

ORGANIZATION: RALPH A. HILLER COMPANY  
PITTSBURGH, PENNSYLVANIA

REPORT NO.: 99901170/89-01	INSPECTION DATE: September 5-8, 1989	INSPECTION ON-SITE HOURS: 54
CORRESPONDENCE ADDRESS: Ralph A. Hiller Company Mr. J. R. Hiller, President 951 Killarney Drive Pittsburgh, Pennsylvania 15234		
ORGANIZATIONAL CONTACT: Mr. Michael Meketa TELEPHONE NUMBER: (412) 882-5300		
NUCLEAR INDUSTRY ACTIVITY: Supplier of electrically operated pneumatic-hydraulic valve actuators		
ASSIGNED INSPECTOR:	<u>K. R. Naidu</u> K. R. Naidu, Reactive Inspection Section No. 1	<u>11/28/89</u> Date
OTHER INSPECTOR(S):	H. M. Wescott	
APPROVED BY:	<u>E. T. Baker</u> E. T. Baker, Chief, RIS-1, Vendor Inspection Branch	<u>11/28/89</u> Date
INSPECTION BASES AND SCOPE:		
A. <u>BASES</u> : 10 CFR 50 Appendix B and 10 CFR Part 21		
B. <u>SCOPE</u> : Review of implementation of the quality assurance program in selected areas; quality assurance records for valve actuators, observation of storage facilities		
PLANT SITE APPLICABILITY: All plants utilizing R. A. Hiller actuators		

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A. VIOLATIONS:

Contrary to Paragraph 21.21 of 10 CFR Part 21, R. A. Hiller Company (RAH) did not establish and implement a procedure to evaluate deviations in the valve actuators supplied to nuclear power plants or inform the purchaser of the deviation in order that the purchaser may cause the deviation to be evaluated. (Violation 89-01-01)

B. NONCONFORMANCE:

Contrary to Criterion II of 10 CFR 50, Appendix B, RAH did not establish an adequate quality assurance program as documented in their quality assurance manual (QAM), Revision G, dated December 6, 1988, as evidenced by the following examples:

1. Contrary to Criterion I of 10 CFR 50, Appendix B, the authority and duties of currently employed persons performing activities affecting safety-related functions of components were not clearly established and delineated in writing. Furthermore, a current organizational chart was not available. (Nonconformance 89-01-02)
2. Contrary to Criterion III of 10 CFR 50, Appendix B, and paragraph 5.4.1 of the RAH QAM, the Engineering/Quality Assurance Manager performs dual functions of reviewing design changes in his capacity as Engineering Manager and approving the same engineering changes as Quality Assurance Manager, thus compromising the independence of verifications. (Nonconformance 89-01-03)
3. Contrary to Criterion VI of 10 CFR 50, Appendix B, and paragraph 5.4.1 of the RAH QAM, the current drawing format does not have an "Approved" block in the lower right hand corner for the QA signature as indicated in Exhibit 4-2. A "QA" stamp is affixed to the drawing in which the QA representative signs and dates the drawing to denote his review and approval. (Nonconformance 89-01-04)
4. Contrary to Criterion XIII of 10 CFR 50, Appendix B, and paragraph 7.4.1 of the RAH QAM, safety-related stock parts are stored in an area which is not segregated. (Nonconformance 89-01-05)

C. UNRESOLVED ITEMS:

No unresolved items were identified during this inspection.

D. DETAILS:

1. Purpose

This inspection was conducted to determine the adequacy of the implementation of the RAH quality assurance (QA) program relative to the manufacture of actuators. The inspection was prompted by a notification from Commonwealth Edison Company (CECo) on June 19, 1989, to the NRC that during a product QA program audit of RAH, their auditors identified several deficiencies related to material traceability. The RAH actuators operate the main steam isolation valves (MSIVs) installed at the LaSalle County nuclear power plant. The MSIVs were manufactured by Rockwell Manufacturing Company, which is currently known as Edwards Valve Company.

2. Background Information on RAH

a. Introduction

RAH is a distributor of air actuators manufactured by The Sheffer Corporation (TSC), located in Cincinnati, Ohio.

