DE-ENER	OPEN	FULLOPEN	2.7396	964.13	
	18:35:14.300	DE-ENER	OPEN	FULLOPEN	2.7317	964.13	
	18:35:14.400	DE-ENER	OPEN	FULLOPEN	2.7372	964.26	
	18:35:14.500	DE-ENER	OPEN	FULLOPEN	2.7420	964.13	
	18:35:14.600	DE-ENER	OPEN	FULLOPEN	2.7398	964.13	
	18:35:14.700	DE-ENER	OPEN	FULLOPEN	2.7372	964.00	
	18:35:14.800	DE-ENER	OPEN	FULLOPEN	2.7481	964.12	
	18:35:14.900	DE-ENER	OPEN	FULLOPEN	2.7507	964.12	
	18:35:15.000	DE-ENER	OPEN	FULLOPEN	2.7533	964.12	
	18:35:15.100	DE-ENER	OPEN	FULLOPEN	2.7479	964.12	
	18:35:15.200	DE-ENER	OPEN	FULLOPEN	2.7452	964.12	
	18:35:15.300	DE-ENER	OPEN	FULLOPEN	2.7479	964.12	
	18:35:15.400	DE-ENER	OPEN	FULLOPEN	2.7479	964.00	
	18:35:15.500	DE-ENER	OPEN	FULLOPEN	2.7474	964.12	
	18:35:15.600	DE-ENER	OPEN	FULLOPEN	2.7424	964.00	
	18:35:15.700	DE-ENER	OPEN	FULLOPEN	2.7533	964.25	
	18:35:15.800	DE-ENER	OPEN	FULLOPEN	2.7479	964.00	
	18:35:15.900	DE-ENER	OPEN	FULLOPEN	2.7533	964.01	
	18:35:16.000	DE-ENER	OPEN	FULLOPEN	2.7479	964.01	
	18:35:16.100	DE-ENER	OPEN	FULLOPEN	2.7424	964.27	
	18:35:16.200	DE-ENER	OPEN	FULLOPEN	2.7424	964.01	
	18:35:16.300	DE-ENER	OPEN	FULLOPEN	2.7424	964.14	
	18:35:16.400	DE-ENER	OPEN	FULLOPEN	2.7370	964.01	
	18:35:16.500	DE-ENER	OPEN	FULLOPEN	2.7343	964.01	

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TABULAR TREND REPORT
STI-821-025A, TSH 451, STEP 8.3.9/11

REPORT TIME: 29-OCT-87 21:51:08.000 DATA START: 29-OCT-87 18:34:56
STATION ID : PERRY_UNIT_1 0007 DATA END : 29-OCT-87 18:35:21
NUMBER OF VALUES : 250 DATA MODE : HISTORICAL
PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5	6
	18:35:16.600	DE-ENER	OPEN	FULLOPEN	2.7424	963.88	
	18:35:16.700	DE-ENER	OPEN	FULLOPEN	2.7424	963.88	
	18:35:16.800	DE-ENER	OPEN	FULLOPEN	2.7370	963.98	
	18:35:16.900	DE-ENER	OPEN	FULLOPEN	2.7310	964.11	
	18:35:17.000	DE-ENER	OPEN	FULLOPEN	2.7364	963.98	
	18:35:17.100	DE-ENER	OPEN	FULLOPEN	2.7364	963.72	
	18:35:17.200	DE-ENER	OPEN	FULLOPEN	2.7364	963.65	
	18:35:17.300	DE-ENER	OPEN	FULLOPEN	2.7419	963.85	
	18:35:17.400	DE-ENER	OPEN	FULLOPEN	2.7474	963.85	
	18:35:17.500	DE-ENER	OPEN	FULLOPEN	2.7419	964.11	
	18:35:17.600	DE-ENER	OPEN	FULLOPEN	2.7474	964.11	
	18:35:17.700	DE-ENER	OPEN	FULLOPEN	2.7474	964.11	
	18:35:17.800	DE-ENER	OPEN	FULLOPEN	2.7500	963.85	
	18:35:17.900	DE-ENER	OPEN	FULLOPEN	2.7427	963.84	
	18:35:18.000	DE-ENER	OPEN	FULLOPEN	2.7318	963.84	
	18:35:18.100	DE-ENER	OPEN	FULLOPEN	2.7318	963.84	
	18:35:18.200	DE-ENER	OPEN	FULLOPEN	2.7374	963.97	
	18:35:18.300	DE-ENER	OPEN	FULLOPEN	2.7318	963.84	
	18:35:18.400	DE-ENER	OPEN	FULLOPEN	2.7265	963.97	
	18:35:18.500	DE-ENER	OPEN	CLOSE	2.7204	963.84	
	18:35:18.600	DE-ENER	OPEN	CLOSE	2.7154	963.84	
	18:35:18.700	DE-ENER	OPEN	CLOSE	2.7045	963.97	
	18:35:18.800	DE-ENER	OPEN	CLOSE	2.6825	963.98	
	18:35:18.900	DE-ENER	OPEN	CLOSE	2.6667	964.11	
	18:35:19.000	DE-ENER	OPEN	CLOSE	2.6447	964.36	
	18:35:19.100	DE-ENER	OPEN	CLOSE	2.6226	964.36	
	18:35:19.200	DE-ENER	OPEN	CLOSE	2.5901	964.36	
	18:35:19.300	DE-ENER	OPEN	CLOSE	2.5626	964.50	
	18:35:19.400	DE-ENER	OPEN	CLOSE	2.5353	964.50	
	18:35:19.500	DE-ENER	OPEN	CLOSE	2.4886	964.76	
	18:35:19.600	DE-ENER	OPEN	CLOSE	2.4424	964.89	
	18:35:19.700	DE-ENER	OPEN	CLOSE	2.3905	965.02	
	18:35:19.800	DE-ENER	OPEN	CLOSE	2.3357	965.53	
	18:35:19.900	DE-ENER	OPEN	CLOSE	2.2670	965.49	
	18:35:20.000	DE-ENER	OPEN	CLOSE	2.1631	966.01	
	18:35:20.100	DE-ENER	OPEN	CLOSE	2.0646	966.14	
	18:35:20.200	DE-ENER	OPEN	CLOSE	1.9281	966.66	
	18:35:20.300	DE-ENER	OPEN	CLOSE	1.7695	967.05	
	18:35:20.400	DE-ENER	OPEN	CLOSE	1.5398	967.82	
	18:35:20.500	DE-ENER	OPEN	CLOSE	1.2775	968.86	
	18:35:20.600	DE-ENER	FULLCLOS	CLOSE	0.89199	970.16	
	18:35:20.700	DE-ENER	FULLCLOS	CLOSE	0.49021	971.33	
	18:35:20.800	DE-ENER	FULLCLOS	CLOSE	0.27145	972.04	

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TABULAR TREND REPORT
STI-821-025A, TSN 451, STEP 8.3.9/11

REPORT TIME: 29-OCT-87 21:51:08.000 DATA START: 29-OCT-87 18:34:51
 STATION ID : PERRY_UNI1.1 0007 DATA END : 29-OCT-87 18:35:21
 NUMBER OF VALUES : 250 DATA MODE: HISTORICAL
 PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5	6
	18:35:20.900	DE-ENER	FULLCLOS CLOSE	-0.19522	972.44		
	18:35:21.000	DE-ENER	FULLCLOS CLOSE	0.10778	973.21		
	18:35:21.100	DE-ENER	FULLCLOS CLOSE	-0.10779	973.08		
	18:35:21.200	DE-ENER	FULLCLOS CLOSE	0.10502	973.34		
	18:35:21.300	DE-ENER	FULLCLOS CLOSE	-8.047-2	974.12		
	18:35:21.400	DE-ENER	FULLCLOS CLOSE	0.10225	974.51		
	18:35:21.500	DE-ENER	FULLCLOS CLOSE	-0.11867	975.29		
	18:35:21.600	DE-ENER	FULLCLOS CLOSE	0.12972	977.7		
	18:35:21.700	DE-ENER	FULLCLOS CLOSE	-0.13785	976..5		
	18:35:21.800	DE-ENER	FULLCLOS CLOSE	0.14061	977.36		
	18:35:21.900	DE-ENER	FULLCLOS CLOSE	-0.12972	977.92		
	18:35:22.000	DE-ENER	FULLCLOS CLOSE	0.14061	978.56		
	18:35:22.100	DE-ENER	FULLCLOS CLOSE	-0.17344	979.21		
	18:35:22.200	DE-ENER	FULLCLOS CLOSE	0.16239	979.99		
	18:35:22.300	DE-ENER	FULLCLOS CLOSE	-0.15979	980.38		
	18:35:22.400	DE-ENER	FULLCLOS CLOSE	0.14614	980.89		
	18:35:22.500	DE-ENER	FULLCLOS CLOSE	-0.14061	981.15		
	18:35:22.600	DE-ENER	FULLCLOS CLOSE	0.17344	981.67		
	18:35:22.700	DE-ENER	FULLCLOS CLOSE	-0.19246	982.31		
	18:35:22.800	DE-ENER	FULLCLOS CLOSE	0.18157	982.40		
	18:35:22.900	DE-ENER	FULLCLOS CLOSE	-0.16743	982.53		

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TABULAR TREND REPORT

STI 82T-025A, ISN451, STEP 8, 3.9/11

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REPORT TIME: 30-OCT-87 05:13:45.000 DATA START: 29-OCT-87 18:35:23.000
 STATION ID : PERRY_UNIT_1 0007 DATA END : 29-OCT-87 18:35:32.900
 NUMBER OF VALUES : 100 DATA MODE : HISTORICAL
 PROCESSING RATE : 0.100 SECONDS/SAMPLE

- POINT ID POINT NAME ANALOG ENG UNITS ANALOG CONV. EQUATION
 DIGITAL LOW AND CONVERSION CONSTANTS
 HIGH STATE NAMES

1 BZIEC078 INBOARD MSIV SOLENOID STATUS
 DE-ENER ENER

2 BZIEC079 INBOARD MSIV POSITION
 OPEN FULLCLOSE

3 BZIEC080 INBOARD MSIV POSITION
 CLOSE FULLOPEN

4 READING STEAMLINE FLOW

MLB/HR Y=C2X + C1
 C1= -40.1065E+01
 C2= 0.1625E+03

5 C34EAU26 NAKRUW RANGE RX DOME PRESSURE

PSIG Y=C2X + C1
 C1= 0.8000E+03
 C2= 0.7687E-02

DATE	TIME	1	2	3	4	5	6
29-OCT-87	18:35:23.000	DE-ENER	FULLCLOSE	CLOSE	0.18937	982.79	
	18:35:23.100	DE-ENER	FULLCLOSE	CLOSE	0.19473	982.91	
	18:35:23.200	DE-ENER	FULLCLOSE	CLOSE	0.19197	983.18	
	18:35:23.300	DE-ENER	FULLCLOSE	CLOSE	0.20026	983.18	
	18:35:23.400	DE-ENER	FULLCLOSE	CLOSE	0.18384	983.31	
	18:35:23.500	DE-ENER	FULLCLOSE	CLOSE	0.20026	983.44	
	18:35:23.600	DE-ENER	FULLCLOSE	CLOSE	0.19197	983.44	
	18:35:23.700	DE-ENER	FULLCLOSE	CLOSE	0.20302	983.69	
	18:35:23.800	DE-ENER	FULLCLOSE	CLOSE	0.20562	983.69	
	18:35:23.900	DE-ENER	FULLCLOSE	CLOSE	0.20026	983.71	
	18:35:24.000	DE-ENER	FULLCLOSE	CLOSE	0.18937	983.71	
	18:35:24.100	DE-ENER	FULLCLOSE	CLOSE	0.18937	983.71	
	18:35:24.200	DE-ENER	FULLCLOSE	CLOSE	0.18384	983.58	
	18:35:24.300	DE-ENER	FULLCLOSE	CLOSE	0.20578	983.98	

TSN-451

000000

PAGE 2

TAPE 451Z1/449

Q OFC
CB

TABULAR TREND REPORT
STI-B21-025A, TSN451, STEP 8.3.97/11

REPORT TIME: 30-OCT-87 05:13:45.000 DATA START: 29-OCT-87 18:35:23.000
 STATION ID : PERRY_UNIT_1 0007 DATA END : 29-OCT-87 18:35:32.900
 NUMBER OF VALUES : 100 DATA MODE : HISTORICAL
 PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5	6
	18:35:24.400	DE-ENER	FULLCLOS CLOSE	0.18937	983.71		
	18:35:24.500	DE-ENER	FULLCLOS CLOSE	0.18937	983.46		
	18:35:24.600	DE-ENER	FULLCLOS CLOSE	0.18937	983.71		
	18:35:24.700	DE-ENER	FULLCLOS CLOSE	0.19490	983.71		
	18:35:24.800	DE-ENER	FULLCLOS CLOSE	0.21131	983.71		
	18:35:24.900	DE-ENER	FULLCLOS CLOSE	0.24365	983.84		
	18:35:25.000	DE-ENER	FULLCLOS CLOSE	0.23829	983.71		
	18:35:25.100	DE-ENER	FULLCLOS CLOSE	0.22724	983.71		
	18:35:25.200	DE-ENER	FULLCLOS CLOSE	0.21082	983.58		
	18:35:25.300	DE-ENER	FULLCLOS CLOSE	0.22180	983.58		
	18:35:25.400	DE-ENER	FULLCLOS CLOSE	0.18904	983.71		
	18:35:25.500	DE-ENER	FULLCLOS CLOSE	0.21635	983.71		
	18:35:25.600	DE-ENER	FULLCLOS CLOSE	0.21635	983.58		
	18:35:25.700	DE-ENER	FULLCLOS CLOSE	0.21635	983.46		
	18:35:25.800	DE-ENER	FULLCLOS CLOSE	0.23270	983.33		
	18:35:25.900	DE-ENER	FULLCLOS CLOSE	0.21082	983.58		
	18:35:26.000	DE-ENER	FULLCLOS CLOSE	0.20822	983.71		
	18:35:26.100	DE-ENER	FULLCLOS CLOSE	0.21082	983.71		
	18:35:26.200	DE-ENER	FULLCLOS CLOSE	0.21635	983.97		
	18:35:26.300	DE-ENER	FULLCLOS CLOSE	0.21359	983.84		
	18:35:26.400	DE-ENER	FULLCLOS CLOSE	0.22724	983.84		
	18:35:26.500	DE-ENER	FULLCLOS CLOSE	0.21082	983.84		
	18:35:26.600	DE-ENER	FULLCLOS CLOSE	0.24365	983.97		
	18:35:26.700	DE-ENER	FULLCLOS CLOSE	0.22188	983.71		
	18:35:26.800	DE-ENER	FULLCLOS CLOSE	0.22188	984.00		
	18:35:26.900	DE-ENER	FULLCLOS CLOSE	0.18319	983.74		
	18:35:27.000	DE-ENER	FULLCLOS CLOSE	0.16141	984.25		
	18:35:27.100	DE-ENER	FULLCLOS CLOSE	0.19961	984.13		
	18:35:27.200	DE-ENER	FULLCLOS CLOSE	0.19408	984.25		
	18:35:27.300	DE-ENER	FULLCLOS CLOSE	0.21602	984.00		
	18:35:27.400	DE-ENER	FULLCLOS CLOSE	0.22415	983.74		
	18:35:27.500	DE-ENER	FULLCLOS CLOSE	0.22691	984.00		
	18:35:27.600	DE-ENER	FULLCLOS CLOSE	0.22415	983.74		
	18:35:27.700	DE-ENER	FULLCLOS CLOSE	0.21602	984.00		
	18:35:27.800	DE-ENER	FULLCLOS CLOSE	0.21050	984.00		
	18:35:27.900	DE-ENER	FULLCLOS CLOSE	0.21619	984.61		
	18:35:28.000	DE-ENER	FULLCLOS CLOSE	0.23260	984.35		
	18:35:28.100	DE-ENER	FULLCLOS CLOSE	0.22171	984.22		
	18:35:28.200	DE-ENER	FULLCLOS CLOSE	0.22171	984.09		
	18:35:28.300	DE-ENER	FULLCLOS CLOSE	0.26007	984.09		
	18:35:28.400	DE-ENER	FULLCLOS CLOSE	0.25454	984.22		
	18:35:28.500	DE-ENER	FULLCLOS CLOSE	0.23260	984.22		
	18:35:28.600	DE-ENER	FULLCLOS CLOSE	0.24365	984.35		

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TABULAR TREND REPORT
SII 821-025A, TSN451, STEP8.3.97/11

REPORT TIME: 30-OCT-87 05:13:45.000 DATA START: 29-OCT-87 18:35:23.000
 STATION ID : PERRY_UNIT_1 0007 DATA END : 29-OCT-87 18:35:32.900
 NUMBER OF VALUES : 100 DATA MODE : HISTORICAL
 PROCESSING RATE : 0.100 SECONDS/SAMPLE

DATE	TIME	1	2	3	4	5	6
	18:35:28.700	DE-ENER	FULLCLOS CLOSE	0.24625	984.35		
	18:35:28.800	DE-ENER	FULLCLOS CLOSE	0.25731	984.34		
	18:35:28.900	DE-ENER	FULLCLOS CLOSE	0.23813	983.96		
	18:35:29.000	DE-ENER	FULLCLOS CLOSE	0.23813	984.34		
	18:35:29.100	DE-ENER	FULLCLOS CLOSE	0.24365	984.34		
	18:35:29.200	DE-ENER	FULLCLOS CLOSE	0.23260	983.70		
	18:35:29.300	DE-ENER	FULLCLOS CLOSE	0.22724	984.21		
	18:35:29.400	DE-ENER	FULLCLOS CLOSE	0.19977	984.34		
	18:35:29.500	DE-ENER	FULLCLOS CLOSE	0.21619	984.21		
	18:35:29.600	DE-ENER	FULLCLOS CLOSE	0.19977	984.21		
	18:35:29.700	DE-ENER	FULLCLOS CLOSE	0.20253	984.34		
	18:35:29.800	DE-ENER	FULLCLOS CLOSE	0.24902	983.96		
	18:35:29.900	DE-ENER	FULLCLOS CLOSE	0.22724	984.15		
	18:35:30.000	DE-ENER	FULLCLOS CLOSE	0.23260	984.54		
	18:35:30.100	DE-ENER	FULLCLOS CLOSE	0.24902	984.15		
	18:35:30.200	DE-ENER	FULLCLOS CLOSE	0.24365	983.76		
	18:35:30.300	DE-ENER	FULLCLOS CLOSE	0.23260	983.89		
	18:35:30.400	DE-ENER	FULLCLOS CLOSE	0.23260	984.02		
	18:35:30.500	DE-ENER	FULLCLOS CLOSE	0.23260	984.15		
	18:35:30.600	DE-ENER	FULLCLOS CLOSE	0.21619	983.76		
	18:35:30.700	DE-ENER	FULLCLOS CLOSE	0.23260	984.41		
	18:35:30.800	DE-ENER	FULLCLOS CLOSE	0.21619	984.11		
	18:35:30.900	DE-ENER	FULLCLOS CLOSE	0.21927	983.72		
	18:35:31.000	DE-ENER	FULLCLOS CLOSE	0.24122	983.59		
	18:35:31.100	DE-ENER	FULLCLOS CLOSE	0.23293	983.72		
	18:35:31.200	DE-ENER	FULLCLOS CLOSE	0.22204	983.98		
	18:35:31.300	DE-ENER	FULLCLOS CLOSE	0.21391	983.98		
	18:35:31.400	DE-ENER	FULLCLOS CLOSE	0.24398	983.72		
	18:35:31.500	DE-ENER	FULLCLOS CLOSE	0.23569	983.72		
	18:35:31.600	DE-ENER	FULLCLOS CLOSE	0.24398	983.98		
	18:35:31.700	DE-ENER	FULLCLOS CLOSE	0.25487	983.85		
	18:35:31.800	DE-ENER	FULLCLOS CLOSE	0.26576	983.72		
	18:35:31.900	DE-ENER	FULLCLOS CLOSE	0.24382	983.73		
	18:35:32.000	DE-ENER	FULLCLOS CLOSE	0.24382	983.86		
	18:35:32.100	DE-ENER	FULLCLOS CLOSE	0.21099	983.99		
	18:35:32.200	DE-ENER	FULLCLOS CLOSE	0.29030	983.86		
	18:35:32.300	DE-ENER	FULLCLOS CLOSE	0.23293	983.73		
	18:35:32.400	DE-ENER	FULLCLOS CLOSE	0.20010	983.99		
	18:35:32.500	DE-ENER	FULLCLOS CLOSE	0.21375	983.73		
	18:35:32.600	DE-ENER	FULLCLOS CLOSE	0.19733	983.73		
	18:35:32.700	DE-ENER	FULLCLOS CLOSE	0.28754	983.73		
	18:35:32.800	DE-ENER	FULLCLOS CLOSE	0.32037	983.87		

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B21 - T2001

<u>LATE</u>	<u>VALVES</u>	<u>PASS</u>
-------------	---------------	-------------

12-16-86 0451	ALL	YES
------------------	-----	-----

4-9-87 0846	ALL	YES
----------------	-----	-----

5-13-87 0044	IB21-F028B	YES - PARTIAL
-----------------	------------	---------------

8-10-87 0303	ALL	YES EXCEPT IB21-F028C STROKE TIME 5.3 SEC
-----------------	-----	--

8-11-87 1230	IB21-F028A IB21-F022A	YES (WO RETEST) 87-766 & 87-768
-----------------	--------------------------	------------------------------------

8-12-87 1744	IB21-F028C	YES (WO RETEST) 87-764
-----------------	------------	---------------------------

10-9-87 2327	ALL	YES
-----------------	-----	-----

36	-	1 FAILURE	<u>5.3 SEC</u>
----	---	-----------	----------------

F022A	1	F028 A	1
F022B	1	F028 B	1
J22C	1	F028 C	1
F022D	2 - 1	F028 D	1

9 - 3	45 - 4	→ TOTAL INC	10-29-87
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<u>DATE</u>	<u>VALVES</u>	<u>PASS</u>
12/16/86 0451	<u>ALL</u>	YES
4/9/87 0846	<u>ALL</u>	YES
5/13/87 0044	B21-F028B	YES - PARTIAL
8/10/87 0303	<u>ALL</u> B21-F028C	YES EXCEPT BL1-F028C STROKE TIME 5.3
8/11/87 1230	B21-F028A BL1-F022A	YES (W/O RETEST) 87-766 + 87-768
11/2/87 1744	B21-F028C	YES (W/O RETEST) 87-764
10/9 2321	All	YES

36 - 1 failure

5.3 sec

F022A	1	F028A	1
F022B	1	F028B	1
F022C	1	F028C	1
F022D	- 2 - 1	F028D	1

9 - 3
 45-4 → TOTAL INC 10/29

B21 - T2001

DATE VALVES PASS

12-16-86 ALL YES
0451

4-9-87 ALL YES
0846

5-13-87 1B21-F028B YES-PARTIAL
0044

8-10-87 ALL YES EXCEPT 1B21-F028C
0303 STROKE TIME 5.3 SEC

8-11-87 1B21-F028A YES (NO RETEST)
1230 1B21-F022A 87-766 & 87-768

8-12-87 1B21-F028C YES (WO RETEST)
1744 87-764

10-9-87 ALL YES
2327

36 - 1 FAILURE 5.3 SEC

F022A	1		F028A	1	
F022B	1		F028B	1	1
F022C	1		F028C	1	
F022D	2 - 1		F028D	1	1

9-3 45-4 → TOTAL INC 10-29-87

B21-T2001

DATEVALVESPASS12-16-86
0451

ALL

YES

4-9-87
0846

ALL

YES

5-13-87
0044

IB21-F028B

YES-PARTIAL

8-10-87
0303

ALL

YES EXCEPT IB21-F028C
STROKE TIME 5.3 SEC8-11-87
1230IB21-F028A
IB21-F022AYES (WO RETEST)
87-766 & 87-7688-12-87
1744

IB21-F028C

YES (WO RETEST)
87-76410-9-87
2327

ALL

YES

36 - 1 FAILURE 5.3 SEC

F022A 1

F028A 1

F022B 1

F028B 1 1

F022C 1

F028C 1

F022D 2 - 1

F028D 1 1

9-3

45-4

TOTAL INC 10-29-87

DATA PACKAGE COVER SHEET

PNPO NO. 6687 REV 10/86

PAP-1105-1

INSTRUCTION NO.

502-821-7200

TEST PERFORMANCE

AUTHORIZATION TO START PREREQUISITES:

T.J. Pickle

OPERATIONS UNIT SUPERVISOR

4/14/87 0946

DATE AND TIME

AUTHORIZATION TO START TEST:

Dan Johnson

SUPERVISING OPERATOR

4/14/87 0955

DATE AND TIME

INSTRUCTION COMPLETION

 FULL PARTIAL*

*See comments for extent of testing

TECH. SPEC. ACCEPTANCE CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found data are taken, acceptance will be based on As Left data only.

OTHER DATA CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found data are taken, acceptance will be based on As Left data only.

TASK COMPLETION

 CREDIT** NO CREDIT

**Task fully completed or all failed/not completed items tracked per LCD Tracking, Work Orders, etc.

TON'S IN EFFECT:

001,002

COMMENTS:

Initials in ASA, MSIV, left closed

LEAD PERFORMER'S SIGNATURE

T.J. Pickle

4/14/87 0946

DATE AND TIME

OPERATIONS UNIT SUPERVISOR

T.J. Pickle

4/14/87 0945

DATE AND TIME

SHIFT SUPERVISOR

N/A

DATE AND TIME

(Required If Tech. Spec. Acceptance Criteria Is Not Met. Otherwise Mark N/A)

TEST RESULTS REVIEW

130589 4-13-87

COMMENTS

All Data Available

SYSTEM ENGINEER/RESPONSIBLE SECTION REVIEWER

Bryan L. Qualls

4/13/87

DATE

~ GRC

Frank J. Ferraro

4/17/87

161

DATA PACKAGE COVER SHEET

PNP/N NO. 6687 REV 10/86

PAP-1105-1

INSTRUCTION NO.

SVI 1B21-T2001

TEST PERFORMANCE

AUTHORIZATION TO START PREREQUISITES:

Mike Nemec
OPERATIONS UNIT SUPERVISOR12/1/86 0451
DATE AND TIME

AUTHORIZATION TO START TEST:

Jennis M. Jones
SUPERVISING OPERATOR12/16/86 0459
DATE AND TIME

INSTRUCTION COMPLETION

 FULL PARTIAL*

*See comments for extent of testing

TECH. SPEC. ACCEPTANCE CRITERIA

 ACCEPTABLE UNACCEPTABLE NAWhen both As Left and As Found data are taken,
acceptance will be based on As Left data only.

OTHER DATA CRITERIA

 ACCEPTABLE UNACCEPTABLE NAWhen both As Left and As Found data are taken,
acceptance will be based on As Left data only.

TASK COMPLETION

 CREDIT** NO CREDIT**Task fully completed or all failed/not completed
items tracked per LCD Tracking, Work Orders, etc.

TON'S IN EFFECT:

01COMMENTS: NONE

LEAD PERFORMER'S SIGNATURE

Jennis M. Jones12/16/86 0530
DATE AND TIME

OPERATIONS UNIT SUPERVISOR

Michael Nemec12/16/86 0531
DATE AND TIME

SHIFT SUPERVISOR

N/A

(Required If Tech. Spec. Acceptance Criteria is Not Met, Otherwise Mark N/A)

DATE AND TIME

TEST RESULTS REVIEW

CLOSED 12-17-86

COMMENTS

All Data Acceptable

SYSTEM ENGINEER/RESPONSIBLE SECTION REVIEWER

Bryan L. Anolis

12/19/86

DATE

1684

DATA PACKAGE COVER SHEET

PNPP NO. 6687 REV 10/86

PPB-1105-1

INSTRUCTION NO.

SUI - 1321-T2001

TEST PERFORMANCE

AUTHORIZATION TO START PREREQUISITES:

JRC Mahan
OPERATIONS UNIT SUPERVISOR

5-13-87 0044

DATE AND TIME

AUTHORIZATION TO START TEST:

JRC Mahan
SUPERVISING OPERATOR

5-13-87 0150

DATE AND TIME

INSTRUCTION COMPLETION

 FULL PARTIAL*

*See comments for extent of testing

TECH. SPEC. ACCEPTANCE CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found data are taken, acceptance will be based on As Left data only.

OTHER DATA CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found data are taken, acceptance will be based on As Left data only.

TASK COMPLETION

 CREDIT** NO CREDIT

**Task fully completed or all failed/not completed items tracked per LCO Tracking, Work Orders, etc.

TON'S IN EFFECT: 001, 002COMMENTS: perform item 5.1.2.4 thru 5.1.2.6LEAD PERFORMER'S SIGNATURE JRC Mahan

5-13-87 0225

DATE AND TIME

OPERATIONS UNIT SUPERVISOR Mat. West

5-13-87 0407

DATE AND TIME

SHIFT SUPERVISOR N/A

(Required If Tech. Spec. Acceptance Criteria Is Not Met, Otherwise Mark N/A)

DATE AND TIME

TEST RESULTS REVIEW

CLOSED 5-13-87COMMENTS Re-test Data AcceptableSYSTEM ENGINEER/RESPONSIBLE SECTION REVIEWER Bryan L. Adie, Jr.

5-14-87 5-14-87

DATE

1 LLC

212

Sign-Off Verification Sheet

PIT Required [] [✓]
(Unit Supervisor) Yes No

SECTION/STEP INITIALS

4.0 PREREQUISITES

1. Unit Supervisor's Authorization & PIT checkoff obtained. f
2. Plant in operational condition 2 or 3, or with steam lines wet in Operational Condition, 4 or 5. f
3. M&TE instrumentation properly recorded on appropriate data sheet. f
4. RWP in effect if necessary. b
5. MSIV ammeters indicating greater than 100 milliamps. N/A

5.1 Surveillance Test

1. Supervising operator's authorization obtained. f
2. Condenser Low Vac Bypass switches in Bypass, if condenser vacuum is below MSIV trip setpoint. f
- 5.1.1.2 MSIV 1B21-F022A ammeters downscale. N/A
- 5.1.1.5 MSIV 1B21-F028A ammeters downscale. N/A
- 5.1.2.2 MSIV 1B21-F022B ammeters downscale. N/A
- 5.1.2.5 MSIV 1B21-F028B ammeters downscale. f
- 5.1.3.2 MSIV 1B21-F022C ammeters downscale. N/A
- 5.1.3.5 MSIV 1B21-F028C ammeters downscale. N/A
- 5.1.4.2 MSIV 1B21-F022D ammeters downscale. N/A
- 5.1.4.5 MSIV 1B21-F028D ammeters downscale. N/A

SECTION/STEP

INITIALS

5.1.5

\$ 1. Calculate average fastest stroke time:

Steam line A fastest stroke time in
section 5.1.1 (step 1 or 3)

N/A N/A

Steam line B fastest stroke time in
section 5.1.2 (step 1 or 3)

Steam line C fastest stroke time in
section 5.1.3 (step 1 or 3)

Steam line D fastest stroke time in
section 5.1.4 (step 1 or 3)

Total

Divide by 4

\$ 2. Average stroke time is greater than
or equal to 3 seconds.

↓

Stopwatch Crown S-T

MPL L70-N32G Cal Date 1-23-87 Cal Due Date 8-23-87 Init G

Comments: Revised SVI on B21-F02EB

Performed By: J. H. Sandoval I.S. 5-13-87

N/A

Signature

Initials

Date

\$ Denotes Technical Specification requirement

MSIV FULL-STROKE OPERABILITY TEST

[1021] VALVE TESTING DATA SHEET

INSTRUCTION STEP NO.	VALVE HPL NUMBER	PRI-TEST POSITION	FULL-STROKE EXERCISE OF TRAVEL BY (INITIAL)			FULL STROKE TIME (SECONDS)	ACCEPTANCE		CRITERIA	FAIL-SAFE TEST (INITIAL)	POST TEST POSITION
			LITE \$ (a)	STEM \$ (b)	OTHER \$ (c)	OPEN \$ (e)	CLOSED \$ (f)	MAXIMUM STROKE TIME (SECONDS)	SAT (CHECK) Y N		
5.1.1.1	IB21-F022A	OPEN	N/A	N/A	N/A	NA	N/A	NA	5	N/A	→
5.1.1.3	IB21-F022A	CLOSED				NA	NA	NA	NA	NA	OPEN
5.1.1.4	IB21-F028A	OPEN				NA	N/A	NA	5	N/A	→
5.1.1.6	IB21-F028A	CLOSED				NA	NA	NA	NA	NA	OPEN
5.1.2.1	IB21-F022B	OPEN	↓	↓	↓	NA	N/A	NA	5	N/A	→
5.1.2.3	IB21-F022B	CLOSED	N/A	N/A	N/A	NA	NA	NA	NA	NA	OPEN
5.1.2.4	IB21-F028B	OPEN	↑	N/A	N/A	NA	4	NA	5	✓	↑
5.1.2.6	IB21-F028B	CLOSED	↑	N/A	N/A	NA	NA	NA	NA	NA	OPEN
PERFORMED BY: (SIGNATURE)	<i>R.W. Smith</i>				INITIAL	✓	DATE	5-13-87	TIME	0215	
(SIGNATURE)	N/A				INITIAL		DATE		TIME		
(SIGNATURE)					INITIAL		DATE		TIME		
ISI REVIEWED BY: (SIGNATURE)					DATE		TIME				
NOTE(S)	<p>a) FULL-STROKE EXERCISE IS PRACTICING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.e., NORMALLY CLOSED FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING THE VALVE OR FULL-STROKE CHECK VALVES BY EXERCISING TO THEIR ALTERNATE POSITION) USING THE INDICATING LITES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FLOW RATE, LEVEL, TEMPERATURE OR STEM MOVEMENT. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE FULL-STROKE EXERCISE COLUMN (APPROPRIATE COLUMN).</p> <p>b) POSITION INDICATION TEST (PIT) IS PERFORMED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.e., VALVE OPEN - RED INDICATOR ENERGIZED AND VALVE CLOSED - GREEN INDICATOR ENERGIZED). POSITION INDICATION TEST (PIT) IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE STEM OR OTHER COLUMN, AS APPROPRIATE. IF THE POSITION INDICATION TEST (PIT) IS NOT REQUIRED N/A THE STEM OR OTHER COLUMN, AS APPROPRIATE.</p> <p>c) FULL STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINGUISHES. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINGUISHES. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM MOVEMENT TERMINATES.</p> <p>d) VALVES WITH FAIL-SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL-SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORILY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL-SAFE FUNCTION IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE FAIL-SAFE TEST COLUMN.</p>										

S = DENOTES TECHNICAL SPECIFICATION REQUIREMENT

DN/SV1119A/III/2/pw

MSIV FULL STROKE OPERABILITY TEST

[IB21] VALVE TESTING DATA SHEET

INSTRUCTION STEP NO.	VALVE MPL NUMBER	PRE-TEST POSITION	FULL-STROKE EXERCISE OF TRAVEL BY (INITIAL)			FULL STROKE TIME (SECONDS)		ACCEPTANCE		CRITERIA SAT (CHECK) Y N	FAIL-SAFE TEST (INITIAL) S (d)	POST TEST POSITION
			LITE S (e)	STEM S (b)	OTHER S(e/b)	OPEN S (e)	CLOSED S (e)	OPEN S (e)	CLOSED S (e)			
0.1.3.1	IB21-F022G	OPEN	N/A	N/A	N/A	NA	NA	NA	5	N/A	→	CLOSED
0.1.3.3	IB21-F022G	CLOSED				NA	NA	NA	NA	NA	NA	OPEN
0.1.3.4	IB21-F020G	OPEN				NA	N/A	NA	5	N/A	→	CLOSED
0.1.3.6	IB21-F020G	CLOSED				NA	NA	NA	NA	NA	NA	OPEN
0.1.4.1	IB21-F022D	OPEN				NA	N/A	NA	5	N/A	→	CLOSED
0.1.4.3	IB21-F022D	CLOSED				NA	NA	NA	NA	NA	NA	OPEN
0.1.4.4	IB21-F020D	OPEN				NA	N/A	NA	5	N/A	→	CLOSED
0.1.4.6	IB21-F020D	CLOSED				NA	NA	NA	NA	NA	NA	OPEN

PERFORMED BY: (SIGNATURE) _____
 (SIGNATURE) _____
 (SIGNATURE) _____
 INITIAL _____ DATE _____ TIME _____
 INITIAL _____ DATE _____ TIME _____
 INITIAL _____ DATE _____ TIME _____

ISI REVIEWED BY: (SIGNATURE) _____ DATE _____ TIME _____

- NOTE(S) a) FULL-STROKE EXERCISE IS PRACTICING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.e., NORMALLY CLOSED FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING THE VALVE OR FULL-STROKE CHECK VALVES BY EXERCISING TO THE ALTERNATE POSITION) USING THE INDICATING LITES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FLOW RATE, LEVEL, TEMPERATURE OR STEM MOVEMENT. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE FULL-STROKE EXERCISE COLUMN (APPROPRIATE COLUMN).
- b) POSITION INDICATION TEST (PIT) IS PERFORMED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.e., VALVE OPEN - RED INDICATOR ENERGIZED AND VALVE CLOSED - GREEN INDICATOR ENERGIZED). POSITION INDICATION TEST (PIT) IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE STEM OR OTHER COLUMN, AS APPROPRIATE. IF THE POSITION INDICATION TEST (PIT) IS NOT REQUIRED N/A THE STEM OR OTHER COLUMN, AS APPROPRIATE.
- c) FULL STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINGUISHES. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINGUISHES. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM MOVEMENT TERMINATES.
- d) VALVES WITH FAIL SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORIALLY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL SAFE FUNCTION IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE FAIL SAFE TEST COLUMN.

S = DENOTES TECHNICAL SPECIFICATION REQUIREMENT

DW/SV1119A/IM/2/ct

System Restoration Checklist

Instruction Title: MSIV Full Stroke Operability Test

Verified By:

H. Deardorff, D.
J. Miller, A.
NLA, I.

5-17-87
02-00
5/13/87

Signature/Initials

Date

LOCATION	COMPONENT MPL OR NAME	REQUIRED POSITION	FIRST VERIF	SECOND VERIF	REMARKS
1H13-P601	1B21-F022A	Open*	N/A	N/A	C.S. in AUTO
1H13-P601	1B21-F022B	Open*			C.S. in AUTO
1H13-P601	1B21-F022C	Open*			C.S. in AUTO
1H13-P601	1B21-F022D	Open*			C.S. in AUTO
1H13-P601	1B21-F028A	Open*	↓	↓	C.S. in AUTO
1H13-P601	1B21-F028B	Open*	↓	↓	C.S. in AUTO
1H13-P601	1B21-F028C	Open*	N/A	N/A	C.S. in AUTO
1H13-P601	1B21-F028D	Open*	↓	↓	C.S. in AUTO

COMMENTS:

Partial DVI on 1B21-F028B

For operability, LEFT in

closes position per US

* In Operational Condition 4 or 5, valve position may be determined by the Unit Supervisor.

DATA PACKAGE COVER SHEET

DRAFT NO. 668 REV 10/86

PAP-1105-1

INSTRUCTION NO.

SVI-B21-T2001 Rev. 3

TEST PERFORMANCE

AUTHORIZATION TO START PREREQUISITES:

Dan Johnson
 OPERATIONS UNIT SUPERVISOR
Darrell T. M.
 SUPERVISING OPERATOR

8/10/87 0323

F/11/87 DATE AND TIME
8-10-87 0330

DATE AND TIME

INSTRUCTION COMPLETION

 FULL PARTIAL*

*See comments for extent of testing

TECH. SPEC. ACCEPTANCE CRITERIA

 ACCEPTABLE UNACCEPTABLE NAWhen both As Left and As Found data are taken,
acceptance will be based on As Left data only.

OTHER DATA CRITERIA

 ACCEPTABLE UNACCEPTABLE NAWhen both As Left and As Found data are taken,
acceptance will be based on As Left data only.

TASK COMPLETION

 CREDIT** NO CREDIT**Task fully completed or all failed/not completed
items tracked per LCD Tracking, Work Orders, etc.TON'S IN EFFECT: 001, 002

COMMENTS: 1B21-F028C operation reported as "noisy". 1B21-F028Csterile
+ net 5.3 sec. W.O. 87-764 is open to track repairs
and extract of 1B21-F028C.

LEAD PERFORMER'S SIGNATURE

Thomas Blawie

8-12-87 / 1400

DATE AND TIME

8-12-87 2100

DATE AND TIME

8-12-87 2104

DATE AND TIME

OPERATIONS UNIT SUPERVISOR

M.L.D. Mullen

SHIFT SUPERVISOR

R. Johnson

(Required If Tech. Spec. Acceptance Criteria Is Not Met. Otherwise Mark N/A)

TEST RESULTS REVIEW

Closed 8-13-87COMMENTS 1B21-F028C Unacceptable All Other Data Acceptable

SYSTEM ENGINEER/RESPONSIBLE SECTION REVIEWER

Bryant L. Andrie

8/13/87

DATE

8/13/87

364

INIT Review MLL 8-14-87

Sign-Off Verification Sheet

PIT Required [✓] []
(Unit Supervisor) Yes No

SECTION/STEP

4.0 PREREQUISITES

1. Unit Supervisor's Authorization & PIT checkoff obtained.
 2. Plant in operational condition 2 or 3, or with steam lines wet in Operational Condition, 4 or 5.
 3. M&TE instrumentation properly recorded on appropriate data sheet.
 4. RWP in effect if necessary.

*note: MSIV's sheet
shows no reading zero 5.*

 5. MSIV ammeters indicating greater than 100 milliamps.

5.1 Surveillance Test

- 4. Supervising operator's authorization obtained.
 - 2. Condenser Low Vac Bypass switches in Bypass, if condenser vacuum is below MSIV trip setpoint.

5.1.1.2 MSIV 1B21-F022A ammeters downscale.

5.1.1.5 MSIV 1B21-F028A ammeters downscale.

5.1.2.2 MSIV 1B21-F022B ammeters downscale.

5.1.2.5 MSIV 1B21-F028B ammeters downscale.

5.1.3.2 MSIV 1B21-F022C ammeters downscale.

5.1.3.5 MSIV 1B21-F028C ammeters downscale.

5.1.4.2 MSIV 1B21-F022D ammeters downscale.

5.1.4.5 MSIV 1B21-F028D ammeters downscale.

SECTION/STEP

INITIALS

5.1.5

\$ 1. Calculate average fastest stroke time:

Steam line A fastest stroke time in
section 5.1.1 (step 1 or 3)

3.20 mjd

Steam line B fastest stroke time in
section 5.1.2 (step 1 or 3)

3.11 19
+ 4.64 .47 ACR

Steam line C fastest stroke time in
section 5.1.3 (step 1 or 3)

+ 3.7 thr

Steam line D fastest stroke time in
section 5.1.4 (step 1 or 3)

3.19 19
+ 4.11 .47 ACR

Total = 12.5 thr

Divide by 4 = 3.2 thr

\$ 2. Average stroke time is greater than
or equal to 3 seconds.

thr

Stopwatch _____

MPL L70-R335 Cal Date 6-10-87 Cal Due Date 12-10-87 Init ACR

Comments: Revised program 0030 8-11-87 mjd
execute 5 sec delay 1300 8-12-87 thr
1021-F02BC operation was reported as "noisy" b.
individual programming FIT

Performed By: Alfred Labrador, NOR 8/10/87

Markel J. Hamm, mjd 8-11-87

Tom Aland, THR 8-12-87

Signature Initials Date

\$ Denotes Technical Specification requirement

HUMANISATION OF THE WORKPLACE TEST

E - MODELS TECHNICAL SPECIFICATION HIGH VACUUM

AD/2/1996 11 AS/RM

MSIV FULL STROKE OPERABILITY TEST

(1B21) VALVE TESTING DATA SHEET

INSTRUCTION STEP NO.	VALVE MPL NUMBER	PRE-TEST POSITION	FULL-STROKE EXERCISE OF TRAVEL BY (INITIAL)			FULL STROKE TIME (SECONDS)		ACCEPTANCE MAXIMUM STROKE TIME (SECONDS)		CRITERIA SAT (CHECK) Y N	FAIL-SAFE TEST (INITIAL) S (4)	POST TEST POSITION										
			LITE S (4)	STEM S (4)	OTHER S (4/b)	OPEN S (5)	CLOSED S (6)	\$ OPEN	\$ CLOSED													
0.1.2.1	1B21-F022C	OPEN	T/R	T/R	N/A	NA	5.3	NA	5	✓	T/R	CLOSED										
0.1.2.2	1B21-F022C	CLOSED	T/R	T/R	N/A	NA	NA	NA	NA	NA	NA	OPEN										
0.1.3.4	1B21-F028C	OPEN	T/R	T/R	N/A	NA	5.3	NA	5	✓✓	T/R	CLOSED										
0.1.3.6	1B21-F028C	CLOSED	T/R	T/R	N/A	NA	NA	NA	NA	NA	NA	OPEN										
0.1.4.1	1B21-F022D	OPEN	ADR	ADR	N/A	NA	3.17	NA	5	✓	N/A	CLOSED										
0.1.4.2	1B21-F022D	CLOSED	ADR	ADR	N/A	NA	NA	NA	NA	NA	NA	OPEN										
0.1.4.4	1B21-F028D	OPEN	ADR	-7	N/A	NA	4.11	NA	5	✓	N/A	CLOSED										
0.1.4.6	1B21-F028D	CLOSED	ADR	-7	N/A	NA	NA	NA	NA	NA	NA	OPEN										
PERFORMED BY: (SIGNATURE)			INITIAL			DATE		TIME		INITIAL												
<i>Alfred J. Palen</i>			ADR			8/10/87		1110		INITIAL												
<i>John F. Ladd</i>			7			8/10/87		0730		INITIAL												
<i>George W. Scott</i>			ADR			8/10/87		0740		INITIAL												
REVIEWED BY: (SIGNATURE)			DATE			TIME																
NOTE(S)																						
a) FULL-STROKE EXERCISE IS PLACING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.E., NORMALLY CLOSED: FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING THE VALVE OR FULL-STROKE CHECK VALVES BY EXERCISING TO THE ALTERNATE POSITION) USING THE INDICATING LITES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FLOW RATE, LEVEL, TEMPERATURE OR STEM MOVEMENT. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE FULL-STROKE EXERCISE COLUMN (APPROPRIATE COLUMN).																						
b) POSITION INDICATION TEST (PIT) IS PERFORMED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.E., VALVE OPEN - RED INDICATOR ENERGIZED AND VALVE CLOSED - GREEN INDICATOR ENERGIZED). POSITION INDICATION TEST (PIT) IS SATISFACTORILY AND DOCUMENTED BY AN INITIAL IN THE STEM OR OTHER COLUMN, AS APPROPRIATE. IF THE POSITION INDICATION TEST (PIT) IS NOT REQUIRED N/A THE STEM OR OTHER COLUMN, AS APPROPRIATE.																						
c) FULL STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINGUISHES. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINGUISHES. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM POSITION TERMINATES.																						
d) VALVES WITH FAIL SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORILY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL SAFE FUNCTION IS SATISFACTORILY AND DOCUMENTED BY AN INITIAL IN THE FAIL SAFE TEST COLUMN.																						

S = DENOTES TECHNICAL SPECIFICATION REQUIREMENT

DW/SV1119A/HII/2/ct

*T/R**T/R*

8/10/87

1450

System Restoration Checklist

Instruction Title: MSIV Full Stroke Operability Test

Verified By: John Lubenec, ADR

8/10/87

Michael J. Hammal mjl0

8-10-87

Paul Etzkorn PAF

7/11/87

Signature/Initials

Peter O. Peters /pw

8-12-87
3-12-87

LOCATION	COMPONENT MPL OR NAME	REQUIRED POSITION	FIRST VERIF	SECOND VERIF	REMARKS
1H13-P601	1B21-F022A	Closed Open	mjl0	ADR	CLOSE C.S. IN AUTO
1H13-P601	1B21-F022B	Closed Open	ADR	mjl0	CLOSE C.S. IN AUTO
1H13-P601	1B21-F022C	Closed Open	ADR	RL	CLOSE C.S. IN AUTO
1H13-P601	1B21-F022D	Closed Open	ADR	mjl0	CLOSE C.S. IN AUTO
1H13-P601	1B21-F022E	Closed Open	mjl0	ADR	CLOSE C.S. IN AUTO
1H13-P601	1B21-F022F	Closed Open	ADR	mjl0	CLOSE C.S. IN AUTO
1H13-P601	1B21-F022G	Closed Open	RL	RL	CLOSE C.S. IN AUTO
1H13-P601	1B21-F022H	Closed Open	ADR	mjl0	CLOSE C.S. IN AUTO

COMMENTS: VLVs are closed in condition 4

* In Operational Condition 4 or 5, valve position may be determined by the Unit Supervisor.

DATA PACKAGE COVER SHEET

DRAFT NO. 6687 REV 10/86

PMP-1105-1

INSTRUCTION NO.

SUI-B21-T2001

TEST PERFORMANCE

AUTHORIZATION TO START PREREQUISITES:

J. Hauly
OPERATIONS UNIT SUPERVISOR8/11/87 1230
DATE AND TIME

AUTHORIZATION TO START TEST:

J. Peeler
SUPERVISING OPERATOR8/11/87 1445
DATE AND TIME

INSTRUCTION COMPLETION

 FULL PARTIAL*

*See comments for extent of testing

TECH. SPEC. ACCEPTANCE CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found data are taken, acceptance will be based on As Left data only.

OTHER DATA CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found data are taken, acceptance will be based on As Left data only.

TASK COMPLETION

8/9/87

 CREDIT** NO CREDIT

**Task Fully completed or all failed/not completed items tracked per LCD Tracking, Work Orders, etc.

ENV'S IN EFFECT:

001 002

COMMENTS:

PANDAL SUI FOR RETEST OF
AU- 87-766 & 7682227
V 10/87
8/11/87

LEAD PERFORMER'S SIGNATURE

John Carr 999

1130 8/11/87

DATE AND TIME

OPERATIONS UNIT SUPERVISOR

M.C. Mull

8/12/87 2100

DATE AND TIME

SHIFT SUPERVISOR

NA

DATE AND TIME

(Required if Tech. Spec. Acceptance Criteria Is Not Met, Otherwise Mark N/A)

TEST RESULTS REVIEW

Cannot close due to work

COMMENTS Retest Data Acceptable

Final Review MLL 8-14-87

SYSTEM ENGINEER/RESPONSIBLE SECTION REVIEWER

Byron L. Andrus

8/13/87

DATE

Scot Johnson

8/17/87

29

15

Sign-Off Verification Sheet

PIT Required
(Unit Supervisor) [] []
 Yes No

SECTION/STEP

INITIALS

4.0 PREREQUISITES

1. Unit Supervisor's Authorization & PIT checkoff obtained. JL
2. Plant in operational condition 2 or 3, or with steam lines wet in Operational Condition, 4 or 5. JL
3. M&TE instrumentation properly recorded on appropriate data sheet. JL
4. RWP in effect if necessary. JL
5. MSIV ammeters indicating greater than 100 millamps. JL

5.1 Surveillance Test

1. Supervising operator's authorization obtained. JL
2. Condenser Low Vac Bypass switches in Bypass, if condenser vacuum is below MSIV trip setpoint. JL
- 5.1.1.2 MSIV 1B21-F022A ammeters downscale. JL
- 5.1.1.5 MSIV 1B21-F028A ammeters downscale. JL
- 5.1.2.2 MSIV 1B21-F022B ammeters downscale. NIP
- 5.1.2.5 MSIV 1B21-F028B ammeters downscale.
- 5.1.3.2 MSIV 1B21-F022C ammeters downscale.
- 5.1.3.5 MSIV 1B21-F028C ammeters downscale.
- 5.1.4.2 MSIV 1B21-F022D ammeters downscale.
- 5.1.4.5 MSIV 1B21-F028D ammeters downscale.

Attachment 1 (Cont.)
Sheet 2 of 2

OM7A: SVI-B21-T2001
Page: 13
Rev.: 3

SECTION/STEP

INITIALS

5.1.5

§ 1. Calculate average fastest stroke time:

Steam line A fastest stroke time in section 5.1.1 (step 1 or 3)

3.2 μ

Steam line B fastest stroke time in section 5.1.2 (step 1 or 3)

+ nif —

Steam line C fastest stroke time in section 5.1.3 (step 1 or 3)

$$+ \frac{N/f}{\text{_____}} = \text{_____}$$

Steam line D fastest stroke time in section 5.1.4 (step 1 or 3)

+ 115 —

Total

NIC

Divide by

N/A _____

5 2. Average stroke time is greater than
 or equal to 3 seconds.

Stopwatch Cette partie

MPL470-R73K Cal Date 5-27-87 Cal Due Date 10-27-87 Init GL

Comments: PARTIAL DONE FOR REQUESTS FOR
W.O. #700000763
W.O. #700000766

^S Denotes Technical Specification requirement

FINAL VALUE SECURING DATA CLASS

102

INSTRUCTION STEP NO.	VALVE MPL NUMBER	PNEU- HST POSITION	FULL-STROKE FRIC'TS			TIME (SECONDS)	MAXIMUM STROKE TIME (SECONDS)	CRITERIA	FAIL-SAFE TEST (INITIAL) POSITION
			LIT. \$ (in)	SHR \$ (in)	OTH \$ (in)			OPEN \$ (in)	CLOSED \$ (in)
D.1.1.1	1021-1022A	OPEN	2c	~10	NA	3.2	NA	NA	NA
D.1.1.2	1021-1022A	CLOSED	2c	~10	NA	NA	NA	NA	NA
D.1.1.3	1021-1020A	OPEN	2c	~10	NA	3.0	NA	NA	NA
D.1.1.4	1021-1020A	CLOSED	2c	~10	NA	NA	NA	NA	NA
D.1.1.6	1021-1020A	OPEN	2c	~10	NA	NA	NA	NA	NA
D.1.2.1	1021-1022B	OPEN	2c	~10	NA	NA	NA	NA	NA
D.1.2.2	1021-1022B	CLOSED	2c	~10	NA	NA	NA	NA	NA
D.1.2.3	1021-1020B	OPEN	2c	~10	NA	NA	NA	NA	NA
D.1.2.4	1021-1020B	CLOSED	2c	~10	NA	NA	NA	NA	NA
D.1.2.6	1021-1020B	OPEN	2c	~10	NA	NA	NA	NA	NA
D.1.2.7	1021-1020B	CLOSED	2c	~10	NA	NA	NA	NA	NA

PERFORMED BY: (SIGNATURE) *Eric Coker*

[SIGNATURE] [SIGNATURE]

THE JOURNAL

WUH-TSINHOK TEL

FBI - SHOTGUN (X)

HILDEBRAND

卷之三

b) POSITION INDICA

WAI WAII PRESS 111 NOV

POSITION INDICA

AS APPENDIX

卷之三

POSITION UNIT

MILITARY COMMUNICATIONS

EDITIONS - HUMI

11

WILSON / 51

EINE MILLION IS SAI

WATERFALL

BIMODAL TECHNICAL SPECIFIC

NOVEMBER 2000

- a) FUL-STROKE TEST IS PLACING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.E., NORMALLY CLOSED: FULL-STROKE EXERCISE POSITION AND THEN CLOSING THE VALVE OR FULL STROKE CHECK VALVES BY EXERCISING TO FULL STROKE POSITION) USING THE INDICATING LINES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE FROM RATE, LEVEL, INFLATION OR STEM POSITION. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE POSITION INDICATION TEST (PII) IS PERIODICALLY PROVIDED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.E., VALVE OPEN - RED INDICATOR ILLUMINATED AND VALVE CLOSED - GREEN INDICATOR ILLUMINATED) POSITION INDICATION TEST (PII) IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE STEM ON OTHER COLUMN, AS APPROPRIATE.
- b) III POSITION INDICATION TEST (PIII) IS NOT REQUIRED IF THE STEM OR OTHER COLUMN, AS APPROPRIATE.
- c) III STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINCTS. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINCTS. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM MOVEMENT TERMINATES.
- d) VALVES WITH FAIL SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORIALLY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL SAFE FUNCTION IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE FAILSAFE TEST COLUMN.

THE JOURNAL OF CLIMATE VOL. 17, NO. 10, OCTOBER 2004

MSIV FULL STROKE OPERABILITY TEST

[1B21] VALVE TESTING DATA SHEET

INSTRUCTION STEP NO.	VALVE MPE NUMBER	PRE- TEST POSITION	FULL-STROKE EXERCISE OF TRAVEL BY [INITIAL] S. (a) S. (b) S. (a/b)			FULL STROKE TIME (SECONDS) OPEN CLOSED S. (c) S. (d)		ACCEPTANCE TIME (SECONDS) S. OPEN S. C; OPEN		CRITERIA SAT (CHECK) Y N	FAIL-SAFE TEST [INITIAL] S. (d)	POST TEST POSITION
			STEADY STATE	OTHER	S. (e)	S. (f)	S. (g)	S. (h)	S. (i)			
2.1.3.1	1B21-F022C	OPEN						NA	NA	5		CLOSED
2.1.3.3	1B21-F022C	CLOSED						NA	NA	NA	NA	OPEN
2.1.3.4	1B21-F020C	OPEN						NA	NA	5		CLOSED
2.1.3.6	1B21-F020C	CLOSED						NA	NA	NA	NA	OPEN
2.1.4.1	1B21-F022D	OPEN						NA	NA	5		CLOSED
2.1.4.3	1B21-F022D	CLOSED						NA	NA	NA	NA	OPEN
2.1.4.4	1B21-F020D	OPEN						NA	NA	5		CLOSED
2.1.4.6	1B21-F020D	CLOSED						NA	NA	NA	NA	OPEN
PERFORMED BY: (SIGNATURE)			INITIAL _____ DATE _____ TIME _____			INITIAL _____ DATE _____ TIME _____			INITIAL _____ DATE _____ TIME _____			
(SIGNATURE)			INITIAL _____ DATE _____ TIME _____			INITIAL _____ DATE _____ TIME _____			INITIAL _____ DATE _____ TIME _____			
2SI REVIEWED BY: (SIGNATURE)			INITIAL _____ DATE _____ TIME _____			INITIAL _____ DATE _____ TIME _____			INITIAL _____ DATE _____ TIME _____			
NOTE(S)		<p>a) FULL-STROKE EXERCISE IS PRACTICING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.E., NORMALLY CLOSED: FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING THE VALVE OR FULL-STROKE CHECK VALVES BY EXERCISING TO THEIR ALTERNATE POSITION) USING THE INDICATING LIGHTS TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FLOW RATE, LEVEL, TEMPERATURE OR STEM MOVEMENT. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE FULL-STROKE EXERCISE COLUMN (APPROPRIATE COLUMN).</p> <p>b) POSITION INDICATION TEST (PIT) IS PERFORMED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.E., VALVE OPEN - RED INDICATOR ENERGIZED AND VALVE CLOSED - GREEN INDICATOR ENERGIZED). POSITION INDICATION TEST (PIT) IS SATISFACTORILY DOCUMENTED BY AN INITIAL IN THE STEM OR OTHER COLUMN, AS APPROPRIATE. IF THE POSITION INDICATION TEST (PIT) IS NOT REQUIRED N/A THE STEM OR OTHER COLUMN, AS APPROPRIATE.</p> <p>c) FULL STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINGUISHES. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINGUISHES. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM MOVEMENT TERMINATES.</p> <p>d) VALVES WITH FAIL-SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL-SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORILY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL-SAFE FUNCTION IS SATISFACTORILY DOCUMENTED BY AN INITIAL IN THE FAIL-SAFE TEST COLUMN.</p>										

S = DENOTES TECHNICAL SPECIFICATION REQUIREMENT

BN/SV1119A/HII/2/ct

Attachment 2 (Cont.)
Sheet 2 of 2OM7A: SV1-821-T2001
Page: 15
Rev.: 3

System Restoration Checklist

Instruction Title: MSIV Full Stroke Operability Test

Verified By:

Jim Case / jk
Dale Bragg / DB

7/11/17
8-11-87

Signature/Initials

Date

LOCATION	COMPONENT MPL OR NAME	REQUIRED POSITION	FIRST VERIF	SECOND VERIF	REMARKS
1H13-P601	1B21-F022A	Open*	✓	BB	C.S. in AUTO
1H13-P601	1B21-F022B	Open*	NA	NA	C.S. in AUTO
1H13-P601	1B21-F022C	Open*	NA	NA	C.S. in AUTO
1H13-P601	1B21-F022D	Open*	NA	NA	C.S. in AUTO
1H13-P601	1B21-F028A	Open*	✓	BB	C.S. in AUTO
1H13-P601	1B21-F028B	Open*	NA	NA	C.S. in AUTO
1H13-P601	1B21-F028C	Open*	NA	NA	C.S. in AUTO
1H13-P601	1B21-F028E	Open*	NA	NA	C.S. in AUTO

COMMENTS: MSIV LEFT IN CLOSED POSITION
PER U.S. DIRECTION

* In Operational Condition 4 or 5, valve position may be determined by the Unit Supervisor.

DW/SV119A/X/pw

DATA PACKAGE COVER SHEET

DPPG 46-6647 REV 10/86

DPP-1105-1

INSTRUCTION NO.

SVI-B21-T20

TEST PERFORMANCE

PARRAV
B21-F028C
8/12/87

AUTHORIZATION TO START PREREQUISITES:

OPERATIONS UNIT SUPERVISOR

8/12/

DATE

AUTHORIZATION TO START TEST:

SUPERVISING OPERATOR

8/12/

DATE

INSTRUCTION COMPLETION

 FULL PARTIAL*

*See comments for extent of it

TECH. SPEC. ACCEPTANCE CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found acceptance will be based on As

OTHER DATA CRITERIA

 ACCEPTABLE UNACCEPTABLE NA

When both As Left and As Found acceptance will be based on A

TASK COMPLETION

 CREDIT** NO CREDIT

**Task fully completed or all fail items tracked per LCO Tracking

TON'S IN EFFECT: 02,01

COMMENTS: Partial 5.1.3 for 28cality as a RETEST F0
WU 87-764.

LEAD PERFORMER'S SIGNATURE

8/12/

DA

OPERATIONS UNIT SUPERVISOR

8/12/

DA

SHIFT SUPERVISOR

NA

D

(Required If Tech. Spec. Acceptance Criteria Is Not Met. Otherwise Mark N/A)

TEST RESULTS REVIEW

Cannot Close

COMMENTS: RETEST Data Acceptable

8/12/

DA

SYSTEM ENGINEER/RESPONSIBLE SECTION REVIEWER: Bryan L. Ashlie

8/12/

DA

*

Sign-Off Verification Sheet

PIT Required [] Yes [] No
(Unit Supervisor)

SECTION/STEP

INITIALS

4.0 PREREQUISITES

1. Unit Supervisor's Authorization & PIT checkoff obtained.
 2. Plant in operational condition 2 or 3, or with steam lines wet in Operational Condition, 4 or 5.
 3. MATE instrumentation properly recorded on appropriate data sheet.
 4. RWP in effect if necessary.
 5. MSIIV ammeters indicating greater than 100 milliamps.

5.1 Surveillance Test

1. Supervising operator's authorization obtained.
 2. Condenser Low Vac Bypass switches in Bypass, if condenser vacuum is below MSIV trip setpoint.

5.1.1.2 MSIV 1B21-F022A ammeters downscale.

5.1.1.5 MSIV 1B21-F028A ammeters downscale.

5.1.2.2 MSIV 1B21-F022B ammeters downscale.

5.1.2.5 MSIV 1B21-F028B ammeters downscale.

5.1.3.2 MSIV 1B21-F022C ammeters downscale.

5.1.3.5 MSIV 1B21-F028C ammeters downscale.

5.1.4.2 MSIV 1B21-F022D ammeters downscale.

5.1.4.5 MSIV 1B21-F028D ammeters downscale.

SECTION/STEP

INITIALS

5.1.5

\$ 1. Calculate average fastest stroke time:

Steam line A fastest stroke time in
section 5.1.1 (step 1 or 3)

Steam line B fastest stroke time in
section 5.1.2 (step 1 or 3)

+ _____

Steam line C fastest stroke time in
section 5.1.3 (step 1 or 3)

+ _____

Steam line D fastest stroke time in
section 5.1.4 (step 1 or 3)

+ _____

Total

= _____

Divide by 4

= _____

\$ 2. Average stroke time is greater than
or equal to 3 seconds.

Stopwatch _____

MPL L70-R02a2 Cal Date 6-10-87 Cal Due Date 12-10-87 Init J

Comments: initial per WO sect 5.1.3 for 28C
only

Performed By: John Pritchett / C

8/12/87

8/12/87

Signature _____

Initials _____

Date _____

\$ Denotes Technical Specification requirement

MSIV FULL STROKE OPERABILITY TEST

[1821] VALVE TESTING DATA SHEET

INSTRUCTION STEP NO.	VALVE MPL NUMBER	PRI - TEST POSITION	FULL-STROKE EXERCISE OF TRAVEL BY (INITIAL)	FULL STROKE TIME (SECONDS)	ACCEPTANCE MAXIMUM STROKE TIME (SECONDS)	CRITERIA SAT (CHECK) Y N	FAIL-SAFE TEST (INITIAL)	POST TEST POSITION
			LITE STEM OTHER S (ft) S (in) S (in)	OPEN S (ft) S (in)	S OPEN S CLOSED		S (ft)	
D.1.1.1	1821-F022A	OPEN		NA	NA	5		CLOSED
D.1.1.3	1821-F022A	CLOSED		NA	NA	NA	NA	OPEN
D.1.1.4	1821-F022A	OPEN		NA	NA	5		CLOSED
D.1.1.6	1821-F022A	CLOSED		NA	NA	NA	NA	OPEN
D.1.2.1	1821-F022B	OPEN		NA	NA	5		CLOSED
D.1.2.3	1821-F022B	CLOSED		NA	NA	NA	NA	OPEN
D.1.2.4	1821-F022B	OPEN		NA	NA	5		CLOSED
D.1.2.6	1821-F022B	CLOSED		NA	NA	NA	NA	OPEN

PERFORMED BY: (SIGNATURE) INITIAL DATE TIME
 (SIGNATURE) INITIAL DATE TIME
 (SIGNATURE) INITIAL DATE TIME

ISI REVIEWED BY: (SIGNATURE) DATE TIME

- NOTE(S)
- a) FULL-STROKE EXERCISE IS PRACTICING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.e., NORMALLY CLOSED FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING THE VALVE OR FULL STROKE CHECK VALVES BY EXERCISING TO THEIR ALTERNATE POSITION) USING THE INDICATING LITES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FLOW RATE, LEVEL, TEMPERATURE OR STEM MOVEMENT. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE FULL-STROKE EXERCISE COLUMN (APPROPRIATE COLUMN).
 - b) POSITION INDICATION TEST (PIT) IS PERFORMED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.e., VALVE OPEN - RED INDICATOR ENERGIZED AND VALVE CLOSED - GREEN INDICATOR ENERGIZED). POSITION INDICATION TEST (PIT) IS SATISFACTORILY AND DOCUMENTED BY AN INITIAL IN THE STEM OR OTHER COLUMN, AS APPROPRIATE. IF THE POSITION INDICATION TEST (PIT) IS NOT REQUIRED N/A THE STEM OR OTHER COLUMN, AS APPROPRIATE.
 - c) FULL STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINGUISHES. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINGUISHES. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM MOVEMENT TERMINATES.
 - d) VALVES WITH FAIL SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORILY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL SAFE FUNCTION IS SATISFACTORILY AND DOCUMENTED BY AN INITIAL IN THE FAIL-SAFE TEST COLUMN.

S = DENOTES TECHNICAL SPECIFICATION REQUIREMENT

DW/SV1119A/III/2/pw

7/4
S
8/2/82

MSIV FULL STROKE OPERABILITY TEST

(1B21) VALVE TESTING DATA SHEET

Attachment 2
Sheet 2 of 2
(Cont.)

INSTRUCTION STEP NO.	VALVE MPL NUMBER	PRE-TEST POSITION	FULL-STROKE EXERCISE OF TRAVEL BY (INITIAL)	FULL STROKE TIME (SECONDS)	ACCEPTANCE CRITERIA	FAIL-SAFE TEST (INITIAL)	POST TEST POSITION
			LITE STEM OTHER S (s) S (in) S (in)	OPEN S (s) S (s)	MAXIMUM STROKE TIME (SECONDS) S OPEN S CLOSED	SAT (CHECK) Y N	S (s)
D.1.3.1	1B21-F022C	OPEN	N/A	N/A	NA	N/A	N/A
D.1.3.2	1B21-F022C	CLOSED	N/A	N/A	NA	NA	OPEN
D.1.3.4	1B21-F022C	OPEN	N/A	N/A	NA	N/A	CLOSED
D.1.3.6	1B21-F022C	CLOSED	N/A	NA	NA	NA	OPEN
D.1.4.1	1B21-F022D	OPEN	N/A	NA	NA	NA	CLOSED
D.1.4.2	1B21-F022D	CLOSED	N/A	NA	NA	NA	OPEN
D.1.4.4	1B21-F022D	OPEN	N/A	NA	NA	NA	CLOSED
D.1.4.6	1B21-F022D	CLOSED	N/A	NA	NA	NA	OPEN

PERFORMED BY: (SIGNATURE) *[Signature]* INITIAL *[Signature]* DATE 8/12/02 TIME 1744
 (SIGNATURE) INITIAL _____ DATE _____ TIME _____
 (SIGNATURE) INITIAL _____ DATE _____ TIME _____

ISI REVIEWED BY: (SIGNATURE) DATE _____ TIME _____

- NOTE(S)
- a) FULL-STROKE EXERCISE IS PRACTICING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.e., NORMALLY CLOSED: FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING THE VALVE OR FULL STROKE CHECK VALVES BY EXERCISING TO THEIR ALTERNATE POSITION) USING THE INDICATING LITES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FLOW RATE, LEVEL, TEMPERATURE OR STEM MOVEMENT. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE FULL-STROKE EXERCISE COLUMN (APPROPRIATE COLUMN).
 - b) POSITION INDICATION TEST (PIT) IS PERFORMED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.e., VALVE OPEN - RED INDICATOR ENERGIZED AND VALVE CLOSED - GREEN INDICATOR ENERGIZED). POSITION INDICATION TEST (PIT) IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE STEM OR OTHER COLUMN, AS APPROPRIATE. IF THE POSITION INDICATION TEST (PIT) IS NOT REQUIRED N/A THE STEM OR OTHER COLUMN, AS APPROPRIATE.
 - c) FULL STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINGUISHES. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINGUISHES. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM MOVEMENT TERMINATES.
 - d) VALVES WITH FAIL SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORILY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL SAFE FUNCTION IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE FAIL SAFE TEST COLUMN.

S = DENOTES TECHNICAL SPECIFICATION REQUIREMENT

DN/SV1119A/IMI/2/ct

0H1A: SV1-8211-2001
Page: 15
Rev: 3

System Restoration Checklist

Instruction Title: MSIV Full Stroke Operability Test

Verified By:

Haworth, dk
MAB/BS

8-18-82
8/12/87

Signature/Initials

Date

LOCATION	COMPONENT MPL OR NAME	REQUIRED POSITION	FIRST VERIF	SECOND VERIF	REMARKS
1H13-P601	1B21-F022A	Open*			C.S. in AUTO
1H13-P601	1B21-F022B	Open*			C.S. in AUTO
1H13-P601	1B21-F022C	Open*			C.S. in AUTO
1H13-P601	1B21-F022D	Open*			C.S. in AUTO
1H13-P601	1B21-F028A	Open*			C.S. in AUTO
1H13-P601	1B21-F028B	Open*			C.S. in AUTO
1H13-P601	1B21-F028C	Closed Open			C.S. in AUTO
1H13-P601	1B21-F028D	Open*			C.S. in AUTO

COMMENTS:

in Open & value set 8/12/87
left closed - Partially open, no
flow & only valve operated

* In Operational Condition 4 or 5, valve position may be determined by the Unit Supervisor.

Sign-Off Verification Sheet

PIT Required
(Unit Supervisor) [✓] []
Yes No

SECTION/STEP

INITIALS

4.0 PREREQUISITES

1. Unit Supervisor's Authorization & PIT checkoff obtained. LDB
2. Plant in operational condition 2 or 3, or with steam lines wet in Operational Condition, 4 or 5. LDB
3. M&TE instrumentation properly recorded on appropriate data sheet. LDB
4. RWP in effect if necessary. LDB
5. MSIV ammeters indicating greater than 100 millamps. PJA

5.1 Surveillance Test

1. Supervising operator's authorization obtained. LDB
2. Condenser Low Vac Bypass switches in Bypass, if condenser vacuum is below MSIV trip setpoint. LDB
- 5.1.1.2 MSIV 1B21-F022A ammeters downscale. BT
- 5.1.1.5 MSIV 1B21-F028A ammeters downscale. LDB
- 5.1.2.2 MSIV 1B21-F022B ammeters downscale. BT
- 5.1.2.5 MSIV 1B21-F028B ammeters downscale. LDB
- 5.1.3.2 MSIV 1B21-F022C ammeters downscale. BT
- 5.1.3.5 MSIV 1B21-F028C ammeters downscale. LDB
- 5.1.4.2 MSIV 1B21-F022D ammeters downscale. H
- 5.1.4.5 MSIV 1B21-F028D ammeters downscale. LDB

SECTION/STEP

INITIALS

5.1.5

\$ 1. Calculate average fastest stroke time:

Steam line A fastest stroke time in section 5.1.1 (step 1 or 3)	<u>3.5</u>	<u>✓</u>
Steam line B fastest stroke time in section 5.1.2 (step 1 or 3)	<u>+ 3.3</u>	<u>✓</u>
Steam line C fastest stroke time in section 5.1.3 (step 1 or 3)	<u>+ 3.8</u>	<u>✓</u>
Steam line D fastest stroke time in section 5.1.4 (step 1 or 3)	<u>+ 3.2</u>	<u>✓</u>
Total	<u>= 13.8</u>	<u>✓</u>
Divide by 4	<u>= 3.45</u>	<u>✓</u>

\$ 2. Average stroke time is greater than or equal to 3 seconds.

