Entergy Nuclear South
Entergy Operations, Inc.
17265 River Road
Killona, LA 70057-3093
Tel 504-739-6475
Fax 504-739-6698
aharris@entergy.com

Entergy

W3F1-2005-0019

Alan J. Harris
Director, Nuclear Safety Assurance
Waterford 3

March 17, 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Supplement to Amendment Request NPF-38-249
Extended Power Uprate
Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

REFERENCES:
1. Entergy Letter dated November 13, 2003, "License Amendment Request NPF-38-249 Extended Power Uprate"
2. Entergy Letter dated July 28, 2004, "Supplement to Amendment Request NPF-38-249 Extended Power Uprate"
3. Entergy Letter dated July 14, 2004, "Supplement to Amendment Request NPF-38-249 Extended Power Uprate"

Dear Sir or Madam:

By letter (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the Waterford Steam Electric Station, Unit 3 (Waterford 3), Operating License and Technical Specifications to increase the unit's rated thermal power level from 3441 megawatts thermal (MWt) to 3716 MWt. On March 9, 2005, Entergy and members of your staff held a call to discuss a correction to an input to the Large Break Loss of Coolant Accident (LBLOCA) analysis used in support of the Extended Power Uprate (EPU) license amendment request submitted in Reference 1.

As discussed during the call, the problem was discovered in the EPU LBLOCA Emergency Core Cooling System (ECCS) performance analysis performed to determine the Peak Cladding Temperature (PCT). Specifically, the code input caused the analysis to be run with no containment cooling from the Containment Fan Coolers (CFCs) which is non-conservative for the ECCS performance analysis. This was identified while investigating sensitivities on a future Waterford 3 core reload (one cycle beyond the first EPU cycle) when Westinghouse was referring back to the EPU analysis. This condition has been entered into both the Westinghouse and Entergy 10CFR50 Appendix B corrective action programs.

The LBLOCA analysis of record for current plant operation was verified not to be impacted by this condition.

With containment cooling from the CFCs corrected, the EPU LBLOCA ECCS performance analysis calculated a PCT in excess of 2200°F. A PCT of 2164°F was reported for the limiting EPU LBLOCA ECCS performance analysis in Section 2.12.3 of Attachment 5 to Reference 1.

A001

One key assumption used in the EPU LBLOCA ECCS performance analysis was a Peak Linear Heat Generation Rate (PLHGR) of 13.2 kW/ft. Due to cycle specific fuel performance restrictions, Cycle 14 (i.e., first EPU cycle) is limited to a value of 12.9 kW/ft. With the input corrected and the PLHGR reduced to 12.9 kW/ft the resulting PCT is 2153°F. A PLHGR limit of 12.9 kW/ft supports Cycle 14 operation and will be implemented and controlled by the Core Operating Limits Report (COLR).

Therefore, the EPU LBLOCA ECCS performance analysis has been reperformed with the input corrected and utilizing the Cycle 14 specific PLHGR of 12.9 kW/ft. Other inputs independent of PLHGR are not changed from those listed in Section 2.12.3 of Attachment 5 to Reference 1. The limiting break size of 0.8 DEG/PD (Double Ended Guillotine/Pump Discharge) is not changed.

The revised results for the extended power uprate demonstrate conformance to the ECCS acceptance criteria as summarized below.

Parameter	**Criterion**	**Revised Result**
PCT	≤2200°F	2153°F
Maximum Cladding Oxidation	≤17%	8.5%
Maximum Core-Wide Oxidation	≤1%	<0.99%
Coolable Geometry	Yes	Yes

The results are applicable to Waterford 3 for a PLHGR of 12.9 kW/ft as specified in the COLR and a rated core power of 3716 MWt (3735 MWt including a 0.5% power measurement uncertainty). These revised EPU LBLOCA ECCS performance analysis results supersede those previously submitted in support of the EPU license amendment request (e.g., Reference 1 and 2). A revised Section 2.12.3 with hand marked changes and revised figures is attached and supersedes Section 2.12.3 previously submitted in Attachment 5 to Reference 1.

No other analyses (e.g., Small Break LOCA, Long Term Cooling (including boric acid precipitation), Alternative Source Term, fuel system design, etc.) were impacted by this problem or the revised analysis and results.

The no significant hazards consideration included in Reference 3 is not affected by any information contained in the supplemental letter. There are no new commitments contained in this letter.

It continues to be Entergy's plan to implement the Waterford 3 EPU during the Spring 2005 outage. Entergy recognizes that the input correction to the LBLOCA analysis challenges NRC approval by March 31, 2005, the approval date previously requested by Entergy. NRC approval of the amendment by April 15, 2005 will support implementation plans during the outage. Your prompt review and approval of the EPU amendment request is important to the Waterford 3 outage plans and preparation.

If you have any questions or require additional information, please contact D. Bryan Miller at 504-739-6692.

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 17, 2005.

Sincerely,

AJH/DBM/cbh

Attachment: Revised Section 2.12.3, Large-Break LOCA (LBLOCA) Analysis

cc: Dr. Bruce S. Mallett
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

NRC Senior Resident Inspector
Waterford 3
P.O. Box 822
Killona, LA 70066-0751

U.S. Nuclear Regulatory Commission
Attn: Mr. Nageswaran Kalyanam MS O-7D1
Washington, DC 20555-0001

Wise, Carter, Child & Caraway
Attn: J. Smith
P.O. Box 651
Jackson, MS 39205

Winston & Strawn
Attn: N.S. Reynolds
1400 L Street, NW
Washington, DC 20005-3502

Louisiana Department of Environmental Quality
Office of Environmental Compliance
Surveillance Division
P. O. Box 4312
Baton Rouge, LA 70821-4312

American Nuclear Insurers
Attn: Library
Town Center Suite 300S
29th S. Main Street
West Hartford, CT 06107-2445

Attachment

To

W3F1-2005-0019

Revised Power Uprate Report Section 2.12.3, Large-Break LOCA (LBLOCA) Analysis

properties sufficient to provide assurance that the most severe postulated LOCAs are calculated. The evaluation model may either be a realistic evaluation model as described in 10CFR50.46(a)(1)(i) or must conform to the required and acceptable features of Appendix K ECCS Evaluation Models (Reference 2.12-2). The evaluation models used to perform the Waterford 3 EPU ECCS performance analysis are Appendix K evaluation models.

2.12.3 Large-Break LOCA (LBLOCA) Analysis

2.12.3.1 Methodology

The LBLOCA ECCS performance analysis used the 1999 Evaluation Model (EM) version of the Westinghouse LBLOCA evaluation model for Combustion Engineering (CE) PWRs. The current Waterford 3 LBLOCA ECCS performance analysis, described in Sections 6.3.3.2 and 15.6.3.3.3.1 of the Waterford 3 FSAR (Reference 2.12-3), employs the June 1985 version of the Westinghouse LBLOCA EM for CE PWRs (Reference 2.12-4), which is the version of the evaluation model upon which the 1999 EM is built.

Several computer codes are used in the 1999 EM. The computer codes are described in the references cited with additional descriptive information provided in the 1999 EM topical report (Reference 2.12-5). The CEFLASH-4A computer code (Reference 2.12-6) is used to perform the blowdown hydraulic analysis of the reactor coolant system (RCS) and the COMPERC-II computer code (Reference 2.12-7) is used to perform the RCS refill/reflood hydraulic analysis and to calculate the containment minimum pressure. It is also used in conjunction with the methodology described in Reference 2.12-8 to calculate the FLECHT-based reflood heat transfer coefficients used in the hot rod heatup analysis. The HCROSS (Reference 2.12-9) and PARCH (Reference 2.12-10) computer codes are used to calculate steam cooling heat transfer coefficients. The hot rod heatup analysis, which calculates the PCT and maximum cladding oxidation, is performed with the STRIKIN-II computer code (Reference 2.12-11). Core-wide cladding oxidation is calculated using the COMZIRC computer code (Appendix C of Supplement 1 of Reference 2.12-7). The initial steady state fuel rod conditions used in the analysis are determined using the FATES3B computer code (Reference 2.12-12).

The 1999 EM is described in the topical report (Reference 2.12-5) and it has been approved for LBLOCA analyses for the CE-designed PWRs as documented in the Safety Evaluation Report for the model (Reference 2.12-28). The 1999 EM as described in the topical report was used in the Waterford 3 extended power uprate LBLOCA ECCS performance analysis.

The 1999 EM is built on the June 1985 version of the Westinghouse LBLOCA evaluation model for the CE-designed PWRs. The Safety Evaluation Reports for the 1985 EM and computer codes are documented in References 2.12-13 through 2.12-19. The Safety Evaluation Reports (SERs) for the FATES3B computer code are documented in References 2.12-20 through 2.12-22.

In performing the LOCA calculations, conservative assumptions are made concerning the availability of safety injection (SI) flow. It is assumed that offsite power is lost and all pumps must await diesel startup before they can begin to deliver flow. (It is assumed, however, that offsite power is available for the Containment Spray System (CSS) and containment fan coolers). Also, it is assumed that all safety injection flow delivered to the broken cold leg is lost.

The limiting initial fuel rod conditions used in the LBLOCA analysis (i.e., the conditions that result in the highest calculated peak cladding temperature) were determined by performing burnup dependent calculations with STRIKIN-II using initial fuel rod conditions calculated by FATES3B. The calculations included the analysis of both UO_2 and erbia burnable absorber fuel rods.

A study was performed to determine the most limiting single failure of ECCS equipment under EPU conditions. The study analyzed no failure, failure of an emergency diesel generator, failure of a high-pressure safety injection (HPSI) pump, and a failure of a low-pressure safety injection (LPSI) pump consistent with approved topical reports. Maximum safety injection pump flow rates were used in the no failure case; minimum safety injection pump flow rates were used in the emergency diesel generator (EDG), HPSI and LPSI pump failure cases. The pumps were actuated on a safety injection actuation signal (SIAS) generated by low pressurizer pressure with a startup delay of greater than or equal to 27.0 seconds for HPSI and greater than or equal to 42.5 seconds for LPSI. Minimum refueling water storage pool temperature was used in all four cases as a result of a sensitivity study of the refueling water storage pool water temperature. The most limiting single failure (i.e., the failure that resulted in the highest calculated PCT) was no failure of ECCS equipment. This is the same limiting single failure described in the SAR for the current analysis. No failure is the worst condition because it maximizes the amount of safety injection that spills into the containment. This acts to minimize containment pressure which, in turn, minimizes the rate at which the core is reflooded. The failure of either an EDG or a HPSI or LPSI pump is not the most damaging failure because, in all cases, there is sufficient safety injection pump flow to keep the acceptable reflood rate. This maintains about the same reflood rate as for no failure, but results in less spillage into the containment. The study also investigated the impact of variation in safety injection tank (SIT) pressure, water temperature, and water volume on PCT. Minimum SIT pressure, minimum water temperature and maximum water volume were determined to result in the highest peak cladding temperature. The assumed maximum SIT water volume is 1686 ft^3, which is a 200 ft^3 reduction from the current Technical Specification. A Technical Specification change for maximum SIT water volume is included as part of this licensing amendment request.

A spectrum of guillotine breaks in the reactor coolant pump (RCP) discharge leg was analyzed. As described in Section 3.4 of Reference 2.12-5, the discharge leg is the most limiting break location and a guillotine break is more limiting than a slot break. In particular, the 0.6, 0.8, and 1.0 double-ended guillotine breaks in the reactor coolant pump discharge leg (DEG/PD) were analyzed. The 0.8 DEG/PD break was determined to be the limiting LBLOCA (i.e., the break that results in the highest calculated PCT). The same break was the limiting case in previous cycles also.

2.12.3.2 Plant Design Data

Important core, Reactor Coolant System (RCS), ECCS, and containment design data used in the LBLOCA analysis are listed in Tables 2.12-1 and 2.12-2. The listed fuel rod conditions are for rod average burnup of the hot rod that produced the highest calculated PCT. Plant design data for the containment (e.g., data for the containment initial conditions, containment volume, containment heat removal systems, and containment passive heat sinks) were selected to minimize the transient containment pressure. The core inlet temperature was the minimum RCS cold leg temperature at full power including uncertainty.

2.12.3.3 Results

Table 2.12-3 lists the peak cladding temperature and oxidation percentages for the spectrum of LBLOCAs. Times of interest are listed in Table 2.12-4. The variables listed in Table 2.12-5 are plotted as functions of time in Figures 2.12-1 through 2.12-8 for the 1.0 DEG/PD break. The variables listed in Tables 2.12-5 and 2.12-6 are plotted as functions of time for the 0.8 DEG/PD break, the limiting LBLOCA, in Figures 2.12-9 through 2.12-27. The variables listed in Table 2.12-5 are plotted for the 0.6 DEG/PD in Figures 2.12-28 through 2.12-35. The results for the extended power uprate demonstrate conformance to the ECCS acceptance criteria as summarized below. The results from the FSAR are provided for comparison.

2153 °F

Parameter	Criterion	EPU Results	Current FSAR
PCT	≤2200°F	2164°F	2177°F
Maximum Cladding Oxidation	≤17%	8.7% 8.5%	8.6%
Maximum Core-Wide Oxidation	≤1%	<0.99%	<0.81%
Coolable Geometry	Yes	Yes	Yes

The results are applicable to Waterford 3 for a peak linear heat generation rate (PLHGR) of 12.9 13.2 kW/ft as specified in the Core Operating Limits Report (COLR) and a rated core power of 3716 MWt (3735 MWt including a 0.5% power measurement uncertainty).

Table 2.12-1
LBLOCA ECCS Performance Analysis
Core and Plant Design Data

Quantity	Value	Units
Reactor power level (100.5% of rated power)	3735	MWt
PLHGR of the hot rod*	13.2 – 12.9	kW/ft
PLHGR of the average rod in assembly with hot rod	12.38 – 12.1	kW/ft
Gap conductance at the PLHGR**	1661 – 1604	BTU/hr-ft^2-°F
Fuel centerline temperature at the PLHGR**	3371 – 3312	°F
Fuel average temperature at the PLHGR**	2129 – 2103	°F
Hot rod gas pressure**	1108	psia
Moderator temperature coefficient at 583°F, 2250 psia	$+0.0\times10^{-4}$	$\Delta\rho$/°F
RCS flow rate	148.0×10^{6}	lbm/hr
Core flow rate	144.15×10^{6}	lbm/hr
RCS pressure	2250	psia
Cold leg temperature	533.0	°F
Hot leg temperature	598.7	°F
Plugged tubes per steam generator	1000	---
Low pressurizer pressure SIAS setpoint	1560	psia
SIT pressure (min/max)	584.7/714.7	psia
SIT water volume (min/max)	926/1686	ft^3
LPSI pump flow rate (min, 1 pump/max, 2 pump)	4084/11300	gpm
HPSI pump flow rate (min, 1 pump/max, 2 pump)	762/1970	gpm
Containment pressure	14.025	psia
Containment temperature	90	°F
Containment humidity	100	%
Containment net free volume	2.684×10^{6}	ft^3
Containment spray pump flow rate	2250	gpm/pump
Refueling water storage pool temperature (min/max)	50/100	°F
Containment passive heat sinks	Table 2.12-2	---

* As specified in Core Operating Limits Report (COLR).
** These quantities correspond to the rod average burnup of the hot rod (1000 MWD/MTU) that yields the highest PCT.

Table 2.12-2
LBLOCA ECCS Performance Analysis
Containment Passive Heat Sink Data

Wall No.	Description	Material	Thickness[1] (ft)	Surface Area (ft^2)
1	Containment Primary Cylinder and Dome	Carbon Steel	0.118879	92819.00
2	Concrete Underwater (one side faces ground)	Concrete	11.463	15427.75
3	Concrete Underwater (all remaining)	Concrete	2.049	8553.69
4	Concrete in Air – less than 6 feet thick	Concrete	1.1025	47663.92
5	Concrete in Air – greater than or equal to 6 feet thick	Concrete	3.365	9913.15
6	Stainless Steel	Stainless Steel	0.003734	59114.40
7	Galvanized Steel (Zinc Coating on Carbon Steel)	Zinc Carbon Steel	0.000122 0.005628	192827.75
8	Structural and Miscellaneous Exposed Steel – less than 0.2-inch thick	Carbon Steel	0.008134	184549.18
9	Structural and Miscellaneous Exposed Steel – greater than or equal to 0.2-inch thick but less than 0.5-inch thick	Carbon Steel	0.03154	215234.76
10	Structural and Miscellaneous Exposed Steel – greater than 0.5-inch thick	Carbon Steel	0.065582	71308.76

(1) Thickness is effective thickness as a result of combining similar thickness walls.

