Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

March 28, 1991

Mr. A. Bert Davis
Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Dresden Nuclear Power Station Units 2 and 3
Response to Request for Additional Information
Regarding the February 14, 1991 Enforcement
Conference for Dresden Station Unit 2
NRC Docket No. 50-237

References: (a) D. Galle (CECo) letter to A. Bert Davis (NRC) dated February 21, 1991.

(b) A. Bert Davis (NRC) letter to C. Reed (CECo) dated March 15, 1991.

(c) Conference Call between CECo (M. Richter, et. al.) and NRR (J. Lee) on March 25, 1991.

(d) Conference Call between CECo (M. Richter, et. al.) and NRR (B. Siegel, J. Lee, et. al.) on March 27, 1991.

Dear Mr. Davis:

Commonwealth Edison Company (CECo) provided the NRC in Reference (a) additional information requested during the February 14, 1991 Enforcement Conference for Dresden Unit 2. The NRC provided their review of the Enforcement Conference and supplemental materials in Reference (b). Subsequent telephone conversations between Mr. J. Lee of NRR and Mr. M. Richter of my staff occurred on March 25, 1991 (Reference (c)) and March 27, 1991 (Reference (d)). Additional technical information supporting the dose analyses submitted by CECo in Reference (a) was requested. That information, regarding Standby Gas Treatment System efficiency and secondary containment holdup, is provided in Attachments A and B.

Based on our review of Reference (b) there are two points that we would like to clarify. First, on page 7 the NRC provides a calculation based on assumptions that do not credit holdup in the secondary containment for either the Site Boundary/LPZ calculations or the Control Room calculations. The Licensing/Design Basis LOCA dose analysis for the Control Room previously credited the effect of holdup in the secondary containment and was approved by the NRC (reference December 1981 Control Room Habitability Study for Dresden Units 2 and 3 and the May 11, 1983 NRC Safety Evaluation Report accepting that study). Therefore, at least proper credit should be applied to the Control Room calculations for design basis consideration.

Secondly, the NRC concluded in Reference (b) that "the Dresden containment would not have been capable of performing its safety function". In the context of the NRC Enforcement Policy, intended safety function means the total safety function and is not directed towards loss of redundancy. The Dresden containment systems provide a multibarrier pressure suppression containment employing containment-in-depth principles in the design. The containment systems are composed of: a primary containment (the pressure suppression system), and a secondary containment (the reactor building).

The primary containment is a Mark I type containment structure that consists of a drywell, which encloses the reactor vessel, a pressure suppression chamber which stores a large volume of water as a heat sink, a connecting vent system between the drywell and suppression chamber, isolation valves, containment cooling systems, and other service equipment.

The reactor building encloses both the Units 2 and 3 reactors and their respective pressure suppression primary containments. The structure provides secondary containment for a unit when its primary containment is in service, and serves as primary containment during periods when the primary containment is open, such as during refueling. From an engineered safeguards consideration, the primary purpose of the secondary containment is to minimize the ground level release of airborne radioactive materials and to provide for a controlled, elevated release of the building atmosphere under accident conditions. Given this, we believe that there would be a loss of containment only under certain conditions (e.g., when secondary containment is not available).

Mr. J. Lee of NRR pointed out a discrepancy in our February 21, 1991, submittal (Reference (a)). On page 2 of Attachment B1 in the first full paragraph, reference is made to MSIV Leakage of "276 scfh per day". The units associated with this value are not correct and should read "276 scf per day per line". We apologize for any inconvenience this oversight may have caused.

We trust that the information submitted with this letter is responsive. Please contact me if you have any questions or need additional information.

Very truly yours,

T.J. Kovach

T.J. Kovach
Nuclear Licensing Manager

Attachments: A - Standby Gas Treatment System Efficiency
B - Secondary Containment Holdup

cc: C.J. Paperiello
B.L. Siegel, Project Manager-NRR
J.Y. Lee, Radiation Protection-NRR
D.E. Hills, Senior Resident Inspector
NRR Document Control Desk

ZNLD590

ATTACHMENT A

STANDBY GAS TREATMENT SYSTEM EFFICIENCY

Commonwealth Edison Company (CECo) indicated in Reference (a) that a realistic Standby Gas Treatment System (SBGTS) efficiency of ninety-eight percent (98%) was utilized for dose analyses, and that this efficiency was conservative based on test results. The following tables present the results of recent methyl iodine laboratory testing performed on samples from the charcoal adsorbers, and the results of SBGTS charcoal adsorber leak rate tests which provides a measure of bypass leakage.

