

Stephenson,
Carl
J(Z05778)

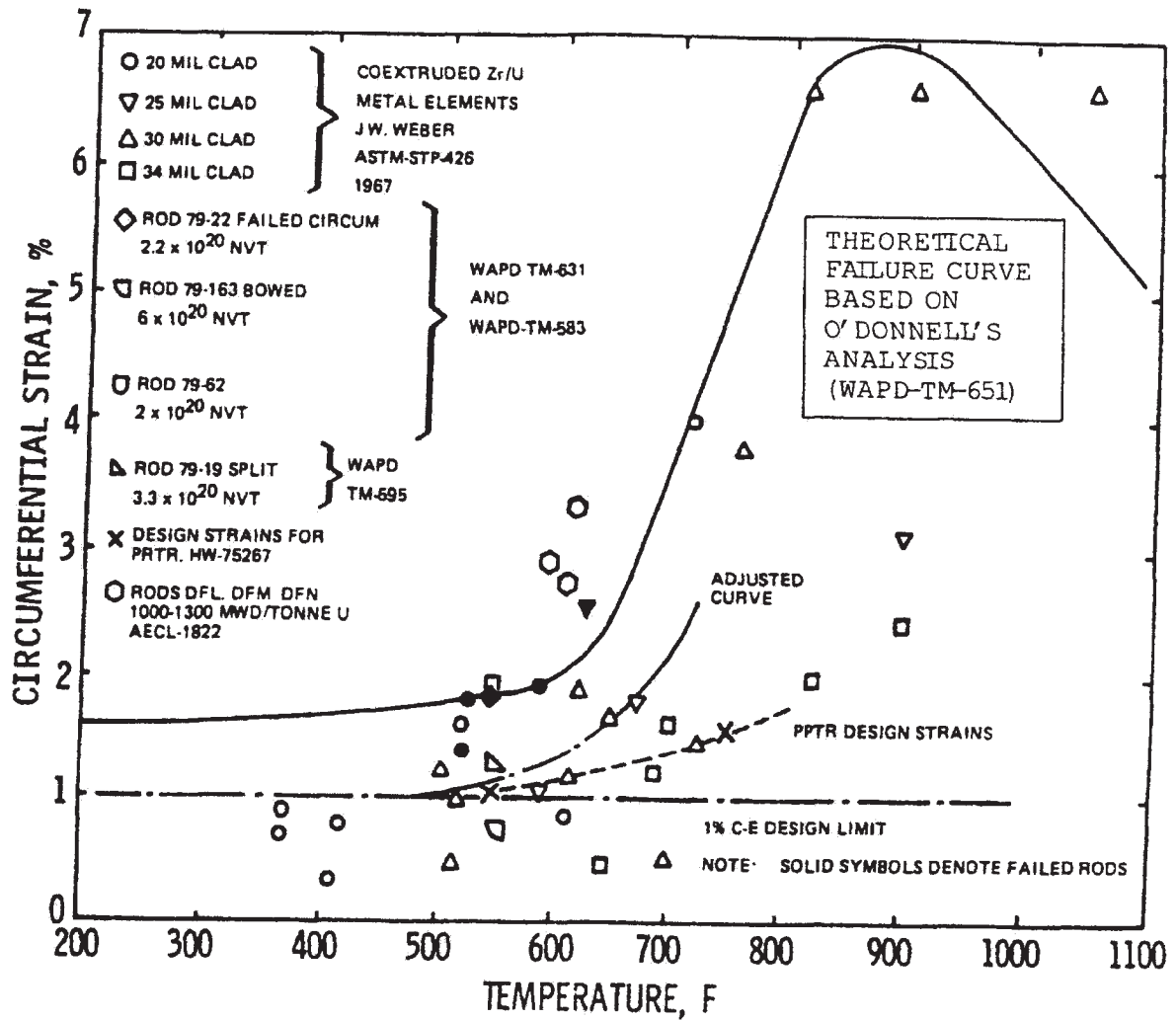
Digitally signed by Stephenson,
Carl J(Z05778)
DN: cn=Stephenson, Carl
J(Z05778)
Reason: I attest to the accuracy
and integrity of this document
Date: 2019.06.28 13:56:50 -07'00'

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR VERTICAL ARRANGEMENT
FIGURE 4.1-1

JUNE 2001

REVISION 11



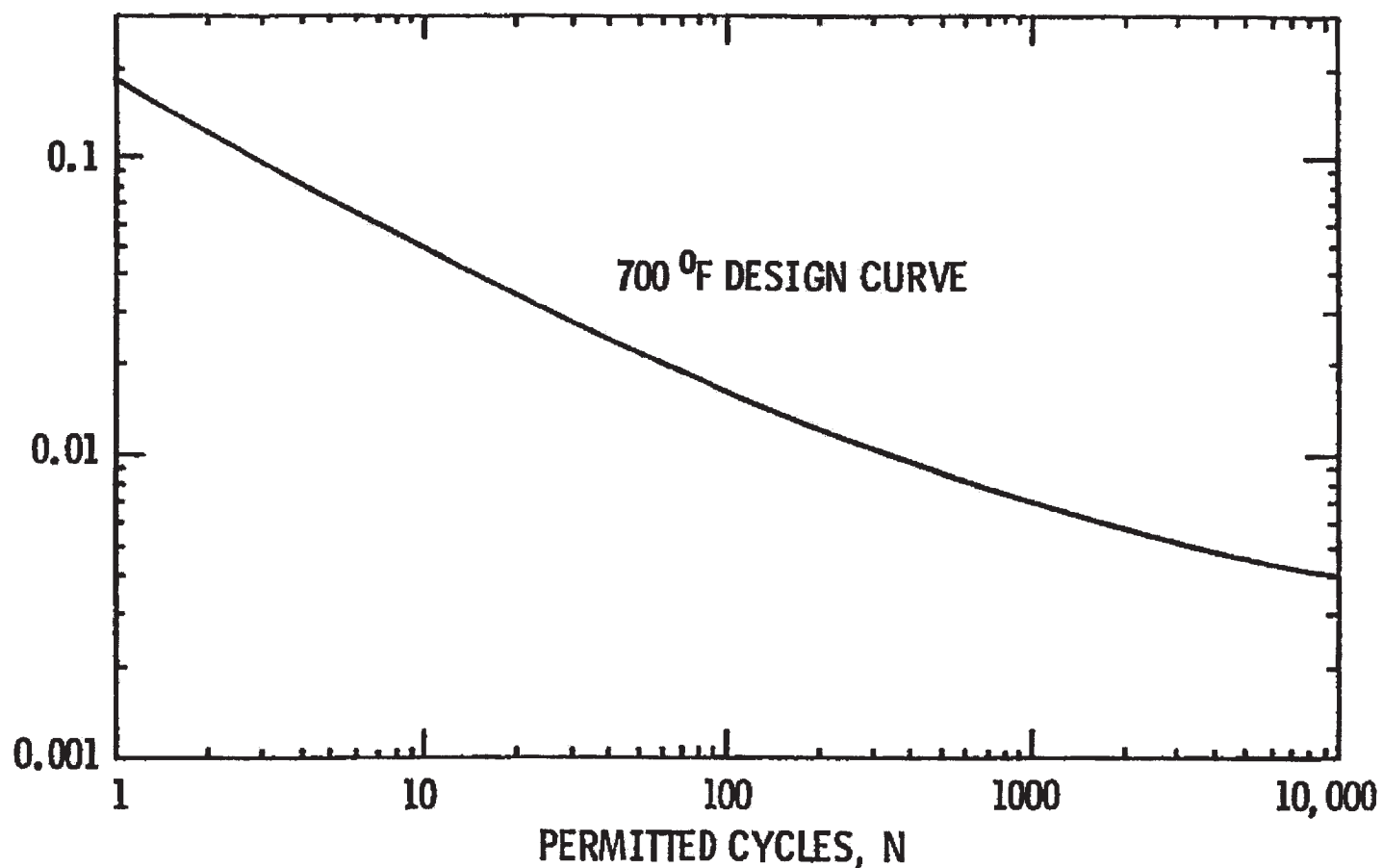
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CIRCUMFERENTIAL STRAIN VS TEMPERATURE
FIGURE 4.2-1

JUNE 2001

REVISION 11

$\Delta \epsilon$ EFFECTIVE
STRAIN RANGE

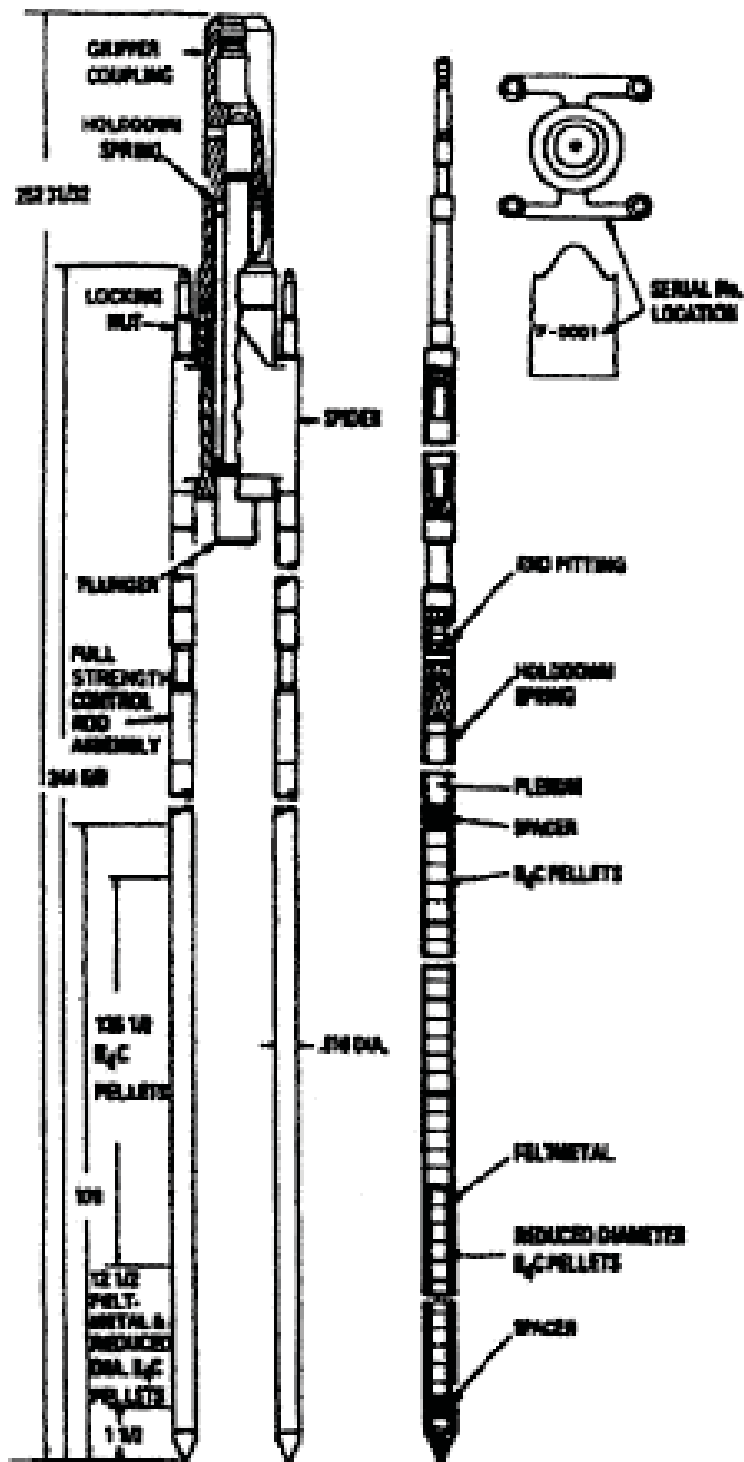


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

DESIGN CURVE FOR CYCLIC STRAIN USAGE
OF ZIRCALOY-4 AND ZERLO AT 700F
FIGURE 4.2-2

JUNE 2003

REVISION 12



NOTES:

1. ALL DIMENSIONS TYPICAL AND REPRESENTATIVE OF DESIGN.
2. PLANT ID NUMBERS WERE STAMPED ON THE ORIGINAL CEAS, BUT ARE NOT REQUIRED ON REPLACEMENT CEAS.

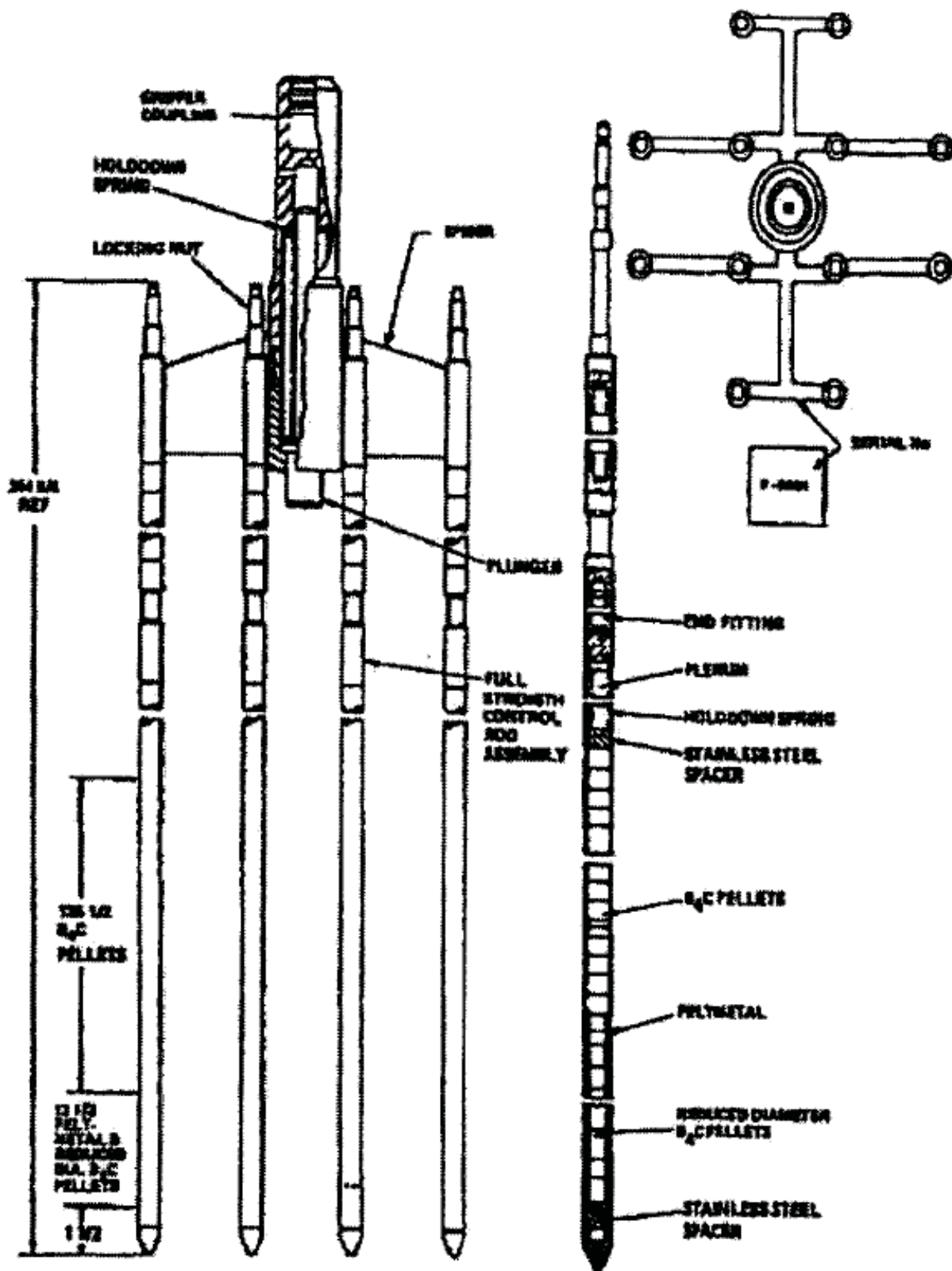
4-FINGER FULL STRENGTH CEA (FSCEA)

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

FULL-STRENGTH CONTROL ELEMENT ASSEMBLY
(4-ELEMENT)
FIGURE 4.2-3

JUNE 2011

REVISION 16



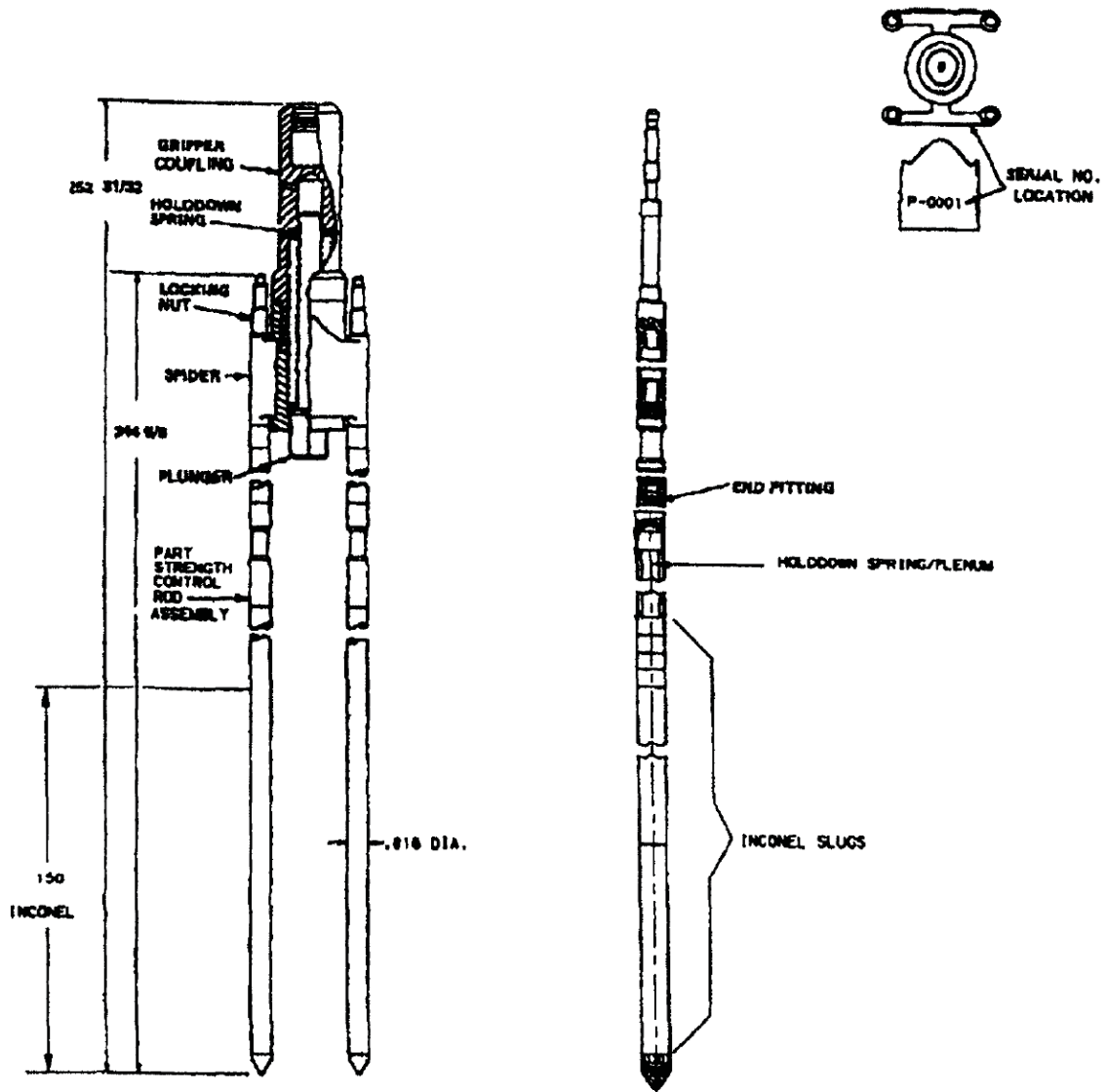
12-FINGER FULL STRENGTH CEA (FSCEA)

NOTES:

1. ALL DIMENSIONS TYPICAL AND REPRESENTATIVE OF DESIGN.
2. PLANT ID NUMBERS WERE STAMPED ON THE ORIGINAL CEAS, BUT ARE NOT REQUIRED ON REPLACEMENT CEAS.

PALO VERDE NUCLEAR GENERATING STATION
FULL-STRENGTH CONTROL ELEMENT ASSEMBLY
(12-ELEMENT)

FIGURE 4.2-4



PART STRENGTH CEA (PSCEA)

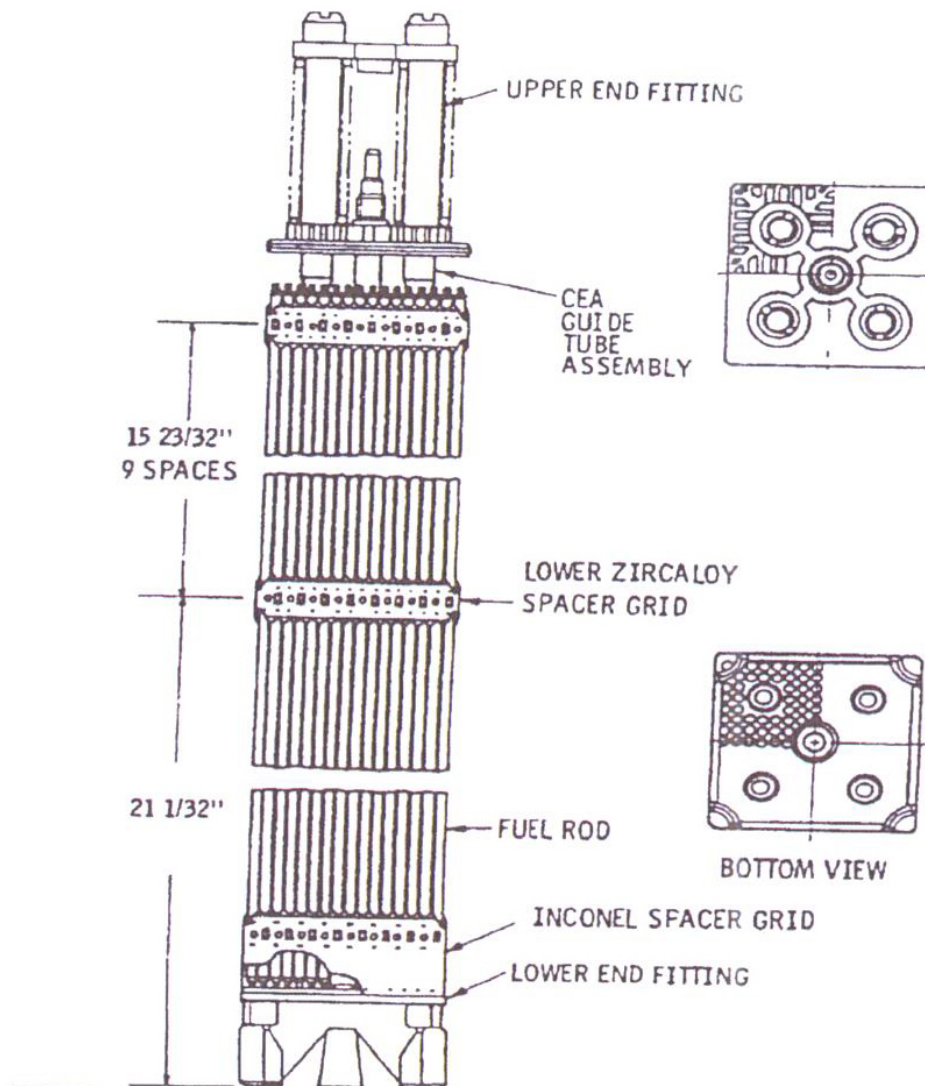
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PART-STRENGTH CONTROL ELEMENT ASSEMBLY

FIGURE 4.2-5

JUNE 2011

REVISION 16



NOTE –

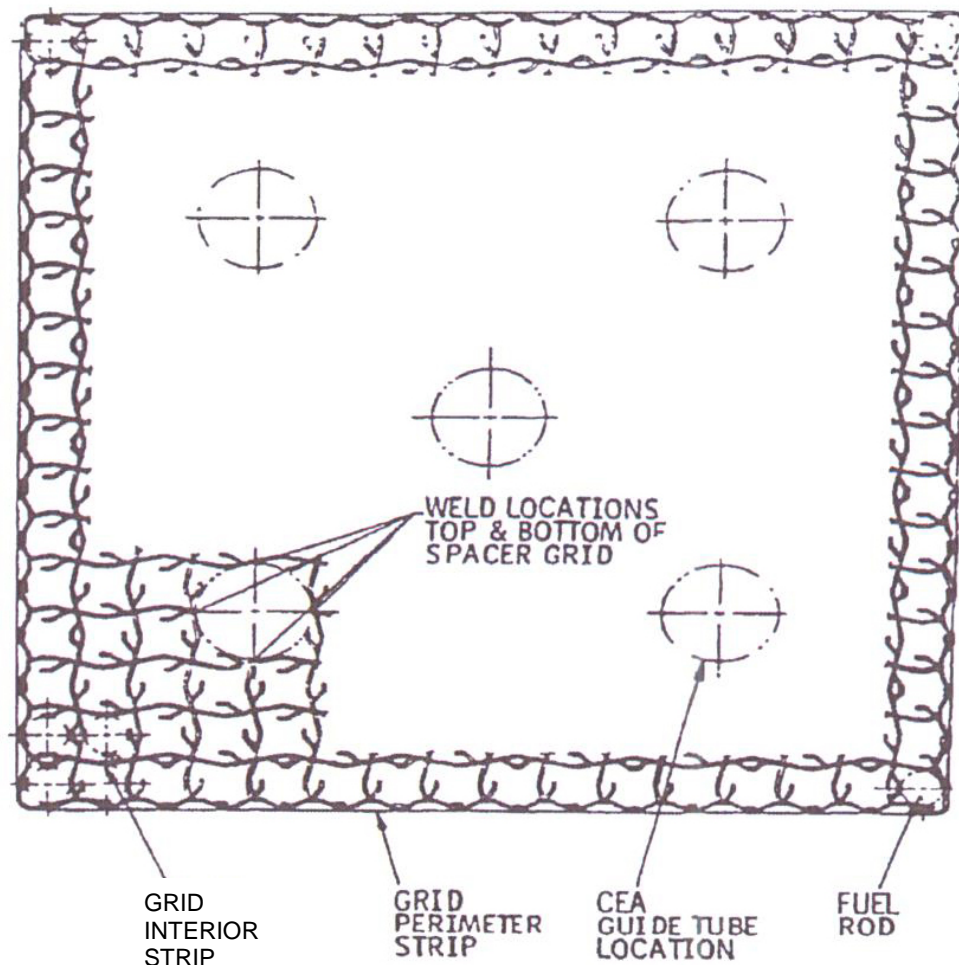
1. All dimensions typical, not for design purposes. NGF has two additional intermediate flow mixer grids.
2. Proprietary GUARDIAN grids may replace the lower Inconel grids on reload assemblies.
3. Inconel grid may replace Zircaloy top grid on reload assemblies.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

FUEL ASSEMBLY
FIGURE 4.2-6

JUNE 2019

REVISION 20



NOTE –

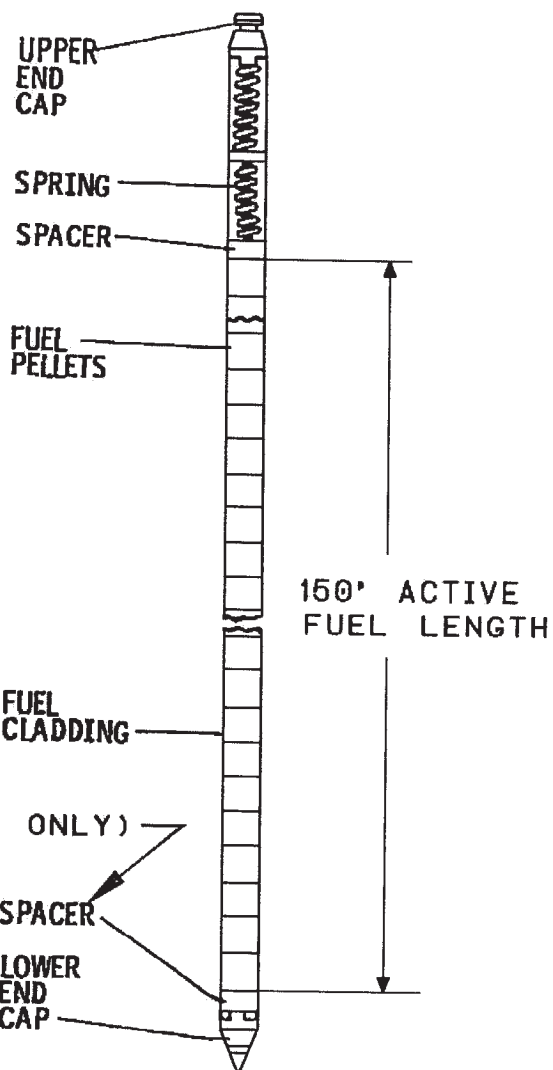
1. Proprietary GUARDIAN grids may replace the lower Inconel grids on reload assemblies.
2. Inconel grid may replace Zircaloy top grid on reload assemblies.
3. Pre-NGF mid grid with “wavy” interior strips shown. NGF mid grids have straight interior strips.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

FUEL SPACER GRID
FIGURE 4.2-7

JUNE 2019

REVISION 20



NOTES:

Reload assemblies may incorporate one or more design improvements, including:

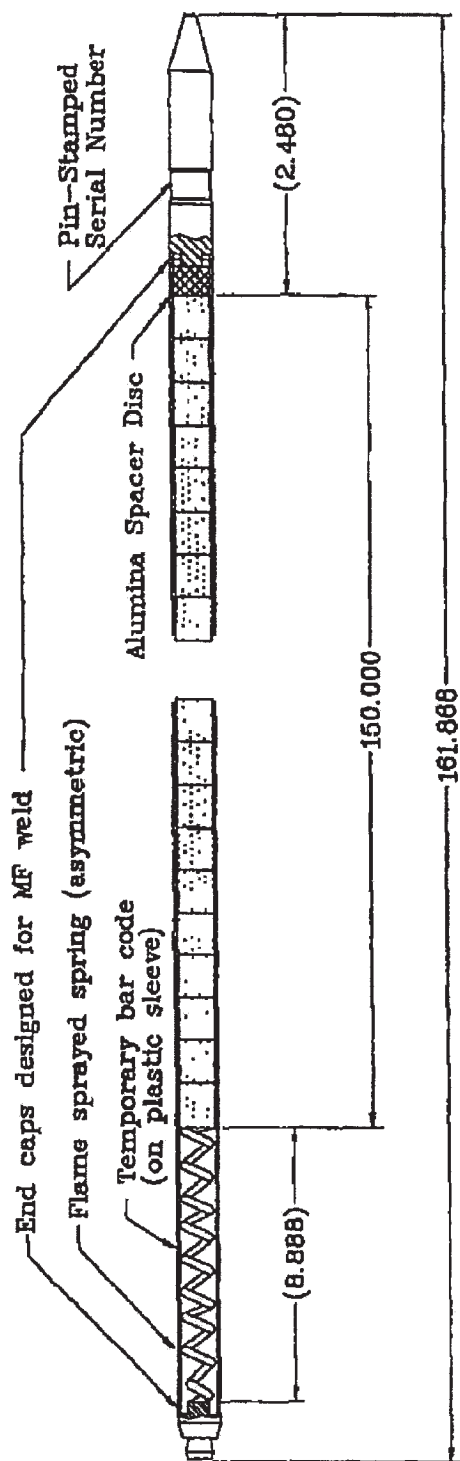
1. Removal of upper spacer disc.
2. Longer lower end caps for use with Guardian™ grids
3. Minor changes in fuel pellet dimensions (diameter, dishes, chamfers)
4. Use of $UO_2-ER_2O_3$ fuel - poison pellets, in lieu of the $A1_2O_3-B_4C$ poison rod shown in Figure 4.2-9.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

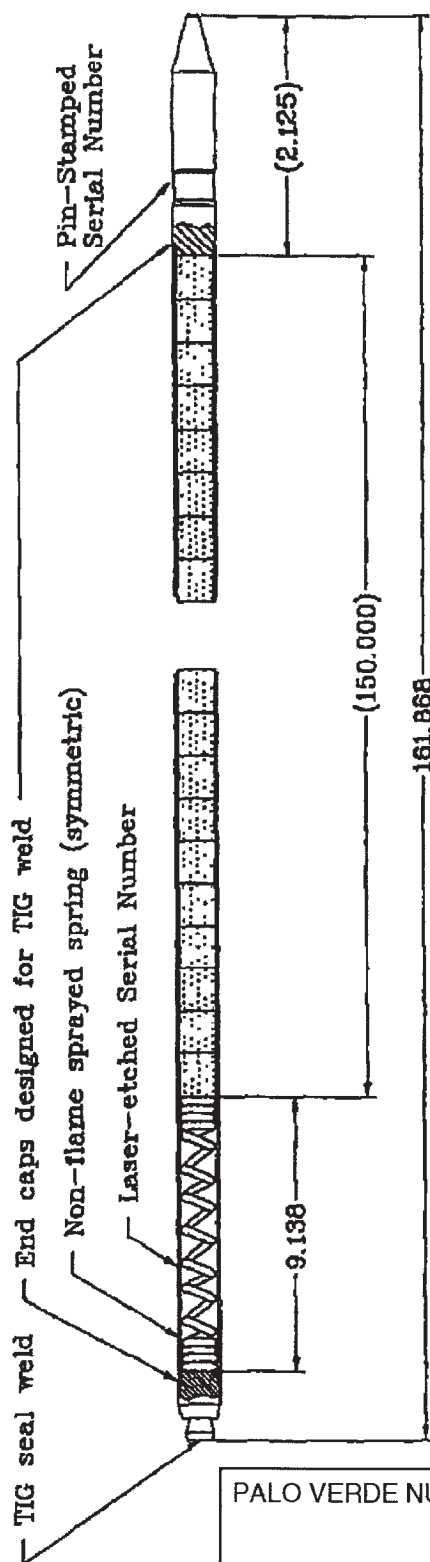
FUEL ROD
FIGURE 4.2-8

JUNE 2003

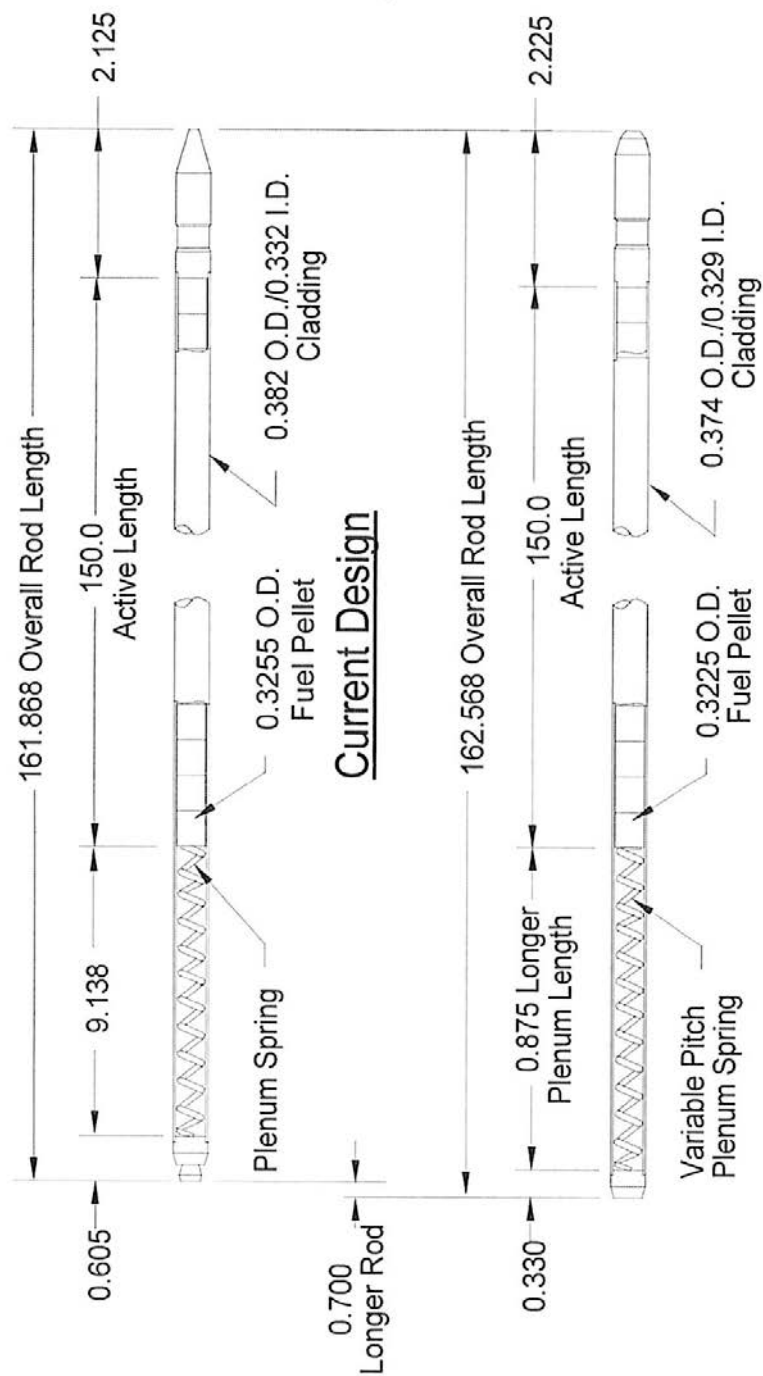
REVISION 12



Batch 3M Rod Assembly with MF Welds (Hematite Production)



Batch 2N Rod Assembly with TIG Welds (Columbia Production)



NGF 16x16 Design

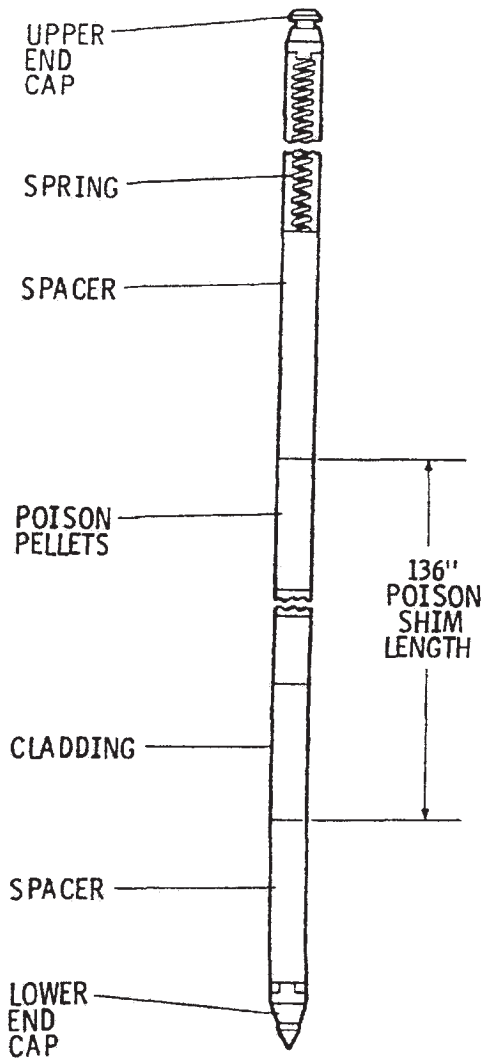
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

COMPARISON OF PRE-NGF (CURRENT DESIGN)
AND NGF FUEL ROD ASSEMBLIES

FIGURE 4.2-8B

JUNE 2019

REVISION 20



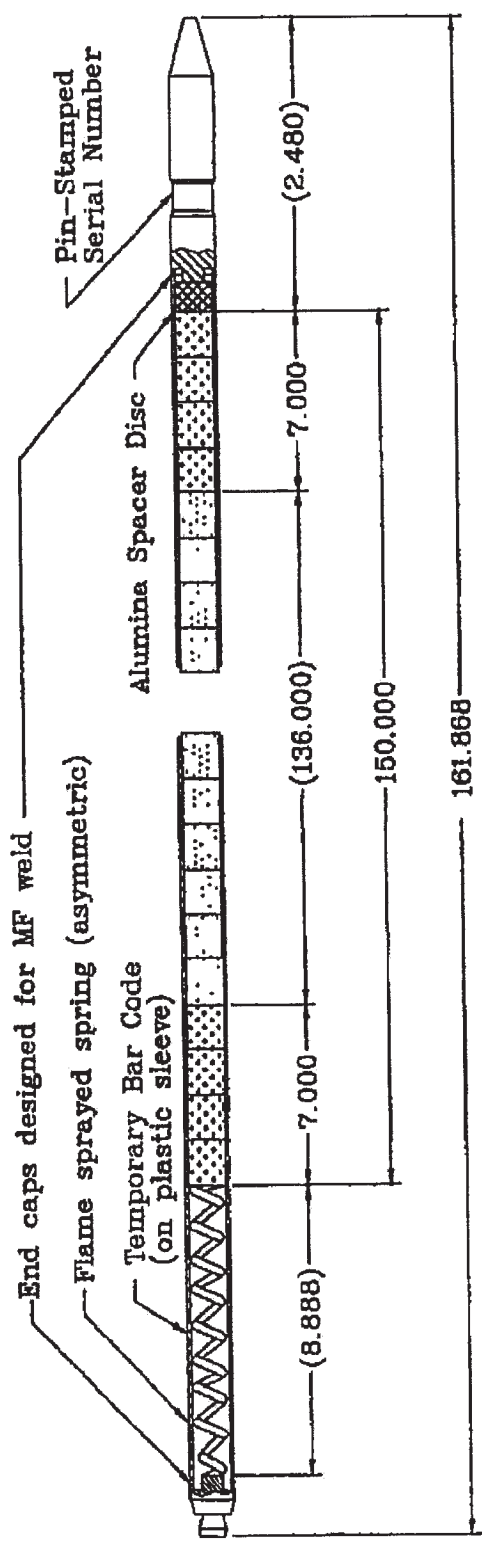
NOTE. Reload designs may utilize UO_2 - ER_2O_3 fuel - poison rods, in lieu of the $\text{A1}_2\text{O}_3$ - B_4C rods, in lieu of the $\text{A1}_2\text{O}_3$ - B_4C rods that were incorporated into the original design of system 80 fuel for PVNGS. See Figure 4.2- 8

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

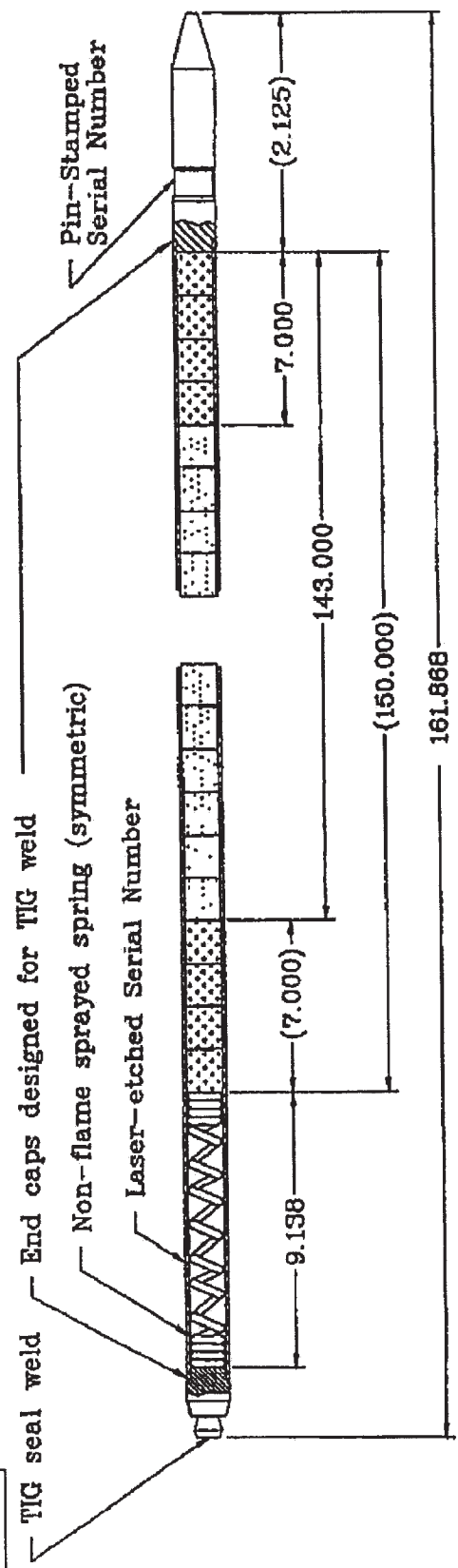
BURNABLE POISON ROD
FIGURE 4.2-9

JUNE 2001

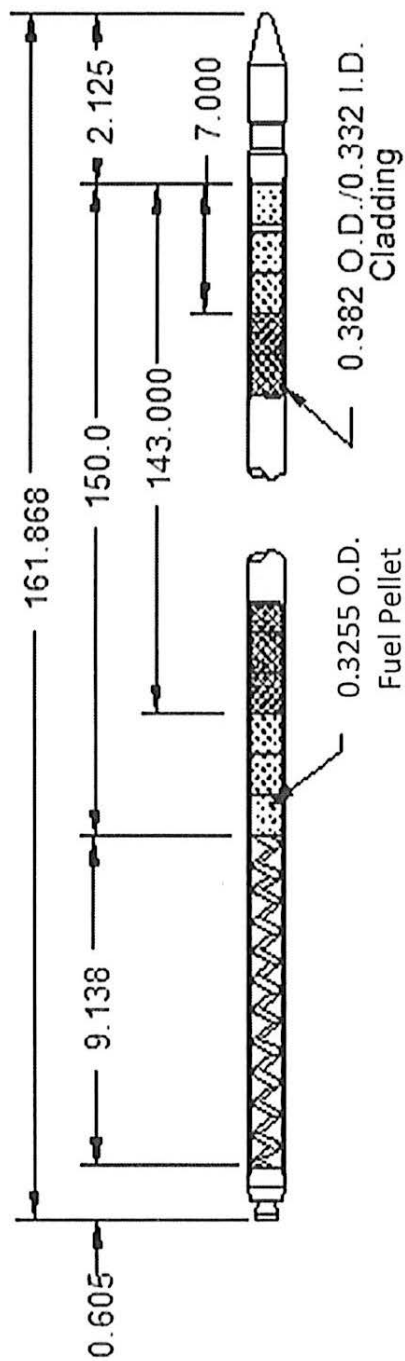
REVISION 11



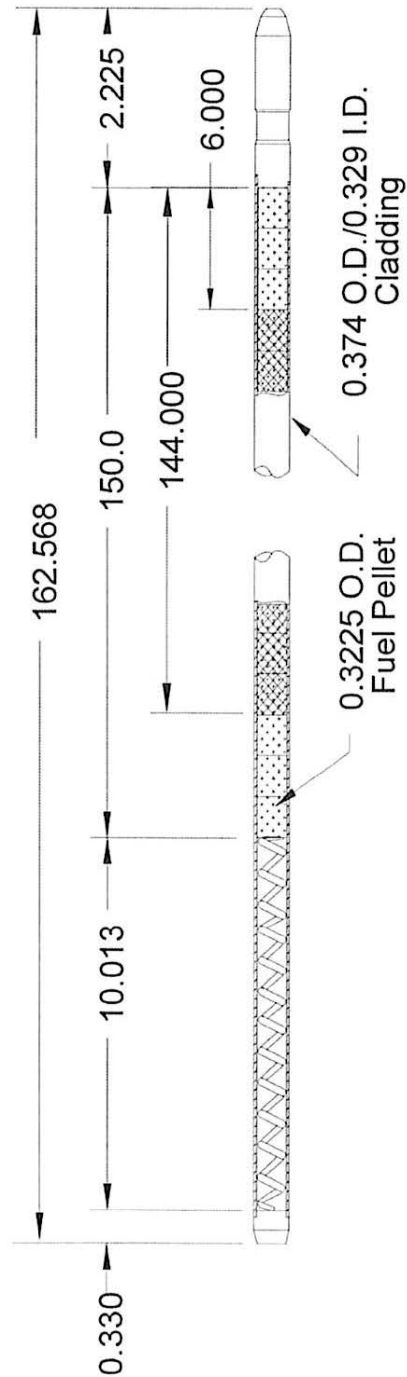
Batch 3M Rod Assembly with MF Welds (Hematite Production)



Batch 2N Rod Assembly with TIG Welds (Columbia Production)



Current Design

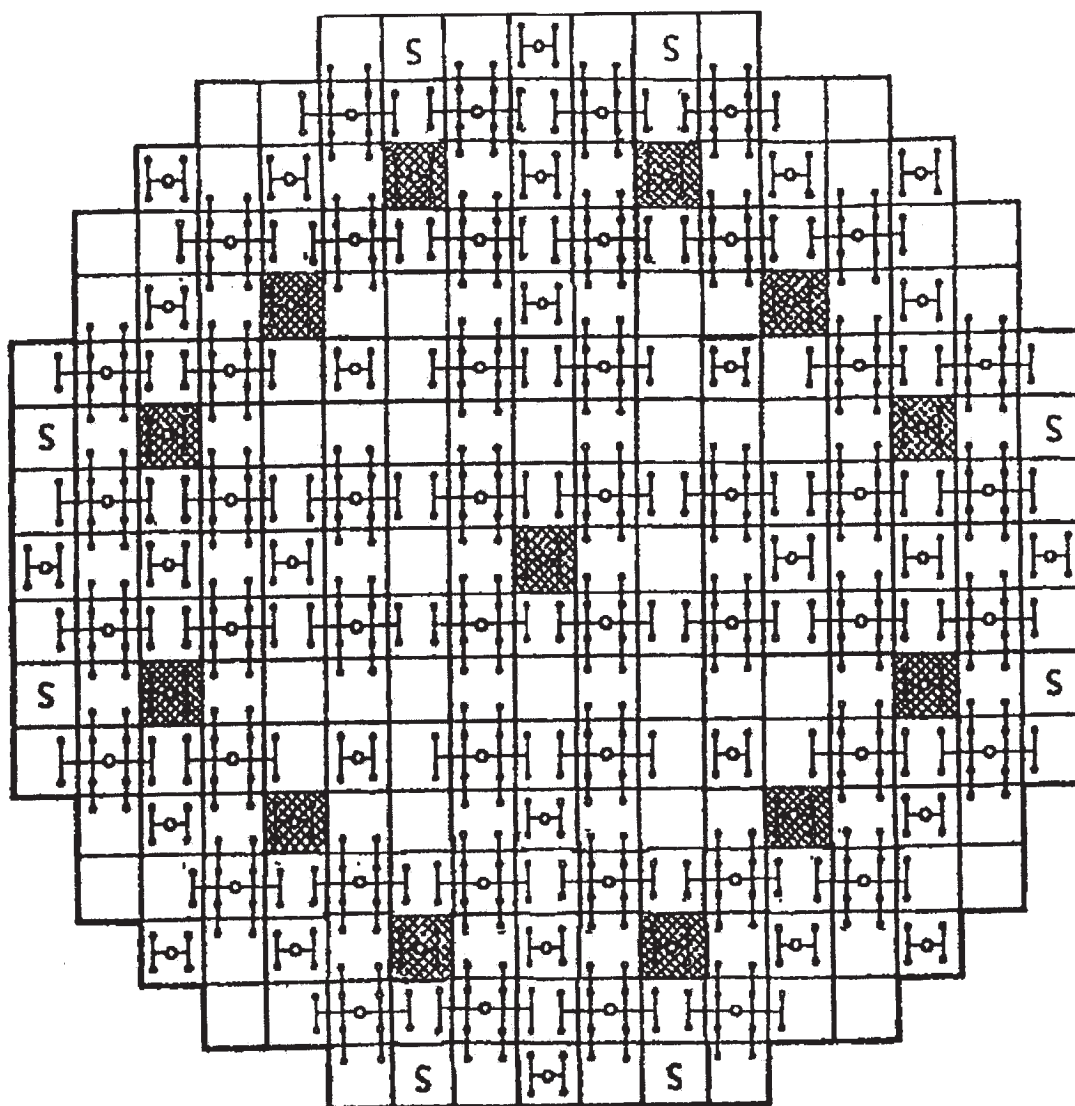


NGF 16x16 Design

PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

COMPARISON OF PRE-NGF (CURRENT DESIGN) AND NGF BURNABLE ABSORBER ROD ASSEMBLIES

FIGURE 4.2-9B



	12 ELEMENT FULL LENGTH CEA's	48
	4 ELEMENT FULL LENGTH CEA's	28
	4 ELEMENT PART LENGTH CEA's	13
TOTAL		89 CEA's

S DENOTES SPARE CEA LOCATIONS 8

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

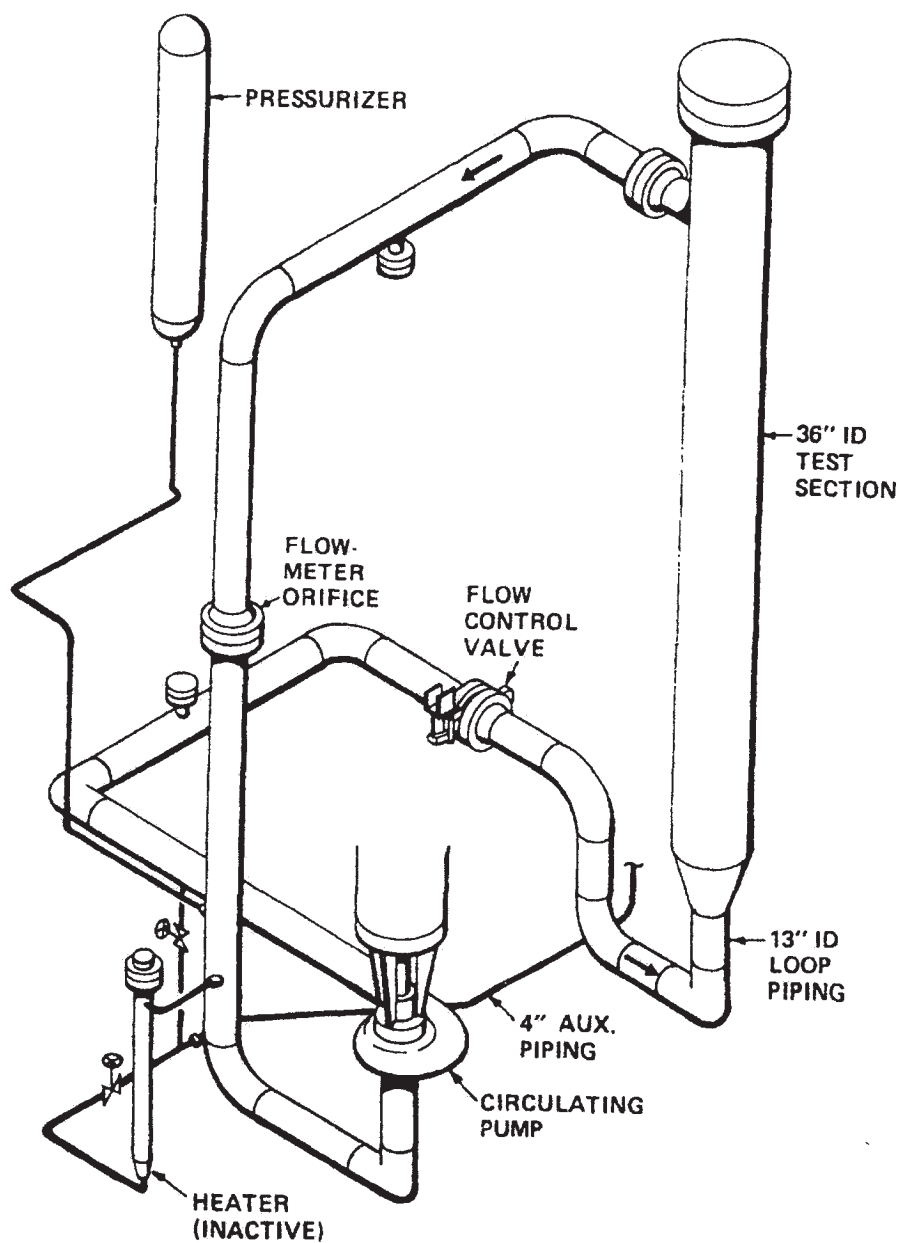
CONTROL ELEMENT ASSEMBLY LOCATIONS

FIGURE 4.2-10

JUNE 2003

REVISION 12

FIGURE 4.2-10
REV. 12

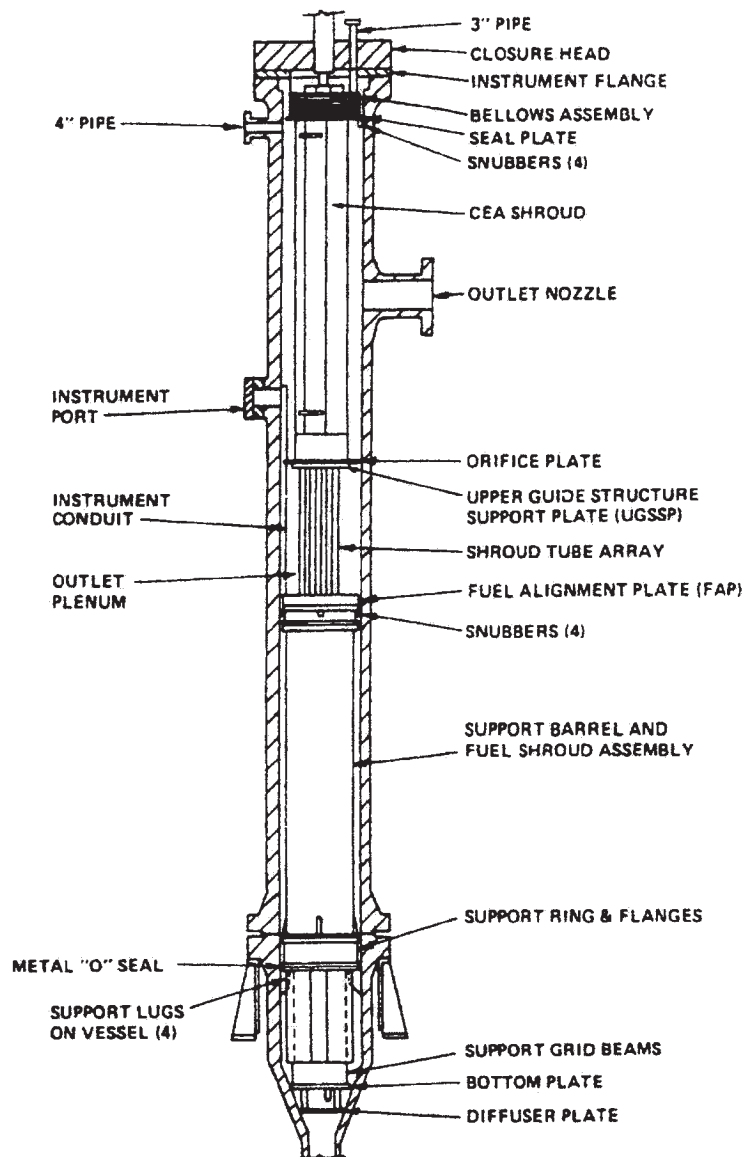


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

C-E TF - 2 HOT LOOP PIPING ISOMETRIC
FIGURE 4.2-11

JUNE 2001

REVISION 11

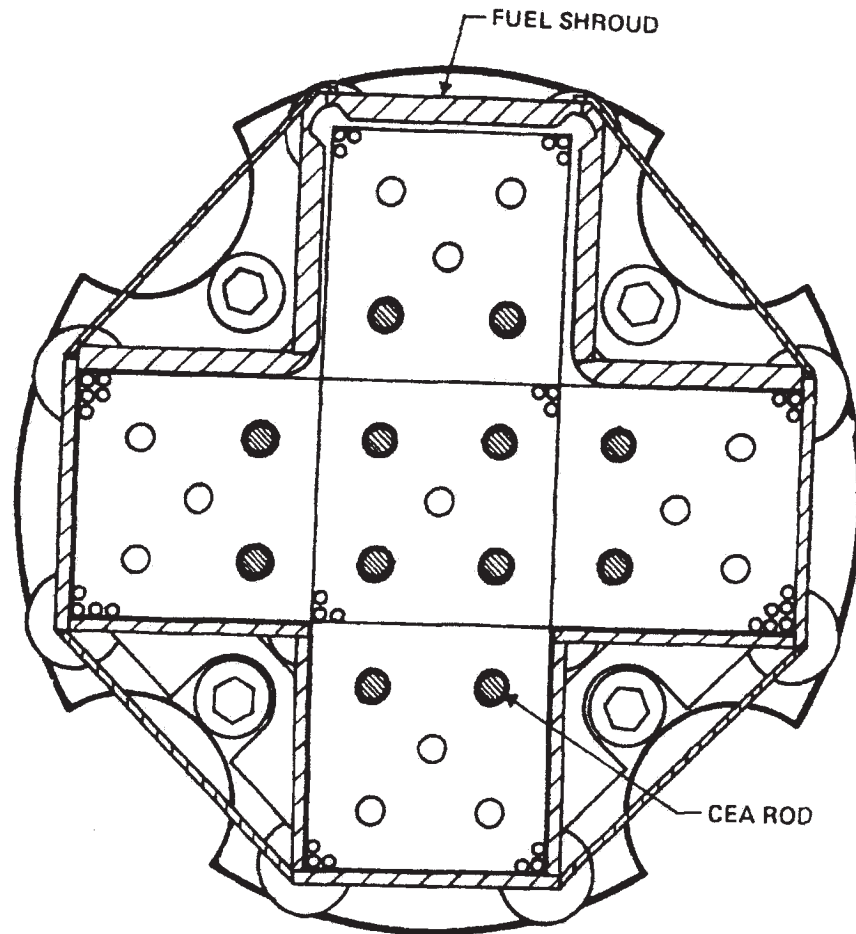


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SYSTEM 80 FUEL HOT LOOP TESTS,
COMPONENT STACKUP IN TF - 2
FIGURE 4.2-12

JUNE 2001

REVISION 11

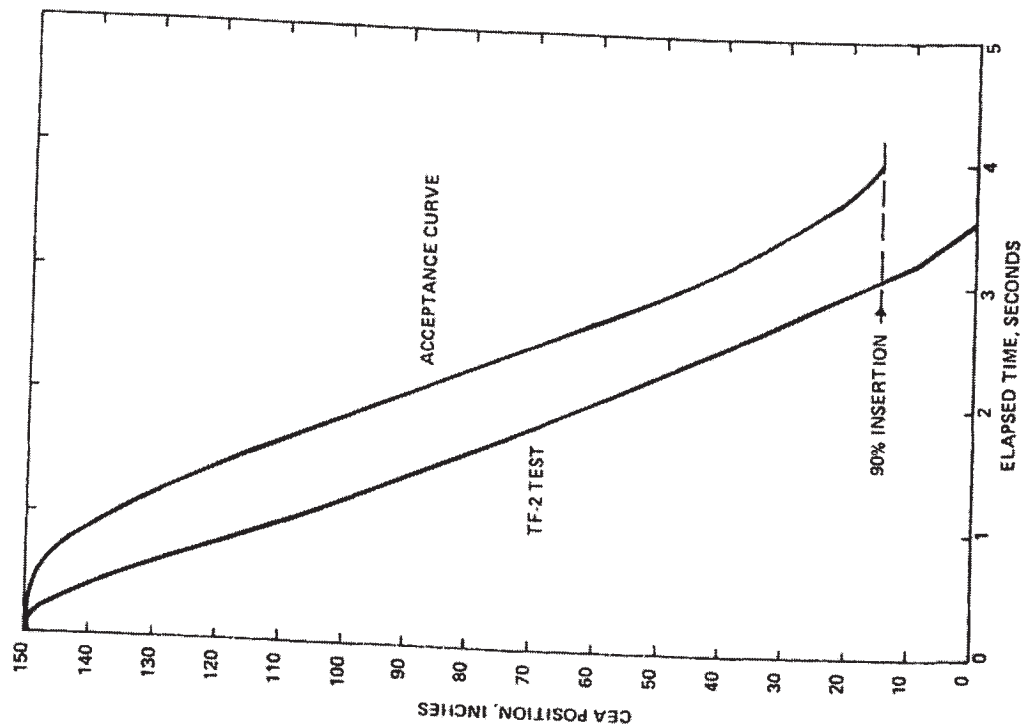


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CROSS SECTION THROUGH FUEL SHROUD AND
FUEL ARRAY TF-2 TESTS
FIGURE 4.2-13

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TEST SCRAM VS ACCEPTANCE CURVE,
525°F FOUR PUMP FLOW SETTING IN TF - 2

FIGURE 4.2-14

JUNE 2001

REVISION 11

					1 Old	2 Old	3 Old	4 New
		5 Old	6 Old	7 New	8 Old	9 New	10 Old	
	11 Old	12 Old	13 New	14 Old	15 New	16 Old	17 New	
18 Old	19 Old	20 New	21 Old	22 New	23 Old	24 New	25 Old	
26 Old	27 New	28 Old	29 New	30 Old	31 New	32 Old	33 Old	
34 Old	35 New	36 Old	37 New	38 Old	39 Old	40 Old	41 New	42 Old
43 Old	44 Old	45 New	46 Old	47 New	48 Old	49 New	50 Old	51 New
52 Old	53 New	54 Old	55 New	56 Old	57 New	58 Old	59 Old	60 Old
61 New	62 Old	63 New	64 Old	65 Old	66 Old	67 New	68 Old	69 Old

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TYPICAL FUEL MANAGEMENT

FIGURE 4.3-1

JUNE 2001

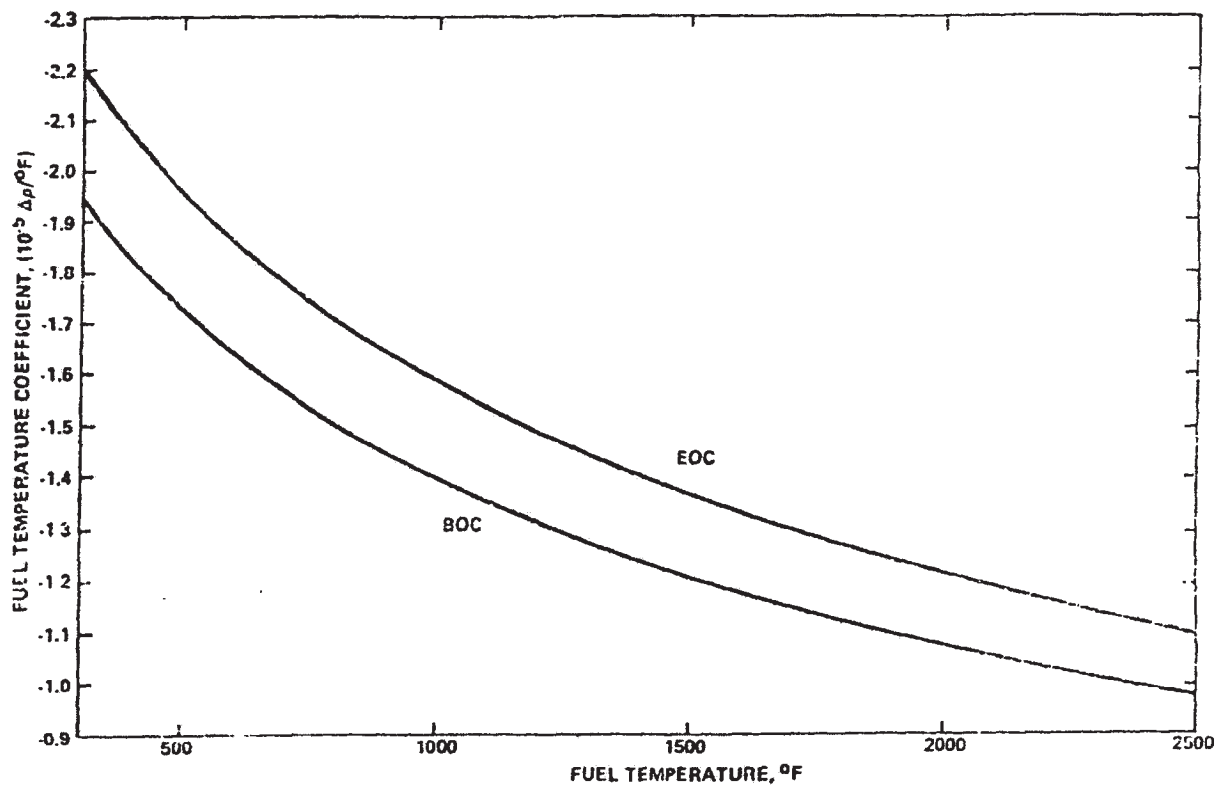
REVISION 11

0.933							
0.933	0.950						
0.942	0.968	1.003					
0.950	0.989	1.039					
0.950	0.987	1.045					
0.945	0.979	1.021	1.063	1.076	1.060		
0.945	0.972	0.999	1.024	1.039	1.048	1.068	
0.947	0.968	0.990	1.009	1.027	1.049	1.094	

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

NORMALIZED POWER DISTRIBUTION OF UNSHIMMED ASSEMBLY
USED IN SAMPLE DNB ANALYSIS IN PARAGRAPH 4.4.2.2
FOR TORC/CE-1 CORRELATION PREDICTIONS

FIGURE 4.3-2



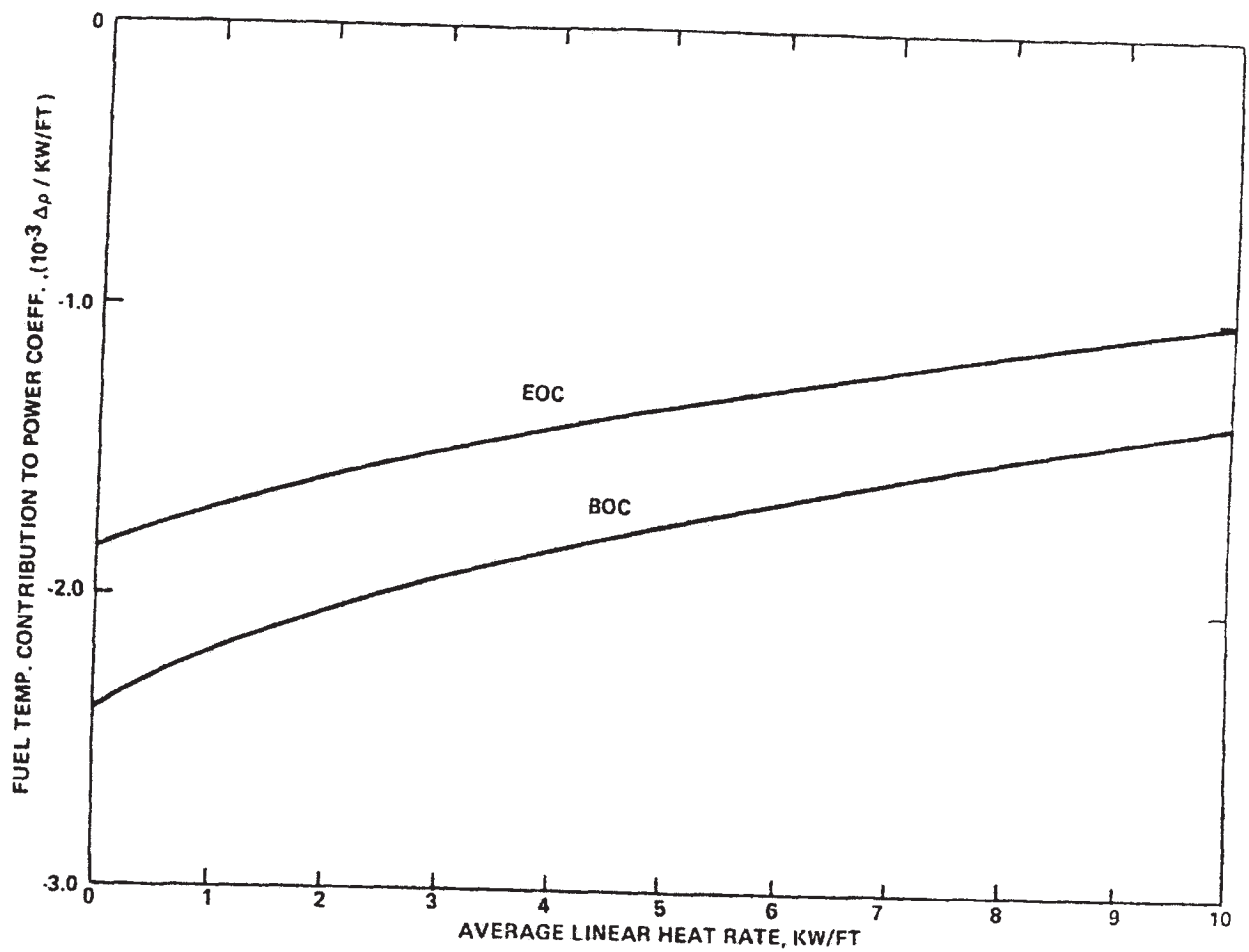
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

FUEL TEMPERATURE COEFFICIENT vs
EFFECTIVE FUEL TEMPERATURE

FIGURE 4.3-3

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

FUEL TEMPERATURE CONTRIBUTION
TO POWER COEFFICIENT AT EOC

FIGURE 4.3-4

JUNE 2001

REVISION 11

5 - FIRST REGULATING BANK
 4 - SECOND REGULATING BANK
 3 - THIRD REGULATING BANK
 2 - FOURTH REGULATING BANK
 1 - LAST REGULATING BANK
 B - SHUTDOWN BANK B
 A - SHUTDOWN BANK A
 P₂ - PART-STRENGTH GROUP 2
 P₁ - PART-STRENGTH GROUP 1
 S - SPARE CEA LOCATIONS

				1	2	3	4	5	6	7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
--	--	--	--	---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

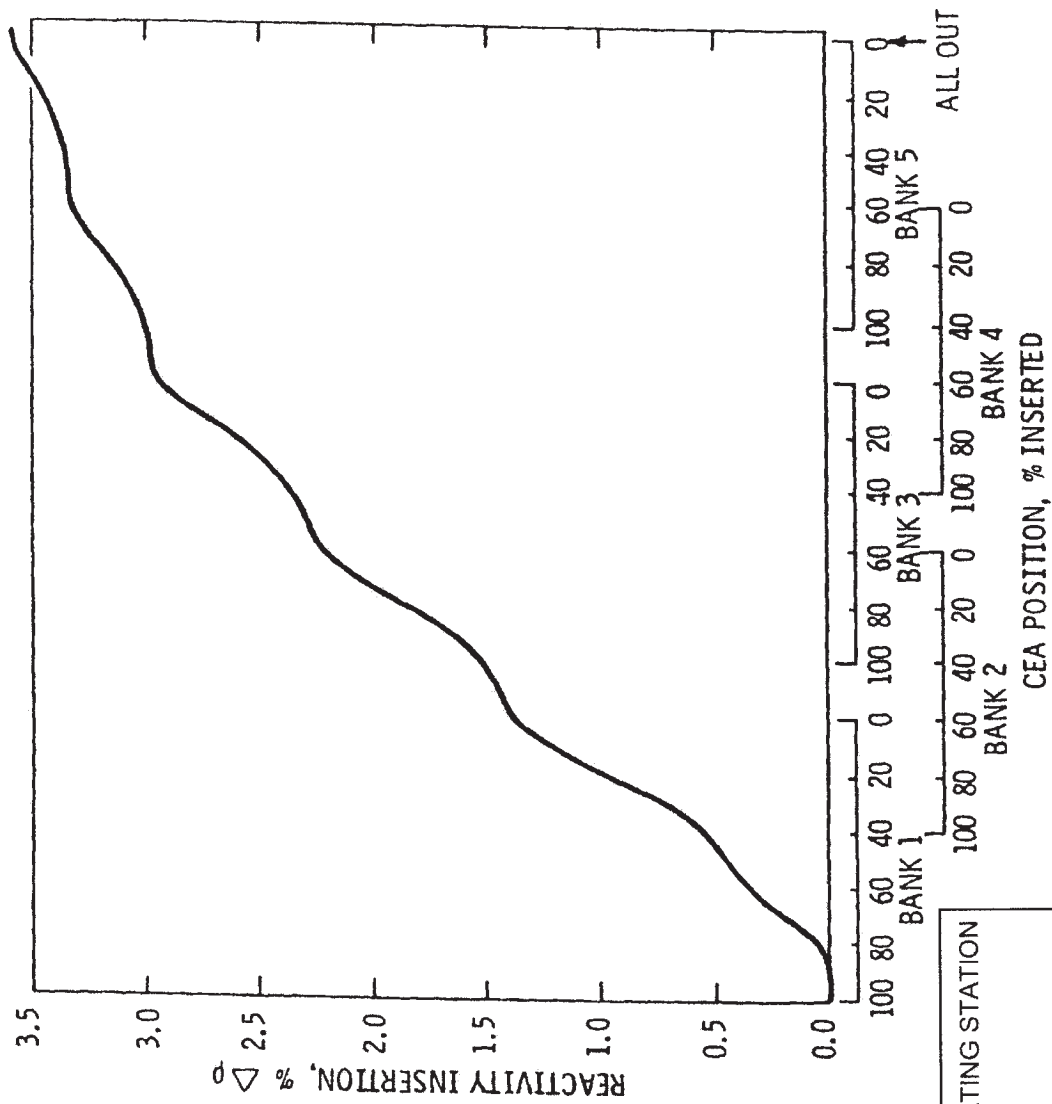
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

CEA BANK IDENTIFICATION

FIGURE 4.3-6

JUNE 2007

REVISION 14

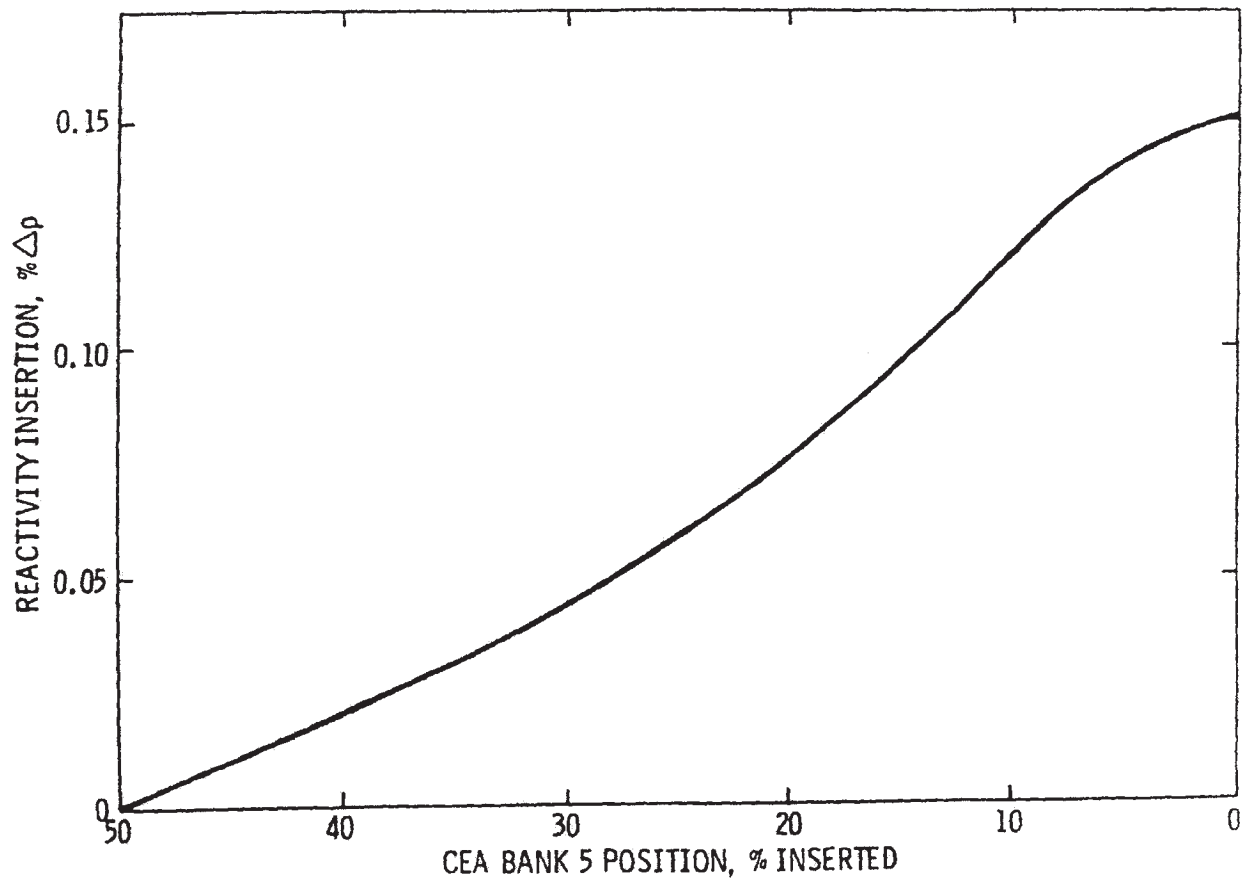


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TYPICAL INTEGRAL WORTH vs WITHDRAW
AT ZERO POWER, EOC 1 CONDITIONS
FIGURE 4.3-7

JUNE 2001

REVISION 11

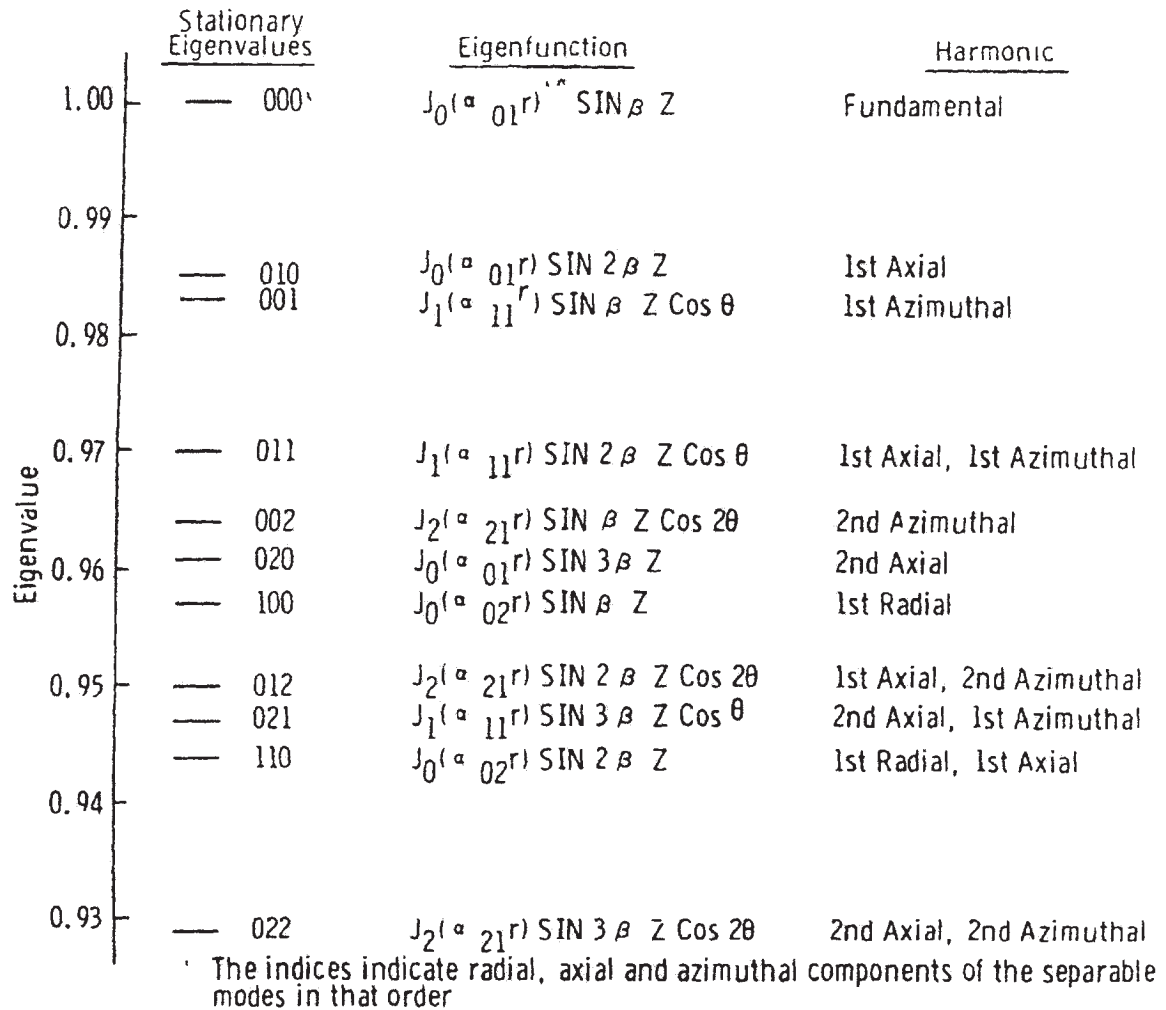


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TYPICAL INTEGRAL WORTH vs WITHDRAW
AT HOT FULL POWER, EOC 1,
EQUILIBRIUM XENON CONDITIONS
FIGURE 4.3-8

JUNE 2001

REVISION 11

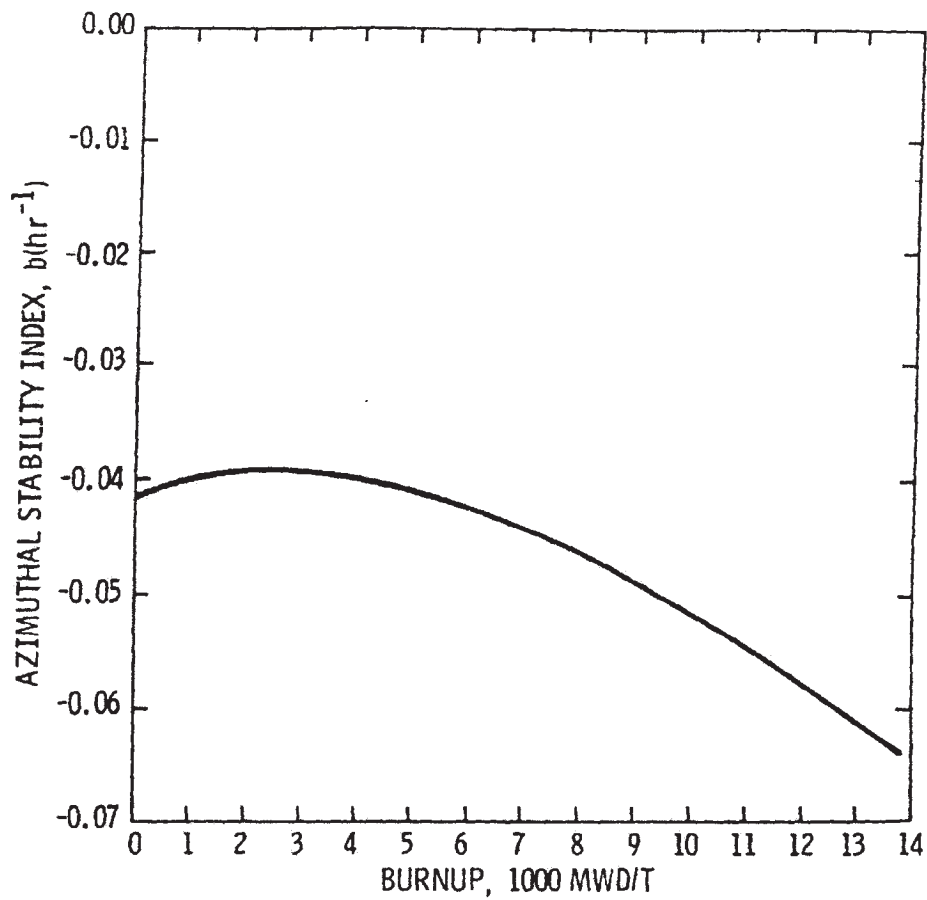


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTIVITY DIFFERENCE BETWEEN
FUNDAMENTAL AND EXCITED STATES OF A
BARE CYLINDRICAL REACTOR
FIGURE 4.3-9

JUNE 2001

REVISION 11

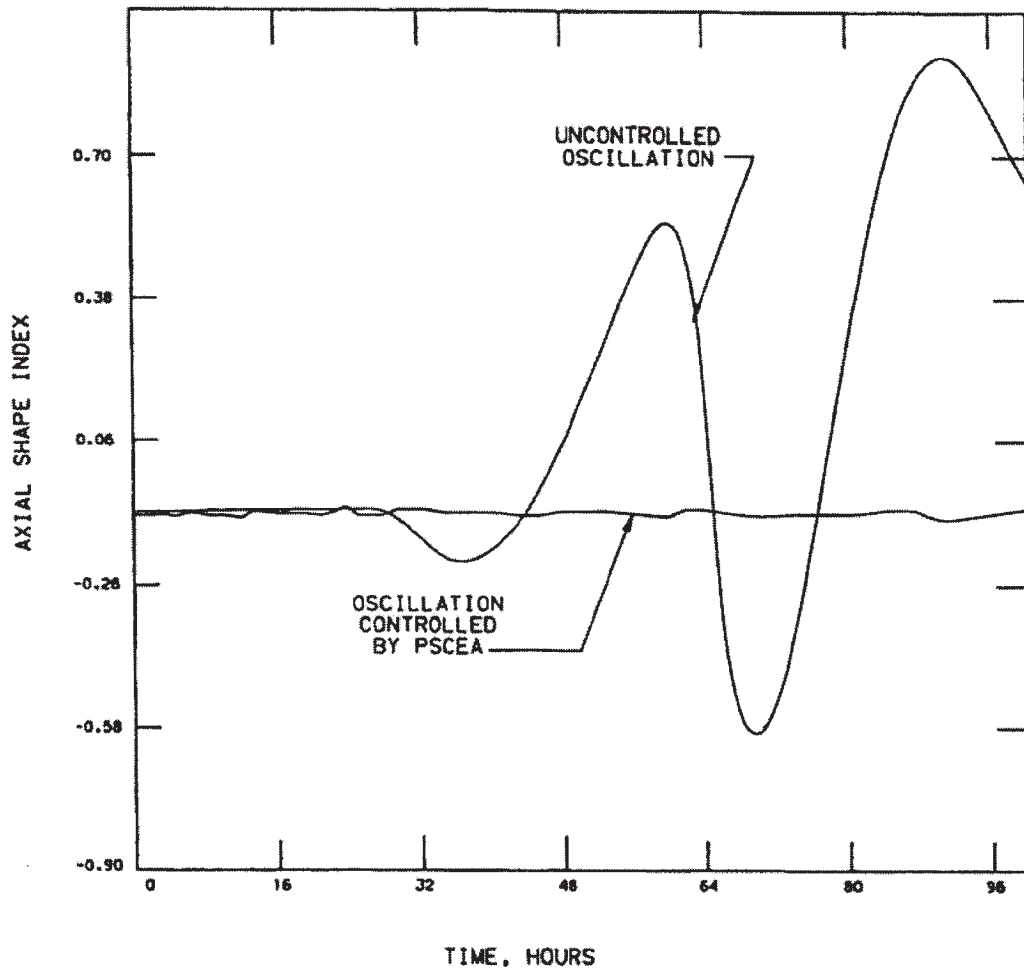


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

EXPECTED VARIATION OF THE AXIMUTHAL
STABILITY INDEX, HOT FULL POWER, NO CEAs
FIGURE 4.3-10

JUNE 2001

REVISION 11



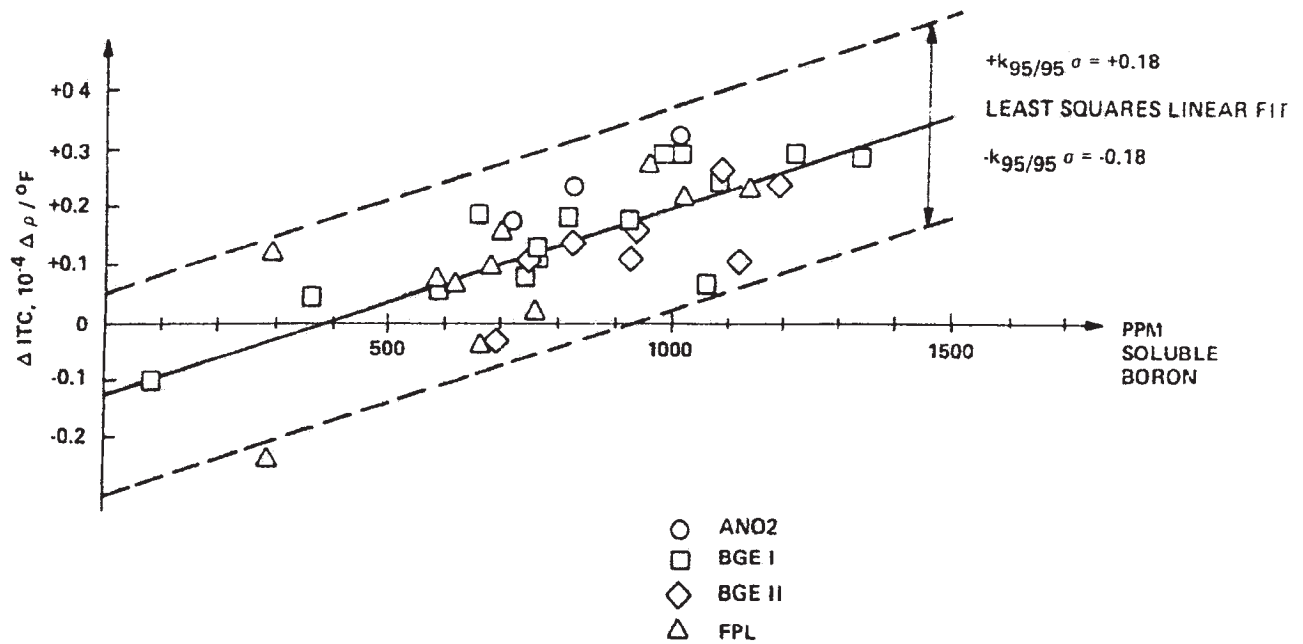
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PLCEA CONTROLLED AND UNCONTROLLED
OSCILLATION

FIGURE 4.3-11

JUNE 2007

REVISION 14



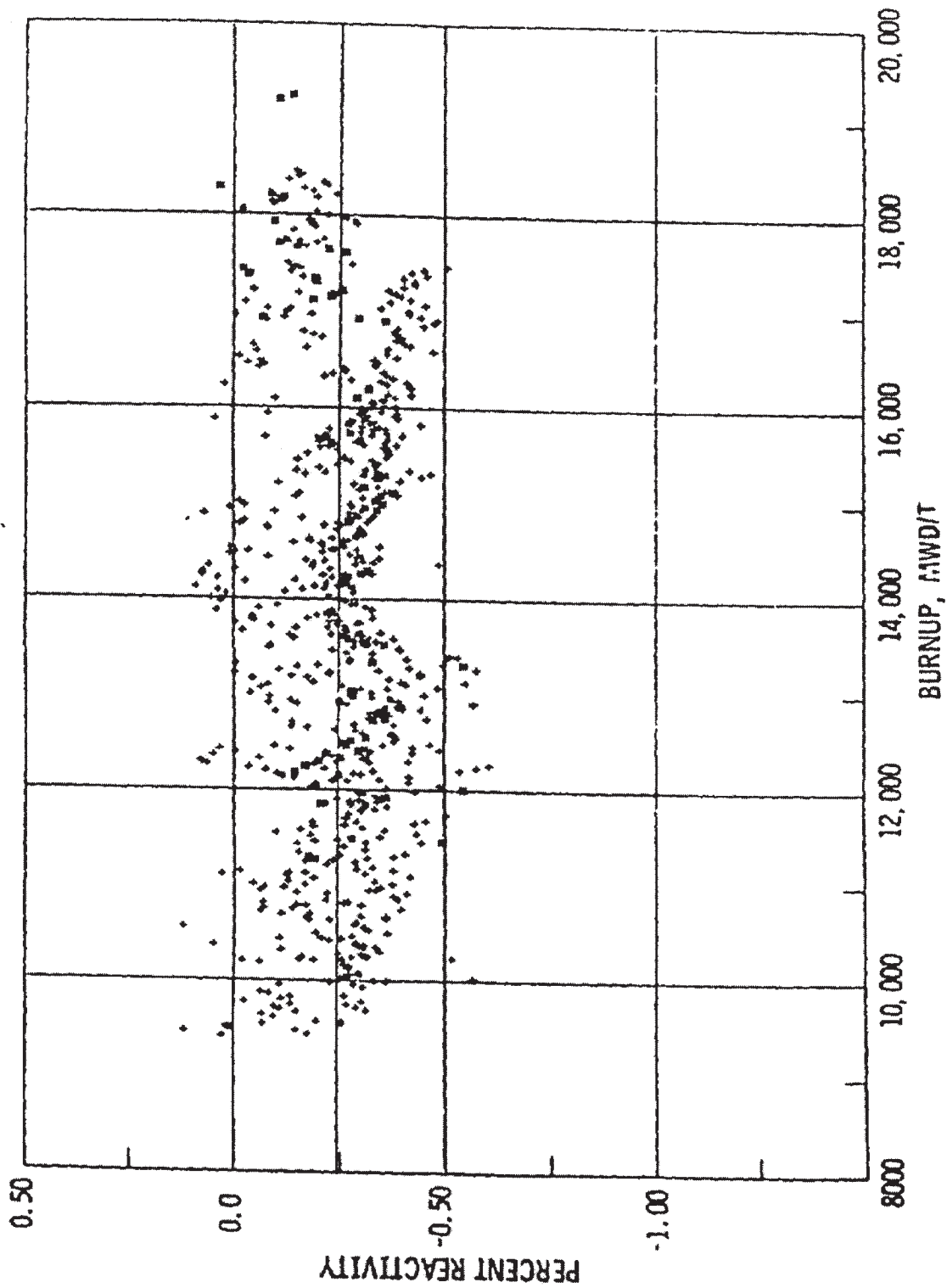
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CALCULATION - MEASUREMENT ITC DIFFERENCE
vs SOLUBLE BORON 3D ROCS (DIT)

FIGURE 4.3-12

JUNE 2001

REVISION 11



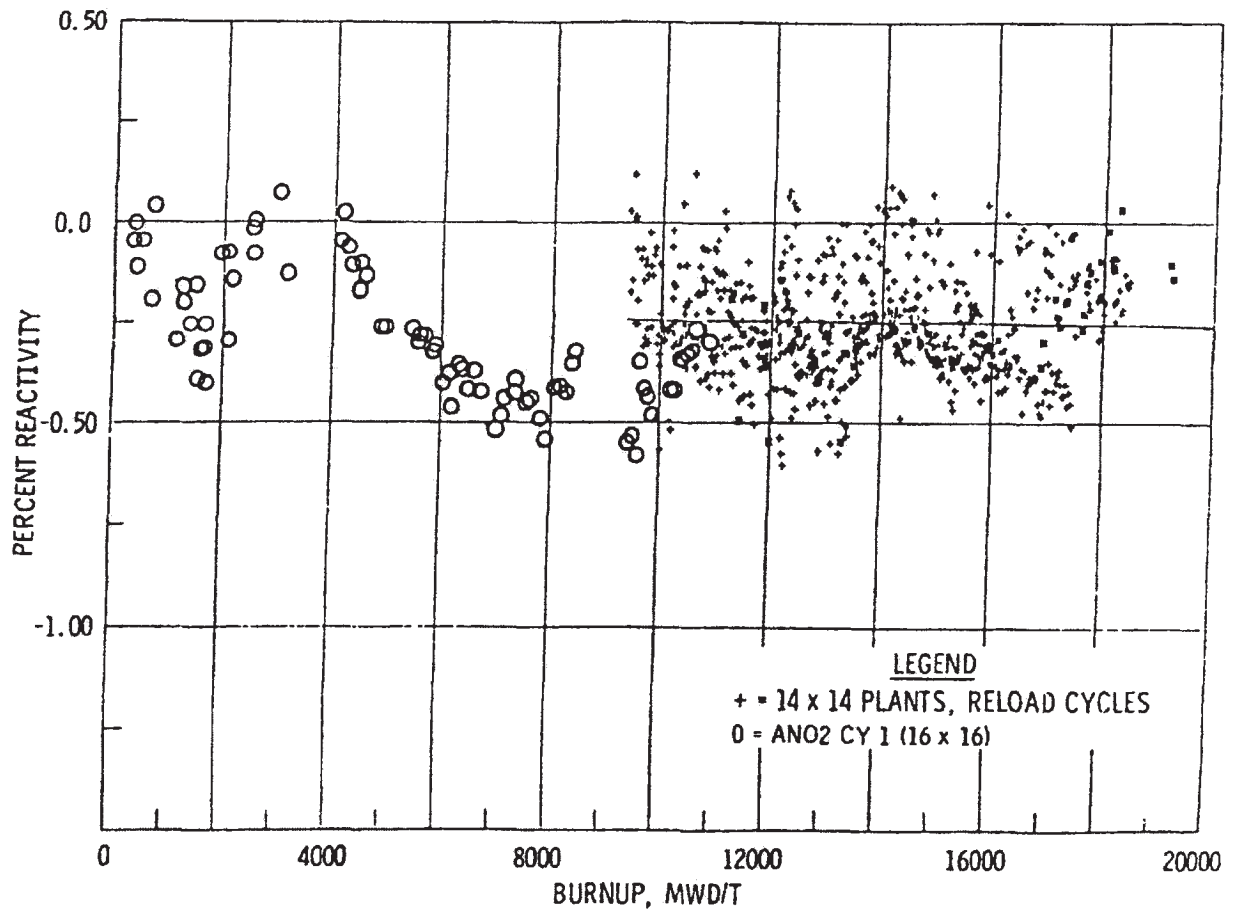
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ROCS/DIT REACTIVITY FROM CORE FOLLOW
CALCULATIONS, 14x14 PLANTS, RELOAD
CYCLES

JUNE 2001

FIGURE 4.3-13

REVISION 11



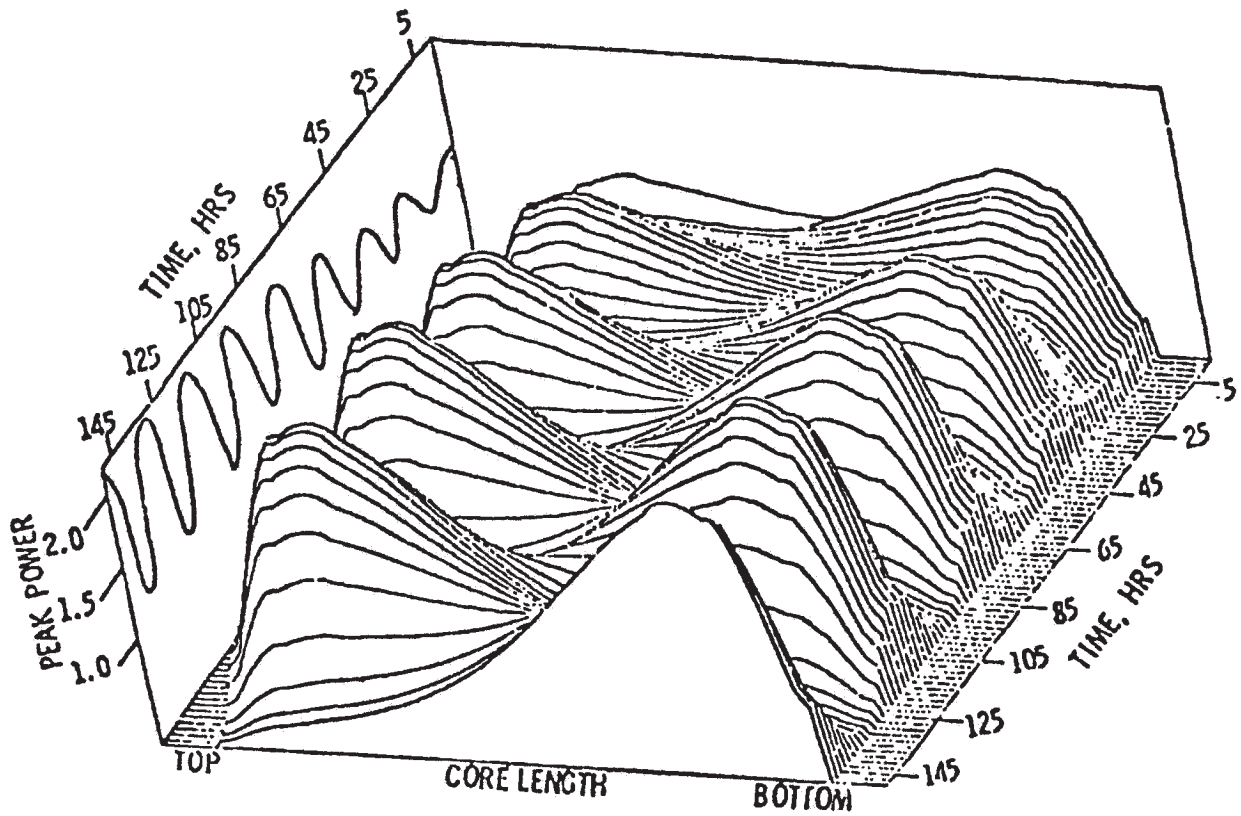
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ROCS/DIT REACTIVITY FROM CORE FOLLOW
CALCULATIONS, 16x16 AND 14x14
ASSEMBLY PLANTS

FIGURE 4.3-14

JUNE 2001

REVISION 11



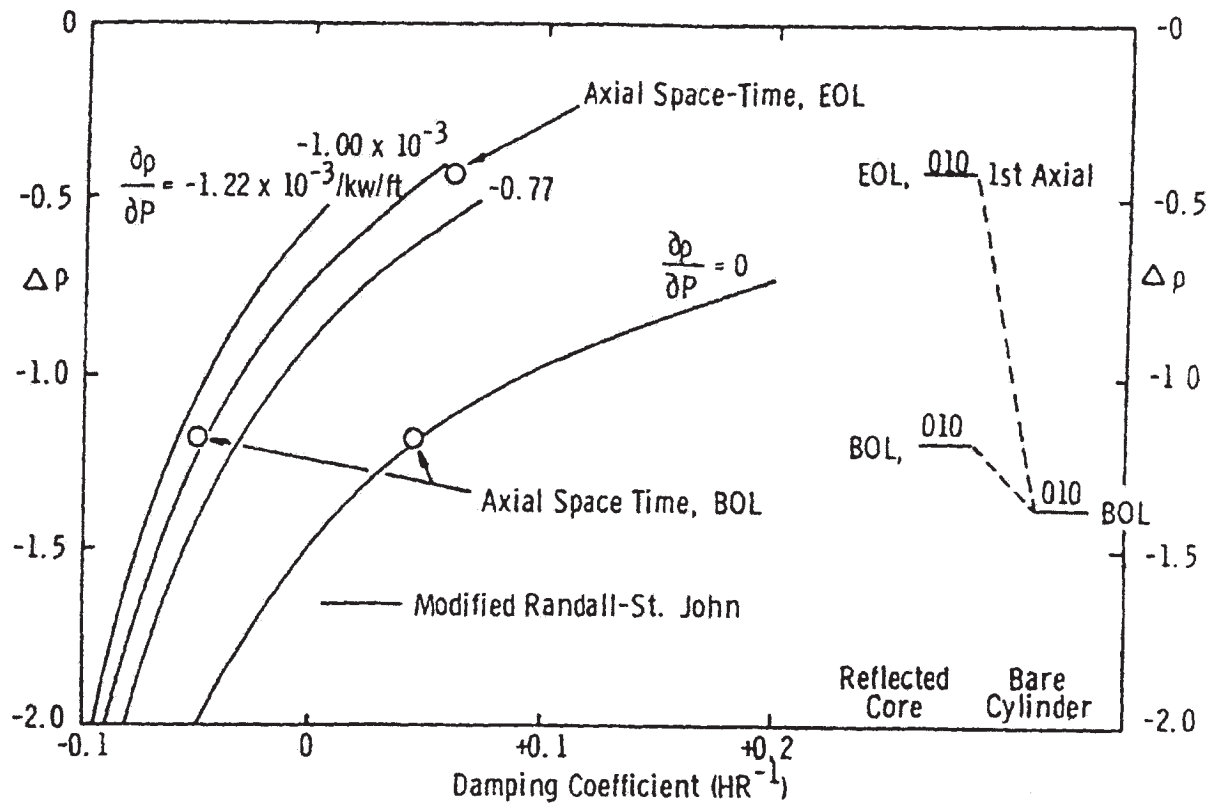
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

A DIVERGENT AXIAL OSCILLATION IN AN EOC
CORE WITH REDUCED POWER FEEDBACK
($\alpha_c = 0.96 \times 10^{-4} \text{ } ^\circ\text{P/KTW/FT}$)

FIGURE 4.3-15

JUNE 2001

REVISION 11



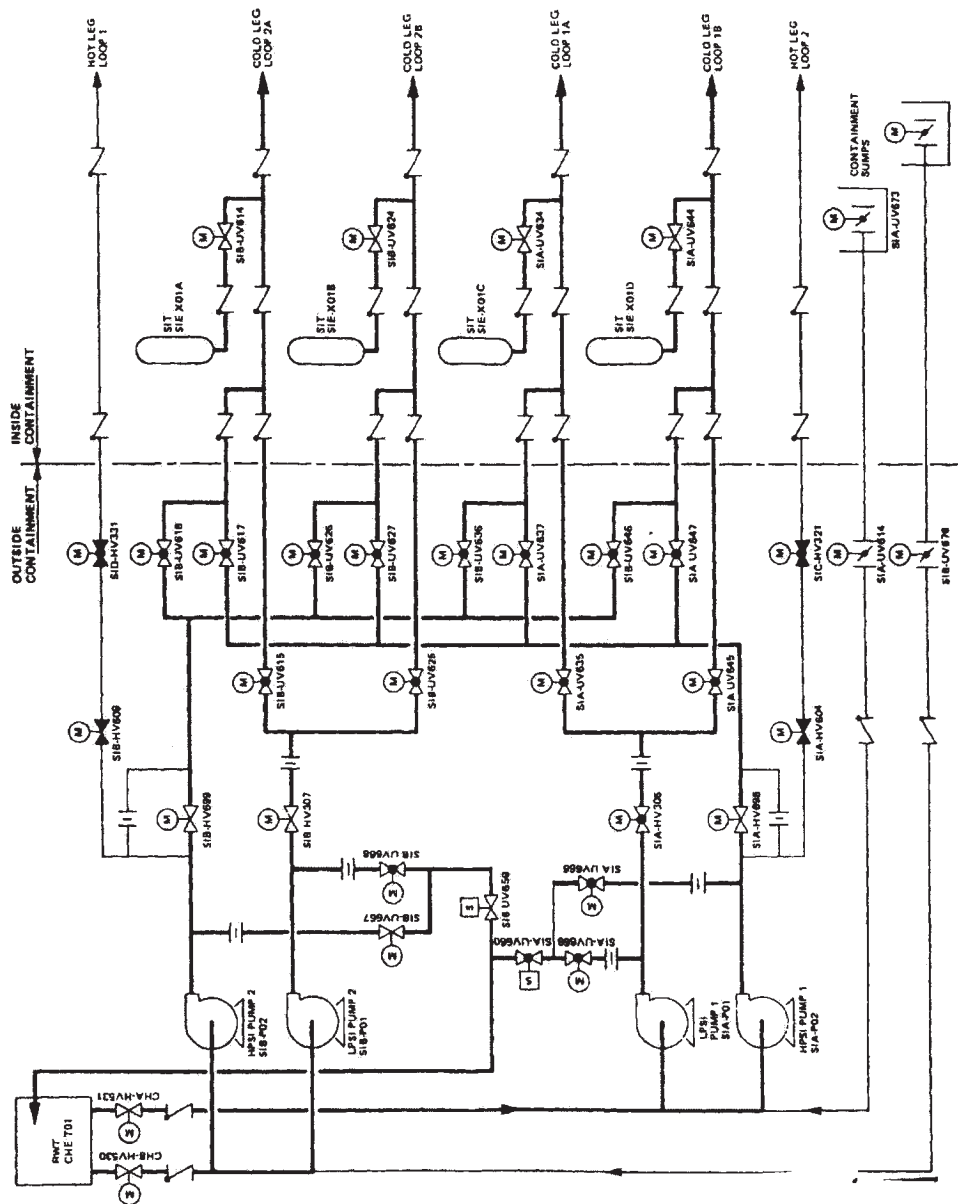
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

DAMPING COEFFICIENT vs REACTIVITY
DIFFERENCE BETWEEN FUNDAMENTAL AND
EXCITED STATE

FIGURE 4.3-16

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION PIPING

FIGURE 4.4-1

JUNE 2001

REVISION 11

					0.901 1.367	1.101 1.434	1.175 1.550	1.234 1.550
Assy Avg. Rod Radial Power Factor →	0.749	1.100	1.338	1.024	1.075	1.422		
Assy Maximum Rod Radial Power Factor →	1.202	1.392	1.441	1.089	1.171	1.520		
	0.551 1.033	1.013 1.172	0.965 1.024	0.961 1.032	0.858 0.974	0.962 1.071	1.003 1.075	
	0.749 1.202	1.013 1.172	0.876 0.910	0.966 1.083	0.919 0.982	1.129 1.186	0.891 0.935	1.079 1.207
	1.100 1.392	0.965 1.024	0.966 1.083	0.750 0.869	0.889 0.992	0.841 0.898	0.917 1.053	0.615 0.757
	0.901 1.367	1.338 1.441	0.961 1.032	0.919 0.982	0.889 0.992	0.661 0.840	0.852 0.920	0.918 1.009
	1.101 1.434	1.024 1.089	0.858 0.974	1.129 1.186	0.841 0.898	0.852 0.920	0.934 1.009	1.001 1.031
	1.175 1.550	1.075 1.171	0.962 1.071	0.891 0.935	0.917 1.053	0.918 1.009	1.001 1.031	1.054 1.123
	1.234 1.550	1.422 1.520	1.003 1.075	1.079 1.207	0.615 0.757	0.892 0.952	1.039 1.121	0.994 1.042
								0.739 0.813

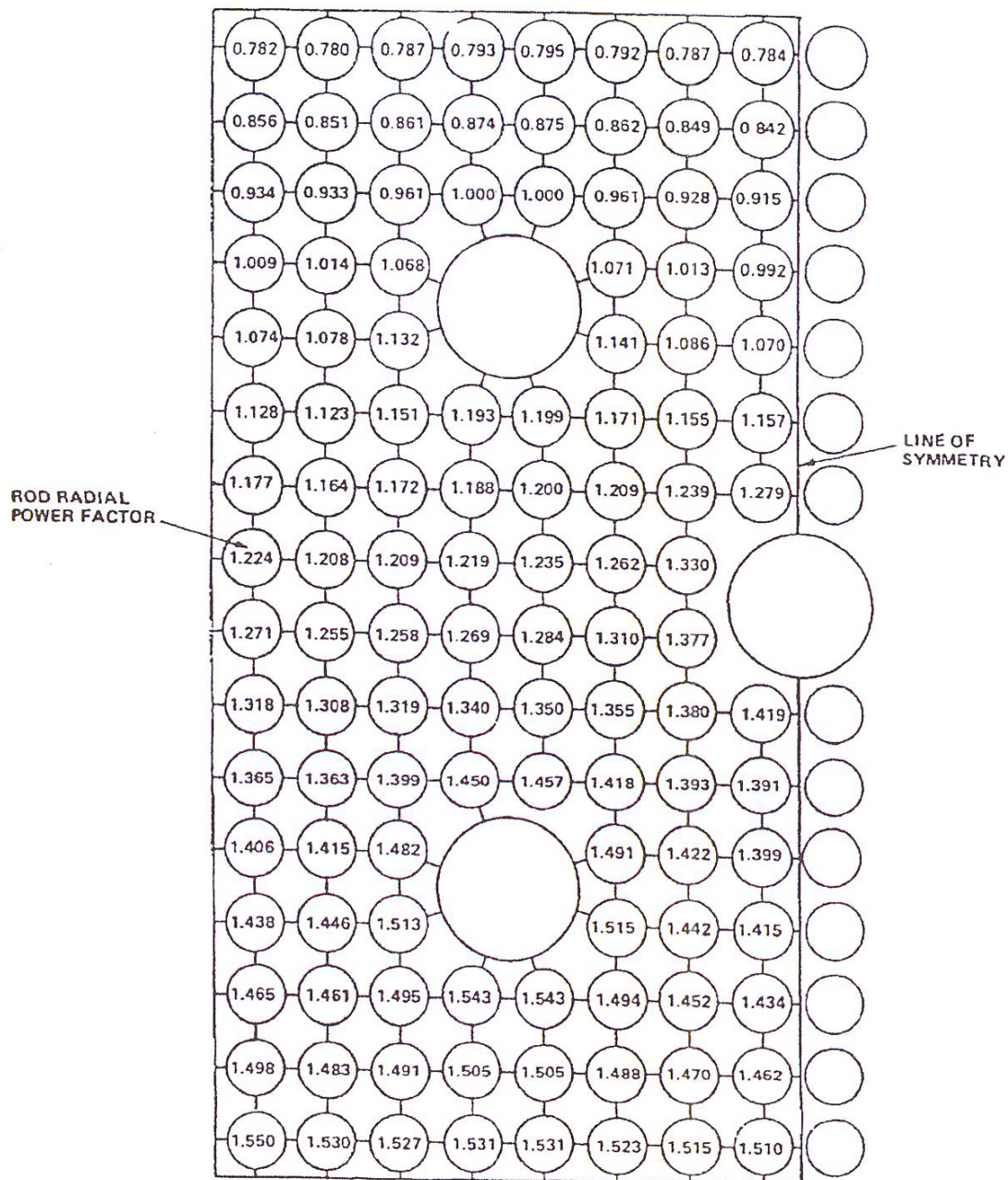
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CORE WIDE PLANAR POWER DISTRIBUTION
FOR SAMPLE DNB ANALYSIS

FIGURE 4.4-2

JUNE 2001

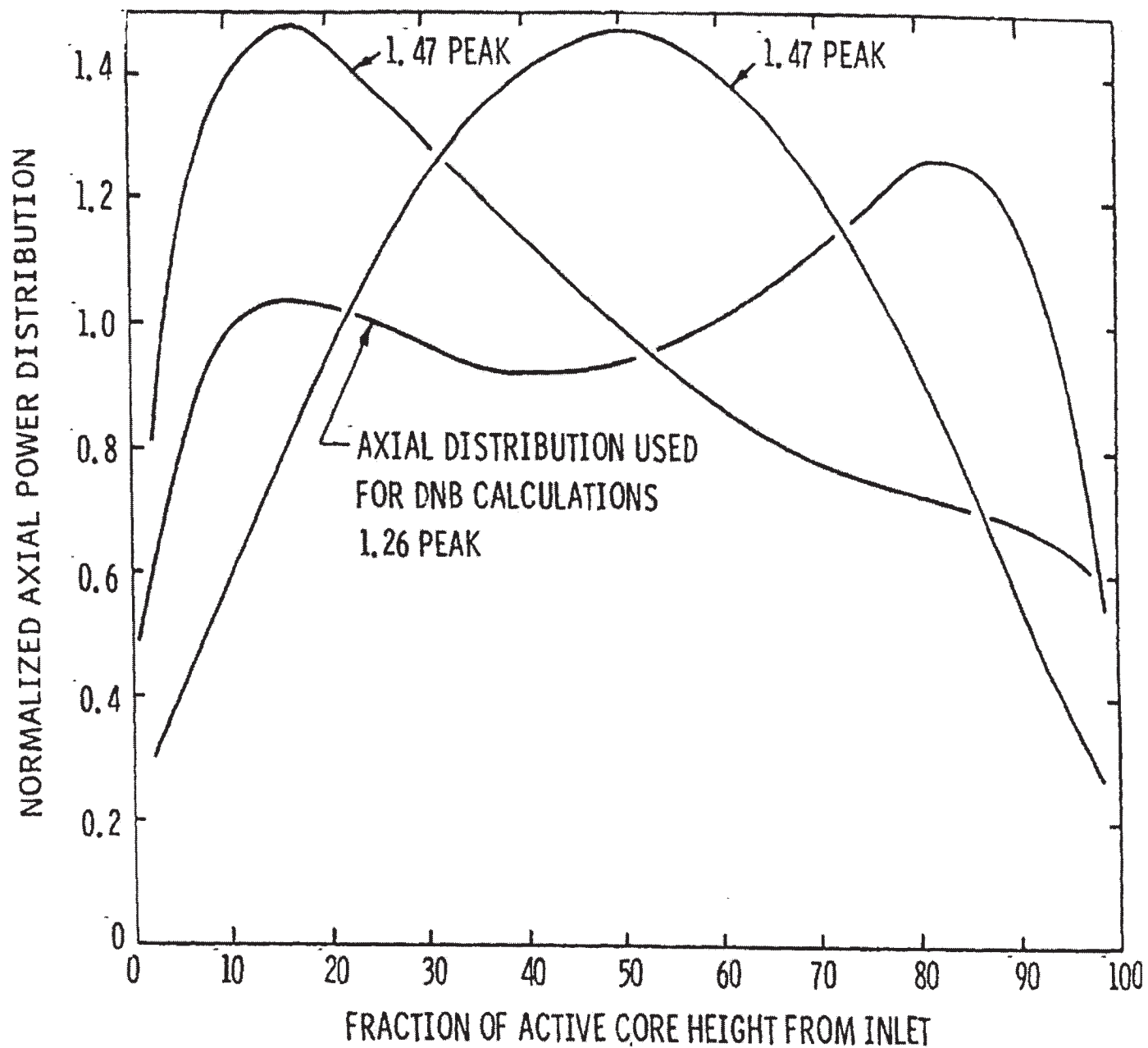
REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ROD RADIAL POWER FACTORS IN HOT ASSEMBLY
FOR SAMPLE DNB ANALYSIS FOR TORC/CE-1 CORRELATION
PREDICTIONS

FIGURE 4.4-3



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TYPICAL AXIAL POWER DISTRIBUTIONS

FIGURE 4.4-4

JUNE 2001

REVISION 11

					0.0 -13	0.0 - 9	0.0 - 7	0.0 - 6
EXIT VOID FRACTION, %					0.0 - 6	0.0 -12	0.0 -10	0.0 - 4
EXIT QUALITY, %		0.0 -17	0.0 -11	0.0 -13	0.0 -14	0.0 -13	0.0 -10	
		0.0 -21	0.0 -12	0.0 -12	0.0 -13	0.0 -11	0.0 -14	0.0 -11
		0.0 -10	0.0 -12	0.0 -14	0.0 -15	0.0 -15	0.0 -15	0.0 -19
0.0 -14	0.0 - 6	0.0 -13	0.0 -13	0.0 -15	0.0 -18			
	0.0 -10			0.0 -14			0.0 -19	

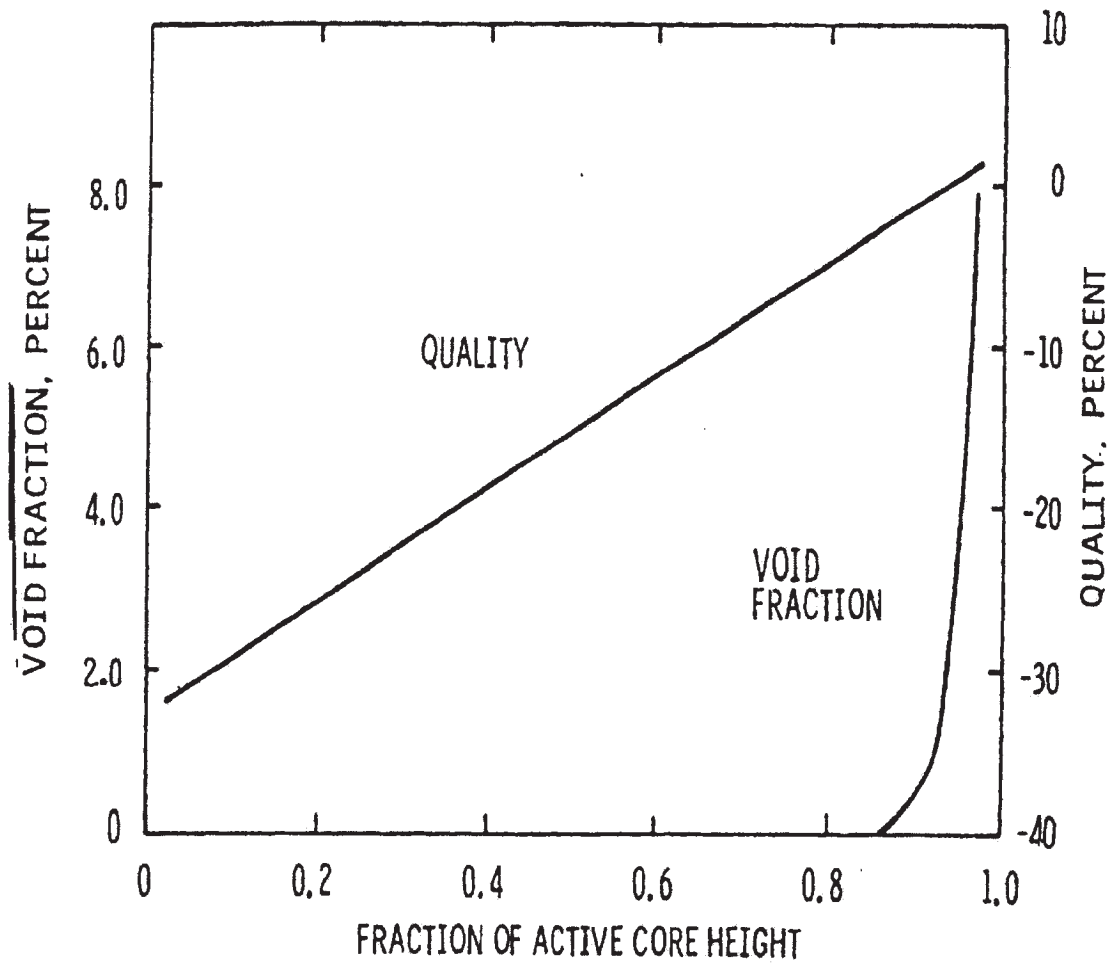
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

AVERAGE VOID FRACTIONS AND QUALITIES AT
THE EXIT OF DIFFERENT CORE REGIONS

FIGURE 4.4-5

JUNE 2001

REVISION 11



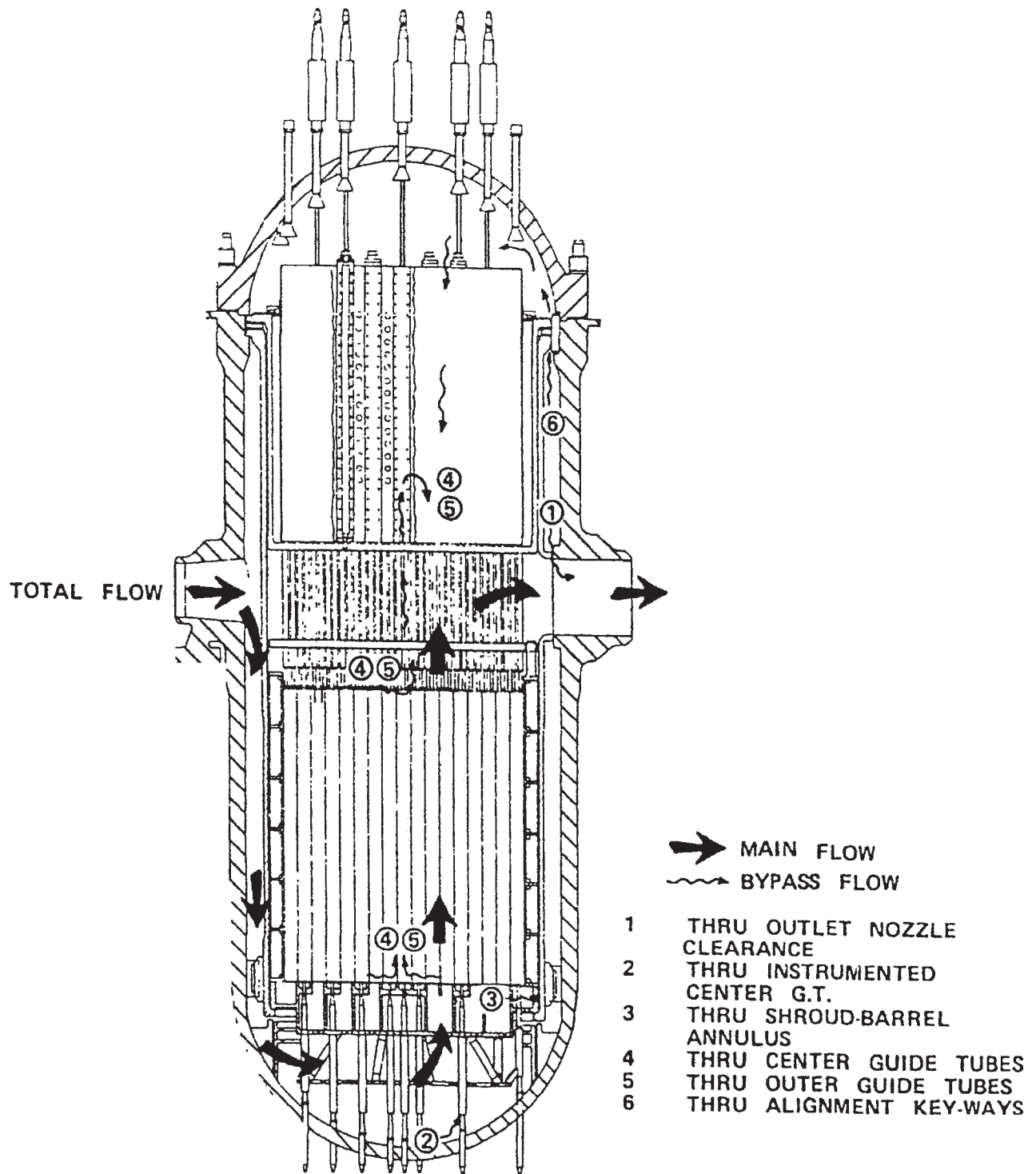
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

AXIAL DISTRIBUTION OF VOID FRACTION AND
QUALITY IN THE SUBCHANNEL ADJACENT TO
THE ROD WITH MINIMUM DNBR

FIGURE 4.4-6

JUNE 2001

REVISION 11



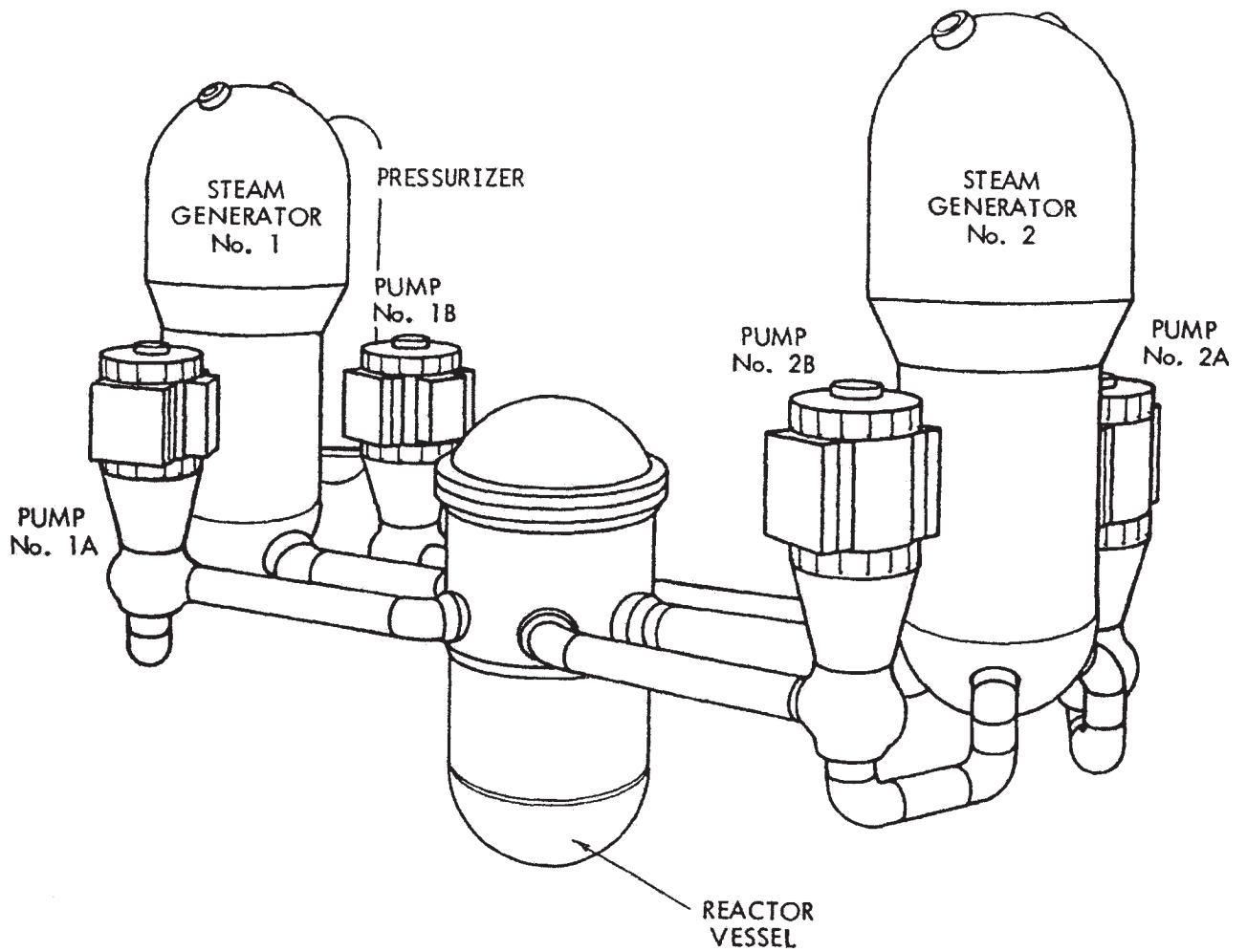
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

REACTOR FLOW PATHS

FIGURE 4.4-7

JUNE 2001

REVISION 11



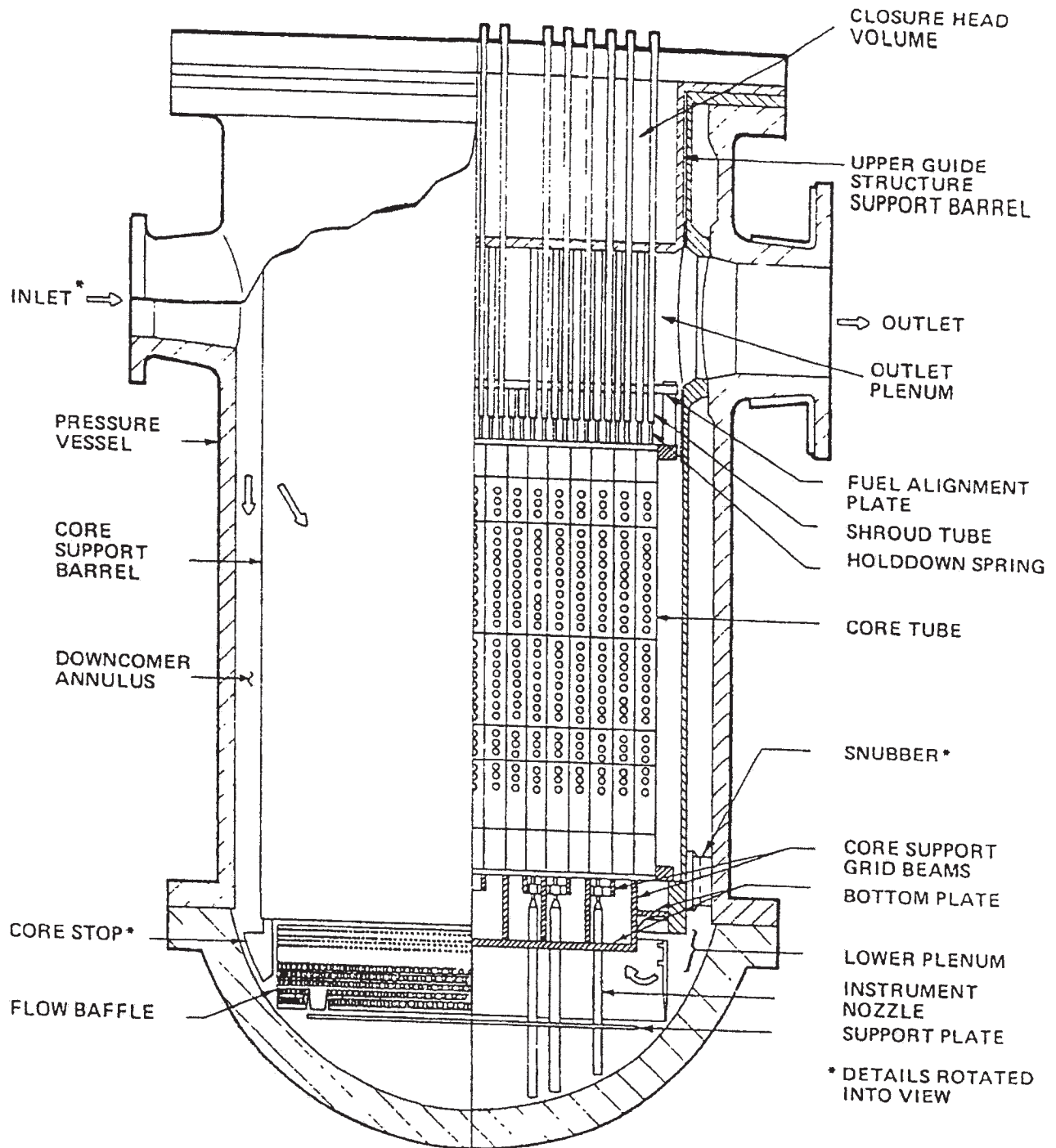
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ISOMETRIC VIEW OF THE REACTOR
COOLANT SYSTEM

FIGURE 4.4-8

JUNE 2001

REVISION 11



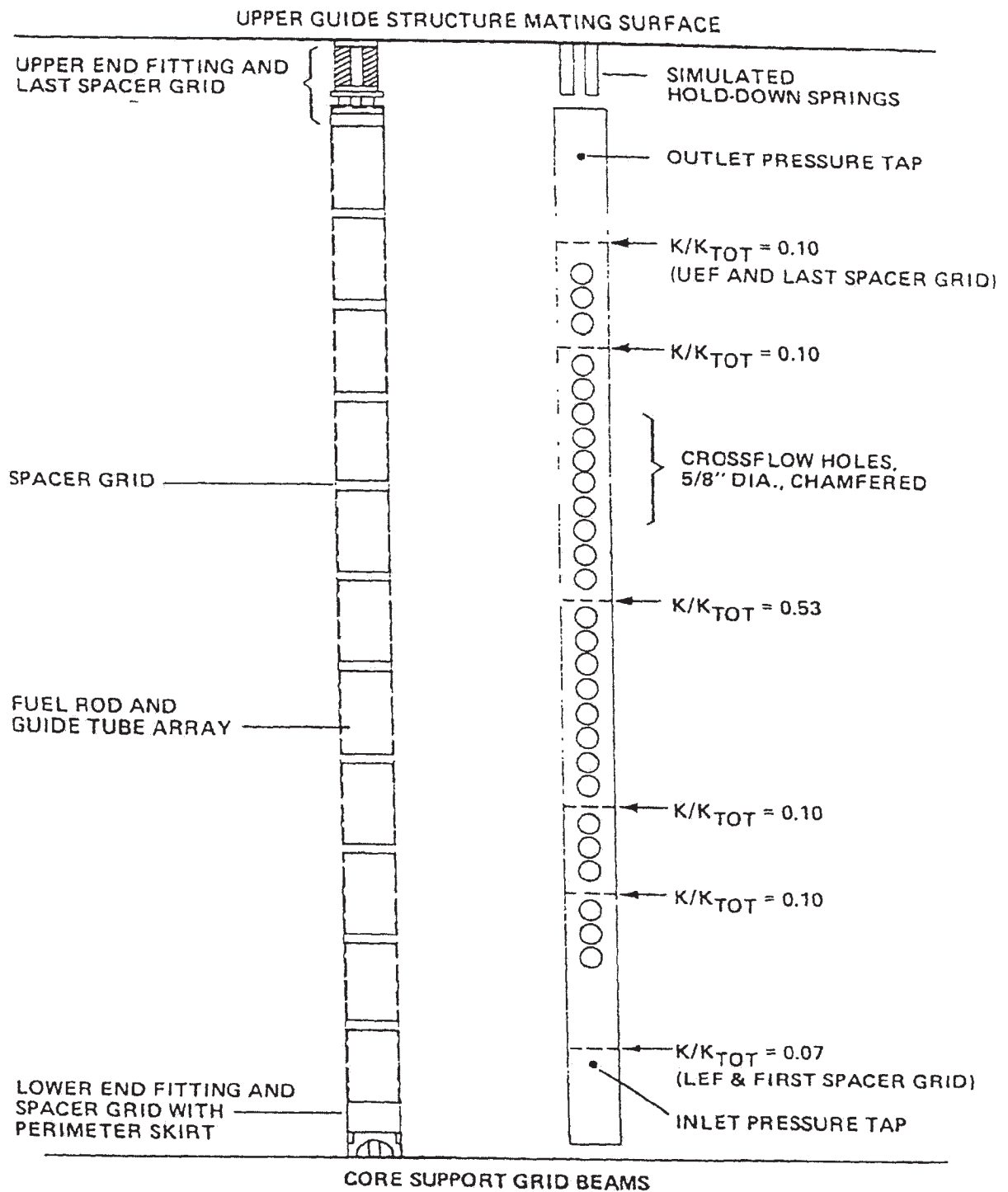
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR FLOW MODEL

FIGURE 4.4-9

JUNE 2001

REVISION 11



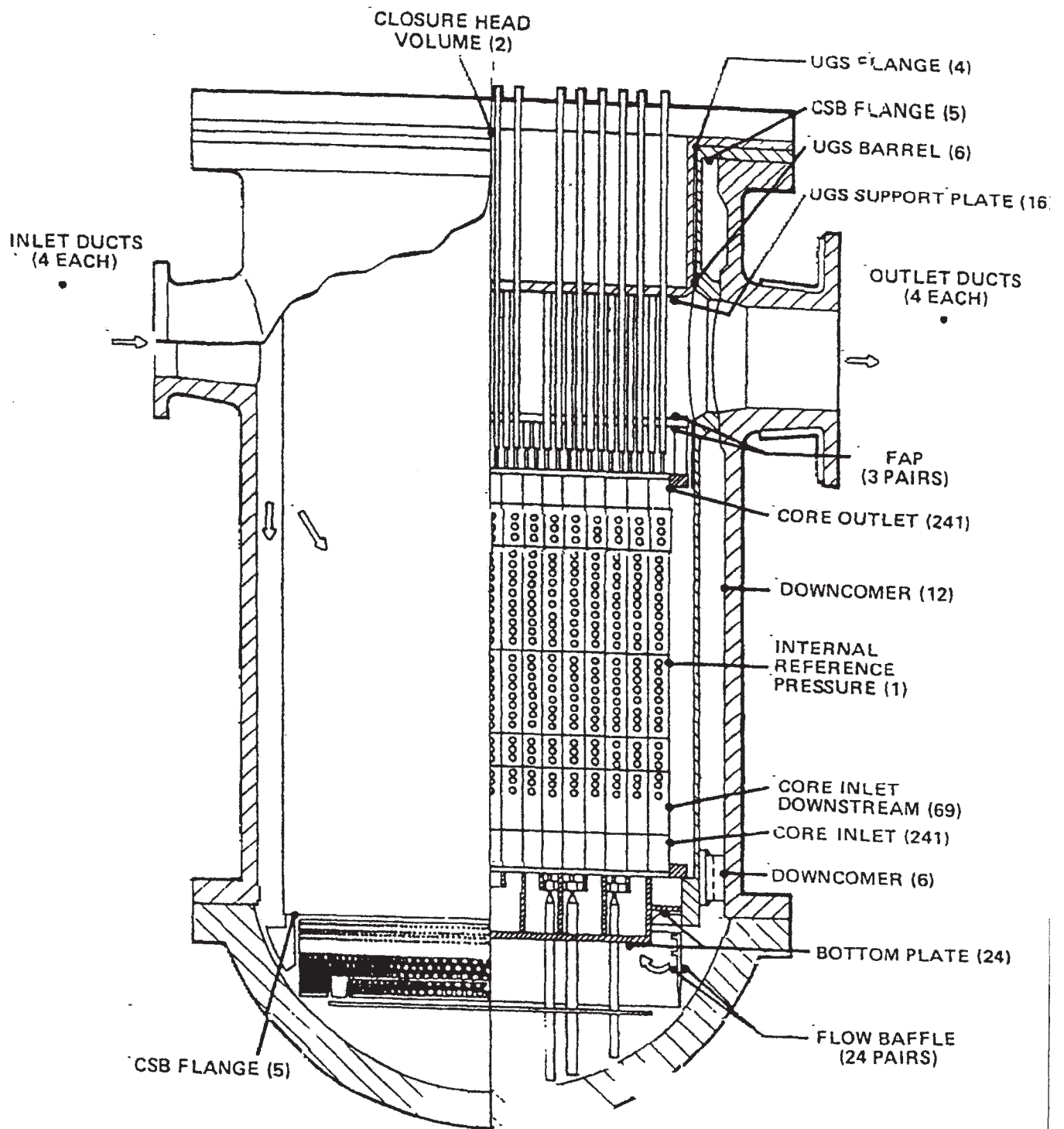
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

COMPARISON OF REACTOR AND MODEL
FUEL ASSEMBLY LAYOUT

FIGURE 4.4-10

JUNE 2001

REVISION 11



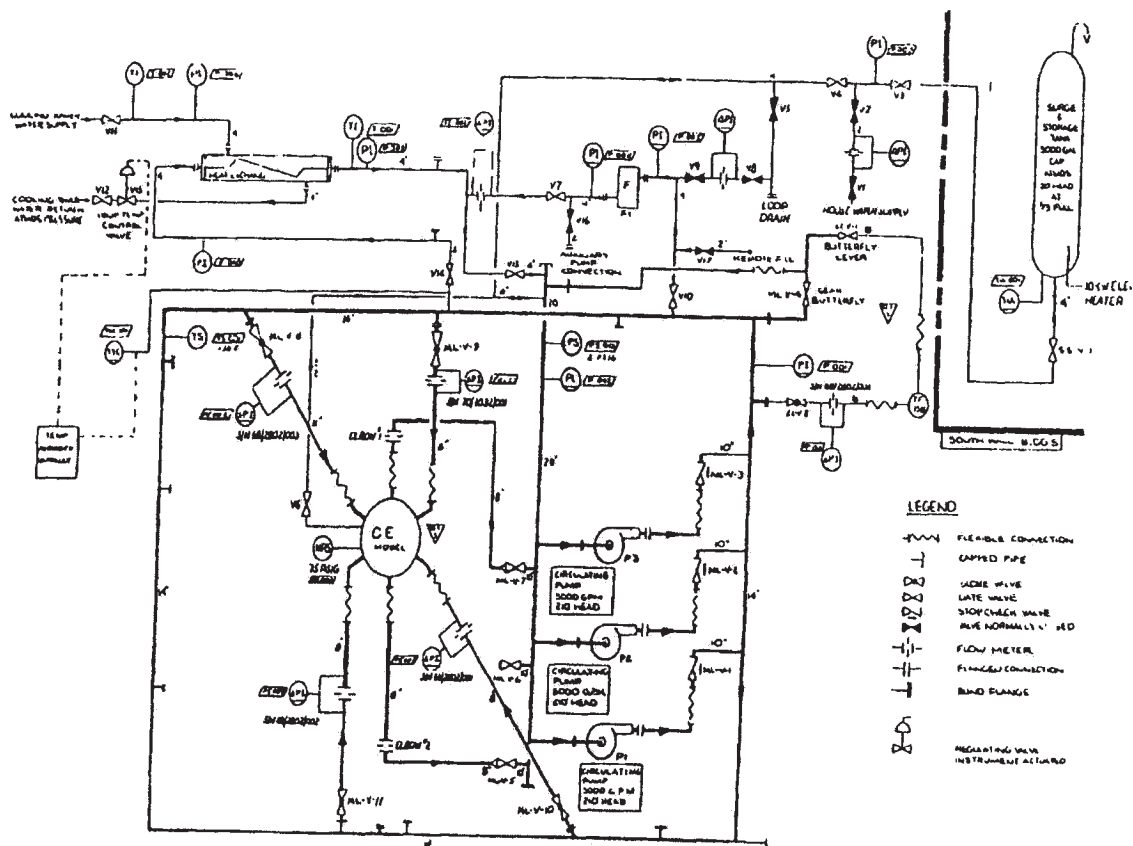
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PRESSURE TRAP LOCATIONS IN THE
REACTOR FLOW MODEL

FIGURE 4.4-11

JUNE 2001

REVISION 11



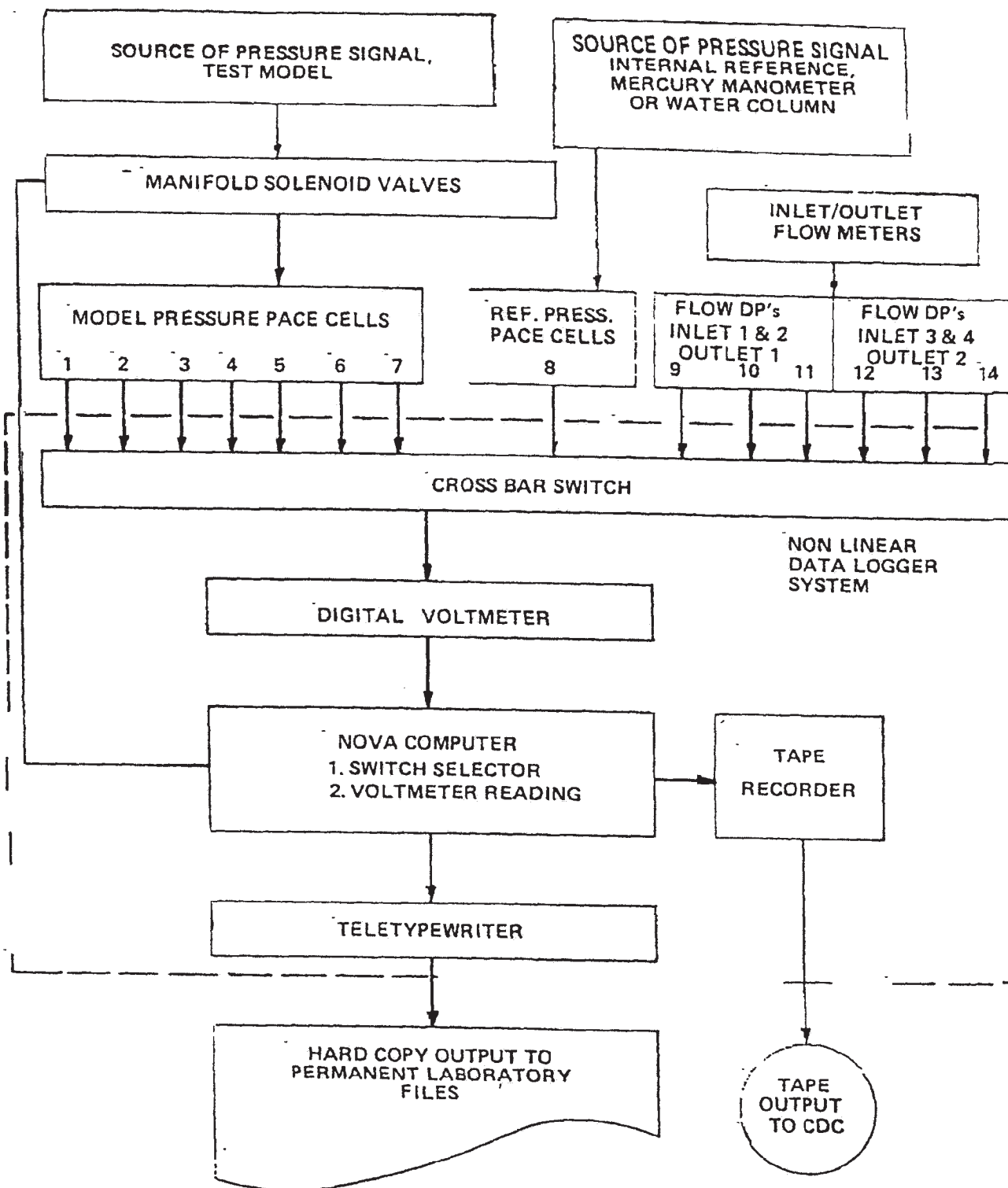
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TEST LOOP SCHEMATIC

FIGURE 4.4-12

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SCHEMATIC OF DATA ACQUISITION SYSTEM

FIGURE 4.4-13

JUNE 2001

REVISION 11

					1.11 1.01	0.97 1.01	1.00 1.01	1.05 1.01	0.99 1.01	0.95 1.01	0.93 0.99					
		0.86 0.99	0.98 1.01	0.87 0.96	0.83 0.89	0.84 0.96	1.04 0.96	0.93 0.89	0.90 0.96	1.02 0.96	0.87 1.01	0.94 1.01				
	0.93 1.01	1.16 0.96	1.12 1.08	0.97 1.03	1.11 1.08	1.08 1.03	1.13 1.08	1.11 1.08	1.06 1.03	1.09 1.08	0.85 0.89	0.99 0.96	1.10 1.01			
1.07 1.01	0.89 0.89	0.95 0.96	0.93 0.89	0.95 1.01	0.95 1.01	1.01 1.01	1.00 1.01	1.07 1.01	0.96 1.01	0.96 1.01	0.92 0.96	0.88 0.89	0.84 0.96	0.98 1.01		
1.10 1.01	1.08 1.08	0.98 0.96	1.08 1.08	1.05 0.99	1.02 1.01	0.95 0.99	1.07 1.01	0.99 1.01	0.95 0.99	1.04 1.01	1.08 1.08	0.96 0.96	1.09 1.08	1.12 0.99		
0.90 1.01	0.86 0.89	1.03 1.08	0.89 0.99	0.98 1.01	0.98 1.01	0.95 1.01	0.95 1.01	0.99 0.99	1.15 1.01	1.01 1.01	1.04 0.99	0.98 1.01	1.03 1.01	0.98 1.03	0.94 0.96	0.90 1.01
0.95 1.01	1.03 0.96	1.05 1.03	1.02 1.01	1.04 1.01	1.07 0.99	1.03 1.01	1.06 1.01	1.08 1.01	1.05 1.01	1.01 1.01	1.05 1.01	1.05 1.01	1.05 0.99	1.12 1.08	1.20 0.96	0.96 1.01
1.02 1.01	0.90 0.96	1.02 1.08	0.92 0.99	0.97 1.01	0.98 1.01	0.99 1.01	1.03 0.99	0.96 1.01	0.96 1.01	1.01 1.01	0.91 0.99	0.93 1.01	0.96 1.01	0.98 1.08	1.00 0.96	0.94 0.99
1.05 0.99	0.88 0.96	0.92 1.03	1.03 1.01	0.87 0.99	0.99 1.01	0.98 1.01	1.03 1.01	1.01 0.99	0.97 0.99	1.02 1.01	1.00 1.01	0.92 1.01	0.95 1.01	0.94 1.08	0.85 0.89	1.16 1.01
1.05 1.01	1.09 0.96	1.08 1.08	0.96 1.01	0.94 1.01	1.04 0.99	1.06 1.01	1.09 1.01	0.97 1.01	0.91 1.01	0.97 0.99	1.11 1.01	1.05 1.01	0.94 0.99	1.047 1.08	0.81 0.96	0.96 1.01
0.93 0.99	1.09 0.96	1.04 1.08	1.01 0.99	1.16 1.01	1.12 1.01	1.02 0.99	1.06 1.01	1.02 0.99	1.11 1.01	0.96 1.01	1.05 0.99	1.00 1.01	1.08 1.01	0.98 1.03	1.00 0.96	1.01 1.01
1.02 1.01	0.92 1.96	1.05 1.03	0.95 1.01	0.79 1.01	1.08 1.01	0.98 1.01	0.99 1.01	0.89 1.01	1.01 1.01	0.99 1.01	1.03 1.01	0.93 1.01	0.93 0.99	1.03 1.08	0.87 0.89	0.90 1.01
	1.00 1.01	1.08 1.08	0.96 0.96	1.03 1.03	1.05 1.01	0.98 0.99	1.08 1.01	1.03 1.01	1.04 0.99	1.14 1.01	1.03 0.99	1.09 1.08	1.05 0.96	1.13 1.08	1.08 1.01	
	1.01 1.01	0.97 0.96	0.91 0.96	0.86 0.96	0.97 1.01	1.05 1.01	0.97 1.01	1.00 0.99	0.95 1.01	0.90 1.01	1.00 1.01	0.92 0.89	0.93 0.96	0.90 0.89	1.00 1.01	
		1.07 0.99	0.94 0.96	0.93 0.89	1.10 1.08	1.11 1.03	1.13 1.08	1.17 1.08	1.03 1.03	1.11 1.08	1.09 1.03	0.98 1.08	1.00 0.96	1.06 1.01		
			0.94 1.01	1.07 1.01	0.90 0.96	0.99 0.96	0.89 0.89	1.00 0.96	0.88 0.96	0.94 0.89	0.79 0.96	1.07 1.01	0.86 0.99			
					0.93 0.99	0.96 1.01	1.02 1.01	1.04 1.01	1.02 1.01	0.96 1.01	1.03 1.01					

Note: The first (top) values represents the original 4-pump flow distribution based on 3/16 scale flow model tests. The second (bottom) values represents current TORC 4-pump flow distributions based on later Yonggwang 177-assembly tests.

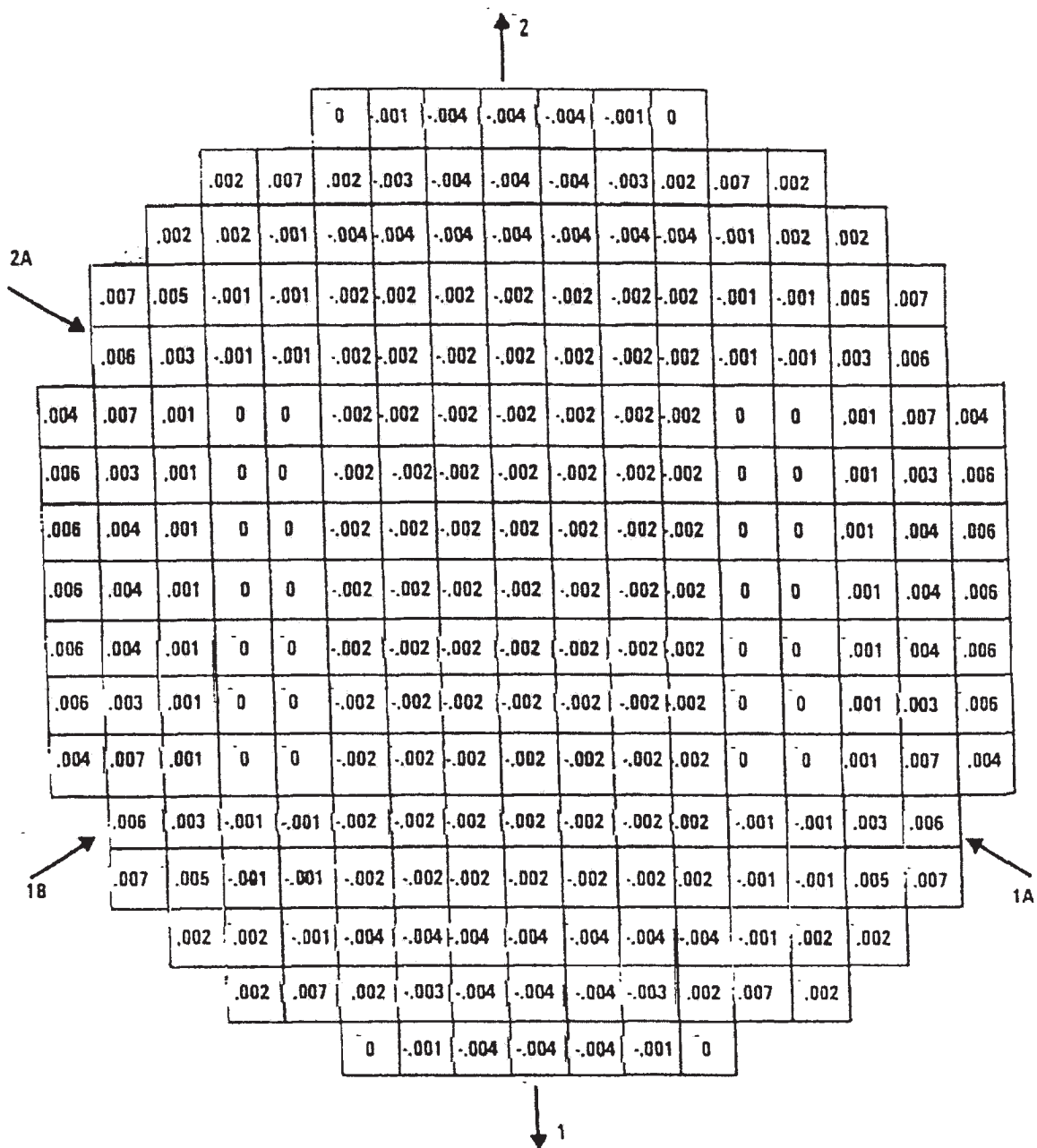
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CORE INLET FLOW DISTRIBUTION Qi/Q Bar

FIGURE 4.4-14

JUNE 2009

REVISION 15



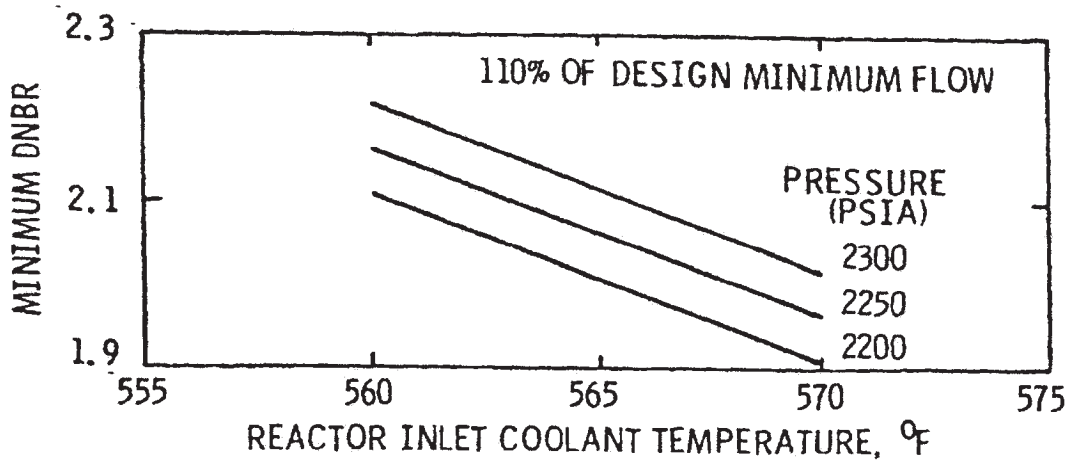
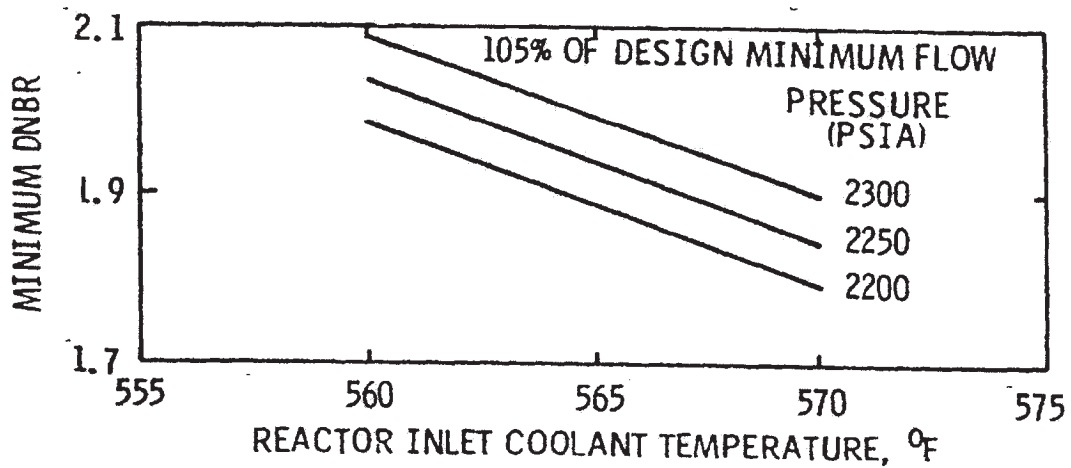
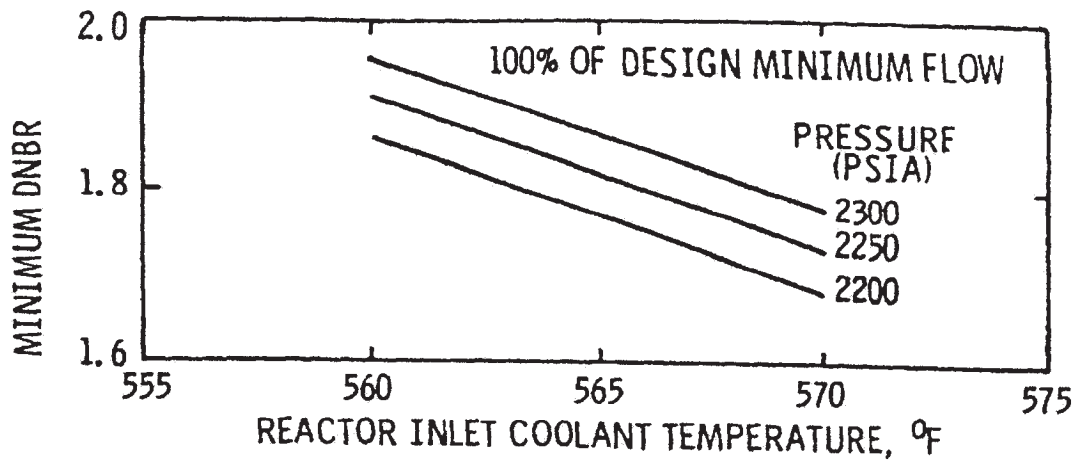
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CORE EXIT EULER NUMBERS, Ei

FIGURE 4.4-15

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SENSITIVITY OF MINIMUM DNBR TO SMALL
CHANGES IN REACTOR COOLANT CONDITIONS

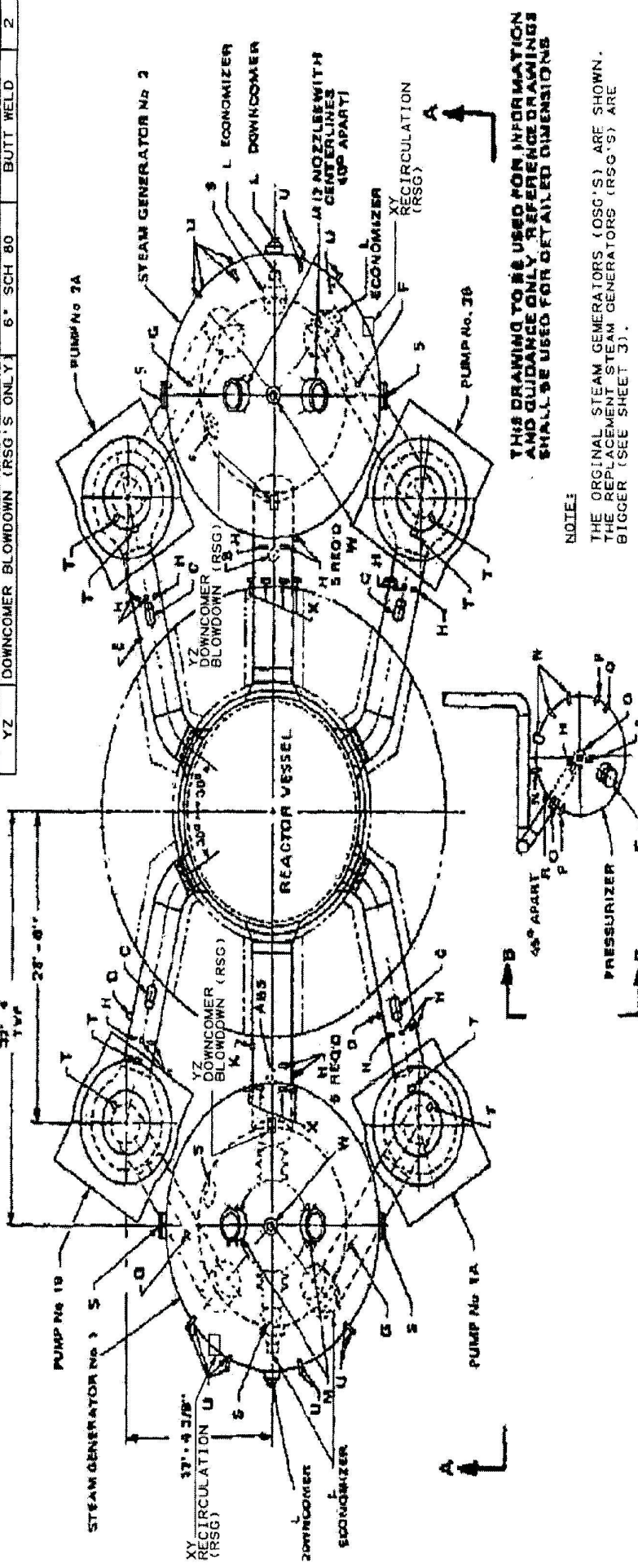
FIGURE 4.4-16

JUNE 2001

REVISION 11

NOZZLE IDENTIFICATION				
CODE LETTER	FUNCTION	PIPE SIZE	END PREPARATION	QTY
M	STEAM OUTLET	24" SCH 160	BUTT WELD	4
N	SAFETY VALVE INLET	24" SCH 160	BUTT WELD	4
O	PRESSURIZER LEVEL	24" SCH 160	BUTT WELD	4
P	PRESSURIZER PRESSURE	24" SCH 160	BUTT WELD	4
Q	PRESSURIZER SPRAY	6" SCH 160	BUTT WELD	2
R	PRESSURIZER TEMPERATURE	1" SCH 160	BUTT WELD	1
S	MANWAY	18" ID	BUTT WELD	1
T	RCF FUNCTION/CHARGE PRESSURE	24" SCH 160	BUTT WELD	8
U	SIG PRESSURE/LEVEL MEASUREMENT	24" SCH 160	BUTT WELD	24
V	BOTTOM TOWN	8" SCH 80	BUTT WELD	4
W	PRESSURE TEG	24" SCH 160	BUTT WELD	2
X	RCF PRESSURE DROPT TANK	24" SCH 160	BUTT WELD	18
Y	PRIMARY SURGE OUTLET	30" ID	BUTT WELD	4
Z	PRIMARY SIDE INLET	47 ID	BUTT WELD	2
XY	RECIRCULATION (RSG'S ONLY)	2" SCH 80	BUTT WELD	2
YZ	DOWNCOMER BLOWDOWN (RSG'S ONLY)	6" SCH 80	BUTT WELD	2

NOZZLE IDENTIFICATION				
CODE LETTER	FUNCTION	PIPE SIZE	END PREPARATION	QTY
A	PRESSURIZER SURGE	12" SCH 160	BUTT WELD	1
B	SHUTDOWN COOLING OUTLET	18" SCH 160	BUTT WELD	1
C	SAFETY INJECTION AND PRESSURIZER SPRAY	14" SCH 160	BUTT WELD	4
D	SHUTDOWN COOLANT INLET	3" SCH 160	BUTT WELD	3
E	SHUTDOWN COOLANT INLET	3" SCH 160	BUTT WELD	1
F	CHARGING INLET	3" SCH 160	BUTT WELD	1
G	LET DOWN & DRAIN	2" SCH 160	BUTT WELD	3
H	RAIN	1" SCH 160	BUTT WELD	23
I	TEMPERATURE MEASUREMENT	3/4" SCH 160	BUTT WELD	4
J	SAMPLING	3/4" SCH 160	BUTT WELD	3
L	PEROWATER	DOWN-COMER 16" SCH 80	BUTT WELD	4
		ECONOMIZER 14" SCH 80		



THIS DRAWING TO BE USED FOR INFORMATION AND GUIDANCE ONLY. REFERENCED DRAWINGS SHALL BE USED FOR DETAILED DIMENSIONS.

NOTE:
THE ORIGINAL STEAM GENERATORS (OSG'S) ARE SHOWN. THE REPLACEMENT STEAM GENERATORS (RSG'S) ARE BIGGER (SEE SHEET 3).

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR
REACTOR COOLANT SYSTEM ARRANGEMENT
3817 MWt

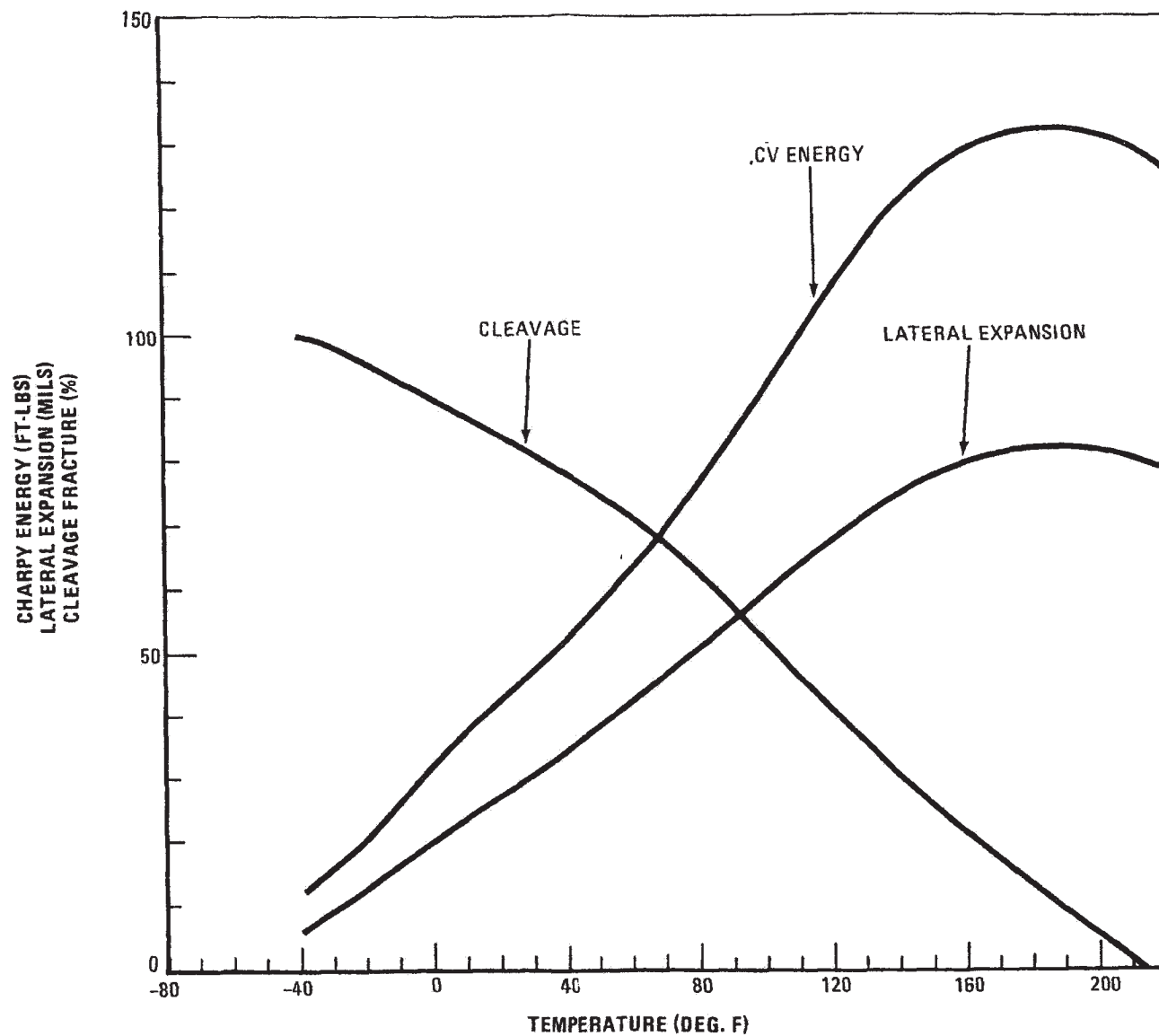
FIGURE 5.1-3 Sheet 1 of 2

REACTOR COOLANT SYSTEM ARRANGEMENT
4013 MWt

FIGURE 5.1-3 Sheet 2 of 2

JUNE 2009

REVISION 15



LOWER SHELL PLATE
CODE NUMBER
M-4311-1

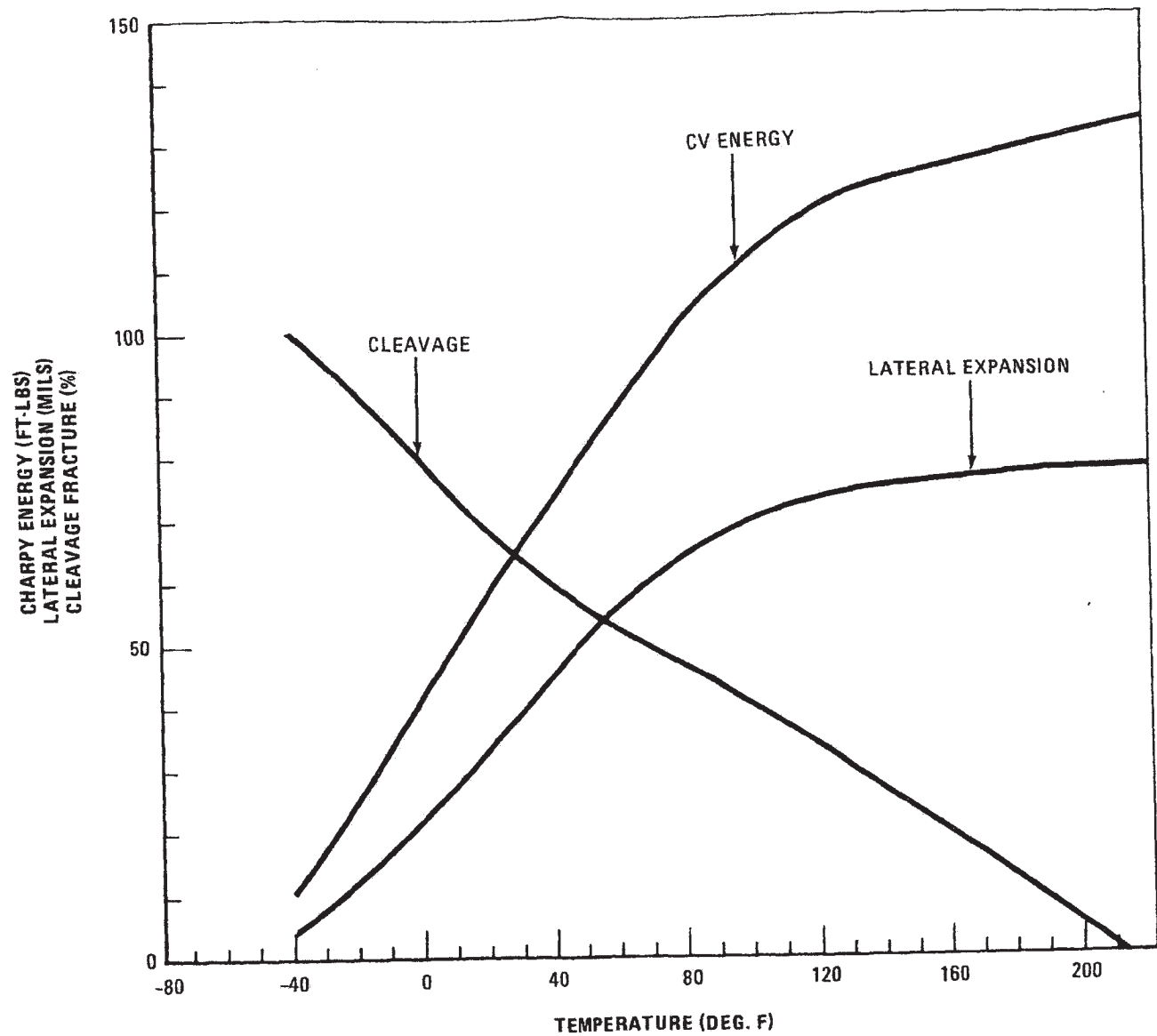
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 1 OF 20

JUNE 2003

REVISION 12



LOWER SHELL PLATE
CODE NUMBER
M-4311-2

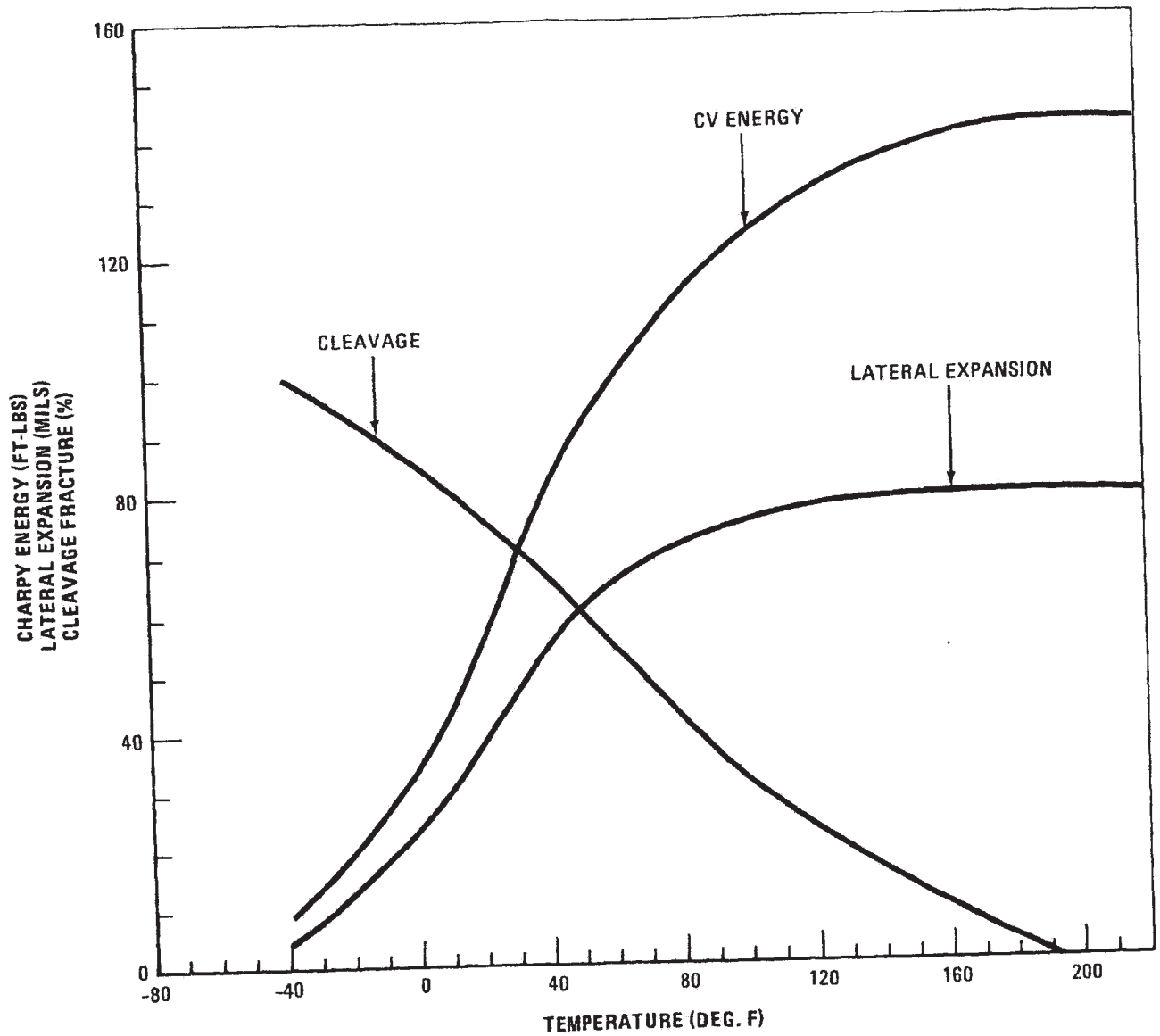
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 2 OF 20

JUNE 2003

REVISION 12



LOWER SHELL PLATE
CODE NUMBER
M-4311-3

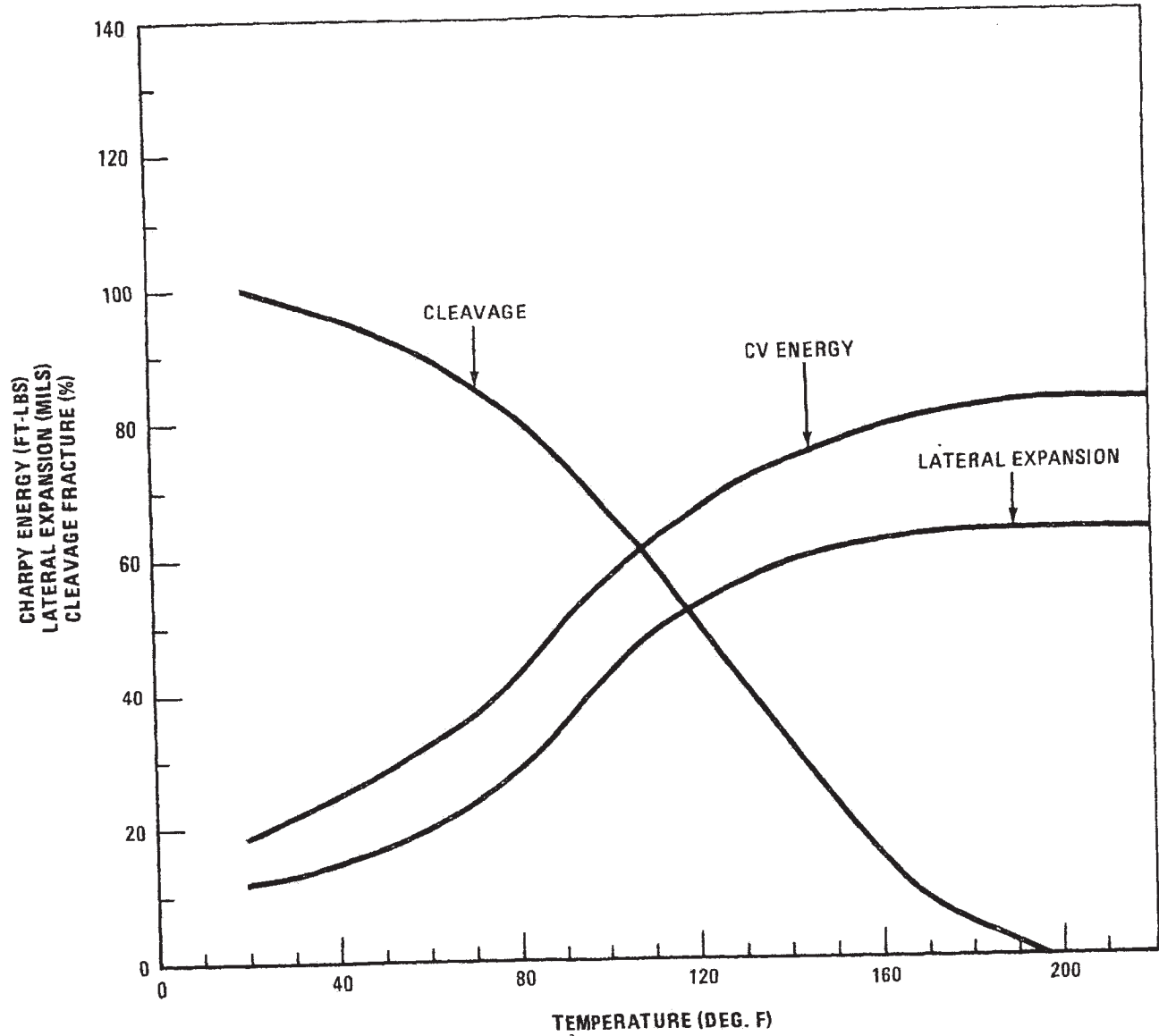
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 3 OF 20

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
PLATE
CODE NUMBER
M-6701-1

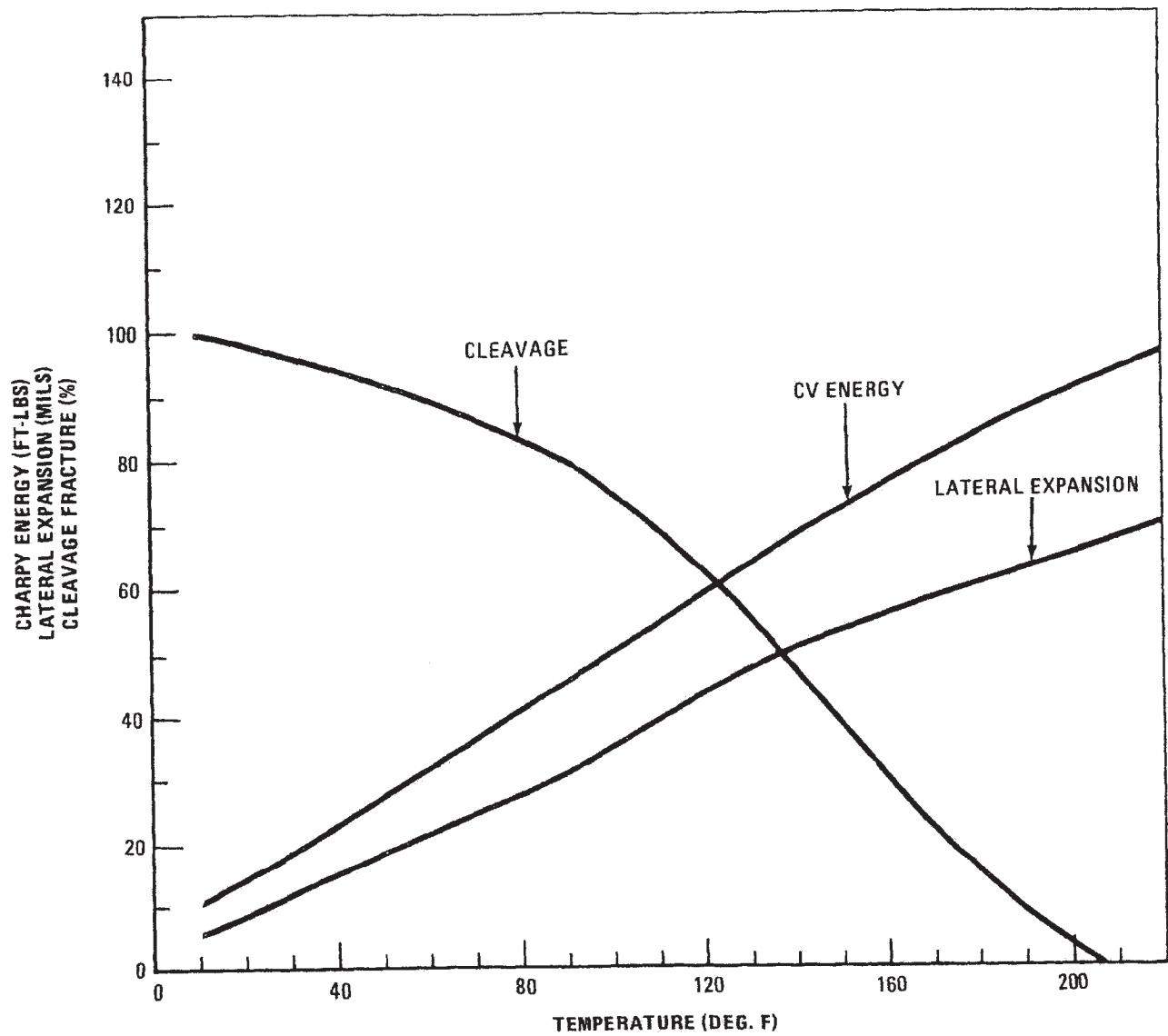
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 4 OF 20

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
PLATE
CODE NUMBER
M-6701-2

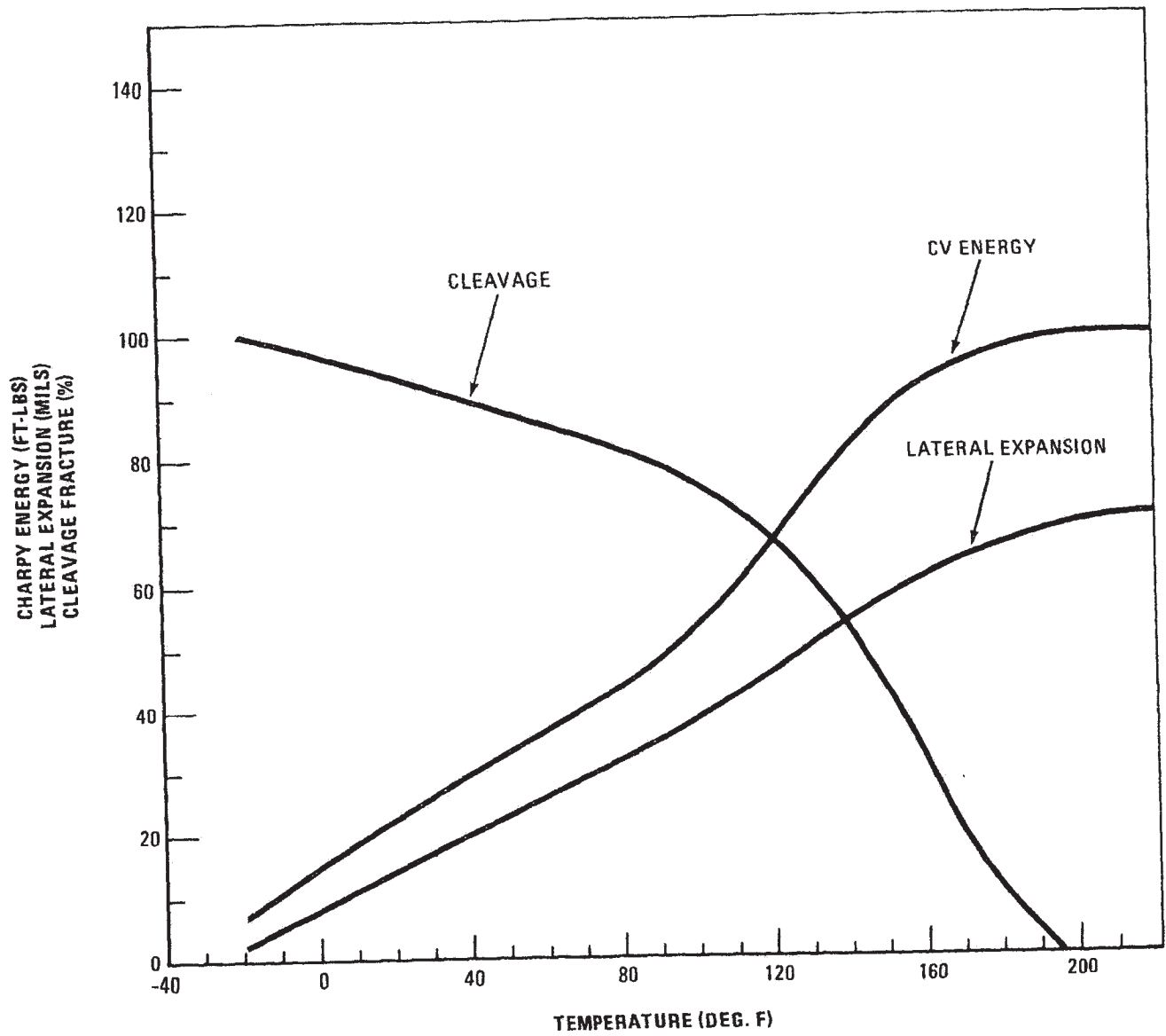
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 5 OF 20

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
PLATE
CODE NUMBER
M-6701-3

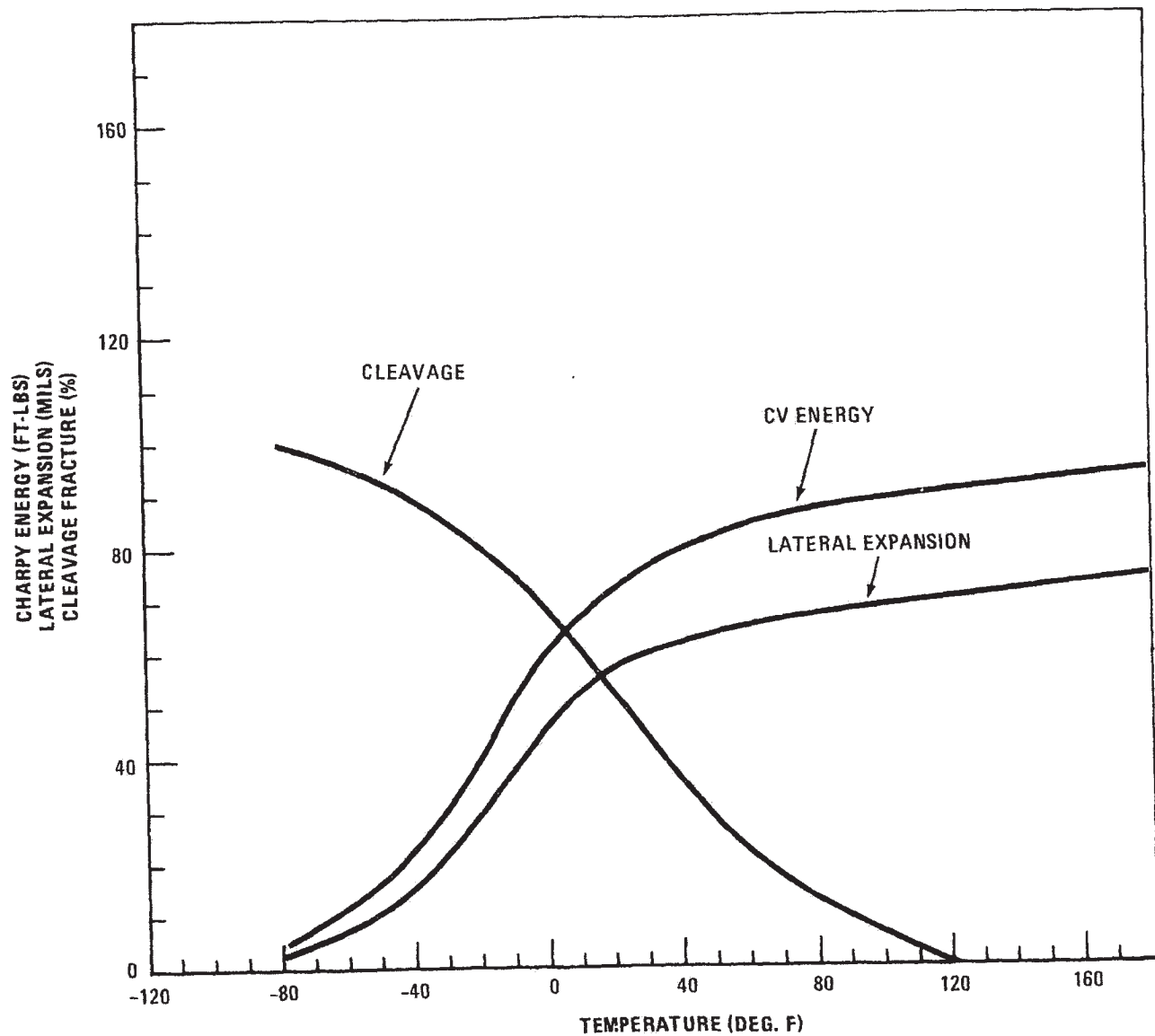
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 6 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-171
MIL B-4 WIRE
FLUX LINDE 124

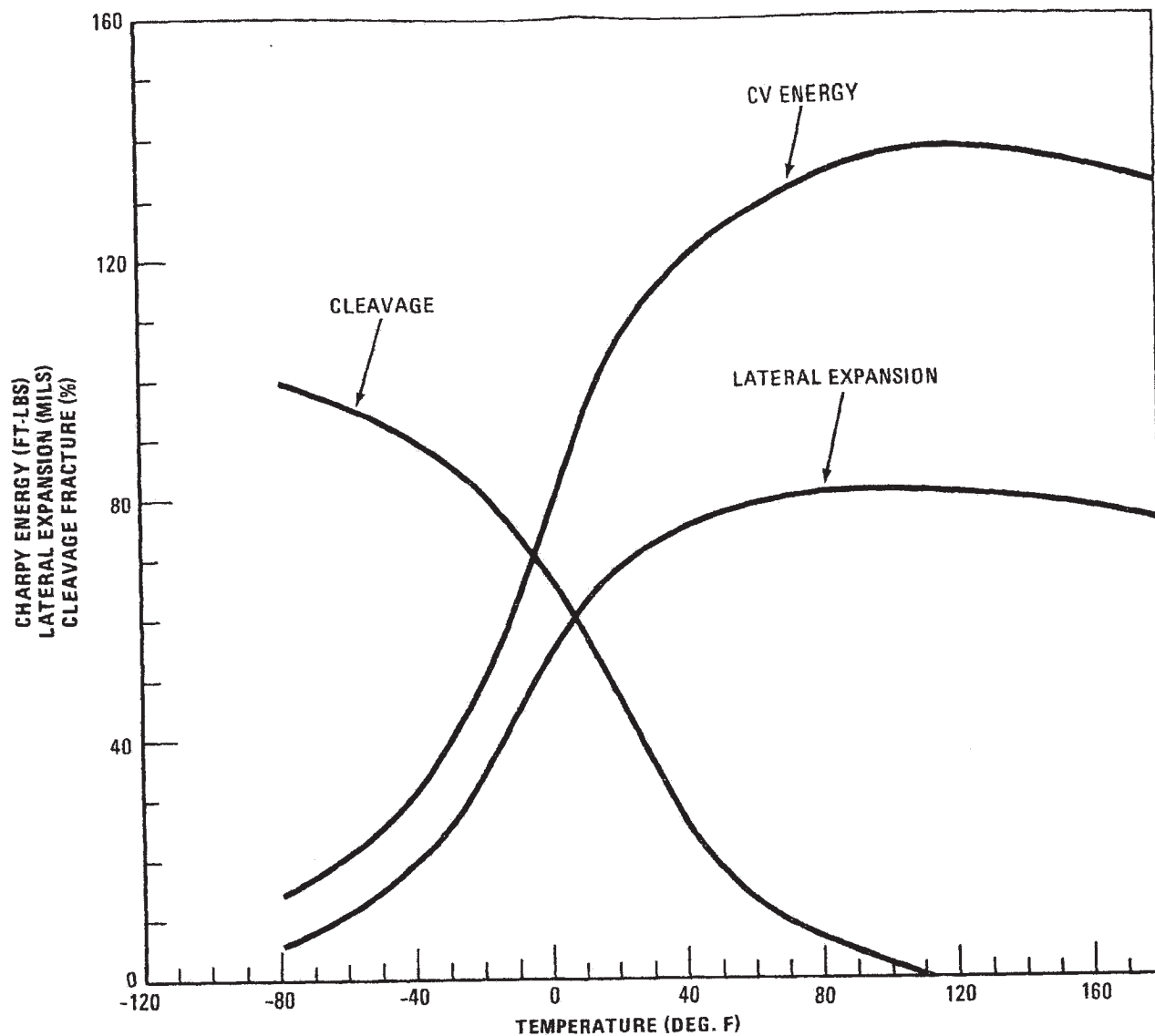
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 7 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-142
MIL B-4 WIRE
FLUX LINDE 0091

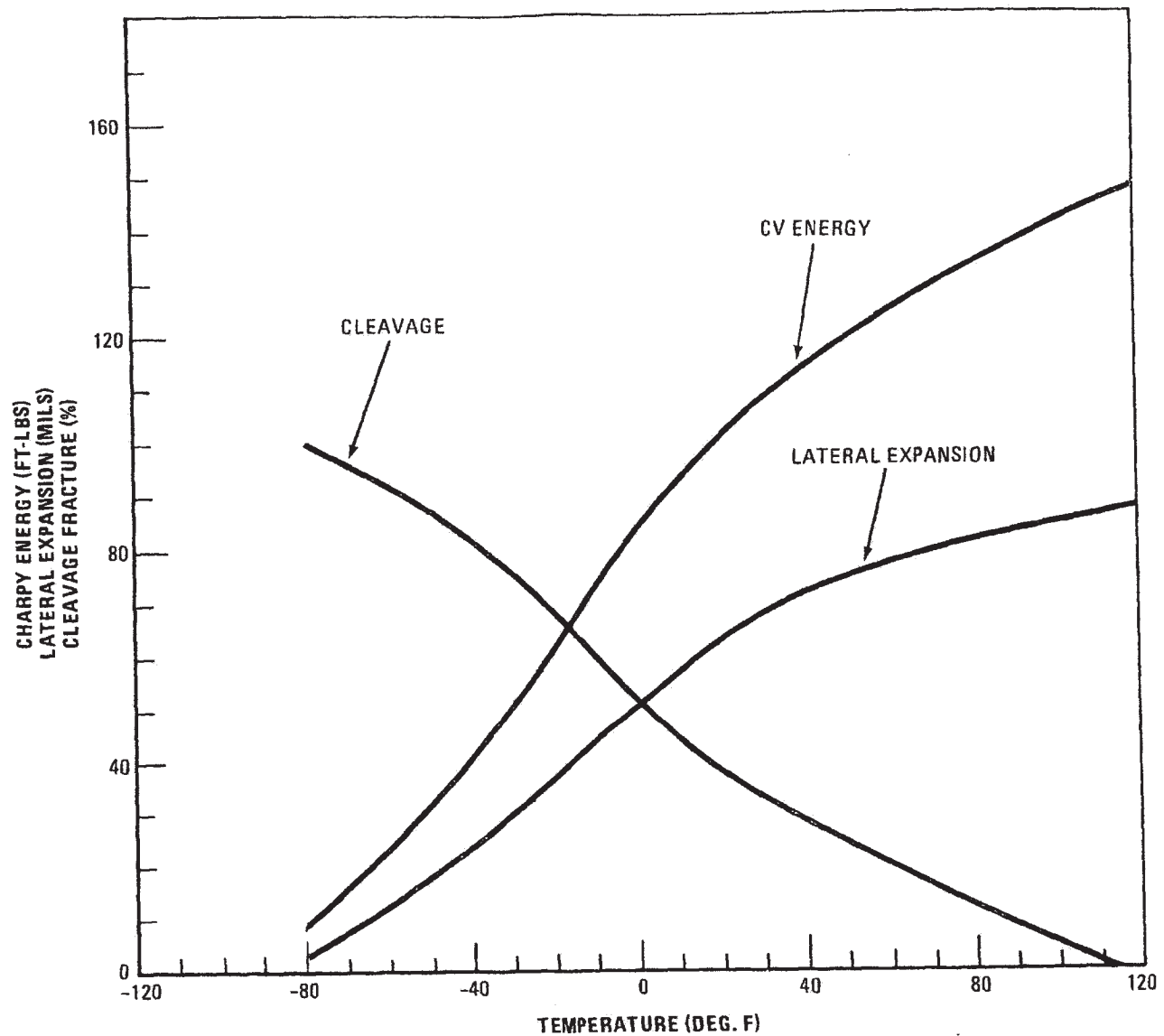
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 8 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-124
COATED ELECTRODE
LOT NO FAQED

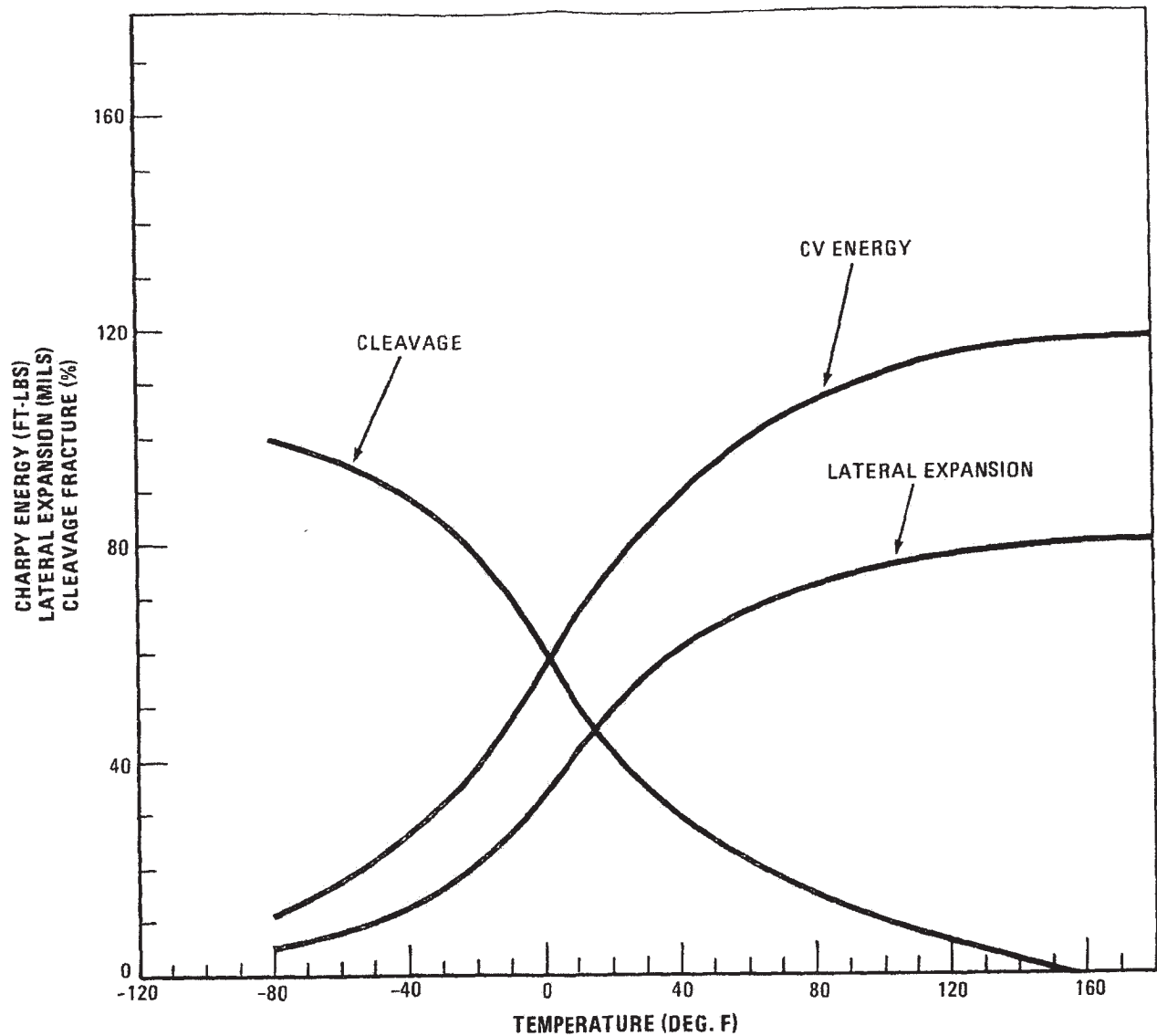
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 9 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-124
COATED ELECTRODE
LOT NO. HAAID

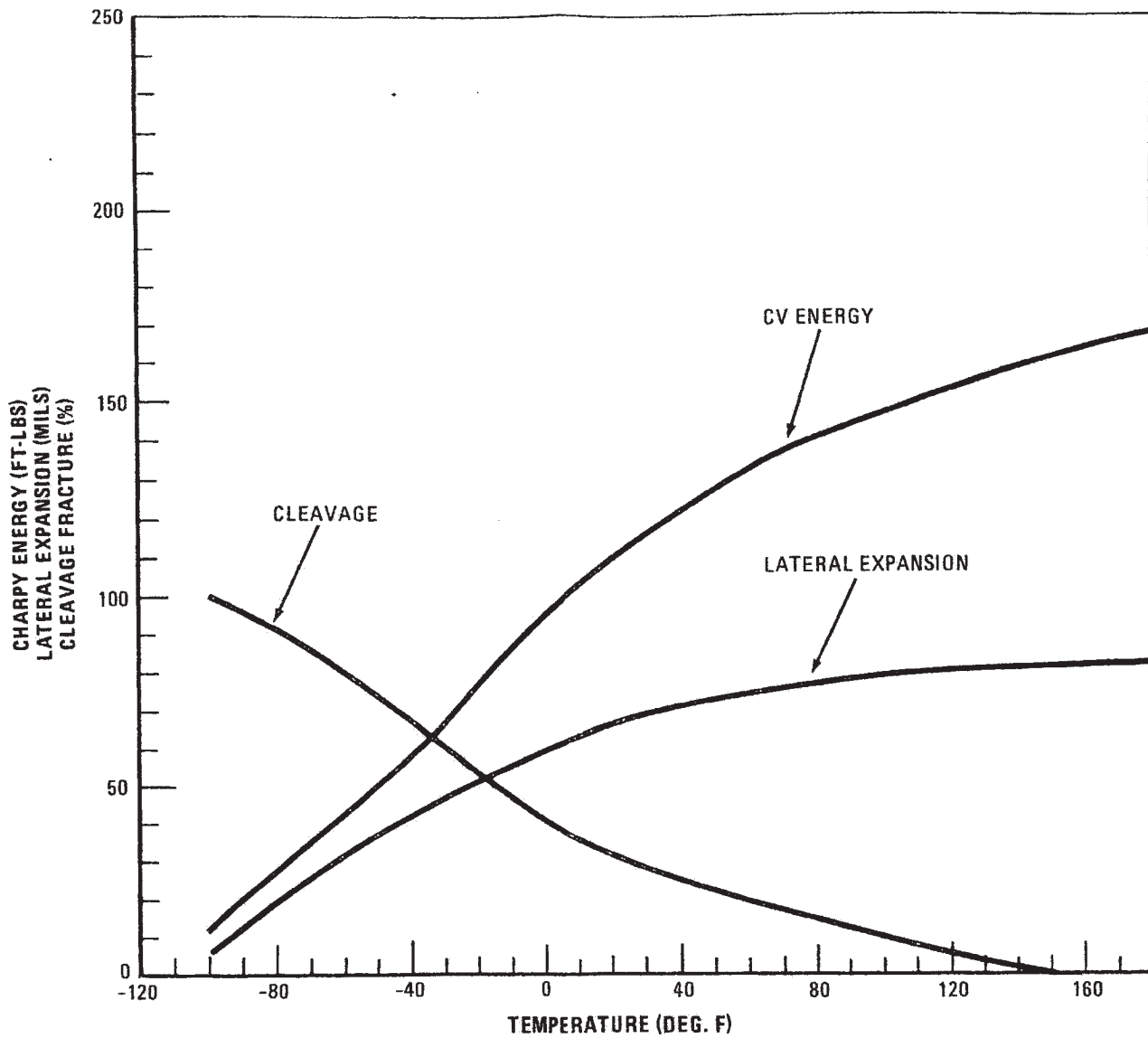
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 10 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-124
COATED ELECTRODE
LOT NO. GABFE

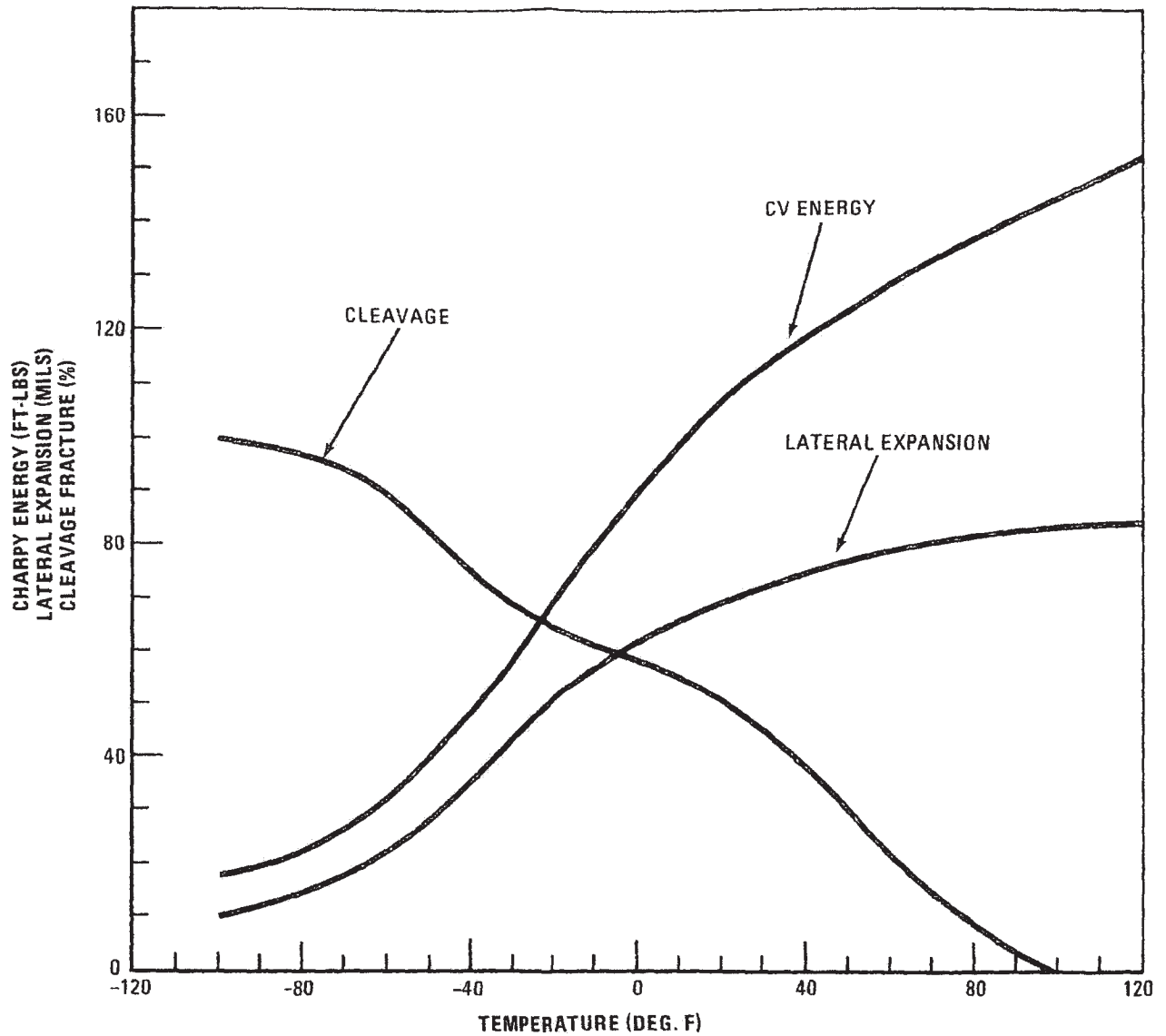
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 11 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-124
COATED ELECTRODE
LOT NO. HADEE

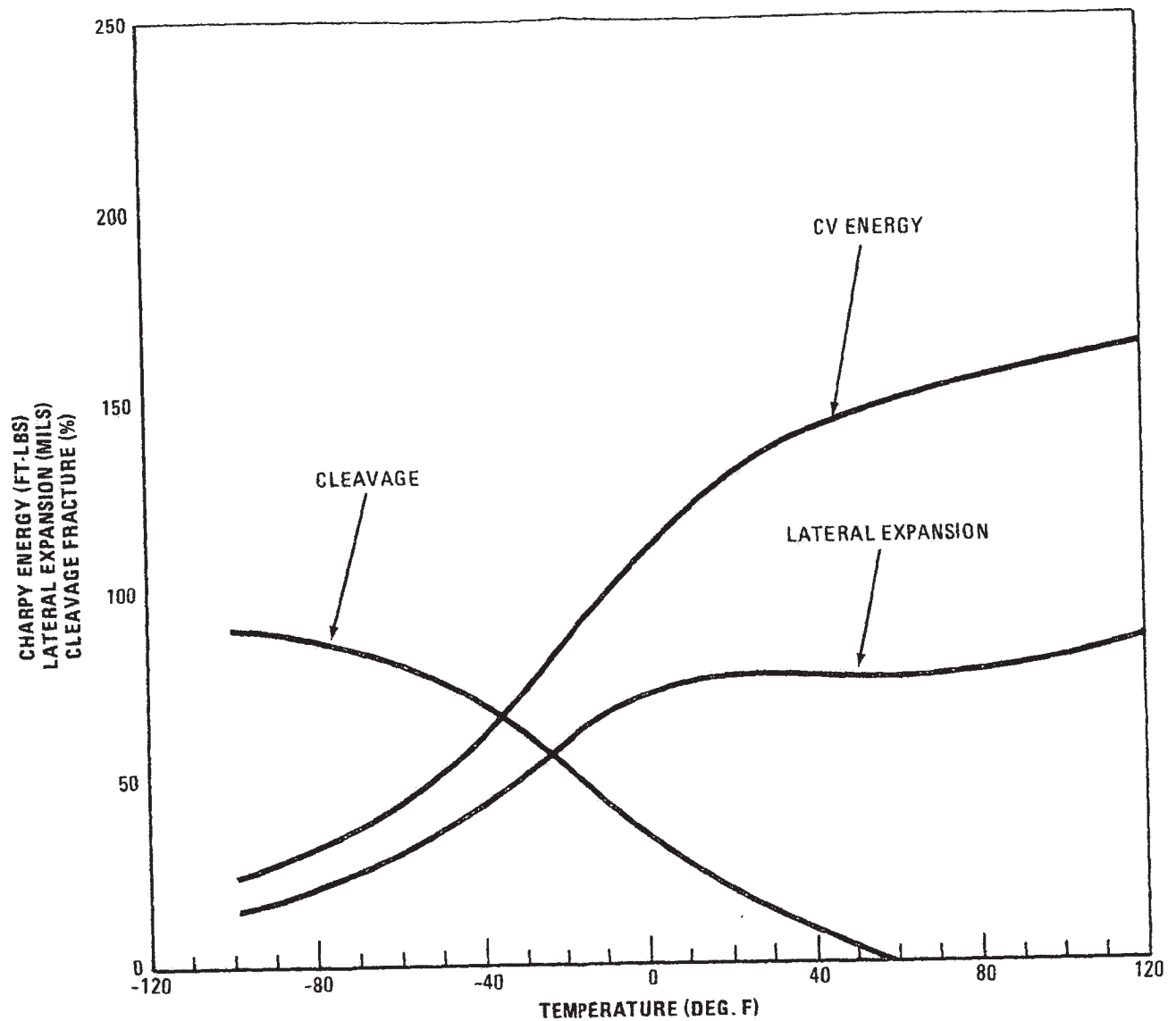
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 12 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-124
COATED ELECTRODE
LOT NO. HAACE

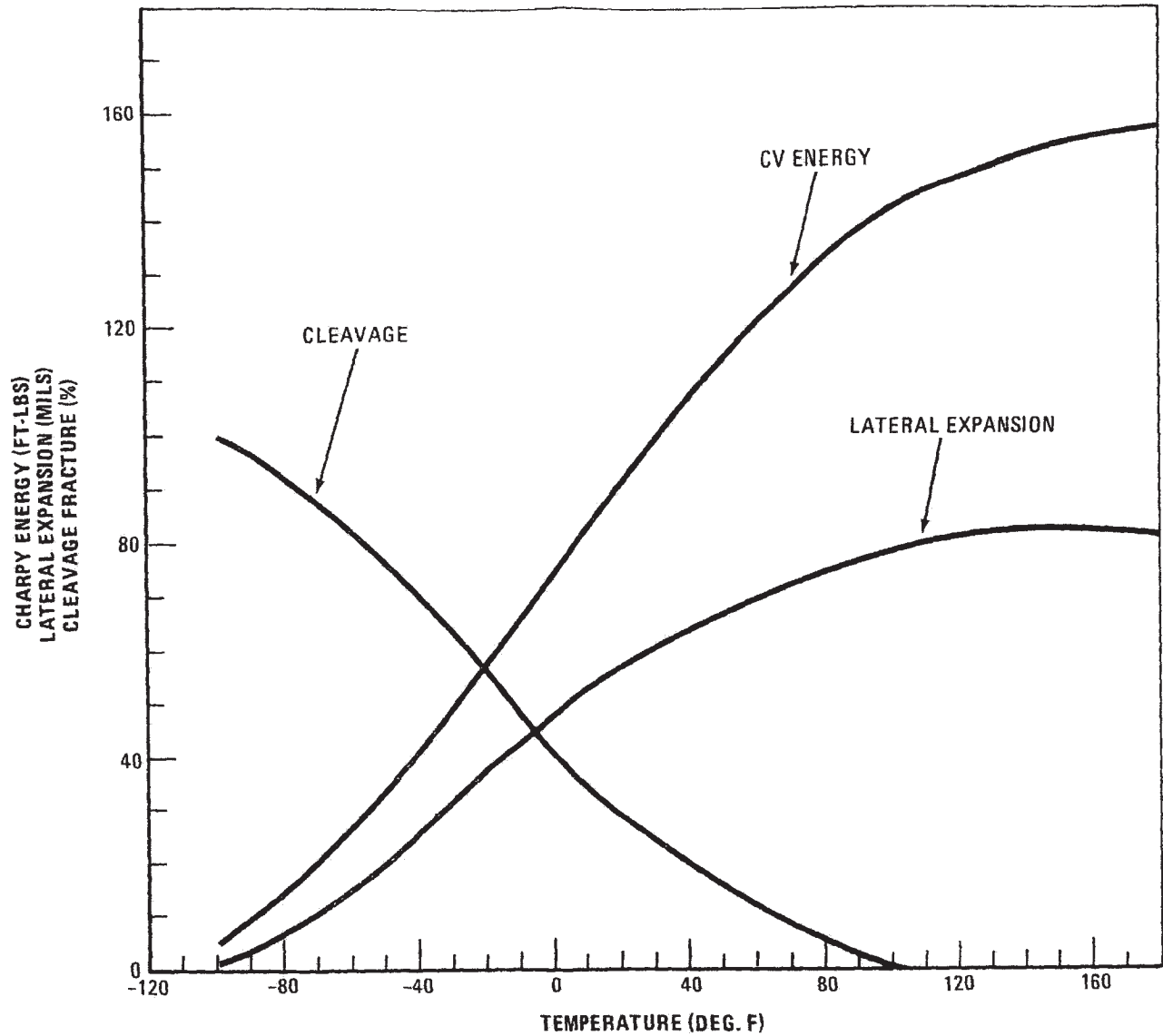
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 13 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-142
COATED ELECTRODE
LOT NO. IAOCE

