

PRIMARY COOLANT SYSTEM PARAMETERS

	<u>Initial</u>	<u>Present</u>	
Design Thermal Power	2,650 MWt	-	
Licensed Core Power	2,200 MWt	2,565.4 MWt	
Design Pump Power	16 MWt	-	
Operating Pump Power (Nominal)	12 MWt	15 MWt	
Operating Thermal Power (NSSS)	2,212 MWt	2,545 MWt	
Heat Input	7.55×10^9 Btu/h	8.63×10^9 Btu/h	
Design Pressure	2,500 psia	2,500 psia	
Design Temperature (Except Pressurizer)	650°F	650°F	
Coolant Flow Rate(a)	125×10^6 lb/h	143.1×10^6 lb/h(b)	
Cold Leg Temperature	545°F	537.0°F	
Average Temperature	568.05°F	560.0°F	
Hot Leg Temperature	591.1°F	583.0°F	
Normal Operating Pressure	2,100 psia	2,060 psia(c)	
Primary System Initial Volume	10,900 ft ³	-	

(a) Changes as S/G tubes are plugged or sleeved

(b) Corrected to zero power 532°F operation

(c) Nominal pressurizer pressure

PRIMARY COOLANT SYSTEM CODE REQUIREMENTS

<u>Component</u>	<u>Code</u>
Reactor Vessel	ASME III, Class A ^(a)
Steam Generator	
Primary Side	ASME III, Class A ^(b)
Secondary Side	ASME III, Class A ^(b)
Pressurizer	ASME III, Class A ^(c)
Coolant Pumps	ASME III, Class A ^{(a)(d)}
Quench Tank	ASME III, Class C ^(a)
Pressurizer Safety Valves	ASME III ^(a)
Piping	ASA B31.1, 1955

(a) 1965 edition, includes addenda through Winter 1965

(b) 1977 edition

(c) 1965 edition, includes addenda through Winter 1966

(d) Original Type SU mechanical seals manufactured to ASME III, Class A, 1965 Edition, includes addenda through Winter 1965. Replacement Type N-9000 seals manufactured to ASME III, Class 1, 1989, no addenda.

REACTOR VESSEL PARAMETERS

Design Pressure	2,500 psia
Design Temperature	650°F

	<u>Quantity</u>	<u>Size</u>
<u>Nozzles</u>		
Inlet	4	30" ID
Outlet	2	42" ID
Control Rod Drive	45	2.76" ID
Instrumentation	8	4" Nominal
Head Vent	1	3/4" ID

Dimensions

Inside Diameter	172"
Overall Height, Including Control Rod Drive Nozzles	41'-1-13/16"
Height, Vessel Without Head	33'-2-1/8"
Outside Diameter	189"
Wall Thickness	8-1/2"
Upper Head Thickness	7-3/8"
Lower Head Thickness	4-3/8"
Cladding Thickness	1/4" Nominal 3/16" Minimal

Materials

Vessel and Heads	SA-302 Grade B
Cladding	308/309 SS
Control Rod Drive Nozzles	Ni-Cr-Fe Alloy 600
34, Instrumentation Nozzles	Nozzles 17, 25, 29, 30, 33, 34, and 36 Alloy 690 Ni-Cr-Fe Alloy 600

Dry Weights

Head	156,700 lb
Vessel	657,100 lb
Studs, Nuts, Washers	38,400 lb
Total	852,200 lb

STEAM GENERATOR PARAMETERS

Number	2
Type	Vertical U-Tube
Number of Active Tubes	
Original Design	8219
SG E-50A	7682
SG E-50B	7773
Tube Outside Diameter	0.750"

	<u>Quantity</u>	<u>Size</u>
Nozzles and Manways		
Primary Inlet Nozzle	1	42" ID
Primary Outlet Nozzle	2	30" ID
Steam Nozzle	1	34" ID
Feedwater Nozzle	1	18" Nominal
Instrument Taps	9	1" Nominal
Primary Manways	2	18" ID
Secondary Manways	2	18" ID
Secondary Handhole	4	6" ID
Secondary Drain and Blowdown	1	6" Nominal
Recirculation Inlet	1	6" Nominal
Auxiliary Feedwater	1	4" Nominal
Inspection Ports	2	2" Nominal