METHYL IODINE LABORATORY TEST RESULTS

CHALLENGE AGENT: METHYL IODIDE

TEST CONDITIONS: TEMPERATURE = 130°C (266°F)
RELATIVE HUMIDITY = 95%

SBGT TRAIN	DATE OF TEST	CHARCOAL EFFICIENCY (%)	PENETRATION (%)
A	1/19/90	99.826	0.174
A	1/19/90	99.306	0.694
A	7/07/88	99.999	<0.001
B	1/20/90	99.640	0.360
B	9/16/88	99.054	0.946

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SBGTS CHARCOAL ADSORBER LEAK TEST RESULTS

CHALLENGE AGENT: AIR CHARGED WITH FREON R-11

ACCEPTANCE CRITERIA: PENETRATION/LEAKAGE OF <1%

SBGT TRAIN	DATE OF TEST	PENETRATION (%)
A	12/18/89	<1
A	06/09/88	<1
B	12/18/89	<1
B	08/31/88	<1

In addition, since the receipt of Reference (b), CECo has retrieved additional information which is pertinent with respect to the iodine loading capability of the SBGTS. This information is performance data which was provided by the SBGTS vendor (Barneby-Cheney Company). For the charcoal adsorber, the vendor furnished data shows a 1% by weight normal iodine loading at 99.99% efficiency, and 3.5 mg/g methyl iodide loading, for a total loading capability of 3,600 grams. This capacity is in excess of the approximately 870 grams of iodine that could be potentially released (see discussion in Reference (b)), and provides further assurance that no desorption or reduction in efficiency should occur as a result of any additional loading. For your convenience, the following 3 pages of this attachment provide pertinent excerpts from the vendor information.

<u>References</u>

(a) D. Galle (CECo) letter to A. Bert Davis (NRC), dated February 21, 1991.

(b) A. Bert Davis (NRC) letter to C. Reed (CECo), dated March 15, 1991.

ATTACHMENT A

Proposal for
Two (2) Standby Gas Treatment Systems, Cont.
Dresden Nuclear Power Station
Units 2 and 3

Name of Bidder Burnebey-Cheney Company

DIMENSIONS, Cont.	(Insert all data in this column)
b. Each cell	
(1) Width..	26-1/2"
(2) Height..	7-3/4"
(3) Depth (end to end, direction of air flow)......	24" (per Dwg 67-8-10-J1)
E. MIXING ORIFICE AND SAMPLING SECTION	
Length of 24" diameter Spool piece with mixing orifice and sampling section..........................	6'
F. HIGH EFFICIENCY AFTER FILTER SECTION	
a. Width..	4' 9"
b. Height..	4' 6"
c. Depth (end to end, direction of flow).............	7' 0"
9. EQUIPMENT DATA	
A. CARBON ADSORBER SECTION	
a. Number of adsorbent cells per unit.................	12 (= 24 twins)
b. Number of cells:	
(1) Vertical..	6
(2) Horizontal..	2
c. Rated air flow per cell at specified condition.....	333
d. Minimum contact time between air and adsorbent.....	0.26
e. Minimum adsorbent bed thickness....................	2.00"
f. Pounds adsorbent per cell (per Article 15F(2))....	45#
g. Carbon adsorbent origin............................	Coconut shell charcoal

Proposal for
Two (2) Standby Gas Treatment Systems, Cont.
Dresden Nuclear Power Station
Units 2 and 3

