

**Constellation  
Nuclear**

**Calvert Cliffs  
Nuclear Power Plant**

*A Member of the  
Constellation Energy Group*

September 4, 2001

U. S. Nuclear Regulatory Commission  
Washington, DC 20555

**ATTENTION:** Document Control Desk

**SUBJECT:** Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318  
30-Day Response to NRC Bulletin 2001-01, "Circumferential Cracking of  
Reactor Pressure Vessel Head Penetration Nozzles"

**REFERENCES:**

- (a) NRC Bulletin 2001-01: Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles, dated August 3, 2001
- (b) Letter from Mr. A. Marion (NEI) to Dr. B. W. Sherron (NRC), dated August 21, 2001, Generic Information for Use by Licensees in Response to NRC Bulletin 2001-01

The purpose of this letter is to forward Calvert Cliffs Nuclear Power Plant, Inc.'s (CCNPPs) 30-day response to Nuclear Regulatory Commission (NRC) Bulletin 2001-01 (Reference a). The Bulletin was issued "to (1) request that addressees provide information related to the structural integrity of the reactor pressure vessel head penetration (VHP) nozzles for their respective facilities, including the extent of VHP nozzle leakage and cracking that has been found to date, the inspections and repairs that have been undertaken to satisfy applicable regulatory requirements, and the basis for concluding that their plans for future inspections will ensure compliance with applicable regulatory requirements, and (2) require that all addressees provide to the NRC a written response in accordance with the provisions of 10 CFR 50.54(f)." In the 30-day response, the NRC requested licensees "to submit a written response indicating, (1) whether the requested information will be submitted and (2) whether the requested information will be submitted within the requested time period."

On August 21, 2001, the Nuclear Energy Institute submitted EPRI Report, "TP-1006284, PWR Materials Reliability Program Response to NRC Bulletin 2001-01 (MRP-48)" [Reference b]. The report contains generic information that we are referencing in our response. Attachment (1) to this letter provides our 30-day response to Bulletin 2001-01.

A088



**ATTACHMENT (1)**

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**30-DAY RESPONSE TO NRC BULLETIN 2001-01**

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## ATTACHMENT (1)

### 30-DAY RESPONSE TO NRC BULLETIN 2001-01

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#### **Requested Information 1**

*All addressees are requested to provide the following information:*

- a. *the plant-specific susceptibility ranking for your plant(s) (including all data used to determine each ranking) using the PWSCC susceptibility model described in Appendix B to the MRP-44, Part 2, report;*

#### **CCNPP Response**

Calvert Cliffs Units 1 and 2 have been ranked for the potential for primary water stress corrosion cracking (PWSCC) of the reactor pressure vessel (RPV) top head nozzles using the time-at-temperature model and plant-specific input data reported in MRP-48 (Reference 1). As shown in Table 2-1 of Reference (1), this evaluation indicates that it will take Unit 1 9.8 effective full power years (EFPYs) and Unit 2 10.2 EFPYs of additional operation from March 1, 2001, to reach the same time-at-temperature that Oconee Nuclear Station Unit 3 had at the time that its leaking nozzles were discovered in February 2001.

Using the criteria stated in NRC Bulletin 2001-01, both Units fall into the NRC category of plants with greater than 5 EFPYs and less than 30 EFPYs until reaching the Oconee 3 time-at-temperature.

- b. *a description of the VHP nozzles in your plant(s), including the number, type, inside and outside diameter, materials of construction, and the minimum distance between VHP nozzles;*

#### **CCNPP Response**

Calvert Cliffs Units 1 and 2 have 74 total RPV head nozzles each. The requested nozzle information is provided in Table 2-3 of Reference (1).

- c. *a description of the RPV head insulation type and configuration;*

#### **CCNPP Response**

As reported in Table 2-1 of Reference (1), Unit 1 has reflective contoured RPV head insulation and Unit 2 has blanket contoured RPV head insulation. Figure 1 shows the Unit 1 RPV head insulation. The configuration of the RPV head on Unit 2 is similar to Unit 1. The Transco Encapsulated Mineral Wool insulation on Unit 2 was, however, removed in 1989 and replaced with PCI Nukon Fiberglass Blanket type insulation. The Unit 1 and Unit 2 insulation can be removed to permit bare metal inspection of the head.

