BALTIMORE GAS AND ELECTRIC COMPANY

GAS AND ELECTRIC BUILDING

BALTIMORE, MARYLAND 21203

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

November 13, 1979

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Subject: Calvert Cliffs Nuclear Power Plant
Units No. 1 & 2, Docket No. 50-317 & 50-318
Fire Protection Safety Evaluation Report and
Amendments to Facility Operating License
File: 013-261-0, L-037-F

Reference: NRC letter dated September 14, 1979 from Reid to Lundvall, same subject

Gentlemen:

The enclosures attached are submitted in response to the referenced letter which forwarded the NRC Fire Protection Safety Evaluation (SE) that identifies the modifications and concerns of the NRC staff. Enclosure 1 addresses modifications identified in Paragraphs 3.1.1 through 3.1.21. Enclosure 2 provides additional information as to "Incomplete Items" identified in Paragraphs 3.2.1 through 3.2.11. Enclosure 3 provides additional responses and updates the status of "Unresolved Issues" identified in Paragraphs 3.3.1 through 3.3.7.

Additional information will follow later under separate cover relative to Paragraphs 3.1.19, 3.1.20, 3.2.1, 3.2.2, 3.2.8, and 3.2.9. Drawings and other data are now being prepared for NRC staff review.

Very truly yours,

Arthur E. Lundvall Jr.

cc: J. A. Biddison, Esquire
G. F. Trowbridge, Esquire
Messrs. E. L. Conner, Jr. - NRC
J. W. Brothers - Bechtel

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ENCLOSURE 1

3.1.1 Curb in Diesel Room (4.5, 5.18)

The licensee has provided information showing that the curb will prevent a possible communication of spilled oil between two adjacent diesel rooms in Unit 1 area. The staff will address its evaluation in a supplement to this report.

Response

The curb identified as required to prevent possible communication of oil between the two adjacent diesel rooms in the Unit 1 area has been provided. Calculations have been provided previously to demonstrate that this curb is adequate. This item is complete subject to staff review.

3.1.2 Additional Fire Fighting Equipment (4.3.1.3, 4.3.1.4)

The licensee will provide the following additional hose and equipment:

(1) For each exterior hose cabinet

(a) 200' of 2½" fire hose (single jacket, lined, synthetic)
(b) One 2½" x 1½" x 1½" gated wye
(c) One 2½" combination fog/straight stream nozzle rated at least 250 gallons per minute
(d) One 1½" fog/straight stream nozzle rated at 60-90 GPM
(e) Two each of 2½" and 1½" gaskets

(2) For each portable equipment cabinet

(a) 50' of 2½" fire hose
(b) One Halligan type forcible entry tool
(c) 100' of 1½" fire hose

(3) For each interior hose station

(a) One universal type hose spanner that can be used as a hose valve wrench and as a hose coupling spanner for both 2½" and 1½" hoses.

(4) At a suitable central location

(a) One heat sensing device
(b) 10 sets of fire fighting protective clothing; each set includes one turnout coat with removable liner, one helmet, one pair of boots and one pair of gloves.

Response

The equipment identified above has been purchased and is available at the site. This item is completed.

3.1.3 Fire Water System Overpressurization (4.3.1.3)

The licensee will identify and correct the cause of the fire water system overpressurization.

Response

As indicated in previous BG&E submittals dated April 19 and August 6, 1979, the cause of "overpressurization" has been identified with the on-off operation of the electric motor driven fire pump and its check valves. One half inch pressure relief valves are to be installed on all thirteen alarm check valves which trap pressure surges. These relief valves will be set to open at 175 psi. These pressure relief valves will be installed by October, 1980.

3.1.4 Marking of Fire Water Valves (4.3.1.3)

The licensee will provide identification tags clearly marking post-indicator valves and control valves for fire protection water systems so that reference to written descriptions or reference number is not necessary to identify the systems or areas each valve controls.

Response

By December 1, 1979, each valve in the fire suppression water system, excluding instrument stops, are being provided with an identification tag. These are stainless steel tags which will identify the valve by number and provide sufficient description to facilitate the identity of the valves function by a qualified operator.

3.1.5 Breathing Apparatus Recharging System (4.4.3)

The licensee will:

(1) relocate the recharging system from the present location in warehouse No. 1 to a suitable central location within the Unit 1 - Unit 2 operating area,

(2) provide cooling water tank for each cascade system for air cylinders being recharged.

Response

The recharging system has been relocated from Warehouse No. 1 to a central location inside the fenced yard within the Service Building. The cooling water tanks are on site and the installation will be completed before January 1, 1980.

3.1.6 Automatic Fire Suppression in Cable Spreading Rooms

The licensee will install an automatic fire suppression system in each cable spreading room.

Response

A fixed automatic Halon 1301 fire suppression system is being designed and will be installed for each of the Cable Spreading Rooms. Its scheduled in service date is October, 1980.

3.1.7 Fire Water System Valves (4.3.1.1, 4.3.1.3)

The fire water tank discharge valves are locked open. The fire water tank interconnection valve has been locked closed. All locked valves in the fire protection system will be checked monthly to verify their position.

Response

As indicated above in the SER, this item has been completed.

3.1.8 Miscellaneous Usage of Fire Water (4.3.1.1)

An additional centrifugal pump, taking suction from the fire water tank standpipe and discharging to the fire protection system header, will be installed with adequate capacity to meet the intermittent use of fire water for purposes other than fire protection. Administrative procedures will be implemented to limit such usage of fire water to a single 1-1/2" hose stream at any time. In the event of a fire, non-fire fighting water usage will be terminated immediately.

Response

An additional electric driven centrifugal fire pump is to be installed by October, 1980, in the Turbine Building. This pump will have adequate capacity to meet intermittent use of fire water for purposes other than fire protection. The pump will take suction from the fire water tank standpipe and will discharge into the fire protection system header. This pump will be arranged to start and stop automatically.

Administrative procedures have been established to insure that the fire system usage for purposes other than the fire fighting will be limited to a single 1-1/2" hose stream at any one time.

3.1.9* Low Water Tank Level Interlock (4.3.1.2)

The fire pump controller will be modified to remove the fire water storage tank low level interlock from the control logic. Alarms will be provided to annunciate, in both the control room and the fire pump house, low level in fire water storage tanks.

Response

BG&E will rewire each fire pump controller so as to defeat the present pretreated water storage tank low level interlock from the fire pumps control logic. This will be accomplished by removing control relay functions (initiated by low pretreated water storage low tank level) from each fire pump controller. This modification will prevent the fire pump from stopping on a low pretreated water storage tank level. Presently installed level switches on the pretreated water storage tank now being used for fire pump control function will be modified to provide pretreated water tank low level alarms which will annunciate in both the control room and the fire pump house. These modifications will be accomplished by January 1, 1980 subject to timely review and approval by the NRC staff.

3.1.10 Single Isolation in Fire Water Piping System (4.3.1.3, 5.18, 5.30)

A 2-1/2" hose connected to Hydrant No. 5 will be prelaid to provide hose coverage for Diesel Generator Room No. 21, when the fire water supply to the automatic sprinkler system and manual hoses stations protecting these areas are valved out simultaneously.

Response

As indicated in the SER, this item has been completed. Technical Specification No. 3.7.11.2, Unit 2 covers this condition and CCI 133 specifically addresses the temporary corrective action required.

3.1.11 Portable Smoke Ejectors (4.4.1)

Three portable smoke ejectors and associated portable ducting will be provided to aid in manual smoke removal. The ejectors will be of the explosion-proof type that are used for fire fighting and have a minimum combined capacity of 17,500 CFM.

Response

Three portable smoke ejectors and associated portable ducting have been provided to aid in manual smoke removal. The ejectors, two explosion-proof electric motor driven and one water-motor driven, provide a combined capacity of 17,500 cfm. This item has been completed.

3.1.12 Battery Room Ventilation (4.4.4, 5.11)

Telltales have been installed at the exhaust and supply air grills in each battery room and the air flow is being verified twice each shift.

Response

As indicated above in the SER, this item has been completed and is considered acceptable to the NRC staff as indicated in Section 4.4.4.

3.1.13* Emergency Communication (4.7)

Communication equipment will be provided which is capable of maintaining communication between the control room and all areas of the plant, including the interior of containment, considering possible damage due to a single fire.

Response

Existing plant communications systems include a page system and sound powered phone system which are capable of maintaining communications between the control room and all areas of the plant including the interior of the containment. An additional communications system will be provided which will also be capable of maintaining communications between the control room and all areas of the plant including the containments. Adequate separation between this system and the existing communication systems including their respective power supplies will be provided to ensure that a single fire at any location cannot disable both systems. BG&E will furnish documentation to the NRC staff for review prior to implementing modifications.

3.1.14* Hydrogen Piping (5.4, 5.8, 5.9)

An excess flow stop valve will be installed in the line to the hydrogen supply to auxiliary building to automatically secure hydrogen to the building in the event of a piping system rupture.

Response

Design drawings and details will be furnished for NRC staff review prior to implementing the modifications described above in the SER.

3.1.15* Addition of Curbs (5.9)

The licensee will provide means to curb or contain a possible oil/solvent spillage in the hot machine shop and in the hot instrument shop.

Response

Both the hot machine shop and hot instrument shops have been provided with two inch curbs at their respective entrances to contain possible oil/solvent spillage to the rooms. These curbs are sufficient to contain 1640 gallons in the hot machine shop and 425 gallons in the hot instrument shop. Calculations are shown below. These modifications will be accomplished by June 1, 1980 subject to timely review and acceptance by the NRC staff.

3.1.15

Project – FCR 79-100 Est. No.

ROOM SPILL CAPACITIES FOR FCR 79-100 Eng'r Date 8/8/79

HOT MACHINE SHOP

Volume ≈ (34'x 39' - 3'x3') x 2/12' ≈ 1317 ft³

Spill Capacity (GAL.) = 1317 ft³ x $\frac{7.47 \text{ GAL}}{\text{ft}^3}$

= 1,640 GAL. WITH A 2" CURB

HOT I&C SHOP

Volume ≈ 8.75' x 39' x 2/12' = 56.9 ft³

Spill Capacity (GAL) = 56.9 ft³ x $\frac{7.47 \text{ GAL}}{\text{ft}^3}$

= 425 GAL. WITH A 2" CURB

1355 007

Computed by L. O. W. Date Checked by Date Sheet of

Elec. Eng. D. O. & E. Co. (12r

3.1.16 Control of Combustibles (5.9, 5.24, 5.26)

All combustibles that are not required for the routine operation and maintenance of the plant will be removed from all safety-related plant areas. Storage of combustible materials necessary for the routine operation or maintenance of the plant will be limited to approximately one week's supply. Metal cabinets, removed from the vicinity of any safety-related cables/equipment will be provided for such storage.

Response

Storage of combustible material within safety related areas will be restricted to a one week supply of those materials required for routine operation and maintenance of the plant. Storage of combustible materials in excess of a one week supply inside or adjacent to safety related buildings or systems is prohibited except where such combustibles are stored in covered metal containers (i.e., drums or cabinets). No combustible material will be stored directly under safety related cabling or components. Combustible material which is removed from systems in the course of normal maintenance activities, such as charcoal filter material, will be properly packaged and removed from the vicinity of safety related equipment as soon as practicable.