Name of Bidder: Barnebey-Cheney Company

EQUIPMENT DATA, Cont.	(Insert all data in this column)
B. ROUGH AND HIGH EFFICIENCY FILTER	
a. Rough Filter	4 (24" x 24" x 2")
(1) Number and size of rough filter frames per section..................................	
(2) Type filter media and temp. limit...........	Fiberglass, 800°F
(3) Filter frame material........................	Cad. plated steel
(4) Rated air flow rate per frame at specific conditions.....................................	1000 CFM
b. High Efficiency Filter	
(1) Number and size of rough filter frames per section..................................	4 (24" x24" x 11-1/2"
(2) Type filter media and temp. limit...........	Glass Asbestos 1000°F
(3) Frame material and temp. limit..............	Cad plated carbon st[illegible] 1000°F
(4) Separator material and temp. limit..........	Aluminum 650°F
(5) Bond material and temp. limit...............	Phenolic 650°F
(6) Gasket material and temp. limit.............	Fiberglass 1000°F
C. DEMISTER SECTION	
a. Number and size of demister units per section....	4 (24" x24" x 2")
b. Make and model number of demister unit..........	Otto York 321 SR
c. Demister media material and temp. limit.........	Teflon Coated stainless wire, 3000°F
10. PERFORMANCE (at specified conditions)	
A. CARBON ADSORBER SECTION	
a. Guaranteed iodine removal efficiency at specified conditions:	
(1) Grams normal iodine per gram adsorbent.......	1% by Wt. at 99.99% efficiency

Proposal for
Two (2) Standby Gas Treatment Systems, Cont.
Dresden Nuclear Power Station
Units 2 and 3

Name of Bidder: Barnebey-Cheney Company

PERFORMANCE, Cont.	(Insert all data in this column)
(2) Grams methyl iodide per gram adsorbent.......	3.5 mg/g
(3) Grams normal iodine per adsorbent unit.......	2700 g
(4) Grams methyl iodide per adsorbent unit.......	900 g
(5) Minimum normal iodine removal efficiency.....	99.99%
(6) Minimum methyl iodide removal efficiency.....	99.0%
b. Adsorbent packing density (minimum bone dry) (per Article title MATERIALS)....................	28#/cu ft
c. Adsorbent ignition temperature.................	875°F
d. Name of water insoluble iodide used to impregnate adsorbent to improve its efficiency to remove methyl iodide..................................	$KI + I_2$ (KI_3)
e. Guaranteed maximum section pressure drop at specified conditions................................	1.0"
f. Air velocity through adsorbent..................	38 fpm
B. ROUGH PREFILTER: Guranteed maximum section pressure drop..	.2"
C. HIGH EFFICIENCY PREFILTER: Guranteed maximum section pressure drop..................................	1.0"
D. HIGH EFFICIENCY AFTERFILTER: Guranteed maximum section pressure drop..............................	1.0"
E. DEMISTER:	
a. Guranteed maximum section pressure drop @ 1.0 lb. entrained water/1000 cfm air flow........	1.0"
11. ADDENDA Bidder represents that this proposal includes provision for the following addenda (Bidder shall insert Addenda	

ATTACHMENT B

SECONDARY CONTAINMENT HOLDUP

Commonwealth Edison Company (CECo) indicated in Reference (a) that a secondary containment holdup assumption of one volume per day was considered for the dose analyses. CECo believes this is a conservative assumption since the secondary containment infiltration will have a tendency to bypass the containment leakage. This assumption is based on the fact that the Standby Gas Treatment System (SBGTS) is a general area exhaust system and is not designed to collect primary leakage at its source.

The potential containment leakage (from the inboard flange of the reactor building to pressure suppression chamber vacuum breaker) would have occurred in the torus area of the Unit 2 reactor building, which is an open expanse of approximately 420,000 cubic feet located below grade level (see Figure 1).

The reactor building ventilation system for each unit has three sections of exhaust duct. These ducts are:

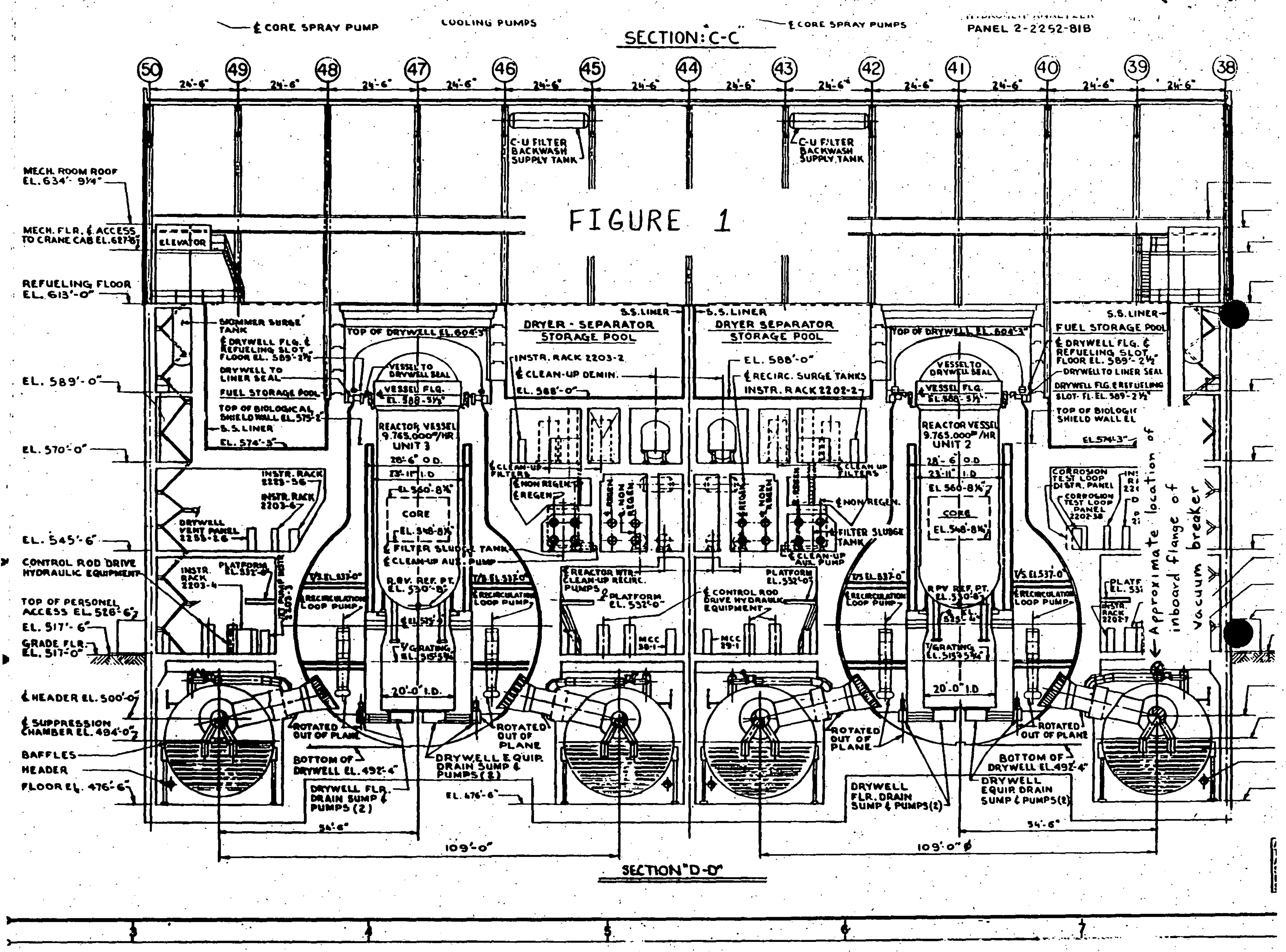
- The exhaust duct in the upper region of the refuel floor which also services the 570' and 589' elevations.
- The exhaust duct in the upper region of the 589' elevation which also services the refuel floor.
- The exhaust duct in the upper region of the 570' elevation which also services the lower regions of the reactor building, including the torus area.

The three sections of exhaust duct feed to a common header which goes to the Reactor Building exhaust fans. The SBGTS tie-in is located immediately upstream of the exhaust fans located on the 613' elevation. The SBGTS draws 2000 cfm suction from each of the reactor building ventilation systems which are tripped during a loss-of-coolant accident. Both reactor building ventilation systems are sized for a normal flow of approximately 110,000 cfm. It is expected that the infiltration, which occurs through the "butler building" structure above elevation 613', will pass directly to the reactor building exhaust openings in the area without being drawn down into the lower elevations of the reactor building.

Based on the anticipated dispersion of the potential leak in the large torus area, the location of the potential leak with respect to SBGTS suction and the anticipated in-leakage from the reactor building structure on the refueling floor, CECo believes the holdup assumed in the secondary containment is realistic and appropriate for the dose analyses.

References

(a) D. Galle (CECo) letter to A. Bert Davis (NRC), dated February 21, 1991.



