

50-266/301



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 3, 1997

LICENSEE: Wisconsin Electric Power Company

FACILITY: Point Beach Nuclear Plant, Units 1 and 2

SUBJECT: SUMMARY OF FEBRUARY 24, 1997, MEETING ON ENVIRONMENTAL QUALIFICATION OF EQUIPMENT BASED ON REVISED CONTAINMENT RESPONSE INCLUDED IN CHANGE REQUEST 192

On February 24, 1997, NRR staff members met in Rockville, Maryland, with representatives of Wisconsin Electric Power Company (WEPCO) and GLS Enterprises, Inc., to gain a better understanding of the licensee's basis for concluding that the ability of environmentally qualified equipment inside containment to perform its function following a loss-of-coolant accident is not affected by the revised containment profiles. A list of attendees is included as Attachment 1.

The licensee discussed the concept of degradation equivalency (Attachment 2) and presented its evaluation of equipment qualification impact resulting from the revised containment temperature profile (Attachment 3). Degradation equivalency was presented as a method of equating a design-basis equipment test profile to a design-basis equipment requirement. The concept of degradation equivalency as expressed in the presentation is not defined and was not accepted by the NRC staff. The staff stated that the Arrhenius methodology is acceptable. However, during transient conditions, the staff contended that no basis exists to correlate tests at lower temperatures to conditions at higher temperatures for a shorter period of time. In addition, the staff stated that acceptable criteria for documenting that equipment may not be needed for the entire duration of an accident should be based on criteria specified in NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," Revision 1.

WEPCO's presentation provided sufficient information for the majority of equipment. WEPCO agreed to submit further information on Gems level transmitters (Item 15); Rome cable (Item 28); and containment accident fan motor bearings, motor cable and cable splices, and lubricant (Items 37 and 38). WEPCO stated that the lubricant similarity will be based on the chemical composition of the original lubricant used in the qualification tests as compared to the chemical composition of the manufacturer's currently recommended lubricant.

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March 3, 1997

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If there are any questions regarding the information presented in this meeting summary, please contact Linda Gundrum at (301) 415-1380.

Orig. signed by

Linda L. Gundrum, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-266
and 50-301

Attachments: 1. Attendance List
2. Degradation Equivalency
3. Evaluation of EQ Impact

cc w/att: See next page

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Linda L. Gundrum

Linda L. Gundrum, Project Manager
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Office of Nuclear Reactor Regulation

Docket Nos. 50-266
and 50-301

Attachments: 1. Attendance List
2. Degradation Equivalency
3. Evaluation of EQ Impact

cc w/att: See next page

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Point Beach Nuclear Plant
Unit Nos. 1 and 2

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ATTENDANCE LIST

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Harold Walker	Plant Systems Branch, NRC
Saba Saba	Electrical Engineering Branch, NRC
Dale Thatcher	Electrical Engineering Branch, NRC
John Knox	Electrical Engineering Branch, NRC
Frank Ashe	Electrical Engineering Branch, NRC
Linda Gundrum	Project Manager for Point Beach
John Hannon	Project Director, PD 3-1 (part time)
Tom Malanowski	WEPCO
John Hinck	WEPCO
James Gleason	GLS Enterprises, Inc.

GLS Enterprises, Inc.
Degradation Equivalency

It is necessary to utilize Degradation Equivalency for many reasons, such as :

- Original Qualification Test was performed in two transients. IEEE 323-74's appendix showed DBE Test profile with two transients. Thus many qualification tests were performed with a high temperature, pressure and steam transient, followed by a cool down period and a repeat of the transient.
- Original Qualification Tests had more than two transients. In some cases test anomalies caused the DBE simulation to be repeated more than twice, typically due to anomalies in testing.
- Generic qualification testing has been performed in which a specific plant requirement was demonstrated by testing to worst case DBE's representing many nuclear plants and the test DBE does not exactly follow each plants DBE requirements.
- Postulated Plant DBE's have changed since the original qualification requirements. Plant requirements change due to tech spec changes. These often result in new postulated DBE requirements. Since 10CFR50.49 allows partial type testing to demonstrate qualification, rather than requiring new testing, Degradation Equivalency allows comparisons to the new requirements.

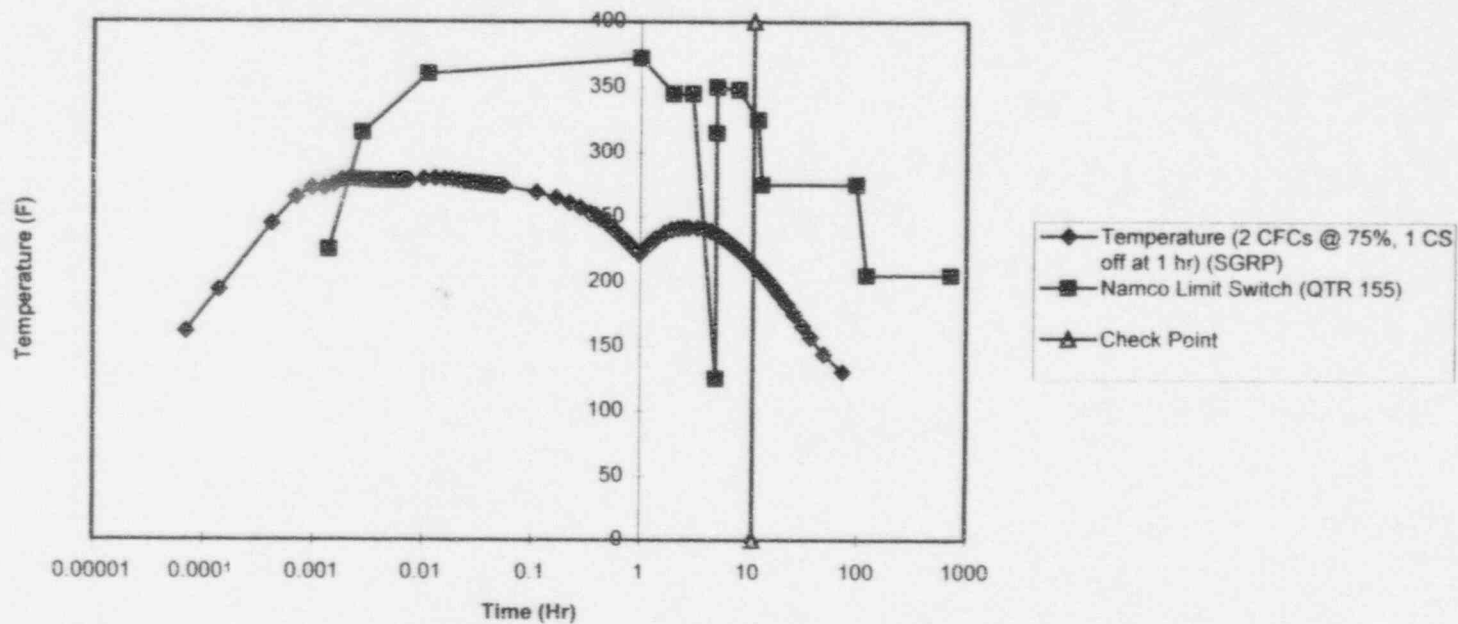
Degradation Equivalency is a conservative approach to comparing DBE requirements to DBE test conditions. Example 1 shows a two transient test for Namco Limit Switches (QTR-155). The first transient was over after approximately 3 hours and the cool down period was approximately 2 hours prior to the start of the second transient. Thus the period between 3 and 5 hours appears to not envelope the DBA requirement. A better depiction of the DBE simulation is to use the "Cumulative Time at Temperature" technique. In this technique, the transient at the 3 hour point is not plotted and instead, the continuation of the second transient is plotted after the first transient and the period of the cool down period is subtracted from the elapsed time. Example 2 shows the same graph with the total Time at Temperature technique.

Example 2 is conservative since it removes the cool down period and the resulting line moves closer to the requirement, as can be seen from the check point noted on Examples 1 and 2. The check point in example 1 is at the 11 hour point and shows that the temperature is approximately 340 °F. In Example 2, the same 11 hour point now shows that the temperature is approximately 275 °F. Thus the cumulative time at temperature technique provides a more conservative representation of the DBE Test Profile, when the profile contains cool down periods which are less than the requirement.

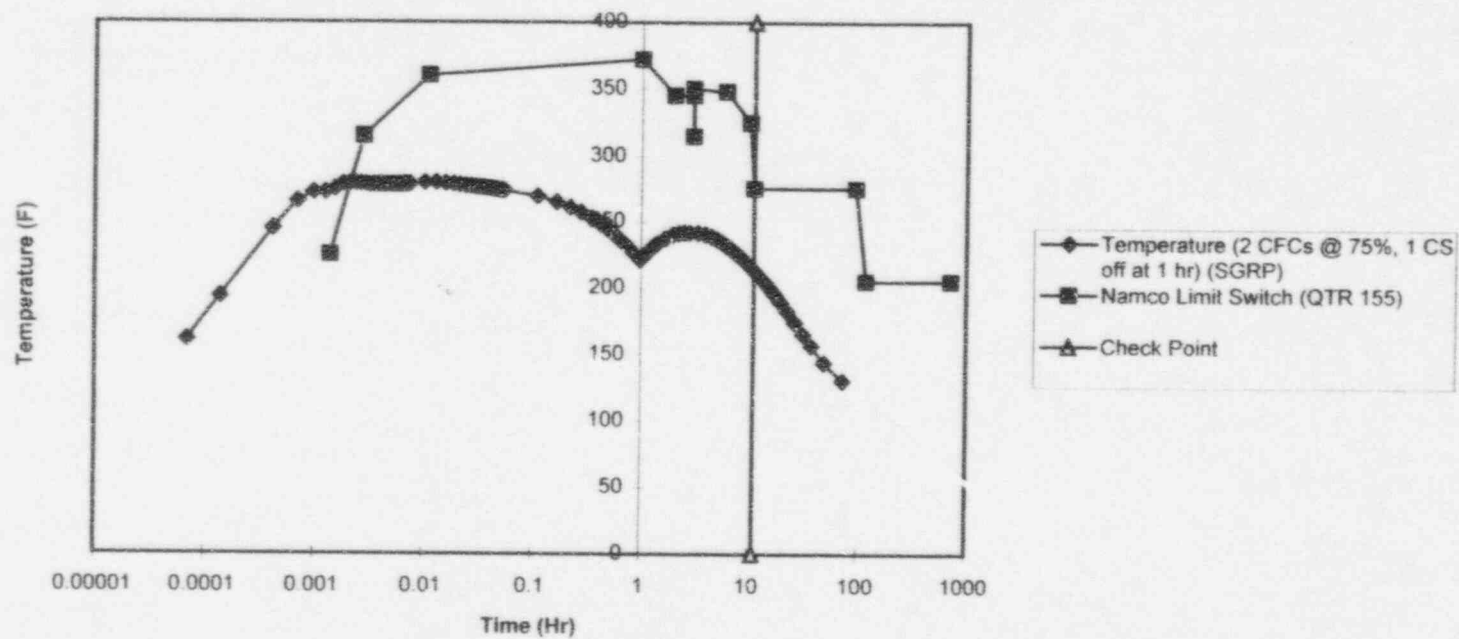
Therefore, the graphical representation of Degradation Equivalency, using the Total Time at Temperature technique allows comparisons between DBE requirements and DBE simulations. When the Degradation Equivalency shows that the test DBE envelopes the DBE requirement, it is demonstrated that the testing exceeds the requirement.

GLS Enterprises, Inc.
Degradation Equivalency

Example 1. PBNP-DBA Temperature



GLS Enterprises, Inc.
Degradation Equivalency



Example 2. Total Cumulative time at Temperature.

Evaluation of EQ Impact of Wisconsin Electric Power Company Technical Specification Change Request 192

GLS Enterprises, Inc.

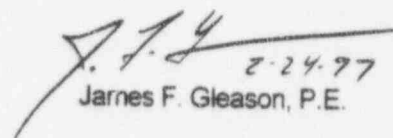
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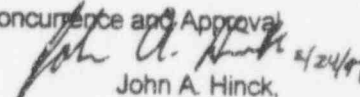
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James F. Gleason, P.E.

Date : 2-24-97

Concurrence and Approval


John A. Hinck, 2/24/97

Wisconsin Electric

Date : 2-24-97

Background

Wisconsin Electric Power Company has identified changes to the Design Basis Accident Conditions that are postulated based on the implementation of Technical Specification Change Request (TSCR) 192. The change results in a change to the DBA profile utilized in the Point Beach Nuclear Plant, Units 1 and 2 Environmental Qualification (EQ) Program, which is required to meet 10CFR50.49. It was recognized by Wisconsin Electric that the change to the DBA Profile could impact EQ equipment and an evaluation was performed. A Condition Report, CR 97-0242, was initiated. The CR documents the operability determination and establishes actions for final resolution.

Conclusion

All EQ equipment required to be reviewed due to changes in the DBA conditions as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification has been enhanced with new EQ reports and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA requirements.

Evaluation

The major elements of this evaluation were :

1. Identification of EQ Equipment to be evaluated for this change.
2. Evaluation Procedure
 - 2.1 Maximum DBA Temperature Evaluation
 - 2.2 Maximum DBA Pressure Evaluation
 - 2.3 DBA Temperature Profile Evaluation
 - 2.4 PBNP EQ Program Enhancement: In the evaluation, additional Qualification reports for similar cable to the Rome cable were located and are being incorporated into the PBNP EQ program.
 - Wyle Report 17740-1
 - Wyle Report 17732-1
 - Wyle Report 6110

1. Identification of EQ Equipment to be evaluated for this change.

The Point Beach EQ program identified that the following EQ equipment, Table 1, is required to be reviewed in this evaluation. This equipment list consists of all environmentally qualified equipment located inside of containment at PBNP.

Table 1. EQ Equipment Being Reviewed for TSCR 192

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
1	Westinghouse	Electrical Penetration Assembly	PEN-RLK-3-16-01
2	Rockbestos	Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	Conax	Electrical Penetration Assembly and Penetration Splices	IPS-1420
4	Conax	RTDs and Thermocouples	IPS-875
5	Conax	RTDs	IPS-798
6	Raychem	WCSF-N Splices	Wyle 58442-1
7	Westinghouse	Fan Cooler Motor, Thermalastic Epoxy Insulation, splice and lubricants	WCAP 7829
8	Gamma-Metrics	Neutron Flux Monitoring System	Report No. 010
9	Limitorque	Limitorque Valve Actuators	Limitorque Report B0058
10	Kerite Cable	Kerite HTK Insulated FR	Kerite 9/12/80 Report

WE FBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
		Jacketed Cable	
10A	Kerite Cable	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report
11	Namco	Namco EA-180 Limit Switches	Namco Report No. 105
12	Namco	Namco EA-180 Limit Switches	Namco Report No. 155
13	Crosby Valve	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	Foxboro	Foxboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4
15	Transamerica Delaval	Transamerica Delaval Gems Level Transmitter	Wyle Report 45700-2
16	Conax	Electrical Conductor Seal Assemblies	Conax IPS-409
17	Litton Veam and American BOA	Litton Veam Connector and American Boa Flex conduit	Veam test report performed by the Component Testing Division of Isomedix, Inc., November 1978
18	Target Rock	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	Exo-Sensor	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	Exo-Sensor	CEC Pressure Transducer and	Exo-Sensor Report EXO-QTR-119

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
		Tayco RTD	
21	Litton-Vels	Litton-Vearn Thermocouple Connectors	NTS Report 558-1654
22	Anaconda	Anaconda Cable	Franklin Report F-C4969-1
23	Anaconda	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	Raychem	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02P
25	Rockbestos	Rockbestos Firewall III Chemically Cross linked Polyethylene Cables	Rockbestos Report 5804
25A	Rockbestos	Rockbestos Firewall III Irradiation Cross linked Polyethylene Cables	Rockbestos Report 5805
26	Automatic Switch Company	ASCO NP-1 Solenoid Valves	ASCO Report AQR-67368
27	Rockbestos	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	Rome	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	Rosemount	Rosemount Transmitter Model 1154	Rosemount Report D6400102

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
29A	Rosemount	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	Rosemount	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D8300200
30	Control Products	Incore Thermocouples	ISA MC96.1-1975
31	General Atomic	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960
32	Gamma-Metrics	Gamma-Metrics Cable	Gamma-Metrics Report 040
33	Westinghouse	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	Westinghouse	Limatorque MOVs	Westinghouse Report WCAP-7410-L
35	Westinghouse	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	Westinghouse	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	Westinghouse	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722
38	Westinghouse	Containment Accident Fan Lubricant	Westinghouse Report WCAP- 7722
39	Okonite	Okonite Cable	Franklin Report F-C3694

2. Evaluation Procedure

TSCR 192 results in the following changes to the postulated DBA, which need to be addressed :

- The Maximum postulated DBA Temperature increases from 278 °F to 280 °F.
- The Maximum postulated DBA Pressure increases from 53 psig to 53.5 psig.
- The postulated DBA Temperature Profile (Temperature vs. time) increases the temperature after the one hour point for a duration of approximately 10 hours.

2.1 Maximum DBA Temperature Evaluation:

In the evaluation, the Qualification data for PBNP was reviewed for each of the potentially impacted EQ equipment to determine if the Qualification data envelopes the new requirement for Maximum postulated DBA Temperature.

PBNP is required to meet the EQ requirements of 10CFR50.49 and DOR Guidelines. Thus Maximum DBA Temperature is met when the Test Data Maximum exceeds the postulated Maximum DBA Temperature. Temperature Margin is the difference between the postulated Maximum DBA Temperature and the documented qualified Temperature.

Conclusion:

All EQ equipment required to be reviewed due to changes in the DBA Temperature as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification, has been enhanced with new EQ reports, and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA Temperature.

Each of potentially impacted EQ equipment was found to be not impacted by the change to postulated Maximum DBA Temperature.

Table 2. Maximum DBA Temperature Evaluation.

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
1	280	340	60	Electrical Penetration Assembly	PEN-RLK-3-16-01

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
2	280	341	61	Rockbestos Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	280	445	165	Conax Electrical Penetration Assembly and Penetration Splices	Conax IPS-1420
4	280	432	152	Conax RTDs and Thermocouples	Conax IPS-875
5	280	432	143	Conax RTDs	Conax IPS-798
6	280	442	162	WCSF-N Splices	Wyle 58442-1
7	280	324	44	Fan Cooler Motor, Thermalastic Epoxy Insulation, splice and lubricants	WCAP 7829
8	280	460	180	Gamma-Metrics Neutron Flux Monitoring System	Report No. 010
9	280	315	35	Limitorque Valve Actuators	Limitorque Report B0058
10	280	340	60	Kerite HTK Insulated FR Jacketed Cable	Kerite 9/12/80 Report
10A	280	300	20	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
11	280	370	90	Namco EA-180 Limit Switches	Namco Report No. 105
12	280	372	85	Namco EA-180 Limit Switches	Namco Report No. 155
13	280	430	150	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	280	420	140	Foxboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4
15	280	412	132	Transamerica Delaval Gems Level Transmitter	Wyle Report 45700-2
16	280	350	70	Electrical Conductor Seal Assemblies	Conax IPS-409
17	280	340	60	Litton Veam Connector and American Bos Flex conduit	Isomedix Nov 78
18	280	385	105	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	280	310	30	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	280	306	26	CEC Pressure Transducer and Tayco RTD	Exo-Sensor Report EXO-QTR-119

WE PBNP TSCR 182 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
21	280	415	135	Litton Veam Thermocouple Connectors	NTS Report 558-1654
22	280	385	105	Anaconda Cable	Franklin Report F-C4969-1
23	280	385	105	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	280	365	85	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02P
25	280	341	61	Rockbestos Firewall III Chemically Cross Linked Polyethylene Cables	Rockbestos Report 5804
25A	280	342	62	Rockbestos Firewall III Irradiation Cross Linked Polyethylene Cables	Rockbestos Report 5805
26	280	450	170	ASCO NP-1 Solenoid Valves	ASCO Report AQR-67368
27	280	346	66	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	280	300	20	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	280	450	170	Rosemount Transmitter Model 1154	Rosemount Report

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
					D8400102
29A	280	420	140	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	280	446	166	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D8300200
30	280	1800	1420	Incore Thermocouples	ISA MC96.1-1975
31	280	320	40	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960
32	280	420	180	Gamma-Metrics Neutron Monitoring System Cable	Gamma-Metrics Report 040
33	280	347	67	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	280	307	27	Limitorque MOV's	Westinghouse Report WCAP-7410-L
35	280	307	27	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	280	296	16	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	280	324	44	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
38	280	324	44	Containment Accident Fan Lubricant	Westinghouse Report WCAP-7722
39	280	345	65	Okonite Cable	Franklin Report F-C3694

2.2 Maximum DBA Pressure Evaluation:

In the evaluation, the Qualification data for PBNP was reviewed for each of the potentially impacted EQ equipment to determine if the Qualification data envelopes the new requirement for Maximum postulated DBA Pressure.

PBNP is required to meet the EQ requirements of 10CFR50.49 and DOR Guidelines. Thus Maximum DBA Pressure is met when the Test Data for Maximum Pressure exceeds the postulated Maximum DBA Pressure. Pressure Margin is the difference between the postulated Maximum DBA Pressure and the documented qualified Pressure.

Conclusion:

All EQ equipment required to be reviewed due to changes in the DBA pressure as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification, has been enhanced with new EQ reports, and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA pressure.

Each of potentially impacted EQ equipment was found to be not impacted by the change to postulated Maximum DBA Pressure.

Table 3. Maximum DBA Pressure Evaluation.

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
1	53.5	60	6.5	Electrical Penetration Assembly	PEN-RLK-3-16-01

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Pressure (Paig)	Qualified Maximum Pressure (Paig)	Margin (paig)	Item Description	Applicable Test Report
2	53.5	107	53.5	Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	53.5	80	26.5	Conax Electrical Penetration Assembly and Penetration Splices	Conax IPS-1420
4	53.5	70	16.5	Conax RTDs and Thermocouples	Conax IPS-875
5	53.5	70	16.5	Conax RTDs	Conax IPS-796
6	53.5	66	12.5	WCSF-N Splices	Wyle 58442-1
7	53.5	80	26.5	Fan Cooler Motor, Thermalastic Epoxy Insulation, splice and lubricants	WCAP 7829
8	53.5	70	16.5	Neutron Flux Monitoring System	Report No. 010
9	53.5	81	27.5	Limiterque Valve Actuators	Limiterque Report B0058
10	53.5	105	51.5	Kerite HTK Insulated FR Jacketed Cable	Kerite 9/12/80 Report
10A	53.5	105 (Note 2)	51.5	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report

WE PBNP TSCR 182 EQ EVALUATION

Evaluation Item No.	New Postulated DSA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margir. (psig)	Item Description	Applicable Test Report
11	53.5	76.4	22.9	Namco EA-180 Limit Switches	Namco Report No. 105
12	53.5	76.4	22.9	Namco EA-180 Limit Switches	Namco Report No. 155
13	53.5	72	18.5	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	53.5	90	31.5	Foxboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4
15	53.5	70	16.5	Transamerica Delaval Gems Level Transmitter	Wyle Report 45700-2
16	53.5	180	126.5	Electrical Conductor Seal Assemblies	Conax IPS-409
17	53.5	105	51.5	Litton Vaern Connector and American Boa Flex conduit	Isomedix Nov 78
18	53.5	66	12.5	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	53.5	67	13.5	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	53.5	58	4.5	CEC Pressure Transducer and Tayco RTD	Exo-Sensor Report EXO-QTR-119

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
21	53.5	66	12.5	Litton Vearn Thermocouple Connectors	NTS Report 558-1654
22	53.5	66	12.5	Anaconda Cable	Franklin Report F-C4969-1
23	53.5	66	12.5	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	53.5	58	4.5	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02P
25	53.5	107	53.5	Rockbestos Firewall III Chemically Cross Linked Polyethylene Cables	Rockbestos Report 5804
25A	53.5	107	53.5	Rockbestos Firewall III Irradiation Cross Linked Polyethylene Cables	Rockbestos Report 5805
26	53.5	78	24.5	ASCO NP-1 Solenoid Valves	ASCO Report AQR-67368
27	53.5	122	68.5	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	53.5	58	4.5	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	53.5	110	56.5	Rosemount Transmitter Model 1154	Rosemount Report D8400102

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
29A	53.5	110	56.5	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	53.5	110	56.5	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D8300200
30	53.5	Note 1.	Note 1.	Incore Thermocouples	ISA MC96.1-1975
31	53.5	78	24.5	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960
32	53.5	70	16.5	Gamma-Metrics Cable	Gamma-Metrics Report 040
33	53.5	108	54.5	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	53.5	60	6.5	Limitorque MOVs	Westinghouse Report WCAP-7410-L
35	53.5	60	6.5	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	53.5	60	6.5	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	53.5	60	6.5	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722
38	53.5	60	6.5	Containment Accident Fan Lubricant	Westinghouse Report WCAP- 7722

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
39	53.5	115	61.5	Okonite Cable	Franklin Report F-C3694

Note 1. For Item 30. A six inch portion of the thermocouple cable extends above the reactor vessel head. This stainless steel sheathed, mineral insulated thermocouple cable is designed for the incore environment (1800°F and 2500 psig) and routinely operates at 600°F and 2000psig. The portion of the thermocouple cable exposed to the containment atmosphere is unaffected by the small increase in containment pressure (0.5 psig) postulated in TSCR 192.

Note 2. Kerite FR Material was tested as a jacket to 105 psig in a one hundred day test and as an insulation to 52 psig in a 25 day test.

2.3 DBA Temperature Profile Evaluation:

In the evaluation, the Qualification data for PBNP was reviewed for each of the potentially impacted EQ equipment to determine if the Qualification data envelopes the new requirement for the new postulated DBA Temperature Profile.

PBNP is required to meet the EQ requirements of 10CFR50.49 and DOR Guidelines. Thus DBA Temperature Profile is met when the Test Profile envelopes the peak conditions, which was documented above and when the degradation caused by the test profile was more severe than the equivalent degradation of the new postulated DBA Temperature Profile. Thus this section addresses the Degradation Equivalency of the new DBA Temperature Profile to the documented profile in the PBNP EQ program.

Degradation Equivalency is performed in two methods : graphical and analytical. First, each item's EQ test profile is graphed on the same chart as the new postulated DBA Profile. The Degradation Equivalency is acceptable when the cumulative time at temperature of the EQ test profile is above the new postulated DBA Profile once maximum temperature conditions have been met.

If a portion of the cumulative time at temperature of the EQ test profile is below the new postulated DBA Profile after the peak test conditions have been met, then it is necessary to analytically compare the area under the new postulated DBA Profile to the conservatism where the test profile exceeds the new postulated DBA Profile to verify that the Degradation caused during the time under the new postulated DBA Profile is less severe than the Degradation caused by the area of the test profile that exceeds the new postulated DBA Profile.

Degradation Equivalency is an acceptable method for demonstrating the equivalence of DBA profiles and is acceptable since it is a method which utilizes 10CFR50.49 Qualification Method (f) (2) "Testing a similar item of equipment with a supporting analysis to show that the equipment to be qualified is acceptable," and / or 10CFR50.49 Qualification Method (f) (4) "Analysis in combination with partial type test data that supports

the analytical assumptions and conclusions." Similar partial test data per 10CFR50.49 paragraph (f) (4) has been used.

For most equipment in this evaluation at PBNP, the graphical method of Degradation Equivalency demonstrates that the new postulated DBA Profile is within the already established EQ program at PBNP.

Only two equipment items, the Delaval Gems Level Transmitter and the Rome Cable required the supplemental Degradation Equivalency Analysis. This analysis showed that the degradation caused during the time under the new postulated DBA Profile is less severe than the degradation caused by the area of the test profile that exceeds the new postulated DBA Profile, by a margin of over 60% for the Delaval Gems Level Transmitter and by a margin of over 130%, for the Rome Cable. For these equipment items Post Accident Operability was also reviewed to assure that long term post DBA was not affected.

Conclusion:

All EQ equipment required to be reviewed due to changes in the DBA profile as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification, has been enhanced with new EQ reports, and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA profile.

The Table 4, summarizes the evaluation of the new postulated DBA Profile at PBNP.

Table 4. Evaluation of new postulated DBA Profile at PBNP.

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
1	Graphical	Electrical Penetration Assembly	PEN-RLK-3-16-01
2	Graphical	Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	Graphical	Conax Electrical Penetration Assembly and Penetration Splices	Conax IPS-1420
4	Graphical	Conax RTDs and Thermocouples	Conax IPS-875

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
5	Graphical	Conax RTDs	Conax IPS-796
6	Graphical	WCSF-N Splices	Wyle 58442-1
7	Graphical	Fan Cooler Motor, Thermaelastic Epoxy Insulation, splice and lubricants	WCAP 7829
8	Graphical	Neutron Flux Monitoring System	Report No. 010
9	Graphical	Limitorque Valve Actuators	Limitorque Report B0058
10	Graphical	Kerite HTK Insulated FR Jacketed Cable	Kerite 9/12/80 Report
10A	Graphical	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report
11	Graphical	Namco EA-180 Limit Switches	Namco Report No. 105
12	Graphical	Namco EA-180 Limit Switches	Namco Report No. 155
13	Graphical	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	Graphical	Foxboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
15	Graphical and Analytical	Transamerica Delaval Gems Level Transmitter	Wyle Report 45700-2
16	Graphical	Electrical Conductor Seal Assemblies	Conax IPS-409
17	Graphical	Litton Veam Connector and American Boa Flex conduit	Isomedix Nov 78
18	Graphical	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	Graphical	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	Graphical	CEC Pressure Transducer and Tayco RTD	Exo-Sensor Report EXO-QTR-119
21	Graphical	Litton Veam Thermocouple Connectors	NTS Report 558-1654
22	Graphical	Anaconda Cable	Franklin Report F-C4969-1
23	Graphical	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	Graphical	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02P

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
25	Graphical	Rockbestos Firewall III Chemically Cross Linked Polyethylene Cables	Rockbestos Report 5804
25A	Graphical	Rockbestos Firewall III Irradiation Cross Linked Polyethylene Cables	Rockbestos Report 5805
26	Graphical	ASCO NP-1 Solenoid Valves	ASCO Report AQR-67368
27	Graphical	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	Graphical and Analytical	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	Graphical	Rosemount Transmitter Model 1154	Rosemount Report D8400102
29A	Graphical	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	Graphical	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D8300200
30	Graphical	Incore Thermocouples	ISA MC96.1-1975
31	Graphical	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
32	Graphical	Gamma-Metrics Cable	Gamma-Metrics Report 040
33	Graphical	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	Graphical	Limiterque MOVs	Westinghouse Report WCAP-7410-L
35	Graphical	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	Graphical	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	Graphical	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722
38	Graphical	Containment Accident Fan Lubricant	Westinghouse Report WCAP-7722
39	Graphical	Okonite Cable	Franklin Report F-C3694

2.4 PBNP EQ Program Enhancement:

In the evaluation, the additional Qualification reports for similar cable to the Rome cable were located and are being incorporated into the PBNP EQ program.

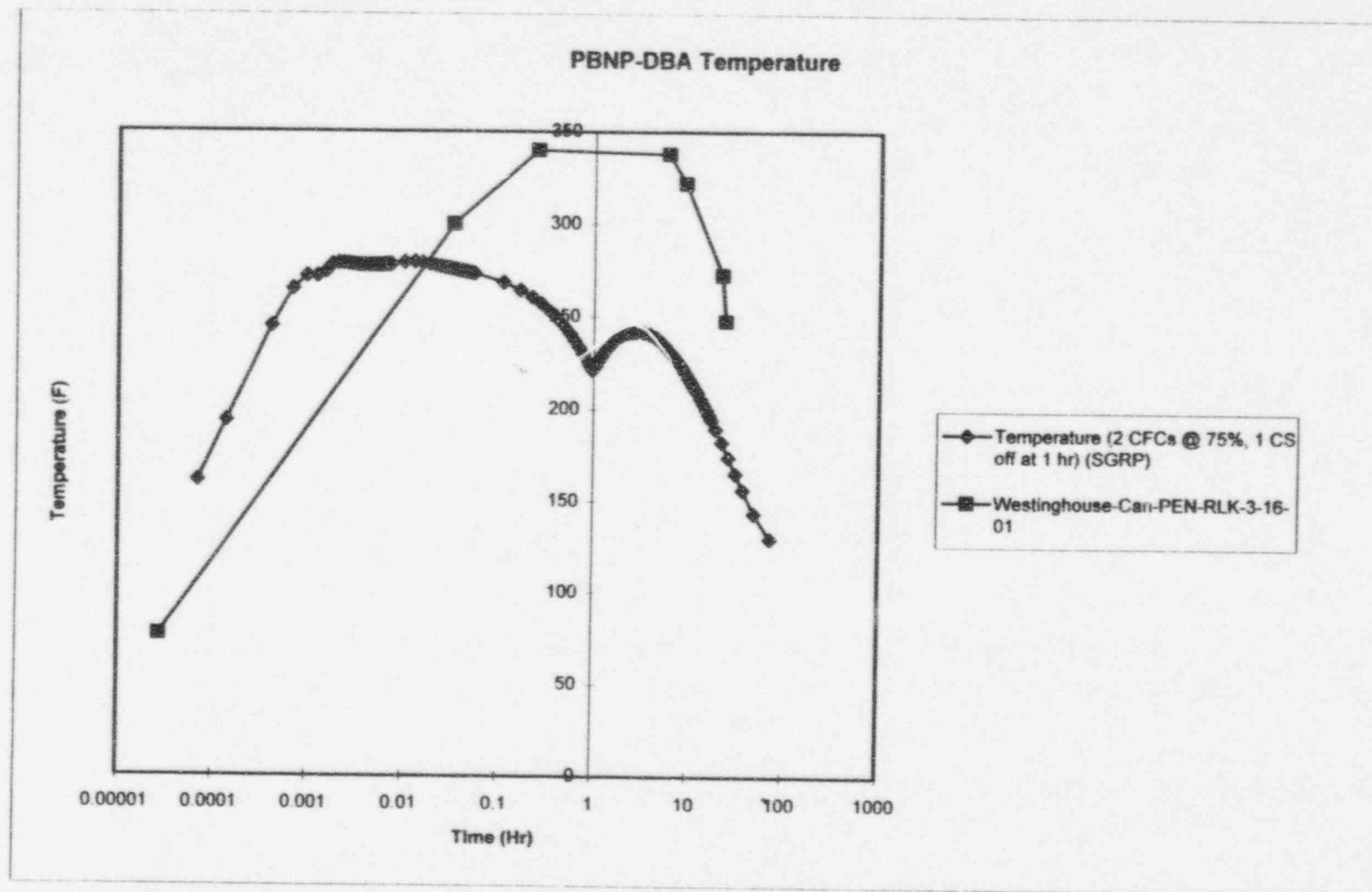
- Wyle Report 17740-1
- Wyle Report 17732-1
- Wyle Report 6110

Attachments

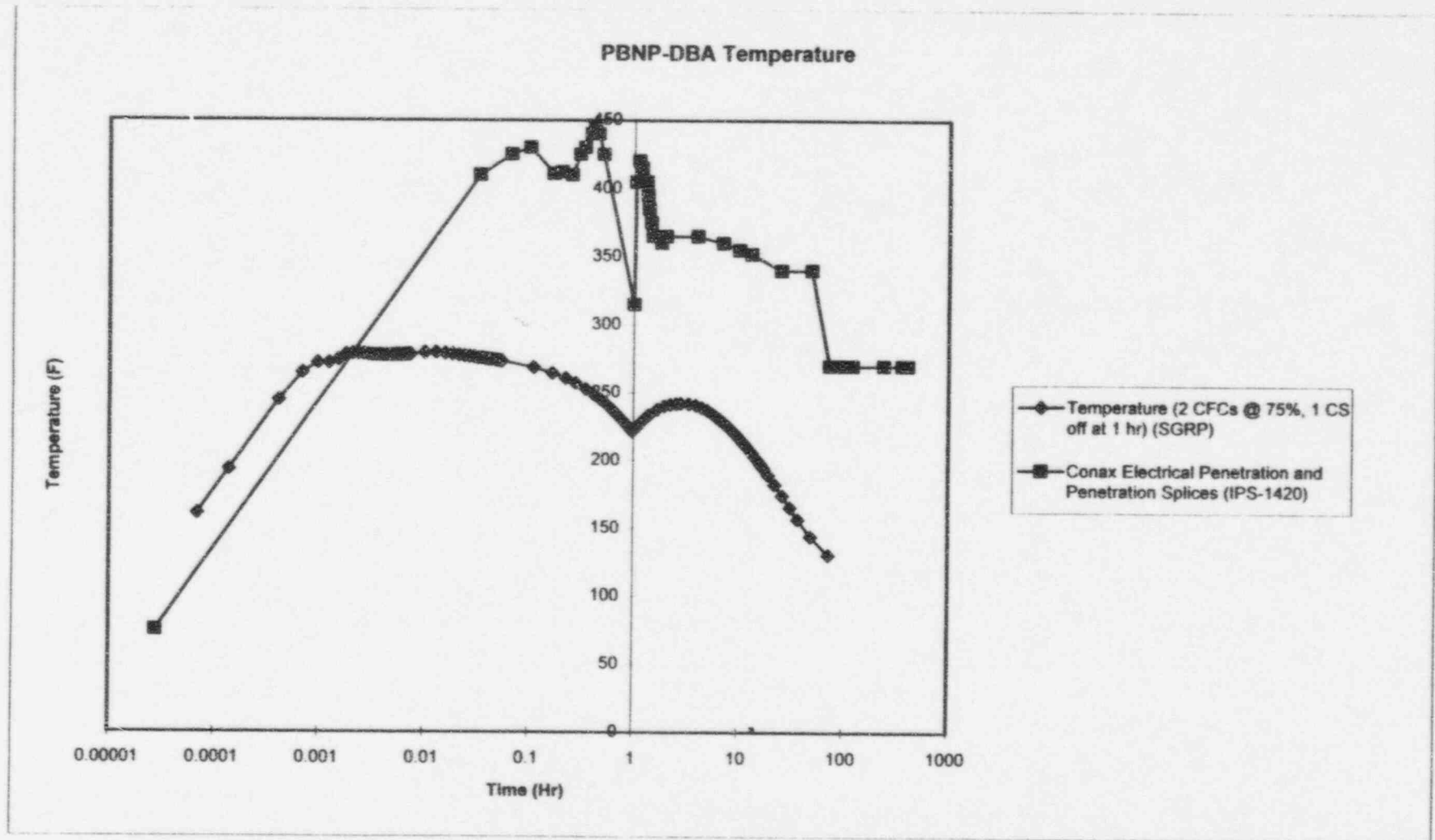
- 1) Profile Graphs Item 1, 3, 4, 5, 6, 7, 8, 9, 10, 10A, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 25A, 26, 27, 28, 29, 29A, 29B, 31, 32, 33, 34, 35, 36, 37, 38, 39
- 2) Degradation Equivalency for Transamerica Delaval Gems Level Transmitter Wyle Report 45700-2, Pages A8-A10
- 3) Degradation Equivalency for Rome Cable Wyle Report 17740-1 Pages C8-C11

Item 1.

PBNP-DBA-T-W-Can-PEN-RLK-31601



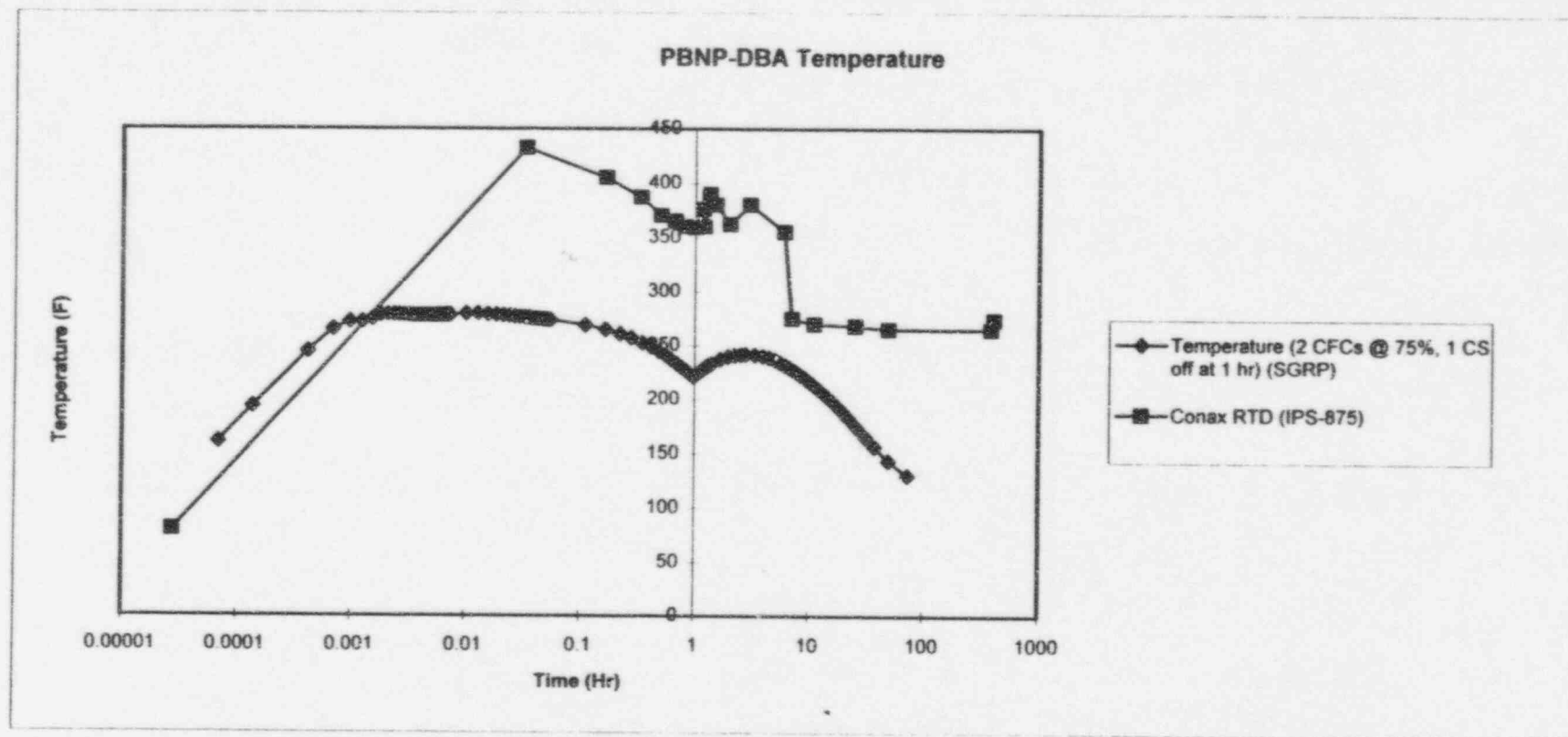
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	340	
Met	Yes	
Margin	21.4%	
		Graphical



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	445.00	
Met	Yes	Graphical
Margin	58.90%	

Item 4.