Transient Fire Loading inside or adjacent to safety related buildings or systems during maintenance or modification will be minimized consistent with the requirements of the job. When transient combustibles are introduced into these areas, the responsible supervisor shall specify the additional fire protection, if any, required. He may be assisted by the Fire Protection Inspector as necessary in making this determination. Debris, scrap, rags, oil spills or other waste combustibles resulting from the work activity will be removed either after the completion of the activity or at the end of the shift, whichever comes sooner.

At least weekly during normal plant operation, the Fire Protection Inspector will make a tour of all accessible safety related areas of the plant. During this tour, he will inspect for hazards as noted above. Should items presenting unacceptable risk be noted, the cognizant supervisor will immediately be notified to correct the hazard. Results of these inspections will be documented on a Fire Protection Inspector Report, which shall be retained for one year. During outages involving major work, in addition to the tours required above, the Fire Protection Inspector will make frequent inspections of the safety related work areas for fire hazards. Additionally, he will note equipment and materials used on the job which may change the combustible loading of the area and require fire protection measures over and above the installed equipment.

3.1.17 Dedicated Ladders (5.10)

The licensee has provided a dedicated ladder of fiberglass construction in each cable spreading room to provide access to the areas above the battery rooms and the overhead cable chases.

Response

As indicated in the SER, this item has been completed.

3.1.18 Miscellaneous Protection for Control Room (5.16)

(1) The licensee has provided a fog nozzle for the manual hose protecting the room.

(2) All wooden furniture and shelves will be removed from the control room complex except for work benches in the Log and Test Instrument Room.

(3) Metal partitions will be provided to separate the adjoining panels from the computer terminal in the middle of the main panel.

Response

As indicated above in the SER:

(1) The fog nozzle has been provided,

(2) Wooden furniture and shelves will be removed except for work benches, and

(3) We will relocate the printer from the bench board or provide a metal enclosure for printout paper.

3.1.19* Fire Detection in Safety-Related Areas (4.2, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.14, 5.19, 5.21, 5.27)

The licensee has proposed to install appropriate fire detection devices in some additional safety-related areas. We will further evaluate this modification when the design details become available.

Response

To follow under separate cover.

3.1.20* Unprotected Doorways (4.9.1, 5.1, 5.2, 5.4, 5.5, 5.7, 5.16, 5.18, 5.22)

UL or FM listed fire doors of appropriate ratings will be installed, or acceptable alternate provided to protect the unprotected doorways in fire barriers separating various safety-related plant areas, including five doorways in the computer rooms currently provided with nonfire rated bullet-proof doors.

Response

To follow under separate cover.

3.1.21* Manual Hose Coverage (4.3.1.4, 5.6, 5.12, 5.17, 5.19, 5.21, 5.24, 5.25, 5.26, 5.28)

The licensee has performed hose reach tests and proposed to provide several additional hose stations. We will further evaluate this modification when the design details become available.

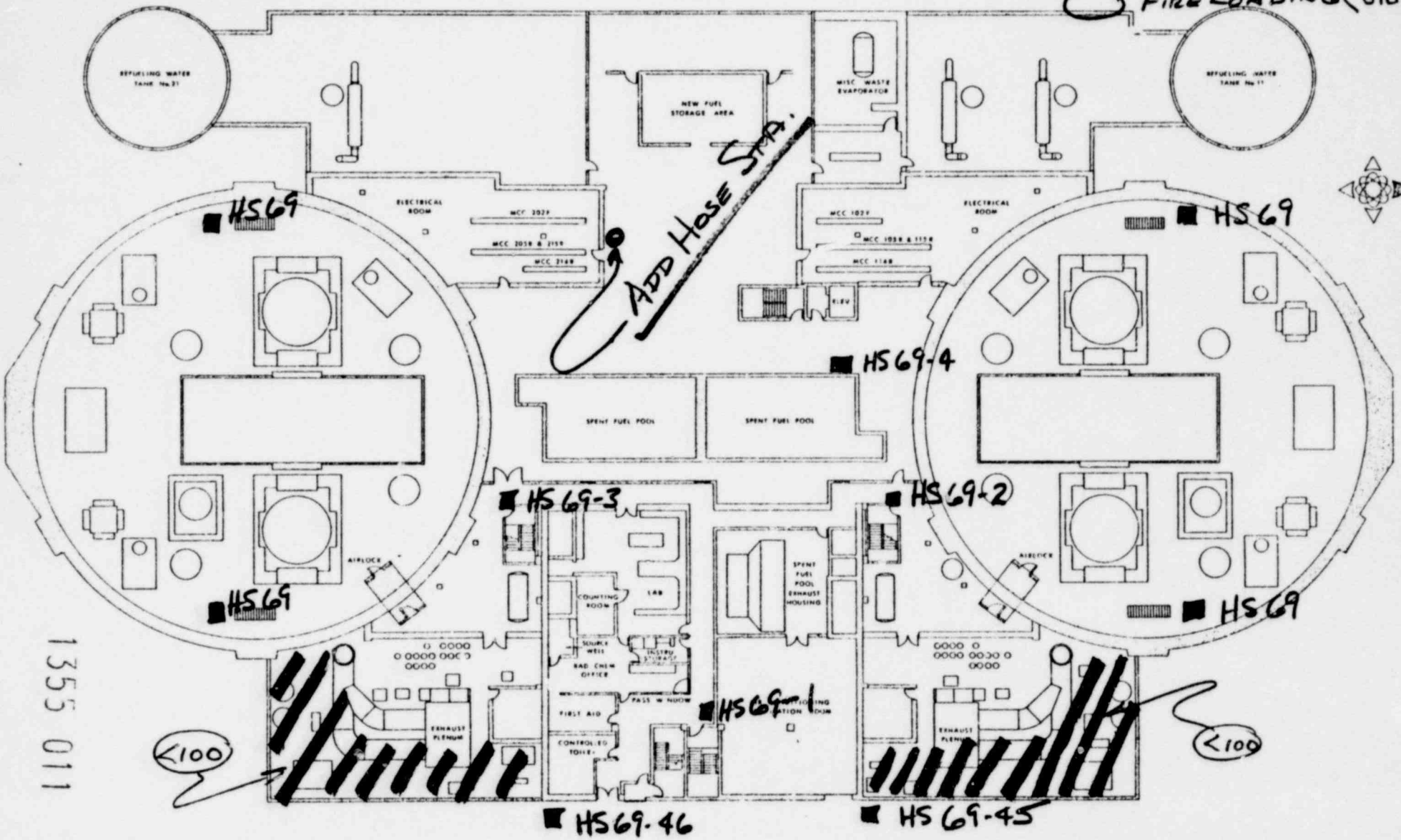
Response

The results of the hose stretch test are attached herewith. Additional hose stations are to be added as shown on the attached drawings. Crosshatched areas identify areas beyond reach of preconnected fire hose. Next to the crosshatched areas, we have identified the fire loading characterized by less than one pound of combustibles per square foot. These low fire loads do not justify extension of the standpipe and hose stations. The new hose station design and installation is shown on Figure E-1 of the Fire Protection Program Evaluation, Type C hose station detail. Fire brigade response is assured as the crosshatched areas are within rooms equipped with automatic fire detection. The fire brigade is trained in hose laying evolutions and additional hose, both 1-1/2 and 2-1/2 inch, are available in strategically located portable equipment cabinets.

CALVERT CLIFFS NUCLEAR POWER PLANT
Baltimore Gas & Electric Company

UNITS 1&2 CONTAINMENT AND AUXILIARY BUILDING PLAN AT 69'-0" ELEVATION

LEGEND
- EXISTING HOSE STA'S
- AREA BEYOND REACH OF PRECONNECTED HOSE
- PROPOSED NEW HOSE STA'S
- FIRE LOADING (BTU's/□)



POOR ORIGINAL

3.1.21

1355 011

POOR ORIGINAL

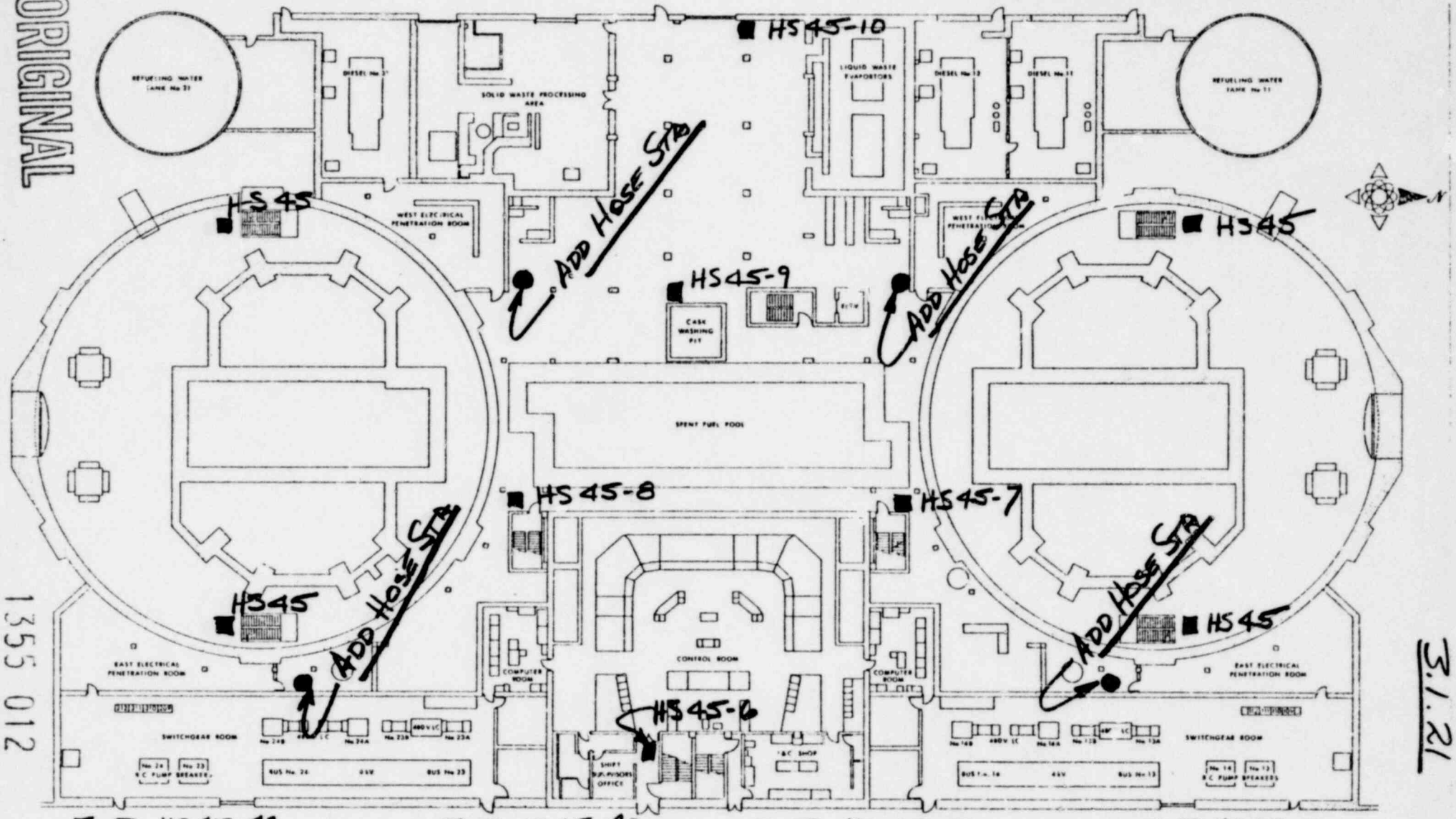
CALVERT CLIFFS NUCLEAR POWER PLANT
Baltimore Gas & Electric Company