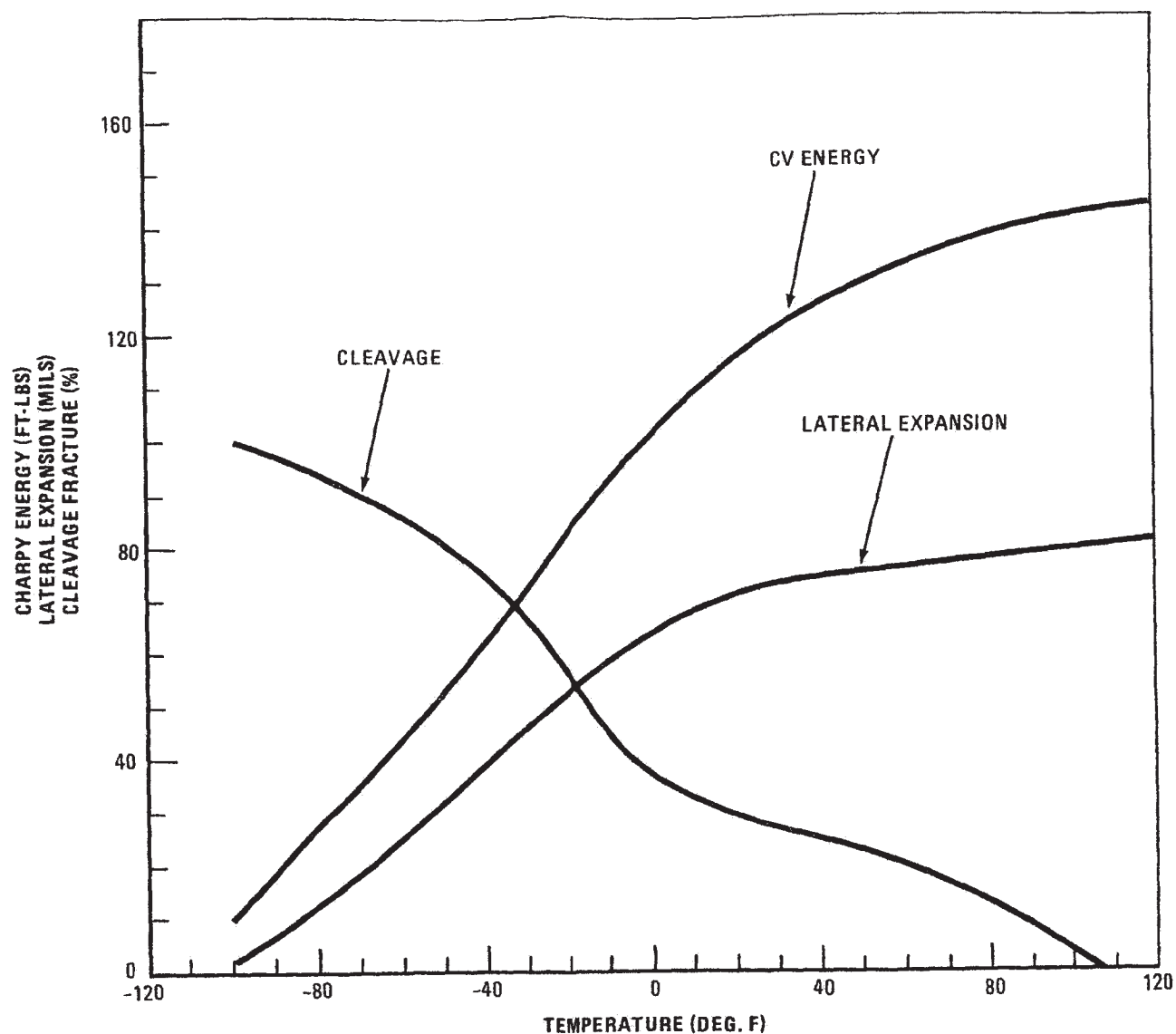
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 14 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-142
COATED ELECTRODE
LOT NO. KA0GE

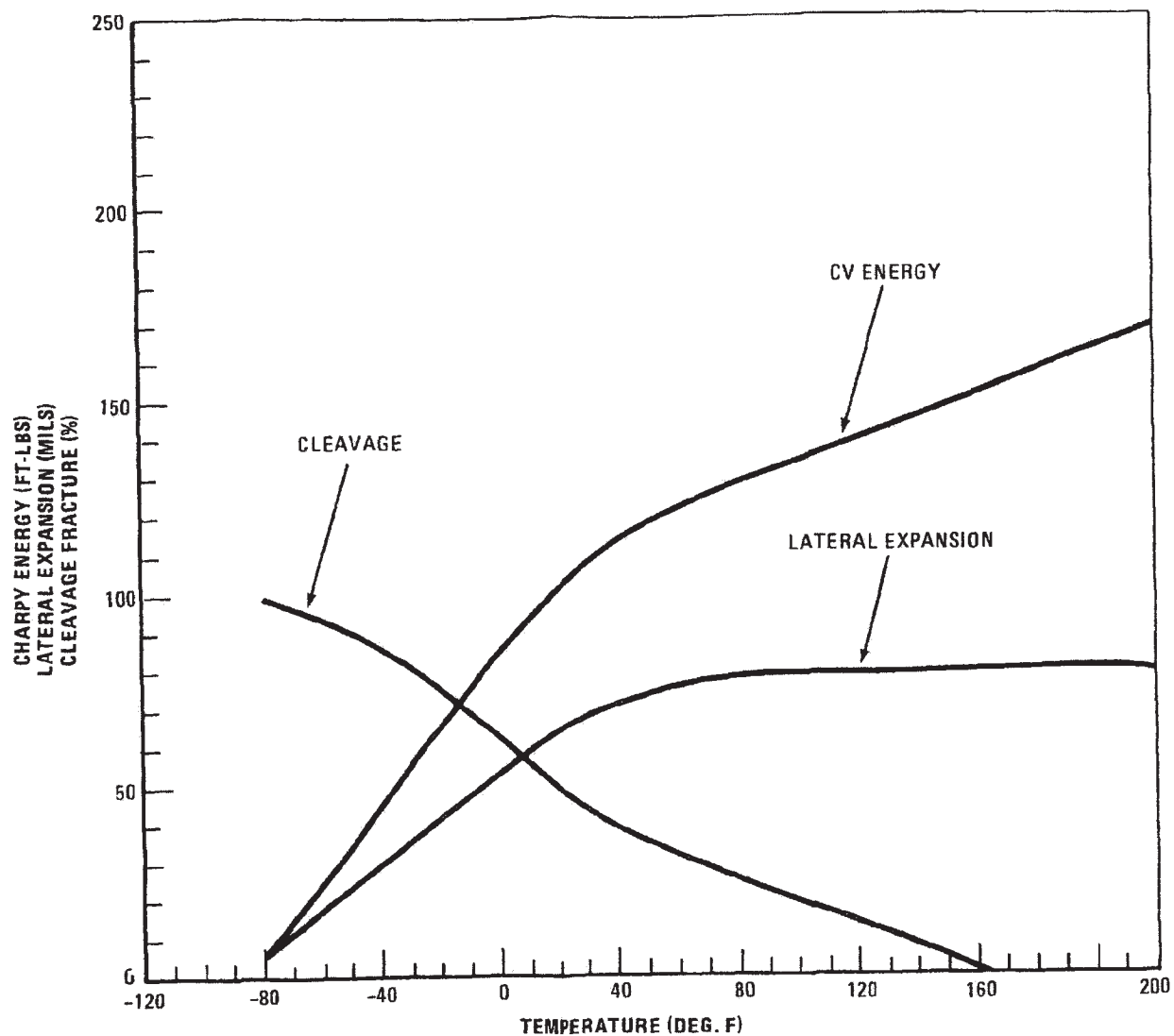
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 15 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBERS
101-124 & 101-142
COATED ELECTRODE
LOT NO. BABEF

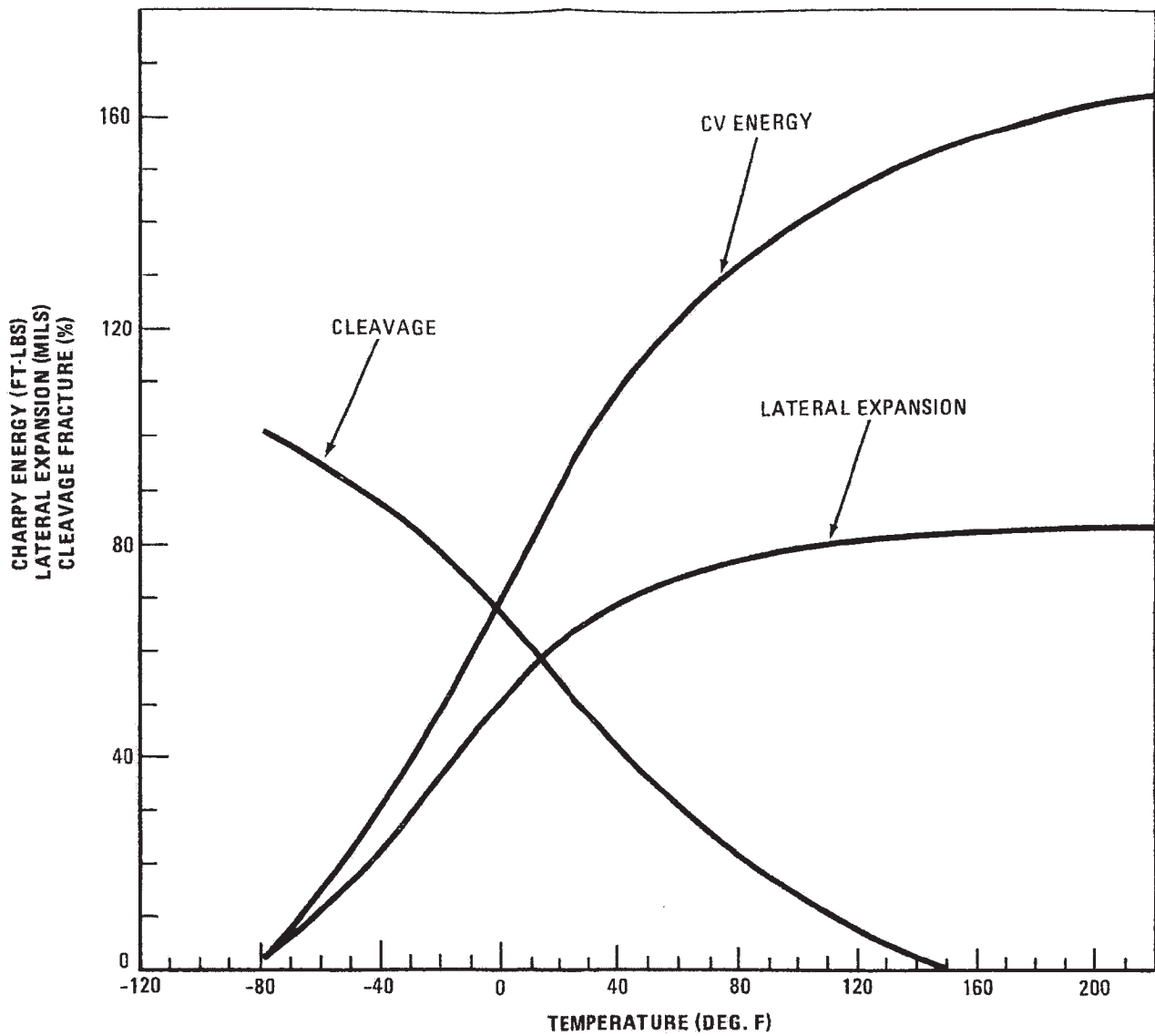
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 16 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBERS
101-124 & 101-142
COATED ELECTRODE
LOT NO. JAAEF

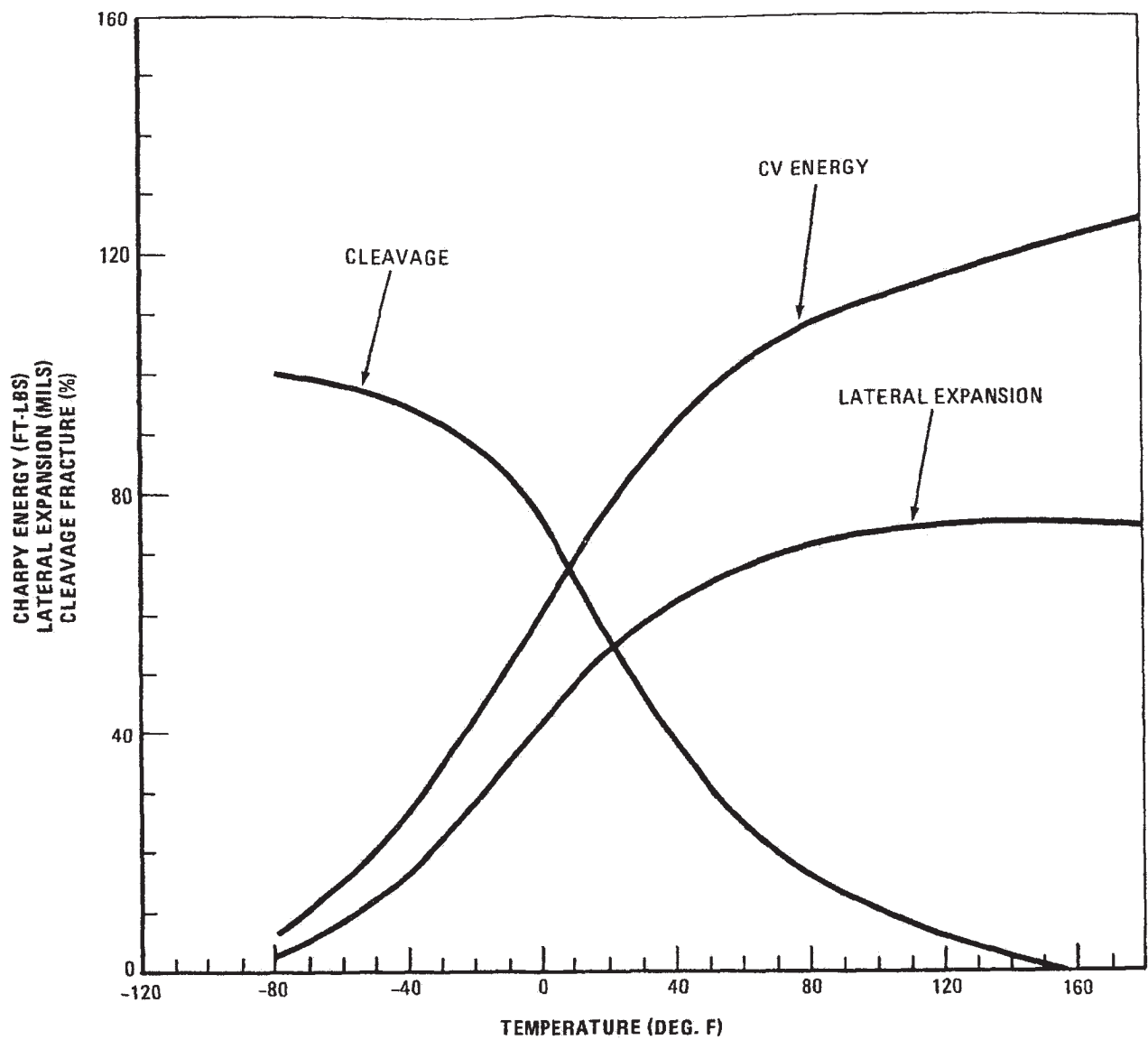
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 17 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-171
COATED ELECTRODE
LOT NO. DBBJG

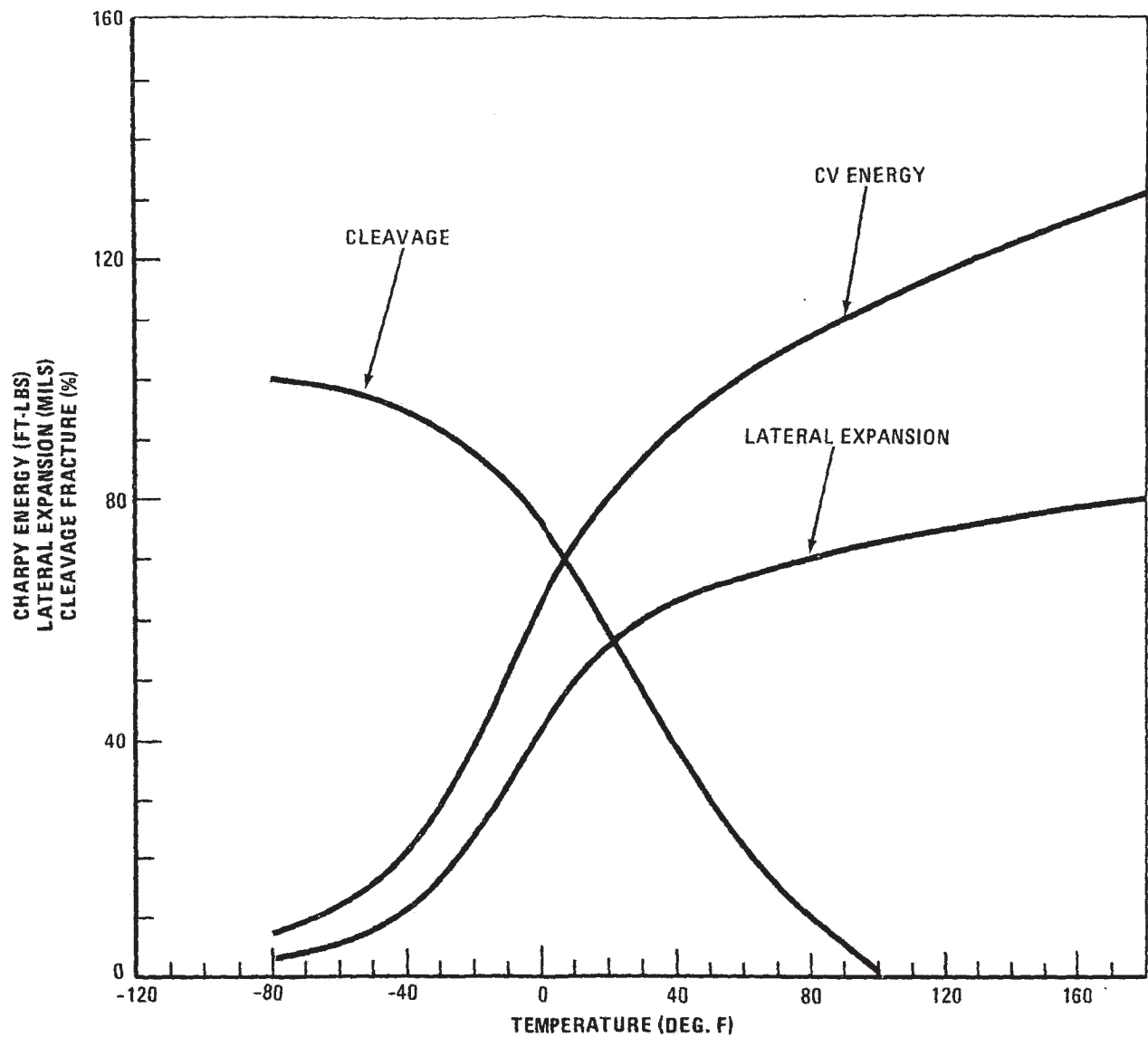
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 18 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-171
COATED ELECTRODE
LOT NO. DABGG

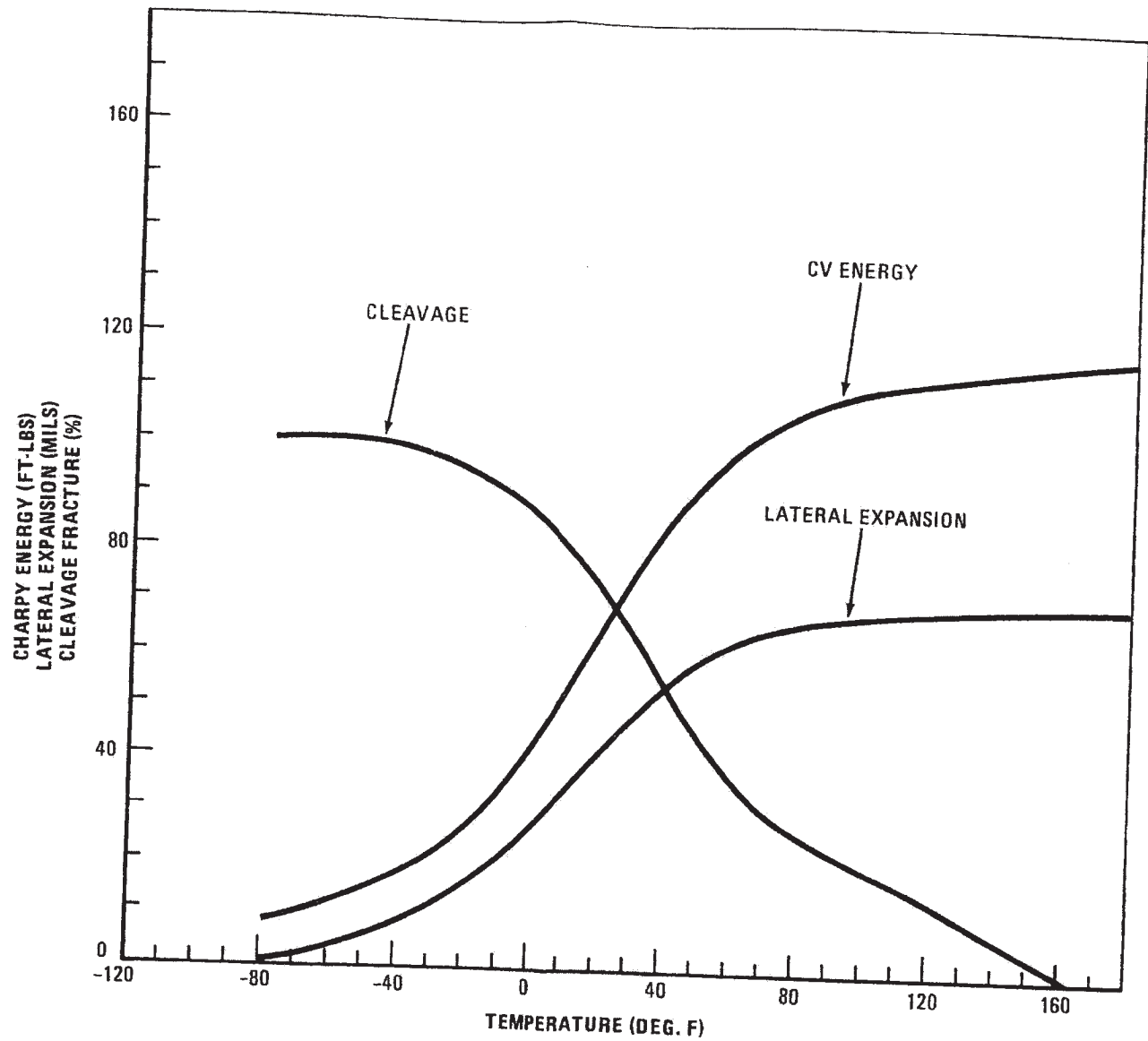
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 19 OF 20

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-171
COATED ELECTRODE
LOT NO. FABBG

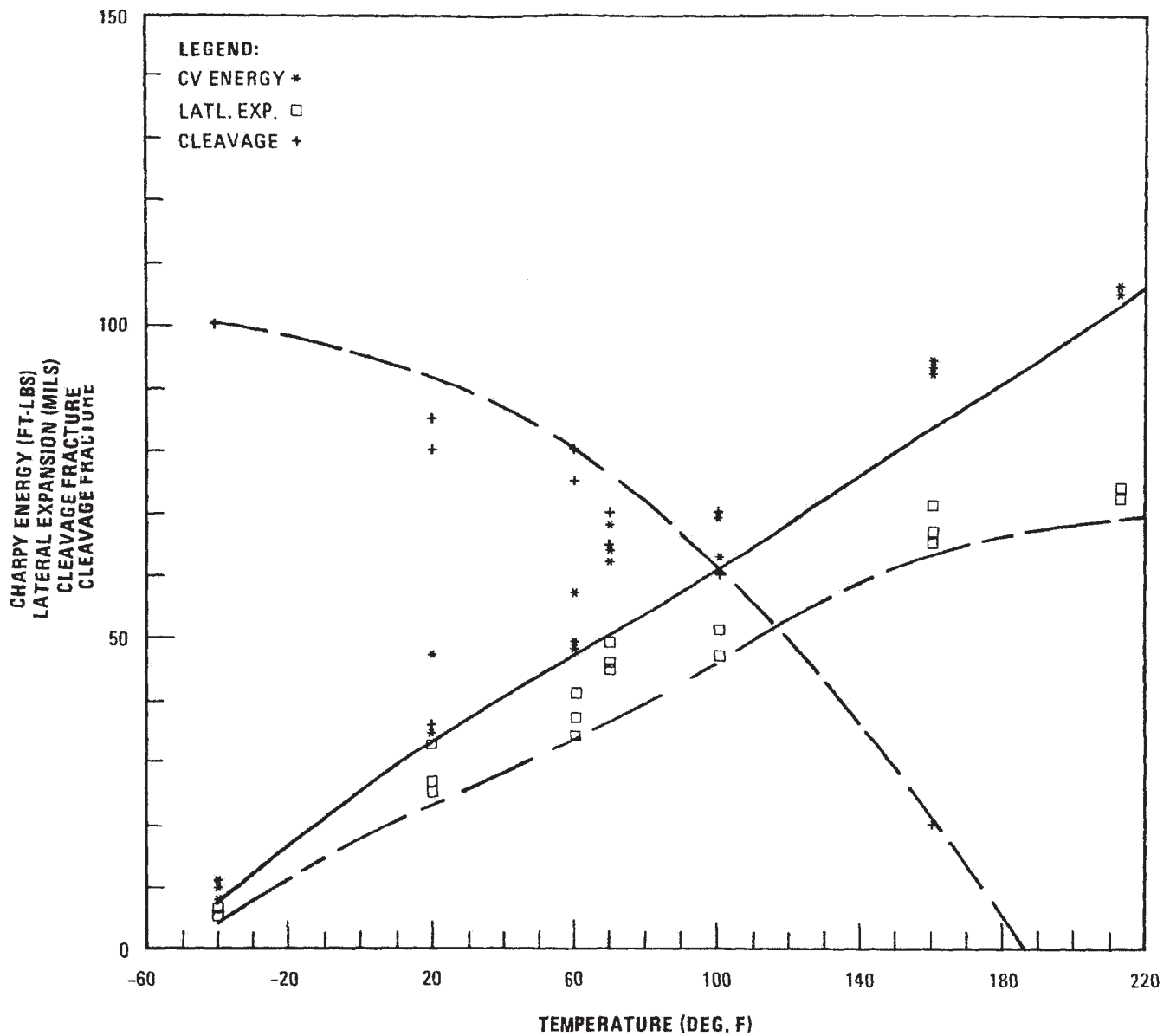
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 1 CHARPY TEST RESULTS

FIGURE 5.2-1 SHEET 20 OF 20

JUNE 2003

REVISION 12



LOWER SHELL PLATE
 CODE NUMBER
 F-773-1

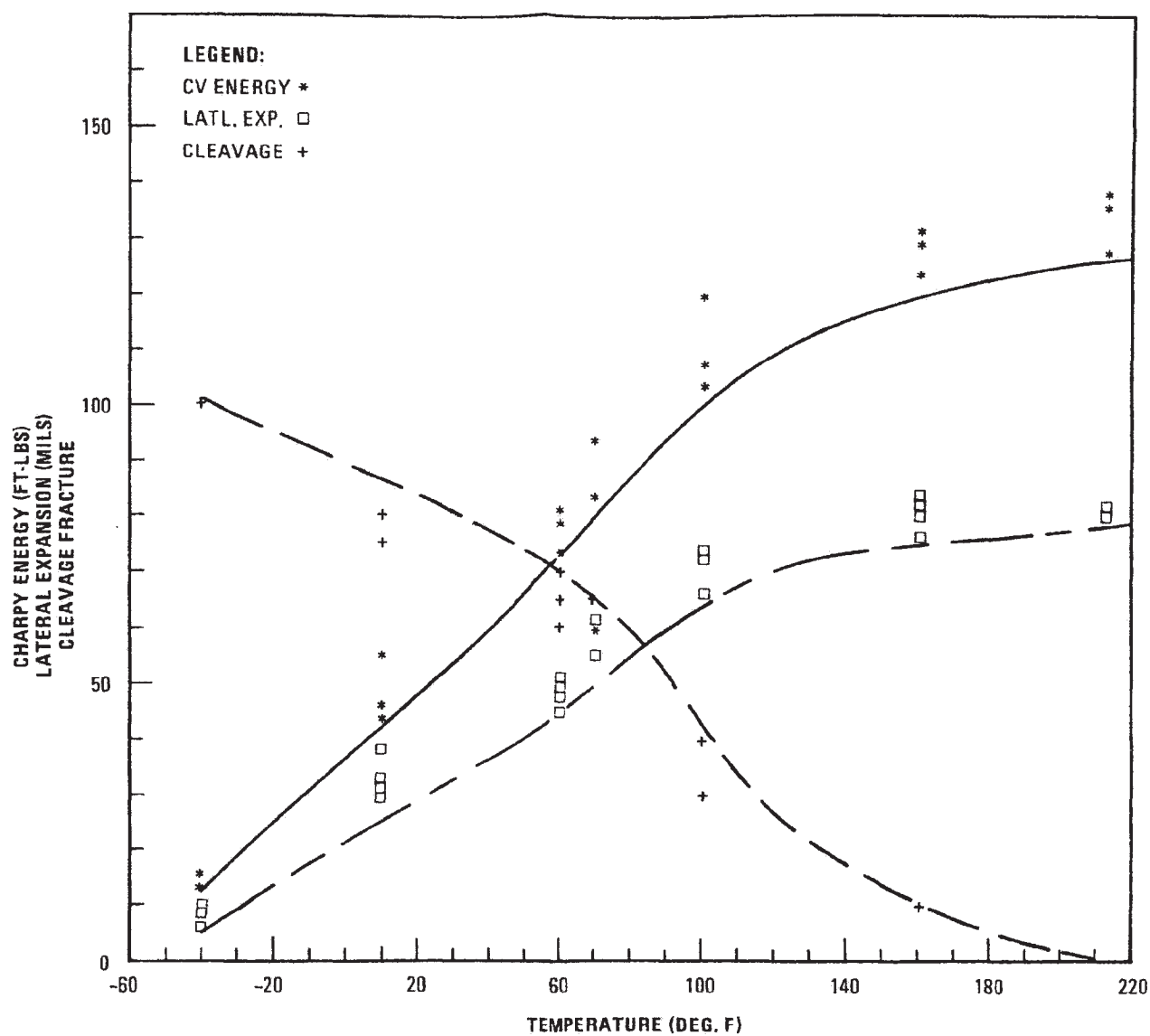
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 1 OF 15

JUNE 2003

REVISION 12



LOWER SHELL PLATE
 CODE NUMBER
 F-773-2

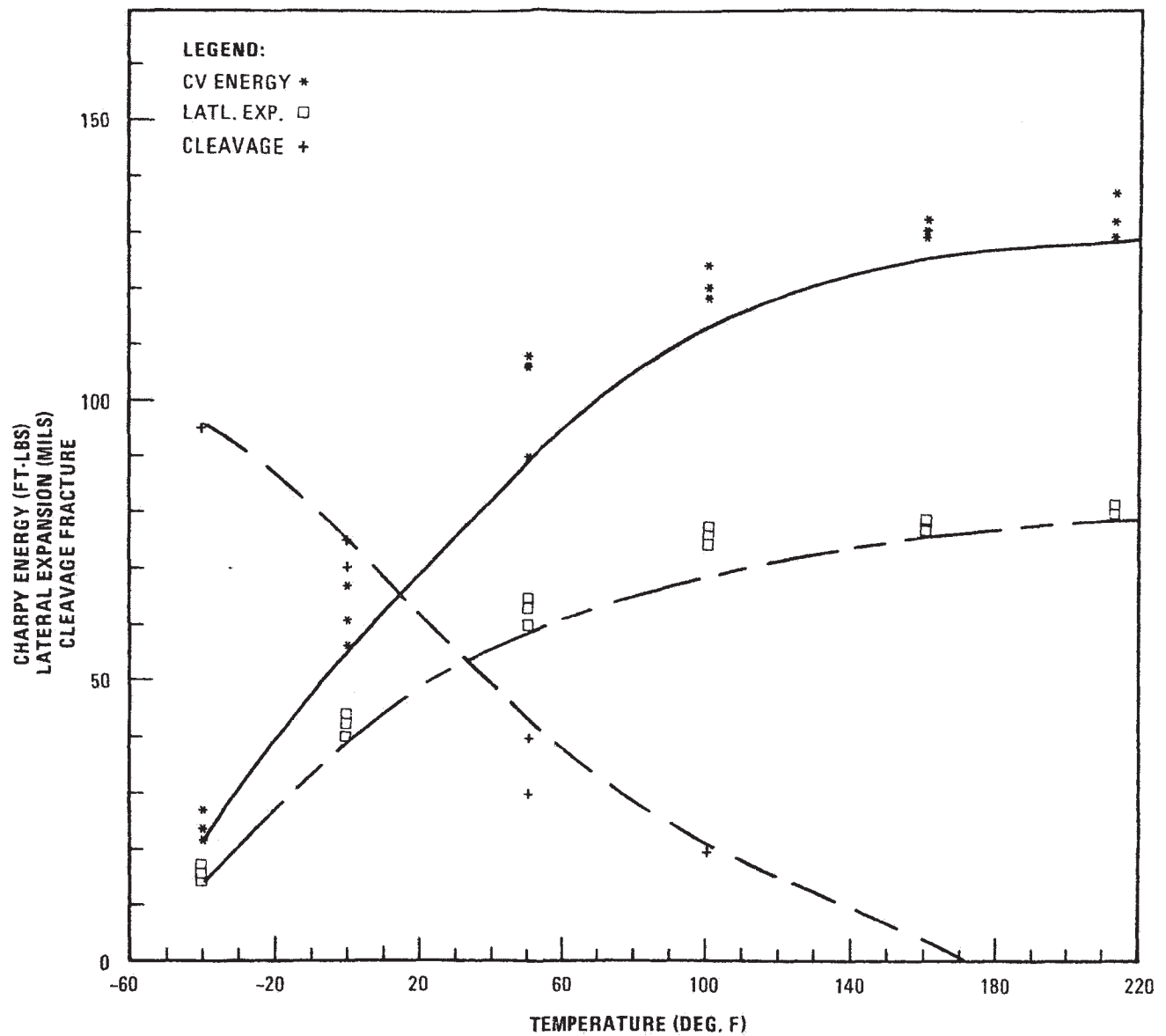
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 2 OF 15

JUNE 2003

REVISION 12



LOWER SHELL PLATE
 CODE NUMBER
 F-773-3

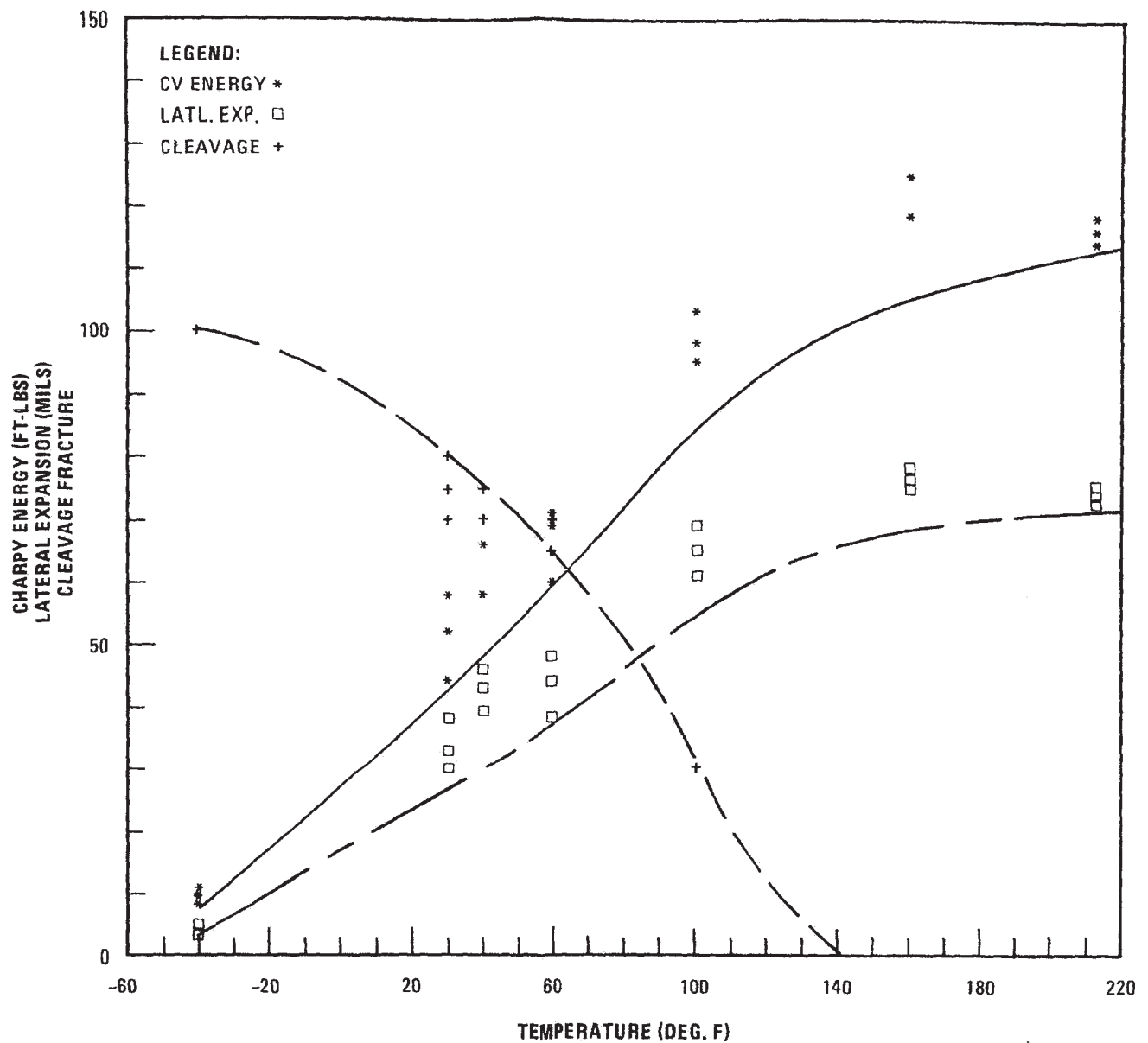
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 3 OF 15

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
 PLATE
 CODE NUMBER
 F-765-4

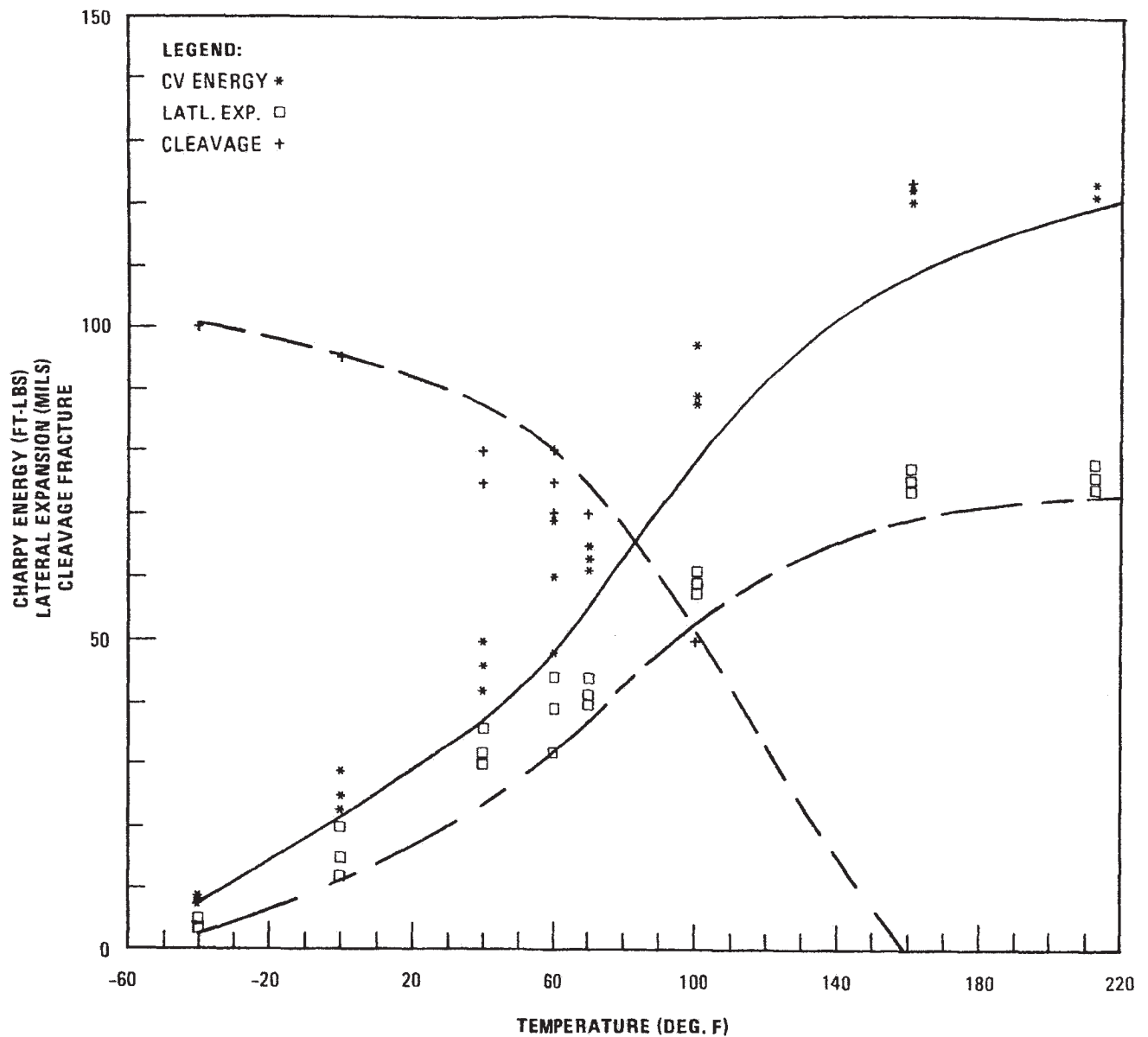
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 4 OF 15

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
 PLATE
 CODE NUMBER
 F-765-5

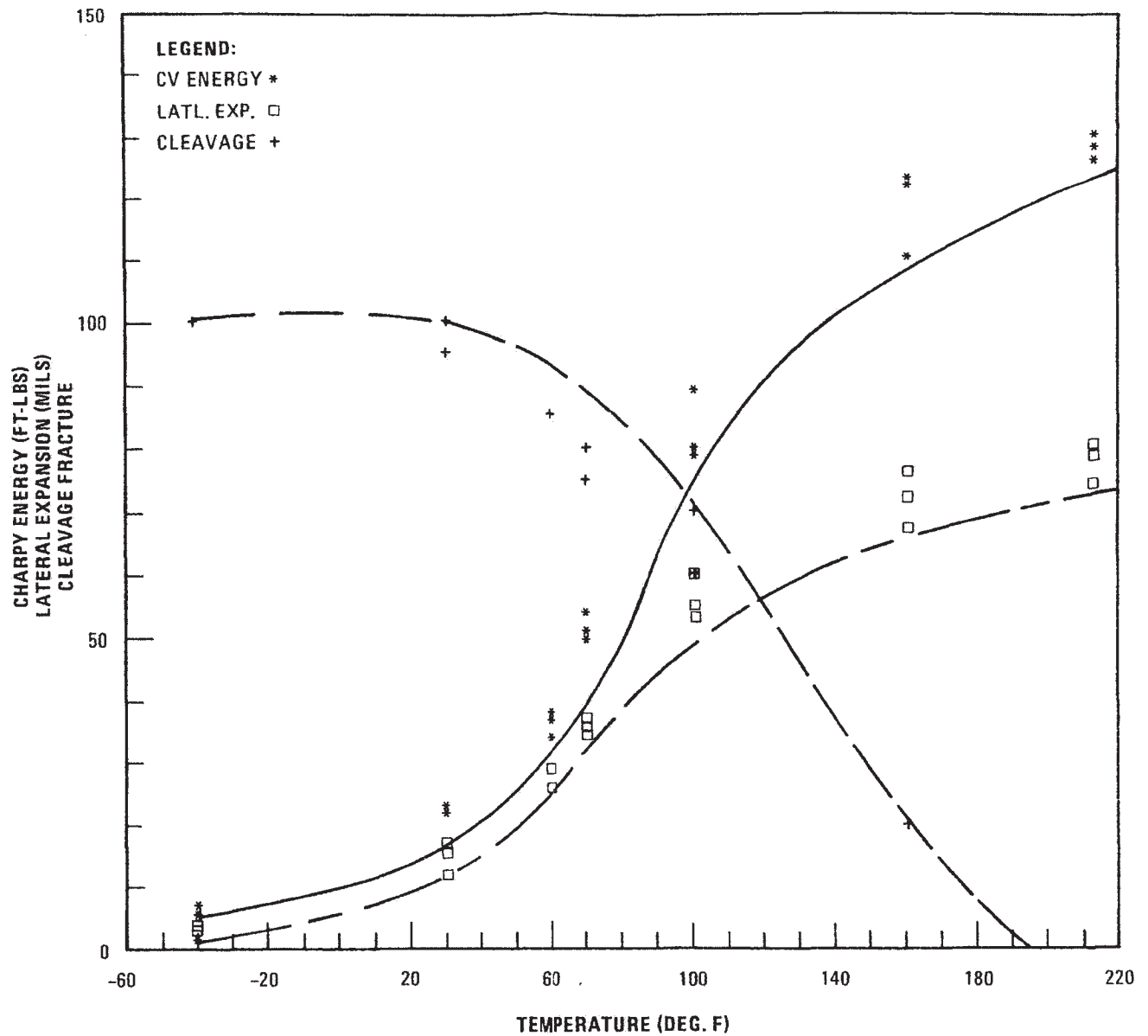
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 5 OF 15

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
 PLATE
 CODE NUMBER
 F-765-6

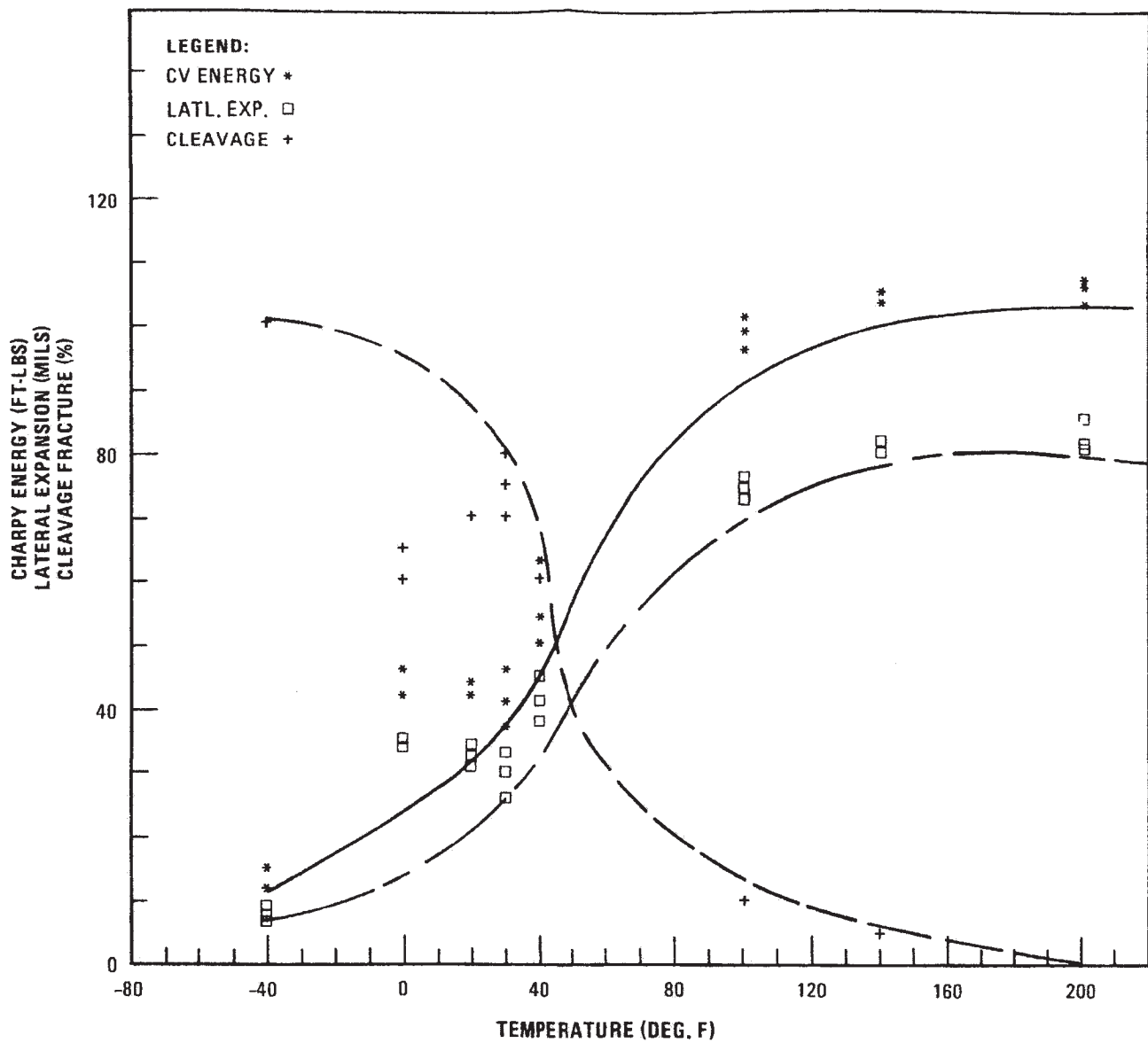
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 6 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-124
 MIL B-4 WIRE
 FLUX LINDE 124

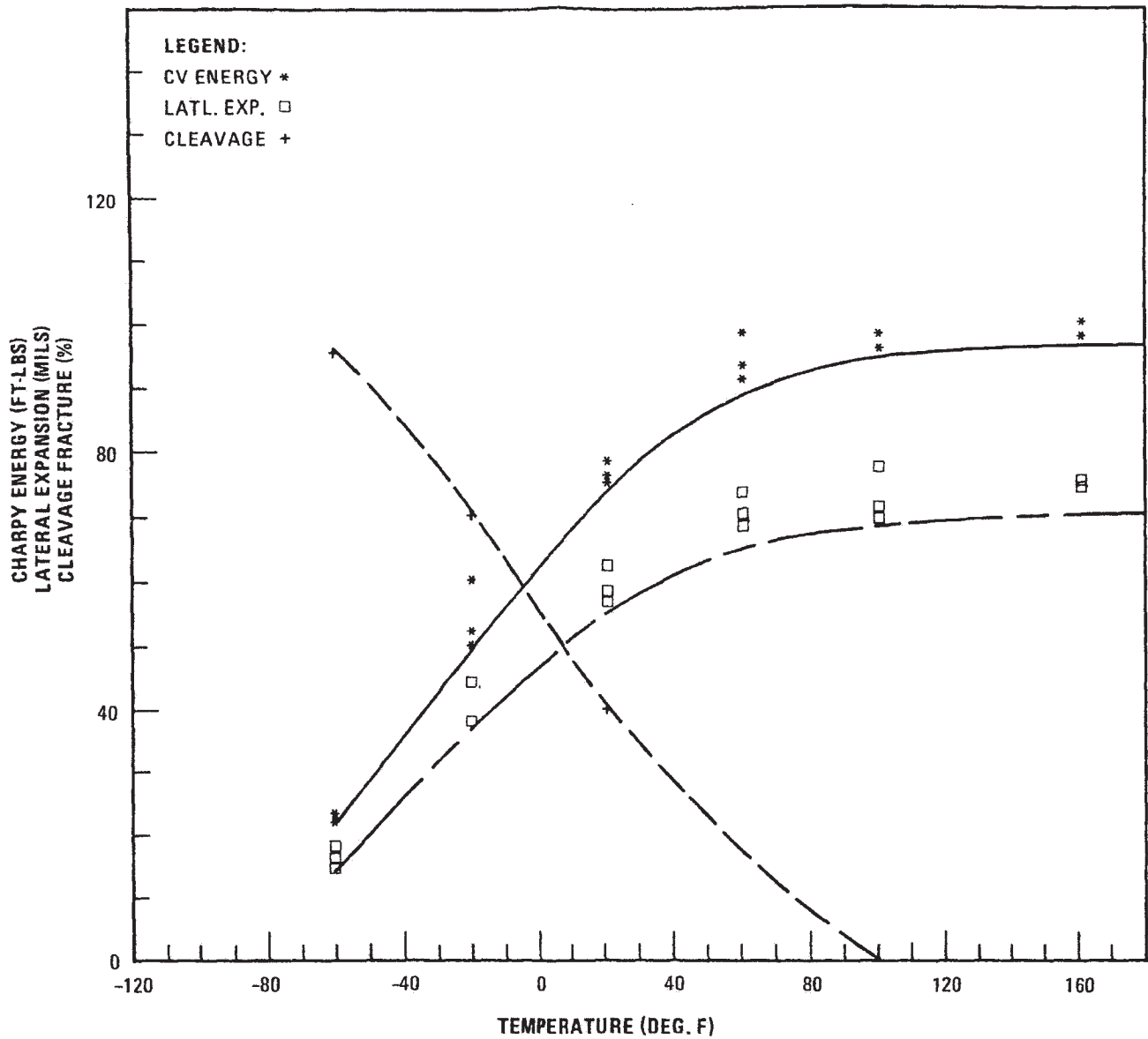
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 7 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-142
MIL B-4 WIRE
FLUX LINDE 124

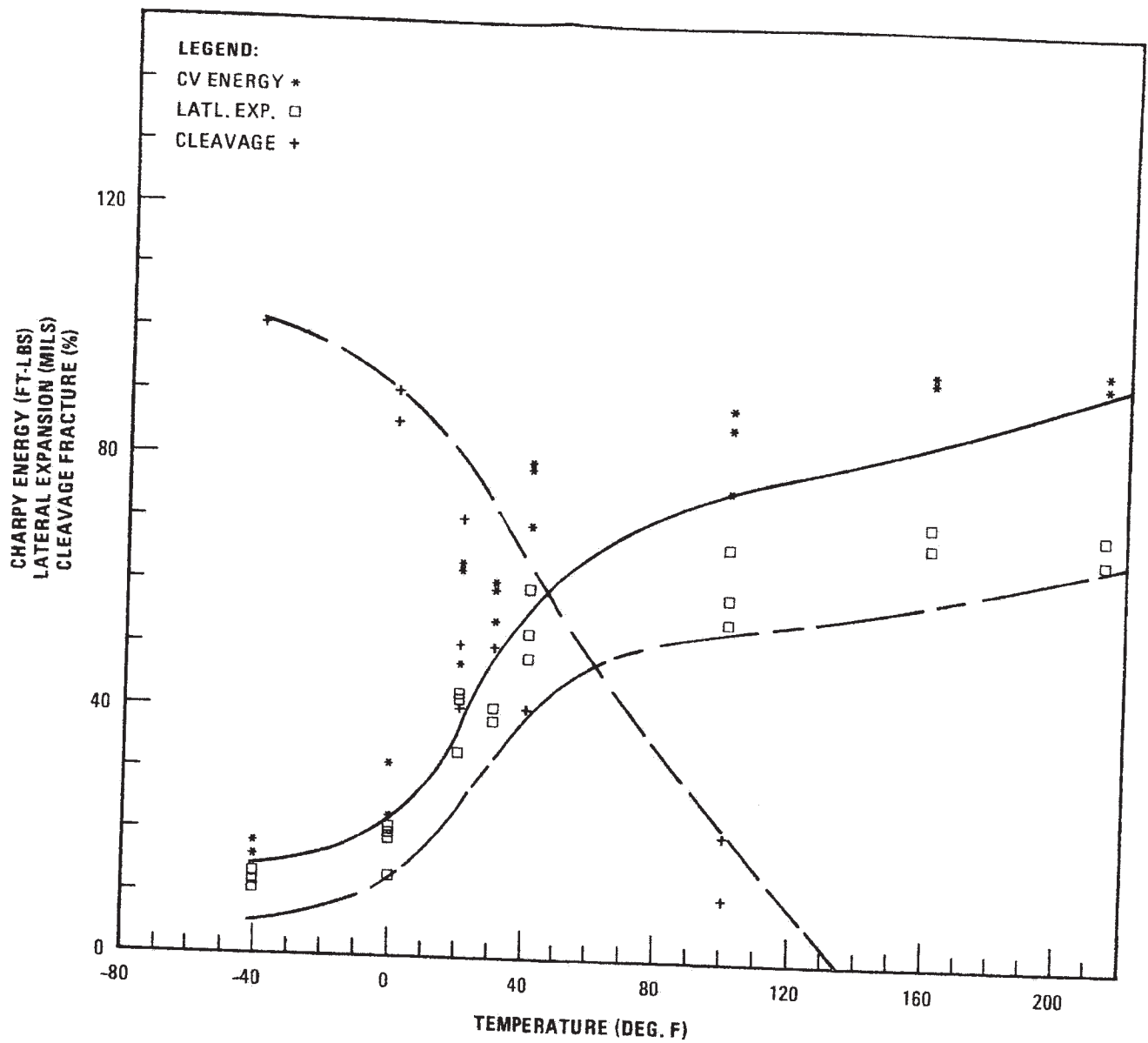
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 8 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-171
 MIL B4 WIRE
 FLUX LINDE 124

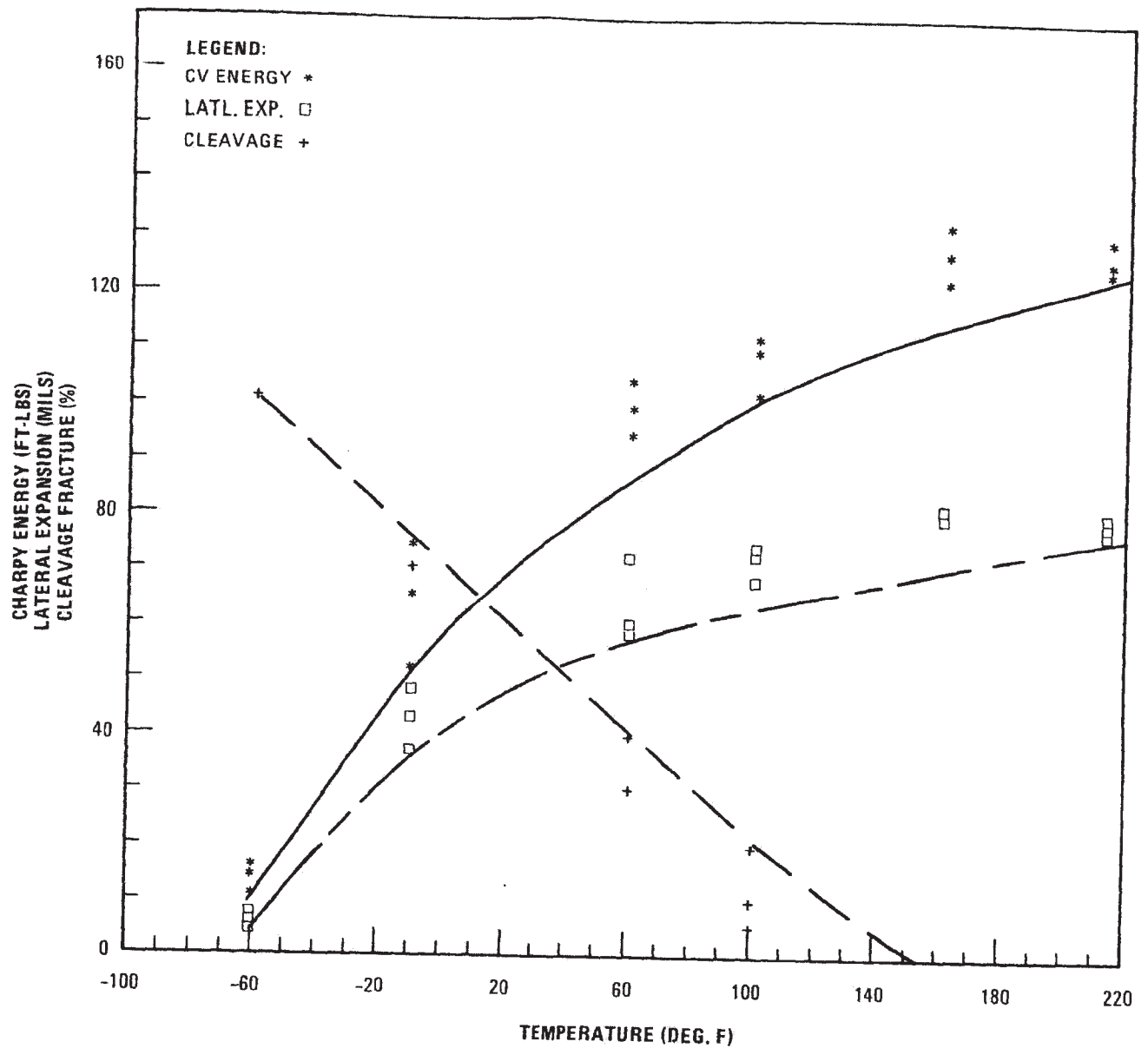
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 9 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-124 & 101-142
 COATED ELECTRODE
 LOT NO. FAAFF

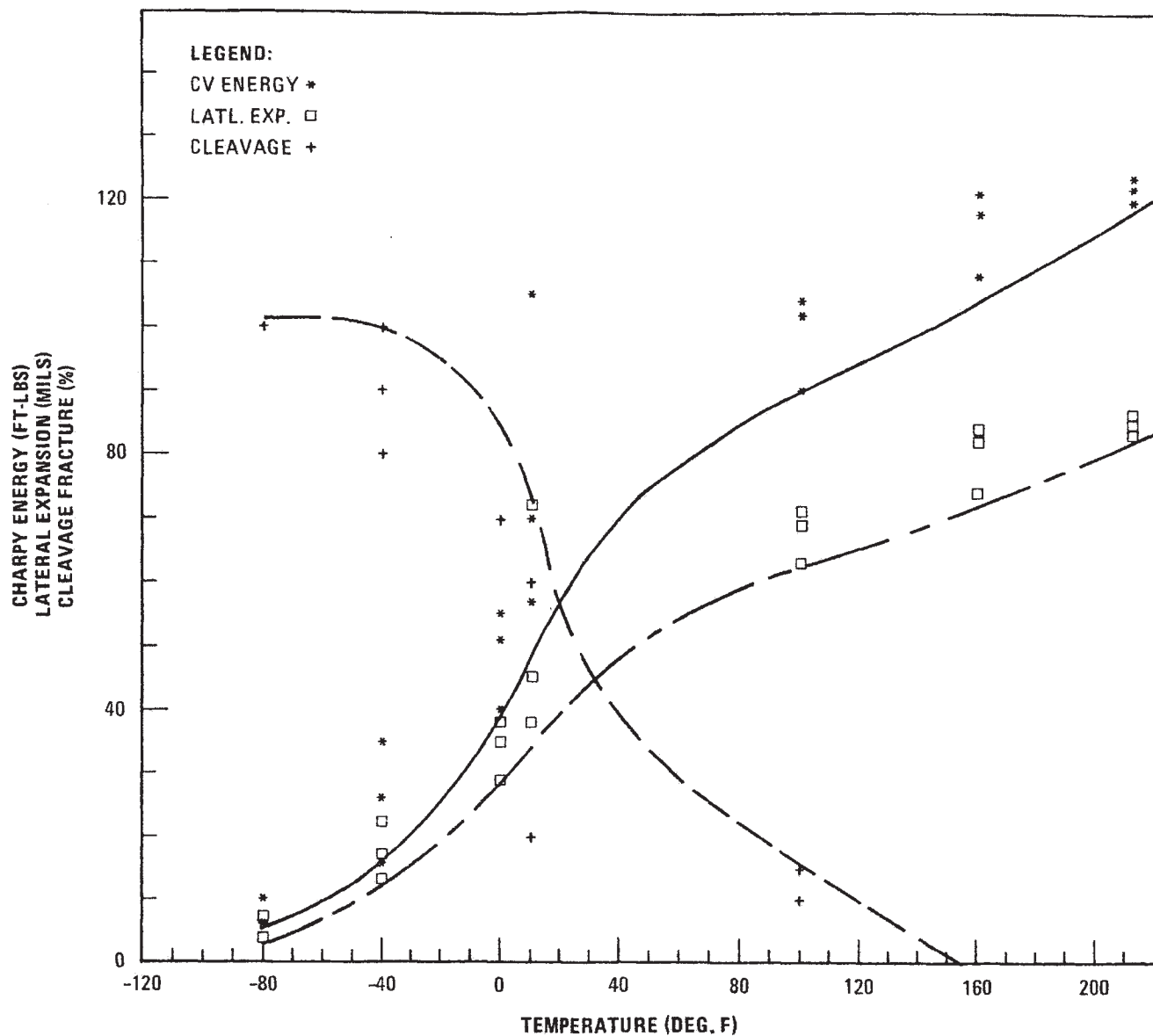
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 10 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-124
 COATED ELECTRODE
 LOT NO. FAAHF

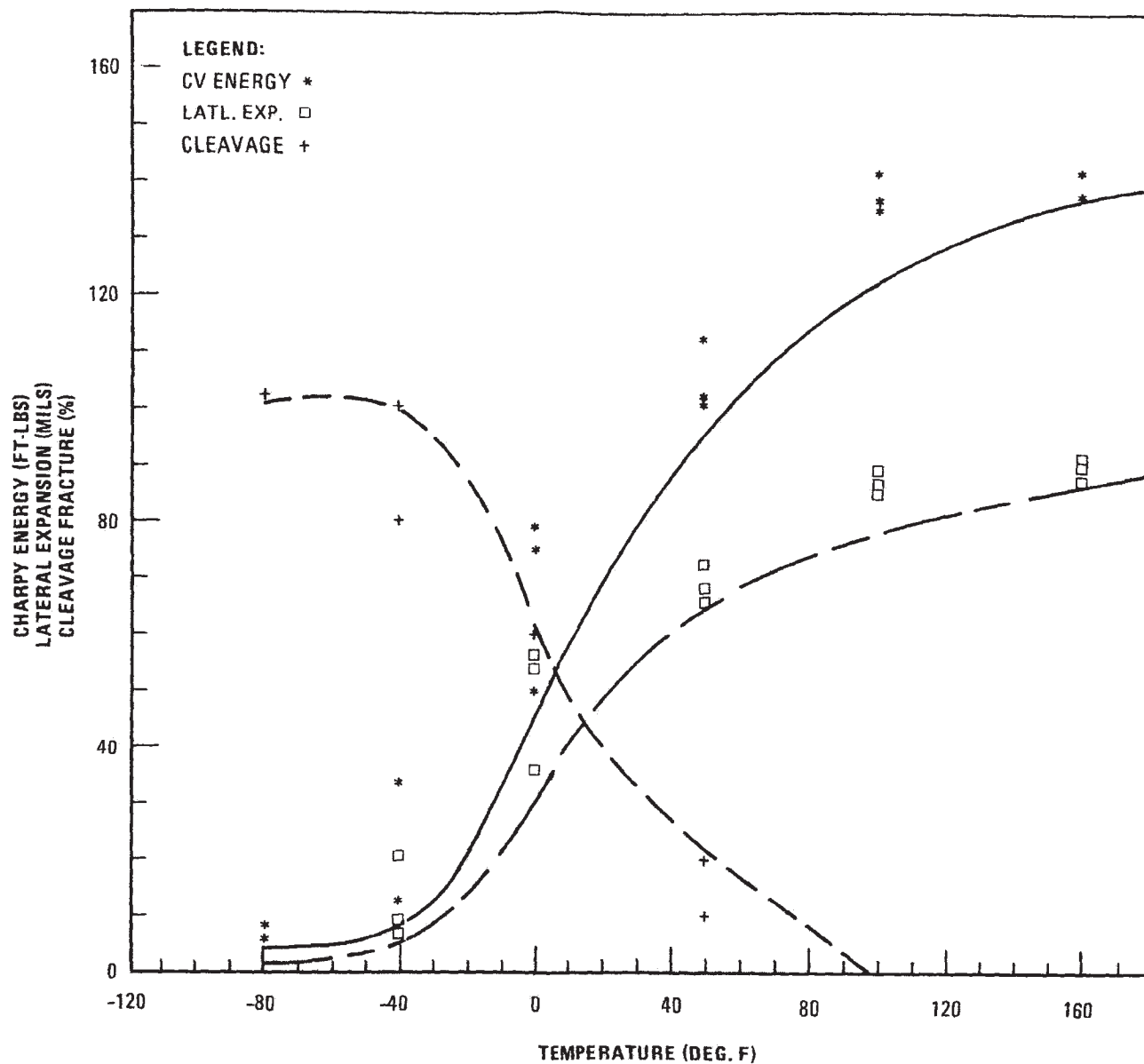
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 11 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-124
 COATED ELECTRODE
 LOT NO. FABAF

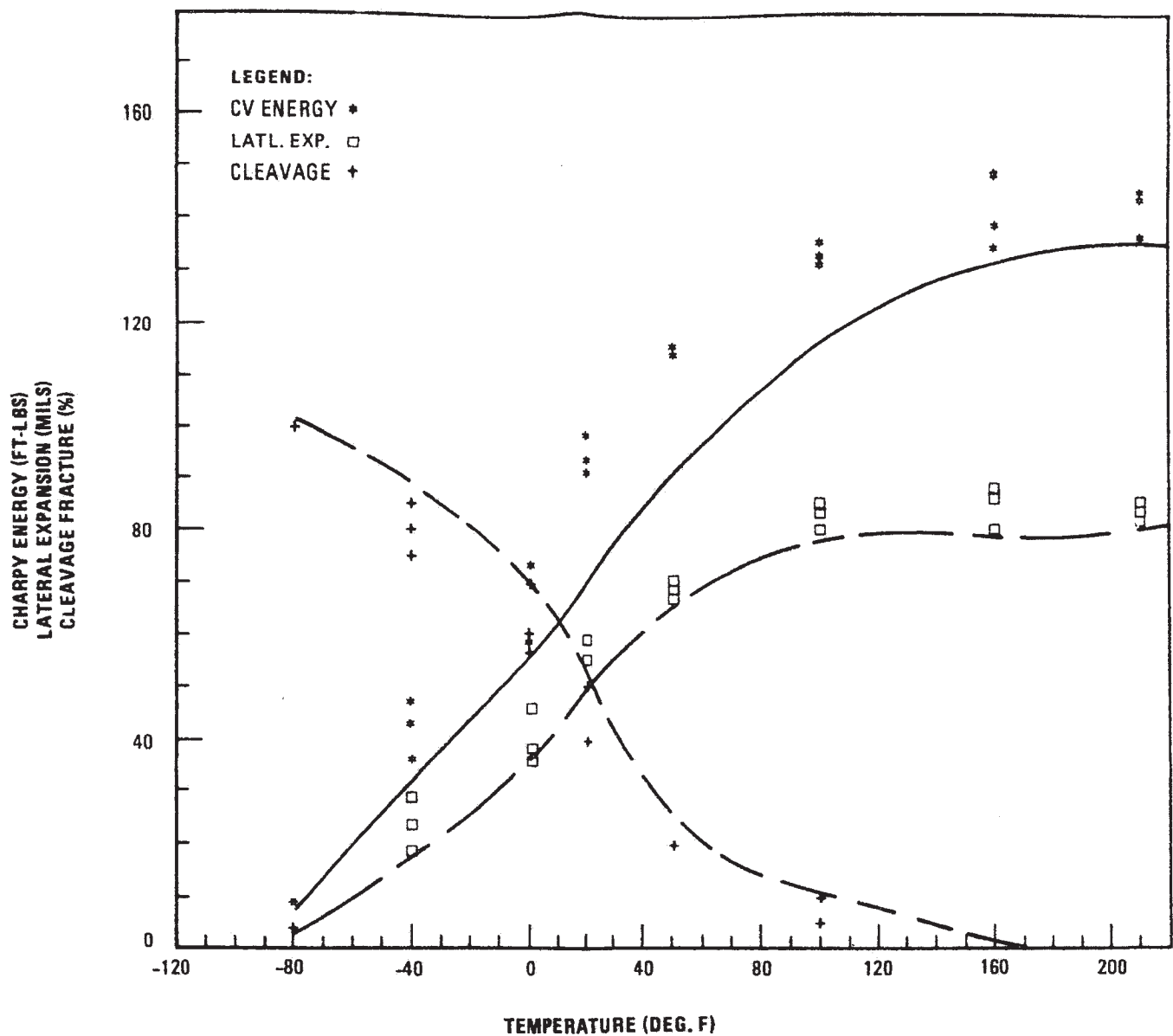
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 12 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-142
 COATED ELECTRODE
 LOT NO. LA0GF

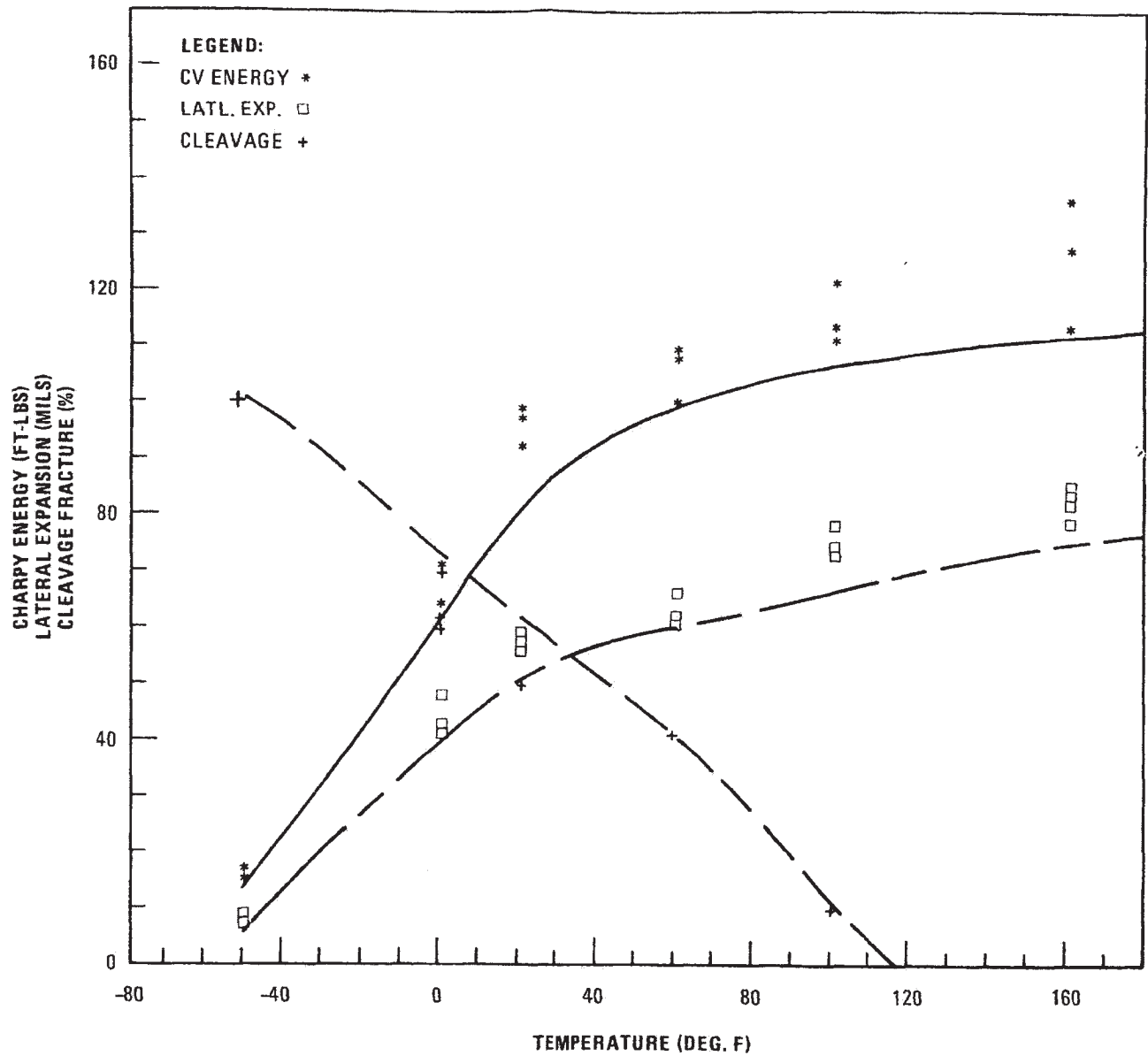
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 13 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-171
 COATED ELECTRODE
 LOT NO. EAOAH

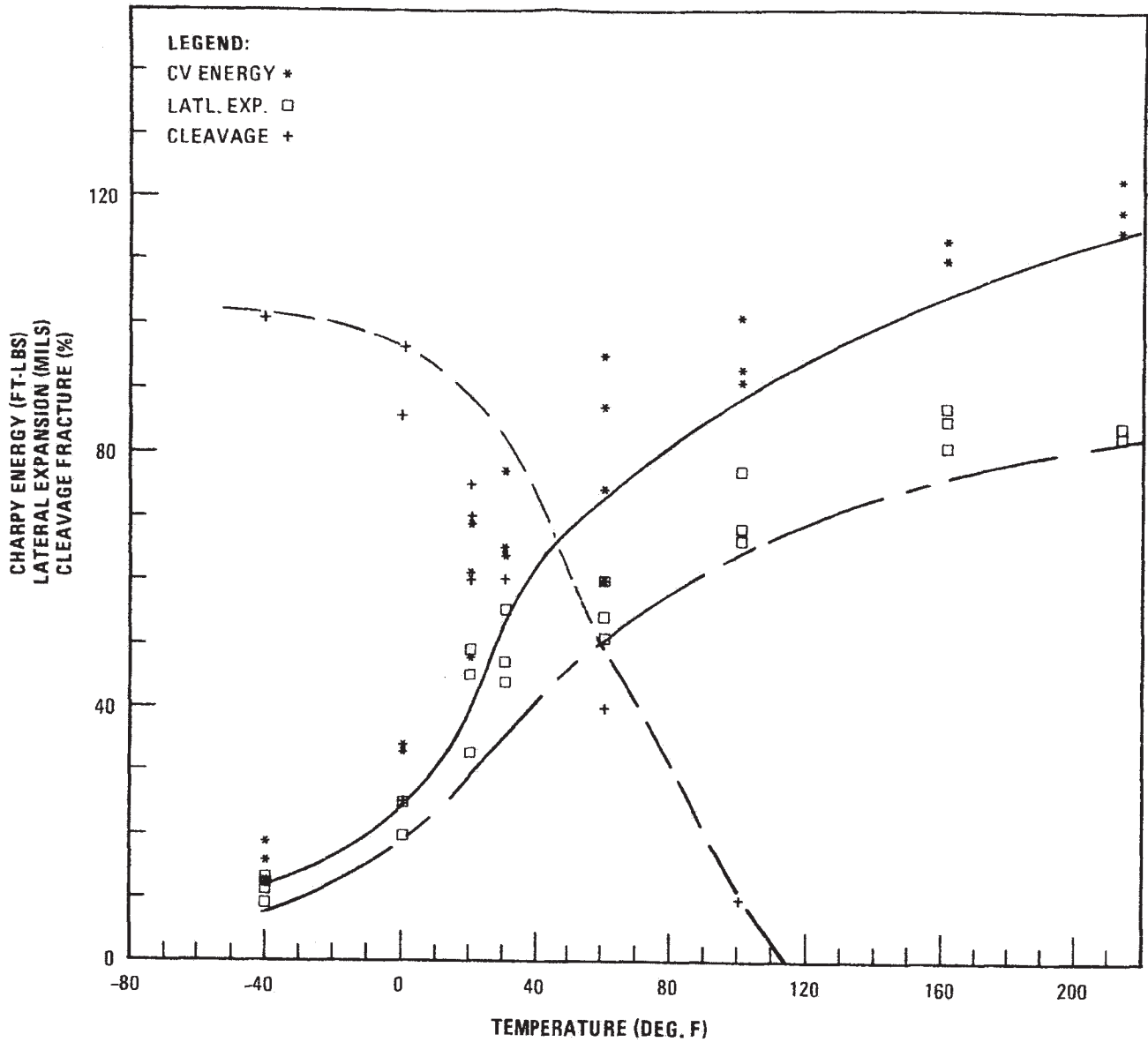
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 14 OF 15

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-171
 COATED ELECTRODE
 LOT NO. JAOEH

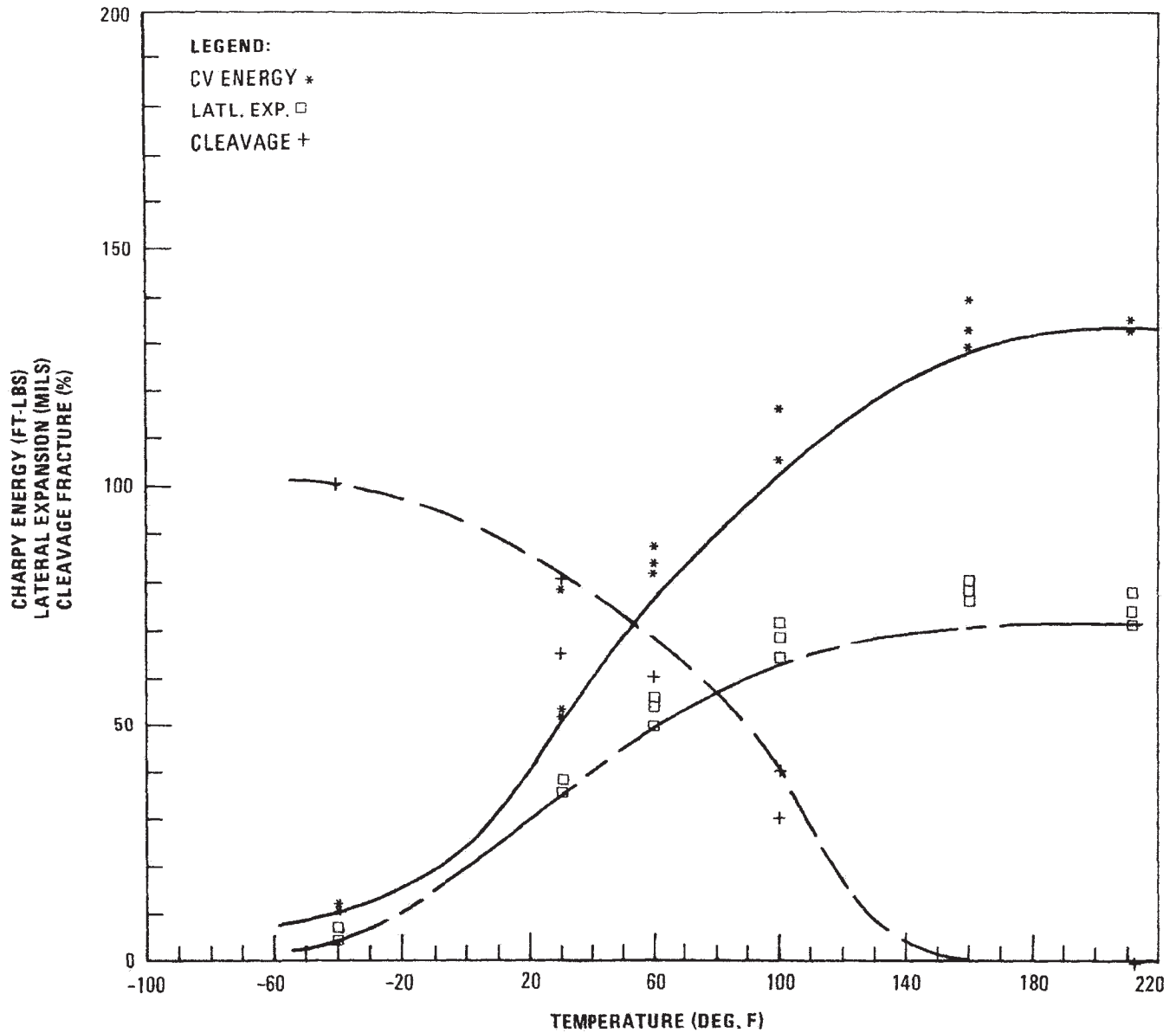
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 2 CHARPY TEST RESULTS

FIGURE 5.2-2 SHEET 15 OF 15

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
PLATE
CODE NUMBER
F-6407-4

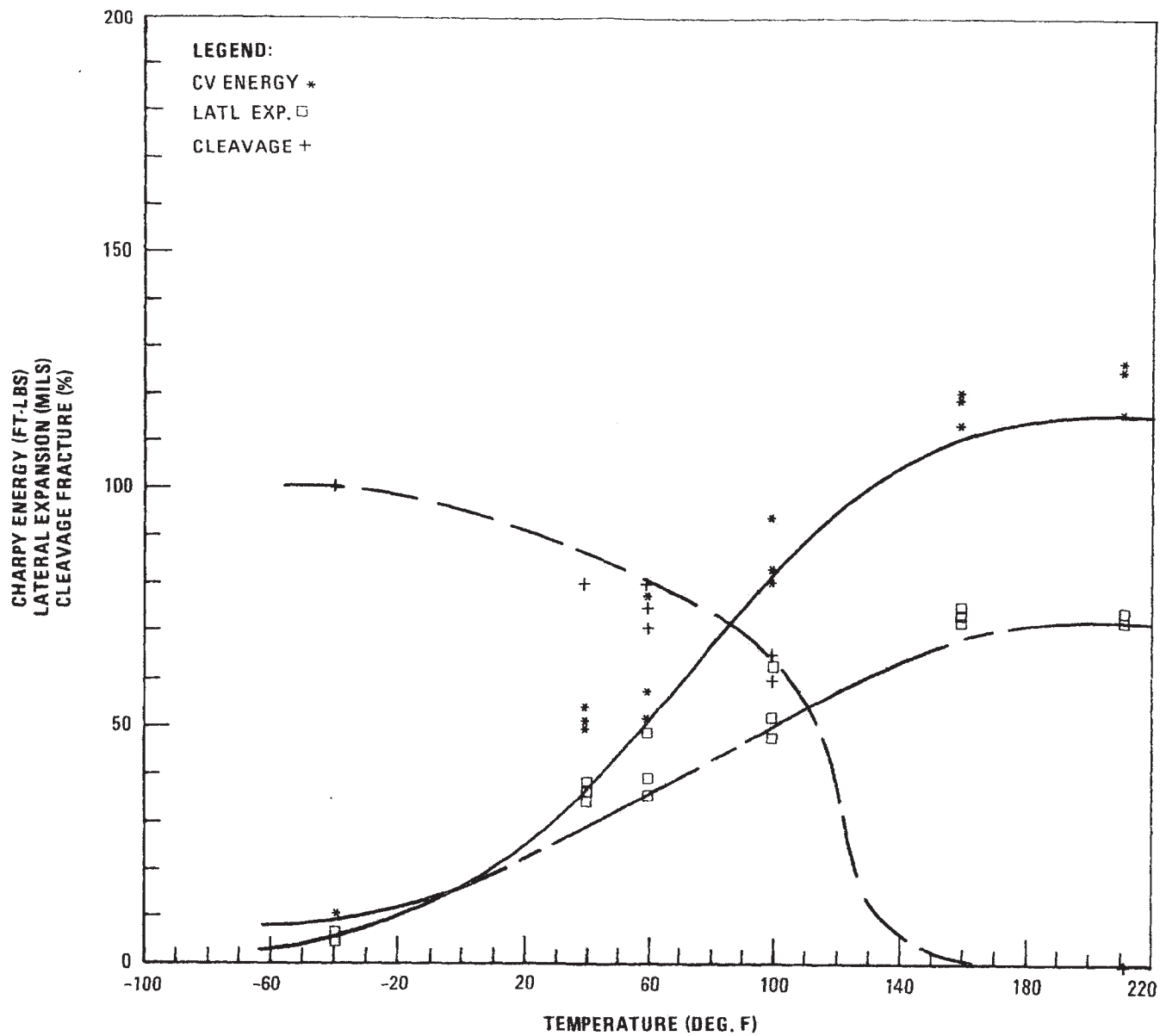
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 1 OF 18

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
PLATE
CODE NUMBER
F-6407-5

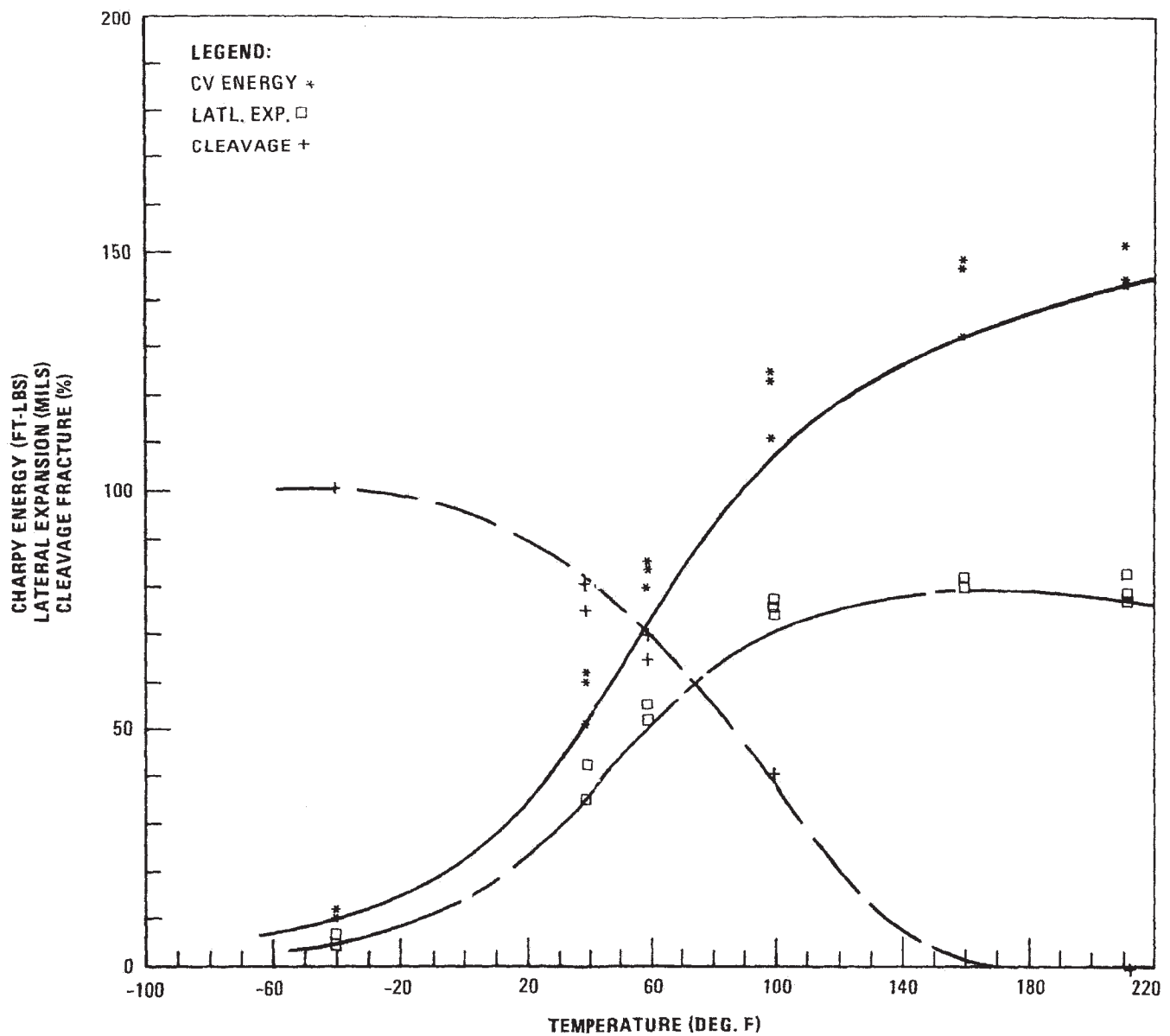
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 2 OF 18

JUNE 2003

REVISION 12



INTERMEDIATE SHELL
 PLATE
 CODE NUMBER
 F-6407-6

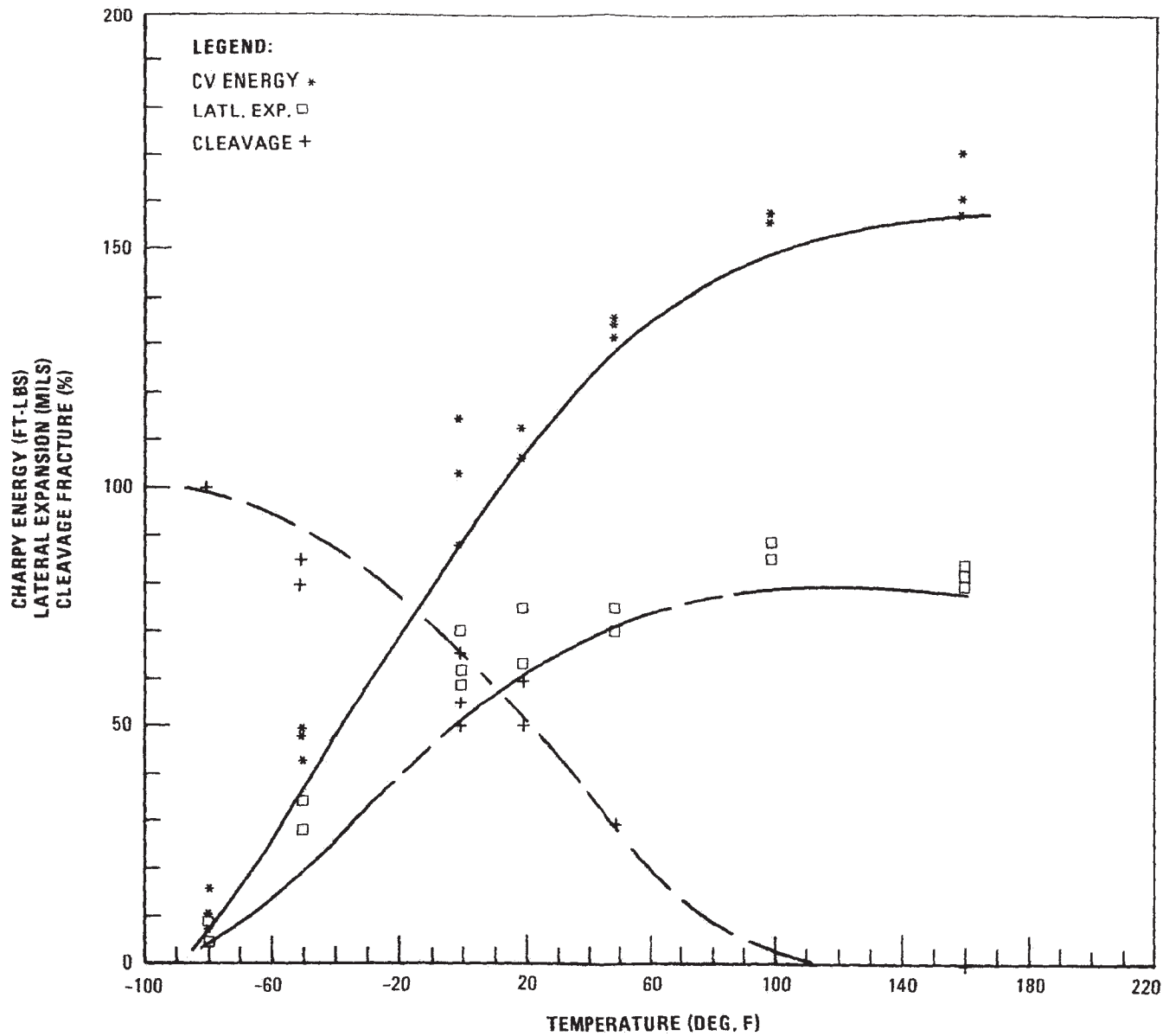
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 3 OF 18

JUNE 2003

REVISION 12



LOWER SHELL PLATE
 CODE NUMBER
 F-6411-1

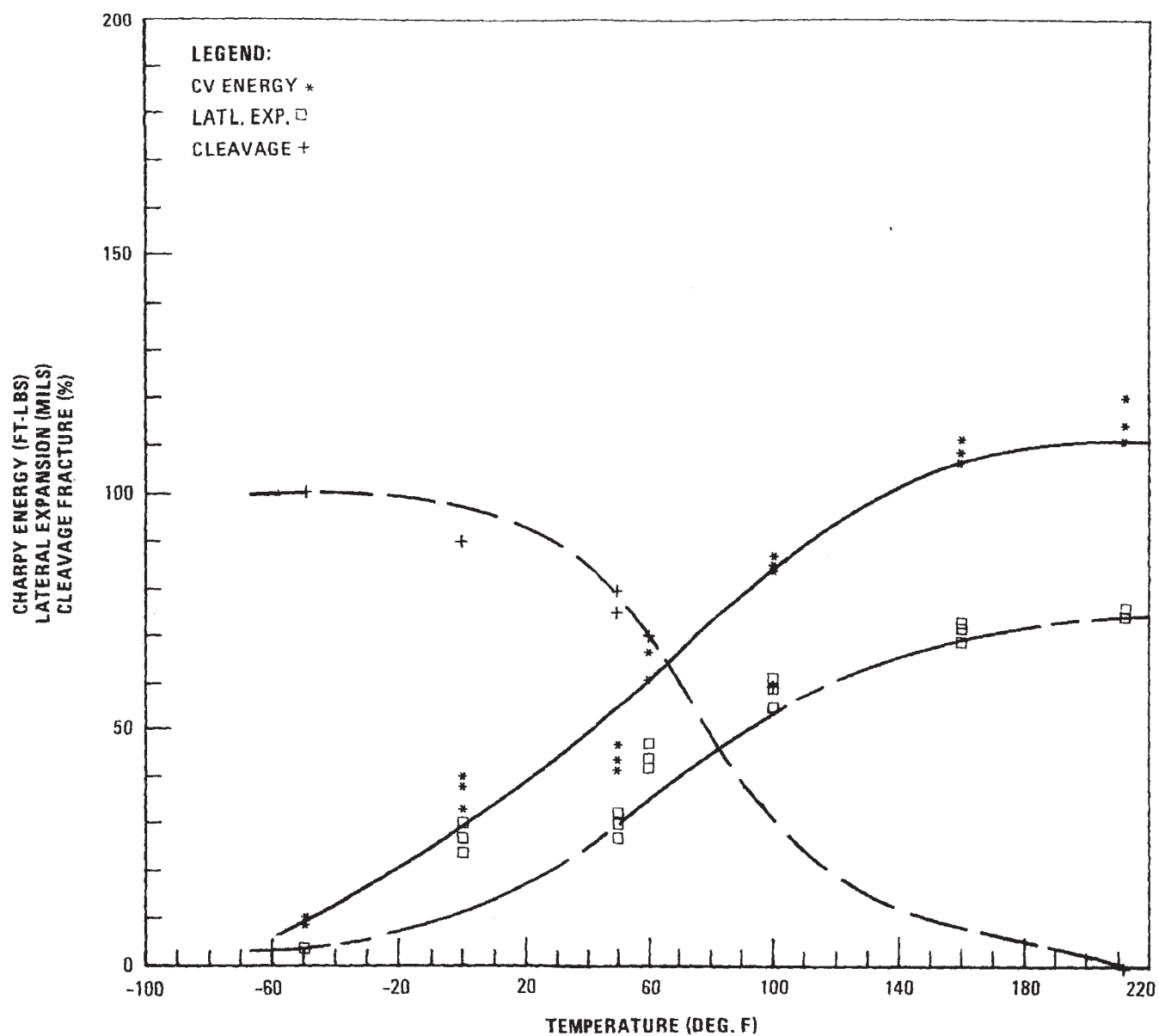
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 4 OF 18

JUNE 2003

REVISION 12



LOWER SHELL PLATE
 CODE NUMBER
 F-6411-2

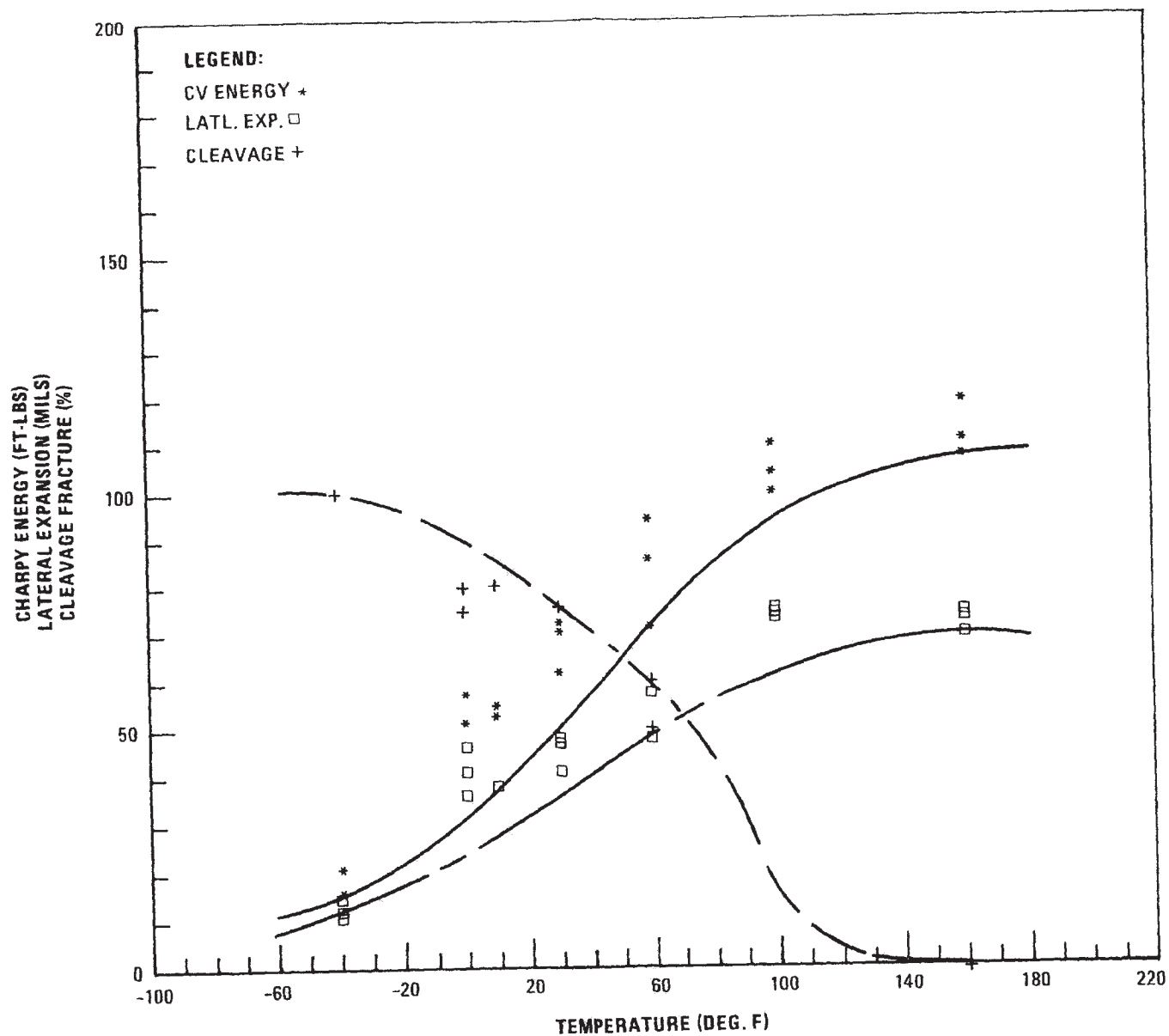
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 5 OF 18

JUNE 2003

REVISION 12



LOWER SHELL PLATE
 CODE NUMBER
 F-6411-3

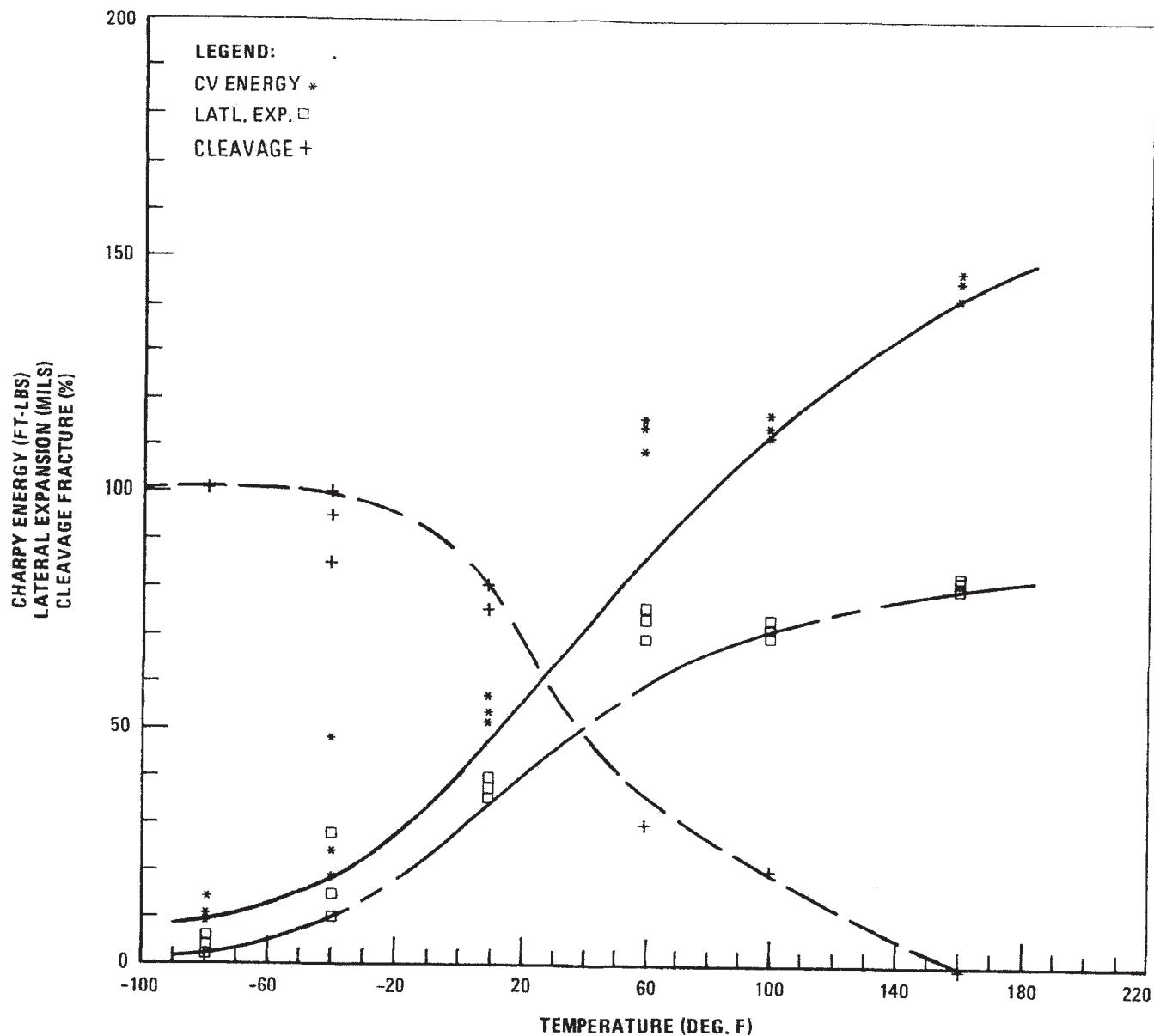
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 6 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-124
COATED ELECTRODE
LOT NO. FABBG

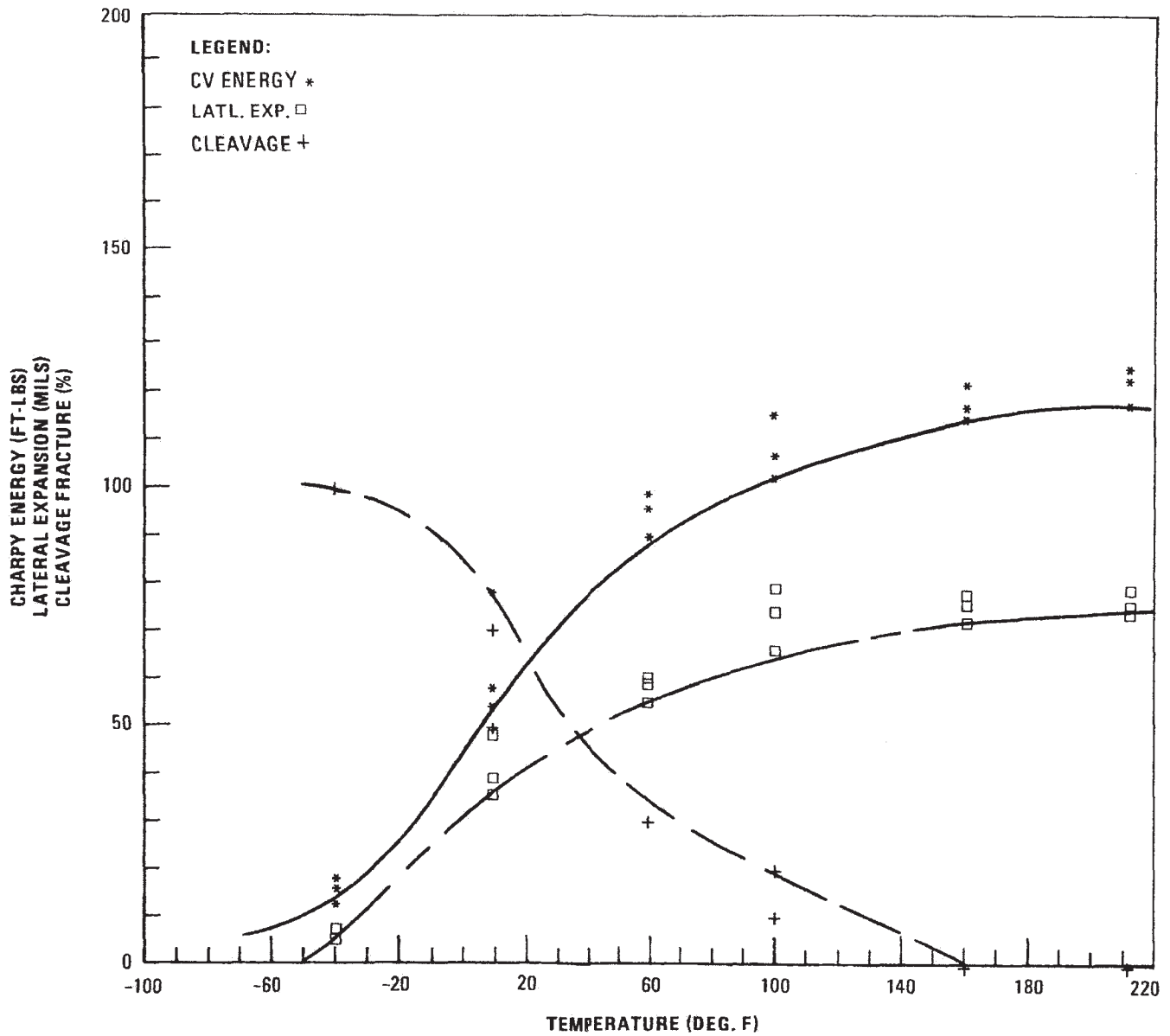
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 7 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-124
 COATED ELECTRODE
 LOT NO. GABGG

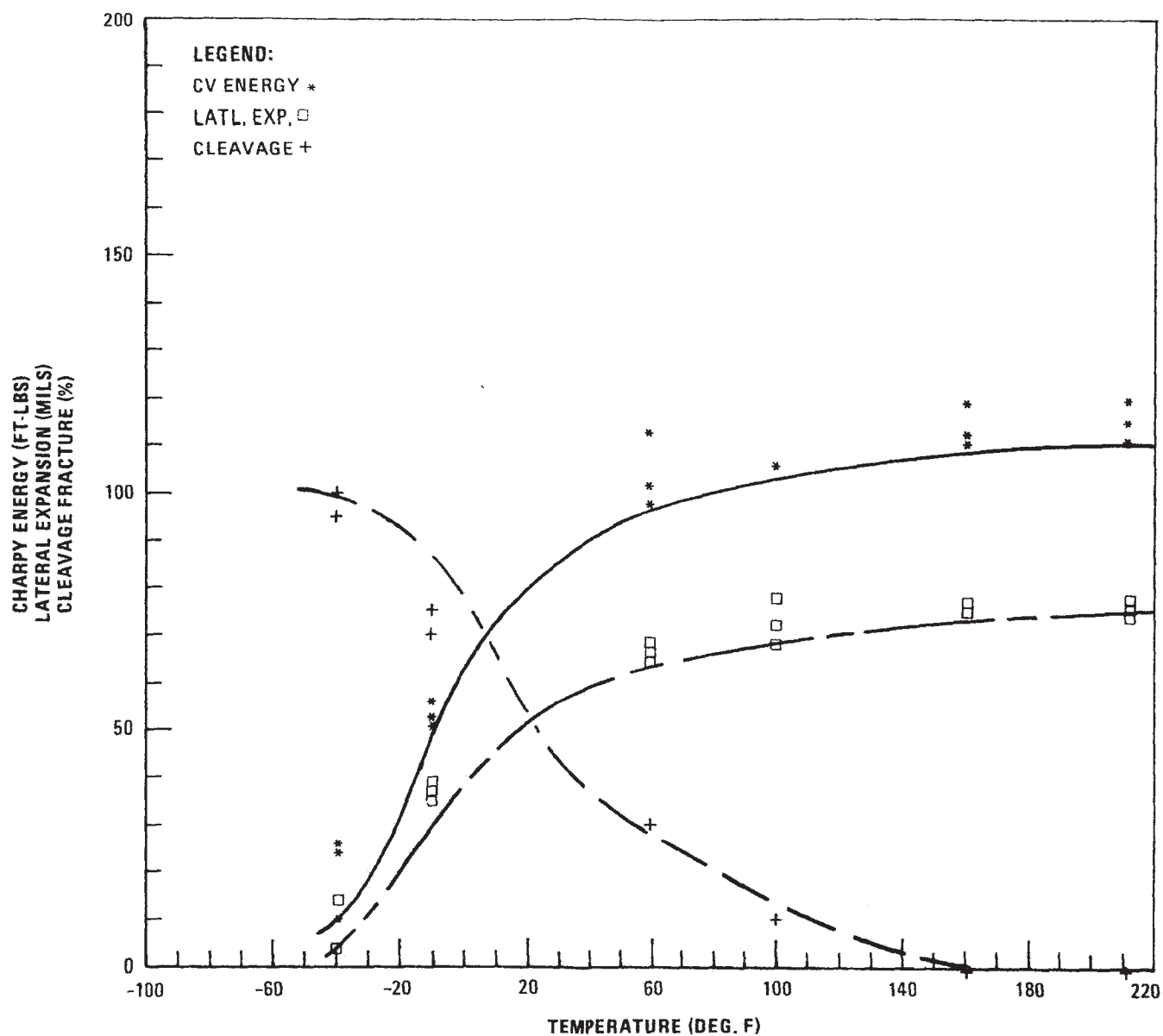
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 8 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-142
 COATED ELECTRODE
 LOT NO. HAAHG

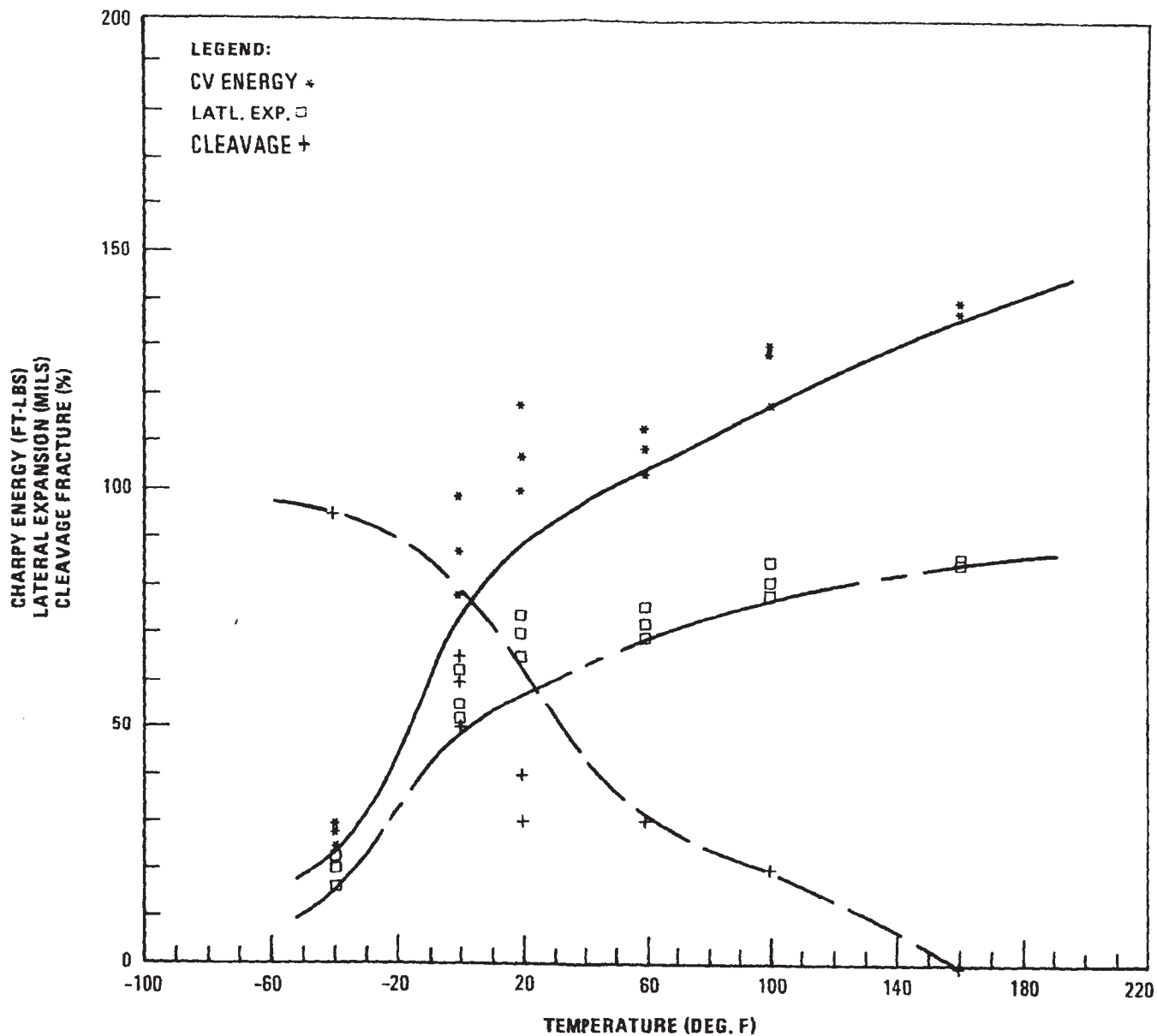
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 9 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-124
 COATED ELECTRODE
 LOT NO. HACJG

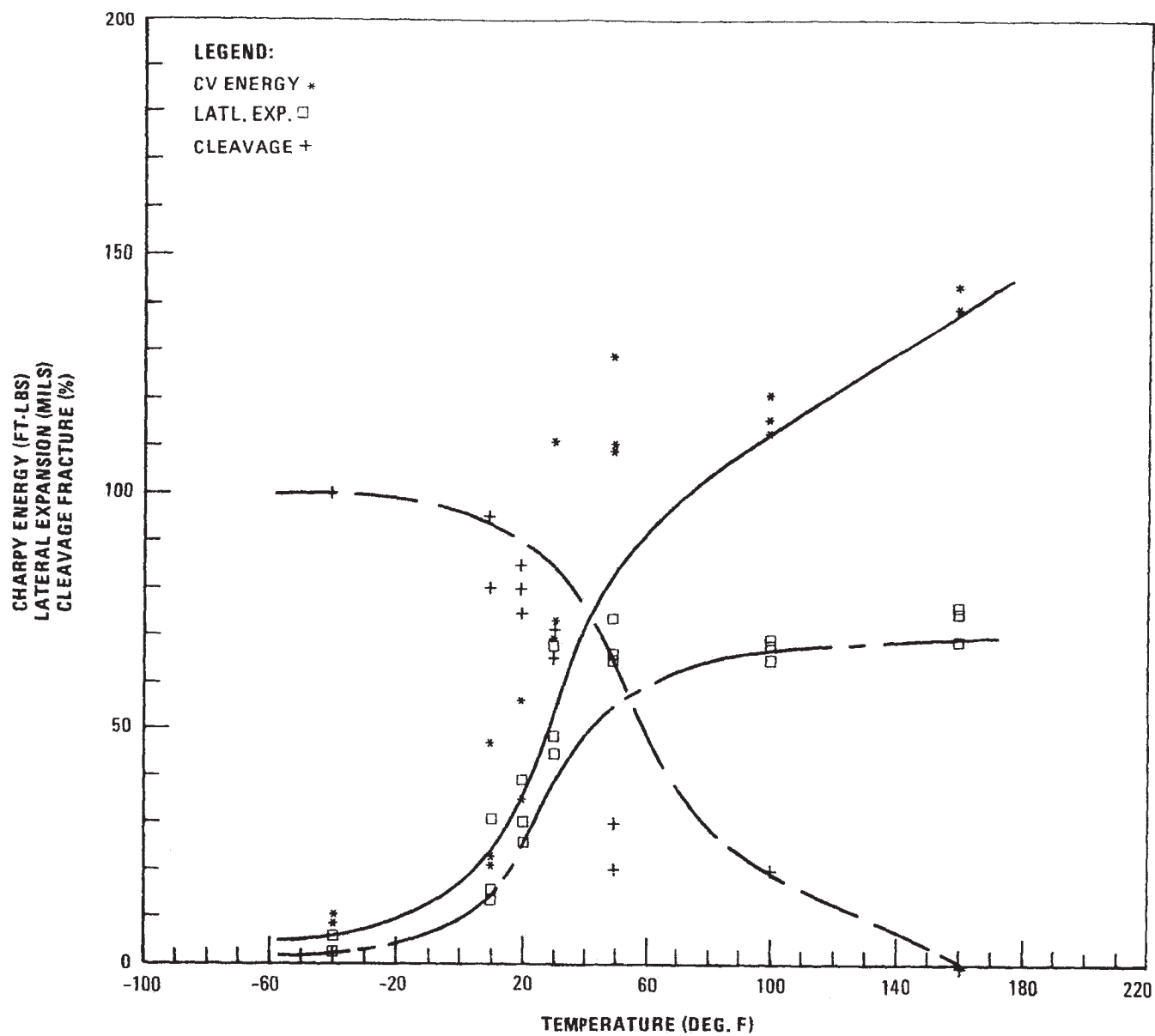
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 10 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-142
 COATED ELECTRODE
 LOT NO. LAOHG

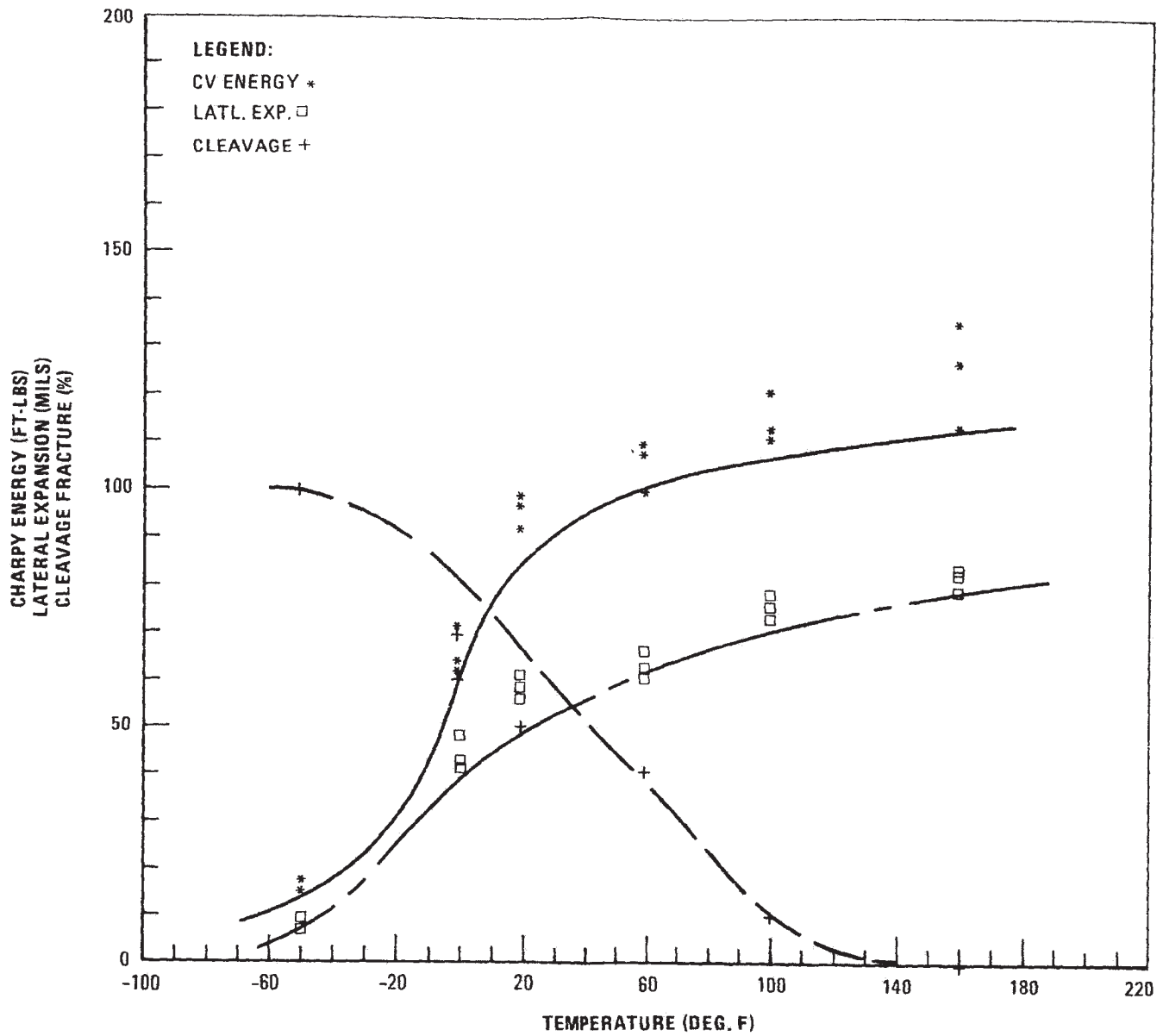
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 11 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-142
 COATED ELECTRODE
 LOT NO. EAOAH

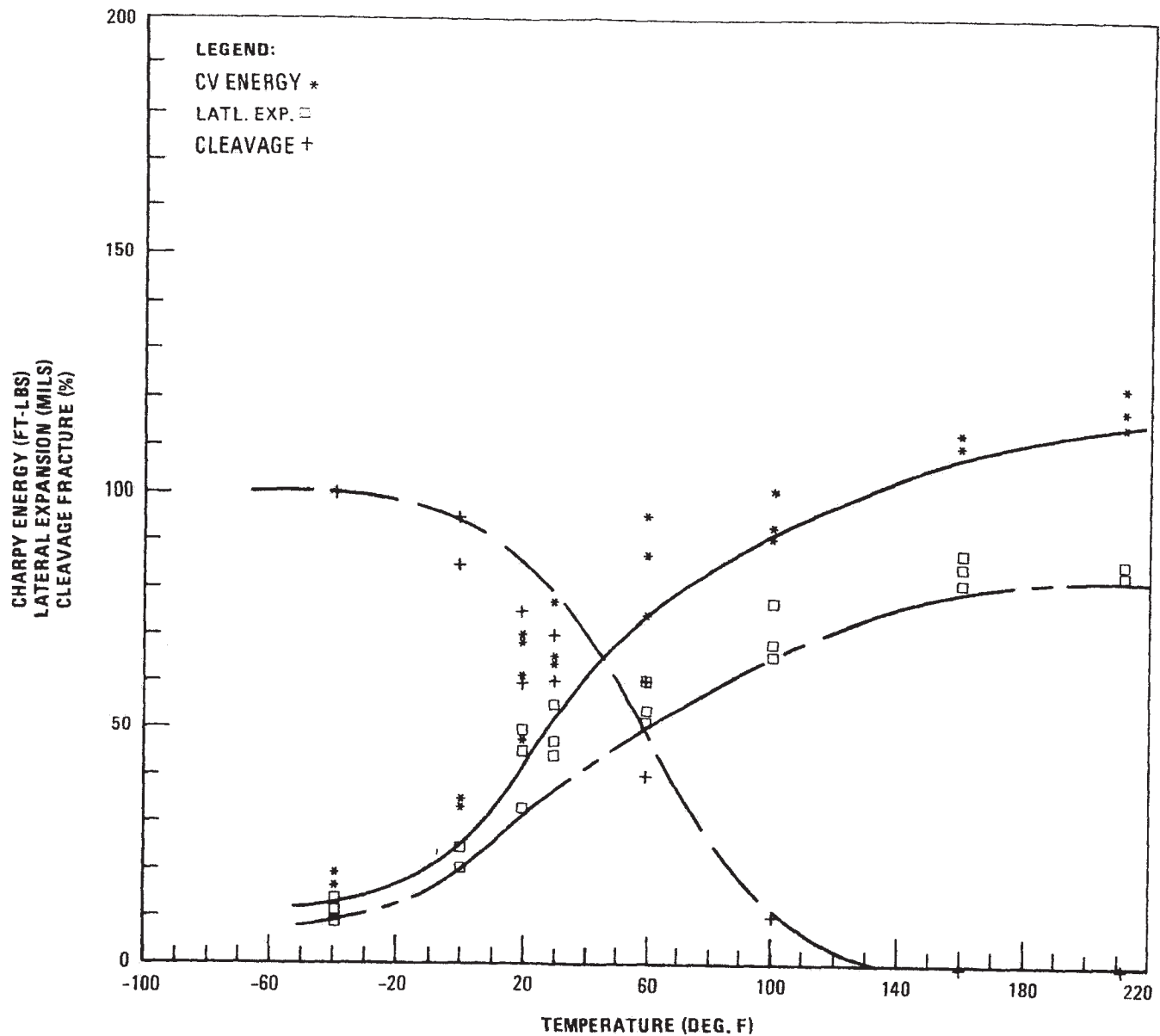
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 12 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-142
 COATED ELECTRODE
 LOT NO. JAOEH

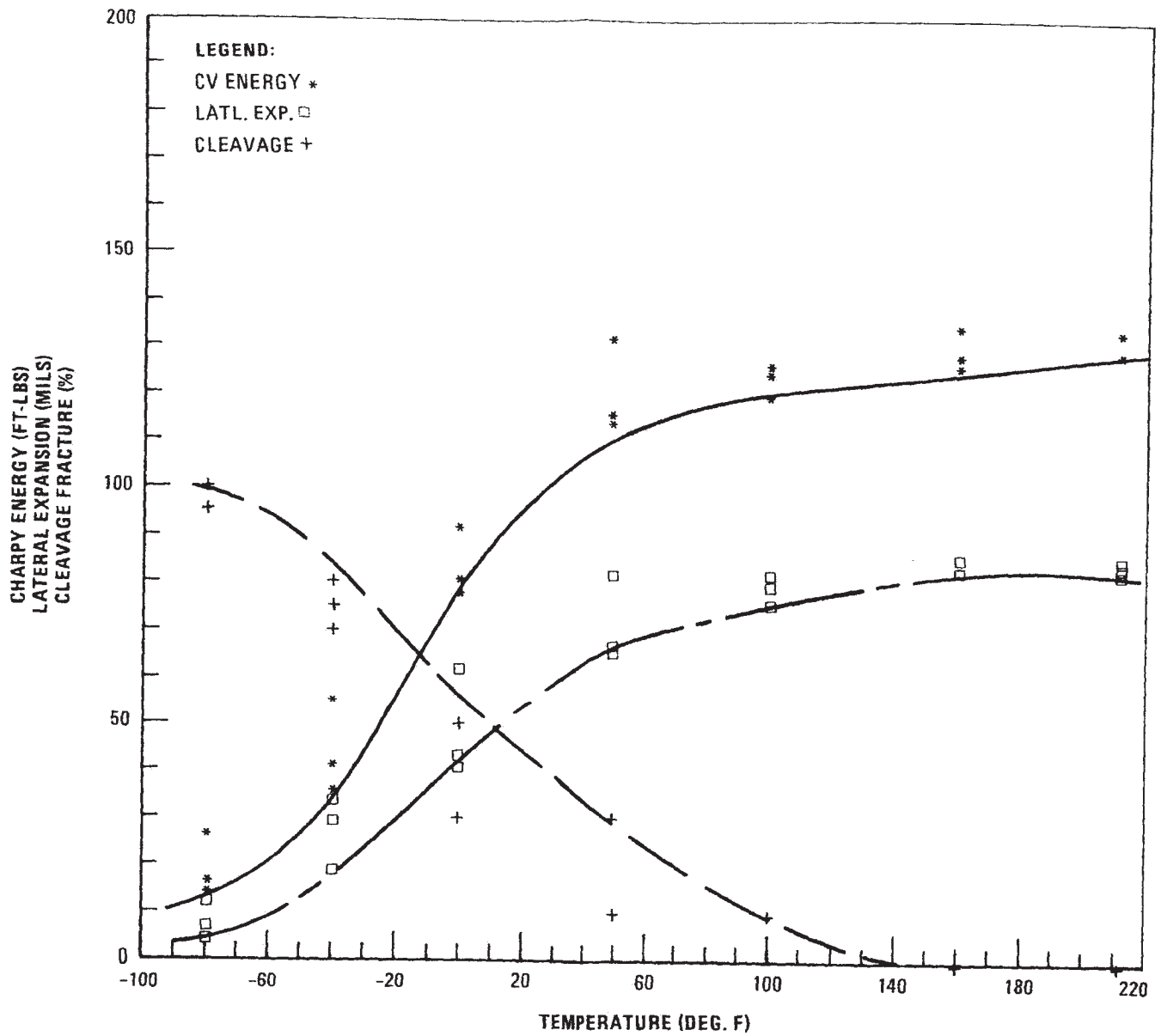
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 13 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-171
 COATED ELECTRODE
 LOT NO. CAAIJ

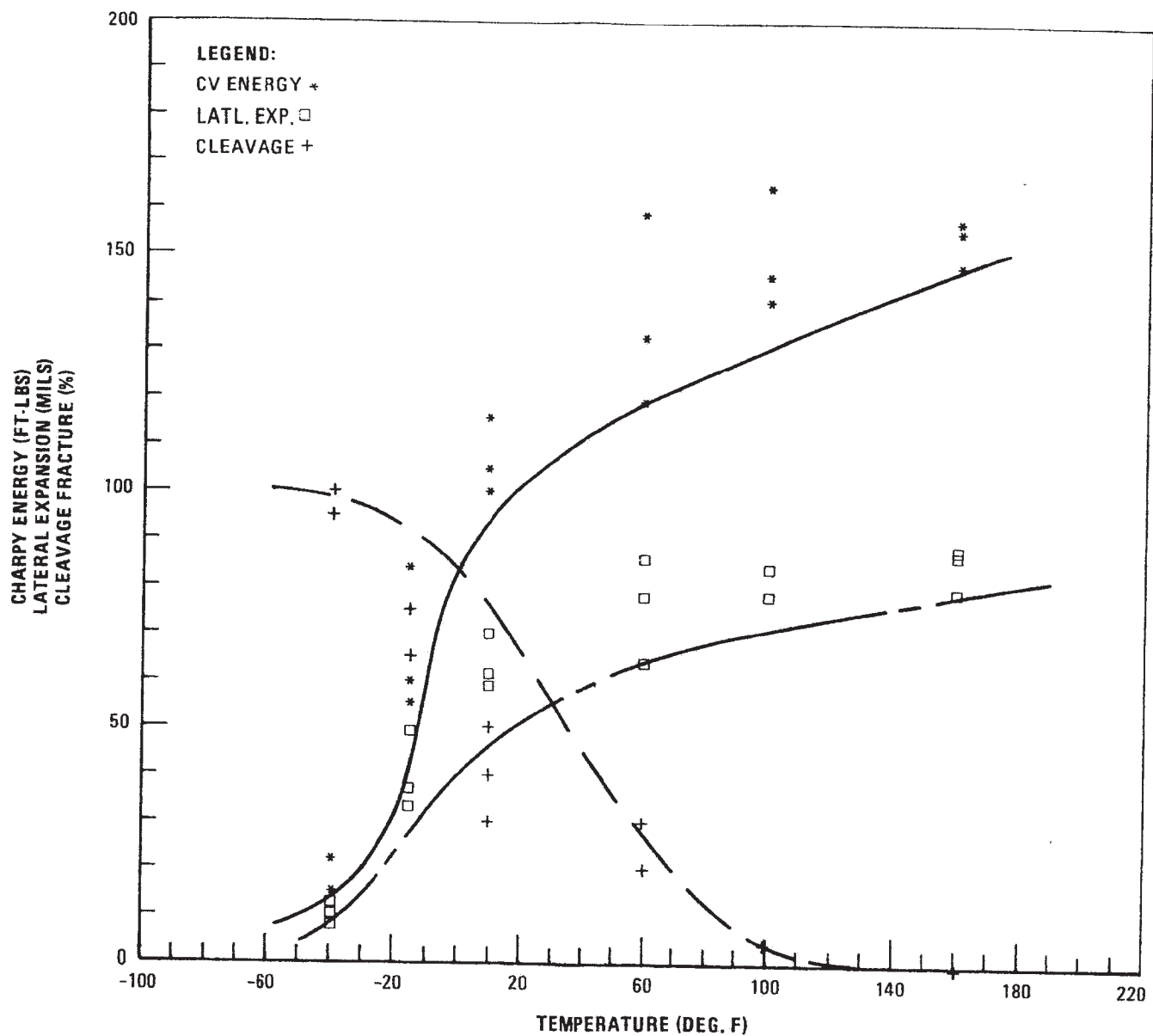
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 14 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-171
 COATED ELECTRODE
 LOT NO. 1A0HJ

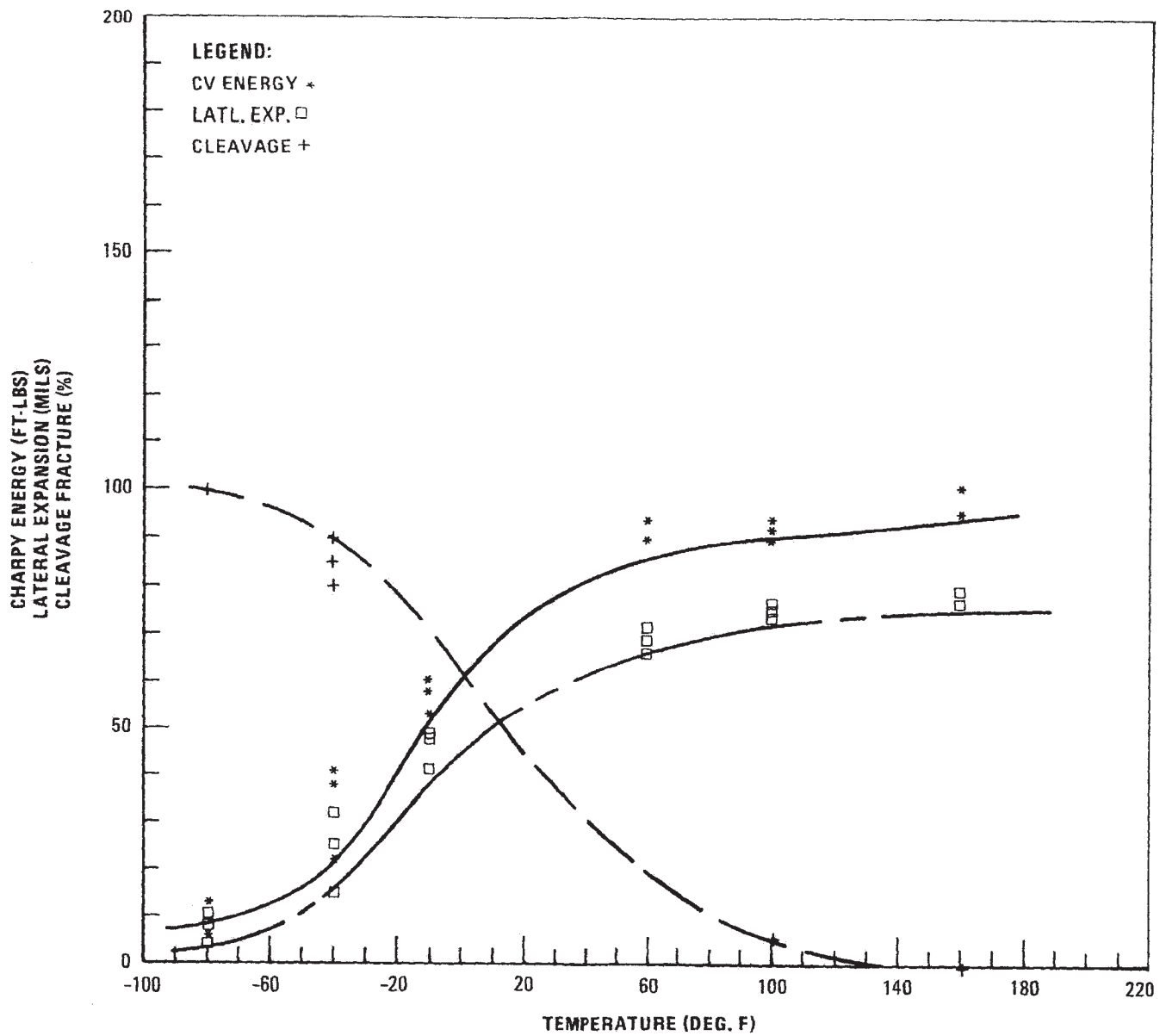
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 15 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
101-171
MIL B-4 WIRE
FLUX LINDE 124

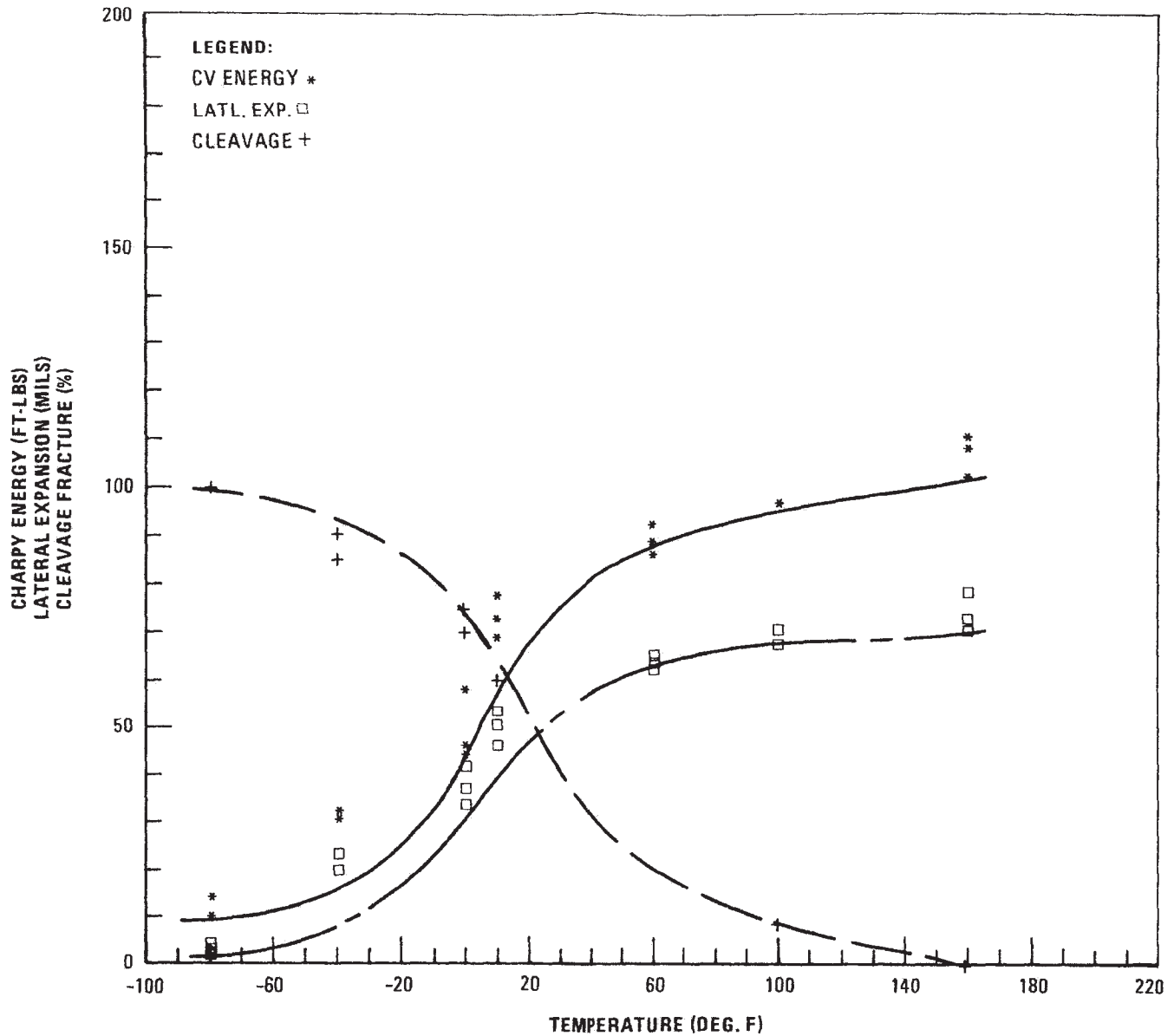
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 16 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-124
 MIL B-4 WIRE
 FLUX LINDE 124

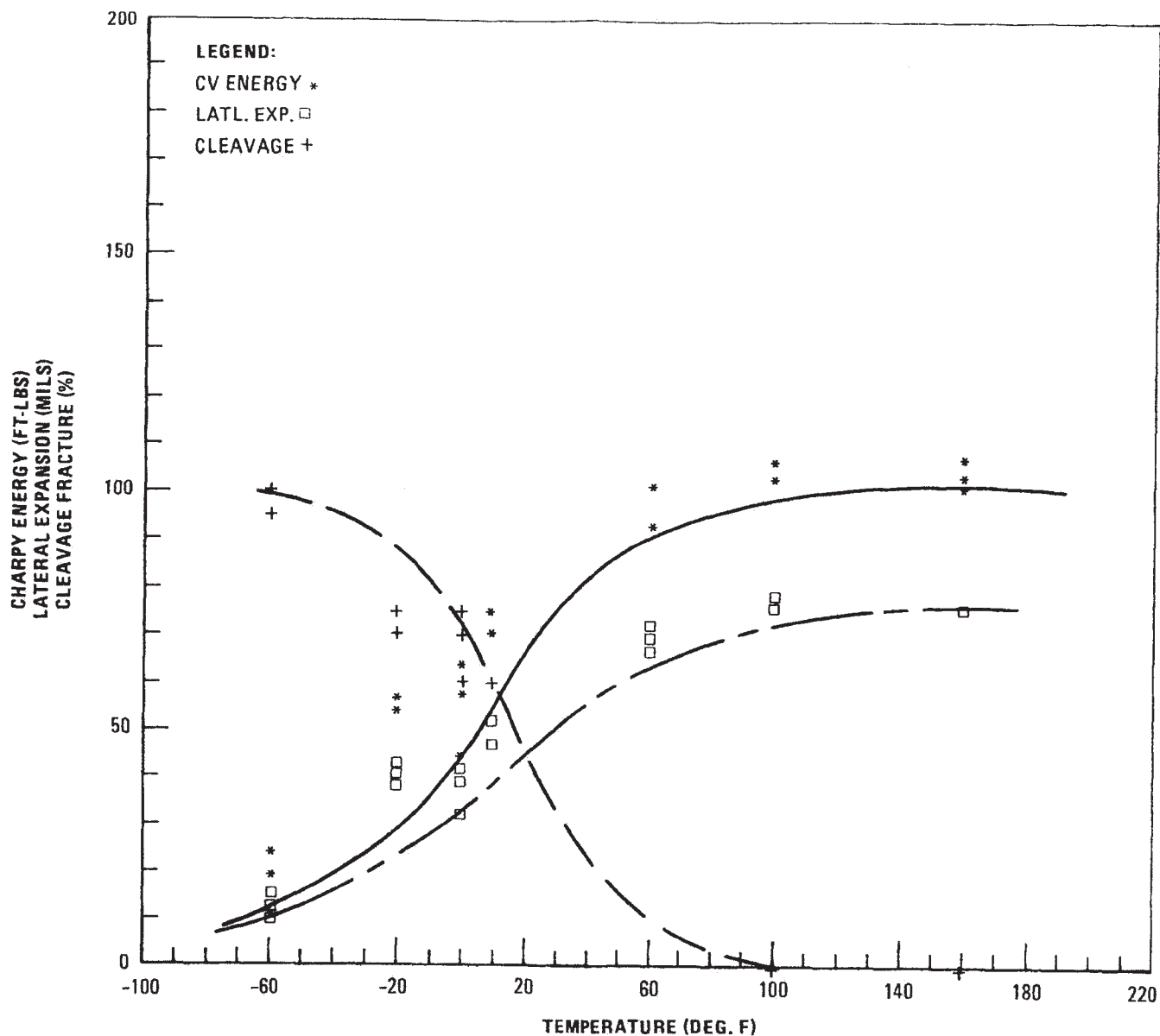
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 17 OF 18

JUNE 2003

REVISION 12



WELD SEAM NUMBER
 101-142
 MIL B-4 WIRE
 FLUX LINDE 124

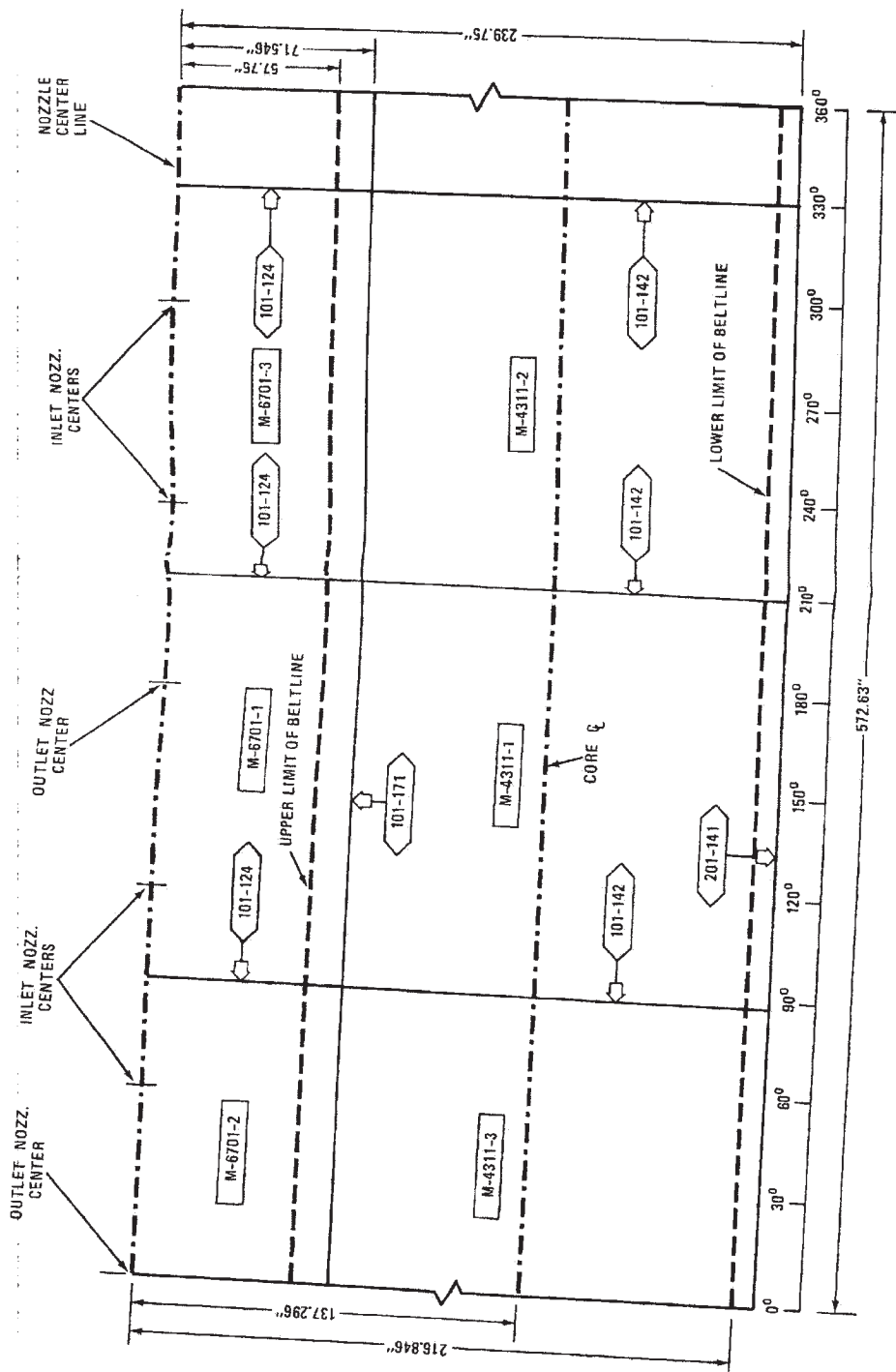
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

UNIT 3 CHARPY TEST RESULTS

FIGURE 5.2-3 SHEET 18 OF 18

JUNE 2003

REVISION 12



LEGEND

PLATE MATERIAL CODE NO.

WELDSEAM NUMBER

(SKETCH NOT TO SCALE)

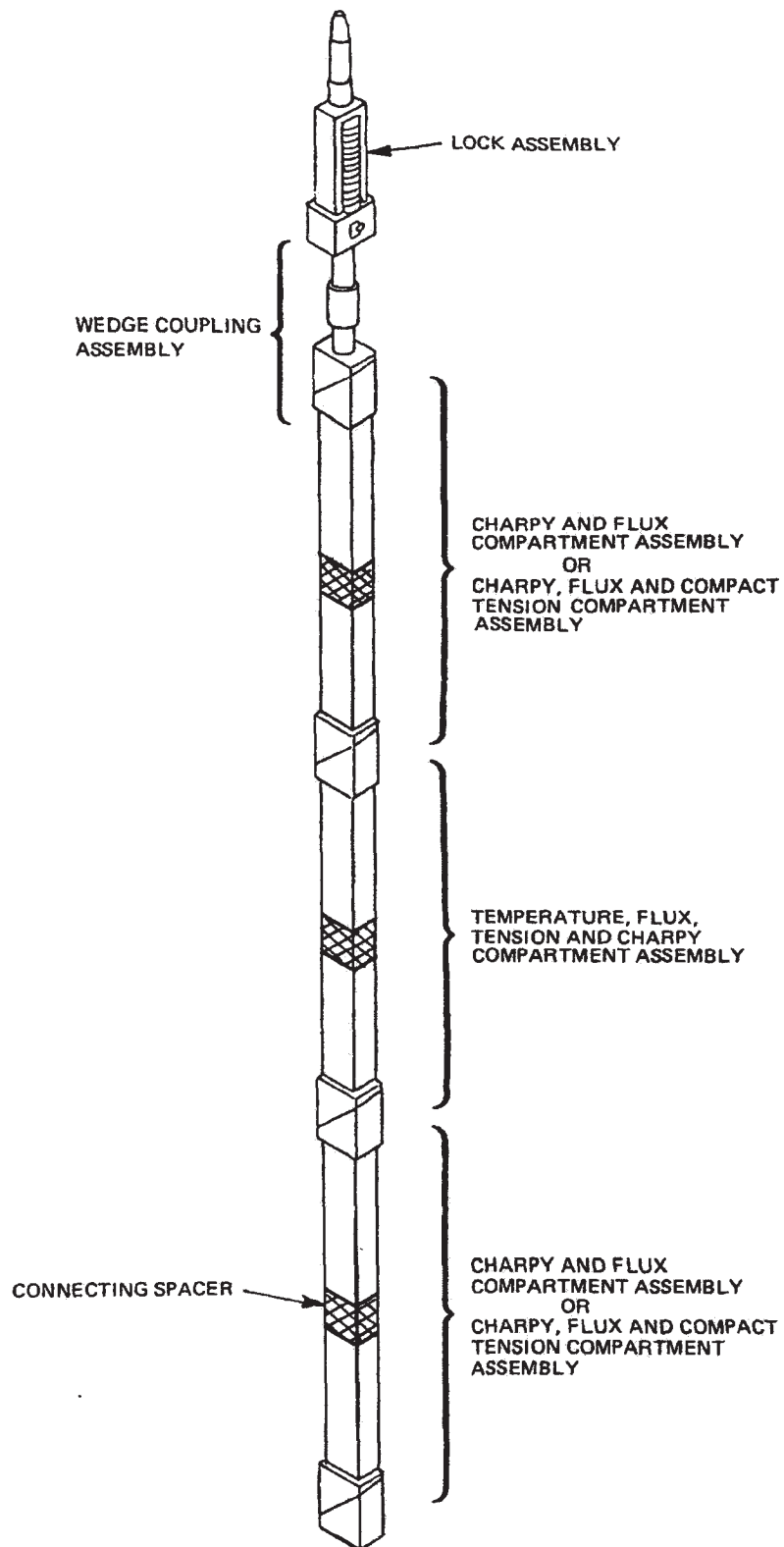
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PALO VERDE UNIT 1
R.V. BELTLINE REGION

FIGURE 5.2-6

JUNE 2003

REVISION 12



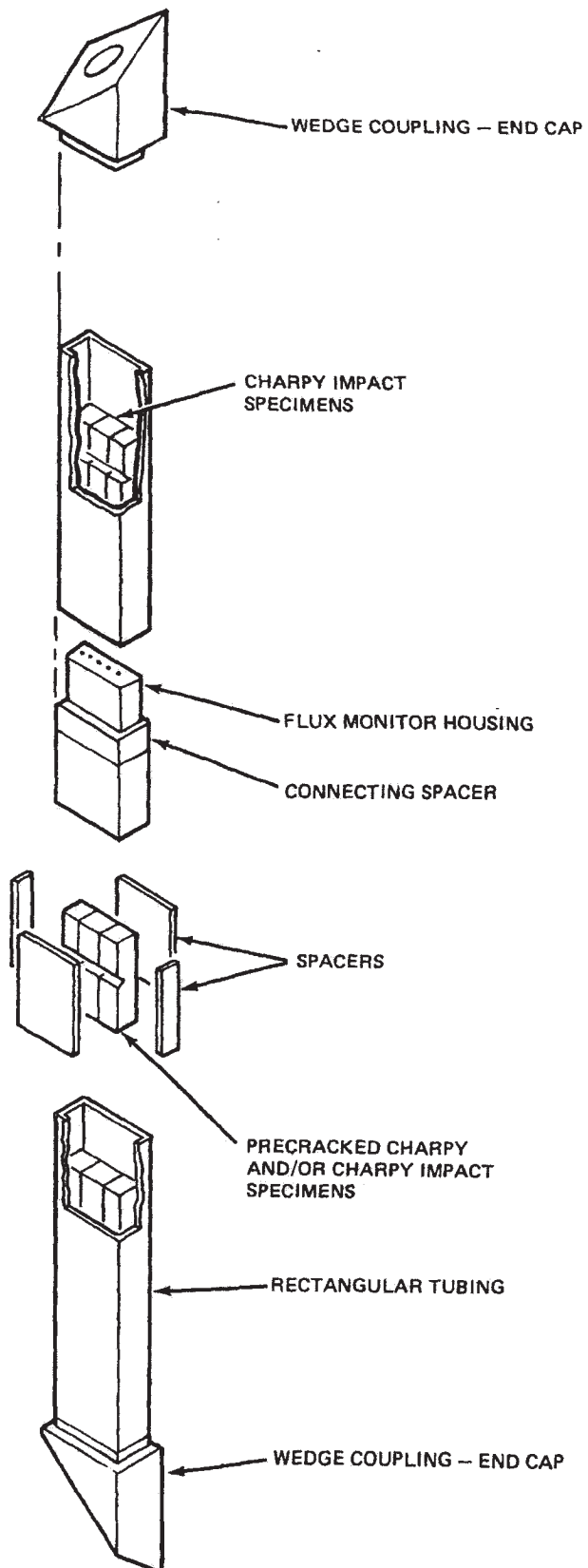
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SURVEILLANCE CAPSULE ASSEMBLY

FIGURE 5.3-1

JUNE 2001

REVISION 11

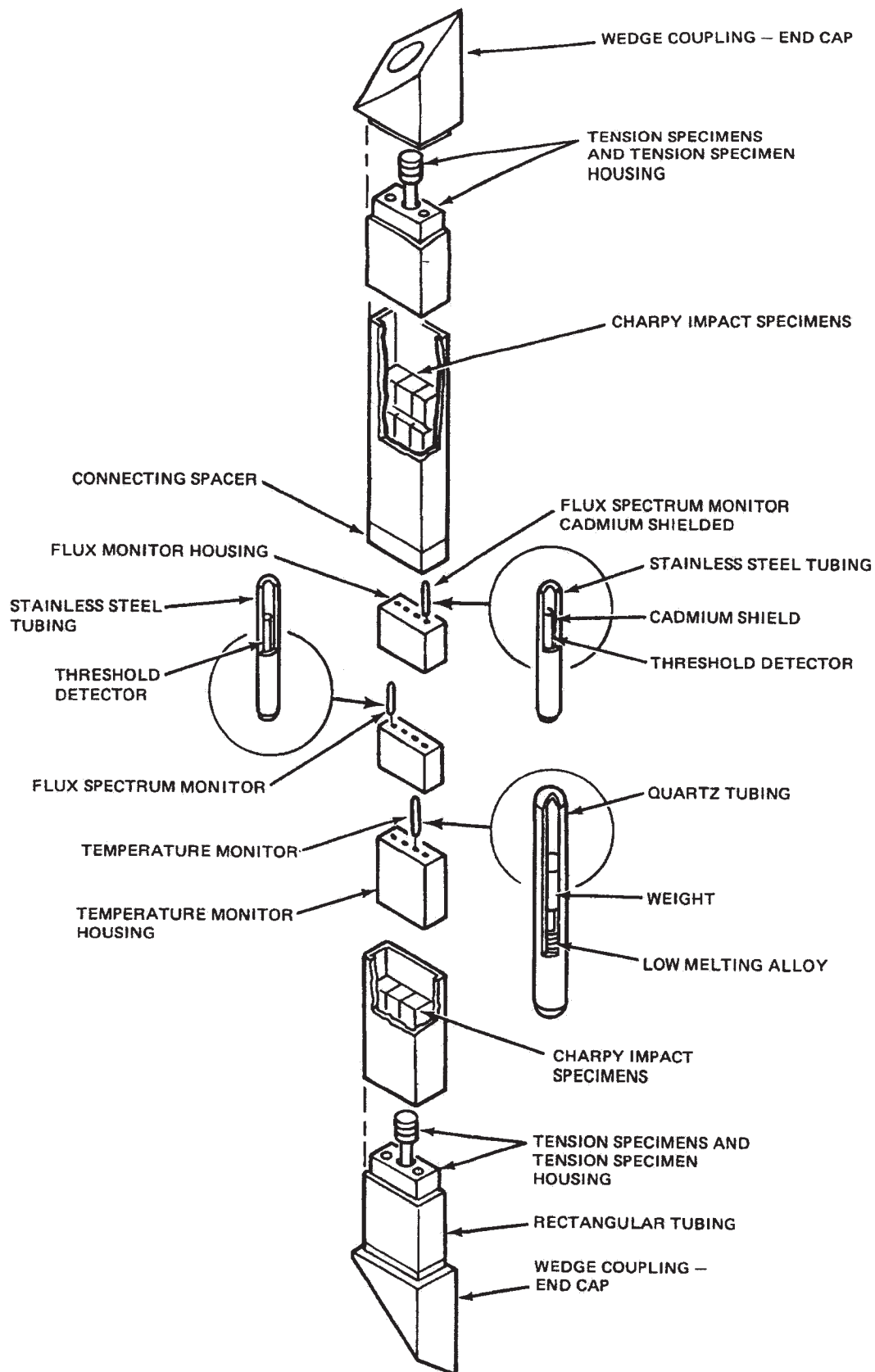


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CHARPY IMPACT
COMPARTMENT ASSEMBLY
FIGURE 5.3-2

JUNE 2001

REVISION 11

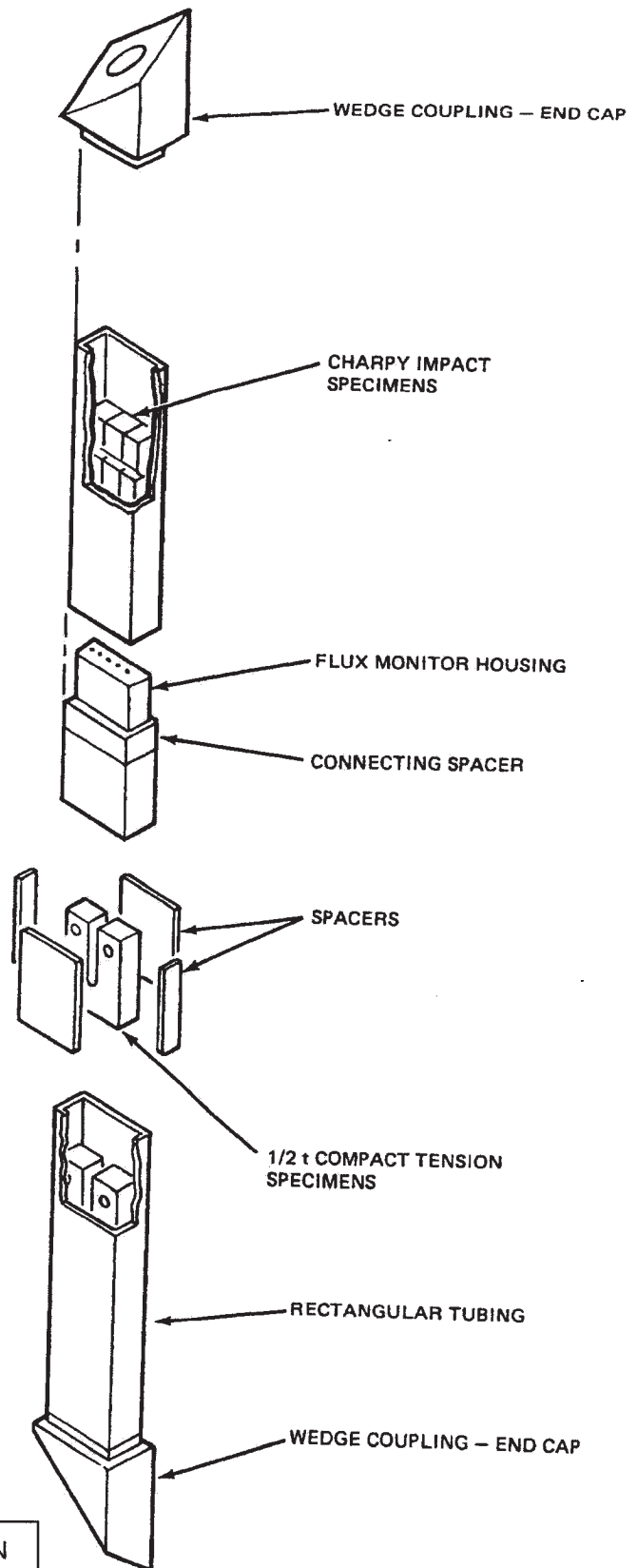


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TEMPERATURE, FLUX AND
TENSION COMPARTMENT ASSEMBLY
FIGURE 5.3-3

JUNE 2001

REVISION 11

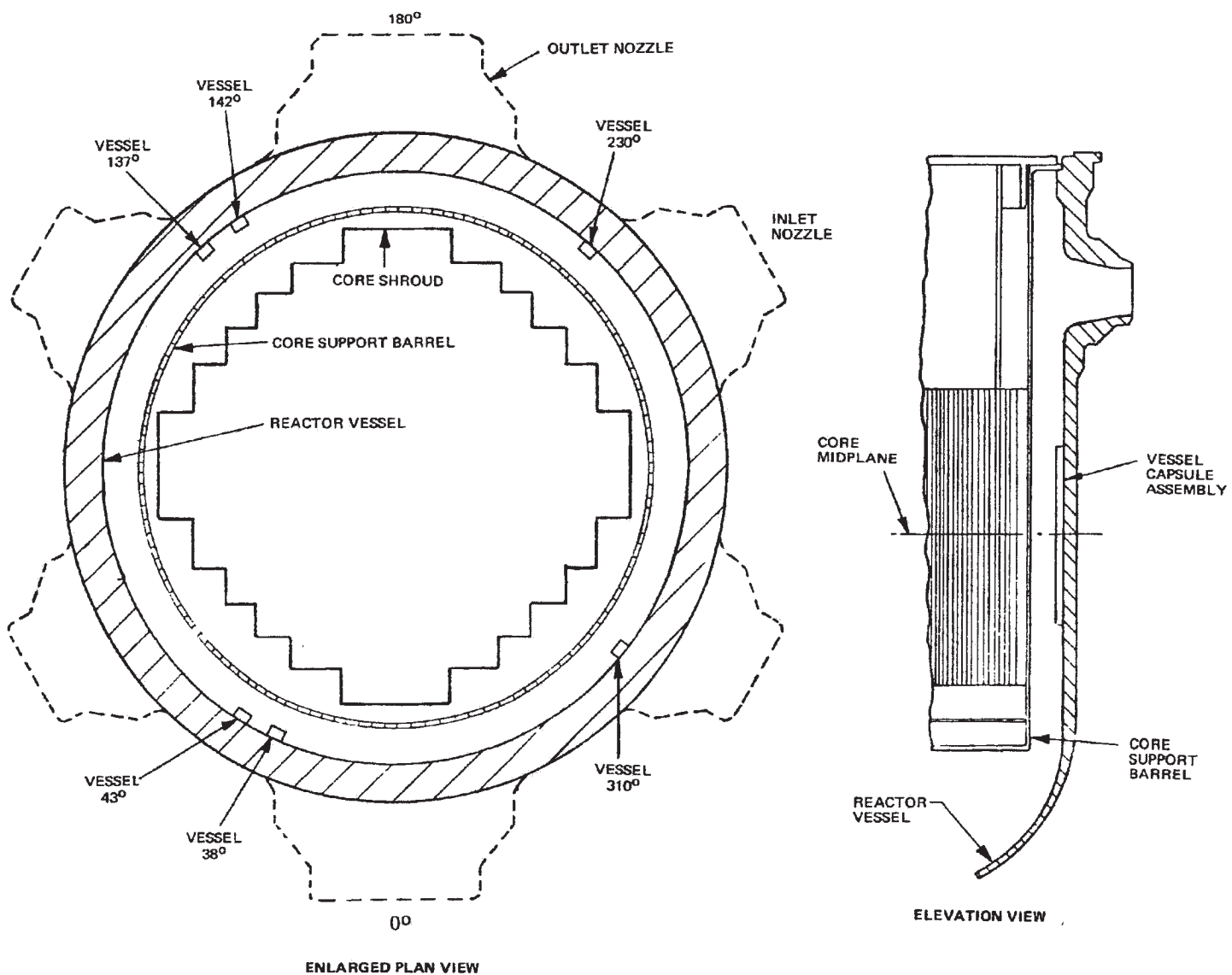


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CHARPY FLUX AND COMPACT
TENSION COMPARTMENT ASSEMBLY
FIGURE 5.3-3A

JUNE 2001

REVISION 11



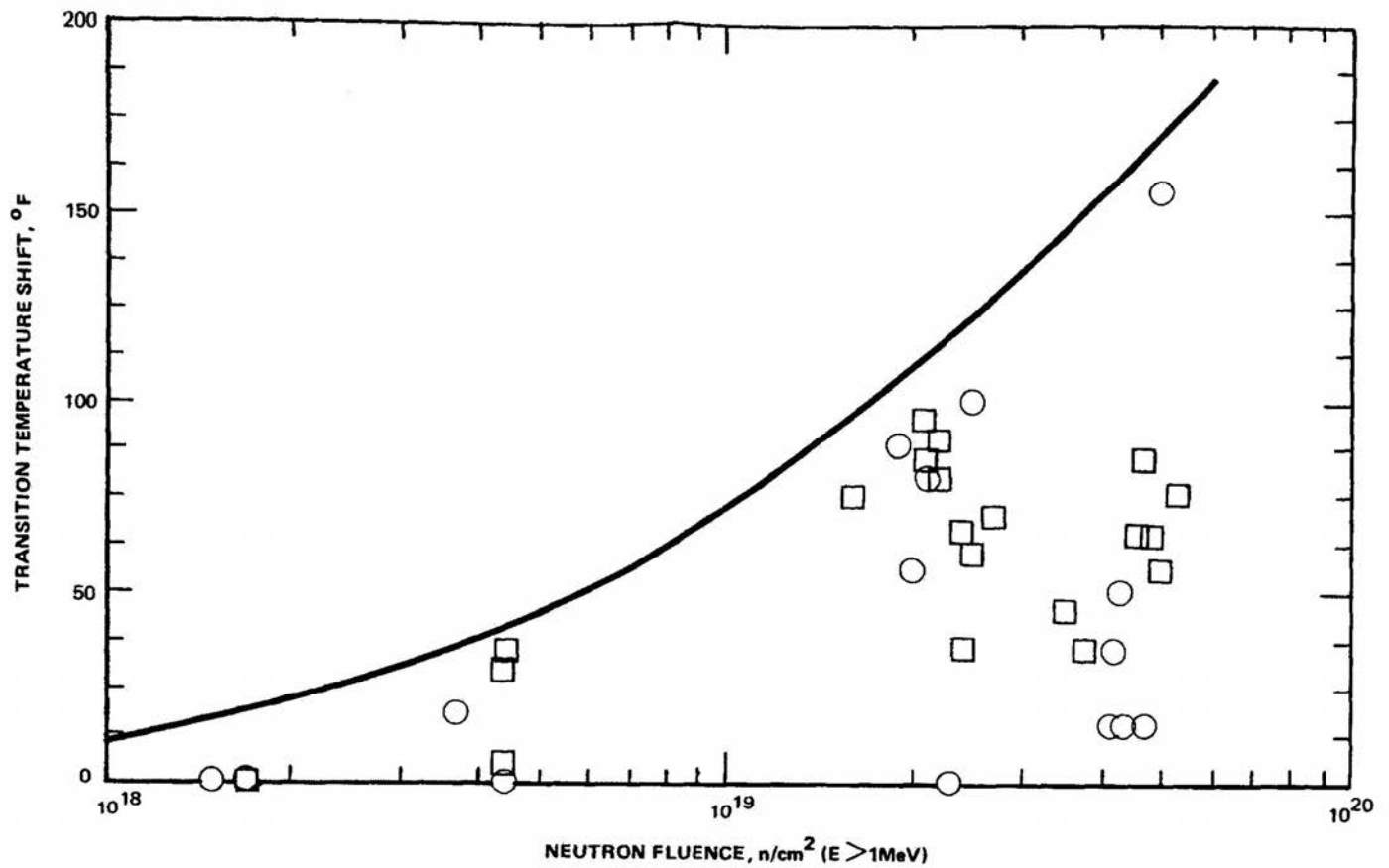
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

LOCATIONS OF
 SURVEILLANCE CAPSULE ASSEMBLIES

FIGURE 5.3-4

JUNE 2001

REVISION 11



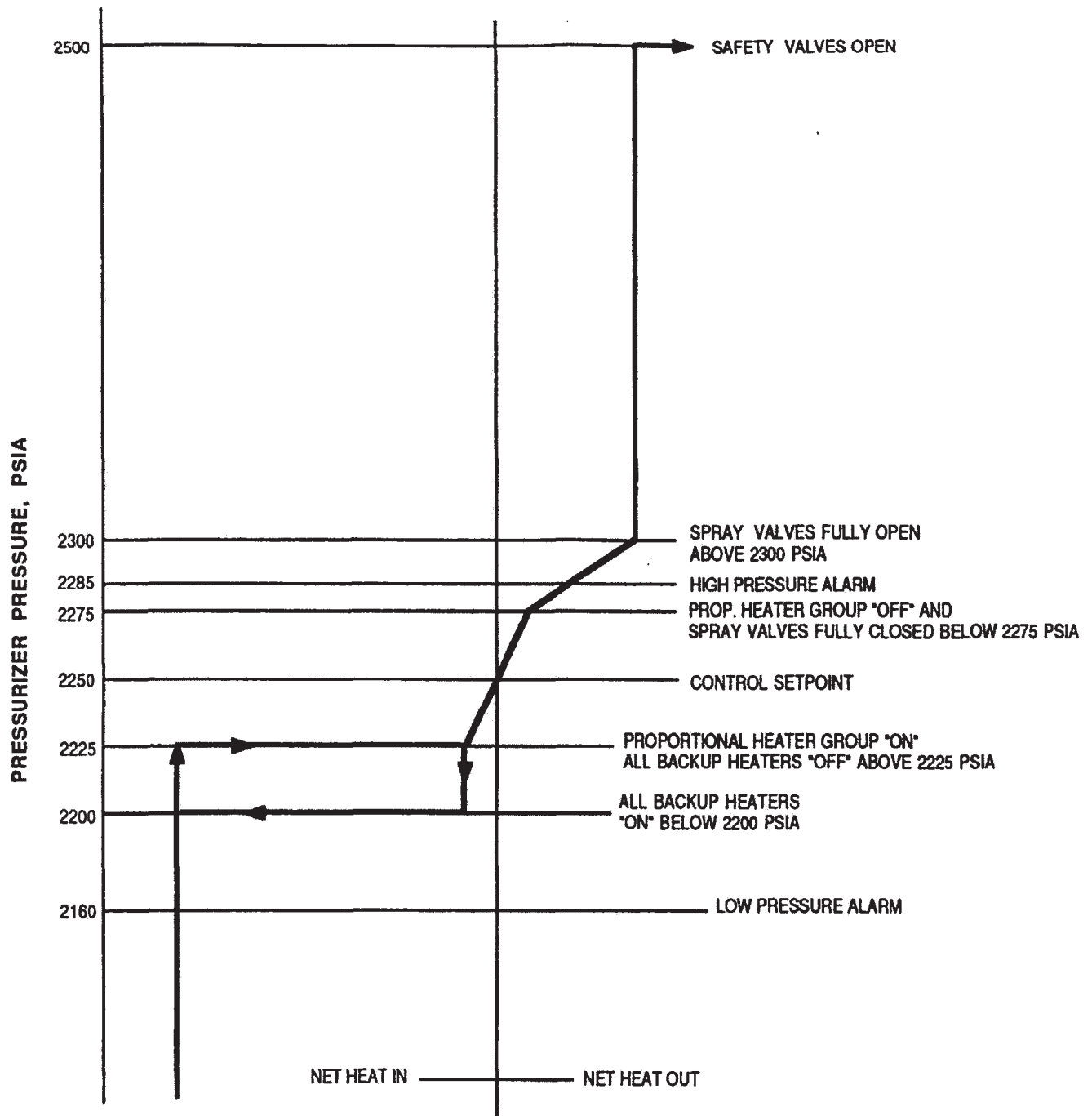
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TRANSITION TEMPERATURE SHIFT FOR PLATE
AND WELD METAL
METAL CONTAINING 0.10 W/O COPPER

FIGURE 5.3-5

JUNE 2009

REVISION 15



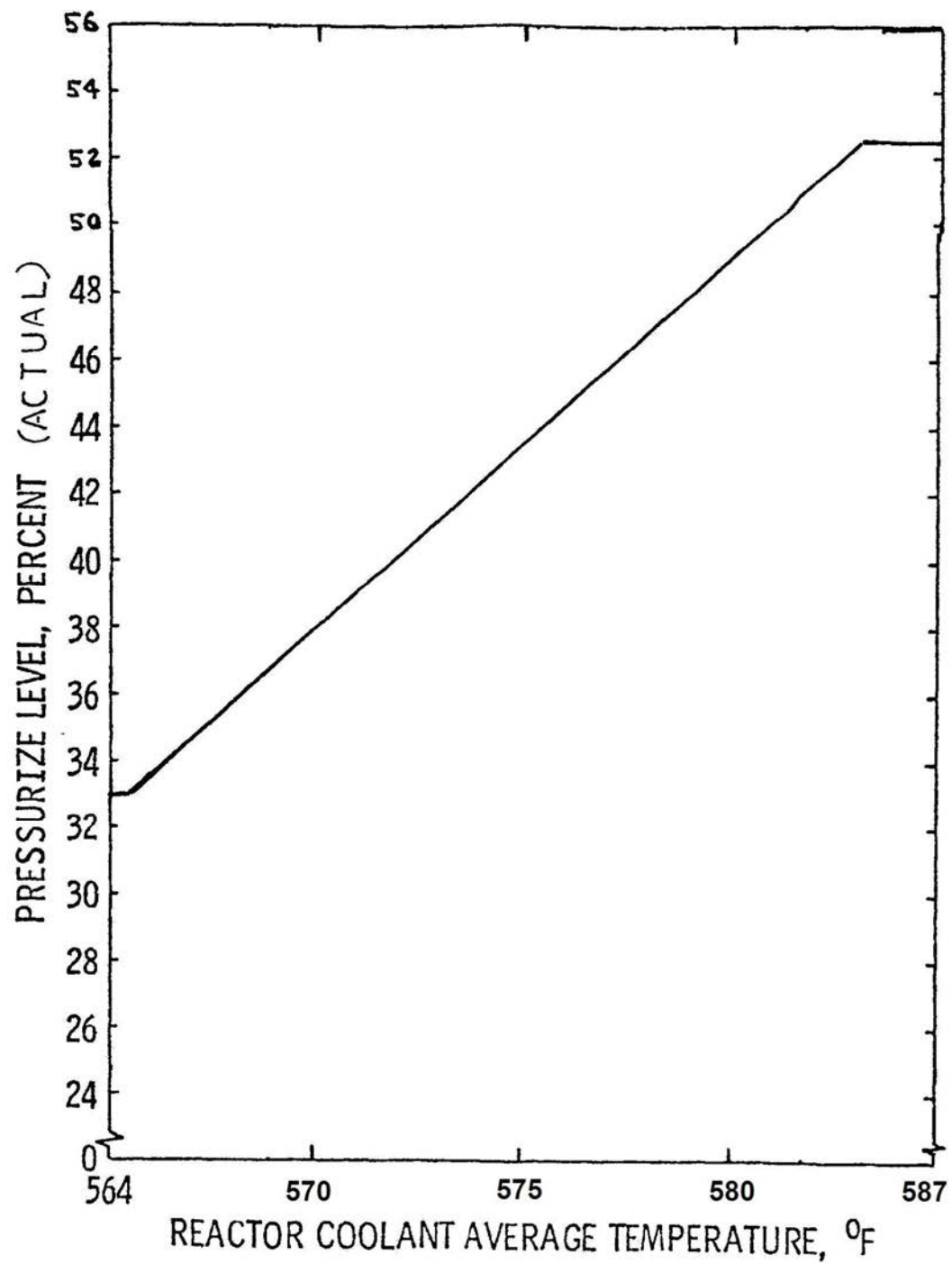
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PALO VERDE PRESSURE
CONTROL PROGRAM SETPOINTS

FIGURE 5.4-1

JUNE 2001

REVISION 11



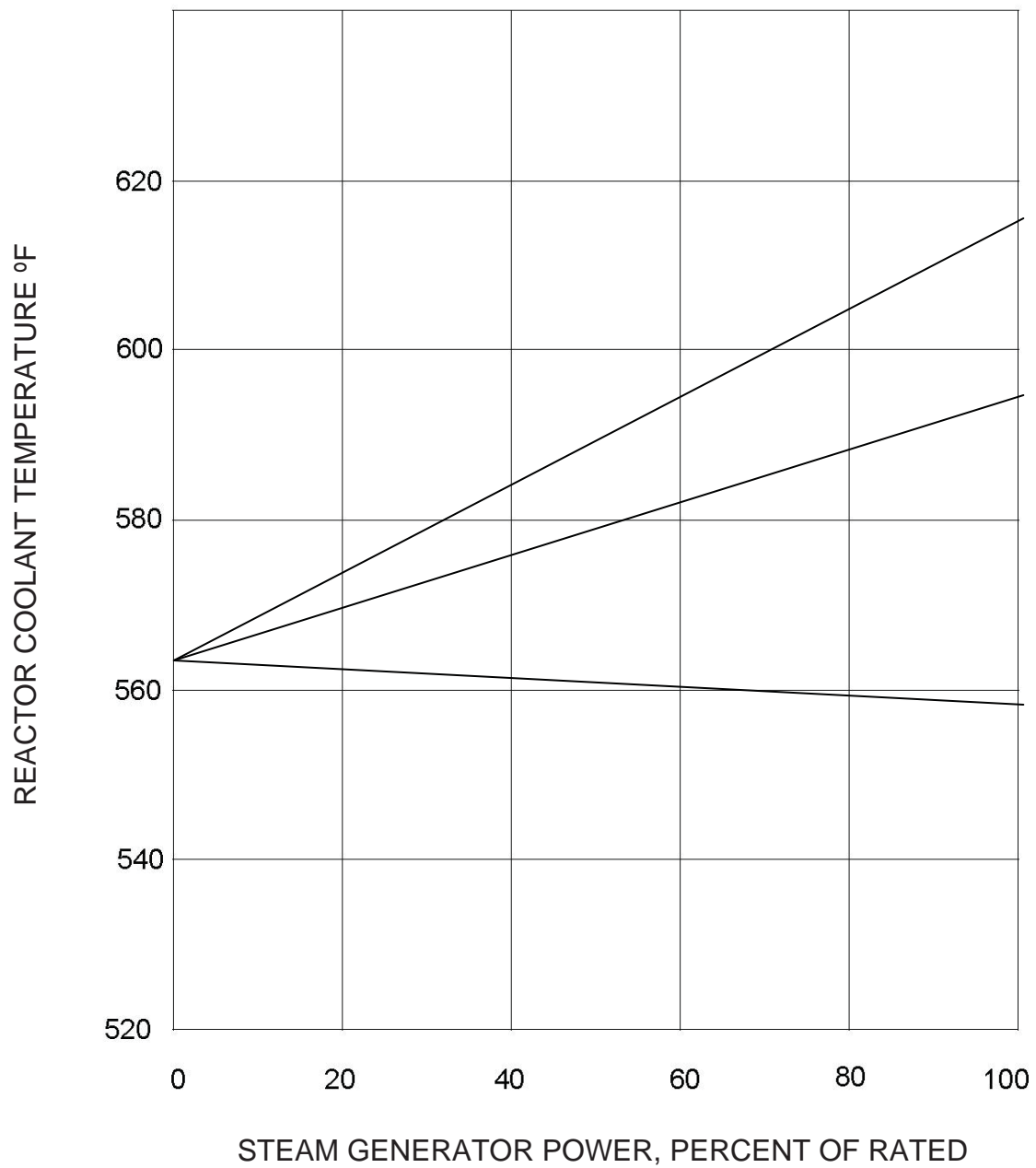
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PALO VERDE PRESSURIZER
TYPICAL LEVEL SETPOINT PROGRAM

FIGURE 5.4-2

JUNE 2009

REVISION 15



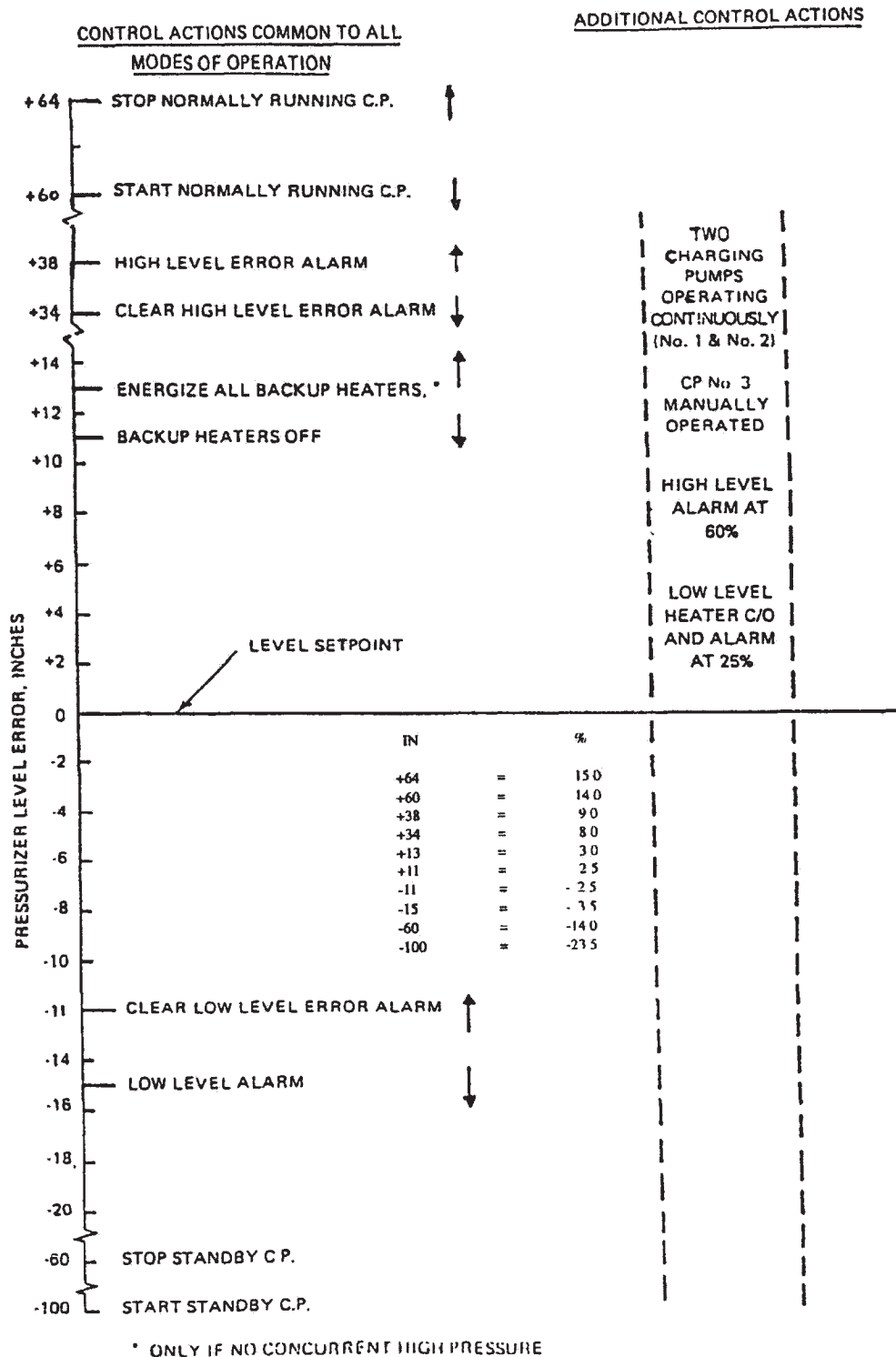
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PALO VERDE TYPICAL
TEMPERATURE CONTROL PROGRAM

FIGURE 5.4-3

JUNE 2009

REVISION 15



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

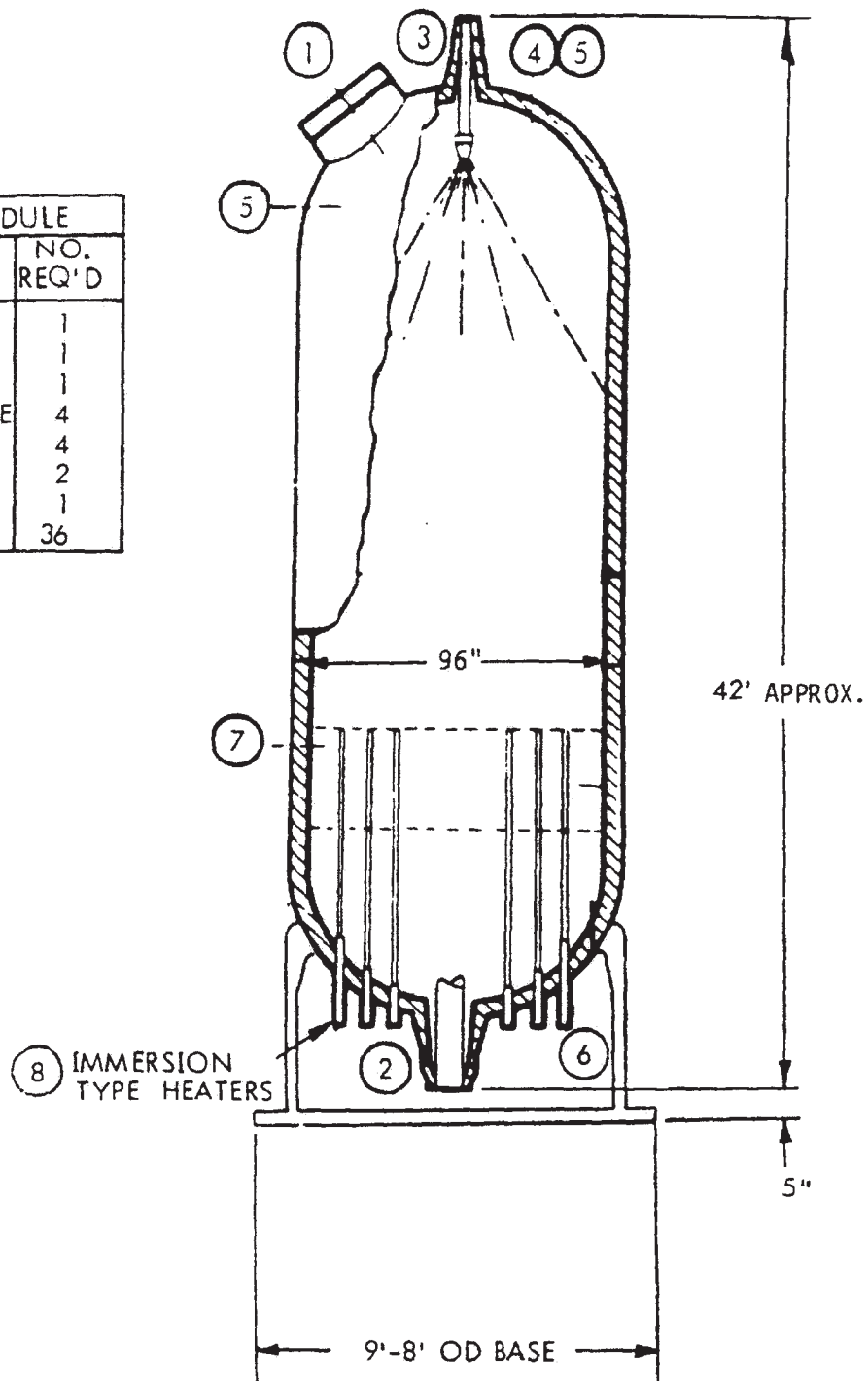
PALO VERDE PRESSURIZER
TYPICAL LEVEL ERROR PROGRAM

FIGURE 5.4-4

JUNE 2001

REVISION 11

NOZZLE SCHEDULE		
NO.	SERVICE	NO. REQ'D
1	MANWAY	1
2	SURGE	1
3	SPRAY	1
4	SAFETY VALVE	4
5	INSTRUMENT	4
6	INSTRUMENT	2
7	TEMPERATURE	1
8	HEATER	36



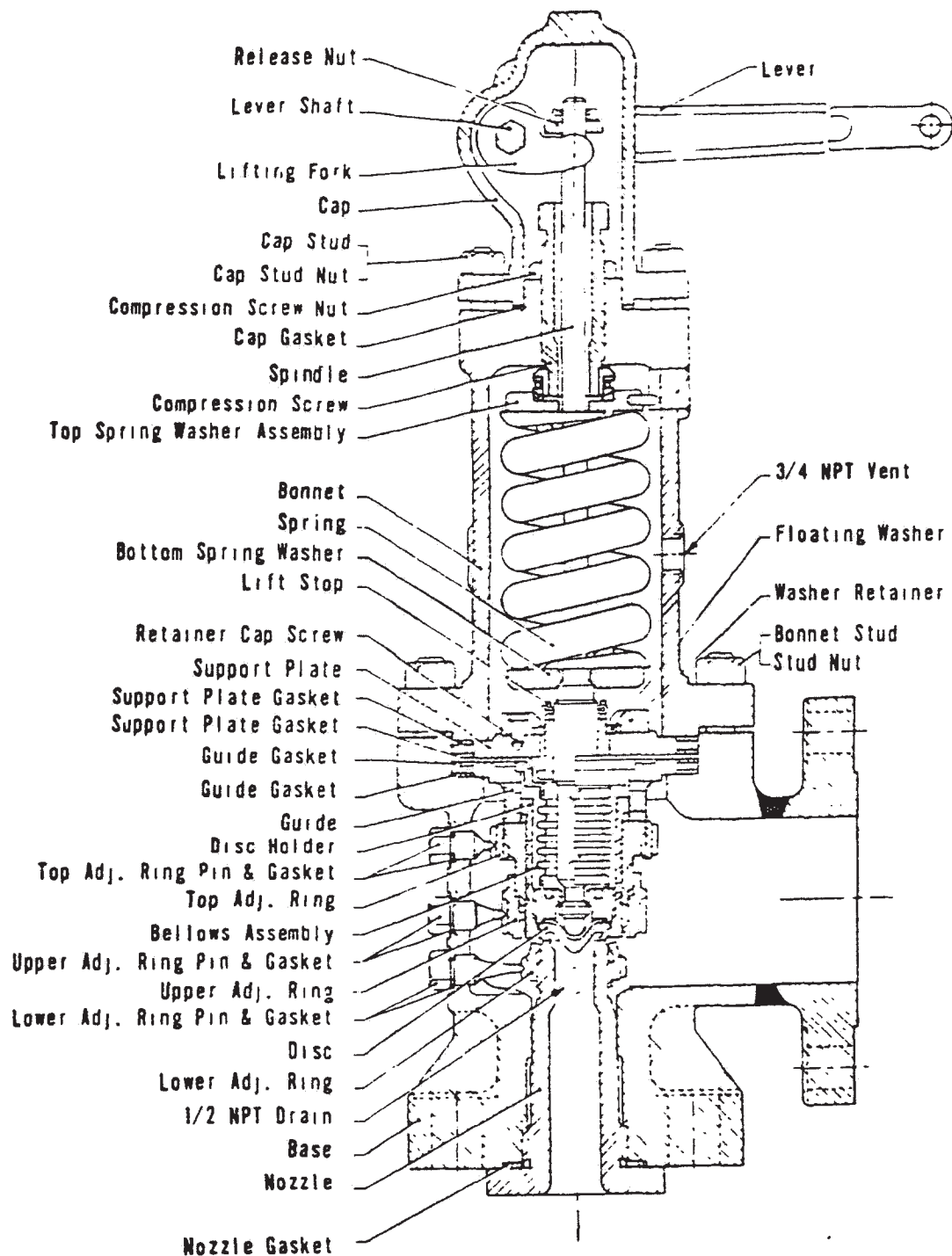
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TYPICAL PRESSURIZER

FIGURE 5.4-5

JUNE 2001

REVISION 11



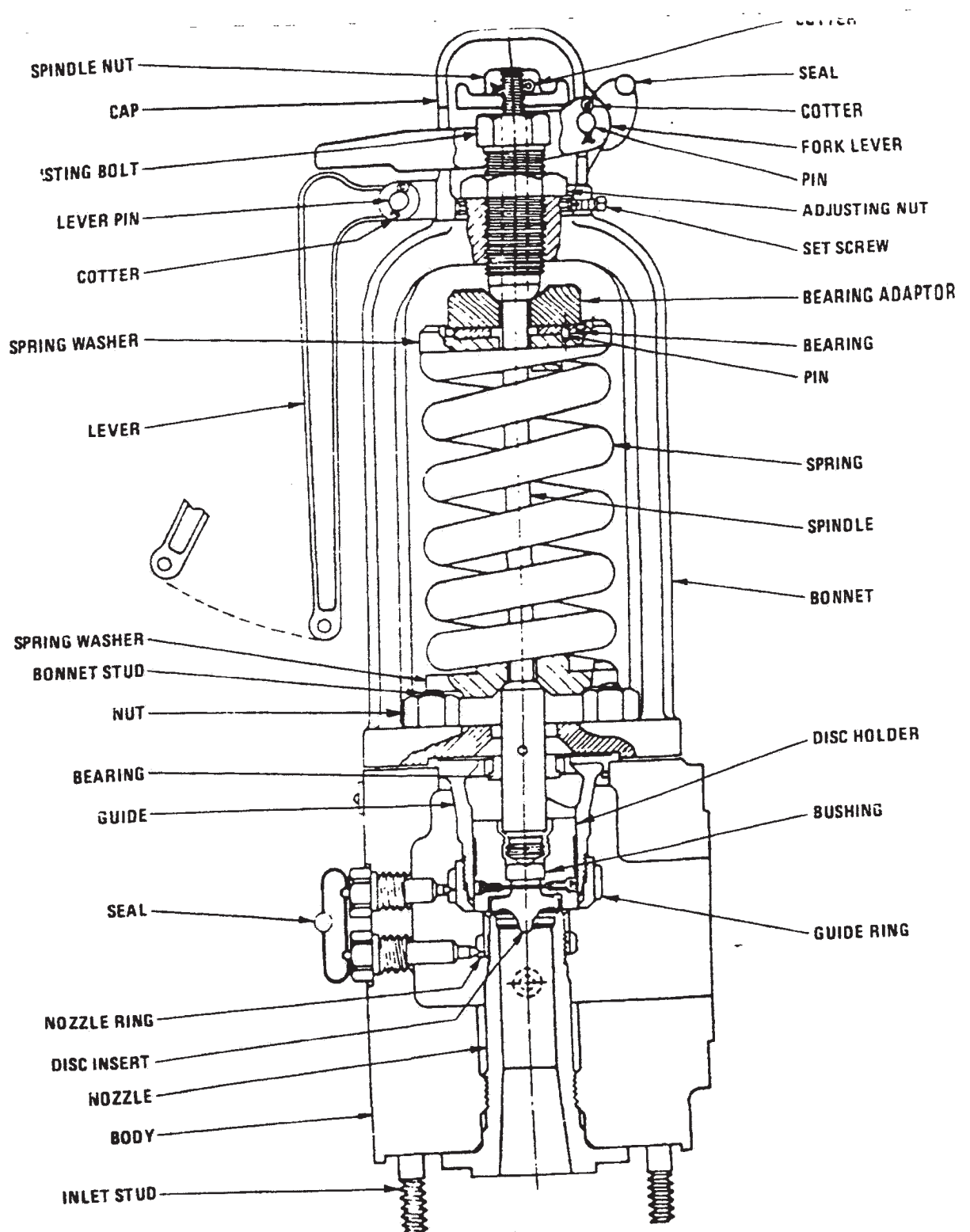
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PRIMARY SAFETY VALVE

FIGURE 5.4-6

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

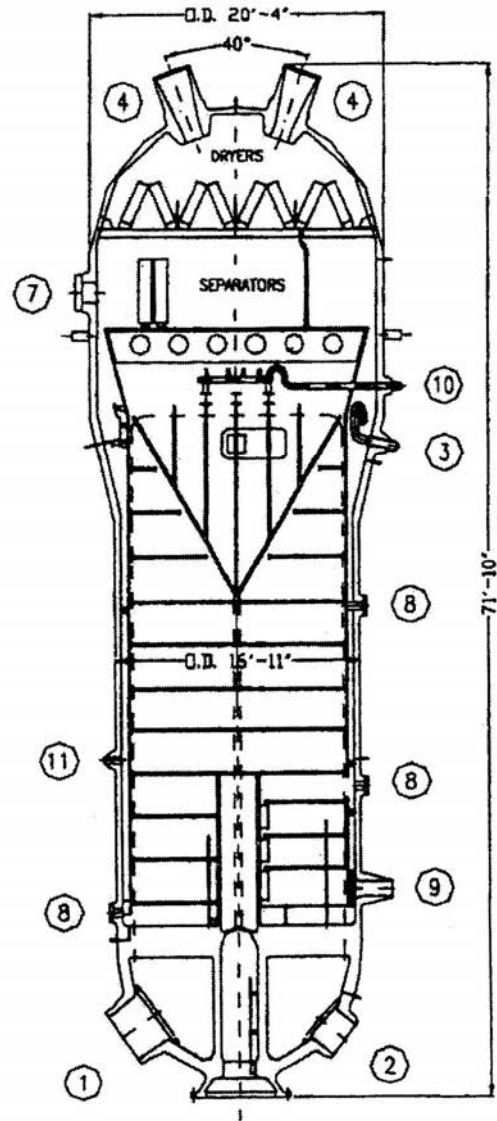
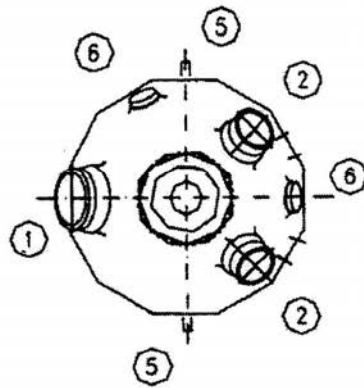
MAIN STEAM SAFETY VALVE

FIGURE 5.4-7

JUNE 2001

REVISION 11

NO.	SERVICE	NO. REQ'D
1	PRIMARY INLET	1
2	PRIMARY OUTLET	2
3	DOWNCOMER FEEDWATER	1
4	STEAM OUTLET	2
5	BLOWDOWN	2
6	PRIMARY MANWAY	2
7	SECONDARY MANWAY	2
8	HANDHOLE	7
9	ECONOMIZER FEEDWATER	2
10	RECIRCULATION	1
11	DOWNCOMER BLOWDOWN	1



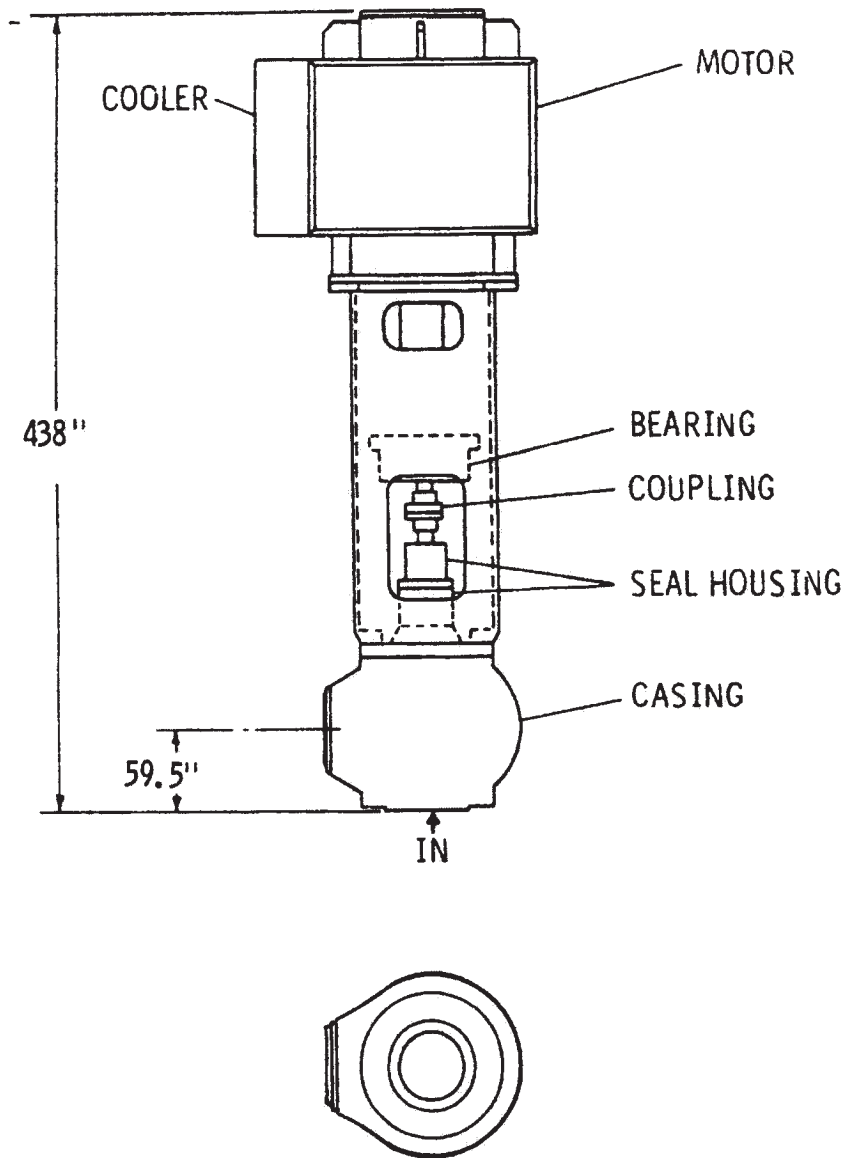
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

STEAM GENERATOR
(TYPICAL)

FIGURE 5.4-8

JUNE 2009

REVISION 15

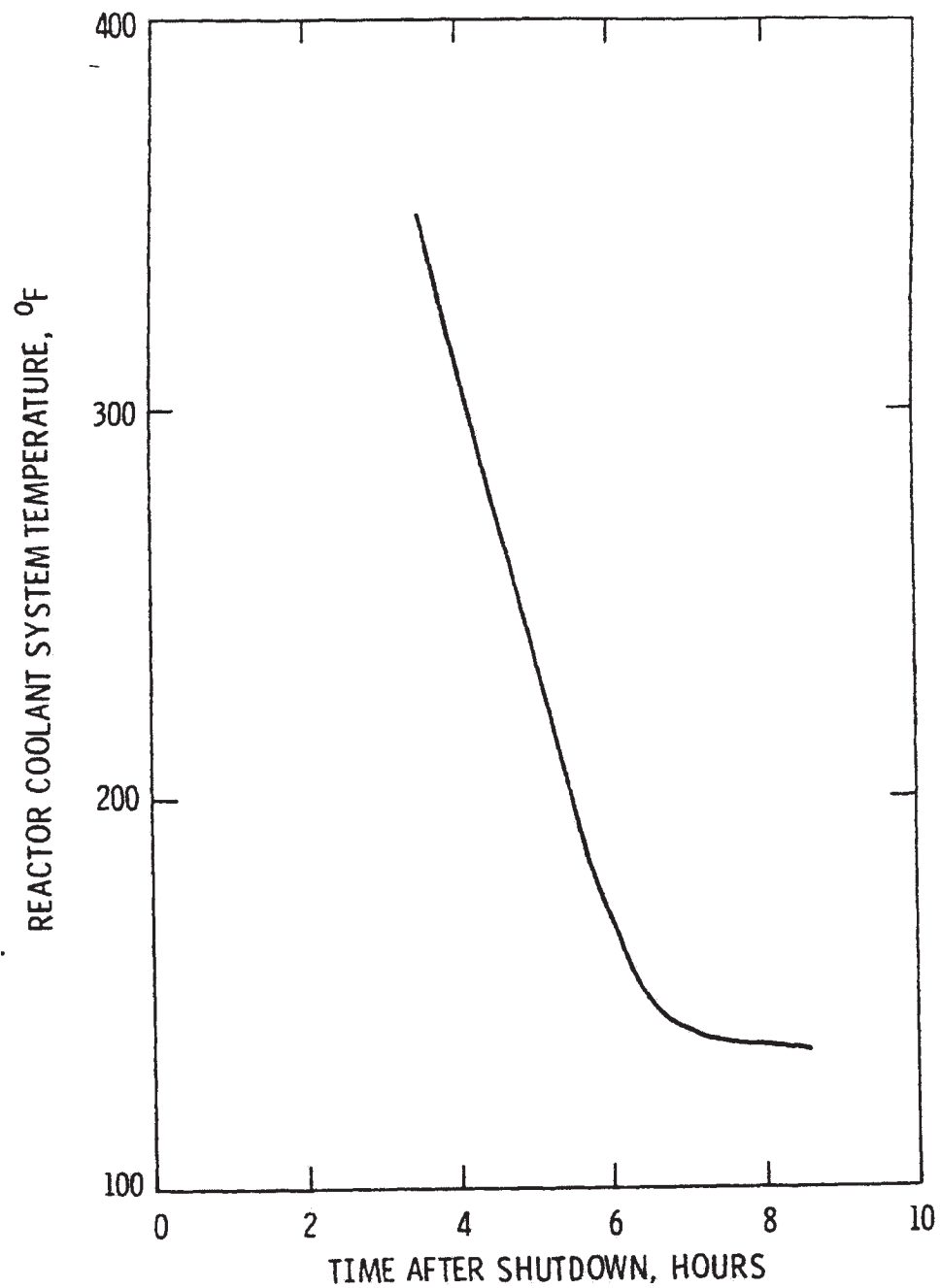


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR COOLANT PUMP
(TYPICAL)
FIGURE 5.4-9

JUNE 2001

REVISION 11



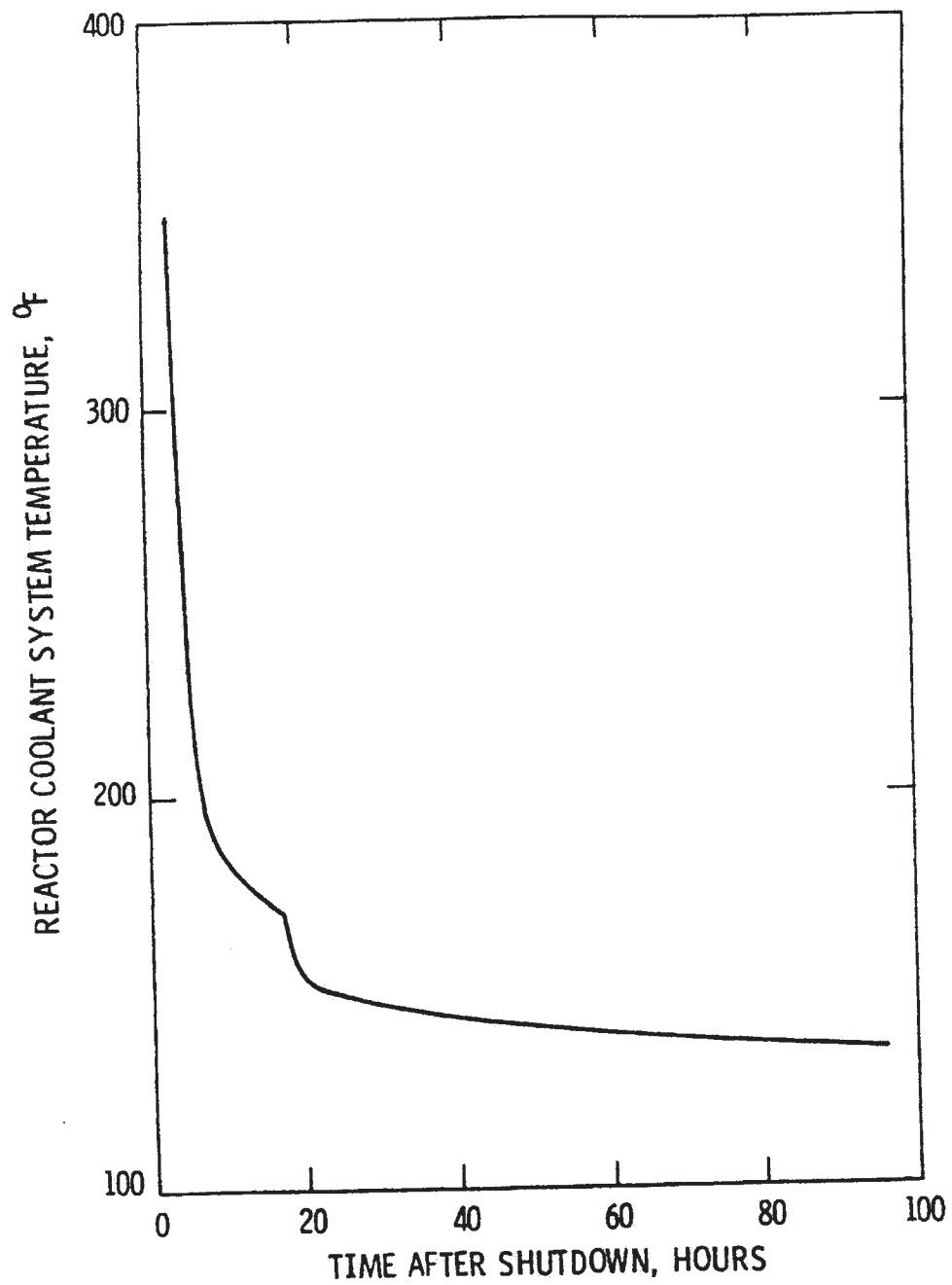
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SHUTDOWN COOLING SYSTEM
TWO TRAIN COOLDOWN (TYPICAL)

FIGURE 5.4-10

JUNE 2001

REVISION 11



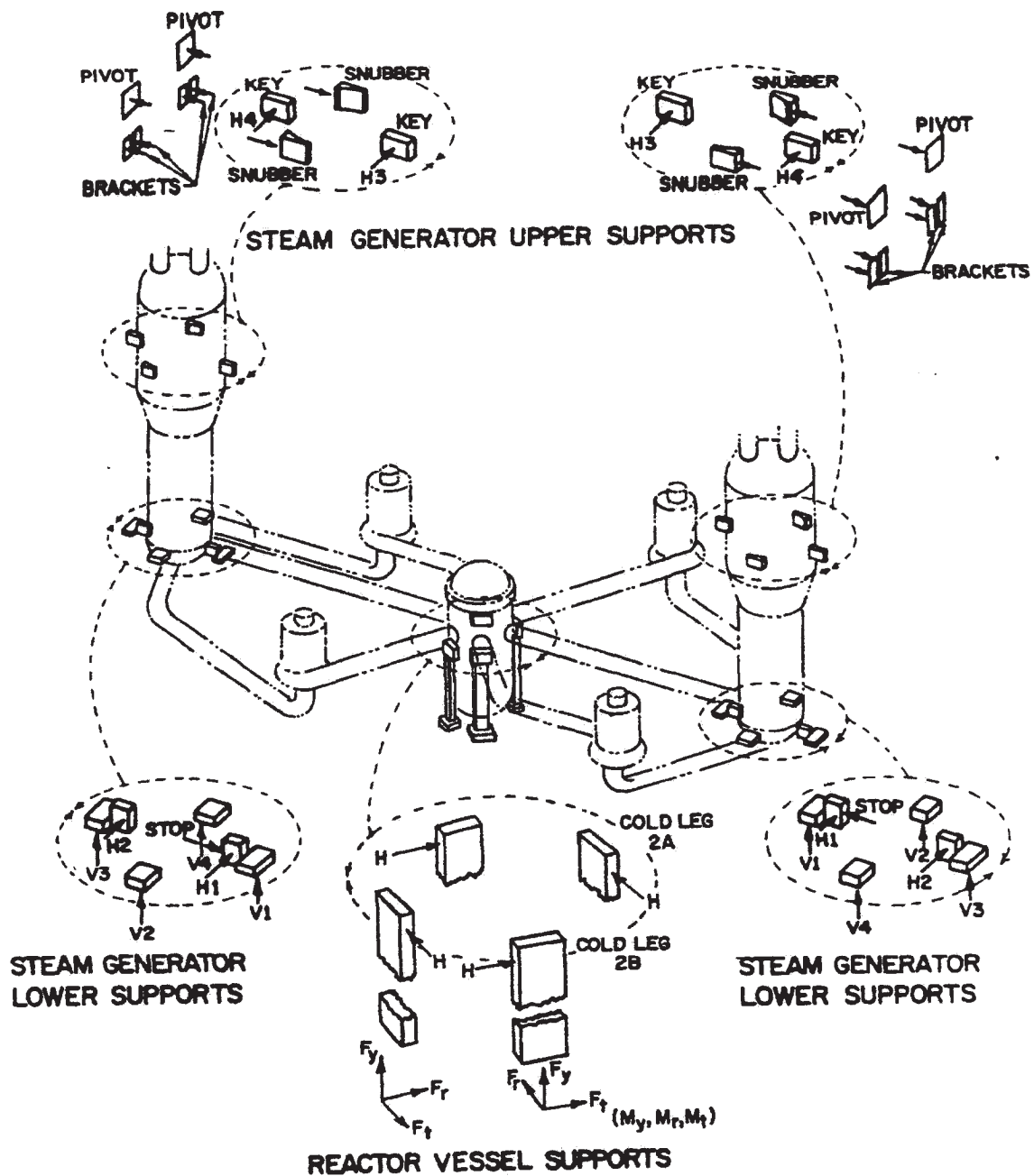
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SHUTDOWN COOLING SYSTEM
ONE TRAIN COOLDOWN(TYPICAL)

FIGURE 5.4-11

JUNE 2001

REVISION 11



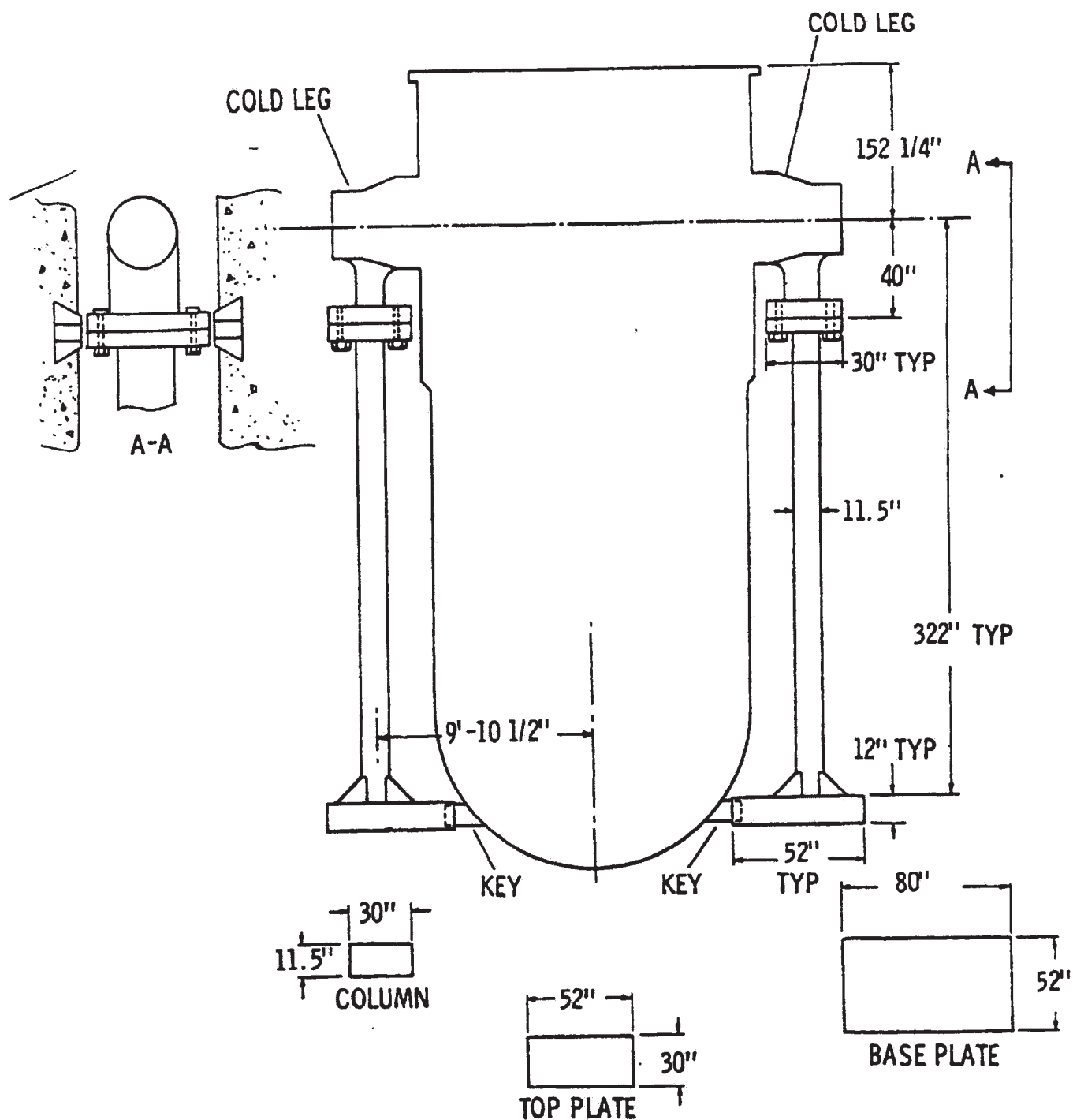
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR COOLANT SYSTEM ARRANGEMENT
AND SUPPORT POINTS

FIGURE 5.4-12

JUNE 2001

REVISION 11



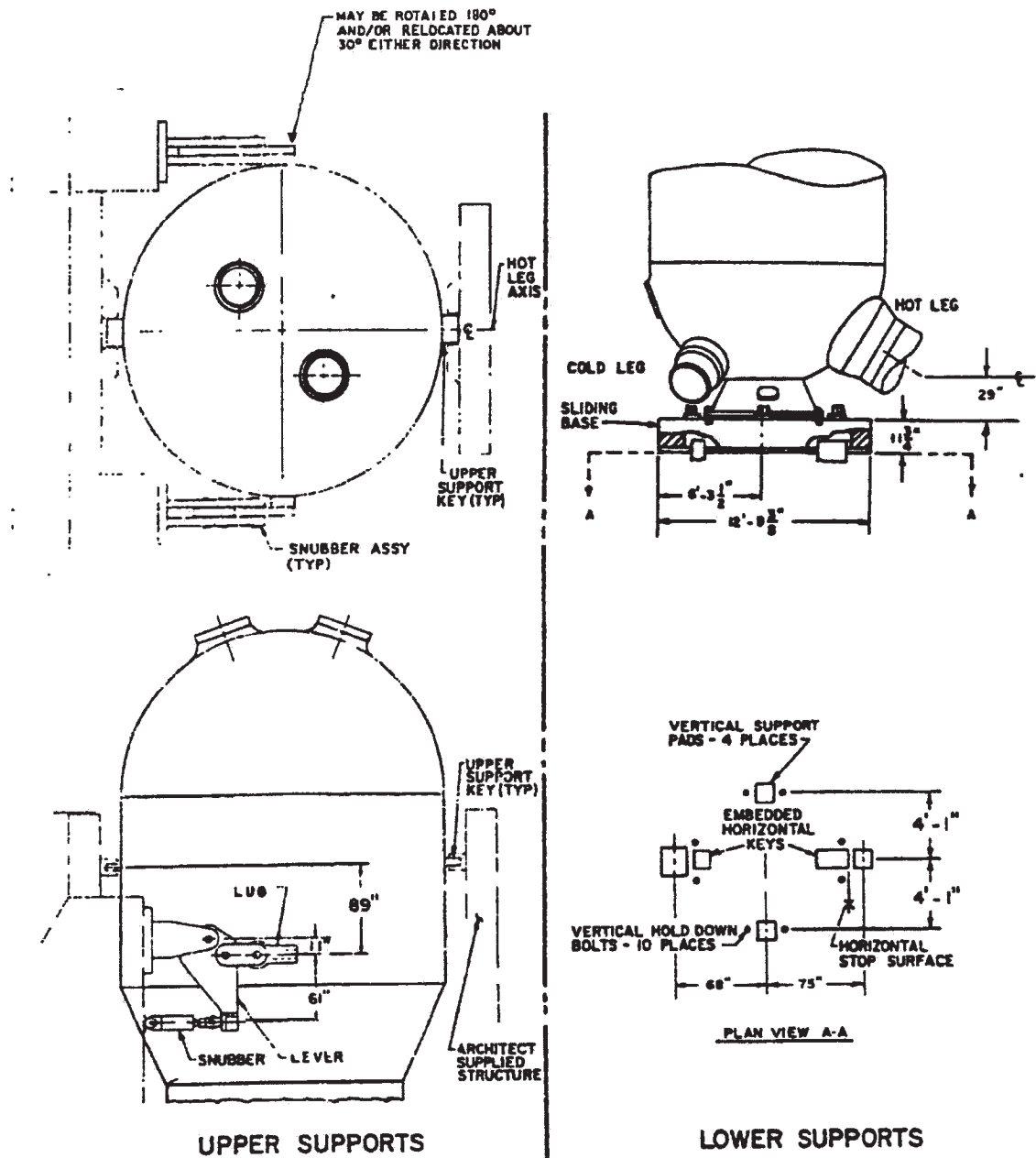
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR VESSEL SUPPORTS