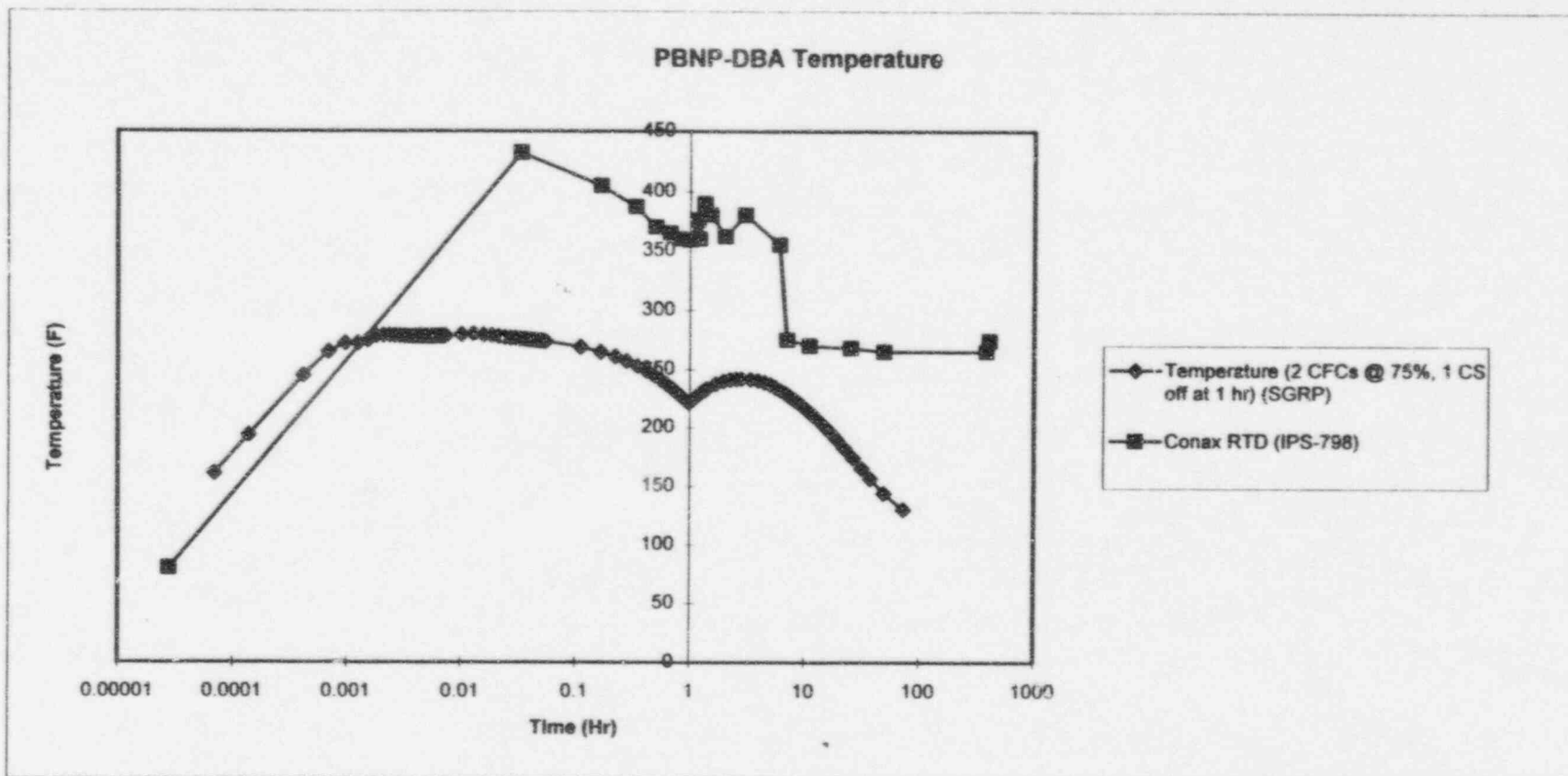
PBNP-DBA-Temp ConaxRTD (IPS875)



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	432	
Met	Yes	
Margin	54.4%	

Item 5.

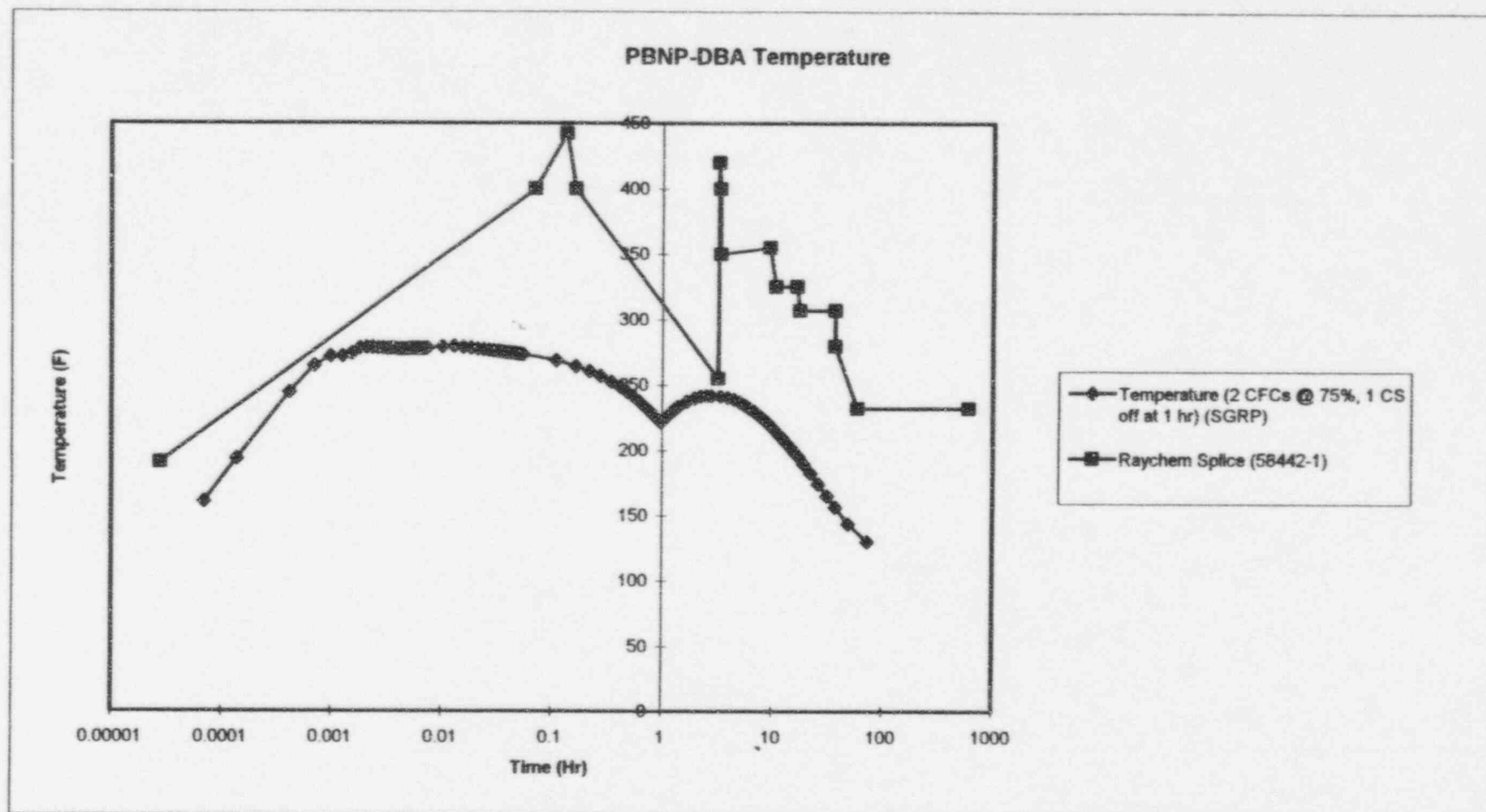
PBNP-DBA-Temp Conzx RTD(IPS798)



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	432	Graphical
Met	Yes	
Margin	54.4%	

Item 6.

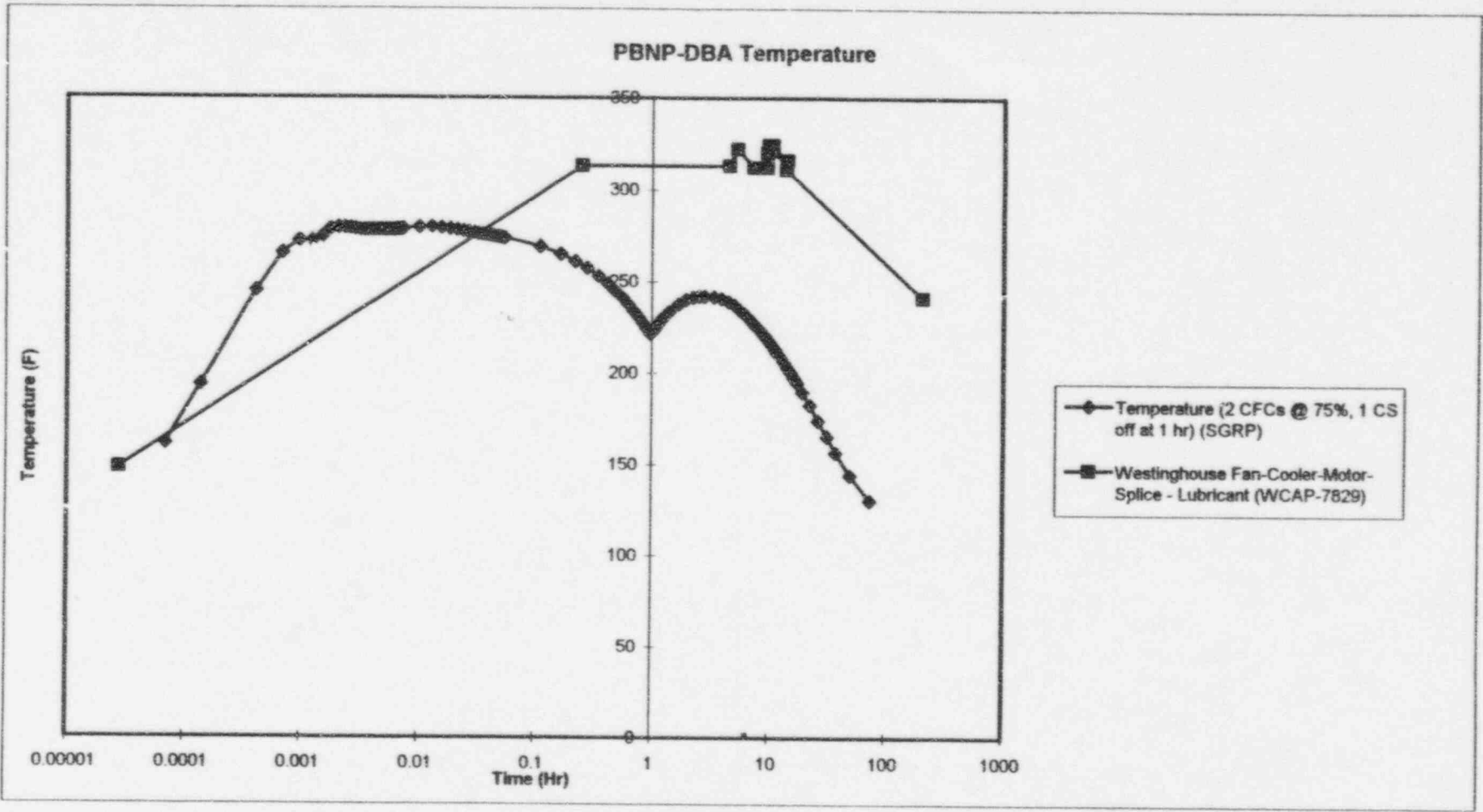
PBNP-DBA-Temp-Raychem(58442-1)



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	442	
Met	Yes	Graphical
Margin	57.9%	

Item 7.

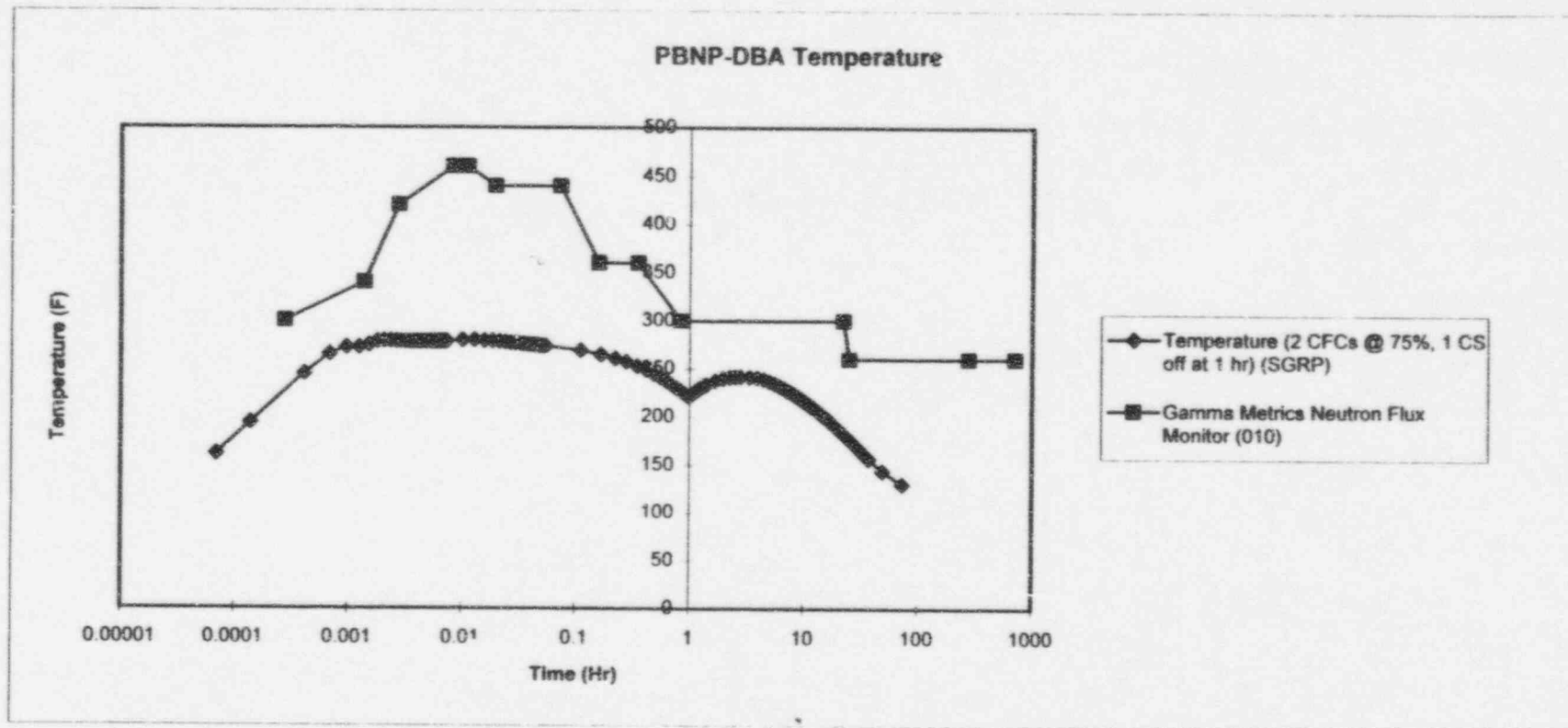
PBNP-DBA-Temp-West-Fan-C-Motor



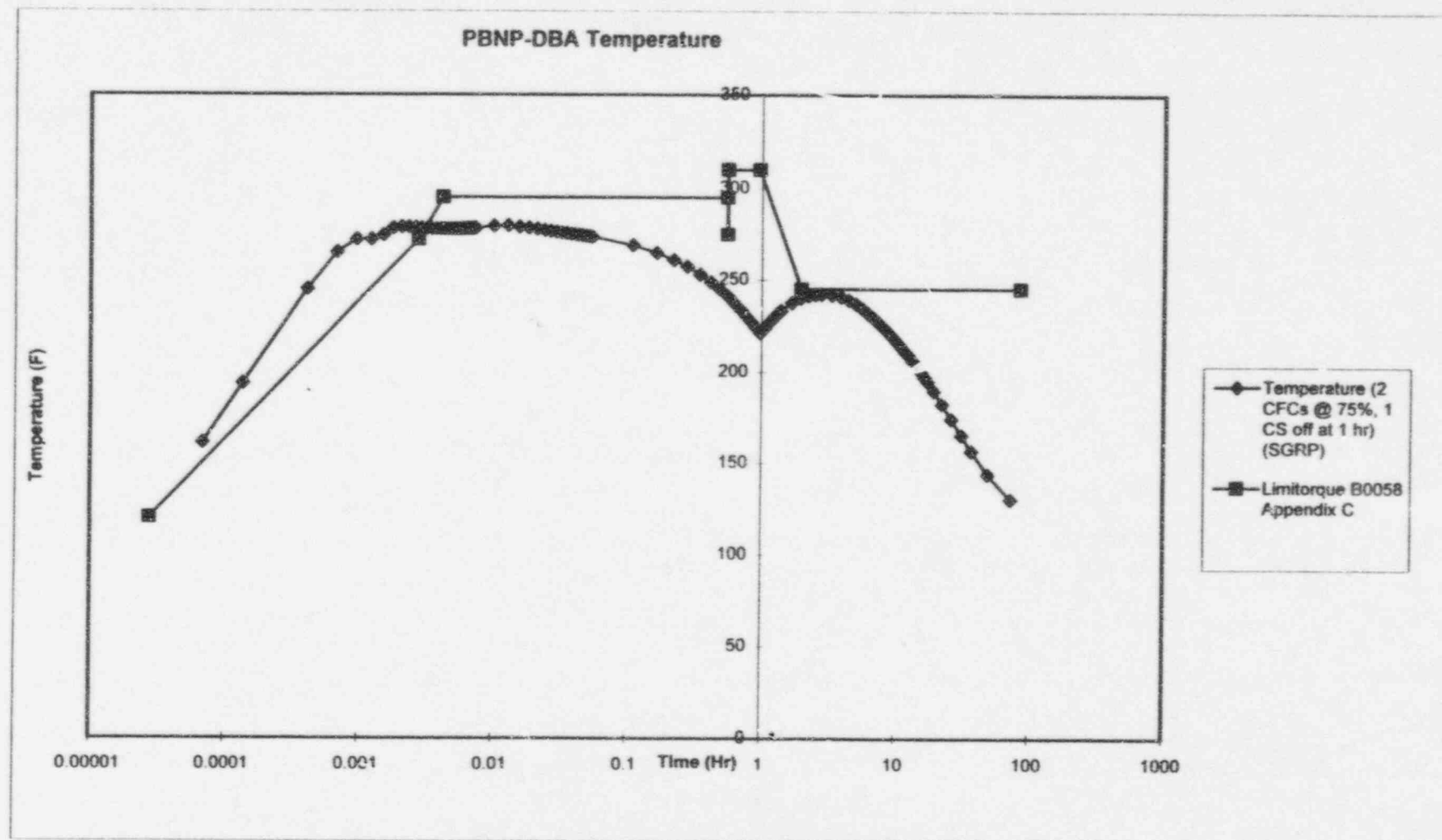
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	324	
Met	Yes	
Margin	15.7%	

Item 8.

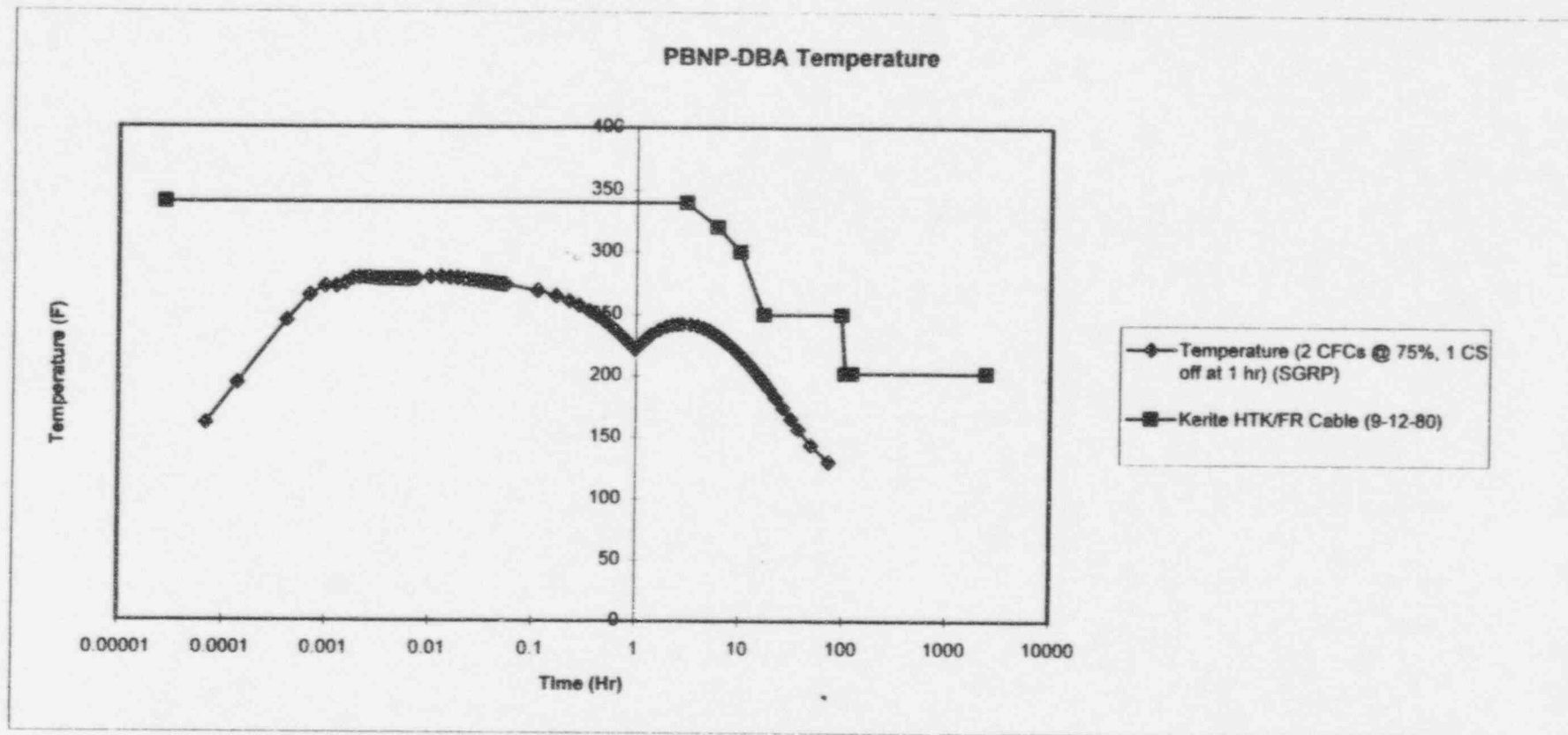
PBNP-DBA -Temp GM Monitor (010)



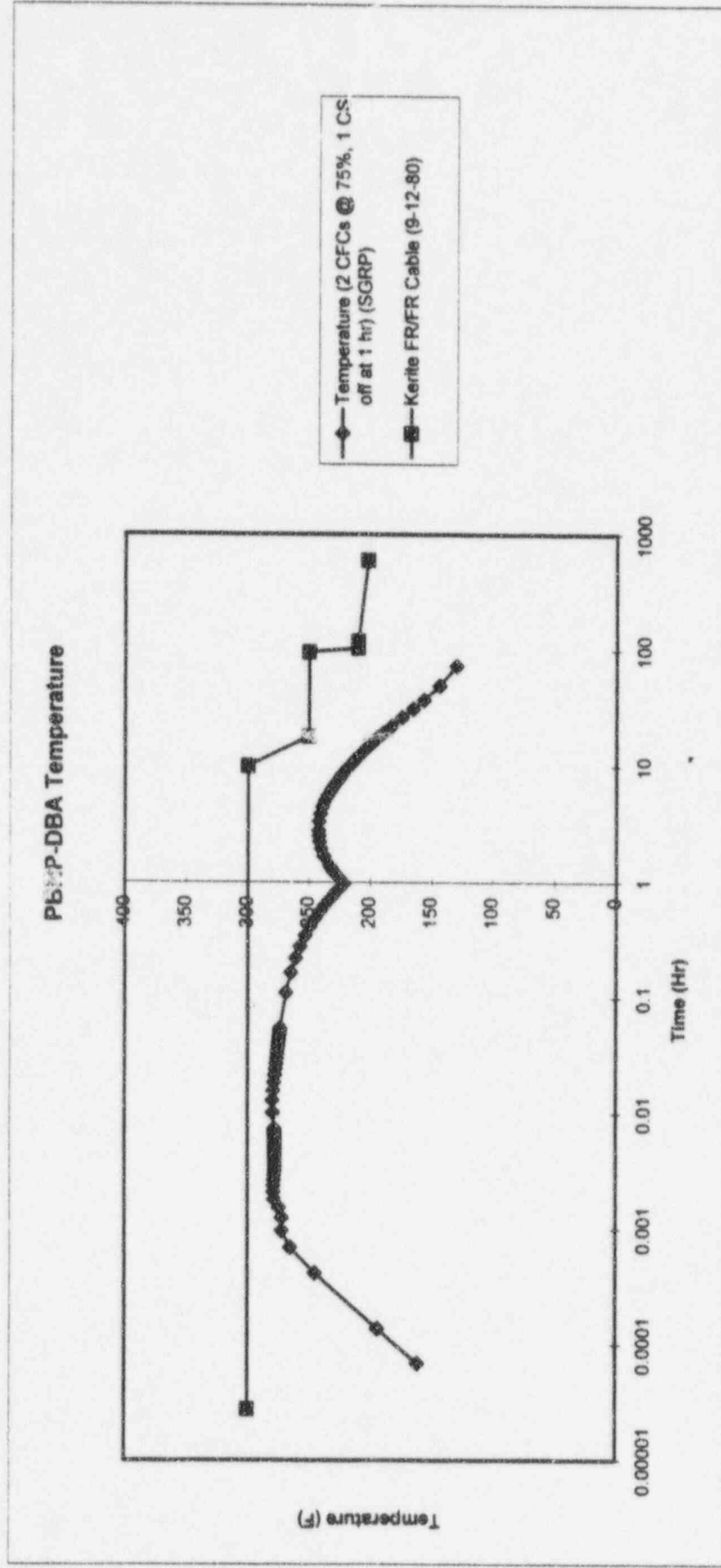
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	460	
Met	Yes	
Margin	64.3%	



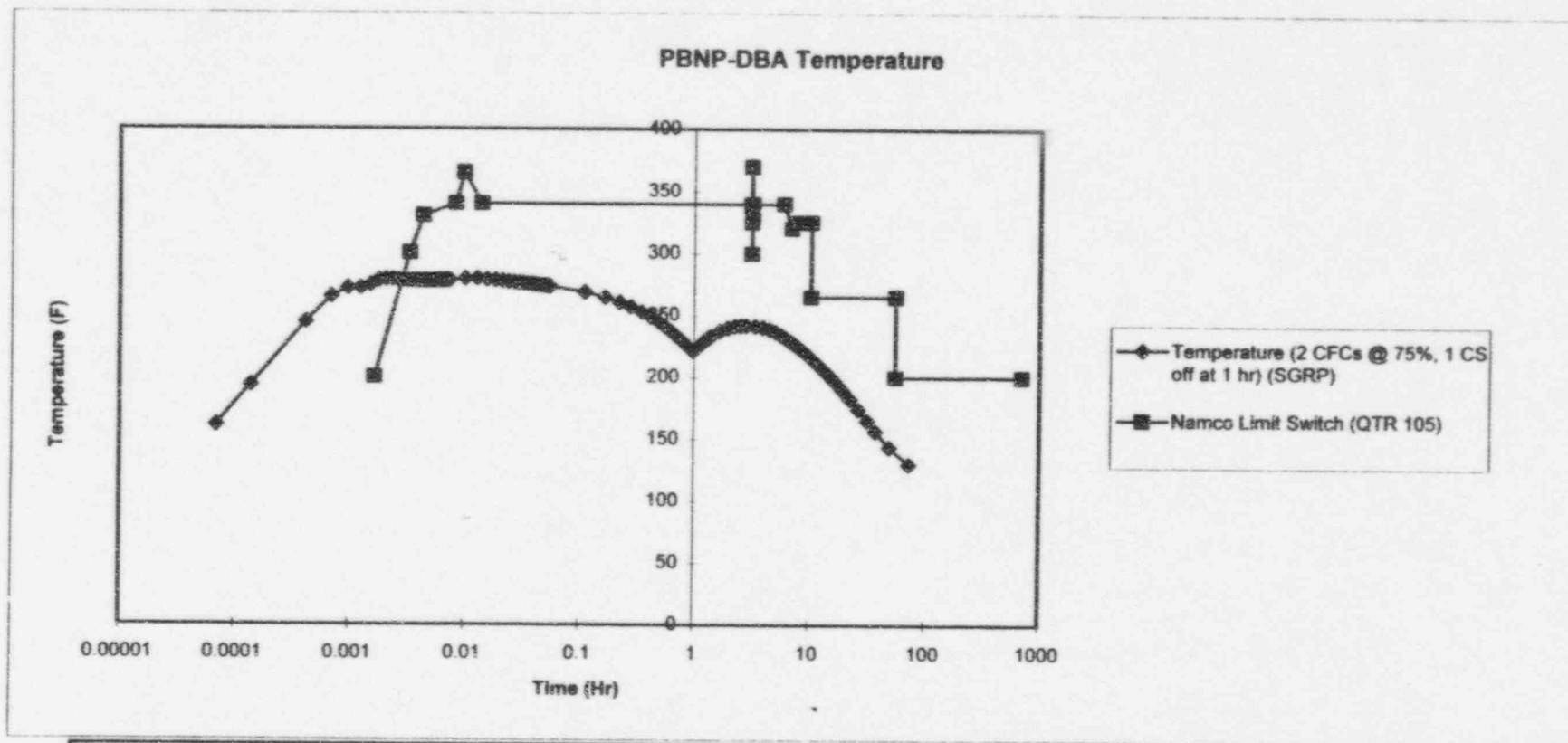
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	310	
Met	Yes	Graphical
Margin		



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	340	
Met	Yes	
Margin	21.4%	



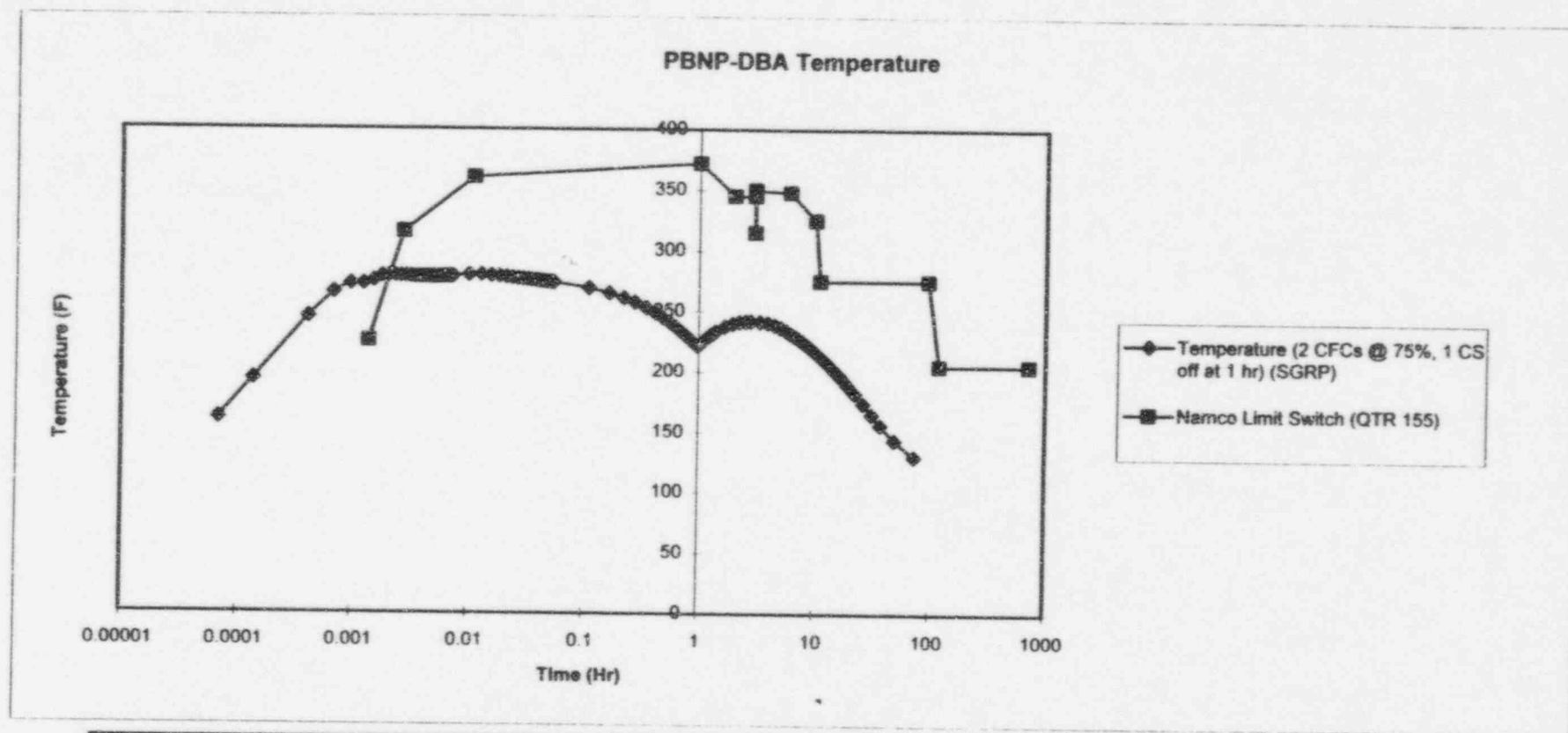
Degradation Equivalency Method	
Graphical	
PBNP Temperature Requirement (F) :	280
Qualified Temperature (F)	300
Met	Yes
Margin	7.1%



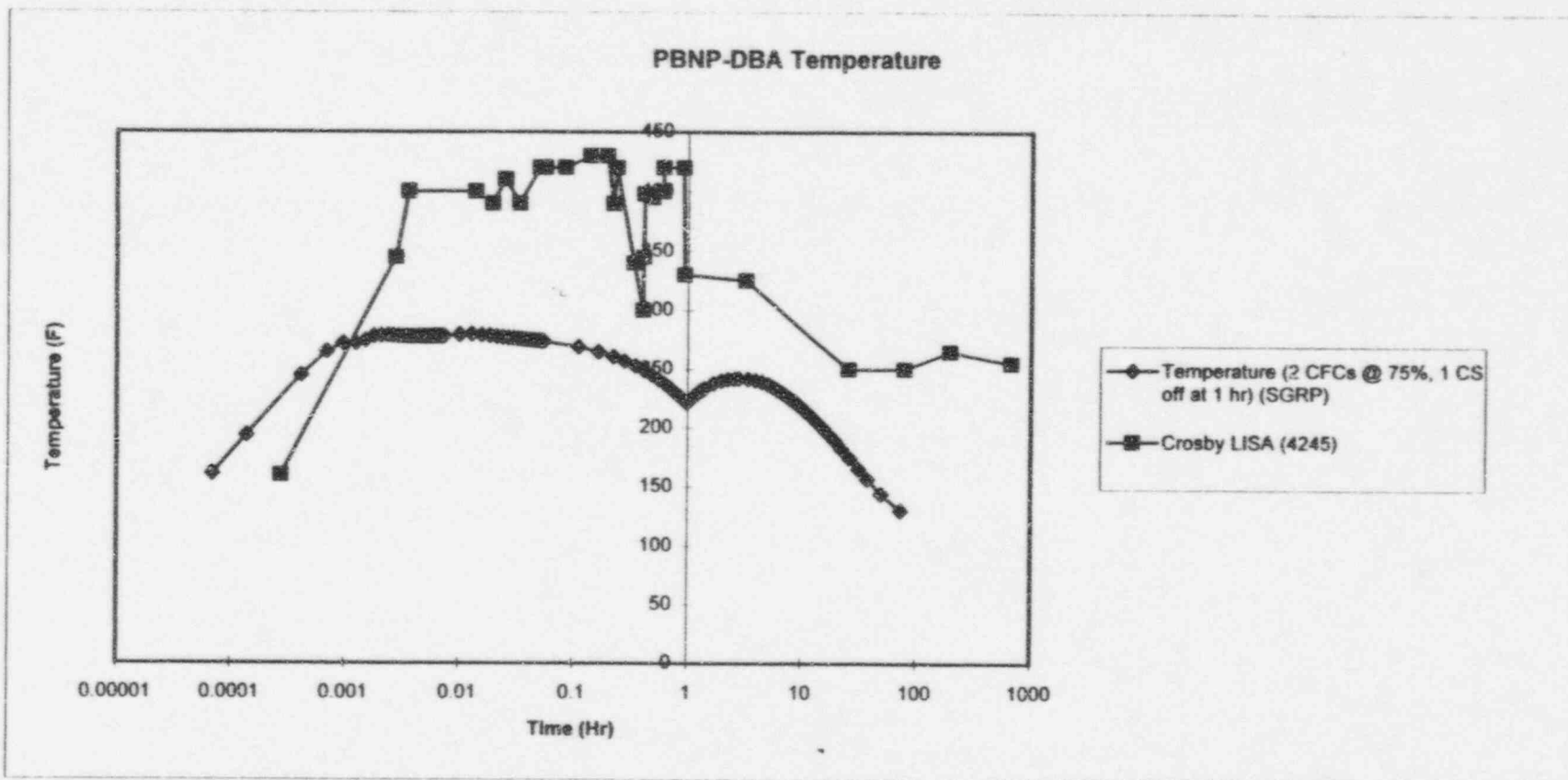
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	370	
Met	Yes	
Margin	32.1%	

Item 12.

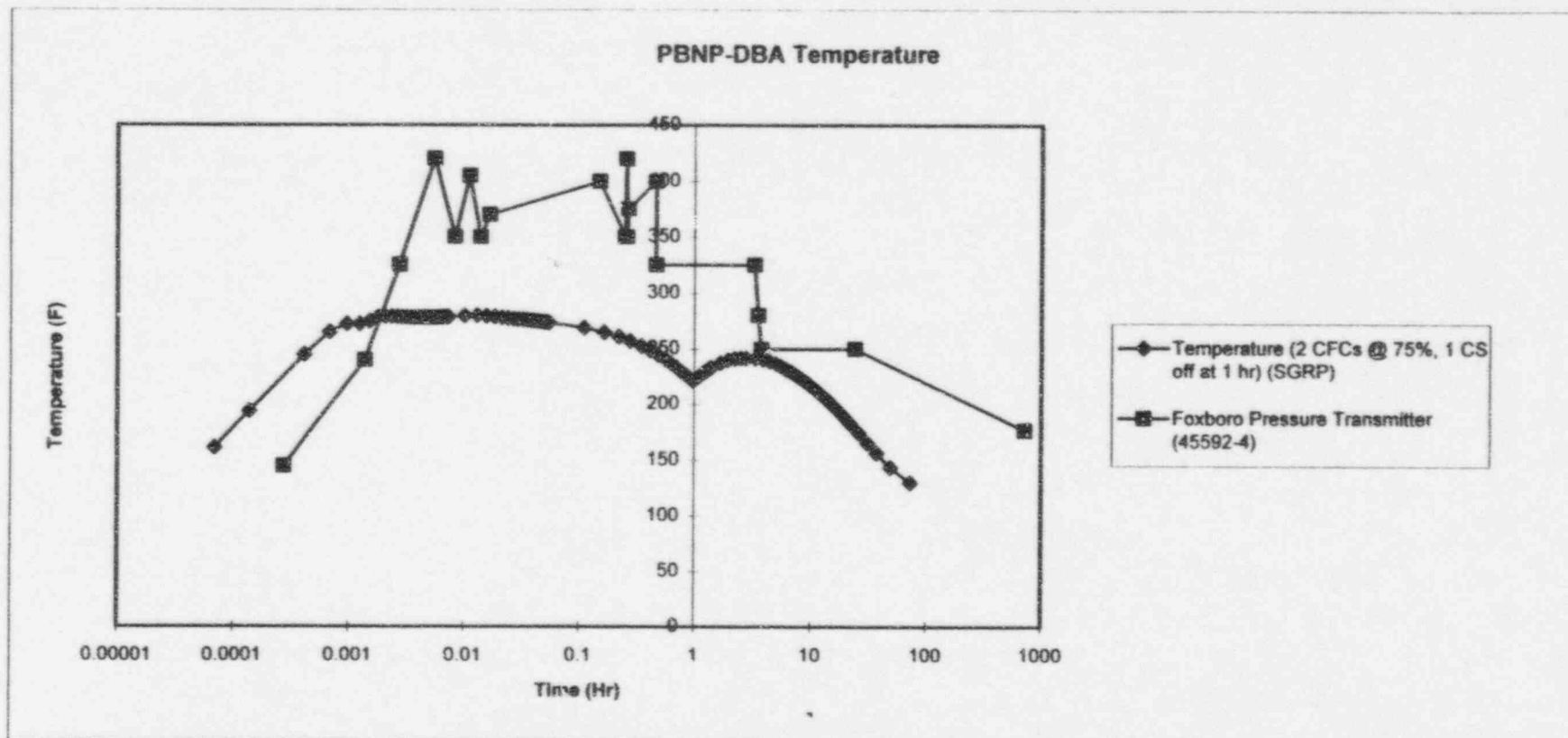
PBNP-DBA-Temp Namco (QTR-155)



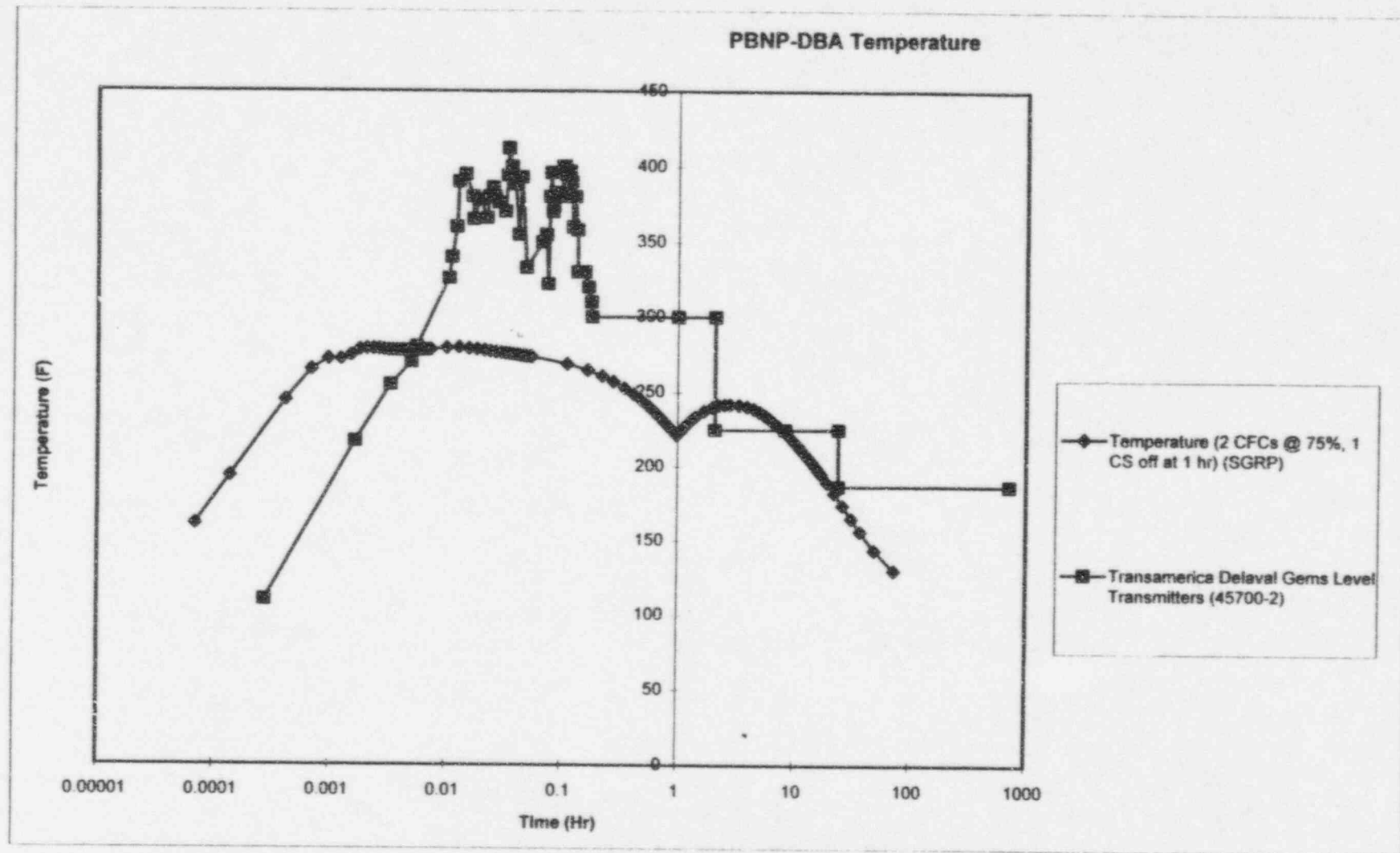
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	372	
Met	Yes	
Margin	32.9%	