UNITS 1&2 CONTAINMENT AND AUXILIARY BUILDING PLAN AT 45'-0" ELEVATION

HYDRANT #6

HYDRANT #7

LEGEND
- EXISTING HOSE STA'S
- AREA BEYOND REACH OF PRECONNECTED HOSE
- EXISTING HYDRANTS
- PROPOSED NEW HOSE STA'S



TO HS 45-42

TO HS 45-40

TO HS 45-38

TO HS 45-36

TO HS 45-34

1355 012

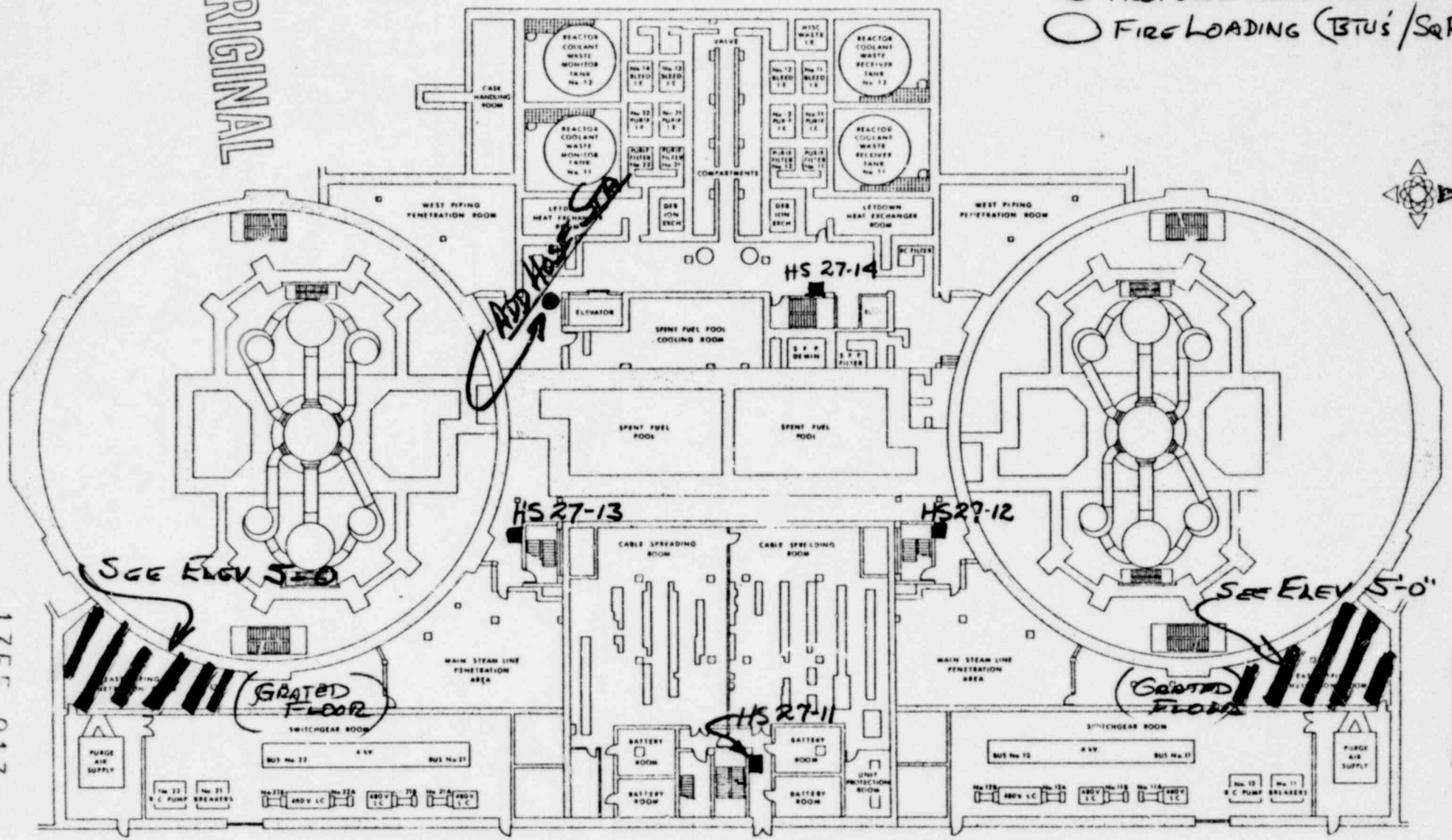
3.1.21

POOR ORIGINAL

CALVERT CLIFFS NUCLEAR POWER PLANT
Baltimore Gas & Electric Company

UNITS 1&2 CONTAINMENT AND AUXILIARY BUILDING PLAN AT 27'-0" ELEVATION

LEGEND
- ■ EXISTING HOSE STA'S
- /// AREA BEYOND REACH OF PRECONNECTED HOSE
- ● PROPOSED NEW HOSE STA'S
- ⬭ FIRE LOADING (BTU'S/SQ FT)



■ TO HS 27-26

■ TO HS 27-24

■ TO HS 27-22

1355 013

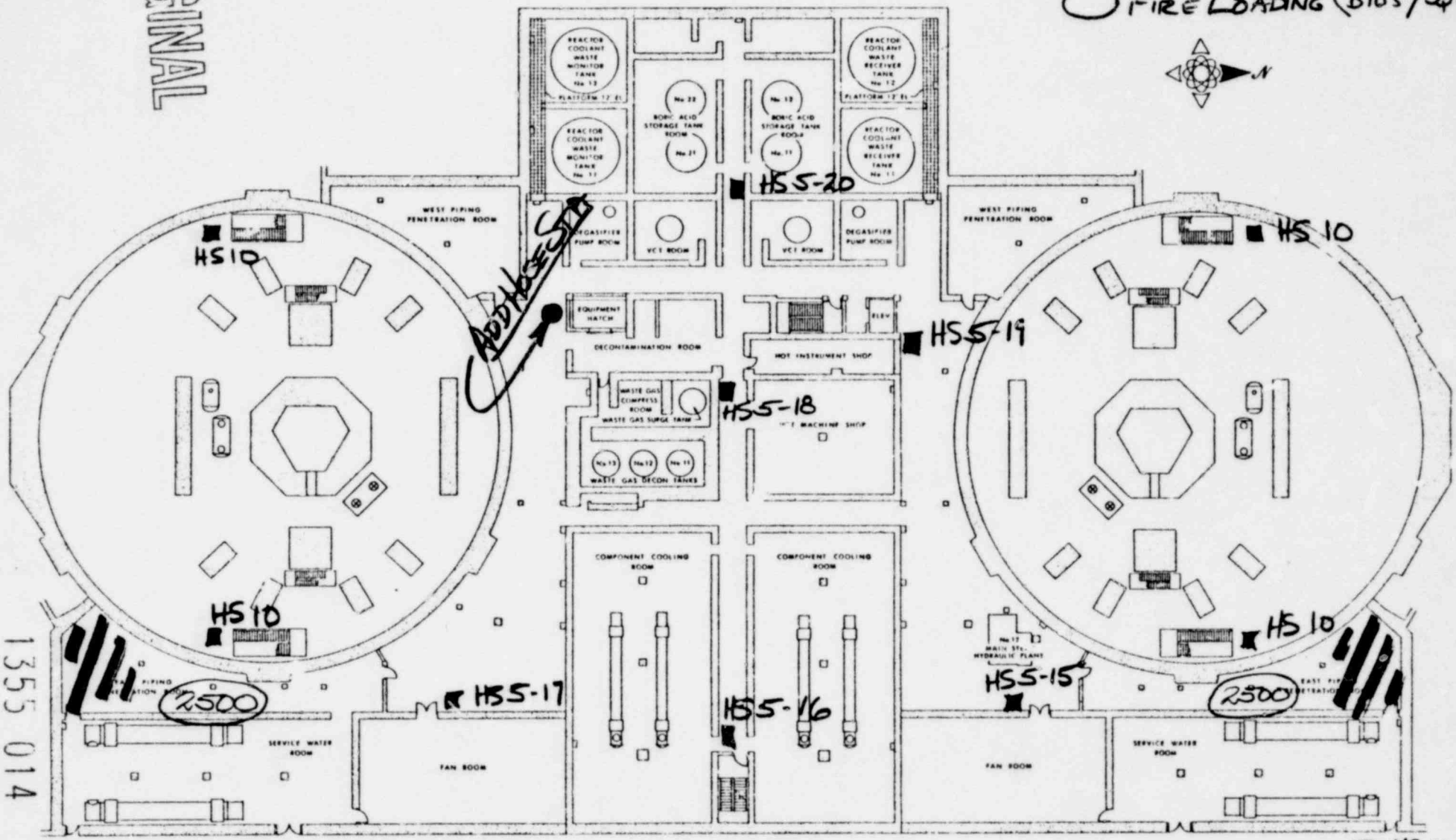
3.1.21

POOR ORIGINAL

CALVERT CLIFFS NUCLEAR POWER PLANT
Baltimore Gas & Electric Company

UNITS 1&2 CONTAINMENT AND AUXILIARY BUILDING PLAN AT
5'-0" & 10'-0" ELEVATIONS

LEGEND
- EXISTING HOSE STAS
- AREA BEYOND REACH OF PRECONNECTED HOSE
- PROPOSED NEW HOSE STAS
- FIRE LOADING (BTU's/Sq Ft)