Stopwatch Lyle Farmer

MPL L70-2554 Cal Date 6-9-67 Cal Due Date 12-9-67 Init LAF

Comments: None

Performed By: Lyle Farmer / LAF 6-9-67
Bernard J. P. / BP 6-9-67
/
/
Signature Initials Date

\$ Denotes Technical Specification requirement

ESTIMATION OF SMALL STREAM OPTIMALITY INDEX IN NEW ZEALAND

INSTRUCTION STEP NO.	VALVE PART NUMBER	PRE- FIRST POSITION	FIRST OF TRAVEL BY (INITIAL) STIM S (lb)	SECOND OF TRAVEL BY (INITIAL) STIM S (lb)	TOTAL STROKE TIME (SECONDS)	MAXIMUM STROKE TIME (SECONDS)	ACCEPTANCE CRITERIA	FAIL-SAFE SAFETY (INITIAL) POSITION
D.3.1.1	1021-1022A	OPEN	0f	0f	NA	NA	NA	CLOSED
D.3.1.2	1021-1022A	CLOSED	0f	0f	NA	NA	NA	OPEN
D.3.1.3	1021-1022A	OPEN	1.00	1.00	3.5	NA	NA	CLOSED
D.3.1.4	1021-1022A	OPEN	1.00	1.00	3.5	NA	NA	OPEN
D.3.1.5	1021-1022A	CLOSED	1.00	1.00	3.5	NA	NA	CLOSED
D.3.1.6	1021-1022A	CLOSED	1.00	1.00	3.5	NA	NA	OPEN
D.3.2.1	1021-1022B	OPEN	0f	0f	NA	NA	NA	CLOSED
D.3.2.2	1021-1022B	CLOSED	0f	0f	NA	NA	NA	OPEN
D.3.2.3	1021-1022B	CLOSED	0f	0f	NA	NA	NA	CLOSED
D.3.2.4	1021-1022B	OPEN	1.00	1.00	NA	NA	NA	OPEN
D.3.2.5	1021-1022B	CLOSED	1.00	1.00	NA	NA	NA	CLOSED
D.3.2.6	1021-1022B	CLOSED	1.00	1.00	NA	NA	NA	OPEN

Grand
affair

(SIGNATURE)
(SIGNATURE)
(SIGNATURE)

PRIMO

MORITZ

NOTES

- a) FULL-STROKE EXERCISE IS PLACING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.E., FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING; THE VALVE OR FULL-STROKE CHECK VALVES BY EXERCISING TO FULL-INITIAL POSITION) USING THE INDICATING LINES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FROM HALF-LEVEL, 1/2 LEVEL, 1/4 LEVEL, 1/8 LEVEL, 1/16 LEVEL, 1/32 LEVEL, 1/64 LEVEL, 1/128 LEVEL, 1/256 LEVEL, 1/512 LEVEL, 1/1024 LEVEL, 1/2048 LEVEL, 1/4096 LEVEL, 1/8192 LEVEL, 1/16384 LEVEL, 1/32768 LEVEL, 1/65536 LEVEL, 1/131072 LEVEL, 1/262144 LEVEL, 1/524288 LEVEL, 1/1048576 LEVEL, 1/2097152 LEVEL, 1/4194304 LEVEL, 1/8388608 LEVEL, 1/16777216 LEVEL, 1/33554432 LEVEL, 1/67108864 LEVEL, 1/134217728 LEVEL, 1/268435456 LEVEL, 1/536870912 LEVEL, 1/107374184 LEVEL, 1/214748368 LEVEL, 1/429496736 LEVEL, 1/858993472 LEVEL, 1/1717986944 LEVEL, 1/3435973888 LEVEL, 1/6871947776 LEVEL, 1/13743895520 LEVEL, 1/27487791040 LEVEL, 1/54975582080 LEVEL, 1/109951164160 LEVEL, 1/219902328320 LEVEL, 1/439804656640 LEVEL, 1/879609313280 LEVEL, 1/1759218626560 LEVEL, 1/3518437253120 LEVEL, 1/7036874506240 LEVEL, 1/14073749012480 LEVEL, 1/28147498024960 LEVEL, 1/56294996049920 LEVEL, 1/112589992099440 LEVEL, 1/225179984198880 LEVEL, 1/450359968397760 LEVEL, 1/900719936795520 LEVEL, 1/1801439873591040 LEVEL, 1/3602879747182080 LEVEL, 1/7205759494364160 LEVEL, 1/1441151898872320 LEVEL, 1/2882303797744640 LEVEL, 1/5764607595489280 LEVEL, 1/11529215190978560 LEVEL, 1/23058430381957120 LEVEL, 1/46116860763914240 LEVEL, 1/92233721527828480 LEVEL, 1/184467443055656960 LEVEL, 1/368934886111313920 LEVEL, 1/737869772222627840 LEVEL, 1/1475739544445255680 LEVEL, 1/2951479088890511360 LEVEL, 1/5902958177781022720 LEVEL, 1/11805916355562045440 LEVEL, 1/23611832711124090880 LEVEL, 1/47223665422248181760 LEVEL, 1/94447330844496363520 LEVEL, 1/188894661688992727040 LEVEL, 1/377789323377985454080 LEVEL, 1/755578646755970908160 LEVEL, 1/1511157293511941816320 LEVEL, 1/3022314587023883632640 LEVEL, 1/6044629174047767265280 LEVEL, 1/12089258348095334530560 LEVEL, 1/24178516696190669061120 LEVEL, 1/48357033392381338122240 LEVEL, 1/96714066784762676244480 LEVEL, 1/193428133569525352488960 LEVEL, 1/386856267139050704977920 LEVEL, 1/773712534278101409555840 LEVEL, 1/1547425068556202819111680 LEVEL, 1/3094850137112405638223360 LEVEL, 1/6189700274224811276446720 LEVEL, 1/1237940054844962255289440 LEVEL, 1/2475880109689924510577880 LEVEL, 1/4951760219379849021155760 LEVEL, 1/9903520438759698042311520 LEVEL, 1/19807040877519396084623040 LEVEL, 1/39614081755038792169246080 LEVEL, 1/79228163510077584338492160 LEVEL, 1/15845632702015516867698320 LEVEL, 1/31691265404031033735396640 LEVEL, 1/63382530808062067470793280 LEVEL, 1/12676506161612413494158560 LEVEL, 1/25353012323224826988317120 LEVEL, 1/50706024646449653976634240 LEVEL, 1/10141204929289930795326880 LEVEL, 1/20282409858579861590653760 LEVEL, 1/40564819717159723181307520 LEVEL, 1/81129639434319446362615040 LEVEL, 1/162259278868638892725230240 LEVEL, 1/324518557737277785450460480 LEVEL, 1/649037115474555570900920960 LEVEL, 1/1298074230949111141801841920 LEVEL, 1/2596148461898222283603683840 LEVEL, 1/5192296923796444567207367680 LEVEL, 1/10384593847592889134414735360 LEVEL, 1/20769187695185778268829470720 LEVEL, 1/41538375390371556537658941440 LEVEL, 1/83076750780743033075317882880 LEVEL, 1/166153501561485566150635765760 LEVEL, 1/332307003122971132301271531520 LEVEL, 1/664614006245942264602543063040 LEVEL, 1/1329228012491884529205860326880 LEVEL, 1/2658456024983769058411720653760 LEVEL, 1/5316912049967538116823441307520 LEVEL, 1/1063382409993507623364682615040 LEVEL, 1/2126764819987015246729365230080 LEVEL, 1/4253529639974030493458730460160 LEVEL, 1/8507059279948060986917460920320 LEVEL, 1/17014118559896121973834921840640 LEVEL, 1/34028237119792243947669843681280 LEVEL, 1/68056474239584487895339687362560 LEVEL, 1/136112948479168955790679374725120 LEVEL, 1/272225896958337911581358749450240 LEVEL, 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WILLIS, HEMMELD, SWARTZ, MULMULI

ADJ.2/400/V6111AS/MC

MSIV FULL STROKE OPERABILITY TEST

(1B21) VALVE TESTING DATA SHEET

INSTRUCTION STEP NO.	VALVE MPL NUMBER	PRE- TEST POSITION	FULL-STROKE EXERCISE OF TRAVEL BY (INITIAL)			FULL STROKE TIME (SEC/COND)		ACCEPTANCE TIME (SEC/COND)		CRITERIA SAT (CHECK)	FAIL-SAFE TEST (INITIAL)	POST TEST POSITION
			LITE	STEM	OTHER	OPEN	CLOSED	S OPEN	S CLOSED			
2.1.3.1	1B21-F0220	OPEN	Up	Up	Up	NA	3.8	NA	5	/	60	CLOSED
2.1.3.2	1B21-F0220	CLOSED	BSP	BSP	BSP	NA	NA	NA	NA	NA	NA	OPEN
2.1.3.4	1B21-F0280	OPEN	Up	Up	Up	NA	13.5	NA	5	/	Up	CLOSED
2.1.3.6	1B21-F0280	CLOSED	Up	Up	Up	NA	NA	NA	NA	NA	NA	OPEN
2.1.4.1	1B21-F0220	OPEN	Up	Up	Up	NA	3.2	NA	5	/	Up	CLOSED
2.1.4.2	1B21-F0220	CLOSED	Up	Up	Up	NA	NA	NA	NA	NA	NA	OPEN
2.1.4.3	1B21-F0280	OPEN	Up	Up	Up	NA	NA	NA	NA	NA	NA	OPEN
2.1.4.6	1B21-F0280	CLOSED	Up	Up	Up	NA	NA	NA	NA	NA	NA	OPEN

PERFORMED BY: (SIGNATURE) *John Bendix Jr* INITIAL 100 DATE 10-9-87 TIME 0153
 (SIGNATURE) *John H. H.* INITIAL 02 DATE 10-9-87 TIME 1730
 (SIGNATURE) INITIAL _____ DATE _____ TIME _____

1ST REVIEWED BY: (SIGNATURE) INITIAL _____ DATE _____ TIME _____

NOTE(S) *None*

a) FULL-STROKE EXERCISE IS PRACTICING THE VALVE THROUGH ONE COMPLETE CYCLE OF OPERATION (I.E., NOMINALLY 6.856 SEC). FULL-STROKE EXERCISE BY OPENING AND THEN CLOSING THE VALVE OR FULL-STROKE CHECK VALVES BY EXERCISING TO EITHER ALTERNATE POSITION) USING THE INDICATING LITES TO VERIFY MOVEMENT OR CHANGES IN SYSTEM PRESSURE, FLOW RATE, LEVEL, TEMPERATURE OR STEM POSITION. FULL-STROKE EXERCISE IS DOCUMENTED BY AN INITIAL IN THE FULL-STROKE EXERCISE COLUMN (APPROPRIATE COLUMN).

b) POSITION INDICATION TEST (PIT) IS PERFORMED TO VERIFY REMOTE VALVE POSITION INDICATORS ACCURATELY REFLECT VALVE POSITION (I.E., VALVE OPEN - RED INDICATOR ENERGIZED AND VALVE CLOSED - GREEN INDICATOR ENERGIZED). POSITION INDICATION TEST (PIT) IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE STEM OR OTHER COLUMN, AS APPROPRIATE. IF THE POSITION INDICATION TEST (PIT) IS NOT REQUIRED N/A THE STEM OR OTHER COLUMN, AS APPROPRIATE.

c) FULL STROKE TIME: CLOSING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE CLOSE POSITION UNTIL THE RED POSITION INDICATING LIGHT EXTINGUISHES. OPENING VALVE STROKE TIME SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE OPEN POSITION UNTIL THE GREEN POSITION INDICATING LIGHT EXTINGUISHES. TIMING BY STEM POSITION SHALL BE FROM WHEN THE CONTROL SWITCH IS PLACED IN THE PROPER POSITION UNTIL STEM POSITION TERMINATES.

d) VALVES WITH FAIL-SAFE ACTUATORS WILL BE TESTED TO VERIFY PROPER FAIL-SAFE OPERATION UPON LOSS OF ACTUATOR POWER. WHEN THE VALVE IS SATISFACTORILY FULL-STROKE EXERCISED BY THE CONTROL SWITCH THE FAIL-SAFE FUNCTION IS SATISFACTORY AND DOCUMENTED BY AN INITIAL IN THE FAIL-SAFE TEST COLUMN.

\$ = DENOTES TECHNICAL SPECIFICATION REQUIREMENT

IM/SV1119A/IMI/2/ct

 Attachment
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2
(CONT.)

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REV.
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SV1-
IMI-
1001

System Restoration Checklist

Instruction Title: MSIV Full Stroke Operability Test

Verified By:

Bernard J. M., Jr.

10-9-87

Michael J. D'Amico, myd

10-9-87

Signature/Initials

Date

LOCATION	COMPONENT MPL OR NAME	REQUIRED POSITION	FIRST	SECOND	REMARKS
			VERIF	VERIF	
1H13-P601	1B21-F022A	Open*	BR	myd	C.S. in AUTO
1H13-P601	1B21-F022B	Open*	BR	myd	C.S. in AUTO
1H13-P601	1B21-F022C	Open*	BR	myd	C.S. in AUTO
1H13-P601	1B21-F022D	Open*	BR	myd	C.S. in AUTO
1H13-P601	1B21-F028A	Open*	BR	myd	C.S. in AUTO
1H13-P601	1B21-F028B	Open*	BR	myd	C.S. in AUTO
1H13-P601	1B21-F028C	Open*	BR	myd	C.S. in AUTO
1H13-P601	1B21-F028D	Open*	BR	myd	C.S. in AUTO

COMMENTS:

* All Valves Closed, C/S in CLOSE
due to condition 4.

* In Operational Condition 4 or 5, valve position may be determined by the Unit Supervisor.

Nov 5 Quarantine List P00

MAIN STEAM ISOLATION VALVES

DUE TO THE RECENT PROBLEMS ASSOCIATED WITH THE MSIV'S,
NO WORK ASSOCIATED WITH THE B21, P51 OR P52 SYSTEMS WILL
BE APPROVED WITHOUT PRIOR APPROVAL OF THE MSIV TASK
FORCE. THE TASK FORCE LEADERS WHO CAN AUTHORIZE WORK
ARE:

	<u>EXT.</u>	<u>BEEPER</u>
B. NEWKIRK	5183	275-4351
V. CONCEL	6080	275-0336
P. ARTHUR	6846	275-0517

THE FOLLOWING WORK ORDERS HAVE BEEN AUTHORIZED TO WORK:

87-9323	RECORD SOLENOID VOLTAGE & ACCUMULATOR PRESSURE ON B21-F022D
87-9293	TROUBLESHOOT AIR PACK & SOLENOIDS, REWORK AS NECESSARY - 1B21-F022D (AFTER 9323)

D-16

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

17

MEMORANDUM

 I no longer wish to receive this material.

TO K. R. Peet

ROOM E110 FROM

J. P. Eppich

DATE November 5, 1987

PHONE

5225

ROOM E110

SUBJECT

RELATIONSHIP OF MSIV

AIR PACK VENDORS

Attached is a responsibility definition for parts which make up the MSIV Air Packs. Note that Hiller is the supplier to General Electric and all others are direct suppliers to Hiller. In addition to supplying the Tandem Cylinder to Hiller, Sheffer also performs all assembly and testing activities for Hiller.

JPE/amc

CC: R. Newkirk
B. Stetson
V. Concel

D-11

COMPANY'S REPSONSIBLE FOR PARTS IN AIR PAC

SA-A068 - AIR PAC	GENERAL ELECTRIC
ITEM: 1) TANDEM CYLINDER	RALPH A. HILLER
2) CHECK VALVE	SHEFFER
3) FLOW CONTROL VALVE	RALPH A. HILLER
4) HYD. FILL VALVE	PARKER HANNIFIN
5) GAS CHARGING VALVE	RALPH A. HILLER
6) FLOW CONTROL VALVE	SCHRADER
7) 4 WAY AIR CONTROL VALVE	PAKER HANNIFIN
8) 3 WAY AIR CONTROL VALVE	NORGREN
9) 2 WAY AIR CONTROL VALVE	NORGREN
10) 3 WAY AIR PILOT CONTROL VALVE	ASCO
11) 3 WAY AIR PILOT CONTROL VALVE	ASCO
12) MUFFLER CONTROL VALVE	MOSIER COMPANY

REV 0 11/05/87

SEQUENCE OF TROUBLESHOOTING PLAN

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
1) Inboard MSIV's	Field - Inspect all 4 MSIV's	WO 87-9323	Yes	11/05/87
2) B21-F022D	Field - Stroke B21-F022D Open	WO 87-9323	Yes	11/05/87
3) B21-F022D	Field - Remove junction box box cover - Verify tightness of terminal screws - Record voltage at term 1 & 2 - Record voltage at term 3 & 4 - Install pressure gauge at B21-F083D (Accumulator drain)	WO 87-9323	Yes	11/05/87
4) B21-F022D	Field - Ops slow stroke B21-F022D app. 50% then finish with fast stroke - Obtain "Pillow Case" air samples of exhaust ports - Monitor for lowest pressure	WO 87-9323	Yes	11/05/87
5) B21-F022D	Field - Open B21-F083D (Accumulator Drain) and blow down for app. 1 min. into pillow case	WO 87-9323	Yes	11/05/87
6) B21-F022D	Field - Disconnect 3/8" and 1 5/8" air supply to air pack - Unbolt and remove air pack - Transport air pact to shop	WO 87-9293	Yes	

D'18

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>Approval</u>	<u>Complete</u>
7) B21-F022D	Field	WO 87-	No	
	<ul style="list-style-type: none"> - Perform blowdown of 1 5/8" air supply - Obtain a "pillow case" air sample - Perform a dewpoint reading - Perform a particle count 			
8) B21-F022D	Shop	WO 87-9372	No	
	<ul style="list-style-type: none"> - Perform shop testing by cycling valve with N₂ supply and temp. power supply and document results 			
9) B21-F022D	Shop	WO 87-9372	No	
	<ul style="list-style-type: none"> - Perform a detailed disassembly of each component as follows: 			
1)	Inspect air pack bolts for tightness <ul style="list-style-type: none"> - Inspect air ports for cleanliness - Look for signs of foreign material - Photograph air pack 			
2)	Disassemble ASCO 3-way (Part #4) Model #8323 <ul style="list-style-type: none"> - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solencid 'A' <ul style="list-style-type: none"> - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings 			

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>Approval</u>	<u>Complete</u>
2)	Disassemble ASCO 3-way (Part #4) Model #8323 (continued)			
	- Disassemble Solenoid 'B' - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings			
3)	Disassemble ASCO 3-way (Part #5) Model 8320	WO 87-9372	No	
	- Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			
4)	Disassemble Norgren 4-way valve (Part #1)			
	- Remove 4-way valve - Examine 4-way valve - Disassemble 4-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			
5)	Disassembly of Norgren 3-way valve (Part #2)			
	- Remove 3-way valve - Examine 3-way valve - Disassemble 3-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>Approval</u>	<u>Complete</u>
6)	Disassembly of Norgren 2-way valve (Part #3) - Remove 2-way valve - Examine 2-way valve - Disassemble 2-way - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			
10)	Outboard Field - Inspect all 4 MSIV's MSIV's			
11)	B21-F028D Field - Ops to slow stroke B21-F028D app. 50% then finish with fast stroke - Obtain "Pillow Case" air sample of exhaust parts - Monitor solenoid actuation from energized to de-energized - Document findings			
12)	B21-F028D Field - Disconnect 3/8" and 1 5/8" air supply to air pack - Unbolt and remove air pack - Transport air pact to shop			
13)	B11-F028D Shop - Perform shop testing by cycling valve with N ₂ supply and temp. power supply and document results			

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>Approval</u>	<u>Complete</u>
14) B21-F028D Shop	<ul style="list-style-type: none"> - Perform a detailed disassembly of each component as follows: <ol style="list-style-type: none"> 1) Inspect air pack bolts for tightness <ul style="list-style-type: none"> - Inspect air ports for cleanliness - Look for signs of foreign material - Photograph air pack 2) Disassemble ASCO 3-way (Part #4) Model #8323 <ul style="list-style-type: none"> - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid 'A' <ul style="list-style-type: none"> - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings - Disassemble Solenoid 'B' <ul style="list-style-type: none"> - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings 			

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>Approval</u>	<u>Complete</u>
3)	Disassemble ASCO 3-way (Part #5) Model 8320 - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			
4)	Disassemble Norgren 4-way valve (Part #1) - Remove 4-way valve - Examine 4-way valve - Disassemble 4-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			
5)	Disassembly of Norgren 2-way valve (Part #2) - Remove 3-way valve - Examine 3-way valve - Disassemble 3-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			
6)	Disassembly of Norgren 2-way valve (Part #3) - Remove 2-way valve - Examine 2-way valve - Disassemble 2-way - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			

P022D
Review AIA pack
20

PAGE 1 PERRY NUCLEAR POWER PLANT WORK ORDER DATE 11/05/87
M151B01 INFORMATION ONLY TIME 06:42:28
REV 2

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009293	I&C	1B21F0022D	I&C TROUBLESHOOT	C O/ -664

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
1 2 3	3 4 5	CAT	CODE	M/E	M/E		REQ'D
		VLV	5X	1 /SR	I/I	NA	YES

SPECIAL PERMIT NO	RETEST REQ'D YES	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP REQ'D YES	TECH SPEC YES
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SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : REM. & REPLACE PILOT CONTROL VALVE
MPL NAME : FIRST MSIV

PLANNER REMARKS

PPTD REQUIRES A TEST OF 1B21F022D TO INVESTIGATE SLOW CLOSING OF THIS VALVE
IN T.C.7 (SEE W.O.87-9231) P.C. 11/2/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

TROUBLESHOOT PER JOB TRAVELER

1. Determine electrical, circuit paths + remove air pack.

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY	_____	DATE	/ /
REVIEWED BY NQAD/AIA	_____	DATE	/ /
APPROVED BY	_____	DATE	/ /
APPROVAL TO COMMENCE WORK	_____	TIME:	: :
WORK COMPLETE	_____	DATE	/ /
APPROVAL TO COMMENCE TEST	_____	TIME:	: :
RETEST COMPLETE	_____	DATE	/ /
REVIEW BY NQAD/AIA	_____	DATE	/ /
ACCEPTED BY UNIT SUPERV.	_____	DATE	/ /

D.20

PAGE 2
M151B23

PERRY NUCLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/05/87
06:42:28

WO# 870009293 PRIORITY 5X LOC C O/ -664
MPL 1B21F0022D COMP CAT VLV SFTY M/E 1 /SR

LN	REVISIONS TEXT	REV 1 OF 2
01	REVISED TO CORRECT MPL # IN TRAVELER.	PEC 11/03/87 16:07:44
LN	REVISIONS TEXT	REV 2 OF 2
01	REVISED FOR MINOR CONCERNS, NO WORK WAS PERFORMED	CLC 11/04/87 23:05:17
02	UNDER THE PREVIOUS REV.	CLC 11/04/87 23:05:17

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
RELATED REPETITIVE TASK LIST

M151B13

11-05-87

06:42:28

INFORMATION ONLY

REV NO: 2

LAST CHNG:11/03/87

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
		CODE	M/E	M/E
	1B21F0022D	VLV	C O/ -664	1 /SR I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
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FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE

R85 013050	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T1400
R85 013051	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T2001
R85 013052	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T2003
R85 013053	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T9415
R86 011266	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI T23-T1201
R86 012775	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI C61-T1104

PAGE 4 PERRY NUCLEAR POWER PLANT WORK ORDER 11/05/87
 M151B03 JOB TRAVELER 06:42:28
 REV NO: 2
 INFORMATION ONLY LAST CHG: 11/03/87
 COMP CAT SAFETY SEISMIC
 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009293 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
010	REFERENCE DRW.			
	1. REFER TO DRW. 209-13 SH 2 THROUGH 9 FOR INTERCONNECTIONS TO B21/C71/C95/R61 ECT.		I&C	2
	2. REFER TO VENDOR DRW. 47-58-1&3 FOR SWITCH DRW.			
	3. REFER TO DRW.208-13-10 & 36 FOR CONNECTIONS.			
	4. REFER TO DRW.208-46-522 FOR ERIS INPUTS.			
	5. REFER TO DRW. 208-40 SH 5 & 8 FOR RX. SCRAM LOGIC.			
	6. ATWOOD & MORRILL VENDOR MANUAL (FILE # 29-G).			
020	PRECAUTIONS			
	1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.		I&C	1
	2. ENSURE TAGOUTS ARE ESTABLISHED TO PROVIDE PERSONNEL OR EQUIPMENT SAFETY PER PAP-1401.		I&C	2
	3. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.		I&C	2
	4. OBSERVE PRECAUTIONS AS SHOWN IN SVI B21-T1400		I&C	2
	5. OBSERVE PRECAUTIONS AS SHOWN IN SVI C71-T0038D		I&C	2
	6. ALL PAR REMOVED SHALL BE MARKED AND RETAINED FOR FUTURE EVALUATION.		I&C	2
030	PREPARATION			
	1. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED REWORK.SEE SVI-T0038E FOR ADDITIONAL TOOLS REQUIRED.		I&C	2
	2. SUBMIT R.W.P. FORM PER PAP-0512		I&C	2

PAGE 5 PERRY NUCLEAR POWER PLANT WORK ORDER 11/05/87
M151B03 JOB TRAVELER 06:42:28

INFORMATION ONLY	REV NO: 2
WO NUMBER	LAST CHG: 11/03/87
870009293	SAFETY SEISMIC
MPL NUMBER	M/E M/E
1B21F0022D	C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
040	TROUBLESHOOTING			
1.	NOTIFY MMQS PRIOR TO WORK, 6350		I&C	2
INITIALS .....DATE..../.../.....				
2.	NOTIFY UNIT SUPERVISOR PRIOR TO WORK		I&C	2
3.	CONTACT HEALTH PHYSICS PRIOR TO WORK FOR ANY R.W.P. REQUIREMENTS.		I&C	2
4.	DETERMINATE & LABLE WIRES FROM JCT.BOX FOR 1B21F463 TO ALLOW REMOVAL OF AIR PACK & SOLENOIDS VALVES.		I&C	2
5.	CONTACT NC86M SUPERVISOR X6200 OR 6984 TO REMOVE AIR PACK.		I&C	2
6.	VERIFY THAT VALVE IS IN THE CLOSED POSITION AND THAT I&C HAS PERFORMED DETERMINATION OF THE VALVE ACTUATOR CONTROL PANEL.		CRAFT	2
7.	CONTACT PETE ARTHUR OR VINCE CONCEL FOR AUHTORIZATION TO PROCEED TO THE NEXT STEP (NRC-APPROVAL REQUIRED PRIOR TO PROCEEDING TO THE NEXT STEP).		I&C	2
INITIAL.....DATE..../.../...TIME.....				
8.	DICONNECT THE 3/8" & 1 5/8" AIR SUPPLY TUBING CONNECTIONS. UNBOLT AIR CONTROL PANEL FROM ACTUATOR AND REMOVE PANEL. SEAL ALL OPENINGS.		CRAFT	2
9.	DELIVER AIR PACK TO I&C FOR TESTING.		CRAFT	2

NOTE: EXERCISE EXTREME CARE WHEN WHEN HANDLING THE AIR CONTROL PANEL AT ALL TIMES. DO NOT SUBJECT IT TO SHOCK. LIMIT ANY DECONTAMINATION NEEDED AS MUCH AS PRATICAL.

PAGE 6 PERRY NUCLEAR POWER PLANT WORK ORDER 11/05/87
 M151B03 JOB TRAVELER 06:42:28
 REV NO: 2
 INFORMATION ONLY LAST CHG: 11/03/87
 COMP CAT SAFETY SEISMIC
 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009293 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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***** NQAD-WITNESS *****

** SIGNATURE DATE COMMENT **

FROM	TO	PLACED BY	REMOVED BY
LOCATION TB#/TERMINAL	LOCATION TB#/TERMINAL	INIT/DATE VERIF BY	INIT/DATE VERIF BY
1.		.../...	.../...
		.../...	.../...
2.		.../...	.../...
		.../...	.../...
3.		.../...	.../...
		.../...	.../...
4.		.../...	.../...
		.../...	.../...
5.		.../...	.../...
		.../...	.../...
6.		.../...	.../...
		.../...	.../...
7.		.../...	.../...
		.../...	.../...
8.		.../...	.../...
		.../...	.../...
9.		.../...	.../...
		.../...	.../...
10.		.../...	.../...
		.../...	.../...

PAGE 7 PERRY NUCLEAR POWER PLANT WORK ORDER 11/05/87
 M151B03 JOB TRAVELER 06:42:28

INFORMATION ONLY	REV NO: 2
COMP CAT	LAST CHG: 11/03/87
WO NUMBER	SAFETY
870009293	SEISMIC
MPL NUMBER	M/E
1B21F0022D	C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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060 RESTORATION

***** NQAD-WITNESS *****
 **
 ** SIGNATURE DATE COMMENT **

 1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST I&C 2
 USING INDEPENDENT VERIFICATION PER IAP-0503.
 2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS I&C 2
 REQUIREMENTS HAVE BEEN MET PER PAP-0204.
 3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND I&C 2
 FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR
 R.W.P. TERMINATION PER PAP-0512. N/A IF NONE.
 4. ANY DEFECTIVE/UNUSED PARTS REMOVED UNDER THIS WO I&C 2
 SHOULD BE EVALUATED, DISPOSITIONED AND RETURNED TO
 THE SALVAGE WAREHOUSE PER SMI-018 OR DISCARDED AS
 NON REPAIRABLE ON THE W.O. CLOSING SHEET. PRIOR TO
 REMOVING PARTS FROM A RCA; HEALTH PHYSICS MUST SURVEY
 AND RELEASE THEM PER PAP-0515. N/A IF NOT APPLICABLE

070 RETEST

***** NQAD-WITNESS *****
 **
 ** SIGNATURE DATE COMMENT **

 1. PER S.SEMAN 11/03/87 PERFORM SVI B21-T2001 OPERA 3
 INCLUDING PIT (LISTED AS STEP 2.4 OF SVI)

080 ACCEPTANCE CRITERIA

STEP	DESCRIPTION	RESP	# OF PERS
		SECT	JOB CLASS

***** NOAD-WITNESS *****

*** SIGNATURE DATE COMMENT ***

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED I&C SUP 1

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS
REQUIREMENTS HAVE BEEN MET PER PAP-0204.

3. CONFIGURATION VERIFICATION COMPLETED BY HAVING
ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN
PER IAP-0503.

090 FIRE/VAPOR BARRIERS

1. VAPOR BERRIERS RESTORED IN TROUBLESHOOTING STEP. I&C

F022D
blowdown
Air-pump &
Visual +
Voltage

PAGE 1 PERRY NUCLEAR POWER PLANT WORK ORDER DATE 11/05/87
M151B01 INFORMATION ONLY TIME 07:53:20
REV 1

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009323	I&C	1B21F0022D	I&C TROUBLESHOOT	C O/ -664

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
1 2 3	3 4 5	VLV	SB	1 /SR	I/I	NA	NO

SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP	TECH
				REQ'D YES	SPEC YES

SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : RECORD SOLENOID VOLTAGE & ACCUM PRESSURE
MPL NAME : FIRST MSIV

PLANNER REMARKS

THIS W.O. WILL RECORD VOLTAGE LEVELS AT THE SOLENOIDS & ACCUMULATOR PRESSURE
FOR IB21F0022D REFER TO DRW. 302-605, 304-471, 304-471-101.2,
304-487, 816-705, 208-13-10 & 36 P.C. 11/4/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION
RECORD VOLTAGE LEVELS & PRESSURE READINGS PER JOB TRAVELER.

1. Visual check w/ mill 8 MSIV's.
2. Voltage checks with voltmeter (solvent energized).
3. Air samples from exhaust port of solenoid & from accumulator filter.

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY	_____	DATE	/ /		
REVIEWED BY NQAD/AIA	_____	DATE	/ /		
APPROVED BY	_____	DATE	/ /		
APPROVAL TO COMMENCE WORK	_____	TIME:	: :	DATE	/ /
WORK COMPLETE	_____	DATE	/ /		
APPROVAL TO COMMENCE TEST	_____	TIME:	: :	DATE	/ /
RETEST COMPLETE	_____	DATE	/ /		
REVIEW BY NQAD/AIA	_____	DATE	/ /		
ACCEPTED BY UNIT SUPV.	_____	DATE	/ /		

PAGE 2
M151B23

PERRY NUCLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/05/87
07:53:20

WO# 870009323
MPL 1B21F0022D

COMP CAT VLV

PRIORITY 5B
SFTY M/E 1 /SR

LOC C O/ -664

LN

REVISIONS TEXT

REV 1 OF 1

01 REVISED FOR MINOR CONCERNS, NO WORK WAS PERFORMED ON
02 THE PREVIOUS REV.

CLC 11/04/87 23:03:50
CLC 11/04/87 23:03:50

PAGE 3 PERRY NUCLEAR POWER PLANT WORK ORDER 11-05-87
RELATED REPETITIVE TASK LIST 07:53:20
M151B13 REV NO: 1
INFORMATION ONLY LAST CHNG:11/04/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
870009323	1B21F0022D	CODE VLV	C O/ -664	M/E 1 /SR	M/E I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
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FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE

R85 013050	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T1400
R85 013051	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T2001
R85 013052	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T2003
R85 013053	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T9415
R86 011266	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI T23-T1201
R86 012775	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI C61-T1104

PAGE	4	PERRY NUCLEAR POWER PLANT WORK ORDER	11/05/87
		JOB TRAVELER	07:53:21
M151B03			
		INFORMATION ONLY	REV NO: 1
		COMP CAT	LAST CHG: 11/04/87
WO NUMBER		CODE	SAFETY SEISMIC
870009323	MPL NUMBER 1B21F0022D	VLV	M/E M/E C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
010	REFERENCE DRW.			
	1. REFER TO DRW. 209-13 SH 2 THROUGH 9 FOR INTERCONNECTIONS TO B21/C71/C95/R61 ECT.		I&C	2
	2. REFER TO VENDOR DRW. 47-58-1&3 FOR SWITCH DRW.			
	3. REFER TO DRW. 208-13-10 & 36 FOR CONNECTIONS.			
	4. REFER TO DRW. 208-46-522 FOR ERIS INPUTS.			
	5. REFER TO DRW. 208-40 SH 5 & 8 FOR RX. SCRAM LOGIC.			
	6. ATWOOD & MORRILL VENDOR MANUAL (FILE # 29-G).			
020	PRECAUTIONS			
	1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.		I&C	1
	2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.		I&C	2
	3. OBSERVE PRECAUTIONS AS SHOWN IN SVI B21-T1400.		I&C	2
	4. OBSERVE PRECAUTIONS AS SHOWN IN SVI C71-T0038D.		I&C	2
030	PREPARATION			
	1. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED REWORK. SEE SVI-T0038D FOR ADDITIONAL TOOLS REQUIRED.		I&C	2
	2. SUBMIT R.W.P. FORM PER PAP-0512		I&C	2
040	TROUBLESHOOT MSIVS			
	1. NOTIFY MMQS PRIOR TO WORK, 6350.		I&C	2
	INITIALS.....DATE.../.../.....			

PAGE	5	PERRY NUCLEAR POWER PLANT WORK ORDER	11/05/87
		JOB TRAVELER	07:53:21
M151B03			REV NO: 1
		INFORMATION ONLY	LAST CHG: 11/04/87
		COMP CAT	SAFETY SEISMIC
WO NUMBER		CODE	M/E M/E
870009323	MPL NUMBER 1B21F0022D	VLV	C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
2.	NOTIFY UNIT SUPERVISOR PRIOR TO WORK.		I&C	2
3.	CONTACT HEALTH PHYSICS PRIOR TO WORK FOR ANY R.W.P. REQUIREMENTS.		I&C	2
4.	JOB STEPS CAN BE WORKED IN ANY SEQUENCE AS DETERMINED BY THE JOB SUPERVISOR.			
5.	PERFORM A WALKDOWN INSPECTION OF INBOARD MSIVS & OUTBOARD MSIVS ,RECORD ANY PROBLEMS OBSERVED BELOW AS LOOSE BOLTS,PLUGGED EXHAUST PORTS ECT,IF NO PROBLEMS FOUND WRITE NONE.		I&C	2
A)	INSPECTION OF 1B21F022A,B,C,D..... INITIALS.....DATE.../.../.....		I&C	2
B)	INSPECTION OF 1B21F028A,B,C,D..... INITIALS.....DATE.../.../.....		I&C	2
6.	CONTACT LEAD SHIFT CHEMISTRY TECH X5582 TO PERFORM PARTICLE COUNT PER PAP1102.		I&C	2
050	TROUBLESHOOT MSIVS			
	**CAUTION THE FOLLOWING STEP WILL RESULT IN 1B21F022D CLOSURE BE AWARE-STAY CLEAR		I&C/OPERA	3
7.	REQUEST OPERATIONS TO OPEN 1B21F022D.		I&C/OPERA	3

PAGE 6 PERRY NUCLEAR POWER PLANT WORK ORDER 11/05/87
 M151B03 JOB TRAVELER 07:53:21
 INFORMATION ONLY REV NO: 1
 COMP CAT LAST CHG: 11/04/87
 WO NUMBER WO LOCATION SAFETY SEISMIC
 870009323 MPL NUMBER CODE M/E M/E
 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	-----------	-----------	-----------

***** NQAD-WITNESS *****

SIGNATURE	DATE	COMMENT
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8. AT 1B21F0022D
- A) REMOVE 1B21F0463 JUNCTION BOX COVER (SEE 209-13-5) I&C 2
 - B) VERIFY TIGHTNESS OF TERMINAL SCREWS FOR SV'S I&C 2
 - C) RECORD VOLTAGE AT TERMINALS 1&2 (FOR SOLENOID #3) I&C 2
 - VOLTS..... RATE M&L.....
 - D) RECORD VOLTAGE AT TERMINALS 3&4 (FOR SOLENOID #2) I&C 2
 - VOLTS..... M&TF MPL.....
 - E) CONNECT A 200PSIG TEST GAGE AT ACCUMULATOR DRAIN (AT VALVE 1B21F083D), REMOVE PIPE CAP AS REQUIRED. I&C 2
 - ***CAUTION TANK IS UNDER 100PSIG.
 - F) REQUEST OPERATOR TO CHECK 1B21F83D OPEN I&C/OPERA 2
 - G) RECORD PRESSURE FROM TEST GAGE AT 1B21F83D I&C 2
 - PRESSURE..... M&TE MPL.....
9. REQUEST OPERATIONS TO DO A SLOW CLOSE OF 1B21F022D I&C/OPERA 3
- FOR 30 SECONDS, THEN COMPLETE CLOSURE BY FAST
- CLOSING AND NOTE SOLENOID VALVE CHANGE
- AND ALLOW I&C TO DO A CHECK OF EXHAUST AIR WITH A
- PILLOWCASE. LOG RESULTS RECORD IF ANY PARTICLES ARE
- TRAPPED, RECORD ANY DISCOLORATION AND RECORD
- MINIMUM GAUGE READING WHILE VALVE IS GOING CLOSED.
-
-
-
- NOTE: PLACE PILLOWCASE IN MARKED PROTECTIVE PLASTIC
- BAG AND SAVE FOR FUTURE EVALUATIONS.
10. CLOSE DRAIN VALVE 1B21F0083D, AND REMOVE GAUGE. I&C 2
11. OPEN DRAIN VALVE 1B21F0083D AND OBTAIN A PILLOW-CASE BLOWDOWN SAMPLE FOR APPROX. ONE (1) MINUTE, OPERA/I&C 2
- PLACE IN MARKED PROTECTIVE PLASTIC BAG AND SAVE FOR
- FUTURE EVALUATION.
- A) TAKE A DEW POINT READING PER IMI-E2-18. I&C 2
 - B) PERFORM A PARTICLE COUNT PER PAP-1102. CHEM 1

PAGE 7

M151B03

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/05/87
07:53:21WO NUMBER
870009323INFORMATION ONLY
COMP CAT
MPL NUMBER
1B21F0022D
CODE
VLV
WO LOCATION
C O/ -664REV NO: 1
LAST CHG: 11/04/87
SAFETY SEISMIC
M/E M/E
1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

C) HAVE THE OPERATOR CLOSE 1B21F0083D AND REOPEN
THE PIPE CAP AS REQUIRED.

060 RESTORATION

NQAD-WITNESS		
SIGNATURE	DATE	COMMENT
1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST USING INDEPENDENT VERIFICATION PER IAP-0503.		
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.		
3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND FOWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR R.W.P. TERMINATION PER PAP-0512. N/A IF NONE.		

070 RETEST

1. PER S.SEMAN RETEST TO BE PERFORMED BY W.O.
87-9285 & 87-9293.

080 ACCEPTANCE CRITERIA

NQAD-WITNESS		
SIGNATURE	DATE	COMMENT
1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED.		
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.		
3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503.		

PAGE 8 PERRY NUCLEAR POWER PLANT WORK ORDER 11/05/87
M151B03 JOB TRAVELER 07:53:21

INFORMATION ONLY	REV NO:	1
CUMP CAT	LAST CHG:	11/04/87
WO NUMBER	SAFETY	SEISMIC
870009323	M/E	M/E
MPL NUMBER	WO LOCATION	C O/ -664
1B21F0022D	CODE	VLV
		1 /SR
		I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
090	FIRE/VAPOR BARRIERS			
	1.VAPOR BERRIERS RESTORED IN W.O.87-9285 & 87-9293.		I&C	

Kevin, this is a Draft (finalized)

≈ Nov 05, 1987

GD

Enclosure
Page 1 of 4

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The following evaluations and actions have been or will be completed prior to plant startup:

Item # 13
of FOIA
8B-165

1. As previously stated in PY-CEI/OIE-0288 L, for the dual (fast closure) solenoids, the total air pack has been replaced for the 1B21-F028D valve, and the whole dual solenoid has been replaced on both the 1B21-F022D, and the 1B21-F022A valves. No other solenoids showed significant degradation or required replacement. All of the other MSIV dual solenoids have been rebuilt.
2. As previously stated in PY-CEI/OIE-0288 L, the single (slow closure) solenoid was replaced on the 1B21-F028D valve since the whole air pack was replaced and on the 1B21-F028B valve due to a frayed wire. Based on the inspection results above, no other replacements were necessary.
3. As previously stated in PY-CEI/OIE-0288 L, an evaluation has been performed of other ASCO solenoid Class 1E harsh environment applications in the plant, including those which may have been subject to the steam leak environment which affected the MSIV solenoids. The review identified two normally deenergized solenoids which were subject to the same conditions as the MSIV solenoids. Since the solenoids are in a normally deenergized state, and the seat is not in contact with elastomers for potential degradation, no further action was considered necessary. Work history review of all other applications has shown no solenoid failures, indicating the ASCO solenoid degradation appears to be limited to the MSIV solenoid valves.
4. An evaluation has been performed of other equipment in the vicinity of the 1B21-F022D, 1B21-F028D, and 1B21-F028B valves, to assess any impact that the steam leaks may have had on other components. This evaluation revealed that there were six valve actuators in the steam tunnel and two in the drywell that were in close proximity to the known steam leaks. These actuators were inspected and no steam/heat degradation was observed.
5. Until the temporary temperature monitoring baseline values have been determined, the existing permanent temperature elements will be used. The historical readings of the existing permanent steam tunnel and drywell temperature elements in the vicinity of the MSIVs have been reviewed, and a baseline has been determined for each element (see Attachment 1). It has been determined that a 10% rise above these baseline values may be indicative of a localized steam leak and would require investigation. This value is approximately one half of the temperature rise expected for the Technical Specification trip value for leak detection.

A procedure will be established specifying necessary actions to be taken upon exceeding these values. The corrective actions to be taken are as follows:

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- Reduce power as necessary to perform a visual inspection to determine the equipment affected.
 - Immediately repair the leakage or shield the adjacent Class 1E components to limit the impact until a repair is possible.
 - Note components being affected and assess the thermal impact (EO). Evaluate and determine the necessary time frame for taking additional action, such as increasing surveillance frequency or changing replacement interval.
 - At least 1 temporary temperature element in the area of each MSIV will be maintained in service in Operating Conditions 1, 2 and 3.
6. Additional steam tunnel temporary temperature monitoring has been installed on the preselected sample points on the MSIVs including the dual and the test solenoid bodies. Baseline data will be obtained on the temporary temperature elements in the steam tunnel during the next full operating period of sufficient duration to allow temperatures to stabilize. Based on experience, this will be several days after the plant is at full power. Inspections will be performed during startup to assure that the initial temperature reading are not being effected by steam leaks. Once it has been determined that the readings have stabilized, the procedure outlined in item (5) above will be revised to use the temporary temperature elements in lieu of the permanent elements.
- At least one drywell temporary temperature element will be installed on each of the dual solenoids on the inboard MSIVs, typical of what was done with the temporary steam tunnel temperature elements. A baseline will be established after the startup following this outage as described above for the temporary steam tunnel temperature elements. These baseline values will then be incorporated into the program, along with the respective acceptance criteria.
7. A test has been performed which verified that air does not flow between the air compressor reduction gear vents and the air compressor intake. Consequently, it was determined that there was no need for any equipment modification, or change in the intake filter replacement frequency.

Following startup, these additional evaluations and actions will be performed:

1. To further substantiate the root cause, the laboratory analyses will be performed to determine the failure mechanisms of the EPDM degradation. A review of industry experiences and discussions with various industry sources will continue to be conducted in order to input into our analysis plan. Our preliminary analysis plan, which included these industry contacts, is completed, and a summary is provided in Attachment 2.

We have completed an initial evaluation of industry experience. The initial industry review did not change our preliminary conclusion that the root cause of the problem was primarily localized elevated temperatures near the ASCO solenoid valves. However, we have not eliminated the potential of hydrocarbons having a deleterious effect. We plan to use data obtained from other plant experiences as described in IEN 86-57, along with our own analysis, to confirm the root cause.

Our preliminary schedule is to have initial results and analyses by end of the first quarter 1988. Any further analyses required will be determined at that time. We plan to use a local research laboratory, as our primary analyses contractor. Results will be provided to the NRC.

Following completion of the analysis program, possible design improvements, will be evaluated and a determination will be made on future actions, including replacement frequencies.

2. Presently, in order to minimize the potential for introducing hydrocarbons to the air system, a preventive maintenance requirement will be established for periodic replacement of the instrument air system prefilters. The maintenance frequency will be consistent with replacement of the instrument air system after filters. Additionally, a generic precaution will be added into air system work orders regarding the use of thread lubricants and sealants. If the outcome of the Chemical Analyses indicates the presence of hydrocarbons, we will establish an appropriate hydrocarbon sample and analysis program for the instrument air system. This program will be provided to the NRC.

Dev point and particulate sampling of the instrument air system will continue in accordance with the existing plant administrative procedure. Any unacceptable results will be evaluated and system blowdowns will be conducted until satisfactory results are obtained.

3. Until the first refueling outage the fast closure dual solenoids will be checked for proper operation during the monthly slow closure check. This will be performed by fully closing each MSIV individually utilizing the test solenoid, followed by taking the control switch to close. Performance of this test will verify the proper operation of the dual solenoid, since the MSIV will only remain closed if the dual solenoid deenergizes and properly repositions. If any MSIV should reopen during the test, indicating failure of a dual solenoid, the associated MSIV will be declared inoperable and the plant will be placed in Hot Shutdown within 12 hours and Cold Shutdown within the following 24 hours. The NRC will be notified upon discovery of such a failure.

Also during this time frame the MSIVs will be cycled individually on a quarterly basis regardless of plant operating conditions, and the fast closure time verified. Upon failure of this quarterly test due to a problem with a dual solenoid, the plant will be shutdown and the NRC will be notified as described above. The monthly test described above, will not be performed during those months when the quarterly fast closure test is performed.

Prior to exceeding a six month period an inspection will be performed on the dual solenoid experiencing the highest temperature profile during an outage of opportunity. This inspection will verify no degradation of the solenoid valve internals. If accelerated heat degradation is observed, a complete investigation will be initiated and the NRC notified.

4. A review has been completed of all known steam leaks in the plant which could have affected class 1E equipment. These components will be evaluated to determine if there has been any affect on their qualified life based on the environment under which they were subjected. The results of this evaluation will be completed and submitted to the NRC by November 30, 1987.

**TEMPERATURE MONITORING
FOR DETECTION OF STEAM LEAKS**

	TEMPERATURE SENSOR NUMBER	NORMAL OPERATIONAL BASELINE TEMPERATURE	ACTION PLAN IMPLEMENTATION TEMPERATURE
UPPER DRYWELL AREA	D23-K102 A D23-K102 B M13-R110-2 M13-R110-16	140° F 140° F 150° F 135° F	154° F 154° F 165° F 148° F
MIDDLE DRYWELL AREA	D23-K112 A D23-K112 B M13-R110-3 M13-R110-4 M13-R110-14 M13-R110-15	135° F 131° F 136° F 124° F 136° F 127° F	148° F 144° F 150° F 136° F 150° F 140° F
LOWER DRYWELL AREA	D23-K122 A D23-K122 B M13-R110-5 M13-R110-7 M13-R110-8 M13-R110-11 M13-R110-12	130° F 128° F 114° F 122° F 122° F 110° F 127° F	143° F 141° F 125° F 134° F 134° F 121° F 140° F
STEAM TUNNEL AREA MONITORS	E31-N604 A E31-N604 B E31-N604 C E31-N604 D	125° F 134° F 130° F 128° F	138° F 147° F 143° F 141° F
STEAM TUNNEL DELTA-T MONITORS	E31-N605 A E31-N605 B E31-N605 C E31-N605 D	80° F 80° F 82° F 82° F	88° F 88° F 90° F 90° F

ANALYSIS PLAN FOR EPDM SOLENOID COMPONENTS

I. INTRODUCTION

To determine the cause for failure of solenoid pilot valves which resulted in the slow closing of MSIV'S, two approaches will be taken. Both approaches involve analyses of the EPDM elastomer gasket material. The physical properties of the elastomeric material which was in service will be compared to new material to observe degradation, loss of material, deformation, anomalies in surface characteristics, and reduced performance. In addition, the gasket material will be subjected to chemical analyses to discover changes from original material at the molecular level. Data obtained from the analysis regimen along with data from a similar failure experienced at Brunswick in 1985 will be used to determine cause.

II. PERSONNEL CONTACTED

Interviews with the Harris Research Personnel and NRR provided information regarding analyses performed and resulting postulations. PNPP analyses will include methods to confirm or deny these failure postulates. The full Brunswick Failure Analysis Report has been sent and will be used as guidance. A meeting with Ricerca, Inc. Personnel regarding this failure analysis program resulted in the following proposed course of testing.

III. ANALYSIS PROGRAM

A. Samples

1. Unused Elastomer Gasket material
2. Used Elastomer from pilot solenoids which did not fail.
3. Used, degraded Elastomer Material from failed pilot solenoids.
4. Pilot Solenoid valve bodies with elastomer residue.

Attachment 2.

B. Physical Testing

1. Profilimetric analysis to compare indentations in EPDM discs (sample nos. 3, and 2)
2. Optical Microscopy to determine the presence of foreign material, or loss of material from surfaces.
3. Hardness testing to compare with original specifications.
4. Compression set to compare with unused material and note performance degradation.

C. Chemical Testing

1. Infrared survey to determine carbonile content. This will provide information about mode of attack (organic acids from the presence of hydrocarbons) and extent of oxidation.
2. Scanning Electron Microscopy/X-Ray dispersion Spectrometry to confirm or negate copper-catalyzed accelerated oxidation. (Which was a postulated Failure Mode at Brunswick)

D. Environmental Testing

Six new dual coil solenoids will be sent to a laboratory for additional environmental testing. The solenoids will be placed in three separate environmental chambers (two per chamber) at various elevated temperatures in an energized condition. The solenoids will remain energized for predetermined times in an attempt to determine the temperature and continuously energized time at which the solenoids do not perform their function.

IV. SUMMARY

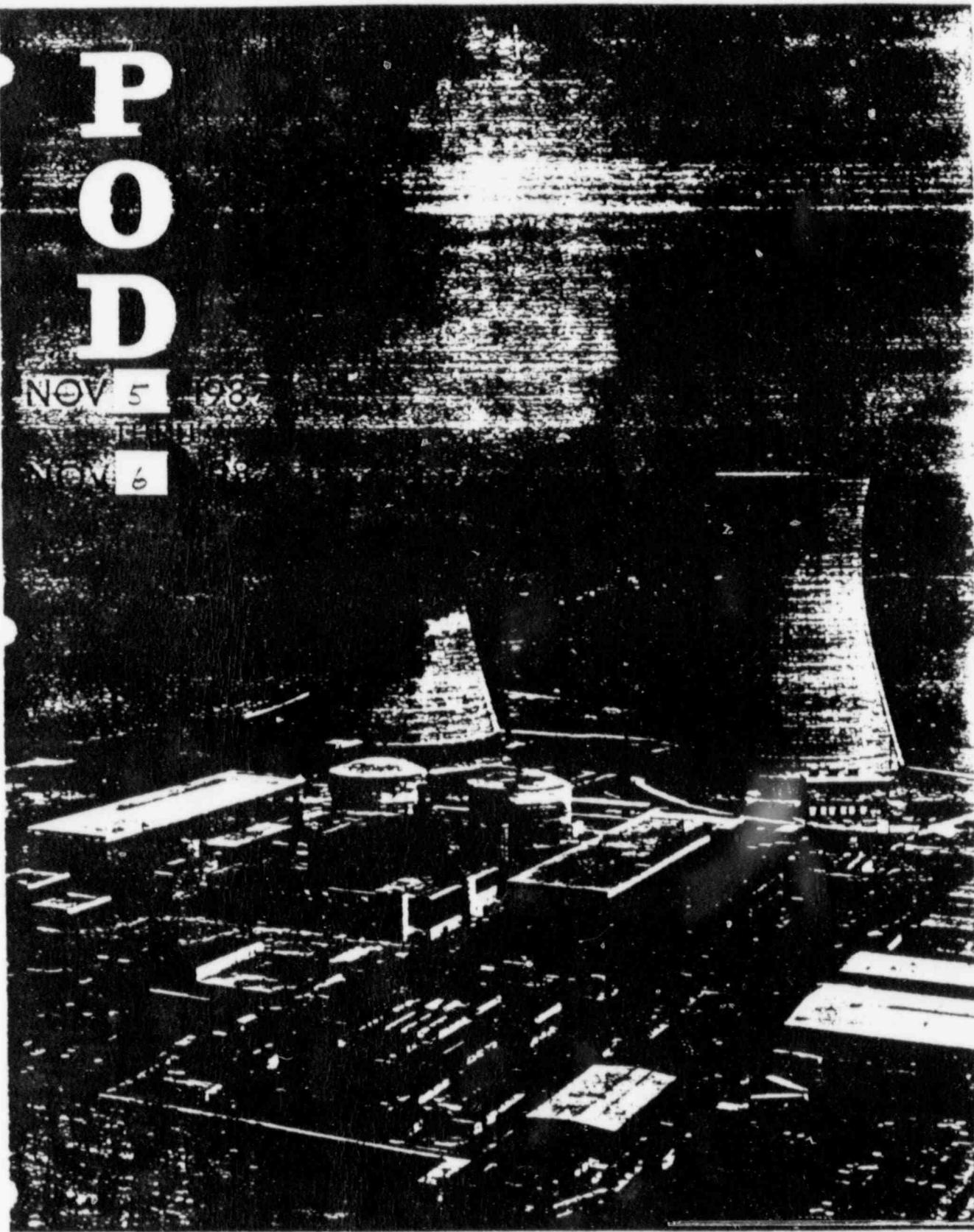
The above analyses and their results will provide evidence of failure mode and will describe any further confirming analyses which may be needed. In addition, recommendations will be made in order to preclude recurrence.

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POD

NOV 5 1987

NOV 6



B-23

PLAN OF THE DAY

1600 Thursday Nov. 5 thru 1600 Friday Nov. 6

PROJECT OBJECTIVES

1. Release and work those work activities identified in the forced outage fragnet.
2. Complete work associated with "Week 05" of the Ops Quarterly Schedule.

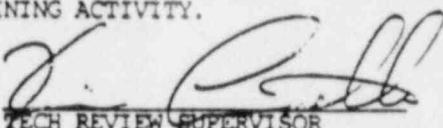
Work Priorities are as follows:

- A. Priority 1 and 2
- B. Restraint "08" WO's
- C. "Week 05" WO's for OPS quarterly schedule
- D. Priority 3, no restraint code work orders
- E. Priority 4, no restraint code work orders

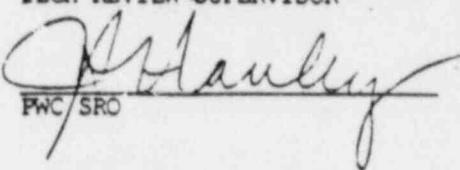
NOTE: 1) PRIORITY 1 AND 2 WORK ORDERS SHOULD BE BROUGHT DIRECTLY TO THE PWC FOR IMMEDIATE PROCESSING THROUGH THE CONTROL ROOM AND OUT TO THE WORK GROUP.

2) ADDITIONAL WORK SHALL BE RELEASED BY THE CONTROL ROOM THRU THE NORMAL POD. SHOULD ANY OF THESE ITEMS RESTRAIN THE PLANT FROM TESTING OR POWER ASCENSION, THE UNIT SUPERVISOR SHOULD CONTACT THE SOD OF THE RESTRAINING ACTIVITY.

PREPARED:


TECH REVIEW SUPERVISOR

APPROVED:


PWC SRO

PHONE NUMBERS TO CALL FOR SPECIFIC INFORMATIONPOD/OPERATIONS QUARTERLY SCHEDULE

D. DERVAY	6028	275-4361
K. CIMORELLI	6029	

SHIFT OUTAGE DIRECTORS

PHONE	6248
BEEPER	275-0536

SHIFT MATERIAL DIRECTORS

PHONE NUMBERS	6487 OR 6135
BEEPER	275-0501

WAREHOUSE

ISSUE	6117
RECEIPT ISSUE	275-4188

NCSS COVERAGE

MECH.	1ST SHIFT - DAVE KACKLEY	275-0304
	2ND SHIFT - FRED FOSTER	275-0308
ELECT.	1ST SHIFT - GUY CAD	275-0339
CIVIL	1ST SHIFT - LARRY YOUNG	275-4227
SCAFFOLDING	1ST SHIFT - KEVIN CAMERSON	275-0440

MECH QUALITY ENGINEER

1ST SHIFT	275-4118
2ND SHIFT	275-4382

I&C QUALITY ENGINEER

1ST SHIFT	275-4104
2ND SHIFT	275-4383
IF NO RESPONSE	275-4124

ELECTRICAL QUALITY ENGINEER

1ST SHIFT	275-4110
2ND SHIFT	275-4112/275-4058
IF NO RESPONSE	275-0432

SHIFT I&C ENGINEER

PHONE	6891 OR 6894
BEEPER	275-4264

PHONE NUMBERS TO CALL FOR SPECIFIC INFORMATIONBACK SHIFT PPTD SUPPORT

PHONE	6786
BEEPER	275-4347

DIESEL TASK FORCE

1ST SHIFT	5724
TONY PUSATERI	275-4216/255-0365
BOB BOYLES	275-0586
BACKSHIFT/WEEKENDS	
DANA SMITH	428-6855

NED/NCSS ENGINEER

NCSS SYSTEMS	275-4054
BOP SYSTEMS	275-4135
HVAC SYSTEMS	275-4131
DIESEL SYSTEMS	275-4216
STRUCTURAL DESIGN	275-4130
PIPING SUPPORTS	275-0593
VALVES	275-4054

MISC

NR TRACKING	6271 275-4188
PPMIS (KEEP AVAILABLE)	8681-77-3279
DCP CLOSURE	6084 275-4178
FCR CLERK	6489
DCP COPIES	275-4200
ICU/DOC CENTER	6148 275-4153

MAIN STEAM ISOLATION VALVES

DUE TO THE RECENT PROBLEMS ASSOCIATED WITH THE MSIV'S,
NO WORK ASSOCIATED WITH THE B21, P51 OR P52 SYSTEMS WILL
BE APPROVED WITHOUT PRIOR APPROVAL OF THE MSIV TASK
FORCE. THE TASK FORCE LEADERS WHO CAN AUTHORIZE WORK
ARE:

	<u>EXT.</u>	<u>BEEPER</u>
B. NEWKIRK	5188	275-4351
V. CONCEL	6080	275-0336
P. ARTHUR	6846	275-0517

THE FOLLOWING WORK ORDERS HAVE BEEN AUTHORIZED TO WORK:

87-9323	RECORD SOLENOID VOLTAGE & ACCUMULATOR PRESSURE ON B21-F022D
87-9293	TROUBLESHOOT AIR PACK & SOLENOIDS, REWORK AS NECESSARY - 1B21-F022D (AFTER 9323)

11-05-87

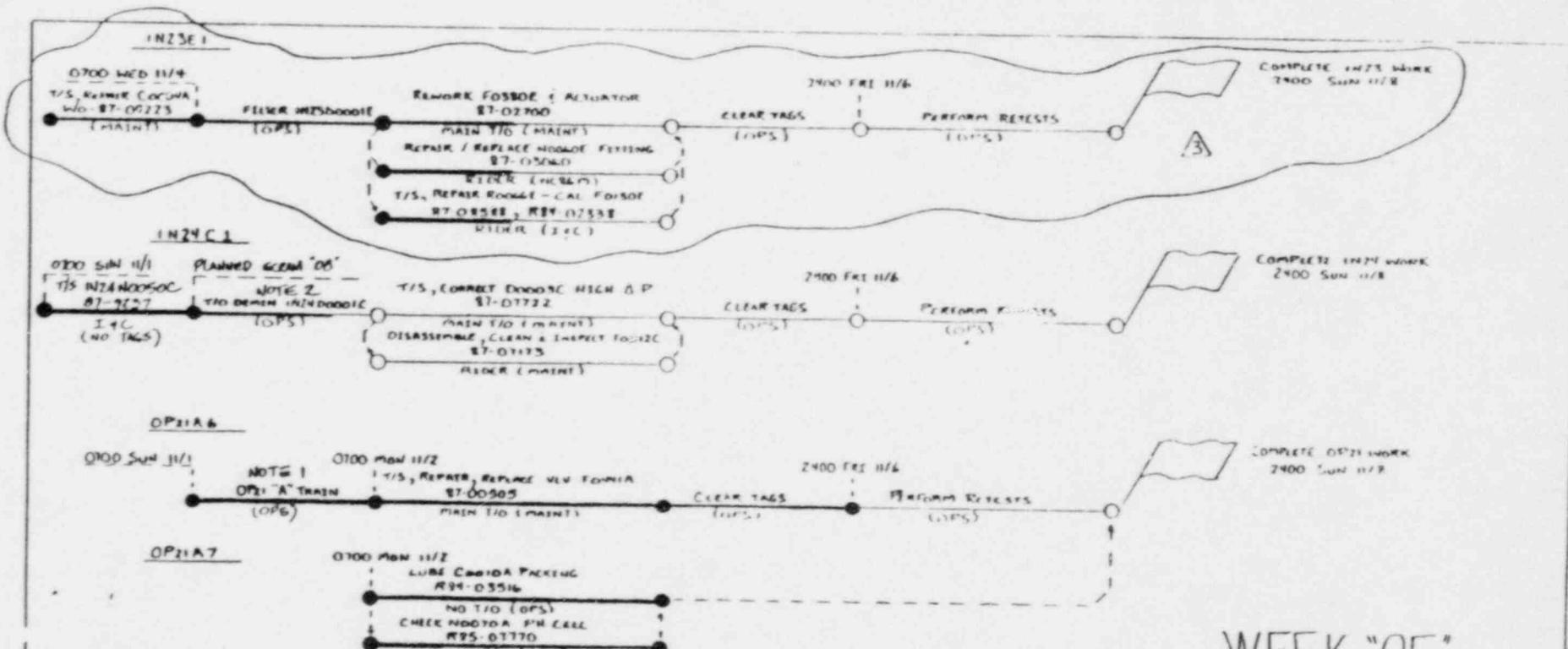
OPERATIONS SUPPORT

RETESTS AND OTHER ACTIVITIES IN PRIORITY ORDER

- ** NOTIFY THE SOD SUPERVISOR AS SOON AS IT IS DETERMINED THAT AN ACTIVITY HAS FAILED, IS RESTRAINED OR NEEDS FURTHER ATTENTION.
- I. FORCED OUTAGE RECOVERY, ISSUE AND COMPLETE ALL IDENTIFIED "08" OUTAGE ACTIVITIES.
(NOTE: THE SOD WILL ISSUE ANY ADDITIONAL OUTAGE WORK AS TIME PERMITS.)
- II. OPERATIONS QUARTERLY SCHEDULE "WEEK 05" IS DEPICTED ON ATTACHED FRAGNETS.
- III. SUPPORT WORK AS LISTED ON THE US LIST.
- IV. THE ATTACHED FRAGNET DEPICTS LONG TERM C51 NOISE REDUCTION WORK.
- V. ATTACHED IS THE FRAGNET FOR UNIT 2 DIV 2 COORDINATED ELECTRICAL MAINT. WORK. THE EXPECTED DURATION OF THIS WORK IS 3 WEEKS. (REQUIRED GROUND STRAPS ARE BEING OBTAINED TO COMPLETE T/O)
- VI. WHEN ACID AND CAUSTIC ARE LOADED OPERATIONS IS REQUESTED TO LEAK CHECK THE DRAIN AND FILL LINES FOR TANKS OP2..-A006 AND OP21-A007 TO COMPLETE THE RETEST OF WORK ORDERS 87-2742 AND 87-2743 RESPECTIVELY.
- VII. OPS IS REQUESTED TO ASSIST HEALTH PHYSICS BY RELEASING SVI E31T5190 SOURCE LEAKAGE AND/OR CONTAMINATION TESTING. HEALTH PHYSICS WILL CONTACT UNIT SUPERVISOR THURSDAY 11/5.
- VIII. DURING PERFORMANCE OF THE MONTHLY RUN OF DIVISION 1 DIESEL GENERATOR, OPS IS TO RELEASE AND SUPPORT WO 87-812: TO BALANCE CYLINDER TEMPERATURES AS REQUIRED.
- IV. OPERATIONS IS REQUESTED TO PERFORM THE FOLLOWING RETESTS:
 - A. 87-7804 OG51F0050A PERFORM ISLT ON F0050A FLANGE TO VERIFY NO LEAKAGE.
 - B. 87-3566 OG41F0360 PERFORM STROKE TEST OF THE FILTER DEMIN.
 - C. 87-5317 OG50F1029 ISLT THE RWCU BACK WASH SETTLING TANK CROSS CONNECT
 - D. 87-6473 OG41F0085 OPS TO PERFORM FUNCTIONAL STROKE TEST OF F0085 TO ENSURE PROPER OPERATION AND INDICATION
 - E. 86-15029 OM40C0002B PERFORM VIBRATION TESTING ON FAN. NO PEAKS GREATER THAN .314 ALLOWED
 - F. 86-5280 1N34 F0505 LEAK CHECK FOR LUBE OIL ISOLATION
 - G. 87-8686 1N71D001A FUNCTIONAL TEST OF THE "A" AMERTAP SCREEN
 - H. 87-8687 1N71D0001B FUNCTIONAL TEST OF THE "B" AMERTAP SCREEN

OPERATIONS SUPPORT

- I. 87-8690 1N71D001E FUNCTIONAL TEST OF THE "E" AMERTAP SCREEN
- J. 87-8692 1N71D0001G OPS TO STROKE INNER SCREEN OPEN AND CLOSED TWICE
- K. 87-8693 1N71D0001H OPS TO STROKE INNER SCREEN OPEN AND CLOSED TWICE
- L. 87-7414 1N71F0611B PERFORM ISLT ON F0611B FLANGE TO ENSURE NO LEAKAGE
- M. 87-8585 1N71F0616A PERFORM IN-SERVICE LEAK CHECK ON VALVE PACKING GLAND
- N. 87-8586 1N71F0616B PERFORM IN-SERVICE LEAK CHECK ON VALVE PACKING GLAND
- O. 87-8587 1N71F0616C PERFORM IN-SERVICE LEAK CHECK ON VALVE PACKING GLAND
- P. 87-505 OP21F0441A PERFORM OPERABILITY TEST ON F0441A. VERIFY NO LEAKAGE
- Q. 87-5671 1P52D0003A ISLT OF INSPECTION PORT AND COORDINATE WITH CHEM AND PERFORM AIRBLOWS. PERFORM FUNCTIONAL TEST.
- R. 87-7453 1P52D0003A PERFORM FUNCTIONAL TEST ON INSTRUMENT AIR DRYER TO ENSURE HEATER OPERATION
- S. 86-2638 1P52J0409 CHEM TO PERFORM AIR PARTICLE COUNT.
- T. 87-4341 1P51C0001 RUN INSTRUMENT AIR COMPRESSOR FOR 1 WEEK TO VERIFY SYSTEM OIL TEMP. STAYS WITHIN SETPOINT. FUNCTIONAL TEST VALVE. (1 WEEK RUN WILL BE COMPLETE 11/11.)
- U. 87-4649 OP61B0001B CHECK THE 'B' AUX BOILER FUEL OIL LINES FOR LEAKS
- V. 87-5188 OP62F515 FUNCTIONAL & LEAK CHECK OF FUEL OIL FLOW METER ISOLATION VALVE. (OSC WHEN FUEL OIL LOADED)
- W. 86-13285 OP84 PERFORM ISLT ON TEMP FLOW METER.
- X. 87-5978 OP84 FUNCTIONAL & LEAK CHECK OF THE SALT DISOLVER TANK INLET VALVE.
- Y. 87-8935 1P54 OPS TO PERFORM ISLT ON SYSTEM WITH FIRE PUMP RUNNING
- Z. 85-13143 2R22S0004 FUNCTIONAL TEST OF BUS LH-2-B INTERLOCKS
- AA. 85-13137 2R22S0005 FUNCTIONAL TEST OF BUS LH-2-B INTERLOCKS



WEEK "05"

- NOTES:**
- 1) PRIOR TO HANGING TAGS, OPERATIONS SHOULD ENSURE THAT BOTH P21 & - STREAM TANK'S ARE TOPPED OFF & THAT "B" TRAIN IS FREQUENTLY DEMONSTRATED.
 - 2) IE T/S OF IN24NOOSOC (87-927) INDICATES NO PROBLEM WITH NOOSOC. WHEN MINT & CMMI TRY WILL EVALUATE DENIM TIO IN24NOOSOC FOR PT-772 DURING PLANNED SCRAM "08".