STEAM GENERATOR PARAMETERS

Primary Side Parameters	<u>Design</u>	<u>Nominal Operating</u>
Pressure, Maximum	2,500 psia ^(a)	2,100 psia ^(b)
Temperature	650°F ^(a)	560.0°F ^(d)
Thermal Power	2,650 MWt ^(a)	2565.4 MWt ^(d)
Thermal Power (NSSS)	2,650 MWt ^(a)	2580.4 MWt
Cold Leg Temperature	547.8°F ^(a)	537.0°F ^(d)
Hot Leg Temperature	598.5°F ^(a)	583.0°F ^(d)
Coolant Flow Rate(Each)	70.00x10 ⁶ lb _m /h ^(a)	62.5x10 ⁶ lb _m /h ^(b)
Normal Operating Pressure	2,250 psia ^(a)	2,060 psia
Secondary Side Parameters	<u>Design</u>	<u>Nominal Operating</u>
Pressure	1,000 psia ^(a)	765.8 psia ^(d)
Temperature	550°F ^(a)	-
Steam Moisture Content, Maximum	0.25% ^(a)	0.25%
Blowdown Flow(Normal)	10,000 lbm/h	variable ^(c)
Drying Capacity at 770 psia, Maximum (Each)	5.86x10 ⁶ lb _m /h	
Steam Flow (Each)	5.786x10 ⁶ lb _m /h ^(a)	5.649x10 ⁶ lb _m /h ^(d)
Feedwater Temperature	438°F ^(a)	440.7°F ^(d)
Dimensions		
Overall Height, Including Support Skirt	61'-10"	
Upper Shell Outside Diameter	19'-11"	
Lower Shell Outside Diameter	13'-8"	
Dry Weight	921,946 lb	
Flooded Weight	1,500,391 lb	
Operating Weight	1,131,583 lb	

- (a) Values can be found in Reference 41. The actual operating values may vary slightly.
- (b) Values can be found in Reference 42. The actual operating values may vary slightly.
- (c) Blowdown flow normal maximum is 30,000 lbm/hr. Higher flows are allowed during low power operation following multi-day shutdowns per EAR-2001-0233.
- (d) Values can be found in Reference 53. The actual operating values may vary slightly.

SECONDARY SAFETY VALVE PARAMETERS

Design Pressure	1,000 psia
Design Temperature	550°F
Fluid - Saturated Steam	
Capacity, Minimum per Valve	486,600 lb/h*
Total Capacity	11,678,400 lb/h
Set Pressure	
Eight Valves, Four per Unit	1,040 psia
Eight Valves, Four per Unit	1,020 psia
Eight Valves, Four per Unit	1,000 psia
Body Material	ASTM A 216, Gr WCB
Trim Material	Stainless Steel
Set Point Tolerance (As-Found Testing)	±3% of Set Pressure
Set Point Tolerance (As-Left Testing)	±1% of Set Pressure

*Small break LOCA analysis uses the nominal capacity of 511,563 lb/hr.

PRIMARY COOLANT PUMP PARAMETERS

Number	4
Type	Vertical, Limited Leakage, Centrifugal
Shaft Seals	Mechanical (4)
Type SU Seals	
Stationary Face	Carbon CNFJ or Graphitar 114
Rotating Face Body	ASTM A 351, Gr CF8
Rotating Face Ring	Titanium Carbide KZ 162 B
Type N-9000 Seals	
Stationary Face	Morganite CMFJ or Graphite 114
Rotating Face Body	ASTM A 351, Gr CF8 or CF8M
Rotating Face Ring	KENNAMETAL K E162B
Design Pressure	2,500 psia
Design Temperature	650°F
Normal Operating Pressure	2,060 psia ^(a)
Design Flow	83,000 gpm
Design Head	260 ft
Maximum Flow (One Pump Operation)	110,000 gpm
Design/Operating Power	4/3 MWt
Dry Weight	156,800 lb
Flooded Weight	163,800 lb
Primary Coolant Volume	112 ft ³
Impeller	ASTM A 351, Gr CF8 or Gr CF3 (P-50C only)
Shaft	ASTM A 182, Type 304
Casing Material	ASTM A 351, Gr CF8M
Casing Wear Ring	ASTM A 362, Gr CF8

(a) This represents the Primary Coolant Pump Discharge Pressure. The Pressurizer pressure is a nominal 2,010 psia.