TO HS 12-16 | TO HS 12-14 | TO HS 12-12 | TO HS 12-10 | TO HS 12-8

1355 014

2.1.21

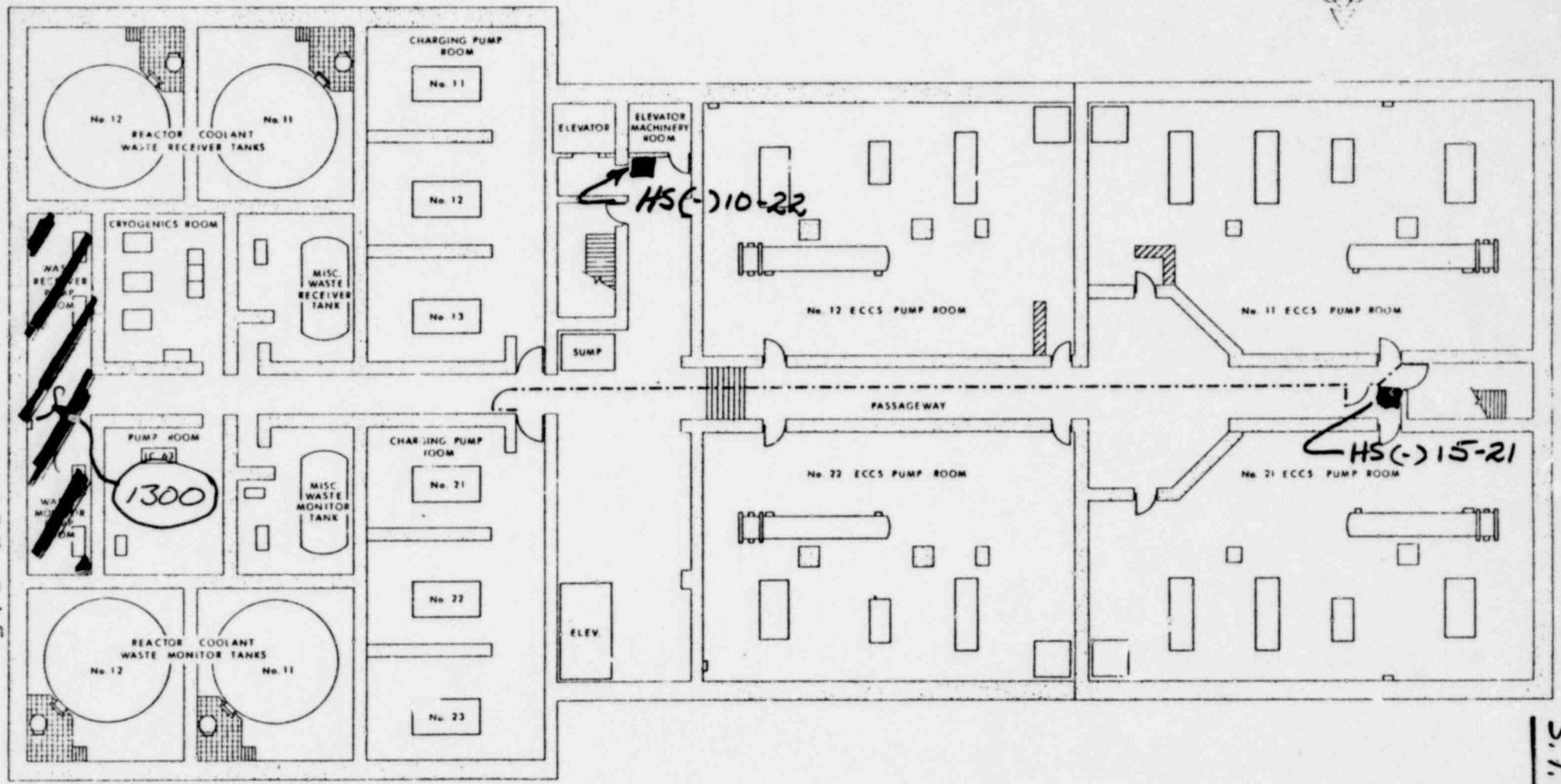
CALVERT CLIFFS NUCLEAR POWER PLANT
Baltimore Gas & Electric Company

UNITS 1 & 2 AUXILIARY BUILDING PLAN

AT (-) 8'-0" / (-) 10'-0" / (-) 15'-0" } ELEVATIONS

POOR ORIGINAL

LEGEND
■ EXISTING HOSE STAS
▨ AREA BEYOND REACH OF PRECONNECTED HOSE
⬭ FIRE LOADING (BTUS/SQ FT)



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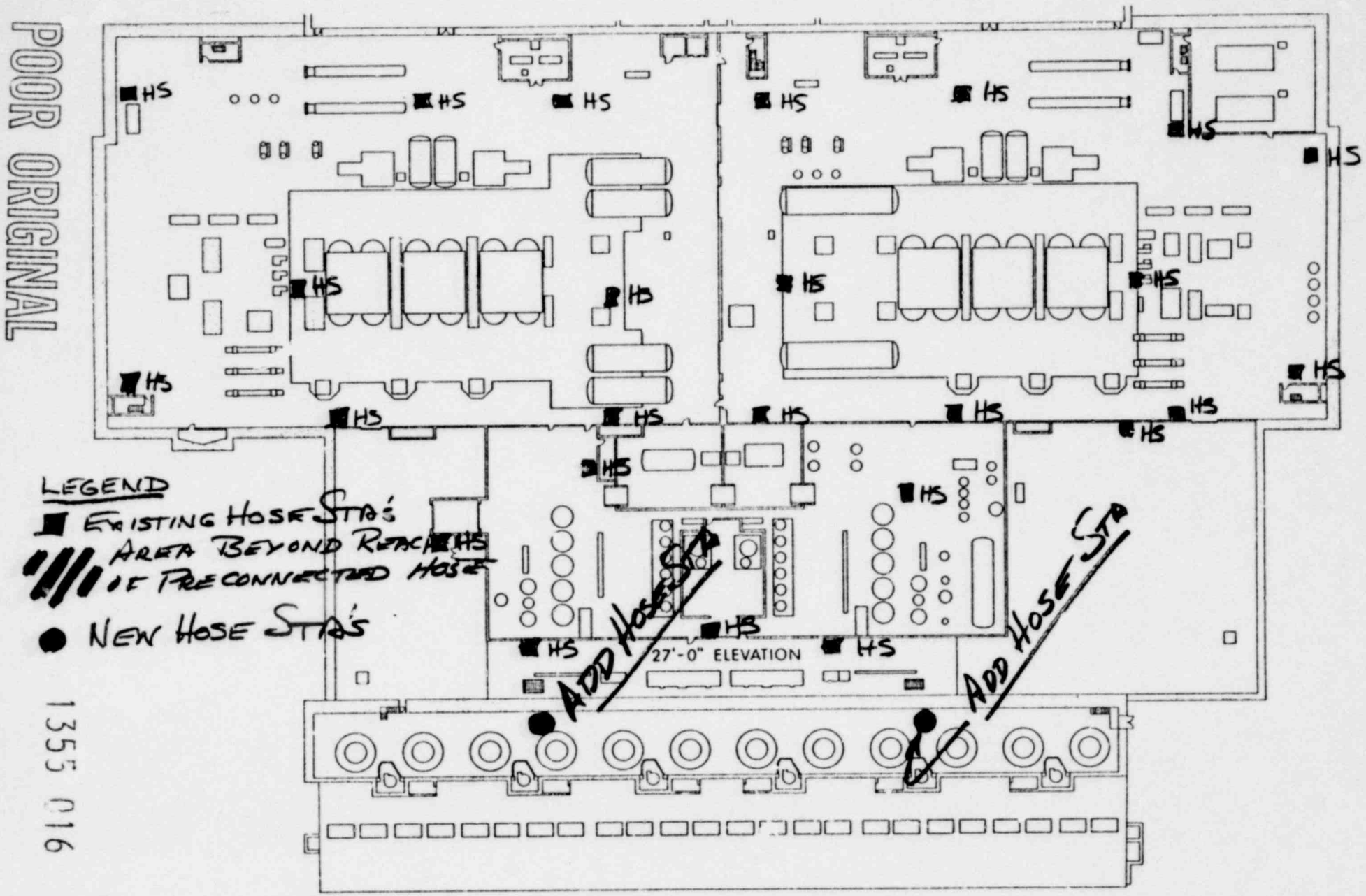
3.1.21

CALVERT CLIFFS NUCLEAR POWER PLANT
Baltimore Gas & Electric Company

UNITS 1&2 TURBINE BUILDING - WATER TREATMENT AREA - INTAKE STRUCTURE and WAREHOUSE PLAN AT 12'-0" ELEVATION



POOR ORIGINAL

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3.1.21

ENCLOSURE 2

3.2.1 Fire Hazards Analysis (4.1, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17, 5.19, 5.20, 5.21, 5.23, 5.24, 5.27, 5.28, 5.30)

The licensee will provide the results of an analysis to:

(1) demonstrate the adequacy of separation between adjacent fire areas that are not separated by fire barriers (with protected openings and penetrations) of appropriate fire resistance,

(2) identify the minimum separation between the redundant cables (in trays or in conduits)/equipment required for safe shutdown in each fire area,

(3) identify the largest fire that can be expected in each fire area based on the fixed combustibles in the area and transient combustibles which may be introduced into or moved through the area,

(4) identify the worst damage that could result from such fire, and

(5) demonstrate that such damage will not have an adverse effect on safe shutdown or cause excessive radioactive release to the environment.

The analysis will, as a minimum, include the following considerations:

(1) The possibility that redundant cables (in trays or in conduits)/equipment may be involved in an exposure fire due to fixed or transient combustibles.

(2) Effects of the fire and possible explosion, and fire fighting activities.

(3) Shutdown capability without offsite power.

(4) Safe shutdown consequences of possible system transients resulting from a fire induced faulting of electrical cables.

Where assumptions are made, such as operability of damaged cabling/equipment, or effectiveness of protection, etc., they will be substantiated by the results of tests and/or analyses.

In those plant areas where it cannot be demonstrated that safe shutdown capability can be preserved during and following the postulated fire, appropriate modification(s) will be provided to assure that the plant's shutdown capability will meet the following criteria as the minimum:

(1) Following any fire, the plant can be brought to hot shutdown conditions using equipment and systems that are free of fire damage.

(2) The plant shall be capable of maintaining hot shutdown conditions for an extended time period significantly longer than 72 hours.

(3) Fire damage to systems necessary to achieve and maintain cold shutdown conditions shall be limited so that repairs can be made and cold shutdown conditions achieved within 72 hours.

(4) Repair procedures for cold shutdown systems shall be prepared now and material needed for such repairs shall be on the site.

(5) The hot shutdown condition shall be achieved with power from the offsite power system, and upon its loss, with power from the onsite power system. A dedicated power supply may be substituted for the onsite power systems.

(6) The power needed to achieve the cold shutdown condition may be obtained from any one of the offsite power, onsite power, and dedicated power systems.

(7) When these minimum systems are provided, their adequacy shall be verified by a thorough evaluation of:

(a) Systems required for hot shutdown;
(b) Systems required for cold shutdown;
(c) Fire damage to power distribution systems; and
(d) Interactions caused by fire damage to power and water supply systems and to supporting systems, i.e., component cooling water supply.

Response

To follow under separate cover.

3.2.2 Adequacy of Detector Installations (4.2)

The licensee will provide the results of a study or tests to verify that proper consideration has been given to such factors as ceiling height and configuration, ventilation air flow rate and pattern, location and arrangement of plant equipment and combustibles, etc. in determining the type, number and location of the existing and the proposed fire detector installations.

Response

To follow under separate cover.

3.2.3 Fire Pump Flow Test (4.3.1.2)

The licensee will perform full scale pump tests and furnish the results of such tests.

Response

Full-scale fire pump tests were performed August 29, 1979. These tests were witnessed by representatives of the American Nuclear Insurers (IRI personnel). The results of the tests are attached.

