

July 8, 1987

Docket No.: 50-352

Mr. Edward G. Bauer, Jr.
Vice President and General Counsel
Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Dear Mr. Bauer:

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SUBJECT: TECHNICAL SPECIFICATIONS FOR STANDBY GAS TREATMENT SYSTEM
SERVICE TO THE REFUELING AREA (TAC NO. 64464)

RE: LIMERICK GENERATING STATION, UNIT 1

The Commission has issued the enclosed Amendment No. 6 to Facility Operating License No. NPF-39 for the Limerick Generating Station, Unit 1. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated January 13, 1987, as supplemented on March 25 and April 9, 1987.

This amendment changes the Technical Specifications (TSs) to permit the completion of the physical modifications, testing and other actions to facilitate connection of the standby gas treatment system (SGTS) to the refueling area. The changes to the TS will enable establishment of the operability of the SGTS service to the refueling area in response to License Condition 2.C(14).

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/s/

Robert E. Martin, Project Manager
Project Directorate I-2
Division of Reactor Projects I/II

Enclosures:

1. Amendment No. 6 to License No. NPF-39
2. Safety Evaluation

cc w/enclosures:
See next page

PDI-2/HA
MO'Brien
6/9/87

PDI-2/PM
RMartin:lb
6/8/87

OGC/klh
Vogler
6/12/87
revised revision to SE and amend

PDI-2/D
WButler
7/8/87

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PDR ADDCK 05000352
PDR



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

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A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Robert E. Martin

Robert E. Martin, Project Manager
Project Directorate I-2
Division of Reactor Projects I/II

Enclosures:

1. Amendment No. 6 to
License No. NPF-39
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. Edward G. Bauer, Jr
Philadelphia Electric Company

Limerick Generating Station
Units 1 & 2

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ATTN: Coordinator, Pennsylvania
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Harrisburg, Pennsylvania 17102

Philadelphia Electric Company

- 2 -

Limerick Generating Station 1/2

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

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. 50-352

LIMERICK GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 6
License No. NPF-39

1. The Nuclear Regulatory Commission (the Commission) has found that
 - A. The application for amendment by Philadelphia Electric Company (the licensee) dated January 13, 1987 as supplemented on March 25 and April 9, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-39 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B. as revised through Amendment No. 6, are hereby incorporated into this license. Philadelphia Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective upon initial entry into either Operational Condition 3 or 2 during startup following the first refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/

Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 8, 1987

Previously concurred*:

PDI-2/LA* PDI-2/PM*
MO'Brien RMartin:lb
06/09/87 06/08/87

OGC* PDI-2/D
MYoung WButler
06/12/87 7/18/87

WB

3. This license amendment is effective upon initial entry into either Operational Condition 3 or 2 during startup following the first refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "Walter R. Butler".

Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 8, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 6

FACILITY OPERATING LICENSE NO. NPF-39

DOCKET NO. 50-352

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Overleaf pages provided to maintain document completeness.*

Remove

Insert

3/4 3-13
3/4 3-14

3/4 3-13*
3/4 3-14

3/4 3-15
3/4 3-16

3/4 3-15
3/4 3-16

3/4 3-21
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3/4 3-29
3/4 3-30

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3/4 3-31
3/4 3-32

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3/4 3-32*

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3/4 6-51
3/4 6-51a

Remove

3/4 6-52

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3/4 6-54

B 3/4 6-5

-

Insert

3/4 6-52*

3/4 6-53

3/4 6-54

B 3/4 6-5

B 3/4 6-5a

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>ISOLATION SIGNAL (a)</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (b)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
4. <u>HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION</u> (Continued)				
f. HPCI Pipe Routing Area Temperature - High	L	4	1, 2, 3	23
g. Manual Initiation	NA(e)	1/system	1, 2, 3	24
h. HPCI Steam Line Δ Press Timer	NA	1	1, 2, 3	23
5. <u>REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION</u>				
a. Reactor Steam Line Δ Pressure - High	K	1	1, 2, 3	23
b. RCIC Steam Supply Pressure - Low	KA	2	1, 2, 3	23
c. RCIC Turbine Exhaust Diaphragm Pressure - High	K	2	1, 2, 3	23
d. RCIC Equipment Room Temperature - High	K	1	1, 2, 3	23
e. RCIC Equipment Room Δ Temperature - High	K	1	1, 2, 3	23
f. RCIC Pipe Routing Area Temperature - High	K	5	1, 2, 3	23
g. Manual Initiation	NA(e)	1/system	1, 2, 3	24
h. RCIC Steam Line Δ Pressure Timer	NA	1	1, 2, 3	23

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	ISOLATION SIGNAL ^(a)	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM ^(b)	APPLICABLE OPERATIONAL CONDITION	ACTION
6. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level				
1) Low, Low - Level 2	B	2	1, 2, 3	20
2) Low, Low, Low - Level 1	C	2	1, 2, 3	20
b. Drywell Pressure - High	H	2	1, 2, 3	20
c. North Stack Effluent Radiation - High ^(g)	W	1	1, 2, 3	23
d. Deleted				
e. Reactor Enclosure Ventilation Exhaust Duct-Radiation - High	S	2	1, 2, 3	23
f. Outside Atmosphere to Reactor Enclosure Δ Pressure - Low	U	1	1, 2, 3	23
g. Deleted				
h. Drywell Pressure - High/ Reactor Pressure - Low	G	2/2	1, 2, 3	26
i. Primary Containment Instrument Gas Line to Drywell Δ Pressure-Low	M	1	1, 2, 3	26
j. Manual Initiation	NA	1	1, 2, 3	24

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	ISOLATION SIGNAL (a),(c)	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (b)	APPLICABLE OPERATIONAL CONDITION	ACTION
7. <u>SECONDARY CONTAINMENT ISOLATION</u>				
a. Reactor Vessel Water Level Low, Low - Level 2	B	2	1, 2, 3	25
b. Drywell Pressure - High	H	2	1, 2, 3	25
c. Refueling Area Ventilation Exhaust Duct Radiation - High	R	2	*	25
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	S	2	1, 2, 3	25
e. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	U	1	1, 2, 3	25
f. Outside Atmosphere To Refueling Area Δ Pressure - Low	T	1	*	25
g. Reactor Enclosure Manual Initiation	NA	1	1, 2, 3	24
h. Refueling Area Manual Initiation Initiation	NA	1	*	25

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION
ACTION STATEMENTS

- ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- ACTION 21- Be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- ACTION 22 - Be in at least STARTUP within 6 hours.
- ACTION 23 - In OPERATIONAL CONDITION 1 or 2, verify the affected system isolation valves are closed within 1 hour and declare the affected system inoperable. In OPERATIONAL CONDITION 3, be in at least COLD SHUTDOWN within 12 hours.
- ACTION 24 - Restore the manual initiation function to OPERABLE status within 8 hours or close the affected system isolation valves within the next hour and declare the affected system inoperable or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- ACTION 25 - Establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within 1 hour.
- ACTION 26 - Close the affected system isolation valves within 1 hour.

