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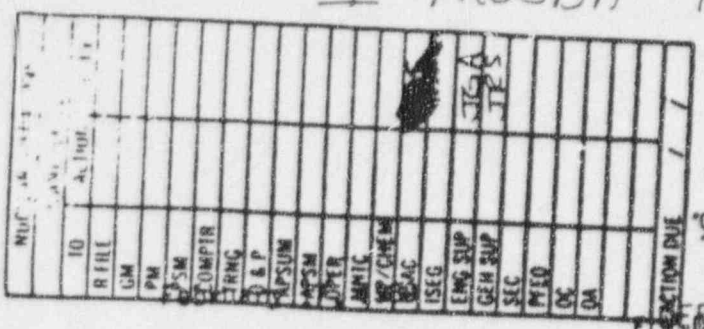

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Atlanta, GA 30323

VOGTLE ELECTRIC GENERATING PLANT - UNITS 1 and 2
OPERATING LICENSES NPF-68 AND NPF-79
GENERIC LETTER NO., 88-14 INSTRUMENT AIR
SUPPLY SYSTEM PROBLEMS AFFECTING SAFETY RELATED EQUIPMENT

Gentlemen:

Generic Letter 88-14 requested that each licensee/applicant review NUREG - 1275, Volume 2 and perform a design and operational verification of the instrument air system. A response to this generic letter was to be submitted to the NRC within 180 days.

Attached is a response to the identified concerns of NUREG - 1275, Volume 2. The reviews and/or investigations indicate that the design, installation, testing, operation and maintenance of the instrument air systems at Plant Vogtle are adequate to ensure the proper and reliable operation of pneumatically-operated, safety-related equipment.

If you have any questions, please advise.

Mr. W. G. Hairston, III states that he is a Senior Vice President of Georgia Power Company and is authorized to execute this oath on behalf of Georgia Power Company and that, to the best of his knowledge and belief, the facts set forth in this letter and enclosures are true.

NUCLEAR REGULATORY COMMISSION
Docket No. 50-424/425-OLA-3 EXHIBIT NO. Int II 13
In the matter of Georgia Power Co. et al., Vogtle Units 1 & 2
☐ Staff ☐ Applicant ☒ Intervenor ☐ Other
☒ Identified ☐ Received ☐ Rejected Reporter CR
Date 05-17-95 Witness Stipulated

GEORGIA POWER COMPANY

By: W. G. Hairston, III

Sworn to and subscribed before me this 17th day of February, 1989.

Notary Public

MY COMMISSION EXPIRES DEC. 15, 1992

WM/ljb

Georgia Power

Enclosure:

cc: Georgia Power Company
Mr. P. D. Rice
Mr. C. K. McCoy
Mr. G. Bockhold, Jr.
GONORMS

U.S. Nuclear Regulatory Commission
Mr. M. L. Ernst, Acting Regional Administrator
Mr. J. B. Hopkins, Licensing Project Manager, NRR (2 copies)
Mr. J. F. Rogge, Senior Resident Inspector-Operations, Vogtle

VOGTLE ELECTRIC GENERATING PLANT
UNITS 1 AND 2
RESPONSE TO GENERIC LETTER 88-14

G.L. Item 1: Verification by test that actual instrument air quality is consistent with the manufacturers' recommendations for individual components served.

A. Action Plan:

1. Verify the Instrument Air Quality from performance of preoperational test procedures.

2. Periodic verification during performance of preventive maintenance (PM) tasks associated with the Instrument Air System.

3. Select sample points and conduct additional in-plant testing to measure actual instrument air quality.

4. Verify diesel generator air start system air quality from preoperational test procedures.

B. Response:

Testing of instrument air system air quality has been accomplished as follows at VEGP:

1. Testing activities during the performance of preoperational test procedures consisted of verifying the air quality (moisture and oil content) immediately downstream of the afterfilter for each set of dryers and at the end of selected feeder lines. This testing was accomplished in accordance with the VEGP stated position of conformance to Regulatory Guide 1.68.3 which is provided in FSAR Section 1.9.68.4.2. This statement of conformance committed VEGP to meeting the quality requirements of ANSI/ISA S7.3-1975 for verifying moisture and oil content and noted that verification of particulate size at the end of each feeder line is not considered necessary at VEGP since "the VEGP instrument air system design is such that instrument air is filtered at the dehumidifier and at each instrument (by a local filter/regulator) in accordance with individual instrument manufacturer's requirements." To meet the requirements of ANSI/ISA S7.3-1975, the acceptance criteria for maximum allowable oil content was established as 1 ppm (w/w) and the maximum allowable moisture content was established at -15°F dewpoint at line pressure (see FSAR Section 9.3.1.2.2). The results of the preoperational testing of instrument air quality are tabulated in Tables 1 and 2. These results show that preoperational testing verified that the instrument air systems for both units meet the moisture and oil content requirements of ANSI/ISA S7.3-1975.

2. For Unit 1, periodic verification during performance of PM tasks consisted primarily of verifying the air quality (moisture and oil content) immediately downstream of the afterfilter for each set of dryers. Verification of moisture content (dewpoint) at the end of a representative feeder line has also been performed on eight separate occassions. The PM acceptance criteria for maximum allowable oil content is established as 1 ppm (w/w) and maximum allowable moisture content is established as -60°F dewpoint at line pressure. The results of the PM verifications of instrument air system air quality are tabulated in Table 3. These results show that oil content has consistently been verified to be 0 ppm (a few measurements were recorded as less than 1 ppm); however, dewpoint, on occasion, has been found to exceed the PM acceptance criteria of -60°F. In these cases, corrective maintenance was typically required to restore the dewpoint to less than -60°F. While the dewpoint has been found to exceed the PM acceptance criteria in several instances (typically due to a malfunctioning solenoid valve associated with the dryers), the dewpoint has still consistently been verified to be less than the ANSI/ISA S7.3-1975 requirement of -15°F at line pressure. This demonstrates that the VEGP instrument air system design is such that high quality instrument air can typically be supplied even with a malfunctioning system component.

