

RS-16-121

10 CFR 50.90

June 2, 2016

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-001

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket Nos. 50-461 and 72-1046

Subject: Response to Request for Additional Information Concerning License Amendment  
Request to Incorporate Revised Alternative Source Term Dose Calculation in  
USAR

- References:
1. Letter from P. R Simpson (Exelon Generation Company, LLC) to U. S. NRC, "License Amendment Request to Incorporate Revised Alternative Source Term Dose Calculation," dated January 29, 2016
  2. Letter from E. Brown (U. S. NRC) to B. C. Hanson, "Clinton Power Station, Unit 1 - Request for Additional Information Related to Incorporation of Revised Alternative Source Term (CAC No MF7336)(RS-16-019)," dated May 11, 2016
  3. Teleconference Between U. S. NRC (E. Brown, et al) and Exelon Generation Company, LLC (J. Schrage, et al) on May 5, 2016

In Reference 1, Exelon Generation Company, LLC (EGC) submitted a request to amend Facility Operating License No. NPF-62 for Clinton Power Station (CPS), Unit 1.

The proposed amendment would revise an input parameter for the Loss-of-Coolant Accident (LOCA) dose calculation in the CPS Updated Safety Analysis Report (USAR) and the CPS Technical Specification (TS) Bases. The current LOCA dose calculation methodology was submitted and approved by the NRC in Amendment 167 to NPF-62, which implemented an alternative source term (AST) methodology in accordance with 10 CFR 50.67, "Accident source term."

In Reference 2, the NRC provided five requests for additional information (RAIs) related to the proposed license amendment. The RAIs were based on draft questions that were provided to EGC in an email from E. Brown to T. Byam on April 29, 2016. The NRC provided additional clarification of the draft RAIs during the Reference 3 teleconference.

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As a preliminary response to this request, EGC is providing the information in the Attachment and Enclosure to this letter. EGC will provide the remaining requested information (i.e., EGC response to RAI 3.b and 3.c) on or before June 10, 2016, as specified in Reference 2.

There are no regulatory commitments contained within this letter.

If you have any questions concerning this letter, please contact Mr. John L. Schrage at (630) 657-2821.

Respectfully,

A handwritten signature in black ink, reading "Patrick R. Simpson". The signature is fluid and cursive, with a long horizontal flourish extending from the end of the name.

Patrick R. Simpson  
Manager – Licensing  
Exelon Generation Company, LLC

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cc: NRC Regional Administrator, Region III  
NRC Senior Resident Inspector – Clinton Power Station  
Illinois Emergency Management Agency – Division of Nuclear Safety

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**RAI 1.** Section 3.2 of the attachment to the January 29, 2016 submittal states:

*"In addition, actual SGTS [standby gas treatment system] train performance history during TS [technical specification] 3.6.4.1.4 Secondary Containment drawdown surveillances indicates that the required negative pressure equivalent to ¼ inch of water is achieved in approximately one half of the procedural acceptance criteria of 78 seconds. This acceptance criteria is based on the required drawdown time, without the post-LOCA [loss of coolant accident] heat loads. Although this surveillance is conducted with normal operating conditions (i.e., as opposed to LOCA conditions), the margin from the acceptance criteria of 78 seconds to the analytical drawdown time provides additional assurance that SGTS will achieve the required negative pressure within 19 minutes following a LOCA, assuming a fully loaded design basis cask in the FB [Fuel Building]."*

**RAI 1.a.** *Describe the relative contributions to the increased analytical drawdown time from the additional heat load in the railroad bay and the portion attributable to the addition of the railroad bay volume. Describe how the procedure acceptance criterion of 78 seconds was derived. Discuss the relationship between the analytical drawdown time and the procedure acceptance criterion/criteria. Address whether the assumed post-LOCA heat loads account for all the difference between the AST assumed drawdown times and the surveillance procedure acceptance criteria of 78 seconds.*

**EGC Response to RAI 1.a**

As a conservative assumption, the revised CPS AST analyses for the increased drawdown time included the CPS Fuel Building (FB) Railroad (RR) Bay Airlock volume. However, the actual secondary containment physical design will not change. That is, the design basis configuration of secondary containment will not include the FB RR Airlock Bay volume.

Given the small volume of the FB RR Bay Airlock, relative to the entire FB volume, the additional analytical post-LOCA drawdown time that is attributable to the added volume is a small fraction of the additional seven minutes. Although EGC has not specifically determined this contribution, actual drawdown time testing with the RR Bay Airlock, as described in the response to RAI 1.c, demonstrates that the additional volume of the RR Bay Airlock adds nine seconds to the actual drawdown time.

The conditions under which drawdown testing is performed are different than those assumed for LOCA conditions. For this reason, and because test results are also influenced by certain plant and/or atmospheric conditions, it is necessary to adjust the test acceptance criteria to account for such test conditions. The current acceptance criterion for the drawdown test, which was implemented in 2011, is thus based on an analytical model, verified by actual performance of drawdown tests, in which the drawdown time determined for accident conditions is adjusted to account for performance of the test during normal plant conditions.

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The additional post-LOCA drawdown time of 7 minutes, as the endpoint of the revised secondary containment drawdown curve, is a conservative bounding value. Based on both the revised drawdown curve and the analytical model described above, EGC has verified that the current surveillance acceptance criterion of 78 seconds will continue to demonstrate the ability of SGTS to achieve the required negative pressure within the revised post-LOCA drawdown time.

***RAI 1.b.*** *Address whether the acceptance criteria of 78 seconds will continue to be used for both the test not including the railroad bay volume, and the test including the railroad bay volume.*

**EGC Response to RAI 1.b**

EGC will continue to utilize the current procedure and acceptance criteria to demonstrate compliance with TS Surveillance Requirement 3.6.4.1.4 for secondary containment. As stated in the EGC response to RAI 1.a, the design basis configuration of secondary containment will not include the FB RR Airlock Bay volume.