Table 2.12-3
LBLOCA ECCS Performance Analysis Results

Break Size	PCT (°F)	Maximum Cladding Oxidation (%)	Maximum Core-Wide Cladding Oxidation (%)
1.0 DEG/PD	2133 - 2146	8.3 - 8.4	<0.99
0.8 DEG/PD	2164 - 2153	8.7 - 8.5	<0.99
0.6 DEG/PD	2149 - 2140	8.3 - 8.2	<0.99

Table 2.12-4
LBLOCA ECCS Performance Analysis
Times of Interest (Seconds after Break)

Break Size	SITs On	End of Bypass	Start of Reflood	SITs Empty	SI Pumps on	Hot Rod Rupture
1.0 DEG/PD	10.5	21.7	43.1 - 0	114.6	49.7	43.6
0.8 DEG/PD	11.7 4	23.2	44.6 - 4	115.9	49.7	44.4
0.6 DEG/PD	13.8	25.6	47.0	118.2	49.8	45.8

46.8

113.7 45.9
115.0 45.9
117.3 47.4

Table 2.12-5
LBLOCA ECCS Performance Analysis
Each Break
Variables Plotted as a Function of Time

Variable
Core Power
Pressure in Center Hot Assembly Node.
Leak Flow Rate
Hot Assembly Flow Rate (below and above hot spot)
Hot Assembly Quality
Containment Pressure
Mass Added to Core During Reflood
Peak Cladding Temperature

Table 2.12-6
LBLOCA ECCS Performance Analysis
Limiting Break
Variables Plotted as a Function of Time

Variable
Mid Annulus Flow Rate
Quality Above and Below the Core
Core Pressure Drop
Safety Injection Flow Rate into Intact Discharge Legs
Water Level in Downcomer During Reflood
Hot Spot Gap Conductance
Maximum Local Cladding Oxidation Percentage
Fuel Centerline, Fuel Average, Cladding, and Coolant Temperature at the Hot Spot
Hot Spot Heat Transfer Coefficient
Hot Pin Pressure
Core Bulk Channel Flow Rate

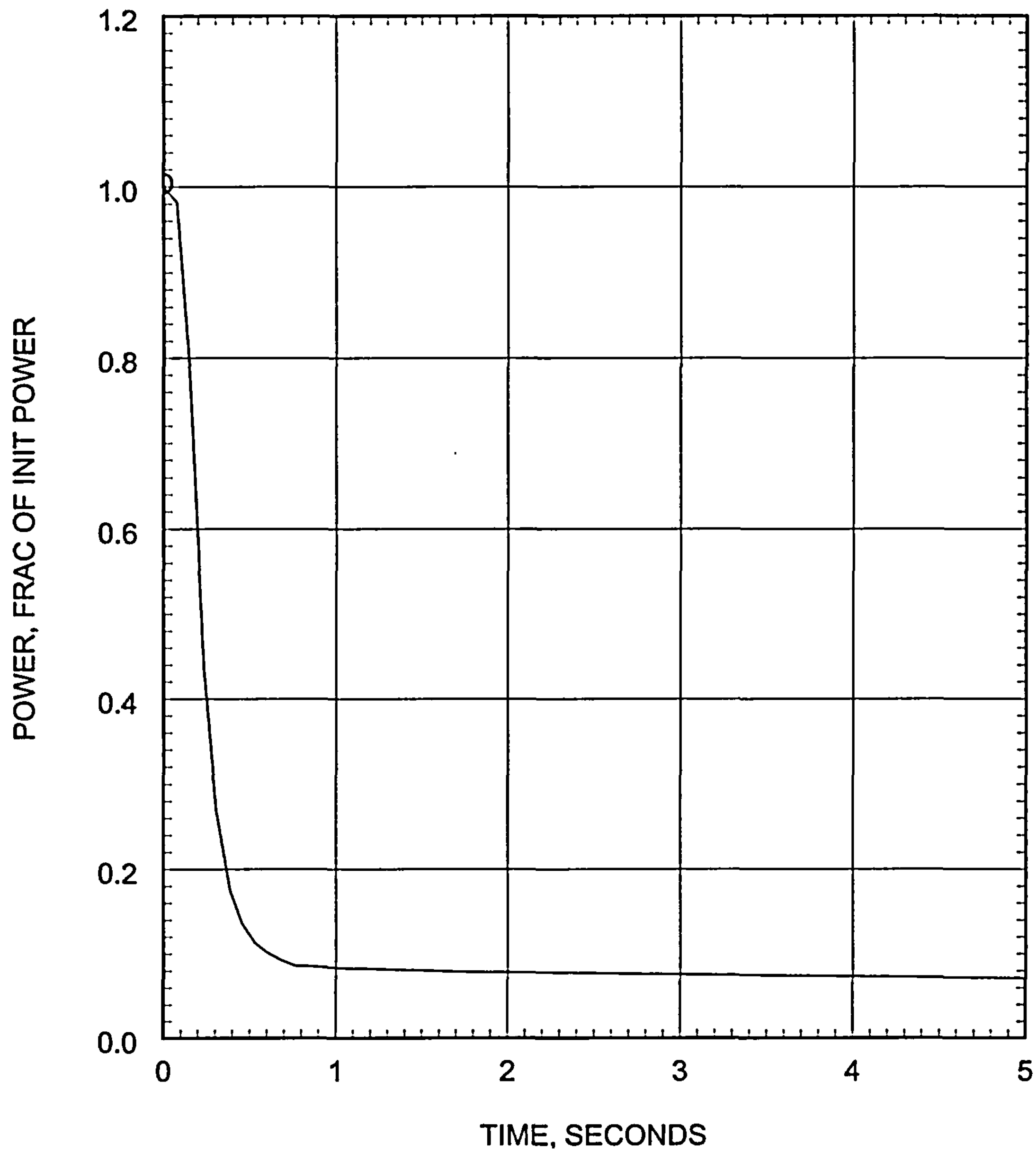

Figure 2.12-1
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Core Power

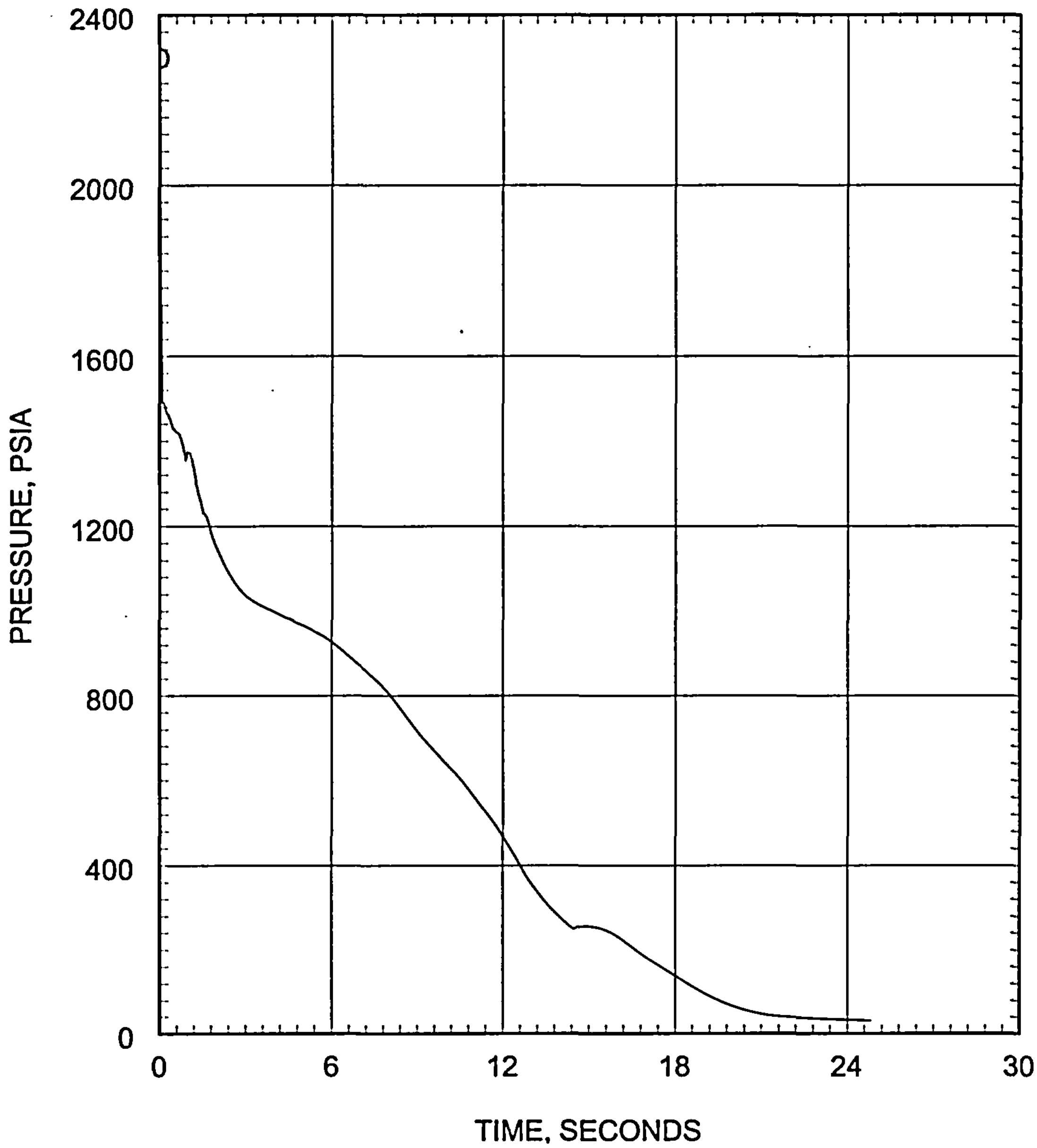

Figure 2.12-2
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Pressure in Center Hot Assembly Node

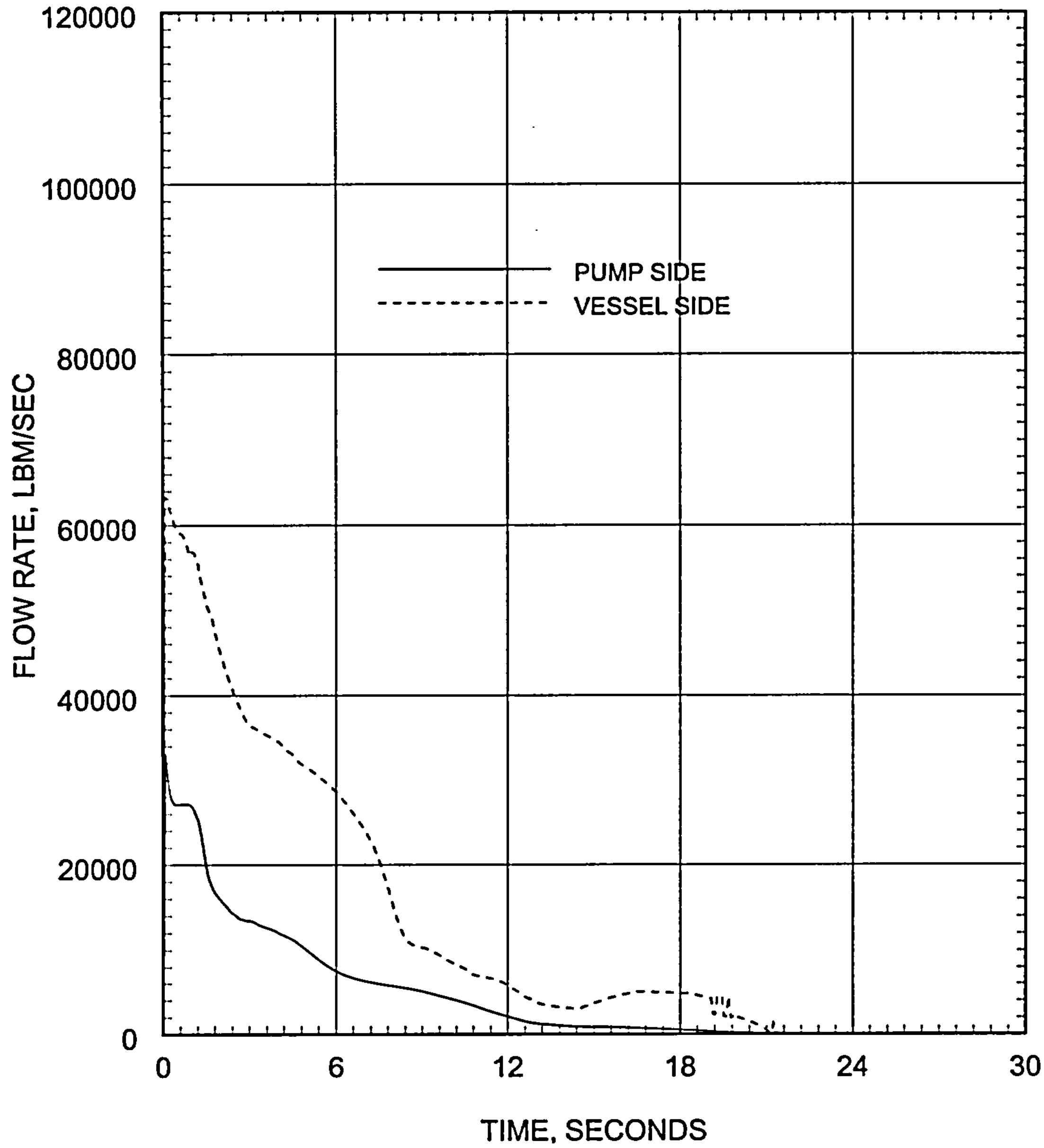

Figure 2.12-3
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Leak Flow Rate

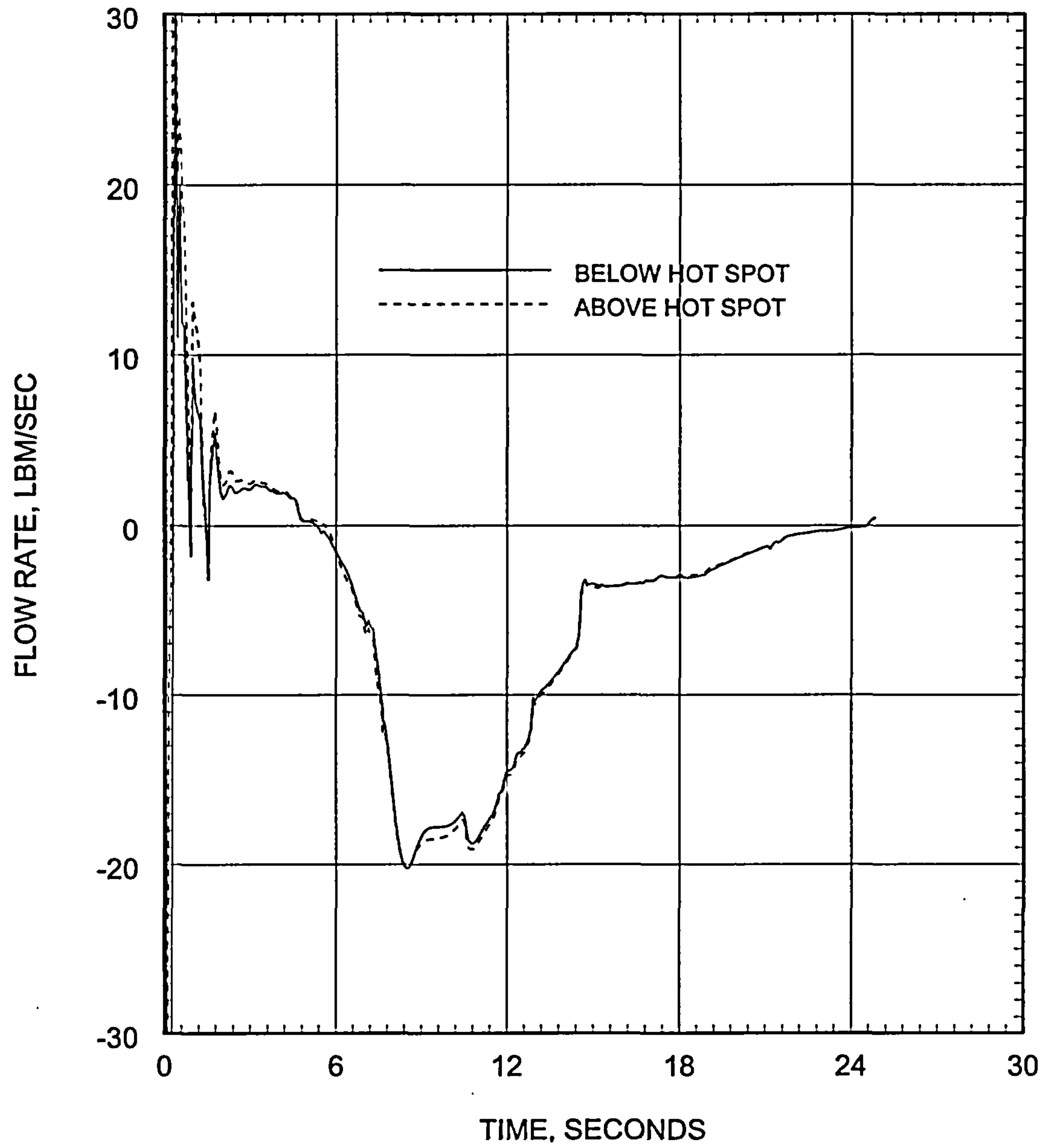

Figure 2.12-4
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Hot Assembly Flow Rate (Below and Above Hot Spot)

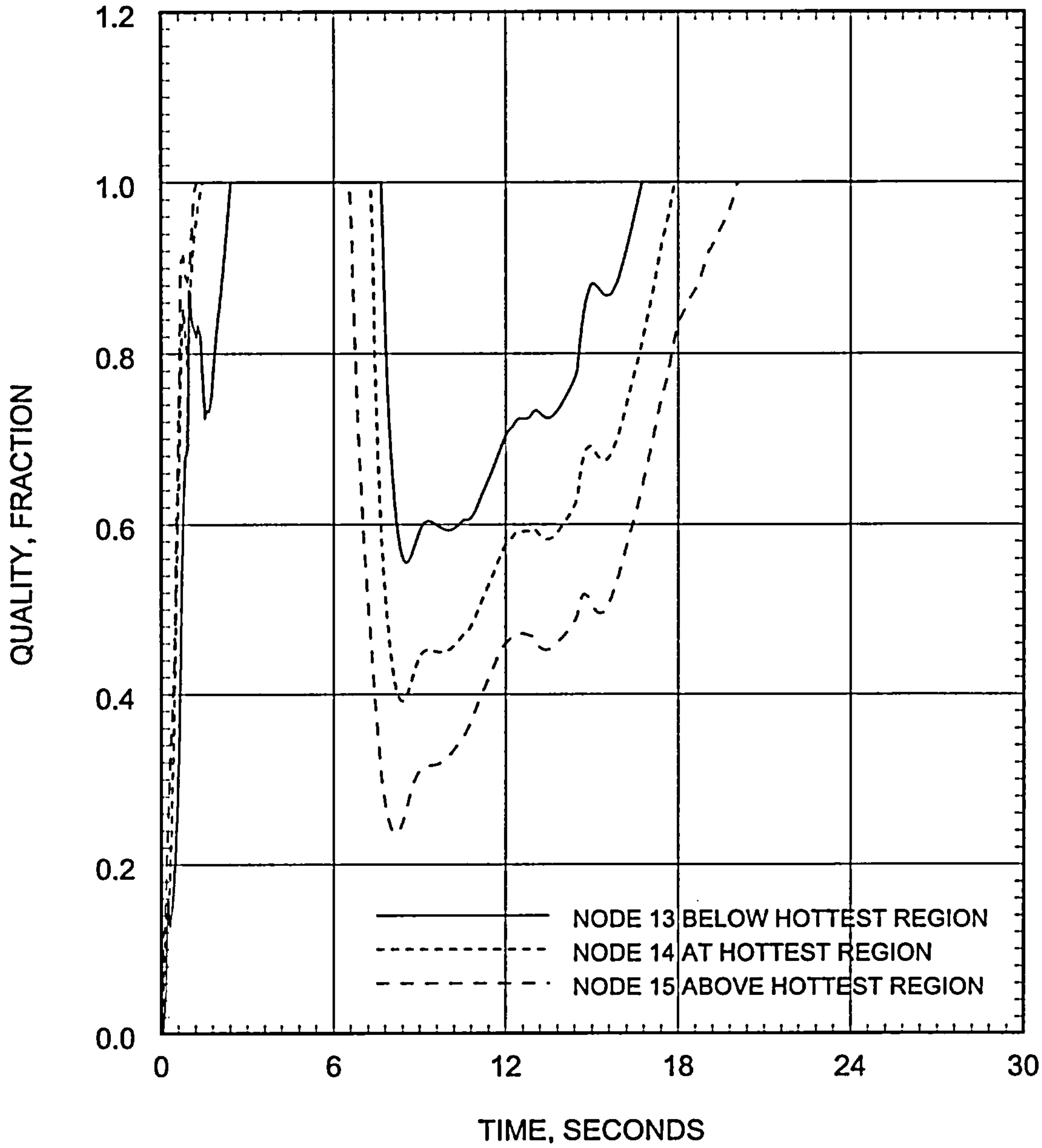

Figure 2.12-5
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Hot Assembly Quality