   Verification of particulate size has not been performed as a part of the PM verifications of instrument air quality; such verification has not been considered necessary for the same reason as stated previously for not performing such verification during the preoperational tests for the instrument air system. However, as a part of the inspections performed per PM checklist SCL00285, "Valve/Damper Stroke", the local air filters/regulators for approximately 39 safety related air-operated valves were inspected during the Unit 1 first refueling outage (Fall, 1988). These inspections verified that no cleaning or replacement of the air filters was required. Vogtle Electric Generating Plant considers that periodic inspection and cleaning or replacement as necessary of these local air filters for each safety related air-operated component is an appropriate method of ensuring that instrument air quality is maintained consistent with the manufacturers' recommendations for size of particulates contained in the air stream. The VEGP program for performing such periodic inspections is discussed later in this response.

3. Additional inplant testing of the operating Instrument Air System consisted of verifying the oil content and dewpoint for five (5) instrument air feeder lines. The results of this testing are tabulated in Table 4. These results show

that the oil content and dewpoint was again verified to meet the requirement of ANSI/ISA S7.3-1975. This testing, combined with the periodic PM measurements of air quality, is considered as sufficient for reverifying the air quality testing results of preoperational test 1-3KB-01 for VEGP Unit 1. The air quality testing results of preoperational test 2-3KB-01 for VEGP Unit 2 are still considered current and therfore reverification of those results is not considered necessary at this time.

Vogtle Electric Generating Plant concludes that the above testing has been sufficient to verify that actual instrument air system air quality is consistent with the manufacturers' recommendations for individual components served. This conclusion is made based on a review that was conducted of the manufacturers' literature associated with individual air operated components. This review indicated that while certain recommendations, such as "filtered," "dry," or "oil free," have been made for the supply air, quantitative air quality requirements have not been specified. The above described testing verified moisture and oil content to be consistent with the quantitative requirements of ANSI/ISA S7.3 - 1975 and the inspection of local air filters (Unit 1) verified particulate size to be acceptable for instrument air as supplied to the individual components. Therefore, the instrument air system air quality is considered as having been verified as consistent with the manufacturers' recommendations.

Testing of air quality for the diesel generator air start system has also been accomplished for VEGP Units 1 and 2. The VEGP diesel generator air start system was supplied by Transamerica Delaval. (Note: VEGP diesel generators are also Transamerica Delaval) and consists of two separate compressed air systems or trains per diesel, with each individual train consisting of one suction filter, compressor, aftercooler, air dryer, and air receiver. Downstream of each air receiver is a y-strainer/filter for removing particulates and oil. Further downstream, filters exist for the starting air distributor and for the engine control panel. The maximum dewpoint acceptance criteria for the VEGP diesel air start system has been established as 50°F at system pressure (see FSAR Table 9.5.6-1). This dewpoint criteria was established based on the design capability of the air start system, the fact that the air is compressed to between 225 and 250 psig, which raises the dewpoint, and the minimum diesel generator room design temperature of 50°F. Preoperational test procedures 1-3KJ-01 "Diesel Generator Train A Starting Air System" (Unit 1), 1-3KJ-02 "Diesel Generator Train B Starting Air System" (Unit 1), 2-3KJ-01 Diesel Generator Train A Starting Air System" (Unit 2), and 2-3KJ-02 "Diesel Generator Train B Starting Air System" (Unit 2) included a verification of dewpoint for starting air contained in each receiver. The results of this preoperational verification of dewpoint are tabulated in Table 5. These results

show that the dewpoint acceptance criteria was met for all but the No. 2 air start train for the Unit 1 "B" diesel. After replacement of a bad condenser fan motor and recharging the dryer with refrigerant, this air start train was also verified to meet the dewpoint acceptance criteria.

Testing of the diesel generator air start system for particulate and oil content is not considered necessary due to the system design which includes the previously mentioned y-strainer/filter and downstream filters. Transamerica Delaval (now IMO Delaval) has specified the exact filters to be used in these applications. These filters are periodically inspected and cleaned or replaced in accordance with the generic maintenance recommendations developed by the Transamerica Delaval Owner's Group (see Appendix II of the TDI Diesel Generator Design Review and Quality Revalidation Report - VEGP: Note: This report was previously submitted to the NRC). The VEGP program for performing these periodic inspections is discussed in more detail later in this response.

A review was conducted of Transamerica Delaval recommendations and of the recommendations developed by the Transamerica Delaval Owner's Group. This review indicated that quantitative air quality requirements have not been specified for the diesel generator air start system. Therefore, VEGP considers that the air quality testing performed during preoperational tests 1-3KJ-01, 1-3KJ-02, 2-3KJ-01, and 2-3KJ-02 was sufficient to verify the air quality of the diesel air start systems for Units 1 and 2 consistent with the manufacturers' recommendations.

G.L. Item 2: Verification that maintenance practices, emergency procedures and training are adequate to ensure that safety-related equipment will function as intended on loss of instrument air.

A. Action Plan:

1. Evaluate current maintenance programs and practices to determine overall adequacy for components within the scope of the generic letter.

2. Review plant procedures designed to mitigate the effects of a loss of instrument air.

3. Review the content and scope of training programs for adequacy in the area of required response to a loss of instrument air.