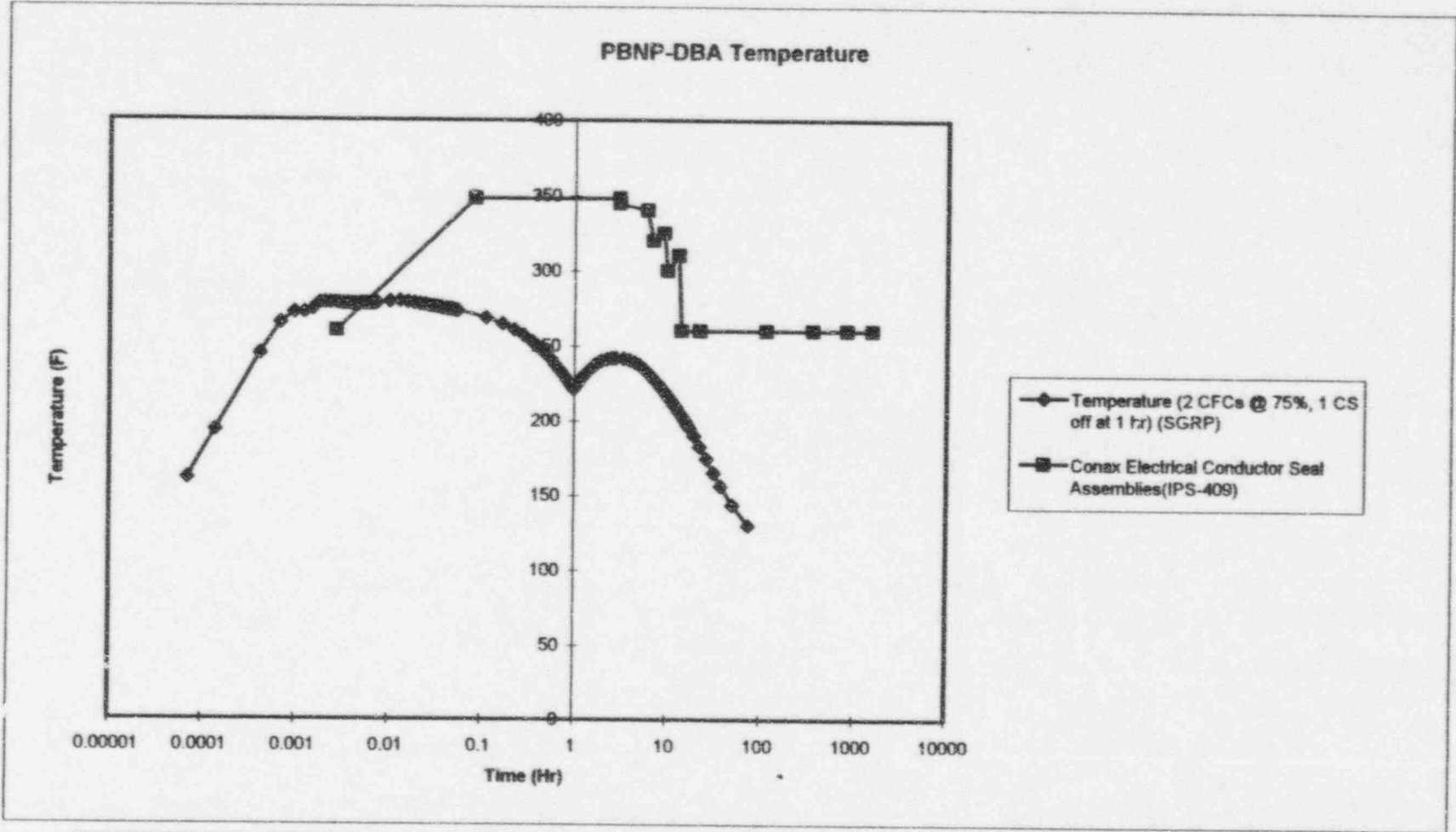
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	430	
Met	Yes	Graphical
Margin	53.6%	



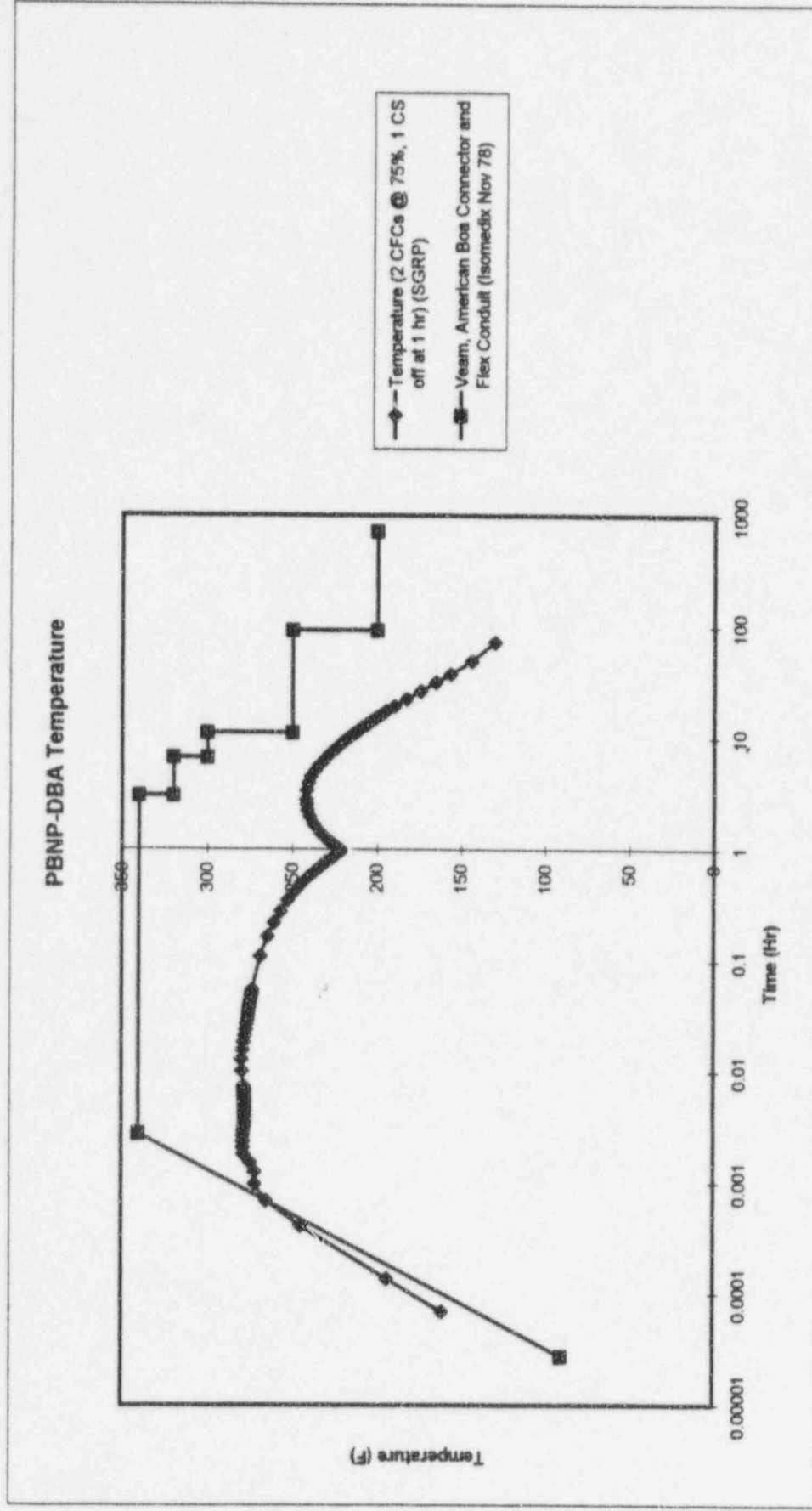
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	420	
Met	Yes	Graphical
Margin	50.0%	



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	412	
Met	Yes	Analytical
Margin	47.1%	



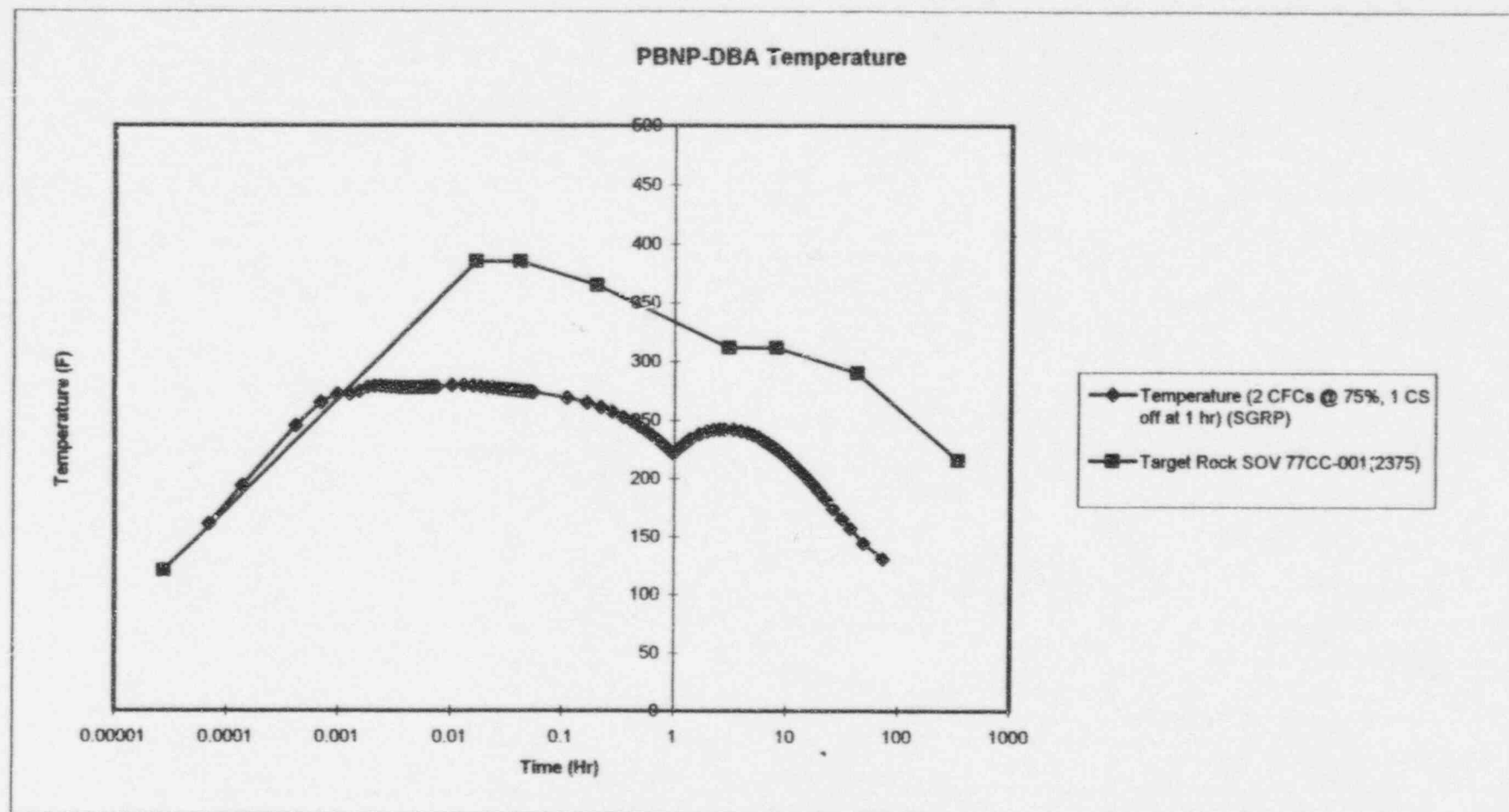
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	348.00	
Met	Yes	
Margin	24.3%	



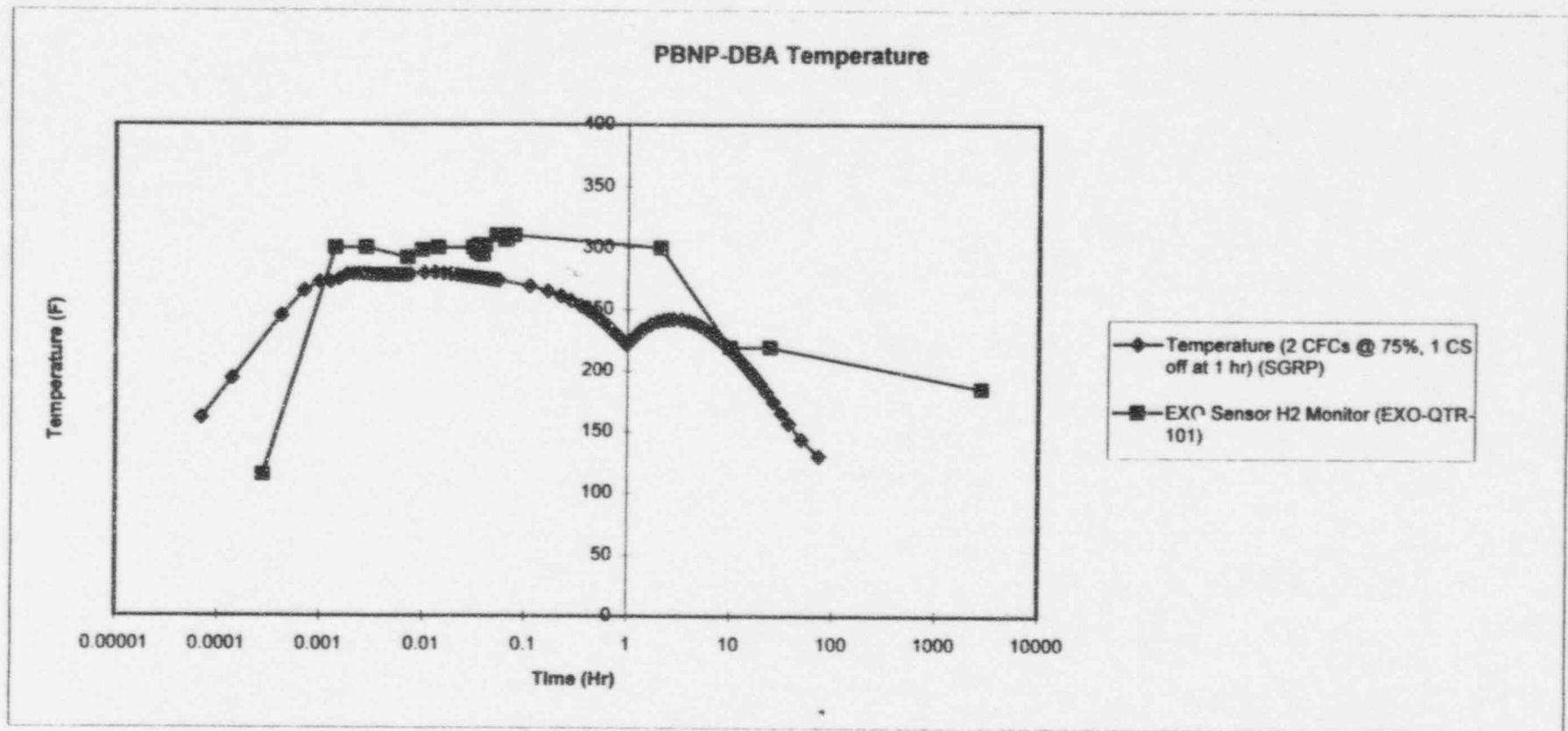
PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met			
Margin			
		21.4%	

Item 18.

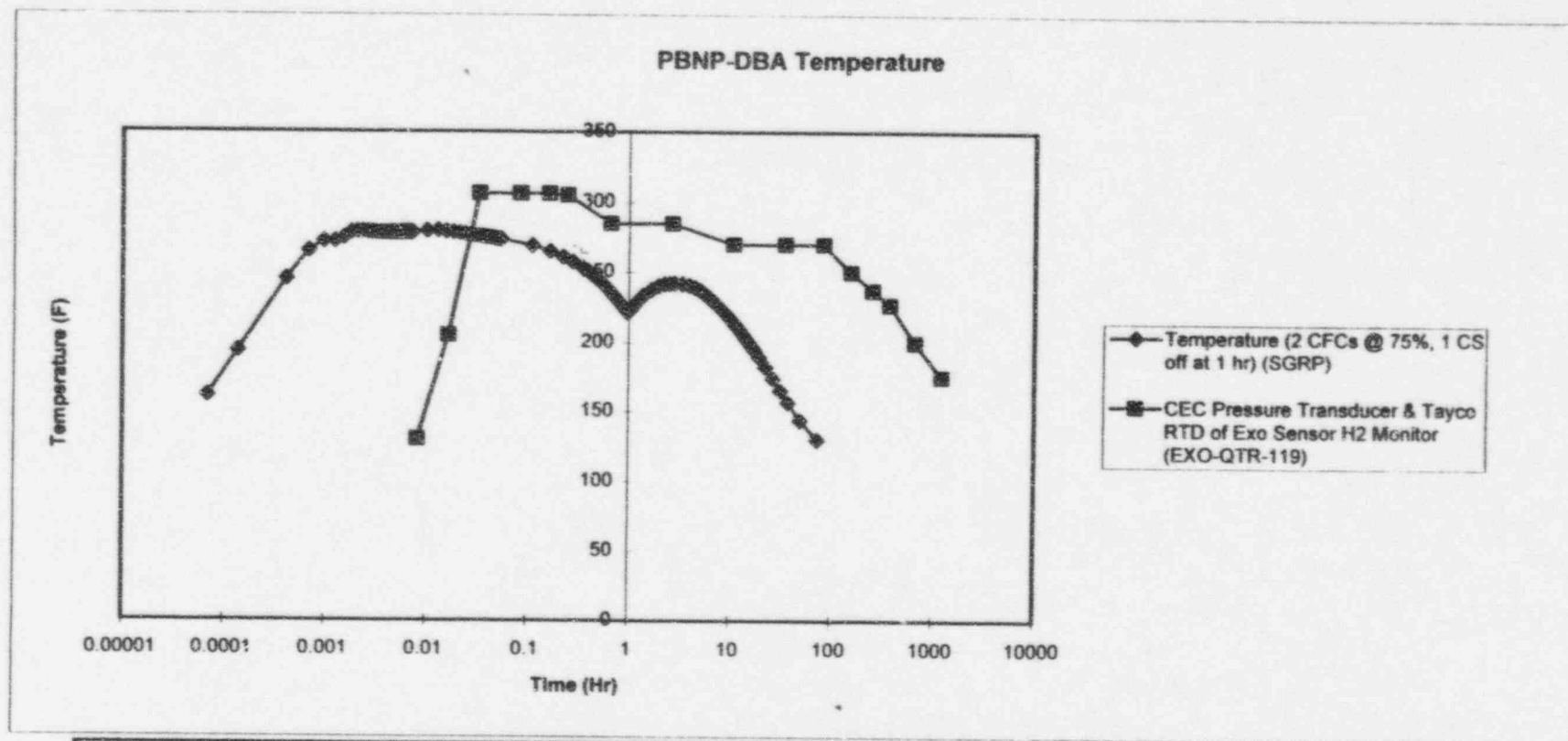
PBNP-DBA-Temp-Target Rock SOV



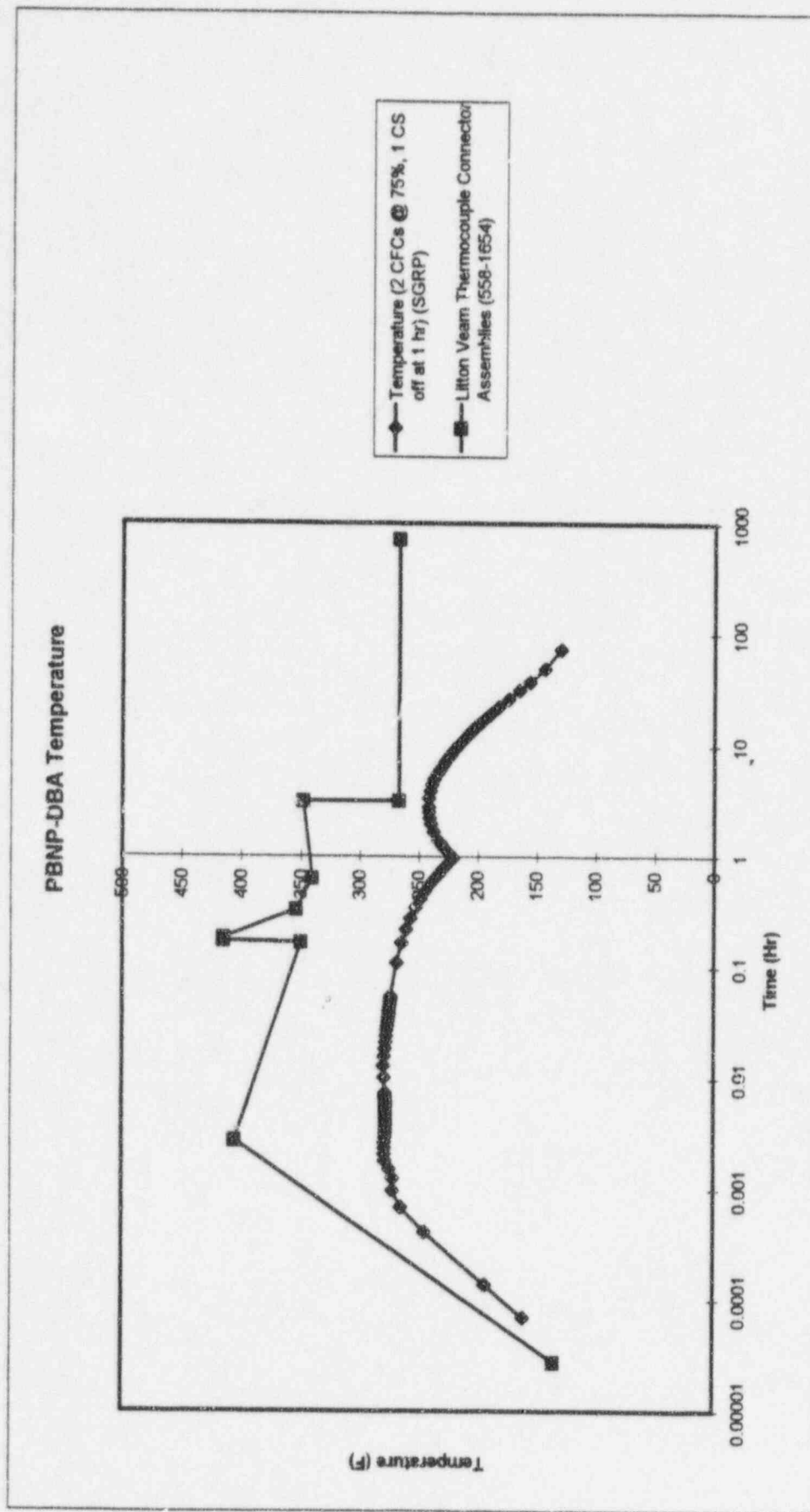
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	385	
Met	Yes	
Margin	37.5%	



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	310	
Met	Yes	
Margin	10.7%	

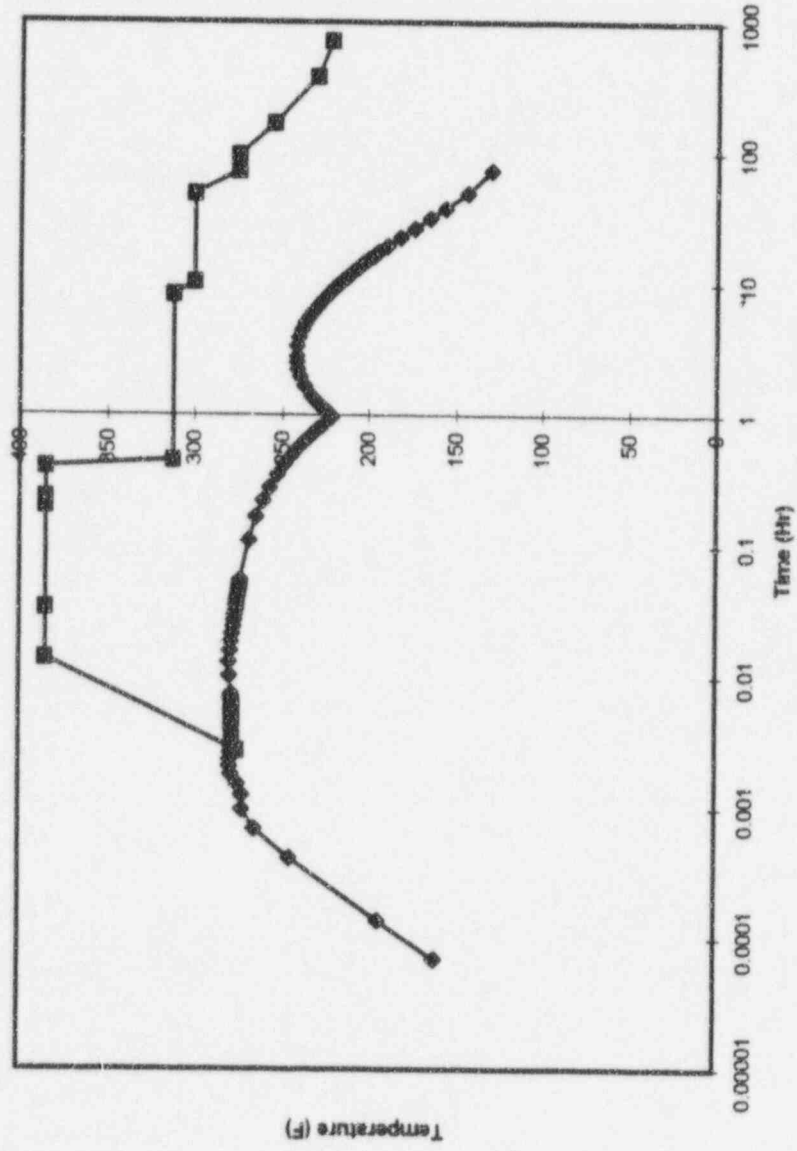


PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	306	
Met	Yes	
Margin	9.3%	



PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method	Graphical
Qualified Temperature (F)		415		
Met		Yes		
Margin		48.2%		

PBNP-DBA Temperature



Degradation Equivalency Method

Graphical

PBNP Temperature Requirement (F) : 280

Qualified Temperature (F)

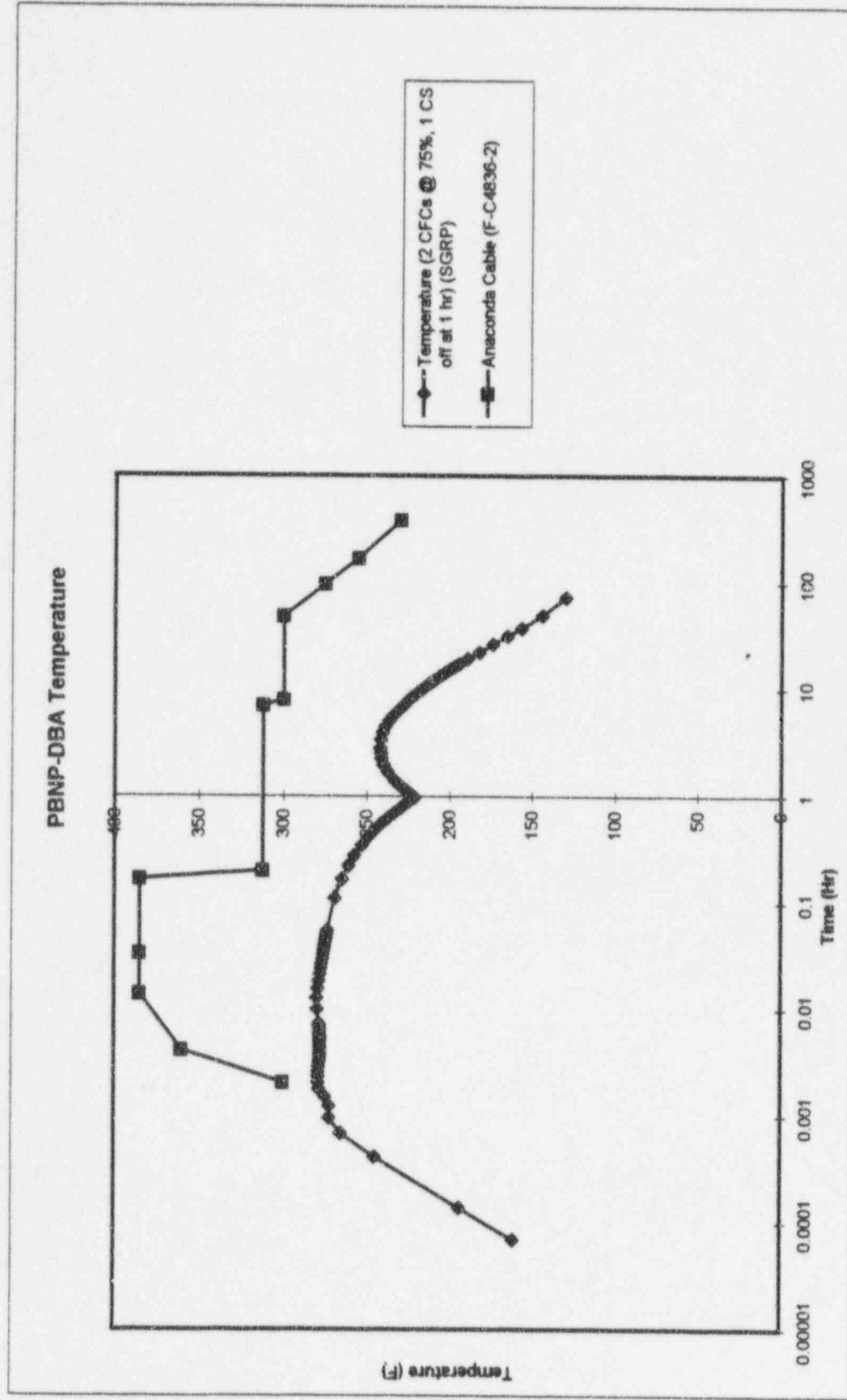
385

Met

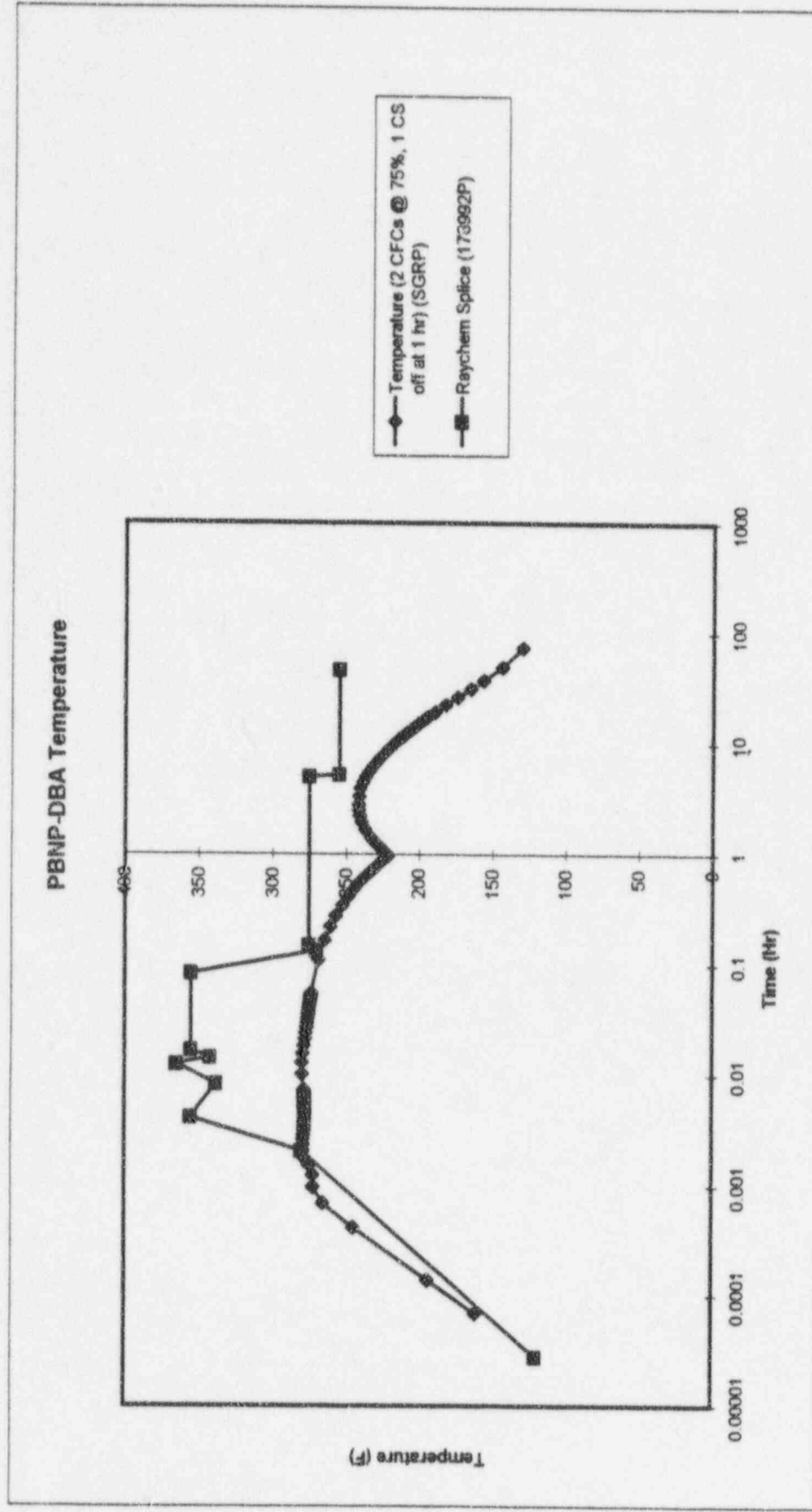
Margin

Yes

37.5%



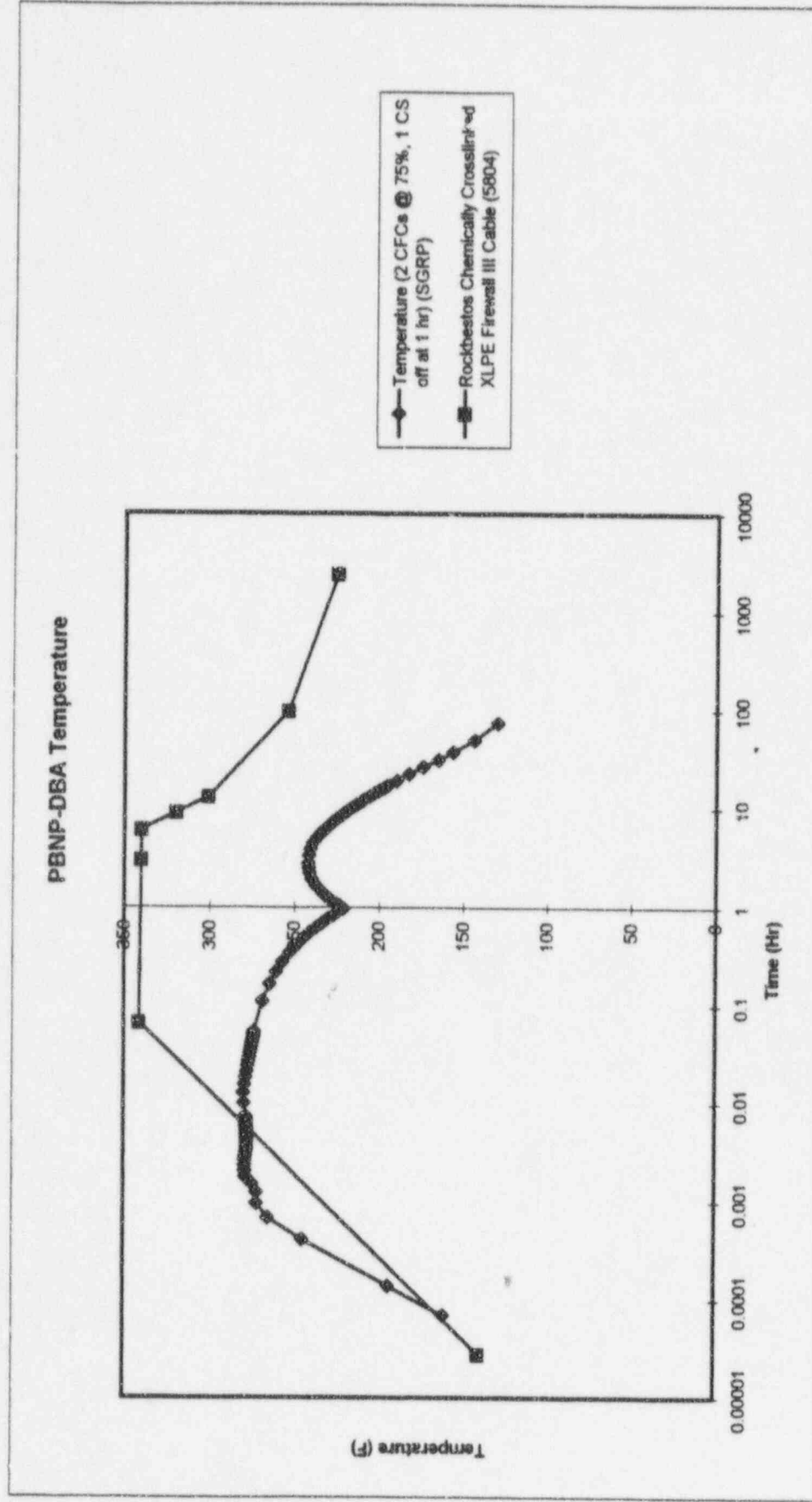
PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met		Yes	
Margin		37.5%	



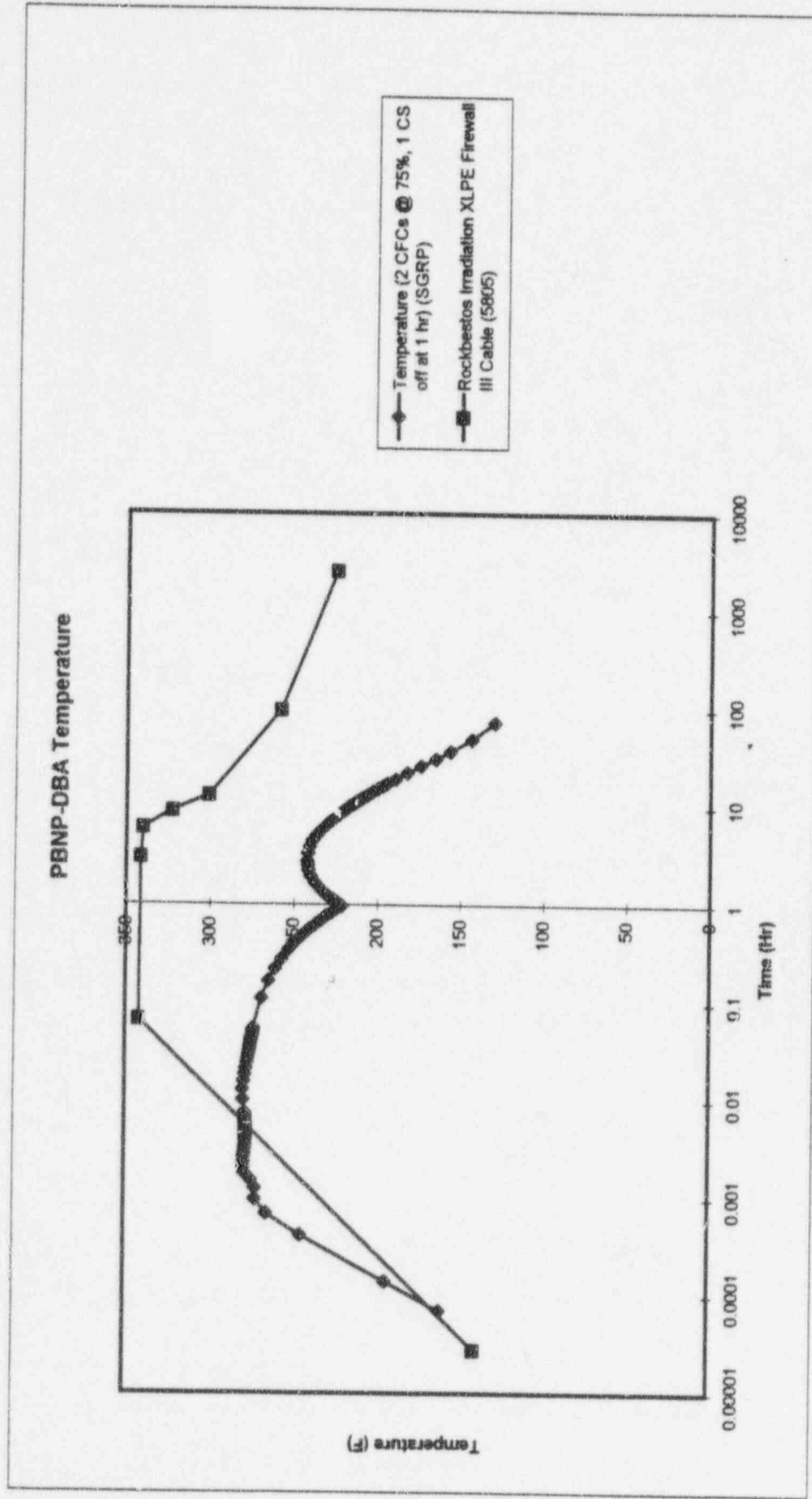
PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method	
Qualified Temperature (F)		365	Graphical	
Met		Yes		
Margin		30.4%		

Item 25.

