Docket 716

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DOCKET NOS. 50-269, 50-270 and 50-287 DATE: FEBRUARY 2 1978

LICENSEE: Duke Power Company (DPC)

FACILITY: Oconee Nuclear Station

SUMMARY OF MEETING HELD ON JANUARY 18, 1978, TO DISCUSS A PROPOSED SAFE SHUTDOWN SYSTEM (SSS) FOR OCONEE

A meeting was held on January 18, 1978, for the purpose of allowing DPC to present a proposal to install a Safe Shutdown System at Oconee.

A list of attendees is attached.

Oconee Nuclear Station is currently being reviewed by the NRC in the areas of fire protection, physical security (10 CFR 73.55) and flooding of the turbine building. Each of these areas of review deal with the capability to safely shutdown the plant if the Oconee turbine building were lost or if the systems necessary to shut the plant down were compromised.

The proposed installation of the SSS would provide an independent shutdown capability for the Oconee Station and would resolve a common area of concern of the three separate reviews currently being performed.

Attached is a copy of the DPC proposal which describes the concept being considered.

Preliminary reaction by the staff to this proposed concept was favorable. DPC stated that the NRC approval of the concept is desired before design work begins. DPC will forward the proposal formally by letter on February 1, 1978, for NRC review.

The installation of the SSS would take 30 months from start to finish. DPC will provide interim measures to be taken regarding the three areas of review until the SSS is completed.

Original signed by

Don Neighbors, Project Manager
Operating Reactors Branch #1
Division of Operating Reactors

OFFICE ➤	DOR:ORB#1				
SURNAME ➤	DNeighbors:lb				
DATE ➤	2/2/78				

NRC FORM 318 (9-76) NRCM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1976 — 626-624

Docket
NRC PDR
LOCAL PDR
ORB#1 Reading
NRR Reading
E. G. Case
V. Stello
K. R. Goller
D. Eisenhut
A. Schwencer
D. Davis
G. Lear
R. Reid
L. Shao
B. Grimes
W. Butler
R. Baer
Project Manager
Attorney, OELD
OI&E(3)
ACRS(16)
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Each NRC Participant
Licensee
T. B. Abernathy
J. R. Buchanan

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Don Neighbors

Don Neighbors, Project Manager
Operating Reactors Branch #1
Division of Operating Reactors

LIST OF ATTENDEES
AT MEETING ON
JANUARY 18, 1978

NRC

D. Neighbors
F. Jape
J. Burdoin
A. Schwencer
W. Pasedag
J. Knight
E. Imbero
P. Wagner
S. MacKay

Rolf Jensen & Associates (NRC Consultant)

R. Herman

Duke Power Company

K. Canady
T. Holland
D. Holt
T. McMeekin
R. Dobson
R. Priori
J. Hendricks
L. Dail
J. Pope
L. Summerlin
C. Fring
C. Wylie
W. Foley

FEBRUARY 2 1978

DUKE POWER/NRC MEETING
JANUARY 18, 1978
SAFE SHUTDOWN SYSTEM (SSS)

Our purpose in meeting today is to describe the Safe Shutdown System that we propose for utilization at Oconee Nuclear Station. The system would bring all or any combination of units, if necessary, to a shutdown condition in response to certain postulated accidents or sabotage scenarios. The system is not designed for emergency core cooling nor is it intended to be redundant to the ECCS equipment function. The system is one aspect of Oconee security systems; other aspects have been previously discussed with NRC.

The reason such a system is being proposed is that NRC criteria for security made it evident that for a plant the vintage of Oconee, the requirements for sabotage protection could not be economically or feasibly met. These requirements would have forced us to protect the Oconee Turbine Building from sabotage because the 4160 switchgear, emergency feedwater pump, and low pressure service water pumps are located in the Turbine Building. All of these are safety-related systems and provide either power to or cooling water for shutdown systems.

Secondly, it was recognized that Turbine Building flooding protection should be provided since a flood or break in a condenser circulating water system waterbox could disable the installed safety related equipment equipment as well as the normal feedwater chain and possibly prevent an orderly reactor cooldown. In order to mitigate the consequences of flood,

we proposed a Turbine Building drain system to remove the water from the Turbine Buildings so that the accumulation would not impact on the safety-related equipment. However, a Safe Shutdown System can achieve our reactor cooling goals as well.