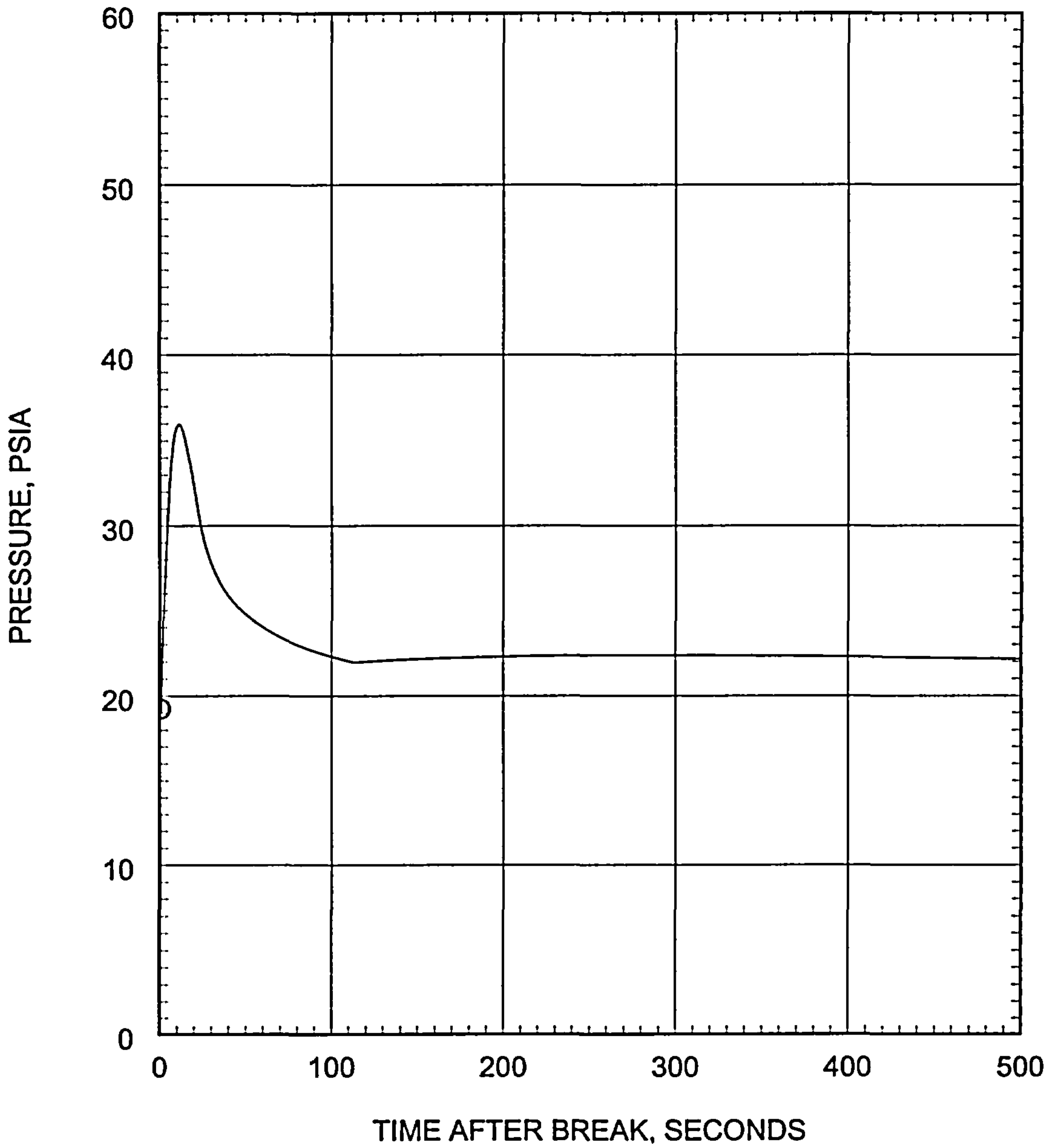

Figure 2.12-6
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Containment Pressure

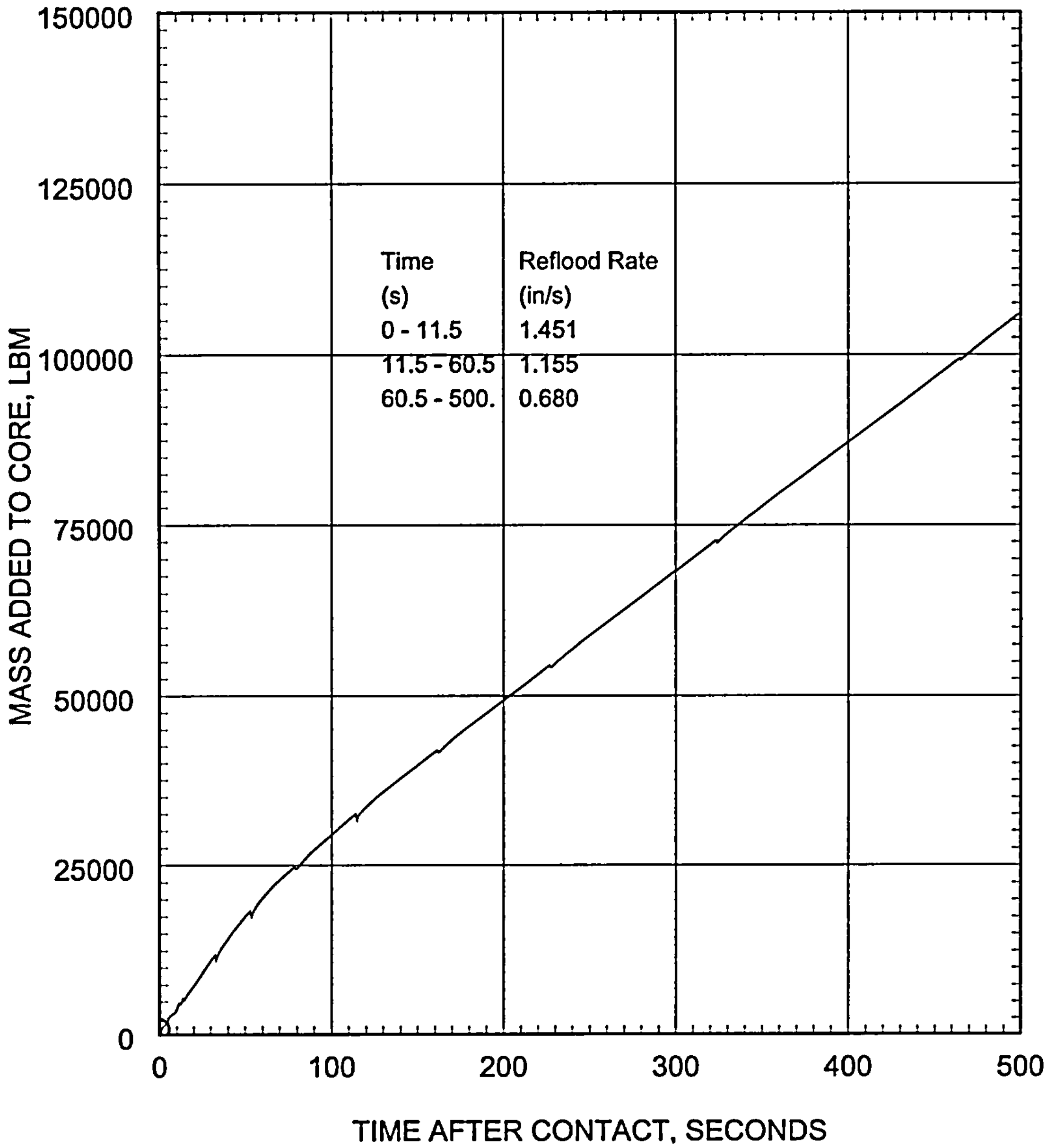

Figure 2.12-7
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Mass Added to Core During Reflood

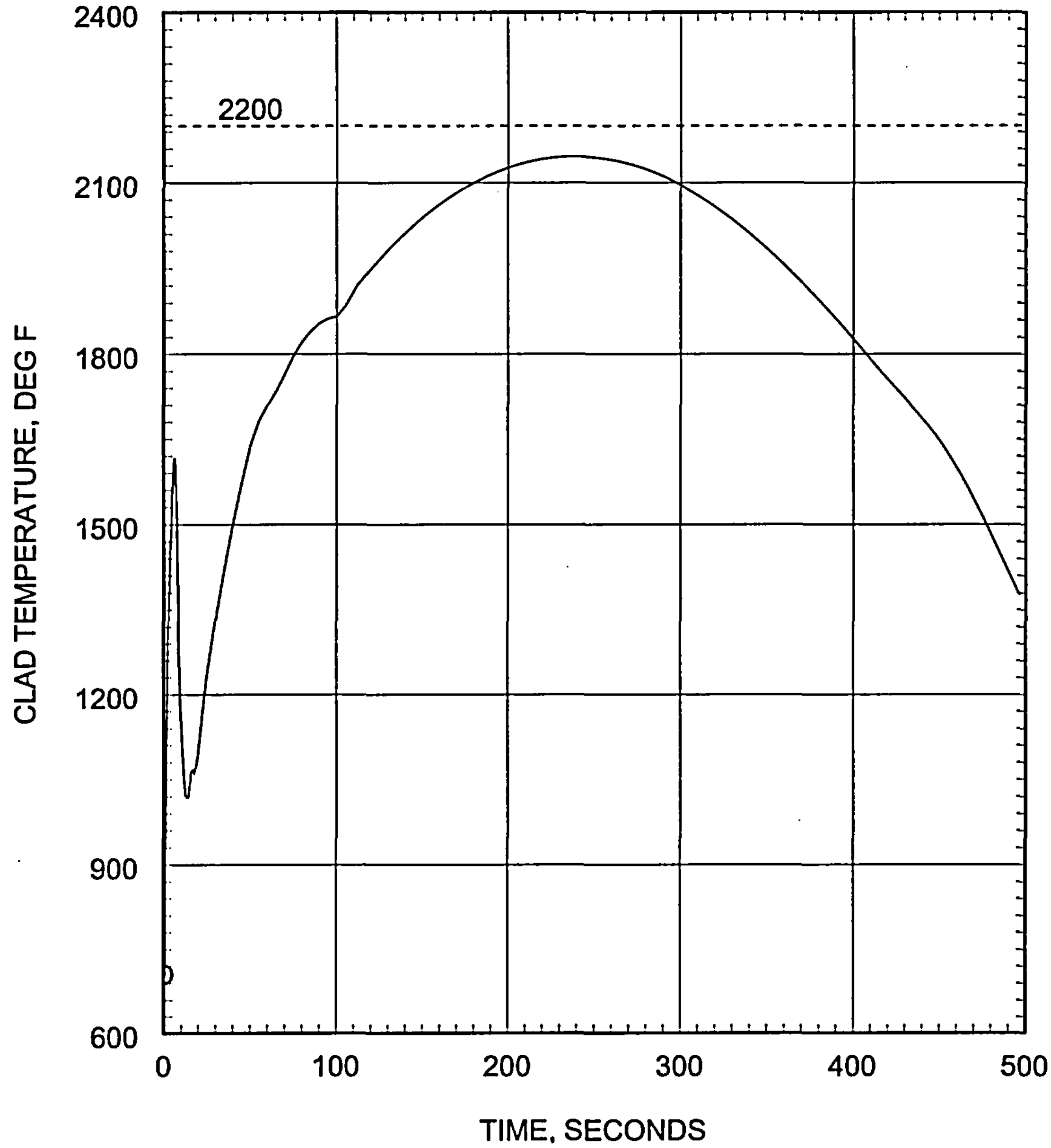

Figure 2.12-8
Large Break LOCA ECCS Performance Analysis
1.0 DEG/PD Break Peak Cladding Temperature

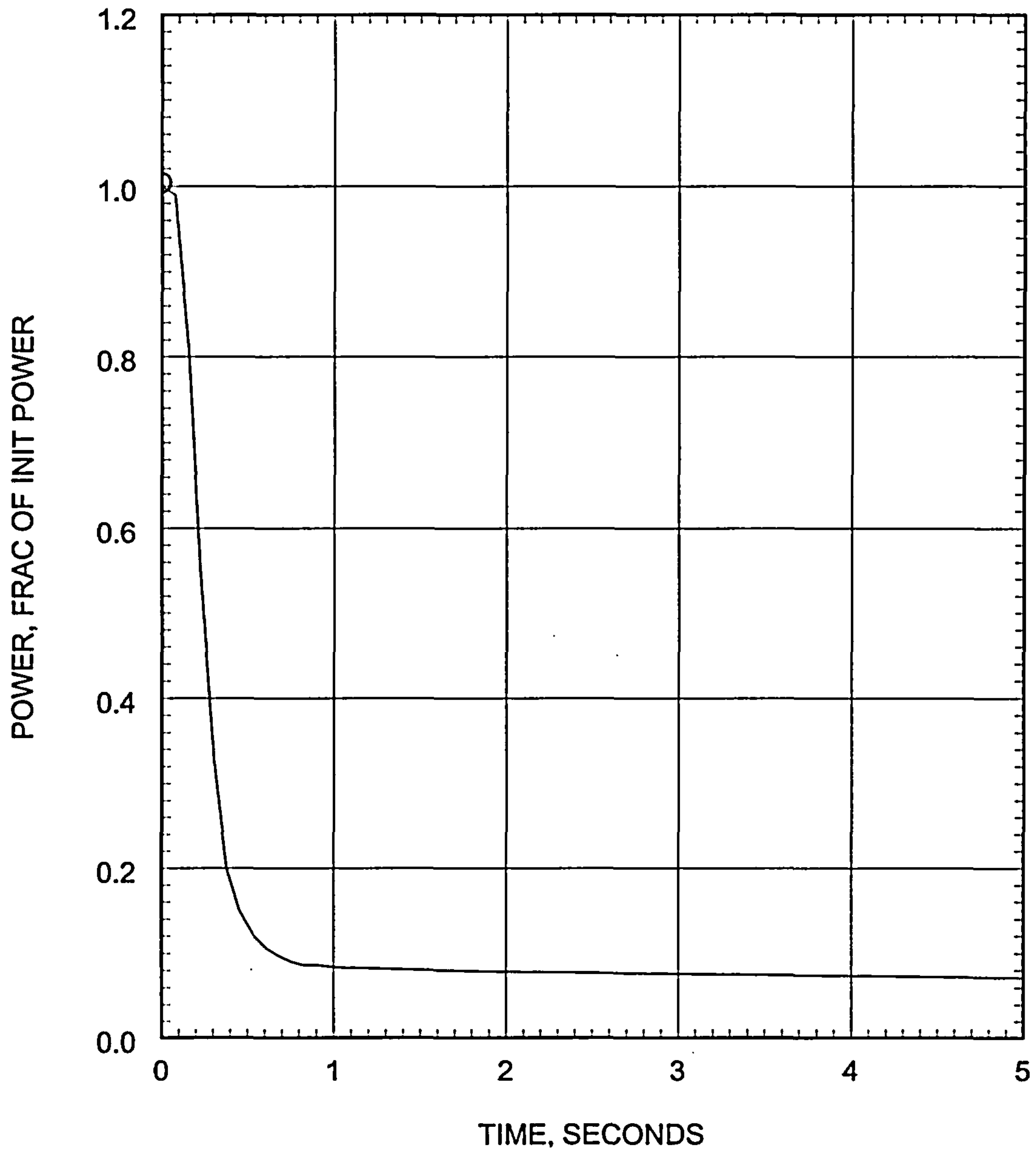

Figure 2.12-9
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Core Power

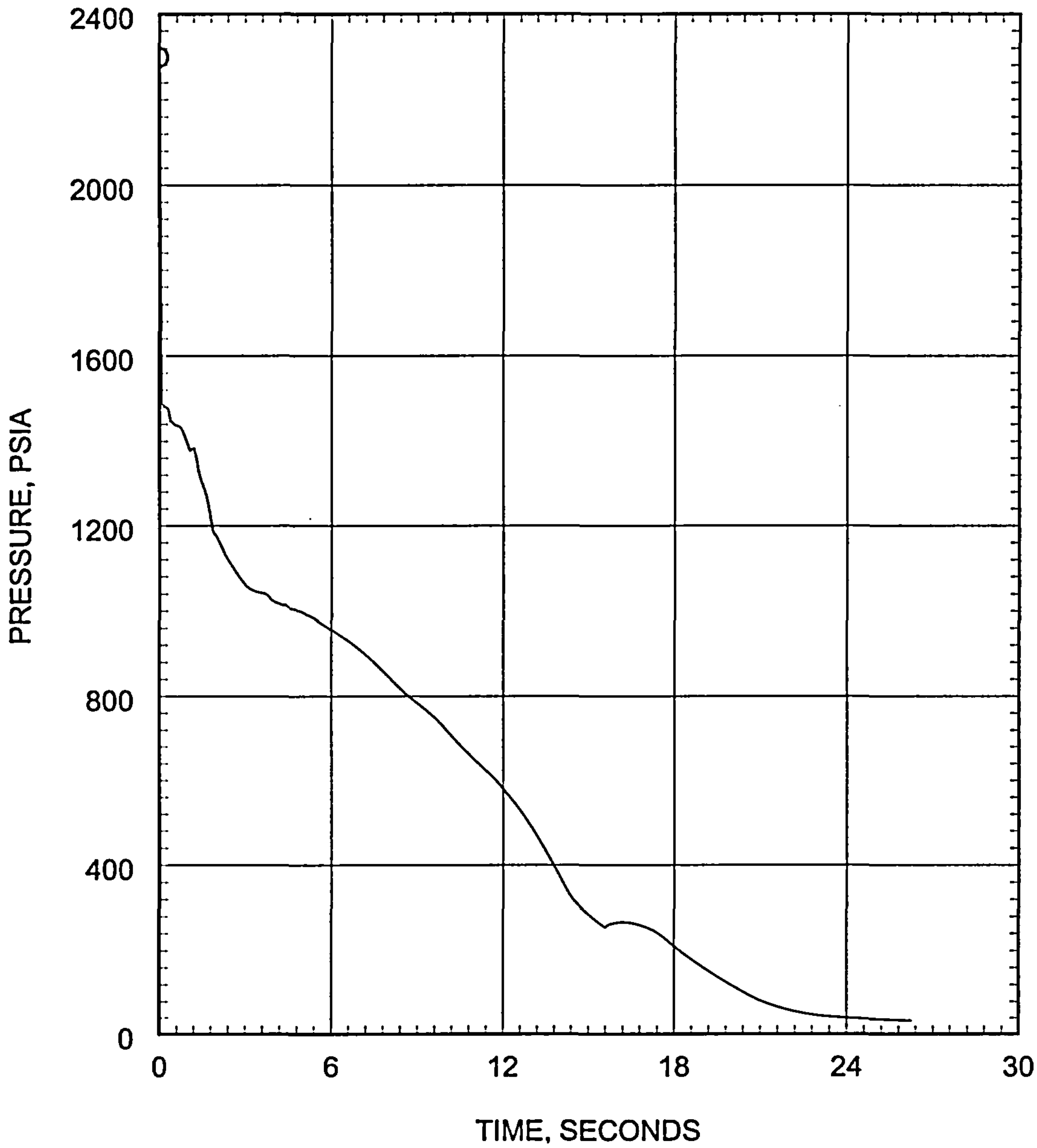

Figure 2.12-10
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Pressure in Center Hot Assembly Node