B. Response:

1. Maintenance Practices

Maintenance on safety-related air-operated components is controlled by Maintenance Work Orders (MWO's) issued per the instructions of Procedure 00350-C "Maintenance Program," and by various task specific procedures which are identified as appropriate when preparing the detailed work isntructions for the MWO. Examples of a few of the different procedures that might be identified on the MWO as required for maintenance on air-operated components are:

25036-C "General Valve Packing"
26060-C "ASCO Solenoid Valve Maintenance"
26081-C "Copes Vulcan D-100-60, 100, 150, 400 Valve Maintenance"
26844-C "AOV Diaphram Replacement"
26850-C "Fisher Type 67AF and 67AFR Regulator Maintenance"

On completion of the maintenance task, the Work Planning Group assigns a functional test to the MWO using Procedure 29401-C "Maintenance Work Order Functional Tests" as a guideline. Included in Attachment A of Procedure 29401-C, Rev. 3, are specific guidelines for functional tests to be performed on air-operated valves (AOV's). An AOV failure mode check (fail open, fail close) is specified as one of the checks required following replacement of the actuator, the valve portion, or the entire AOV. Procedure 29007-C "Air Operated Valve Post Maintenance Verification," Rev. 0, includes specific guidance for checking that a safety-related AOV will properly assume its "failsafe" position both on slowly bleeding-off supplied air pressure and on suddenly venting supplied air pressure.

The above described maintenance practices are considered adequate for ensuring that safety-related air-operated components will function as intended on loss of instrument air.

2. Emergency Procedures

Procedures are provided to assist operators in the identification, control, and recovery from a partial or total loss of instrument air event. Alarms on the main control board include "Service Air Header Lo Press" which alarms at 95 psig in the service air header and "Inst Air Equip Lo Press ISO" which alarms at 70 psig in the Turbine Building air header. (Note: The service air header isolates at 80 psig and the Turbine Building air header isolates at

70 psig). Annunciator Response Procedure (ARP) 17001-1, Rev. 10, describes actions to take on receipt of these alarms. For the service air header low pressure alarm, ARP 17001-1 directs the operator to go to abnormal operating procedure (AOP) 18028-C "Loss of Instrument Air," if pressure continues to fall and cannot be restored. For the instrument air equipment low pressure isolation alarm, ARP 17001-1 directs the operator to go immediately to AOP 18028-C. AOP 18028-C, Rev. 4, lists other symptoms of a loss of instrument air to ensure identification of such an event. AOP 18028-C identifies critical components operated by instrument air and describes failure modes of which the operator needs to be aware. The note preceding Step A2 identifies that a loss of service air will result in failure of the fuel transfer canal and/or cask loading pit gate seal assemblies. The note preceding Step A4 identifies that a loss of Turbine Building instrument air will close all extraction steam non-return valves and will fail all feedwater heater high level dump valves fully open. While the "failsafe" position assumed by safety-related air-operated components on a loss of instrument air is essential to ensure mitigation of accidents and events described in the safety analysis, AOP 18028-C recognizes that the "failsafe" positions for some components may not be favorable or appropriate for actual existing plant conditions and therefore directs the operator to either take manual control or bypass certain specific components when appropriate to maintain control of the plant. The note preceding Step B6 identifies that a loss of instrument air will cause the positive displacement charging pump to fail to maximum speed and the note preceding Step B7 identifies that the reactor coolant pump seal injection flow control valve will fail open. Under non-accident conditions, these "failsafe" positions would result in an increasing pressurizer level. AOP 18028-C therefore directs the operator to close the charging header isolation valves if pressurizer level is rising and to bypass the seal injection flow control valve and to throttle the bypass valve to maintain RCP seal injection flow within the proper range. Other examples exist in AOP 18028-C where the operator is directed to take manual control or bypass certain "failsafe" components dependent on actual plant conditions. On recovery from a loss of instrument air, if in Mode 1 or 2, AOP 18028-C directs the operator to initiate system operating procedures 13710-C "Service Air System" and 13711-C "Instrument Air System" to ensure systems are restored to normal; for Modes 3, 4, 5, and 6, AOP 18028-C contains the appropriate steps to restore potentially impacted systems to normal.

Emergency Operating Procedures (EOP's) also contain guidance when appropriate for operator actions to be taken when

instrument air is not available. EOP 19002-C "Natural Circulation Cooldown," Rev. 6, includes a note prior to Step 4 indicating that makeup to the volume control tank is not possible without instrument air available. Attachment A of EOP 19030-C, "Steam Generator Tube Rupture," Rev. 7, provides instructions for establishing charging flow without instrument air available and applies to Step 22 of that procedure.

The types of procedural controls as discussed above are considered adequate for ensuring that safety-related air-operated components will function as intended on loss of instrument air.

3. Training

Current training for licensed operators includes lesson plans, instructional units, and simulator exercises as follows:

LO-LP-02110	"Service and Instrument Air Systems"
LO-IU-02110-001	"Start Air Compressors"
LO-IU-02110-002	"Respond to Instrument Air System Alarms"
LO-IU-02110-003	"Respond to Service Air System Alarms"
LO-IU-02110-004	"Respond to a Loss of Instrument Air to Containment"
LO-SE-60019	"RHR Operations With Malfunctions"
LO-SE-60023	"Coolant & Feedwater & Air Systems Malfunctions"
LO-LP-60321	"Loss of Instrument Air"
LO-IU-60321-001	"Respond to Loss of Instrument Air"

Lesson Plan LO-LP-60321 is based on abnormal operating procedure (AOP) 18028-C and includes training on how to detect a loss of instrument air, response of critical components to a loss of instrument air, how to compensate for certain critical components assuming failure positions which are not necessarily favorable for actual plant conditions, and how to recover from a loss of instrument air. Simulator exercise LO-SE-60019 introduces a loss of instrument air during operations associated with plant shutdown (Mode 5) and simulator exercise LO-SE-60023 introduces a loss of instrument air during power operation (Mode 1). The operator is expected to utilize the guidance of AOP 18028-C for responding to both simulator exercise scenarios.