3.2.4 Ventilation Duct Penetrations (4.4.1, 4.9.2, 5.4, 5.5, 5.6, 5.9)

The licensee has verified that all ventilation duct penetrations of fire barriers are protected with UL or FM listed fire dampers which will close automatically in the event of a fire, and the gaps between the ducts and the barriers are sealed. Fire rating of the dampers will be evaluated and appropriate modifications provided as necessary.

Response

The fire dampers provided in ventilation duct penetrations are fusible link dampers which have a 1-1/2 hour UL rating. This rating was evaluated relative to inventoried fire loads across associated fire barriers, and this rating was found adequate.

The fire hazards analysis has identified those areas where additional fire dampers are required to maintain fire separation. These additional dampers will carry a 3 hour rating. The method by which the fire damper is installed in its associated wall or ceiling penetration assures that all gaps between the dampers and the barriers are completely closed. This method was used for the original installation of fire dampers and will be used for the additional ones as well. See the attached drawing detail.

3.2.5 Backflow Protection (4.5, 5.2)

The licensee will provide the results of an analysis, including drawings or sketches of the drain systems as necessary, to demonstrate that the design of existing drain systems can prevent the backflow of combustible liquids to other safety-related areas, or to provide additional modifications to prevent such possibilities.

Response

Drains in safety related areas of the auxiliary building are connected to a common drainage system which empties into the miscellaneous waste receiver tank. The drain system consists of stainless steel floor drain fittings and connecting piping embedded in the floor concrete. Four inch lines are used as connecting headers for these drains in the upper elevations. The headers are tied to a six inch gravity drain which leads to the receiver tank at Elevation -10'-0". The piping from any given floor drain is embedded at least 12" below the floor.

Industrial Risk Insurers

RECEIVED

SEP 17 1979

ELEC. ENGR. DEPT.

3.2.3 Diesel

ANNUAL FIRE PUMP TEST SHEET

SC. ID. N-137 RISK B.G.+E. DATE 8/29 1979

MAKE FAIRBANKS-MORSE Model or type 5824F Serial No. K-2P1054782

Rated Capacity 2500 gpm. at rated head 125 psi., ≡ at rated speed 1770 rpm.

Net pressure at shutoff 149.3 psi. Net pressure at 150% rated capacity 82.3 psi.

Brake horsepower at rated conditions 242.7 Max. brake H. P. at rated speed at any capacity 149.3

Horizontal, vertical, turbine 1 stages impeller dia. 18⅛ inches.

PUMP OPERATES: Manual, Automatic Cut in 85 psi Cut out MANUAL psi.

DRIVEN BY: Electric motor; steam turbine; gasoline, diesel, engine; water wheel; no clutch.

SUCTION FROM: SUCTION TANK Capacity 500,000 Gals.

Lift ft. Vertical Turbine Discharge Head to Water Level Ft.

Head 13 ≡, psi. Vertical Turbine Lowest Impeller to Water Level Ft.

JOCKEY OR MAKE-UP PUMP: Make FAIRBANKS-MORSE Type VS4783 K2P3 Rated Capacity 30 gpm.

Rated Head 130 psi., ≡. Cut-in 115 psi., Cut-out 125 psi.

Centrifugal or Positive Displacement Type. Relief Valve Setting 140 psi.

SPECIAL COMMENTS CANNOT REMOVE SUCTION + DISCHARGE GAUGE FROM PUMP EASILY - THEY ARE CALIBRATED YEARLY, LOOK OK

Date	Number and Size of Streams Ft. of Hose	Location	Pitot	GPM	Pump Pressures Vertical Turbine Discharge ~~Gage to Water Level~~ or Suction: Discharge (PSI) Ft.	(PSI) Ft.	Net (PSI) Ft.	R.P.M.	Steam at Inlet: Stroke	Jets slip at 100: Volts	AMPS	Insp.
8-29-79	Churn	Hose	—	—	155	15	140	1770				RM
	4-1 3/4"-50'		48,47,47,47	495	139	14	125	1782				
	6-1 3/4"-50		46,47,47,47,46	564	92	12	80	1800				

Check engine tachometer against Insp. Speed Counter. Plot test points on reverse side

NFSH Rev. 11/71

Industrial Risk Insurers

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ELEC. ENGR. DEPT.

3.23
Elect

ANNUAL FIRE PUMP TEST SHEET

LOC. ID. N-137 RISK B.G.+E DATE 8-29 1979

MAKE FAIRBANKS-MORSE Model or type 5824F Serial No. KZP1554783
Rated Capacity 2500 gpm. at rated head 125 psi., & at rated speed 1750 rpm.
Net pressure at shutoff 137.5 psi. Net pressure at 150% rated capacity 90 psi.
Brake horsepower at rated conditions 2425 Max. brake H. P. at rated speed at any capacity 277
Horizontal, vertical, turbine 1 stages impeller dia. 18⅛" inches.

PUMP OPERATES: Manual, Automatic Cut in 100 psi Cut out 125 psi.

DRIVEN BY: Electric motor; steam turbine; gasoline, diesel, engine; water wheel; no clutch.

SUCTION FROM: Suction tank Capacity 500,000 Gals.

Lift ft. Vertical Turbine Discharge Head to Water Level Ft.
Head 14 &, psi. Vertical Turbine Lowest Impeller to Water Level Ft.

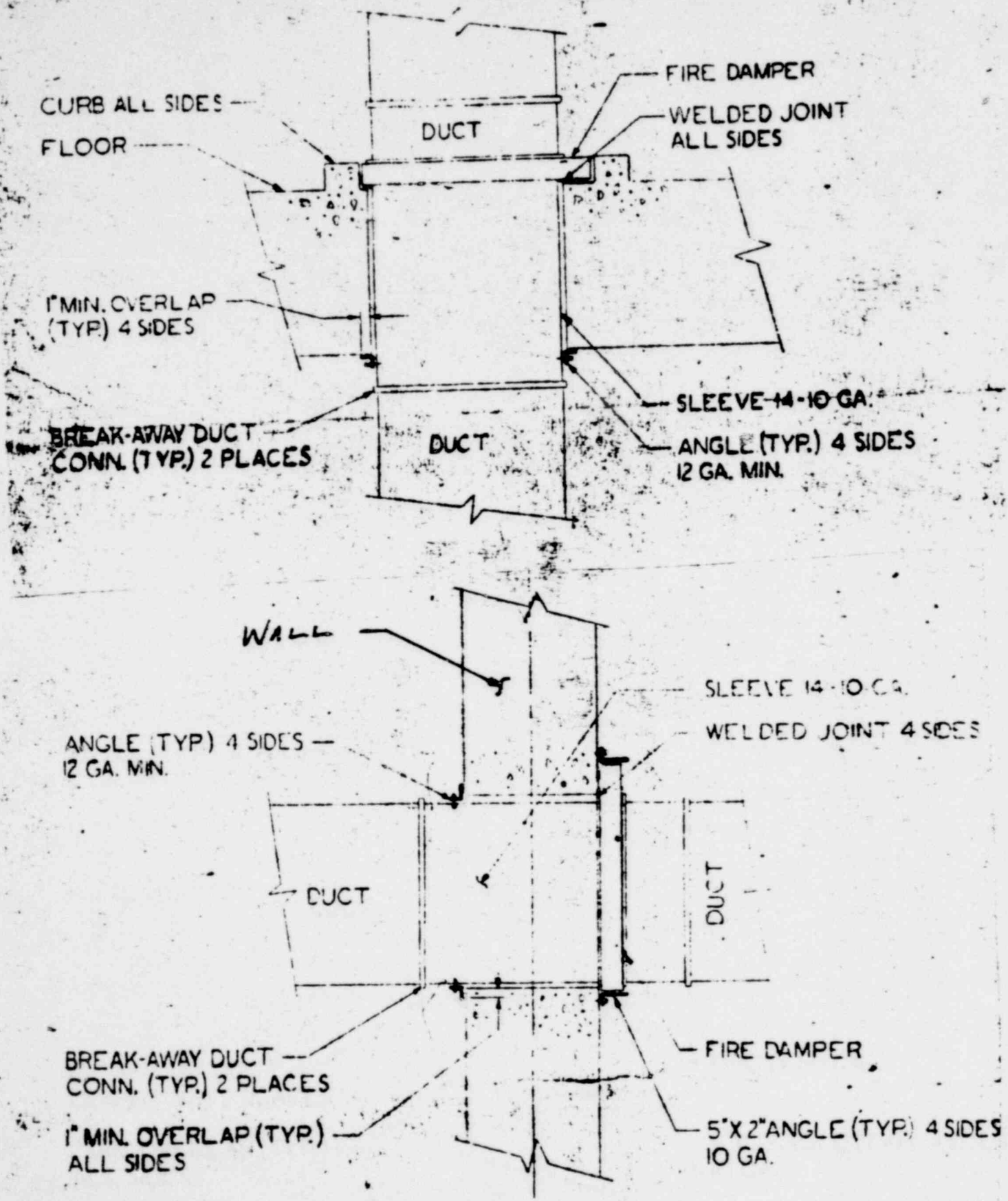
JOCKEY OR MAKE-UP PUMP: Make FAIRBANKS-MORSE Type KZP3 U54R52 Rated Capacity 30 gpm.
Rated Head 130 psi., &. Cut-in 115 psi., Cut-out 125 psi.
Centrifugal or Positive Displacement Type. Relief Valve Setting 140 psi.

SPECIAL COMMENTS To REMOVE TIMER

Date	Number and Size of Streams Ft. of Hose	Location	Pitot	GPM	Pump Pressures Vertical Turbine Discharge Gage to Water Level or Suction: Discharge PSI, Ft.	PSI, Ft.	Net PSI, Ft.	R.P.M.	Steam at Inlet: Stroke	Jets slip at 100: Volts	AMPS	Insp.
8-29-79	Churn	Pumphse	—	0	165	13	152	1803				Rm 7
	4-100'-1¾"		47,47,47,47	2496	144	13	131	1778				
	6-1¾"-100'		47,47,47,47,47,47	5762	110	12	98	1771				

Check engine tachometer against Insp. Speed Counter. Plot test points on reverse side

115H Rev. 11/71



Spillage on Elevation -10'-0" and -15'-0" is drained to individual room sumps and then pumped to the waste receiver tank. Check valves prevent backflow to other rooms. At Elevation 5'-0" and above, spillage of combustible liquids in any given room will drain by gravity to the receiver tank. Connecting piping is sufficiently below the floor level to preclude transfer of combustibles to other safety related rooms.

3.2.6 Electrical Penetration Fire Resistance (4.9.3, 5.4, 5.5, 5.6, 5.9)

The licensee will provide the results of a standard ASTM E-119 test to demonstrate the adequacy of fire resistance of the Calvert Cliffs electrical penetrations.

Response

The staff requested BG&E furnish a procedure for testing cable tray, piping and conduit penetrations through walls and floors. This was done by our letter dated September 14, 1979 from Lundvall to Reid. NRC staff comments were received November 5, 1979 by telecopy and are now being evaluated.