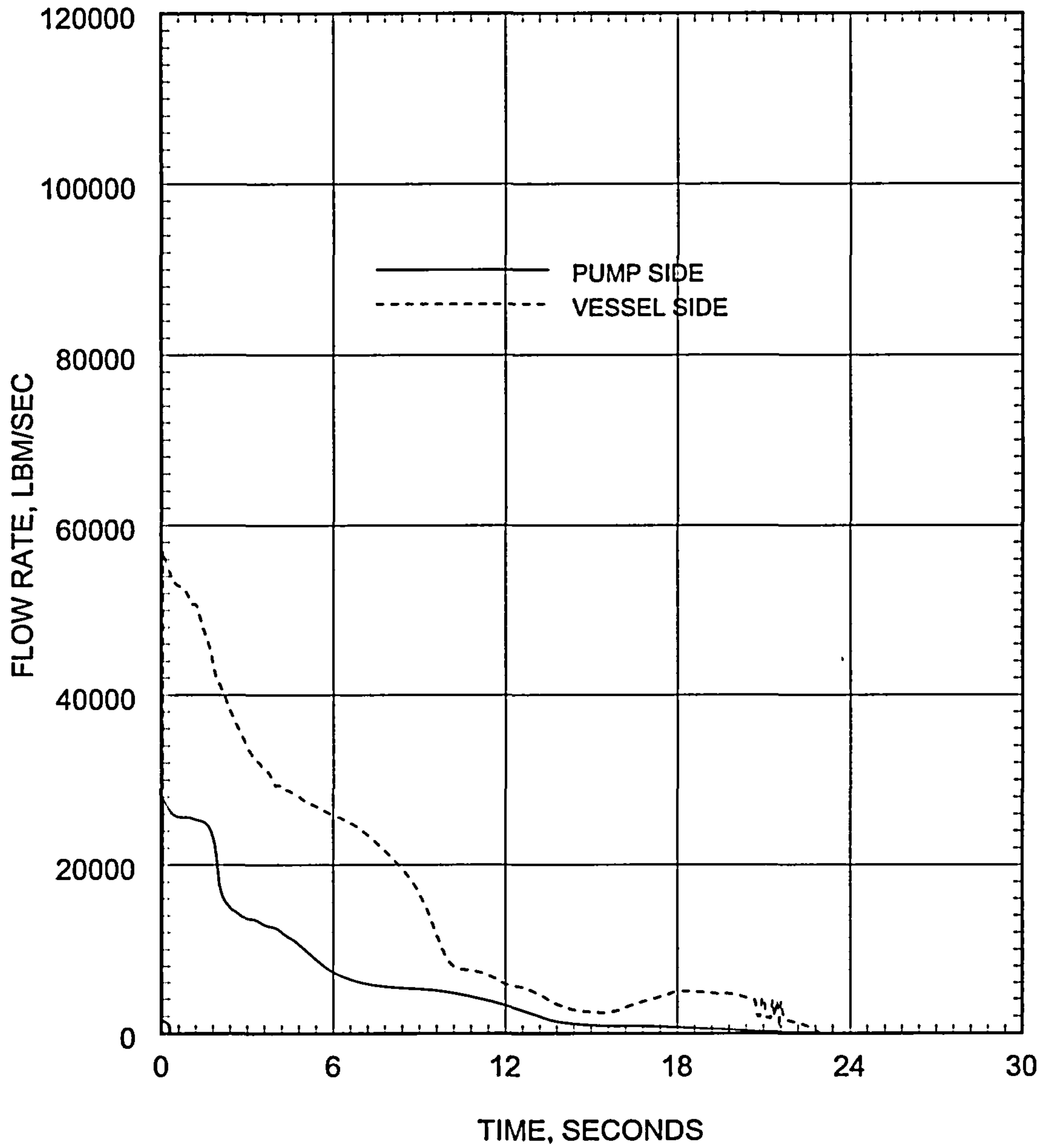

Figure 2.12-11
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Leak Flow Rate

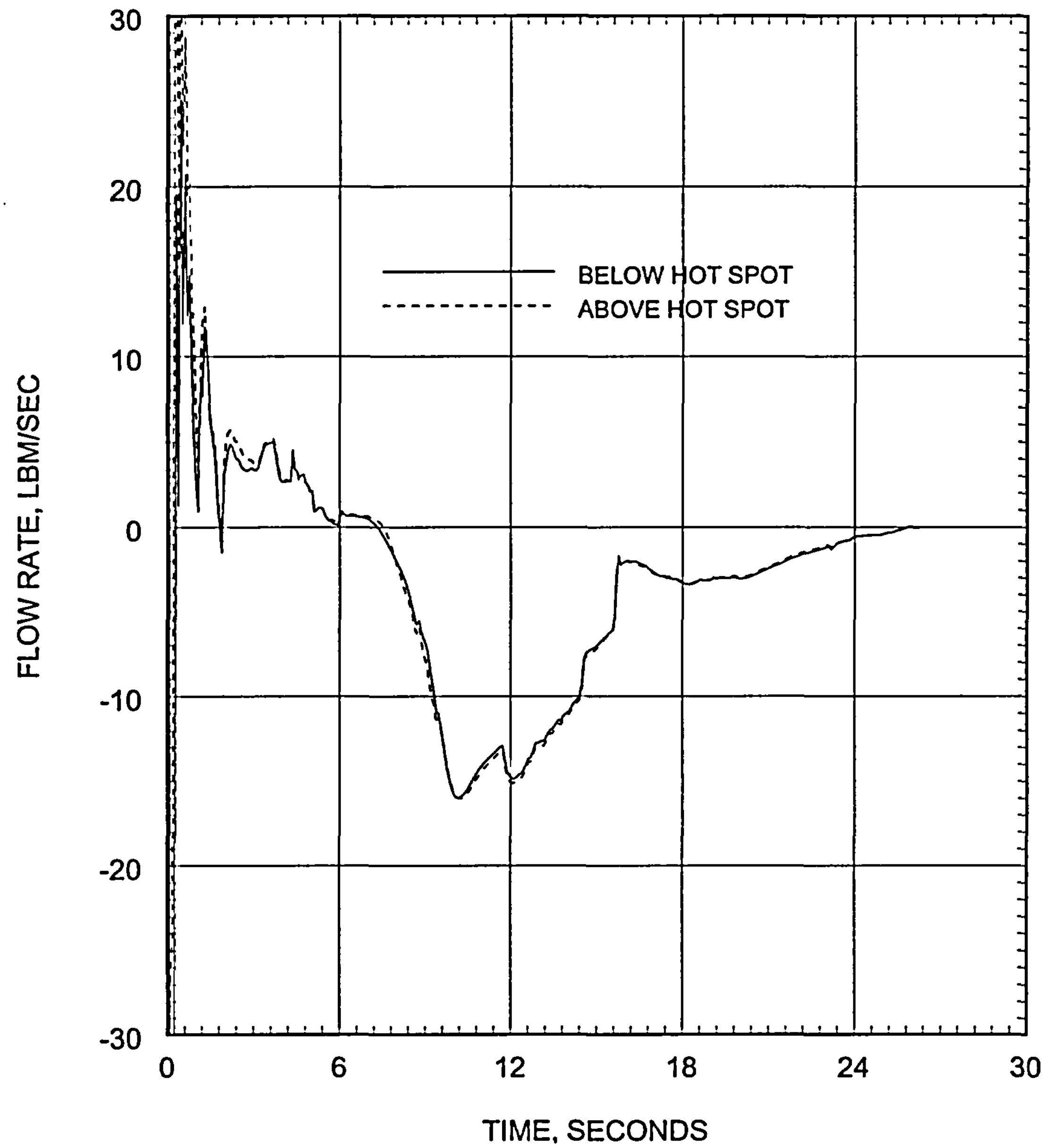

Figure 2.12-12
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Hot Assembly Flow Rate (Above and Below Hot Spot)

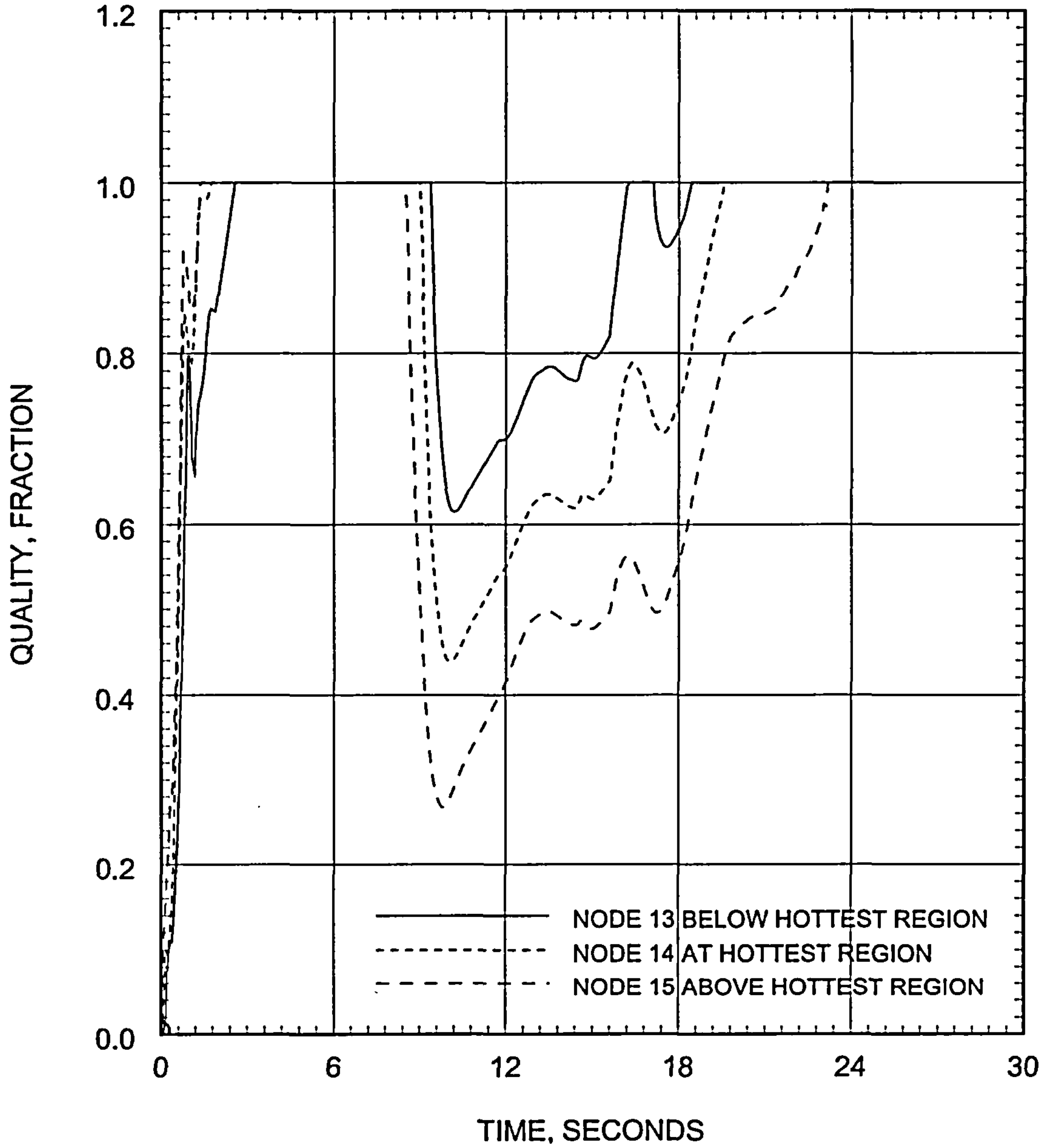

Figure 2.12-13
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Hot Assembly Quality

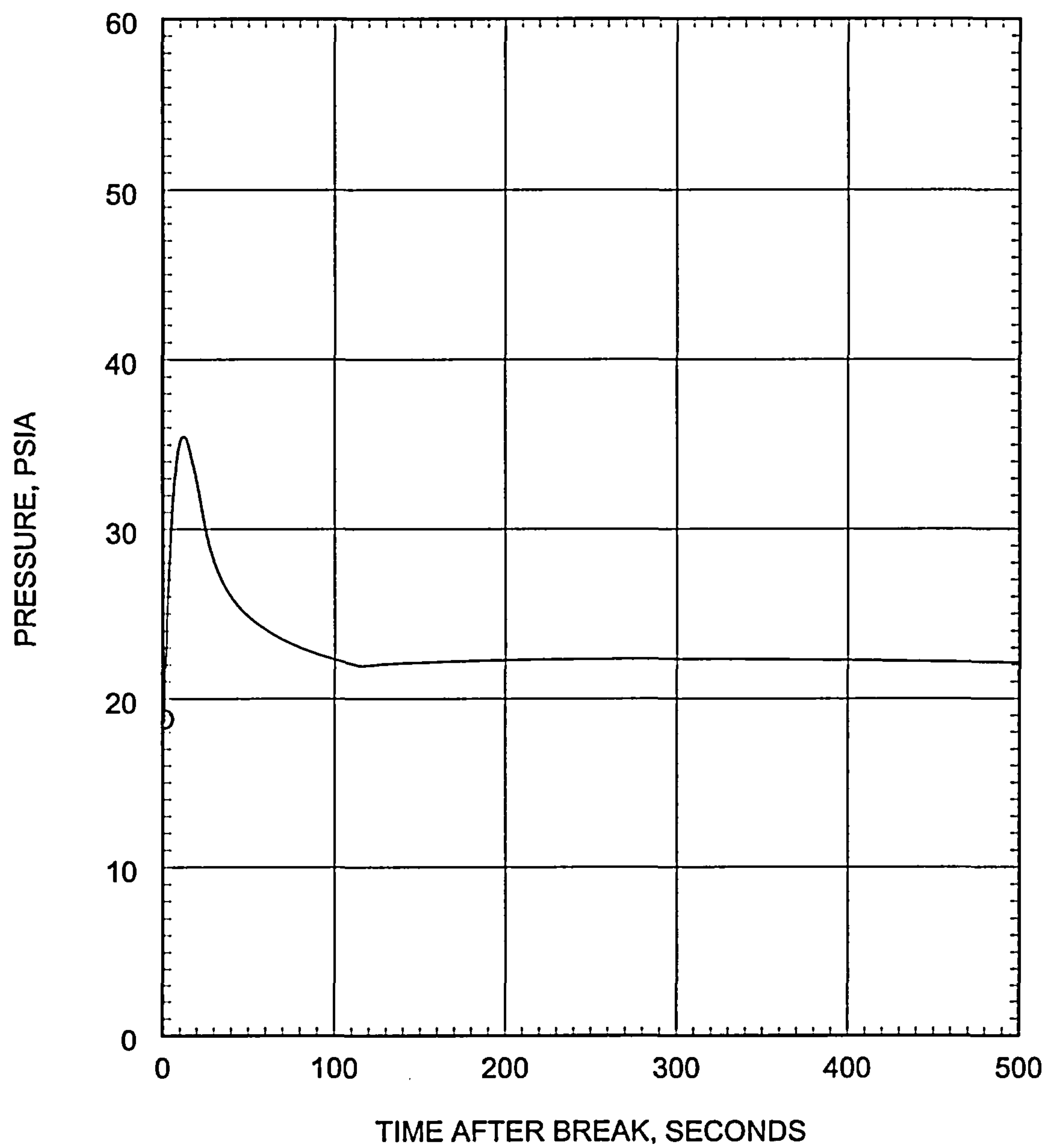

Figure 2.12-14
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Containment Pressure

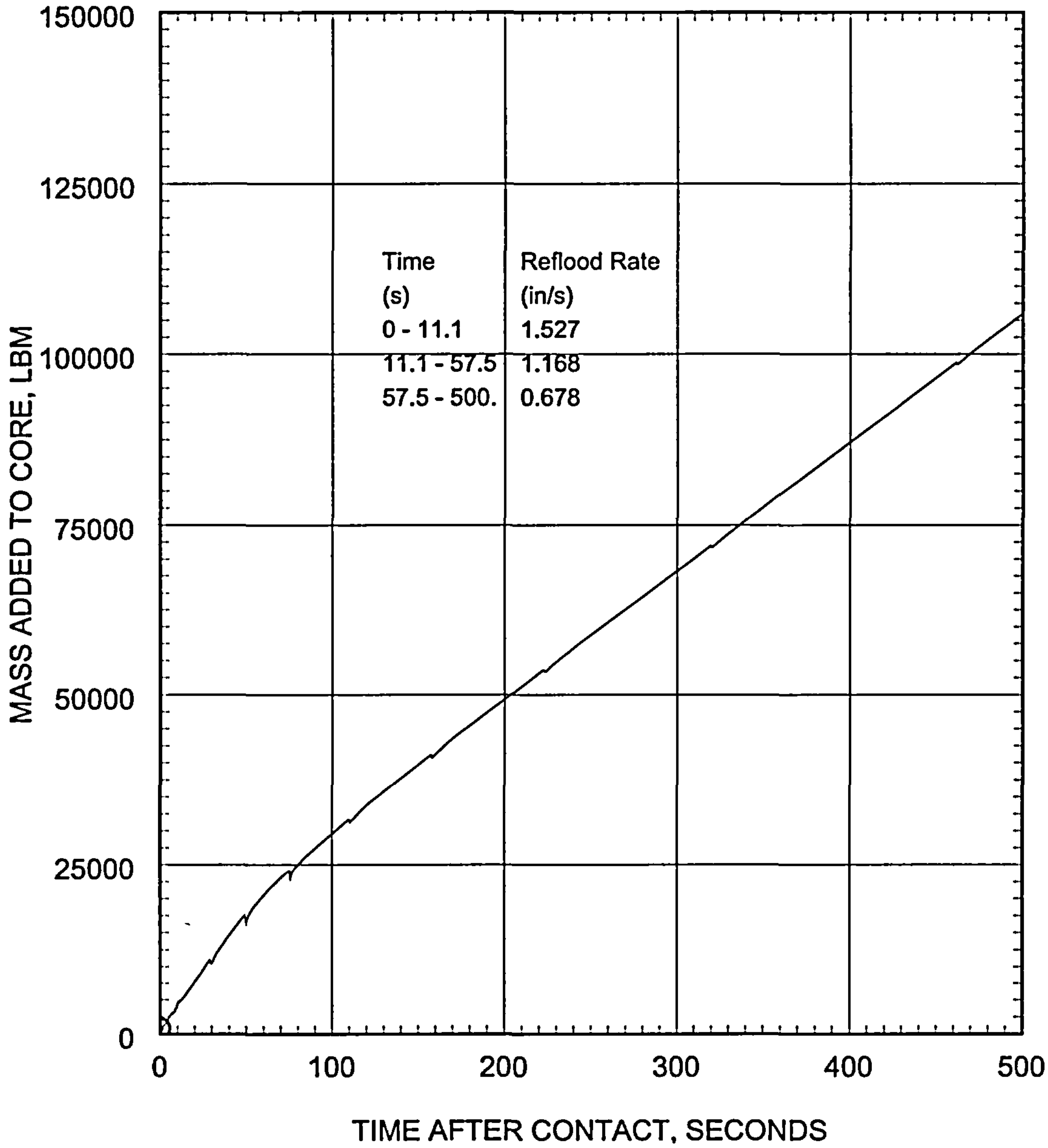

Figure 2.12-15
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Mass Added to Core During Reflood