The Safe Shutdown System can also be used as a redundant shutdown system for fire protection and eliminate cable rerouting problems.

Duke had quickly recognized after the NRC site visits that an integrated solution was needed for all of these three issues. Task forces were in existence for fire protection and Turbine Building flooding. A task force for security was organized and all three efforts were integrated for the shutdown aspects. Consequently, a common solution was recognized and proposed to Duke management. Management agreed with the proposal and suggested an early meeting with NRC. Today, various members of those task forces will describe the Safe Shutdown System and its relation to security, Turbine Building flooding, and fire protection. The first presentation will describe the mechanical and electrical system design. Subsequent presentations will then develop the relationship to each of the problem areas and describe how the design satisfies our understanding of the various criteria established.

This charts shows the past history of Duke/NRC interaction on the three issues. The chart is primarily for background information for those who may not have been involved previously. The major milestone dates are underlined.

What we hope to accomplish in this meeting is: (a) understanding of the Safe Shutdown System, (b) the definition of the relationships of the Safe Shutdown System to the problem areas defined, and (c) recognition that Oconee Nuclear Station may be a unique situation and may require such a system where other plants do not.

What we need from you is agreement on the system concept and that the system concept solves the problems and satisfies the NRC criteria. When we have that agreement, we can begin the detailed design, construction, and procurement for the system.

Where we intend to go after today is to submit to you in the form of a supplement to the Security Plan, a design description of the Safe Shutdown System. This will be submitted by February 1, 1978.

Would you please hold questions until each speaker has completed his presentation?

DUKE POWER/NRC MEETING
January 18, 1978
Safe Shutdown System

1.	Introduction and Bases	K. S. Canady
2.	Safe Shutdown System Design	T. C. McMeekin
3.	System Relation to Security	R. L. Dobson
4.	Fire Protection Relation to System	J. R. Hendricks
5.	Turbine Flooding Relation to System	R. B. Proiry
6.	Conclusion and Schedule	K. S. Canady