3.2.7 Piping Penetration Fire Resistance (4.9.4, 5.4, 5.5, 5.6, 5.9)

The licensee will provide the results of a standard ASTM E-119 test to demonstrate that piping penetrations have fire resistance ratings commensurate with fire hazards on both sides of the barriers.

Response

Refer to Item 3.2.6 "Response".

3.2.8 Radiological Consequences of Fire (4.14, 5.3, 5.7, 5.9, 5.20, 5.24, 5.25)

The licensee will provide the results of a study of radiological consequences of a fire in areas containing radioactive materials (including a fire in a charcoal or a HEPA filter), or other areas where a fire could cause the release of radioactive materials. Additional modifications will be provided in areas where a fire could cause the release of radioactive materials that could preclude the normal usage or occupancy of areas surrounding the plant.

Response

To follow under separate cover.

3.2.9 Effects of Fire on Radiation Monitors

The licensee will provide the results of a study to demonstrate that the radiation monitor will remain operational when exposed to smoke and/or heat of a potential fire.

Response

To follow under separate cover.

3.2.10 Fire Water Drainage (4.5)

The licensee will perform an additional study, following the completion of hose reach tests and addition of interior hose stations and other automatic water systems, to verify that fire water drainage in all safety-related areas is adequate and possible fire water accumulation in any safety-related area will be acceptable.

Response

The largest postulated fire is one that actuates a sprinkler coverage of 3,000 ft.^{2}. A sprinkler actuation of this magnitude could occur in one of the following three areas: No. 419 (Cask and Equipment Loading Area), Nos. 228 and 201 (Component Cooling Water Pump Rooms, Units 1 and 2). All other sprinkled areas in the auxiliary building have an area less than 3,000 ft.^{2}, so the largest flow rate of fire water will come from one of these three areas. Also, there are three hose stations which could serve each of the areas.

If a fire were to actuate 3,000 ft.^{2} of sprinkler coverage and 3 hoses were used in any one of the three rooms, the drain capacity of the room would be exceeded. In addition, if we assume that the miscellaneous waste receiving tank is full at the start of the fire (all drains will flow into this tank), the drainage will overflow from the tank to a sump, fill and overflow the sump, and begin to flood elevation -15'-0".

The area being sprinkled will accumulate up to two inches of water but no more, as the water will flow down the staircases and eventually reach elevation -15'-0". Some fire water may backflow from the drains to other areas, but this will eventually drain down to the bottom elevation without significant accumulations.

At elevation -15'-0" only the corridor, Area 100, will flood as the other areas at this elevation are provided with watertight doors. Elevation -10'-0" will begin to flood, and this is acceptable up to the top of the equipment pedestals. For fire water to reach this point, the sprinklers and hose stations would all have to operate continuously for at least 60 minutes. It will actually take longer for all the water to reach the bottom elevation, as the water will not instantaneously flow down. Considering all fixed and transient combustibles in the area, and the operation of 3 hoses and a coverage of 3,000 ft.^{2} of sprinklers, 60 minutes would be adequate to extinguish a fire in these areas.

The effects of fire water drainage in all of the other areas in the auxiliary building would be less severe with the exception of the ECCS pump rooms, Areas Nos. 118, 119, 102, and 101. For fire fighter admission to these rooms, a watertight door must be opened. Fire water could accumulate up to the top of the equipment pedestals in this room. Two hose stations can serve any of the rooms. With a fire in one of the smaller ECCS pump rooms, the miscellaneous waste receiving tank full, and two hoses used, it would take 48 minutes to flood the room but this would not prevent safe shutdown as the redundant room would be sealed from flooding by watertight doors. These time periods would be sufficient to extinguish a fire within the room.

3.2.11 Control Air (4.15)

Loss of control air to the salt water system valves causes the service water heat exchanger and the component cooling water heat exchanger inlet and outlet valves to fail open. The licensee will provide the results of his study to verify that possible over-cooling of service water and/or component cooling water will not have adverse effects on the plant safety.

Response

Loss of control air to the salt water system valves causes the service water heat exchanger and component cooling water heat exchanger inlet and outlet valves to fail open with a resultant decrease in service water and component cooling water temperatures. This failure mode is consistent with the positions to which the valves would automatically be positioned in the event of an Engineering Safety Features Actuation. Therefore, all equipments serviced by component cooling or service water are designed to accept this reduced temperature water with no adverse impact on plant safety. This includes the diesel generators which utilize service water to cool integral jacket cooling, air cooling, and lube oil cooling heat exchangers. Overcooling of these systems is prevented by thermostatically actuated valves which bypass service water around the heat exchangers to maintain jacket cooling water 170-185°F, scavenging air 100-115°F, and lube oil 190-205°F.

ENCLOSURE 3

3.3.1 Halon System Backup Power (4.3.2)

The licensee has not provided sufficient justification for not providing backup power for the Halon suppression systems.

Response

The staff accepted the existing Halon systems power supplies without further modification during a meeting held on October 2, 1979.

3.3.2 Emergency Lighting (4.6)

The licensee has not provided sufficient justification for not replacing the existing 1-1/2 hour rated batteries of the emergency lighting units with those of 8-hour rating. The distribution of existing emergency lighting units has not been demonstrated to provide adequate lighting for shutdown operation and fire emergency responses.

Response

The normal lighting throughout the plant is fed from the station auxiliary transformers. The normal/emergency lighting in the Control Room consists of normal AC/emergency AC and emergency DC. Upon loss of AC power, the emergency DC lighting in the Control Room is provided from the 125 volt station batteries. (DC Control Panel Bus 24). Also, the emergency AC is provided by the auxiliary busses which are fed by emergency diesel generators upon loss of offsite AC power.

The normal AC/emergency AC lighting is provided for Cable Spreading Room (elevation 27'-0") and Switchgear Rooms (elevation 27'-0" and 45'-0"). The emergency AC is provided by the auxiliary busses which are fed by the emergency diesel generators upon loss of AC power. For personnel safety and safe egress during the period of time it takes the diesel generator to pick up the lighting load, less than 5 minutes, battery-operated emergency lights have been provided. These battery-operated emergency lights actuate immediately upon loss of normal AC power.

All safety related areas of the plant contain fixed emergency lighting units, which have individual batteries and are presently rated for 1-1/2 hours. These units are automatically actuated upon loss of normal AC power. We will replace the existing 1-1/2 hour units with new 8 hour battery-operated units in the areas listed below. The new units will be Exide Model B-200, or equal. (See attached literature.)

Exide

EXIDE EMERGENCY LIGHTING SYSTEMS

An Economical 12 Volt Unit or System Totally Maintenance Free with New Model H Lamps

Lightguard®

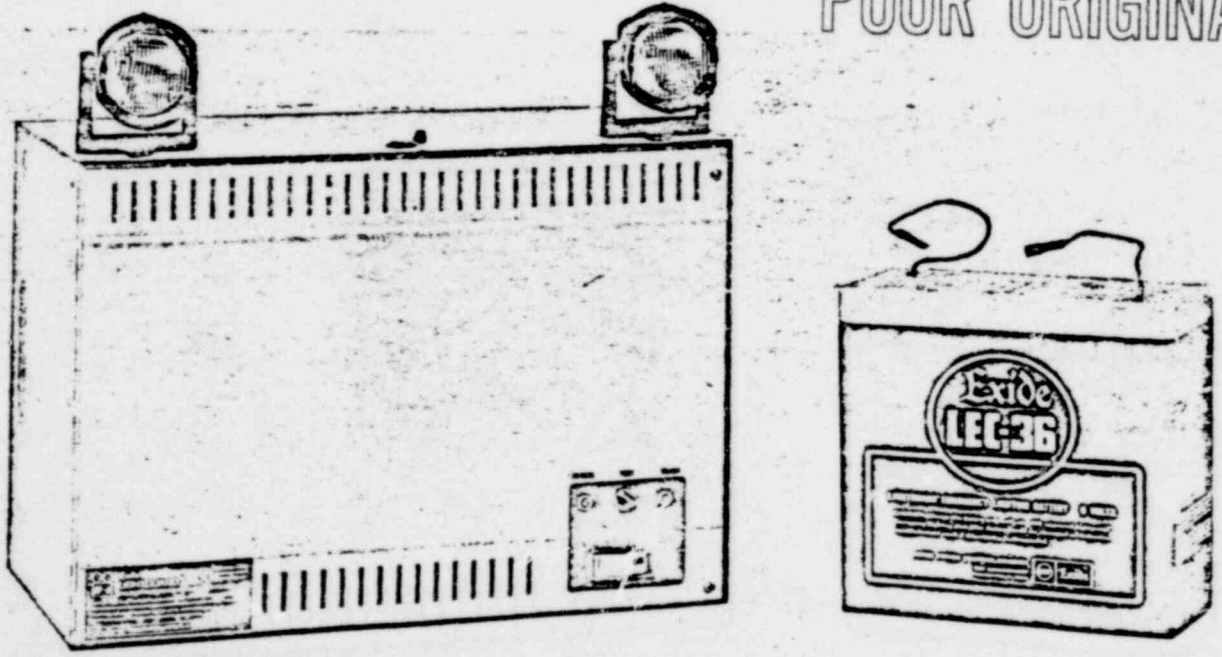
Model B-200 12-volt Universal 120/277 V AC Input

Model B-200 with Model H Halogen lamps provides high efficiency emergency lighting protection economically. A unit mounts up to three Model H lamps. As a system, all 13 lamps can be remotely mounted. Two maintenance-free LEC-36 batteries are used. They need no watering and operate unattended for their 10 year or longer lives. There are no moving parts—the internal components are all solid-state. The pulse-type charger keeps the battery up to charge; the switch circuit insures instantaneous load transfer on AC failure; the protector circuit prevents excessive discharging.

ACCESSORIES

- ☐ ADDITIONAL MODEL H LAMPS
- ☐ WALL MOUNTING BRACKET
- ☐ REMOTE FIXTURES
- ☐ ILLUMINATED EXIT SIGNS
- ☐ WIREGUARD PROTECTORS
- ☐ EXPLOSION PROOF FIXTURES
- ☐ ADJUSTABLE TIME DELAY

See Accessories Section



Specifications

LIGHTGUARD® EMERGENCY LIGHTING MODEL B-200

OPERATION
Model B-200 provides emergency light automatically and instantaneously on failure of normal AC power.

RATING

	AC INPUT				DC OUTPUT	
MODEL	VOLTS	HERTZ	PHASE	WATTS	VOLTS	WATTS
B-200	120/277	60	1	60	12	200

INSTALLATION
Unit is easily field connected for a 120 or 277 volt, 60 Hz, unswitched power source. It should comply with the National Electric Code and all other applicable codes.

CASE
The 18 gage steel container and 20 gage steel door are coated with an acid-resistant gray finish. The battery, and the charger and controls are in separate compartments. Internal access is through the front panel, piano hinged on the left, and held closed by two screws on the right.

LAMPS
Case can mount three horizontally and vertically adjustable Model H high efficiency 12 watt halogen lamps.