REV. NO	DATE	PURPOSE
A	11-5-87	ADDED IN23 BACK ON DUE TO FORCED OUTAGE
A	11-7-87	ADDED 87-09223 TO IN23E1
A	11-7-87	PLANNED SCRAM "08" TO IN24C1 DUE TO FORCED OUTAGE

REVISION	11/5/87
PLANNER	JM AEF
LEAD PLANNER	JJC
OPERATIONS	JJC
OUTAGE PLANNING	JJC
QA/QC	JJC

11/5/87

FOR PLANNING
USE ONLY

CLEVELAND ELECTRIC ILLUMINATING CO
PERRY NUCLEAR POWER PLANT
PROJECT PLANNING AND SCHEDULING
OP21 QUARTERLY SCHEDULE
SHEET 1 OF 2 REVISION

** RIDERS MAIN T/O ON THIS US LIST
 *** RIDERS CURRENTLY HUNG TAGOUT

UNIT SUPERVISOR'S LIST
MO'S TO BE WORKED

WORK ORDERS	TAC OUT	SYST	COMMENTS	WORK GROUP	RESTR CODE	PFL
A. 1N24 REGEN/ACID OUTAGE - OPS REQUEST						
1. 85-12544	MAIN	1N24	REPAIR/REPLACE F0565A	NC86M	NA	4A
2. 86-6993	**	1N24	REPAIR AIR LEAK REG. FOR 1H51P0299	NC86M	NA	4C
3. 87-1752	**	1N24	T/S C0002B - REPAIR AS REQ'D	MAINT	NA	3A
4. 86-3863	**	1N24	REMOVE ACID BUILD-UP FROM F0566A	MAINT	NA	3A
5. 86-3864	**	1N24	REMOVE ACID BUILD-UP FROM F0566B	MAINT	NA	3A
6. R86-12331	**	1N24	CHANGE C0002A OIL/GREASE MOTOR BEARINGS	OPERA	NA	3A
7. R86-12332	**	1N24	CHANGE C0002B OIL/GREASE MOTOR BEARINGS	OPERA	NA	3A
B. ADDITIONAL WORK TO BE RELEASED AS TIME AND PERSONNEL AVAILABILITY PERMITS						
1. 87-2795		1D19	T/S CAUSE OF NOISE SPIKES	I&C	NA	3F
2. 87-5750		1D21	INSTALL CONDUIT/SUPPORTS - DCP-87-0139	NC86E	87	3D
3. 87-4431		2E22	REMOVE S0001 TURBO CHARGER/KL2-0110 R/1	MAINT	NA	4I
4. 86-14425	MAIN	G36	REPLACE LAMP SOCKETS/INPUT JACK P0002	MAINT	NA	3A
5. 87-8606		0G50	R304B, T/S-REWORK DRIVE MOTOR	I&C	NA	4A
6. 87-6030		1N27	REPAIR CRACKS IN SPARE WEDGE	MAINT	NA	3F
7. 87-8721		1N27	N020B, CLEAR SENSING LINE	I&C	NA	3A
8. 87-8863		1N11	R275A, REPLACE REGULATOR	I&C	NA	3A
9. 87-6111	MAIN	1N64	F920, TEST NEW SPRING	MAINT	NA	5F
10. 87-8276	MAIN	1N64	B0112D, T/S-REWORK LOW FLOW ALARM	MAINT	NA	3A
11. 87-4987		1P53	A3050A, REPLACE TROMBETTA SOLENOID	MAINT	NA	3D
12. 87-4988		1P53	A3050B, REPLACE TROMBETTA SOLENOID	MAINT	NA	3D
13. 87-7827	MAIN	OP72	REPAIR LINKAGE-C0001D BKR SW NOTE: THIS PUMP IS PRESENTLY INOPPED & FUSES ARE PULLED	NC86E	NA	3A

** RIDERS MAIN T/O ON THIS US LIST
*** RIDERS CURRENTLY HUNG TAGOUT

UNIT SUPERVISOR'S LIST
WO'S TO BE WORKED

WORK ORDERS	TAG OUT	SYST	COMMENTS	WORK GROUP	RESTR CODE	PR.
B. ADDITIONAL WORK TO BE RELEASED AS TIME AND PERSONNEL AVAILABILITY PERMITS (CONT'D)						
14. 87-9069		1R22	Q642A, REPLACE RELAY	ETS	NA	3A
15. 87-9070		1R22	Q806B, REPLACE RELAY	ETS	NA	3A
16. 87-8754		1R23	INSTALL THREADED SWITCH CAPS	OPERA	NA	4B
17. 87-8756		2R23	INSTALL THREADED SWITCH CAPS	OPERA	NA	4D
18. 87-9287		0R24	S038, MTA MCC BUCKET FROM 2R24-S041	EASTE	NA	3F
19. 87-8005		1R63	REPLACE CH '8' CARD W/MODIFIED CARD	I&C	NA	3D
20. 87-6603	MAIN	0M40	D001A, INITIATE CARBON SAMPLING	MAINT	14	3C
21. 87-8640	MAIN	0G41	CHANGEOUT INCORRECT WIRE-F0280	MAINT	NA	4E
NOTE:	THIS WORK REQUIRES ISOLATION OF ALL 4 DEMINERALIZERS FOR 1 SHIFT					
C. MAINT. RPTSKS						
1. R86-8143	MAIN	1M15	LUBE LATCHING DOGS-D001A	OPERA		
2. R86-9325	MAIN	0M31	LUBE FAN & CPLG. - C001A	OPERA		
3. R86-10231	MAIN	1N34	GREASE MSP UPPER BRG-C006	OPERA		
4. R87-2706	MAIN	1N64	GREASE UNIT/INSPECT V-BELTS-B112C	MAINT		
5. R86-10770	MAIN	0P50	LUBE MTR & CPLG - C001A	OPERA		
6. R85-1506	MAIN	0P61	CHANGE OIL/GREASE BRGS - C004C	OPERA		
7. R86-13838	MAIN	1R22	BKR EXERCISE & SERVICE-H1109 (P50-B001A)	MAINT		
8. R86-12669	MAIN	1P45	CHANGE OIL/GREASE BRGS - D002A	MAINT		
D. TAGS ARE BEING HUNG						
1. R87-881	MAIN	2R22	BUS SERVICE & CLEANING, EH22	MAINT		
2. R87-795	**	2R22	BKR EXERCISE & SERVICE, EH2204	MAINT		
3. R87-797	**	2R22	BKR EXERCISE & SERVICE, EH2209	MAINT		
4. R87-798	**	2R22	BKR EXERCISE & SERVICE, EH2212	MAINT		

** RIDERS MAIN T/O ON THIS US LIST
*** RIDERS CURRENTLY HUNG TAGOUT

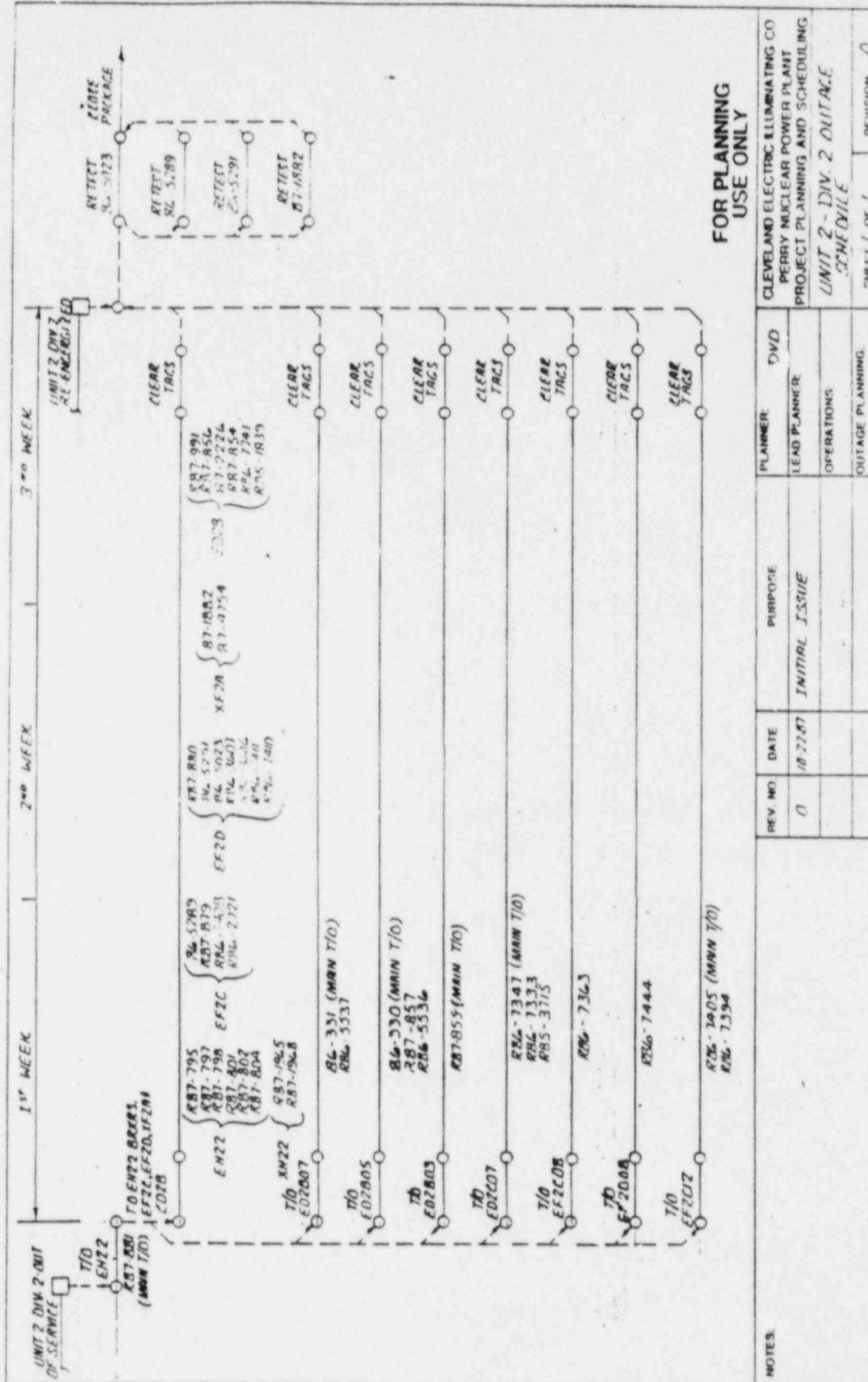
UNIT SUPERVISOR'S LIST
WO'S TO BE WORKED

WORK ORDERS	TAG OUT	SYST	COMMENTS	WORK GROUP	RESTR CODE	PFL
D. TAGS ARE BEING HUNG (CONT'D)						
5. R87-801	**	2R22	BKR EXERCISE & SERVICE, EH2213	MAINT		
6. R87-802	**	2R22	BKR EXERCISE & SERVICE, EH2214	MAINT		
7. R87-804	**	2R22	BKR EXERCISE & SERVICE, XH2204	MAINT		
8. 86-5289	**	2R23	INSTALL NEW FAN CONTACTOR ON EF-2-C	MAINT	NA	40
9. R87-879	**	2R23	BUS SERVICE & CLEANING EF-2-C	MAINT		
10. R86-7408	**	2R23	ROUTINE BKR MAINT EF2C13	MAINT		
11. R86-2721	**	2R23	ROUTINE BKR MAINT EF2C03	MAINT		
12. R87-880	**	2R23	BUS SERVICE & CLEANING EF-2-D	MAINT		
13. 86-5291	**	2R23	INSPECT FAN CKT CONTACTOR COIL ON EH F-2-D	MAINT		
14. 86-5023	**	2R23	REVISE ALARM SENSING PER DCP ON EHF-2-D	MAINT		
15. R86-3607	**	2R23	ROUTINE BKR MAINT EF2D03	MAINT		
16. R86-3606	**	2R23	ROUTINE RELAY MAINT Q616	MAINT		
17. 87-1882	**	2R23	CHANGE FUSES/FUSE BLOCK ON XF2A	MAINT		
18. 87-4754	**	2R23	REWORK XFMR XF2A TO ELIMINATE NOISE	MAINT		
19. R87-991	**	2R42	BKR EXERCISE & SERVICE ED2B01	MAINT		
20. R87-856	**	2R42	BKR EXERCISE & SERVICE ED2B04	MAINT		
21. 87-2226	**	2R42	PERFORM VISUAL INSPECTION OF WIRING HARNESS ON ED2B02	MAINT		
22. R87-854	**	2R42	BKR EXERCISE & SERVICE ED2B02	MAINT		
23. R86-7741	**	2R42	ROUTINE RELAY MAINT Q1802	MAINT		
24. R86-7411	**	2R23	ROUTINE BKR MAINT EF2D06	MAINT		
25. R86-7410	**	2R23	ROUTINE RELAY MAINT Q619	MAINT		

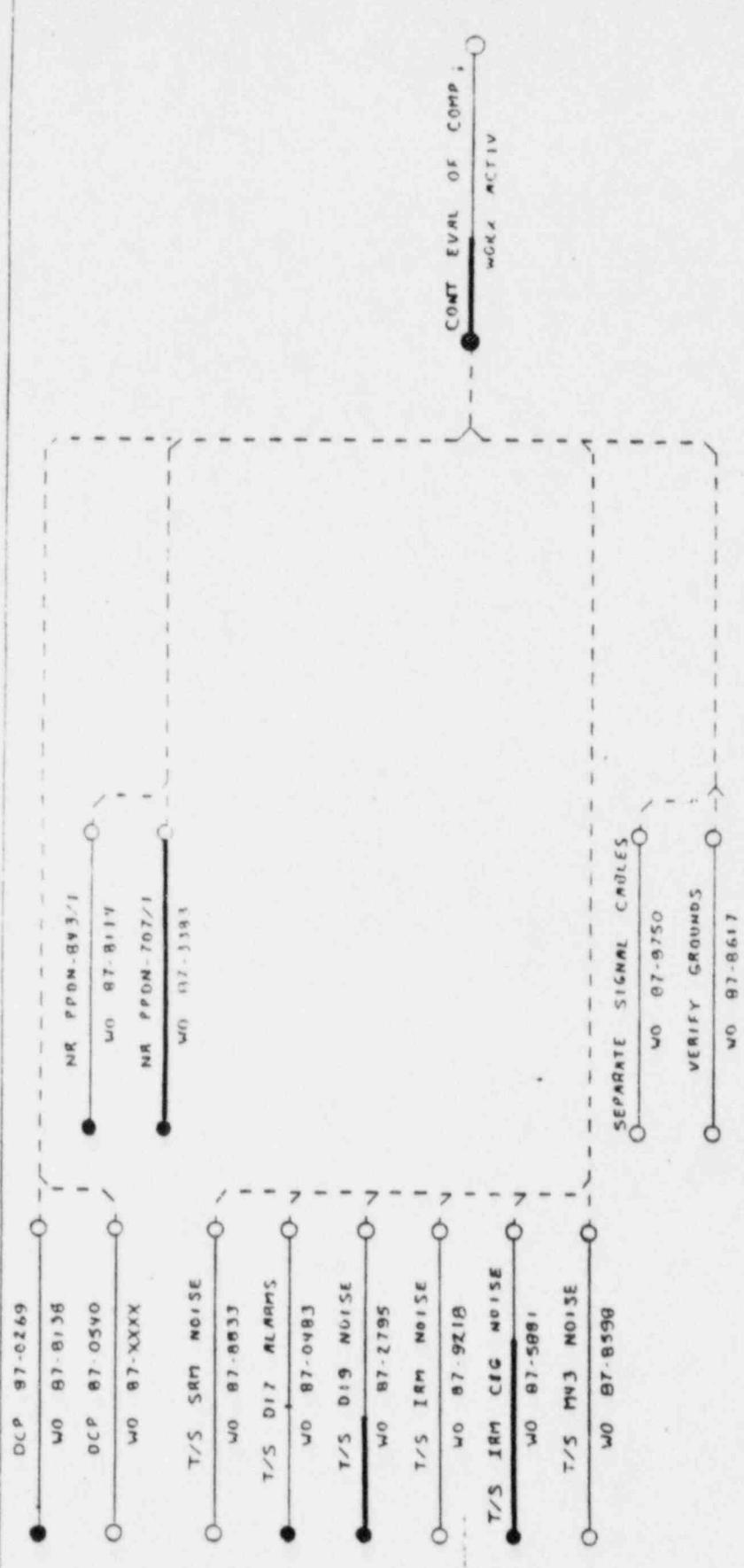
** RIDERS MAIN T/O ON THIS US LIST
*** RIDERS CURRENTLY HUNG TAGOUT

UNIT SUPERVISOR'S LIST
WO'S TO BE WORKED

WORK ORDERS	TAG OUT	SYST	COMMENTS	WORK GROUP	RESTR CODE	PFL
D. TAGS ARE BEING HUNG (CONT'D)						
26. 86-331	MAIN	2R42	PERFORM BKR MAINT ON ED2B07	MAINT		
27. R86-5537	**	2R42	PERFORM RELAY MAINT Q1807	MAINT		
28. 86-330 R87-857 R86-5536	MAIN	2R42	PERFORM BKR MAINT ON ED2B05	MAINT		
29. R86-7347	MAIN	2R23	PERFORM ROUTINE BKR MAINT ON EF2C07	MAINT		
30. R86-7333	**	2R23	PERFORM ROUTINE RELAY MAINT Q607	MAINT		
31. R85-3715	**	2R24	SWITCHGEAR CLEANING & SERVICING EF2C07	MAINT		
32. R86-7405	MAIN	2R23	ROUTINE BKR MAINT EF2C12	MAINT		
33. R86-7394	**	2R23	ROUTINE RELAY MAINT Q612	MAINT		
34. R87-855	MAIN	2R42	ROUTINE BKR MAINT ED2B03	MAINT		
35. R87-1965	MAIN	2R22	ROUTINE BKR MAINT XH2201	MAINT		
36. R86-7363	MAIN		ROUTINE BKR MAINT EF2C08	MAINT		
37. R86-7444	MAIN		ROUTINE BKR MAINT EF2D08	MAINT		
38. 87-7722	MAIN	N24	HIGH Δ P ON D003C	MAINT		
39. 87-7173	**	N24	CLEAN & INSPECT NOTE: RELEASE AS SOON AS DEMIN IS NO LONGER NEEDED	MAINT		
40. 86-6933	MAIN	1P52	TEMP GAUGE R720B	I&C		
41. R85-9981	**	1P52	CAL CHECK R718B	I&C		
42. R85-9986	**	1P52	CAL CHECK R717B	I&C		
43. R85-9993	**	1P52	CAL. CHECK N0708B	MAINT		



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**FOR PLANNING
USE ONLY**

NOTES:	1) WORK IS GENERALLY INDEPENDENT OF OTHER WORK	PLANNER: [Signature]	CLEVELAND ELECTRIC ILLUMINATING CO.
2) THESE ACTIVITIES CAN BE PERFORMED IN ANY PLANT MODE	6 10/30 ADD NEW WORK	TEC Task code: CCD	PERRY NUCLEAR POWER PLANT PROJECT PLANNING AND SCHEDULING
3) WORK IS PER THE SAN/NOISE TASK FORCE	4 10/22 DELAY / OVERTIME	TEC GSE [Signature]	C.51 NOISE PRODUCTION WORK OUTAGE PLANNING
	5 10/22 ADD NEW WORK		SHEET 1 OF 1 REVISION 2

24

AIT ACTION ITEMS

<u>RESPONSIBLE SECTION</u>	<u>ITEM</u>	<u>DELIVERED</u>	<u>DESCRIPTION</u>
OPS/LCS	1. SEQUENCE OF EVENTS A. CLOSURE TIMES B. OPERATOR ACTIONS TAKEN	X X X	o OPS CHRONOLOGY o UNIT LOGS o STA LOG o CONDITION REPORTS o SUMMARY o STI DATA
LCS	2. ADEQUACY OF REPORTING AND CATEGORIZATION OF EVENT	X	o SUMMARY WRITE UP
NED/LCS	3. IMMEDIATE SAFETY SIGNIFICANCE	X	o HISTORY OF EVENTS SUMMARY
OPS/LCS	4. ADDITIONAL TESTING ACTIVITIES IN PROGRESS	X	o SVI LIST o W.O. LISTS/VARIOUS UNITS
I&C/LCS	5. RPS ACTUATION SIGNALS DURING SURVEILLANCES	X	o SVIs
LCS	6. MANAGEMENT DECISION MAKING PROCESS-INFORMATION AVAILABLE	X	o SUMMARY WRITE UP
LCS	7. PREVIOUS MSIV TIMING PROBLEMS	X	o SUMMARY WRITE UP o CANTLIN MEMO
TECH/LCS	8. MSIV MAINTENANCE HISTORY (OTHER THAN STI/SVI) A. RETESTING PERFORMED	X X	o WO LIST - WO's PROVIDED
TECH	9. AIR SYSTEMS MAINTENANCE HISTORY A. RETESTING PERFORMED B. VENDORS MANUALS	X X X	o WO LIST - WOs NOT PROVIDED (NOT IN BOOK) o VARIOUS P52 W.O.s/CRs o 3 VENDOR MANUALS PROVIDED TO NRC
OPS	10. ADEQUACY OF PROCEDURES IN PLACE TO HANDLE EVENT A. OPERATOR TRAINING	X	o OPS SUMMARY
NED/LCS	11. SAFETY SIGNIFICANCE OF INCIDENT (ACCIDENT ANALYSIS)		o HISTORY OF EVENT SUMMARY o GE; MSIV CLOSURE TESTING

3-24

NED/LCS	12. ANALYSIS OF LOADING ON STEAMLINES (3 CLOSED, 1 OPEN)	X	<ul style="list-style-type: none">o GE -EFFECTS OF ISOLATION
LCS	13. PREVIOUS SIMILAR INDUSTRY EVENTS A. LER 86030	X	<ul style="list-style-type: none">o NPPD PRINTOUT (NOT IN BOOK)o SERs 36-84, 57-85,o RELATED LER SUMMARIESo PERRY LER 86030
LCS	14. PREVIOUS NRC INFORMATION- BULLETINS, CIRCULARS, INFORMATION NOTICES	X	<ul style="list-style-type: none">o IENs; 80-11,81-29,82-52, 83-57,84-23,84-68,85-08, 85-17,85-17-01,85-84, 86-57,78-14o IEB; 78-14,79-01A
NED/LCS	15. OTHER APPLICATIONS OF ASCO VALVES	X	<ul style="list-style-type: none">o EQ LIST
TECH/I&C	16. TROUBLESHOOTING PLAN A. MATERIAL CONDITIONS AFFECT ON CLOSURE B. ANY FURTHER INVESTIGATIONS	X(REV. 0)	<ul style="list-style-type: none">o TROUBLESHOOTING PLAN, AIR SYS.o POINTS SAMPLEDo SEQUENCE OF TROUBLESHOOT PLANo PARTICLE COUNTS
	17. GENERIC IMPLICATIONS		
TECH	18. ROOT CAUSE		<ul style="list-style-type: none">o GE; PRELIMINARY ANALYSIS
TECH	19. CORRECTIVE ACTIONS		
TECH	20. PLANS FOR STARTUP		
LCS	21. CLOSURE INFORMATION ON 1985 OPEN ITEM ON FSAR AIR QUALITY CHANGE (3 TO 40 MICRONS)	X	<ul style="list-style-type: none">o CEI/NRR LTR 0306o CEI/NRC LTR NOV. 9, 1984o VIOLATION FROM 84-15o IER 85-039o IER 85-066o IER 85-088o SSER SUPP 7 - 9.3.1
TECH	22. MESH SIZE OF FLUSH CLOTHS USED ON AIR SYSTEMS TESTS		CLOSED PER DISCUSSIONS
RPS	23. ANALYSIS OF AIR SYSTEM FLUSH CLOTHS TO VERIFY LESS THAN 40 MICRON PARTICLE SIZE (OIL, WATER)		CLOSED PER DISCUSSIONS

11/06/87
PAGE 3 OF 3

NED-MDS	24. BRIEF SUMMARY DESCRIBING RELATIONSHIP BETWEEN COMPONENT SUPPLIERS AND MSIV CONTROL AIR PACK ASSEMBLERS (i.e. HILLER SHEFLER, NORGREN, ETC.)	X	o SUMMARY WRITE UP/LIST
OPLS	25. EQUIPMENT QUARANTINE LIST	X	o POD, NOV. 5

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 11/06/87

M151B01

TIME 00:27:38

REV 0

25

WO NUMBER 870009372	RESP SECT I&C	MPL NUMBER 1B21F0022D	MAINTENANCE TYPE I&C TROUBLESHOOT	PLANT LOCATION C O/ -664
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R O C 1 2 3	P O C 3 4 5	COMP CAT VLV	PRIORITY CODE 5X	SAFETY M/E 1 /SR	SEISMIC M/E I/I	ASME 11	PAG OUT REQ'D NO
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SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP REQ'D YES	TECH SPEC YES
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SYSTEM NAME: NUCLEAR BOILER (NSSS)
 SUMMARY : FAILURE ANALYSIS OF AIRPACK & SOLENOIDS
 MPL NAME : FIRST MSIV

PLANNER REMARKS

THIS W.O. WILL PERFORM FAILURE ANALYSIS ON SOLENOIDS & AIR RELAYS FOR
 MSIV 1B21F022D. P.C. 11/5/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

*****REFER TO ATTACHED JOB TRAVELER*****

SUPERSEDED

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY
 REVIEWED BY NQAD/AIA
 APPROVED BY
 APPROVAL TO COMMENCE WORK
 WORK COMPLETE
 APPROVAL TO COMMENCE TEST
 RETEST COMPLETE
 REVIEW BY NQAD/AIA
 ACCEPTED BY UNIT SUPERV.

Dush-Cordu (clc) J. Hagan Steen Holloman JK Mahan TIME: 0:40
N/A clc 11-6-87 N/A clc 11-6-87 TIME: —

DATE 11/6/87
 DATE 11/6/87
 DATE 11/6/87
 DATE 11/6/87
 DATE —
 DATE —
 DATE —
 DATE —
 DATE —
 DATE —

B-25

PAGE 2

PERRY NUCLEAR POWER PLANT WORK ORDER
REPRINTED REPETITIVE TASK LIST

M151B13

11-06-87

00:27:39

REV NO: 0

LAST CHNG: 11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
870009372	1B21F0022D	CODE VLV	C O/ -664	M/E 1 /SR	M/E I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
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FOR TASK CATEGORY: (LLRT) LOCAL LEAK RATE TESTING
 R85 003790 TECHS 1B21F0022D PERFORM PRE AND POST MAINT LLRT

FOR TASK CATEGORY: (MEMP) MECHANICAL & ELECTRICAL PM'S
 R85 011026 MAINT 1B21F0022D REPLACE NON-METALLIC PARTS (EQ)
 R85 011121 MAINT 1B21F0022D REPLACE PACKING, CHECK LIMIT SWITCH

FOR TASK CATEGORY: (PI) PLANT INSTRUMENTS
 R85 010956 I&C 1B21F0022D REPLACE NONMETALLIC PARTS,CLEAN,LUBE(EQ)

FOR TASK C. EGORY: (SVI) TECH. SPEC. SURVEILLANCE
 R85 013050 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T1400
 R85 013051 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T2001
 R85 013052 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T2003
 R85 013053 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T9415
 R86 011266 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI T23-T1201
 R86 012775 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI C61-T1104

SUPERSEDED

PAGE 4

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

M151B03

WO NUMBER
870009372MPL NUMBER
1B21F0022DCOMP CAT
CODE
VLVWO LOCATION
C O/ -664REV NO: 00:2
LAST CHG: 11/1
SAFETY SEI
M/E M/
1 /SR I/

STEP	DESCRIPTION	RESP SECT	JOB CLASS
010	PURPOSE		I&C

THE PURPOSE OF THIS PROCEDURE/W.O. IS TO PROVIDE DISASSEMBLY AND INSPECTION PROCEDURES FOR THE MSIV ACTUATOR ASSEMBLY. THREE OF EIGHT PERRY MSIV'S EXPERIENCED A DELAYED CLOSURE DURING PLANT SVI TESTING. THIS PROCEDURE/W.O. ASSUMES THE AIR PACK ASSEMBLY IS REMOVED FROM THE MSIV AND IS LOCATED IN AN AREA PREPARED FOR DISASSEMBLY. THE INSPECTION IS CENTERED ON THE ASCO MODEL 8323 3-WAY DUAL SOLENOID VALVE ASSEMBLY, WHICH IS CONSIDERED TO CONTAIN THE SOURCE OF THE PROBLEM.

020	PRECAUTIONS	I&C
	1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.	I&C
	2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.	I&C
	3. ENSURE ALL LOOSE PARTS REMOVED UNDER THIS W.O. ARE CAREFULLY IDENTIFIED AND BAGGED. COTTON-LINE GLOVES TO BE USED WHEN HANDLING ANY INTERNAL PARTS. ENSURE O-RINGS AND SOFT SEATED MATERIALS ARE CAREFULLY IDENTIFIED AND ONLY STORED IN GLASS CONTAINERS.	I&C
	4. ENSURE ALL PHOTOGRAPHS ARE ADEQUATLY CATALOGED TO POSITIVLY IDENTIFY EACH PHOTOGRAPH TO THE PROPER PART.	I&C
030	REF./PREPARATION	I&C

1. MAINTENANCE MANUAL FOR HILLER MODEL SA-A068 VALVE ACTUATOR.

2. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, VENDOR MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED FAILURE ANALYSIS.

040	NOTIFICATIONS	I&C
-----	---------------	-----

SUPERSEDED

PAGE 5

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

00:27:39

M151B03

REV NO: 0
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 1 /SR I/I

WO NUMBER
870009372MPL NUMBER
1B21F0022DCOMP CAT
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRPTIC.	RESP SECT	JOB CLASS	# OF PERS
------	------------	--------------	-----------	--------------

1. NOTIFY MMQS & K6350 PRIOR TO START OF WORK. I&C

MMQS LOG #... 11286 DATE. 11.6.87 TIME. 0215..

2. NOTIFY R.S.E OR ALTERNATE PRIOR TO START OF WORK I&C
TO ALLOW NOTIFICATION TO THE N.R.C.

N.R.C. REPRESENTATIVE NOTIFIED. T.B. 11-6-87 RSE

3. NRC PRESENCE APPLICABLE (CIRCLE): YES / NO RSE

△HQAD△ HOLD 050 FUNCTIONAL BENCH CHK 87-I-0686
cc OA OA 11-6-87 PARTIAL

NOTE: MMQS INSPECTOR AND RESPONSIBLE SYSTEM ENGINEER,
OR ALTERNATE, ARE TO BE PRESENT AT ALL TIMES WHILE
BENCH CHECK OPERATIONS AND FAILURE ANALYSIS ARE BEING
PERFORMED.

1. THE MSIV ACTUATOR AIR PACK SHALL BE PLACED ON A I&C 2
CLEAN SURFACE (SURFACE TO BE COVERED WITH PAPER
DURING THE PERFORMANCE OF THE FOLLOWING WORK STEPS.

2. ALL OBSERVATIONS SHALL BE LOGGED ON THE TROUBLE- I&C 2
SHOOTING LOG IN ACCORDANCE WITH PAP-0905. ALL
ABNORMAL FINDINGS AND THE CONDITION OF CRITICAL PARTS
SHALL BE PHOTOGRAPHED.

3. INITIAL INSPECTION: THE MSIV ACTUATOR AIR PACK I&C 2
SHALL BE INSPECTED FOR SIGNS OF PHYSICAL DAMAGE AND
CONTAMINATION.

A) INSPECT BOLTS FOR TIGHTNESS.

B) INSPECT EXPOSED AIR PORTS FOR SIGNS OF FOREIGN
MATERIAL AND BLOCKAGE.

C) PHOTOGRAPH THE ASSEMBLY AS A WHOLE AND ANY RELE-
VANT INDICATIONS FOUND DURING THE INSPECTION.

4. CONNECT THE TEST POWER CONTROL BOX (L70-V063B OR I&C 2

SUPERSEDED

PAGE 6

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
00:27:39

M151B03

REV NO: 0
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
L /SR I/IWO NUMBER
870009372MPL NUMBER
1B21F0022DCOMP CAT
VLVWO LOCATION
C O/ -664M/E
L /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
	EQUIVALENT) TO THE MSIV ACTUATOR AIR PACK. (REFER TO 208-013-H36, 209-13-5)			
5.	CONNECT NITROGEN PRESSURE SOURCE TO THE MSIV ACTUATOR AIR PACK. PRESSURE TO BE SET AT 90 PSIG MINIMUM, OR AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, NOT TO EXCEED 130 PSIG.		I&C	2
6.	PERFORM A "BENCH CHECK" OF THE MSIV ACTUATOR AIR PACK AS REQUIRED TO DETERMINE UNIT OPERABILITY. UNIT IS TO BE OPERATED A MINIMUM OF THREE TIMES IN THE "FAST CLOSE" MODE.		I&C	2
7.	PERFORM OTHER TROUBLESHOOTING EFFORTS AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE.		I&C	2

<HQAD> 060 FAILURE ANALYSIS

1. REFER TO VENDOR MANUAL FOR DISASSEMBLY
INSTRUCTIONS, ASSEMBLY DRAWINGS, PART NUMBERS,
AND PART DESCRIPTIONS TO SUPPLEMENT THE FOLLOWING
INSTRUCTIONS.
2. DISASSEMBLY OF THE ASCO MODEL NP-8323-A2GE 3-WAY
DUAL SOLENOID VALVE
 - A) REMOVE THE SOLENOID VALVE REFERRING TO THE INSTR-
UCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAW-
ING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR
MANUAL.
 - B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR
AND SOLENOID VALVE ASSEMBLY FOR EVIDENCE OF FOREIGN
MATERIAL AND DAMAGE. INCLUDING CAREFUL INSPECTION OF
THE INLET STRAINER (PART #18). EXAMINE FOR MIGRATION
OF LOCA SEAL TO SOLENOID AND RECORD RESULTS.
 - C) EXAMINE THE PILOT AIR LINE FOR FOREIGN MATERIAL.
RECORD IF ANY THREAD LUBRICANT IS NOTED TO BE PRESENT
AT THE THREADED CONNECTIONS AND CONDITION OF THE

SUPERSEDED

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

00:27:39

M151B03

REV NO: 0

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER	MPL NUMBER	COMP CAT	CODE	WO LOCATION	M/E	M/E
870009372	1B21F0022D		VLV	C O/ -664	1 / SR	I/I

STEP	DESCRIPTION	RESP	SECT	JOB CLASS	# OF PERS
------	-------------	------	------	-----------	-----------

LUBRICANT. DO NOT REMOVE ANY LUBRICANT SEAL FROM PILOT AIR LINE. RETAIN ANY LOOSE LUBRICANT FOR SUBSEQUENT EVALUATION.

D) RECORD ALL OBSERVATIONS ON TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL OBSERVATIONS.

E) REFER TO ASCO BULLETIN 8323 AND ASCO DRAWINGS JVA 210-165 PROVIDED IN THE MAINTENANCE MANUAL FOR DISASSEMBLY OF THE SOLENOID VALVE.

3. DISASSEMBLY OF SOLENOID "A": NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905. I&C

A) PLACE THE SOLENOID VALVE ON THE CLEAN WORK AREA.

B) REMOVE SOLENOID "A" AND THE BASE SUBASSEMBLY AS A SINGLE ASSEMBLY FROM THE VALVE BODY.

C) REMOVE THE BODY GASKET AND CORE ASSEMBLY.

D) EXAMINE ALL FRESHLY EXPOSED COMPONENTS FOR SIGNS OF OBVIOUS DAMAGE AND EVIDENCE OF FOREIGN MATERIALS, RECORD ANY FOREIGN MATERIALS FOUND.

E) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. OBSERVE THAT THE CORE SPRING IS PROPERLY ATTACHED TO THE CORE GUIDE AND CORE ASSEMBLY. LOG THE CONDITION OBSERVED. PHOTOGRAPH THE CONDITION OF THE GUIDE AND ANY UNUSUAL CONDITIONS.

F) MANUALLY STROKE THE CORE WITHIN THE BASE SUBASSEMBLY AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

G) EXAMINE THE BODY GASKET (O-RING) AND RECORD THE OBSERVATIONS/CONDITIONS (DISCOLORATION, SWELLING & ETC.). PHOTOGRAPH ANY UNUSUAL CONDITIONS NOTED.

4. SOLENOID "B" DISASSEMBLY: NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905. I&C

A) REMOVE SOLENOID "B", INCLUDING THE ADAPTER, AND

11-6-87
87-J-644
PARTIAL

SUPERSEDED

PAGE 8

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

00:27:39

M151B03

REV NO: 0
LAST CHG: 11/06/87
SAFETY SEISMICWO NUMBER
870009372MPL NUMBER
1B21F0022D

COMP CAT

CODE
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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BASE SUBASSEMBLY AS A COMPLETE ASSEMBLY FROM THE VALVE BODY.

B) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF OBVIOUS DAMAGE OR FOREIGN MATERIAL.

C) REMOVE THE STEM, DISC HOLDER SPRING, DISC HOLDER AND BODY GASKET (O-RING). VERIFY PROPER INSTALLATION OF THE STEM. ESPECIALLY PROPER ATTACHMENT OF THE STEM TO THE CORE. RECORD CONDITION OF THE BODY GASKET (O-RING), DISCOLORATION, SWELLING & ETC. LOG ANY OTHER OBVIOUS DAMAGE THAT WAS OBSERVED.

~~WQAD~~ ▶ HOLD 070 FAILURE ANALYSIS

D) INSPECT THE ID OF THE PLUGNUT/ADAPTOR ASSY AND STEM FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE STEM, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE STEM AND ANY UNUSUAL CONDITIONS.

E) MANUALLY STROKE THE STEM IN ITS GUIDE(S) AND THE DISC HOLDER IN ITS GUIDES. RECORD THE RELATIVE FREEDOM OF MOVEMENT ON THE TROUBLESHOOTING LOG PER PAP-0905.

F) EXAMINE THE DISC HOLDER SPRING FOR EVIDENCE OF FOREIGN MATERIAL AND SIGNS OF DAMAGE. MEASURE THE FREE HEIGHT OF THE SPRING. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS. RECORD IF SPRING APPEARS TO BE COCKED WITHIN HOLDER OR APPEARS TO HAVE BEEN BINDING

G) REMOVE THE PLUGNUT/ADAPTER ASSY., BODY GASKET (O-RING) FROM THE SOLENOID VALVE ASSEMBLY. REMOVE PLUGNUT GASKET (O-RING) AND CORE FROM THE SOLENOID BASE SUBASSEMBLY. VERIFY THE PROPER INSTALLATION OF THE BASE SUBASSEMBLY. RECORD CONDITION OF O-RING

CEI GA 02
87-1-694
PARTIAL
11-6-87

B.C.
11/6/87

Rev 1

SUPERSEDED

M151B03

WO NUMBER
870009372MPL NUMBER
1B21F0022DCOMP CAT
CODE
VLVWO LOCATION
C O/ -664REV
LAST :
SAF
M/
L/

STEP	DESCRIPTION	RESP SECT	JOB
------	-------------	--------------	-----

(SWELLING, DISCOLORATION & ETC.)

- ~~I) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF FOREIGN MATERIAL OR DAMAGE.~~ P.C 6/87
- ~~V) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PAR PAP-0905. PHOTOGRAPH THE CONDITION OF THE CONDITION OF THE GUIDE TUBE AND ANY UNUSUAL CONDITIONS.~~ P.C 11/6
- ~~X) EXAMINE THE PLUGNUT/ADAPTER ASSY. AND BODY GASKETS AND LOG THE OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS.~~ P.C 11/6
- ~~G) EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH COULD PREVENT ITS SMOOTH MOTION. UNUSUAL TACKINESS OR CONTAMINATION OF THE DISC SEALING SURFACE IS OF PARTICULAR INTEREST. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE SEALING SURFACES.~~
- ~~H) REMOVE THE PLUGNUT/ADAPTER ASSY., BODY GASKET (O-RING) FROM THE SOLENOID VALVE ASSEMBLY. REMOVE PLUGNUT GASKET (O-RING) AND CORE FROM THE SOLENOID BASE SUBASSEMBLY. VERIFY THE PROPER INSTALLATION OF THE BASE SUBASSEMBLY.~~
- ~~I) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF FOREIGN MATERIAL OR DAMAGE.~~
- ~~J) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PAR PAP-0905. PHOTOGRAPH THE CONDITION~~

SUPE

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

00:27:39

M151B03

REV NO: 0

11/06/87

WO NUMBER
870009372

COMP CAT		SAFETY	SEISMIC
MPL NUMBER	CODE	WO LOCATION	M/E
1B21F0032D	VLV	C O / -664	1 /SR

SAFETY SEISMIC

M/E

/SB 1/1

2 / 58 2 / 2

—

STEP	DESCRIPTION	RESP	# OF PERS
		SECT	JOB CLASS

OF THE CONDITION OF THE GUIDE TUBE AND ANY UNUSUAL CONDITIONS.

K) EXAMINE THE PLUGNUT/ADAPTOR ASSY. AND BODY GASKETS
AND LOG THE OBSERVATIONS ON THE TROUBLESHOOTING LOG
PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS.

C) EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH COULD
CAUSE BINDING.

080 INSPECTION CHECKLIST

R.C. 11/6/87

NOTE: IN ADDITION TO A DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECK LIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

1. ACTUATOR AIR PACK INITIAL INSPECTION

INSPECTION POINT	INITIALS/DATE P.E.	VENDOR	TECHNICIAN	RECORD SAT/UNSAT
---------------------	-----------------------	--------	------------	---------------------

B) AIR PORT T5 1411 N² Galling noted at 1 1/4" inlet
CONDITION Sat. 1/13/37 11:45:17 Sat. Exhaust & Cylinder ports

C) EXTERNAL SURFACE CONDITION GOOD AD 11-6-87 SAT 11-6-87 201

2. MODEL NP-8323-A20E S.V. INITIAL INSPECTION.

A) AIR PORT ~~11/16/87~~ VAN ~~THURSDAY~~ SAT
CONDITIONS ~~10~~ ~~11/16/87~~ SAT ~~PILOTURE~~
~~SHALL AMOUNT OF LUBRICANT ON VLV. THREAD NO 11-6-87~~

B) EXTERNAL SURFACE CONDITIONS *Fr. 11647* *100* *TEA 11647* *SAT*
COT *1/10/83* *SAT*

C) FOREIGN MATERIAL JUN 11 1967 11:45 A.M. JUN 11 1967 ... S.A.T. ...
none

SUPERSEDED

PAGE 11

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

M151B03

WO NUMBER
870009372MPL NUMBER
1B21F0022DCOMP CAT
CODE
VLVWO LOCATION
C O/ -664REV NO: 0
LAST CHG: 11/0
SAFETY SEI:
M/E M/I
1 /SR I/11/0
00:2

STEP	DESCRIPTION	RESP SECT	JOB CLASS
------	-------------	--------------	-----------

SOLENOID A
SOLENOID B

D) GUIDING SURFACE CONDITIONS

SOLENOID A

CORE GUIDE

SOLENOID B

CORE GUIDE

STEM/PLUG

NUT

E) STEM/CORE..
ORIENTATION.....

F) O-RING CONDITION

"A" SIDE BODY

O-RING

"B" SIDE BODY

O-RING

PLUGNUT/
ADAP.ASSY

O-RING

B SIDE BODY O-RING BETWEEN BASE AND
ADAPTER

090 RESTORATION

1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST
USING INDEPENDENT VERIFICATION PER IAP-0503.

I&C

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS
REQUIREMENTS HAVE BEEN MET PER PAP-0204.

I&C

3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE
AND FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS

I&C

SUPERSEDED

PAGE 12

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

00:27:39

M151B03

REV NO: 0

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009372MPL NUMBER
1B21F0022D

COMP CAT

CODE
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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FOR TERMINATION PER PAP-0512.

4. ANY DEFECTIVE PARTS REMOVED UNDER THIS WORK ORDER SHOULD BE EVALUATED BY R.E. FOR FURTHER ANALYSIS OR RELEASE TO SALVAGE WAREHOUSE PER SMI-018 OR SCRAPPED. NOTE DISPOSITION ON W.O. CLOSING SHEET. PRIOR TO REMOVING PARTS FROM A RCA, HEALTH PHYSICS MUST SURVEY AND RELEASE THEM PER PAP-0515 AND APPROVAL FROM VINCE CONCEL OR ALTERNATE MUST APPROVE THE RELEASE OF PARTS.

I&C 2

VINCE CONSEL OR ALTERNATE NOTIFIED:

INITIALS.....DATE.../.../...TIME.....

100 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED.

I&C SUP 1

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.

I&C SUP 1

3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503.

I&C SUP 1

110 FIRE/VAPOR BARRIERS

FIRE/VAPOR BARRIERS TO RESTORED UNDER W.O. #87-9293.

I&C

SUPERSEDED

TROUBLESHOOTING LOG

Side 1

W.O. NO.	ORIGINATOR	BADGE NO.
WORK/PROBLEM DESCRIPTION _____ _____ _____ _____		
AUTHORIZING UNIT SUPERVISOR		BADGE NO. DATE TIME
OQS NOTIFICATION LOG NO.		DATE TIME
PERSONNEL PERFORMING WORK		
NAME	BADGE NO.	NAME BADGE NO.
NAME	BADGE NO.	NAME BADGE NO.
LIST WORK PERFORMED		
EQUIPMENT/MPL	NATURE OF WORK _____ _____ _____ _____ _____ _____ _____	
DESCRIPTION OF FINAL PROBLEM AND END RESULTS OF TROUBLESHOOTING _____ _____ _____ _____ _____ _____ _____		
PROBLEM CORRECTED ? <input type="checkbox"/> YES <input type="checkbox"/> NO		
ACTION NEEDED TO CORRECT PROBLEM _____ _____ _____ _____ _____ _____ _____		
UNIT SUPERVISOR NOTIFIED OF RESULTS		DATE TIME
REVIEWED BY WORK/I&C UNIT SUPERVISOR		DATE

87-I-726

PMPP NO. 6287 Rev 8/86

QUALITY ASSURANCE CHECKLIST
ARRY NUCLEAR POWER PLANT

CHECKLIST NO. 001 REV. 3SHEET 1 OF 1

CHECKLIST TITLE

MMQS-I&C Inspection Checklist

APPROVED BY / DATE

James R. Kovak 4/22/87

REFERENCE DOCUMENT: TITLE, NUMBER, REV.

PAP-0905, Rev. 6

WO 87-9372 R.1

 N/A SAT UN SAT

1. Unit Supervisor/QA Authorization
2. Reference Documents Controlled/Approved Latest Revision.
3. Prerequisites Complete.
4. Precautions and Limitations Observed
5. Material used is in accordance with approved Stores Requisition and design documents.
6. All M&TE used is listed on appropriate documents and is in current calibration.
7. Steps performed in numerical sequence, unless otherwise stated in procedure.
8. Work performed meets the Acceptance Criteria as specified in WO 87-9372
R.1
9. Equipment Restored.
10. Retest Performed.
11. Cleanliness Requirements observed as per work order/instructions.
12. Items of known nonconformance/noncompliance from previous inspection etc. have been checked.

COMMENTS WORK PERFORMED PER WORK ORDER	PERFORMED BY/DATE
	<u>James J. Kovak</u> 11/6/87

FOLLO
Follows A.I.A.

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 11/06/87

M151B01

TIME 00:40:04

REV 1

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
870009405	I&C	1P52	I&C REWORK	C I/ 599			
R O C	P O C	COMP CAT	PRIORITY CODE	SAFETY M/E	SEISMIC M/E	ASME I/	TAG OUT REQ'D
N A	4 5	MSC	5X	3 /		03	YES
SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS B	INITIATING DOCUMENT NA	RWP	TECH		
				REQ'D YES	SPEC NO		

SYSTEM NAME: INSTRUMENT AIR

SUMMARY : SAMPLE INSTRUMENT AIR AT 1B21F022D

MPL NAME : N/A

PLANNER REMARKS

** THIS W.O. IS TO SUPPORT MSIV INVESTIGATION. AIR PARTICLE TEST WILL BE PERFORMED BY CHEMISTRY, DEW POINT CHECK WILL BE DONE BY * REFERENCE 302-243 FOR INST AIR, 302-605 FOR 1B21F022D AND ATWOOD-MORRILL VENDOR MANUAL FILE #29-G.

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

PERFORM AIR SAMPLE TESTS AT AIR SUPPLY LINES TO 1B21F022D PER THE ATTACHED JOB TRAVELER.

All at 1 1/2" line

1. Follow core sample.
2. Air particle test.
3. Dew point check.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

Chuck Conder (cjc) DATE 11/6/87

REVIEWED BY HQAD/AIA

George Valgovic DATE 11/6/87

APPROVED BY

John R. Johnson DATE 11/6/87

APPROVAL TO COMMENCE WORK

TIME: ____ DATE ____

WORK COMPLETE

DATE ____

APPROVAL TO COMMENCE TEST

TIME: ____ DATE ____

RETEST COMPLETE

DATE ____

REVIEW BY HQAD/AIA

DATE ____

ACCEPTED BY UNIT SUPERV.

DATE ____

PAGE 2
M151B23

PERRY NUCLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/06/87
00:40:04

WO# 870009405
MPL 1P52

COMP CAT MSC

PRIORITY 5X
SFTY M/E 3 /

LC C I/ 599

LN

REVISIONS TEXT

REV 1 OF 1

01 REVISED TO REFLECT THE CORRECT VALVE MPL

CLC 11/06/87 00:39:57

INFORMATION ONLY

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

00:40:04

M151B03

REV NO: 1

LAST CHG: 11/05/87

SAFETY SEISMIC

WO NUMBER
870009405COMP CAT
MPL NUMBER
1P52
CODE
MSCWO LOCATION
C I/ 599M/E
3 /
M/E
I/

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
010	PRECAUTIONS			
	1. ENSURE AIRLINE CLEANLINESS REQUIREMENTS ARE MAINTAINED IN ACCORDANCE WITH PAP-0204.		I&C	
	2. ENSURE THAT THE INSTRUMENT AIR SUPPLY TO 1B21F022D IS TAGGED IN ACCORDANCE WITH PAP-1401. NOTE: THE AIR SUPPLY WILL BE RED TAGGED PER W.O. 87-9293, BUT WILL HAVE TO BE CHANGED TO A WHITE TAG PRIOR TO THIS WORK.		I&C	
	3. ANY TEMPORARY CONNECTIONS TO THE AIR SUPPLY LINES REQUIRED TO FACILITATE CONNECTION OF THE REQUIRED TEST EQUIPMENT MUST BE CLEANED WITH ACETONE OR AN EQUIVALENT SOLVENT PRIOR TO CONNECTING.		I&C/CHEM	
020	PREREQUISITES			
	1. THE AIRPACK FOR VALVE 1B21F022D MUST BE REMOVED PRIOR TO STARTING THIS WORK. (W.O. 87-9293)		I&C	
	2. VALVE 1P52F0640 WILL BE USED TO BLOW AIR AND MUST BE WHITE TAGGED PER PAP-1401 PRIOR TO STARTING THIS WORK.		I&C	1
	3. COMMUNICATION SHOULD BE ESTABLISHED BETWEEN THE AREA OF 1B21F022D AND VALVE 1P52F0640.		I&C	1
	4. AN ADAPTER FITTING WILL BE REQUIRED TO ALLOW CONNECTION OF TEST EQUIPMENT TO THE 1 5/8" FLEX CONNECTION. MAINTENANCE WILL SUPPLY THIS FITTING.		MAINT	
	5. IF AREA AMBIENT TEMPERATURE EXCEEDS THE VALUE REQUIRED TO TAKE A GOOD DEWPOINT READING AS CALLED FOR BY THE GENERAL EASTERN INSTRUCTION MANUAL, A COOLING WATER SOURCE MUST BE CONNECTED PER THAT MANUAL.		I&C	

PAGE 4 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 JOB TRAVELER 00:40:04
 M151B03 REV NO: 1
 LAST CHG: 11/05/87
 WO NUMBER MPL NUMBER COMP CAT SAFETY SEISMIC
 870009405 1P52 CODE MSC WO LOCATION M/E M/E
 C I/ 599 3 / I/

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	-----------	-----------	-----------

030 TESTING

1. NOTIFY MMQS PRIOR TO WORK TO WITNESS AIR QUALITY TEST (REQUIRED PER PAP-0204) I&C

MMQS LOG# DATE .../.../... TIME:.....

2. NOTIFY THE DUTY I&C ENGINEER PRIOR TO STARTING. I&C

3. PLACE A PILLOW CASE OVER THE END OF THE INSTRUMENT AIR SUPPLY LINE CONNECTION TO 1B21F022D AIRPACK AND BLOWDOWN THE LINES FOR 10 MINUTES. NOTE: THE PILLOW CASE SHOULD BE TIGHTLY FIXED SO THAT AIR IS BLOWN THROUGH AN AREA EQUAL TO THE END OF THE FLEX CONNECTION.

WHEN COMPLETE, PLACE THE PILLOW CASE IN A MARKED PROTECTIVE PLASTIC BAG AND SAVE FOR FUTURE EVALUATION

4. PERFORM AN AIR PARTICLE TEST, TESTING FOR 15 MICRON PARTICLES USING AN AIR PARTICLE COUNTER. CHEMISTRY

5. PERFORM A DEW POINT CHECK ON THE INSTRUMENT AIR SUPPLY LINE TO THE AIRPACK FOR 1B21F022D PER IMI-E2-18. I&C △ NGAD HOLD ▽

040 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE, AND MEETS THE ACCEPTANCE CRITERIA OF PAP-0204 FOR AIR PARTICLE SAMPLE AND IMI-E2-18 FOR DEW POINT MEASUREMENT. I&C

2. ALL TEMPORARY CONDITIONS CREATED AS A RESULT OF THIS WORK ORDER HAVE BEEN RESTORED TO THE AS FOUND CONFIGURATION AND VERIFIED PER AN INSTRUMENT RESTORATION CHECKLIST PER IAP-0503. I&C

050 FIRE/VAPOR BARRIERS

NOT APPLICABLE.

FD288
Remove A-Pak

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 11/06/87
TIME 01:04:15
REV 0

M151B01

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
870009324	I&C	1B21F0028B	I&C TROUBLESHOOT	SMC/04-620			
R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
1 2 3	3 4 5	CAT	CODE	M/E	M/E		REQ'D
		VLV	SF	1 / SR	I/I	11	YES
SPECIAL PERMIT NO	RETEST YES	SYSTEM B	CLEANLINESS	INITIATING DOCUMENT NA	RWP	TECH	
					REQ'D	SPEC	
					YES	YES	

SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : REM. & REPLACE PILOT CONTROL VALVE
MPL NAME : SECOND MSIV

PLANNER REMARKS

NONE

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION
SEE ATTACHED JOB TRAVELER

INFORMATION ONLY

1. Determine electrical wires, remove air lines.
2. Remove air pack

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY _____
REVIEWED BY NQAD/AIA
APPROVED BY _____
APPROVAL TO COMMENCE WORK _____
WORK COMPLETE _____
APPROVAL TO COMMENCE TEST _____
RETEST COMPLETE _____
REVIEW BY NQAD/AIA _____
ACCEPTED BY UNIT SUPV. _____

Derry G. Dailey
J. E. Sjors
John R. Gallardo
Sp. Mahan

TIME: 03:14
TIME: ____:
TIME: ____:
TIME: ____:
TIME: ____:
TIME: ____:
TIME: ____:
TIME: ____:

DATE 11/06/87
DATE 11/6/87
DATE 11/6/87
DATE 11/06/87
DATE 11/6/87
DATE 11/6/87
DATE 11/6/87
DATE 11/6/87

PAGE 2

PERRY NUCLEAR POWER PLANT WORK ORDER
RELATED REPETITIVE TASK LIST

M151B13

11-06-87

01:04:15

REV NO: 0

LAST CHNG:11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
		CODE	M/E	M/E
		VLV	1 /SR	I/I
870009324	1B21F0028B			

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
------------	-----------	------------	---------------------

FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE

R85 013065	TECHS	1B21F0028B	POST MAINT RETEST REQD ? SVI B21-T1400
R85 013066	TECHS	1B21F0028B	POST MAINT RETEST REQD ? SVI B21-T2001
R85 013067	TECHS	1B21F0028B	POST MAINT RETEST REQD ? SVI B21-T2003
R85 013068	TECHS	1B21F0028B	POST MAINT RETEST REQD ? SVI B21-T9416
R86 011268	TECHS	1B21F0028B	POST MAINT RETEST REQD ? SVI T23-T1201

INFORMATION ONLY

PAGE 3 PEI NUCLEAR POWER PLANT WORK ORDER 11/06/87
 JOB TRAVELER 01:04:16
 M151B03 REV NO: 0
 LAST CHG: 11/06/87
 COMP CAT SAFETY SEISMIC
 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009324 1B21F0028B VLV SMC/04-620 1 / SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
010	REFERENCE DRW.			
	1. REFER TO DRW. 209-13 SH 2 THROUGH 9 FOR INTERCONNECTIONS TO B21/C71/C95/R61 ECT.		I&C	2
	2. REFER TO VENDOR DRW. 47-58-1&3 FOR SWITCH DRW.			
	3. REFER TO DRW. 208-13-10 & 36 FOR CONNECTIONS.			
	4. REFER TO DRW. 208-46-522 FOR ERIS INPUTS.			
	5. REFER TO DRW. 208-40 SH 5 & 8 FOR RX. SCRAM LOGIC.			
	6. ATWOOD & MORRILL VENDOR MANUAL (FILE # 29-G).			
020	PRECAUTIONS			
	1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.		I&C	1
	2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.		I&C	2
	3. OBSERVE PRECAUTIONS AS SHOWN IN SVI B21-T1400		I&C	2
	4. OBSERVE PRECAUTIONS AS SHOWN IN SVI C71-T0038F		I&C	2
	5. ALL PARTS REMOVED SHALL BE MARKED AND RETAINED FOR FUTURE EVALUATION.		I&C	2
	6. HAVE OPERATIONS SLOW CLOSE MSIV'S PER SOI-B21 SECTION 6.1.1		I&C / OPS	2
	***** NOTE ***** MSIV 1B21F0028D SHALL BE CLOSED PRIOR TO CLOSING THE OTHER THREE MSIV'S (1B21F0028A, 1B21F0028B, 1B21F0028C).			
	7. ENSURE TAGOUTS ARE ESTABLISHED TO PROVIDE PERSONNEL OR EQUIPMENT SAFETY PER PAP-1401.		I&C	2
030	PREPARATION			
	1. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS,		I&C	2

INFORMATION ONLY

PAGE	4	PER.	NUCLEAR POWER PLANT WORK ORDER	11/06/87	
			JOB TRAVELER	01:04:16	
M151B03				REV NO: 0	
				LAST CHG: 11/06/87	
	COMP	CAT	SAFETY	SEISMIC	
WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009324	LB21F0028B	VLV	SMC/04-620	1 /GR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED REWORK. SEE SVI-T0038E FOR ADDITIONAL TOOLS REQUIRED.				
2.	SUBMIT R.W.P. FORM PER PAP-0512		I&C	2
040	TROUBLESHOOTING			
1.	NOTIFY MMQS PRIOR TO WORK, 6350		I&C	2
INITIALS DATE.../.../.....				
2.	NOTIFY UNIT SUPERVISOR PRIOR TO WORK		I&C	2
3.	CONTACT HEALTH PHYSICS PRIOR TO WORK FOR ANY R.W.P. REQUIREMENTS.		I&C	2
▷ 4.	DETERMINE & LABLE WIRES FROM JCT. BOX FOR 1B21F481 TO ALLOW REMOVAL OF AIR PACK & SOLENOIDS VALVES.		I&C	2
5.	CONTACT NC86M SUPERVISOR X6200 OR 6984 TO REMOVE AIR PACK.		I&C	2
6.	VERIFY THAT VALVE IS IN THE CLOSED POSITION AND THAT I&C HAS PERFORMED DETERMINATION OF THE VALVE ACTUATOR CONTROL PANEL.		CRAFT	2
7.	CONTACT PETE ARTHUR OR VINCE CONCEL FOR AUTHORIZATION TO PROCEED TO THE NEXT STEP (NRC APPROVAL REQUIRED PRIOR TO PROCEEDING TO THE NEXT STEP)			2
INITIAL..... DATE.../.../... TIME.....				
8.	DISCONNECT THE 3/8" & 1 5/8" AIR SUPPLY TUBING CONNECTIONS. UNBOLT AIR CONTROL PANEL FROM ACTUATOR AND REMOVE PANEL. SEAL ALL OPENINGS.		CRAFT	2
9.	DELIVER AIR PACK TO I&C FOR TESTING.		CRAFT	2
NOTE: EXERCISE EXTREME CARE WHEN HANDLING THE				

PAGE 5

PER. NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

01:04:16

M151B03

REV NO: 0

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009324MPL NUMBER
1B21F0028B

COMP CAT

CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

AIR CONTROL PANEL AT ALL TIMES. DO NOT SUBJECT IT
TO SHOCK. LIMIT ANY DECONTAMINATION NEEDED AS MUCH
AS PRACTICAL.

050 GENERIC LOG

***** NQAD-WITNESS *****				
**	SIGNATURE	DATE	COMMENT	**
FROM	TO	PLACED BY	REMOVED BY	
LOCATION TB#/TERMINAL	LOCATION TB#/TERMINAL	INIT/DATE VERIF BY	INIT/DATE VERIF BY	
1.		.../...	.../...	
		.../...	.../...	
2.		.../...	.../...	
		.../...	.../...	
3.		.../...	.../...	
		.../...	.../...	
4.		.../...	.../...	
		.../...	.../...	
5.		.../...	.../...	
		.../...	.../...	
6.		.../...	.../...	
		.../...	.../...	
7.		.../...	.../...	
		.../...	.../...	
8.		.../...	.../...	
		.../...	.../...	
9.		.../...	.../...	

INFORMATION ONLY

PAGE 6 PER. NUCLEAR POWER PLANT WORK ORDER 11/06/87
 M151BC JOB TRAVELER 01:04:16

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	REV NO:	0
870009324	1B21F0028B	CODE	SMC/04-620	M/E	LAST CHG:	11/06/87
		VLV		I/E		SEISMIC
				I/I		

STEP	DESCRIPTION	RESP	SECT	JOB CLASS	# OF PERS
10.		.../...	.../...		
		.../...	.../...		
		.../...	.../...		

060 RESTORATION

***** NQAD-WITNESS *****
 ** _____ **
 ** SIGNATURE DATE COMMENT **

 1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST I&C 2
 USING INDEPENDENT VERIFICATION PER IAP-0503.
 2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS I&C 2
 REQUIREMENTS HAVE BEEN MET PER PAP-0204.
 3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND I&C 2
 FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR
 R.W.P. TERMINATION PER PAP-0512. N/A IF NONE.
 4. ANY DEFECTIVE/UNUSED PARTS REMOVED UNDER THIS WO I&C 2
 SHOULD BE EVALUATED, DISPOSITIONED AND RETURNED TO
 THE SALVAGE WAREHOUSE PER SMI-018 OR DISCARDED AS
 NON REPAIRABLE ON THE W.O. CLOSING SHEET. PRIOR TO
 REMOVING PARTS FROM A RCA, HEALTH PHYSICS MUST SURVEY
 AND RELEASE THEM PER PAP-0515. N/A IF NOT APPLICABL

INFORMATION ONLY

070 RETEST

***** NQAD-WITNESS *****
 ** _____ **
 ** SIGNATURE DATE COMMENT **

 1. PER S.SEMAN 11/03/87 PERFORM SVI B21-T2001 OPERA 3
 INCLUDING PIT (LISTED AS STEP 2.4 OF SVI)

080 ACCEPTANCE CRITERIA

PAGE 7

PER. NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
01:04:16

M151B03

REV NO: 0
LAST CHG: 11/06/87
SAFETY SEISMICWO NUMBER
870009324MPL NUMBER
1B21F0028BCOMP CAT
CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SR
M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

***** NQAD-WITNESS *****

**
** SIGNATURE DATE COMMENT **

- *****
1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE I&C SUP 1
CRITERIA OF ALL PROCEDURES USED.
- 2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS I&C SUP 1
REQUIREMENTS HAVE BEEN MET PER PAP-0204.
- 3. CONFIGURATION VERIFICATION COMPLETED BY HAVING I&C SUP 1
ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN
PER IAP-0503.

090 FIRE/VAPOR BARRIERS

- 1.VAPOR BERRIERS RESTORED IN TROUBLESHOOTING STEP. I&C

INFORMATION ONLY

INFORMATION ONLY

FO22D
Airpack division 1, Inc.
600 W. Avenue 21

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 11/06/87

TIME 14:34:57

REV 1

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009372	I&C	1B21F0022D	I&C TROUBLESHOOT	C O/ -664

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
1 2 3	3 4 5	VLV	5X	1 /SR	I/I	11	NO

SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP	TECH
				REQ'D YES	SPEC YES

SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : FAILURE ANALYSIS OF AIRPACK & SOLENOIDS
MPL NAME : FIRST MSIV

PLANNER REMARKS

THIS W.O. WILL PERFORM FAILURE ANALYSIS ON SOLENOIDS & AIR RELAYS FOR
MSIV 1B21F022D.

P.C.11/5/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

***** REFER TO ATTACHED JOB TRAVELER *****

2. Cycle air pack on load.

1. Inspect coil - bolt tightens, etc + photograph.
- 3A. Remove, diseng. & insp ASCO duals
coil + reeng. coil.
- 4B. Diseng + int 4-way shuttle valve.
- 5A. " " 3 " " "
- 6B. " " 2 " " "

Not done

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY
REVIEWED BY NQAD/AIA
APPROVED BY
APPROVAL TO COMMENCE WORK
WORK COMPLETE
APPROVAL TO COMMENCE TEST
RETEST COMPLETE
REVIEW BY NQAD/AIA
ACCEPTED BY UNIT SUPERV.

Dick Cherry
WES 11/6/87
John Mulligan TIME: 1900
N/A 11/6/87 TIME: ____
N/A 11/6/87 TIME: ____

DATE 11/6/87
DATE 11/6/87
DATE 11/6/87
DATE 11/6/87
DATE ____/
DATE ____/
DATE ____/
DATE ____/
DATE ____/
DATE ____/

PAGE 2
M151B23

PERRY (CLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/06/87
14:34:57

WO# 870009372
MPL 1B21F0022D

COMP CAT VLV

PRIORITY 5X
SFTY M/E 1 /SR

LOC C O/ -664

LN

REVISIONS TEXT

REV 1 OF 1

01 REVISED TO REMOVE SOLENOID COIL AND DELETE DUPLICATE PEC 11/06/87 14:34:39
02 STEPS PEC 11/06/87 14:34:39

PAGE 3 PERRY NUCLEAR POWER PLANT WORK ORDER 11-06-87
RELATED REPETITIVE TASK LIST 14:34:57
M151B13 REV NO: 1
LAST CHNG:11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
		CODE	C O/ -664	M/E	M/E
	1B21F0022D	VLV		1 /SR	I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
FOR TASK CATEGORY: (LLRT)LOCAL LEAK RATE TESTING			
R85 003790	TECHS	1B21F0022D	PERFORM PRE AND POST MAINT LLRT
FOR TASK CATEGORY: (MEMP)MECHANICAL & ELECTRICAL PM'S			
R85 011026	MAINT	1B21F0022D	REPLACE NON-METALLIC PARTS (EQ)
R85 011121	MAINT	1B21F0022D	REPLACE PACKING, CHECK LIMIT SWITCH
FOR TASK CATEGORY: (PI)PLANT INSTRUMENTS			
R85 010956	I&C	1B21F0022D	REPLACE NONMETALLIC PARTS,CLEAN,LUBE(EQ)
FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE			
R85 013050	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T1400
R85 013051	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T2001
R85 013052	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T2003
R85 013053	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T9415
R86 011266	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI T23-T1201
R86 012775	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI C61-T1104

PAGE 4 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
RELATED WORK ORDER LIST 14:34:58
M151B02 REV NO: 1
LAST CHNG: 11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
		CODE	M/E	M/E
	1B21F0022D	VLV	C O/ -664	I /SR I/I

WO NUMBER	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
870009293	I&C	1B21F0022D	REM. & REPLACE PILOT CONTROL VALVE
870009323	I&C	1B21F0022D	RECORD SOLENOID VOLTAGE & ACCUM PRESSURE

PAGE 5

PERRY CLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 C O/ -664 1 /SR I/I

WO NUMBER
870009372MPL NUMBER
1B21F0022DCOMP CAT
CODE
VLVWO LOCATION
C O/ -664M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

010 PURPOSE

THE PURPOSE OF THIS PROCEDURE/W.O. IS TO PROVIDE DISASSEMBLY AND INSPECTION PROCEDURES FOR THE MSIV ACTUATOR ASSEMBLY. THREE OF EIGHT PERRY MSIV'S EXPERIENCED A DELAYED CLOSURE DURING PLANT SVI TESTING. THIS PROCEDURE/W.O. ASSUMES THE AIR PACK ASSEMBLY IS REMOVED FROM THE MSIV AND IS LOCATED IN AN AREA PREPARED FOR DISASSEMBLY. THE INSPECTION IS CENTERED ON THE ASCO MODEL 8323 3-WAY DUAL SOLENOID VALVE ASSEMBLY, WHICH IS CONSIDERED TO CONTAIN THE SOURCE OF THE PROBLEM.

I&C

020 PRECAUTIONS

1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204. I&C 2

2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503. I&C 2

3. ENSURE ALL LOOSE PARTS REMOVED UNDER THIS W.O. ARE CAREFULLY IDENTIFIED AND BAGGED. COTTON-LINE GLOVES TO BE USED WHEN HANDLING ANY INTERNAL PARTS. ENSURE O-RINGS AND SOFT SEALED MATERIALS ARE CAREFULLY IDENTIFIED AND ONLY STORED IN GLASS CONTAINERS.

I&C

2

4. ENSURE ALL PHOTOGRAPHS ARE ADEQUATLY CATALOGED TO POSITIVLY IDENTIFY EACH PHOTOGRAPH TO THE PROPER PART. I&C

030 REF./PREPARATION

1. MAINTENANCE MANUAL FOR HILLER MODEL SA-A068 VALVE ACTUATOR. I&C

2. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, VENDOR MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED FAILURE ANALYSIS. I&C

040 NOTIFICATIONS

PAGE 6

PERRY CLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009372MPL NUMBER
1B21F0022DCOMP CAT
CODE
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
1.	NOTIFY MMQS @ X6350 PRIOR TO START OF WORK. MMQS LOG #.....DATE.../.../...TIME.....		I&C	
2.	NOTIFY R.S.E OR ALTERNATE PRIOR TO START OF WORK TO ALLOW NOTIFICATION TO THE N.R.C.		I&C	
	N.R.C. REPRESENTATIVE NOTIFIED.....		RSE	
3.	NRC PRESENCE APPLICABLE (CIRCLE): YES / NO		RSE	

<^{MQAD}
^{HOLD}> 050 FUNCTIONAL BENCH CHK

NOTE: DURING THE PERFORMANCE OF THIS WORK ORDER
(BENCH CHECK OPERATIONS AND FAILURE ANALYSIS), STEPS
MAY BE PERFORMED OUT OF SEQUENCE AT THE DISCRETION OF
THE RESPONSIBLE ENGINEER.

1

NOTE: MMQS INSPECTOR AND RESPONSIBLE SYSTEM ENGINEER,
OR ALTERNATE, ARE TO BE PRESENT AT ALL TIMES WHILE
BENCH CHECK OPERATIONS AND FAILURE ANALYSIS ARE BEING
PERFORMED.

- | | | | |
|----|--|-----|---|
| 1. | THE MSIV ACTUATOR AIR PACK SHALL BE PLACED ON A
CLEAN SURFACE (SURFACE TO BE COVERED WITH PAPER
DURING THE PERFORMANCE OF THE FOLLOWING WORK STEPS. | I&C | 2 |
| 2. | ALL OBSERVATIONS SHALL BE LOGGED ON THE TROUBLE-
SHOOTING LOG IN ACCORDANCE WITH PAP-0905. ALL
ABNORMAL FINDINGS AND THE CONDITION OF CRITICAL PARTS
SHALL BE PHOTOGRAPHED. | I&C | 2 |
| 3. | INITIAL INSPECTION: THE MSIV ACTUATOR AIR PACK
SHALL BE INSPECTED FOR SIGNS OF PHYSICAL DAMAGE AND
CONTAMINATION. | I&C | 2 |
| A) | INSPECT BOLTS FOR TIGHTNESS. | | |
| B) | INSPECT EXPOSED AIR PORTS FOR SIGNS OF FOREIGN
MATERIAL AND BLOCKAGE. | | |

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PERRY ..CLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
1 /SR I/I

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

C) PHOTOGRAPH THE ASSEMBLY AS A WHOLE AND ANY RELEVANT INDICATIONS FOUND DURING THE INSPECTION.

4. CONNECT THE TEST POWER CONTROL BOX (L70-V063B OR EQUIVALENT) TO THE MSIV ACTUATOR AIR PACK. (REFER TO 208-013-H36, 209-13-5) I&C 2
5. CONNECT NITROGEN PRESSURE SOURCE TO THE MSIV ACTUATOR AIR PACK. PRESSURE TO BE SET AT 90 PSIG MINIMUM, OR AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, NOT TO EXCEED 130 PSIG. I&C 2
6. PERFORM A "BENCH CHECK" OF THE MSIV ACTUATOR AIR PACK AS REQUIRED TO DETERMINE UNIT OPERABILITY. UNIT IS TO BE OPERATED A MINIMUM OF THREE TIMES IN THE "FAST CLOSE" MODE. I&C 2
7. PERFORM OTHER TROUBLESHOOTING EFFORTS AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE. I&C 2

<HQAD>

HOLD 060

FAILURE ANALYSIS

1. REFER TO VENDOR MANUAL FOR DISASSEMBLY INSTRUCTIONS, ASSEMBLY DRAWINGS, PART NUMBERS, AND PART DESCRIPTIONS TO SUPPLEMENT THE FOLLOWING INSTRUCTIONS. I&C
2. DISASSEMBLY OF THE ASCO MODEL NP-8323-A20E 3-WAY DUAL SOLENOID VALVE I&C
- A) REMOVE THE SOLENOID VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.
- B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALVE ASSEMBLY FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. INCLUDING CAREFUL INSPECTION OF THE INLET STRAINER (PART #18). EXAMINE FOR MIGRATION

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009372MPL NUMBER
1B21F0022D

COMP CAT

CODE
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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OF LOCA SEAL TO SOLENOID AND RECORD RESULTS.

- C) EXAMINE THE PILOT AIR LINE FOR FOREIGN MATERIAL. RECORD IF ANY THREAD LUBRICANT IS NOTED TO BE PRESENT AT THE THREADED CONNECTIONS AND CONDITION OF THE LUBRICANT. DO NOT REMOVE ANY LUBRICANT SEAL FROM PILOT AIR LINE. RETAIN ANY LOOSE LUBRICANT FOR SUBSEQUENT EVALUATION.
- D) RECORD ALL OBSERVATIONS ON TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL OBSERVATIONS.

E) REFER TO ASCO BULLETIN 8323 AND ASCO DRAWINGS JVA 210-165 PROVIDED IN THE MAINTENANCE MANUAL FOR DISASSEMBLY OF THE SOLENOID VALVE.

- 3. DISASSEMBLY OF SOLENOID "A": NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905.

A) PLACE THE SOLENOID VALVE ON THE CLEAN WORK AREA.

B) REMOVE SOLENOID "A" AND THE BASE SUBASSEMBLY AS A SINGLE ASSEMBLY FROM THE VALVE BODY.

C) REMOVE THE BODY GASKET AND CORE ASSEMBLY.