- d. *a description of the VHP nozzle and RPV head inspections (type, scope, qualification requirements, and acceptance criteria) that have been performed at your plant(s) in the past 4 years, and the findings. Include a description of any limitations (insulation or other impediments) to accessibility of the bare metal of the RPV head for visual examinations;*

#### **CCNPP Response**

As reported in Table 2-1 of Reference (1), Calvert Cliffs Nuclear Power Plant (CCNPP) has not performed RPV head and nozzle inspections on Unit 1 within the past four years. On Unit 2, CCNPP performed a bare metal visual examination of the eight peripheral nozzles (incore instrumentation nozzles) during the 2001 Refueling outage (March, 2001). No leakage was identified. Although not within the past four years, in 1997 CCNPP performed eddy current examination of the Unit 2 Reactor Vessel Head Vent line. No indications were identified.

ATTACHMENT (1)

30-DAY RESPONSE TO NRC BULLETIN 2001-01

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- e. *a description of the configuration of the missile shield, the CRDM housings and their support/restraint system, and all components, structures, and cabling from the top of the RPV head up to the missile shield. Include the elevations of these items relative to the bottom of the missile shield*

**CCNPP Response**

The attached drawing No. 61-761-E provides an overall view of the configuration. Drawing No. 61787 provides the elevation of the bottom of the missile shield (73' 11-9/16") and shield construction. Drawing No. 61-769-E, Sh 1 provides the elevation of control rod drive mechanisms (CRDMs) (3 tiers at 69' 6-1/16", 68' 11-3/8", 67' 10-1/8"), and top and bottom of the electrical platform (70" 6-1/2", 71' 0-1/2"), and construction of the electrical platform.

Cable runs from the Q-panels at the exterior of the missile shield rails are routed in a random fashion to the individual CRDMs and instruments while traversing the area over the head. The CRDMs are self-supported. Structural integrity is provided by the CRDM nozzle attachment welds.

**Requested Information 2**

*If your plant has previously experienced either leakage from or cracking in VHP nozzles, addressees are requested to provide the following information.*

**CCNPP Response**

Not applicable. See Table 2.1 of Reference (1).

**Requested Information 3**

*If the susceptibility ranking for your plant is within 5 EFPY of Oconee 3, addressees are requested to provide the following information*

**CCNPP Response**

Not applicable. See Table 2.1 of Reference (1).

**Requested Information 4**

*If the susceptibility ranking for your plant is greater than 5 EFPY and less than 30 EFPY of Oconee 3, addressees are requested to provide the following information.*

- a. *your plans for future inspections (type, scope, qualification requirements, and acceptance criteria) and the schedule;*

**CCNPP Response**

We will perform 100 percent visual inspections of the top RPV head after removing tight fitting insulation or volumetric (or equivalent wetted surface) inspections of nozzles from under the vessel head, during the next refueling outage (currently scheduled to begin in February 2002 for Unit 1 and February 2003 for Unit 2).

## ATTACHMENT (1)

### 30-DAY RESPONSE TO NRC BULLETIN 2001-01

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- b. *your basis for concluding that the inspections identified in 4.a will assure that regulatory requirements are met (see Applicable Regulatory Requirements section). Include the following specific information in this discussion: (1) If your future inspection plans do not include a qualified visual examination at the next scheduled refueling outage, provide your basis for concluding that the regulatory requirements discussed in the Applicable Regulatory Requirements section will continue to be met until the inspections are performed. (2) The corrective actions that will be taken, including alternative inspection methods (for example, volumetric examination), if leakage is detected.*

#### **CCNPP Response**

The technical basis for concluding that regulatory bases are met for CCNPP is provided in Reference (1). If any leaks are detected, the source will be determined, and the leakage pathway will be characterized. Inspection expansion will be determined based on the nature of the findings, but will be consistent with American Society of Mechanical Engineers and other regulatory requirements.

#### **Requested Information 5**

*Addressees are requested to provide the following information within 30 days after plant restart following the next refueling outage:*

- a. *a description of the extent of VHP nozzle leakage and cracking detected at your plant, including the number, location, size, and nature of each crack detected;*
- b. *if cracking is identified, a description of the inspections (type, scope, qualification requirements, and acceptance criteria), repairs, and other corrective actions you have taken to satisfy applicable regulatory requirements. This information is requested only if there are any changes from prior information submitted in accordance with this bulletin.*

#### **CCNPP Response**

Calvert Cliffs Nuclear Power Plant will provide the information requested in Item 5 of NRC Bulletin 2001-01 or indicate that no leakage was identified within 30 days after plant restart following the next refueling outage (currently scheduled to begin in February 2001 for Unit 1 and February 2003 for Unit 2).