PRIMARY COOLANT PUMP PARAMETERS

	<u>Quantity</u>	<u>Size</u>
Piping Connections		
Cooling Water	2	1-1/2" Nominal
Controlled Bleedoff	1	3/4" Nominal
Seal Leakage	1	3/4" Nominal
Primary Pressure Taps	5	3/4" Nominal
Hydrostatic Bearing		
Bearing		ASTM A 362, Gr CF8 or A 182, Gr F304 Col #6 Overlay or ASTM A-351 Gr CF3 (P-50C and P-50D)
Journal		ASTM A 362, Gr CF8 Col #5 Overlay or ASTM A-351 Gr CF3 (P-50C and P-50D)
Motor		
Voltage		4,160 Volts
Frequency		60 Hz
Phases		3
Horsepower/Speed		5,500 hp/888 r/min

	<u>Quantity</u>	
Instrumentation		
Seal Temperature Detectors	2	
Pump Casing Pressure Taps	2	
Seal Pressure Detectors	3	
Controlled Bleedoff Flow		
Rate Detectors	1	
Motor Oil Level Detectors	2	
Motor Bearing Temperature		
Detectors	4	
Motor Stator Temperature		
Detectors	6	
Vibration Detectors	2	Note: P-50C has four Vibration Detectors and one Key Phasor
Oil Lift Pressure Detector	1	
Total Seal Assembly Leakage (Normal and Standby Operation)		
Three Seals Operating		1.2 gpm
Two Seals Operating		1.47 gpm
One Seal Operating		2.08 gpm

PIPING LIST

<u>Line No</u>	<u>Description</u>	<u>Material</u>	<u>Schedule</u>	<u>Nominal Size, Inches</u>	<u>Design Pressure, Psia</u>	<u>Design Temp, °F</u>
1	Primary Line, Reactor Vessel to Steam Generator	Carbon Steel With Stainless Steel Clad ID	Special 4" Wall (3-3/4" Carbon W/1/4" SS)	42 ID	2,500	650
2	Primary Line, Steam Generator to Reactor Vessel	Carbon Steel With Stainless Steel Clad ID	Special 3" Wall (2-3/4" Carbon W/1/4" SS)	30 ID	2,500	650
3	Surge Line, Hot Leg to Pressurizer	Type 316 Stainless Steel	140	12	2,500	700
4	Pressurizer Spray	Type 316 Stainless Steel	160	3	2,500	650
5	Pressurizer Power Relief Valve Inlet	Type 316 Stainless Steel	120	4	2,500	700
6	Primary System Drain Lines	Type 316 Stainless Steel	160	2	2,500	650
7	Pressurizer Power Relief Valve Discharge to Quench Tank	Type 304 Stainless Steel	40	4	500	500
8	Pressurizer Safety Valve Discharge to Quench Tank	Type 304 Stainless Steel	40	6	500	500

PRESSURIZER PARAMETERS

Design Pressure	2,500 psia
Design Temperature	700°F
Normal Operating Pressure	2,060 psia
Normal Operating Temperature	636.5°F
Internal Free Volume	1507 ft ³
Normal Water Volume, Full Power	800 ft ³
Normal Steam Volume, Full Power	700 ft ³
Installed Heater Capacity	1487.5 kW
Spray Flow, Original Calculated Maximum*	375 gpm
Spray Flow, Continuous	1.5 gpm