D) EXAMINE ALL FRESHLY EXPOSED COMPONENTS FOR SIGNS OF OBVIOUS DAMAGE AND EVIDENCE OF FOREIGN MATERIALS, RECORD ANY FOREIGN MATERIALS FOUND.

E) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. OBSERVE THAT THE CORE SPRING IS PROPERLY ATTACHED TO THE CORE GUIDE AND CORE ASSEMBLY. LOG THE CONDITION OBSERVED. PHOTOGRAPH THE CONDITION OF THE GUIDE AND ANY UNUSUAL CONDITIONS.

F) MANUALLY STROKE THE CORE WITHIN THE BASE SUBASSEMBLY AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

G) EXAMINE THE BODY GASKET (O-RING) AND RECORD THE OBSERVATIONS/CONDITIONS (DISCOLORATION, SWELLING &

PAGE 9

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009372MPL NUMBER
1521F0022D

COMP CAT

CODE
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

ETC.). PHOTOGRAPH ANY UNUSUAL CONDITIONS NOTED.

4. SOLENOID "B" DISASSEMBLY: NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905.

I&C

A) REMOVE SOLENOID "B", INCLUDING THE ADAPTER, AND BASE SUBASSEMBLY AS A COMPLETE ASSEMBLY FROM THE VALVE BODY.

B) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF OBVIOUS DAMAGE OR FOREIGN MATERIAL.

C) REMOVE THE STEM, DISC HOLDER SPRING, DISC HOLDER AND BODY GASKET (C-RING). VERIFY PROPER INSTALLATION OF THE STEM. ESPECIALLY PROPER ATTACHMENT OF THE STEM TO THE CORE. RECORD CONDITION OF THE BODY GASKET (O-RING), DISCOLORATION, SWELLING & ETC. LOG ANY OTHER OBVIOUS DAMAGE THAT WAS OBSERVED.

< NOAD D070

FAILURE ANALYSIS

D) INSPECT THE ID OF THE PLUGNUT/ADAPTOR ASSY AND THE STEM FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE STEM, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE STEM AND ANY UNUSUAL CONDITIONS.

E) MANUALLY STROKE THE STEM IN ITS GUIDE(S) AND THE DISC HOLDER IN ITS GUIDES. RECORD THE RELATIVE FREEDOM OF MOVEMENT ON THE TROUBLESHOOTING LOG PER PAP-0905.

F) EXAMINE THE DISC HOLDER SPRING FOR EVIDENCE OF FOREIGN MATERIAL AND SIGNS OF DAMAGE. MEASURE THE FREE HEIGHT OF THE SPRING. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS. RECORD IF SPRING APPEARS TO BE COCKED WITHIN HOLDER OR APPEARS TO HAVE BEEN BINDING

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PERRY | LEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMICWO NUMBER MPL NUMBER CODE WO LOCATION M/E
870009372 1B21F0022D V V C O/ -664 1 /SR

M/E

I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

G) EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH COULD PREVENT ITS SMOOTH MOTION. UNUSUAL TACKINESS OR CONTAMINATION OF THE DISC SEALING SURFACE IS OF PARTICULAR INTEREST. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE SEALING SURFACES.

H) PERFORM CONTINUITY CHECK OF COIL B RECORD BELOW RESISTANCE..... M&TE MPL.....

I) MEGGER COIL TO SOLENOIL CHASSIS (AT 250 VOLTS)
RECORD BELOW.
RESISTANCE..... M&TE MPL.....

J) REMOVE SOLENOID COIL BY CUTTING COIL LEADS AS DIRECTED BY RESPONSIBLE ENGINEER.

K) REMOVE THE PLUGNUT/ADAPTER ASSY., BODY GASKET (O-RING) FROM THE SOLENOID VALVE ASSEMBLY. REMOVE PLUGNUT GASKET (O-RING) AND CORE FROM THE SOLENOID BASE SUBASSEMBLY. VERIFY THE PROPER INSTALLATION OF THE BASE SUBASSEMBLY.

L) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF FOREIGN MATERIAL OR DAMAGE.

M) INSPECT THE ID OF THE SOLENOIL BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PAR PAP-0905. PHOTOGRAPH THE CONDITION OF THE CONDITION OF THE GUIDE TUBE AND ANY UNUSUAL CONDITIONS.

7

N) EXAMINE THE PLUGNUT/ADAPTOR ASSY. AND BODY GASKETS AND LOG THE OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS.

080

INSPECTION CHECKLIST

1

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B0

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 1 /SR I/I

WO NUMBER 870009372	MPL NUMBER 1B21F0022D	CODE VLV	WO LOCATION C O/ -664	M/E 1 /SR	SEISMIC I/I
------------------------	--------------------------	-------------	--------------------------	--------------	----------------

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

NOTE: IN ADDITION TO A DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECK LIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

1. ACTUATOR AIR PACK INITIAL INSPECTION
 INSPECTION INITIALS/DATE RECORD
 POINT R.E. VENDOR TECHNICIAN SAT/UNSAT

A) BOLT

TIGHTNESS

B) AIR PORT

CONDITION

C) EXTERNAL SURFACE

CONDITON

2. MODEL NP-8323-A20E S.V. INITIAL INSPECTION.

A) AIR PORT

CONDITIONS

B) EXTERNAL SURFACE

CONDITIONS

C) FOREIGN MATERIAL

SOLENOID A

SOLENOID B

D) GUIDING SURFACE CONDITIONS

SOLENOID A

CORE GUIDE

SOLENOID B

CORE GUIDE

STEM/PLUG

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER 870009372	MPL NUMBER 1B21F0022D	CODE VLV	COMP CAT	WO LOCATION C O/ -664	M/E 1 /SR	M/E I/I
------------------------	--------------------------	-------------	----------	--------------------------	--------------	------------

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
	NUT .....	.....	
E)	STEM/CORE.....	.....	
	ORIENTATION.....	.....	
F)	O-RING CONDITION			
	"A" SIDE BODY.....	.....	
	O-RING .....	.....	
	"B" SIDE BODY.....	.....	
	O-RING .....	.....	
	PLUGNUT/ ADAP.ASSY .....	.....	
	O-RING			
	B SIDE BODY O-RING BETWEEN BASE AND ADAPTER .....	.....	

<HQAD
HOLD> 090

FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 4-WAY AIR CONTROL VALVE I&C 2

A) REMOVE THE 4-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 4-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLES AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

1

PAGE 13

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009372MPL NUMBER
1B21F0022D

COMP CAT

CODE
VLVWO LOCATION
C O/ -664M/E M/E
1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

100 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 4-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	RECORD TECH	RECORD SAT/UNSAT
------------------	------	----------------------	-------------	------------------

EXPOSED PORTS/
GASKETS

INTERNAL/O-RING
(PILOT INLET
AIR CAP ADAPTOR)

SHUTTLE
STROKE
.....

INTERNAL/O-RINGS
O-RINGS

SHUTTLE

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

GASKETS/	.....	.....	.....	.....
O-RINGS/	.....	.....	.....	.....
COMPONENTS	.....	.....	.....	.....

< NQAD >
HOLD 110 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORIGREN 3-WAY AIR CONTROL VALVE I&C 2

A) REMOVE THE 3-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 3-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIAL FOUND OR DAMAGE NOTED.

C) REMOVE THE EXHAUST MUFFLER CONTROL VALVE AND EXAMINE FOR ANY EVIDENCE OF FOREIGN MATERIAL. RECORD ALL OBSERVATIONS.

D) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

E) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE(S) AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

F) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE(S) AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER

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PERRY CLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFE.: SEISMIC

WO NUMBER 870009372	MPL NUMBER 1B21F0022D	CODE VLV	WO LOCATION C O/ -664	M/E 1 /SR	M/E I/I
------------------------	--------------------------	-------------	--------------------------	--------------	------------

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

DISPOSITION/EVALUATION.

120 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 3-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE	RECORD
	VENDOR	TECH	SAT/UNSAT

EXPOSED PORTS/
GASKETS 1

EXHAUST
MUFFLER
1

INTERNAL/
O-RING
(PILOT INLET AIR CAP ADAPTOR)

SHUTTLE
STROKE
1

INTERNAL/
O-RINGS
1

SHUTTLE
GASKETS/
O-RINGS/
COMPONENTS
1

130 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 2-WAY AIR CONTROL VALVE

- A) REMOVE THE 2-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1

LAST CHG: 11/06/87

WO NUMBER
870009372MPL NUMBER
1B21F0022D

COMP CAT

CODE

WO LOCATION

VLV

C O/ -664

SAFETY SEISMIC

M/E M/E

1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PEWS
------	-------------	--------------	-----------	--------------

AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 2-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIALS, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

140 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 2-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	RECORD TECH	SAT/UNSAT
------------------	------	----------------------	-------------	-----------

EXPOSED PORTS/

PAGE 17

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

M151B03

WO NUMBER
870009372COMP CAT
MPL NUMBER
1B21F0022D
CODE
VLV
WO LOCATION
C O/ -66411/06/87
14:34:58
REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
I/SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

GASKETS

INTERNAL/
O-RING

(PILOT INLET AIR CAP ADAPTOR)

SHUTTLE

STROKE

INTERNAL/
O-RINGS

SHUTTLE

GASKETS/

O-RINGS/

COMPONENTS

150 RESTORATION

1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST
USING INDEPENDENT VERIFICATION PER IAP-0503.

I&C

2

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS
REQUIREMENTS HAVE BEEN MET PER PAP-0204.

I&C

2

3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND
FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR
TERMINATION PER PAP-0512.

I&C

2

4. ANY DEFECTIVE PARTS REMOVED UNDER THIS WORK ORDER
ARE TO BE EVALUATED BY THE RESPONSIBLE ENGINEER
(VINCE CONCIL OR ALTERNATE) FOR RETENTION FOR FURTHER
ANALYSIS, RETURNED TO THE SALVAGE WAREHOUSE PER
SMI-018, OR TO BE SCRAPPED. NOTE THE DISPOSITION ON
THE WORK ORDER CLOSING SHEET. PRIOR TO REMOVING PARTS
FROM THE R.C.A., HEALTH PHYSICS MUST SURVEY AND
RELEASE THEM PER PAP-0515. THE RESPONSIBLE ENGINEER
MUST ALSO APPROVE ANY RELEASE OF PARTS.

I&C

2

RESPONSIBLE ENGINEER APPROVAL OBTAINED

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009372MPL NUMBER
1B21F0022D

COMP CAT

CODE
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

NAME.....DATE.../.../...TIME.....

160 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED. I&C SUP 1
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204. I&C SUP 1
3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503. I&C SUP 1

170 FIRE/VAPOR BARRIERS

FIRE/VAPOR BARRIERS TO RESTORED UNDER W.O. #87-9293. I&C

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 11/06/87

M151B01

TIME 14:34:57

REV 1

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009372	I&C	1B21F0022D	I&C TROUBLESHOOT	C O/ -664

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
1 2 3	3 4 5	VLV	5X	1 /SR	I/I	11	NO

SPECIAL PERMIT NO	RETEST NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP	TECH
				REQ'D	SPEC
				YES	YES

SYSTEM NAME: NUCLEAR BOILER (NSSS)

SUMMARY : FAILURE ANALYSIS OF AIRPACK & SOLENOIDS except slow closure solenoids
MPL NAME : FIRST MSIV

PLANNER REMARKS

THIS W.O. WILL PERFORM FAILURE ANALYSIS ON SOLENOIDS & AIR RELAYS FOR
MSIV 1B21F022D.

P.C.11/5/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

*****REFER TO ATTACHED JOB TRAVELER*****

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY
REVIEWED BY NQAD/AIA
APPROVED BY
APPROVAL TO COMMENCE WORK
WORK COMPLETE
APPROVAL TO COMMENCE TEST
RETEST COMPLETE
REVIEW BY NQAD/AIA
ACCEPTED BY UNIT SUPERV.

Daniel Cherry
D.C. 11/6/87 TIME: 10:00 DATE 11/6/87
John Murphy TIME: 10:00 DATE 11/6/87
N/A 11/6/87 TIME: ____ DATE ____
N/A 11/6/87 TIME: ____ DATE ____
____ DATE ____
____ DATE ____
____ DATE ____
____ DATE ____

PAGE 2
M151B23

PERRY CLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/06/87
14:34:57

WO# 870009372
MPL 1B21F0022D

COMP CAT VLV

PRIORITY 5X
SFTY M/E 1 /SR

LOC C O/ -664

LN

REVISIONS TEXT

REV 1 OF 1

01 REVISED TO REMOVE SOLENOID COIL AND DELLTE DUPLICATE
02 STEPS

PEC 11/06/87 14:34:39
PEC 11/06/87 14:34:39

PAGE 3 PERRY NUCLEAR POWER PLANT WORK ORDER 11-06-87
RELATED REPETITIVE TASK LIST 14:34:57
M151B13 REV NO: 1
LAST CHNG:11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
		CODE	WO LOCATION	M/E M/E
	1B21F0022D	VLV	C O/ -664	1 /SR I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
------------	-----------	------------	---------------------

FOR TASK CATEGORY: (LLRT)LOCAL LEAK RATE TESTING
R85 003790 TECHS 1B21F0022D PERFORM PRE AND POST MAINT LLRT

FOR TASK CATEGORY: (MEPM)MECHANICAL & ELECTRICAL PM'S
R85 011026 MAINT 1B21F0022D REPLACE NON-METALLIC PARTS (EQ)
R85 011121 MAINT 1B21F0022D REPLACE PACKING, CHECK LIMIT SWITCH

FOR TASK CATEGORY: (PI)PLANT INSTRUMENTS
R85 010956 I&C 1B21F0022D REPLACE NONMETALLIC PARTS,CLEAN,LUBE(EQ)

FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE
R85 013050 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T1400
R85 013051 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T2001
R85 013052 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T2003
R85 013053 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T9415
R86 011266 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI T23-T1201
R86 012775 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI C61-T1104

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PERRY NUCLEAR POWER PLANT WORK ORDER
RELATED WORK ORDER LIST

11/06/87

14:34:58

M151B02

REV NO: 1

LAST CHNG: 11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
		CODE	C O/ -664	M/E	M/E
	1B21F0022D	VLV		1 /SR	I/I

WO NUMBER	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
870009293	I&C	1B21F0022D	REM. & REPLACE PILOT CONTROL VALVE
870009323	I&C	1B21F0022D	RECORD SOLENOID VOLTAGE & ACCUM PRESSURE

PAGE 5

PERRY CLEA. POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009372	LB21F0022D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

010 PURPOSE

THE PURPOSE OF THIS PROCEDURE/W.O. IS TO PROVIDE DISASSEMBLY AND INSPECTION PROCEDURES FOR THE MSIV ACTUATOR ASSEMBLY. THREE OF EIGHT PERRY MSIV'S EXPERIENCED A DELAYED CLOSURE DURING PLANT SVI TESTING. THIS PROCEDURE/W.O. ASSUMES THE AIR PACT ASSEMBLY IS REMOVED FROM THE MSIV AND IS LOCATED IN AN AREA PREPARED FOR DISASSEMBLY. THE INSPECTION IS CENTERED ON THE ASCO MODEL 8323 3-WAY DUAL SOLENOID VALVE ASSEMBLY, WHICH IS CONSIDERED TO CONTAIN THE SOURCE OF THE PROBLEM.

I&C

020 PRECAUTIONS

1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204. I&C 2
2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503. I&C 2
3. ENSURE ALL LOOSE PARTS REMOVED UNDER THIS W.O. ARE CAREFULLY IDENTIFIED AND BAGGED. COTTON-LINE GLOVES TO BE USED WHEN HANDLING ANY INTERNAL PARTS. ENSURE O-RINGS AND SOFT SEATED MATERIALS ARE CAREFULLY IDENTIFIED AND ONLY STORED IN GLASS CONTAINERS. I&C
4. ENSURE ALL PHOTOGRAGHS ARE ADEQUATLY CATALOGED TO POSITIVLY IDENTIFY EACH PHOTOGRAGH TO THE PROPER PART. I&C

030 REF./PREPARATION

1. MAINTENANCE MANUAL FOR HILLFR MODEL SA-A068 VALVE ACTUATOR. I&C
2. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, VENDOR MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED FAILURE ANALYSIS. I&C

040 NOTIFICATIONS

PAGE 6

PERRY (CLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMIC

NO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV	C O/ -664	1 / SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
1.	NOTIFY MMQS @ X6350 PRIOR TO START OF WORK. MMQS LOG #.....DATE...../.....TIME.....		I&C	
2.	NOTIFY R.S.E OR ALTERNATE PRIOR TO START OF WORK TO ALLOW NOTIFICATION TO THE N.R.C.		I&C	
	N.R.C. REPRESENTATIVE NOTIFIED.....		RSE	
3.	NRC PRESENCE APPLICABLE (CIRCLE): YES / NO		RSE	

QAD ▶ HOLD 050 FUNCTIONAL BENCH CHK

NOTE: DURING THE PERFORMANCE OF THIS WORK ORDER
(BENCH CHECK OPERATIONS AND FAILURE ANALYSIS), STEPS
MAY BE PERFORMED OUT OF SEQUENCE AT THE DISCRETION OF
THE RESPONSIBLE ENGINEER.

1

NOTE: MMQS INSPECTOR AND RESPONSIBLE SYSTEM ENGINEER,
OR ALTERNATE, ARE TO BE PRESENT AT ALL TIMES WHILE
BENCH CHECK OPERATIONS AND FAILURE ANALYSIS ARE BEING
PERFORMED.

- | | | |
|---|-----|---|
| 1. THE MSIV ACTUATOR AIR PACK SHALL BE PLACED ON A
CLEAN SURFACE (SURFACE TO BE COVERED WITH PAPER
DURING THE PERFORMANCE OF THE FOLLOWING WORK STEPS. | I&C | 2 |
| 2. ALL OBSERVATIONS SHALL BE LOGGED ON THE TROUBLE-
SHOOTING LOG IN ACCORDANCE WITH PAP-0905. ALL
ABNORMAL FINDINGS AND THE CONDITION OF CRITICAL PARTS
SHALL BE PHOTOGRAPHED. | I&C | 2 |
| 3. INITIAL INSPECTION: THE MSIV ACTUATOR AIR PACK
SHALL BE INSPECTED FOR SIGNS OF PHYSICAL DAMAGE AND
CONTAMINATION. | I&C | 2 |
| A) INSPECT BOLTS FOR TIGHTNESS. | | |
| B) INSPECT EXPOSED AIR PORTS FOR SIGNS OF FOREIGN
MATERIAL AND BLOCKAGE. | | |

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

M151B03

11/06/87

14:34:58

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 C O/ -664 1 /SR I/I

WO NUMBER	MPI NUMBER	COMP CAT	CODE	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV		C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

C) PHOTOGRAPH THE ASSEMBLY AS A WHOLE AND ANY RELEVANT INDICATIONS FOUND DURING THE INSPECTION.

4. CONNECT THE TEST POWER CONTROL BOX (L70-V063B OR EQUIVALENT) TO THE MSIV ACTUATOR AIR PACK. (REFER TO 208-013-H36, 209-13-5) I&C 2
5. CONNECT NITROGEN PRESSURE SOURCE TO THE MSIV ACTUATOR AIR PACK. PRESSURE TO BE SET AT 90 PSIG MINIMUM, OR AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, NOT TO EXCEED 130 PSIG. I&C 2
6. PERFORM A "BENCH CHECK" OF THE MSIV ACTUATOR AIR PACK AS REQUIRED TO DETERMINE UNIT OPERABILITY. UNIT IS TO BE OPERATED A MINIMUM OF THREE TIMES IN THE "FAST CLOSE" MODE. I&C 2
7. PERFORM OTHER TROUBLESHOOTING EFFORTS AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE. I&C 2

△ HQAD △ HOLD △ 060 FAILURE ANALYSIS

1. REFER TO VENDOR MANUAL FOR DISASSEMBLY INSTRUCTIONS, ASSEMBLY DRAWINGS, PART NUMBERS, AND PART DESCRIPTIONS TO SUPPLEMENT THE FOLLOWING INSTRUCTIONS. I&C
 2. DISASSEMBLY OF THE ASCO MODEL NP-8323-A20E 3-WAY DUAL SOLENOID VALVE I&C
- A) REMOVE THE SOLENOID VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.
- B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALVE ASSEMBLY FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE.. INCLUDING CAREFUL INSPECTION OF THE INLET STRAINER (PART #18). EXAMINE FOR MIGRATION

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 COMP CAT SAFETY SEISMIC
 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009372 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

OF LOCA SEAL TO SOLENOID AND RECORD RESULTS.

- C) EXAMINE THE PILOT AIR LINE FOR FOREIGN MATERIAL. RECORD IF ANY THREAD LUBRICANT IS NOTED TO BE PRESENT AT THE THREADED CONNECTIONS AND CONDITION OF THE LUBRICANT. DO NOT REMOVE ANY LUBRICANT SEAL FROM PILOT AIR LINE. RETAIN ANY LOOSE LUBRICANT FOR SUBSEQUENT EVALUATION.
- D) RECORD ALL OBSERVATIONS ON TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL OBSERVATIONS.
- E) REFER TO ASCO BULLETIN 8323 AND ASCO DRAWINGS JVA 210-165 PROVIDED IN THE MAINTENANCE MANUAL FOR DISASSEMBLY OF THE SOLENOID VALVE.

3. DISASSEMBLY OF SOLENOID "A": NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905. I&C

A) PLACE THE SOLENOID VALVE ON THE CLEAN WORK AREA.

B) REMOVE SOLENOID "A" AND THE BASE SUBASSEMBLY AS A SINGLE ASSEMBLY FROM THE VALVE BODY.

C) REMOVE THE BODY GASKET AND CORE ASSEMBLY.

D) EXAMINE ALL FRESHLY EXPOSED COMPONENTS FOR SIGNS OF OBVIOUS DAMAGE AND EVIDENCE OF FOREIGN MATERIALS. RECORD ANY FOREIGN MATERIALS FOUND.

E) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. OBSERVE THAT THE CORE SPRING IS PROPERLY ATTACHED TO THE CORE GUIDE AND CORE ASSEMBLY. LOG THE CONDITION OBSERVED. PHOTOGRAPH THE CONDITION OF THE GUIDE AND ANY UNUSUAL CONDITIONS.

F) MANUALLY STROKE THE CORE WITHIN THE BASE SUBASSEMBLY AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

G) EXAMINE THE BODY GASKET (O-RING) AND RECORD THE OBSERVATIONS/CONDITIONS (DISCOLORATION, SWELLING &

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP	SECT	JOB CLASS	# OF PERS
------	-------------	------	------	-----------	-----------

ETC.). PHOTOGRAPH ANY UNUSUAL CONDITIONS NOTED.

4. SOLENOID "B" DISASSEMBLY: NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905.
 A) REMOVE SOLENOID "B", INCLUDING THE ADAPTER, AND BASE SUBASSEMBLY AS A COMPLETE ASSEMBLY FROM THE VALVE BODY.

I&C

B) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF OBVIOUS DAMAGE OR FOREIGN MATERIAL.

C) REMOVE THE STEM, DISC HOLDER SPRING, DISC HOLDER AND BODY GASKET (O-RING). VERIFY PROPER INSTALLATION OF THE STEM. ESPECIALLY PROPER ATTACHMENT OF THE STEM TO THE CORE. RECORD CONDITION OF THE BODY GASKET (O-RING), DISCOLORATION, SWELLING & ETC. LOG ANY OTHER OBVIOUS DAMAGE THAT WAS OBSERVED.

NO AD D070 FAILURE ANALYSIS
HOLD

D) INSPECT THE ID OF THE PLUGNUT/ADAPTOR ASSY AND THE STEM FOR CONDITIONS WHICH SHOULD INHIBIT SMOOTH MOVEMENT OF THE STEM, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE STEM AND ANY UNUSUAL CONDITIONS.

E) MANUALLY STROKE THE STEM IN ITS GUIDE(S) AND THE DISC HOLDER IN ITS GUIDES. RECORD THE RELATIVE FREEDOM OF MOVEMENT ON THE TROUBLESHOOTING LOG PER PAP-0905.

F) EXAMINE THE DISC HOLDER SPRING FOR EVIDENCE OF FOREIGN MATERIAL AND SIGNS OF DAMAGE. MEASURE THE FREE HEIGHT OF THE SPRING. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS. RECORD IF SPRING APPEARS TO BE COCKED WITHIN HOLDER OR APPEARS TO HAVE BEEN BINDING

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PERRY / NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
14:34:58

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMICWO NUMBER
870009372COMP CAT
MPL NUMBER
1B21F0022D
CODE
VLV
WO LOCATION
C O/ -664M/E
1 / SR
M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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G) EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH COULD PREVENT ITS SMOOTH MOTION. UNUSUAL TACKINESS OR CONTAMINATION OF THE DISC SEALING SURFACE IS OF PARTICULAR INTEREST. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE SEALING SURFACES.

~~H)~~ PERFORM CONTINUITY CHECK OF COIL B RECORD BELOW RESISTANCE. 11.5-4.7... M&TE MPL.479: NO.56. ~~X~~.....

I) MEGGER COIL TO SOLENOIL CHASSIS (AT 250 VOLTS)
RECORD BELOW.
RESISTANCE...~~∞~~..... M&TE MPL.476-2.821.H.....

J) REMOVE SOLENOID COIL BY CUTTING COIL LEADS AS DIRECTED BY RESPONSIBLE ENGINEER.

K) REMOVE THE PLUGNUT/ADAPTER ASSY., BODY GASKET (O-RING) FROM THE SOLENOID VALVE ASSEMBLY. REMOVE PLUGNUT GASKET (O-RING) AND CORE FROM THE SOLENOID BASE SUBASSEMBLY. VERIFY THE PROPER INSTALLATION OF THE BASE SUBASSEMBLY.

L) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF FOREIGN MATERIAL OR DAMAGE.

M) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PAR PAP-0905. PHOTOGRAPH THE CONDITION OF THE CONDITION OF THE GUIDE TUBE AND ANY UNUSUAL CONDITIONS.

N) EXAMINE THE PLUGNUT/ADAPTOR ASSY. AND BODY GASKETS AND LOG THE OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS.

20
10
87
67-5-094
PARTIAL

PARTIAL
CEI
GA
05
11-6-87
97-1-726

1

7

PAGE 11

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMIC

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009372	1B21F0021D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP	SECT	JOB CLASS	# OF PERS
------	-------------	------	------	-----------	-----------

NOTE: IN ADDITION TO A DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECK LIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

1. ACTUATOR AIR PACK INITIAL INSPECTION

INSPECTION	INITIALS/DATE	RECORD		
POINT	R.E.	VENDOR	TECHNICIAN	SAT/UNSAT
A) BOLT				
TIGHTNESS				
B) AIR PORT CONDITION				
C) EXTERNAL SURFACE CONTITION				

See Rev. O.

2. MODEL NP-8323-A20E S.V. INITIAL INSPECTION.

A) AIR PORT CONDITIONS	
B) EXTERNAL SURFACE CONDITIONS	
C) FOREIGN MATERIAL	
SOLENOID A	
SOLENOID B	
D) GUIDING SURFACE CONDITIONS	
SOLENOID A	
CORE GUIDE	
SOLENOID B	
CORE GUIDE	
STEM/PLUG	

See Rev. O

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 1 /SR I/I

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
NUT		
E) STEM/CORE		
ORIENTATION		
F) O-RING CONDITION			
"A" SIDE BODY		
O-RING		
"B" SIDE BODY		
O-RING		
PLUGNUT / ADAP. ASSY	10/17/87 08:45 10/17/87 08:45	DB.C. 11/6/87 DB.C. 11/6/81	SA.T. SOT.	
O-RING				
B SIDE BODY O-RING BETWEEN BASE AND ADAPTER		

not on an explosion proof housing

<NGAD>
HOLD

090

FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 4-WAY AIR CONTROL VALVE I&C 2

A) REMOVE THE 4-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 4-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLES AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

1

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 C O/ -664 1 /SR I/I

WO NUMBER 870009372	MPL NUMBER 1B21F0022D	CODE VLV	COMP CAT	WO LOCATION C O/ -664	M/E	M/E
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STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

100 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 4-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	TECH	RECORD SAT/UNSAT
EXPOSED PORTS/ GASKETS				
INTERNAL/O-RING (PILOT INLET AIR CAP ADAPTOR)				
SHUTTLE STROKE				
INTERNAL/O-RINGS				
SHUTTLE				

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER	MPL NUMBER	COMP CAT	CODE	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV		C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP	SECT	JOB CLASS	# OF PERS
------	-------------	------	------	-----------	-----------

GASKETS/
 O-RINGS/
 COMPONENTS
 110 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 3-WAY AIR CONTROL VALVE I&C 2

A) REMOVE THE 3-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 3-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIAL FOUND OR DAMAGE NOTED.

C) REMOVE THE EXHAUST MUFFLER CONTROL VALVE AND EXAMINE FOR ANY EVIDENCE OF FOREIGN MATERIAL. RECORD ALL OBSERVATIONS.

D) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

E) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE(S) AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

F) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE(S) AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER

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PERRY CLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 1 /SR I/I

WO NUMBER
870009372MPL NUMBER
1B21F0022D

COMP CAT

CODE
VLVWO LOCATION
C O/ -664M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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D: POSITION/EVALUATION.

120 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 3-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE	VENDOR	TECH	RECORD SAT/UNSAT
EXPOSED PORTS/					
GASKETS					
EXHAUST					
MUFFLER					
INTERNAL/					
O-RING					
(PILOT INLET AIR CAP ADAPTOR)					
SHUTTLE					
STROKE					
INTERNAL/					
O-RINGS					
SHUTTLE					
GASKETS/					
O-RINGS/					
COMPONENTS					

130 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 2-WAY AIR CONTROL VALVE

- A) REMOVE THE 2-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL

< NQAUD HOLD >

1

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 C O/ -664 1 /SR I/I

WO NUMBER 870009372	MPL NUMBER 1B21F0022D	CODE VLV	COMP CAT C O/	WO LOCATION -664	M/E 1 /SR	SAFETY SEISMIC I/I
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STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 2-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIALS, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

140 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 2-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	RECORD TECH	SAT/UNSAT
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EXPOSED PORTS/

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009372	1B21F0022D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
	GASKETS .....	.....	
	INTERNAL/ .....	.....	
	O-RING .....	.....	
	(PILOT INLET AIR CAP ADAPTOR)			
	SHUTTLE .....	.....	
	STROKE .....	.....	
	INTERNAL/ .....	.....	
	O-RINGS .....	.....	
	SHUTTLE .....	.....	
	GASKETS/ .....	.....	
	O-RINGS/ .....	.....	
	COMPONENTS .....	.....	

150 RESTORATION

1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST USING INDEPENDENT VERIFICATION PER IAP-0503. I&C 2
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204. I&C 2
3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR TERMINATION PER PAP-0512. I&C 2
4. ANY DEFECTIVE PARTS REMOVED UNDER THIS WORK ORDER ARE TO BE EVALUATED BY THE RESPONSIBLE ENGINEER (VINCE CONCIL OR ALTERNATE) FOR RETENTION FOR FURTHER ANALYSIS, RETURNED TO "F" SALVAGE WAREHOUSE PER SMI-018, OR TO BE SCRAPPED. NOTE THE DISPOSITION ON THE WORK ORDER CLOSING SHEET. PRIOR TO REMOVING PARTS FROM THE R.C.A., HEALTH PHYSICS MUST SURVEY AND RELEASE THEM PER PAP-0515. THE RESPONSIBLE ENGINEER MUST ALSO APPROVE ANY RELEASE OF PARTS. I&C 2

RESPONSIBLE ENGINEER APPROVAL OBTAINED

1

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

14:34:58

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 I/I I/I

WO NUMBER 870009372	MPL NUMBER 1B21F0022D	CODE VLV	COMP CAT C O/ -664	WO LOCATION C O/ -664	M/E 1 /SR	SEISMIC I/I
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STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

NAME.....DATE.../.../...TIME.....

160 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED. I&C SUP 1
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204. I&C SUP 1
3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503. I&C SUP 1

170 FIRE/VAPOR BARRIERS

FIRE/VAPOR BARRIERS TO RESTORED UNDER W.O. #87-9293. I&C

FOLK
blowdown Pipeline

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 11/06/87
TIME 15:08:09
REV 0

M151B01

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009439	I&C	1P52	I&C REWORE	SMC/04 620

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
N A	4 5	MSC	SX	3 /	I/	11	YES

SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS B	INITIATING DOCUMENT NA	RWP	TECH
				REQ'D	SPEC
				YES	NO

SYSTEM NAME: INSTRUMENT AIR
SUMMARY : SAMPLE SUPPLY AIR TO 1B21F028B
MPL NAME : N/A

PLANNER REMARKS

** THIS W.O. IS TO SUPPORT MSIV INVESTIGATION. AIR PARTICLE TEST WILL BE PERFORMED BY CHEMIST. LOW POINT CHECK WILL BE DONE BY I&C.
* REFERENCE 302-243 INST AIR, 302-605 FOR 1B21F028B AND ATWOOD-MORRILL VENDOR MANUAL FILE.
POWER SUPP ***** PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

PERFORM AIR SAMPLE TESTS AT AIR SUPPLY LINES TO 1B21F028B PER THE ATTACHED JOB TRAVELER.

1. Pillow case in blow.
2. Particle count.
3. Dewpoint.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NGAD/AIA

APPROVED BY

APPROVAL TO COMMENCE WORK

WORK COMPLETE

APPROVAL TO COMMENCE TEST

RETEST COMPLETE

REVIEW BY NGAD/AIA

ACCEPTED BY UNIT SUPERV.

<u>John Morrissey</u>	DATE 11/6/87
<u>John Morrissey</u> 11/6/87	DATE 11/6/87
<u>John Morrissey</u>	DATE 11/6/87
<u>John Morrissey</u> TIME: 04:40	DATE 11/6/87
<u>John Morrissey</u>	DATE / /
<u>John Morrissey</u> 11/6/87 TIME: ____	DATE / /
<u>John Morrissey</u>	DATE / /

PAGE 2

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

15:08:10

M151B03

REV NO: 0
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 SMC/04 620 3 / I/

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009439	LP52	MSC	SMC/04 620	3 /	I/

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	-----------	-----------	-----------

010 PRECAUTIONS

1. ENSURE AIRLINE CLEANLINESS REQUIREMENTS ARE MAINTAINED IN ACCORDANCE WITH PAP-0204. I&C

2. ENSURE THAT THE INSTRUMENT AIR SUPPLY TO 1B21F028B IS TAGGED IN ACCORDANCE WITH PAP-1401. NOTE: THE AIR SUPPLY WILL BE RED TAGGED PER W.O. 87-9324, BUT WILL HAVE TO BE CHANGED TO A WHITE TAG PRIOR TO THIS WORK. I&C

3. ANY TEMPORARY CONNECTIONS TO THE AIR SUPPLY LINES REQUIRED TO FACILITATE CONNECTION OF THE REQUIRED TEST EQUIPMENT MUST BE CLEANED WITH ACETONE OR AN EQUIVALENT SOLVENT PRIOR TO CONNECTING. I&C/CHEM

020 PREREQUISITES

1. THE AIRPACK FOR VALVE 1B21F028B MUST BE REMOVED PRIOR TO STARTING THIS WORK. (W.O. 87-9324) I&C

2. VALVE 1P52F0648 WILL BE USED TO BLOW AIR AND MUST BE WHITE TAGGED PER PAP-1401 PRIOR TO STARTING THIS WORK. I&C

3. COMMUNICATION SHOULD BE ESTABLISHED BETWEEN THE AREA OF 1B21F028B AND VALVE 1P52F0648. I&C

4. AN ADAPTER FITTING WILL BE REQUIRED TO ALLOW CONNECTION OF TEST EQUIPMENT TO THE 1 5/8" FLEX CONNECTION. MAINTENANCE WILL SUPPLY THIS FITTING. MAINT

5. IF AREA AMBIENT TEMPERATURE EXCEEDS THE VALUE REQUIRED TO TAKE A GOOD DEWPOINT READING AS CALLED FOR BY THE GENERAL EASTERN INSTRUCTION MANUAL, A COOLING WATER SOURCE MUST BE CONNECTED PER THAT MANUAL.

6. THE AIRPACK FOR 1B21F028B SHOULD BE REMOVED PRIOR TO THIS WORK. IF AIRPACK IS STILL IN PLACE, THE VALVE HAS THE POTENTIAL TO OPEN DUE TO A I&C

CE 03 29 11/7/87

CE 03 29 11/7/87

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

15:08:10

M151B03

REV NO: 0
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER	MPL NUMBER	COMP CAT	CODE	WO LOCATION	M/E	M/E
870009439	1P52		MSC	SMC/04 620	3 /	I/

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

PRESUMED STUCK SHUTTLE VALVE. DO NOT PROCEED IF
THE AIRPACK IS IN PLACE (1B21F028D).

7. THIS WORK SHOULD BE DONE IN CONJUNCTION WITH W.O.
87-9440. THE AIR BLOW CANNOT BE DONE WITH AIR
SUPPLY LINES TO BOTH 1B21F028B AND 1B21F028D OPEN.
AN ADDITIONAL ADAPTER WILL BE REQUIRED TO BLOCK
ONE SUPPLY WHILE BLOWING DOWN THE OTHER.

I&C
11/7/87

CL
QA
29

11/7/87

030 TESTING

1. NOTIFY MMQS PRIOR TO WORK TO WITNESS AIR QUALITY TEST (REQUIRED PER PAP-0204)

I&C

MMQS LOG# .(130!... DATE 11...7..87. TIME: 0457....

2. NOTIFY THE DUTY I&C ENGINEER PRIOR TO STARTING.

I&C

Done
 △ HQAD HOLD ▷ 3. PLACE A PILLOW CASE OVER THE END OF THE INSTRUMENT AIR SUPPLY LINE CONNECTIONS TO 1B21F028B AIRPACK AND BLOWDOWN THE LINES FOR 5 TO 10 MINUTES. NOTE: THE PILLOW CASE SHOULD BE AFFIXED SO THAT AIR IS BLOWN THROUGH AN AREA EQUAL IN SIZE TO THE END OF THE FLEX CONNECTION.

I&C
11/7/87

CL
QA
29

11/7/87

WHEN COMPLETE, PLACE THE PILLOW CASE IN A MARKED PROTECTIVE PLASTIC BAG AND SAVE FOR FUTURE EVALUATION

**** THE NEXT TWO STEPS MAY BE PERFORMED ****

**** IN ANY SEQUENCE REQUIRED TO BEST ****

**** FACILITATE WORK . ****

△ HQAD HOLD ▷ 4. PERFORM AN AIR PARTICLE TEST, TESTING FOR 15 MICRON PARTICLES USING AN AIR PARTICLE COUNTER.

CHEMISTRY

gd

△ HQAD HOLD ▷ 5. PERFORM A DEW POINT CHECK ON THE INSTRUMENT AIR SUPPLY LINE TO THE AIRPACK FOR 1B21F028B PER IMI-E2-18.

I&C

gd

040 ACCEPTANCE CRITERIA

PAGE 4

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

15:08:10

M151B03

REV NO: 0

LAST CHG: 11/06/87

WO NUMBER
870009439MPL NUMBER
1P52COMP CAT
CODE
MSCWO LOCATION
SMC/04 620SAFETY M/E
SEISMIC I/

STEP	DESCRIPTION	RZSP SECT	JOB CLASS	% OF PERS
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1. WORK IS COMPLETE, AND MEETS THE ACCEPTANCE CRITERIA OF PAP-0204 FOR AIR PARTICLE SAMPLE AND IMI-E2-18 FOR DEW POINT MEASUREMENT.

I&C

2. ALL TEMPORARY CONDITIONS CREATED AS A RESULT OF THIS WORK ORDER HAVE BEEN RESTORED TO THE AS FOUND CONFIGURATION AND VERIFIED PER AN INSTRUMENT RESTORATION CHECKLIST PER IAP-0503.

I&C

050 FIRE/VAPOR BARRIERS

NOT APPLICABLE.

7/6/87

FoZED
Baldwin
Airline
DATE 11/06/87
TIME 15:08:23
REV 0

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

INFORMATION ONLY

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009440	I&C	1P52	I&C REWORK	SMC/05 620

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
N A	4 5	MSC	SX	3 /	I/	11	YES

SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS B	INITIATING DOCUMENT NA	RWP REQ'D YES	TECH SP; NO
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SYSTEM NAME: INSTRUMENT AIR
SUMMARY : SAMPLE AIR SUPPLY TO 1B21F028D
MPL NAME : N/A

PLANNER REMARKS

** THIS W.O. IS TO SUPPORT MSIV INVESTIGATION. AIR PARTICLE TEST WILL BE PERFORMED BY CHEMISTRY, DEW POINT CHECK WILL BE DONE BY I&C.

* REFERENCE 302-243 FOR INST AIR, 302-605 FOR 1B21F028D AND ATWOOD-MORRILL VENDOR MANUAL FILE #29-G.

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

PERFORM AIR SAMPLE TESTS AT AIR SUPPLY LINES TO 1B21F028D PER THE ATTACHED JOB TRAVELER.

1. Pillow case blow
2. Air particle test
3. Dew point check.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY NQAD/AIA

APPROVED BY

APPROVAL TO COMMENCE WORK

WORK COMPLETE

APPROVAL TO COMMENCE TEST

RETEST COMPLETE

REVIEW BY NQAD/AIA

ACCEPTED BY UNIT SUPV.

X. Hansen 11/6/87
TIME: ____

W. Way 11/6/87
TIME: ____

DATE 11/6/87
DATE 11/6/87
DATE 11/6/87
DATE ____/____/
DATE ____/____/
DATE ____/____/
DATE ____/____/
DATE ____/____/
DATE ____/____/

PAGE 2 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 JOB TRAVELER 15:08:24
 M151B03 REV NO: 0
 LAST CHG: 11/06/87
 WO NUMBER COMP CAT SAFETY SEISMIC
 870009440 MPL NUMBER CODE WO LOCATION M/E M/E
 1P52 MSC SMC/05 620 3 / I/

INFORMATION ONLY

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
010	PRECAUTIONS			
	1. ENSURE AIRLINE CLEANLINESS REQUIREMENTS ARE MAINTAINED IN ACCORDANCE WITH PAP-0204.		I&C	
	2. ENSURE THAT THE INSTRUMENT AIR SUPPLY TO 1B21F028D IS TAGGED IN ACCORDANCE WITH PAP-1401. NOTE: THE AIR SUPPLY WILL BE RED TAGGED PER W.O. 87-9285, BUT WILL HAVE TO BE CHANGED TO A WHITE TAG PRIOR TO THIS WORK.		I&C	
	3. ANY TEMPORARY CONNECTIONS TO THE AIR SUPPLY LINES REQUIRED TO FACILITATE CONNECTION OF THE REQUIRED TEST EQUIPMENT MUST BE CLEANED WITH ACETONE OR AN EQUIVALENT SOLVENT PRIOR TO CONNECTING.		I&C/CHEM	
020	PREREQUISITES			
	1. THE AIRPACK FOR VALVE 1B21F028D MUST BE REMOVED PRIOR TO STARTING THIS WORK. (W.O. 87-9285)		I&C	
	2. VALVE 1P52F0648 WILL BE USED TO BLOW AIR AND MUST BE WHITE TAGGED PER PAP-1401 PRIOR TO STARTING THIS WORK.		I&C	
	3. COMMUNICATION SHOULD BE ESTABLISHED BETWEEN THE AREA OF 1B21F028D AND VALVE 1P52F0648.		I&C	
	4. AN ADAPTER FITTING WILL BE REQUIRED TO ALLOW CONNECTION OF TEST EQUIPMENT TO THE 1 5/8" FLEX CONNECTION. MAINTENANCE WILL SUPPLY THIS FITTING.		MAINT	
	5. IF AREA AMBIENT TEMPERATURE EXCEEDS THE VALUE REQUIRED TO TAKE A GOOD DEWPOINT READING AS CALLED FOR BY THE GENERAL EASTERN INSTRUCTION MANUAL, A COOLING WATER SOURCE MUST BE CONNECTED PER THAT MANUAL.		I&C	
	6. THIS WORK SHOULD BE DONE IN CONJUNCTION WITH W.O. 87-9439. THE AIR BLOW CANNOT BE DONE WITH AIR SUPPLY LINES TO BOTH 1B21F028B AND 1B21F028D OPEN.		I&C	

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

M1S1B03

15:08:24

REV NO: 0

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER 870009440	MPL NUMBER 1P52	COMP CAT CODE MSC	WO LOCATION SMC/05 620	M/E 3 /	M/E I/
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INFORMATION ONLY

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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AN ADDITIONAL ADAPTER WILL BE REQUIRED TO ONE SUPPLY WHILE BLOWING DOWN THE OTHER.

030 TESTING

1. NOTIFY MMQS PRIOR TO WORK TO WITNESS AIR QUALITY TEST (REQUIRED PER PAP-0204) I&C

MMQS LOG# DATE .../.../... TIME:.....

2. NOTIFY THE DUTY I&C ENGINEER PRIOR TO STARTING. I&C

△^{NQAD}_{HOLD} ▷ 3. PLACE A PILLOW CASE OVER THE END OF THE INSTRUMENT AIR SUPPLY LINE CONNECTIONS TO 1B21F028D AIRPACK AND BLOWDOWN THE LINES FOR 5 TO 10 MINUTES. NOTE: THE PILLOW CASE SHOULD BE AFFIXED SO THAT AIR IS BLOWN THROUGH AN AREA EQUAL IN SIZE TO THE END OF THE FLEX CONNECTION.

WHEN COMPLETE, PLACE THE PILLOW CASE IN A MARKED PROTECTIVE PLASTIC BAG AND SAVE FOR FUTURE EVALUATION

***** THE NEXT TWO STEPS MAY BE PERFORMED *****
***** IN ANY SEQUENCE REQUIRED TO BEST *****
***** FACILITATE WORK. ***** CHEMISTRY

△^{NQAD}_{HOLD} ▷ 4. PERFORM AN AIR PARTICLE TEST, TESTING FOR 15 MICRON PARTICLES USING AN AIR PARTICLE COUNTER. CHEMISTRY

△^{NQAD}_{HOLD} ▷ 5. PERFORM A DEW POINT CHECK ON THE INSTRUMENT AIR SUPPLY LINE TO THE AIRPACK FOR 1B21F028D PER IMI-E2-18. I&C

040 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE, AND MEETS THE ACCEPTANCE CRITERIA OF PAP-0204 FOR AIR PARTICLE SAMPLE AND IMI-E2-18 FOR DEW POINT MEASUREMENT. I&C

2. ALL TEMPORARY CONDITIONS CREATED AS A RESULT OF THIS WORK ORDER HAVE BEEN RESTORED TO THE AS FOUND I&C

PAGE 4

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

15:08:24

M151B03

REV NO: 0

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009440

MPL NUMBER
1P52

COMP CAT

CODE
MSC

WO LOCATION
SMC/05 620

M/E
3 /

M/E
I/

INFORMATION DATA

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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CONFIGURATION AND VERIFIED PER AN INSTRUMENT
RESTORATION CHECKLIST PER IAP-0503.

050 FIRE/VAPOR BARRIERS

NOT APPLICABLE.

5/16/87

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

M151B01

DATE 11/06/87
TIME 17:14:32
REV 4

REV 4

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009433	I&C	1B21F0028B	I&C TROUBLESHOOT	SMC/04-620

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
1 2 3	3 4 5	VLV	SX	1 /SR	I/I	11	NO

SPECIAL PERMIT NO.	RETEST REQ'D NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP REQ'D YES	TECH SPEC YES
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SYSTEM NAME: NUCLEAR BOILER (NSSL)
SUMMARY : FAILURE ANALYSIS OF AIRPACK & SOLENOIDS
MPL NAME : SECOND MSIV

PLANNER REMARKS

THIS W.O. WILL PERFORM FAILURE ANALYSIS ON SOLENOIDS & AIR RELAYS FOR
MSIV 1B21F028B. D.A.D. 11/6/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

***** REFER TO ATTACHED JOB TRAVELER *****

- 1.唐晋t airpuds - check batt. for tightness, etc.
 2. Photograpl in pack
 3. Remove, clean & inspect ASC Dual solenoid.
 4. Megger coil & check continuity
 5. Dismantle of 4-way shuttle valve
 6. " " " 3 " " "
 7. " " " 2 " " "

RELATED REPETITIVE TASKS

INFORMATION ONLY

SEE ATTACHED LIST

PLANNED BY
REVIEWED BY NOAD/MA

REVIEWED BY HQAD/AIA
APPROVED BY

APPROVED BY
APPROVAL NO.

**APPROVAL TO COMMENCE WORK
NBBJ, CONSTRUCTION**

WORK COMPLETE

APPROVAL TO COMMENCE TEST

RETEST COMPLETE

REVIEW BY HQAD/AIA

ACCEPTED BY UNIT SUPERV.

PAGE 2
M151B23

PERRY NUCLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/06/87
17:14:32

WO# 870009433 PRIORITY 5X LOC SMC/04-620
MPL 1B21F0028B COMP CAT VLV SFTY M/E 1 /SR

LN REVISIONS TEXT REV 1 OF 4

01 REVISED TO ELIMINATE DUPLICATE JOB STEPS PEC 11/06/87 11:49:22

LN REVISIONS TEXT REV 2 OF 4

01 REVISED TO WORK JOB STEPS AS DIRECTED BY R.E. PEC 11/06/87 14:15:59
02 NO WORK PERFORMED BY REV #1 PEC 11/06/87 14:15:59

LN REVISIONS TEXT REV 3 OF 4

01 REVISED TO REMOVE SOLENOID COIL IF REQUIRED FOR PEC 11/06/87 15:52:05
02 FAILURE ANALYSIS. PEC 11/06/87 15:52:05

LN REVISIONS TEXT REV 4 OF 4

01 ADDED STEPS FOR DISASSEMBLY/FAILURE ANALYSIS OF THE DSV 11/06/87 17:14:00
02 NORGREN AIR CONTROL VALVES. DSV 11/06/87 17:14:00

INTEGRATION ONLY

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
RELATED REPETITIVE TASK LIST

11-06-87

17:14:32

M151B13

REV NO: 4

LAST CHNG: 11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
		CODE		M/E	M/E
		VLV	SMC/04-620	1 /SR	I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
------------	-----------	------------	---------------------

FOR TASK CATEGORY: (PI) PLANT INSTRUMENTS

R85 010958 I&C 1B21F0028B REPLACE NONMETALLIC PARTS,CLEAN,LUBE(EQ)

FOR TASK CATEGORY: (SVI) TECH. SPEC. SURVEILLANCE

R85 013065 TECHS 1B21F0028B POST MAINT RETEST REQD ? SVI B21-T1400

R85 013066 TECHS 1B21F0028B POST MAINT RETEST REQD ? SVI B21-T2001

R85 013067 TECHS 1B21F0028B POST MAINT RETEST REQD ? SVI B21-T2003

R85 013068 TECHS 1B21F0028B POST MAINT RETEST REQD ? SVI B21-T9416

R86 011268 TECHS 1B21F0028B POST MAINT RETEST REQD ? SVI T23-T1201

INFORMATION ONLY

PAGE 4 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 M151B03 JOB TRAVELER 17:14:33
 REV NO: 4
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 WO NUMBER MPL NUMBER COMP CAT WO LOCATION M/E M/E
 870009433 1B21F0028B VLV SMC/04-620 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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010 PURPOSE

THE PURPOSE OF THIS PROCEDURE/W.O. IS TO PROVIDE DISASSEMBLY AND INSPECTION PROCEDURES FOR THE MSIV ACTUATOR ASSEMBLY. THREE OF EIGHT PERRY MSIV'S EXPERIENCED A DELAYED CLOSURE DURING PLANT SVI TESTING. THIS PROCEDURE/W.O. ASSUMES THE AIR PACK ASSEMBLY IS REMOVED FROM THE MSIV AND IS LOCATED IN AN AREA PREPARED FOR DISASSEMBLY. THE INSPECTION IS CENTERED ON THE ASCO MODEL 8323 3-WAY DUAL SOLENOID VALVE ASSEMBLY, WHICH IS CONSIDERED TO CONTAIN THE SOURCE OF THE PROBLEM.

I&C

020 PRECAUTIONS

INFORMATION ONLY

1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.

I&C

2

2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.

I&C

2

3. ENSURE ALL LOOSE PARTS REMOVED UNDER THIS W.O. ARE CAREFULLY IDENTIFIED AND BAGGED. COTTON-LINE GLOVES TO BE USED WHEN HANDLING ANY INTERNAL PARTS. ENSURE O-RINGS AND SOFT SEALED MATERIALS ARE CAREFULLY IDENTIFIED AND ONLY STORED IN GLASS CONTAINERS.

I&C

4. ENSURE ALL PHOTOGRAPHS ARE ADEQUATLY CATALOGED TO POSITIVLY IDENTIFY EACH PHOTOGRAGH TO THE PROPER PART.

I&C

030 REF./PREPARATION

1. MAINTENANCE MANUAL FOR HILLER MODEL SA-A068 VALVE ACTUATOR.

I&C

2. OBTAIN THE REQUIRED MATE PER PAP-1201, TOOLS, VENDOR MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED FAILURE ANALYSIS.

I&C

040 NOTIFICATIONS

PAGE 5 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 M151B03 JOB TRAVELER 17:14:33

WO NUMBER	MPL NUMBER	COMP CAT	REV NO:	4
870009433	1B21F0028B	CODE	LAST CHG:	11/06/87
		VLV	SAFETY	SEISMIC
			M/E	M/E
			SMC/04-620	1 / SR
				I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
1.	NOTIFY MMQS @ X6350 PRIOR TO START OF WORK.		I&C	
	MMQS LOG #.....DATE..../....TIME.....			
2.	NOTIFY R.S.E OR ALTERNATE PRIOR TO START OF WORK TO ALLOW NOTIFICATION TO THE N.R.C.		I&C	
	N.R.C. REPRESENTATIVE NOTIFIED.....		RSE	
3.	NRC PRESENCE APPLICABLE (CIRCLE): YES / NO		RSE	

<NGAD HOLD > 050 FUNCTIONAL BENCH CHK

NOTE: DURING THE PERFORMANCE OF THIS WORK ORDER (BENCH CHECK OPERATION AND FAILURE ANALYSIS), STEPS MAY BE PERFORMED OUT OF SEQUENCE AT THE DISCRETION OF THE RESPONSIBLE ENGINEER.

NOTE: MMQS INSPECTOR AND RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE, ARE TO BE PRESENT AT ALL TIMES WHILE FAILURE ANALYSIS IS BEING PERFORMED.

- | | | |
|---|-----|---|
| 1. THE MSIV ACTUATOR AIR PACK SHALL BE PLACED ON A CLEAN SURFACE (SURFACE TO BE COVERED WITH PAPER DURING THE PERFORMANCE OF THE FOLLOWING WORK STEPS. | I&C | 2 |
| 2. ALL OBSERVATIONS SHALL BE LOGGED ON THE TROUBLE-SHOOTING LOG IN ACCORDANCE WITH PAP-0905. ALL ABNORMAL FINDINGS AND THE CONDITION OF CRITICAL PARTS SHALL BE PHOTOGRAPHED. | I&C | 2 |
| 3. INITIAL INSPECTION: THE MSIV ACTUATOR AIR PACK SHALL BE INSPECTED FOR SIGNS OF PHYSICAL DAMAGE AND CONTAMINATION. | I&C | 2 |
| A) INSPECT BOLTS FOR TIGHTNESS. | | |
| B) INSPECT EXPOSED AIR PORTS FOR SIGNS OF FOREIGN MATERIAL AND BLOCKAGE. | | |

INFORMATION UNCLASSIFIED

PAGE 6 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 M151B03 JOB TRAVELER 17:14:33

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
870009433	1B21F0028B	CODE VLV	M/E	M/E
			1 / SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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C) PHOTOGRAPH THE ASSEMBLY AS A WHOLE AND ANY RELEVANT INDICATIONS FOUND DURING THE INSPECTION.

4. PERFORM OTHER TROUBLESHOOTING EFFORTS AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE.

< NGAD > 060 FAILURE ANALYSIS

1. REFER TO VENDOR MANUAL FOR DISASSEMBLY INSTRUCTIONS, ASSEMBLY DRAWINGS, PART NUMBERS, AND PART DESCRIPTIONS TO SUPPLEMENT THE FOLLOWING INSTRUCTIONS.

2. DISASSEMBLY OF THE ASCO MODEL NP-8323-A20E 3-WAY DUAL SOLENOID VALVE

A) REMOVE THE SOLENOID VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALVE ASSEMBLY FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. INCLUDING CAREFUL INSPECTION OF THE INLET STRAINER (PART #18). EXAMINE FOR MIGRATION OF LOCA SEAL TO SOLENOID AND RECORD RESULTS.

C) EXAMINE THE PILOT AIR LINE FOR FOREIGN MATERIAL. RECORD IF ANY THREAD LUBRICANT IS NOTED TO BE PRESENT AT THE THREADED CONNECTIONS AND CONDITION OF THE LUBRICANT. DO NOT REMOVE ANY LUBRICANT SEAL FROM PILOT AIR LINE. RETAIN ANY LOOSE LUBRICANT FOR SUBSEQUENT EVALUATION.

D) RECORD ALL OBSERVATIONS ON TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL OBSERVATIONS.

E) REFER TO ASCO BULLETIN 8323 AND ASCO DRAWINGS JVA 210-165 PROVIDED IN THE MAINTENANCE MANUAL FOR DISASSEMBLY OF THE SOLENOID VALVE.

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

17:14:33

M151B03

REV NO: 4
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
I/SR I/IWO NUMBER
870009433MPL NUMBER
1B21F0028B

COMP CAT

CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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3. DISASSEMBLY OF SOLENOID "A": NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905.

I&C

A) PLACE THE SOLENOID VALVE ON THE CLEAN WORK AREA.

B) REMOVE SOLENOID "A" AND THE BASE SUBASSEMBLY AS A SINGLE ASSEMBLY FROM THE VALVE BODY.

C) REMOVE THE BODY GASKET AND CORE ASSEMBLY.

D) EXAMINE ALL FRESHLY EXPOSED COMPONENTS FOR SIGNS OF OBVIOUS DAMAGE AND EVIDENCE OF FOREIGN MATERIALS, RECORD ANY FOREIGN MATERIALS FOUND.

E) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. OBSERVE THAT THE CORE SPRING IS PROPERLY ATTACHED TO THE CORE GUIDE AND CORE ASSEMBLY. LOG THE CONDITION OBSERVED. PHOTOGRAPH THE CONDITION OF THE GUIDE AND ANY UNUSUAL CONDITIONS.

F) MANUALLY STROKE THE CORE WITHIN THE BASE SUBASSEMBLY AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

G) EXAMINE THE BODY GASKET (O-RING) AND RECORD THE OBSERVATIONS/CONDITIONS (DISCOLORATION, SWELLING & ETC.). PHOTOGRAPH ANY UNUSUAL CONDITIONS NOTED.

4. SOLENOID "B" DISASSEMBLY: NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905.

I&C

A) REMOVE SOLENOID "B", INCLUDING THE ADAPTER, AND BASE SUBASSEMBLY AS A COMPLETE ASSEMBLY FROM THE VALVE BODY.

B) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF OBVIOUS DAMAGE OR FOREIGN MATERIAL.

C) REMOVE THE STEM, DISC HOLDER SPRING, DISC HOLDER AND BODY GASKET (O-RING). VERIFY PROPER INSTALLATION OF THE STEM. ESPECIALLY PROPER ATTACHMENT OF THE STEM TO THE CORE. RECORD CONDITION OF THE BODY GAS-

PAGE 8

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

17:14:33

M151B03

REV NO: 4

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009433MPL NUMBER
1B21F0028B

COMP CAT

CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SR
M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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KET (O-RING), DISCOLORATION, SWELLING & ETC. LOG ANY OTHER OBVIOUS DAMAGE THAT WAS OBSERVED.

<^{NQAD}
HOLD> 070 FAILURE ANALYSIS

D) INSPECT THE ID OF THE PLUGNUT/ADAPTOR ASSY AND THE STEM FOR CONDITIONS WHICH SHOULD INHIBIT SMOOTH MOVEMENT OF THE STEM, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE STEM AND ANY UNUSUAL CONDITIONS.

E) MANUALLY STROKE THE STEM IN ITS GUIDE(S) AND THE DISC HOLDER IN ITS GUIDES. RECORD THE RELATIVE FREEDOM OF MOVEMENT ON THE TROUBLESHOOTING LOG PER PAP-0905.

F) EXAMINE THE DISC HOLDER SPRING FOR EVIDENCE OF FOREIGN MATERIAL AND SIGNS OF DAMAGE. MEASURE THE FREE HEIGHT OF THE SPRING. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS. RECORD IF SPRING APPEARS TO BE COCKED WITHIN HOLDER OR APPEARS TO HAVE BEEN BINDING

G) EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH COULD PREVENT ITS SMOOTH MOTION. UNUSUAL TACKINESS OR CONTAMINATION OF THE DISC SEALING SURFACE IS OF PARTICULAR INTEREST. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE SEALING SURFACES.

H) CHECK CONTINUITY OF COIL B AS REQUIRED FOR COIL REMOVAL STEP & RECORD BELOW.
RESISTANCE..... M&TE MPL.....

I) MEGGER COIL TO SOLENOIL CHASSIS (AT 250 VOLTS)
AS REQUIRED FOR COIL REMOVAL STEP & RECORD BELOW.
RESISTANCE..... M&TE MPL.....

INFORMATION ONLY

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
17:14:33

M151B03

REV NO: 4
LAST CHG: 11/06/87
SAFETY SEIFMICWO NUMBER
870009433MPL NUMBER
1B21F0028B

COMP CAT

CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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- J) REMOVE SOLENOID COIL BY CUTTING COIL LEADS AS DIRECTED BY RESPONSIBLE ENGINEER.
- K) REMOVE THE PLUGNUT/ADAPTER ASSY., BODY GASKET (O-RING) FROM THE SOLENOID VALVE ASSEMBLY. REMOVE PLUGNUT GASKET (O-RING) AND CORE FROM THE SOLENOID BASE SUBASSEMBLY. VERIFY THE PROPER INSTALLATION OF THE BASE SUBASSEMBLY.
- L) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF FOREIGN MATERIAL OR DAMAGE.
- M) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PAR PAP-0905. PHOTOGRAPH THE CONDITION OF THE CONDITION OF THE GUIDE TUBE AND ANY UNUSUAL CONDITIONS.
- N) EXAMINE THE PLUGNUT/ADAPTOR ASSY. AND BODY GASKETS AND LOG THE OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS.

080 INSPECTION CHECKLIST

NOTE: IN ADDITION TO A DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECK LIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

1. ACTUATOR AIR PACK INITIAL INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE	RECORD
POINT	VENDOR	TECHNICIAN	SAT/UNSAT
A) BOLT
TIGHTNESS
B) AIR PORT
CONDITION

INSPECTION ONLY

PAGE 10

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
17:14:33

M151B03

REV NO: 4
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
I /SR I/IWO NUMBER MPL NUMBER COMP CAT CODE WO LOCATION M/E SAFETY SEISMIC
670009433 1B21F0028B VLV SMC/04-620 I /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
C)EXTERNAL	SURFACE			
CONTITION				
2. MODEL NP-8323-A20E S.V. INITIAL INSPECTION.				
A)AIR PORT	CONDITIONS			
B)EXTERNAL	SURFACE			
CONDITIONS				
C)FOREIGN	MATERIAL			
SOLENOID A				
SOLENOID B				
D) GUIDING SURFACE CONDITIONS				
SOLENOID A				
CORE GUIDE				
SOLENOID B				
CORE GUIDE				
STEM/PLUG				
NUT				
E) STEM/CORE	ORIENTATION			
F) O-RING CONDITION				
"A" SIDE BODY				
O-RING				
"B" SIDE BODY				
O-RING				
PLUGNUT/				
ADAP.ASSY				

INSPECTED ONLY

PAGE 11

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

17:14:33

M151B03

REV NO: 4

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009433MPL NUMBER
1B21F0028B

COMP CAT

CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

O-RING
B SIDE BODY O-RING BETWEEN BASE AND
ADAPTER

△ NQAD ▷ HOLD 090 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORIGREN 4-WAY AIR CONTROL VALVE I&C 2

A) REMOVE THE 4-WAY AIR CONTROL VALVE REFERRING TO
THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL
AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE
VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE
ACTUATOR AND THE 4-WAY AIR CONTROL VALVE FOR EVIDENCE
OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN
MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE
INTERNAL AND O-RING FOR ANY FOREIGN MATERIAL,
DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLES
AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR
CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS
FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR
UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND
COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS
FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE,
OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPO-
SITION/EVALUATION.

PAGE 12

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

17:14:33

M151B03

REV NO: 4
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 SMC/04-620 1 /SR I/I

WO NUMBER
870009433COMP CAT
MPL NUMBER
1B21F0028B
CODE
VLVWO LOCATION
SMC/04-620

I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	\$ OF PERS
------	-------------	--------------	-----------	---------------

100 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 4-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	RECORD TECH	RECORD SAT/UNSAT
------------------	------	----------------------	-------------	------------------

EXPOSED PORTS/
GASKETS
.....

INTERNAL/O-RING
(PILOT INLET
AIR CAP ADAPTOR)
.....

SHUTTLE
STROKE
.....

INTERNAL/O-RINGS
O-RINGS
.....

SHUTTLE
GASKETS/
O-RINGS/
COMPONENTS
.....

△ HOLD ▽ 110 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 3-WAY AIR CONTROL VALVE

I&C

2

A) REMOVE THE 3-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE

PAGE 13 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
M151B03 JOB TRAVELER 17:14:33
REV NO: 4
LAST CHG: 11/06/87
SAFETY SEISMIC
WO NUMBER MPL NUMBER COMP CAT WO LOCATION M/E M/E
870009433 1B21F0028B VLV SMC/04-620 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
ACTUATOR AND THE 3-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIAL FOUND OR DAMAGE NOTED.				
C) REMOVE THE EXHAUST MUFFLER CONTROL VALVE AND EXAMINE FOR ANY EVIDENCE OF FOREIGN MATERIAL. RECORD ALL OBSERVATIONS.				
D) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.				
E) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE(S) AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.				
F) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.				
G) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE(S) AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.				
H) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.				

120 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 3-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE	VENDOR	RECORD TECH	RECORD SAT/UNSAT
------------------	------	---------------	--------	-------------	------------------

EXPOSED PORTS/

PAGE 14

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
17:14:33

M151B03

REV NO: 4
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
SMC/04-620 1 /SR I/IWO NUMBER
870009433MPL NUMBER
1B21F0028BCOMP CAT
CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
GASKETS		
EXHAUST				
MUFFLER		
INTERNAL / O-RING (PILOT INLET AIR CAP ADAPTOR)		
SHUTTLE				
STROKE		
INTERNAL / O-RINGS		
SHUTTLE				
GASKETS /		
O-RINGS /		
COMPONENTS		

< HOLD > 130

FAILURE ANALYSIS

PROGRESSIVE ONLY

1. DISASSEMBLY OF THE NORGREN 2-WAY AIR CONTROL VALVE

A) REMOVE THE 2-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 2-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIALS, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
17:14:33

M151B03

REV NO: 4
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
SMC/04-620 1 /SR I/IWO NUMBER
870009433MPL NUMBER
1B21F0028BCOMP CAT
CODE
VLVWO LOCATION
SMC/04-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

140 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 2-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	RECORD TECH	SAT/UNSAT
------------------	------	----------------------	-------------	-----------

EXPOSED PORTS/
GASKETS
.....

INTERNAL/
O-RING
(PILOT INLET AIR CAP ADAPTOR)

SHUTTLE
STROKE
.....

INTERNAL/
O-RINGS
.....

SHUTTLE
GASKETS/
.....

INFORMATION CHECK

PAGE 16

PERRY NUCLEAR POWER PLANT WORK ORDER
JCB TRAVELER

11/06/87

17:14:33

M151B03

REV NO: 4

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009433COMP CAT
MPL NUMBER
1B21F0028BCODE
VLVWO LOCATION
SMC/04-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	-----------	-----------	-----------

O-RINGS/
COMPONENTS

150 RESTORATION

1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST
USING INDEPENDENT VERIFICATION PER IAP-0503.

I&C 2

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS
REQUIREMENTS HAVE BEEN MET PER PAP-0204.

I&C 2

3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND
FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR
TERMINATION PER PAP-0512.

I&C 2

4. ANY DEFECTIVE PARTS REMOVED UNDER THIS WORK ORDER
ARE TO BE EVALUATED BY THE RESPONSIBLE ENGINEER
(VINCE CONCIL OR ALTERNATE) FOR RETENTION FOR FURTHER
ANALYSIS, RETURNED TO THE SALVAGE WAREHOUSE PER
SMI-018, OR TO BE SCRAPPED. NOTE THE DISPOSITION ON
THE WORK ORDER CLOSING SHEET. PRIOR TO REMOVING PARTS
FROM THE R.C.A., HEALTH PHYSICS MUST SURVEY AND
RELEASE THEM PER PAP-0515. THE RESPONSIBLE ENGINEER
MUST ALSO APPROVE ANY RELEASE OF PARTS.

INFORMATION ONLY

RESPONSIBLE ENGINEER APPROVAL OBTAINED

NAME..... DATE.../.../... TIME.....

160 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA
OF ALL PROCEDURES USED.

I&C SUP 1

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS
REQUIREMENTS HAVE BEEN MET PER PAP-0204.

I&C SUP 1

3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL
INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER
IAP-0503.

I&C SUP 1

PAGE 17

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

M151B03

17:14:33

REV NO: 4

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009433

MPL NUMBER
1B21F0028B

COMP CAT
CODE
VLV

WO LOCATION
SMC/04-620

M/E
1 /SR

M/E

I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
170	FIRE/VAPOR BARRIERS			
	FIRE/VAPOR BARRIERS TO RESTORED UNDER W.O. #87-9324.		I&C	

INFORMATION ONLY

FO 28D
Reactor Air pump

PAGE 1 PERRY NUCLEAR POWER PLANT WORK ORDER DATE 11/06/87
M151B01 TIME 18:24:30
REV 3

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
870009285	I&C	1B21F00^8D	I&C TROUBLESHOOT	SMC/05-620			
R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
1 2 3	3 4 5	CAT	CODE	M/E	M/E		REQ'D
		VLV	5X	1 /SR	I/I	11	YES
SPECIAL PERMIT NO	RETEST YES	SYSTEM C	INITIATING DOCUMENT			RWP	TECH
			NA			REQ'D	SPEC
						YES	YFS

SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : REM. & REPLACE PILOT CONTROL VALVE
MPL NAME : SECOND MSIV

PLANNER REMARKS

NONE

POWER SUPPLY: ***** PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION
SEE ATTACHED JOB TRAVELER

1. Determine piping.
2. Disconnect air line.
3. Unbolt & remove airpot.

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY
REVIEWED BY NQAD/AIA
APPROVED BY
APPROVAL TO COMMENCE WORK
WORK COMPLETE
APPROVAL TO COMMENCE TEST
RETEST COMPLETE
REVIEW BY NQAD/AIA
ACCEPTED BY UNIT SUPV.

