



General Electric Company
175 Cuthbert Avenue, San Jose, CA 95125

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Chet Poslusny, Senior Project Manager
Standardization Project Directorate
Associate Directorate for Advanced Reactors
and License Renewal
Office of the Nuclear Reactor Regulation

Subject: Submittal Supporting Accelerated ABWR Review Schedule - DFFSER
Confirmatory Item 9.5.1.2.2-1 and COL Action Items 9.5.1.4.6-1 and 20.3.1-1

Dear Chet:

Enclosed is a SSAR markup addressing DFFSER Confirmatory Item 9.5.1.2.2-1 and COL
Action Items 9.5.1.4.6-1 and 20.3.1-1.

Please provide a copy of this transmittal to Butch Burton.

Sincerely,

Jack Fox
Advanced Reactor Programs

cc: Norman Fletcher (DOE)
Mohsen Nik-Ahd (GE)
Chandra Oza (GE)

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(3) Radioactive Material Present - None

(4) Qualifications of Fire Barriers - The walls common with the HWH pump and heat exchanger room (Rm 640), the SBGTS filter train room (Rm 642), corridor room (Rm 614), the floor above the steam tunnel and the ceiling serve as fire barriers between adjacent fire areas and are of 3 hr fire-resistive concrete construction. A 3 hr fire rated door provides access from the AC filter/fan area (Rm 615). Room 643 connects directly into room 622.

(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
Cable Tray	NCLL (64,000 Btus per sq ft maximum average) applies.

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull stations at 2.7-C.0 & 2.8-F.1.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I standpipe and hose reel	Col. 2.7-C.0, 2.8-F.1/ Manual
ABC hand extinguishers	Col. 2.7-C.0, 2.8-F.1/ Manual

(8) Fire Protection Design Criteria Employed:

- (a) The function is located in a separate fire resistive enclosure.
- (b) Fire detection and suppression capability is provided and accessible.
- (c) Fire stops are provided for cable tray and piping penetrations through rated fire barriers.

(9) Consequences of Fire - The postulated fire assumes the loss of the function. Loss of the SGTS by an exposure fire is acceptable.

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) provision of raised supports for the equipment;
- (b) provision of floor drainage;
- (c) Seismic Category I standpipe (rupture unlikely); and
- (d) provision of curbs for the doorways.

(12) Fire Containment or Inhibiting Methods Employed:

- (a) The functions are located in a separate fire-resistive enclosure.
- (b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

9A.4.1.6.20 SGTS Fans Room (Rm No. 641)

(1) Fire Area - F4201

(2) Equipment: See Table 9A.6-2

Safety-Related	Provides Core Cooling
Yes, D1, D2	Yes, D1 D2

replace with insert "A"

(3) Radioactive Material Present - None, normally. Variable following and incident.

(4) Qualifications of Fire Barriers - The walls common with the HWH pump and heat exchanger room (Rm 640), the SBGTS filter train room (Rm 642) and a section of the floor common to fire area F3400 (Rm 543) below serve as fire barriers between adjacent fire areas and are of 3 hr fire-resistive concrete construction. The remainder of the floor (not common to F3400) is common with the containment and exceeds a 3 hr fire rating. The ceiling is internal to fire area F4201 and is not fire rated. A non fire rated door provides access from room 643.

(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
Cable Tray	NCLL (64,000 Btus per sq ft maximum average) applies.

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull stations at Col. 2.7-C.0 & 2.8-F.1.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I, standpipe and hose reel	Col. 2.7-C.0 & 2.8-F.1/ Manual
ABC fire extinguisher	Col. 2.7-C.0 & 2.8-F.2/ Manual

(8) Fire Protection Design Criteria Employed:

- (a) Fire detection and suppression capability is provided and accessible.
- (b) Fire stops are provided for cable tray and piping penetrations through rated fire barriers.

(9) Consequences of Fire - The postulated fire assumes loss of the function. The complete loss of the SGTS as a consequence of a single fire is acceptable.

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) location of the manual suppression system in the corridor, external to the rooms containing the main safety related equipment;
- (b) provision of raised supports for the equipment;
- (c) provision of floor drainage;
- (d) Seismic Category I standpipe (rupture unlikely); and
- (e) provision of doorway curbs.

(12) Fire Containment or Inhibiting Methods Employed:

- (a) The functions are located in a separate fire-resistive enclosure.
- (b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

9A.4.1.6.21 SGTS Filter Train Room (Rm No. 642)

(1) Fire Area - F6201

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(2) Equipment: See Table 9A.6-2

Safety- Related	Provides Core Cooling
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Yes, D1, D2	No,
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(3) Radioactive Material Present - Filters within their housings may become contaminated with use. Releases up the stack could occur as a result of fire. However, the system is capable to be isolated in case of any fire, and burn itself out by cutting off the oxygen to the fire.

(4) Qualifications of Fire Barriers - The floor, ceiling and walls serve as fire barriers between adjacent fire areas and are of 3 hr fire-resistive concrete construction. 3 hr fire-resistive doors provide access from the corridor (Rm 643) and the SBTG Room 641.

(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
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Cable Tray	NCLL (64,000 Btus per sq ft maximum average) applies.
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(6) Detection Provided - Class A supervised POC in the room and manual alarm pull station at Col. 2.7-C.0.

(7) Suppression Available:

Type	Location/Actuation
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Modified Class III, Seismic Category I, standpipe and hose reel	Col. 2.7-C.0/ Manual
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ABC hand extin- guishers	Col. 2.7-C.0/ Manual
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(8) Fire Protection Design Criteria Employed:

(a) The function is located in a separate fire resistive enclosure.

(b) Fire detection and suppression capability is provided and accessible.

(c) Fire stops are provided for cable tray and piping penetrations through rated fire barriers.

(9) Consequences of Fire - The postulated fire assumes loss of the function. The complete loss of the SGTS as a consequence of a single fire is acceptable.

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

(a) location of the manual suppression system in the corridor, external to the rooms containing the main safety related equipment;

(b) provision of raised supports for the equipment;

(c) provision of floor drainage;

(d) Seismic Category I standpipe (rupture unlikely); and

(e) provision of doorway curbs.

(12) Fire Containment or Inhibiting Methods Employed:

(a) The functions are located in a separate fire-resistive enclosure.

