

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, D.C. 20555

November 22, 1989

NRC INFORMATION NOTICE NO. 89-56, SUPPLEMENT 1: QUESTIONABLE CERTIFICATION  
OF MATERIAL SUPPLIED TO THE  
DEFENSE DEPARTMENT BY NUCLEAR  
SUPPLIERS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice supplement is intended to alert addressees of additional information concerning a problem with the certification of material furnished by Meredith Corporation, Pressure Vessel Nuclear (PVN), of Hillside, New Jersey, which was discussed previously in NRC Information Notice No. 89-56. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

NRC Information Notice No. 89-56 discussed a 27-count indictment rendered on May 4, 1989, by a Newark Federal Grand Jury charging PVN and Alloy & Carbon Steel Company Incorporated (Alloy) corporate officers with substituting commercial-grade steel for military-grade steel and fraudulently documenting the substitutions as meeting military specifications. The notice indicated that NRC was interested in obtaining information relevant to material supplied to nuclear utilities or vendors by PVN or Alloy in which discrepancies have been found or discrepancies have been discovered as a result of independent verification testing of chemical and mechanical properties, and information on recent procurements. The NRC is aware that a number of organizations are continuing to perform independent testing of PVN material. The following discussion details the results of testing performed to date that has been made available to the NRC.

Discussion:

As of mid-September 1989, the NRC had received the results of tests conducted by a laboratory performing tests for the Virginia Power Company on PVN material supplied to the Surry nuclear power station. The results indicated that 17 of

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94 items tested did not meet specification. Heat No. PV00199 of ASTM A570-79 Grade 40 steel sheet exhibited a tensile strength of 45,993 pounds per square inch (psi) and a yield strength of 26,282 psi, which are lower than the 55,000 psi tensile strength and 40,000 psi yield strength required by specification. Ten items of ASTM A36-81A steel exhibited tensile strengths that were as high as 86,109 psi which exceeded the specified range of 58,000 to 80,000 psi. Other deviations were found, including yield strength, manganese content, elongation, and hardness, which were all lower than material specifications. Virginia Power Company initiated corrective actions to review the location and application of the nonconforming material to assure that safety and operability concerns are addressed.

On September 20, 1989, the NRC received the results of tests conducted by a laboratory performing tests for General Public Utilities Nuclear Corporation (GPUN) on PVN material supplied to the Oyster Creek nuclear power station. The results indicated that a 2 1/2-inch diameter round forged bar of ASME SA-350, LF2, normalized and tempered steel failed to meet the minimum specified Charpy impact test requirement of 20 foot-pounds. ASME SA-350, LF2, imposes ASME SA-370, which specifies that not more than one specimen may exhibit a value below the specified minimum average, and in no case shall an individual value be below either two thirds of the specified minimum average or 5 foot-pounds, whichever is greater. GPUN Charpy impact testing of three initial specimens resulted in values of 19, 13, and 32 foot-pounds which failed to meet the ASME SA-370 requirement. Section 22.2.1 of ASME SA-370 requires a retest of three additional specimens, each of which shall have a value equal to or exceeding the specified minimum. GPUN Charpy impact retesting of three additional specimens resulted in values of 20, 11, and 14 foot-pounds which did not meet the retest requirement of Section 22.2.1. PVN certified Charpy impact values for three specimens of this material were 26, 24, and 24 foot-pounds. GPUN initiated corrective actions by requiring that an engineering evaluation be made of the location and application of the nonconforming material to address safety and operability concerns.

The NRC also received the results of tests conducted by a laboratory performing tests for Anchor Darling Enterprises, Incorporated (AD), on PVN material to be used by AD for nuclear applications. Five of the 16 items tested exhibited chemical analysis values that were different from the values listed on the PVN certified material test report, and two of the five items exhibited chemical properties that did not meet the ASTM specification. Heat No. 412L1181 of ASTM A-588 Grade B steel plate exhibited a chromium content of 0.17 percent, a copper content of 0.06 percent, and a vanadium content of less than 0.01 percent, which were lower than the ASTM specified values of 0.4 to 0.7 percent, 0.2 to 0.4 percent, and 0.01 to 0.1 percent, respectively. Heat No. 402N5561 of ASTM A-588 Grade B steel plate exhibited a chromium content of 0.17 percent, a copper content of 0.02 percent, and a vanadium content of less than 0.01 percent, which were also lower than the ASTM specified values listed above. AD is notifying their customers of the nonconforming material and performing evaluations in accordance with 10 CFR Part 21.

A PVN letter dated July 17, 1989, to Dubose Steel Incorporated in Roseboro, North Carolina, advised of a potential defect in two pieces of 1 3/4-inch diameter round bar of ASME SA-193 Grade B7 quenched, tempered, and stress-relieved steel (Heat 58783, Trace Heat Code HJK, Stress Charge #85-737) manufactured by the Copperweld Steel Company and supplied to Dubose Steel by PVN on November 18, 1981. Louisiana Power and Light Company (LP&L) found 5/8 inch deep quench cracks on one end face of material from the same heat that had been supplied to Dubose Steel. Dubose advised the NRC in a letter dated October 25, 1989, that Dubose records do not indicate who received the PVN material. This information is provided to encourage addressees to locate the missing material.