	<u>Quantity</u>	<u>Size</u>
Nozzles		
Surge Line	1	12" Nominal
Safety Valve	3	3" ID
Relief Valve	1	3" ID
Spray	1	4" Nominal
Heaters	120	0.902 ID
Instrument	10	1" Nominal
Manway	1	16" ID

Materials	
Vessel	ASTM A 533, B, Class 1
Cladding	AISI-304 SS and Ni-Cr-Fe Alloy

Dimensions	
Overall Length	336-11/32"
Outside Diameter	121-1/2"
Inside Diameter	110-1/16"
Cladding Thickness	7/32"

Dry Weight	201,967 lbs
Flooded Weight	295,716 lbs (60°F Water)

* Reference 44 and 48.

PRESSURIZER NORMAL LEVEL CONTROL PROGRAM

<u>Controller Output</u>	<u>Action</u>
88.5%	Open ↑ CV-2005
69.3%	Close ↓ CV-2005 Open ↑ CV-2004
56.5%	Close ↓ CV-2004
50.0%	P-55A at required capacity CV-2003 Open
43.5%	Trip ↑ P-55B
37.3%	Trip ↑ P-55C
30.8%	Start ↓ P-55B
24.3%	Start ↓ P-55C

PRESSURIZER BACKUP LEVEL CONTROL PROGRAM

<u>Deviation of Process and Setpoint</u>	<u>Action</u>
5.8%	Hi-Lo Level Alarm Off (EK-0761)
4.6%	Backup Heaters On Open CV-2004 and CV-2005 Trip P-55B and P-55C
3.8%	Hi-Lo Level Alarm On (EK-0761)
2.3%	Backup Heaters Off Permit P-55B and P-55C Start Permit CV-2004 & CV-2005 Closure
-3.8%	Hi-Lo Level Alarm Off (EK-0761) Permit P-55B and P-55C Trip Permit CV-2004 and CV-2005 Open
-5.8%	Hi-Lo Level Alarm On (EK-0761) Start P-55B and P-55C Close CV-2004 and CV-2005

PRESSURIZER SAFETY VALVE PARAMETERS

Design Pressure	2,500 psia
Design Temperature	700°F
Fluid	Sat Stm - 0.1 Wt -Percent Boric Acid
Capacity, Each	230,000 lb/h
Number and Set Pressure	3
RV-1039	2,580 psia
RV-1040	2,540 psia
RV-1041	2,500 psia
Type	Totally Enclosed, Bellows
Accumulation	3%
Back Pressure Compensation	Yes
Gagging Device	Yes
Setpoint Tolerance (As-Found Testing)	±3% of Set Pressure
Setpoint Tolerance (As-Left Testing)	±1% of Set Pressure

QUENCH TANK PARAMETERS

Design Pressure	100 psig
Design Temperature	340°F
Normal Operating Pressure	3 psig
Internal Volume	1,147 ft ³
Normal Water Volume	800 ft ³
Normal Gas Volume	347 ft ³
Blanket Gas	Nitrogen

	<u>Quantity</u>	<u>Size</u>
Nozzles		
Pressurizer Relief Relief Valve	1	10" Nominal
Demineralized Water Rupture Disc	1	3"
Drain	1	2"
Instrument	1	18"
Instrument	1	2"
Instrument	2	1"
Instrument		1/2"

Materials

Vessel	SA-515, Gr 70
Coating	Interior Epoxy (Phenolic 372)

Dimensions

Overall Length	18'
Outside Diameter	9'-6"
Dry Weight	21,000 lb
Flooded Weight	92,500 lb

ACTUATOR-OPERATED THROTTLING VALVE PARAMETERS

Service - Pressurizer Spray Valves

Design Temperature	650°F
Design Pressure	2,500 psia
Flow, Minimum	40 gpm
Maximum	280 gpm*
Stem Leak Off	Yes

* In accordance with Reference 44, under the condition of "One Flow Branch Operating."