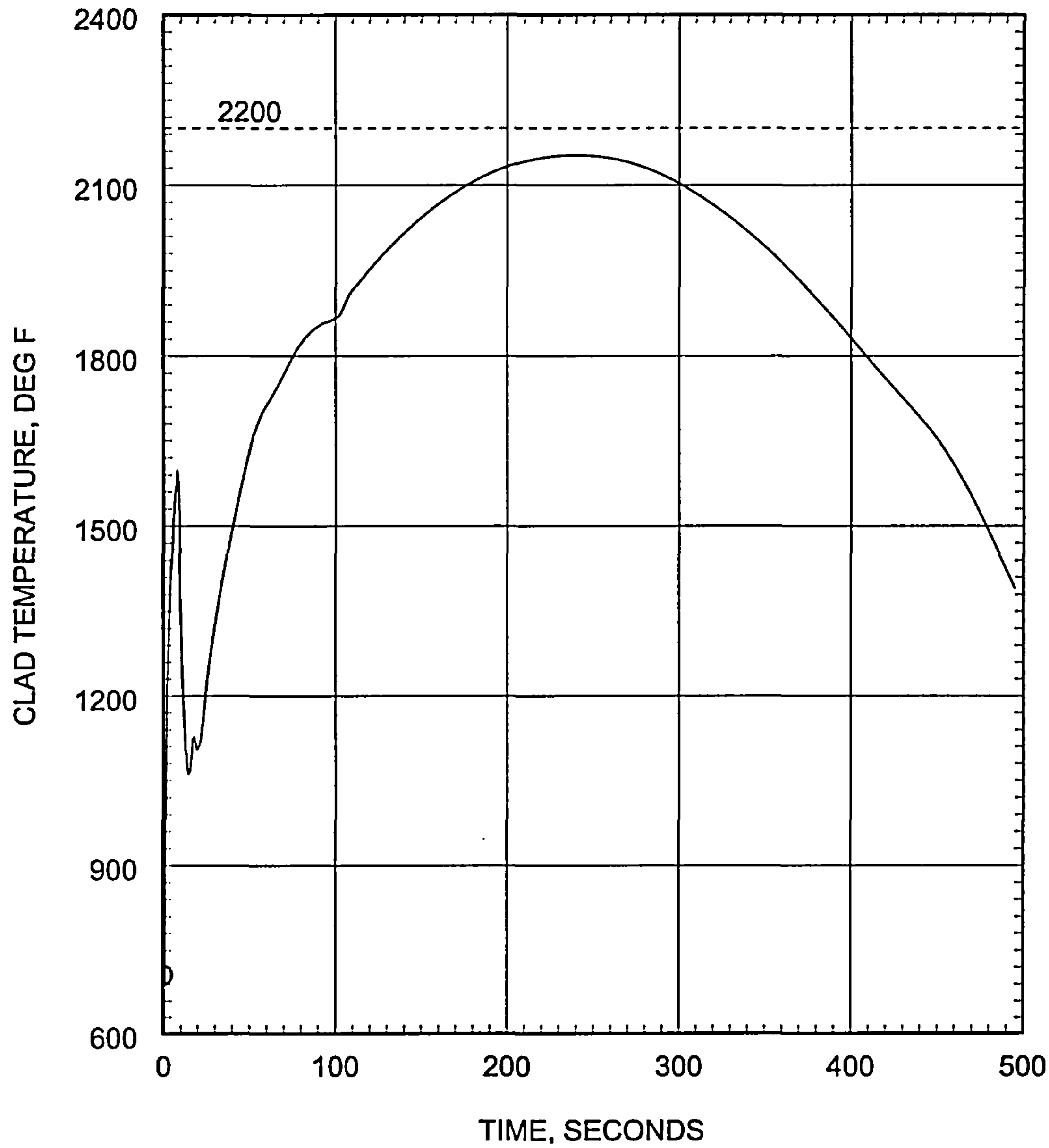

Figure 2.12-16
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Peak Cladding Temperature

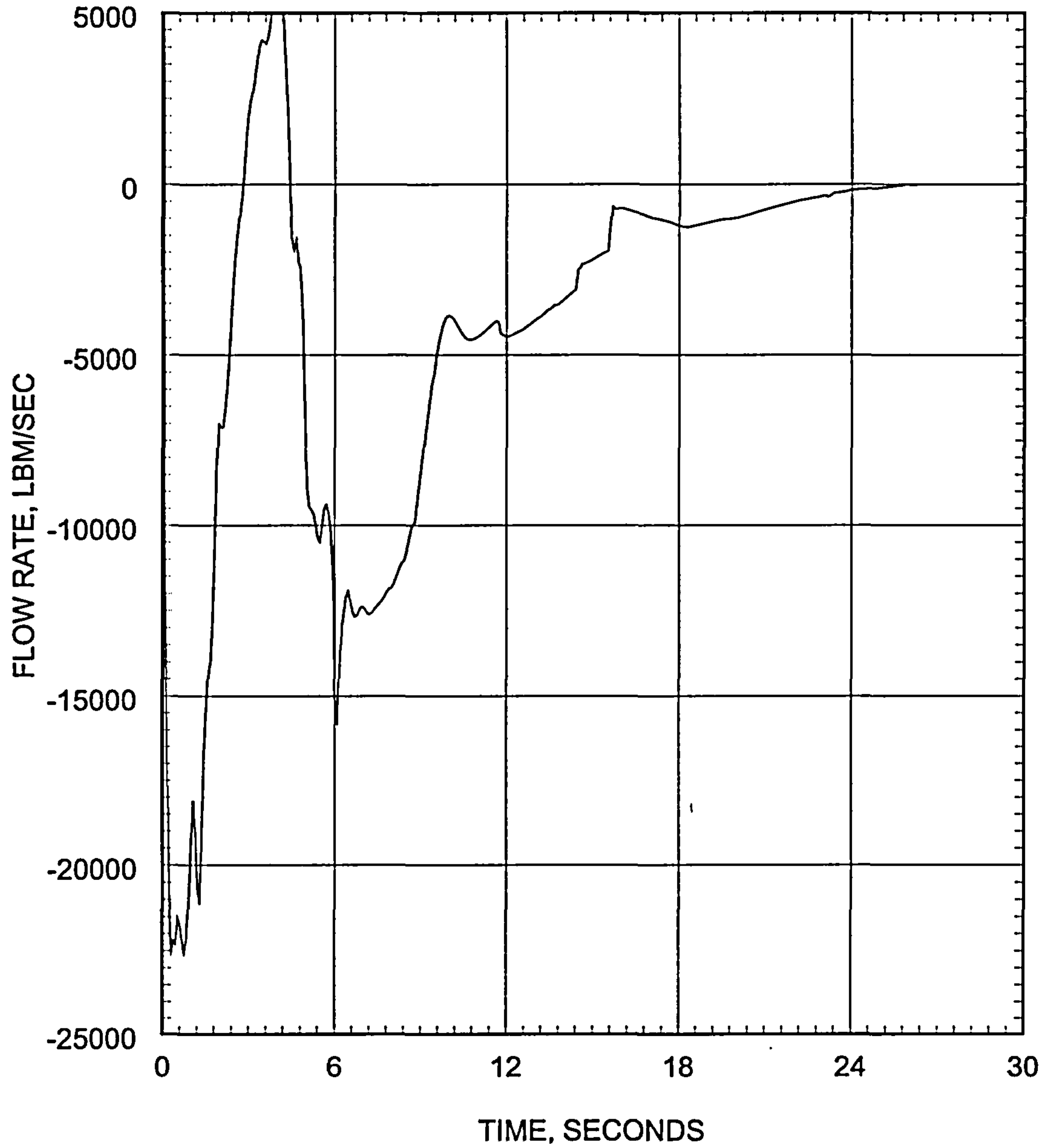

Figure 2.12-17
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Mid Annulus Flow Rate

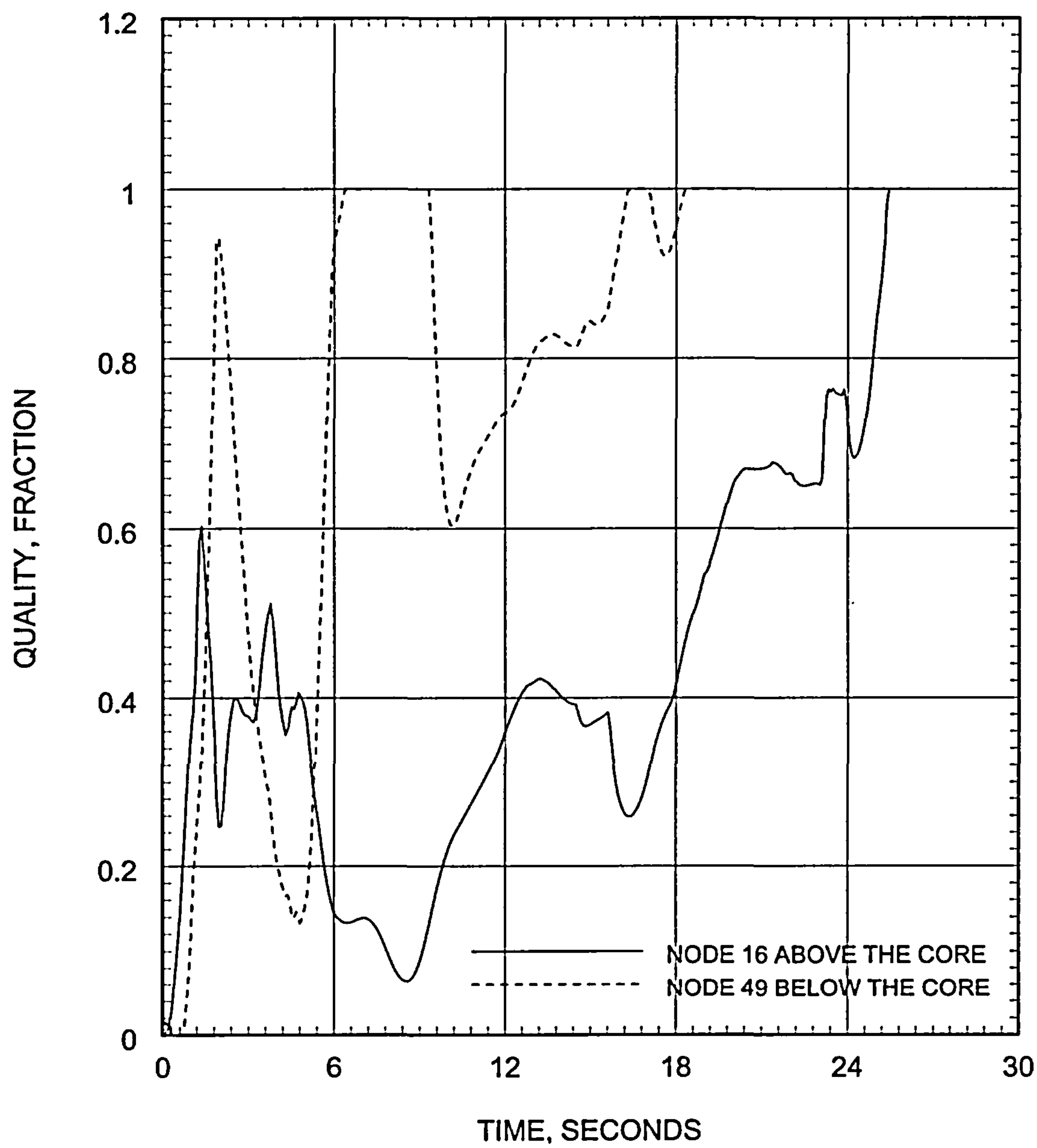

Figure 2.12-18
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Quality Above and Below the Core

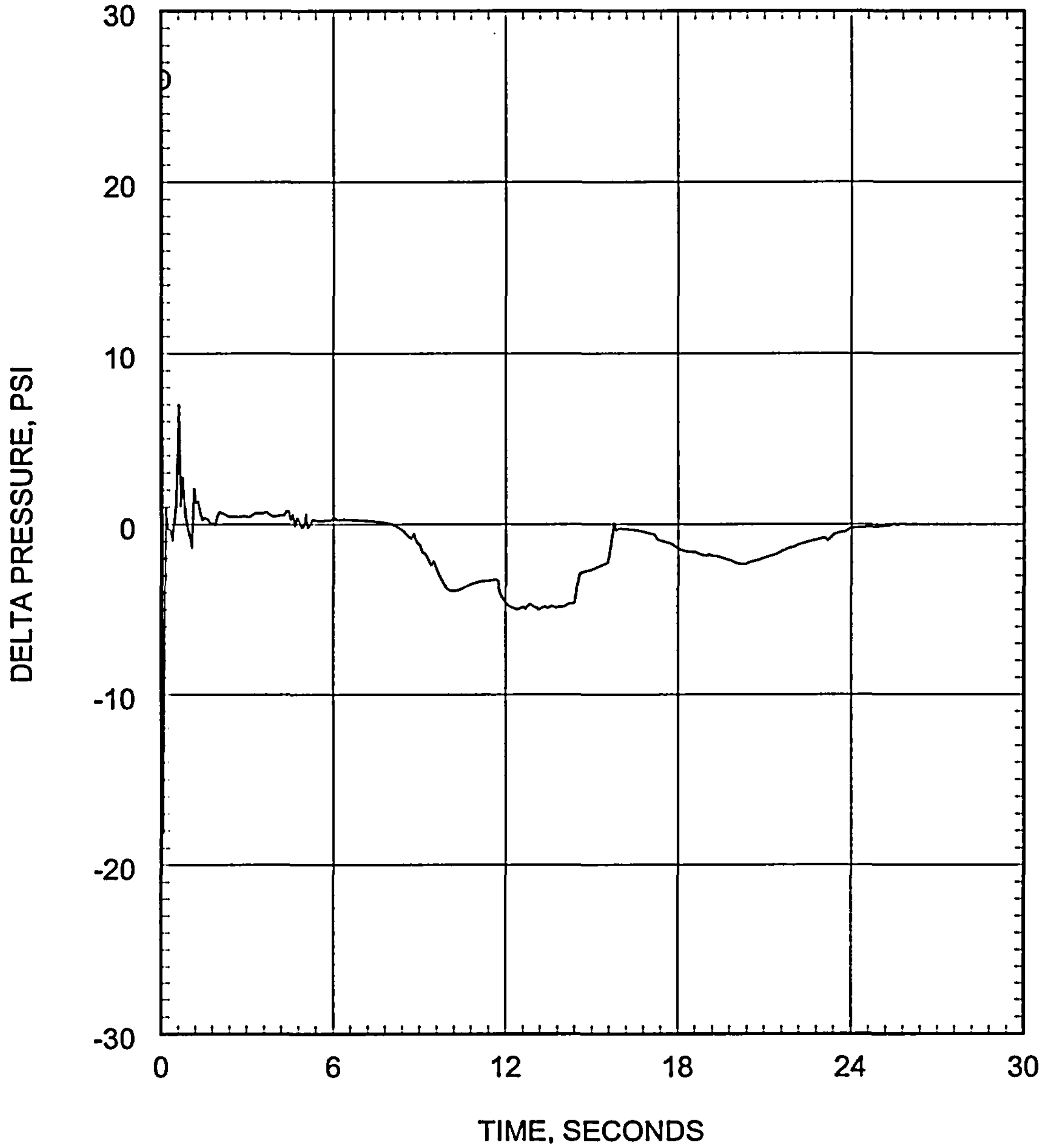

Figure 2.12-19
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Core Pressure Drop

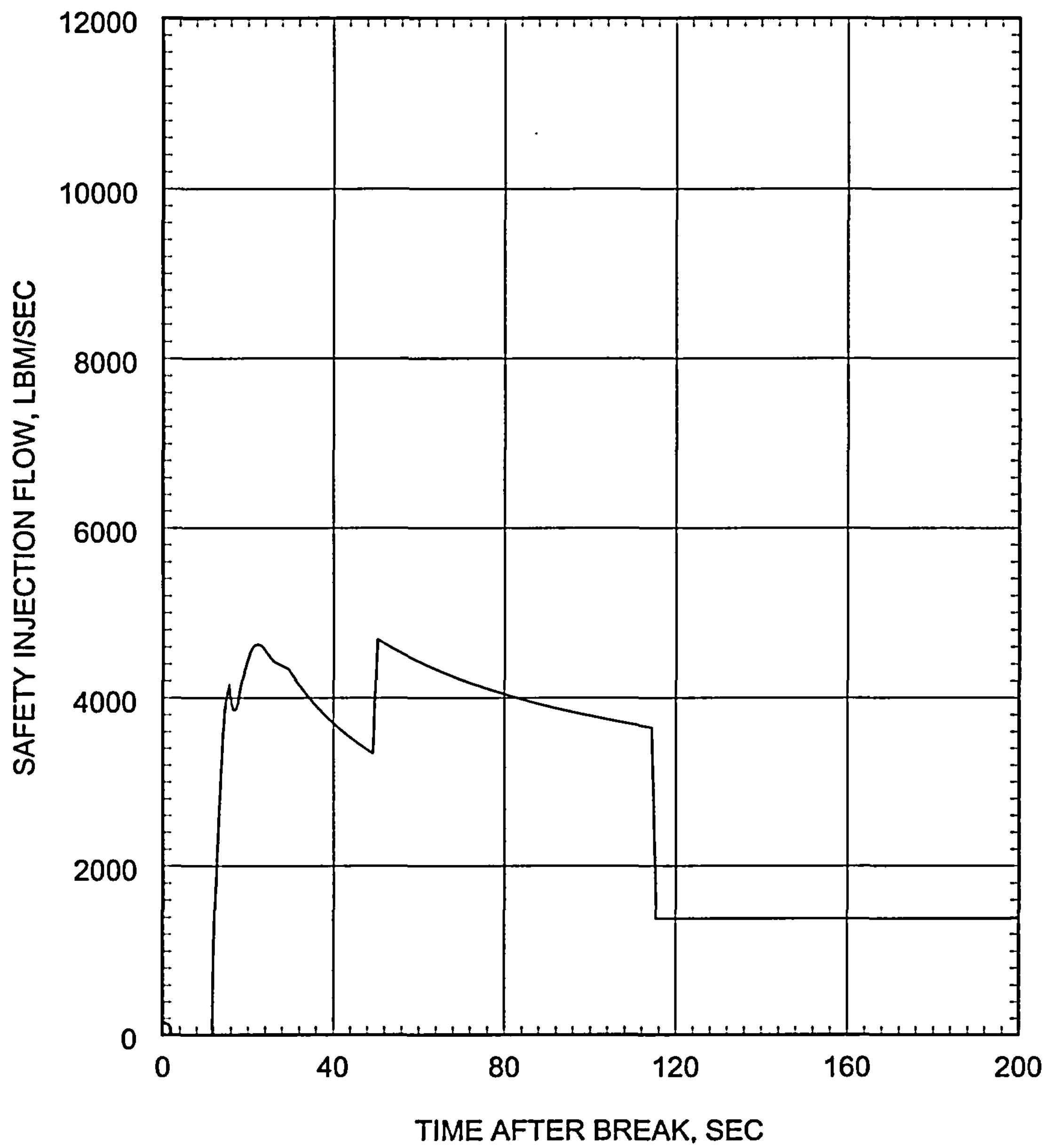

Figure 2.12-20
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Safety Injection Flow Rate into Intact Discharge Legs