TABLE NOTATIONS

- * When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.
- ** May be bypassed under administrative control, with all turbine stop valves closed.
- (a) See Specification 3.6.3, Table 3.6.3-1 for primary containment isolation valves which are actuated by these isolation signals.
- (b) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the channel or trip system in the tripped condition provided at least one other OPERABLE channel in the same trip system is monitoring that parameter. In addition, for the HPCI system and RCIC system isolation, provided that the redundant isolation valve, inboard or outboard, as applicable, in each line is OPERABLE and all required actuation instrumentation for that valve is OPERABLE, one channel may be placed in an inoperable status for up to 8 hours for required surveillance without placing the channel or trip system in the tripped condition.
- (c) Actuates secondary containment isolation valves shown in Table 3.6.5.2.1-1 and/or 3.6.5.2.2-1 and signals B, H, S, U, R and T also start the standby gas treatment system.
- (d) RWCU system inlet outboard isolation valve closes on SLCS "B" initiation. RWCU system inlet inboard isolation valve closes on SLCS "A" or SLCS "C" initiation.

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
6. <u>PRIMARY CONTAINMENT ISOLATION</u>		
a. Reactor Vessel Water Level		
1. Low, Low - Level 2	> -38 inches*	> -45 inches
2. Low, Low, Low, Level 1	≥ -129 inches*	≥ -136 inches
b. Drywell Pressure - High	≤ 1.68 psig	≤ 1.88 psig
c. North Stack Effluent Radiation - High	≤ 2.1 μ Ci/cc	≤ 4.0 μ Ci/cc
d. Deleted		
e. Reactor Enclosure Ventilation Exhaust Duct - Radiation - High	≤ 1.35 mR/h	≤ 1.5 mR/h
f. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	≥ 0.1 inch	≥ 0.0 inch
g. Deleted		
h. Drywell Pressure - High/ Reactor Pressure - Low	≤ 1.68 psig/ ≥ 455 psig (decreasing)	≤ 1.88 psig/ ≥ 435 psig (decreasing)
i. Primary Containment Instrument Gas to Drywell Δ Pressure-Low	≥ 2.0 psig	≥ 1.9 psig
j. Manual Initiation	N.A.	N.A.

TABLE 3.3.2-2 (Continued)
ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
7. <u>SECONDARY CONTAINMENT ISOLATION</u>		
a. Reactor Vessel Water Level - Low, Low - Level 2	≥ -38 inches*	≥ -45 inches
b. Drywell Pressure - High	≤ 1.68 psig	≤ 1.88 psig
c. Refueling Area Ventilation Exhaust Duct Radiation - High	≤ 2.0 mR/h	≤ 2.2 mR/h
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	≤ 1.35 mR/h	≤ 1.5 mR/h
e. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	≥ 0.1 inch	≥ 0.0 inch
f. Outside Atmosphere To Refueling Area Δ Pressure - Low	≥ 0.1 inch	≥ 0.0 inch
g. Reactor Enclosure Manual Initiation	N.A.	N.A.
h. Refueling Area Manual Initiation	N.A.	N.A.

*See Bases Figure B 3/4 3-1.

**The low setpoints are for the RWCU Heat Exchanger Rooms; the high setpoints are for the pump rooms.

TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

<u>TRIP FUNCTION</u>	<u>RESPONSE TIME (Seconds)#</u>
6. <u>PRIMARY CONTAINMENT ISOLATION</u>	
a. Reactor Vessel Water Level	
1) Low, Low - Level 2	$\leq 13^{(a)}$
2) Low, Low, Low - Level 1	$\leq 13^{(a)}$
b. Drywell Pressure - High	$\leq 13^{(a)}$
c. North Stack Effluent Radiation - High	N.A.
d. Deleted	
e. Reactor Enclosure Ventilation Exhaust Duct - Radiation - High	N.A.
f. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	N.A.
g. Deleted	
h. Drywell Pressure - High/ Reactor Pressure - Low	N.A.
i. Primary Containment Instrument Gas to Drywell Δ Pressure-Low	N.A.
j. Manual Initiation	N.A.
7. <u>SECONDARY CONTAINMENT ISOLATION</u>	
a. Reactor Vessel Water Level Low, Low - Level 2	N.A.
b. Drywell Pressure - High	N.A.
c. Refueling Area Ventilation Exhaust Duct Radiation - High	N.A.
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	N.A.
e. Outside Atmosphere to Reactor Enclosure Δ Pressure - Low	N.A.

TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

<u>TRIP FUNCTION</u>	<u>RESPONSE TIME (Seconds)#</u>
f. Outside Atmosphere To Refueling Area Δ Pressure - Low	N.A.
g. Reactor Enclosure Manual Initiation	N.A.
h. Refueling Area Manual Initiation	N.A.

TABLE NOTATIONS

- (a) Isolation system instrumentation response time specified includes 10 seconds diesel generator starting and 3 seconds for sequence loading delays.
- (b) Radiation detectors are exempt from response time testing. Response time shall be measured from detector output or the input of the first electronic component in the channel.

*Isolation system instrumentation response time for MSIV only. No diesel generator delays assumed for MSIVs.

**Isolation system instrumentation response time for associated valves except MSIVs.

#Isolation system instrumentation response time specified for the Trip Function actuating each valve group shall be added to isolation time shown in Tables 3.6.3-1, 3.6.5.2.1-1 and 3.6.5.2.2-1 for valves in each valve group to obtain ISOLATION SYSTEM RESPONSE TIME for each valve.

##With 45 second time delay.

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
5. <u>REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION</u>				
a. Reactor Steam Line Δ Pressure - High	S	M	R	1, 2, 3
b. RCIC Steam Supply Pressure - Low	S	M	R	1, 2, 3
c. RCIC Turbine Exhaust Diaphragm Pressure - High	S	M	R	1, 2, 3
d. RCIC Equipment Room Temperature - High	S	M	R	1, 2, 3
e. RCIC Equipment Room Δ Temperature - High	S	M	R	1, 2, 3
f. RCIC Pipe Routing Area Temperature - High	S	M	R	1, 2, 3
g. Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. RCIC Steam Line Δ Pressure Timer	N.A.	M	R	1, 2, 3

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
6. <u>PRIMARY CONTAINMENT ISOLATION</u>				
a. Reactor Vessel Water Level				
1) Low, Low - Level 2	S	M	R	1, 2, 3
2) Low, Low, Low - Level 1	S	M	R	1, 2, 3
b. Drywell Pressure - High	S	M	R	1, 2, 3
c. North Stack Effluent Radiation - High	S	Q	R	1, 2, 3
d. Deleted				
e. Reactor Enclosure Ventilation Exhaust Duct - Radiation - High	S	M	R	1, 2, 3
f. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	N.A.	M	Q	1, 2, 3
g. Deleted				
h. Drywell Pressure - High/ Reactor Pressure - Low	S	M	R	1, 2, 3
i. Primary Containment Instrument Gas to Drywell Δ Pressure - Low	N.A.	M	Q	1, 2, 3
j. Manual Initiation	N.A.	R	N.A.	1, 2, 3