Current training for non-licensed operators includes lesson plans and instructional units as follows:

NL-LP-02201	"Service and Instrument Air Systems - Outside Area Operator"

NL-LP-02301	"Service and Instrument Air Systems - Turbine Building Operator"
NL-IU-02301-00-001	"Perform Service/Instrument Air Start-Up Inspections"
NL-IU-02301-01-002	"Operate Air Dryers"
NL-IU-02301-01-003	"Blowdown Moisture Separator Drain Traps and Air Receivers"
NL-IU-02301-01-004	"Cross-Connect Unit Compressed Air Systems"
NL-IU-02301-01-005	"Restore Instrument Air to Turbine Building Following Isolation"
NL-IU-02301-00-006	"Restore Service Air Following Isolation"
NL-IU-02301-01-007	"Check Proper Operation of Rotary Air Compressor"
NL-IU-02301-00-008	"Check Proper Operation of Reciprocating Air Compressors"
NL-IU-02301-01-009	"Check Operation of Master Energy Conservator"
NL-LP-02401	"Service and Instrument Air Systems - Auxiliary Building Operator"
NL-LP-53112	"Introduction to Valve Actuators"
NL-IU-53112-00-001	"Verify Power-Operated Valve Operation"
NL-LP-53170	"Introduction to Basic Air Compressors"

NL-LP-02201, NL-LP-02301, and NL-LP-02401 provide training on the purposes of the instrument air system, flowpath, identification of major air-users, expected response of major components to a loss of instrument air, and pertinent industry events. The discussion of industry events is based on events described by NRC Information Notice 87-28, NUREG-1275, Vol. 2, and SOER 88-01 and is intended to sensitize the plant equipment operator to the importance of the instrument air system and to problems which could occur if instrument air quality is allowed to degrade.

Current training for maintenance personnel includes Lesson Plan ME-LP-10003 "Air Operator Maintenance," which is provided to mechanical maintenance personnel and GE-LP-12516, "Service and Instrument Air," which is provided to I & C personnel.

ME-LP-10003 provides training on the basic purpose and principle of operation of air operators, various types of air operators, general maintenance practices for troubleshooting common mechanical and operational causes of air operator failures, and includes a review of NRC Information Notice 87-28, NUREG-1275, Vol. 2, and SOER 88-01 to emphasize the need to prevent degradation of the instrument air system by allowing foreign material such as oil, water, dirt, or debris to enter the system while performing maintenance. GE-LP-12516 provides training on the purpose of

the instrument air system, major components, functions and flowpath, emphasizes that significant problems have occurred at various nuclear plants due to the contamination of instrument air and instructs the student to observe for contamination while performing maintenance on the instrument air system or components serviced by instrument air.

The above described training for licensed operators, non-licensed operators, and maintenance personnel has been reviewed against the recommendations of NUREG-1275, Vol. 2, and revised where appropriate to incorporate those recommendations. This training is considered adequate for ensuring that safety-related equipment will function as intended on loss of instrument air.

G.L. Item 3: Verification that the design of the entire instrument air system including air or other pneumatic accumulators is in accordance with its intended function, including verification by test that air-operated, safety-related components will perform as expected in accordance with all design-bases events, including a loss of the normal instrument air system. This design verification should include an analysis of current air operated component failure positions to verify that they are correct for assuring required safety functions.

A. Action Plan:

1. Identify, by reviewing plant design documentation, the system and component level safety design bases.

2. Create a list of all safety-related components within the scope of the generic letter.

3. Review the testing that was performed for each safety-related component within the scope of the generic letter.

4. Schedule any additional safety-related component testing required.

B. Response:

Safety-related active instrument air users for VEGP Units 1 and 2 are tabulated in Tables 6 and 7. The current failure position for each of these components, as indicated on Piping and Instrumentation Diagrams (P & ID's), was checked against the FSAR-FMEA Tables and/or design calculations as appropriate. The current failure positions for these components were verified to be correct for assuring the required safety functions.

With exceptions as noted below, loss of instrument air pressure tests were performed for the components listed in Tables 6 and 7 during construction acceptance testing for each unit. The air-operated valves listed in Table 6 were individually tested in accordance with construction acceptance test CAT-M-04 "Air Operated Valves." The air-operated dampers listed in Table 7 were individually tested in accordance with CAT-M-07 "HVAC Pneumatic Operated Dampers." This testing was performed to meet the VEGP stated position of conformance to Regulatory Guide 1.68.3 which is provided in FSAR Section 1.9.68.4.2.

Loss of instrument air pressure testing performed per CAT-M-04 consisted of placing the valve opposite to its fail-safe position and then verifying the valve properly moved to its fail-safe position on slowly bleeding off the air from the actuator and, as applicable, on suddenly venting the positioner or controller air supply port to atmosphere. Loss of instrument air pressure testing performed per CAT-M-07 consisted of placing the damper opposite to its fail-safe position and then verifying the damper properly moved to its fail-safe position on slowly reducing the air pressure to the actuator.

The main feedwater isolation valves (i.e., valves 1HV5227, 1HV5228, 1HV5229, 1HV5230, 2HV5227, 2HV5228, 2HV5229, and 2HV5230) were not CAT-M-04 tested. These valves are hydraulic actuated valves but require a source of air to perform their safety function in that air-operated pilot valves have to reposition on a feedwater isolation signal to allow the flow of hydraulic fluid to the appropriate side of the hydraulic piston. The source of air is ensured by air reservoirs and instrument air check valves which seat when supplied instrument air pressure is decreased. The VEGP MFIV's are the same valves as those described in NRC Information Notice 85-35 and which are used as main steam isolation valves at Byron Unit 1. Following issuance of Notice 85-35, the VEGP MFIV's were modified by replacing the air check valves with those of a slightly different design. The ability of these air check valves to seat on a gradual loss of supplied instrument air pressure and to therefore not impact the ability of the MFIV's to perform their safety function is periodically verified in accordance with testing performed per Procedure 14850-1 (14850-2) "Cold Shutdown Valve Inservice Test." This testing is considered adequate verification for the MFIV's as required by the Generic Letter.