Pat J. M. W.

list, Pollard

J. W.

TIME: ____ : ____ DATE 11/6/87

TIME: ____ : ____ DATE 11/6/87

TIME: ____ : ____ DATE ____/____/____

TIME: ____ : ____ DATE ____/____/____

TIME: ____ : ____ DATE ____/____/____

TIME: ____ : ____ DATE ____/____/____

PAGE 2
M151B23

PERRY NUCLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/06/87
18:24:31

WO# 870009285 PRIORITY 5X LOC SMC/05-620
MPL 1B21F0028D COMP CAT VLV SFTY M/E 1 /SR

LN	REVISIONS TEXT	REV 1 OF 3	PDM 11/02/87 18:53:28
01	REV 1 GENERATED TO CORRECT TYPO'S		
LN	REVISIONS TEXT	REV 2 OF 3	PDM 11/02/87 21:29:54
01	REVISION 2 GENERATED TO ADD THE TEMP. ALT. LOG		
LN	REVISIONS TEXT	REV 3 OF 3	PDM 11/06/87 18:24:24
01	REV 3 GENERATED TO MAKE THE TROUBLESHOOTING OF 1B21-		PDM 11/06/87 18:24:24
02	F0028D FOLLOW THE SAME STEPS AS THOSE FOR 1B21F0028B		

PAGE 3 PERRY NUCLEAR POWER PLANT WORK ORDER 11-06-87
RELATED REPETITIVE TASK LIST 18:24:31
M151B13 REV NO: 3
LAST CHNG:11/02/87

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
870009285	1B21F0028D	CODE VLV	W/O LOCATION SMC/05-620	M/E 1 /SR M/E I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
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FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE

R85 013073	TECHS	1B21F0028D	POST MAINT RETEST REQD ? SVI B21-T1400
R85 013074	TECHS	1B21F0028D	POST MAINT RETEST REQD ? SVI B21-T2001
R85 013075	TECHS	1B 8D	POST MAINT RETEST REQD ? SVI B21-T2003
R85 013076	TECHS	1F)	POST MAINT RETEST REQD ? SVI B21-T9415
R86 011270	TECHS	1B4)	POST MAINT RETEST REQD ? SVI T23-T1201

PAGE 4

PERRY NUCLEAR POWER PLANT WORK ORDER
RELATED WORK ORDER LIST

11/06/87

18:24:31

M151B02

REV NO: 3

LAST CHNG: 11/02/87

WO NUMBER	MPL NUMBER	COMP CAT	CODE	WO LOCATION	SAFETY	SEISMIC
870009285	1B21F0028D	VLV		SMC/C5-620	M/E 1 /SR	M/E I/I

WO NUMBER	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
870009443	I&C	1B21F0028D	FAILURE ANALYSIS OF AIRPACK & SOLENOIDS

PAGE 5 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 JOB TRAVELER 18:24:31
 M151B03 REV NO: 3
 LAST CHG: 11/02/87
 SAFETY SEISMIC
 WO NUMBER MPL NUMBER COMP CAT WO LOCATION M/E M/E
 870009285 1B21F0028D VLV SMC/05-620 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
010	REFERENCE DRW.			
	1. REFER TO DRW. 209-13 SH 2 THROUGH 9 FOR INTERCONNECTIONS TO B21/C71/C95/R61 ECT.		I&C	2
	2. REFER TO VENDOR DRW. 47-58-1&3 FOR SWITCH DRW.			
	3. REFER TO DRW. 208-13-11 FOR VALVE POSITION LIGHTS.			
	4. REFER TO DRW. 208-46-433 FOR ERIS INPUTS.			
	5. REFER TO DRW. 208-40 SH 5 & 8 FOR RX. SCRAM LOGIC.			
	6. ATWOOD & MORRILL VENDOR MANUAL (FILE # 29-G).			
020	PRECAUTIONS			
	1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.		I&C	1
	2. ENSURE TAGOUTS ARE ESTABLISHED TO PROVIDE PERSONNEL OR EQUIPMENT SAFETY PER PAP-1401.		I&C	2
	3. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.		I&C	2
	4. OBSERVE PRECAUTIONS AS SHOWN IN SVI B21-T1400		I&C	2
	5. OBSERVE PRECAUTIONS AS SHOWN IN SVI C71-T0038E		I&C	2
	6. ALL PARTS REMOVED SHALL BE MARKED AND RETAINED FOR FUTURE EVALUATION.		I&C	2
030	PREPARATION			
	1. OBTAIN THE REQUIRE MATE PER PAP-1201, TOOLS, MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED REWORK.SEE SVI-T0038E FOR ADDITIONAL TOOLS REQUIRED.		I&C	2
	2. SUBMIT R.W.P. FORM PER PAP-0512		I&C	2

PAGE 6 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 M151B03 JOB TRAVELER 18:24:31
 REV NO: 3
 LAST CHG: 11/02/87
 WO NUMBER COMP CAT SAFETY SEISMIC
 870009285 MPL NUMBER CODE WO LOCATION M/E M/E
 1B21F0028D VLV SMC/05-620 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
040	TROUBLESHOOTING			
	1.NOTIFY MMQS PRIOR TO WORK, 6350		I&C	2
	INITIALS .....DATE..../....			
	2.NOTIFY UNIT SUPERVISOR PRIOR TO WORK		I&C	2
	3.CONTACT HEALTH PHYSICS PRIOR TO WORK FOR ANY R.W.P. REQUIREMENTS.		I&C	2
<i>NGAD WITNESS</i> ▷	4.DETERMINATE & LABEL WIRES FROM JCT.BOX FOR 1B21F483 TO ALLOW REMOVAL OF AIR PACK & SOLENOIDS VALVES.		I&C	2
	5.CONTACT NC86M SUPERVISOR X6200 OR 6984 TO REMOVE AIR PACK.		I&C	2
	6.VERIFY THAT VALVE IS IN THE CLOSED POSITION AND THAT I&C HAS PERFORMED DETERMINATION OF THE VALVE ACTUATOR CONTROL PANEL.		CRAFT	2
	7.CONTACT PETE ARTHUR OR VINCE CONCEL FOR AUTHORIZATION TO PROCEED TO THE NEXT STEP (NRC APPROVAL REQUIRED PRIOR TO PROCEEDING TO THE NEXT STEP).		I&C	2
	INITIAL.....DATE..../....TIME.....		I&C/RSE	2
◁ <i>NGAD HOLD</i> ▷	8.DICONNECT THE 3/8" & 1 5/8" AIR SUPPLY TUBING CONNECTIONS. UNBOLT AIR CONTROL PANEL FROM ACTUATOR AND REMOVE PANEL. SEAL ALL OPENINGS.		CRAFT	2
	9.DELIVER AIR PACK TO I&C FOR TESTING.		CRAFT	2
NOTE: EXERCISE EXTREME CARE WHEN HANDLING THE AIR CONTROL PANEL AT ALL TIMES. DO NOT SUBJECT IT TO SHOCK. LIMIT ANY DECONTAMINATION NEEDED AS MUCH AS PRACTICAL.				

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

18:24:31

M151B03

REV NO: 3

LAST CHG: 11/02/87

WO NUMBER
870009285MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620

SAFETY

M/E
1 /SR

SEISMIC

M/E
I/I

STEP	DESCRIPTION	RESP	# OF	
		SECT	JOB CLASS PERS	

FROM	TO	PLACED BY		REMOVED BY
		INIT/DATE	INIT/DATE	
LOCATION TB#/TERMINAL	LOCATION TB#/TERMINAL	VERIF BY	VERIF BY	
1.		.../...	.../...	
		.../...	.../...	
2.		.../...	.../...	
		.../...	.../...	
3.		.../...	.../...	
		.../...	.../...	
4.		.../...	.../...	
		.../...	.../...	
5.		.../...	.../...	
		.../...	.../...	
6.		.../...	.../...	
		.../...	.../...	
7.		.../...	.../...	
		.../...	.../...	
8.		.../...	.../...	
		.../...	.../...	
9.		.../...	.../...	
		.../...	.../...	
10.		.../...	.../...	
		.../...	.../...	

060 RESTORATION

1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST

I&C

2

PAGE 8 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 JOB TRAVELER 18:24:31
 M151B03 REV NO: 3
 LAST CHG: 11/02/87
 SAFETY SEISMIC
 WO NUMBER COMP CAT M/E M/E
 870009285 MPL NUMBER CODE WO LOCATION 1 /SR I/I
 1B21F0028D VLV SMC/05-620

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	-----------	-----------	-----------

USING INDEPENDENT VERIFICATION PER IAP-0503.

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.
3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND FOWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR R.W.P. TERMINATION PER PAP-0512. N/A IF NONE.
4. ANY DEFECTIVE/UNUSED PARTS REMOVED UNDER THIS WO SHOULD BE EVALUATED, DISPOSITIONED AND RETURNED TO THE SALVAGE WAREHOUSE PER SMI-018 OR DISCARDED AS NON REPAIRABLE ON THE W.O. CLOSING SHEET. PRIOR TO REMOVING PARTS FROM A RCA; HEALTH PHYSICS MUST SURVEY AND RELEASE THEM PER PAP-0515. N/A IF NOT APPLICABLE

070 RETEST

1. PER S.SEMAN 11/02/87 PERFORM SVI B21-T2001 INCLUDING PIT (LISTED AS STEP 2.4 OF SVI)

080 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED.
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.
3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503.

090 FIRE/VAPOR BARRIERS

- 1.VAPOR BERRIERS RESTORED IN TROUBLESHOOTING STEP.

FO 280

Complete & put
in diso. op.

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 11/06/87

TIME 20:34:35

REV 1

M151B01

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION			
870009443	I&C	1B21F0028D	I&C TROUBLESHOOT	SMC/05-620			
R O C	P O C	COMP CAT 1 2 3	PRIORITY CODE 3 4 5	SAFETY M/E 1 /SR	SEISMIC M/E I/I	ASME 11	TAG OUT REQ'D NO
SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA		RWP REQ'D YES	TEC'A SPEC YES	

SYSTEM NAME: NUCLEAR BOILER (NSSS)
 SUMMARY : FAILURE ANALYSIS OF AIRPACK & SOLENOIDS
 MPL NAME : SECOND MSIV

PLANNER REMARKS

THIS W.O. WILL PERFORM FAILURE ANALYSIS ON SOLENOIDS & AIR RELAYS FOR
 MSIV 1B21F028D.
 P.C. 11/6/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

*****REFER TO ATTACHED JOB TRAVELER*****

1. Visual insp + check bolts for tightness
2. Dray, insp ASCE dual solenoid
3. Megger & continuity check of coils.
4. Dray + insp 4 way shutoff valve.
5. " " 3 " "
6. " " 2 " "
7. Dray + insp ASCE 5 way (test)

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY
 REVIEWED BY NQAD/AIA
 APPROVED BY
 APPROVAL TO COMMENCE WORK
 WORK COMPLETE
 APPROVAL TO COMMENCE TEST
 RETEST COMPLETE
 REVIEW BY NQAD/AIA
 ACCEPTED BY UNIT SUPERV.

11/6/87 SPB

Cush. - Rogers (clc) DATE 11/6/87
A.J. Pollard DATE 11/06/87
____ DATE 11/6/87
FR. Rogers TIME: 14:30 DATE 11/7/87
NIA clc 11-6-87 TIME: ____ DATE ____
NIA clc 11-6-87 TIME: ____ DATE ____
____ DATE ____
____ DATE ____
____ DATE ____

PAGE 2
M151B23

PERRY NUCLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/06/87
20:34:35

WO# 870009443 PRIORITY 5X LOC SMC/05-620
MPL 1B21F0028D COMP CAT VLV SFTY M/E 1 /SR

LN	REVISIONS TEXT	REV	1 OF 1
01	REVISED TO ADD STEPS FOR DISASSEMBLY/FAILURE ANALYSIS	CLC	11/06/87 20:34:29
02	OF THE "SLOW MODE" ASCO 3-WAY SOLENOID VALVE.	CLC	11/06/87 20:34:29

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
RELATED REPETITIVE TASK LIST

11-06-87

20:34:35

M151B13

REV NO: 1

LAST CHNG:11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
		CODE		M/E	M/E
	1B21F0028D	VLV	SMC/05-620	1 / SR	I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
------------	-----------	------------	---------------------

FOR TASK CATEGORY: (PI)PLANT INSTRUMENTS

R85 010960 I&C 1B21F0028D REPLACE NONMETALLIC PARTS,CLEAN,LUBE(EQ)

FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE

R85 013073 TECHS 1B21F0028D POST MAINT RETEST REQD ? SVI B21-T1400

R85 013074 TECHS 1B21F0028D POST MAINT RETEST REQD ? SVI B21-T2001

R85 013075 TECHS 1B21F0028D POST MAINT RETEST REQD ? SVI B21-T2003

R85 013076 TECHS 1B21F0028D POST MAINT RETEST REQD ? SVI B21-T9415

R86 011270 TECHS 1B21F0028D POST MAINT RETEST REQD ? SVI T23-T1201

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PERRY NUCLEAR POWER PLANT WORK ORDER
RELATED WORK ORDER LIST

11/06/87

20:34:36

M151B02

REV NO: 1

LAST CHNG: 11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	CODE	WO LOCATION	SAFETY	SEISMIC
870009443	1B21F0028D		VLV	SMC/05-620	1 /SR	M/E I/I

WO NUMBER	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
870009285	I&C	1B21F0028D	REM. & REPLACE PILOT CONTROL VALVE

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

20:34:36

M151B03

REV NO: 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	t OF PERS
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010 PURPOSE

THE PURPOSE OF THIS PROCEDURE/W.O. IS TO PROVIDE DISASSEMBLY AND INSPECTION PROCEDURES FOR THE MSIV ACTUATOR ASSEMBLY. THREE OF EIGHT PERRY MSIV'S EXPERIENCED A DELAYED CLOSURE DURING PLANT SVI TESTING. THIS PROCEDURE/W.O. ASSUMES THE AIR PACK ASSEMBLY IS REMOVED FROM THE MSIV AND IS LOCATED IN AN AREA PREPARED FOR DISASSEMBLY. THE INSPECTION IS CENTERED ON THE ASCO MODEL 8323 3-WAY DUAL SOLENOID VALVE ASSEMBLY, WHICH IS CONSIDERED TO CONTAIN THE SOURCE OF THE PROBLEM.

I&C

020 PRECAUTIONS

1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.

I&C

2

2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.

I&C

2

3. ENSURE ALL LOOSE PARTS REMOVED UNDER THIS W.O. ARE CAREFULLY IDENTIFIED AND BAGGED. COTTON-LINE GLOVES TO BE USED WHEN HANDLING ANY INTERNAL PARTS. ENSURE O-RINGS AND SOFT SEATED MATERIALS ARE CAREFULLY IDENTIFIED AND ONLY STORED IN GLASS CONTAINERS.

I&C

4. ENSURE ALL PHOTOGRAPHS ARE ADEQUATLY CATALOGED TO POSITIVLY IDENTIFY EACH PHOTOGRAPH TO THE PROPER PART.

I&C

030 REF./PREPARATION

1. MAINTENANCE MANUAL FOR HILLER MODEL SA-A068 VALVE ACTUATOR.

I&C

2. OBTAIN THE REQUIRED MATE PER PAP-1201, TOOLS, VENDOR MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED FAILURE ANALYSIS.

I&C

040 NOTIFICATIONS

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

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M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 / SR M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
1.	NOTIFY MMQS @ X6350 PRIOR TO START OF WORK. MMQS LOG #...1.31.3.....DATE..11/..7/..87 TIME..1447..		I&C	
2.	NOTIFY R.S.E OR ALTERNATE PRIOR TO START OF WORK TO ALLOW NOTIFICATION TO THE N.R.C.		I&C	
	N.R.C. REPRESENTATIVE NOTIFIED <i>Sabot Senn 11/7/87</i>		RSE	
3.	NRC PRESENCE APPLICABLE (CIRCLE): <input checked="" type="radio"/> YES / NO		RSE	

<NGAD 050
HOLD

FUNCTIONAL BENCH CHK

NOTE: DURING THE PERFORMANCE OF THIS WORK ORDER
(BENCH CHECK OPERATIONS AND FAILURE ANALYSIS), STEPS
MAY BE PERFORMED OUT OF SEQUENCE AT THE DISCRETION OF
THE RESPONSIBLE ENGINEER.

NOTE: MMQS INSPECTOR AND RESPONSIBLE SYSTEM ENGINEER,
OR ALTERNATE, ARE TO BE PRESENT AT ALL TIMES WHILE
BENCH CHECK OPERATIONS AND FAILURE ANALYSIS ARE BEING
PERFORMED.

- | | | |
|---|-----|---|
| 1. THE MSIV ACTUATOR AIR PACK SHALL BE PLACED ON A
CLEAN SURFACE (SURFACE TO BE COVERED WITH PAPER
DURING THE PERFORMANCE OF THE FOLLOWING WORK STEPS.) | I&C | 2 |
| 2. ALL OBSERVATIONS SHALL BE LOGGED ON THE TROUBLE-
SHOOTING LOG IN ACCORDANCE WITH PAP-0905. ALL
ABNORMAL FINDINGS AND THE CONDITION OF CRITICAL PARTS
SHALL BE PHOTOGRAPHED. | I&C | 2 |
| 3. INITIAL INSPECTION: THE MSIV ACTUATOR AIR PACK
SHALL BE INSPECTED FOR SIGNS OF PHYSICAL DAMAGE AND
CONTAMINATION. | I&C | 2 |
| A) INSPECT BOLTS FOR TIGHTNESS. | | |
| B) INSPECT EXPOSED AIR PORTS FOR SIGNS OF FOREIGN
MATERIAL AND BLOCKAGE. | | |

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

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M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CONE

WO LOCATION
SMC/05-620M/E
1 / SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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C) PHOTOGRAPH THE ASSEMBLY AS A WHOLE AND ANY RELEVANT INDICATIONS FOUND DURING THE INSPECTION.

4. CONNECT THE TEST POWER CONTROL BOX (L70-V063B OR EQUIVALENT) TO THE MSIV ACTUATOR AIR PACK. (REFER TO 208-013-H36, 209-13-5) I&C 2

5. CONNECT NITROGEN PRESSURE SOURCE TO THE MSIV ACTUATOR AIR PACK. PRESSURE TO BE SET AT 90 PSIG MINIMUM, OR AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, NOT TO EXCEED 130 PSIG. I&C 2

6. PERFORM A "BENCH CHECK" OF THE MSIV ACTUATOR AIR PACK AS REQUIRED TO DETERMINE UNIT OPERABILITY. UNIT IS TO BE OPERATED A MINIMUM OF THREE TIMES IN THE "FAST CLOSE" MODE. I&C 2

7. PERFORM OTHER TROUBLESHOOTING EFFORTS AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE. I&C 2

<^{NGAD}
HOLD> 060

FAILURE ANALYSIS

1. REFER TO VENDOR MANUAL FOR DISASSEMBLY INSTRUCTIONS, ASSEMBLY DRAWINGS, PART NUMBERS, AND PART DESCRIPTIONS TO SUPPLEMENT THE FOLLOWING INSTRUCTIONS. I&C

2. DISASSEMBLY OF THE ASCO MODEL NP-8323-A20E 3-WAY DUAL SOLENOID VALVE I&C

A) REMOVE THE SOLENOID VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALVE ASSEMBLY FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. INCLUDING CAREFUL INSPECTION OF THE INLET STRAINER (PART #18). EXAMINE FOR MIGRATION

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/05/87

20:34:36

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMICWO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 /SR M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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OF LOCA SEAL TO SOLENOID AND RECORD RESULTS.

- C) EXAMINE THE PILOT AIR LINE FOR FOREIGN MATERIAL. RECORD IF ANY THREAD LUBRICANT IS NOTED TO BE PRESENT AT THE THREADED CONNECTIONS AND CONDITION OF THE LUBRICANT. DO NOT REMOVE ANY LUBRICANT SEAL FROM PILOT AIR LINE. RETAIN ANY LOOSE LUBRICANT FOR SUBSEQUENT EVALUATION.
- D) RECORD ALL OBSERVATIONS ON TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL OBSERVATIONS.

E) REFER TO ASCO BULLETIN 8323 AND ASCO DRAWINGS JVA 210-165 PROVIDED IN THE MAINTENANCE MANUAL FOR DISASSEMBLY OF THE SOLENOID VALVE.

3. DISASSEMBLY OF SOLENOID "A": NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905. I&C

A) PLACE THE SOLENOID VALVE ON THE CLEAN WORK AREA.

B) REMOVE SOLENOID "A" AND THE BASE SUBASSEMBLY AS A SINGLE ASSEMBLY FROM THE VALVE BODY.

C) REMOVE THE BODY GASKET AND CORE ASSEMBLY.

D) EXAMINE ALL FRESHLY EXPOSED COMPONENTS FOR SIGNS OF OBVIOUS DAMAGE AND EVIDENCE OF FOREIGN MATERIALS, RECORD ANY FOREIGN MATERIALS FOUND.

E) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. OBSERVE THAT THE CORE SPRING IS PROPERLY ATTACHED TO THE CORE GUIDE AND CORE ASSEMBLY. LOG THE CONDITION OBSERVED. PHOTOGRAPH THE CONDITION OF THE GUIDE AND ANY UNUSUAL CONDITIONS.

F) MANUALLY STROKE THE CORE WITHIN THE BASE SUBASSEMBLY AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

G) EXAMINE THE BODY GASKET (O-RING) AND RECORD THE OBSERVATIONS/CONDITIONS (DISCOLORATION, SWELLING &

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

20:34:36

M151B03

REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC
 M/E M/E
 1 /SR I/I

WO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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Etc.). PHOTOGRAPGH ANY UNUSUAL CONDITIONS NOTED.

4. SOLENOID "B" DISASSEMBLY: NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905.

A) REMOVE SOLENOID "B", INCLUDING THE ADAPTER, AND BASE SUBASSEMBLY AS A COMPLETE ASSEMBLY FROM THE VALVE BODY.

B) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF OBVIOUS DAMAGE OR FOREIGN MATERIAL.

C) REMOVE THE STEM, DISC HOLDER SPRING, DISC HOLDER AND BODY GASKET (O-RING). VERIFY PROPER INSTALLATION OF THE STEM. ESPECIALLY PROPER ATTACHMENT OF THE STEM TO THE CORE. RECORD CONDITION OF THE BODY GASKET (O-RING), DISCOLORATION, SWELLING & ETC. LOG ANY OTHER OBVIOUS DAMAGE THAT WAS OBSERVED.

HOLD HOLD 070

FAILURE ANALYSIS

D) INSPECT THE ID OF THE PLUGNUT/ADAPTOR ASSY AND THE STEM FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE STEM, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PER PAP-0905.

PHOTOGRAPGH THE CONDITION OF THE STEM AND ANY UNUSUAL CONDITIONS.

E) MANUALLY STROKE THE STEM IN ITS GUIDE(S) AND THE DISC HOLDER IN ITS GUIDES. RECORD THE RELATIVE FREEDOM OF MOVEMENT ON THE TROUBLESHOOTING LOG PER PAP-0905.

F) EXAMINE THE DISC HOLDER SPRING FOR EVIDENCE OF FOREIGN MATERIAL AND SIGNS OF DAMAGE. MEASURE THE FREE HEIGHT OF THE SPRING. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPGH ANY UNUSUAL CONDITIONS. RECORD IF SPRING APPEARS TO BE COCKED WITHIN HOLDER OR APPEARS TO HAVE BEEN BINDING

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PERRY NUCLEAR POWER PLANT WORK ORDER
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REV NO: 1
LAST CHG: 11/06/87WO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620SAFETY SEISMIC
M/E M/E
I/SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
G)	EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH COULD PREVENT ITS SMOOTH MOTION. UNUSUAL TACKINESS OR CONTAMINATION OF THE DISC SEALING SURFACE IS OF PARTICULAR INTEREST. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE SEALING SURFACES.			
H)	CHECK CONTINUITY OF COIL B AS REQUIRE FOR COIL REMOVAL STEP & RECORD BELOW. RESISTANCE. J.I.7: 472.0 H.MATE MPL. 470-N056X.....			
I)	MEGGER COIL TO SOLENOIL CHASSIS (AT 250 VOLTS) AS REQUIRED FOR COIL REMOVAL STEP & RECORD BELOW. RESISTANCE. J.I.7: 472.0 H.MATE MPL. 470-N056X..... INFINITE			
J)	REMOVE SOLENOID COIL BY CUTTING COIL LEADS AS DIRECTED BY RESPONSIBLE ENGINEER.			
K)	REMOVE THE PLUGNUT/ADAPTER ASSY., BODY GASKET (O-RING) FROM THE SOLENOID VALVE ASSEMBLY. REMOVE PLUGNUT GASKET (O-RING) AND CORE FROM THE SOLENOID BASE SUBASSEMBLY. VERIFY THE PROPER INSTALLATION OF THE BASE SUBASSEMBLY.			
L)	EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF FOREIGN MATERIAL OR DAMAGE.			
M)	INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PAR PAP-0905. PHOTOGRAPH THE CONDITION OF THE CONDITION OF THE GUIDE TUBE AND ANY UNUSUAL CONDITIONS.			7
N)	EXAMINE THE PLUGNUT/ADAPTOR ASSY. AND BODY GASKETS AND LOG THE OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAGE ANY UNUSUAL CONDITIONS.			

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PERRY NUCLEAR POWER PLANT WORK ORDER
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SAFETY SEISMIC

WO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE

WO LOCATION

SMC/05-620

M/E

1 /SR

M/E

I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
080	INSPECTION CHECKLIST			

NOTE: IN ADDITION TO A DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECK LIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

1. ACTUATOR AIR PACK INITIAL INSPECTION

INSPECTION INITIALS/DATE RECORD

POINT R.E. VENDOR TECHNICIAN SAT/UNSAT

A) BOLT

TIGHTNESS

B) AIR PORT

CONDITION

C) EXTERNAL

SURFACE

CONTITION

2. MODEL NP-8323-A20E S.V. INITIAL INSPECTION.

A) AIR PORT *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* *DOC 11/1/87* ... SAT...
CONDITIONS *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* *DOC 11/1/87* ... SAT...B) EXTERNAL *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* ... SAT...
SURFACE *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* ... SAT...
CONDITIONS *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* ... SAT...C) FOREIGN MATERIAL *SDS 4/17* *DOC 11/1/87* ... SAT...
SOLENOID A *SDS 4/17* *DOC 11/1/87* ... SAT...
SOLENOID B *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* ... UNSAT...
*(Note: Foreign)*D) GUIDING SURFACE CONDITIONS
SOLENOID A *SDS 4/17* *DOC 11/1/87* ... SAT...
CORE GUIDE *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* ... SAT...SOLENOID B *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* ... SAT...
CORE GUIDE *SDS 4/17* *DOC 11/1/87* *DOC 11/1/87* ... SAT...

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PERRY NUCLEAR POWER PLANT WORK ORDER
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REV NO: 1

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SAFETY SEISMIC

WO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 /SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
	(ALLIED STEEL)			
STEM/PLUG	SO 4/18? <i>11/1/87</i> . DEC 11/1/87	SAT....		
NUT	..... <i>1/3/87</i> . DEC 11/1/87	SAT....		
E) STEM/CORE	SRS 4/18? <i>1/1/87</i> . DEC 11/1/87	UNSAT		
ORIENTATION	SO 4/18? <i>1/1/87</i> . DEC 11/1/87	SAT		
F) O-RING CONDITION				
"A" SIDE BODY	SO 4/18? <i>1/1/87</i> . DEC 11/1/87	UNSAT		
O-RING	SO 4/18? <i>1/1/87</i> . DEC 11/1/87	UNSAT		
"B" SIDE BODY	SO 4/18? <i>1/1/87</i> . DEC 11/1/87	UNSAT		
O-RING	SO 4/18? <i>1/1/87</i> . DEC 11/1/87	UNSAT		
PLUGNUT/	.....	.....
ADAP. ASSY	.....	.....
O-RING	.....	.....
B SIDE BODY O-RING BETWEEN BASE AND ADAPTER	.....	.....
		

<NCAD HOLD 090

FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGRAN 4-WAY AIR CONTROL VALVE

I&C

2

A) REMOVE THE 4-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A058 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 4-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLES AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

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 M151B03 JOB TRAVELER 20:34:36

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	SAFETY	COMP CAT	REV NO:	1
870009443	1B21F0028D	VLV	SMC/05-620	SEISMIC		LAST CHG:	11/06/87
						M/E	M/E
						1 / SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

100 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 4-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	TECH	RECORD SAT/UNSAT
EXPOSED PORTS/
GASKETS
INTERNAL/O-RING				
(PILOT INLET
AIR CAP ADAPTOR)
SHUTTLE				
STROKE
INTERNAL/O-RINGS
O-RINGS

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PERRY NUCLEAR POWER PLANT WORK ORDER
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REV NO: 1
 LAST CHG: 11/06/87
 SAFETY SEISMIC

WO NUMBER
870009443MPL NUMBER
B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 / SR M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
SHUTTLE				
GASKETS/		
O-RINGS/		
COMPONENTS		

<^{HOLD}_{HOLD}> 110

FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 3-WAY AIR CONTROL VALVE I&C 2

A) REMOVE THE 3-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 3-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIAL FOUND OR DAMAGE NOTED.

C) REMOVE THE EXHAUST MUFFLER CONTROL VALVE AND EXAMINE FOR ANY EVIDENCE OF FOREIGN MATERIAL. RECORD ALL OBSERVATIONS.

D) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

E) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE(S) AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

F) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE(S) AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

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PERRY NUCLEAR POWER PLANT WORK ORDER
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REV NO: 1
LAST CHG: 11/06/87WO NUMBER
870009443COMP CAT
MPL NUMBER
1B21F0028D
CODE
VLV
WO LOCATION
SMC/05-620
SAFETY
M/E
1 /SR
SEISMIC
M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER
DISPOSITION/EVALUATION.

120 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE
DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST
SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 3-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	TECH	RECORD SAT/UNSAT
EXPOSED PORTS/
GASKETS
EXHAUST MUFFLER
INTERNAL/
O-RING
(PILOT INLET AIR CAP ADAPTOR)				
SHUTTLE STROKE
INTERNAL/
O-RINGS
SHUTTLE GASKETS/ O-RINGS/ COMPONENTS

<NOAD
HOLD> 130

FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 2-WAY AIR CONTROL VALVE

A) REMOVE THE 2-WAY AIR CONTROL VALVE REFERRING TO

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 M151B03 JOB TRAVELER 20:34:36

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	SAFETY	REV NO:	1
870009443	1B21F0028D	VLV	SMC/05-620	M/E	LAST CHG:	11/06/87
				I/I	SAFETY	SEISMIC

STEP	DESCRIPTION	RESP SECT	JOB CLASS	* OF PERS
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THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 2-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIALS, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

140 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 2-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	RECORD TECH
			SAT/UNSAT

PAGE 17

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

20:34:36

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMICWO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 / SR M/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
EXPOSED PORTS/		
GASKETS		
INTERNAL/		
O-RING		
(PILOT INLET AIR CAP ADAPTOR)				
SHUTTLE				
STROKE		
INTERNAL/		
O-RINGS		
SHUTTLE				
GASKETS/		
O-RINGS/		
COMPONENTS		

<NCAD HOLD> 150

FAILURE ANALYSIS

1. DISASSEMBLY OF THE ASCO MODEL NP-8320-1185E 3-WAY SOLENOID VALVE. I&C 2

A) REMOVE THE SOLENOID VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE MANUAL

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALVE ASSEMBLY FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE.

C) EXAMINE THE PILOT AIR LINES FOR FOREIGN MATERIAL.

D) REFER TO ASCO BULLETIN 8320 AND ASCO DRAWING JVA-210-450 PROVIDED IN THE MAINTENANCE MANUAL FOR DISASSEMBLY OF THE SOLENOID VALVE.

E) PLACE THE SOLENOID VALVE ON A CLEAN WORK SURFACE.

F) REMOVE SOLENOID AND THE BASE ASSEMBLY AS A SINGLE

1

6473

PAGE 18

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/06/87
20:34:36

M151B03

REV NO: 1
LAST CHG: 11/06/87
SAFETY SEISMIC
M/E M/E
I/SR I/IWO NUMBER
870009443MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E
1 / SRM/E
I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

ASSEMBLY FROM THE VALVE BODY.

G) REMOVE THE BODY GASKET AND CORE ASSEMBLY.

H) EXAMINE ALL FRESHLY EXPOSED COMPONENTS FOR SIGNS
OF OBVIOUS DAMAGE AND EVIDENCE OF FOREIGN MATERIAL.I) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY
AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD
INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE
PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR
DAMAGE. LOG THE CONDITIONS OBSERVED. PHOTOGRAPH ANY
UNUSUAL CONDITIONS.J) MANUALLY STROKE THE CORE WITHIN THE BASE SUB-
ASSEMBLY AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.K) REMOVE ENDCAP, DISC, DISC SPRING, AND LOWER BODY
GASKET (O-RING).L) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF
FOREIGN MATERIAL OR OBVIOUS DAMAGE.M) EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH
COULD PREVENT SMOOTH OPERATION. UNUSUAL TACKINESS OR
CONTAMINATION OF THE DISC SEALING SURFACE IS OF
PARTICULAR INTEREST. RECORD ALL OBSERVATIONS. PHOTO-
GRAPH ANY UNUSUAL CONDITIONS.N) EXAMINE THE TWO BODY GASKETS (O-RINGS) AND RECORD
THE OBSERVATIONS. PHOTOGRAPH ANY UNUSUAL CONDITIONS.O) IDENTIFY AND BAG ALL LOOSE PARTS FOR LATER
DISPOSITION/EVALUATION.

160 INSPECTION CHECKLIST

NOTE: IN ADDITION TO A DETAILED LOG OF THE INSPECTION
AND DISASSEMBLY, THE FOLLOWING CHECKLIST SHALL BE
MAINTAINED TO SUMMARIZE THE FINDINGS.

1

PAGE 19 PERRY NUCLEAR POWER PLANT WORK ORDER 11/06/87
 M151B03 JOB TRAVELER 20:34:36

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	REV NO:
870009443	1B21F0028D	CODE VLV	WO LOCATION SMC/05-620	LAST CHG: 11/06/87
				M/E 1 /SR
				M/E I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
ASCO 3-WAY SOLENOID VALVE INSPECTION				
INSPECTION POINT	R.E.	INITIALS/DATE VENDOR TECH	RECORD SAT/UNSAT	
EXPOSED CONNECTIONS				
ACTUATOR/ SOLENOID				
PILOT AIR LINES				
BASE SUB- ASSEMBLY				
VALVE BODY				
BODY GASKET				
CORE ASSEMBLY				
BASE SUB- ASSEMBLY ID				
CORE OD				
CORE STROKE				
ENDCAP				
DISC				
DISC				

1

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

20:34:36

M151B03

REV NO: 1
LAST CHG: 11/06/87WO NUMBER
870009443COMP CAT
MPL NUMBER CODE WO LOCATION SAFETY SEISMIC
1B21F0028D VLV SMC/05-620 M/E M/E
1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
SPRING		
LOWER BODY GASKET		
DISC HOLDER		
DISC SEALING SURFACE		
BODY GASKETS (O-RINGS)		
170 RESTORATION				
1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST USING INDEPENDENT VERIFICATION PER IAP-0503.		I&C		2
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.		I&C		2
3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR TERMINATION PER PAP-0512.		I&C		2
4. ANY DEFECTIVE PARTS REMOVED UNDER THIS WORK ORDER ARE TO BE EVALUATED BY THE RESPONSIBLE ENGINEER (VINCE CONCIL OR ALTERNATE) FOR RETENTION FOR FURTHER ANALYSIS, RETURNED TO THE SALVAGE WAREHOUSE PER SMI-018, OR TO BE SCRAPPED. NOTE THE DISPOSITION ON THE WORK ORDER CLOSING SHEET. PRIOR TO REMOVING PARTS FROM THE R.C.A., HEALTH PHYSICS MUST SURVEY AND RELEASE THEM PER PAP-0515. THE RESPONSIBLE ENGINEER MUST ALSO APPROVE ANY RELEASE OF PARTS.		I&C		2

RESPONSIBLE ENGINEER APPROVAL OBTAINED

1

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PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/06/87

20:34:36

M151B03

REV NO: 1

LAST CHG: 11/06/87

SAFETY SEISMIC

WO NUMBER
870009443

W/L NUMBER
1821F0028D

COMP CAT

CODE
VLV

WO LOCATION
SMC/05-620

M/E
1 S- I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	-----------	-----------	-----------

NAME.....DATE.../.../...TIME.....

180 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED. I&C SUP 1
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PFR PAP-0204. I&C SUP 1
3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503. I&C SUP 1

190 FIRE/VAPOR BARRIERS

FIRE/VAPOR BARRIERS TO RESTORED UNDER W.O. #87-9285. I&C

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<p>The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: 1 NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT</p>			REPORT NO. 87-I-726	DATE 11/6/87
			SHEET 1 OF 2	
SUBJECT/ACTIVITY <u>WORK ORDER / MSIV INVESTIGATION</u>			<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION		MPL SYS. CODE	LOCATION	
SCREWDRIVERS/AIR RELAY ASSY 1A21F00212D		I+C HOT SHOP 599		
WORK DOCUMENT	WORK GROUP	PERSONNEL PERFORMING THE WORK		
WO 97-9372 R1	I+C	D. CARMAN I+CTECH.		
REFERENCE DOCUMENTS (REV)		CHECKLIST NO.	INSPECTION PLAN NO.	
WO 97-9372 R1		001	NR	
H & T E USED TO PERFORM THE INSPECTION NR				
INSPECTION RESULTS <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	CORRECTIVE ACTION DOCUMENTS ISSUED NR			
DETAIL SECTION				
<p>MMQS HOLE POINT COVERAGE STEP 070-H - ASSUMED TURN OVER FROM MATT HELLMER IN THE I+C HOT SHOP AT APPROXIMATELY 1830, FRIDAY, 11/6/87 ECR WO 97-9372 REV. 1 WORK WAS PERFORMED UNDER THE GUIDANCE OF THE RSE, GE AND ASCC VENDOR REPRESENTATIVES WERE PRESENT ALSO THE NRQ, PICTURES TAKEN OF VARIOUS ASSEMBLIES - COMPONENTS WERE LABELED BY I+C WITH THE WORK ORDER STEP NUMBER. I+C REMOVED THE PLUG-NUT ASSEMBLY. SAMPLES TAKEN WERE CHECKED WITH VALVE MPL AND CORRECT NOMEN CLATURE. I+C VERIFIED ADDITION GASKET WAS INSTALLED CORRECTLY. IT WAS DOCUMENTED ON THE TROUBLE SHOOTING LOG THAT (PAR 005) A GREASE THAT SUBSTANCE</p>				
INSPECTOR Thomas J. Kafurin	DATE 11/6/87			

The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: 1 NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT	REPORT NO. 87-I-726	DATE 11/6/87
	SHEET <u>2</u> OF <u>2</u>	

DETAIL SECTION

WAS FOUND AROUND THE BOTTOM OF THE SOLENOID BASE ASSEMBLY. THE RETAINER RING HAD DIRT AND GREASE ON IT. THE PLUG NUT IS A "PRESS FIT" SUB ASSEMBLY WHICH FITS INTO THE SOLENOID BASE. ITC NOTED THAT THE GORE DOES MOVE FREELY STEP 70.L - ITC EXAMINED ALL EXPOSED PARTS FOR DAMAGE - NONE FOUND. ALSO NO FOREIGN MATERIAL DISCOVERED. STEP 070.M WAS NOT PERFORMED BECAUSE THE PLUG NUT WAS PRESS' FIT. (SAME FOR STEP 070.N) ITC NOTED THAT THE VENDOR NEEDS TO SUPPLY A MORE DETAILED DRAWING WHICH SHOWS EXACTLY WHAT THE BREAKDOWN IS FOR PARTS EQUIPMENT/ SUB ASSEMBLIES FOR THE SOLENOIDS THAT WE HAVE AT PERRY, OTHER WISE FURTHER DETAILED INSPECTION CANNOT BE PERFORMED BY ITC. NO FURTHER WORK PERFORMED ON FRIDAY 11/6/87.

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The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT: 1
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO. 87-I-0686 DATE 11-6-87
 SHEET 1 of 5

SUBJECT/ACTIVITY

FAILURE ANALYSIS OF msIV

 SAFETY AUGMENTED QUALITY NSR

EQUIPMENT/COMPONENT IDENTIFICATION	MPL. SYS. CODE	LOCATION WORK PERFORMED IN
AIRPACK & SOLENOIDS	IB21-F022D	I&C HOT SHOP ON IB-599
WORK DOCUMENT 87-9372 R/0	WORK GROUP I&C	PERSONNEL PERFORMING THE WORK I&C TECHNICIANS: T. GOODMAN, A. DIETRICH ④ SEE BELOW FOR OTHERS

REFERENCE DOCUMENTS (REV) DWG. 3-208-013-HJ6 2/8,
 MILLER MODEL SA-A018 VALVE ACTUATOR VENDOR MANUAL,
 DWG. 2-209-013-Q5 18/m

CHECKLIST NO. 001

INSPECTION PLAN NO. N/A

M & TE USED TO PERFORM THE INSPECTION

NONE

INSPECTION RESULTS (OBSERVATION)	CORRECTIVE ACTION DOCUMENTS ISSUED
<input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	NONE

DETAIL SECTION

④ RESPONSIBLE ENGINEERS - T. SHEGA & P. AUTHER & S. SEMEN

NRC REPRESENTATIVES - S. EICK, H. ORNSTEIN, R. LANKSBURY
 KAT 11-6-87

CEI PHOTOGRAPHER - M. VANTZ

HILLER CORP. VENDOR REP. - J. NACI

GE REPRESENTATIVE - W. J. ROIT

QA REPRESENTATIVE - S. ERIN

THIS INSPECTION IS PARTIAL IN THAT WORK VERIFIED ON GOES
 TO STEP 060.3.C IN THE WORK ORDER. WORK COMMENCED
 APPROXIMATELY 0225 ON 11-6-87.

THE FOLLOWING DETAILS WERE PERFORMED UNDER STEPS 050 & 060
 OF THIS WORK ORDER:

STEP 050.1 → THE AIR PACK WAS LOCATED ON A TABLE ^{9AM 11-6-87} ~~LOC~~
 COVERED WITH CLEAN WHITE PAPER.

STEP 050.2 → THROUGHOUT PERFORMANCE OF THE WORK, OBSERVATIONS
 WERE LOGGED ON THE TROUBLESHOOTING LOG. NUMEROUS PHOTO-
 GRAPHS WERE ALSO TAKEN.

(CONTINUED ON SHT. 2)

INSPECTOR

Jeffrey C. Hulett

DATE

11-6-87

The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: 1 NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT	REPORT NO. 87-I-0686	DATE 11-6-87
	SHEET <u>2</u> OF <u>5</u>	

DETAIL SECTION

STEP 050.3.A → ALL NUTS, BOLTS, SCREWS & FITTINGS WERE INSPECTED FOR TIGHTNESS. NONE WERE FOUND LOOSE.

STEP 050.3.B → ALL EXPOSED AIR PORTS WERE INSPECTED FOR SIGNS OF FOREIGN MATERIAL AND BLOCKAGE. THE FOLLOWING WAS

FOUND: ^① SLIGHT GAULING, AT THE FERRULE AREA, IN THE STAINLESS "T" FITTING, FOR THE DUAL SOLENOID ASSEMBLY WAS FOUND. ^② A SMALL AMOUNT OF DIRT/GREASE IN THE EXHAUST PORT INTERNALS.

THE SAMPLE TAKEN WAS ID'D AND PLACED IN A PYREX GLASS

^③ CONTAINER. GAULING DAMAGE TO THE SUPPLY PORT, PHOTO

TAKEN. THE FITTING/ADAPTOR FOR THIS PORT WAS ALSO GAUCLED,

^④ PHOTO TAKEN. PHOTOGRAPHS OF THE LOCA SEALS WERE TAKEN.

^⑤ AREAS OF THE PREVIOUS PHOTOGRAPHS WERE THEN LABELED AND

^⑥ THE PHOTO'S WERE RE-TAKEN. SILICON TYPE COMPOUND

^⑦ NOTED ON THE EXTERNAL THREADS OF THE EXHAUST & SUPPLY PORTS.

^⑧ A SMALL AMOUNT OF DIRT/GREASE ⁹⁴¹¹⁻⁶⁸⁷ WITH A FEW UNIDENTIFIED PARTICLES PRESENT - (POSSIBLY METAL SHAVINGS), DURING

SAMPLE SWIPE. SAMPLE WAS ID'D AND PLACED IN A PYREX GLASS

^⑨ CONTAINER. BOTH UPPER & LOWER CYLINDER CONNECTION PORTS WERE

SMEARED AND SUBSTANTIAL AMOUNTS OF A BLACKISH GREASE WAS

FOUND - (PROBABLY O-RING LUBRICANT). BOTH SAMPLES WERE ID'D

^⑩ AND PLACED IN PYREX GLASS CONTAINERS. SOLENOID A, B & C

EXHAUST PORTS WERE SWIPE. THEY WERE CLEAN WITH NOTHING FOUND.

(CONTINUED ON SHT. 3)

The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: / NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT	REPORT NO. 87-I-0686	DATE 11-6-87
	SHEET <u>3</u> OF <u>5</u>	

DETAIL SECTION

STEP 050.4 → ^① TEST POWER CONTROL BOX, (L70-V036B), WAS CONNECTED TO THE AIRPACK. PROBLEM FOUND: DWG. B-208-013-H36 ^{R/3}, DOES NOT AGREE WITH DWG. D-209-013-5 ^{R/m} OR THE VENDOR MANUAL, NOR DOES IT AGREE WITH THE ACTUAL SOLENOID ID'S. IT SHOWS SOL."A" GOING ^{TO} TERM. PTS. 1+2 AND SOL."B" GOING TO TERM. PTS. 3+4. IT SHOULD SHOW "B" & "A" GOING TO TERM. PTS. 1+2, 3+4 RESPECTIVELY. ALSO, THE MANUAL AND OTHER DWG. HAS THE SOLENOIDS ^{208 11-6-87} GOING ID'D AS 1, 2+3. THIS WAS NOT A WIRING PROBLEM. AN FCR WAS INITIATED BY I&C ^{208 11-6-87} TECHNICIAN A. DIETRICH AND SUBMITTED BY ENGINEER K. MITCHELL. ^② THE SOLENOIDS WERE THEN ELECTRICALLY ENERGIZED AND CHECKED FOR ACTUATION. ALL (3) FUNCTIONED SATISFACTORILY.

STEP 050.5 → A NITROGEN PRESSURE SOURCE WAS CONNECTED TO THE AIR PACK AT 100 PSIG! (ACCEPTANCE WAS 90 TO 130 PSIG). A 0-200 HEISE GAUGE, L70-R128I, CAL. DUE 1-9-88, WAS USED TO VERIFY TEST PRESSURE.

STEP 050.6 → THE AIR PACK WAS ACTUATED (5) TIMES. (3) TIMES ENERGIZING SOLENOIDS 2+3 SIMULTANEOUSLY, AND TWICE ENERGIZING THEM ALTERNATELY. THE AIR PACK FUNCTIONED PROPERLY EACH TIME. DURING THE 5TH TEST THE O-RING IN THE "SLOW CLOSE SHUTTLE" WAS BLOWN. PER RSE T. SHEGA, THE WC WILL BE REVISED TO INCLUDE REWORK CAPABILITIES.

(CONTINUED ON SHT. 4)

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT: 1
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO.

DATE

87-I-0686

11-6-87

SHEET 4 OF 5

DETAIL SECTION

COTTON GLOVES WERE ATTACHED TO THE EXHAUST PORT DURING THE TESTS TO COLLECT ANY PARTICLES/DEBRIS. NOTHING WAS FOUND.

STEP 060.2 → THE 3-WAY DUAL SOLENOID VALVE WAS REMOVED FROM THE AIR PACK AND THE SOLENOID COVERS WERE TAKEN OFF, (BOTH A & B), AS WELL AS THE BODY GASKETS AND CORE ASSEMBLIES.

STEP 060.2.B → THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALVE ASSEMBLY WERE CHECKED FOR FOREIGN MATERIAL AND DAMAGE. NONE FOUND. PHOTOGRAPHS WERE TAKEN. INSPECTION OF THE INLET STRAINER, (PART #18), WAS ATTEMPTED. BUT THE ITEM COULD NOT BE FOUND. IT WAS NOTED THAT PART #18 WAS NOT SHOWN ON DWG. SA-A068 SHT. 4, (SUPPLIED WITH THE WORK ORDER).

JCH 11-6-87

STEP 060.2.C → GRATION TO THE SOLENOIDS. IT WAS NOTED THAT THE SEALS MAY HAVE FLOWED SOMEWHAT. THE HILLER VENDOR REP. SPECULATED THAT THIS WAS POSSIBLY DUE TO SOLENOID HEAT & AMBIENT TEMPERATURE.

STEP 060.2.C → PILOT AIR LINE WAS EXAMINED FOR FOREIGN MATERIAL. NONE WAS DETECTED. THREAD LUBRICANT ^{LOC} ¹¹⁻⁶⁻⁸⁷ WAS FOUND ON THE THREADED CONNECTIONS AND DOCUMENTED. NONE OF THE LUBRICANT WAS REMOVED, AND THERE WAS NO LOOSE LUBRICANT RETAINABLE FOR FUTURE EVALUATION.

CONTINUED ON SHT. 5

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT: 1
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO.	DATE
87-I-0686	11-6-87
SHEET <u>5</u> of <u>5</u>	

DETAIL SECTION

AT THIS TIME THE HILLER VENDOR REP. FOUND THAT THE DWG. IN HIS MANUAL SHOWED THE PART #18. THUS INDICATING A POSSIBLE DEFICIENCY IN THE MANUAL SUPPLIED WITH THE WORK ORDER. THE INLET STRAINER REFERENCED IN STEP 060.2.B WAS THEN INSPECTED. NO PROBLEMS FOUND.

DUE TO THE PART #18 PROBLEM, AND THE NEXT STEP, (060.3), INDICATING THAT SOLENOID "A" IS NOW THE ONLY SOLENOID TO BE DISASSEMBLED, NRC INSPECTOR R. LANKSBURY QUESTIONED PERSONNEL ON THE POSSIBLE DEVIATION FROM WRITTEN PROCEDURE. I THEN REQUESTED THAT THE IAC TECHNICIAN REASSEMBLE SOLENOID "B" TO MORE CONFORMING TO THE STEP WE WERE AT.

REMOVAL OF THE BODY GASKET AND CORE ASSEMBLY WAS THEN REPERFORMED (STEP 060.3.C). 060.3.C HAD TO BE DONE PRIOR TO 060.3.B IN ORDER TO FACILITATE PERFORMANCE OF THE STEP 060.3.B. WORK THEN CEASED DUE TO DIFFICULTIES IN OBTAINING AN APPROPRIATE TOOL FOR REMOVING SOLENOID "A" AND THE BASE SUBASSEMBLY AS A SINGLE UNIT FROM THE VALVE BODY, UNDER STEP 060.3.B. SHIFT TURNOVER THEN COMMENCED.

PNPP NO. 6287 Rev 8/86

QUALITY ASSURANCE CHECKLIST
ARRY NUCLEAR POWER PLANT

ATTACHMENT TO IR # 87-I-0686CHECKLIST NO. 001 REV. 3SHEET 1 OF 1CHECKLIST TITLE
MMQS-I&C Inspection Checklist

APPROVED BY / DATE

James R. Horak 4/22/87

REFERENCE DOCUMENT: TITLE, NUMBER, REV.

PAP-0905, Rev. 6 N/A SAT UN SAT

1. Unit Supervisor/QA Authorization gct
2. Reference Documents Controlled/Approved Latest Revision. gct
3. Prerequisites Complete. gct
4. Precautions and Limitations Observed gct
5. Material used is in accordance with approved Stores Requisition and design documents. gct
6. All M&TE used is listed on appropriate documents and is in current calibration. gct
7. Steps performed in numerical sequence, unless otherwise stated in procedure. gct
8. Work performed meets the Acceptance Criteria as specified in WO 87-9372
OBSERVATION ONLY gct
9. Equipment Restored. gct
10. Retest Performed. gct
11. Cleanliness Requirements observed as per work order/instructions. gct
12. Items of known nonconformance/noncompliance from previous inspection etc. have been checked. gct

COMMENTS

SEE IR # 87-I - 0686

PERFORMED BY/DATE

Jeffrey C. Reddith 11-6-87

The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: 1 NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT		REPORT NO.	DATE
		87-I-194	11-6-87
SUBJECT/ACTIVITY	SHEET <u>1</u> OF <u>2</u>		
FAILURE ANALYSIS OF MSIV AIRPACK + SOLENOIDS		<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION	HPL SYS. CODE	LOCATION	
1B21F03220	1B21	TFC HOT SHOP	
WORK DOCUMENT	WORK GROUP	PERSONNEL PERFORMING THE WORK	
E7-9372 Rev 0	PPOD JK	C. MOORE, JEFF TUETS	INSPECTION PLAN NO.
REFERENCE DOCUMENTS (REV) DWG B-208-013-134 Rev 3/1 HILLER MODEL SA-4004 VALVE ACTUATOR VENDOR'S MANUAL	DWG D-204-013-134 Rev M	CHECKLIST NO.	✓ 1A
H & TE USED TO PERFORM THE INSPECTION			
N/A		N/A	
INSPECTION RESULTS OBSERVATION	CORRECTIVE ACTION DOCUMENTS ISSUED		
<input type="checkbox"/> ACCEPT <input checked="" type="checkbox"/> REJECT ONLY	N/A		
<u>DETAIL SECTION</u>			
<p>TOOK OVER OVR FROM THIRD SHIFT INSPECTOR J. HUBBART (SEE Inspection Report 87-I-194) AT STEP 060-38 Remove solenoid "A" from the valve body and remove the body gasket and core assembly. Performed an inspection of all freshly exposed components for signs of damage and foreign materials. Inspected the solenoid base subassembly and the core for conditions which could inhibit smooth movement, verified that the core spring was properly attached to the core guide and core assembly. Manually stroked the core within the base sub-assembly for relative freedom no problems were noted. We then examine the body gasket per step 060-39, the gasket was stuck to the gasket seat and appeared to be covered with lubricant, and particles were stuck to the seat when the gasket was removed. A sample were taken with a Q-TIP and stored for analysis. We then proceeded to step 060-39-4 disassembly of solenoid "B". Tracing the the adapter</p>			
INSPECTOR	DATE		
William Bellon	11-6-87		

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The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: <u>1</u> NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT	REPORT NO. <u>87-I-094</u>	DATE <u>11-6-87</u>
	SHEET <u>1</u> OF <u>12</u>	<i>11-6-87</i>

DETAIL SECTION

AND BASE SUBASSEMBLY PERFORMED THE SAME INSPECTIONS AS ON "A" SOLENOID, IN FACT THE PLUGNUT ADAPTOR ASSY. AND THE STEM FOR SMOOTH MOVEMENT OF THE STEM, FOREIGN MATERIAL EXCESSIVE WEAR, OR DAMAGE, MANUALLY STROKED THE STEM AND THE DISC HOLDER IN ITS GUIDE FOR FREEDOM OF MOVEMENT. INSPECTED THE DISC HOLDER SPRING FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. ON THE DISC HOLDER SUB-ASSEMBLY THERE WERE IMPACT MARKS ON THE STAR SHAPE DISC OF THE SUB-ASSEMBLY AND A DEEP DEPRESSION WAS NOTED ON THE DISC SEAL. THE BODY GASKET AS IN "A" SOLENOID WAS STUCK TO THE SEAL AND PARTS OF THE GASKET WERE LEFT IN THE SEAL WHEN THE GASKET WAS REMOVED. AND ONE OF THE LEADS GOING TO THE COIL HAD A NICK IN THE INSULATION, WORK WAS PERFORMED UP TO STEP 060-4F WHEN IT WAS DETERMINED THAT REV 0 OF THE WO HAD TO BE REVISED WORK STOPPED AT THIS POINT. WORK WAS RESUMED AT 5:45 PM AT STEP 060-4H WITH NEW I&C TECHS D. CARRIN + W. BAKER, PERFORMED CONTINUITY CHECK OF THE COIL FOR A SOLENOID WITH FLUKE 8050 L70R N050X DUE DATE 12-1-87 RESISTANCE READING WAS 115.62 OHMS THE MEGGER READING WAS 0 USING BRITISH MEGGER L70R 821H DUE DATE - 3-20-88. THE SOLENOID COIL WAS THEN REMOVED BY CUTTING THE LEADS. THE JOB WAS TURNOVER TO 8ND SHIFT INSPECTOR T. HALPIN.

QUALITY ASSURANCE CHECKLIST
ARRY NUCLEAR POWER PLANT

CHECKLIST NO. 001 REV. 3SHEET 1 OF 1**CHECKLIST TITLE****MMQS-I&C Inspection Checklist**

APPROVED BY / DATE

Kimer R Kovak 4/22/87

REFERENCE DOCUMENT: TITLE, NUMBER, REV.

PAP-0905, Rev. 5

See Inspection Report 87-F-194

 N/A SAT UNSAT

1. Unit Supervisor/QA Authorization
2. Reference Documents Controlled/Approved Latest Revision.
3. Prerequisites Complete.
4. Precautions and Limitations Observed
5. Material used is in accordance with approved Stores Requisition and design documents.
6. All M&TE used is listed on appropriate documents and is in current calibration.
7. Steps performed in numerical sequence, unless otherwise stated in procedure.
8. Work performed meet the Acceptance Criteria as specified in WO 87-9372.
9. Equipment Restored.
10. Retest Performed.
11. Cleanliness Requirements observed as per work order/instructions.
12. Items of known nonconformance/noncompliance from previous inspection etc. have been checked.

COMMENTS

n/a

PERFORMED BY/DATE

Mark Bell

11-6-87

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT:
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO. 87-I-0729 DATE 11/6/87
 SHEET 1 OF 2

SUBJECT/ACTIVITY VERIFIED BY QC ATTACHEE'S UMOS ATTACHEE'S	DATA GATHERING WHILE PERFORMING JOB TRAVELER FOR FAILURE ANALYSIS		<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR
EQUIPMENT/COMPONENT IDENTIFICATION PILOT CONTROL VALVE 1821F0028B MAIN STEAM LINE FAULT	MPL SYS. CODE 18.21	LOCATION SMC/04 - 620' ELEV.	
WORK DOCUMENT WFO 870009324 REV. 0	WORK GROUP PROS IFC	PERSONNEL PERFORMING THE WORK T. TURBTZAN L. FOXSON	
REFERENCE DOCUMENTS (REV) PAP0905 R/G		RECALL NO. PAPD# 8287 REV. 8/86	INSPECTION PLAN NO. N/A

H & TE USED TO PERFORM THE INSPECTION

NONE

INSPECTION RESULTS OBSERVATION

 ACCEPT REJECTCORRECTIVE ACTION DOCUMENTS ISSUED WFO FOR LACK OF SUPPORT FOR $\frac{3}{8}$ " TUBING TO SOLENOID
WFO FOR MISSING METAL IN MPL TAGS

DETAIL SECTION

WITNESSED IFC TECH'S PERFORM WORK TO WFO 8700093.24 JOB TRAVELER STEP 040.4 OBSERVED DETERMINATION OF FIELD WIRING FROM T80.1 IN JBOX 1821F481 FOR MSCV 1821F0028B. WIRES REMOVED AND DOCUMENTED BY COLOR CODE AND BRADY MARKED WITH LABEL'S REFLECTING THEIR REQUIRED TERMINAL POINT POSITIONS, REORDERED ON TEMPORARY CONDITION LOG CONTAINED IN WFO STEP 050 OF JOB TRAVELER. FOUR MAINTENANCE ELECTRICAL TECH'S WERE PRESENT SUPPLIED BY NC86M SUPERVISOR AS PER WFO STEP 040.5 TO REMOVE AIR PACK. I VERIFIED 1821F0028B WAS IN THE CLOSED POSITION ALONG WITH CONTROL VALVE ACTUATOR DETERMINATED REQUIRED BY STEP 040.6 ALSO VERIFIED BY MAINTENANCE MECHANICS. AS DESCRIBED BY IFC STEP 040.7 OF TRAVELER AUTHORIZATION TO PROCEED WAS OBTAINED FROM PETE ARTHUR AND NRC INSPECTOR BOTH PRESENT WHILE PERFORMING WORK. WITNESSED REMOVAL OF $\frac{3}{8}$ " AIR SUPPLY TO SOLENOID TUBING PER STEP 040.8 REMOVED BY NC86M INSPECTED AND FOUND NO EVIDENCE OF FOREIGN MATERIALS, AFTER OPENING AIR LINE. MECHANIC THEN DISCONNECTED $1\frac{5}{8}$ " AIR SUPPLY PIPE AND CAPTURED SAMPLES OF WHAT APPEARED TO BE FRAGMENTS OF METAL SHAVINGS AND SOME SEALANT POSSIBLY FROM

INSPECTOR

Kirk Kelly

DATE

11/6/87

29
D2

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT:
NUCLEAR QUALITY ASSURANCE DEPARTMENT
INSPECTION REPORT

REPORT NO.

87-I-0729

DATE

11/6/87

SHEET 2 OF 2

DETAIL SECTION PIPE CONNECTION FITTINGS AND MACHINED THREADS. THE 1 $\frac{1}{8}$ " TUBING COUPLING WAS TRANSPORTED TO I&C HOT SHOP TO BE EVALUATED FOR CAUSE OF EXTENSIVE GROOVED OR GOUGED SCRATCHES INTO SMOOTH OUTSIDE OF PIPE PIPE PART OF FITTING, WHICH APPEARS TO HAVE BEEN GAULED WHEN ASSEMBLED. THE INSIDE OF THE 1 $\frac{1}{8}$ " PIPE HAD SAMPLES OF SMALL METAL SLIVERS TAKEN FOR ANALYSIS, TO DETERMINE WHETHER THEY WERE FROM WITHIN THE AIR SUPPLY LINE OR FROM INSTALLATION AND OR REMOVAL OF FITTING THREADS. THE AIR PACK WAS REMOVED ^{FROM} ACTUATOR AND BAGGED FOR TRANSPORT ALONG WITH ALL SAMPLES CAPTURED FROM SUPPLY AIR PIPE INTERNALS. THE DEBRIS WILL BE EVALUATED BY P. ARTHUR. ALL TUBING AND ACTUATOR AIR PACKS REMOVED DOCUMENTED IN W/O TEMP. CONDITION LOG. WIRES THAT WERE PREVIOUSLY LIFTED WERE WRAPPED WITH OKONZTE TAPE AND TYWRAPPED. THE LOWER LIQUID SIDE OF ACTUATOR WAS KIPPED WITH A WHITE COTTON GLOVE AND HAD A RUST COLORED OILY SUBSTANCE TO BE EVALUATED. ALL EXPOSED PIPE PORTS OR OPENINGS WERE TAPE CLOSED TO MAINTAIN CLEANLINESS. SPEC NC86M TRANSPORTED AIR PACK TO I&C HOT SHOP PER W/O STEP 040.9.

THIS ^{W/O} WILL REMAIN OPEN UNTIL RESTORATION REINSTALLATION OF AIR PACKS, IN THE ^{INTERIM} W/O 879433 WILL PROVIDE TEST INSTRUCTION OF AIR PACKS AND SOLENOID FAILURE ANALYSIS.

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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MEMORANDUM

 I no longer wish to receive this material.

TO M. W. Gmyrek

FROM F. A. Kearney DATE November 6, 1987
PHONE 5484 ROOM TEC/214
SUBJECT Training Procedures Relative to
Failure of MSIV Closing Events

FAK

This memo is intended to supplement the information provided to you by F. W. Berg concerning the procedures in effect at the time of the MSIV problem. In this memo the training of PEI B13 RPV Control, ONI-N11 High Energy Pipe Break Outside Containment, and PEI-D17 Radiation Release Control will be discussed.

An operator who participated in the NRC Reactor Operator and Senior Reactor Operator training programs was exposed to these procedures during the following training courses:

- OT-3034-02 Mitigation of Core Damage - Instructions 40 hrs.
- OT-3034-03 Mitigation of Core Damage - Simulator 20 hrs.
- OT-3034-04 Mitigation of Core Damage - Classroom 20 hrs.
- OT-3035-01 Transient Plant Operations - Simulator 60 hrs.
- OT-3035-02 Transient Plant Operations - Classroom 60 hrs.
- OT-3047 Integrated Simulator Operations 20 hrs.

During these courses, entry conditions, immediate operator actions, and supplemental actions are discussed in the classroom and performed in the simulator.

The scenarios used in these courses cover a broad spectrum of initiating events in order to expose the Control Room Operators (crew) to a variety of transients. The training of Plant Emergency Instructions satisfies and exceeds the requirements of the PGP Section 7.4.

Continuing Operator Training provides for refresher training on these topics. During Cycle 1, each operating crew received classroom training to update their knowledge on recent PEI changes. During Cycle 8, the PEI's were covered in the level of detail of the initial license operator candidate. Each operator received 8 hours of simulator training specifically on PEI's. Again, these training items exceeded the requirements of the PGP. Cycle 11, currently in progress, is training ONI-N11.

Detailed lesson plans, scenario guides, and the hours spent on the training of these items do not accompany this memo but are available for your review. If you desire to do so, please contact me in the Training Center.

FAK/cab

cc: D. P. Iggyarto
R. J. Tadych

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THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
PERRY NUCLEAR POWER PLANT

M E M O R A N D U M

TO M.W. GMYREK ROOM SB312 FROM F.W. BERG DATE 11/5/87
PHONE 5282 ROOM SP110
SUBJECT PROCEDURES IN AFFECT AT TIME OF
MSIV PROBLEM

This memo documents the off-normal and emergency procedures in effect at Perry on 11/3/87 which deal with a failure of MSIV's to isolate.

The procedures that provide direction to verify or initiate isolation are:

PEI-B13, Reactor Pressure Vessel Control
ONI-N11, High Energy Pipe Break Outside Containment
PEI-D17, Radiation Release Control

To qualify this guidance it will be shown that there is a high probability that the operator would enter at least one of these procedures and then take the action required by the particular step.

First and foremost is PEI-B13, Reactor Pressure Vessel Control, (see attachment 1) which is the symptomatic procedure developed from the generic Emergency Procedure Guideline. The initial steps in this instruction ensure the reactor is shutdown and then requires that the sections which address power, pressure, and level be entered concurrently. The first step (3.3.1 on page 34) in RPV Level Control verifies the Main Steam Line Isolation.

From an event perspective, conditions which require a Main Steam Line isolation are primarily steam leak related. In the case of a steam leak; ONI-N11, High Energy Pipe Break Outside Containment, (see attachment 2) would be entered. The initial immediate action requires the operator to isolate any leak that has not already been isolated by automatic action. In addition, should high radiation levels accompany the steam leak; PEI-D17, Radiation Release Control, (see attachment 3) which is entered upon radiation levels corresponding to the Alert Emergency Action Level, would again require isolation of any pressure boundary system not required to assure adequate core cooling or shutdown the reactor.

Once the requirement for Main Steam Line isolation is discovered, the operator would enter SOI-B21 (see attachment 5) for guidance in closing the MSIV's.

Based on the fact that these procedures provide direction to isolate the Main Steam Line upon initial entry and the fact that the condition requires Emergency Plan entry at the Alert level (see attachment 4) which requires the Technical Support Center to be manned to provide additional guidance and perspective, there is a high degree of assurance that the operators will take action to isolate the affected steam line.

Respectfully,

Biel

ATTACHMENT 1

Pg 1 of 3

OM4C: PEI-B13
Page: 2
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Reactor Pressure Vessel Control

1.0 SCOPE

This emergency instruction provides the direction necessary to shutdown the reactor, control RPV pressure, and maintain adequate core cooling.

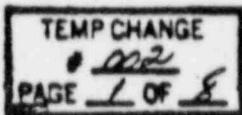
2.0 ENTRY CONDITIONS

1. Reactor level is less than 177.7 inches or cannot be determined.
2. Reactor pressure is greater than 1065 psig.
3. A condition exists which requires a MSIV isolation
 - a. Reactor Level Low Level 1.
 - b. Main Steam Line Radiation High/Inoperative.
 - c. Main Steam Line Flow High.
 - d. Steam Tunnel High Temperature.
 - e. Steam Tunnel Ventilation High Differential Temperature.
 - f. Turbine Area Temperature High.
 - g. Main Steam Line Pressure Low.
 - h. Main Condenser Vacuum Low.
 - i. Manual (operator judgment).
4. Dwell pressure is greater than 1.68 psig.
5. A condition exists which requires a reactor scram:
 - a. Turbine Stop Valve Closure.
 - b. Turbine Control Valve Closure.
 - c. MSIV Closure.
 - d. Instrument Volume Level High.
 - e. Reactor Pressure High.
 - f. Reactor Level Low Level 3 or High Level 8.
 - g. Main Steam Line Radiation High/Inoperative.
 - h. Neutron Monitoring Systems Trip.
 - i. Drywell Pressure High.
 - j. Manual (operator judgment).

and

reactor power is either:

- a. above 4% or
- b. cannot be determined



ON4C: PEI-B13
Page: 4
Rev.: 1

3.0 OPERATOR ACTIONS

	<u>Instruction Steps</u>		<u>Contingency Steps</u>
3.0.1	If a reactor scram has <u>not</u> been initiated, then arm and depress the RPS MANUAL SCRAM (CH A-D) pushbuttons.	3.0.1	None
3.0.2	Place the REACTOR MODE SWITCH in SHUTDOWN.	3.0.2	None
3.0.3	Place the Hydrogen Analyzers in service.	3.0.3	None
3.0.4	Irrespective of the entry conditions, execute Sections 3.1, 3.2, and 3.3 <u>concurrently</u> .	3.0.4	None

NOTE: If the indications exist for entry into ONI-R10, then execute concurrently PEI-B13 and LNI-R10. Other ONI's associated with natural events may be executed concurrently, such as ONI-P54.

TC-
002TC-
002

TEMP CHANGE
<u>5</u>
PAGE <u>1</u> OF <u>1</u>

OM4C: PYI-B13
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3.3 Reactor Level Control

	<u>Instruction Steps</u>	<u>Contingency Steps</u>	TC- 15
3.3.1	If any of the following should have initiated, but did not, then manually initiate. <ul style="list-style-type: none">- EPCS- RCCIC- LPCS- LPCI- Diesel Generators- MSL ISOL- KER ISOL- RSCU ISOL- RI SAMPLING ISOL	3.3.1 None	

TEMP CHANGE
2
PAGE 1 OF 1

OM&B: ONI-N11
Page: 3
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3.0 IMMEDIATE ACTIONS

NOTE: The spray from a high energy pipe break can lead to malfunctions and electrical faults in surrounding equipment.

1. If isolation has not already occurred as an automatic action, isolate the leak by isolating the affected system.
2. If Feedwater has been lost:
 - a. Manually initiate RCIC per SOI-E51.
 - b. If necessary to control level, manually initiate HPCS per SOI-E22A.
3. If the break is in a system other than Auxiliary Steam and cannot be isolated, the plant shall be shutdown by one of the following means depending on the severity of the break.
 - a. Unit Shutdown per IOI-4, Shutdown.
 - b. Fast Reactor Shutdown as follows:
 - 1) Close both FLOW CONTROL VALVES until UPSC ALARM is received or the minimum is attained.
 - 2) Arm and depress the RPS MANUAL SCRAM D pushbuttons.

4.0 SUPPLEMENTAL ACTIONS

1. If MSIVs have closed or reactor vessel water level is below 178 inches, enter PEI-B13, RPV Control.
2. If there is any possibility of radioactive release due to the break, enter ONI-D17, High Radiation Levels Within Plant.
3. If required, proceed with reactor cooldown and depressurization to Cold Shutdown in accordance with IOI-6, Cooldown - Main Condenser Not Available, or IOI-7, Cooldown Following a Reactor Scram Main Condenser Available, as appropriate.
4. Determine if an emergency action level has been exceeded per EPI-A1, Attachment 1, as follows:

Reactor Steam Releases and Other LCOs

Alert
Site Area Emergency

OM4C: PEI-D17
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Rad Release Control

3.0 OPERATOR ACTIONS

	<u>Instruction Steps</u>		<u>Contingency Steps</u>
3.0.1	Execute <u>concurrently</u> steps 3.0.2 and 3.0.3.	3.0.1	None
3.0.2	Isolate all primary pressure boundary systems that are discharging into areas outside the containment except systems required to assure adequate core cooling or shutdown the reactor. Test exit step 3.0.4.	3.0.2	None
3.0.3	<u>If</u> the following conditions are met: Any Abnormal Radiological Effluent which requires a General Emergency as given in EPI-A1 is obtained, <u>and</u> a primary pressure boundary system is discharging into an area outside containment, <u>then</u> EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; perform PEI-B13, RPV Control, and execute <u>concurrently</u> with this instruction.	3.0.3	None
3.0.4	<u>When</u> radiological effluent decreases below the Alert classification, <u>then</u> exit this instruction.	3.0.4	None

ATTACHMENT 4

pg 1 of 1

OM15B: EPI-A1
Page : 27
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Attachment 2 (Cont.)

C.

REACTOR STEAM RELEASES AND OTHER LCO'S

CONDITION

II. 1. (Cont.)

INDICATION

c. (Cont.)

- 1) "Alarm" on Turbine Building Vent Atmosphere rad. monitor on H13-P804, and verified by recorder D17-R190 on H13-P600;
or
2) Turbine Building area radiation recorder D21-R430 on H13-P600 increasing.

OR

d. MSIV malfunction causing leakage, as indicated by:

Neither of the MSIVs in a given MSL close when required, as indicated on H13-P601.

OR

One or both MSIVs in a given MSL indicate closed on H13-P601.

AND

Evid head indi B, C, or D on H13-P680.

OR

In the Emergency Coordinator's judgment, one or more MSLs have failed to isolate.

OM3A: SOI-B21
Page: 12
Rev.: 4

5. Restore isolated systems if required, per ONI-B21-4, Isolation Restoration.

5.4 Automatic Depressurization System Reset

NOTE: This section is entered from ADS Startup to Standby Readiness, or following an Automatic or Manual Initiation of ADS.

1. Verify the following:

- a. Reactor level greater than Level 3.
- b. Annunciators ADS A and B PERMISSIVE RX LEVEL 3 clear.

2. Momentarily depress the following pushbuttons on ECCS Bench-board, 1B13-P601, and verify the associated white lights go off:

- a. ADS A LOGIC SEAL IN RESET, 1B21C-S13A
- b. ADS B LOGIC SEAL IN RESET, 1B21C-S13B

3. Momentarily depress the following pushbuttons on P601 and verify the associated white lights go off:

- a. LOV LOV SET RESET A, 1B21C-S50A.
- b. LOV LOV SET RESET B, 1B21C-S50B.

4. Verify all ADS SRVs closed.

NOTE: ADS SRVs may be verified closed by the presence of the control switch green lights, the SOLENOID A and B STATUS matrix lights off, or by decreasing temperatures on ADS SRV TEMP MONITORING Recorder, 1B21-R614, on NSSS Recorder Panel, 1B13-P614.

6.0 SYSTEM SHUTDOWN

6.1 Closing Main Steam Isolation Valves

NOTE: This section is normally entered from any of the following instructions:

- IOI-4; Shutdown
- IOI-6; Cooldown - Main Condenser Not Available
- IOI-7; Cooldown Following a Reactor Scram Main Condenser Available
- IOI-13; Cooldown Following Reactor Shutdown by Boron Injection

OM3A: SOI-B21
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NOTE: This section is performed on ECCS Benchboard, 1H13-P601.

1. For slow closing of the MSIVs, perform the following:

NOTE: If being performed by one person, the MSIVs should be closed individually. Closing all inboards or all outboards sequentially is recommended. For instructional purposes, this section closes the inboards first.

