b. Surveillance intervals specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda for the inservice inspection and testing activities required by the ASME Boiler and Pressure Vessel Code and applicable Addenda shall be applicable as follows in these Technical Specifications:

ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice inspection and testing criteria	Required frequencies for performing inservice inspection and testing activities
Weekly	At least once per 7 days
Monthly	At least once per 31 days
Quarterly or every 3 months	At least once per 92 days
Semiannually or every 6 months	At least once per 184 days
Yearly or annually	At least once per 366 days

c. The provisions of Specification 4.0.2 are applicable to the above required frequencies for performing inservice inspection and testing activities.

d. Performance of the above inservice inspection and testing activities shall be in addition to other specified Surviellance Requirements.

e. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any Technical Specification.

4.0.6 By specific reference to this section, those surveillances which must be performed on or before July 31, 1987, and are designated as 18-month surveillances (or required as outage-related surveillances) may be delayed until the end of the Cycle 9-10 refueling outage (currently scheduled to begin during the second quarter of 1987). For these specific surveillances under this section, the specified time intervals required by Specification 4.0.2 will be determined with the new initiation date established by the surveillance date during the Unit 1 1987 refueling outage.

4.0.7 By specific reference to this specification, those surveillances which must be performed on or before April 1, 1989, may be delayed until the end of the Cycle 10-11 refueling outage (currently scheduled to begin during the latter part of the first quarter of 1989.) For these specific surveillances under this section, the specified time intervals required by Specification 4.0.2 will be determined with the new initiation date established by the surveillance date during the Unit 1 1989 refueling outage.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1.1 Each reactor trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-1.+

4.3.1.1.2 The logic for the interlocks shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1. *

* The provisions of Specification 4.0.6 are applicable.

\+ The provisions of Specification 4.0.7 are applicable.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Manual Reactor Trip				
A. Shunt Trip Function	N.A.	N.A.	S/U(1)(10)	1,2,3*,4*,5*
B. Undervoltage Trip Function	N.A.	N.A.	S/U(1)(10)	1,2,3*,4*,5*
2. Power Range, Neutron Flux	S	D(2,8),M(3,8) and Q(6,8)	M and S/U(1)	1, 2 and *
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R (6)	M	1, 2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R (6)	M	1, 2
5. Intermediate Range, Neutron Flux	S	R(6,8)	S/U(1)	1, 2 and *
6. Source Range, Neutron Flux	S	R(6,8)	M(8) and S/U(1)	2(7), 3(7), 4 and 5
7. Overtemperature ΔT	S	$R(9)^{+,**}$	M	1, 2
8. Overpower ΔT	S	$R(9)^{+,**}$	M	1, 2
9. Pressurizer Pressure--Low	S	R^{+}	M	1, 2
10. Pressurizer Pressure--High	S	R^{+}	M	1, 2
11. Pressurizer Water Level--High	S	R^{+}	M	1, 2
12. Loss of Flow-Single Loop	S	R(8)	M	1

+ The provisions of Specification 4.0.6 are applicable.

** The provisions of Specification 4.0.7 are applicable.

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.+

4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the automatic actuation logic test. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.*,+

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3. *

* The provisions of Specification 4.0.6 are applicable.

\+ The provisions of Specification 4.0.7 are applicable.

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS				
a. Manual Initiation	N.A.	N.A.	M(1)	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure-High	S	R+	M(3)	1, 2, 3
d. Pressurizer Pressure--Low	S	R+	M	1, 2, 3
e. Differential Pressure Between Steam Lines--High	S	R+	M	1, 2, 3
f. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	S	R+, *	M	1, 2, 3
2. CONTAINMENT SPRAY				
a. Manual Initiation	N.A.	N.A.	M(1)	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure--High-High	S	R+	M(3)	1, 2, 3

+ The provisions of Specification 4.0.6 are applicable.

* The provisions of Specification 4.0.7 are applicable.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	M(1)	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3
c. Containment Pressure--High-High	S	R+	M(3)	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low Pressure--Low	S	R+, *	M	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R+	M	1, 2, 3
6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS				
a. Steam Generator Water Level--Low-Low	S	R+	M	1, 2, 3
b. 4 kv Bus Loss of Voltage	S	R+	M	1, 2, 3
c. Safety Injection	N.A.	N.A.	M(2)	1, 2, 3
d. Loss of Main Feed Pumps	N.A.	N.A.	R+	1, 2

+The provisions of Specification 4.0.6 are applicable.