Dampers AHV12479, AHV12480, AHV12481, AHV12482, 1HV12604, 1HV12605, 1HV12606, 1HV12607, 2HV12604, 2HV12605, 2HV12606, and 2HV12607 are air-operated dampers, but are also equipped with an inflatable bubble tight seal. A source of air is ensured by a reserve air storage tank and an instrument air check valve for each damper. A CAT-M-07 test was performed for each of these dampers which verified that each properly assumed a closure position on loss of instrument air.

CAT-M-07 does not include confirmation of proper operation of inflatable bubble tight seals. Therefore MWO's will be issued to perform testing that confirms the proper operation of these seals on loss of instrument air. These MWO's will also include the testing of the inflatable bubble tight seals for non-pneumatic dampers 1HV12562 and 1HV12563. This testing will be completed by 1 September 1989.

It could not be verified that Valve 1CV9446 or Dampers AHV2534, 2HV12146, 2HV12147, 2HV12148, and 2HV12149 had been tested according to CAT-M-04 or CAT-M-07. However, these items have been tested to confirm that they move to their proper position when required (i.e., on receipt of a Control Room Isolation, Safety Injection, or Fuel Handlig Building Isolation signal, as applicable). MWO's will be issued to perform additional testing which is expected to be completed by 1 September 1989.

The adequacy of the diesel generator air start system air receivers to perform their intended function was verified during preoperational tests 1-3KJ-05 "Diesel Generator Train A Synchronization, Load Rejection, 5 Air Starts, and 35 Consecutive Starts" (Unit 1, Train A), 1-3KJ-06 (Unit 1, Train B), 2-3KJ-05 (Unit 2, Train A), and 2-3KJ-06 (Unit 2, Train B). The five air starts test consisted of verifying that each air receiver contained sufficient air to perform five air starts of the diesel with the associated air compressor deenergized and with the redundant air receiver isolated from the diesel. This testing is considered adequate verification as required by the Generic Letter.

Use of safety-related pneumatic accumulators at VEGP is limited to air accumulators for the MFIV's, air accumulators for safety-related bubble tight dampers equipped with inflatable seals, and the diesel generator air start system air receivers. The adequacy of these accumulators to perform their intended function on a loss of normal supplied air pressure was verified as discussed above.

G.L. Item 4: Provide a discussion of the VEGP program for maintaining proper instrument air quality.

A. Action Plan:

Review the instrument air quality program and make any improvements deemed necessary.

B. Response:

Procedure 11880-1 (11880-2) "Turbine Building Rounds Sheets" requires the Turbine Building operator to check prefilter and

afterfilter differential pressure for each set of air dryers, to check the moisture (dessicant-type) indicator located on each dryer can, to blowdown the prefilter and afterfilter drains for each set of air dryers, to blowdown the instrument air receivers, to blowdown the moisture separator drains, and to perform various checks and blowdowns for the rotary and receprocating air compressors. These inspections and blowdowns are performed shiftly. Maintenance Work Orders and/or Deficiency Cards are initiated as appropriate to resolve potential problems identified during these inspections.

Preventive Maintenance (PM) standardized checklist SCL00402 has been originated to provide for periodically verifying the dew - point and oil content immediately downstream of the afterfilter for each set of instrument air dryers on both Units. Previously, PM verifications of instrument air dewpoint and oil content were performed for Unit 1 per PM repetitive task 12420005-001W-N. Table 3 reflects results obtained by performance of this previous PM task.

Standardized PM checklist SCL00332 has been originated to provide for a periodic inspection of the air filters for the safety-related air-operated valves listed in Table 6. The air-set/regulator and associated air filter per this checklist will be inspected for contaiminants such as oil, water, dirt, or debris and the filter will be replaced if it exhibits signs of clogging or is physically damaged. If a filter is found which needs replacing, then Maintenance Engineering will determine what other instrument air users in the vincinity of the subject component should be similary inspected. The frequency for the inspections described by SCL00332 has been established to correspond to the intervals of other required inspections for the subject valves and will occur at either 24, 36, or 48 month intervals dependent on the particular valve.

VEGP considers the above described inspections and blowdowns to be a sufficient method to ensure proper air quality is maintained for the instrument air system.

Procedure 11882-1 (11882-2) "Outside Areas Rounds Sheets" requires a shiftly "general" inspection of the diesel generator air start system air compressors. Maintenance Work Orders and/or Deficiency Cards are initiated as appropriate to resolve potential problems identified during these inspections.

PM standardized checklist SCL00166 has been originated to provide for periodically performing a dewpoint measurement of the starting air contained in the diesel air start system air receivers for both units.

Inspection of the y-strainer/filter, starting air distributor filter, engine control cabinet filter, and the barring device air filter for the diesel generator air start system is performed on an "End-of-Cycle" basis which corresponds to the generic maintenance recommendations developed by the Transamerica Delaval Owner's Group. These inspections are performed per the instructions of Procedure 28714-C "EOC Diesel Generator Checkout" and were completed for the Unit 1 diesels during the recent Unit 1 refueling outage (reference MWO's 18806319, 18806320, 18806321, and 18806322).

VEGP considers the above described inspections to be a sufficient method to ensure proper air quality is maintained for the diesel generator air start system.