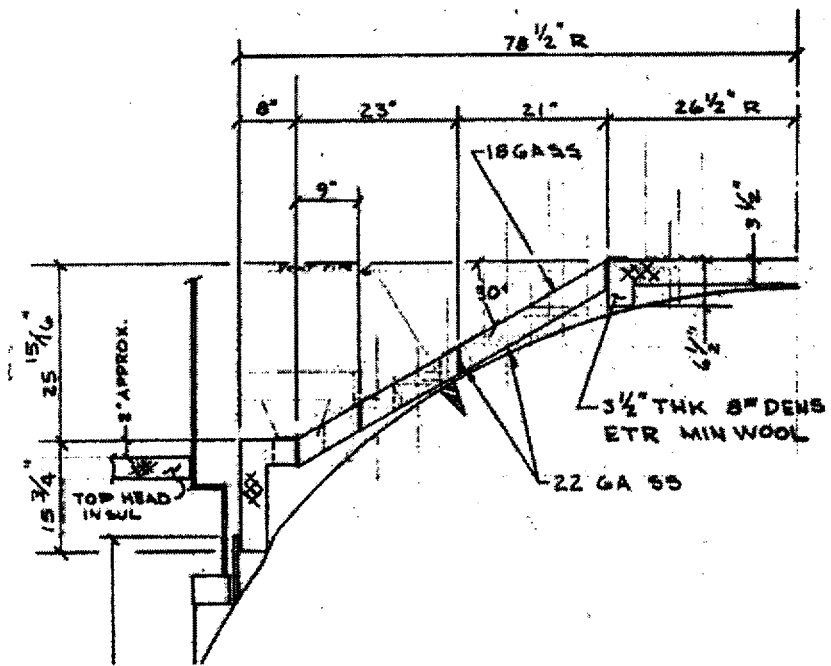
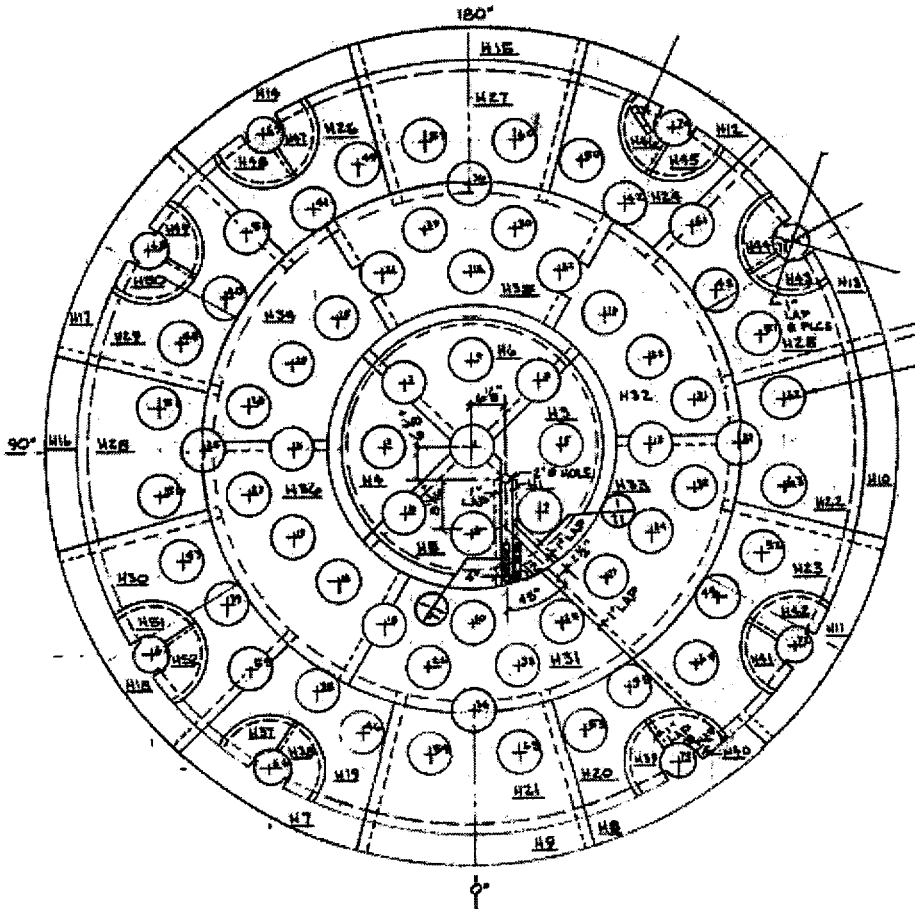
#### **Reference**

- (1) Letter from Mr. A. Marion (NEI) to Dr. B. W. Sheron (NRC), dated August 21, 2001, Generic Information for Use by Licensees in Response to NRC Bulletin 2001-01

ATTACHMENT (1)