In the early 1970's, RAH developed, engineered, and marketed an actuator to operate valves, specifically MSIVs. The concept led to the development of sophisticated hydraulic, pneumatic, and electrically operated pneumatic-hydraulic valve actuators. The actuators are manufactured and tested at TSC in Cincinnati. RAH provides the application engineering oversight, procures and dedicates the additional parts, such as solenoid operated valves (SOVs), multiple-way air valves, and accumulators required to complete the assembly of the actuators. RAH supplied actuators to various valve manufacturers for a variety of applications, principally MSIVs. The RAH actuators were qualified either individually or as an integral component of the valve on which it was mounted to the requirements of Institute of Electric and Electronic Engineers (IEEE) Standards 323, IEEE-344, and IEEE-382. RAH stated that they independently qualified SA series valve actuators to the requirements of the above standards.

b. Other services provided by RAH

RAH stated that they furnish engineering services, including dedicated parts, to modify actuators manufactured by their competitors previously installed on MSIVs.

RAH stated that they supply actuators to replace existing actuators, provide services and material to refurbish installed actuators, and provide spare replacements for actuators originally supplied by them.

c. Performance of RAH actuators

Actuators supplied by RAH and installed on MSIVs enable operators of nuclear power plants to close, open, or exercise the MSIVs from the control room. Also, the reactor protection system logic can initiate a signal to the actuator to close the MSIVs when adverse operating conditions in light water power reactors are sensed by the logic. Electrical power (normally 120 Volts AC) and air pressure (normally 90 psig) are essential for the valve actuators to operate the MSIVs.

To date no specific failures have been experienced with RAH actuators. However, problems have been experienced with electric SOVs assembled on the actuators and hydraulic oil used in them. These are discussed in the following:

- (1). GE Service Information letter (SIL) No. 329, dated June 1980, recommended the use of SF 1147 type hydraulic fluid, which is known to withstand radiation and high temperature without deterioration.
- (2). NRC Information Notice (IN) 82-25 informed users of a potential problem pertaining to RAH actuators which could prevent air-operated isolation valves from going to their fail-safe condition when the instrument air header (supplying air to the actuators) was slowly depressurized.
- (3). IN 88-43 informed users of a series of ASCO type SOVs failures which resulted in MSIV operating problems. The SOVs are installed on RAH operators.
- (4). GE SIL No 481, dated February 14, 1989, informed users that due to the improper functioning of ASCO type dual SOVs installed on RAH MSIV actuators, the MSIVs may not close after the receipt of signal to do so.
- (5). IN 89-66 alerted users to problems related to elastomers used inside ASCO NP 8323A20E type SOVs which may affect the operability of MSIVs or similarly designed components. The SOVs are installed on RAH actuators.

(6). In addition to the above documents, RAH stated that during refurbishing activities performed on actuators, they observed deterioration of the chrome plating inside the pneumatic cylinder due to moisture in the air supply.

3. Review of Purchase Order for Duane Arnold Energy Center (DAEC)

The inspectors reviewed purchase order (PO) 205-89D-869, dated July 18, 1989, issued by General Electric Company (GE) to RAH to initiate advance engineering services to improve the performance of MSIVs installed at DAEC. RAH stated that GE supplied the original MSIVs which were manufactured by Rockwell Manufacturing Company and fitted with RAH actuators. The MSIVs were reportedly experiencing problems related to successful completion of integrated leak rate tests. Furthermore, the actuators were required to be upgraded to meet the environmental qualification requirements of NUREG 0588. The above mentioned PO was to be followed by a PO to design, manufacture, test and ship eight RAH Model SA-A101 type actuators. The PO required RAH to supply the following :

- a. Actuators with control assemblies environmentally qualified to the requirements of NUREG-0588, Category 1.
- b. Quick disconnect cables to accommodate NAMCO limit switch connections.

The inspectors determined that six drawings which had been prepared by TSC are being currently reviewed by RAH. TSC prepared the static pressure rating calculations utilizing formulas from American National Standards Institute B 9310-1969, reaffirmed in 1976, for the pressure retaining components, such as, 5" bore hydraulic cylinder, 20" bore pneumatic cylinder (including the cylinder head and cap), tie rods, and tie rod nuts. These calculations were reviewed and approved by the RAH QA Engineer as indicated by his signature on the design documents.