DUKE POWER/NRC MEETING
January 18, 1978

Accomplish in January 18 meeting

Understanding of Safe Shutdown System

Definition of Fire Protection, Security and ECCS Modifications to System

Unique Oconee Situation

Need From NRC

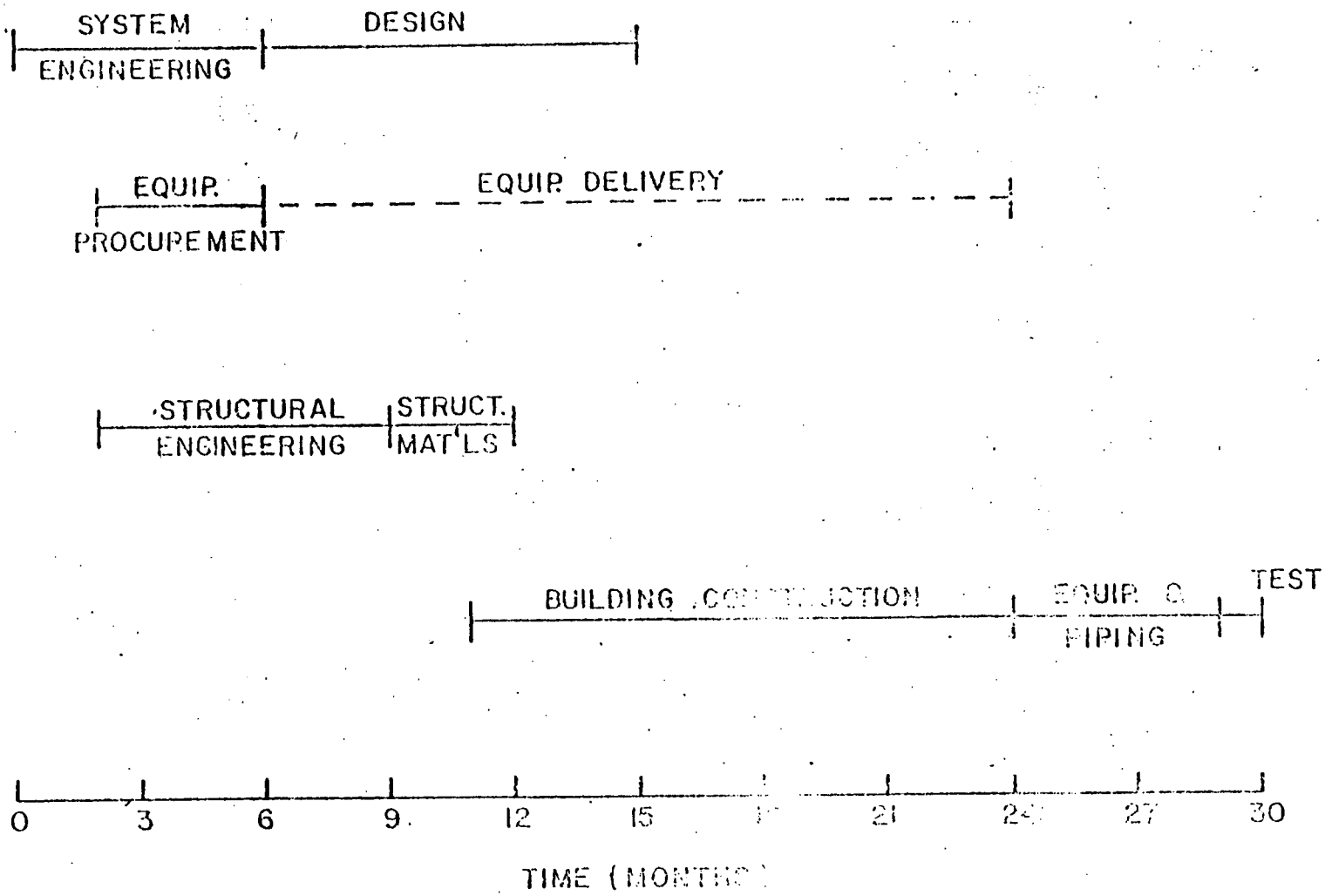
Agreement on System Concept

NRC Criteria Satisfied

Next Step

Provide Design Description

SHUTDOWN FACILITY & CAS



NRC/DUKE INTERACTION

SECURITY

Feb. 24, 1977 New 10 CFR 73 reg.

March 16, 1977 Region II meeting

March 18, 1977 IE Circular 77-03 (Lock combination)

March 23, 1977 Region III meeting

April 27, 1977 NRC Summary report of workshop on sabotage (NUREG 0314)

May 25, 1977 WOP to Give Amended Security Plan

May 27, 1977 (To Ad Hoc Committee) T. Brazil's interpretation [illegible]

May 26, 1977 (Informal) NRC physical search require.

August 15-19, 1977 Site Visit

August 19, 1977 Schwencer to WOP, Plans access for personnel illumination, physical search

Sept. 19, 1977 Case to WOP petition for rulemaking physical search and security clearances

Sept. 29, 1977 10CFR73 Amend. (delay phy. search requirements till 3/24/78)

Oct. 25, 1977 Schwencer to WOP "Guide for Eval. Phy. Security Capability

Nov. 1, 1977 OIE SO 169/77-18

Nov. 24, 1977 Response to 77-18

Dec. 21, 1977 NRC to WOP add. corrective action for 77-18.

Nov. 21, 1977 Modified Amended Security Plan (2/1/78 next submittal)

Nov. 18, 1977 Case to WOP guidance on physical search

Dec. 21, 1977 Geller to WOP received Intrusion Detection Handbook

Jan. 13, 1978 NRC meeting

FIRE

May 1, 1976 NRC to WOP compare ONS to Standard Review Plan 9.5-1; submit Tech Specs

June 15, 1976 WOP to Rusche info. requested will be submitted 1/3/77

Sept. 29, 1976 Appendix A to BTP APCSB 9.5-1 Geller to WOP

Dec. 1, 1976 Standard Tech Specs Schwencer to WOP

Dec. 31, 1976 WOP to Rusche Fire Hazards Analysis (mods. by 7/1/77)

Jan. 3, 1977 Schwencer to WOP proposed agenda for site visit

March 1, 1977 QA info. WOP to Rusche

March 1, 1977 Tech Specs submitted

June 17, 1977 NRC issued revised Sample Tech Specs.