℄ CORE SPRAY PUMP
COOLING PUMPS
SECTION: C-C
℄ CORE SPRAY PUMPS
PANEL 2-2252-81B
50
49
48
47
46
45
44
43
42
41
40
39
38
24'-6"
C-U FILTER BACKWASH SUPPLY TANK
FIGURE 1
MECH. ROOM ROOF EL. 634'-9¼"
MECH. FLR. ℄ ACCESS TO CRANE CAB EL. 627'-8½"
ELEVATOR
REFUELING FLOOR EL. 613'-0"
SKIMMER SURGE TANK
℄ DRYWELL FLG. ℄ REFUELING SLOT FLOOR EL. 589'-2½"
DRYWELL TO LINER SEAL
FUEL STORAGE POOL
TOP OF BIOLOGICAL SHIELD WALL EL. 575'-2"
S.S. LINER
EL. 574'-5"
EL. 589'-0"
EL. 570'-0"
EL. 545'-6"
CONTROL ROD DRIVE HYDRAULIC EQUIPMENT
TOP OF PERSONEL ACCESS EL. 526'-6"
EL. 517'-6"
GRADE FLR. EL. 517'-0"
℄ HEADER EL. 500'-0"
℄ SUPPRESSION CHAMBER EL. 494'-0"
BAFFLES
HEADER
FLOOR EL. 476'-6"
TOP OF DRYWELL EL. 604'-3"
VESSEL TO DRYWELL SEAL
VESSEL FLG. EL. 588'-5½"
REACTOR VESSEL 9.765,000#/HR UNIT 3
28'-6" O.D.
23'-11" I.D.
EL. 560'-8¼"
CORE
EL. 548'-8½"
R.P.V. REF. PT. EL. 530'-8"
T/S EL. 537'-0"
RECIRCULATION LOOP PUMP
T/GRATING EL. 515'-5¾"
20'-0" I.D.
ROTATED OUT OF PLANE
BOTTOM OF DRYWELL EL. 492'-4"
DRYWELL EQUIP. DRAIN SUMP & PUMPS (2)
DRYWELL FLR. DRAIN SUMP & PUMPS (2)
INSTR. RACK 2203-56
INSTR. RACK 2203-6
DRYWELL VENT PANEL 2253-26
INSTR. RACK 2203-4
PLATFORM EL. 532'-0"
S.S. LINER
DRYER - SEPARATOR STORAGE POOL
INSTR. RACK 2203-2
℄ CLEAN-UP DEMIN.
EL. 588'-0"
℄ CLEAN-UP FILTERS
℄ NON REGEN.
℄ REGEN.
℄ FILTER SLUDGE TANK
℄ CLEAN-UP AUX. PUMP
℄ REACTOR WTR. CLEAN-UP RECIRC. PUMPS
℄ PLATFORM EL. 532'-0"
MCC 38-1
EL. 476'-6"
DRYER SEPARATOR STORAGE POOL
EL. 588'-0"
℄ RECIRC. SURGE TANKS
INSTR. RACK 2202-2
℄ CONTROL ROD DRIVE HYDRAULIC EQUIPMENT
PLATFORM EL. 532'-0"
MCC 29-1
℄ NON REGEN.
FILTER SLUDGE TANK
℄ CLEAN-UP AUX. PUMP
DRYWELL FLR. DRAIN SUMP & PUMPS (2)
REACTOR VESSEL 9.765,000#/HR UNIT 2
28'-6" O.D.
23'-11" I.D.
EL. 560'-8¼"
CORE
EL. 548'-8½"
RPV REF. PT. EL. 530'-8"
T/GRATING EL. 515'-5¾"
20'-0" I.D.
BOTTOM OF DRYWELL EL. 492'-4"
DRYWELL EQUIP. DRAIN SUMP & PUMPS (2)
FUEL STORAGE POOL
℄ DRYWELL FLG. ℄ REFUELING SLOT FLOOR EL. 589'-2½"
DRYWELL TO LINER SEAL
DRYWELL FLG. ℄ REFUELING SLOT FL. EL. 589'-2½"
TOP OF BIOLOGICAL SHIELD WALL EL
EL. 574'-3"
CORROSION TEST LOOP DISTR. PANEL
CORROSION TEST LOOP PANEL 2202-38
INSTR. RACK 2202-7
Approximate location of inboard flange of vacuum breaker
54'-6"
109'-0"
SECTION "D-D"
3
4
5
6
7