NOTE: Releasing the MSL A(B,C,D) INBD MSIV TEST pushbutton with MSL A(B,C,D) INBD MSIV control switch in AUTO or TEST will result in the MSIV re-opening.

- a. Place MSL A(B,C,D) INBD MSIV, 1B21-F022A(B,C,D), in TEST.
- b. Depress and hold MSL A(B,C,D) INBD MSIV TEST pushbutton, 1B21E-S3A(B,C,D).
- c. Allow MSL A(B,C,D) INBD MSIV, 1B21-F022A(B,C,D), to cycle closed.
- d. Place MSL A(B,C,D) INBD MSIV, 1B21-F022A(B,C,D), in CLOSE.
- e. Release MSL A(B,C,D) INBD MSIV TEST pushbutton, 1B21E-S3A(B,C,D).
- f. Repeat steps a through e above for the remaining inboard MSIVs.

NOTE: Releasing the MSL A(B,C,D) OTBD MSIV TEST pushbutton with MSL A(B,C,D) OTBD MSIV control switch in AUTO or TEST will result in the MSIV re-opening.

- g. Place MSL A(B,C,D) OTBD MSIV, 1B21-F028A(B,C,D), in TEST.
- h. Depress and hold MSL A(B,C,D) OTBD MSIV TEST pushbutton, 1B21E-S4A(B,C,D).
- i. Allow MSL A(B,C,D) OTBD MSIV, 1B21-F028A(B,C,D), to cycle closed.
- j. Place MSL A(B,C,D) OTBD MSIV, 1B21-F028A(B,C,D), in CLOSE.
- k. Release MSL A(B,C,D) OTBD MSIV TEST pushbutton, 1B21E-S4A(B,C,D).
- l. Repeat steps g through k above for the remaining outboard MSIVs.

2. For fast closing of the MSIVs, place the following control switches in CLOSE:

- a. MSL A INBD MSIV, 1B21-F022A.
- b. MSL B INBD MSIV, 1B21-F022B.
- c. MSL C INBD MSIV, 1B21-F022C.
- d. MSL D INBD MSIV, 1B21-F022D.
- e. MSL A OTBD MSIV, 1B21-F028A.
- f. MSL B OTBD MSIV, 1B21-F028B.
- g. MSL C OTBD MSIV, 1B21-F028C.
- h. MSL D OTBD MSIV, 1B21-F028D.

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3. Take the following control switches to CLOSE:
 - a. MSL DRN & MSIV BYP INBD ISOL, 1B21-F016.
 - b. MSL DRN & MSIV BYP OTBD ISOL, 1B21-F019.
4. Perform independent verification of the required components.

7.0 OTHER OPERATIONS

7.1 Venting the Reactor to the Main Condenser Via Main Steam Line Drains for Pressure Control

NOTE: This section shall only be performed as directed by PEI-B13, Reactor Pressure Vessel Control.

NOTE: The Main Condenser must be available to perform this section.

NOTE: This section is conducted at ECCS Benchboard, 1H13-P601.

1. Place the following control switches in CLOSE:

- a. MSL B INBD MSIV, 1B21-F022B.
- b. MSL D INBD MSIV, 1B21-F022D.
- c. MSL A INBD MSIV, 1B21-F022A.
- d. MSL C INBD MSIV, 1B21-F022C.
- e. MSL B OTBD MSIV, 1B21-F028B.
- f. MSL D OTBD MSIV, 1B21-F028D.
- g. MSL A OTBD MSIV, 1B21-F028A.
- h. MSL C OTBD MSIV, 1B21-F028C.

2. Reset the Nuclear Steam Supply Shutoff System.

3. Take the following control switches to OPEN:

- a. MSL DRN & MSIV BYP INBD ISOL, 1B21-F016.
- b. MSL DRN & MSIV BYP OTBD ISOL, 1B21-F019.

4. Throttle INBD MSIV BEFORE SEAT WARMUP DRN, 1B21-F021, as necessary for pressure control.

5. If plant conditions necessitate a higher flow than that obtained in the above steps, perform the following:

- a. Verify the following valves open:

- 1) MSL B SHUTOFF, 1N11-F020B
 - 2) MSL D SHUTOFF, 1N11-F020D

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ITEM 1A - Analysis of Loading on Steamlines (3 Closed, 1 Open)

Question: If one main steam line failed to isolate during the MSIV closure/scram test at 100% reactor power, would this result in any adverse safety consequences?

Response: Attached are two documents which respond to this question. The first, a letter from General Electric examines this event in light of previously analyzed transients which are documented in the FSAK. This letter elaborates on and replaces the previously submitted letter from General Electric on this subject identified as 87-1294.

The second document is a memorandum authored by J. E. Meyer, Supervisor of CEI's Piping Analysis Unit. It discusses the specific effects on the main steam piping.

The conclusion of both responses is that no adverse consequences would result from the postulated event.

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GENERAL  ELECTRIC
PERRY SITE
NUCLEAR ENERGY BUSINESS OPERATIONS
GENERAL ELECTRIC COMPANY • 175 CURTNER AVENUE • SAN JOSE, CALIFORNIA 95125

November 6, 1987

To: John Eppich, Senior Project Engineer
NSSS/Piping/Equipment
Cleveland Electric Illuminating

Subject: Effects of Isolation of 3 Main Steam Lines

In response to your questions in regard to possible transient effects if the present condition of the "D" MSIV's (F022D and F028D failed to close during performance of an SVI) had gone undetected, the following comments are offered.

Two FSAR transients bound the expected system transients.

- a. Turbine trip with bypass system failure (figure 15.2-5)
 - Vessel pressure rise approximately 160psi
 - SRV's lift (safety)
 - No MSIV closure
- b. Three second closure of all MSIV's (figure 15.2-6)
 - Vessel pressure rise approximately 120psi
 - Relief valves lift

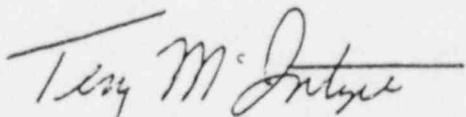
These transients result in vessel pressure increases of approximately 160 and 120psi, respectively. Since total steam flow reduction is greater in both of these transients than expected if 3 of the 4 main steam lines were to isolate, the expected vessel pressure rise is less than 120psi. In a turbine trip, MSIV closure does not occur, so this transient is more limiting than the 3 steam line isolation case from a piping pressure transient standpoint.

In terms of steam flow, the steam flow in any one steam line is limited by the driving pressure drop in the line.

GENERAL  ELECTRIC

The successful completion of generator load reject startup test (STI 1.1-027) with bypass valves has shown that the associated steam flows are of no consequence to the system design. Figure 15 -9 of the FSAR indicates the predicted pressure rise for this event is approximately 115psi. Since the total reduction in steam flow is similar in this case to that expected to occur in a 3 line isolation, a similar reactor pressure transient should result. Though not absolutely conclusive, the successful completion of the load reject test indicates that the steam flows expected for the unanalyzed event are of no adverse consequences.

In conclusion, the transient effects of the unanalyzed event with one steam line failing to isolate are similar to those experienced in STI B21-027 and are considered to have no adverse consequences to the plant.



T. R. McIntyre, Manager
Perry Site Engineering

TRM/vjc

cc: J. J. Larsen
J. Z. Sherk
D. D. Jones

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
PERRY NUCLEAR POWER PLANT

MEMORANDUM

This memo is in regards to your question on consequences from failure to isolate one main steam line during MSIV closure/scram test at 100% power. No problems are anticipated from this event as detailed below.

Thermal

The steam lines are analyzed for closure of the MSIV's on any one line. This analysis is equally appropriate for one line operating and three lines closed. The slope on the lines and the equalizing line will ensure no significant thermal expansion exists in this operating mode. The before seat drain on F020 and continual blowdown from the low point on the steam line will keep live steam in the lines isolated by MSIV closure.

PRESSURE

The piping wall thickness is in excess of that required for 1250 psig operating pressure. Transient pressure spikes from this event are far less severe than the pressure spike from main steam stop valve closure which was considered in the piping design.

FLOW RATE

This is not a normal input to piping analysis. It is used to determine heat transfer rates for Class One analysis, however, since the lines were already at full temperature, there will be no effect. The design pressure is conservatively based on zero flow because it does not take credit for pressure drop.

VIBRATION

Verification that flow induced vibrations are within acceptable limits is based upon startup testing. Based on data taken at 100% power, no major problem would be anticipated with an increase in flow rate.

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PERRY NUCLEAR POWER PLANT EVALUATIONS OF SINGLE MSIV SLOW CLOSURE

The Project was tasked with performing an analysis to evaluate the safety significance of having one main steam line failed to isolate in the proper time. Both GE and Gilbert were used to help in this analysis.

First GE determined that two accident scenarios and three transients described in the FSAR took credit for closure of the MSIVs. The events were the following:

- 1) Steamline break outside containment
- 2) Inside containment breaks which reach Level I
- 3) Pressure regulator failure transient
- 4) Loss of condenser vacuum transient
- 5) Loss of AC power transient

It was determined that the bounding event of those described above would be the steamline break outside containment, since this event would permit the largest amount of activity to reach the site boundary. Therefore, GE was tasked with determining what the mass flow would be for a main steam line break outside containment given the as found conditions that existed on November 3, 1987 (i.e. three main steam lines isolate with proper times, and the remaining main steam line isolates in 18 seconds). Enclosure 1 is the results of this analysis. The analysis was done using the GE's SAFE 06 Code, a NRC approved code which has been previously used by Perry in the ECCS performance analyses (FSAR Chapter 6). Note that the mass release determined by this code were much less than the mass release discussed in FSAR 15.6.4.4 for the main steam line break outside containment. This was due to the conservative assumptions used in the FSAR analysis, such as assuming that level rise time is 1.0 seconds, that mixture quality is a constant 7.0%, and that the system pressure remains constant at 1060 psig throughout MSIV closure.

B-32

However, it was decided that two calculations would be done. The first would use the mass release given in the FSAR (FSAR page 15.6-10) for the first 5.5 seconds and then using the GE supplied flow data after 5.5 seconds when only one main steamline is open. The second calculation used the GE supplied data throughout the event. For each calculation two results were determined. First the postulated amount of radiation which would be released in the 18 seconds it took for the D line to isolate on November 3, and secondly the total time it would take with one main steam line unisolated before 10CFR Part 100 limits were exceeded. A conservative assumption was used for these calculation that there would be no plateout, or hold up time for the release. Enclosure 2 documents the results of these calculations.

To summarize the results of Enclosure 2, the analyses was performed using realistic assumptions that no fuel failure would occur for the events. Therefore, FSAR Table 15.6-17 values were used for isotopic content of the reactor coolant.

For the calculation using the FSAR mass release the following conclusions were drawn:

EB Iodine dose with 18 second single MSIV closure - 192 Rem

EB Iodine dose with 79 second single MSIV closure - 300 Rem

For the calculation using the GE data the following conclusions were drawn:

EB Iodine dose with 18 second single MSIV closure - 82 Rem

EB Iodine dose with 120 second single MSIV closure - 300 Rem

As shown above for either calculation the slow closure (18 second) of the D MSIV line on November 3 would not have resulted in a release exceeding 10CFR100 guidelines. Also, depending on which calculation used it was determined that the plant would have had between 79 and 120 seconds to isolate that line under accident conditions prior to exceeding 10CFR100 guidelines. Therefore, the 18 second slow closure of the D main steam line penetration has been shown to be within the bounds of accident guidelines.

FEB 1988

GENERAL  ELECTRIC
PERRY SITE
NUCLEAR ENERGY BUSINESS OPERATIONS
GENERAL ELECTRIC COMPANY • 175 CURTNER AVENUE • SAN JOSE, CALIFORNIA 95125

November 6, 1987

To: Gary Rhoades
Cleveland Electric Illuminating

Subject: Estimate of Mass Flows for Break Outside of Containment

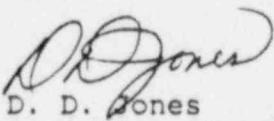
Per your request, the calculated mass flow rates for a steamline break outside containment with failure to isolate one steamline are attached. These values were calculated with the GE ECCS analysis code SAFE. All assumptions are identical to those in the FSAR for the steamline break outside the containment with the exception of only 3 lines isolating. These calculations have been verified and are filed in DRF 668-000036.

Also attached is a plot of these values compared to the original hand calculated estimate. The basis for the hand calculation was as follows:

<u>t</u>	<u>assumption</u>
0-4 sec	flow = FSAR calculation
4-5 sec	linear ramp to flow for 1 steam line open
5-10 sec	liquid bread flow based on Moody critical flow model
10-30 sec	steam break flow based on Moody critical flow model

As can be seen, the hand calculation was an excellent estimate of the SAFE results.

Please call if there are further questions.


D. D. Jones
Lead Site System Engineer

Extension 6908

DDJ/vjc

cc: D. A. Hamon
T. R. McIntyre

GENERAL ELECTRIC CO

TEL NO.

408 925 2790 Nov 05,87 6:00 P.M.

Steamline Break Outside Containment

- 3 Lines Isolate, 1 stays open

TIME	PRESSURE PSIA	BRK 1 FLOW LB/SEC	BREAK(16) QUALITY
0.	1.060E 03	7.086E 03	1.000E 00
0.1865234	1.035E 03	6.907E 03	1.000E 00
0.6240234	9.928E 02	6.616E 03	1.000E 00
1.1240234	9.672E 02	6.439E 03	1.000E 00
1.8935547	9.412E 02	6.260E 03	1.000E 00
2.3994141	9.296E 02	6.179E 03	1.000E 00
2.8134766	9.208E 02	6.118E 03	1.000E 00
3.0669141	9.151E 02	6.079E 03	1.000E 00
3.5244141	9.081E 02	6.117E 04	4.066E-01
3.9931041	9.080E 02	6.670E 04	1.734E-01
4.4619141	9.089E 02	1.456E 04	1.563E-01
5.2744141	9.154E 02	5.831E 03	2.170E-01
6.2119141	9.279E 02	3.449E 03	2.836E-01
7.1494141	9.393E 02	4.169E 03	1.652E-01
7.9150391	9.473E 02	4.685E 03	1.126E-01
8.1494141	9.499E 02	2.612E 03	4.308E-01
8.3637691	9.511E 02	1.582E 03	1.000E 00
8.6161641	9.520E 02	1.583E 03	1.000E 00
8.6525391	9.528E 02	1.585E 03	1.000E 00
9.0669141	9.535E 02	1.566E 03	1.000E 00
9.3212691	9.541E 02	1.587E 03	1.000E 00
9.5556641	9.546E 02	1.588E 03	1.000E 00
9.7900391	9.549E 02	1.589E 03	1.000E 00
10.024414	9.552E 02	1.589E 03	1.000E 00
10.256789	9.554E 02	1.589E 03	1.000E 00
10.493164	9.555E 02	1.590E 03	1.000E 00
10.727539	9.555L 02	1.590E 03	1.000E 00
10.961914	9.555E 02	1.589E 03	1.000E 00
11.196269	9.553E 02	1.589E 03	1.000E 00
11.430664	9.550E 02	1.589E 03	1.000E 00
11.605039	9.547E 02	1.588E 03	1.000E 00
11.899414	9.543E 02	1.587E 03	1.000E 00
12.133789	9.538E 02	1.587E 03	1.000E 00
12.368164	9.533E 02	1.586E 03	1.000E 00
12.602539	9.527E 02	1.585E 03	1.000E 00
12.836914	9.520E 02	1.585E 03	1.000E 00
13.071289	9.513E 02	1.582E 03	1.000E 00
13.305664	9.505E 02	1.581E 03	1.000E 00
13.540039	9.497E 02	1.579E 03	1.000E 00
13.774414	9.487E 02	1.578E 03	1.000E 00
14.008789	9.478E 02	1.576E 03	1.000E 00
14.243164	9.467E 02	1.574E 03	1.000E 00
14.524414	9.453E 02	1.572E 03	1.000E 00
14.993164	9.430E 02	1.568E 03	1.000E 00
15.461914	9.405E 02	1.564E 03	1.000E 00
15.930664	9.379E 02	1.559E 03	1.000E 00
16.399414	9.351E 02	1.554E 03	1.000E 00
16.868164	9.323E 02	1.549E 03	1.000E 00
17.336914	9.293E 02	1.544E 03	1.000E 00
17.805664	9.262E 02	1.539E 03	1.000E 00
18.274414	9.231E 02	1.533E 03	1.000E 00

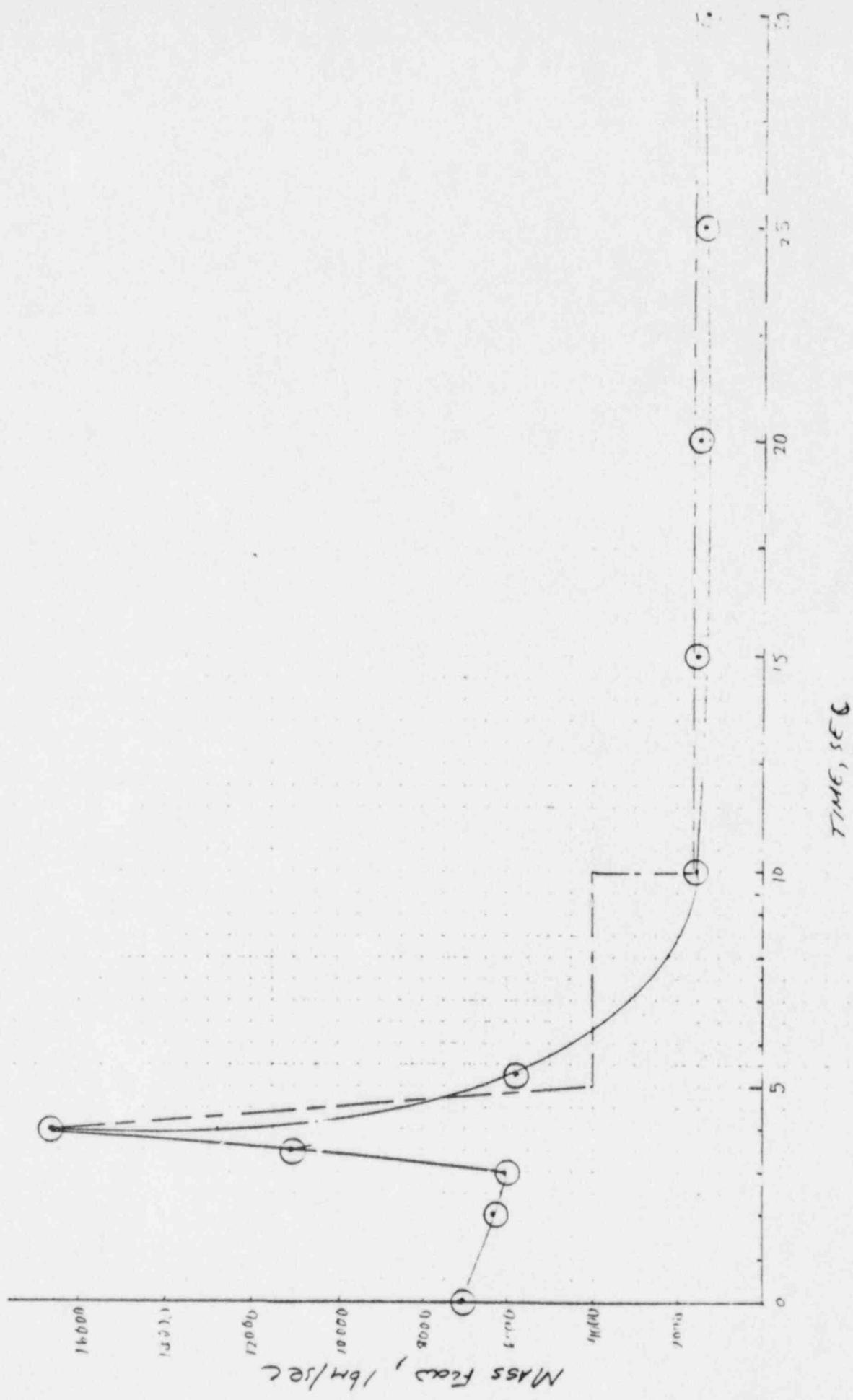
GENERAL ELECTRIC CO

TEL NO.

408 925 2790 Nov 05,87 6:39 P.C.T

Steamline Break Outside Containment
- 3 lines isolate, 1 stays open-

TIME	PRESSURE PSIA	BRK 1 FLOW LB/SEC	BREAK(16) QUALITY
18.743164	9.200E 02	1.768E 03	8.250E-01
19.211914	9.170E 02	1.864E 03	7.639E-01
19.680654	9.137E 02	1.517E 03	1.000E 00
20.149414	9.102E 02	1.511E 03	1.000E 00
20.868164	8.048E 02	1.502E 03	1.000E 00
21.556914	8.995E 02	1.648E 03	8.790E-01
22.116164	8.954E 02	1.486E 03	1.000E 00
22.805664	8.901E 02	1.477E 03	1.000E 00
23.461914	8.848E 02	1.468E 03	1.000E 00
24.055664	8.802E 02	1.460E 03	1.000E 00
24.711914	8.748E 02	1.451E 03	1.000E 00
25.274414	8.705E 02	1.443E 03	1.000E 00
25.868164	8.657E 02	1.435E 03	1.000E 00
26.461914	8.609E 02	1.427E 03	1.000E 00
27.024414	8.563E 02	1.419E 03	1.000E 00
27.556914	8.518E 02	1.411E 03	1.000E 00
28.211914	8.467E 02	1.403E 03	1.000E 00
28.836914	8.417E 02	1.394E 03	1.000E 00
29.461914	8.367E 02	1.386E 03	1.000E 00
30.024414	8.324E 02	1.378E 03	1.000E 00



 **Gilbert/Commonwealth** engineers and consultants

GILBERT/COMMONWEALTH, INC., P.O. Box 1400, Reading, PA 19603/Tel 215 775-2800/Cable GHASOC/Tellex 836-431

November 6, 1987

PY-GAI/CEI-19150
Information

The Cleveland Electric Illuminating Company
Project Organization Document Control Center
Perry Site
Post Office Box 97
Perry, Ohio 44081

Attention: K. R. Pech

Re: Perry Nuclear Power Plant
Evaluation of Exclusion Boundary
Dose with a single MSIV Closure
at 18 seconds

Dear Ken:

Per your verbal request of 11/5/87, we have evaluated the potential radiological consequences at the Exclusion Boundary (EB) based upon the following:

1. The postulated accidents result in no fuel damage per Reference 1.
2. The reactor coolant activity levels are per Reference 2.
3. Two cases were considered for the steam line break outside containment mass release for the first 5.5 seconds of the transient. The first is based on the data contained in FSAR section 15.6.4.4 and the second is based on data generated by GE using the SAFE 06 computer code. After 5.5 seconds the mass release in both cases is the same. Attachment 1 contains the GE data as verbally modified per our telephone conference to extend the table beyond 5 seconds.
4. Inboard MSIV closes in 18 seconds.

The details of the evaluation performed are presented as Attachment #2. The evaluation concludes:

1. That the environmental accident is a double ended rupture of a main steam line outside containment. The reasoning behind this conclusion is as follows

Given release of reactor coolant inventory with the above noted realistic activity levels, it becomes obvious that the maximum



Gilbert/Commonwealth Engineers and Associates
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Mr. K. R. Pach

-2-

November 6, 1987

radioactivity release to the environment occurs with the event that releases the most mass to the environment. Thus the main steam break outside containment (SBOC) becomes the enveloping case. All postulated ruptures inside containment release coolant and the associated activity into the confines of containment. Thus less activity is released to the environment than in the SBOC. Breaks smaller than a full guillotine double ended rupture SBOC release less mass and activity in 18 seconds than a full size SBOC. Feedwater breaks release mainly 'clean' fluid and are isolated normally.

2. For the FSAR case the results are:

EB iodine dose with 18 second single MSIV closure = 192

EB iodine dose with 79 second single MSIV closure = 300 Rem

EB noble gas dose for delayed single MSIV closure = 4.1 Rem

3. For the GE case the results are:

EB iodine dose with 18 second single MSIV closure = 82 Rem

EB iodine dose with 120 second single MSIV closure = 300 Rem

EB Noble gas dose for delayed single MSIV closure = 4.1 Rem

It should be noted that these results are not based on design verified safety related calculations. To complete a design package, verified design input regarding mass release and timing would be required from GE.

Should you have any questions, please contact us.

Very truly yours,

M. M. Waselus

Project Engineer - AEA

J. Ioannidi
Project Manager

MMW/JI:f11

cc: J. Ioannidi (2)
PO/DC (R-290)
J. Eppich (E-110)

R. E. Anderson
Enclosure

Attachment 1

Streamline Break Outside Containment

TIME	PRESSURE PSIA	LAYER	BREAK(16) GALL/FT
0.	1.000E 03	7.000E 03	1.000E 00
0.186527	1.035E 03	6.907E 03	1.000E 00
0.624023	0.928E 02	6.616E 03	1.000E 00
1.124023	0.672E 02	6.439E 03	1.000E 00
1.897394	0.912E 02	6.260E 03	1.000E 00
2.395941	0.298E 02	6.179E 03	1.000E 00
2.813376	0.208E 02	6.118E 03	1.000E 00
3.085911	0.151E 02	6.079E 03	1.000E 00
3.524411	0.081E 02	1.117E 04	1.066E -01
3.993161	0.088E 02	1.670E 04	1.734E -01
4.461611	0.090E 02	1.346E 04	1.633E -01
5.236911	0.186E 02	8.178E 02	9.036E -01
6.274411	0.358E 02	0. /	1.000E 00
7.2119141	0.588E 02	0. /	1.000E 00
"	4.0	1.670E 04	
"	5.0	4.000E 03	
"	10.0	1.000E 02	
"	10.0	1.000E 03	
"	12.0	1.000E 02	

As modified for a
single 18 strand
nickel chrome

11/15/87

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1.0 Purpose:

To evaluate the radiological consequence (dose) at the exclusion boundary for the worst case accident assuming that there is no failed fuel and that one MSIV closes in 18 seconds while the other 3 MSIV's close in the normal 5.5 seconds.

2.0 Design Input: See Design Input Record**3.0 Computer Data:** Computer not used**4.0 References:**

- 4.1 Letter DAH 87-1104, To T.R. McIntyre from D.A. Hamill / L.S. Burdick, 11/4/87
- 4.2 Letter FPC GEN/GRI-1310, To R.E. Gudkwest from R.C. Mitchell, 5/8/79
- 4.3 Containment And KSES Interface, Data Book, Document No. 22A3759 AL Rev 1
- 4.4 Main Steam Break Outside Containment Mass Release, Teletype GE to CEI, 11-5-87 AM
- 4.6 FSAR Pg 15.6-10

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5.0 Calculation

5.1 Assumptions:

- 1/ The postulated scenario will have no failed fuel (Per Reference 4.1)
- 2/ Reactor coolant activity levels per Reference 4.2 (Also given as FSAR Table 15.6-17).
- 3/ Mass Steam break outside containment mass release as per (Reference 4.4 & Reference 4.5)
- 4/ Others noted as used

5.2 Definitions:

NONE REQUIRED

5.3 Methodology:

Since there is no failed fuel (Reference 4.1), the activity released will be based on the realistic activity including iodine spike as per Reference 4.2.

Given a loss of reactor coolant inventory with the above noted realistic activity levels it is noted what postulated accident occurs, it becomes obvious that the maximum radioactivity release to the environment occurs with the event that releases the most mass to the environment. Thus the main steam break outside containment (SBOC) becomes the enveloping case. All postulated ruptures inside containment release most of the lost reactor coolant & associated activity into the confines of containment, thus less activity is lost to the environment than in the SBOC. Smaller thus full DER SBOC release less mass and activity in 18 seconds than full size SBOC. Feedwater breaks release mainly 'clean' fluid and are isolated normally.

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E.4 Estimate of Maximum Exclusion Boundary Dose Using Realistic PC Activity Levels

Use Reference 4.2 Total Isotopic Activity levels
Check both iodine and noble gas doses

Isotope	Activity (Curies)	Date Conversion Factor (Rem/Curie)	Breathing Rate (ml/sec)	$\frac{\gamma}{\alpha}$ (sec/m²)	Iodine Dose (Rem)
I-131	1600	1.48 ± 6	3.47 ± 4	4.3 ± 4	353.3
I-132	2400	5.35 ± 4			19.2
I-133	3200	4.00 ± 5			226.8
I-134	4100	3.50 ± 4			15.3
I-135	3600	1.84 ± 5			66.6
					681.2

Isotope	CSC Factor (α)	E_γ (MeV/α)	Activity (Curies)	$\frac{\gamma}{\alpha}$ (sec/m²)	GAMMA Dose (Rem)
Xe-131m	0.25	0.0116	49	4.3 ± 4	-
Xe-133		0.0272	9600		-
Xe-132m		0.0318	240		-
Xe-135		0.229	8200		0.2
Xe-133m		0.296	1300		0.1
Xe-137		0.18	7800		0.2
Xe-138		1.12	8000		1.0
Kr-83m		9.59 ± 6	680		-
Xe-85		0.00204	370		-
Kr-85m		0.148	1700		-
Kr-87		0.75	2200		0.3
Kr-88		1.86	4600		0.9
Kr-89		2.1	6000		1.4
					4.1

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	ORIGINATOR PFD, Dose calc					
	DATE 11-5-87					

5.3 Estimate of 18 Second MINS Exclusion Boundary Dose Using Realistic RC Activity

Only the iodine dose need be evaluated since Sect. 5.4 shows the noble gas dose to be within 10 CFF 100 limit easily

Method - Use the SLOC mass release to determine what percentage of RC activity is released (assuming instantaneous equilibrium of activity). This % represents the % of the total dose (iodine) calculated in Sect. 5.4 that would be released in 18 seconds.

SLOC Mass Release - Reference 4.4

Time (Sec)	Mass Rate (lbm/sec)	Integrated Mass Release (lbm)
0.	7026	-
0.1865234	6907	1305
0.6240224	6616	2938.2
1.1240224	6429	3263.8
1.8935247	6260	4826.1
2.3994141	6179	3146.2
2.8124766	6118	2645.9
3.0269141	6079	1667.6
3.5644141	11170	3773.2
3.9931641	16700	6532.0
4.0	16700	114.2
5.0	4000	10350.0
10.0	4000	20000.0
10.0	1600	-
18.0	1600	12000.0
		73342.2



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5.2 Cont'd

Total Reactor Coolant Inventory = 613400 lbm ... Reference 4.2

thus, the ratio of SEOC to second release to total RC inventory is

$$\frac{73242.2}{613400} \approx 0.12$$

thus EE iodine dose is: $D_{E2} = 0.12 (651.2) \approx .82 \text{ Rem}$.

Calculate at what time the EE iodine dose = 200 Rem, the 10 CFR 100 limit:

$$\text{Iodine Fraction} = \frac{200}{651.2} \approx 0.4404$$

$$\text{Mass} = 0.4404 (613400) = 270141.4 \text{ lbm}$$

$$\text{Time} = 18 \text{ seconds} + \frac{(270141.4 - 73242.2)}{1600}$$

Time ≈ 140 seconds

Assume 1600 lbm/sec is the constant release rate after 18 seconds

Say 120 seconds

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5.6 Estimate of 16 Second MCIV Exclusion Boundary Dose Using Realistic RC Activity and a Combination FSRR/Ref. 4 Mass Release

Method - Same as in Section 5.5 except that the mass release to be used for the first 5.5 seconds of the EBOC will be taken from FSRR Page 15.6-10 (Ref. 4.5). The mass release after 5.5 seconds will be per Reference 4.4. The use of the FSRR information is done for consistency with the plant licensing basis.

Time (Sec)	Mass Rate (lbm/sec)	Integrated Mass Release (lbm)
0 - 5.5	-	141687
5.5 - 10.0	4000	18000
10.0 - 18.0	1600	12800
		172487

$$\text{Ratio} = \frac{172487}{618400} \approx 0.2812$$

The dose (using 16 second EBOC) = 0.2812 (0.1 m) ≈ 112 Rem

Time to Reach 300 Rem is:

$$\text{Time} = 18 + \frac{(270141.4 - 172487)}{1600}$$

Assuming 1600 lbm/sec is the constant release rate after 18 seconds

Time ≈ 79 seconds

FROM

11/06/87 15:00 P.11

AH #2, Page 7/7

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	REV.	9	1	2	
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	ORIGINATOR	PE Judgment			
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6.0 Results : See pages 5, 7, 8

1/ EB iodine dose with 16 second single MCIV closure \approx 82 Rem

With Ref.
Mass
Release

2/ EB iodine dose with 160 second/circle MCIV closure \approx 300 Rem

3/ EB iodine dose for delayed circle MCIV closure \leq 4.1 Rem

4/ EB iodine dose with 18 second single MCIV closure \approx 192 Rem

With
Combination
Ref. H.4.6
Ref. H.5
Mass
Release

5/ EB iodine dose with 79 second single MCIV closure \approx 300 Rem

7.0 Disposition of Results:

PLANT PERFORMANCE ENGINEERING
San Jose, CA

November 4, 1987
DAH 87-1104

cc: AE Rogers
B Wolf
SS Dua

To: T. R. McIntyre
Subject: Effect of Isolation Delay or Failure in One Steamline
Reference: Letter, DA Hamon to TR McIntyre, "FSAR MSIV Assumptions", November 3, 1987, DAH 87-1103.

This letter expands on the reference to provide a more detailed discussion of the fuel response and radiological analysis requirements associated with an isolation delay or failure in one steamline.

The Perry FSAR transient and ECCS performance analyses take credit for operation of the MSIVs for the following events:

- 1) Steamline break outside containment,
- 2) Inside containment breaks which reach Level 1,
- 3) Pressure regulator failure open transient,
- 4) Loss of condenser vacuum transient, and
- 5) Loss of AC power transient (2 FSAR events).

None of these events have been analyzed without credit for MSIV closure. Thus, if the MSIV problem at Perry had gone undetected it could have led to the occurrence of an unanalyzed event.

However, all of the transient events (items 3-5 above) are expected to be bounded by the FSAR ECCS performance analysis in Chapter 6. As far as the core is concerned, items 1 and 2 would not be significantly affected if the MSIVs failed to close and the calculated peak cladding temperature change for the limiting event would be negligible (probably change by less than 1°F). No fuel rod perforations were calculated to occur for any loss-of-coolant accident (LOCA) event in the Perry Chapter 6 analysis and none would be expected if one or more steamlines failed to isolate.

The only item substantially impacted by lack of MSIV closure would be the radiological release due to a loss-of-coolant accident. If one of the steamlines could not be closed, the releases would be much higher than calculated in the FSAR. After 3 of the 4 steamlines isolate, the mass flow rate out of a steamline break will be reduced by 75%. This reduction occurs because the limiting flow area is at the steamline flow limiters, and only one will be contributing to the break flow after isolation of 3 steamlines. By this time in the transient the break quality will be 1.0 (steam only).

T. R. McIntyre
November 4, 1987
Page 2

Steamline breaks are very mild transients as far as peak cladding temperature (PCT) is concerned. Figures 6.3-65 through 6.3-68 of the Perry FSAR show the calculated response to a steamline break inside the containment for Perry. At no time does the calculated PCT exceed the normal operating temperature of the fuel. The response for a steamline break outside the containment is shown in FSAR Figures 6.3-69 through 6.3-72. No fuel heatup is calculated until after ADS actuation occurs, which is nearly 10 minutes after MSIV closure. If isolation of one steamline is delayed, the response would resemble that of the steamline break inside the containment (but with a much slower depressurization rate due to the smaller break area) until the time isolation finally occurs. Thus, no fuel damage (perforations) is expected for any steamline break with or without MSIV closure.

For the radiological analysis of a steamline break outside the containment, Reg. Guide 1.5 requires that the total coolant loss before isolation be evaluated. The coolant released must be assumed to contain tech spec maximum activity levels, with all activity becoming airborne and drifting to the site boundary. If isolation of one steamline is delayed, the additional amount of coolant lost would have to be considered, along with an iodine spiking term due to the resulting RPV depressurization. There is no requirement to postulate fuel damage unless it is expected to occur for this event.

A delay or failure to isolate one steamline would also substantially affect the radiological evaluation of the DBA recirculation line break inside the containment. For this event Reg. Guide 1.3 requires the assumption that 100% of all activity in the core be released, even though no fuel damage is expected for any LOCA event. This activity would then be available for transport outside the containment until all steamlines are isolated.

Please call if you have any questions.

D.A. Hamon

D. A. Hamon, Tech Leader
Plant Performance Engineering
M/C 763, Dial Comm 8*425-4593

Lloyd S. Burns

L. S. Burns, Tech Leader
Plant Analysis Services
M/C 769, Dial Comm 8*425-6596

GENERAL  ELECTRIC
PERRY SITE
NUCLEAR ENERGY BUSINESS OPERATIONS
GENERAL ELECTRIC COMPANY • 175 CURTISS AVENUE • SAN JOSE, CALIFORNIA 95195

November 4, 1987
PER 87-1294

To: J. P. Eppich, Senior Project Engineer
Perry Nuclear Power Plant

Subject: MSIV Closure Testing

In response to your verbal question of last evening, I have discussed the situation with our systems engineers in San Jose, and prepared the attached response. Please note that this response is based solely on our best engineering judgement and significant computer resource would be required to verify the statements with regard to bounding ECCS analysis. We believe the statements to be correct, but no analyses have been performed.

TR McIntyre

T. R. McIntyre, Manager
Perry Site Engineering

TRM/vjc

cc: J. J. Larsen
J. Z. Sherk

Question:

If one main steam line failed to isolate during the MSIV closure/SCRAM test at 100% Reactor Power would this result in any adverse safety consequences?

Answer:

If the MSIV closure test at test condition 8 had been performed prior to detecting the failure of the "D" line MSIVs, there would have been no adverse safety consequences. In making this conclusion, it is assumed that no pipe break or abnormal transient, other than that caused by the isolation will occur. Transients do exist that take credit for MSIV closure in FSAR analyses, but all of these transients are expected to be bounded by the ECCS performance analysis in FSAR chapter six.

If the test had been run, and one steam line had failed to isolate, the challenge to the reactor system would have been substantially less severe than planned. Reactor isolation leads to a reactor pressure increase and power transient. One line remaining unisolated would reduce the severity of this transient. From a dynamic loads standpoint, the steam flow in the unisolated line would increase by a maximum of 5 percent, which is bounded by the steam flow assumed to occur in that line during pipe break scenarios, which is the piping design basis. At any rate, turbine stop valve closure would terminate steam flow in all lines.

FORLED
Bench Test Airpack

PAGE 1

PERRY NUCLEAR POWER PLANT WORK ORDER

DATE 11/07/87

TIME 05:56:24

REV 0

M151B01

33

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT LOCATION
870009456	I&C	LB21F0028D	I&C TROUBLESHOOT	SMC/05-620

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
1 2 3	3 4 5	VLV	5X	1 /SR	I/I	11	NO

SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP REQ'D YES	TECH SPEC YES
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SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : BENCH TEST OF AIRPACK & SOLENOIDS
MPL NAME : SECOND MSIV

PLANNER REMARKS

THIS W.O. WILL PERFORM BENCH CHECK ON AIRPACK & SOLENOIDS FOR
MSIV LB21F028D.

D.A.D. 11/7/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

***** REFER TO ATTACHED JOB TRAVELER*****

1. Mount on test rig.
2. Thread pipe & cl. & bolt tight.
3. Connect rest of test rig.
4. Cooked for 2 hr.
5. Cycle valves sat - don't type pump out to be problem.

RELATED REPETITIVE TASKS

NONE

PLANNED BY

REVIEWED BY HQAD/AIA

APPROVED BY

APPROVAL TO COMMENCE WORK

WORK COMPLETE

APPROVAL TO COMMENCE TEST

RETEST COMPLETE

REVIEW BY HQAD/AIA

ACCEPTED BY UNIT SUPERV.

John G. Derry
DATE 11/07/87
John G. Derry (ANI NOT AVAILABLE OVER
DATE 11/7/87
WATERCO
DATE 11/7/87
John G. Derry
TIME: 06:40
DATE 11/7/87
John G. Derry
TIME: ____
DATE 11/7/87

33

PAGE 2

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/07/87

05:56:24

M151B03

REV NO: 0
 LAST CHG: 11/07/87
 SAFETY SEISMIC
 M/E M/E
 I / SR I/I

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009456	1B21F0028D	VLV	SMC/05-620	I / SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	\$ OF PERS
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010 PURPOSE

THE PURPOSE OF THIS PROCEDURE/W.O. IS TO PROVIDE BENCH TEST PROCEDURES FOR THE MSIV ACTUATOR ASSEMBLY. THREE OF EIGHT PERRY MSIV'S EXPERIENCED A DELAYED CLOSURE DURING PLANT SVI TESTING. THIS PROCEDURE/W.O. ASSUMES THE AIR PACK ASSEMBLY IS REMOVED FROM THE MSIV AND IS LOCATED IN AN AREA PREPARED FOR BENCH TEST.

I&C

020 PRECAUTIONS

1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.
2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.
3. ENSURE AIR PACK IS MOUNTED ON THE TEST FIXTURE PRIOR TO APPLYING NITROGEN FOR BENCH TEST.

I&C

2

I&C

2

030 REF./PREPARATION

1. MAINTENANCE MANUAL FOR HILLER MODEL SA-A068 VALVE ACTUATOR.
2. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, VENDOR MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED BENCH TEST.

I&C

I&C

040 NOTIFICATIONS

1. NOTIFY MMQS # X6350 PRIOR TO START OF WORK.

I&C

MMQS LOG #...11.30.4.....DATE..11/07/87 TIME..0707.

2. NOTIFY R.S.E OR ALTERNATE PRIOR TO START OF WORK TO ALLOW NOTIFICATION TO THE N.R.C.

I&C

N.R.C. REPRESENTATIVE NOTIFIED... *Karen Compton* RSE

SEE NEXT PAGE
APPROVAL FOR STEPS 1-5
ONLY STEP 6 REQUIRED
NRC PRESENCE NOT REQUIRED
11/07/87
0705

PAGE 3

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/07/87

05:56:24

M151B03

REV NO: 0

LAST CHG: 11/07/87

SAFETY SEISMIC

WO NUMBER
870009456MPL NUMBER
1B21F0028D

COMP CAT

CODE
VLVWO LOCATION
SMC/05-620M/E M/E
1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	\$ OF PERS
3.	NRC PRESENCE APPLICABLE (CIRCLE): YES / NO	*	RSE	

<NGAD
HOLD>050

FUNCTIONAL BENCH CHR

NOTE: DURING THE PERFORMANCE OF THIS WORK ORDER (BENCH CHECK OPERATIONS), STEPS MAY BE PERFORMED OUT OF SEQUENCE AT THE DISCRETION OF THE RESPONSIBLE ENGINEER.

NOTE: MMQS INSPECTOR AND RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE, ARE TO BE PRESENT AT ALL TIMES WHILE BENCH CHECK OPERATIONS ARE BEING PERFORMED.

- ✓ 1. INSTALL THE MSIV ACTUATOR AIR PACK ON THE TEST FIXTURE PER DIRECTION OF R.S.E. OR ALTERNATE FOR THE PERFORMANCE OF THE FOLLOWING WORK STEPS. I&C 2
- 2. ALL OBSERVATIONS SHALL BE LOGGED ON THE TROUBLE-SHOOTING LOG IN ACCORDANCE WITH PAP-0905. ALL ABNORMAL FINDINGS SHALL BE LOGGED ON TROUBLESHOOTING LOG. I&C 2
- 3. INITIAL INSPECTION: THE MSIV ACTUATOR AIR PACK SHALL BE INSPECTED FOR SIGNS OF PHYSICAL DAMAGE AND CONTAMINATION. I&C 2
 - A) INSPECT BOLTS FOR TIGHTNESS.
 - B) INSPECT EXPOSED AIR PORTS FOR SIGNS OF FOREIGN MATERIAL AND BLOCKAGE.
- 4. CONNECT THE TEST POWER CONTROL BOX (L70-V063B OR EQUIVALENT) TO THE MSIV ACTUATOR AIR PACK. (REFER TO 208-013-H36, 209-13-5) I&C 2
- 5. CONNECT NITROGEN PRESSURE SOURCE TO THE MSIV ACTUATOR AIR PACK. PRESSURE TO BE SET AT 90 PSIG MINIMUM, OR AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, NOT TO EXCEED 130 PSIG. I&C 2

* KEVIN CONNAUGHTON NOTIFIED PER TELECON
AT 0650. KEVIN GAVE PERMISSION TO
SET UP AND GAVE AUTHORITY TO PERFORM
STEPS 1-5 ONLY - STEP 6 CANNOT BE
PERFORMED UNTIL NRC IS PRESENT &
0700 11/7/87

PAGE 4

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/07/87

05:56:24

M151B03

REV NO: 0
 LAST CHG: 11/07/87
 SAFETY SEISMIC

WO NUMBER	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
870009456	LB21F0028D	VLV	SMC/05-620	1 / SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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6. PERFORM A "BENCH CHECK" OF THE MSIV ACTUATOR AIR PACK AS REQUIRED TO DETERMINE UNIT OPERABILITY. UNIT IS TO BE OPERATED A MINIMUM OF THREE TIMES IN THE "FAST CLOSE" MODE. DURATION BETWEEN TESTS SHALL BE DETERMINED BY R.S.E. OR ALTERNATE.

I&C 2

7. PERFORM OTHER TROUBLESHOOTING EFFORTS AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE.

I&C 2

060 RESTORATION

1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST USING INDEPENDENT VERIFICATION PER IAP-0503.

I&C 2

2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.

I&C 2

3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR TERMINATION PER PAP-0512.

I&C 2

4. ANY DEFECTIVE PARTS REMOVED UNDER THIS WORK ORDER ARE TO BE EVALUATED BY THE RESPONSIBLE ENGINEER (VINCE CONCIL OR ALTERNATE) FOR RETENTION FOR FURTHER ANALYSIS, RETURNED TO THE SALVAGE WAREHOUSE PER SMI-018, OR TO BE SCRAPPED. NOTE THE DISPOSITION ON THE WORK ORDER CLOSING SHEET. PRIOR TO REMOVING PARTS FROM THE R.C.A., HEALTH PHYSICS MUST SURVEY AND RELEASE THEM PER PAP-0515. THE RESPONSIBLE ENGINEER MUST ALSO APPROVE ANY RELEASE OF PARTS.

I&C 2

RESPONSIBLE ENGINEER APPROVAL OBTAINED

NAME: *[Signature]* DATE: 11/07/87 TIME: 1456...
None were returned to Salvage

070 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED.

I&C SUP 1

PAGE 5

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER

11/07/87

05:56:24

M151B03

REV NO: 0
LAST CHG: 11/07/87
SAFETY SEISMIC
M/E M/E
I/SR I/I

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	M/E	M/E
	LB21F0028D	VLV	SMC/05-620	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
2.	HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.		I&C SUP	1
3.	CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503.		I&C SUP	1

080 FIRE/VAPOR BARRIERS

FIRE/VAPOR BARRIERS TO RESTORED UNDER W.O. #87-9285. I&C

The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: 1 NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT		REPORT NO. 87-I-0730 SHEET <u>1</u> of <u>3</u>	DATE 11/7/87
SUBJECT/ACTIVITY MAGS HOLD POINTS / VERIFICATION OF BENCH WORK PER WJO TRAVELER		<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION / 1821/P0028D 2ND MSIV AIRPACK & SOLENOIDS FOR NUCLEAR COOLER SYSTEM (NCS)		NPL SYS. CODE 821	LOCATION SMC05-620' ELEV. (X-FERRED TO HOT SHOP)
WORK DOCUMENT WJO 870009443 REV. 1 WJO 870009450 REV. 0	WORK GROUP PADS I&C	PERSONNEL PERFORMING THE WORK T. GOODMAN / R. PETRONITO / S. C. MOORE	
REFERENCE DOCUMENTS (REV.) RALPH A. MILLER VESSEL MAINTAIN EXPIRES 12/4/87 (SEE BOOK OF LR)		CHECKLIST NO. AIA/P00287/REV.3/86 001 REV. 3	INSPECTION PLAN NO. N/A
H&TE USED TO PERFORM THE INSPECTION NP			
INSPECTION RESULTS 1A - OBSERV. <input type="checkbox"/> ACCEPT <input checked="" type="checkbox"/> REJECT 8/7/87		CORRECTIVE ACTION DOCUMENTS ISSUED NP	
DETAIL SECTION 08/30 OBSERVED JOB TRAVELER STEP 050.1 INSTALLATION OF ACTUATOR AIR PACK IN TEST FIXTURE AS DIRECTED BY RSE SCOTT SEMAN. NO OBSERVATIONS OF ANY ABNORMALITY IDENTIFIED TO DOCUMENT ON TROUBLESHOOTING LOG REQUIRED BY JOB TRAVELER STEP 050.2. 09/15 AS DIRECTED BY JOB TRAVELER STEP 050.3 INSPECTED MSIV ACTUATOR AIR PACK ASSY. FOR DAMAGE & CONTAMINATION. IDENTIFIED 1/8" AIR SUPPLY SWAGE LOCK INPUT FITTING HAS DEEP GROOVES OR ETCHED SCRATCHES, NOT A PORTION OF SEALING SURFACE PER RSE. THE SAME FITTING AS ABOVE HAS AIRT LIKE SUBSTANCE ALONG WITH SOME TINY METALLIC SHAKINGS 11/7/87 . ALSO WHAT APPEARS TO BE MACHINED THREAD REFORMATIONS POSSIBLY FROM OVER TIGHTENING. SOLENOID "A" HAS FRAYED INSULATION (FIBERGLASS ASBESTOS) ON MANUFACTOR TERMINATED TO T81-PT-4. VERIFIED I&C TECH'S CHECK BOLTS FOR TIGHTNESS DID NOT FIND ANY LOOSE HARDWARES WHEN CHECKED PER WJO STEP 050.3A. CHECKED ALL AIR PORTS EXPOSED AND DID NOT IDENTIFY ANY CONTAMINATION, FOREIGN MATTER, OR BLOCKAGE WHEN CHECKED TO WJO STEP 050.3B.			
INSPECTOR KIRK Kachler - <i>[Signature]</i> signed PER TELECON 8/4 11/7/87	DATE 11/7/87		

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT:
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO.

87-I-0730

DATE

11/7/87

SHEET 2 OF 3

DETAIL SECTION

09:45 WITNESSED CONNECTION OF TEST POWER CONTROL BOX L70-WL3B TO J-BOX 1821-F463 CONTAINING AIR PACK SOLENOID POWER TERMINAL BOARD. ~~10:00~~ INSTALLED CABLE AND JUMPER TO AGREE WITH DRAWING 209-13-SHEET 5 REV.M REFERENCED IS JOB TRAVELER STEP 050.4.

10:00 WATCHED TECH'S WORK TO JOB TRAVELER STEP 050.5 CONNECT NITROGEN PRESSURE TO ACTUATOR AIR PACK ~~(SOLENOID)~~^{#3 or 2F3} 3 WAY VALVE, AND PILOT AIR PACK WITH 90 PSI PRESSURE. WAITING 1 HOUR MIN. FROM 11:00 PER NRC K-~~112~~⁴¹³ CONNAUGHTON DIRECTIONS BEFORE PROCEEDING TO NEXT STEP.

13:05 OBSERVED STEP 050.6 OF JOB TRAVELER, AFTER WAITING FOR V. COUNSEL AND ASCO VENDOR REP.. TOOK TEMPERATURE READINGS ON SOLENOID HOUSING COVERS "A" WAS ~~128~~¹²³ °F AND "B" WAS 128 °F THEIR 3 WAY VALVE TEMPERATURE WAS 131.5 °F. ON BENCH FUNCTIONALLY CHECKED MSIV ACTUATOR AIR PACK SOLENOIDS A #8 SAT. ON FIRST ATTEMPT. THEN WAITED UNTIL SOLENOID TEMPERATURES WERE AT APPROX. RANGES IN FIRST TEST WHEN ENERGIZED FOR A WHILE. ON SECOND CYCLE ~~70~~⁷³ OF AIR PACK FIRST DEENERGIZED SOLENOID "A" THEN "B" SAT. CYCLED 4 TIMES SATISFACTORILY.

14:30 V. COUNSEL, VENDOR REP., & NRC DECIDED TO MOVE ON TO TROUBLESHOOTING PER STEP 050.7, WHICH IS ACTUALLY TO BE PERFORMED UNDER SPECIFIC W/J #8700094520.

15:30 TECH'S STARTED TROUBLESHOOTING TO W/J 9443 REV. 1 WITH SPECIFIC INSTRUCTIONS IN JOB TRAVELER BEGINNING WITH STEP 050.1, .2, & .3. VERIFIED REMOVAL OF DUAL SOLENOID 3 WAY VALVE. IDENTIFIED LOCTITE OR SOME TYPE OF PIPE THREAD SEALANT AT 3 WAY VALVE FILTER SCREEN. D. CARMEN AND B. BAKER TOOK TURNOVER OF DUAL SOLENOID / 3 WAY VALVE ASSY. NO SIGN OF LOCA SEAL MIGRATION WAS NOTICED. SOLENOID "A" CORE APPEARS TO BE BLUE FROM HEAT DAMAGE. ALSO THERE IS THE SAME DISCOLORATION ON THE INSIDE, OR BASE ASSY. SOLENOID "A" BASE TO 3 WAY VALVE ASSY. O RING / GASKET DEGRADED STUCK TO BRASS VALVE AND SEEMED

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT: /
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO.

87-I-0730

DATE

11/7/87

SHEET 3 of 3DETAIL SECTION

TO BE DECOMPOSING.

16:20 TECH.'S BEGAN DISASSEMBLY OF SOLENOID "B". CHECKED AS FOUND
 CONTINUITY OF "B" COIL THRU PIGTAIL LEADS AT APPROX. 117.0 READING.
 MEGGERED BOTH A #8 SOLENOID COIL LEADS TO HOUSING CHASSIS
 BOTH CHECKED AT 250 VDC RANGE BOTH VALUES ~~1000~~ INDICATED
 ON MEGGER METER WAS 20 MOEOMHS. I ASKED TECH.'S TO CHECK
 CONTINUITY OF PIGTAIL LEADS OF COIL TO HOUSING CHASSIS VALUES
 WERE INFINITE ON FLUKE 8050A IN RESISTANCE SCALE. I THEN
 ASKED TECH.'S TO CHECK MEGGER WITH NO LEADS AND COULD NOT
 OBTAIN A READING OF >80 MOEOMHS, TECH.'S RETURNED MEGGER
 TO H/F TE CAGE AS BAD (DEFECTIVE). RE-MEGGERED BOTH A #8
 SOLENOIDS AND OBTAINED INFINITE READINGS Satisfactorily,
 THUS TERMINATING WORK TO UP JOB TRAVELER STEP 070. J
 @ 18:00 FOR TURNOVER TO 2ND SHIFT.

ATTACHMENT

PMPP No. 4287 Rev 8/86

QUALITY ASSURANCE CHECKLIST
ERRY NUCLEAR POWER PLANT

CHECKLIST NO. 001 REV. 3

SHEET 1 OF 1

CHECKLIST TITLE

MMQS-I&C Inspection Checklist

APPROVED BY / DATE

Kirks R Kohler 4/22/87

REFERENCE DOCUMENT: TITLE, NUMBER, REV.

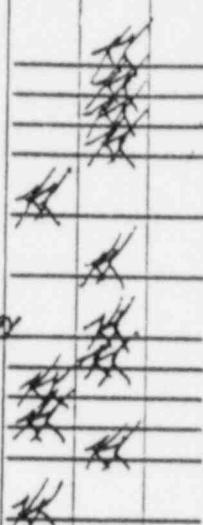
PAP-0905, Rev. 6

870009443 REV. 1

W/ 870009456 REV. 0

N/A SAT UN SAT

1. Unit Supervisor/QA Authorization
2. Reference Documents Controlled/Approved Latest Revision.
3. Prerequisites Complete.
4. Precautions and Limitations Observed
5. Material used is in accordance with approved Stores Requisition and design documents.
6. All M&TE used is listed on appropriate documents and is in current calibration.
7. Steps performed in numerical sequence, unless otherwise stated in procedure.
8. Work performed meets the Acceptance Criteria as specified in ACCEPTATION CRITERIA NA.
9. Equipment Restored.
10. Retest Performed.
11. Cleanliness Requirements observed as per work order/instructions.
12. Items of known nonconformance/noncompliance from previous inspection etc. have been checked.



COMMENTS

OBSERVATION ON 04/24/1987

PERFORMED BY/DATE

KIRK KOHLER

4/24/87

SIGNED PER TELECON

TROUBLESHOOTING LOG

W.O. NO.	ORIGINATOR	BADGE NO.
87-9456	T.E. Goodman	1423
WORK/PROBLEM DESCRIPTION	Perform Bench check on Air pack & Solenoids for MSIV 1B21F028D.	

AUTHORIZING UNIT SUPERVISOR	BADGE NO.	DATE	TIME
	500	11-7-87	0705-
DQS NOTIFICATION LOG NO.		DATE	TIME
	11304	11-7-87	0707
PERSONNEL PERFORMING WORK			
NAME	BADGE NO.	NAME	BADGE NO.
T.E. GOODMAN	1423	RA	
NAME	BADGE NO.	NAME	BADGE NO.
R PIOTROWICZ	10240	TD 11-7-87	

EQUIPMENT/MPL	NATURE OF WORK
1B21F028D AIR PACK	INSTALL AIR PACK ON TEST PLATE

DESCRIPTION OF FINAL PROBLEM AND END RESULTS OF TROUBLESHOOTING still performing work per WO 879456

PROBLEM CORRECTED? YES NO

ACTION NEEDED TO CORRECT PROBLEM CONTINUE WO - 879456

UNIT SUPERVISOR NOTIFIED OF RESULTS	B. Sucha	DATE	TIME
REVIEWED BY WORK/IAC UNIT SUPERVISOR	<u>St Holbrook</u>	11-7-87	0804
		DATE	
		11-7-87	

DATE	TIME	STEP DESCRIPTION	INITIALS
7 Nov 87	0800	INSPECTED AIR PACK (B21 FORBD) PER WD STEP 50.3 A, B. RESULTS: ALL BOLTS TIGHT. INSPECTION OF EXPOSED AIR PORTS: SUPPLY PORT ON 4-WAY VALVE HAS GALLING ON INTERNAL SURFACE, BROWN DEPOSITS ON WALLS AND BLACK OR GRAY DEPOSITS ON EXTERNAL SWAGELOCK THREADS/ROUGH THREADS; EXHAUST PORT ON 4-WAY VALVE APPEARS TO HAVE NEVER SEIZE ON INTERNAL SURFACE OF SWAGE LOCK; EXHAUST PORT OF DUAL SOLENOID VALVE HAS SILVER DUCT TAPE OVER EXHAUST PORT (TAPE LEFT IN PLACE); FILTER VALVE ON TEST SOLENOID EXHAUST HAS DEPOSITS ON/N GRAINS OF FILTER?	gjt
7 Nov 87	1010	CONNECTED SOLENOID TEST BOX & AIR LINES	gjt
7 Nov 87	1100	ENERGIZED SOLENOIDS A+B ("2+3"), APPLIED 9 OPS, NITROGEN AT SUPPLY AIR SOLENOID VALVE AND 4 WAY VALVE. (IN ONE HOUR WARM PERIOD, LETTING SOLENOIDS HEAT-UP)	
7 Nov 87	1310	SOLENOID "B" 128°, "A" 127°F, BASE 131°F OMEGA 450 AET 470-12828F DUE 11/27/87 SOLENOIDS ENERGIZED FOR 2 HRS 15 MIN.	gjt
7 Nov 87	1328	CYCLED AIR-PAC SAT, SOLENOIDS ENERGIZED FOR 2 HRS 20 MIN. B+C OPEN? SAT DIRECTION: D-T THIS DID NOT STOP VALVE FROM OPERATING. REMOVED TAPE FROM SOLENOID EXHAUST.	
7 Nov 87	1349	CYCLED VALVE A+P+K CPER → Cuse, Tuse, Ei OFF "A" THEN "R" SAT. CYCLED VALVE P+K Cuse → Cper using "B" SOLENOID SAT. SAT	gjt
7 Nov 87	1405	TIME "R" OF 1.7201 CYCLED SAT	gjt

TROUBLESHOOTING LOG

W.O. NO. 87-9456	ORIGINATOR CHARLES S. MOORE	BADGE NO. 1377
WORK/PROBLEM DESCRIPTION Perform bench check on air pac & solenoids for NSIV 1B21-F028D		

AUTHORIZING UNIT SUPERVISOR B Socchi	BADGE NO.	DATE 11-7-87	TIME 0815
DQS NOTIFICATION LOG NO. 11304		DATE 11-7-87	TIME 0707

PERSONNEL PERFORMING WORK			
NAME J Tufts	BADGE NO. 2587	NAME	BADGE NO.
NAME C Moore	BADGE NO. 1377	NAME	BADGE NO.

LIST WORK PERFORMED	
EQUIPMENT/HPL 1B21-F028D	NATURE OF WORK DATA TAKING on AIR PAK

DESCRIPTION OF FINAL PROBLEM AND END RESULTS OF TROUBLESHOOTING

CYCLED AIR PAK TO SEE IF SOLENOID WOULD FAIL

PROBLEM CORRECTED ?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
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ACTION NEEDED TO CORRECT PROBLEM	N ACTION TAKEN
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UNIT SUPERVISOR NOTIFIED OF RESULTS B. Socchi	DATE 11-7-87	TIME 140 -
REVIEWED BY WORK/IAC UNIT SUPERVISOR WGL	DATE 11-7-87	

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The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: <u>1</u> NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT		REPORT NO. <u>87I-0760</u>	DATE <u>11/7/87</u>
		SHEET <u>1</u> of <u>3</u>	
SUBJECT/ACTIVITY <u>INSTALLATION & HOOKUP OF HYGROMETER & SAMPLE EQUIP.</u>		<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION <u>1P52 SYS.</u>		MPL SYS. CODE <u>1P52 / 1B21</u>	LOCATION <u>SM C/05 630'</u>
WORK DOCUMENT <u>87-9439-9440/0</u>	WORK GROUP <u>PPOD IS'C</u>	PERSONNEL PERFORMING THE WORK <u>J. McDONALD / R. WILES / P. NICHOLS (RSE)</u>	
REFERENCE DOCUMENTS (REV.) <u>IMI-E2-18/1</u>		CHECKLIST NO. <u>001</u>	INSPECTION PLAN NO. <u>NONE</u>
H & TE USED TO PERFORM THE INSPECTION <u>HYGROMETER L70-N502B DUE 1/3/88 STOPWATCH L70-R834 DUE 12/5/87</u>			
INSPECTION RESULTS <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	OBSERVATION <u>CORRECTIVE ACTION DOCUMENTS ISSUED</u> NONE		
DETAIL SECTION <p>0600 TECH ATTACHED HYGROMETER TO HANDRAIL NEAR VALVE 1B21-F002-B & ENERGIZED PER IMI-E2-18. P. NICHOLS & TECHS INSPECTED INSIDE 1 5/8" S.S. AIR SUPPLY PIPE AFTER REMOVAL OF TAPE. EVIDENCE OF NEVER-SIEZE WAS NOTED ON THREADS & INTERNAL OF PIPE NEAR END OF PIPE. NEVER-SIEZE WAS OF MINIMAL AMOUNT. A SAMPLE WAS TAKEN OF PIPE THREAD SURFACE & INTERNAL BY NIPPING w/ CLOTH. PILLOW CASE WAS THEN WRAPPED AROUND 1 5/8" S.S. AIR LINE OPENING & SECURED w/ NYLON STRAP. TAPE WAS THEN REMOVED FROM 3 1/2" S.S. FLEX TUBING END & INSPECTED FOR FOREIGN MATTER ON INTERNAL SURFACES (NONE FOUND). PILLOW CASE WAS THEN WRAPPED AROUND OPEN END OF FLEX TUBING (AS PER W.O. 87-9439-9440) & SECURED w/ NYLON STRAP.</p> <p>MOVED TO ADJACENT VALVE 1B21-F002-B. TECHS REMOVED COUPLING FROM END OF 1 5/8" S.S. AIR SUPPLY LINE. P. NICHOLS & TECH INSPECTED INTERNAL OF 1 5/8" S.S. PIPE NIPPLE NEAR END. NEVER-SIEZE IN MINIMAL AMOUNT WAS NOTED. SAMPLE WAS TAKEN OF THREAD SURFACE & NIPPLE END. 1 5/8" S.S. LINE WAS CAPPED & FITTING ON</p>			
INSPECTOR <u>J. E. Conrow</u>	DATE <u>11/7/87</u>		

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The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT: /
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO.

87I-0760

DATE

11/7/87

SHEET 2 OF 3DETAIL SECTION

3/8" S.S. FLEX. TUBING & END WAS CAPPED AFTER INSPECTION OF THREADS & INTERNALS FOR FOREIGN MATTER (NONE FOUND).

MOVED TO 1B21-F028B & BEGAN COMMUNICATION w/
 OPERATOR BY WAY OF HAND RADIO. OPERATOR OPENED VALVE 1A52-F648
 UPON REQUEST & TIME/STOPWATCH WAS STARTED. VALVE WAS THEN
 SHUT AFTER 6 MIN. 50 SEC. UPON REQUEST. PILLOW CASE
 SAMPLES WERE THEN REMOVED FROM 3/8" & 1 5/8" S.S. AIR LINE.
 SAMPLES WERE LABELED IN PEN & BAGGED FOR RETENTION.

MOVED TO F028D & REMOVED END CAPS FROM AIR
 LINES THAT PREVIOUSLY PLACED. END CAPS WERE PLACED ON
 AIR LINES FOR F028B & SECURED. NOTE: FITTING HAD TO BE
 REMOVED FROM 3/8" S.S. AIR LINE TO FACILITATE PLACING OF END
 CAP. PILLOW CASES WERE PLACED OVER AIR LINE ENDS ON F028D
 & SECURED. REQUEST WAS GIVEN TO OPEN ISOLATION VALVE F0648
 & STOP WATCH WAS STARTED.

0655 TURNED JOB OVER TO S. JOPKO DAY SHIFT INSPECTOR.

NOTE: PRIOR TO START OF WORK THE AMBIENT TEMP. WAS
 TAKEN FROM CONTROL ROOM TEMP. INDICATOR FOR STEAM TUNNEL
 MSIV AREA. TEMP. WAS 76°F.

NOTE END CAPS FOR AIR LINES (TEMP. CONDITIONS AS DESCRIBED
 IN N.O.S.) WERE CLEAN & FREE OF RESIDUE & ETC.

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PAP-0905-2 S1687 2

DATE	TIME	STEP DESCRIPTION	INITIALS
11-7-87	1546	Step 60.2 B & 2C Removed Tee fitting from supply port. Found strainer intact and thread sealant present. Thread sealant was hard & brittle. Sample taken. Found no migration of LOCA seal.	PBC
11-7-87	1549	Step 60.3 Removed solenoid A from base. Core assembly top has a burnished appearance, also there were carbon deposits present. Appeared that top part of assembly was overheated. Core moves freely inside of solenoid base. Core spring and core guide were attached properly to core assembly. Inside of solenoid base assembly appeared to be overheated to match the top of the core assembly.	DBC
11-7-87	1550	Step 60.3 G Removed Body basket, it was in bad shape. When removed it left excessive amounts of residue on base assembly. When viewing the bottom of the disk holder assembly the three legs are shiny, from excessive cycling.	DBC
11-7-87	1551	Step 60.4 Removed Sol. B sub assembly from valve body. Found that disc holder leg tops are worn and have carbon deposits on them. Body basket is dry and brittle and has some discoloration. Found foreign material on top of stem. Appears to be varnish.	DBC
11-7-87	1610	Step 70 D. Plug nut assembly and stem move freely.	DBC
11-7-87	1620	Step 70 E. Slotted stem & Disc holder in their respective guides. No binding was observed.	DBC
11-7-87	1635	Step 70 F. Disc holder spring had no evidence of foreign material and it measured 1 49/64" free height.	DBC
11-7-87	1645	-LW 70.4 Disc holder 2-5/8" overall height. -Disc holder frame.	DBC
		See page 2	

DATE	TIME	STEP DESCRIPTION	IN.
11-7-87	2234	Step 70.5 - cut coil leads between coil and solenoid housing.	DBC
11-7-87	2252	Step 70.6 Removed plug nut adapter. O-ring is shiny; pressed, also brittle and hard. O-Ring gasket left residue in adapter. Took smear out of adapter. Removed retainer. Retainer had sealant on it. Removed plug nut & plug nut gasket. Plug nut gasket is smashed cannot reuse. (excessive damage) Core moves freely inside solenoid base. Solenoid base sub assembly is in good condition. Some residue leftover from O-Ring Removal. Plug nut assembly has large amount of residue left over from plug nut gasket. No other foreign material found.	DBC
11-7-87	2308	Jumped to step 150 Per Pete Arthur RE. Step 150.1A - Removed valve from electrical box. Disconnected supply air and output air tubing from solenoid base.	DBC
11-7-87	2311	Step 150.1B Found no damage or foreign material.	DBC
11-7-87	2315	Step 150.1C Found w/foreign material	DBC
11-7-87	2318	Step 150.1E Body basket in good shape. no damage found. Core moves freely inside of solenoid base. NO EXCESSIVE WEAR	DBC
11-7-87	2325	Step 150.2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 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DATE	TIME	STEP DESCRIPTION	INITIALS
11/8/87	0015	Step 90. 1. D Shuttles Stroke freely.	
	0040	E) Noticed some dirt on Cap, dirt on O-Ring Some dirt dropped on Piston.	
	0100	F) No evidence of Grease on O-Rings, Some more dirt noticed. Noticed Small Pieces of Copper on top of Piston ^{Piston} Bottom Seal of Piston dirty → needs to be changed. Ref. DWG 975-30504	
		item 5 No. Part lower Seal very Dirty, Appears to be water or grease on Seal.	
		item 17 Pushrod dirty noticed no Lubricant.	
		item 18 Piston dirty ; item 3 dirty Overall → extremely dirty, found some small Copper Particles + lower Seals appear to be very dry.	
	0110	Section 110 Step 1	
	0130	B) Noticed some dirt in Coupling from 3-way to 4 way Valve, 1 Mounting Bolt Extremely difficult to Remove, threads Stripped. C) Noticed dirt in every Port.	
	0135	C) Noticed couple small specs of material in Exhaust Muffler.	
	0138	D) Looks Pretty Clean.	
	0141	E) Stroke Seems a little Slow per Vendor	
	0144	F) O-Ring Looks good, Internal maybe some dirt, Looks OK.	

<p>The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: / NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT</p>			REPORT NO.	DATE
			87-I-0687	11-7-87
			SHEET <u>1</u> of <u>4</u>	
SUBJECT/ACTIVITY FAILURE ANALYSIS OF MSIV			<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION AIR PACK & SOLENOIDS		MPL SYS. CODE 1821-F0028D	LOCATION I&C HOT SHOP - ELEV. S-99'	
WORK DOCUMENT WO 87-9443 R/	WORK GROUP PPOD I&C	PERSONNEL PERFORMING THE WORK I&C TECHNICIANS : <input checked="" type="checkbox"/> D. CARMAN, B. BAKER & <input type="checkbox"/> J. RE. P. AUTHER A. DIETRICH, S. HOLBROOK		
REFERENCE DOCUMENTS (REV.) MODEL SA-A068 MAINT. MANUAL		CHECKLIST NO. 001	INSPECTION PLAN NO. N/A	
R & T USED TO PERFORM THE INSPECTION NONE				
INSPECTION RESULTS (OBSERVATION) ONLY <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	CORRECTIVE ACTION DOCUMENTS ISSUED NONE			
DETAIL SECTION <p>(*) ALSO PRESENT: (2) NRC INSPECTORS, (1) HILLER VENDOR REP., (1) QA REPRESENTATIVE AND (1) HEALTH PHYSICS TECHNICIAN.</p>				
<p>ARRIVED AT JOB LOCATION FOR COMMENCEMENT OF WORK AT APPROXIMATELY 2230 MRS. THIS REPORT COVERS ONLY A PORTION OF THE WORK ORDER. THE FOLLOWING ARE THE DETAILS OF MY OBSERVATIONS:</p> <p>STEP 070. J → THE SOLENOID "B" COIL WAS REMOVED BY CUTTING THE COIL LEADS.</p> <p>STEP 070. K → THE PLUGNUT/ADAPTER ASSY., BODY GASKET, WERE REMOVED FROM THE SOLENOID VALVE ASSEMBLY. THE PLUGNUT GASKET AND CORE WERE REMOVED FROM THE SOLENOID BASE SUBASSEMBLY. PROPER INSTALLATION OF THE BASE SUBASSEMBLY WAS THEN VERIFIED.</p> <p>STEPS 070. L, M, N → THE DETAILS TO FOLLOW ARE THE RESULTS OF THE INSPECTIONS/EXAMINATIONS PERFORMED UNDER THESE STEPS.</p> <p>(CONTINUED ON SHEET 2)</p>				
INSPECTOR <i>Jeffrey C. Hubbard</i>	DATE 11-7-87			

The Cleveland Electric Illuminating Co.
PERRY NUCLEAR POWER PLANT UNIT:
NUCLEAR QUALITY ASSURANCE DEPARTMENT
INSPECTION REPORT

REPORT NO.

