

APPENDIX A

BOSTROM-BERGEN/MEDDCO METALS

ALLEGATIONS INVESTIGATION

Materials Reinspection Program Plan

February 23, 1984

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APPENDIX A

1.0 INTRODUCTION

This document presents the expanded investigation program of the Bostrom-Bergen/Medco Metals (BB/MM) allegations prepared by Pacific Gas and Electric (PGandE). This program is consistent with the commitment to perform reinspection of a logical representative sample of BB/MM supplied materials made to the U. S. Nuclear Regulatory Commission (NRC) Region V Staff on Thursday, February 16, 1984, and will be integrated into the existing investigation initiated in December 1983.

The objective of this program is to provide additional confirmation that BB/MM-supplied items meet requisite quality standards (refer to paragraph 2.5) by performing field reinspections. A further objective of the program is to provide this information through a well thought-out plan which leads to a logical representative sampling program.

Bostrom-Bergen/Medco Metals
Allegations Investigation
Materials Reinspection Program Plan
Dated: February 23, 1984

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2.0 SCOPE

This scope consists of the following eight tasks which will assure that a satisfactory reinspection program is performed.

- 2.1 The first task is to finalize the identification of the scope of materials supplied to the Diablo Canyon Power Plant (DCPP) by BB/MM. This requires review of BB/MM-supplied structural items for all periods of interest and will be accomplished at the DCPP site. The information that will be gathered in this task will be based on the lists of BB/MM material used at DCPP as shown in Attachments A and B. The lists include all major pieces shown on the BB/MM shop drawings.
- 2.2 The second task is to define key characteristics (those characteristics which determine the manner in which BB/MM item grouping occurs) related to the different types of items supplied by BB/MM. These will include:
 - o Material Type
 - o Generic Item Description
 - o Safety Classification
 - o Time Frame of Fabrication
- 2.3 The results shown in Attachments A and B, which represent all major BB/MM items supplied to DCPP, will be analyzed and grouped into generic item categories. This grouping will assure that the items are identified in terms of the components, materials and time frames of supply. In this way, a basis for a logical representative sample selection will already be established.
- 2.4 Upon completion of the categorization, logical sample groups for reinspection will be determined to assure a representative reinspection across the population of BB/MM-supplied items and will provide assurance that PGandE has an indication of the quality of the BB/MM items.

Emphasis in selecting items for inspection will be placed on (1) confirming that BB/MM supplied special steels were used at locations where they were required, and (2), confirming that special fabrication techniques performed by BB/MM (e.g., welding) were adequately performed. Selection of individual items for inspection will be made to cover as broad a time frame as possible. In summary, the total quantity of items to be inspected is large enough to encompass material used in all safety-related applications over the periods of interest for BB/MM material supplied to Diablo Canyon.

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Several BB/MM-supplied materials have been reinspected in great detail. These are identified in Attachment C and will be incorporated into the program.

2.5 Field inspections will be performed to provide assurance that the existing materials meet specified requirements. Inspection of sampled items will cover two general areas:

1. Conformance of BB/MM materials to design and specification requirements.
2. Conformance of BB/MM fabrication to acceptable practices and to design drawing requirements.

2.5.1 Inspections of BB/MM material will include:

- a. Hardness testing to confirm the tensile strength of the base material. A form similar to Attachment D will be used for this inspection.
- b. Alloy analysis to confirm the content of specified chemical elements in the base material. A form similar to Attachment E will be used for this inspection.

2.5.2 Inspections of BB/MM fabrication will include:

- a. Visual examination, per AWS criteria, for weld quality and dimensional verification of weld sizes and base metal thicknesses. A form similar to Attachment F will be used for this inspection.
- b. Measurement of critical dimensions and visual examination of overall conformance to design drawing requirement.

2.6 A final report will be prepared upon completion of the BB/MM materials reinspection program, documenting each of the tasks performed and fully explaining BB/MM grouping and how the samples were selected. The final results and conclusions will be fully documented and submitted to the NRC.

APPENDIX A

ATTACHMENT A

MATERIAL SUPPLIED BY BOSTROM-BERGEN METAL PRODUCTS
TO GUY F. ATKINSON COMPANY

TURBINE PEDESTAL	Anchor bolts, embed plates, jacking posts, edge angles.
TURBINE BUILDING	Column anchor bolts, pump and motor anchor bolts, roof corners, all edge angles, embed plates, stair nosings, post sockets, monorail beams, hatch cover frames, hatch cover seats, ladder rungs, supports for metal decks, lifting inserts, CCWHE pipe support column anchor bolts, leveling plates for switch gear, freight elevator enclosures, anchor plates for blockwalls, blockwall support columns Area A, floor opening sleeves, (5) line firewall albi-clad frame, fire damper frames Area A. CCW heat exchanger barrier, pipe rupture restraints. Oil receiving and storage room roof and monorail support, added structural steel El. 119'2", expansion joint between turbine building and auxiliary building spring support beams. Area B-C, El. 140', platform P-17T, P18T (Turbine feedwater pump).
AUXILIARY BUILDING	Embed plates, anchor bolts for pumps and motors, edge angles, hatch frames and seats, lifting inserts, pipe rupture restraints, monorail supports, wire mesh doors - sodium iodide protector shield, all CVCS embeds removable shield walls and plates, seismic restraint for residual heat exchanger, sensor probe embed. Main steam relief stack platform and bracing. Jet impingement structural steel.
CONTAINMENT	Rupture restraint anchor bolts, reactor head storage embed, polar crane rail, fan cooler embed frames, pressurizer shield, fuel transfer tube shield and hoist, reactor loop pipe restraints, jib crane, feedwater restraints, manipulator crane rail support, steam generator manway cover hoist, grating El. 140' and beams, cable support El. 140'. Rec. sump screens. Pipe sleeves for penetrations, embed plates, soldier beams and cover plates at exterior penetrations, anchor