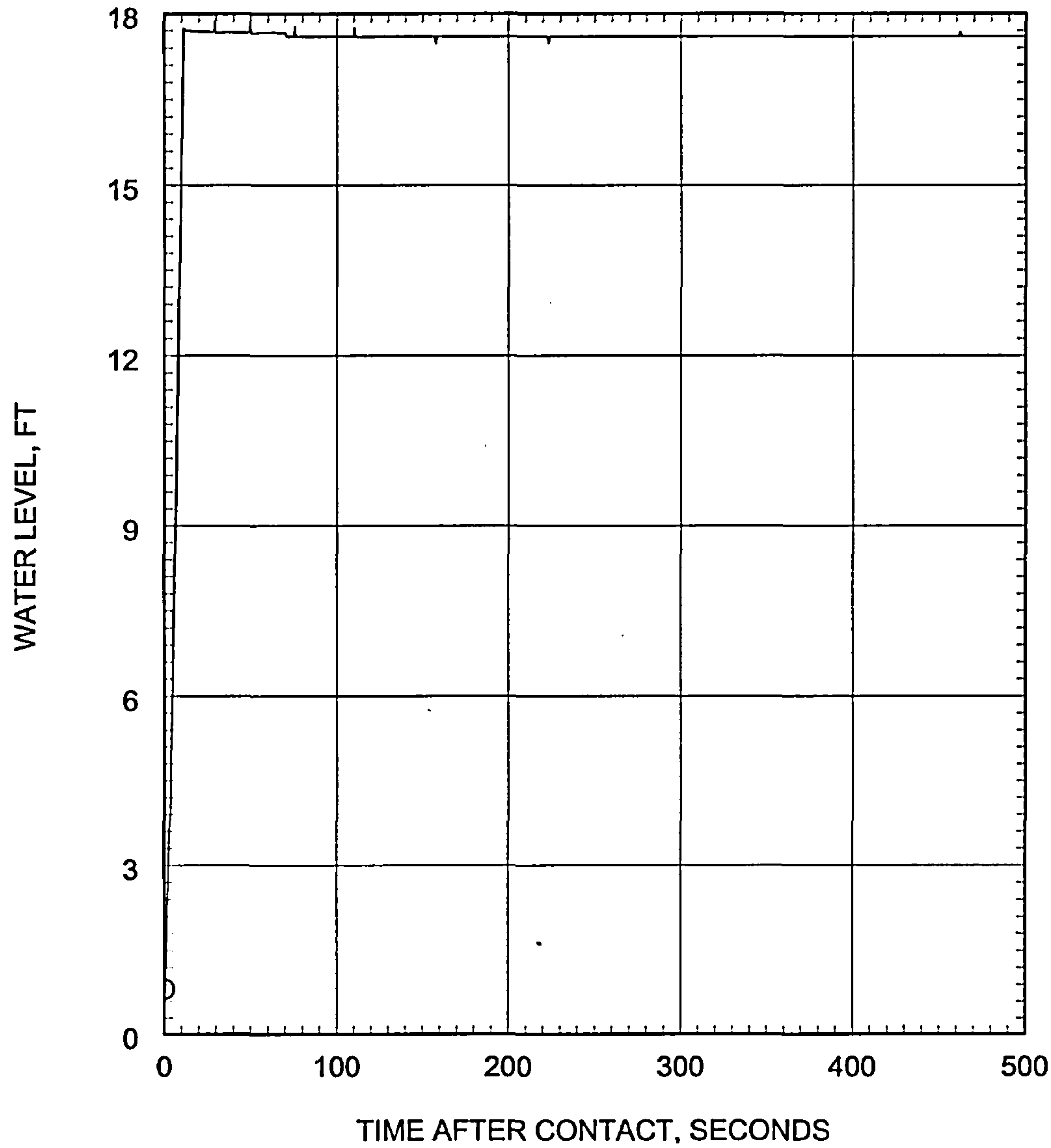

Figure 2.12-21
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Water Level in Downcomer During Reflood

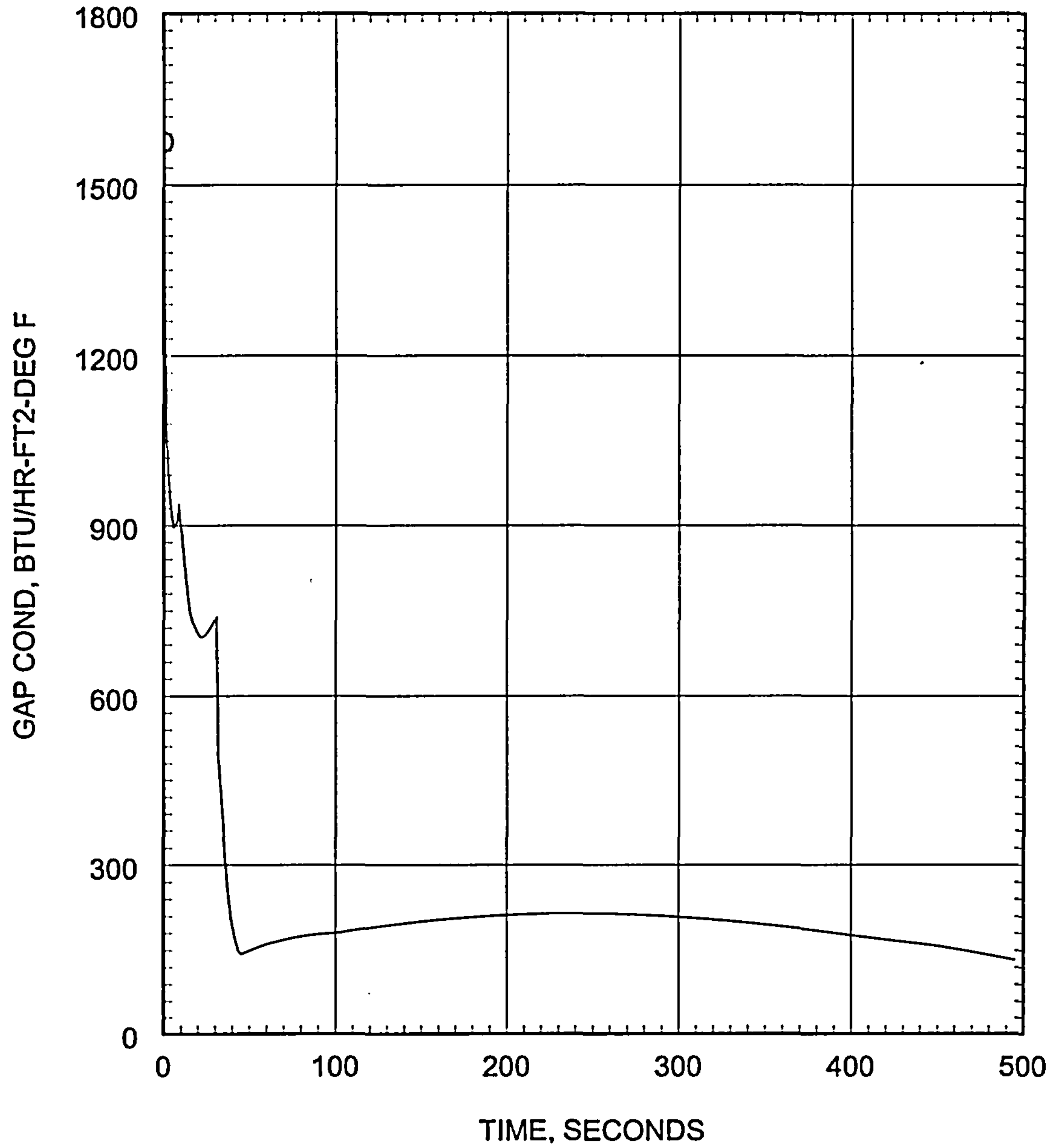

Figure 2.12-22
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Hot Spot Gap Conductance

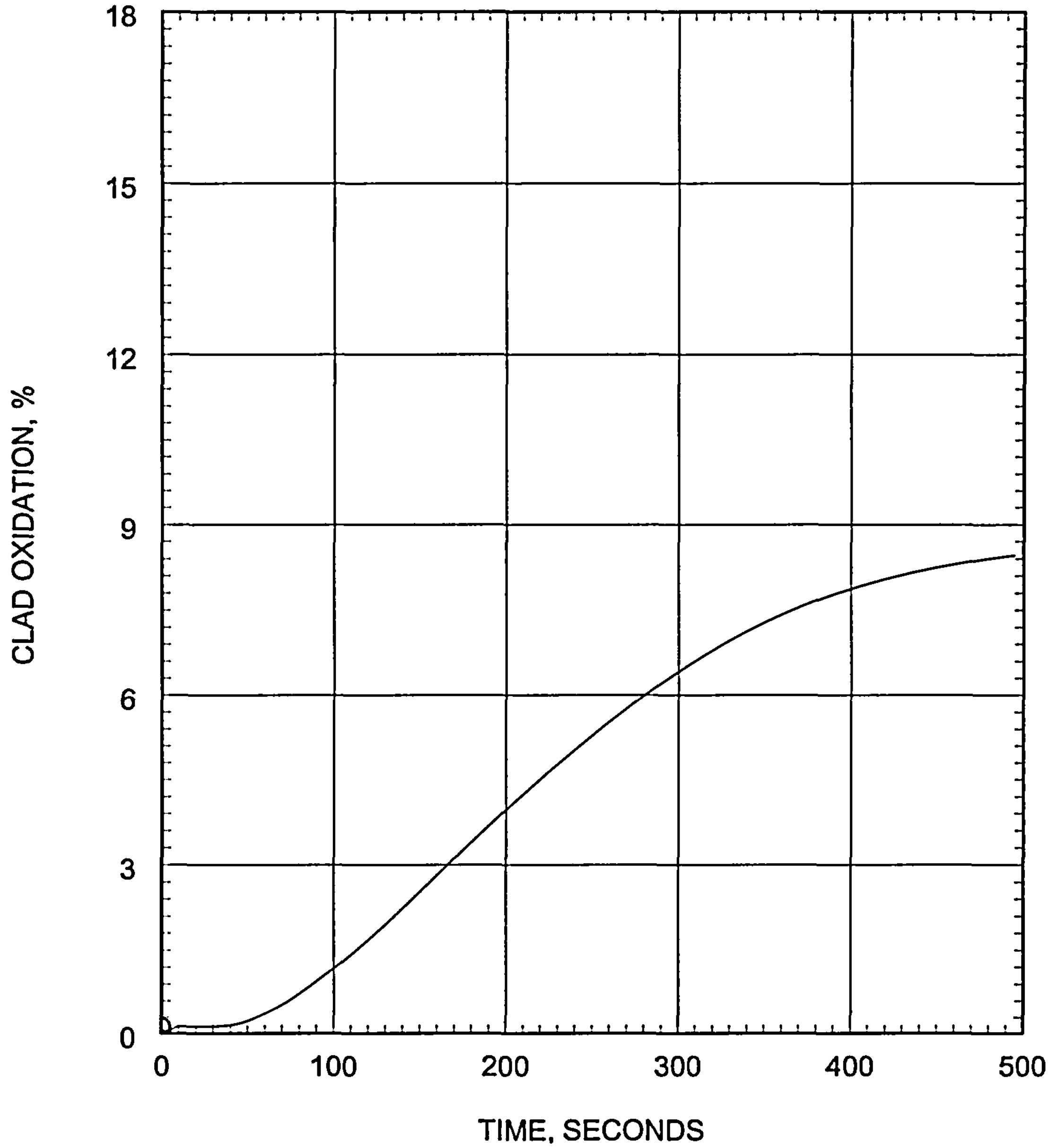

Figure 2.12-23
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Maximum Local Cladding Oxidation Percentage

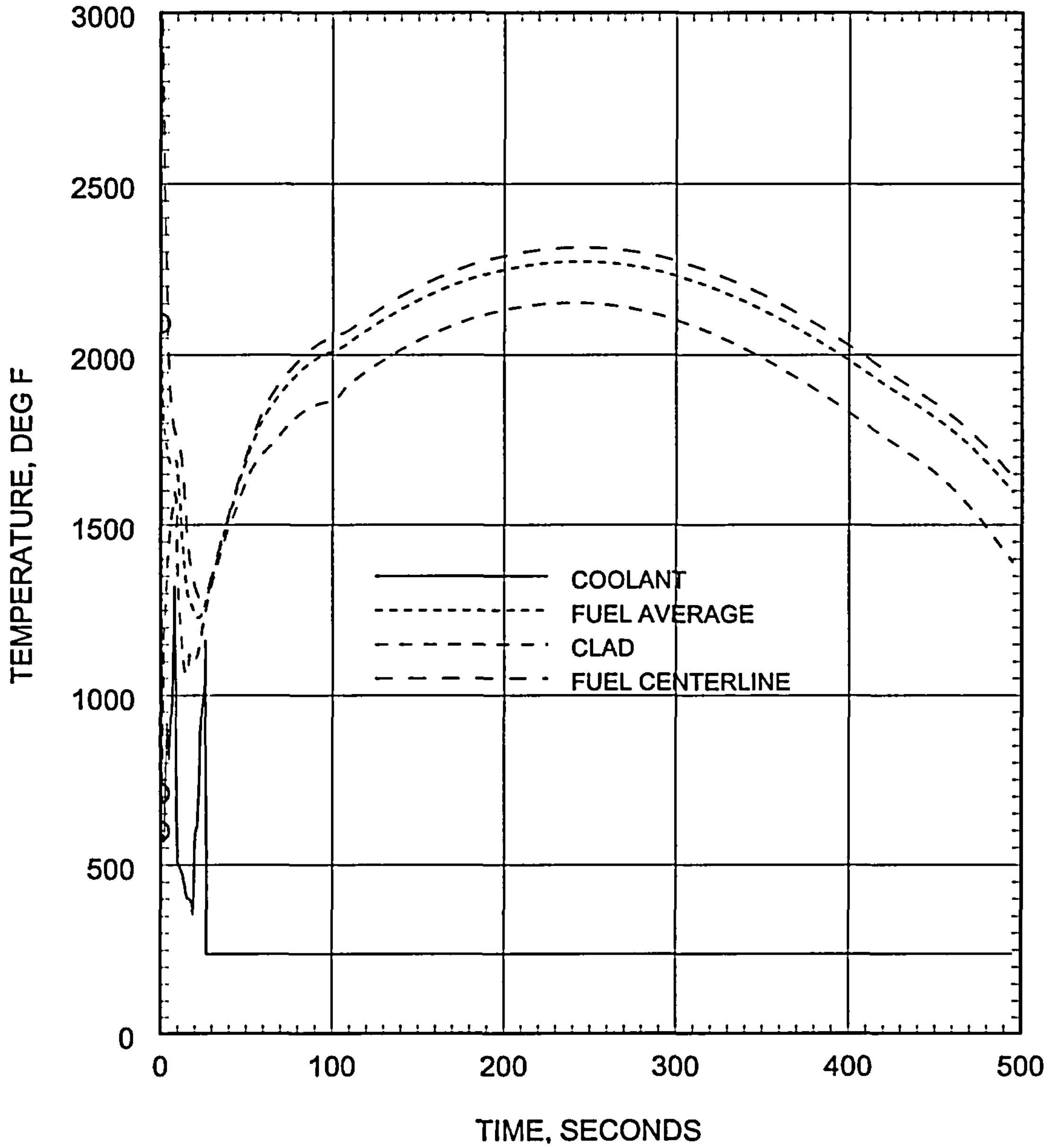

Figure 2.12-24
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break
Fuel Centerline, Fuel Average, Cladding, and Coolant Temperature at the Hot Spot

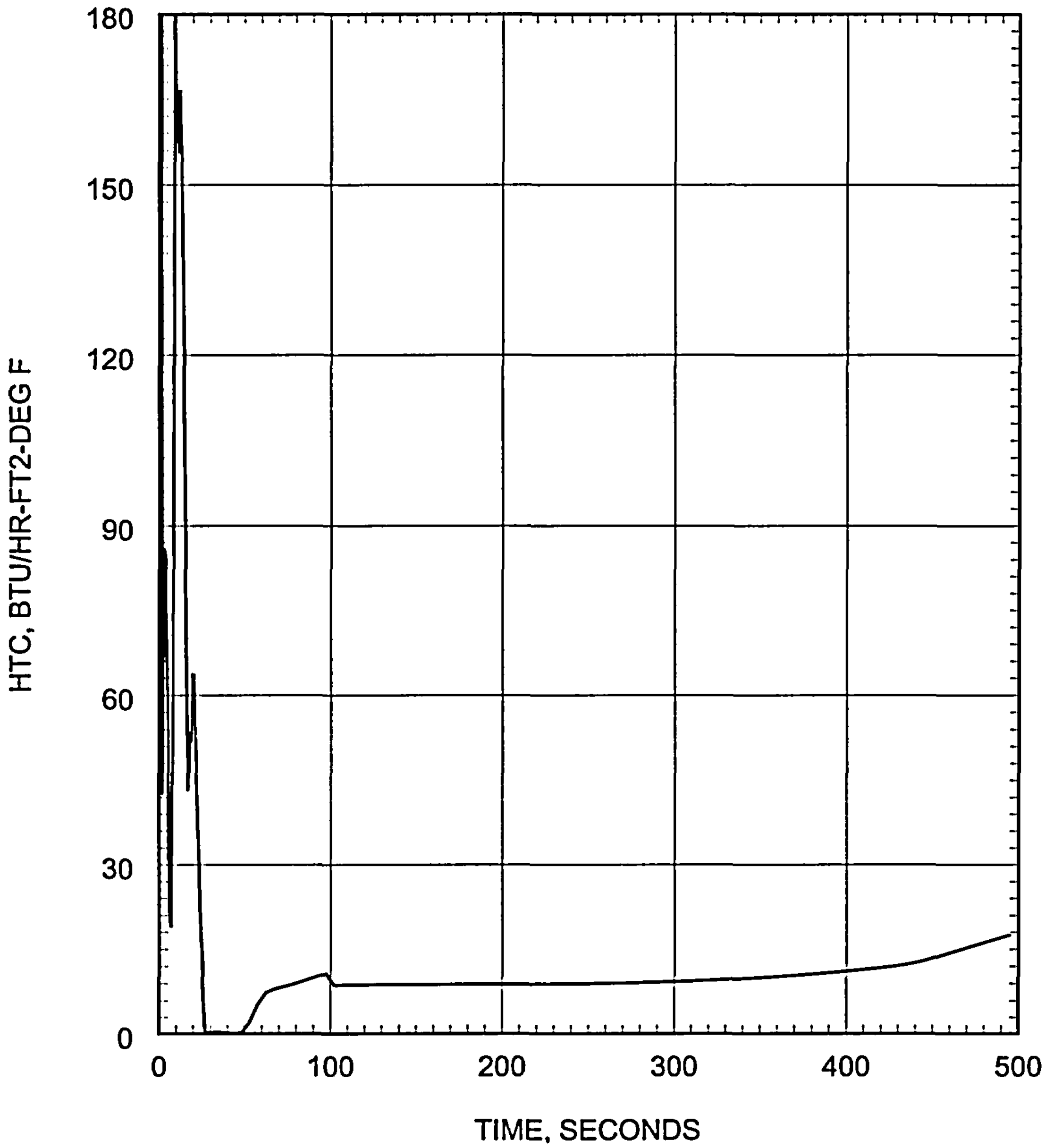

Figure 2.12-25
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Hot Spot Heat Transfer Coefficient