4. Review of the Components Supplied by RAH for the Hope Creek Actuators

a. Background

Valve actuators for the Hope Creek nuclear power plant were originally supplied by the SP Manufacturing Corporation (SP), Cleveland, Ohio, and were installed on MSIVs manufactured by Atwood and Morrill Company, Massachusetts.

During 1984, GE issued a PO to RAH to modify the actuators. The modification consisted of replacing the pneumatic-hydraulic portion of the valve actuator with one designed by RAH and manufactured at TSC. All the sealing surfaces were modified to accommodate RAH seal designs. The air manifold to this actuator was designed and manufactured by Automatic Valve Company (AVC), Novi, Michigan, a sub-tier vendor of SP. The RAH valve actuators currently being supplied to Hope Creek have the AVC manifolds.

b. Review of the current GE PO

GE issued PO 205-89 D844, dated July 3, 1989, to RAH to design, manufacture, test, and supply four SA-A102 model pneumatic-hydraulic actuators intended to replace the existing modified actuators installed on the Hope Creek MSIVs. RAH was required to assemble the air manifold assemblies furnished by AVC. The PO required the actuators to be qualified to meet the requirements of IEEE-323-74 and 344-75 based on GE phase III Equipment Qualification Tests. The standard GE QA requirements were required to be implemented. The items procured were considered safety-related and RAH was required to comply with the reporting requirements of 10 CFR Part 21. RAH was to provide a list of the differences between Models SA-A076 and SA-A102 and to provide justification to apply the environmental qualification test results on Model SA-A076 to Model SA-A102 actuators. RAH was required to provide a set of drawings, parts list, and an instruction manual for SA-A102 actuators for GE review and approval. The inspectors observed that RAH has reviewed and approved a complete set of 6 drawings prepared by TSC. RAH has approved the list of materials developed by TSC.

c. Review of the components supplied by RAH

The components procured by RAH, Pittsburgh, and supplied to TSC, Cincinnati, Ohio, for assembly on the actuators manufactured by TSC for use at Hope Creek included the following:

- (1). Four PCCMS-1600-SU-X0740 (MS-1600) flow control valves manufactured by Parker Fluid Power Company (Parker), Elyria, Ohio. Each actuator is fitted with one MS-1600 flow control valve to regulate the speed of the actuator extension.

- (2). Four PCCMS-800-SU20-X0742 (MS-800) flow control valves also manufactured by Parker. Each actuator is fitted with one MS-800 flow control valve to regulate the speed of the actuator retraction.
- (3). Hydraulic fluid manufactured by Harwick, Akron, Ohio. SF1147 type hydraulic fluid is used in the hydraulic cylinder which operates in tandem with the pneumatic cylinder of the RAH pneumatic-hydraulic valve actuator.

d. Components provided by GE to assemble Hope Creek actuators.

GE procured the pneumatic control assembly to operate the pneumatic portion of the RAH pneumatic-hydraulic actuator from Automatic Valve Company (AVC), Novi, Michigan. RAH stated that GE instructed AVC to deliver the assemblies directly to TSC. This unique agreement arranged by GE was intended to retain the previously qualified portion of the pneumatic control assembly supplied to Hope Creek.

No adverse findings were identified in the above area at RAH. The inspectors witnessed the assembly and test of the Hope Creek actuators at TSC in Cincinnati during an inspection on September 12-15, 1989, the results of which are documented in Inspection Report 99901171/89-01.

5. Review of Commonwealth Edison Company (CECO) PO

The inspectors also reviewed CECO PO No. 321957, dated August 25, 1988, to RAH for four actuators, Model SA-A022, for LaSalle County Station to be installed on the MSIVs manufactured by Rockwell International, 26-inch angle globe valves. These actuators were required to be duplicates of the originally supplied actuators. The PO specified the documentation requirements such as, quality assurance documents and certificates of conformance (CoC), and stated that 10 CFR 21 was applicable.

