

ORGANIZATION: ANCHOR/DARLING VALVE COMPANY
WILLIAMSPORT, PENNSYLVANIA

REPORT NO.: 99900053/90-01	INSPECTION DATE: November 13-16, 1990	INSPECTION ON-SITE HOURS: 64
CORRESPONDENCE ADDRESS: Mr. George W. Knieser, QA Manager Anchor/Darling Valve Company 701 First Street P.O. Box 3428 Williamsport, Pennsylvania 17701		
ORGANIZATIONAL CONTACT: Mr. George Knieser TELEPHONE NUMBER: (717) 327-4825		
NUCLEAR INDUSTRY ACTIVITY: Manufacturer of valves including spare/replacement parts used in nuclear safety-related applications.		
ASSIGNED INSPECTOR:	<u>Robert L. Pettis Jr.</u> R. L. Pettis, Jr., Reactive Inspection Section No. 1 (RIS-1), Vendor Inspection Branch (VIB).	<u>1/29/91</u> Date
OTHER INSPECTOR(S):	A. Fitzgerald, VIB	
APPROVED BY:	<u>U. Potapovs</u> U. Potapovs, Chief, RIS-1, VIB	<u>2-1-91</u> Date
INSPECTION BASES AND SCOPE:		
A. BASES: 10 CFR Part 50, Appendix B; 10 CFR Part 21; ASME Boiler and Pressure Vessel Code, Section III, Division 1.		
B. SCOPE: Review previous inspection findings, 10 CFR Part 21 reports, and Anchor/Darling Valve Company's program for dedication of commercial-grade items used in safety-related applications.		
PLANT SITE APPLICABILITY: Multiple plant sites.		

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A. VIOLATIONS:

No violations were identified during the inspection.

B. NONCONFORMANCES

1. Contrary to the requirements of Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50, A/DV's QA program does not require implementation audits or alternate measures for verifying that suppliers of safety-related material holding Quality Systems Certificates (QSC) issued by the American Society of Mechanical Engineers (ASME) are effectively implementing the approved QA programs. (90-01-01)

2. Contrary to Criterion III, "Design Control," of Appendix B to 10 CFR Part 50, A/DV failed to adequately review for suitability spare/replacement parts purchased commercial-grade and used in safety-related applications as referenced below:

a. Resilient seats used in a 4-inch, 1535 pound Tilting Disc Check Valve supplied to Carolina Power and Light under Purchase Order (PO) No. 693153AN for the Harris Nuclear Plant.

b. Barksdale pressure switches for a 20-inch, 900 pound, Double Disk Gate Valve supplied to Florida Power and Light Company under PO No. C90930-91310 for the St. Lucie Nuclear Plant.

A/DV's dedication of these commercial-grade items was based primarily on a sampling method which is inadequate to verify suitability of the remaining items. (90-01-02)

C. UNRESOLVED ITEMS:

No unresolved items were identified during the inspection.

D. STATUS OF PREVIOUS INSPECTION FINDINGS:

1. (Closed) Violation (86-01-11)

Prior to the 1986 inspection, POs from A/DV to its subsuppliers which referenced ASME Section III requirements did not specify 10 CFR Part 21 requirements. Corrective action was taken by

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A/DV after this violation was identified. To verify this corrective action, the inspectors reviewed selected safety-related POs from 1987, 1988, 1989, and 1990. In all cases, A/DV invoked the requirements of 10 CFR Part 21.

2. (Closed) Nonconformance (86-01-02)

There was no documentation to support a Rework Ticket for two defects repaired on a Weld Repair Record dated September 4, 1985 for the globe body on Shop Order No. E-6534. In addition, a Repair Welding and Hardfacing Record dated October 31, 1985 did not contain a sketch for the disc on Shop Order No. E-6534.

A/DV's response to this nonconformance provided an explanation of the difference between "Weld Repairs in Upgrading" and "Weld Repairs in Manufacturing." A/DV responded to the missing sketch issue by stating that "the inspector did not draw a picture but he did make an adequate written description of the repair."

The NRC inspectors reviewed Sections 10 and 11 of the A/DV QAM during the inspection and verified that a Rework Ticket was not necessary for the Weld Repair Record dated September 4, 1985, because it was a weld repair made during upgrading.

3. (Closed) Nonconformance (86-01-03)

In the 1986 inspection, the NRC identified that a member from QA had not signed, initialed, or stamped the MRBA block on Material Rejection Notice (MRN) No. 9419 dated April 3, 1985, relating to a valve bonnet on Shop Order No. E-6534-001. In response, A/DV stated this was an isolated incident. To verify corrective action, the NRC inspector reviewed 150 MRNs from 1990 and verified that they were properly signed.