(b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

9A.4.1.6.22 Deleted

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- (3) Radioactive Material Present-None that can be released as the result of a fire.
- (4) Qualification of Fire Barriers - All four walls, the ceiling floor and door are internal to fire area F4301 and therefore are not fire rated. Access to Rm 657 is provided via a stairwell from Rm 615 on the floor below.
- (5) Combustibles Present - No significant amount of exposed combustibles. NCLL (64,000 Btus per sq ft maximum average) applies.
- (6) Detection Provided - Class A supervised POC detection system in the room and alarm pull station at 5.2-D.8 & 5.2-B.6, elevation 23500mm.
- (7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I, standpipe and hose reel	5.2-D.8 & 5.2-B.6 EI 23500/ Manual
ABC hand extinguishers	5.2-D.8 & 5.2-B.6 EI 23500/ Manual

- (8) Fire Protection Design Criteria Employed:
 - (a) Fire detection and suppression capability is provided and accessible.
 - (b) Fire stops are provided for cable tray and piping penetration through rated fire barriers.
- (9) Consequences of Fire - The postulated fire assumes the loss of the function.

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

- (10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.
- (11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:
 - (a) location of the manual hose suppression system external to the room;
 - (b) provision of raised supports for the equipment;
 - (c) provision of floor drainage;
 - (d) Seismic Category I standpipe (rupture unlikely); and
 - (e) provision of doorway curbs.
- (12) Fire Containment or Inhibiting Methods Employed:
 - (a) The functions are located in a separate fire-resistive enclosure.
 - (b) The means of fire detection suppression and alarm are provided and accessible.

- (13) Remarks - None

9A.4.1.6.45 Dust Radiation Sampler (A) Room (Rm No. 658)

- (1) Fire Area - F4301
- (2) Equipment: See Table 9A.6-2

Safety-Related	Provides Core Cooling
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No	No
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- (3) Radioactive Material Present *None*
- (4) Qualification of Fire Barriers - Three walls, the ceiling, floor and door are internal to fire area F4301 and therefore are not fire rated. A fourth wall is common to room 659 and is of 3 hr fire-

resistive concrete construction. Access to room 658 is via a stairway from room 616 on the floor below.

(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
Cable Tray	NCLL (64,000 Btus per sq ft maximum average) applies.

(6) Detection Provided - Class A supervised POC detection system in the room and alarm pull station at 5.2-D.8 & 5.2-B.6, EI 23500.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I, standpipe and hose reel	5.2-D.8 & 5.2-B.6 EI 23500/ Manual
ABC hand extinguishers	5.2-D.8 & 5.2-B.6 EI 23500/ Manual

(8) Fire Protection Design Criteria Employed:

- (a) Fire detection and suppression capability is provided and accessible.

(9) Consequences of Fire - The postulated fire assumes the loss of the function.

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) location of the manual hose suppression system external to the room;
- (b) provision of raised supports for the equipment;
- (c) provision of floor drainage;
- (d) Seismic Category I standpipe (rupture unlikely); and
- (e) provision of doorway curbs.

(12) Fire Containment or Inhibiting Methods Employed:

- (a) The functions are located in a separate fire-resistive enclosure.
- (b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

Containment Vessel Atmosphere Monitor
9A.4.1.6.46(C-MS) Room (Rm No. 659) Rack

(1) Fire Area - F6100

(2) Equipment: See Table 9A.6-2

Safety-Related	Provides Core Cooling
Yes, D1	No

(3) Radioactive Material Present

(4) Qualification of Fire Barriers - All four walls, the ceiling, floor and door are of 3 hr fire-resistive concrete construction. Access to room 659 is through room 658 through a 3 hr fire rated door.

(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
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(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
Cable Tray	NCLL (64,000 Btus per sq ft maximum average) applies.

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull stations at 1.7-C.0 & 1.4-E.0.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I, standpipe and hose reel	Col. 1.7-C.0 & 1.4-E.0/ Manual
ABC hand extinguishers	Col. 1.7-C.0 & 1.4-E.0/ Manual

(8) Fire Protection Design Criteria Employed:

- The function is located in a room separate from the rooms which contain safety related equipment.
- Fire detection and suppression capability is provided and accessible.
- Fire stops are provided for cable tray and piping penetrations through rated fire barriers.

(9) Consequences of Fire - The postulated fire assumes the loss of the function.

Smoke from a fire will be removed by the EHVAC(B) system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- location of the manual suppression system external to this non safety-related room;
- provision of floor drainage;
- Seismic Category I standpipe (rupture unlikely); and
- provision of curbs for doorways.

(12) Fire Containment or Inhibiting Methods Employed:

- The functions are located in a separate fire-resistive enclosure.
- The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

9A.4.1.6.48 Dust Radiation Sampler Room (B) (Rm No. 682)

(1) Fire Area - F4201

(2) Equipment: See Table 9A.6-2

Safety-Related	Provides Core Cooling
No	No

(3) Radioactive Material Present - None, normally. Variable following and incident.

(4) Qualifications of Fire Barriers - The walls in common with the FMCRD panel room (Rm 681) and the SBGT filter train room (Rm 642) and the ceiling are 3 hr fire-resistive concrete construction. The remaining walls and the floor are internal to fire area 4201 and therefore are not fire rated. Access to room 682 is provided through a non fire rated door via a stairs up from the corridor at elevation 23500mm (Rm 643).

(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
Cable in conduit	NCLL (64,000 Btus per sq ft maximum average) applies.

Pre-filters

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull stations at 2.7-C.0 & 2.8-F.1 at El. 23500.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I, standpipe and hose reel	Col. 2.7-C.0 & 2.8-F.1 at El. 23500/ Manual
ABC hand extinguishers	Col. 2.7-C.0 & 2.8-F.2 at El. 23500/ Manual

(8) Fire Protection Design Criteria Employed:

- (a) Fire detection and suppression capability is provided and accessible.
- (b) Fire stops are provided for cable tray and piping penetrations through rated fire barriers.

(9) Consequences of Fire - The postulated fire assumes loss of the function.

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) location of the manual suppression system in the corridor, external to the rooms;
- (b) provision of raised supports for the equipment;
- (c) provision of floor drainage;
- (d) Seismic Category I standpipe (rupture unlikely); and
- (e) provision of doorway curbs.

(12) Fire Containment or Inhibiting Methods Employed:

- (a) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

9A.4.1.6.49 Containment Vessel Atmosphere (CAM) monitor Rack Room (Rm 683)

(1) Fire Area - F4201

(2) Equipment: See Table 9A.6-2

Safety-Related	Provides Core Cooling
Yes, D2	No

(3) Radioactive Material Present - None

(4) Qualifications of Fire Barriers - The wall common with the FMCRD panel room (Rm 681) and the ceiling are 3 hr fire-resistive concrete construction. The remaining walls and the floor are internal to fire area F4201 and therefore are not fire rated. Access to room 683 is provided through a non fire rated door from room 684 (via a stairs up from the corridor at elevation 23500mm (Rm 642)).