*The provisions of Specification 4.0.7 are applicable.

POST-ACCIDENT INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.8 The post-accident monitoring instrumentation channels shown in Table 3.3-11 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With the number of OPERABLE post-accident monitoring channels less than required by Table 3.3-11, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours.

b. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.8 Each post-accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-7.*

* The provisions of Specification 4.0.7 are applicable.

TABLE 4.3-7
POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. Containment Pressure	M	R*
2. Reactor Coolant Outlet Temperature - T_{HOT} (Wide Range)	M	R^{+}
3. Reactor Coolant Inlet Temperature - T_{COLD} (Wide Range)	M	R^{+}
4. Reactor Coolant Pressure - Wide Range	M	R
5. Pressurizer Water Level	M	R*
6. Steam Line Pressure	M	R*
7. Steam Generator Water Level - Narrow Range	M	R*
8. RWST Water Level	M	R
9. Boric Acid Tank Solution Level	M	R
10. Auxiliary Feedwater Flow Rate	M	R
11. Reactor Coolant System Subcooling Margin Monitor	M	R^{+}
12. PORV Position Indicator - Limit Switches	M	R*
13. PORV Block Valve Position Indicator - Limit Switches	M	R*
14. Safety Valve Position Indicator - Acoustic Monitor	M	R*
15. Incore Thermocouples (Core Exit Thermocouples)	M	R(1)
16. Reactor Coolant Inventory Tracking System (Reactor Vessel Level Indication)	M(2)	R(3)
17. Containment Sump Level**	M	R
18. Containment Water Level**	M	R

(1) Partial range channel calibration for sensor to be performed below P-12 in MODE 3.
(2) With one train of Reactor Vessel Level Indication inoperable, Subcooling Margin Indication and Core Exit Thermocouples may be used to perform a CHANNEL CHECK to verify the remaining Reactor Vessel Indication train OPERABLE.
(3) Completion of channel calibration for sensors to be performed below P-12 in MODE 3.
* The provisions of Specification 4.0.6 are applicable.
** The requirements for these instruments will become effective after the level transmitters are modified or replaced and become operational. The schedule for modification or replacement of the transmitters is described in the Bases.

Amendment No. 107, 112 (Effective before start up following the refueling outage currently scheduled in 8/89)
\+ The provisions of Specification 4.0.7 are applicable.

112 112

SURVEILLANCE REQUIREMENTS (Continued)

shall be constituted of one basket each from Radial Rows ~~1,~~ 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1220 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1220 pounds/basket at a 95% level of confidence.

The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1220 pounds/basket at a 95% level of confidence.

The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,371,450 pounds.*

3. Verifying, by a visual inspection of at least two flow passages per ice condenser bay, that the accumulation of frost or ice on flow passages between ice baskets, past lattice frames, through the intermediate and top deck floor grating, or past the lower inlet plenum support structures and turning vanes is restricted to a nominal thickness of 3/8 inches. If one flow passage per bay is found to have an accumulation of frost or ice greater than this thickness, a representative sample of 20 additional flow passages from the same bay shall be visually inspected. If these additional flow passages are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. More than one restricted flow passage per bay is evidence of abnormal degradation of the ice condenser.*

c. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each 1/3 of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 12 feet for this inspection.

* The provisions of Specification 4.0.7 are applicable.

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more ice condenser doors open or otherwise inoperable, POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained $\leq 27^{\circ}F$; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

a. Continuously monitored and determined closed by the inlet door position monitoring system, and

b. Demonstrated OPERABLE during shutdown at least once per 9 months by: *

   1. Verifying that the torque required to initially open each door is $\leq$ 675 inch pounds.

   2. Verifying that opening of each door is not impaired by ice, frost or debris.

   3. Testing a sample of at least 50% of the doors and verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional

*The provisions of Specification 4.0.7 are applicable.

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 The inlet door position monitoring system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the inlet door position monitoring system inoperable, POWER OPERATION may continue for up to 14 days, provided the ice bed temperature monitoring system is OPERABLE and the maximum ice bed temperature is ≤ 27°F when monitored at least once per 4 hours; otherwise, restore the inlet door position monitoring system to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.4 The inlet door position monitoring system shall be determined OPERABLE by:

a. Performing a CHANNEL CHECK at least once per 12 hours,

b. Performing a CHANNEL FUNCTIONAL TEST at least once per 18 months, and *

c. Verifying that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its testing per Specification 4.6.5.3.1.**

*The provisions of Specification 4.0.6 are applicable.