June 17, 1977 Informal drawing submittal

July 18, 1977 2nd Tech Spec. submittal

August 19, 1977 Schwencer to WOP Administrative controls

August 31, 1977 WOP to Case advised NRC of status of QA (implement by 12/31/77)

October 3-7, 1977 Site Visit

Oct. 25, 1977 NRC minutes of site visit

Nov. 10, 1977 request for add. info. Schwencer to WOP

Nov. 22, 1977 WOP to Case response to 11/10

Nov. 25, 1977 NRC proposed Tech Specs

Nov. 29, 1977 request for add. info. (informal) due 1/15/78

Dec. 15 1977 formal request of quest. of 11/29

Dec. 15, 1977 response to 11/25 Tech Spec proposal

Jan. 16, 1978 response to question on Admin. control

Jan. 16, 1978 response to Dec. 15 question

Jan. 16, 1978 recieved informally additional question pertaining to response to Nov. 10 question

Jan. 19, 1978 NRC meeting

TURBINE BUILDING FLOOD

September 26, 1972 R. C. DeYoung of NRC request for info on FSAR

January 29, 1973 response to 9/26 letter FSAR supplement 13 P. 13-1 (note of possibility of turbine bldg. flood)

October 1, 1976 Turbine Bldg. partial flood

October 11, 1976 Eggs at site to investigate

October 25, 1976 50 247/76-13 describing T.B. flooding incident

November 9, 1976 NRC meeting

November 19, 1976 Site Visit

April 21, 1977 WOP to Rusche advising NRC of approach to final resolution

May 5, 1977 Informal quest. from NRC

June 27, 1977 WOP to Case answers to 5/5 questions

July 29, 1977 WOP to Case mods. will be implemented until issues resolved; revised schedule will be submitted.

November 18, 1977 NRC request for add. info. (response due 1/15/78)