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(5) Combustibles Present:

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Fire Loading	Total Heat of Combustion (Btu)
Cable in conduit	NCLL (64,000 Btus per sq ft maximum average) applies.
Pre-filters	

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull stations at 2.7-C.0 at EL. 23500

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I, standpipe and hose reel	Col. 2.7-C.0 at EL. 23500mm/Manual
ABC hand extinguishers	Col. 2.7-C.0 at EL. 23500mm/Manual

(8) Fire Protection Design Criteria Employed:

- (a) The function is located in a separate fire resistive enclosure.
- (b) Fire detection and suppression capability is provided and accessible.
- (c) Fire stops are provided for cable tray and piping penetrations through rated fire barriers.

(9) Consequences of Fire - The postulated fire assumes loss of the function. The complete loss of the CAM Monitoring Rack B as a consequence of a single fire is acceptable. Functional backup is provided by CAM Monitoring Rack A (Rm 659).

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) location of the manual suppression system in the corridor, external to the rooms containing the main safety related equipment;
- (b) provision of raised supports for the equipment;
- (c) provision of floor drainage;
- (d) Seismic Category I standpipe (rupture unlikely); and
- (e) provision of doorway curbs.

(12) Fire Containment or Inhibiting Methods Employed:

- (a) The functions are located in a separate fire-resistive enclosure.
- (b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

9A.4.1.6.50 Room 684

(1) Fire Area - F4201

(2) Equipment: See Table 9A.6-2

Safety-Related	Provides Core Cooling
No	No

(3) Radioactive Material Present - None.

(4) Qualifications of Fire Barriers - The floor and ceiling are fire barriers of 3 hr fire-resistive concrete construction. The walls are not fire

rated as they are within fire area F4201. Access to this room is provided via the stairs up from the SGTS filter train room (Rm 642) at elevation 23500mm.

Delete
(5) Combustibles Present:

Fire Loading	Total Heat of Combustion (Btu)
None	NCLL (64,000 Btus per sq ft maximum average) applies.

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull stations at 2.7-C.0 at EL. 23500mm.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, Seismic Category I, standpipe and hose reel	Col. 2.7-C.0 at EL. 23500mm/ Manual
ABC hand extinguishers	Col. 2.7-C.0 at EL. 23500mm/ Manual

(8) Fire Protection Design Criteria Employed:

- (a) The function is located in a room separate from the rooms which contain safety related equipment.
- (b) Fire detection and suppression capability is provided and accessible.
- (c) Fire stops are provided for cable tray and piping penetrations through rated fire barriers.

(9) Consequences of Fire - The postulated fire assumes the loss of the function.

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) location of the manual suppression system external to room;
- (b) provision of raised supports for the equipment;
- (c) provision of floor drainage; and
- (d) Seismic Category I standpipe (rupture unlikely).

(12) Fire Containment or Inhibiting Methods Employed:

- (a) The functions are located in a separate fire-resistive enclosure.
- (b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None

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- (3) Radioactive Material Present - None that can be released as the result of a fire.
- (4) All of the listed pits and pools are accessed from the operating floor and are not accessible at this elevation. For this reason, there is no effect on the fire protection features at this elevation. See the discussion for the operating floor for applicable fire protection feature. No further comments will be made in the analysis for this elevation.

Insert "A"

9A.4.1.6.20 SGTS B Division 2 Room (Rm No.641) (7)

Suppression Available:

(1) Fire Area - F4201

(2) Equipment: See Table 9A.6-2

Safety Related	Provides Core Cooling
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Yes, D2	NO
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(3) Radioactive Material Present - Filters within their housing may become contaminated with use. Releases up the stack could occur as a result of fire. However, the system is capable to be isolated in case of any fire, and burn itself out by cutting the oxygen to the fire.

(4) Qualification of Fire Barriers - The walls common with the HWH pump and heat exchanger room (Rm 640), the SGTS A division 3 room (Rm 642), the ceiling, and a section of the floor common to fire area F3400 (Rm 543) below serve as fire barriers between adjacent fire areas and are of 3 hr fire resistive concrete construction. The remainder of the floor (not common with fire area F3400), the wall common with SLC Area and corridor B room 622 are not rated as they are internal to fire area F4201. A non fire rated curbed door provides access from corridor D (Rm 643).

(5) Combustible Present:

Fire Loading	Total Heat of Combustion (BTU)
Cable Tray	NCLL (64,000 Btus per sq ft maximum average) applies.

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull station at Col. 2.7-C.0 & 2.8-F.1.

Type	Location/Actuation
------	--------------------

Modified Class III, seismic Category I, standpip and hose reel	Col. 2.7-C.0 & 2.8-F.1/ Manual
---	--------------------------------------

ABC hand exti- nguishers	Col. 2.7-C.0 & 2.8-F.2/ Manual
-----------------------------	--------------------------------------

(8) Fire Protection Design Criteria Employed:

(a) The function is located in a separate fire resistive enclosure.

(b) Fire detection and suppression capability is provided and accessible.

(c) Fire stops are provided for cable tray and piping penetration through rated fire barriers

(9) Consequences of Fire - The postulated fire assumes loss of function. The complete loss of the SGTS B as a consequence of a single fire is acceptable. Functional backup is provided by SGTS A (div.III)

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

(10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and proper floor drainage through a pump system.

(11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) location of the manual suppression system in the corridor, external to the rooms containing the main safety related equipment;
- (b) provision of raised supports for the equipment;
- (c) provision of floor drainage;
- (d) Seismic Category I standpipe (rupture unlikely); and
- (e) provision of doorway curbs.

(12) Fire Containment or Inhibiting Methods Employed:

- (a) The functions are located in a separate fire-resistive enclosure.
- (b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None.

Insert "B"

9A.4.1.6.21 SGTs A Division 3 Room (Rm No. 642)

(1) Fire Area - F4301

(2) Equipment: See Table 9A.6-2

Safety Related	Provides Core Cooling
Yes, D3	NO

(3) Radioactive Material Present - Filters within their housing may become contaminated with use. Releases up the stack could occur as a result of fire. However, the system is capable to be isolated in case of any fire, and burn itself out by cutting the oxygen to the fire.

