

INDUSTRIAL
VALVES

DRESSER

DRESSER VALVE AND CONTROLS DIVISION
Dresser Industries, Inc.

Industrial Valve North American Operations
P.O. Box 1430 • Alexandria, Louisiana 71301

May 1, 1986

United States Nuclear Regulatory Commission
Mail Stop EW/W332
Washington, DC 20555

Attn: Gary G. Zech, Chief
Vendor Program Branch
Division of Quality Assurance
Vendor and Technical Training
Center Programs Office of
Inspection and Enforcement

Docket No. 999000054/85-01

Gentlemen:

Your letter dated April 11, 1986 has been reviewed and questions answered as follows:

Toledo Edison Company/Davis-Besse (Safety Valve Serial No. BM8635)

Question 1 When was this valve manufactured?

Answer 1 February, 1972

Question 2 What was the carbon and nickel content of the collar (CB-30)?
What was the carbon content in the Type 304 stainless steel
cutter pin analysis? What was the method of chemical analysis
used to generate your alloy compositions?

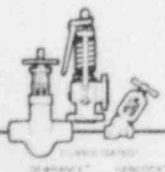
Answer 2 Collar: carbon content .169; nickel content .246
(Lab report C-246 attached)

Cutter pin: Carbon content .073
(Lab report C-247 attached)

The method of analysis was x-ray fluorescence, using a Kevex
6600 machine for all elements except carbon. Carbon analysis
was performed by the thermo conductivity method on a Leco
WR12 carbon analyzer.

Question 3 Where exactly were your hardness readings taken?

Answer 3 The collar was halved, and hardness readings were taken on
the outside diameter surface of each half, supported below.
The cutter pin readings were taken on the inner straight flat
middle of a segment. The cutter pin was directly supported.



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- Question 4 Were the failed spindle threads flat, bright and shiny?
Answer 4 Spindle threads were extremely flattened, some threads were 100% destructed. Bright and shiny is not appropriate.
- Question 5 What was the chemical analysis of the metal chips that were scattered on the top surface of the lower spring washer and the top surface of the cover plate?
Answer 5 The chips were not of sufficient volume to obtain meaningful chemical analysis results.
- Question 6 Were there any unique qualities about the spindles post-failure microstructure?
Answer 6 Microstructure analysis of the spindle was not performed and the spindle has since been scrapped and is no longer available for future testing.
- Question 7 Did the cotter pin show any evidence of necking down? Did the fracture surfaces show evidence of bench markings?
Answer 7 Reference our report dated October 22, 1981. The cotter pin had a marked "ironing" of one pin end which is considered to be "necking down". No bench marks were in evidence. Figure 2 of the report shows the observed condition of the failed cotter pin.

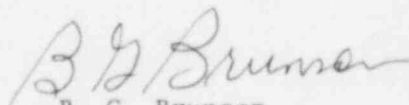
Pacific Gas & Electric Co./Diablo Canyon, Units 1 and 2 (Serial No. BN1741)

- Question 1 Was there a metallurgical failure analysis performed to determine the cause of the defective disc collar/spindle threads? If so, what were the results?
Answer 1 No, a metallurgical failure analysis was not performed.
- Question 2 What are the major changes that have occurred in Dresser quality inspection program since 1973 to reasonably assure future nonrecurrence of the subject problem?
Answer 2 The overall quality program has improved in all areas since 1973. Inspectors have gained considerable knowledge through experience and training. The most significant change to assure nonrecurrence of this problem is that written assembly instructions now require 100% visual inspection of each part by the assembly inspector and the assembler prior to valve assembly.
- Question 3 Which other nuclear power stations, excluding Davis-Besse, have safety valves of the same type and design (as mentioned in your response paragraph 1.7)?

-continued-

- Answer 3
- | | |
|--|---|
| 1. Alabama Power Co.
Joseph M. Farley 1 | 12. Metropolitan Edison
Three Mile Island 1 |
| 2. Alabama Power Co.
Joseph M. Farley 2 | 13. Northeast Utilities
Millstone 2 |
| 3. Arkansas Power & Light
Nuclear One 1 | 14. Northern States Pwr.
Prairie Island 1 |
| 4. Baltimore Gas & Elec.
Calvert Cliffs 1 | 15. Northern States Pwr.
Prairie Island 2 |
| 5. Baltimore Gas & Elec.
Calvert Cliffs 2 | 16. Omaha Pub. Pwr. Dist.
Fort Calhoun 1 |
| 6. Duquesne Light Co.
Beaver Valley 1 | 17. Tennessee Valley Auth.
Browns Ferry 1 |
| 7. Florida Power Corp.
Crystal River 3 | 18. Tennessee Valley Auth.
Browns Ferry 2 |
| 8. Florida Pwr. & Light
Turkey Point 3 | 19. Vermont Yankee Nuc. Pwr.
Vermont Yankee |
| 9. Florida Power & Light
Turkey Point 4 | 20. Virginia Elec. & Pwr.
Surry 1 |
| 10. Indiana & Michigan Light AEP
Donald C. Cook 1 | 21. Virginia Elec. & Pwr.
Surry 2 |
| 11. Indiana & Michigan Light AEP
Donald C. Cook 2 | 22. Sacramento Municipal
Utility District
Rancho Seco |

I trust that this is sufficient information and satisfactorily answers your questions.
If there is need for additional information, do not hesitate to contact me.


B. G. Brunson
Manager Quality Systems
Dresser Industrial Valve
Operations

BGB:bb
Attachments - 2



INDUSTRIAL VALVE & INSTRUMENT DIVISION ☐ BOX 1430 ☐ ALEXANDRIA, LOUISIANA 71301
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METALLURGY LABORATORY REPORT

Chemical Analysis

ORDER NUMBER: Product Engineering Report SV-231

PART NUMBER: VJ 800

HEAT NUMBER:

DESCRIPTION: CB-30Adjusting Collar

CHEMICAL ANALYSIS:

Cr 21.0

Mn .621

Ni .246

Mo .160

C .169

LAB NUMBER: C-246

DW Ginner
MATERIAL ANALYST

4/24/86
DATE



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METALLURGY LABORATORY REPORT

Chemical Analysis

ORDER NUMBER: Product Engineering Report SV-231
PART NUMBER: 2220219
HEAT NUMBER: _____
DESCRIPTION: 304 Stainless Steel Cotter Pin

CHEMICAL ANALYSIS:

Cr 19.0
Mn .836
Ni 8.2
Mo .500
C .073

LAB NUMBER: C-247

R. W. G. Mene
MATERIAL ANALYST

4/24/86
DATE