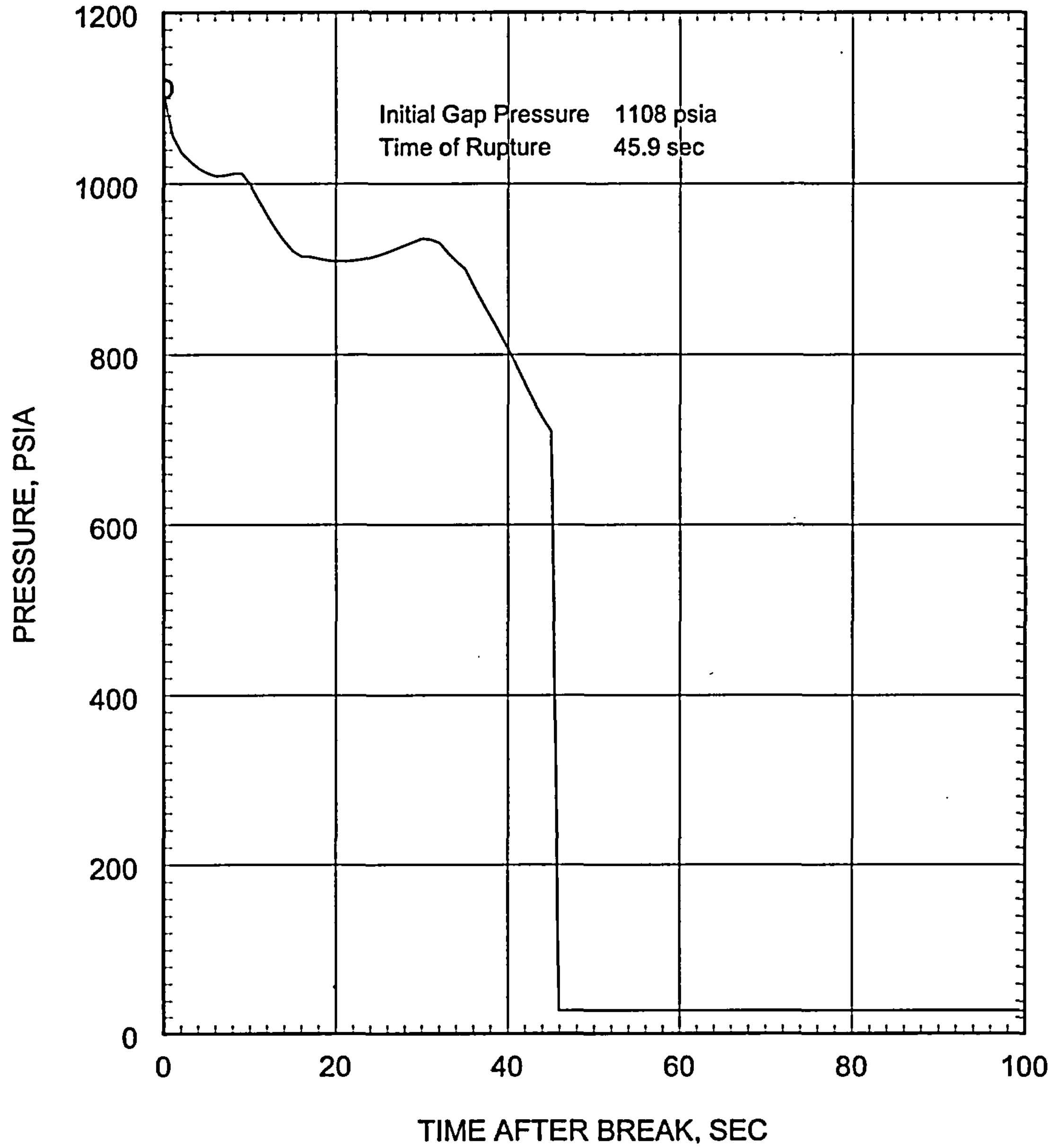

Figure 2.12-26
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Hot Pin Pressure

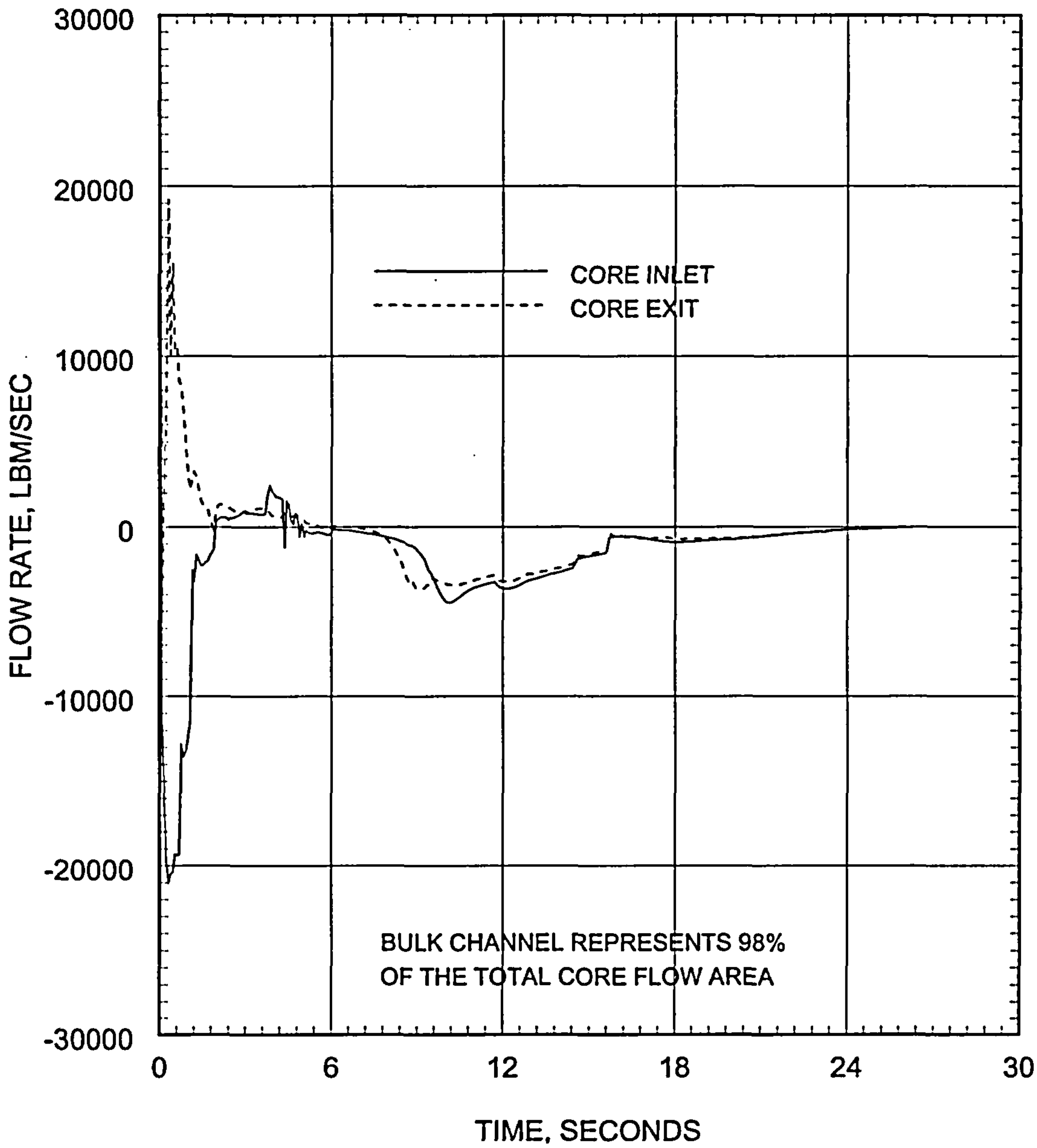

Figure 2.12-27
Large Break LOCA ECCS Performance Analysis
0.8 DEG/PD Break Core Bulk Channel Flow Rate

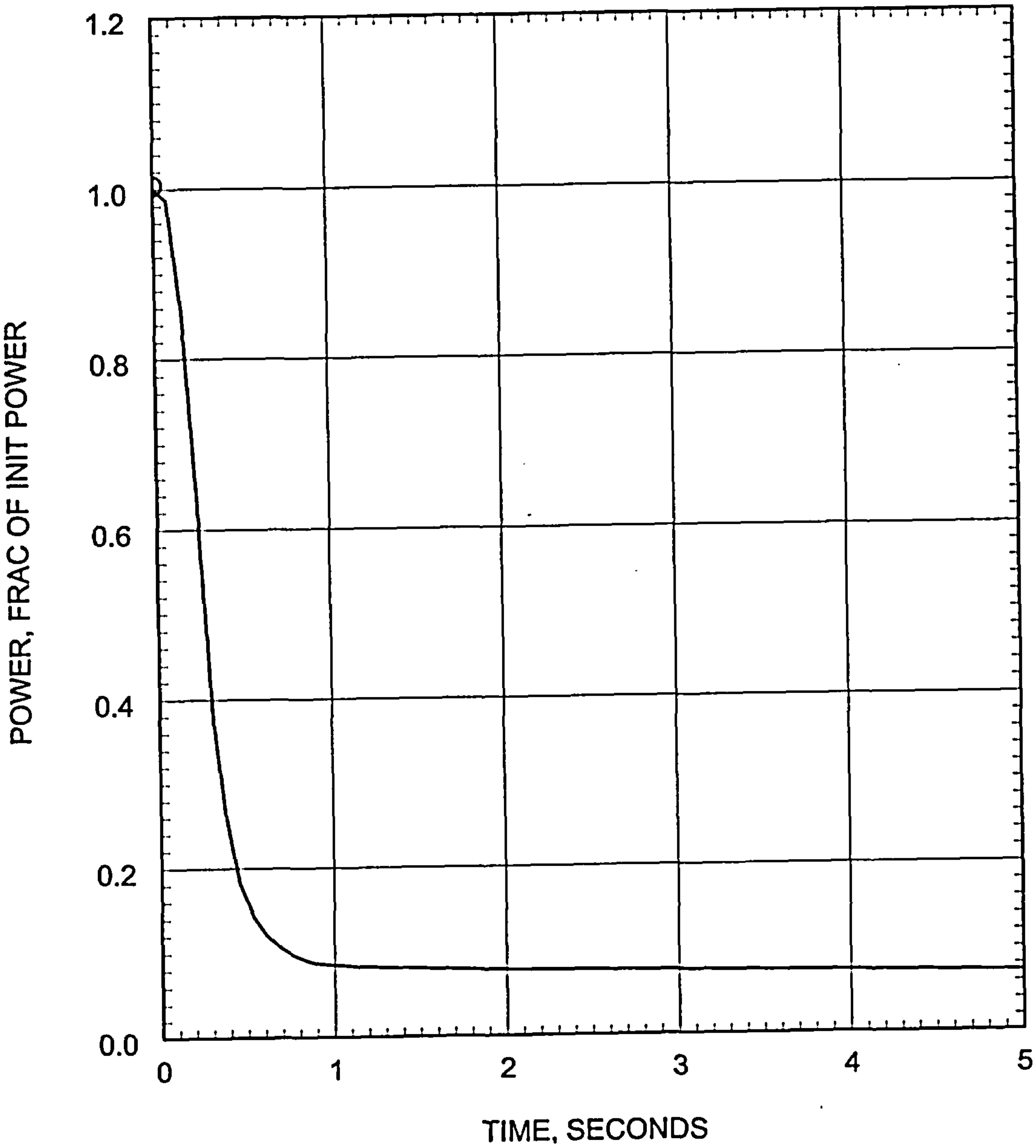

Figure 2.12-28
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Core Power

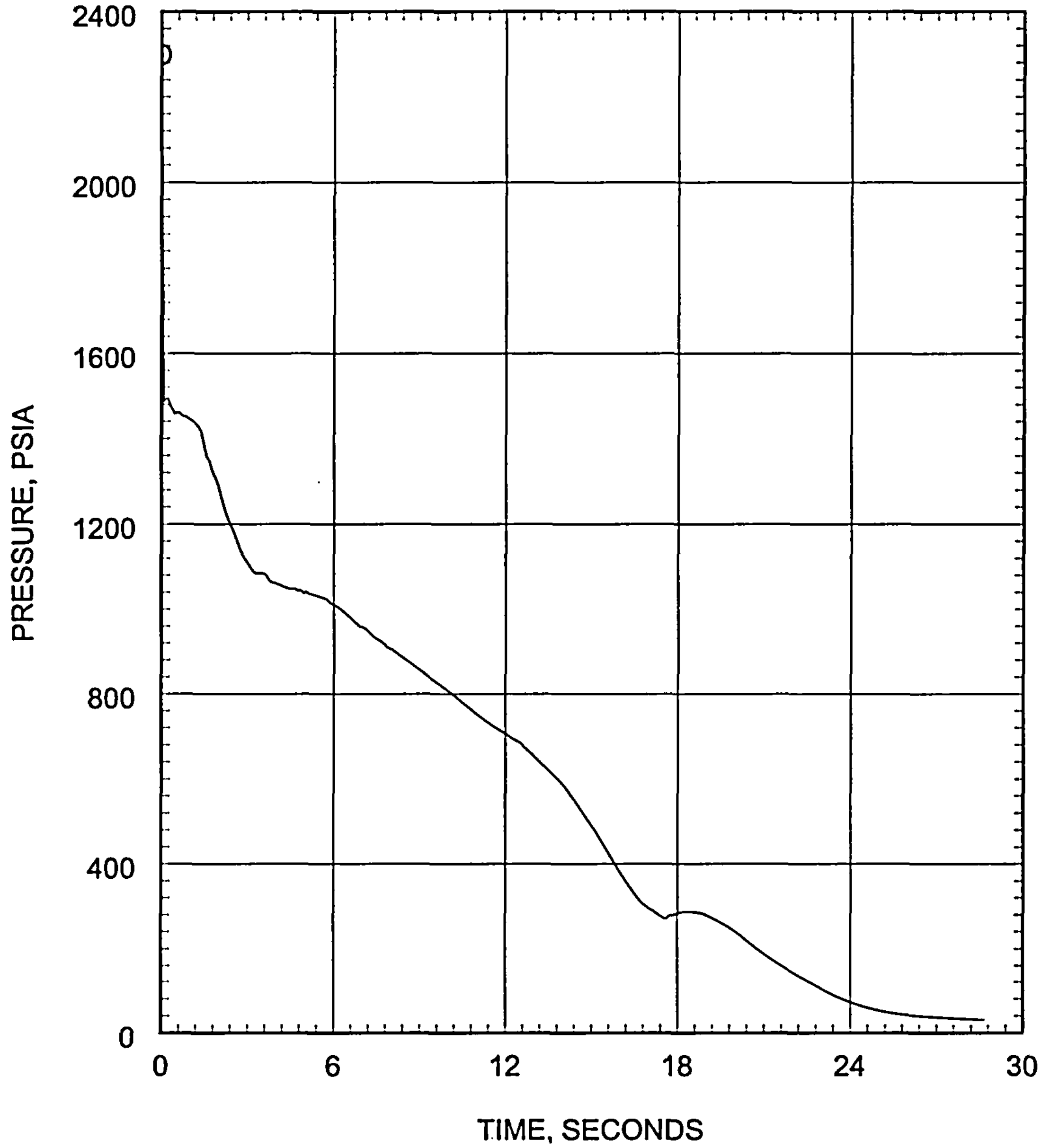

Figure 2.12-29
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Pressure in Center Hot Assembly Node

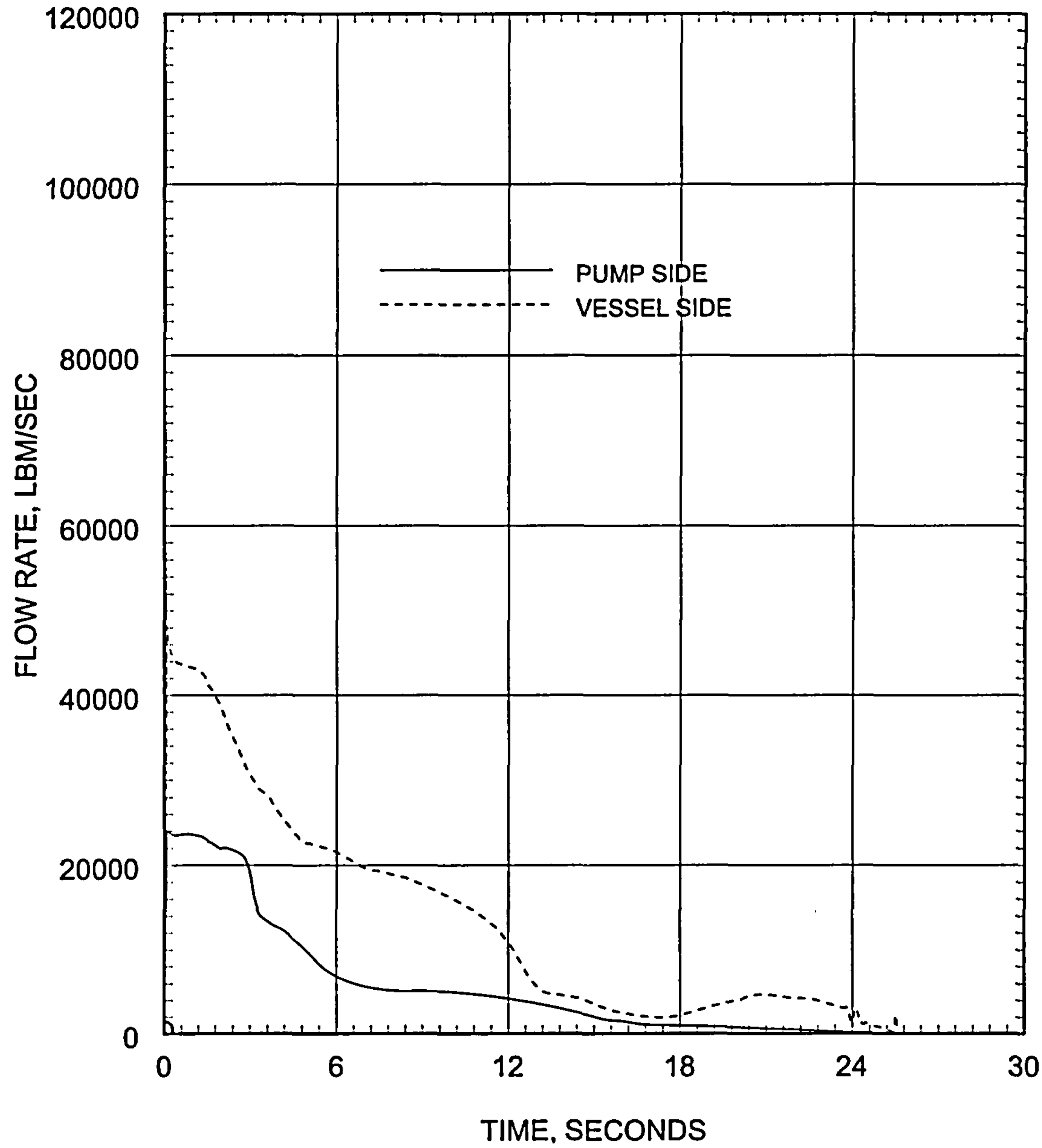

Figure 2.12-30
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Leak Flow Rate