4. (Closed) Nonconformance (86-01-04)

A review of qualification records for several nondestructive examination (NDE) personnel revealed that the qualification records did not contain a statement indicating satisfactory completion of training in accordance with A/DV Standard No. QAS-9. In response to this nonconformance, A/DV changed the form used for initial certification to include a reference to training to QAS-9.

During the inspection the inspector reviewed the certification records for Level II and III NDE inspectors which all referenced training to QAS-9 as of February 28, 1989.

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<p>5. <u>(Closed) Nonconformance (86-01-05)</u></p> <p>There was no documented evidence that a file of Final Approved Vendor Procedures existed for ASME Section III valves on Shop Order Nos. E-6534, E-6516 and E-3256. Additionally, the file for E-3326 did not contain a copy of Cann & Saul heat treat Procedure No. 1023, Revision 4 which was used on the bonnet material.</p> <p>In response to this nonconformance, A/DV revised procedure MPDS-7 on January 22, 1986, to include a section for standard procedures. Approved vendor procedures that are not unique to a shop order are defined as standard procedures which are not required to be maintained with each shop order. The NRC inspector reviewed MPDS-7 and verified that it reflects current practice.</p> <p>6. <u>(Closed) Nonconformance (86-01-06)</u></p> <p>During an inspection of the shop and calibration laboratory, it was noted that two spring gages (0154 and 1395) were not labeled properly to indicate calibration. The balance scales, surface plate, and dead weight tester also were not correctly labeled to indicate removal from service.</p> <p>The NRC inspector toured the calibration laboratory and verified that all equipment had calibration labels. Calibration records for all equipment are maintained in the calibration laboratory.</p> <p>7. <u>(Closed) Nonconformance (86-01-07)</u></p> <p>Acceptable seat rings were found in a nonconforming material hold area with nonconforming material. A/DV's responses to the NRC on June 27, 1986, stated that the material had been on hold. However, upon identification by NRC, the items were removed from hold and placed in an accepted area.</p> <p>8. <u>(Closed) Nonconformance (86-01-08)</u></p> <p>Stainless steel burr wheels were not marked in yellow. A/DV's response to the NRC was that corrective action was implemented on January 17, 1986.</p> <p>9. <u>(Closed) Nonconformance (86-01-09)</u></p> <p>An unmarked box of Sandvik welding electrodes was left in the weld area after completion of a job; unmarked stellite rods were not in containers in the welding material storage area; bare wire</p>		

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remaining on a wire feeder after usage was not covered; and the temperature in an oven containing E309L electrodes was below 225°F on two occasions. A/DV responded that the weld material control problems were corrected on January 17, 1986.

10. (Closed) Nonconformance (86-01-10)

Vendor corrective actions, as indicated on VMDRs, were not audited for implementation by A/DV QA. The restriction resulting from the January 1985 vendor audit of Effort Foundry was not identified in the Approved Vendor List (AVL). Additionally, R.E.C. was not audited within the 12-month frequency.

The NRC inspector verified that A/DV had corrected these problems by revising their audit checklist (MQCS-11-1) and by adding restrictions to the AVL. The restriction on Effort Foundry was added to the AVL on April 8, 1987. R.E.C. was verified on the October 1990 AVL as a supplier of non-pressure boundary material. Verification of vendor corrective action is currently documented as part of the audit report. It should be noted that an MRN is now used to report material deficiencies. Vendor corrective action, as indicated on MRNs, is audited for implementation by A/DV's QA staff. MQCS-11-1, Revision S, contains a check-off item for implementation of corrective action.

11. (Closed) Nonconformance (86-01-11)

Of 373 VMDRs issued during 1985, 19 were still open and exceeded the ten working day response requirement. A/DV responded that ten working days was not adequate to obtain a vendor's response. As a result, A/DV extended the requirement to 30 days. The NRC inspector verified that the current procedure for nonconforming material and MRB disposition, MQCS-2, Revision AB, paragraph 6.6.1, states that the required response time is now 30 days.

12. (Closed) Nonconformance (86-01-12)

Training on revisions to the QAM dated November 1, 1984, and December 3, 1985 for the Manufacturing Manager, Engineer, Planner, Assembly Department Supervisor, Store Supervisor, and Machine Foreman, did not exist. A/DV responded that the Manufacturing Manager has been re-instructed on the training requirements of the QA manual on April 11, 1986, and January 15, 1986.

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The current A/DV practice is that new revisions of the QAM are sent to managers accompanied by a memo that highlights areas that have been revised and also provides a summary of each revision. The managers are responsible for applicable training.