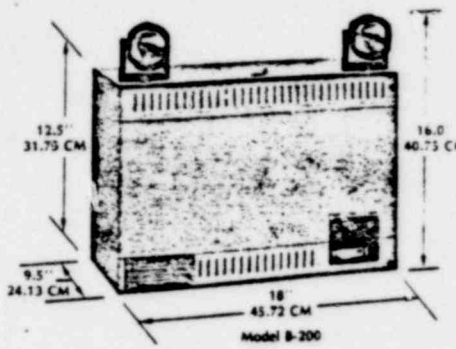
Rated Illumination Time—Hours of Light To 87.5% Of Initial Voltage (12 Volts)	
No. of 12 Watt Lamps	Hours of Light
4	8
7	4
13	1.5

Lamps can be remotely mounted also. See accessory sheet 5-0 for detail specifications and light distribution curves.

CHARGER
Solid-state pulse type charger restores battery to full charge within 12 hours after a discharge not over 1.5 hours, with a 200 watt load. Charger also monitors battery voltage, and charges on fast rate when necessary. Components operate at less than 50% of rating to insure reliability and long life.

BATTERY
Two LEC-36 batteries are used.
The LEC-36 is a 3-cell, 6-volt, sealed lead-acid calcium-alloy grid battery. It has a 36 ampere hour capacity at the 8 hour rate, at 77°F., to 87.5% of initial voltage. (ARTICLE 700-7 NEC)
Positive plates have a single insulation of microporous separators. The battery case is a high-impact, heat resistant, transparent plastic container with permanently sealed cover preventing electrolyte leakage. The battery operates entirely unattended and needs no watering or maintenance for 10 years or longer.

DIMENSIONS
Approx.
Assembled wt.
77 lbs.
35 kg



PROTECTOR AND SWITCH CIRCUITS
Solid-state circuits continually monitor both AC and DC current. The switch circuit instantly connects lamps to battery on AC failure, and disconnects them when normal power is restored. The protector circuit automatically monitors battery output and switches off the lamps when rated illumination time is reached, preventing excessive discharging.
All components operate at 50% of their rating to insure reliability and long life.

SIGNAL LIGHTS, TEST SWITCHES AND VOLTMETER
Front mounted are a "PRESS-TO-TEST" switch for quick testing of lamps and battery; an amber ready-light; a red light indicating fast charge rate; and a voltmeter indicating battery voltage. Within the unit is a ready/off switch.

1355 028

ORDERING INFORMATION
EXAMPLE: B-200 — 2H
Model — No. of Lamps

See accessories section to order accessories

EXIDE LIGHTGUARD
5/5—10 YEAR BATTERY GUARANTEE

The LEC battery is guaranteed by ESB Incorporated against defects in workmanship or material for a period of ten years from the date appearing on the battery, when used in a solid state Exide Lightguard emergency lighting unit designed to incorporate calcium batteries. The battery will be replaced at no charge during the first five years; thereafter, an adjustment charge will be made using ESB's suggested retail price in effect at the time of adjustment. The adjustment charge will be the suggested retail price reduced by the percentage obtained by multiplying 6% by the number of years remaining in the 10 years at the time of battery failure; any fraction of a year shall be regarded as a whole year remaining. Where the LEC battery is installed as a replacement in lighting units having electro-mechanical relays, the period of the guarantee is limited to one year beginning with the date appearing on the battery and the battery will be replaced at no charge during that one year. This guarantee does not cover damage caused by abuse, improper installation or damage resulting from circuitry change or componnral changes made in the Lightguard unit by other than ESB or its authorized distributor.

In the event there is such a defect in the battery, notify your nearest Exide Lightguard distributor listed in the Yellow Pages or ESB. A representative of the distributor or ESB will inspect your Lightguard unit. Installation or replacement batteries which will be sent FOB the distributor's warehouse is not covered by this guarantee.

There are no guarantees or warranties which extend beyond the description on the face thereof and WARRANTIES OF MERCHANTABILITY ARE EXCLUDED.

Corridors 100, 103, 104, and 120 (elev. -10' and -15')
Corridors 200, 202, 203, 212, and 224 (elev. 5' and 10')
Corridors 300, 308, 309, 315, 319, and 327 (elev. 27')
Corridors 410 and 426 (elev. 45')
Corridors 506, 517, and 522 (elev. 69')
Stairtowers AB-1, AB-2, AB-3, AB-4, AB-5, and T-3
Auxiliary Feed Water Pump Rooms 603 and 605 (including passageway in Heater Bay)
Diesel Generator Rooms 416, 421, and 422, Room 419
Automatic Steam Dump Valve Rooms 408 and 428
Auxiliary Feed Water Valve Rooms 310 and 316
Fire Pump House

3.3.3 Fire Door Supervision (4.9.1)

The licensee has not provided sufficient justification for not providing electrical supervision or locking closed those fire doors which are presently not supervised or locked.

Response

The staff has under study earlier responses and additional information developed during the October 2, 1979 meeting and will address its evaluation in a supplement to this report.

3.3.4 RC Pump Lube Oil Collection System (5.19)

The licensee has not provided sufficient justification to demonstrate that:

(a) The existing system provides a complete containment for all potential leakage points which include lift pump and piping, external oil cooler, flanged connections, drain plugs, fill points, upper and lower reservoirs, sight glasses and overflow lines.

(b) The copper drain tubing does have adequate capacity to accommodate drainage of a large oil leak.

(c) Draining collected oil on the containment floor is safe.

(d) The effects of a seismic event on this system will not adversely affect the plant safety.

Response

An oil spillage protection system will be provided for each reactor coolant pump motor. The system will consist of encapsulating devices which will be installed around potential leakage points and will be sized to protect against a major oil leak. Typical motor components to be encapsulated are: lube oil lift pump, lube oil cooler, connecting flanges and oil reservoir drainage points. Piping from the

encapsulations will accommodate a major oil leak and will be interconnected to a common drain leading to an oil spillage collection tank located at elevation 10'-0". Two collection tanks will be installed in each containment, sized to accommodate the largest potential oil leak.

Each of the tanks will service two reactor coolant pump motors. The piping from the oil spillage protection systems to the tanks as well as the tanks themselves will be seismically supported. The tanks will be a UL approved standard design and will be vented to ensure proper system drainage. A drain valve will be provided on each tank to permit oil removal.

Detailed design of the oil spillage protection system when complete will be furnished for staff review prior to implementation of these modifications.

3.3.5 Fire Pump Separation (4.3.1.2)

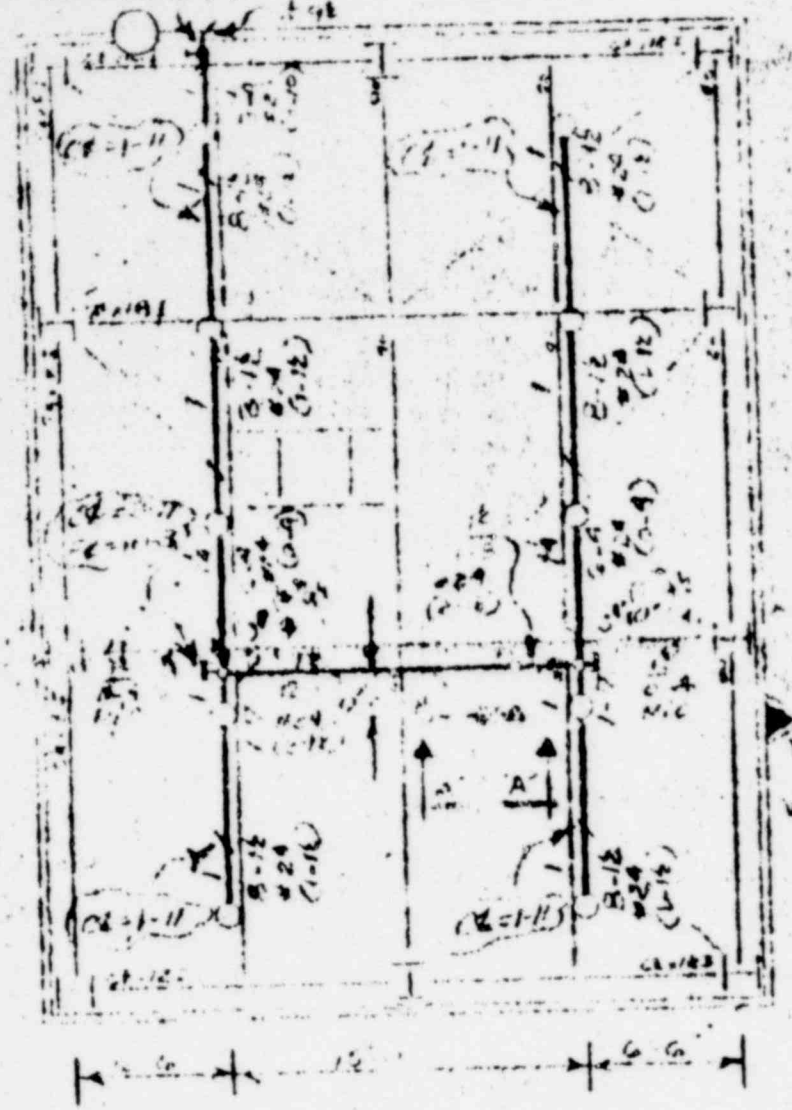
The licensee has not demonstrated that the sprinkler system installed in the fire water pump house provides equivalent protection to the 3-hour fire barrier in limiting the effect of a fire at the diesel fire pump, or its fuel tank, on the electric fire pump.

Response

The fire pump house is protected by automatic sprinklers. A reproduction of the sprinkler design drawing is attached. The sprinkler system water supplies consist of two - 2500 gpm at 125 psi U/L approved horizontal centrifugal pumps taking suction from two - 500,000 gallon pretreated water storage tanks and a 15,000 gallon pressure tank (10,000 gallon nominal capacity) located remote from the fire pump house. A make-up pump is to be installed which also will serve as an additional water supply.

Automatic sprinklers will control temperatures and extinguish fires involving combustible liquids in the Fire Pump House. In NFPA Standard 30, the Flammable and Combustible Liquids Code, automatic sprinklers are recommended for protection of flammable and combustible liquid hazards. American Nuclear Insurers specifically recommended automatic sprinklers to protect against fires in the Calvert Cliffs Nuclear Power Plant Fire Pump House.