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
7. <u>SECONDARY CONTAINMENT ISOLATION</u>				
a. Reactor Vessel Water Level Low, Low - Level 2	S	M	R	1, 2, 3
b. Drywell Pressure - High	S	M	R	1, 2, 3
c. Refueling Area Ventilation Exhaust Duct Radiation - High	S	M	R	*
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	S	M	R	1, 2, 3
e. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	N.A.	M	Q	1, 2, 3
f. Outside Atmosphere To Refueling Area Δ Pressure - Low	N.A.	M	Q	*
g. Reactor Enclosure Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. Refueling Area Manual Initiation	N.A.	R	N.A.	*

*When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

**When not administratively bypassed and/or when any turbine stop valve is open.

INSTRUMENTATION

3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3 The emergency core cooling system (ECCS) actuation instrumentation channels shown in Table 3.3.3-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.3-2 and with EMERGENCY CORE COOLING SYSTEM RESPONSE TIME as shown in Table 3.3.3-3.

APPLICABILITY: As shown in Table 3.3.3-1.

ACTION:

- a. With an ECCS actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.3-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With one or more ECCS actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.3-1.
- c. With either ADS trip system subsystem inoperable, restore the inoperable trip system to OPERABLE status within:
 1. 7 days, provided that the HPCI and RCIC systems are OPERABLE.
 2. 72 hours.

Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to less than or equal to 100 psig within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each ECCS actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.3.1-1.

4.3.3.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.3.3 The ECCS RESPONSE TIME of each ECCS trip function shown in Table 3.3.3-3 shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one channel per trip system 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 ECCS trip system.

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
016A	CORE SPRAY INJECTION	HV52-1F006A(CK) HV52-1F039A	HV52-1F005	NA 7 18		9,22 9,22	52
016B	CORE SPRAY INJECTION	HV52-1F006B(CK) HV52-1F039B	HV52-108(CK)	NA 7 NA		9,22 9,22	52
017	RPV HEAD SPRAY	HV51-1F022 PSV51-122	HV51-1F023	60 NA 135	A,V A,V	4,9,22 9,22	51
021	SERVICE AIR TO DRYWELL	15-1140	15-1139	NA NA			15
022	DRYWELL PRESSURE INSTRUMENTATION		HV42-147C	45		10	42
023	RECW SUPPLY TO RECIRC PUMPS	HV13-106*	HV13-108*	40 30		11,28, 29 11,28 29	13 (
			HV13-109*	NA		11,13	
024	RECW RETURN FROM RECIRC PUMPS	HV13-107*	HV13-111*	40 30		11,28, 29 11,28, 29	13
			HV13-110*	NA		11,13	

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

LIMERICK - UNIT 1	PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
3/4 6-22	025	DRYWELL PURGE SUPPLY	HV57-121(X-201A)		5**	B,H,S,U,W,R,T	3,11,14	57
			HV57-123		5**	B,H,S,U,W,R,T	3,11,14	
			HV57-163		9	B,H,R,S	3,11,14	
				HV57-109 (X-201A)	6**	B,H,S,U,W,R,T	11	
				HV57-131 (X-201A)	5**	B,H,S,U,W,R,T	11	
				HV57-135	6**	B,H,S,U,W,R,T	11	
	026	DRYWELL PURGE EXHAUST	HV57-114		5**	B,H,S,U,W,R,T	3,11,14,33	57
			HV57-111		15**	B,H,S,U,R,T	5,11	
			HV57-161		9	B,H,R,S	3,11,14	
			SV57-139		5		10	
Amendment No. 6				HV57-115	6**	B,H,S,U,W,R,T	11,33	
				HV57-117	5**	B,H,S,U,R,T	11	
				SV57-145	5	B,H,R,S	11	
	027A	CONTAINMENT INSTRUMENT GAS SUPPLY TO ADS VALVES H,M,&S	59-1128(CK)		NA			59
				HV59-151A	45	M		
	028A-1	RECIRC LOOP SAMPLE	HV43-1F019		10	B,D		43
				HV43-1F020	10	B,D		
	028A-2	DRYWELL H2/O2 SAMPLE	SV57-132		5	B,H,R,S	11	57
				SV57-142	5	B,H,R,S	11	
	028A-3	DRYWELL H2/O2 SAMPLE	SV57-134		5	B,H,R,S	11	57
				SV57-144	5	B,H,R,S	11	

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
054	DRYWELL CHILLED WATER RETURN - LOOP 'A'	HV87-129*	HV87-121A* HV87-124A*	60 60	C,H	11 11,28, 29 11,28, 29	87
055	DRYWELL CHILLED WATER SUPPLY - LOOP 'B'	HV87-122*	HV87-120B* HV87-125B*	60 60	C,H	11 11,28, 29 11,28,29	87
056	DRYWELL CHILLED WATER RETURN - LOOP 'B'	HV87-123*	HV87-121B* HV87-124B*	60 60	C,H	11 11,28,29 11,28,29	87
061-1	RECIRC PUMP 'A' SEAL PURGE	43-1004A(CK)	(XV43-103A - SEE PART B, THIS TABLE)	NA NA		15 1	43
061-2	RECIRC PUMP 'B' SEAL PURGE	43-1004B*(CK)	(XV43-103B - SEE PART B, THIS TABLE)	NA NA		15 1	43
062	DRYWELL H2/O2 SAMPLE RETURN, N2 MAKE-UP	SV57-150(X-220A)	SV57-159 (X-220A) HV57-116 (X-220A) SV57-190 (X-220A)	5 5 30** 5	B,H,R,S B,H,R,S B,H,R,S B,H,R,S	11 11 11 11	57

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

LIMERICK - UNIT 1	PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
3/4 6-26				SV57-191 (X-220A)	5	B,H,R,S	11	
	116	STANDBY LIQUID CONTROL	48-1F007(CK) (X-42)	HV48-1F006B	NA 60		29	45
	117B-1	DRYWELL RADIATION MONITORING SUPPLY	SV26-190A	SV26-190B	5 5	B,H,R,S B,H,R,S	11 11	26
	117B-2	DRYWELL RADIATION MONITORING RETURN	SV26-190C	SV26-190D	5 5	B,H,R,S B,H,R,S	11 11	26
	201A	SUPPRESSION POOL PURGE SUPPLY	HV57-124 HV57-131(X-25) HV57-164	HV57-109(X-25) HV57-147 HV57-121(X-25)	5** 5** 9 6** 6** 5**	B,H,S,U,W,R,T B,H,S,U,W,R,T B,H,R,S B,H,S,U,W,R,T B,H,S,U,W,R,T B,H,S,U,W,R,T	3,11,14 3,11,14 3,11,14 11 11 11	57
	202	SUPPRESSION POOL PURGE EXHAUST	HV57-104 HV57-105 HV57-162	HV57-112 HV57-118 SV57-185	5** 15** 9 6** 5** 5	B,H,S,U,W,R,T B,H,S,U,R,T B,H,R,S B,H,S,U,W,R,T B,H,S,U,R,T B,H,R,S	3,11,14,33 5,11 3,11,14 11, 33 11 11	
	203A(B,C,D)	RHR PUMP SUCTION		HV51-1F004A(B, C,D)	240		4,22, 19,29	51
				PSV51-1F030A(B, C,D)	NA		22	