TABLE 1

PREOPERATIONAL TEST 1-3KB-01 (UNIT 1)

INSTRUMENT AIR QUALITY

DATE	LOCATION	DEWPOINT	OIL CONTENT
10/30/86	Afterfilter "A" Discharge	-60°F	0 ppm
10/30/86	Afterfilter "B" Discharge	-72°F	0 ppm
10/30/86	Turbine Bldg. El. 195' & 220'	-50°F	0 ppm
10/30/86	Turbine Bldg. El. 245' & 270'	-60°F	0 ppm
10/30/86	Auxiliary Bldg. Line	-48°F	0 ppm
11/17/86	Auxiliary Boiler & Cooling Tower	-36°F	0 ppm

TABLE 2

PREOPERATIONAL TEST 2-3KB-01 (UNIT 2)

INSTRUMENT AIR QUALITY

DATE	LOCATION	DEWPOINT	OIL CONTENT
06/04/88	After filter "A" Discharge	-80°F	0 ppm
06/04/88	Afterfilter "B" Discharge	-80°F	0 ppm
05/15/88	Turbine Bldg. El. 195' & 220'	-80°F	0 ppm
05/15/88	Turbine Bldg. El. 245' & 270'	-80°F	0 ppm
05/15/88	Auxiliary Bldg. Line	-80°F	0 ppm

TABLE 3

PM CHECKS (UNIT 1)

INSTRUMENT AIR QUALITY

DATE (M&O#)	LOCATION	DEWPOINT	OIL CONTENT*
11/18/86 (18619762)	Afterfilter "A" Discharge	-80°F	
03/15/87 (18703110)	Afterfilter "B" Discharge	-35°F	
06/29/87 (18705688)	Afterfilter "B" Discharge	-40°F	
11/05/87 (18708997)	Afterfilter "B" Discharge	+6.8°F	
11/19/87 (18708995)	Afterfilter "A" Discharge	-80°F	
12/03/87 (18711877)	Afterfilter "A" Discharge	-80°F	
07/19/88 (18804297)	Afterfilter "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-80°F	0 ppm
07/26/88 (18804461)	Afterfilter "A" Discharge	-80°F	<1 ppm
	Afterfilter "B" Discharge	-80°F	<1 ppm
08/02/88 (18804615)	Afterfilter "A" Discharge	-63°F	<1 ppm
	Afterfilter "B" Discharge	-74°F	<1 ppm
08/09/88 (18804802)	Afterfilter "A" Discharge	-68°F	0 ppm
	Afterfilter "B" Discharge	-72°F	0 ppm
08/16/88 (18805141)	Afterfilter "A" Discharge	-71°F	0 ppm
	Afterfilter "B" Discharge	-73°F	0 ppm
	I & C Shop Line	-80°F	
08/23/88 (18805400)	Afterfilter "A" Discharge	-70°F	0 ppm
	Afterfilter "B" Discharge	-78°F	0 ppm
	I & C Shop Line	-80°F	
08/30/88 (18805507)	Afterfilter "A" Discharge	-80°	0 ppm
	Afterfilter "B" Discharge	-78°	0 ppm
	I & C Shop Line	-80°F	
09/06/88 (18805661)	Afterfilter "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-80°F	0 ppm
	Control Bldg. Level B	-80°F	
09/13/88 (18805833)	Afterfilter "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-80°F	0 ppm
09/21/88 (18806086)	Afterfilter "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-80°F	0 ppm
	I & C Shop Line		

TABLE 3 (Continued)

PM CHECKS (UNIT 1)

INSTRUMENT AIR QUALITY

DATE (M&O#)	LOCATION	DEWPOINT	OIL CONTENT
09/27/88 (18806202)	Afterfilter "A" Discharge	-67°F	0 ppm
	Afterfilter "B" Discharge	-70°F	0 ppm
	Control Bldg. Level B	-77°F	
10/04/88 (18806273)	Afterfilter "A" Discharge	-71°F	0 ppm
	Afterfilter "B" Discharge	-71°F	0 ppm
10/05/88 (18806475)	Afterfilter "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-80°F	0 ppm
	Control Bldg. Level B	-80°F	
10/22/88 (18806727)	Afterfilter "A" Discharge	-68°F	0 ppm
	Afterfilter "B" Discharge	-68°F	0 ppm
10/29/88 (18806998)	Afterfilter "A" Discharge	-68°F	0 ppm
	Afterfilter "B" Discharge	-68°F	0 ppm
11/15/88 (18807138)	Afterfilter "A" Discharge	-20°F	0 ppm
	Afterfilter "B" Discharge	-20°F	0 ppm
11/21/88 (18807315)	Afterfilter "A" Discharge	-20°F	0 ppm
	Afterfilter "B" Discharge	-20°F	0 ppm
11/29/88 (18808384)	Afterfitler "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-56°F	0 ppm
12/06/88 (18808385)	Afterfilter "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-59°F	0 ppm
12/16/88 (18808653)	Afterfilter "A" Discharge	-76°F	0 ppm
	Afterfilter "B" Discharge	-61°F	0 ppm
12/20/88 (18808654)	Afterfilter "A" Discharge	-69°F	0 ppm
	Afterfilter "B" Discharge	-60°F	0 ppm
12/27/88 (18808655)	Afterfilter "A" Discharge	-61°F	0 ppm
	Afterfilter "B" Discharge	-43°F	0 ppm
01/03/89 (18808854)	Afterfilter "A" Discharge	-46°F	0 ppm
	Afterfilter "B" Discharge	-22°F	0 ppm
01/10/89 (18808966)	Afterfilter "A" Discharge	-80°F	0 ppm
	Afterfilter "B" Discharge	-80°F	0 ppm

* PM measurement of oil content was implemented in 1988

TABLE 4

SPECIAL TESTING (Unit 1)

INSTRUMENT AIR QUALITY

(M&O #18900303)

DATE	LOCATION	DEWPOINT	OIL CONTENT
02/03/89	Turbine Bldg. Level 1	-80°F	0 ppm
02/03/89	Control Bldg. Level B	-80°F	0 ppm
02/03/89	Auxiliary Bldg. Level D	-80°F	0 ppm
02/03/89	Diesel Generator Bldg. 1A	-80°F	0 ppm
02/03/89	Diesel Generator Bldg. 1B	-80°F	0 ppm