FIGURE 5.4-13

JUNE 2001

REVISION 11



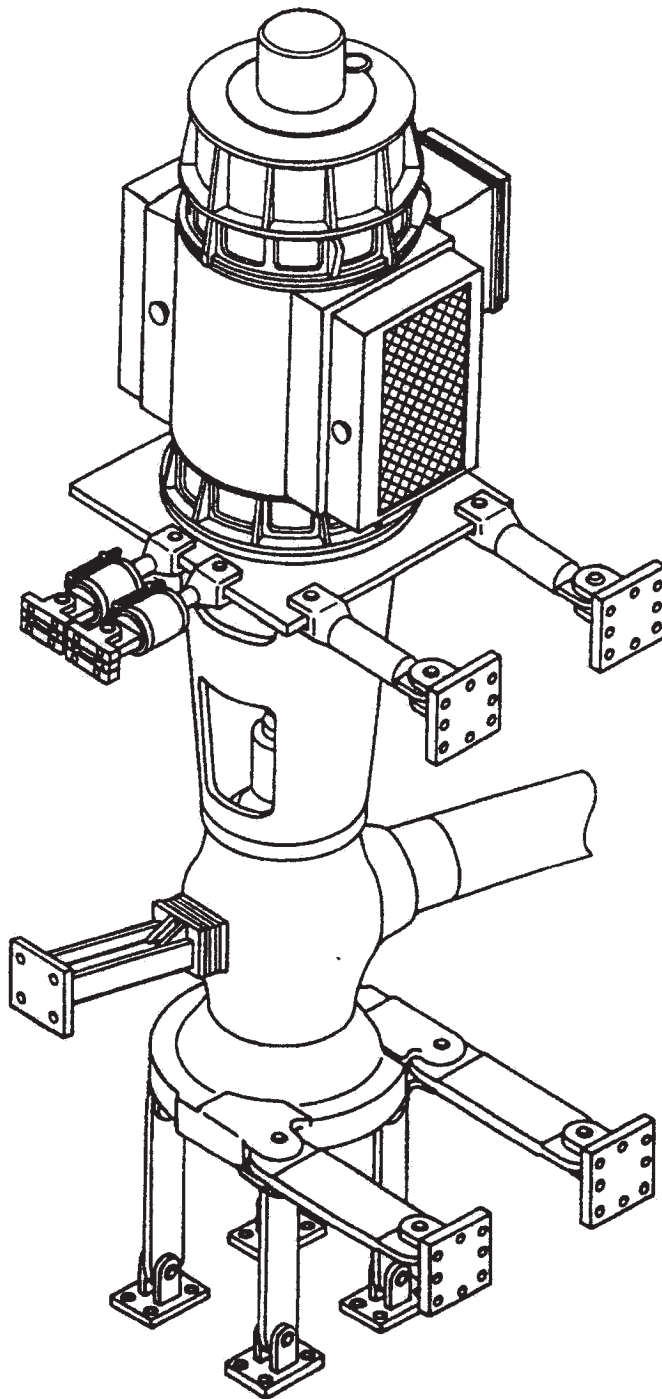
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

STEAM GENERATOR SUPPORTS
(TYPICAL)

FIGURE 5.4-14

JUNE 2001

REVISION 11



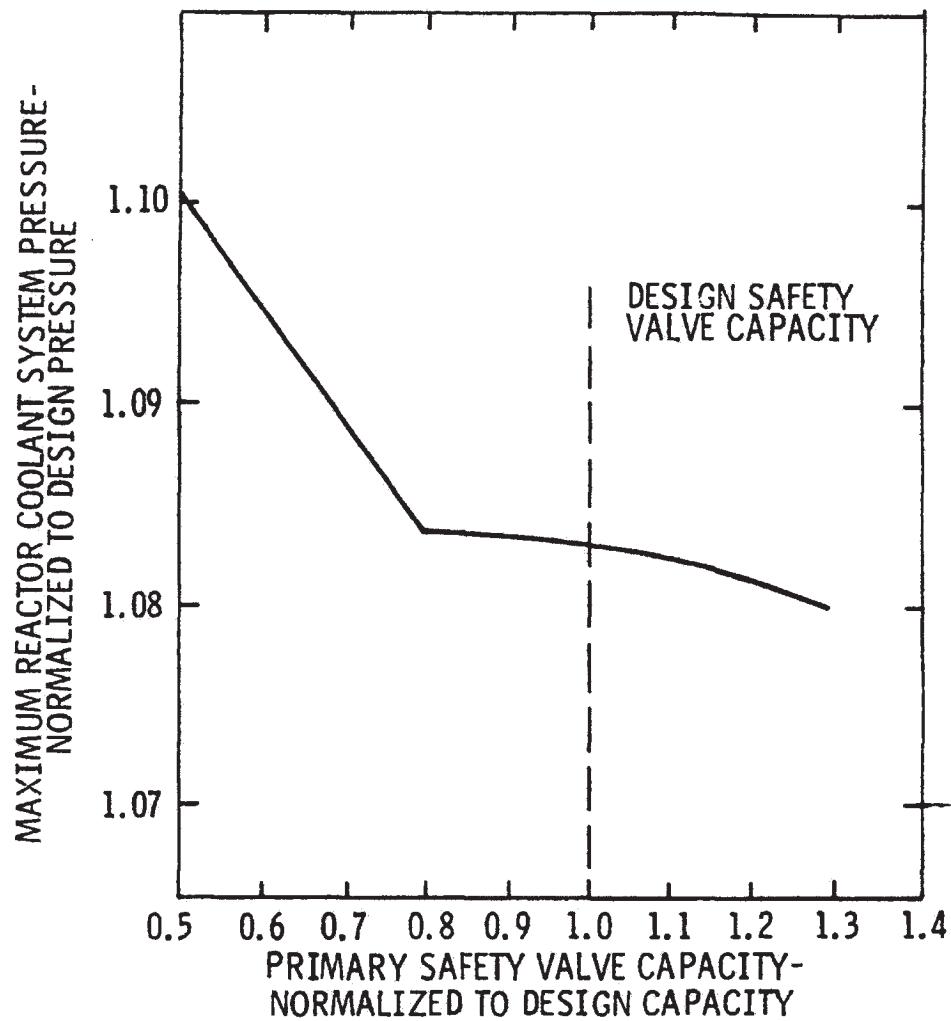
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR COOLANT PUMP SUPPORTS
(TYPICAL)

FIGURE 5.4-15

JUNE 2001

REVISION 11



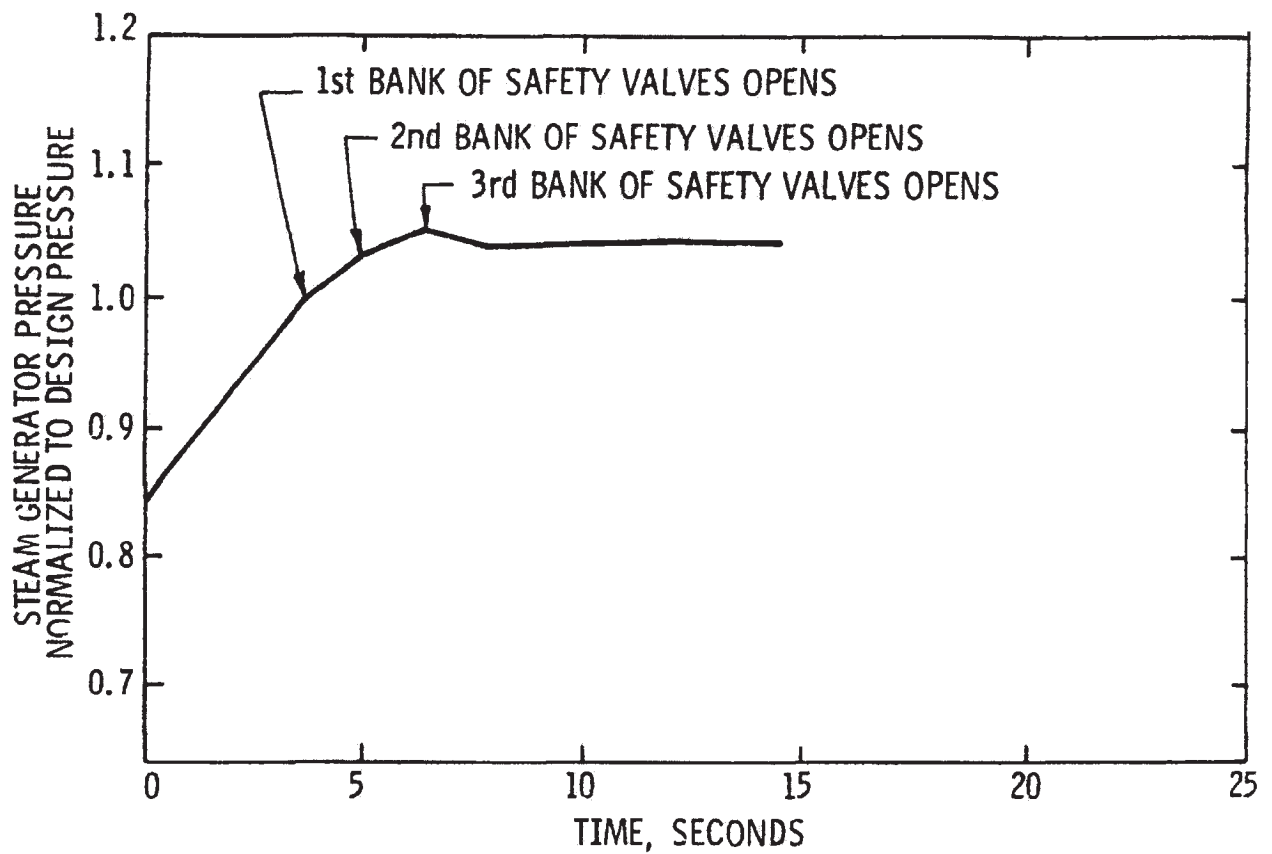
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

OPTIMIZED SAFETY VALVE CAPACITIES

FIGURE 5B-1

JUNE 2001

REVISION 11



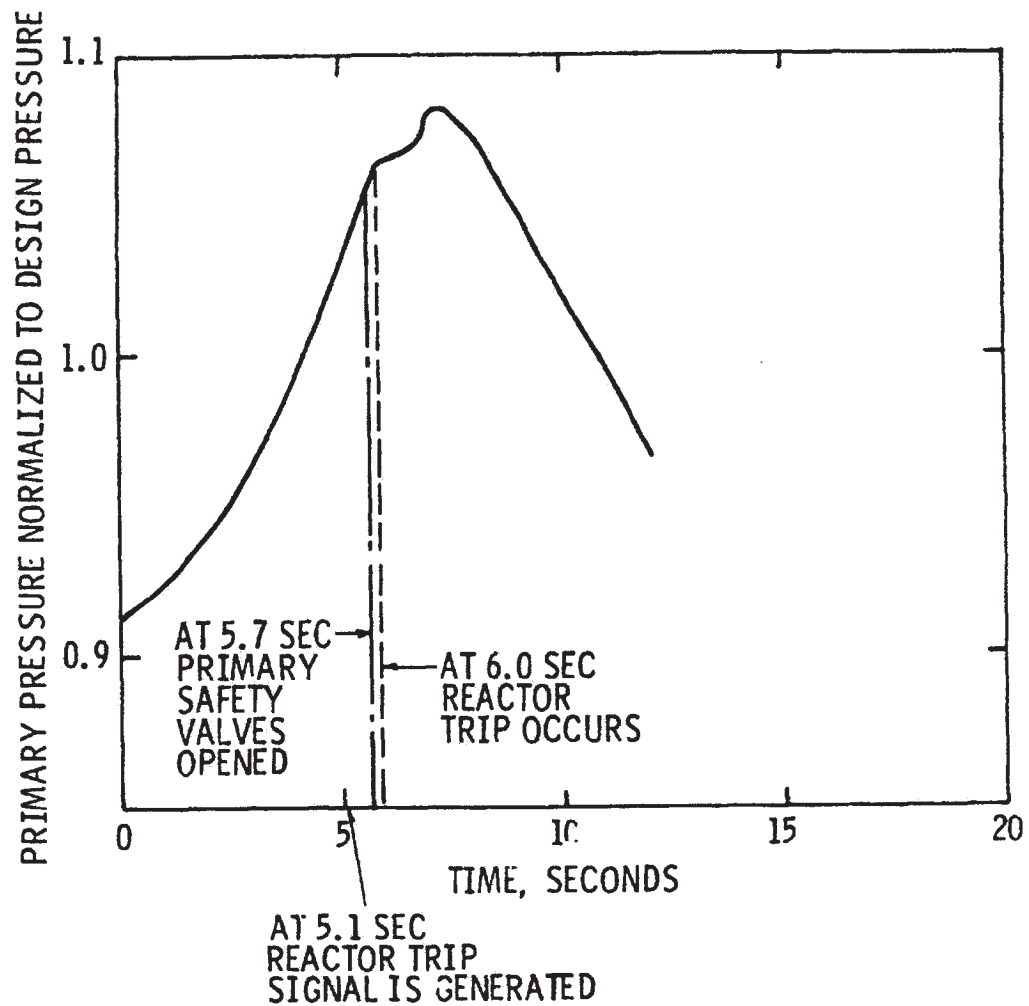
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

STEAM GENERATOR PRESSURE COMPLETE LOSS OF
TURBINE GENERATOR LOAD

FIGURE 5B-2

JUNE 2001

REVISION 11



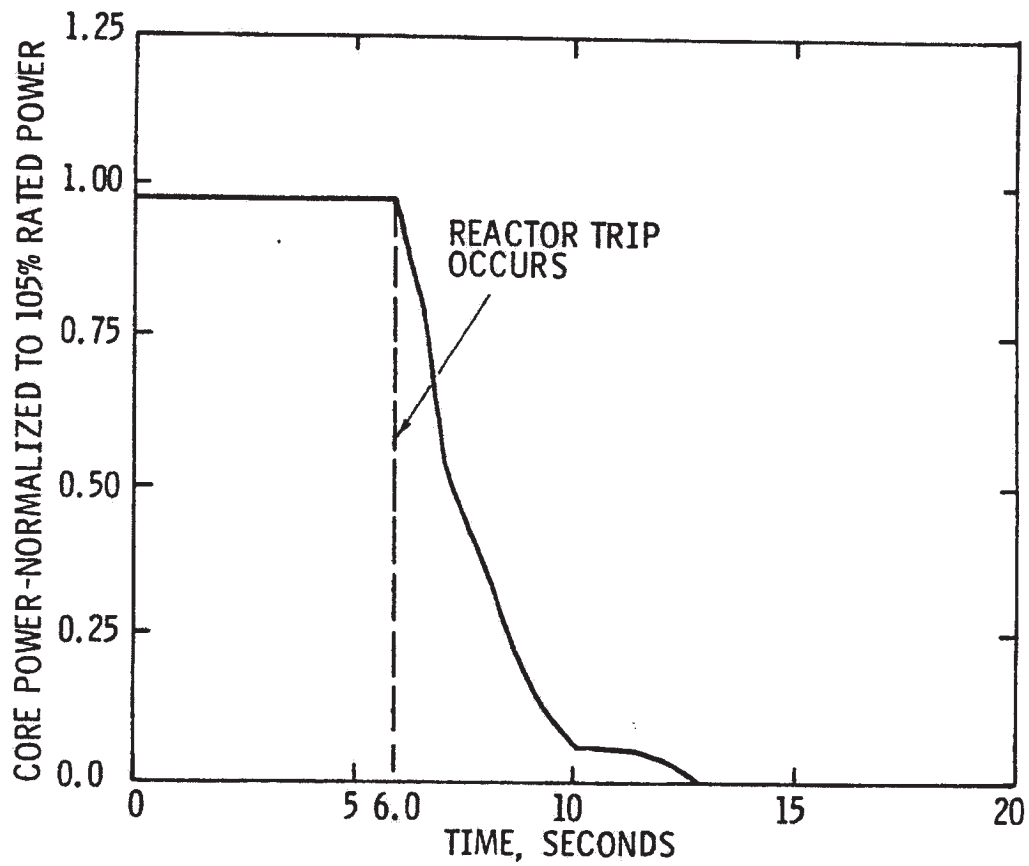
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

MAXIMUM REACTOR COOLANT SYSTEM PRESSURE
VS TIME FOR WORST CASE LOSS OF
LOAD INCIDENT

FIGURE 5B-3

JUNE 2001

REVISION 11



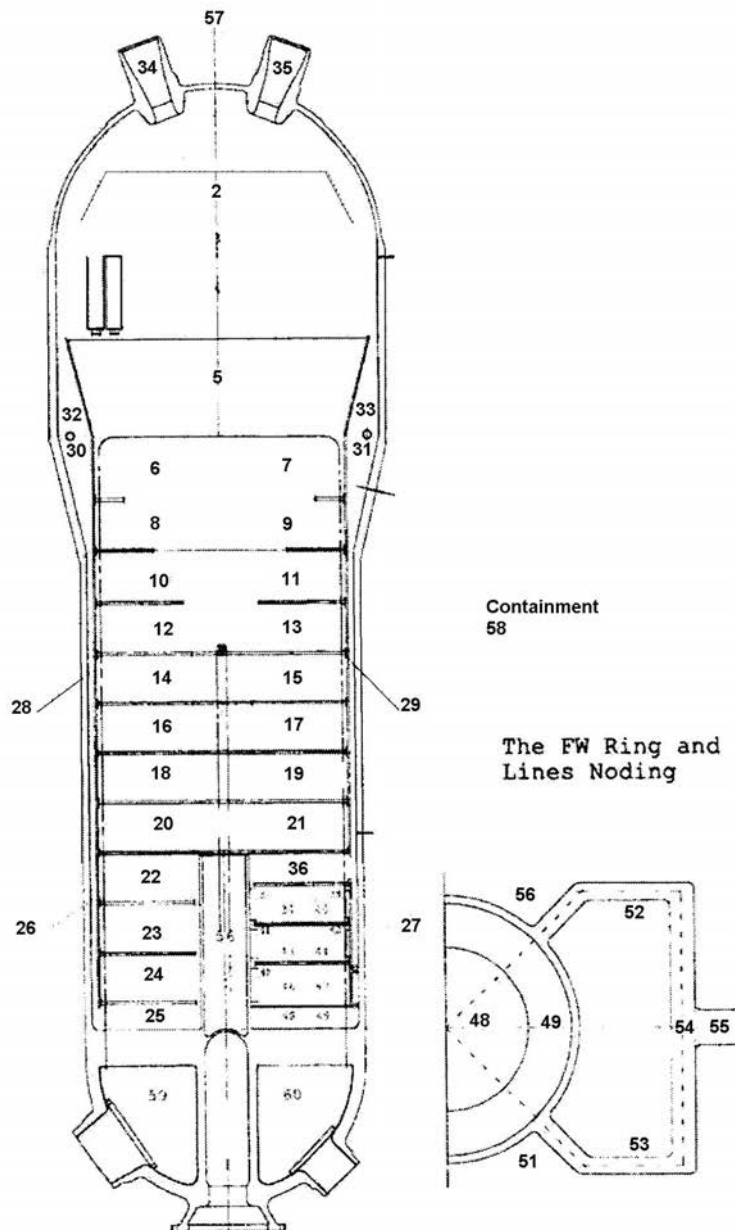
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

MAXIMUM REACTOR POWER
VS TIME FOR WORST CASE LOSS OF
LOAD INCIDENT

FIGURE 5B-4

JUNE 2001

REVISION 11



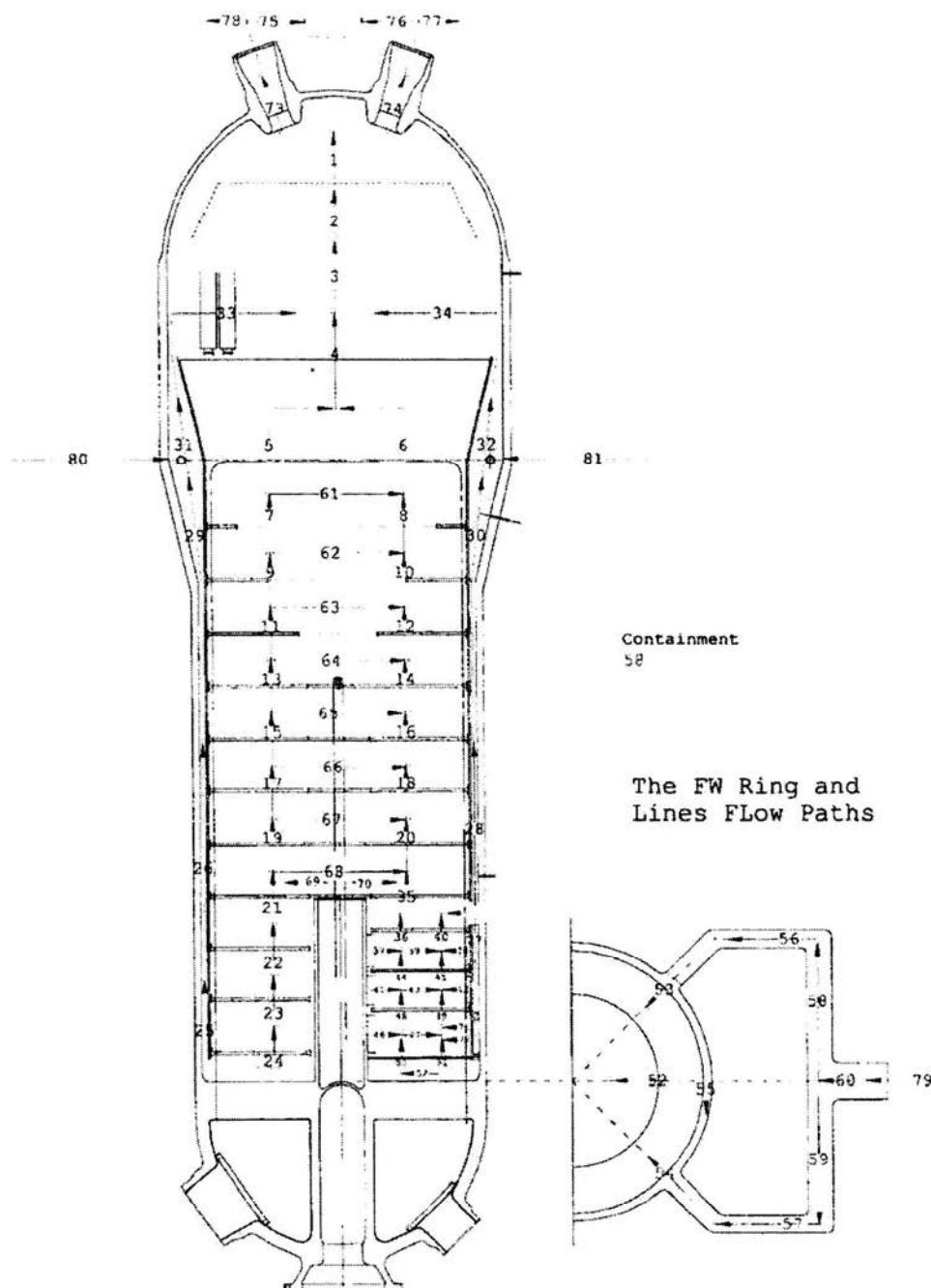
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

STEAM GENERATOR
CEFLASH MODEL NODES

FIGURE 5D-1A

JUNE 2009

REVISION 15



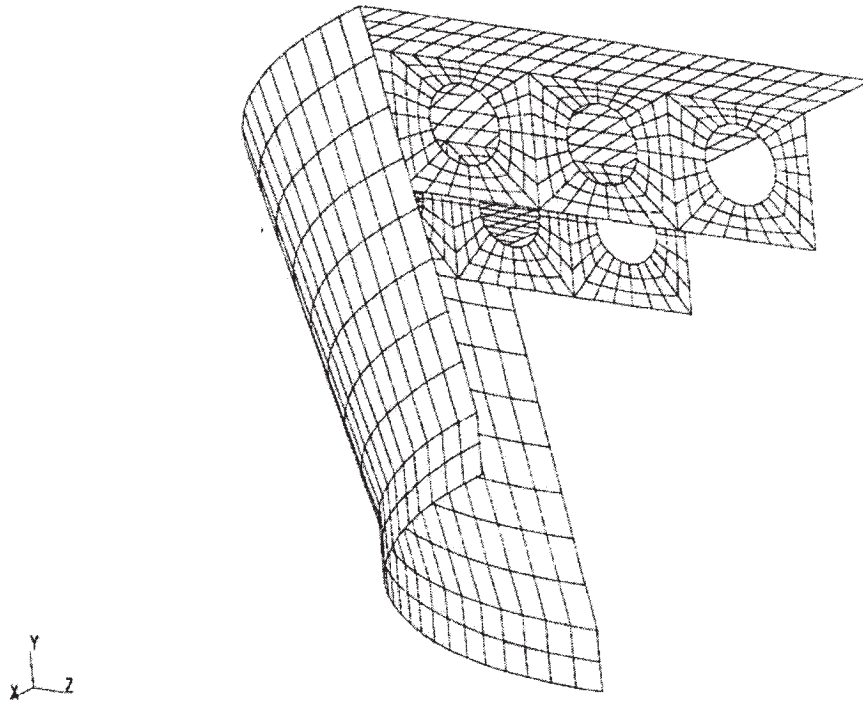
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PV-2 STEAM GENERATOR
CEFLASH MODEL FLOW PATHS

FIGURE 5D-1B

JUNE 2009

REVISION 15



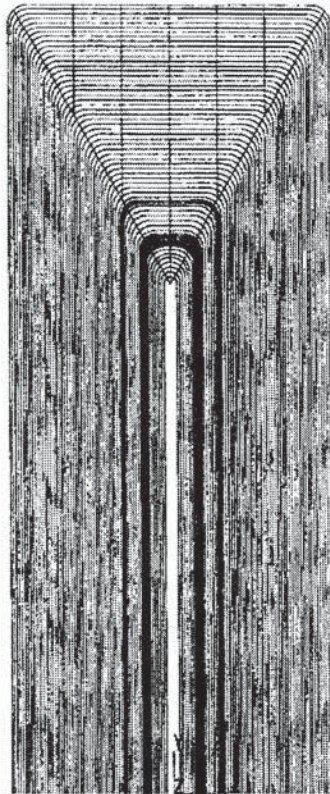
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SEPERATOR DECK AND SHROUD ANSYS MODEL
VIEW OF 90° SECTION MODEL

FIGURE 5D-2

JUNE 2005

REVISION 13



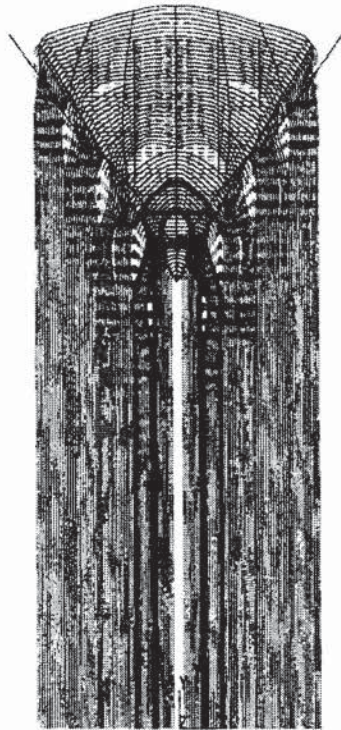
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TUBE BUNDLE FINITE ELEMENT ANSYS MODEL

FIGURE 5D-3

JUNE 2005

REVISION 13



ANSYS 5.4
APR 23 2001
11:38:26
PLOT NO. 2
DISPLACEMENT
STEP=1
SUB=1
TIME=1
RSYS=0
DMX=.068329

DSCA=313.11
ZV=.1
DIST=246.236
YF=-223.851

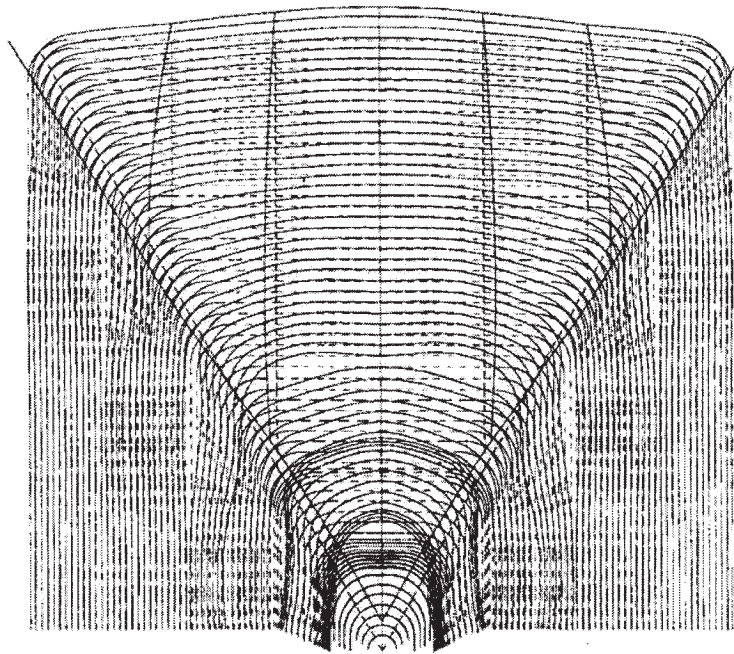
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TUBE BUNDLE DEFORMED SHAPE PLOT

FIGURE 5D-4A

JUNE 2005

REVISION 13



ANSYS 5.4
APR 23 2001
11:38:28
PLOT NO. 3
DISPLACEMENT
STEP=1
SUB =1
TIME=1
RSYS=0
DMX = 068329

DSCA=128.423
ZV =1
DIST=102.117
YF =356.229

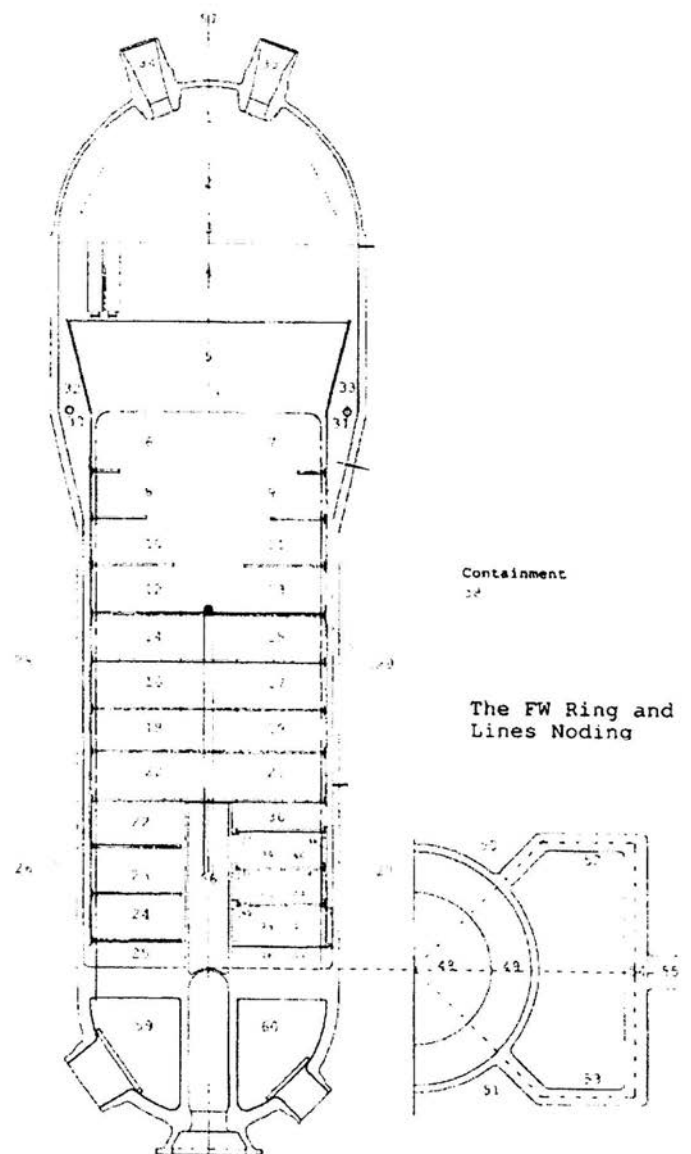
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TUBE BUNDLE TOP REGION DEFORMED SHAPE PLOT
(EXAGGERATED)

FIGURE 5D-4B

JUNE 2005

REVISION 13



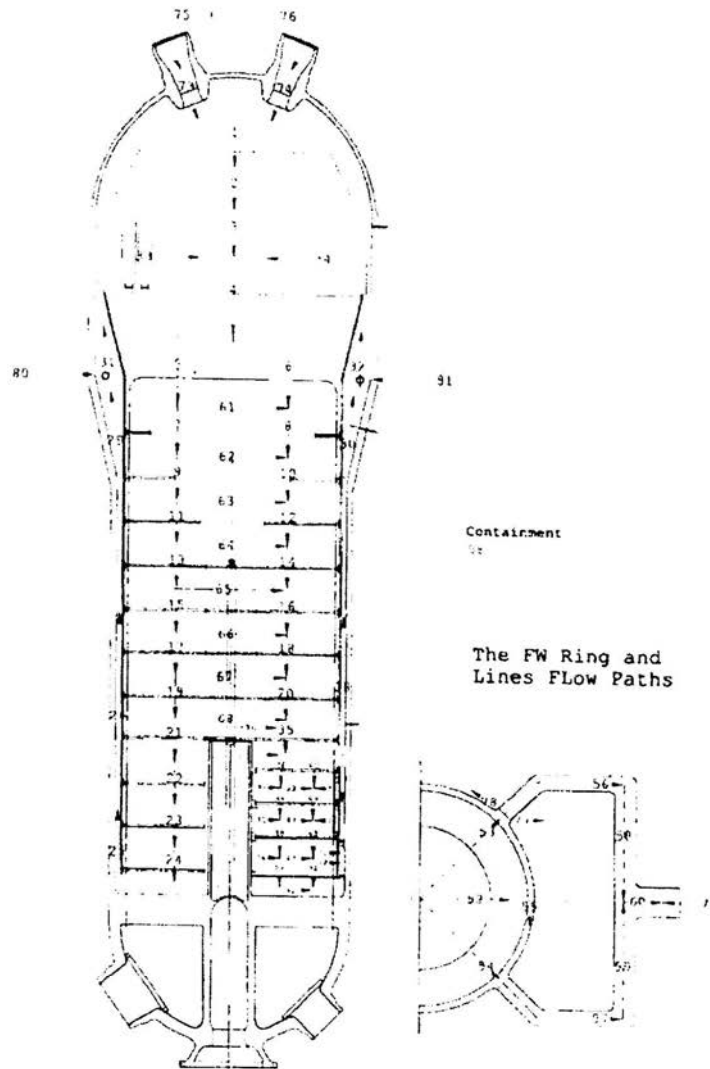
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PV-2 STEAM GENERATOR
CEFLASH MODEL NODES

FIGURE 5E-1A

JUNE 2009

REVISION 15



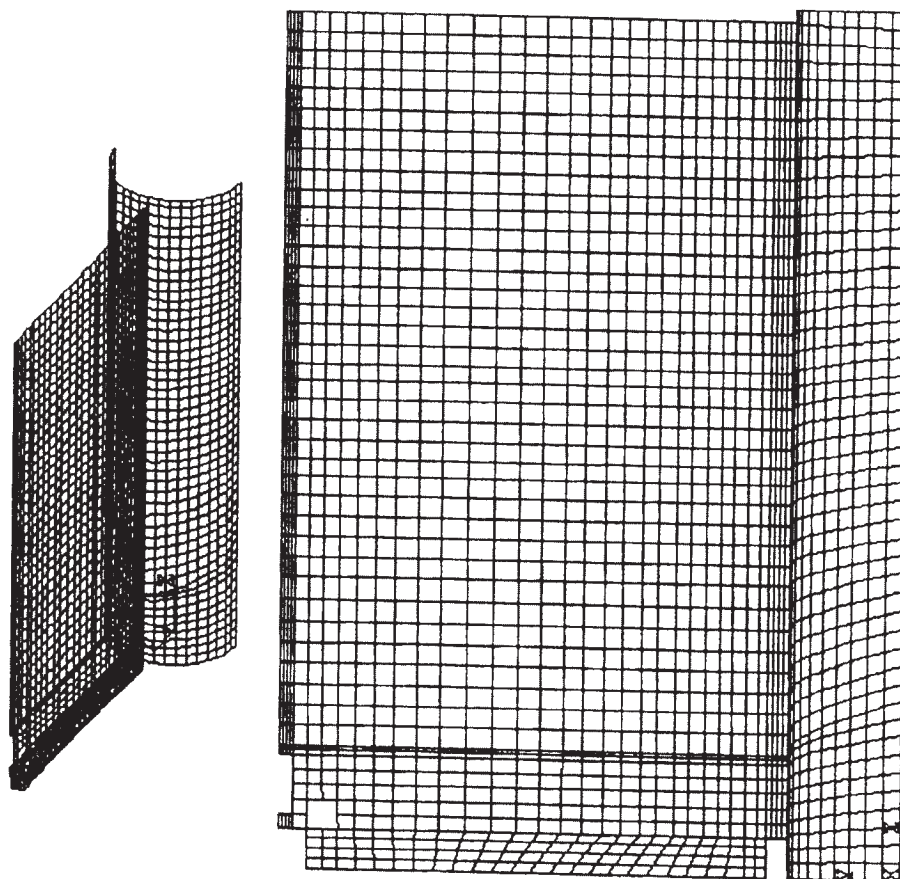
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PV-2 STEAM GENERATOR
CEFLASH MODEL FLOW PATHS

FIGURE 5E-1B

JUNE 2009

REVISION 15



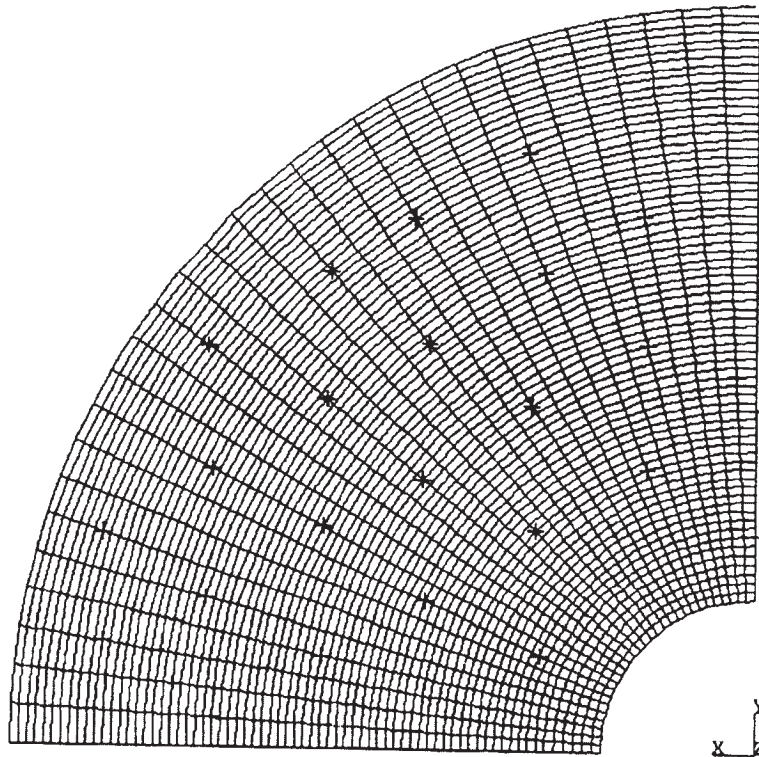
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ECONOMIZER DIVIDER PLATE,
SUPPORT CYLINDER AND BLOWDOWN ASSEMBLY
FINITE ELEMENT ANSYS MODEL

FIGURE 5E-2

JUNE 2005

REVISION 13



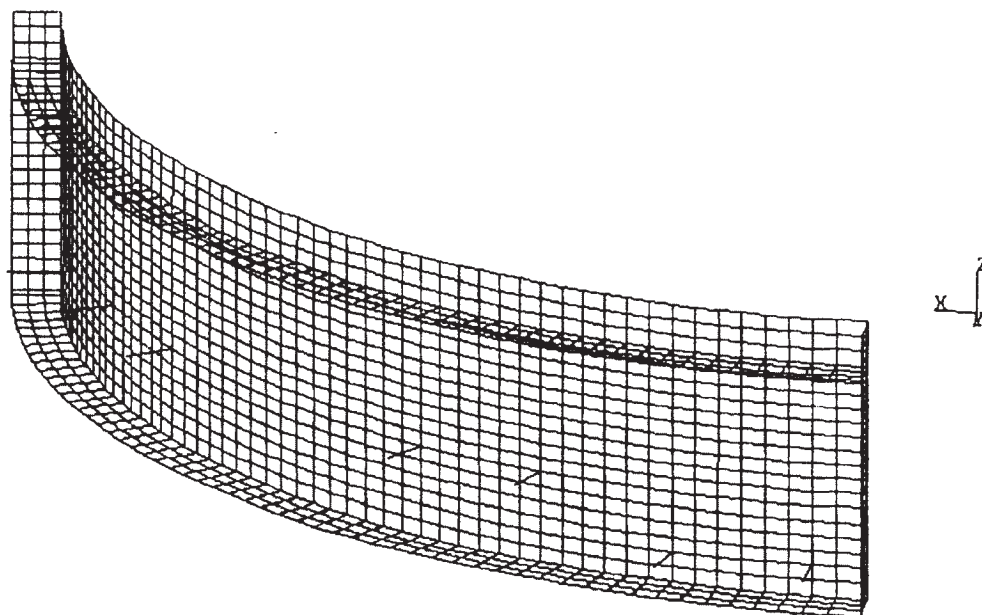
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

COLD LEG DISTRIBUTION PLATE,
FINITE ELEMENT ANSYS MODEL

FIGURE 5E-3

JUNE 2005

REVISION 13



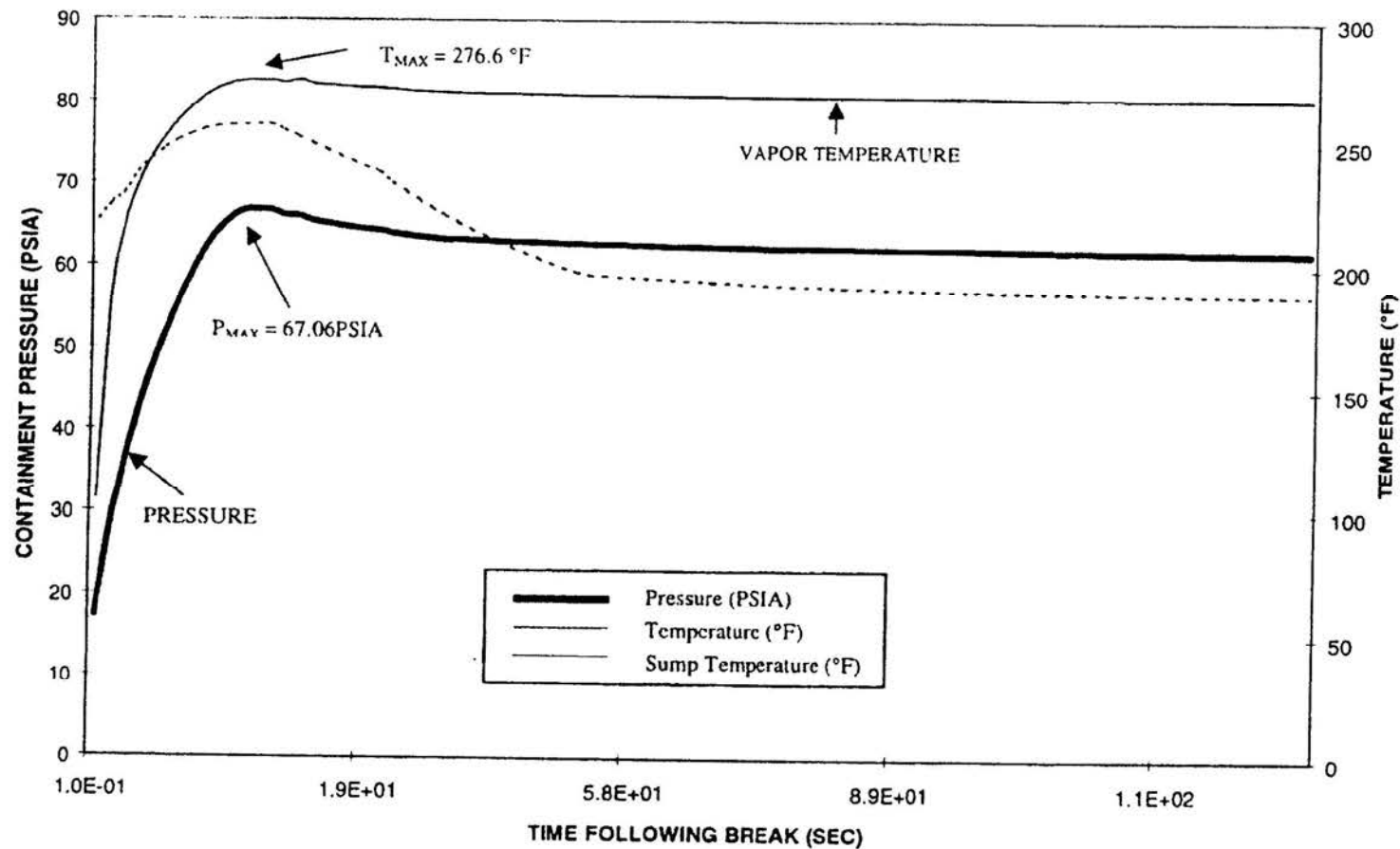
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

84° SEGMENT FEEDWATER BOX,
FINITE ELEMENT ANSYS MODEL

FIGURE 5E-4

JUNE 2005

REVISION 13



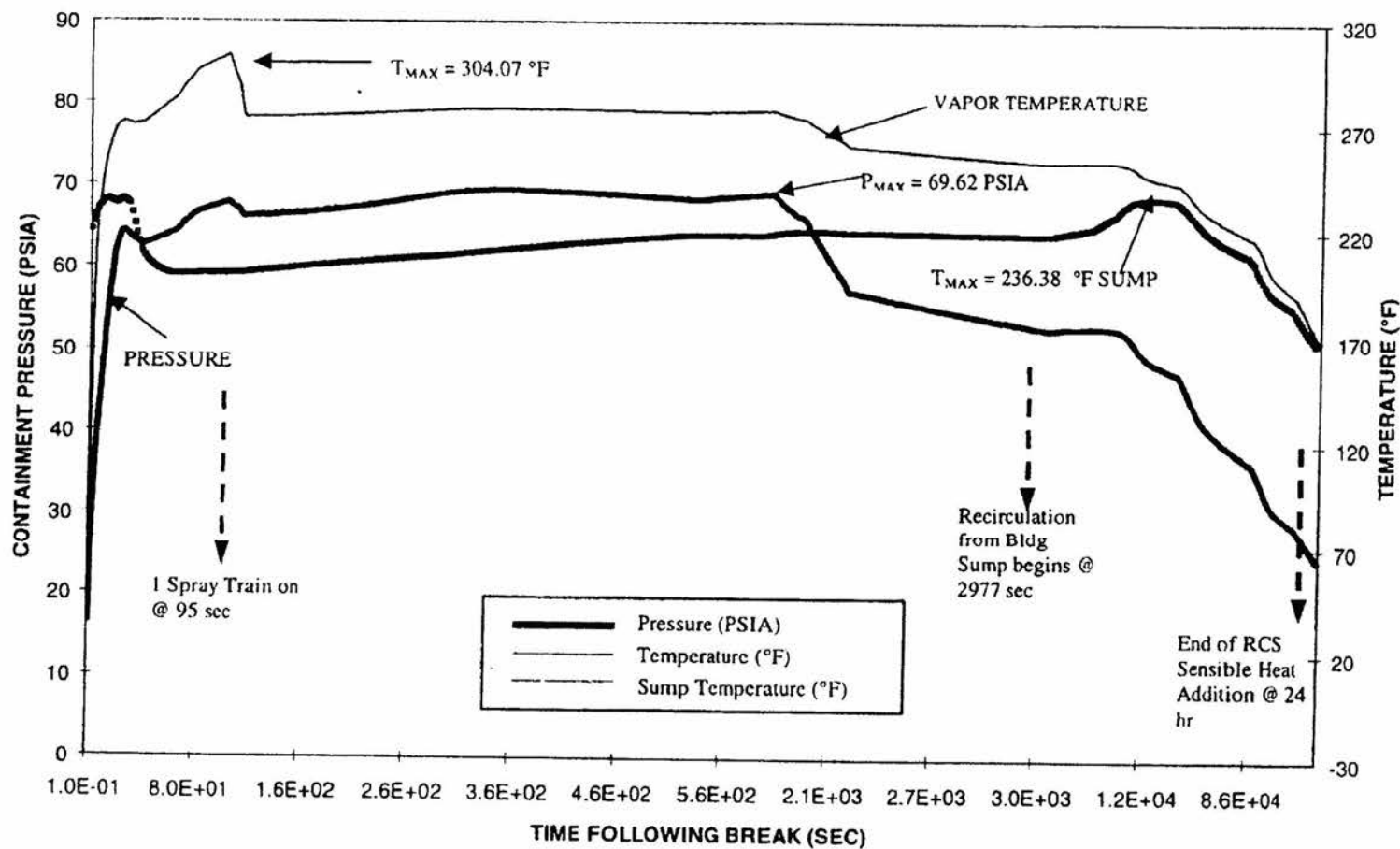
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE,
DOUBLE-ENDED HOT LEG SLOT BREAK,
CORE POWER OF 4070 MWt

FIGURE 6.2.1-1

JUNE 2009

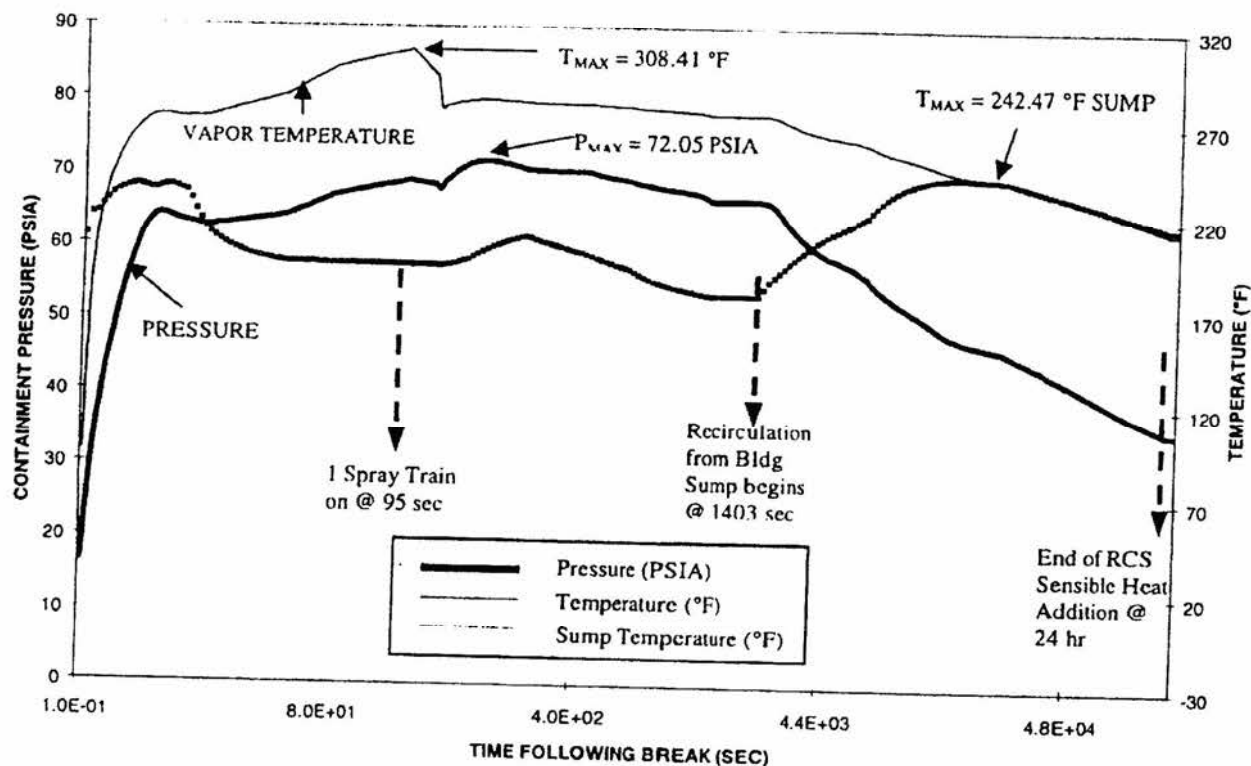
REVISION 15



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE,
DOUBLE-ENDED DISCHARGE LEG SLOT BREAK, MINIMUM ECCS,,
CORE POWER OF 4070 MWt

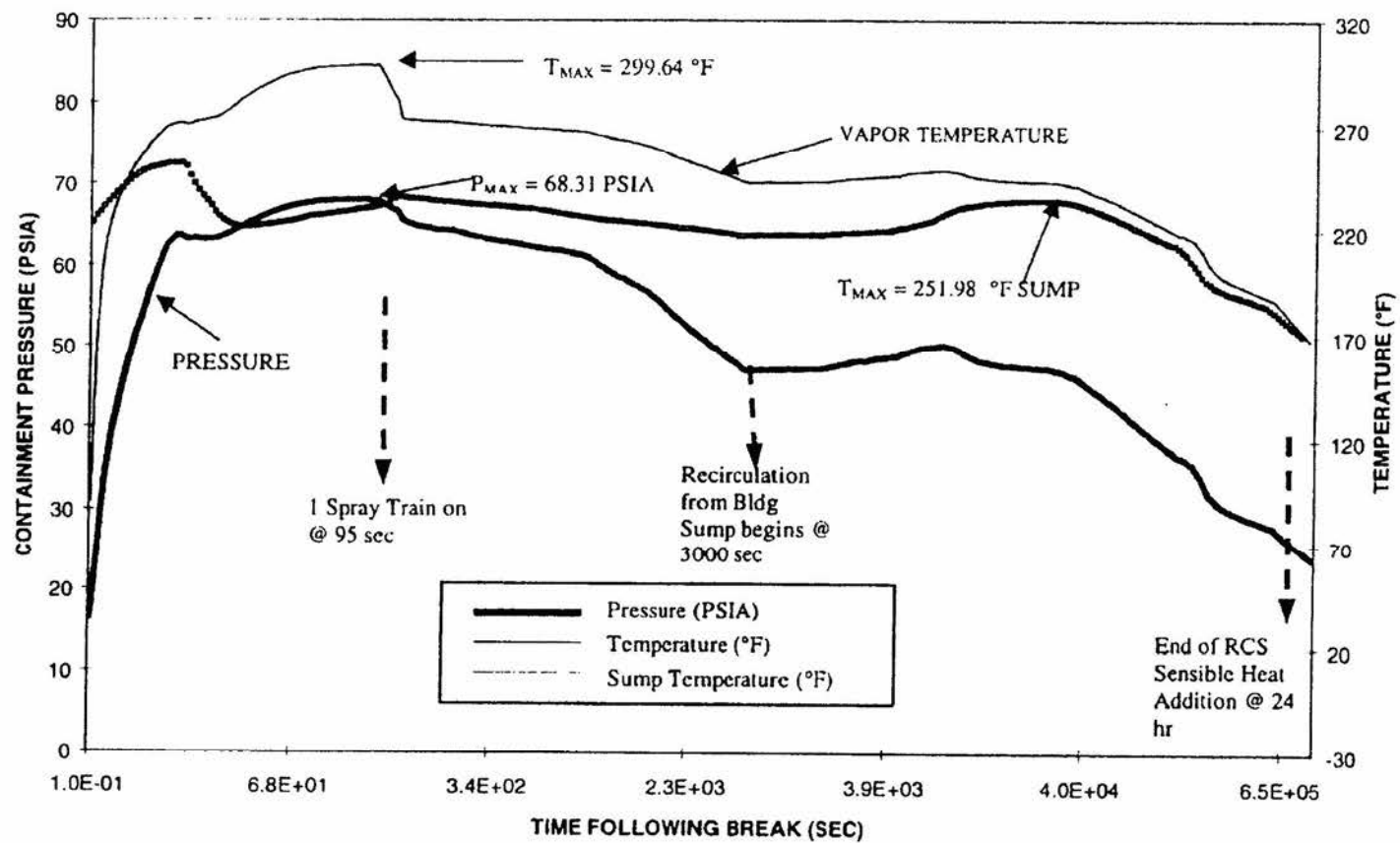
FIGURE 6.2.1-2



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE,
DOUBLE-ENDED DISCHARGE LEG SLOT BREAK, MAXIMUM ECCS
CORE POWER OF 4070 MWt

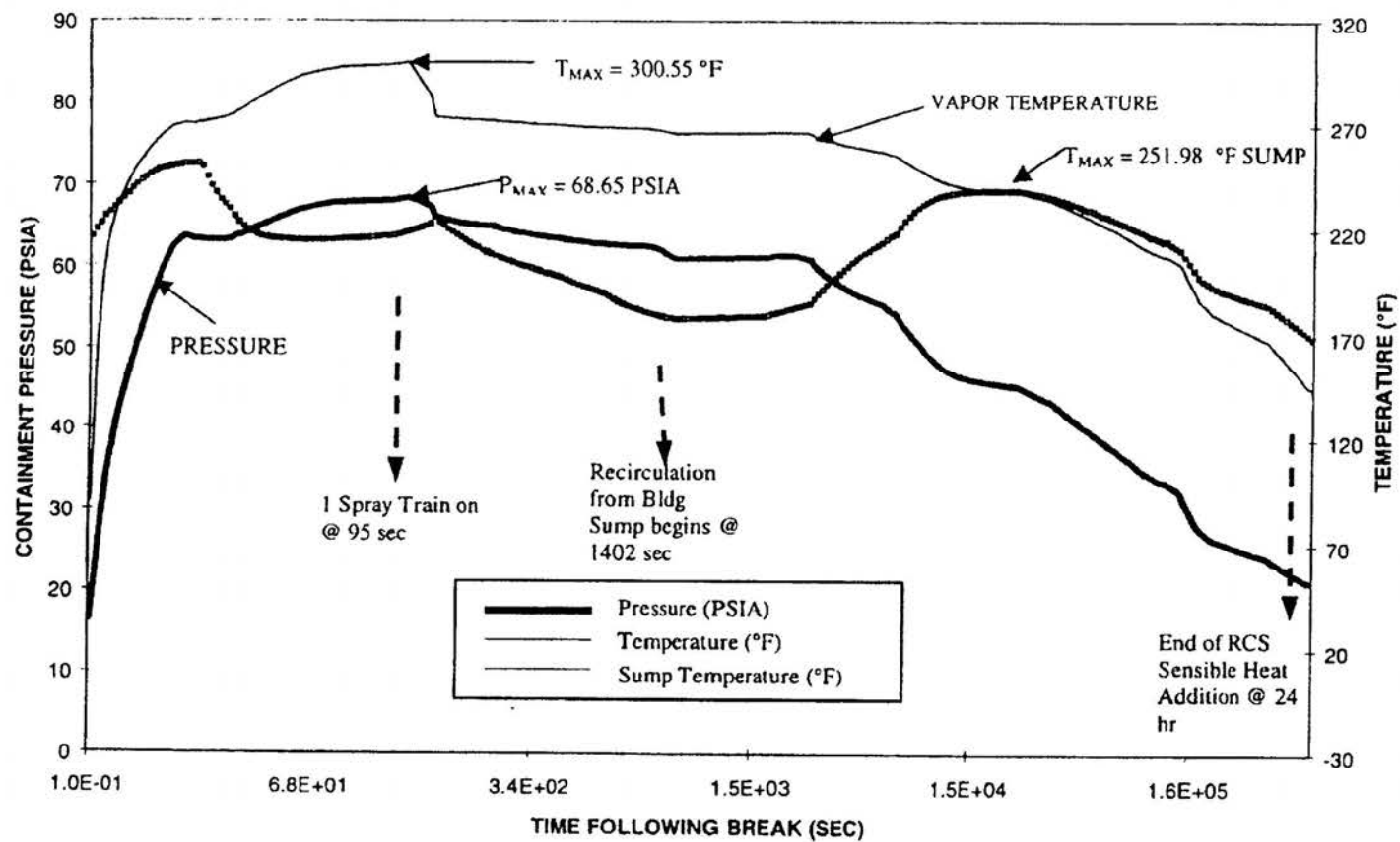
FIGURE 6.2.1-3



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE,
DOUBLE-ENDED SUCTION LEG SLOT BREAK, MINIMUM ECCS
CORE POWER OF 4070 MWt

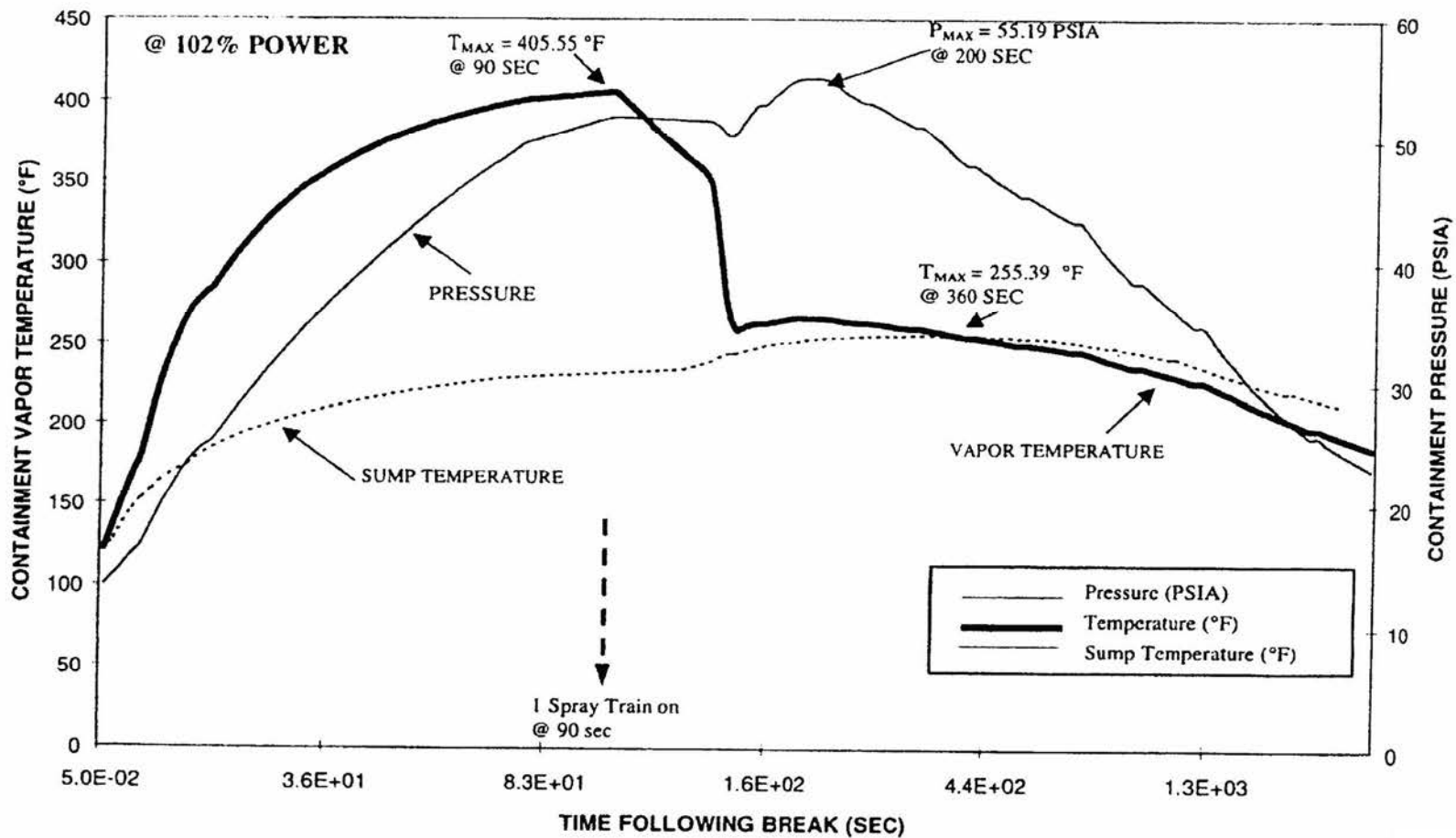
FIGURE 6.2.1-4



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE,
DOUBLE-ENDED SUCTION LEG SLOT BREAK, MAXIMUM ECCS
CORE POWER OF 4070 MWt

FIGURE 6.2.1-5



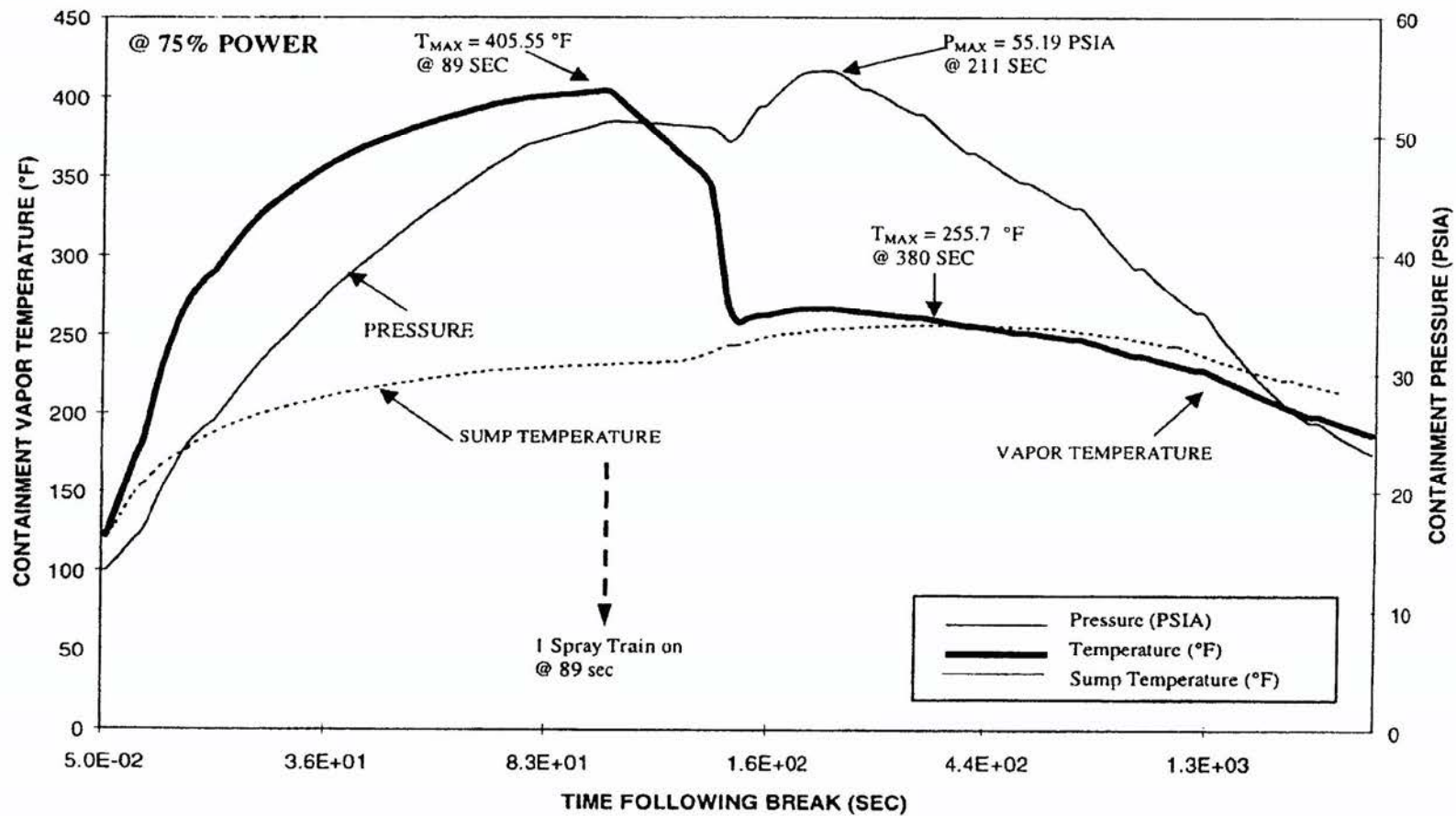
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE, MSLB (GUILLOTINE) INSIDE
 CONTAINMENT WITH LOSS OF ONE TRAIN OF CONTAINMENT SPRAY
 CORE POWER OF 4070 MWt

FIGURE 6.2.1-6 SHEET 1 OF 3

JUNE 2009

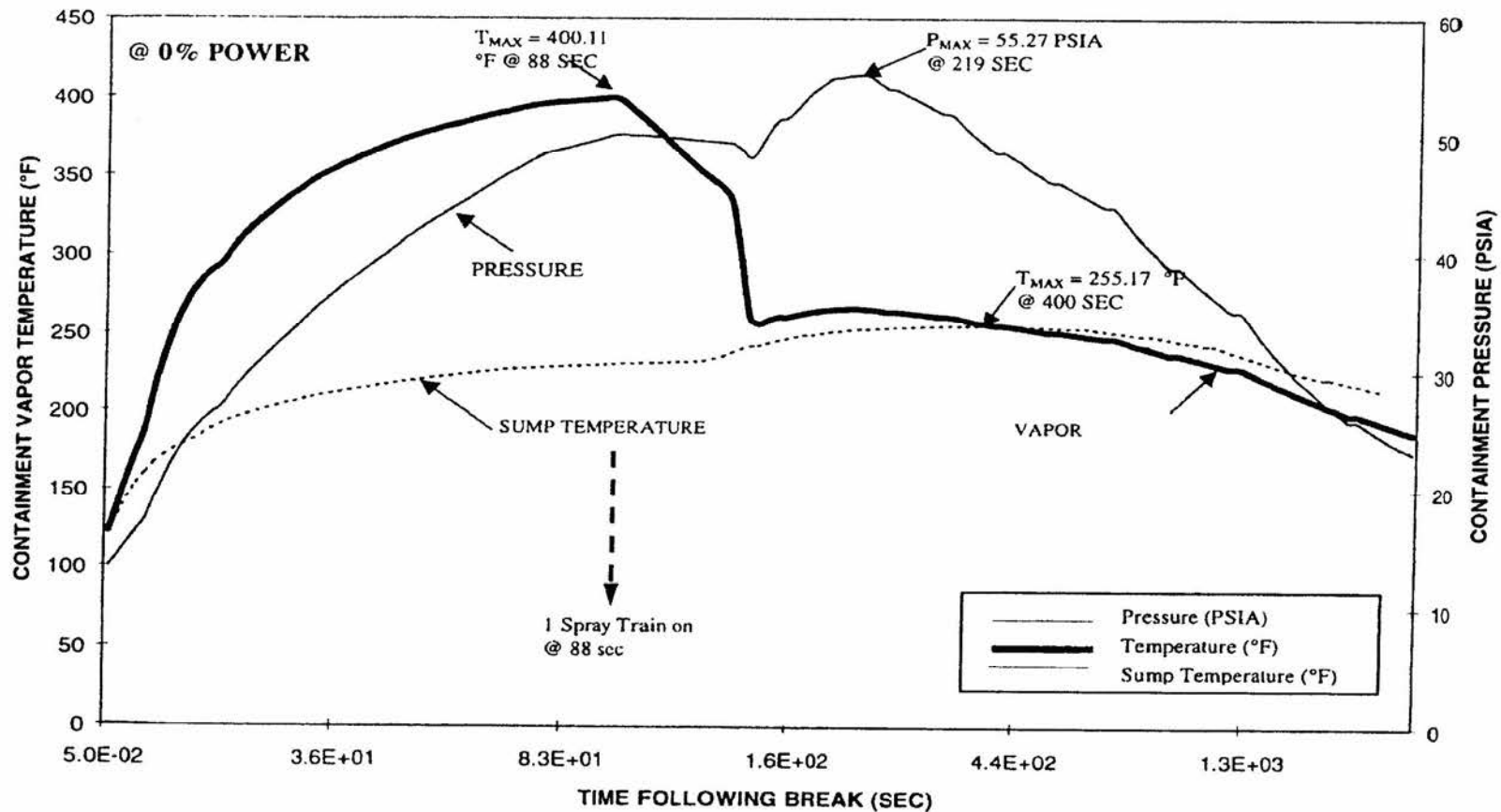
REVISION 15



PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE, MSLB (GUILLOTINE) INSIDE
 CONTAINMENT WITH LOSS OF ONE TRAIN OF CONTAINMENT SPRAY
 CORE POWER OF 4070 MWt

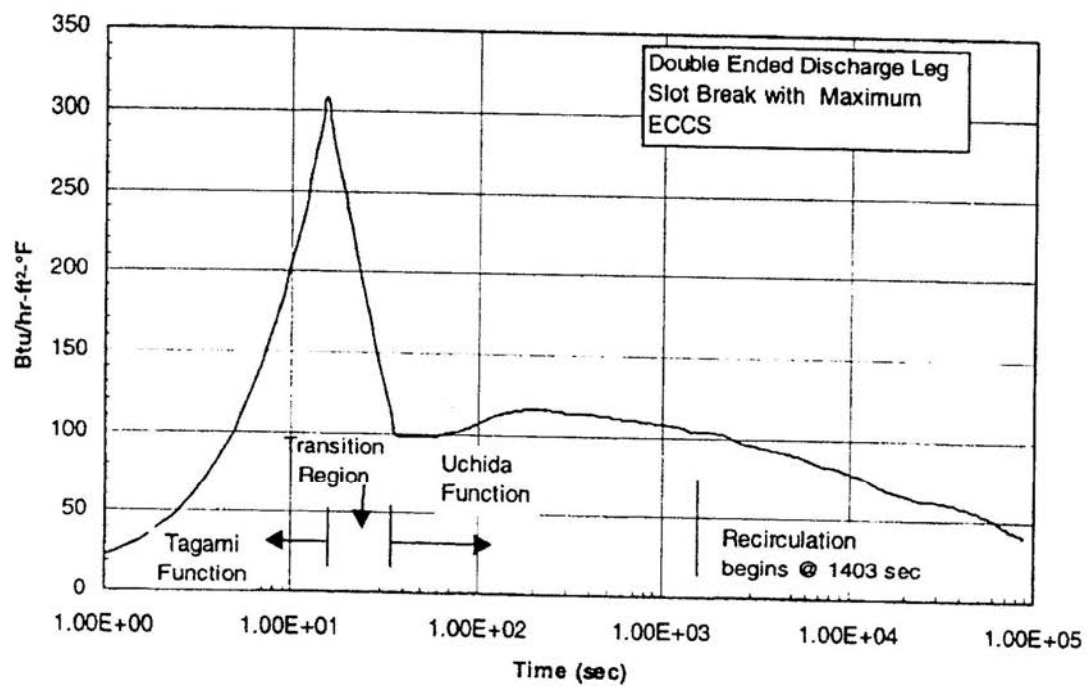
FIGURE 6.2.1-6 SHEET 2 OF 3



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE, MSLB (GUILLOTINE) INSIDE
CONTAINMENT WITH LOSS OF ONE TRAIN OF CONTAINMENT SPRAY
CORE POWER OF 4070 MWt

FIGURE 6.2.1-6 SHEET 3 OF 3



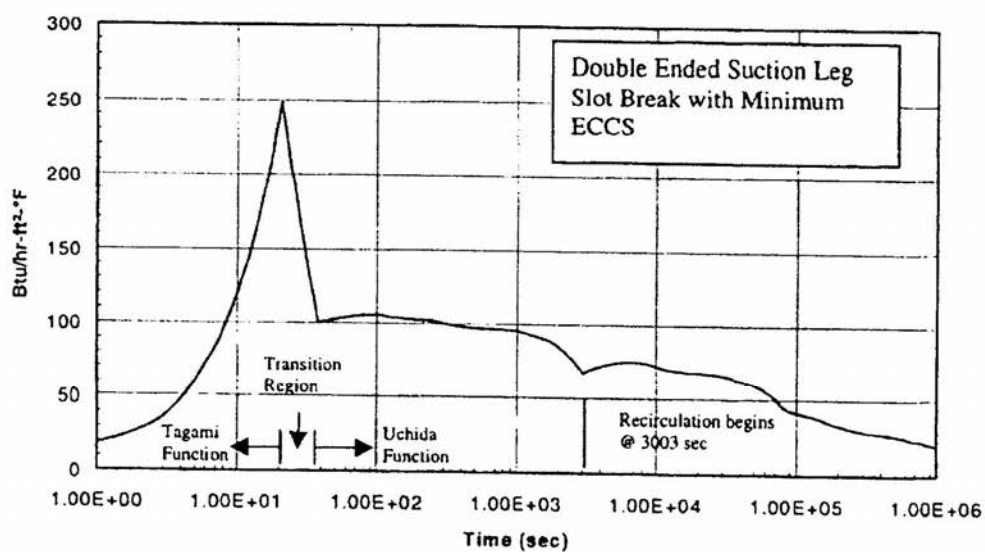
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONDENSING HEAT TRANSFER COEFFICIENT, DOUBLE-ENDED
DISCHARGE LEG SLOT BREAK, MAXIMUM ECCS,
CORE POWER OF 4070 MWt

FIGURE 6.2.1-7

JUNE 2009

REVISION 15



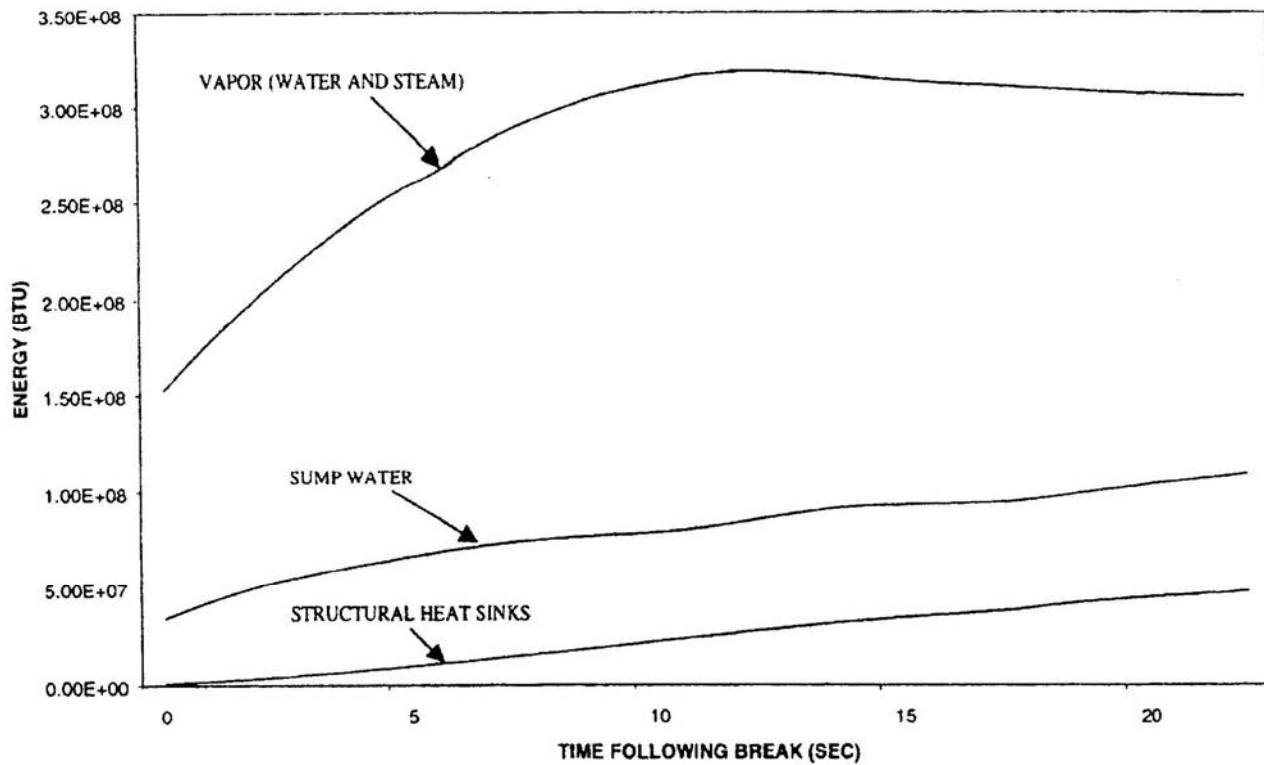
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONDENSING HEAT TRANSFER COEFFICIENT, DOUBLE-ENDED
SUCTION LEG SLOT BREAK, MINIMUM ECCS,
CORE POWER OF 4070 MWt

FIGURE 6.2.1-8

JUNE 2009

REVISION 15



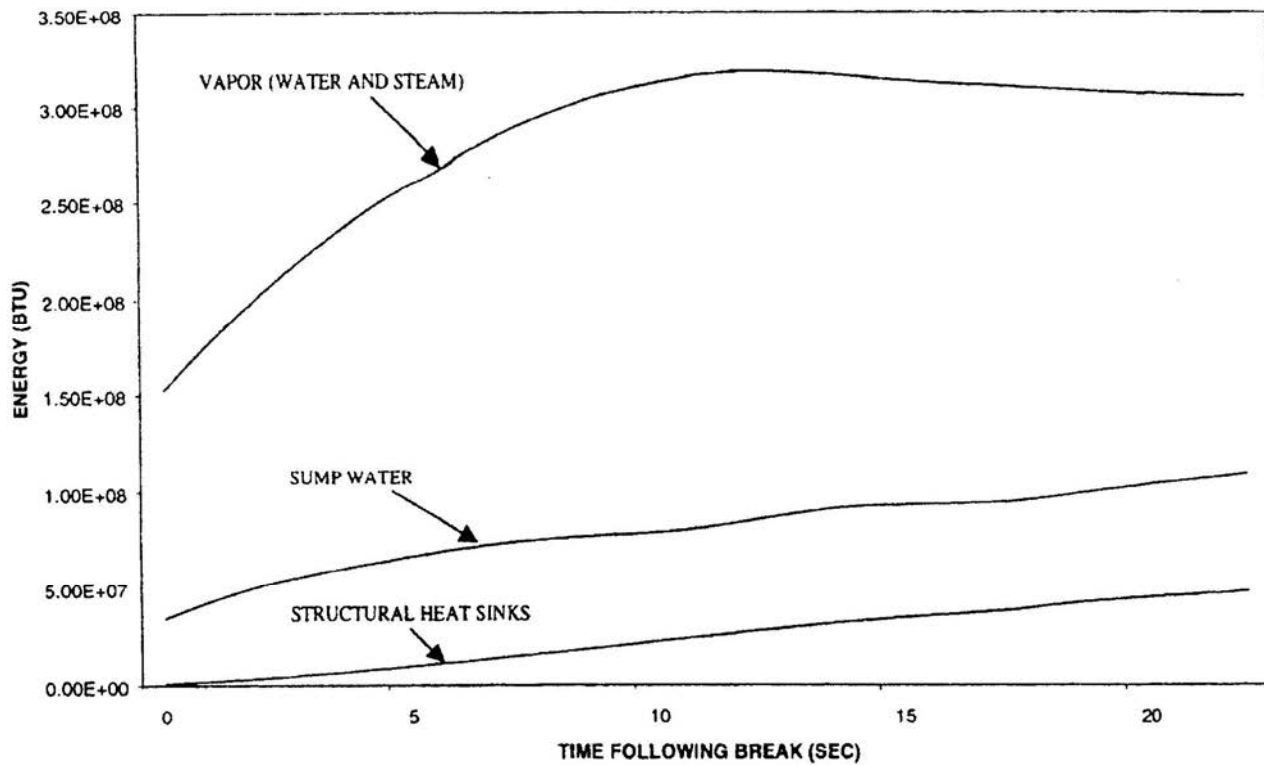
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT ENERGY INVENTORY,
DOUBLE-ENDED DISCHARGE LEG SLOT BREAK, MAXIMUM ECCS
CORE POWER OF 4070 MWt

FIGURE 6.2.1-10 SHEET 1 OF 2

JUNE 2009

REVISION 15



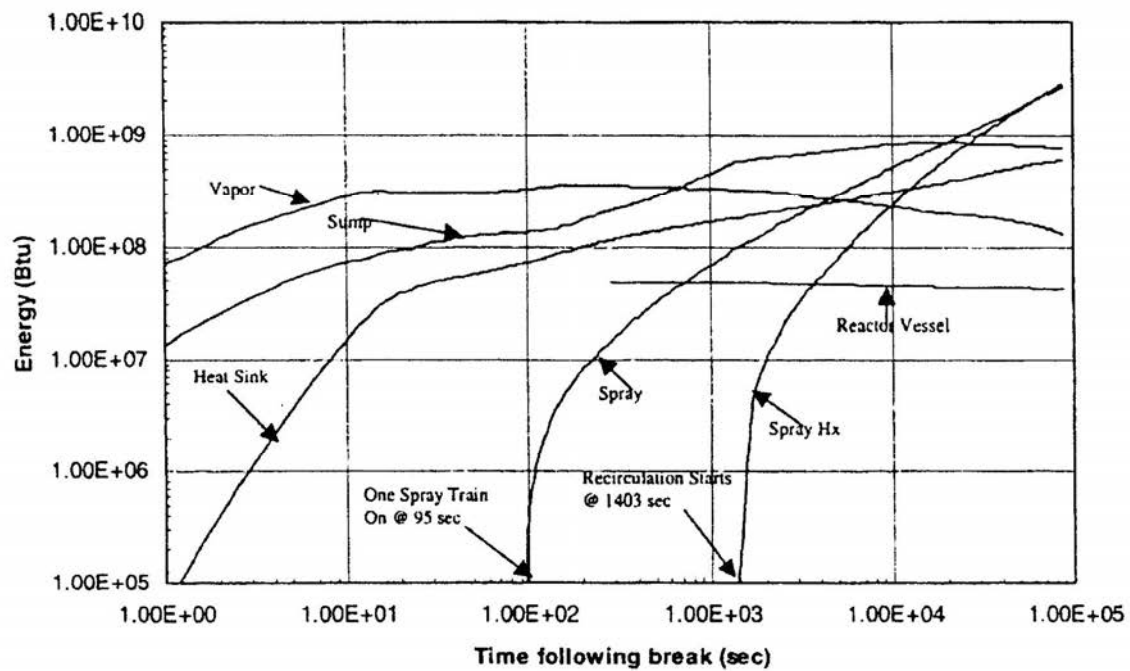
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT ENERGY INVENTORY,
DOUBLE-ENDED DISCHARGE LEG SLOT BREAK, MAXIMUM ECCS
CORE POWER OF 4070 MWt

FIGURE 6.2.1-10 SHEET 1 OF 2

JUNE 2009

REVISION 15



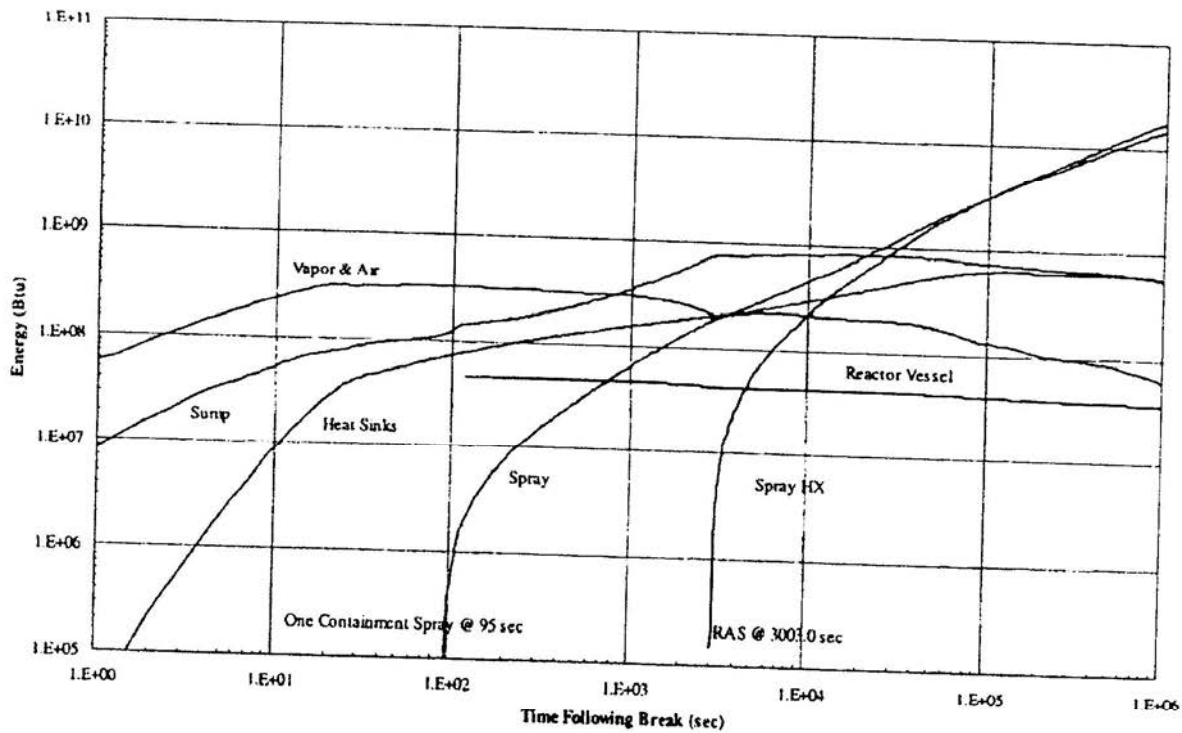
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT ENERGY INVENTORY,
DOUBLE-ENDED DISCHARGE LEG SLOT BREAK, MAXIMUM ECCS
CORE POWER OF 4070 MWt

FIGURE 6.2.1-10 SHEET 2 OF 2

JUNE 2009

REVISION 15



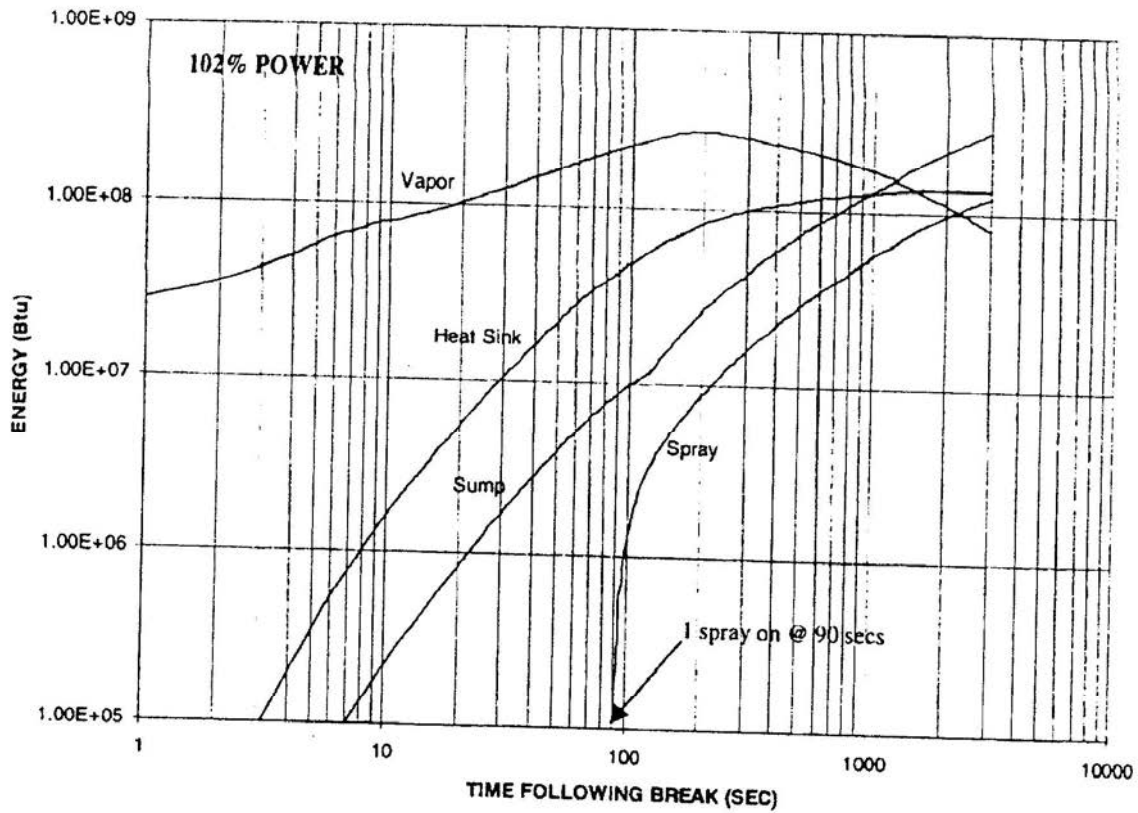
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT ENERGY INVENTORY,
DOUBLE-ENDED SUCTION LEG SLOT BREAK, MINIMUM ECCS
CORE POWER OF 4070 MWt

FIGURE 6.2.1-11

JUNE 2009

REVISION 15



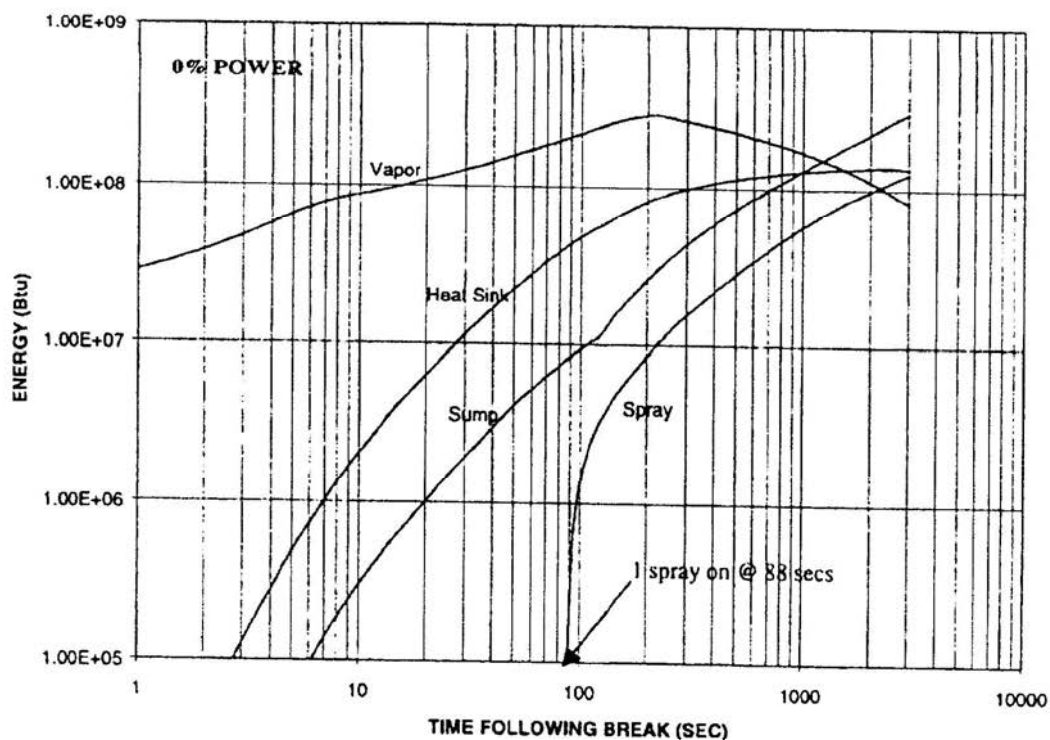
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT ENERGY DISTRIBUTION,
MAIN STEAM LINE GUILLOTINE BREAK INSIDE CONTAINMENT
WITH LOSS OF ONE TRAIN OF CONTAINMENT SPRAY SYSTEM
CORE POWER OF 4070 MWt

FIGURE 6.2.1-12 SHEET 1 OF 2

JUNE 2009

REVISION 15



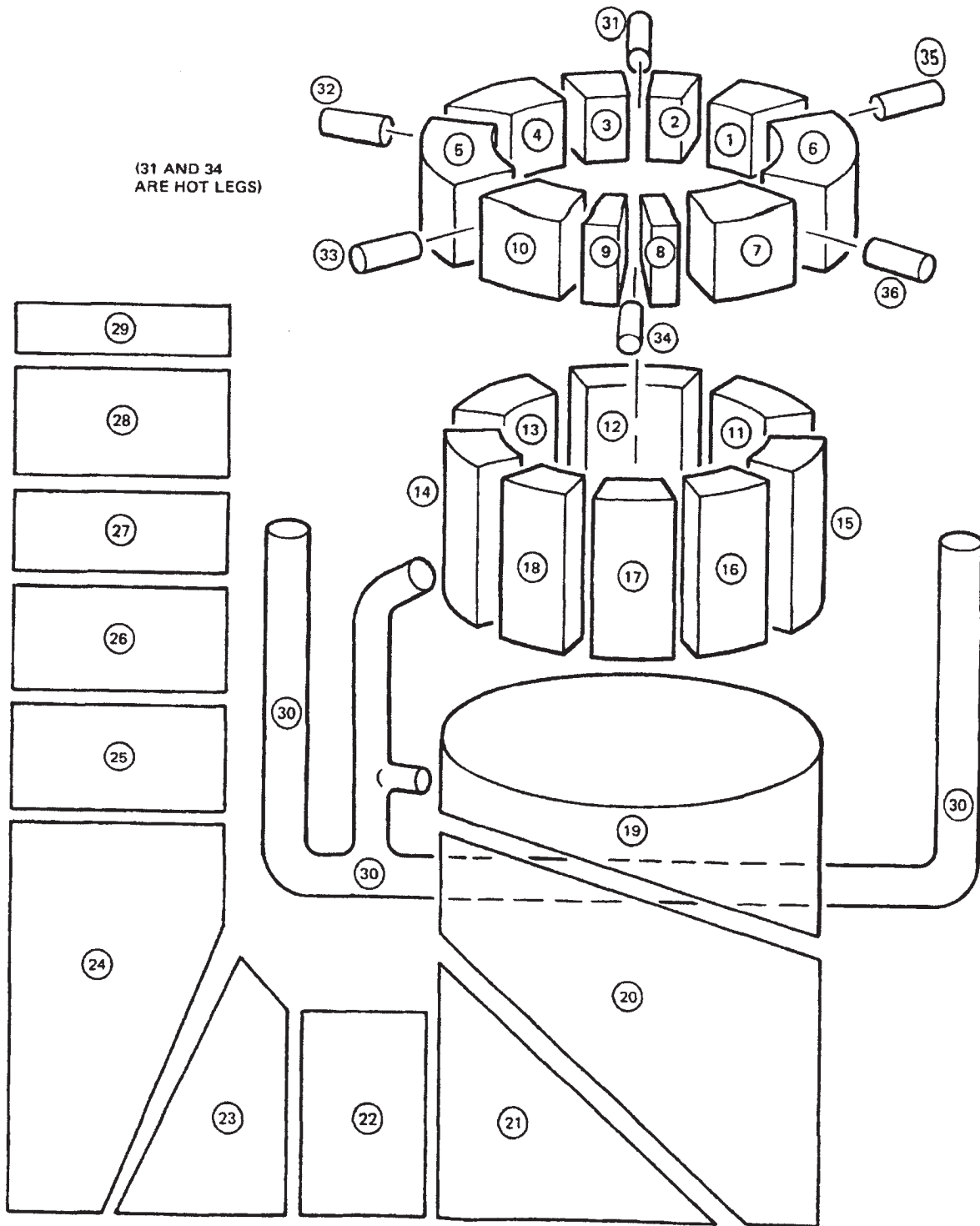
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT ENERGY DISTRIBUTION,
MAIN STEAM LINE GUILLOTINE BREAK INSIDE CONTAINMENT
WITH LOSS OF ONE TRAIN OF CONTAINMENT SPRAY SYSTEM
CORE POWER OF 4070 MWt

FIGURE 6.2.1-12 SHEET 2 OF 2

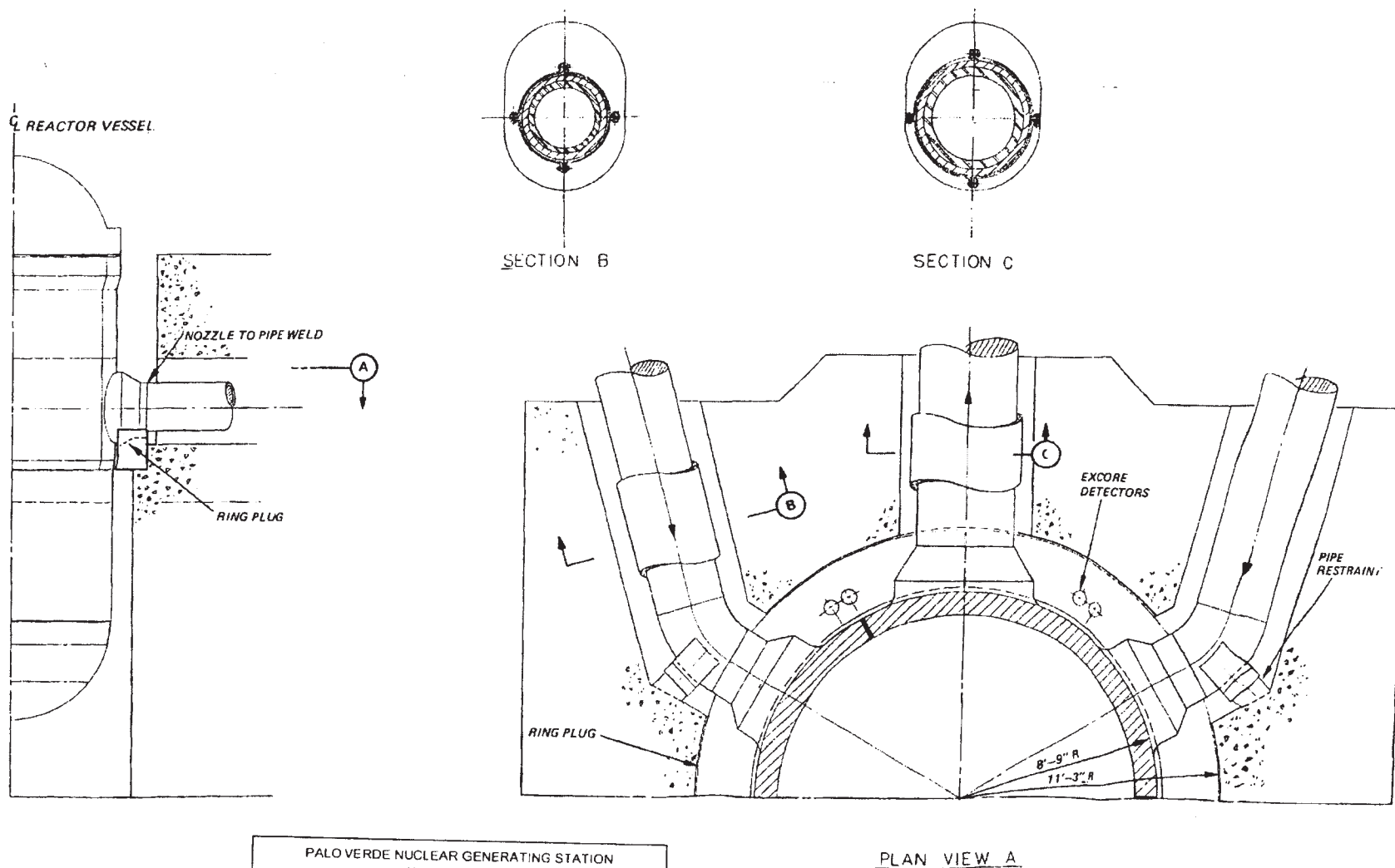
JUNE 2009

REVISION 15



(37) CONTAINMENT

PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 REACTOR CAVITY NODALIZATION
 FIGURE 6.2.1-13
 JUNE 2001
 REVISION 11



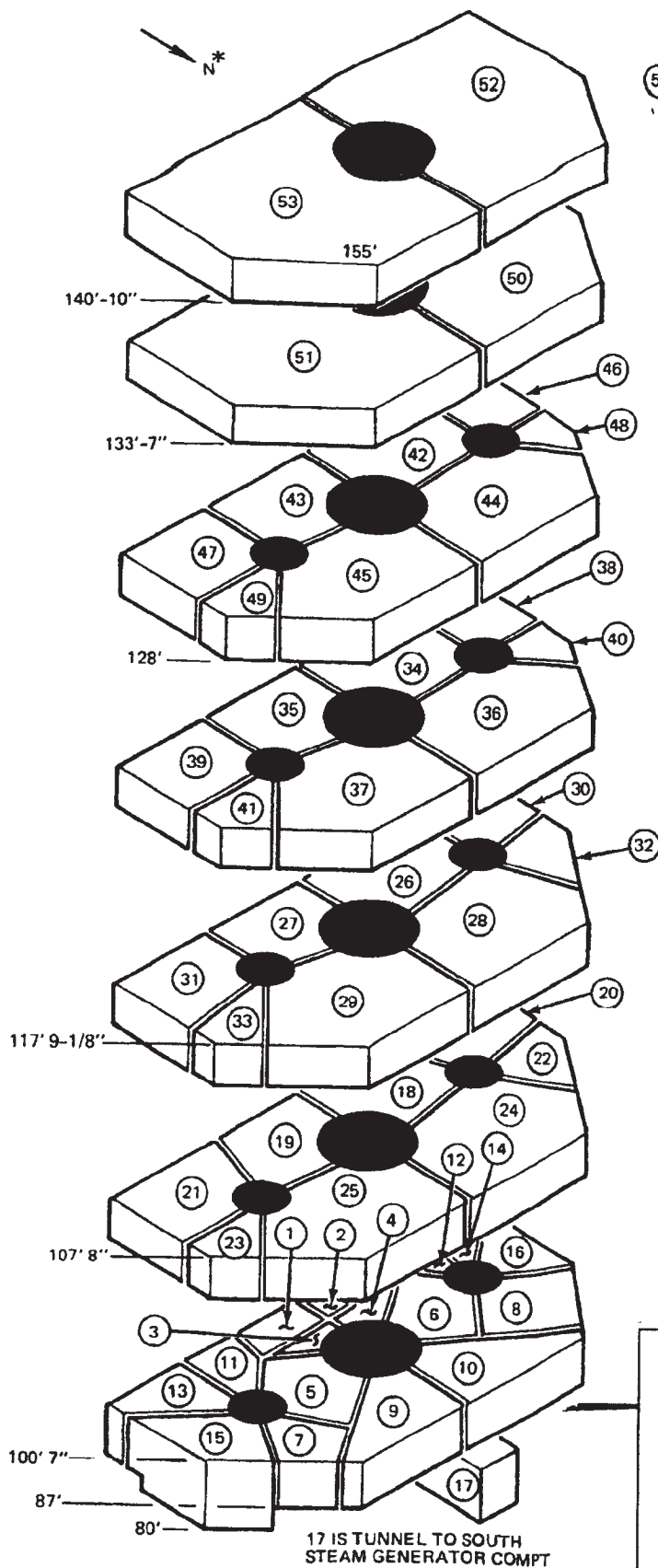
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR CAVITY FLOW NETWORK

FIGURE 6.2.1-14

JUNE 2001

REVISION 11



*SOUTH STEAM GENERATOR
COMPARTMENT IS MIRROR
IMAGE OF FIGURE SHOWN.

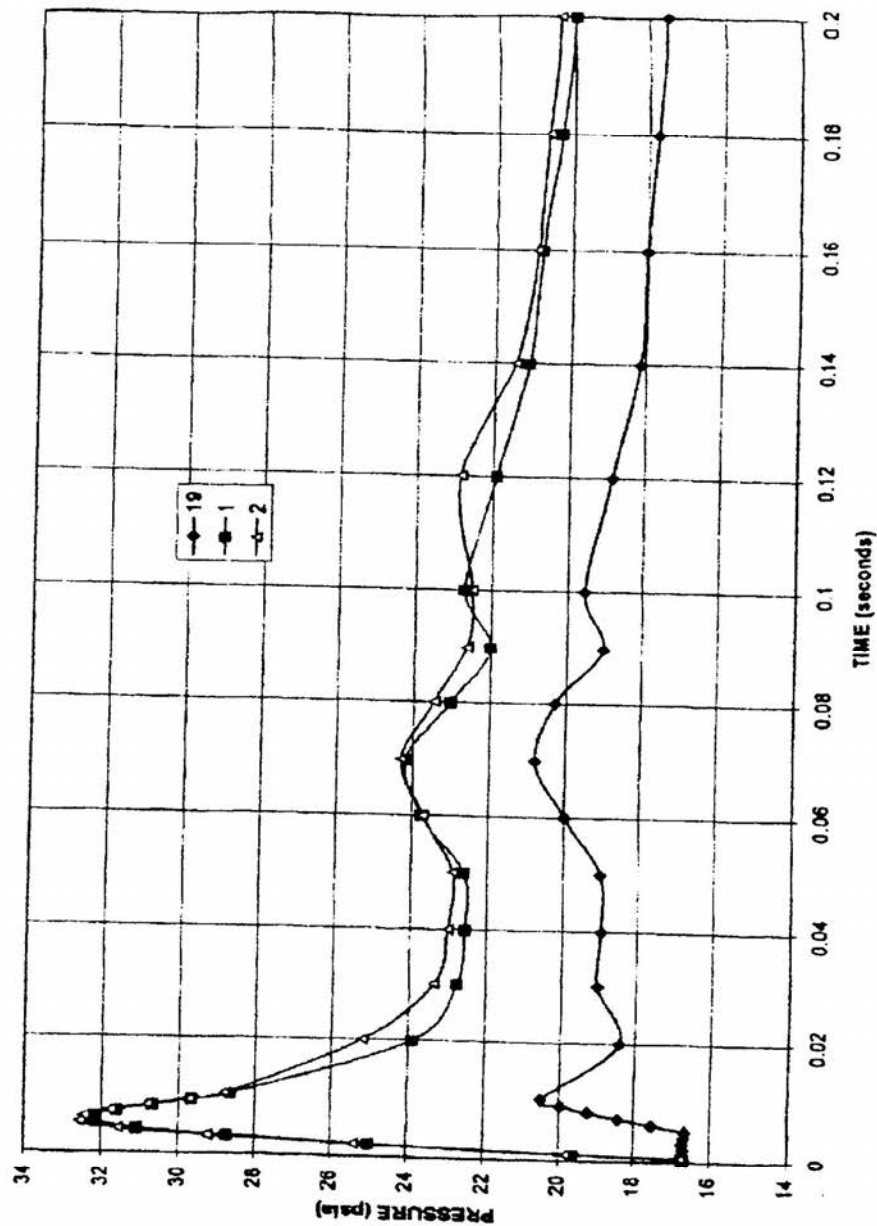
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

STEAM GENERATOR
SUBCOMPARTMENT MODEL

FIGURE 6.2.1-15

JUNE 2001

REVISION 11



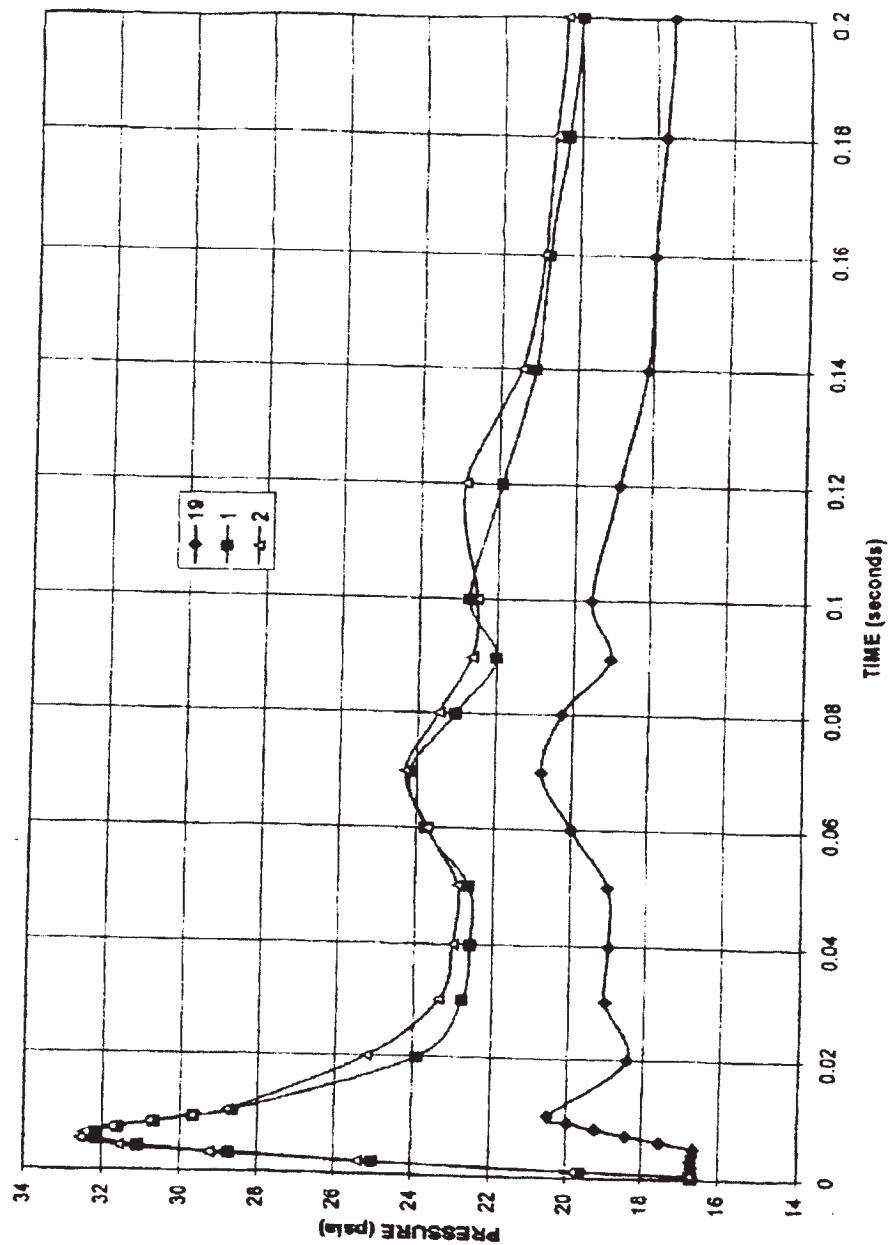
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

3990 MWt,
STEAM GEN. COMPARTMENT MODEL, 55 NODES PRESSURE vs. TIME
CURVES FOR 129 IN² SHUTDOWN COOLING BREAK

FIGURE 6.2.1-18

JUNE 2009

REVISION 15



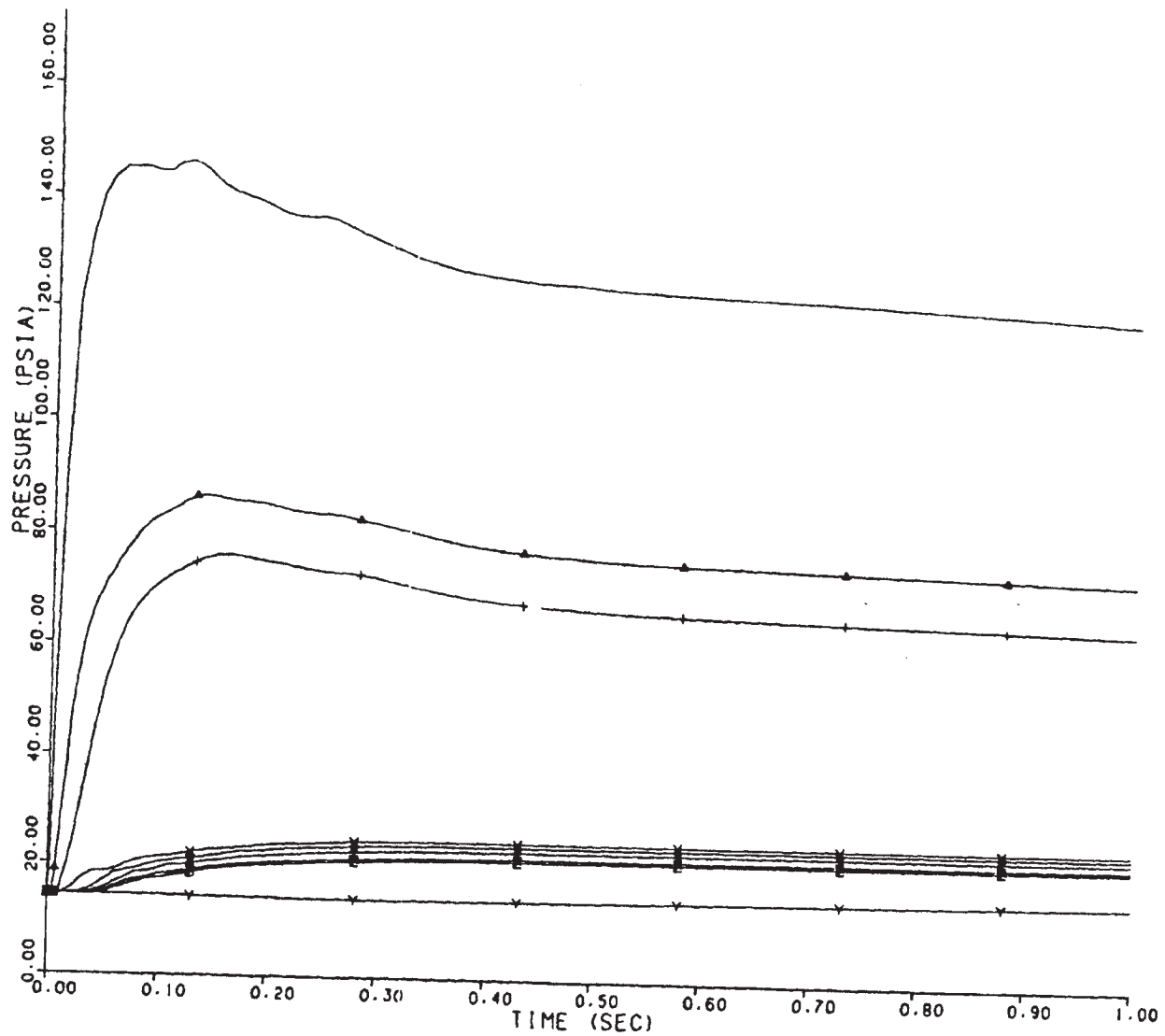
**PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR**

3990 MWt/OSG CONFIGURATION
STEAM GEN. COMPARTMENT MODEL, 55 NODES
PRESSURE vs. TIME CURVES
FOR 129 IN² SHUTDOWN COOLING BREAK

FIGURE 6.2.1-18A

JUNE 2007

REVISION 14



LEGEND:

- NODE 1
- NODE 2
- NODE 3
- NODE 4
- NODE 5
- NODE 6
- NODE 7
- NODE 8
- NODE 9

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

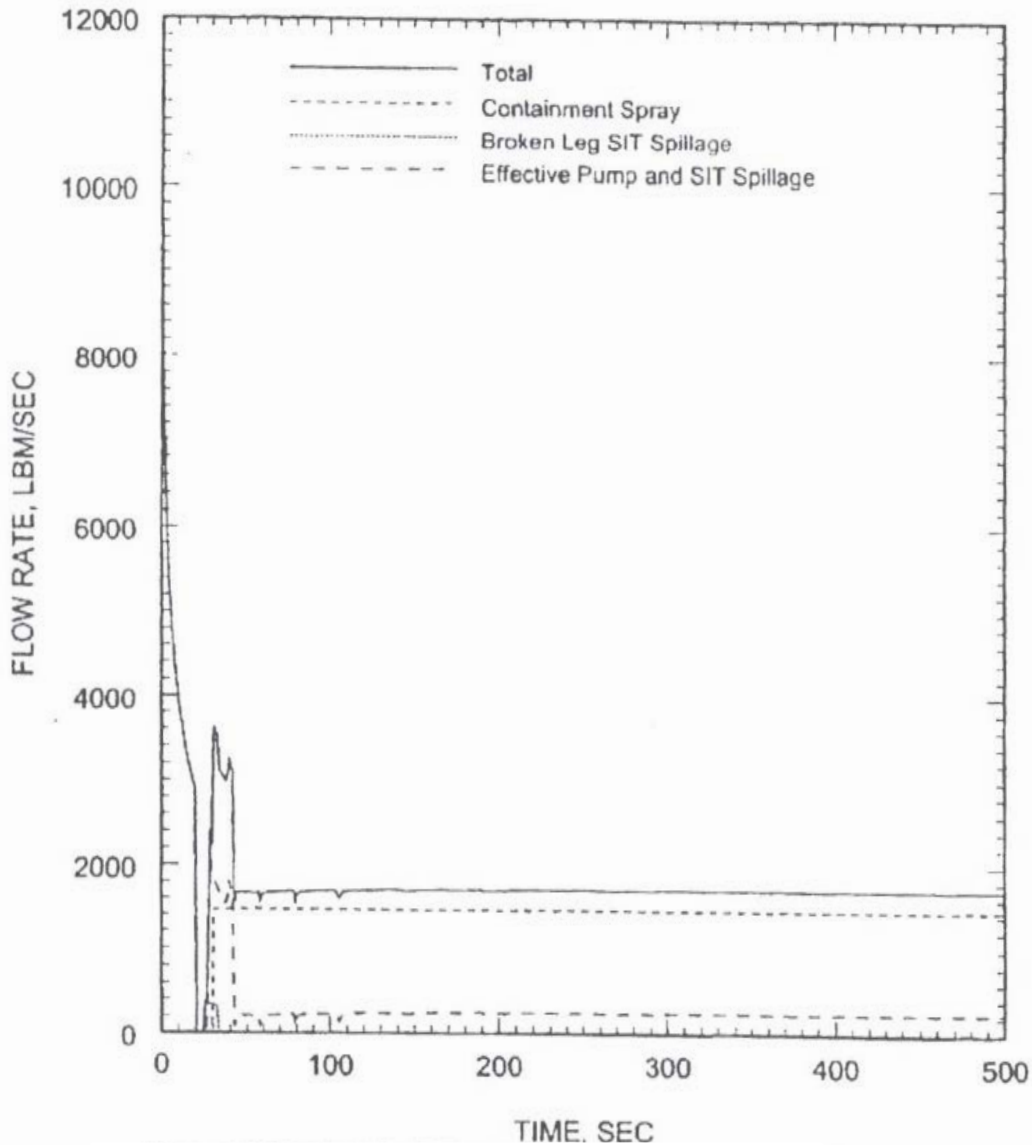
PRESSURIZER COMPARTMENT MODEL, 9 NODES
PRESSURE VS. TIME CURVES
FOR SURGE LINE BREAK

FIGURE 6.2.1-19

JUNE 2001

REVISION 11

**0.6 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK
AT PUMP DISCHARGE FOR ZIRCALOY-4 CLADDING
CONTAINMENT SPRAY AND ECCS SPILLAGE FLOW RATE
CE16STD FUEL**



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

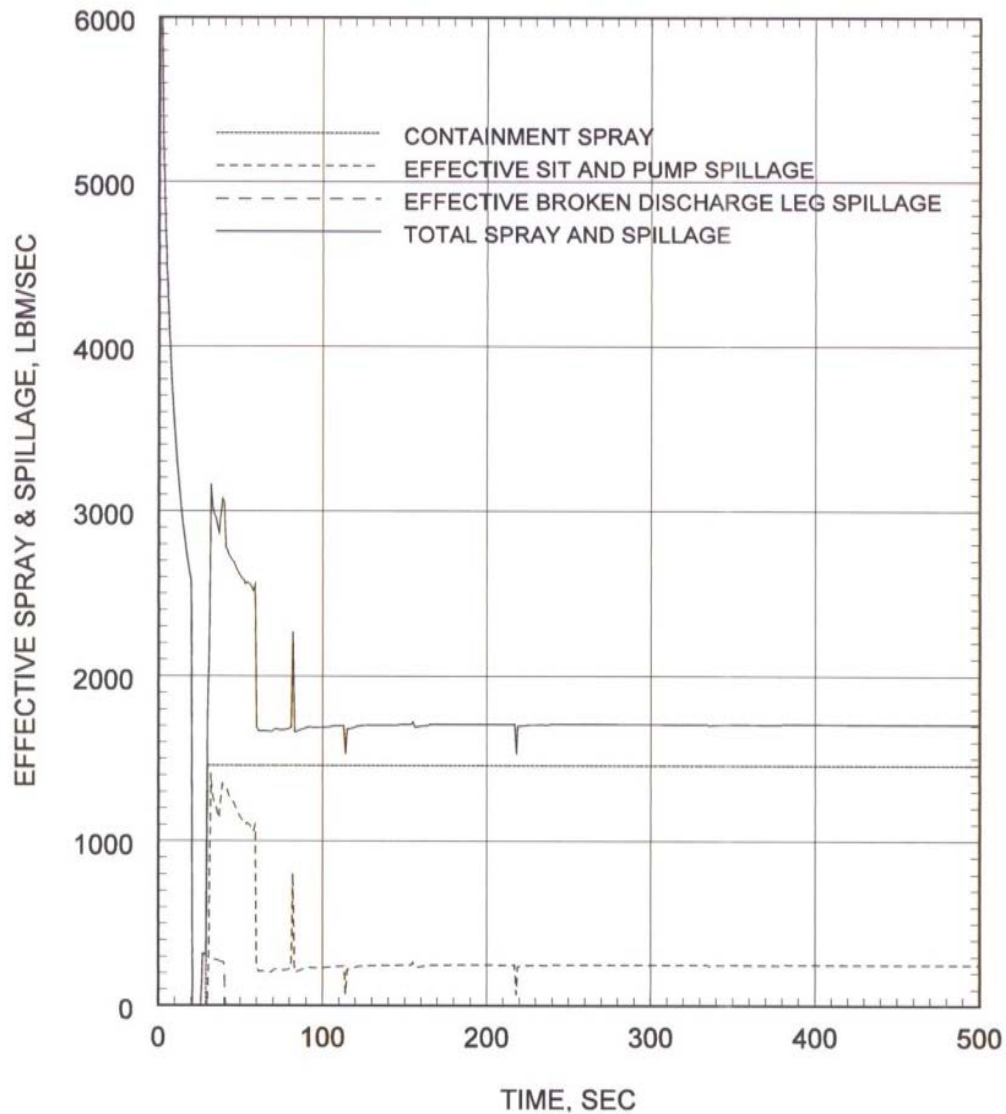
CONTAINMENT SPRAY AND ECCS SPILLAGE FLOW
RATES USED IN THE MINIMUM CONTAINMENT
CE16STD FUEL

FIGURE 6.2.1-21A

JUNE 2019

REVISION 20

**0.8 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK AT PUMP DISCHARGE
CONTAINMENT SPRAY AND ECCS SPILLAGE FLOW RATE CE16NGF FUEL**



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

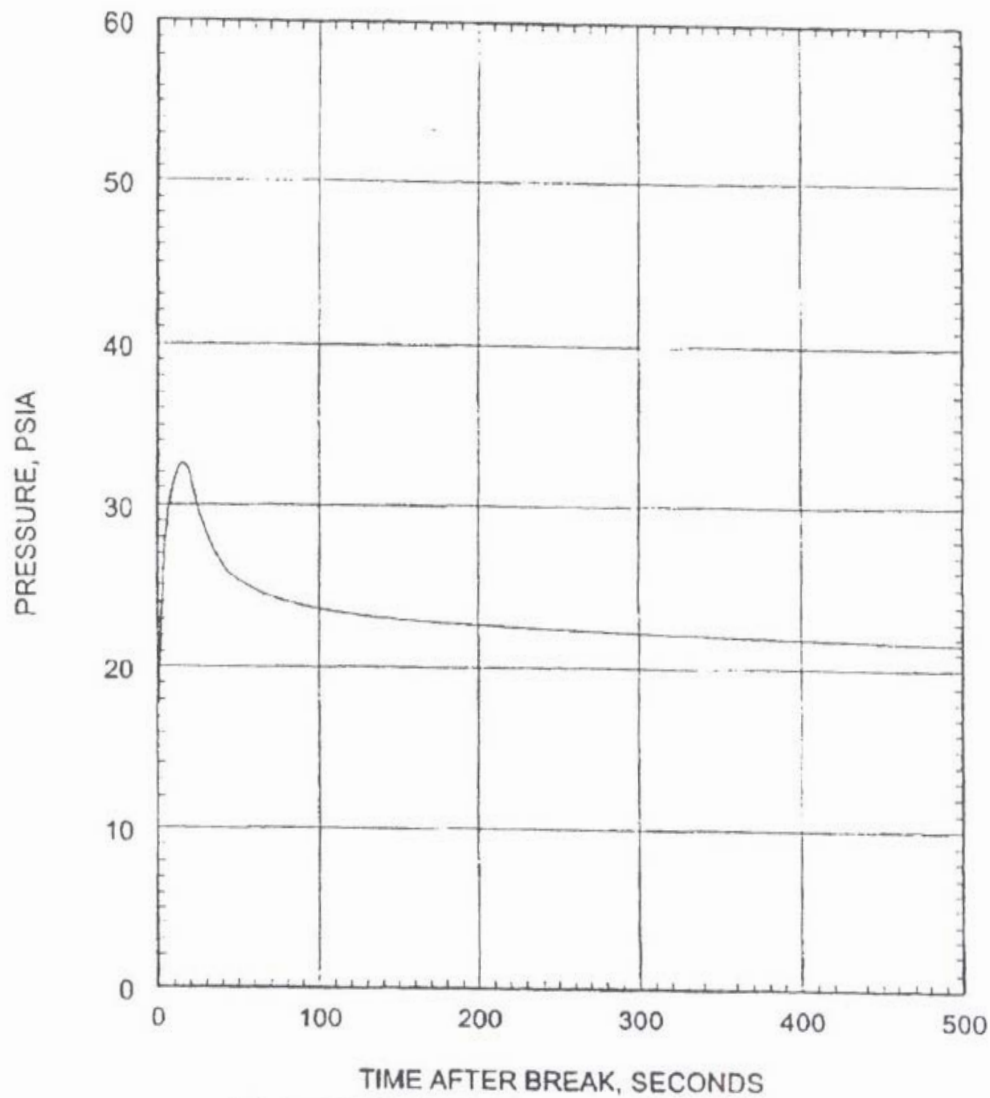
CONTAINMENT SPRAY AND ECCS SPILLAGE FLOW
RATES USED IN THE MINIMUM CONTAINMENT
PRESSURE ANALYSIS FOR ECCS PERFORMANCE
CE16NGF FUEL

FIGURE 6.2.1-21B

JUNE 2019

REVISION 20

**0.6 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK
AT PUMP DISCHARGE FOR ZIRCALOY-4 CLADDING
CONTAINMENT PRESSURE CE16STD FUEL**



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

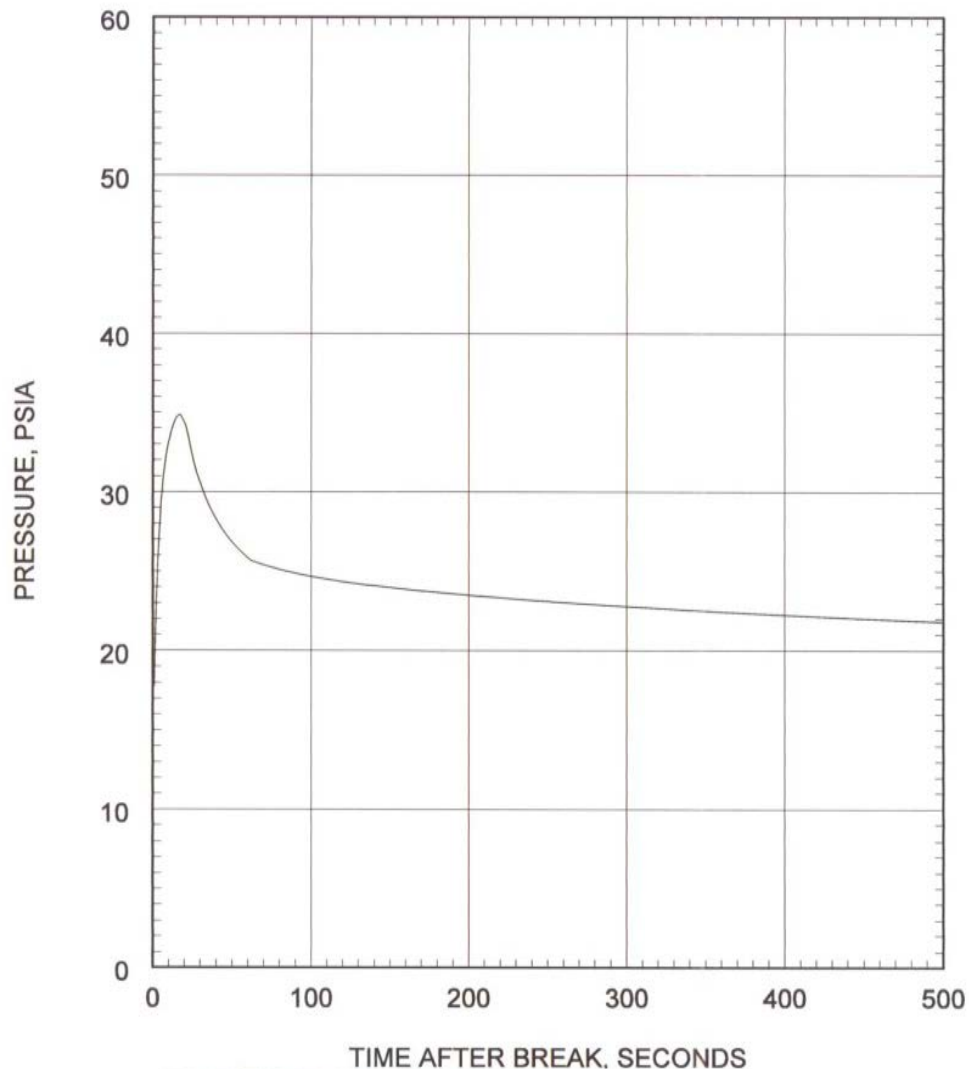
MINIMUM CONTAINMENT PRESSURE FOR ECCS
PERFORMANCE ANALYSIS 0.6 DOUBLE ENDED
GUILLOTINE BREAK IN PUMP DISCHARGE LEG
CE16STD FUEL

FIGURE 6.2.1-22A

JUNE 2019

REVISION 20

**0.8 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK
AT PUMP DISCHARGE
CONTAINMENT PRESSURE CE16NGF FUEL**



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

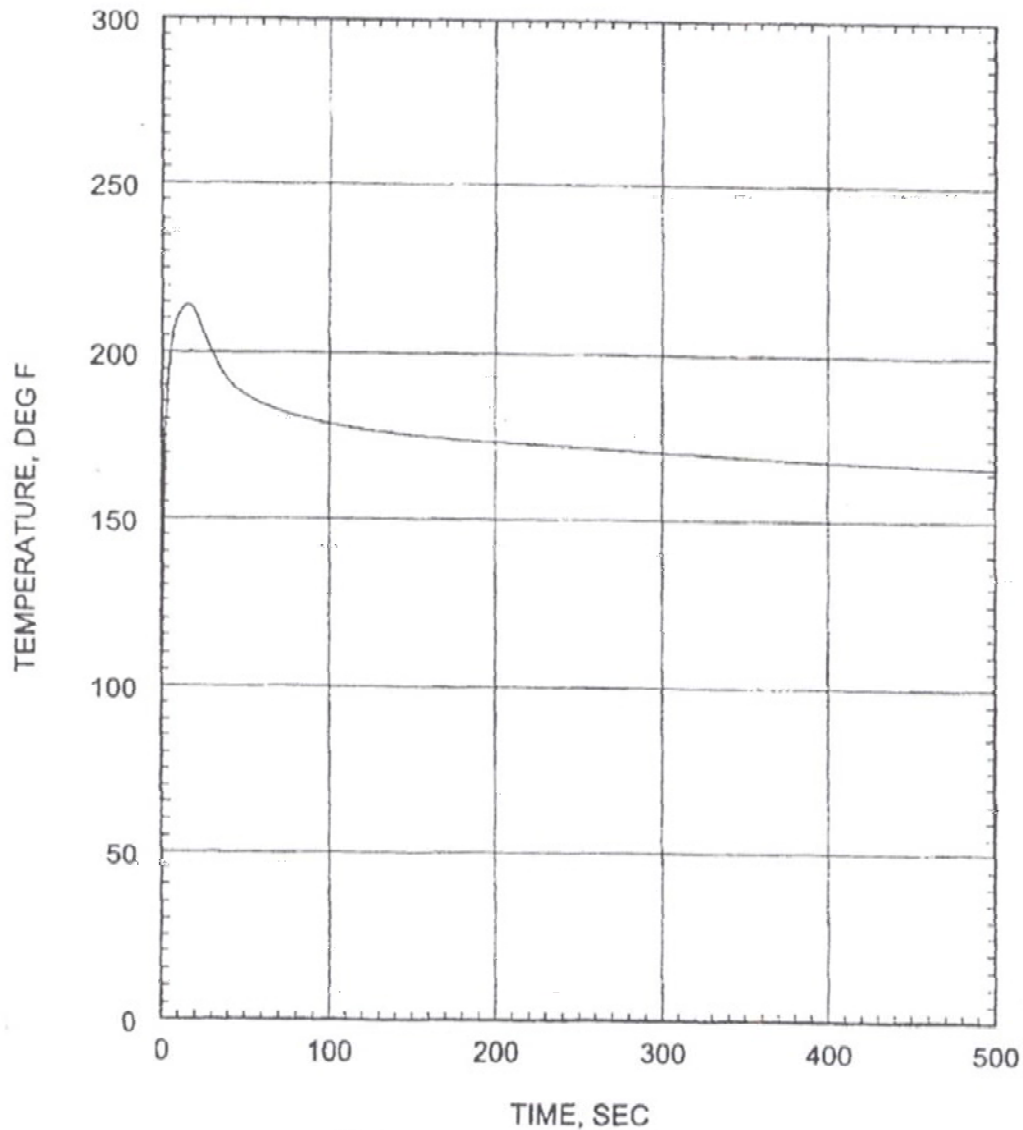
MINIMUM CONTAINMENT PRESSURE FOR ECCS
PERFORMANCE ANALYSIS 0.8 DOUBLE ENDED
GUILLOTINE BREAK IN PUMP DISCHARGE LEG
CE16NGF FUEL

FIGURE 6.2.1-22B

JUNE 2019

REVISION 20

**0.6 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK
AT PUMP DISCHARGE FOR ZIRCALOY-4 CLADDING
CONTAINMENT ATMOSPHERE TEMPERATURE
CE16STD FUEL**



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

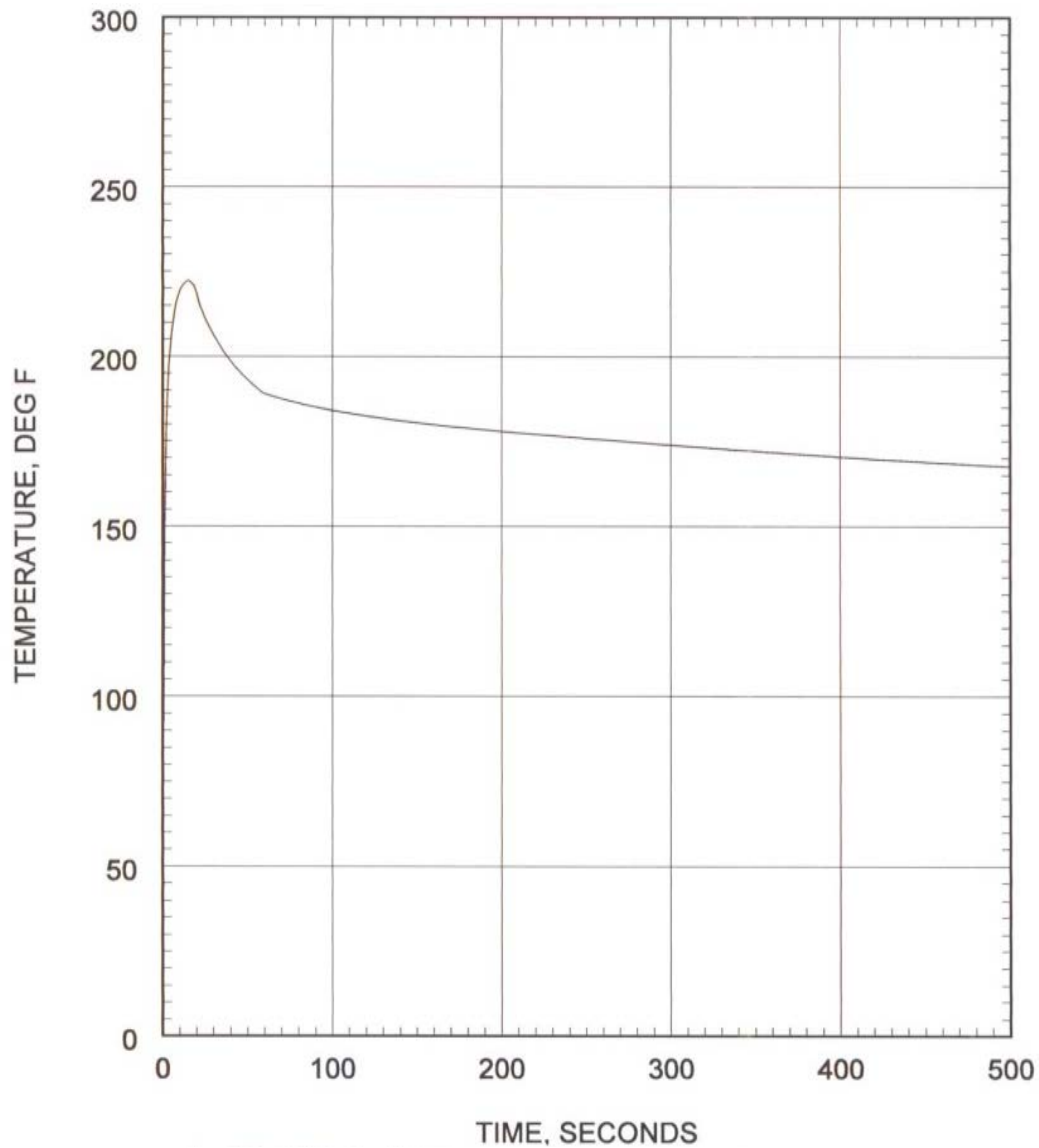
CONTAINMENT ATMOSPHERE TEMPERATURE
0.6 DOUBLE ENDED GUILLOTINE BREAK IN PUMP
DISCHARGE LEG CE16STD FUEL

FIGURE 6.2.1-23A

JUNE 2019

REVISION 20

**0.8 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK
AT PUMP DISCHARGE
CONTAINMENT ATMOSPHERIC TEMPERATURE
CE16NGF FUEL**



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

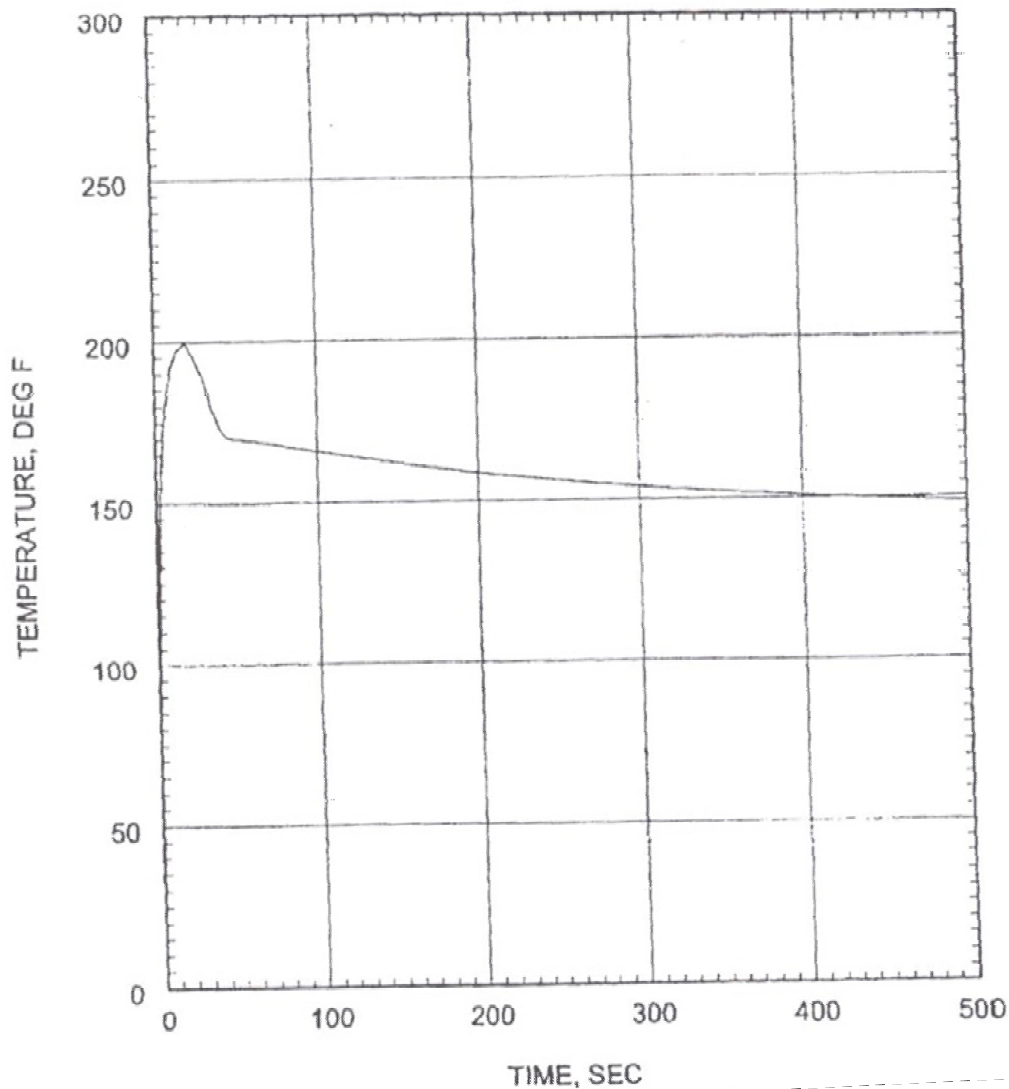
CONTAINMENT ATMOSPHERE TEMPERATURE
0.8 DOUBLE ENDED GUILLOTINE BREAK IN PUMP
DISCHARGE LEG CE16NGF FUEL

FIGURE 6.2.1-23B

JUNE 2019

REVISION 20

**0.6 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK
AT PUMP DISCHARGE FOR ZIRCALOY-4 CLADDING
CONTAINMENT SUMP TEMPERATURE
CE16STD FUEL**



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

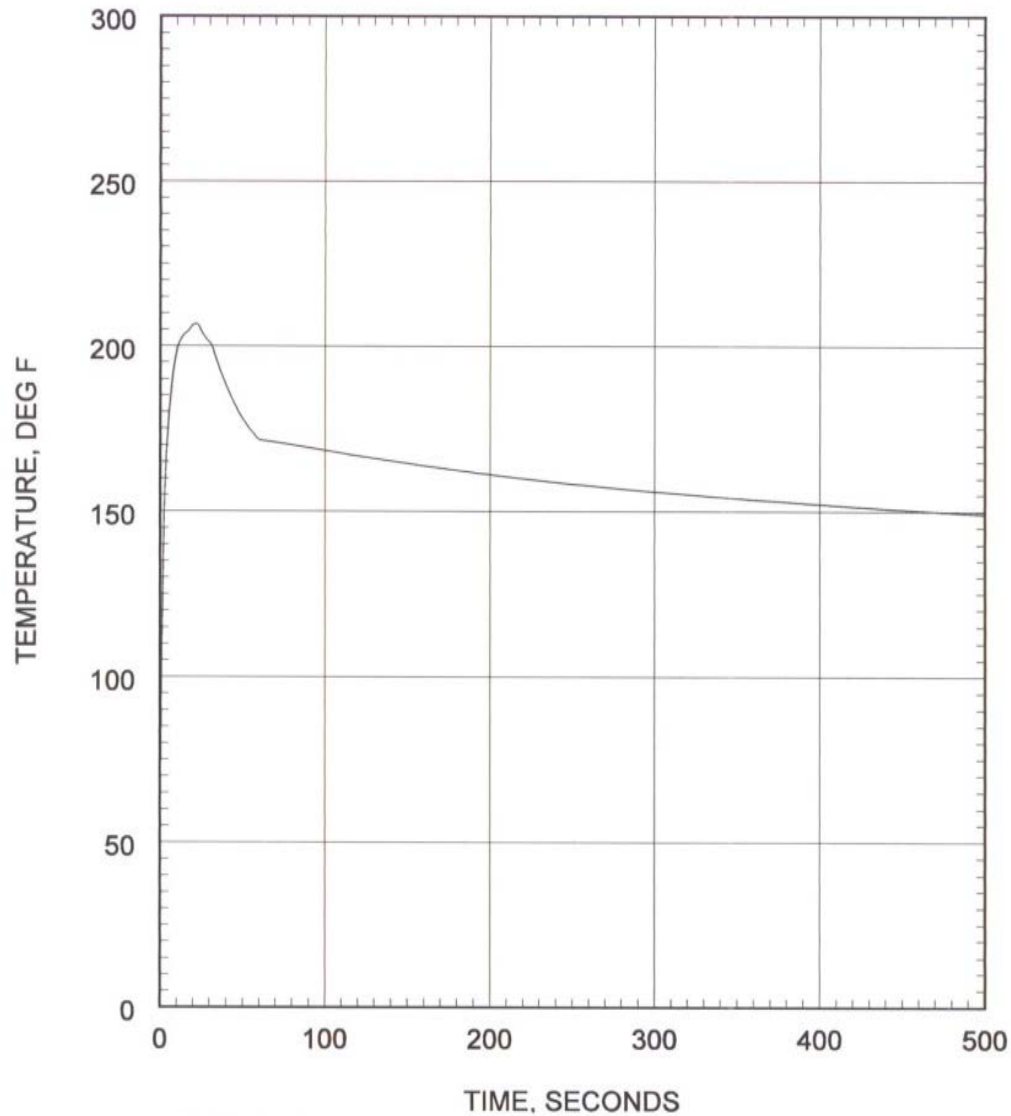
CONTAINMENT SUMP TEMPERATURE
0.6 DOUBLE ENDED GUILLOTINE BREAK IN PUMP
DISCHARGE LEG CE16STD FUEL

FIGURE 6.2.1-24A

JUNE 2019

REVISION 20

**0.8 DOUBLE-ENDED GUILLOTINE COLD LEG BREAK
AT PUMP DISCHARGE
CONTAINMENT SUMP TEMPERATURE
CE16NGF FUEL**



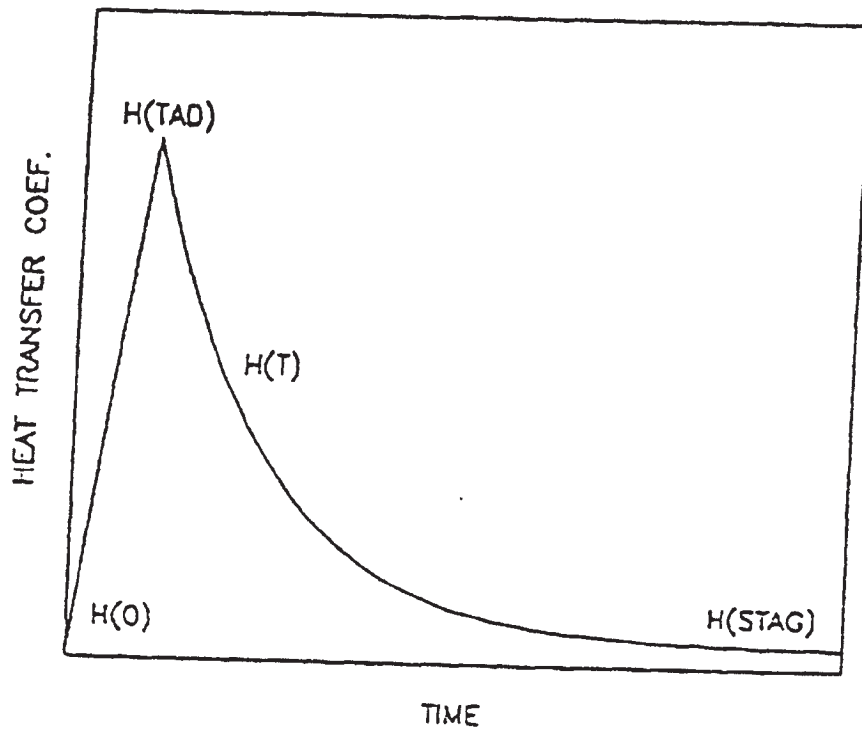
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT SUMP TEMPERATURE
0.8 DOUBLE ENDED GUILLOTINE BREAK IN PUMP
DISCHARGE LEG CE16NGF FUEL

FIGURE 6.2.1-24B

JUNE 2019

REVISION 20



$$H(0) = 8 \text{ BTU/hr-ft}^2\text{-}^\circ\text{F}$$

$$H(TAD) = H_{max} = 4 * H(\text{Tagami})$$

$$H(T) = H(\text{Stag}) + (H_{max} - H(\text{Stag})) * e^{-0.025 * (T - TAD)}$$

$$H(\text{Stag}) = 1.2 * H(\text{Uchida})$$

TAD = Time of Annulus Downflow

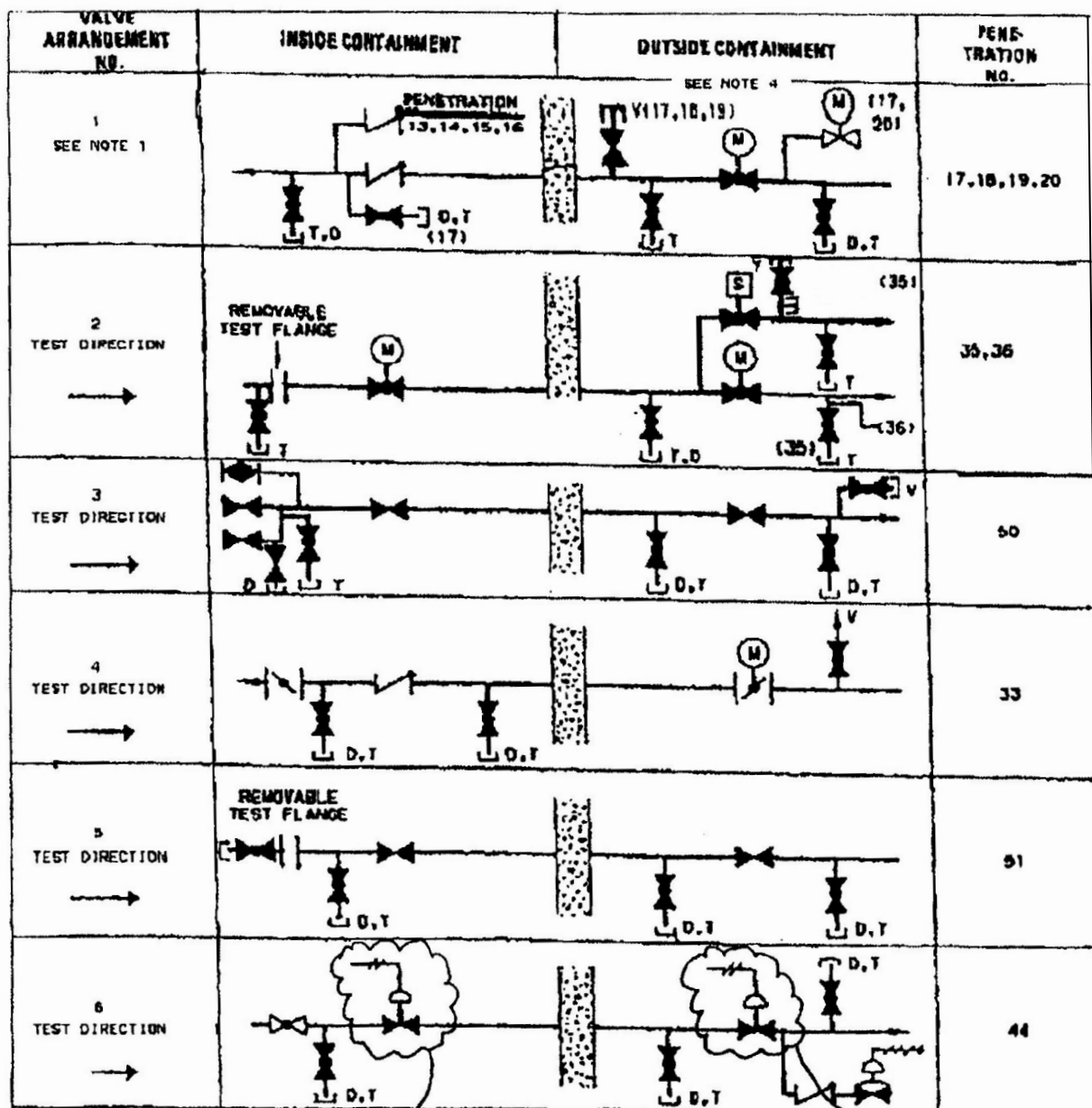
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONDENSING HEAT TRANSFER COEFFICIENT FOR PASSIVE
HEATSINKS USED IN THE MINIMUM CONTAINMENT
PRESSURE ANALYSIS FOR ECCS PERFORMANCE

FIGURE 6.2.1-25

JUNE 2001

REVISION 11



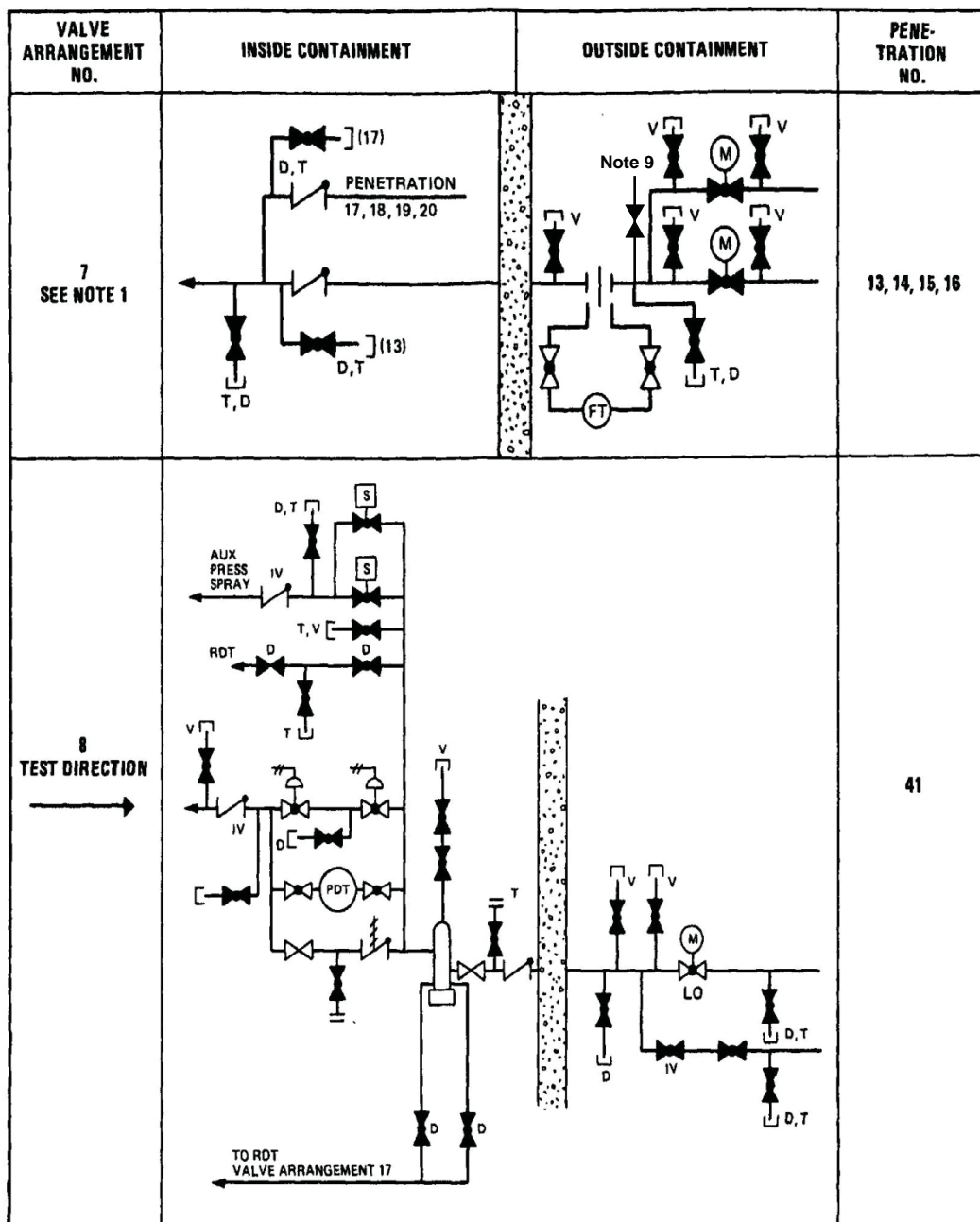
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT FIGURE

FIGURE 6.2.4-1 SHEET 1 OF 10

JUNE 2019

REVISION 20




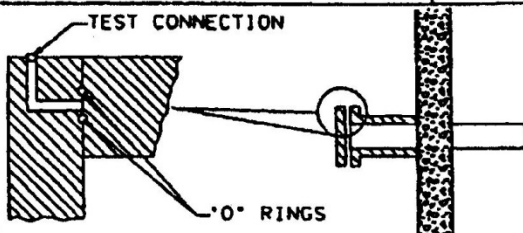
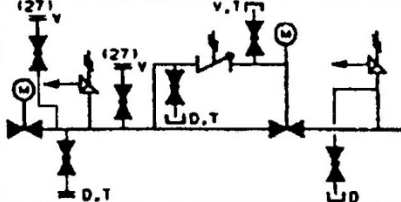
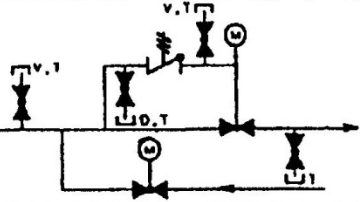

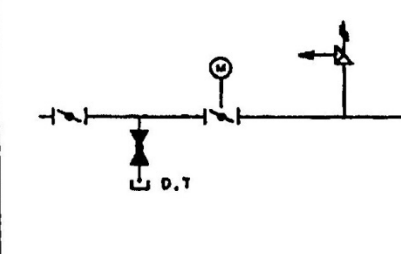
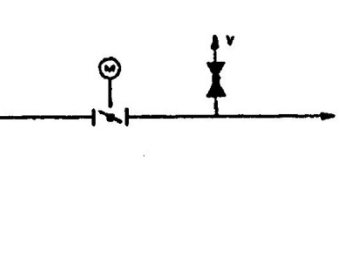

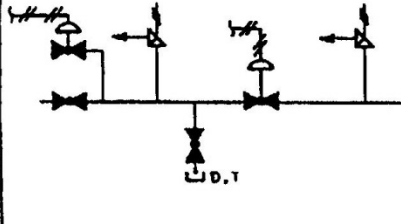
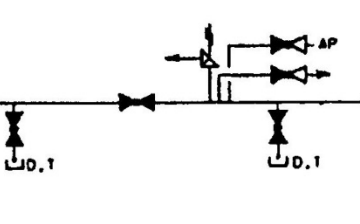

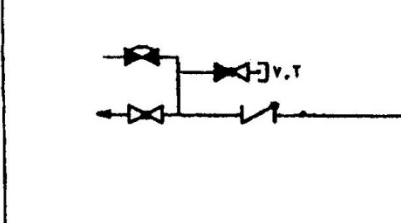
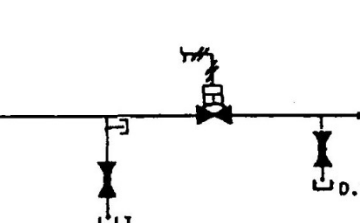
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 2 OF 10

JUNE 2015

REVISION 18

VALVE ARRANGEMENT NO.	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	PENETRATION NO.
9 TEST DIRECTION 			53
10			26, 27
11 TEST DIRECTION 			34
12 TEST DIRECTION 			28
13 TEST DIRECTION SEE NOTE 8 			45

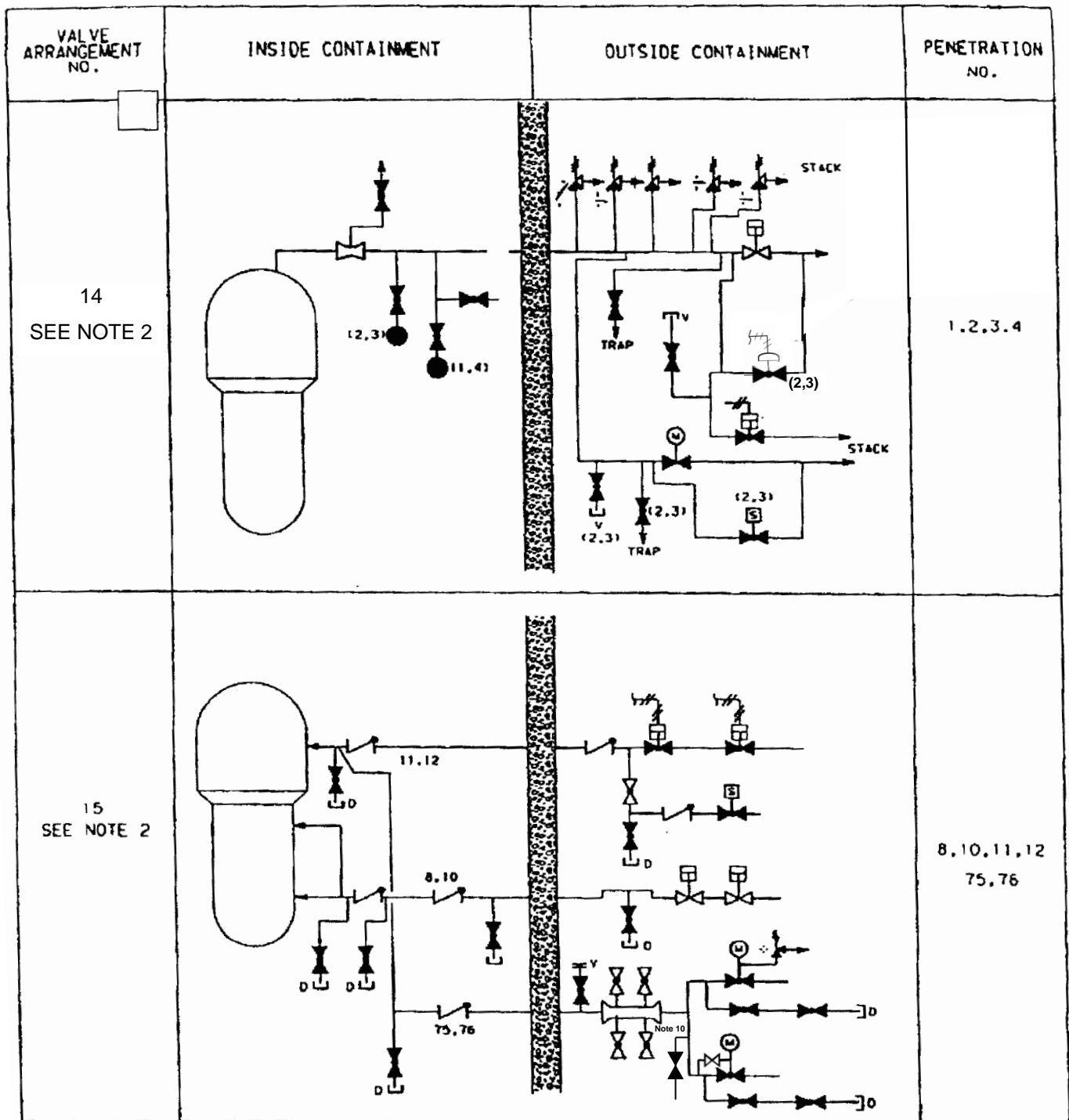
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 3 OF 10

JUNE 2019

REVISION 20



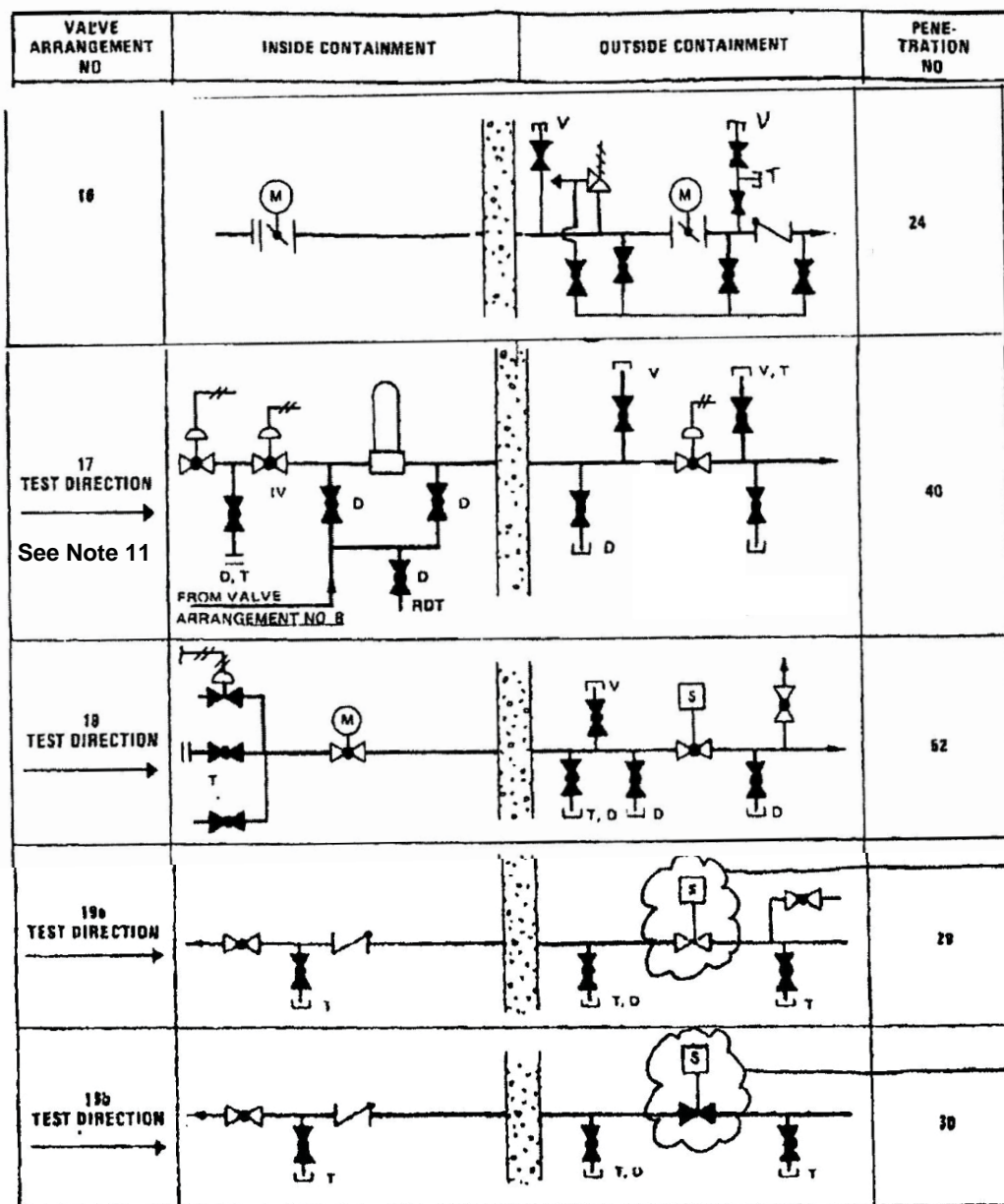
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 4 OF 10

JUNE 2015

REVISION 18



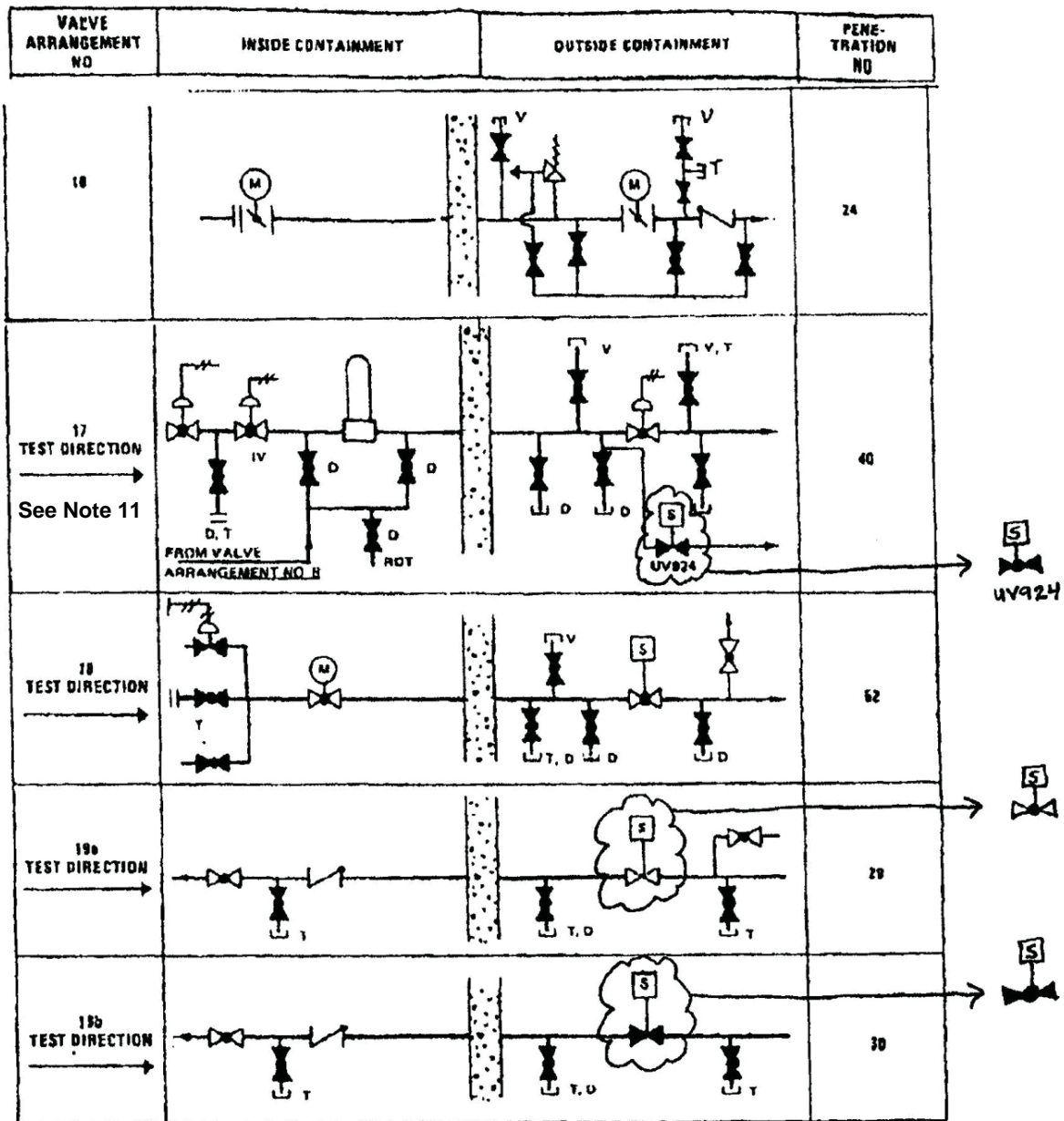
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 5 OF 10

JUNE 2015

REVISION 18



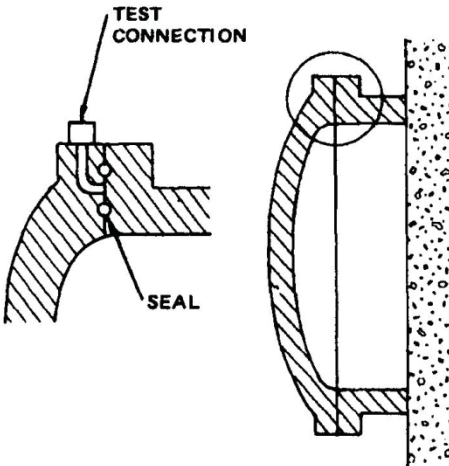
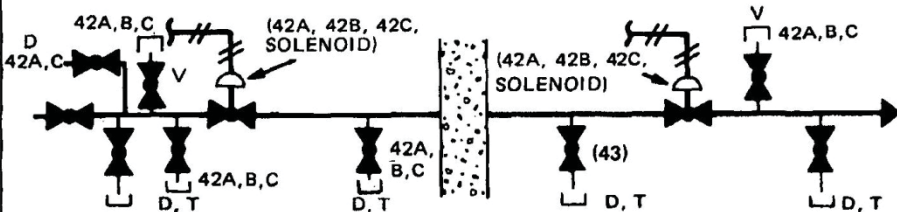
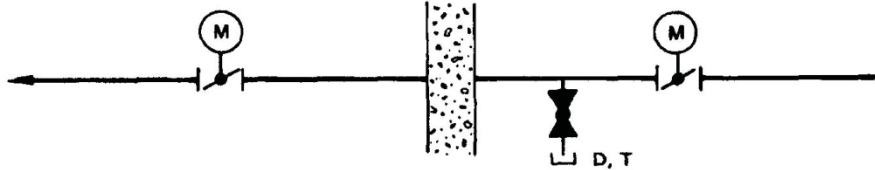
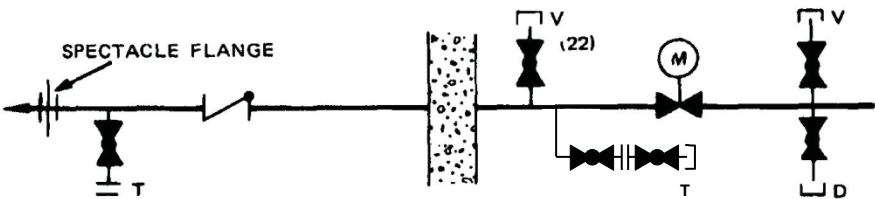
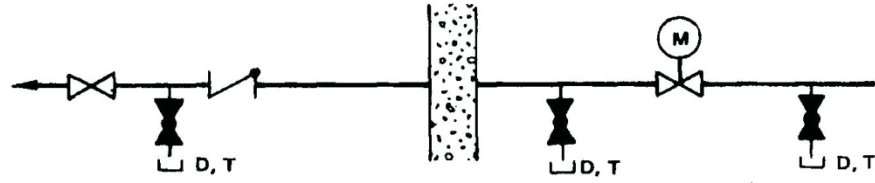
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 5A OF 10

JUNE 2015

REVISION 18

VALVE ARRANGEMENT NO.	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	PENE- TRATION NO.
20 TEST DIRECTION →			L-2
21 TEST DIRECTION →			42A, 42B, 42C, 43
SEE NOTES 3 & 4 22 TEST DIRECTION ↔			56
SEE NOTES 1 & 7 23			21, 22
24 TEST DIRECTION →			60


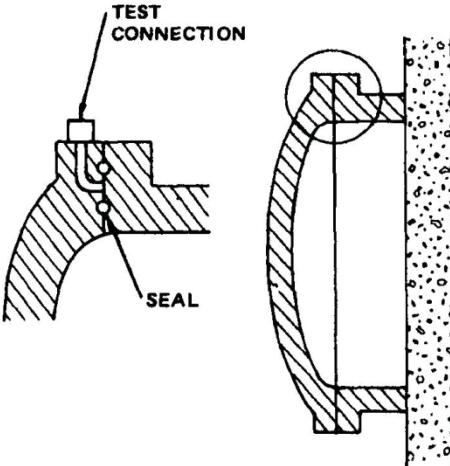

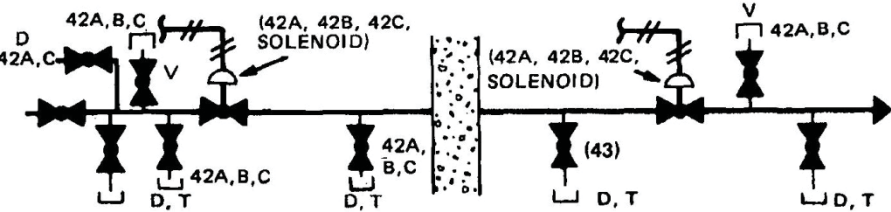

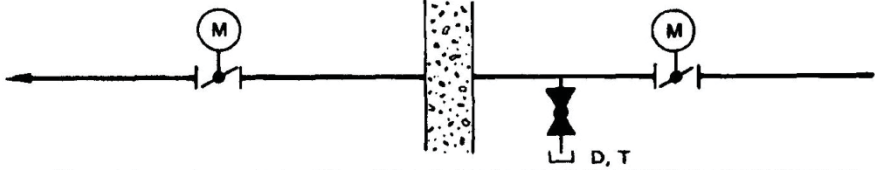
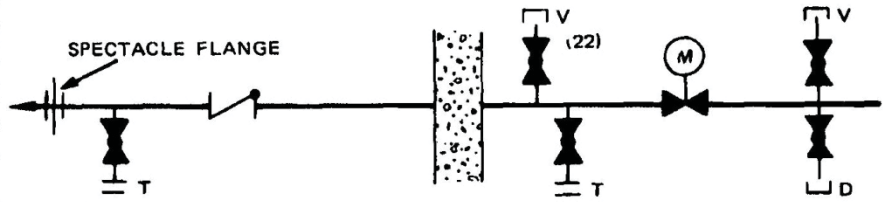

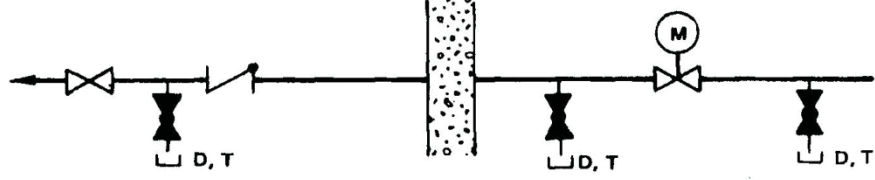
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 6 OF 10

JUNE 2015

REVISION 18

VALVE ARRANGEMENT NO.	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	PENE-TRATION NO.
20 TEST DIRECTION 			L-2
21 TEST DIRECTION 			42A, 42B, 42C, 43
22 TEST DIRECTION 			56
23 SEE NOTES 1 & 7			21, 22
24 TEST DIRECTION 			60

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 6A OF 10

JUNE 2015

REVISION 18

VALVE ARRANGEMENT NO.	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	PENE- TRATION NO.
25 TEST DIRECTION →		61	
26 TEST DIRECTION ↔		L-1, L-3	
27 TEST DIRECTION ↔		58, 62B, 62C	
28 TEST DIRECTION →		59	
29 TEST DIRECTION →		31	

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 7 OF 10

JUNE 2015

REVISION 18

VALVE ARRANGEMENT NO.	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	PENE-TRATION NO.
30 SEE NOTES 3 & 4 TEST DIRECTION ↔			57
31 TEST DIRECTION →			39
32 TEST DIRECTION → SEE NOTE 8			38
33 TEST DIRECTION →			25A, 25B
34 TEST DIRECTION →			9
35 TEST DIRECTION →			6

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 8 OF 10

JUNE 2019

REVISION 20

VALVE ARRANGEMENT NO.	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	PENETRATION
36 SEE NOTE 1 TEST DIRECTION →			66, 77
37 SEE NOTE 1			32A, 54A, 55A, 62A
 TEST DIRECTION 38			72
39			46, 47, 48, 49, 37A, 37B, 63A, 63B
40 SEE NOTE 1 SEE NOTE 12			23

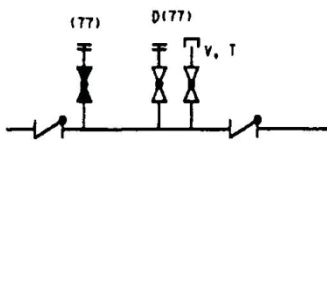
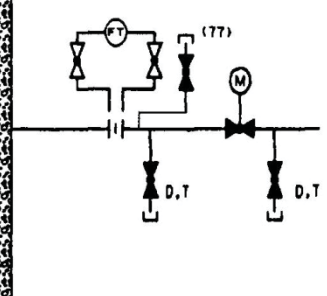
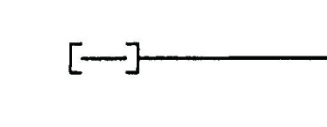
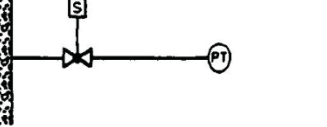

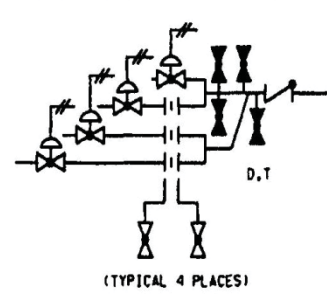
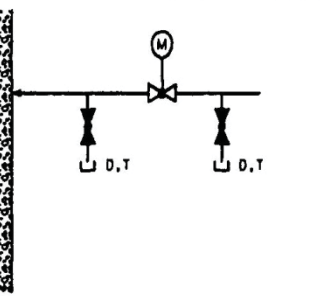
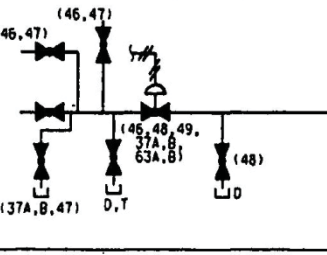
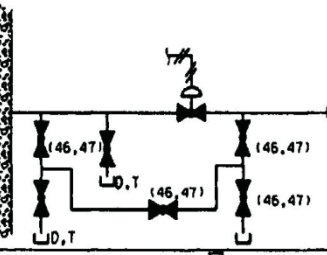
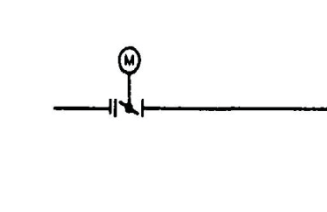
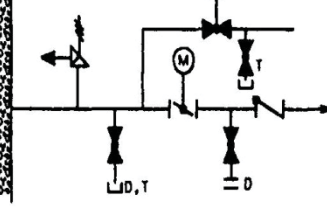
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 9 OF 10

JUNE 2015

REVISION 18

VALVE ARRANGEMENT NO.	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	PENETRATION
36 SEE NOTE 1 TEST DIRECTION →			66, 77
37 SEE NOTE 1			32A, 54A, 55A, 62A
 TEST DIRECTION 38			72
39			46, 47, 48, 49, 37A, 37B, 63A, 63B
40 SEE NOTE 1 SEE NOTE 12			23

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 9A OF 10

JUNE 2015

REVISION 18

VALVE ARRANGEMENT NO.	INSIDE CONATAINMENT	OUTSIDE CONATAINMENT	PENETRATION NO.
41 SEE NOTE 3 TEST DIRECTION ←→			78
42 SEE NOTE 3 TEST DIRECTION ←→			79
43 TEST DIRECTION →			7

LEGEND:

D = DRAIN

V = VENT

T = TEST

IV = ISOLATION VALVE

NOTES:

1. VALVES ARE OPEN IN EVENT OF LOCA.
2. VALVES ARE IN THE SECONDARY SIDE OF THE STEAM GENERATOR (SG). THESE VALVES ARE NOT SUBJECTED TO TYPE C TESTS BECAUSE THEY ARE NOT DEPENDENT ON IN THE LOCA DOSE CALCULATIONS TO KEEP THE RADIOLOGICAL CONSEQUENCES OF A LOCA TO WITHIN GDC 19 AND 10 CFR 100 LIMITS. THE LOCA DOSE CALCULATIONS ASSUME A SINGLE FAILURE OF A GDC 57 VALVE OR A STUCK OPEN ADV.
3. ONE BUTTERFLY VALVE WILL BE LEAKAGE TESTED IN REVERSE DIRECTION.
4. BLIND FLANGES MAY ISOLATE PENETRATION IN PLANT OPERATING MODES 1 - 4. WHEN BLIND FLANGE IS INSTALLED, ONLY TYPE B TESTING OF THE BLIND FLANGE IS REQUIRED.
5. THIS NOTE HAS BEEN DELETED.
6. THIS NOTE HAS BEEN DELETED.
7. CONFIGURATION BEFORE (SHEET 6A OF 10) AND AFTER (SHEET 6 OF 10) IMPLEMENTATION OF DMWO 3234780.
8. IN UNITS WHERE DMWO 2529758 HAS BEEN IMPLEMENTED, VALVE CHA-UV-715 IS REMOVED AND VALVES HPA-UV-023 & HPA-UV-024 ARE DE-TERMINATED WITH UPSTREAM PIPING CUT AND CAPPED AS THE NEW CONTAINMENT BOUNDARY.
9. ALTERNATE RC MAKEUP CONNECTIONS APPLY ONLY TO PENETRATIONS 14 AND 16. EFFECTIVE FOR UNITS WHERE DMWO 4304156 HAS BEEN IMPLEMENTED.
10. LOCATION FOR ALTERNATE SG MAKEUP IS SHOWN FOR PENETRATION 76. PRIMARY SG MAKEUP AT PENETRATION 75 IS SIMILAR BUT IS LOCATED DOWNSTREAM OF FLOW ELEMENT OUTSIDE CONTAINMENT. EFFECTIVE FOR UNITS WHERE DMWO 4345882 HAS BEEN IMPLEMENTED.
11. CONFIGURATION BEFORE (SHEET 5A OF 10) AND AFTER (SHEET 5 OF 10) VALVE (JCHBUV0924) HAS BEEN REMOVED AND REPLACED WITH A SOCKET WELD CAP IN UNITS WHERE DMWO 2778159 HAS BEEN IMPLEMENTED.
12. CONFIGURATION BEFORE (SHEET 9A OF 10) AND AFTER (SHEET 9 OF 10) VALVE (JSIAUV0708) AND DOWNSTREAM DRAIN VALVE (PSSNV082) HAVE BEEN REMOVED AND REPLACED WITH A SOCKET WELD CAP IN UNITS WHERE DMWO 2778159 HAS BEEN IMPLEMENTED.

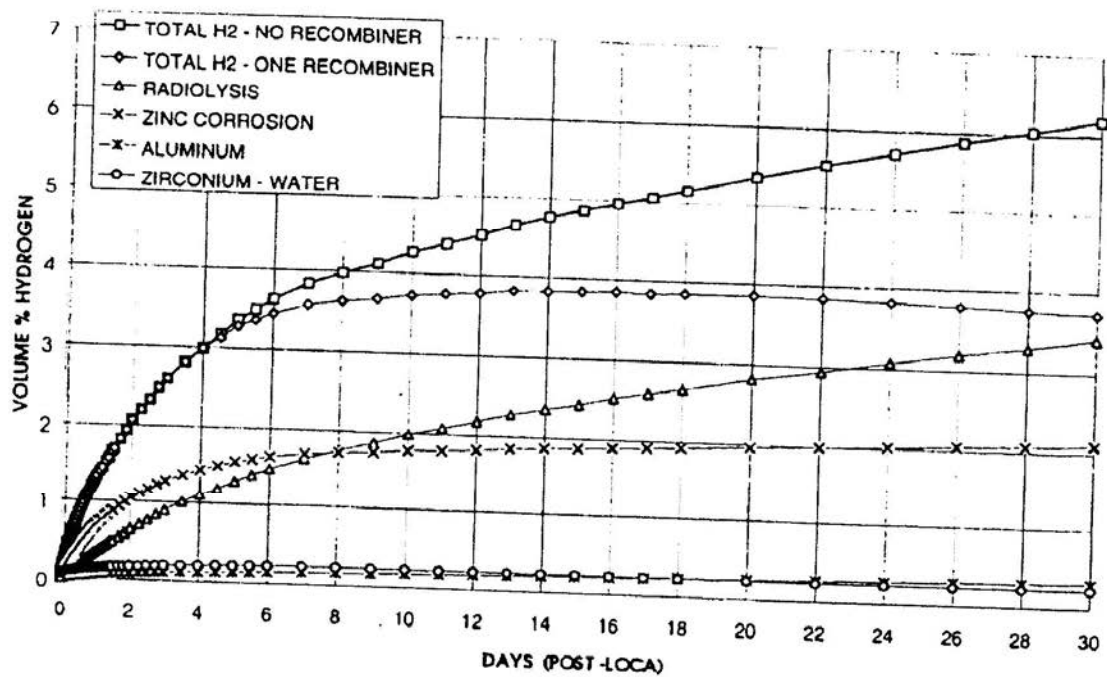
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT PENETRATION VALVE
ARRANGEMENT

FIGURE 6.2.4-1 SHEET 10 OF 10

JUNE 2015

REVISION 18



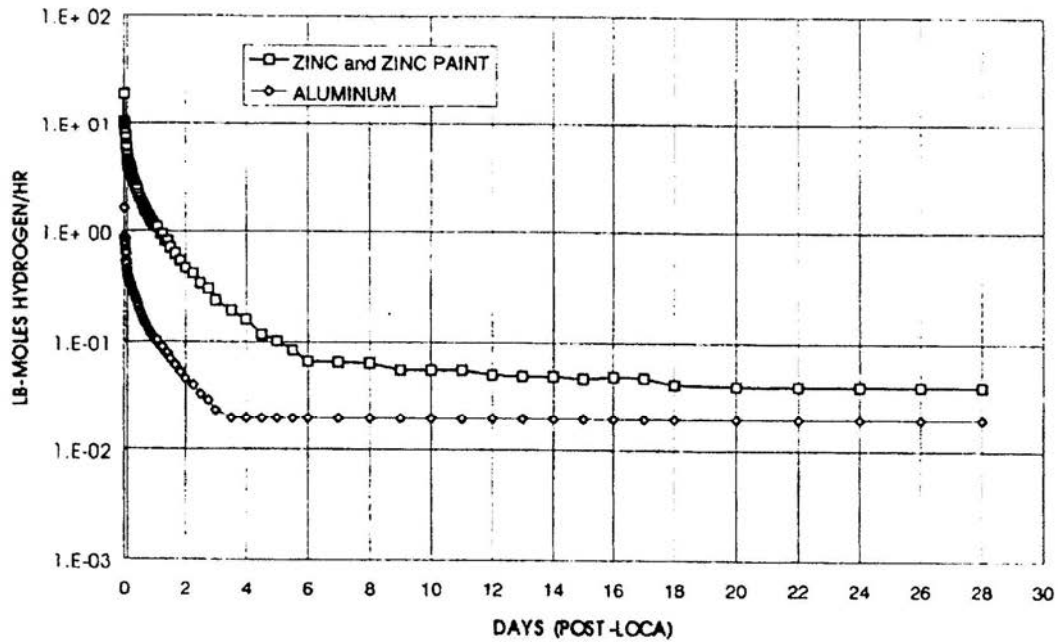
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

POST-LOCA H₂ BUILDUP
CORE POWER 4070 MWt

FIGURE 6.2.5-1

JUNE 2009

REVISION 15



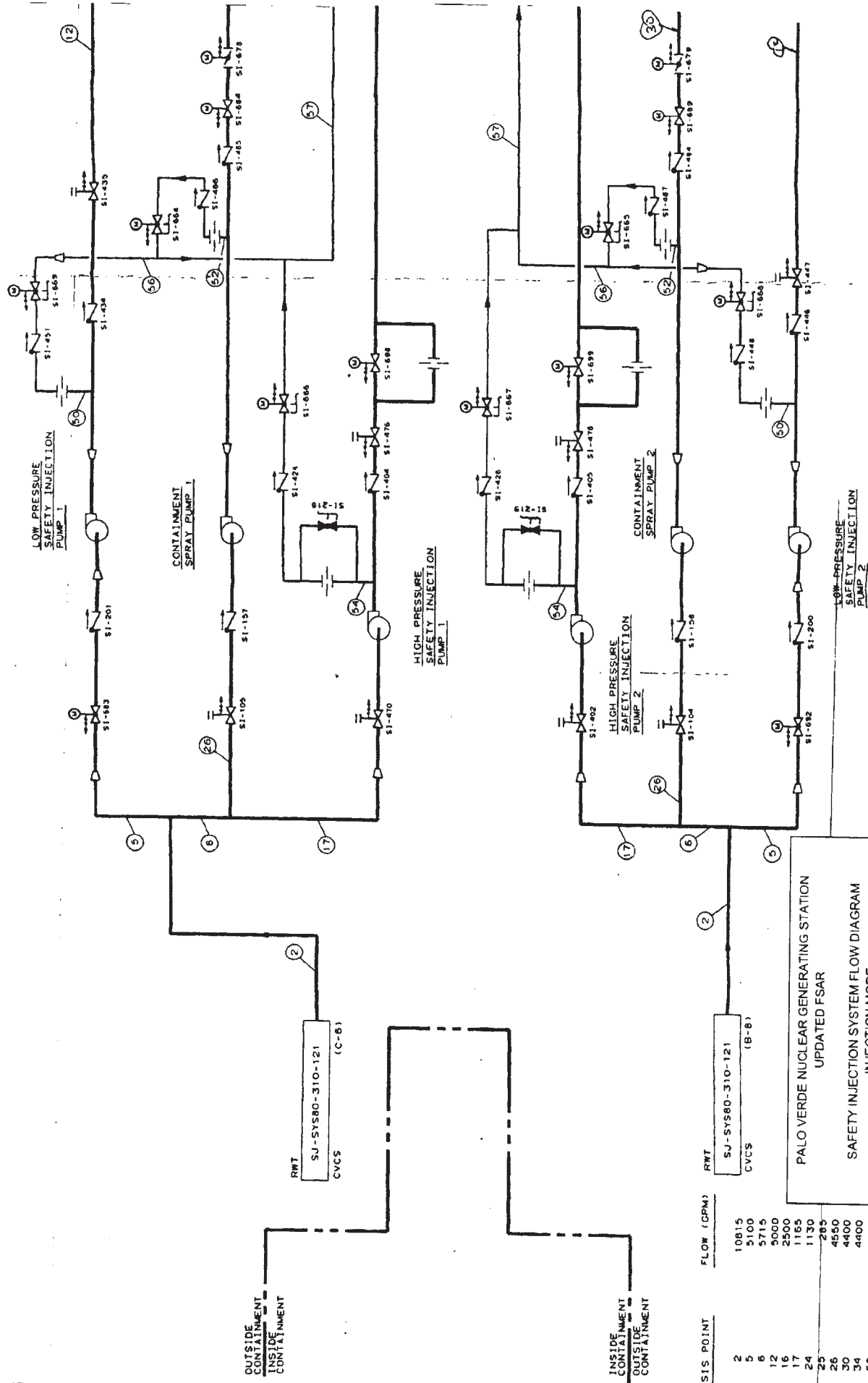
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

H₂ PRODUCTION RATES vs. TIME
CORE POWER 4070 MWt

FIGURE 6.2.5-2

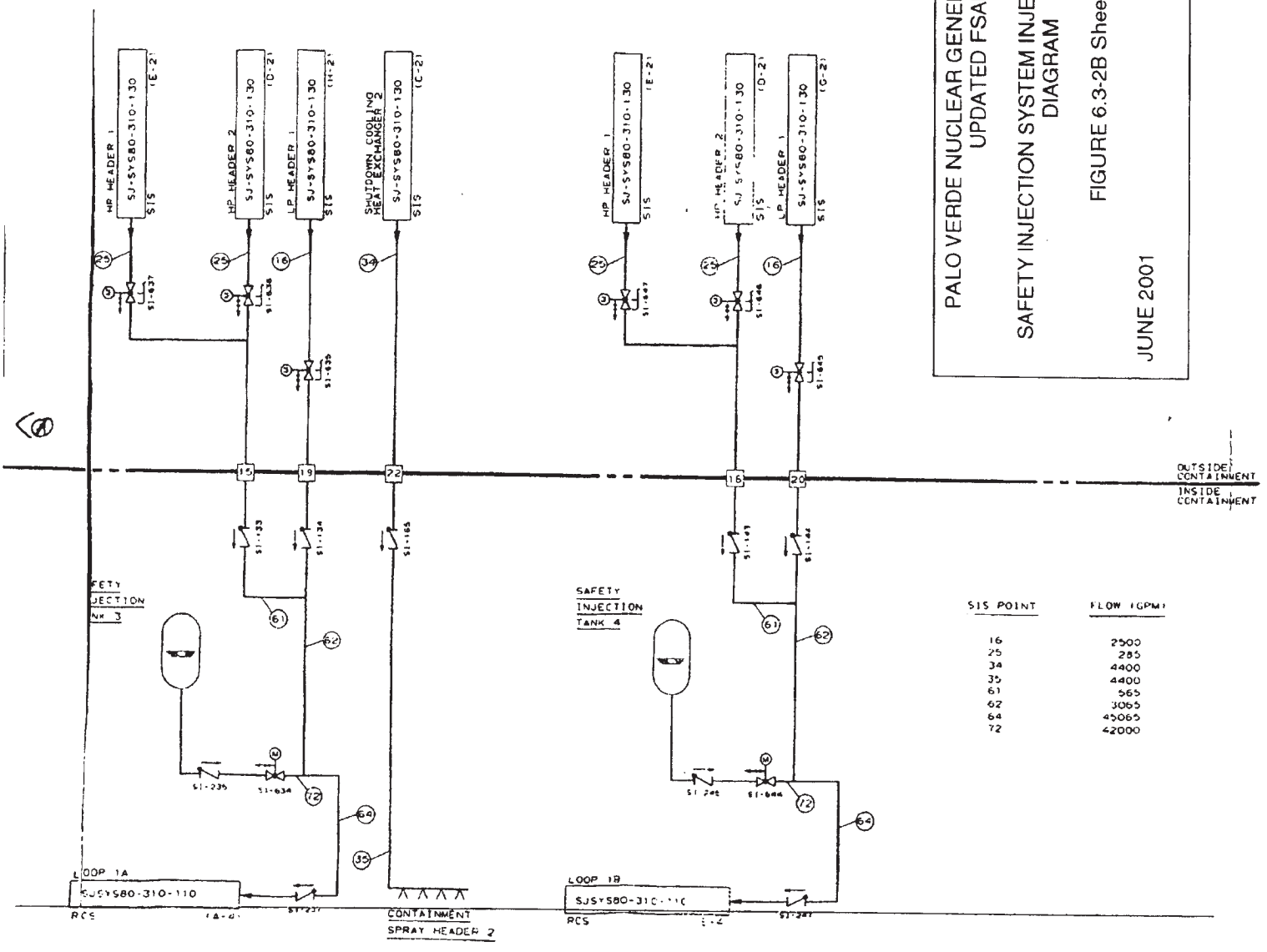
JUNE 2009

REVISION 15



PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 SAFETY INJECTION SYSTEM FLOW DIAGRAM
 INJECTION MODE
 FIGURE 6.3-2A Sheet 20f 2
 JUNE 2001
 REVISION 11

SIS POINT	FLOW (GPM)
2	10815
5	5100
6	5715
12	5000
16	2500
17	1165
24	1130
25	285
26	4550
30	4400
34	4400
50	100
52	150
54	35
56	250
57	255
62	570



PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 SAFETY INJECTION SYSTEM INJECTION MODE FLOW
 DIAGRAM

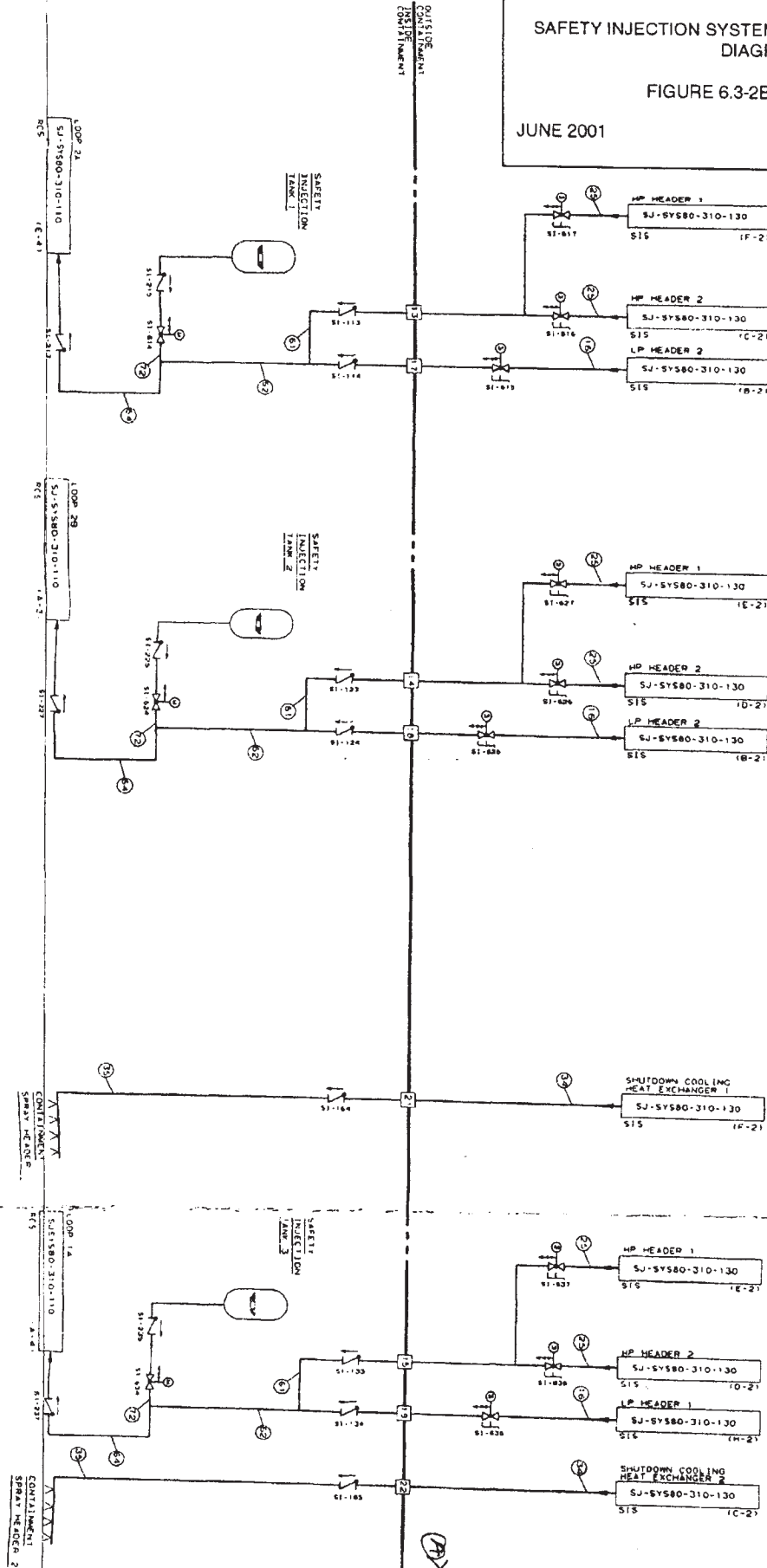
JUNE 2001

REVISION 11

SIS POINT	FLOW (GPM)
16	2500
25	285
34	4400
35	4400
61	565
62	3065
64	45065
72	42000

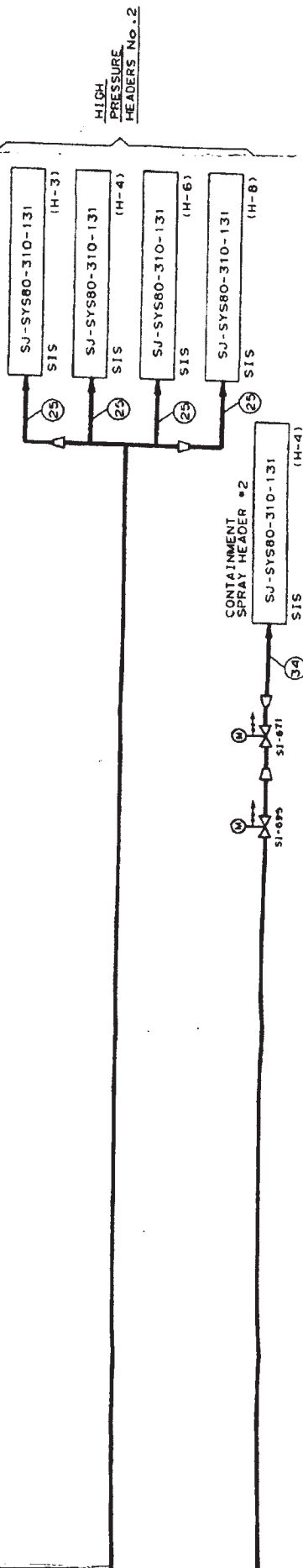
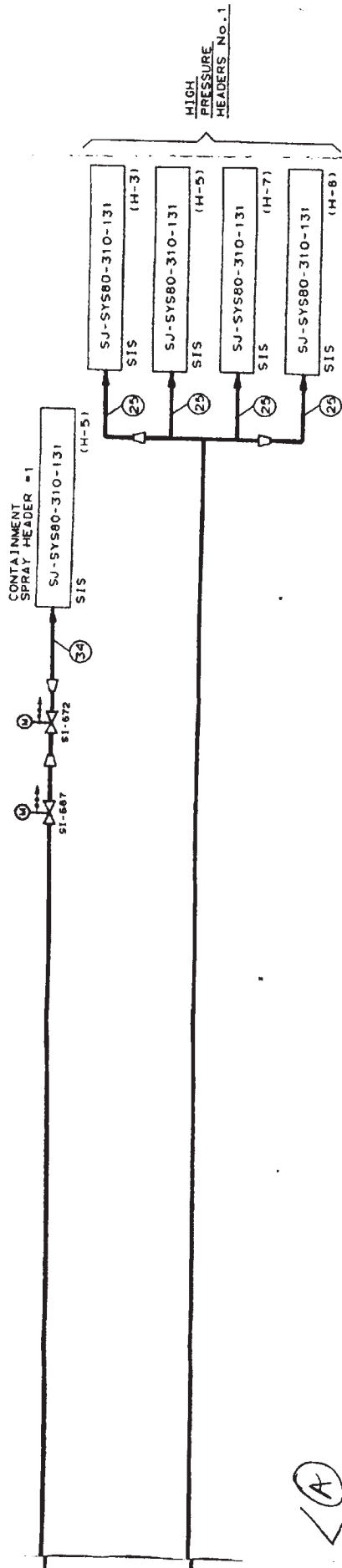
THIS DRAWING FOR INFORMATION ONLY

REVISION 11



SIS POINT FLOW (GPM)

1	5715
17	1165
25	290
26	4550
34	4550



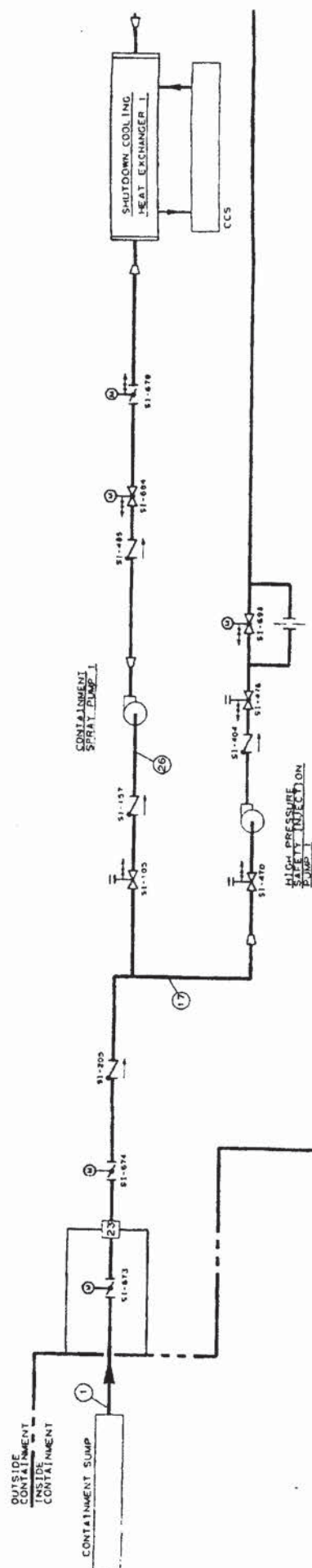
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM
FLOW DIAGRAM
SHORT TERM RECIRCULATION MODE

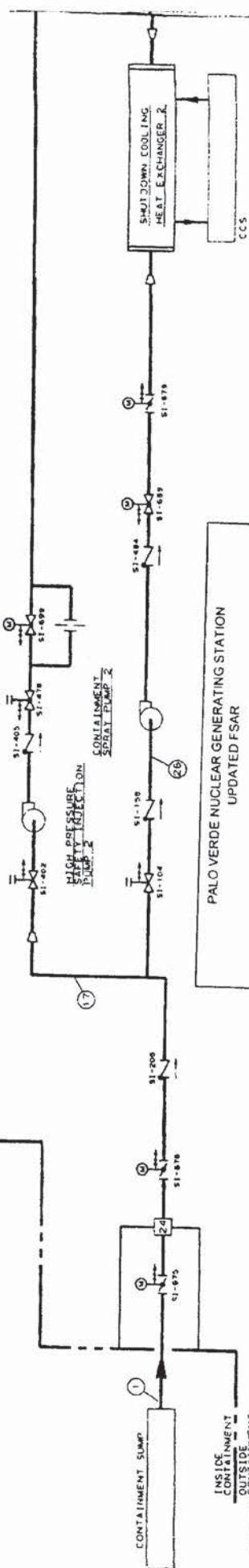
FIGURE 6.3-2C Sheet 1 of 2

JUNE 2001

REVISION 11



4



**PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR**

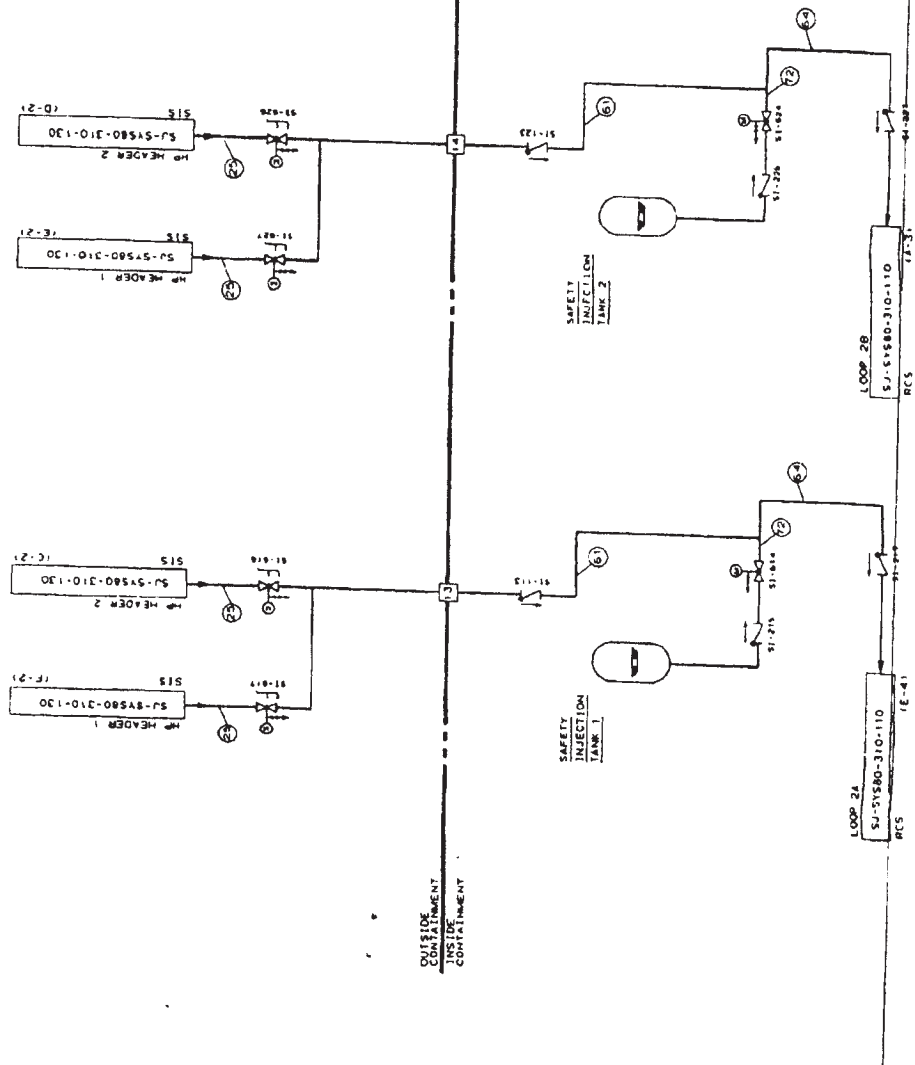
SAFETY INJECTION SYSTEM
FLOW DIAGRAM
SHORT TERM RECIRCULATION MODE

FIGURE 6.3-2C Sheet 2 of 2

JUNE 2001

REVISION 11

7
④



2

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM
FLOW DIAGRAM
SHORT TERM RECIRCULATION MODE

FIGURE 6.3-2D Sheet 2 of 2

JUNE 2001

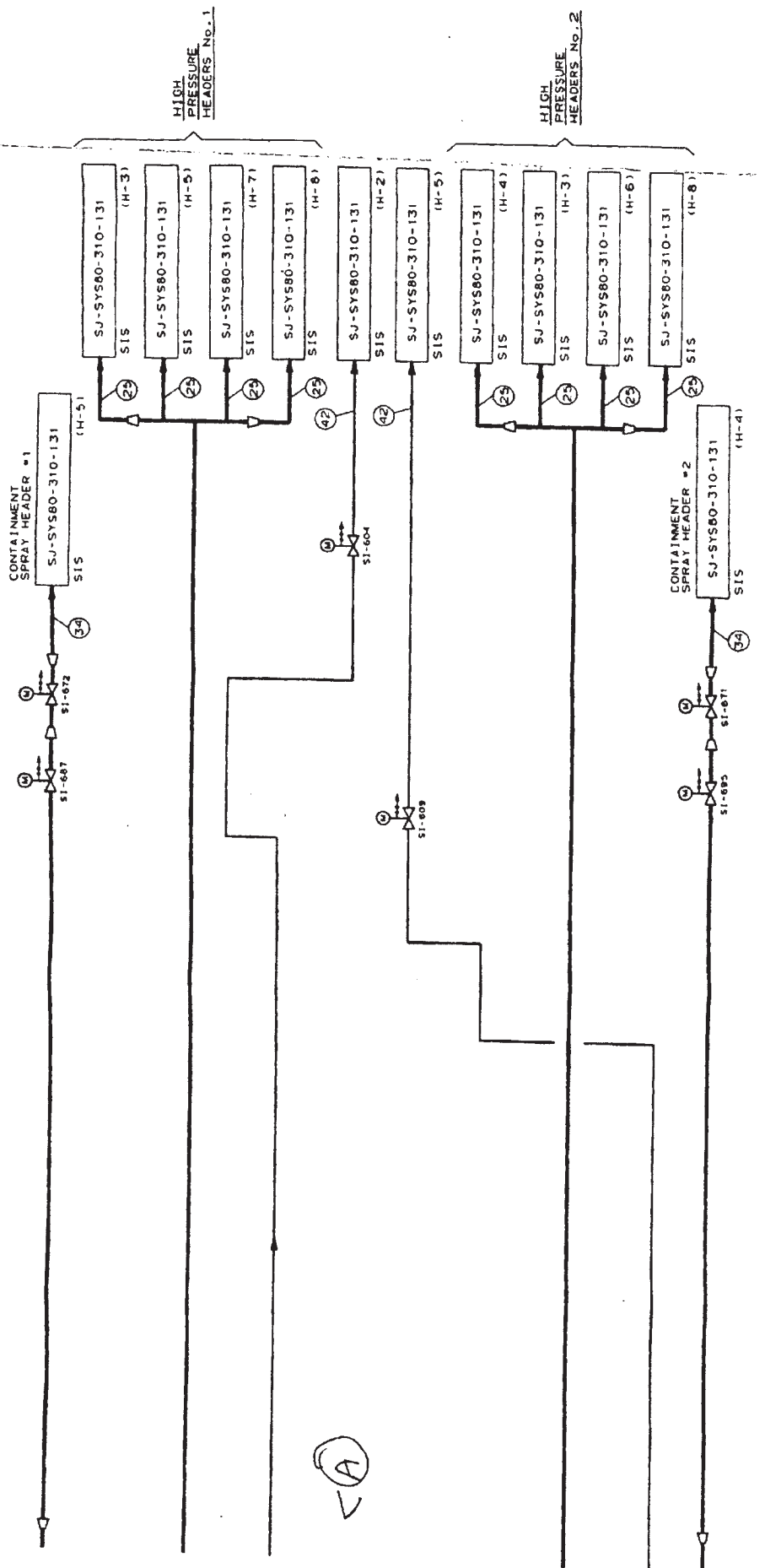
REVISION 11

SIS POINT

FLOW (GPM)

1
17
24
25
26
34
42

5715
1155
585
150
4550
585



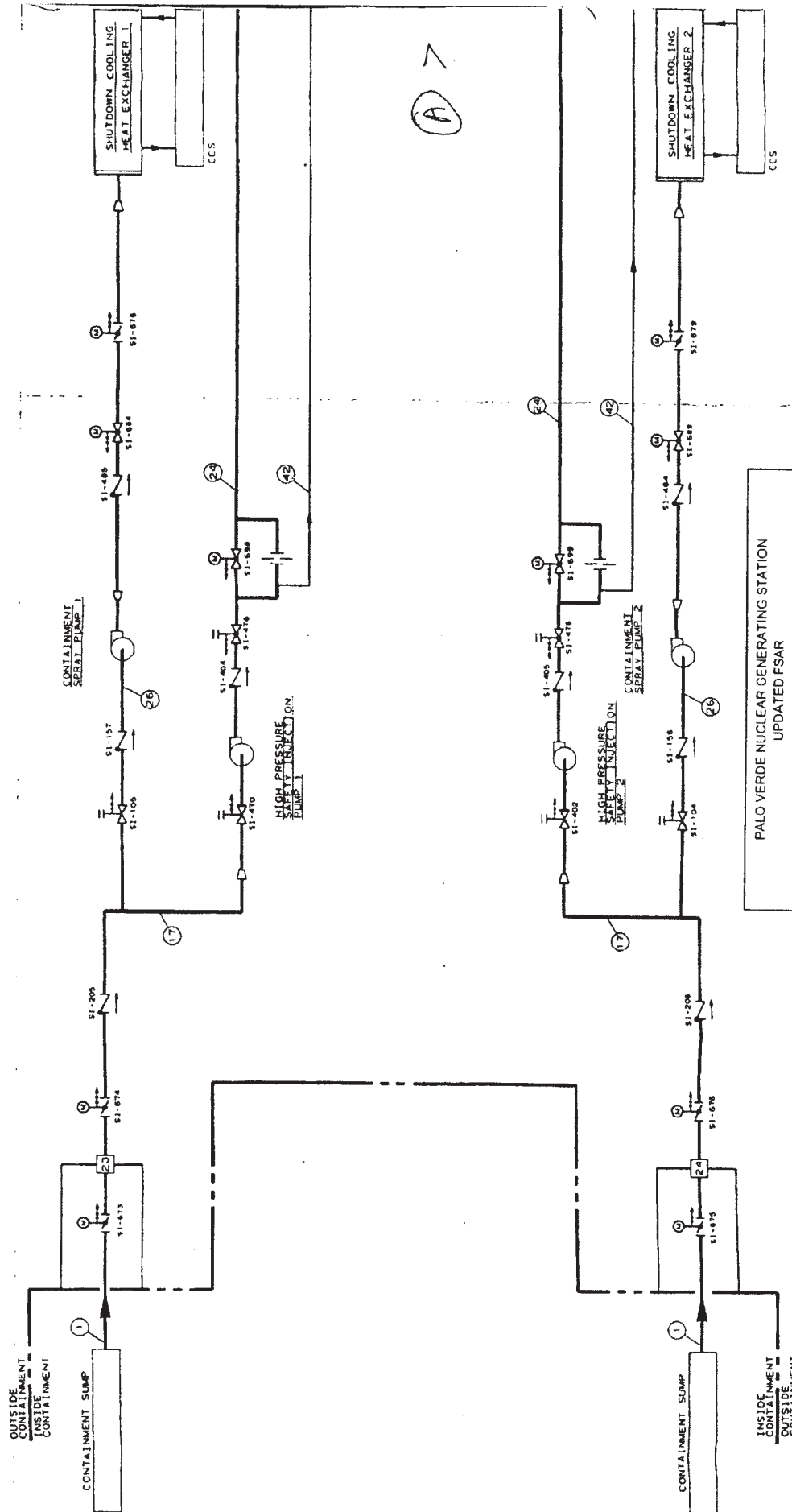
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM
FLOW DIAGRAM
SHORT TERM RECIRCULATION MODE

FIGURE 6.3-2E Sheet 1 of 2

JUNE 2001

REVISION 11



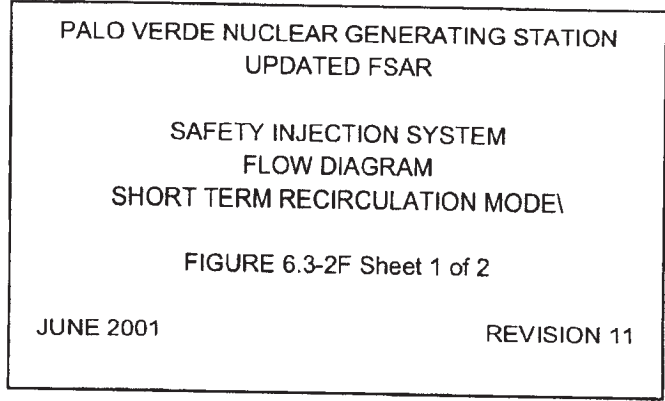
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