ACTUATOR-OPERATED BLOCK VALVE PARAMETERS

Service - Pressurizer Power-Operated Relief Isolation

Design Temperature 700°F

Design Pressure 2,500 psia

Actuator Electric Motor

Failure Position As Is

ASA Class 1,500 lb

PRESSURIZER POWER-OPERATED RELIEF VALVE PARAMETERS

Design Pressure	2,500 psia	
Design Temperature	700°F	
Fluid	Sat Stm - 0.1 Wt - Percent Boric Acid	
Number	2	
Flowrate (each, saturated steam)	514,800 lbm/hr@2450 psia ^(a)	
Flowrate (each, saturated water)	893,520 lbm/hr@1127 psia ^(a)	
Type	Solenoid Operated	
Set Pressure (LTOP)	See Figure 4-15	
Alarm Pressure (LTOP)	See Figure 4-15	

(a) See Reference 40

MATERIALS EXPOSED TO COOLANT

Reactor	
Vessel Cladding	Weld Deposited Type 308/309 SS
Vessel Internals	304 SS and Ni-Cr-Fe Alloy
Fuel Cladding	Zircaloy-4 or M5 [®]
Control Rod Drives	
Housings	316 SS / 304 SS / 347 SS / Alloy 600
Gears	17-4 pH (H1100)
Bearings	Carbon-Graphite
Nozzles	Ni-Cr-Fe Alloy 600
	Nozzles 17, 25, 29, 30, 33, 34, and 36 Alloy 690
Piping	
Cladding	Roll-Bonded Type 304L SS
Nozzles	
Large (>3")	Weld Deposited SS with Ni-Fe-Cr Alloy 600 Safe Ends
Small (≤3")	Ni-Fe-Cr Alloy 600
Surge Line	Type 316 SS
Steam Generator	
Bottom Head Cladding	Weld Deposited Type 304 SS
Tube Sheet Cladding	Weld Deposited Ni-Cr-Fe Alloy
Tubes	Ni-Cr-Fe Alloy
Pumps	
Casing	ASTM A-351, Grade CF8M Annealed
Impeller	ASTM A-351, Grade CF3 or CF8 Annealed
Pump Cover	ASTM A-351, Grade CF8M Annealed
Pump Cover Gasket	Spiral Wound Type 304SS with Asbestos Filler Inner and Outer Gaskets Or Spiral Wound Inconel with Grafoil Filler Inner Gasket and Spiral Wound Type 304SS with Grafoil Filler Outer Gasket
Stud – Cover to Case	ASTM A-193, Grade B7 (Flash Chrome Plate Threads and Phosphate Coated Body)

MATERIALS EXPOSED TO COOLANT

Hex Nut – Cover to Case	ASTM A-194 Class 2H (Phosphate Coated)
Internals	ASTM A-182, Type 304, Cond. A; A-182, Gr. XM-19; A-193, Grade B8, Cond. A; A-276, Type 304, Cond. A & Type 316; A-351, Grade CF8 Annealed; A-362, Grade CF8 Annealed; A-461, Grade 660, Age Hardened; A-479, Type 304; A-479, Type 316; ASTM A-479, Gr. XM-19; A-351 Grade CF3 Annealed; Type 302 SS
Pressurizer	
Cladding	
Lower Head	Ni-Cr-Fe Alloy
Shell and Top Head	Weld Deposited Type 304 SS
Nozzles	
All but temperature elements, PORV and Safety Valve RV-1041	Weld Deposited SS with Ni-Fe-Cr Alloy 600 safe ends
Temperature elements PORV and Safety Valve RV-1041	Ni-Fe-Cr Alloy 600 Type 316 SS with Ni-Fe-Cr Alloy 690 attachment weld

PRIMARY COOLANT CHEMISTRY

Suspended Solids	< 0.35 ppm
pH (Normal Operation and Cold Shutdown)	4.5 to 10.2
Hydrogen (Normal Operation)	25-50 cm ³ (STP) per kg
Hydrogen (24 hours prior to Shutdown)	15-50 cm ³ (STP) per kg
Lithium (Normal Operation)	0.1-5.25 ppm
Chloride (Normal Operation)	≤ 0.05 ppm
Fluoride (Normal Operation)	< 0.05 ppm
Dissolved Oxygen (Normal Operation)	< 0.005 ppm
Boron	<3000ppm
Zinc (depleted in Zn-64, Normal Operation)	≤ 20 ppb
Silica	<3.0 ppm