TABLE 3.6.3-1
PRIMARY CONTAINMENT ISOLATION VALVES
NOTATION

NOTES (Continued)

21. Automatic isolation signal causes TIP to retract; ball valve closes when probe is fully retracted.
22. Isolation barrier remains water filled or a water seal remains in the line post-LOCA. Isolation valve may be tested with water. Isolation valve leakage is not included in 0.60 La total Type B & C tests.
23. Valve does not receive an isolation signal. Valves will be open during Type A test. Type C test not required.
24. Both isolation signals required for valve closure.
25. Deleted
26. Valve stroke times listed are maximum times verified by testing per Specification 4.0.5 acceptance criteria. The closure times for isolation valves in lines in which high-energy line breaks could occur are identified with a single asterisk. The closure times for isolation valves in lines which provide an open path from the containment to the environs are identified with a double asterisk.
27. The reactor vessel head seal leak detection line (penetration 29A) excess flow check valve is not subject to OPERABILITY testing. This valve will not be exposed to primary system pressure except under the unlikely conditions of a seal failure where it could be partially pressurized to reactor pressure. Any leakage path is restricted at the source; therefore, this valve need not be OPERABILITY tested.
28. Automatic isolation logic to be added by the end of the first refueling outage.
29. Valve may be open during normal operation; capable of manual isolation from control room. Position will be controlled procedurally.
30. Valve normally open, closes on scram signal.
31. Valve 41-1016 is an outboard isolation barrier for penetrations X-9A, B and X-44. Leakage through valve 41-1016 is included in the total for penetration X-44 only.
32. Feedwater long-path recirculation valves are sealed closed whenever the reactor is critical and reactor pressure is greater than 600 psig. The valves are expected to be opened only in the following instances:
 - a. Flushing of the condensate and feedwater systems during plant startup.
 - b. Reactor pressure vessel hydrostatic testing, which is conducted following each refueling outage prior to commencing plant startup.Therefore, valve stroke timing in accordance with Specification 4.0.5 is not required.
33. Valve also constitutes a Refueling Area Secondary Containment Automatic Isolation Valve as shown in Table 3.6.5.2.2-1.

CONTAINMENT SYSTEMS

3/4.6.4 VACUUM RELIEF

SUPPRESSION CHAMBER - DRYWELL VACUUM BREAKERS

LIMITING CONDITION FOR OPERATION

3.6.4.1 Each pair of suppression chamber - drywell vacuum breakers shall be OPERABLE and closed.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With one or more vacuum breakers in one pair of suppression chamber - drywell vacuum breakers inoperable for opening but known to be closed, restore the inoperable pair of vacuum breakers to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With one suppression chamber - drywell vacuum breaker open, verify the other vacuum breaker in the pair to be closed within 2 hours; restore the open vacuum breaker to the closed position within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- c. With one position indicator of any suppression chamber - drywell vacuum breaker inoperable:
 1. Verify the other vacuum breaker in the pair to be closed within 2 hours and at least once per 15 days thereafter, or
 2. Verify the vacuum breaker(s) with the inoperable position indicator to be closed by conducting a test which demonstrates that the ΔP is maintained at greater than or equal to 0.7 psi for one hour without makeup within 24 hours and at least once per 15 days thereafter.

Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.4.1 Each suppression chamber - drywell vacuum breaker shall be:

- a. Verified closed at least once per 7 days.
- b. Demonstrated OPERABLE:
 1. At least once per 31 days and within 2 hours after any discharge of steam to the suppression chamber from the safety/relief valves, by cycling each vacuum breaker through at least one complete cycle of full travel.
 2. At least once per 31 days by verifying both position indicators OPERABLE by observing expected valve movement during the cycling test.
 3. At least once per 18 months by;
 - a) Verifying each valve's opening setpoint, from the closed position, to be 0.5 psid \pm 5%, and
 - b) Verifying both position indicators OPERABLE by performance of a CHANNEL CALIBRATION.
 - c) Verifying that each outboard valve's position indicator is capable of detecting disk displacement ≥ 0.050 ", and each inboard valve's position indicator* is capable of detecting disk displacement ≥ 0.120 ".

CONTAINMENT SYSTEMS

3/4.6.5 SECONDARY CONTAINMENT

REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be maintained.
APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

Without REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY, restore REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

- a. Verifying at least once per 24 hours that the pressure within the reactor enclosure secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.
- b. Verifying at least once per 31 days that:
 1. All reactor enclosure secondary containment equipment hatches and blowout panels are closed and sealed.
 2. At least one door in each access to the reactor enclosure secondary containment is closed.
 3. All reactor enclosure secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.
- c. At least once per 18 months:
 1. Verifying that one standby gas treatment subsystem will draw down the reactor enclosure secondary containment to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 121 seconds with the reactor enclosure recirc system in operation, and
 2. Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the reactor enclosure secondary containment at a flow rate not exceeding 1250 cfm.

CONTAINMENT SYSTEMS

3/4.6.5 SECONDARY CONTAINMENT

REFUELING AREA SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: OPERATIONAL CONDITION *.

ACTION:

Without REFUELING AREA SECONDARY CONTAINMENT INTEGRITY, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

- a. Verifying at least once per 24 hours that the pressure within the refueling area secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.
- b. Verifying at least once per 31 days that:
 1. All refueling area secondary containment equipment hatches and blowout panels are closed and sealed.
 2. At least one door in each access to the refueling area secondary containment is closed.
 3. All refueling area secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.
- c. At least once per 18 months:

Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the refueling area secondary containment at a flow rate not exceeding 764 cfm.

*When irradiated fuel is being handled in the refueling area secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

REACTOR CONTAINMENT SYSTEMS

REACTOR ENCLOSURE SECONDARY CONTAINMENT AUTOMATIC ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.5.2.1 The reactor enclosure secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.1-1 shall be OPERABLE with isolation times less than or equal to the times shown in Table 3.6.5.2.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With one or more of the reactor secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.1-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 8 hours either:

- a. Restore the inoperable valves to OPERABLE status, or
- b. Isolate each affected penetration by use of at least one deactivated valve secured in the isolation position, or
- c. Isolate each affected penetration by use of at least one closed manual valve or blind flange.