***RAI 1.c.*** *As stated above, the actual drawdown time is identified as about one half the 78 seconds. Address whether a drawdown time test has been performed for the railroad bay volume included configuration. If so, address the amount of additional drawdown time observed as a result of including the railroad bay volume. If no test was performed and the railroad volume is intended to be assumed included for this analyses, address the amount the test conditions drawdown time is expected to change with the additional volume.*

**EGC Response to RAI 1.c**

In December 2014, EGC conducted a drawdown test of secondary containment for both configurations (i.e., with and without the FB RR Bay Airlock volume). The inclusion of the FB RR Bay Airlock volume added approximately nine seconds to the tested drawdown time (i.e., 37 seconds with the FB RR Bay Airlock inner door open compared to 28 seconds with the inner door closed).

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**RAI 2.** *In Chapter 6.2.3.3.1 of the Updated Safety Analysis Report (USAR), the licensee stated that calculations indicate that the SGBT fan has been adequately sized to achieve a 0.25-inch water gauge negative pressure in less than 12 minutes after the LOCA event. The licensee is proposing to increase the drawdown time for secondary containment from the current licensing basis value of 12 minutes to 19 minutes.*

**RAI 2.a.** *Address whether this change in parameters and operation will impact the emergency diesel generators (EDGs) capability and capacity.*

**EGC Response to RAI 2.a**

The proposed change in secondary containment post-LOCA heat load and drawdown time does not affect the assumed operation of SGTS in the loading profiles of the emergency diesel generators (EDGs). EGC has verified that the Division 1 and Division 2 EDG loading profiles assume continuous, full load operation of SGTS following a design basis LOCA event. As such, the additional heat load and resultant drawdown time will not impact EDG capability and capacity.

**RAI 2.b.** *Address whether any other loads are being added to the EDGs. If so, describe their impact on the capability and capacity of the EDGs. Also, describe changes, if any, being made to the EDG loading sequence to support the licensee amendment request. Explain if any loading change will impact the design margin of the EDG.*

**EGC Response to RAI 2.b**

The proposed change in secondary containment heat load and drawdown time does not require the addition of any new loads to the CPS EDGs, nor does it result in any change to the EDG loading sequence.

**RAI 2.c.** *Address whether any non-safety-related systems and components are credited in the alternative source term (AST) analyses. If so, describe the independence (electrical and physical separation) of these non-safety related systems from the safety-related systems. Provide a discussion on why a fault on the non-Class 1E electrical circuit will not propagate to the Class 1E electrical circuit.*

**EGC Response to RAI 2.c**

The CPS AST analyses do not credit any non-safety-related systems or components.

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**RAI 3**      *Address whether there is a change of equipment qualification (EQ) profile, by responding to the following:*

**RAI 3.a.**    *Provide a list and description of components being added to your Section 50.49 to Title 10 to the Code of Federal Regulations (10 CFR) program due to this revised AST Dose calculation in the LAR. Confirm that these components are qualified for the environmental conditions they are expected to be exposed to.*

**EGC Response to RAI 3.a.**

The revised CPS AST analyses do not result in the addition of any new components to the CPS 10 CFR 50.49 EQ program.

**RAI 3.b.**    *In Enclosure 5 of the LAR, the licensee stated that its evaluation identified temperature increases in various areas within 15 of 20 secondary containment environmental zones. For the 15 environmental zones affected provide, in table form, a list of all the EQ components affected and their respective qualification levels and parameters (i.e., temperature, pressure, and radiation) that shows that the EQ limits remain bounding under the revised AST conditions for normal operation, accident (LOCA), and post-accident. Include the existing EQ limits and show how EQ margins (e.g., temperature, pressure, radiation, etc.) are being maintained.*

**EGC Response to RAI 3.b.**

EGC will provide a response to this RAI in a subsequent transmittal.

**RAI 3.c.**    *Provide pre- and post-AST implementation figures of the worst case accident EQ temperature and pressure profiles for all the affected EQ zones, which demonstrate that the post AST profile is bounding.*

**EGC Response to RAI 3.c.**

EGC will provide a response to this RAI in a subsequent transmittal.

**RAI 3.d.**    *Provide revised environmental zone map(s) of the secondary containment that show all the affected environmental zones.*

**EGC Response to RAI 3.d.**

The Enclosure to this letter provides the Environmental Zone Maps for those areas of the FB that would experience an analytical increase in the post-LOCA temperature, due to the presence of a fully loaded cask. This enclosure also includes a list of the affected Environmental Zones and the expected post-LOCA temperature increase. The Environmental Zone Maps only provide zone boundaries. There are no changes in zone boundaries.

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**RAI 3.e.** *In Chapter 3.11.9 of the USAR the licensee stated that the CPS areas containing Class 1E equipment are divided into two zones based on the environmental conditions that are expected to occur as a result of various plant events. These zone classifications are termed harsh and mild environmental zones. Address whether there are any reclassifications of the EQ equipment due to the revised AST.*

**EGC Response to RAI 3.e.**

The environmental zones that are impacted by the proposed change (i.e., as delineated and described in the Enclosure) are currently classified as harsh. The revised CPS AST analyses do not result in the reclassification of any affected environmental zone, or the components within those zones.