The inspectors further reviewed RAH CoC, dated October 28, 1988, to CECO. The CoC referenced PO No. 321957 and stated that the actuators supplied were in accordance with the requirements of CECO's PO. The CoC further certified that the actuators met the requirements of Specification RAL-GE-003, Revision 0, and were supplied in accordance with RAH QA Manual, Revision D, dated February 13, 1985, incorporating an addendum from CECO, dated

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May 13, 1985, and were tested in accordance with EI-SA-A022. The addendum from CECO listed some additional requirements which RAH had to fulfill as a result of a "desk top" audit CECO performed on RAH. Discussion with an RAH representative established that all documents to substantiate the CoC were supplied to CECO.

5. Review of Refurbishing Activities Supplied to Carolina Power & Light (CPL)

The inspectors reviewed CPL PO No. 537402M-BT-01, dated October 9, 1987, and CPL Requisition No. 7E0509, to RAH for actuators intended for installation at the Brunswick nuclear power plant. This PO was for the rework of three SA-A075 type pneumatic-hydraulic actuators identified with serial numbers 1169294, 1113521, and 1113328. The PO specified that in addition to the actuator rework, certain parts of the actuator controls were to be replaced with new parts (i.e., electrical). Attachment I to this PO required that the actuator assemblies and individual components be qualified to meet the requirements of IEEE 344-1975, IEEE 323-1974, and IEEE 382-1980. Attachment II specified the QA requirements to be met and also stated that this PO was subject to the provisions of 10 CFR Part 21 reporting requirements.

The inspectors reviewed copies of documentation provided with the above reworked actuator assemblies. The documentation package consisted of an Inspection/Rework Report describing the damaged parts found and probable cause of damage, CoC for the components replaced by TSC and RAH, leak test reports, certification of Viton elastomer seals, including cure dates, to indicate the longevity of the Viton elastomer components; and a CoC certifying that devices supplied by their sub-tier suppliers were traceable to their appropriate test reports.

7. Review of RAH Procured Components

In addition to items listed in paragraph 4c, RAH typically procures various components, stores them at RAH facilities in Pittsburgh, and supplies them to TSC for specific POs during the assembly of the actuators. The components procured by RAH include the following:

a. Electric solenoid operated valves (SOVs)

RAH purchases NP 8320A185V and NP 8323A20V type SOVs from Automatic Switch Company (ASCO), Florham, New Jersey. The above mentioned ASCO SOVs, which are installed on the RAH actuators to control the directional movement of the actuators, are known to have successfully withstood the environmental



qualification requirements of IEEE 323 and 344. RAH issued POs to Continental Sales & Engineering, a distributor of ASCO SOVs; ASCO ships the SOVs directly to RAH. Typically, RAH purchases ASCO SOVs in lots of 50, performs receipt inspections, and stores them until they are required for a specific job. Since ASCO furnishes CoCs for the SOVs supplied, RAH does not perform additional tests and dedication.

b. Quick disconnect cable connectors

RAH purchases these connectors from Namco. These types of connectors have been qualified to the requirements of IEEE 323 and 344 by Namco. The connectors have a pin connector on one side and cables (pig tails) on the other side, which are terminated on a terminal block inside a junction box. The pin connector is intended for quick connection in the field to Namco limit switches installed on the MSIV. Namco provides CoCs for the quick disconnects. RAH stated that they performed audits on Namco in the past to verify that their quality assurance program meets the requirements of ANSI N-45.2 and that no adverse findings were identified. The inspectors did not review these audits during this inspection.

c. Terminal Blocks

RAH purchases Buchanan and Weidmueller terminal blocks. Weidmueller provides a typical CoC with a disclaimer for reporting 10 CFR Part 21 deficiencies. They claim that since they are not aware of the final locations where their terminal blocks are installed, they cannot evaluate the deficiencies. However, they stated that they would co-operate in investigations related to failures of their terminal blocks. It should be noted that Weidmueller's practice of supplying a CoC attesting to the qualification of their terminal blocks and disclaiming responsibility for reporting under Part 21 is not acceptable to the NRC staff.

Similarly, Buchanan also supplies CoCs with their terminal blocks. RAH verifies that the terminal blocks received conform to the relevant drawings. These terminal blocks are installed inside a junction box mounted on the actuator where the cables from SOVs and Namco quick disconnects are terminated. RAH stated that they performed audits on Buchanan in the past to verify that their quality assurance program comply with the requirements of ANSI N-45.2. The inspectors did not review the audits performed on Buchanan. Results of a RAH audit on Weidmueller are documented in paragraph 9.C.3.