Otherwise, in OPERATIONAL CONDITION 1, 2 or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.2.1 Each reactor enclosure secondary containment ventilation system automatic isolation valve shown in Table 3.6.5.2.1-1 shall be demonstrated OPERABLE:

- a. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.
- b. At least once per 18 months by verifying that on a containment isolation test signal each isolation valve actuates to its isolation position.
- c. By verifying the isolation time to be within its limit at least once per 92 days.

TABLE 3.6.5.2.1-1
REACTOR ENCLOSURE SECONDARY CONTAINMENT VENTILATION SYSTEM
AUTOMATIC ISOLATION VALVES

<u>REACTOR ENCLOSURE (ZONE I)</u>	<u>MAXIMUM</u>	<u>ISOLATION</u>
<u>VALVE FUNCTION</u>	<u>ISOLATION TIME</u>	<u>SIGNALS^(a)</u>
	<u>(Seconds)</u>	
1. Reactor Enclosure Ventilation Supply Valve HV-76-107	5	B,H,S,U
2. Reactor Enclosure Ventilation Supply Valve HV-76-108	5	B,H,S,U
3. Reactor Enclosure Ventilation Exhaust Valve HV-76-157	5	B,H,S,U
4. Reactor Enclosure Ventilation Exhaust Valve HV-76-158	5	B,H,S,U
5. Reactor Enclosure Equipment Compartment Exhaust Valve HV-76-141	5	B,H,S,U
6. Reactor Enclosure Equipment Compartment Exhaust Valve HV-76-142	5	B,H,S,U
7. Drywell Purge Exhaust Valve HV-76-030	5	B,H,S,U,R,T
8. Drywell Purge Exhaust Valve HV-76-031	5	B,H,S,U,R,T

(a) See Specification 3.3.2, Table 3.3.2-1, for isolation signals that operate each automatic valve.

CONTAINMENT SYSTEMS

REFUELING AREA SECONDARY CONTAINMENT AUTOMATIC ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.5.2.2 The refueling area secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.2-1 shall be OPERABLE with isolation times less than or equal to the times shown in Table 3.6.5.2.2-1.

APPLICABILITY: OPERATIONAL CONDITION *.

ACTION:

With one or more of the refueling area secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.2-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 8 hours either:

- a. Restore the inoperable valves to OPERABLE status, or
- b. Isolate each affected penetration by use of at least one deactivated valve secured in the isolation position, or
- c. Isolate each affected penetration by use of at least one closed manual valve, blind flange or slide gate damper.

Otherwise, in Operational Condition *, suspend handling of irradiated fuel in the refueling area secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.2.2 Each refueling area secondary containment ventilation system automatic isolation valve shown in Table 3.6.5.2.2-1 shall be demonstrated OPERABLE:

- a. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.
- b. At least once per 18 months by verifying that on a containment isolation test signal each isolation valve actuates to its isolation position.
- c. By verifying the isolation time to be within its limit at least once per 92 days.

*When irradiated fuel is being handled in the refueling area secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

TABLE 3.6.5.2.2-1
REFUELING AREA SECONDARY CONTAINMENT VENTILATION SYSTEM
AUTOMATIC ISOLATION VALVES

<u>REFUELING AREA (ZONE III)</u>	<u>MAXIMUM ISOLATION TIME (Seconds)</u>	<u>ISOLATION SIGNALS^(a)</u>
<u>VALVE FUNCTION</u>		
1. Refueling Area Ventilation Supply Valve HV-76-117 (Unit 1)	5	R,T
2. Refueling Area Ventilation Supply Valve HV-76-118 (Unit 1)	5	R,T
3. Refueling Area Ventilation Exhaust Valve HV-76-167 (Unit 1)	5	R,T
4. Refueling Area Ventilation Exhaust Valve HV-76-168 (Unit 1)	5	R,T
5. Refueling Area Ventilation Supply Valve HV-76-217 (Unit 2)**	5	R,T
6. Refueling Area Ventilation Supply Valve HV-76-218 (Unit 2)**	5	R,T
7. Refueling Area Ventilation Exhaust Valve HV-76-267 (Unit 2)**	5	R,T
8. Refueling Area Ventilation Exhaust Valve HV-76-268 (Unit 2)**	5	R,T
9. Drywell Purge Exhaust Valve HV-76-030	5	B,H,S,U,R,T
10. Drywell Purge Exhaust Valve HV-76-031	5	B,H,S,U,R,T
11. Drywell Purge Exhaust Inboard Valve HV-57-114 (Unit 1)	5	B,H,S,U,W,R,T
12. Drywell Purge Exhaust Outboard Valve HV-57-115 (Unit 1)	6	B,H,S,U,W,R,T
13. Suppression Pool Purge Exhaust Inboard Valve HV-57-104 (Unit 1)	5	B,H,S,U,W,R,T
14. Suppression Pool Purge Exhaust Outboard Valve HV-57-112 (Unit 1)	6	B,H,S,U,W,R,T

TABLE 3.6.5.2.2-1 (Continued)
REFUELING AREA SECONDARY CONTAINMENT VENTILATION SYSTEM
AUTOMATIC ISOLATION VALVES

<u>REFUELING AREA (ZONE III)</u>		
<u>VALVE FUNCTION</u>	<u>MAXIMUM ISOLATION TIME (Seconds)</u>	<u>ISOLATION SIGNALS^(a)</u>
15. Drywell Purge Exhaust Inboard Valve HV-57-214 (Unit 2)**	5	B,H,S,U,W,R,T
16. Drywell Purge Exhaust Outboard Valve HV-57-215 (Unit 2)**	6	B,H,S,U,W,R,T
17. Suppression Pool Purge Exhaust Inboard Valve HV-57-204 (Unit 2)**	5	B,H,S,U,W,R,T
18. Suppression Pool Purge Exhaust Outboard Valve HV-57-212 (Unit 2)**	6	B,H,S,U,W,R,T

*The provisions of Specification 3.0.4 are not applicable.

**These lines are blanked off during Unit 1 operation/Unit 2 construction.

(a) See Specification 3.3.2, Table 3.3.2-1, for isolation signals that operate each automatic isolation valve.

CONTAINMENT SYSTEMS

STANDBY GAS TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.3 Two independent standby gas treatment subsystems shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, and *.

ACTION:

- a. With one standby gas treatment subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days, or:
 1. In OPERATIONAL CONDITION 1, 2, or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 2. In Operational Condition *, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.
- b. With both standby gas treatment subsystems inoperable in Operational Condition *, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATIONS or operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3. are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.3 Each standby gas treatment subsystem shall be demonstrated OPERABLE:

- a. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates with the heaters OPERABLE.