January 9, 1978 WOP to Case advise new concept in January 19 meeting

January 19, 1978 NRC meeting

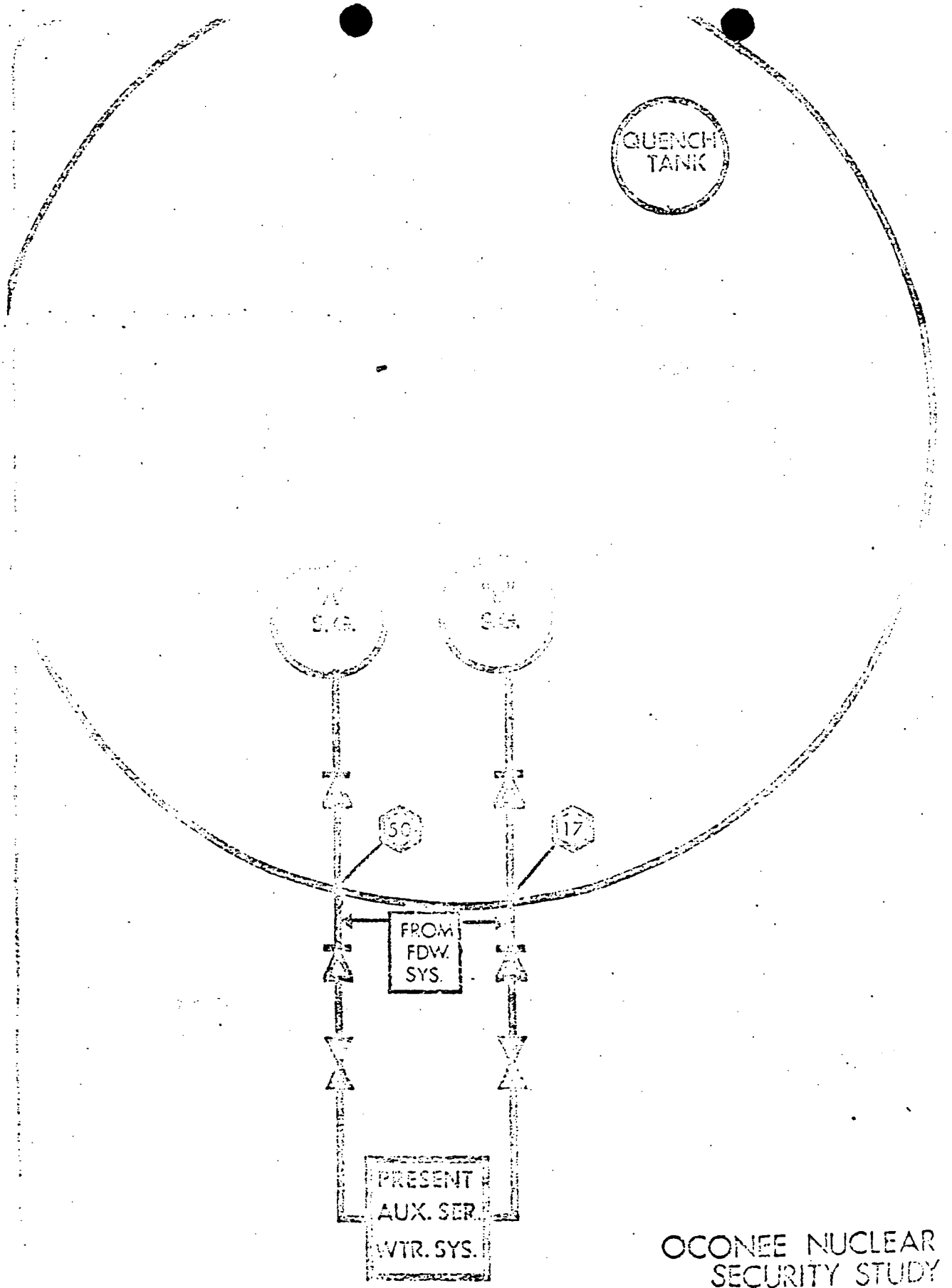
1) MAINTAIN ADEQUATE PRIMARY SIDE COOLANT VOLUME

2) MAINTAIN ADEQUATE SECONDARY SIDE COOLANT VOLUME