**RAI 4.** *On page 4 of the Attachment of the January 29, 2016 submittal, Section 3.1, the licensee stated that in the previous AST LAR the licensee used AST methodology for design basis accidents, in accordance with 10 CFR 50.67, with the exception that Technical Information Document (TID) 14844 "Calculation of Distance Factors for Power and Test Reactor Sites," continued to be used as the radiation dose basis for equipment environmental qualification. On page 2 of the Attachment of the January 29, 2016 submittal, Section 1.0, the licensee stated that evaluations were conducted to validate that the proposed configuration complies with the applicable general design criteria contained in Appendix A to 10 CFR 50, as well as the requirements of 10 CFR 50.49, "Environmental qualification of electric equipment important to safety for nuclear power plants," 10 CFR 50.67, and Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." Address whether the radiation dose basis for EQ of safety related equipment, will continue to be based on TID-14844, assumptions.*

**EGC Response to RAI 4**

The proposed change in secondary containment post-LOCA heat load and drawdown time (i.e., during ISFSI operations) does not result in any change to post-LOCA radiation dose levels or duration within secondary containment. The radiation dose basis for EQ of safety related equipment will continue to be based on TID-14844, assumptions.

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**RAI 5.** *In a letter dated November 6, 2015 (Agencywide Document Access and Management System No. ML15313A464), the Nuclear Regulatory Commission staff issued an integrated inspection report for CPS. The report documents that the inspectors reviewed Engineering Change (EC) 395976, "ISFSI-Extended Secondary Containment Boundary to FB Outer Railroad Bay Doors" Revision 0. This engineering change established the boundary of the secondary containment to include the fuel bundle (FB) railroad bay airlock. The NRC staff issued a finding for failure to obtain a license amendment prior to making modifications to secondary containment. Address whether there secondary containment has been changed to include the FB railroad bay airlock. If so, describe the impact on the EQ components in the FB railroad bay airlock and whether there is any change in seismic qualification of the affected equipment.*

**EGC Response to RAI 5**

The proposed change in secondary containment post-LOCA heat load and drawdown time (i.e., during ISFSI operations) does not require a change to the physical configuration of the secondary containment. Therefore, the FB Railroad Bay Airlock will not be incorporated into secondary containment.

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**Response to RAI-3.d**  
**Environmental Zone Maps**  
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The following provides the affected Environmental Zone Maps, and a list of zones and associated rooms that would experience an increase in the post-LOCA temperature due to the presence of a fully loaded spent fuel cask in the Fuel Building. This list also includes the current value for expected post-LOCA temperature (i.e., without a fuel cask) and the expected Post-LOCA temperature with the addition of a loaded cask.

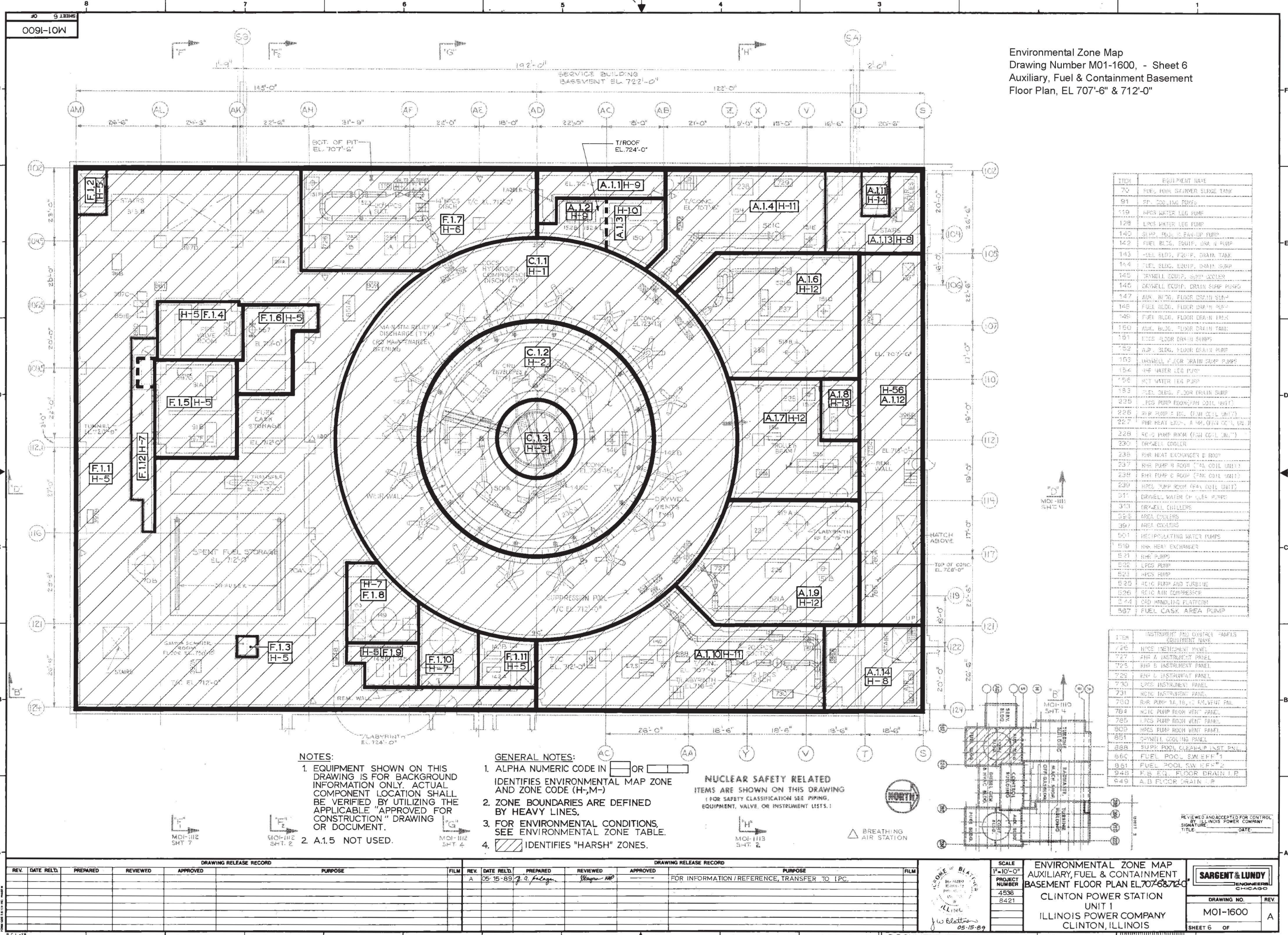
<b>Zone</b>	<b>Room</b>	<b>Description</b>	<b>Current Post-LOCA Temperature (°F)</b>	<b>Post-LOCA Temperature with Cask (°F)</b>
H-4	F.2.1	General Area	147	155
H-5	F.1.1	General Area	147	155
H-5	F.1.2	Stairs	147	155
H-5	F.1.3	Gamma Scanner Room	147	155
H-5	F.1.4	Pipe Valve Room	147	155
H-5	F.1.5	FPI Cooling Pump Room	147	155
H-5	F.1.6	Fuel Cask Area Pump Room	147	155
H-5	F.1.9	Floor Drain Pump Room	147	155
H-5	F.1.11	Equipment Drain Pump Room	147	155
H-5	F.2.2	Stairs	147	155
H-5	F.2.3	Tunnel	147	155
H-5	F.2.4	Change Room	147	155
H-5	F.2.5	Change Room	147	155
H-5	F.2.6	Fuel Cask and Washdown Area	147	155
H-5	F.2.7	Ultrasonic Cleaner & Vault Room	147	155
H-5	F.3.1	General Area	147	155
H-7	F.1.8	Floor Drain Tank Room	147	155
H-7	F.1.10	Equipment Drain Tank Room	147	155
H-7	F.1.12	Tunnel	147	155
H-7	F.2.8	Fuel Pool Heat Exchanger Room	147	155
H-9	A.1.1	Aisle	139	155
H-9	A.1.2	Floor Drain Pump Room	139	155
H-10	A.1.3	Floor Drain Tank Room	139	155
H-11	A.1.10	LPCS Pump Room	146	148
H-17	A.2.1	Access Aisle	148	155
H-17	A.3.1	Gas Control Boundary	148	155
H-17	A.3.5	Gas Control Boundary	148	155
H-17	A.3.8	Air Lock	148	155
H-17	A.3.9	Gas Control Boundary	148	155
H-17	A.4.1	Gas Control Boundary	148	155
H-17	A.4.5	Gas Control Boundary	148	155