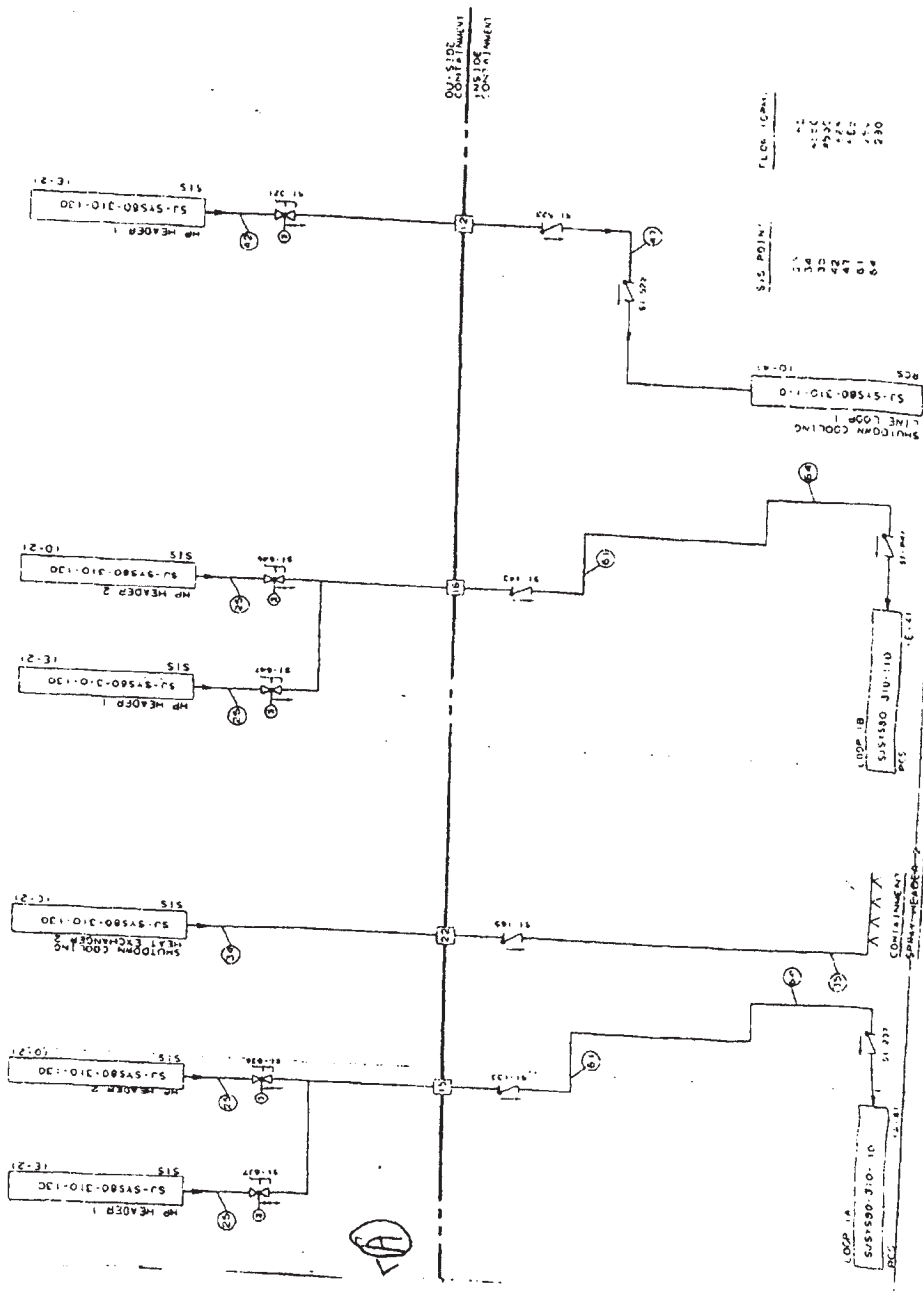
SAFETY INJECTION SYSTEM
FLOW DIAGRAM
SHORT TERM RECIRCULATION MODE

FIGURE 6.3-2E Sheet 2 of 2

JUNE 2001

REVISION 11





THIS DRAWING FOR INFORMATION ONLY

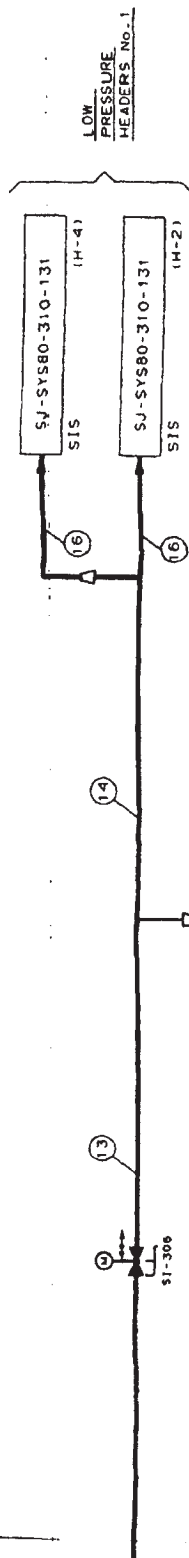
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM
FLOW DIAGRAM
SHORT TERM RECIRCULATION MODE

FIGURE 6.3-2F Sheet 2 of 2

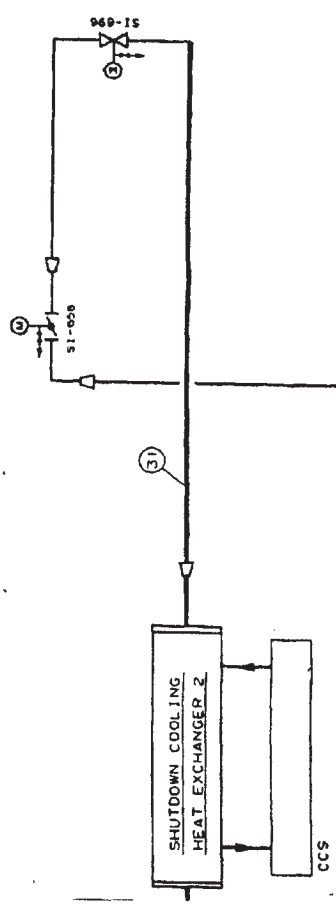
JUNE 2001

REVISION 11



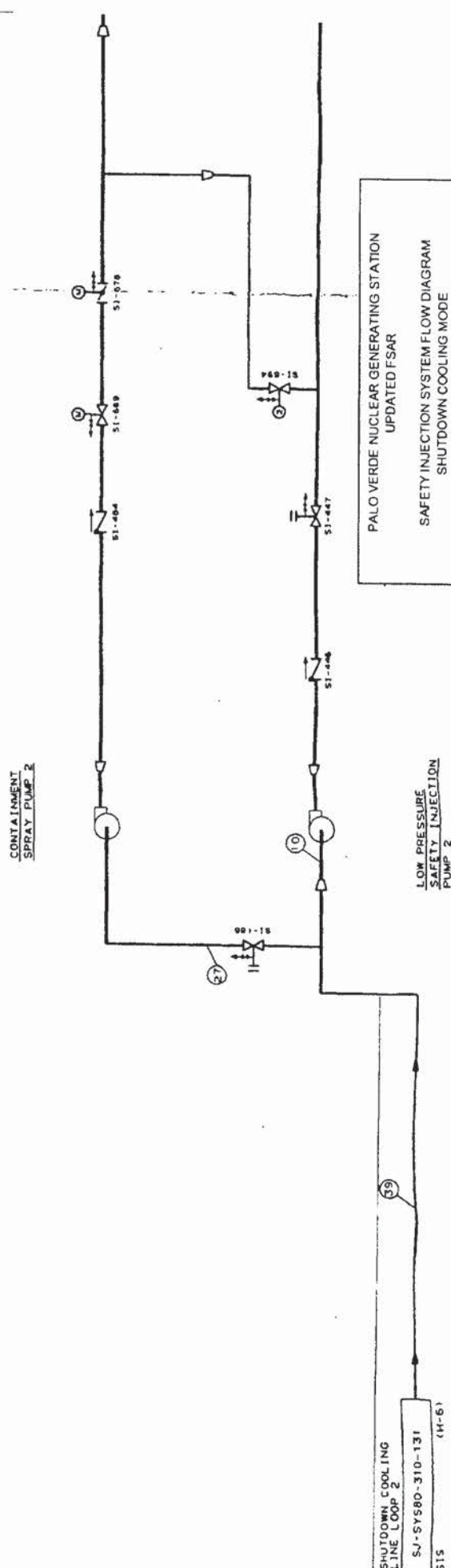
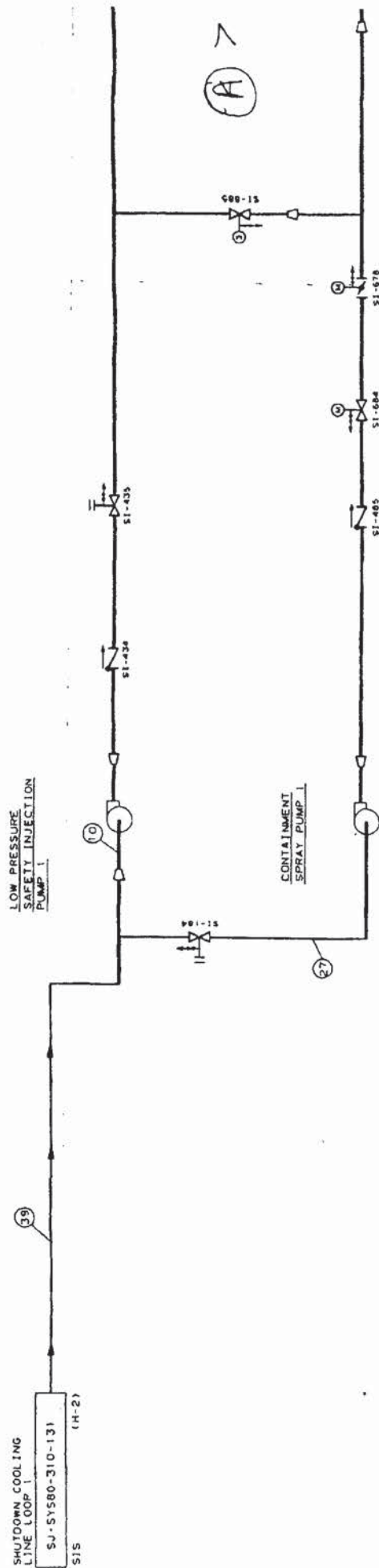
< A

SIS POINT	FLOW (GPM)
10	5000
13	0
14	9000
16	4500
27	4000
31	9000
39	9000



PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 SAFETY INJECTION SYSTEM FLOW DIAGRAM
 SHUTDOWN COOLING MODE
 (<200°F <250 PSIG)
 FIGURE 6.3-2G Sheet 1 of 2
 JUNE 2001
 REVISION 11

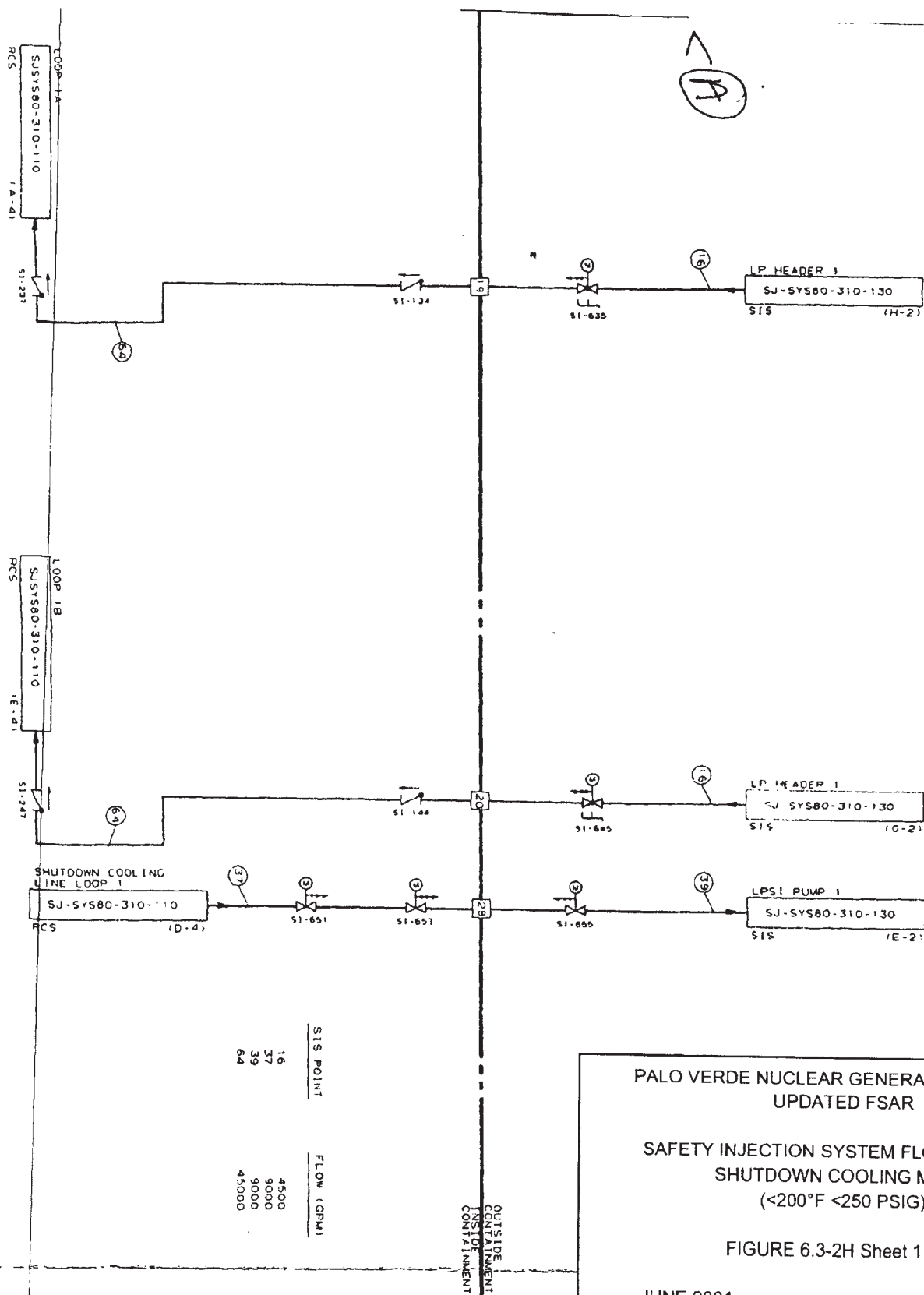
TUE 03/10/2001 09:00 AM



PAULO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM FLOW DIAGRAM
SHUTDOWN COOLING MODE
($<200^{\circ}\text{F}$ <250 PSIG)

FIGURE 6.3-2G Sheet 2 of 2
JUNE 2001
REVISION 11



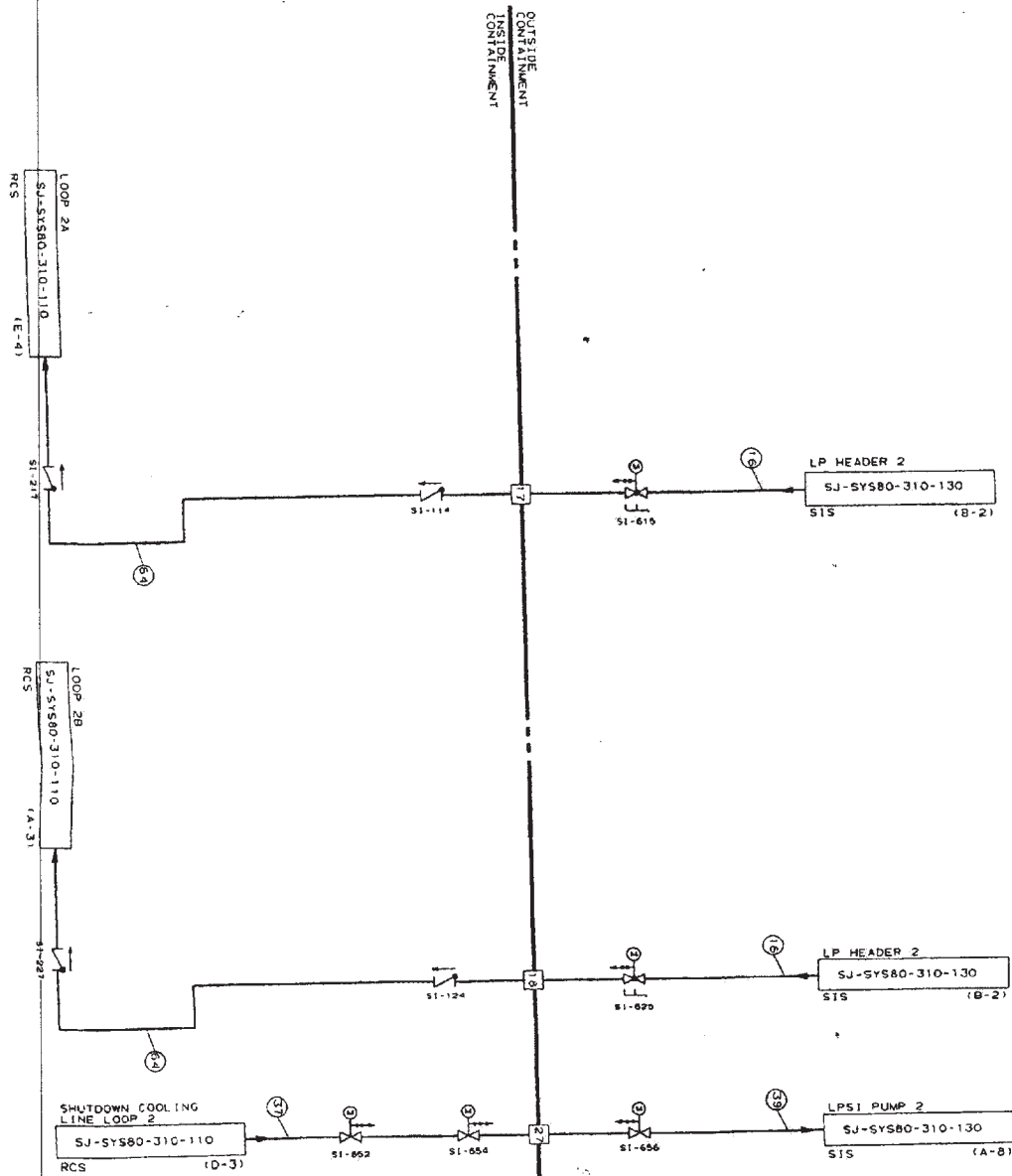
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM FLOW DIAGRAM
SHUTDOWN COOLING MODE
($<200^{\circ}\text{F}$ <250 PSIG)

FIGURE 6.3-2H Sheet 1 of 2

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

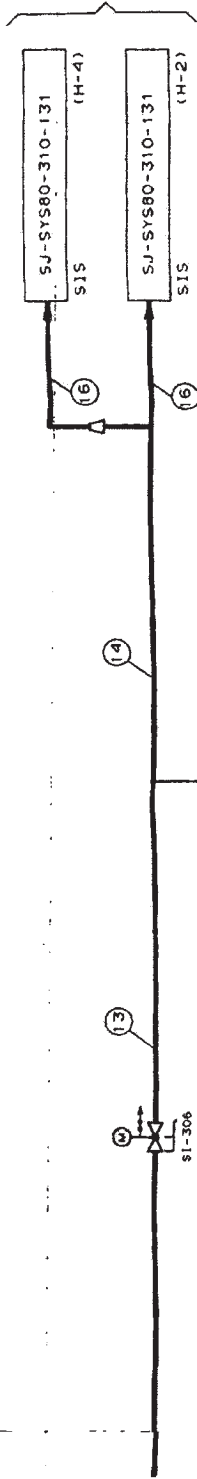
SAFETY INJECTION SYSTEM FLOW DIAGRAM
SHUTDOWN COOLING MODE
($<200^{\circ}\text{F}$ <250 PSIG)

FIGURE 6.3-2H Sheet 2 of 2

JUNE 2001

REVISION 11

LOW
PRESSURE
HEADERS No. 1



2A

FLOW (GPM)

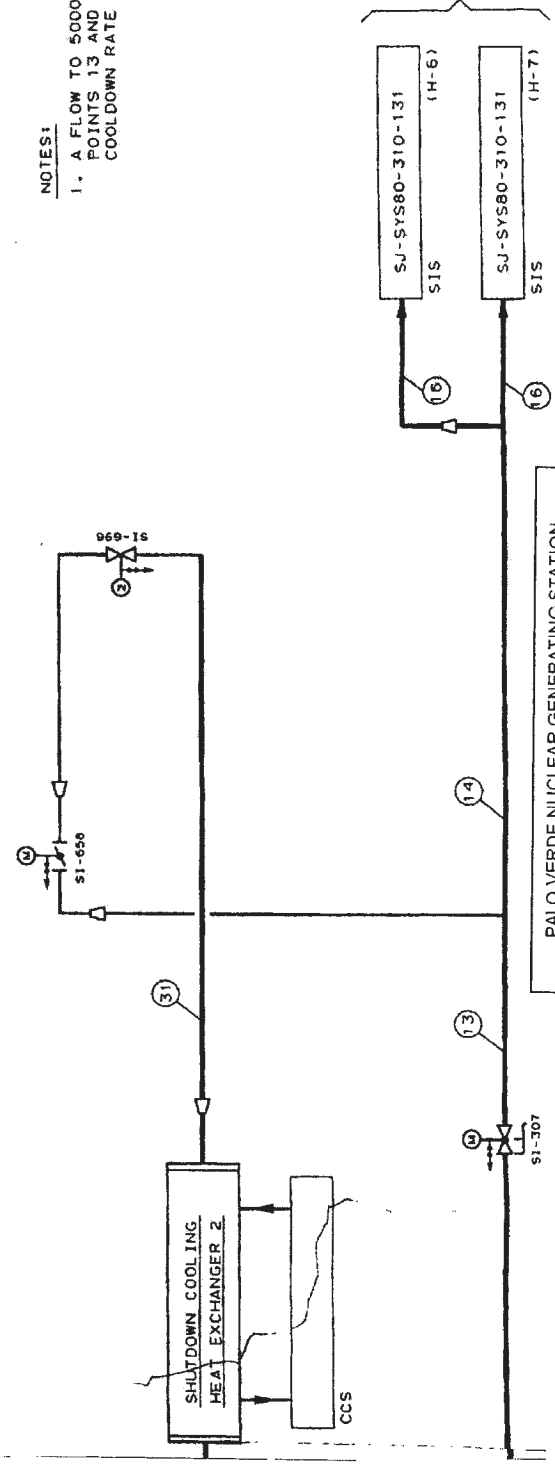
10	5000
13	NOTE 1
14	5000
16	25000
31	NOTE 1
39	5000

SIS POINT

NOTES:

1. A FLOW TO 5000 GPM IS SPLIT BETWEEN POINTS 13 AND 31 TO MAINTAIN THE RCS COOLDOWN RATE AT 75°F/HR OR LESS.

LOW
PRESSURE
HEADERS No. 2



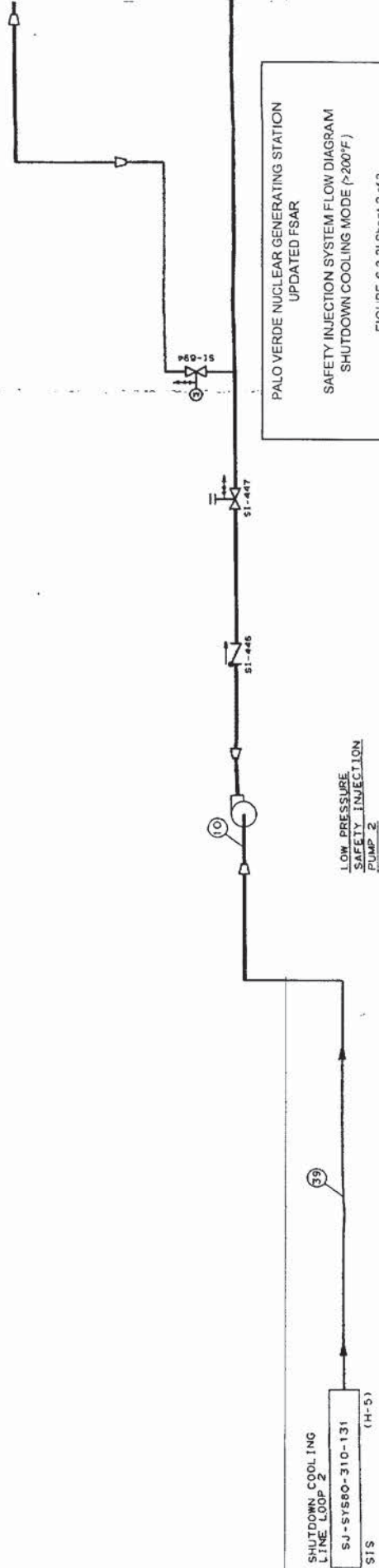
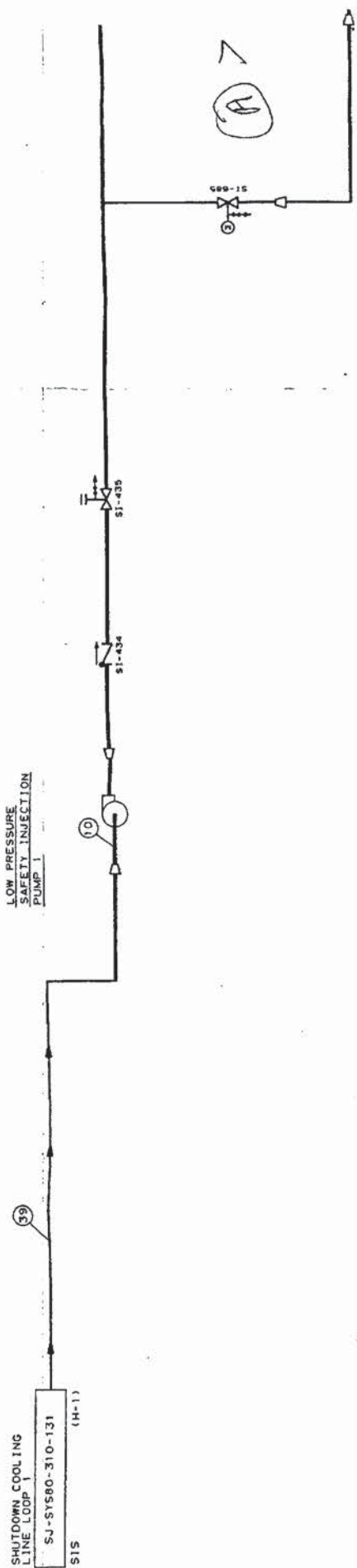
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM FLOW DIAGRAM
SHUTDOWN COOLING MODE (>200°F)

JUNE 2001

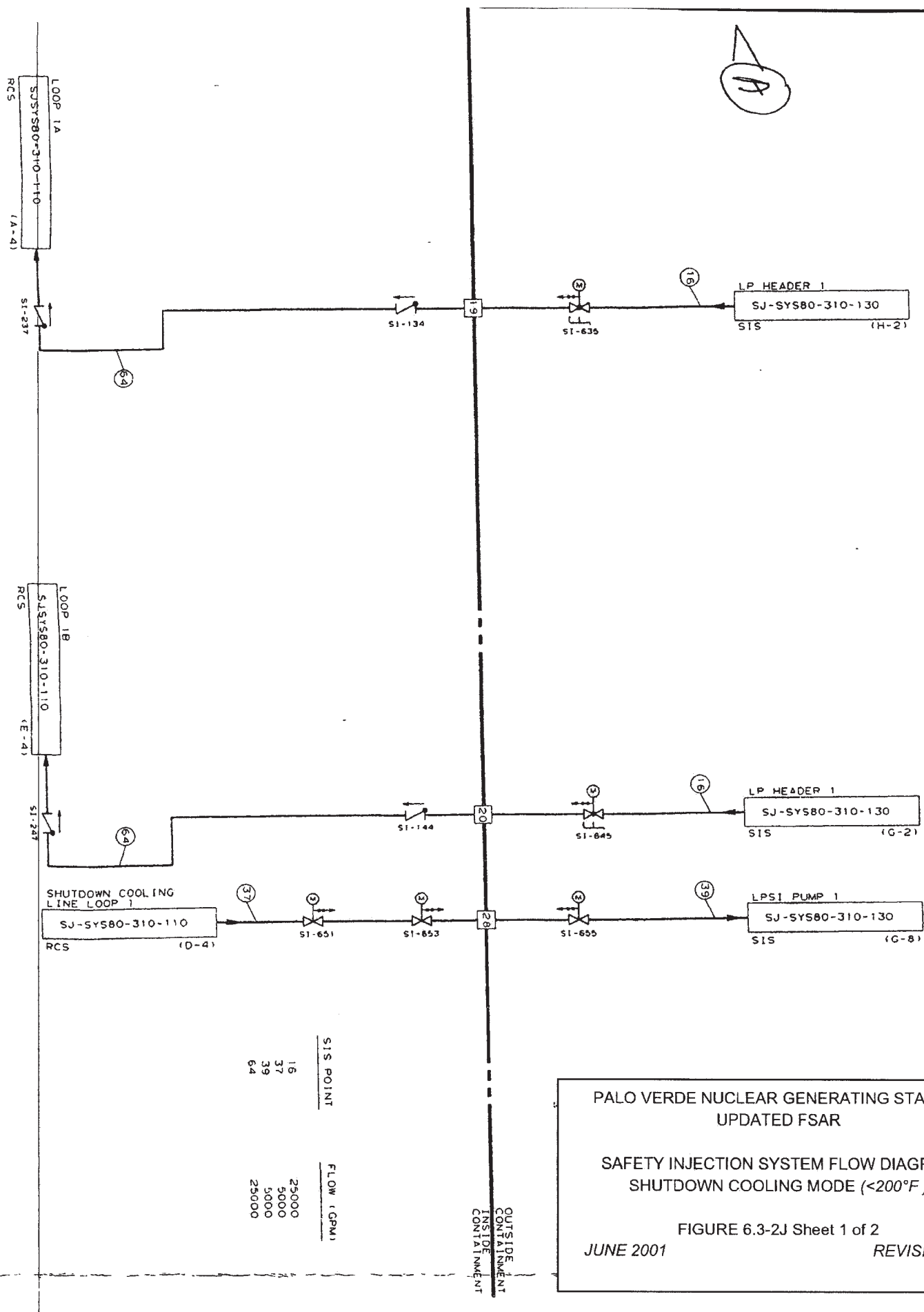
FIGURE 6.3-2 Sheet 1 of 2

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 SAFETY INJECTION SYSTEM FLOW DIAGRAM
 SHUTDOWN COOLING MODE (>200°F)
 JUNE 2001
 FIGURE 6.3-21 Sheet 2 of 2
 REVISION 11

15



SIS POINT	FLOW (GPM)
15	25000
37	5000
39	5000
64	25000

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM FLOW DIAGRAM
SHUTDOWN COOLING MODE (<200°F)

FIGURE 6.3-2J Sheet 1 of 2
JUNE 2001

REVISION 11

THIS DRAWING FOR INFORMATION ONLY

LOOP 2A
RCS
SJ-SYS80-310-110
(E-4)

LOOP 2B
RCS
SJ-SYS80-310-110
(A-3)

SHUTDOWN COOLING
LINE LOOP 2

SJ-SYS80-310-110
RCS
(D-3)

OUTSIDE
CONTAINMENT
INSIDE
CONTAINMENT

LP HEADER 2

SJ-SYS80-310-130
SIS
(B-2)

LP HEADER 2

SJ-SYS80-310-130
SIS
(B-2)

LPSI PUMP 2

SJ-SYS80-310-130
SIS
(A-8)

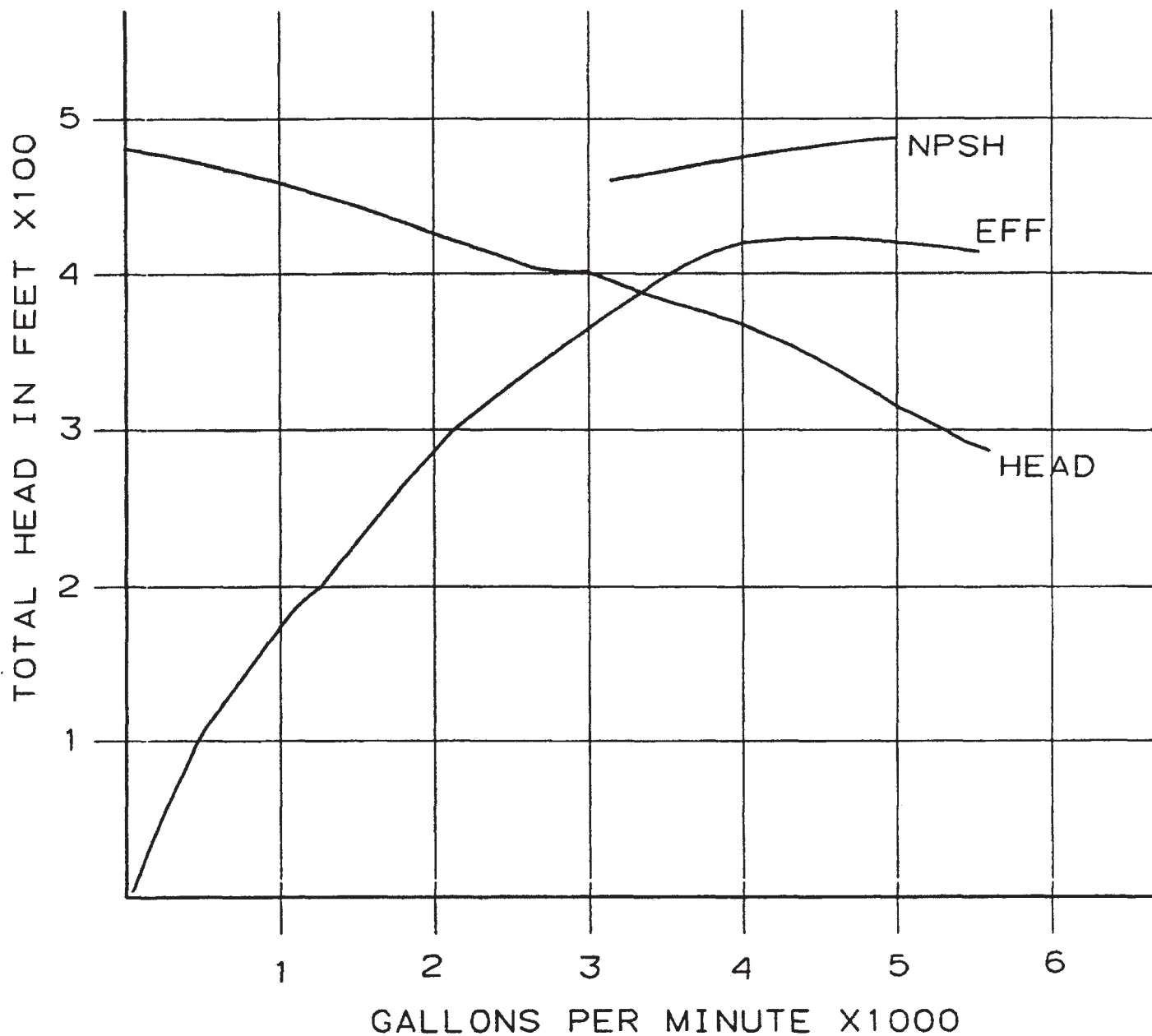
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION SYSTEM FLOW DIAGRAM
SHUTDOWN COOLING MODE (<200°F)

FIGURE 6.3-2J Sheet 2 of 2
JUNE 2001

REVISION 11

15



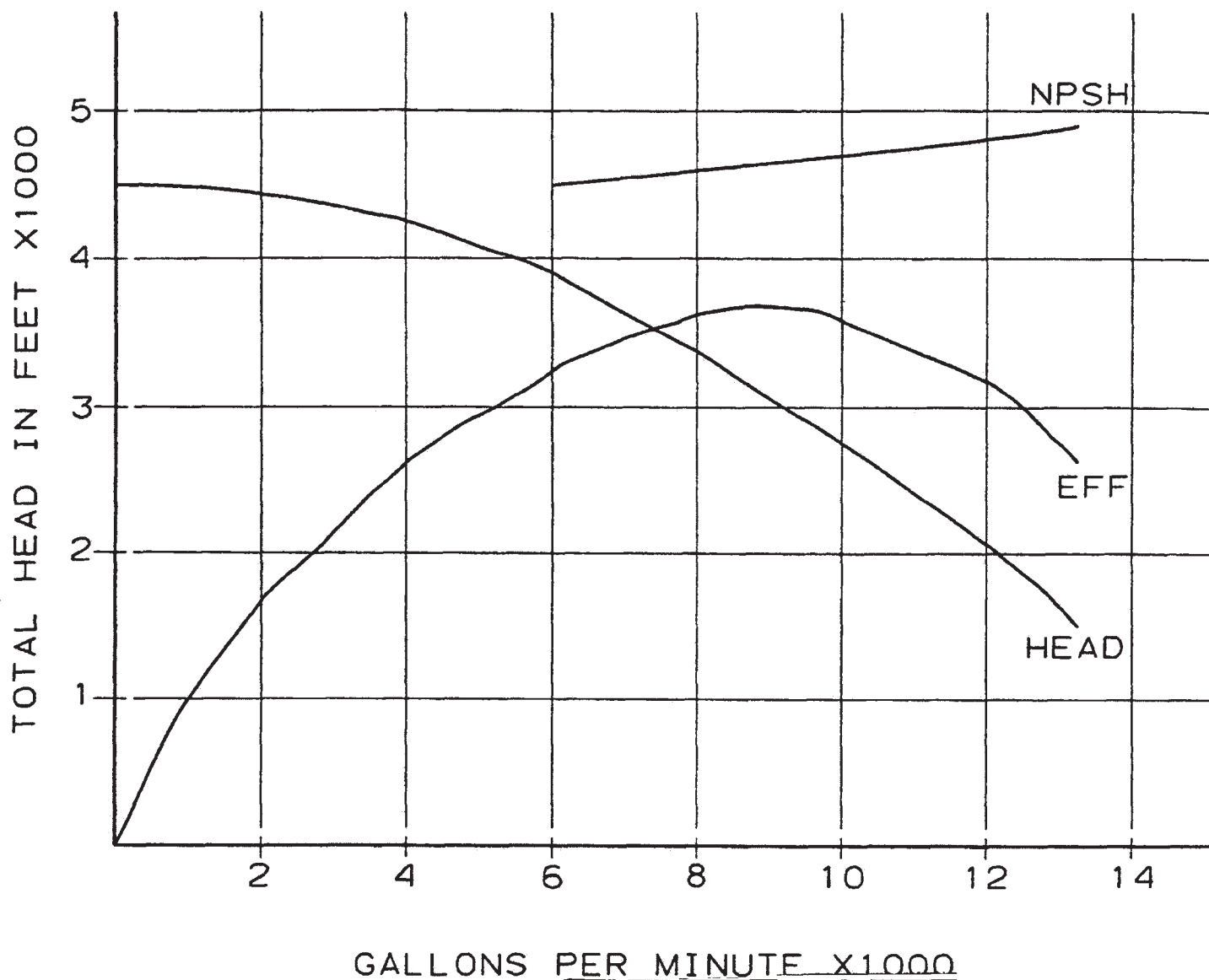
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LOW PRESSURE SAFETY INJECTION PUMP
HEAD CURVES AND NPSH (TYPICAL)

FIGURE 6.3.2-2

JUNE 2001

REVISION 11



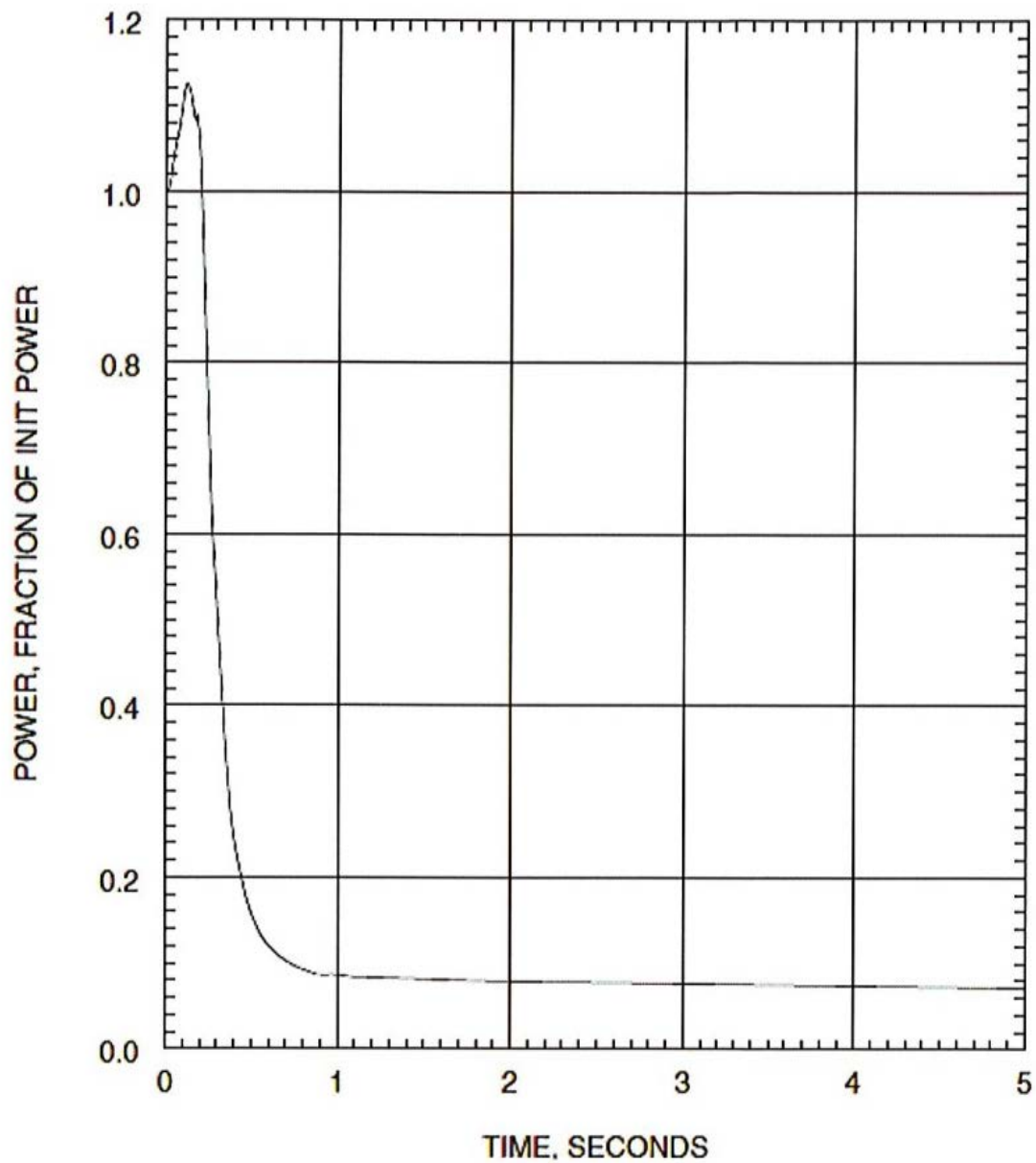
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

HIGH PRESSURE SAFETY INJECTION PUMP
HEAD AND NPSH CURVES (TYPICAL)

FIGURE 6.3.2-3

JUNE 2001

REVISION 11



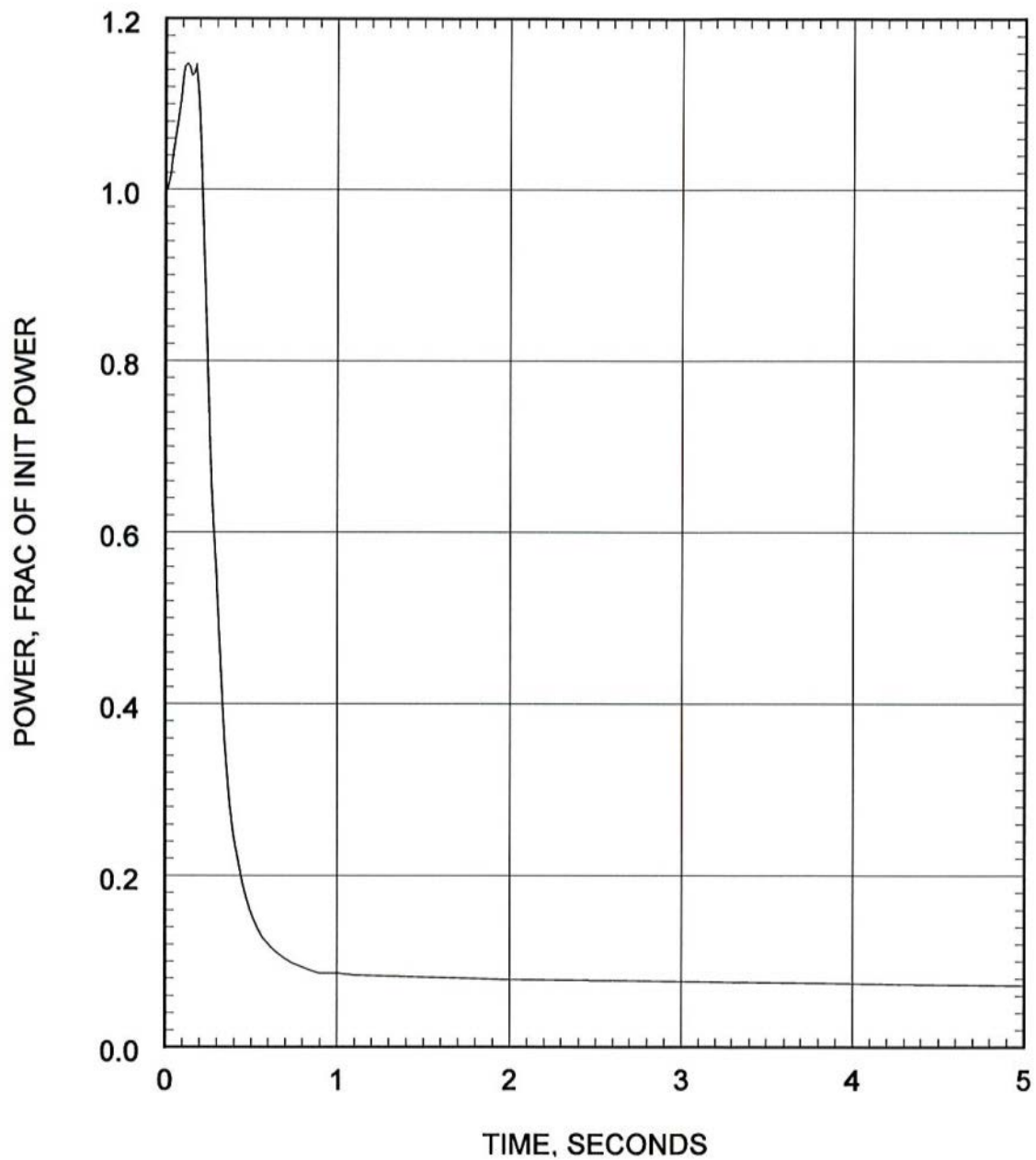
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.2-1A

JUNE 2019

REVISION 20



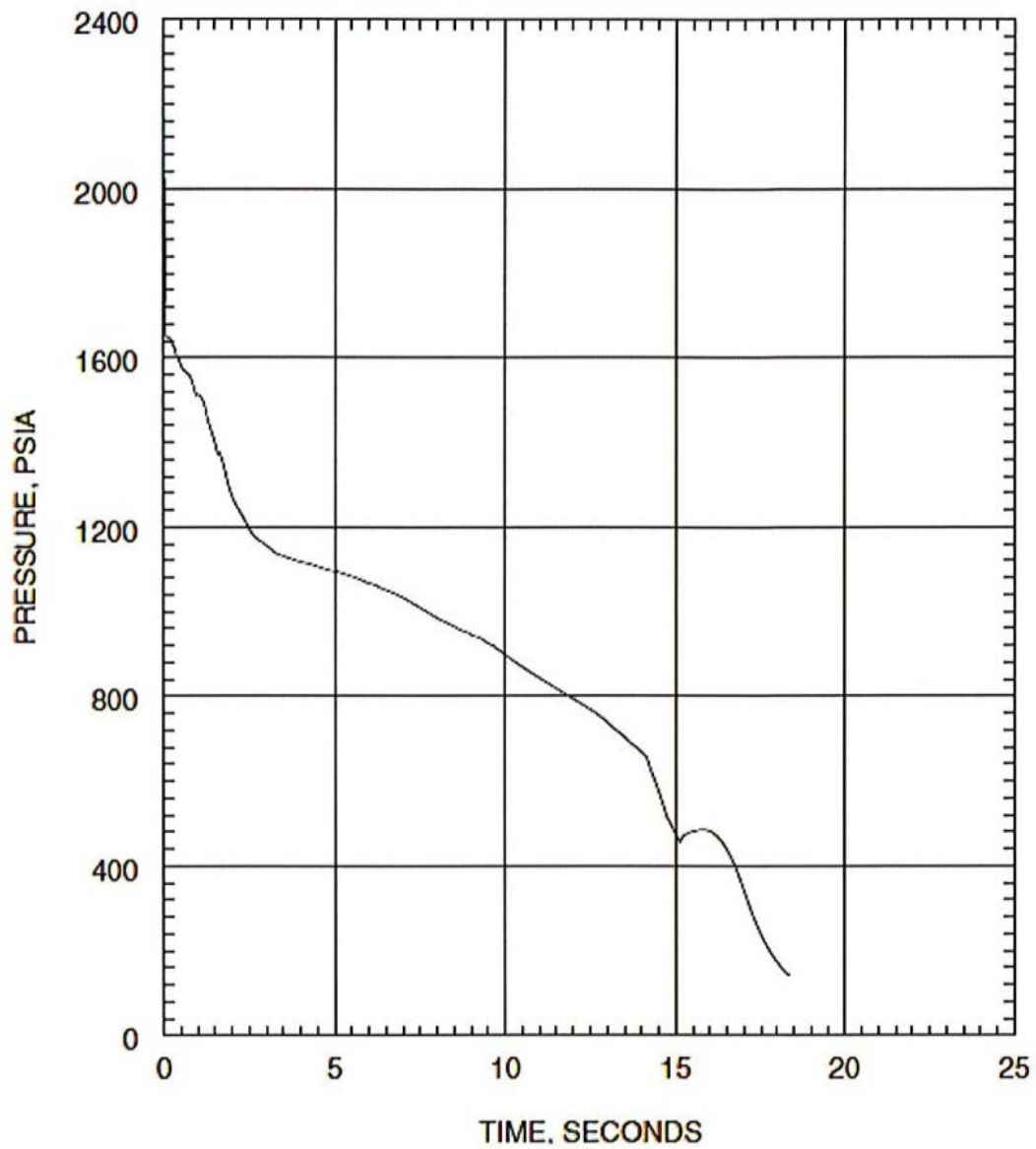
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.2-1A

JUNE 2019

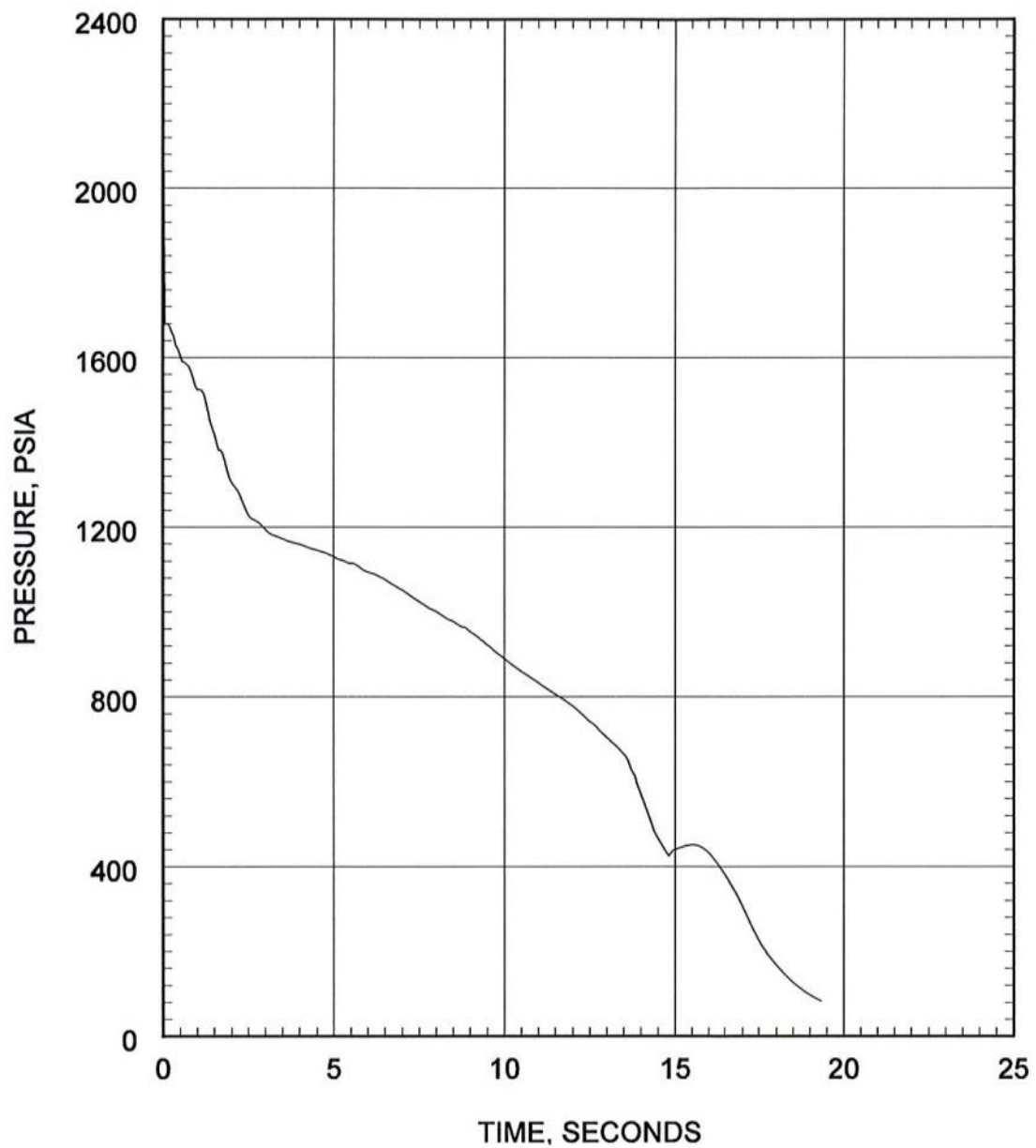
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
PRESSURE IN CENTER HOT ASSEMBLY NODE
CE16STD FUEL

FIGURE 6.3.3a.2-1B



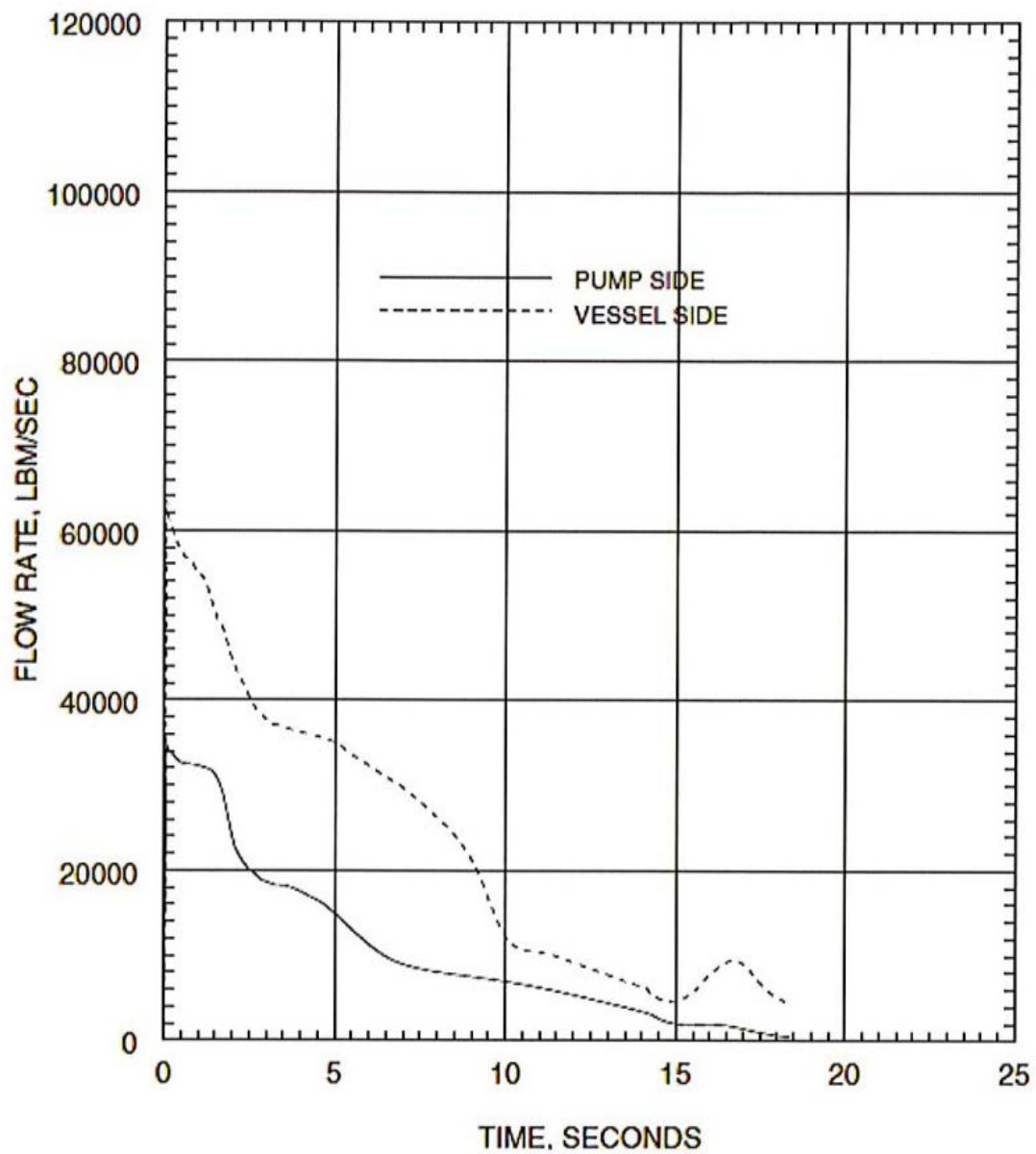
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
PRESSURE IN CENTER HOT ASSEMBLY NODE
CE16NGF FUEL

FIGURE 6.3.3b.2-1B

JUNE 2019

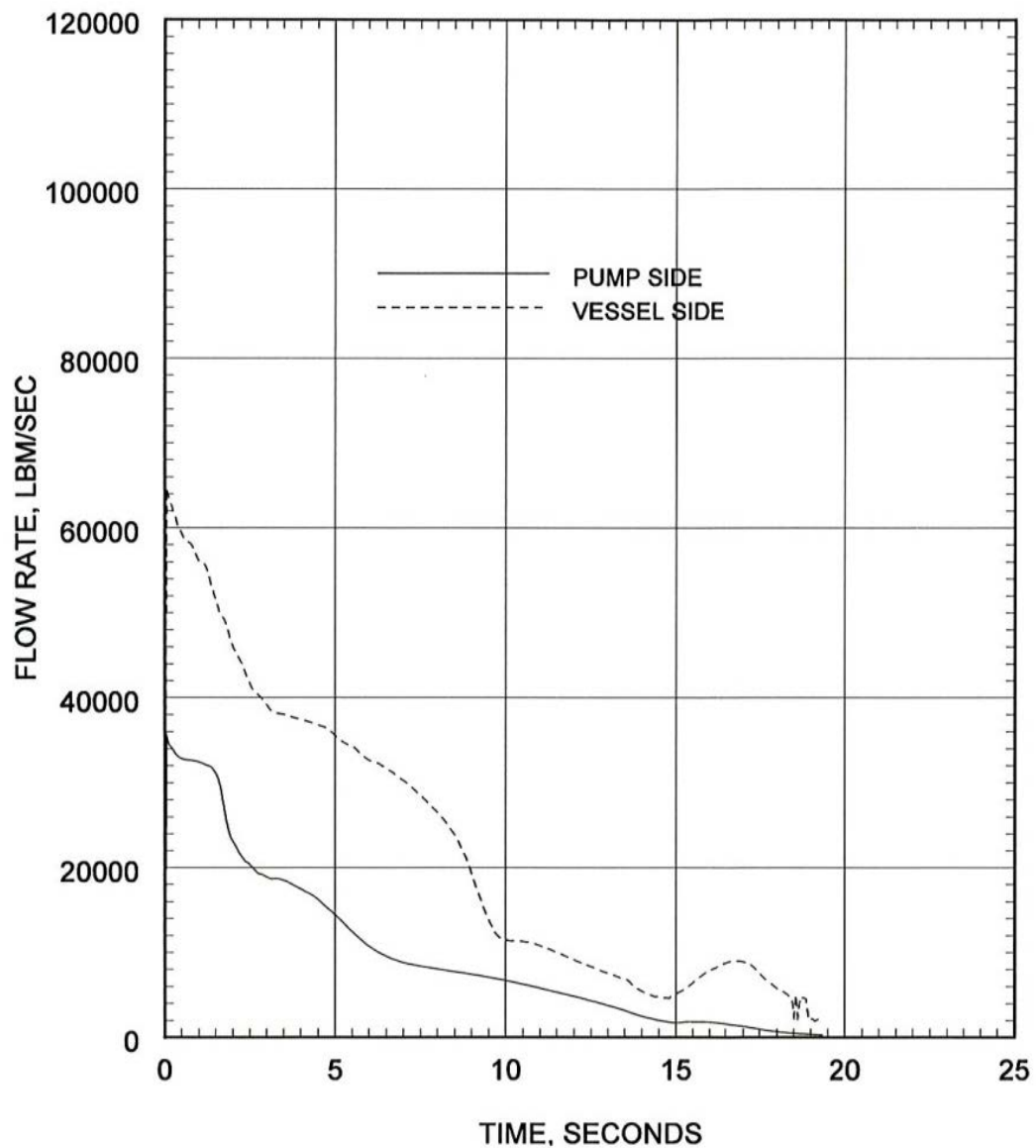
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
LEAK FLOW RATE
CE16STD FUEL

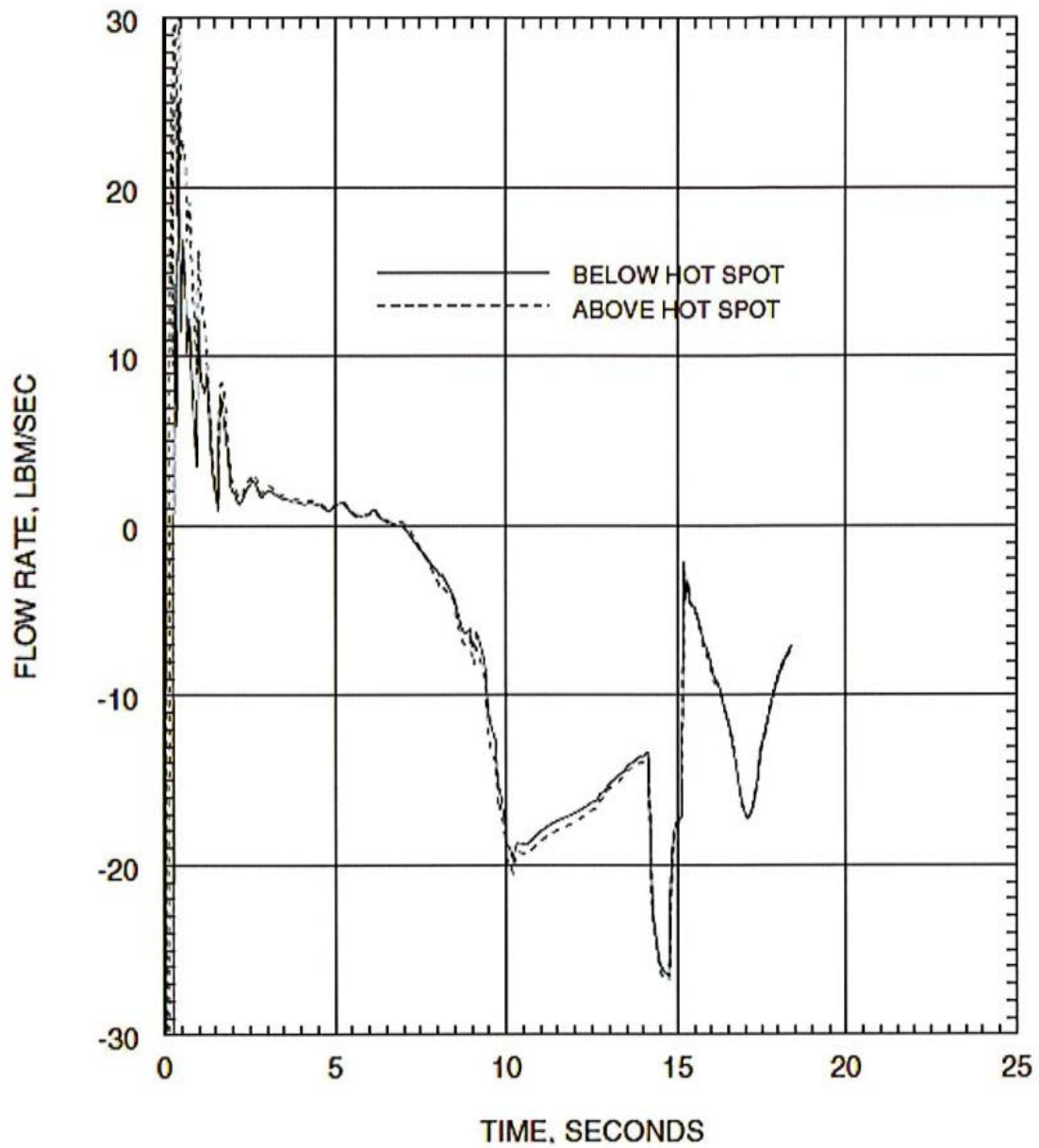
FIGURE 6.3.3a.2-1C



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
LEAK FLOW RATE
CE16NGF FUEL

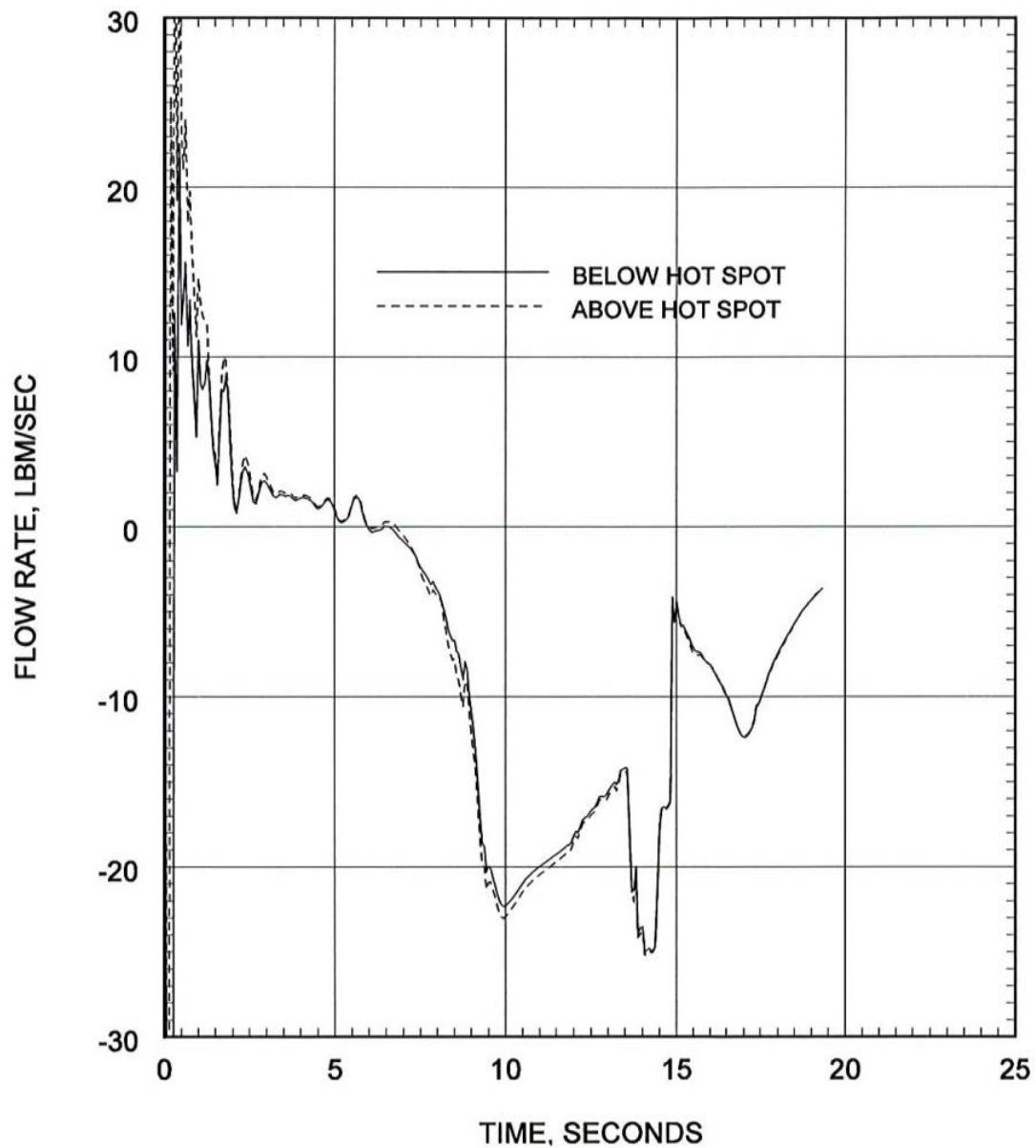
FIGURE 6.3.3b.2-1C



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
HOT ASSEMBLY FLOW RATE
CE16STD FUEL

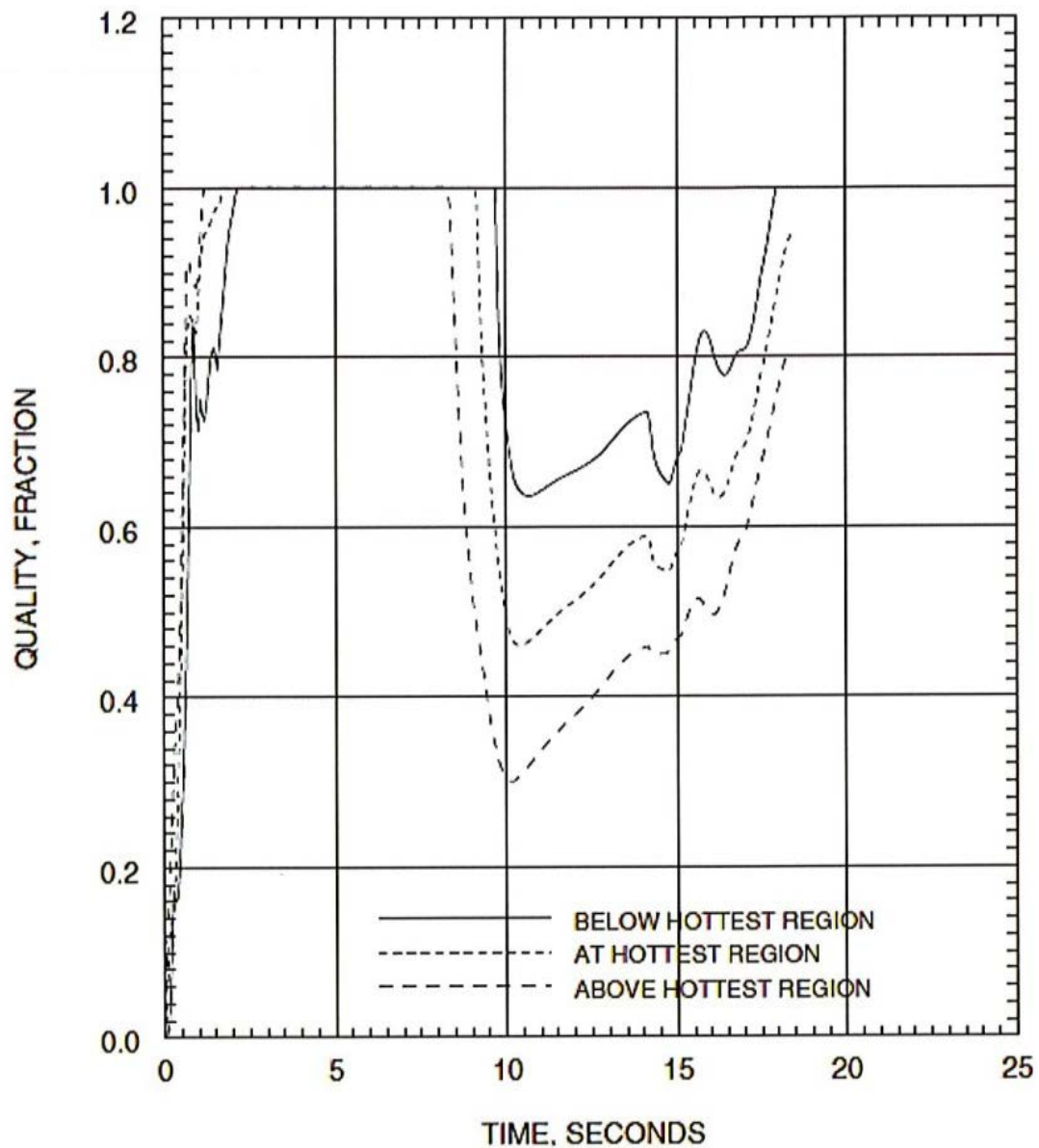
FIGURE 6.3.3a.2-1D



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
HOT ASSEMBLY FLOW RATE
CE16NGF FUEL

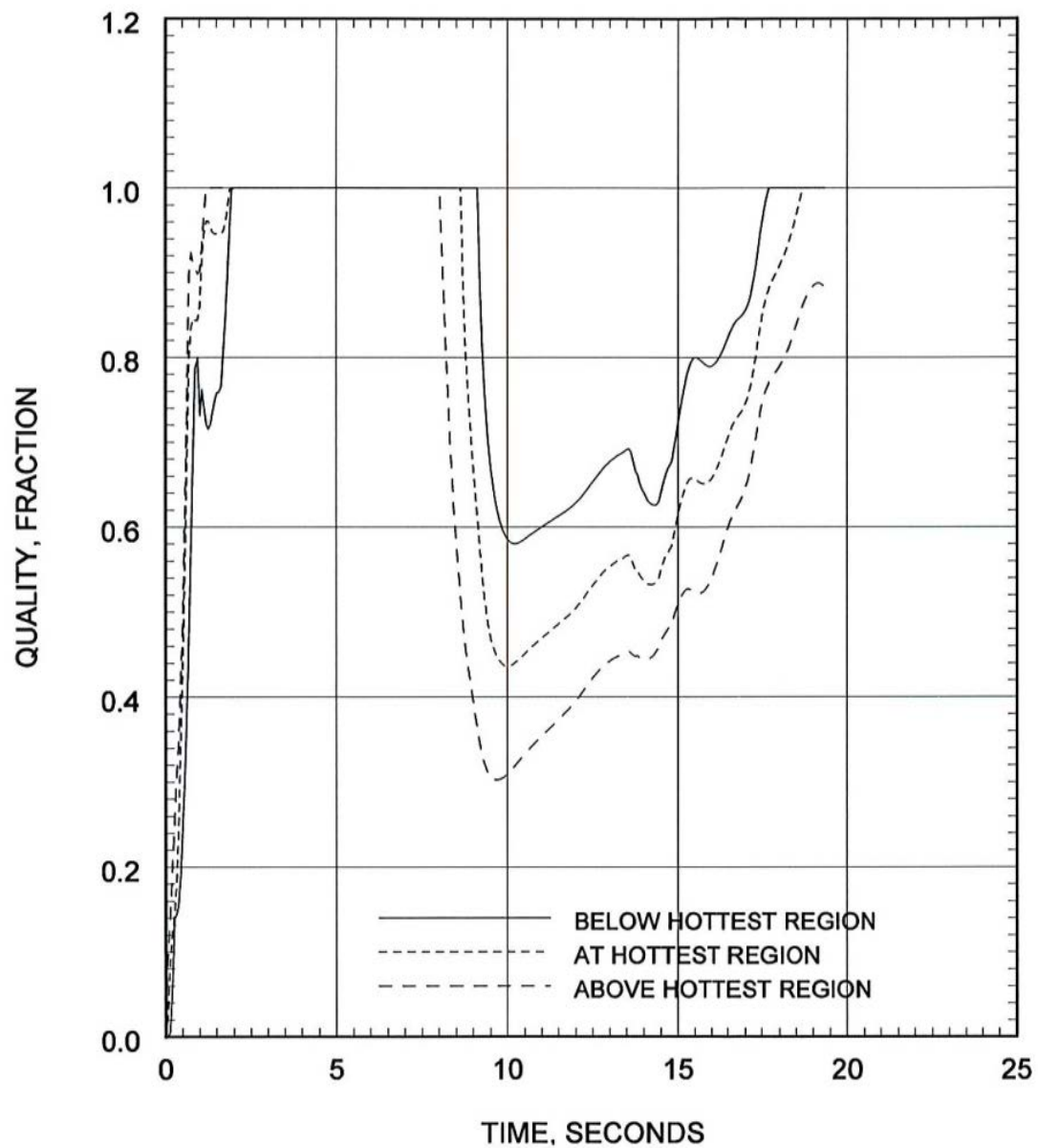
FIGURE 6.3.3b.2-1D



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
HOT ASSEMBLY QUALITY
CE16STD FUEL

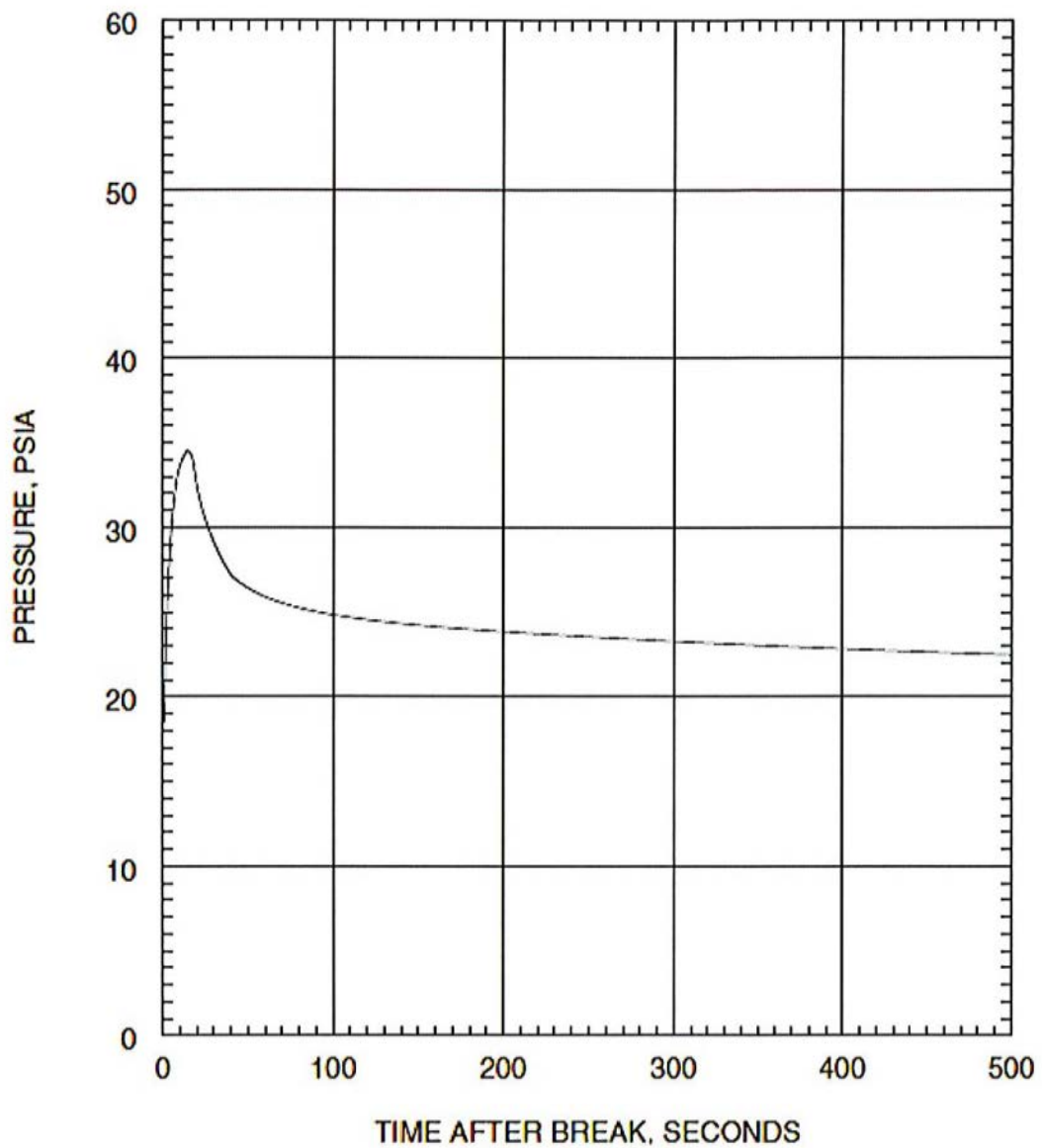
FIGURE 6.3.3a.2-1E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
HOT ASSEMBLY QUALITY
CE16NGF FUEL

FIGURE 6.3.3b.2-1E



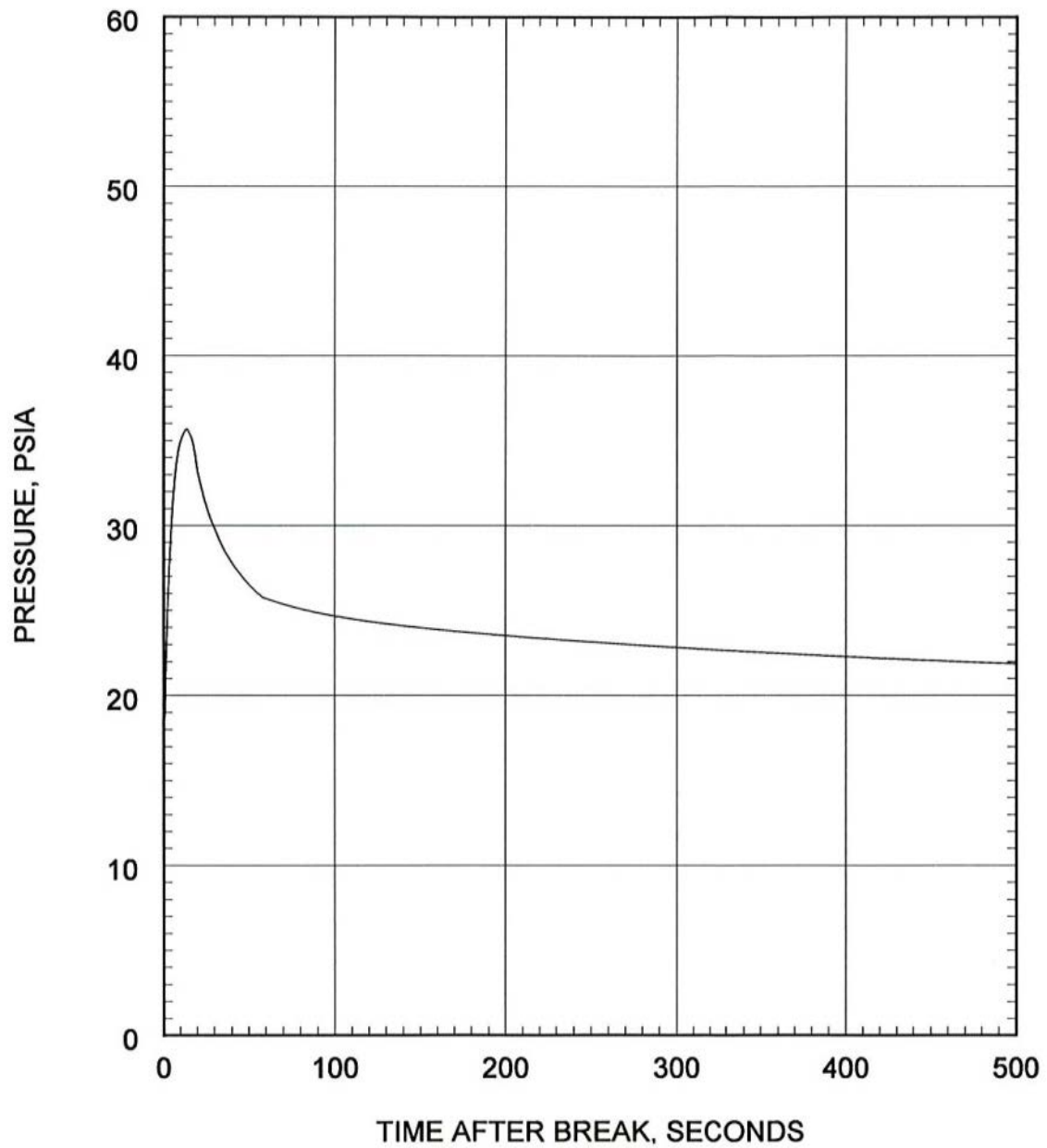
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
CONTAINMENT PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.2-1F

JUNE 2019

REVISION 20



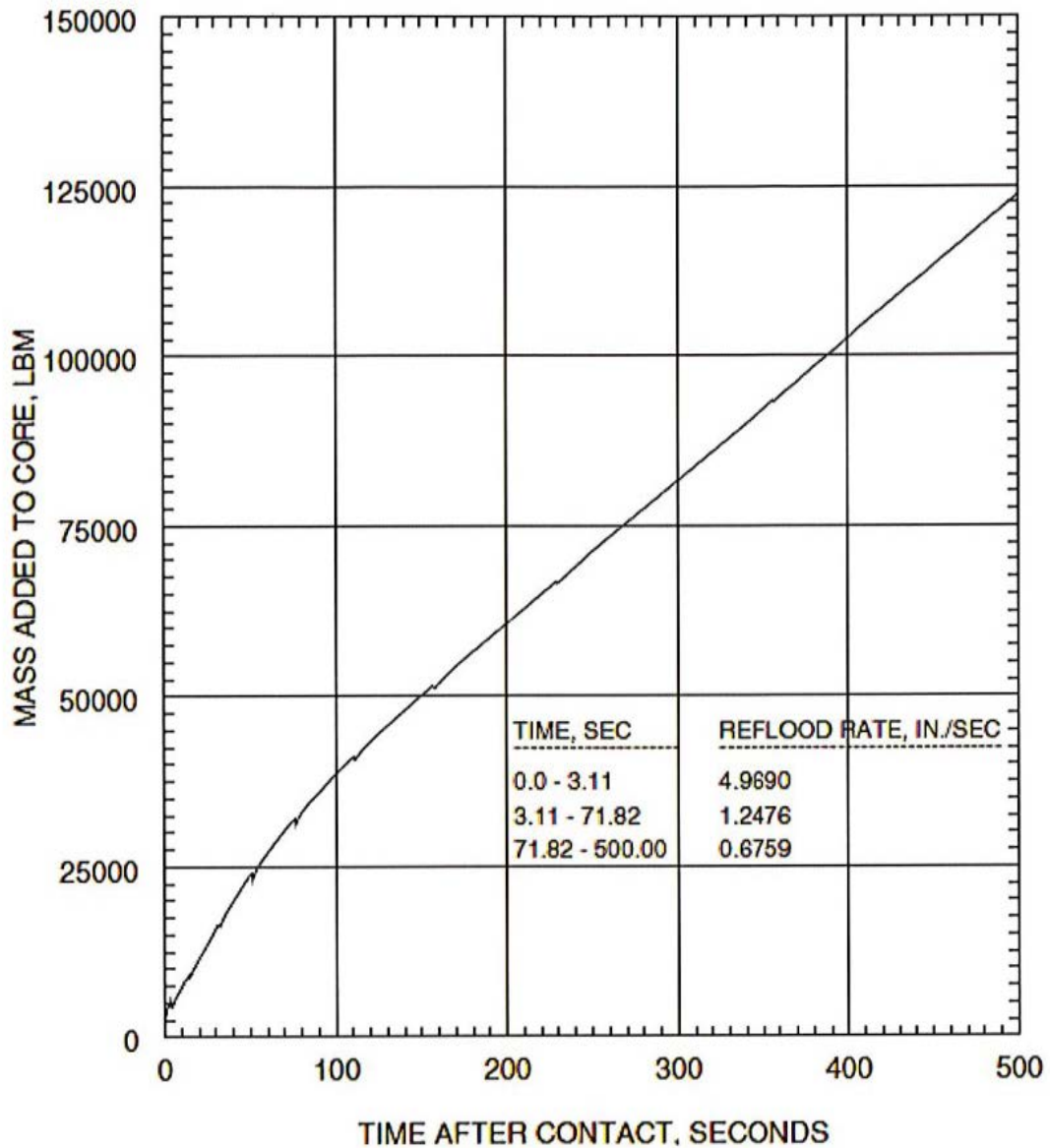
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
CONTAINMENT PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.2-1F

JUNE 2019

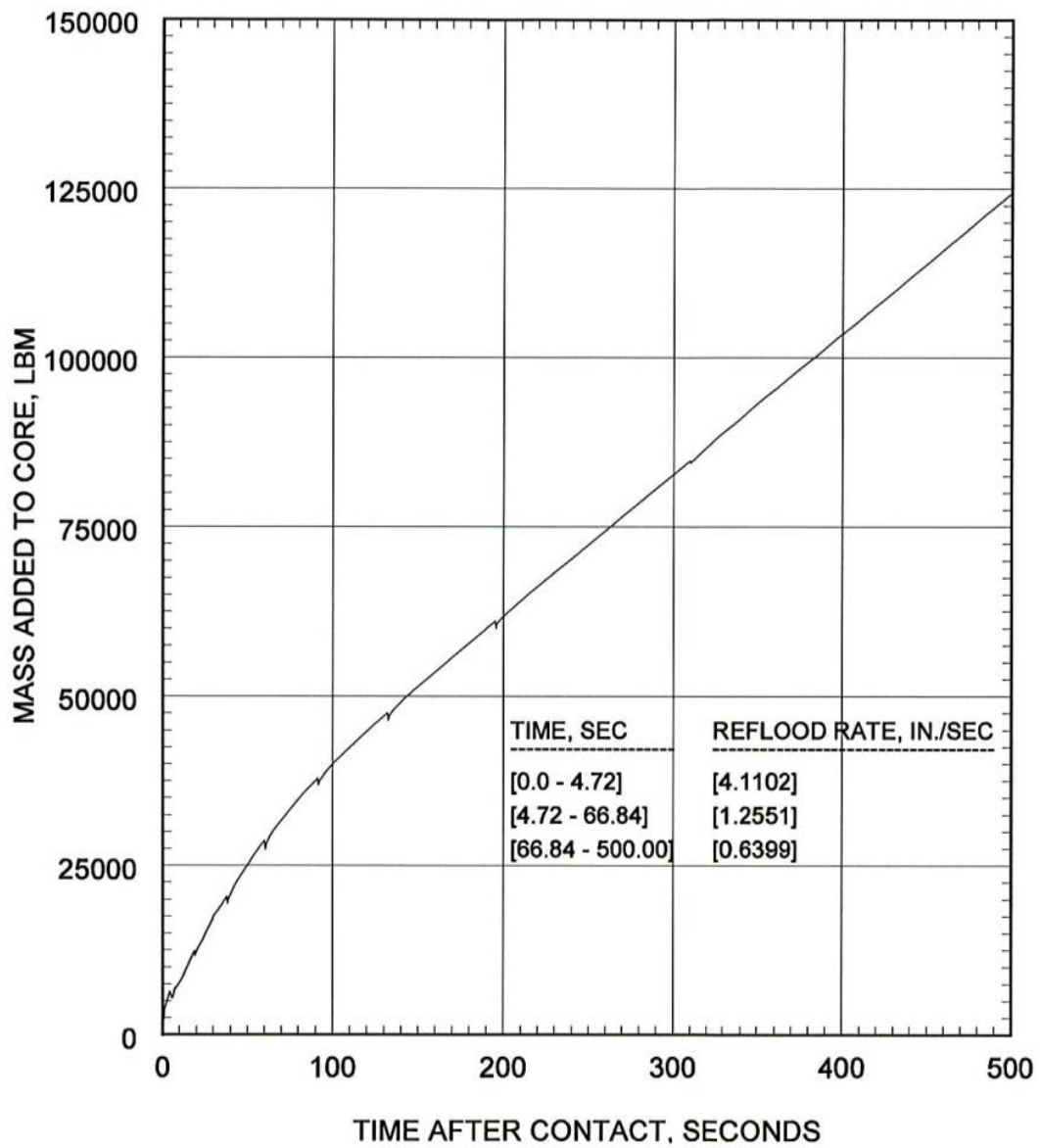
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
MASS ADDED TO CORE DURING REFLOOD
CE16STD FUEL

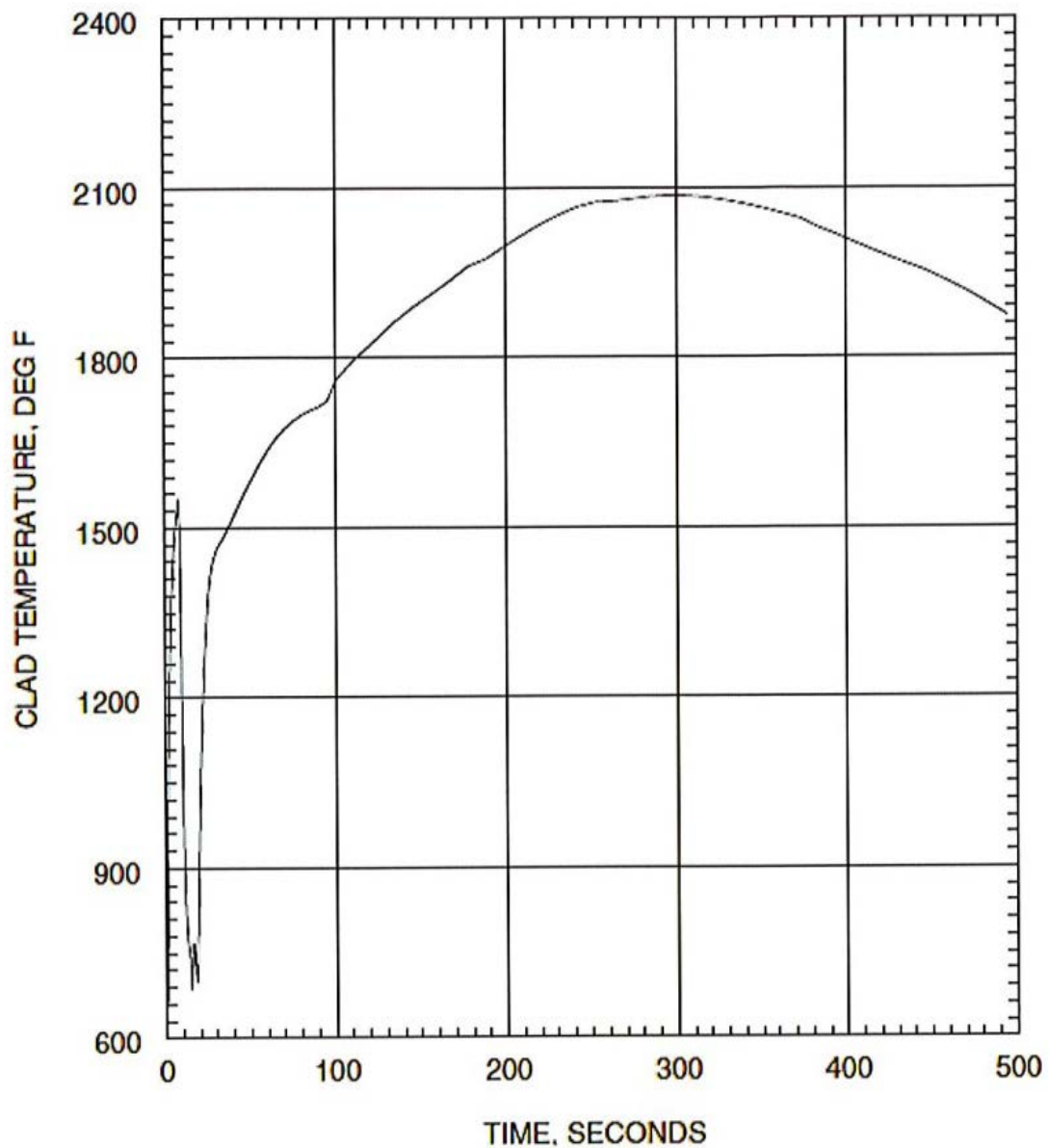
FIGURE 6.3.3a.2-1G



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
MASS ADDED TO CORE DURING REFLOOD
CE16NGF FUEL

FIGURE 6.3.3b.2-1G



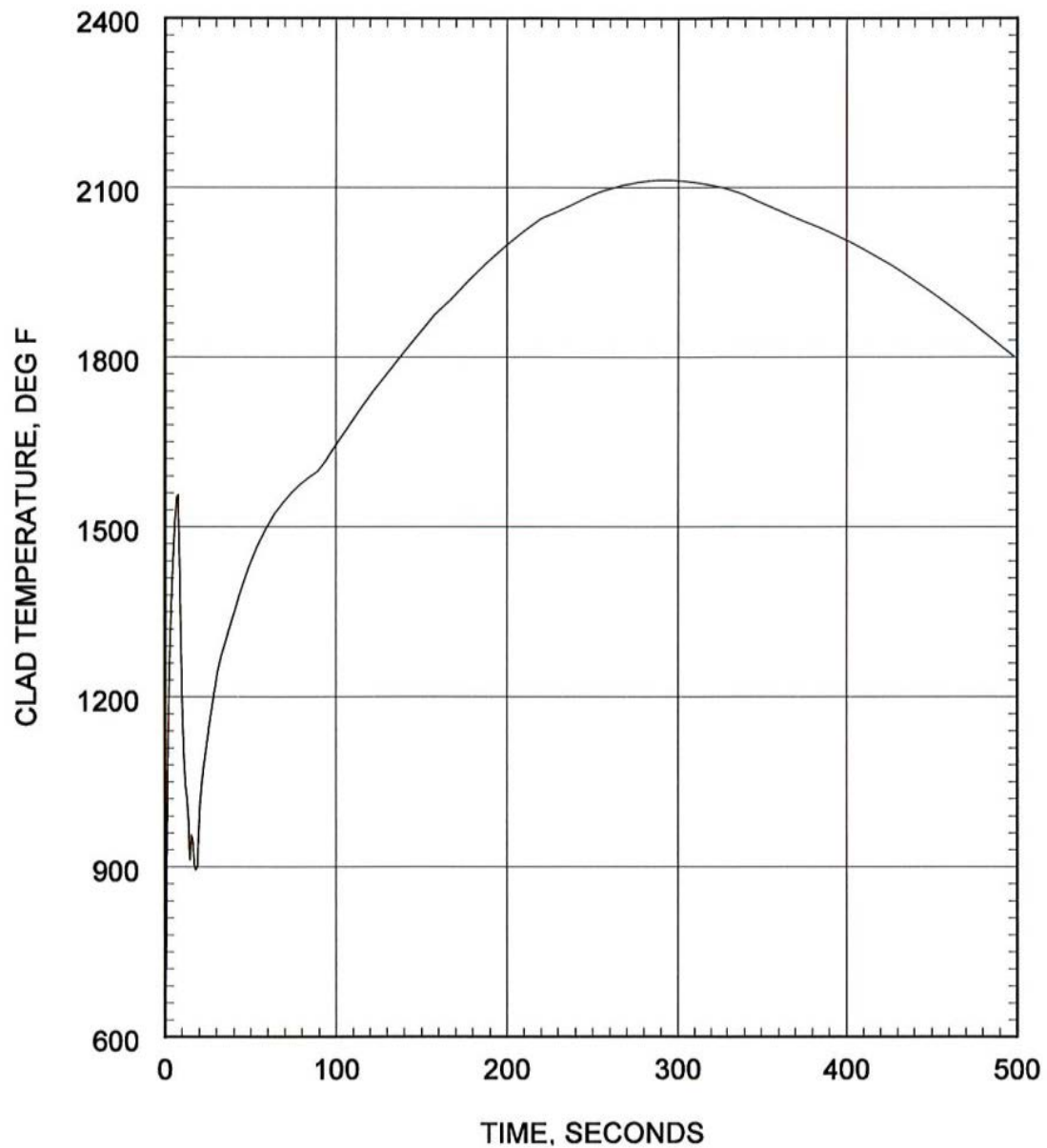
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
PEAK CLADDING TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.2-1H

JUNE 2019

REVISION 20



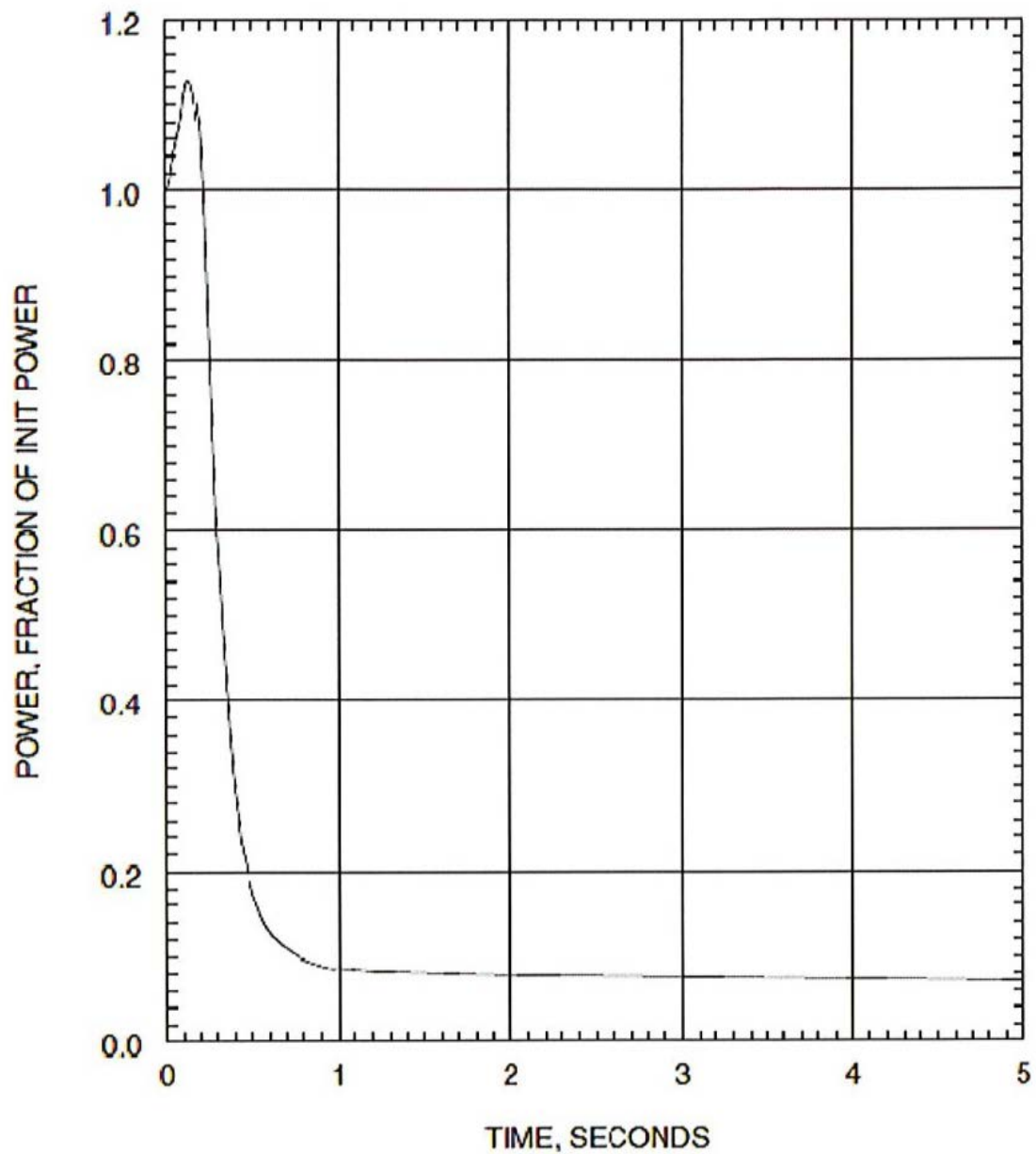
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
1.0 DEG/PD BREAK
PEAK CLADDING TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.2-1H

JUNE 2019

REVISION 20



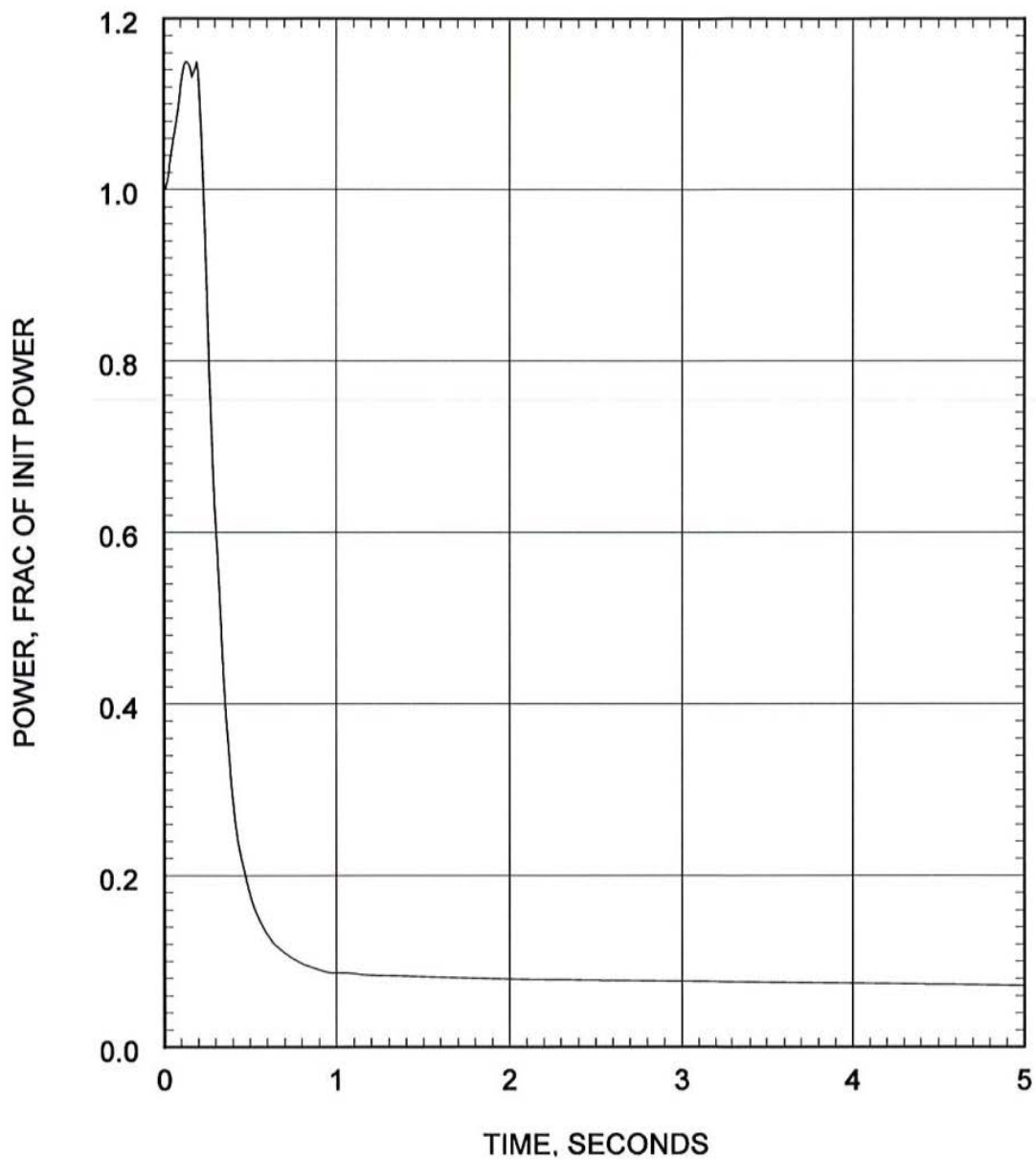
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.2-2A

JUNE 2019

REVISION 20



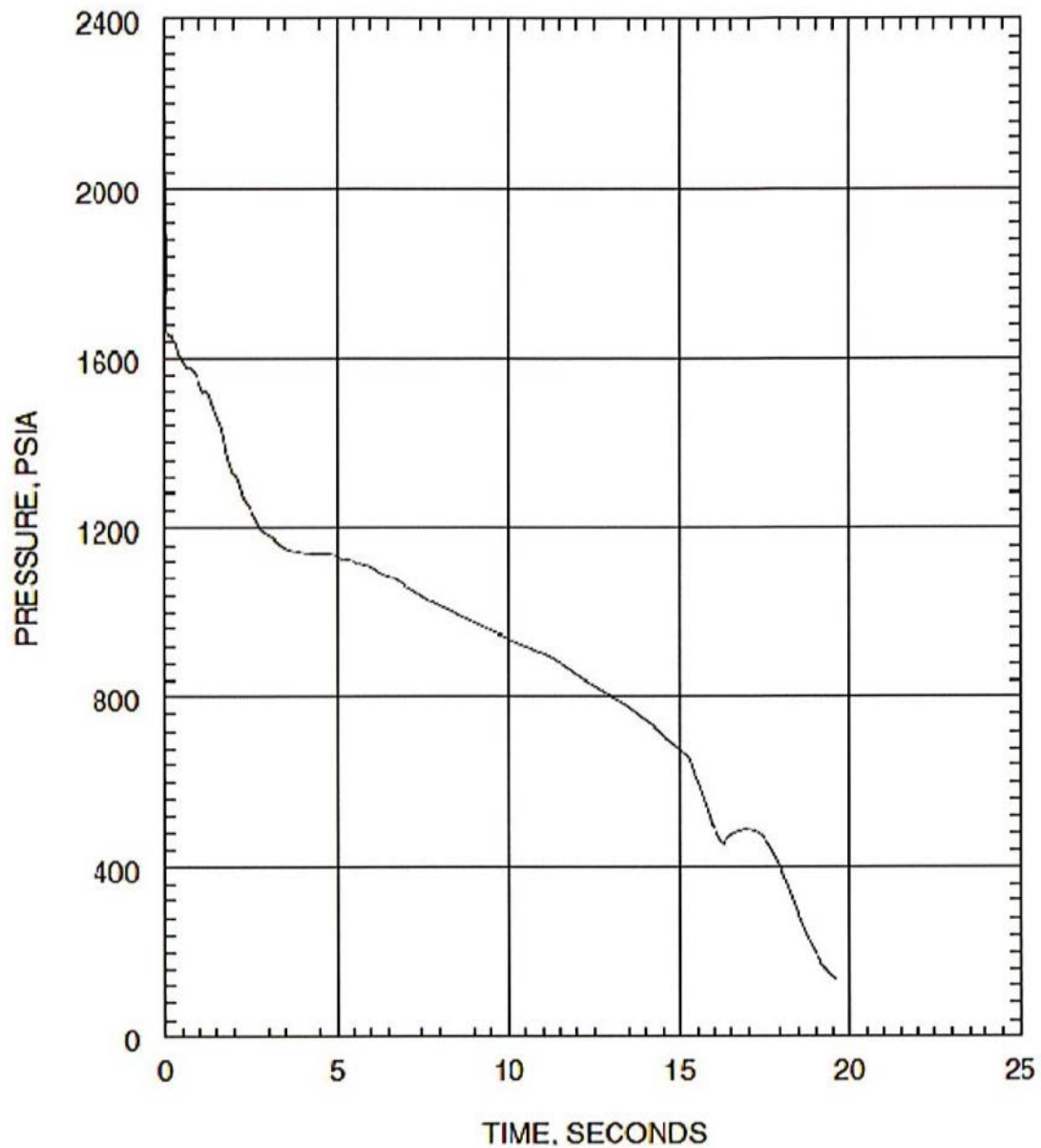
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.2-2A

JUNE 2019

REVISION 20



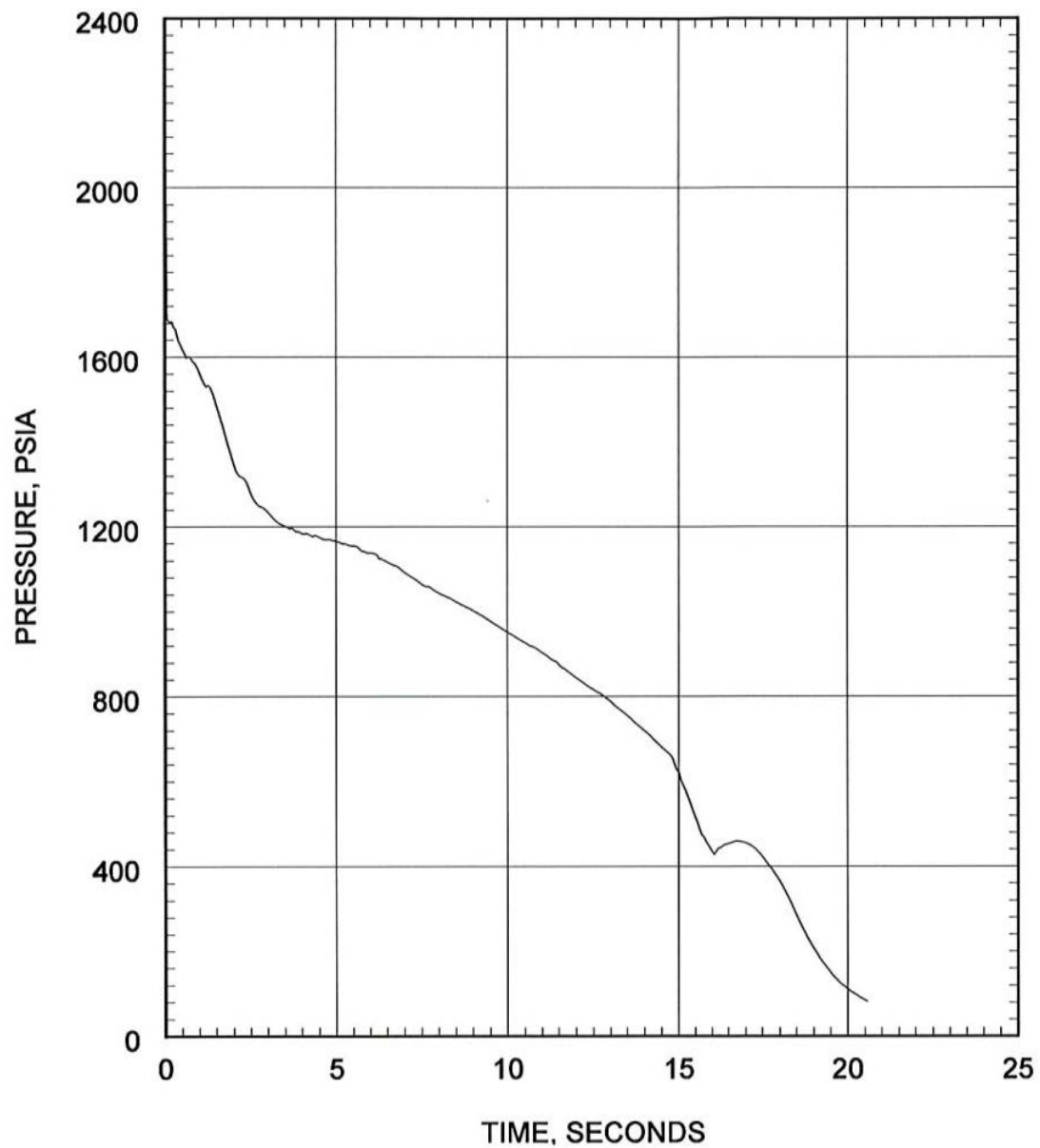
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
PRESSURE IN CENTER HOT ASSEMBLY NODE
CE16STD FUEL

FIGURE 6.3.3a.2-2B

JUNE 2019

REVISION 20



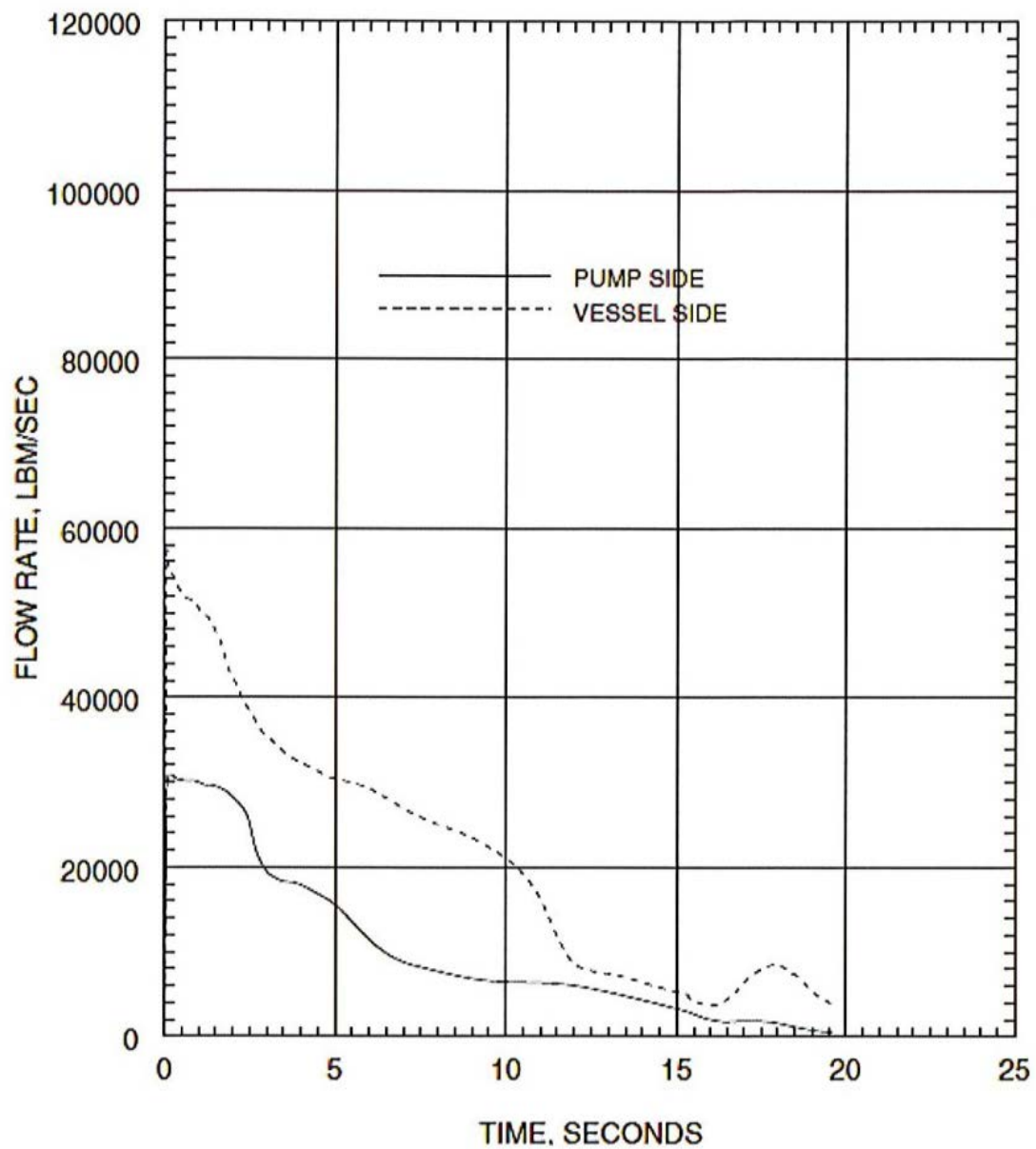
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
PRESSURE IN CENTER HOT ASSEMBLY NODE
CE16NGF FUEL

FIGURE 6.3.3b.2-2B

JUNE 2019

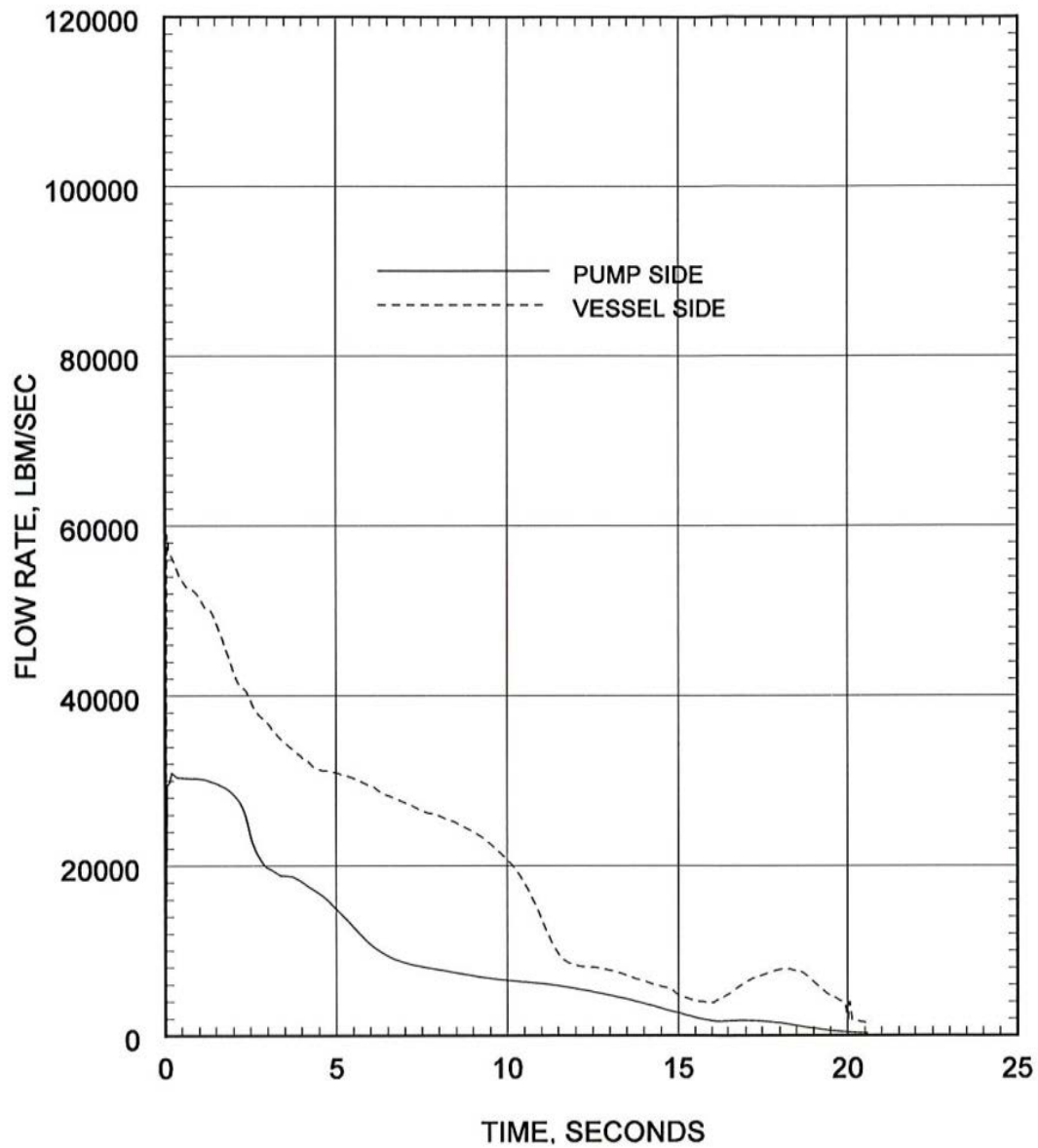
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
LEAK FLOW RATE
CE16STD FUEL

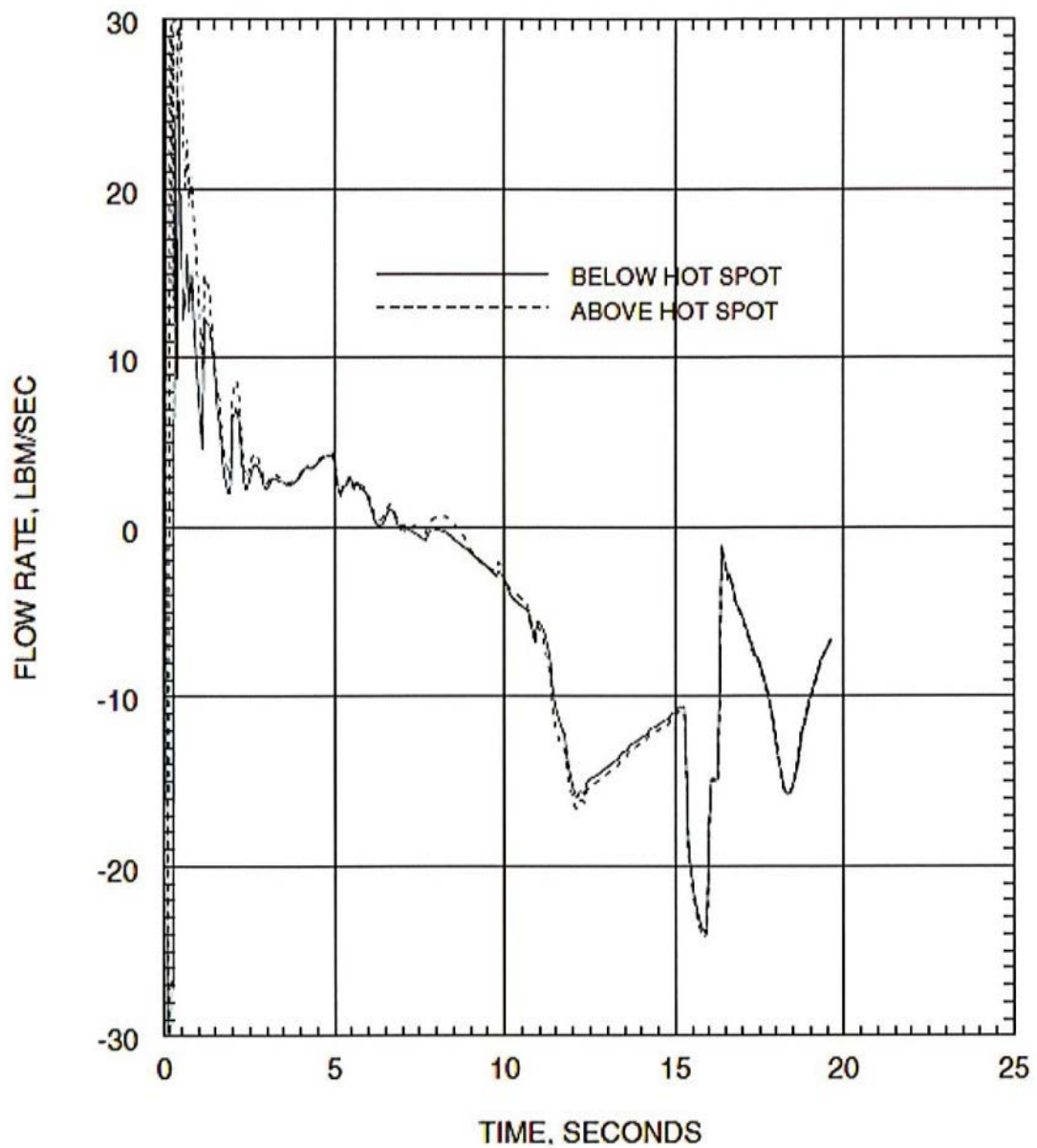
FIGURE 6.3.3a.2-2C



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
LEAK FLOW RATE
CE16NGF FUEL

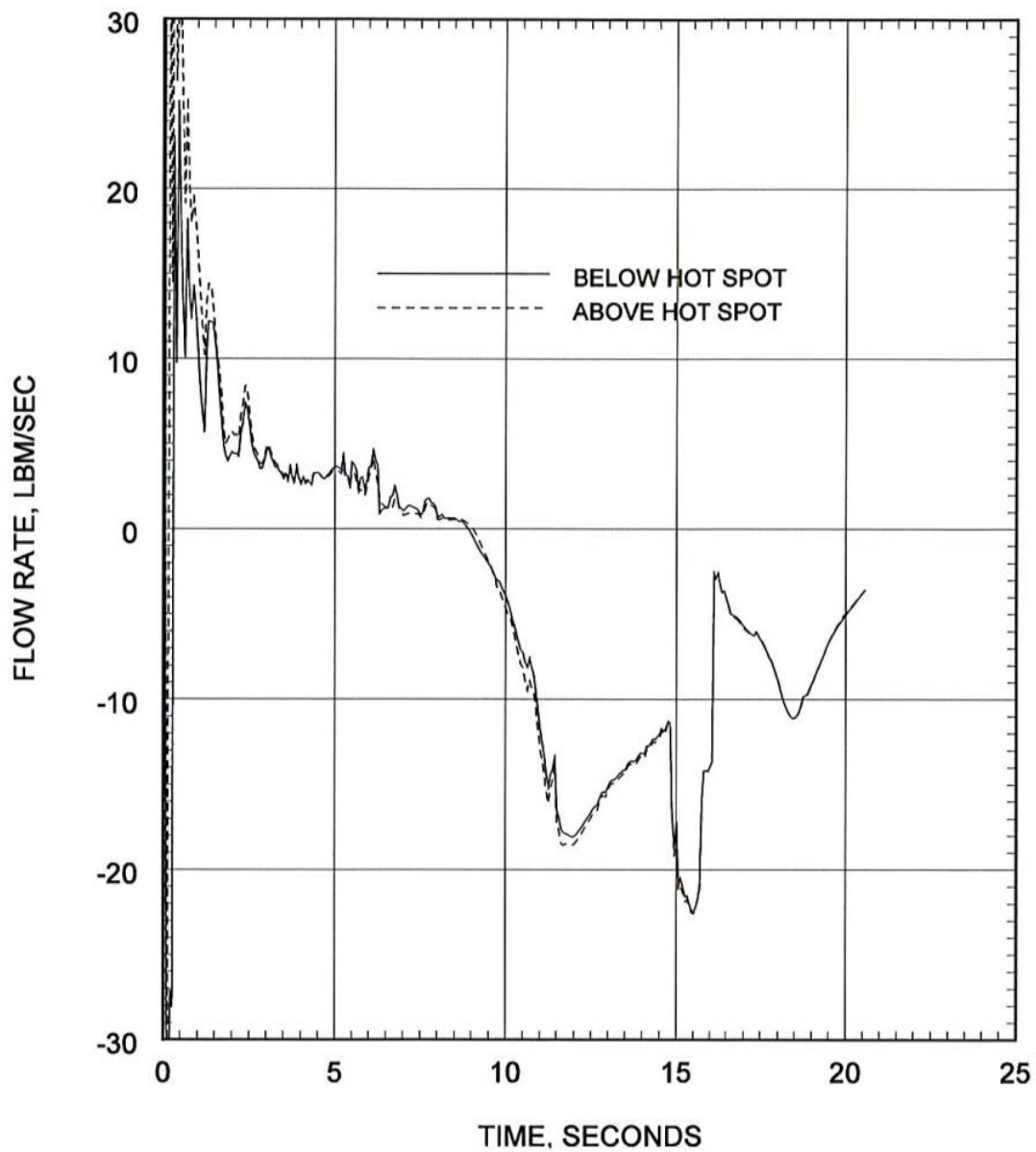
FIGURE 6.3.3b.2-2C



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
HOT ASSEMBLY FLOW RATE
CE16STD FUEL

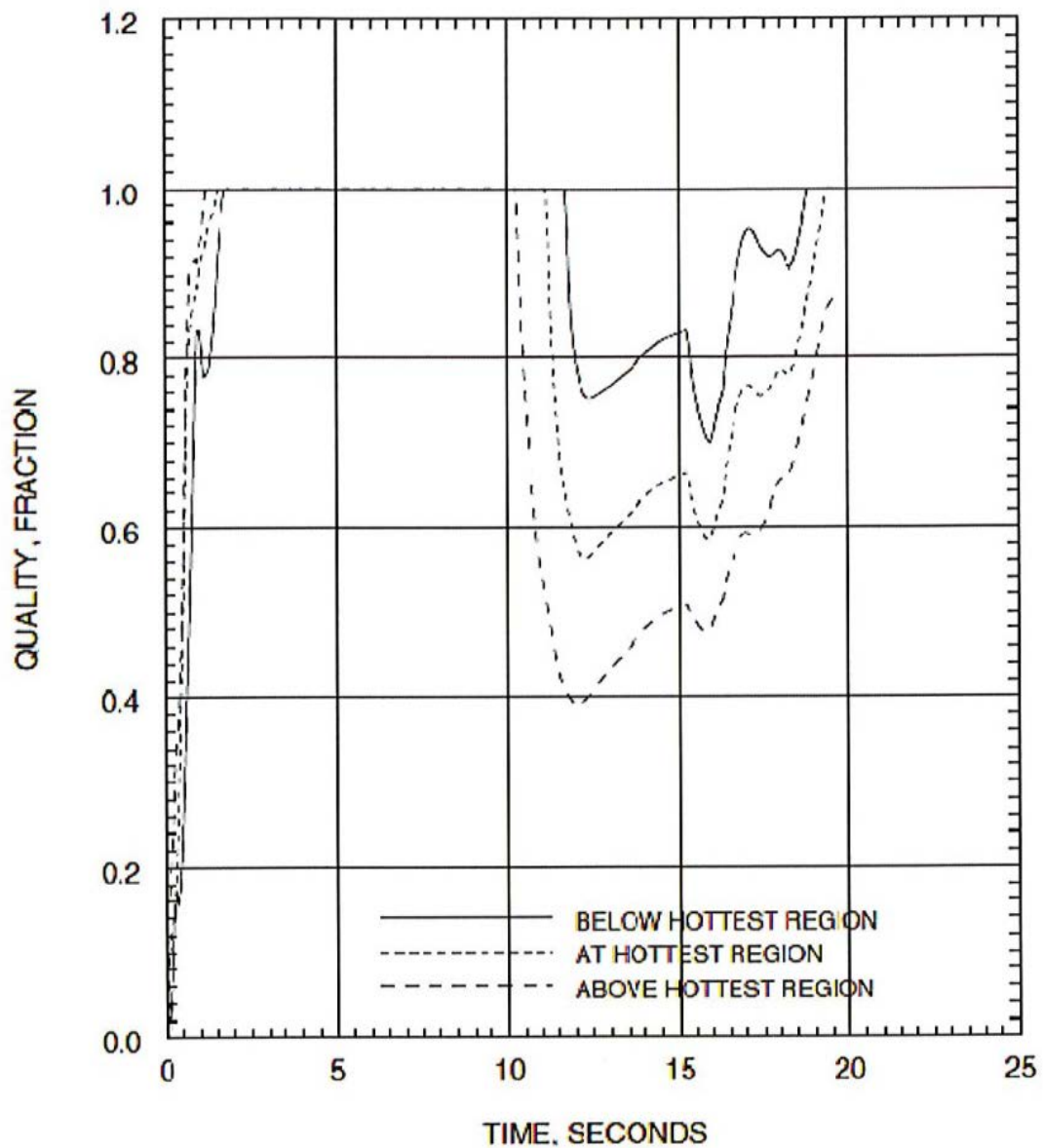
FIGURE 6.3.3a.2-2D



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
HOT ASSEMBLY FLOW RATE
CE16NGF FUEL

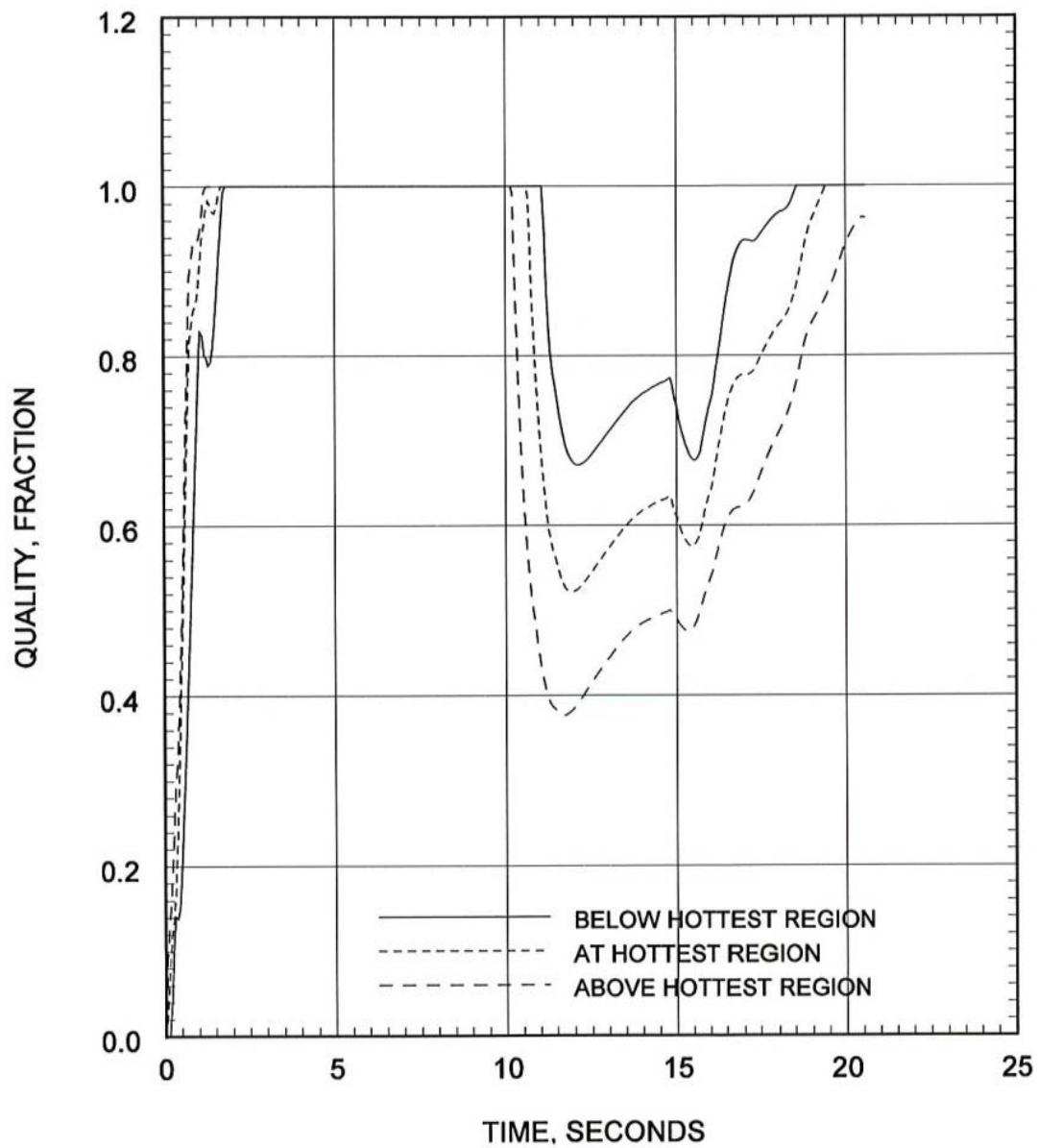
FIGURE 6.3.3b.2-2D



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
HOT ASSEMBLY QUALITY
CE16STD FUEL

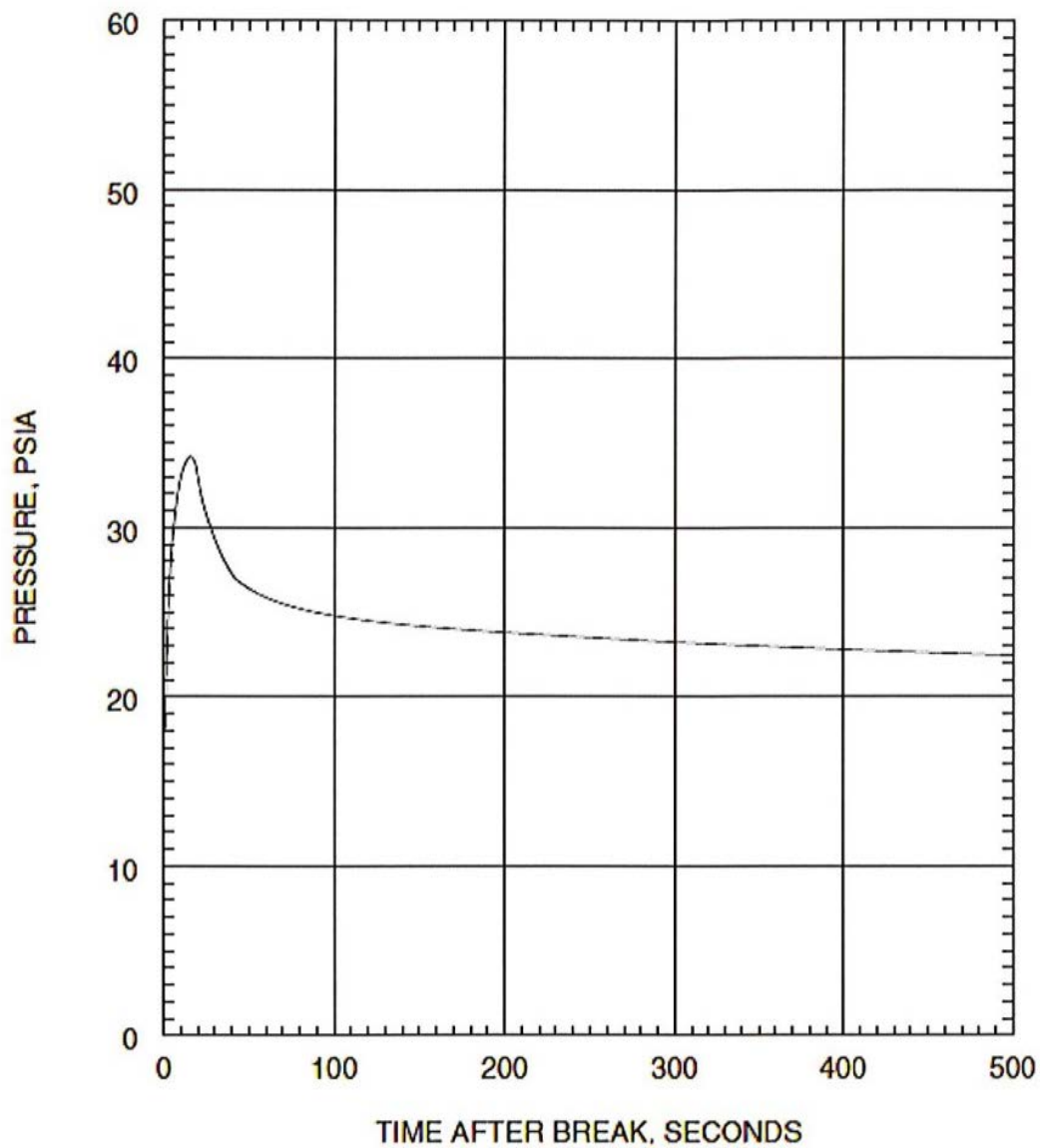
FIGURE 6.3.3a.2-2E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
HOT ASSEMBLY QUALITY
CE16NGF FUEL

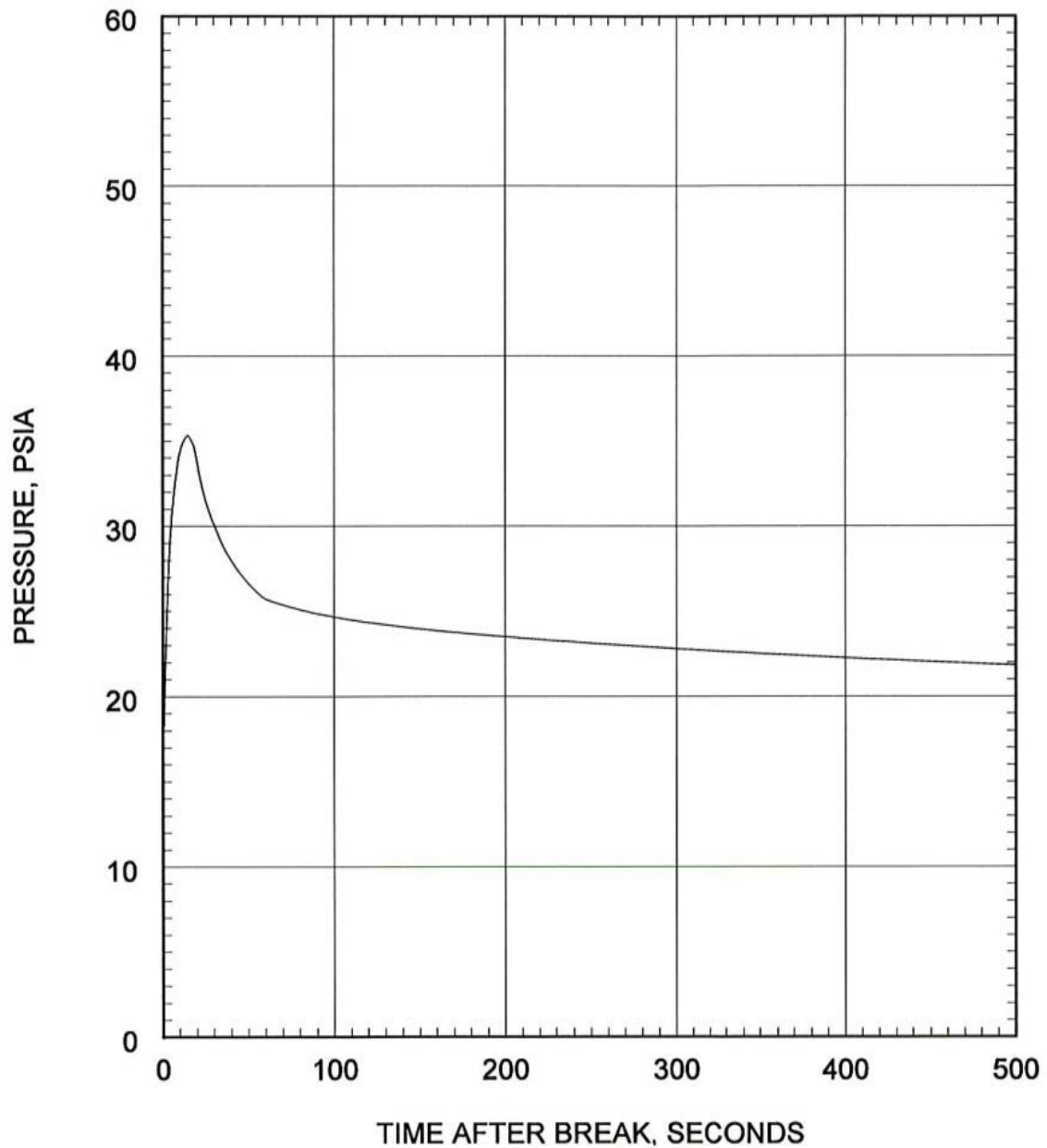
FIGURE 6.3.3b.2-2E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
CONTAINMENT PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.2-2F



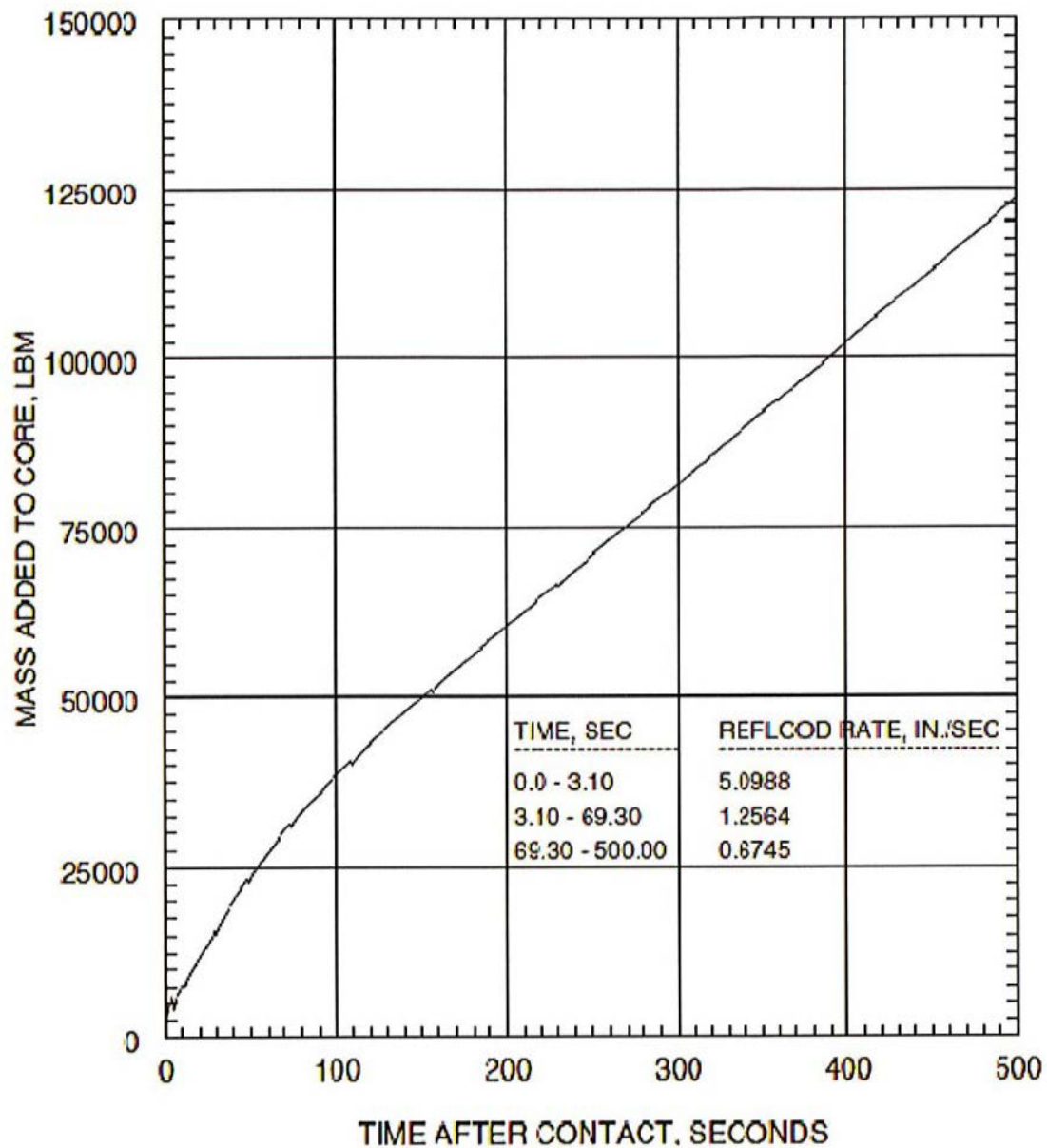
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
CONTAINMENT PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.2-2F

JUNE 2019

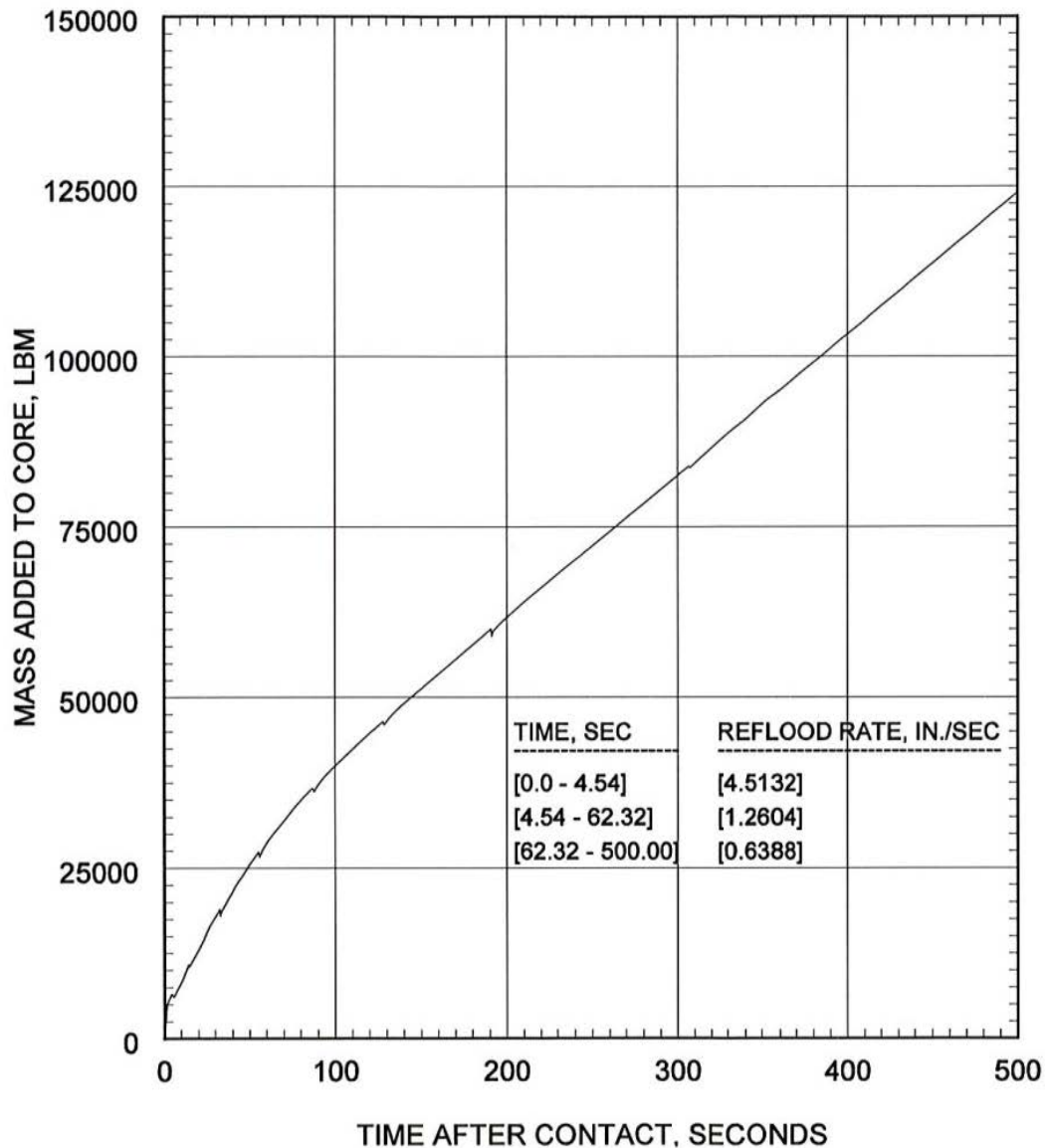
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
MASS ADDED TO CORE DURING REFLOOD
CE16STD FUEL

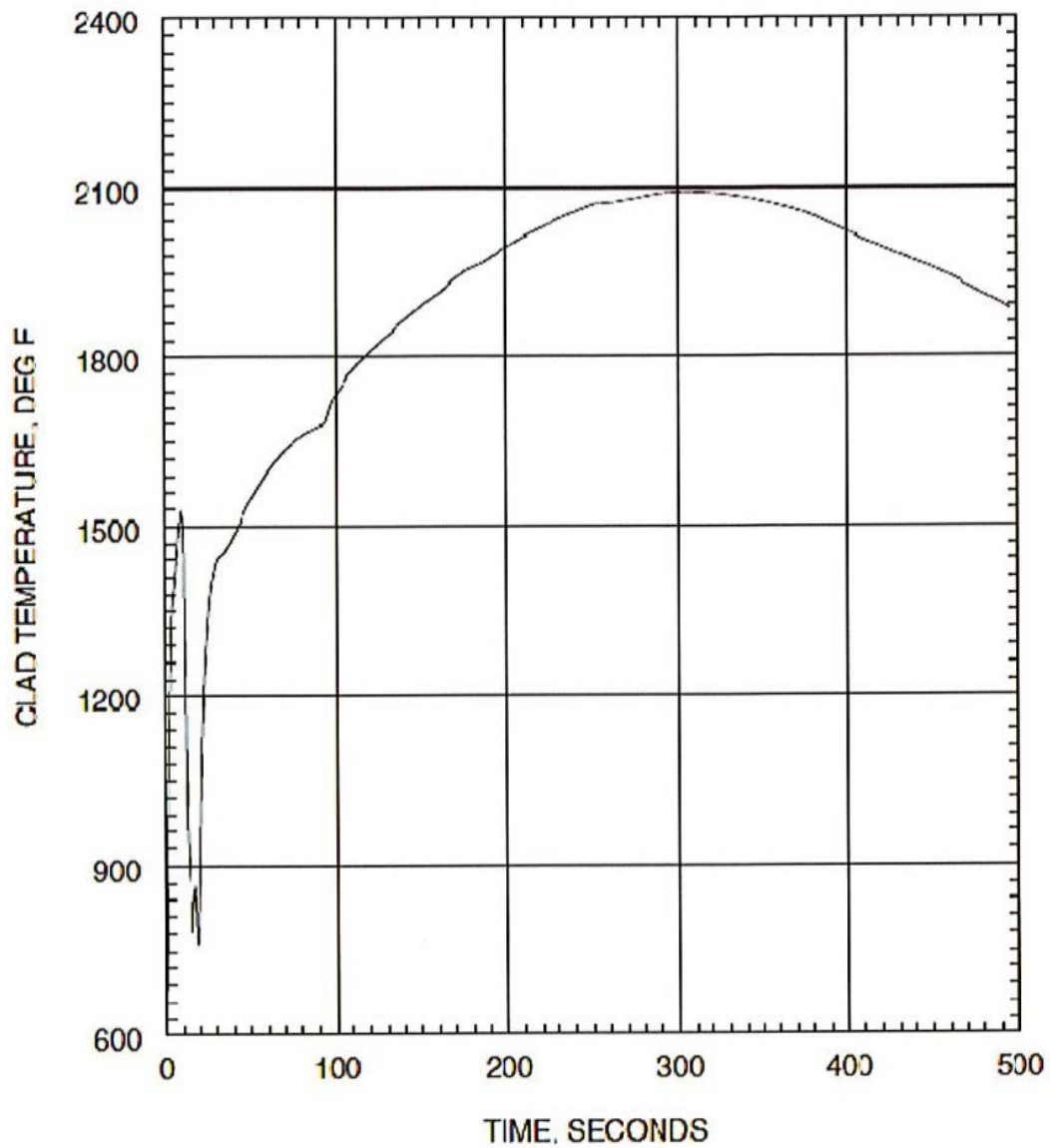
FIGURE 6.3.3a.2-2G



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
MASS ADDED TO CORE DURING REFLOOD
CE16NGF FUEL

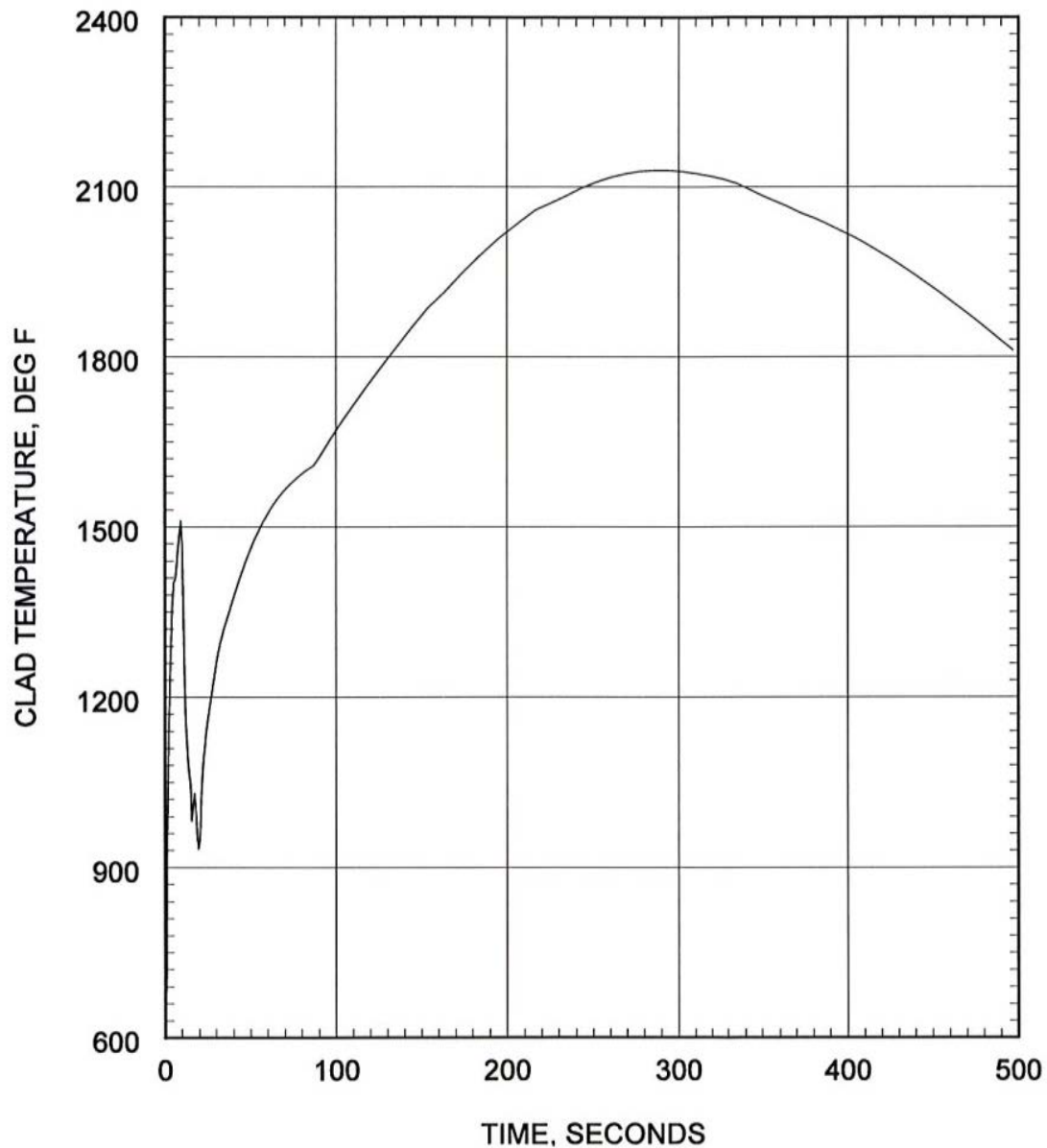
FIGURE 6.3.3b.2-2G



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
PEAK CLADDING TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.2-2H



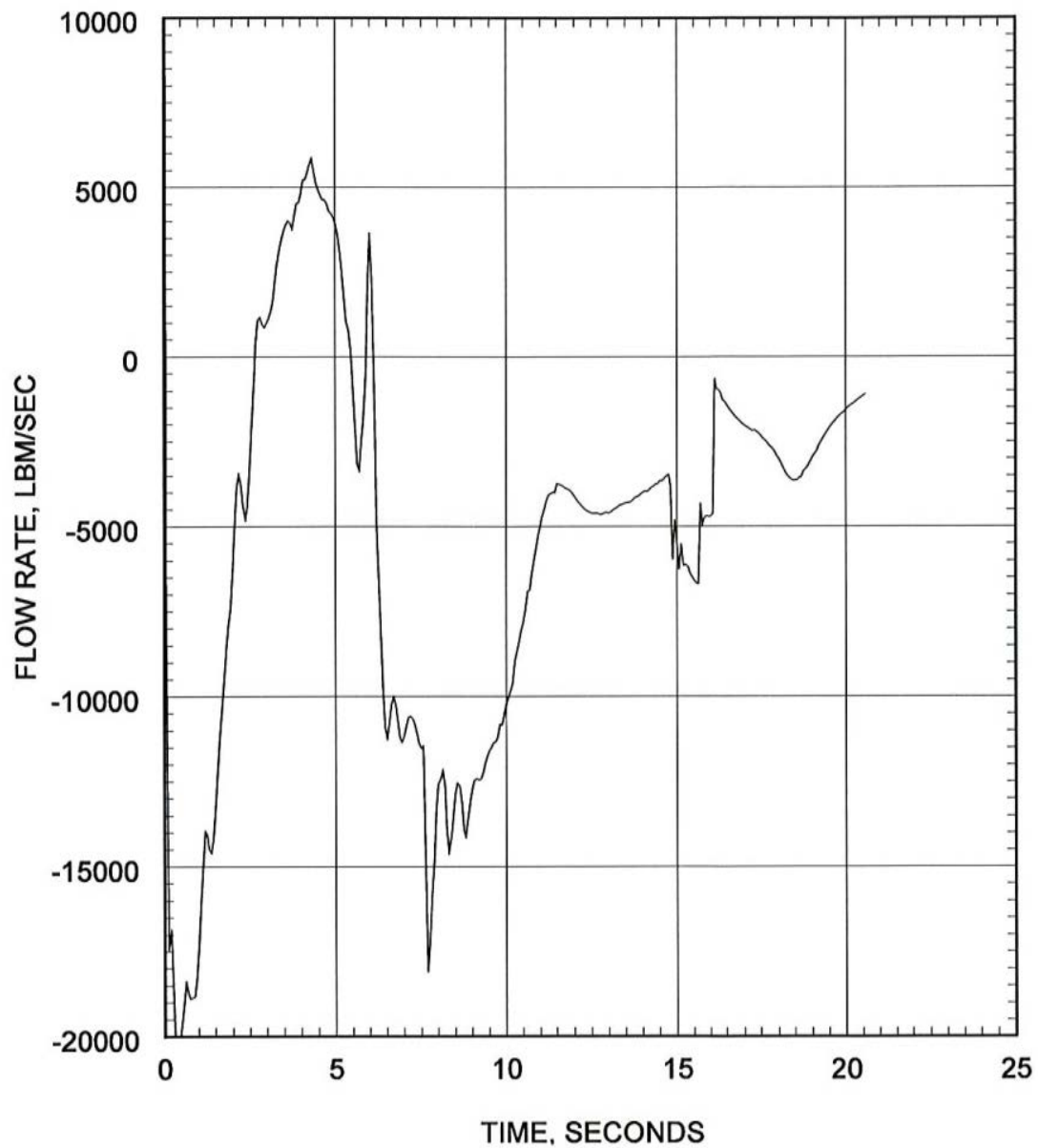
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
PEAK CLADDING TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.2-2H

JUNE 2019

REVISION 20



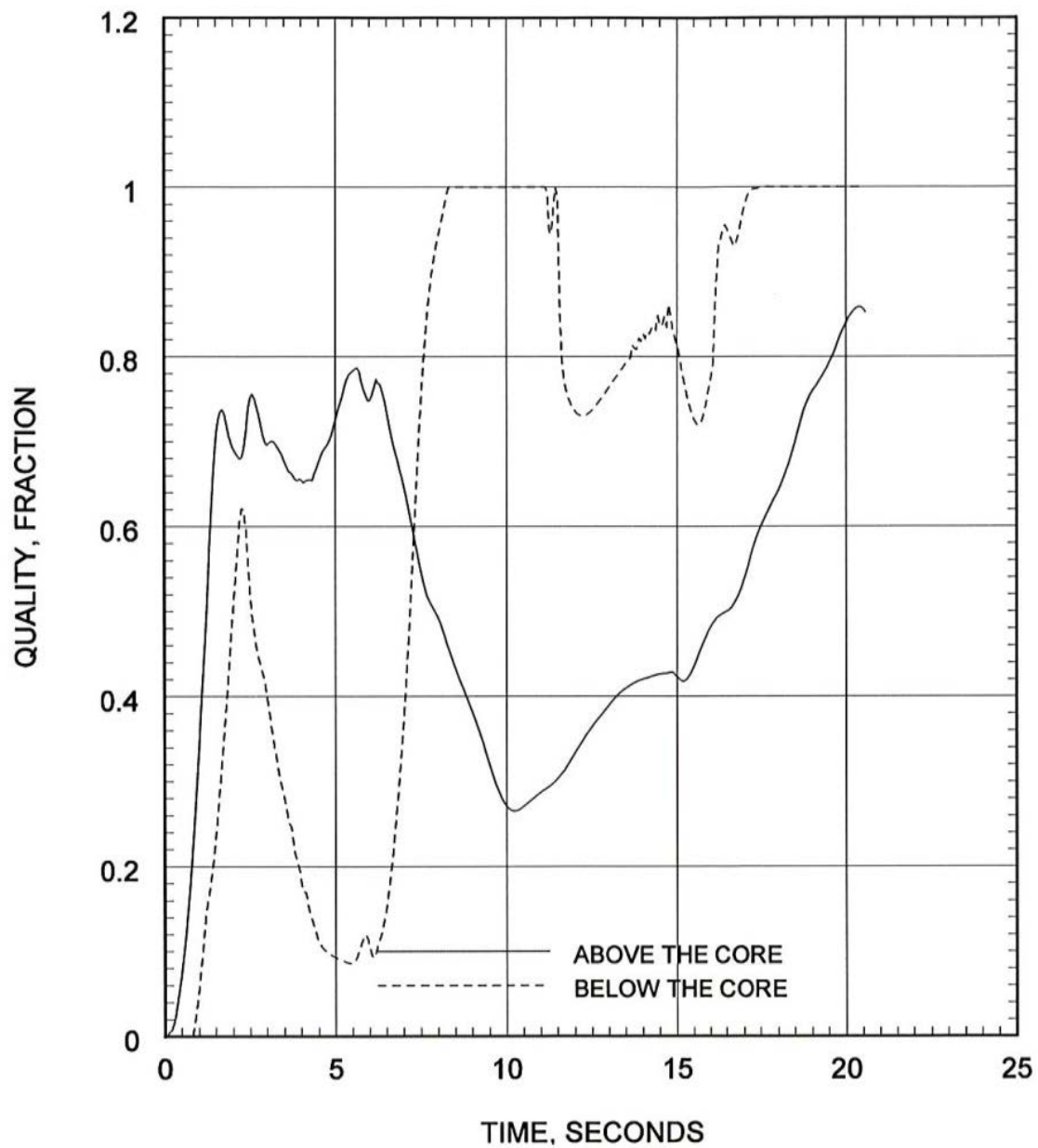
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
MID ANNULUS FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.2-2I

JUNE 2019

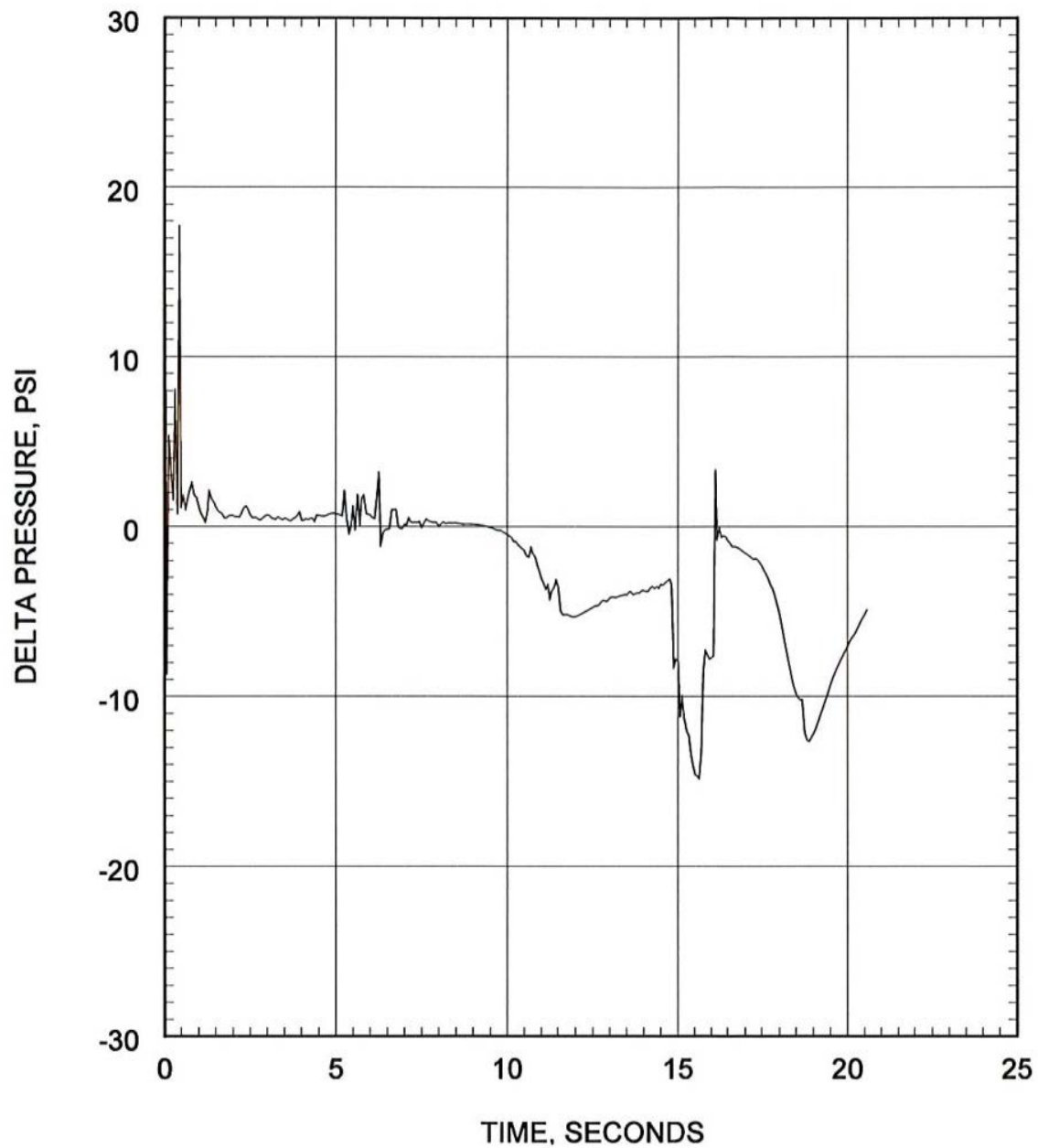
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK QUALITY ABOVE AND BELOW THE CORE
CE16NGF FUEL

FIGURE 6.3.3b.2-2J



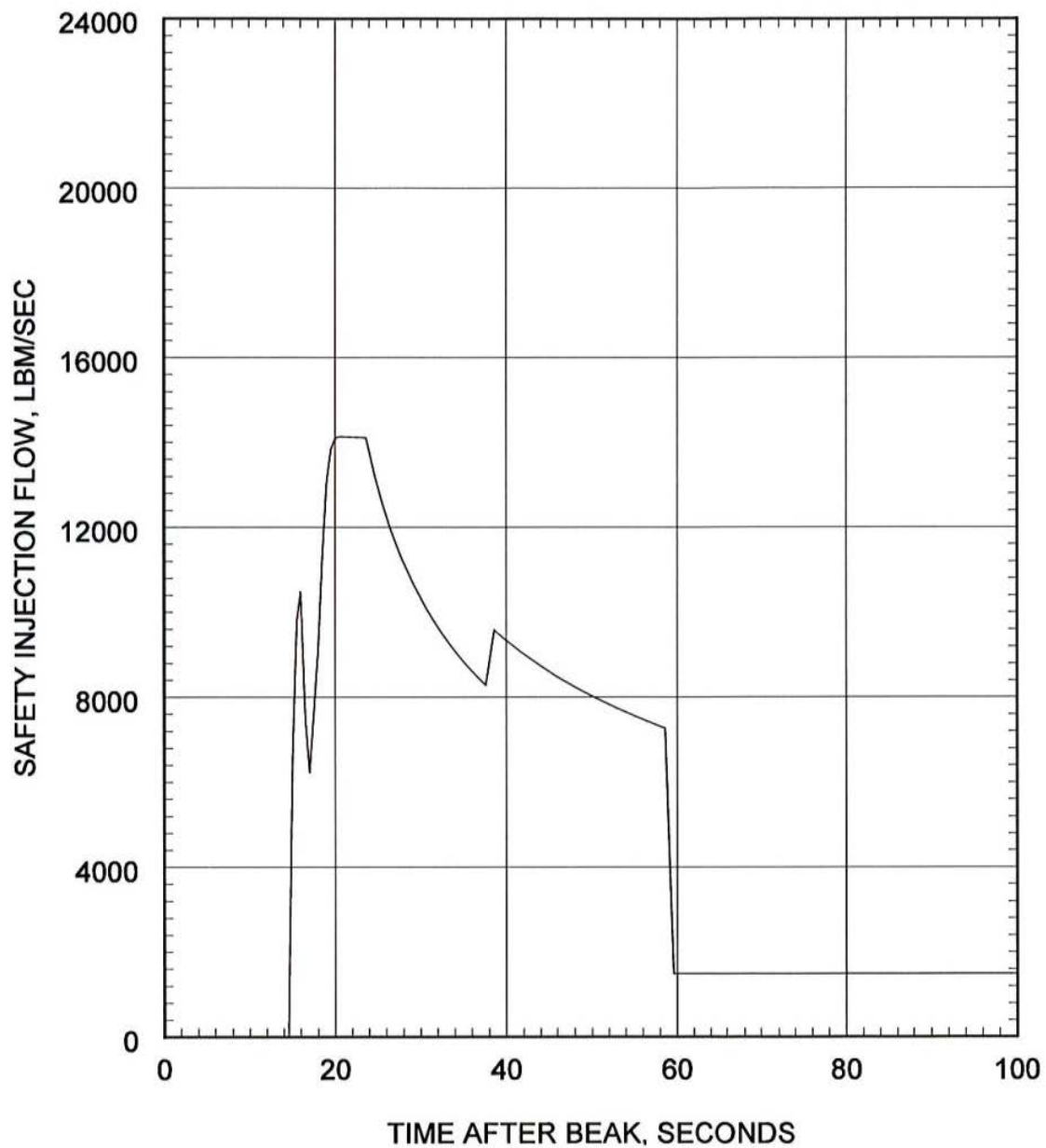
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK CORE PRESSURE DROP
CE16NGF FUEL

FIGURE 6.3.3b.2-2K

JUNE 2019

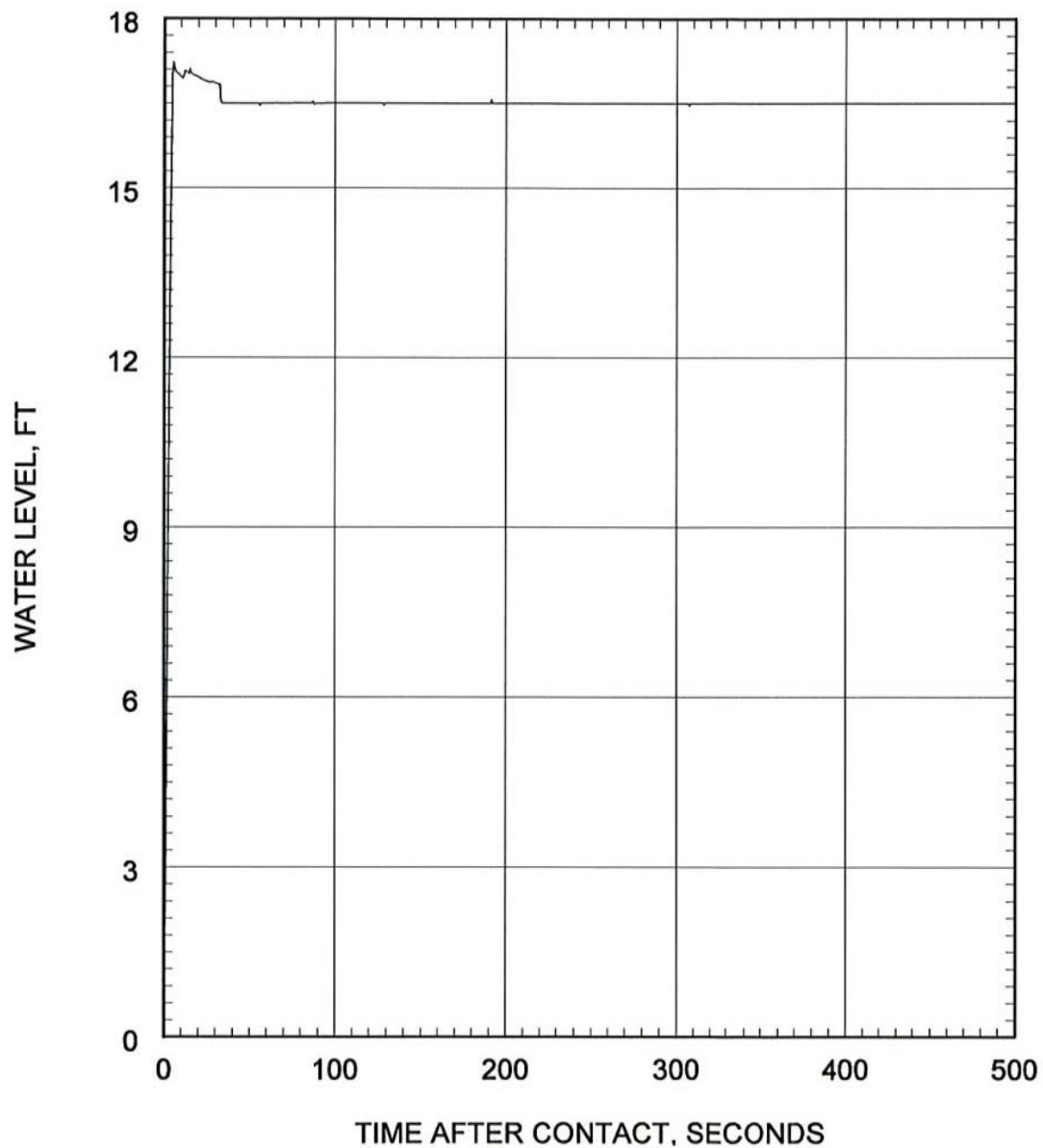
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK SAFETY INJECTION FLOW RATE INTO
INTACT DISCHARGE LEG
CE16NGF FUEL

FIGURE 6.3.3b.2-2L



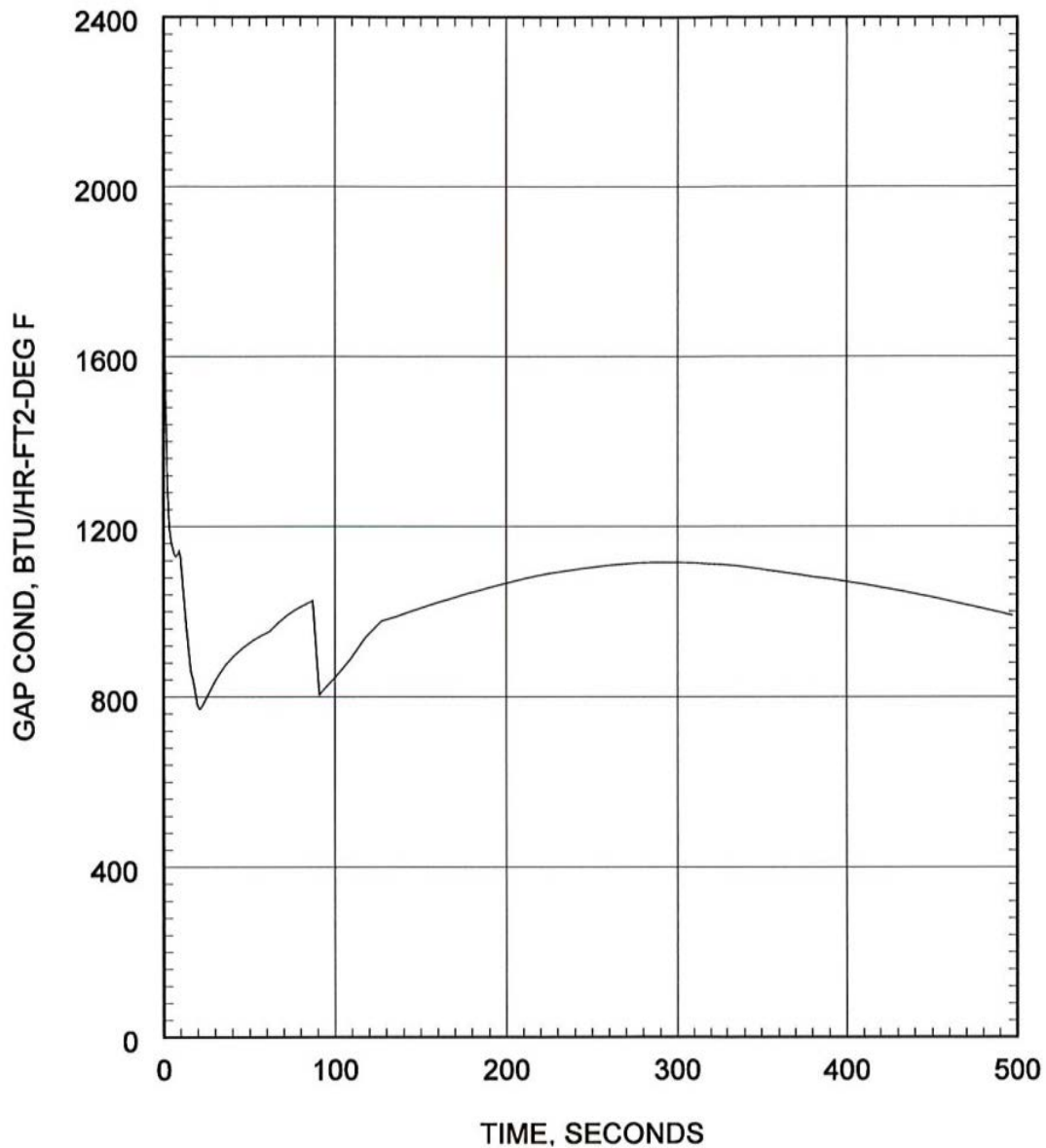
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK WATER LEVEL IN DOWNCOMER
DURING REFLOOD
CE16NGF FUEL

FIGURE 6.3.3b.2-2M

JUNE 2019

REVISION 20



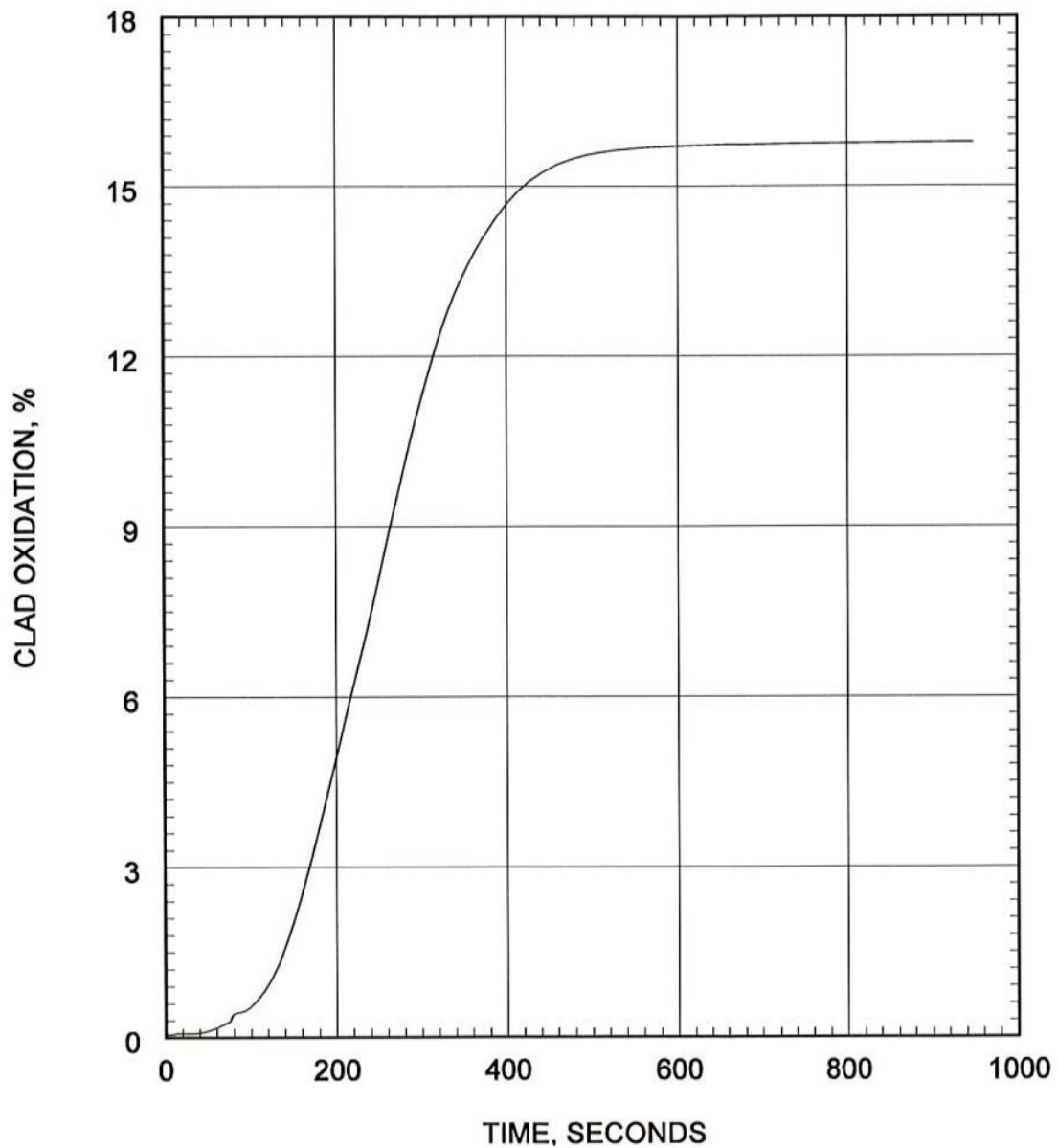
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
HOT SPOT GAP CONDUCTANCE
CE16NGF FUEL

FIGURE 6.3.3b.2-2N

JUNE 2019

REVISION 20



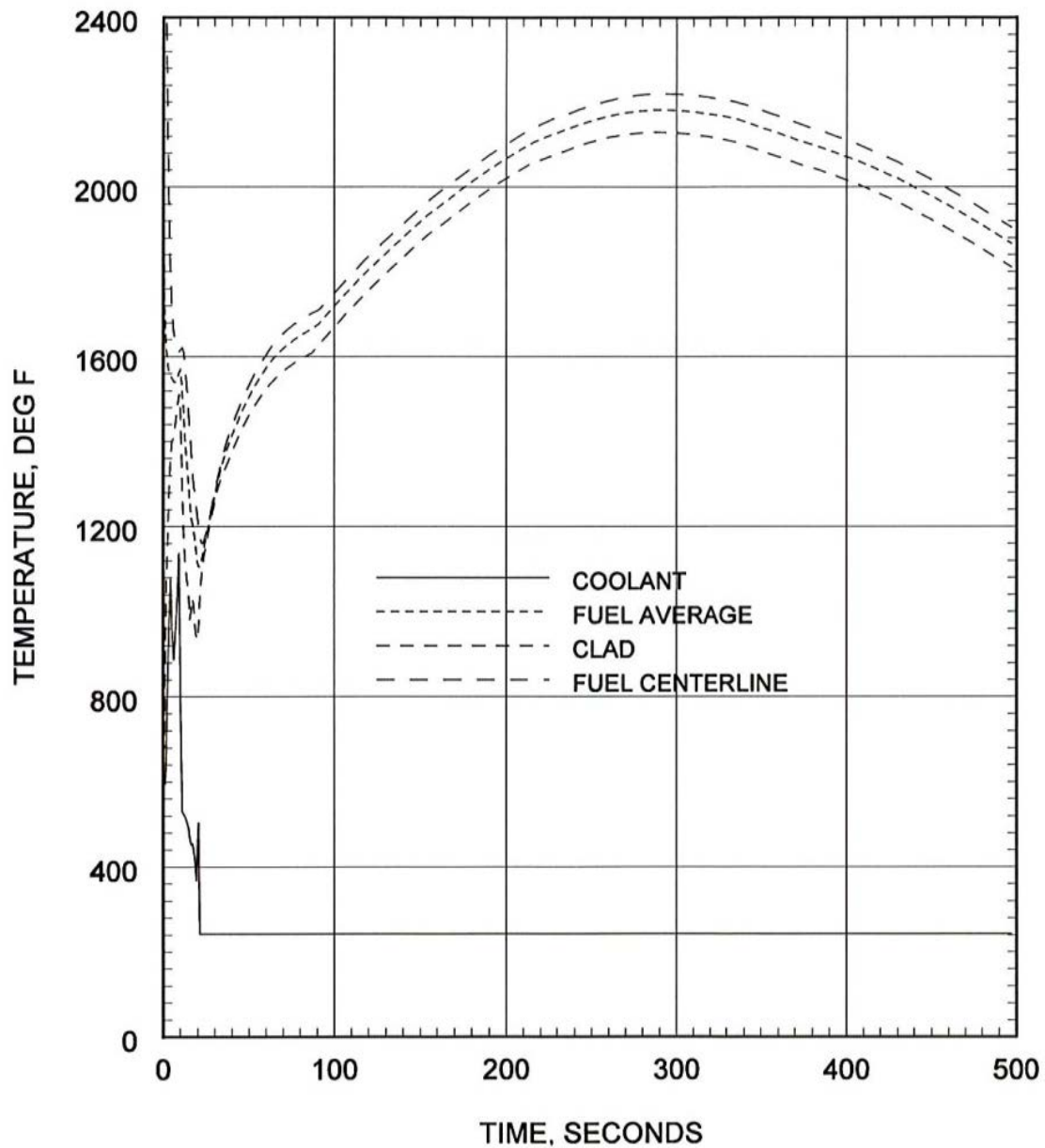
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
LOCAL CLADDING OXIDATION PERCENTAGE
CE16NGF FUEL

FIGURE 6.3.3b.2-20

JUNE 2019

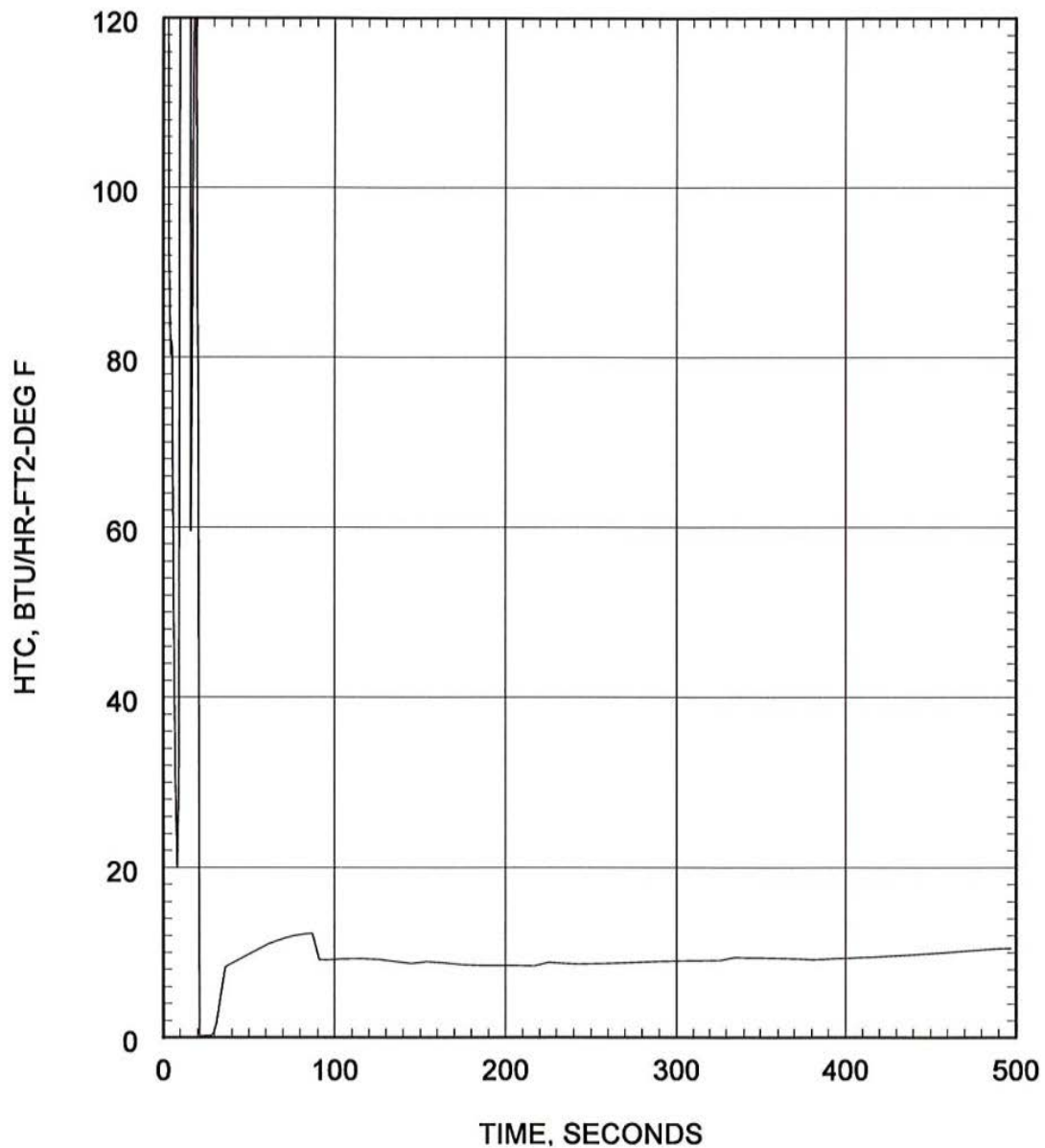
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK FUEL CL & AVE., CLAD, COOLANT
TEMPS AT THE HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.2-2P



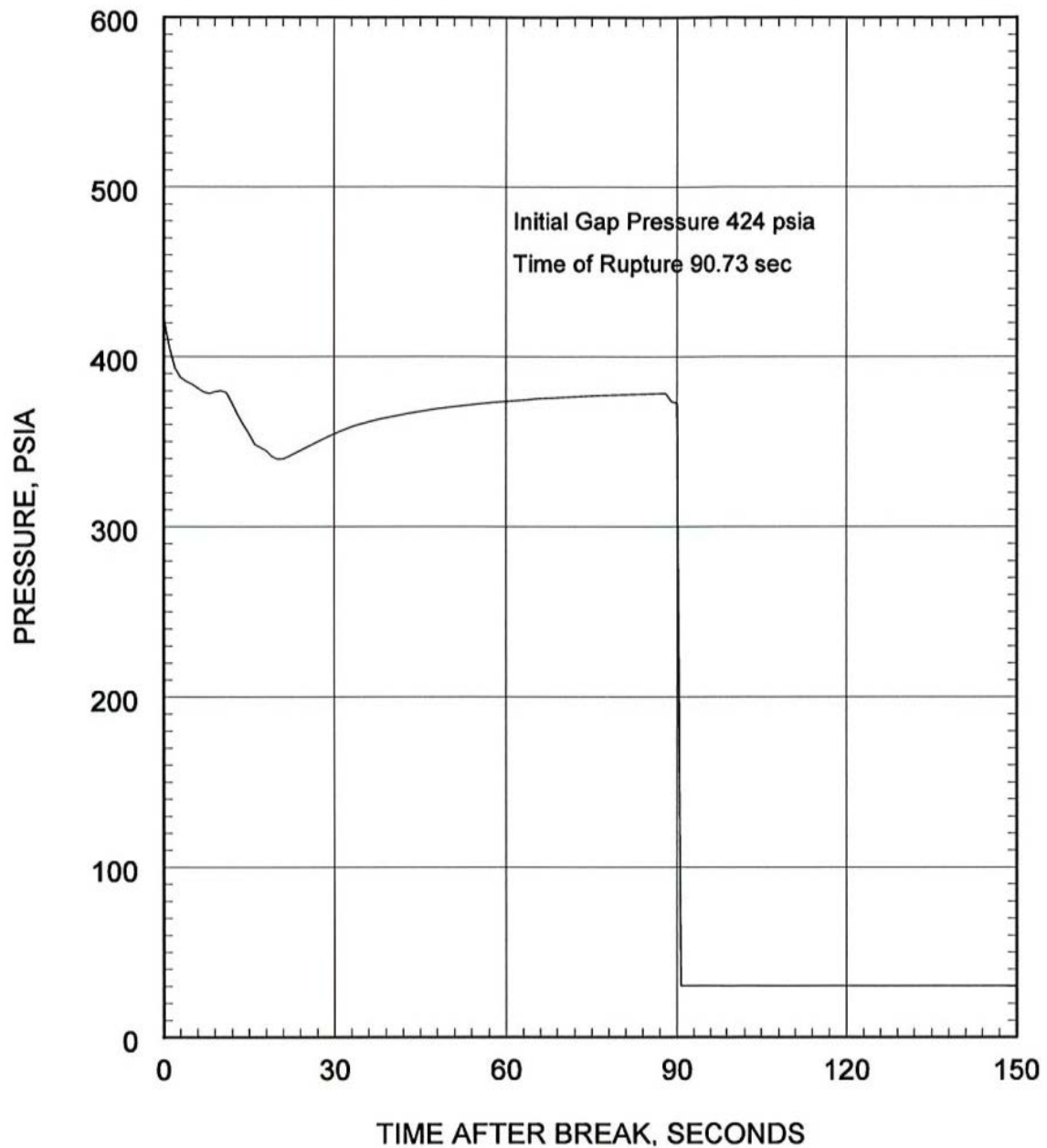
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK
HOT SPOT HEAT TRANSFER COEFFICIENT
CE16NGF FUEL

FIGURE 6.3.3b.2-2Q

JUNE 2019

REVISION 20



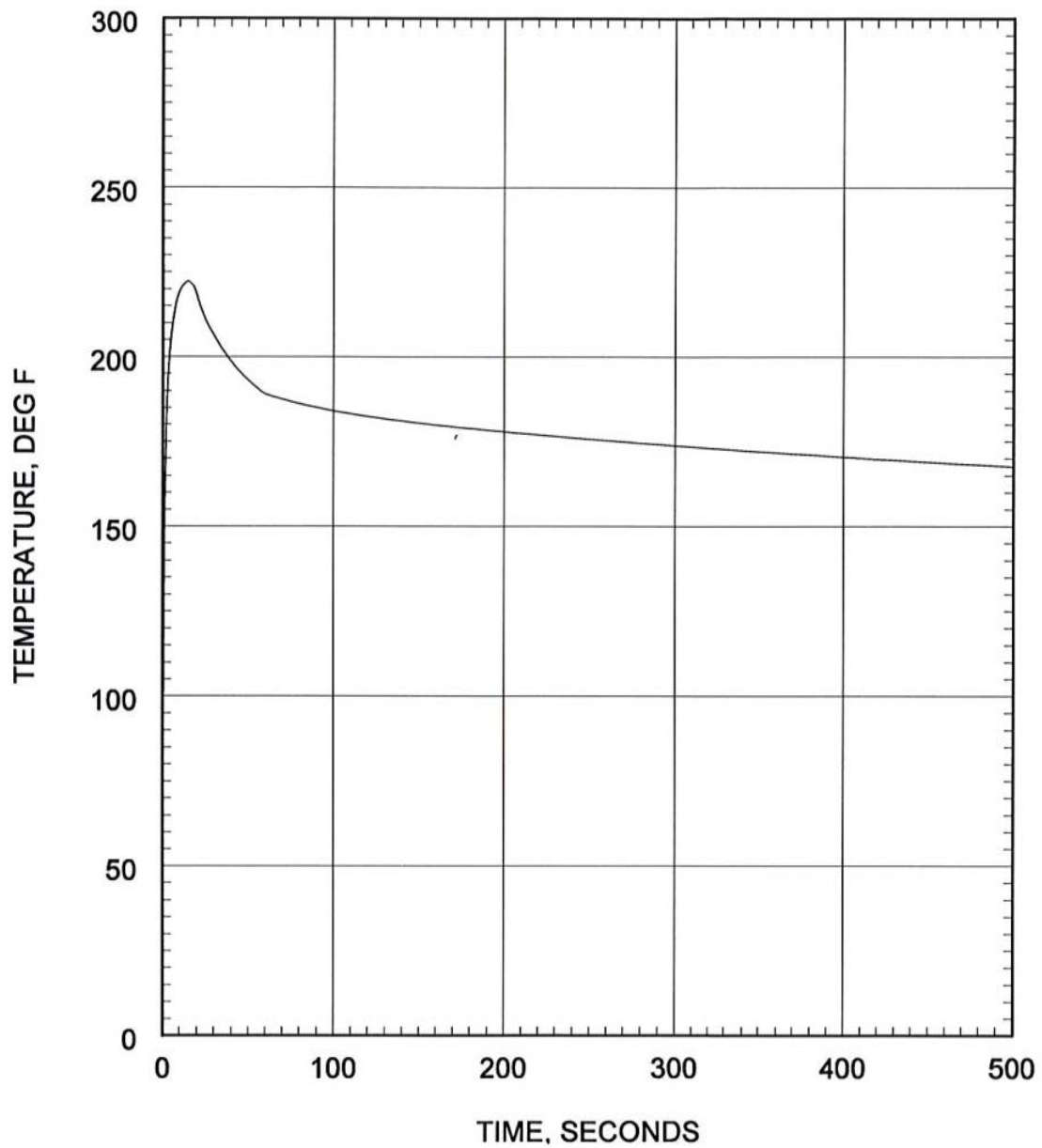
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK HOT PIN PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.2-2R

JUNE 2019

REVISION 20



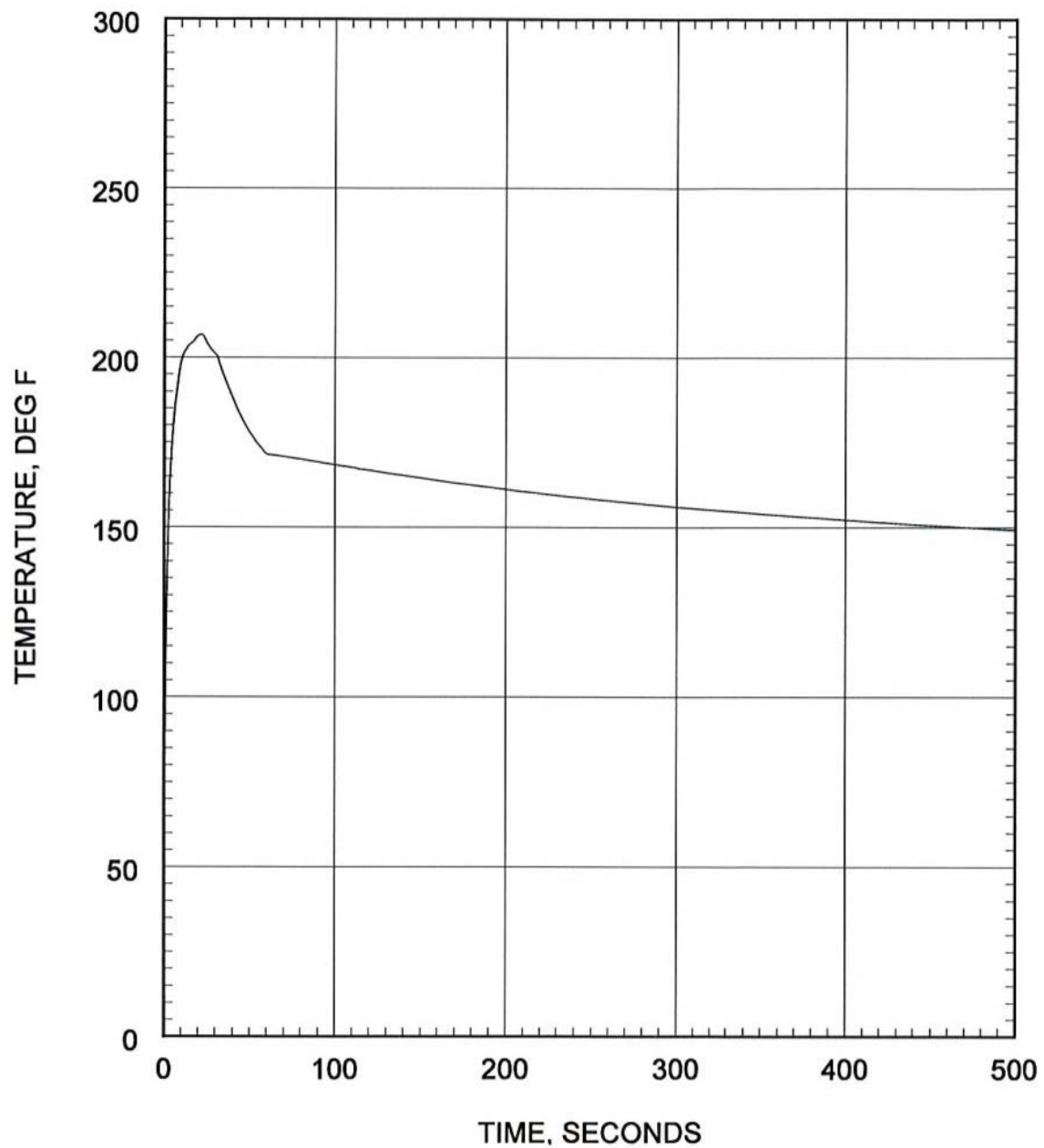
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK CONTAINMENT ATMOSPHERE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.2-2S

JUNE 2019

REVISION 20



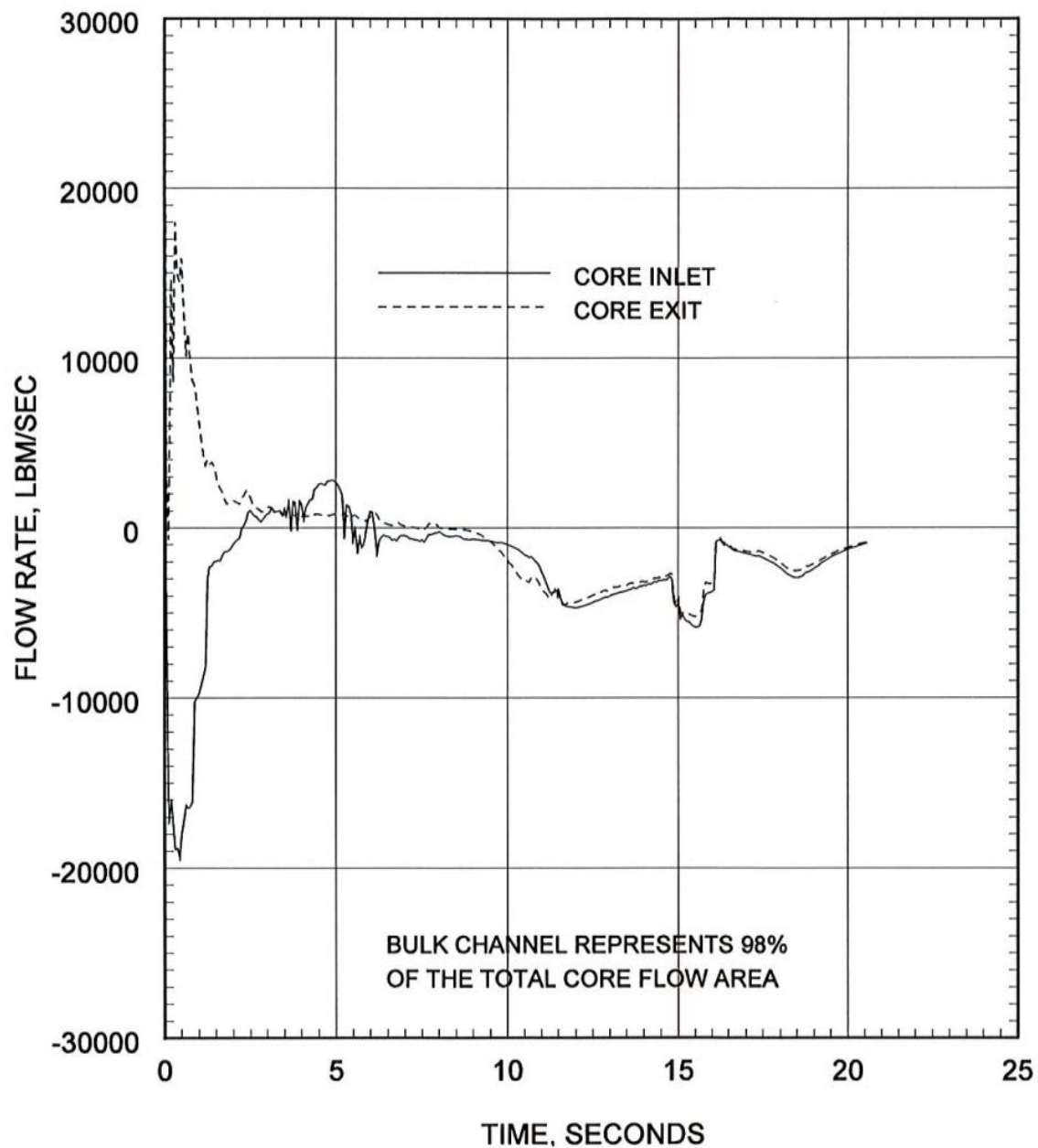
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK CONTAINMENT SUMP TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.2-2T

JUNE 2019

REVISION 20



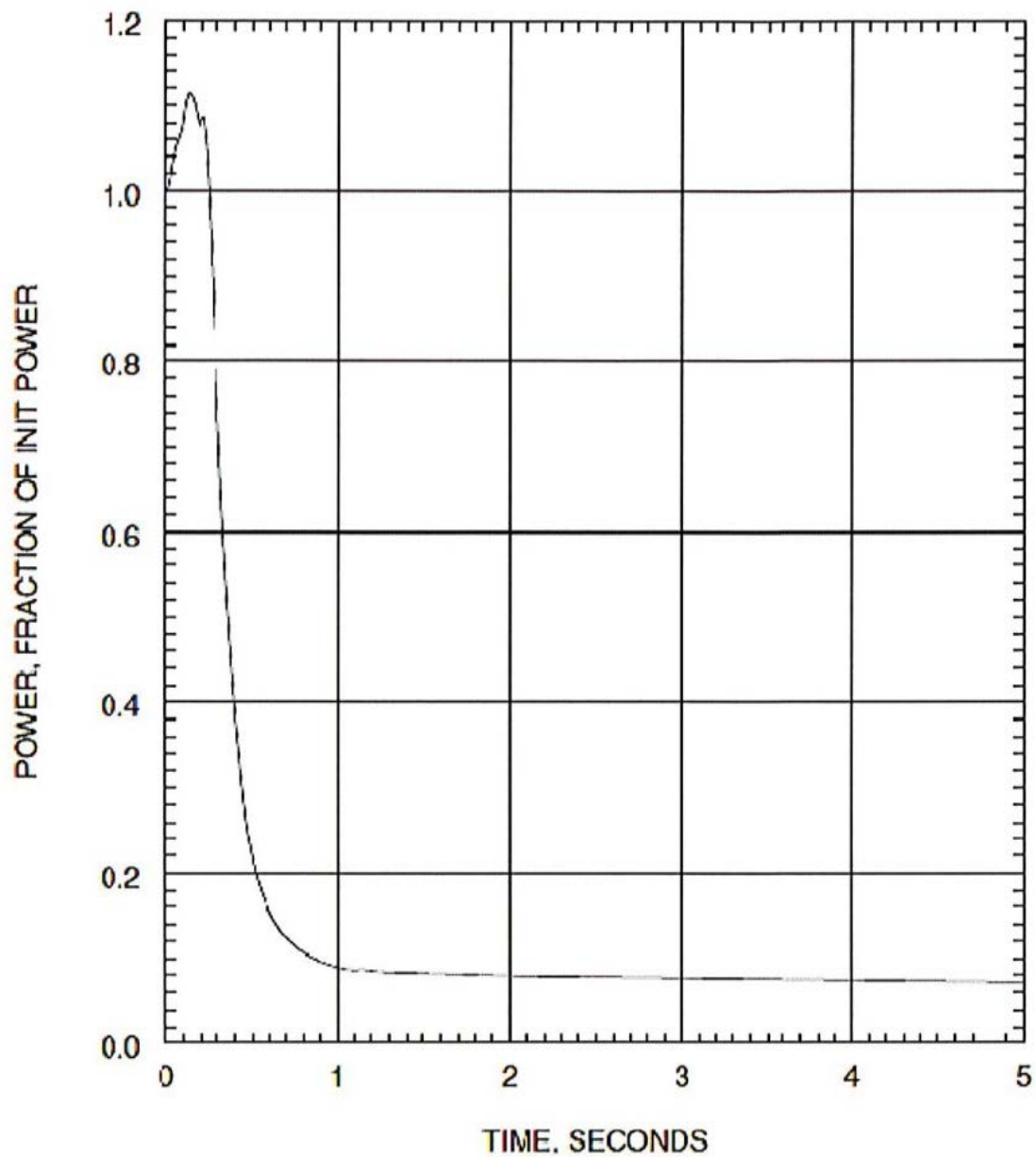
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.8 DEG/PD BREAK CORE BULK CHANNEL FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.2-2U

JUNE 2019

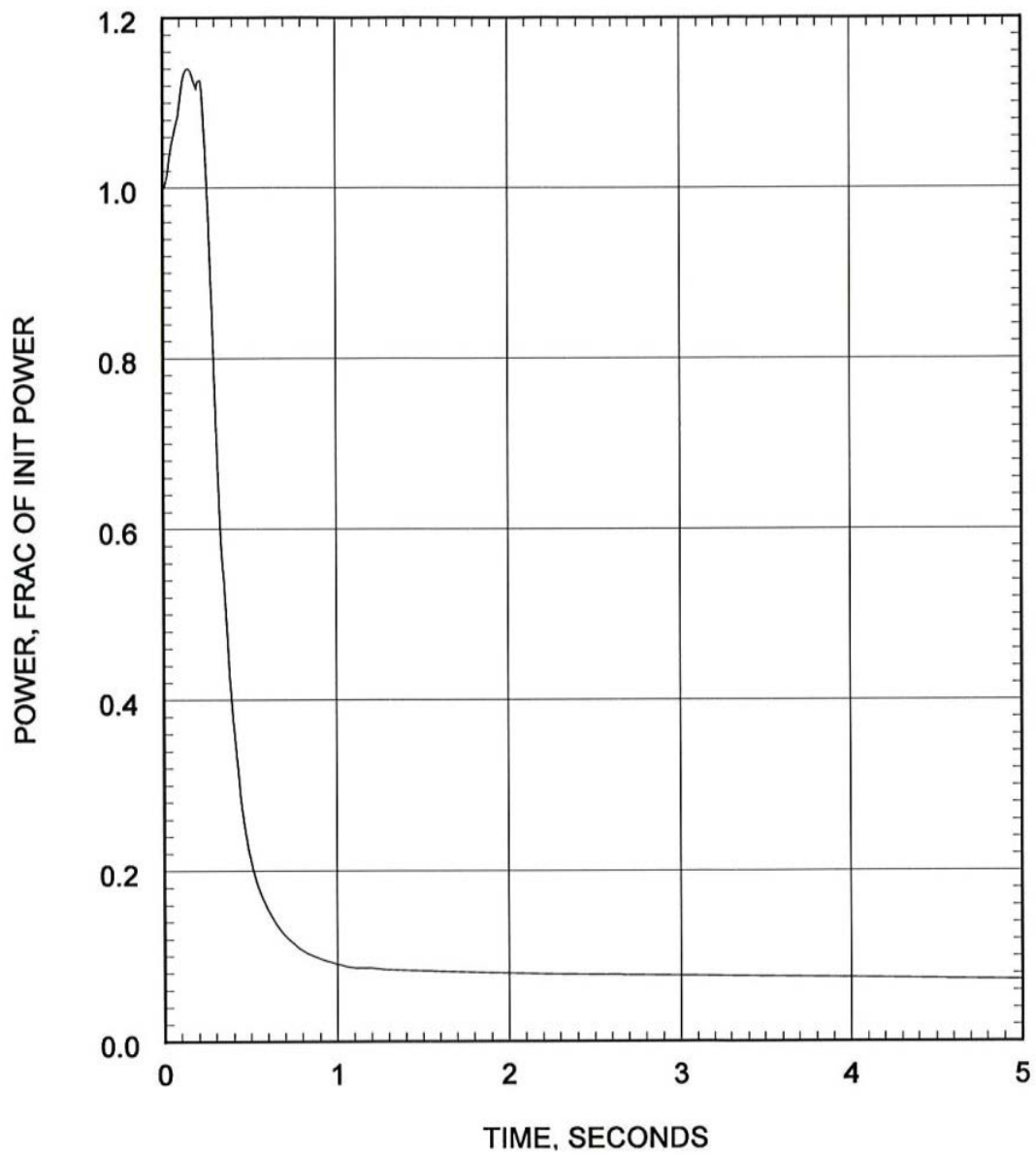
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.2-3A



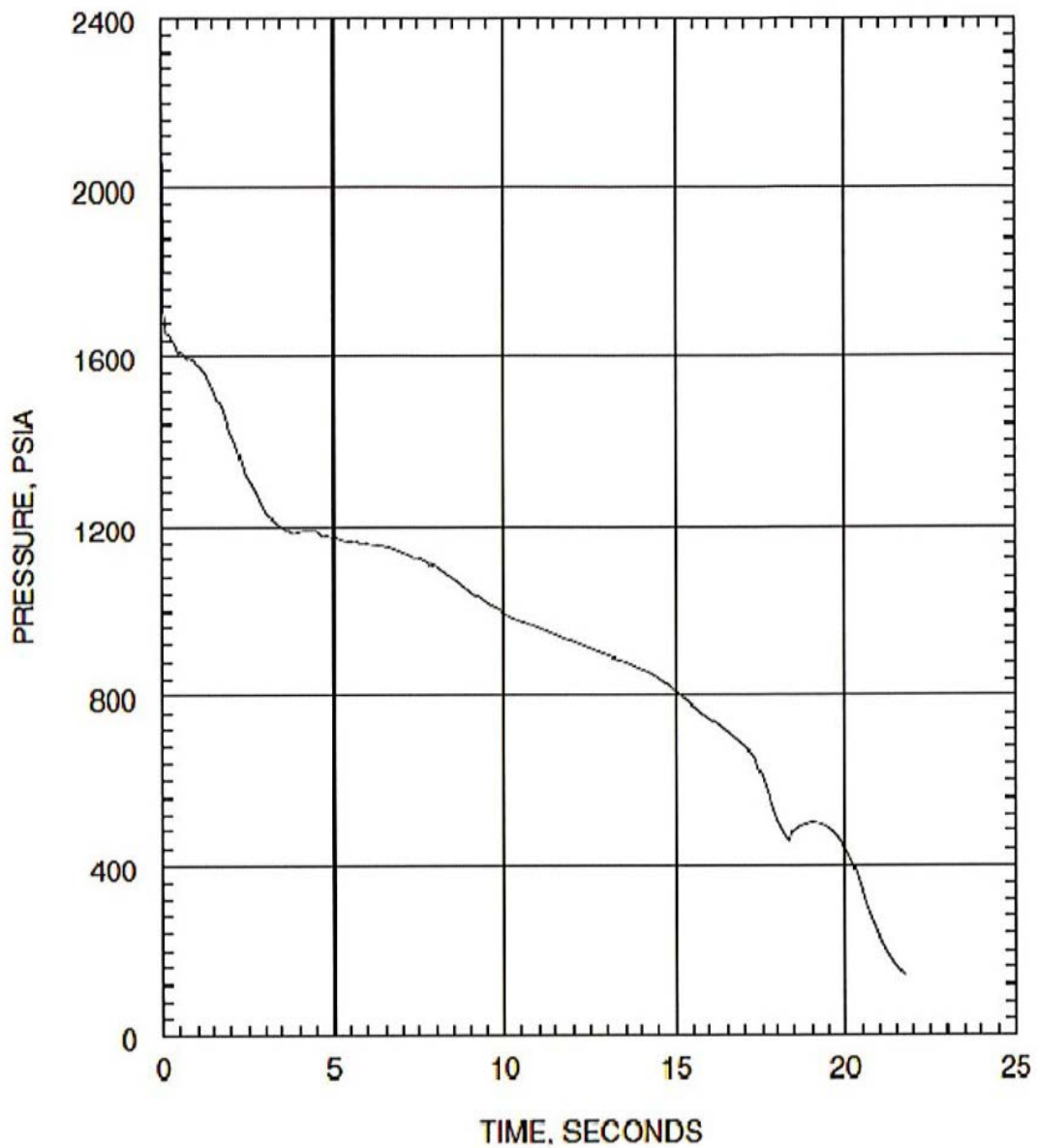
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.2-3A

JUNE 2019

REVISION 20



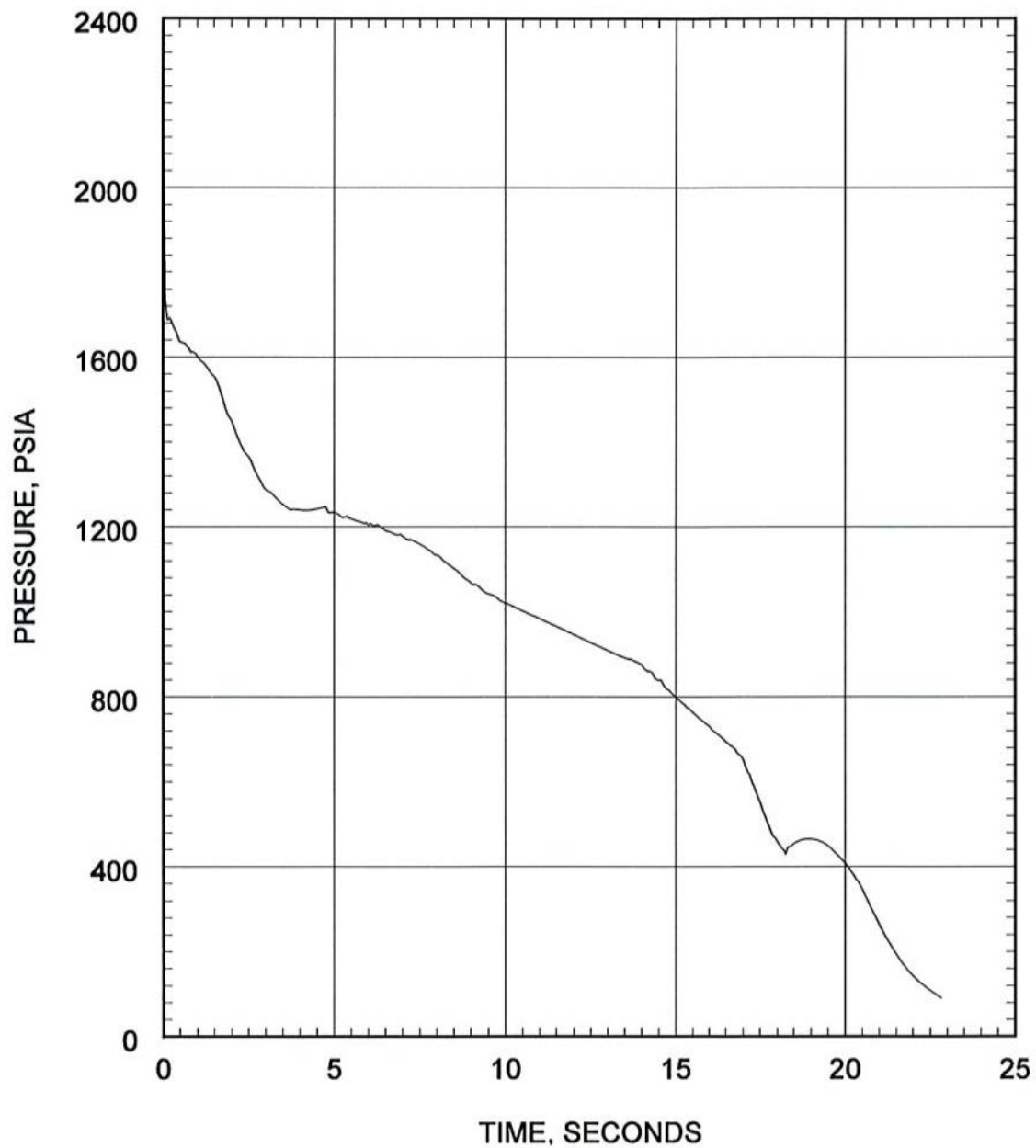
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
PRESSURE IN CENTER HOT ASSEMBLY NODE
CE16STD FUEL