** The provisions of Specification 4.0.7 are applicable.

Attachment 3 to AEP:NRC:0967L

Description of Ice Condenser Sublimination Calculation

Description of Calculation

This section summarizes the calculations done in support of the surveillance extension request. The details of these calculations are available upon request. A pictorial description of the ice condenser arrangement is provided in Attachment 4.

The ice loss per basket was calculated from the data of the past seven surveillance intervals. Ice losses per basket per year were calculated for each bay and row-group. Using small sample statistics, average expected ice loss values at the lower 95 percent confidence level were calculated. This ice loss rate was applied to the "as-left" ice weights of the latest surveillance (March 1988) for the length of the current surveillance interval, including the extension period (estimated to be thirteen months), for each bay and row-group combination. These results were then compared to the T/S acceptance criteria.

Results Summary

All results are presented in the form of tables providing both a best estimate of ice weights and the results of calculations performed at the lower 95% level. The best-estimate results are shown for information purposes. We believe that the lower 95 percent confidence level data provide a suitable basis for regulatory approval of this T/S change request.

Table 1 lists the March 1988 "as-left" average ice basket weight for each bay and the expected weights in April 1989. All bays except bay 24 are expected to have average basket weights above 1220 pounds at the lower 95 percent confidence level. Bay 24 is expected to have an average basket weight above 1098 pounds at the 95 percent confidence level.

Table 2 lists the "as-left" average ice basket weight for each row-group required to be weighed by T/S 4.6.5.1.b.2 and the expected weight in April 1989 at the lower 95 percent confidence level. All row-groups except Row 8 Group 3 and Row 9 Group 3 are expected to have average basket weights above 1220 pounds at the lower 95 percent confidence level. Row 8 Group 3 and Row 9 Group 3 are expected to have average basket weights above 1098 pounds at the lower 95 percent confidence level.

Table 3 lists the expected overall ice weight. As can be seen, the entire ice condenser is expected to have 2,518,128 pounds of ice with at least 95 percent confidence in April 1989, well above the 2,371,450 pound limit of T/S 4.6.5.1.b.2. The total ice weight was calculated using the average of the basket weights calculated for the row-groups at the lower 95 percent confidence level. A weight factor of two was used for Rows 4, 6, and 8 for all groups to incorporate the weights of Rows 3, 5, and 7.

TABLE 1
Average Ice Weights per Basket by Bay

Bay No.	Average Ice Weight/ Basket As Left March 1988 (lbs.)	Expected Ice Weight/ Basket April 1989 (lbs.)	Expected Ice Weight/ Basket Lower 95% Conf. Level April 1989 (lbs.)
1	1375	1327	1245
2	1414	1401	1382
3	1440	1421	1381
4	1393	1334	1247
5	1431	1382	1321
6	1362	1330	1291
7	1404	1331	1231
8	1372	1320	1263
9	1385	1328	1274
10	1405	1367	1326
11	1417	1392	1358
12	1417	1372	1323
13	1411	1374	1327
14	1412	1373	1335
15	1451	1432	1413
16	1436	1398	1354
17	1418	1384	1334
18	1377	1355	1319
19	1372	1344	1305
20	1355	1306	1235
21	1435	1401	1355
22	1425	1384	1348
23	1445	1389	1313
24	1410	1315	1200

TABLE 2
Expected Average Ice Weights per Basket by Row-Group

Row No.-Group No.	Average Ice Weight/ Basket As Left March 1988 (lbs.)	Expected Ice Weight/ Basket April 1989 (lbs.)	Ice Weight/ Basket at Lower 95% Conf. Level April 1989 (lbs.)
1-1	1416	1359	1307
1-2	1438	1368	1278
1-3	1417	1361	1273
2-1	1451	1426	1394
2-2	1453	1417	1366
2-3	1483	1452	1422
4-1	1364	1323	1270
4-2	1363	1331	1283
4-3	1374	1317	1244
6-1	1408	1376	1336
6-2	1441	1419	1400
6-3	1383	1348	1319
8-1	1378	1329	1283
8-2	1373	1325	1273
8-3	1342	1275	1206
9-1	1392	1326	1252
9-2	1448	1368	1288
9-3	1393	1283	1166

