

ORGANIZATION: VELAN VALVE CORPORATION
WILLISTON, VERMONT

REPORT NO.: 99900346/82-01	INSPECTION DATE(S) 8/30-9/3/82	INSPECTION ON-SITE HOURS: 56
CORRESPONDENCE ADDRESS: Velan Valve Corporation ATTN: Mr. E. I. Francois Vice President, Quality Assurance Avenue C, Griswold Industrial Park Williston, Vermont 05495		
ORGANIZATIONAL CONTACT: Mr. Duncan Winton, QC Manager TELEPHONE NUMBER: (514) 748-7743		
PRINCIPAL PRODUCT: Nuclear Valves		
NUCLEAR INDUSTRY ACTIVITY: Current contracts to furnish valves to nine nuclear sites which is approximately 6% of total sales.		
ASSIGNED INSPECTOR:	<u>J. Barnes</u> for J. T. Conway, Reactive and Component Program Section (R&CPS)	<u>11-4-82</u> Date
OTHER INSPECTOR(S):	J. W. Hamilton, R&CPS	
APPROVED BY:	<u>J. Barnes</u> I. Barnes, Chief, R&CPS	<u>11-4-82</u> Date
INSPECTION BASES AND SCOPE:		
A. <u>BASES</u> : 10 CFR Part 50, Appendix B		
B. <u>SCOPE</u> : This inspection was made as a result of: (1) the identification of (a) damaged internals in 6-inch swing check valves at Salem, Unit 2; (b) jammed disks in 6-inch swing check valves at Point Beach, Unit 1, (c) jammed 2½-inch stop check valves at Davis Besse, Unit 1; and (2) the receipt of allegations by NRC Region II regarding welding controls. In addition, the following programmatic areas were inspected: training/qualification, control of special processes, material and manufacturing process controls, nonconformance/corrective action, NDE, records, audits (internal/external), and reporting of defects.		
PLANT SITE APPLICABILITY: Docket Nos. 50-311, 50-266, and 50-346.		

DESIGNATED ORIGINAL

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A. VIOLATIONS:

None

B. NONCONFORMANCES:

1. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and Section 4 of Quality Control (QC) Procedure VELW-QC-156.8, a review of Operation and Routing Sheets (ORS) and Nuclear Valve Assembly Routing Sheets (NVARs) for domestic nuclear orders indicated the absence of an inspector's stamp and date for the following inspection activities: (a) verification of transfer of marking on an ORS for PO P3-5500-N; and (b) assembly and final inspection in an NVARs for Data Package W810408.
2. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and Section 4 of QC Procedure VELW-QC-156.15, a review of record maintenance indicated that calibration records were neither identified in the QC Documentation Manager's log nor stored in the vault.
3. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and Sections 2.4 and 2.13 of QC Procedure VELW-QC-156.13, a review of the Quality Assurance Department Reports relating to corrective action implementation did not address either the review of or the effectiveness of corrective action.

C. UNRESOLVED ITEMS:

None

D. STATUS OF PREVIOUS INSPECTION FINDINGS:

(Closed) Nonconformance (80-01) - The F No. on a Welding Procedure Qualification Record (PQR) was different to the F No. on the applicable Welding Procedure Specification (WPS).

The inspector verified that the September 1970 version of PQR VEL-P-597 was changed to reflect the correct F No. 7 which was applicable at the time of qualification of WPS GT-8860, Rev. 0. In addition, a review of WPS GT 8860, Rev. 3, "Manual GTAW of Austenitic Stainless Steel," (January 1, 1982) showed filler metal group No. F-6 and weld metal analysis No. A-8 which are identical to those on supporting PQR Nos. VEL-P-597(A) and 597(B), both dated October 13, 1977, and GT-552 dated September 18, 1974.

E. OTHER FINDINGS OR COMMENTS:

1. Allegations - In January 1982, a former welder at Velan made allegations regarding the adequacy of welding controls utilized at the Williston plant. A review of documentation, welding, and NDE activities