87-I-0687

DATE

11-7-87

SHEET 2 OF 4DETAIL SECTION

- ① BODY GASKET (O-RING) FOUND SHINY, PRESSED AND BRITTLE. IT LEFT RESIDUE IN THE ADAPTOR WHEN REMOVED. SMEAR TAKEN OF THE ADAPTOR WAS ID'D AND STORED IN A PLASTIC PETRI DISH. EXPERIENCED SOME DIFFICULTY IN REMOVING THE PLUGNUT. ② THE CORE OF THE SOLENOID BASE SUBASSEMBLY HAD FREE MOVEMENT, BUT THE PLUG-NUT GASKET WAS SMASHED AND NOT RE-USABLE. PHOTO TAKEN.
- ③ THE CORE WAS FOUND IN GOOD CONDITION. THE SUBASSEMBLY BASE WAS IN GOOD CONDITION, BUT HAD ^{SCR 11-7-87} ~~RE~~ RESIDUE PRESENT FROM THE O-RING. THE PLUGNUT ASSEMBLY ALSO HAD A LARGE AMOUNT OF O-RING RESIDUE. NOTHING ELSE WAS FOUND.

PER THE RE., WORK THEN STARTED AT STEP 150, APPROXIMATELY 2308 HRS.

STEP 150.1. A → SOLENOID "C", ASCO MODEL NP-8320-1185E 3-WAY, WAS REMOVED FROM THE AIR PACK.

STEP 150.1. B → NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALUE ASSY. WERE EXAMINED FOR FOREIGN MATERIAL & DAMAGE. NONE FOUND.

STEP 150.1. C → THE PILOT AIR LINES WERE EXAMINED FOR FOREIGN MATERIAL. NONE FOUND.

STEP 150.1. D → ^{E 9AM 11-7-87} THE SOLENOID VALVE WAS PLACED ON A CLEAN WORK SURFACE.

(CONTINUED ON SHEET 3)

The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: <u>1</u> NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT	REPORT NO. <u>87-I-0687</u>	DATE <u>11-7-87</u>
	SHEET <u>3</u> OF <u>4</u>	

DETAIL SECTION

STEP 150.1.F → SOLENOID AND BASE ASSY. WAS REMOVED FROM THE VALUE BODY AS A SINGLE UNIT.

STEP 150.1.G → THE BODY GASKET AND CORE ASSY. WERE REMOVED.

STEP 150.1.H → FRESHLY EXPOSED PARTS WERE EXAMINED FOR DAMAGE AND FOREIGN MATERIAL. NONE FOUND.

STEPS 150.1.I,J → THE FOLLOWING ARE THE INSPECTION RESULTS OF THESE STEPS: ⁽¹⁾ THE ID OF THE SOLENOID BASE SUBASSY. & THE OD OF THE CORE WERE CHECKED FOR CONDITIONS WHICH COULD INHIBIT CORE MOVEMENT. NOTHING FOUND. ⁽²⁾ THE CORE HAD GOOD FREEDOM, AND THE O-RING WAS IN GOOD SHAPE WITH VERY LITTLE RESIDUE AND NO EXCESSIVE SIGNS OF WEAR.

STEP 150.1.K → THE END CAP, DISC., DISC SPRING AND LOWER BODY GASKET WERE REMOVED.

STEP 150.1.L → FRESHLY EXPOSED PARTS WERE EXAMINED FOR FOREIGN MATERIAL AND DAMAGE. NONE FOUND.

STEP 150.1.M → THE DISC HOLDER WAS EXAMINED FOR CONDITIONS WHICH COULD PREVENT SMOOTH OPERATION. NOTHING WAS FOUND.

STEP 150.1.N → THE (2) BODY GASKETS WERE EXAMINED. NO UNUSUAL OBSERVATIONS WERE NOTED.

STEP 150.1.O → ALL LOOSE PARTS REMOVED WERE ID'D AND PLACED IN PLASTIC PETRI DISHES WHILE THE ABOVE STEPS WERE PERFORMED.

STEP 160 → THE ASSOCIATED CHECKLIST WAS THEN UPDATED TO INDICATED INSPECTION RESULTS.

(CONTINUED ON SHEET 4)

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT: /
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO.

87-I-0687

DATE

11-7-87

SHEET 4 of 4DETAIL SECTION

PER THE R.E., THE TECHNICIANS THEN MOVED TO STEP 090,
 (APPROXIMATELY 2335).

STEP 090.1. A → THE NORGRAN 4-WAY AIR CONTROL VALVE WAS
 REMOVED / DISASSEMBLED. THE 6 ALLEN HEAD BOLTS TAKEN FROM THE
 COVER WERE A LITTLE RUSTY.

STEP 090.1. B → NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND
 4-WAY CONTROL VALVE WERE EXAMINED. THE ONLY THING FOUND
 WAS A SMALL AREA OF DISCOLORATION ON THE COVER GASKET.

STEP 090.1. C → THE PILOT INLET AIR CAP WAS REMOVED AND
 EXAMINED . , THE O-RING WAS IN GOOD CONDITION. NOTHING ELSE
 NOTED.

STEP 090.1. D → THE AIR CONTROL VALUE SHUTTLES WERE MANUALLY
 STROKED AND FOUND TO BE FREE IN MOVEMENT.

SHIFT TURNOVER COMMENCED ^{PCB 11-7-87} APPROXIMATELY 0000 HRS.

PPF No. 4287 Rev 8/86

QUALITY ASSURANCE CHECKLIST

JRRY NUCLEAR POWER PLANT

ATTACHMENT TO 87-I-0687

CHECKLIST NO. 001 REV. 3

SHEET 1 OF 1

CHECKLIST TITLE

MMQS-I&C Inspection Checklist

APPROVED BY / DATE

James R. Knobk 4/22/87

REFERENCE DOCUMENT: TITLE, NUMBER, REV.

PAP-0905, Rev. 6

N/A SAT UN SAT

1. Unit Supervisor/QA Authorization OCH
2. Reference Documents Controlled/Approved Latest Revision. Y92T
3. Prerequisites Complete. OCH
4. Precautions and Limitations Observed D4T
5. Material used is in accordance with approved Stores Requisition and design documents. OCH
6. All MATE used is listed on appropriate documents and is in current calibration. OCH
7. Steps performed in numerical sequence, unless otherwise stated in procedure. OCH
8. Work performed meets the Acceptance Criteria as specified in WO 87-I-0687. OCH
9. Equipment Restored. OCH
10. Retest Performed. OCH
11. Cleanliness Requirements observed as per work order/instructions. OCH
12. Items of known nonconformance/noncompliance from previous inspection etc. have been checked. OCH

COMMENTS

SEE IIR 87-I-0687

PERFORMED BY/DATE

John C. Hobart 4/7-87

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REV 3 11/07/87

SEQUENCE OF TROUBLESHOOTING PLAN

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
1) Inboard MSIV's	Field - Inspect all 4 MSIV's	WO 87-9323	Yes	11/05/87
2) B21-F022D	Field - Stroke B21-F022D Open	WO 87-9323	Yes	11/05/87
3) B21-F022D	Field - Remove junction box box cover - Verify tightness of terminal screws - Record voltage at term 1 & 2 - Record voltage at term 3 & 4 - Install pressure gauge at B21-F083D (Accumulator drain)	WO 87-9323	Yes	11/05/87 " " " " " "
4) B21-F022D	Field - Ops slow stroke B21-F022D app. 50% then finish with fast stroke - Obtain "Pillow Case" air samples of exhaust ports - Monitor for lowest pressure	WO 87-9323	Yes	11/05/87 " " " "
5) B21-F022D	Field - Open B21-F083D (Accumulator Drain) and blow down for app. 1 min. into pillow case	WO 87-9323	Yes	11/05/87
6) B21-F022D	Field - Disconnect 3/8" and 1 5/8" air supply to air pack - Unbolt and remove air pack - Transport air pact to shop	WO 87-9293	Yes	11/05/87 " " "

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<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
7) B21-F022D	Field - Perform blowdown of 1 5/8" air supply - Obtain a "pillow case" air sample - Perform a dewpoint reading - Perform a particle count	WO 87-9405	Yes	11/06/87
8) B21-F022D	Shop - Perform shop testing by cycling valve with N ₂ supply and temp. power supply and document results	WO 87-9372	Yes	11/06/87
9) B21-F022D	Shop - Perform a detailed disassembly of each component as follows:			
1) Inspect air pack bolts for tightness	- Inspect air ports for cleanliness - Look for signs of foreign material - Photograph air pack	WO 87-9372	Yes	11/05/87
2) Disassemble ASCO 3-way (Part #4) Model #8323	- Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid 'A' - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings	WO 87-9372	Yes	11/06/87
				11/06/87
				11/06/87
				11/06/87
				11/06/87

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
2)	Disassemble ASCO 3-way (Part #4) Model #8323 (continued) - Disassemble Solenoid 'B' - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings	WO 87-9372	Yes	11/06/87
3)	Disassemble ASCO 3-way (Part #5) Model 8320 - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings	WO 87-9372	Yes	11/06/87
4)	Disassemble Norgren 4-way valve (Part #1) - Remove 4-way valve - Examine 4-way valve - Disassemble 4-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings	WO 87-9372	No	
5)	Disassembly of Norgren 3-way valve (Part #2) - Remove 3-way valve - Examine 3-way valve - Disassemble 3-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings	WO 87-9372	No	

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
6)	Disassembly of Norgren 2-way valve (Part #3) - Remove 2-way valve - Examine 2-way valve - Disassemble 2-way - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings	WO 87-9372	No	
10)	Outboard MSIV's Field - Inspect all 4 MSIV's			
11)	B21-F028B Field - Perform blowdown of 1 5/8" air supply - Obtain pillowcase sample	WO 87-9439	Yes	
12)	B21-F028D Field - Perform dewpoint - Perform partical count	WO 87-9440	Yes	
(13)	B21-F028D Field - Ops to slow stroke B21-F028D close then finish with fast stroke	SOI	Yes	11/05/87
14)	B21-F028D Shop - Perform a detailed disassembly of each component as follows: 1) Inspect air pack bolts for tightness - Inspect air ports for cleanliness - Look for signs of foreign material - Photograph air pack	WO 87-9456	Yes	11/07/87

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
2)	Disassemble ASCO 3-way (Part #4) Model #8323 - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid 'A' - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings - Disassemble Solenoid 'B' - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings	WO 87-9444	Yes	
3)	Disassemble ASCO 3-way (Part #5) Model 8320 - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings		Yes	
4)	Disassemble Norgren 4-way valve (Part #1) - Remove 4-way valve - Examine 4-way valve - Disassemble 4-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
	5) Disassembly of Norgren 2-way valve (Part #2) <ul style="list-style-type: none"> - Remove 3-way valve - Examine 3-way valve - Disassemble 3-way valve <ul style="list-style-type: none"> - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings 			
	6) Disassembly of Norgren 2-way valve (Part #3) <ul style="list-style-type: none"> - Remove 2-way valve - Examine 2-way valve - Disassemble 2-way <ul style="list-style-type: none"> - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings 			
15) B21-F028B	Field <ul style="list-style-type: none"> - Disconnect 3/8" and 1 5/8" air supply to air pack - Unbolt and remove air pack - Transport air pack to shop 	WO 87-9324	Yes	11/06/87
16) B21-F028B	Shop <ul style="list-style-type: none"> - Perform a detailed disassembly of each component as follows: <ol style="list-style-type: none"> 1) Inspect air pack bolts for tightness <ul style="list-style-type: none"> - Inspect air ports for cleanliness - Look for signs of foreign material - Photograph air pack 	WO 87-9433	No	

<u>Component</u>	<u>Description of Work</u>	<u>Document</u>	<u>NRC Approval</u>	<u>Date Complete</u>
	2) Disassemble ASCO 3-way (Part #4) Model #8323 - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid 'A' - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings - Disassemble Solenoid 'B' - Examine for free movement - Examine for excessive wear - Examine condition of parts - Document findings			
	3) Disassemble ASCO 3-way . (Part #5) Model 8320 - Remove solenoid - Examine actuator and solenoid valve - Examine pilot air lines - Disassemble solenoid - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings			
	4) Disassemble Norgren 4-way valve (Part #1) - Remove 4-way valve - Examine 4-way valve - Disassembl 4-way valve - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings .			

<u>Component</u>	<u>Description of Work</u>	<u>NRC Document</u>	<u>Approval</u>	<u>Date Complete</u>
	<p>5) Disassembly of Norgren 2-way valve (Part #2)</p> <ul style="list-style-type: none"> - Remove 3-way valve - Examine 3-way valve - Disassemble 3-way valve <ul style="list-style-type: none"> - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings 			
(<p>6) Disassembly of Norgren 2-way valve (Part #3)</p> <ul style="list-style-type: none"> - Remove 2-way valve - Examine 2-way valve - Disassemble 2-way <ul style="list-style-type: none"> - Examine for free movement - Examine for excessive wear - Examine for condition of parts - Document findings 			

TEMP CHANGE
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Air Supply to 3rd floor valve
(3rd floor)

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INFORMATION REPORT

Attachment 50
Form: PAP-1102-44

Air Log

Date/Time 11/6/87 10605

Sample: Instrument Air Filter Effluent, P52-J811

Parameter	Frequency	Limit	Ops	Action	Results		Inst MPL	Init
	Req./Admin	Req - Admin	Cond.	Notes	>3.0	>4.0		
Particle Count,	A / -	None	-	6 A,B	>3.0	344	6700	105
		>15μ			>5.0	65		
					>8.0	24		
					>10.0	17		
					>12.0	12		
					>15.0	10		

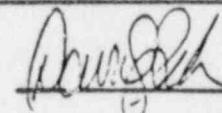
Sample: Safety-Related Air Desiccator, P57-F501/502 (Test Connection)

Parameter	Frequency	Limit	Ops	Action	Results		Inst MPL	Init
	Req./Admin	Req - Admin	Cond.	Notes	>3.0	>4.0		
Particle Count,	A / -	None	-	6 A,B	>3.0			
		>15μ			>5.0			
					>8.0			
					>10.0			
					>12.0			
					>15.0			

Remarks: NOTE 1: Alternate Sample point (Air Supply to Solenoid - D INSTRUMENT) appears D/P. No

NOTE 2: Run # I Kus

Reviewed By:

 11/6/87

Action Notes:

- A. Branch lines shall be checked to determine the extent of the problem when effluent limits are exceeded.
- B. Analysis required post-maintenance as per PAP-0204, Housekeeping/Cleanliness Control Program.

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Attachment 6J
Form: 242-1102-59

Low Concentration Sheet

Log Sheet: Continued: Form: PAF-1000- 64 Date: 11/6/87

Sample I.C.	Parameter	Time	Unit	Results	Last RPL	Date	
SER VLTG (1)	PUN II	Particle Count	CG15	NONE 715AL	>3.0 254	L70- YOGIA	KAS
(1)	RUN II		CG15		>5.0 48	L70- YOGIA	KAS
(1)	RUN II		CG15		>8.0 18	L70- YOGIA	KAS
(1)	RUN II		CG15		>10.0 11	L70- YOGIA	KAS
(1)	PUN II		CG15		>12.0 7	L70- YOGIA	KAS
(1)	RUN II	↓	CG15	↓	>15.0 (2)	L70- YOGIA	KAS
(1)	PUN II	Particle Count	CG20	NONE 715AL	>3.0 158	L70- YOGIA	KAS
(1)	RUN II		CG20		>5.0 28	L70- YOGIA	KAS
(1)	RUN II		CG20		>8.0 11	L70- YOGIA	KAS
(1)	RUN II		CG20		>10.0 7	L70- YOGIA	KAS
(1)	RUN II		CG20		>12.0 7	L70- YOGIA	KAS
(1)	RUN II	↓	CG20	↓	>15.0 (3)	L70- YOGIA	KAS
✓/a				.	.	.	
-							
-							

Remarks: NOTE: Backus to previous doc K25
K25-F4: 2nd 3rd exp to K25-F4
K25-F4

Leverett 351

TEMP CHANGE
PAGE 14 OF 24

Air supply shutoff valve
(100%)

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Attachment 50
Form: PAP-1102-44

Air Log

Date/Time 11/6/87 10530

Sample: Instrument Air Filter Effluent, P52-J811

Parameter	Frequency Req./Admin	Limit Req - Admin	Ops Cond.	Action Notes	Results	Inst MPL	Init
Particle Count,	A / -	None >15u	-	6 A,B	>3.0 >5.0 >8.0 >10.0 >12.0 >15.0	1640 252 92 70 57 29	D- Yea/L Kas

Sample: Safety-Related Air Desiccator, P57-F501/502 (Test Connection)

Parameter	Frequency Req./Admin	Limit Req - Admin	Ops Cond.	Action Notes	Results	Inst MPL	Init
Particle Count,	A / -	None >15u	-	6 A,B	>3.0 >5.0 >8.0 >10.0 >12.0 >15.0		

Remarks: NOTE!! Sample point (Air Supply to Air filter) in Branch line) required DTP filter, Kas

NOTES! RUN # I-KAS

Reviewed By:

Dave Bl 11/6/87

Action Notes:

- A. Branch lines shall be checked to determine the extent of the problem when effluent limits are exceeded.
- B. Analysis required post-maintenance as per PAP-0204, Housekeeping/Cleanliness Control Program.

INFORMATION ONLY

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Attachment 63
Form: PAF-1102-19

Log Sheet Continued: Form: PAF-1100- 44 Date: 11/6/57

Remarks: Done Knj

Lesson 7

DRAFT
11-5-87

AIR SYSTEM TROUBLESHOOTING PLAN

A. INBOARD MSIV 1B21F0022D.

1. PERFORM AIR BLOW INTO PILLOWCASE FROM ACCUMULATOR DRAIN VALVE (COMPLETE) FOR ONE MINUTE. (WO 87-9323).
2. AFTER AIR PACK REMOVAL:
 - INSTALL FITTING TO LIMIT AIR FLOW AT FLEX HOSE TO AIR PACK CONNECTION.
 - OPEN AIR SUPPLY ISOLATION VALVE TO DRYWELL ACCUMULATORS.
 - PERFORM AIR BLOW INTO PILLOWCASE FROM FLEX HOSE FOR 5 TO 10 MINUTES (QUALITATIVE).
 - PERFORM PARTICLE COUNT CHECK (QUANTITATIVE).
 - PERFORM DEW POINT MEASUREMENT (QUANTITATIVE).

B. OUTBOARD MSIV 1B21F0028D.

1. PERFORM AIR BLOW INTO PILLOWCASE FROM ACCUMULATOR DRAIN VALVE FOR ONE MINUTE.
2. AFTER AIR PACK REMOVAL:
 - INSTALL FITTING TO LIMIT AIR FLOW AT FLEX HOSE TO AIR PACK CONNECTION.
 - OPEN AIR SUPPLY ISOLATION VALVE TO STEAM TUNNEL ACCUMULATORS.
 - PERFORM AIR BLOW INTO PILLOWCASE FROM FLEX HOSE FOR 5 TO 10 MINUTES (QUALITATIVE).
 - PERFORM PARTICLE COUNT CHECK (QUANTITATIVE).
 - PERFORM DEW POINT MEASUREMENT (QUANTITATIVE).

C. PERFORM THE FOLLOWING AS NECESSARY:

1. IF AIR QUALITY PROBLEMS ARE FOUND AT F022D AIR PACK, PERFORM ADDITIONAL SAMPLING (PILLOWCASE, PARTICLE COUNT, DEW POINT) AT DRYWELL PENETRATION (F643).
2. IF AIR QUALITY PROBLEMS ARE FOUND AT F028D AIR PACK, PERFORM ADDITIONAL SAMPLING (PILLOWCASE, PARTICLE COUNT, DEW POINT) AT DRAIN VALVE (F781) IN 2" SUPPLY LINE TO OUTBOARD MSIV'S.

Points Sampled by Air Blow and Pillowcase

- 1) 4 way valve (FC013A) exhaust port
- 2) 3 way valve (C007A) orificed exhaust port
- 3) 2 way valve (B004A) exhaust port
- 4) #1 solenoid valve $\frac{1}{8}$ " exhaust port
- 5) #2 & #3 solenoid valves $\frac{1}{8}$ " exhaust port
- 6) Accumulator (B21-A001D) drain valve 1B21-F083D

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PRELIMINARY RESULTS SUMMARY: INSTRUMENT AIR AT MSIV'S

PREPARED BY:

John J. Grimm 11/6/87
John J. Grimm

I. INTRODUCTION

Three types of analyses were performed to determine what contribution, if any, instrument air quality may have had in the failure of the MSIV valves. Samples were collected to determine and characterize particulate matter present in the instrument air system at the solenoid and actuator supply points. Various unknown substances observed in or collected from component surfaces were analyzed using Infrared Spectrophotometry to deduce origin of materials found. Grab samples were analyzed by Gas Chromatography for hydrocarbon content and quantification of organic contaminants, if present in significant quantities. Preliminary results of these analyses are presented in the following report.

II. SAMPLES TAKEN AND ANALYSES PERFORMED

Samples collected, analyses performed on samples and brief annotations are in the following list. Codes for analysis type are as follows:

IR: Infrared Spectroscopy, for identification of unknown organic compounds.

PSC: Particulate sizing, and characterization.

GC: Gas Chromatography, for Identification and quantification of condensable hydrocarbons.

SAMPLE	DATE/TIME	DESCRIPTION	ANALYSIS
MSIV-1	11/6/87:1115	B21-F028B Deposits from 1 5/8" air hose.	IR
MSIV-2	11/6/87:1545	B21-F028B exhaust port (unknown fluid)	IR
MSIV-3	11/6/87:1115	Fitting from B21-F028B w/foreign mat'l inside (black solids and oily fluid)	IR
MSIV-4	11/6/87:2101	B21-F022D: \approx 0.1 ft. ³ solenoid supply collected on 0.45 μ filter paper.	PSC
MSIV-5	11/6/87:2108	B21-F022D: \approx 0.1 ft. ³ solenoid supply collected on 0.45 μ filter paper	PSC

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SAMPLE	DATE/TIME	DESCRIPTION	ANALYSIS
MSIV-6	11/6/87:2125	B21-F022D: ≈ 0.1 ft. ³ actuator supply collected on 0.45 μ filter paper.	PSC
MSIV-7	11/6/87:2135	B21-F022D: ≈ 0.1 ft. ³ actuator supply collected on 0.45 μ filter paper.	PSC
MSIV-8	11/7/87:0800	Rectorseal TM Thread sealant sample.	IR
MSIV-9	11/7/87:0800	Neverseeze TM Thread lubricant sample	IR
MSIV-10	11/7/87:0730	P52-F556: Instr. air at Containment penetration (outside). 10 min. blow-down, 5 min. purge of sampler.	GC
MSIV-11	11/7/87:0745	P52-F556: Instr. air at Containment penetration (outside). 10 min. blow-down, 15 min. purge of sampler.	GC
MSIV-12	11/7/87:1151	B21-F028B: Solenoid supply, ≈ 0.1 ft. ³ on 0.45 μ particulate filter.	PSC
MSIV-13	11/7/87:1202	B21-F028B: Solenoid supply, ≈ 0.1 ft. ³ on 0.45 μ particulate filter.	PSC
MSIV-14	11/7/87:1214	B21-F028B: Actuator supply, ≈ 0.1 ft. ³ on 0.45 μ particulate filter.	PSC
MSIV-15	11/7/87:1220	B21-F028B: Actuator supply, ≈ 0.1 ft. ³ on 0.45 μ particulate filter.	PSC
MSIV-16	11/7/87:1503	B21-F028B: Solenoid supply, ≈ 0.1 ft. ³ on 0.45 μ particulate filter.	PSC
MSIV-17	11/7/87:1521	B21-F028B: Solenoid supply, ≈ 0.5 ft. ³ on 0.45 μ particulate filter.	PSC
MSIV-18	11/7/87:1537	B21-F028B: Actuator supply, ≈ 0.1 ft. ³ on 0.45 μ particulate filter.	PSC
MSIV-19	11/7/87:1553	B21-F028B: Actuator supply, ≈ 0.5 ft. ³ on 0.45 μ particulate filter.	PSC

III. ANALYSIS RESULTS

A. Infrared Spectroscopy

Samples MSIV-1, 2, 3, 8, 9 were analyzed using Infrared Spectroscopy, a measurement which "fingerprints" organic compounds based on deflection of light in the infrared spectral region and the correlation of this deflection to covalent bond angles. Samples 8 and 9 were control samples of suspected contaminants RectorsealTM and NeverseezeTM, respectively. When spectra from samples 1 and 3 were compared to the control spectra, neither matched the spectrum for NeverseezeTM, and the spectrum from sample 3 was similar to that of RectorsealTM. This indicates the presence of thread sealant which has partially degraded, with no NeverseezeTM present.

Sample MSIV-², a clear unknown oily substance, was found to be silicone lubricant.

B. Particle Size Measurement and Characterization

Samples MSIV-4, 5, 6, 7, 16, 17 were analyzed by Microscopy. After being collected on 0.45 μ filter paper on which a grid is superimposed, the samples were analyzed under a microscope. Particles were measured using a graticule. Particles in the 20-40 μ range and >40 μ range were totalled and reported. The results indicated the presence of particles >40 μ in each of the samples analyzed. The total number of particles >40 μ ranged from 6 to 14. On Samples MSIV-4 through 7, some fibrous material was present. This was determined to be contamination of the sample due to adverse sampling conditions in the drywell in the area of the MSIV's. This was confirmed when backup samples taken with improved sampling technique revealed no fibrous material. The particulate material was characterized by the Microscopist into three types: white translucent, rust in color, and black metallic.

A tabulation of particles in the 20-40 μ and >40 μ ranges follows.

SAMPLE DESIGNATION	PARTICLES 20-40 μ	PARTICLES >40 μ
MSIV-4	10	6
MSIV-5	3	5
MSIV-6	10	11
MSIV-7	1	7
MSIV-16	40	6
MSIV-17	47	14

C. Total Hydrocarbon by Gas Chromtography

Two grab samples from the instrument air supply to containment were analyzed for hydrocarbons using Gas Chromatography, a separation and detection/quantification technique based on the molecular weight of the substances analyzed. All hydrocarbons detected were reported as a weighted quantity of Methane, CH₄. Neither sample analyzed revealed detectable condensable Hydrocarbons greater than 0.1 PPM, with one result having no detectable hydrocarbons and the other 0.1 PPM Methane equivalent.

In the case of both sample results however, there is a high probability of false detection at the 0.1 PPM level, which is close to the threshold of detectability. Further, contamination by hydrocarbons from sampling apparatus was a distinct possibility since sampler fittings were not thoroughly cleaned and "baked out" prior to sampling. It is probable then, that the 0.1 PPM result of the single sample is in fact false-detection by reason of sample contamination or errant instrument signals close to the baseline response level.

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The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: / NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT			REPORT NO.	DATE
			87-I-0689	11-8-87
			SHEET <u>1</u> OF <u>1</u>	
SUBJECT/ACTIVITY REASSEMBLY			<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION DUAL SOLENOID VALVE		MPL SYS. CODE 1B21-F022C	LOCATION DRYWELL 664'	
WORK DOCUMENT WO 87-9465 R/2	WORK GROUP PPOD I&C	PERSONNEL PERFORMING THE WORK I&C TECHNICIANS: D. CARMAN, B. BAKER		
REFERENCE DOCUMENTS (REV) HILLER MODEL SA-A068 MAINT. MANUAL		CHECKLIST NO. 001	INSPECTION PLAN NO. N/A	
MATERIALS USED TO PERFORM THE INSPECTION NONE				
INSPECTION RESULTS <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	CORRECTIVE ACTION DOCUMENTS ISSUED NONE			
DETAIL SECTION PER STEP 040 IN THE WORK ORDER, WITNESSED THE FOLLOWING WORK FOR INSTALLATION OF THE REBUILT "DUAL SOLENOID 3-WAY VALVE: THE SOLENOID VALVE WAS SET IN PLACE AND THE CONDUIT HUBS WERE ATTACHED AND TIGHTENED. ALL AIR TUBING WAS RE- CONNECTED AND TIGHTENED. COIL WIRES 1, 2, 3 & 4 WERE ^{9011 11-8-87} RE-TERM RE-TERMINATED IN THE AIR PACK TERMINAL BOX TO TERMINAL PT'S 1, 2, 3 & 4.				
THE TERMINAL BOX COVER WAS RE-INSTALLED. THE (8) SCREWS WERE TIGHTENED. * NOTE: (4) OF THE SCREWS WERE MISSING LOCKWASHERS. PER R.E. P. ARTHUR, LOCKWASHERS WILL BE OBTAINED AND INSTALLED PRIOR TO WORK ORDER CLOSURE.				
INSPECTOR <i>Jeffrey C. Hubbell</i>	DATE <i>11-8-87</i>			

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PNPP No. 6287 Rev 8/86

QUALITY ASSURANCE CHECKLIST
ARRY NUCLEAR POWER PLANT

CHECKLIST NO. 001 REV. 3

SHEET 1 OF 1

ATTACHMENT TO 87-I-0689

CHECKLIST TITLE

MMQS-I&C Inspection Checklist

APPROVED BY / DATE

James R Kovak 4/22/87

REFERENCE DOCUMENT: TITLE, NUMBER, REV.

PAP-0905, Rev. 6

N/A SAT UNSAT

1. Unit Supervisor/QA Authorization QCIT
2. Reference Documents Controlled/Approved Latest Revision. QCIT
3. Prerequisites Complete. QCIT
4. Precautions and Limitations Observed QCIT
5. Material used is in accordance with approved Stores Requisition and design documents. QCIT
6. All M&TE used is listed on appropriate documents and is in current calibration. QCIT
7. Steps performed in numerical sequence, unless otherwise stated in procedure. QCIT
8. Work performed meets the Acceptance Criteria as specified in WO 87-9465 QCIT
9. Equipment Restored. QCIT
10. Retest Performed. QCIT
11. Cleanliness Requirements observed as per work order/instructions. QCIT
12. Items of known nonconformance/noncompliance from previous inspection etc. have been checked. QCIT

COMMENTS

SEE JR # 87-I-0689

PERFORMED BY/DATE

Jerry C. Hobbs 4-8-87

<p>The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: 1 NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT</p>			REPORT NO. 87-I-376	DATE 11/8/87
			SHEET <u>1</u> OF <u>2</u>	
SUBJECT/ACTIVITY REBUILD 3-WAY DUAL SOLENOID VALVE			<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION 3WAY DUAL SOLENOID VALVE FOR 1B21F00288		MPL SYS. CODE 1B21	LOCATION CE 599' HOT SHOP	
WORK DOCUMENT WO 87-9433	WORK GROUP PPTD IFC	PERSONNEL PERFORMING THE WORK Doug CARMAN		
REFERENCE DOCUMENTS (REV.) VENDOR - MAINT. & INSTRUCTION MANUAL		5-6-85	CHECKLIST NO. 001 REV. 3	INSPECTION PLAN NO. N/A
H&TE USED TO PERFORM THE INSPECTION None				
INSPECTION RESULTS <input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	CORRECTIVE ACTION DOCUMENTS ISSUED None			
DETAIL SECTION <p>TIME 2144 - STEP 170 (HOLD POINT) OBSERVED CLEANING & REMOVAL OF BASKET (O-RING) FROM SOLENOID VALVE BODY USING ACETONE & Q-TIPS. VALVE BODY WAS RINSED (WITH DEMIN WATER) AND DRIED WITH HEAT GUN TO REMOVE ALL MOISTURE.</p> <p>NOTE: O-RINGS WERE SET AND HAD TO BE PRIED FROM THEIR INSTALLED POSITION FOR REMOVAL.</p> <p>TIME 2228 - OBSERVED RE-ASSEMBLY OF SOLENOID VALVE PER ASCO DRWG JVA-210-165. STEM WAS INSTALLED INTO "B" SOLENOID PLUG NUT ASSY. WITH DISC HOLDER SPRING (O-RING) & DISC HOLDER. BODY GASKET WAS LUBRICATED & INSTALLED. SOLENOID ADAPTER WAS SCREWED TO VALVE BODY & TORQUED TO 175" LBS.</p> <p>TIME 2235 - OBSERVED ASSEMBLY OF CORE SPRING & CORE GUIDE INTO SOLENOID BASE "A". BODY GASKET (O-RING) WAS LUBRICATED & INSTALLED. SOLENOID ADAPTER WAS SCREWED TO THE VALVE BODY & TORQUED TO 175" LBS.</p>				
INSPECTOR <i>S. Hajin</i>	DATE 11/8/87			

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The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT:
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO.	87-I-376	DATE
		11/8/87
SHEET <u>2</u> OF <u>2</u>		

DETAIL SECTION

TIME 2323 - OBSERVED PERFORMANCE (BENCH CHECK) OF THE ASSEMBLED 3 WAY DUAL SOLENOID VALVE USING A BOTTLED AIR SUPPLY & AC SUPPLIED SWITCHING ARRANGEMENT IN ACCORDANCE TO THE VENDOR MANUAL. THE RESPONSIBLE ENGINEER PETE ARTHUR WAS PRESENT DURING THIS BENCH CHECK.

SOLENOID OPERATION WAS CORRECT & SATISFACTORY IN ACCORDANCE TO THE VENDOR MANUAL & RE.

TIME 2329 - OBSERVED INSTALLATION OF THE DUAL SOLENOID VALVE ASSY. ON TO THE CONTROL PACK. AIR LINES WERE CONNECTED & TIGHTENED. A & B COIL WIRES WERE RETERMINATED AS LABELED WHEN REMOVED. NOTE: NR PPOS 2965 ADDRESSING INSULATION DAMAGE ON LEAD "A" TO COIL, WAS CLOSED BY MYSELF AS NO FURTHER DAMAGE WAS DONE DURING COURSE OF REWORK OR REASSEMBLY.

NOTE: ALL WORK WAS PERFORMED USING WHITE GLOVES AND CLEANLINESS WAS STRICTLY ADHERED TO.

ALL OLD PARTS WERE PACKAGED AND LABELED IN ACCORDANCE TO WHO INSTRUCTIONS.

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The Cleveland Electric Illuminating Co. PERRY NUCLEAR POWER PLANT UNIT: 1 NUCLEAR QUALITY ASSURANCE DEPARTMENT INSPECTION REPORT			REPORT NO.	DATE
			87-I-0731	11/8/87
			SHEET 1 OF 2	
SUBJECT/ACTIVITY	PARTIAL REBUILD PER WFO-JOB MMOS VERIFICATION TRAVELER AND VENDOR MANUAL		<input checked="" type="checkbox"/> SAFETY <input type="checkbox"/> AUGMENTED QUALITY <input type="checkbox"/> NSR	
EQUIPMENT/COMPONENT IDENTIFICATION	MPL SYS. CODE	LOCATION		
DUAL SOLENOID #3 WAY VALVES FOR MSIV'S ON NUMBER 1 BTLR (A1SS)	1821	1B I&C HOT SHOP - 62-599 ELEV.		
WORK DOCUMENT (SEE DETAIL SECTION) GROUP			PERSONNEL PERFORMING THE WORK	
870009466	PPDA	I&C	C. MOORE / J. TUFTS / A. CARMEN	J. MCDONALD / A. DIETRICH / B. BAKER
REFERENCE DOCUMENTS (REV) PAP0905 R16	ASCO VENDOR BULLETIN # 8323	STOKE CHECKLIST NO. 381 REV. 8/86	INSPECTION PLAN NO.	
R. A. HILLER CO. MAINTENANCE INSTRUCTION MANUAL CONTROLLED QD1 REV. 3				NJA
M & T E USED TO PERFORM THE INSPECTION		COPY EXPIRATION DATE 12/4/87		
INSPECTION RESULTS	CORRECTIVE ACTION DOCUMENTS ISSUED			
<input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	NONE ONLY NR# PPD5-2964 R/1 FOR 1821FO022B			
DETAIL SECTION				
<p>MATERIALS SUPPLIED BY WAREHOUSE WITH STORER REQ. # SP49593 STOCK CODE # 1465253 AS DUAL SOLENOID VALVE REPAIR KIT, VENDOR NUMBER 214-035.</p> <p>12:50 I&C TECH¹⁸ DISASSEMBLED DUAL SOLENOID 3 WAY VALVE MPL# 1821FO028A AS PER WFO 870009466 REV.0 JOB TRAVELER STEPS 030.4, 5, 6, & 030.6. A. KITONE OR ALCAHOL WERE USED TO CLEAN DIRTY AREAS AS DIRECTED BY RSE S. SEMAN AND ASCO VENDOR REP K. THOMAS. VISUAL INSPECTION OF "O" RING SEAT SURFACES FOR CLEANLINESS APPEARS FREE OF PARTICLES BUT HAS DISCOLORATION WHICH G.E.-Q.C. AND ASCO REPS. FEEL IS ACCEPTABLE. VERIFIED TECH¹⁸ PERFORM STEPS 030.6, 8, C, D, E, F, G, H, I, & J (STEPS E, F, 1G OMITTED PER I&C SUP. REF. PAP0905 R16 SECTION 1.c.f.). PARTS REPLACED QTY. 2 VLV. BODY GASKETS, CORE ASSEMBLY, & DISC SPRING. LUBRICATION WAS APPLIED TO "O" RING GASKETS SUPPLIED AS PART OF REBUILD KIT. TORQUED BASE ASSEMBLY TO VALUES REQUIRED IN WFO AND VENDOR MANUAL ALSO TORQUED COVERS OF COIL AS REQUIRED. Note: SOLENOID "A" 5/15619N7 AND SOLENOID "B" DATA PLATE AS FOUND CONDITION WAS BLANK. STEP 030.K PERFORMANCE OF DUAL SOLENOID VALVE FUNCTIONAL CHECK WAS VERIFIED BY JOINT CYCLES OF SOLENOIDS AND EACH SOLENOID INDEPENDANTLY OR SIMULTANEOUSLY. "O" RING SEALS WERE CHECKED FOR PRESSURE INTEGRITY ALONG WITH VALVE (USED SNOOP).</p> <p>INSPECTOR <i>Kirk Kelly / Stephen C. Gehrke</i> DATE 11/8/87</p> <p style="text-align: right;">D-40</p>				

The Cleveland Electric Illuminating Co.
 PERRY NUCLEAR POWER PLANT UNIT: 1
 NUCLEAR QUALITY ASSURANCE DEPARTMENT
 INSPECTION REPORT

REPORT NO. 87-I-0731 DATE 11/8/87
 SHEET 2 OF 2

DETAIL SECTION

PERFORM THE SAME REWORK/REBUILD AS LISTED ON THIS IR FOR
 THE FOLLOWING MSCV DUAL SOLENOID AND 3 WAY VALVE ASSEMBLIES.

WFO 870009467 REV.1 (MPL# 1B21F0028C) S/N 15619N9 COMMENTS
 3 WAY VALVE AS FOUND CONDITION OF
 "O" RING GASKET SEATS CLEAN FREE
 OF RESIDUE

WFO 870009465 REV.1 (MPL# 1B21F0022C) S/N 15619N10 AS FOUND CONDITION OF 3 WAY VALVE
 "O" RING GASKETS FAIRLY FLEXIBLE,
 LUBED, AND NO EVIDENCE OF BREAK DOWN.

WFO 870009464 REV.2 (MPL# 1B21F0022B) S/N 15619N8 NR# PPDS-2964 REV.0 OUTERN
 AGAINST SOL X PRAYED INSULATION
 (FIBERGLASS HEAT REFLECTIVE WRAP)

AFTER FUNCTIONAL CHECK
 SOLENOID "8" REMOVED FROM
 VALVE BECAUSE OF CHATTERING.
 REPLACED "O" RING AND RE-
 ASSEMBLED OPERATED SAT.

Witnessed the removal of the solenoids and 3 way valve
 from the AIR PARKS ASSY. The following WFO's of MPL were
 removed:

WFO 87-9458 R/2 MPL 1B21F022A

87-9465 R/2 MPL 1B21F022C

87-9464 R/2 MPL 1B21F022B

87-9466 C/1 MPL 1B21F028A

87-9467 R/1 MPL 1B21F028C

Also witnessed the installation of dual solenoid - 3 way
 valve
~~3 WAY~~ ON 1B21F028A and 1B21F028C. All tubing and
 electrical connection were restored and documented on the
 I&C sheet per TAP 503 C/J. All fitting, covers, and tubing
 were hand and/or wrench tight.

Kirk Kelly *Mylinda Kelly* 11/8/87

LK "81-L-U151

ATTACHMENT

PHPP NO. 6287 REV 8/86

QUALITY ASSURANCE CHECKLIST
ARRY NUCLEAR POWER PLANT

CHECKLIST NO. 001 REV. 3SHEET 1 OF 1

CHECKLIST TITLE

MMQS-I&C Inspection Checklist

APPROVED BY / DATE

James R Kovak 4/22/87

REFERENCE DOCUMENT: TITLE, NUMBER, REV.

PAP-0905, Rev.6

WFO 18 87000

REV.15

 N/A SAT UNSAT

1. Unit Supervisor/QA Authorization
2. Reference Documents Controlled/Approved Latest Revision.
3. Prerequisites Complete.
4. Precautions and Limitations Observed
5. Material used is in accordance with approved Stores Requisition and design documents.
6. All M&TE used is listed on appropriate documents and is in current calibration.
7. Steps performed in numerical sequence, unless otherwise stated in procedure.
8. Work performed meets the Acceptance Criteria as specified in OBSERVATION ONLY.
9. Equipment Restored.
10. Retest Performed.
11. Cleanliness Requirements observed as per work order/instructions.
12. Items of known nonconformance/noncompliance from previous inspection etc. have been checked. NR # PPD-2964//WRITTEN AGAINST 1821 F00218 FOR FRAYED SOLENOID FIBERGLASS HEAT REFLECTIVE SLEEVE OVER CONDUCTOR INSULATION. "R" STAMP REFLECTED IN WFO 870009464 REV.2

COMMENTS

NONE

PERFORMED BY / DATE

K. Kelly, Stoyanofka 11/8/87

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PAGE 1 PERRY NUCLEAR POWER PLANT WORK ORDER DATE 11/09/87
 M151B01 INFORMATION ONLY TIME 11:28:00
 REV 3

WO NUMBER	RESP SECT	MPL NUMBER	MAINTENANCE TYPE	PLANT	LOCATION
870009372	I&C	1B21F0022D	I&C TROUBLESHOOT	C O/	-664

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
1 2 3	3 4 5	CAT	CODE	M/E	M/E		REQ'D
		VLV	5X	1 /SR	I/I	11	NO

SPECIAL PERMIT NO	RETEST REQ'D NO	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP	TECH
				REQ'D YES	SPEC YES

SYSTEM NAME: NUCLEAR BOILER (NSSS)
 SUMMARY : FAILURE ANALYSIS OF AIRPACK & SOLENOIDS
 MPL NAME : FIRST MSIV

PLANNER REMARKS

THIS W.O. WILL PERFORM FAILURE ANALYSIS ON SOLENOIDS & AIR RELAYS FOR
 MSIV 1B21F022D.

P.C.11/5/87

POWER SUPPLY: *****

PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

*****REFER TO ATTACHED JOB TRAVELER*****

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY	_____	DATE	/ /
REVIEWED BY NQAD/AIA	_____	DATE	/ /
APPROVED BY	_____	DATE	/ /
APPROVAL TO COMMENCE WORK	_____	TIME:	: :
WORK COMPLETE	_____	DATE	/ /
APPROVAL TO COMMENCE TEST	_____	TIME:	: :
RETEST COMPLETE	_____	DATE	/ /
REVIEW BY NQAD/AIA	_____	DATE	/ /
ACCEPTED BY UNIT SUPV.	_____	DATE	/ /

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PAGE 2 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
M151B23 SCOPE OF REVISION 11:28:00

WO# 870009372 PRIORITY 5X LOC C O/ -664
MPL 1B21F0022D COMP CAT VLV SFTY M/E 1 /SR

LN	REVISIONS TEXT	REV	1 OF	3
01	REVISED TO REMOVE SOLENOID COIL AND DELETE DUPLICATE	PEC	11/06/87	14:34:39
02	STEPS	PEC	11/06/87	14:34:39
LN	REVISIONS TEXT	REV	2 OF	3
01	REVISED TO ADD STEP TO REWORK DUAL SOLENOID AND STEP	PEC	11/09/87	08:26:26
02	TO REPLACE REWORK VALVE COUPLING	PEC	11/09/87	08:26:26
LN	REVISIONS TEXT	REV	3 OF	3
01	REVISED TO ADD STEP TO HAVE TIE BAR SCREW TORQUED	PEC	11/09/87	10:48:45
02	BY W.O. 87-9293.	PEC	11/09/87	10:48:45

PAGE 3 PERRY NUCLEAR POWER PLANT WORK ORDER 11-09-87
 RELATED REPETITIVE TASK LIST 11:28:01
 M151B13 REV NO: 3
 INFORMATION ONLY LAST CHNG:11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
870009372	1B21F0022D	CODE VLV	W/O LOCATION C O/ -664	M/E 1 /SR M/E I/I

REP-TSK NO	RESP SECT	MPL NUMBLR	SUMMARY DESCRIPTION
------------	-----------	------------	---------------------

FOR TASK CATEGORY: (LLRT)LOCAL LEAK RATE TESTING
 R85 003790 TECHS 1B21F0022D PERFORM PRE AND POST MAINT LLRT

FOR TASK CATEGORY: (MEMP)MECHANICAL & ELECTRICAL PM'S
 R85 011026 MAINT 1B21F0022D REPLACE NON-METALLIC PARTS (EQ)
 R85 011121 MAINT 1B21F0022D REPLACE PACKING, CHECK LIMIT SWITCH

FOR TASK CATEGORY: (PI)PLANT INSTRUMENTS
 R85 010956 I&C 1B21F0022D REPLACE NONMETALLIC PARTS,CLEAN,LUBE(EQ)

FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE
 R85 013050 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T1400
 R85 013051 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T2001
 R85 013052 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T2003
 R85 013053 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI B21-T9415
 R86 011266 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI T23-T1201
 R86 012775 TECHS 1B21F0022D POST MAINT RETEST REQD ? SVI C61-T1104

PAGE 4 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
RELATED WORK ORDER LIST 11:28:01
M151B02 REV NO: 3
INFORMATION ONLY LAST CHNG: 11/06/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
870009372	1B21F0022D	CODE VLV	C O/ -664	M/E 1 /SR	M/E I/I

WO NUMBER	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
870009293	I&C	1B21F0022D	REM. & REPLACE PILOT CONTROL VALVE
870009323	I&C	1B21F0022D	RECORD SOLENOID VOLTAGE & ACCUM PRESSURE

PAGE	5	PERRY NUCLEAR POWER PLANT WORK ORDER		11/09/87
		JOB TRAVELER		11:28:02
M151B03			REV NO:	3
		INFORMATION ONLY	LAST CHG:	11/06/87
		COMP CAT	SAFETY	SEISMIC
WO NUMBER		CODE	WO LOCATION	M/E
8700009372	1B21F0022D	VLV	C O/ -664	1 /SR
			I/I	

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
------	-------------	--------------	-----------	--------------

010 PURPOSE

THE PURPOSE OF THIS PROCEDURE/W.O. IS TO PROVIDE DISASSEMBLY AND INSPECTION PROCEDURES FOR THE MSIV ACTUATOR ASSEMBLY. THREE OF EIGHT PERRY MSIV'S EXPERIENCED A DELAYED CLOSURE DURING PLANT SVI TESTING. THIS PROCEDURE/W.O. ASSUMES THE AIR PACK ASSEMBLY IS REMOVED FROM THE MSIV AND IS LOCATED IN AN AREA PREPARED FOR DISASSEMBLY. THE INSPECTION IS CENTERED ON THE ASCO MODEL 8323 3-WAY DUAL SOLENOID VALVE ASSEMBLY, WHICH IS CONSIDERED TO CONTAIN THE SOURCE OF THE PROBLEM.

I&C

020 PRECAUTIONS

1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204. I&C 2
2. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503. I&C 2
3. ENSURE ALL LOOSE PARTS REMOVED UNDER THIS W.O. ARE CAREFULLY IDENTIFIED AND BAGGED. COTTON-LINE GLOVES TO BE USED WHEN HANDLING ANY INTERNAL PARTS. ENSURE O-RINGS AND SOFT SEATED MATERIALS ARE CAREFULLY IDENTIFIED AND ONLY STORED IN GLASS CONTAINERS. I&C
4. ENSURE ALL PHOTOGRAGHS ARE ADEQUATLY CATALOGED TO POSITIVELY IDENTIFY EACH PHOTOGRAGH TO THE PROPER PART. I&C

030 REF./PREPARATION

1. MAINTENANCE MANUAL FOR HILLER MODEL SA-A068 VALVE ACTUATOR. I&C
2. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, VENDOR MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED FAILURE ANALYSIS. I&C

040 NOTIFICATIONS

PAGE	6	PERRY NUCLEAR POWER PLANT WORK ORDER	11/09/87		
		JOB TRAVELER	11:28:02		
M151B03			REV NO: 3		
		INFORMATION ONLY	LAST CHG: 11/06/87		
		COMP CAT	SAFETY SEISMIC		
WO NUMBER	870009372	MPL NUMBER	WO LOCATION	M/E	M/E
		1B21F0022D	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
1.	NOTIFY MMQS @ X6350 PRIOR TO START OF WORK. MMQS LOG #.....DATE.../.../...TIME.....		I&C	
2.	NOTIFY R.S.E OR ALTERNATE PRIOR TO START OF WORK TO ALLOW NOTIFICATION TO THE N.R.C.		I&C	
	N.R.C. REPRESENTATIVE NOTIFIED.....		RSE	
3.	NRC PRESENCE APPLICABLE (CIRCLE): YES / NO		RSE	

050 FUNCTIONAL BENCH CHK

NOTE: DURING THE PERFORMANCE OF THIS WORK ORDER (BENCH CHECK OPERATIONS AND FAILURE ANALYSIS), STEPS MAY BE PERFORMED OUT OF SEQUENCE AT THE DISCRETION OF THE RESPONSIBLE ENGINEER.

NOTE: MMQS INSPECTOR AND RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE, ARE TO BE PRESENT AT ALL TIMES WHILE BENCH CHECK OPERATIONS AND FAILURE ANALYSIS ARE BEING PERFORMED.

- | | | |
|---|-----|---|
| 1. THE MSIV ACTUATOR AIR PACK SHALL BE PLACED ON A CLEAN SURFACE (SURFACE TO BE COVERED WITH PAPER DURING THE PERFORMANCE OF THE FOLLOWING WORK STEPS. | I&C | 2 |
| 2. ALL OBSERVATIONS SHALL BE LOGGED ON THE TROUBLE-SHOOTING LOG IN ACCORDANCE WITH PAP-0905. ALL ABNORMAL FINDINGS AND THE CONDITION OF CRITICAL PARTS SHALL BE PHOTOGRAPHED. | I&C | 2 |
| 3. INITIAL INSPECTION: THE MSIV ACTUATOR AIR PACK SHALL BE INSPECTED FOR SIGNS OF PHYSICAL DAMAGE AND CONTAMINATION. | I&C | 2 |
| A) INSPECT BOLTS FOR TIGHTNESS. | | |
| B) INSPECT EXPOSED AIR PORTS FOR SIGNS OF FOREIGN MATERIAL AND BLOCKAGE. | | |

PAGE	7	PERRY NUCLEAR POWER PLANT WORK ORDER	11/09/87
		JOB TRAVELER	11:28:02
M151B03			
		INFORMATION ONLY	REV NO: 3
		COMP CAT	LAST CHG: 11/06/87
WO NUMBER		CODE	SAFETY SEISMIC
870009372		1B21F0022D	VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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C) PHOTOGRAPH THE ASSEMBLY AS A WHOLE AND ANY RELEVANT INDICATIONS FOUND DURING THE INSPECTION.

4. CONNECT THE TEST POWER CONTROL BOX (L70-V063B OR EQUIVALENT) TO THE MSIV ACTUATOR AIR PACK. (REFER TO 208-013-H36, 209-13-5) I&C 2
5. CONNECT NITROGEN PRESSURE SOURCE TO THE MSIV ACTUATOR AIR PACK. PRESSURE TO BE SET AT 90 PSIG MINIMUM, OR AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, NOT TO EXCEED 130 PSIG. I&C 2
6. PERFORM A "BENCH CHECK" OF THE MSIV ACTUATOR AIR PACK AS REQUIRED TO DETERMINE UNIT OPERABILITY. UNIT IS TO BE OPERATED A MINIMUM OF THREE TIMES IN THE "FAST CLOSE" MODE. I&C 2
7. PERFORM OTHER TROUBLESHOOTING EFFORTS AS DIRECTED BY THE RESPONSIBLE SYSTEM ENGINEER, OR ALTERNATE. I&C 2

060 FAILURE ANALYSIS

1. REFER TO VENDOR MANUAL FOR DISASSEMBLY INSTRUCTIONS, ASSEMBLY DRAWINGS, PART NUMBERS, AND PART DESCRIPTIONS TO SUPPLEMENT THE FOLLOWING INSTRUCTIONS. I&C
2. DISASSEMBLY OF THE ASCO MODEL NP-8323-A20E 3-WAY DUAL SOLENOID VALVE I&C
 - A) REMOVE THE SOLENOID VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.
 - B) EXAMINE THE NEWLY-EXPOSED PORTIONS OF THE ACTUATOR AND SOLENOID VALVE ASSEMBLY FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. INCLUDING CAREFUL INSPECTION OF THE INLET STRAINER (PART #18). EXAMINE FOR MIGRATION

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M151B03			REV NO: 3
		INFORMATION ONLY	LAST CHG: 11/06/87
		COMP CAT	SAFETY SEISMIC
WO NUMBER		CODE	WO LOCATION M/E M/E
870009372		VLV	C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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OF LOCA SEAL TO SOLENOID AND RECORD RESULTS.

C) EXAMINE THE PILOT AIR LINE FOR FOREIGN MATERIAL. RECORD IF ANY THREAD LUBRICANT IS NOTED TO BE PRESENT AT THE THREADED CONNECTIONS AND CONDITION OF THE LUBRICANT. DO NOT REMOVE ANY LUBRICANT SEAL FROM PILOT AIR LINE. RETAIN ANY LOOSE LUBRICANT FOR SUBSEQUENT EVALUATION.

D) RECORD ALL OBSERVATIONS ON TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL OBSERVATIONS.

E) REFER TO ASCO BULLETIN 8323 AND ASCO DRAWINGS JVA 210-165 PROVIDED IN THE MAINTENANCE MANUAL FOR DISASSEMBLY OF THE SOLENOID VALVE.

3. DISASSEMBLY OF SOLENOID "A": NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905. I&C

A) PLACE THE SOLENOID VALVE ON THE CLEAN WORK AREA.

B) REMOVE SOLENOID "A" AND THE BASE SUBASSEMBLY AS A SINGLE ASSEMBLY FROM THE VALVE BODY.

C) REMOVE THE BODY GASKET AND CORE ASSEMBLY.

D) EXAMINE ALL FRESHLY EXPOSED COMPONENTS FOR SIGNS OF OBVIOUS DAMAGE AND EVIDENCE OF FOREIGN MATERIALS, RECORD ANY FOREIGN MATERIALS FOUND.

E) INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. OBSERVE THAT THE CORE SPRING IS PROPERLY ATTACHED TO THE CORE GUIDE AND CORE ASSEMBLY. LOG THE CONDITION OBSERVED. PHOTOGRAPH THE CONDITION OF THE GUIDE AND ANY UNUSUAL CONDITIONS.

F) MANUALLY STROKE THE CORE WITHIN THE BASE SUBASSEMBLY AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

G) EXAMINE THE BODY GASKET (O-RING) AND RECORD THE OBSERVATIONS/CONDITIONS (COLORATION, SWELLING &

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	COMP CAT	SAFETY SEISMIC		
WO NUMBER 870009372	MPL NUMBER 1BC1F0G22D	WO LOCATION C O/ -664	M/E 1 /SR	M/E I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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ETC.). PHOTOGRAPH ANY UNUSUAL CONDITIONS NOTED.

4. SOLENOID "B" DISASSEMBLY: NOTE: DOCUMENT ALL OBSERVATIONS IN THE TROUBLESHOOTING LOG PER PAP-0905.

A) REMOVE SOLENOID "B", INCLUDING THE ADAPTER, AND BASE SUBASSEMBLY AS A COMPLETE ASSEMBLY FROM THE VALVE BODY.

B) EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF OBVIOUS DAMAGE OR FOREIGN MATERIAL.

C) REMOVE THE STEM, DISC HOLDER SPRING, DISC HOLDER AND BODY GASKET (O-RING). VERIFY PROPER INSTALLATION OF THE STEM. ESPECIALLY PROPER ATTACHMENT OF THE STEM TO THE CORE. RECORD CONDITION OF THE BODY GASKET (O-RING), DISCOLORATION, SWELLING & ETC. LOG ANY OTHER OBVIOUS DAMAGE THAT WAS OBSERVED.

070 FAILURE ANALYSIS

D) INSPECT THE ID OF THE PLUGNUT/ADAPTOR ASSY AND THE STEM FOR CONDITIONS WHICH SHOULD INHIBIT SMOOTH MOVEMENT OF THE STEM, INCLUDING PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE STEM AND ANY UNUSUAL CONDITIONS.

E) MANUALLY STROKE THE STEM IN ITS GUIDE(S) AND THE DISC HOLDER IN ITS GUIDES. RECORD THE RELATIVE FREEDOM OF MOVEMENT ON THE TROUBLESHOOTING LOG PER PAP-0905.

F) EXAMINE THE DISC HOLDER SPRING FOR EVIDENCE OF FOREIGN MATERIAL AND SIGNS OF DAMAGE. MEASURE THE FREE HEIGHT OF THE SPRING. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS. RECORD IF SPRING APPEARS TO BE COCKED WITHIN HOLDER OR APPEARS TO HAVE BEEN BINDING

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 WO NUMBER MPN NUMBER CODE WO LOCATION M/E M/E
 870009372 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
G)	EXAMINE THE DISC HOLDER FOR CONDITIONS WHICH COULD PREVENT ITS SMOOTH MOTION. UNUSUAL TACKINESS OR CONTAMINATION OF THE DISC SEALING SURFACE IS OF PARTICULAR INTEREST. RECORD ALL OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH THE CONDITION OF THE SEALING SURFACES.			
H)	PERFORM CONTINUITY CHECK OF COIL B RECORD BELOW RESISTANCE..... M&TE MPL.....			
I)	MEGGER COIL TO SOLENOID CHASSIS (AT 250 VOLTS) RECORD BELOW. RESISTANCE..... M&TE MPL.....			
J)	REMOVE SOLENOID COIL BY CUTTING COIL LEADS AS DIRECTED BY RESPONSIBLE ENGINEER.			
K)	REMOVE THE PLUGNUT/ADAPTER ASSY., BODY GASKET (O-RING) FROM THE SOLENOID VALVE ASSEMBLY. REMOVE PLUGNUT GASKET (O-RING) AND CORE FROM THE SOLENOID BASE SUBASSEMBLY. VERIFY THE PROPER INSTALLATION OF THE BASE SUBASSEMBLY.			
L)	EXAMINE ALL FRESHLY EXPOSED PARTS FOR SIGNS OF FOREIGN MATERIAL OR DAMAGE.			
M)	INSPECT THE ID OF THE SOLENOID BASE SUBASSEMBLY AND THE OD OF THE CORE FOR CONDITIONS WHICH COULD INHIBIT SMOOTH MOVEMENT OF THE CORE, INCLUDING THE PRESENCE OF FOREIGN MATERIAL, EXCESSIVE WEAR, OR DAMAGE. LOG THE CONDITIONS OBSERVED ON THE TROUBLESHOOTING LOG PAR PAP-0905. PHOTOGRAPH THE CONDITION OF THE GUIDE TUBE AND ANY UNUSUAL CONDITIONS.			7
N)	EXAMINE THE PLUGNUT/ADAPTOR ASSY. AND BODY GASKETS AND LOG THE OBSERVATIONS ON THE TROUBLESHOOTING LOG PER PAP-0905. PHOTOGRAPH ANY UNUSUAL CONDITIONS.			

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 870009372 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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NOTE: IN ADDITION TO A DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECK LIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

1. ACTUATOR AIR PACK INITIAL INSPECTION
 INSPECTION INITIALS/DATE RECORD
 POINT R.E. VENDOR TECHNICIAN SAT/UNSAT
 A) BOLT
 TIGHTNESSL

B) AIR PORT
 CONDITION

C) EXTERNAL
 SURFACE
 CONTITION

2. MODEL NP-8323-A20E S.V. INITIAL INSPECTION.

A) AIR PORT
 CONDITIONS

B) EXTERNAL
 SURFACE
 CONDITIONS

C) FOREIGN
 MATERIAL
 SOLENOID A
 SOLENOID B

D) GUIDING SURFACE CONDITIONS
 SOLENOID A
 CORE GUIDE

SOLENOID B
 CORE GUIDE

STEM/PLUG

PAGE 12 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
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STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
NUT		
E) STEM/CORE.....		
ORIENTATION.....		
F) O-RING CONDITION				
"A" SIDE BODY.....		
O-RING		
"B" SIDE BODY.....		
O-RING		
PLUGNUT/		
ADAP.ASSY		
O-RING		
B SIDE BODY O-RING BETWEEN BASE AND ADAPTER		
		

090 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 4-WAY AIR CONTROL VALVE I&C 2
 - A) REMOVE THE 4-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.
 - B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 4-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.
 - C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.
 - D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLES AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

PAGE 13 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
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STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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E) REMO . THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

100 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 4-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	TECH	RECORD SAT/UNSAT
EXPOSED PORTS/
GASKETS
INTERNAL/O-RING				
(PILOT INLET
AIR CAP ADAPTOR)
SHUTTLE				
STROKE
INTERNAL/O-RING
O-RINGS
SHUTTLE				

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	COMP CAT	SAFETY SEISMIC		
WO NUMBER 870009372	MPL NUMBER 1B21F0022D	WO LOCATION C O/ -664	M/E 1 /SR	M/E I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	* OF PERS
GASKETS/		
O-RINGS/		
COMPONENTS		

110 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 3-WAY AIR CONTROL VALVE I&C 2

A) REMOVE THE 3-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 3-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIAL FOUND OR DAMAGE NOTED.

C) REMOVE THE EXHAUST MUFFLER CONTROL VALVE AND EXAMINE FOR ANY EVIDENCE OF FOREIGN MATERIAL. RECORD ALL OBSERVATIONS.

D) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

E) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE(S) AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

F) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE(S) AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER

PAGE 15 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
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 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009372 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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DISPOSITION/EVALUATION.

120 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 3-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	R.E.	INITIALS/DATE VENDOR	TECH	RECORD SAT/UNSAT
EXPOSED PORTS/
GASKETS
EXHAUST MUFFLER
INTERNAL/
O-RING
(PILOT INLET AIR CAP ADAPTOR)				
SHUTTLE STROKE
INTERNAL/
O-RINGS
SHUTTLE GASKETS/
O-RINGS/
COMPONENTS

130 FAILURE ANALYSIS

1. DISASSEMBLY OF THE NORGREN 2-WAY AIR CONTROL VALVE

- A) REMOVE THE 2-WAY AIR CONTROL VALVE REFERRING TO THE INSTRUCTIONS PROVIDED IN THE MAINTENANCE MANUAL

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M151R03		REV NO: 3			
	INFORMATION ONLY	LAST CHG: 11/06/87			
	COMP CAT	SAFETY SEISMIC			
WO NUMBER 870009372	MPL NUMBER 1B21F0022D	CODE VLV	WO LOCATION C O/ -664	M/E 1 /SR	M/E I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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AND DRAWING SA-A068 (SHEET 4 OF 5) PROVIDED IN THE VENDOR MANUAL.

B) EXAMINE THE NEWLY EXPOSED PORTIONS OF THE ACTUATOR AND THE 2-WAY AIR CONTROL VALVE FOR EVIDENCE OF FOREIGN MATERIAL AND DAMAGE. RECORD ANY FOREIGN MATERIALS FOUND OR DAMAGE NOTED.

C) REMOVE THE PILOT INLET AIR CAP (ADAPTOR). EXAMINE INTERNALS AND O-RING FOR ANY FOREIGN MATERIALS, DAMAGE, OR UNUSUAL CONDITIONS. RECORD OBSERVATIONS.

D) MANUALLY STROKE THE AIR CONTROL VALVE SHUTTLE AND RECORD THE RELATIVE FREEDOM OF MOVEMENT.

E) REMOVE THE CAP FROM THE OPPOSITE SIDE OF THE AIR CONTROL VALVE. EXAMINE VALVE INTERNALS AND O-RINGS FOR ANY EVIDENCE OF FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

F) DISASSEMBLE THE AIR CONTROL VALVE SHUTTLE AND COMPONENTS. EXAMINE ALL PARTS, GASKETS, AND O-RINGS FOR SIZE, EXCESSIVE WEAR, FOREIGN MATERIAL, DAMAGE, OR UNUSUAL CONDITIONS. RECORD ALL OBSERVATIONS.

G) IDENTIFY AND BAG ALL COMPONENTS FOR LATER DISPOSITION/EVALUATION.

140 INSPECTION CHECKLIST

NOTE: IN ADDITION TO THE DETAILED LOG OF THE DISASSEMBLY AND INSPECTION, THE FOLLOWING CHECKLIST SHALL BE MAINTAINED TO SUMMARIZE THE FINDINGS.

NORGREN 2-WAY AIR CONTROL VALVE INSPECTION

INSPECTION POINT	- INITIALS/DATE R.E.	RECORD SAT/UNSAT
VENDOR	TECH	

EXPOSED PORTS/

PAGE 17 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
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 COMP CAT SAFETY SEISMIC
 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
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STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
GASKETS				
INTERNAL/				
O-RING				
(PILOT INLET AIR CAP ADAPTOR)				
SHUTTLE				
STROKE				
INTERNAL/				
O-RINGS				
SHUTTLE				
GASKETS/				
O-RINGS/				
COMPONENTS				

150 REWORK DUAL SOLENOID

NOTE: CONTACT R.S.E. OR ALTERNATE R.S.E.
 PRIOR TO REWORK/ REPLACEMENT OF DUAL SOLENOID.

1. REFER TO THE VENDOR MANUAL FOR DISSASSEMBLY AND
 REASSEMBLY INSTRUCTIONS, ASSEMBLY DRAWINGS, PART
 NUMBERS/IDENTIFICATION, AND PART DESCRIPTIONS TO
 SUPPLEMENT THE FOLLOWING INSTRUCTIONS.

2. REMOVE TERMINAL BOX COVER ON THE AIR PACK ASSY.,
 DISCONNECT TEST SOLENOID #1 COIL WIRE LEADS FROM
 THE TERMINAL BLOCK:
 "A" COIL LEADS LIFTED
 PERFORMED BY.....DATE.../.../...
 INDEPENDENT
 VERIFICATION.....DATE.../.../...

"B" COIL LEADS LIFTED
 PERFORMED BY.....DATE.../.../...
 INDEPENDENT
 VERIFICATION.....DATE.../.../...

3. REMOVE THE CONDUIT HUB/O-RING FROM THE TERMINAL

PAGE 18 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
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COMP CAT LAST CHG: 11/06/87
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870009372 1B21F0022D VLV C O/ -664 1 /SR I/I
SAFETY SEISMIC

STEP	DESCRIPTION	RESP SECT	JOB CLASS	\$ OF PERS
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BOX AND DISCONNECT THE TUBING FITTINGS FROM THE SOLENOID VALVE BODY, REFER TO THE DISSASSEMBLY SECTION IN THE VENDOR MANUAL.

4. OBTAIN A NEW 3 WAY DUAL SOLENOID VALVE AND NEW CONDUIT HUB/O-RINGS. (2)

5. PERFORM A BENCH CHECK OF THE NEW DUAL SOLENOID VALVE TO VERIFY SATISFACTORY OPERATION.

6. ENSURE THE SOLENOID HOUSING COVERS ARE TORQUED TO 135 INCH/POUNDS +/- 15 INCH/POUNDS.

7. INSTALL THE NEW DUAL SOLENOID VALVE PER VENDOR'S INSTRUCTIONS.

A) INSTALL CONDUIT HUB/O RINGS TO THE TERMINAL BOX

B) RETERMINATE COIL LEADS "A" SOLENOID
PERFORMED BY.....DATE..../..../
INDEPENDENT
VERIFICATION.....DATE..../..../...

C) RETERMINATE COIL LEADS "B" SOLENOID
PERFORMED BY.....DATE..../..../
INDEPENDENT
VERIFICATION.....DATE..../..../...

D) RECONNECT AIR TUBING TO VALVE BODY

E) REINSTALL THE TERMINAL BOX COVER.

160 REWORK VLV COUPLING

NOTE: NOTIFY MMQS INSPECTOR AND R.S.E. OR ALTERNATE BEFORE REWORK IS PERFORMED.

1. REFER TO THE VENDOR MANUAL FOR DISASSEMBLY AND REASSEMBLY INSTRUCTIONS, ASSEMBLY DRAWINGS, PART NUMBERS AND PART DESCRIPTIONS TO SUPPLEMENT THE FOLLOWING INSTRUCTIONS. (VENDOR FILE #255G)

I&C

2

PAGE 19 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
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 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009372 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SEC'	JOB CLASS	# OF PERS
	2. TO REPLACE "O" RINGS (ITEMS 23) AT ENDS OF COUPLING (ITEM 22) PERFORM SECTION 3 STEP 3 OF MAINTENANCE REQUIREMENTS PAGE 6 (SEE ATTACHMENT TO W.O.)		I&C	2
X	3. ALINE AIR PILOT LINES AND TIE BAR SCREW, BUT TIGHTEN FINGER TIGHT ONLY. PILOT LINES & TIE BAR SCREW TO BE TIGHTENED BY W.O.87-9293.		I&C	2

170 RESTORATION

1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST USING INDEPENDENT VERIFICATION PER IAP-0503.	I&C	2
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.	I&C	2
3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR TERMINATION PER PAP-0512.	I&C	2
4. ANY DEFECTIVE PARTS REMOVED UNDER THIS WORK ORDER ARE TO BE EVALUATED BY THE RESPONSIBLE ENGINEER (VINCE CONCIL OR ALTERNATE) FOR RETENTION FOR FURTHER ANALYSIS, RETURNED TO THE SALVAGE WAREHOUSE PER SMI-018, OR TO BE SCRAPPED. NOTE THE DISPOSITION ON THE WORK ORDER CLOSING SHEET. PRIOR TO REMOVING PARTS FROM THE R.C.A., HEALTH PHYSICS MUST SURVEY AND RELEASE THEM PER PAP-0515. THE RESPONSIBLE ENGINEER MUST ALSO APPROVE ANY RELEASE OF PARTS.	I&C	2

RESPONSIBLE ENGINEER APPROVAL OBTAINED

NAME.....DATE.../.../... TIME.....

180 ACCEPTANCE CRITERIA

1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED.	I&C SUP	1
2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS	I&C SUP	1

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870009372 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
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REQUIREMENTS HAVE BEEN MET PER PAP-0204.