PBNP-DBA-Temp-Rockbestos(5804)

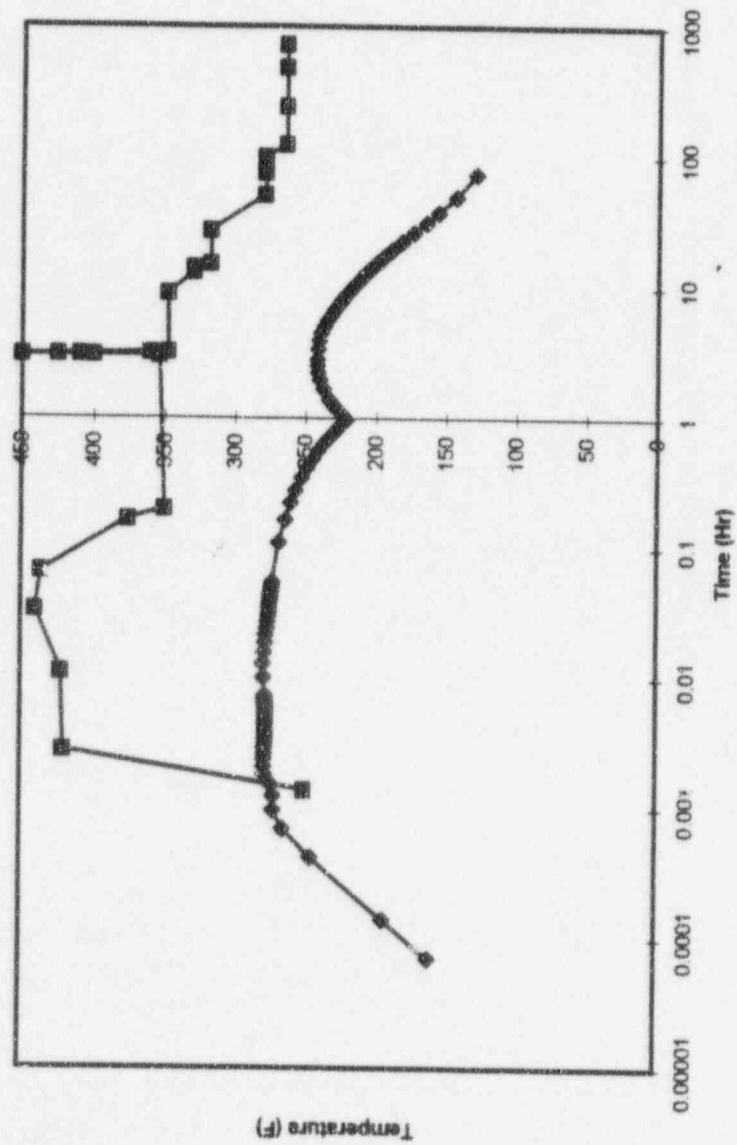


PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method	
Qualified Temperature (F)		341	Graphical	
Met		Yes		
Margin		21.8%		



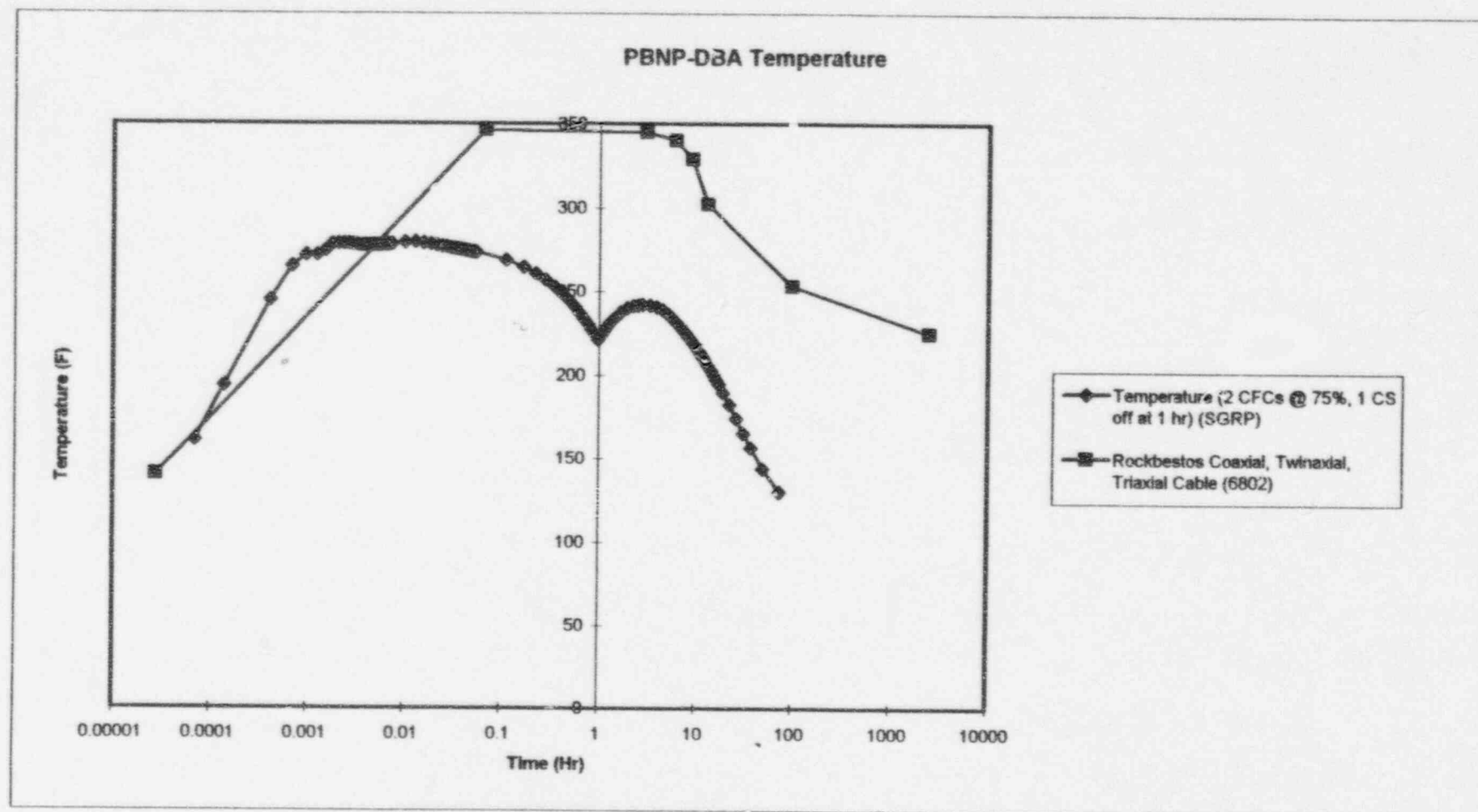
PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met			
Margin			
		22.1%	

PBNP-DBA Temperature

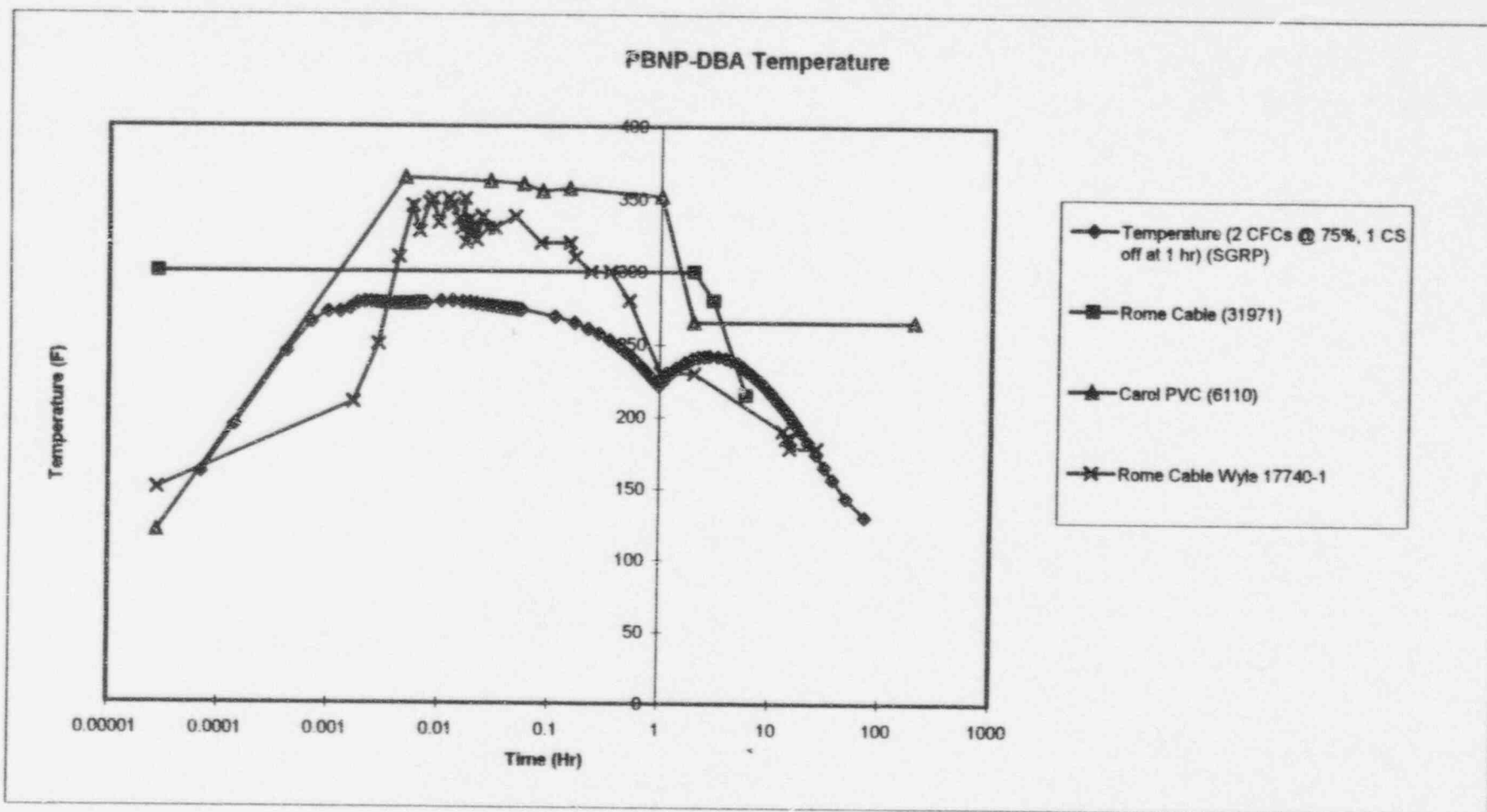


—◆— Temperature (2 CFCs @ 75%, 1 CS off at 1 hr) (SGRP)
—■— ASCO SOV (AQR-67368)

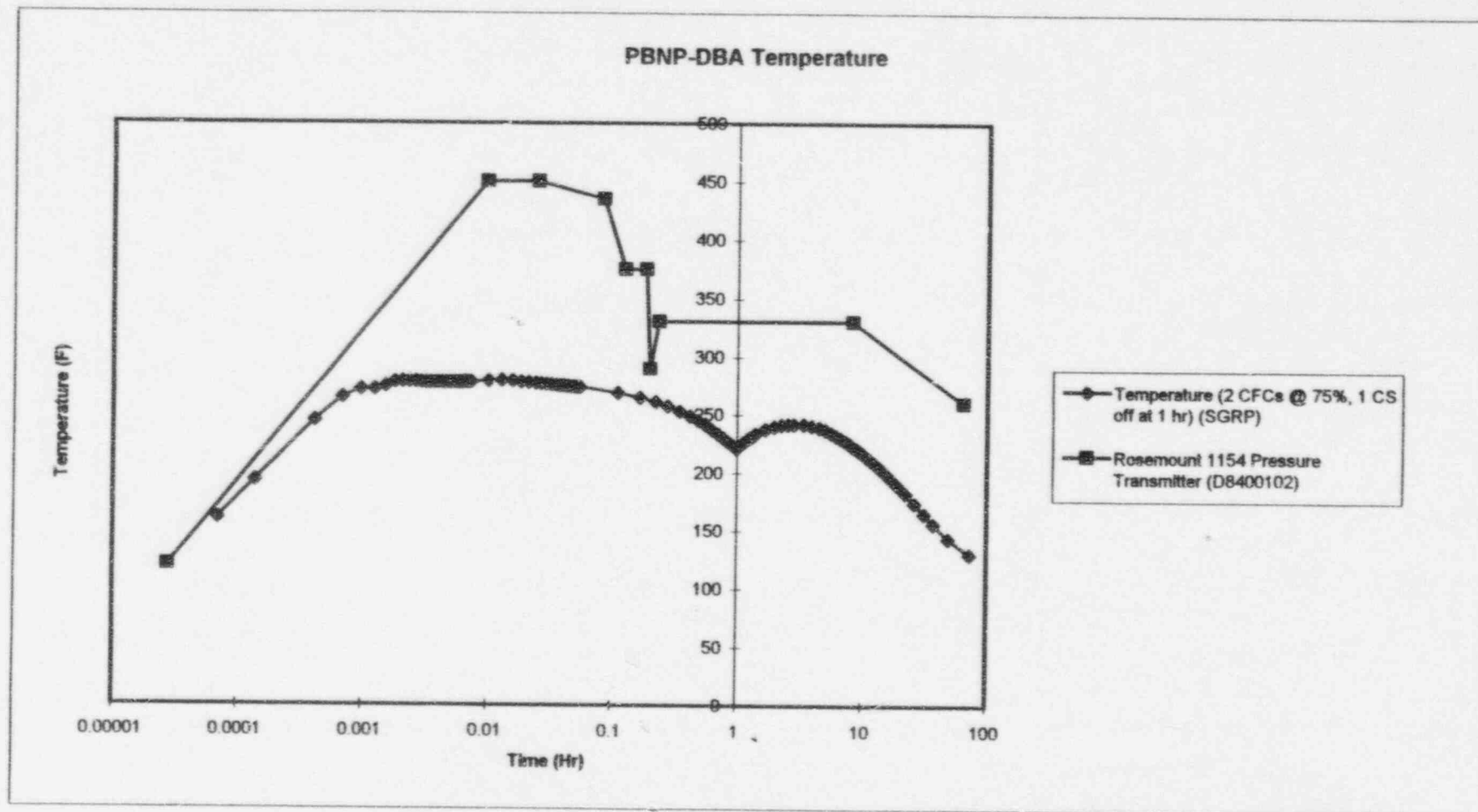
PENP Temperature Requirement (F) :		280	Degradation Equivalency Method Graphical
Qualified Temperature (F)		450	
Met		Yes	
Margin		60.7%	



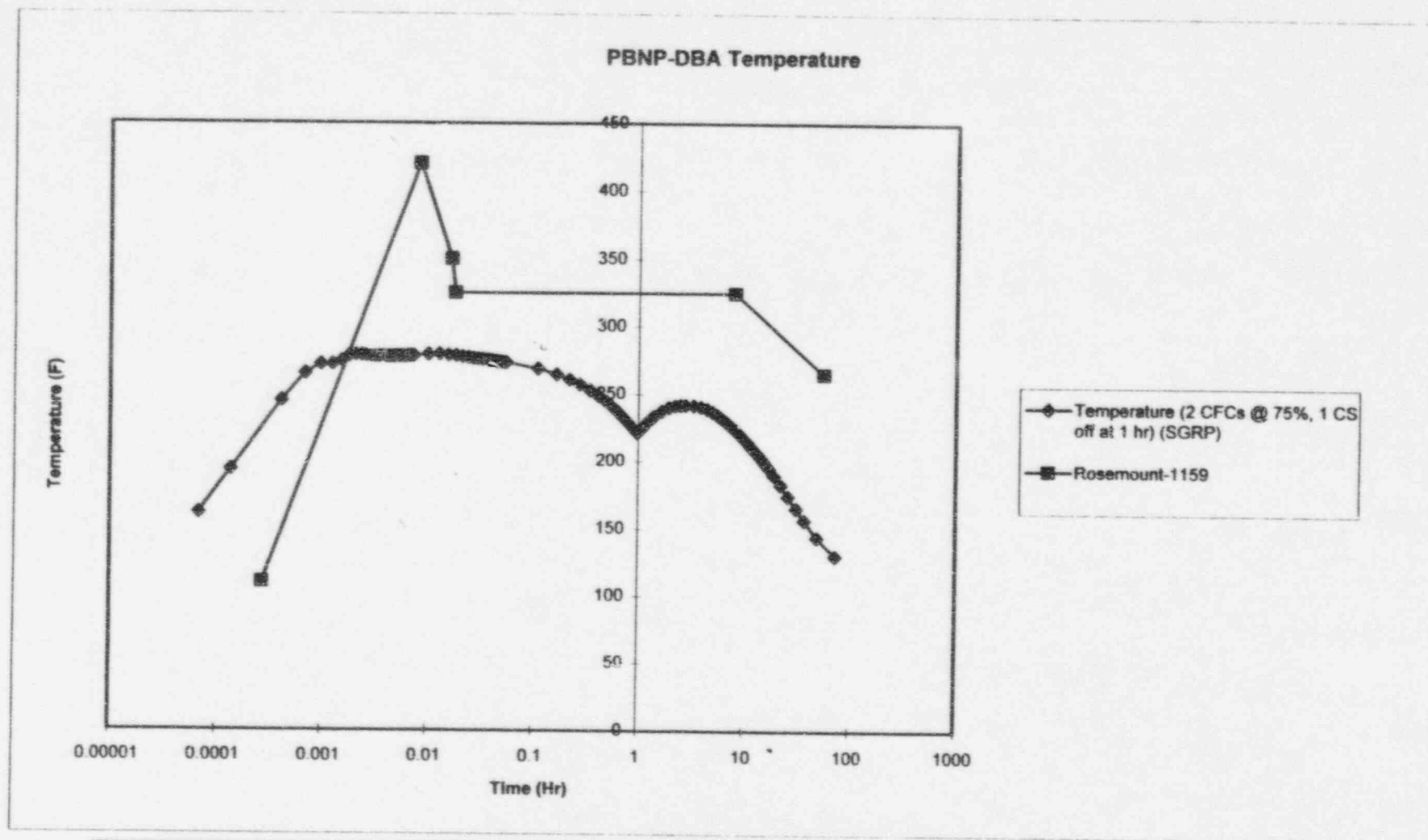
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	346	
Met	Yes	
Margin	23.6%	
		Graphical



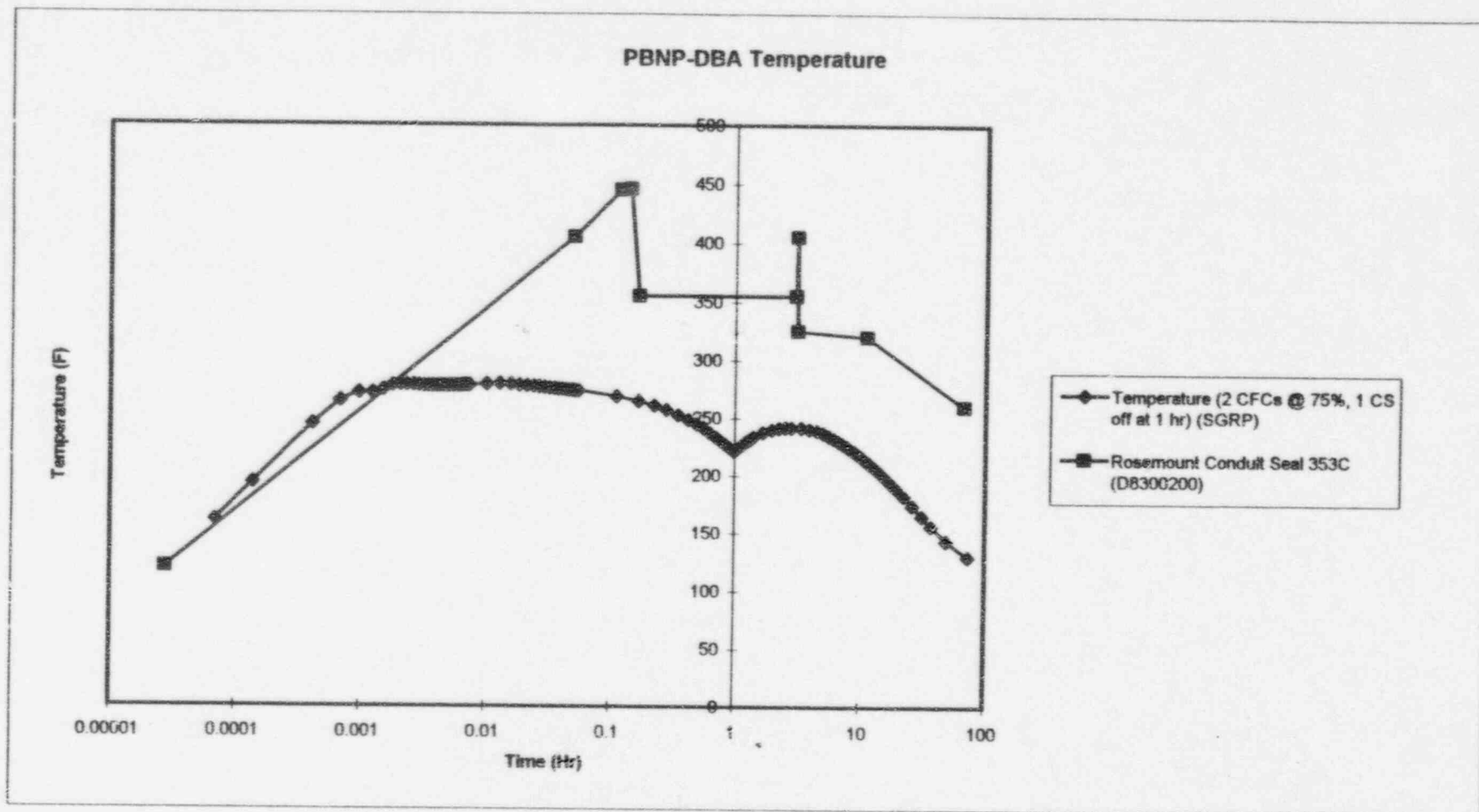
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical and Analytical
Qualified Temperature (F)	300	
Met	Yes	
Margin	7.1%	



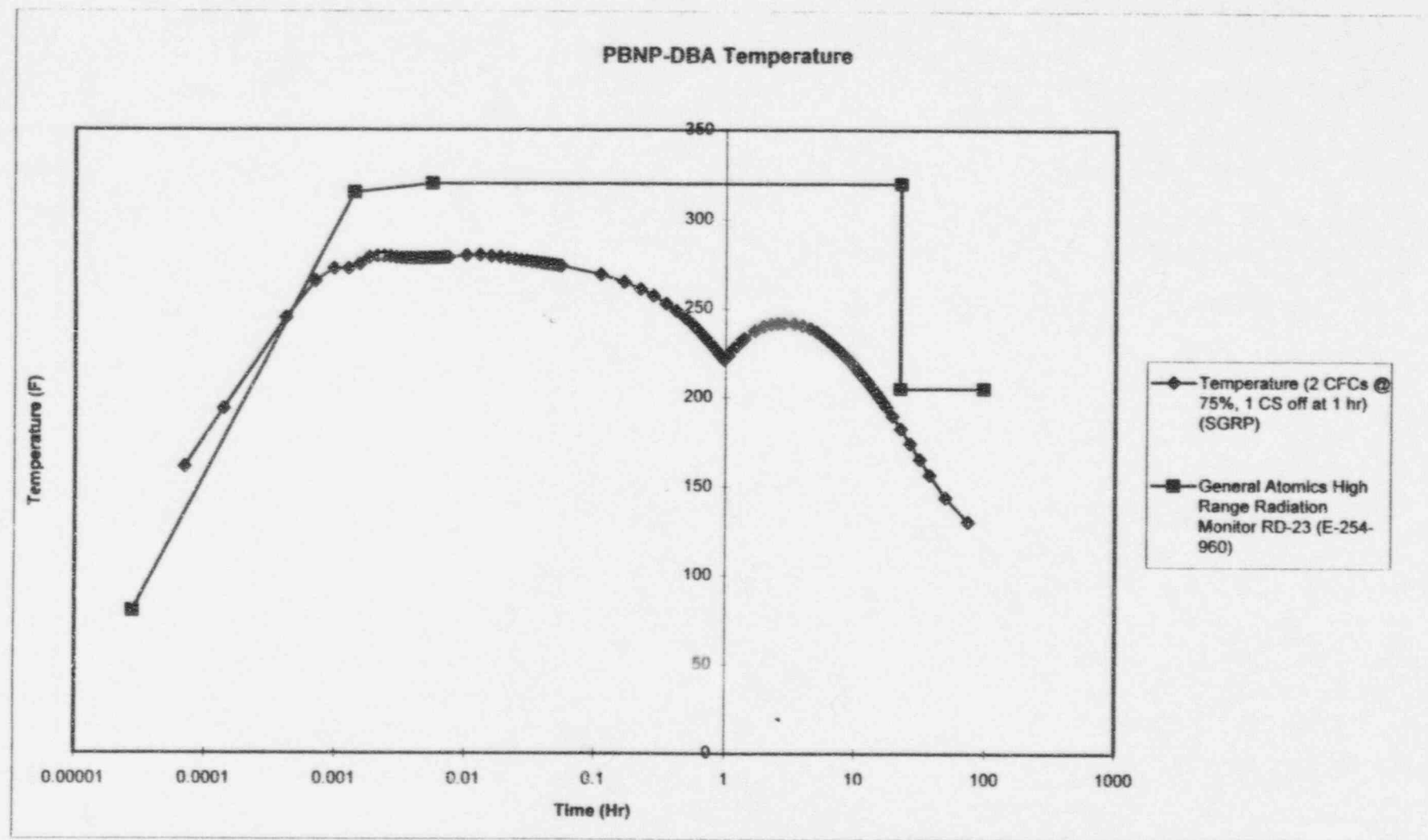
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	450	
Met	Yes	
Margin	60.7%	
		Graphical



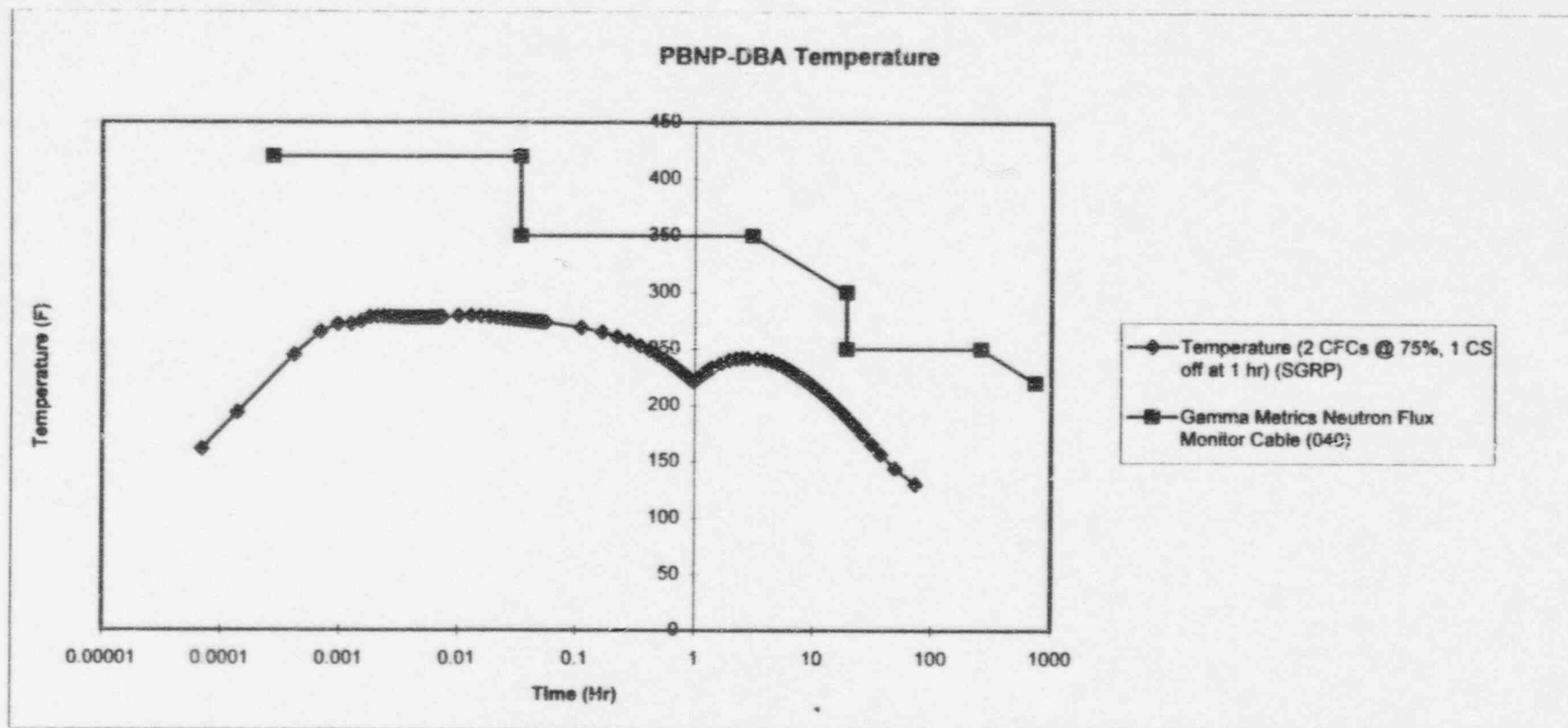
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	420	
Met	Yes	Graphical
Margin	50.0%	



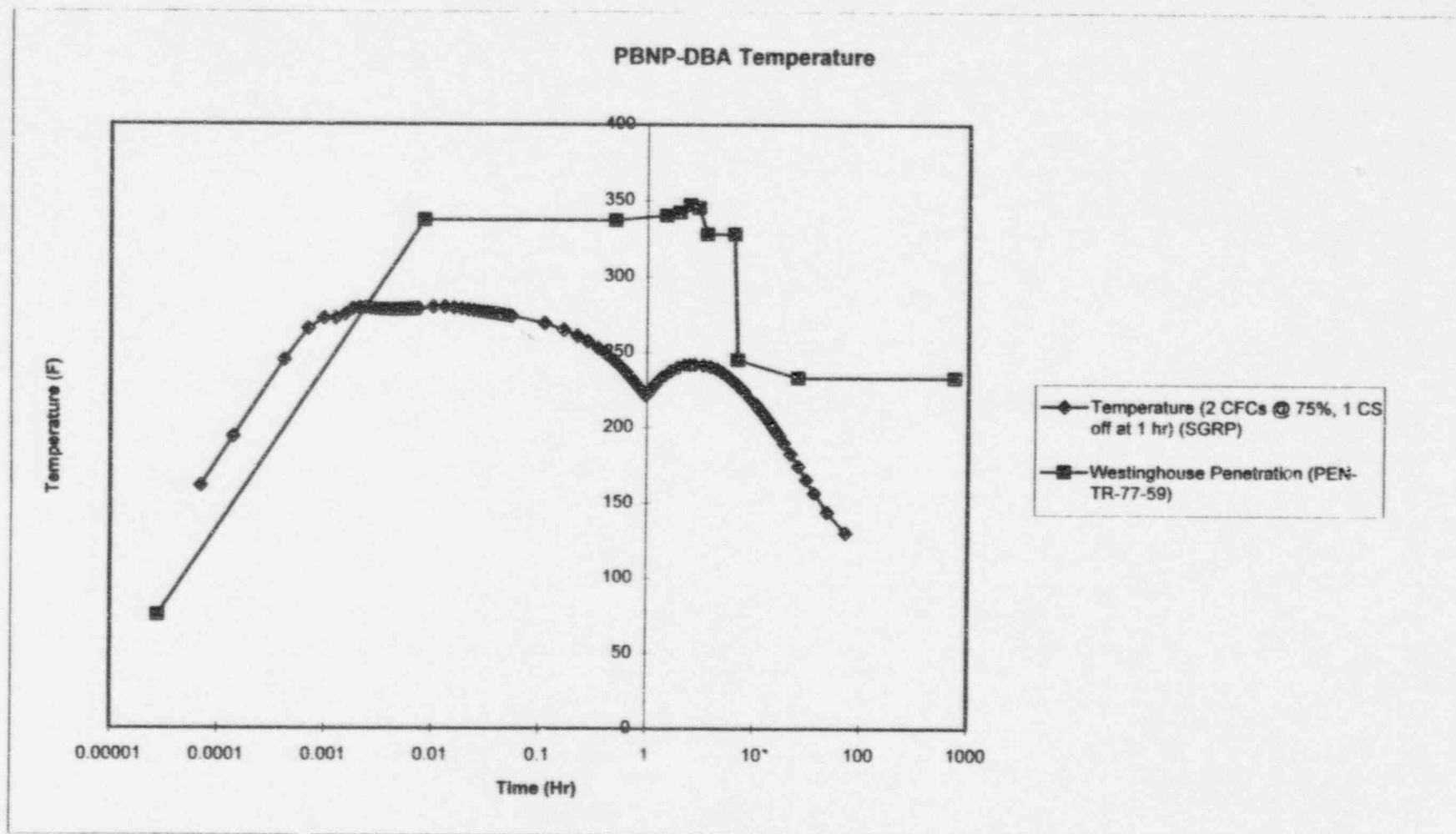
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	446	
Met	Yes	
Margin	59.3%	
		Graphical



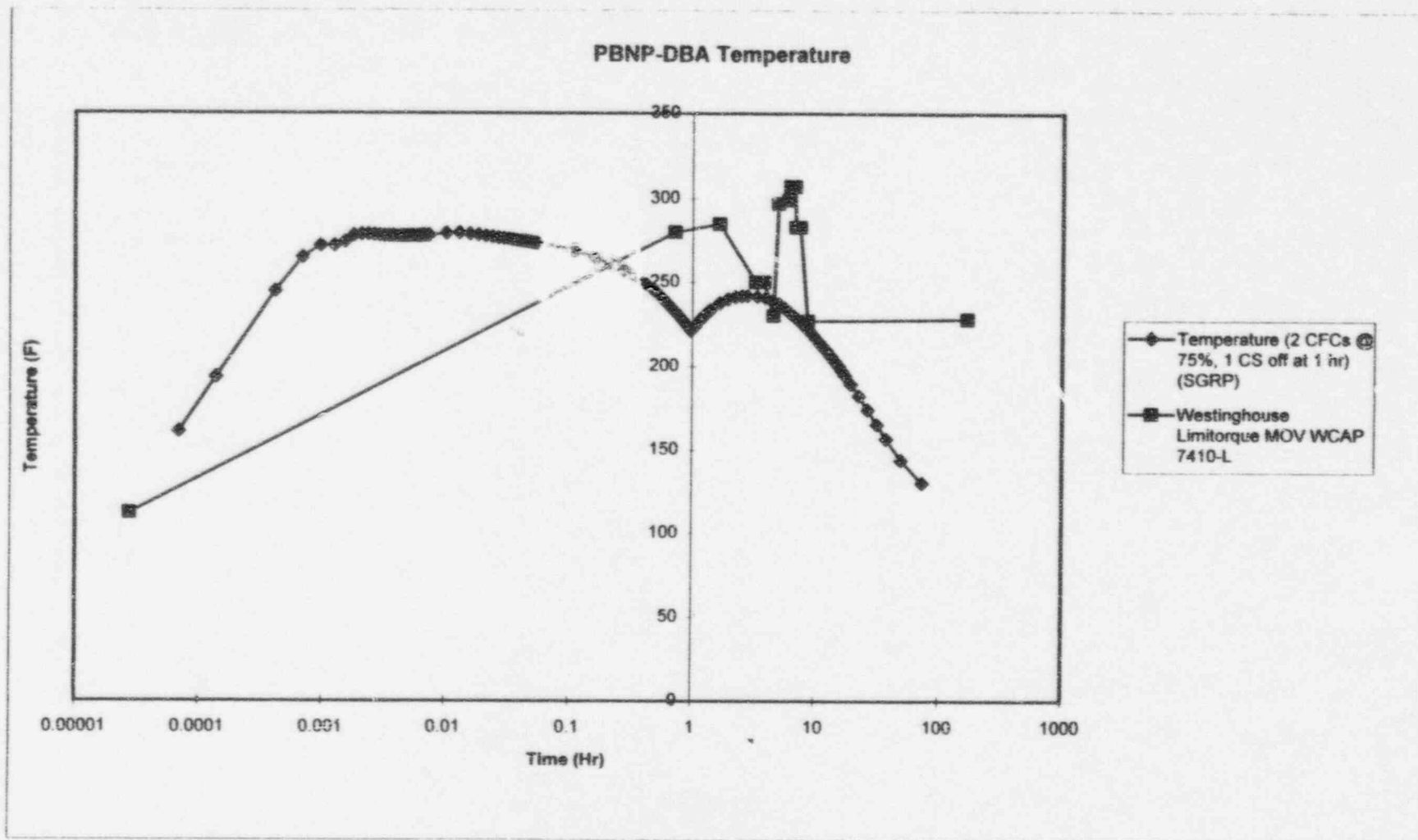
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	320	
Met	Yes	
Margin	14.3%	



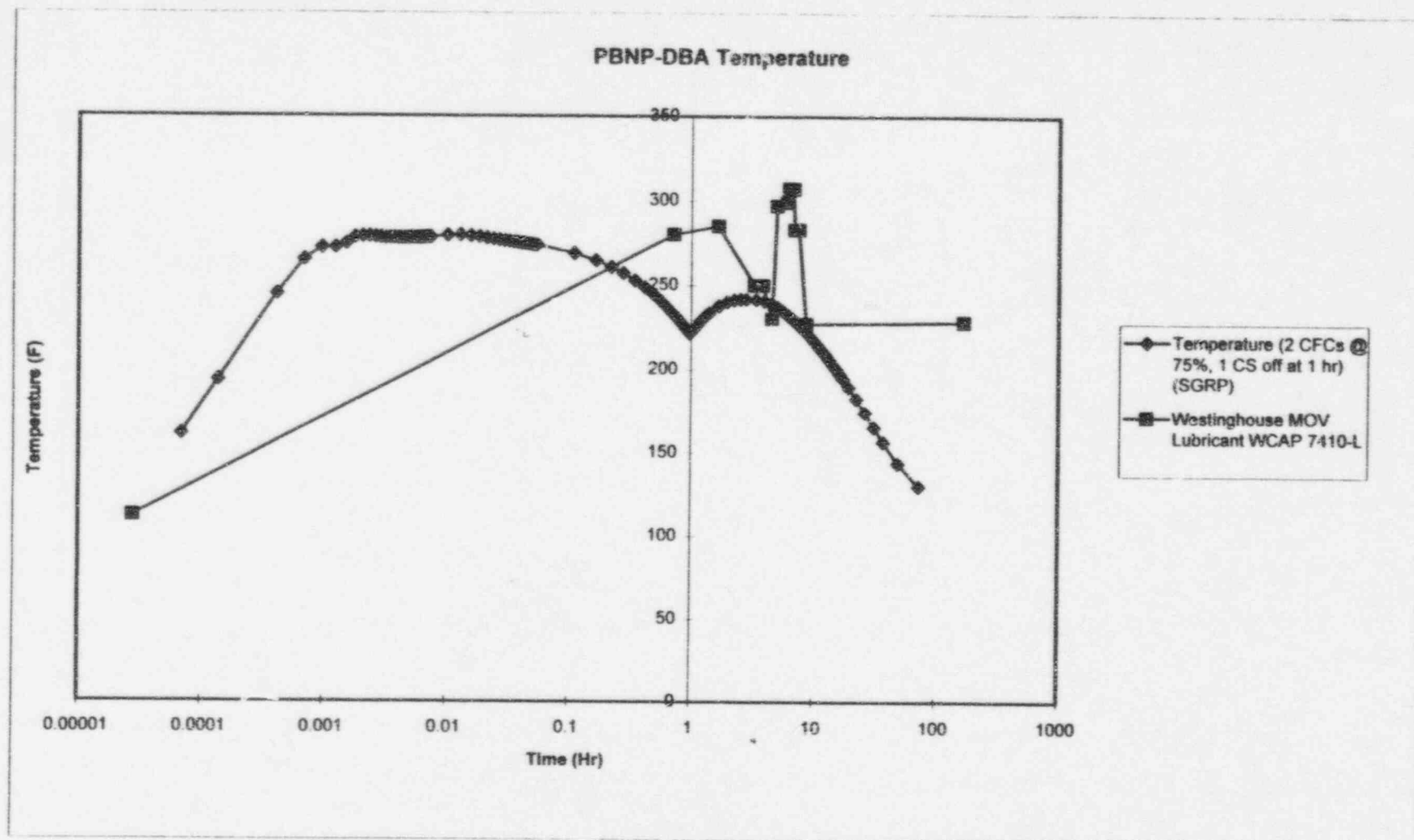
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	420	
Met	Yes	
Margin	50.0%	



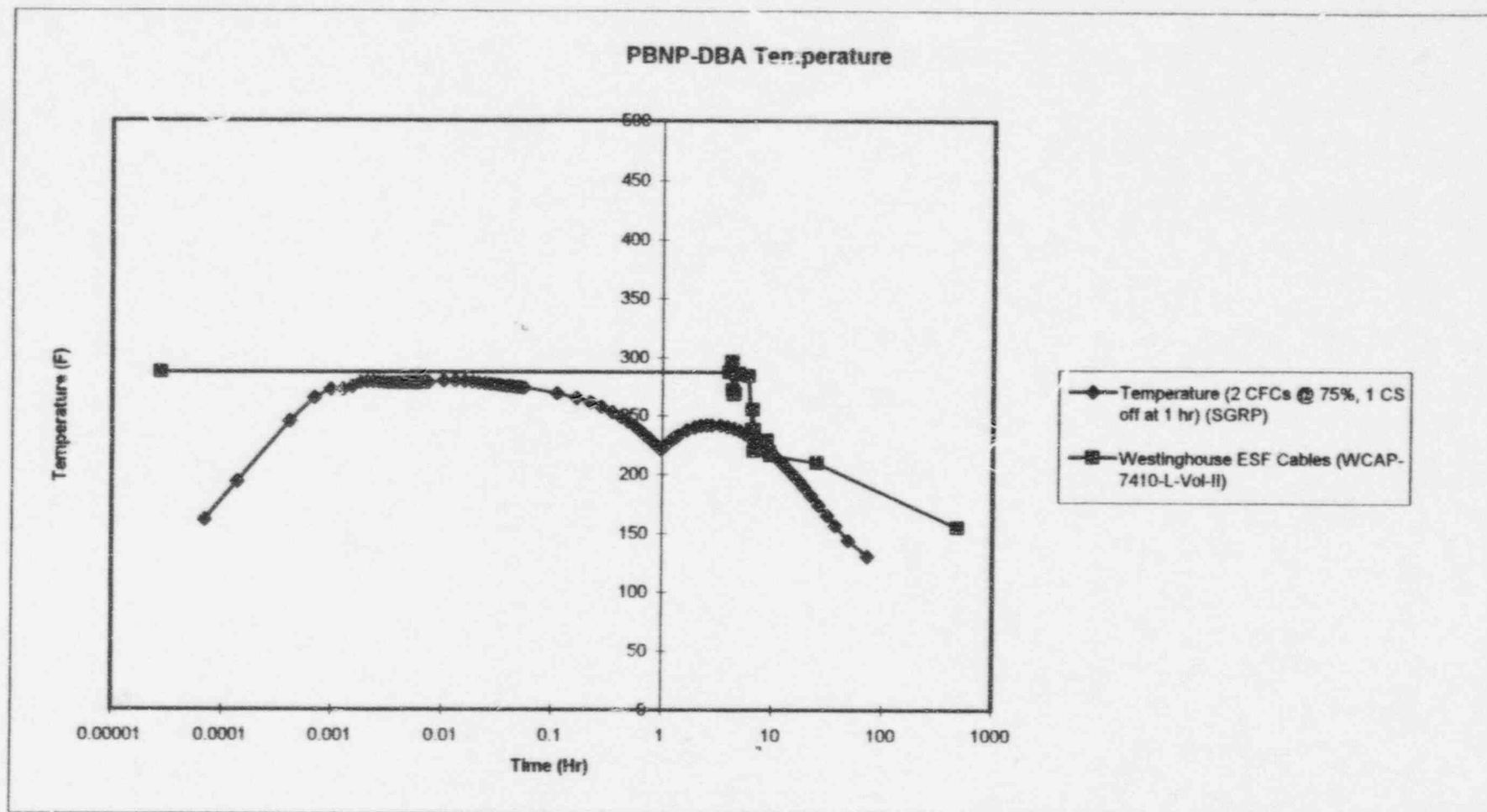
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	347	
Met	Yes	
Margin	23.9%	
		Graphical



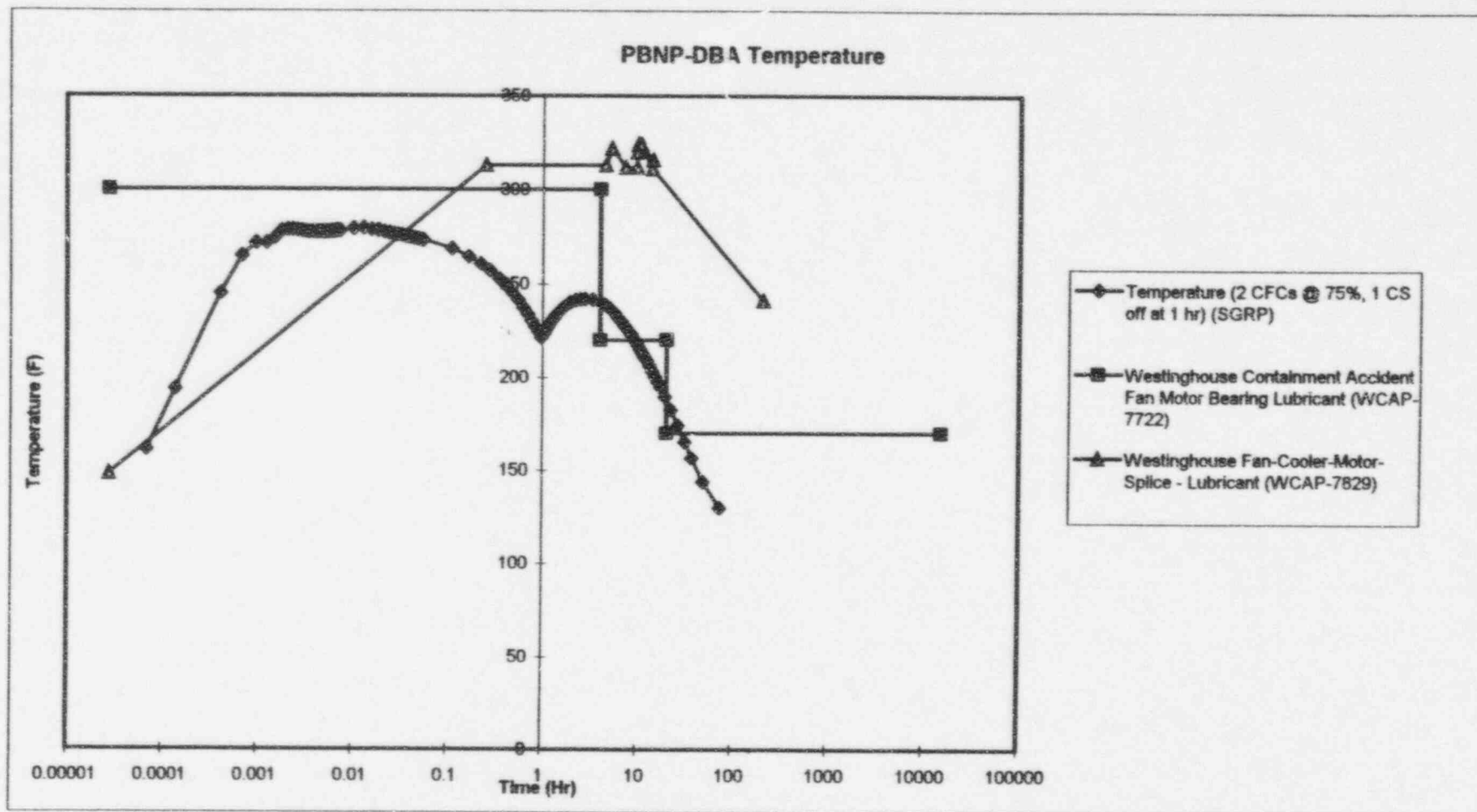
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	307	
Met	Yes	Graphical
Margin	9.6%	