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- d. Air control valves manufactured by C. A. Norgren (CAN)

RAH procures 3-way aluminum cast body air control selector valves with 3/4", 1" and 1 1/4" ports manufactured by CAN, located in Littleton, Colorado, as commercial grade items. The main function of this valve is to direct air into the pneumatic cylinder (by the movement of a poppet) to open or close the MSIV. The valve is manufactured commercially by CAN to a proprietary drawing controlled by RAH. A note on the drawing requires CAN to provide full size prints to RAH if any revisions are made to this drawing. RAH dedicates these valves by performing the following:

- (1). Verify the correct model number of the valve.
- (2). Identify any visual damage which may have occurred during shipment.
- (3). The receipt of "Certification of Test" (COT) from CAN. RAH in a letter dated June 20, 1989, to CAN requested them to revise the COT to read "Certificate of Conformance." A typical COT stated the valve model number, identified a unique traceable serial number of the valve supplied, provided the hydrostatic test procedure used to test the valves to detect leaks in the valve, and that the dimensions were inspected to the pertinent drawing retained at CAN. The RAH QA engineer stated that he witnesses the inspections and tests performed on selected valves by CAN during periodic audits performed by him, usually once in three years. Additionally, the accuracy of the overall dimensions of the valve are also verified during the assembly for the performance testing of the entire actuator. The inspectors reviewed the CAN test procedure identified as IR 183, Revision D, and determined that it contained adequate acceptance/rejection criteria to detect porosity in the aluminum body and parts.

8. Review of Documentation on Actuators Supplied to Grand Gulf Nuclear Power Plant (Grand Gulf)

The review of these documents was prompted by a Grand Gulf Significant Event Report (SER) dated August 18, 1989, informing the NRC that ASCO Model NP 8323A20E type SOVs, installed on RAH actuators could prevent the proper operation of the MSIVs. The SER stated that an investigation into the failure of the inboard MSIV

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d. Air control valves manufactured by C. A. Norgren (CAN)

RAH procures 3-way aluminum cast body air control selector valves with 3/4", 1", and 1 1/4" ports manufactured by CAN, located in Littleton, Colorado, as commercial grade items. The main function of this valve is to direct air into the pneumatic cylinder (by the movement of a poppet) to open or close the MSIV. The valve is manufactured commercially by CAN to a proprietary drawing controlled by RAH. A note on the drawing requires CAN to provide full size prints to RAH if any revisions are made to this drawing. RAH dedicates these valves by performing the following:

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8. Review of Documentation on Actuators Supplied to Grand Gulf Nuclear Power Plant (Grand Gulf)

The review of these documents was prompted by a Grand Gulf Significant Event Report (SER) dated August 18, 1989, informing the NRC that ASCO Model NP 8323A20E type SOVs, installed on RAH actuators could prevent the proper operation of the MSIVs. The SER stated that an investigation into the failure of the inboard MSIV

d. Air control valves manufactured by C. A. Norgren (CAN)

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8. Review of Documentation on Actuators Supplied to Grand Gulf Nuclear Power Plant (Grand Gulf)

The review of these documents was prompted by a Grand Gulf Significant Event Report (SER) dated August 18, 1989, informing the NRC that ASCO Model NP 8323A20E type SOVs, installed on RAH actuators could prevent the proper operation of the MSIVs. The SER stated that an investigation into the failure of the inboard MSIV

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associated with a plant scram on August 14, 1989, revealed that the SOV seal material had come apart and that a piece was lodged in the SOV's internals impeding the flow of air through the valve. This prevented proper closure of the MSIV until such time when the seal material was dislodged. This review was conducted to determine if RAH supplied NP 8323A20E Type ASCO SOVs to Grand Gulf. The inspectors reviewed the following documents and determined that RAH did not supply NP 8323A20E type SOVs to Grand Gulf.