SUMMARY OF SPECIMENS PROVIDED FOR EACH EXPOSURE LOCATION

Capsule Designation	Capsule Location	Type and Quantity of Samples								Total		
		Base Metal			Heat Affected Zone		Weld		Standard	Impact		
		Impact (L)	Impact (T)	Tensile	Impact	Tensile	Impact	Tensile	Impact	(L)	(T)	Tensile
T-330	Thermal(a)	12	12	3	12	3	12	3	-	36	12	9
T-150	Thermal	12	12	3	12	3	12	3	-	36	12	9
A-60	Accelerated(b)(d)	12	-	3	12	3	12	3	12	48	-	9
A-240	Accelerated	12	12	3	12	3	12	3	-	36	12	9
W-290	Vessel(c)	12	12	3	12	3	12	3	-	36	12	9
W-110	Vessel	12	-	3	12	3	12	3	12	48	-	9
W-100	Vessel	12	12	3	12	3	12	3	-	36	12	9
W-280	Vessel	12	12	3	12	3	12	3	-	36	12	9
W-260	Vessel	12	-	3	12	3	12	3	12	48	-	9
W-80	Vessel	12	-	3	12	3	12	3	12	48	-	9
		120	72	30	120	30	120	30	48	408	72	90

(L) = Longitudinal
(T) = Transverse

- (a) Thermal Capsules – Located Above the Core
- (b) Accelerated Capsules – Located on Outside of Core Support Barrel
- (c) Vessel Capsules – Located on Inside Wall of Reactor Vessel
- (d) Capsule A-60 has been deleted from the Reactor Vessel Surveillance Capsule Program (see Reference 19)

SUMMARY OF SPECIMENS PROVIDED FOR EACH SUPPLEMENTAL SURVEILLANCE CAPSULE

	SA-60-01			SA-240-1		
MATERIAL	Modified Impact (T)	Standard Impact (L)	Tensile	Modified Impact (T)	Standard Impact (L)	Tensile
W5124	39			42		
34B009	39			36		
27204	36	12	3	36	12	3
HSST 02		12			12	

PRIMARY COOLANT SYSTEM
PRESERVICE QUALITY ASSURANCE PROGRAM

1. Reactor Vessel

Forgings

Flanges

UT, MT

Studs

UT, MT

Cladding

UT(a), PT(a)

Nozzles

UT, MT

Plates

UT(b), MT

Cladding

UT(a), PT(a)

Welds

Main Seams

RT, MT

CRD Head Nozzle Connection

PT(a)

Instrumentation Nozzles

PT(a)

Main Nozzles

RT, MT

Cladding

UT(a), PT

Nozzle Safe Ends

RT, MT

Vessel Support Buildup

UT(a), MT

All Welds - After Hydrostatic Test

MT

2. Steam Generator

Tube Sheet

Forging

UT, MT

Cladding

UT(a), PT(a)

Primary Head

Plate

UT(b), MT

Cladding

UT(a), PT(a)

Secondary Shell and Head

Plates

UT(b), MT

Tubes

UT, ET

Nozzles (Forgings)

UT, MT

Studs

UT, MT

PRIMARY COOLANT SYSTEM
PRESERVICE QUALITY ASSURANCE PROGRAM

Welds	
Shell, Longitudinal	RT, MT
Shell, Circumferential	RT, MT, UT
Cladding	UT(a), PT
Nozzles to Shell	RT, MT, UT, PT
Tube-to-Tube Sheet	PT, GT(a)
Instrument Connections	MT, RT
Temporary Attachments After Removal	MT
All Welds - After Hydrostatic Test	MT
Nozzle Safe Ends	RT, MT
3. <u>Pressurizer</u>	
Heads	
Plates	UT(b), MT
Cladding	UT(a), PT(a)
Shell	
Plates	UT(b), MT
Cladding	UT(a), PT(a)
Heaters	
Tubing	UT, PT
Centering of Elements	RT(a)
Nozzle	UT, PT, MT
Studs	UT, MT
Welds	
Shell, Longitudinal	RT, MT
Shell, Circumferential	RT, MT
Cladding	UT(a), PT
Nozzles	RT, MT
Nozzle Safe Ends	RT, MT, PT
Instrument Connections	PT
Support Skirt	RT, MT
Temporary Attachments After Removal	MT
All Welds After Hydrostatic Test	MT