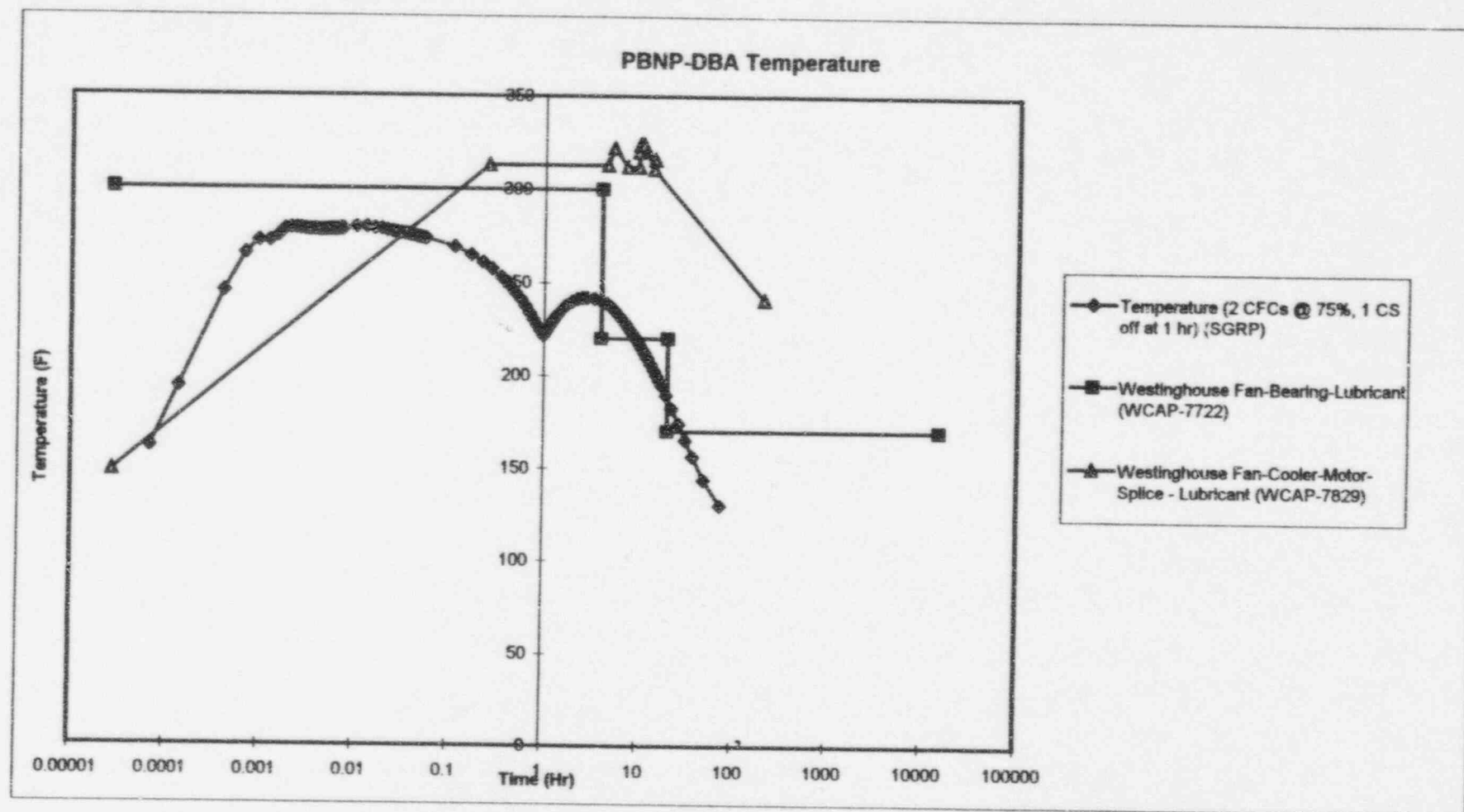
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	307	
Met	Yes	
Margin	9.6%	



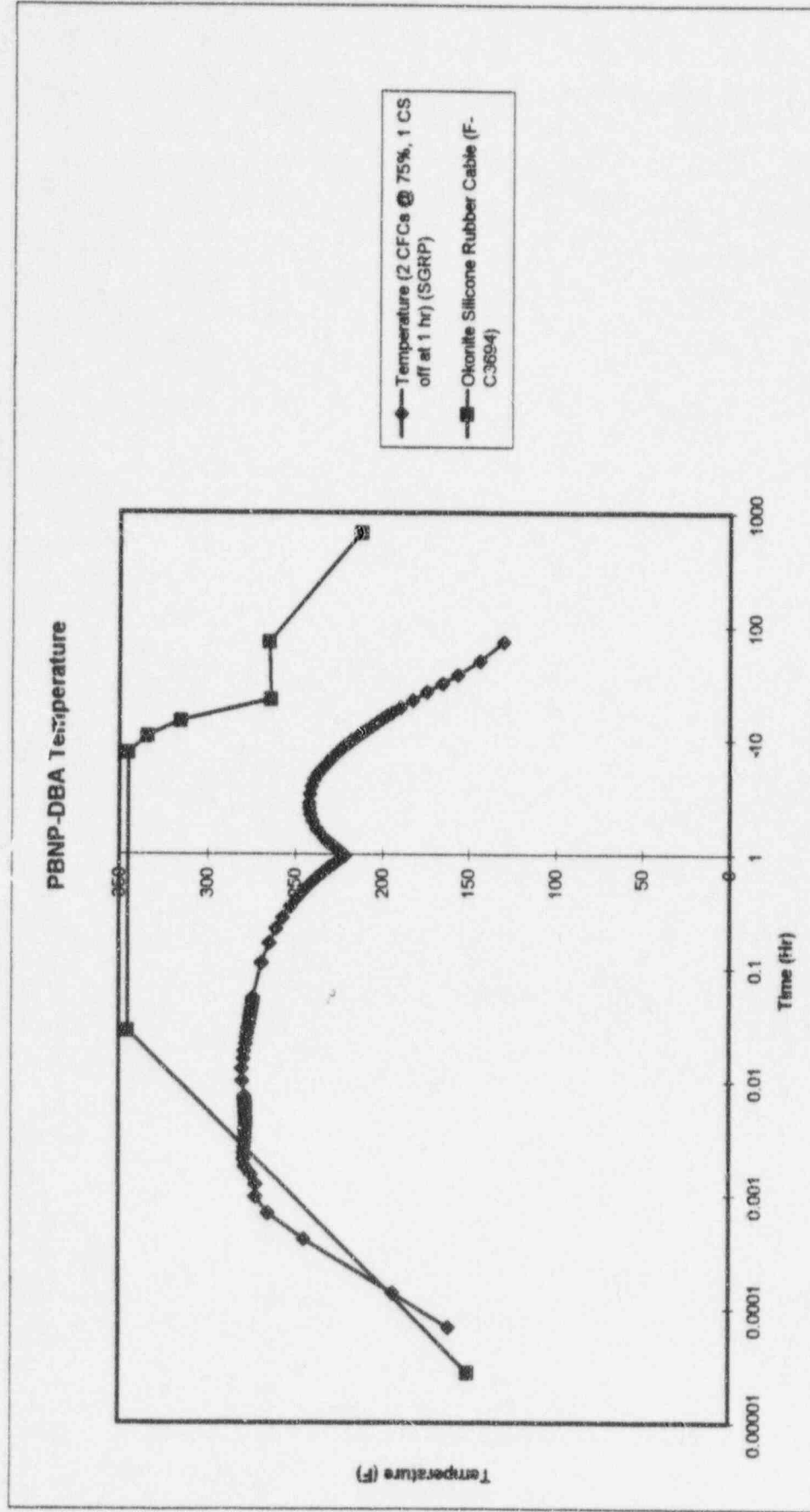
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	296	
Met	Yes	
Margin	5.7%	
		Graphical



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	324	
Met	Yes	Graphical
Margin	15.7%	Westinghouse WCAP-7829 is bounding.



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	324	
Met	Yes	Graphical
Margin	15.7%	Westinghouse WCAP-7829 is bounding.



PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met	Yes		
Margin	23.2%		

TEST VS REQUIREMENTS CALCULATION

Item Description:

CALCULATION INPUT

Activation Energy: 0.7800

Aging Temperature: 200.00 F

ACCIDENT REQUIREMENTS

Plant Name: POINT BEACH 2ND

Zone Name: CS OFF @ 1 HR

TIME	UNITS	STARTING TEMPERATURE	UNITS	ENDING TEMPERATURE	UNITS
150.00	S	221.30	F	223.60	F
250.00	S	223.60	F	226.20	F
250.00	S	226.20	F	228.40	F
250.00	S	228.40	F	230.30	F
250.00	S	230.30	F	231.90	F
250.00	S	231.90	F	233.30	F
1000.00	S	233.30	F	237.50	F
1000.00	S	237.50	F	240.00	F
1000.00	S	240.00	F	241.30	F
1000.00	S	241.30	F	241.80	F
1000.00	S	241.80	F	241.90	F
2000.00	S	241.90	F	241.60	F
2000.00	S	241.60	F	240.60	F
2000.00	S	240.60	F	239.00	F
2000.00	S	239.00	F	237.00	F
2000.00	S	237.00	F	234.60	F
2000.00	S	234.60	F	232.10	F
2000.00	S	232.10	F	229.80	F
2000.00	S	229.80	F	227.50	F
2000.00	S	227.50	F	225.30	F
2000.00	S	225.30	F	223.20	F

ACCIDENT TEST

Test Name: GEMS-DELAVAL (PART)

Report Number: WYLE 45700-2

TIME	UNITS	STARTING TEMPERATURE	UNITS	ENDING TEMPERATURE	UNITS
3880.00	S	300.00	F	300.00	F

ACCIDENT TEST...Continued

Test Name: GEMS-DELAVAL (PART)

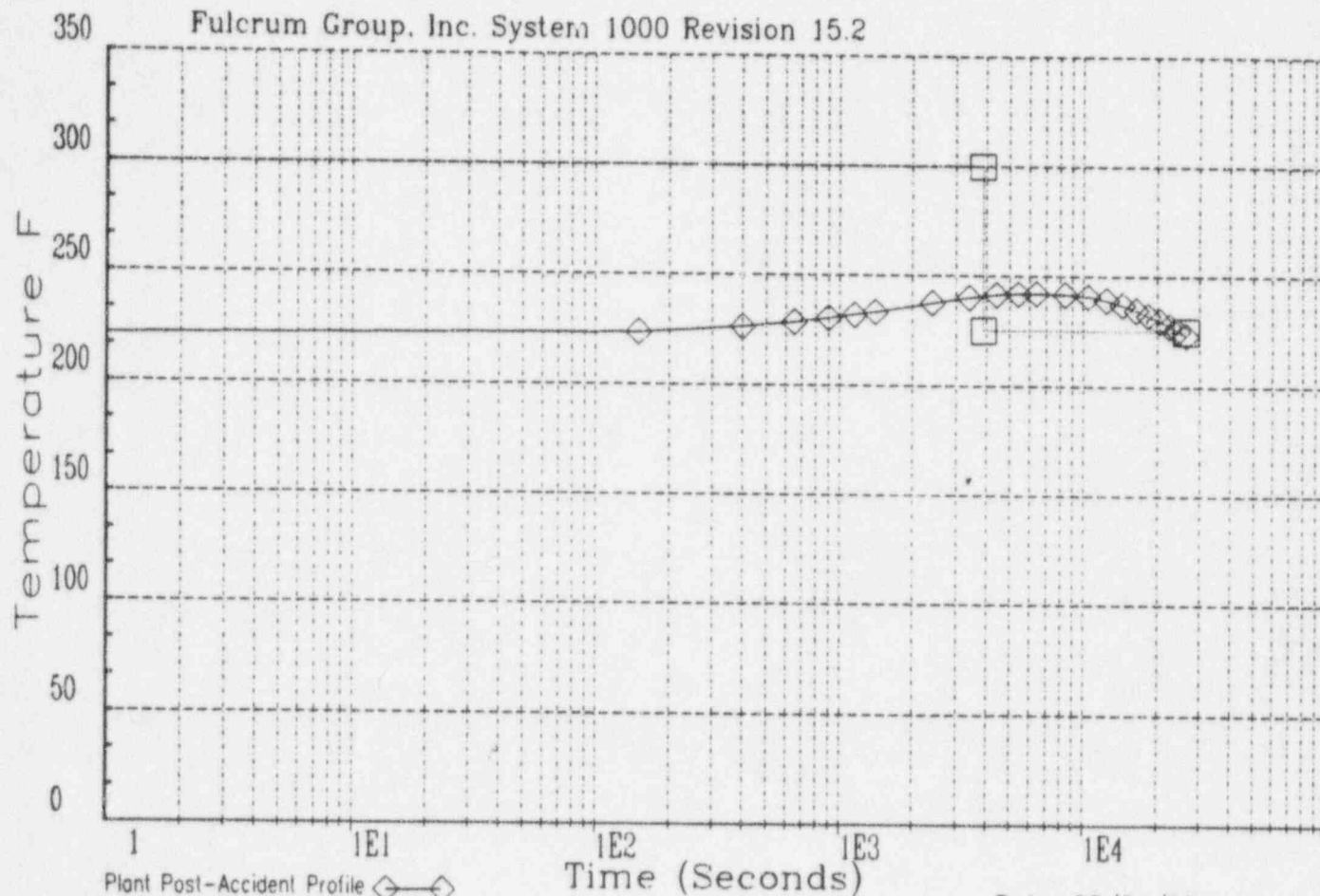
Report Number: WYLE 45700-2





TIME	UNITS	STARTING TEMPERATURE	UNITS	ENDING TEMPERATURE	UNITS
20.00	S	300.00	F	225.00	F
22500.00	S	225.00	F	225.00	F

CALCULATION RESULTS: 63.76%

Prepared By: Marge B. BauerDate: 2-11-97Reviewed By: Thomas A. PerryDate: 02/11/97

Fulcrum Group, Inc. System 1000 Revision 15.2



Plant Post-Accident Profile  
 Test Post-Accident Profile  

Minimum Margin: 63.76 %

Item Description:

Date: 02/04/97

Time: 17:44:52

TEST VS REQUIREMENTS CALCULATION

Item Description: Rome Cable in Wyle 17740-1

CALCULATION INPUT

Activation Energy: 1.3700

Aging Temperature: 200.00 F

ACCIDENT REQUIREMENTS

Plant Name: POINT BEACH

Zone Name: FIRST 26.22 HR

TIME		STARTING UNITS TEMPERATUR	ENDING UNITS TEMPERATUR	UNITS
0.25	S	161.20	F	161.20 F
0.25	S	161.20	F	193.80 F
1.00	S	193.80	F	244.90 F
1.00	S	244.90	F	265.30 F
1.00	S	265.30	F	272.20 F
2.00	S	272.20	F	274.60 F
1.00	S	274.60	F	278.40 F
1.00	S	278.40	F	279.00 F
12.50	S	279.00	F	279.80 F
160.00	S	279.80	F	279.80 F
7.00	S	279.80	F	273.90 F
10.00	S	273.90	F	273.60 F
200.00	S	273.60	F	268.90 F
200.00	S	268.90	F	264.70 F
653.00	S	264.70	F	264.70 F
250.00	S	264.70	F	248.70 F
1500.00	S	248.70	F	248.70 F
250.00	S	248.70	F	224.20 F
350.00	S	224.20	F	221.30 F
150.00	S	221.30	F	223.60 F
250.00	S	223.60	F	226.20 F
250.00	S	226.20	F	228.40 F
250.00	S	228.40	F	230.30 F
250.00	S	230.30	F	231.90 F
250.00	S	231.90	F	233.30 F
1000.00	S	233.30	F	241.90 F
8000.00	S	241.90	F	241.90 F
2000.00	S	241.90	F	239.00 F
2000.00	S	239.00	F	237.00 F
2000.00	S	237.00	F	234.60 F
2000.00	S	234.60	F	232.10 F
10000.00	S	232.10	F	232.10 F
2000.00	S	232.10	F	219.00 F

ACCIDENT REQUIREMENTS...Continued

Plant Name: POINT BEACH

Zone Name: FIRST 26.22 HR

TIME		STARTING UNITS TEMPERATUR	UNITS	ENDING TEMPERATUR	UNITS
10000.00	S	219.00	F	219.00	F
1.00	H	219.00	F	206.16	F
1.00	H	206.16	F	203.15	F
1.00	H	203.15	F	200.24	F
1.00	H	200.24	F	197.44	F
1.00	H	197.44	F	194.73	F
2.00	H	194.73	F	189.60	F
3.00	H	189.60	F	182.56	F
4.00	H	182.56	F	174.26	F

ACCIDENT TEST

Test Name: ROME EQ TEST (PART)

Report Number: WYLE 17740-1

TIME		STARTING UNITS TEMPERATUR	UNITS	ENDING TEMPERATUR	UNITS
6.00	S	150.00	F	210.00	F
4.00	S	210.00	F	250.00	F
5.00	S	250.00	F	310.00	F
5.00	S	310.00	F	315.00	F
3.00	S	345.00	F	328.00	F
5.00	S	328.00	F	347.00	F
2.00	S	347.00	F	350.00	F
4.00	S	350.00	F	334.00	F
8.00	S	334.00	F	350.00	F
3.00	S	350.00	F	346.00	F
6.00	S	346.00	F	336.00	F
4.00	S	336.00	F	330.00	F
4.00	S	330.00	F	350.00	F
1.00	S	350.00	F	320.00	F
5.00	S	320.00	F	336.00	F
5.00	S	336.00	F	328.00	F
5.00	S	328.00	F	322.00	F
10.00	S	322.00	F	338.00	F
10.00	S	338.00	F	330.00	F
15.00	S	330.00	F	330.00	F
60.00	S	330.00	F	338.00	F
120.00	S	338.00	F	320.00	F
240.00	S	320.00	F	320.00	F
70.00	S	320.00	F	310.00	F

ACCIDENT TEST...Continued

Test Name: ROME EQ TEST (PART)

Report Number: WYLE 17740-1

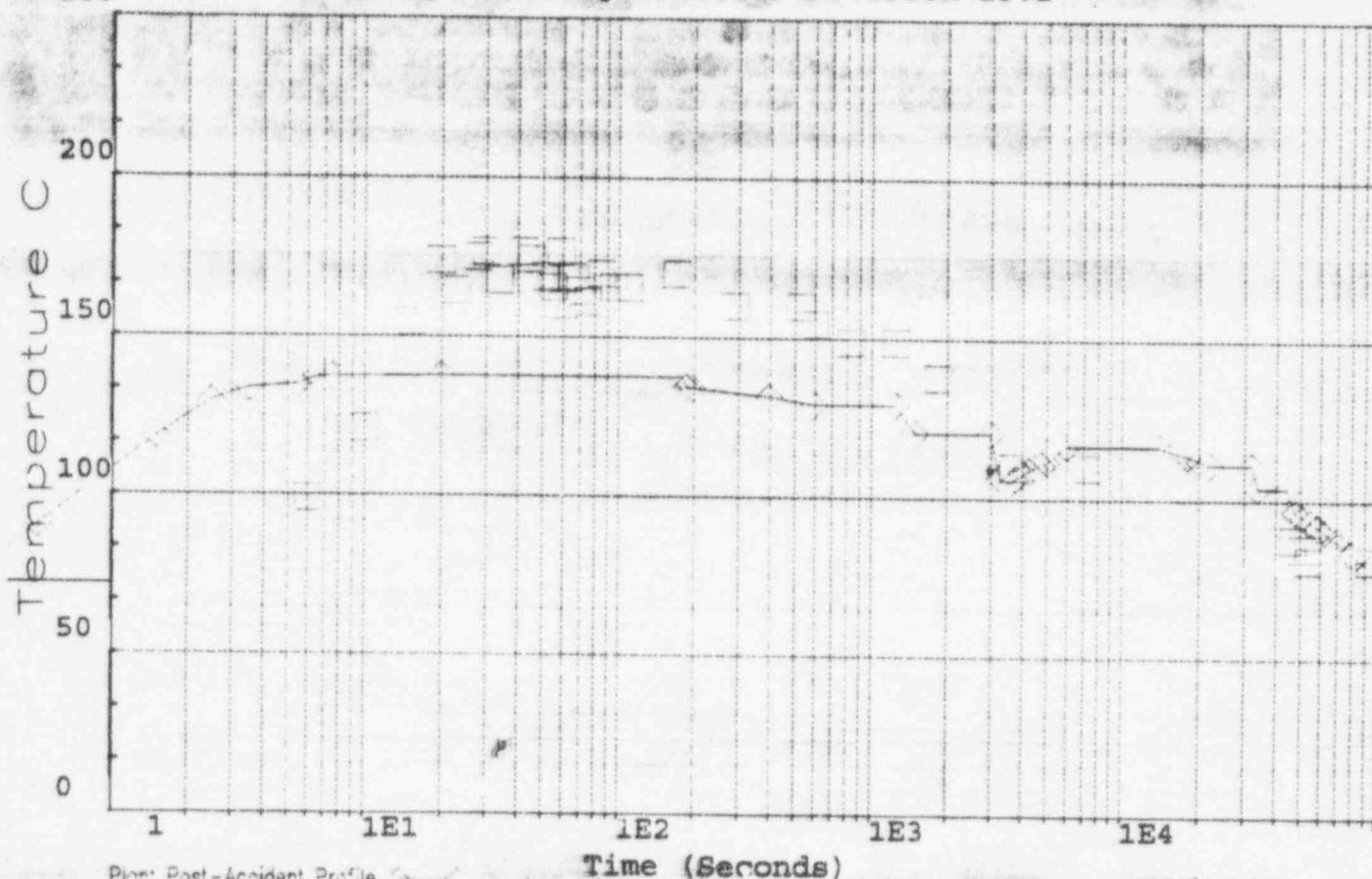
TIME	UNITS	STARTING	UNITS	ENDING	UNITS
		TEMPERATURE		TEMPERATURE	
230.00	S	310.00	F	300.00	F
420.00	S	300.00	F	300.00	F
600.00	S	300.00	F	280.00	F
1800.00	S	280.00	F	230.00	F
1.00	H	230.00	F	230.00	F
30650.00	S	230.00	F	190.00	F
1.00	H	190.00	F	185.00	F
1.00	H	185.00	F	185.00	F
100.00	S	185.00	F	178.00	F
40200.00	S	178.00	F	178.00	F

CALCULATION RESU130.86%

Prepared By: Marge Bruce Date: 2-14-97Reviewed By: Thomas C. Perry Date: 02/14/97

250

Fulcrum Group, Inc. System 1000 Revision 15.2



Plant Post-Accident Profile

Time (Seconds)

Test Post-Accident Profile

Date: 02/14/97

Time: 14:50:30

Minimum Margin: 130.86 %

Item Description: Rome Cable in Wyle 17740-1

March 3, 1997

- 2 -

If there are any questions regarding the information presented in this meeting summary, please contact Linda Gundrum at (301) 415-1380.

Orig. signed by

Linda L. Gundrum, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-265
and 50-301

Attachments: 1. Attendance List
2. Degradation Equivalency
3. Evaluation of EQ Impact

cc w/att: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 3, 1997

LICENSEE: Wisconsin Electric Power Company

FACILITY: Point Beach Nuclear Plant, Units 1 and 2

SUBJECT: SUMMARY OF FEBRUARY 24, 1997, MEETING ON ENVIRONMENTAL QUALIFICATION
OF EQUIPMENT BASED ON REVISED CONTAINMENT RESPONSE INCLUDED IN
CHANGE REQUEST 192

On February 24, 1997, NRR staff members met in Rockville, Maryland, with representatives of Wisconsin Electric Power Company (WEPCO) and GLS Enterprises, Inc., to gain a better understanding of the licensee's basis for concluding that the ability of environmentally qualified equipment inside containment to perform its function following a loss-of-coolant accident is not affected by the revised containment profiles. A list of attendees is included as Attachment 1.

The licensee discussed the concept of degradation equivalency (Attachment 2) and presented its evaluation of equipment qualification impact resulting from the revised containment temperature profile (Attachment 3). Degradation equivalency was presented as a method of equating a design-basis equipment test profile to a design-basis equipment requirement. The concept of degradation equivalency as expressed in the presentation is not defined and was not accepted by the NRC staff. The staff stated that the Arrhenius methodology is acceptable. However, during transient conditions, the staff contended that no basis exists to correlate tests at lower temperatures to conditions at higher temperatures for a shorter period of time. In addition, the staff stated that acceptable criteria for documenting that equipment may not be needed for the entire duration of an accident should be based on criteria specified in NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," Revision 1.

WEPCO's presentation provided sufficient information for the majority of equipment. WEPCO agreed to submit further information on Gems level transmitters (Item 15); Rome cable (Item 28); and containment accident fan motor bearings, motor cable and cable splices, and lubricant (Items 37 and 38). WEPCO stated that the lubricant similarity will be based on the chemical composition of the original lubricant used in the qualification tests as compared to the chemical composition of the manufacturer's currently recommended lubricant.

If there are any questions regarding the information presented in this meeting summary, please contact Linda Gundrum at (301) 415-1380.

Linda L. Gundrum

Linda L. Gundrum, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-266
and 50-301

Attachments: 1. Attendance List
2. Degradation Equivalency
3. Evaluation of EQ Impact

cc w/att: See next page

Wisconsin Electric Power Company

Point Beach Nuclear Plant
Unit Nos. 1 and 2

cc:

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Shaw, Pittman, Petts & Trowbridge
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Washington, DC 20037

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Chief Nuclear Officer
Wisconsin Electric Power Company
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Milwaukee, WI 53201

Mr. Scott A. Patulski
Site Vice President
Point Beach Nuclear Plant
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6610 Nuclear Road
Two Rivers, Wisconsin 54241

Mr. Ken Duveneck
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Chairman
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6612 Nuclear Road
Two Rivers, Wisconsin 54241

Ms. Sarah Jenkins
Electric Division
Public Service Commission of Wisconsin
P.O. Box 7854
Madison, Wisconsin 53707-7854

ATTENDANCE LIST

George Hubbard	Plant Systems Branch, NRC (part time)
Harold Walker	Plant Systems Branch, NRC
Saba Saba	Electrical Engineering Branch, NRC
Dale Thatcher	Electrical Engineering Branch, NRC
John Knox	Electrical Engineering Branch, NRC
Frank Ashe	Electrical Engineering Branch, NRC
Linda Gundrum	Project Manager for Point Beach
John Hannon	Project Director, PD 3-1 (part time)
Tom Malanowski	WEPCO
John Hinck	WEPCO
James Gleason	GLS Enterprises, Inc.

GLS Enterprises, Inc.
Degradation Equivalency

It is necessary to utilize Degradation Equivalency for many reasons, such as :

- Original Qualification Test was performed in two transients. IEEE 323-74's appendix showed DBE Test profile with two transients. Thus many qualification tests were performed with a high temperature, pressure and steam transient, followed by a cool down period and a repeat of the transient.
- Original Qualification Tests had more than two transients. In some cases test anomalies caused the DBE simulation to be repeated more than twice, typically due to anomalies in testing.
- Generic qualification testing has been performed in which a specific plant requirement was demonstrated by testing to worst case DBE's representing many nuclear plants and the test DBE does not exactly follow each plants DBE requirements.
- Postulated Plant DBE's have changed since the original qualification requirements. Plant requirements change due to tech spec changes. These often result in new postulated DBE requirements. Since 10CFR50.49 allows partial type testing to demonstrate qualification, rather than requiring new testing, Degradation Equivalency allows comparisons to the new requirements.

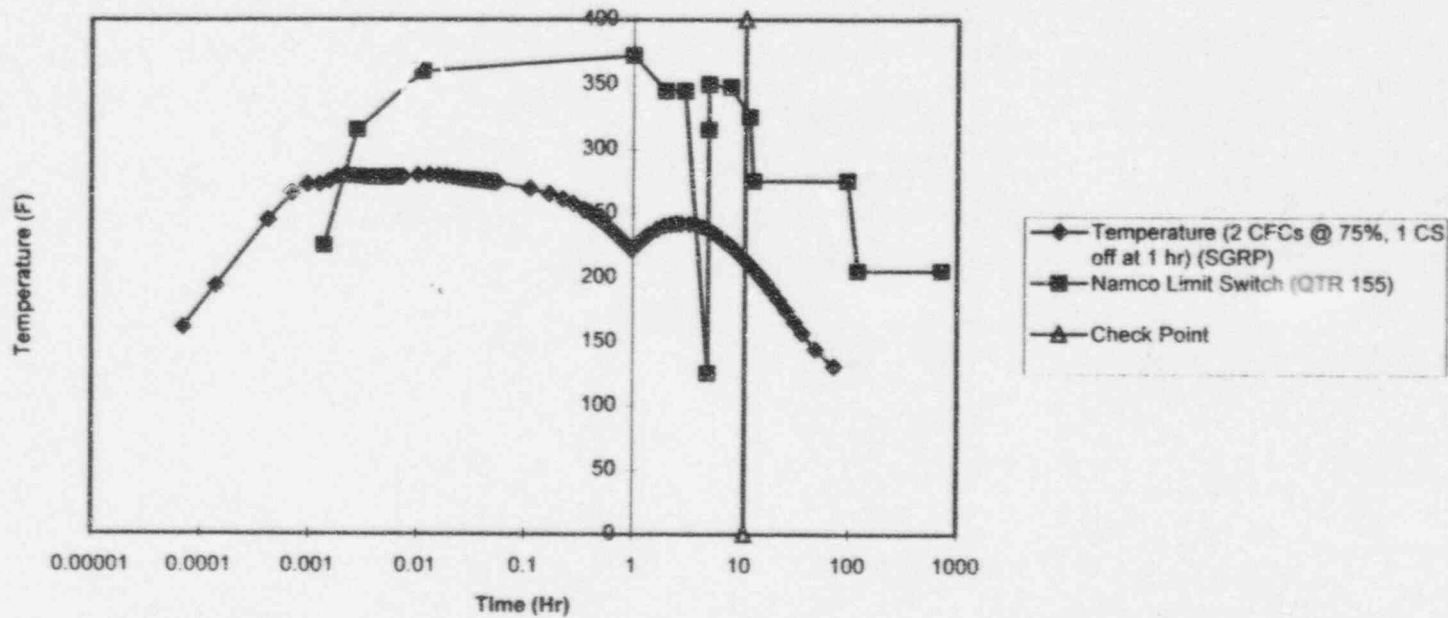
Degradation Equivalency is a conservative approach to comparing DBE requirements to DBE test conditions. Example 1 shows a two transient test for Namco Limit Switches (QTR-155). The first transient was over after approximately 3 hours and the cool down period was approximately 2 hours prior to the start of the second transient. Thus the period between 3 and 5 hours appears to not envelope the DBA requirement. A better depiction of the DBE simulation is to use the "Cumulative Time at Temperature" technique. In this technique, the transient at the 3 hour point is not plotted and instead, the continuation of the second transient is plotted after the first transient and the period of the cool down period is subtracted from the elapsed time. Example 2 shows the same graph with the total Time at Temperature technique.

Example 2 is conservative since it removes the cool down period and the resulting line moves closer to the requirement, as can be seen from the check point noted on Examples 1 and 2. The check point in example 1 is at the 11 hour point and shows that the temperature is approximately 340 °F. In Example 2, the same 11 hour point now shows that the temperature is approximately 275 °F. Thus the cumulative time at temperature technique provides a more conservative representation of the DBE Test Profile, when the profile contains cool down periods which are less than the requirement.

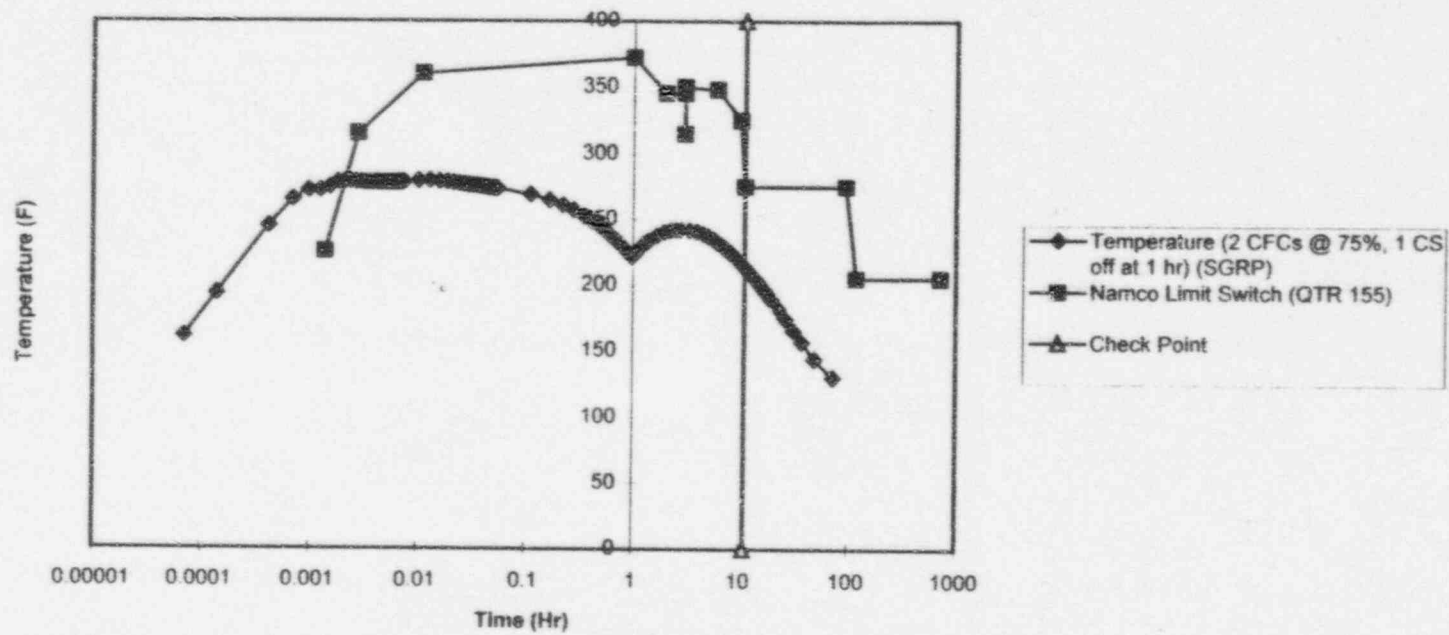
Therefore, the graphical representation of Degradation Equivalency, using the Total Time at Temperature technique allows comparisons between DBE requirements and DBE simulations. When the Degradation Equivalency shows that the test DBE envelopes the DBE requirement, it is demonstrated that the testing exceeds the requirement.

GLS Enterprises, Inc.
Degradation Equivalency

Example 1. PBNP-DBA Temperature



GLS Enterprises, Inc.
Degradation Equivalency



Example 2. Total Cumulative time at Temperature.

GLS Enterprises, Inc.

Evaluation of EQ Impact of Wisconsin Electric Power Company Technical Specification Change Request 192

GLS Enterprises, Inc.

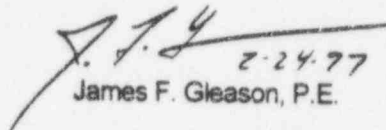
1819 Cross Creek Road

Huntsville, AL 35802-3972

Ph 205-881-9868

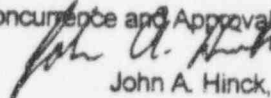
Fax 205-881-498

Email : glsir.c@traveller.com


2-24-97
James F. Gleason, P.E.

Date : 2-24-97

Concurrence and Approval


4/24/97
John A. Hinck,

Wisconsin Electric

Date : 2-24-97

GLS ENTERPRISES, INC.

Background

Wisconsin Electric Power Company has identified changes to the Design Basis Accident Conditions that are postulated based on the implementation of Technical Specification Change Request (TSCR) 192. The change results in a change to the DBA profile utilized in the Point Beach Nuclear Plant, Units 1 and 2 Environmental Qualification (EQ) Program, which is required to meet 10CFR50.49. It was recognized by Wisconsin Electric that the change to the DBA Profile could impact EQ equipment and an evaluation was performed. A Condition Report, CR 97-0242, was initiated. The CR documents the operability determination and establishes actions for final resolution.

Conclusion

All EQ equipment required to be reviewed due to changes in the DBA conditions as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification has been enhanced with new EQ reports and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA requirements.

Evaluation

The major elements of this evaluation were :

1. Identification of EQ Equipment to be evaluated for this change.
2. Evaluation Procedure
 - 2.1 Maximum DBA Temperature Evaluation
 - 2.2 Maximum DBA Pressure Evaluation
 - 2.3 DBA Temperature Profile Evaluation
 - 2.4 PBNP EQ Program Enhancement: In the evaluation, additional Qualification reports for similar cable to the Rome cable were located and are being incorporated into the PBNP EQ program.
 - Wyle Report 17740-1
 - Wyle Report 17732-1
 - Wyle Report 6110

1. Identification of EQ Equipment to be evaluated for this change.

The Point Beach EQ program identified that the following EQ equipment, Table 1, is required to be reviewed in this evaluation. This equipment list consists of all environmentally qualified equipment located inside of containment at PBNP.

Table 1. EQ Equipment Being Reviewed for TSCR 192

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
1	Westinghouse	Electrical Penetration Assembly	PEN-RLK-3-16-01
2	Rockbestos	Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	Conax	Electrical Penetration Assembly and Penetration Splices	IPS-1420
4	Conax	RTDs and Thermocouples	IPS-875
5	Conax	RTDs	IPS-796
6	Raychem	WCSF-N Splices	Wyle 58442-1
7	Westinghouse	Fan Cooler Motor, Thermalastic Epoxy Insulation, splices and lubricants	WCAP 7629
8	Gamma-Metrics	Neutron Flux Monitoring System	Report No. 010
9	Limitorque	Limitorque Valve Actuators	Limitorque Report B0058
10	Kerite Cable	Kerite HTK Insulated FR	Kerite 9/12/80 Report

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
		Jacketed Cable	
10A	Kerite Cable	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report
11	Namco	Namco EA-180 Limit Switches	Namco Report No. 105
12	Namco	Namco EA-180 Limit Switches	Namco Report No. 155
13	Crosby Valve	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	Foxboro	Foxboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4
15	Transamerica Delaval	Transamerica Delaval Gems Level Transmitter	Wyle Report 45700-2
16	Conax	Electrical Conductor Seal Assemblies	Conax IPS-409
17	Litton Veam and American BOA	Litton Veam Connector and American Boa Flex conduit	Veam test report performed by the Component Testing Division of Isomedix, Inc., November 1978
18	Target Rock	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	Exo-Sensor	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	Exo-Sensor	CEC Pressure Transducer and	Exo-Sensor Report EXO-QTR-119

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
		Tayco RTD	
21	Litton-Vearn	Litton-Vearn Thermocouple Connectors	NTS Report 558-1654
22	Anaconda	Anaconda Cable	Franklin Report F-C4969-1
23	Anaconda	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	Raychem	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02P
25	Rockbestos	Rockbestos Firewall III Chemically Cross linked Polyethylene Cables	Rockbestos Report 5804
25A	Rockbestos	Rockbestos Firewall III Irradiation Cross linked Polyethylene Cables	Rockbestos Report 5805
26	Automatic Switch Company	ASCO NP-1 Solenoid Valves	ASCO Report AQR-57368
27	Rockbestos	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	Rome	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	Rosemount	Rosemount Transmitter Model 1154	Rosemount Report D6400102

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Manufacturer	Item Description	Applicable Test Report
29A	Rosemount	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	Rosemount	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D6300200
30	Control Products	Incore Thermocouples	ISA MC96.1-1975
31	General Atomic	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960
32	Gamma-Metrics	Gamma-Metrics Cable	Gamma-Metrics Report 040
33	Westinghouse	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	Westinghouse	Limatorque MOVs	Westinghouse Report WCAP-7410-L
35	Westinghouse	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	Westinghouse	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	Westinghouse	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722
38	Westinghouse	Containment Accident Fan Lubricant	Westinghouse Report WCAP-7722
39	Okonite	Okonite Cable	Franklin Report F-C3694

2. Evaluation Procedure

TSCR 192 results in the following changes to the postulated DBA, which need to be addressed :

- The Maximum postulated DBA Temperature increases from 278 °F to 280 °F.
- The Maximum postulated DBA Pressure increases from 53 psig to 53.5 psig.
- The postulated DBA Temperature Profile (Temperature vs. time) increases the temperature after the one hour point for a duration of approximately 10 hours.

2.1 Maximum DBA Temperature Evaluation:

In the evaluation, the Qualification data for PBNP was reviewed for each of the potentially impacted EQ equipment to determine if the Qualification data envelopes the new requirement for Maximum postulated DBA Temperature.

PBNP is required to meet the EQ requirements of 10CFR50.49 and DOR Guidelines. Thus Maximum DBA Temperature is met when the Test Data Maximum exceeds the postulated Maximum DBA Temperature. Temperature Margin is the difference between the postulated Maximum DBA Temperature and the documented qualified Temperature.

Conclusion:

All EQ equipment required to be reviewed due to changes in the DBA Temperature as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification, has been enhanced with new EQ reports, and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA Temperature.

Each of potentially impacted EQ equipment was found to be not impacted by the change to postulated Maximum DBA Temperature.

Table 2. Maximum DBA Temperature Evaluation.

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
1	280	340	60	Electrical Penetration Assembly	PEN-RLK-3-16-01

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
2	280	341	61	Rockbestos Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	280	445	165	Conax Electrical Penetration Assembly and Penetration Splices	Conax IPS-1420
4	280	432	152	Conax RTDs and Thermocouples	Conax IPS-875
5	280	432	143	Conax RTDs	Conax IPS-798
6	280	442	162	WCSF-N Splices	Wyle 58442-1
7	280	324	44	Fan Cooler Motor, Thermalastic Epoxy insulation, splice and lubricants	WCAP 7829
8	280	460	180	Gamma-Metrics Neutron Flux Monitoring System	Report No. 010
9	280	315	35	Limitorque Valve Actuators	Limitorque Report B0058
10	280	340	60	Kerite HTK Insulated FR Jacketed Cable	Kerite 9/12/80 Report
10A	280	300	20	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
11	280	370	90	Namco EA-180 Limit Switches	Namco Report No. 105
12	280	372	85	Namco EA-180 Limit Switches	Namco Report No. 155
13	280	430	150	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	280	420	140	Foxboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4
15	280	412	132	Transamerica Delaval Gems Level Transmitter	Wyle Report 45700-2
16	280	350	70	Electrical Conductor Seal Assemblies	Conax IPS-409
17	280	340	60	Liton Veam Connector and American Boa Flex conduit	Isomedix Nov 78
18	280	385	105	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	280	310	30	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	280	306	26	CEC Pressure Transducer and Tayco RTD	Exo-Sensor Report EXO-QTR-119

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
21	280	415	135	Litton Veam Thermocouple Connectors	NTS Report 558-1654
22	280	385	105	Anaconda Cable	Franklin Report F-C4969-1
23	280	385	105	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	280	365	85	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02P
25	280	341	61	Rockbestos Firewall III Chemically Cross Linked Polyethylene Cables	Rockbestos Report 5804
25A	280	342	62	Rockbestos Firewall III Irradiation Cross Linked Polyethylene Cables	Rockbestos Report 5805
26	280	450	170	ASCO NP-1 Solenoid Valves	ASCO Report AQR-67368
27	280	346	66	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	280	300	20	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	280	450	170	Rosemount Transmitter Model 1154	Rosemount Report

WE PBNP TSCR 182 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
					D8400102
29A	280	420	140	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	280	446	166	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D8300200
30	280	1800	1420	Inco-e Thermocouples	ISA MC96.1-1975
31	280	320	40	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960
32	280	420	180	Gamma-Metrics Neutron Monitoring System Cable	Gamma-Metrics Report 040
33	280	347	67	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	280	307	27	Limiterque MOVs	Westinghouse Report WCAP-7410-L
35	280	307	27	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	280	296	16	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	280	324	44	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722

GLS ENTERPRISES, INC.