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<p>relating to four nuclear projects currently in process resulted in the following inspection findings which do not substantiate the allegations received by NRC Region II:</p> <p>a. <u>Documentation of welds by others:</u></p> <p>The former welder indicated that on several occasions someone had printed or written his name in the welding log book. However, the other person's initials always accompanied his name. The welder was not certain whether he had made the particular weld since he did not have the opportunity to crosscheck it against the ORS. He also expressed concern about the use of welders' identification stamps, since he only used his on one occasion.</p> <p>A review of welding log books showed that individual welders had entered the details of each weld, dated, and signed the welding log book. There was no indication that the entries in the welding log books were made by individuals other than a welder. A review of ORS's (i.e., travelers) indicated that each welding operation was dated and documented on the ORS by the welder's identification number and signature. This satisfies the Code requirements regarding the identification of a welder to the work performed by that individual.</p> <p>b. <u>Multiple pass vs. single pass welds and radiography vs. liquid penetrant or magnetic particle examination:</u></p> <p>The former welder was of the opinion that multiple pass welds should be used while the procedure required only a single pass weld. However, he stated that management never encouraged or instructed welders to deviate from prescribed procedure. It was also his opinion that many welds should have been radiographed instead of liquid penetrant or magnetic particle examined.</p> <p>A review of WPS's, PQR's, qualification records of welders, NDE procedures, qualification of inspectors, and ORS's; and an evaluation of manufacturing operations indicate that both welding and NDE activities were being conducted in accordance with approved, qualified procedures, and by qualified individuals. The requirements contained in the WPS's and the NDE procedures are consistent with ASME Code requirements.</p>		

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2. Based on discussions with Velan's Corporate Manager of Engineering and a review of applicable documentation relating to the problems identified at three nuclear facilities, the inspector's findings are as follows:

- a. Salem, Unit 2 - Two 6-inch swing check valves in the steam supply line to the turbine driven auxiliary feed water pump suffered internal damage. Velan has supplied replacement internal parts (ref. Farrell/Sullivan letter, dated June 19, 1981) to the licensee. Based on a review of the circumstances and material evidence returned from the site, both Velan and Public Service Electric & Gas Company (PSEG) have determined that there is no generic design problem associated with the subject Velan valves. PSEG has initiated a review (ref. Rippe/Farrell letter, dated June 26, 1981) of the design of the main steam piping to auxiliary feed pump turbines where the valves are installed, to determine if certain characteristics of the system require modification.
- b. Point Beach, Unit 1 - Two 6-inch 1500 lb. swing check valves in the low head safety injection lines had unacceptable back leakage during a check valve leakage test.

The problem was identified as the sticking of a 6-inch swing check valve in the open position due to a disc nut lockwire jamming against a machined relief in the body. Based on Velan's review of layout analysis of all swing check valve designs and physical manipulation of valves in-house, it was determined that the problem is a function of an accumulation of the machining tolerances. Velan has notified their customers to reroute the lockwire if the valve can be induced to jam open. Otherwise, no corrective action is required. In addition, Velan has changed the valve design to incorporate a stainless steel cotter pin in place of the disc nut locking wire and added an operation at assembly inspection to lift the hanger and disc assembly to determine if jamming takes place.

- c. Davis Besse, Unit 1 - Three 2½-inch stop check valves in the high pressure injection lines remained closed during a test of check valves.

Velan Engineering has determined that the use of excessive closing torques by the licensee and a steep valve seat angle of 15° were the major factors in disc jamming of the stop check valves. The three valves in question were reassembled with new discs having an angle of 30°. A functional test was performed using 150 ft.-lbs. closing torque, which resulted in an insignificant amount of pressure (2½ to 2 psi) required to pop the disc open. Velan's stop

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check valves are currently being manufactured with a seat angle of 30°. In addition, Velan has recommended to their customers that the torque to close the valve should not exceed 150 ft.-lbs.

3. A detailed review of documentation (e.g., QA Manual, welding and NDE procedures, training/qualification records, CRS's, data packages, QA records, audit reports, etc.) resulted in the identification of three nonconformances (see B. above) and the following additional observations:
 - a. For Welding Procedure Specification APA-0161, the welding log book index showed Rev. 2 (April 16, 1980), but the QA record file copy was Rev. 3 (July 30, 1980).
 - b. For Procedure Qualification Record No. PA-002, the preheat (QW-406) and technique (QW-410) variables had been whited out and retyped. There was no signature or initials by either change.
 - c. There was no evidence of a procedure/instruction for the use and responsibility of a "Nuclear Approved" stamp which was noted on Material Identification Tags.
 - d. The QA Manual and applicable procedures appear to require updating to satisfy the requirements of Appendix B to 10 CFR Part 50. Examples of observed discrepancies are as follows:
 - (1) The organization chart does not reflect the current organizational structure.
 - (2) The organizational positions with stop work authority are not identified.
 - (3) There was no requirement for management (above or outside the QA organization) to regularly assess the scope, status, and compliance of the QA program to 10 CFR Part 50, Appendix B.