FIGURE 6.3.3a.2-3B

JUNE 2019

REVISION 20



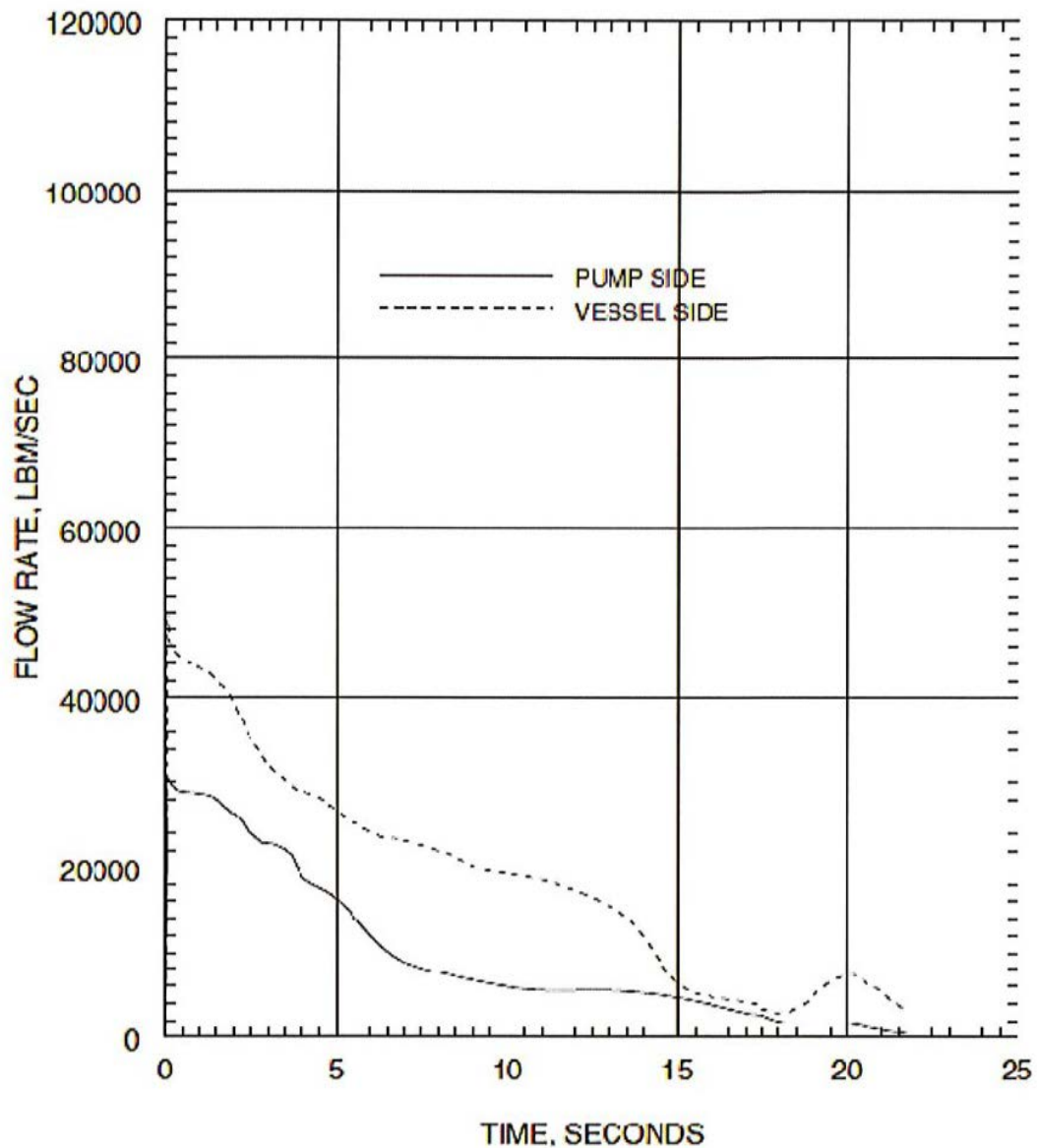
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
PRESSURE IN CENTER HOT ASSEMBLY NODE
CE16NGF FUEL

FIGURE 6.3.3b.2-3B

JUNE 2019

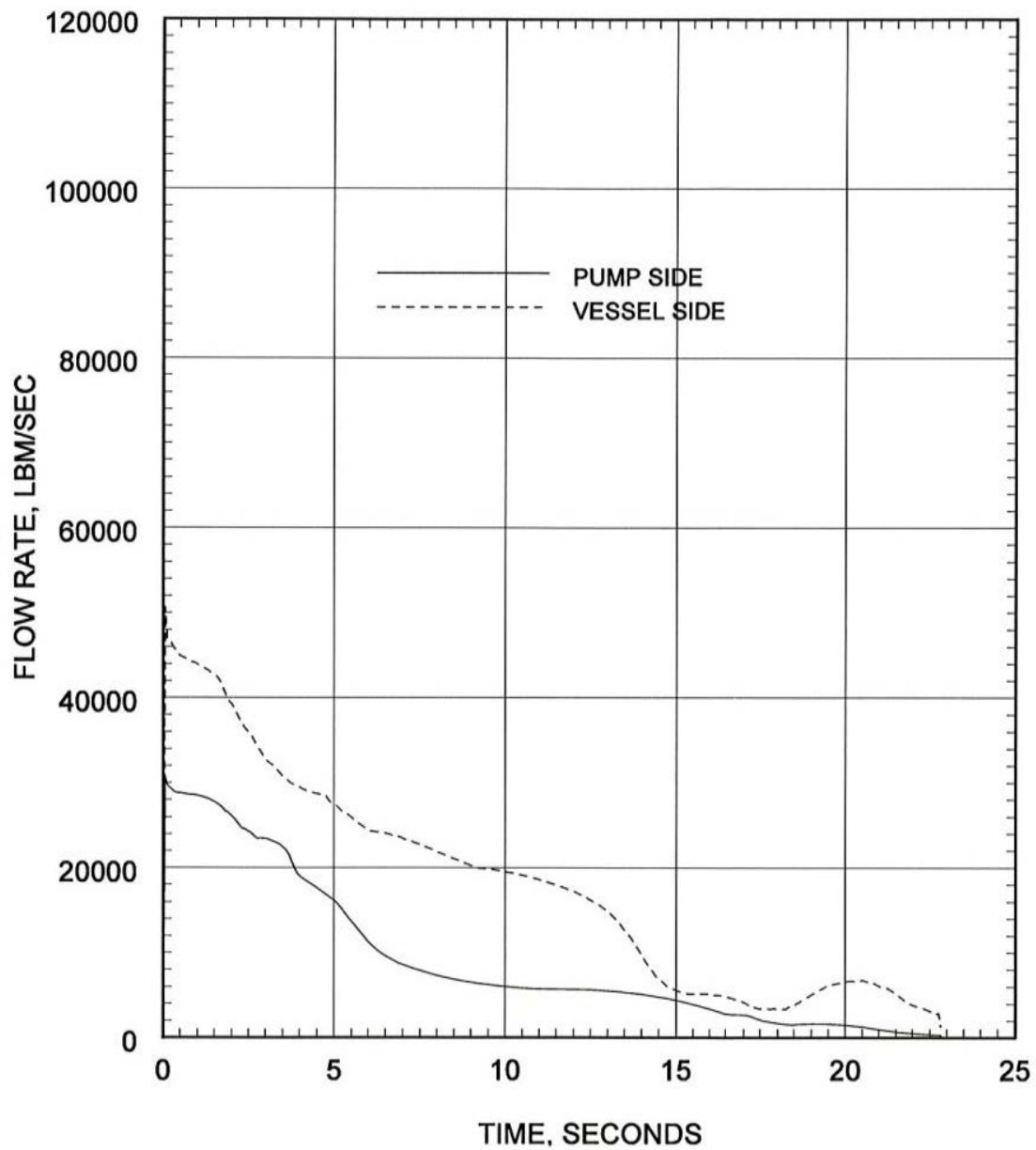
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
LEAK FLOW RATE
CE16STD FUEL

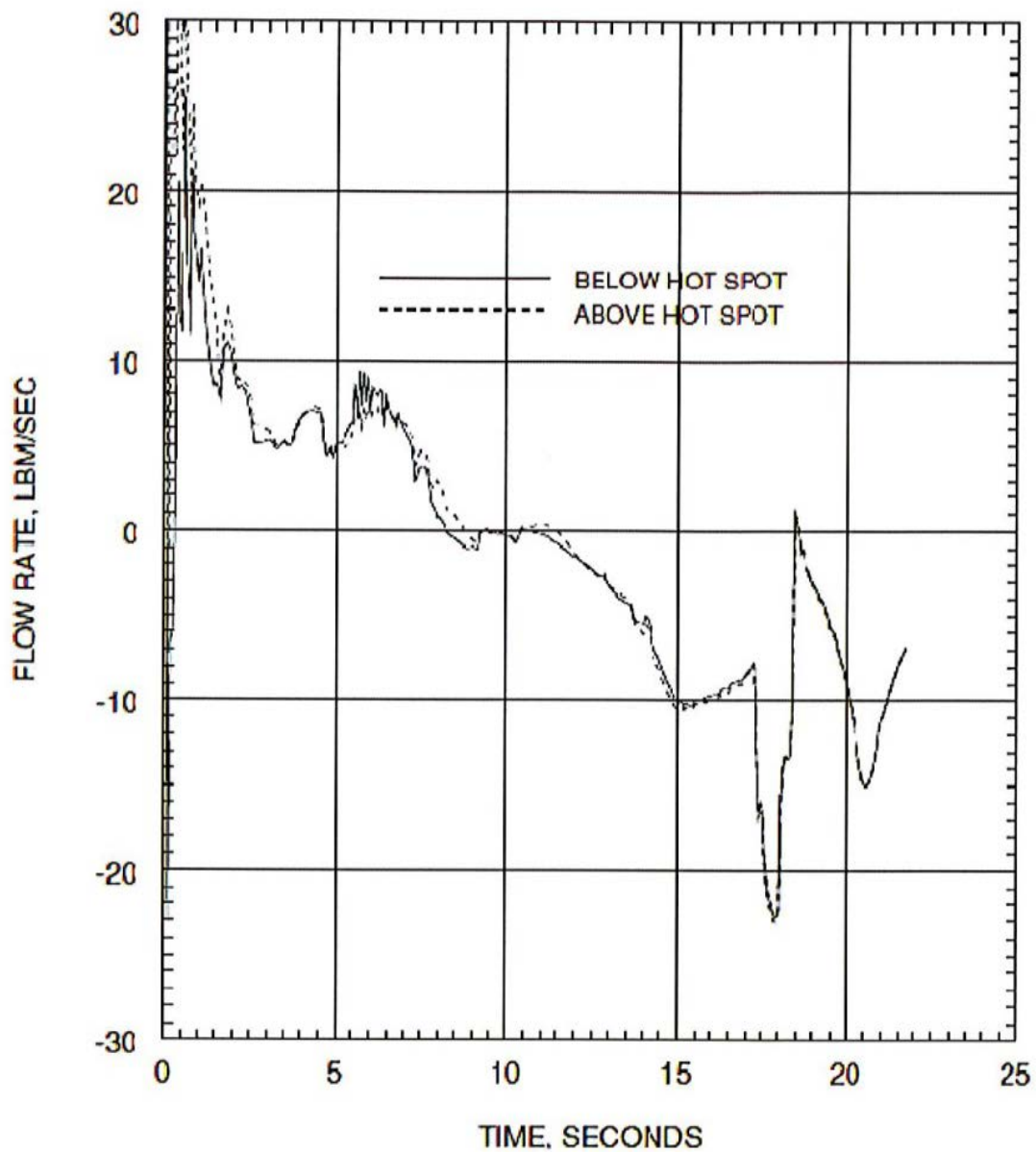
FIGURE 6.3.3a.2-3C



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
LEAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.2-3C



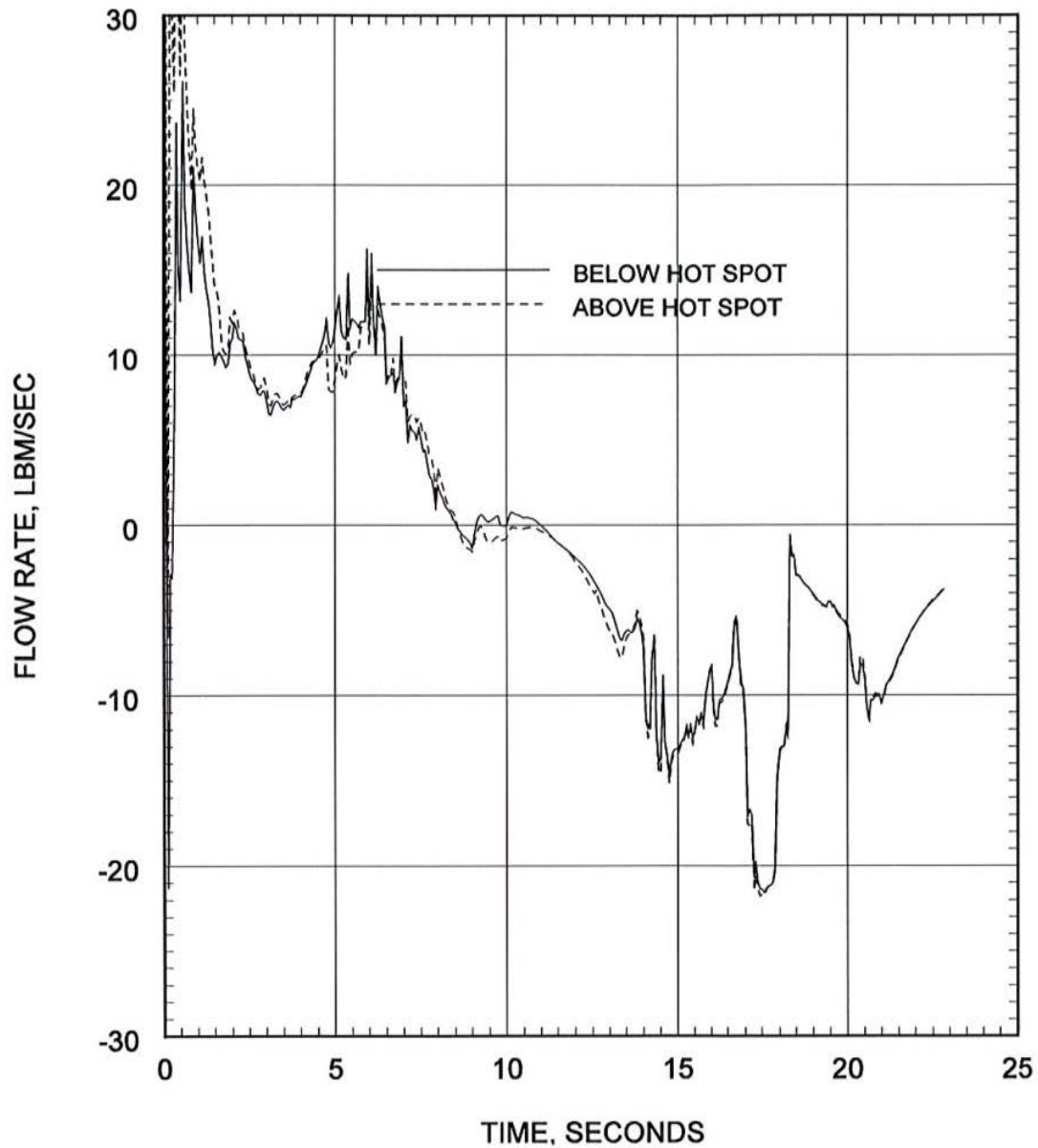
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
HOT ASSEMBLY FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.2-3D

JUNE 2019

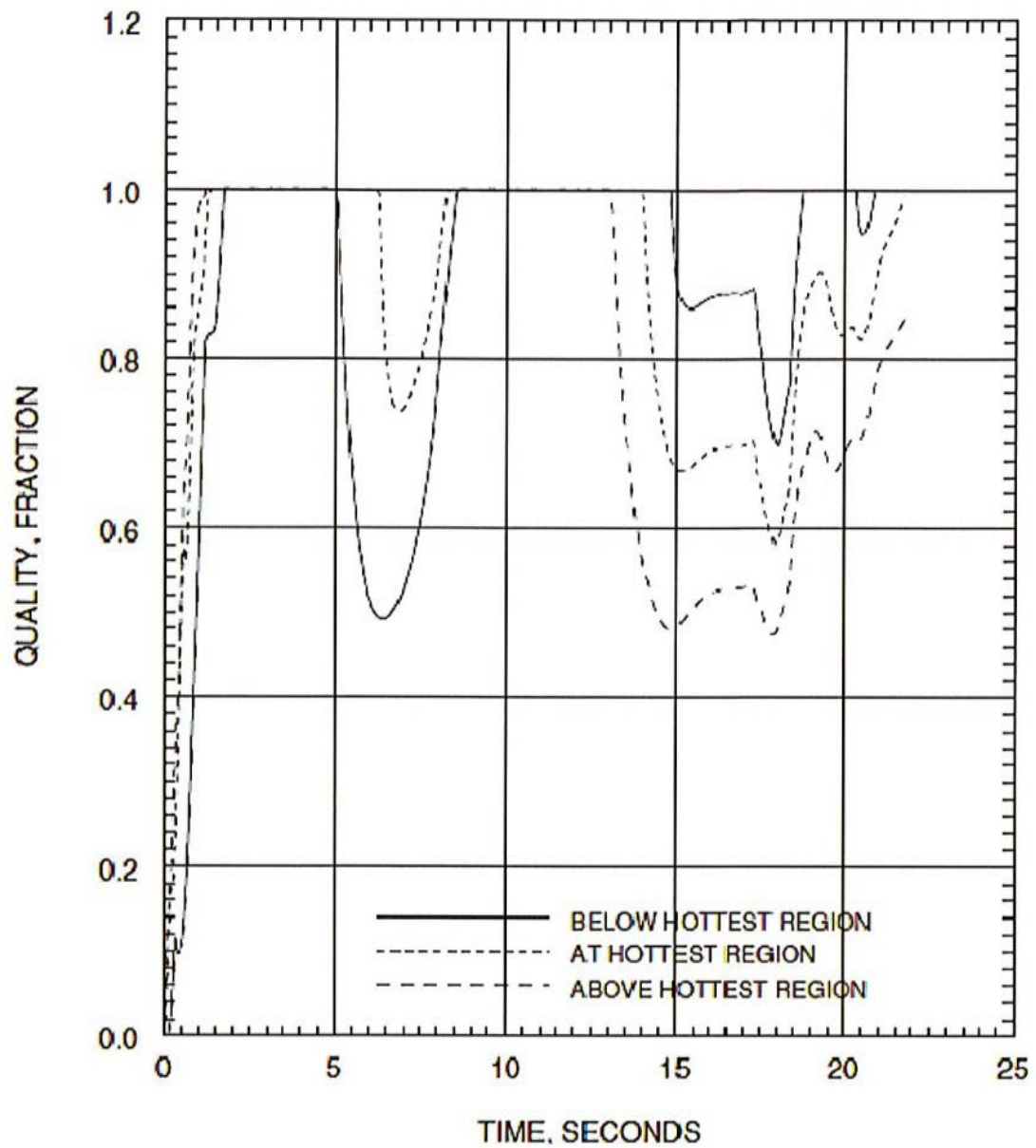
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
HOT ASSEMBLY FLOW RATE
CE16NGF FUEL

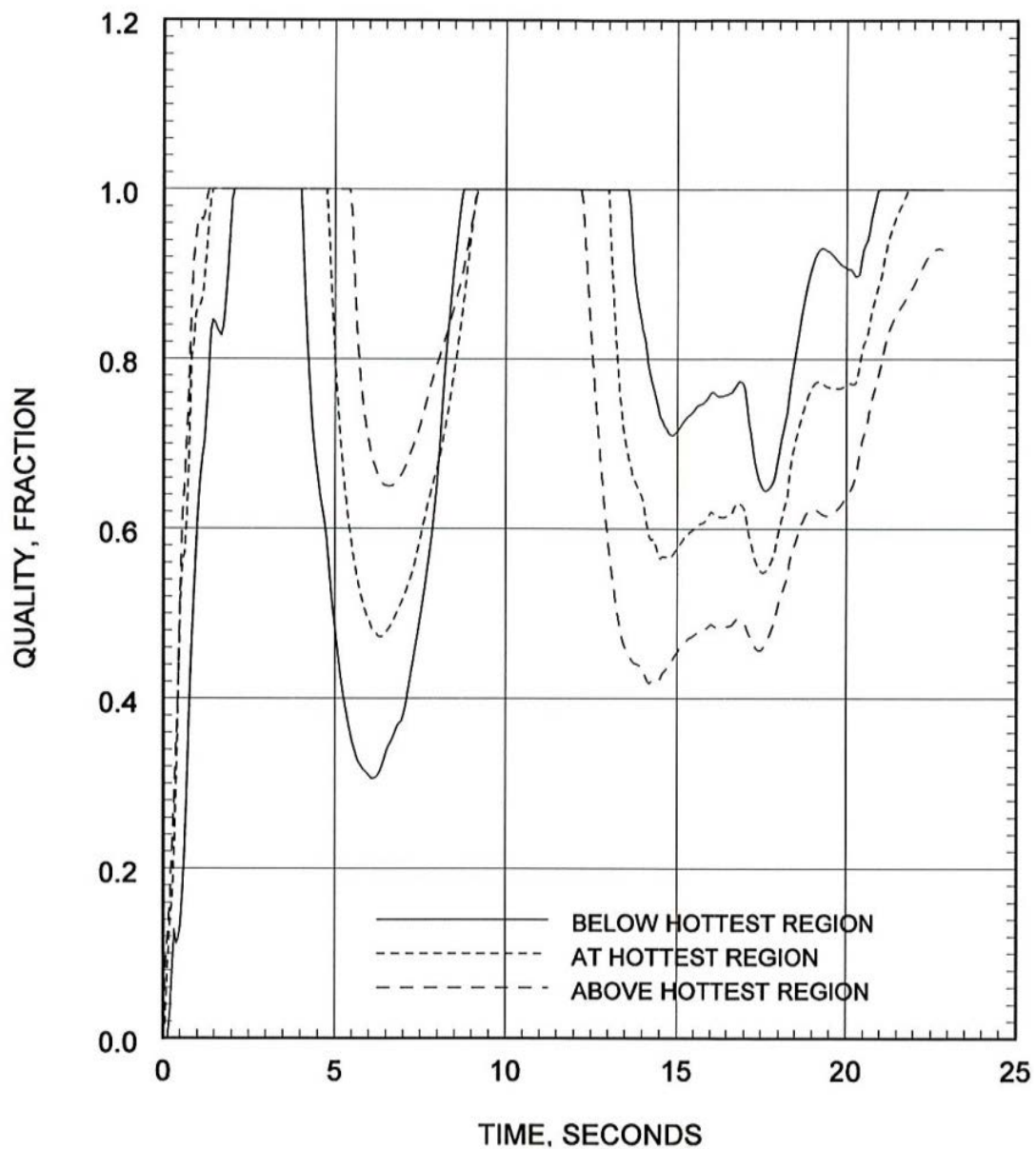
FIGURE 6.3.3b.2-3D



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
HOT ASSEMBLY QUALITY
CE16STD FUEL

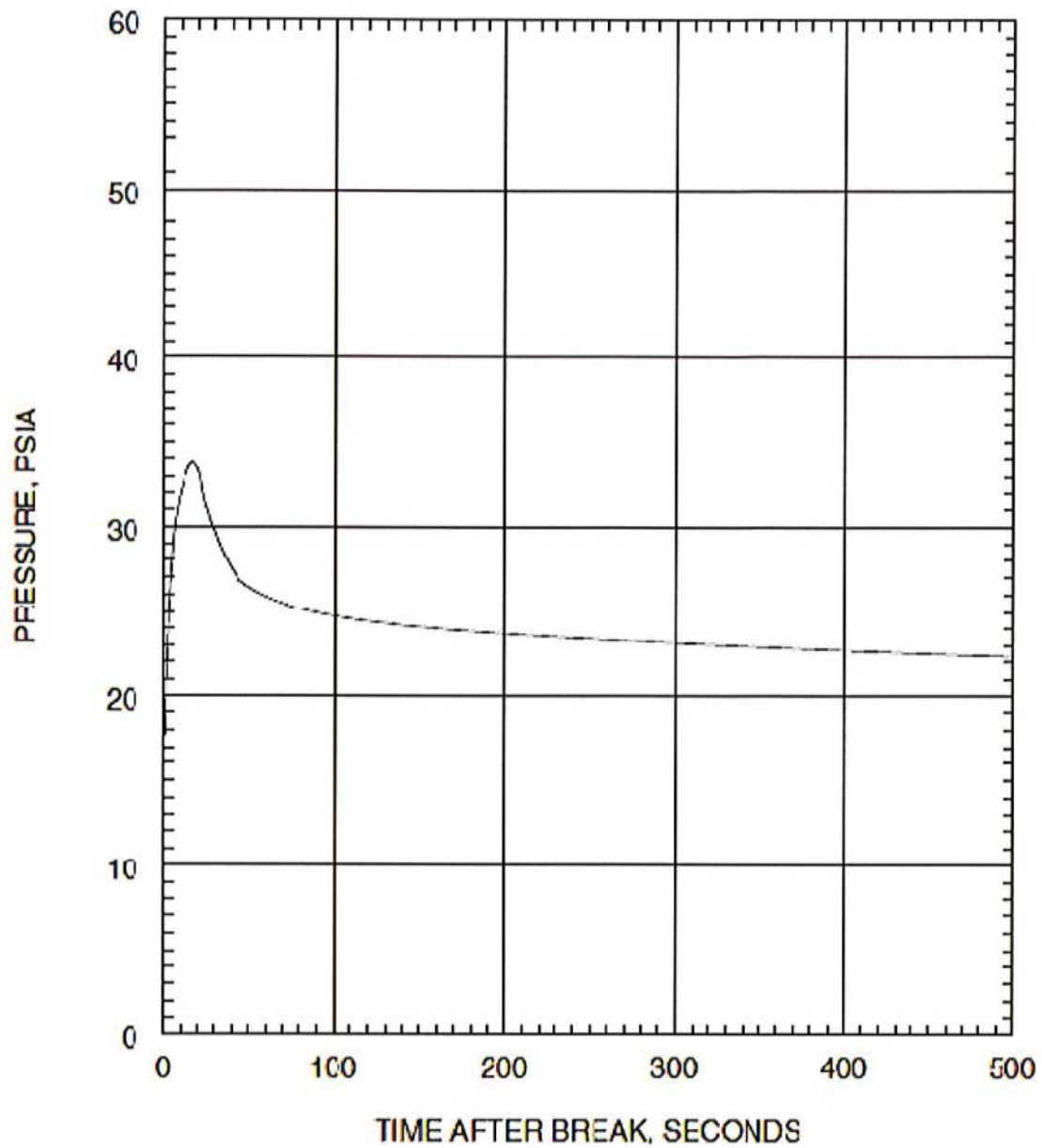
FIGURE 6.3.3a.2-3E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
HOT ASSEMBLY QUALITY
CE16NGF FUEL

FIGURE 6.3.3b.2-3E



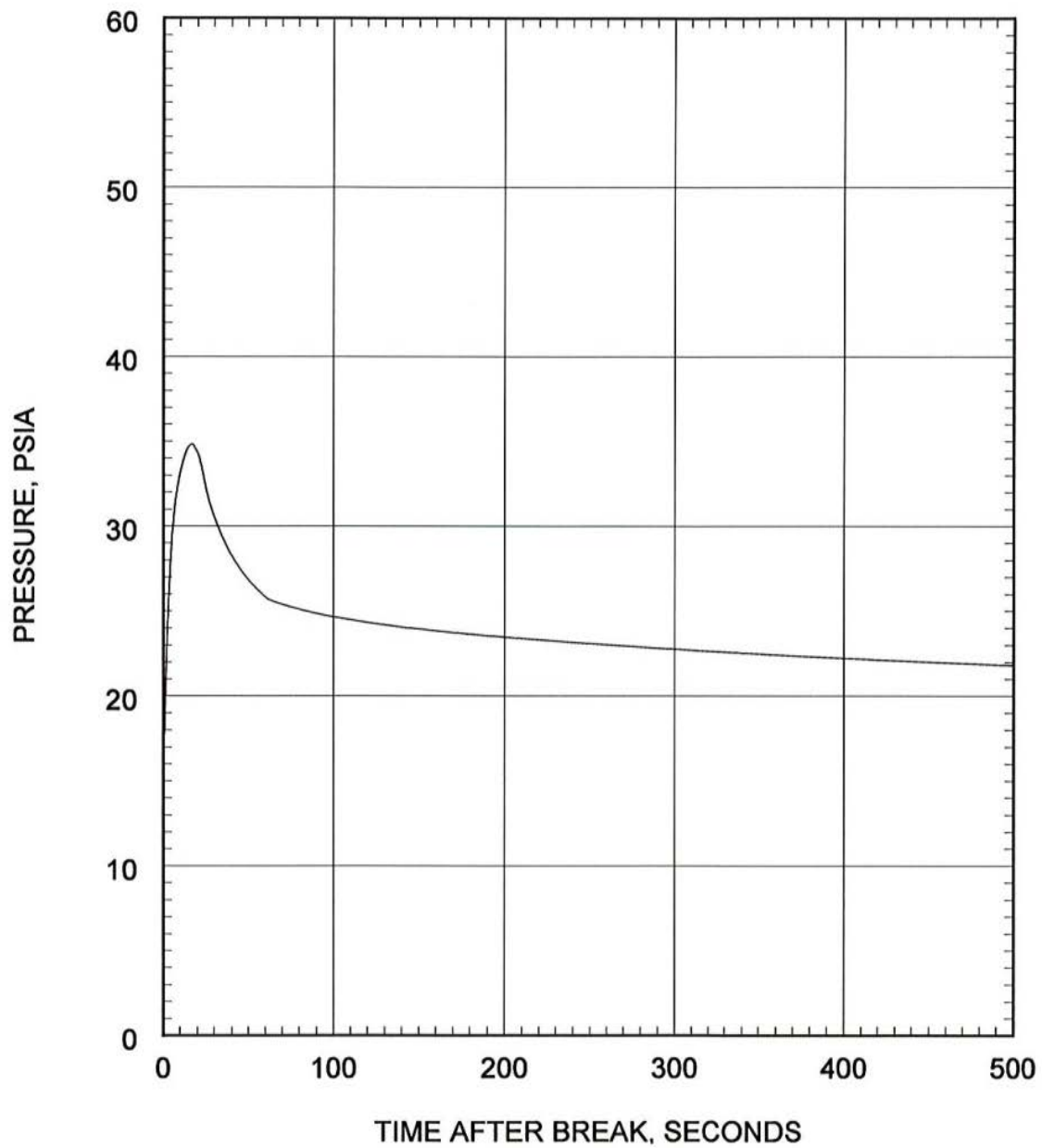
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
CONTAINMENT PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.2-3F

JUNE 2019

REVISION 20



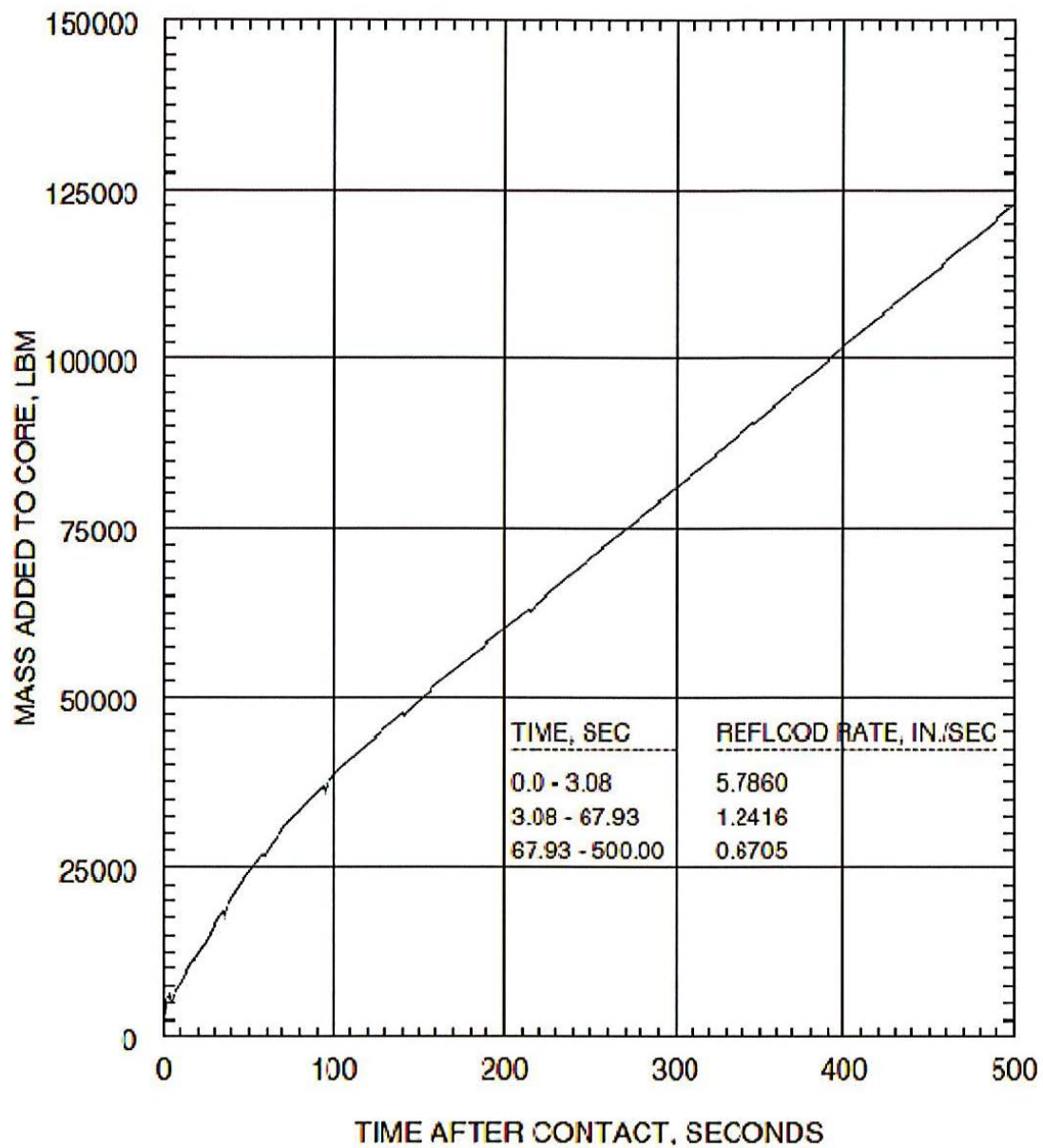
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
CONTAINMENT PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.2-3F

JUNE 2019

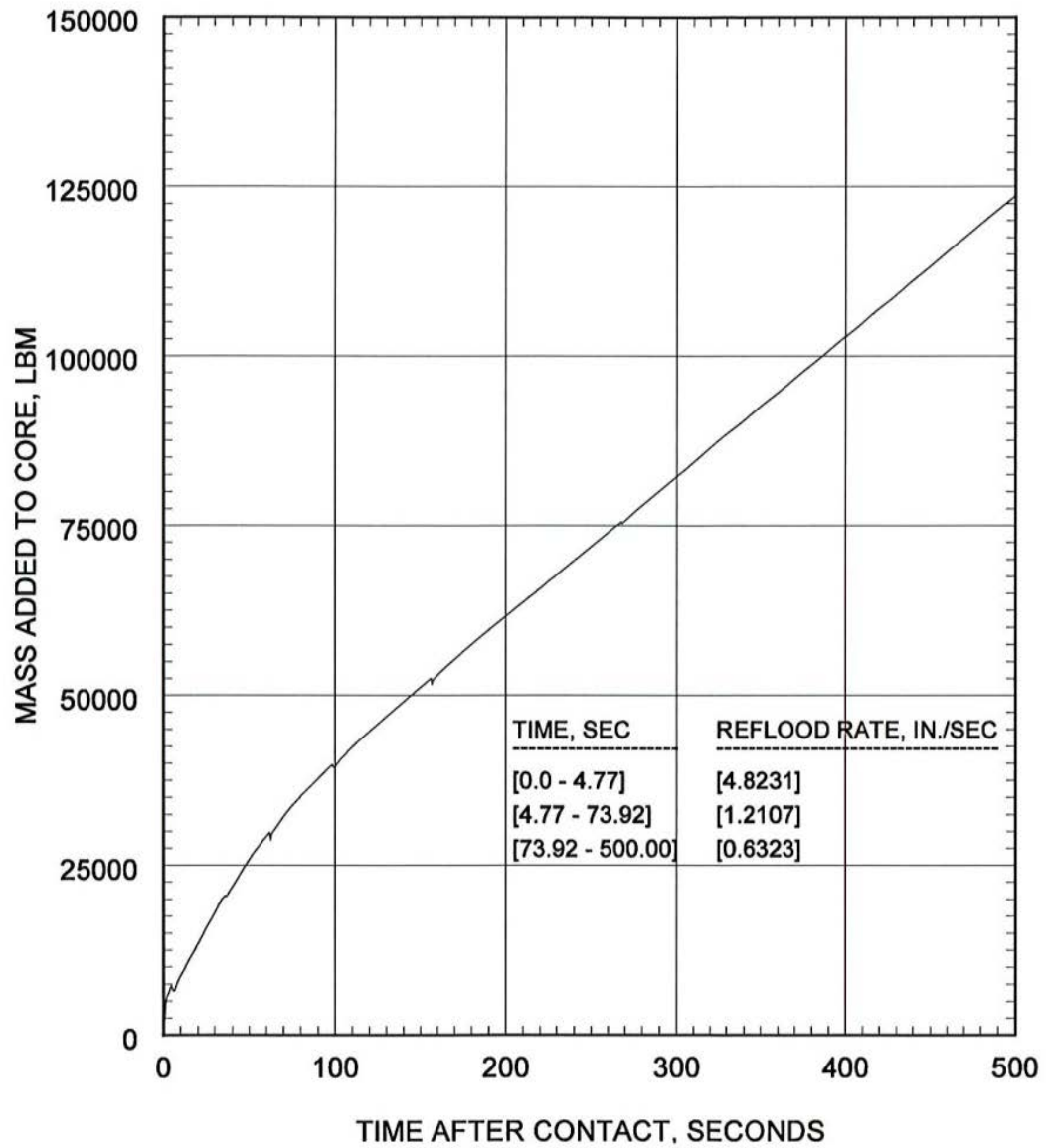
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
MASS ADDED TO CORE DURING REFLOOD
CE16STD FUEL

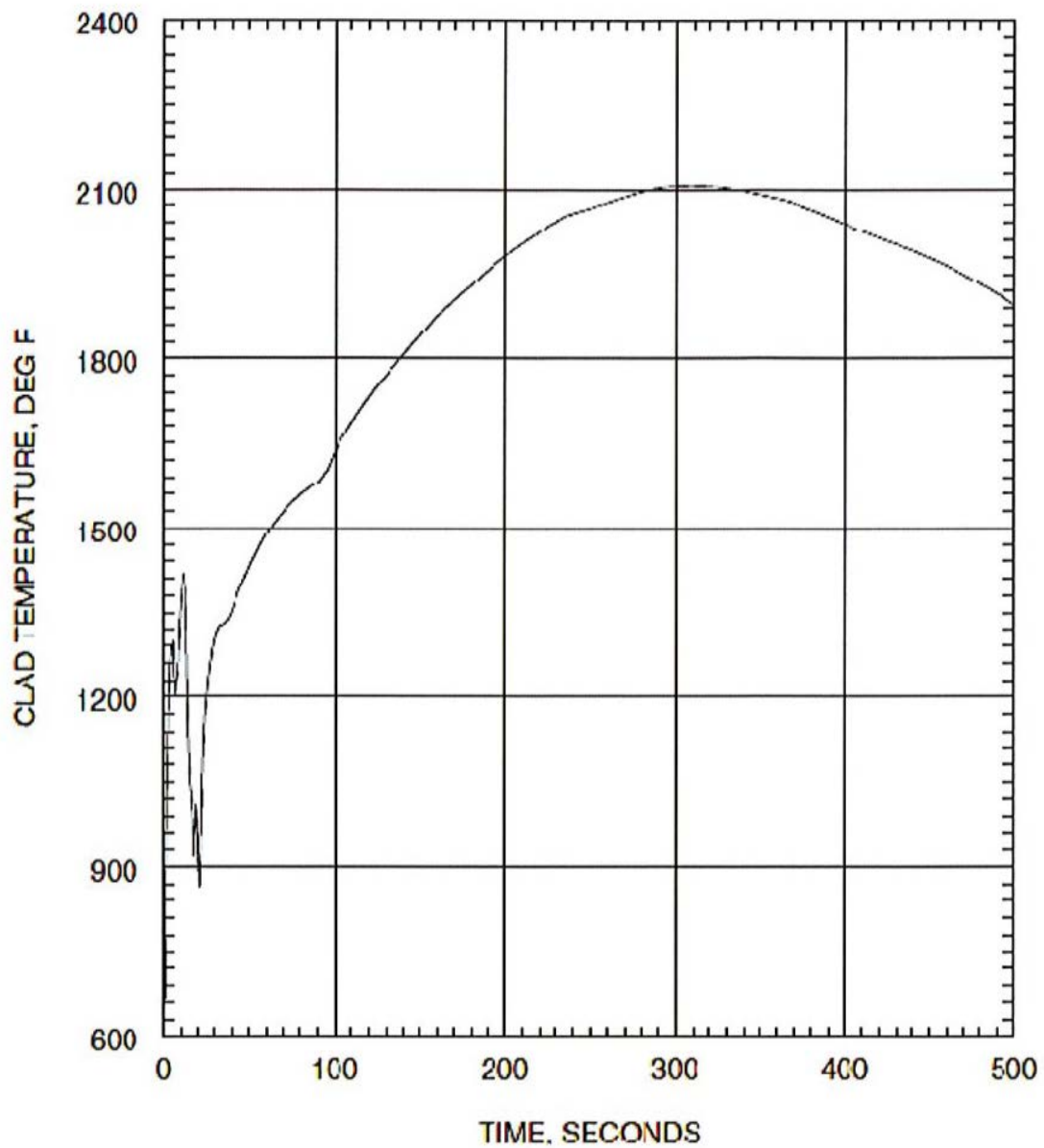
FIGURE 6.3.3a.2-3G



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
MASS ADDED TO CORE DURING REFLOOD
CE16NGF FUEL

FIGURE 6.3.3b.2-3G



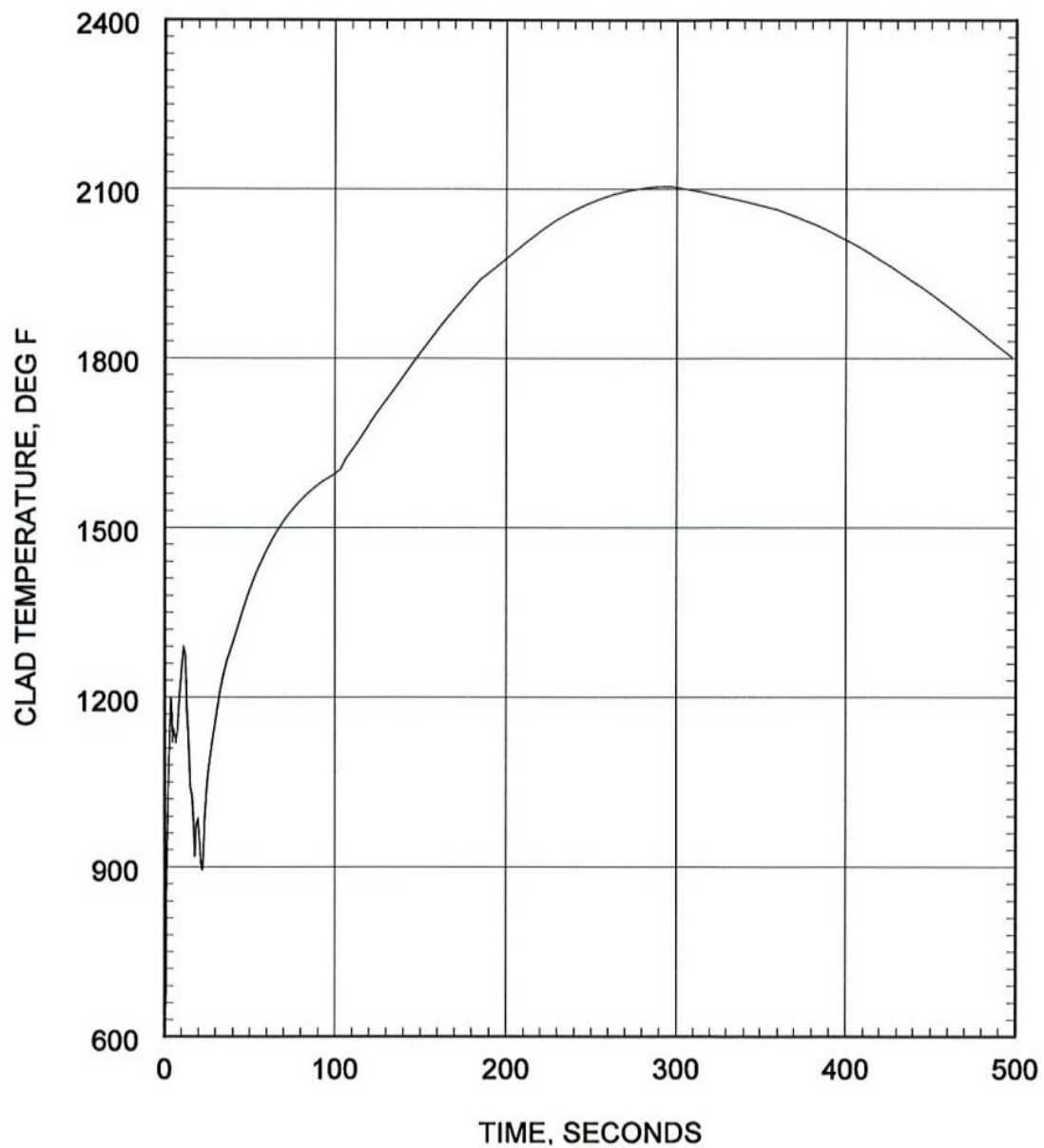
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
PEAK CLADDING TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.2-3H

JUNE 2019

REVISION 20



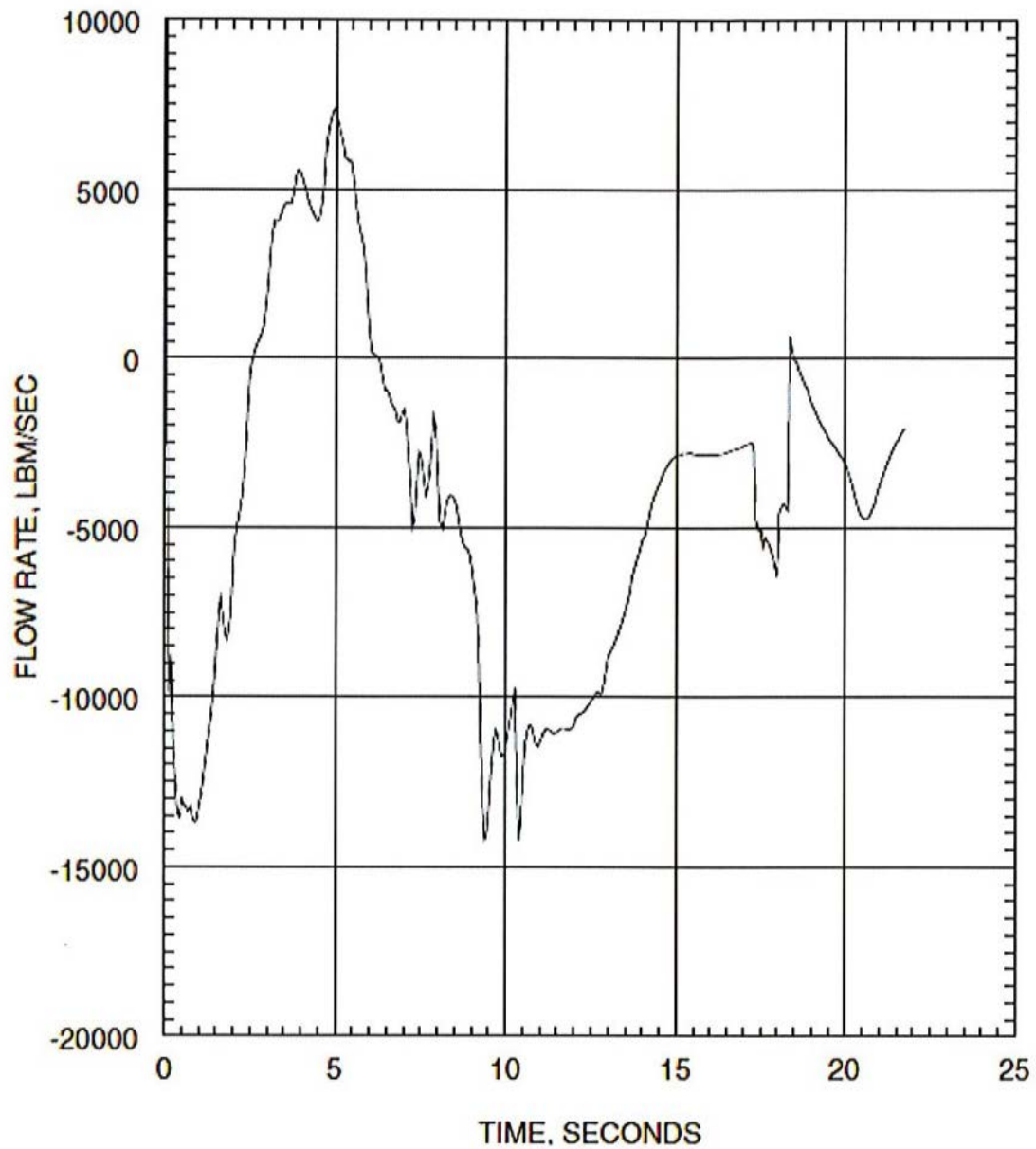
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
PEAK CLADDING TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.2-3H

JUNE 2019

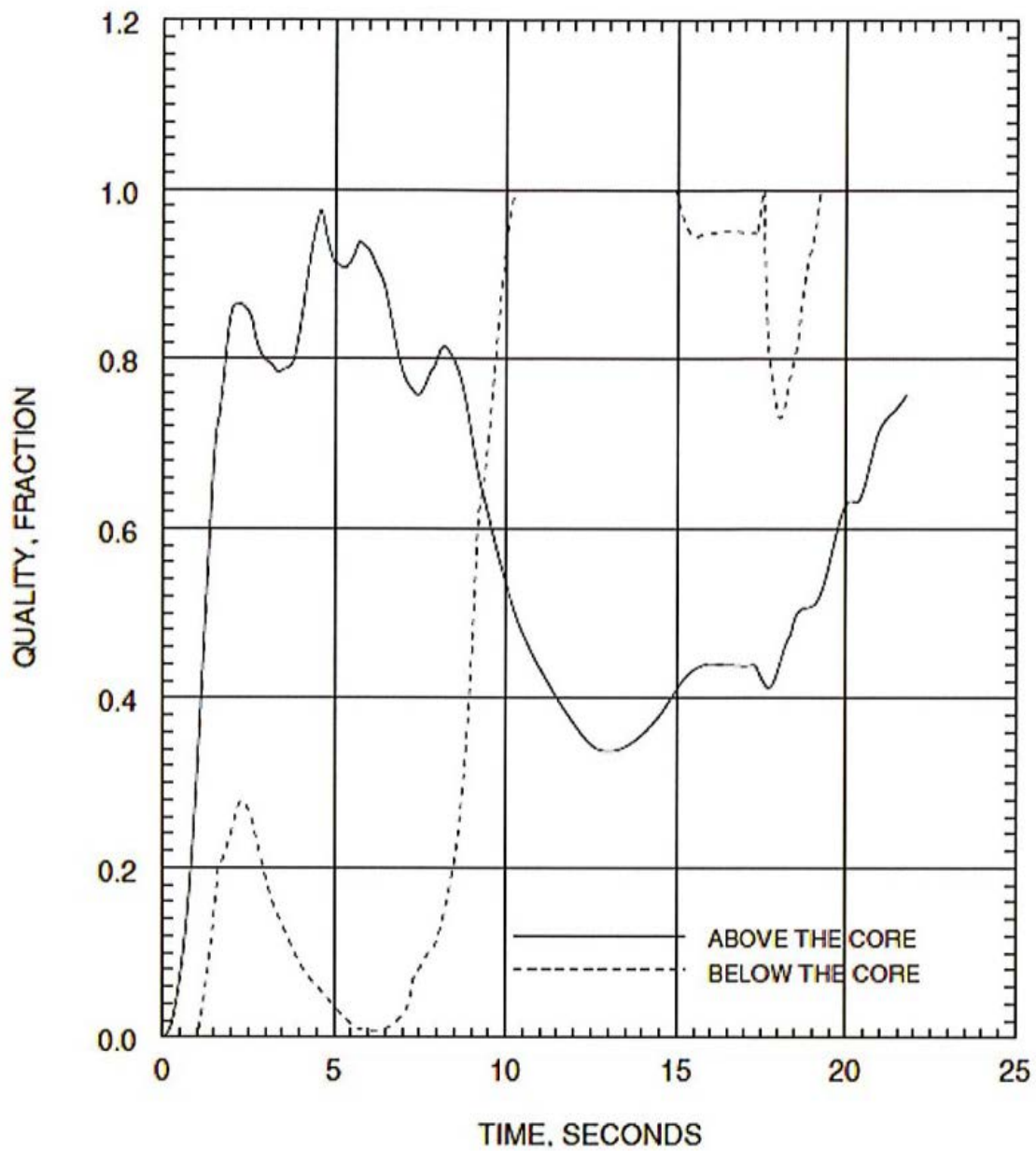
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
MID ANNULUS FLOW RATE
CE16STD FUEL

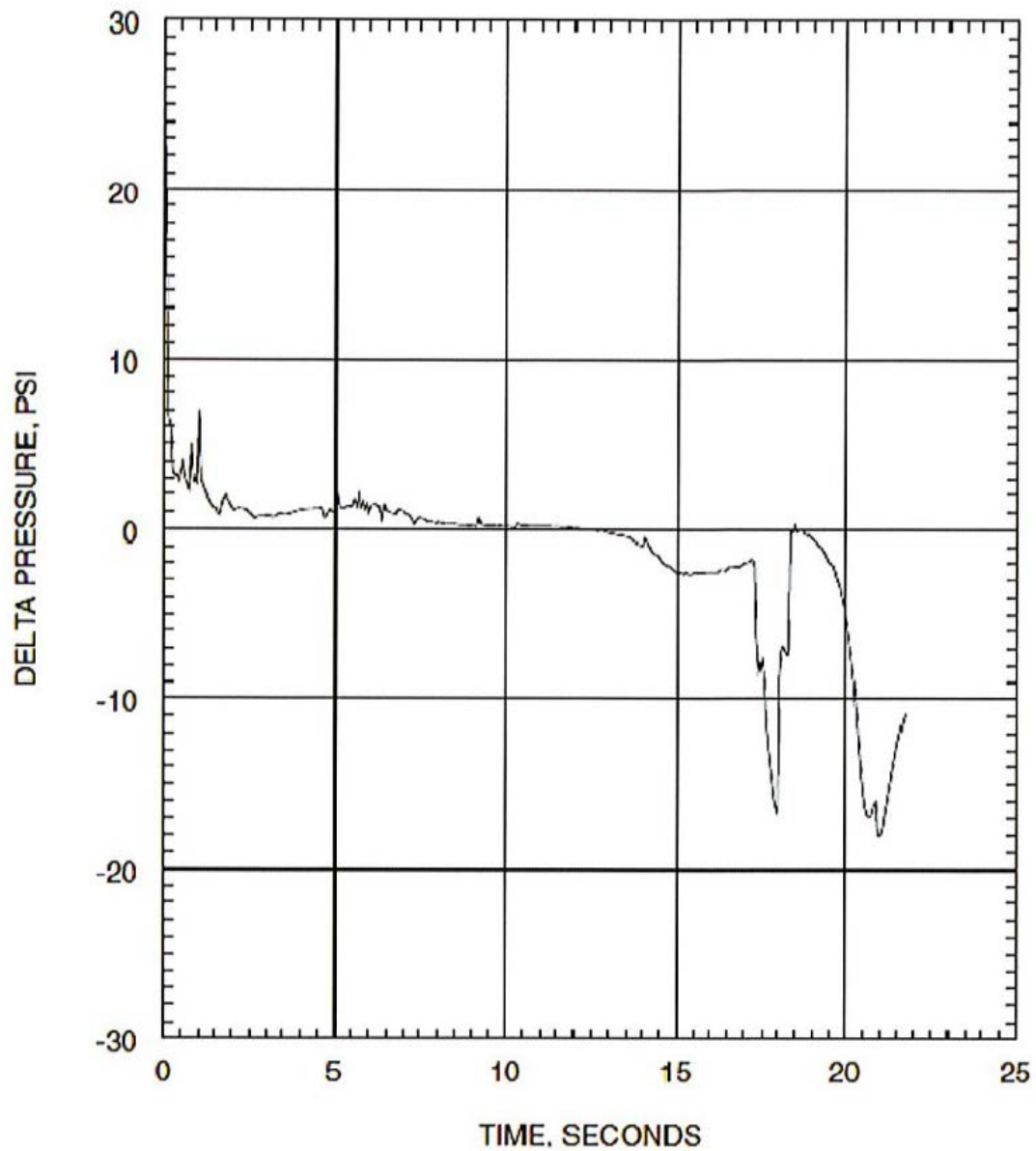
FIGURE 6.3.3a.2-3I



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
QUALITY ABOVE AND BELOW THE CORE
CE16STD FUEL

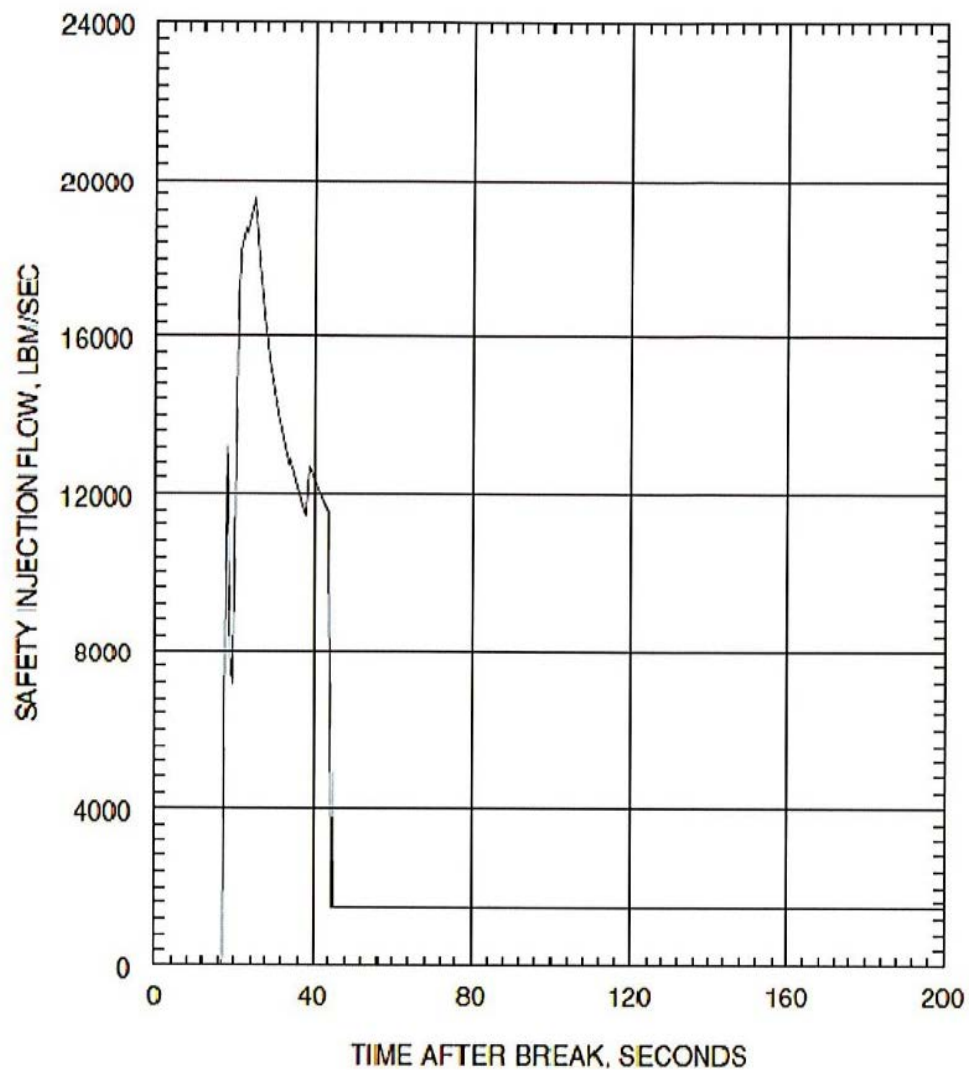
FIGURE 6.3.3a.2-3J



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
CORE PRESSURE DROP
CE16STD FUEL

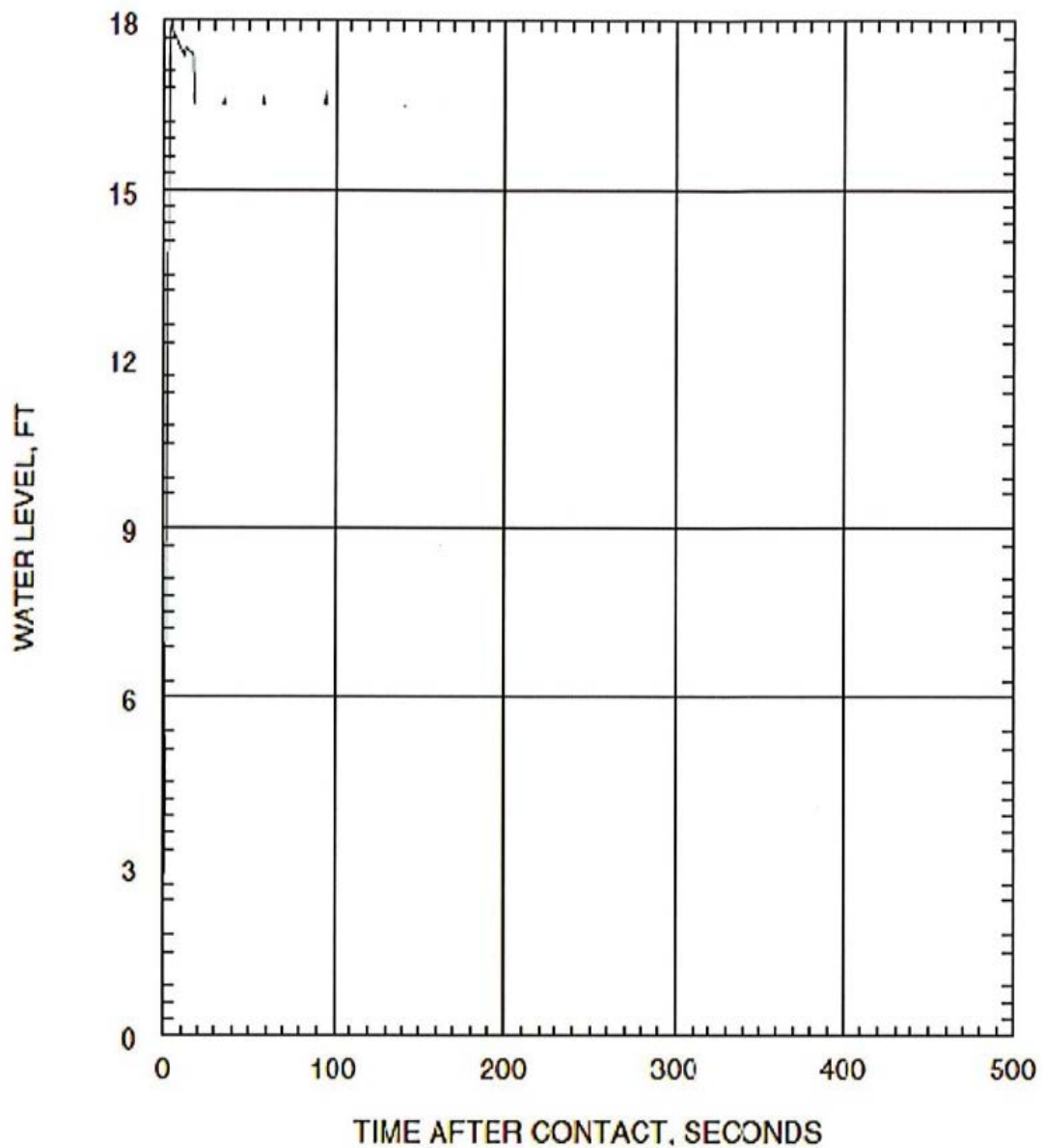
FIGURE 6.3.3a.2-3K



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
SAFETY INJECTION FLOW RATE
INTO INTACT DISCHARGE LEG
CE16STD FUEL

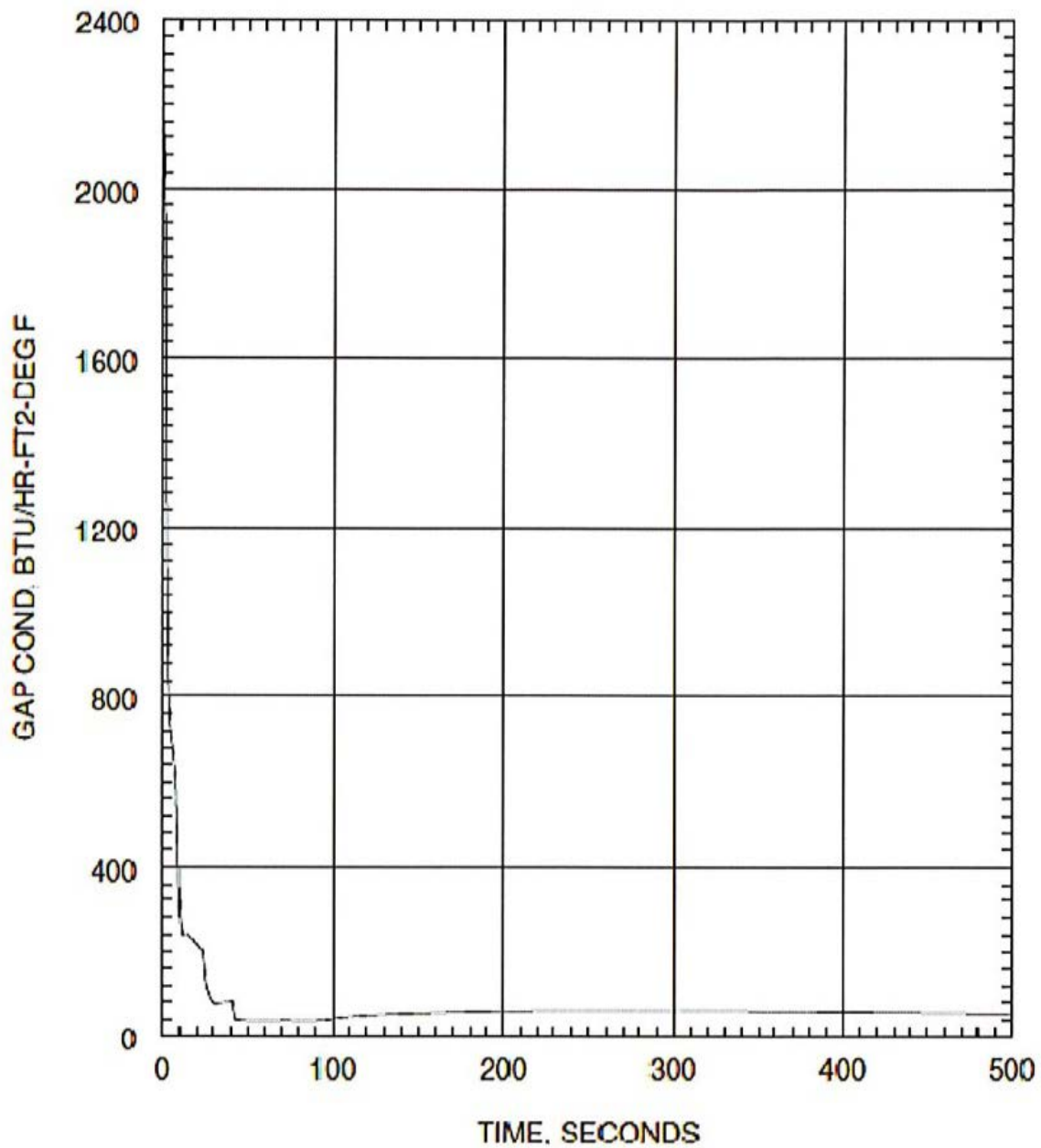
FIGURE 6.3.3a.2-3L



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
WATER LEVEL IN DOWNCOMER
DURING REFLOOD
CE16STD FUEL

FIGURE 6.3.3a.2-3M



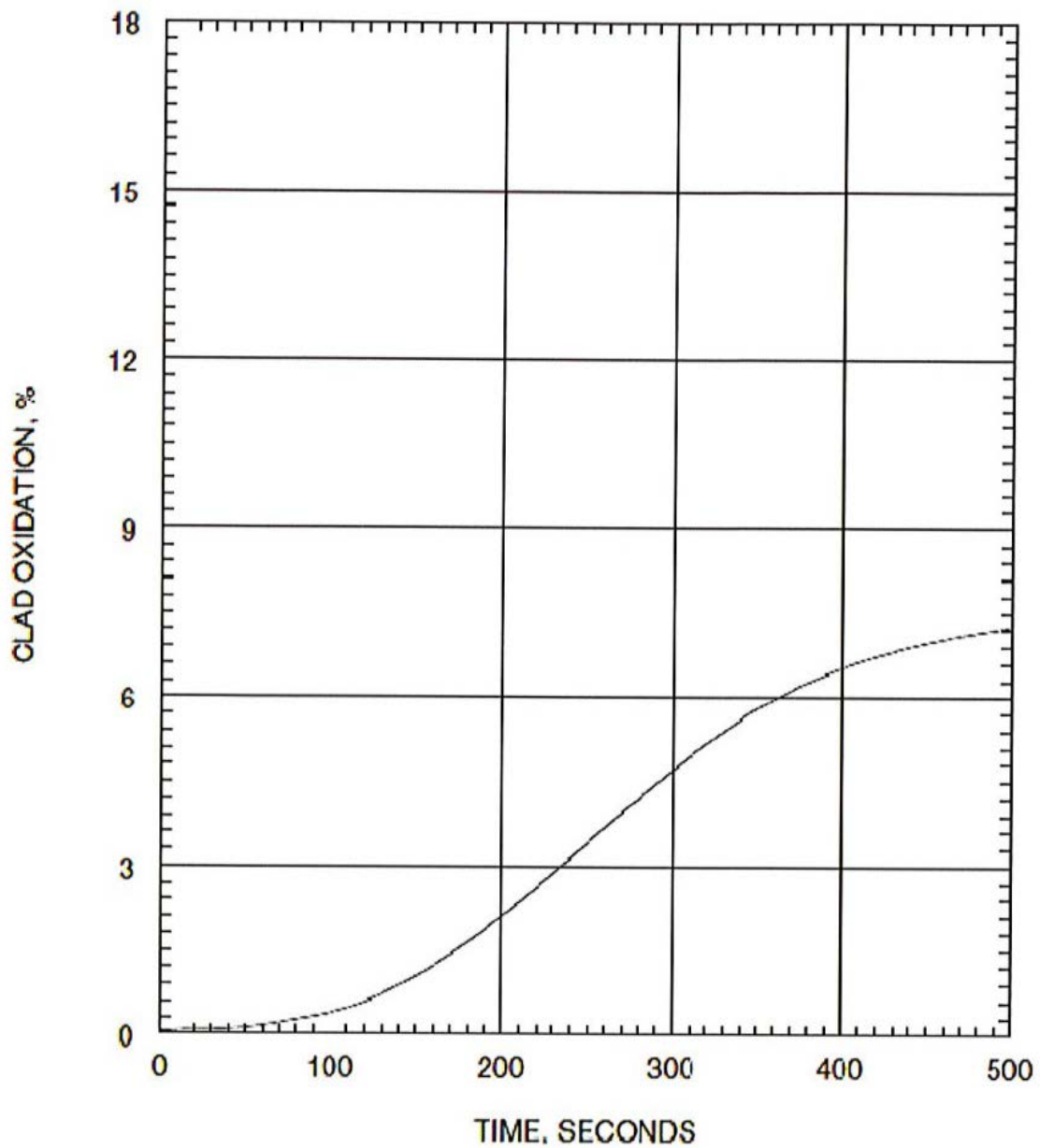
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
HOT SPOT GAP CONDUCTANCE
CE16STD FUEL

FIGURE 6.3.3a.2-3N

JUNE 2019

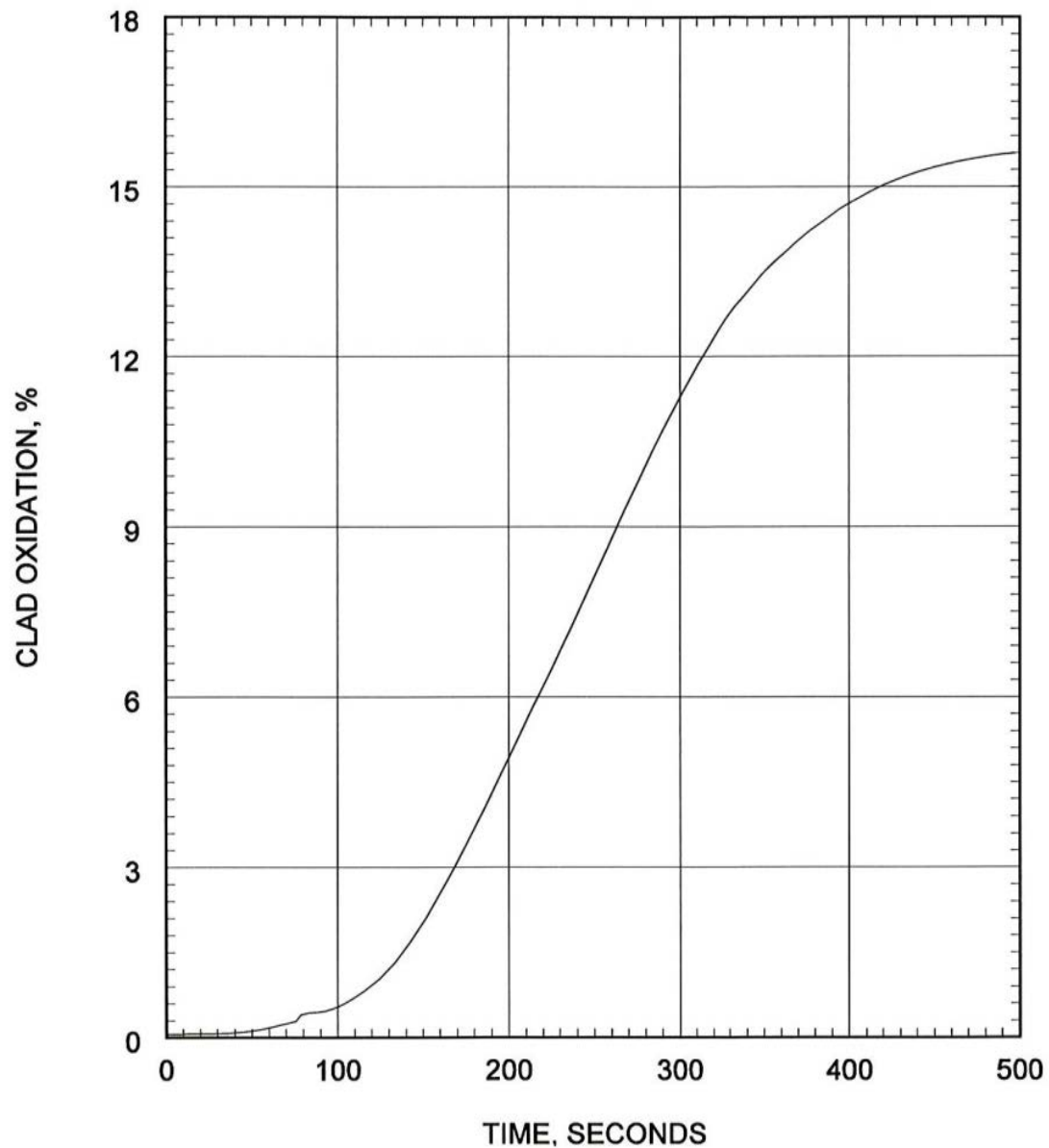
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
LOCAL CLADDING OXIDATION PERCENTAGE
CE16STD FUEL

FIGURE 6.3.3a.2-30



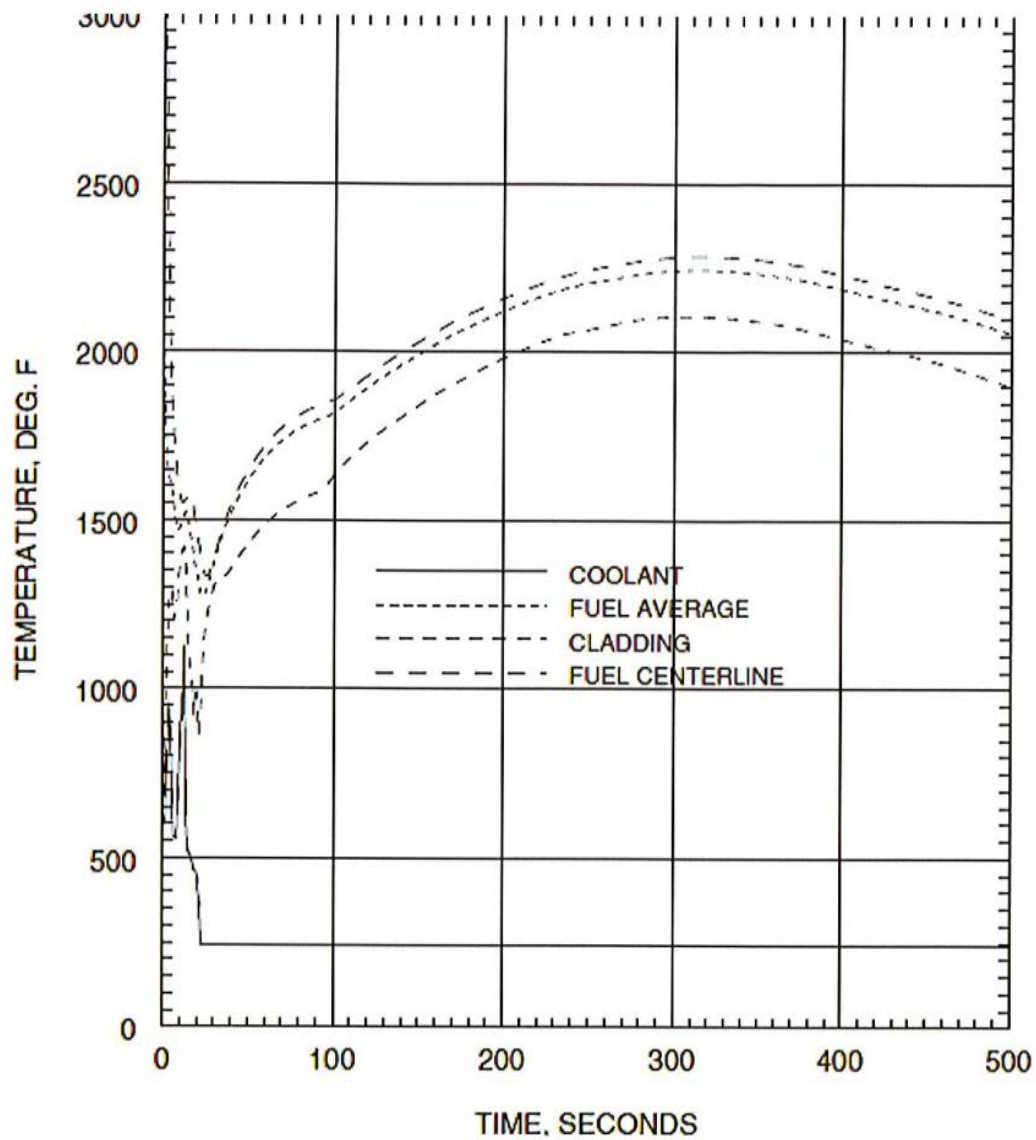
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
LOCAL CLADDING OXIDATION PERCENTAGE
CE16NGF FUEL

FIGURE 6.3.3b.2-30

JUNE 2019

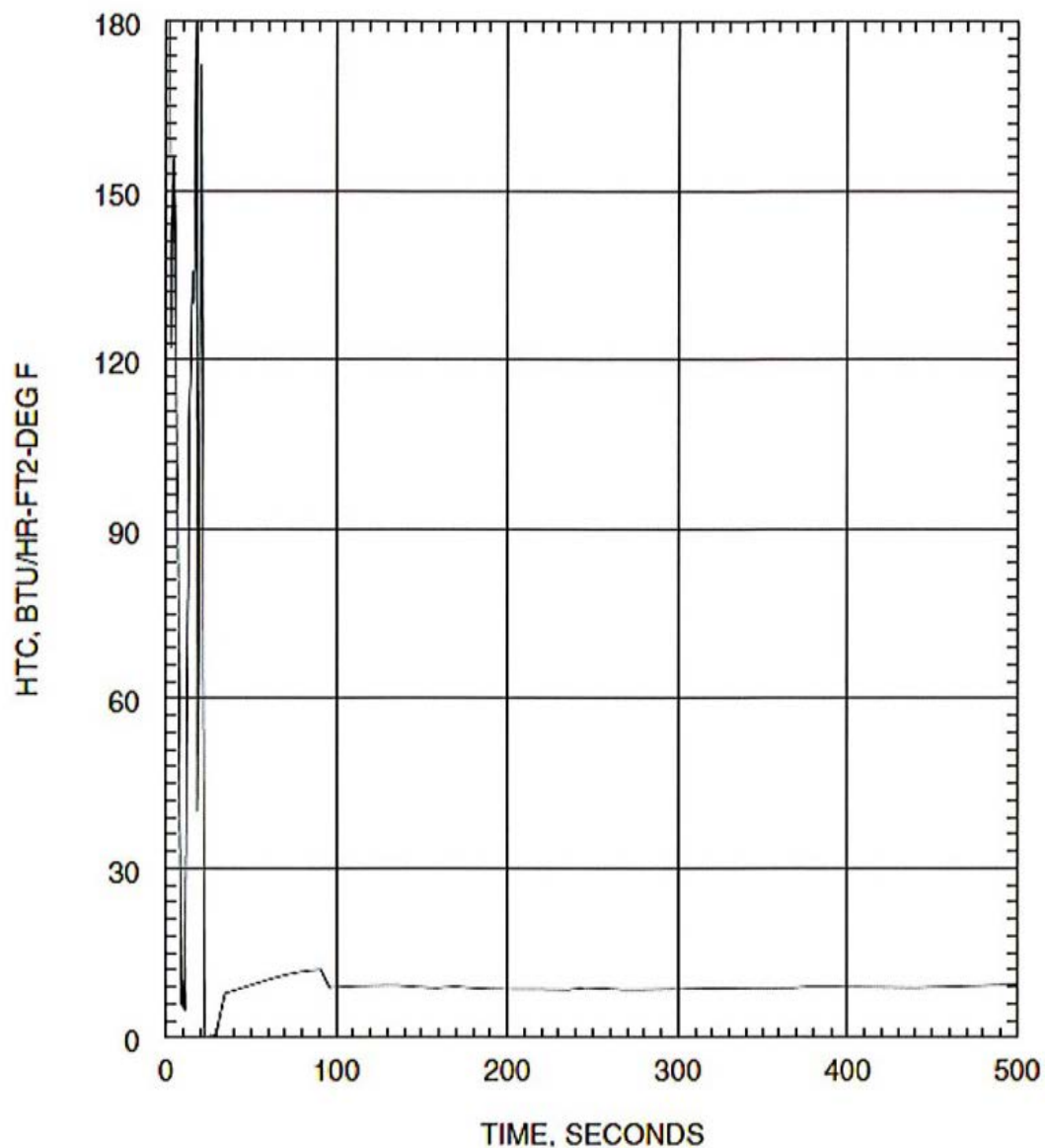
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
FUEL CL & AVE., CLAD, COOLANT
TEMPS AT THE HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.2-3P



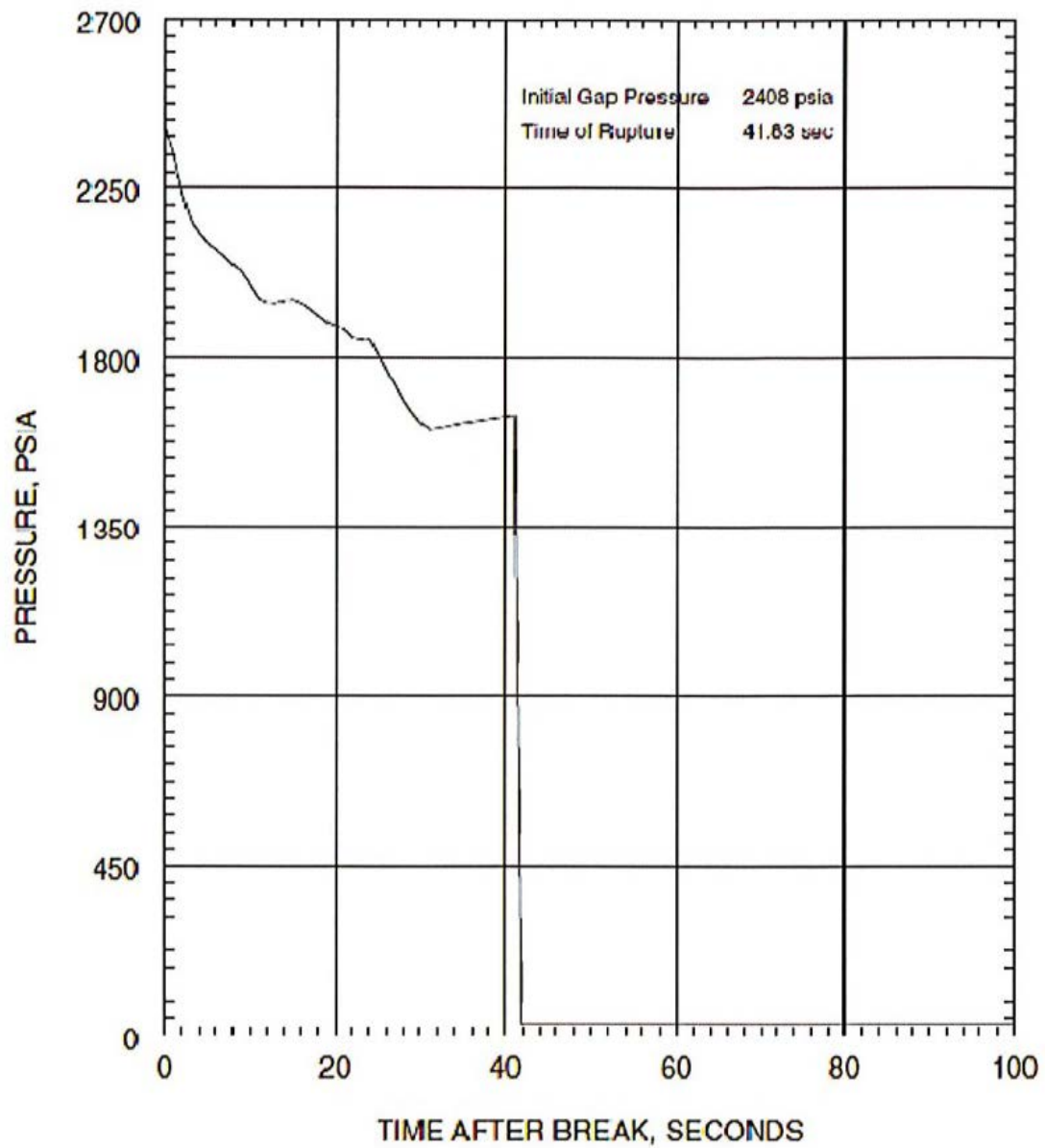
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
HOT SPOT HEAT TRANSFER COEFFICIENT
CE16STD FUEL

FIGURE 6.3.3a.2-3Q

JUNE 2019

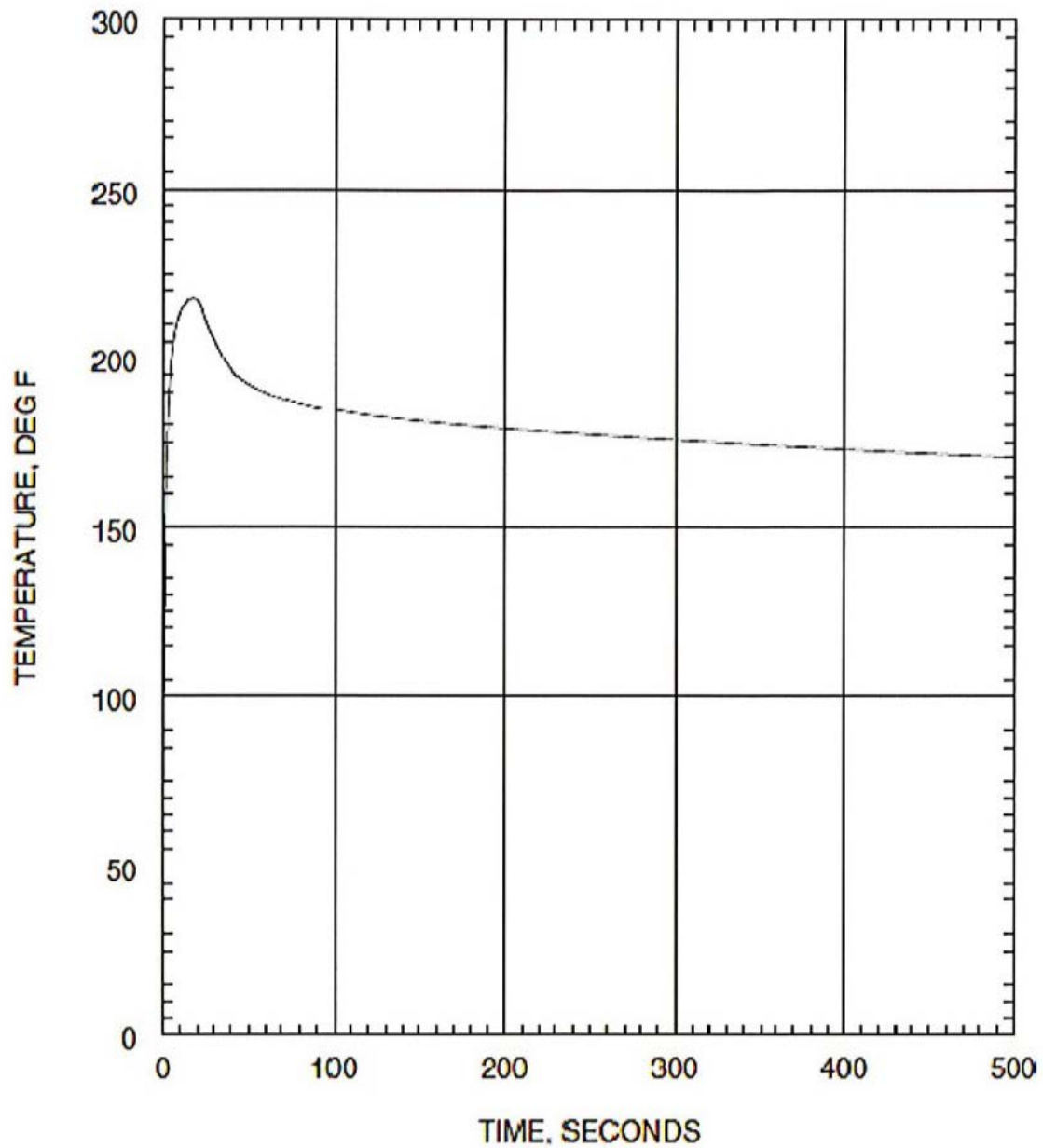
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
HOT PIN PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.2-3R



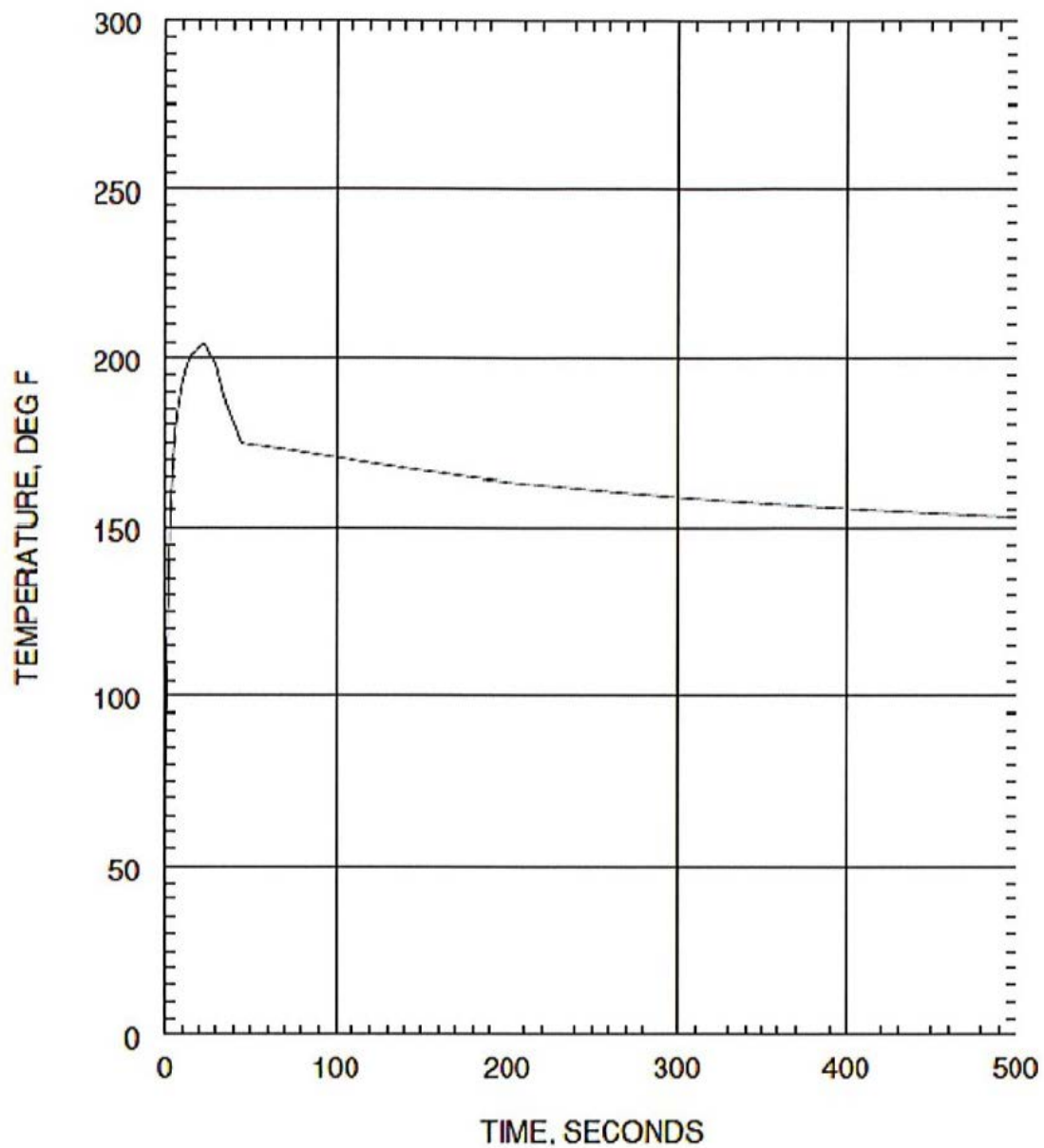
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
CONTAINMENT ATMOSPHERE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.2-3S

JUNE 2019

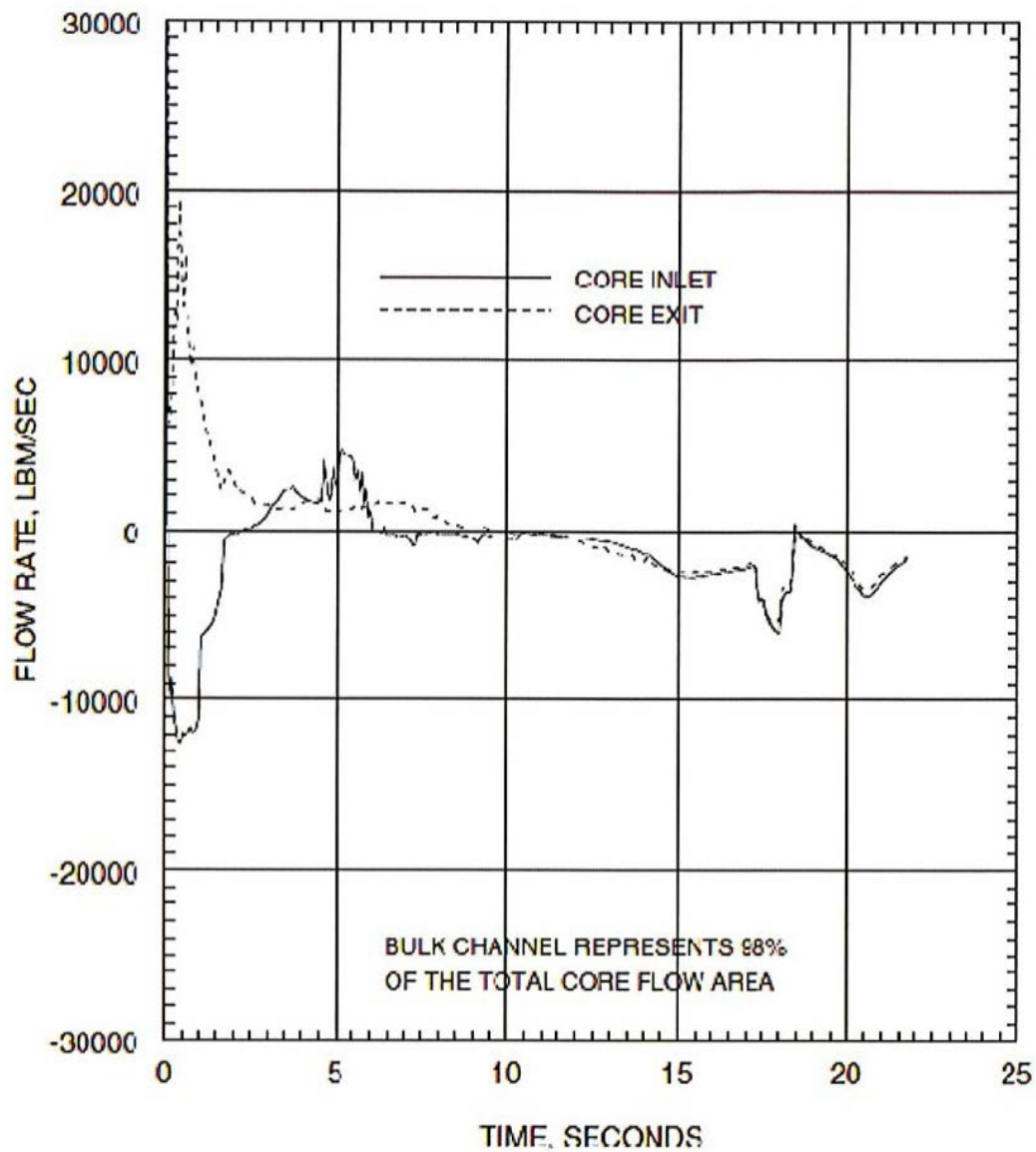
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
CONTAINMENT SUMP TEMPERATURE
CE16STD FUEL

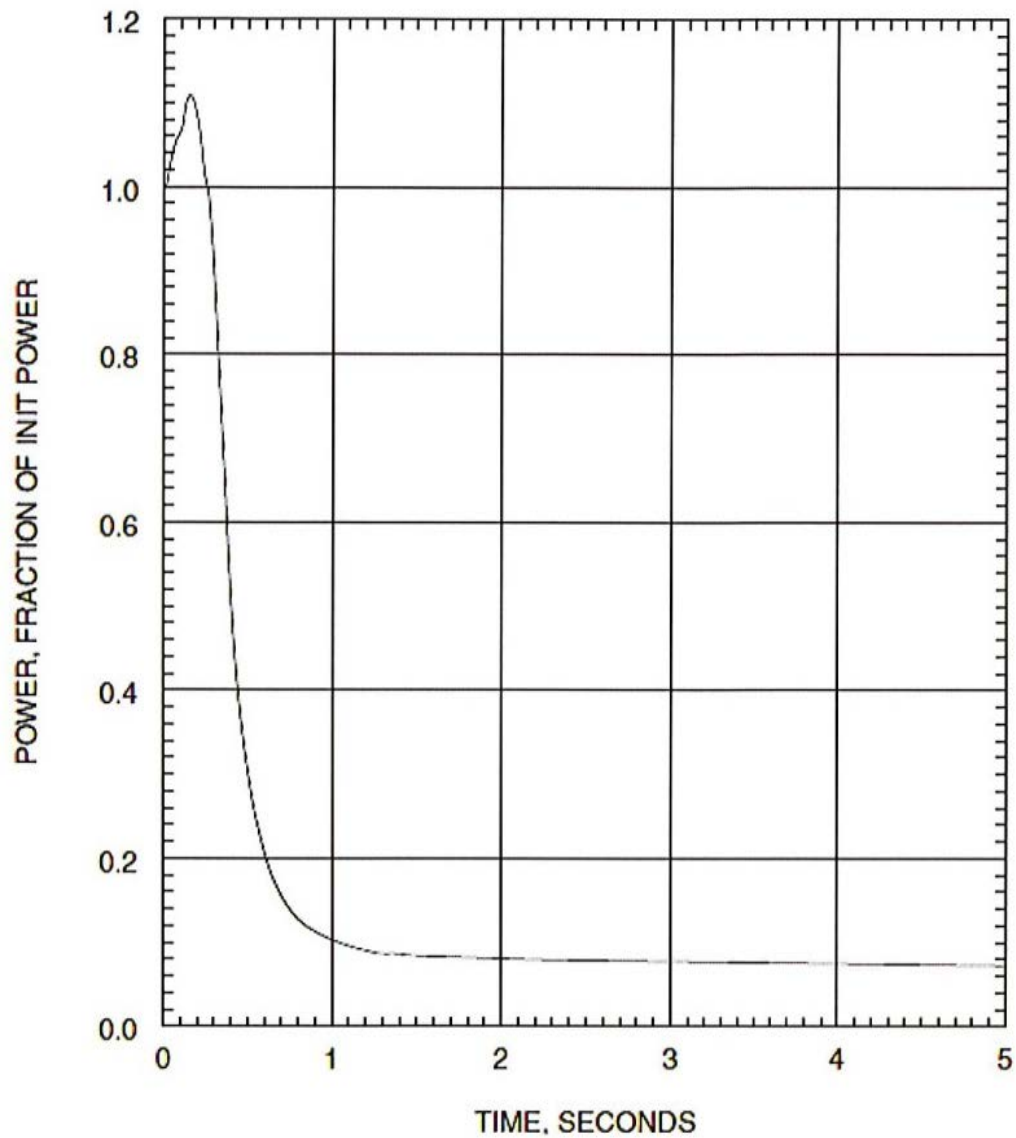
FIGURE 6.3.3a.2-3T



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.6 DEG/PD BREAK
CORE BULK CHANNEL FLOW RATE
CE16STD FUEL

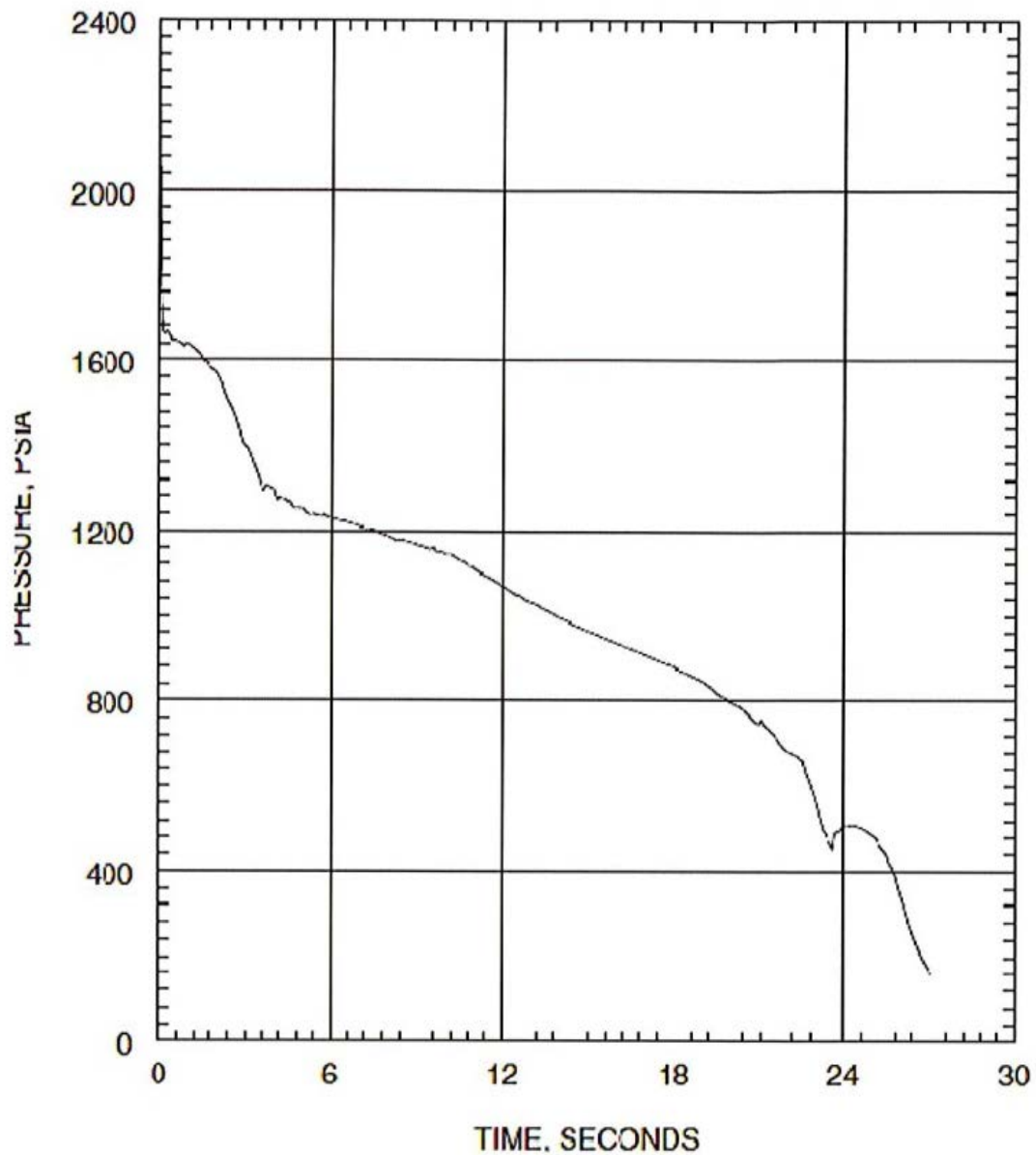
FIGURE 6.3.3a.2-3U



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.2-4A



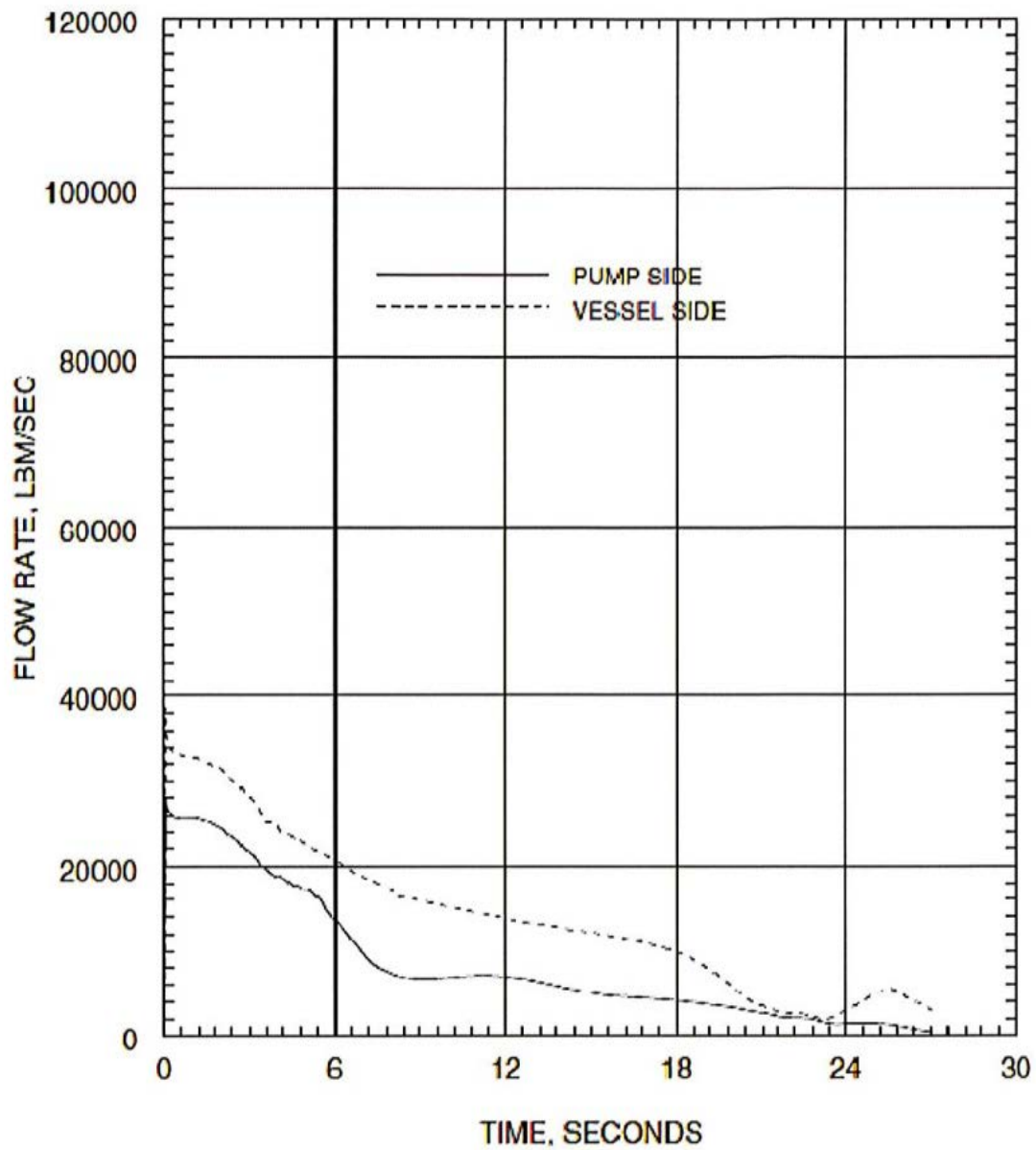
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
PRESSURE IN CENTER HOT ASSEMBLY NODE
CE16STD FUEL

FIGURE 6.3.3a.2-4B

JUNE 2019

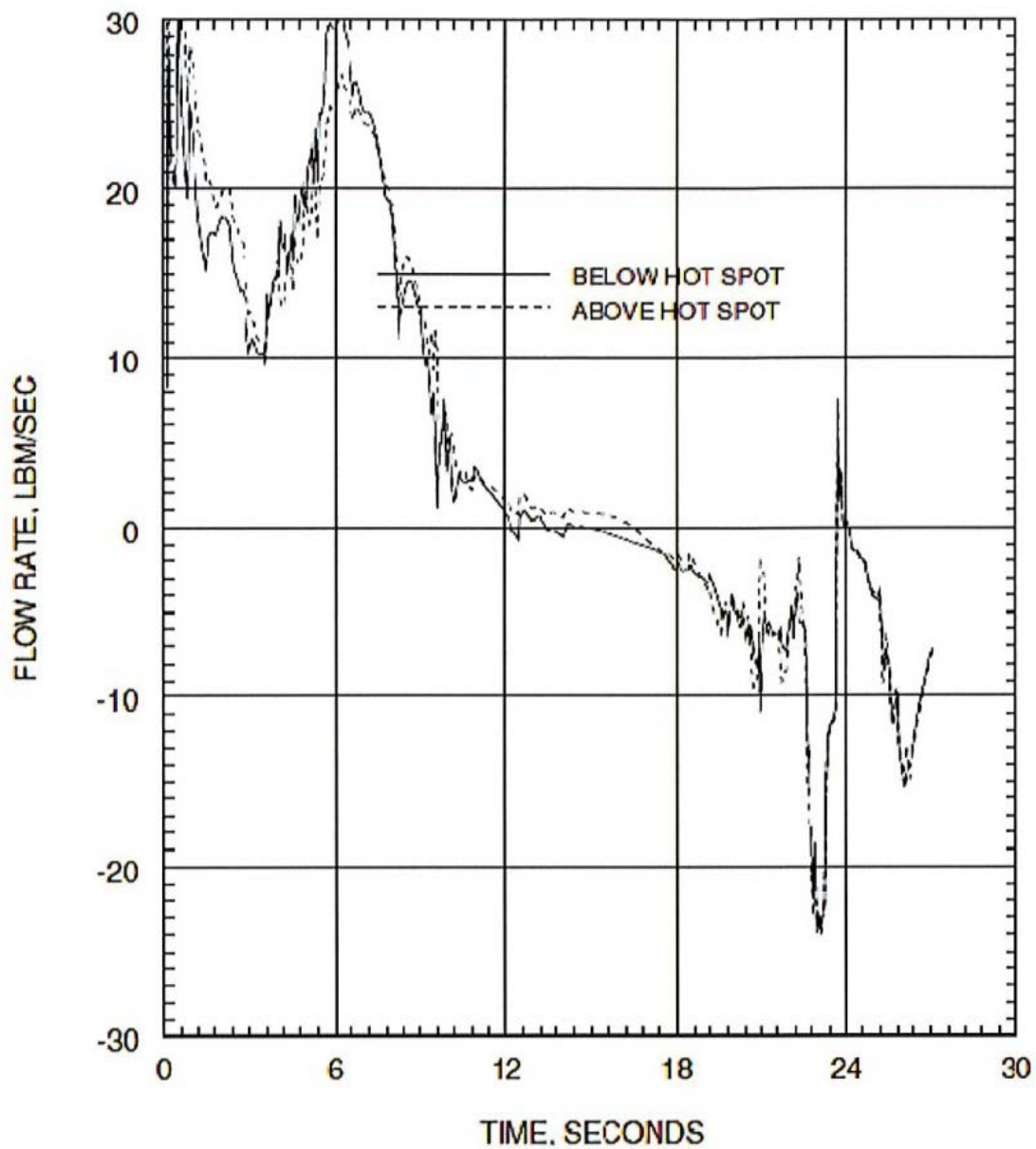
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
LEAK FLOW RATE
CE16STD FUEL

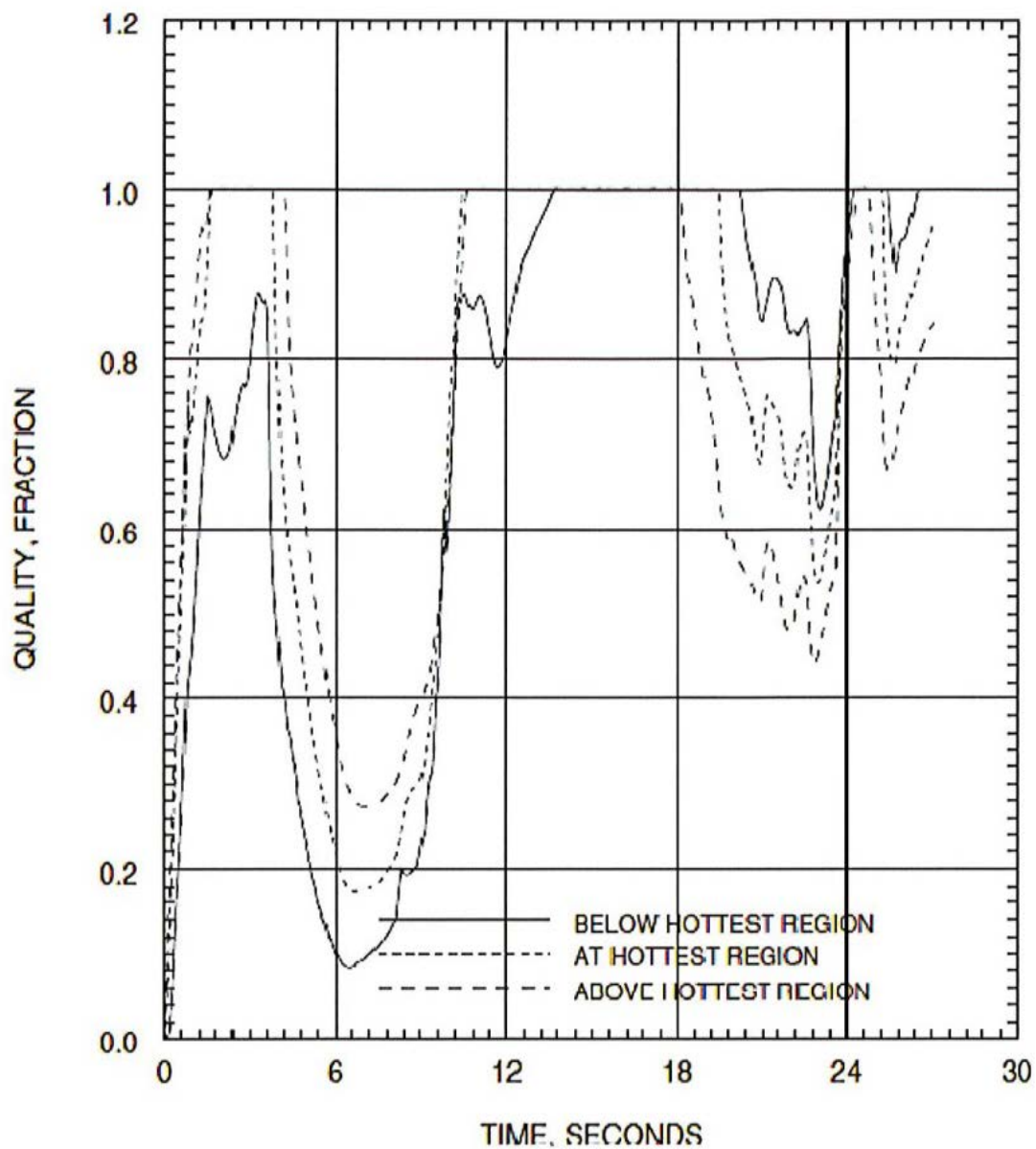
FIGURE 6.3.3a.2-4C



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
HOT ASSEMBLY FLOW RATE
CE16STD FUEL

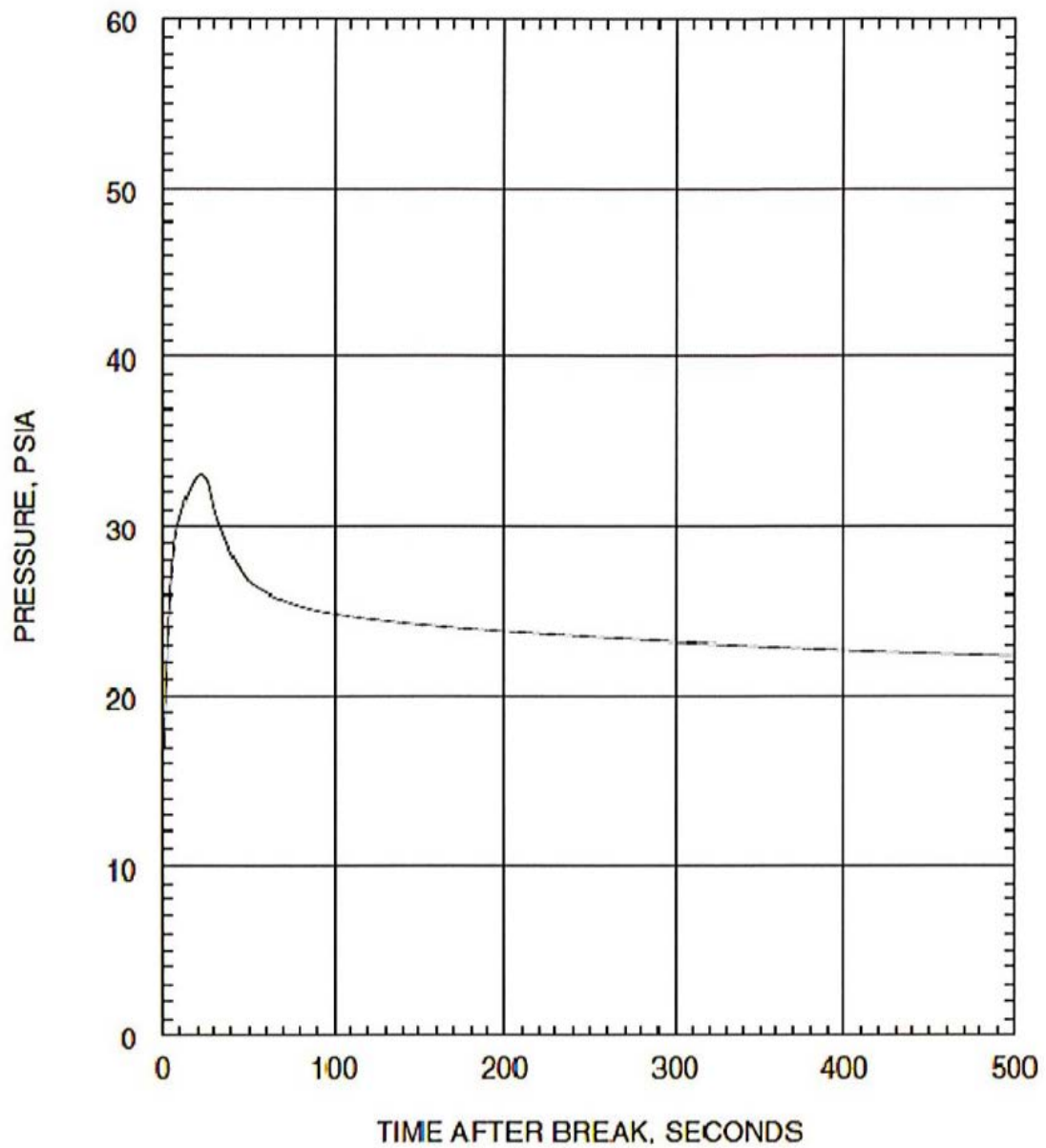
FIGURE 6.3.3a.2-4D



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
HOT ASSEMBLY QUALITY
CE16STD FUEL

FIGURE 6.3.3a.2-4E



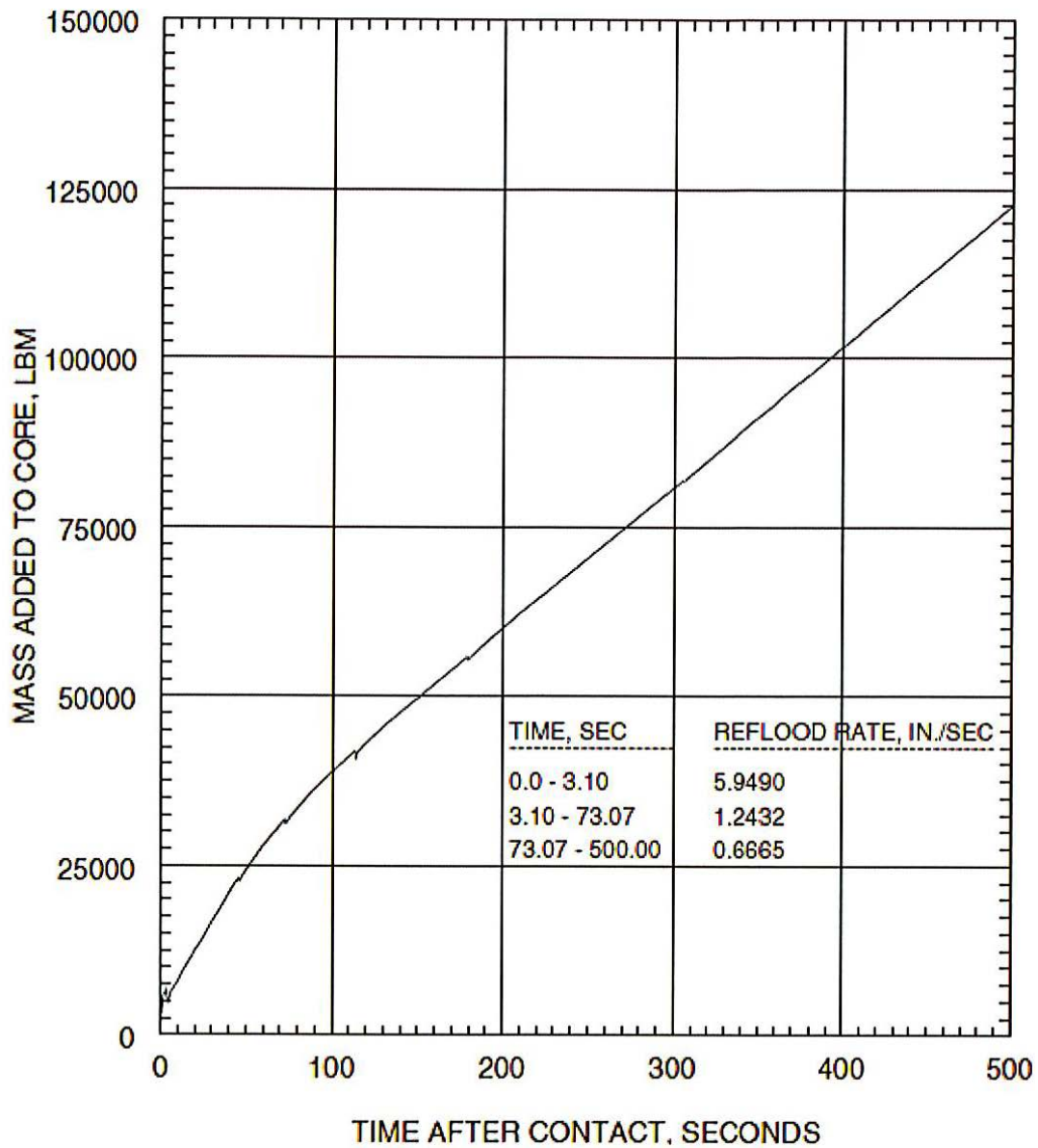
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
CONTAINMENT PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.2-4F

JUNE 2019

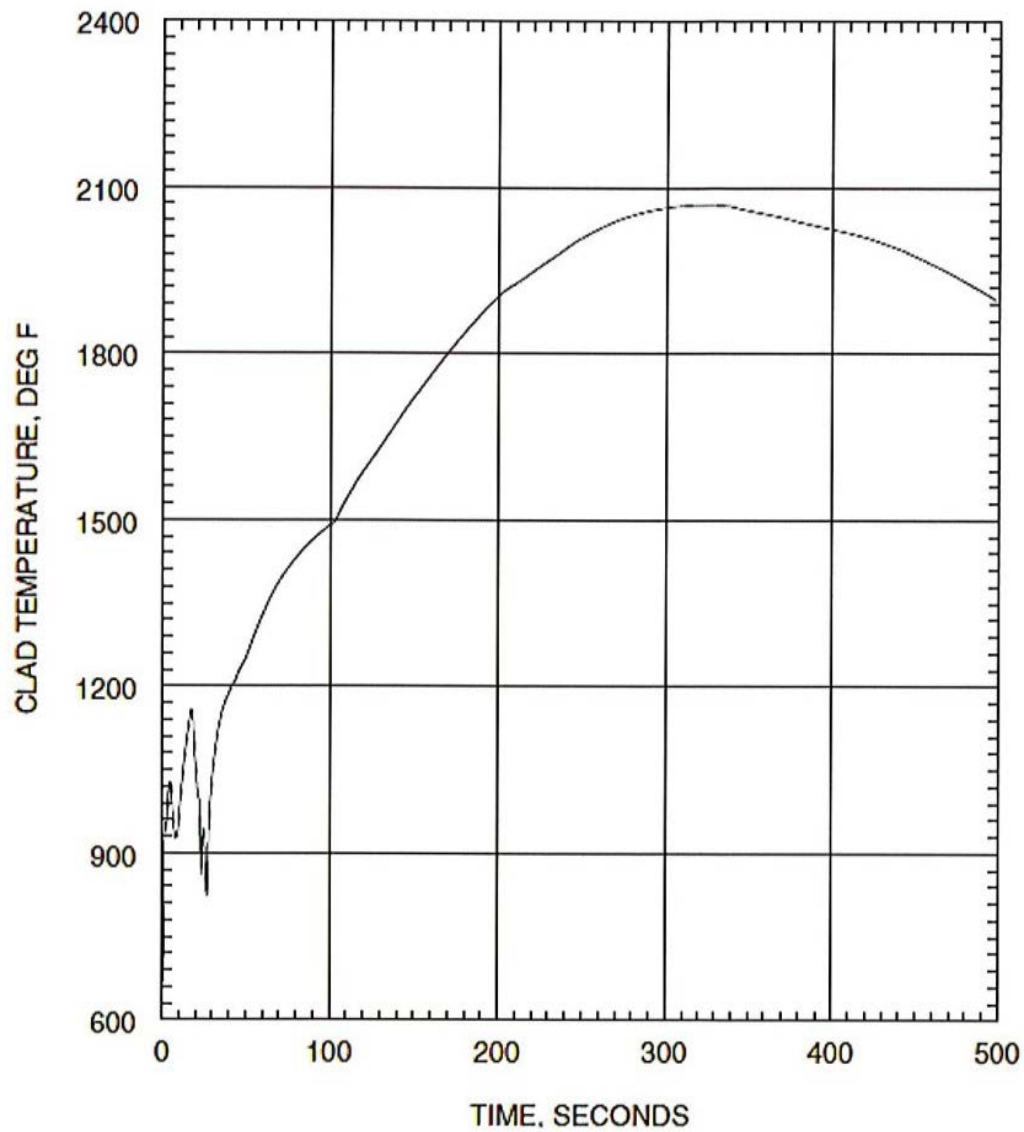
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
MASS ADDED TO CORE DURING REFLOOD
CE16STD FUEL

FIGURE 6.3.3a.2-4G



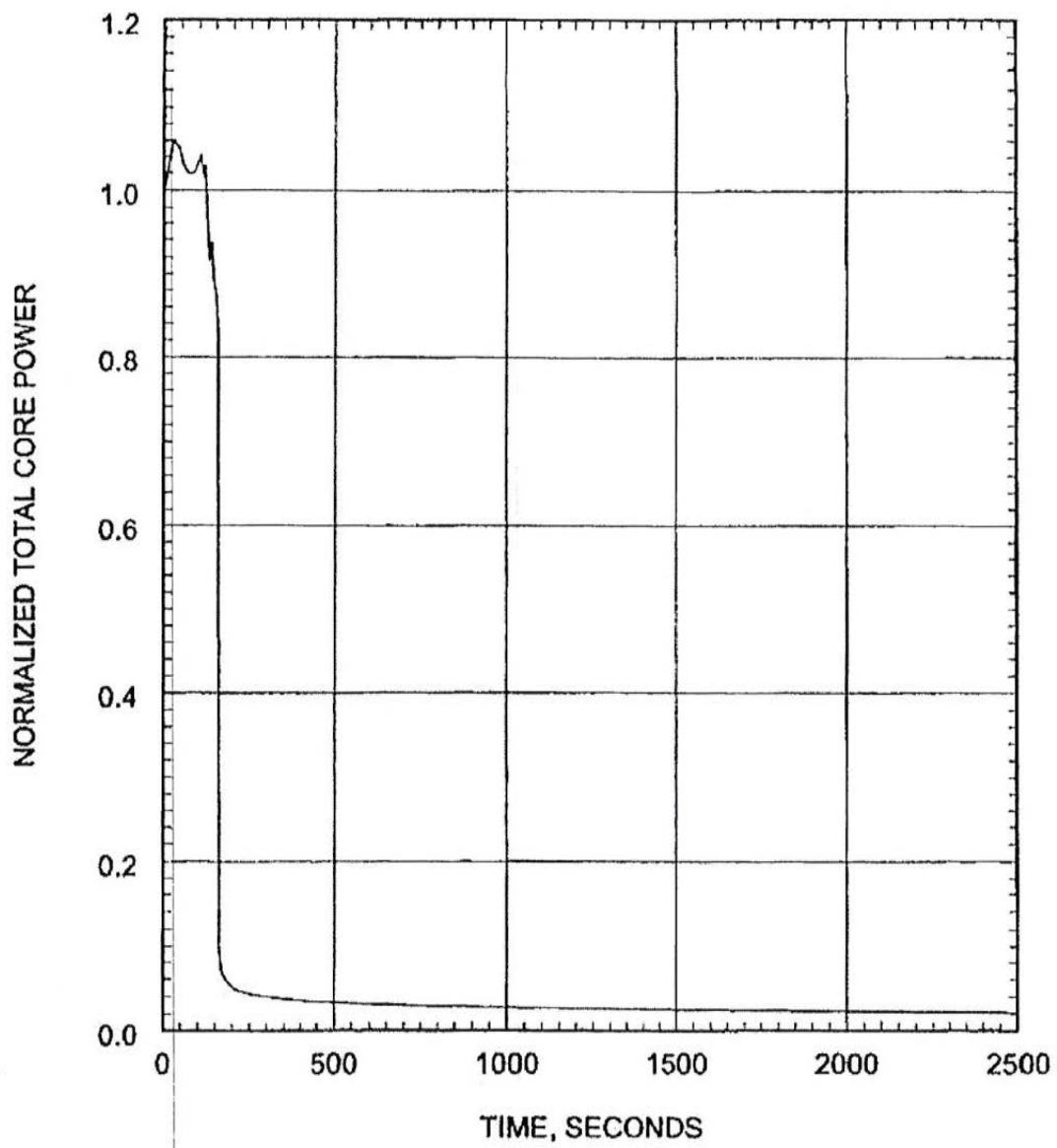
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LBLOCA ECCS PERFORMANCE ANALYSIS
0.4 DEG/PD BREAK
PEAK CLADDING TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.2-4H

JUNE 2019

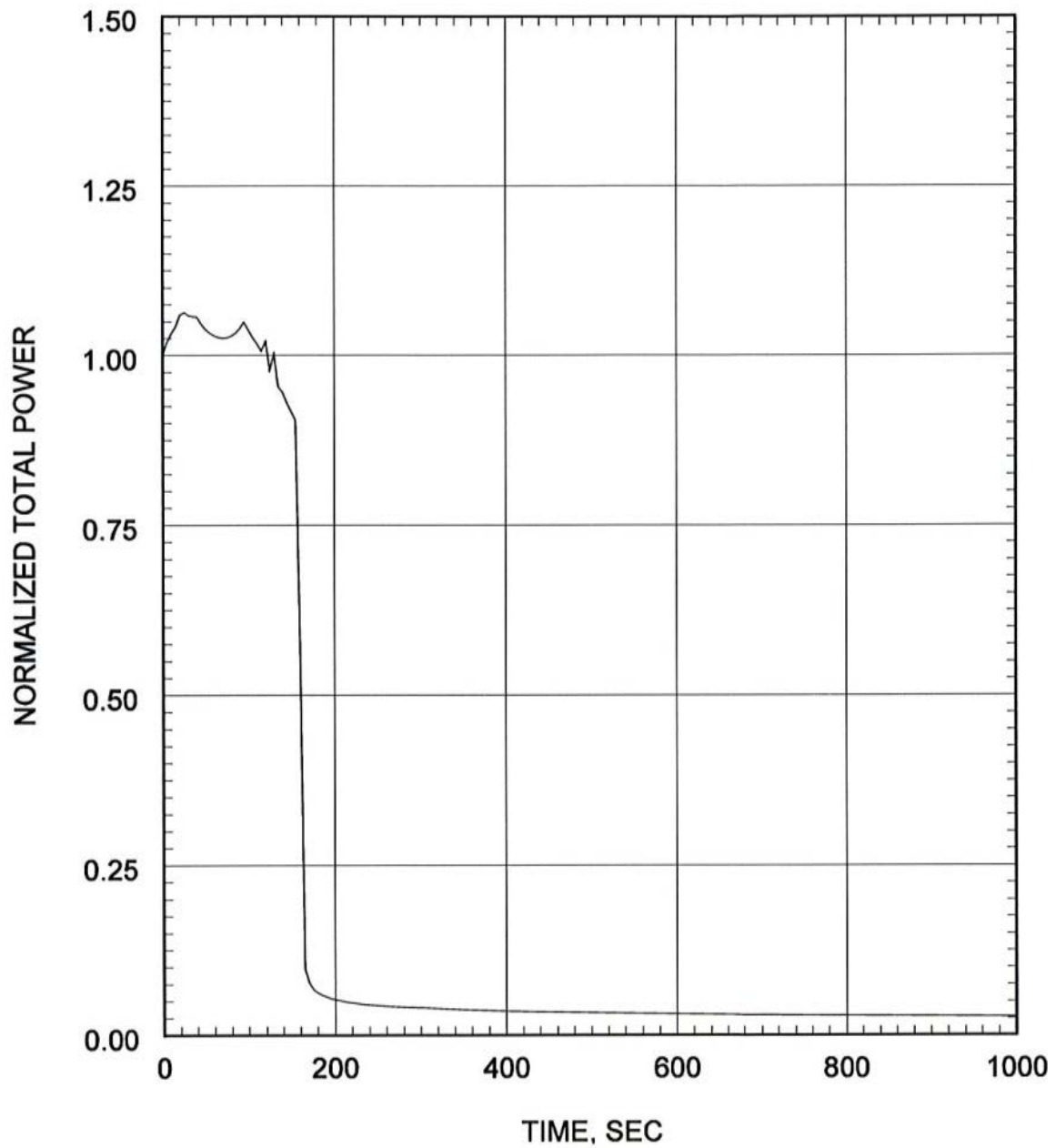
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.3-1A



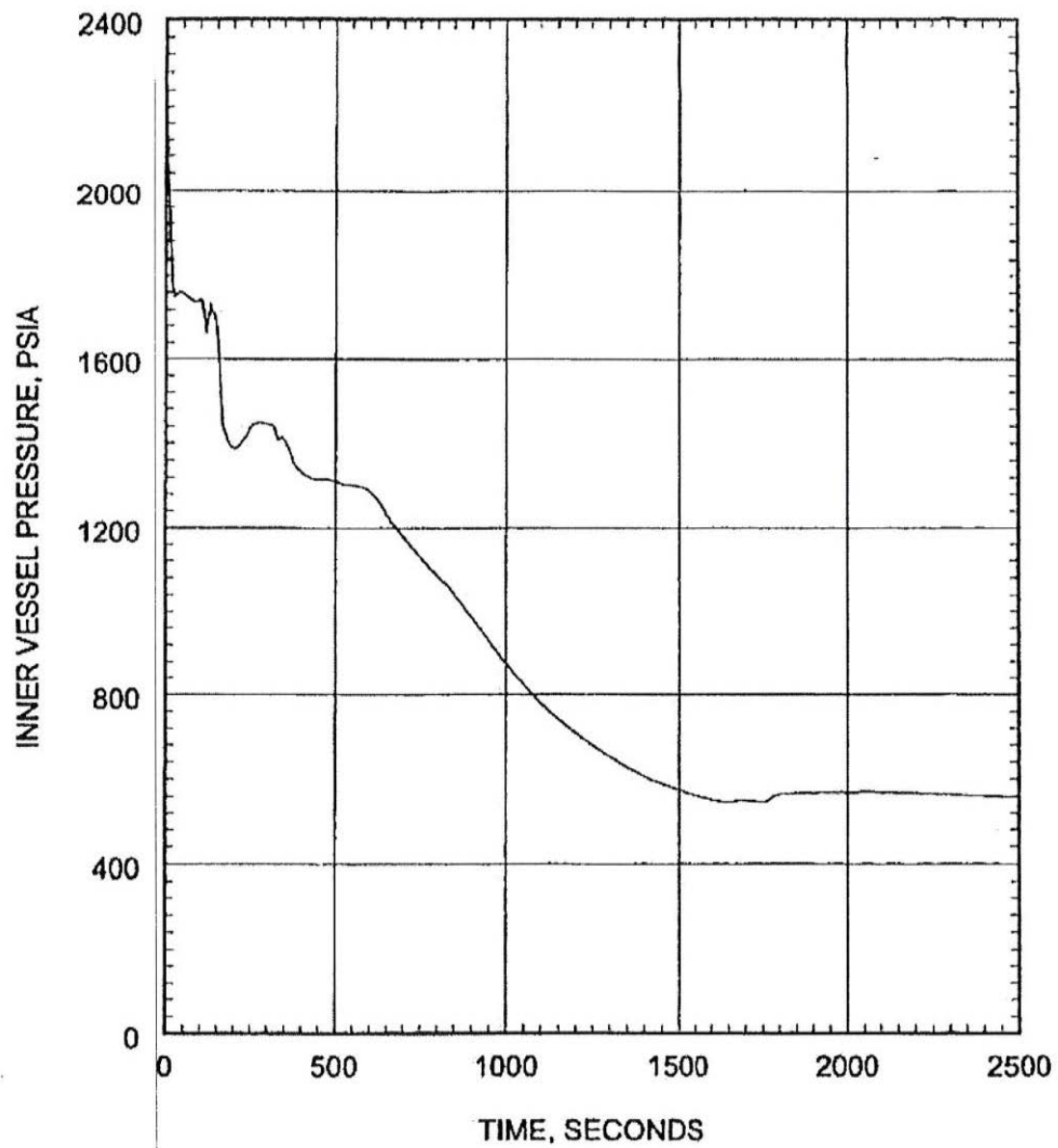
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.3-1A

JUNE 2019

REVISION 20



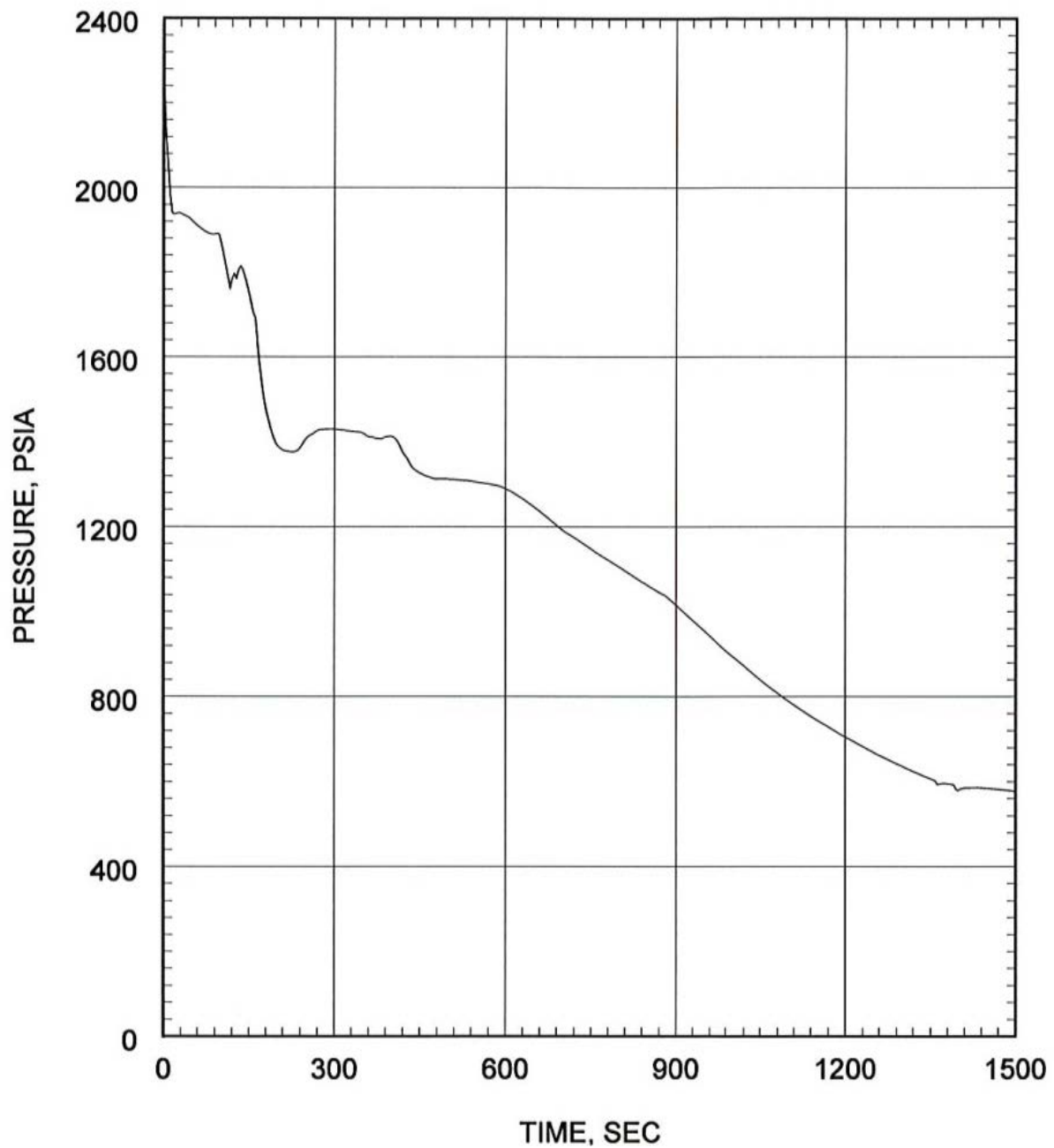
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.3-1B

JUNE 2019

REVISION 20



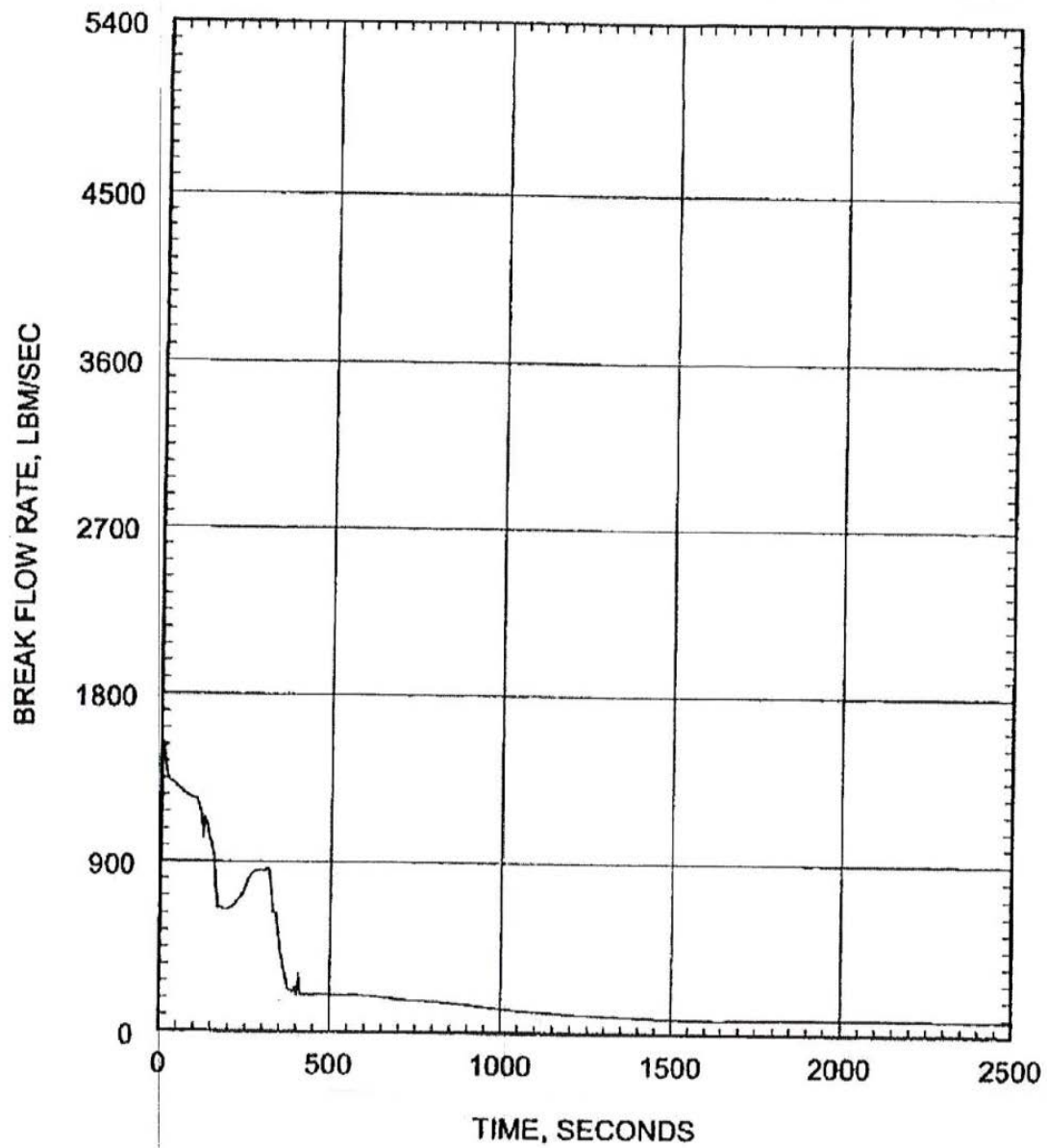
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.3-1B

JUNE 2019

REVISION 20



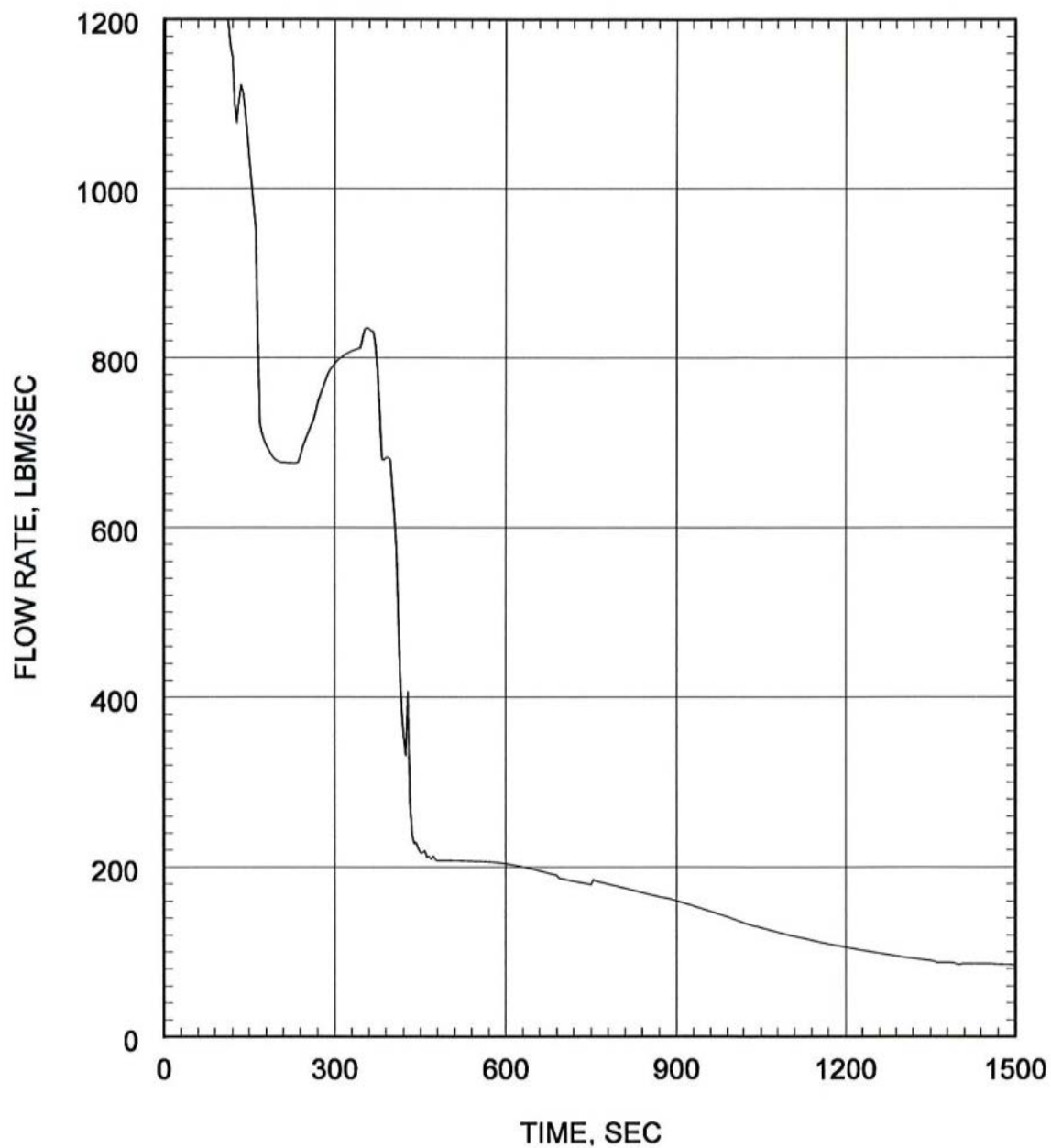
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-1C

JUNE 2019

REVISION 20



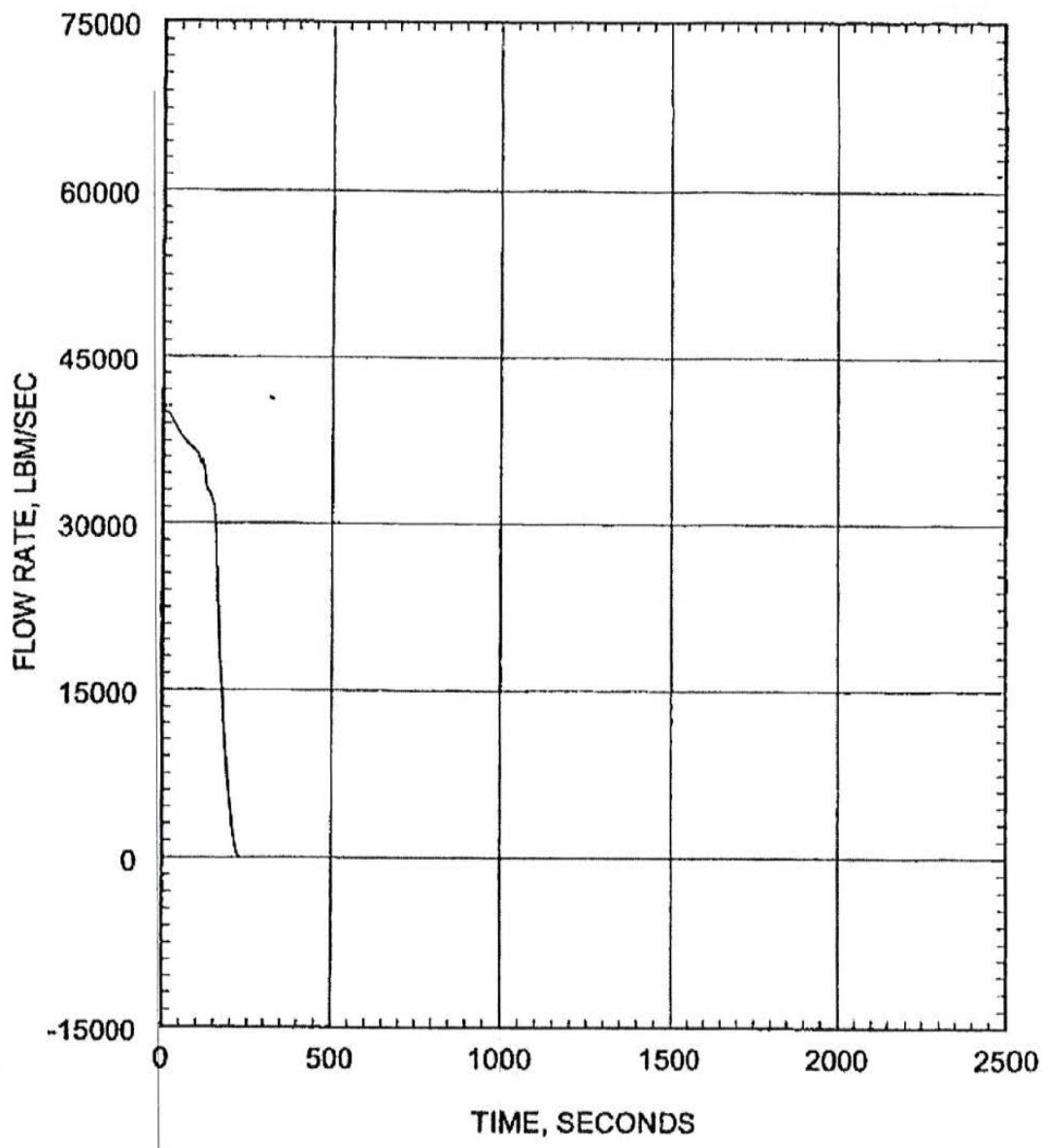
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-1C

JUNE 2019

REVISION 20



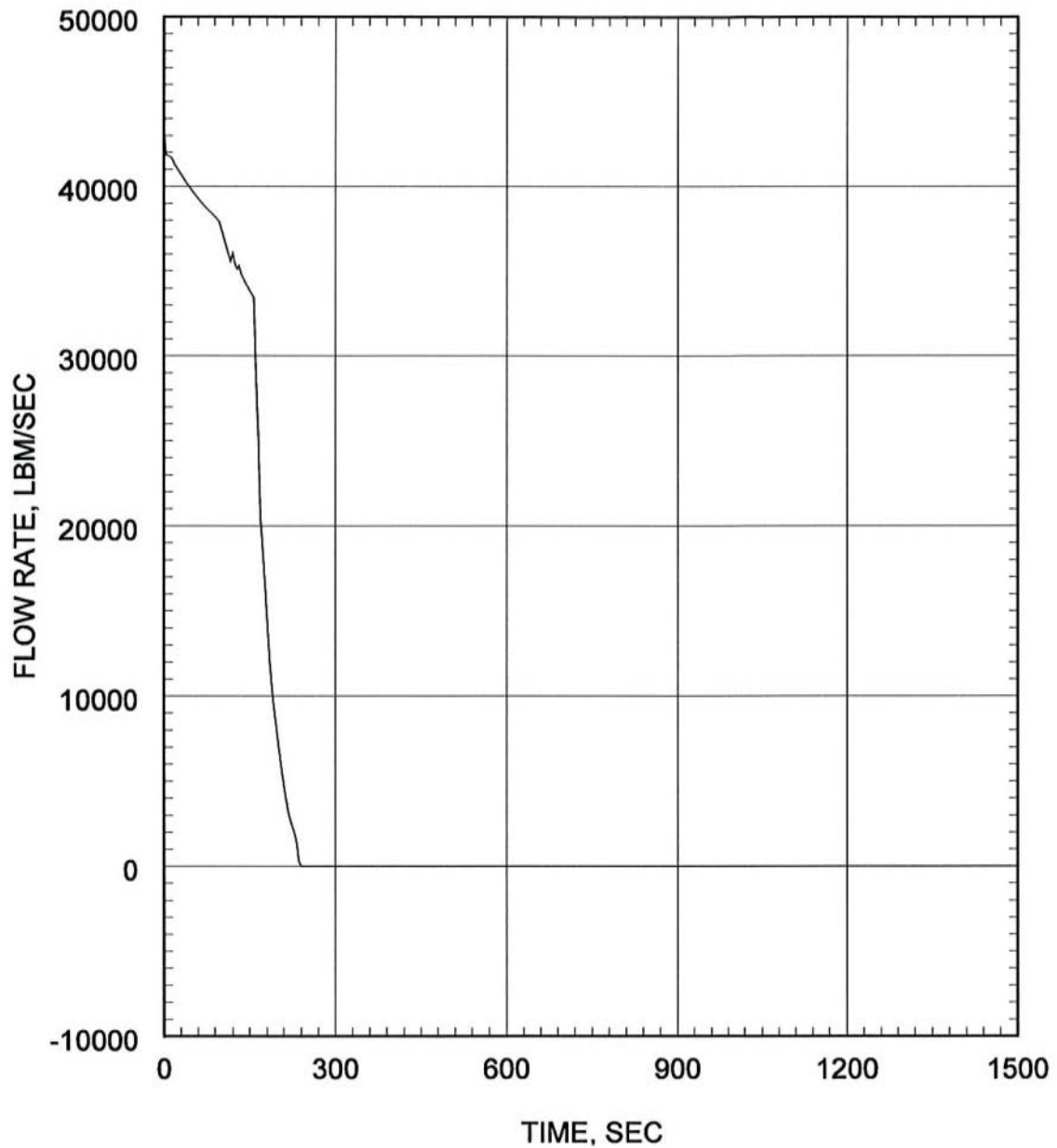
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-1D

JUNE 2019

REVISION 20



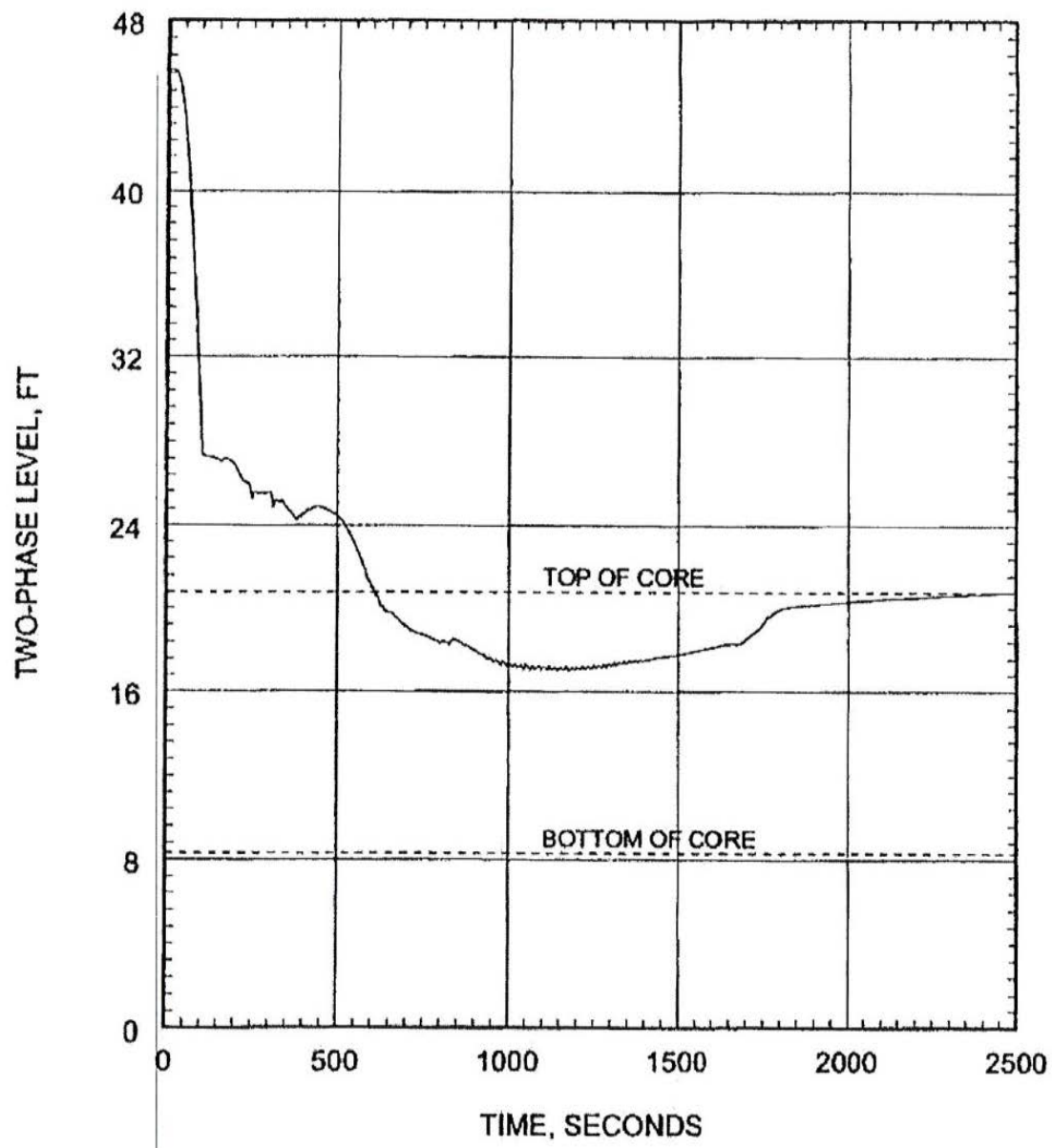
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-1D

JUNE 2019

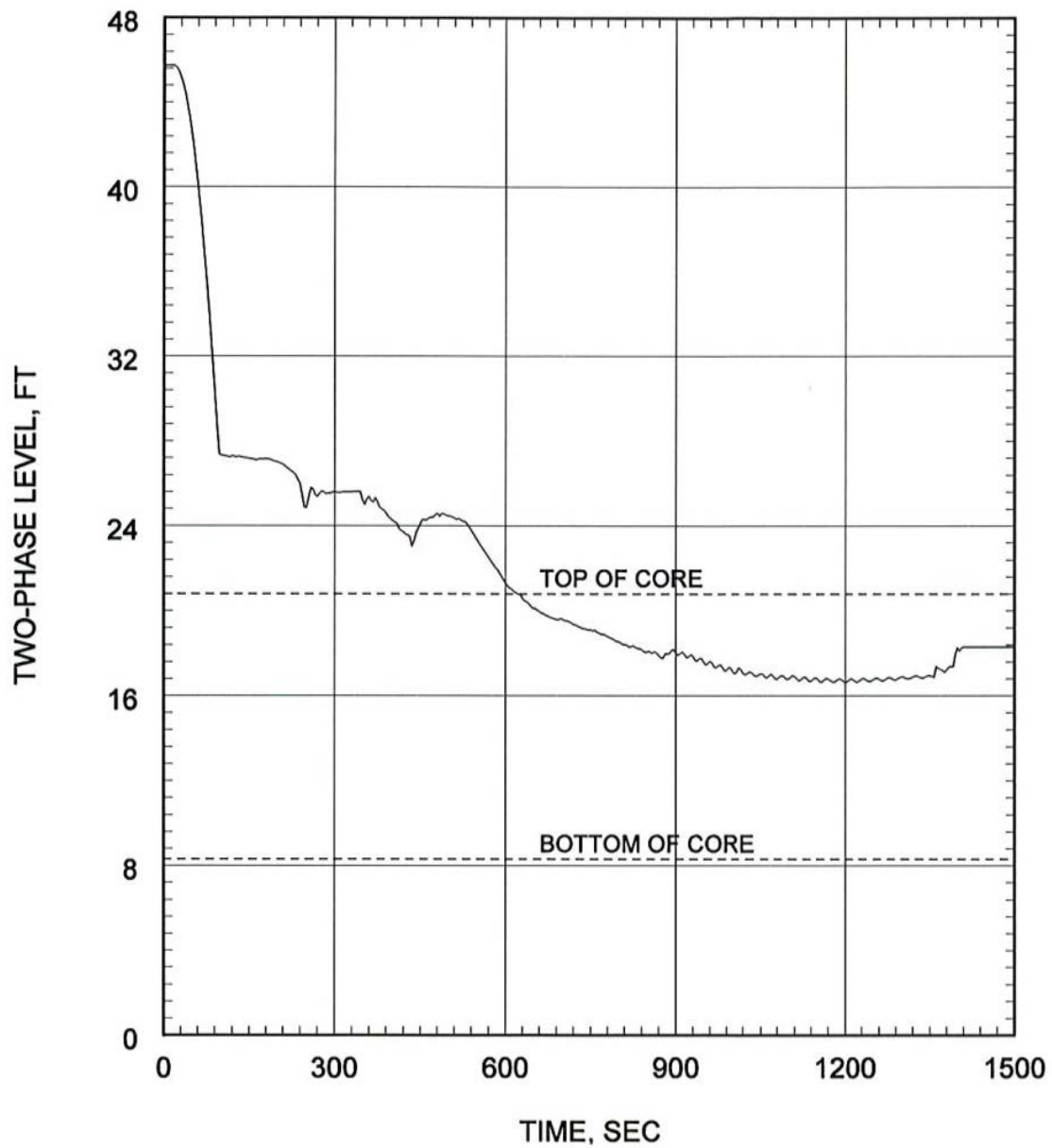
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16STD FUEL

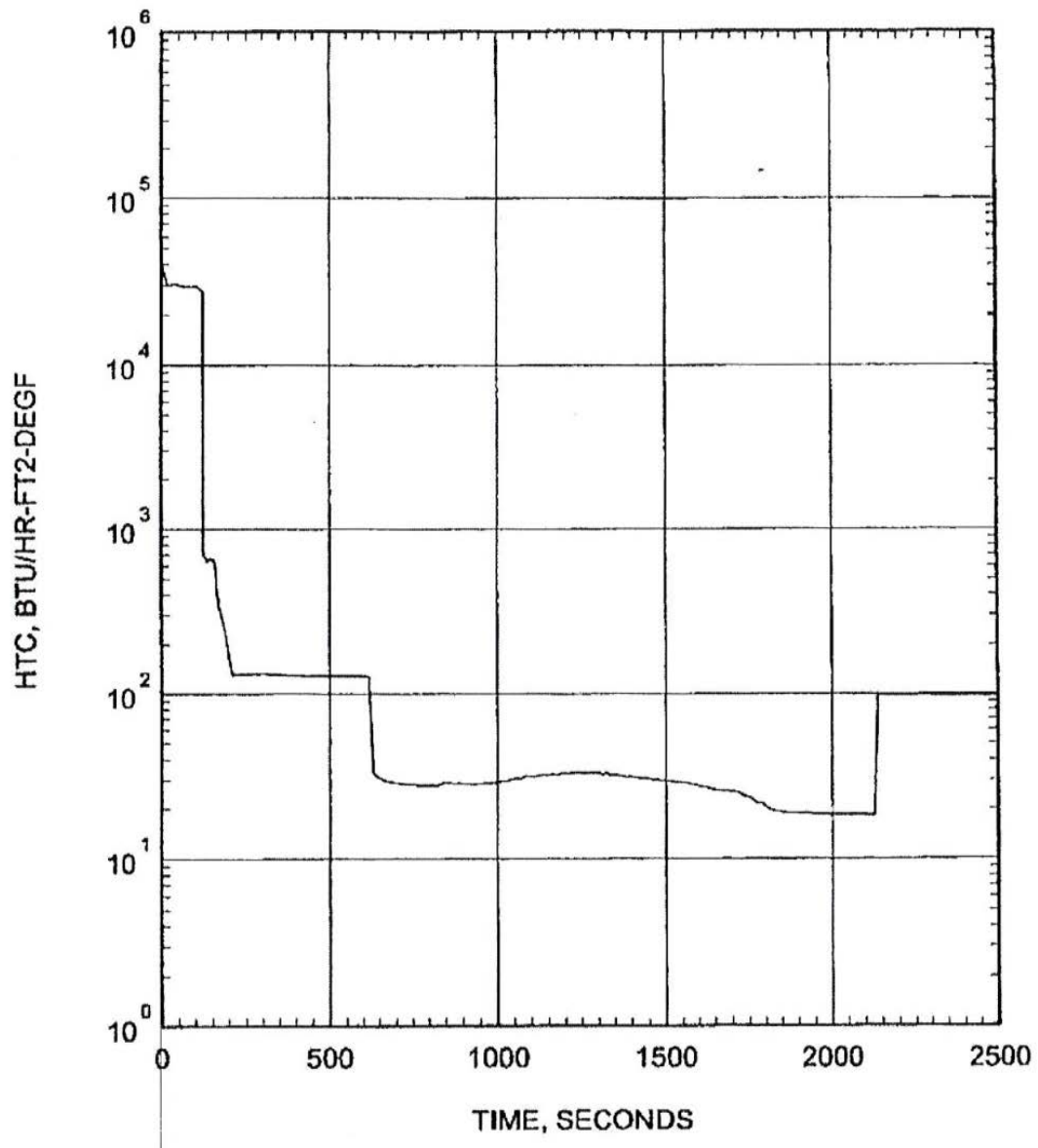
FIGURE 6.3.3a.3-1E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16NGF FUEL

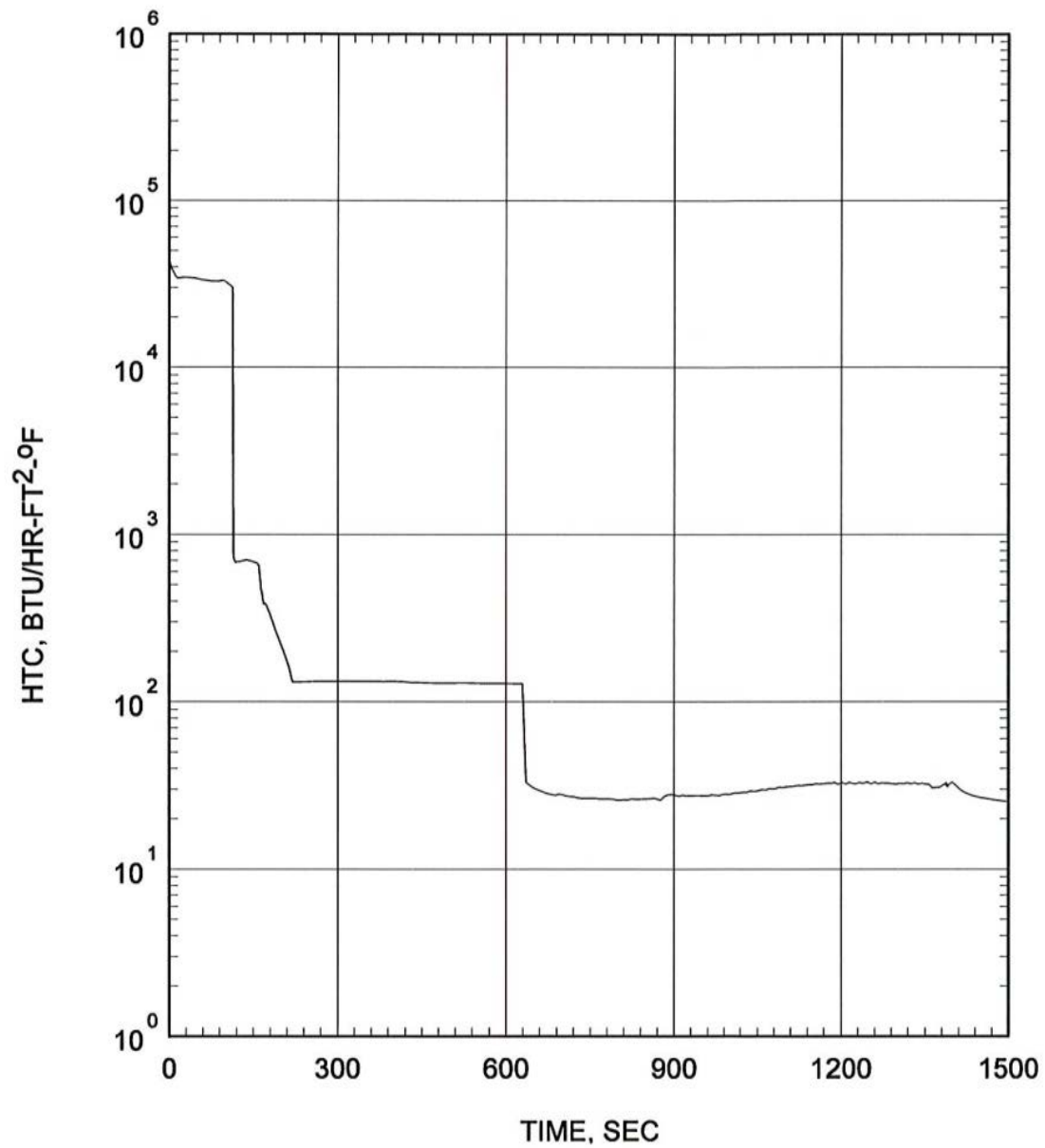
FIGURE 6.3.3b.3-1E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16STD FUEL

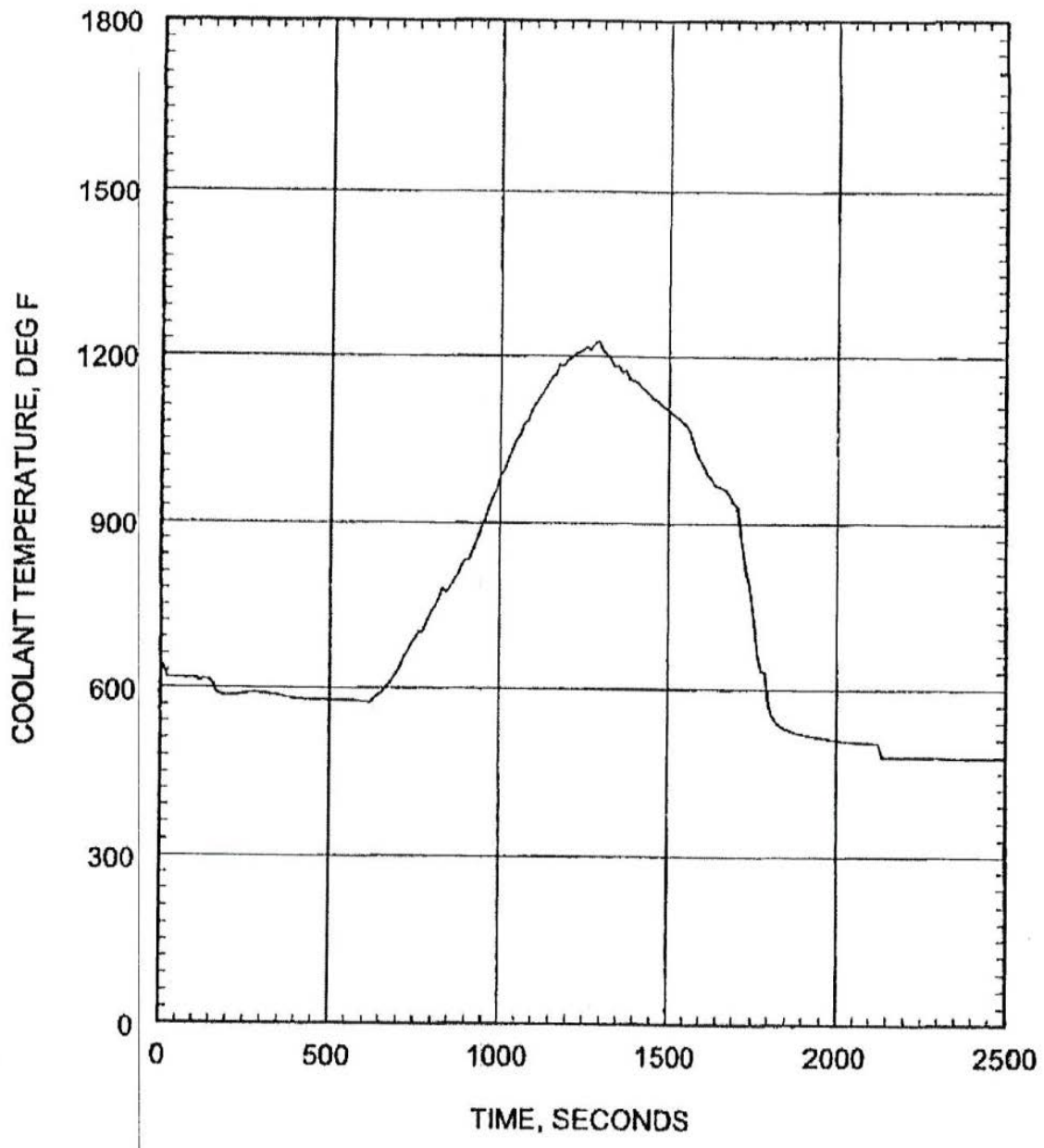
FIGURE 6.3.3a.3-1F



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16NGF FUEL

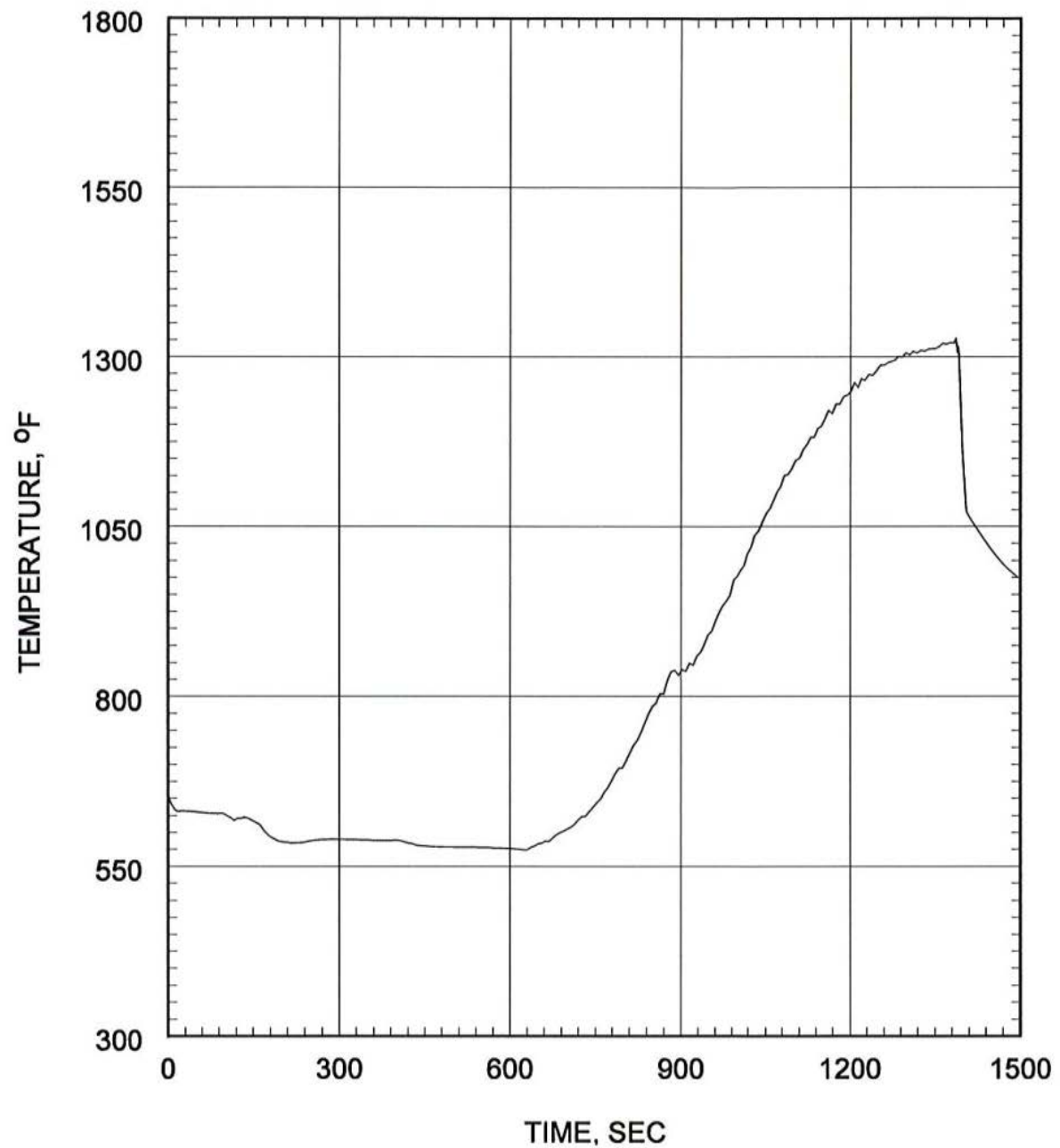
FIGURE 6.3.3b.3-1F



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-1G



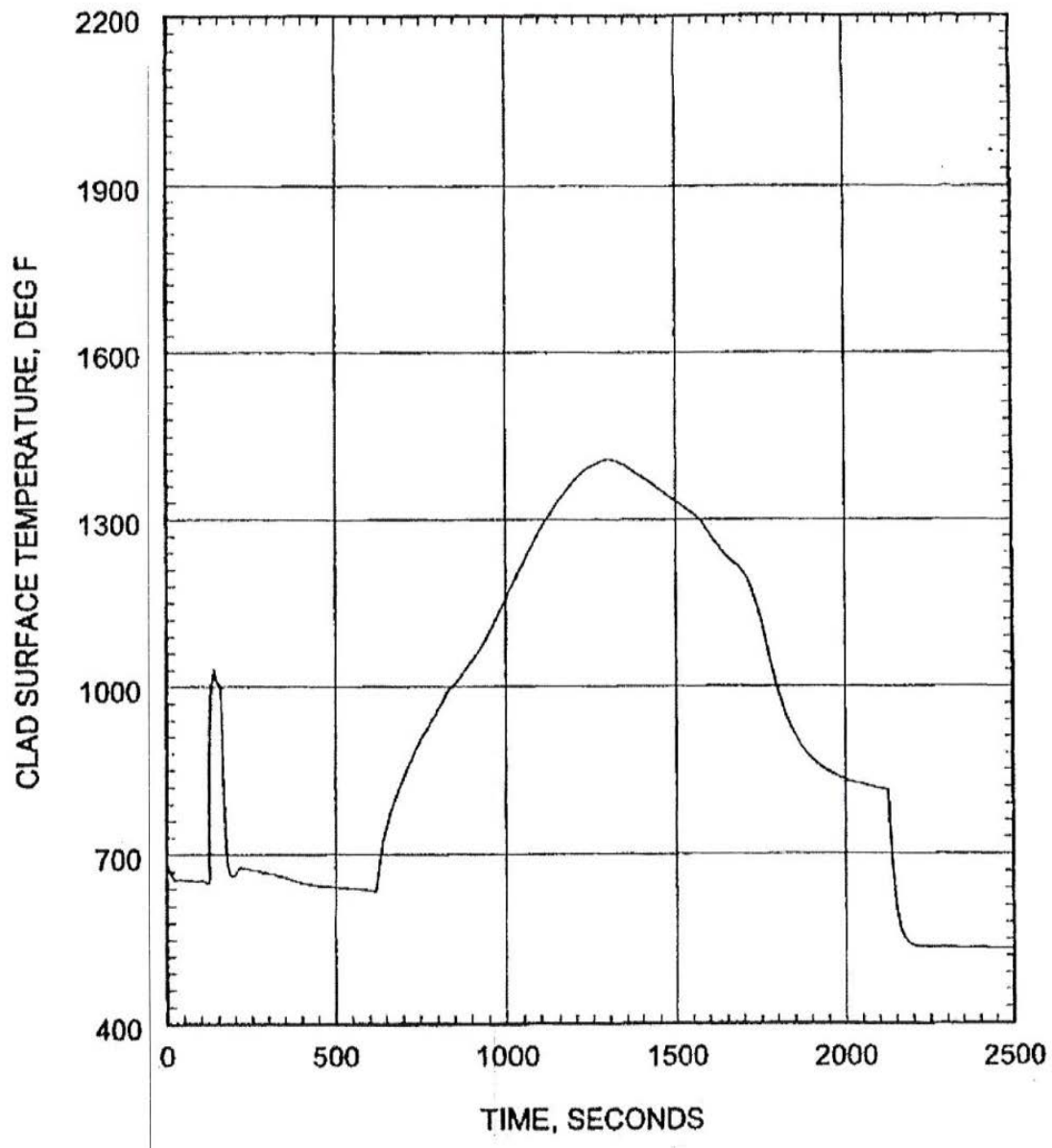
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-1G

JUNE 2019

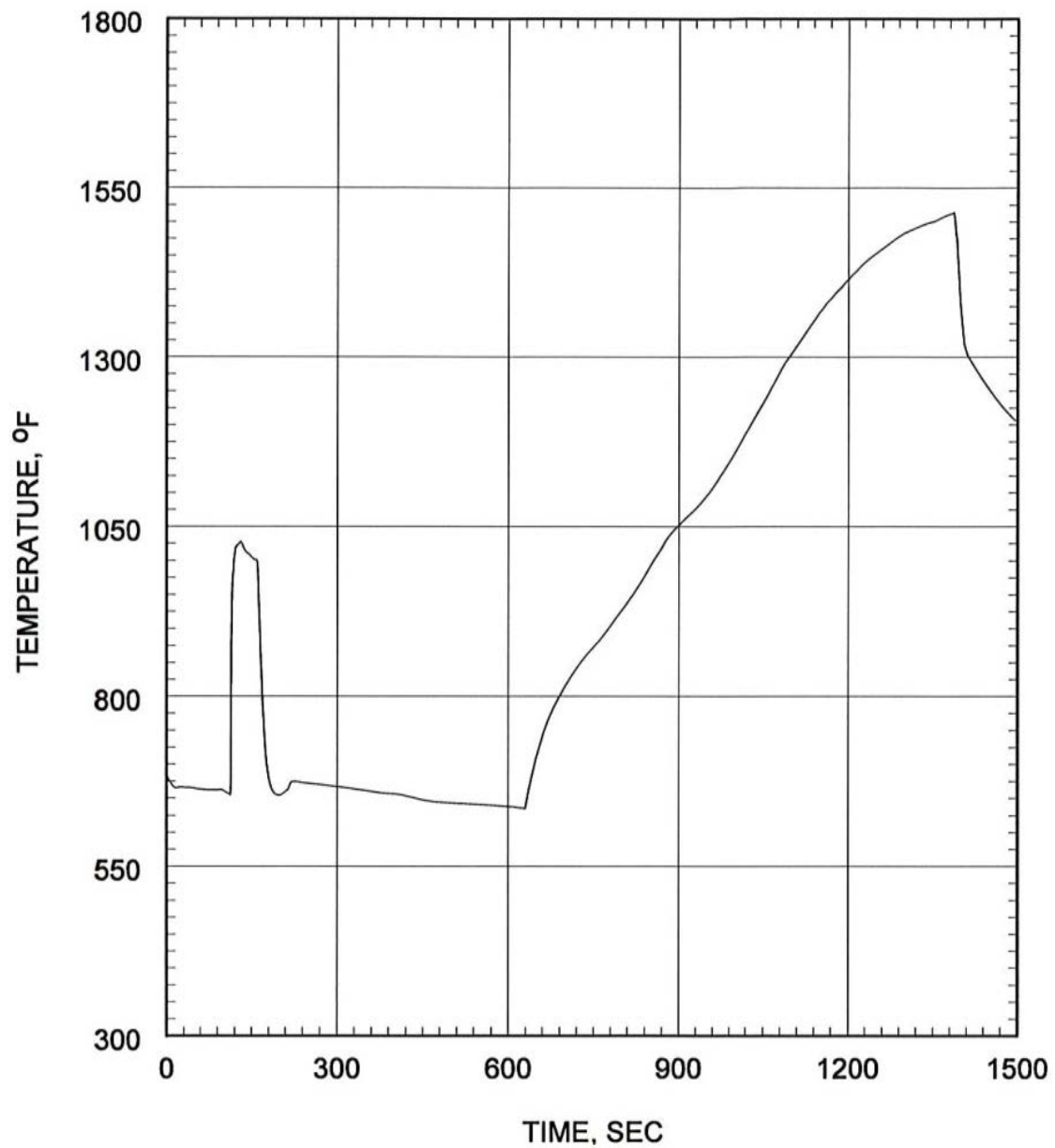
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.3-1H



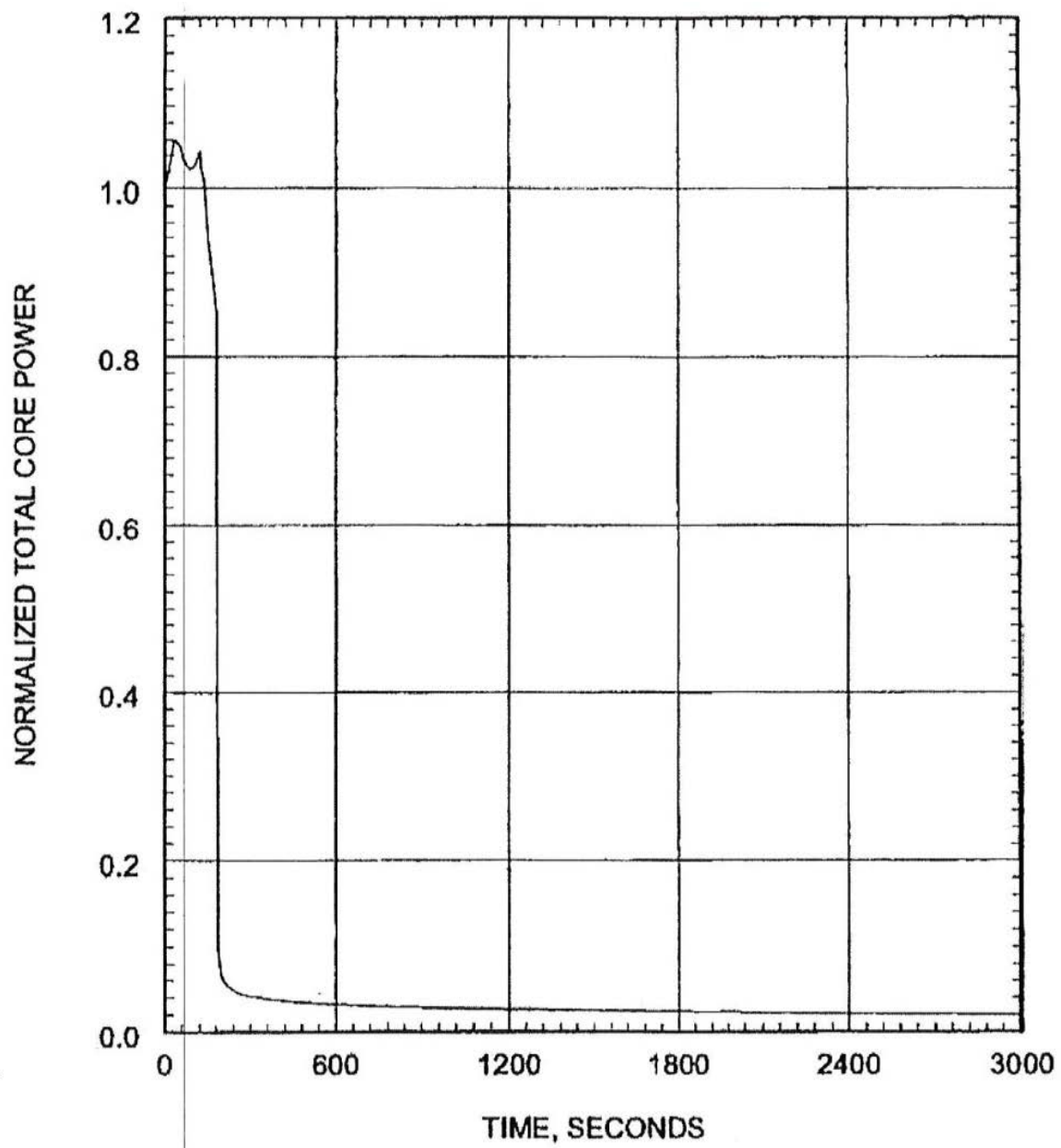
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.075 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.3-1H

JUNE 2019

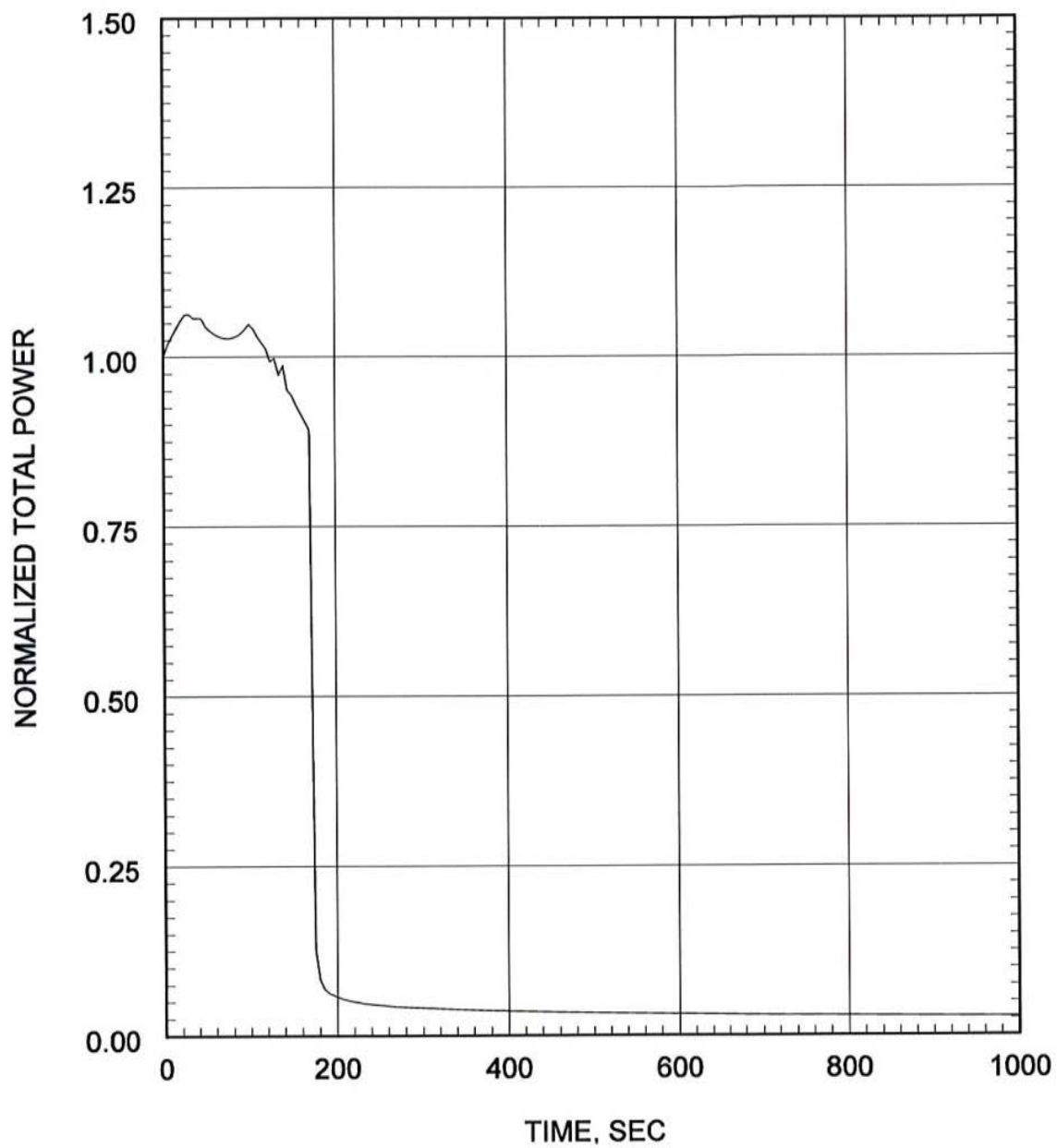
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.3-2A



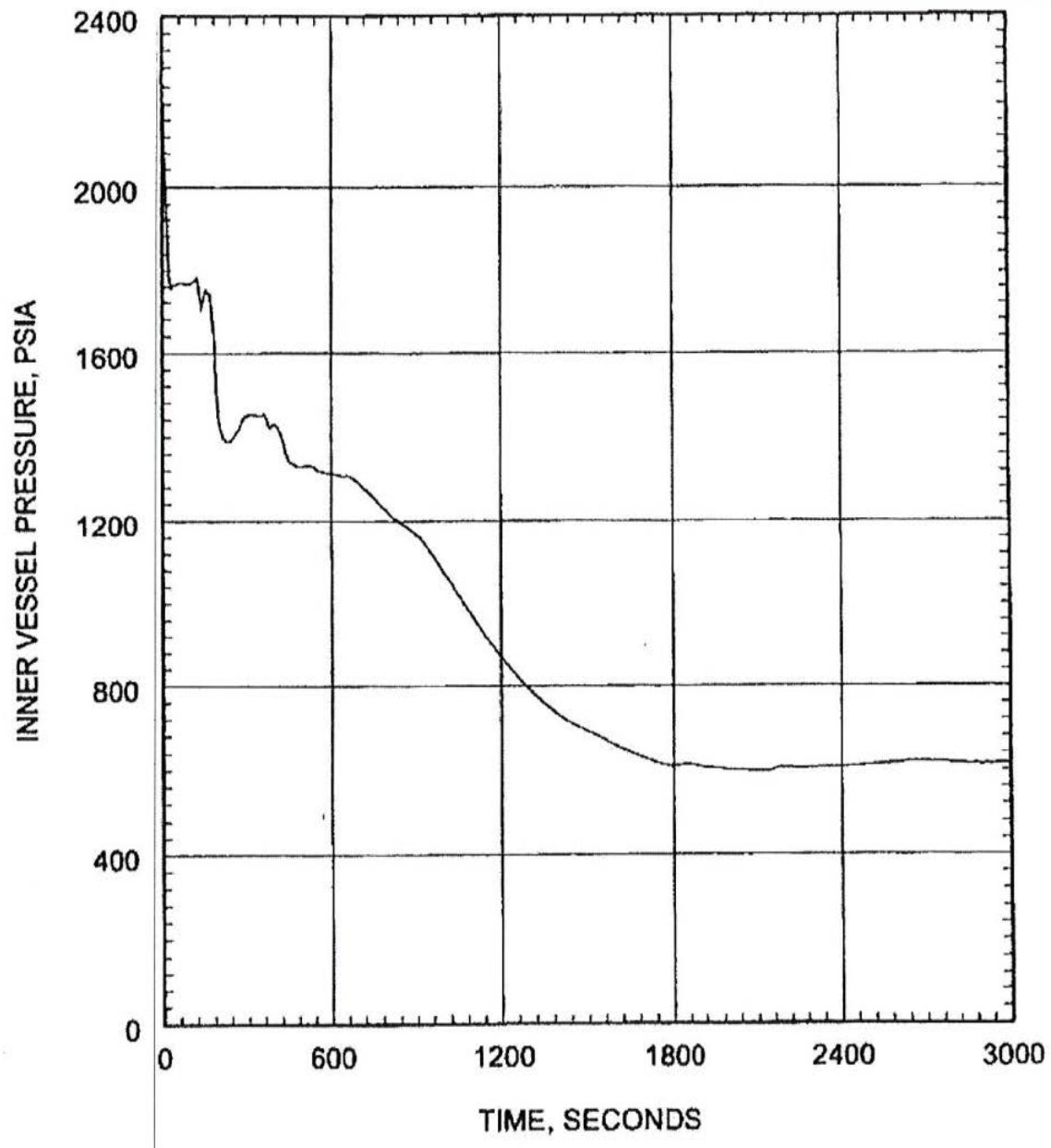
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.3-2A

JUNE 2019

REVISION 20



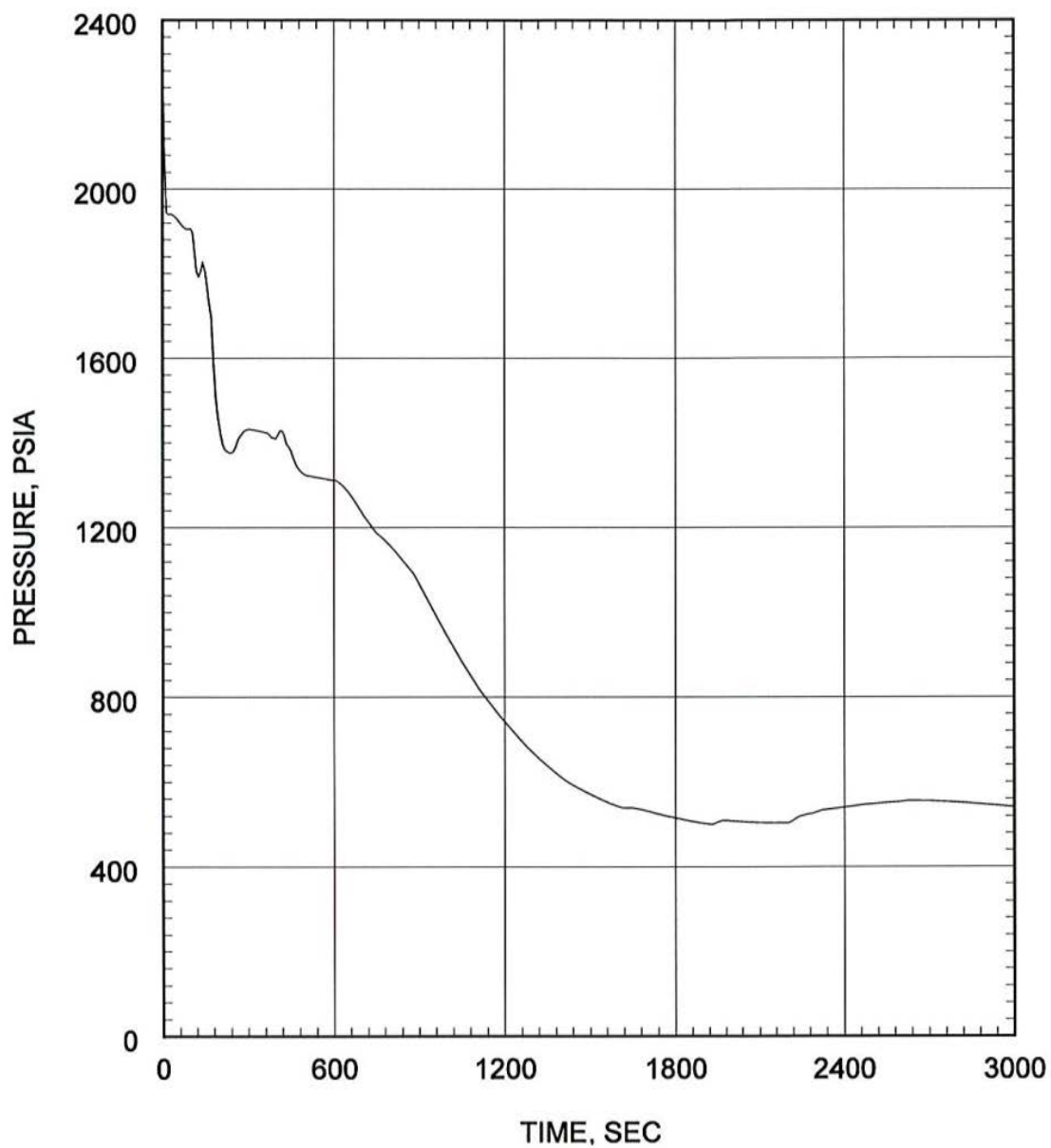
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.3-2B

JUNE 2019

REVISION 20



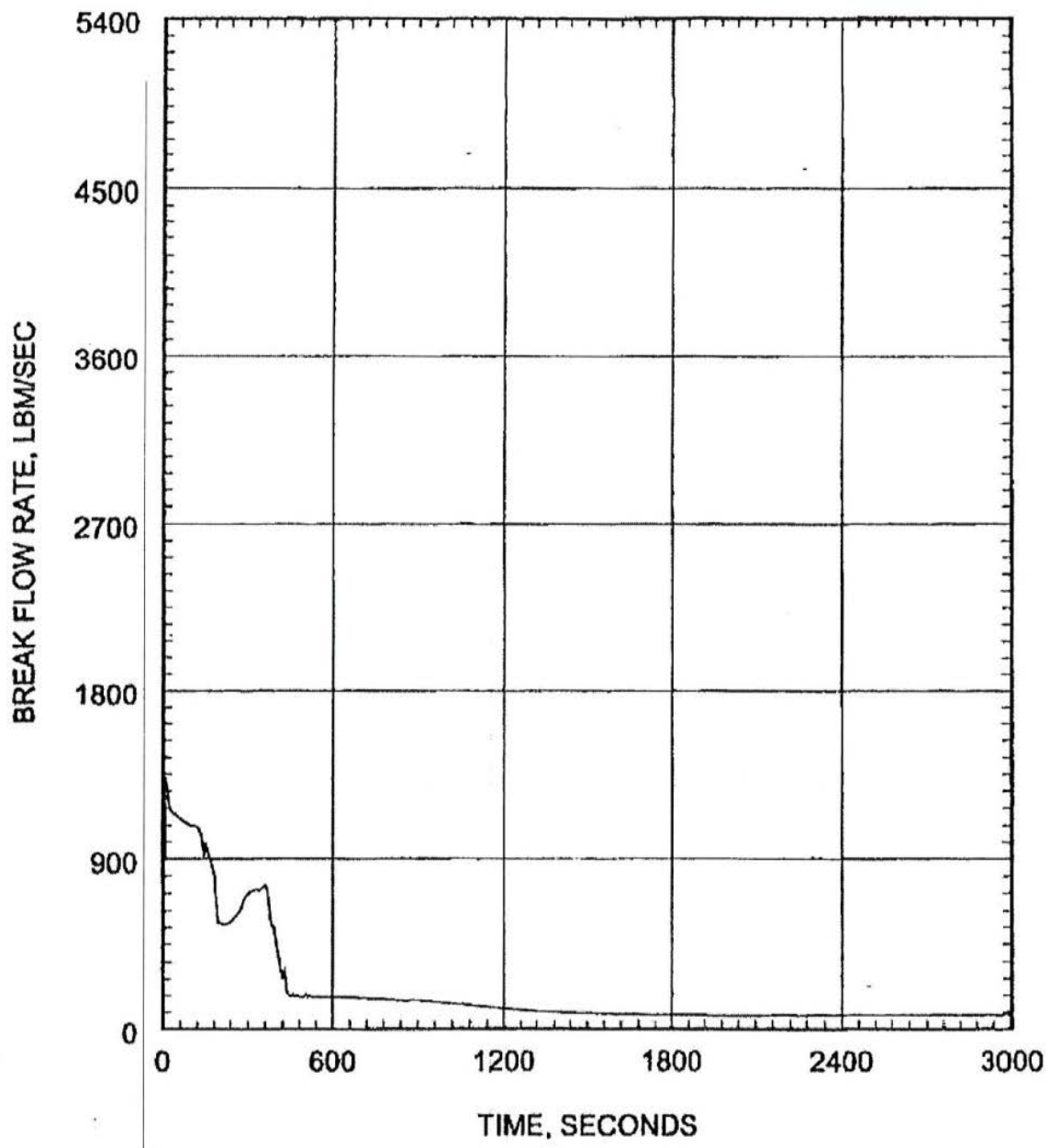
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.3-2B

JUNE 2019

REVISION 20



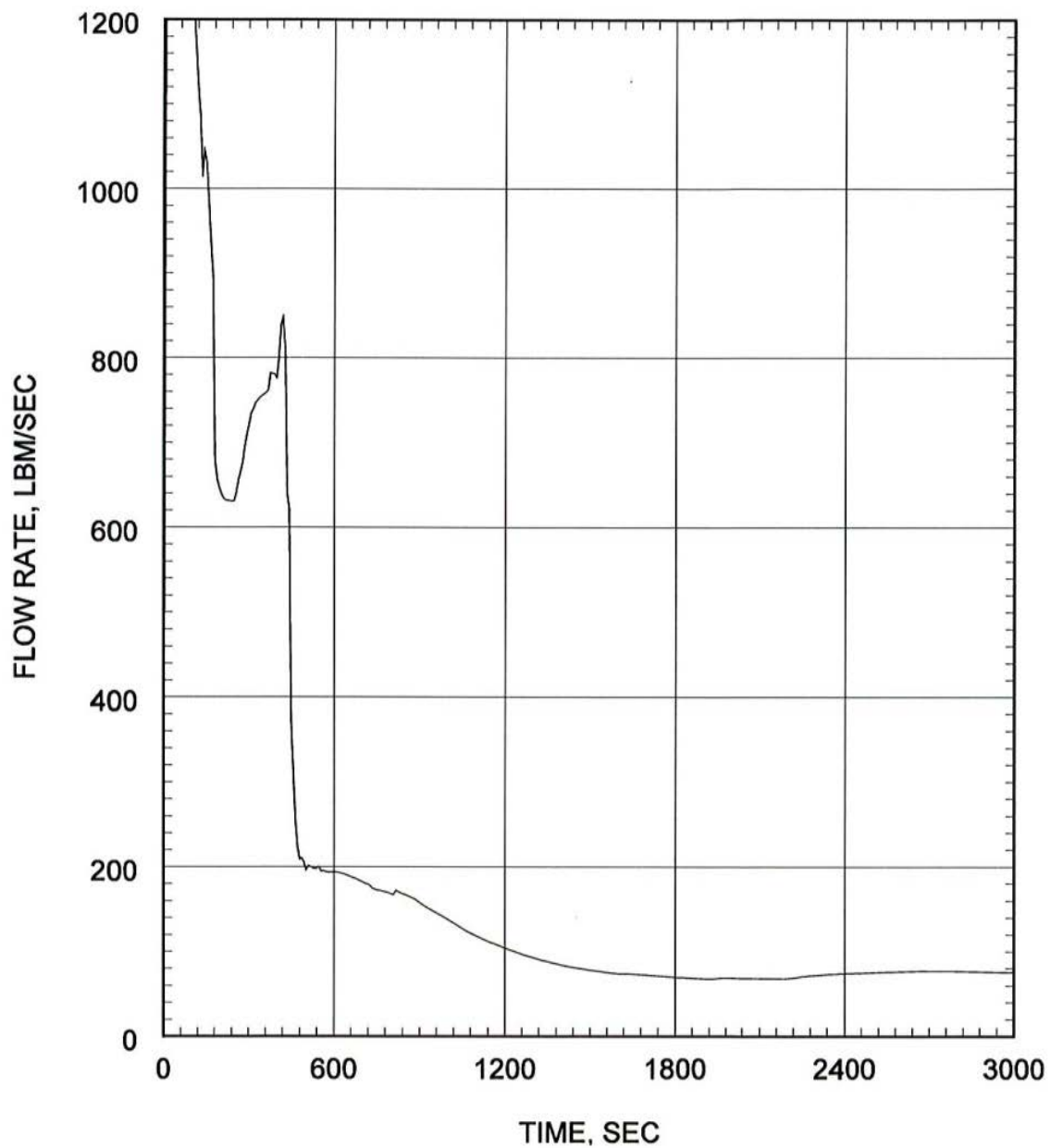
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-2C

JUNE 2019

REVISION 20



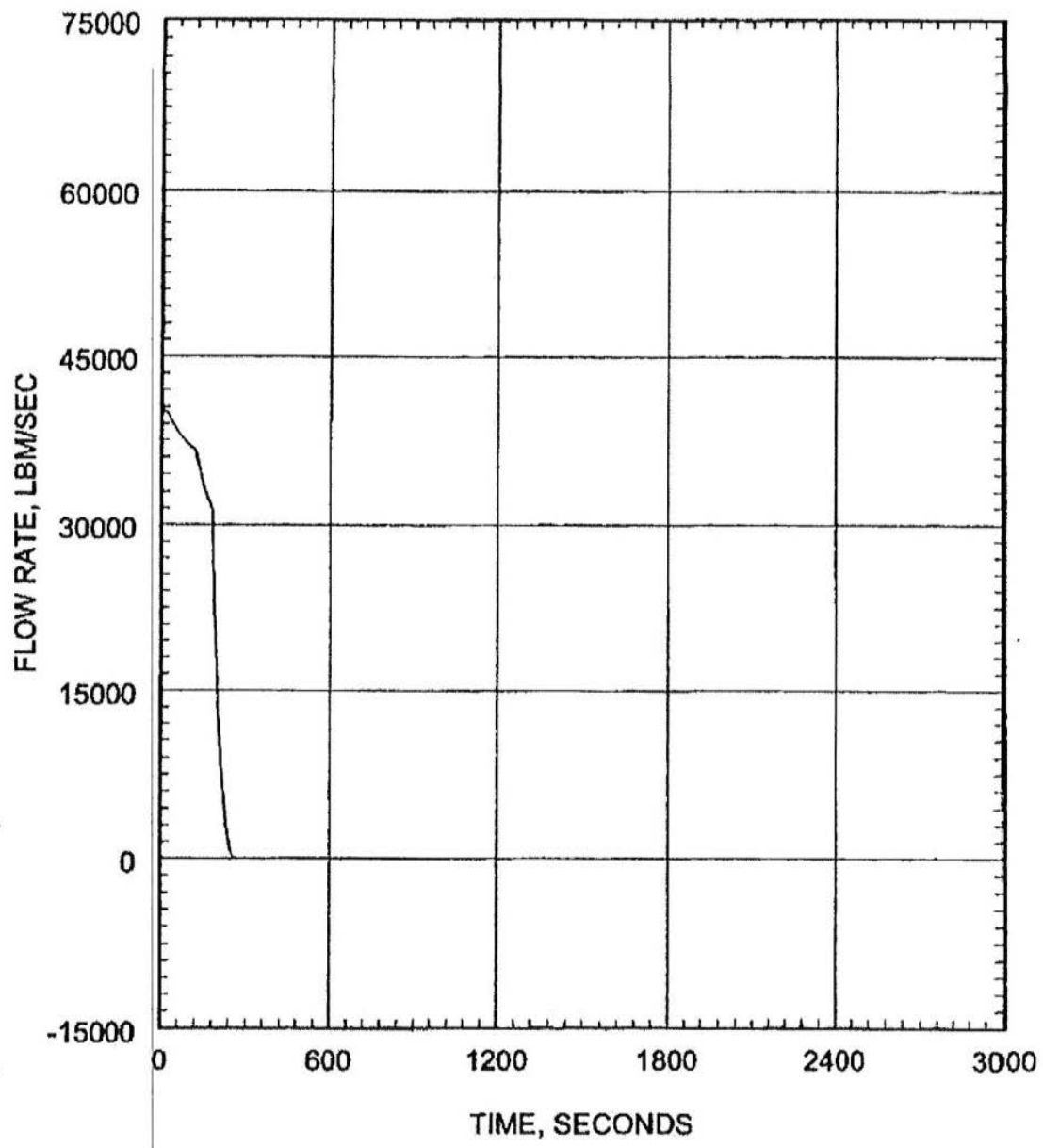
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-2C

JUNE 2019

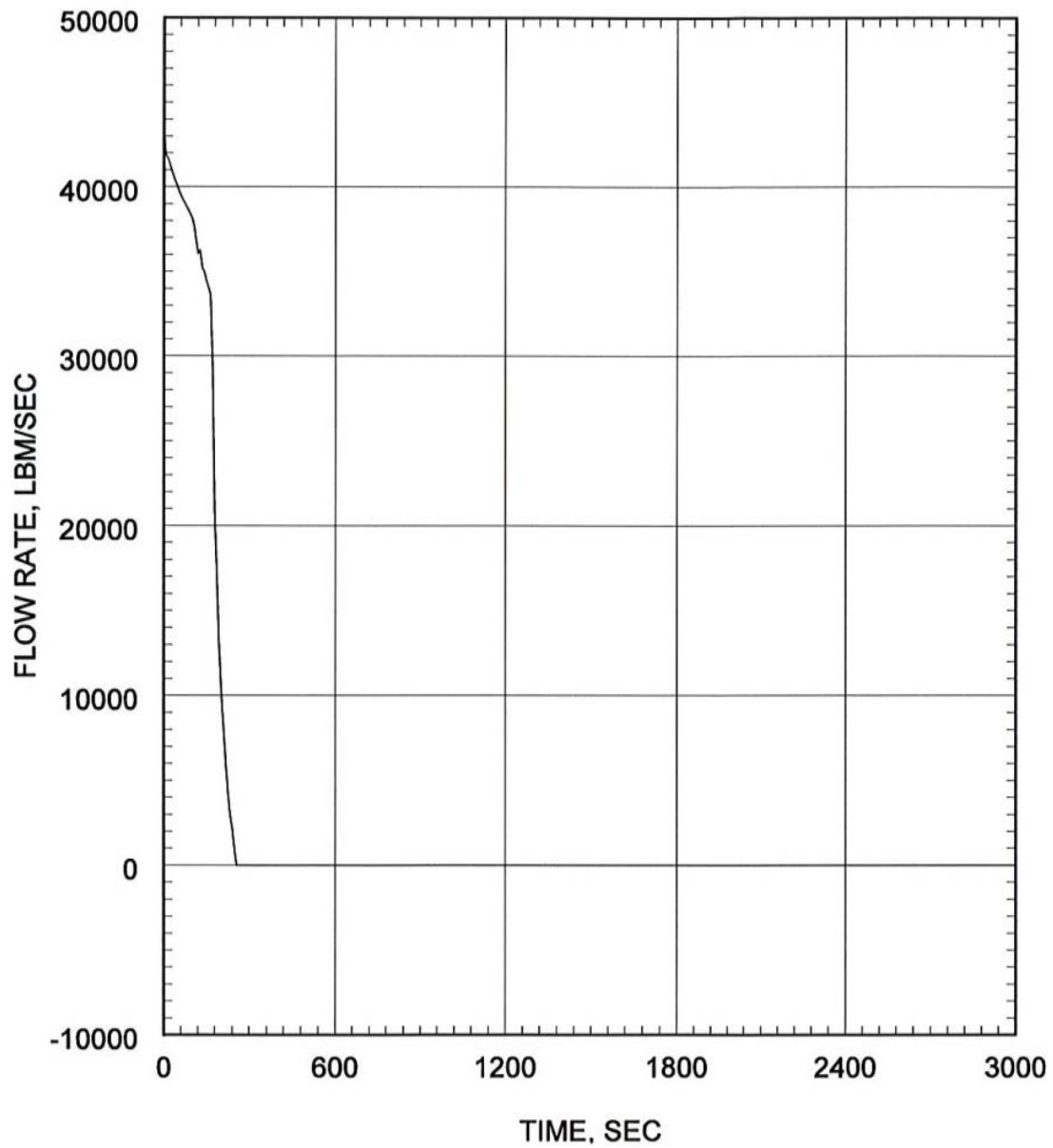
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-2D



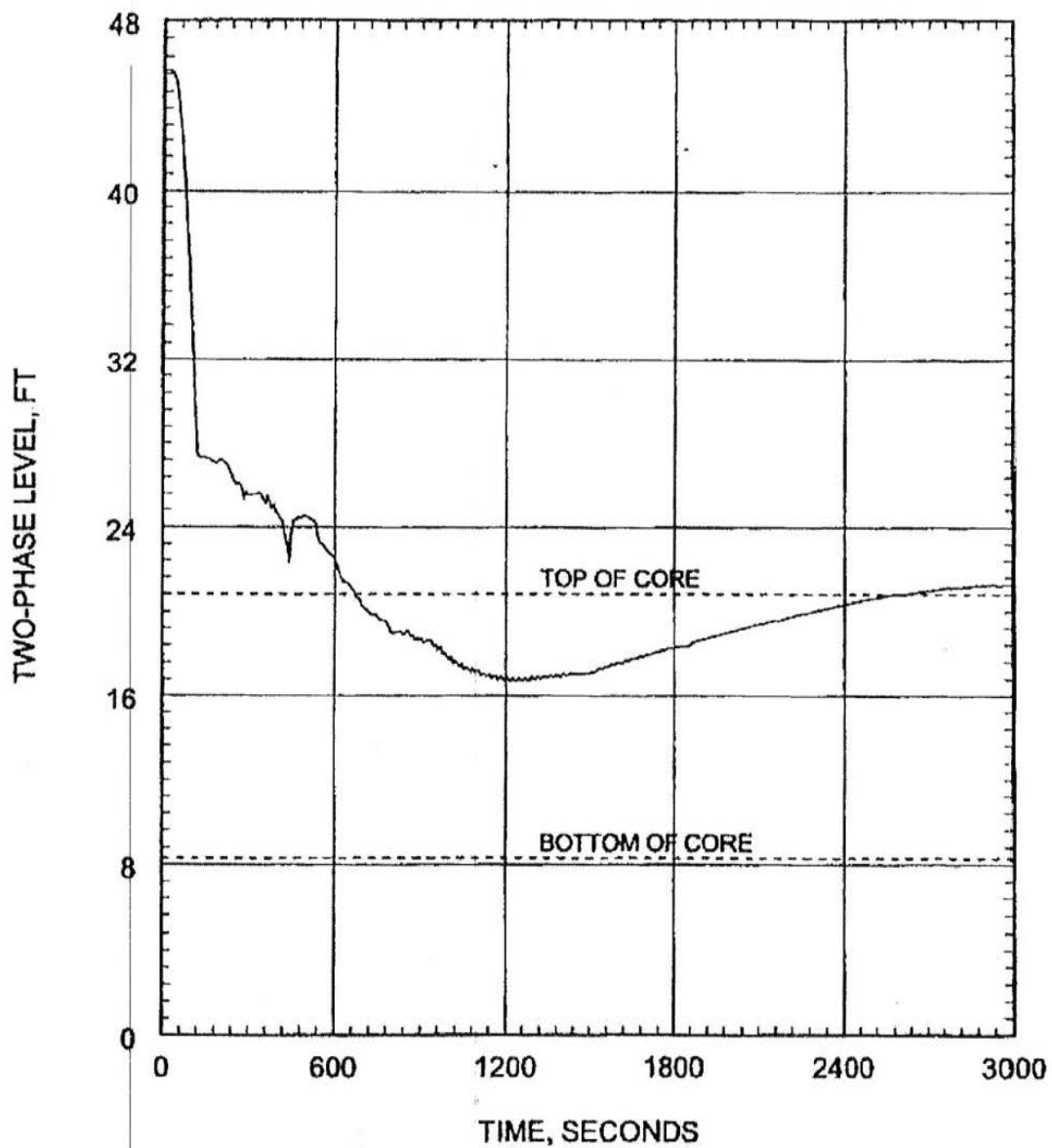
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-2D

JUNE 2019

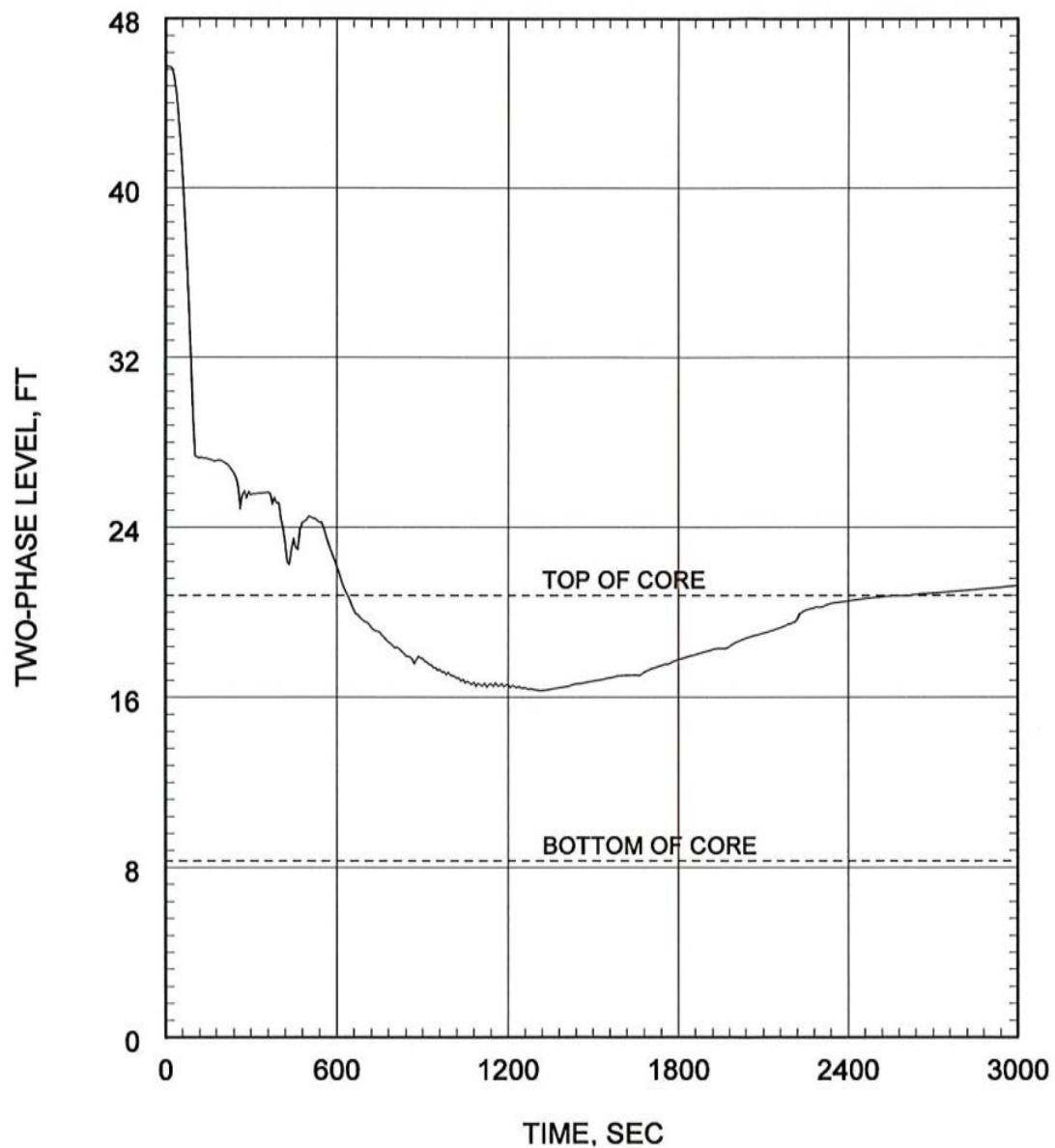
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16STD FUEL