Evaluation Item No.	New Postulated DBA Maximum Temperature (°F)	Qualified Maximum Temperature (°F)	Margin (°F)	Item Description	Applicable Test Report
38	260	324	44	Containment Accident Fan Lubricant	Westinghouse Report WCAP-7722
39	260	345	65	Okonite Cable	Franklin Report F-C3694

2.2 Maximum DBA Pressure Evaluation:

In the evaluation, the Qualification data for PBNP was reviewed for each of the potentially impacted EQ equipment to determine if the Qualification data envelopes the new requirement for Maximum postulated DBA Pressure.

PBNP is required to meet the EQ requirements of 10CFR50.49 and DOR Guidelines. Thus Maximum DBA Pressure is met when the Test Data for Maximum Pressure exceeds the postulated Maximum DBA Pressure. Pressure Margin is the difference between the postulated Maximum DBA Pressure and the documented qualified Pressure.

Conclusion:

All EQ equipment required to be reviewed due to changes in the DBA pressure as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification, has been enhanced with new EQ reports, and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA pressure.

Each of potentially impacted EQ equipment was found to be not impacted by the change to postulated Maximum DBA Pressure.

Table 3. Maximum DBA Pressure Evaluation.

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
1	53.5	60	6.5	Electrical Penetration Assembly	PEN-RLK-3-16-01

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psi)	Qualified Maximum Pressure (Psi)	Margin (psi)	Item Description	Applicable Test Report
2	53.5	107	53.5	Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	53.5	80	26.5	Conax Electrical Penetration Assembly and Penetration Splices	Conax IPS-1420
4	53.5	70	16.5	Conax RTDs and Thermocouples	Conax IPS-875
5	53.5	70	16.5	Conax FT Os	Conax IPS-798
6	53.5	66	12.5	WCSF-N Splices	Wyle 58442-1
7	53.5	80	26.5	Fan Cooler Motor, Thermalastic Epoxy Insulation, splice and lubricants	WCAP 7829
8	53.5	70	16.5	Neutron Flux Monitoring System	Report No. 010
9	53.5	81	27.5	Limatorque Valve Actuators	Limatorque Report B0058
10	53.5	105	51.5	Kerite HTK Insulated FR Jacketed Cable	Kerite 9/12/80 Report
10A	53.5	105 (Note 2)	51.5	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
11	53.5	76.4	22.9	Namco EA-180 Limit Switches	Namco Report No. 105
12	53.5	76.4	22.9	Namco EA-180 Limit Switches	Namco Report No. 155
13	53.5	72	18.5	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	53.5	90	31.5	Foxboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4
15	53.5	70	16.5	Transamerica Delaval Gems Level Transmitter	Wyle Report 45700-2
16	53.5	180	126.5	Electrical Conductor Seal Assemblies	Conax IPS-409
17	53.5	105	51.5	Liton Veam Connector and American Boa Flex conduit	Isomedix Nov 78
18	53.5	66	12.5	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	53.5	67	13.5	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	53.5	58	4.5	CEC Pressure Transducer and Tayco RTD	Exo-Sensor Report EXO-QTR-119

WE PBNP TSCR 102 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
21	53.5	66	12.5	Lifton Veam Thermocouple Connectors	NTS Report 558-1654
22	53.5	66	12.5	Anaconda Cable	Franklin Report F-C4969-1
23	53.5	66	12.5	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	53.5	58	4.5	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02F
25	53.5	107	53.5	Rockbestos Firewall III Chemically Cross Linked Polyethylene Cables	Rockbestos Report 5804
25A	53.5	107	53.5	Rockbestos Firewall III Irradiation Cross Linked Polyethylene Cables	Rockbestos Report 5805
26	53.5	78	24.5	ASCO NP-1 Solenoid Valves	ASCO Report AQR-67368
27	53.5	122	68.5	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	53.5	58	4.5	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	53.5	110	56.5	Rosemount Transmitter Model 1154	Rosemount Report D8400102

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
29A	53.5	110	56.5	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	53.5	110	56.5	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D6300200
30	53.5	Note 1.	Note 1.	Incore Thermocouples	IGA MC96.1-1975
31	53.5	78	24.5	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960
32	53.5	70	16.5	Gamma-Metrics Cable	Gamma-Metrics Report 040
33	53.5	108	54.5	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	53.5	60	6.5	Limitorque MOVs	Westinghouse Report WCAP-7410-L
35	53.5	60	6.5	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	53.5	60	6.5	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	53.5	60	6.5	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722
38	53.5	60	6.5	Containment Accident Fan Lubricant	Westinghouse Report WCAP-7722

Evaluation Item No.	New Postulated DBA Maximum Pressure (Psig)	Qualified Maximum Pressure (Psig)	Margin (psig)	Item Description	Applicable Test Report
39	53.5	115	61.5	Okonite Cable	Franklin Report F-C3694

Note 1. For Item 30. A six inch portion of the thermocouple cable extends above the reactor vessel head. This stainless steel sheathed, mineral insulated thermocouple cable is designed for the incore environment (1800°F and 2500 psig) and routinely operates at 600°F and 2000psig. The portion of the thermocouple cable exposed to the containment atmosphere is unaffected by the small increase in containment pressure (0.5 psig) postulated in TSCR 192.

Note 2. Kerite FR Material was tested as a jacket to 105 psig in a one hundred day test and as an insulation to 52 psig in a 25 day test.

2.3 DBA Temperature Profile Evaluation:

In the evaluation, the Qualification data for PBNP was reviewed for each of the potentially impacted EQ equipment to determine if the Qualification data envelopes the new requirement for the new postulated DBA Temperature Profile.

PBNP is required to meet the EQ requirements of 10CFR50.49 and DOR Guidelines. Thus DBA Temperature Profile is met when the Test Profile envelopes the peak conditions, which was documented above and when the degradation caused by the test profile was more severe than the equivalent degradation of the new postulated DBA Temperature Profile. Thus this section addresses the Degradation Equivalency of the new DBA Temperature Profile to the documented profile in the PBNP EQ program.

Degradation Equivalency is performed in two methods : graphical and analytical. First, each item's EQ test profile is graphed on the same chart as the new postulated DBA Profile. The Degradation Equivalency is acceptable when the cumulative time at temperature of the EQ test profile is above the new postulated DBA Profile once maximum temperature conditions have been met.

If a portion of the cumulative time at temperature of the EQ test profile is below the new postulated DBA Profile after the peak test conditions have been met, then it is necessary to analytically compare the area under the new postulated DBA Profile to the conservatism where the test profile exceeds the new postulated DBA Profile to verify that the Degradation caused during the time under the new postulated DBA Profile is less severe than the Degradation caused by the area of the test profile that exceeds the new postulated DBA Profile.

Degradation Equivalency is an acceptable method for demonstrating the equivalence of DBA profiles and is acceptable since it is a method which utilizes 10CFR50.49 Qualification Method (f) (2) "Testing a similar item of equipment with a supporting analysis to show that the equipment to be qualified is acceptable," and / or 10CFR50.49 Qualification Method (f) (4) "Analysis in combination with partial type test data that supports

the analytical assumptions and conclusions." Similar partial test data per 10CFR50.49 paragraph (f) (4) has been used.

For most equipment in this evaluation at PBNP, the graphical method of Degradation Equivalency demonstrates that the new postulated DBA Profile is within the already established EQ program at PBNP.

Only two equipment items, the Delaval Gems Level Transmitter and the Rome Cable required the supplemental Degradation Equivalency Analysis. This analysis showed that the degradation caused during the time under the new postulated DBA Profile is less severe than the degradation caused by the area of the test profile that exceeds the new postulated DBA Profile, by a margin of over 60% for the Delaval Gems Level Transmitter and by a margin of over 130%, for the Rome Cable. For these equipment items Post Accident Operability was also reviewed to assure that long term post DBA was not affected.

Conclusion:

All EQ equipment required to be reviewed due to changes in the DBA profile as a result of TSCR 192, at Point Beach Units 1 and 2, has been evaluated against the new DBA requirement. The original qualification, has been enhanced with new EQ reports, and has been shown to exceed the new DBA requirement. Thus, there is no impact on the Point Beach EQ program due to TSCR 192 and all EQ equipment is qualified to the new DBA profile.

The Table 4, summarizes the evaluation of the new postulated DBA Profile at PBNP.

Table 4. Evaluation of new postulated DBA Profile at PBNP.

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
1	Graphical	Electrical Penetration Assembly	PEN-RLK-3-16-01
2	Graphical	Firewall III XLPE Cable	N-91-055 (Analysis of Test Reports 5804 & 5805)
3	Graphical	Conax Electrical Penetration Assembly and Penetration Splices	Conax IPS-1420
4	Graphical	Conax RTDs and Thermocouples	Conax IPS-875

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
5	Graphical	Conax RTDs	Conax IPS-798
6	Graphical	WCSF-N Splices	Wyle 58442-1
7	Graphical	Fan Cooler Motor, Thermalastic Epoxy Insulation, splice and lubricants	WCAP 7829
8	Graphical	Neutron Flux Monitoring System	Report No. 010
9	Graphical	Limiter Valve Actuators	Limiter Report B0058
10	Graphical	Kerite HTK Insulated FR Jacketed Cable	Kerite 9/12/80 Report
10A	Graphical	Kerite FR Insulated FR Jacketed Cable	Kerite 9/12/80 Report
11	Graphical	Namco EA-180 Limit Switches	Namco Report No. 105
12	Graphical	Namco EA-180 Limit Switches	Namco Report No. 155
13	Graphical	Crosby Lift Indicating Switch Assembly	Crosby Report 4245
14	Graphical	Fordboro N-E 10 Series Pressure Transmitters	Wyle Report 45592-4

WE PBNP TSCR 182 EQ EVALUATION

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
15	Graphical and Analytical	Transamerica Desalval Gems Level Transmitter	Wyle Report 45700-2
16	Graphical	Electrical Conductor Seal Assemblies	Conax IPS-409
17	Graphical	Liton Veam Connector and American Boa Flex conduit	Isomedix Nov 78
18	Graphical	Target Rock Model 77CC-001 Solenoid Valve	Target Rock Report No. 2375
19	Graphical	Hydrogen Monitoring System	Exo-Sensor Report EXO-QTR-101
20	Graphical	CEC Pressure Transducer and Tayco RTD	Exo-Sensor Report EXO-QTR-119
21	Graphical	Liton Veam Thermocouple Connectors	NTS Report 558-1654
22	Graphical	Anaconda Cable	Franklin Report F-C4969-1
23	Graphical	Anaconda Flame-Guard FR-EP Instrument, Control Cable	Franklin Report F-C4836-2
24	Graphical	Raychem Nuclear Grade Cable Splices	Wyle Report 17859-02P

WE PBNP TSCR 192 EQ EVALUATION

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
25	Graphical	Rockbestos Firewall III Chemically Cross Linked Polyethylene Cables	Rockbestos Report 5804
25A	Graphical	Rockbestos Firewall III Irradiation Cross Linked Polyethylene Cables	Rockbestos Report 5805
26	Graphical	ASCO NP-1 Solenoid Valves	ASCO Report AQR-67368
27	Graphical	Rockbestos Coaxial Cable	Rockbestos Report QR-6802
28	Graphical and Analytical	Rome Cable	Report 3/19/71 and new Wyle reports 17740-1, 17432-1 and 6110
29	Graphical	Rosemount Transmitter Model 1154	Rosemount Report D8400102
29A	Graphical	Rosemount Model 1154 w/ 1159 Remote Seal	Rosemount Report 7/23/92
29B	Graphical	Rosemount Transmitter Conduit Connector Seal Model 353C	Rosemount Report D8300200
30	Graphical	Incore Thermocouples	ISA MC96.1-1975
31	Graphical	General Atomic High Range Radiation Monitor RD-23	General Atomic Report E-254-960

Evaluation Item No.	Degradation Equivalency Method	Item Description	Applicable Test Report
32	Graphical	Gamma-Metrics Cable	Gamma-Metrics Report 040
33	Graphical	Westinghouse Penetrations	Westinghouse Report PEN-TR-77-59
34	Graphical	Limiterque MOVs	Westinghouse Report WCAP-7410-L
35	Graphical	MOV Lubricant	Westinghouse Report WCAP-7410-L
36	Graphical	Engineered Safety Features Cables and Splices	Westinghouse Report WCAP-7410-L, Vol. II
37	Graphical	Containment Accident Fan Motor Bearing Lubricant	Westinghouse Report WCAP-7722
38	Graphical	Containment Accident Fan Lubricant	Westinghouse Report WCAP-7722
39	Graphical	Okonite Cable	Franklin Report F-C3694

2.4 PBNP EQ Program Enhancement:

In the evaluation, the additional Qualification reports for similar cable to the Rome cable were located and are being incorporated into the PBNP EQ program.

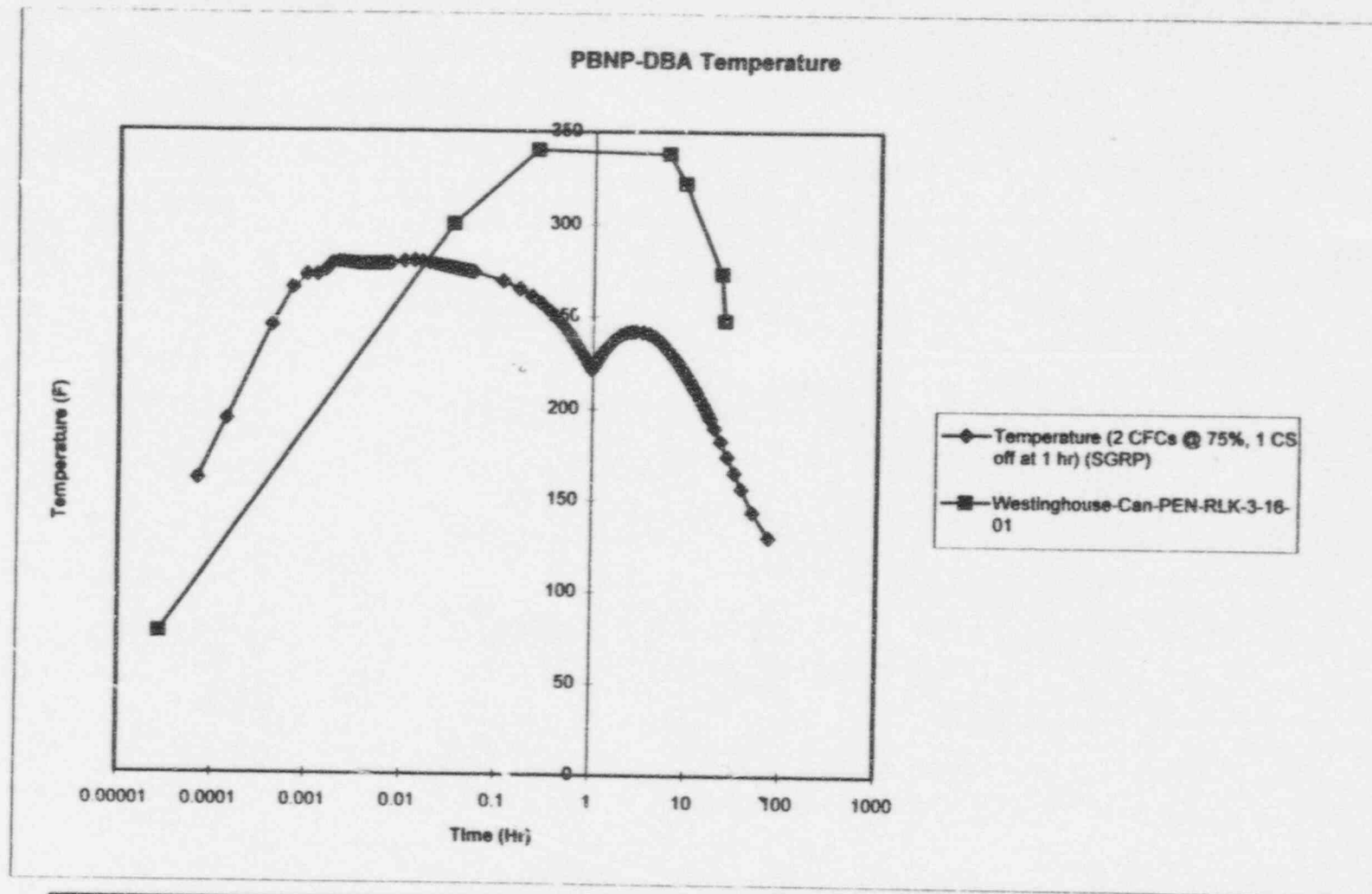
- Wyle Report 17740-1
- Wyle Report 17732-1
- Wyle Report 6110

Attachments

- 1) Profile Graphs Item 1, 3, 4, 5, 6, 7, 8, 9, 10, 10A, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 25A, 26, 27, 28, 29, 29A, 29B, 31, 32, 33, 34, 35, 36, 37, 38, 39
- 2) Degradation Equivalency for Transamerica Delaval Gems Level Transmitter Wyle Report 45700-2, Pages A8-A10
- 3) Degradation Equivalency for Rome Cable Wyle Report 17740-1Pages C8-C11

Item 1.

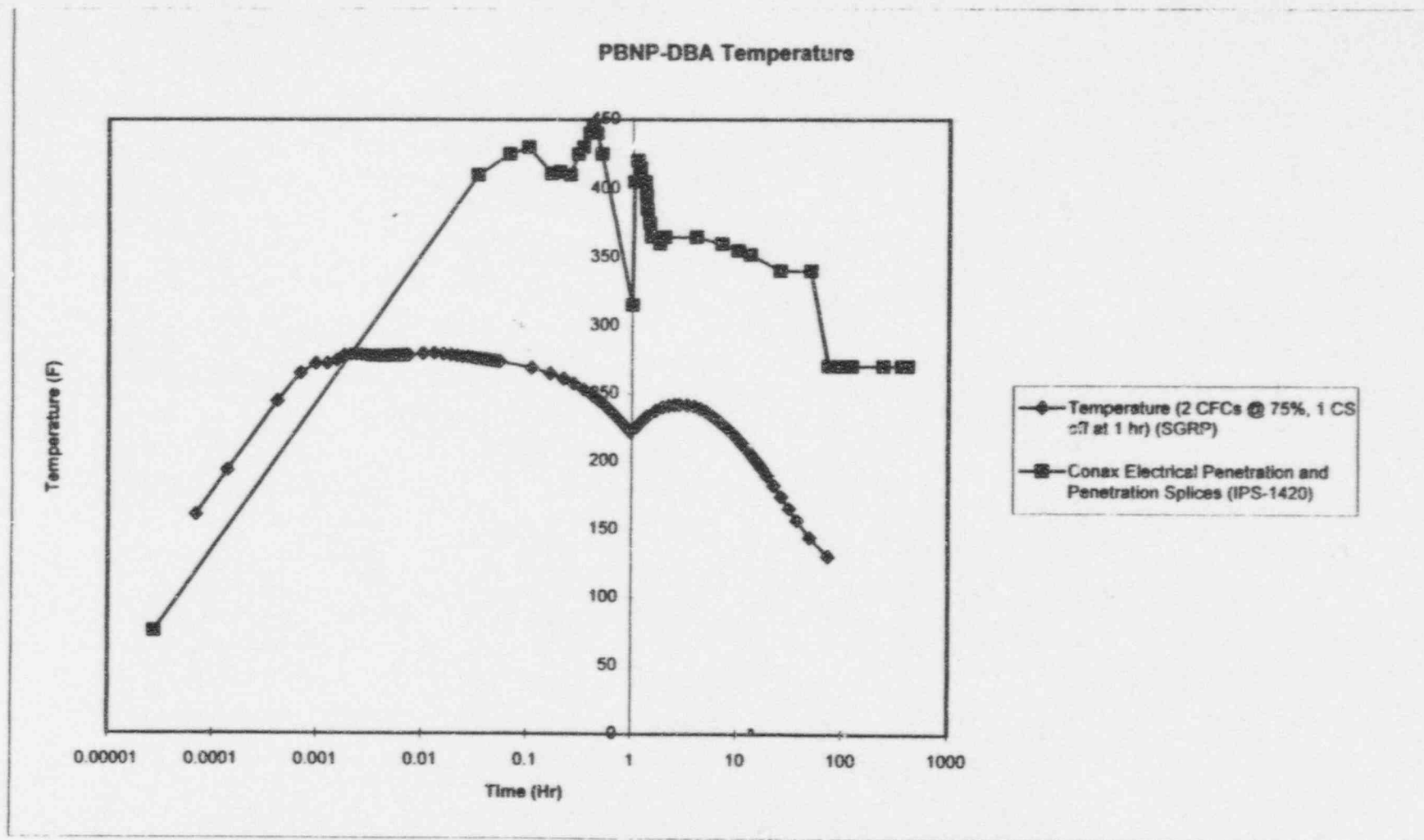
PBNP-DBA-T-W-Can-PEN-RLK-31601



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	340	
Met	Yes	
Margin	21.4%	

Item 3.

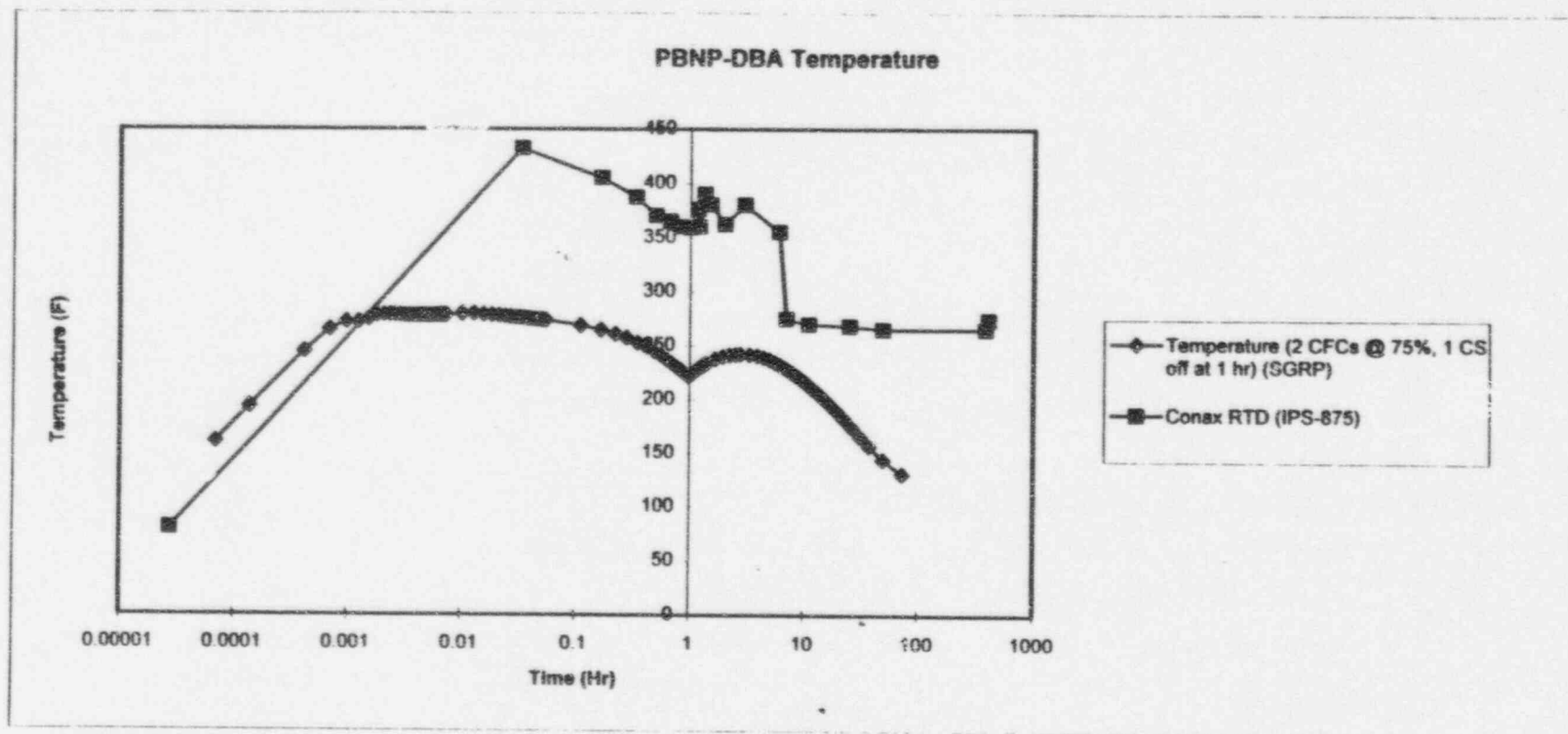
PBNP-DBA-Temp-Conax PenIPS-1420



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	445.00	
Met	Yes	Graphical
Margin	58.90%	

Item 4.

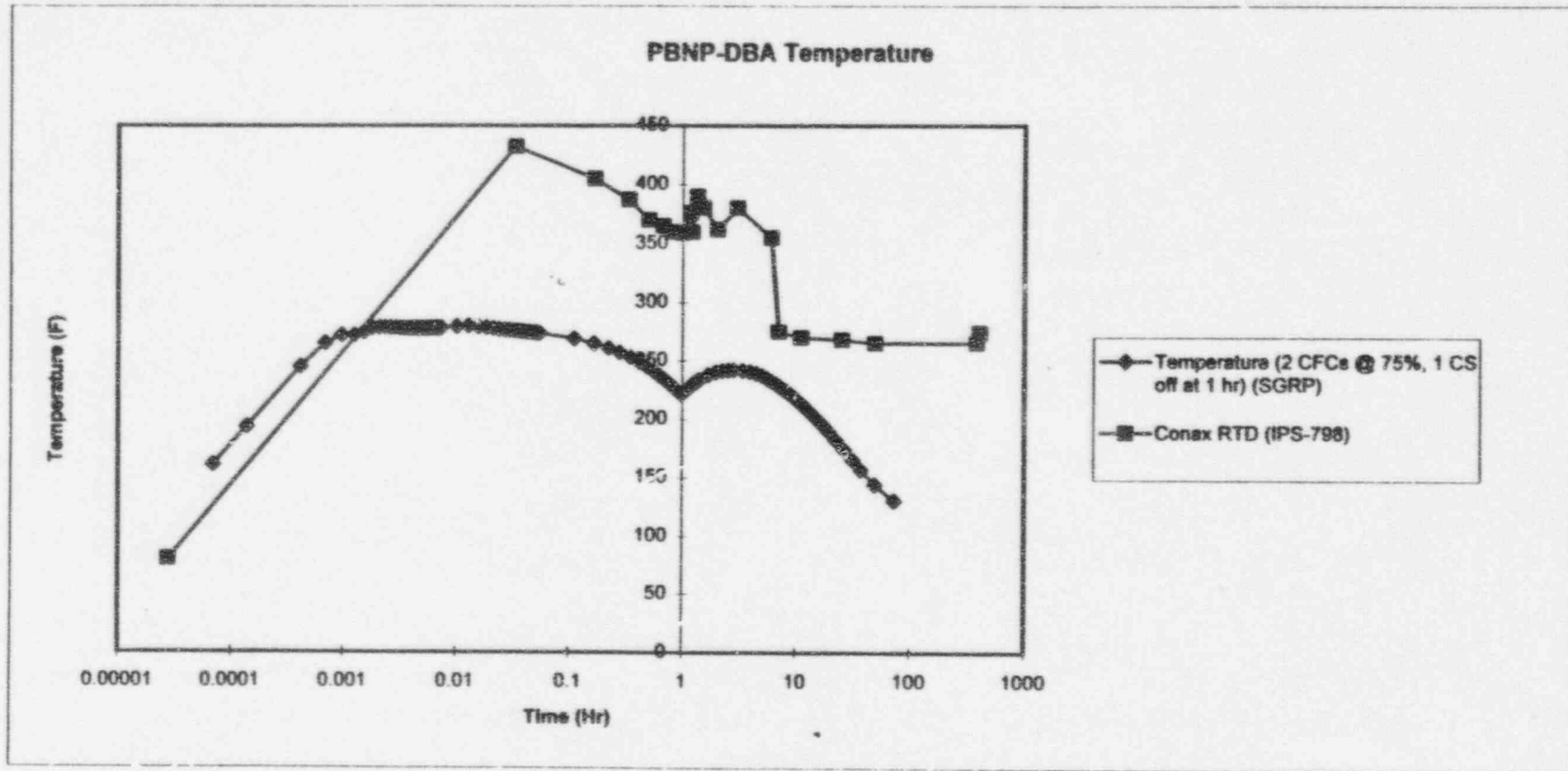
PBNP-DBA-Temp ConaxRTD (IPS875)



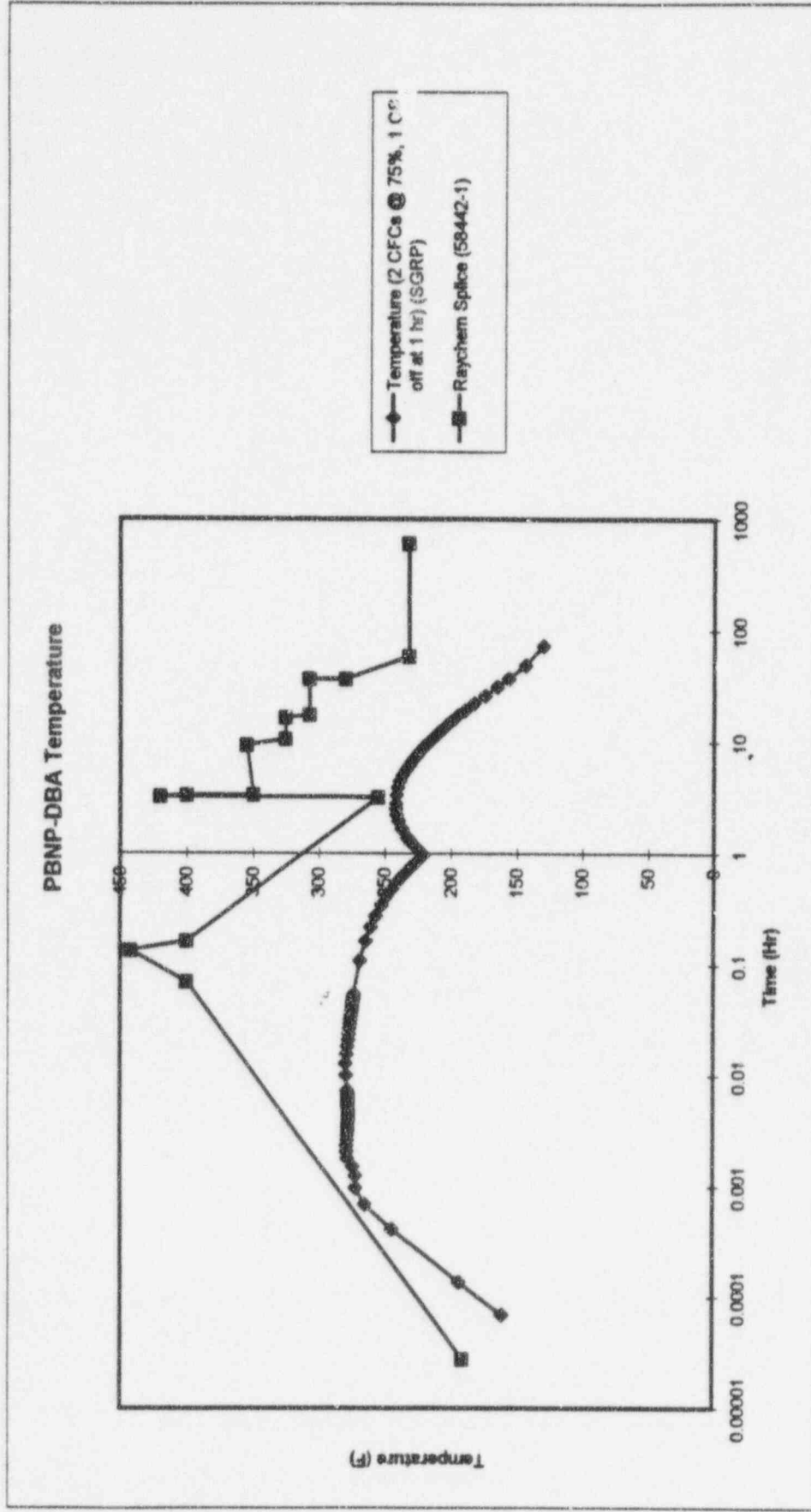
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	432	
Met	Yes	
Margin	54.4%	

Item 5.

PBNP-DBA-Temp Conax RTD(IPS798)



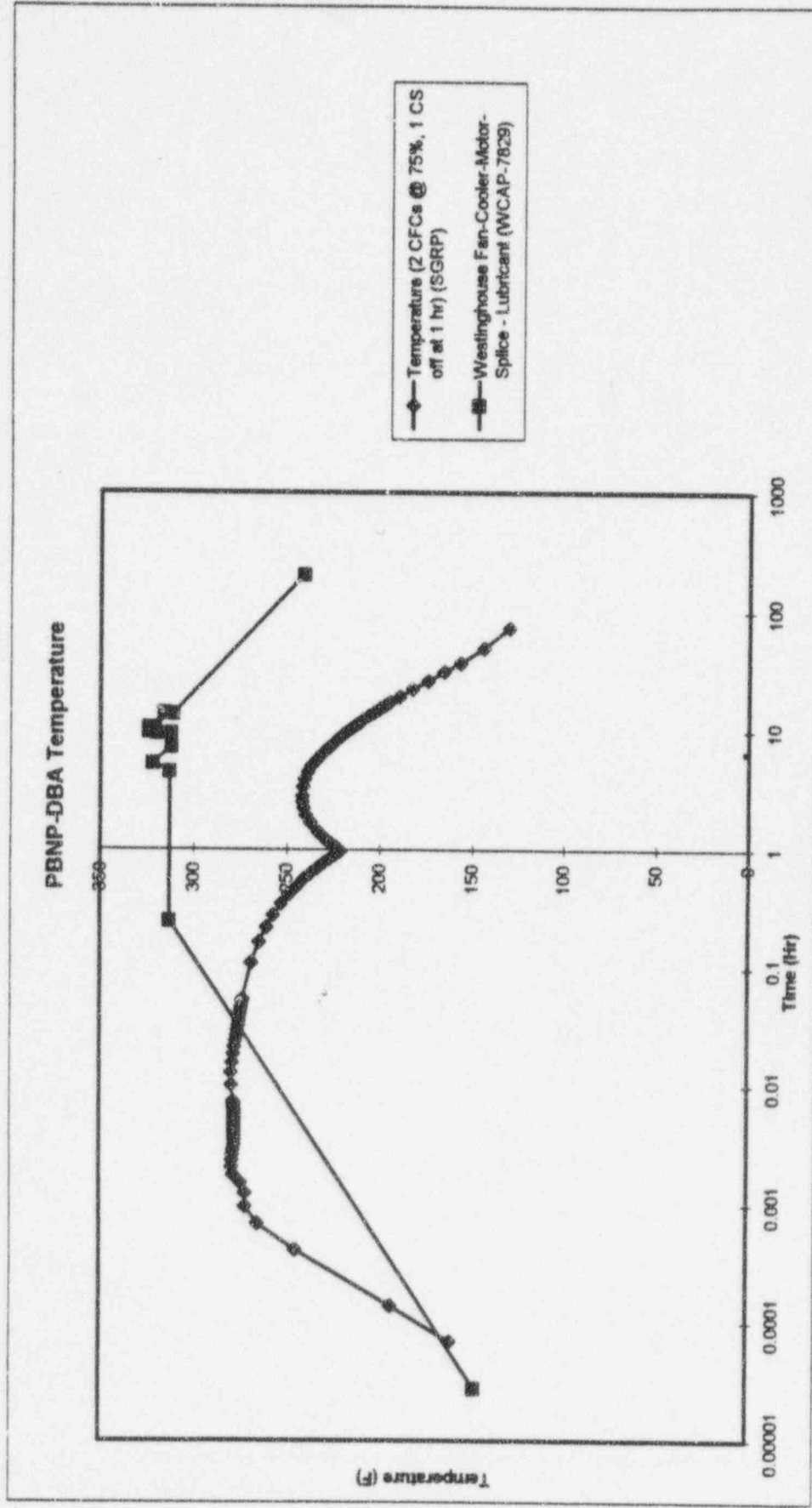
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	432	
Met	Yes	
Margin	54.4%	



PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met			
Margin		57.9%	

Item 7.

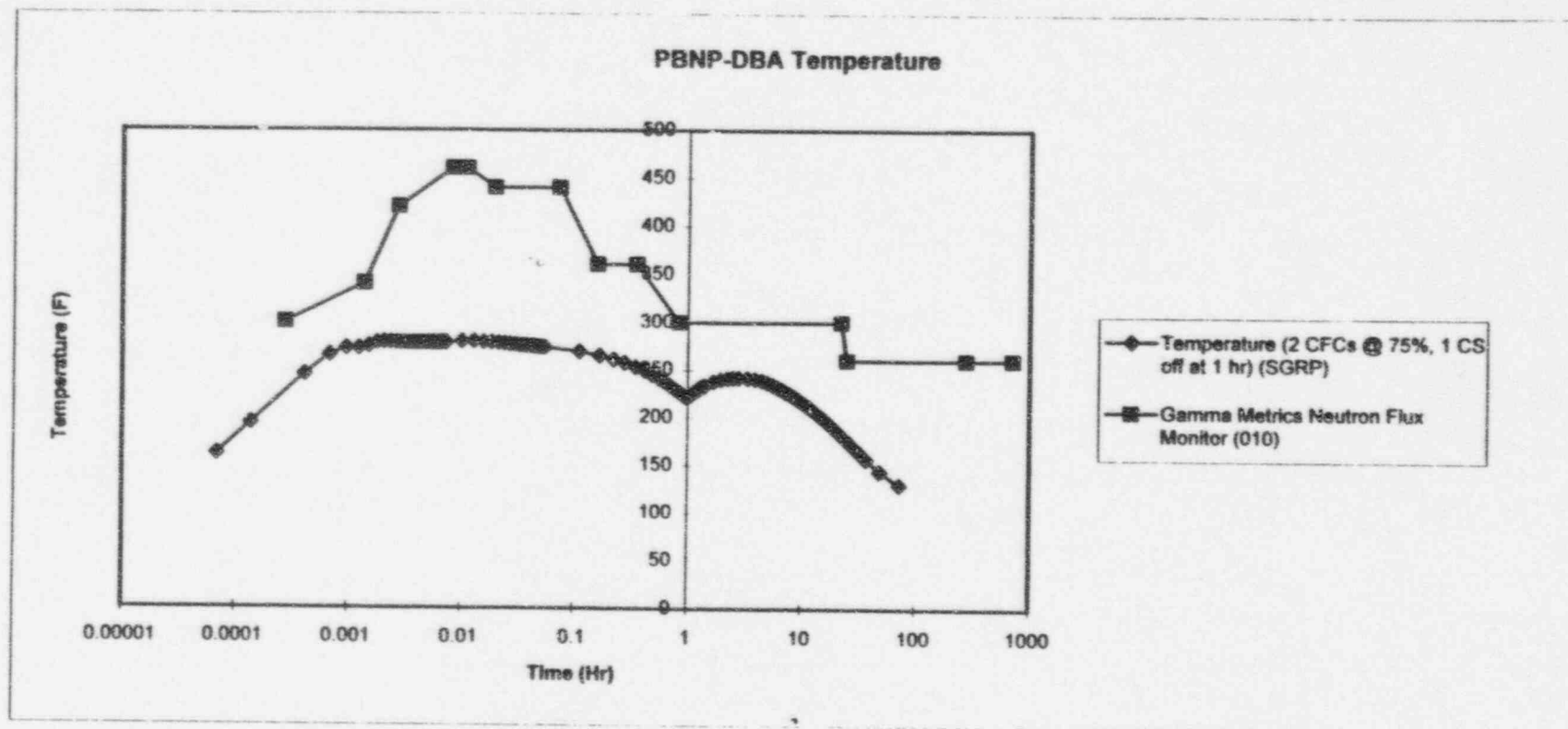
PBNP-DBA-Temp-West-Fan-C-Motor



PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method Graphical
Qualified Temperature (F)		324	
Met		Yes	
Margin		15.7%	

Item 8.