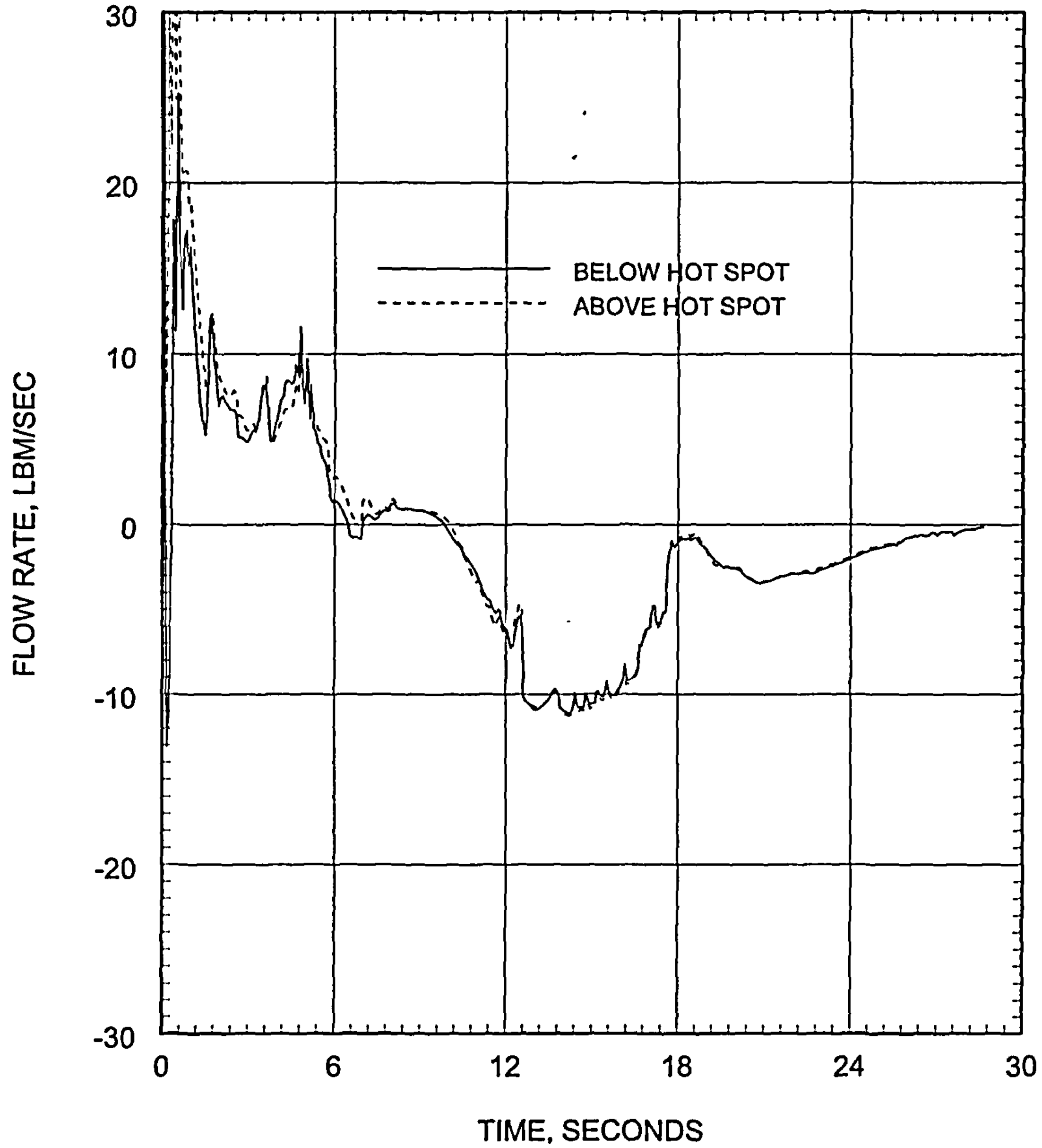

Figure 2.12-31
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Hot Assembly Flow Rate (Above and Below Hot Spot)

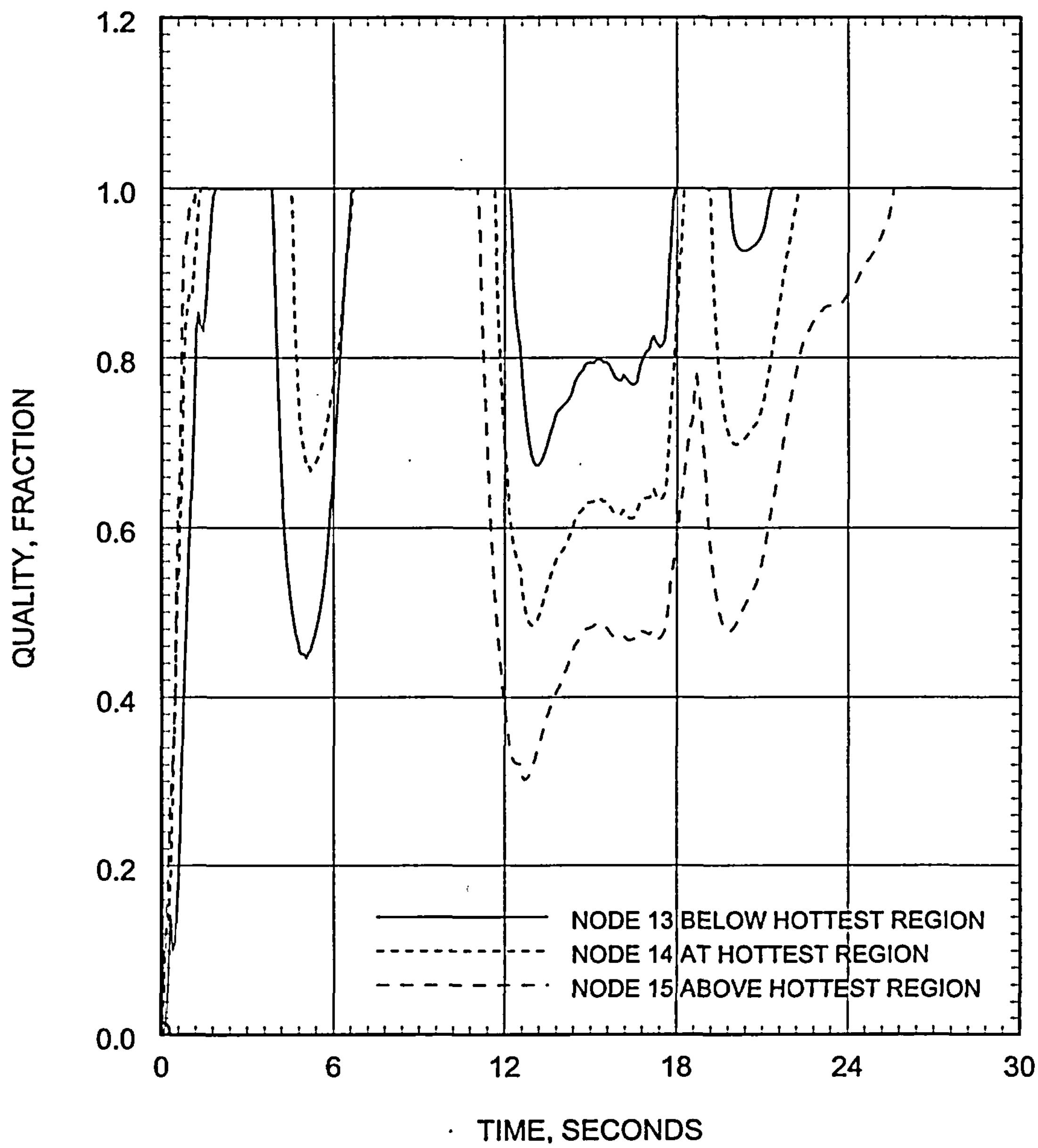

Figure 2.12-32
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Hot Assembly Quality

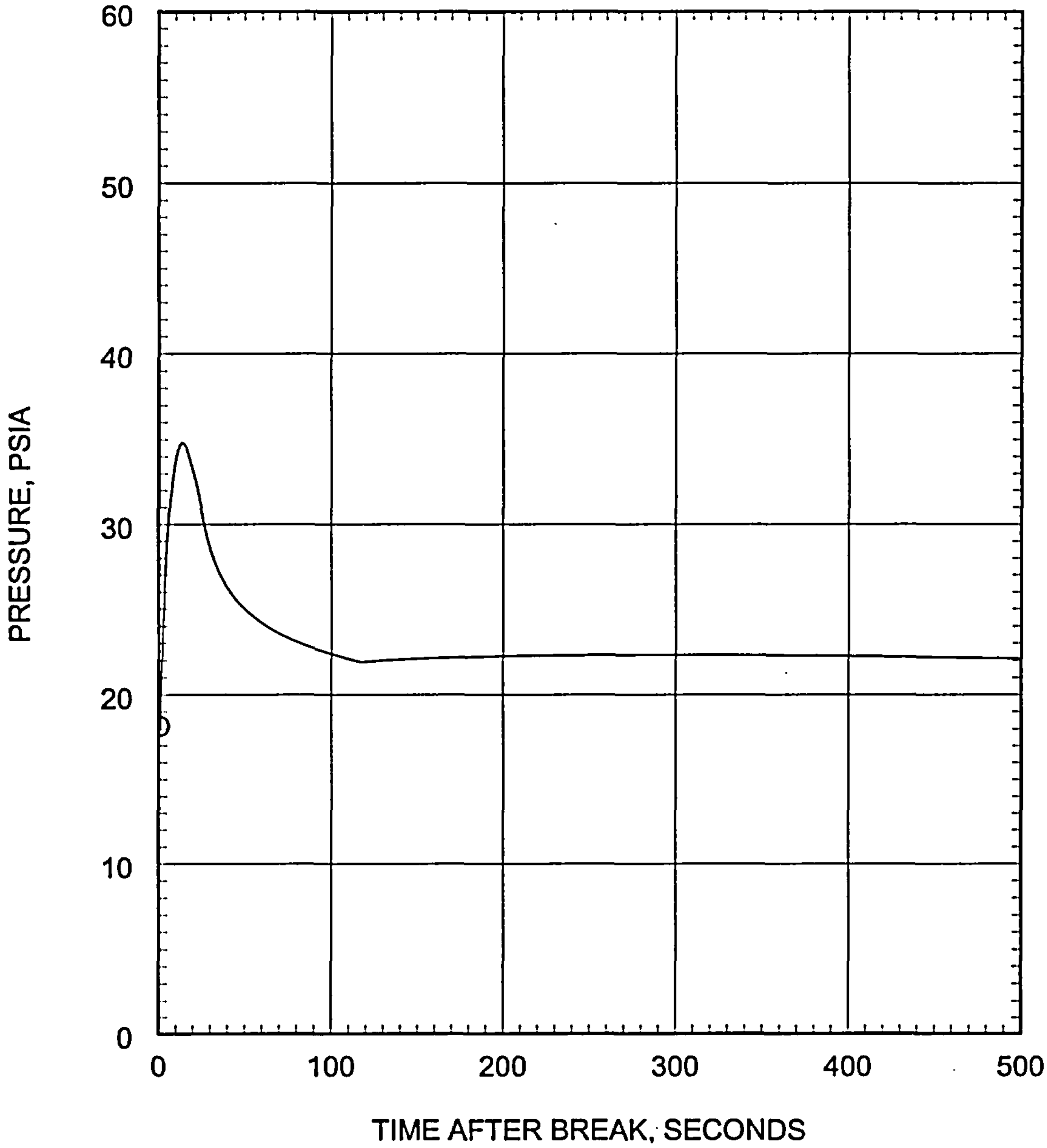

Figure 2.12-33
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Containment Pressure

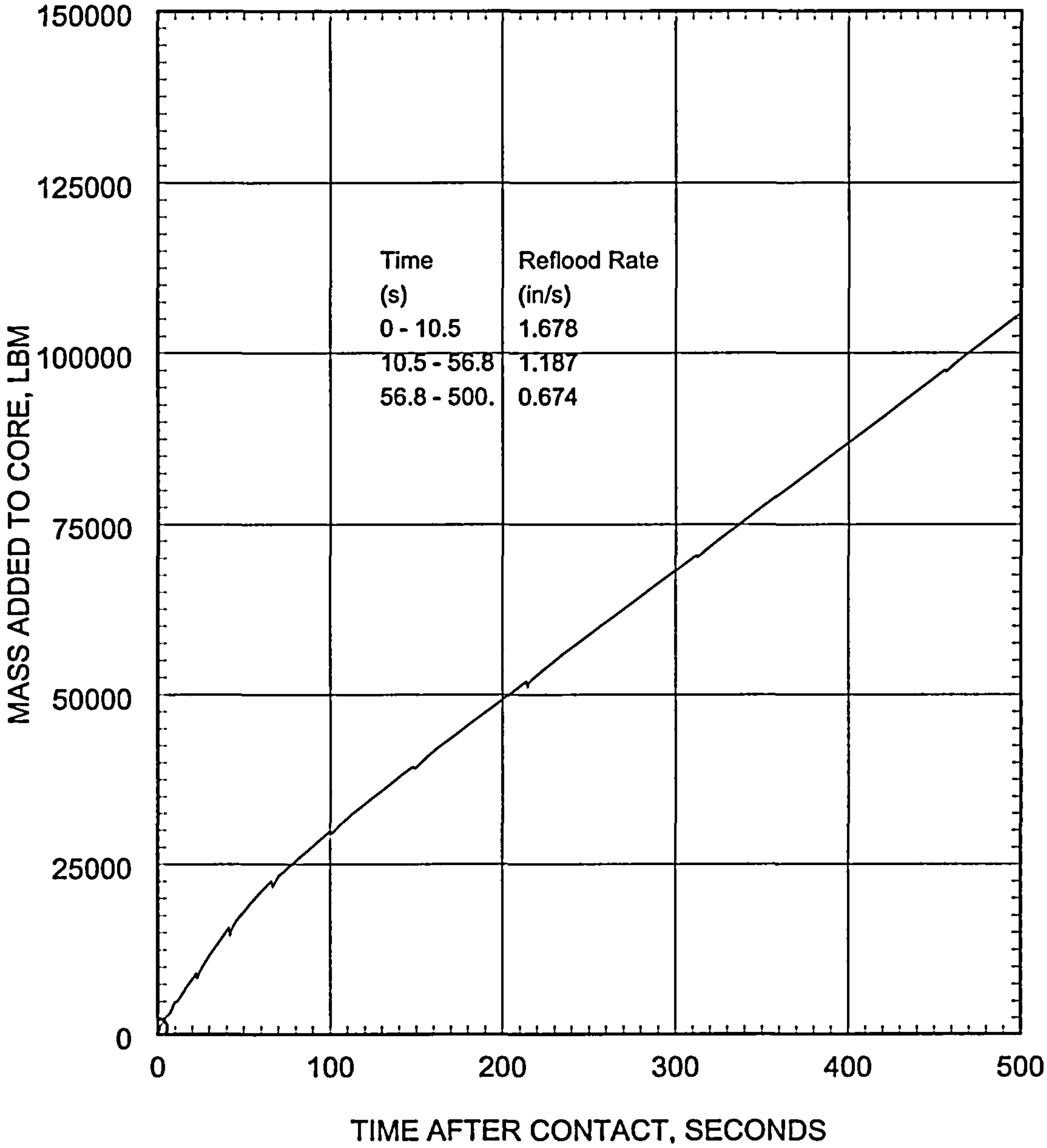

Figure 2.12-34
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Mass Added to Core During Reflood

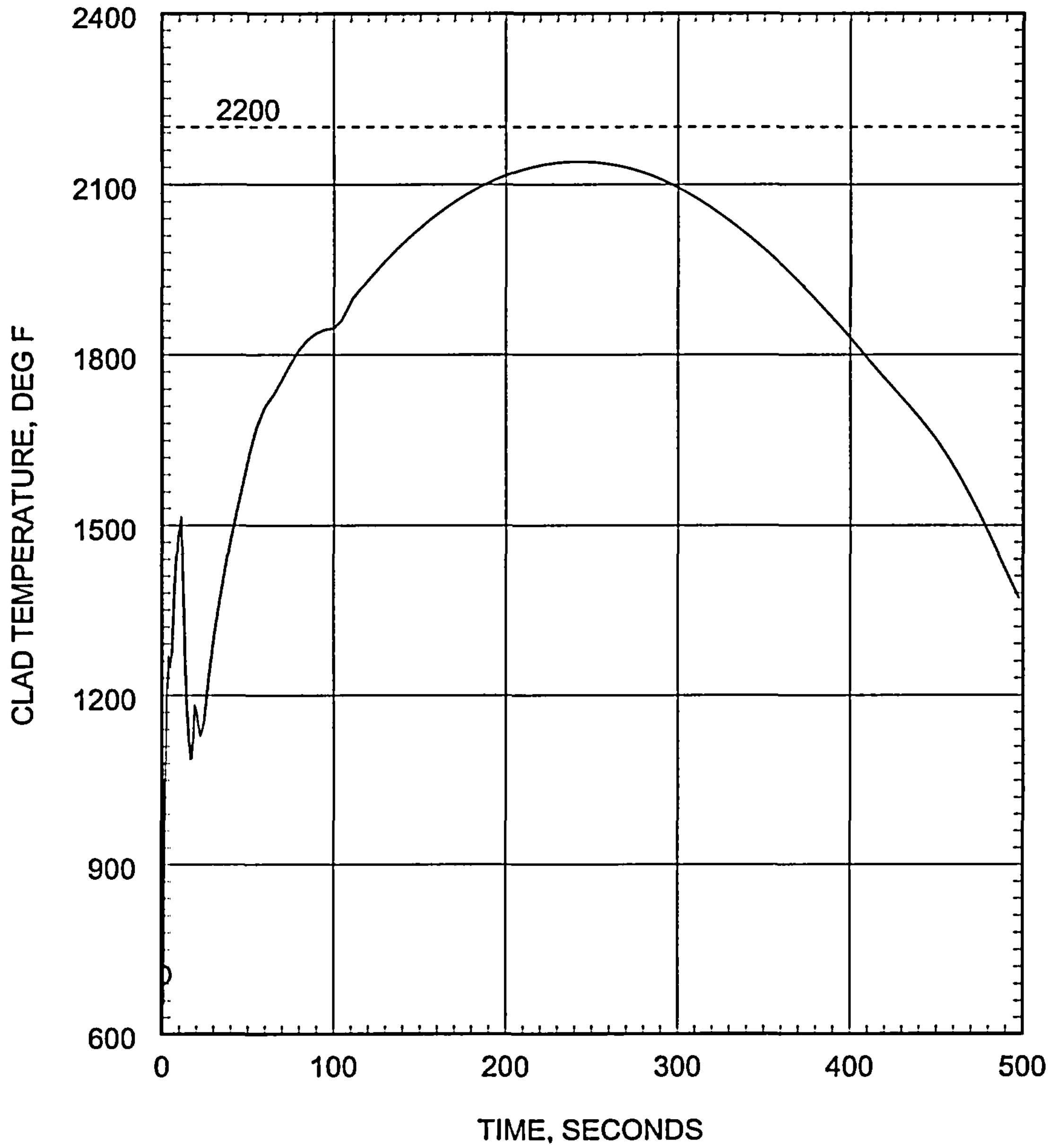

Figure 2.12-35
Large Break LOCA ECCS Performance Analysis
0.6 DEG/PD Break Peak Cladding Temperature