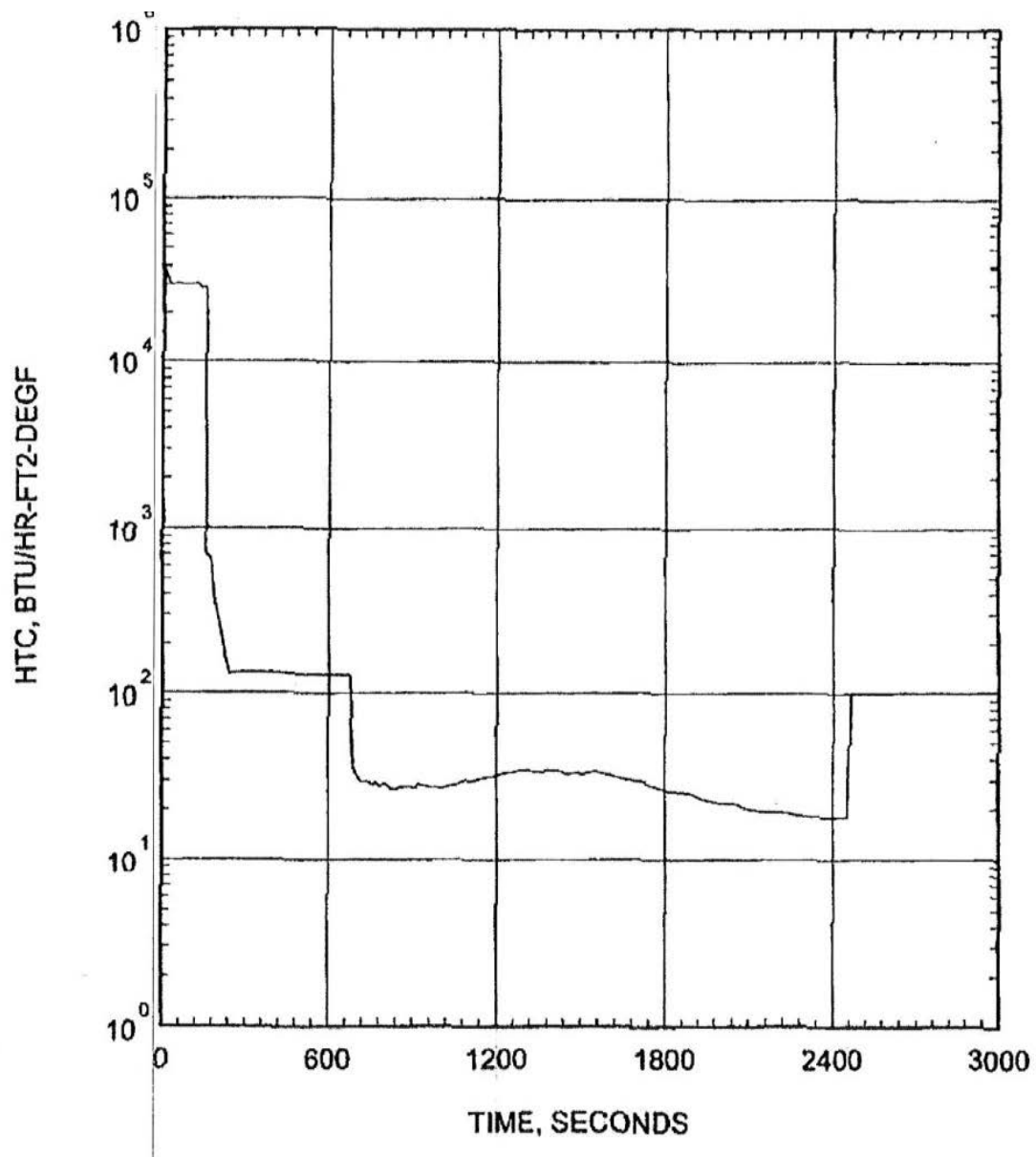
FIGURE 6.3.3a.3-2E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16NGF FUEL

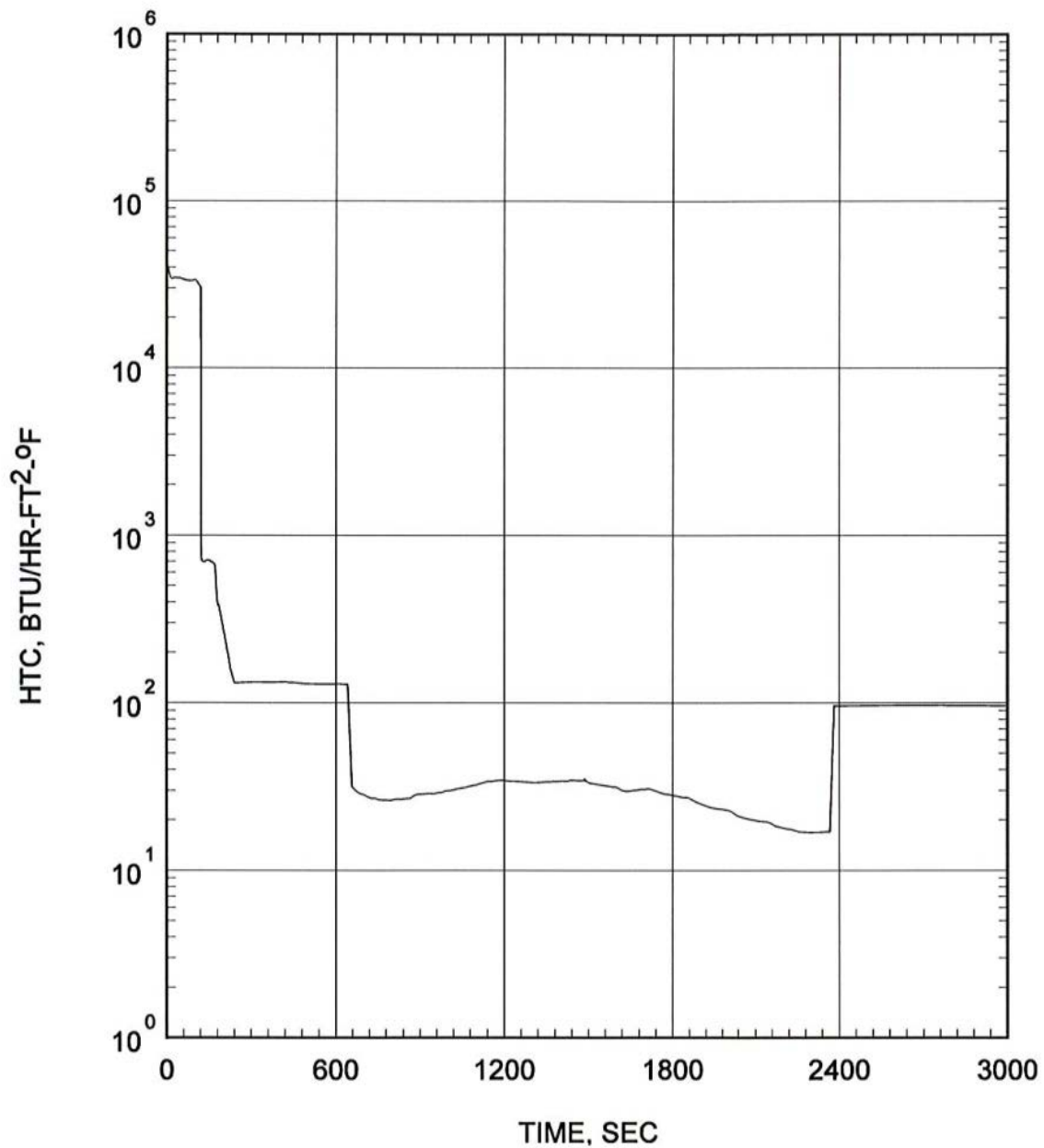
FIGURE 6.3.3b.3-2E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16STD FUEL

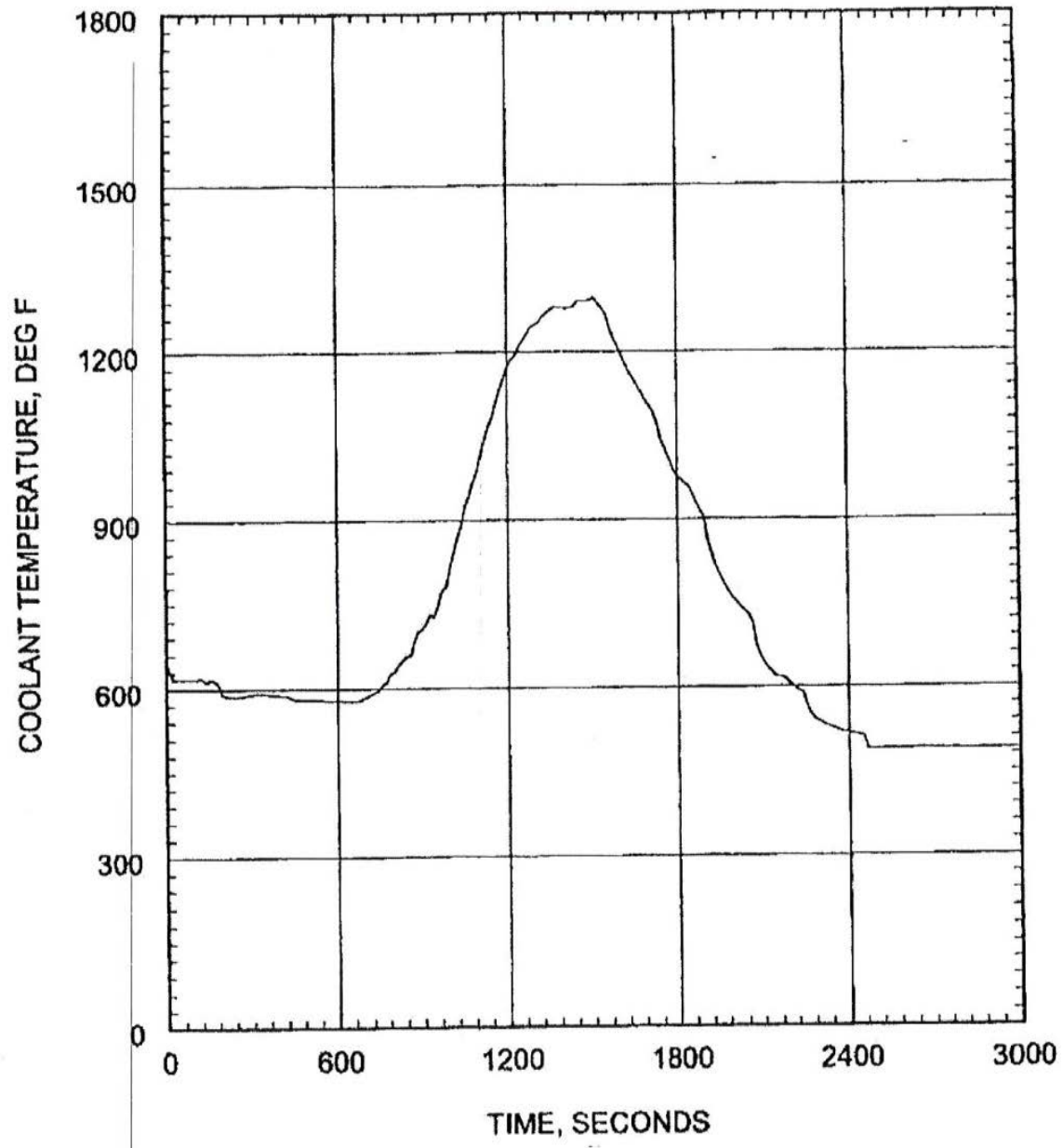
FIGURE 6.3.3a.3-2F



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-2F



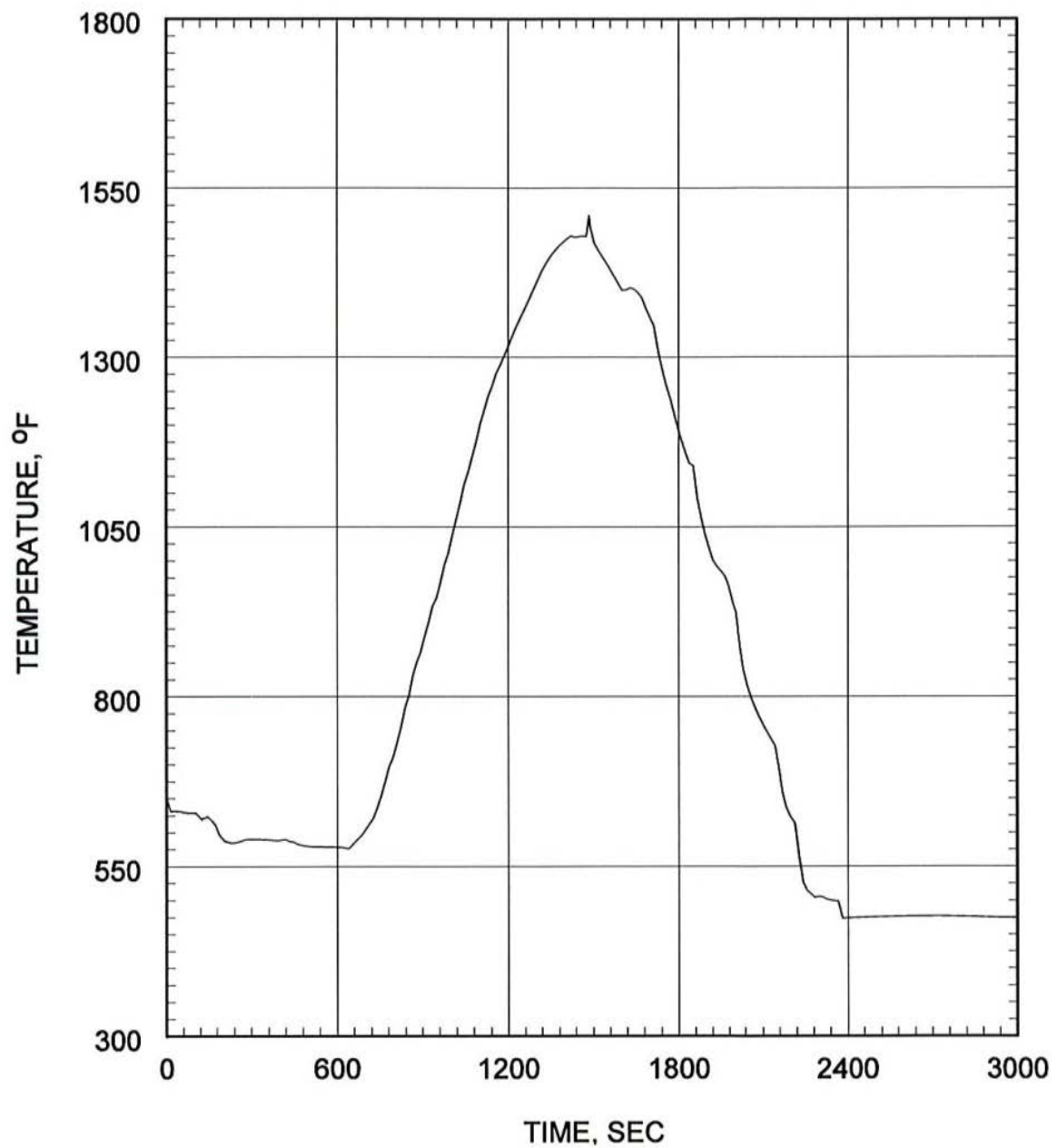
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-2G

JUNE 2019

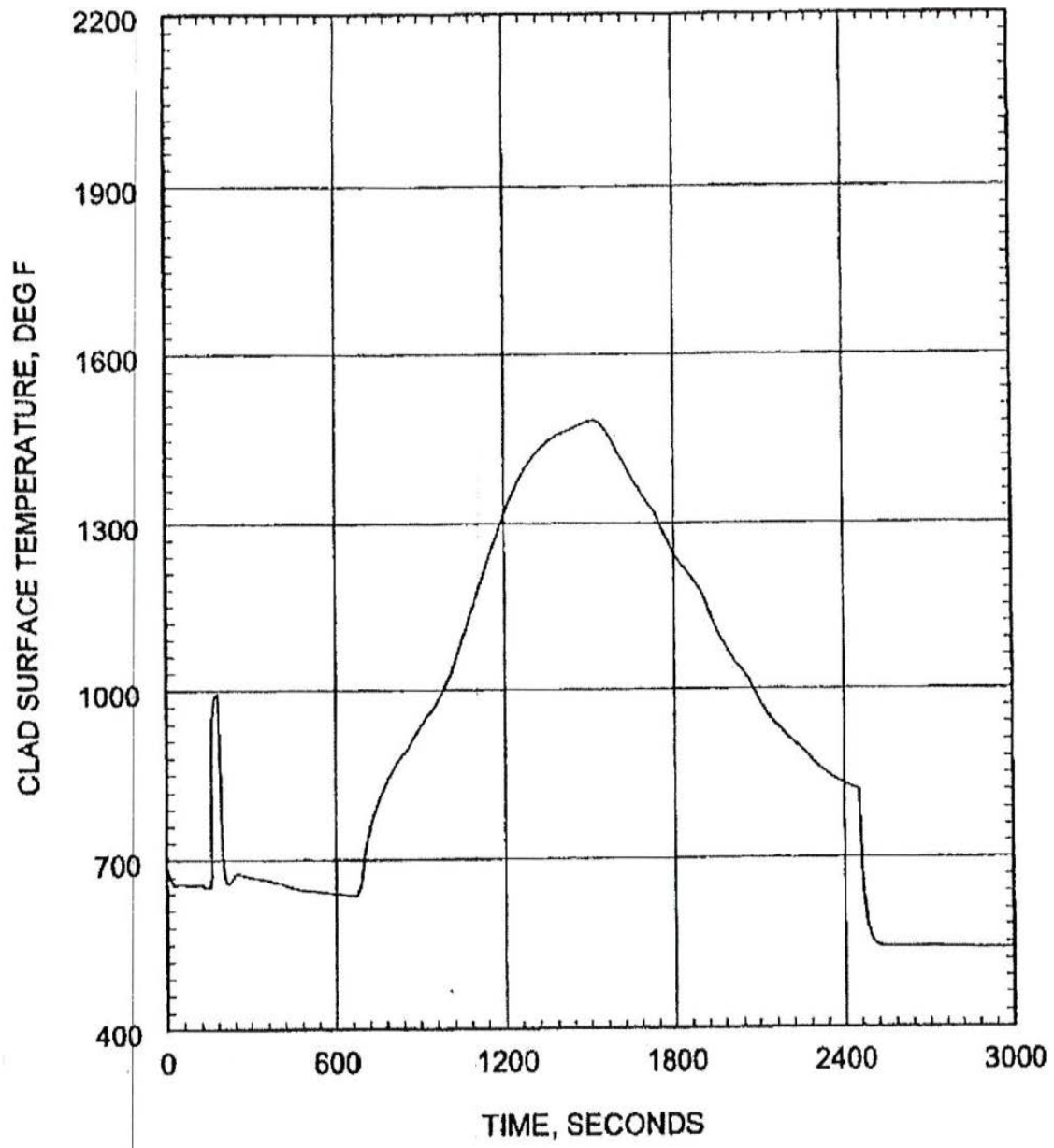
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16NGF FUEL

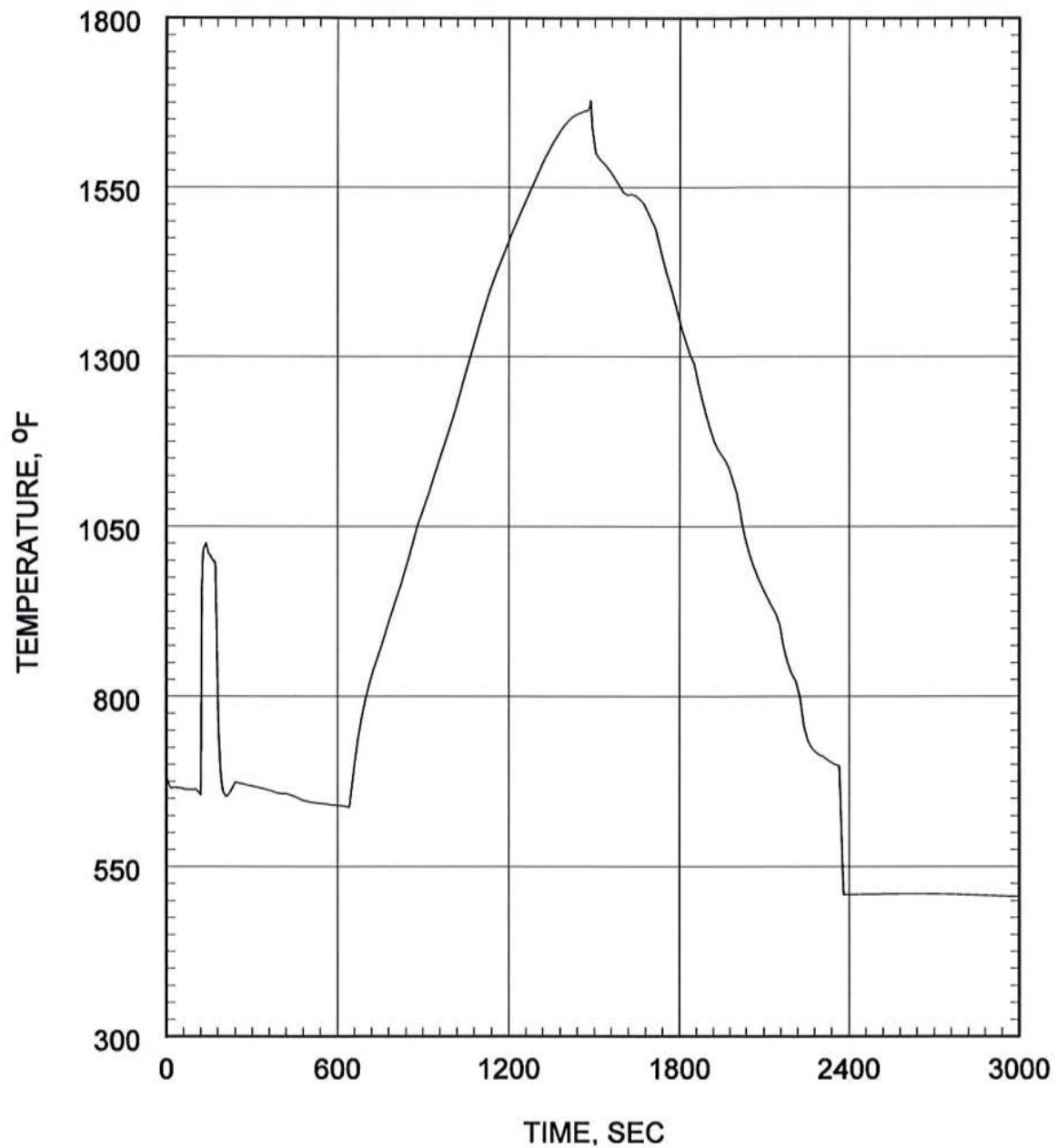
FIGURE 6.3.3b.3-2G



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.06 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.3-2H



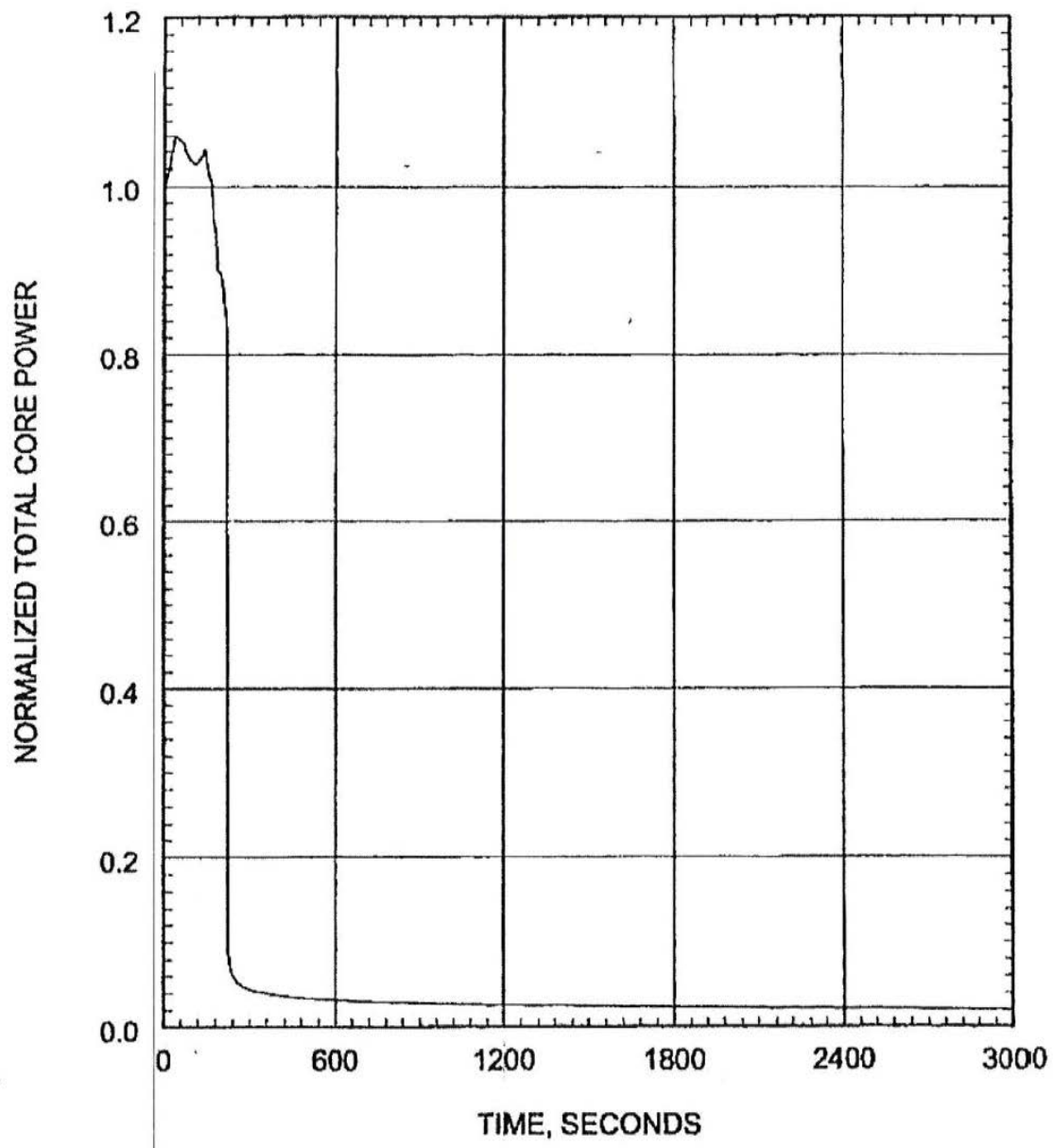
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.07 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.3-2H

JUNE 2019

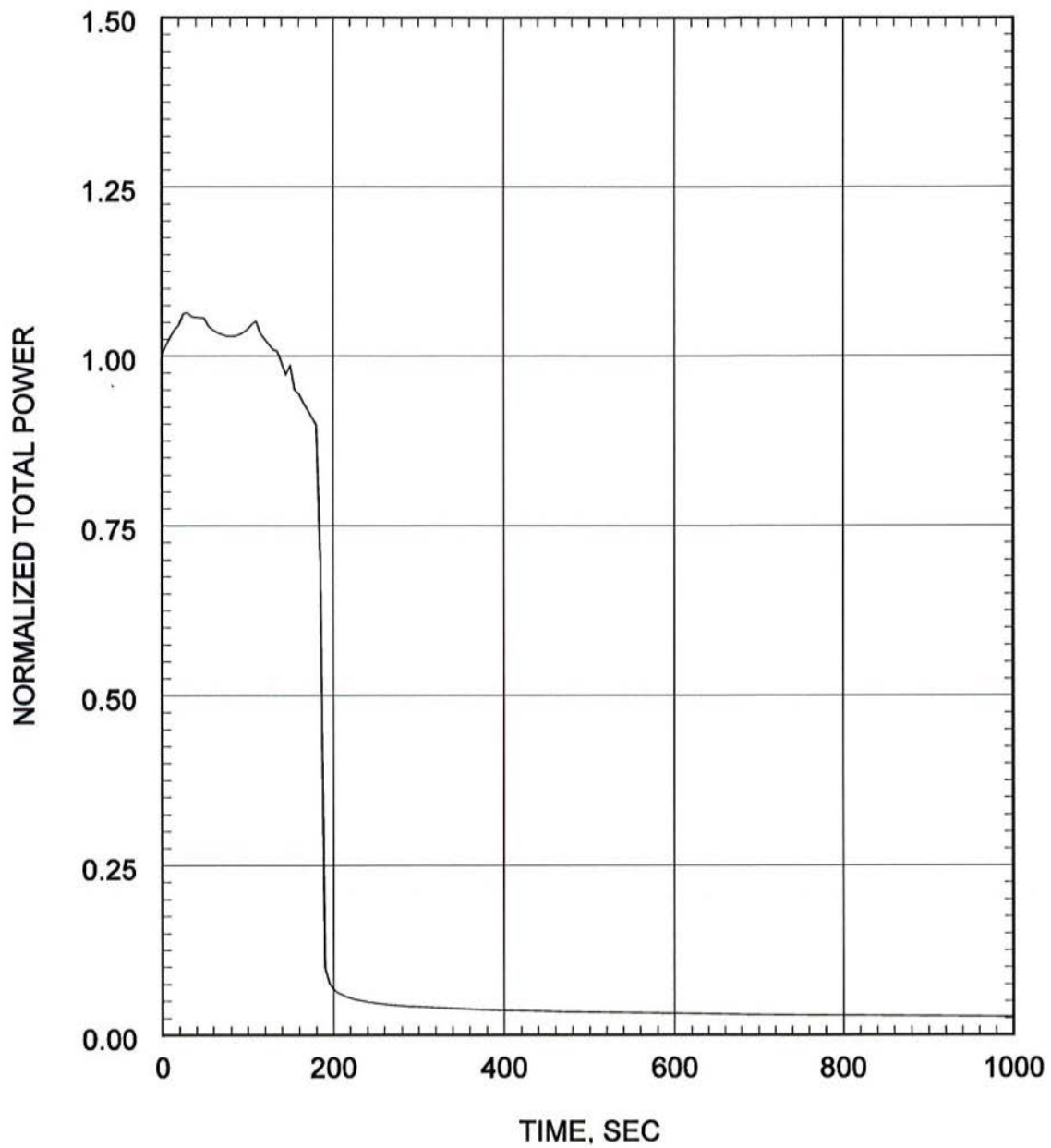
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.3-3A



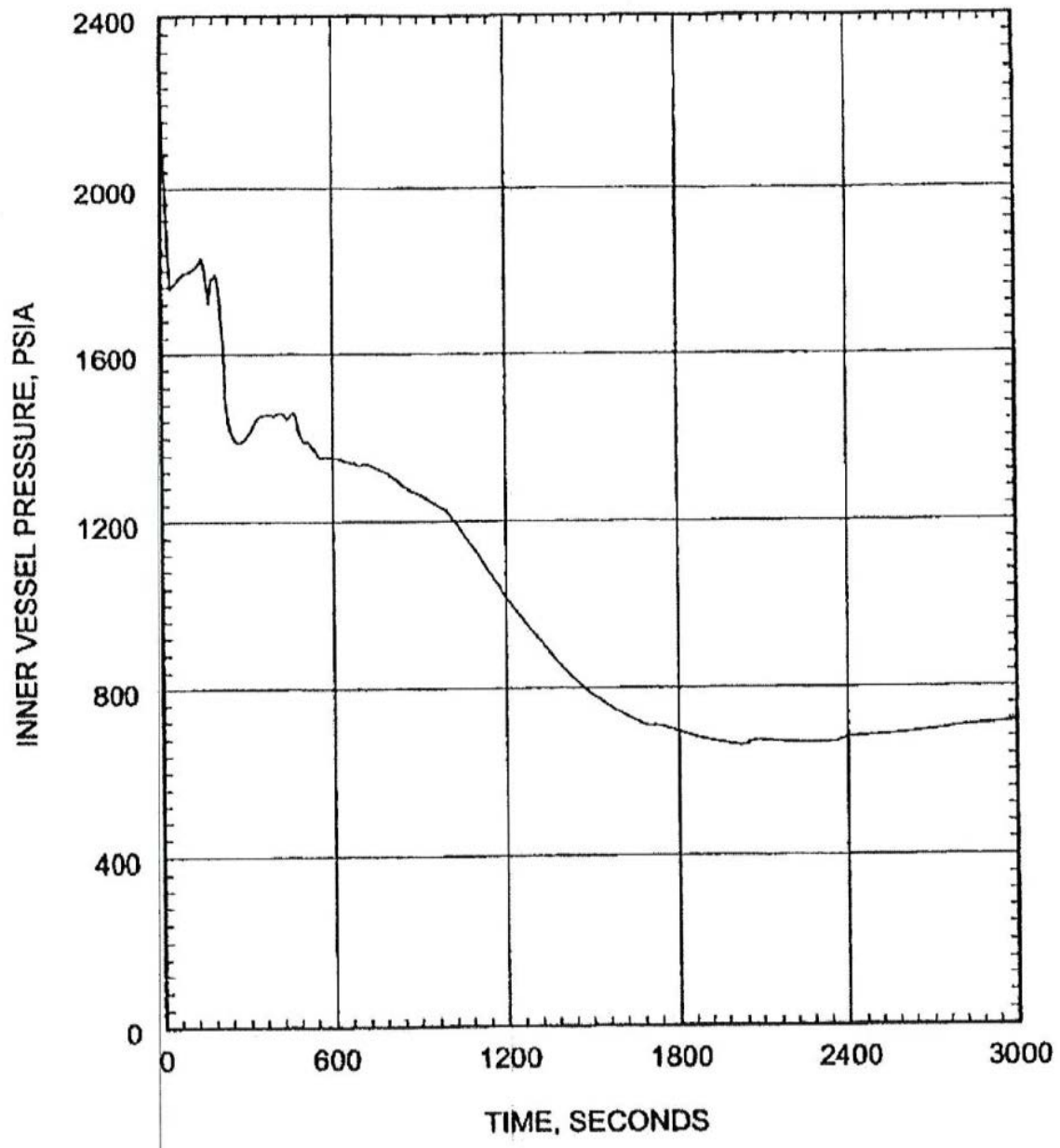
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.3-3A

JUNE 2019

REVISION 20



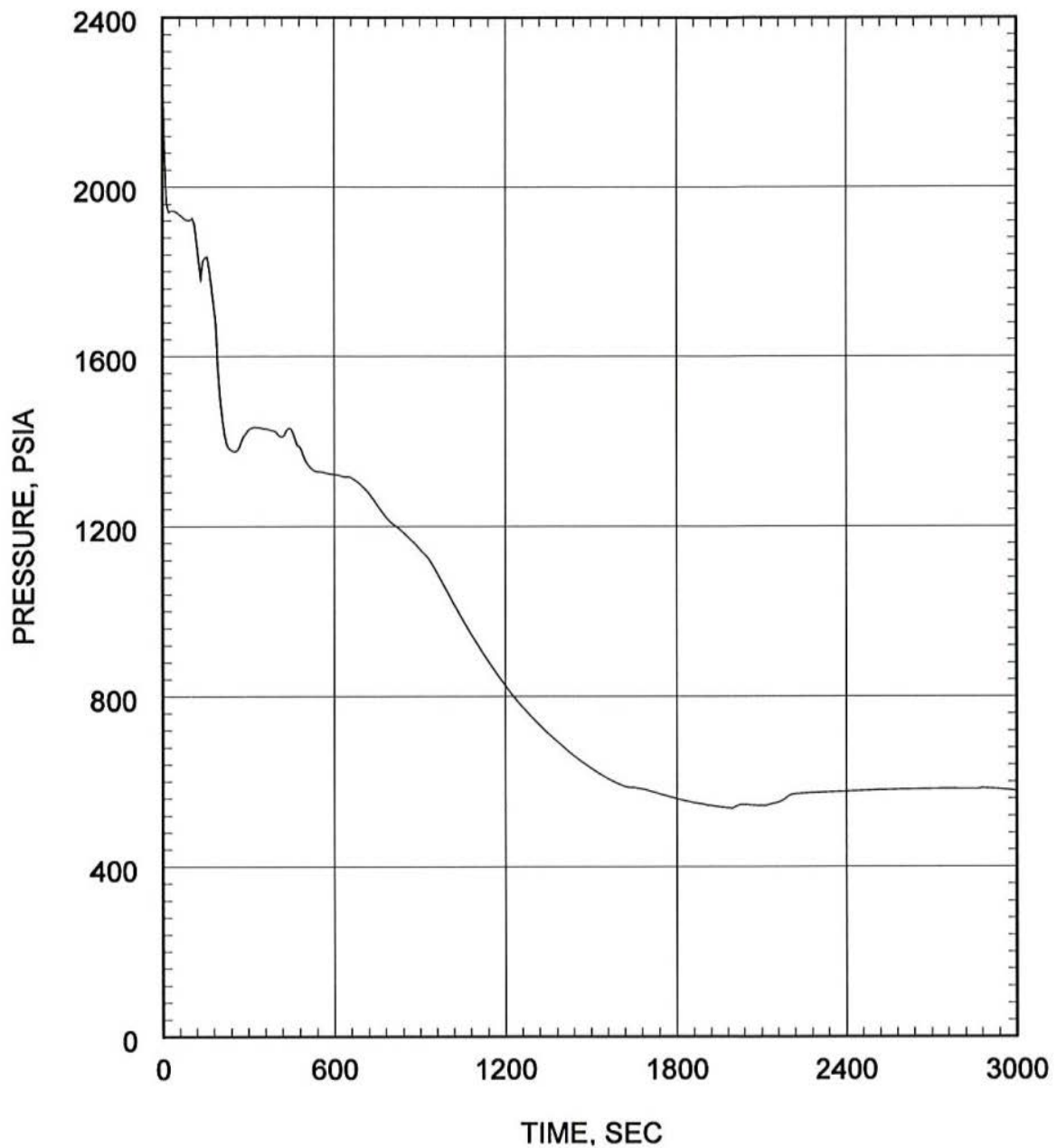
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.3-3B

JUNE 2019

REVISION 20



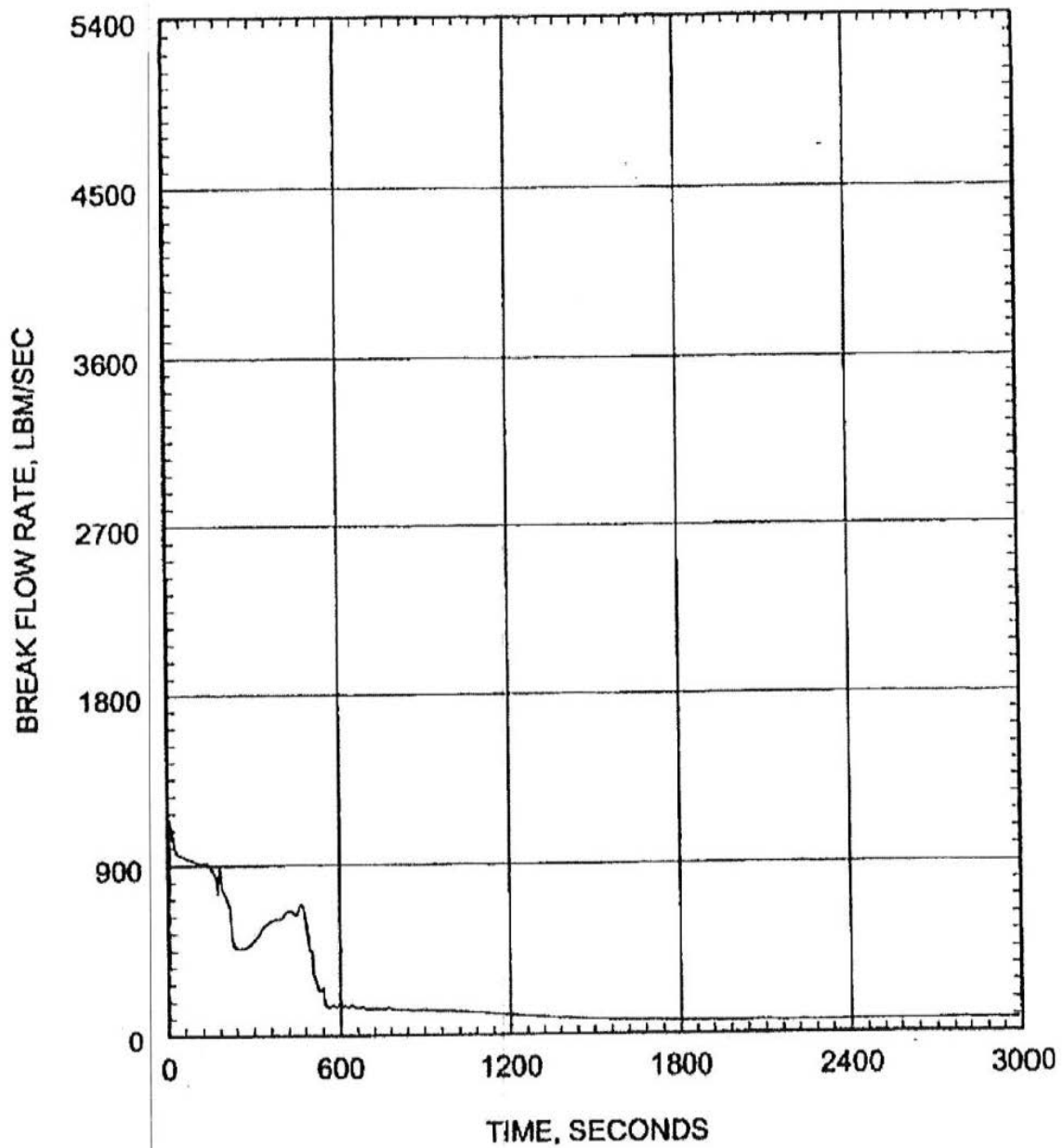
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.3-3B

JUNE 2019

REVISION 20



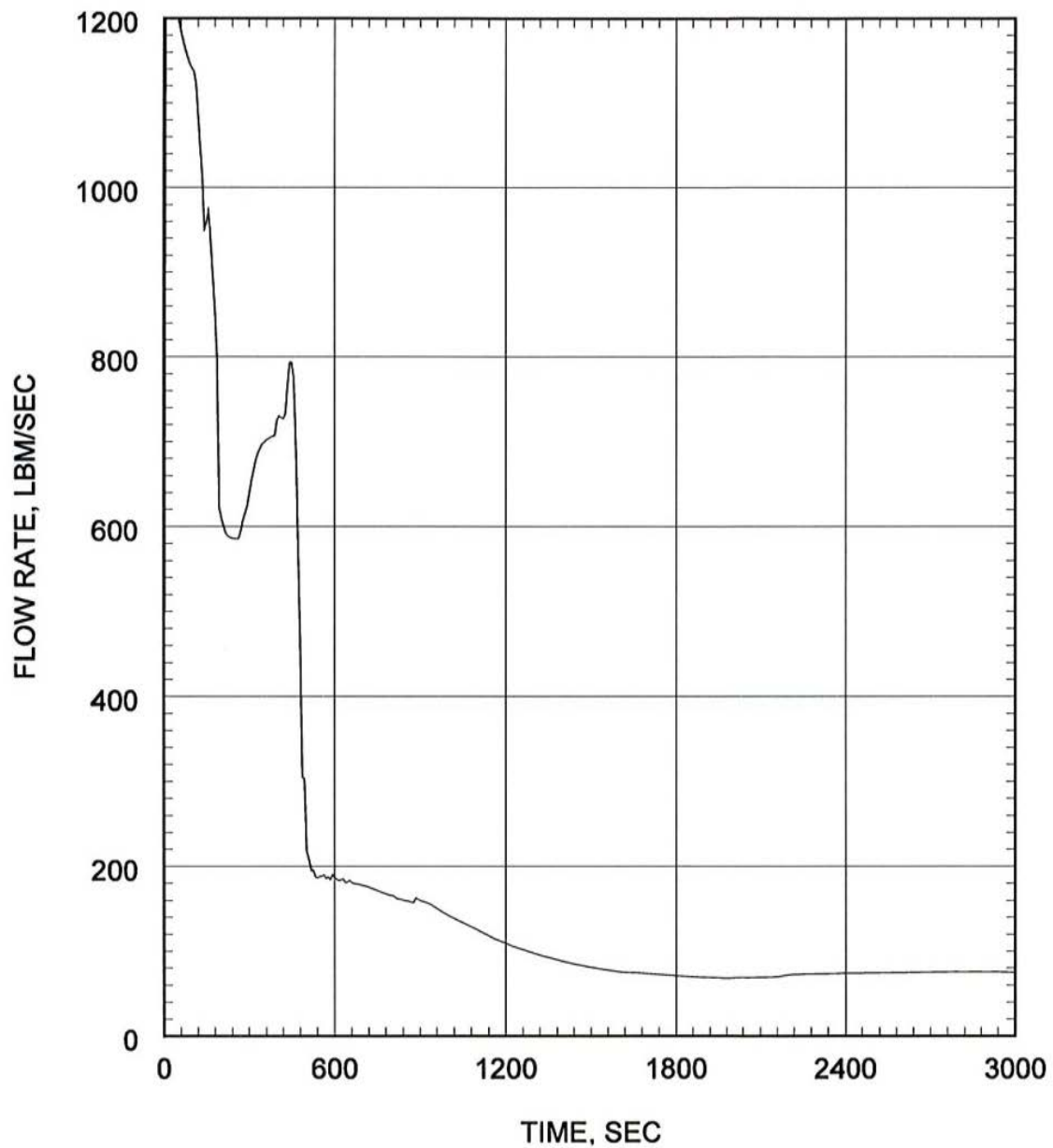
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-3C

JUNE 2019

REVISION 20



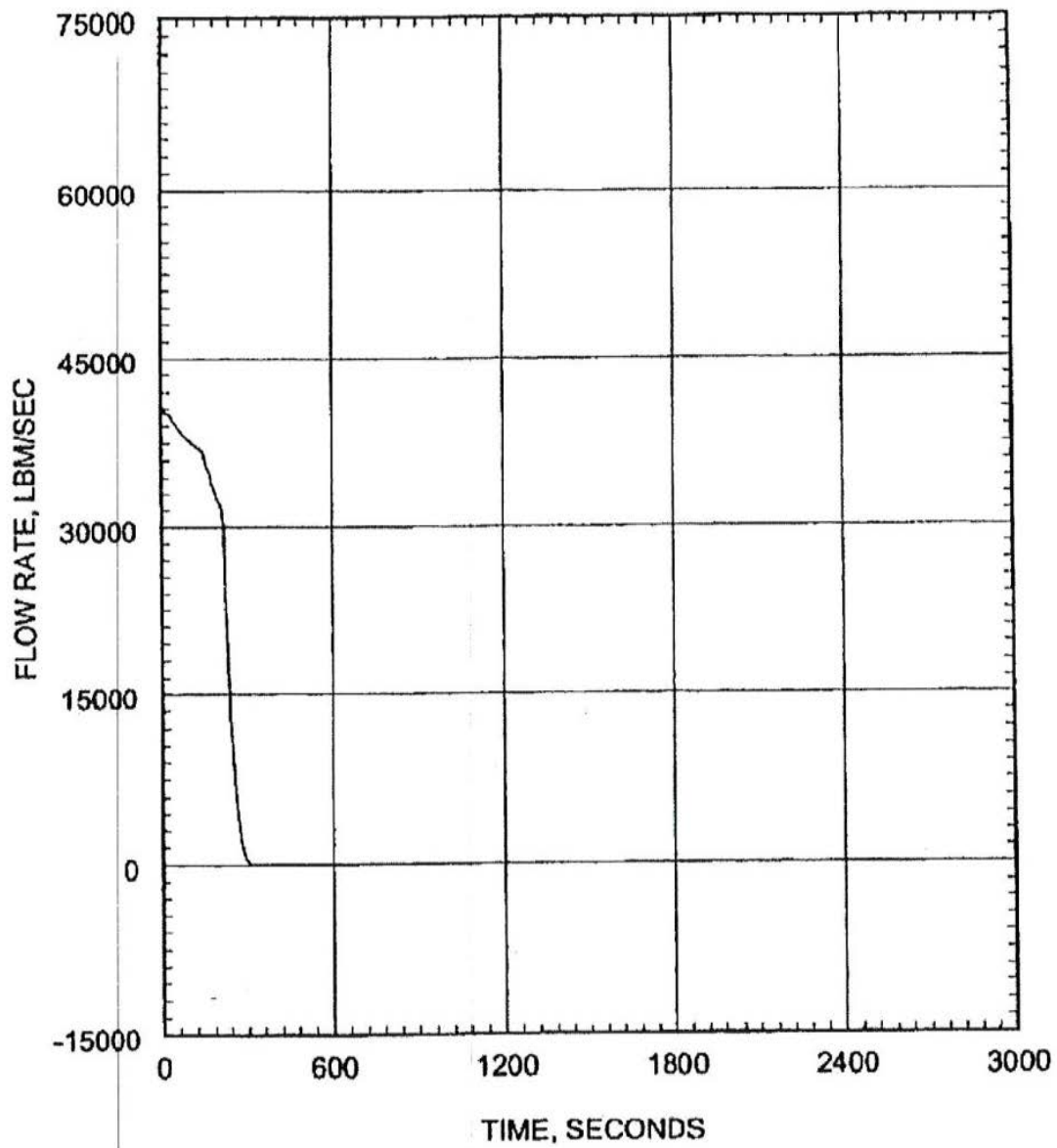
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-3C

JUNE 2019

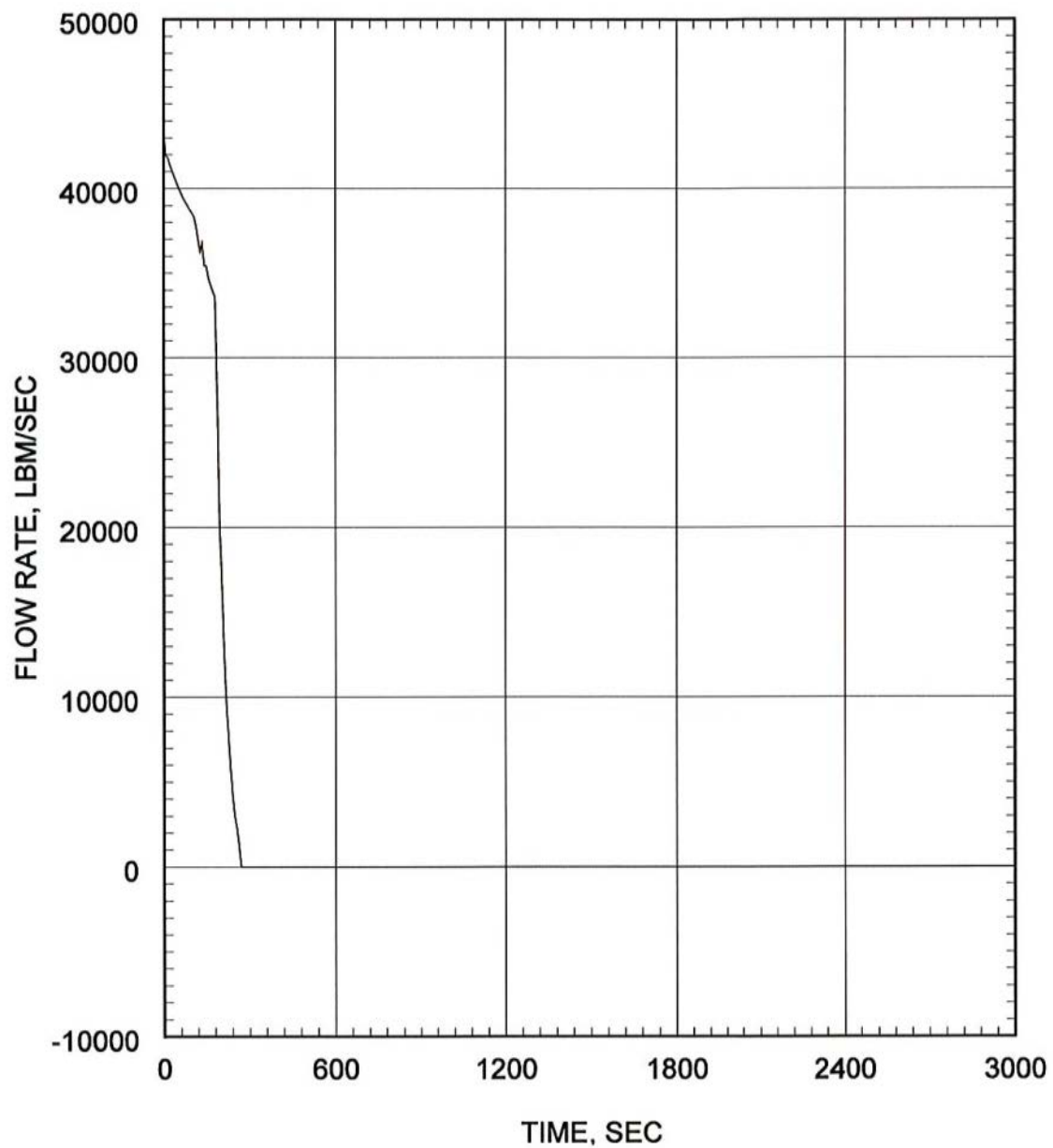
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-3D



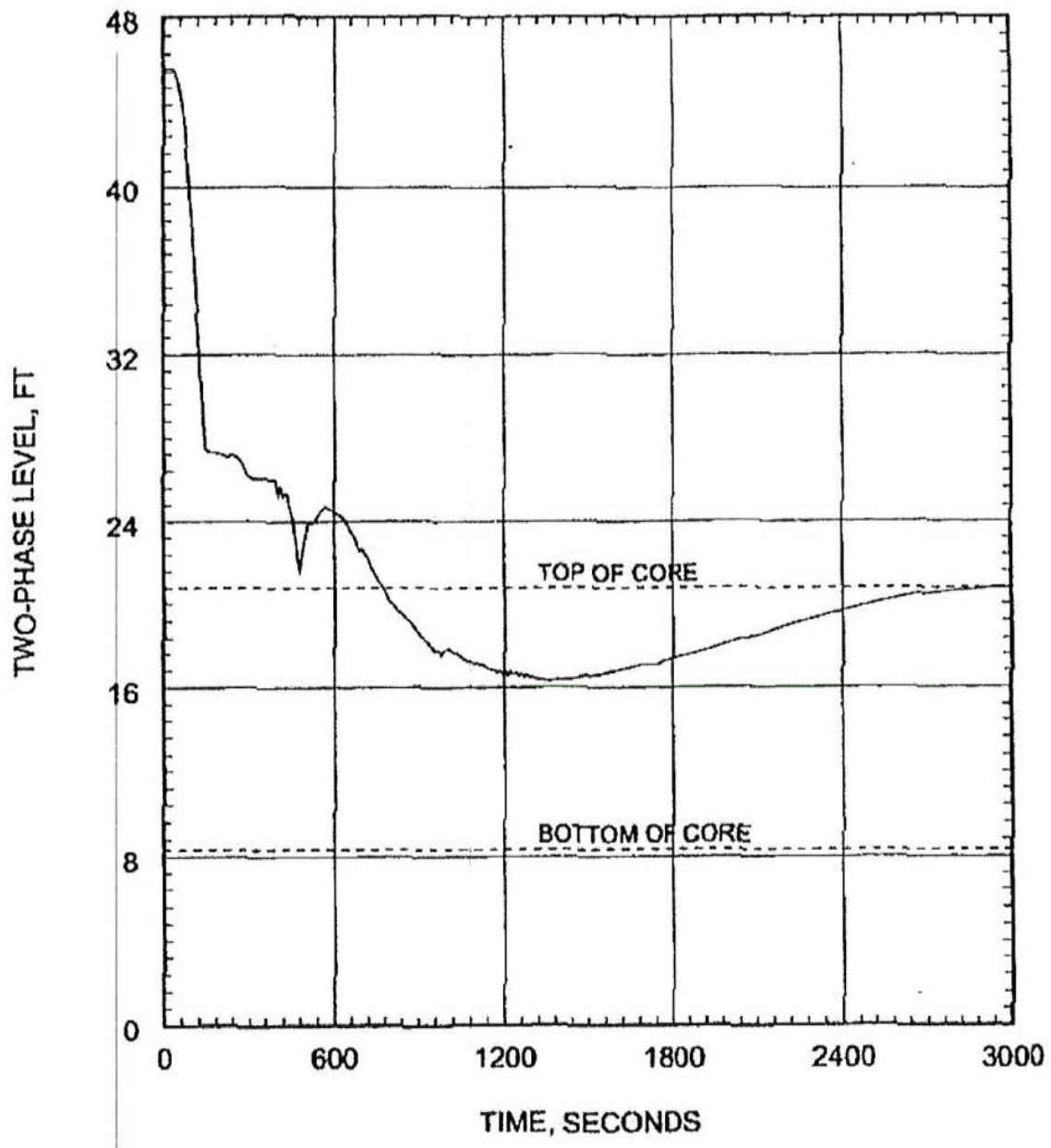
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-3D

JUNE 2019

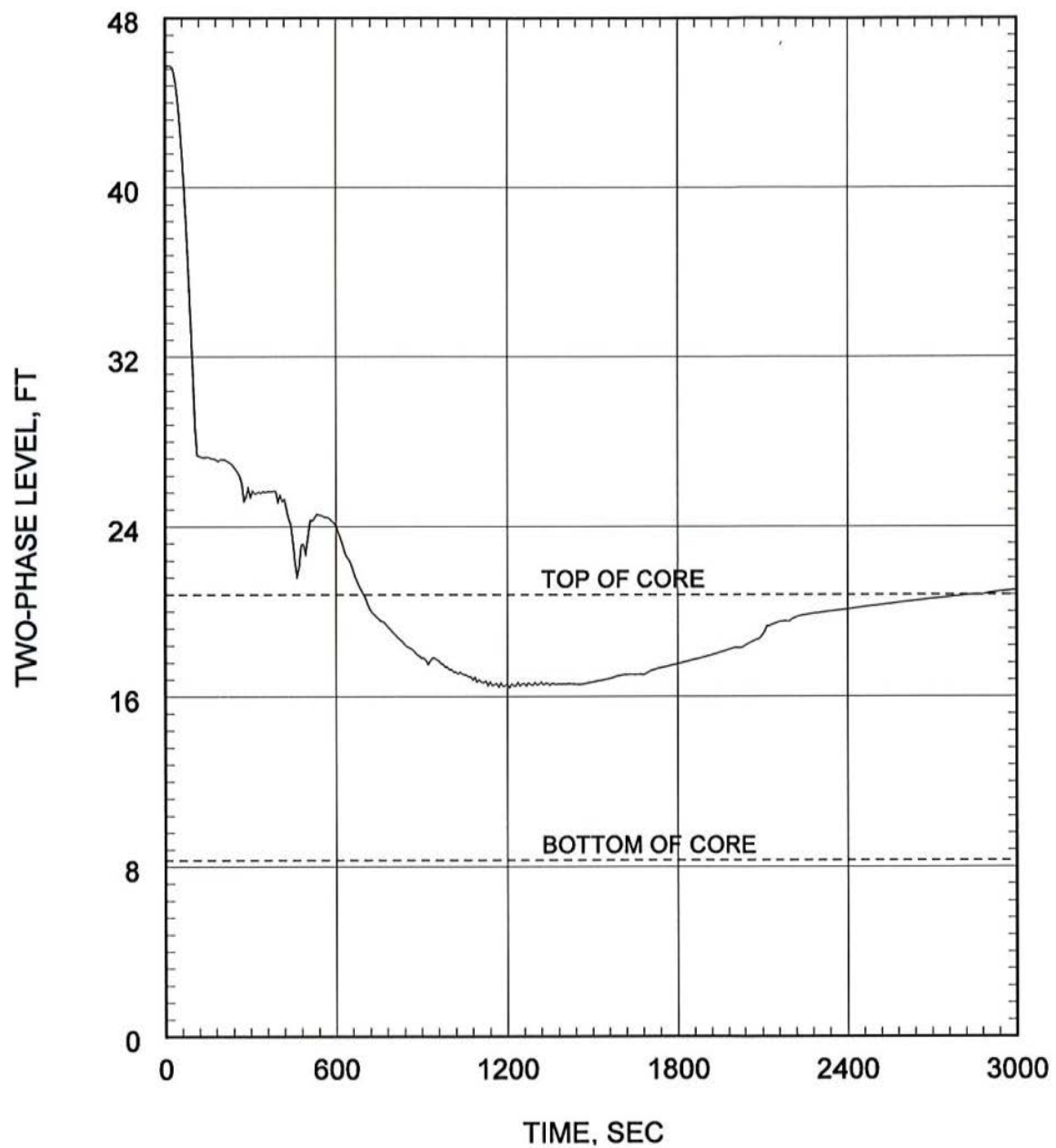
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16STD FUEL

FIGURE 6.3.3a.3-3E



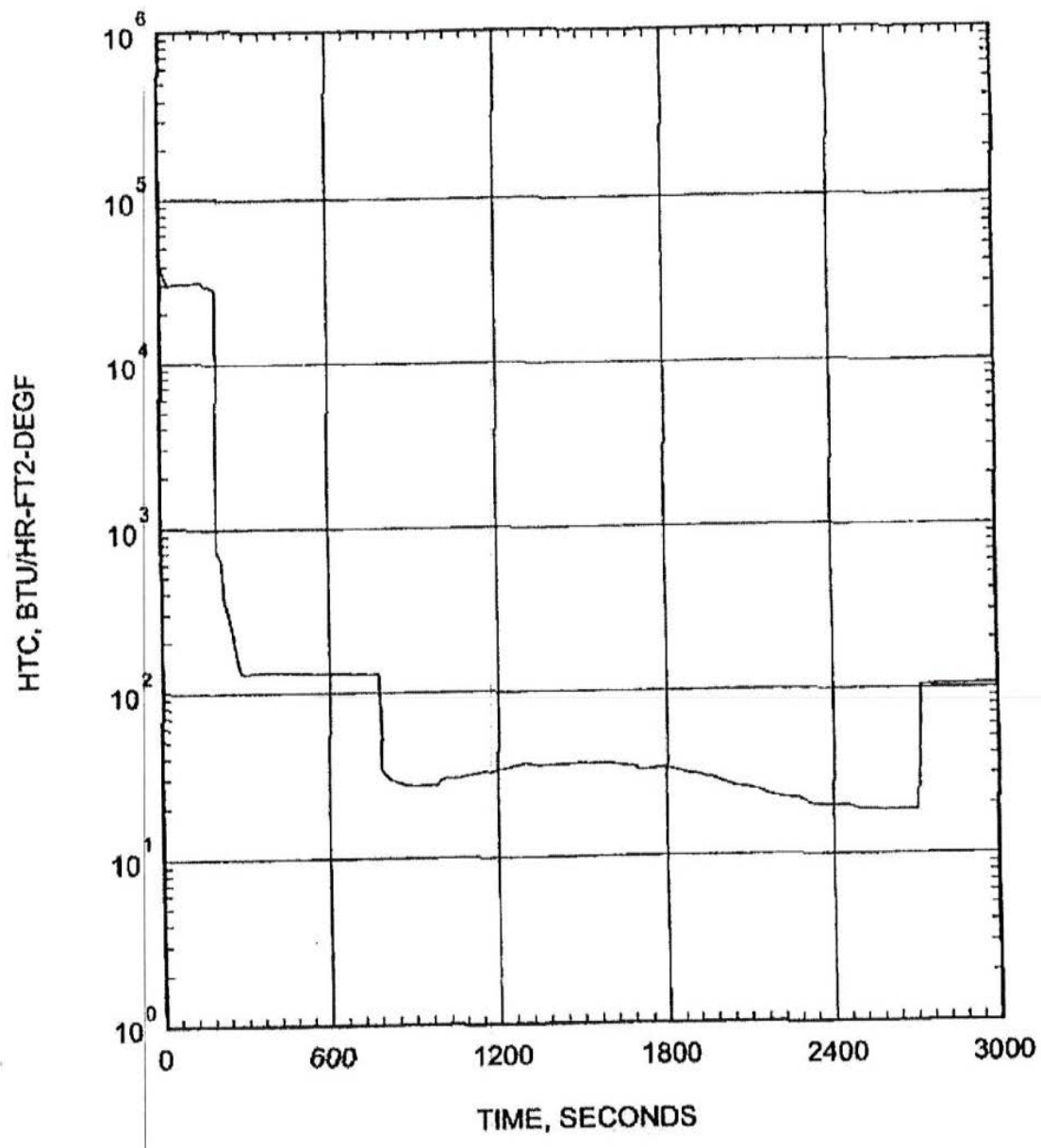
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16NGF FUEL

FIGURE 6.3.3b.3-3E

JUNE 2019

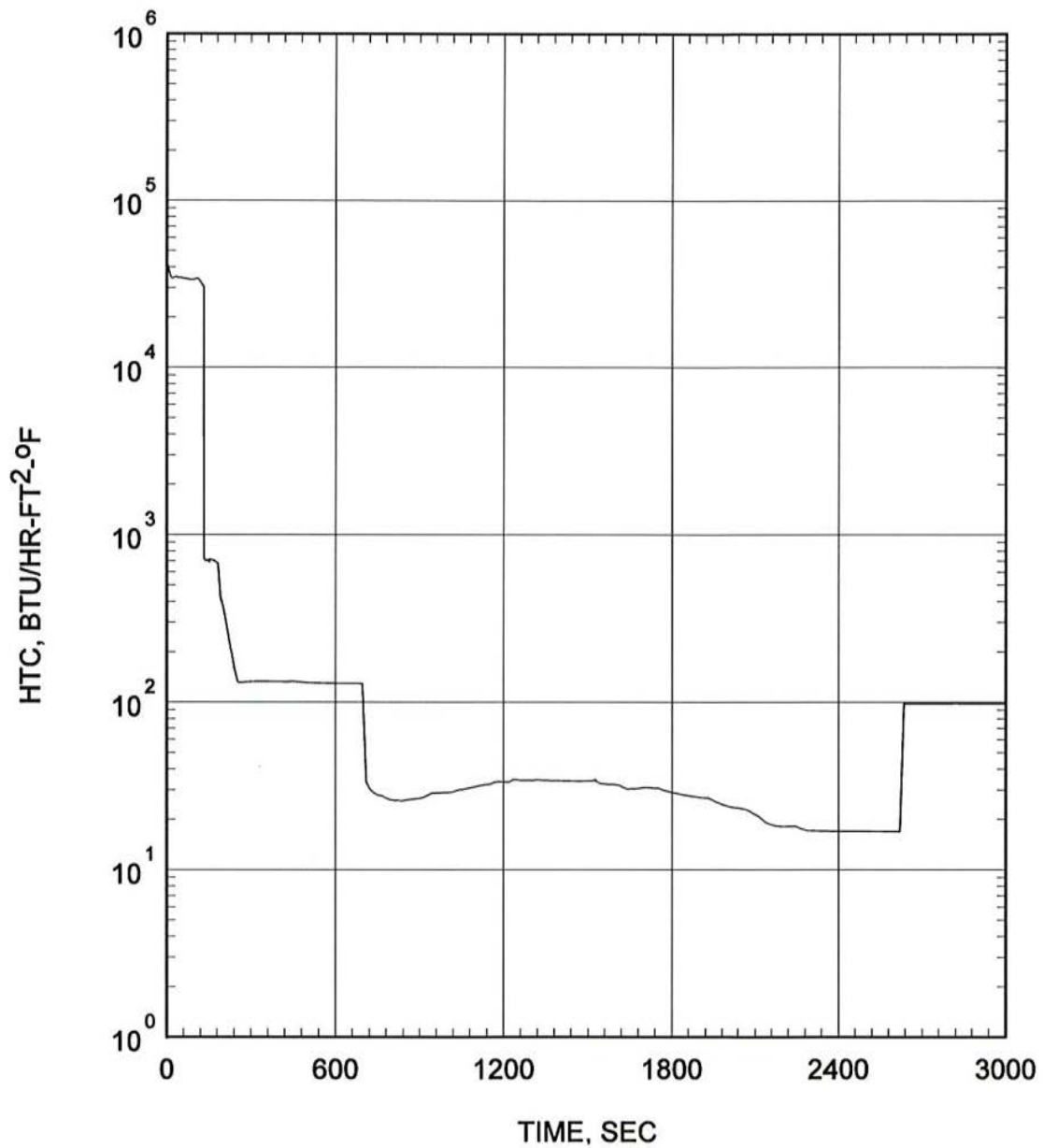
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16STD FUEL

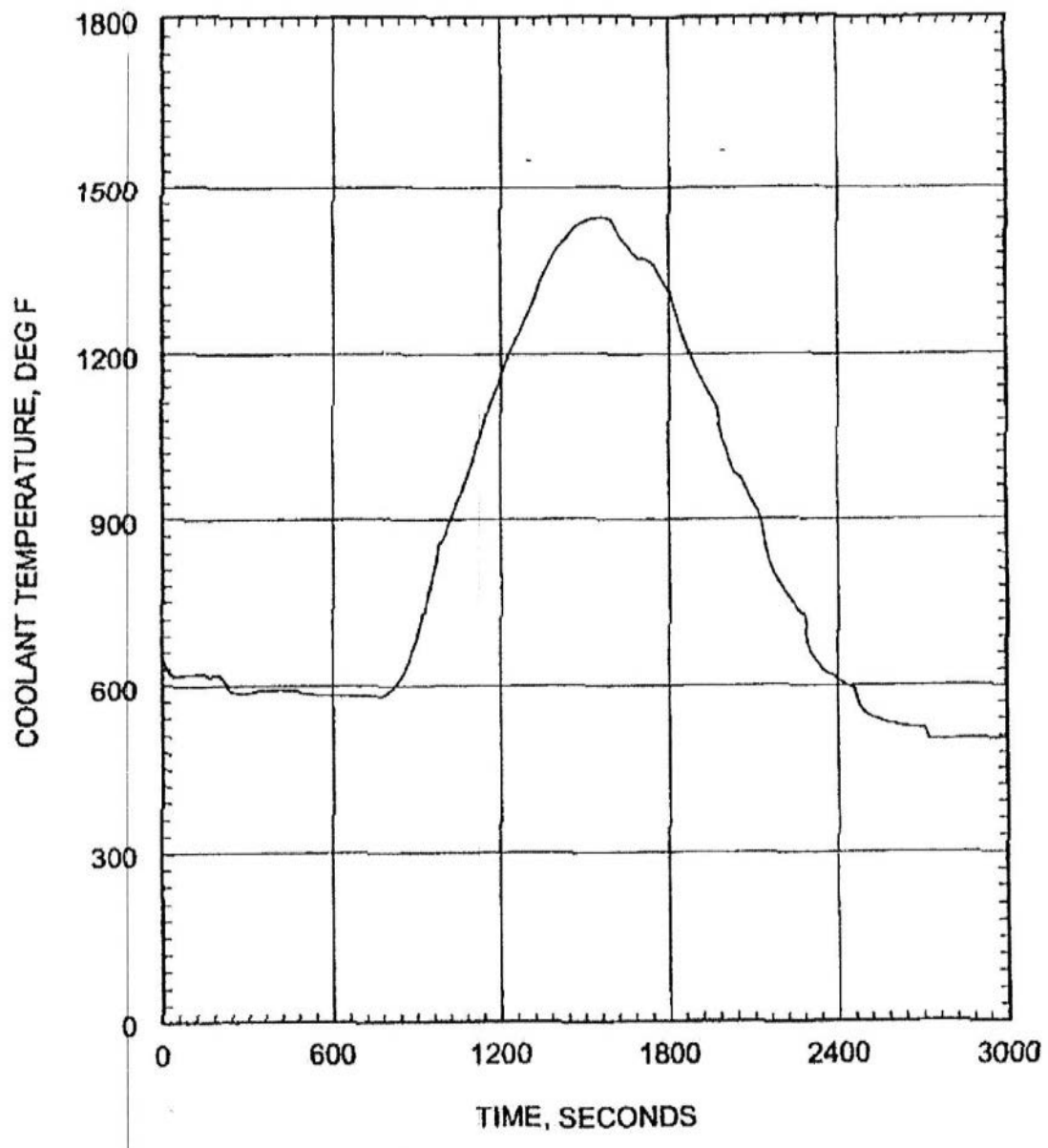
FIGURE 6.3.3a.3-3F



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16NGF FUEL

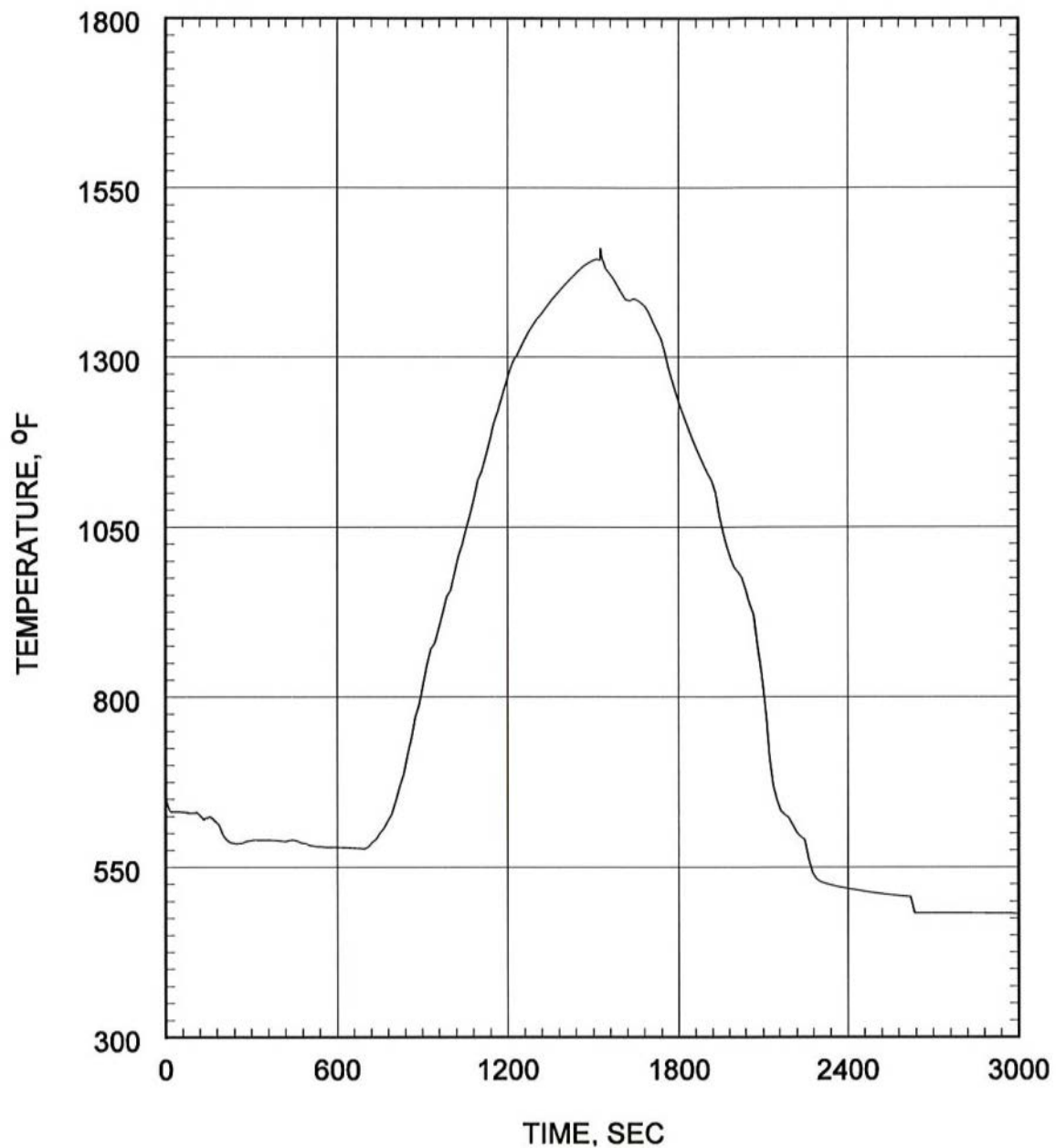
FIGURE 6.3.3b.3-3F



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-3G



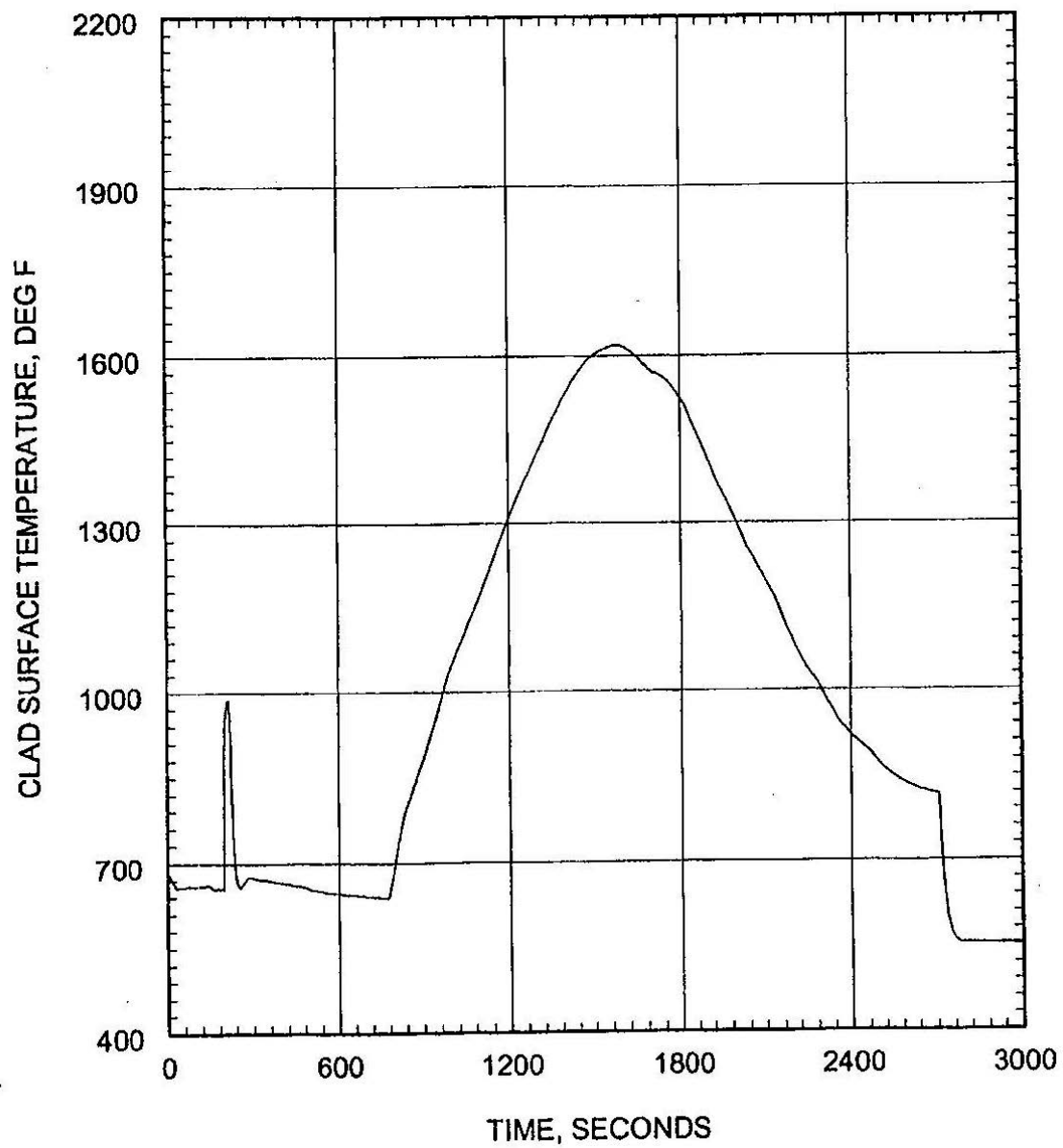
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-3G

JUNE 2019

REVISION 20



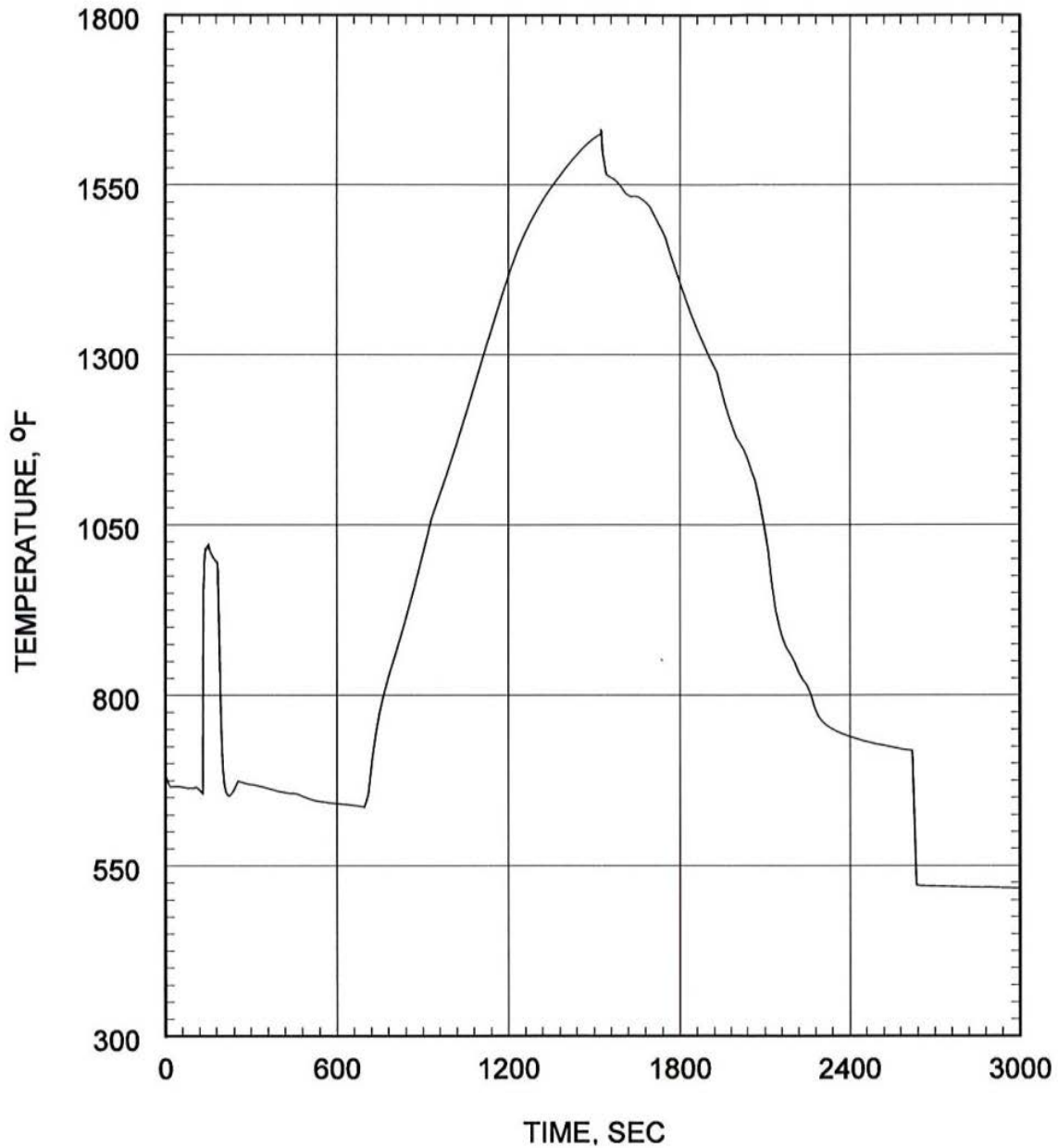
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.3-3H

JUNE 2019

REVISION 20



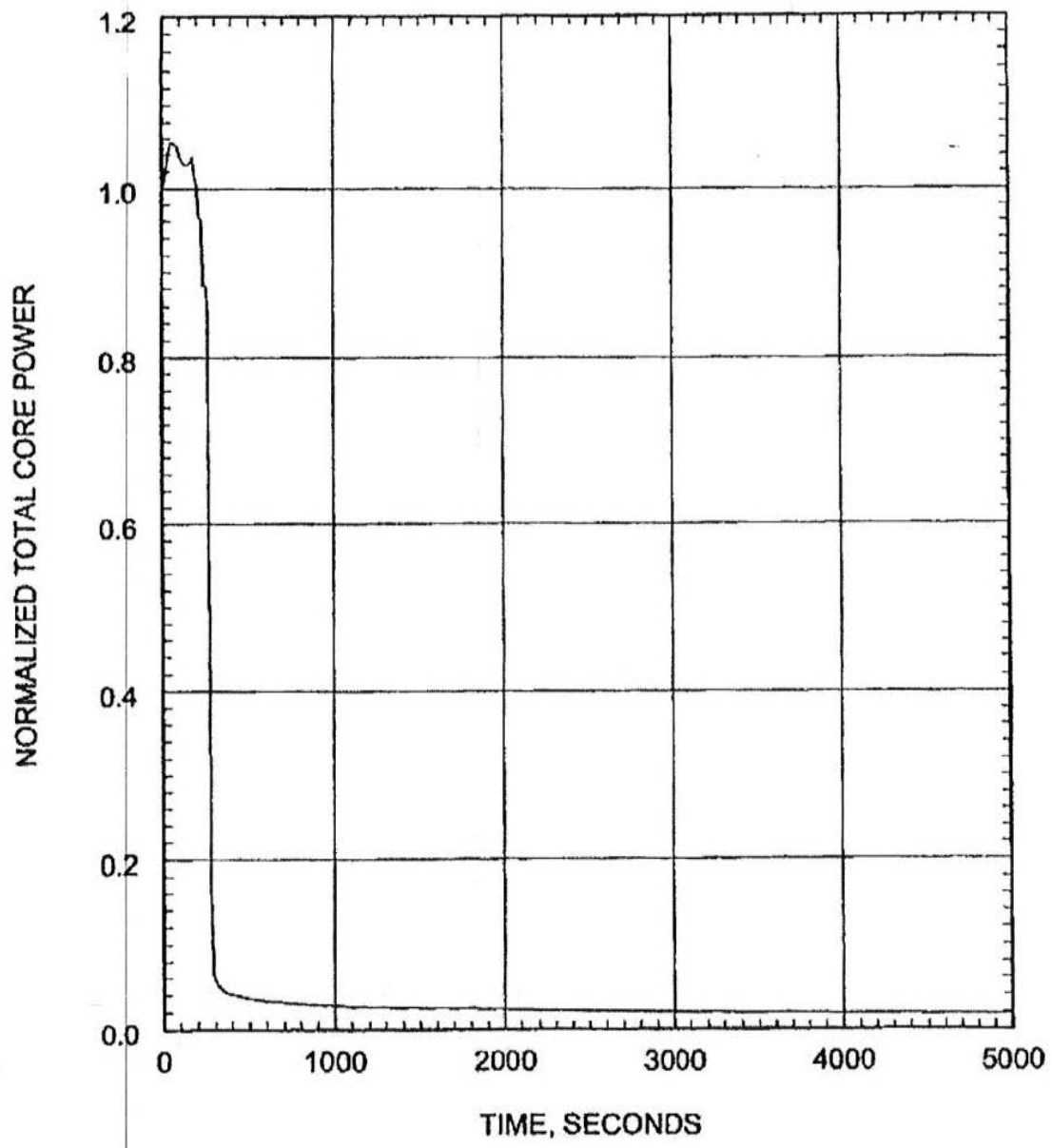
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.065 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.3-3H

JUNE 2019

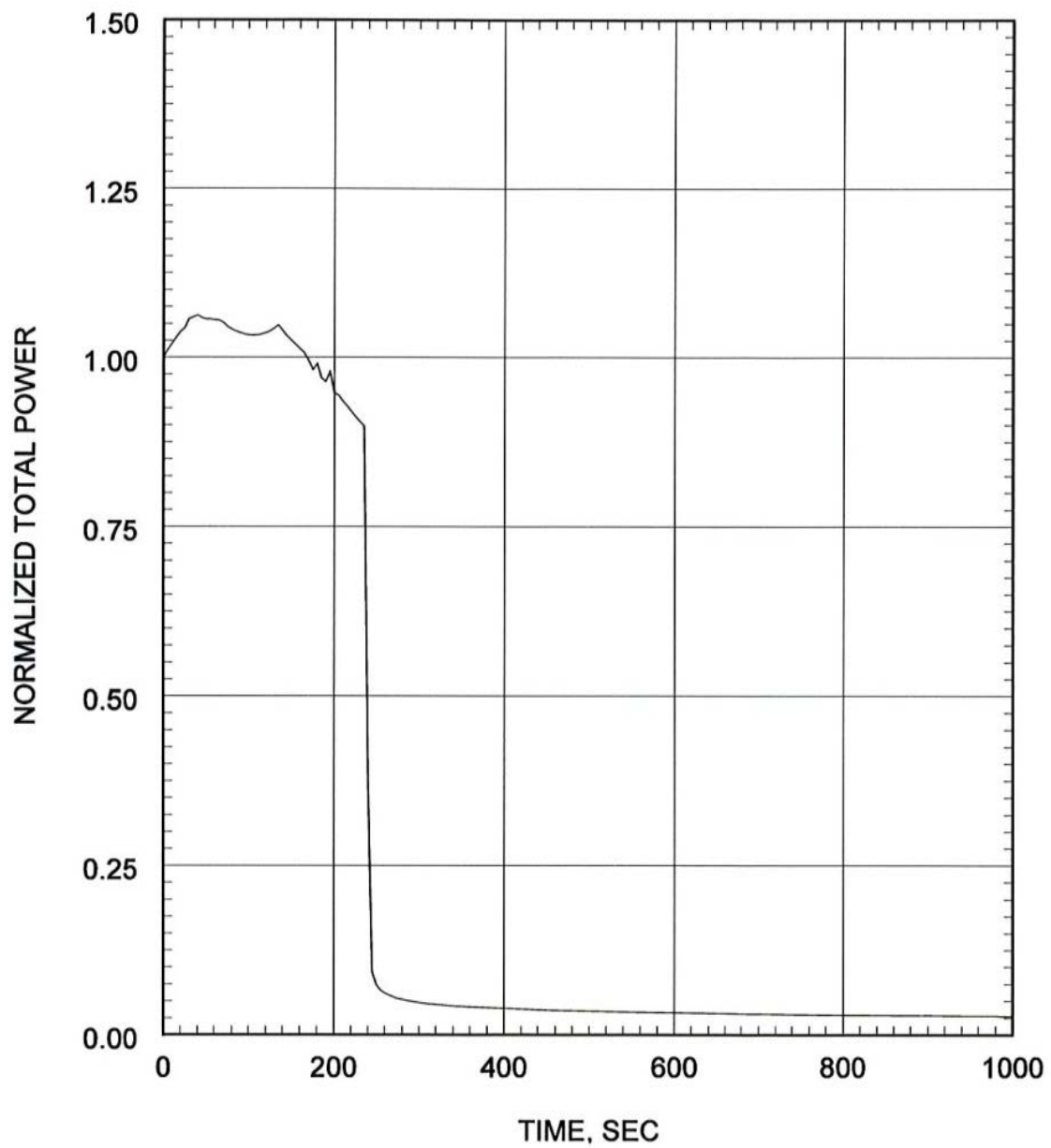
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.3-4A



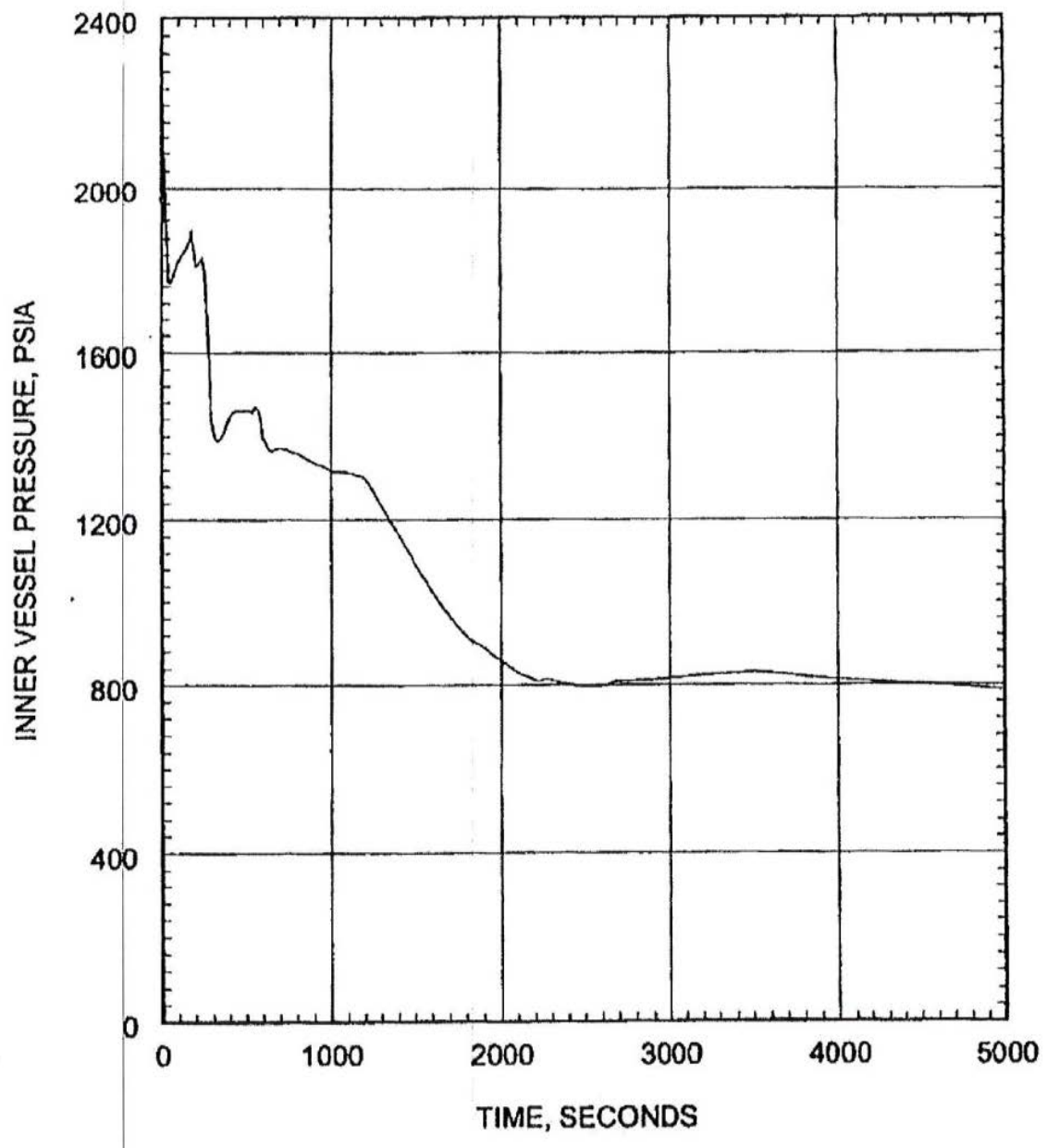
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.3-4A

JUNE 2019

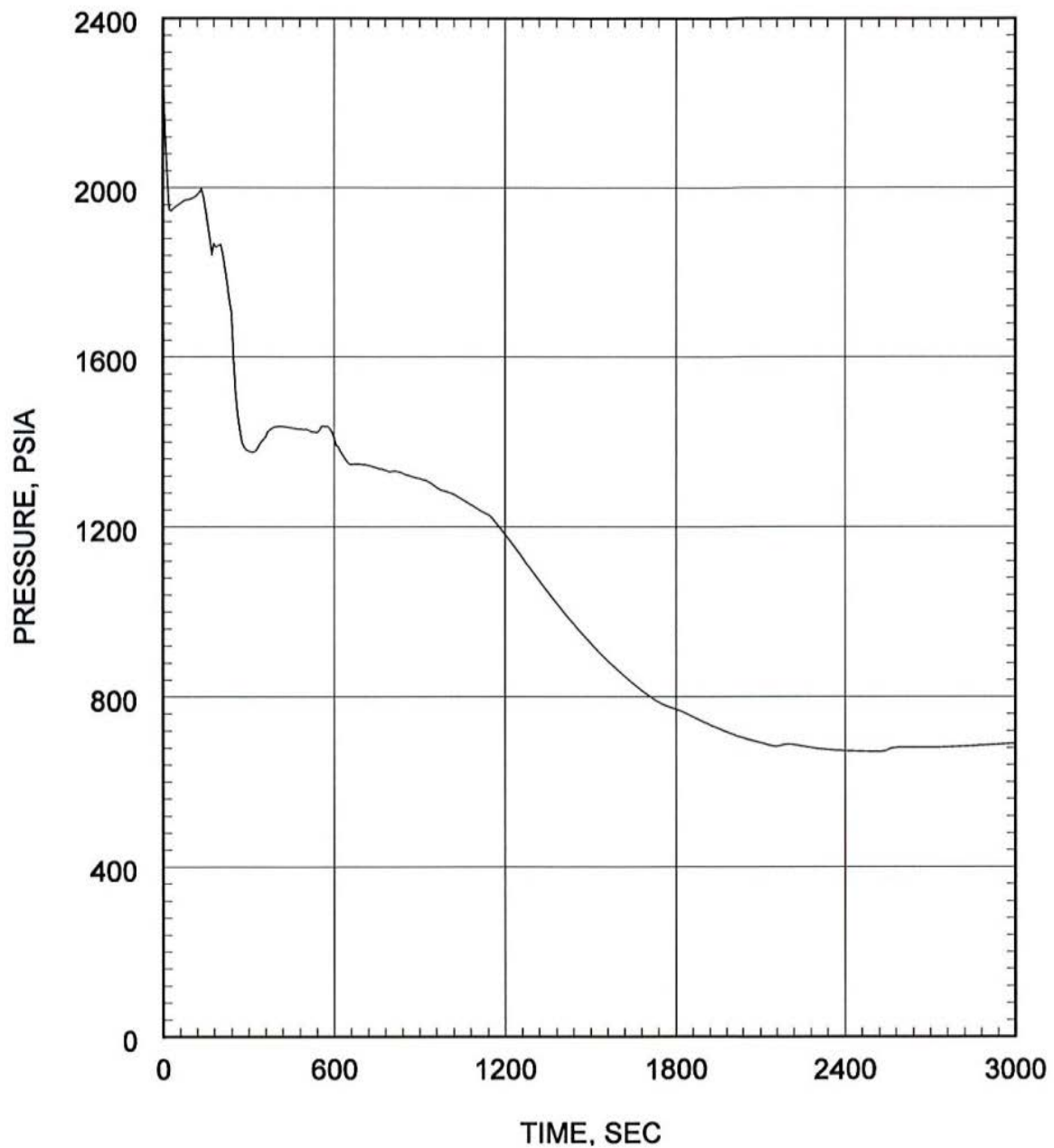
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.3-4B



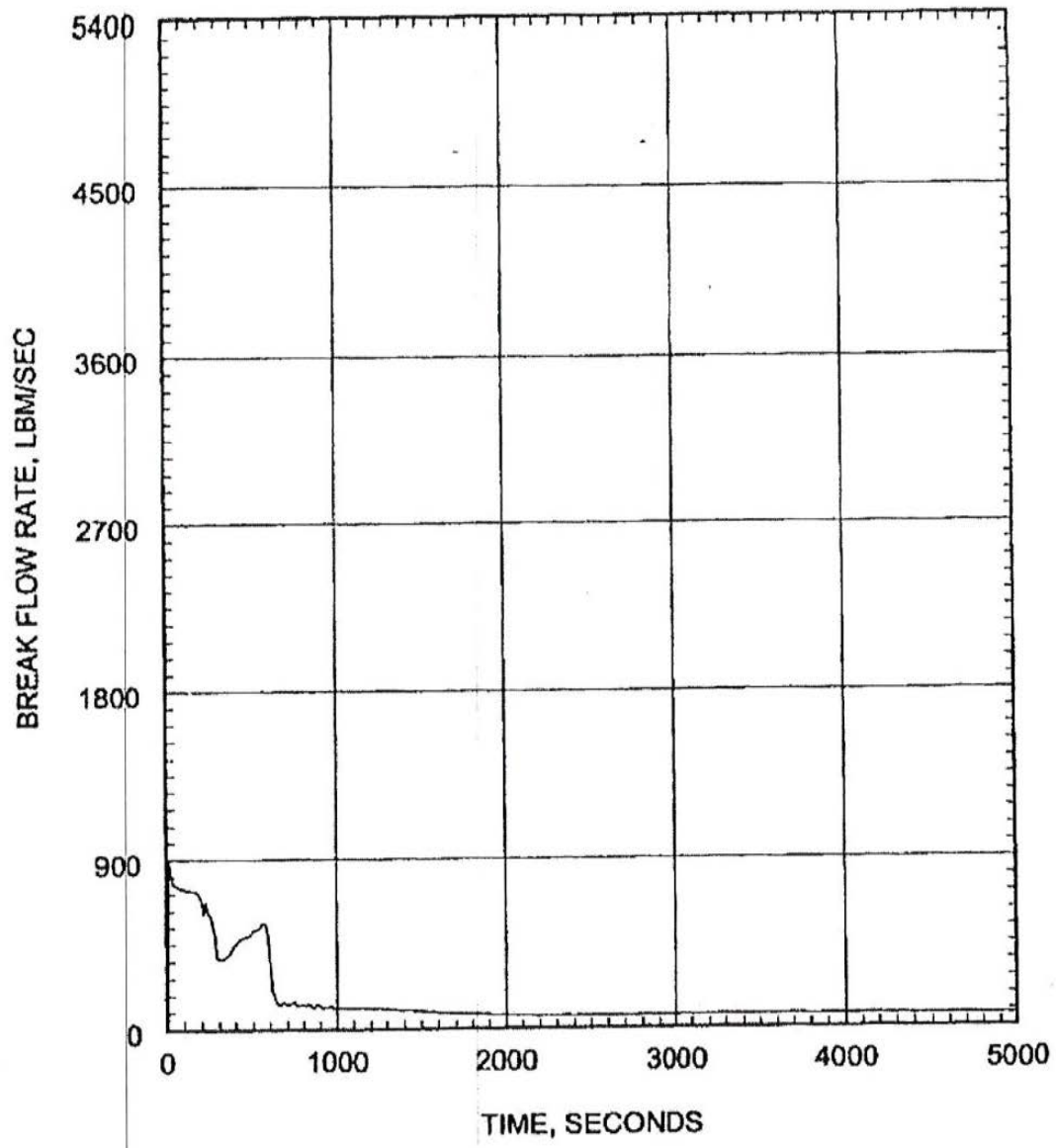
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.3-4B

JUNE 2019

REVISION 20



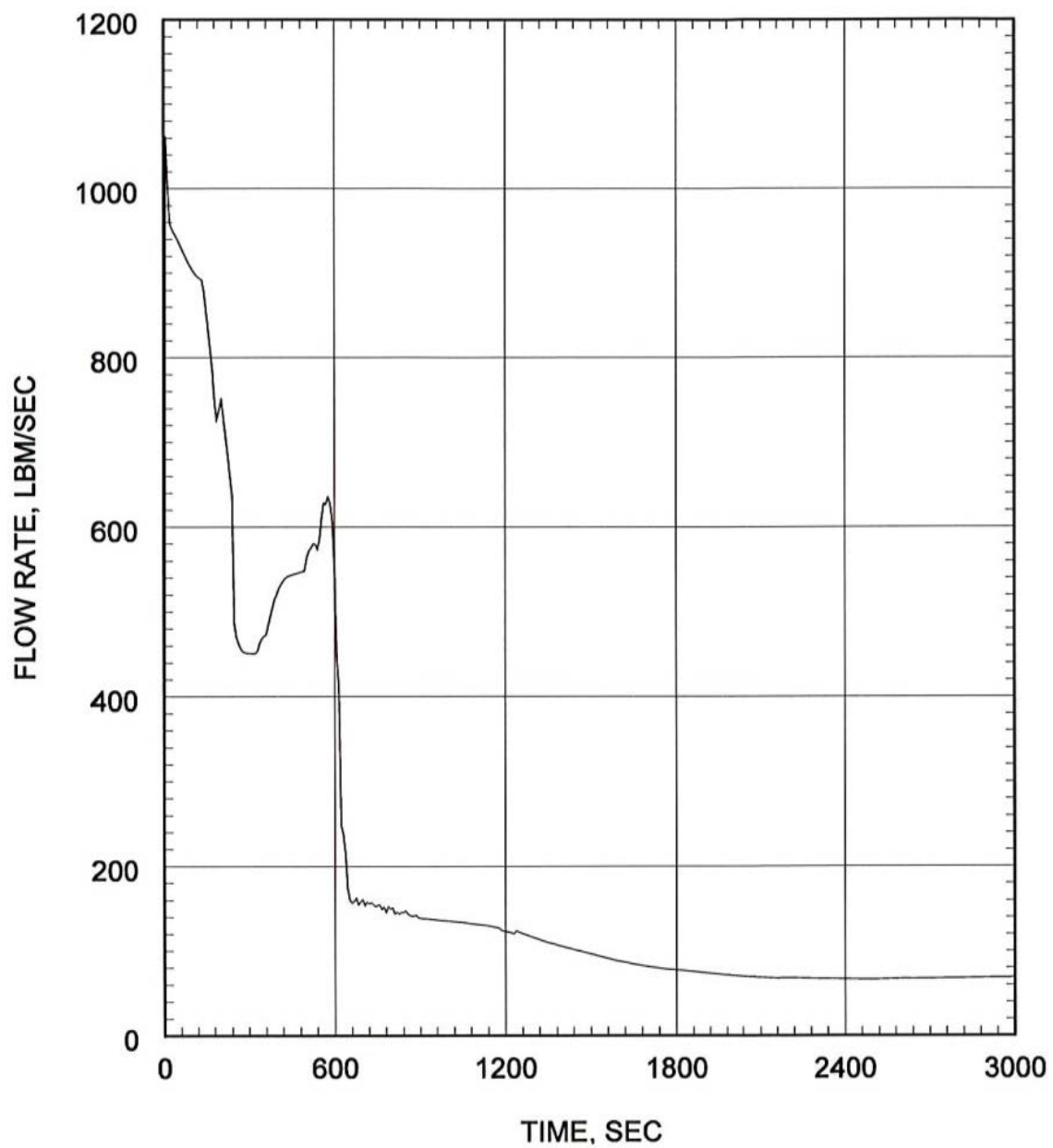
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-4C

JUNE 2019

REVISION 20



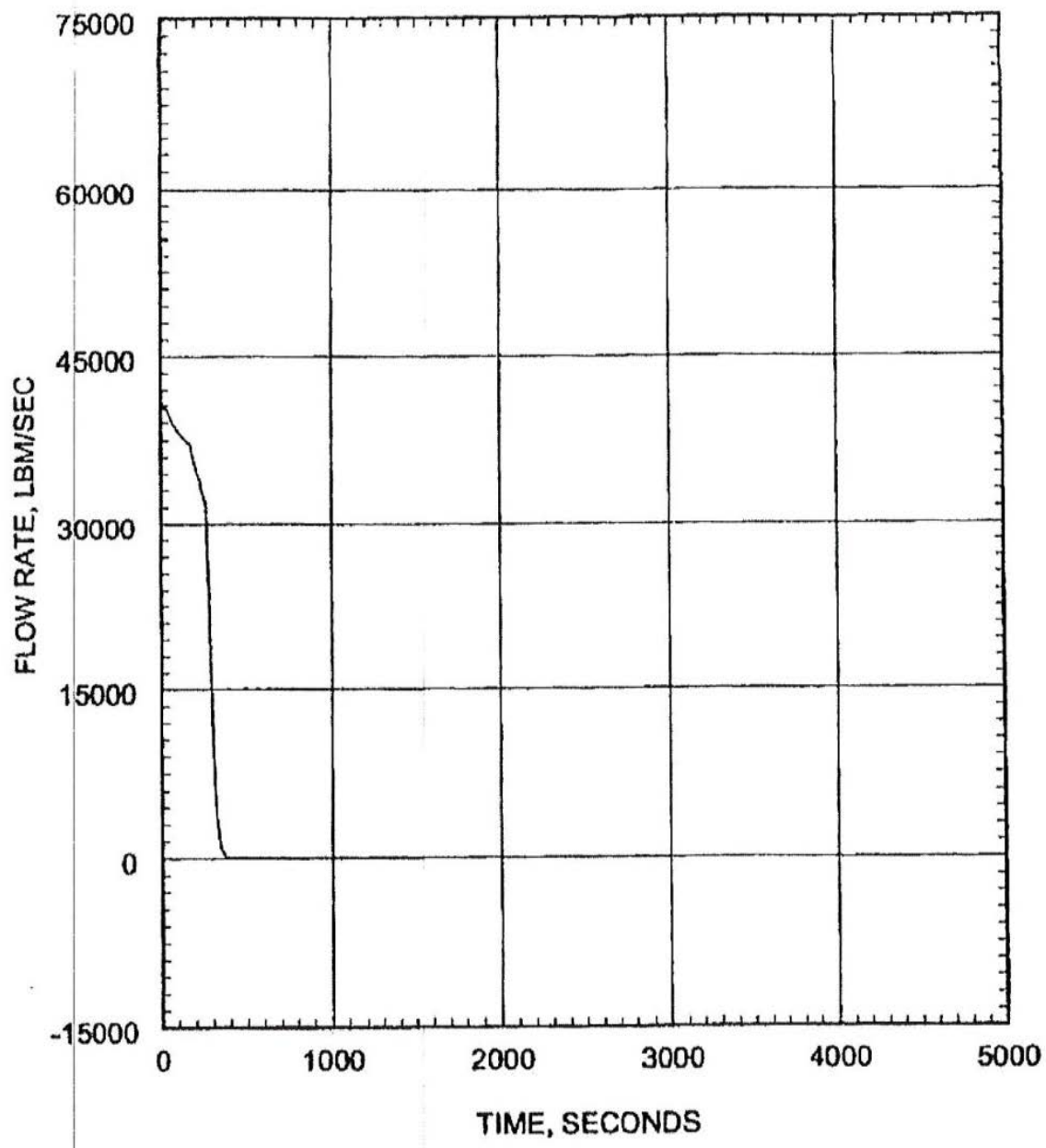
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-4C

JUNE 2019

REVISION 20



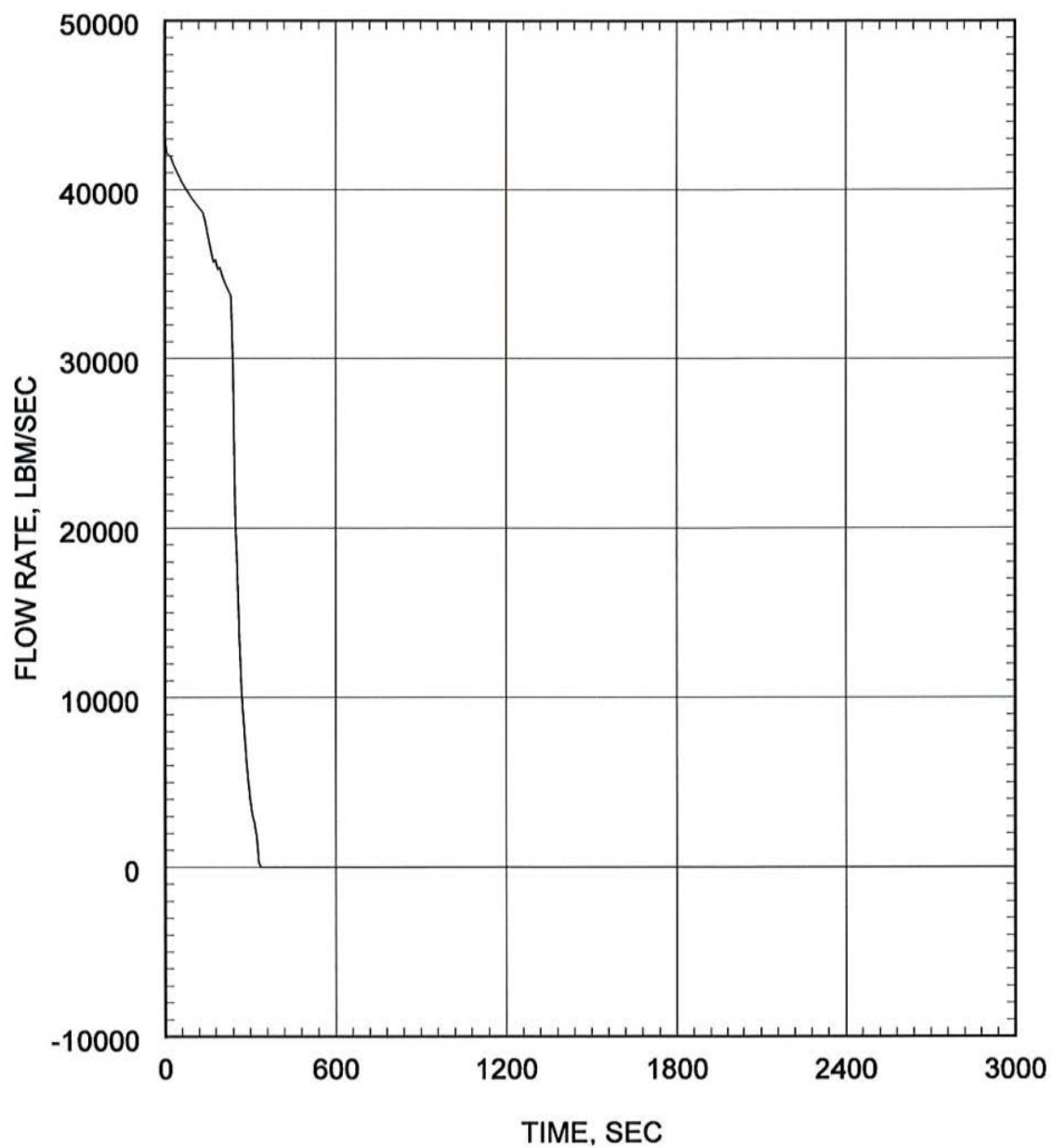
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-4D

JUNE 2019

REVISION 20



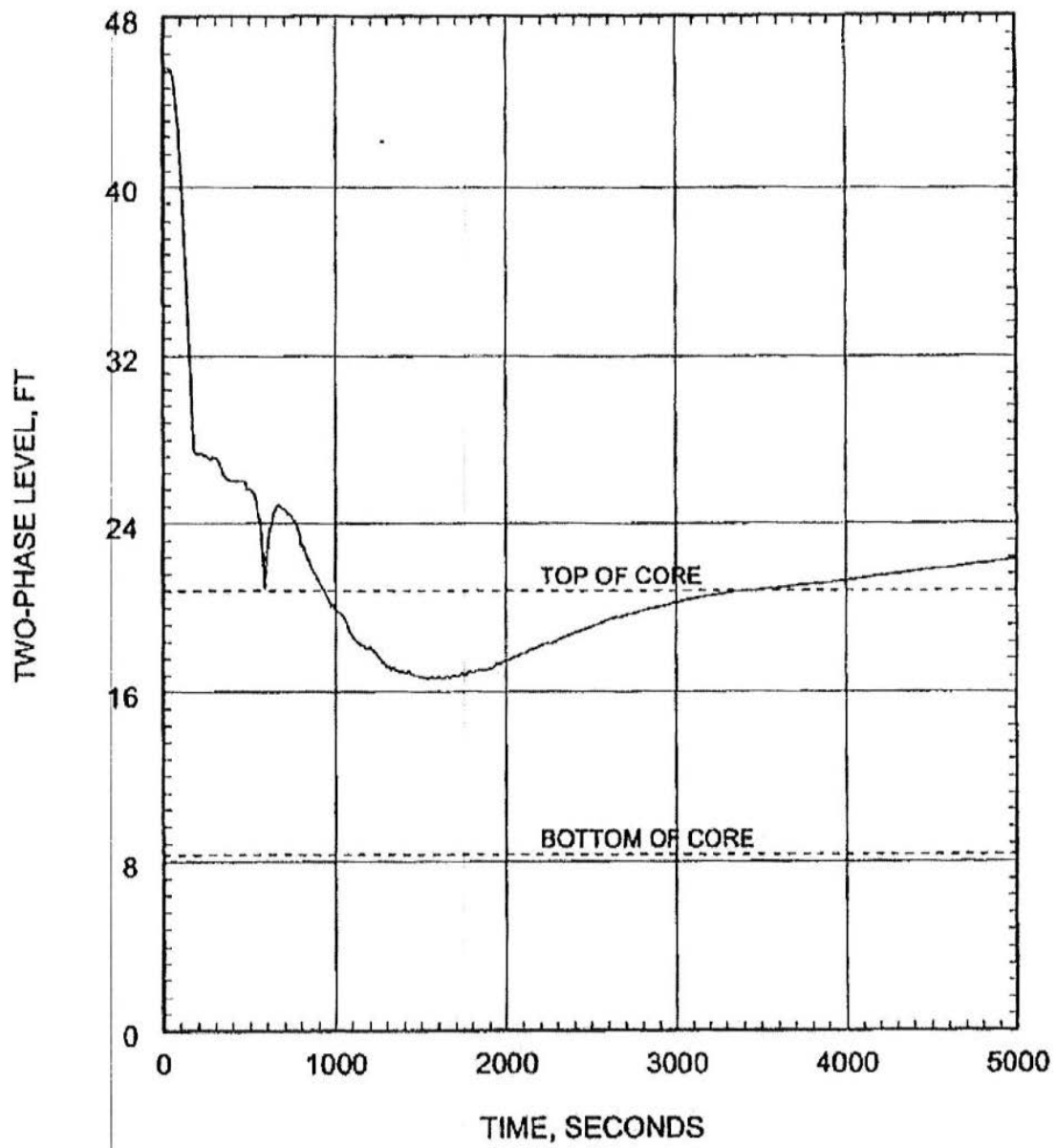
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-4D

JUNE 2019

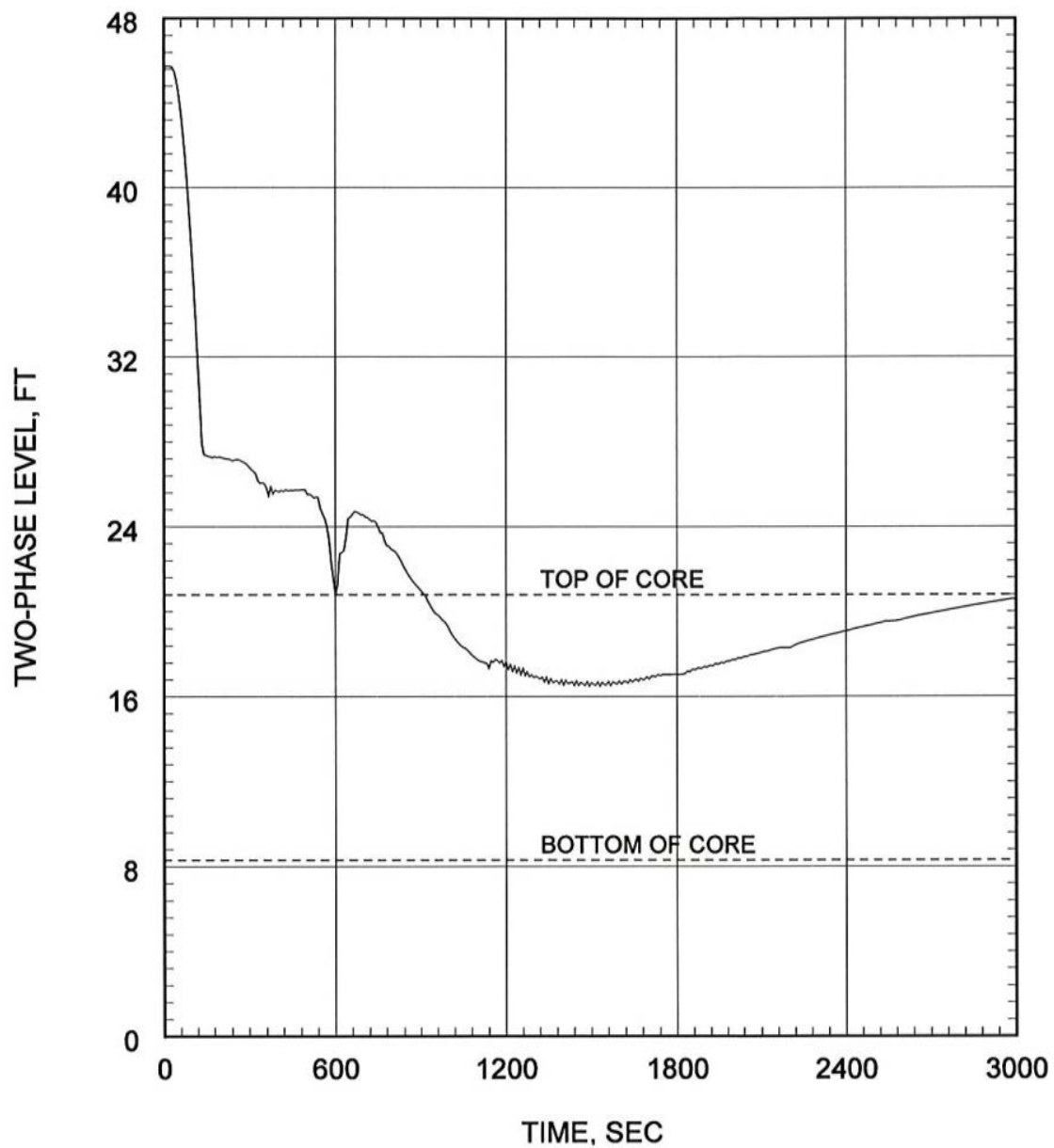
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16STD FUEL

FIGURE 6.3.3a.3-4E



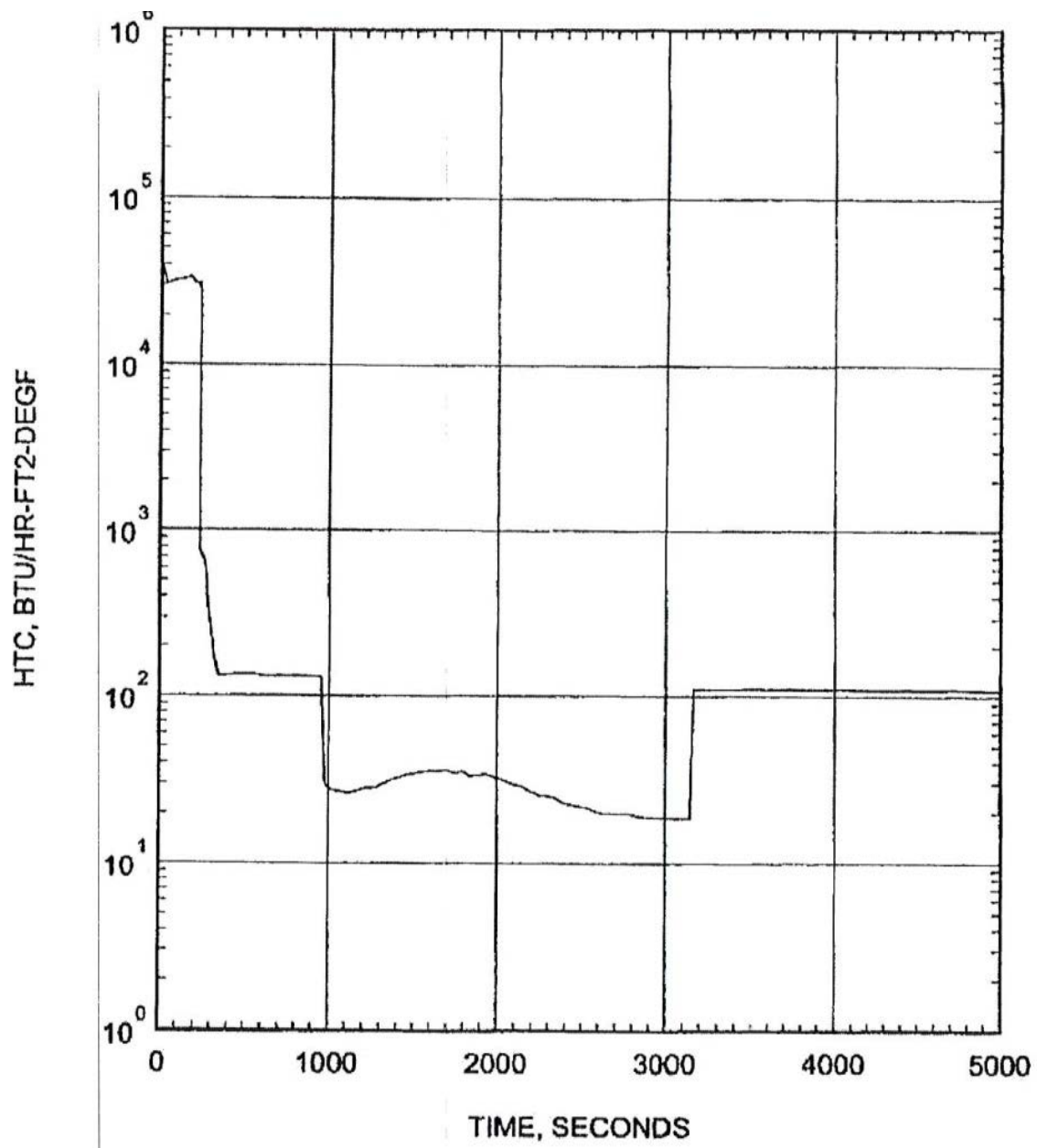
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16NGF FUEL

FIGURE 6.3.3b.3-4E

JUNE 2019

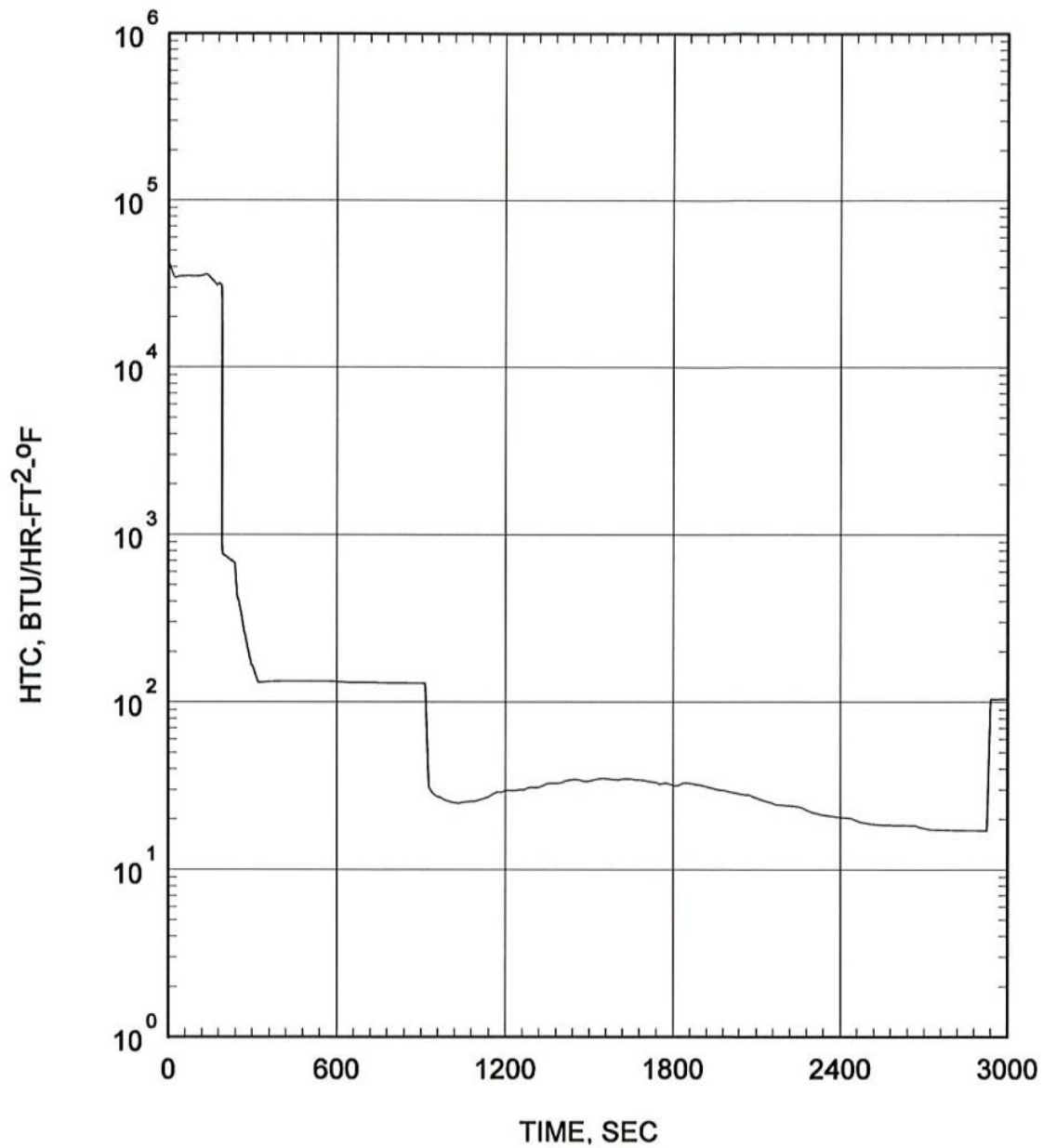
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16STD FUEL

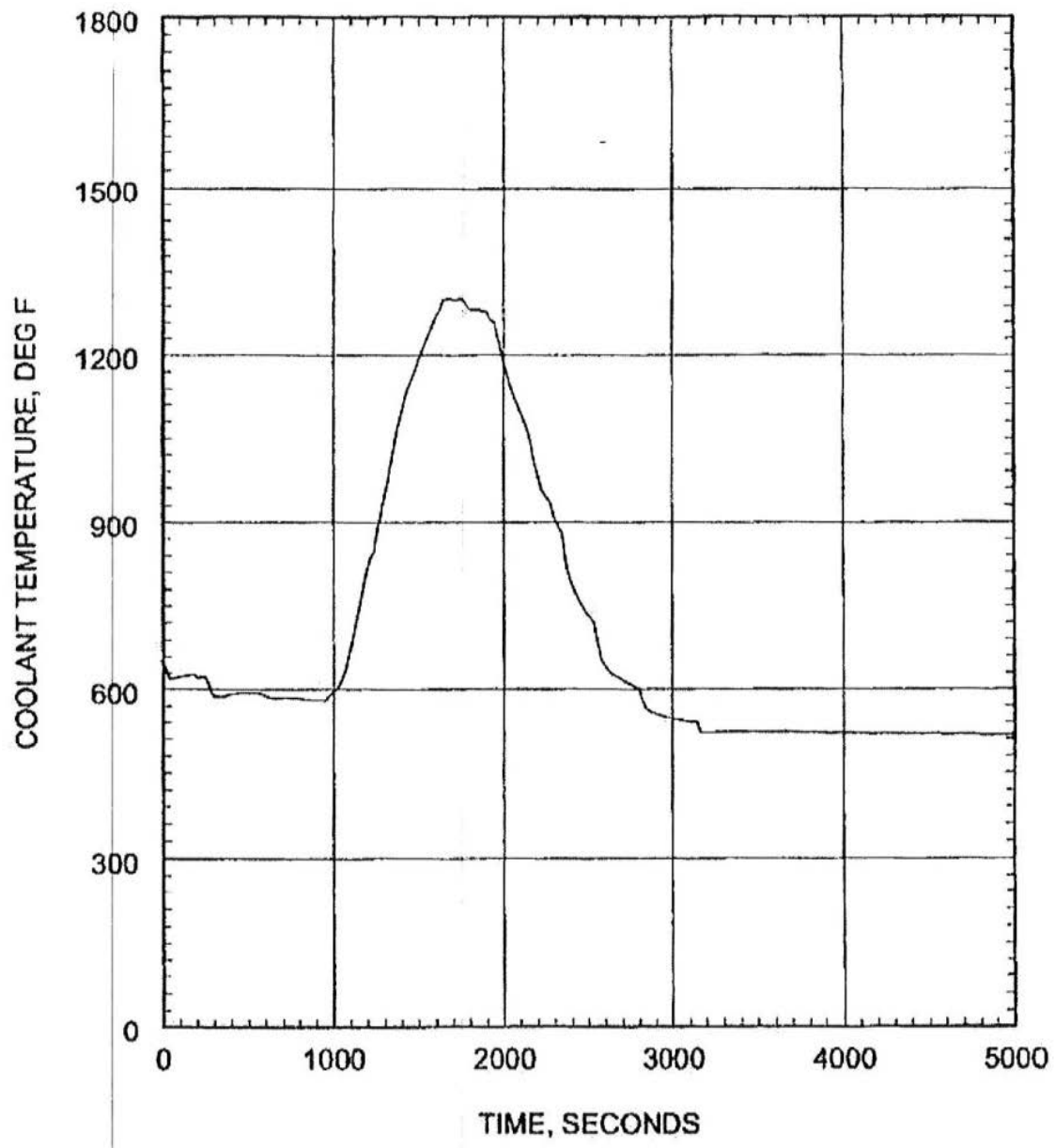
FIGURE 6.3.3a.3-4F



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16NGF FUEL

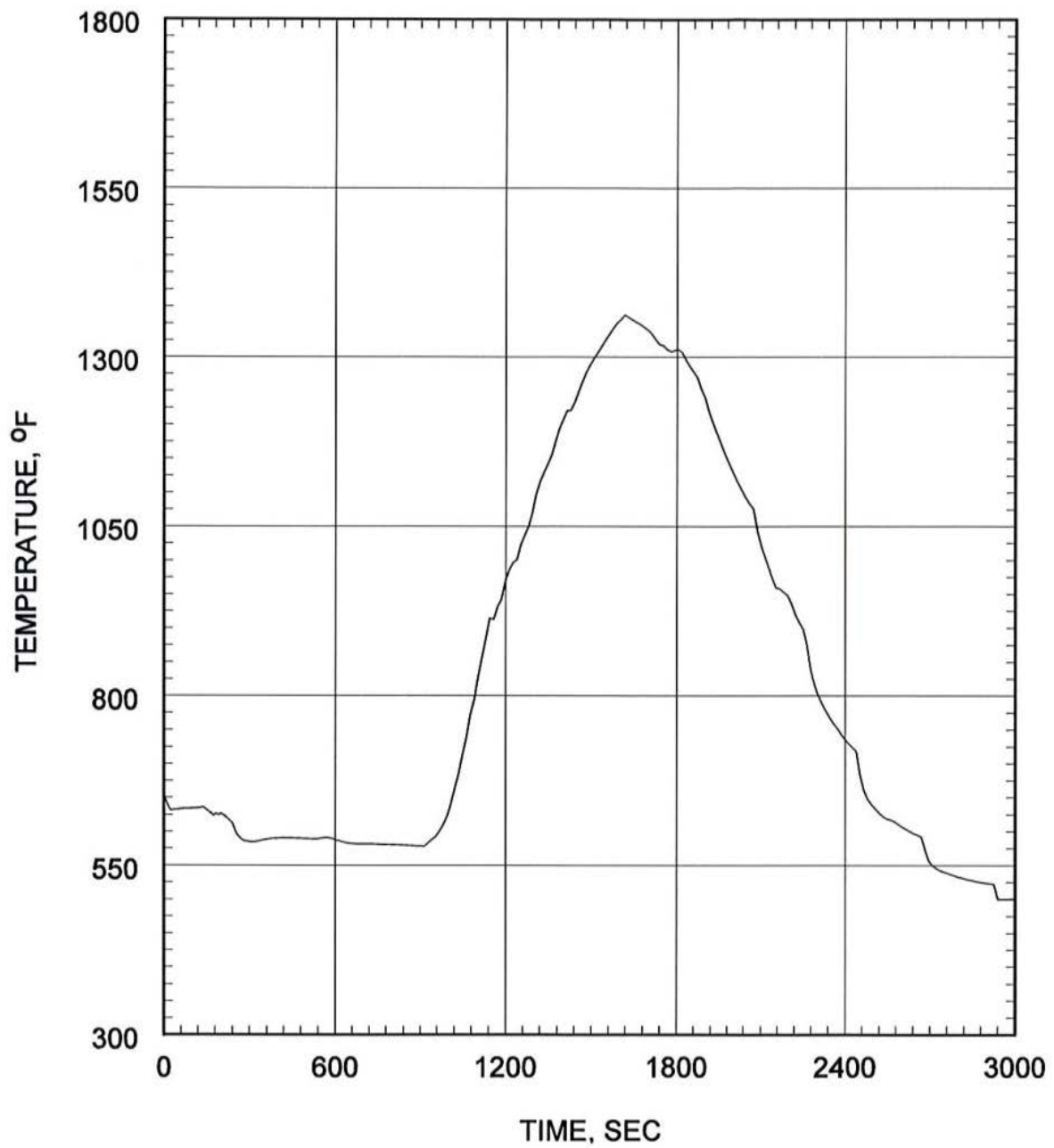
FIGURE 6.3.3b.3-4F



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-4G



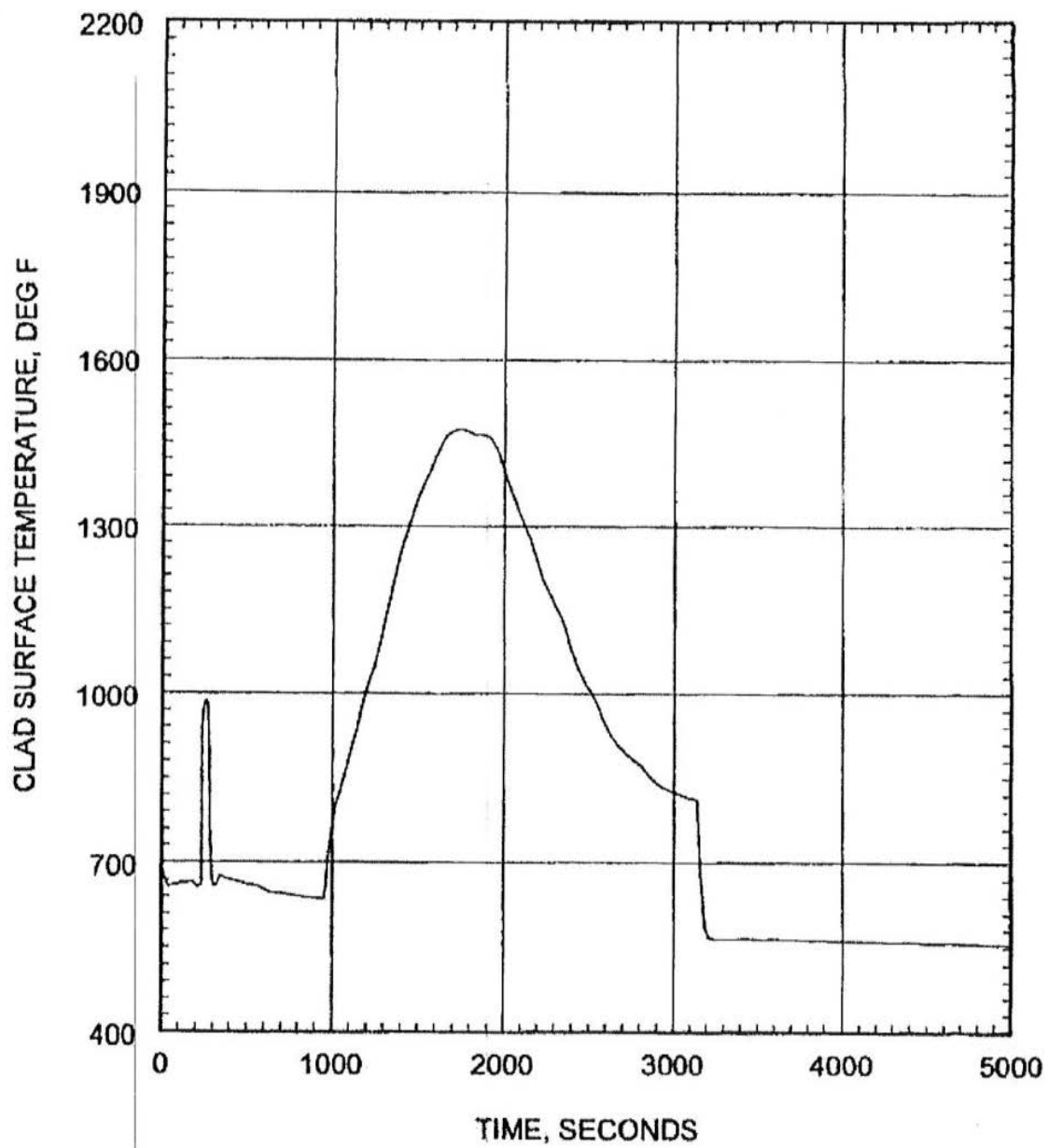
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-4G

JUNE 2019

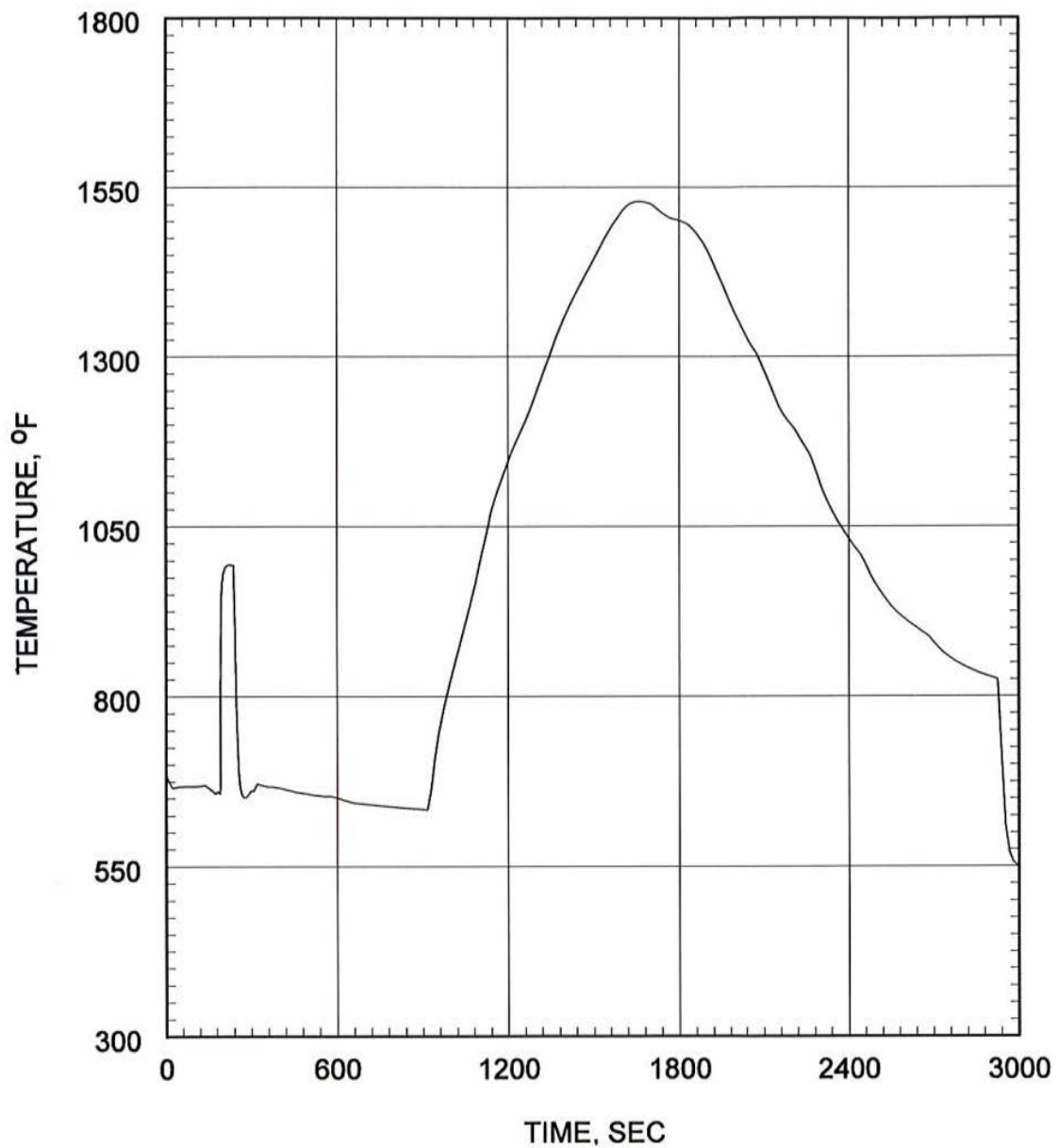
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.04 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.3-4H



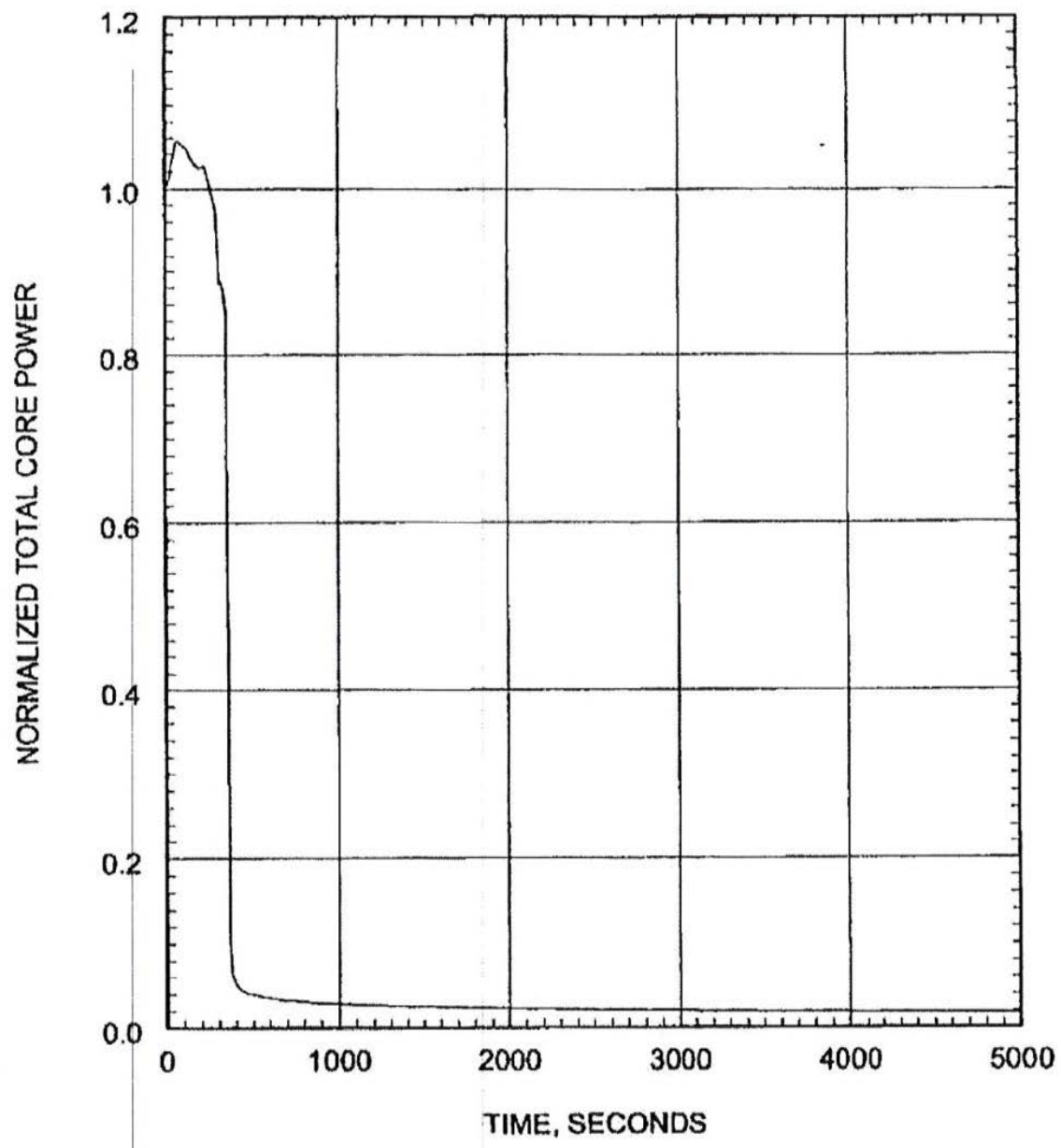
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.05 FT² COLD LEG BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.3-4H

JUNE 2019

REVISION 20



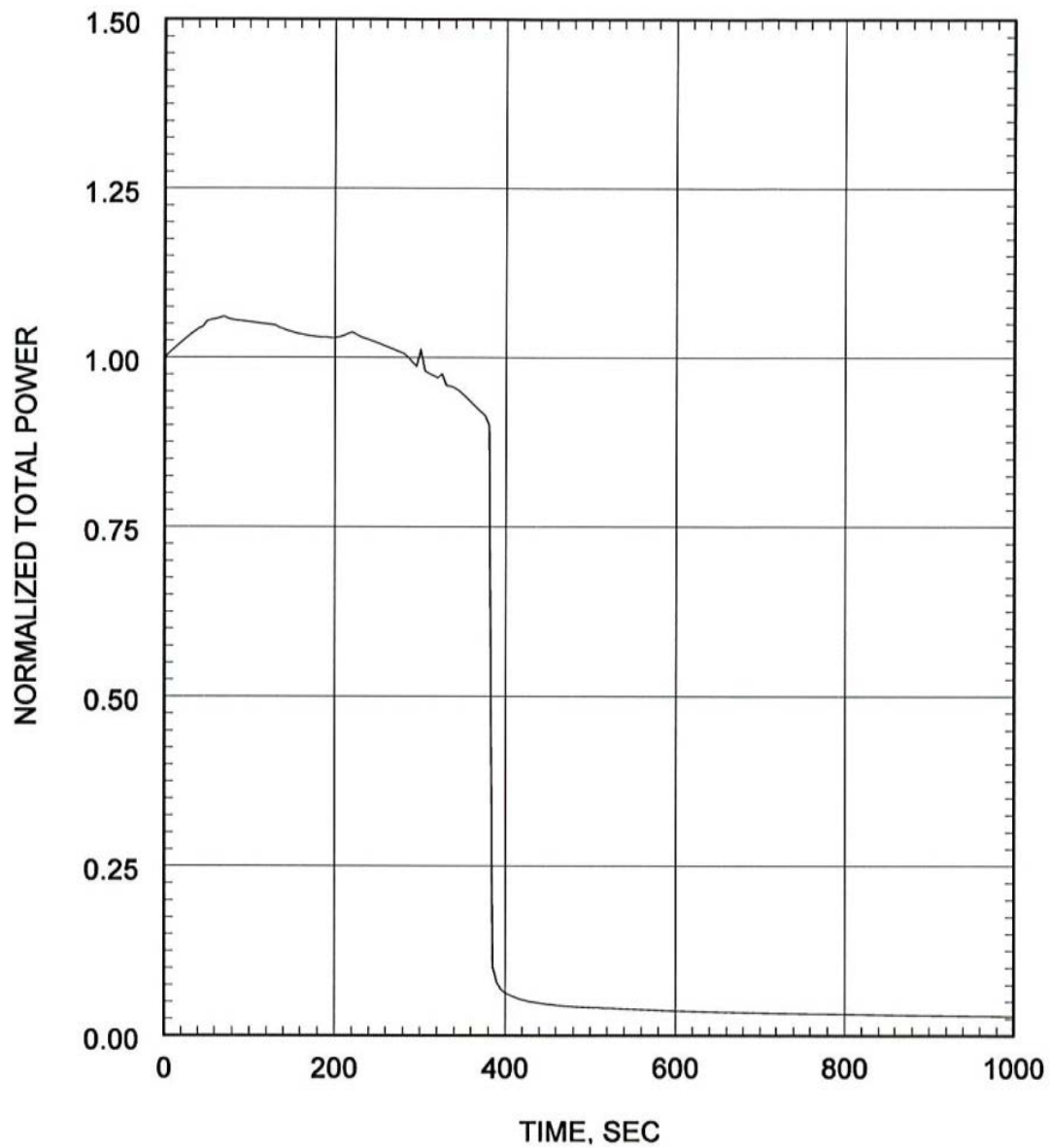
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.3-5A

JUNE 2019

REVISION 20



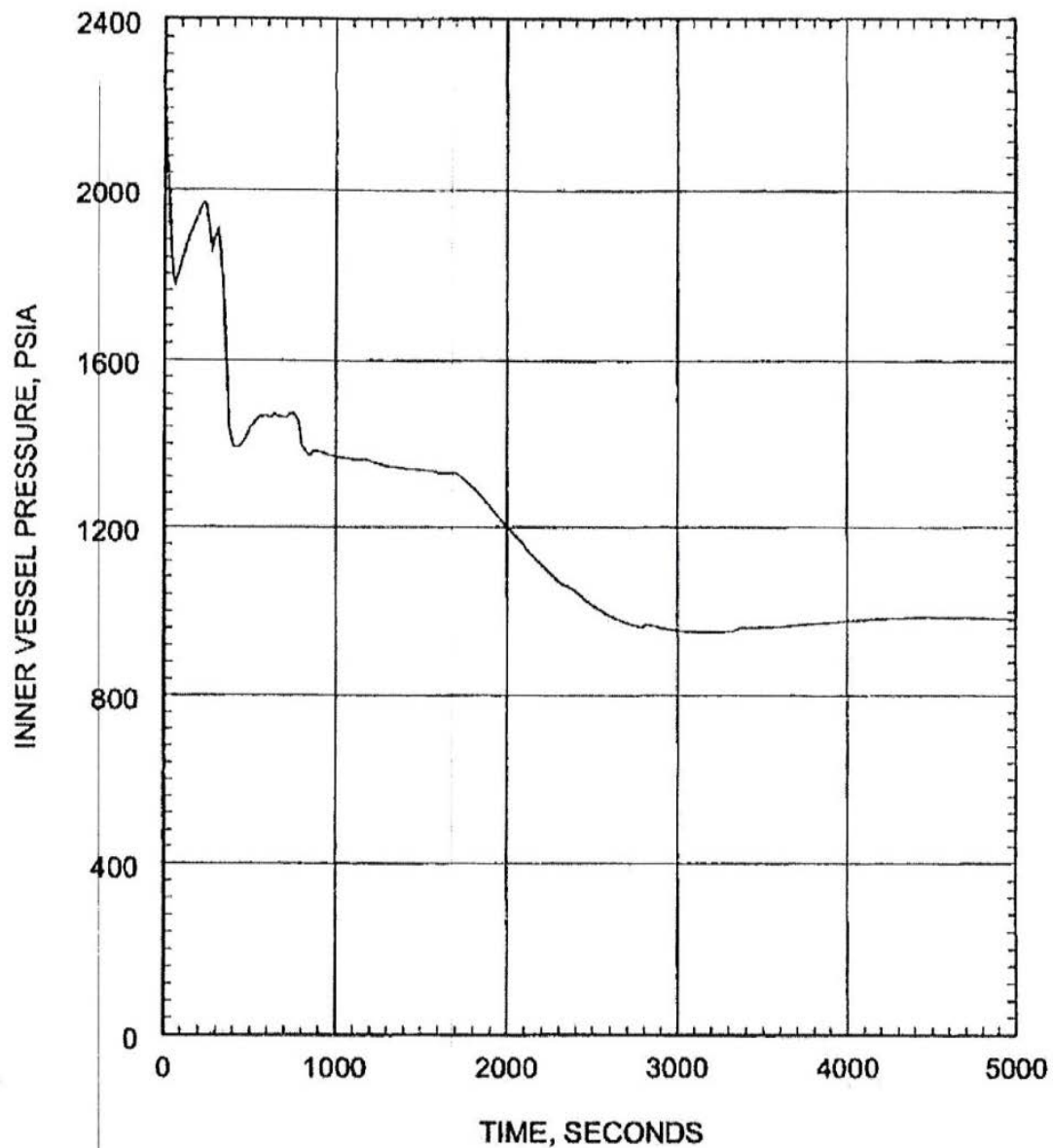
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.3-5A

JUNE 2019

REVISION 20



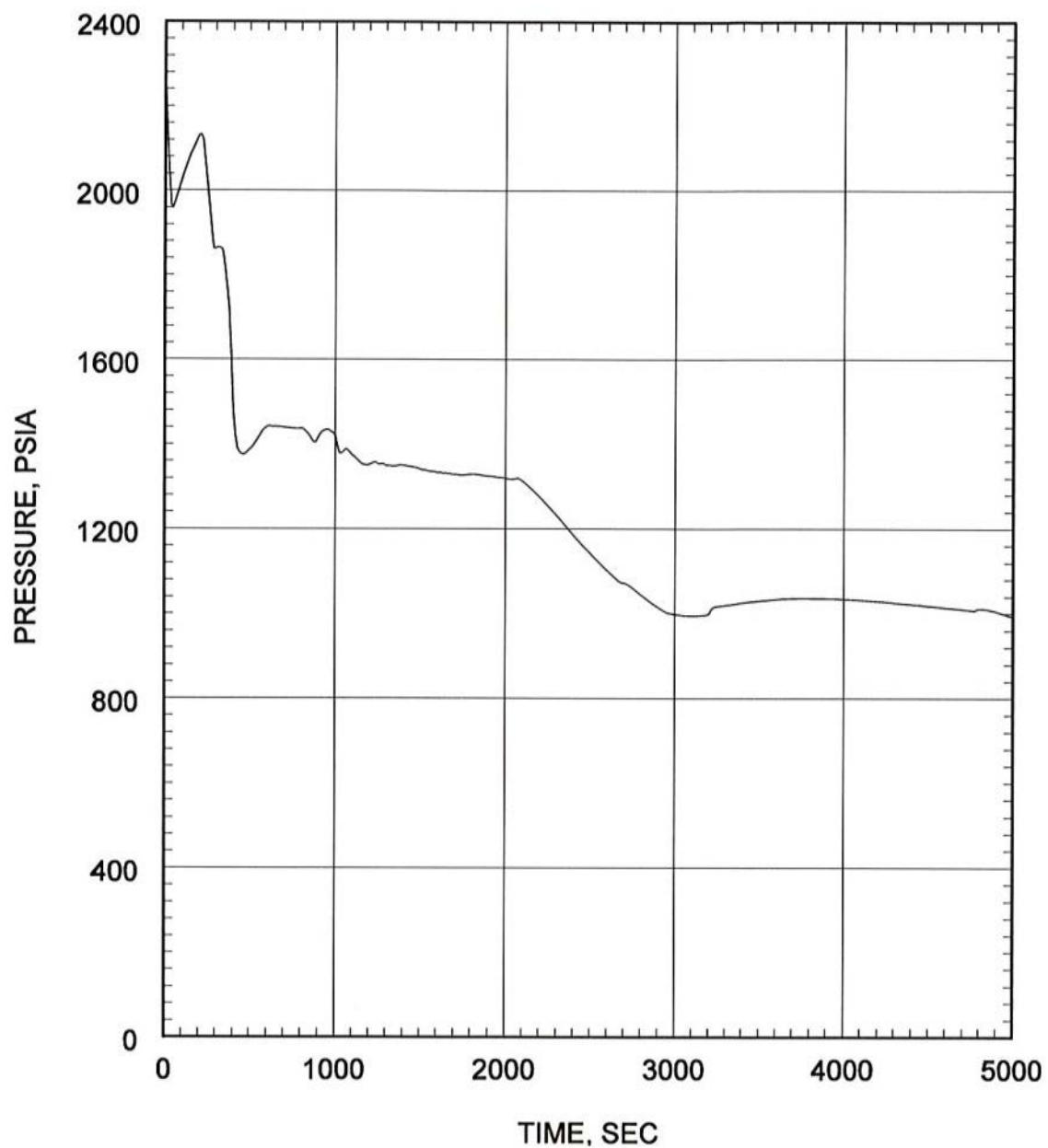
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.3-5B

JUNE 2019

REVISION 20



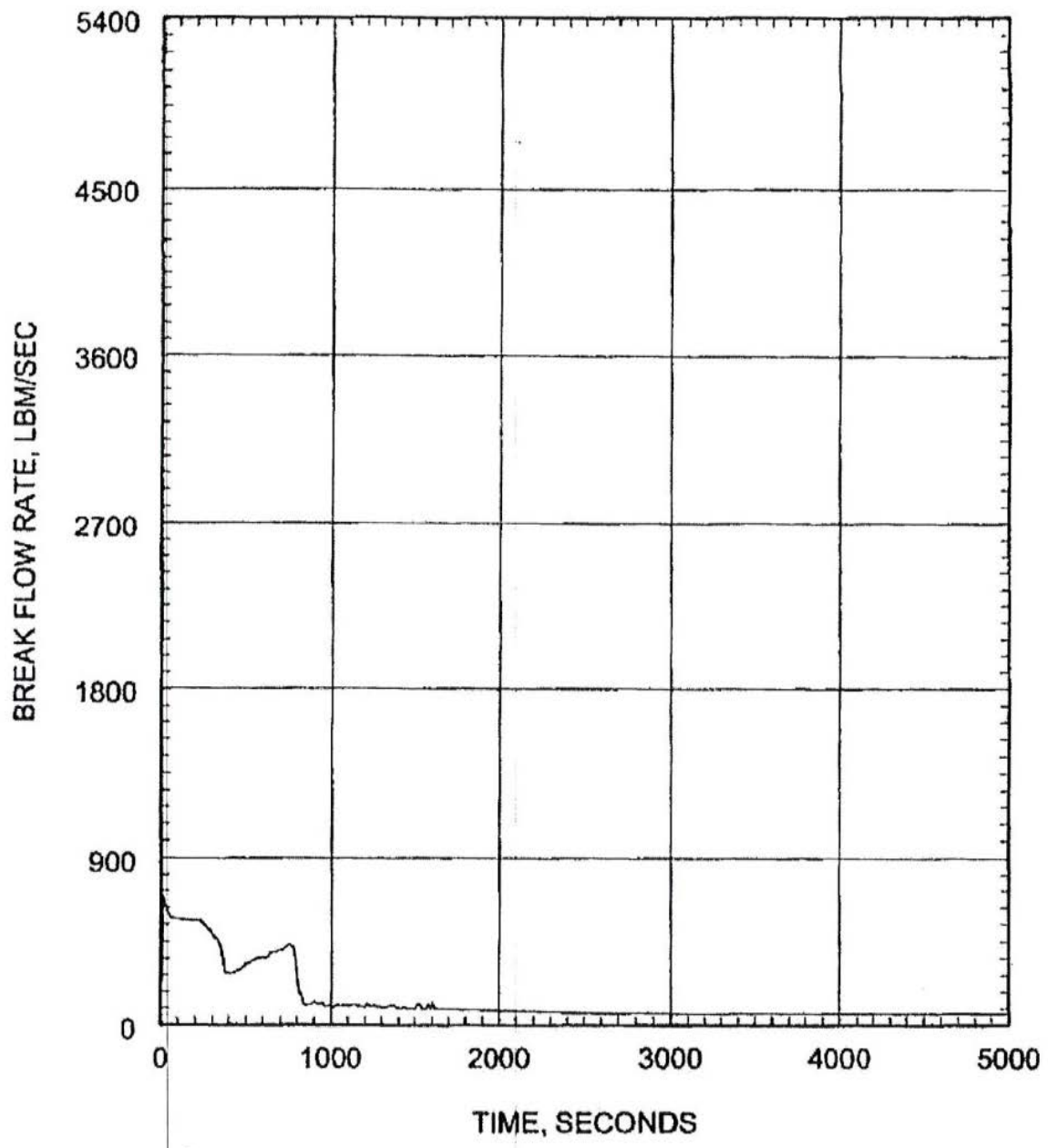
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.3-5B

JUNE 2019

REVISION 20



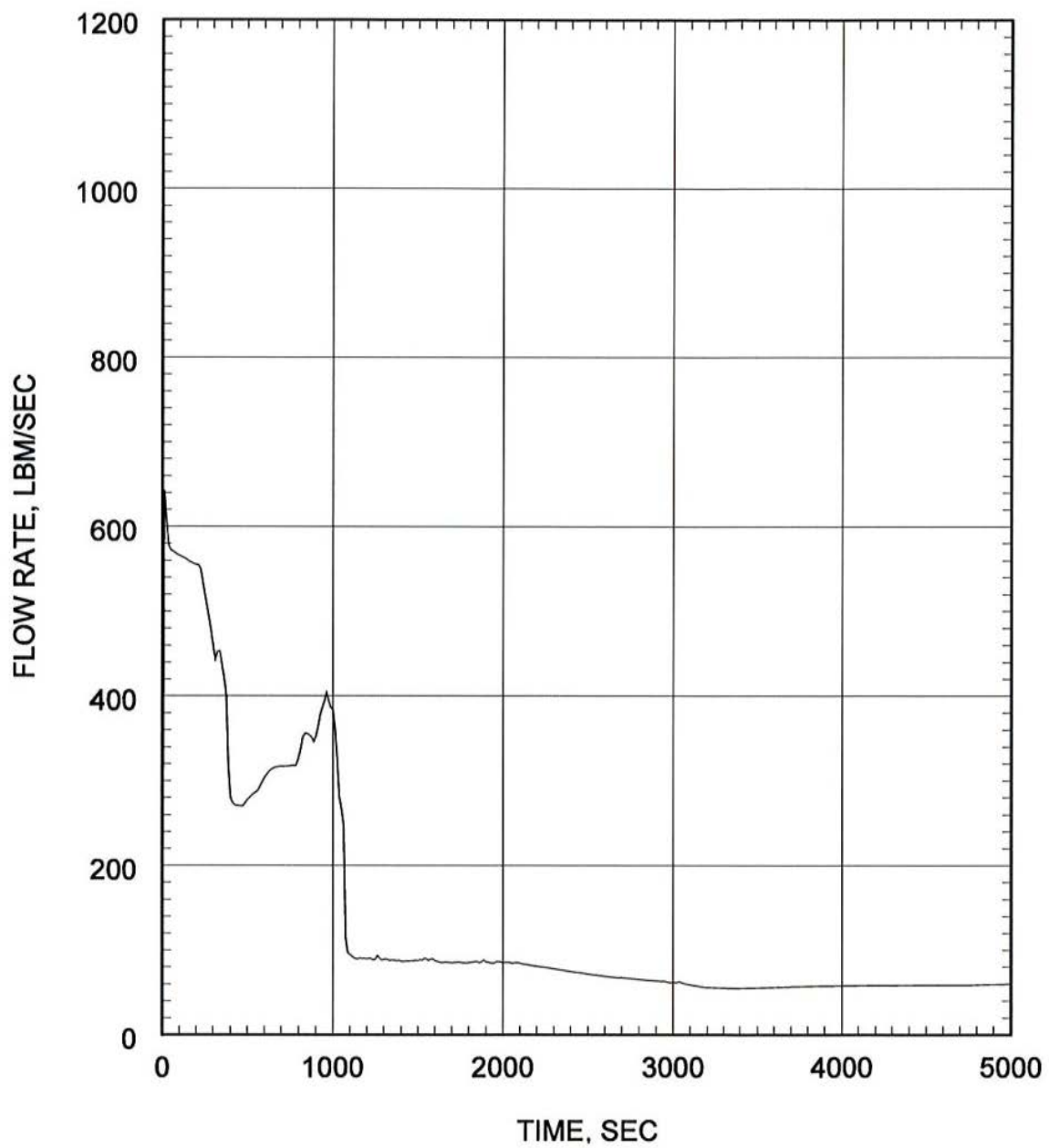
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-5C

JUNE 2019

REVISION 20



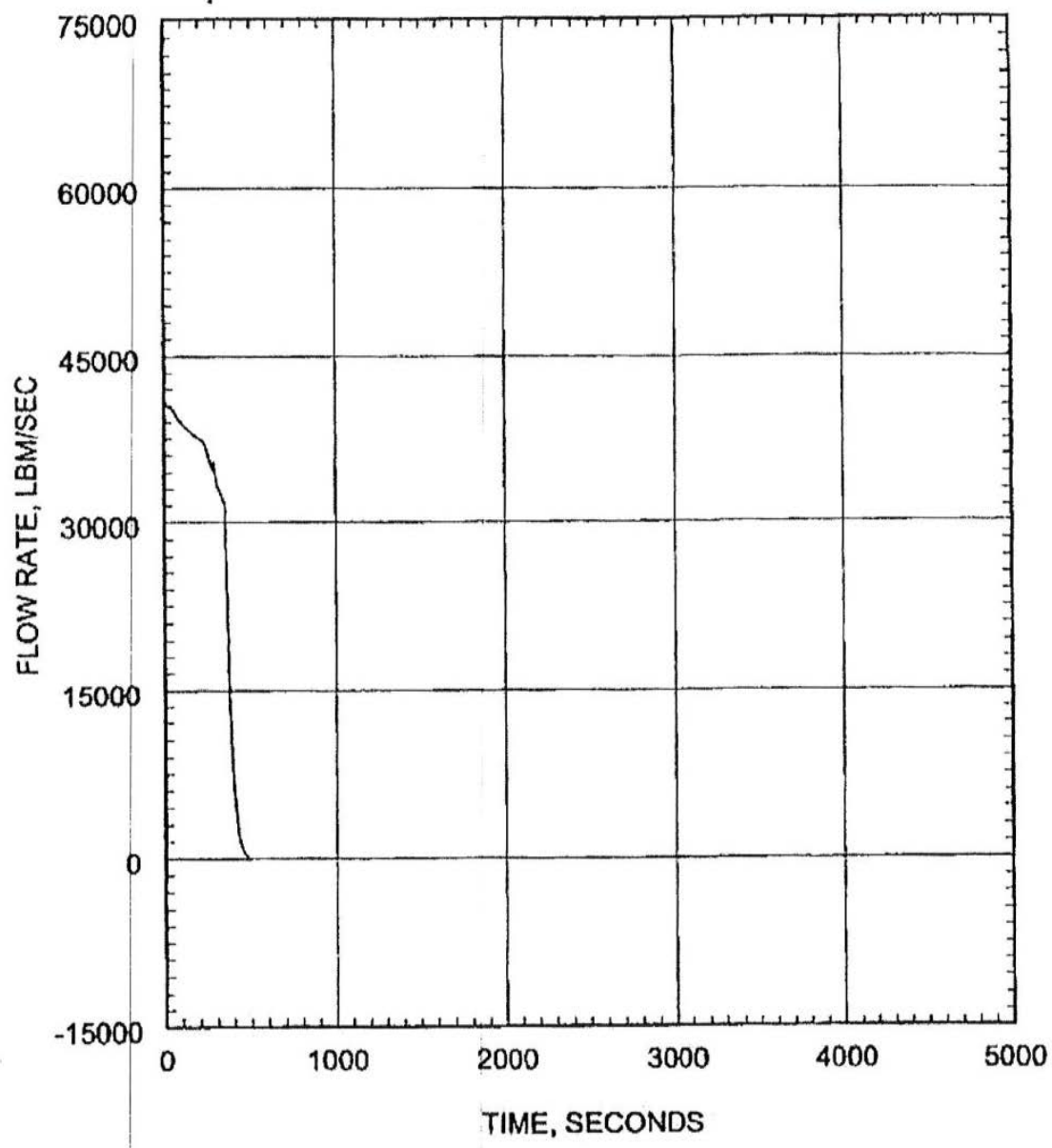
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-5C

JUNE 2019

REVISION 20



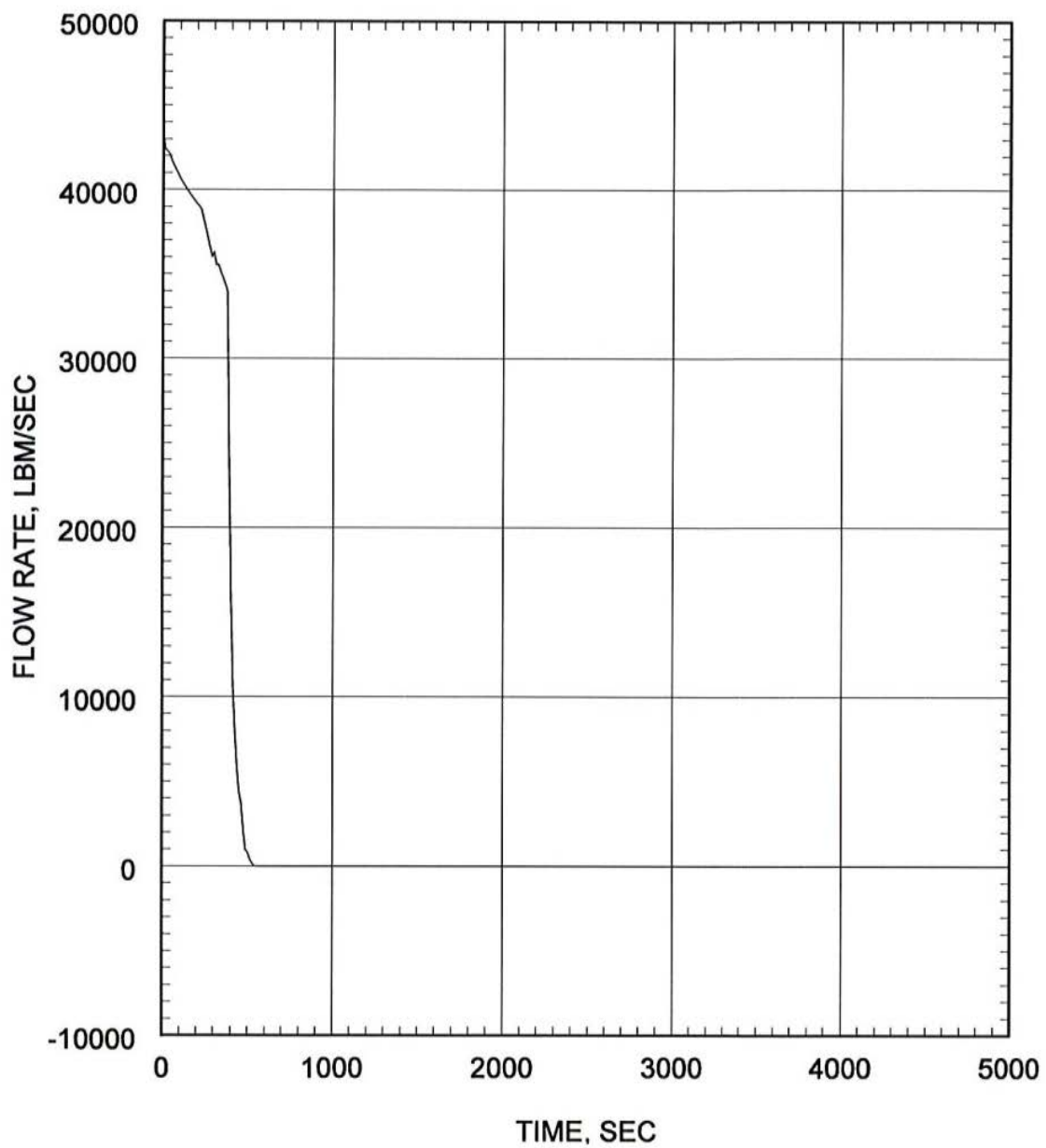
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-5D

JUNE 2019

REVISION 20



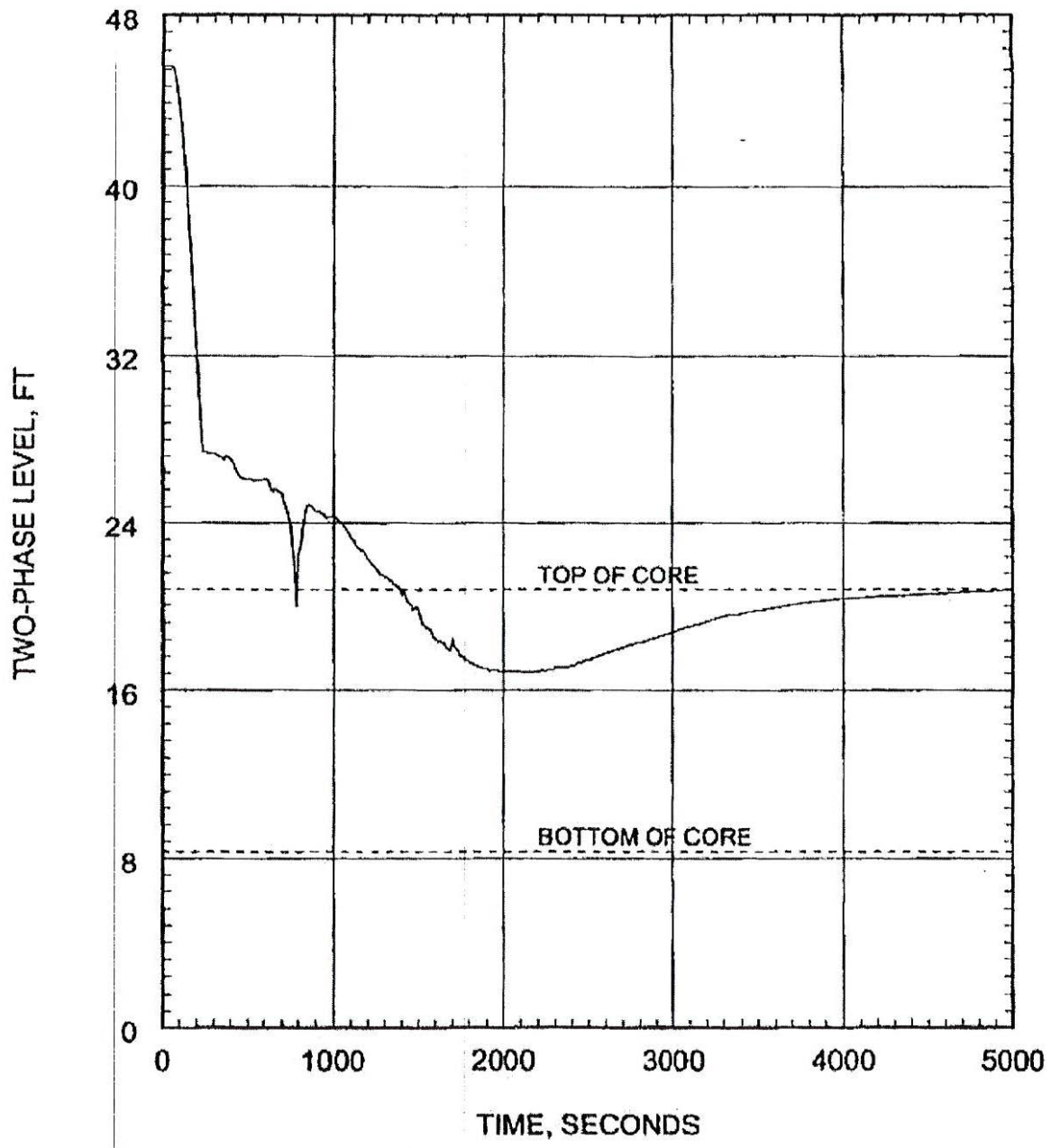
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-5D

JUNE 2019

REVISION 20



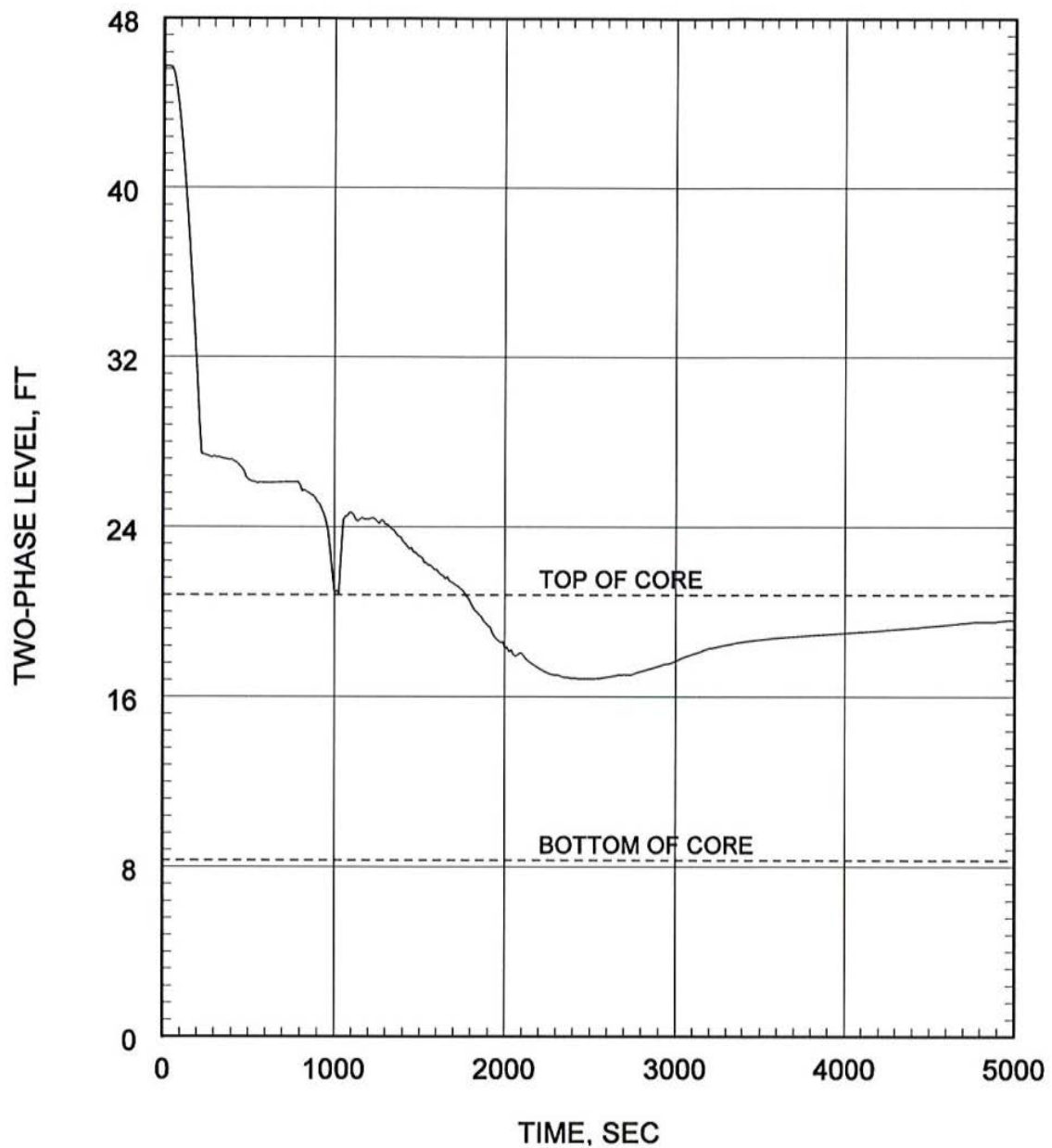
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16STD FUEL

FIGURE 6.3.3a.3-5E

JUNE 2019

REVISION 20



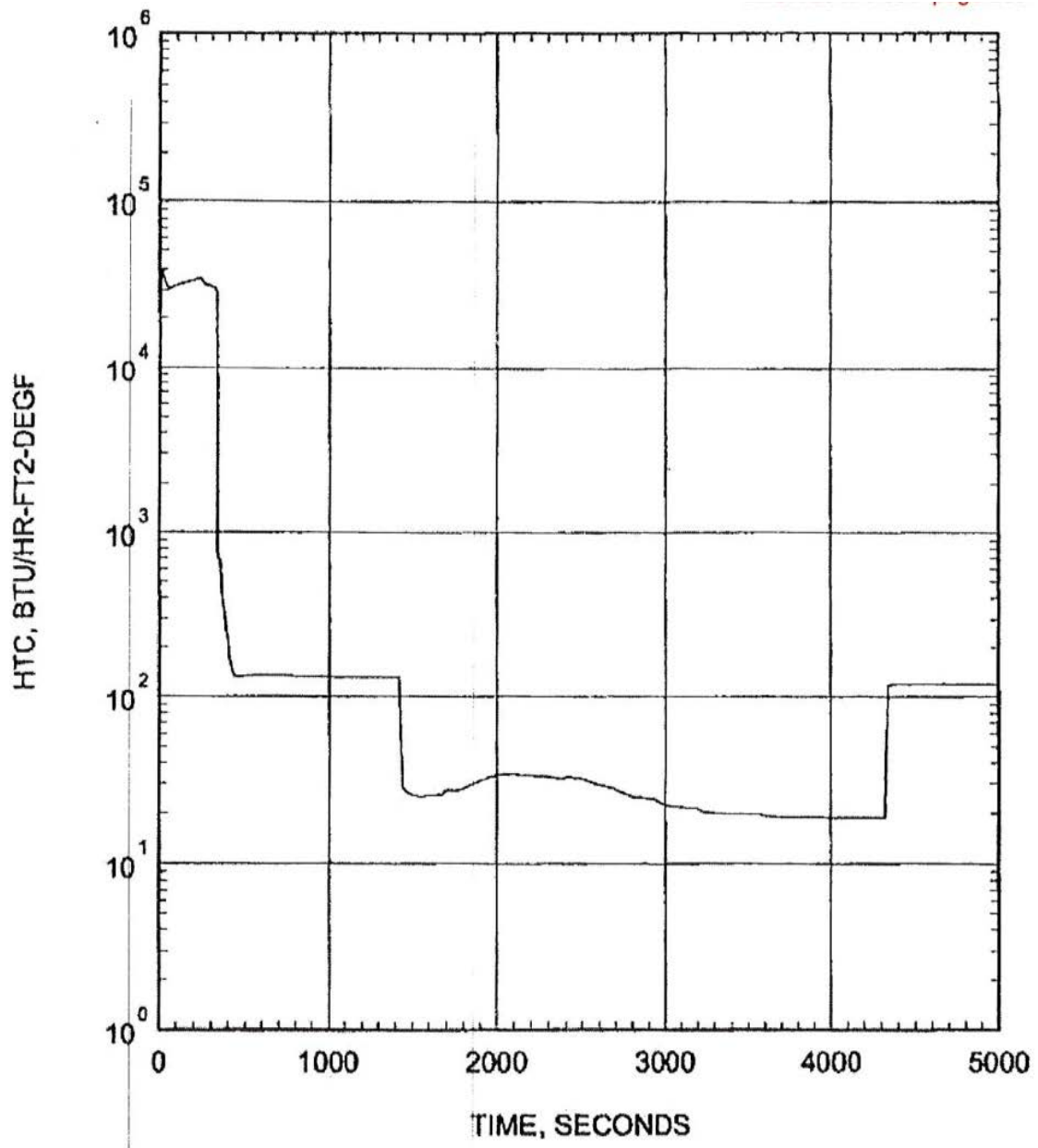
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16NGF FUEL

FIGURE 6.3.3b.3-5E

JUNE 2019

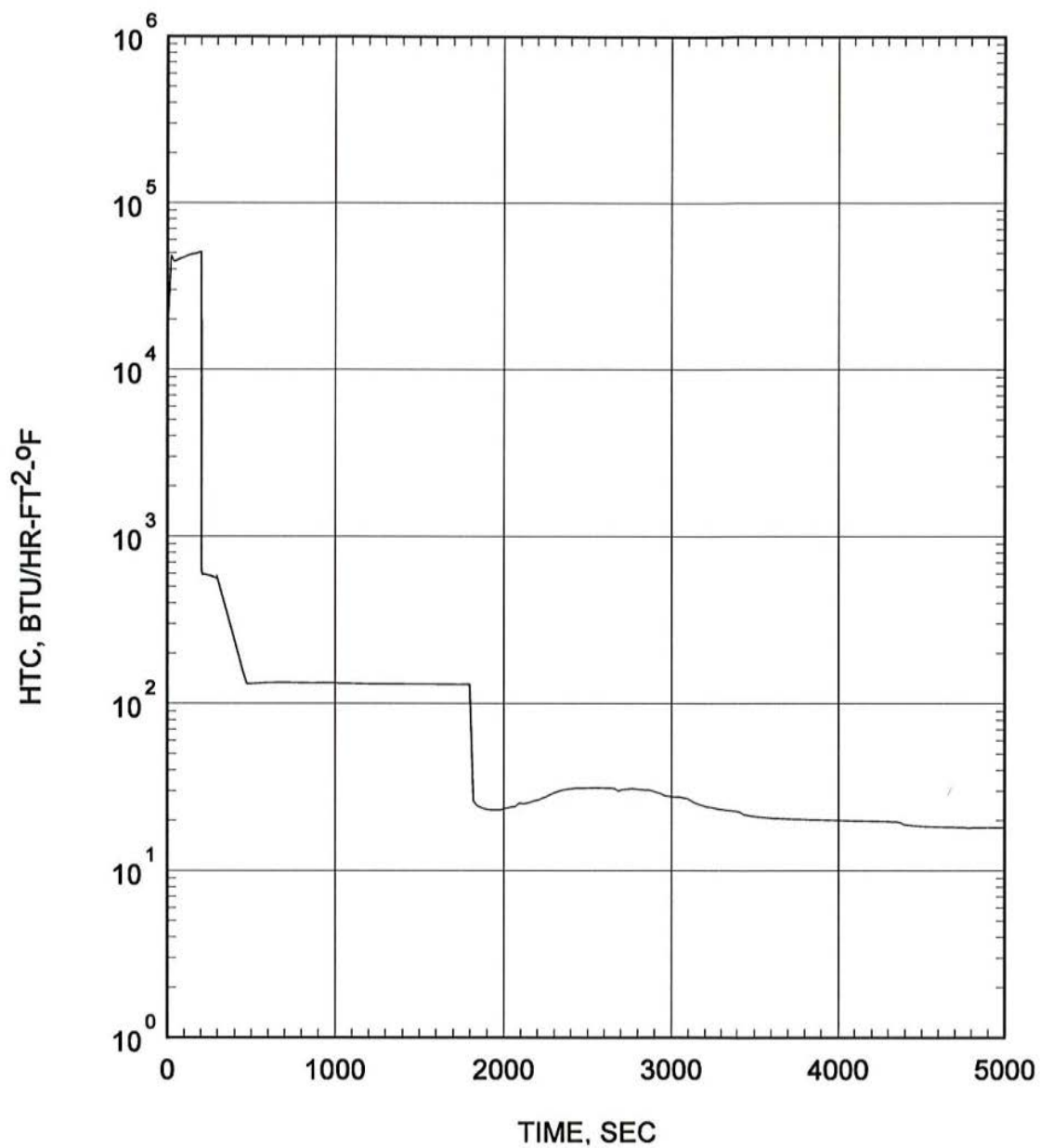
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-5F



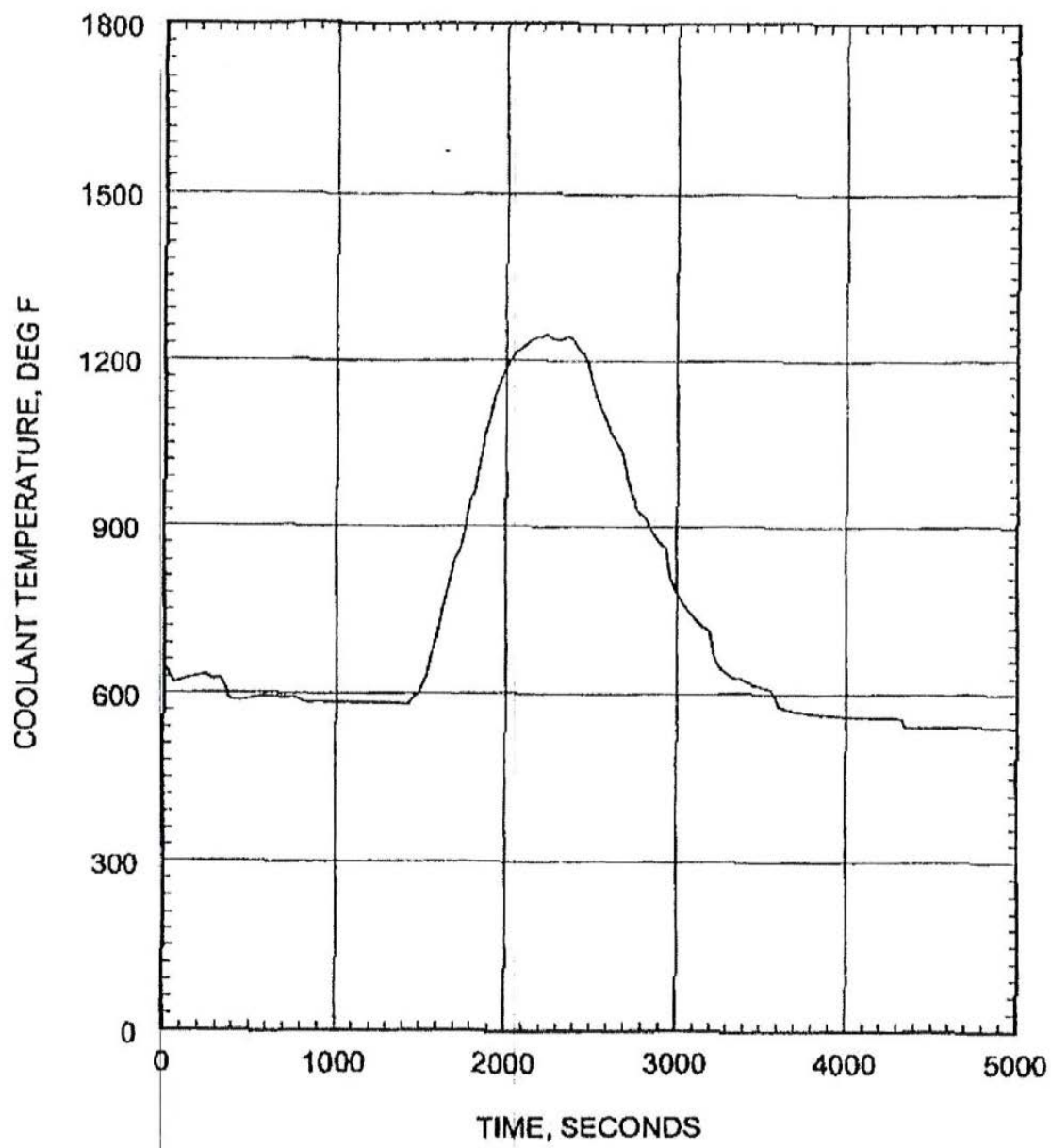
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-5F

JUNE 2019

REVISION 20



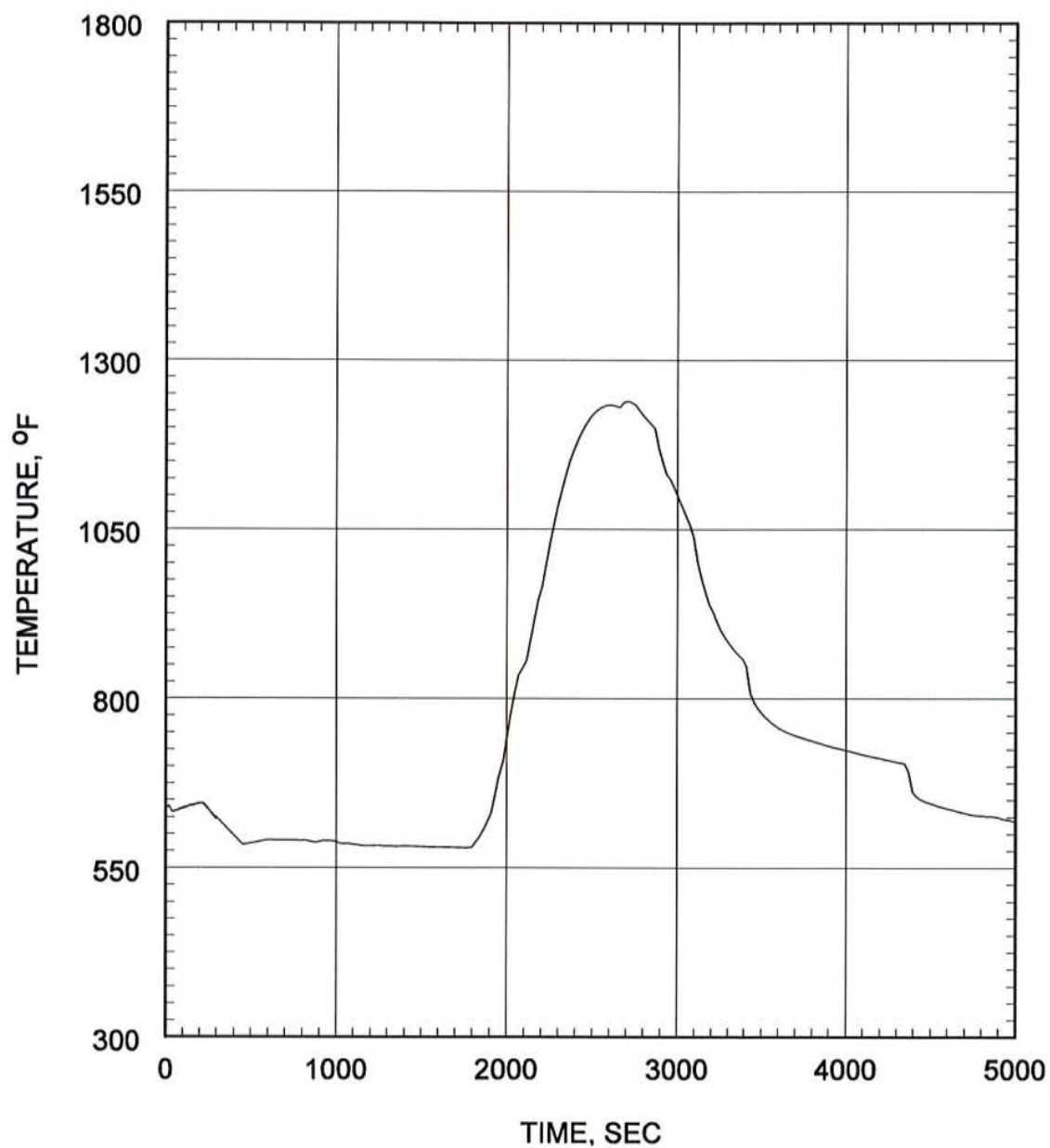
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-5G

JUNE 2019

REVISION 20



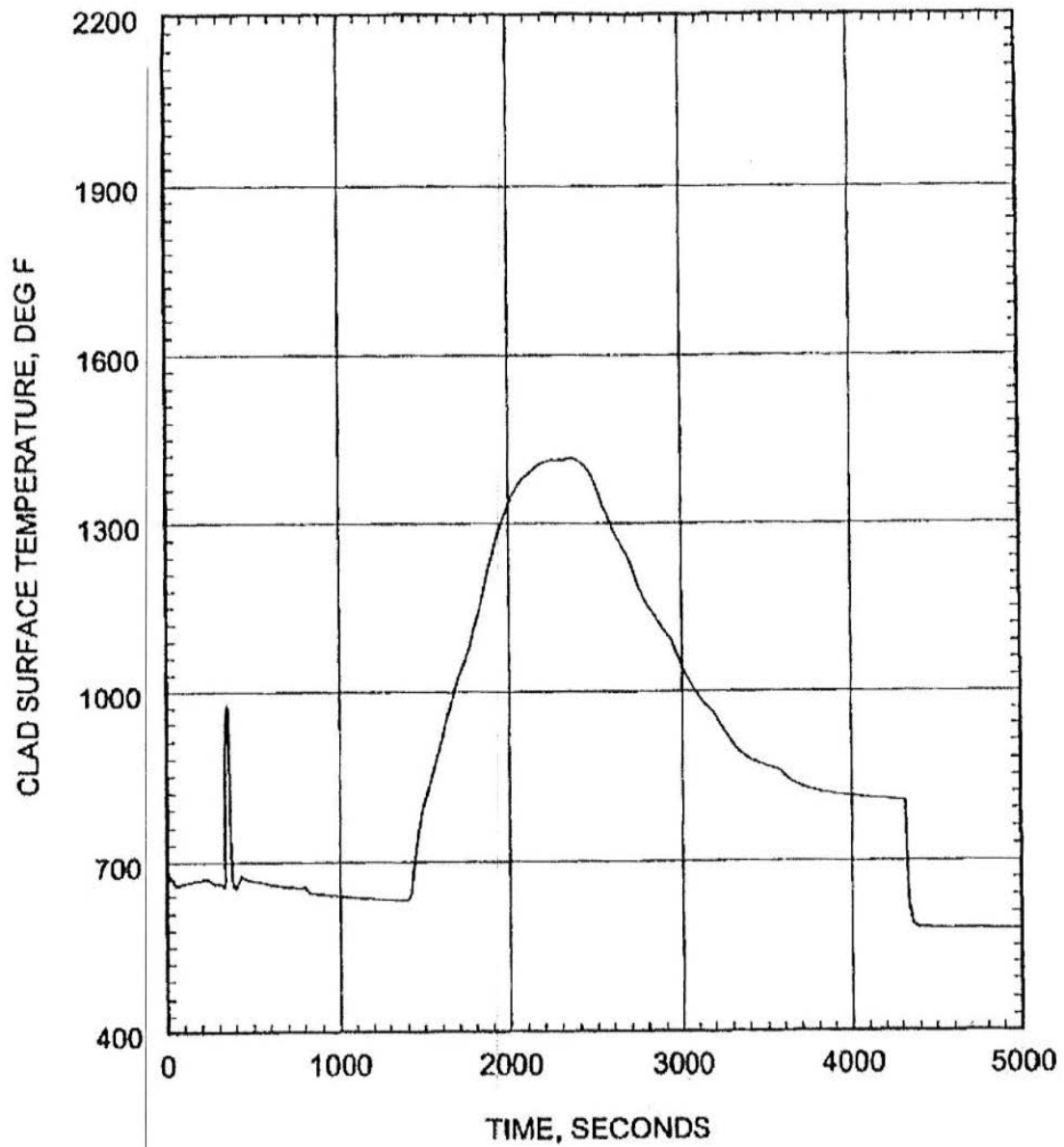
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-5G

JUNE 2019

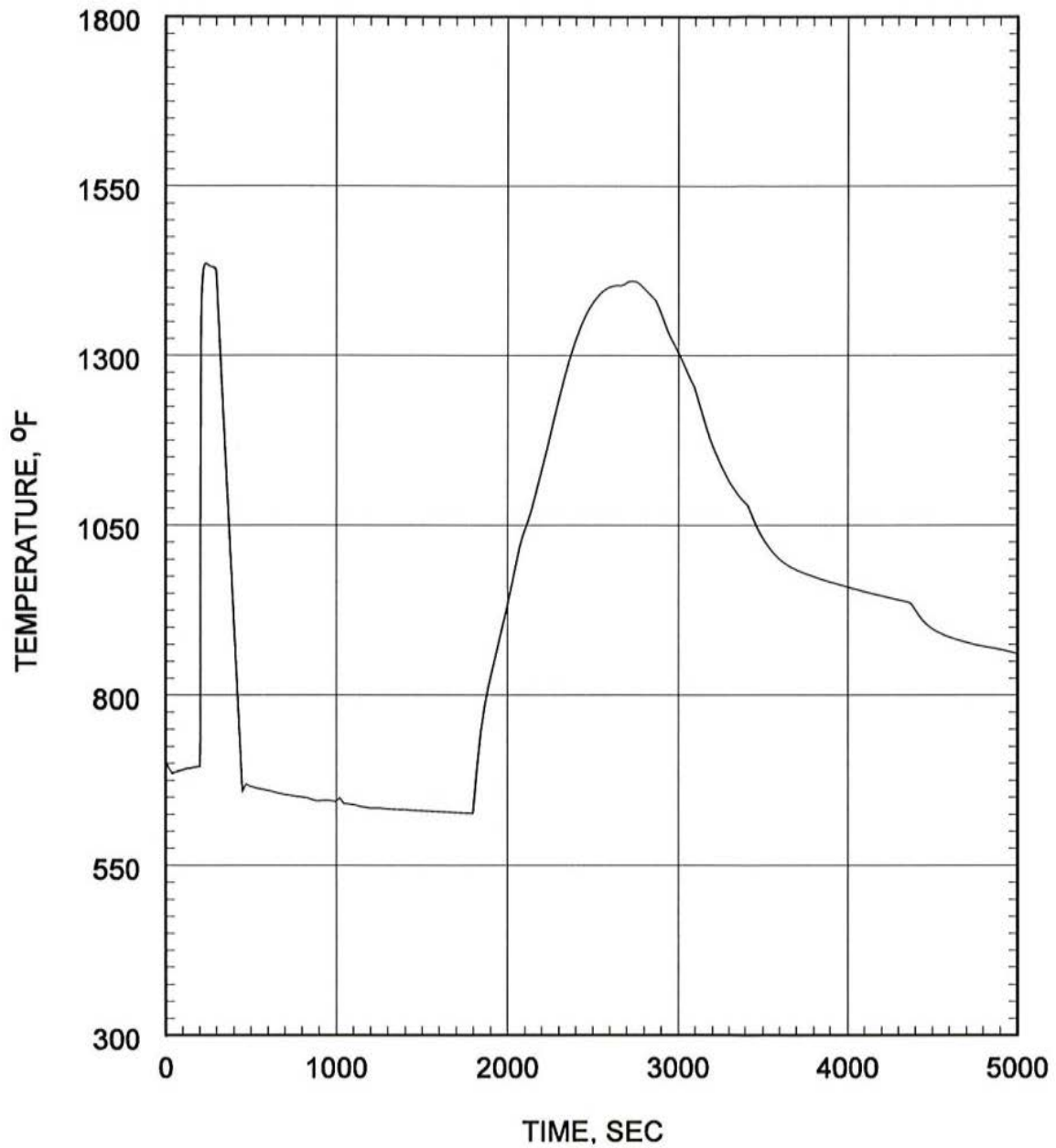
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.3-5H



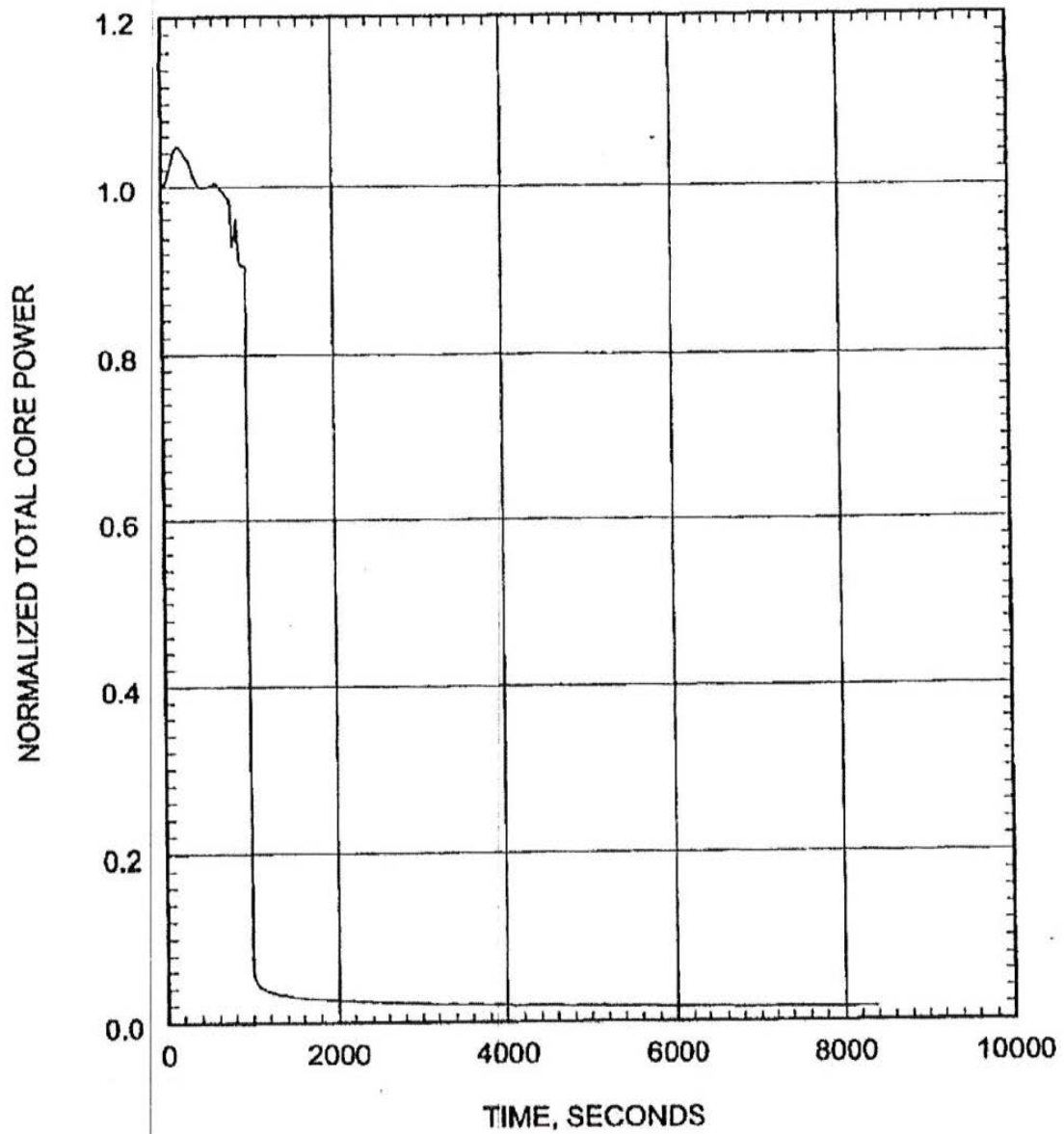
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.03 FT² BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.3-5H

JUNE 2019

REVISION 20



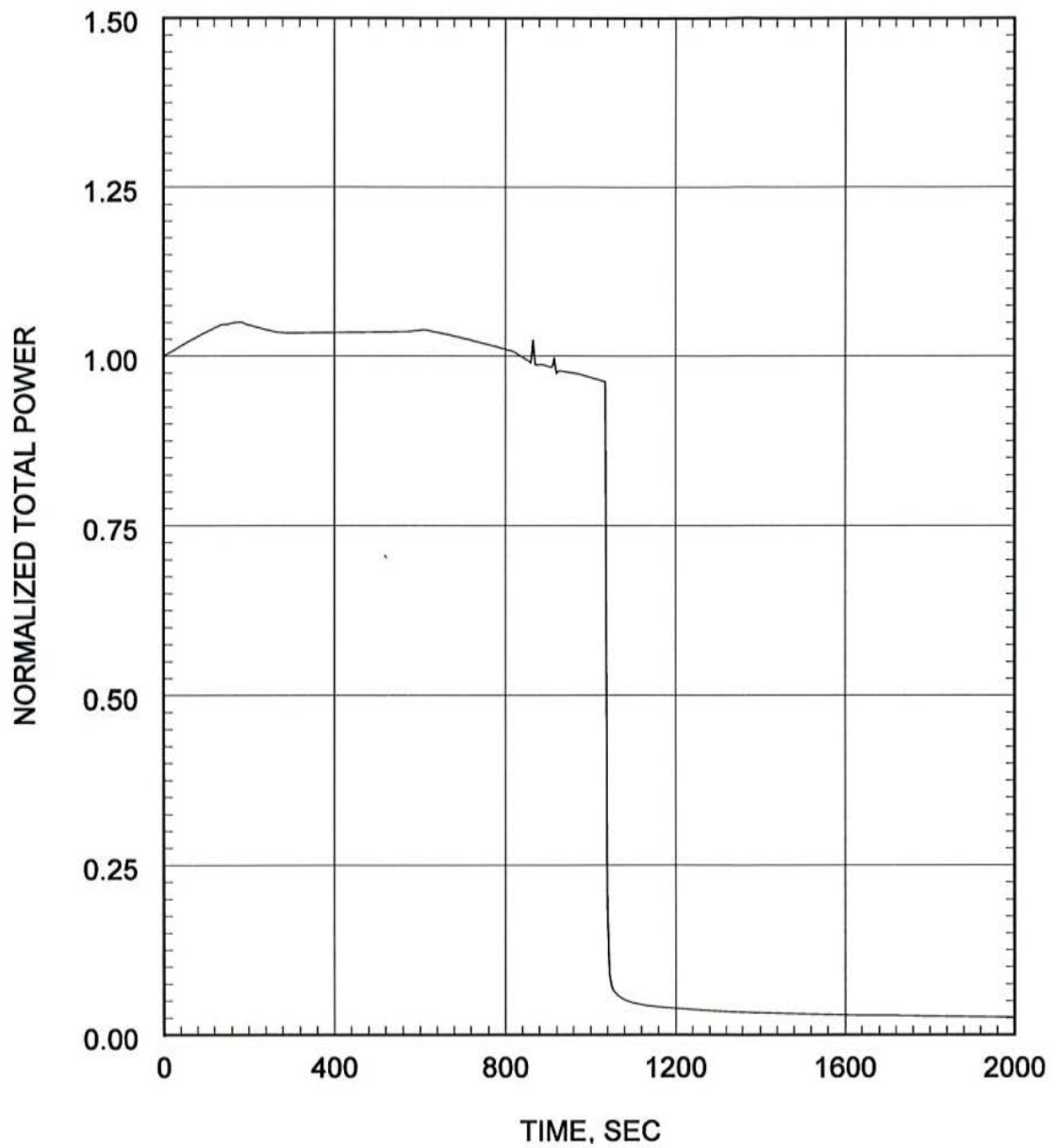
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.3-6A

JUNE 2019

REVISION 20



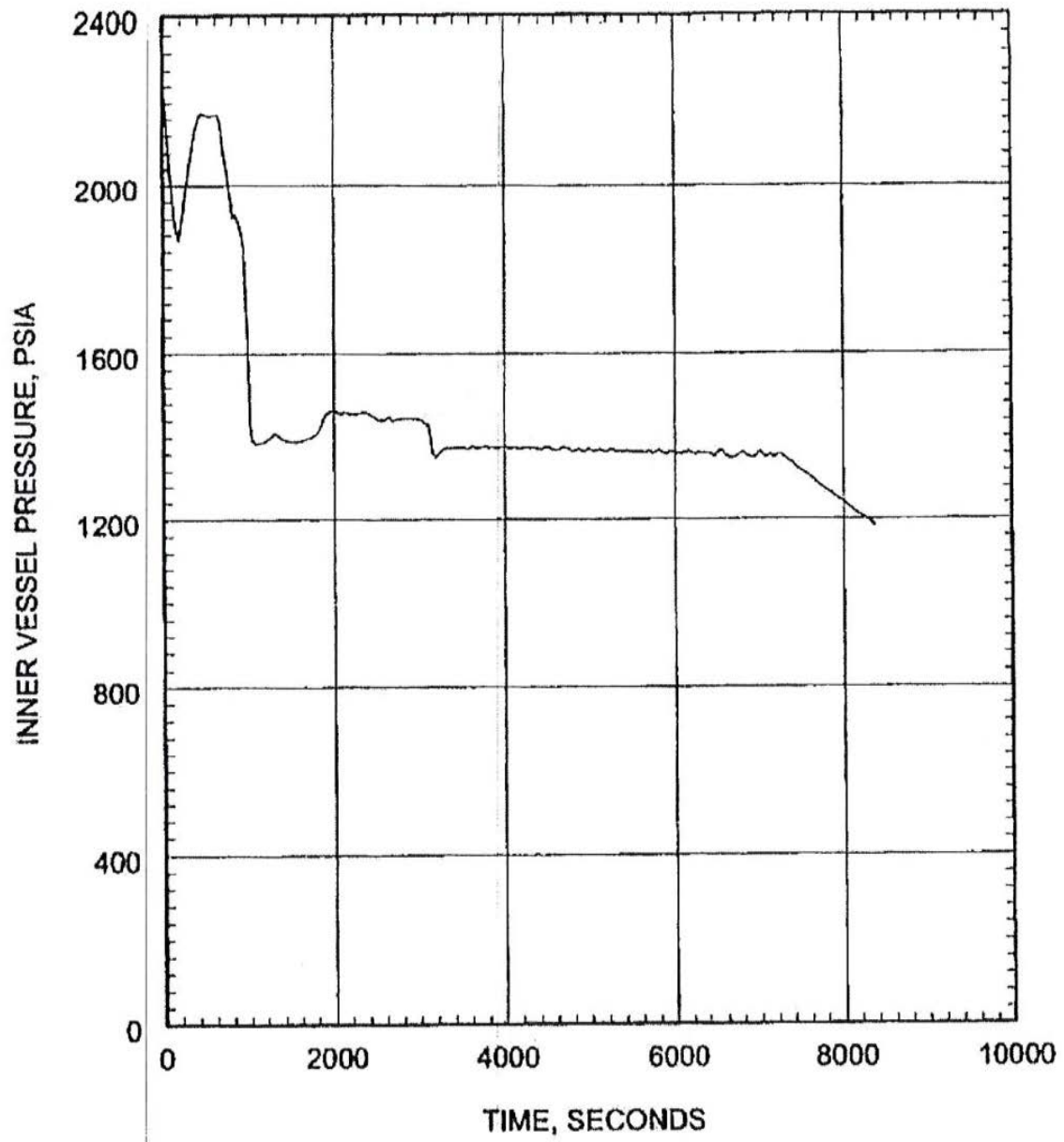
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.3-6A

JUNE 2019

REVISION 20



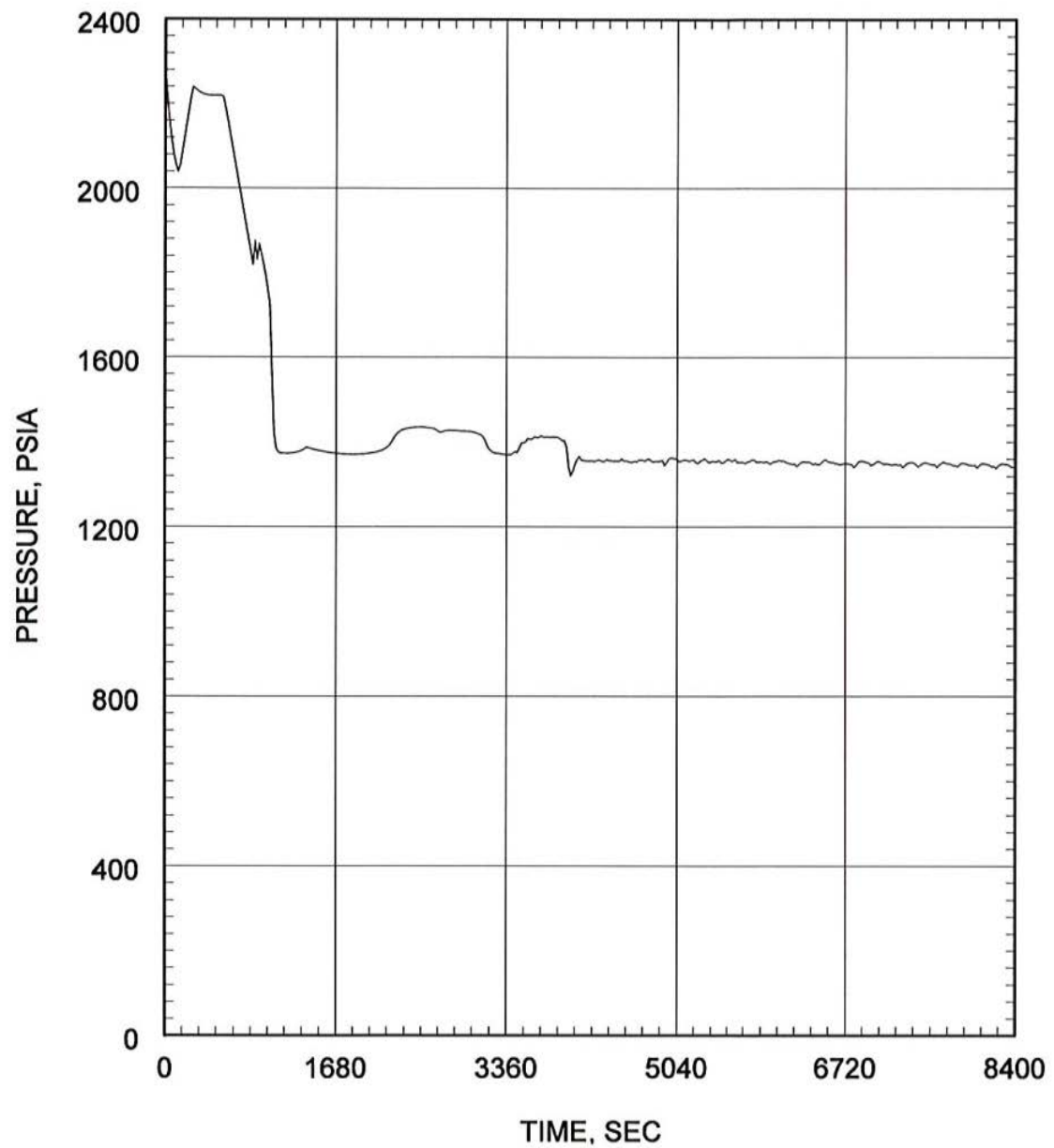
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.3-6B

JUNE 2019

REVISION 20



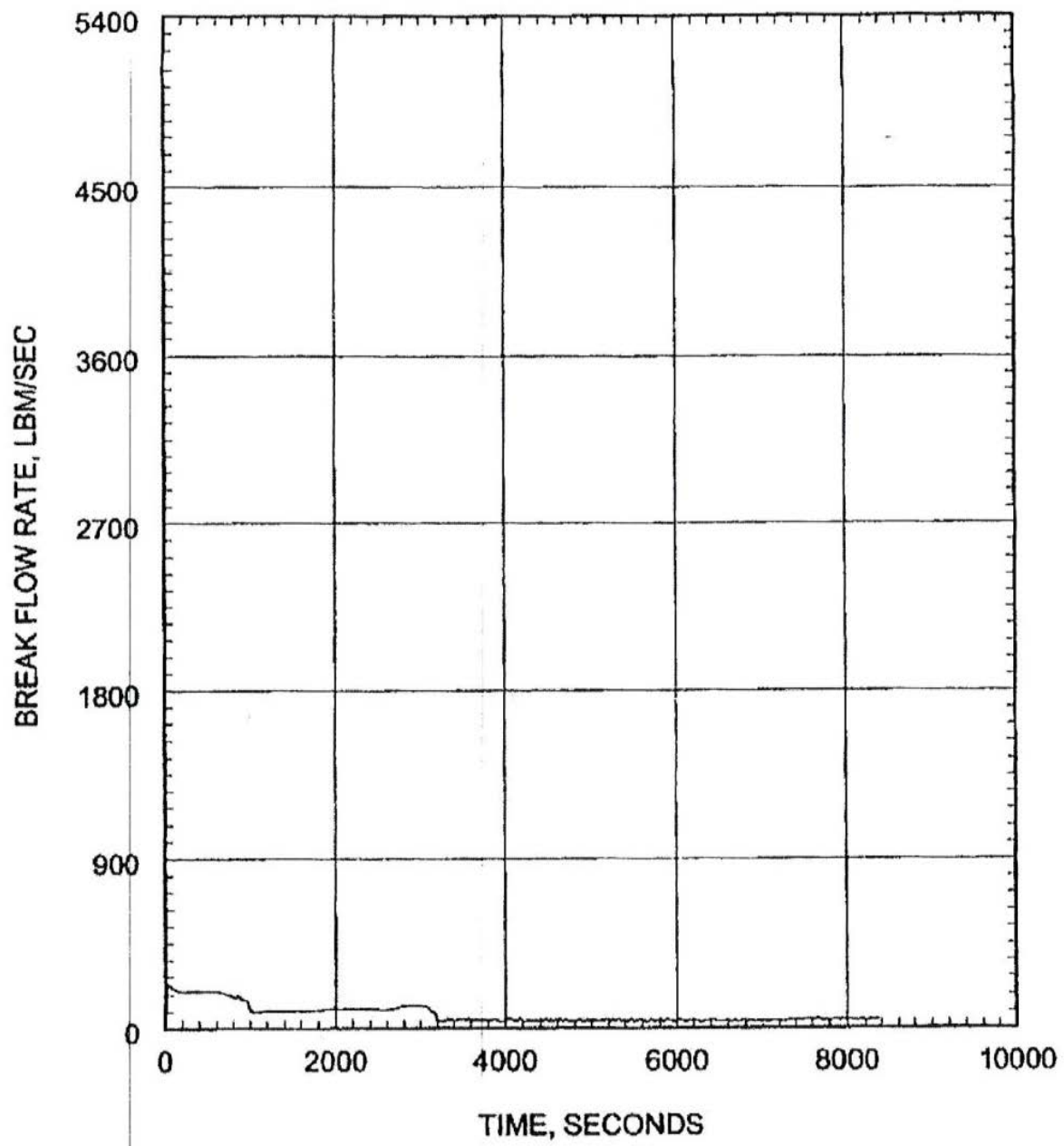
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.3-6B

JUNE 2019

REVISION 20



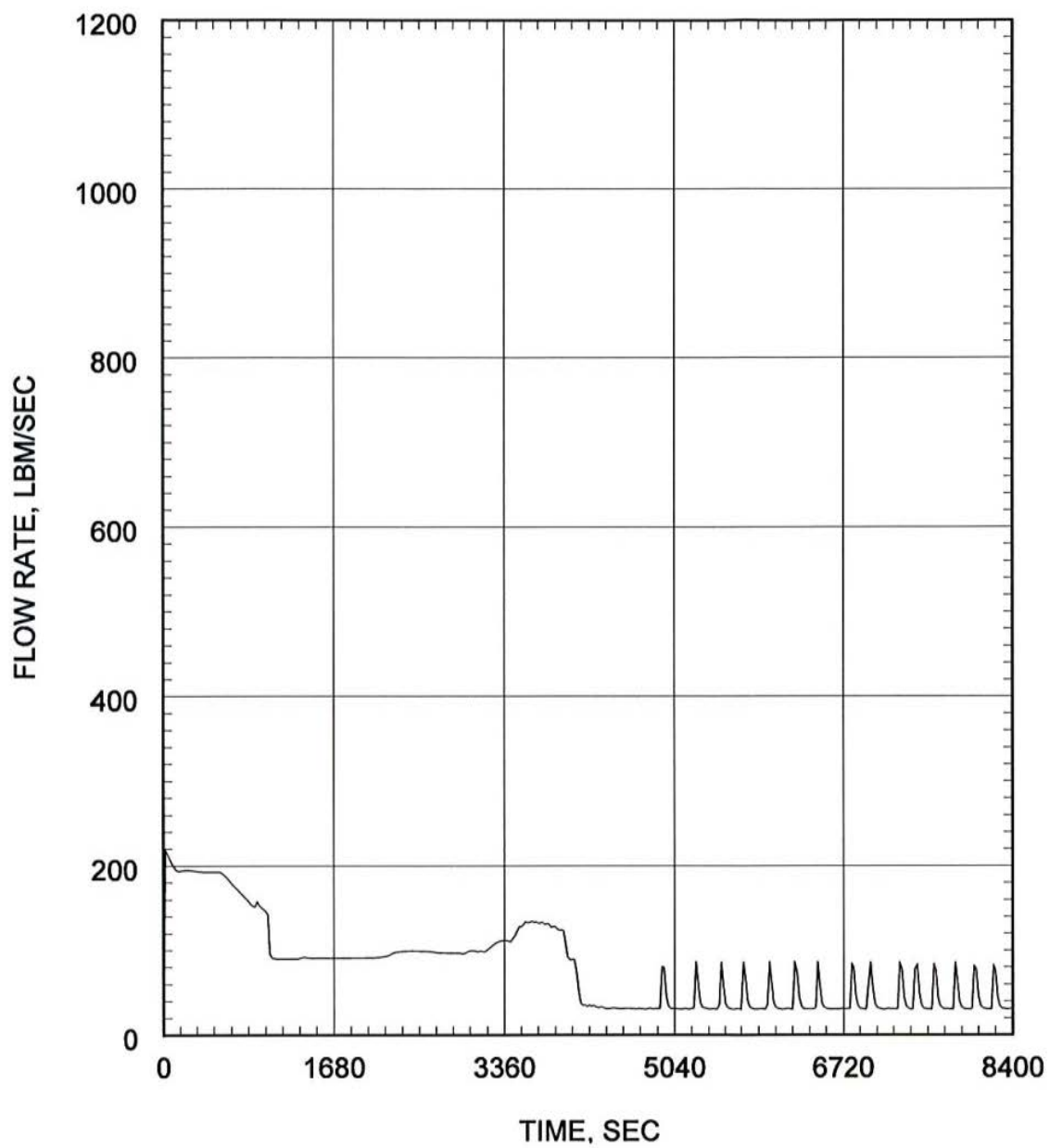
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-6C