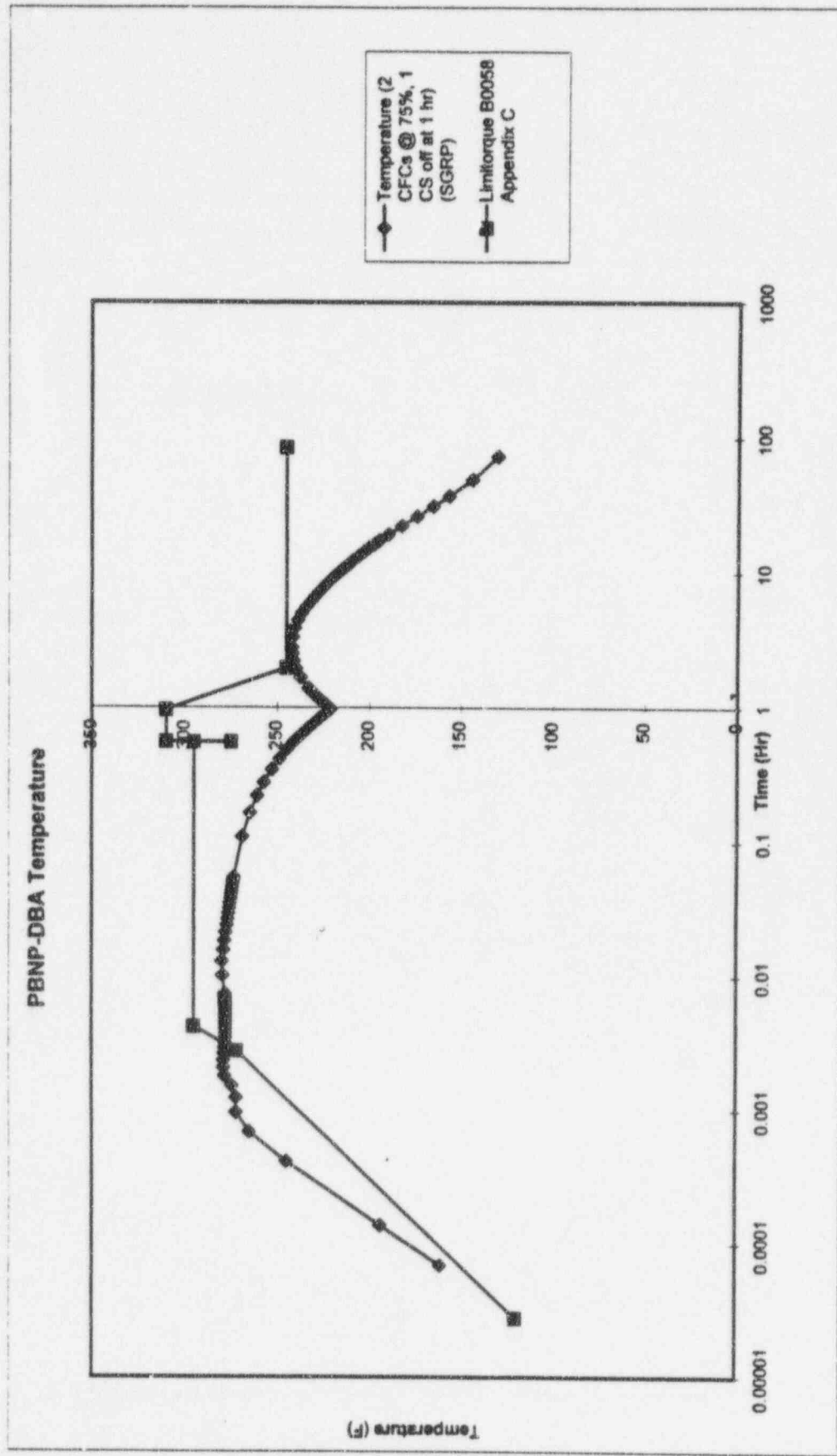
PBNP-DBA -Temp GM Monitor (010)



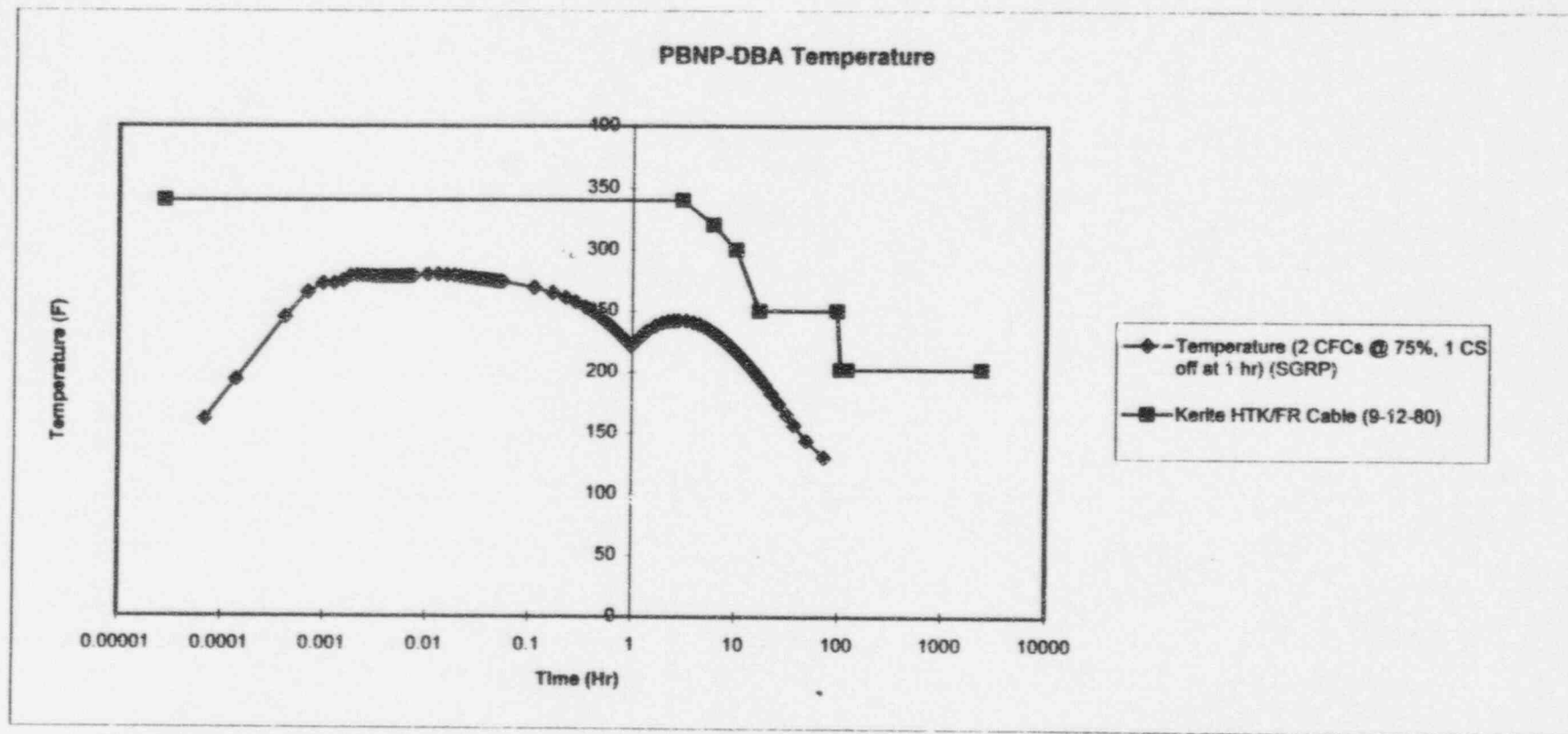
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	460	
Met	Yes	
Margin	64.3%	

Item 9.

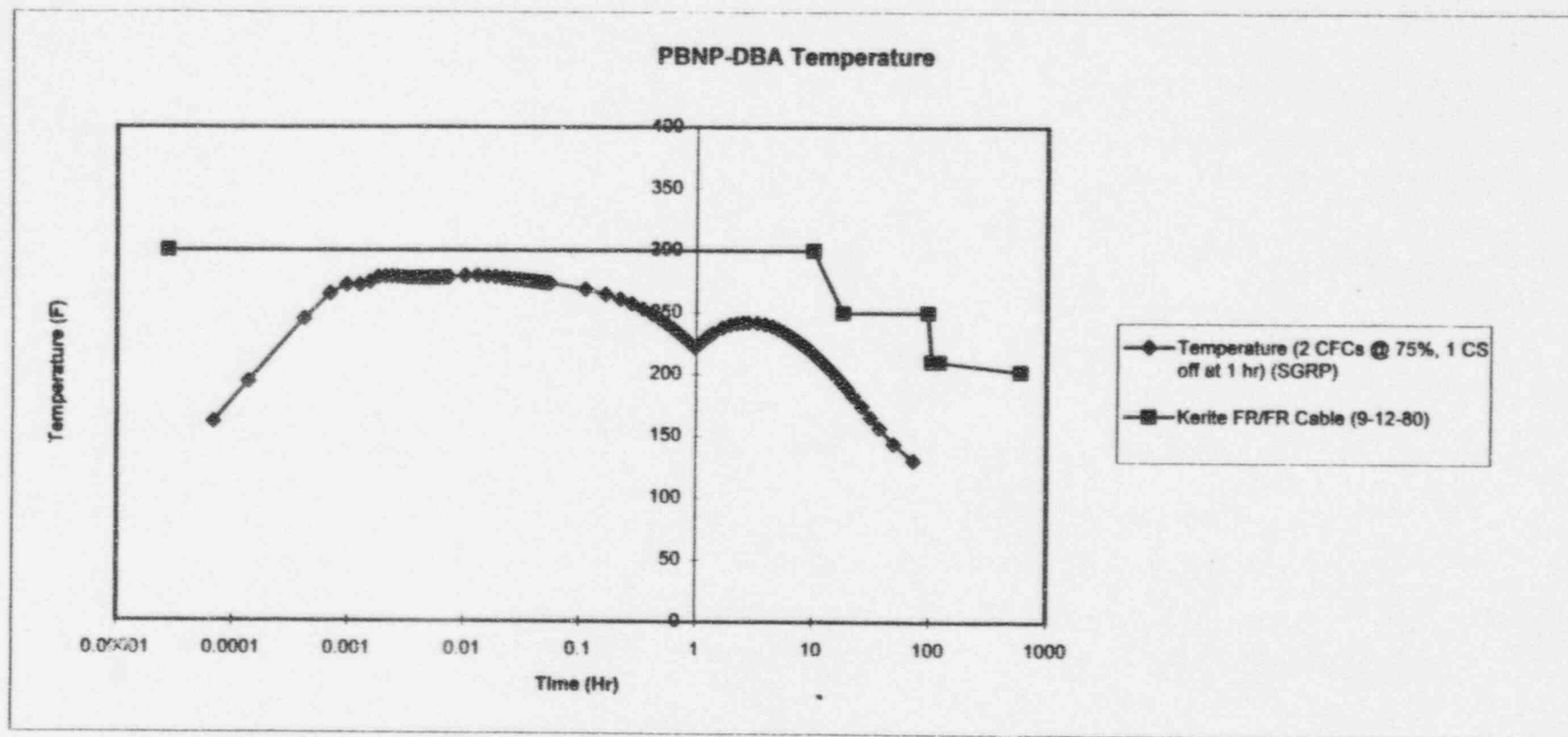
PBNP-DBA-T-Limiting que B0058



Degradation Equivalency Method	
Graphical	
PBNP Temperature Requirement (F) :	280
Qualified Temperature (F)	310
Met	Yes
Margin	



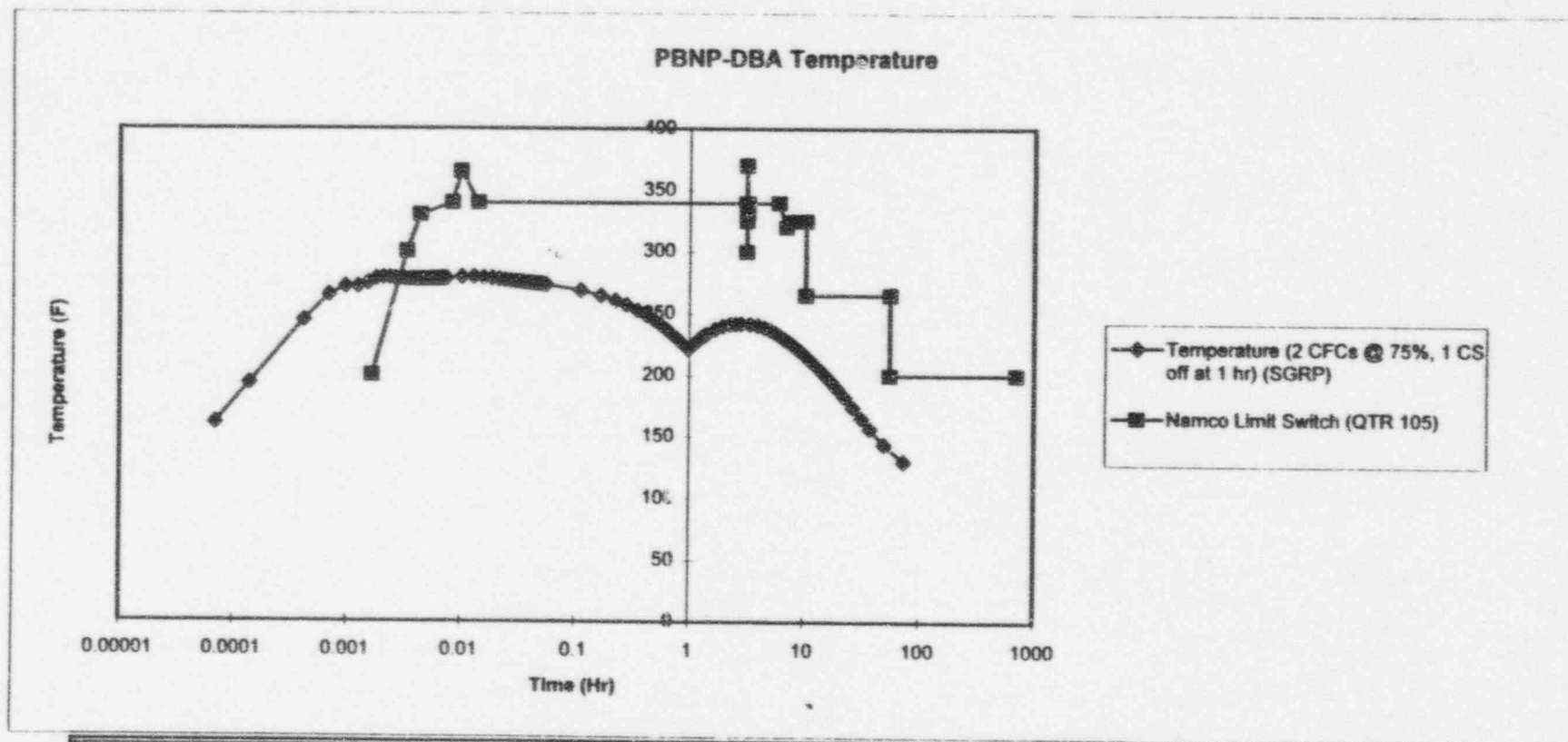
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	340	
Met	Yes	
Margin	21.4%	



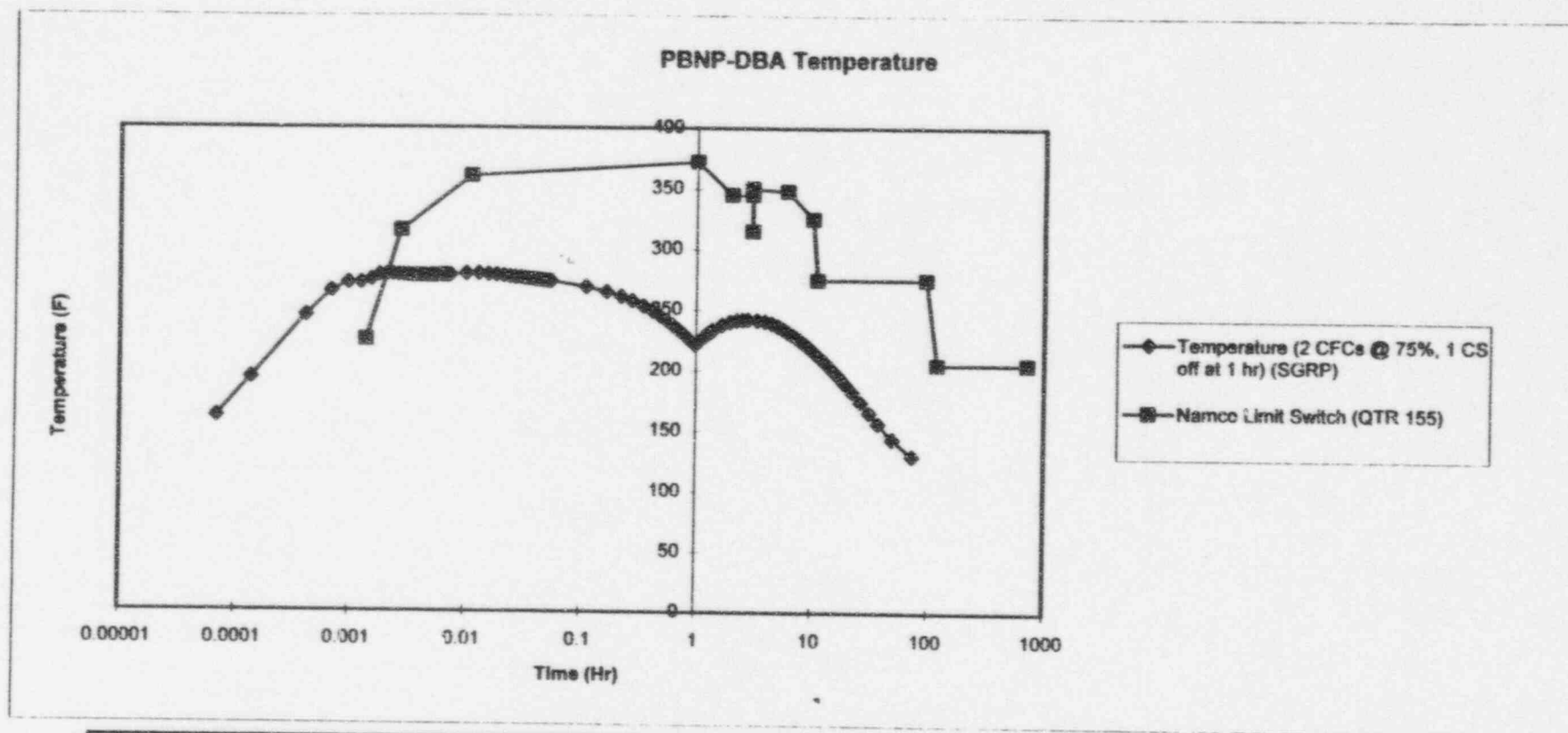
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	300	
Met	Yes	
Margin	7.1%	

Item 11.

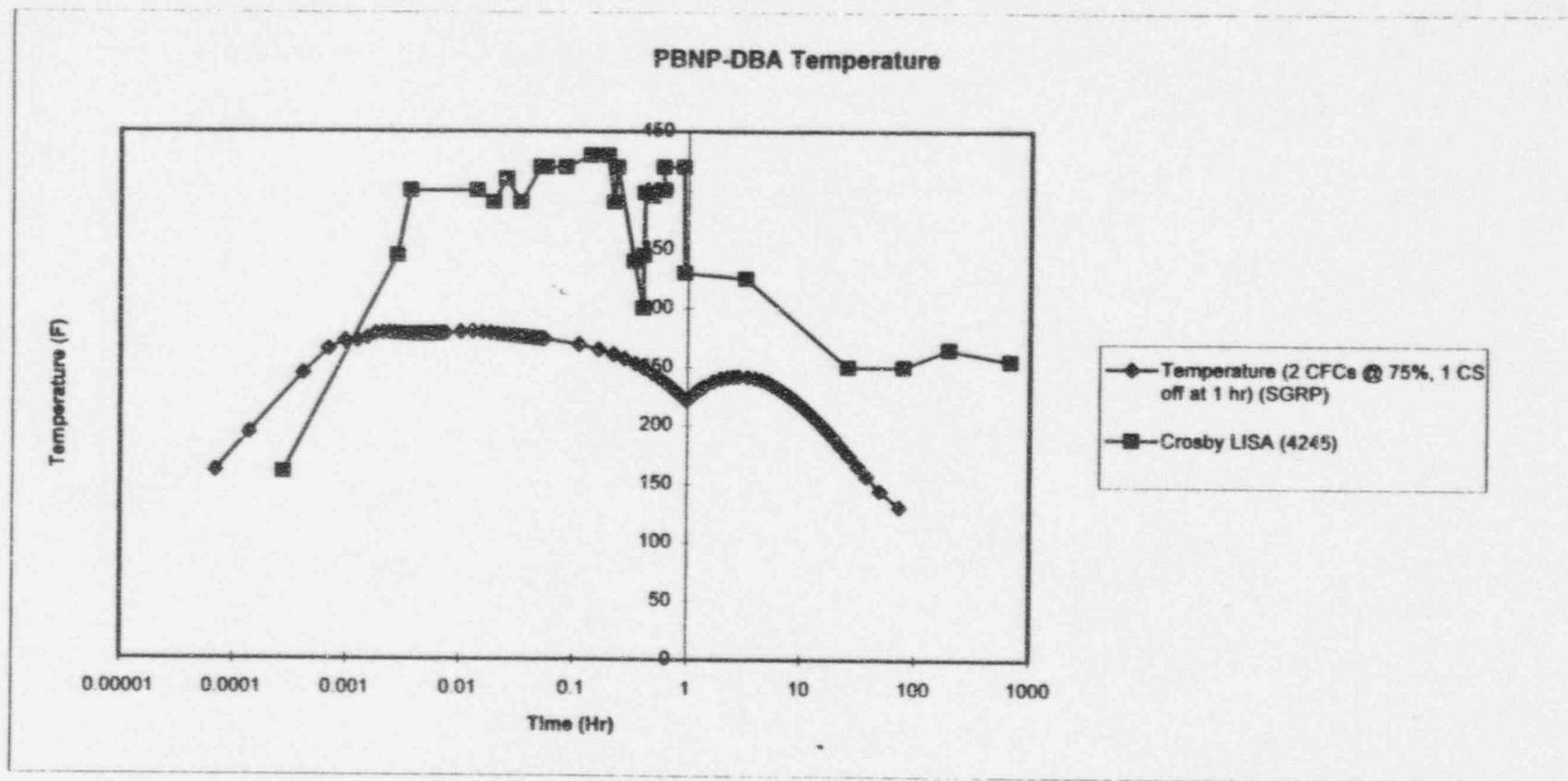
PBNP-DBA-Temp Namco (QTR105)



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	370	
Met	Yes	
Margin	32.1%	



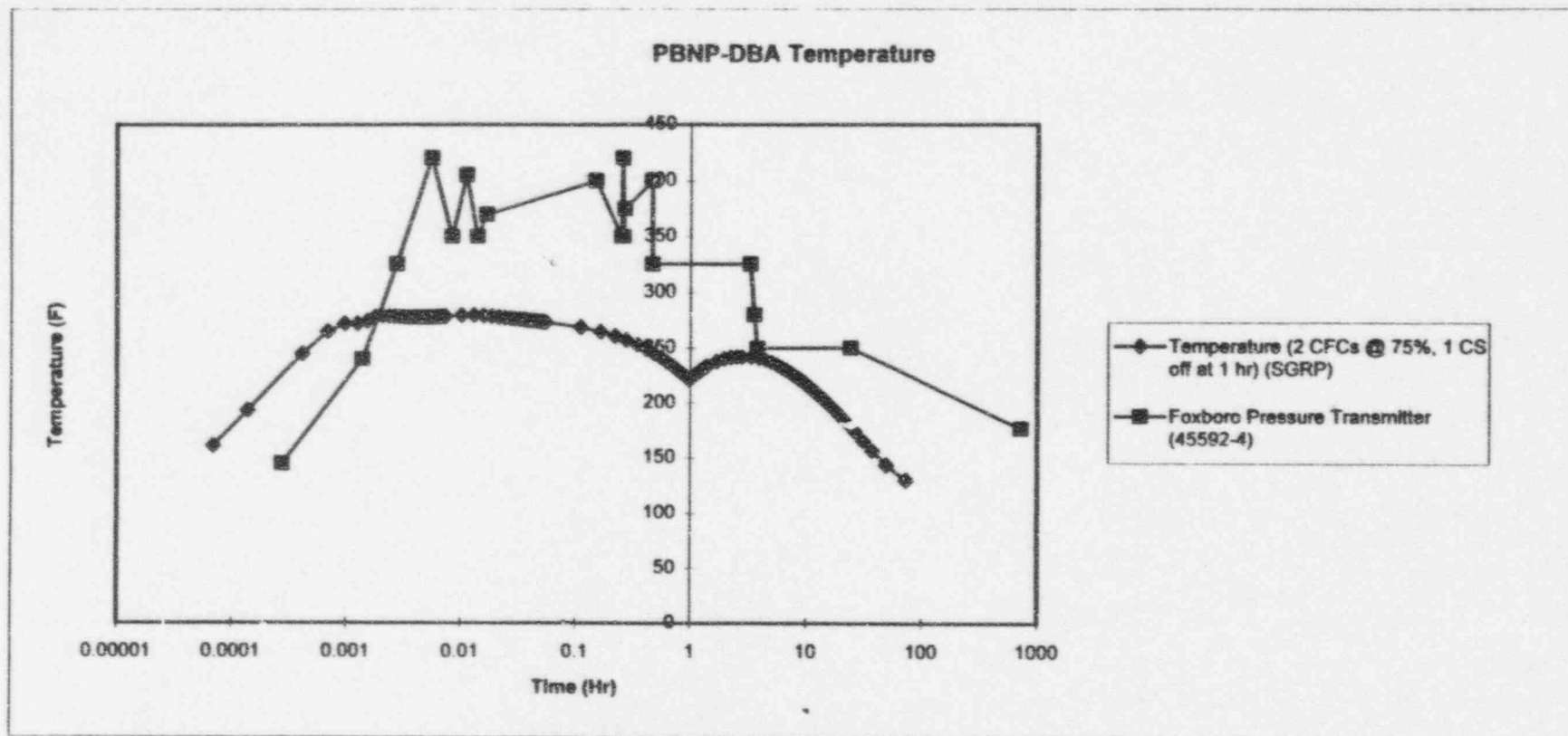
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	372	
Met	Yes	
Margin	32.9%	



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	430	
Met	Yes	
Margin	53.6%	

Item 14.

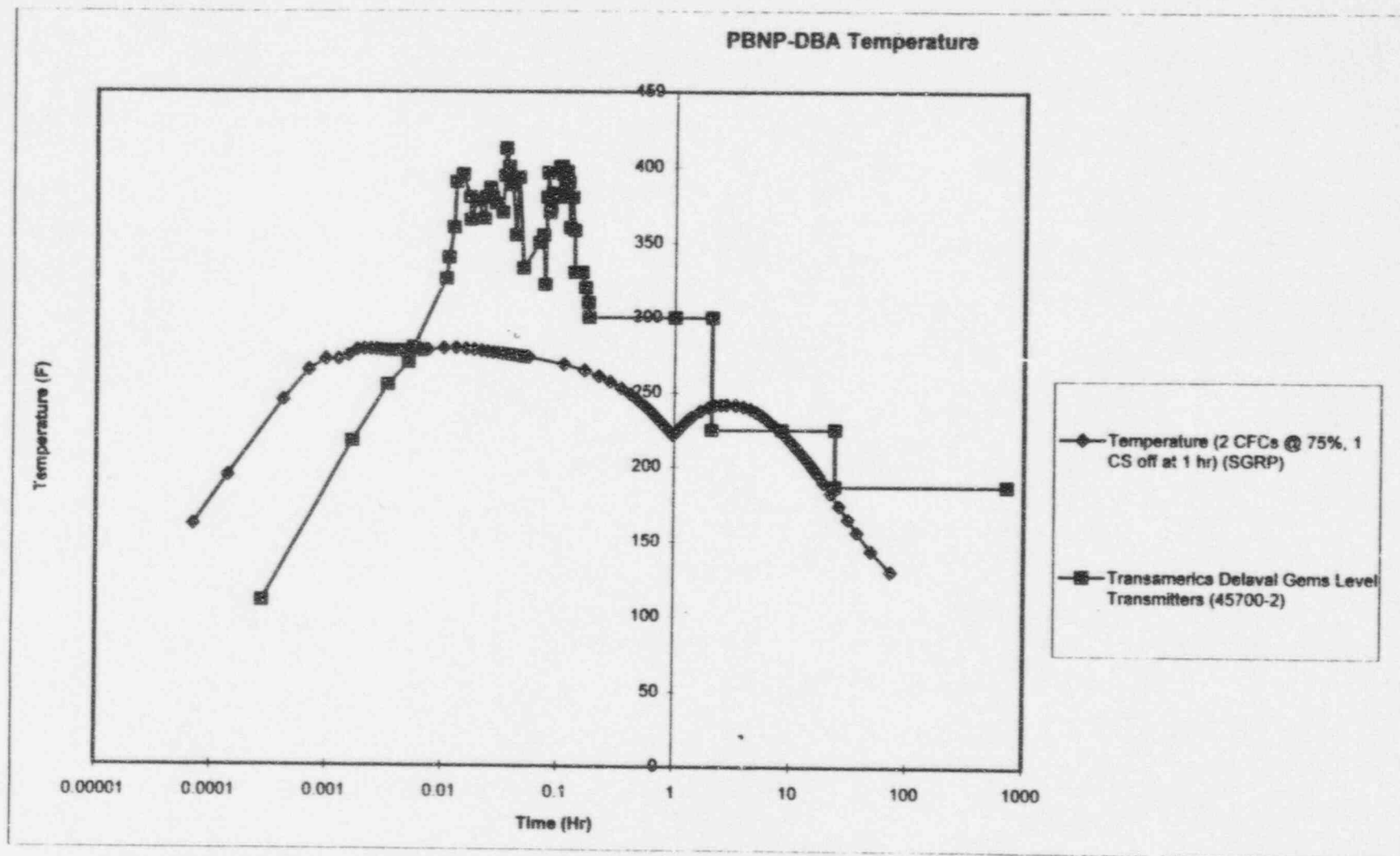
PBNP-DBA-Temp Foxboro(45592-4)



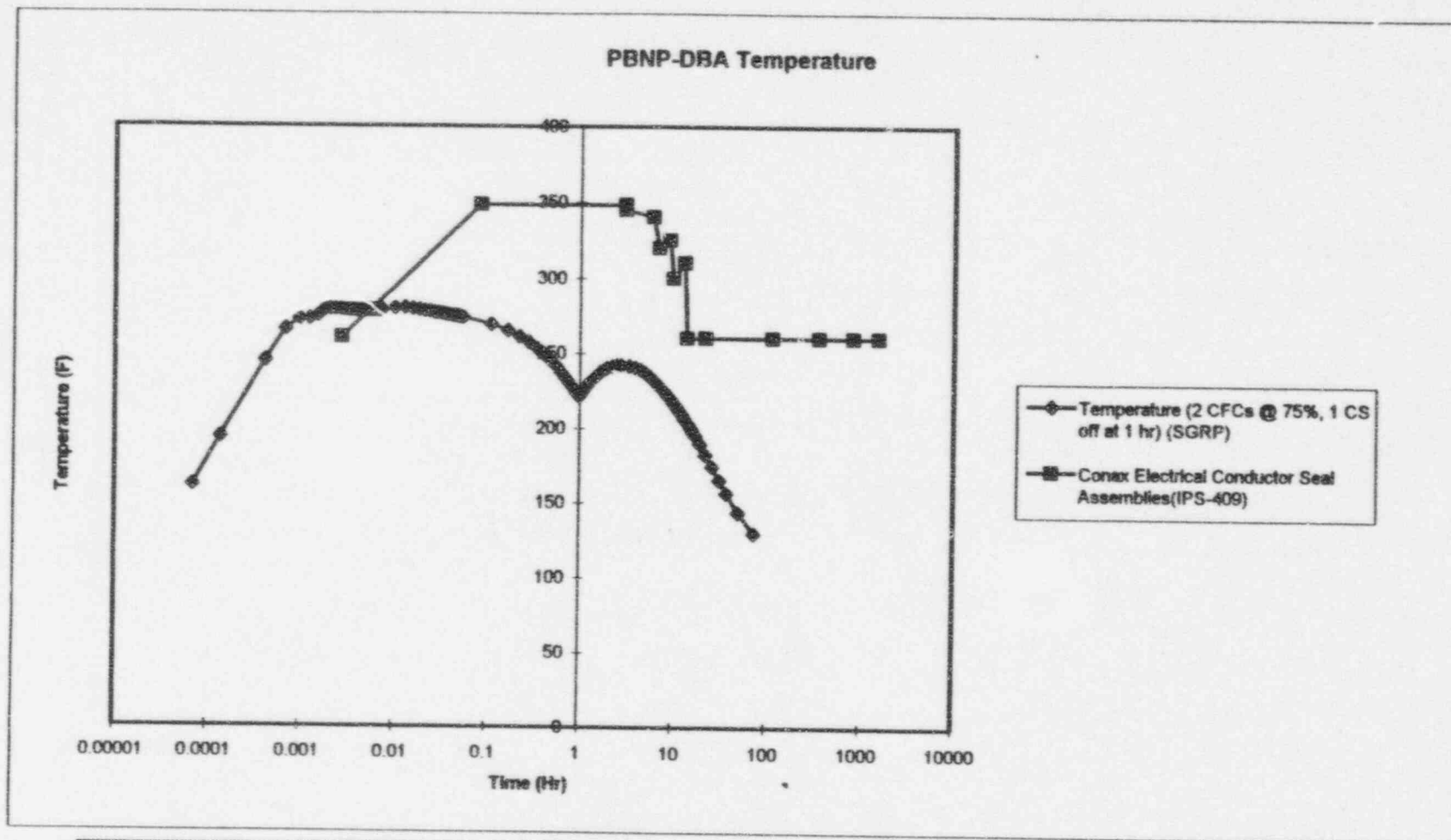
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	420	
Met	Yes	Graphical
Margin	50.0%	

Item 15.

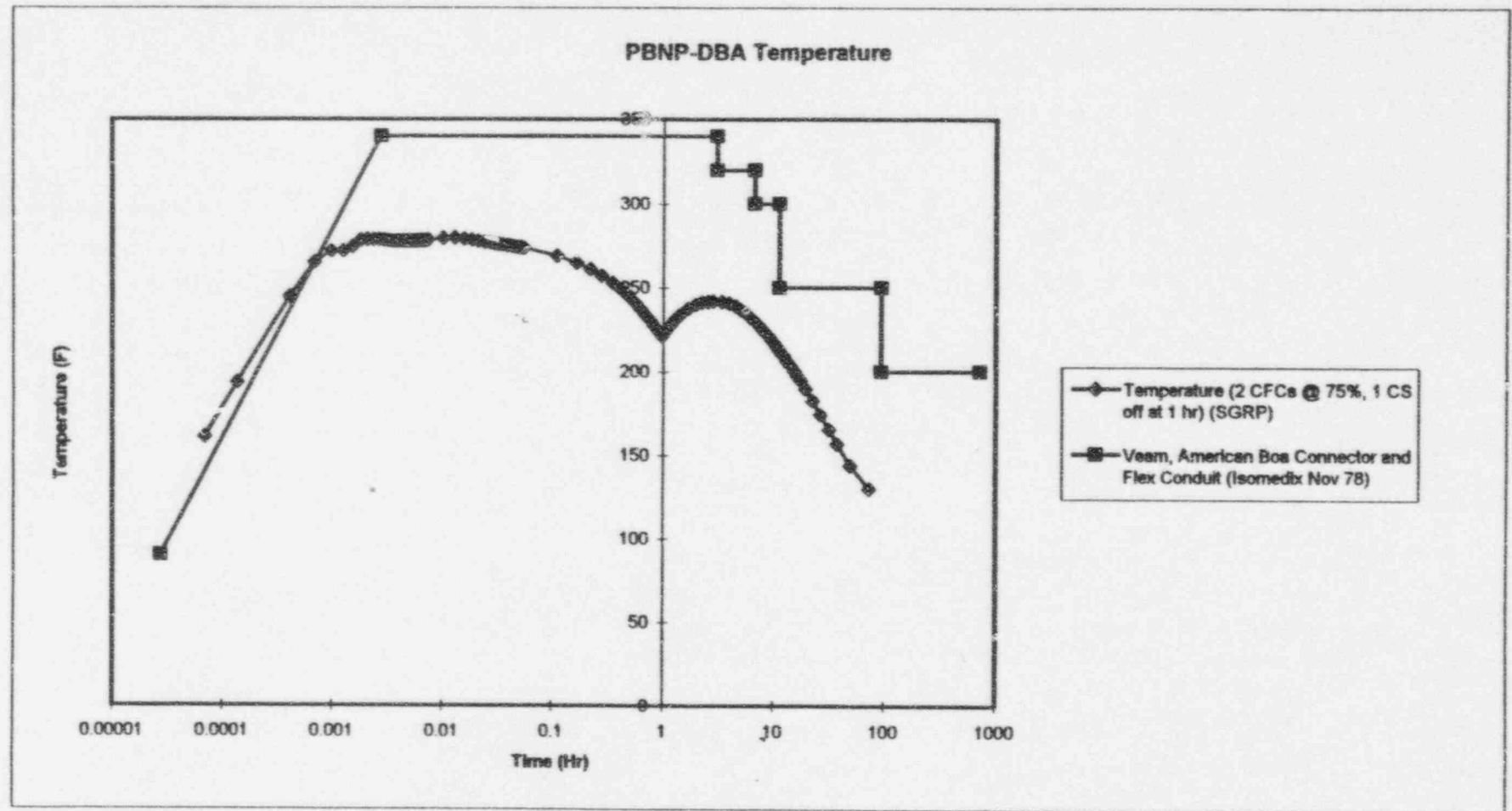
DBA-PBNP-Temp-Gems_(45700-2)



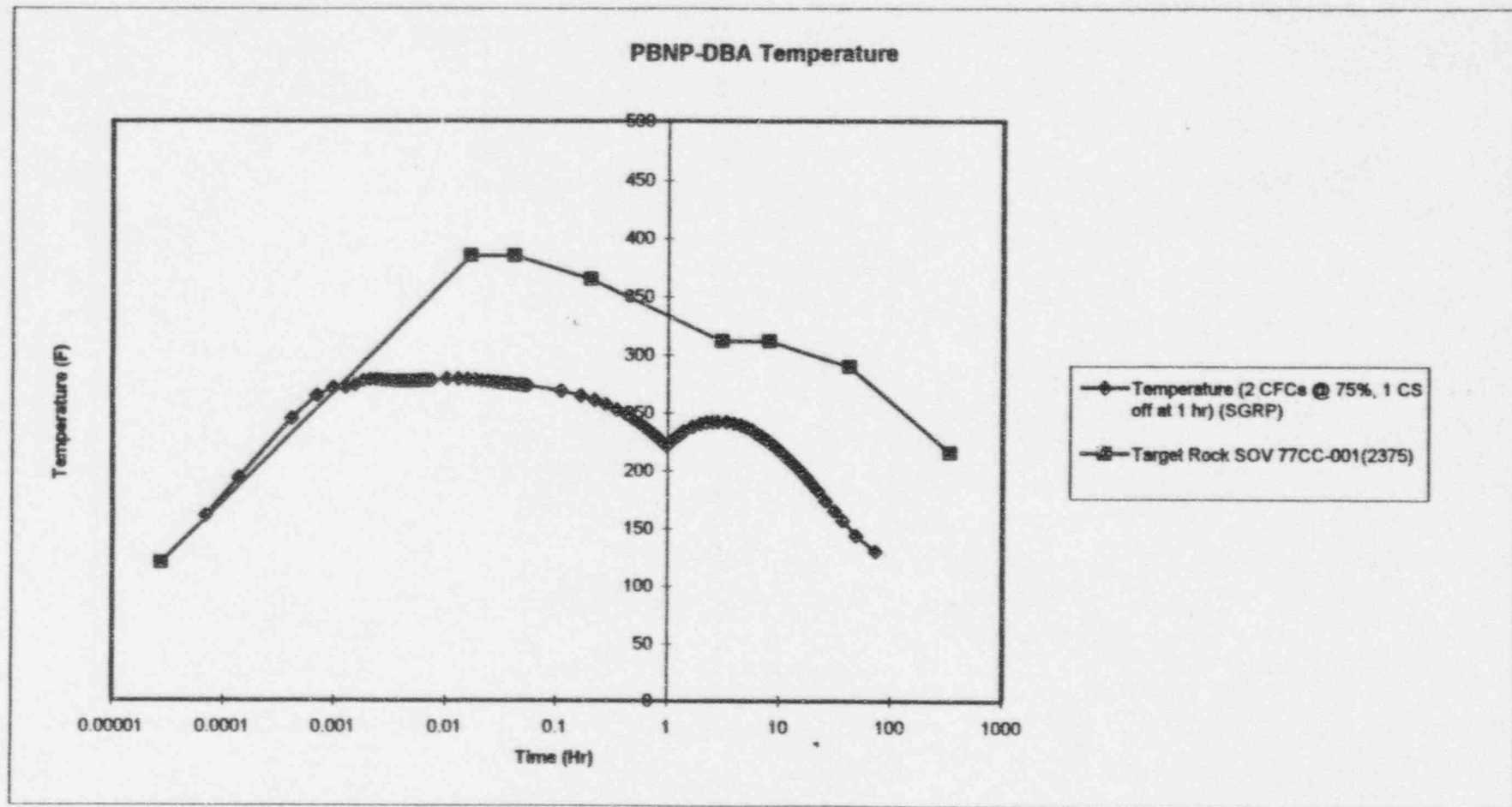
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	412	
Met	Yes	
Margin	47.1%	
		Analytical



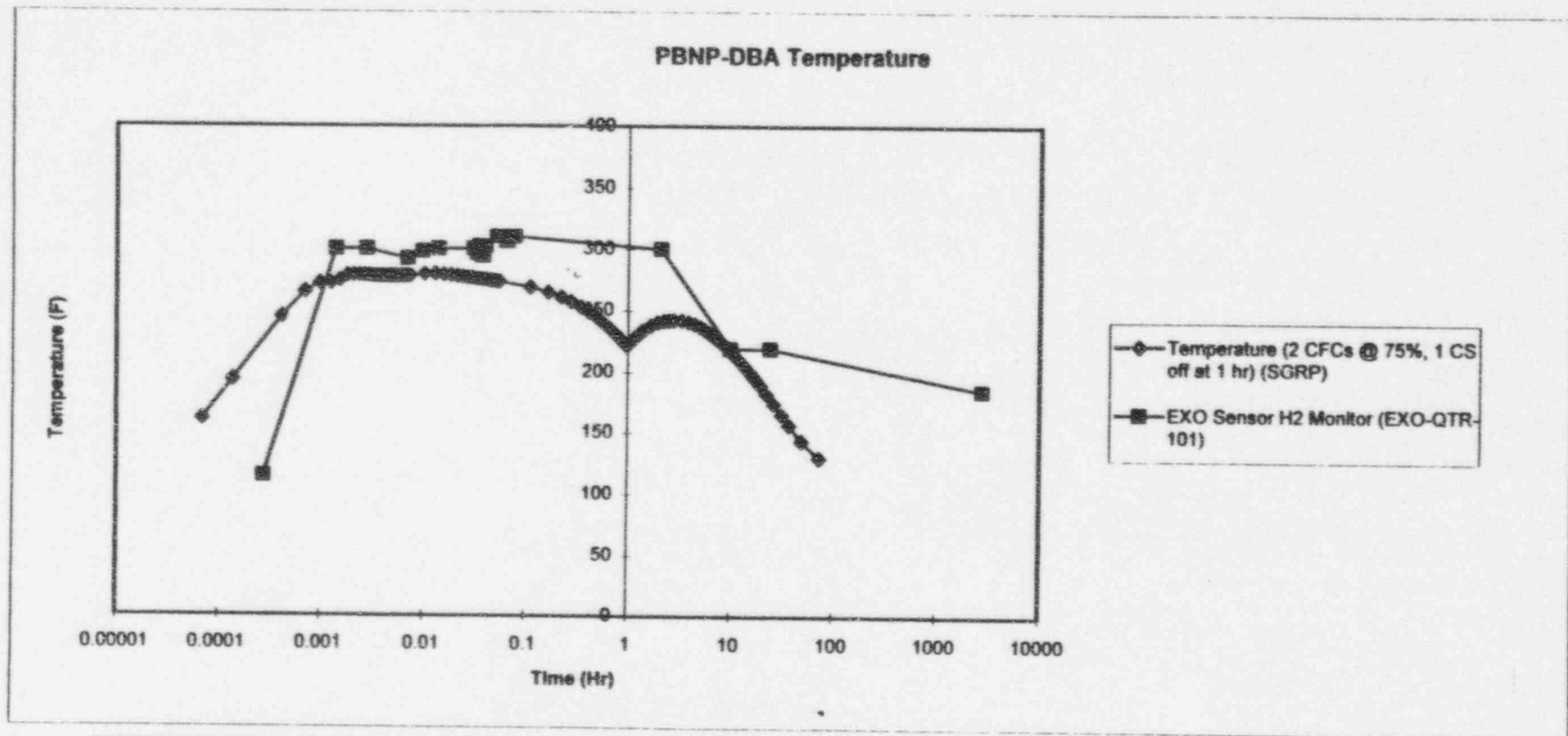
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	348.00	
Met	Yes	
Margin	24.3%	
		Graphical



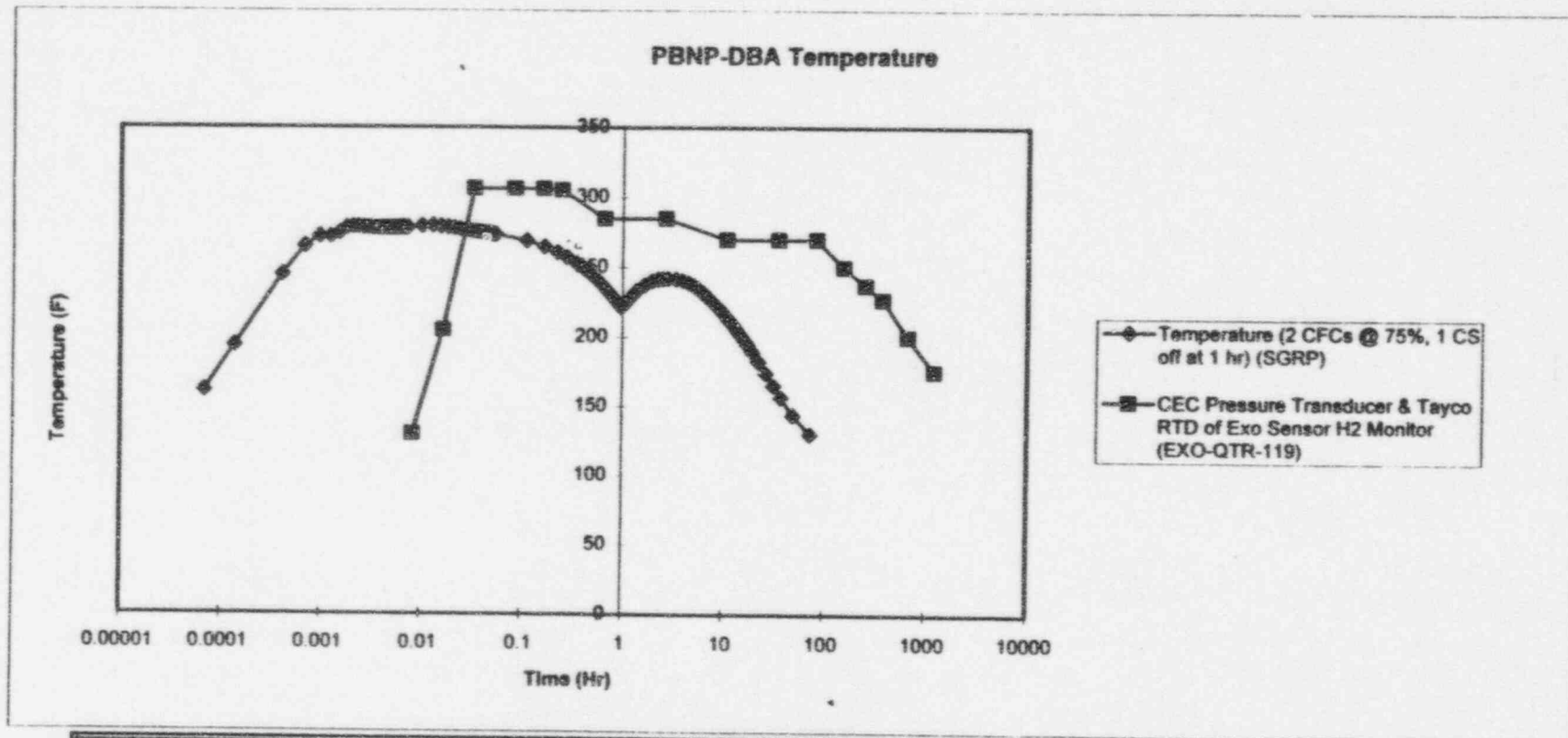
PBNP Temperature Requirement (F) :	283	Degradation Equivalency Method
Qualified Temperature (F)	340	
Met	Yes	
Margin	21.4%	
		Graphical