*When irradiated fuel is being handled in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the subsystem by:
 - 1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 3000 cfm \pm 10%.
 - 2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 0.175%; and
 - 3. Verify that when the fan is running the subsystem flowrate is 2800 cfm minimum from each reactor enclosure (Zones I and II) and 2200 cfm minimum from the refueling area (Zone III) when tested in accordance with ANSI N510-1980.*
 - 4. Verify that the pressure drop across the refueling area to SGTS prefilter is less than 0.25 inches water gage while operating at a flow rate of 2400 cfm \pm 10%.
- c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 0.175%.
- d. At least once per 18 months by:
 - 1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 9.1 inches water gauge while operating the filter train at a flow rate of 8400 cfm \pm 10%.

*Specified subsystem flow rate is for a two unit operation. During the Unit 2 construction phase, the Unit 1 subsystem flow rate will be 2800 cfm minimum from the reactor enclosure and 2200 cfm minimum from the refueling area (Zone III).

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the fan starts and isolation valves necessary to draw a suction from the refueling area or the reactor enclosure recirculation discharge open on each of the following test signals:
 - a) Manual initiation from the control room, and
 - b) Simulated automatic initiation signal.
3. Verifying that the standby gas treatment system can be placed in the cooldown mode of operation from the control room.
4. Verifying that the temperature differential across each heater is $\geq 15^{\circ}\text{F}$ when tested in accordance with ANSI N510-1980.
- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 while operating the system at a flow rate of $3000 \text{ cfm} \pm 10\%$.
- f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of $3000 \text{ cfm} \pm 10\%$.
- g. Prior to initial criticality of Unit 2 or after any major system alteration:
 1. Verify that when the SGTS fan is running the subsystem flowrate is 2800 cfm minimum from each reactor enclosure (Zones I and II) and 2200 cfm minimum from the refueling area (Zone III).
 2. Verify that one standby gas treatment subsystem will drawdown reactor enclosure Zone I secondary containment to greater than or equal to 0.25 inch of vacuum water gage in less than or equal to 121 seconds with the reactor enclosure recirculation system in operation and the adjacent reactor enclosure and refueling area zones are in their isolation modes.

CONTAINMENT SYSTEMS

BASES

3/4.6.5 SECONDARY CONTAINMENT

Secondary containment is designed to minimize any ground level release of radioactive material which may result from an accident. The Reactor Enclosure and associated structures provide secondary containment during normal operation when the drywell is sealed and in service. At other times the drywell may be open and, when required, secondary containment integrity is specified.

Establishing and maintaining a vacuum in the reactor enclosure secondary containment with the standby gas treatment system once per 18 months, along with the surveillance of the doors, hatches, dampers and valves, is adequate to ensure that there are no violations of the integrity of the secondary containment.

The OPERABILITY of the reactor enclosure recirculation system and the standby gas treatment systems ensures that sufficient iodine removal capability will be available in the event of a LOCA or refueling accident (SGTS only). The reduction in containment iodine inventory reduces the resulting SITE BOUNDARY radiation doses associated with containment leakage. The operation of this system and resultant iodine removal capacity are consistent with the assumptions used in the LOCA and refueling accident analyses. Provisions have been made to continuously purge the filter plenums with instrument air when the filters are not in use to prevent buildup of moisture on the adsorbers and the HEPA filters.

Although the safety analyses assumes that the reactor enclosure secondary containment draw down time will take 135 seconds, these surveillance requirements specify a draw down time of 121 seconds. This 14 second difference is due to the diesel generator starting and sequence loading delays which is not part of this surveillance requirement.

The reactor enclosure secondary containment draw down time analyses assumes a starting point of 0.25 inch of vacuum water gauge and worst case SGTS dirty filter flow rate of 2800 cfm. The surveillance requirements satisfy this assumption by starting the drawdown from ambient conditions and connecting the adjacent reactor enclosure and refueling area to the SGTS to split the exhaust flow between the three zones and verifying a minimum flow rate of 2800 cfm from the test zone. This simulates the worst case flow alignment and verifies adequate flow is available to drawdown the test zone within the required time. The Technical Specification Surveillance Requirement 4.6.5.3.b.3 is intended to be a multi-zone air balance verification without isolating any test zone.

The SGTS fans are sized for three zones and therefore, when aligned to a single zone or two zones, will have access capacity to more quickly drawdown the affected zones. There is no maximum flow limit to individual zones or pairs of zones and the air balance and drawdown time are verified when all three zones are connected to the SGTS.

The three zone air balance verification and drawdown test will be done prior to initial criticality of Unit 2 or after any major system alteration, which is any modification which will have an effect on the SGTS flowrate such that the ability of the SGTS to drawdown the reactor enclosure to greater than or equal to 0.25 inch of vacuum water gage in less than or equal to 121 seconds could be affected.

CONTAINMENT SYSTEMS

BASES

3/4.6.5 SECONDARY CONTAINMENT (Continued)

The field tests for bypass leakage across the SGTS charcoal adsorber and HEPA filter banks are performed at a flow rate of $3000 \pm 10\%$ cfm. This flow rate corresponds to the maximum overall three zone inleakage rate of 3264 cfm.

The SGTS filter train pressure drop is a function of air flow rate and filter conditions. Surveillance testing is performed using either the SGTS or drywell purge fans to provide operating convenience.

Each reactor enclosure secondary containment zone and refueling area secondary containment zone is tested independently to verify the design leak tightness. A design leak tightness of 1250 cfm or less for each reactor enclosure and 764 cfm or less for the refueling area at a 0.25 inch of vacuum water gage will ensure that containment integrity is maintained at an acceptable level if all zones are connected to the SGTS at the same time.

3/4.6.6 PRIMARY CONTAINMENT ATMOSPHERE CONTROL

The OPERABILITY of the systems required for the detection and control of hydrogen combustible mixtures of hydrogen and oxygen ensures that these systems will be available to maintain the hydrogen concentration within the primary containment below the lower flammability limit during post-LOCA conditions. The primary containment hydrogen recombiner is provided to maintain the oxygen concentration below the lower flammability limit. The combustible gas analyzer is provided to continuously monitor, both during normal operations and post-LOCA, the hydrogen and oxygen concentrations in the primary containment. The primary containment atmospheric mixing system is provided to ensure adequate mixing of the containment atmosphere to prevent localized accumulations of hydrogen and oxygen from exceeding the lower flammability limit. The hydrogen control system is consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 6 TO FACILITY OPERATING LICENSE NO. NPF-39
PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION, UNIT 1
DOCKET NO. 50-352

1.0 INTRODUCTION

By letter dated January 13, 1987 as supplemented on March 25 and April 9, 1987, Philadelphia Electric Company (the licensee) requested an amendment to Facility Operating License No. NPF-39 for the Limerick Generating Station, Unit 1. The proposed amendment would change the Technical Specifications (TS) to permit the licensee to complete the physical modifications, testing and other actions to facilitate connection of the standby gas treatment system (SGTS) to the refueling floor area. These changes to the TS would enable the licensee to establish the operability of the SGTS service to the refueling floor area in response to the requirements of License Condition 2.C(14).

The April 9, 1987 submittal provided supplemental information and revised TS Bases pages and did not alter the action noticed in the Federal Register on April 8, 1987 or the staff's initial no significant hazards determination.