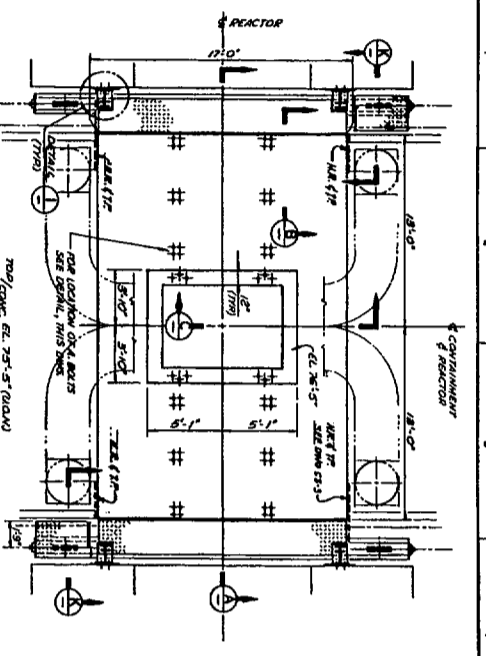
30-DAY RESPONSE TO NRC BULLETIN 2001-01

Figure 1  
Calvert Cliffs Unit 1 RPV Head Insulation

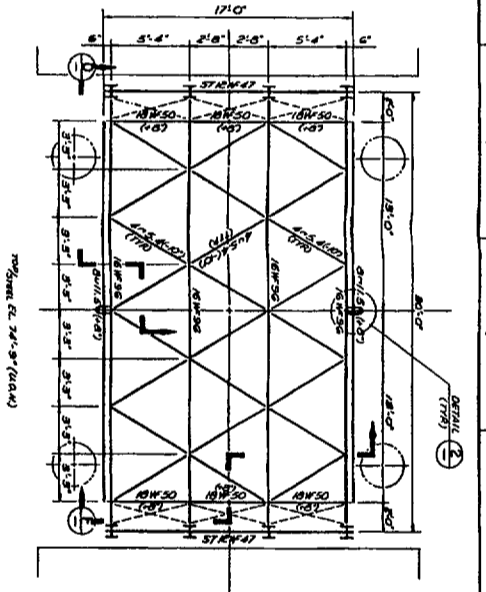




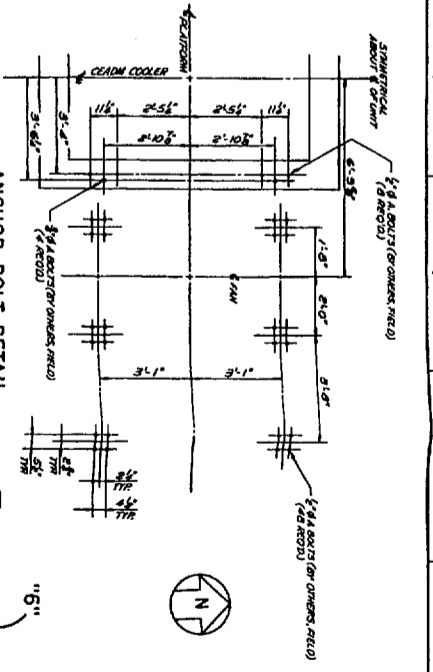




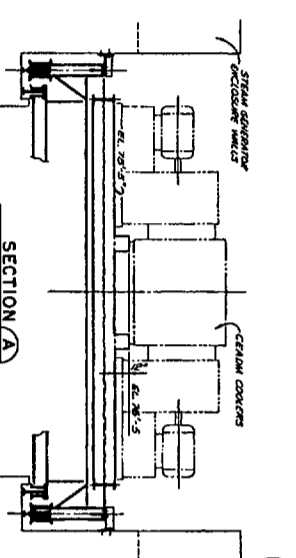
PLAN - SHIELDING SUPPORT PLATE CONCRETE



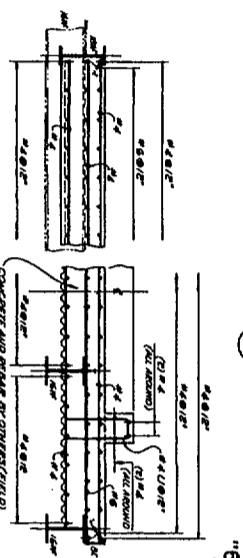
PLAN - SHIELDING SUPPORT PLATE STEEL



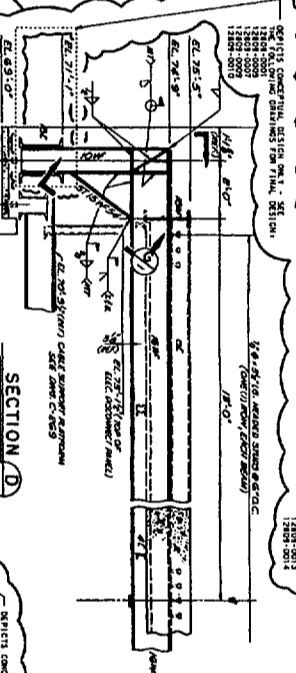
ANCHOR BOLT DETAIL



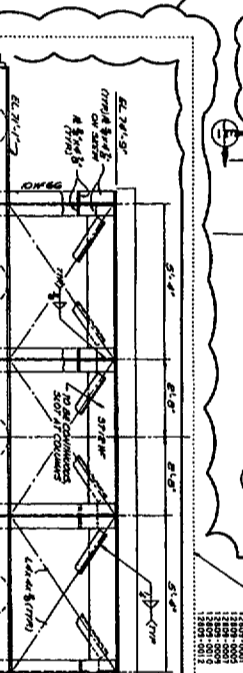
SECTION A