TABLE 5

DIESEL GENERATOR AIR START SYSTEM

AIR QUALITY PREOP TESTING

DATE	PREOP	AIR START TRAIN	ROOM TEMP	DEWPOINT
11/03/86	1-3KJ-01	1-2403-G4-001-K01	77°F	48.3°F
11/03/86	1-3KJ-01	1-2403-G4-001-K02	77°F	48.2°F
11/04/86	1-3KJ-02	1-2403-G4-002-K01	79°F	49.1°F
11/04/86	1-3KJ-02	1-2403-G4-002-K02	79°F	61.9°F
10/06/87	2-3KJ-01	2-2403-G4-001-K01	77°F	41.4°F
10/06/87	2-3KJ-01	2-2403-G4-001-K02	77°F	42.4°F
10/13/87	2-3KJ-02	2-2403-G4-002-K01	63°F	36.3°F
12/11/87	2-3KJ-02	2-2403-G4-002-K02	71°F	40°F

TABLE 6
SAFETY-RELATED
INSTRUMENT AIR USERS
----ACTIVE VALVES----

VALVE	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	POSITION
1HV13005A 2HV13005A	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV13005B 2HV13005B	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV13006A 2HV13006A	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV13006B 2HV13006B	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV13007A 2HV13007A	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV13007B 2HV13007B	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV13008A 2HV13008A	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV13008B 2HV13008B	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV7603A 2HV7603A	CONOFLOW	FH-20	35	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV7603B 2HV7603B	CONOFLOW	FH-20	35	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV7603C 2HV7603C	CONOFLOW	FH-20	35	FMEA-FSAR TABLE 10.3.3-1	CLOSED

(Continued)

TABLE 6 (Continued)
SAFETY-RELATED
INSTRUMENT AIR USERS
-----ACTIVE VALVES-----

VALVE	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	POSITION
1HV7603D 2HV7603D	CONOFLOW	FH-20	35	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV5280 2HV5280	FISHER	67AFR	40	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV5281 2HV5281	FISHER	67AFR	40	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV3502 2HV3502	FISHER	67AFR	40	NONE	CLOSED
1HV8823 2HV8823	FISHER	P-594-1	40	NONE	CLOSED
1HV8824 2HV8824	FISHER	P-594-1	40	NONE	CLOSED
1HV8843 2HV8843	CONOFLOW	FH-20	35	NONE	CLOSED
1HV8881 2HV8881	CONOFLOW	FH-20	35	NONE	CLOSED
1HV27901 2HV27901	CONOFLOW	GFH20XT1782	35	NONE	CLOSED
1HV8871 2HV8871	FISHER	P594-1	40	NONE	CLOSED
1HV8964 2HV8964	FISHER	P594-1	40	NONE	CLOSED
1HV8888 2HV8888	FISHER	P594-1	40	NONE	CLOSED
1HV8380 2HV8880	FISHER	P-594-1	40	NONE	CLOSED
1HV8160 2HV8160	CONOFLOW	FH-20	35	NONE	CLOSED
1HV8152 2HV8152	FISHER	P594-1	40	NONE	CLOSED

(Continued)

TABLE 6 (Continued)
SAFETY-RELATED
INSTRUMENT AIR USERS
----ACTIVE VALVES----

VALVE	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	POSITION
1HV8825 2HV8825	FISHER	P-594-1	40	NONE	CLOSED
1HV8890A 2HV8890A	FISHER	P-594-1	40	NONE	CLOSED
1HV8890B 2HV8890B	FISHER	P-594-1	40	NONE	CLOSED
1HV8033 2HV8033	CONOFLOW	FH20XTKXGB1	35	NONE	CLOSED
1HV8047 2HV8047	CONOFLOW	FH20XTKXGB1	35	NONE	CLOSED
1HV8028 2HV8028	CONOFLOW	FH20XTKXGB1	35	NONE	CLOSED
1HV3513 2HV3513	FISHER	P595	50	NONE	CLOSED
1HV3514 2HV3514	FISHER	67AFR	40	NONE	CLOSED
1HV3507 2HV3507	FISHER	P595	50	NONE	CLOSED
1HV3508 2HV3508	FISHER	67AFR	40	NONE	CLOSED
1HV5278 2HV5278	FISHER	67AFR	40	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV5279 2HV5279	FISHER	67AFR	40	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV7699 2HV7699	CONOFLOW	FH20XTKXGB1	35	NONE	CLOSED
1HV7136 2HV7136	CONOFLOW	FH20XTKXGB1	35	NONE	CLOSED

(Continued)

TABLE 6 (Continued)
SAFETY-RELATED
INSTRUMENT AIR USERS
----ACTIVE VALVES----

VALVE	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	POSITION
1HV780 2HV780	CONOFLOW	GFH20XT1782	35	NONE	CLOSED
1HV781 2HV781	CONOFLOW	GFH20XT1782	35	NONE	CLOSED
1HV7126 2HV7126	CONOFLOW	FH20XTKXGB1	35	NONE	CLOSED
1HV7150 2HV7150	CONOFLOW	FH20XTKXGB1	35	NONE	CLOSED
1HV9385 2HV9385	CONOFLOW	GFH20XT1782	35	NONE	CLOSED
1HV9378 2HV9378	FISHER	67AFR	40	NONE	CLOSED
1HV15198 2HV15198	CONOFLOW	GFH20XT1782	35	FMEA-FSAR TABLE 10.4.9-4	CLOSED
1HV15197 2HV15197	CONOFLOW	GFH20XT1782	35	FMEA-FSAR TABLE 10.4.9-4	CLOSED
1HV15199 2HV15199	CONOFLOW	GFH20XT1782	35	FMEA-FSAR TABLE 10.4.9-4	CLOSED
1HV15196 2HV15196	CONOFLOW	GFH20XT1782	35	FMEA-FSAR TABLE 10.4.9-4	CLOSED
1CV9446 2CV9446	FISHER	67AFR/67FR	40	NONE	CLOSED
1CV9447 2CV9447	FISHER	67AFR/67FR	40	NONE	CLOSED

(Continued)