Atwood and Morrill issued PO AM 25010, dated April 28, 1975 to RAH for the supply of 40 pneumatic-hydraulic actuators with a stroke of 14" to operate 28" and 26" MSIVs and 16 actuators with a stroke of 12" to operate 24" MSIVs. The PO required the use of Viton seats throughout and did not permit the use of Teflon. The actuators were to meet various technical specifications including GE Valve Actuators Specification No. 21A3630, Revision 0; GE MSIV Specification 21A9506, Revision 2; and GE Quality Requirements Specification 21A8793, Revision 1. RAH records indicate that the ASCO SOVs used on the Grand Gulf SA-A039 type actuators were from a lot purchased in 1975. RAH PO HO 382-5, dated January 29, 1975, issued to Continental Sales, Pittsburgh, requested the supply of 56 3-way direct acting I:TX832320V type ASCO dual solenoid valves and 56 I:TX8320A20V type single solenoid valves. The remaining SOVs were installed on SA-A033 and SA-A034 type actuators supplied to the Koshaug (Taiwan) and Perry nuclear power plants respectively.

GE issued PO 205-86K662 dated August 4, 1986 to RAH to revise the Grand Gulf "Maintenance and Instruction Manual" to reflect the substitution of NP8323A20E type ASCO dual solenoid valves. RAH informed the inspectors that they revised the Instruction Manual but did not supply any replacement SOVs. ASCO Brochure V5972R1, dated 1981, indicates that SOVs with an E suffix on the model number have Ethylene Propylene Diene Monomer type elastomer seats for oil-free instrument air service. SOVs with a V suffix on the model number have Viton elastomer seats for non-oil-free instrument air service. It was not within the scope of this inspection to determine when the solenoids with ethylene propylene elastomers were installed on the RAH actuators at Grand Gulf.

The data package contained TSC CoCs, which certified that each actuator successfully passed the tests prescribed in TSC Engineering Specification EI-1028. Tests results indicated the following:

- a. The hydraulic cylinder withstood 5000 psig test pressure for one minute without any visible leaks.

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- b. The pneumatic cylinder withstood 50 psig test pressure for 5 minutes without any visible leakage.
- c. The hydrostatic accumulator withstood 1500 psig test pressure without any visible damage.
- d. Basic actuator leakage at 156.5 psig test pressure was less than the permissible leakage of 0.3 standard cubic feet per hour (SCFH).
- e. Internal leakage of the complete actuator, including air control circuit manifold, when subjected to 120 psig was less than the permissible 0.5 SCFH.
- f. External leakage test of the complete actuator, including air control circuit manifold, when subjected to 120 psig indicated no leakage.
- g. Extension time test.
- h. Retraction speed test.
- i. Extend speed control test.
- j. Exercise circuit test.
- k. Breakaway pressure test.
- l. Cycle test.

9. Review of Audits

The inspectors reviewed the audits performed by nuclear power plant representatives on RAH, audits performed by RAH on their vendors, and one audit performed on RAH by an independent auditor.

a. Review of audits performed by nuclear power plant representatives

- (1). The inspectors reviewed a Quality Assurance Audit Report O-89-213, dated June 20, 1989, performed by CECO on RAH. This audit concerned four MISV actuators supplied to LaSalle County Station per CECO PO 321957. The audit identified 11 findings. The audit was extended to TSC in Cincinnati where several more findings were documented. The audit resulted in RAH being

removed from CECOs Approved Bidders List. RAH addressed all the 11 findings.

- (2). The inspectors reviewed Iowa Electric Light and Power Company's audit of RAH Company, Audit Report No. V-88-48, dated October 21, 1988. This audit was performed on September 21-23, 1988 and contained three findings and two observations. These items were subsequently resolved.
- (3). The inspectors reviewed an audit performed by Cleveland Electric Illuminating Company identified as No. PY-"Q"504621. The audit was performed on October 20-22, 1987. There were no adverse findings.

b. Review of audits performed by an Independent Auditor on RAH.