3) UTILIZE PRIMARY SIDE NATURAL CIRCULATION

4) UTILIZE ATMOSPHERE AS HEAT SINK VIA SECONDARY SIDE STEAM RELIEF

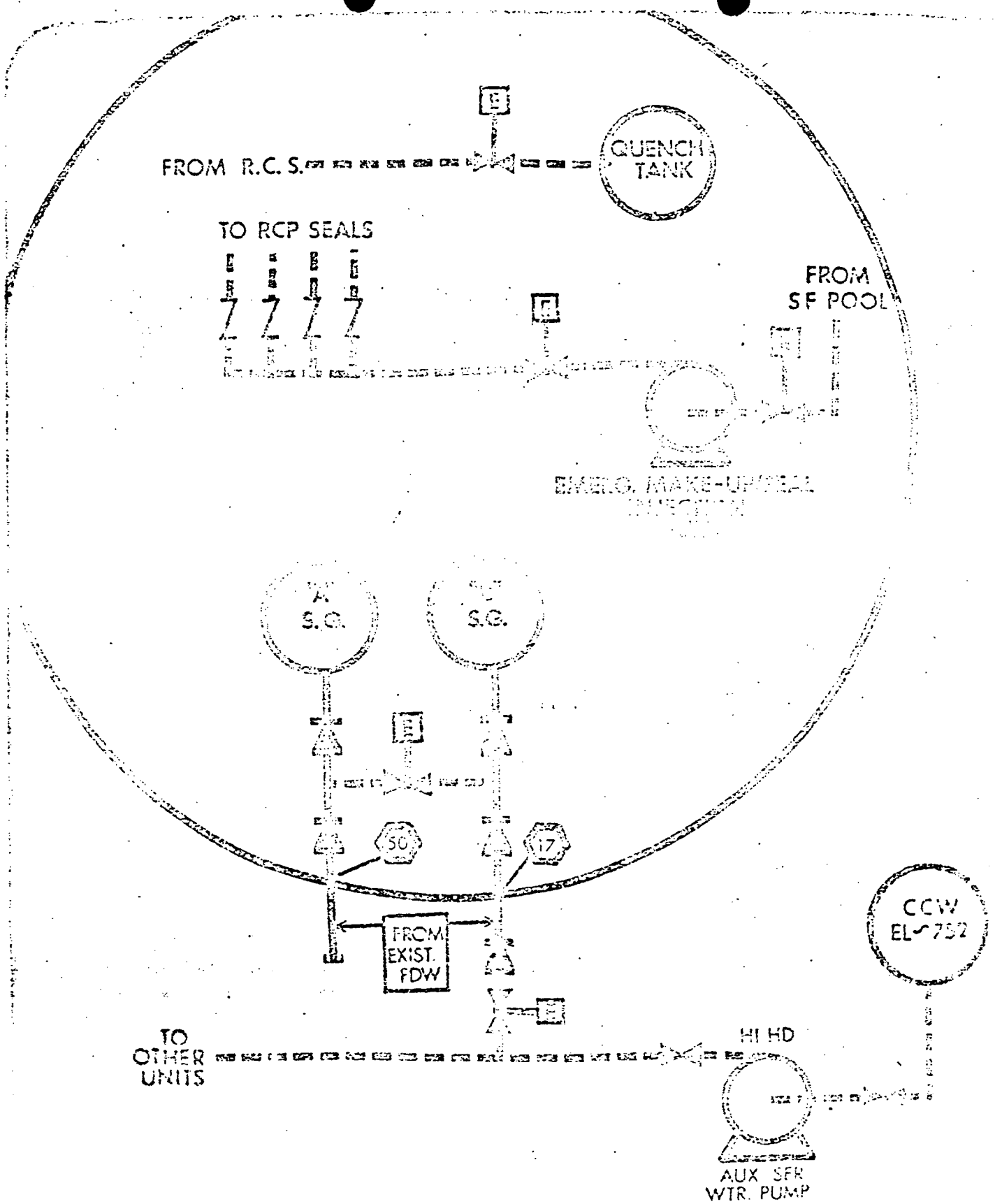
5) PROVIDE SUPPORTING SERVICES, INSTRUMENTATION, POWER SUPPLY, ETC.