(4) Qualification of Fire Barriers - The walls, and floor serve as fire barriers between adjacent fire areas and are of 3 hr fire-resistive concrete construction. The ceiling is common with the fire area above (F4301), therefore is not required to be of a 3 hr fire barrier. A 3 hr fire resistive curved door provides access from corridor D (Rm 643).

(5) Combustible Present:

Fire Loading	Total Heat of Combustion (BTU)
Cable Tray	NCLL (64 000 Btus per sq ft maximum average) applies.

(6) Detection Provided - Class A supervised POC in the room and manual alarm pull station at Col. 2.7-C.0 & 2.8-F.1.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, seismic Category I, standpipe and hose reel	Col. 2.7-C.0 & 2.8-F.1/ Manual

ABC hand extinguishers	Col. 2.7-C.0 & 2.8-F.2/ Manual
------------------------	--------------------------------

(8) Fire Protection Design Criteria Employed:

- (a) The function is located in a separate fire resistive enclosure.
- (b) Fire detection and suppression capability is provided and accessible.
- (c) Fire stops are provided for cable tray and piping penetration through rated fire barriers.

- 3
4
5
- (9) Consequences of Fire - The postulated fire assumes loss of function. The complete loss of the SGTS A as a consequence of a single fire is acceptable. Functional backup is provided by SGTS B (div.II)

Smoke from a fire will be removed by the normal HVAC system operating in its smoke removal mode.

- (10) Consequences of Fire Suppression - Suppression extinguishes the fire. Water pools on the floor. Protection against flooding is provided by supporting equipment on steel framing or raised pads and providing floor drainage through the sump system.

- (11) Design Criteria Used for Protection Against Inadvertent Operation, Careless Operation or Rupture of the Suppression System:

- (a) location of the manual suppression system in the corridor, external to the rooms containing the main safety related equipment;
- (b) provision of raised supports for the equipment;
- (c) provision of floor drainage;
- (d) Seismic Category I standpipe (rupture unlikely); and
- (e) provision of doorway curbs.

- (12) Fire Containment or Inhibiting Methods Employed:

- (a) The functions are located in a separate fire-resistive enclosure.
- (b) The means of fire detection, suppression and alarming are provided and accessible.

- (13) Remarks - None.

9A.4.1.6.49 Containment Vessel
Atmospher (CAM) monitor Rack B Room
(Rm No.621.

ABC hand exti- Col. 2.7-C.0
nguishers & 2.8-F.2/
Manual

- (1) Fire Area - F4201
- (2) Equipment: See Table 9A.6-2
- | | |
|-------------------|--------------------------|
| Safety
Related | Provides
Core Cooling |
| Yes, D2 | NO |
- (3) Radioactive Material Present -
None
- (4) Qualification of Fire Barriers -
The exterior wall and the wall
common with the elevator serve as
fire barriers and are of 3 hr
fire-resistive concrete
construction. The remaining
walls, ceiling and floor are
internal to fire area F4201 and
therefore are not fire rated.
Access to the room 621 is provided
through a non fire rated curbed
door from corridor B (Rm 622).

(5) Combustible Present:

Fire Loading	Total Heat of Combustion (BTU)
Cable Tray	NCLL (64,000 Btus per sq ft maximum average) applies.

- (6) Detection Provided - Class A
supervised POC in the room and
manual alarm pull station at Col.
2.7-C.0 & 2.8-F.1.

(7) Suppression Available:

Type	Location/Actuation
Modified Class III, seismic Category I, standpip and hose reel	Col. 2.7-C.0 & 2.8-F.1/ Manual

(8) Fire Protection Design Criteria
Employed:

- (a) The function is located in a
separate fire resistive
enclosure.
- (b) Fire detection and
suppression capability is
provided and accessible.
- (c) Fire stops are provided for
cable tray and piping
penetration through rated
fire barriers.

- (9) Consequences of Fire - The
postulated fire assumes loss of
function. The complete loss of
the CAM Monitoring Rack B as a
consequence of a single fire is
acceptable. Functional backup is
provided by CAM Monitoring Rack A
div.I (Rm 659).

Smoke from a fire will be removed
by the normal HVAC system
operating in its smoke removal
mode.

- (10) Consequences of Fire Suppression
- Suppression extinguishes the
fire. Water pools on the floor.
Protection against flooding is
provided by supporting equipment
on steel framing or raised pads
and providing floor drainage
through the sump system.

- (11) Design Criteria Used for
Protection Against Inadvertent
Operation, Careless Operation or
Rupture of the Suppression
System:

- (a) location of the manual
suppression system in the
corridor, external to the
rooms containing the main
safety related equipment;

(b) provision of raised supports for the equipment;

(c) provision of floor drainage;

(d) Seismic Category I standpipe (rupture unlikely); and

(e) provision of doorway curbs.

(12) Fire Containment or Inhibiting Methods Employed:

(a) The functions are located in a separate fire-resistive enclosure.

(b) The means of fire detection, suppression and alarming are provided and accessible.

(13) Remarks - None.

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Rev. B

considerable length of time will not prevent safe shutdown.

In addition, fire protection systems are designed so that their inadvertent operation or the occurrence of a single failure in any of these systems will not prevent plant safe shutdown.

Possible fires that could affect safety related systems and significant combustible loadings are presented in Appendix 9A on a room-by-room basis. Fire barriers and fire protection systems are discussed for each safety and non safety-related area. Each room is also analyzed for its potential radioactive release due to a postulated fire. Noncombustible or smoke-evolved and fuel-contributed index of 25 or less are used wherever practicable.

SRP acceptance Criterion II.2.a of SRP Section 9.5.1 requires adherence to BTP CMEB 9.5.1. Paragraph C.5.f of the SRP requires that the means by which smoke will be removed from the plant be established early in the plant design. The ABWR meets this requirement, in that it is planned that smoke will be removed by normal HVAC System. In the reactor building, the normal supply and exhaust fans are located external to the building. Every room of the reactor building secondary containment receives supply air from and exhausts to the building normal HVAC. The emergency ventilation systems for the electrical equipment and diesel generator rooms provide additional smoke removal capability for those rooms.

There is a containment vent and supply system. Neither the supply or exhaust ducts are equipped with fire dampers. The isolation valves on these ducts are normally closed and would remain closed during plant operation so as to maintain the containment in an inerted condition.

I If a fire occurred in containment during a plant outage, when the valves were open and the containment not inerted, the drywell or wetwell spray would be initiated to protect the containment at a temperature well below the threshold of damage to the ventilation duct. For these reasons, the ABWR design for the containment ventilation is considered proper and adequate.