13. (Closed) Nonconformance (86-01-13)

Of 17 Abnormal Occurrence Reports (AOR) issued in 1985, only 3 had a documented evaluation performed on Form OPER-1-2. AORs are now evaluated by the Technical Director according to the OPER-1 procedure which does not specify a completion time.

E. INSPECTION FINDINGS AND OTHER COMMENTS:

1. Review of 10 CFR Part 21

10 CFR Part 21 responsibilities are included on POs from A/DV to suppliers of Category 1 and Category 2 materials. A/DV's system for reporting defects states that once a deviation is identified, it is evaluated in accordance with OPER-1, entered on the appropriate form and affected customers notified if it is determined that the item is reportable to the NRC. The inspectors reviewed the following AORs which were reported to the NRC in 1990.

a. (Closed) 10 CFR Part 21 (89-098)

In 1989, an incorrectly sized stem nut was discovered in a motor-operated valve at the Clinton Power Station. Illinois Power Company reported this matter to the NRC in accordance with 10 CFR Part 21. The 20-inch diameter gate valve was intended for use in the High Pressure Core Spray System. A/DV assembled the valve using a 2-inch stem nut to couple the actuator to the 1 3/4-inch diameter stem.

The valve in question was supplied in 1977 by A/DV's Hayward, California plant. This is believed to be an isolated incident because this type of valve was only supplied to two plants. Both plants involved were notified and there were no similar problems found.

b. (Closed) 10 CFR Part 21 (90-018 and 90-036)

Kansas Gas and Electric discovered that backup o-rings furnished by A/DV in spare parts seal kits contained the

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wrong material. A specific gravity test was developed by A/DV for verification testing of the o-rings. All licensees that had received these kits were notified by A/DV of the problem by letter on January 26, 1990.

2. Vendor/Supplier Audit Program

The NRC inspectors selected for review several safety-related suppliers listed on A/DV's AVL for both Category 1 and 2 material. Category 1 material is used in pressure-boundary applications, where Category 2 material is used for nonpressure boundary, safety-related applications. Items which fall into this category include, but are not limited to, screws, various small valves (pilot operated, check, hydraulic, pneumatic, solenoid operated), o-rings, resilient valve seats, hinge pins, valve discs and pressure switches. Such items normally fall outside of ASME pressure boundary requirements but are considered safety-related with respect to the function they perform within the valve.

The method for placing and maintaining a vendor on the AVL is described in Chapter 9 of the A/DV QAM. Section 9.4.1.5 specifies the audit frequency and criteria for specifying a vendor on the AVL. Vendors on the AVL are audited by A/DV QA to be maintained on the AVL and are audited to NCA-3800 in accordance with A/DV procedure MQCS-11. The Vendor Audit Checklist is used to record the information. The NRC inspector reviewed audit reports for the following Category 1 and 2 suppliers: Mountain Alloys; Parker Hannifin; Teledyne Republic; and Quaker Alloy. The results of these audits were reflected on the AVL for the proper category including vendor restrictions. The AVL is updated every three months to reflect recent audit information. It should be noted that, if the supplier holds an ASME QSC, A/DV's program does not require audits to verify implementation of the supplier's approved QA program. Section 5.2 of A/DV Standard No. MQCS-11, Revision U, dated November 1990, states that the performance of vendors holding a QSC shall be reviewed at least once for every four purchase orders. The validation process may consist of an audit to verify program implementation or a retest of the material to confirm compliance to the specification.

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Product verification utilizing the one out of four POs approach is not considered adequate to establish confidence that the vendor is adequately implementing its approved QA program. This item was previously identified to A/DV by Arizona Public Service Company (APSC) in June 1989. A/DV's response in a letter dated October 12, 1989 stated that A/DV would verify every heat of material from QSC holders that are used on all APSC orders and would include a verification of chemical and physical properties. However, this 100% verification process is only used on APSC orders. A/DV stated to the NRC inspectors that APSC is the only customer which imposed the requirement to verify QA program implementation of QSC holders. At present, the 100% method or alternate measures for verifying quality is not assured on A/DV orders with other nuclear customers. Licensee/supplier responsibilities in this area are discussed in NRC Information Notice 86-21, issued March 31, 1986. Nonconformance 90-01-01 was identified during this part of the inspection.

3. Dedication of Commercial-Grade Items (CGI's) Used in Safety-Related Applications.

The inspectors reviewed A/DV's procedure for dedication of CGI's used in Category 2 safety-related applications (non-pressure boundary).