**ENCLOSURE**  
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**Environmental Zone Maps**  
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Zone	Room	Description	Current Post-LOCA Temperature (°F)	Post-LOCA Temperature with Cask (°F)
H-17	A.4.10	Air Lock	148	155
H-19	A.2.5	Access Aisle	148	155
H-20	A.2.6	Pipe Tunnel	148	155
H-22	A.2.9	Air Lock	148	155
H-22	A.2.19	Air Lock	148	155
H-23	A.2.12	Below Main Steam Tunnel	148	155
H-24	A.2.13	MSIV Room A	148	155
H-24	A.2.14	MSIV Room B	148	155
H-25	A.2.16	RWCU Pump Room C	148	155
H-25	A.2.17	RWCU Pump Room B	148	155
H-25	A.2.18	RWCU Pump Room A	148	155
H-38	C.5.2	Gas Control Boundary	147	155
H-52	A.2.2	Radwaste Pipe Tunnel	141	155

Environmental Zone Maps (attached); Drawing Number M01-1600

- Sheet 6, Auxiliary, Fuel & Containment Basement Floor Plan EL 707'-6" & 712'-0"
- Sheet 7, Auxiliary, Fuel & Containment Grade Floor Plan EL 737'-0"
- Sheet 8, Auxiliary, Fuel & Containment Mezz. Floor Plan EL 755'-0" & 762'-0"
- Sheet 9, Auxiliary, Fuel & Containment EL 778'-0" & 781'-0"
- Sheet 10, Containment Building Floor Plan EL 803'-3"
- Sheet 11, Containment Building Refueling Floor EL 828'-3"



Environmental Zone Map  
Drawing Number M01-1600, - Sheet 6  
Auxiliary, Fuel & Containment Basement  
Floor Plan, EL 707'-6" & 712'-0"

ITEM	EQUIPMENT NAME
70	FUEL POOL SKIMMER SURGE TANK
91	SP. COOLING PUMP
119	WPS WATER LEG PUMP
128	WPS WATER LEG PUMP
140	SUP. POOL CLEAN-UP PUMP
142	FUEL BLDG. EQUIP. DRAIN PUMP
143	FUEL BLDG. EQUIP. DRAIN PUMP
144	FUEL BLDG. EQUIP. DRAIN PUMP
145	WPSWELL EQUIP. DRAIN PUMP
146	WPSWELL EQUIP. DRAIN PUMP
147	AUX. BLDG. FLOOR DRAIN PUMP
148	FUEL BLDG. FLOOR DRAIN PUMP
149	FUEL BLDG. FLOOR DRAIN PUMP
150	AUX. BLDG. FLOOR DRAIN PUMP
151	WPSWELL FLOOR DRAIN PUMP
152	AUX. BLDG. FLOOR DRAIN PUMP
153	WPSWELL FLOOR DRAIN PUMP
154	WPSWELL FLOOR DRAIN PUMP
155	WPSWELL FLOOR DRAIN PUMP
156	WPSWELL FLOOR DRAIN PUMP
157	WPSWELL FLOOR DRAIN PUMP
225	WPSWELL FLOOR DRAIN PUMP
226	WPSWELL FLOOR DRAIN PUMP
227	WPSWELL FLOOR DRAIN PUMP
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ITEM	INSTRUMENT AND CONTROL PANELS
726	WPSWELL INSTRUMENT PANEL
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- NOTES:

  - EQUIPMENT SHOWN ON THIS DRAWING IS FOR BACKGROUND INFORMATION ONLY. ACTUAL COMPONENT LOCATION SHALL BE VERIFIED BY UTILIZING THE APPLICABLE "APPROVED FOR CONSTRUCTION" DRAWING OR DOCUMENT.
  - A.1.5 NOT USED.
- GENERAL NOTES:

  - ALPHA NUMERIC CODE IN    OR    IDENTIFIES ENVIRONMENTAL MAP ZONE AND ZONE CODE (H-M)
  - ZONE BOUNDARIES ARE DEFINED BY HEAVY LINES.
  - FOR ENVIRONMENTAL CONDITIONS, SEE ENVIRONMENTAL ZONE TABLE.
  - IDENTIFIES "HARSH" ZONES.
- NUCLEAR SAFETY RELATED ITEMS ARE SHOWN ON THIS DRAWING (FOR SAFETY CLASSIFICATION SEE PIPING, EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

DRAWING RELEASE RECORD						DRAWING RELEASE RECORD							
REV.	DATE	REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	REV.	DATE	REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
							A	05-15-89		J. A. Feltgen			FOR INFORMATION / REFERENCE, TRANSFER TO I.P.C.

SCALE: 1"=10'-0"

PROJECT NUMBER: 4536

8421

ENVIRONMENTAL ZONE MAP

AUXILIARY, FUEL & CONTAINMENT

BASEMENT FLOOR PLAN EL. 707'-6" & 712'-0"

CLINTON POWER STATION

UNIT 1

ILLINOIS POWER COMPANY

CLINTON, ILLINOIS

SARGENT & LUNDY

ENGINEERS

CHICAGO

DRAWING NO. M01-1600

REV. A

SHEET 6 OF 6

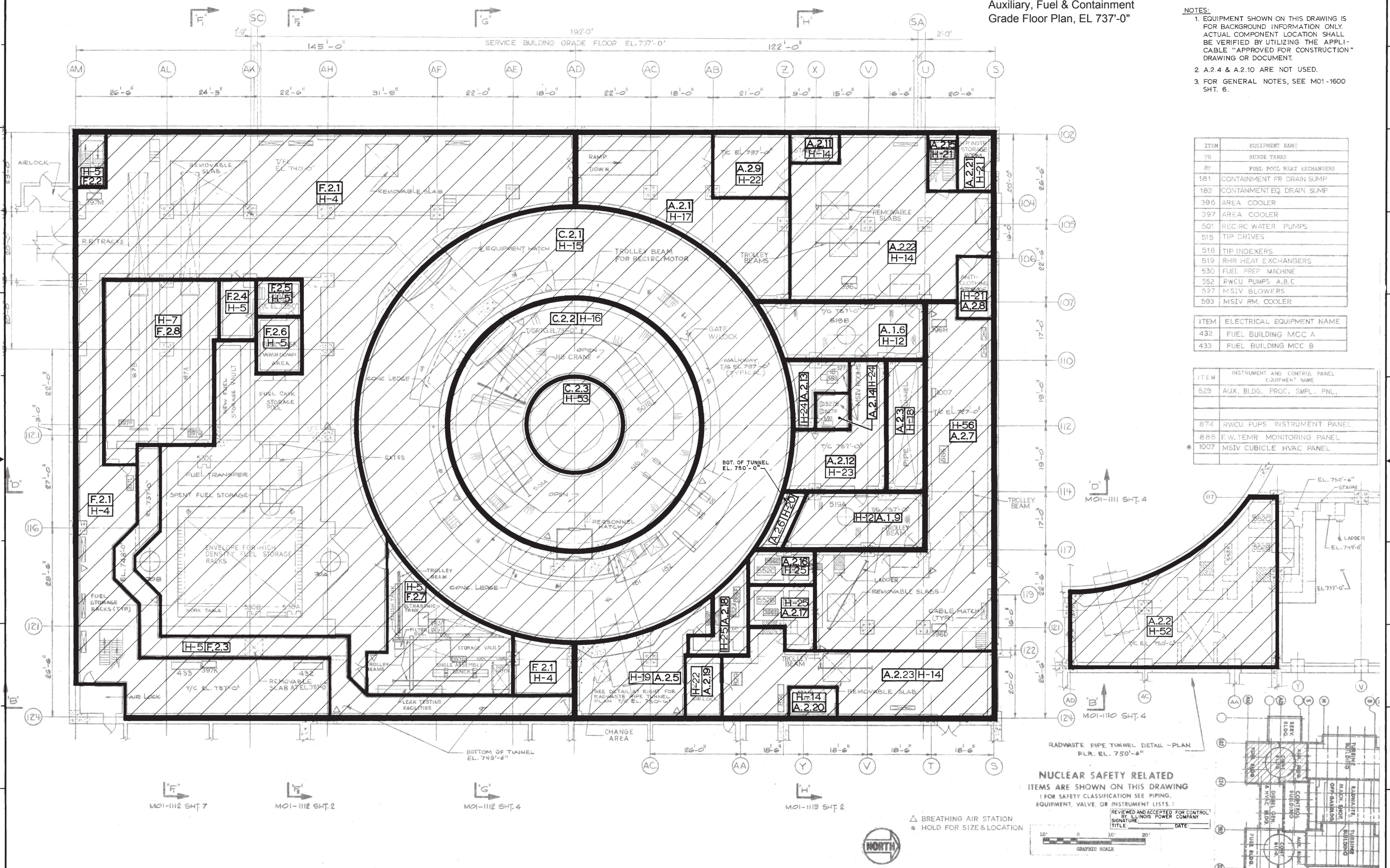
DOCUMENT TRANSFERRED TO I.P.C. 10-31-85

- NOTES:
- EQUIPMENT SHOWN ON THIS DRAWING IS FOR BACKGROUND INFORMATION ONLY. ACTUAL COMPONENT LOCATION SHALL BE VERIFIED BY UTILIZING THE APPLICABLE "APPROVED FOR CONSTRUCTION" DRAWING OR DOCUMENT.
  - A.2.4 & A.2.10 ARE NOT USED.
  - FOR GENERAL NOTES, SEE M01-1600 SHT. 6.