TABLE 6 (Continued)
SAFETY-RELATED
INSTRUMENT AIR USERS
----ACTIVE VALVES----

VALVE	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	POSITION
1HV8145 2HV8145	FISHER	P-594-1	40	FIG. 3.6.1-1 (SHEET 25)	CLOSED
1HV15214 2HV15214	FISHER	P595	50	NONE	CLOSED
1HV10957 2HV10957	CONOFLOW	GFH20XT1782	35	NONE	CLOSED
1HV10958 2HV10958	CONOFLOW	GFH20XT1782	35	NONE	CLOSED
1HV15212A 2HV15212A	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV15212B 2HV15212B	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV15212C 2HV15212C	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV15212D 2HV15212D	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV15216A 2HV15216A	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV15216B 2HV15216B	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV15216C 2HV15216C	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED
1HV15216D 2HV15216D	FISHER	P595	50	FMEA-FSAR TABLE 10.3.3-1	CLOSED

(Continued)

TABLE 6 (Continued)
SAFETY-RELATED
INSTRUMENT AIR USERS
----ACTIVE VALVES----

VALVE	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	POSITION
1LV0459 2LV0459	FISHER	P594-1	40	NONE	CLOSED
1LV0460 2LV0460	FISHER	P594-1	40	NONE	CLOSED
1HV8153 2HV8153	FISHER	P594-1	40	NONE	CLOSED
1HV8154 2HV8154	CONOFLOW	FH-20	35	NONE	CLOSED
1HV5227 2HV5227	WATTS	F-602-4EJ	40	NONE	CLOSED*
1HV5228 2HV5228	WATTS	F-602-4EJ	40	NONE	CLOSED*
1HV5229 2HV5229	WATTS	F-602-4EJ	40	NONE	CLOSED*
1HV5230 2HV5230	WATTS	F-602-4EJ	40	NONE	CLOSED*
AHV19722	CONOFLOW	GFH20XT1782	35	NONE	CLOSED
AHV19723	CONOFLOW	GFH20XT1782	35	NONE	CLOSED

* Assumes failure position on feedwater isolation signal

TABLE 7
SAFETY-RELATED
INSTRUMENT AIR USERS
-----ACTIVE DAMPERS-----

DAMPER	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	FAILURE POSITION
AHV2534	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV2535	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV2528	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV2529	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV12482	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV12481	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV12479	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV12480	NORGREN	F12-400A3M	50	TABLE 9.4.2-2	CLOSED
AHV12152	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED
AHV12153	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED
AHV12162	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED
AHV12163	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED
1HV12605 2HV12605	NORGREN	F12-400A3M	50	TABLE 9.4.3-5	CLOSED
1HV12607 2HV12607	NORGREN	F12-400A3M	50	TABLE 9.4.3-5	CLOSED
1HV12604 2HV12604	NORGREN	F12-400A3M	50	TABLE 9.4.3-5	CLOSED
1HV12606 2HV12606	NORGREN	F12-400A3M	50	TABLE 9.4.3-5	CLOSED
1HV12146 2HV12146	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED
1HV12147 2HV12147	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED
1HV12148 2HV12148	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED

TABLE 7 (CONTINUED)
SAFETY-RELATED
INSTRUMENT AIR USERS
-----ACTIVE DAMPERS-----

DAMPER	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF	FAILURE POSITION
1HV12149 2HV12149	NORGREN	F12-400A3M	50	TABLE 6.4.4-1	CLOSED
1HV2626B 2HV2626B	FISHER	262C	40	NONE	CLOSED
1HV2627B 2HV2627B	FISHER	262C	40	NONE	CLOSED
1HV2628B 2HV2628B	FISHER	262C	40	NONE	CLOSED
1HV2629B 2HV2629B	FISHER	262C	40	NONE	CLOSED
1HV2636A	NORGREN	F12-400A3M	50	TABLE 9.4.5-3	CLOSED
1HV2636B	NORGREN	F12-400A3M	50	TABLE 9.4.5-3	CLOSED
1HV2638A	NORGREN	F12-400A3M	50	TABLE 9.4.5-3	CLOSED
1HV2638B	NORGREN	F12-400A3M	50	TABLE 9.4.5-3	CLOSED
1HV12562	BALSTON			TABLE 9.4.5-3	CLOSED*
1HV12563	BALSTON			TABLE 9.4.5-3	CLOSED*
1HV12596 2HV12596	FISHER	67AFR	40	NONE	CLOSED
1HV12597 2HV12597	FISHER	67AFR	40	NONE	CLOSED
1TV12086/12086A 2TV12086/12086A	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12090/12098A 2TV12098/12098A	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12085/12085A 2TV12085/12085A	(USES FILTER ON 1TV12098) (USES FILTER ON 2TV12098)			TABLE 9.4.7-2	OPEN
1HV12010 2HV12010	NORGREN	F12-400A3M	50	TABLE 9.4.8-2	OPEN

*These are electric operated dampers with air operated bubble tight seals; does not assume failure position on loss of instrument air.

TABLE 7 (CONTINUED)
SAFETY-RELATED
INSTRUMENT AIR USES
-----ACTIVE DAMPERS-----

DAMPER	VENDOR	AIR FILTER MODEL	SIZE(M)	FMEA-FSAR REF.	FAILURE POSTION
1HV12010A 2HV12010A	NORGREN	F12-400A3M	50	NONE	OPEN
1TV12095A/12095C 2TV12095A/12095C	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12095B/12095D 2TV12095B/12095D	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12094A/12094C 2TV12094A/12094C	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12094B/12094D 2TV12094B/12094D	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12096/12096A 2TV12096/12096A	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12097/12097A 2TV12097/12097A	(USES FILTER ON 1TV12096) (USES FILTER ON 2TV12096)			TABLE 9.4.7-2	OPEN
1TV12099/12099A 2TV12099/12099A	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	OPEN
1TV12100/12100A 2TV12100/12100A	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	CLOSED
1TV12101/12101A 2TV12101/12101A	NORGREN	F12-400A3M	50	TABLE 9.4.7-2	CLOSED