The dedication process is described in A/DV Standard No. ES-21, "Technical Evaluation and Dedication," dated October 19, 1989, which is based in part on the guidelines contained in Electric Power Research Institute Report No. NP-5652, "Guidelines for the Utilization of Commercial-Grade Items for Nuclear Safety-Related Applications (NCIG-07)." This report has been conditionally endorsed by the NRC in Generic Letter 89-02, dated March 21, 1989.

The A/DV standard is intended for use on Category 2 items where the customer has imposed the requirements of Appendix B to 10 CFR Part 50 and/or 10 CFR Part 21. Category 1 items (pressure boundary, safety-related) are purchased from audited vendors who maintain an approved Appendix B QA program.

A/DV initiated ES-21 for all orders quoted after December 1, 1989, and has since processed approximately 400 technical evaluations,

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250 of which comprised o-rings used in safety-related valve actuator rebuild kits for Feedwater and Main Steam Isolation Valves.

The NRC inspector selected the following dedication packages for review during the inspection:

- a. PO No. 693153AN, dated May 16, 1990, from Carolina Power and Light for safety-related resilient seats associated with a 4-inch, 1535 pound Tilting Disc Check Valve for the Harris nuclear plant. The PO invoked 10 CFR Part 21 and 10 CFR 50, Appendix B, requirements on A/DV and its sub-suppliers. A certificate of conformance to the PO was also required. A review of the Technical Evaluation Worksheet For Safety-Related Items, Form ES-21-1, dated September 19, 1990, for A/DV Part No. B64313RK (resilient seats) indicated that dimensions and material are the critical characteristics necessary to dedicate the item.

The tests or inspections necessary to verify these characteristics consisted of a 100% inspection to verify dimensions per A/DV drawing B64313 and a specific gravity test to verify the proper material. In addition, a micro-hardness test was specified.

Although this process appeared to be adequate to dedicate commercial-grade seat material, the tests described above to verify proper material are only performed on a sample of items procured, not the entire lot. This method does not assure equivalency to the tested item since commercial-grade suppliers routinely make changes in design, manufacturing, and materials without the purchaser's knowledge. In addition, A/DV does not audit the commercial-grade suppliers' QA program to verify the validity of statements made in certificates of conformance.

A/DV representatives stated that they purchased these items directly from Parker-Hannifin (P-H) O-Ring Division, which is audited and listed as an approved supplier. The last audit of P-H was performed on July 27, 1990, in which P-H was classified as a supplier of Category 2 material. The audit was performed at P-H's manufacturing facility. However, A/DV is only permitted by P-H to purchase such material from an authorized P-H distributor. As such, lot or batch traceability cannot be assured, verified or relied upon. Therefore, 100% of the items purchased must be dedicated.

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This sampling approach appears to have contributed to the problem in which several licensees received actuator rebuild units for Feedwater and Main Steam Isolation valves which contained o-rings of incorrect material (Buna-N instead of Viton). This resulted in A/DV issuing a 10 CFR Part 21 report to the NRC on January 30, 1990, which stated that the incorrect material could cause operational problems which could adversely affect the safety-related function of the valve.

- b. PO No. 90930-9130 dated June 21, 1990, from Florida Power and Light (FP&L) for two safety-related Barksdale pressure switches used for a 20-inch, 900 pound Double Disk Gate Valve for the St. Lucie Nuclear plant. The PO invoked 10 CFR Part 21 and required A/DV to provide certification that the switches provided are identical or functionally interchangeable with the original model so as not to affect the original qualification test report performed by Wyle.

A review of the Technical Evaluation Worksheet For Safety-Related Items, Form ES-21-1, dated August 31, 1990, for A/DV Part No. N31190 (Barksdale No. B2T-A-48SS) indicated that vendor part number, material and pressure integrity are the critical characteristics necessary to dedicate the item. The inspection necessary to verify these characteristics consisted of a visual inspection to verify part number and a verification of calibration for 100% of the items.

However, the tests required to verify material (Bourdon Tube) and pressure integrity (hydrostatic test) are only required to be performed on a sample basis. As stated in item (a) above, this method does not assure equivalency to the item selected for testing since commercial-grade suppliers routinely make changes in design, manufacturing and materials without the purchaser's knowledge. A/DV purchased the switches from IMO Industries, Incorporated as a CGI and certified to FP&L that the items were identical to the original item supplied and would not affect the original qualification report performed by Wyle on May 23, 1978. Nonconformance 90-01-02 was identified during this part of the inspection.

F. PERSONS CONTACTED

G. Knieser, Quality Assurance Manager
W. Knecht, Technical Director
J. Chappell, P.E., Engineering Manager