The water suppression systems are designed on the basis that following a safe shutdown

INSERT 9.5.1.1 transformers located within fire areas containing safety-related equipment will be of the drytype only. For those areas utilizing liquid insulated transformers, the COL applicant shall provide features to prevent the insulating liquid from becoming an unacceptable health hazard to employees in the event of release of the material to the building environment. See Subsection 9.5.13.15 for COL license information requirements.

earthquake there will be two manual hose streams available in any area containing equipment required for safe shutdown and that there will be no uncontrolled release of fire suppression water in the areas.

INSERT 9.5.1.1

The quality assurance (QA) program, in accordance with CMEB 9.5.1 for the design of fire protection systems, is presented in Chapter 17.

The consequences of inadvertent operation of a suppression system and of moderate energy line cracks are discussed in Appendix 9A.

Except for fuel and lubricating oil located in the diesel-generator rooms, there are no storage areas in the reactor or control buildings for flammable liquids, oxidizing agents, flammable compressed gases, corrosive material or explosive or highly flammable materials. Nonflammable compressed gases (e.g., air, nitrogen) do not represent a fire hazard.

Small quantities of chemicals may be stored in listed or approved cabinets and containers for immediate use. The CRD maintenance area is an example where such storage is permitted. Identification of the type and location of these materials is a requirement of SRP Section 13.2.2 which is the responsibility of the COL applicant.

COL
9.5.1.4.6-1

9.5-1.0.7

full-load following every no-load or low-load (20% or less) operation lasting for a period of 30 minutes or more. (See Subsection 8.3.1.1.8).

9.5.13.9 Applicant Fire Protection Program

The following areas are out of the ABWR Standard Plant design scope for the fire protection program, and shall be included in the COL applicant's fire protection program.

- (1) Main transformer
- (2) Equipment entry lock
- (3) Fire protection pumphouse
- (4) Ultimate heat sink

The COL applicant's fire protection program shall comply with the SRP Section 9.5.1, with ability to bring the plant to safe shutdown condition following a complete fire burnout without a need for recovery. (See Subsection 9.5.1)

9.5.13.10 HVAC Pressure Calculations

The COL applicant shall provide pressure calculations and confirm capability during pre-operational testing of the smoke control mode of the HVAC systems as described in Subsection 9.5.1.0.6.

9.5.13.11 Plant Security Systems Criteria

The COL applicant's design of the security system (see Subsection 9.5.2) shall include an evaluation of its impact on plant operation, testing, and maintenance. This evaluation shall assure that the security restrictions for access to equipment and plant regions is compatible with required operator actions during all operating and emergency modes of operation (i.e., loss of offsite power, access for fire protection, health physics, maintenance, testing and local operator). In addition, this evaluation shall assure that:

- (a) There are no areas within the Nuclear Island where communication with central and secondary alarm stations is not possible;
- (b) Portable security radios will not interfere

with plant monitoring equipment;

- (c) Minimum isolation zone and protected area illumination capabilities cannot be defeated by sabotage actions outside of the protected area; and,
- (d) Electromagnetic interference from plant equipment startups or power transfers will not create nuisance alarms or trip security access control systems.

9.5.13.12 Fire Hazard Analysis Compliance Review

The COL applicant will perform a compliance review of the as built design against the assumptions and requirements stated in the fire hazard analysis (Appendix 9A) shall be conducted. This includes comparison with Table 9A.6-1 data base. Any non compliance shall be documented as being required and acceptable on the basis of the Fire Hazard Analysis, Appendix 9A, and the Fire Hazard Probabilistic Risk Assessment, Appendix 19M. (See Subsection 9.5.1.3).

9.5.13.13 Diesel Fuel Refueling Procedures

The COL applicant shall establish procedures to verify that the day tank is full prior to refilling the storage tank. This minimizes the likelihood of sediment obstruction of fuel lines and any deleterious impacts on diesel generator operation.

9.5.13.14 Portable and Fixed Emergency Communication Systems

The COL applicants design of the portable radio communication system and the fixed emergency communication system shall comply with BTP CMEB 9.5-1, position C.5.g(3) and (4). The COL applicant will supplement Subsection 9.5.2.6 accordingly as applicable.

9.5.13.15 Identification of Chemicals

The COL applicant will identify the type and location of chemicals as required by SRP Section 13.2.2. (See Subsection 9.5.1.1).

provide protection features from liquid insulated transformers and will

1A.3 COL LICENSE INFORMATION

1A.3.1 Emergency Procedures and Emergency Procedures Training Program

Emergency procedures, developed from the emergency procedures guidelines, shall be provided and implemented prior to fuel loading. (See Subsection 1A.2.1).

1A.3.2 Review and Modify Procedures for Removing Safety-Related Systems From Service

Procedures shall be reviewed and modified (as required) for removing safety-related systems from service (and restoring to service) to assure operability status is known. (See Subsections 1A.2.18 and 19).

complying with Item 6 of IE Bulletin 79-08,

1A.3.3 In-Plant Radiation Monitoring

Equipment and training procedures shall be provided for accurately determining the airborne iodine concentration in areas within the facility where plant personnel may be present during the accident. (See Subsection 1A.2.35).

1A.3.4 Reporting Failures of Reactor System Relief Valves

Failures of reactor system relief valves shall be reported in the annual report to the NRC. (See Subsection 1A.2.3.21.1).