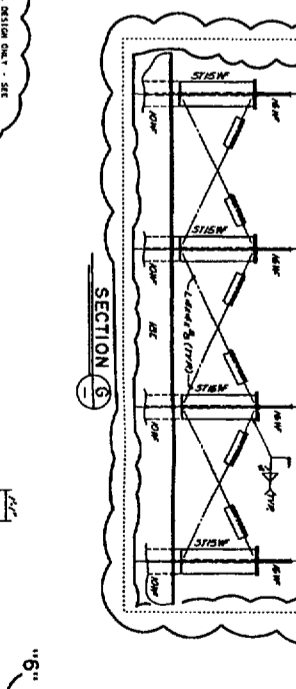
SECTION B



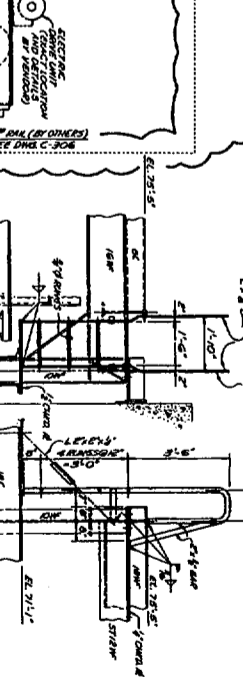
SECTION C



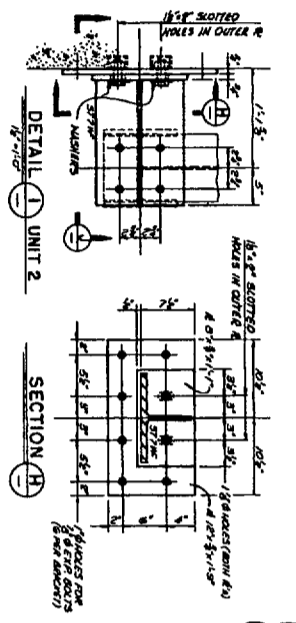
SECTION D



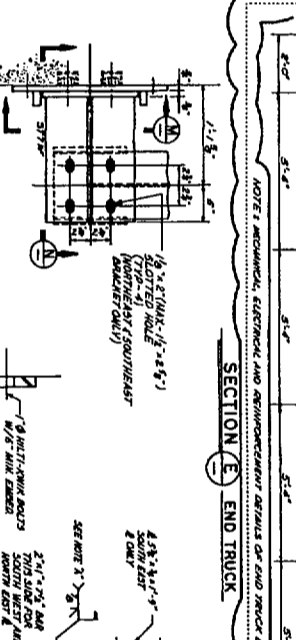
SECTION E



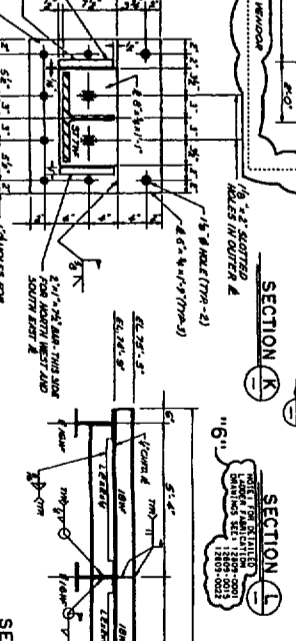
SECTION F



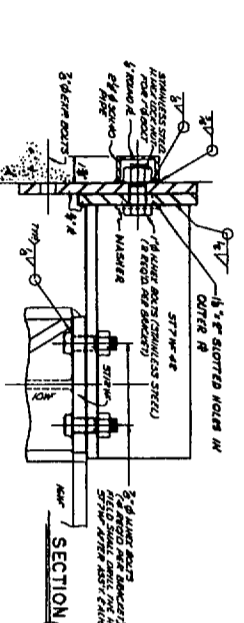
DETAIL 1 UNIT 2



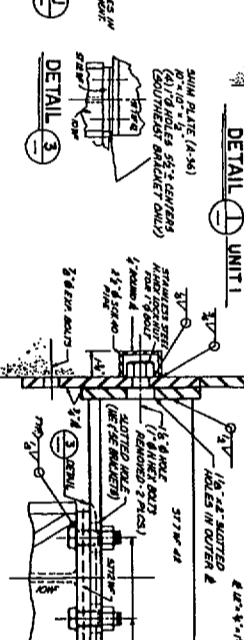
DETAIL 2 UNIT 1



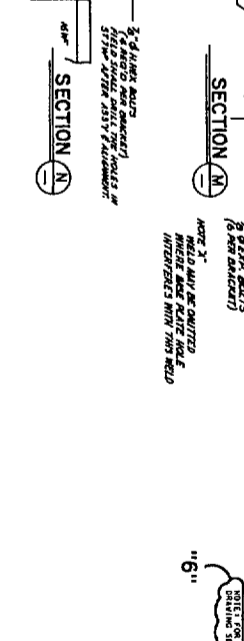
DETAIL 3 UNIT 1



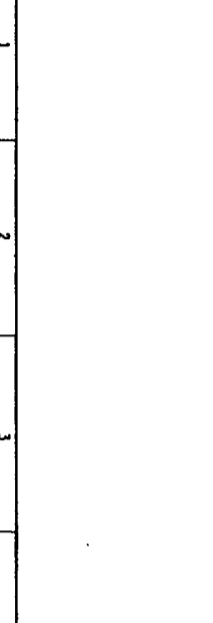
SECTION G



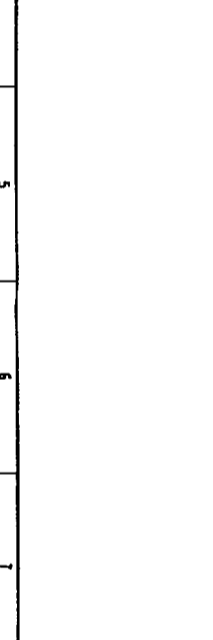
SECTION H



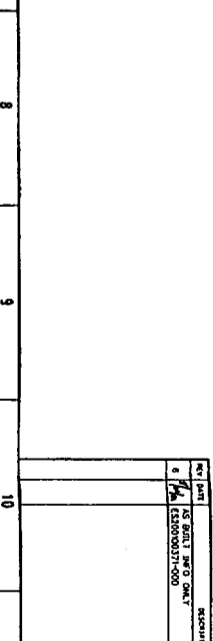
SECTION I



SECTION J



SECTION K



SECTION L

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	10/15/74	AS BUILT AND O.M.C.			
2	10/15/74	REVISIONS			

CONTAINMENT INTERIOR SHIELDING SUPPORT PLATFORM C-287

THE ENGINEER HAS EXAMINED THE DRAWINGS AND APPROVES THEM FOR CONSTRUCTION.

DATE: 10/15/74

SCALE: AS SHOWN

PROJECT: C-287

DESIGNER: [Name]

CHECKER: [Name]

APPROVER: [Name]

DATE: 10/15/74

SCALE: AS SHOWN

PROJECT: C-287

DESIGNER: [Name]

CHECKER: [Name]