ITEM	EQUIPMENT NAME
70	SURGE TANKS
87	FUEL POOL HEAT EXCHANGERS
181	CONTAINMENT FR DRAIN SUMP
182	CONTAINMENT EQ DRAIN SUMP
396	AREA COOLER
397	AREA COOLER
501	RECIRC WATER PUMPS
515	TIP DRIVES
516	TIP INDEXERS
519	RHR HEAT EXCHANGERS
530	FUEL PREP MACHINE
552	RWCU PUMPS A,B,C
527	MSIV BLOWERS
593	MSIV RM. COOLER

ITEM	ELECTRICAL EQUIPMENT NAME
432	FUEL BUILDING MCC A
433	FUEL BUILDING MCC B

ITEM	INSTRUMENT AND CONTROL PANEL EQUIPMENT NAME
829	AUX. BLDG. PROC. SMPL. PNL.
874	RWCU PUMPS INSTRUMENT PANEL
888	F.W. TEMP. MONITORING PANEL
1007	MSIV CUBICLE HVAC PANEL



DRAWING RELEASE RECORD					DRAWING RELEASE RECORD								
REV.	DATE RELD.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM	REV.	DATE RELD.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
							A	05-15-89	J. A. Salazar	Wagner HAP		FOR INFORMATION / REFERENCE, TRANSFER TO I.P.C.	

SCALE 1"=10'-0"	PROJECT NUMBER 4536 8421	ENVIRONMENTAL ZONE MAP AUXILIARY, FUEL & CONTAINMENT GRADE FLOOR PLAN EL. 737'-0" CLINTON POWER STATION UNIT 1 ILLINOIS POWER COMPANY CLINTON, ILLINOIS	SARGENT & LUNDY ENGINEERS CHICAGO
DRAWING NO. M01-1600		REV. A	SHEET 7 OF

DOCUMENT TRANSFERRED TO I.P.C. 10-21-85

Environmental Zone Map  
Drawing Number M01-1600, - Sheet 8  
Auxiliary, Fuel & Containment  
Mezz. Floor Plan, EL 755'-0" & 762'-0"

[illegible]

7274	INDEPENDENT AUTO PARTS INC
7275	PROFESSOR'S DISCOUNT FARMER
7276	BRIDGE, ROBERT & MARGARET
7277	BRIDGE, ROBERT & MARGARET
7278	JAY FLEISCH, 8011 E. 10TH AVE
7279	BRIDGE, ROBERT & MARGARET
7280	BRIDGE, ROBERT & MARGARET
7281	BRIDGE, ROBERT & MARGARET
7282	BRIDGE, ROBERT & MARGARET
7283	BRIDGE, ROBERT & MARGARET
7284	BRIDGE, ROBERT & MARGARET
7285	BRIDGE, ROBERT & MARGARET
7286	BRIDGE, ROBERT & MARGARET
7287	BRIDGE, ROBERT & MARGARET
7288	BRIDGE, ROBERT & MARGARET
7289	BRIDGE, ROBERT & MARGARET
7290	BRIDGE, ROBERT & MARGARET
7291	BRIDGE, ROBERT & MARGARET
7292	BRIDGE, ROBERT & MARGARET
7293	BRIDGE, ROBERT & MARGARET
7294	BRIDGE, ROBERT & MARGARET
7295	BRIDGE, ROBERT & MARGARET
7296	BRIDGE, ROBERT & MARGARET
7297	BRIDGE, ROBERT & MARGARET
7298	BRIDGE, ROBERT & MARGARET
7299	BRIDGE, ROBERT & MARGARET
7300	BRIDGE, ROBERT & MARGARET

547	MAIN STEAM FLOW
548	MAIN STEAM FLOW
549	COND. PRESS. CNL. 3.2
550	COND. PRESS. CNL. 3.4
551	HYDRO-PNEUM. UNIT
552	WATER RELAY PNL.
553	FUEL BLDG. CRCP. RM.

PK#	ALTIMETAL THERMISTOR 1000"
8	4.5 100 10000000000 16
10	4.5 100 10000000000 16
12	4.5 100 10000000000 16
14	4.5 100 10000000000 16
16	4.5 100 10000000000 16
20	4.5 100 10000000000 16
22	4.5 100 10000000000 16
24	4.5 100 10000000000 16
26	4.5 100 10000000000 16
28	4.5 100 10000000000 16
30	4.5 100 10000000000 16
32	4.5 100 10000000000 16
34	4.5 100 10000000000 16
36	4.5 100 10000000000 16
38	4.5 100 10000000000 16
40	4.5 100 10000000000 16
42	4.5 100 10000000000 16
44	4.5 100 10000000000 16
46	4.5 100 10000000000 16
48	4.5 100 10000000000 16
50	4.5 100 10000000000 16

REVIEWED AND ACCEPTED FOR CONT.  
BY ILLINOIS POWER COMPANY  
SIGNATURE \_\_\_\_\_

**SARGENT & LUNDY**  
ENGINEERS  
CHICAGO

DRAWING NO.  
**M01-1600**

SHEET 8 OF

NOTES:

1. EQUIPMENT SHOWN ON THIS DRAWING IS FOR BACKGROUND INFORMATION ONLY. ACTUAL COMPONENT LOCATION SHALL BE VERIFIED BY UTILIZING THE APPLICABLE "APPROVED FOR CONSTRUCTION" DRAWING OR DOCUMENT.
2. A.3.2 & A.3.4 ARE NOT USED.
3. FOR GENERAL NOTES, SEE M01-1600 SHT. 6.