OCONEE NUCLEAR STA
SECURITY STUDY

SUBJECT
NO.

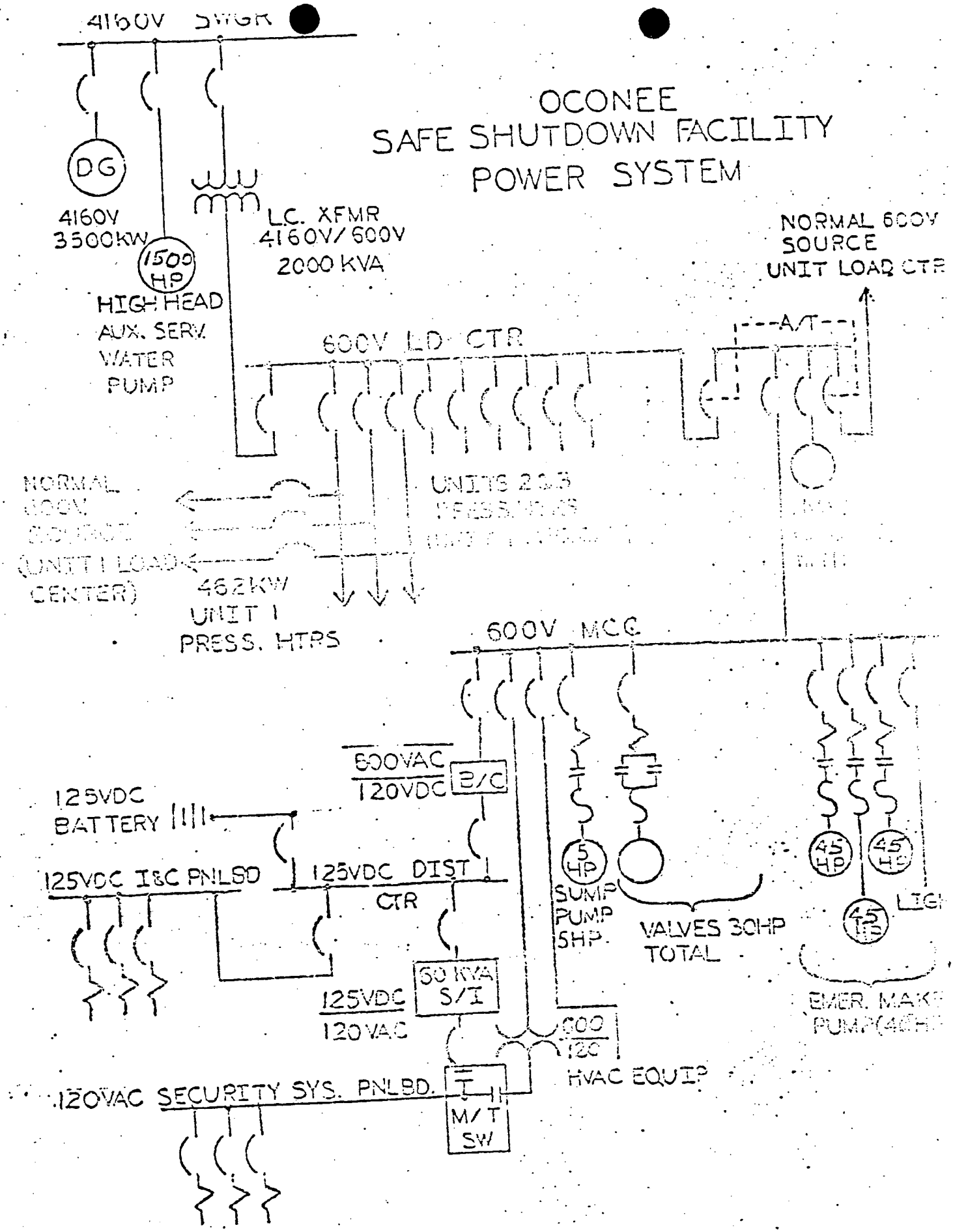
300 CATAL

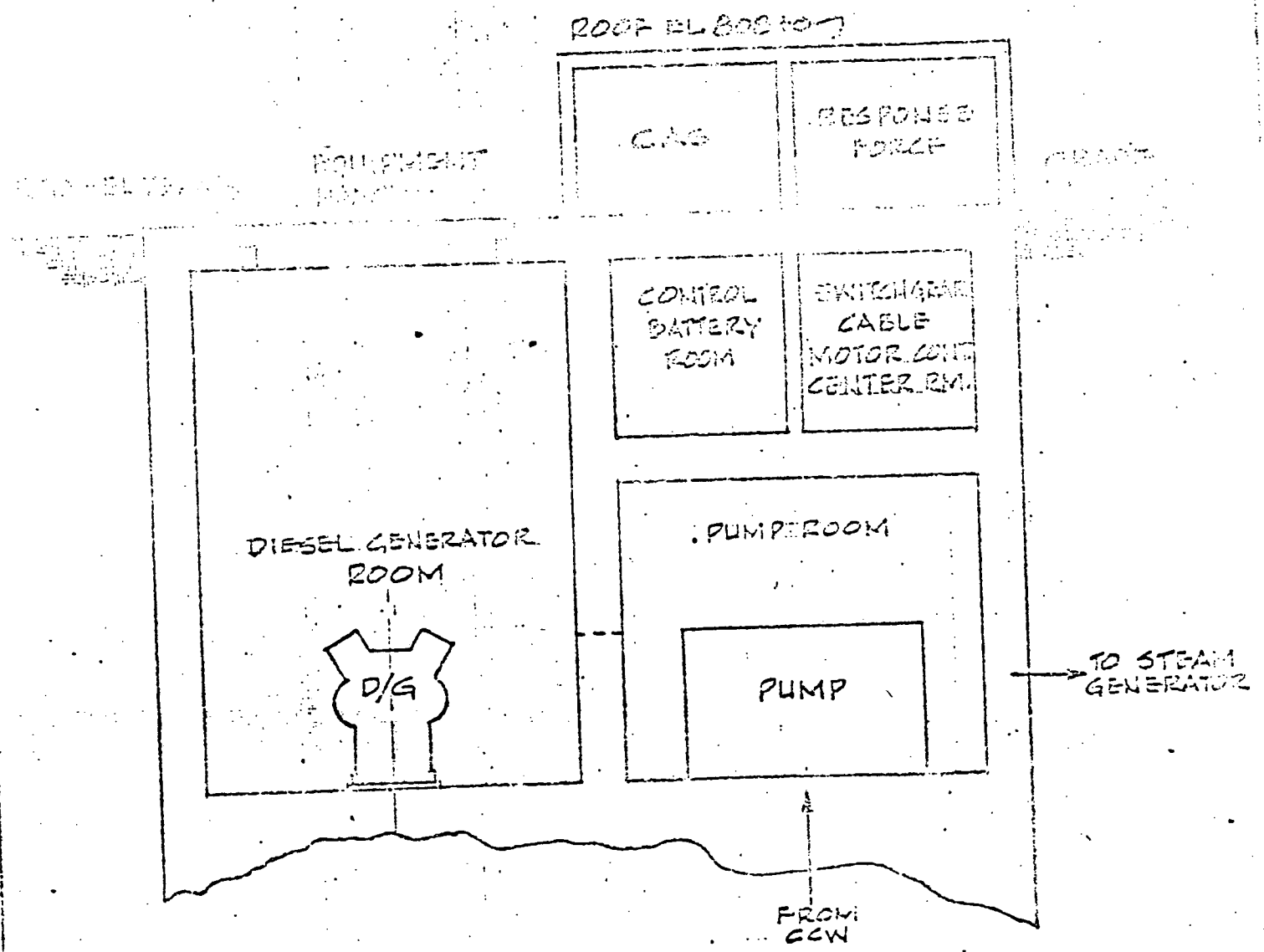


OCONEE NUCLEAR STA.
SECURITY STUDY

SUBJECT NO.

OCONEE
SAFE SHUTDOWN FACILITY
POWER SYSTEM





OCONEE NUCLEAR STATION		
SAFE SHUTDOWN FACILITY		
DATE	SCALE	DRAWING NO.

Component	Press	Flow	Rating
High Head Auxiliary Service Water Pump	1050	2250	1500 HP
Emergency Makeup Pump	2250	35	45 HP
Diesel Generator			3500 KW

Time Limitations Without Damage Control Measures

Secondary Side Water	~ 3½ Days
Primary Side Water	~ 8 Days
Power Supply	~ 7 Days

Security History - 10 CFR 73.55

11/13/74	Proposed 10 CFR 73.55
02/24/77	Issue of 10 CFR 73.55
05/25/77	Amended security plan ssubmittal
08/15/77	Site visit by NRC to Oconee Nuclear Station
11/21/77	Modified amended security plan submittal
01/18/78	Presentation to NRC

Vital Equipment Functions

1. Maintain reactor coolant system integrity
2. Maintain fuel integrity
3. Achieve and maintain safe shutdown condition

"The license shall establish and maintain an onsite physical protection system and security organization which will provide protection with high assurance against successful industrial sabotage..."

from 10 CFR 73.55 (a)

"... it must be demonstrated that given initial detection, the onsite response force must be able to intercept and engage an adversary force in less time than is available for the adversary force to successfully penetrate any single or multiple vital area barriers such that disablement of equipment within those areas would lead to a significant release of radioactivity."

from NUREG 0220