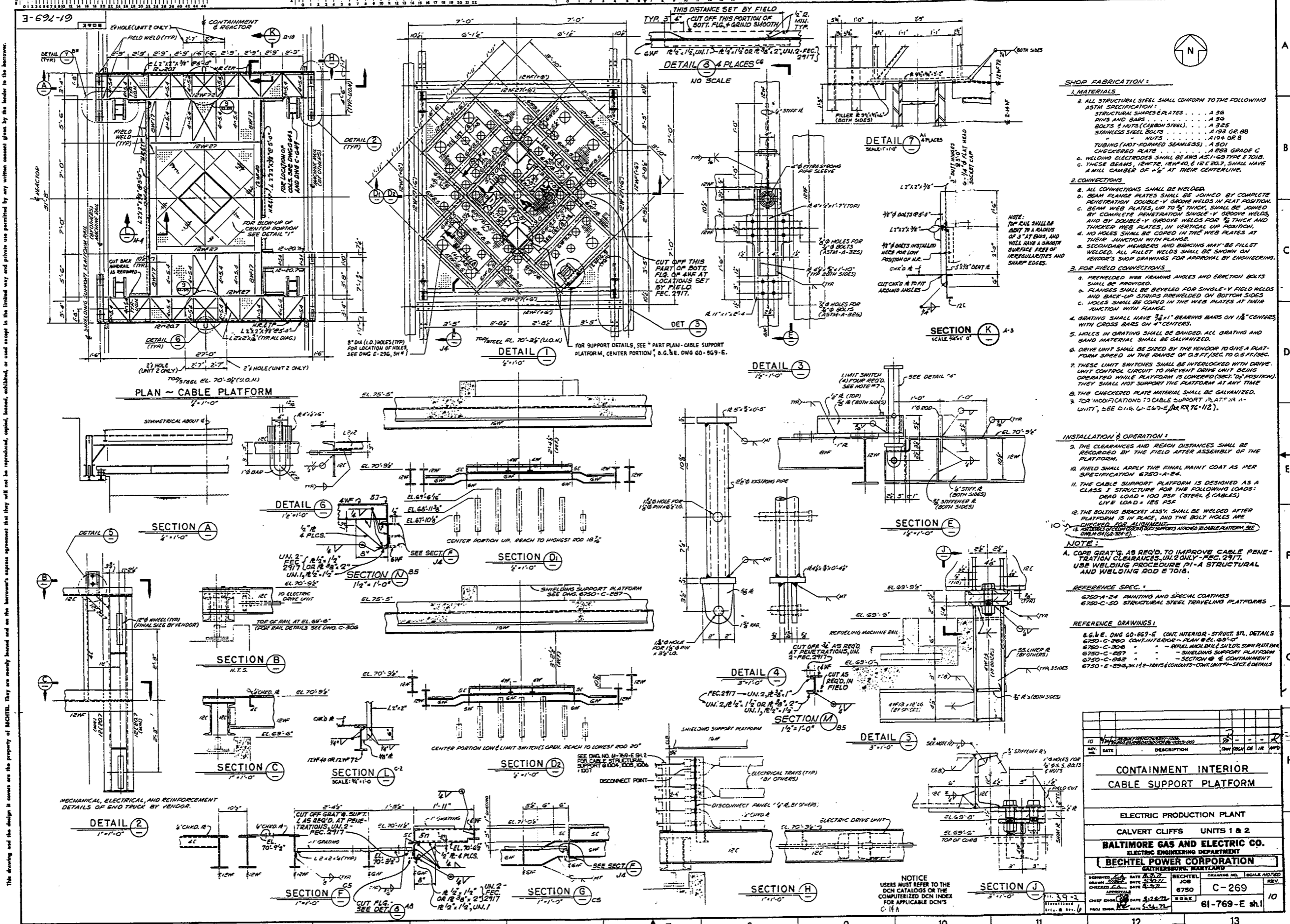
APPROVER: [Name]

DATE: 10/15/74

SCALE: AS SHOWN

PROJECT: C-287

STOP, THINK, ACT AND REVIEW



- SHOP FABRICATION:**
- MATERIALS:**
    - ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATION:
      - STRUCTURAL SQUARE PLATES . . . . . A 36
      - RIMS AND BARS . . . . . A 36
      - BOLTS & NUTS (CARBON STEEL) . . . . . A 325
      - STAINLESS STEEL BOLTS . . . . . A 193 GR. B8
      - NUTS . . . . . A 194 GR. B
      - TUBING (NOT FORMED SEAMLESS) . . . . . A 501
      - CHECKERED PLATE . . . . . A 253
    - WELDING ELECTRODES SHALL BE AWS A5.1-63 TYPE E 7018.
    - THESE BEAMS, IEM72, IEM70, & IEM70.2, SHALL HAVE A MILL CAMBER OF 1/8" AT THEIR CENTERLINE.
  - CONNECTIONS:**
    - ALL CONNECTIONS SHALL BE WELDED.
    - BEAM FLANGE PLATES SHALL BE JOINED BY COMPLETE PENETRATION DOUBLE-Y GROOVE WELDS IN FLAT POSITION.
    - BEAM WEB PLATES, UP TO 1/2" THICK, SHALL BE JOINED BY COMPLETE PENETRATION SINGLE-Y GROOVE WELDS, AND BY DOUBLE-Y GROOVE WELDS FOR 1/2" THICK AND THICKER WEB PLATES, IN VERTICAL UP POSITION.
    - NO HOLES SHALL BE COPED IN THE WEB PLATES AT THEIR JUNCTION WITH FLANGE.
    - SECONDARY MEMBERS AND BRIDGES MAY BE FILLET WELDED. ALL FILLET WELDS SHALL BE SHOWN ON TENDOR'S SHOP DRAWINGS FOR APPROVAL BY ENGINEERING.
  - FOR FIELD CONNECTIONS:**
    - PREWELDED WEB FRAMING ANGLES AND ERECTION BOLTS SHALL BE PROVIDED.
    - FLANGES SHALL BE BEVELLED FOR SINGLE-Y FIELD WELDS AND BACK-UP STRIPS PREWELDED ON BOTTOM SIDES.
    - HOLES SHALL BE COPED IN THE WEB PLATES AT THEIR JUNCTION WITH FLANGE.
    - GRATING SHALL HAVE 3/8" x 1" BEARING BARS ON 1/2" CENTERS WITH CROSS BARS ON 4" CENTERS.
    - HOLES IN GRATING SHALL BE SANDWICHED. ALL GRATING AND BAND MATERIAL SHALL BE GALVANIZED.
    - DRIVE UNIT SHALL BE SIZED BY THE TENDOR TO GIVE A PLATFORM SPEED IN THE RANGE OF 0.3 FT./SEC. TO 0.5 FT./SEC.
    - THESE LIMIT SWITCHES SHALL BE INTERLOCKED WITH DRIVE UNIT CONTROL CIRCUIT TO PREVENT DRIVE UNIT BEING OPERATED WHILE PLATFORM IS LOWERED (SECTION D2 POSITION). THEY SHALL NOT SUPPORT THE PLATFORM AT ANY TIME.
    - THE CHECKERED PLATE MATERIAL SHALL BE GALVANIZED.
    - FOR MODIFICATIONS TO CABLE SUPPORT PLATFORM (A-1 UNIT), SEE D19, G-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