DOCUMENTS EXAMINED

1	2	TITLE/SUBJECT	3	4
1	4	Velar Valve Corporation Quality Assurance Manual	Jan 26, 1982	6
2	8	Internal Audit Reports (18)	—	—
3	8	Domestic Commercial Nuclear Rejection Reports (14)	—	—
4	6	Corp QA Mgr memo on Review of Rejection Reports (8)	—	—
5	8	Quality Control Documentation Mgr's Log	—	—
6	8	Random selection of vault records (16) ⁵	—	—
7	6	Approved Vendor List	May 18, 1982	16
8	8	Inspector Personnel records (15)	—	—
9	6	List of Qualified Auditors	Nov 25, 1981	—
10	8	List of Nuclear Orders for Domestic Applications	—	—
11	8	Internal Master Audit Schedule, Wiltiston Plant	1982	Issue #2
12	6	Notification of Management Audit Mgr (from VP of QA file)	1982	—
13	8	Gauge Control Records (3)	—	—
14	8	Vendor Audit Reports (5)	—	—

Document Types:

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| 1. Drawing | 5. Purchas Order |
| 2. Specification | 6. Internal Memo |
| 3. Procedure | 7. Letter |
| 4. QA Manual | 8. Other (Specify-if necessary) |

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| 1. Sequential Item Number |
| 2. Type of Document |
| 3. Date of Document |
| 4. Revision (If applicabl |

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Scope/Module _____

DOCUMENTS EXAMINEDDocket No. ⁹⁴²⁰⁰³⁴⁶
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1	2	TITLE/SUBJECT	3	4
1	4	QUALITY ASSURANCE MANUAL	1/26/82	6
2	8	PROCEDURE QUALIFICATION RECORDS FOR SIX WELDERS		
3	3	WPS No. GT-8860 'MANUAL GTAW of AUSTENITIC STAINLESS STEEL'	1/12/82	3
4	3	WPS No. GT-1160 'GTAW-MA WELDING of CARBON STEEL'		2
5	8	DISTRIBUTION LISTS for WELDING PROCEDURES & NDE PROCEDURES	-	-
6	8	CERTIFIED WELDER REPORT	8/3/82	-
7	8	NDE Log Book		
8	3	WPS No. AGM 1160 'AUTO Carbon Steel Seal Weld with E705-3'	11/30/81	2
9	3	WPS No. SAGM 1060 'GMAW ER 309 Overlay of C/S'	6/23/81	1
10	3	WPS No. SM 1992 'P4 to P4 with no PWHT (1/16 - 1/2)'	12/31/80	1
11	8	QC I - WLP 3.4 'UCLAN TRAINING & INDOCTRINATION PROGRAM RECEIVING INSPECTORS'	-	-
12	8	RECORD of APPROVAL STATUS for 4 NUCLEAR CONTRACTS	-	-
13	8	INSPECTION REPORT NOS. S499 - 11094 - 11024	-	-
14	8	GAUGE CONTROL RECORD FORM for SIX INSTRUMENTS	-	-
15	8	WF-9 TOOL ROOM FILLER METAL LOG BOOK	-	-
16	8	Log Book for CMTR'S on Weld Rod	-	-

Document Types:

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DOCUMENTS EXAMINED

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1	2	TITLE/SUBJECT	3	4
17	0	Purchase orders & CMTR'S FOR THREE VENDORS		
18	3	UEL-NDT-640 B (HT) 'HYDROSTATIC TESTING'	5/80	0
19	3	UEL-NDT-543 B 'MAGNETIC PARTICLE EXAMINATION'	7/82	4
20	3	UEL-NDT-564 B 'LIQUID PENETRANT EXAMINATION'	4/82	2
21	3	UEL-QCI-477 'CHECK LIST - ASSEMBLY & FINAL INSPECTION'	8/82	4
22	3	UEL-P-631 'GTAW-MANUAL'	2/82	9
23	3	UEL-P-591 'SMAW-MANUAL'	10/77	8
24	0	DATA PACKAGE No. W820580 (Seabrooke)		
25	0	DATA PACKAGE No. W810408 (Marble Hill)		
26	0	DATA PACKAGE No. W820527 (Nine Mile Pl.)		
27	0	Control log for Welding Identification & Inspection Stamps		
28	0	Distribution log for QA Manual		
29	1	DWG. No. P3-12506-NI '4" PRESSURE SEAL GATE VALVE'	9/81	A
30	3	W.P.S. No. GT 4461 'Man GTAW of Low Alloy (P4-P4) No. PWHT'	12/80	2

Document Types:

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| Drawing | 5. Purchase Order |
| Specification | 6. Internal Memo |
| Procedure | 7. Letter |
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