NUCLEAR SAFETY RELATED  
ITEMS ARE SHOWN ON THIS DRAWING  
(FOR SAFETY CLASSIFICATION SEE Piping,  
EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)



△ BREATHING  
AIR STATION

[illegible]

SCA
1 <sup>st</sup> -10 <sup>th</sup>
PROJ
NUM
453
847

ENVIRONMENTAL ZONE MAP  
AUXILIARY, FUEL & CONTAINMENT  
MEZZ. FLOOR PLAN EL. 755'-0" & 762'-0"  
CLINTON POWER STATION  
UNIT 1  
ILLINOIS POWER COMPANY  
CLINTON, ILLINOIS

DOCUMENT TRANSFERRED TO J.P.C.

101	EQUIPMENT WARE
124	125 TOP CASE, HANDLING CRANE
147	SAFETYHEAT HEAT REMOVAL UNIT
156	SWITCHBOARD HEAT REMOVAL CONT. UNIT
210	FILTER MEDIA, RECIRCULATING PUMP
249	LIQUID COOLERS
291	COOLING COMP.
306, 307 308, 309	AREA COOLERS
310	REACTOR VESSEL
309	ACCUMULATOR
506	ACCUMULATOR
507	ACCUMULATOR
508	ACCUMULATOR
512	STANDBY LIQ. CONTROL SCOF. TANK
513	STANDBY LIQ. CONTROL TEST TANK
514	STANDBY LIQ. CONTROL PUMPS
519	HIA HEAD EXCHANGERS
555	INCU. BACKUP SYS. TANK
373	BATTERY ROOM EX. FAN
408	COMBUSTION GAS COOL. UNIT
171	BATTERY ROOM EX. FAN

ITEM	INSTRUMENT PANEL
734	SRM / IRM PREAMPLIFIER PANEL A
735	SRM / IRM PREAMPLIFIER PANEL B
736	SRM / IRM PREAMPLIFIER PANEL C
737	SRM / DRK PREAMPLIFIER PANEL D
738	STANDBY LOG CONTROL SYS INSTRUMENT PANEL
739	LFMG. ALK. PH
81	EXHAUST GAS ANALYZER IN 19 VENT. PANEL
963	AUXILIARY BLDG. CAM.
964	FUEL BLDG. CAM.
970	CONTAINMENT BLDG. CAM. 2
933	R. R. IODINE GAS SAMPLE
937	P. P. PART SAMPLE
719	HYDROGEN COMP INSTR PANEL
951	MSIV LEAK DETECTOR
952	MSIV LEAK DET DIV. 2

ITEM	EXPLANATION, EQUIPMENT NAME
12	4.1 KV SWITCHGEAR 1A1
14	4.1 KV SWITCHGEAR 1B1
25	450 V UNIT SUBSTATION 1A
27	450 V UNIT SUBSTATION 1B
121	3.9 KV SWGR
317	LFMS SET
430	AE MDC 3
431	AE MDC 5
774	REMOTE SHUTDOWN PN
400	BATTERY CHARGER
695	DC MCC 1A, 1B

NOTES :

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2. A.4.2, A.4.4 & C.4.6 ARE NOT USED.
3. FOR GENERAL NOTES, SEE M01-1600 SHT. 6.

△ BREATHING AIR STATION  
\* HOLD FOR SIZE & LOCATION

SHT-2

**NUCLEAR SAFETY RELATED**  
ITEMS ARE SHOWN ON THIS DRAWING  
(FOR SAFETY CLASSIFICATION SEE PIPING,  
EQUIPMENT, VALVE, OR INSTRUMENT LISTS.)