PRIMARY COOLANT SYSTEM
PRESERVICE QUALITY ASSURANCE PROGRAM

4. Pumps

Castings	RT, PT
Forgings	UT, PT
Welds	
Circumferential	RT, PT
Instrument Connections	PT
All Welds After Hydrostatic Test	PT

5. Piping

Fittings (Mill Clad Plate)	UT, PT(a)
Pipe (Mill Clad Plate)	UT, PT(a)
Welds	
Longitudinal	RT, MT
Circumferential	RT, MT
Nozzle to Run Pipe	RT, MT (or PT)
Instrument Connections	PT
Cladding	PT

RT - Radiographic MT- Magnetic Particle

UT - Ultrasonic ET - Eddy Current

PT - Dye Penetrant GT - Gas Leak Test

- (a) Above code (ASME B&PV Code, Section III, 1965, W65a).
- (b) A 100% volumetric ultrasonic test of plate for both two-directional shear wave and longitudinal wave is performed. The ASME Code requires that Section III, Class A plate receive only a longitudinal wave ultrasonic test on a 9-inch by 9-inch grid. The 100% volumetric ultrasonic test assures that plate used in the primary system is of the highest quality.

PRIMARY COOLANT SYSTEM INSPECTION CE REQUIREMENTS

	<u>CE Requirement</u>	<u>ASME III Code Requirement</u>
<u>Reactor Vessel</u>		
Ultrasonic Testing (UT)	1. 100% Volumetric Longitudinal and Shear Wave UT of Plate Material	1. Longitudinal UT on a 9" x 9" Grid Pattern
	2. UT of Clad Bond to a 3" Diameter Unbonded Area Repair Standard	2. None
Dye Penetrant Testing (PT)	1. PT Test Root and Final Layer of Welds for Partial Penetration Welds to Control Rod Drive Mechanism Head Adapters and Instrument Tube Connections	1. PT Test of Finished Weld
	2. PT Test Finished Surface of Cladding	2. None
<u>Steam Generator</u>		
Ultrasonic Testing (UT)	1. 100% Volumetric Longitudinal and Shear Wave UT of Plate Material	1. Longitudinal UT on a 9" x 9" Grid Pattern
Dye Penetrant Testing (PT)	1. PT Test Finished Surface of Primary Head Cladding	1. None
<u>Pressurizer</u>		
Ultrasonic Testing (UT)	1. 100% Volumetric Longitudinal and Shear Wave UT of Plate Material	1. Longitudinal UT on a 9" x 9" Grid Pattern
Dye Penetrant Testing (PT)	1. PT Test on Finished Surface of Cladding	1. None
Radiography (RT)	1. Radiograph Heaters To Check Heater Wire Positioning	1. None

REACTOR VESSEL SURVEILLANCE COUPON REMOVAL SCHEDULE

Withdrawal Sequence	Capsule	Removal Time (EFPY)	Capsule Fluence X 10 ¹⁹ (n/cm ²)	Refuel Number
First	A-240	2.26	4.01	2
Second	W-290	5.21	0.926	5
	T-330	5.21		5
Third	W-110	9.95	1.66	10
Fourth	W-100	16.93	2.1	16
Fifth	W-80	~ 35.2	~ 3.65	~ 29
	W-280	Reserved for future use		
	W-260	Reserved for future use		
	T-150	Reserved for future use		

Revision of the removal schedule requires NRC approval prior to implementation per 10CFR50, Appendix H. Schedule approved by NRC December 2, 2019 (ADAMS Accession No. ML19318E394)