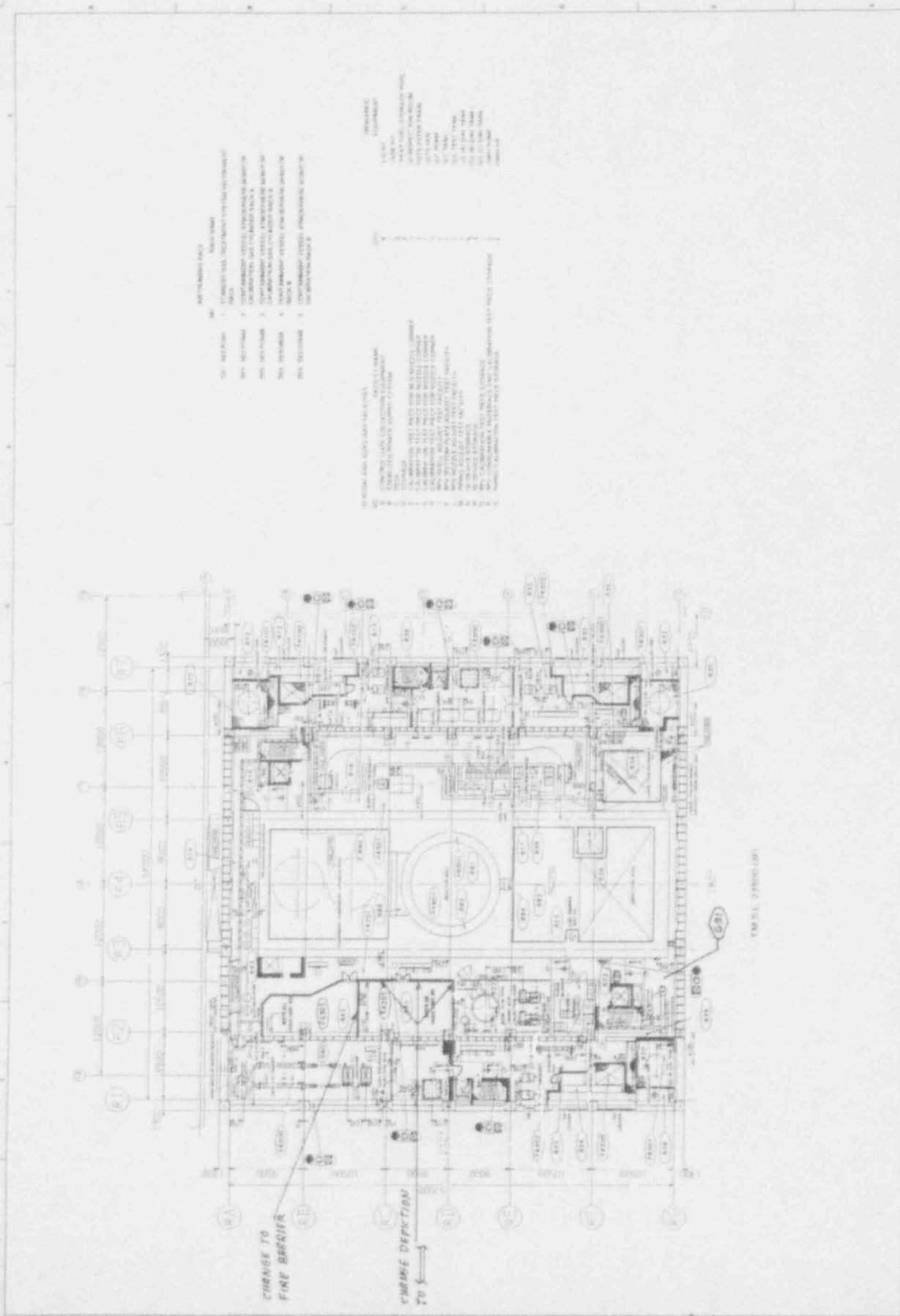
1A.3.5 Report on ECCS Outages

Starting from the date of commercial operations, an annual report should be submitted which includes instance of emergency core cooling system unavailability because of component failure, maintenance outage (both forced or planned), or testing, the following information shall be collected:

- (1) Outage date
- (2) Duration of outage
- (3) Cause of outage
- (4) Emergency core cooling system or component involved
- (5) Corrective action taken

The above information shall be assembled into a report, which will also include a discussion of any

changes, proposed or implemented, deemed appropriate, to improve the availability of the emergency core cooling equipment. (See Subsection 1A.2.2.5).