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ATTACHMENT A (continued)

**MATERIAL SUPPLIED BY BOSTROM-BERGEN METAL PRODUCTS
TO GUY F. ATKINSON COMPANY**

bolts, stair nosings, post sockets, neutron detector guides and positioning device, edge angles, hatch frames and seats, annulus structure support anchors, reactor support and cooling block, transfer canal shield plates. General anchor bolts at El. 91', 109', 112', RCP support anchor bolts, hydraulic support structure anchors. RCP cross over pipe rupture restraint embeds, Steam Generator supports at 138, pipe restraint sleeves, pipeway support embeds, reactor missile shield.

Variable spring pipe support - equipment hatch trolley and rails - personnel hatch trolley and rail, annulus 106, insore trolley beams, RV head carriers, embedded air ducts to reactor.

DIESEL GENERATORS

Anchor bolts, embed plates for wall anchors - edge angles - exhaust pipe restraints at El. 189 and 202. Tornado barriers.

DISCHARGE STRUCTURE

Miscellaneous embedded steel.

WATER TANKS

Foundation anchor plates (rings).

FUEL HANDLING BUILDING

Filter bank access platforms - partition walls and movable walls - radiation shield walls - filter bank embed frames - all embeds. Boiler support beams - air tight door frames - manipulator crane rail supports - duct supports El. 180', cols. and bracing line 263 - fan platforms 21 and 22 - fuel storage cover - Auxiliary feedwater pump missile shield - vacuum deaerator tower support.

PLATFORMS

48FW-2, 42FW-1, 48FW-1, 7GE-1, 19GW-1, 5GW-1, 6GE-1, 7G-1, 77G-2, 86F-2, 42FW-2, 67F-2, 71G-2, 82F-2, 83F-2, 70G-2, 64F-2, 76F-2, 20GW-1, 54F-2, 55F-2, 57G-2, 56G-2, 19GW-2, 20GW-2, 21GW-2, 108F-1, 109G-1, 21GW-1, 66F-2, 63F-2, 85F-2, 81F-2, 5FW-1, 8GW-1, 8GW-2, 65F-2, 63F-1, 76F-1, 77G-1, 94F-1, 68G-2, 69G-2, 70G-2, 5GW-2, 6GE-2, 7GE-2, 65F-1, 64F-1, 84F-2

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ATTACHMENT B

BOSTROM-BERGEN METAL PRODUCTS SUPPLIED TO H. P. FOLEY

AUXILIARY BUILDING	Rolling door 12" thick, radiation shield door, edge angles for post-LOCA.
CONDENSATE POLISHING SYSTEM	Column anchor plates, beam anchor plates, structural framing, floor plates and supports, roof framing, stairways.
TECHNICAL SUPPORT CENTER	None, access provided via condensate polishing structural steel and stairways.
FUEL HANDLING BUILDING	Gross gamma monitor support platform.
REVERSE OSMOSIS	Anchor bolts, curb angles, structural framing, stairways.
TRAINING BUILDING	Structural foundation and stairway.
TURBINE BUILDING	Storage rack.

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ATTACHMENT C

PREVIOUSLY INSPECTED ITEMS

<u>Time Period</u>	<u>Item Description</u>	<u>Remarks</u>
1984	Rupture Restraint Rods	Inspected overall length threads, bend radius, and straightness for 19 rods
1983/1984	Rupture Restraint Rods	Tested hardness for 842 rods
1984	Condensate Polishing System (Class 2)	Full weld inspection 940 BB/MM (shop welds)
1983	Rupture Restraint Welds	Full weld inspection on 351 restraint welds.

APPENDIX A
ATTACHMENT D

MATERIAL VERIFICATION REPORT

<u>Sample Description</u>	<u>Date</u>
<u>Supplier</u>	<u>Location</u>

Component Description	Piece Number	Material Type and Grade	Brinell Reading	Tensile Strength	Accepted	Rejected

Comments:

<u>Performed by (Bechtel Signature)</u>	<u>Acknowledged by</u>
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ATTACHMENT E
TNAa ANALYSIS RESULTS

Sample Description

Date

Location

Piece Mark	Precision			Ident.	Analysis	Elemental	Other	Signature/Date
	.5	1	2 3					

Comment(s)

Performed by _____ Acknowledged by _____

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ATTACHMENT F

BB/MM WELD INSPECTION REPORT

Unit	Area	Elevation
Sample	Location Drawing and Revision	
Piece No.	Erection Drawing	

Inspection	Accept	Reject
Cracks		
Fusion		
Undercut		
Porosity		
Free of Slog		
Weld Length		
Spacing		
Weld Size		

Inspection	Date
Convexity	
Reinforcement	
Craters Filled	

Comments:

Inspector:	Date:
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