JUNE 2019

REVISION 20



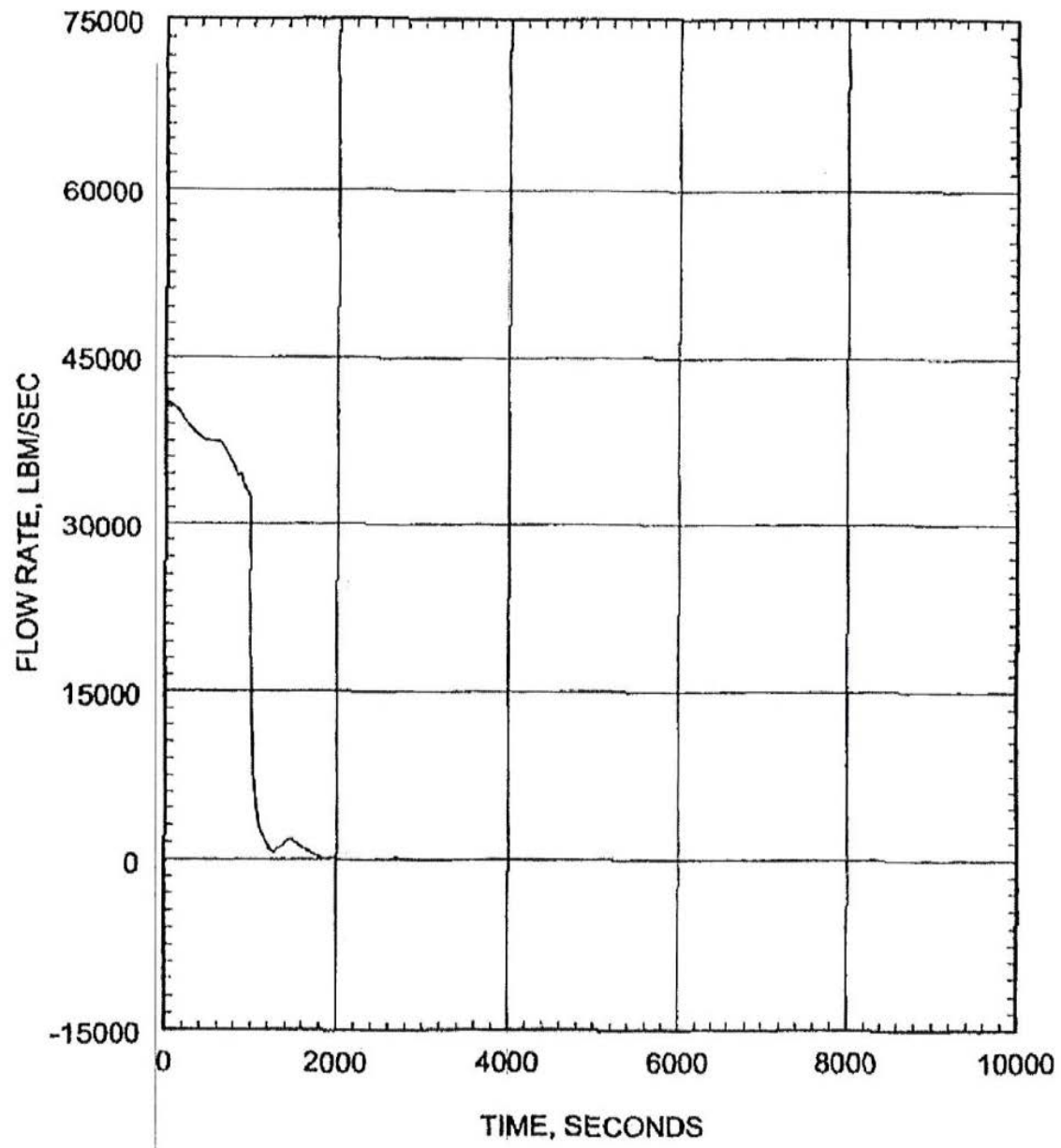
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
BREAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-6C

JUNE 2019

REVISION 20



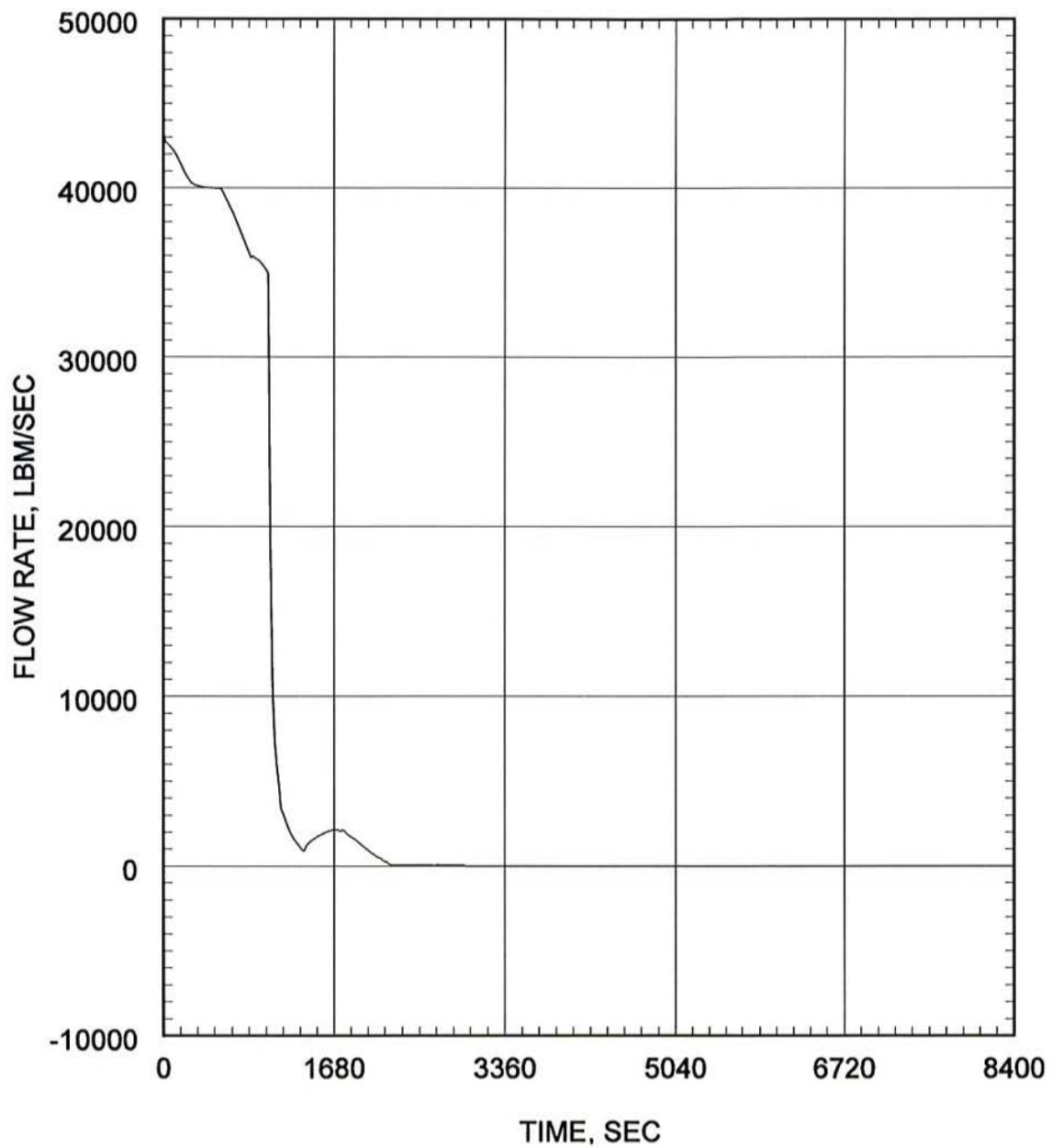
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-6D

JUNE 2019

REVISION 20



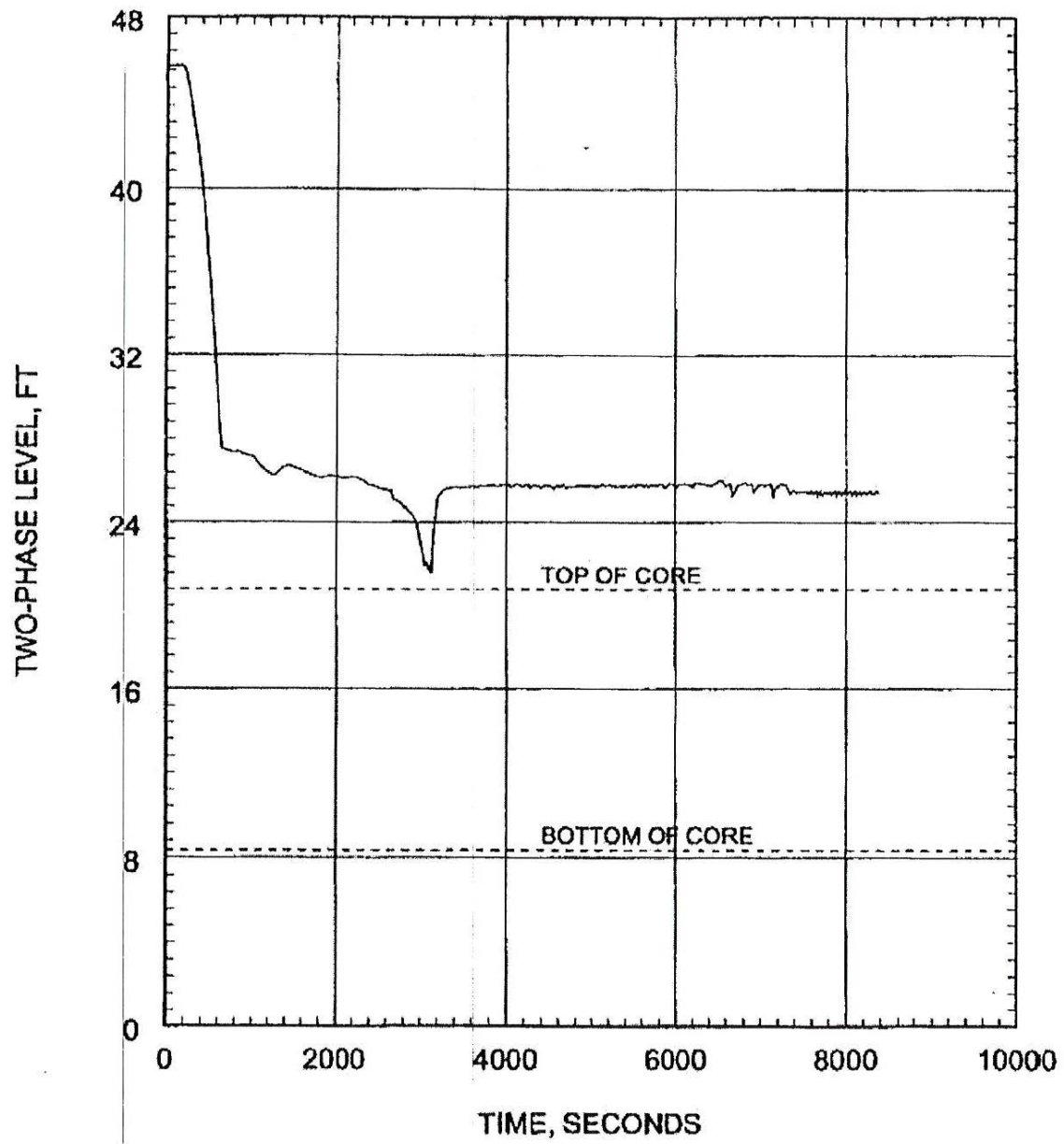
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL INLET FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-6D

JUNE 2019

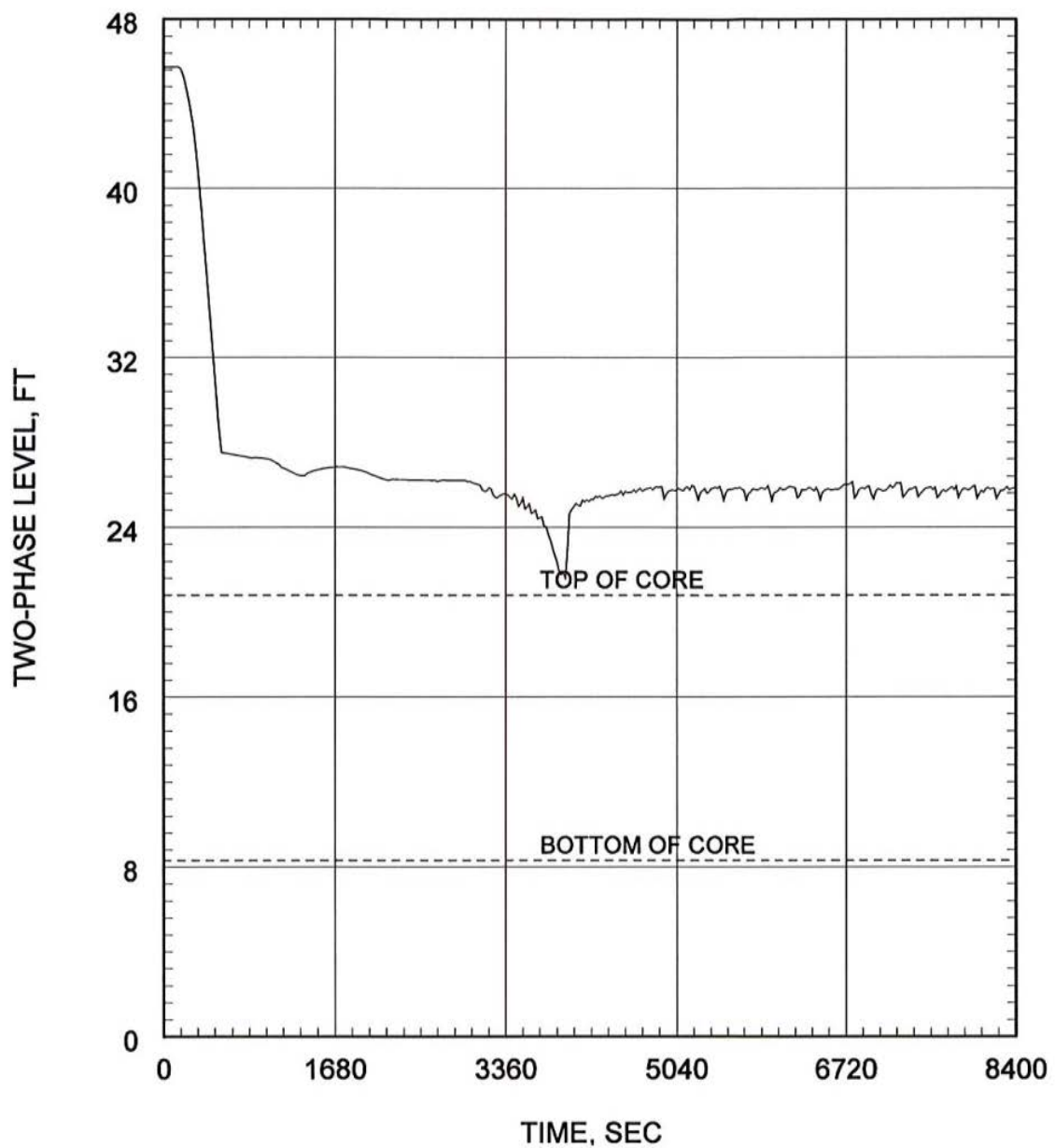
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16STD FUEL

FIGURE 6.3.3a.3-6E



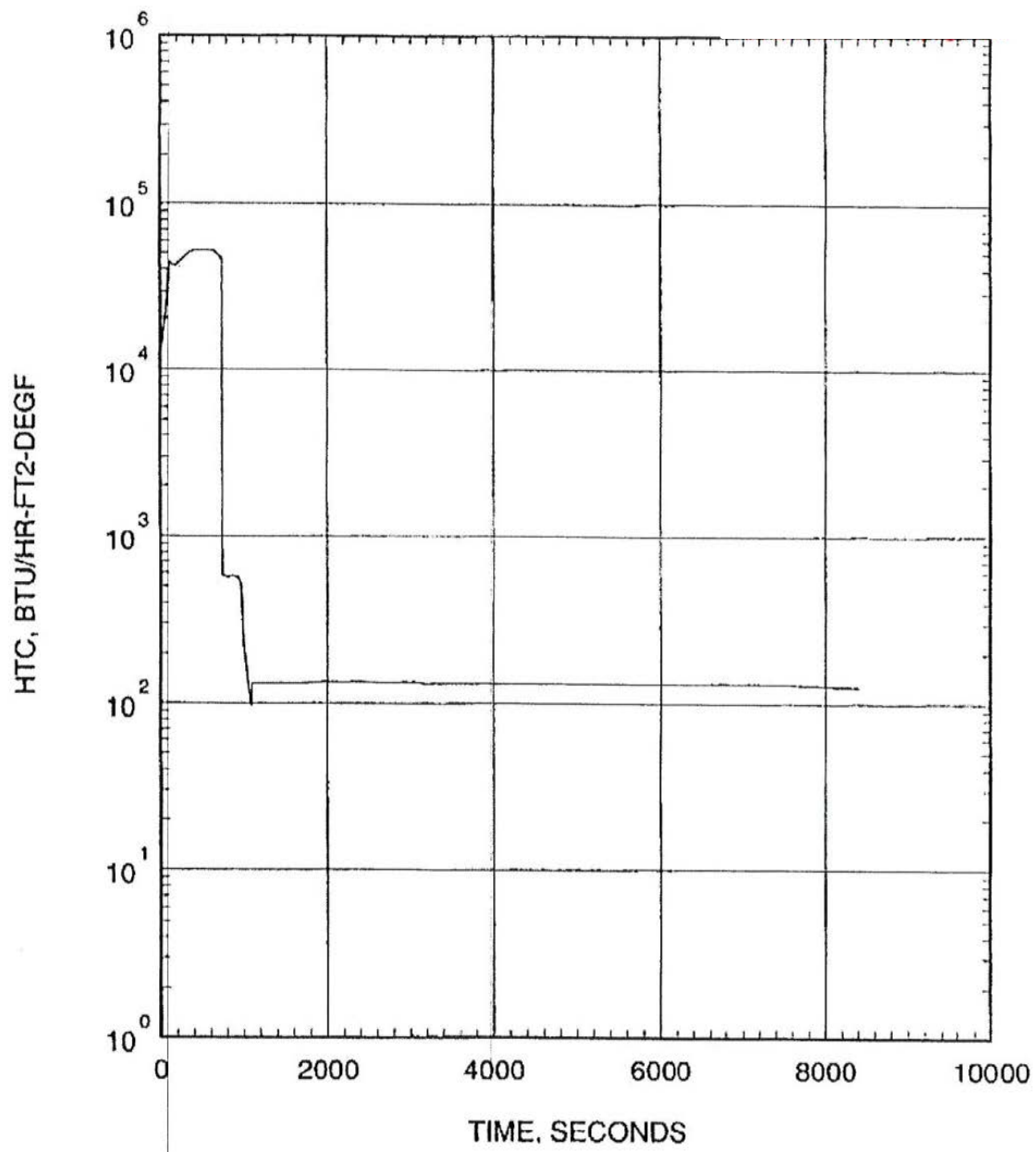
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16NGF FUEL

FIGURE 6.3.3b.3-6E

JUNE 2019

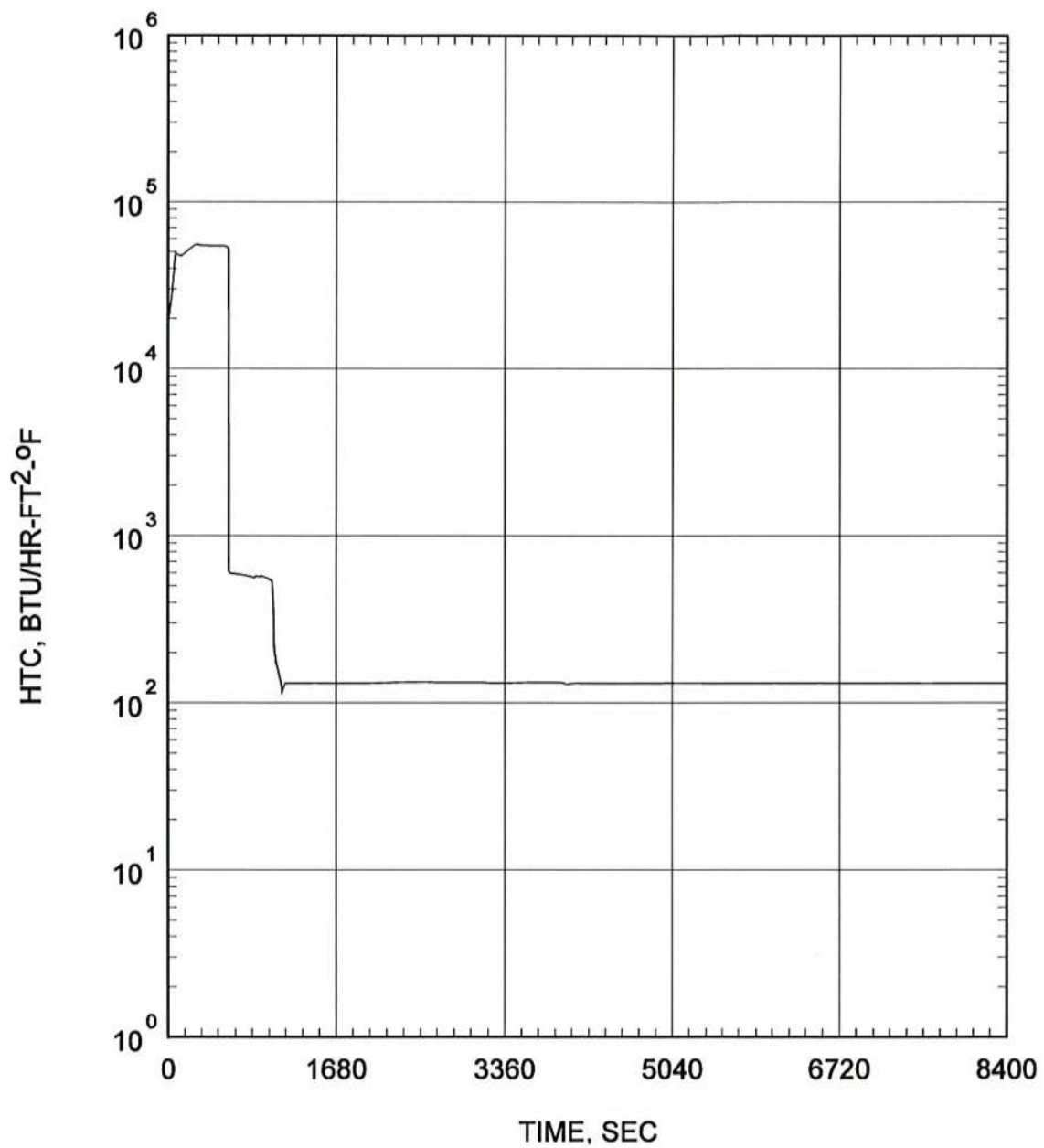
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-6F



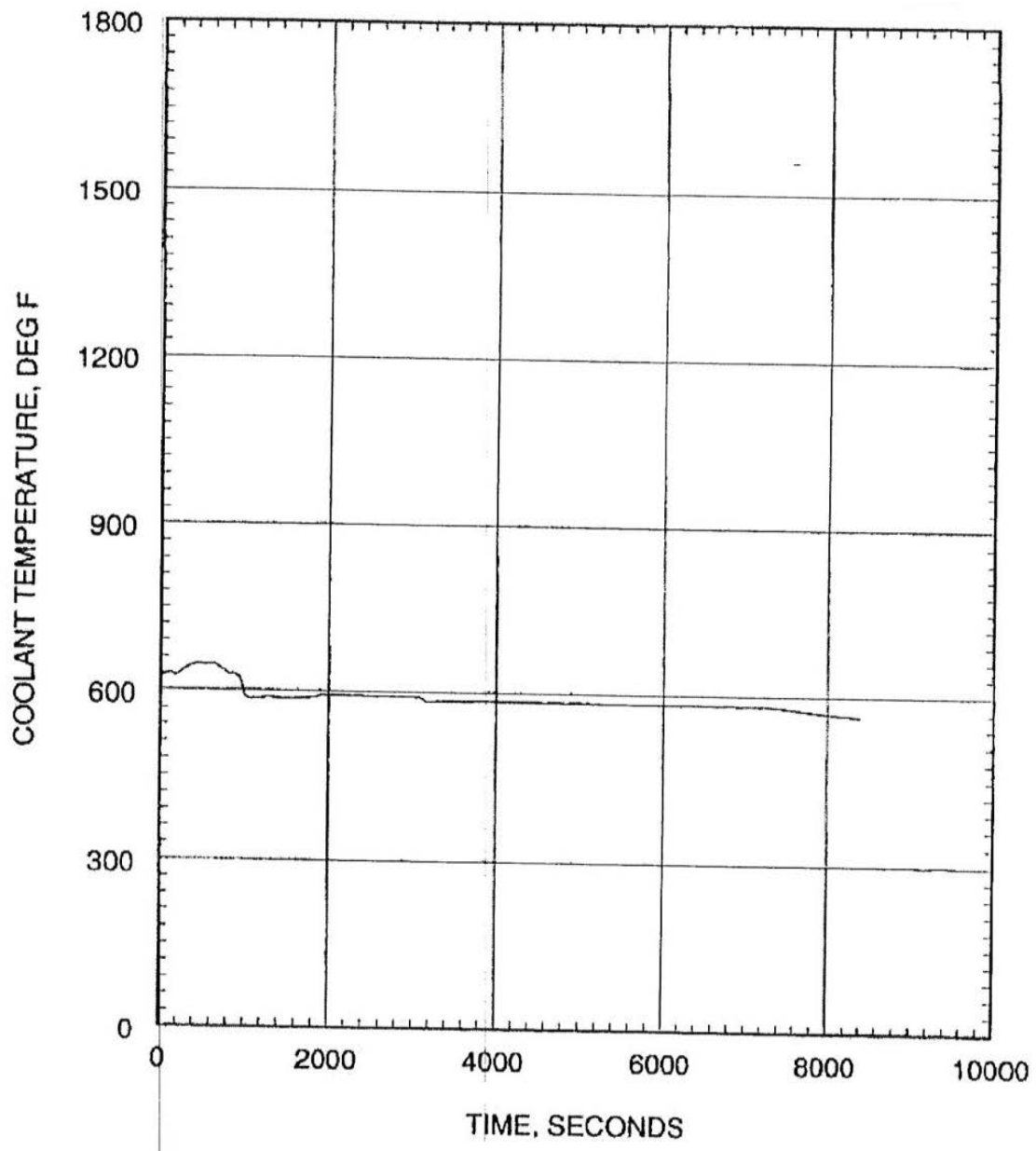
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-6F

JUNE 2019

REVISION 20



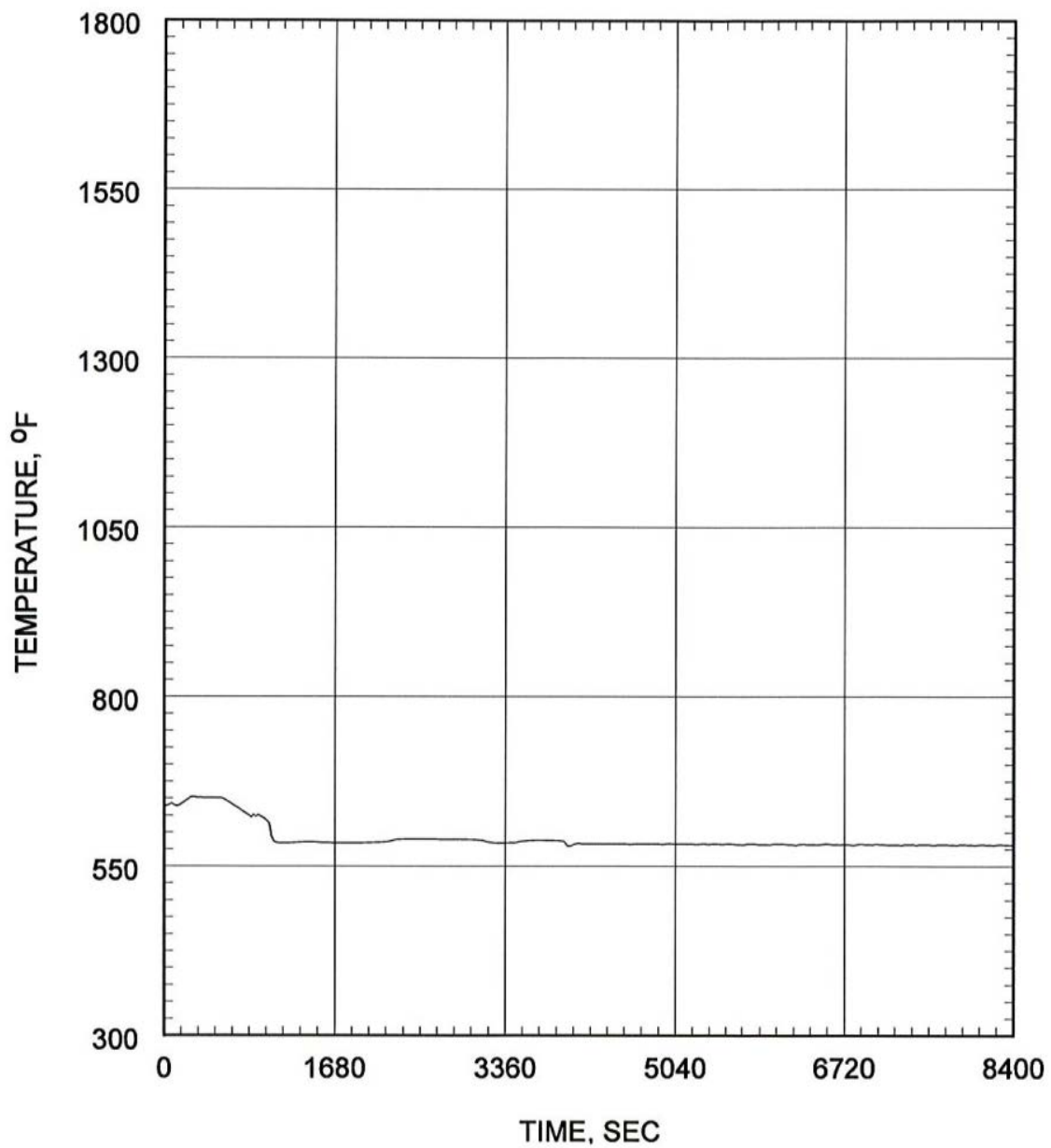
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-6G

JUNE 2019

REVISION 20



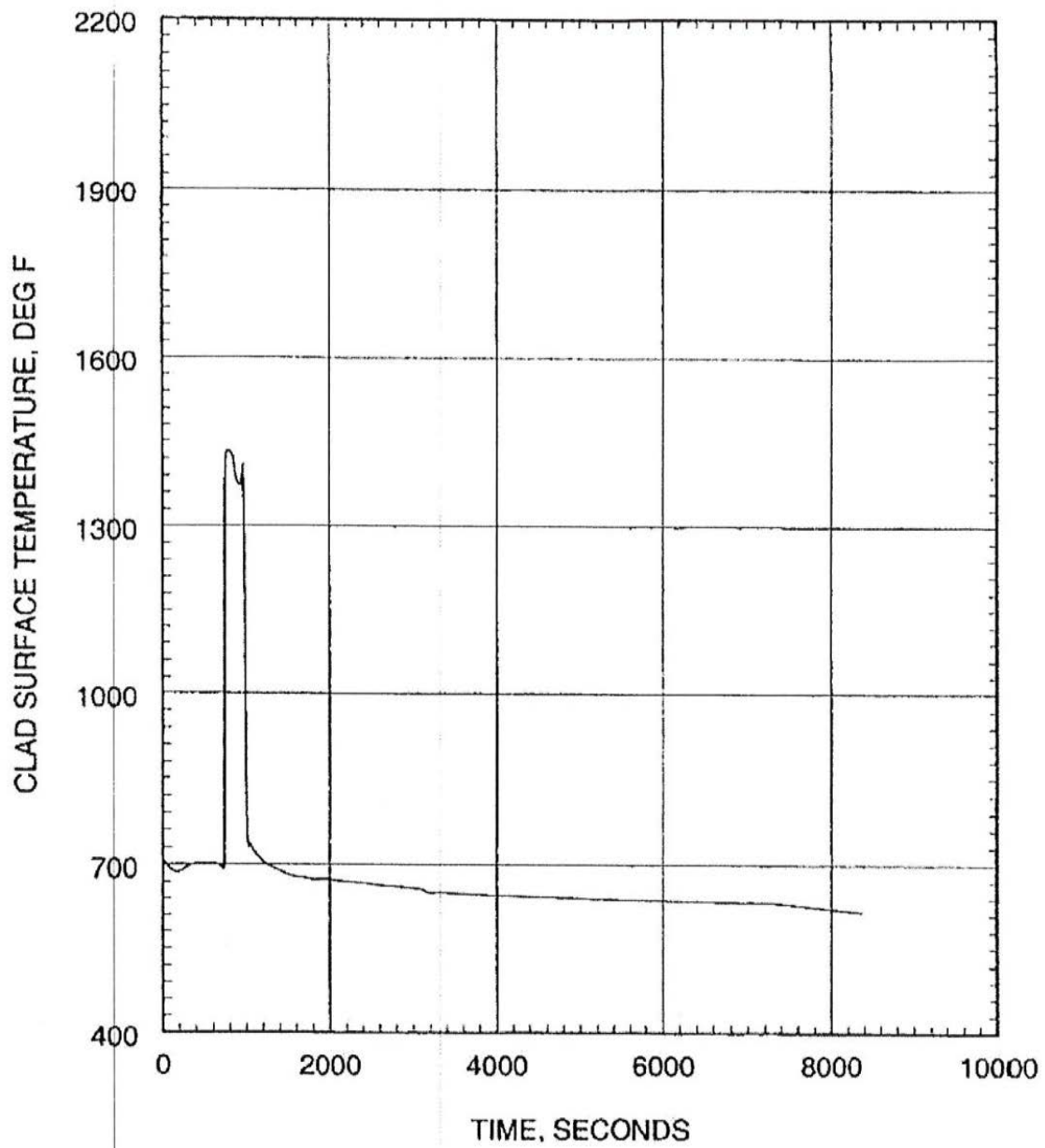
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
COOLANT TEMPERATURE AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-6G

JUNE 2019

REVISION 20



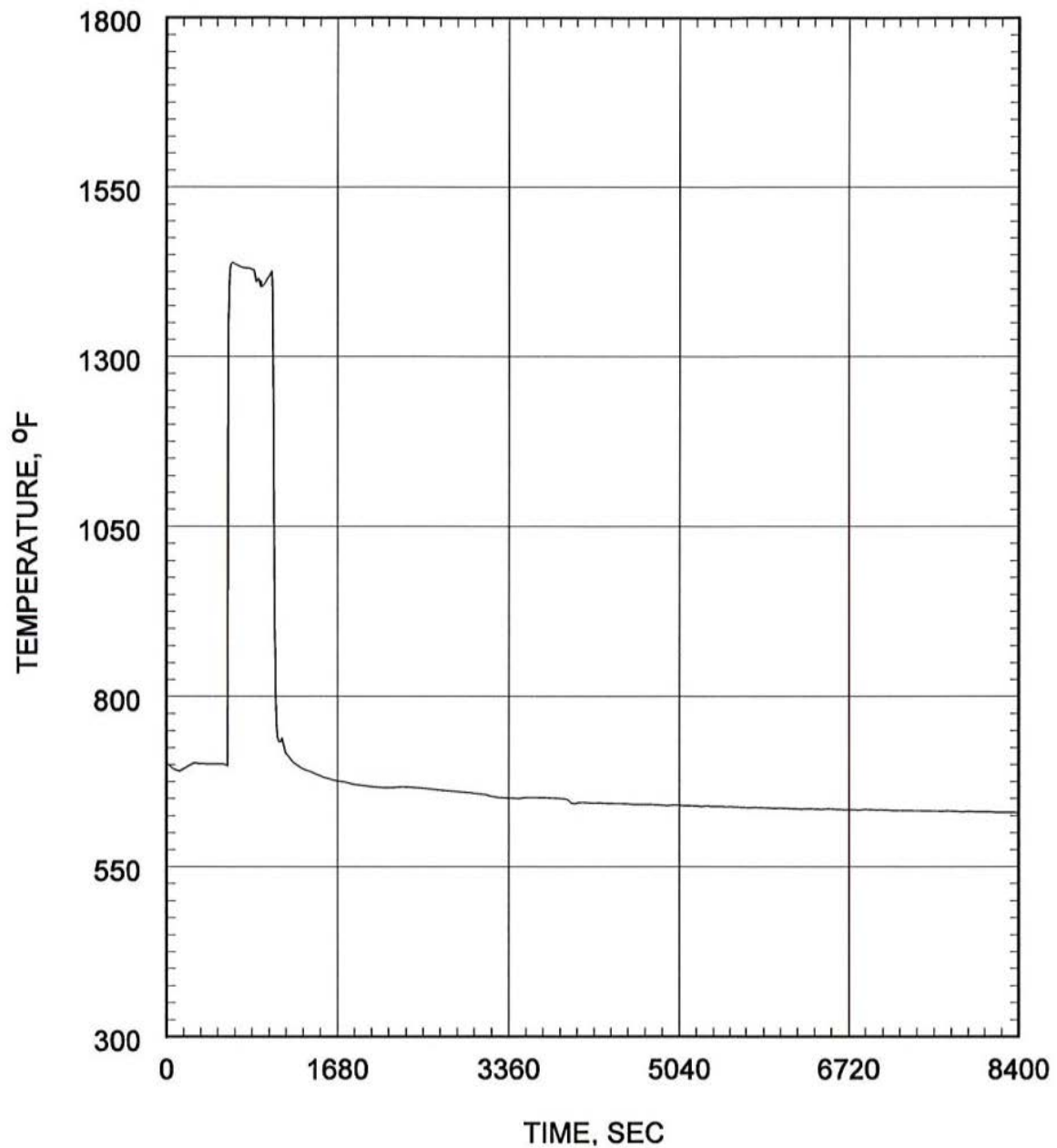
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.3-6H

JUNE 2019

REVISION 20



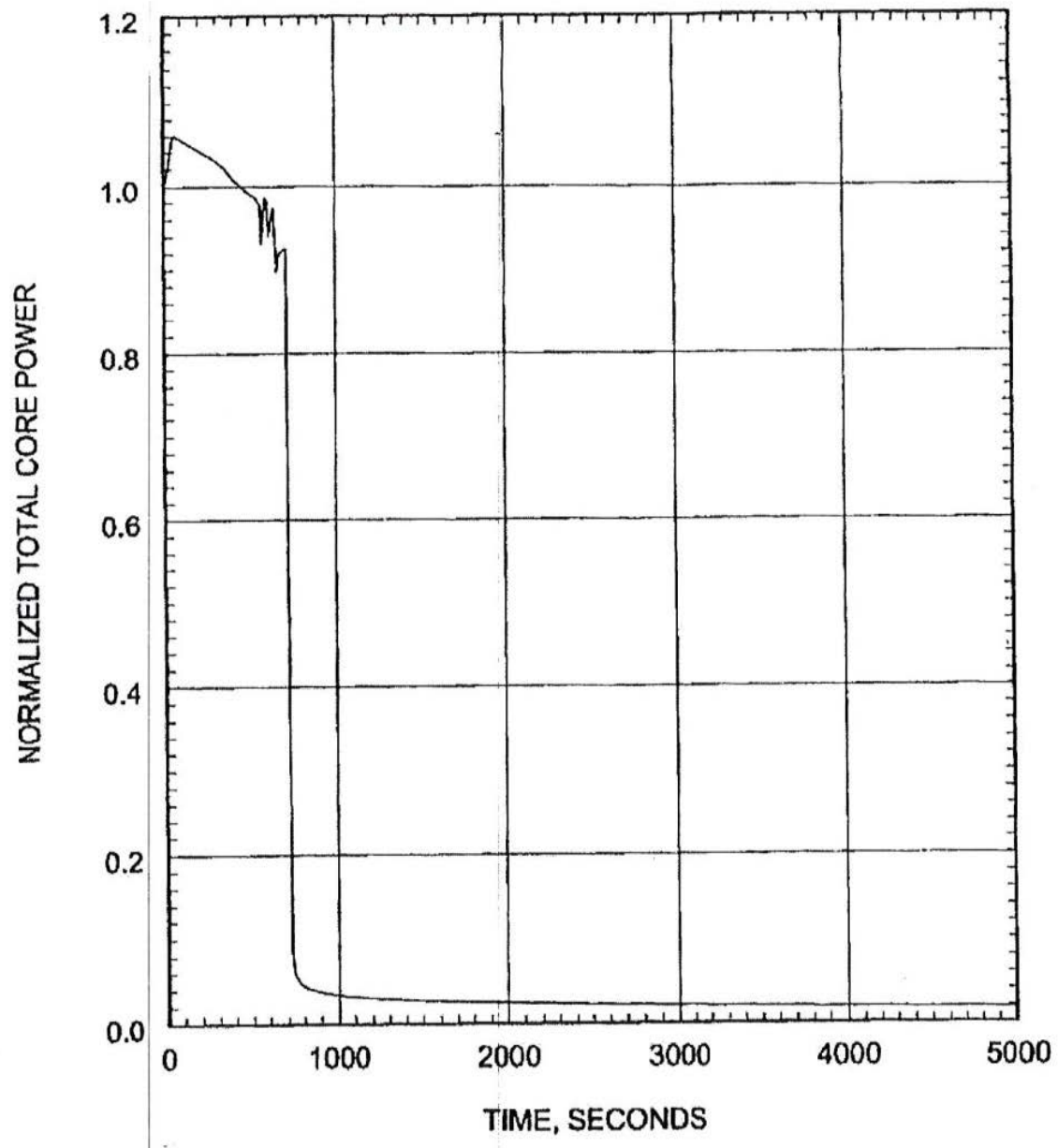
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

0.01 FT² BREAK AT PUMP DISCHARGE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.3-6H

JUNE 2019

REVISION 20



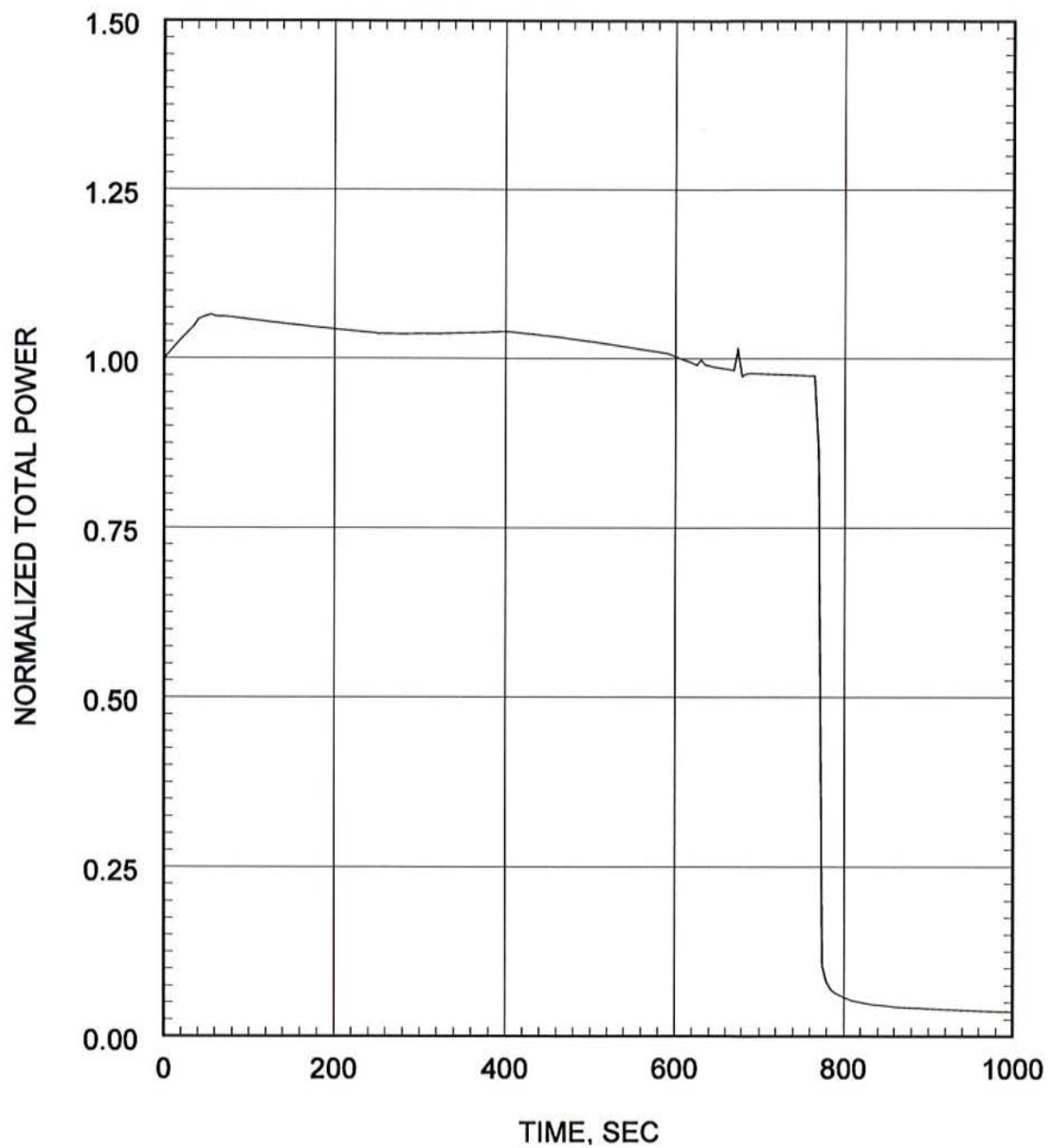
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
NORMALIZED TOTAL CORE POWER
CE16STD FUEL

FIGURE 6.3.3a.3-7A

JUNE 2019

REVISION 20



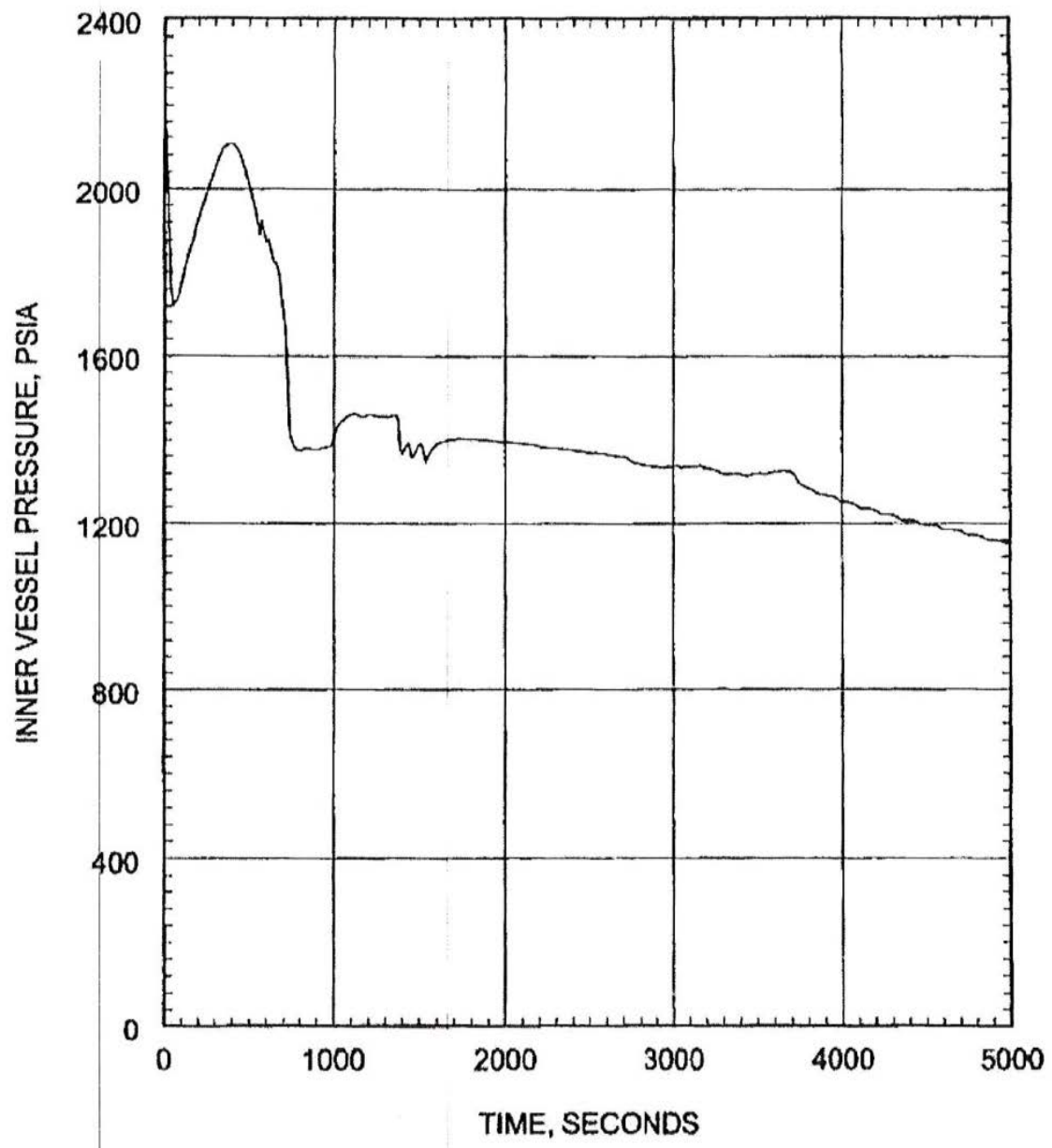
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
NORMALIZED TOTAL CORE POWER
CE16NGF FUEL

FIGURE 6.3.3b.3-7A

JUNE 2019

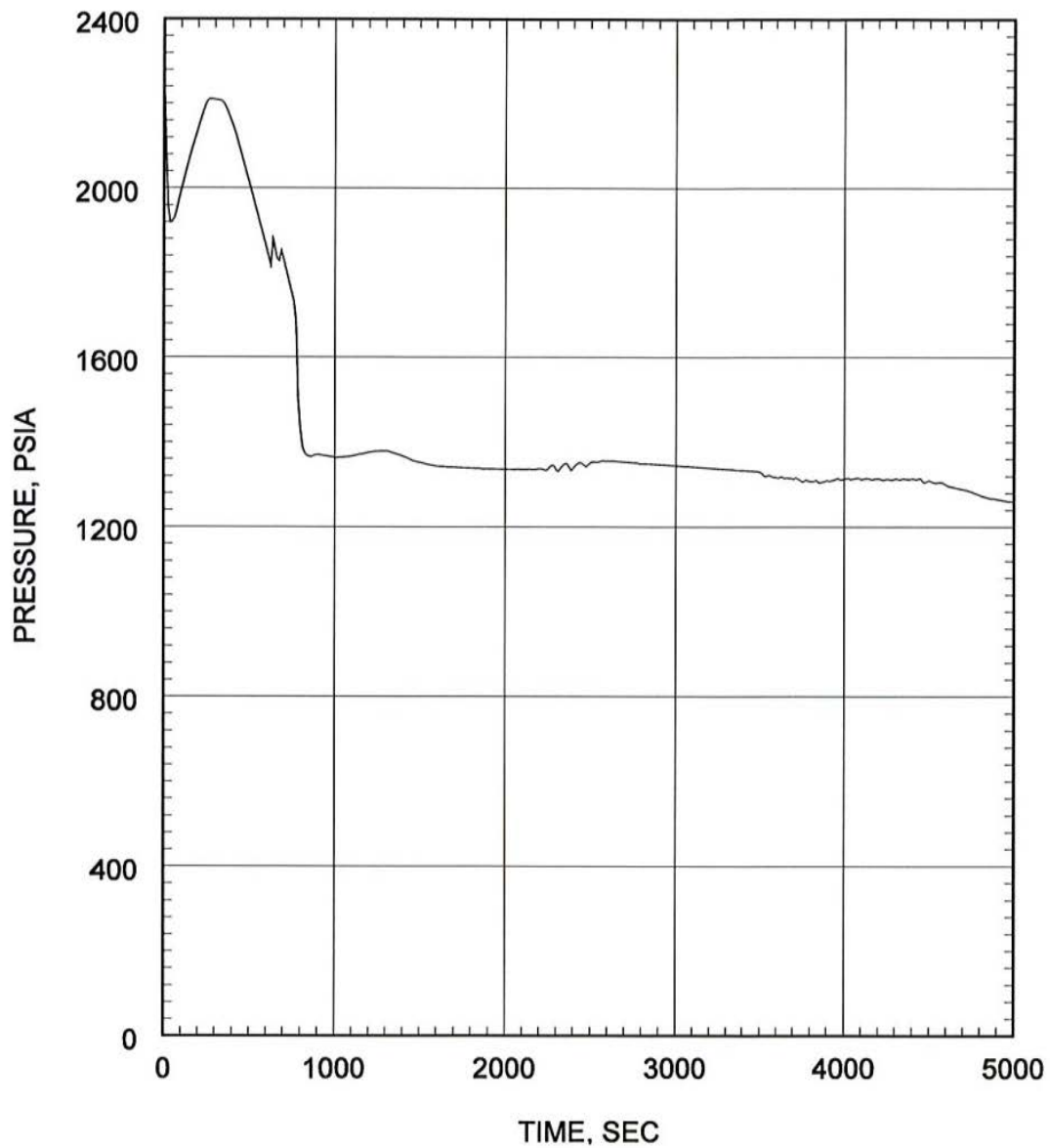
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
INNER VESSEL PRESSURE
CE16STD FUEL

FIGURE 6.3.3a.3-7B



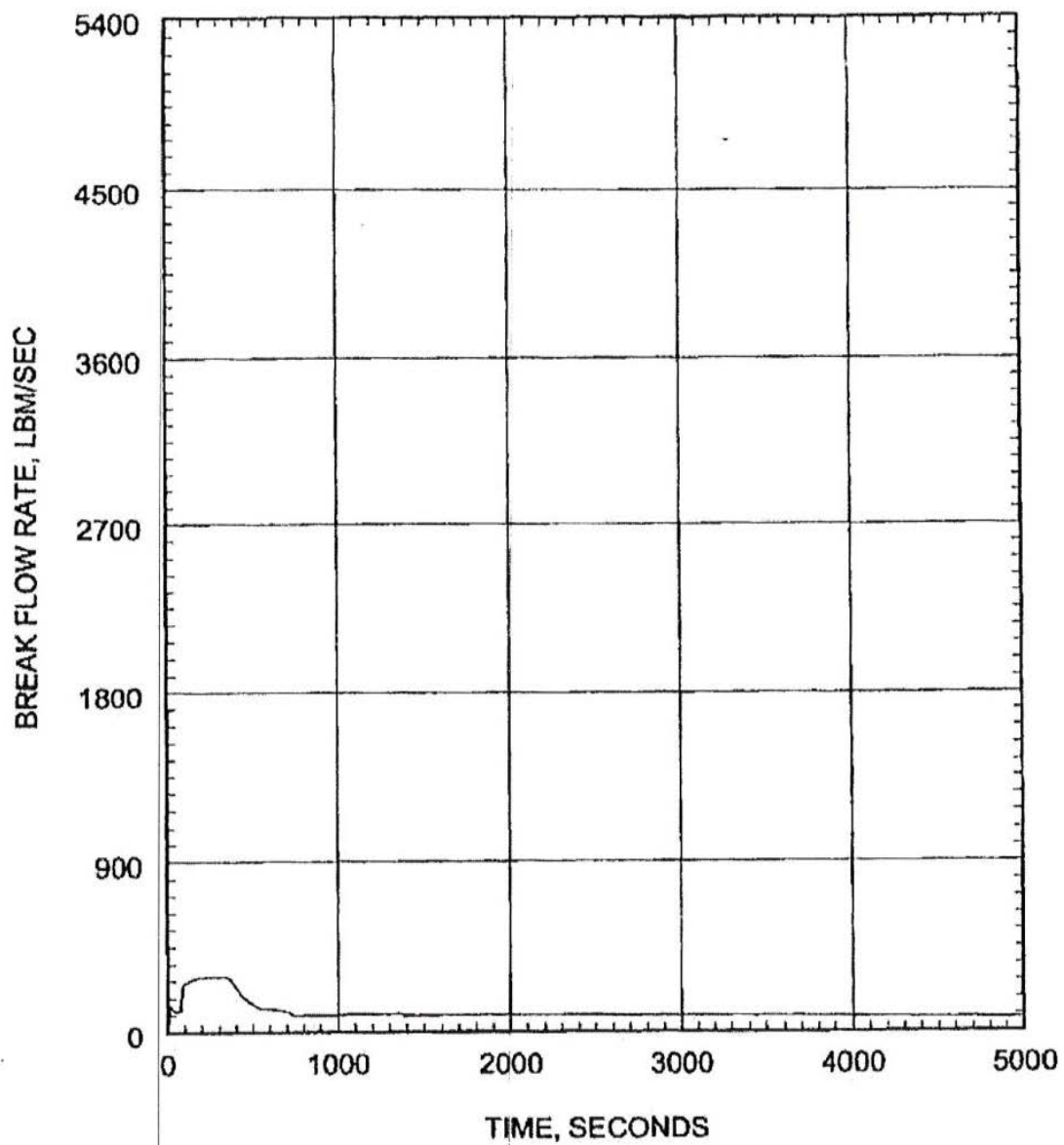
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
INNER VESSEL PRESSURE
CE16NGF FUEL

FIGURE 6.3.3b.3-7B

JUNE 2019

REVISION 20



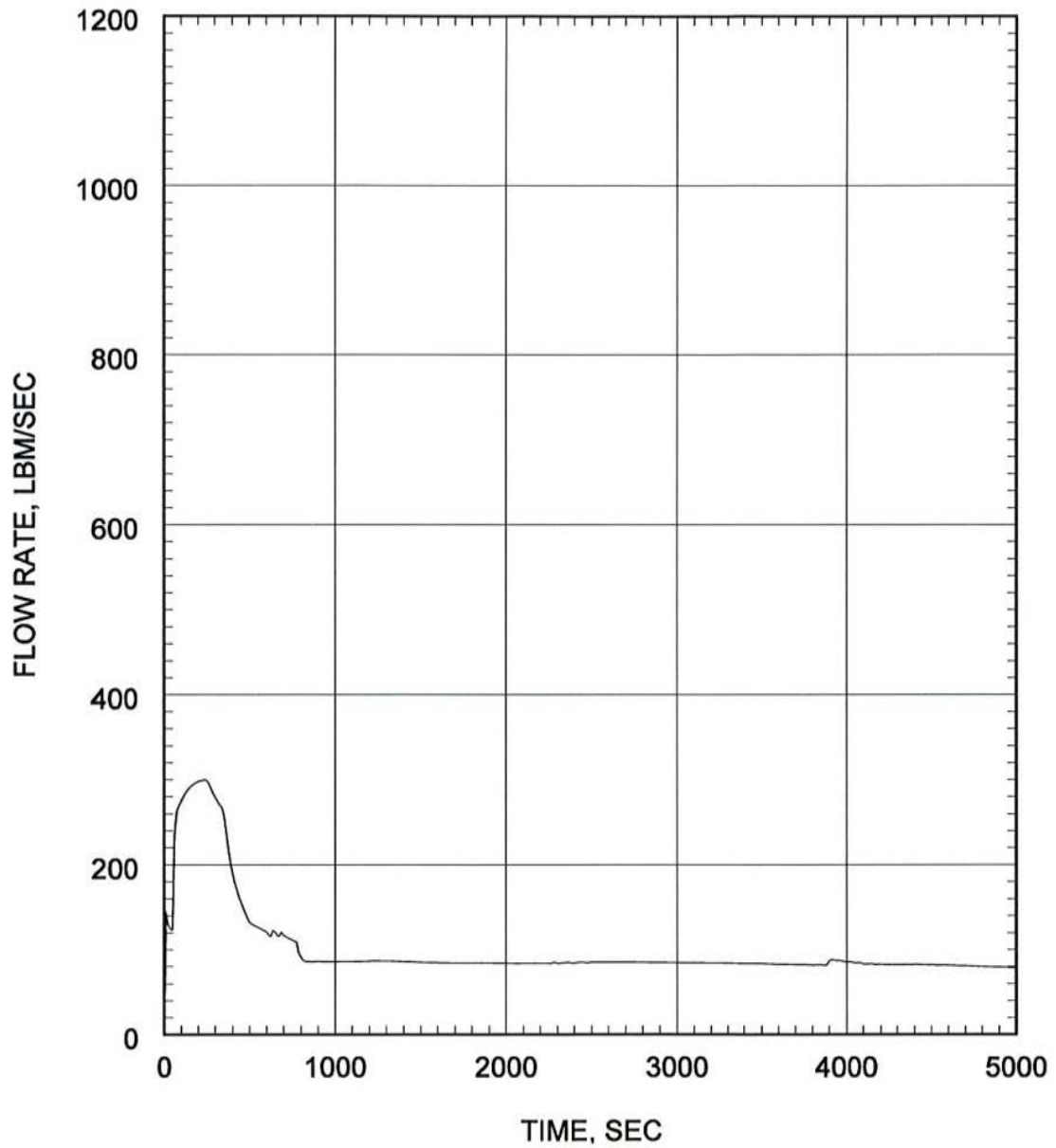
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
BREAK FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-7C

JUNE 2019

REVISION 20



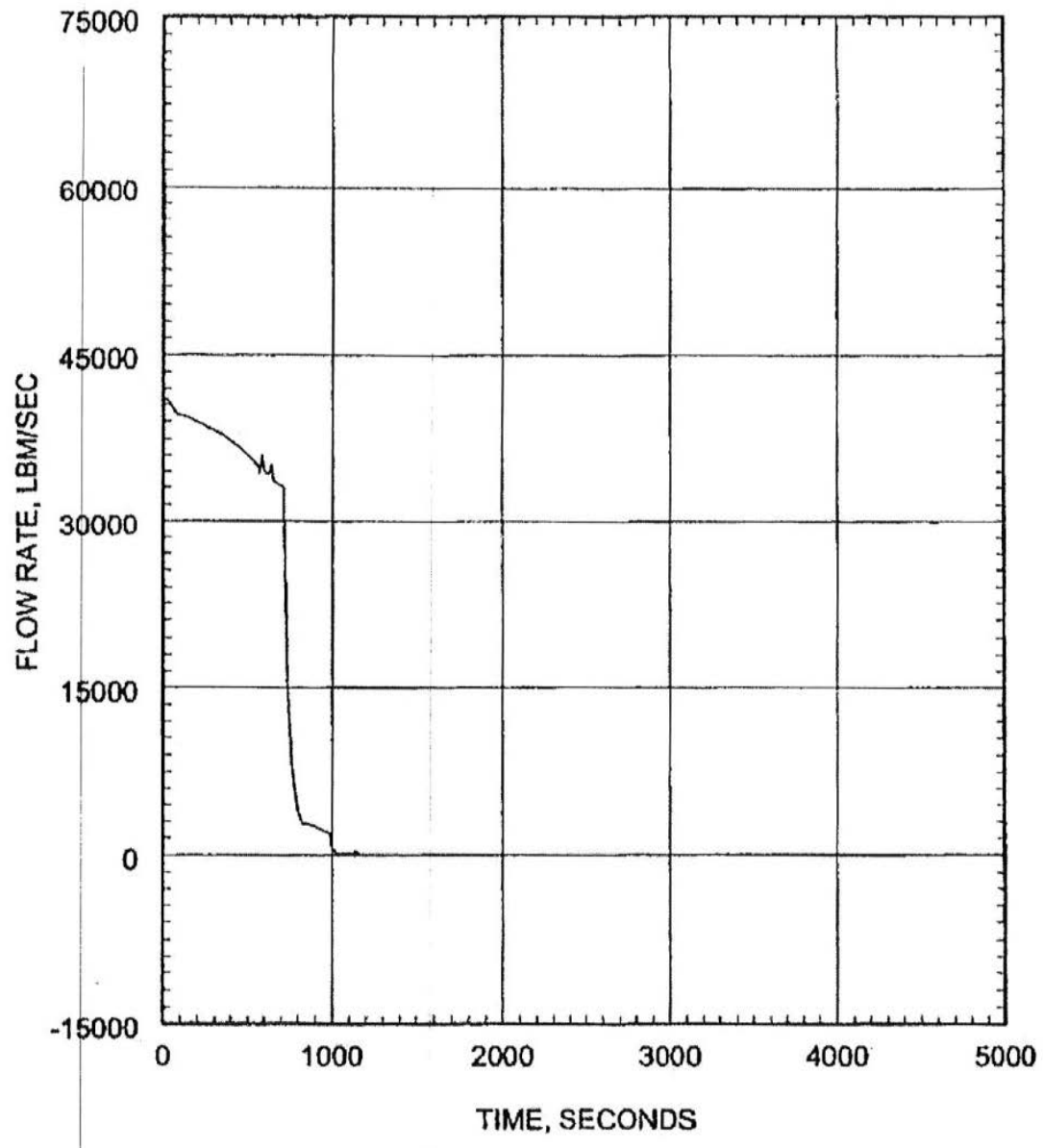
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
BREAK FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-7C

JUNE 2019

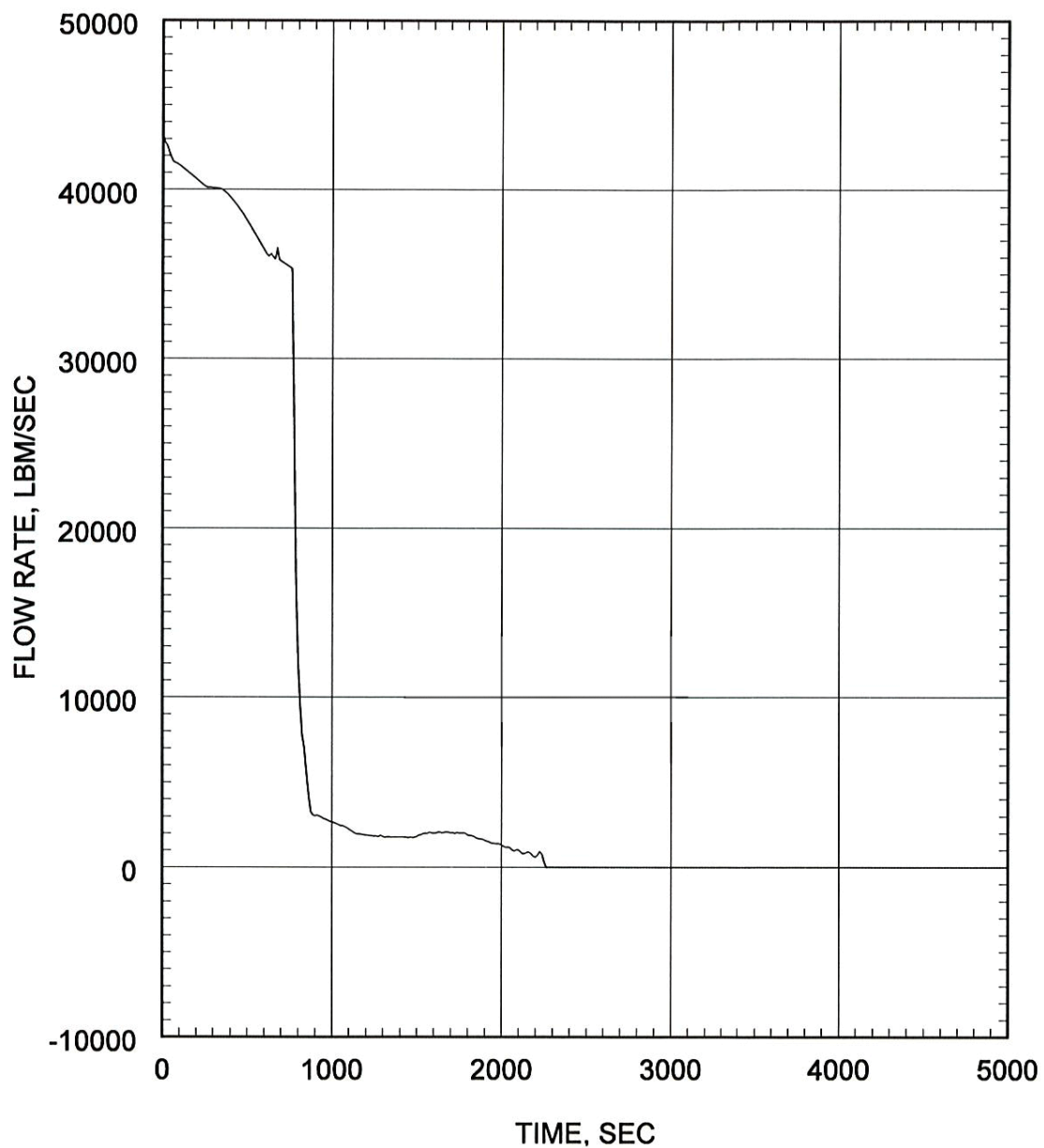
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
INNER VESSEL INLET FLOW RATE
CE16STD FUEL

FIGURE 6.3.3a.3-7D



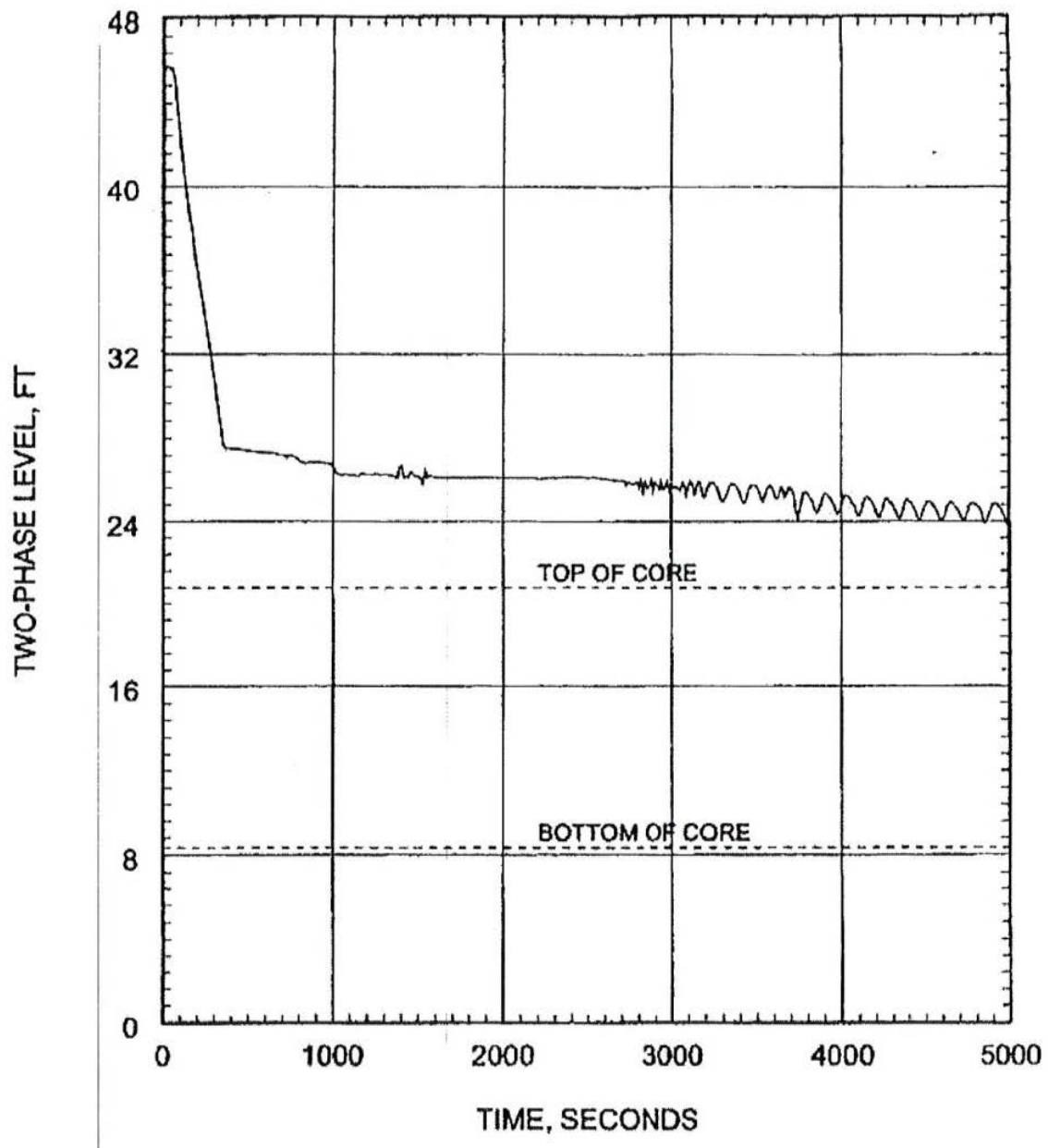
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
INNER VESSEL INLET FLOW RATE
CE16NGF FUEL

FIGURE 6.3.3b.3-7D

JUNE 2019

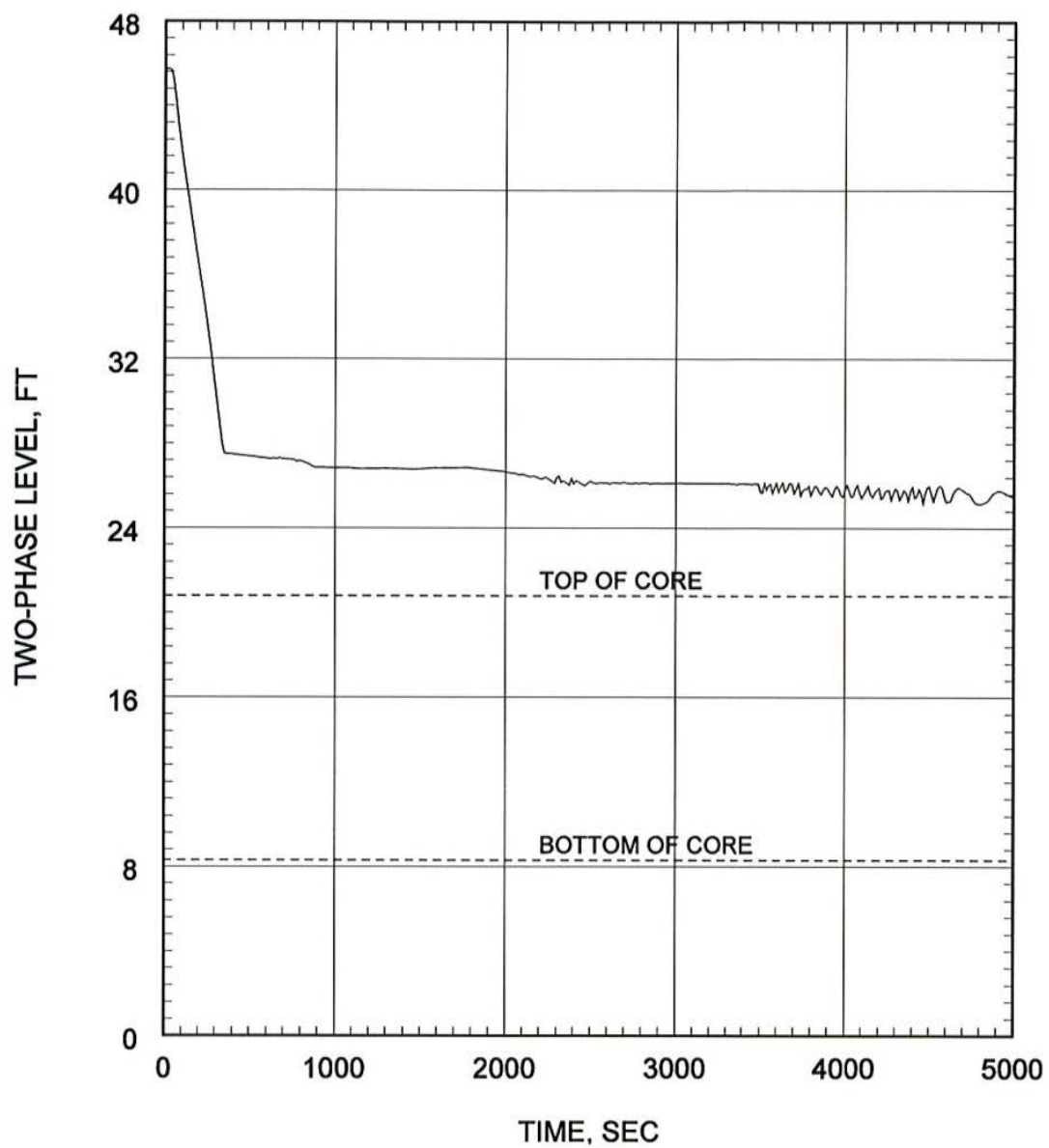
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16STD FUEL

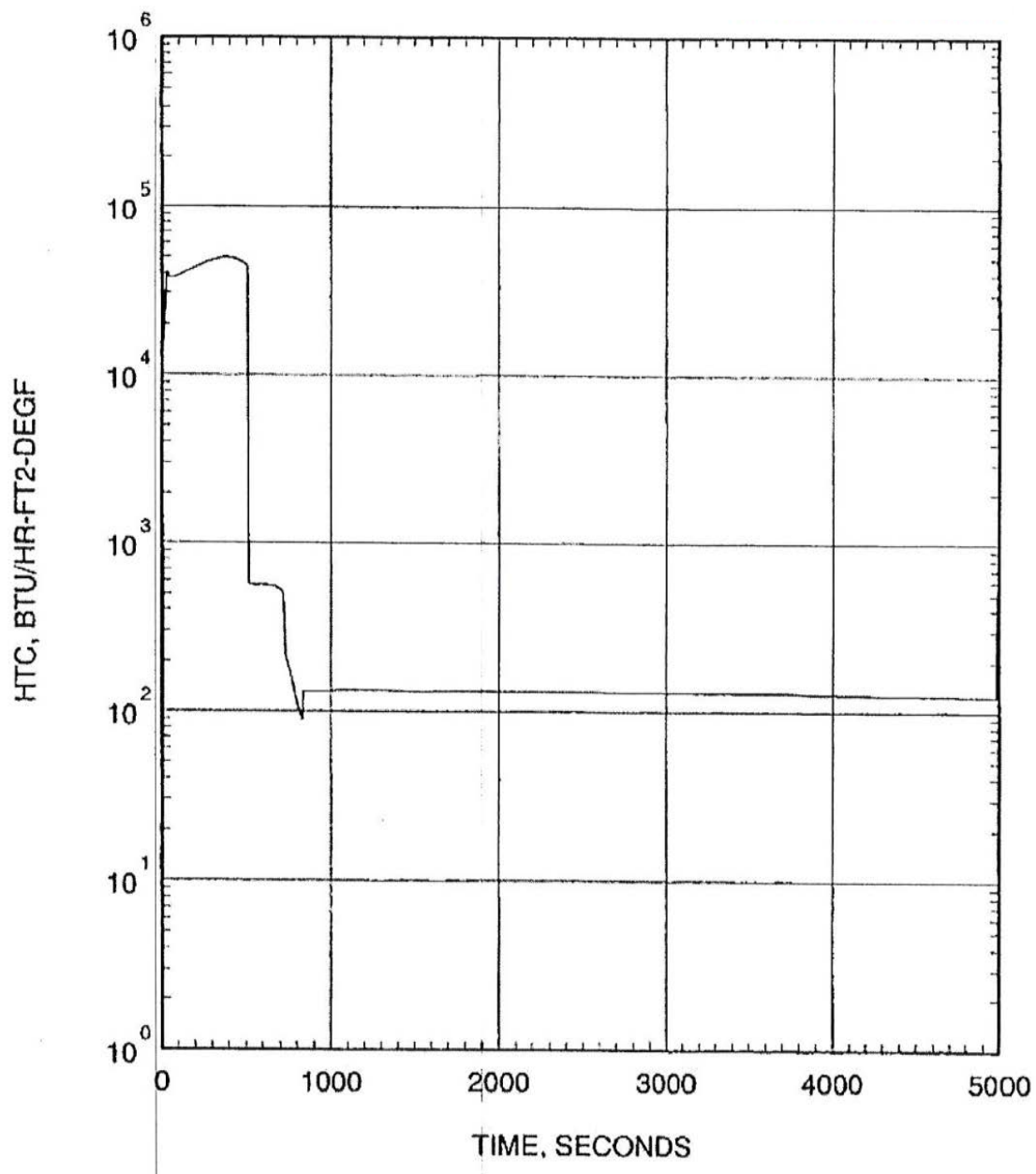
FIGURE 6.3.3a.3-7E



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
INNER VESSEL TWO-PHASE MIXTURE LEVEL
CE16NGF FUEL

FIGURE 6.3.3b.3-7E



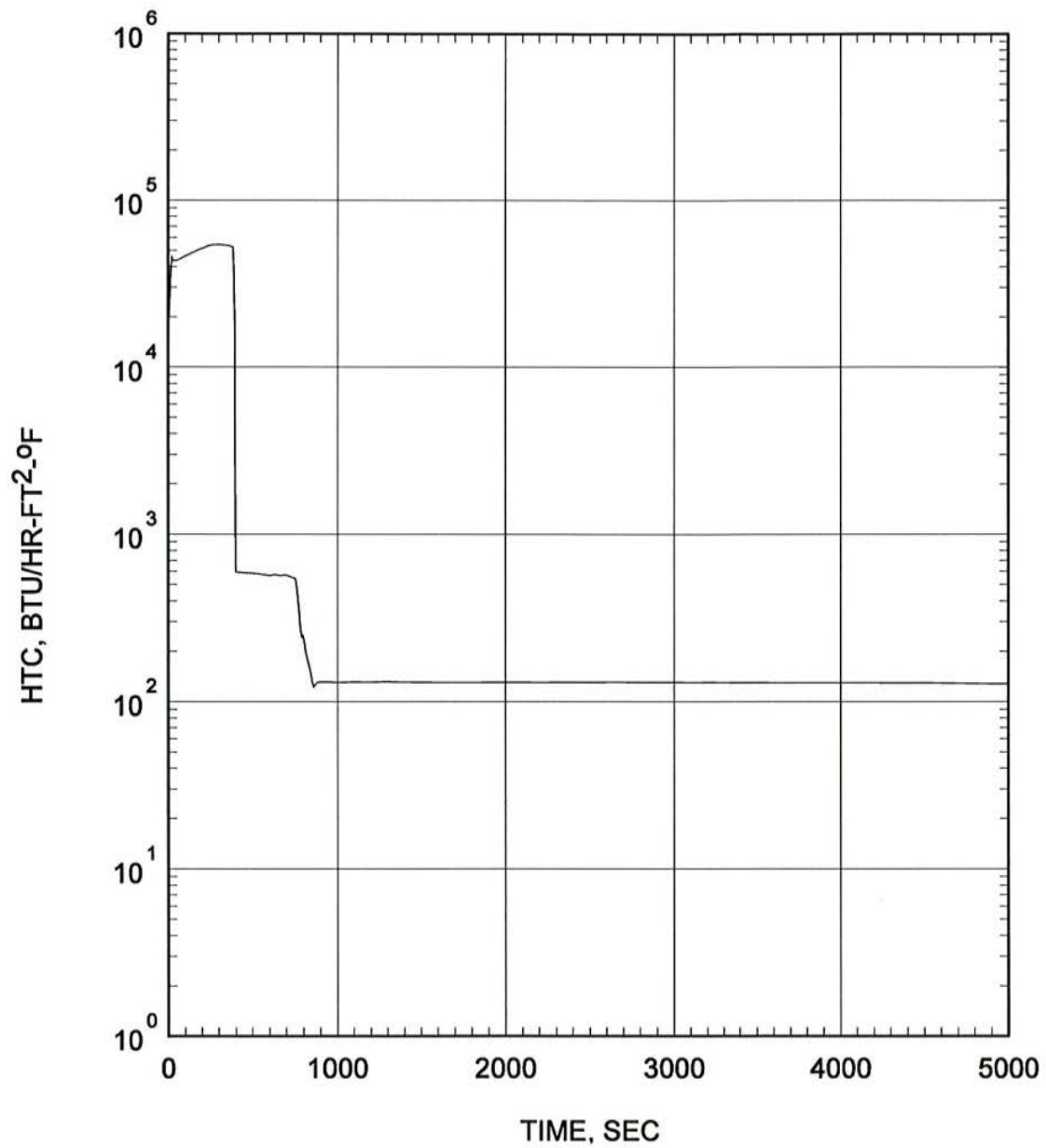
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-7F

JUNE 2019

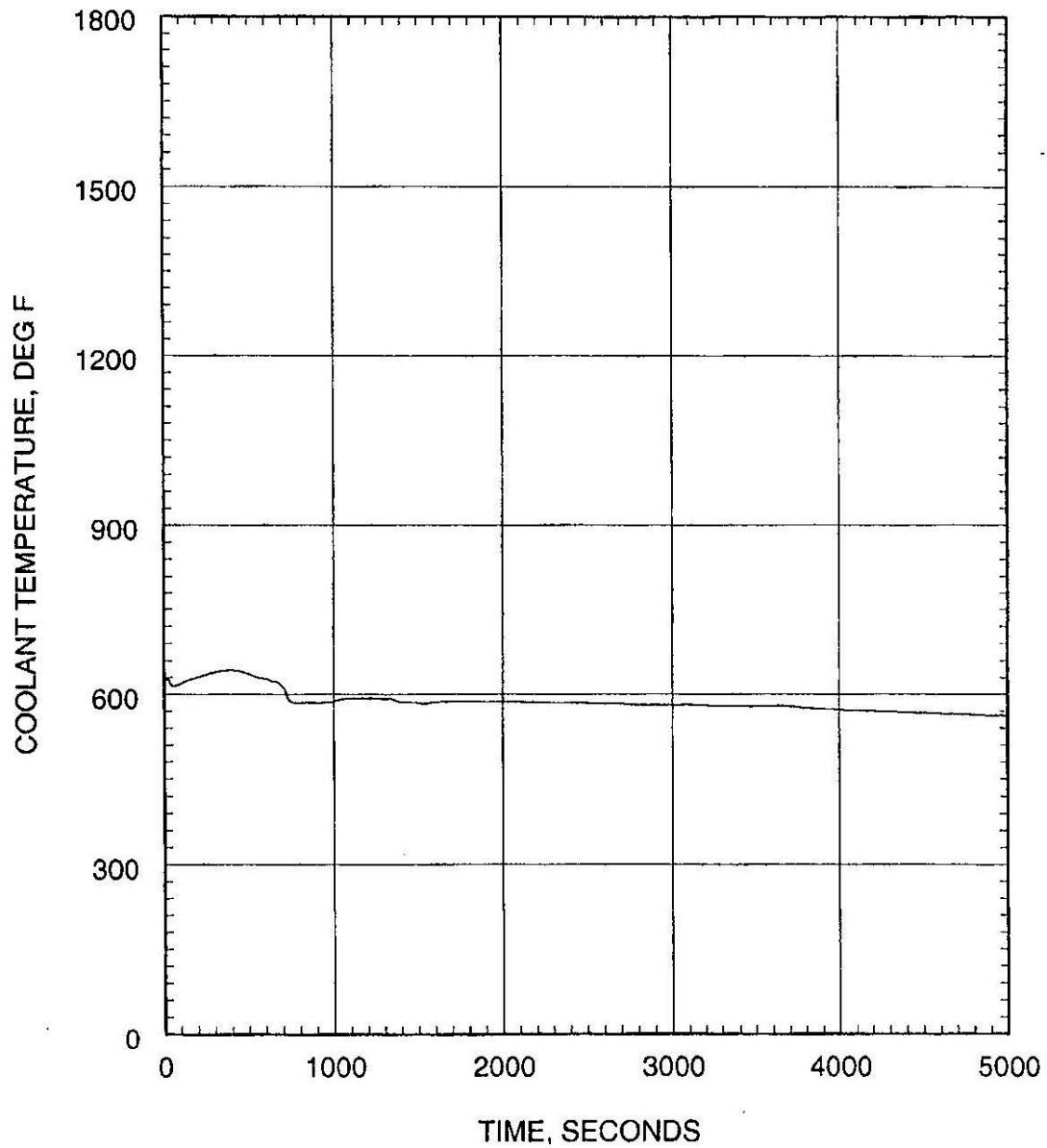
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
HEAT TRANSFER COEFFICIENT AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-7F



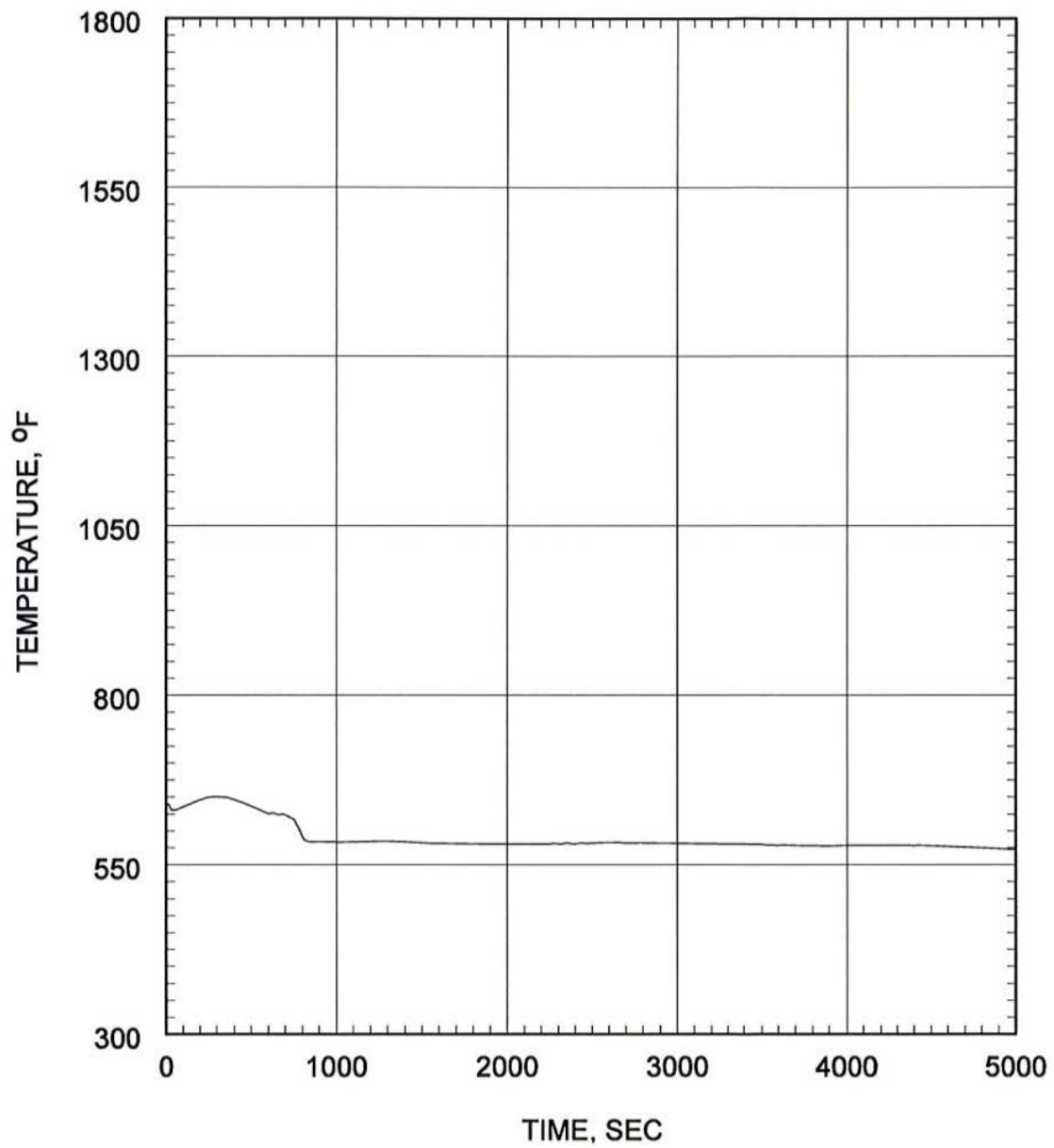
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
COOLANT TEMPERATURE AT HOT SPOT
CE16STD FUEL

FIGURE 6.3.3a.3-7G

JUNE 2019

REVISION 20



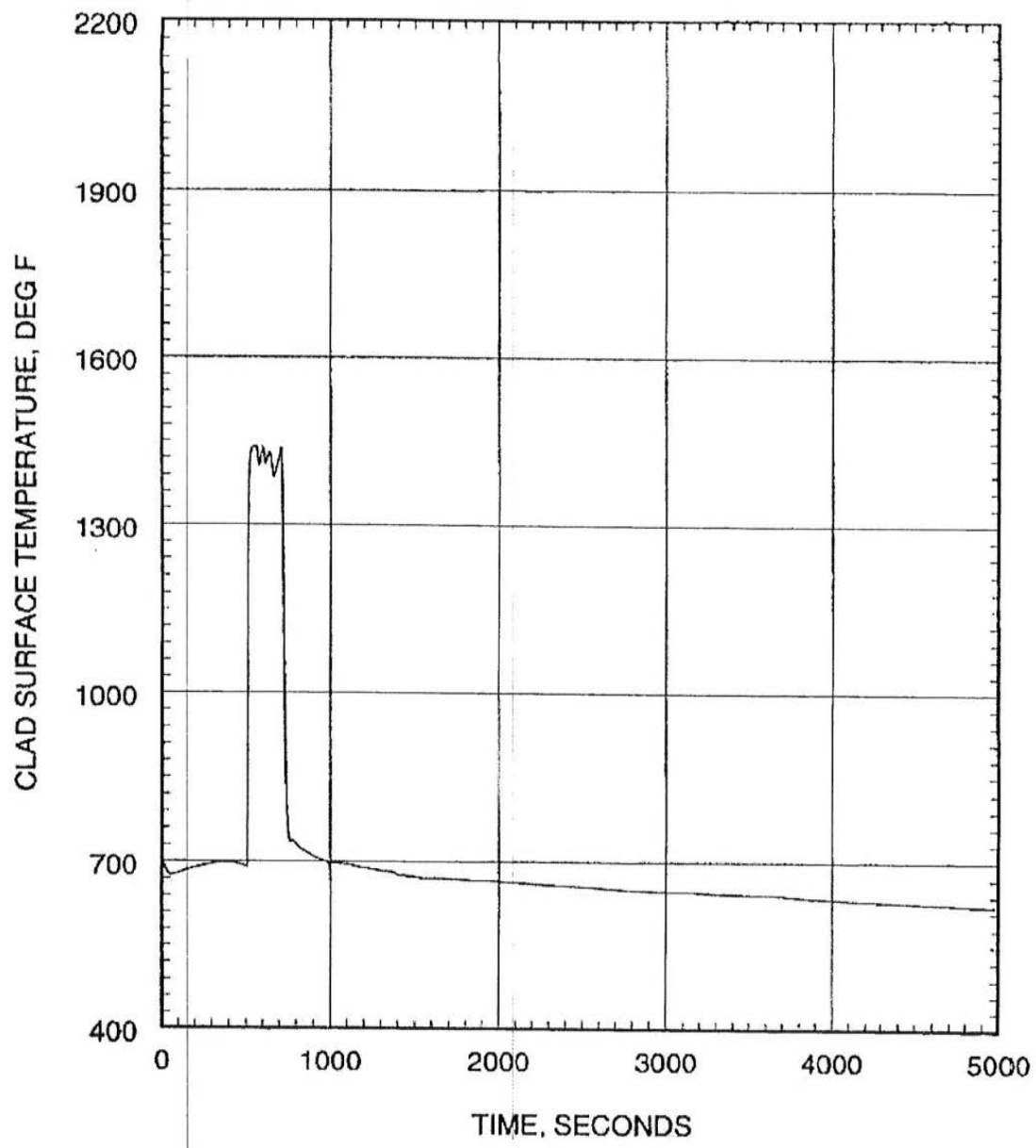
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
COOLANT TEMPERATURE AT HOT SPOT
CE16NGF FUEL

FIGURE 6.3.3b.3-7G

JUNE 2019

REVISION 20



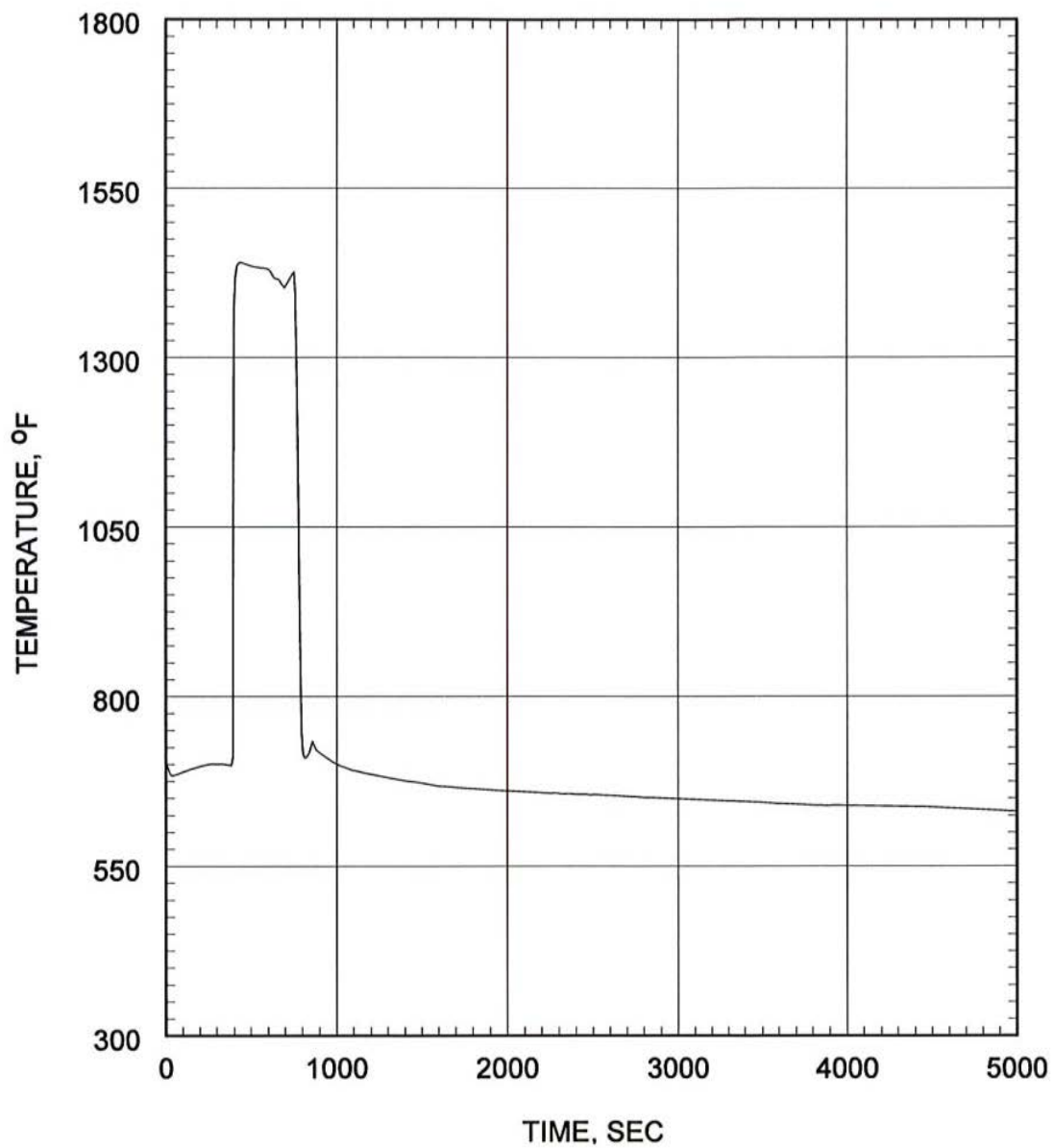
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16STD FUEL

FIGURE 6.3.3a.3-7H

JUNE 2019

REVISION 20



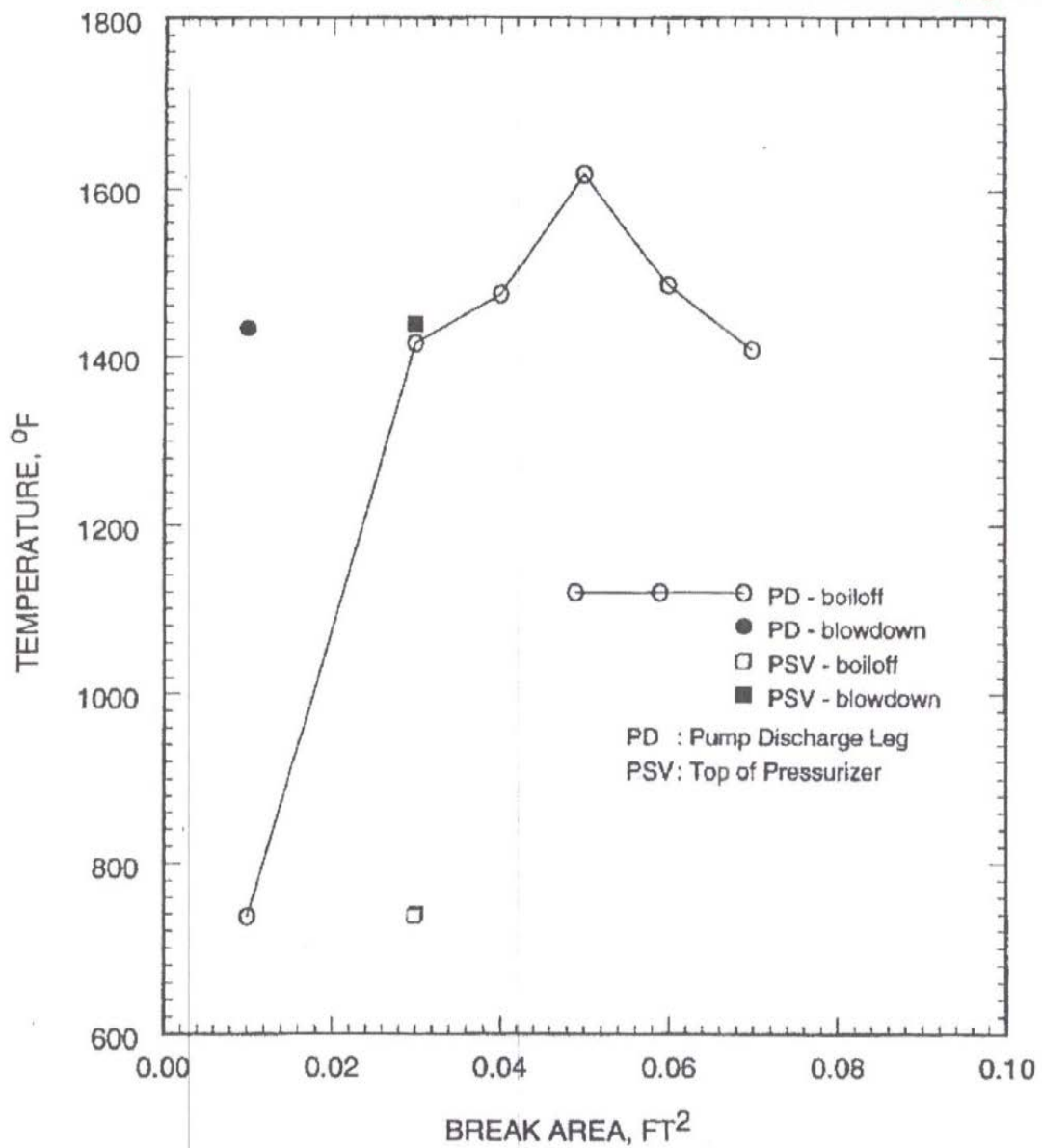
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BREAK AT PRESSURIZER SAFETY VALVE
HOT SPOT CLAD SURFACE TEMPERATURE
CE16NGF FUEL

FIGURE 6.3.3b.3-7H

JUNE 2019

REVISION 20



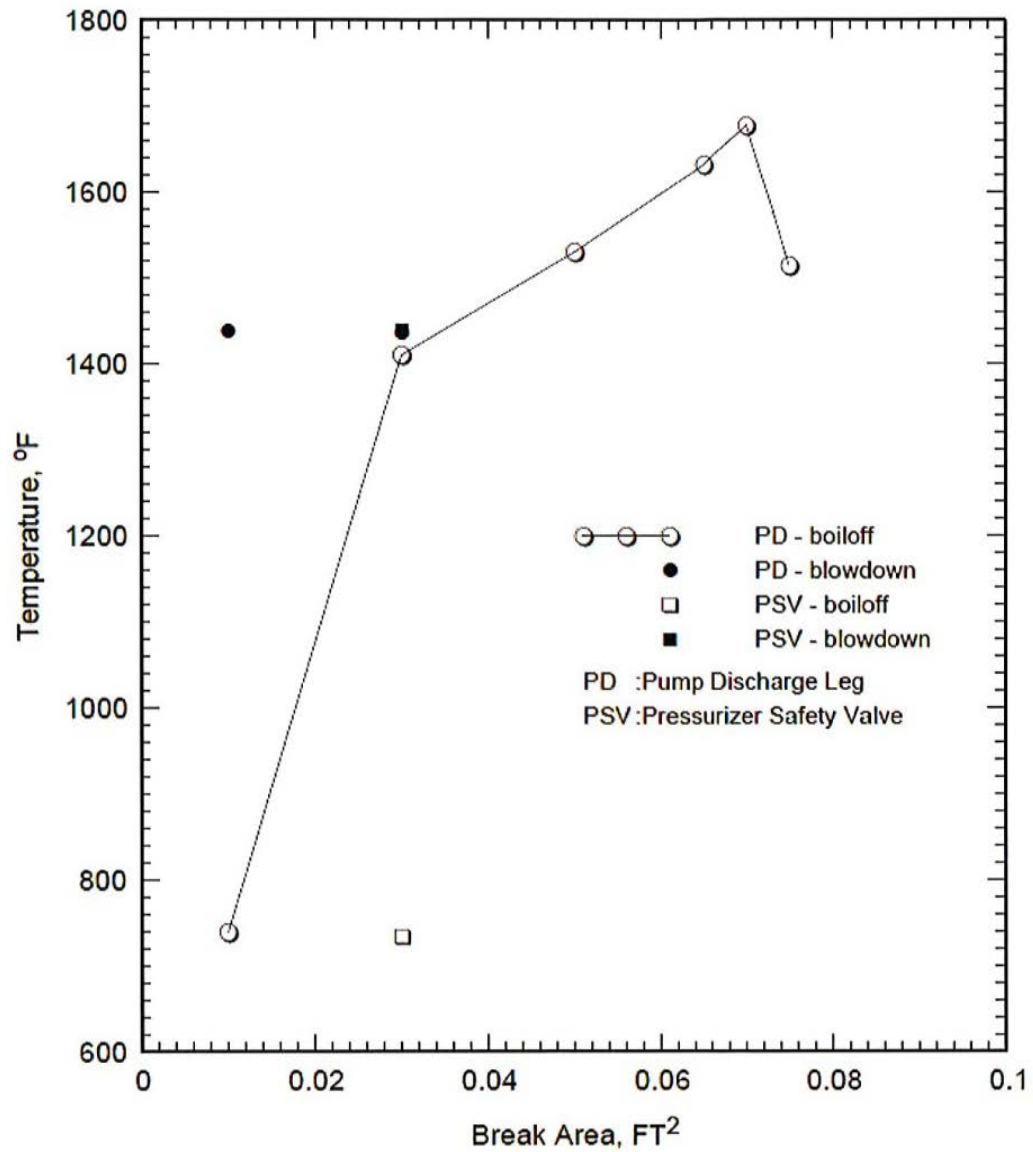
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

MAXIMUM HOT SPOT CLAD TEMPERATURE
VERSUS BREAK SIZE
CE16STD FUEL

FIGURE 6.3.3a.3-8

JUNE 2019

REVISION 20



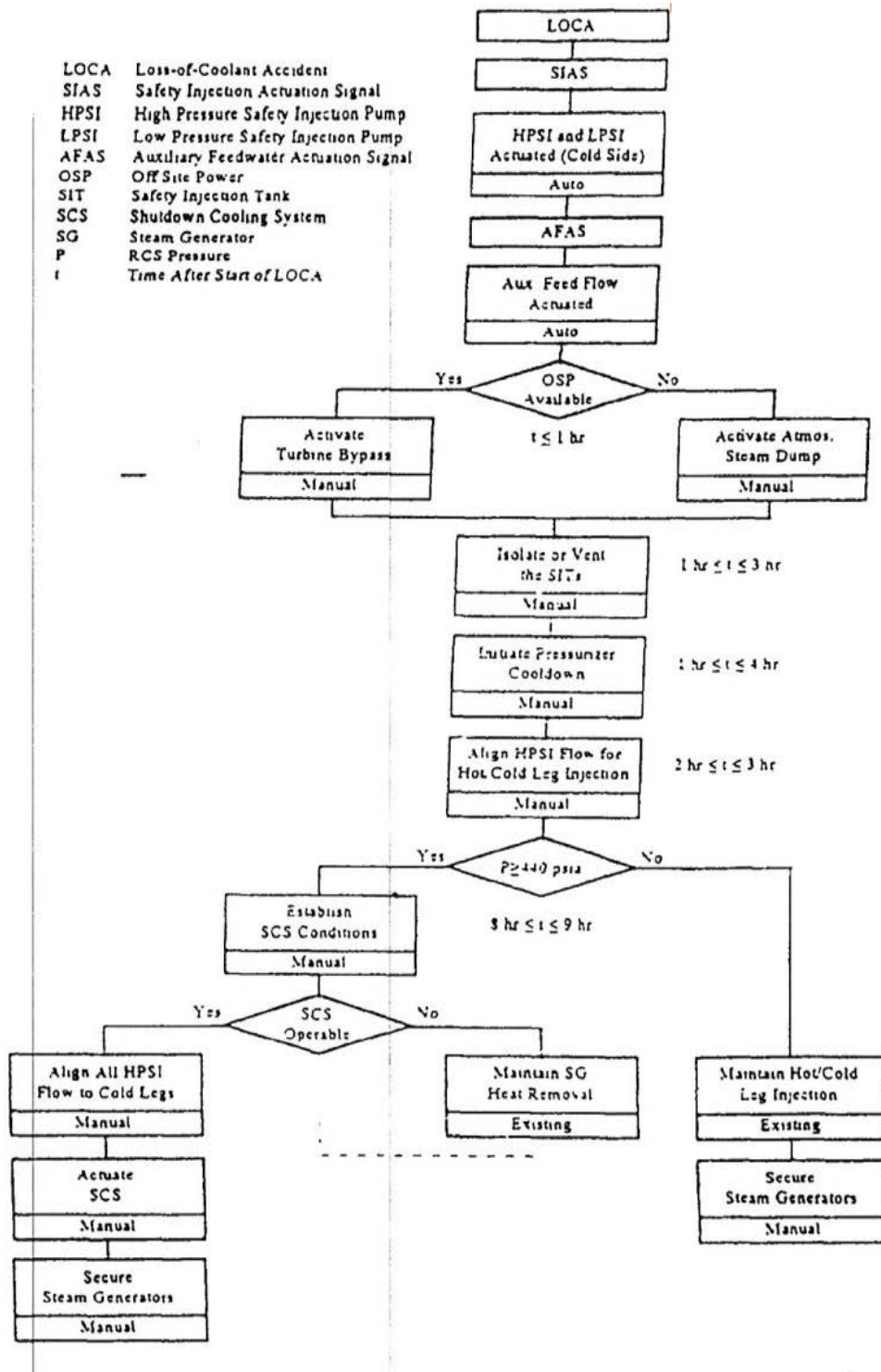
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

MAXIMUM HOT SPOT CLAD TEMPERATURE
VERSUS BREAK SIZE
CE16NGF FUEL

FIGURE 6.3.3b.3-8

JUNE 2019

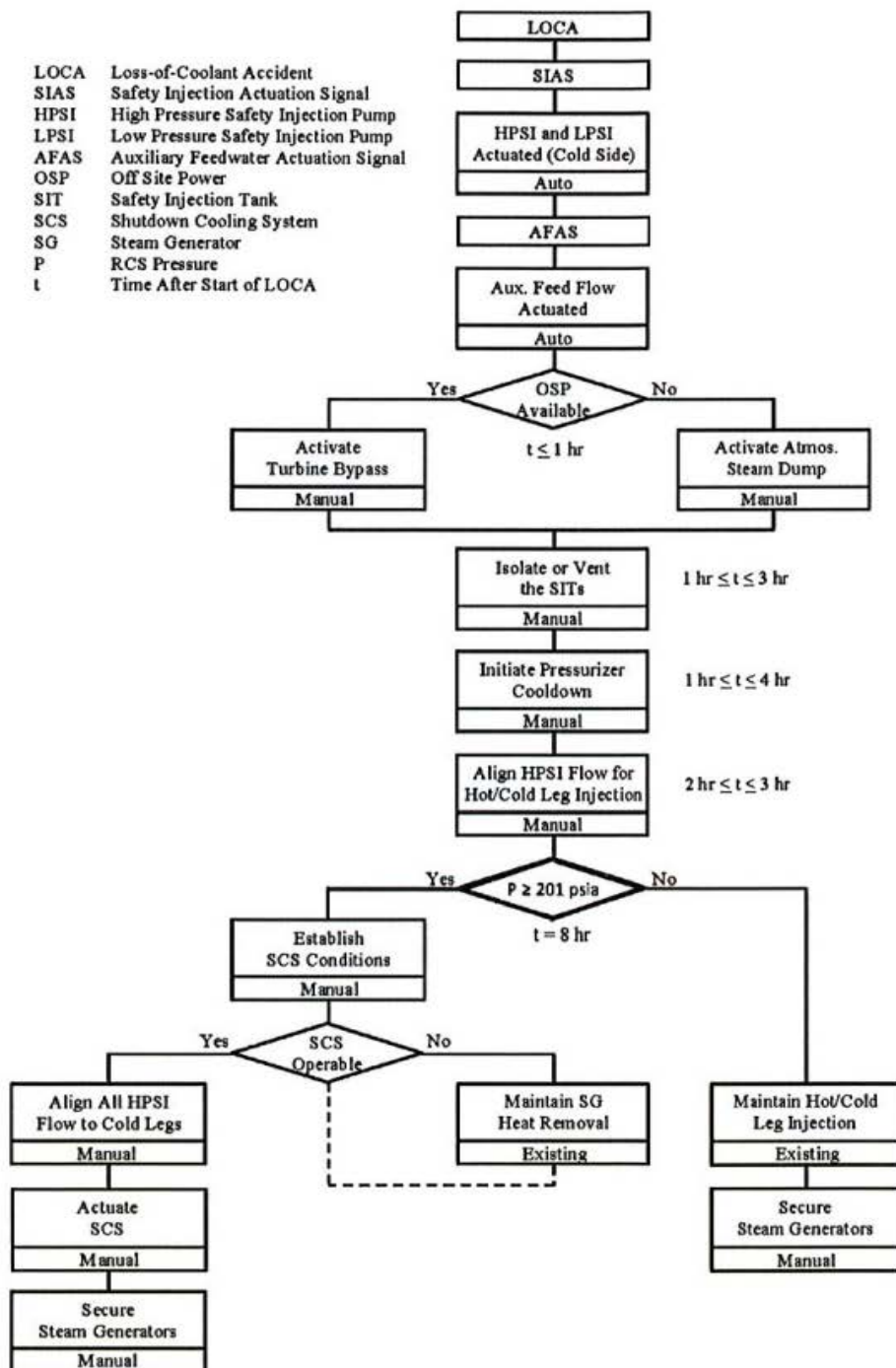
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LONG TERM COOLING PLAN
CE16STD FUEL

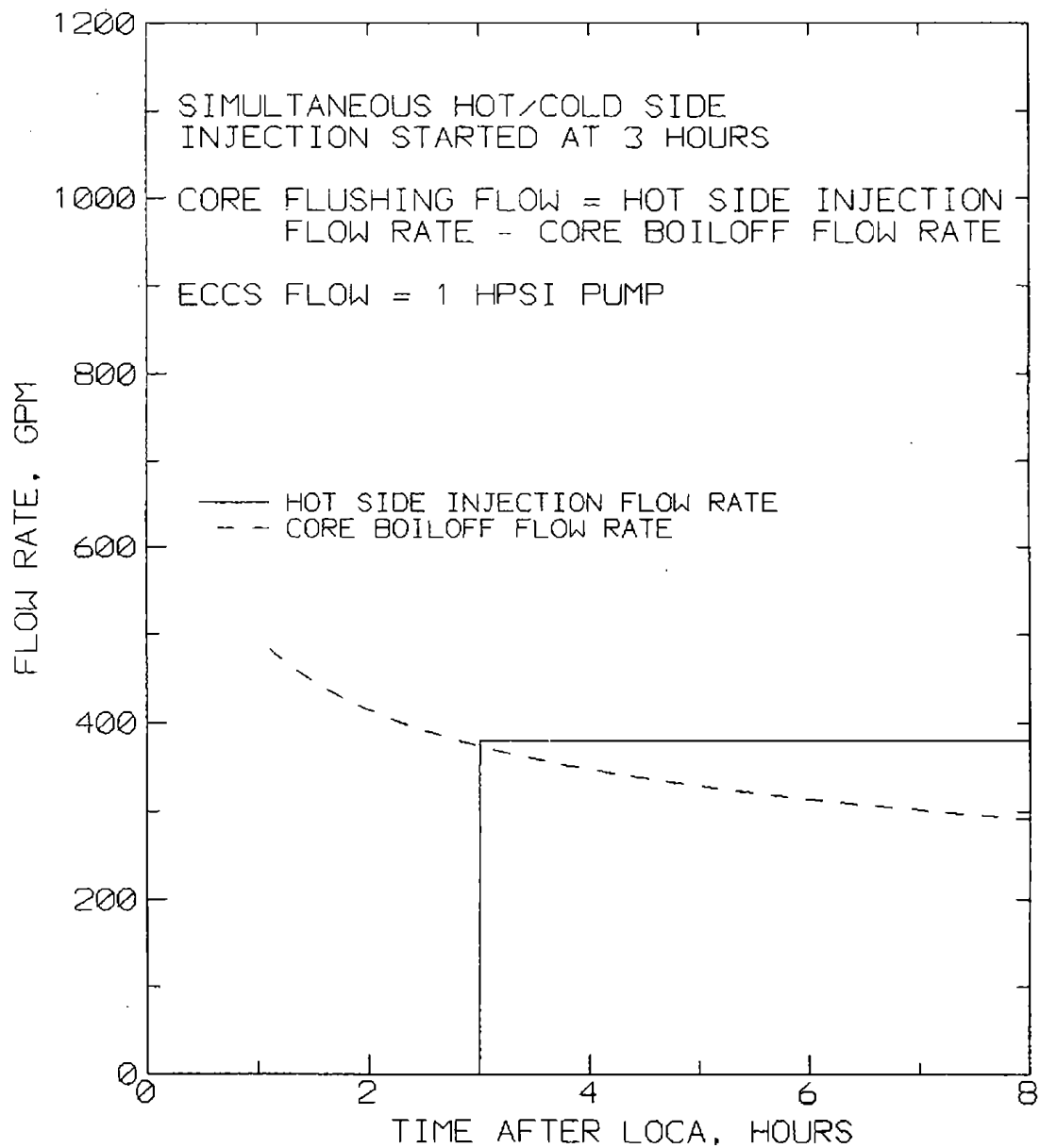
FIGURE 6.3.3a.4-1



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LONG TERM COOLING PLAN
CE16NGF FUEL

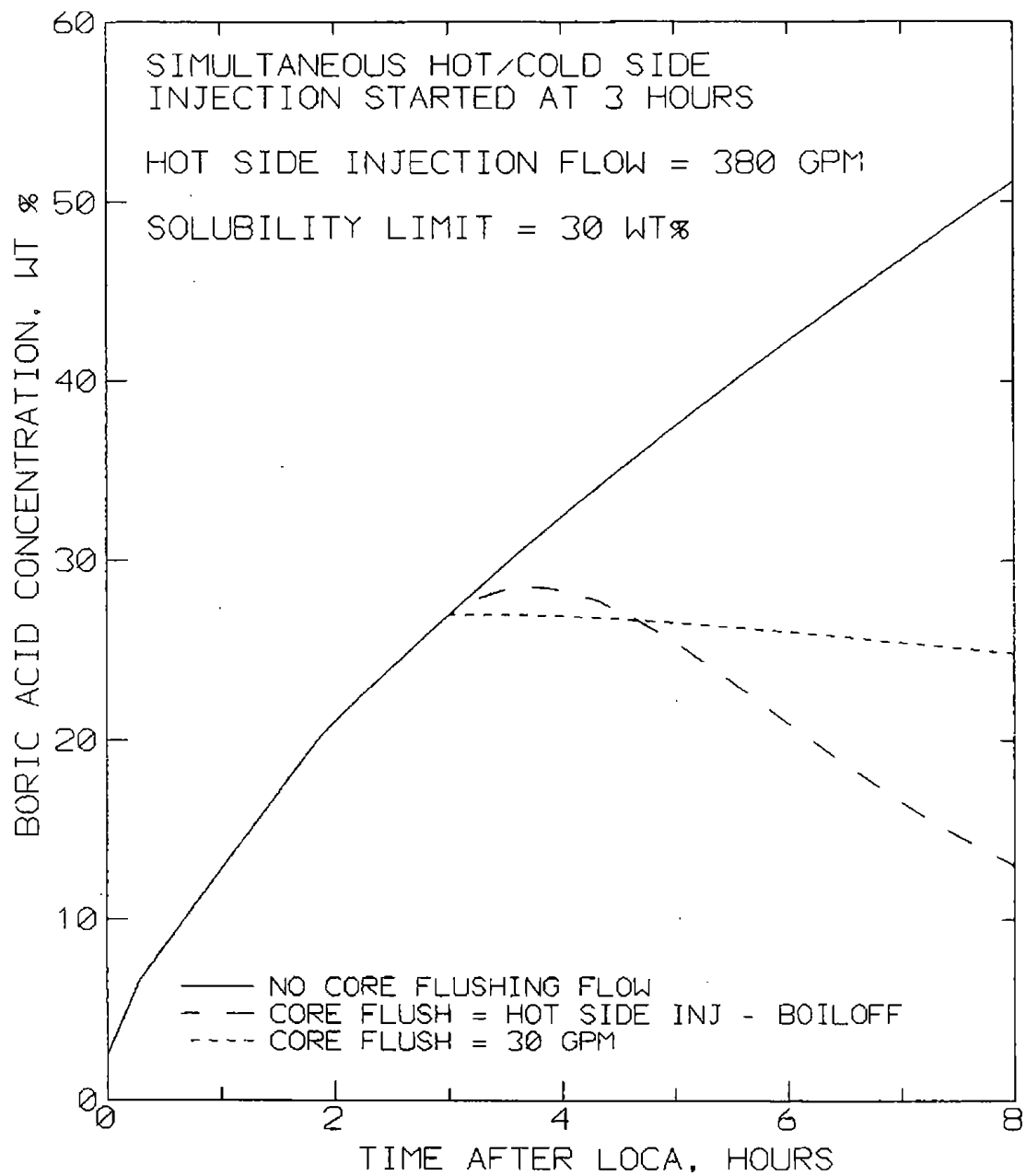
FIGURE 6.3.3b.4-1



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CORE FLUSH BY HOT SIDE INJECTION FOR 9.8 Ft²
COLD LEG BREAK CE16STD FUEL

FIGURE 6.3.3a.4-2



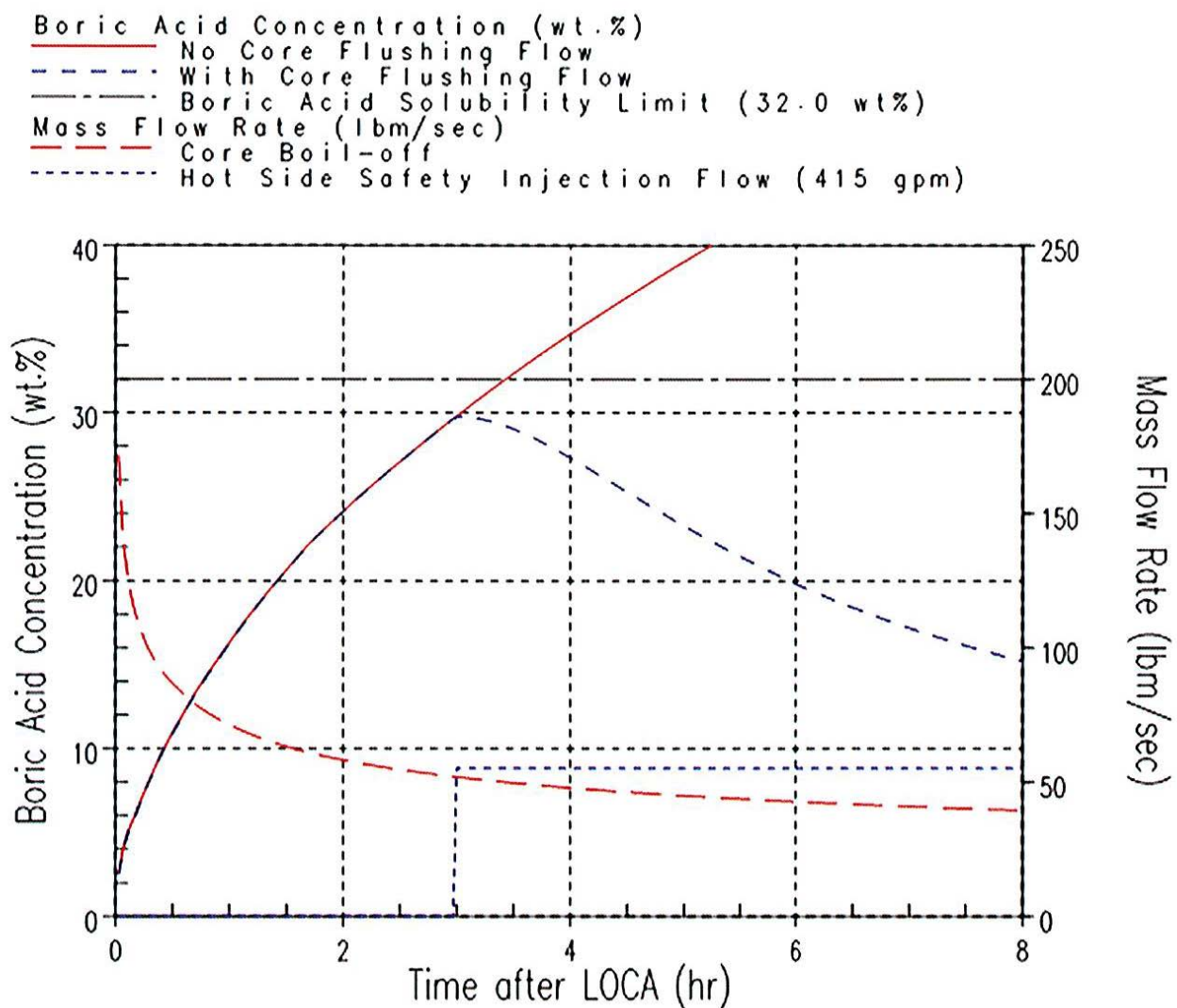
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

INNER VESSEL BORIC ACID CONCENTRATION
VS TIME
CE16STD FUEL

FIGURE 6.3.3a.4-3

JUNE 2019

REVISION 20



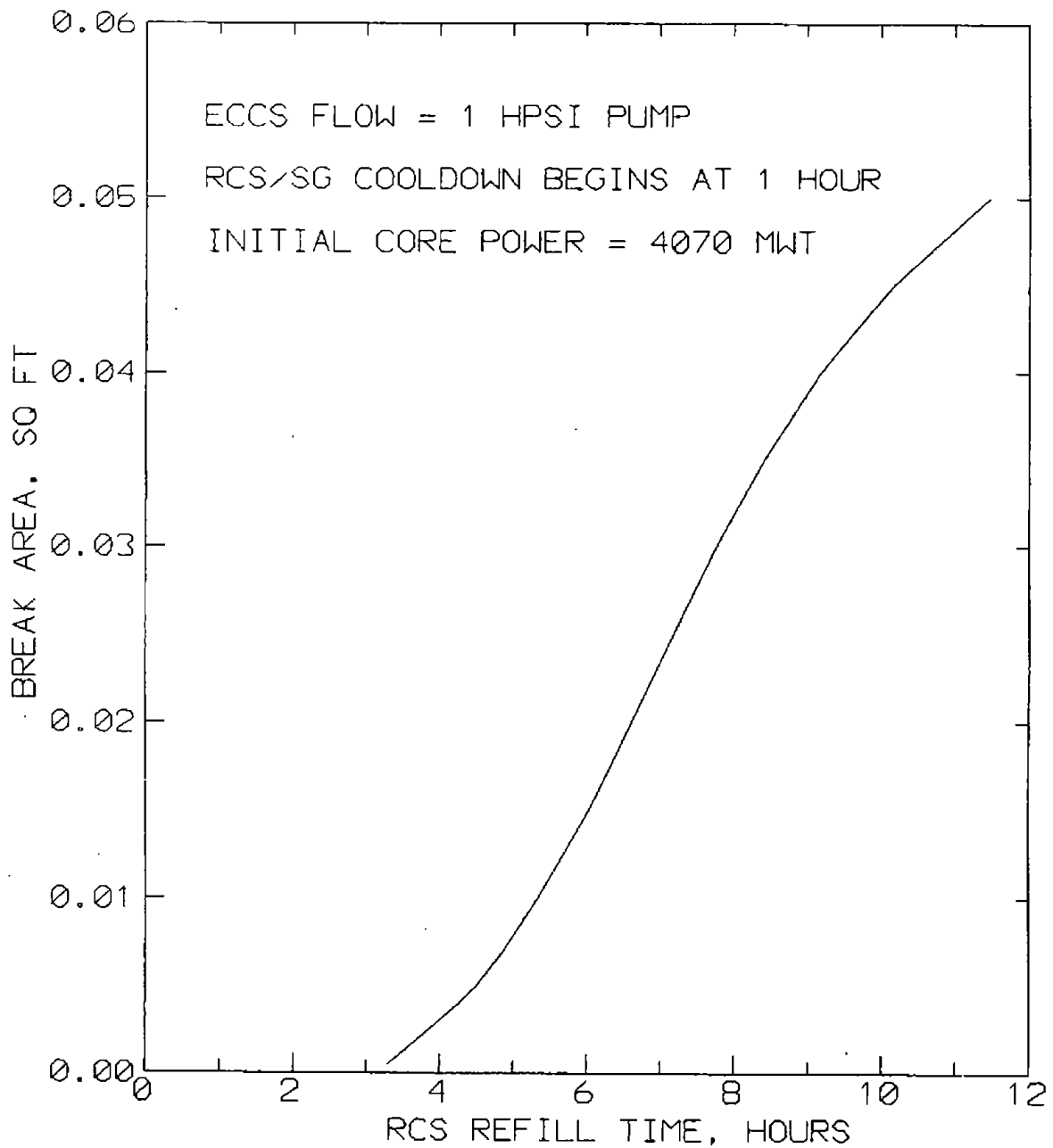
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BORIC ACID CONCENTRATION IN THE CORE
VS TIME
CE16NGF FUEL

FIGURE 6.3.3b.4-3

JUNE 2019

REVISION 20



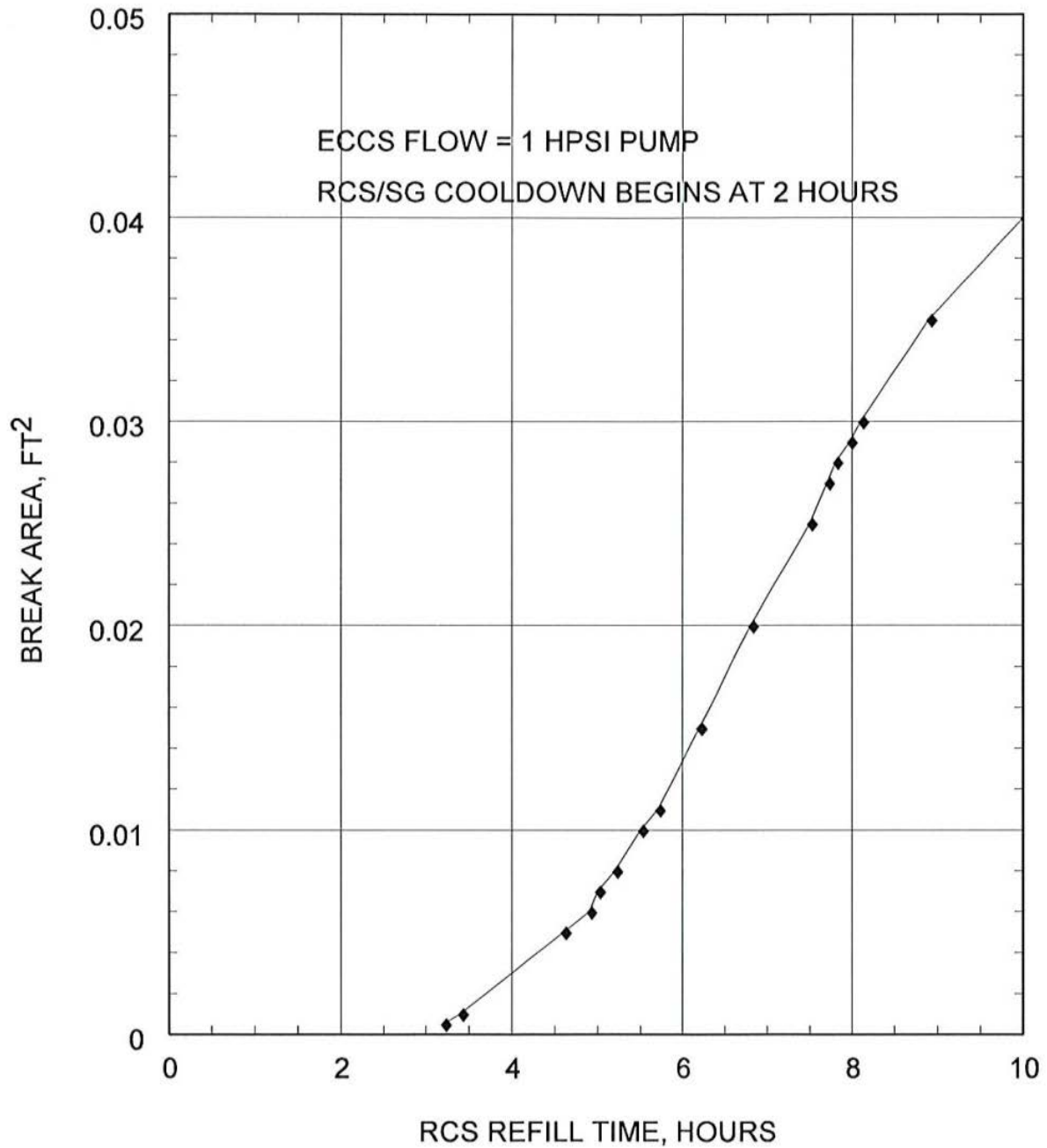
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

RCS REFILL TIME VS BREAK AREA
CE16STD FUEL

FIGURE 6.3.3a.4-4

JUNE 2019

REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

RCS REFILL TIME VS BREAK AREA
CE16NGF FUEL

FIGURE 6.3.3b.4-4

JUNE 2019

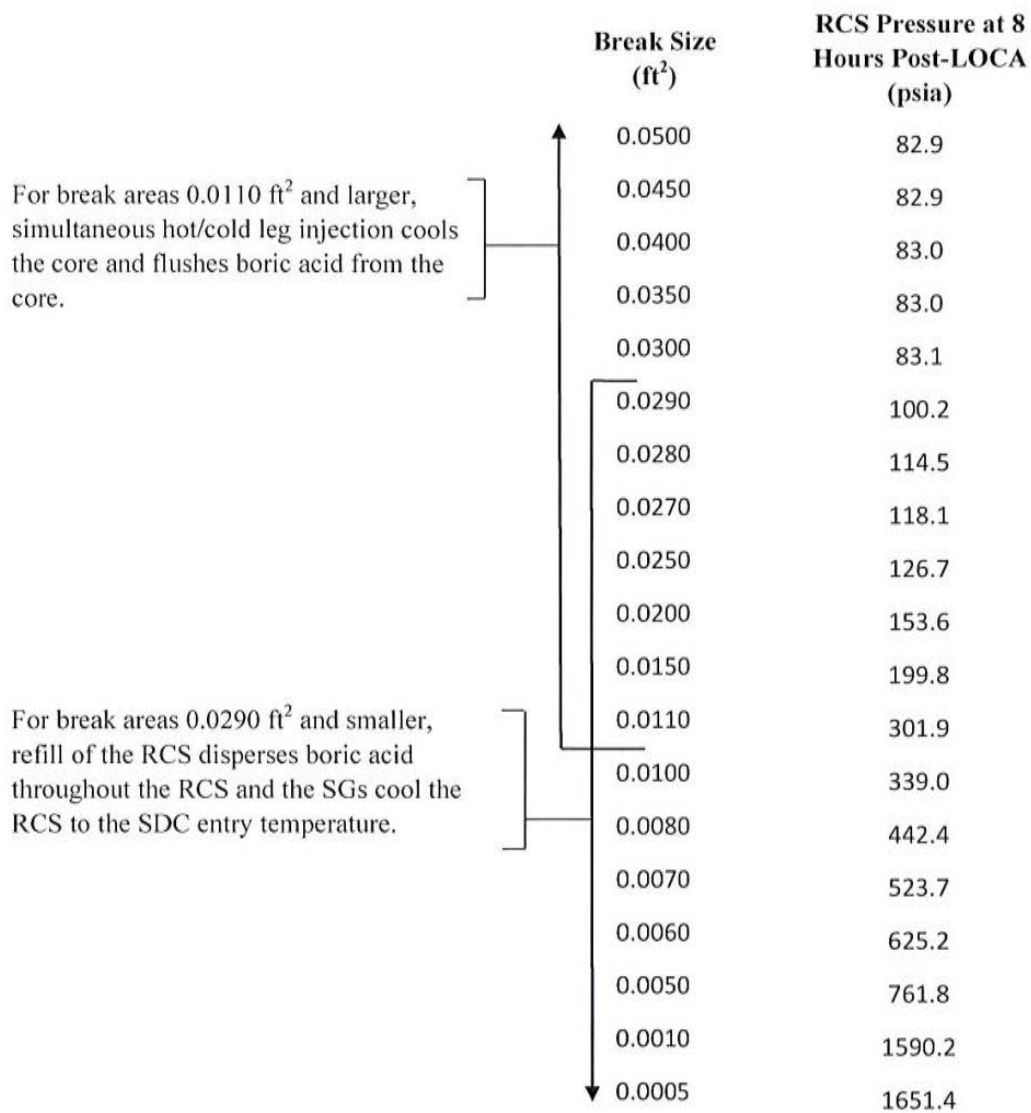
REVISION 20

	Break Area, ft ²	RCS Pressure at 8 Hours, psia
Simultaneous hot and cold side injection can cool the core and flush boric acid from the reactor vessel for these breaks.	10	17
	◦	◦
	◦	◦
	◦	◦
	0.050	81
	0.045	81
	0.040	81
	0.035	81
	0.030	107
	0.025	127
RCS refill can disperse boric acid and the SGs can cool the RCS to SCS entry conditions for these breaks.	0.020	155
	0.015	204
	0.010	346
	0.007	533
	0.006	639
	0.005	776
	0.004	950
	0.003	1159
	0.002	1392
	0.001	1594
	0.0005	1653

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

OVERLAP OF ACCEPTABLE LTC MODES IN
TERMS OF COLD LEG BREAK SIZE
CE16STD FUEL

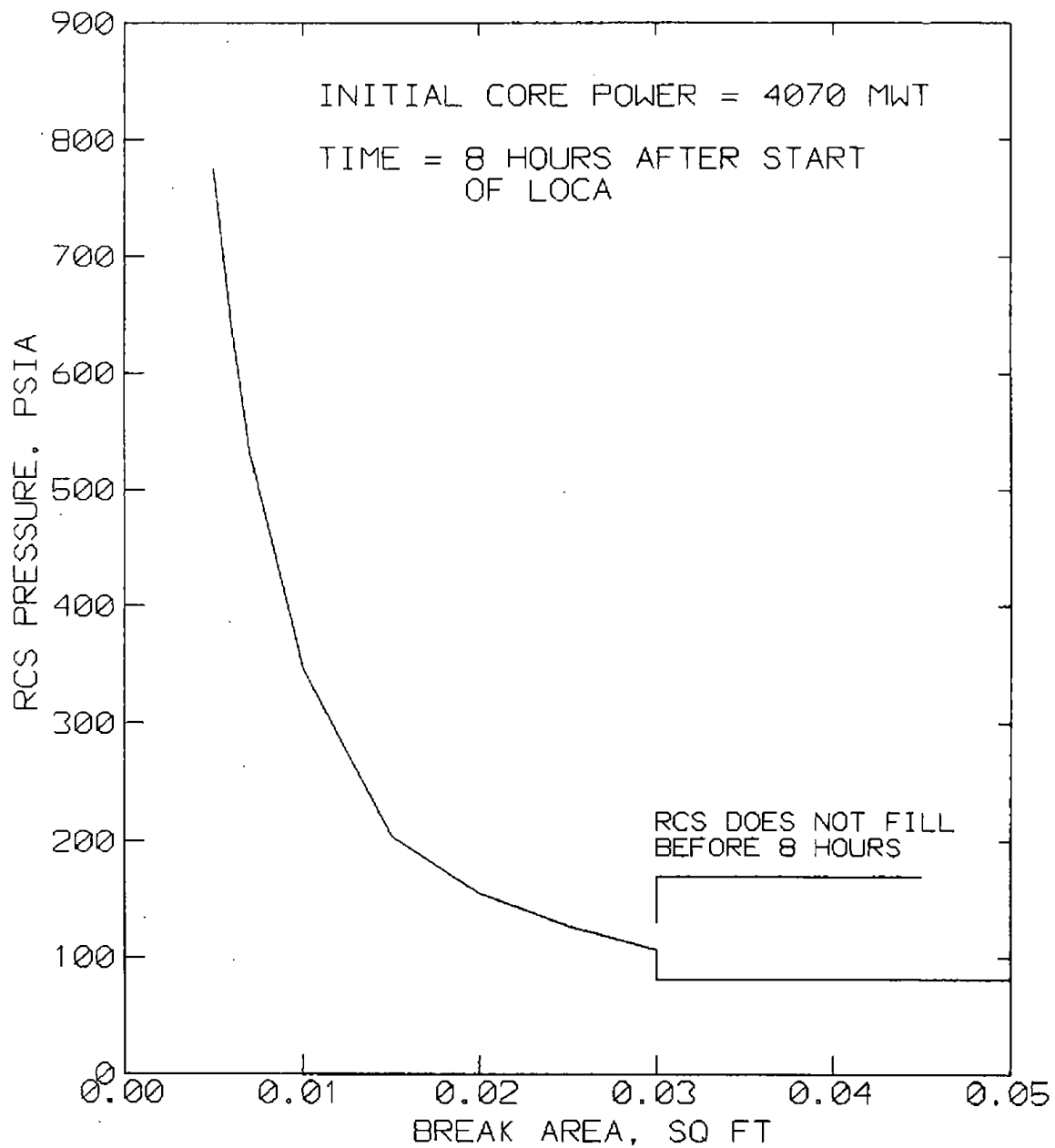
FIGURE 6.3.3a.4-5



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

OVERLAP OF ACCEPTABLE LTC MODES IN
TERMS OF COLD LEG BREAK SIZE
CE16NGF FUEL

FIGURE 6.3.3b.4-5



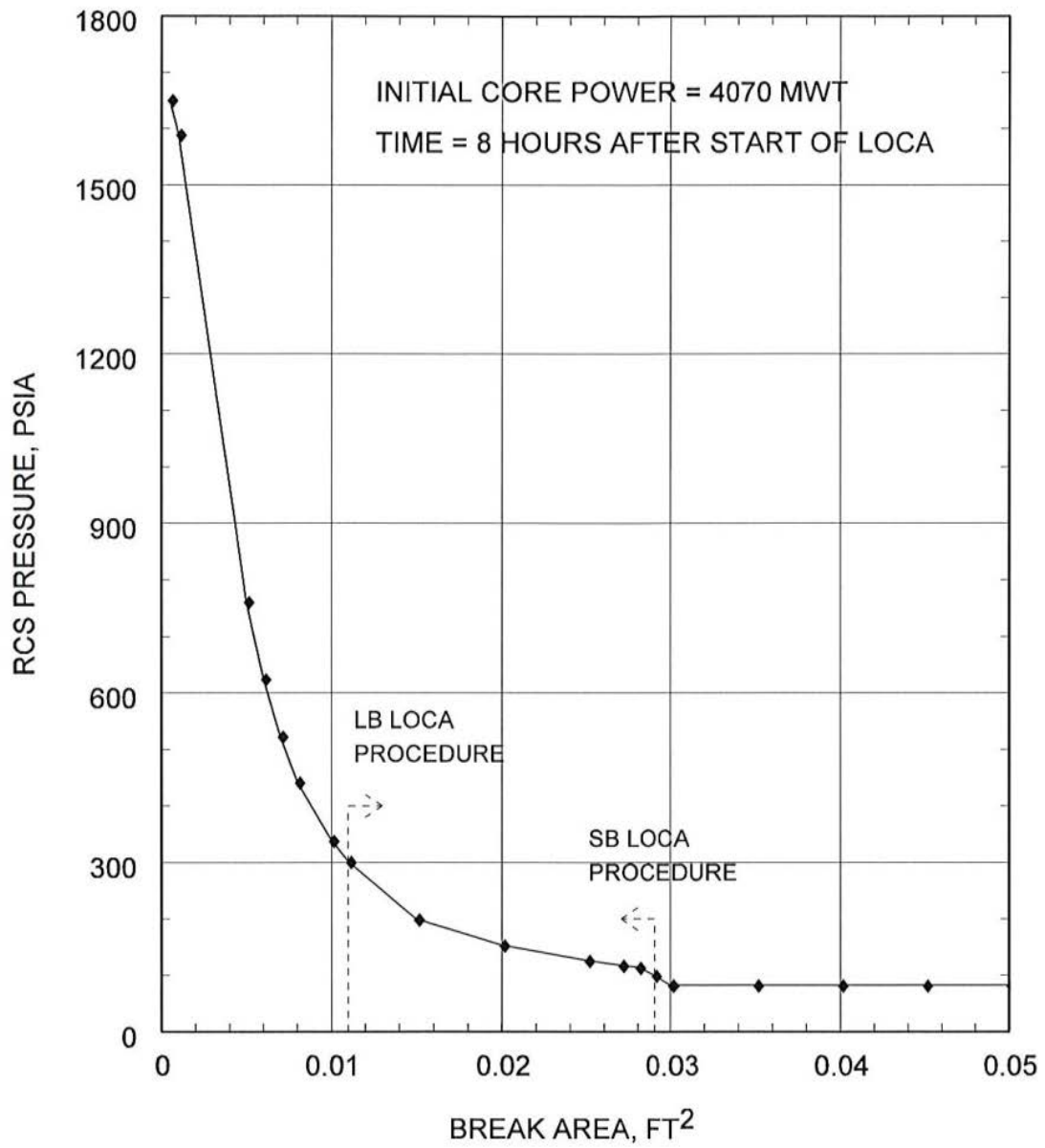
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

RCS PRESSURE AFTER REFILL VS BREAK AREA
CE16STD FUEL

FIGURE 6.3.3a.4-6

JUNE 2019

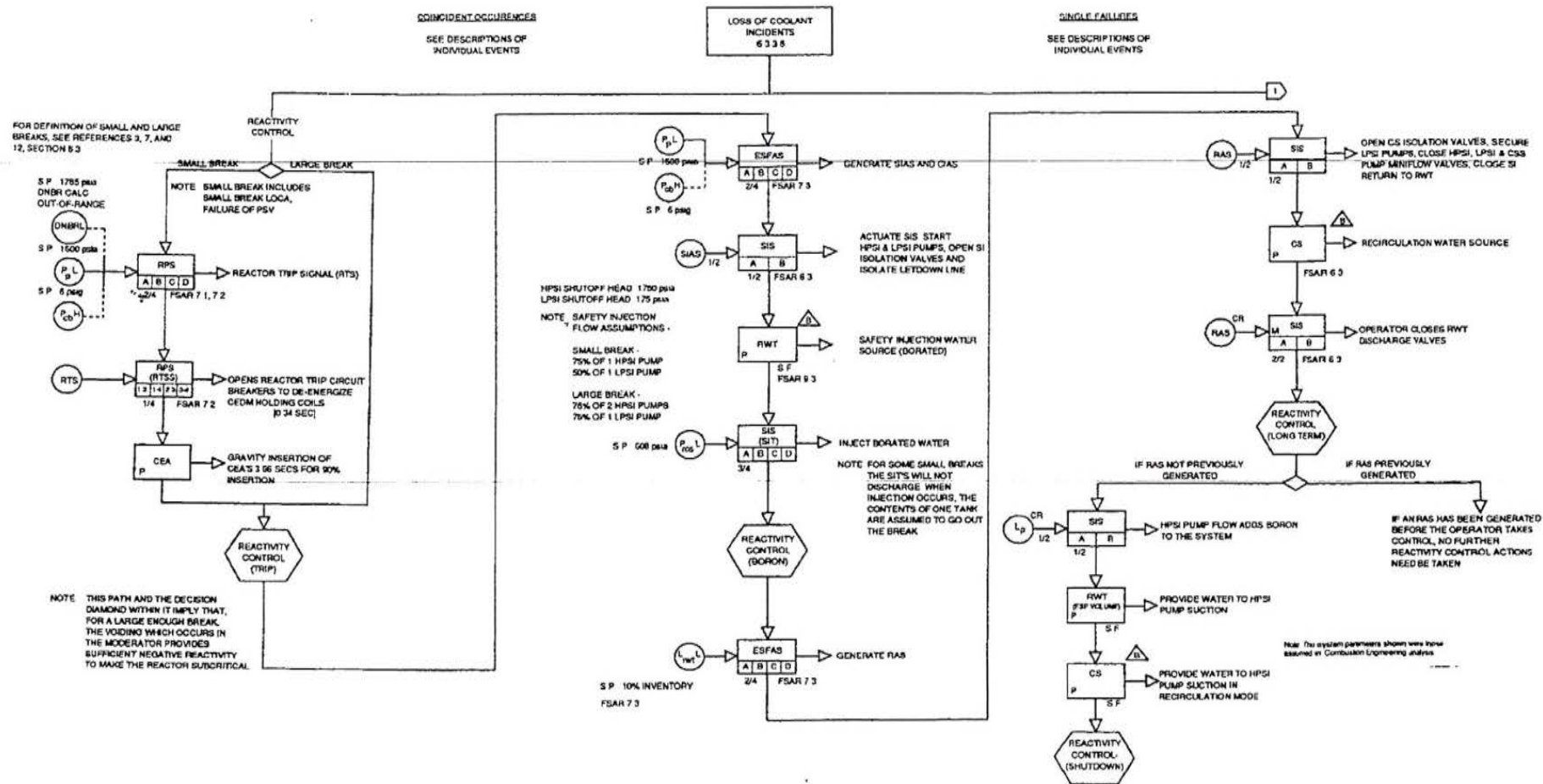
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

RCS PRESSURE AT THE DECISION TIME VS BREAK AREA
CE16NGF FUEL

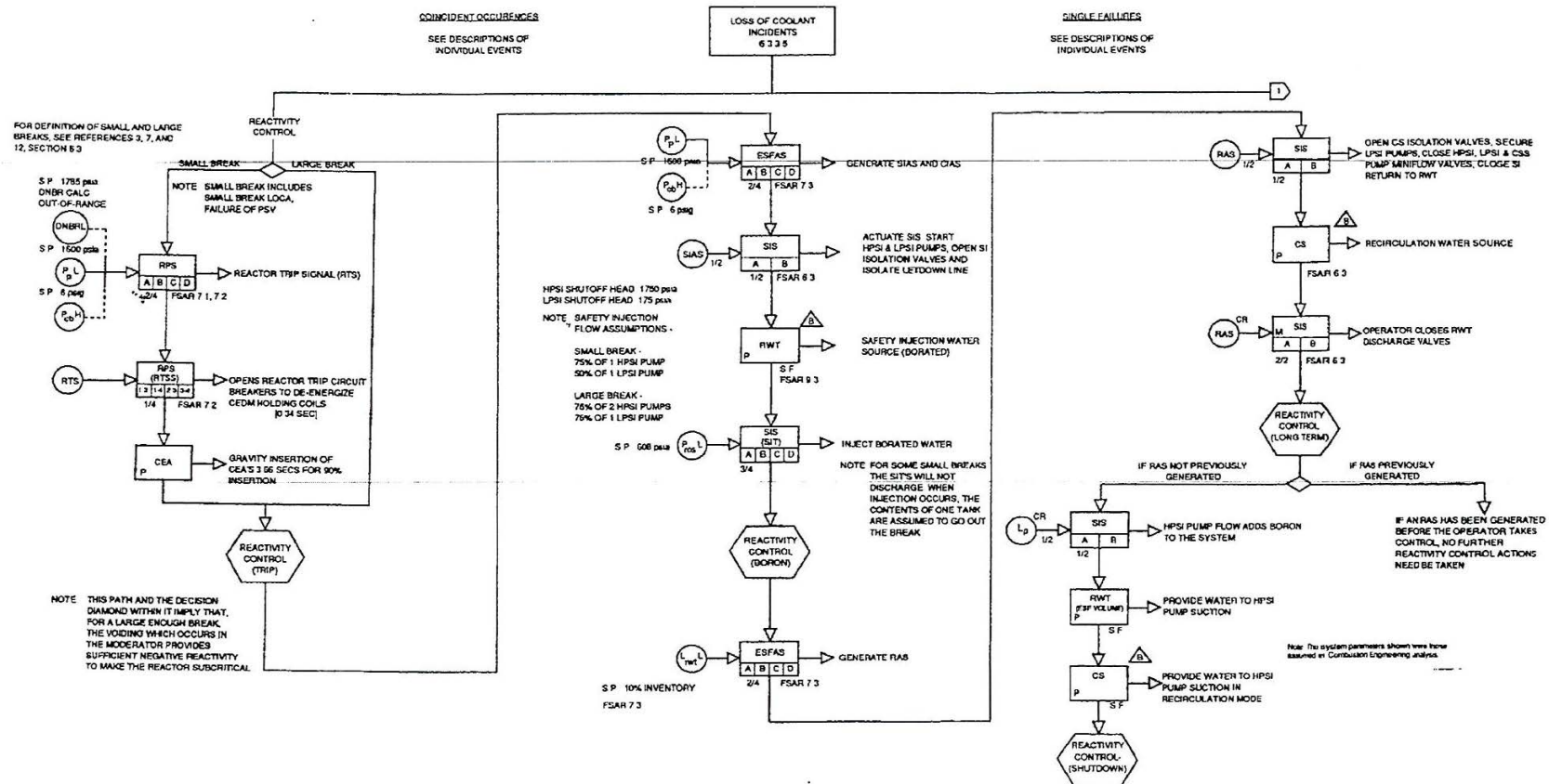
FIGURE 6.3.3b.4-6



PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16STD FUEL

FIGURE 6.3.3a.5-1 SHEET 1 OF 6



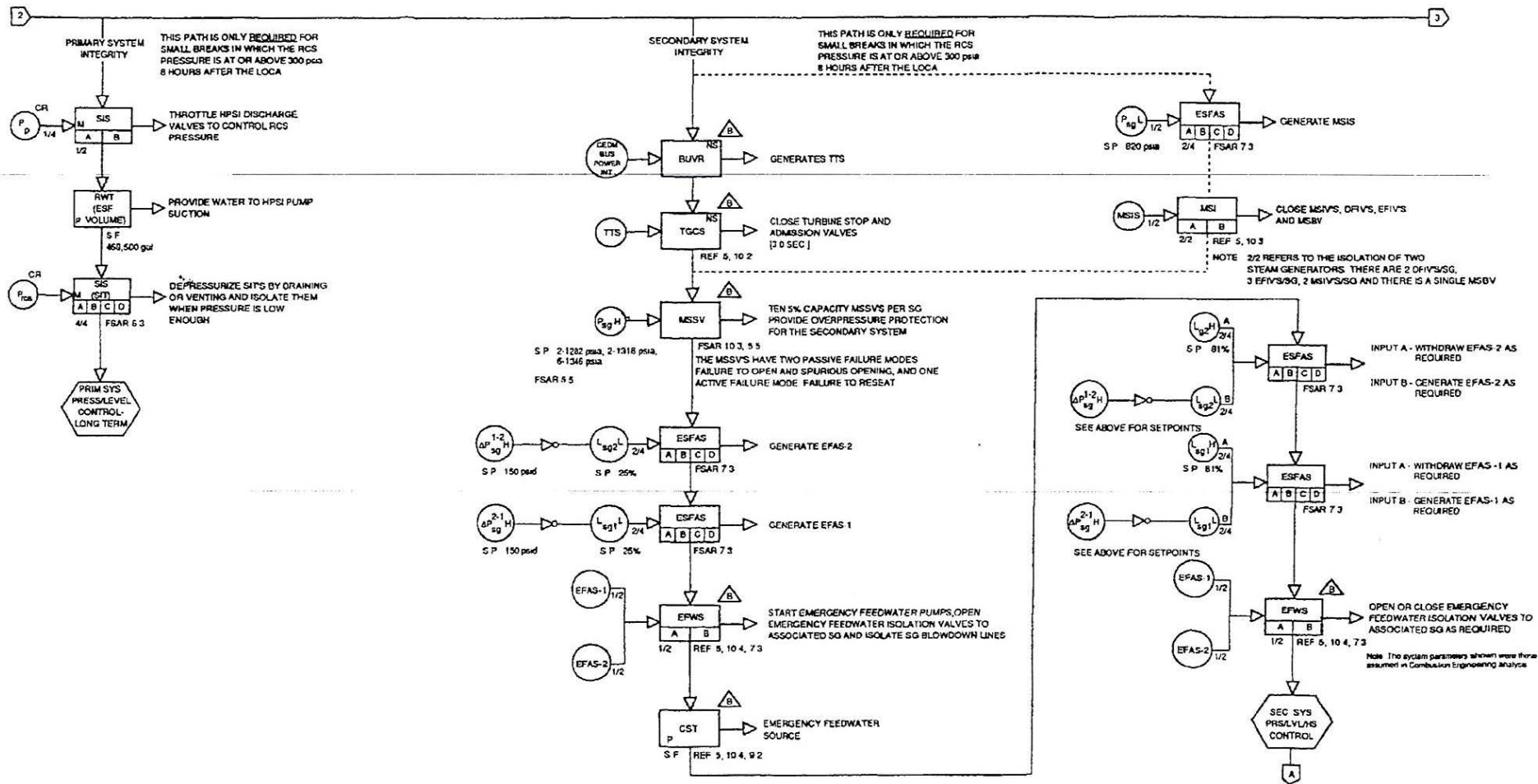
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16NGF FUEL

FIGURE 6.3.3b.5-1 SHEET 1 OF 6

JUNE 2019

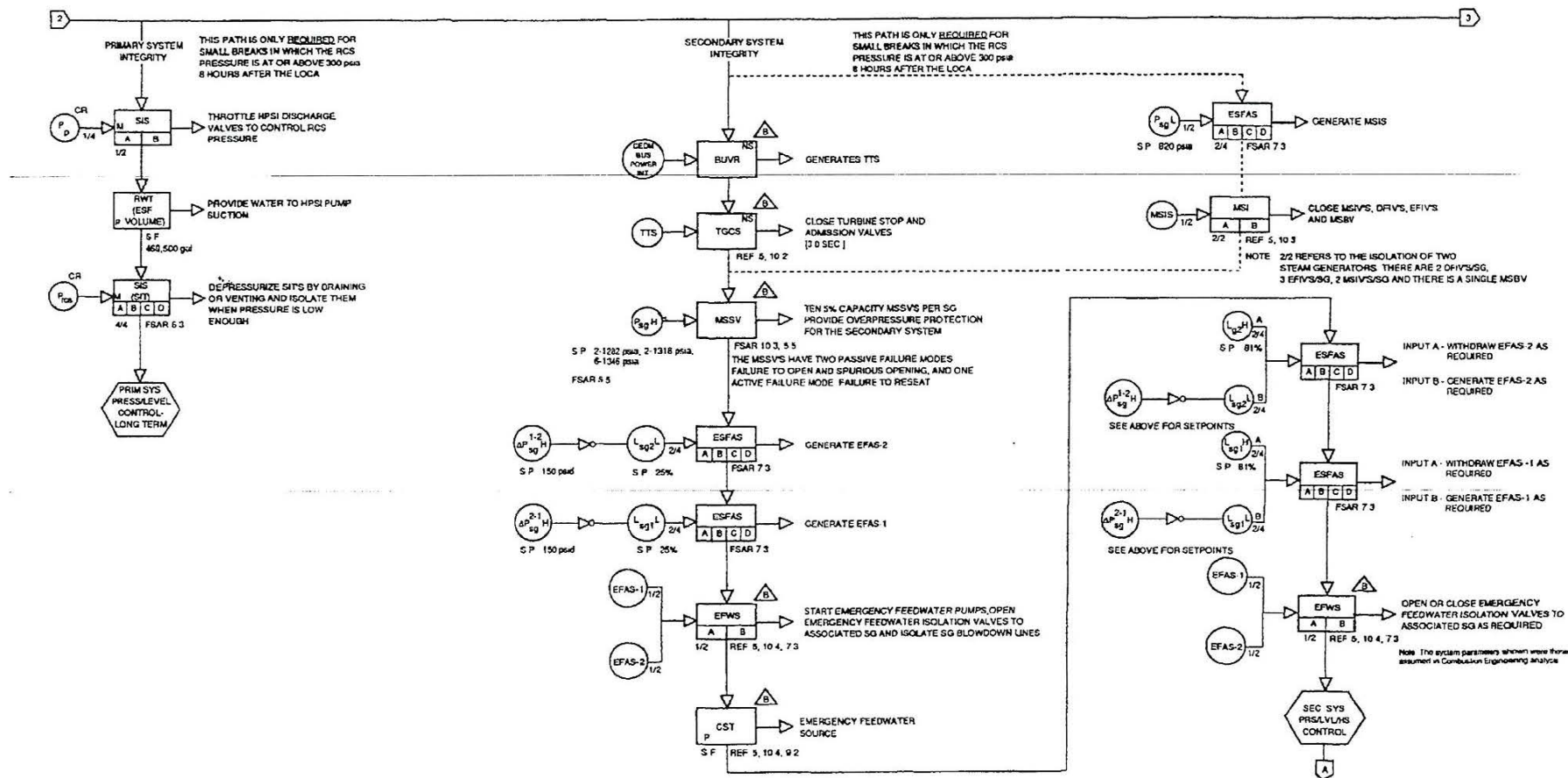
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16STD FUEL

FIGURE 6.3.3a.5-1 SHEET 3 OF 6
CESSAR FIG. 6.3.3.5-1C



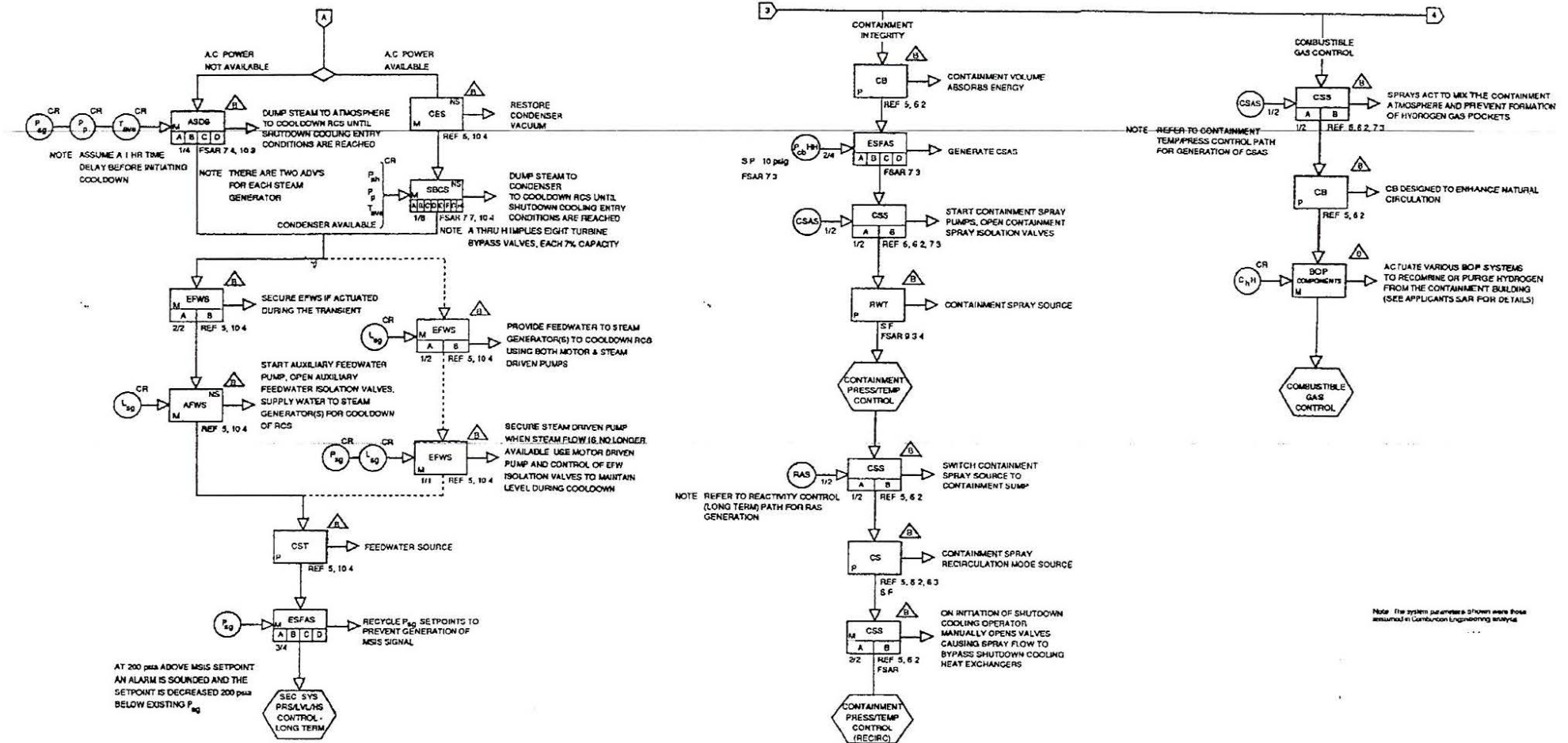
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16NGF FUEL

FIGURE 6.3.3b.5-1 SHEET 3 OF 6
CESSAR FIG. 6.3.3.5-1C

JUNE 2019

REVISION 20



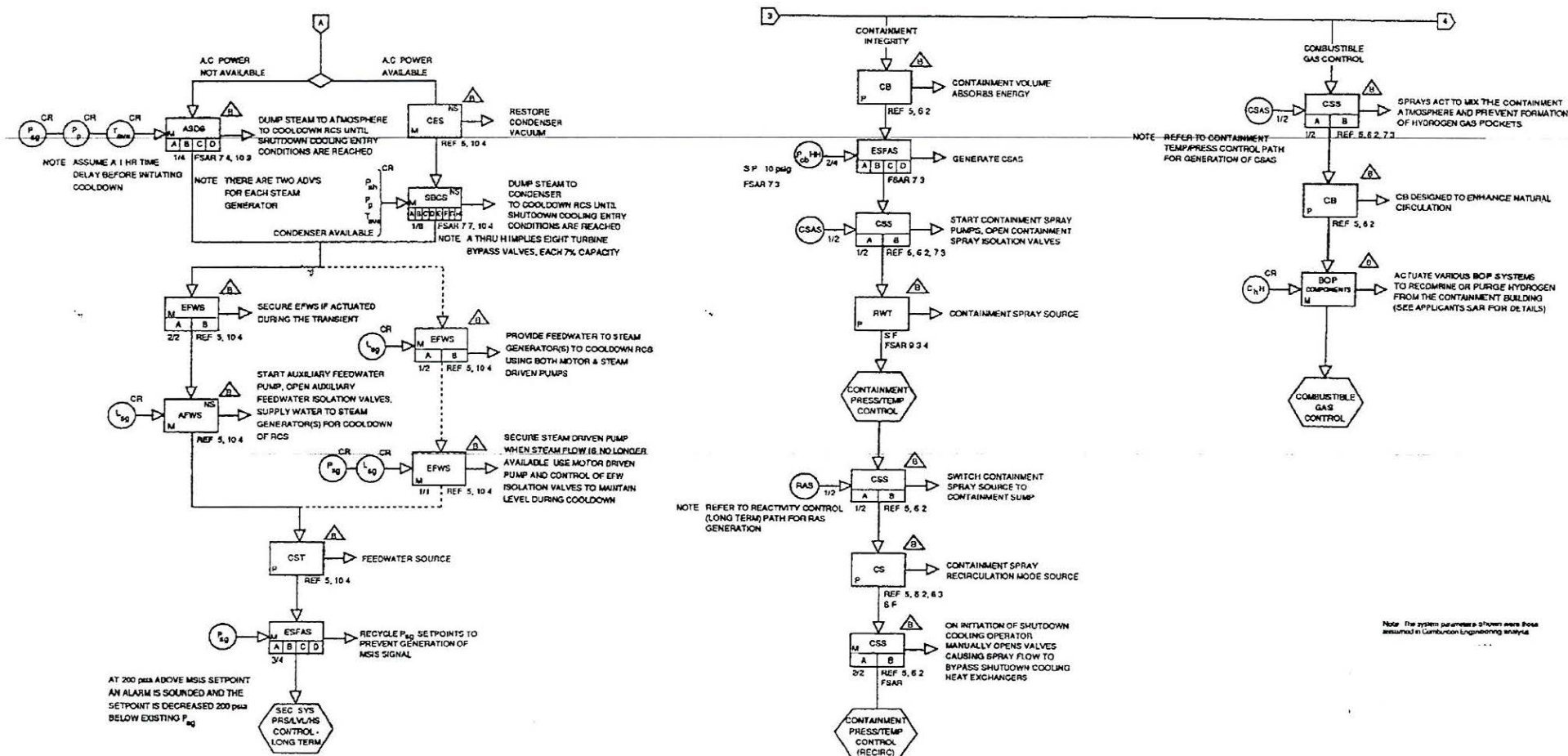
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16STD FUEL

FIGURE 6.3.3a.5-1 SHEET 4 OF 6
CESSAR FIG. 6.3.3.5-1D

JUNE 2019

REVISION 20



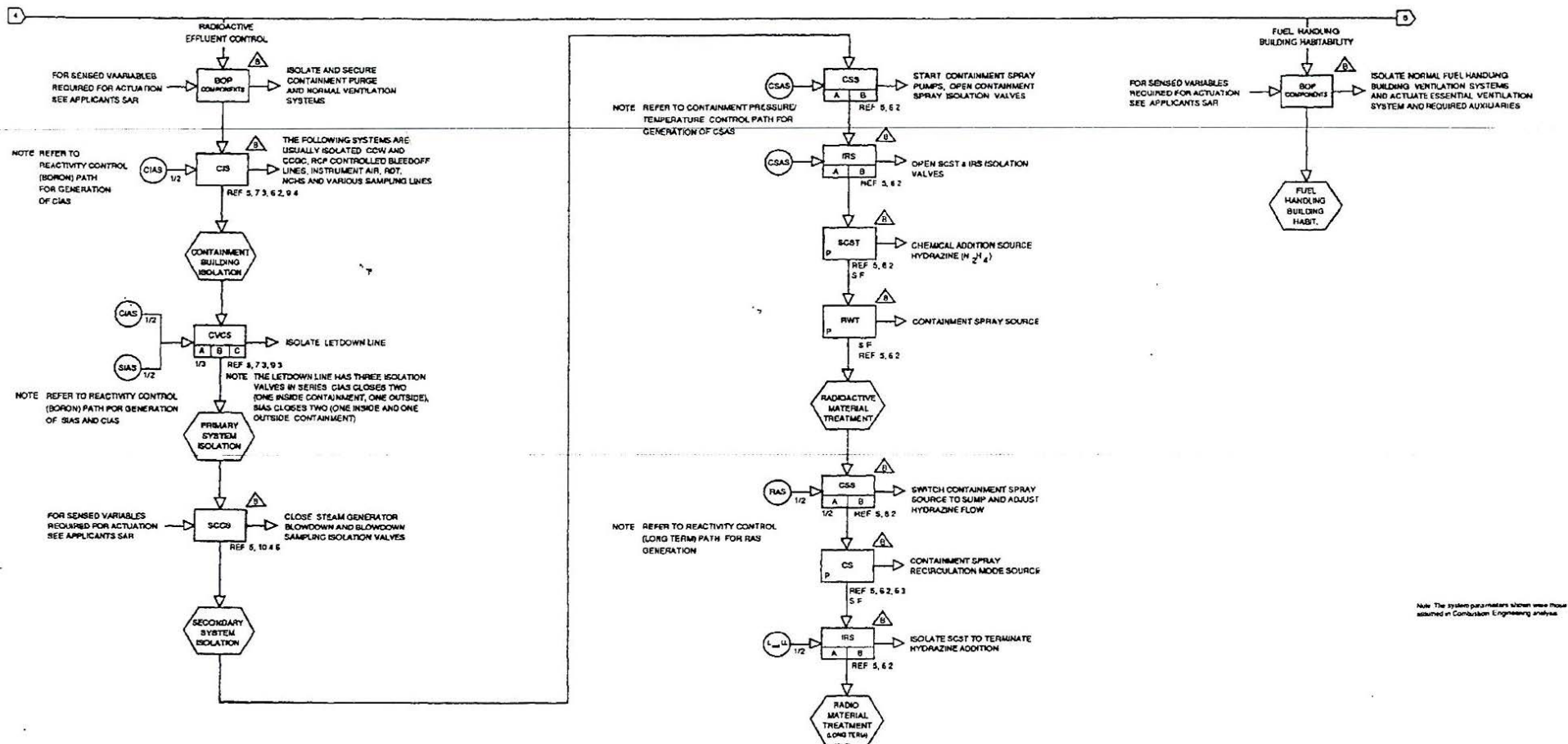
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16NGF FUEL

FIGURE 6.3.3b.5-1 SHEET 4 OF 6
CESSAR FIG. 6.3.3.5-1D

JUNE 2019

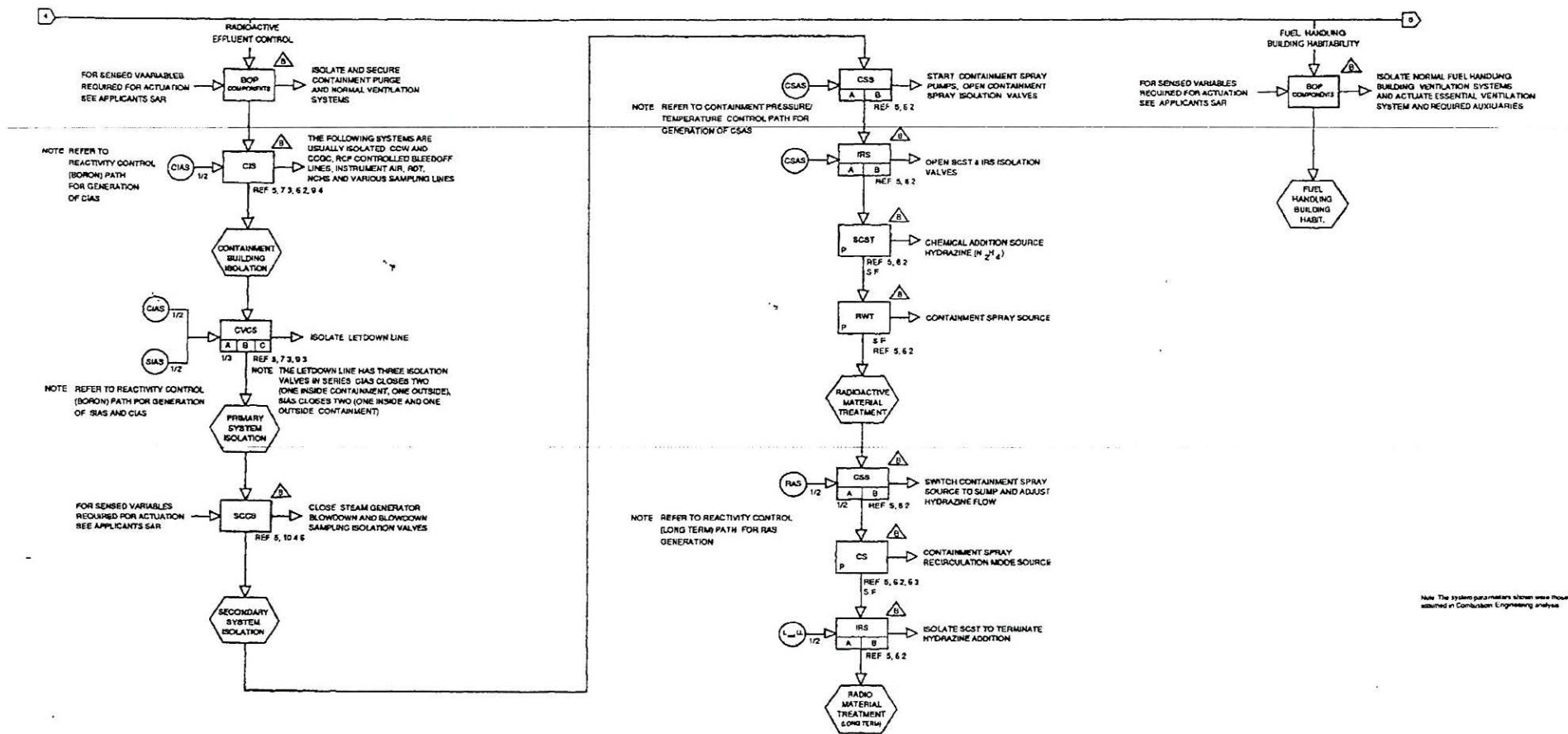
REVISION 20



PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16STD FUEL

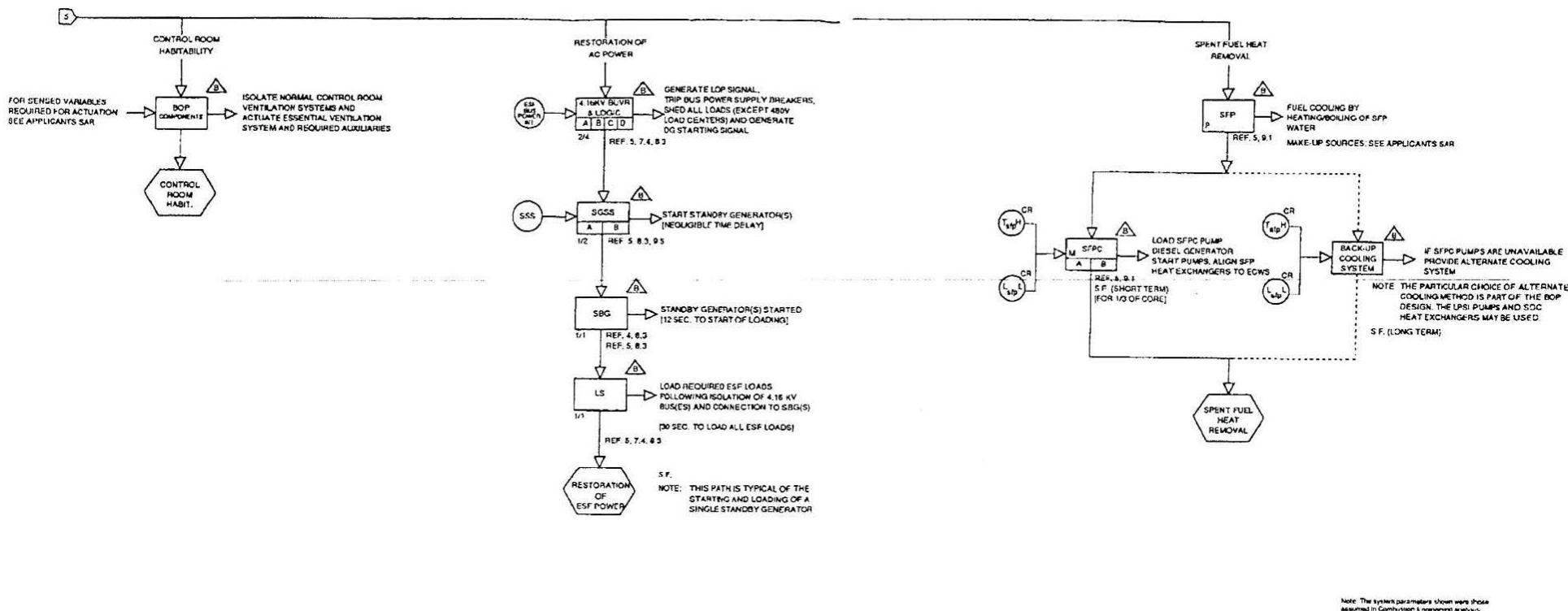
FIGURE 6.3.3a.5-1 SHEET 5 OF 6
CESSAR FIG. 6.3.3.5-1E



PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16NGF FUEL

FIGURE 6.3.3b.5-1 SHEET 5 OF 6
CESSAR FIG. 6.3.3.5-1E



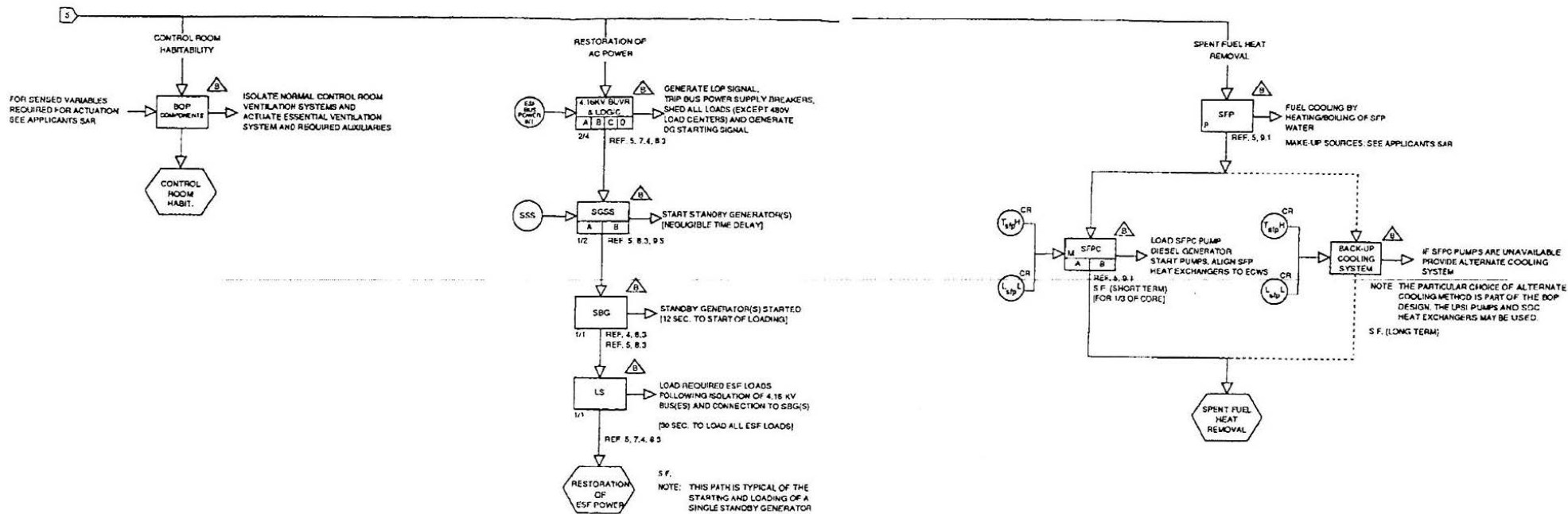
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16STD FUEL

FIGURE 6.3.3a.5-1 SHEET 6 OF 6
CESSAR FIG. 6.3.3.5-1F

JUNE 2019

REVISION 20



Note: The system parameters shown were those assumed in Commission's engineering analysis.

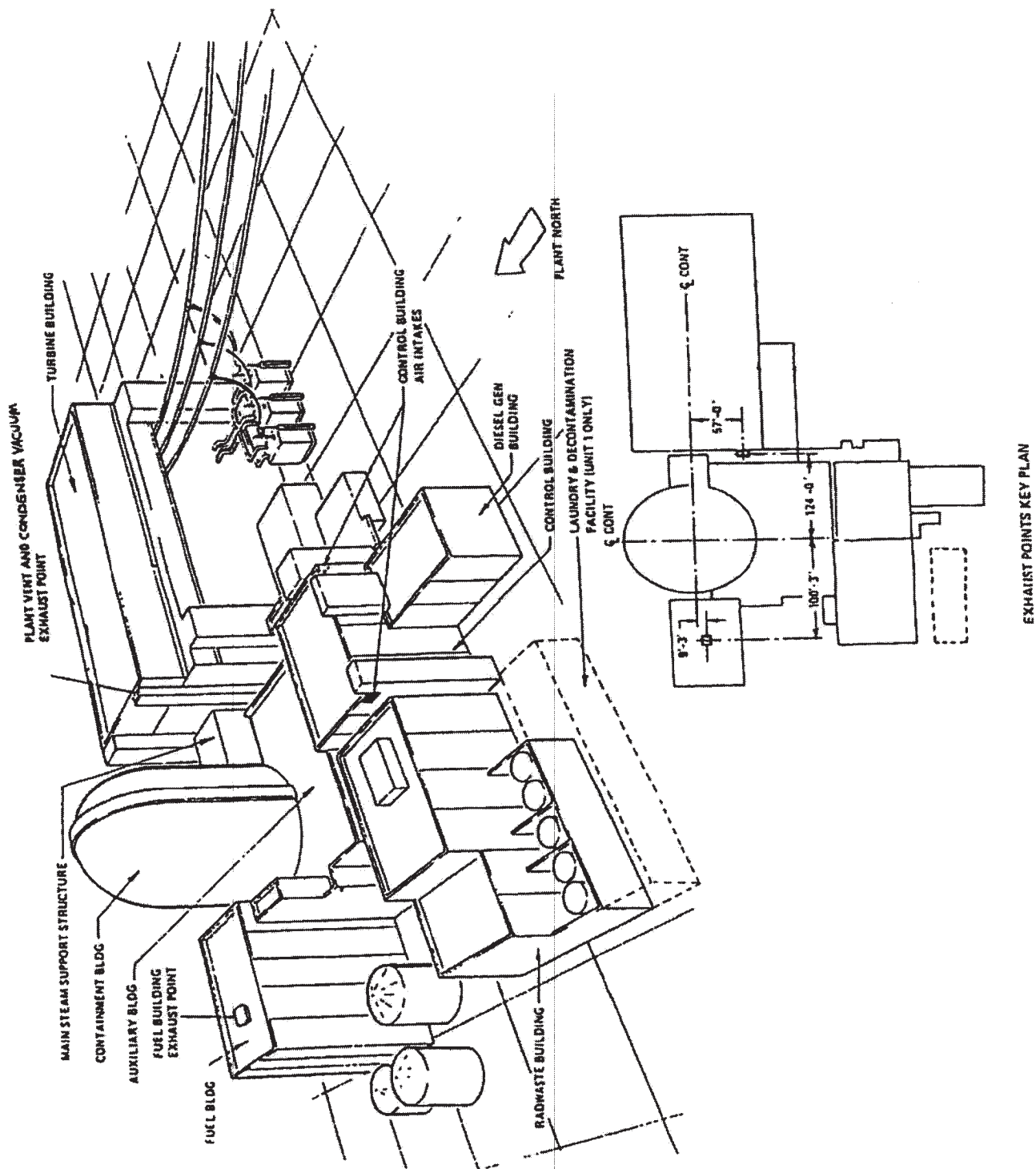
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

SEQUENCE OF EVENTS DIAGRAM FOR LARGE AND SMALL BREAK LOCAS CE16NGF FUEL

FIGURE 6.3.3b.5-1 SHEET 6 OF 6
CESSAR FIG. 6.3.3.5-1F

JUNE 2019

REVISION 20



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PLANT LAYOUT
AIR INTAKE AND POTENTIAL RELEASE POINTS

FIGURE 6.4-1

JUNE 2001

REVISION 11

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

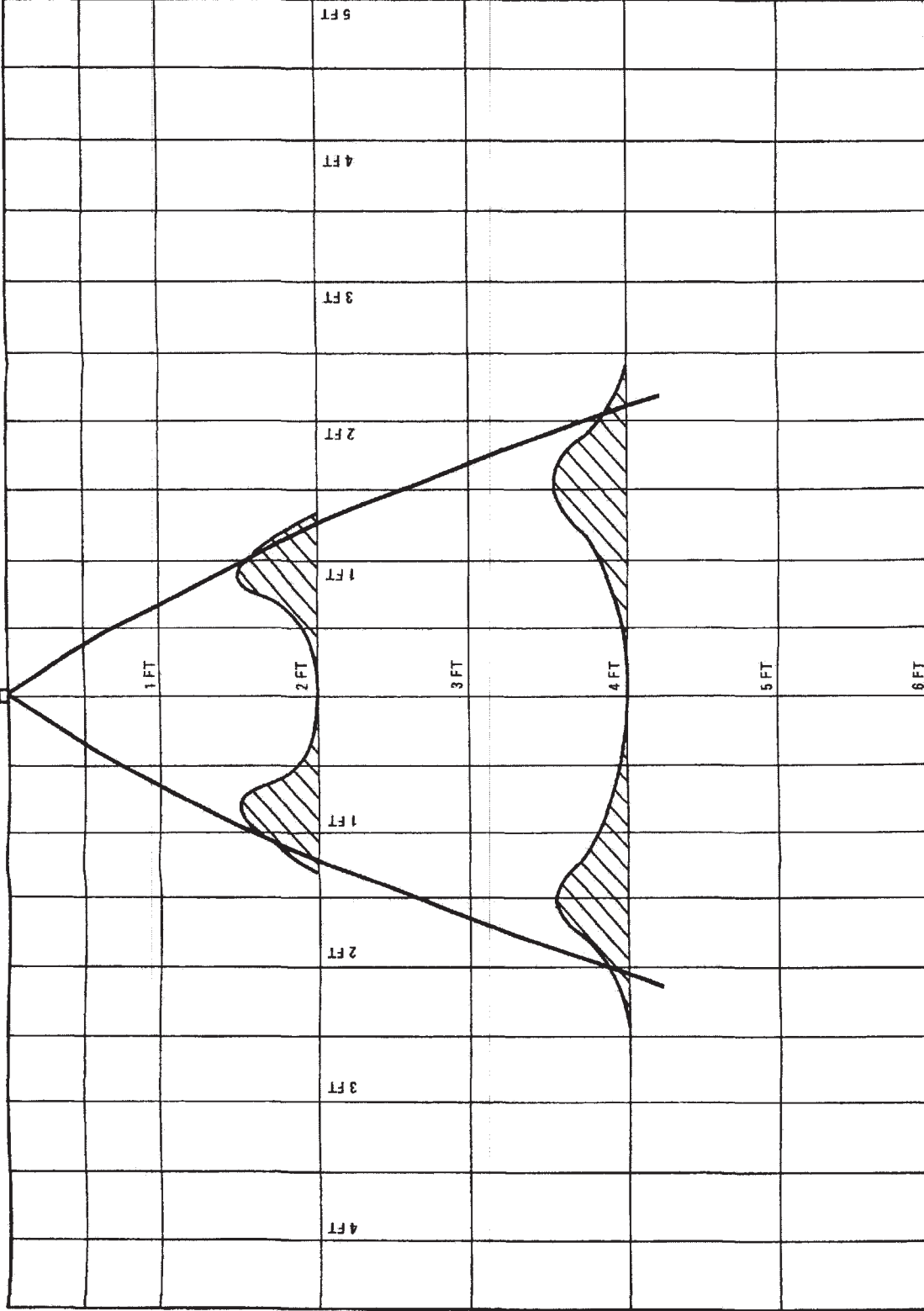
This Figure has been redacted.

PRESSURE 40 LBS/SQ. IN.

CAPACITY 3.0 GAL/MIN

TIME SECONDS

NOZZLE



EFFECTIVE DIAMETER	EFFECTIVE ANGLE
2 FT 5 IN.	62°
4 FT 1 IN.	54°

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SPRAY NOZZLE PERFORMANCE DATA
(SPRACO NO. 17651308)

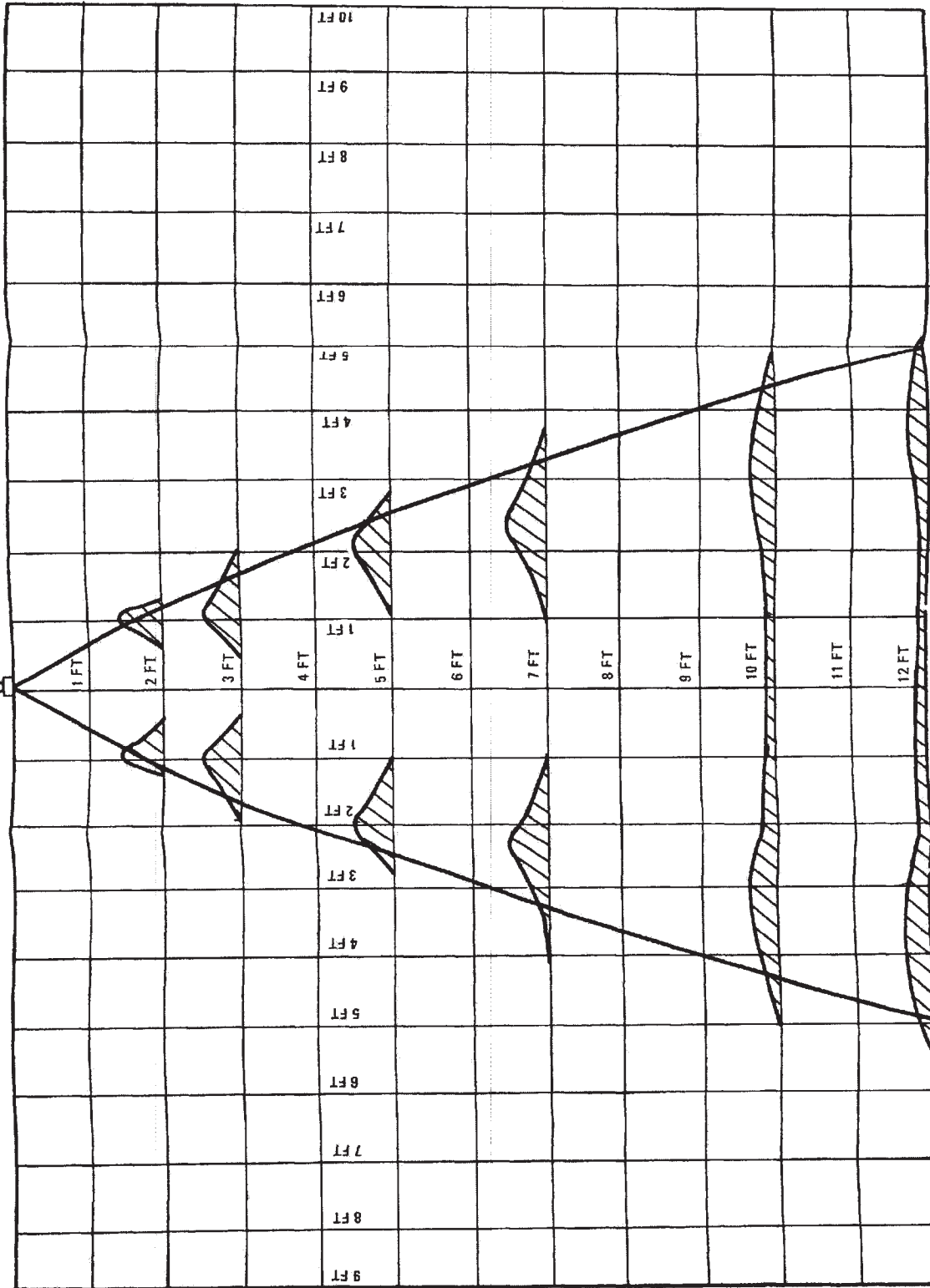
FIGURE 6A-1

JUNE 2001

REVISION 11

PRESSURE 40 LBS/SQ IN.
CAPACITY 15.2 GAL/MIN
TIME SECONDS

NOZZLE



EFFECTIVE DIAMETER	EFFECTIVE ANGLE
28 IN	60°
37 IN	55°
60 IN	53°
78 IN	50°
102 IN	46°
120 IN	40°

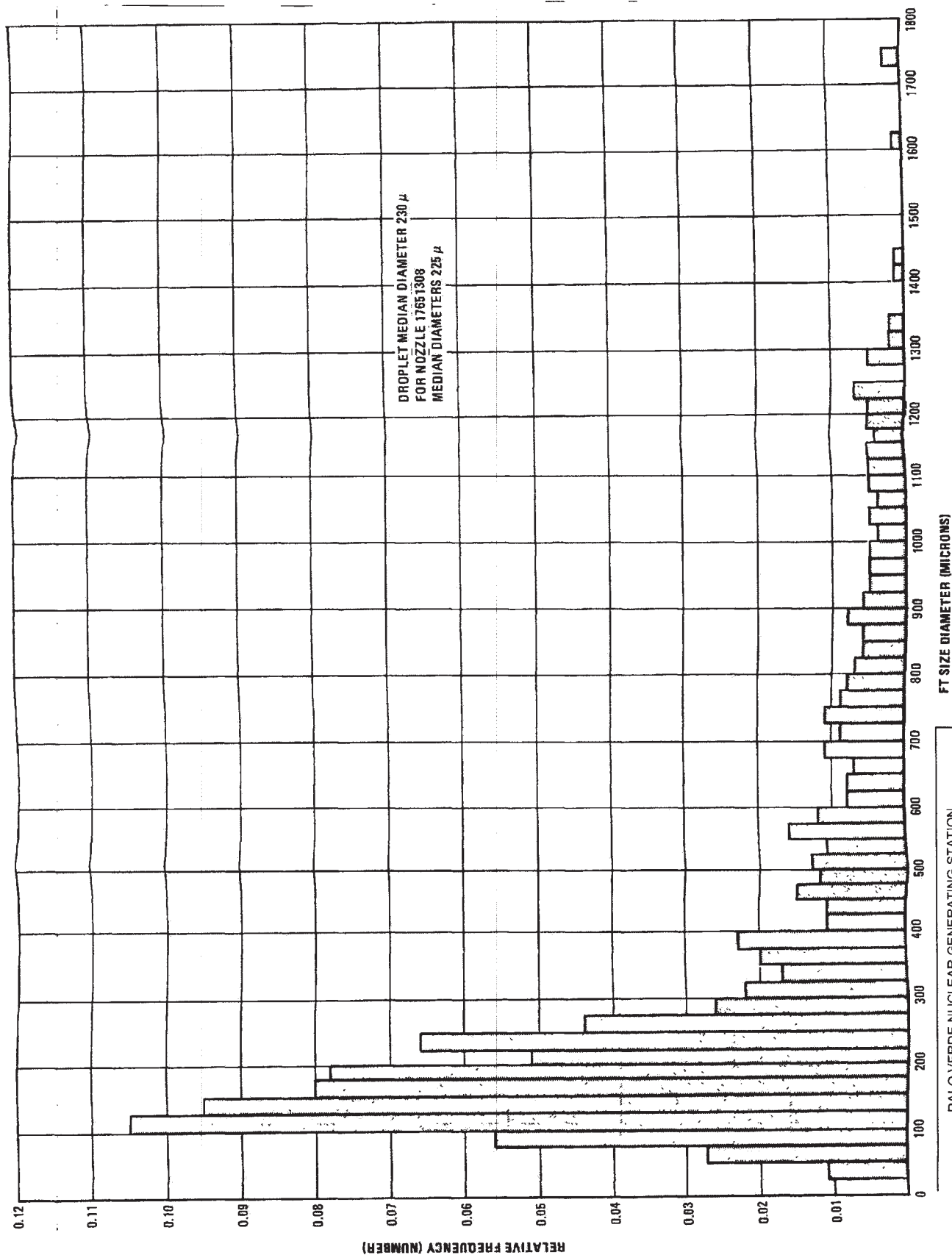
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SPRAY NOZZLE PERFORMANCE DATA
(SPRACO NO. 17071417)

FIGURE 6A-2

JUNE 2001

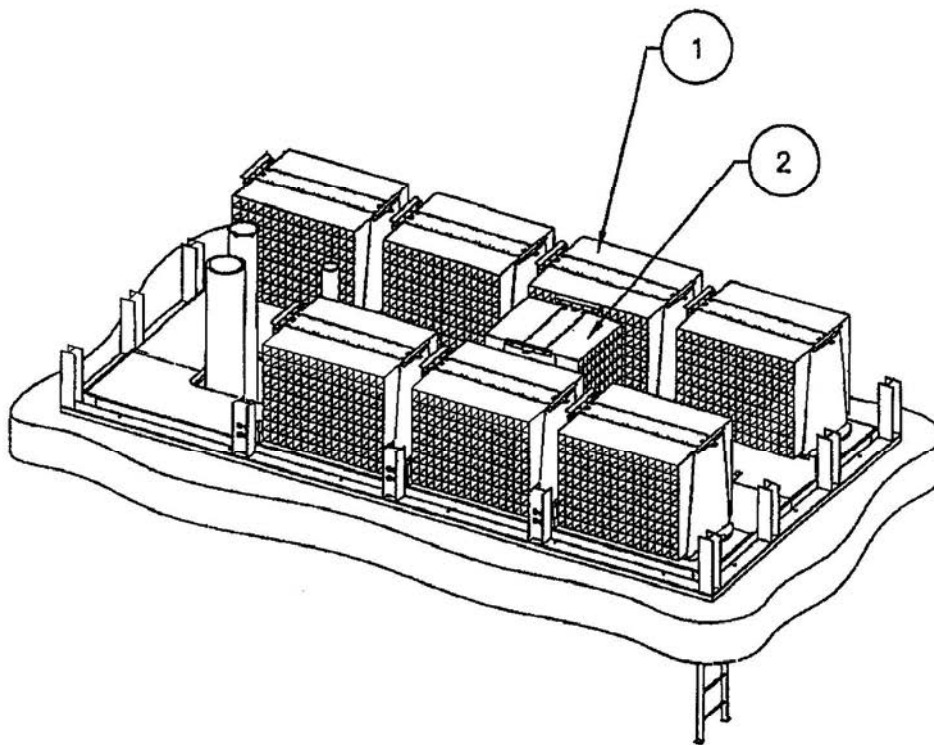
REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SPATIAL DROPLET SIZE DISTRIBUTION OF SPRACO 17071417
NOZZLE APPLYING SURFACE AREA CORRECTION AND
SPRAYING H₂O @ 40 PSIG UNDER LABORATORY CONDITIONS

This Figure has been redacted.



WEST SUMP SCREEN ARRANGEMENT

① 7X 16 CARTRIDGE UNIT	2875 SQ FT
② 1X 10 CARTRIDGE UNIT	266 SQ FT
10" PIPE VENT	1 SQ FT
<u>TOTAL FLOW AREA APPROX</u>	<u>3142 SQ FT</u>

SIZE OF SCREEN PERFORATIONS: 0.083 IN

West sump only is shown. East sump is similar in arrangement.

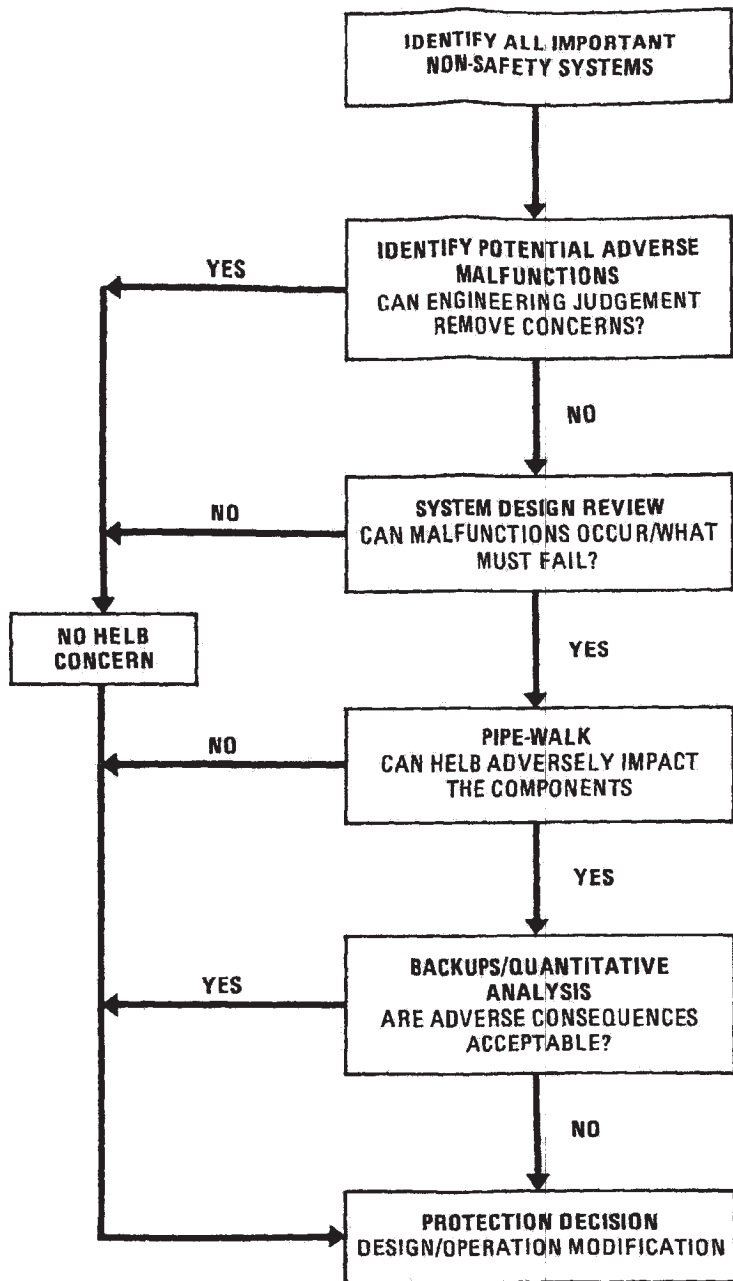
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT RECIRCULATION SUMP
REPLACEMENT STRAINER DETAIL

FIGURE 6A-5

JUNE 2009

REVISION 15



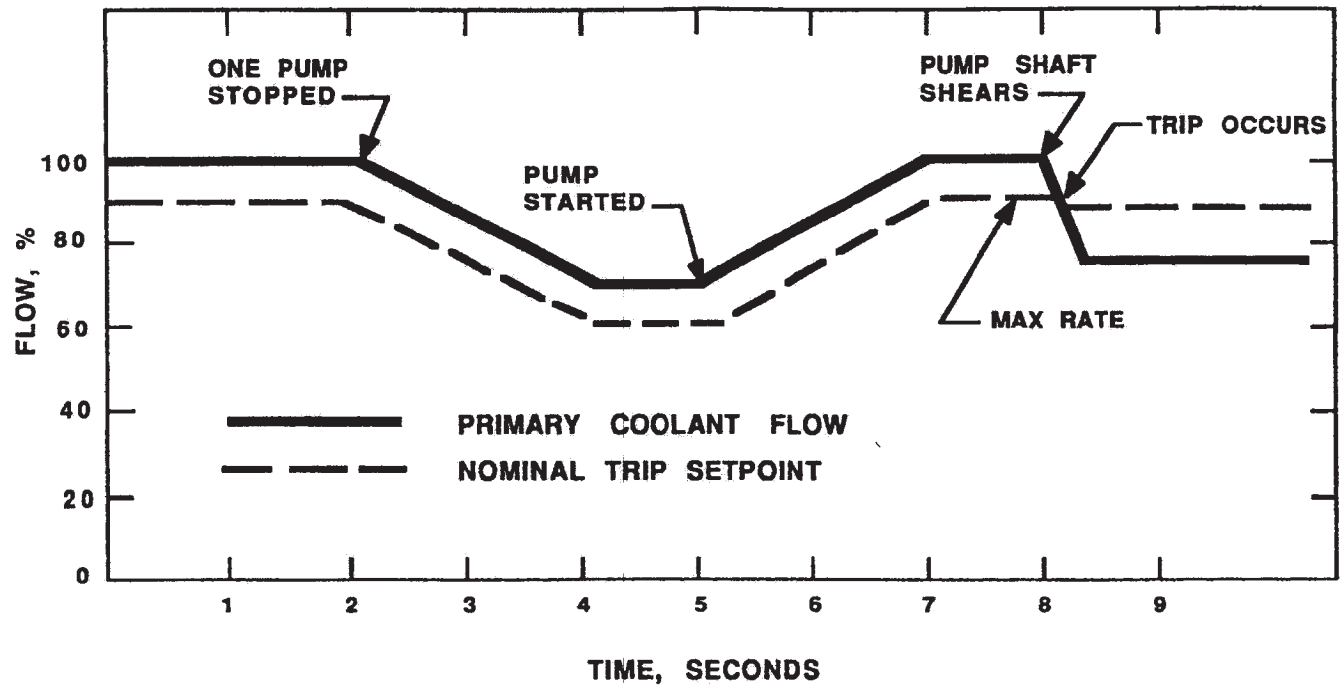
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

HELBA PROCESS

FIGURE 7.1-1

JUNE 2001

REVISION 11

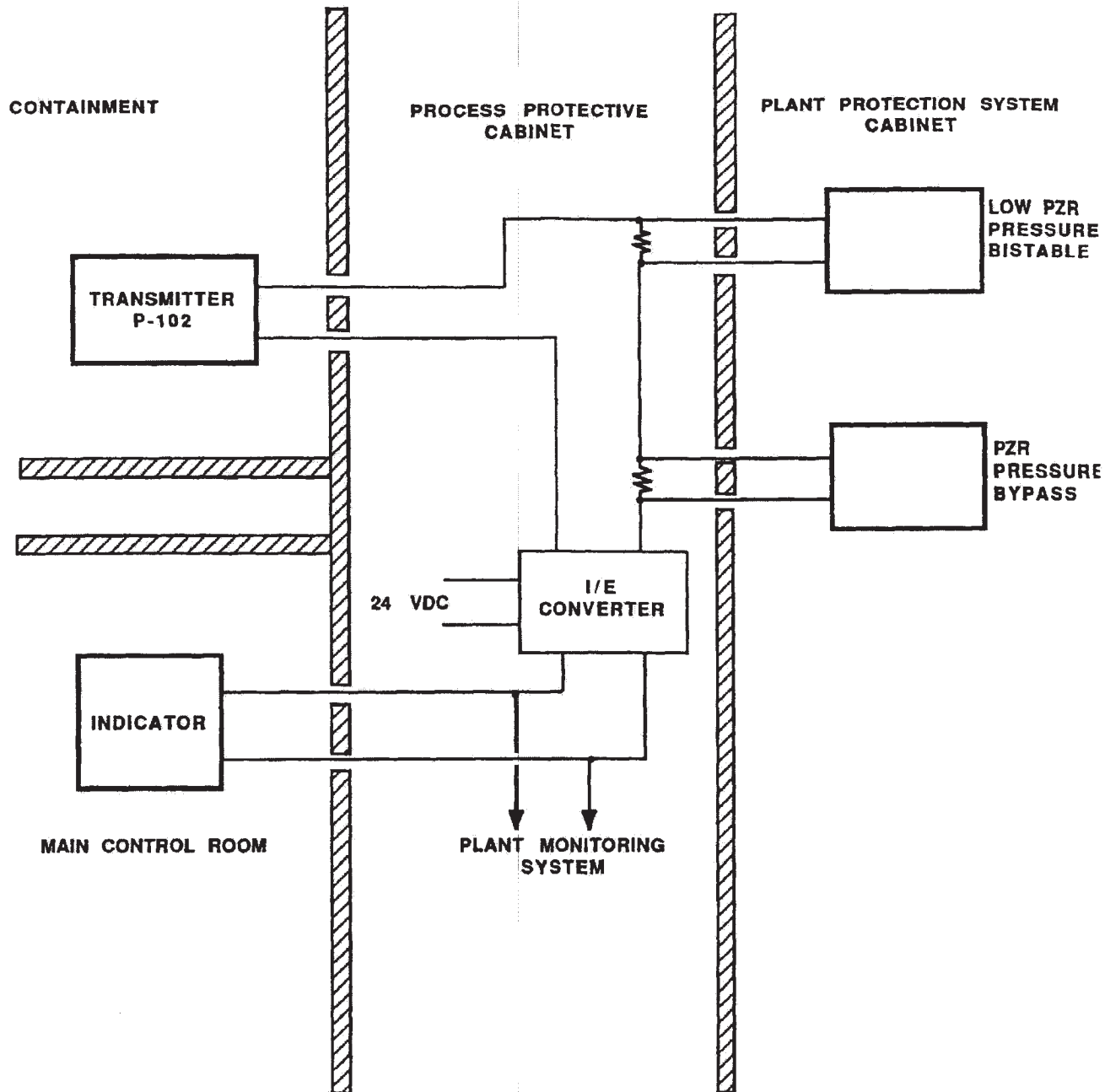


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

TYPICAL LOW REACTOR COOLANT FLOW TRIP
SETPOINT OPERATION
FIGURE 7.2-0

JUNE 2001

REVISION 11

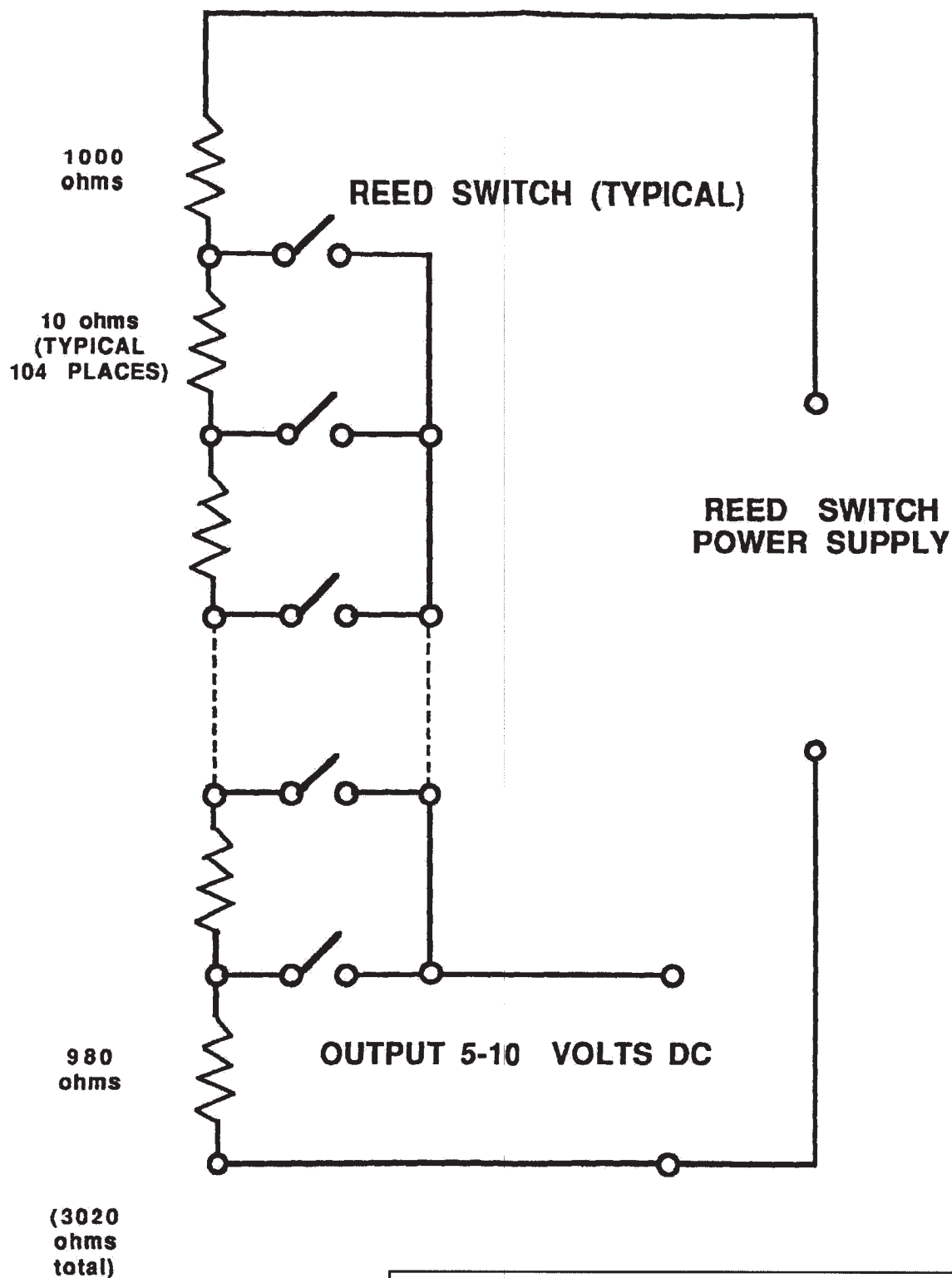


PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 TYPICAL MEASUREMENT CHANNEL FUNCTIONAL
 DIAGRAM
 (PRESSURIZER PRESSURE WIDE RANGE)

FIGURE 7.2-0A

JUNE 2001

REVISION 11



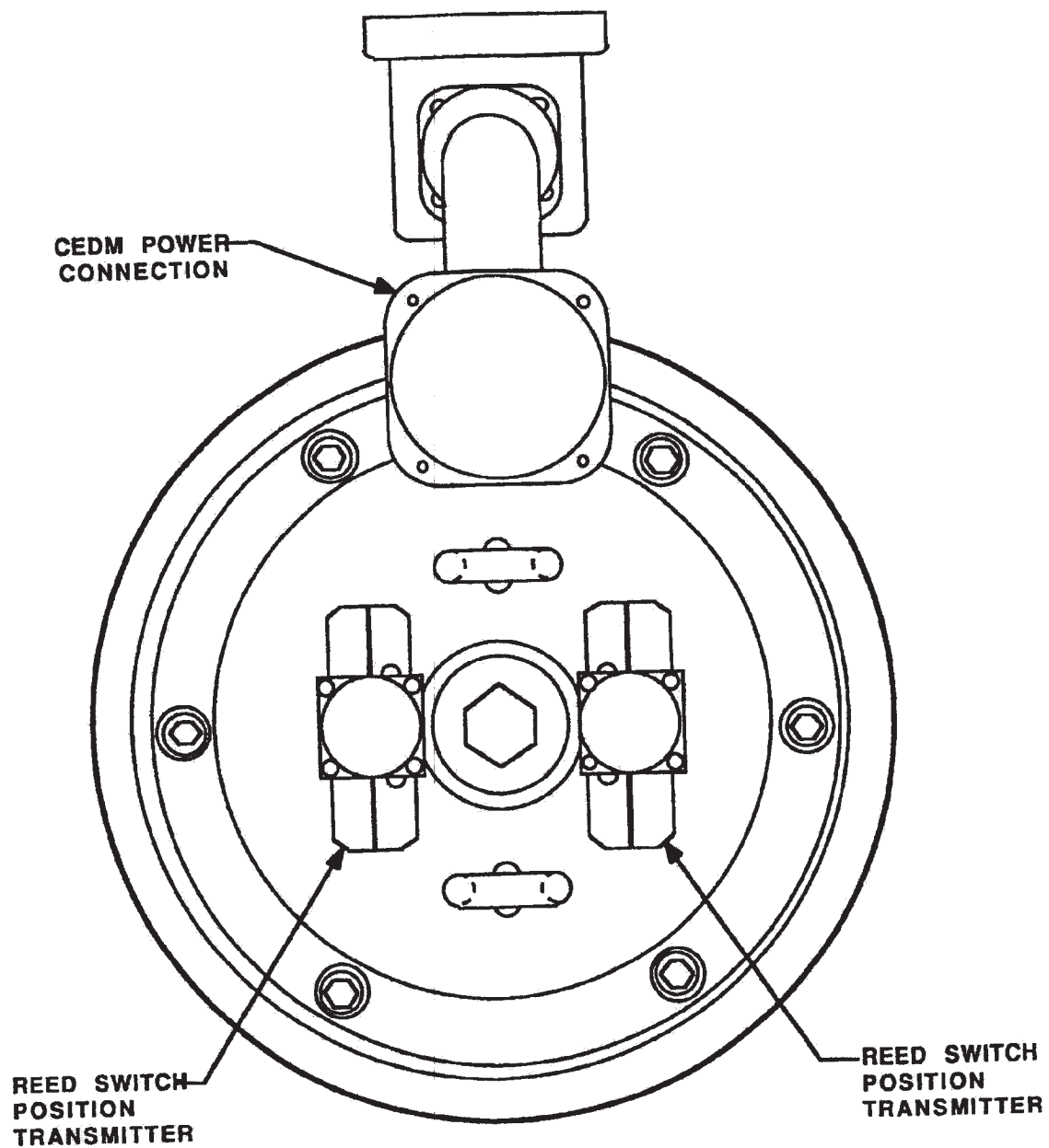
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REED SWITCH POSITION TRANSMITTER
ASSEMBLY
SCHEMATIC DIAGRAM

FIGURE 7.2-0B

JUNE 2001

REVISION 11



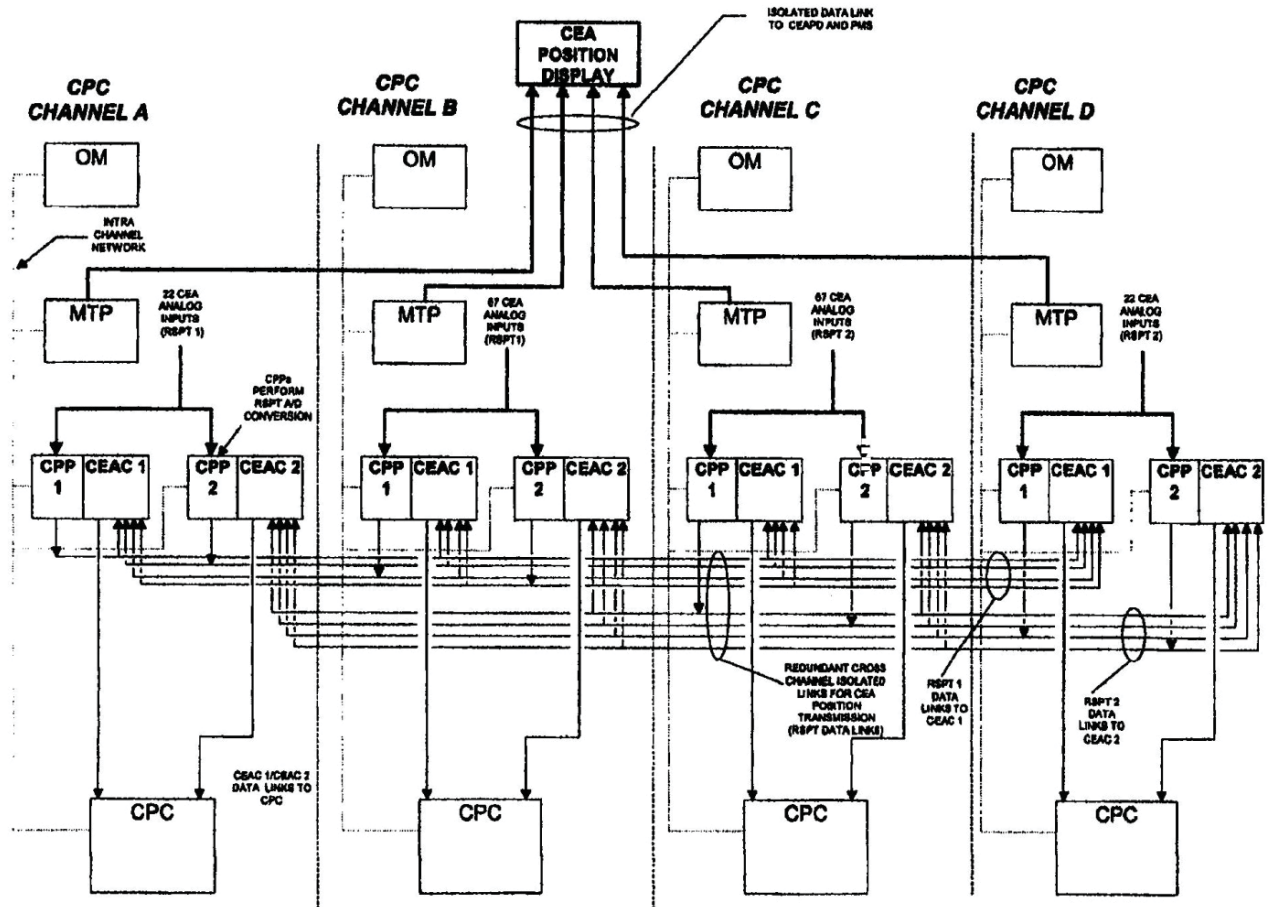
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REED SWITCH POSITION TRANSMITTER
CABLE ASSEMBLIES

FIGURE 7.2-0C

JUNE 2001

REVISION 11



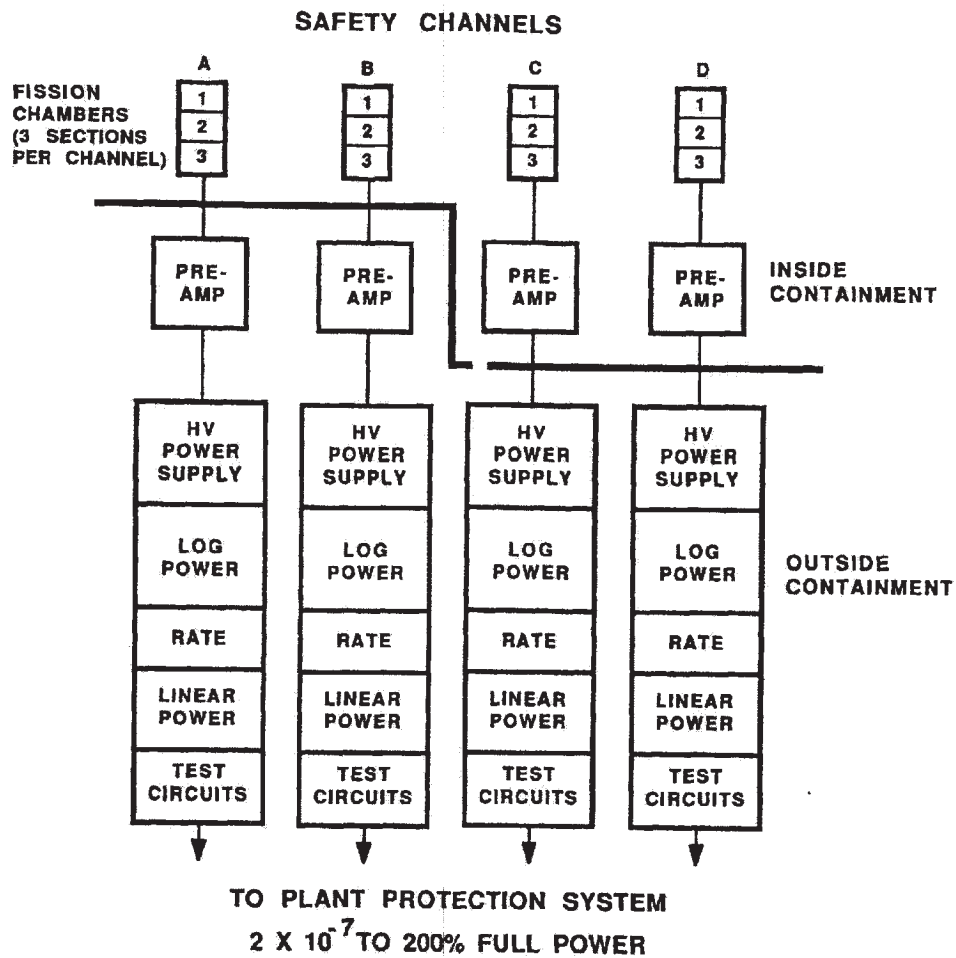
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CEA POSITION SIGNALS WITHIN REACTOR
PROTECTIVE SYSTEM

FIGURE 7.2-0D

JUNE 2017

REVISION 19



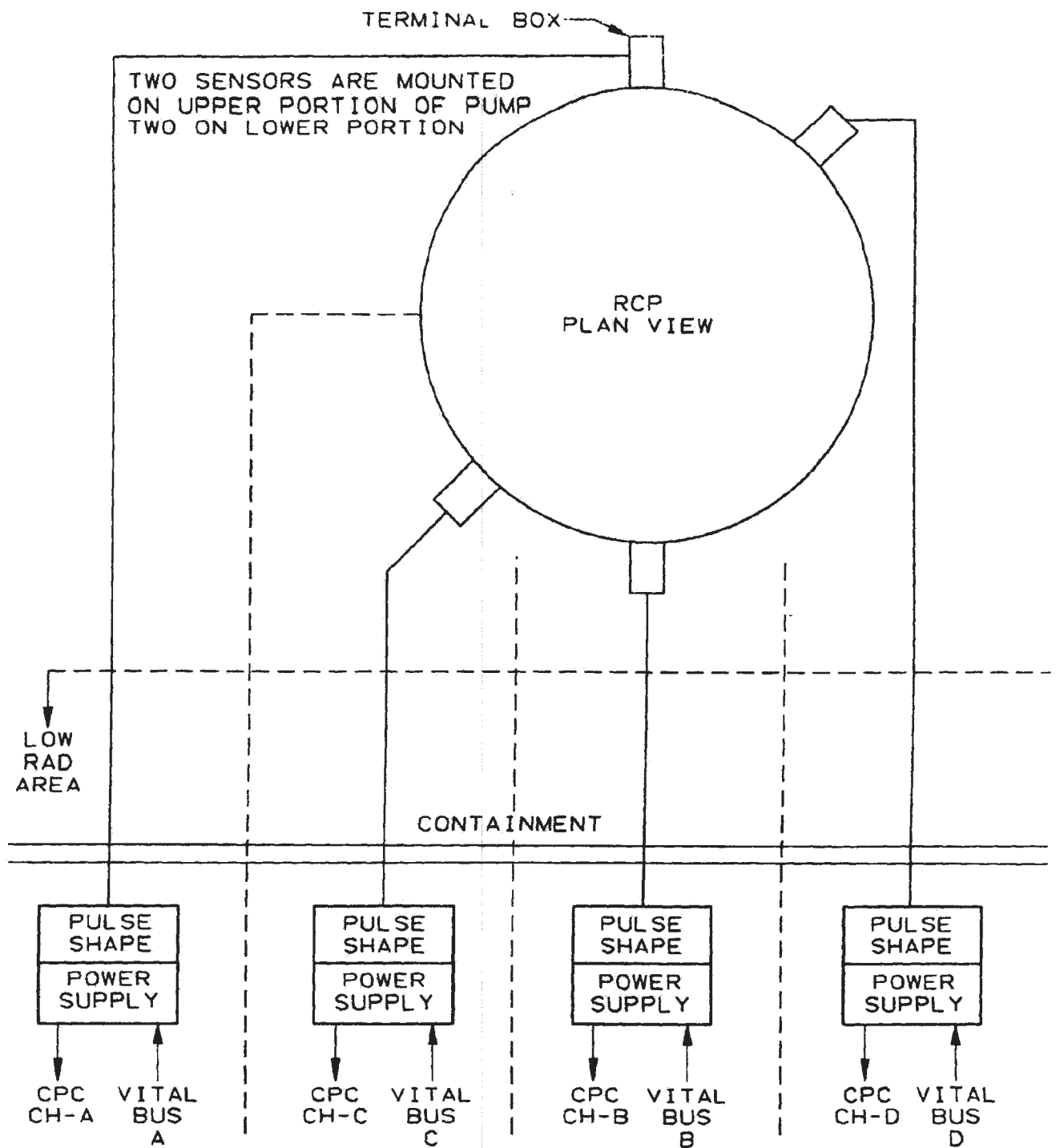
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

EXCORE NEUTRON FLUX MONITORING
SYSTEM

FIGURE 7.2-0E

JUNE 2001

REVISION 11



NOTE: SPEED SENSORS S2 AND S5 WHICH ARE NOT SHOWN, ARE USED FOR MONITORING FUNCTIONS ONLY.