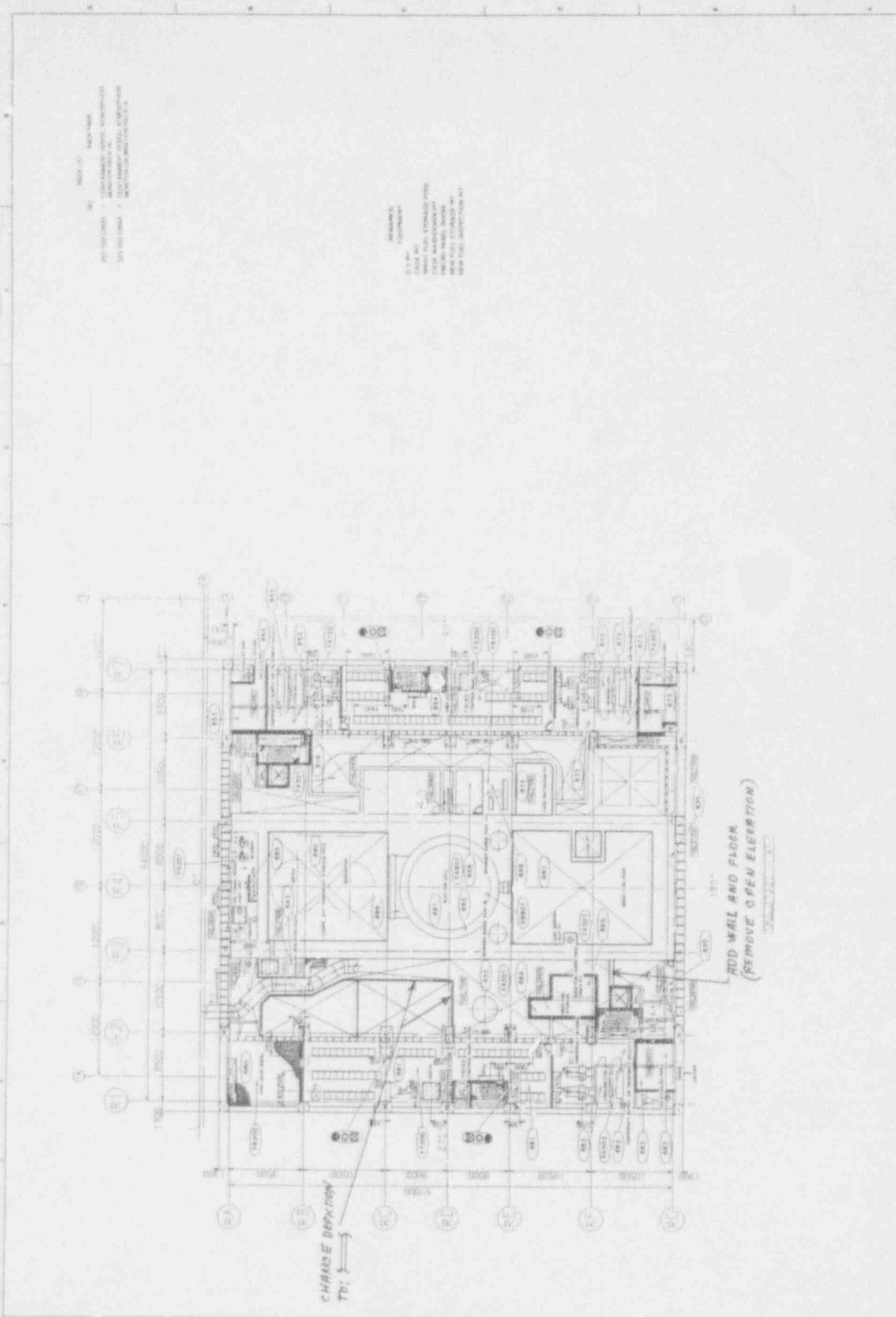


Figure 1.2-11 REACTOR BUILDING, ARRANGEMENT PLAN AT ELEVATION 27000mm

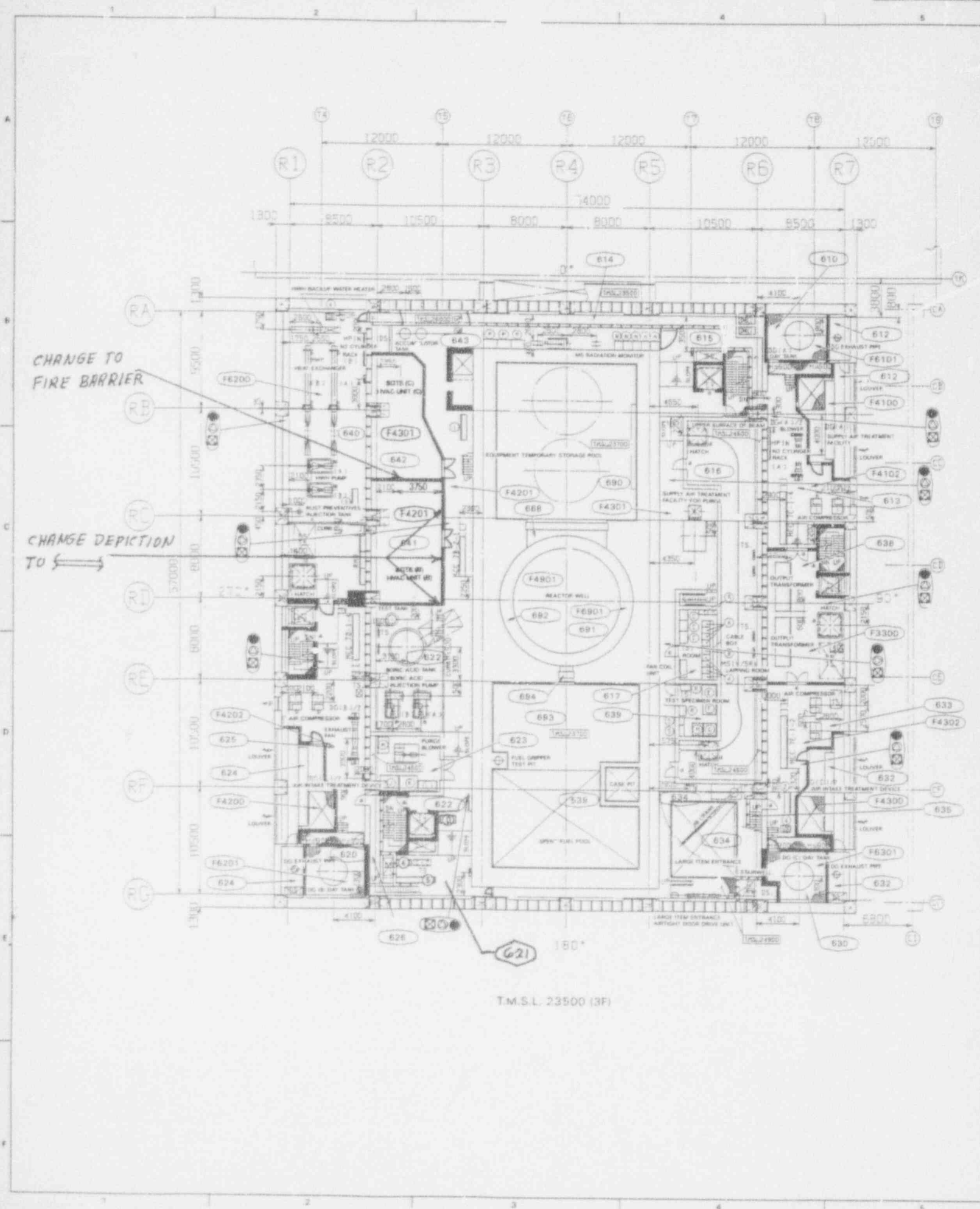


Figure 1.2-10

SI APERTURE CARD

Also Available On
Aperture Card

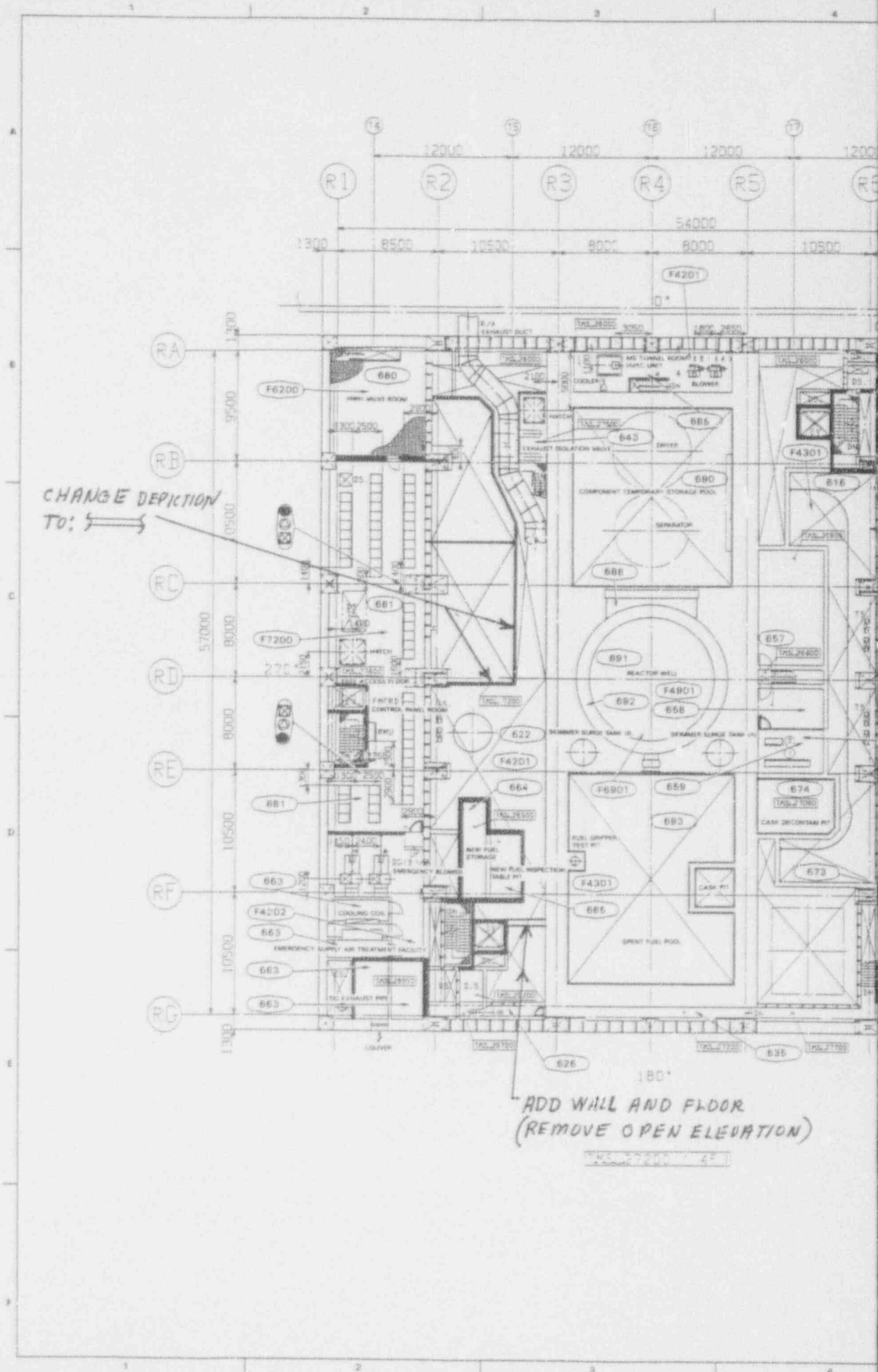
INSTRUMENT RACK

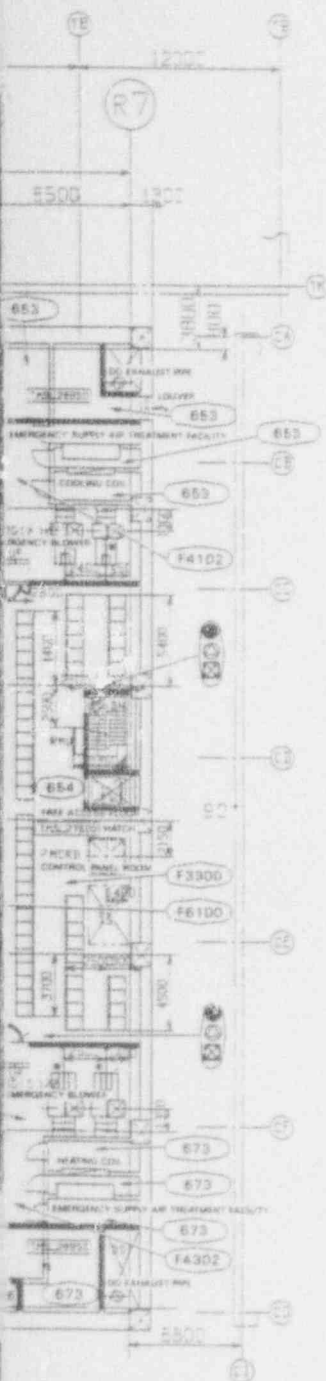
NO	RACK NAME
041 H22-PO43	1. STANDBY GAS TREATMENT SYSTEM INSTRUMENT RACK
023 H22-PO44A	2. CONTAINMENT VESSEL ATMOSPHERE MONITOR CALIBRATION GAS CYLINDER RACK A
023 H22-PO44B	3. CONTAINMENT VESSEL ATMOSPHERE MONITOR CALIBRATION GAS CYLINDER RACK B
023 D22C053B	4. CONTAINMENT VESSEL ATMOSPHERE MONITOR RACK B
023 D22C054B	5. CONTAINMENT VESSEL ATMOSPHERE MONITOR CALIBRATION RACK B

SI ROOM AND AUXILIARY FACILITIES

NO	FACILITY NAME	QTY	REMARKS: EQUIPMENT
A	CONTROL DATA COLLECTION EQUIPMENT	8	3/5 PIT
B	STABILIZED POWER SUPPLY SYSTEM	1	CASK PIT
C	DESK	3	SPENT FUEL STORAGE POOL
D	STORAGE	2	SI INSPECTION ROOM
E	CALIBRATION TEST PIECE FOR MIS NOZZLE CORNER	1	SDTS FILTER TRAIN
F	CALIBRATION TEST PIECE FOR NOZZLE CORNER	1	SDTS FAN