It is anticipated that both the electric motor and engine driven fire pumps will properly function in the event that the sprinklers are actuated and discharging in the Fire Pump House. The fire pump controllers have NEMA 3 drip-tight weather resistant enclosures which are elevated on foundation pedestals. The electric pump foundation pedestal and base plate are 16 inches above the floor



FIRE PUMP HOUSE
TOP OF STEEL EL = 58'-8"
FLOOR EL = 45'-6"
SCALE 1/8"=1'-0"

NOTES

ALL PIPE HANGER DIMENSIONS ARE (CUT)
(S.T.S.) NOTES TOP OF STEEL TO C OF PIPE
(F.F.) NOTES FLOOR TO C OF PIPE
ALL PIPE TO BE BLACK STEEL
ALL FITTINGS TO BE BLACK CAST IRON

SYSTEM #1 (FIRE PUMP HOUSE)

2" FLANGE BY OTHERS

1355 031

POOR ORIGINAL

WATER MOTOR GONG

SECTION A-A
SCALE 1/4"=1'-0"

KEY PLAN

1. 6" OS&Y GATE VALVE W/MONITOR SWITCH (1-5688A)
2. 4" ELL (A-5639G)
3. 4" ALARM VALVE SETUP 2-G-A 7/1
   RETARD CHAMBER (A-5639G)
4. 2x9 REDUCING FLANGE
5. PRESSURE SWITCH (2 P.C. CONTACTS) AND BR

ASCOA
Dwg 1 of 20

PUMP HOUSE SPRINKLERS
CALVERT CLIFFS NUCLEAR PLANT

NOZZLES # / GPM	PIPE DIA	PIPE LGTH	F.L. #s/□"	PRESS SUMMARY	REMARKS
				5.00	
1 - 12.6	1	8.125	.056	+ .45	MOST REMOTE HEAD AT N/E CORNER
				5.45	
2 - 25.7	1	8.125	.208	+ 1.69	
				7.14	
3 - 40.7	1½	6.33	.131	+0.83	
				7.97	
5 - 67.8	1½	E = 4.0 12.8	.156	+ 2.62	ADD 2 HEADS - NO BRANCH LINE
				10.59	
10 - 135.6	2	E = 5.0 0.6	.167	+ 0.93	ADD 5 HEADS ON SOUTH BRANCH LINE
				11.52	
135.6	4"	HL Ch 20.0 E 10.0 0.5	.008	+ 0.24	
				11.76	
135.6	2½	GATE 1.0 0.16	.107	.08	
				11.84	
		ELEV 7.0		3.39	NO ADD'L FRICTION LOSS BECAUSE ALL PIPING IS ≥ 2½" ϕ.
				15.23 PSI VS. HEAD OF 17.32 PSI	

FIRE PUMP HOUSE = 1092
MIN RATE OF APPLICATION = .124 GPM/SQ FT
AREA PER SPRINKLER = 109 SQ FT

FROM PRETREATED WATER STORAGE TANKS.

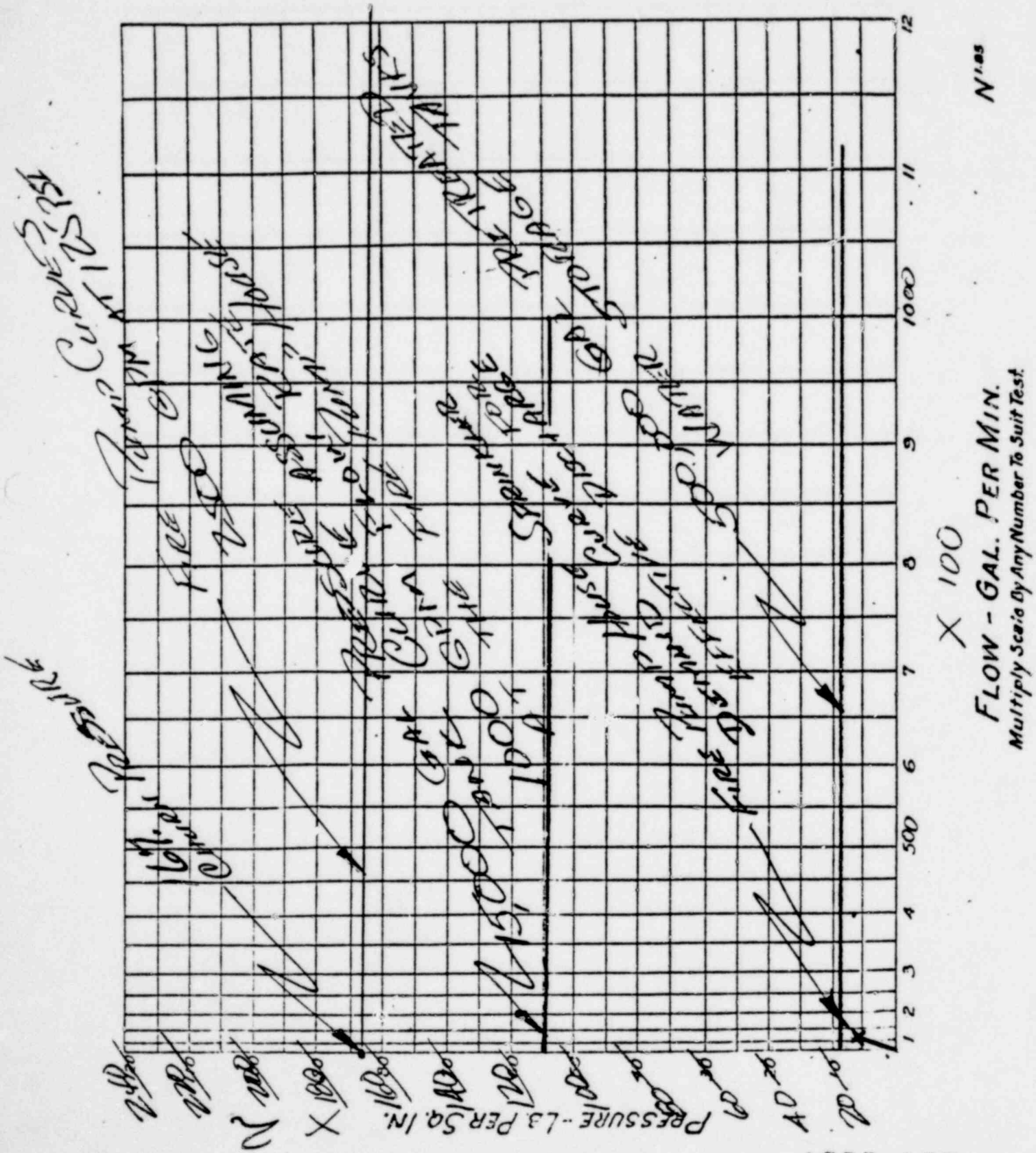
∴ 15.23 psi REPRESENTS THE MIN. PRESS REQUIRED TO PROVIDE EFFECTIVE DISCHARGE FROM AUTO. SPRINKLERS. THIS REQUIREMENT IS SATISFIED BY:

a - 2500 GPM, 125 psi ELEC FIRE PUMP
b - 2500 GPM, 125 psi DIESEL FIRE PUMP
c - 15000 GAL, 110 psi PRESS. TANK
d - 500,000 GAL, 40' HIGH, PRETREATED WATER STORAGE TANK No 11.
e - 500,000 GAL, 40' HIGH, PRETREATED WATER STORAGE TANK No 21.

7.3.1

FIRE PUMP HOUSE SPRINKLERS

C.C.N.P.P.



so that air intakes are elevated more than 20 inches. The electric motor is enclosed to NEMA Type MG1-1.25A Drip-Proof specifications (i.e., motor ventilating openings are so constructed that successful operation is not interfered with when water particles strike or enter the enclosure at any angle from 0 to 15 degrees downward from the vertical). The diesel engine is also supported on a pedestal and steel base plate and the engine is qualified to operate when exposed to weather conditions subject to freeze protection. The pump room floor is pitched to floor drains to preclude communication of water or fuels from one pump to another. The diesel fuel oil tank is provided with a dike to contain its contents.

Attached is a hydraulic calculation of the in situ automatic sprinkler system for the pump house. The hydraulic calculation shows that at least 5 psi can be maintained at the most remote sprinkler head with all sprinklers in the Fire Pump House operating when supplied by the 500,000 gallon pretreated water storage tanks which are 40 feet high. The Factory Mutual System has selected 5 psi because it is the approximate minimum required for effective sprinkler discharge.

Further, it should be recognized that an additional centrifugal pump is to be installed as required in Item 3.1.8. This pump will be capable of supplying the sprinkler demand for the Fire Pump House and will have a power supply independent of the Fire Pump House. This pump will be located in the Turbine Building to take suction from the fire water tank standpipe and will discharge into the fire protection system header.

3.3.6 Fire Fighting Strategies (6.1)

The licensee has not provided sufficient justification that the fire fighting strategies he has developed for seven areas in the plant are adequate for all plant areas.

Response

Fire fighting strategies are being developed for the following plant areas which either contain significant quantities of combustible material or which would pose unusual problems for the fire brigade combating a fire in that area. All strategies will be completed by August 1, 1980.

Room No.	Description
(-) 10' Aux. Bldg.	
101	Safety Injection Pumps & Spray Unit 2
102	" " " " " " "
118	" " " " " Unit 1
119	" " " " " " "
115	Charging Pump Rm. Unit 1
105	" " " Unit 2
111	Waste Processing Control Rm.
5' Aux. Bldg.	
226	Service Water Pump Rm. Unit 1
225	Rad Exhaust Vent Equip. Rm. Unit 1
224	Piping Area Unit 1
202	Passage
228	Component Cooling Pump Rm. Unit 1
201	" " " " Unit 2
203	Piping Area Unit 2
205	Service Water Pump Rm. Unit 2
223	Hot Machine Shop
222	Hot Instrument Shop
204	Rad Exhaust Vent Equip. Rm. Unit 2
27' Aux. Bldg.	
320	Spent Fuel Pool Cooling Rm.
315	Main Steam Piping Rm. Unit 1
309	" " " " Unit 2
317	Switchgear Rm. Unit 1
318	Purge Air Supply Unit 1

Room No.	Description
311	Switchgear Rm. Unit 2
312	Purge Air Supply Unit 2
301	Battery Rm. Unit 1
304	" " " "
305	" " Unit 2
307	" " " "
45' Aux. Bldg.	
405	Control Rm.
423	West Elect Pent Rm. Unit 1
414	" " " " Unit 2
418	Solid Waste Handling Rm.
408	Piping Area Unit 2
409	East Elect Pent Rm. Unit 2
407	Elect Equip. Rm. Unit 2
(2A)	Cable Chase Unit 2
(2B)	" " " "
428	Piping Area Unit 1
429	East Elect Pent Rm. Unit 1
430	Elect Equip. Rm. Unit 1
(1A)	Cable Chase Unit 1
(1B)	" " " "
419	Equip. Loading Area

Room No.	Description
69' Aux. Bldg.	
512	Control Rm. HVAC Equip. Rm.
520	Spent Fuel Pool Area Vent Rm.
524	Main Plant Exhaust Rm. Unit 1
526	" " " " Unit 2
522	Hot Laboratory Rad Chem.
529	Elect. Equip. Rm. Unit 1
532	" " " Unit 2
530	Cask Handling Area
12' Turbine Bldg.	
603	Auxiliary Feed Pump Rm. Unit 1
605	" " " " Unit 2
	Intake Structure
1101	Warehouse Storage Area
602	Auxiliary Steam Gen. Rm.

3.3.7 Quality Assurance (6.2)

The licensee has not provided the comparison of his quality assurance program and the guidelines.

Response

A Fire Protection Quality Assurance Procedure (QAP) will be completed and a comparison of the QAP and the guidelines will be provided by January 1, 1980.