- INSTALLATION & OPERATION:**
- THE CLEARANCES AND REACH DISTANCES SHALL BE RECORDED BY THE FIELD AFTER ASSEMBLY OF THE PLATFORM.
  - FIELD SHALL APPLY THE FINAL PAINT COAT AS PER SPECIFICATION 6750-A-24.
  - THE CABLE SUPPORT PLATFORM IS DESIGNED AS A CLASS I STRUCTURE FOR THE FOLLOWING LOADS:
    - DEAD LOAD = 100 PSF (STEEL & CABLES)
    - LIVE LOAD = 125 PSF
  - THE BOLTING BRACKET ASSY. SHALL BE WELDED AFTER PLATFORM IS IN PLACE, AND THE BOLT HOLES ARE CHECKED FOR ALIGNMENT.
  - SHIELDS OF OVERHEAD SUPPORTS ATTACHED TO CABLE PLATFORM, SEE D19, G-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

**NOTE:**  
 A. CORR. GRATING AS REQ'D. TO IMPROVE CABLE PENETRATION CLEARANCES, UN. 2 ONLY - SEC. 2917. USE WELDING PROCEDURE P1-A STRUCTURAL AND WELDING ROD E 7018.

**REFERENCE SPEC.:**  
 6750-A-24 PAINTING AND SPECIAL COATINGS  
 6750-C-50 STRUCTURAL STEEL TRAVELING PLATFORMS

**REFERENCE DRAWINGS:**  
 6750-A-24 CONT. INTERIOR - STRUCT. ST. DETAILS  
 6750-C-260 CONT. INTERIOR - PLAN @ EL. 69'-0"  
 6750-C-306 . . . . . RETAIL MACHINE & SHIELD SUPPORT PLATFORM  
 6750-C-257 . . . . . SHIELDING SUPPORT PLATFORM  
 6750-C-282 . . . . . SECTION G & CONTAINMENT  
 6750-E-239, 241, 242-TENTS (CONDUITS-CONT. UNIT)-SECT. & DETAILS

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.
10	12/15/77	REVISION			

<b>CONTAINMENT INTERIOR</b>	
<b>CABLE SUPPORT PLATFORM</b>	
<b>ELECTRIC PRODUCTION PLANT</b>	
<b>CALVERT CLIFFS UNITS 1 &amp; 2</b>	
<b>BALTIMORE GAS AND ELECTRIC CO.</b>	
<b>ELECTRIC ENGINEERING DEPARTMENT</b>	
<b>BECHTEL POWER CORPORATION</b>	
<b>BALTIMORE, MARYLAND</b>	
DESIGNED BY	DATE 3-23-77
DRAWN BY	DATE 3-23-77
CHECKED BY	DATE 3-23-77
APPROVED BY	DATE 3-23-77
PROJECT NO.	DATE 3-23-77
SCALE	SCALE 1/2" = 1'-0"
REV.	NO. 10

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**NOTICE:**  
 USERS MUST REFER TO THE DCN CATALOGS OR THE COMPUTERIZED DCN INDEX FOR APPLICABLE DCN'S C-14