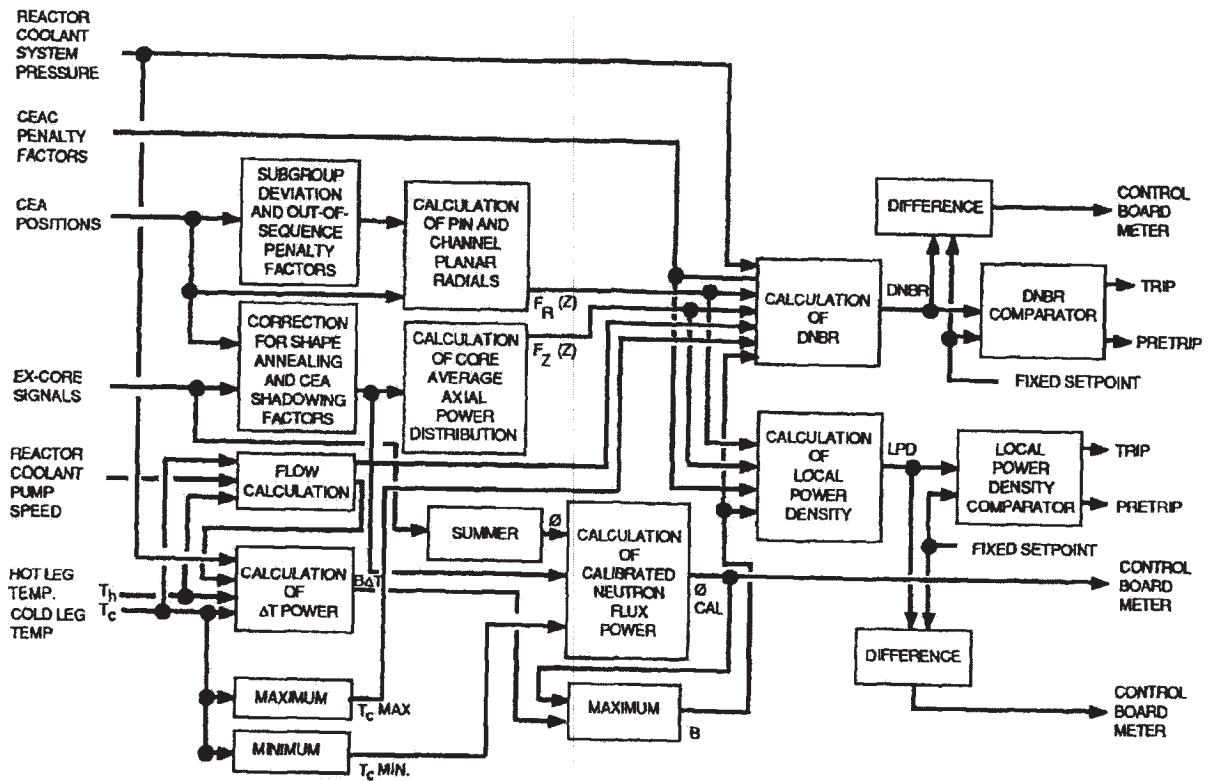
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR COOLANT PUMP SPEED SENSORS
TYPICAL FOR EACH
REACTOR COOLANT PUMP

FIGURE 7.2-0F

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CORE PROTECTION CALCULATOR
FUNCTIONAL BLOCK DIAGRAM

FIGURE 7.2-0G

JUNE 2001

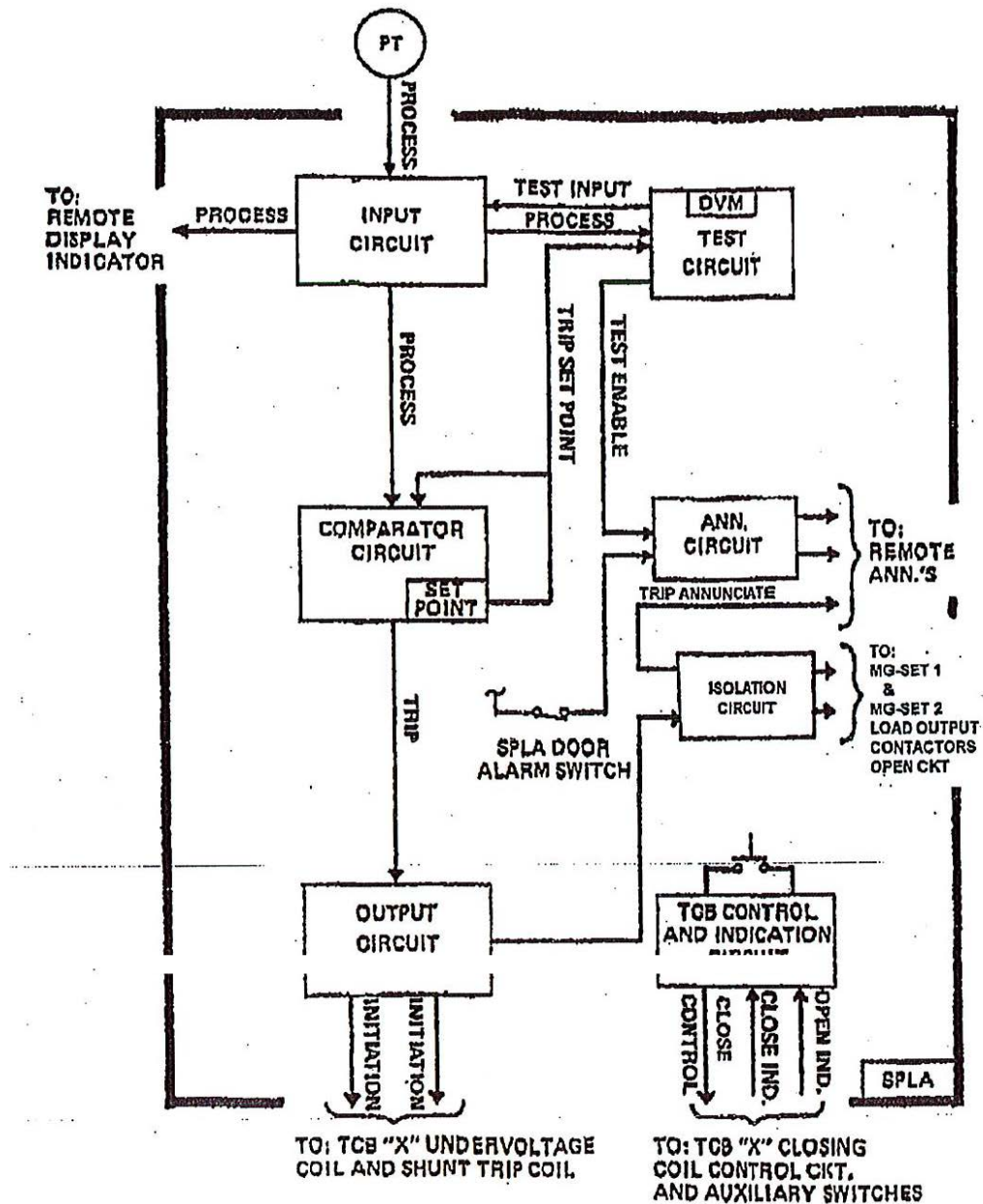
REVISION 11

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

FIGURE 7.2-4
DELETED



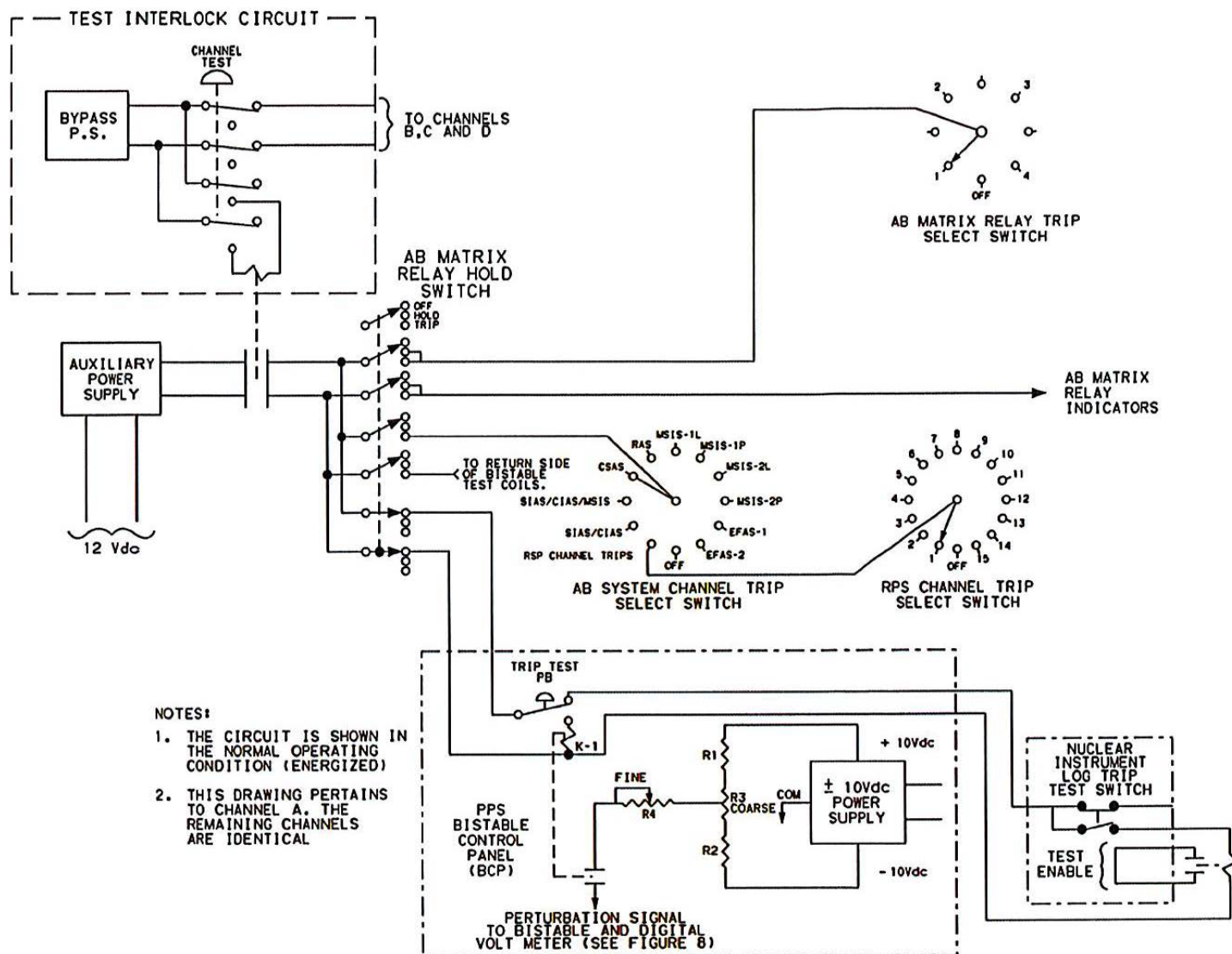
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SPLA FUNCTIONAL BLOCK DIAGRAM

FIGURE 7.2-5

FIGURE 7.2-6
DELETED

FIGURE 7.2-8
DELETED



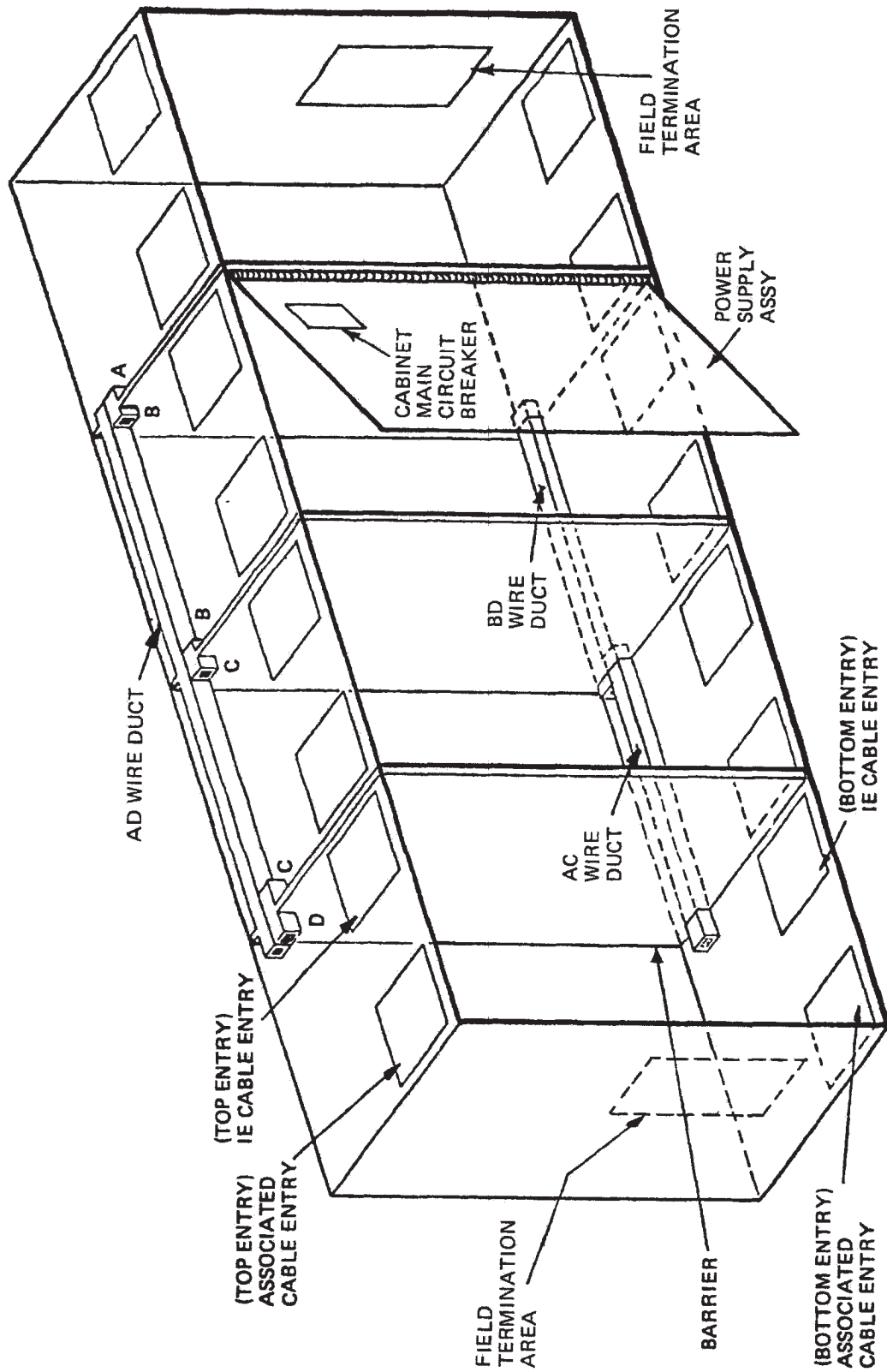
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

MATRIX, BISTABLE TRIP AND LOG TRIP INTERLOCK CKT.

FIGURE 7.2-9

FIGURE 7.2-10
DELETED

FIGURE 7.2-11
DELETED



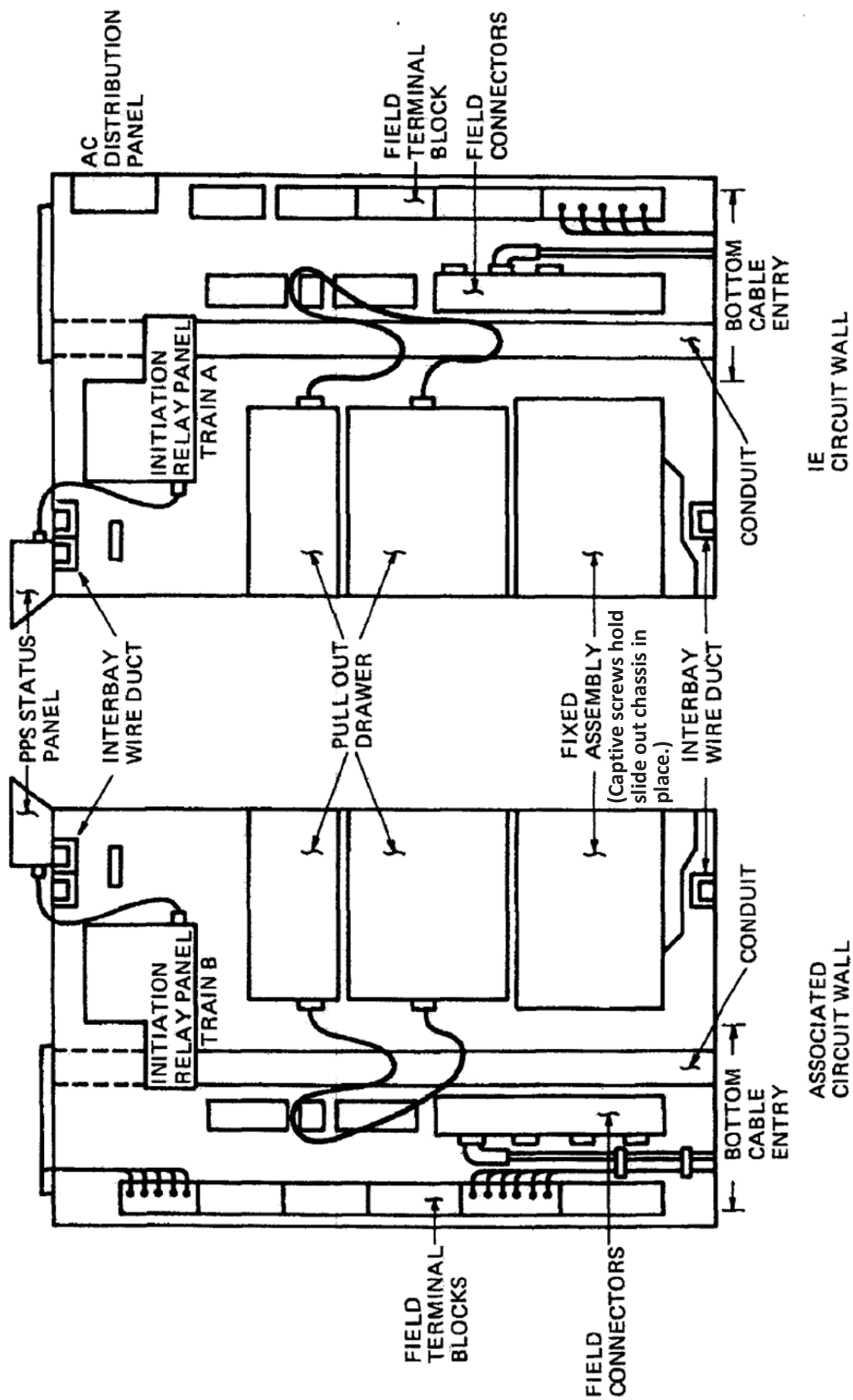
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SIMPLIFIED P.P.S. CABINET LAYOUT
(REAR VIEW)

FIGURE 7.2-12

JUNE 2001

REVISION 11



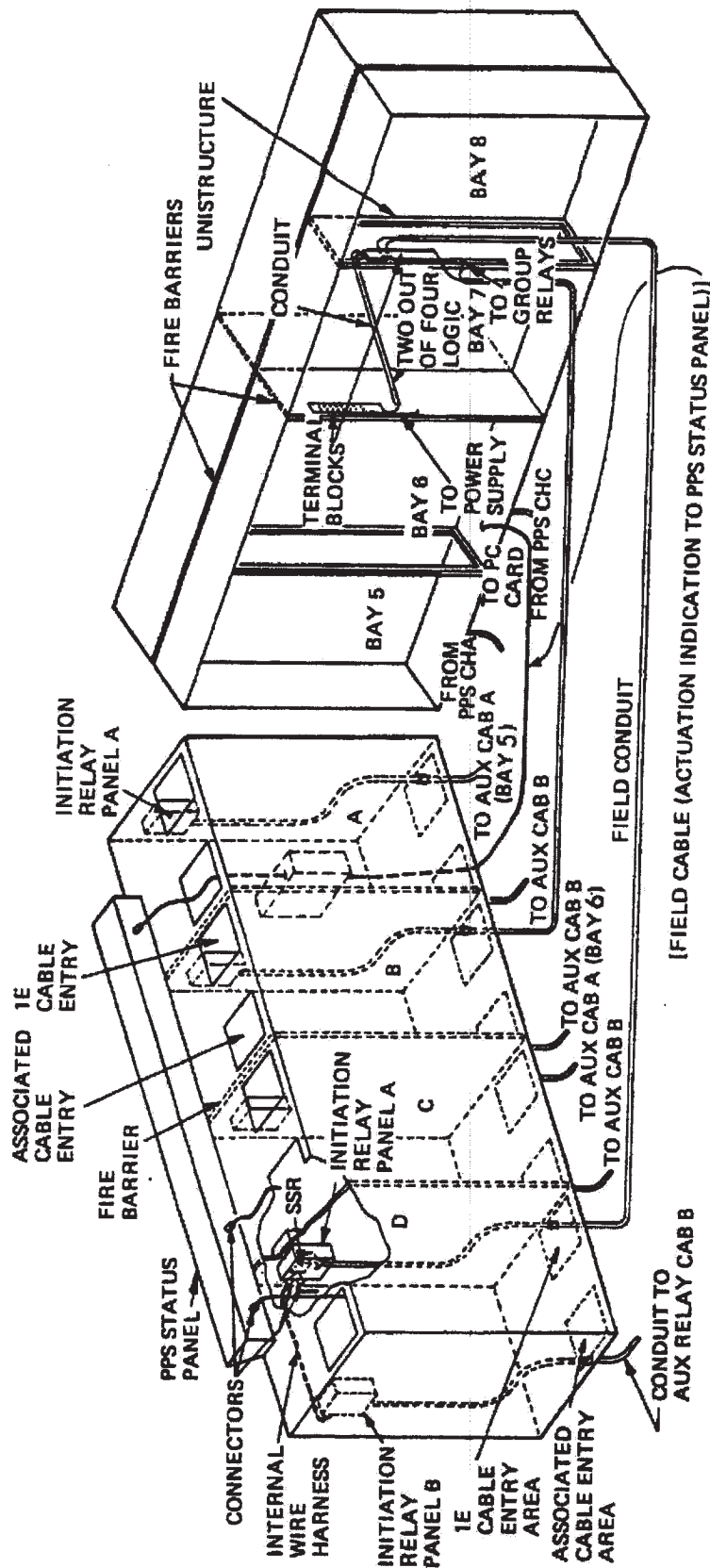
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

TYPICAL P.P.S. BAY LAYOUT

FIGURE 7.2-13

JUNE 2015

REVISION 18



PPS CABINET (REAR VIEW)

AUX. RELAY CABINET A (FRONT VIEW)

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

AUXILIARY RELAY CABINET A
(FRONT VIEW)

FIGURE 7.2-14

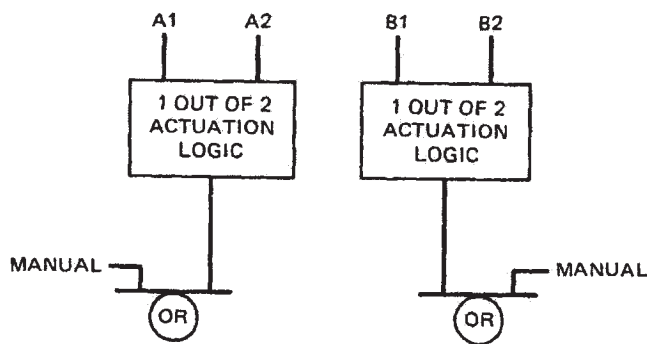
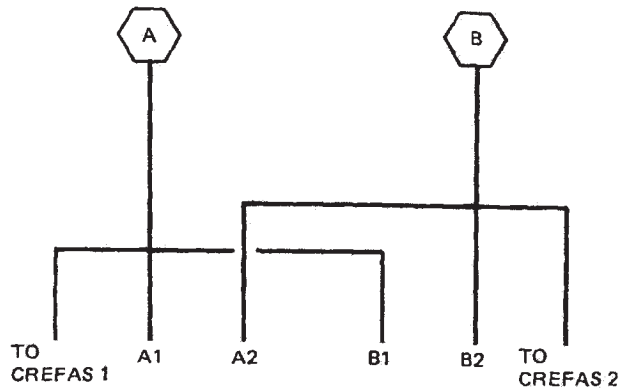
JUNE 2003

REVISION 12

FUEL BUILDING MONITORS

SPENT FUEL POOL
AREA HIGH RADIATION

FUEL BUILDING
EXHAUST DUCT
HIGH ACTIVITY



TRAIN A
COMPONENTS

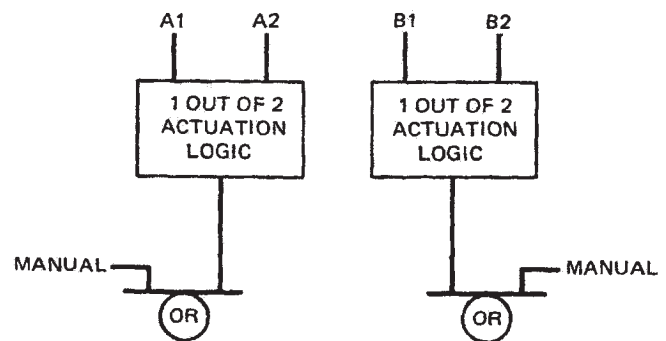
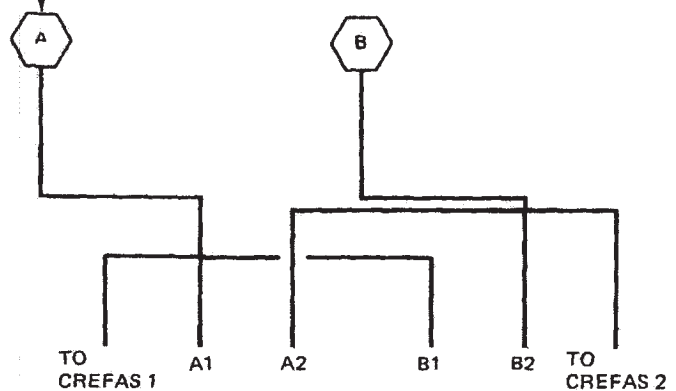
TRAIN B
COMPONENTS

FBEVAS

CONTAINMENT BUILDING MONITORS

CONTAINMENT BUILDING
POWER ACCESS PURGE
EXHAUST AREA
RADIATION

CONTAINMENT BUILDING
POWER ACCESS PURGE
EXHAUST AREA
RADIATION



TRAIN A
COMPONENTS

TRAIN B
COMPONENTS

CPIAS

LEGEND:

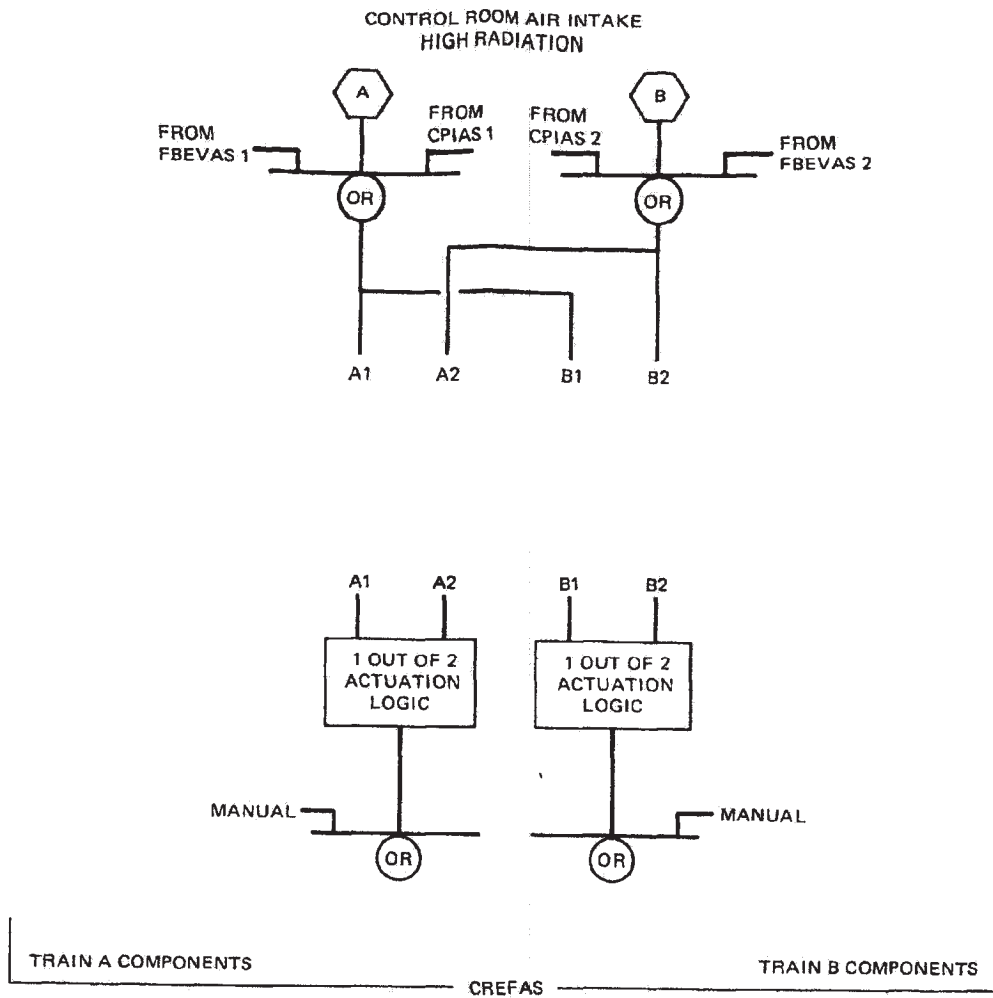
CPIAS = CONTAINMENT PURGE ISOLATION
ACTUATION SIGNAL
CREFAS = CONTROL ROOM ESSENTIAL
FILTRATION ACTUATION SIGNAL
FBEVAS = FUEL BUILDING ESSENTIAL
VENTILATION ACTUATION SIGNAL

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR
ESFAS SIGNAL LOGIC

FIGURE 7.3-1

JUNE 2001

REVISION 11



LEGEND:

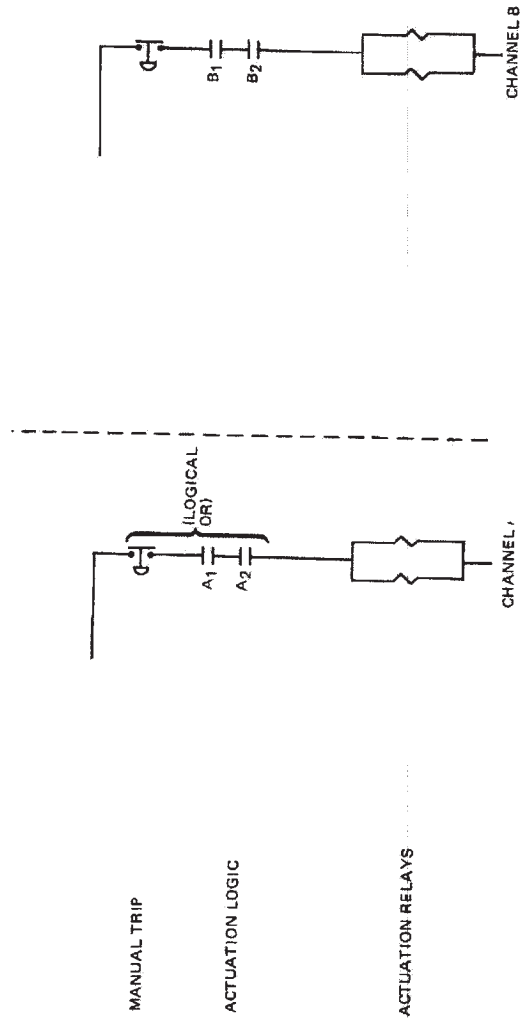
CPIAS = CONTAINMENT PURGE ISOLATION
ACTUATION SIGNAL
CREFAS = CONTROL ROOM ESSENTIAL
FILTRATION ACTUATION SIGNAL
FBEVAS = FUEL BUILDING ESSENTIAL
VENTILATION ACTUATION SIGNAL

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR
ESFAS SIGNAL LOGIC

JUNE 2001

FIGURE 7.3-2

REVISION 11



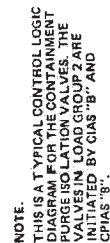
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ONE-OUT-OF-TWO ESFAS LOGIC

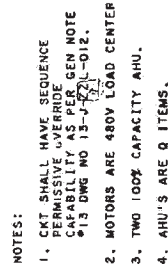
FIGURE 7.3-3

JUNE 2001

REVISION 11



JUNE 2001 REVISION 11



NOTE: THESE ARE TYPICAL CONTROL LOGIC DIAGRAMS SHOWING THE COMBINATION OF SIAS, CRVIAS, AND CREFAS AT THE COMPONENT LEVEL. A SIMILAR COMPONENT IN LOAD GROUP 2 WOULD BE INITIATED BY SIAS "B", CRVIAS "B", AND CREFAS "B".

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ESF COMPONENT CONTROL LOGIC

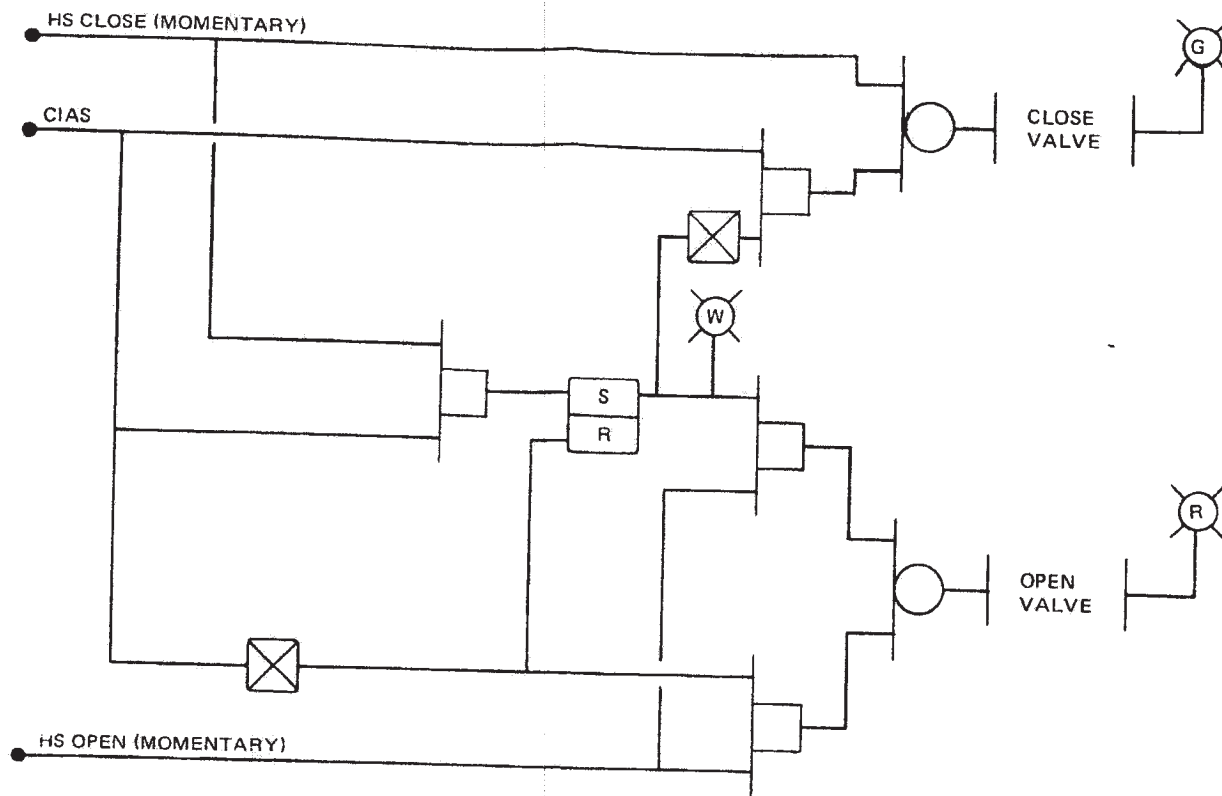
FIGURE 7.3-5

JUNE 2001

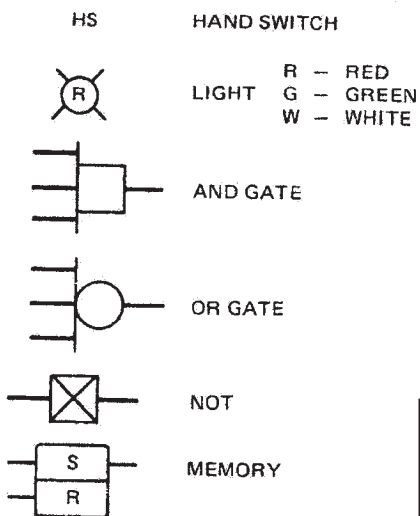
REVISION 11

CONTROL ROOM ESSENTIAL AHU'S			ELECTRICAL PROTECTION		
EQUIPMENT	CONTROL		ANN		COMP
	ID	SWITCH			
CR ESSENTIAL AHU FAN A	M-HJA-F04	HS-28		HJVS-10	A
CR ESSENTIAL AHU FAN B	M-HJB-F04	HS-28		HJVS-11	B

CONTROL ROOM ESSENTIAL AHU OSA INTAKE DAMPERS			ESF CHAN
DAMPER	DMPR ID	CONTROL SW	
ESSENTIAL AHU A OSA INTK DMPR	M-HJA-M02	H3-35	A
ESSENTIAL AHU A OSA INTK DMPR	M-HJB-M02	H3-34	B
ESSENTIAL AHU B OSA INTK DMPR	M-HJA-M03	H3-34	A
ESSENTIAL AHU B OSA INTK DMPR	M-HJB-M03	H3-35	B



LEGEND:



NOTE:

THIS IS A TYPICAL CONTROL LOGIC FOR THE VALVES IN TABLE 7.3-11.

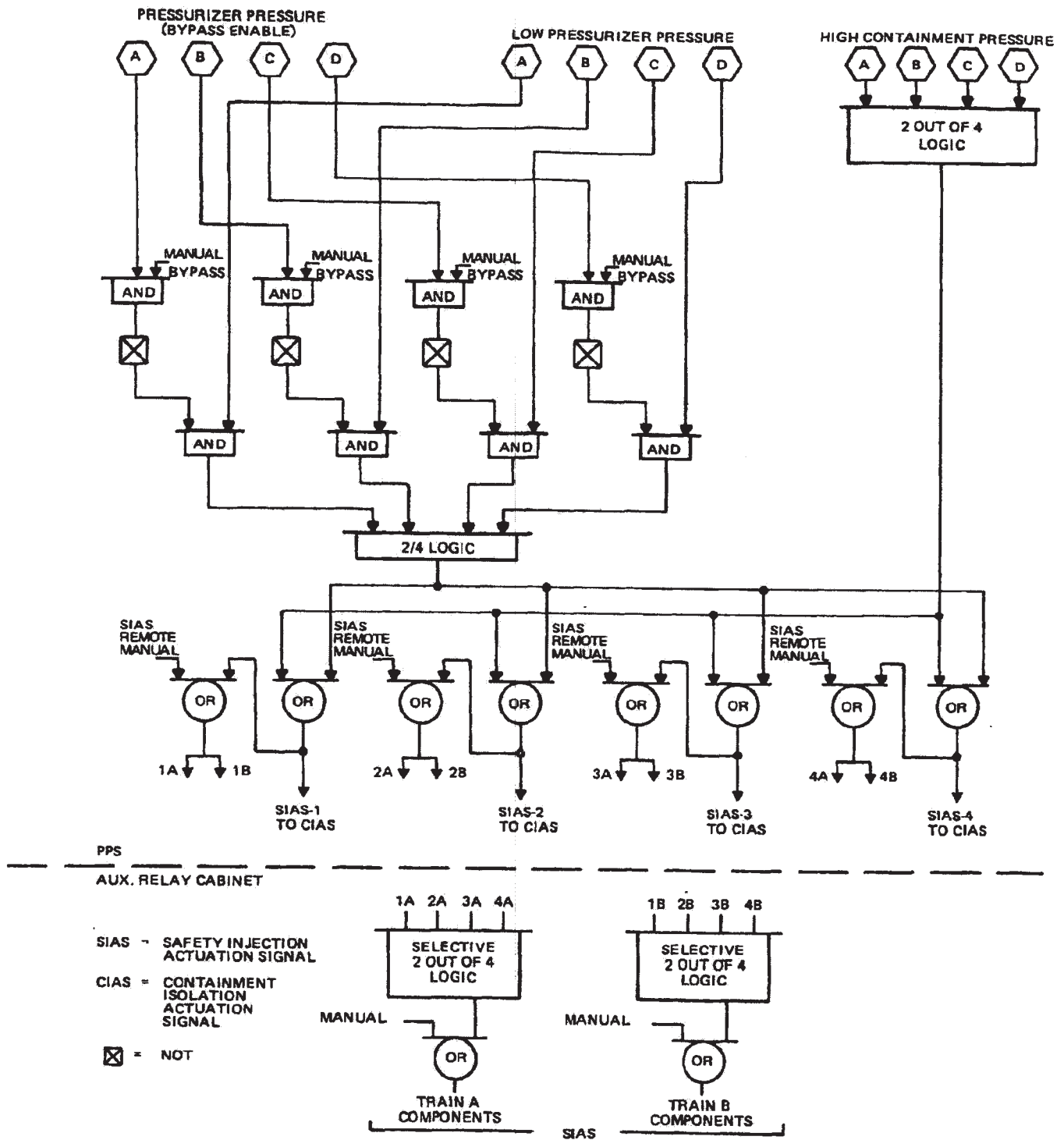
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTAINMENT COMBUSTIBLE GAS CONTROL
SYSTEM DEVICE CONTROL LOGIC

FIGURE 7.3-6

JUNE 2001

REVISION 11



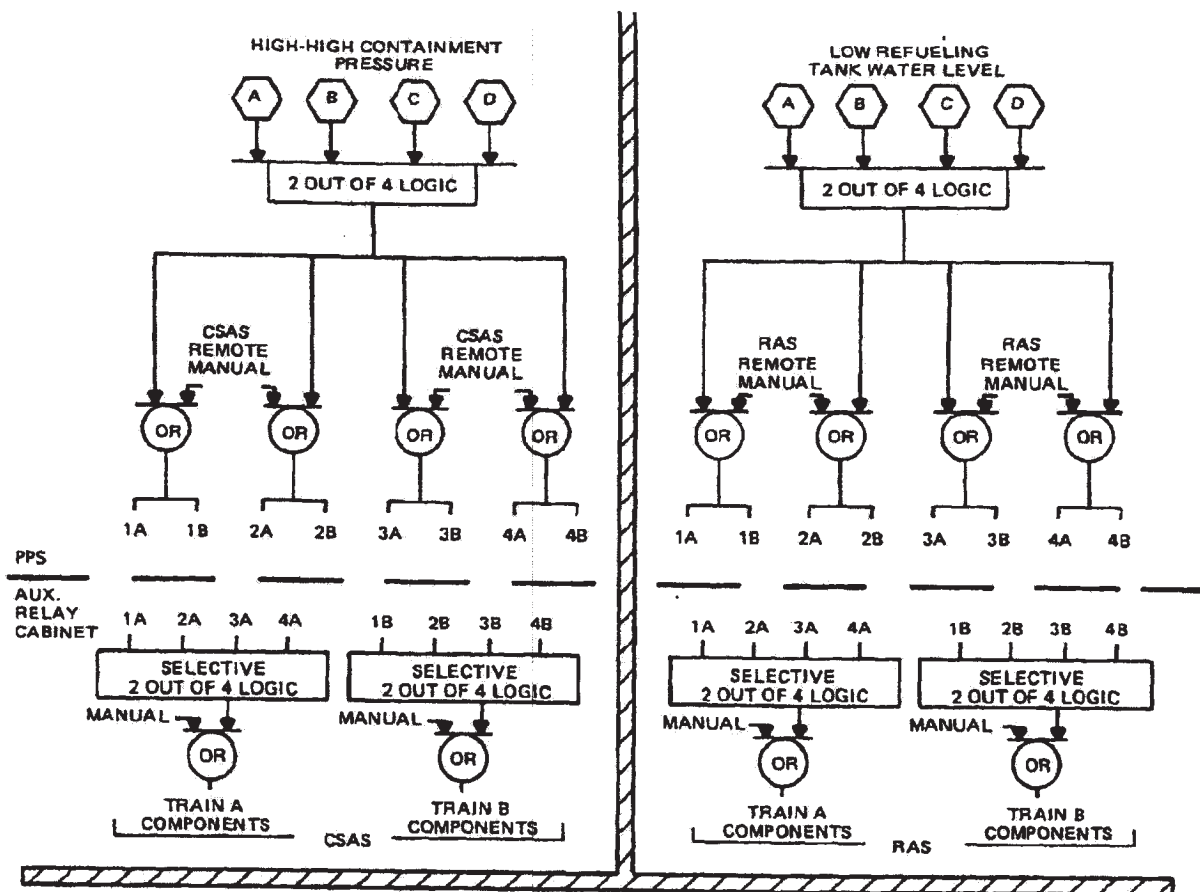
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

ESFAS SIGNAL LOGIC (SIAS)

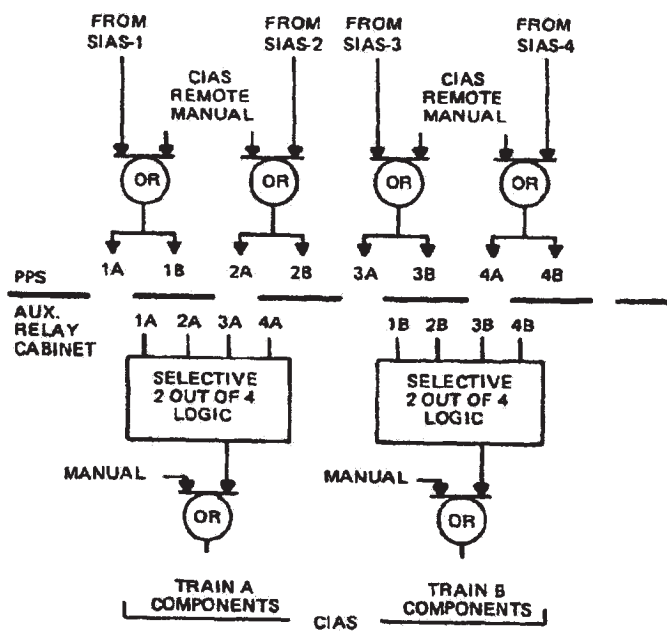
FIGURE 7.3-7A

JUNE 2001

REVISION 11



SIAS = SAFETY INJECTION ACTUATION SIGNAL
 CSAS = CONTAINMENT SPRAY ACTUATION SIGNAL
 RAS = RECIRCULATION ACTUATION SIGNAL
 CIAS = CONTAINMENT ISOLATION ACTUATION SIGNAL



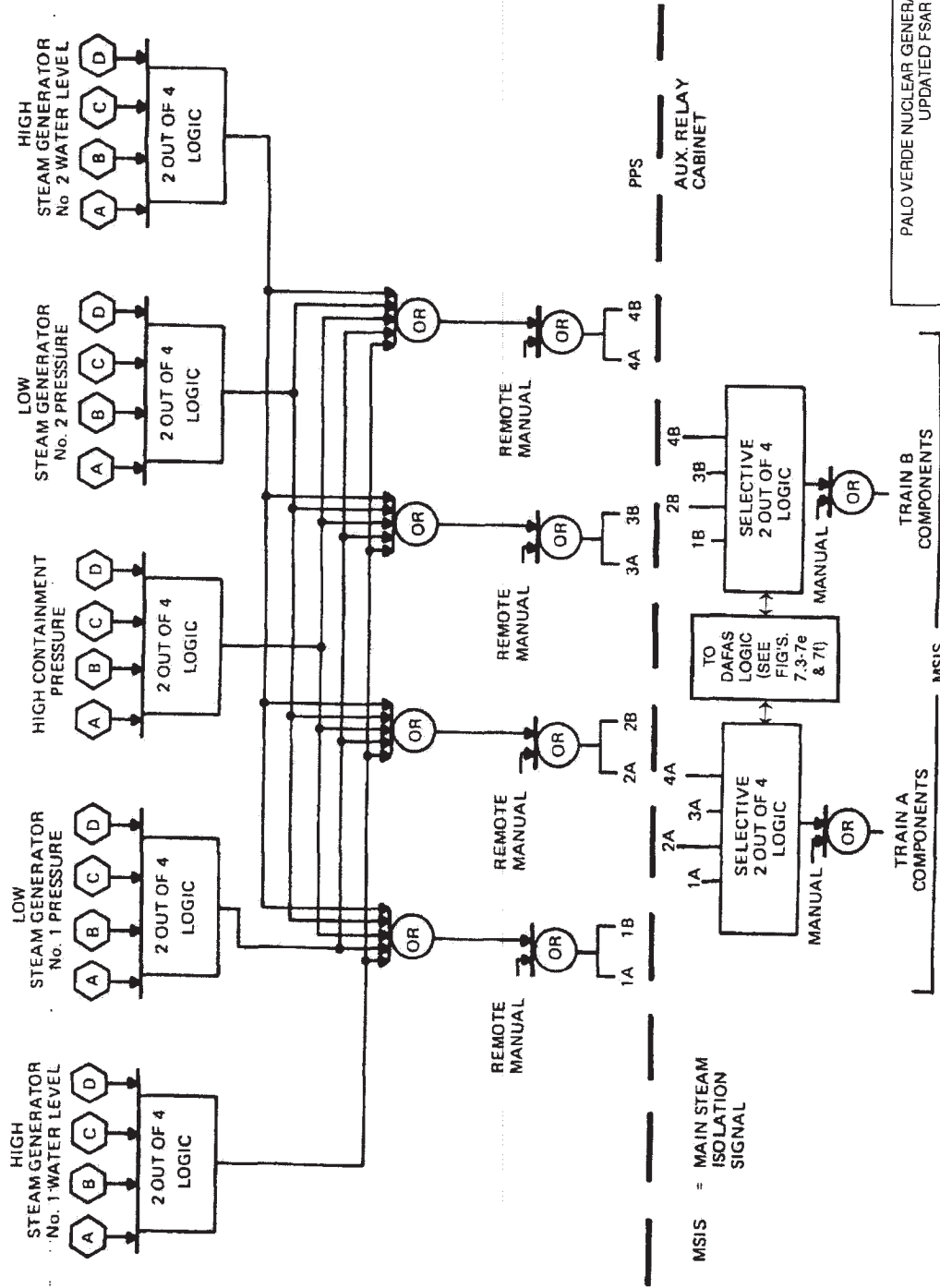
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

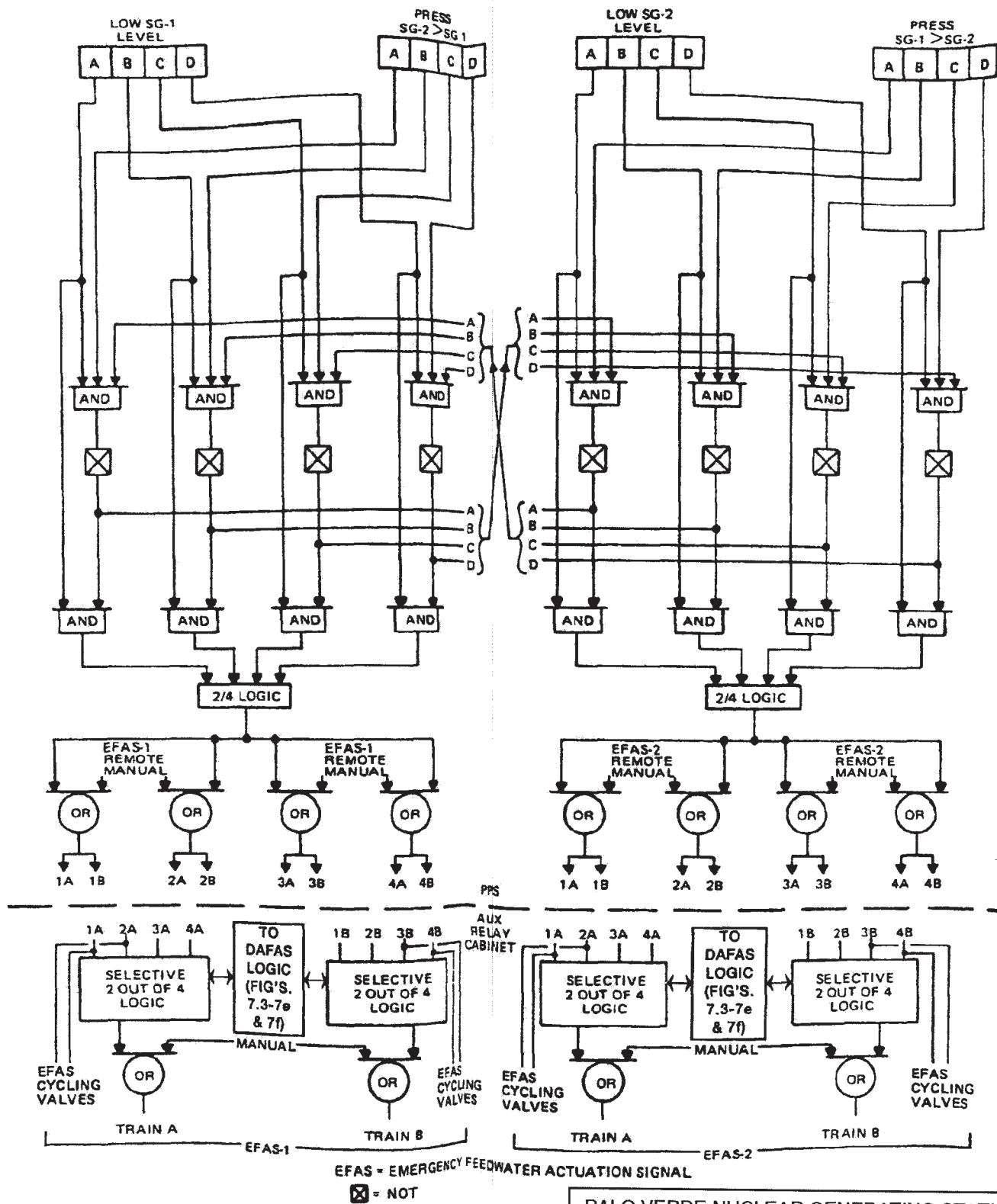
ESFAS SIGNAL LOGIC
 (CSAS, CIAS, RAS)

FIGURE 7.3-7B

JUNE 2001

REVISION 11





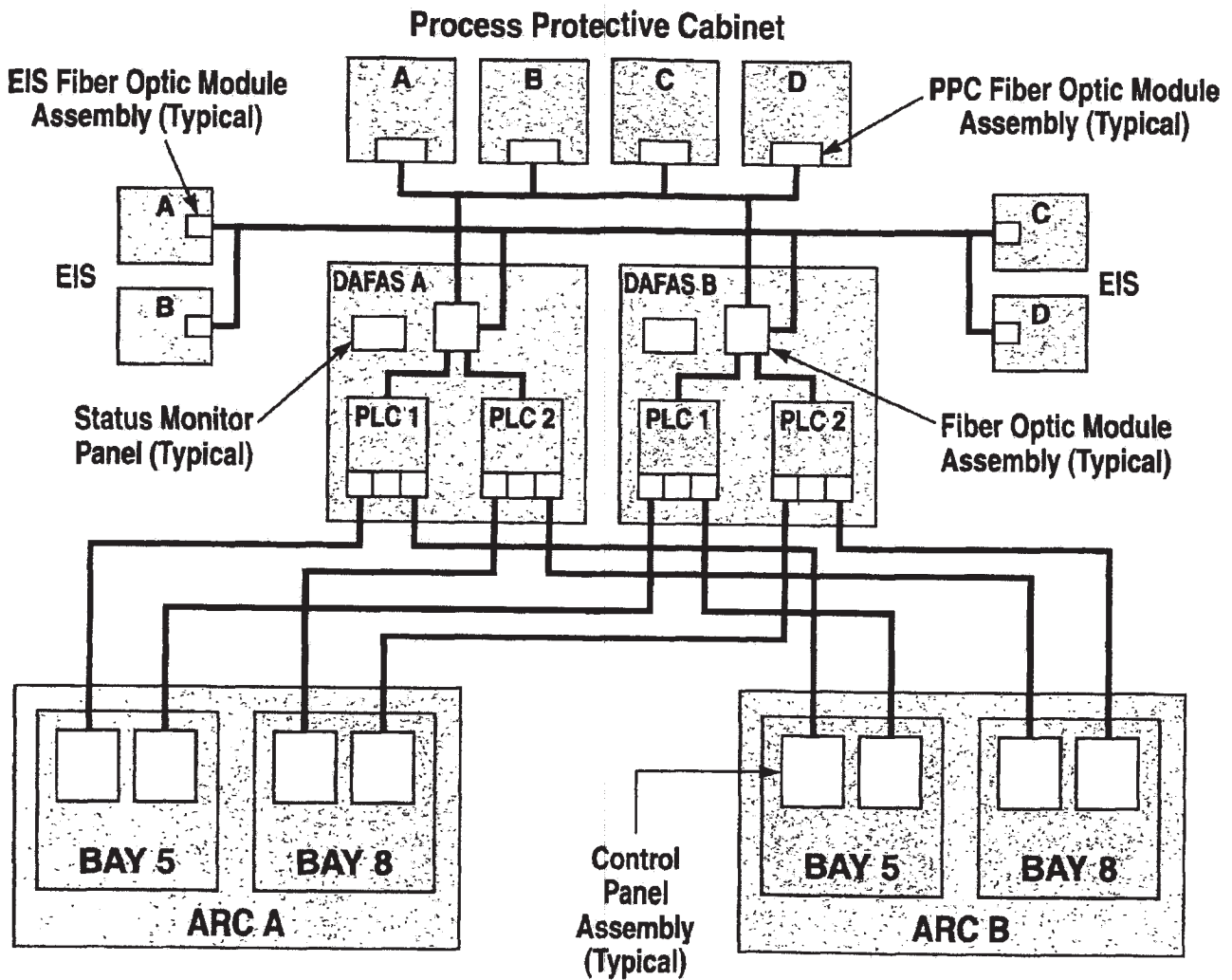
PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

ESFAS SIGNAL LOGIC
 (EFAS 1, EFAS 2)

FIGURE 7.3-7D

JUNE 2001

REVISION 11



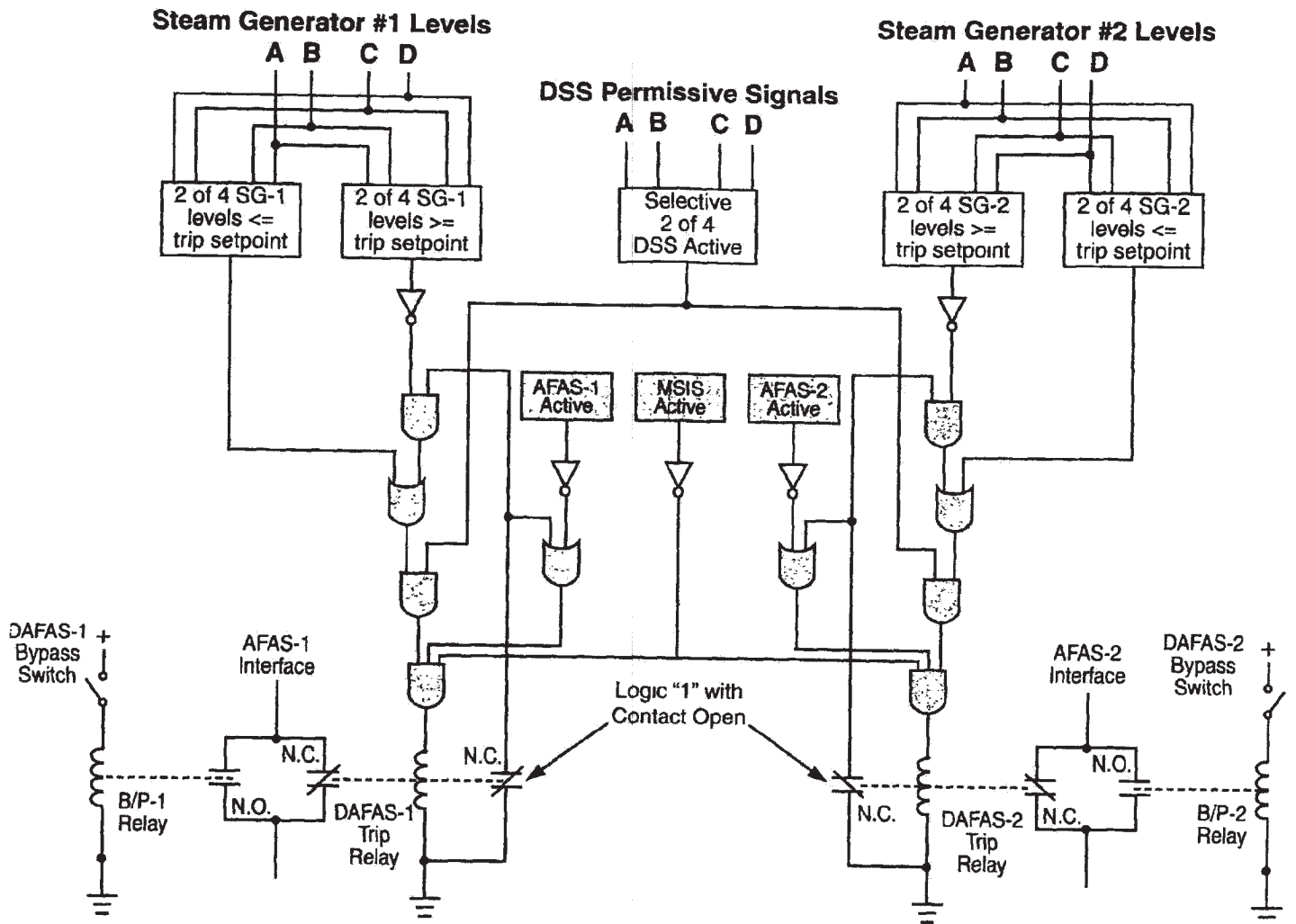
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

DAFAS BLOCK DIAGRAM

FIGURE 7.3-7E

JUNE 2001

REVISION 11



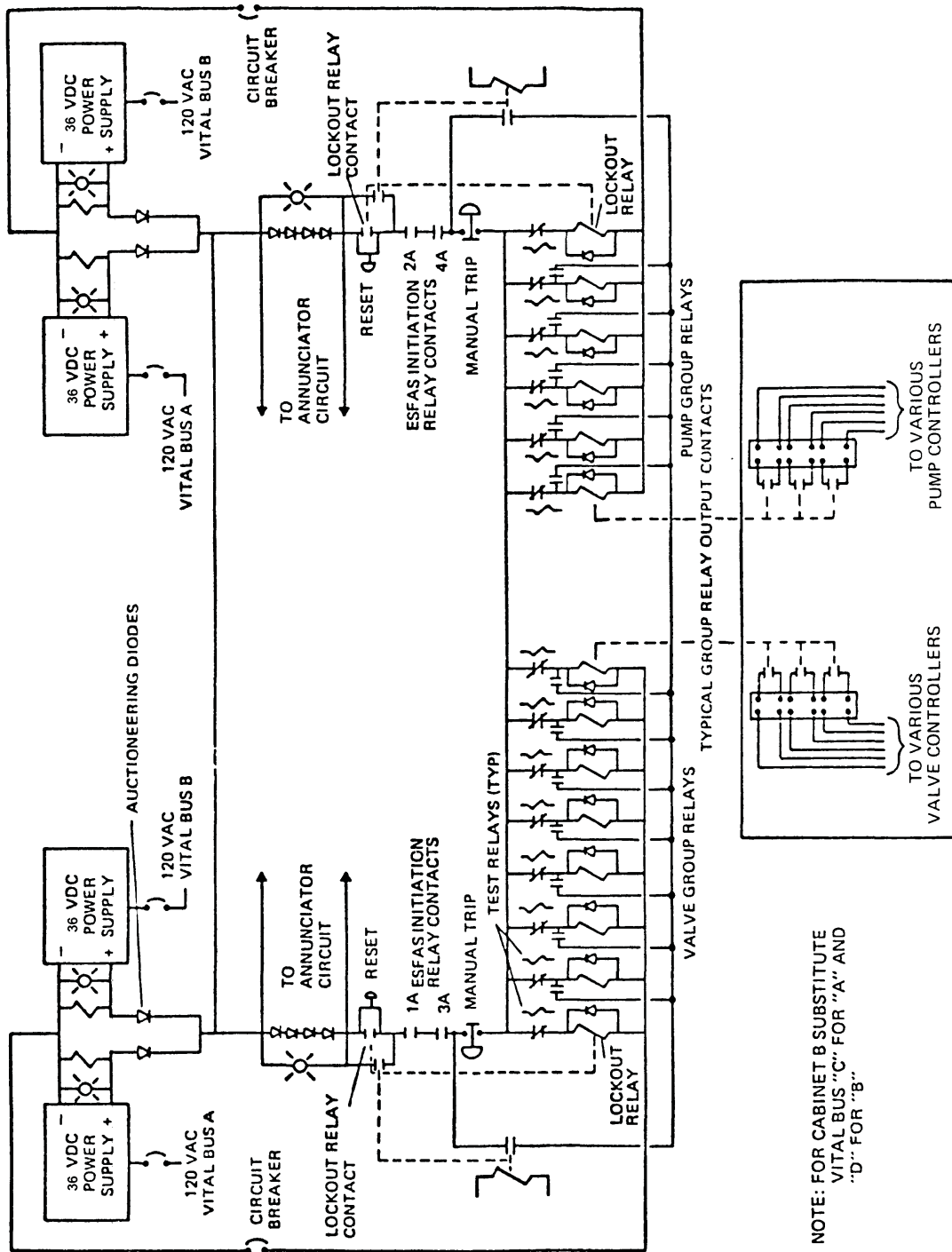
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

DAFAS LOGIC DIAGRAM

FIGURE 7.3-7F

JUNE 2001

REVISION 11



NOTE: FOR CABINET B SUBSTITUTE
VITAL BUS "C" FOR "A" AND
"D" FOR "B"

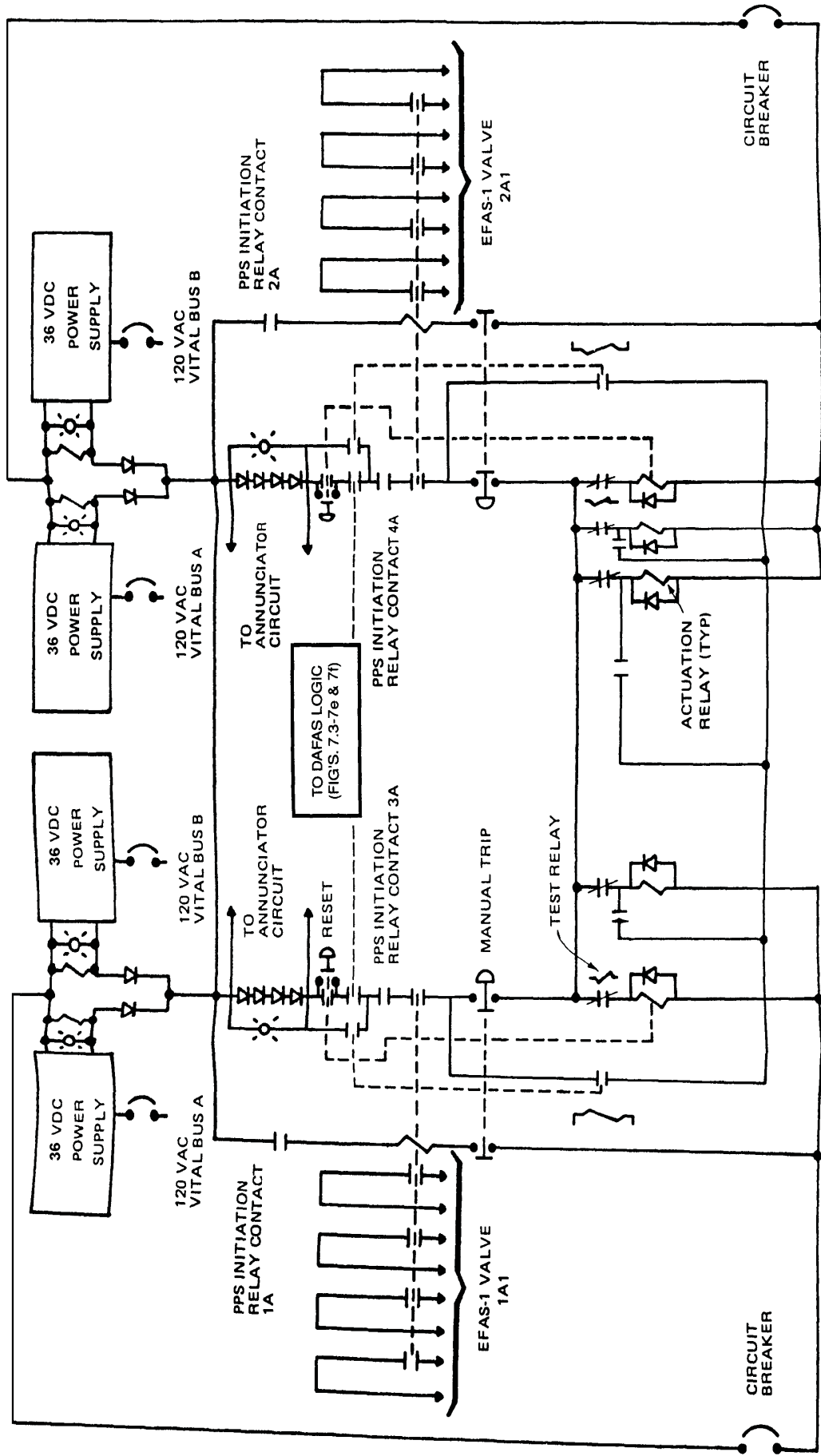
PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

ESFAS AUXILIARY RELAY CABINET SCHEMATIC DIAGRAM FOR TYPICAL ACTUATION SIGNAL

FIGURE 7.3-8A

JUNE 2009

REVISION 15



NOTE: FOR CABINET B SUBSTITUTE VITAL BUS "C" FOR "A," "D" FOR "B," "EFAS-2 VALVE 1B1" FOR "EFAS-1 VALVE 1A1" AND "EFAS-2 VALVE 2B1" FOR "EFAS-1 VALVE 2A1"

PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

ESFAS AUXILIARY RELAY CABINET SCHEMATIC DIAGRAM FOR THE EFAS

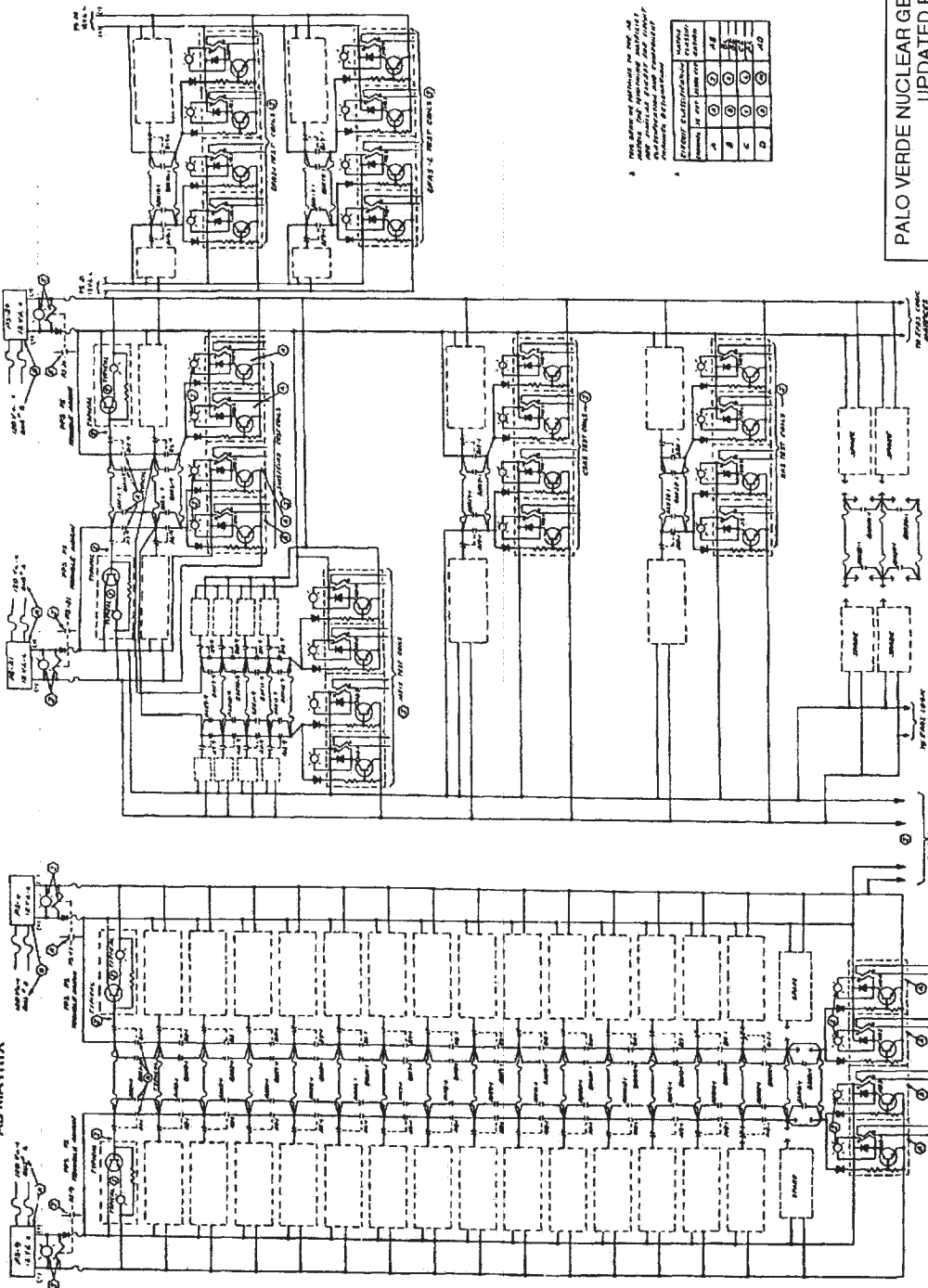
FIGURE 7.3-8B

JUNE 2009

REVISION 15



ENGINEERED SAFETY FEATURES ACTUATION AB MATRIX



1. The above diagram is for the purpose of showing the approximate location of the components and their interconnections. It is not intended to be a detailed schematic diagram.

COMPONENT	1	2	3	4	5	6	7	8	9	10
1. REACTOR PROTECTIVE SYSTEM	1	2	3	4	5	6	7	8	9	10
2. ENGINEERED SAFETY FEATURES	1	2	3	4	5	6	7	8	9	10
3. REACTOR PROTECTIVE SYSTEM	1	2	3	4	5	6	7	8	9	10
4. ENGINEERED SAFETY FEATURES	1	2	3	4	5	6	7	8	9	10
5. REACTOR PROTECTIVE SYSTEM	1	2	3	4	5	6	7	8	9	10
6. ENGINEERED SAFETY FEATURES	1	2	3	4	5	6	7	8	9	10
7. REACTOR PROTECTIVE SYSTEM	1	2	3	4	5	6	7	8	9	10
8. ENGINEERED SAFETY FEATURES	1	2	3	4	5	6	7	8	9	10
9. REACTOR PROTECTIVE SYSTEM	1	2	3	4	5	6	7	8	9	10
10. ENGINEERED SAFETY FEATURES	1	2	3	4	5	6	7	8	9	10

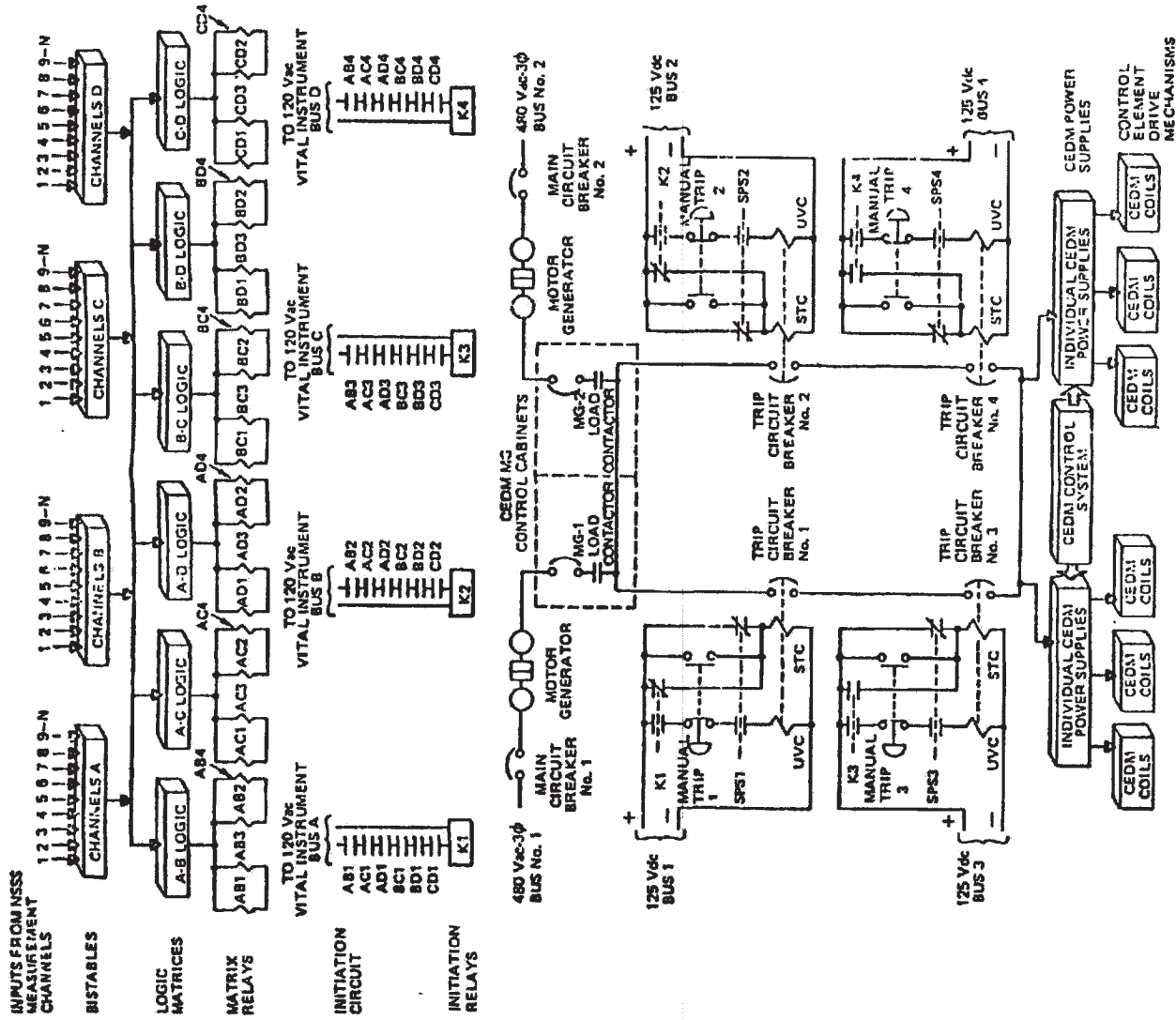
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SIMPLIFIED FUNCTIONAL DIAGRAM
OF THE REACTOR PROTECTIVE SYSTEM

FIGURE 7.3-9B

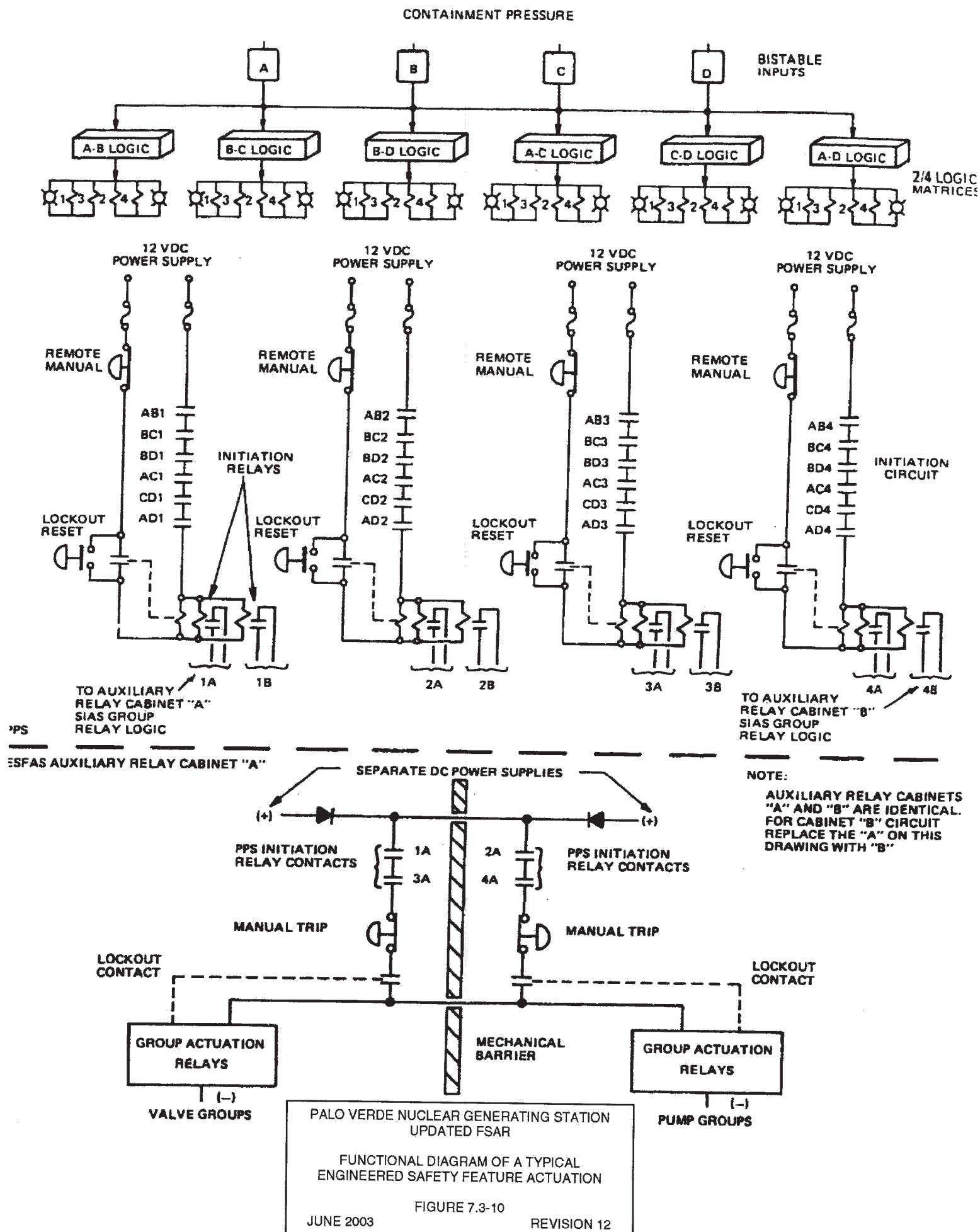
JUNE 2001

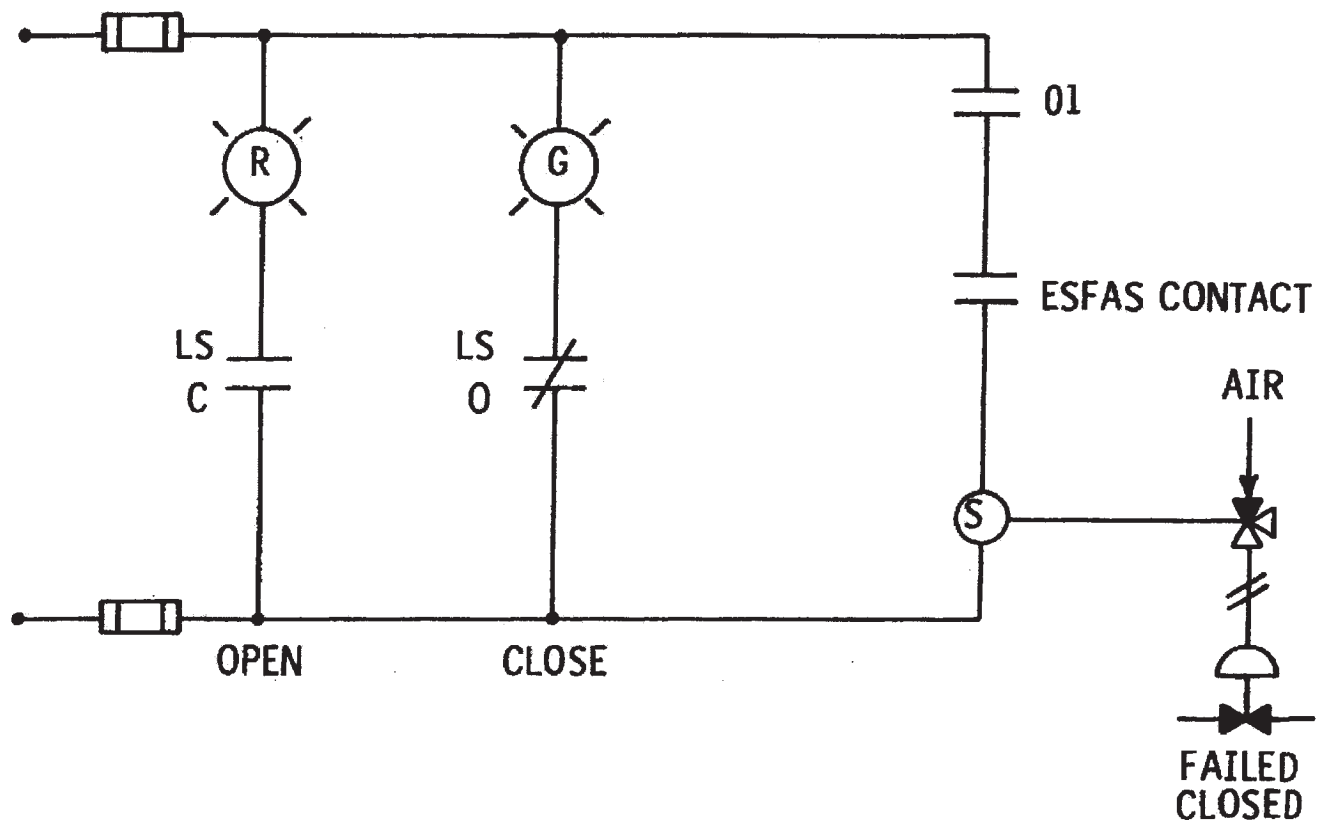
REVISION 11



NOTES:

1. STC = SHUNT TRIP COIL
2. UVC = UNDER VOLTAGE COIL
3. SPS = SUPPLEMENTARY PROTECTIVE SYSTEM





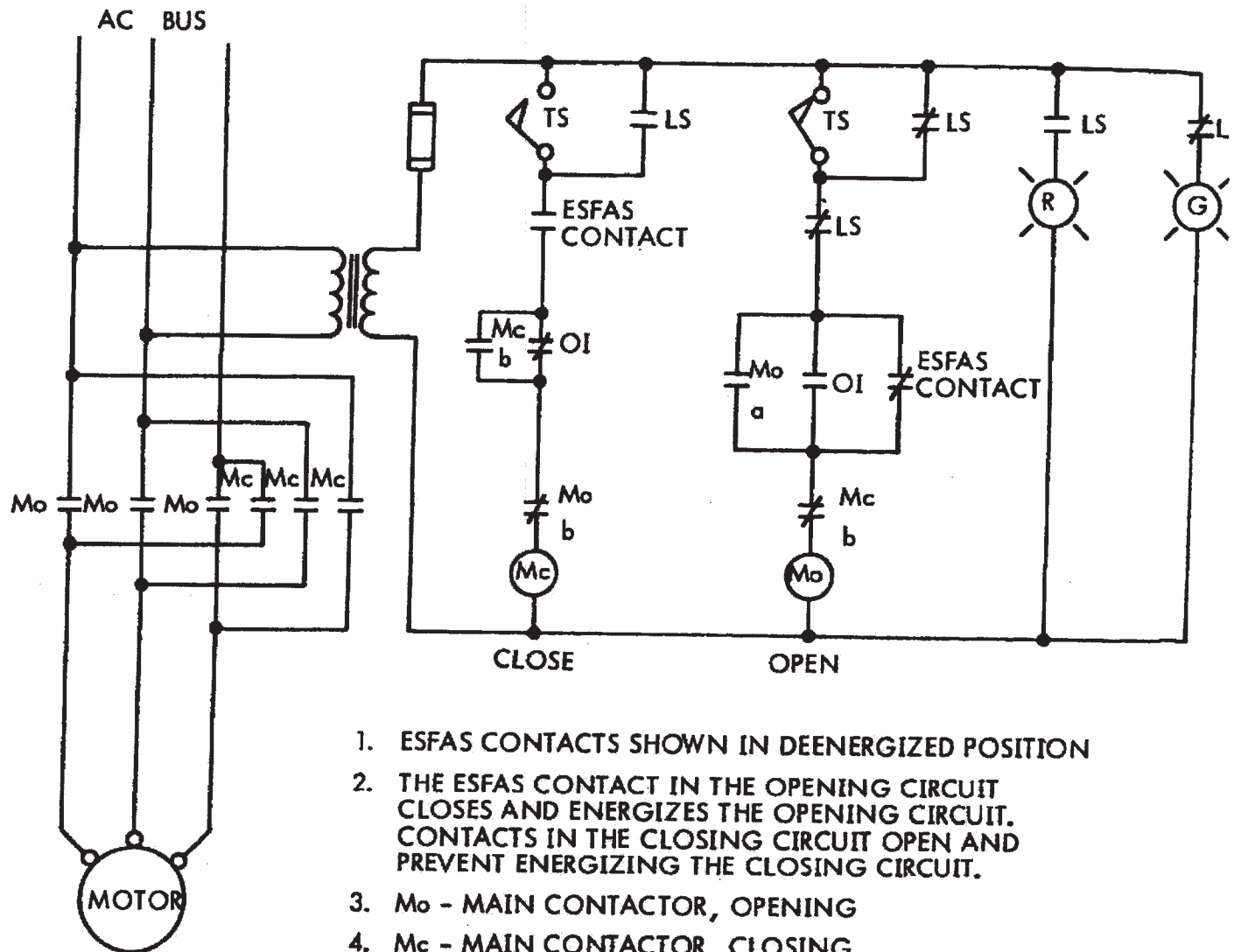
1. ESFAS CONTACT SHOWN IN DEENERGIZED POSITION
2. THE ESFAS CONTACT OPENS AND VALVE GOES TO FAILURE POSITION
3. 01 - VALVE CONTROL SWITCH
4. S - SOLENOID
5. L. S. - LIMIT SWITCH

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTROL CIRCUIT FOR A SOLENOID
ACTUATED
AIR OPERATED VALVE

FIGURE 7.3-11A

JUNE 2003 REVISION 12



1. ESFAS CONTACTS SHOWN IN DEENERGIZED POSITION
2. THE ESFAS CONTACT IN THE OPENING CIRCUIT CLOSSES AND ENERGIZES THE OPENING CIRCUIT. CONTACTS IN THE CLOSING CIRCUIT OPEN AND PREVENT ENERGIZING THE CLOSING CIRCUIT.
3. Mo - MAIN CONTACTOR, OPENING
4. Mc - MAIN CONTACTOR, CLOSING
5. TS - TORQUE SWITCH
6. LS - LIMIT SWITCH
7. OI - VALVE CONTROL SWITCH

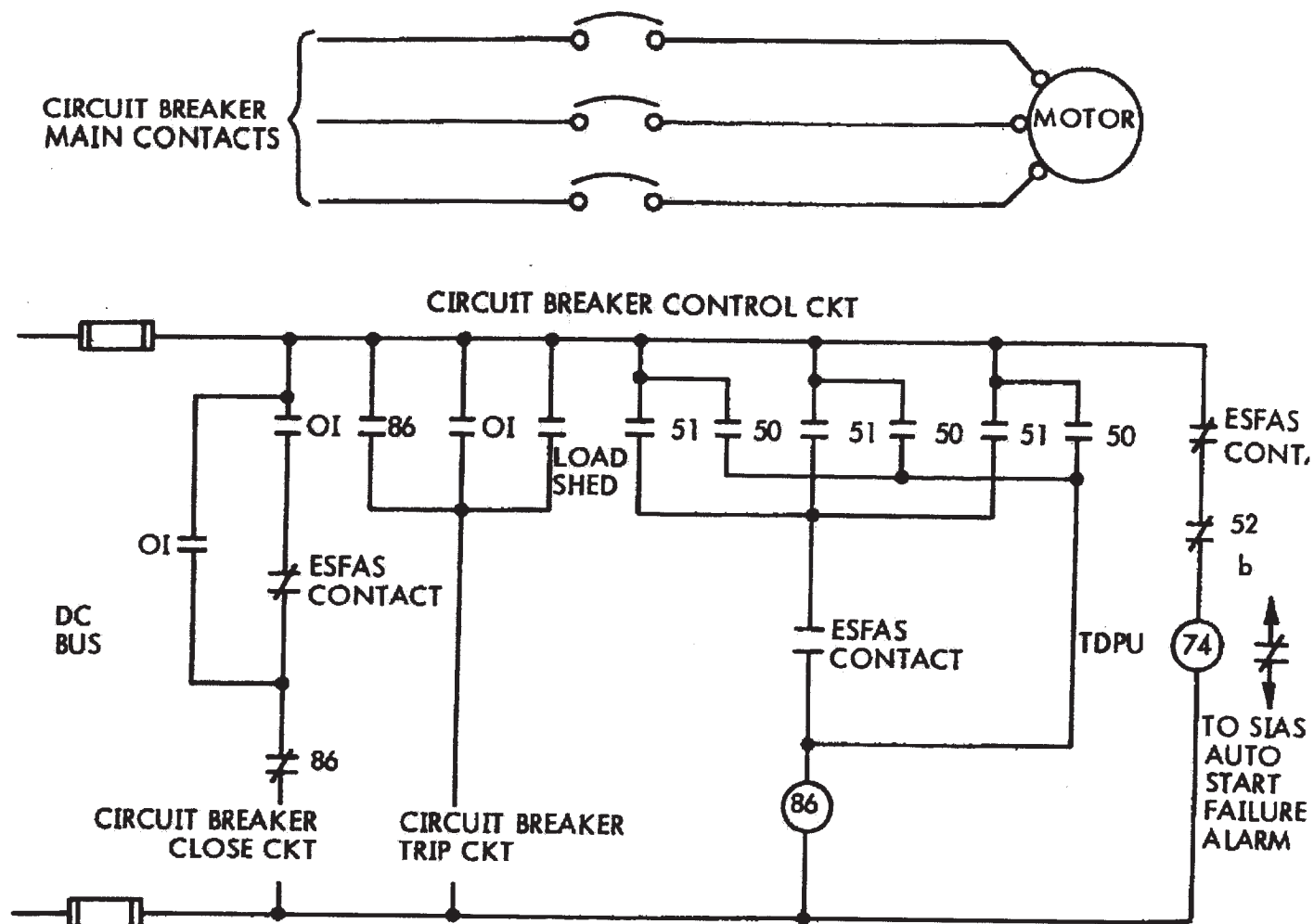
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTROL CIRCUIT FOR A
MOTOR OPERATED VALVE

FIGURE 7.3-11B

JUNE 2003

REVISION 12



1. ESFAS CONTACTS SHOWN IN DEENERGIZED POSITION
2. THE ESFAS CONTACT IN ALARM CIRCUIT CLOSSES AND IF THE BREAKER DOES NOT CLOSE AN ALARM WILL BE INITIATED. THE CONTACT IN THE LOCKOUT CIRCUIT PREVENTS THE TRIP CIRCUIT FROM BEING ENERGIZED WHEN A 51 DEVICE IS INITIATED IN COINCIDENT WITH A ESFAS SIGNAL. THE CLOSING CIRCUIT CONTACT CLOSSES AND ENERGIZES THE CLOSING CIRCUIT.
3. 50 - INSTANTANEOUS OVERCURRENT RELAY
4. 51 - TIME OVERCURRENT RELAY
5. OI - CIRCUIT BREAKER CONTROL SWITCH
6. 86 - LOCK-OUT RELAY
7. 52 - CIRCUIT BREAKER AUXILIARY CONTACT, NORMALLY CLOSED
8. 74 - ALARM RELAY

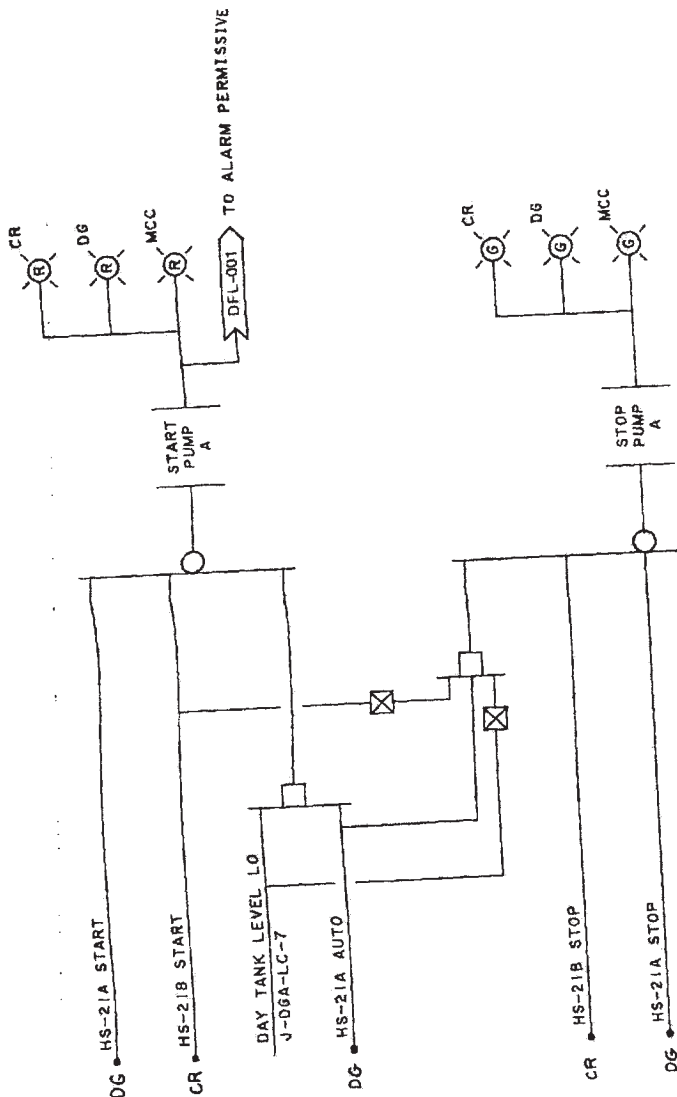
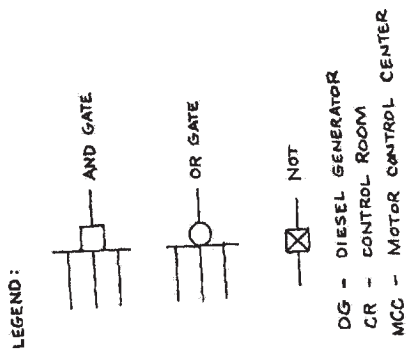
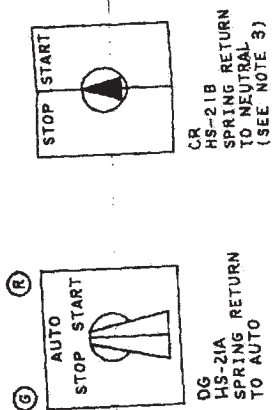
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTROL CIRCUIT FOR A
PUMP MOTOR

FIGURE 7.3-11C

JUNE 2003

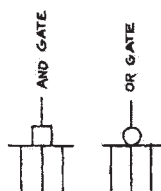
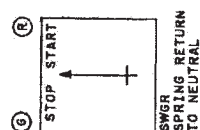
REVISION 12



- NOTES:
1. PUMPS ARE 480V MCC
 2. PUMPS ARE Q-ITEMS.
 3. HOLDING CONTROL SWITCH HS-21B IN "START" WILL OVERRIDE THE AUTO STOP SIGNAL.

PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 CONTROL LOGIC DIAGRAM
 DIESEL GENERATOR FUEL OIL
 TRANSFER PUMPS
 JUNE 2001
 FIGURE 7.4-1
 REVISION 11

TRAIN	PUMP ID	CONTROL SWITCH (CR)	CONTROL SWITCH LOCAL	DAY TANK LEVEL SW
A	M-OFA-P01	HS-21B	HS-21A	LC-7
B	M-OFA-P01	HS-22B	HS-22A	LC-8



NOT
CR - CONTROL R
SWGR - SWITCH GR

NOTES:

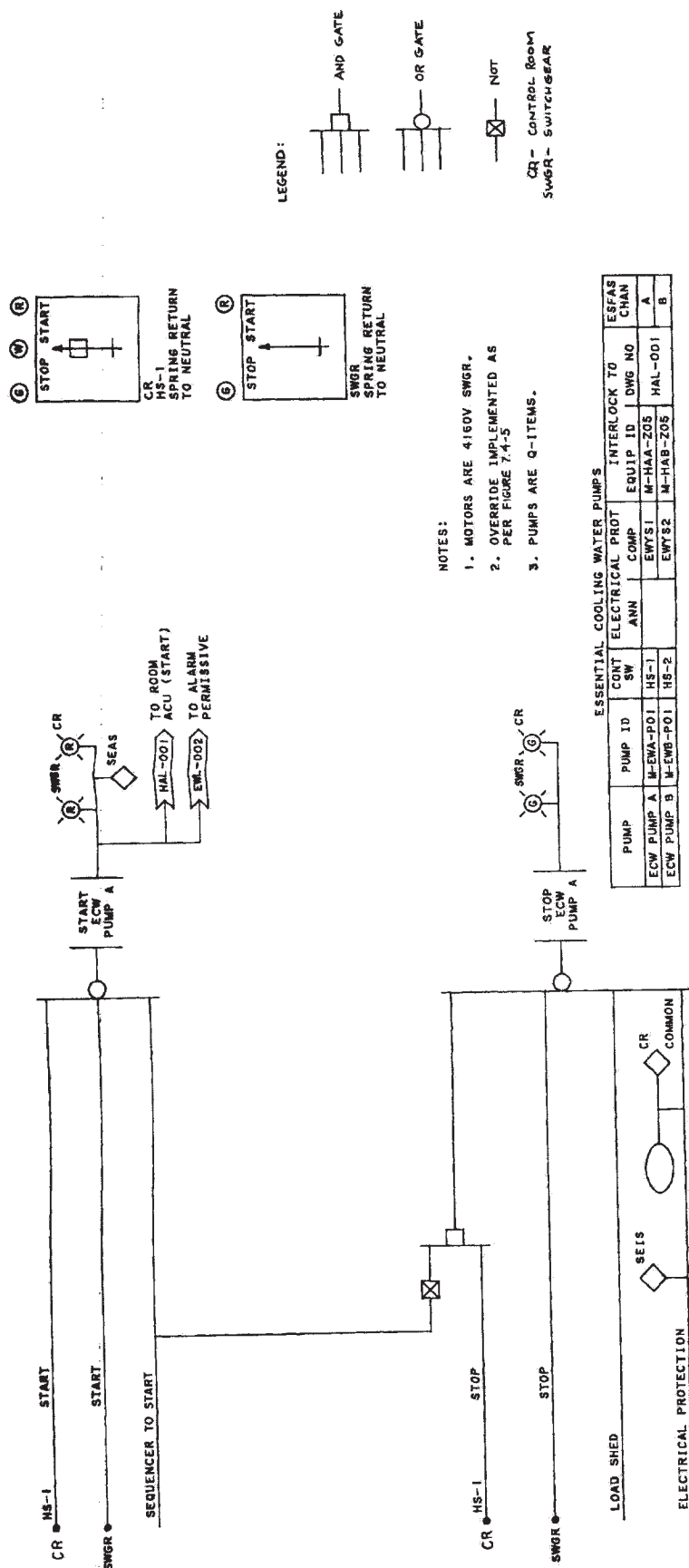
1. MOTORS ARE 4160V SWGR.
2. OVERRIDE IMPLEMENTED AS PER FIGURE 7.4-5
3. PUMPS ARE Q-ITEMS.

ESSENTIAL SPRAY POND PUMPS											
INTERLOCK WITH		INTERLOCK WITH		PUMP		CONTROL SWITCH		ELECT ANN		ESFAS	
DWE NO		DWE NO		DWE NO		PUMP ID		ANN		CHAN	
HY-99	SPL-004	M-SPN-004A	SPL-004	ESS SPRAY POND PP A	M-SPA-P01	MS-1				SPYS1	A
HY-100	M-SPN-004B	M-SPN-004B	SPL-004	ESS SPRAY POND PP B	M-SBP-P01	MS-2				SPYS2	B

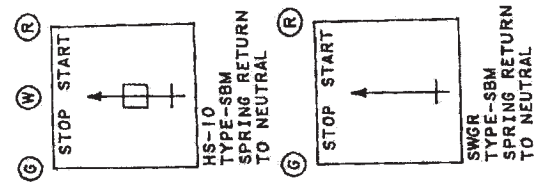
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTROL LOGIC DIAGRAM ESSENTIAL SPRAY POND PUMPS

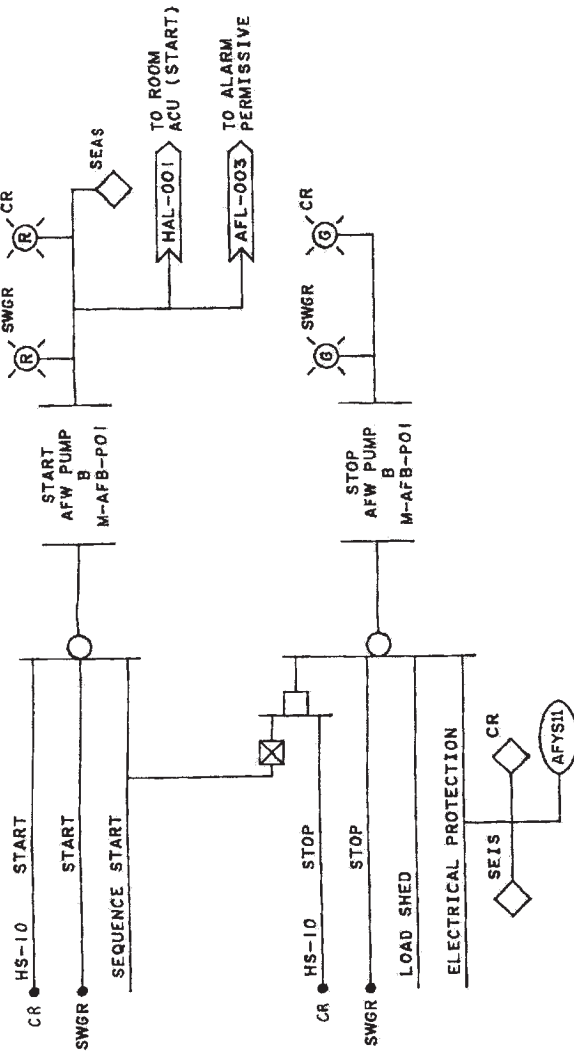
FIGURE 7.4-2



PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR
 CONTROL LOGIC DIAGRAM
 ESSENTIAL COOLING WATER PUMPS
 JUNE 2001
 FIGURE 7.4-3
 REVISION 11



- NOTES:
1. MOTOR IS 4160V SWGR.
 2. OVERRIDE IS IMPLEMENTED AS PER FIGURE 7-4-5
 3. PUMP IS A Q-ITEM.



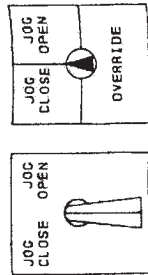
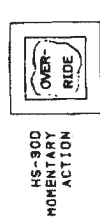
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTROL LOGIC DIAGRAM
AUXILIARY FEEDWATER PUMP B

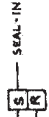
FIGURE 7-4-4 SHEET 1 OF 3

JUNE 2001

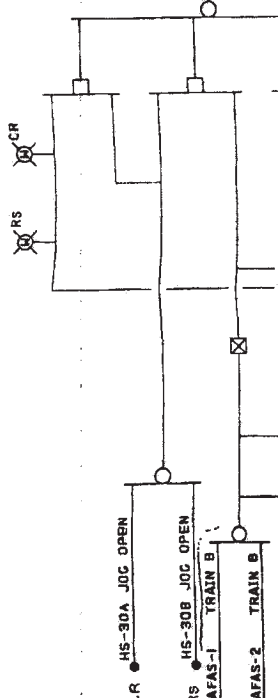
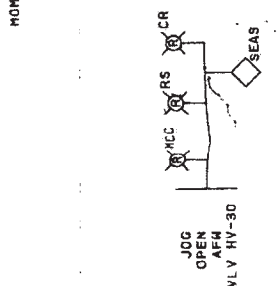
REVISION 11



LEGEND:



CR — CONTROL ROOM
RS — REMOTE SHUTDOWN PANEL
MCC — MOTOR CONTROL CENTER

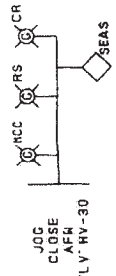


AUXILIARY FEEDWATER (SAFETY) REGULATING VALVES

VALVE	VALVE ID	CONTROL SWITCH	AFAS CYCLING	AFAS182 TRAIN	APPLICABLE NOTES
AFV PP.B TO S/C #1 (UPSTREAM)	HV-30	HS-30ABC	1 TRAIN B	B	1.3A, 9
AFV PP.B TO S/C #2 (UPSTREAM)	HV-31	HS-31ABC	2 TRAIN B	B	1.3A, 9
AFV PP.A TO S/C #1 (UPSTREAM)	HV-32	HS-32ABC	1 TRAIN A	A	2.3A, 9
AFV PP.A TO S/C #2 (UPSTREAM)	HV-33	HS-33ABC	2 TRAIN A	A	2.3A, 5, 9
AFV PP.B TO S/C #1 (DOWNSTREAM)	UV-34	HS-34ABC	1 TRAIN B	B	1.3B, 4
AFV PP.B TO S/C #2 (DOWNSTREAM)	UV-35	HS-35ABC	2 TRAIN B	B	1.3B, 4
AFV PP.A TO S/C #1 (DOWNSTREAM)	UV-36	HS-36ABC	1 TRAIN A	A	2.3B, 4, 5
AFV PP.A TO S/C #2 (DOWNSTREAM)	UV-37	HS-37ABC	2 TRAIN A	A	2.3B, 4

NOTES - SEE TABLE FOR APPLICATION

1. VALVE MOTORS ARE 480V MCC.
2. VALVE MOTORS ARE 125V MCC.
- 3A. GLOBE VALVE — OPEN — LIMITED STOPPED
- 3B. GATE VALVE — CLOSE — TORQUE SEATED
4. JOG FEATURE NOT USED — VALVE WILL NOT REVERSE TRAVEL WHILE IN MOTION EXCEPT DURING AFAS.
5. ISOLATION OF CYCLING AND NORMAL AFAS SIGNALS REQUIRED SINCE POWER IS FROM CHANNEL C BATTERIES.



AFAS-1 TRAIN B CYCLING

HS-30A JOG CLOSE

HS-30B JOG CLOSE

TORQUE PROTECTION

ELECTRICAL PROTECTION

STOP VALVE

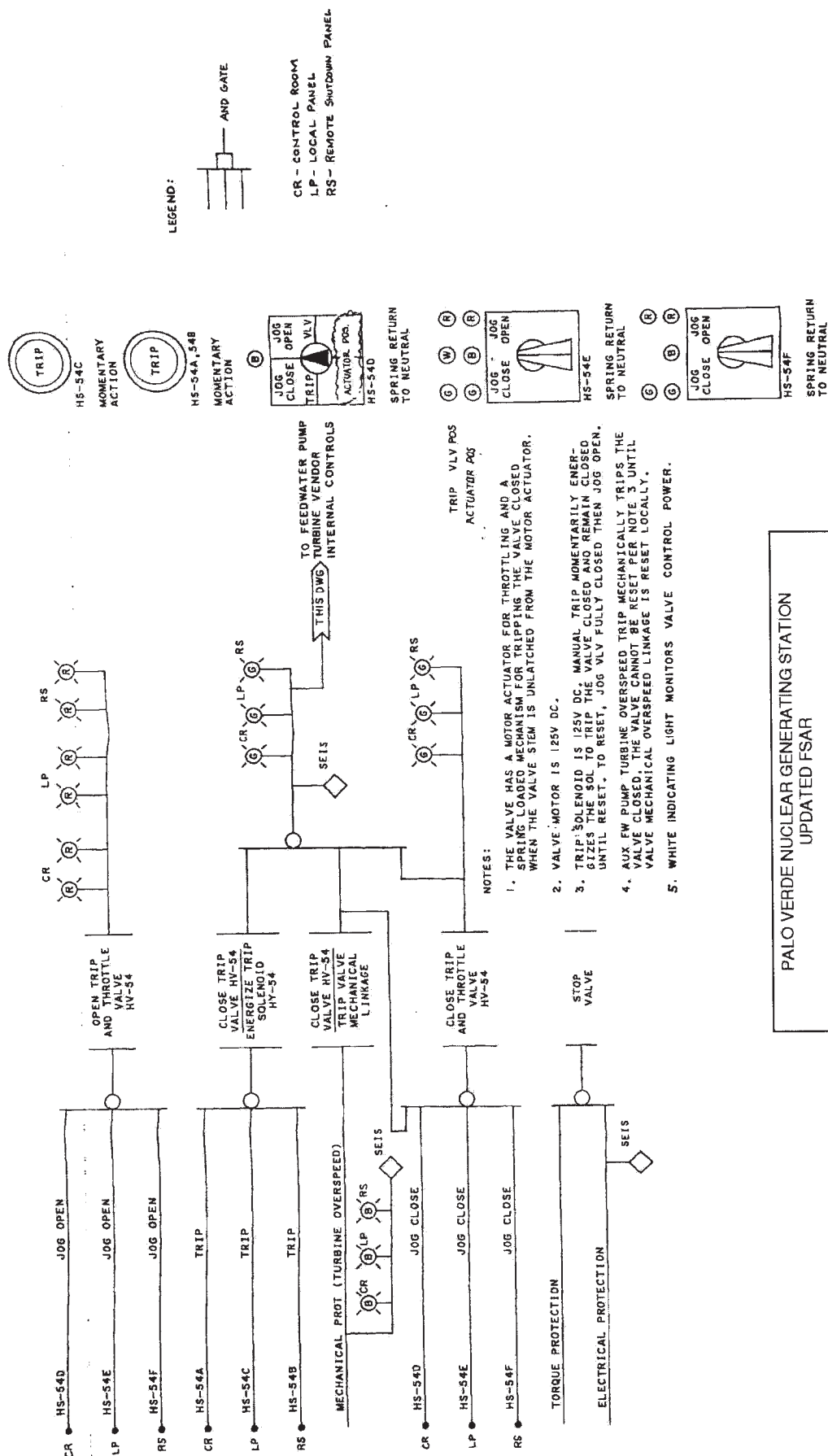
SELS

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTROL LOGIC DIAGRAM
AUXILIARY FEEDWATER
REGULATING VALVES

FIGURE 7.4-4 SHEET 2 OF 3
JUNE 2001

REVISION 11

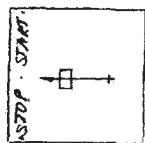


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CONTROL LOGIC DIAGRAM AUX
FEEDWATER PUMP A TURB TRIP
& THROTTLE VALVE J-AFA-HV-54

FIGURE 7.4-4 SHEET 3 OF 3
JUNE 2001
REVISION 11

ⓐ ⓑ ⓓ



HS-1

SPRING RETURN TO NEUTRAL

HS-1 START

CR

3 R

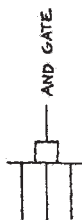
ESFAS OR SEQUENCER START
(WHERE APPLICABLE - SEE NOTE 4)

LOP SIGNAL
(WHERE APPLICABLE - SEE NOTE 4)

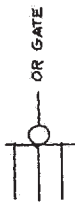
START
PUMP
A

CR

LEGEND:



AND GATE



OR GATE

HS-1 STOP

LOAD SHED
(WHERE APPLICABLE - SEE NOTE 4)

STOP
PUMP
A

CR

NOTES:

- 1) OVERRIDE MODE INITIATED BY PULLING CONTROL SWITCH TO THE ESFAS INITIATED POSITION OR CONDITION AS IN THIS DIAGRAM TO "START".
- 2) OVERRIDE CAN ONLY BE INITIATED DURING AN ESFAS CONDITION
- 3) A WHITE LIGHT SHALL INDICATE THE OVERRIDE MODE.
- 4) SEE INDIVIDUAL COMPONENT LOGIC DIAGRAMS.

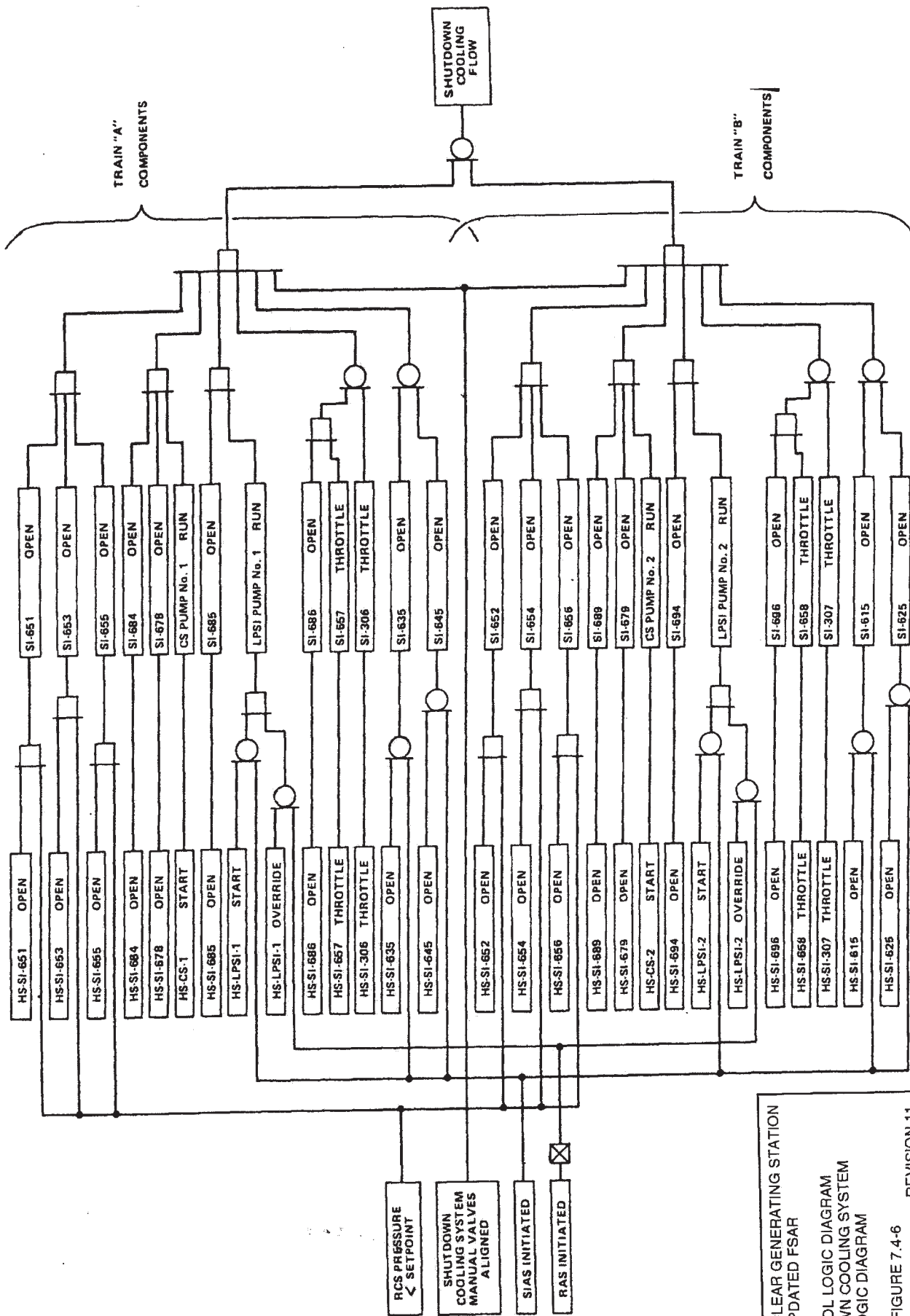
ELECTRICAL PROTECTION

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR
CONTROL LOGIC DIAGRAM
OVERRIDE MODE AS APPLIED TO
ESFAS CONTROL

FIGURE 7.4-5

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR
CONTROL LOGIC DIAGRAM
SHUTDOWN COOLING SYSTEM
LOGIC DIAGRAM

FIGURE 7.4-6

REVISION 11

JUNE 2001

This Figure has been redacted.

ITEM NO.	QUAL CLS	EQUIP NO.	DESCRIPTION	DWG NO.	DESCRIPTION	ITEM NO.	QUAL CLS	EQUIP NO.	DWG NO.
1	Q	J-SBA-C02A	NSSS CHAN A ANALOG INSTRUMENT CABINET		NSSS CHAN A ANALOG INSTRUMENT CABINET	45	Q	J-RMN-B04	
2	Q	J-SBA-C02B	ESFAS AUXILIARY RELAY A		ESFAS AUXILIARY RELAY A			J-RMA-B04	(SK-J-416)
3	Q	J-SAA-C01	NSSS CHAN B ANALOG INSTRUMENT CABINET		NSSS CHAN B ANALOG INSTRUMENT CABINET			J-RMB-B04	
4	Q	J-SBB-C02B	NSSS CHAN C ANALOG INSTRUMENT CABINET		NSSS CHAN C ANALOG INSTRUMENT CABINET	47	Q	J-RMC-B04	
5	Q	J-SBB-C02A	ESFAS AUXILIARY RELAY B		ESFAS AUXILIARY RELAY B			J-RMD-B05	
6	Q	J-SBA-C01	PLANT PROTECTION SYSTEM		PLANT PROTECTION SYSTEM			J-RMA-B05	(SK-J-417)
		J-SBB-C01						J-RMB-B05	
7	Q	J-SBD-C01	BOP RADIATION MONITORING SYSTEM		BOP RADIATION MONITORING SYSTEM	48	Q	J-RMD-B05	
8	Q	J-SOA-C01	BOP RADIATION MONITORING SYSTEM		BOP RADIATION MONITORING SYSTEM			J-RMA-B06	
9	Q	J-SOB-C01	NSSS CONTROL (RRS, FWCS, SBOS)		NSSS CONTROL (RRS, FWCS, SBOS)			J-RMB-B06	
10	R	J-SFN-C03						J-RMC-B06	
11								J-RMD-B06	
12		J-ZJN-C02	BALANCE OF PLANT INSTRUMENT CABINET		BALANCE OF PLANT INSTRUMENT CABINET	49	Q	J-RMN-B07	
13	R	E-MAH-C01	GENERATOR PROTECTION CABINET		GENERATOR PROTECTION CABINET	50	Q	J-RMA-B07	
14	R	E-MAH-C02	GENERATOR METERING CABINET		GENERATOR METERING CABINET			J-RMB-B07	
15	R	J-RMN-C01	ANNUNCIATOR LOGIC CABINET		ANNUNCIATOR LOGIC CABINET	51	R	J-SOA-C02	
16	R	J-RMN-C02	ANNUNCIATOR LOGIC CABINET		ANNUNCIATOR LOGIC CABINET	52	R	J-SYN-C01	
17	R	J-RMN-C02	EHC CABINET		EHC CABINET	53	S	J-SYN-C02	
18	R	J-RMN-C02	TSI CABINET		TSI CABINET	54	R	J-SYN-C03	
19	R	J-RMN-C02	CNTL AND REG CABINET - GENEREX		CNTL AND REG CABINET - GENEREX	55	R	J-SYN-C04	
20	R	J-RMN-C02	DIGITAL I/O CABINET (CMC)		DIGITAL I/O CABINET (CMC)	56	R	J-SYN-C05	
21	S	J-RMN-C02	ANALOG I/O CABINET (CMC)		ANALOG I/O CABINET (CMC)	57	Q	J-SYN-C06	
22	S	J-RMN-C02	ANALOG I/O CABINET (PC)		ANALOG I/O CABINET (PC)			J-SYN-C07	
23	S	J-RMN-C02						J-SYN-C08	
24	S	J-RMN-C02	DIGITAL I/O CABINET (PC)		DIGITAL I/O CABINET (PC)	58	S	J-SYN-C09	
25	S	J-RMN-C02						J-SYN-C10	
26	S	J-RMN-C02						J-SYN-C11	
27	S	J-RMN-C02						J-SYN-C12	
28	S	J-RMN-C02						J-SYN-C13	
29	S	J-RMN-C02						J-SYN-C14	
30	S	J-RMN-C02						J-SYN-C15	
31	S	J-RMN-C02						J-SYN-C16	
32	S	J-RMN-C02						J-SYN-C17	
33	S	J-RMN-C02						J-SYN-C18	
34	R	J-RMN-C02						J-SYN-C19	
35	R	J-RMN-C02						J-SYN-C20	
36	S	J-RMN-C02						J-SYN-C21	
37	S	J-RMN-C02						J-SYN-C22	
38	S	J-RMN-C02						J-SYN-C23	
39	Q	J-SAA-C02A	BOP ESFAS CABINET		BOP ESFAS CABINET	59	Q	J-SYN-C24	
40	Q	J-SAA-C02A	BOP ESFAS CABINET		BOP ESFAS CABINET	60	Q	J-SYN-C25	
41	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	61	S	J-SYN-C26	
42	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	62	R	J-SYN-C27	
43	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	63	Q	J-SYN-C28	
44	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	64	R	J-SYN-C29	
45	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	65	S	J-SYN-C30	
46	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	66	S	J-SYN-C31	
47	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	67	R	J-SYN-C32	
48	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	68	R	J-SYN-C33	
49	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	69	R	J-SYN-C34	
50	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	70	R	J-SYN-C35	
51	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	71	R	J-SYN-C36	
52	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	72	R	J-SYN-C37	
53	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	73	R	J-SYN-C38	
54	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	74	R	J-SYN-C39	
55	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	75	R	J-SYN-C40	
56	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET	76	Q	J-SYN-C41	
57	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C42	
58	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C43	
59	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C44	
60	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C45	
61	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C46	
62	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C47	
63	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C48	
64	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C49	
65	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C50	
66	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C51	
67	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C52	
68	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C53	
69	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C54	
70	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C55	
71	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C56	
72	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C57	
73	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C58	
74	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C59	
75	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C60	
76	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C61	
77	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C62	
78	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C63	
79	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C64	
80	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C65	
81	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C66	
82	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C67	
83	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C68	
84	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C69	
85	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C70	
86	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C71	
87	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C72	
88	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C73	
89	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C74	
90	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C75	
91	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C76	
92	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C77	
93	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C78	
94	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C79	
95	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C80	
96	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C81	
97	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C82	
98	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C83	
99	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C84	
100	Q	J-SAA-C02B	BOP ESFAS CABINET		BOP ESFAS CABINET			J-SYN-C85	

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

MAIN CONTROL ROOM AND
COMPUTER ROOM ARRANGEMENT

FIGURE 7.5-1 SHEET 2 OF 2

JUNE 2001

REVISION 11

SESS CONTROL TRAIN A						
CONTAINMENT ISOLATION	MAIN STEAM ISOLATION	HIGH PRESSURE SAFETY INJECTION	RECIRCULATION	AUX FW STEAM GEN NO.1	AUX FW STEAM GEN NO. 2	SPARE
LOW PRESSURE SAFETY INJECTION	PASSIVE SAFETY INJECTION	CONTAINMENT SPRAY	CHEM ADD	CONTAINMENT PURGE ISOLATION	SPARE	SPARE
CONTROL ROOM FILTRATION & ISOLATION	CONTROL BLDG ESSENTIAL ACV's	FUEL BUILDING ESSENTIAL VENTILATION	CONTAINMENT GAS CONTROL	SPARE	SPARE	SPARE
ESSENTIAL CHILLED WATER	ESSENTIAL COOLING WATER	ESSENTIAL SPRAY POND	DIESEL GENERATOR	IE LOAD CENTER BREAKERS	NON - ESF LOAD SHED	SPARE

MANUAL BYPASS INITIATE

ALARM RESET	FLASHER RESET	LAMP RESET	BYPASS/INOP TEST	STATUS TEST	STATUS DISPLAY
-------------	---------------	------------	------------------	-------------	----------------

SYSTEM RESET AND TEST

NOTES:

1. ALL SWITCHED ARE MASTER SPECIALTIES
MODEL 10H TWIST - LITE OR EQUIVALENT
WITH P/N CM-382 LAMPS.
 - MANUAL BYPASS - ALTERNATE ACTION SWITCHCH
 - SYSTEM RESET, TEST AND DISPLAY - MOMENTARY ACTION PUSHBUTTONS
2. CONTROL PANNEL IS INSERT TO MAIN ESF CONTROL BOARD

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY EQUIPMENT STATUS SYSTEM
CONTROL PANEL

FIGURE 7.5-2 SHEET 1 OF 2

JUNE 2001

REVISION 11

SESS CONTROL TRAIN A							
CONTAINMENT ISOLATION	MAIN STEAM ISOLATION	HIGH PRESSURE SAFETY INJECTION	RECIRCULATION	AUX FW STEAM GEN NO 1	AUX FW STEAM GEN NO. 2	SPARE	SPARE
LOW PRESSURE SAFETY INJECTION	PASSIVE SAFETY INJECTION	CONTAINMENT SPRAY		CONTAINMENT PURGE ISOLATION	SPARE	SPARE	SPARE
CONTROL ROOM FILTRATION & ISOLATION	CONTROL BLDG ESSENTIAL ACV's	FUEL BUILDING ESSENTIAL VENTILATION	CONTAINMENT GAS CONTROL	SPARE	SPARE	SPARE	SPARE
ESSENTIAL CHILLED WATER	ESSENTIAL COOLING WATER	ESSENTIAL SPRAY POND	DIESEL GENERATOR	IE LOAD CENTER BREAKERS	NON - ESF LOAD SHED	SPARE	SPARE

NOTES

- 1 STATUS DISPLAY PANEL IS INSERT TO MAIN ESF CONTROL BOARD

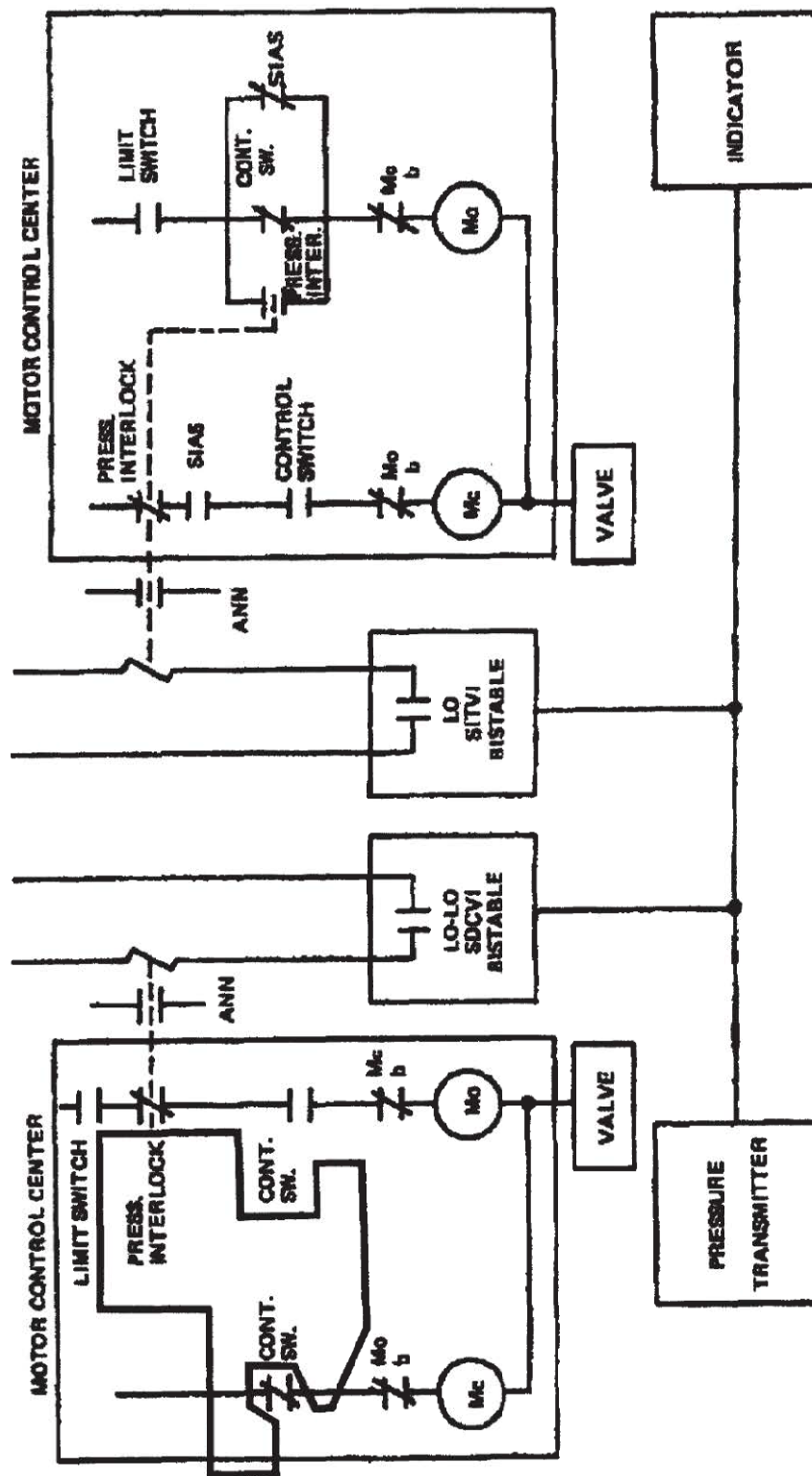
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY EQUIPMENT STATUS SYSTEM
ANNUNCIATOR PANEL

FIGURE 7.5-2 SHEET 2 OF 2

JUNE 2001

REVISION 11



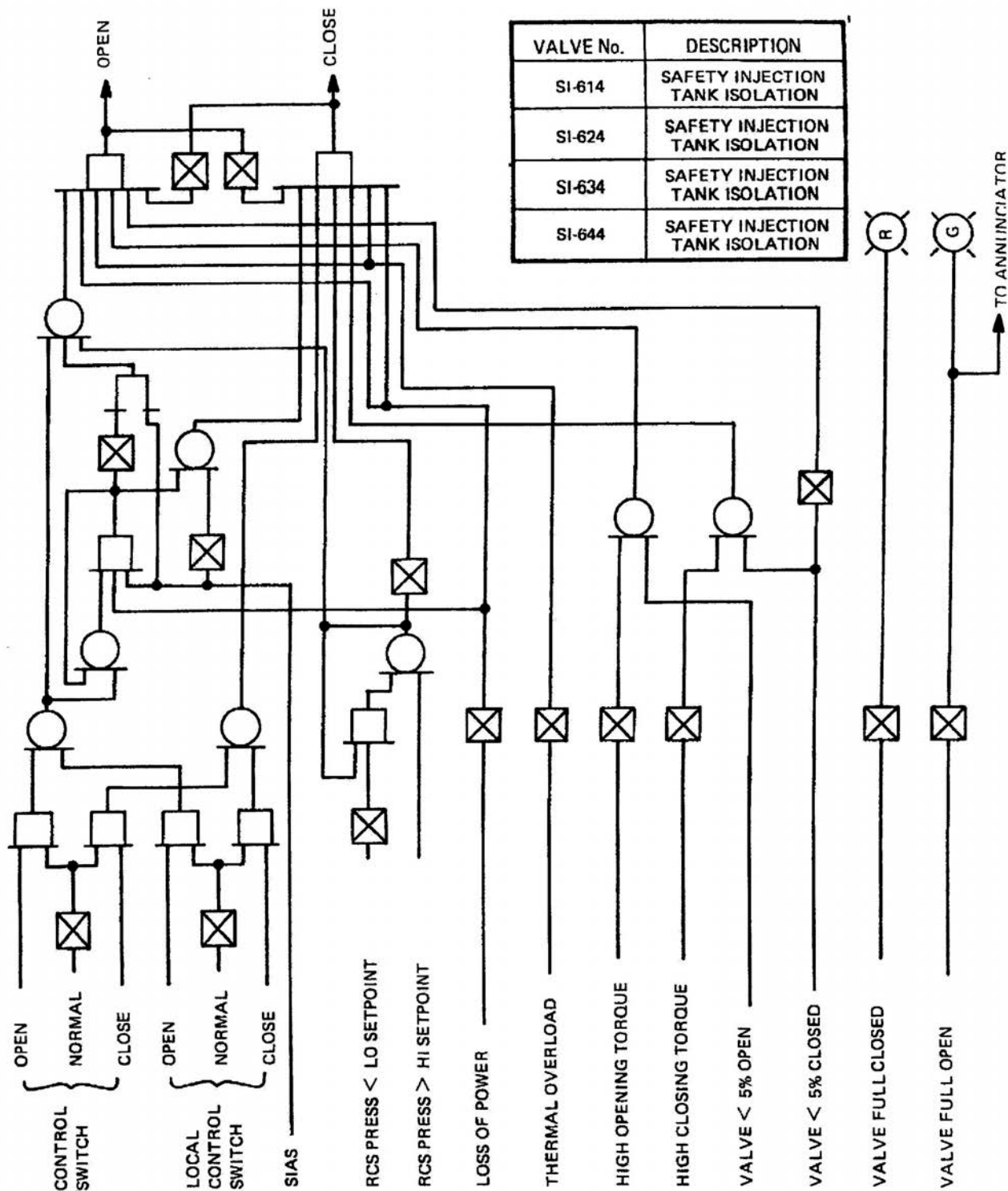
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY-RELATED INTERLOCK LOGIC CIRCUIT

FIGURE 7.6-1

JUNE 2013

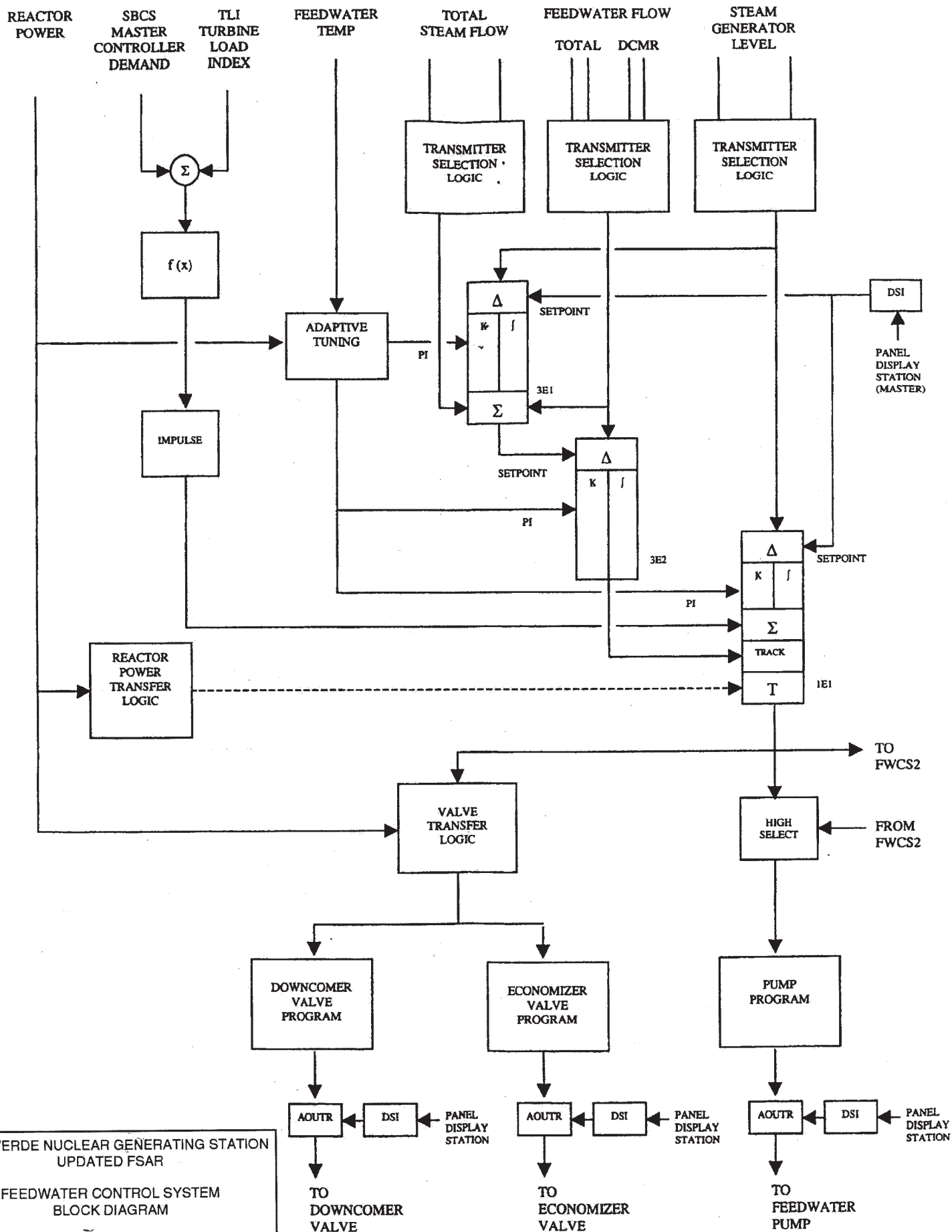
REVISION 17



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SAFETY INJECTION TANK
ISOLATION VALVE INTERLOCKS

FIGURE 7.6-2

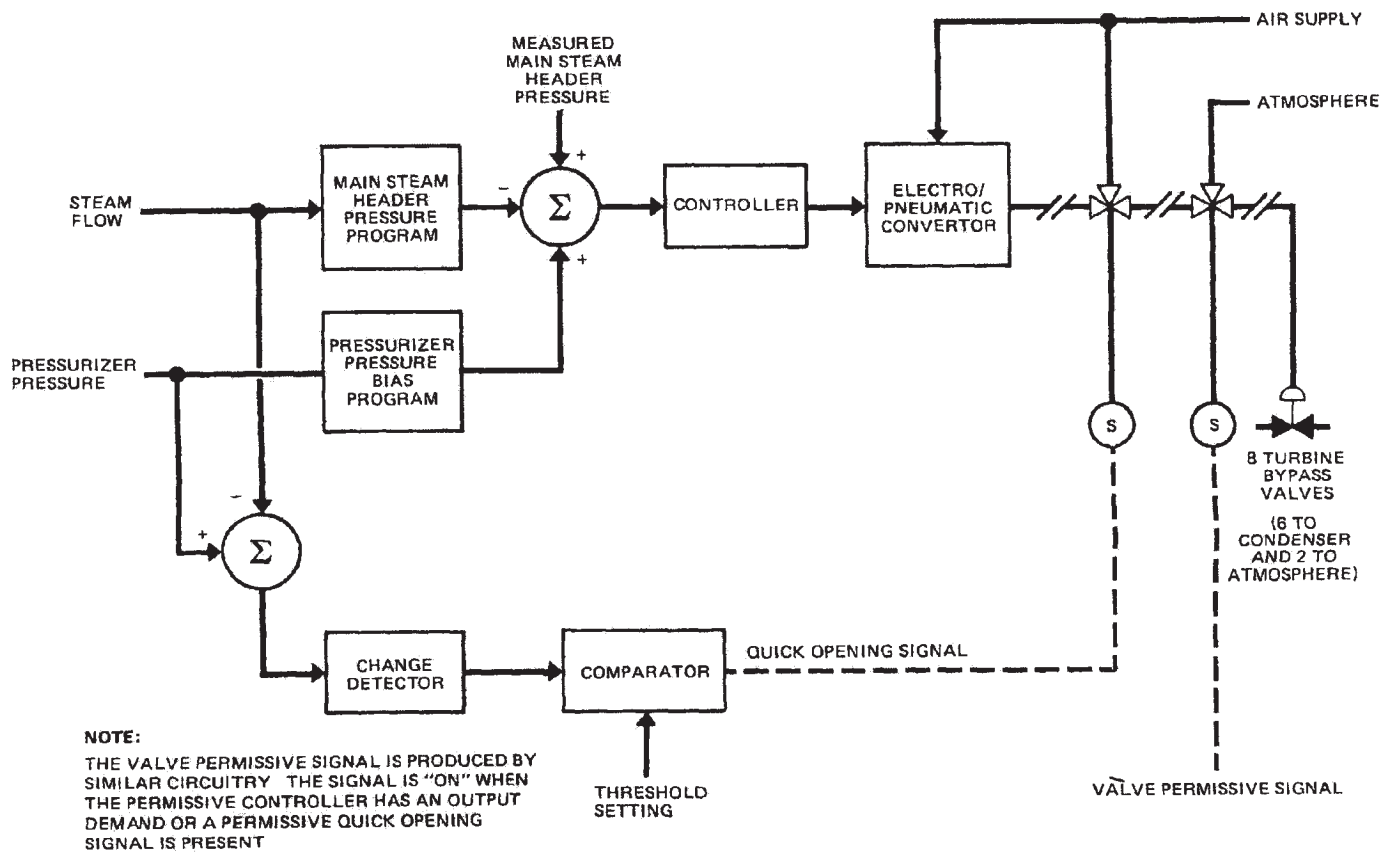


PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

FEEDWATER CONTROL SYSTEM
BLOCK DIAGRAM

FIGURE 7.7-1

JUNE 2001 REVISION 11



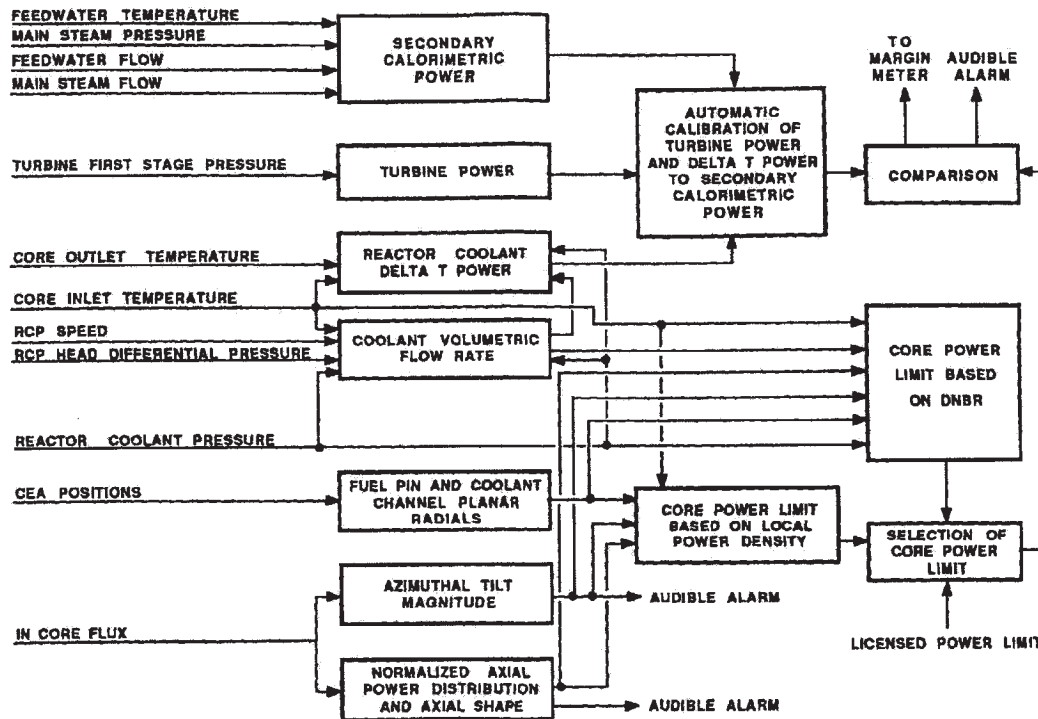
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

STEAM BYPASS CONTROL SYSTEM BLOCK DIAGRAM

FIGURE 7.7-2

JUNE 2001

REVISION 11

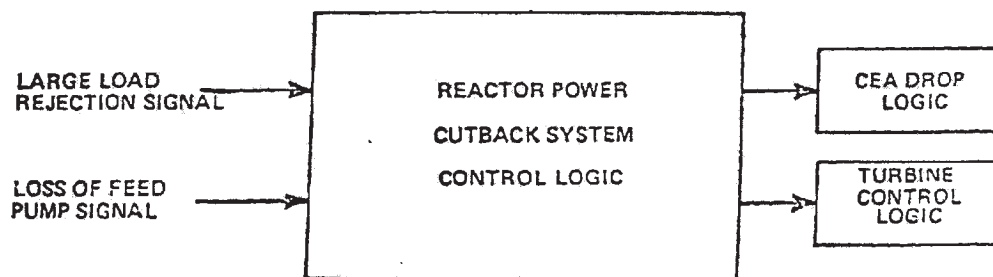


PALO VERDE NUCLEAR GENERATING STATION
 UPDATED FSAR

FUNCTIONAL DIAGRAM OF THE CORE OPERATING
 LIMIT SUPERVISORY SYSTEM

FIGURE 7.7-3

JUNE 2001 REVISION 11



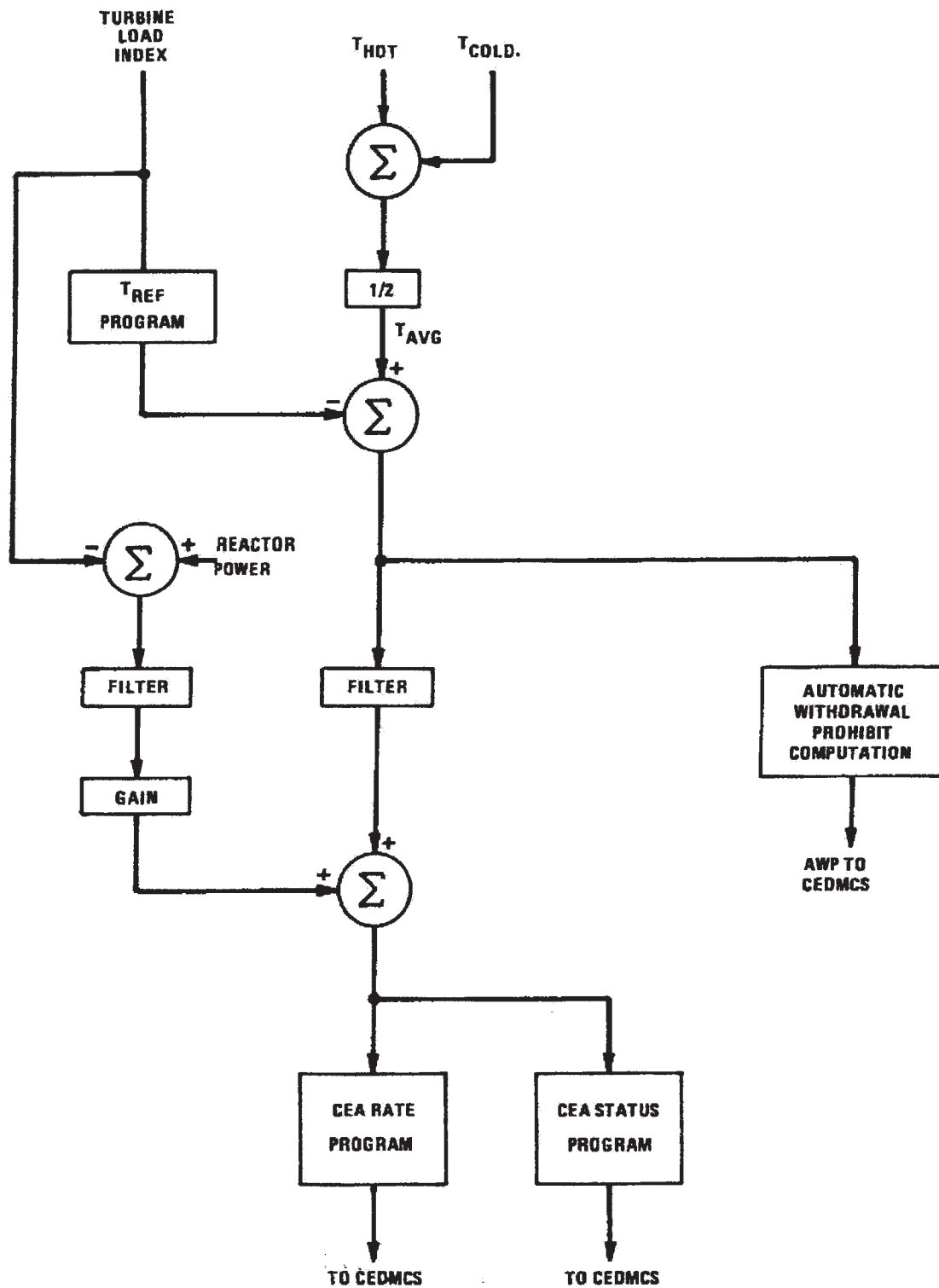
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

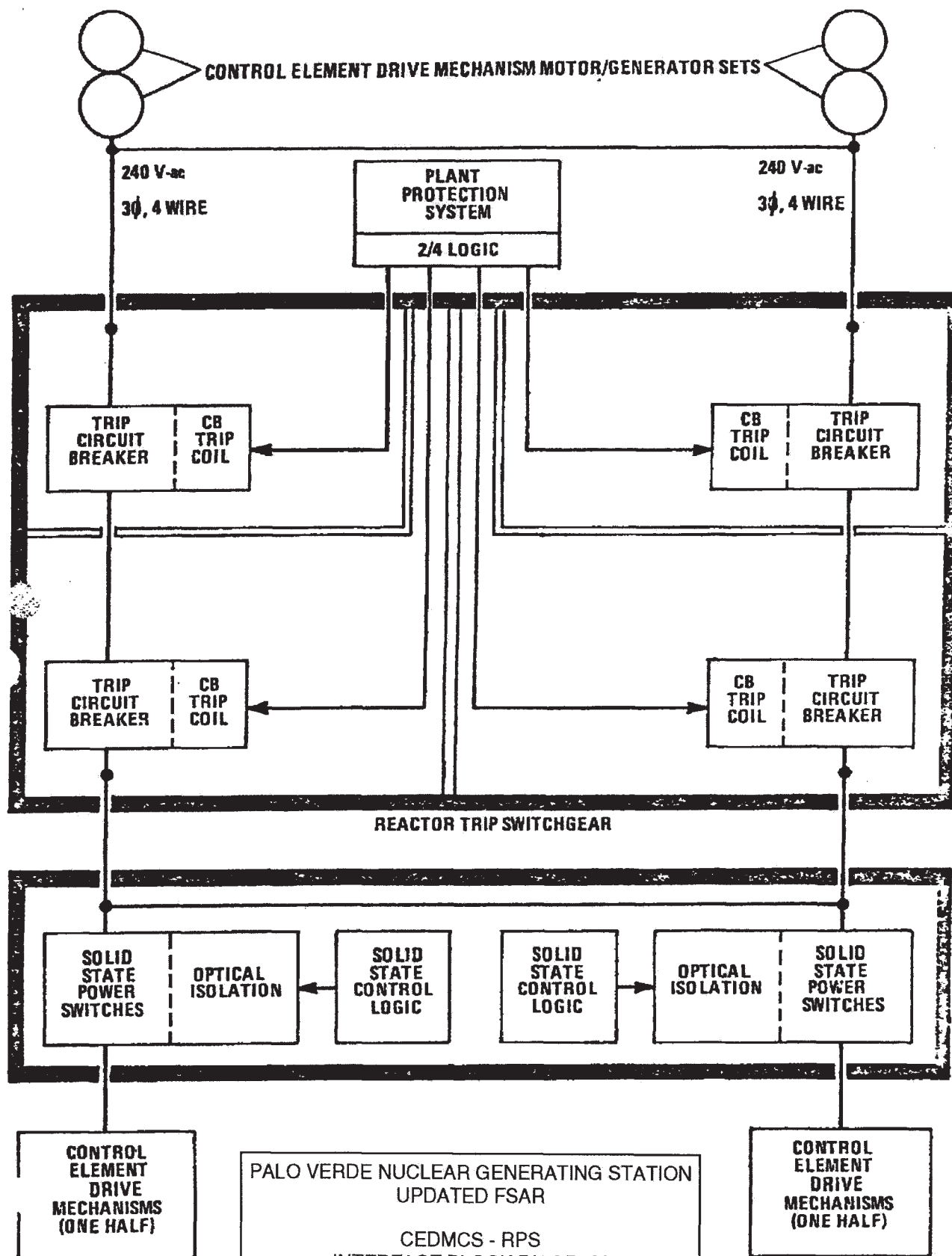
RPCS BLOCK DIAGRAM

FIGURE 7.7-4

JUNE 2001

REVISION 11





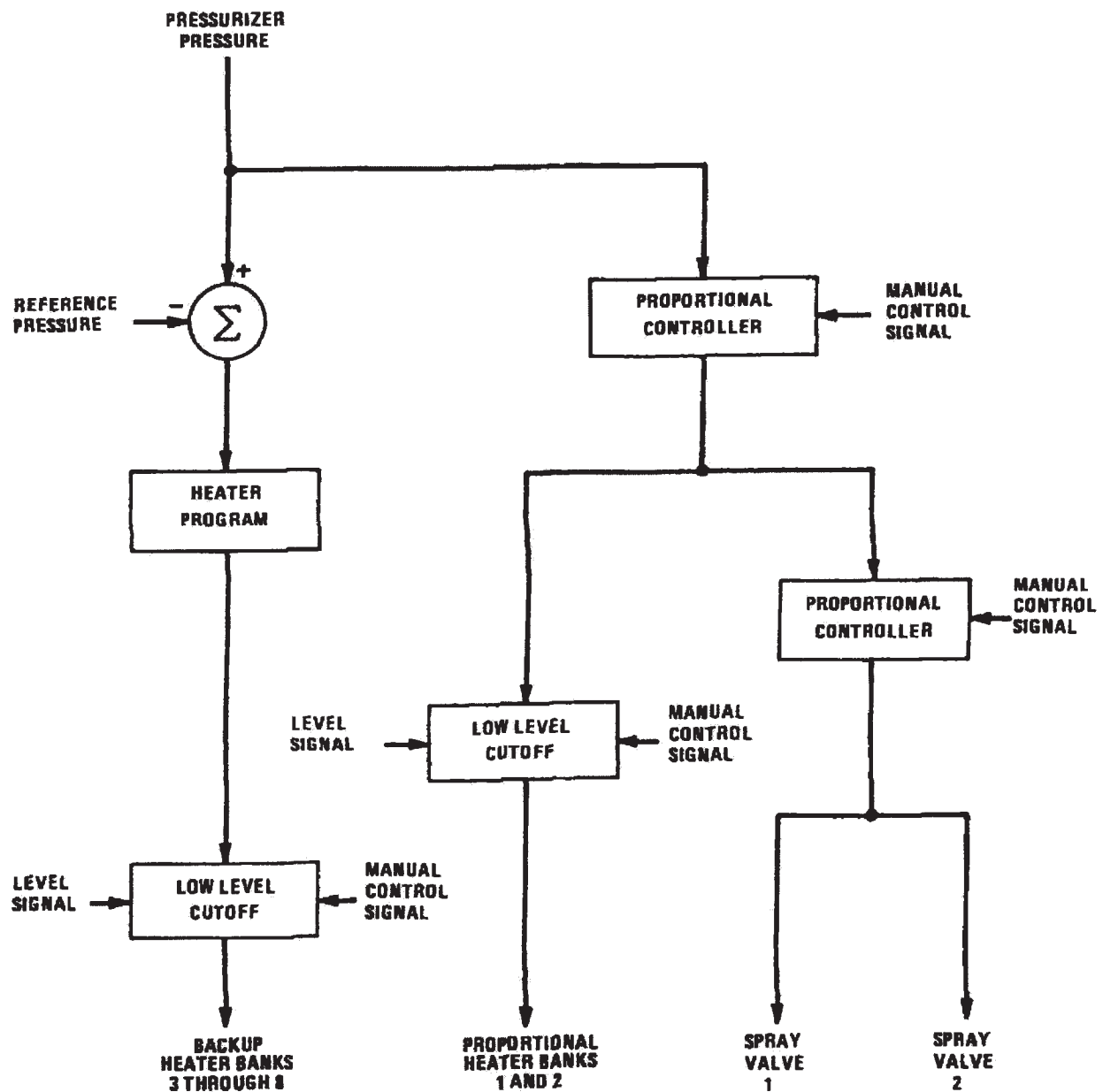
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CEDMCS - RPS
INTERFACE BLOCK DIAGRAM

FIGURE 7.7-6

JUNE 2003

REVISION 12



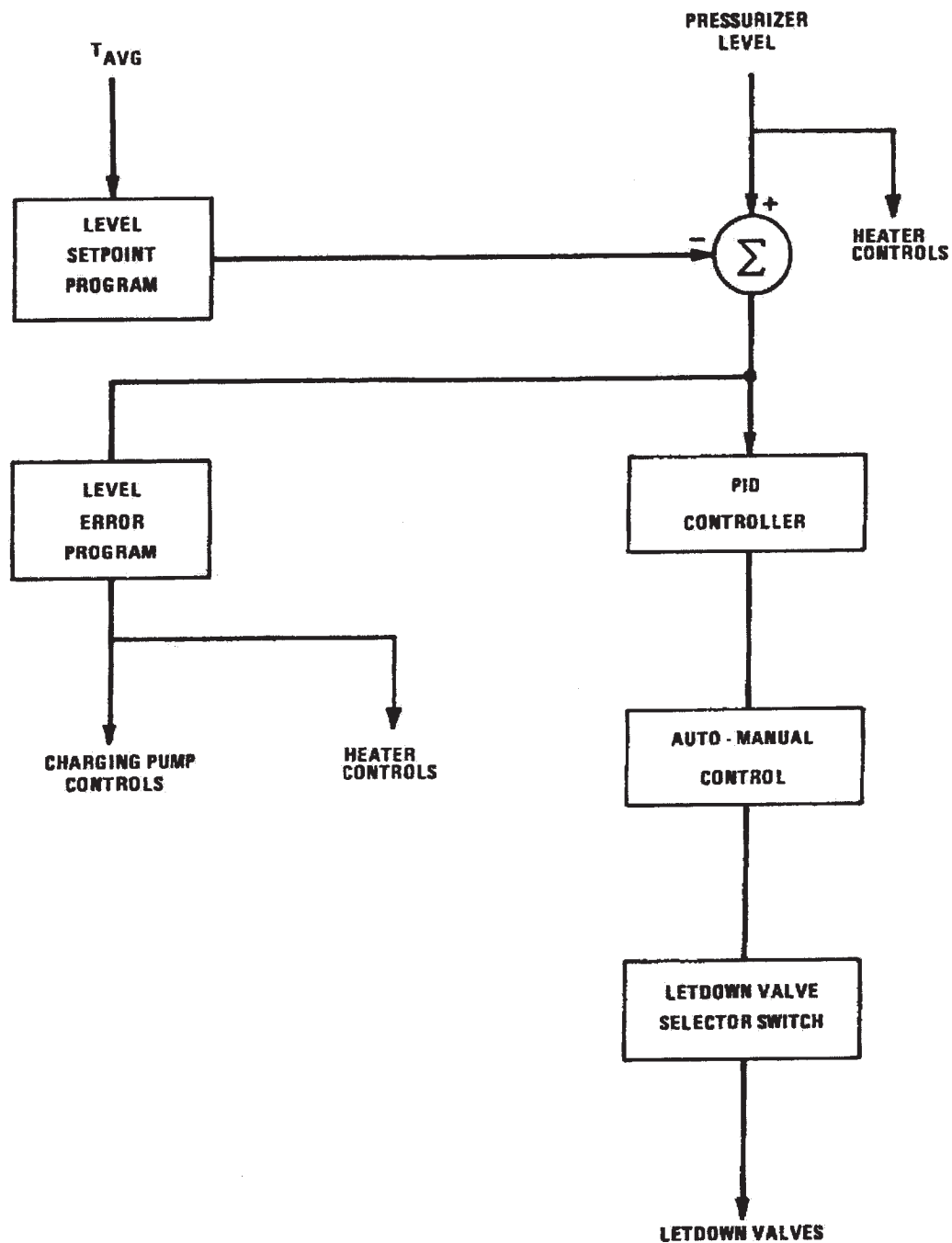
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PRESSURIZER PRESSURE CONTROL SYSTEM
BLOCK DIAGRAM

FIGURE 7.7-7

JUNE 2003

REVISION 12



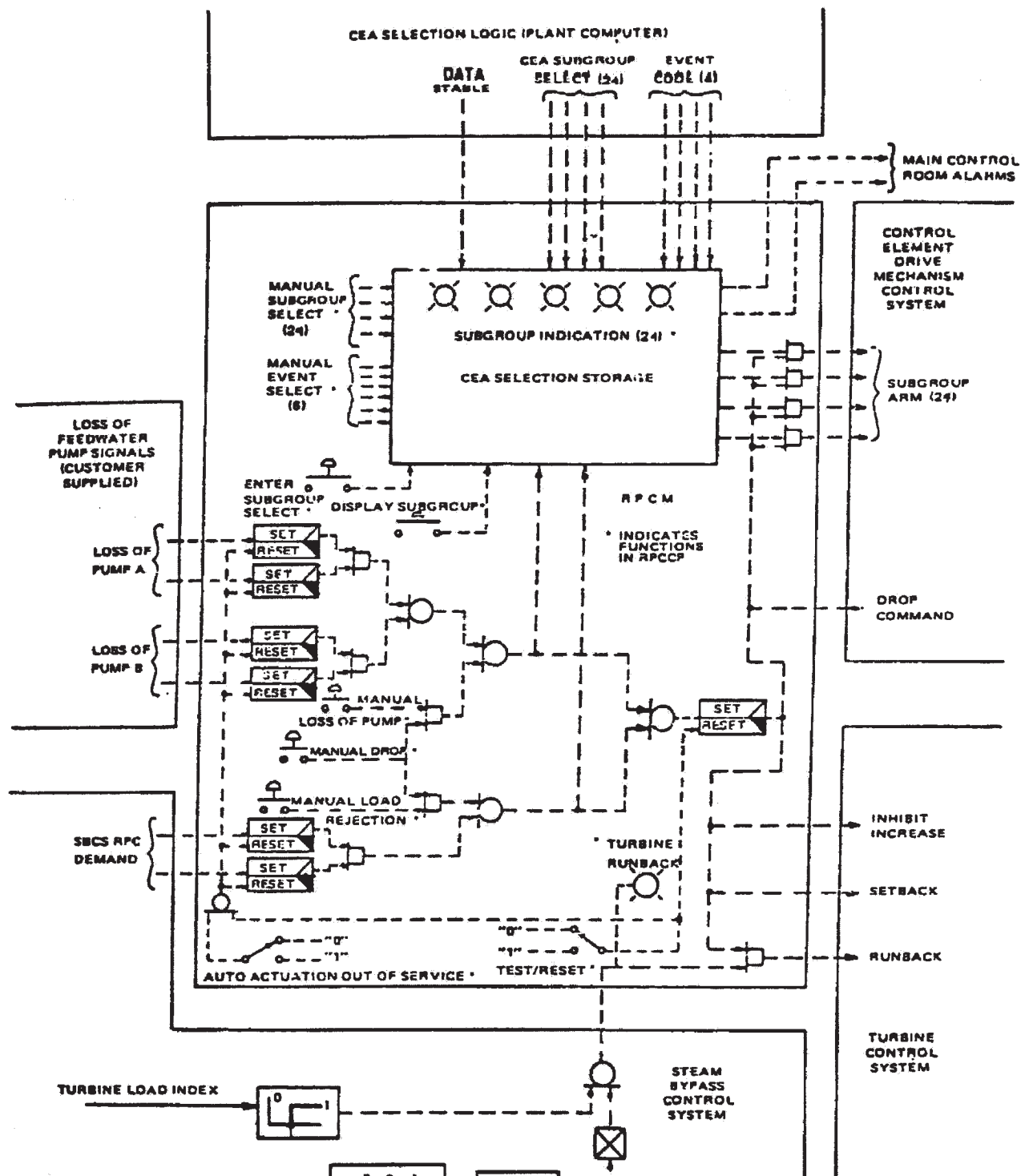
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

PRESSURIZER LEVEL CONTROL SYSTEM
BLOCK DIAGRAM

FIGURE 7.7-8

JUNE 2003

REVISION 12



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

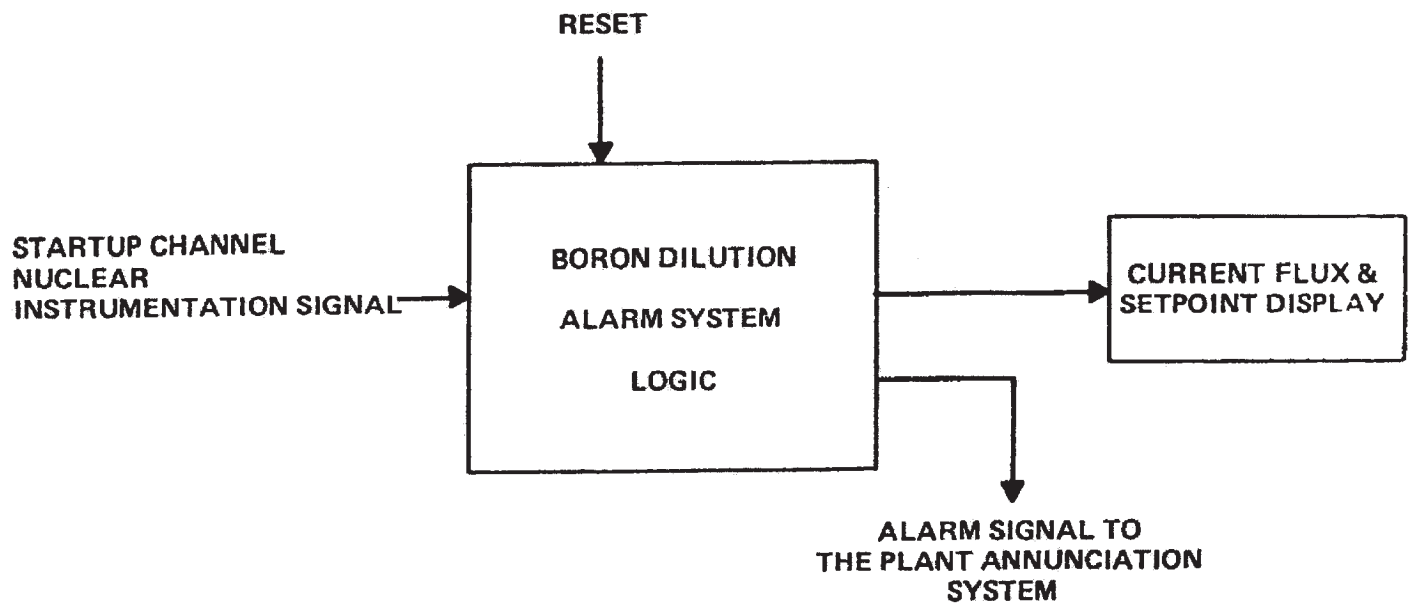
REACTOR POWER CUTBACK SYSTEM
SIMPLIFIED BLOCK DIAGRAM

FIGURE 7.7-9

JUNE 2003

REVISION 12

FIGURE 7.7-10
DELETED



NOTE: ONLY ONE OF TWO IDENTICAL CHANNELS IS SHOWN.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BORON DILUTION ALARM SYSTEM
SIMPLIFIED BLOCK DIAGRAM

FIGURE 7.7-11

JUNE 2003

REVISION 12

Figure 8.1-1 Sheet 1 of 2 has been deleted

Refer to Western Electricity Coordinating Council (WECC) maps for latest Grid System.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

GRID SYSTEM

FIGURE 8.1-1 SHEET 1 OF 2

JUNE 2015

REVISION 18

Figure 8.1-1 Sheet 2 of 2 has been deleted

Refer to Western Electricity Coordinating Council (WECC) maps for latest Grid System.

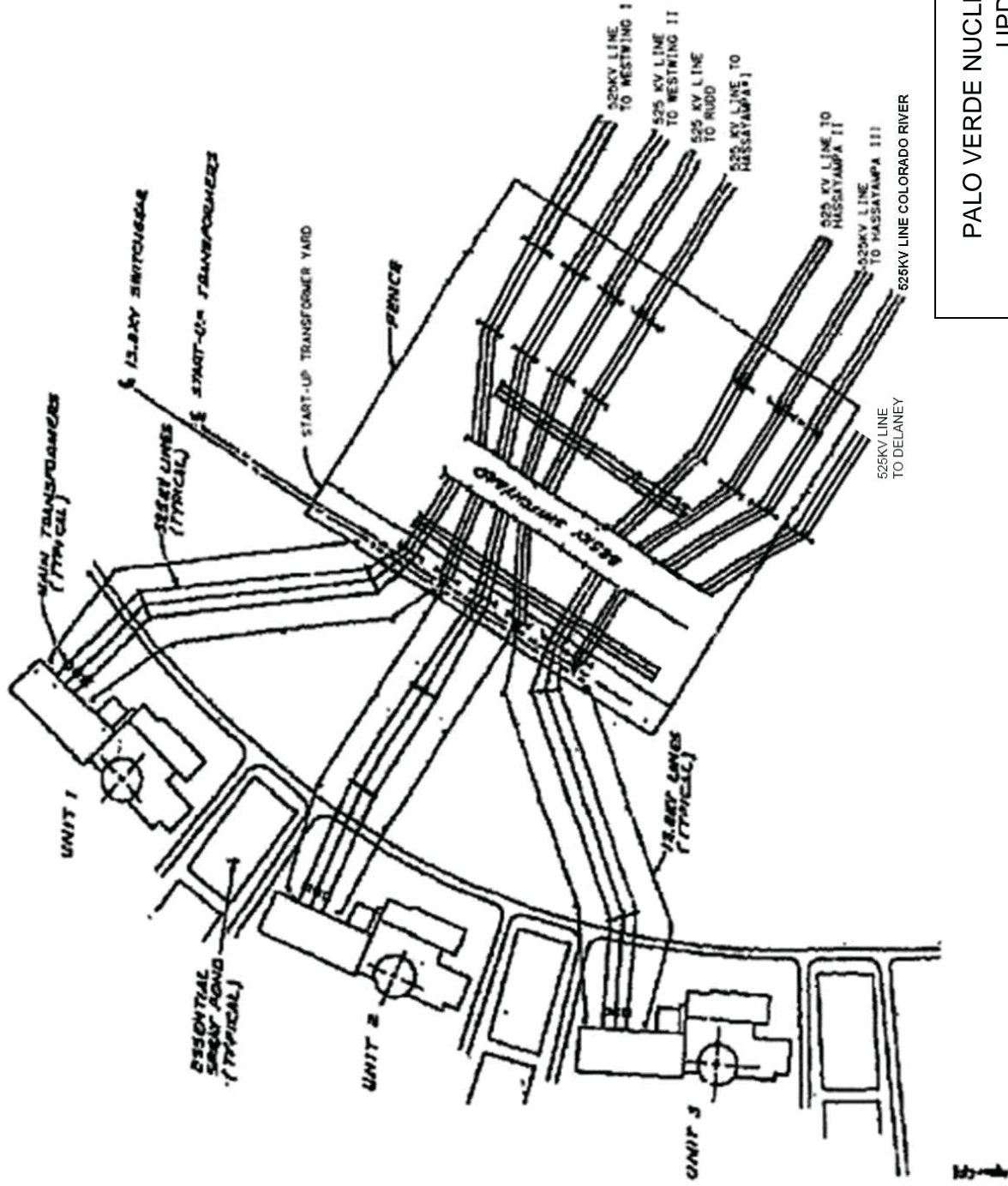
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

GRID SYSTEM

FIGURE 8.1-1 SHEET 2 OF 2

JUNE 2015

REVISION 18



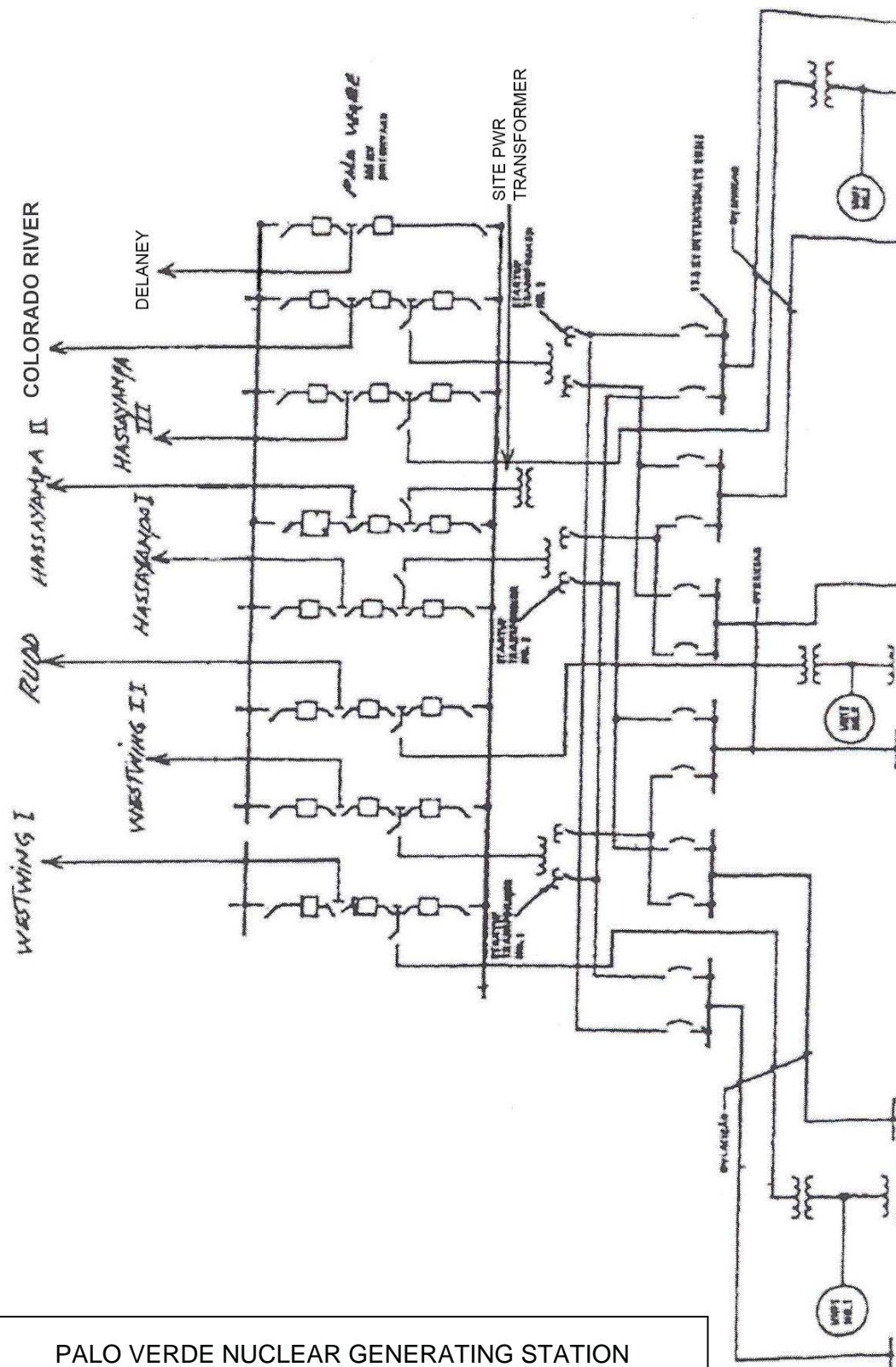
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

525 KV SWITCHYARD AND CONNECTIONS
TO ONSITE POWER SYSTEM

FIGURE 8.2-1

JUNE 2017

REVISION 19



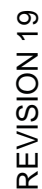
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

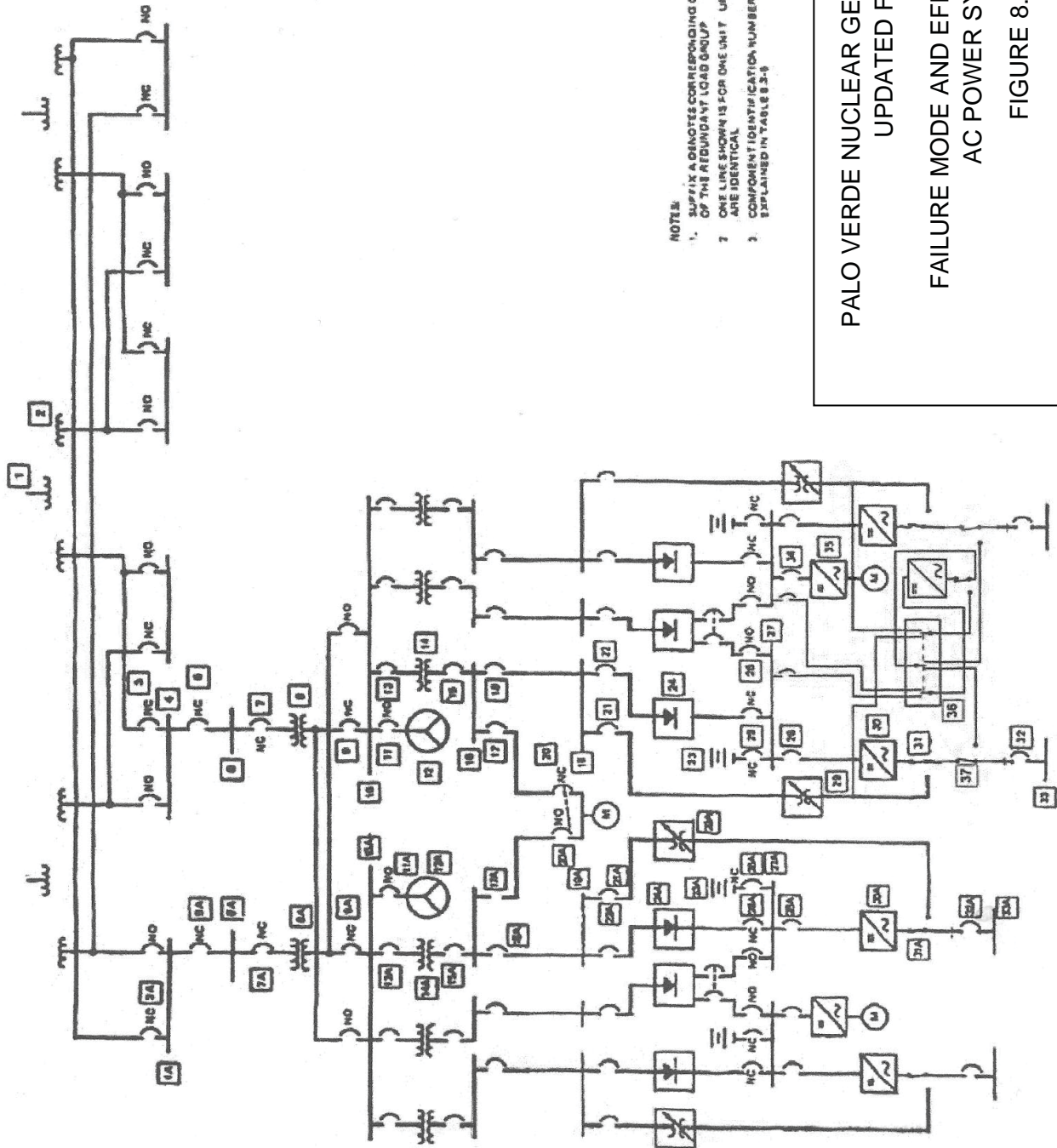
525 SWITCHYARD AND
SINGLE LINE DIAGRAM FOR UNITS 1, 2, AND 3

FIGURE 8.2-2

JUNE 2017

REVISION 19





NOTES:
 1. SUPPLY AID NOTES CORRESPONDING COMPONENT OF THE REDUNDANT LOAD GROUP
 2. ONE LINE SHOWN IS FOR ONE UNIT. UNITS 2 AND 3 ARE IDENTICAL
 3. COMPONENT IDENTIFICATION NUMBERS ARE EXPLAINED IN TABLE 8.3-1

PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR

FAILURE MODE AND EFFECTS ANALYSIS AC POWER SYSTEM

FIGURE 8.3-2

JUNE 2017

REVISION 19

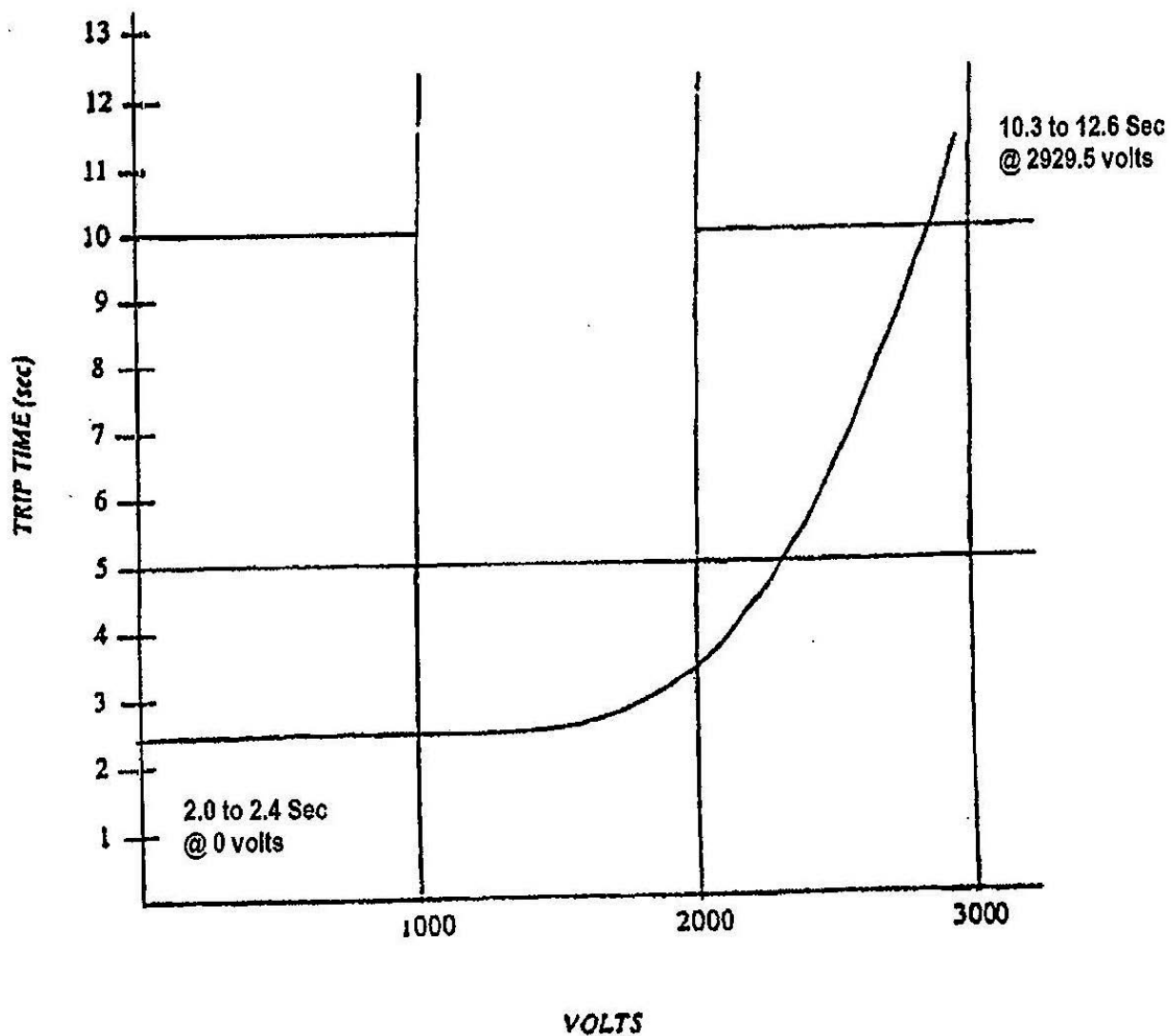


Figure only applicable to Class 1E buses not yet modified by DMWO 4544651.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

LOSS OF BUS VOLTAGE
SETTING TIME VS. VOLTS

FIGURE 8.3-3

JUNE 2019

REVISION 20

FIGURE 8B.1A-1 DELETED

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

POWER FLOW MAP
CASE 1A

FIGURE 8B.1A-1

JUNE 2013

REVISION 17

FIGURE 8B.1B-1 DELETED

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

POWER FLOW MAP
CASE 1B

FIGURE 8B.1B-1

JUNE 2013

REVISION 17

FIGURE 8B.2A-1 DELETED

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

POWER FLOW MAP
CASE 2A

FIGURE 8B.2A-1

JUNE 2013

REVISION 17

FIGURE 8B.2B-1 DELETED

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

POWER FLOW MAP
CASE 2B

FIGURE 8B.2B-1

JUNE 2013

REVISION 17

FIGURE 8B.3A-1 DELETED

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

POWER FLOW MAP
CASE 3A

FIGURE 8B.3A-1

JUNE 2013

REVISION 17

FIGURE 8B.3B-1 DELETED

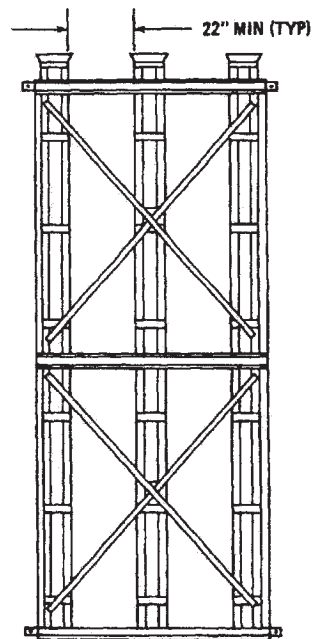
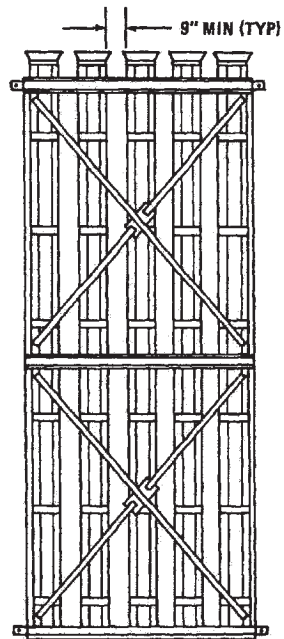
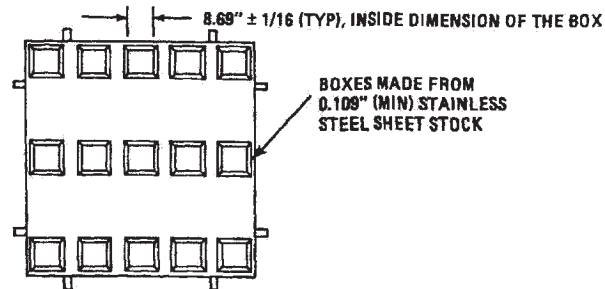
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

POWER FLOW MAP
CASE 3B

FIGURE 8B.3B-1

JUNE 2013

REVISION 17



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

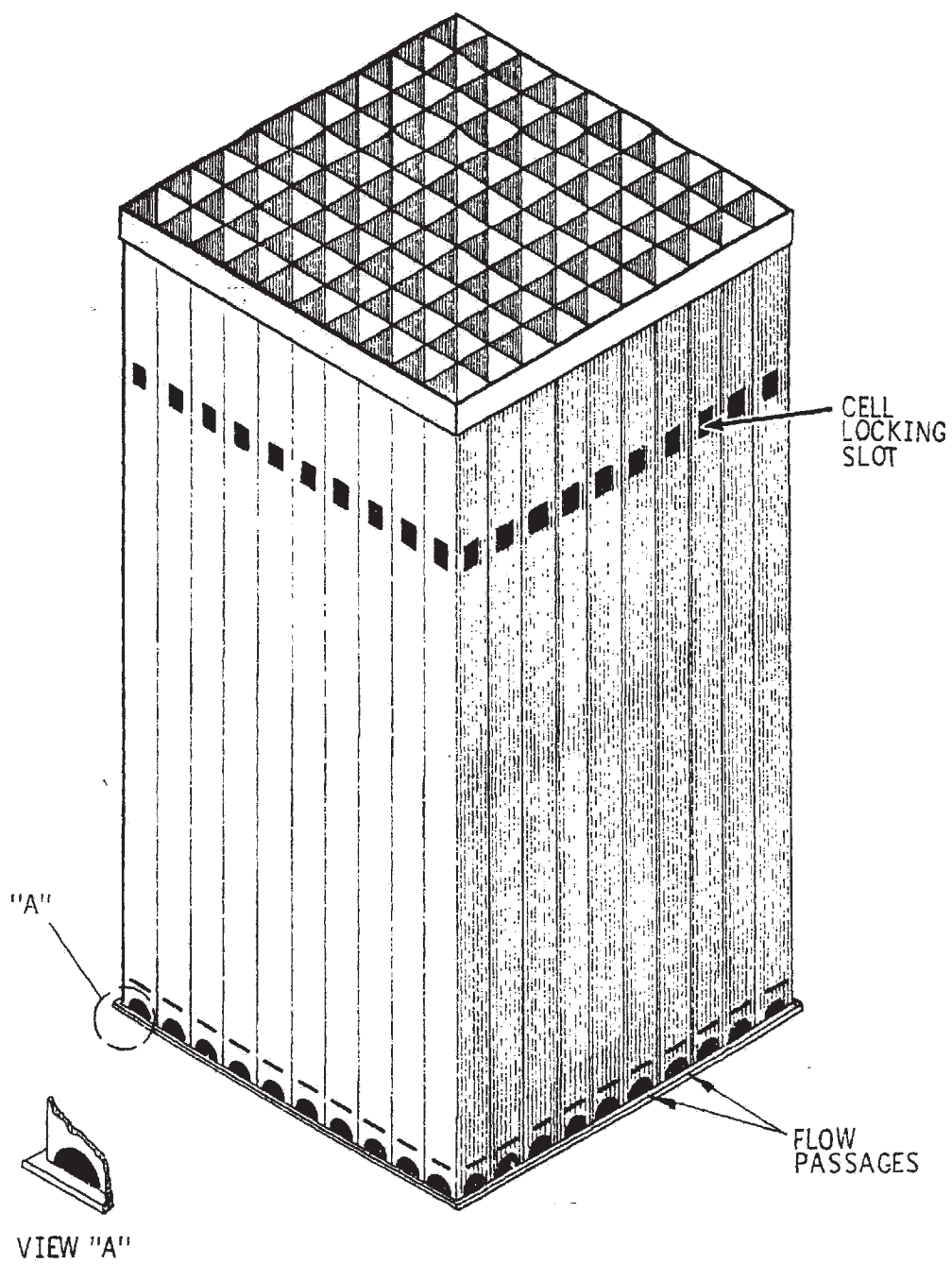
NEW FUEL STORAGE RACK
(150" ACTIVE FUEL LENGTH)

FIGURE 9.1-1

JUNE 2001

REVISION 11

This Figure has been redacted.



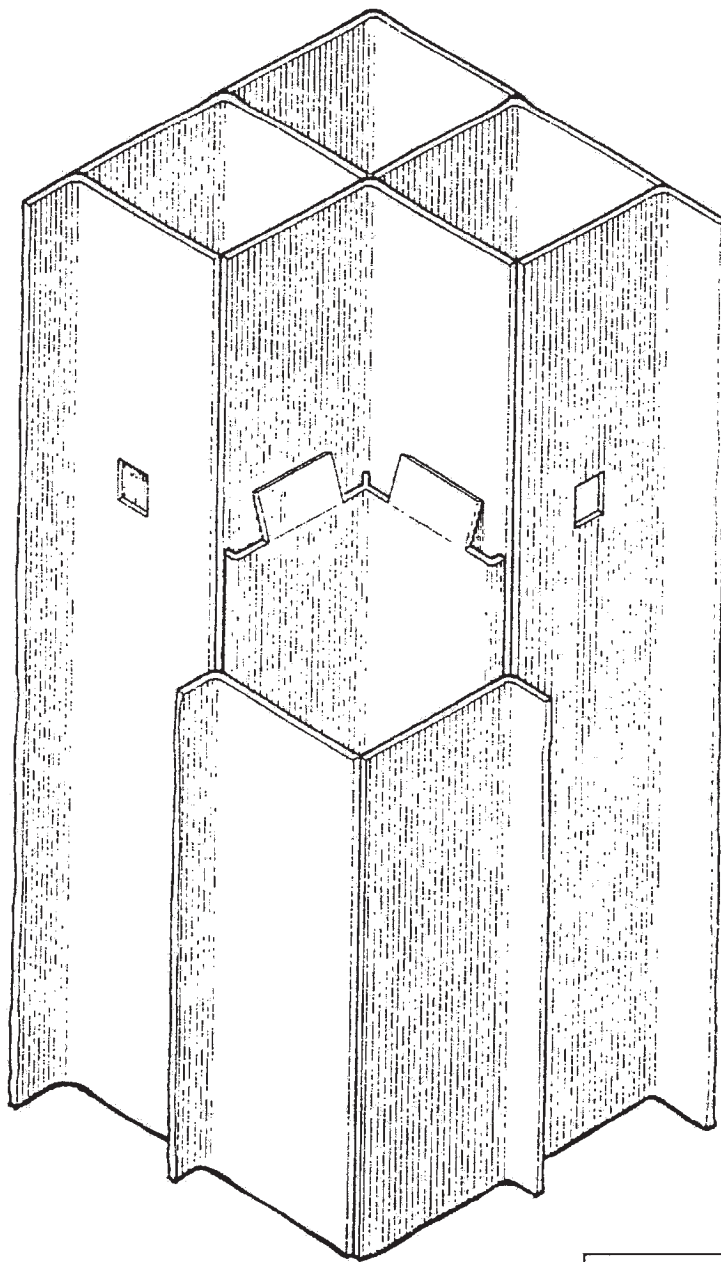
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

SPENT FUEL STORAGE RACK

FIGURE 9.1-3

JUNE 2001

REVISION 11



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CELL DETAILS OF "L" INSERT BOX

FIGURE 9.1-4

JUNE 2001

REVISION 11

FIGURE 9.1-5
DELETED

FIGURE 9.1-6
DELETED

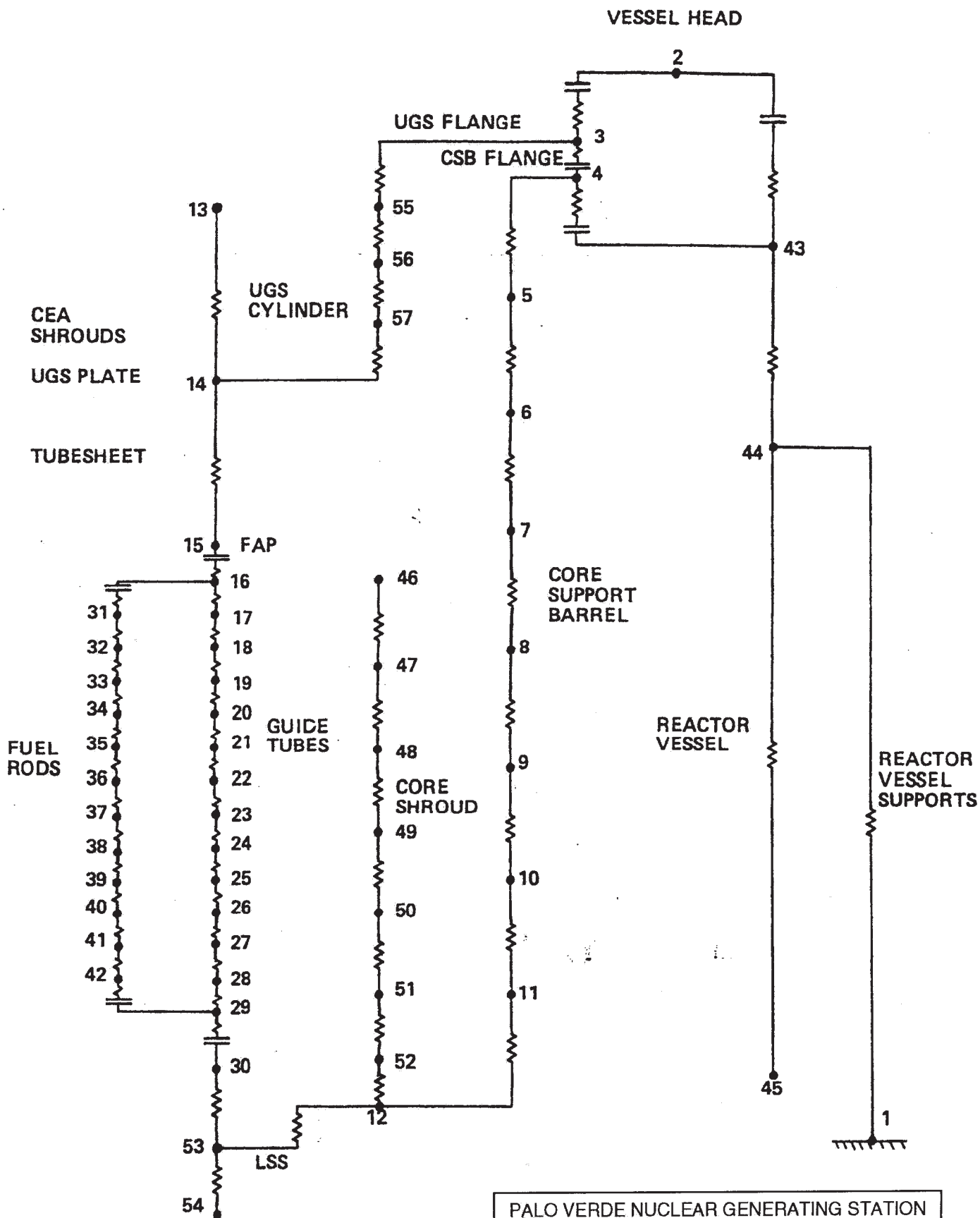
FIGURE 9.1-7
DELETED

FIGURE 9.1-7A
DELETED

Array A Two Region 1 assemblies (1) checkerboarded with two blocked cells (X). The Region 1 assemblies are each in a cell with a stainless steel L-insert. No NETCO-SNAP-IN® inserts are credited.	1	X
	X	1
Array B Two Region 1 assemblies (1) checkerboarded with two cells containing trash cans (TC). The Region 1 assemblies are each in a cell with a stainless steel L-insert. Every cell without a stainless steel L-insert must contain a NETCO-SNAP-IN® insert.	1	TC
	TC	1
Array C Two Region 2 assemblies (2) checkerboarded with one Region 3 assembly (3) and one blocked cell (X). The Region 2 assemblies are each in a cell with a stainless steel L-insert. The Region 3 assembly is in a cell containing a NETCO-SNAP-IN® insert.	2	X
	3	2
Array D One Region 2 assembly (2) checkerboarded with three Region 4 assemblies (4). The Region 2 assembly and the diagonally located Region 4 assembly are each in a storage cell with a stainless steel L-insert. The two storage cells without stainless steel L-insert contain a NETCO-SNAP-IN® insert.	2	4
	4	4
Array E Four Region 5 assemblies (5). Two storage cells contain a stainless steel L-insert. One cell contains a NETCO-SNAP-IN® insert. One storage cell contains no insert.	5	5
	5	5
Array F Four Region 6 assemblies (6). Two storage cells contain a stainless steel L-insert. The other two cells contain no inserts.	6	6
	6	6

Notes:

1. The shaded locations indicate cells which contain a stainless steel L-insert.
2. A blocked cell (X) contains a blocking device.
3. NETCO-SNAP-IN® inserts must be oriented in the same direction as the stainless steel L-inserts.
4. NETCO-SNAP-IN® inserts are only located in cells without a stainless steel L-insert.
5. Any cell containing a fuel assembly or a TC may instead be an empty (water-filled) cell in all storage arrays.
6. Any storage array designated for fuel assembly may be replaced with non-fissile material.
7. Interface Requirements: Each cell is part of up to four 2x2 arrays and each cell must simultaneously meet the requirements of all those arrays of which it is a part.



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

REACTOR VESSEL AND INTERNALS MODEL
FOR FLAT HEAD DROP ANALYSIS

FIGURE 9.1-11

JUNE 2003

REVISION 12

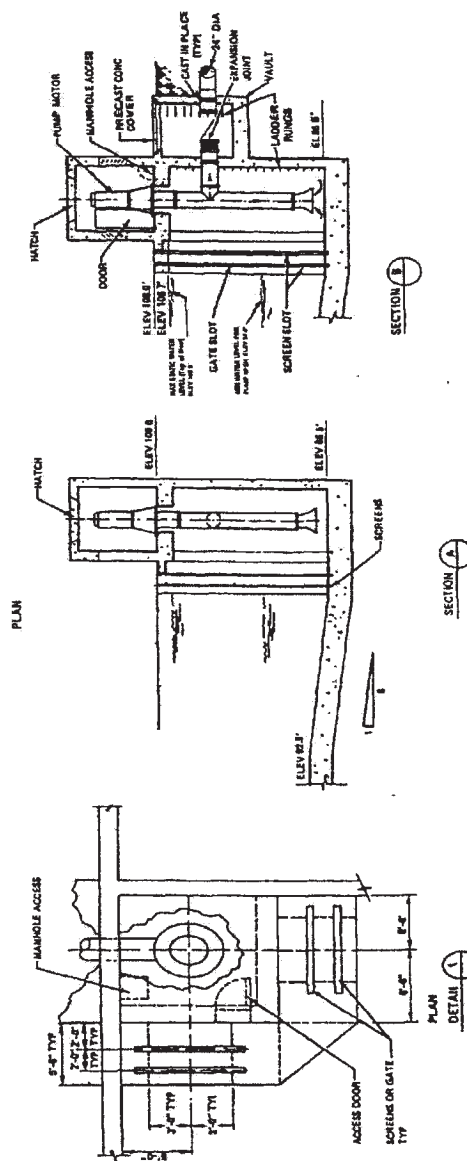
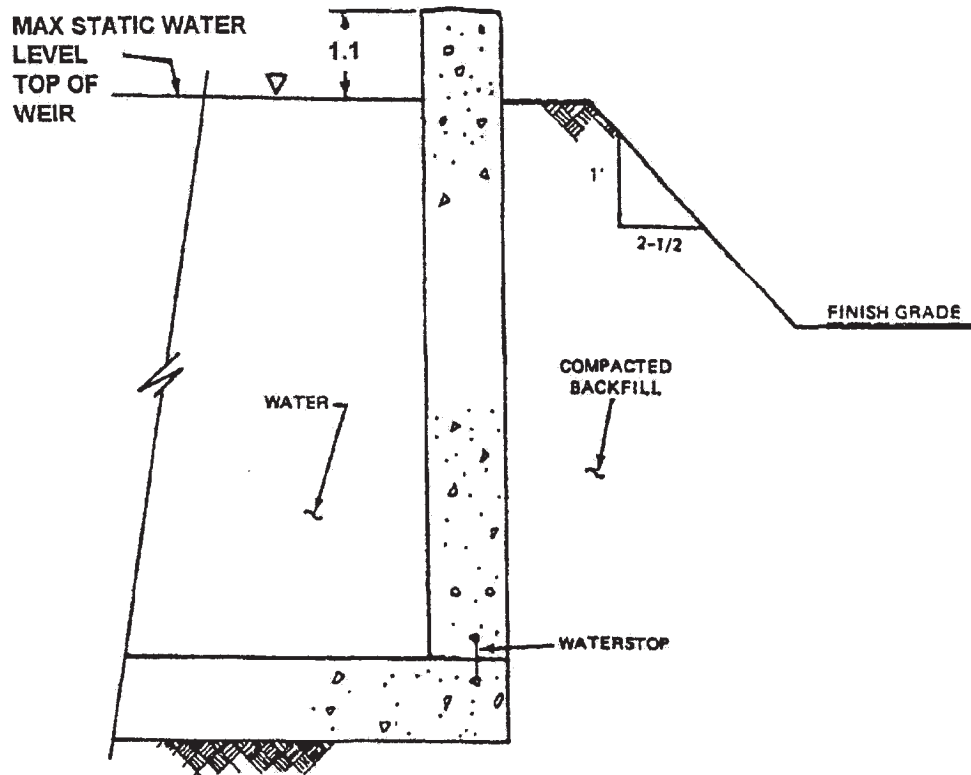


FIGURE 9.2-1 SHEET 1 OF 2
JUNE 2003
REVISION 12



TYPICAL EXTERIOR
WALL SECTION

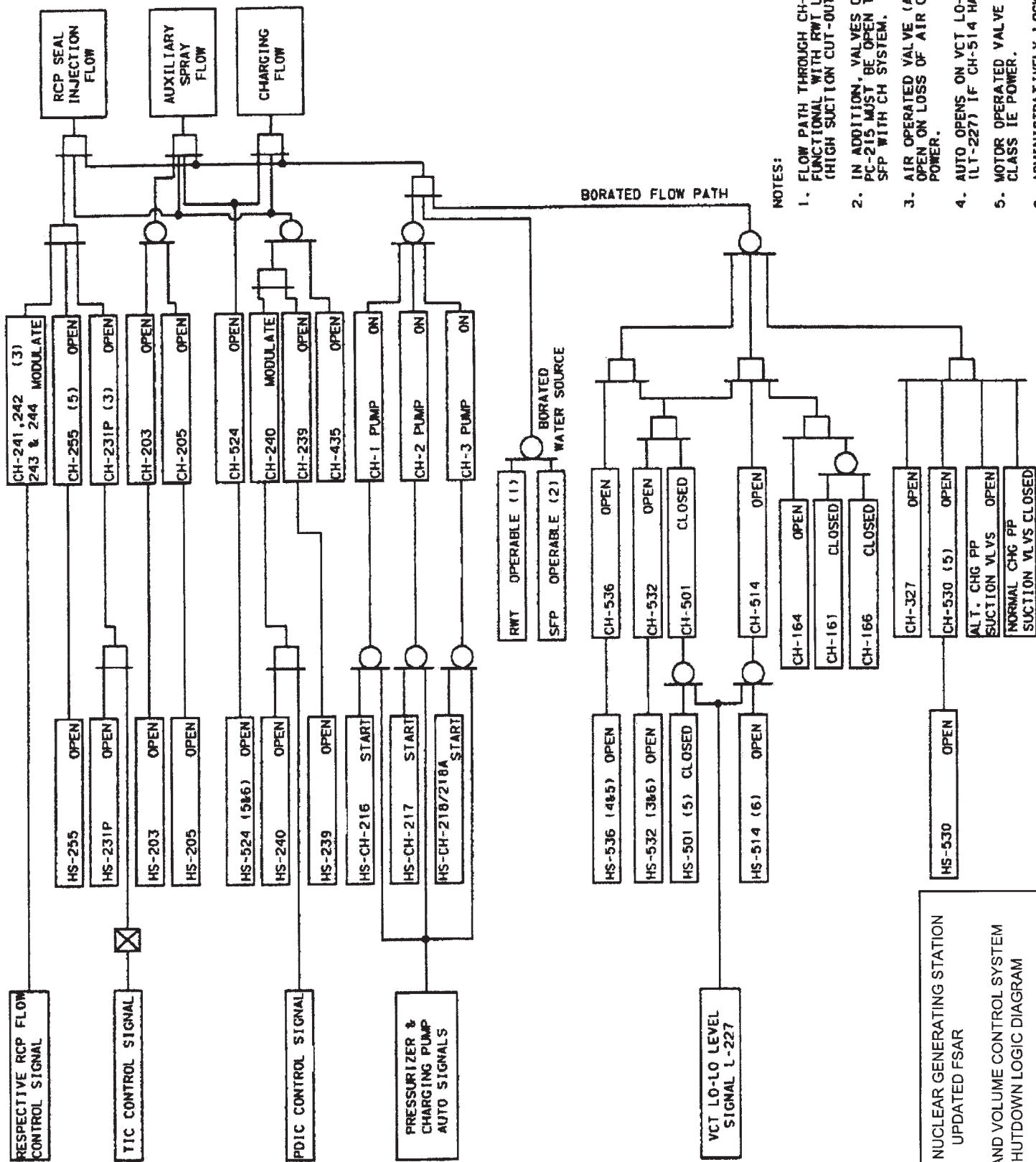
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

DETAIL DRAWINGS
ESSENTIAL SPRAY POND

FIGURE 9.2-1 SHEET 2 OF 2

REVISION 12

JUNE 2003



NOTES:

1. FLOW PATH THROUGH CH-327 MAY BE FUNCTIONAL WITH RWT LEVEL BELOW 73% (HIGH SUCTION CUT-OUT)
2. IN ADDITION, VALVES CH-144 AND PC-215 MUST BE OPEN TO CROSS-CONNECT SFP WITH CH SYSTEM.
3. AIR OPERATED VALVE (AOV) THAT FALLS OPEN ON LOSS OF AIR OR SOLENOID POWER.
4. AUTO OPENS ON VCT LO-LO LEVEL (ILT-227) IF CH-514 HAS NO POWER.
5. MOTOR OPERATED VALVE (MOV) WITH CLASS IE POWER.
6. ADMINISTRATIVELY LOCKED OPEN WITH POWER TO MOTOR (MOV) OR SOLENOID (AOV) DE-ENERGIZED.

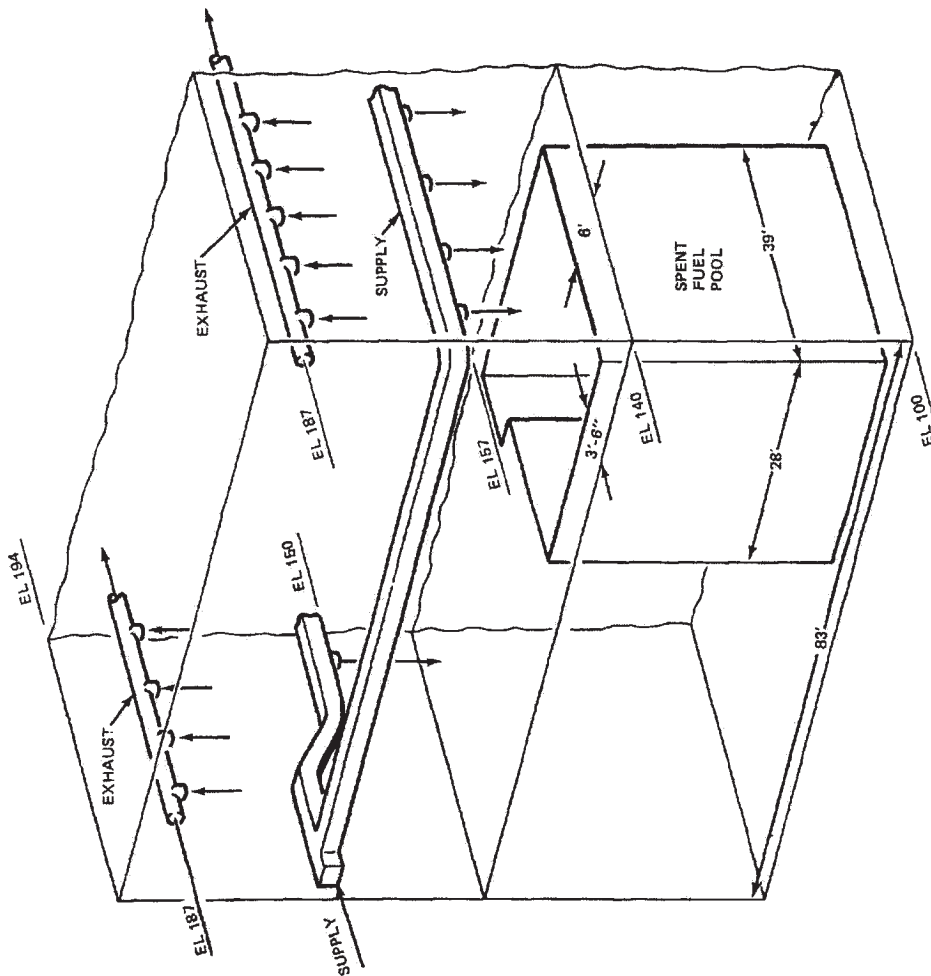
PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

CHEMICAL AND VOLUME CONTROL SYSTEM
SAFE SHUTDOWN LOGIC DIAGRAM

FIGURE 9.3-1

REVISION 12

June 2003



NOTE: DIMENSIONS ARE APPROXIMATE

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

FUEL BUILDING
VENTILATION AND DUCT ARRANGEMENT
ABOVE SPENT FUEL POOL

FIGURE 9.4-1

JUNE 2003

REVISION 12

Figure 9.5-1 has been deleted.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

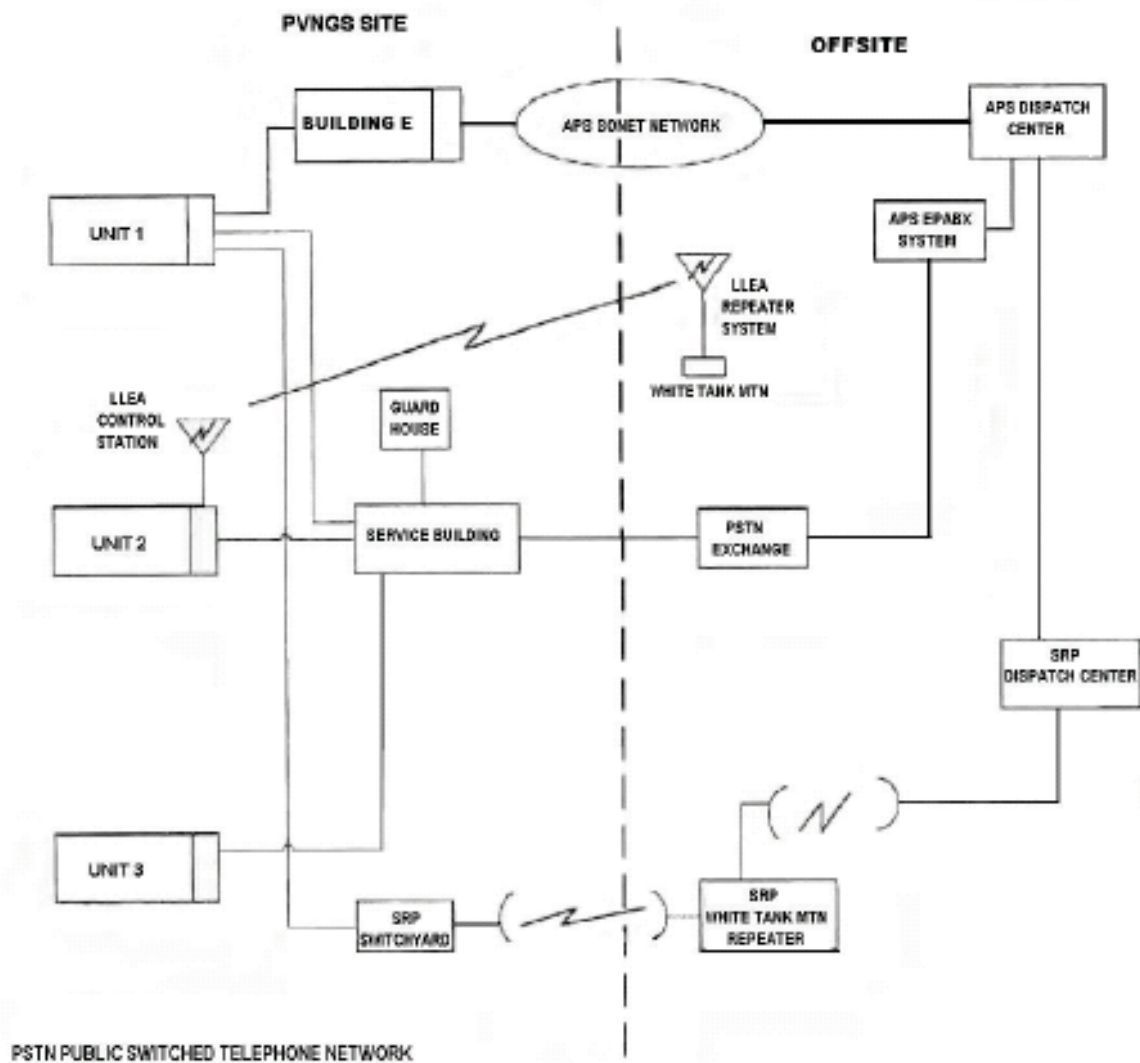
SCHEMATIC DIAGRAM
PUBLIC ADDRESS EQUIPMENT
FIGURE 9.5-1

JUNE 2013

REVISION 17

Figure 9.5-2 has been deleted.

PALO VERDE NUCLEAR GENERATING STATION UPDATED FSAR		
SCHEMATIC DIAGRAM PUBLIC ADDRESS EQUIPMENT FIGURE 9.5-2		
JUNE 2013		REVISION 17



PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BLOCK DIAGRAM
NORMAL OFFSITE COMMUNICATIONS

FIGURE 9.5-3

JUNE 2013

REVISION 17

Figure 9.5-4 has been deleted.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BLOCK DIAGRAM
EMERGENCY COMMUNICATION SYSTEM

FIGURE 9.5-4 SHEET 1 OF 2

JUNE 2013

REVISION 17

Figure 9.5-4 has been deleted.

PALO VERDE NUCLEAR GENERATING STATION
UPDATED FSAR

BLOCK DIAGRAM
EMERGENCY COMMUNICATION SYSTEM

FIGURE 9.5-4 SHEET 2 OF 2

JUNE 2013

REVISION 17

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.

This Figure has been redacted.