TABLE 3

Total Ice Weight Expected in April 1989

Based on Average Ice Basket Weights	Based on Average Ice Basket Weights at the Lower 95% Confidence Level
2,624,000	2,518,000

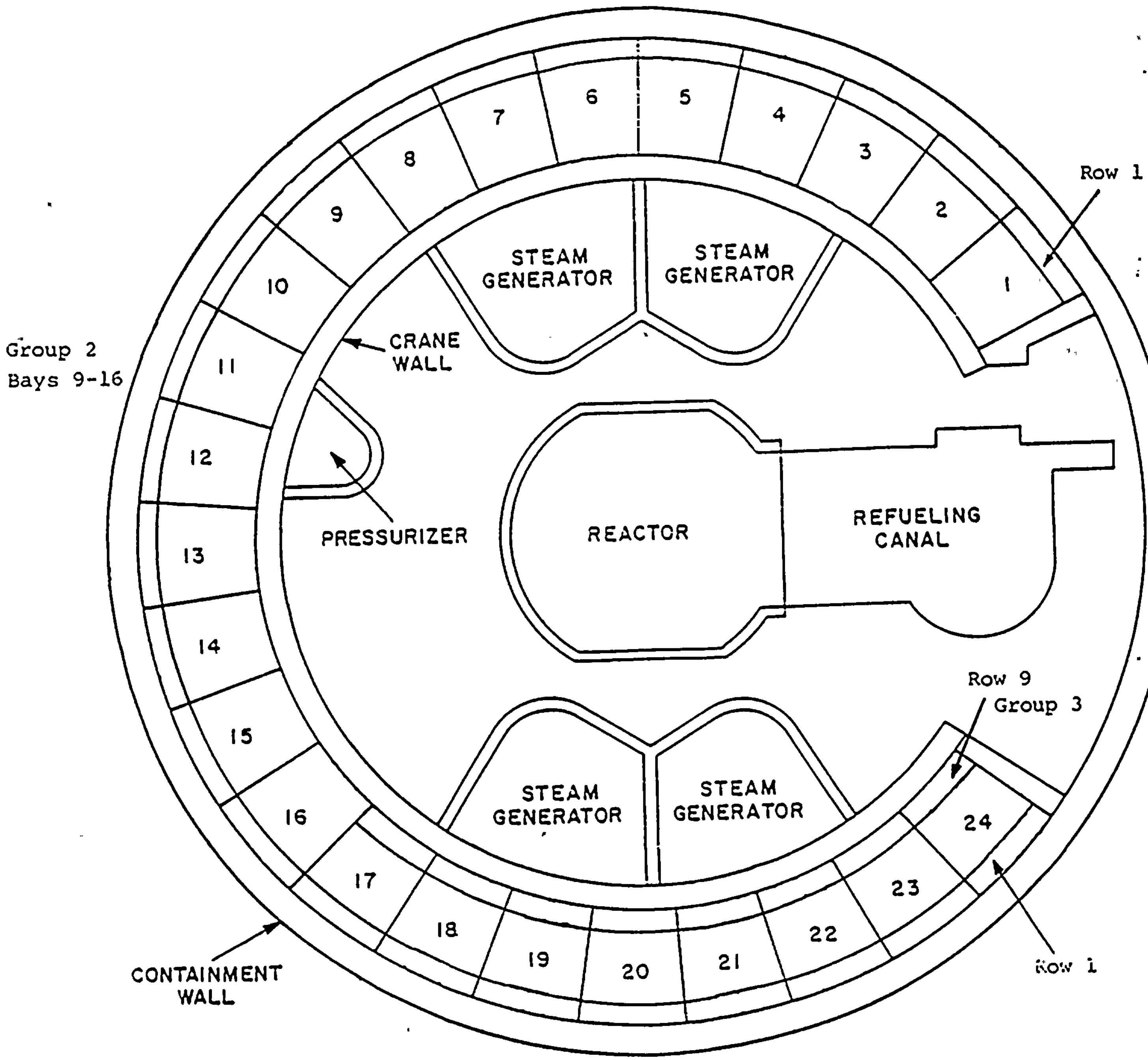
Attachment 4 to AEP:NRC:0967L

Drawing of Ice Condenser Bay
and Row-Group Layout

ICE CONDENSER BAY AND
ROW-GROUP CONFIGURATION

DONALD C. COOK NUCLEAR PLANT

Group 1 - Bays 1-8



Group 3 - Bays 17-24