The SGTS has been operable in support of the Unit 1 reactor enclosure secondary containment integrity since the issuance of the Unit 1 operating license. A secondary containment completely encloses the Unit 1 and the Unit 2 primary containments and is provided to contain any leakage from the primary containments for processing by filtration systems prior to release. The secondary containment is divided into three separate ventilation zones. Zones I and II consist of the reactor enclosures which surround the primary containments of Units 1 and 2, respectively, below the floor at elevation 352 feet. Zone III consists of the common refueling area above the floor at elevation 352 feet. A design basis of the secondary containment is that the conditions that could exist following a loss-of-coolant-accident (LOCA) or fuel handling accident require the control of any fission products that may leak into secondary containment. Accordingly, a standby gas treatment system is provided to collect and exhaust sufficient filtered air from the reactor enclosure or refueling area to maintain a negative pressure in the affected volumes during secondary containment isolation.

The NRC staff concurred in SER Supplement Nos. 2 and 3 with a request by the licensee for a scheduler delay in completion of the connection of

the SGTS to the refueling floor area (Zone III). The staff concurred on the basis that Zone III is completely isolated from the Unit 1 reactor enclosure secondary containment zone, and that Zone III SGTS operation is relied upon during the fuel handling and that there would be no irradiated fuel in the spent fuel pool until the first refueling outage. The staff also established License Condition 2.C(14) which requires the connection of the refueling floor volume to the SGTS prior to any movement of irradiated fuel. Specifically, it stated: "Prior to any movement of irradiated fuel within the refueling floor volume the licensee shall complete and test all modifications required to connect the refueling floor volume to standby gas treatment system. During the interim period, the licensee shall not remove the reactor pressure vessel head prior to the NRC staff review and approval." The staff's review and approval of removal of the primary containment head and certain items connected to the reactor vessel head were addressed as separate items by the staff's letters dated May 12 and May 18, 1987.

2.0 EVALUATION

The SGTS modifications for License Condition 2.C(14) necessitates changes to the Limerick Unit No. 1 Technical Specifications as follows: (1) incorporate the new as-built SGTS capacity, (2) address new as-built SGTS configuration, (3) address new system isolation actuations, and (4) delete footnotes which will become obsolete upon completion of the modifications. The requested modifications will be completed prior to startup from the first refueling outage which began on May 15, 1987.

In order to satisfy the requirements of License Condition 2.C(14), several modifications will be made to the SGTS as indicated below.

A new refueling area purge exhaust duct will be connected to the SGTS through two new fail open valves (HV-19 and HV-20). Two new prefilters (OAF-906 and OBF-906) will also be installed in the refueling area purge exhaust lines upstream of the existing SGTS filters. These filters will remove larger airborne particles from the refueling area extending the life of the existing SGTS HEPA filters. In addition, two new SGTS fans (OAV-163 and OBV-163) with higher capacity (8400 cfm) will replace the existing fans (3000 cfm). The licensee stated in the January 13, 1987 letter that the new fans and common ductwork will meet the current Limerick "drawdown time" limitation. This limitation requires that a negative pressure of 0.25 inches water gage be achieved in the secondary containment within 2.25 minutes with simultaneous drawdown of the Unit 1 reactor enclosure, Unit 2 reactor enclosure (future), and common (Units 1 and 2) refueling area. The new fans will be installed in the same room and in approximately the same location as the existing fans. The existing fans will be electrically disconnected and blocked off from the existing ductwork and left in place. The specific technical specification changes for the SGTS are evaluated in the following subsections.

2.1 Deletion of Primary Containment Isolation Signals

The licensee proposed deletion of the isolation signals "R" (refueling area ventilation exhaust duct radiation high) and "T" (outside atmosphere to refueling area differential pressure low) from the primary containment isolation sections of Technical Specification Tables 3.3.2-1, 3.3.2-2, 3.3.2-3, and 4.3.2.1-1. This proposal results in no physical or hardware changes to the primary containment isolation system. The R and T signals provide a primary and secondary containment isolation function only for a potential fuel handling accident during the refueling mode of operation.

The Limerick secondary containment is divided into three (3) isolated ventilation zones. Zones 1 and 2 consist of the reactor enclosures which surround the primary containments of Unit No. 1 and Unit No. 2, respectively. Zone 3 consists of the common refueling area. Thus, the refueling area constitutes a distinct zone of the secondary containment and does not communicate with the reactor enclosure secondary containment. In the current Limerick Technical Specifications, R and T isolation signals appear in both primary and secondary containment isolation sections. These isolation signals are presently required to be operable during Modes 1, 2, and 3 in the primary containment isolation section but are required to be operable only during Mode * (refueling) in this secondary containment isolation section.

The licensee stated in the referenced letter that deletion of the R and T isolation signals from the primary containment isolation section will prevent possible confusion among the plant operators because of the inconsistent operability requirements and that inclusion of R and T signals in the primary containment isolation section appears to have been an inadvertent oversight during the development of the Limerick Technical Specifications because they are not part of the primary containment isolation function for accidents in Modes 1, 2, and 3. The staff has reviewed this and agrees with the licensee's evaluation and therefore, finds deletion of the R and T isolation signals from the primary containment isolation TS section to be acceptable.

2.2 Addition of Clarification to Isolation Signals

The licensee proposed the addition of footnote (a) to the isolation signal column on TS page 3/4 3-15 and clarification of footnotes (a) and (c) on TS page 3/4 3-16. These changes are needed because the SGTS serves both the refueling area ventilation exhaust (zone 3) and the drywell purge exhausts (zone 1 and 2). Therefore, the R and T signals will still actuate certain primary containment isolation valves (e.g., drywell purge supply and exhaust valves, drywell hydrogen/oxygen sample valves) following accidents during refueling. Footnotes (a) and (b) clarify these operational features and therefore, the staff finds the addition and clarification to be acceptable.

2.3 Manual Initiation Signals

The licensee proposed to revise the manual initiation signals on TS pages 3/4 3-15, 3/4 3-22, 3/4 3-26, and 3/4 3-31. These changes revise the current manual initiation isolation signal to be either from the Reactor Enclosure or the Refueling Area upon completion of the SGTS modifications. The staff finds this revision to be consistent with the system design and, therefore, acceptable.