Addressees may wish to consider the results of the recent testing performed for Virginia Power, GPUN and AD in planning their activities to assess the certification of materials supplied by PVN. The NRC remains particularly interested in receiving additional results from independent verification testing of material supplied by PVN.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate NRR project manager.

  
Charles E. Rossi, Director  
Division of Operational Events Assessment  
Office of Nuclear Reactor Regulation

Technical Contacts: Ramon Cillimberg, NRR  
(301) 492-3220

E. William Brach, NRR  
(301) 492-0961

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED  
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
89-78	Failure of Packing Nuts on One-Inch Uranium Hexafluoride Cylinder Valves	11/22/89	All NRC licensees authorized to possess and use source material and/or special nuclear material for the heating, emptying, filling, or shipping of uranium hexafluoride in 30- and 48-inch diameter cylinders.
89-77	Debris in Containment Emergency Sumps and Incorrect Screen Configurations	11/21/89	All holders of OLs or CPs for PWRs.
89-76	Biofouling Agent: Zebra Mussel	11/21/89	All holders of OLs or CPs for nuclear power reactors.
89-75	Falsification of Welder Qualifications for Contractor Employees	11/20/89	All holders of OLs or CPs for nuclear power reactors.
89-74	Clarification of Transportation Requirements Applicable to Return of Spent Radiopharmacy Dosages from Users to Suppliers	11/7/89	All manufacturers and distributors of radiopharmaceuticals for medical use, nuclear pharmacies, and medical licensees.
89-73	Potential Overpressurization of Low Pressure Systems	11/1/89	All holders of OLs or CPs for nuclear power reactors.
89-72	Failure of Licensed Senior Operators to Classify Emergency Events Properly	10/24/89	All holders of OLs or CPs for nuclear power reactors.
89-71	Diversion of the Residual Heat Removal Pump Seal Cooling Water Flow During Recirculation Operation Following a Loss-of-Coolant Accident	10/19/89	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License  
CP = Construction Permit

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Document Name: IN 8956, SUPPLEMENT 1

OFC	:RIS-1:VIB*	:C:RIS-1:VIB*	:C:VIB:DRIS*	:TECH ED*	:D:DRIS:NRR*	:C:GCB:DOEA*
NAME	:RCilimberg:nrp	:ETBaker	:EWBrach	:	:BKGrimes	:CBerlinger
DATE	:10/20/89	:10/20/89	:10/24/89	:10/23/89	:10/25/89	:11/15/89

Document Name: IN 8956, SUPPLEMENT 1

OFC	:OI*	:SC:EMCB:DET*	:D:DOEA:NRR	:OGC*	:	:
NAME	:BLetts	:RAHermann	:CERossi	:SHLewis	:	:
DATE	:11/08/89	:11/07/89	:11/16/89	:11/14/89	:	:

A PVN letter dated July 17, 1989, to Dubose Steel Incorporated in Roseboro, North Carolina, advised of a potential defect in two pieces of 1 3/4-inch diameter round bar of ASME SA-193 Grade B7 quenched, tempered, and stress-relieved steel (Heat 58783, Trace Heat Code HJK, Stress Charge #85-737) manufactured by the Copperweld Steel Company and supplied to Dubose Steel by PVN on November 18, 1981. Louisiana Power and Light Company (LP&L) found 5/8 inch deep quench cracks on one end face of material from the same heat that had been supplied to Dubose Steel. Dubose advised the NRC in a letter dated October 25, 1989, that Dubose records do not indicate who received the PVN material. This information is provided to encourage addressees to locate the missing material.

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NAME	:BLetts	:RAHermann	:CERossi	:SHLewis	:	:
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NAME	: <i>BL</i>	:RAHermann	:CERossi	: <i>S H Lewis</i>		
DATE	:11/28/89	:11/7/89	:11/ /89	:11/14/89		

AD is notifying their customers of the nonconforming material and performing evaluations in accordance with 10 CFR Part 21.

Addressees may wish to reassess activities concerning material supplied by PVN in light of the results of recent testing performed by Virginia Power, GPUN, and AD. The NRC is particularly interested in receiving the results of independent verification testing of material supplied by PVN.

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DATE	:10/20/89	:10/20/89	:10/24/89	:10/23/89	:10/25/89	:10/ /89

Document Name: MEREDITH INSP1

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DATE	:10/ /89	:10/ /89	:10/ /89	:	:	:

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AD is notifying their customers of the nonconforming material and performing evaluations in accordance with 10 CFR Part 21.

Addressees may wish to reassess any activities they have ongoing concerning material supplied by PVN or Alloy in light of the results of recent testing performed by Virginia Power, GPUN, and AD. The NRC is particularly interested in receiving the results of independent verification testing of material supplied by PVN or Alloy.

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*Tech Ed. comments  
incorporated by Cilimberg*

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in receiving the results of independent verification testing of material supplied by PVN or Alloy.

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*DR BB*  
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NAME :RCILIMBERG :EBaker :EWBrach :BGrimes :CHBerlinger:  
DATE :10/20/89 :10/21/89 :10/ /89 :10/ /89 :10/ /89 :10/ /89 :