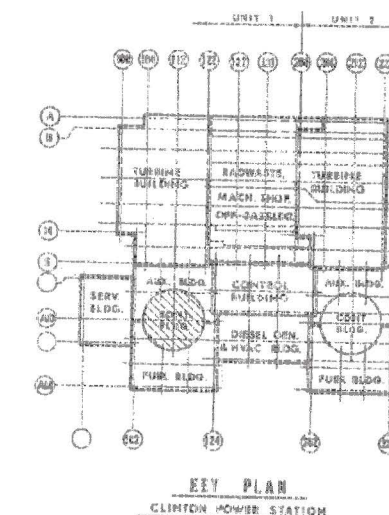
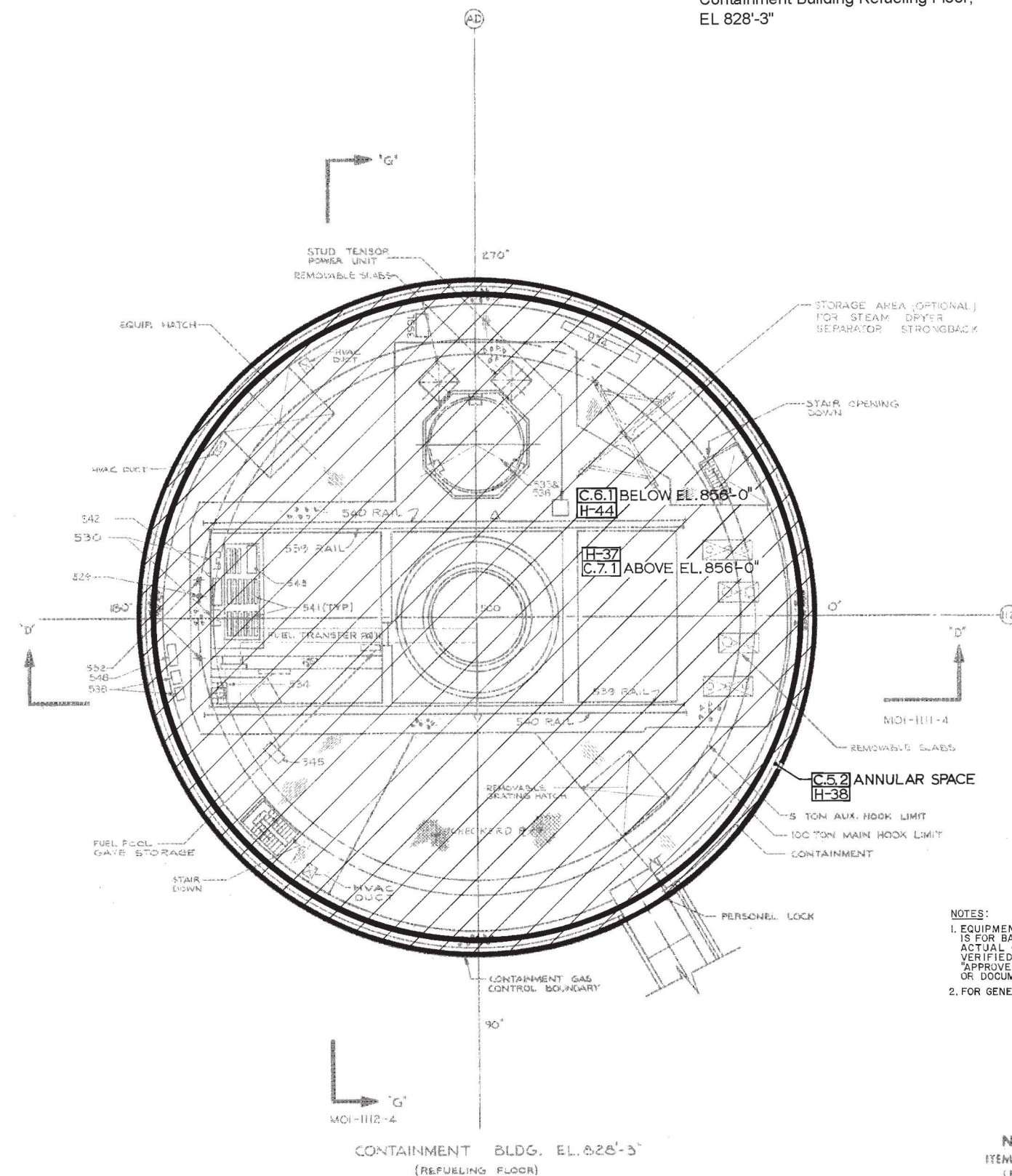
DRAWING RELEASE RECORD					
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
A	05-15-89	J. A. Falgout	[Signature]	[Signature]	FOR INFORMATION / REFERENCE, TRANSFER TO IPC.

SCALE	ENVIRONMENTAL ZONE MAP AUXILIARY, FUEL & CONTAINMENT PLAN EL. 778'-0" & 781'-0" CLINTON POWER STATION UNIT 1 ILLINOIS POWER COMPANY CLINTON, ILLINOIS
1"=10'-0"	
PROJECT NUMBER	
4536	
8421	

The logo for SARGENT & LUNDY ENGINEERS CHICAGO is located in the top left corner. It consists of the company name in a bold, sans-serif font, with 'ENGINEERS' and 'CHICAGO' on separate lines below 'SARGENT & LUNDY'. To the right of the logo is a rectangular title block containing the text 'DRAWING NO.' followed by 'M01-1600' and 'SHEET 9 OF'.



ITEM	EQUIPMENT	NAME
402	REACTOR VESSEL	
519	CHANNEL HANDLING BOOM	
520	FUEL PUMP	
542	IID CRANE	
584	FUEL TRANSFER TUBE	
595	R/V HEAD SUPPORT	
505	AUXILIARY PLATFORM	
546	REFUELING PLATFORM	
541	FUEL STORAGE RACK	
542	CHANNEL RACK	
513	CONTROL RND STORAGE RACK	
638	WINCH & CONTROLLER	
545	HYDRAULIC UNIT	
548	REACTOR BLDG OPER. PANEL	
399	AREA COOLER	
934	REACTOR WATER CLEANUP SOL PAN	
536	HEAD STRONGBACK CAROUSEL	



NOTES:

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2. FOR GENERAL NOTES, SEE MOI-1600 SHT. 6.

REVIEWED AND ACCEPTED FOR CONTROL  
BY ILLINOIS POWER COMPANY  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

△ BREATHING  
AIR STATION

NUCLEAR SAFETY RELATED  
ITEMS ARE SHOWN ON THIS DRAWING  
(FOR SAFETY CLASSIFICATION SEE PIPING,  
EQUIPMENT, VALVE OR INSTRUMENT LISTS.)

GRAPHIC SCALE

[illegible]

SCALE
1"=10'-0"
PROJECT
NUMBER
4536
8421

ENVIRONMENTAL ZONE MAP  
CONTAINMENT BUILDING  
REFUELING FLOOR EL. 828'-3"  
CLINTON POWER STATION  
UNIT 1  
ILLINOIS POWER COMPANY  
CLINTON, ILLINOIS

**SARGENT & LUNDY**

DRAWING NO.
M01-1600
SHEET 11 OF