2.4 Addition of Isolation Signals

The licensee proposed to add R and T isolation signals on TS pages 3/4 3-16, 3/4 6-22, and 3/4 6-26 and delete notes 25 and (b) on TS pages 3/4 6-43, 3/4 6-22, 3/4 6-26, 3/4 6-49, and 3/4 6-51, respectively. The current note 25 and (b) on page 3/4 6-43 and 3/4 6-49 states: "Isolation capability upon refueling floor high radiation (signal R in Specification 3.3.2, Table 3.3.2-1) and low differential pressure (signal T in Specification 3.3.2, Table 3.3.2-1) will be added [by the end of the first refueling outage (Note 25)], [prior to handling irradiated fuel in the refueling area secondary containment (Note (b))]. In accordance with these notes, isolation signals R and T were added where the note is referenced on TS pages 3/4 6-22, 3/4 6-26, 3/4 6-49 and 3/4 6-51, respectively. Accordingly, Note 25 and Note (b) were deleted from pages 3/4 6-43, 3/4 6-49, and 3/4 6-51 as they become obsolete upon completion of the SGTS modifications. Isolation signals R and T were also added to Note C on TS page 3/4 3-16 since these signals will become functional (actuate the SGTS) upon completion of the modifications. The staff finds these changes to be consistent with the SGTS modifications and, therefore acceptable.

2.5 Drywell Purge Exhaust and Suppression Pool Purge Exhaust Isolation Valve

The licensee proposed the addition of a new note (Note 33) on TS page 3/4 6-43 for the drywell purge exhaust and suppression pool purge exhaust valves which are called out on TS pages 3/4 6-22 and 3/4 6-26 to incorporate the fact that these valves are both primary containment and refueling area secondary containment isolation valves. The staff finds the change to be consistent with the SGTS modifications and, therefore, acceptable.

In addition, the licensee proposed to add the drywell purge exhaust and suppression pool purge exhaust isolation valves to Table 3.6.5.2.2-1 on page 3/4 6-51 as part of the Refueling Area Secondary Containment Automatic Isolation Valves. This addition is required due to the connection of the refueling area ventilation to the SGTS ductwork which also interfaces with the drywell and suppression pool exhaust purge ductwork. Further, an error in Table 3.6.5.2.2-1 where the Refueling Area was erroneously titled as Reactor Enclosure in the table subheading has been corrected. The staff finds these proposed changes to be consistent with the SGTS modifications and, therefore, acceptable.

2.6 SGTS Surveillance Requirements

The licensee proposed to revise the SGTS Surveillance Requirements as indicated on TS pages 3/4 6-53 and 3/4 6-54 because of modifications to the SGTS. The modifications include the addition of two new prefilters installed in the refueling area purge exhaust lines upstream of the existing SGTS filters which will extend the life of the existing SGTS HEPA filters, and two new SGTS fans with higher capacity (8400 cfm) to replace the existing fans (3000 cfm). In addition, Section 4.6.5.1.1.b.3 on TS page 3/4 6-46, Section 4.6.5.1.2.b.3 on TS page 3/4 6-47, and Section 3.6.5.2.2(c) on TS page 3/4 6-50 have been revised to reflect the addition of new slide gate dampers which will be added as part of the SGTS modifications. A new surveillance requirement for the two new prefilters has been added on Item b.4 on TS page 3/4 6-53. This requirement will specify that the pressure drop across the prefilter should not exceed 0.25 inch water gage while operating at a flow rate of 2400 cfm \pm 10%. Also the pressure drop limit in TS 4.6.5.3.d across the combined HEPA and charcoal adsorber banks is revised to be less than 9.1 inches water gage (currently 4.8 inches) while operating the filter train at a flow rate of 8400 cfm \pm 10% (currently 3000 cfm \pm 10%). Further the footnote on TS page 3/4 6-53 and the system flow rates in Item b.3 are revised to reflect the new SGTS operational modes.

No operational changes have been made to the existing SGTS configuration with the exception of the increased flow rate from the new fans in order to meet the secondary containment drawdown time requirement. The increased SGTS flow rate will also reduce the resident time in the existing 8-inch deep charcoal adsorbers, however, the SGTS will be operated at 8,400 cfm air flow rate only during the drawdown period (2.25 minutes to reach negative 0.25 inches water gage), during which no credit for iodine removal is given. Only after drawdown is completed is the iodine removal credit given (99 percent for elemental, organic, and particulate iodine). During secondary containment isolation (zone 1, 2 and 3), the maximum inleakage rate will be 3264 cfm. At this flow rate, the residence time in the existing charcoal adsorbers will be approximately 1.1 seconds. This residence time meets the guidance in Regulatory Guide 1.52, Rev. 1. The staff therefore, finds the revised SGTS surveillance requirements to be acceptable.

2.7 SGTS Technical Specification Bases

Bases Section 3/4 6.5 on TS page B 3/4 6-5 has been revised by the licensee to reflect the SGTS system modifications. The staff finds the bases to be consistent with the revised system requirements and, therefore, acceptable.

2.8 CONCLUSION

On the basis of the above evaluation, the staff finds that the proposed changes to the Limerick Technical Specifications concerning the SGTS

modifications are in accordance with Limerick License Condition 2.C(14), and thus, the staff conclusions in the original Limerick Safety Evaluation Report (NUREG-0991) regarding post-accident fission product control systems are unchanged by the modifications. The staff, therefore, concludes that the proposed Technical Specification changes are acceptable.

2.9 IMPLEMENTATION

The above Technical Specification changes will be implemented prior to startup following the first refueling outage. Specifically, the revised Technical Specifications will become effective upon initial entry into either Operational Condition 3 or 2 during startup following the first refueling outage. This implementation is consistent with the requirements of License Condition 2.C(14) and is therefore acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes to requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and the security nor to the health and safety of the public.

Principal Contributors: Jay Lee

Dated: July 8, 1987

Local Public Document Room location: Pottstown Public Library, 500 High Street,
Pottstown, Pennsylvania 19464.

/s/
Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

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

JUL 08 1987

MEMORANDUM FOR: Sholly Coordinator

FROM: Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

SUBJECT: REQUEST FOR PUBLICATION IN MONTHLY FR NOTICE - NOTICE OF
ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

Philadelphia Electric Company, Docket No. 50-352, Limerick Generating Station,
Unit 1, Montgomery County, Pennsylvania

Date of application for amendment: January 13, 1987, as supplemented on
March 25 and April 9, 1987

Brief description of amendment: This amendment changed the Technical
Specifications (TSs) to permit the completion of the physical modifications,
testing and other actions to facilitate connection of the standby gas
treatment system (SGTS) to the refueling area. The changes to the TS will
enable establishment of the operability of the SGTS service to the refueling
area in response to License Condition 2.C(14).

Date of issuance: July 8, 1987

Effective date: The license amendment is effective upon initial entry into
either Operational Condition 3 or 2 during startup following the first
refueling outage.

Amendment No. 6

Facility Operating License No. NPF-39. This amendment revised the Technical
Specifications.

Date of initial notice in Federal Register: April 8, 1987 (52 FR 11367)

The Commission's related evaluation of the amendment is contained in a Safety
Evaluation dated July 8, 1987.

No significant hazards consideration comments received: No

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Pottstown, Pennsylvania 19464.

A handwritten signature in cursive script, reading "Walter R. Butler".

Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance:

PDI-2/A
WButler
6/9/87

PDI-2/PM
RMartin:lb
6/18/87

OGC *Up noted revision
to SE and admnt.*
MYoung
6/12/87
PDI-2/D
WButler
1/87