RAH authorized an external auditor to perform an audit on RAH on August 7, 1988. The inspectors reviewed this audit report dated August 28, 1988. The external auditor was a certified lead auditor and a QA consultant. The external auditor had reviewed the RAH company QA manual prior to the audit. The auditor utilized a checklist using ANSI N-45.2 and appropriate daughter standards. The audit concluded that the RAH Company QA program was well integrated into the supply of valve actuators and associated spare parts and was generally acceptable.

c. Audits performed by RAH on their vendors

- (1). The inspectors reviewed audit No. VH1-136-14 performed on May 12-13, 1987, on behalf of RAH, by Gilbert/Commonwealth Engineers/Consultants, on Automatic Switch Company (ASCO). There were no audit findings requiring a response.
- (2). The inspectors reviewed RAH vendor audit of C.A. Norgren Company who supplies pneumatic control valves to RAH. This audit was identified as vendor audit No. 87-01, dated June 29-30, 1987. The audit noted two findings and three observations which were subsequently resolved to the satisfaction of RAH.
- (3). The inspectors reviewed RAH audit No. 86-02 of Weidmueller Terminations dated February 20, 1986, and Audit No. 89-01,

dated January 30-31, 1989. These audits were performed utilizing appropriate requirements of ANSI N-45.2.

The inspectors determined that the audits performed by RAH were complete and acceptable.

10. Review of Ralph A. Hiller (RAH) QA Manual

The inspectors reviewed the RAH QA Manual (QAM), Revision G, dated December 6, 1988, which consists of seven sections to meet the requirements of ANSI 45.2-1977 with appropriate daughter standards; and 10 CFR 50, Appendix B as applicable to the manufacture of actuators for service in nuclear power plants. The inspectors determined the following:

- a. The organization chart in the QAM does not represent the staff currently employed at RAH and does not describe the authority and duties of persons currently performing activities affecting the design approval, procurement, and storage of components to be assembled on the valve actuators. RAH representatives stated that the QAM is in the process of being revised. The inspectors informed RAH that failure to describe the authority and duties of persons performing safety-related activities is contrary to the requirements of 10 CFR 50, Appendix B, Criterion I. (Nonconformance 89-01-02)
- b. Paragraph 5.4.2 of the RAH QAM Section 5.0, Design Control, states, in part, "The Engineering/QA Manager shall ensure that any design change resulting from his and/or the customer's review of the design is documented via the Engineering Change Request Form (see exhibit 5-2)...the change authorization must be provided by the Engineering/QA Manager...."

"Upon completion of the change the design drawings shall be returned to the Engineering/QA Manager for review. After reviewing the drawings, the Engineering/QA Manager shall indicate this approval by signing the revision box on the drawing...." Exhibit 5-2 provides for two separate individuals with "Engineering Authority" and "Quality Assurance Authority" to sign and date the Engineering Change Request in two different places. With the current arrangement, one individual, with the title Engineering/Quality Assurance Engineering Manager, is permitted to sign in both places, first as an Engineering Manager and second as a



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Quality Assurance Manager. The inspectors informed RAH representatives that such an arrangement compromises the independence of reviews and is in nonconformance with 10 CFR 50, Appendix B, Criterion III, "Design Control." (Nonconformance 89-01-03)

- c. The inspectors reviewed several recent design drawings of safety-related valve actuators and determined that the individuals involved in the preparation and verification of the drawings are TSC personnel located in Cincinnati, Ohio. The signatures of these individuals were in the RAH title block in the lower right hand corner. However, there was no "Approved" block in the title block for the RAH QA person to sign his name as indicated in paragraph 5.4.1 and illustrated in Exhibit 4-2 of the RAH QAM. Instead, a "QA" stamp was affixed to the drawing and the QA Manager signed in the assigned space to denote his review and approval. The inspectors informed RAH that the above practice deviated from the RAH QAM and as such is a nonconformance. (Nonconformance 89-01-04)
- d. During the tour of the facilities, the inspectors observed that the safety-related "stock" parts were stored in an area which was not segregated. The RAH QAM in paragraph 7.4.1 states in part, "...The receiver identifies all incoming "stock" parts or equipment with proper part number and locates the "stock" part in a segregated area according to the part number and manufacturer." The inspectors observed that all the "stock" parts were identified with the proper part number tags. The inspectors informed RAH that the storage of safety-related material was not in accordance with the QAM. (Nonconformance 89-01-05)

E. EXIT INTERVIEW:

The inspectors met with individuals identified in Section F, discussed the scope and findings at the conclusion of the inspection.

F. PERSONS CONTACTED:

J. R. Hiller	President
M. Mekata	QA Manager
R. A. DeMarki	Executive Vice President
D. W. Borcik	Project Manager
*J. Nanci	Sales Manager

\* Denotes individual not present at exit interview on September 8, 1989