G	CALIBRATION TEST PIECE FOR NOZZLE CORNER	1	SLC PUMP
H	CALIBRATION TEST PIECE FOR NOZZLE CORNER	1	SLC TANK
J	RPV SHELL ADJUST TEST FACILITY	1	SLC TEST TANK
K	RPV BOTTOM PLATE ADJUST TEST FACILITY	1	SD (A) DAY TANK
L	RPV NOZZLE ADJUST TEST FACILITY	1	SD (B) DAY TANK
M	PIPING ADJUST TEST FACILITY	1	SD (C) DAY TANK
N	ISI DEVICE STORAGE	5	RWH PUMP
P	ISI DEVICE STORAGE	3	IWH HX
O	RPV CALIBRATION TEST PIECE STORAGE	1	
R	RPV CONSUMABLE MATERIALS AND CALIBRATION TEST PIECE STORAGE	2	
S	PIPING CALIBRATION TEST PIECE STORAGE	2	

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RACK LIST	
NO	RACK NAME
D23 D22 C053A	1 CONTAINMENT VESSEL ATMOSPHERE MONITOR RACK (A)
D23 D22 C054A	2 CONTAINMENT VESSEL ATMOSPHERE MONITOR CALIBRATION RACK (A)

SI APERTURE CARD

Also Available On
Aperture Card

(REMARKS) EQUIPMENT

D-5 PIT
CASK PIT
SPENT FUEL STORAGE POOL
CASK WASHDOWN PIT
FACED PANEL ROOM
NEW FUEL STORAGE PIT
NEW FUEL INSPECTION PIT

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Figure 1.2-11 REACTOR BUILDING, ARRANGEMENT PLAN AT ELEVATION 27000mm