3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503. I&C SUP 1

190 FIRE/VAPOR BARRIERS

FIRE/VAPOR BARRIERS TO RESTORED UNDER W.O. #87-9293. I&C

PAGE 1 PERRY NUCLEAR POWER PLANT WORK ORDER DATE 11/09/87
M151B01 INFORMATION ONLY TIME 11:28:14
REV 3

WO NUMBER RESP SECT MPL NUMBER MAINTENANCE TYPE PLANT LOCATION
870009293 I&C 1B21F0022D I&C TROUBLESHOOT C O/ -664

R O C	P O C	COMP	PRIORITY	SAFETY	SEISMIC	ASME	TAG OUT
		CAT	CODE	M/E	M/E		REQ'D
1 2 3	3 4 5	VLV	5X	1 /SR	I/I	NA	YES

SPECIAL PERMIT NO	RETEST REQ'D YES	SYSTEM CLEANLINESS C	INITIATING DOCUMENT NA	RWP REQ'D YES	TECH SPEC YES
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SYSTEM NAME: NUCLEAR BOILER (NSSS)
SUMMARY : REM. & REPLACE PILOT CONTROL VALVE
MPL NAME : FIRST MSIV

PLANNER REMARKS

PPTD REQUIRES A TEST OF 1B21F022D TO INVESTIGATE SLOW CLOSING OF THIS VALVE
IN T.C.7 (SEE W.O.87-9231) P.C. 11/2/87

POWER SUPPLY: ***** PWR SUPPLY LOCATION: *****

CORRECTIVE ACTION

TROUBLESHOOT PER JOB TRAVELER

RELATED REPETITIVE TASKS

SEE ATTACHED LIST

PLANNED BY		DATE	/ /
REVIEWED BY NQAD/AIA		DATE	/ /
APPROVED BY		DATE	/ /
APPROVAL TO COMMENCE WORK	TIME: __ : __	DATE	/ /
WORK COMPLETE		DATE	/ /
APPROVAL TO COMMENCE TEST	TIME: __ : __	DATE	/ /
RETEST COMPLETE		DATE	/ /
REVIEW BY NQAD/AIA		DATE	/ /
ACCEPTED BY UNIT SUPV.		DATE	/ /

PAGE 2
M151B23

PERRY NUCLEAR POWER PLANT WORK ORDER
SCOPE OF REVISION

11/09/87
11:28:15

WO# 870009293 PRIORITY 5X LOC C O/ -664
MPL 1B21F0022D COMP CAT VLV SFTY M/E 1 /SR

LN	REVISIONS TEXT	REV 1 OF 3
01	REVISED TO CORRECT MPL # IN TRAVELER.	PEC 11/03/87 16:07:44
LN	REVISIONS TEXT	REV 2 OF 3
01	REVISED FOR MINOR CONCERNs, NO WORK WAS PERFORMED	CLC 11/04/87 23:05:17
02	UNDER THE PREVIOUS REV.	CLC 11/04/87 23:05:17
LN	REVISIONS TEXT	REV 3 OF 3
01	ADDED JOB TRAVELER STEP TO REINSTALL AIR PACK	PEC 11/08/87 16:29:47

PAGE 3 PERRY NUCLEAR POWER PLANT WORK ORDER 11-09-87
RELATED REPETITIVE TASK LIST 11:28:15
M151B13 REV NO: 3
INFORMATION ONLY LAST CHNG:11/03/87

WO NUMBER	MPL NUMBER	COMP CAT	WO LOCATION	SAFETY	SEISMIC
		CODE	C O/ -664	M/E	M/E
		VLV		1 /SR	I/I

REP-TSK NO	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
------------	-----------	------------	---------------------

FOR TASK CATEGORY: (SVI)TECH. SPEC. SURVEILLANCE

R85 013050	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T1400
R85 013051	TECHS	1B21FC022D	POST MAINT RETEST REQD ? SVI B21-T2001
R85 013052	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T2003
R85 013053	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI B21-T9415
R86 011266	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI T23-T1201
R86 012775	TECHS	1B21F0022D	POST MAINT RETEST REQD ? SVI C61-T1104

PAGE 6 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
RELATED WORK ORDER LIST 11:28:15
M151B02 REV NO: 3
INFORMATION ONLY LAST CHNG: 11/03/87

WO NUMBER	MPL NUMBER	COMP CAT	SAFETY	SEISMIC
870009293	1B21F0022D	CODE VLV	WO LOCATION C O/ -664	M/E 1 /SR M/E I/I

WO NUMBER	RESP SECT	MPL NUMBER	SUMMARY DESCRIPTION
870009372	I&C	1B21F0022D	FAILURE ANALYSIS OF AIRPACK & SOLENOIDS

PAGE	5	PERRY NUCLEAR POWER PLANT WORK ORDER		11/09/87
		JOB TRAVELER		11:28:15
M151B03			REV NO:	3
		INFORMATION ONLY	LAST CHG:	11/03/87
		COMP CAT	SAFETY	SEISMIC
WO NUMBER		CODE	WO LOCATION	M/E
870009293	1B21F0022D	VLV	C O/ -664	1 /SR
				I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
010	REFERENCE DRW.			
	1. REFER TO DRW. 209-13 S: 2 THROUGH 9 FOR INTERCONNECTIONS TO B21/C71/C95/R61 ECT.		I&C	2
	2. REFER TO VENDOR DRW. 47-58-1&3 FOR SWITCH DRW.			
	3. REFER TO DRW. 208-13-10 & 36 FOR CONNECTIONS.			
	4. REFER TO DRW. 208-46-522 FOR ERIS INPUTS.			
	5. REFER TO DRW. 208-40 SH 5 & 8 FOR RX. SCRAM LOGIC.			
	6. ATWOOD & MORRILL VENDOR MANUAL (FILE # 29-G).			
020	PRECAUTIONS			
	1. MAINTAIN HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS PER PAP-0204.		I&C	1
	2. ENSURE TAGOUTS ARE ESTABLISHED TO PROVIDE PERSONNEL OR EQUIPMENT SAFETY PER PAP-1401.		I&C	2
	3. PERFORM THIS WORK IN ACCORDANCE WITH IAP-0503.		I&C	2
	4. OBSERVE PRECAUTIONS AS SHOWN IN SVI B21-T1400		I&C	2
	5. OBSERVE PRECAUTIONS AS SHOWN IN SVI C71-T0038D		I&C	2
	6. ALL PARTS REMOVED SHALL BE MARKED AND RETAINED FOR FUTURE EVALUATION.		I&C	2
030	PREPARATION			
	1. OBTAIN THE REQUIRED M&TE PER PAP-1201, TOOLS, MANUALS, AND APPROVED INSTRUCTIONS NEEDED TO PERFORM THE REQUIRED REWORK. SEE SVI-T0038E FOR ADDITIONAL TOOLS REQUIRED.		I&C	2
	2. SUBMIT R.W.P. FORM PER PAP-0512		I&C	2

PAGE 6 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
 JOB TRAVELER 11:28:15
 M151B03 REV NO: 3
 INFORMATION ONLY LAST CHG: 11/03/87
 COMP CAT SAFETY SEISMIC
 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009293 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
040	TROUBLESHOOTING			
	1.NOTIFY MMQS PRIOR TO WORK, 6350		I&C	2
	INITIALS .....DATE.../.../.....			
	2.NOTIFY UNIT SUPERVISOR PRIOR TO WORK		I&C	2
	3.CONTACT HEALTH PHYSICS PRIOR TO WORK FOR ANY R.W.P. REQUIREMENTS.		I&C	2
	4.DETERMINATE & LABLE WIRES FROM JCT.BOX FOR 1B21F463 TO ALLOW REMOVAL OF AIR PACK & SOLENOIDS VALVES.		I&C	2
	5.CONTACT NC86M SUPERVISOR X6200 OR 6984 TO REMOVE AIR PACK.		I&C	2
	6.VERIFY THAT VALVE IS IN THE CLOSED POSITION AND THAT I&C HAS PERFORMED DETERMINATION OF THE VALVE ACTUATOR CONTROL PANEL.		CRAFT	2
	7.CONTACT PETE ARTHUR OR VINCE CONCEL FOR AUHTORIZATION TO PROCEED TO THE NEXT STEP (NRC APPROVAL REQUIRED PRIOR TO PROCEEDING TO THE NEXT STEP).		I&C	2
	INITIAL.....DATE.../.../...TIME.....		I&C/RSE	2
	8.DICONNECT THE 3/8" & 1 5/8" AIR SUPPLY TUBING CONNECTIONS. UNBOLT AIR CONTROL PANEL FROM ACTUATOR AND REMOVE PANEL. SEAL ALL OPENINGS.		CRAFT	2
	9.DELIVER AIR PACK TO I&C FOR TESTING.		CRAFT	2

NOTE: EXERCISE EXTREME CARE WHEN WHEN HANDLING THE AIR CONTROL PANEL AT ALL TIMES. DO NOT SUBJECT IT TO SHOCK. LIMIT ANY DECONTAMINATION NEEDED AS MUCH AS PRATICAL.

PAGE 7

PERRY NUCLEAR POWER PLANT WORK ORDER
JOB TRAVELER11/09/87
11:28:15

M151B03

REV NO: 3
LAST CHG: 11/03/87
SAFETY SEISMICWO NUMBER
870009293MPL NUMBER
1B21F0022D

CODE

WO LOCATION
C O/ -664M/E
1 /SRM/E
I/IINFORMATION ONLY
COMP CAT

STEP	DESCRIPTION	RESP		JOB CLASS	# OF PERS
		SECT			
		FROM	TO	PLACED BY	REMOVED BY
		LOCATION TB#/TERMINAL	LOCATION TB#/TERMINAL	INIT/DATE VERIF BY	INIT/DATE VERIF BY
1.				.../...	.../...
				.../...	.../...
2.				.../...	.../...
				.../...	.../...
3.				.../...	.../...
				.../...	.../...
4.				.../...	.../...
				.../...	.../...
5.				.../...	.../...
				.../...	.../...
6.				.../...	.../...
				.../...	.../...
7.				.../...	.../...
				.../...	.../...
8.				.../...	.../...
				.../...	.../...
9.				.../...	.../...
				.../...	.../...
10.				.../...	.../...
				.../...	.../...

060 INSTALL AIR PACK

1.RECIEVE AIR CONTROL MANIFOLD(SC#1465021) FROM

I&C

2

PAGE 8 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
 JOB TRAVELER 11:28:15
 M151B03 REV NO: 3
 INFORMATION ONLY LAST CHG: 11/03/87
 COMP CAT SAFETY SEISMIC
 WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
 870009293 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
	I&C SUPERVISOR.			
2.	RECORD MANIFOLD S/N		I&C	2
3.	CONTACT NC86C SUPERVISOR X6200 OR X6984 TO REINSTALL AIR PACK.		I&C	2
4.	REPLACE "O"RING (COAT WITH LUBRICANT PARA SEAL DIV.SUPER O LUBE) AT THE LEAD AND MANIFOLD INTERFACES		CRAFT	2
5.	INSTALL AIR CONTROL PANEL & TORQUE BOLTS TO 30 FT-LBS.		CRAFT	2
	FINAL TORQUE			
	TORQUE WRENCH MPL.....			
X 6.	TORQUE THE TIE BAR SCREW (ITEM 30) TO 20 FT-LBS.		CRAFT	2
	FINAL TORQUE.....			
	TORQUE WRENCH MPL.....			
7.	TIGHTEN PILOT AIR LINE FITTINGS.		CRAFT	2
A)	AIR LINE BETWEEN SOLENOID #1 AND 3-WAY AIR CONTROL VALVE.			
B)	AIR LINE BETWEEN 2-WAY AIR CONTROL VALVE AND SOLENOID VALVE #2/#3.			
8.	CONTACT MMQS X6615 FOR CLEANLINESS REQUIREMENTS		CRAFT	2
	INITIALS .....DATE.../.../.....			
9.	CONNECT THE 3/8" AND 1-5/8" AIR SUPPLY TUBING CONNECTIONS TO THE AIR CONTROL PANEL & TIGHTEN.		CRAFT	2
10.	RETERMINATE LEADS LIFTED INSTEP 40,4.		I&C	2
11.	SEE THAT TAG OUT HAS BEEN CLEARED.		I&C	2

PAGE	9	PERRY NUCLEAR POWER PLANT WORK ORDER		11/09/87		
		JOB TRAVELER		11:28:15		
M151B03			REV NO:	3		
		INFORMATION ONLY	LAST CHG:	11/03/87		
		COMP CAT	SAFETY	SEISMIC		
WO NUMBER	870009293	MPL NUMBER	CODE	WO LOCATION	M/E	M/E
		1B21FC0022D	VLV	C O/ -664	1 /SR	I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
	12. PERFORM SLOW & FAST CLOSE OF MSIV FROM CONTROL RM.AS REQUESTED BY SYSTEM RESPONSIBLE ENGINEER, TO VERIFY VALVE OPERATION.		R.E./OPERA	2
070	RESTORATION			
	1. COMPLETE THE INSTRUMENT RESTORATION CHECKLIST USING INDEPENDENT VERIFICATION PER IAP-0503.		I&C	2
	2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.		I&C	2
	3. NOTIFY HEALTH PHYSICS WHEN WORK IS COMPLETE AND FORWARD ALL R.W.P. FORMS TO HEALTH PHYSICS FOR R.W.P. TERMINATION PER PAP-0512. N/A IF NONE.		I&C	2
	4. ANY DEFECTIVE/UNUSED PARTS REMOVED UNDER THIS WO SHOULD BE EVALUATED, DISPOSITIONED AND RETURNED TO THE SALVAGE WAREHOUSE PER SMI-018 OR DISCARDED AS NON REPAIRABLE ON THE W.O. CLOSING SHEET. PRIOR TO REMOVING PARTS FROM A RCA; HEALTH PHYSICS MUST SURVEY AND RELEASE THEM PER PAP-0515. N/A IF NOT APPLICABLE		I&C	2
080	RETEST			
	1. PER S.SEMAN 11/03/87 PERFORM SVI B21-T2001 INCLUDING PIT (LISTED AS STEP 2.4 OF SVI)		OPERA	3
090	ACCEPTANCE CRITERIA			
	1. WORK IS COMPLETE AND MEETS THE ACCEPTANCE CRITERIA OF ALL PROCEDURES USED.		I&C SUP	1
	2. HOUSEKEEPING AND SYSTEM INTERNAL CLEANLINESS REQUIREMENTS HAVE BEEN MET PER PAP-0204.		I&C SUP	1
	3. CONFIGURATION VERIFICATION COMPLETED BY HAVING ALL INSTRUMENT RESTORATION CHECKLISTS FILLED IN PER IAP-0503.		I&C SUP	1

PAGE 10 PERRY NUCLEAR POWER PLANT WORK ORDER 11/09/87
M151B03 JOB TRAVELER 11:28:15
INFORMATION ONLY REV NO: 3
COMP CAT LAST CHG: 11/03/87
WO NUMBER MPL NUMBER CODE WO LOCATION M/E M/E
870009293 1B21F0022D VLV C O/ -664 1 /SR I/I

STEP	DESCRIPTION	RESP SECT	JOB CLASS	# OF PERS
100	FIRE/VAPOR BARRIERS			
	FIRE/VAPOR BARRIERS WILL BE RESTORED DURING AIR PACK REINSTALLATION..		I&C	

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
PERRY NUCLEAR POWER PLANT

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MEMORANDUM

TO Vince Concel ROOM TG1 FROM K. Matheny DATE November 9, 1987
PHONE 6710 ROOM B290
SUBJECT MSIV ASCO Solenoid Valves

This memo outlines the EPDM parts required to be analyzed by the test facility and the testing requirements applicable as determined by the ZPSS EQ element.

I. Parts to be tested (removed from F0028C and D solenoid valves)
A. Dual coil solenoids valves -NP8323-A20E

A. Dual coil solenoids valves -NP8323-A2OE

- 1) Disc holder subassembly (EPDM insert)
 2) Body gasket O-rings (2)

NOTE: Parts as defined on ASCO bulletinnn 8323 for solenoid
 "A" and "B".

B. Single coil solenoid valve - NP8320-A185E

- 1) Body gaskets (O-rings) - 2
 - 2) Disc

OTE: Parts as defined on ASCO bulletin 8320

II. Same parts from I., above, obtained from the applicable ASCO spare parts kits.

III. Testing requirements

A. Identification of residual materials

- 1) Hydrocarbons
 - 2) Any other contaminants or foreign materials

B. Hardness test (Durometer)

C. Documented inspection of existing compression set

D. Elongation and ultimate tensile strength as applicable

Since this is GE supplied equipment they should be consulted for additional information on parts or testing requirements.

Prepared by:

R. J. McCarthy

Sel
cc: B. D. Walrath
S. W. Litchfield
J. Wilcox
D. Reyes
A. Killian
T. McIntyre
G. Dunn
S. Wojton

8.43

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THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
PERRY NUCLEAR POWER PLANT

MEMORANDUM

Engineering was tasked with determining what the safety consequences would be if one main steam line failed to isolate during the MSIV closure/scram test at 100% reactor power. The determination was made in a two step process. First, General Electric examined this event in light of previously analyzed transients which are documented in the FSAR. General Electric analyzed the effects on the reactor's physical response to the transient and determined the transient would be within previously analyzed events and would therefore not adversely effect the plant. The second was done by MDS/Piping and Equipment Analysis Element and discussed the specific effects on the main steam piping. The conclusion of this analysis was that there would be no adverse effect on main steam piping. Both responses therefore concluded that no adverse consequences would result since analyzed transients/design bases are bounding and that Startup Test results, to date, support this conclusion.

D-44

GENERAL  ELECTRIC
PERRY SITE
NUCLEAR ENERGY BUSINESS OPERATIONS
GENERAL ELECTRIC COMPANY • 175 CURTNER AVENUE • SAN JOSE, CALIFORNIA 95195

November 6, 1987

To: John Eppich, Senior Project Engineer
NSSS/Piping/Equipment
Cleveland Electric Illuminating

Subject: Effects of Isolation of 3 Main Steam Lines

In response to your questions in regard to possible transient effects if the present condition of the "D" MSIV's (F022D and F028D failed to close during performance of an SVI) had gone undetected, the following comments are offered.

Two FSAR transients bound the expected system transients.

- a. Turbine trip with bypass system failure (figure 15.2-5)
 - Vessel pressure rise approximately 160psi
 - SRV's lift (safety)
 - No MSIV closure
- b. Three second closure of all MSIV's (figure 15.2-6)
 - Vessel pressure rise approximately 120psi
 - Relief valves lift

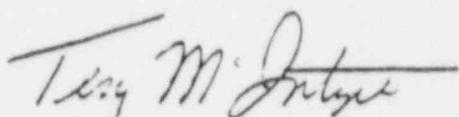
These transients result in vessel pressure increases of approximately 160 and 120psi, respectively. Since total steam flow reduction is greater in both of these transients than expected if 3 of the 4 main steam lines were to isolate, the expected vessel pressure rise is less than 120psi. In a turbine trip, MSIV closure does not occur, so this transient is more limiting than the 3 steam line isolation case from a piping pressure transient standpoint.

In terms of steam flow, the steam flow in any one steam line is limited by the driving pressure drop in the line.

GENERAL  ELECTRIC

The successful completion of generator load reject startup test (STI B21-027) with bypass valves has shown that the associated steam flows are of no consequence to the system design. Figure 15.2-9 of the FSAR indicates the predicted pressure rise for this event is approximately 115psi. Since the total reduction in steam flow is similar in this case to that expected to occur in a 3 line isolation, a similar reactor pressure transient should result. Though not absolutely conclusive, the successful completion of the load reject test indicates that the steam flows expected for the unanalyzed event are of no adverse consequences.

In conclusion, the transient effects of the unanalyzed event with one steam line failing to isolate are similar to those experienced in STI B21-027 and are considered to have no adverse consequences to the plant.



T. R. McIntyre, Manager
Perry Site Engineering

TRM/vjc

cc: J. J. Larsen
J. Z. Sherk
D. D. Jones

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
PERRY NUCLEAR POWER PLANT

M E M O R A N D U M

This memo is in regards to your question on consequences from failure to isolate one main steam line during MSIV closure/scram test at 100% power. No problems are anticipated from this event as detailed below.

THERMAL

The steam lines are analyzed for closure of the MSIV's on any one line. This analysis is equally appropriate for one line operating and three lines closed. The slope on the lines and the equalizing line will ensure no significant thermal expansion exists in this operating mode. The before seat drain on F020 and continual blowdown from the low point on the steam line will keep live steam in the lines isolated by MSIV closure.

PRESSURE

The piping wall thickness is in excess of that required for 1250 psig operating pressure. Transient pressure spikes from this event are far less severe than the pressure spike from main steam stop valve closure which was considered in the piping design.

FLOW RATE

This is not a normal input to piping analysis. It is used to determine heat transfer rates for Class One analysis, however, since the lines were already at full temperature, there will be no effect. The design pressure is conservatively based on zero flow because it does not take credit for pressure drop.

VIBRATION

Verification that flow induced vibrations are within acceptable limits is based upon startup testing. Based on data taken at 100% power, no major problem would be anticipated with an increase in flow rate.

AIT ACTION ITEMS

<u>RESPONSIBLE SECTION</u>	<u>ITEM</u>	<u>DELIVERED</u>	<u>DESCRIPTION</u>
OPS/LCS	1. SEQUENCE OF EVENTS A. CLOSURE TIMES B. OPERATOR ACTIONS TAKEN	X X X	o OPS CHRONOLOGY o UNIT LOGS o STA LOG o CONDITION REPORTS o SUMMARY o STI DATA
LCS	2. ADEQUACY OF REPORTING AND CATEGORIZATION OF EVENT	X	o SUMMARY WRITE UP
NED/LCS	3. IMMEDIATE SAFETY SIGNIFICANCE	X	o HISTORY OF EVENTS SUMMARY
OPS/LCS	4. ADDITIONAL TESTING ACTIVITIES IN PROGRESS	X	o SVI LIST o W.O. LISTS/VARIOUS UNITS
I&C/LCS	5. RPS ACTUATION SIGNALS DURING SURVEILLANCES	X	o SVIs o ISEG EVALUATION OF TRIP SIGNALS
LCS	6. MANAGEMENT DECISION MAKING PROCESS-INFORMATION AVAILABLE	X	o SUMMARY WRITE UP
LCS	7. PREVIOUS MSIV TIMING PROBLEMS	X	o SUMMARY WRITE UP o CANTLIN MEMO
TECH/LCS	8. MSIV MAINTENANCE HISTORY (OTHER THAN STI/SVI) A. RETESTING PERFORMED	X X	o WO LIST - WO's PROVIDED o SYSTEM AND COMPONENT DRAWINGS
TECH	9. AIR SYSTEMS MAINTENANCE HISTORY A. RETESTING PERFORMED B. VENDORS MANUALS	X X	o WO LIST - WOs NOT PROVIDED (NOT IN BOOK) o VARIOUS P51/P52 W.O.s/CRs o 3 VENDOR MANUALS PROVIDED TO NRC o SYSTEM AND COMPONENT DRAWINGS o CONDITION REPORTS P51/P52

0-45

OPS	10. ADEQUACY OF PROCEDURES IN PLACE TO HANDLE EVENT A. OPERATOR TRAINING	X	o OPS SUMMARY
NED/LCS	11. SAFETY SIGNIFICANCE OF INCIDENT (ACCIDENT ANALYSIS)		o HISTORY OF EVENT SUMMARY o GE; MSIV CLOSURE TESTING o GE; MASS FLOW ESTIMATES o GAI SAFETY ANALYSIS
NED/LCS	12. ANALYSIS OF LOADING ON STEAMLINES (3 CLOSURE, 1 OPEN)	X	o GE -EFFECTS OF ISOLATION o J. EPPICH MEMO DATED 11/6/87 o J. EPPICH MEMO DATED 11/6/87
LCS	13. PREVIOUS SIMILAR INDUSTRY EVENTS A. LER 86030	X	o NRPD PRINTOUT (NOT IN BOOK) o SERs 36-84, 57-85, o RELATED LER SUMMARIES o PERRY LER 86030
LCS	14. PREVIOUS NRC INFORMATION-BULLETINS, CIRCULARS, INFORMATION NOTICES	X	o IENs; 80-11,81-29,82-52, 83-57,84-23,84-68,85-08, 85-17,85-17-01,85-84, 86-57,78-14 o IEB; 78-14,79-01A
NED/LCS	15. OTHER APPLICATIONS OF ASCO VALVES	X	o EQ LIST o W.O. SEARCH o MODEL NUMBERS
TECH/I&C	16. TROUBLESHOOTING PLAN A. MATERIAL CONDITIONS AFFECT ON CLOSURE B. ANY FURTHER INVESTIGATIONS	X(REV. 0)	o TROUBLESHOOTING PLAN, AIR SYSTEM o POINTS SAMPLED o SEQUENCE OF TROUBLESHOOTING o PARTICLE COUNTS
	17. GENERIC IMPLICATIONS	X	o CORRECTIVE ACTION, INDUSTRY EVALUATION
TECH	18. ROOT CAUSE	X	o PRELIMINARY ANALYSIS
TECH	19. CORRECTIVE ACTIONS	X	o (DRAFT) 9 ITEMS
TECH	20. PLANS FOR STARTUP	X	o TUESDAY CONFERENCE @ REGION III

LCS	21. CLOSURE INFORMATION ON 1985 OPEN ITEM ON PSAR R QUALITY CHANGE (3 40 MICRONS)	X	<ul style="list-style-type: none">o CEI/NRR LTR 0306o CEI/NRC LTR NOV. 9, 1984o VIOLATION FROM 84-15o IER 85-039o IER 85-066o IER 85-088o SSER SUPP 7 - 9.3.1
TECH	SIZE OF FLUSH CLOTHS USED ON AIR SYSTEMS TESTS		CLOSED PER DISCUSSIONS
RPS	23. ANALYSIS OF AIR SYSTEM FLUSH CLOTHS TO VERIFY LESS THAN 40 MICRON PARTICLE SIZE (OIL, WATER)	X	CLOSED PER DISCUSSIONS <ul style="list-style-type: none">o RESULTS ON CHEMISTRY ANALYSIS
NED-MDS	24. BRIEF SUMMARY DESCRIBING RELATIONSHIP BETWEEN COMPONENT SUPPLIERS AND MSIV CONTROL AIR PACK ASSEMBLERS (i.e. HILLER SHEFLER, NORGREN, ETC.)	X	<ul style="list-style-type: none">o SUMMARY WRITE UP/LIST
OPLS	25. EQUIPMENT QUARANTINE LIST	X	<ul style="list-style-type: none">o POD, NOV. 5
NED	26. MSIV EQUIPMENT	X	<ul style="list-style-type: none">o SCREW SHEETSo DRAWINGS

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
PERRY NUCLEAR POWER PLANT

46
—

M E M O R A N D U M

TO W. Kanda

ROOM SB314

FROM K. Matheny,
PHONE 6710 ROOM E290
SUBJECT MSIV Temperature Monitoring

DATE November 9, 1987

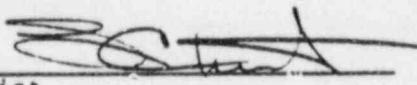
-JGM

Please find attached information for the MSIV Temperature Monitoring to be installed prior to start-up. This has been discussed with Phil Cherry prior to issuance of this memo and he is in tune with our (EQ's) request for this monitoring. A work request has been submitted to have the monitoring equipment installed.

When it has been determined that Monitoring of the MSIV's inside drywell is possible we will be glad to assist in determining the locations for these monitors.

If you have any questions or concerns please feel free to contact Larry Christ at extension 6676 during working hours (day shift) or after hours, home phone 255-2357.

Prepared by:


L. Christ

KAM/njc

cc: V. Concel
B. Walrath
A. Killian
J. Cichello
S. Litchfield
L. Christ
G. Dunn

0-46

- Format for MSIV Monitoring -

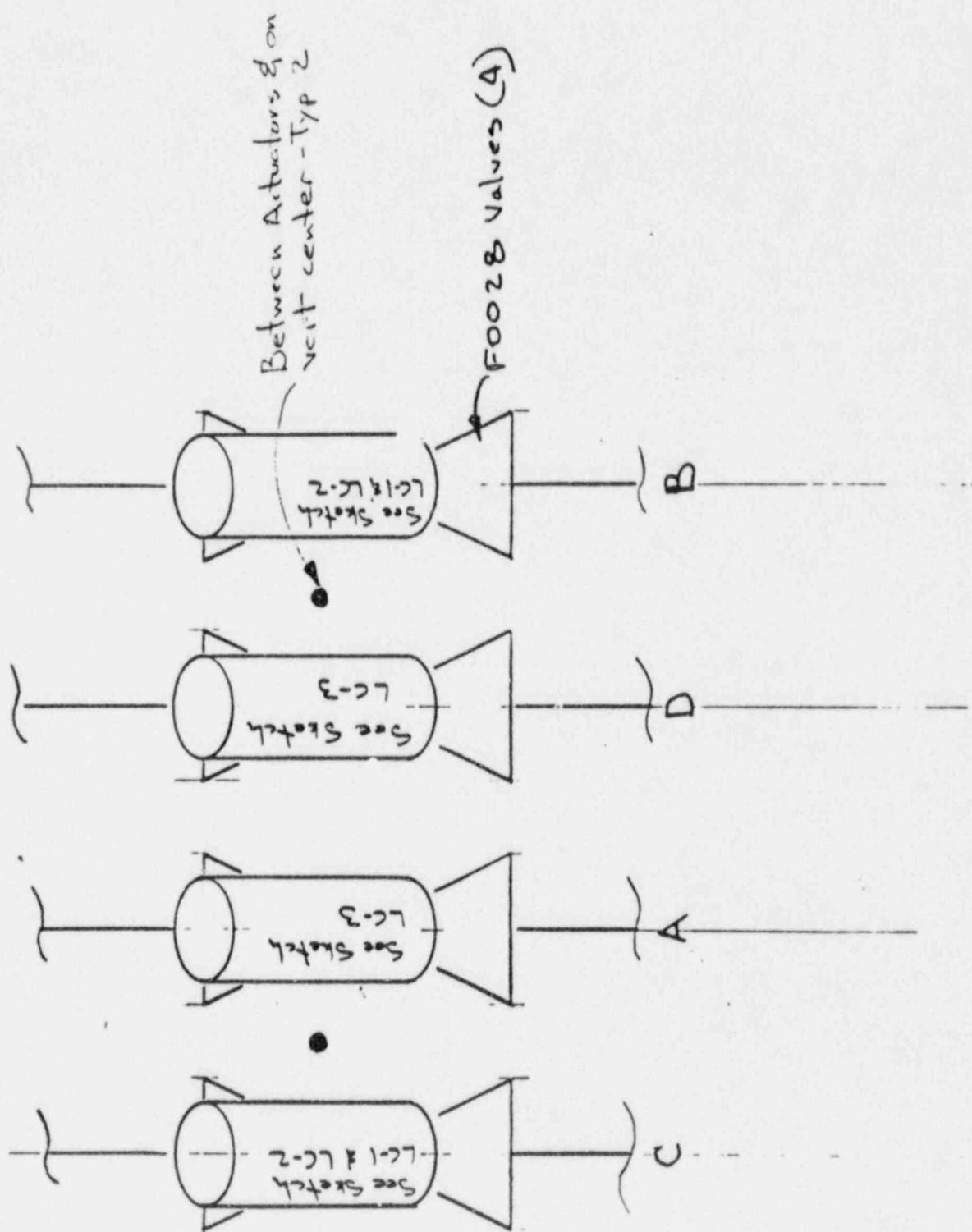
A. Monitor Locations & Specifics

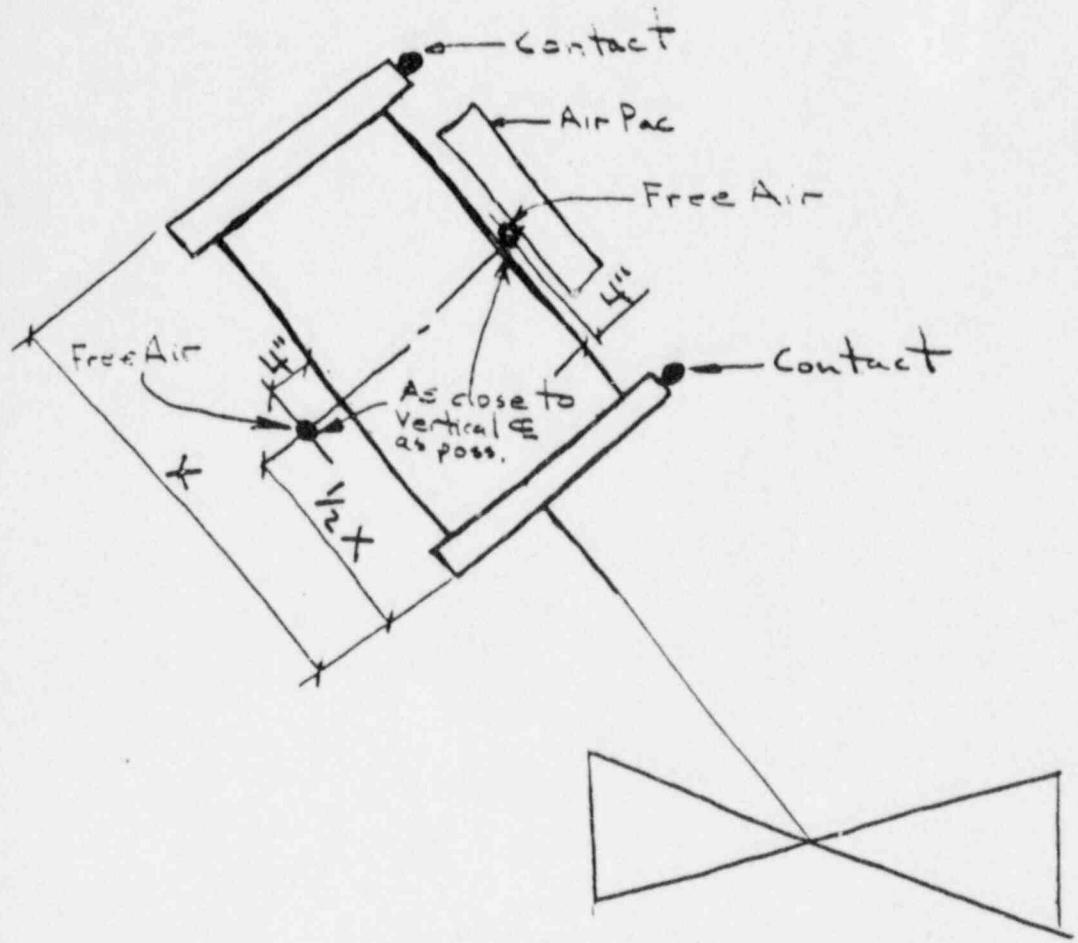
1. See sketches LCMP1, LC-1, LC-2, & LC-3
2. Total of 22 points
3. Each point to have a unique identifier related to its location
4. All charts, printouts, etc., shall be marked with unique number for identification
5. Verification of location is required
6. Accuracy of instrument $\pm 5^{\circ}\text{F}$.
7. All types (originals) or computer printouts of data obtained is to be forwarded to Harry Christ (E-290) for retention & analysis.
8. Monitoring is not to be removed without the signed approval of Harry Christ or Stuart Litchfield.

B. When to record

1. After tagout cleared, solenoid valves energized, and prior to start-up. - 1 hr. recording
2. 25% power - 1 hr. recording
3. 50% power - 1 hr. recording
4. 75% power - 1 hr. recording
5. 100% power - 1 hour recording every 24 hours for a 2 week period
6. None of these recordings are to be a restraint to power escalation. An attempt is to be made to obtain these recordings as close to the power ranges as possible.

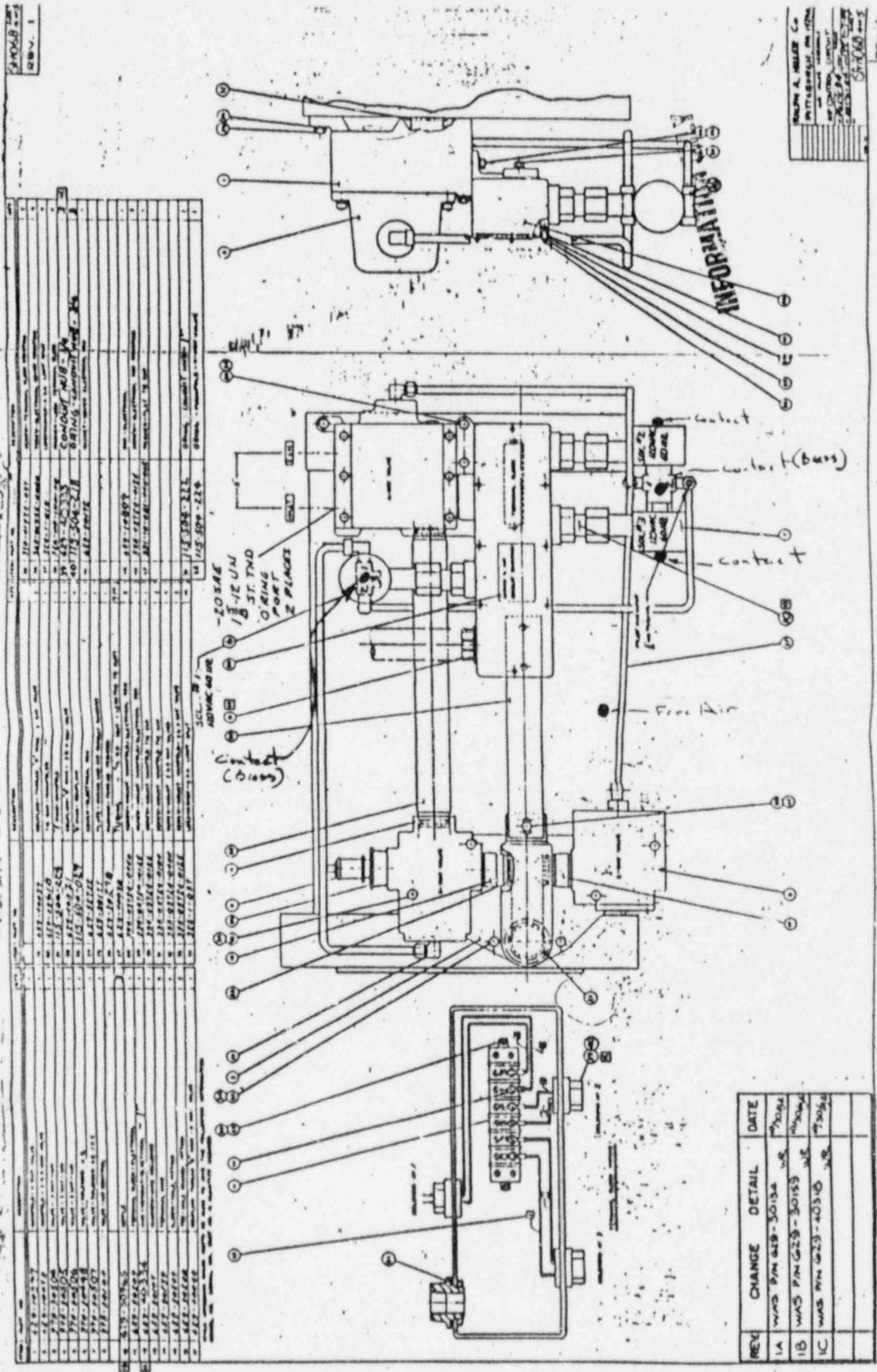
Sketch LCM P-1





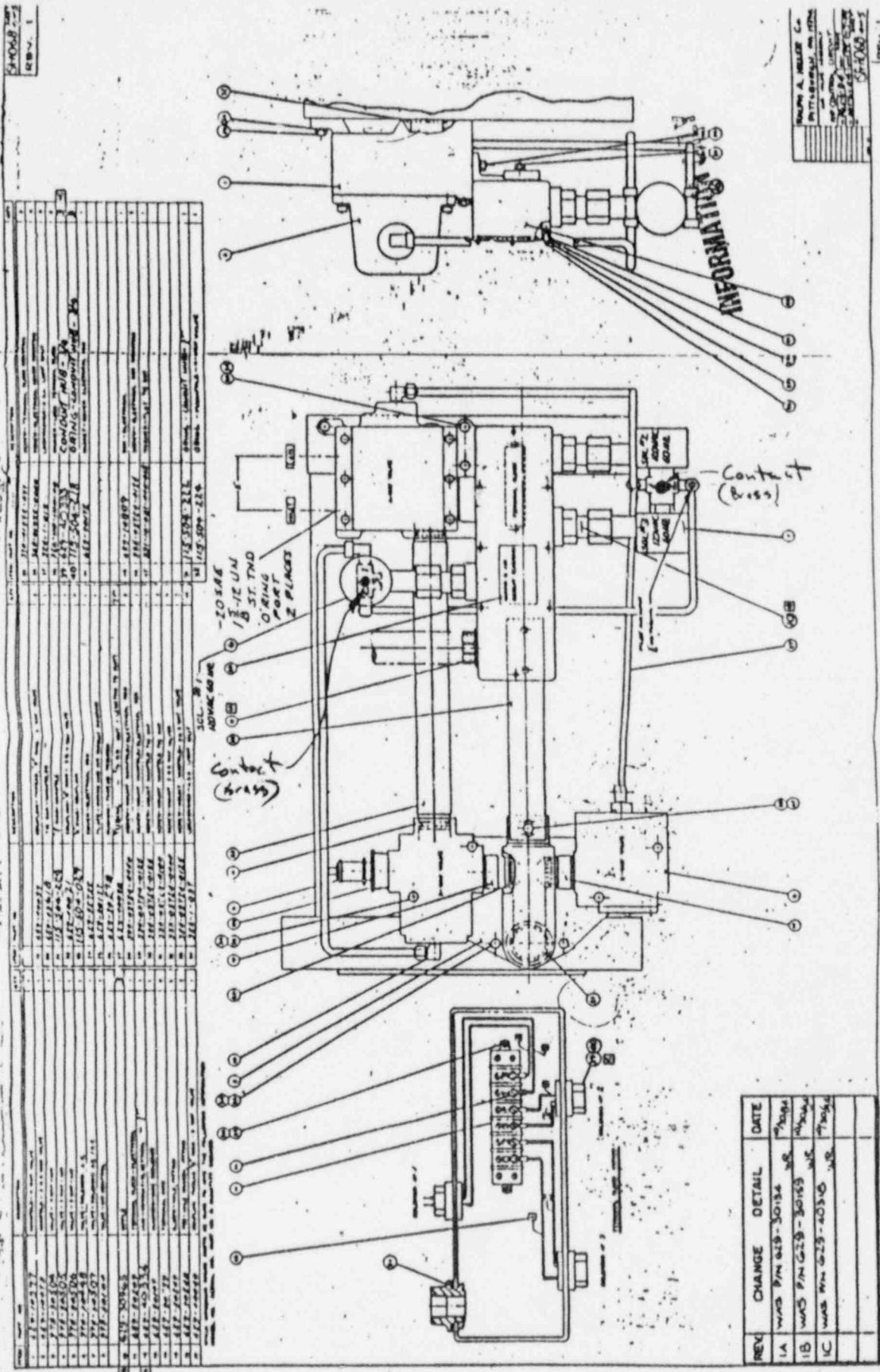
VALVES F0028B & F0028C

SKETCH LC-2



SKETCH LC-1

VALVES FDD28B & FDD28C



SKETCH LC.3

VALVES FDD28A & FDD28D

NOV 11 '87 16:10

NOV 11 '87 16:18

P01

Item 26 of

FOIA 88-11 P.1

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Cleveland Electric Illuminating Co.
Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081
Telex No. (216) 259-2010

Date 11/11/87

Many

I gave cop

to Deanna

Wright

Lakebury

Milner

TELECOPY REQUEST

To: Dick Knapp NRR

From: _____

Telex No. 312-790-5665

Comments: URGENT

No. of Pages _____ (including this cover sheet)

If you have any problems during transmission or for verification, please call
(216) 259-3737 extension 5275 or 5276.

D-50

DRAFT

Enclosure

The following evaluations and actions have been or will be completed prior to plant startup:

1. As previously stated in PY-CEI/OIE-0288 L, for the dual (fast closure) solenoids, the total air pack has been replaced for the 1B21-F028D valve, and the whole dual solenoid has been replaced on both the 1B21-F022D^{and F028D} valves. No other solenoids showed significant degradation or required replacement. All of the other MSIV dual solenoids have been rebuilt.
2. As previously stated in PY-CEI/OIE-0288 L, the single (slow closure) solenoid was replaced on the 1B21-F028D valve since the whole air pack was replaced and on the 1B21-F028B valve due to a frayed wire. Based on the inspection results above, no other replacements were necessary.
3. As previously stated in PY-CEI/OIE-0288 L, a evaluation has been performed of other ASCO solenoid Class 1E harsh environment applications in the plant, including those which may have been subject to the steam leak environment which affect the MSIV solenoids. The review identified two normally deenergized solenoids which were ~~not~~ subject to the same conditions as the MSIV solenoids. Since the solenoids are in a normally deenergized state, ~~and the part is not in contact with elastomers, for potential degradation,~~ no further action was considered necessary. Work history review of all other applications has shown no solenoid failures indicating the ASCO solenoid degradation appears to be limited to the MSIV solenoid valves.
4. An evaluation ~~has been~~ performed of other equipment in the vicinity of the 1B21-F022D, 1B21-F028D, and 1B21-F028B valves, to assess any impact that the steam leaks may have had on ~~these~~ other components. It was determined that no heat degradation affecting equipment operability had occurred.

5. Until the temporary temperature monitoring baseline values have been determined, the existing permanent temperature elements will be used. The historical readings of the existing permanent steam tunnel and drywell temperature elements in the vicinity of the MSIVs has been reviewed, and a baseline has been determined for each element (see Attachment 1). It has been determined that a 10% rise above these baselines values may be indicative of a localized steam leak and would require investigation. This value is approximately one half of the temperature rise expected for the Technical Specification trip value for leak detection.⁴ A procedure will be established specifying necessary actions to be taken upon exceeding these values. The corrective actions to be taken are as follows:
- o Reduce power as necessary to perform a visual inspection to determine the equipment inspected.
 - o Immediately repair the leakage or shield the adjacent Class 1E components to limit the impact until a repair is possible.
 - o Note components being affected and assess the thermal impact (EO). Evaluate and determine the necessary time frame for taking additional action.
 - o At least 1 temporary temperature element in the area of each MSIV will be maintained in service in Operating Conditions 1, 2 and 3.
6. Additional steam tunnel temporary temperature monitoring has been installed on the preselected sample points in the MSIVs ~~area~~— including the dual and the test solenoid bodies. Baseline data will be obtained on the temporary temperature elements in the steam tunnel during the next full operating period of sufficient duration to allow temperatures to stabilize. Based on experience, this will be several days after the plant is at full power. Inspections will be performed during startup to assure that the initial temperature reading are not being effected by steam leaks. Once it has been determined that the readings have stabilized, the procedure outlined in item (5) above will be revised to use the temporary temperature elements in lieu of the permanent elements.

After completion of the startup test program, at least nine drywell temporary temperature elements will be installed on locations on ~~and~~ the inboard MSIVs, typical of what was done with the temporary steam tunnel temperature elements. A baseline will be established after the startup following this outage as described above for the temporary steam tunnel temperature elements. These baseline values will then be incorporated into the program, along with the respective acceptance criteria.

7. A test has been performed which verified that air does not flow between the air compressor reduction gear vents and the air compressor intake. Consequently, it was determined that there was no need for any equipment modification, or ^{changes in the} intake filter replacement frequency. ch [redacted]

Following startup, these additional evaluations and actions will be performed:

1. To further substantiate the root cause, the laboratory analysis will be performed to determine the failure mechanisms of the EPDM degradation. A review of industry experiences and discussions with various industry sources will continue to be conducted in order to input into our analysis plan. Our preliminary analyses plan which included these industry contacts is completed, and a summary is provided in Attachment 2.

We have completed an initial evaluation of industry experience. The initial industry review did not change our preliminary conclusion that the root cause of the problem was primarily localized elevated temperatures near the ASCO Solenoid valves. However, we have not eliminated the potential of hydrocarbons having a deleterious effect. We plan to use data obtained from other plant experiences as described in IBN 86-57, along with our own analysis, to confirm the root cause.

Our preliminary schedule is to have initial results and analyses by end of ^{first} quarter 1988. Any further analyses required will be determined at that time. We plan to use a local research laboratory, as our primary analyses contractor. Results will be provided to NRC. Following completion of the analysis program, possible design improvements, will be evaluated and a determination will be made on future actions, including replacement frequencies.

NOV 11 '87 16:22

P.S.

2. Presently, in order to ~~minimize~~ preclude the potential for introducing hydrocarbons to the air system, a preventive maintenance requirement will be established for periodic replacement of the instrument air system prefilters. The maintenance frequency will be consistent with replacement of the instrument air system after filters. Additionally a generic precaution will be added into air system work orders regarding the use of thread lubricants and sealants.

If the outcome of the Chemical Analyses indicates the presence of hydrocarbons, we will establish an appropriate hydrocarbon sample and analysis program for the instrument air system. This program will be provided to the NRC.

Dew point and particulate sampling of the instrument air system will continue in accordance with the existing plant administrative procedure program. Any unacceptable results will be evaluated and system blowdowns will be conducted until satisfactory results are obtained.

3. Until the first refueling outage, the fast closure dual solenoids will be checked for proper operation during the monthly slow closure check. This test will not be performed during those months ~~of when performing a~~ quarterly fast closure test. This will be performed by fully closing each MSIV individually utilizing the test solenoid, followed by taking the control switch to close. This will verify the proper operation of the dual solenoid, since the MSIV will only remain closed if the dual solenoid deenergizes and properly repositions. If any MSIV should reopen during this test indicating the failure of a dual solenoid, the associated MSIV will be declared inoperable and the plant will be in Hot Shutdown within 12 hours and Cold Shutdown within the following 24 hours. The NRC will be notified upon discovery of such a failure.

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Also during this time frame the MSIVs will be cycled individually on a quarterly basis regardless of plant operating conditions, and the fast closure time verified. Upon failure of this quarterly test due to a problem with a dual solenoid, the plant will be shutdown and the NRC will be notified as described above.

Prior to exceeding a six month period an inspection will be performed on the dual solenoid during experiencing the highest temperature profile during an outage of opportunity. This inspection will verify no degradation of the solenoid valve internals. If accelerated heat degradation is observed a complete investigation will be initiated and the NRC notified.

A review has been completed of all known steam leaks in the plant which could have affected class 1E equipment. These components will be evaluated to determine if there has been any affect on their qualified life based on the environment under which they were subjected. The results of this evaluation will be completed and submitted to the NRC by November 30, 1987.

NOV 11 '87 16:16

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P07

P.7

Attachment 1

**TEMPERATURE MONITORING
FOR DETECTION OF STEAM LEAKS**

	TEMPERATURE SENSOR NUMBER	NORMAL OPERATIONAL BASELINE TEMPERATURE	ACTION PLAN IMPLEMENTATION TEMPERATURE
UPPER DRYWELL AREA	D23-K102 A D23-K102 B M13-R110-2 M13-R110-16	140° F 140° F 150° F 135° F	154° F 154° F 165° F 148° F
MIDDLE DRYWELL AREA	D23-K112 A D23-K112 B M13-R110-3 M13-R110-4 M13-R110-14 M13-R110-15	135° F 131° F 136° F 124° F 136° F 127° F	148° F 144° F 150° F 136° F 150° F 140° F
LOWER DRYWELL AREA	D23-K122 A D23-K122 B M13-R110-5 M13-R110-7 M13-R110-8 M13-R110-11 M13-R110-12	130° F 128° F 114° F 122° F 122° F 110° F 127° F	143° F 141° F 125° F 134° F 134° F 121° F 140° F
STEAM TUNNEL AREA MONITORS	E31-N604 A E31-N604 B E31-N604 C E31-N604 D	125° F 134° F 130° F 128° F	138° F 147° F 143° F 141° F
STEAM TUNNEL DELTA-T MONITORS	E31-N605 A E31-N605 B E31-N605 C E31-N605 D	80° F 80° F 82° F 82° F	88° F 88° F 90° F 90° F

NOV 11 '87 16:17

P08

NOV 11 '87 16:25

P.8

Attachment 2.

ANALYSIS PLAN FOR EPDM SOLENOID COMPONENTS

I. INTRODUCTION

To determine the cause for failure of solenoid pilot valves which resulted in the slow closing of MSIV's, two approaches will be taken. Both approaches involve analyses of the EPDM elastomer gasket material. The physical properties of the elastomeric material which was in service will be compared to new material to observe degradation, loss of material, deformation, anomalies in surface characteristics, and reduced performance. In addition, the gasket material will be subjected to chemical analyses to discover changes from original material at the molecular level. Data obtained from the analysis regimen along with data from a similar failure experienced at Brunswick in 1985 will be used to determine cause.

II. PERSONNEL CONTACTED

Interviews with the Harris Research Personnel and NRR provided information regarding analyses performed and resulting postulations. PNPP analyses will include methods to confirm or deny these failure postulates. The full Brunswick Failure Analysis Report has been sent and will be used as guidance. A meeting with Ricerca, Inc. Personnel regarding this failure analysis program resulted in the following proposed course of testing.

III. ANALYSIS PROGRAM

A. Samples

1. Unused Elastomer Gasket material
2. Used Elastomer from pilot solenoids which did not fail.
3. Used, degraded Elastomer Material from failed pilot solenoids.
4. Pilot Solenoid valve bodies with elastomer residue.

Attachment 2.

B. Physical Testing

1. Profilimetric analysis to compare indentations in EPDM discs (sample nos. 3, and 2)
2. Optical Microscopy to determine the presence of foreign material, or loss of material from surfaces.
3. Hardness testing to compare with original specifications.
4. Compression set to compare with unused material and note performance degradation.

C. Chemical Testing

1. Infrared survey to determine carbonyl content. This will provide information about mode of attack (organic acids from the presence of hydrocarbons) and extent of oxidation.
2. Scanning Electron Microscopy/X-Ray dispersion Spectrometry to confirm or negate copper-catalyzed accelerated oxidation. (Which was a postulated Failure Mode at Brunswick)

D. Environmental Testing

Six new dual coil solenoids will be sent to a laboratory for additional environmental testing. The solenoids will be placed in three separate environmental chambers (two per chamber) at various elevated temperatures in an energized condition. The solenoids will remain energized for predetermined times in an attempt to determine the temperature and continuously energized time at which the solenoids do not perform their function.

IV. SUMMARY

The above analyses and their results will provide evidence of failure mode and will describe any further confirming analyses which may be needed. In addition, recommendations will be made in order to preclude recurrence.

NOV 12 '87 07:49

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Grossman
Gouldman
Hut Miller
Christiansen
Hines
Knop.

P.1

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Cleveland Electric Illuminating Co.
Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081
Telex No. (216) 259-2010

Date 11/12/87

TELECOPY REQUEST

To: D. KNOP

From: GREG DUNN

Telex No. (312) 790-57665

Comments: This is a more complete
and clean draft copy.

Please deliver ASAP

No. of Pages 9 (including this cover sheet)

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(216) 259-3737 extension 5275 or 5276.

12 NOV 87 7:05

D-S1

Enclosure
Page 1 of 4

The following evaluations and actions have been or will be completed prior to plant startup:

1. As previously stated in PY-CEI/OIE-0288 L, for the dual (fast closure) solenoids, the total air pack has been replaced for the 1B21-F028D valve, and the whole dual solenoid has been replaced on both the 1B21-F022D, and the 1B21-F022A valves. No other solenoids showed significant degradation or required replacement. All of the other MSIV dual solenoids have been rebuilt.
2. As previously stated in PY-CEI/OIE-0288 L, the single (slow closure) solenoid was replaced on the 1B21-F028D valve since the whole air pack was replaced and on the 1B21-F028B valve due to a frayed wire. Based on the inspection results above, no other replacements were necessary.
3. As previously stated in PY-CEI/OIE-0288 L, an evaluation has been performed of other ASCO solenoid Class 1E harsh environment applications in the plant, including those which may have been subject to the steam leak environment which affected the MSIV solenoids. The review identified two normally deenergized solenoids which were subject to the same conditions as the MSIV solenoids. Since the solenoids are in a normally deenergized state, and the seat is not in contact with elastomers for potential degradation, no further action was considered necessary. Work history review of all other applications has shown no solenoid failures, indicating the ASCO solenoid degradation appears to be limited to the MSIV solenoid valves.
4. An evaluation has been performed of other equipment in the vicinity of the 1B21-F022D, 1B21-F028D, and 1B21-F028B valves, to assess any impact that the steam leaks may have had on other components. This evaluation revealed that there were six valve actuators in the steam tunnel and two in the drywell that were in close proximity to the known steam leaks. These actuators were inspected and no steam/heat degradation was observed.
5. Until the temporary temperature monitoring baseline values have been determined, the existing permanent temperature elements will be used. The historical readings of the existing permanent steam tunnel and drywell temperature elements in the vicinity of the MSIVs have been reviewed, and a baseline has been determined for each element (see Attachment 1). It has been determined that a 10% rise above these baseline values may be indicative of a localized steam leak and would require investigation. This value is approximately one half of the temperature rise expected for the Technical Specification trip value for leak detection.

A procedure will be established specifying necessary actions to be taken upon exceeding these values. The corrective actions to be taken are as follows:

Enclosure
Page 2 of 4

- o Reduce power as necessary to perform a visual inspection to determine the equipment affected.
 - o Immediately repair the leakage or shield the adjacent Class 1E components to limit the impact until a repair is possible.
 - o Note components being affected and assess the thermal impact (EQ). Evaluate and determine the necessary time frame for taking additional action, such as increasing surveillance frequency or changing replacement interval.
 - o At least 1 temporary temperature element in the area of each MSIV will be maintained in service in Operating Conditions 1, 2 and 3.
6. Additional steam tunnel temporary temperature monitoring has been installed on the preselected sample points on the MSIVs including the dual and the test solenoid bodies. Baseline data will be obtained on the temporary temperature elements in the steam tunnel during the next full operating period of sufficient duration to allow temperatures to stabilize. Based on experience, this will be several days after the plant is at full power. Inspections will be performed during startup to assure that the initial temperature reading are not being effected by steam leaks. Once it has been determined that the readings have stabilized, the procedure outlined in item (5) above will be revised to use the temporary temperature elements in lieu of the permanent elements.
- At least one drywell temporary temperature element will be installed on each of the dual solenoids on the inboard MSIVs, typical of what was done with the temporary steam tunnel temperature elements. A baseline will be established after the startup following this outage as described above for the temporary steam tunnel temperature elements. These baseline values will then be incorporated into the program, along with the respective acceptance criteria.
7. A test has been performed which verified that air does not flow between the air compressor reduction gear vents and the air compressor intake. Consequently, it was determined that there was no need for any equipment modification, or change in the intake filter replacement frequency.

Enclosure
Page 3 of 4

Following startup, these additional evaluations and actions will be performed:

1. To further substantiate the root cause, the laboratory analyses will be performed to determine the failure mechanisms of the EPDM degradation. A review of industry experiences and discussions with various industry sources will continue to be conducted in order to input into our analysis plan. Our preliminary analysis plan, which included these industry contacts, is completed, and a summary is provided in Attachment 2.

We have completed an initial evaluation of industry experience. The initial industry review did not change our preliminary conclusion that the root cause of the problem was primarily localized elevated temperatures near the ASCO solenoid valves. However, we have not eliminated the potential of hydrocarbons having a deleterious effect. We plan to use data obtained from other plant experiences as described in IEN 86-57, along with our own analysis, to confirm the root cause.

Our preliminary schedule is to have initial results and analyses by end of the first quarter 1988. Any further analyses required will be determined at that time. We plan to use a local research laboratory, as our primary analyses contractor. Results will be provided to the NRC.

Following completion of the analysis program, possible design improvements, will be evaluated and a determination will be made on future actions, including replacement frequencies.

2. Presently, in order to minimize the potential for introducing hydrocarbons to the air system, a preventive maintenance requirement will be established for periodic replacement of the instrument air system prefilters. The maintenance frequency will be consistent with replacement of the instrument air system after filters. Additionally, a generic precaution will be added into air system work orders regarding the use of thread lubricants and sealants. If the outcome of the Chemical Analyses indicates the presence of hydrocarbons, we will establish an appropriate hydrocarbon sample and analysis program for the instrument air system. This program will be provided to the NRC.

Dew point and particulate sampling of the instrument air system will continue in accordance with the existing plant administrative procedure. Any unacceptable results will be evaluated and system blowdowns will be conducted until satisfactory results are obtained.

Enclosure
Page 4 of 4

3. Until the first refueling outage the fast closure dual solenoids will be checked for proper operation during the monthly slow closure check. This will be performed by fully closing each MSIV individually utilizing the test solenoid, followed by taking the control switch to close. Performance of this test will verify the proper operation of the dual solenoid, since the MSIV will only remain closed if the dual solenoid deenergizes and properly repositions. If any MSIV should reopen during the test, indicating failure of a dual solenoid, the associated MSIV will be declared inoperable and the plant will be in Hot Shutdown within 12 hours and Cold Shutdown within the following 24 hours. The NRC will be notified upon discovery of such a failure.

Also during this time frame the MSIVs will be cycled individually on a quarterly basis regardless of plant operating conditions, and the fast closure time verified. Upon failure of this quarterly test due to a problem with a dual solenoid, the plant will be shutdown and the NRC will be notified as described above. The monthly test described above, will not be performed during those months when the quarterly fast closure test is performed.

Prior to exceeding a six month period an inspection will be performed on the dual solenoid during experiencing the highest temperature profile during an outage of opportunity. This inspection will verify no degradation of the solenoid valve internals. If accelerated heat degradation is observed a complete investigation will be initiated and the NRC notified.

4. A review has been completed of all known steam leaks in the plant which could have affected class 1E equipment. These components will be evaluated to determine if there has been any affect on their qualified life based on the environment under which they were subjected. The results of this evaluation will be completed and submitted to the NRC by November 30, 1987.

Enclosure
Page 4 of 4

3. Until the first refueling outage the fast closure dual solenoids will be checked for proper operation during the monthly slow closure check. This will be performed by fully closing each MSIV individually utilizing the test solenoid, followed by taking the control switch to close. Performance of this test will verify the proper operation of the dual solenoid, since the MSIV will only remain closed if the dual solenoid deenergizes and properly repositions. If any MSIV should reopen during the test, indicating failure of a dual solenoid, the associated MSIV will be declared inoperable and the plant will be placed in Hot Shutdown within 12 hours and Cold Shutdown within the following 24 hours. The NRC will be notified upon discovery of such a failure.

Also during this time frame the MSIVs will be cycled individually on a quarterly basis regardless of plant operating conditions, and the fast closure time verified. Upon failure of this quarterly test due to a problem with a dual solenoid, the plant will be shutdown and the NRC will be notified as described above. The monthly test described above, will not be performed during those months when the quarterly fast closure test is performed.

Prior to exceeding a six month period an inspection will be performed on the dual solenoid experiencing the highest temperature profile during an outage of opportunity. This inspection will verify no degradation of the solenoid valve internals. If accelerated heat degradation is observed, a complete investigation will be initiated and the NRC notified.

4. A review has been completed of all known steam leaks in the plant which could have affected class 1E equipment. These components will be evaluated to determine if there has been any affect on their qualified life based on the environment under which they were subjected. The results of this evaluation will be completed and submitted to the NRC by November 30, 1987.

NOV 12 '87 07:55

NOV 12 '87 08:03

P07

P.7

Attachment 1

**TEMPERATURE MONITORING
FOR DETECTION OF STEAM LEAKS**

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STEAM TUNNEL DELTA-T MONITORS	E31-N605 A E31-N605 B E31-N605 C E31-N605 D	80° F 80° F 82° F 82° F	88° F 88° F 90° F 90° F

Attachment 2.

ANALYSIS PLAN FOR EPDM SOLENOID COMPONENTS

I. INTRODUCTION

To determine the cause for failure of solenoid pilot valves which resulted in the slow closing of MSIV'S, two approaches will be taken. Both approaches involve analyses of the EPDM elastomer gasket material. The physical properties of the elastomeric material which was in service will be compared to new material to observe degradation, loss of material, deformation, anomalies in surface characteristics, and reduced performance. In addition, the gasket material will be subjected to chemical analyses to discover changes from original material at the molecular level. Data obtained from the analysis regimen along with data from a similar failure experienced at Brunswick in 1985 will be used to determine cause.

II. PERSONNEL CONTACTED

Interviews with the Harris Research Personnel and NRR provided information regarding analyses performed and resulting postulations. PNPP analyses will include methods to confirm or deny these failure postulates. The full Brunswick Failure Analysis Report has been sent and will be used as guidance. A meeting with Ricerca, Inc. Personnel regarding this failure analysis program resulted in the following proposed course of testing.

III. ANALYSIS PROGRAM**A. Samples**

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2. Used Elastomer from pilot solenoids which did not fail.
3. Used, degraded Elastomer Material from failed pilot solenoids.
4. Pilot Solenoid valve bodies with elastomer residue.

Attachment 2.

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1. Profilimetric analysis to compare indentations in EPDM discs (sample nos. 3, and 2)
2. Optical Microscopy to determine the presence of foreign material, or loss of material from surfaces.
3. Hardness testing to compare with original specifications.
4. Compression set to compare with unused material and note performance degradation.

C. Chemical Testing

1. Infrared survey to determine carbonile content. This will provide information about mode of attack (organic acids from the presence of hydrocarbons) and extent of oxidation.
2. Scanning Electron Microscopy/X-Ray dispersion Spectrometry to confirm or negate copper-catalyzed accelerated oxidation. (Which was a postulated Failure Mode at Brunswick)

D. Environmental Testing

Six new dual coil solenoids will be sent to a laboratory for additional environmental testing. The solenoids will be placed in three separate environmental chambers (two per chamber) at various elevated temperatures in an energized condition. The solenoids will remain energized for predetermined times in an attempt to determine the temperature and continuously energized time at which the solenoids do not perform their function.

IV. SUMMARY

The above analyses and their results will provide evidence of failure mode and will describe any further confirming analyses which may be needed. In addition, recommendations will be made in order to preclude recurrence.

NOV 12 '87 17:47

NOV 12 '87 17:54

P01

Item 25, of

FOIA 88-165 P.1

52

Cleveland Electric Illuminating Co.
Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081
Telescopy No. (216) 259-2010

Date 11/12/87

CC: Ed Grunman
M.L. M~B
H. Miller
N. Christoforos
G. Wright
R. Lansbury

TELECOPY REQUEST

To:

Jeff Wright

From:

E. Buzzelli

Telescopy No.

(312) 790-5665

Comments:

Final Draft Copy

No. of Pages

5

(including this cover sheet)

If you have any problems during transmission or for verification, please call
(216) 259-3737 extension 5275 or 5276.

D-S2

Final

Enclosure
Page 1 of 4

The following actions have been or will be completed prior to plant startup:

- # DRAFT
- As previously stated in PY-CEI/OIE-0288 L, for the dual (fast closure) solenoids, the total air pack has been replaced for the 1B21-F028D valve, and the whole dual solenoid has been replaced on the 1B21-F022D valve. Additionally, the 1B21-F022A solenoid valve has been replaced due to a frayed wire at the termination. No other solenoids showed significant degradation or required replacement. All of the other MSIV dual solenoids have been rebuilt.
 - As previously stated in PY-CEI/OIE-0288 L, the single (slow closure) solenoid was replaced on the 1B21-F028D valve since the whole air pack was replaced. Additionally, the 1B21-F028B solenoid valve has been replaced due to a frayed wire at the termination. Based on the inspection results above, no other replacements were necessary.
 - As previously stated in PY-CEI/OIE-0288 L, an evaluation has been performed of other ASCO solenoid Class 1E harsh environment applications in the plant, including those which may have been subject to the steam leak environment which affected the MSIV solenoids. The review identified two normally deenergized solenoids which were subject to the same conditions as the MSIV solenoids. Since the solenoids are in a normally deenergized state, no further action was considered necessary. Work history review of all other applications has shown no solenoid failures, indicating the ASCO solenoid degradation appears to be limited to the MSIV solenoid valves. Further reviews are described in item 4 of the post startup actions.
 - An evaluation has been performed of other equipment in the vicinity of the 1B21-F022D, 1B21-F028D, and 1B21-F028B valves, to assess any impact that the steam leaks may have had on other components. This evaluation revealed that there were six valve actuators in the steam tunnel and two in the drywell that were in close proximity to the known steam leaks. These actuators were inspected and no steam/heat degradation was observed. → expand.
 - The historical readings of the existing permanent steam tunnel and drywell temperature elements in the vicinity of the MSIVs have been reviewed, and a baseline has been determined for each element (see Attachment 1). Until the temporary temperature monitoring baseline values have been determined, the existing permanent temperature elements will be used. It has been determined that a 10% rise above these baseline values may be indicative of a localized steam leak and would require investigation. This value was conservatively selected since it is approximately one half of the temperature rise expected for the Technical Specification trip value for leak detection. It is sufficiently conservative for the interim period until the MSIV area and surface temporary temperature element readings have been fully baselined. This temperature rise would have indicated the steam leaks which impacted the inboard MSIV (24 degrees F differential temperature). A lower threshold temperature rise could result in unnecessary actions or reduction in power operation due to minor temperature fluctuations.

BHR MM

(3)

What specific actions?
Time frame for continued operation.

Was this exceeded in the recent event?

Need to
commit to
these prior
to S/U.

A procedure will be established specifying necessary actions to be taken when exceedance values. The Senior NRC Resident Inspector will be notified if any of the following corrective actions are to be taken:

criteria?

- o Reduce power, as necessary, to perform a visual inspection to determine the equipment affected.
 - o Immediately repair the leakage or shield the adjacent Class 1E components to limit the impact until a repair is possible.
 - o Note components being affected and assess the thermal impact (EQ). Evaluate and determine the necessary time frame for taking additional action, such as increasing surveillance frequency or changing replacement interval.
 - o At least 1 temporary temperature element in the area of each MSIV will be maintained in service in Operating Conditions 1, 2 and 3. If all temporary temperature elements fail for a specific MSIV, the adjacent MSIV elements will be utilized in an interim period not to exceed 7 days. At that time, reactor power will be reduced in order to repair/replace the failed element within 24 hours or the plant will be placed in Hot Shutdown within 12 hours and Cold Shutdown within the following 24 hours.
6. Additional steam tunnel temporary temperature monitoring has been installed on the preselected sample points in the MSIVs area including on the dual and the test solenoid bodies. Baseline data will be obtained on the temporary temperature elements in the steam tunnel during the next full operating period of sufficient duration to allow temperatures to stabilize. From our experience, this will be several days after the plant is at full power. Until the baseline data is established, a value of 284 F degrees will be utilized for the temporary temperature elements in the areas surrounding the MSIV. This is based on prior EQ test data. Inspections will be performed during startup to assure that the initial temperature reading are not being effected by steam leaks. Once it has been determined that the readings have stabilized, the procedure outlined in item (5) above will be revised to use the temporary temperature elements in lieu of the permanent elements. The temporary temperature monitoring program will continue until the final analysis results of the environmental testing (see Attachment 2) is fully evaluated. At this time, possible design improvements will be evaluated and a determination will be made on future actions, including replacement frequencies or correlation to permanent area temperature elements. The NRC will be notified prior to removal. (Want concurrence.)

Correlation
needed

When
will this
be done?

Nine drywell temporary temperature elements have been installed with at least one on each of the dual solenoids on the inboard MSIVs, typical of what was done with the temporary steam tunnel temperature elements. A baseline will be established after the startup following the outage as described above for the temporary steam tunnel temperature elements. These baseline values will then be incorporated into the program, along with the respective acceptance criteria. In the interim, a selected threshold of 284 degrees F will be used for temperature elements in the area surrounding the inboard MSIVs.

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7. A test has been performed which verified that air does not flow between the upper compressor suction gear vents and the air compressor intake. Consequently, it was determined that there was no need for any equipment modification, or change in the intake filter replacement frequency.

Following startup, these additional evaluations and actions will be performed:

1. To further substantiate the high temperature root cause, laboratory analyses will be performed to confirm the failure mechanism of the EPDM degradation. A review of industry experiences and discussions with various industry sources will continue to be conducted in order to input into our analysis plan. Our preliminary analysis plan, which included these industry contacts, is completed, and a summary is provided in Attachment 2.

We have completed an initial evaluation of industry experience. The initial industry review did not change our preliminary conclusion that the root cause of the problem was primarily localized elevated temperatures near the ASCO solenoid valves. The visual inspection of the EPDM did not exhibit the normal signs of hydrocarbon degradation (stickiness, sponginess, or swelling), however, we have not eliminated the potential of hydrocarbons having a deleterious effect. We plan to use data obtained from other plant experiences as described in IEN 86-57, along with our own analysis, to confirm the root cause.

Our preliminary schedule is to have initial infrared analysis for hydrocarbon degradation by the end of January 1988 with the remaining results and analyses by end of the first quarter 1988. Any further analyses required will be determined at that time. We plan to use a local research laboratory, as our primary analyses contractor. Results will be provided to the NRC. With respect to environmental testing, a test plan will be provided to the NRC by November 23, 1987. Interim test results will be provided to the NRC as they become available during the 92 day test duration.

Following completion of the analysis program, possible design improvements, will be evaluated and a determination will be made on future actions, including replacement frequencies.

2. Presently, in order to minimize the potential for introducing hydrocarbons to the air system, a preventive maintenance requirement will be established for periodic replacement of the instrument air system prefilters. The maintenance frequency will be consistent with replacement of the instrument air system after filters. Additionally, a generic precaution will be added into air system work orders regarding the use of thread lubricants and sealants. If the outcome of the chemical analyses indicates the presence of hydrocarbons, we will immediately implement an appropriate hydrocarbon sample and analysis program for the instrument air system. This will include weekly sampling of the supply lines to the MSIV's at the containment penetration connection as well as other main J-headers throughout the air supply system. The Senior NRC Resident Inspector will be notified upon implementation of this action.

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Dew point and air temperature of instrument air system will continue in accordance with existing plant administrative procedure. All available results will be evaluated and system blowdowns will be conducted until satisfactory results are obtained.

3. Until the first refueling outage, the fast closure dual solenoids will be checked for proper operation during the monthly slow closure check. The existing monthly surveillance instruction will be revised prior to startup to reflect the following test procedure. The test will be performed by fully closing each MSIV individually utilizing the test solenoid, followed by taking the control switch to close. Performance of this test will verify the proper operation of the dual solenoid, since the MSIV will only remain closed if the dual solenoid deenergizes and properly repositions. If any MSIV should reopen during the test, indicating failure of a dual solenoid, the associated MSIV will be declared inoperable and the plant will be placed in Hot Shutdown within 12 hours and Cold Shutdown within the following 24 hours. The NRC will be notified upon discovery of such a failure.

Also during this time frame the MSIVs will be cycled individually on a quarterly basis regardless of plant operating conditions, and the fast closure time verified. As a result of a failure of this quarterly test due to temperature related problem with a dual solenoid, or other air pack component, the plant will be shutdown and the NRC will be notified as described above. The monthly test described above, will not be performed during those months when the quarterly fast closure test is performed.

Prior to exceeding a six month period an inspection will be performed during an outage of opportunity, on the dual solenoid experiencing the highest temperature profile. This inspection will verify no degradation of the solenoid valve internals. If accelerated heat degradation is observed, a complete investigation will be initiated and the NRC notified.

4. A review has been completed of all known steam leaks in the plant which could have affected Class 1E equipment. For all of the potentially affected equipment identified, there is no configuration where elastomer compression set or degradation could result in the equipment not being able to perform its intended function. However, these components will be evaluated to determine if there has been any affect on their long term qualified life based on the environment under which they were subjected. The results of this evaluation will be completed and submitted to the NRC by November 30, 1987. A further review will be conducted for potentially high temperature area environments of all Class 1E solenoids and other equipment with EPDM subcomponents where elastomer compression set or degradation could result in equipment not being able to perform its intended function. This review will be completed by the end of the first quarter 1988.