"Interim Acceptance Criteria for a Physical Security Plan for Nuclear Power Plants"

Recommendation 1 - [illegible] be adequately protected by physical barriers, intrusion detection systems, and active response.

Recommendation 2 - Systems required to provide recovery from short-term transient incidents which could lead to a radioactive release should be adequately protected by physical barriers, intrusion detection systems, and active response.

from SAND 77-0116C
"Protection of Nuclear Power Plants Against Sabotage", Sandia Labs, Oct. 77

Critical Plant Functions

An analysis was made by the workshop of the minimum plant functions which must be performed to prevent a severe radioactive release. These functions will be called critical plant functions and are summarized as follows:

A. The spent fuel must be kept underwater.

B. PWR - The reactor coolant loop must be maintained filled to a level in the pressurizer to assure natural convection core cooling. The steam generators must have secondary side cooling water available.

C. Decay heat energy from the fuel must be transferred from the fuel to an ultimate heat sink, through one or more intermediate heat transfer systems.

D. Reactivity must be controlled to limit fission heat generation within the reactor core.

From USNRC - DTIA
[illegible] of Nuclear [illegible]
Protection for Nuclear [illegible]
Sandia Labs, Feb 1977

Vital Equipment

	Containment	Spent Fuel Pool	Control Room	SSF
1. Reactor Coolant System	X			
2. Control Boards			X	
3. Spent Fuel		X		
4. Emergency Makeup Pump	X			
5. High Head Auxiliary Service Water Pump				X
6. Diesel Generator				X
7. SSF Switchgear				X
8. SSF Battery				X
9. Shutdown Panel				X