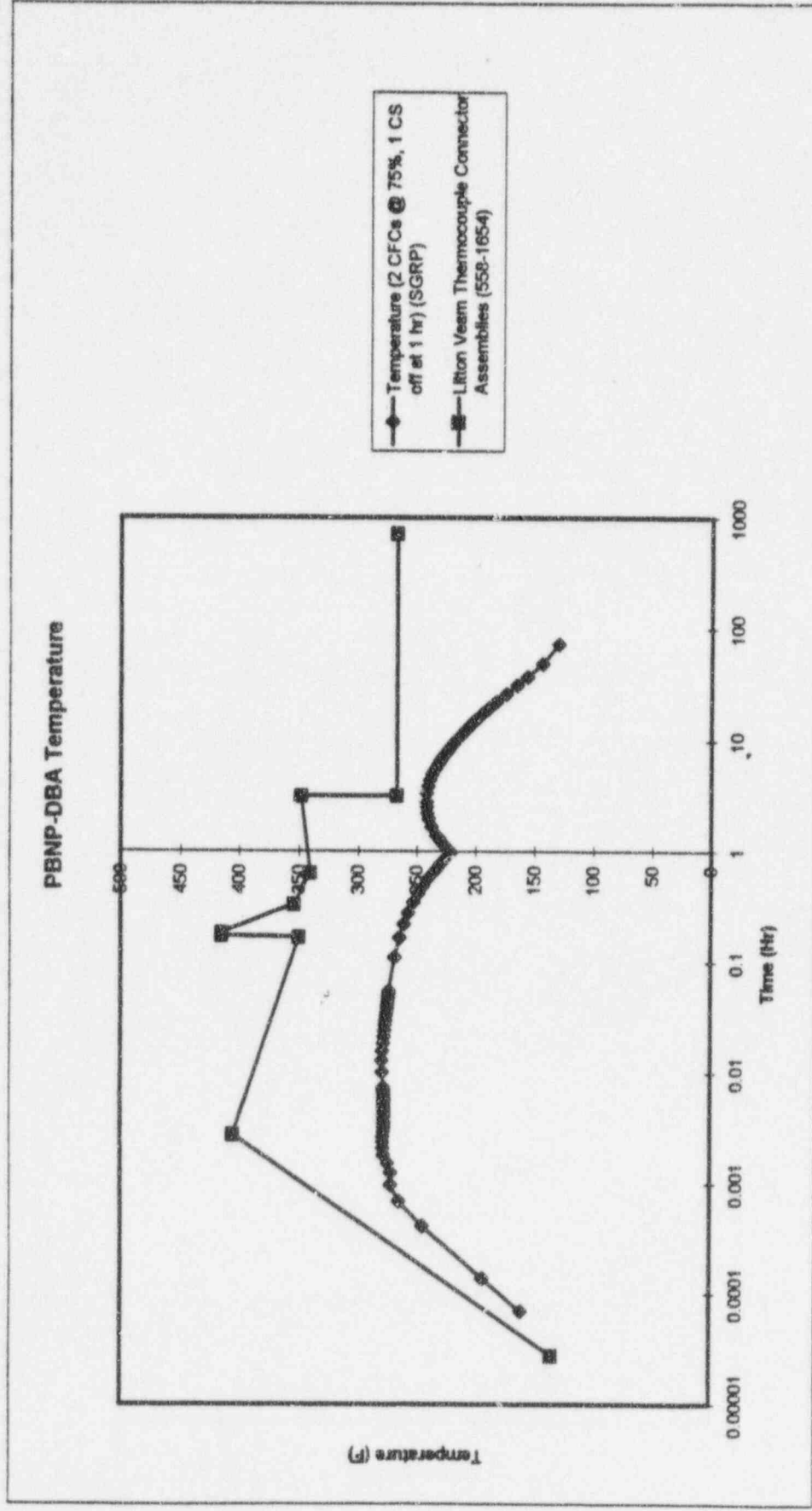
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	385	
Met	Yes	
Margin	37.5%	
		Graphical



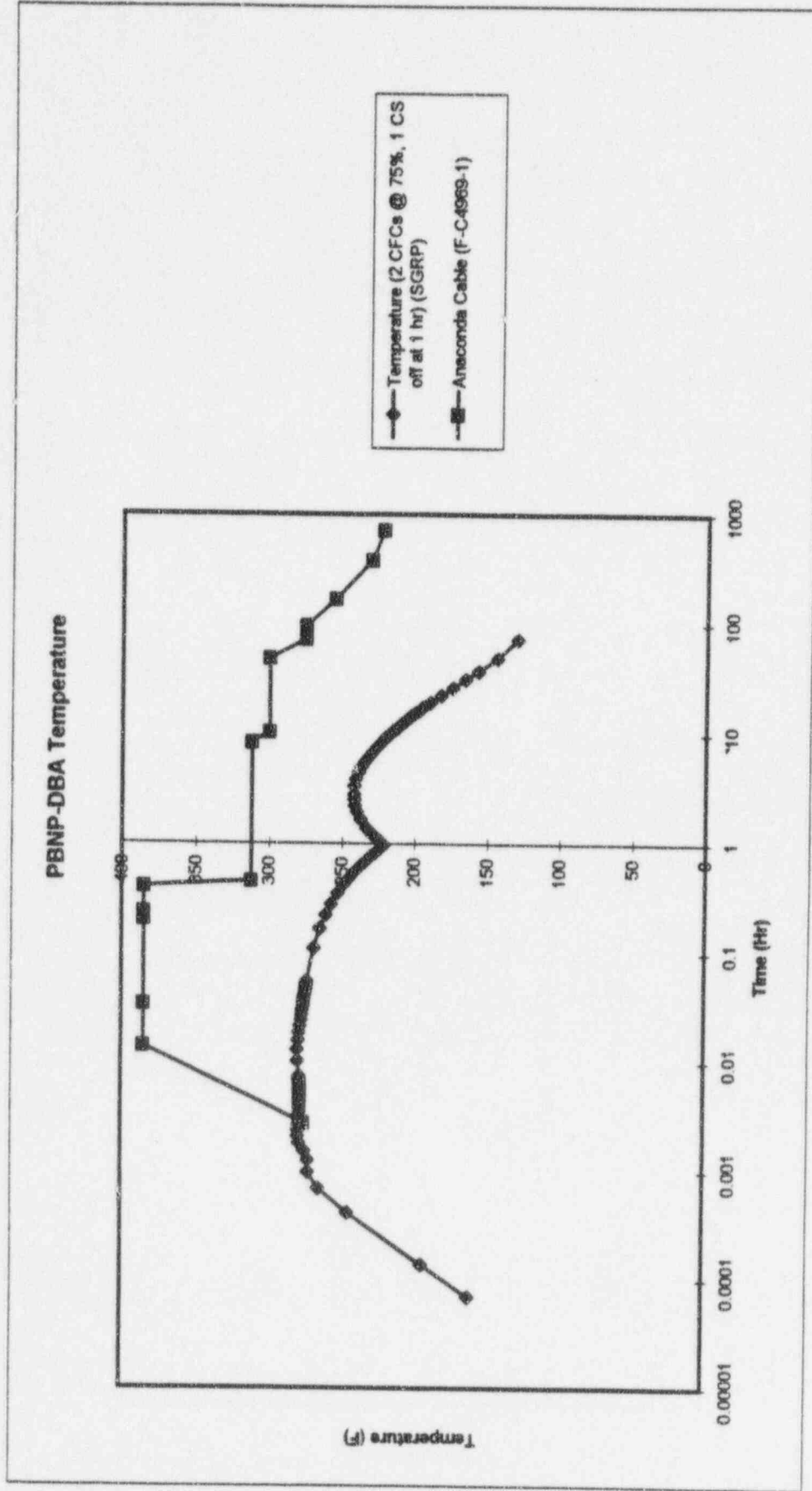
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	310	
Met	Yes	
Margin	10.7%	



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	306	
Met	Yes	
Margin	9.3%	
		Graphical



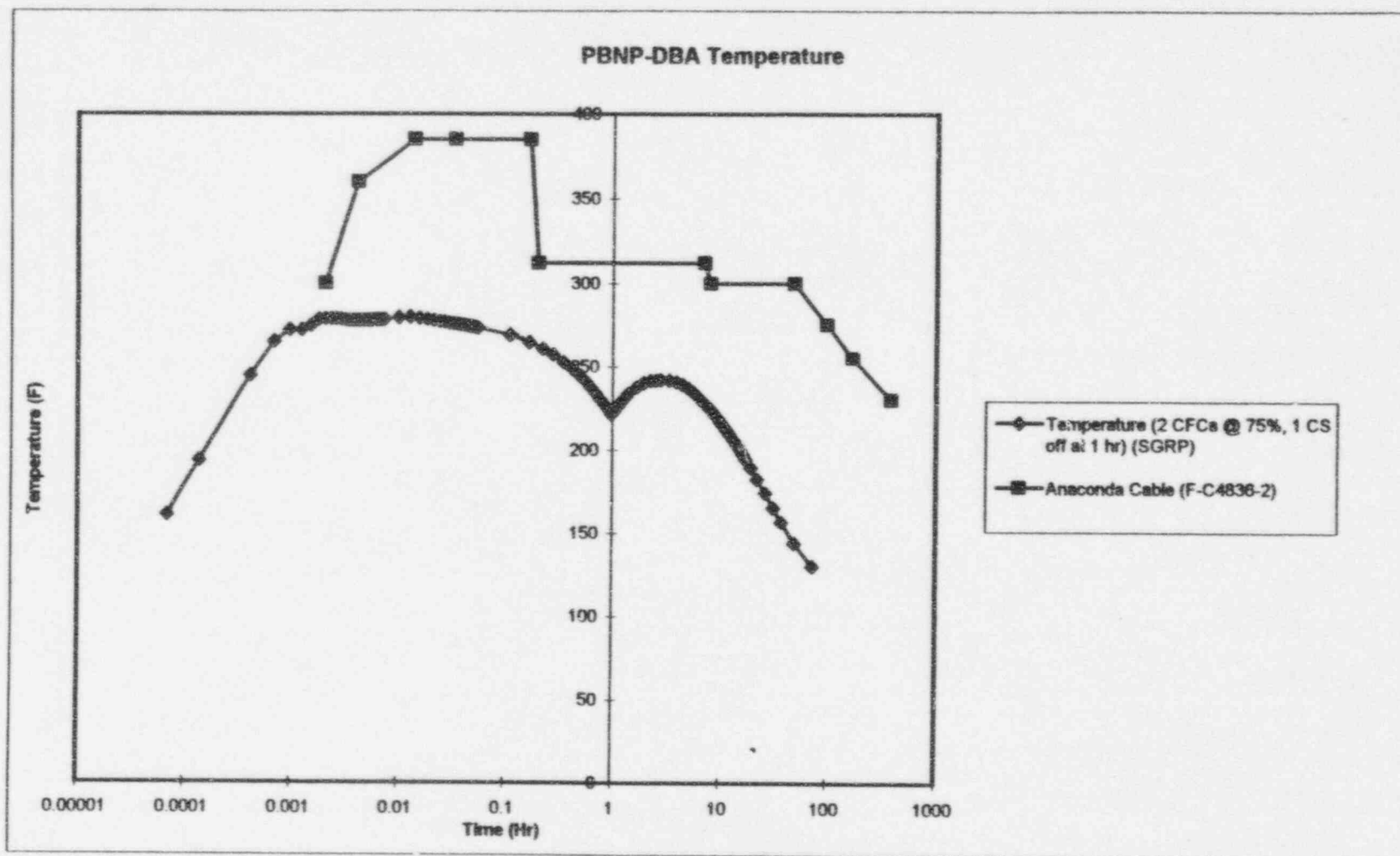
PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method	Graphical
Qualified Temperature (F)		415		
Met		Yes		
Margin		48.2%		



PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met	385		
Margin	Yes		
	37.5%		

Item 23.

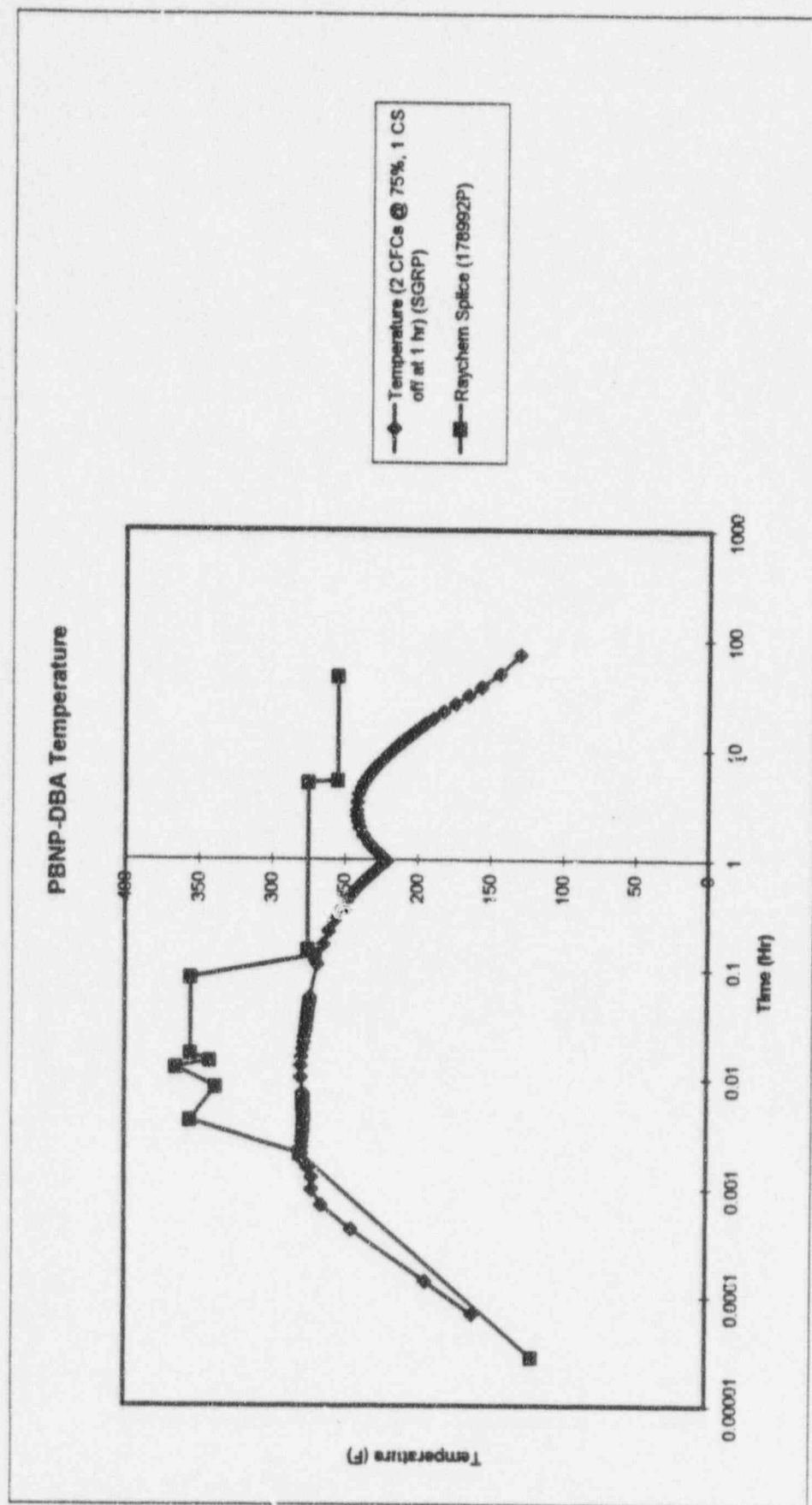
PBNP-DBA-Temp-Anaconda (4836-2)



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	385	
Met	Yes	
Margin	37.5%	

Item 24.

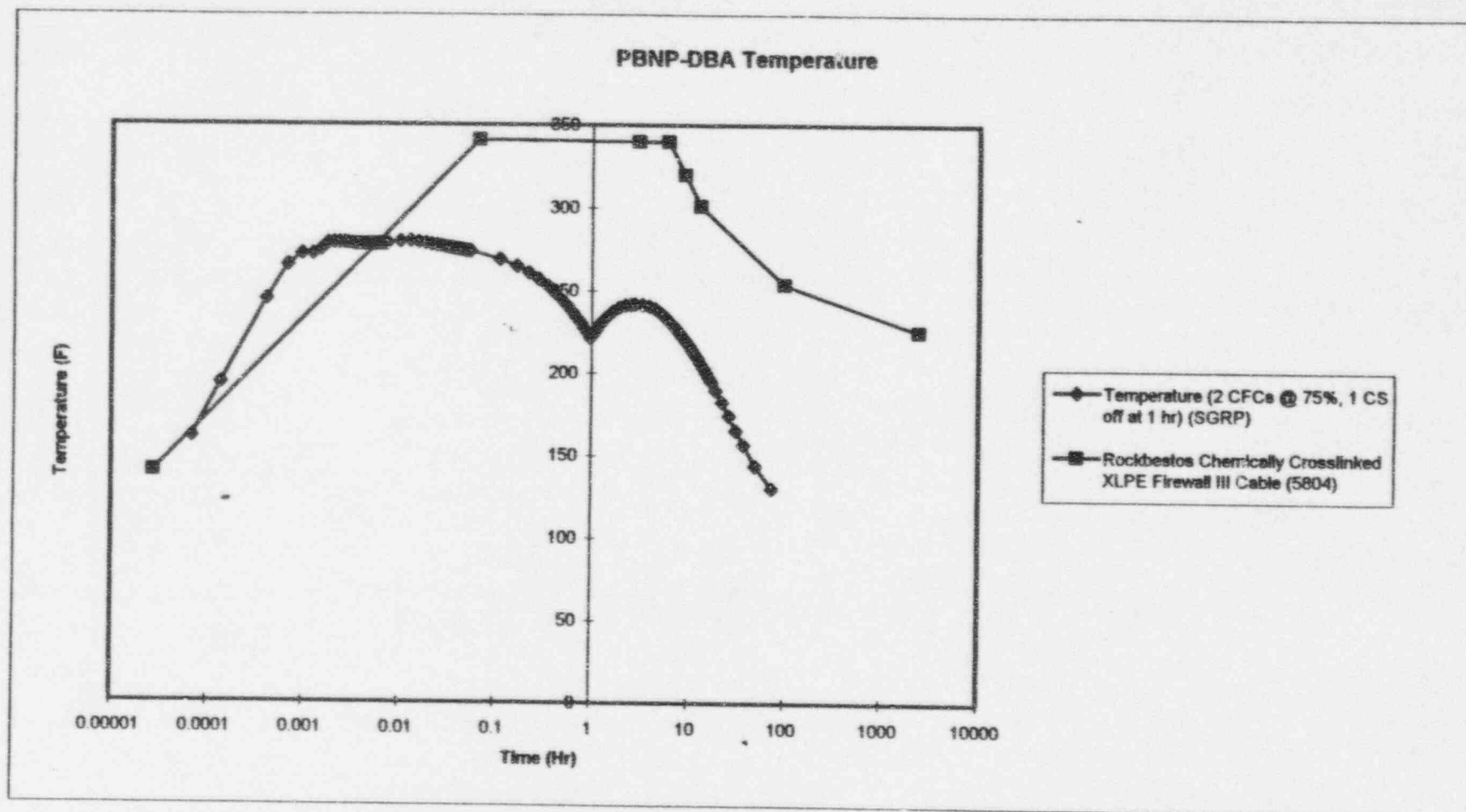
PBNP-DBA-Temp-Raychem(178592P)



PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method	
Qualified Temperature (F)		365	Graphical	
Met		Yes		
Margin		30.4%		

Item 25.

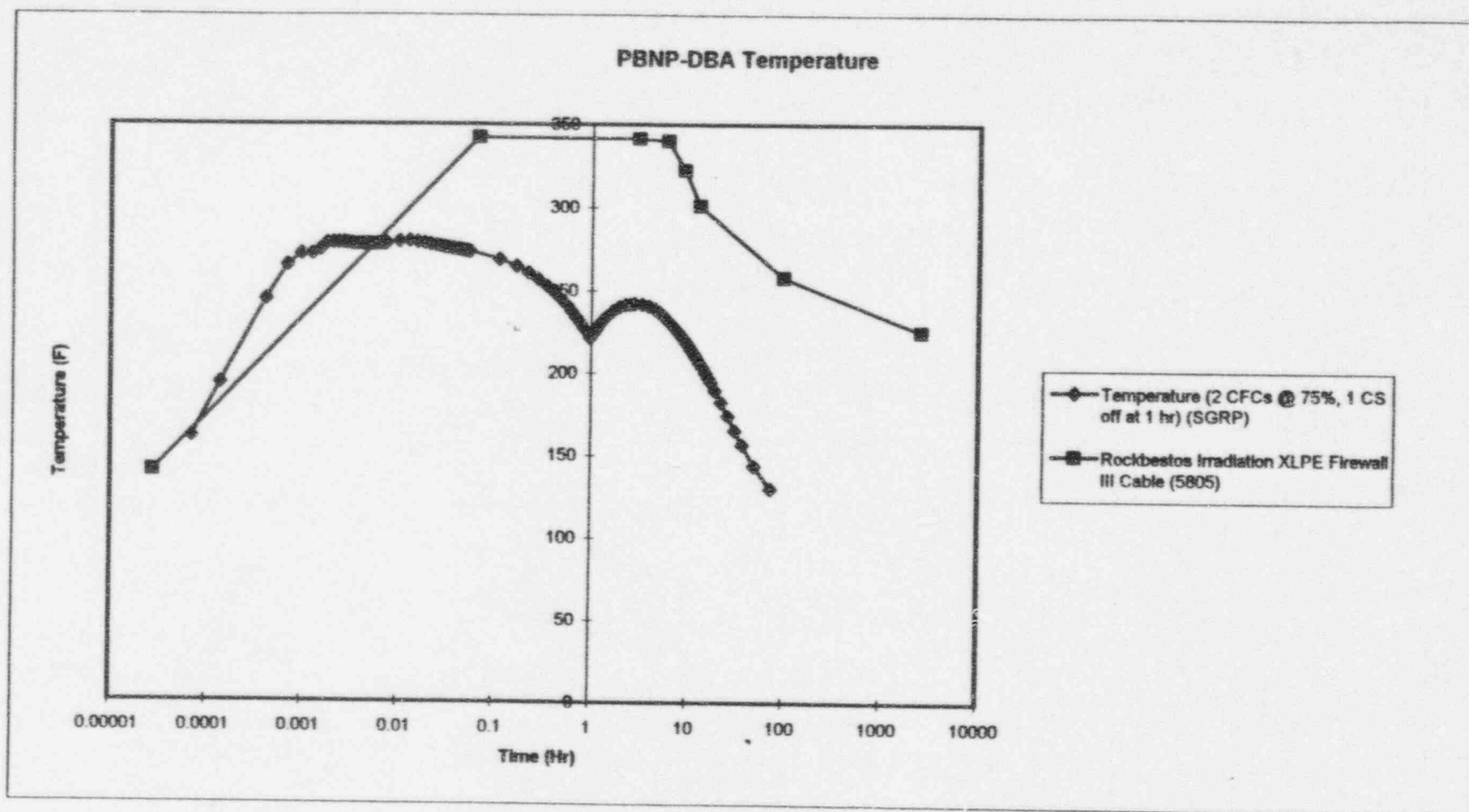
PBNP-DBA-Temp-Rockbestos(5804)



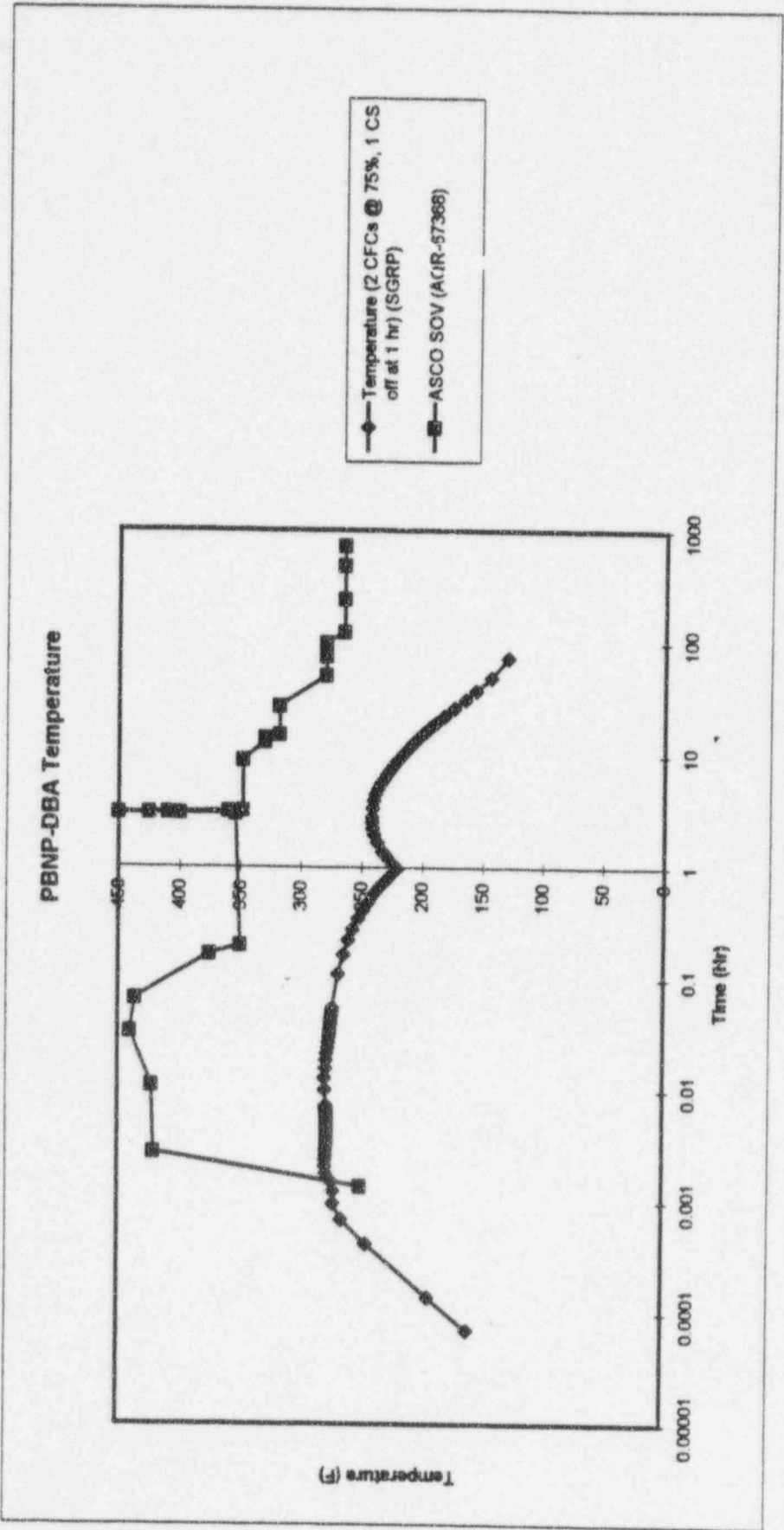
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	341	
Met	Yes	
Margin	21.8%	

Item 25A.

PBNP-DBA-Temp-Rockbestos(5805)



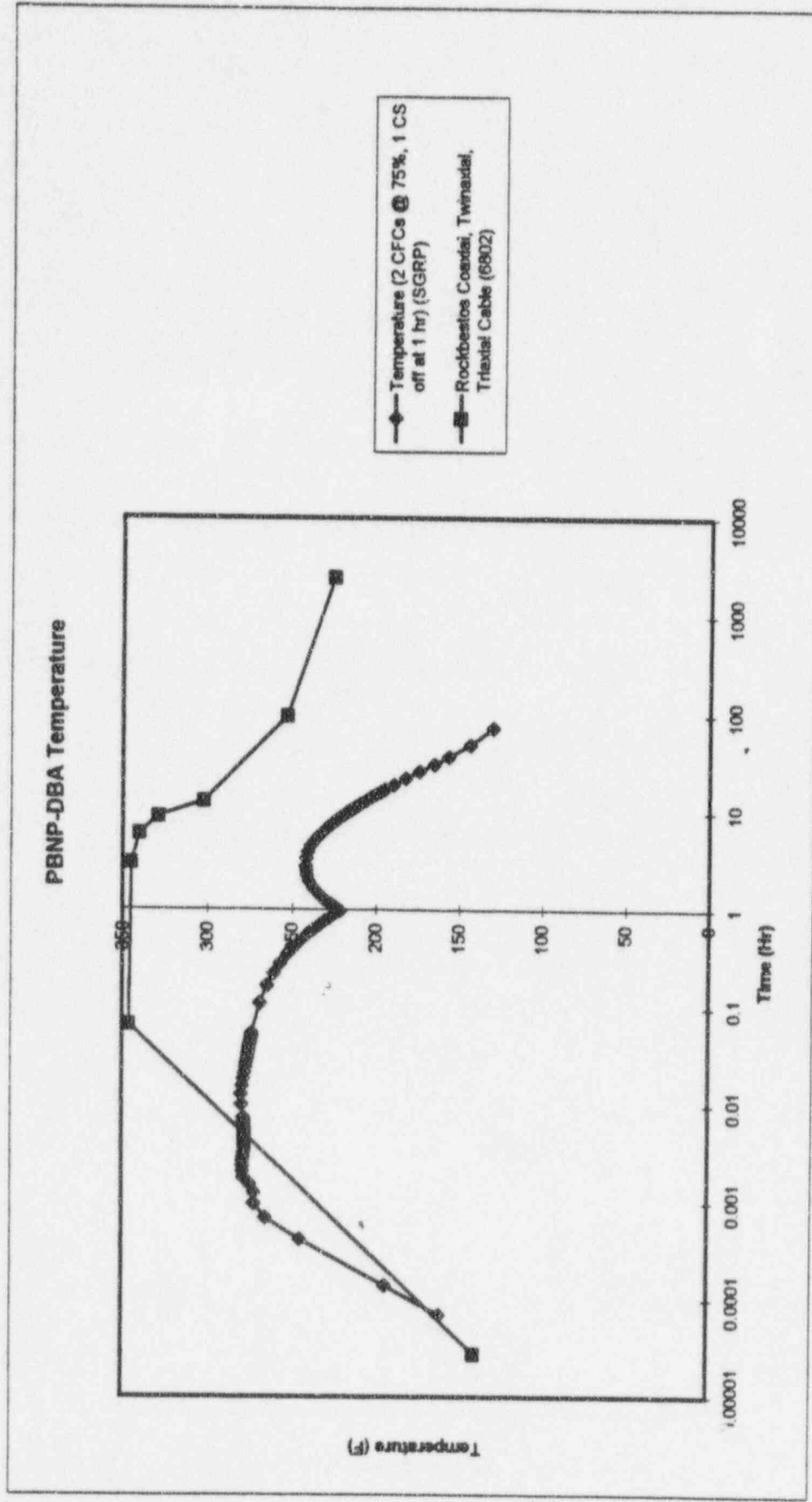
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	342	
Met	Yes	
Margin	22.1%	
		Graphical



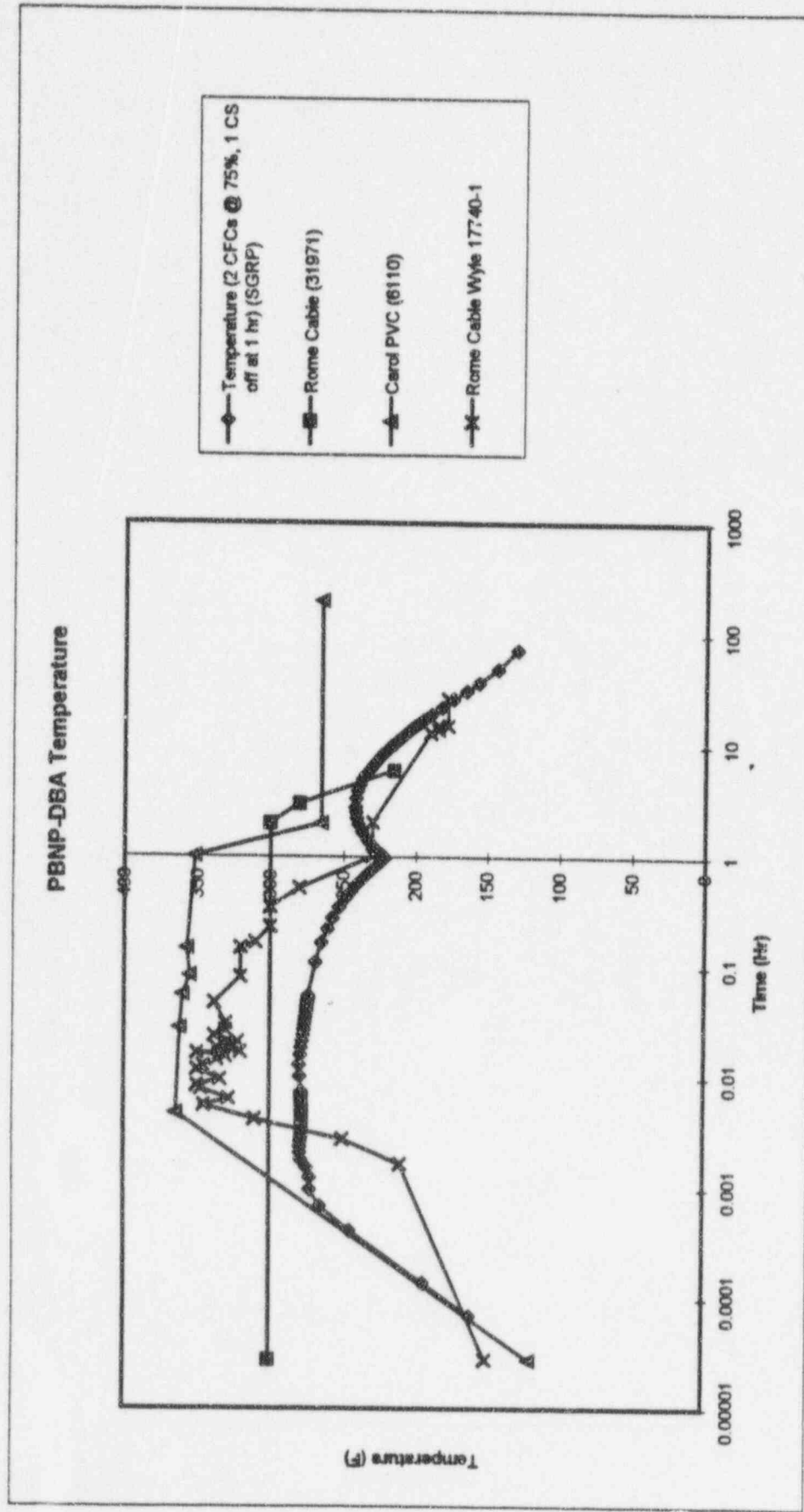
PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method
Qualified Temperature (F) 450		Graphical
Met	Yes	
Margin	60.7%	

Item 27.

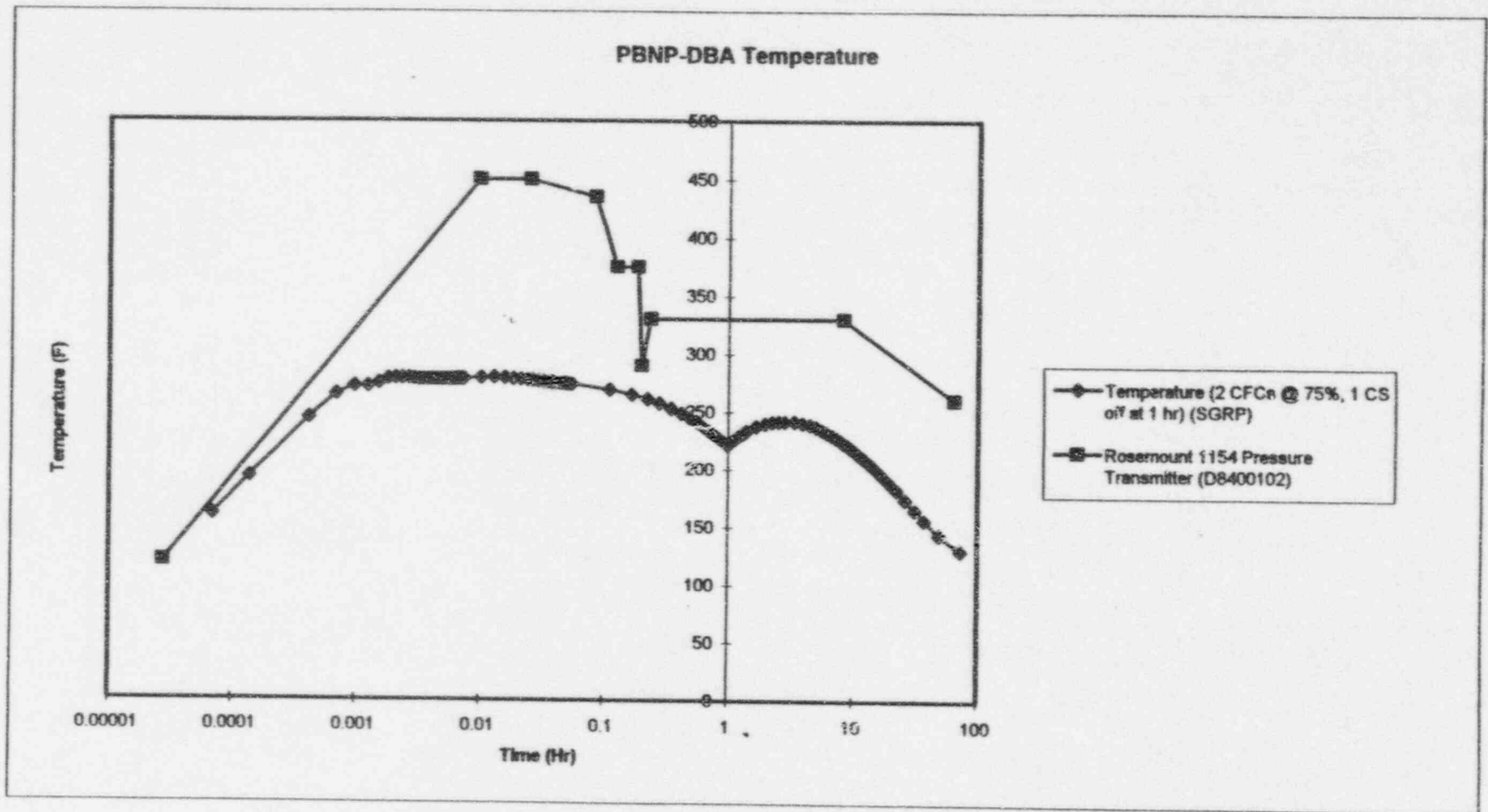
PBNP-DBA-Temp-Rockbestos(6802)



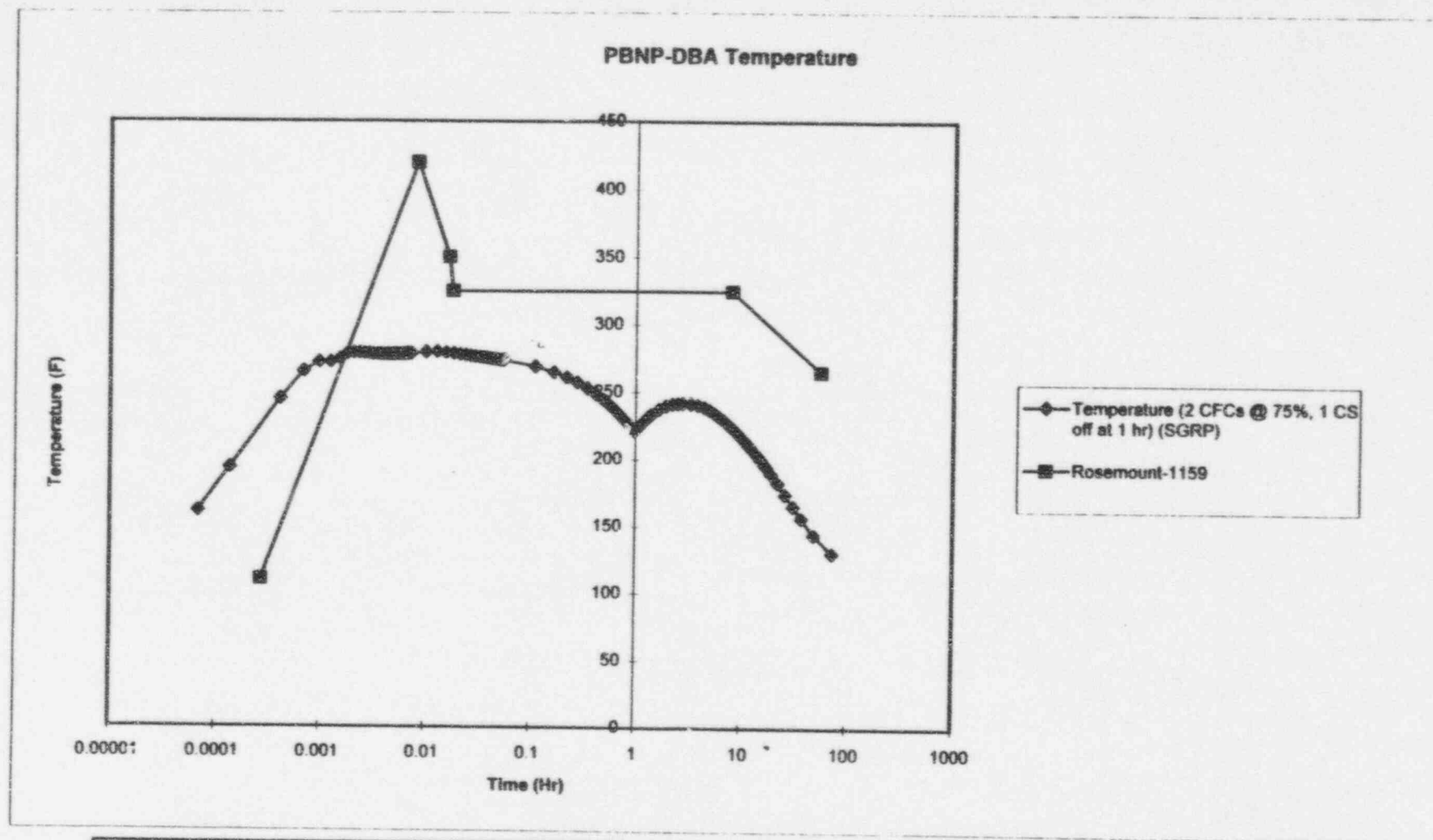
PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met			
Margin		23.6%	



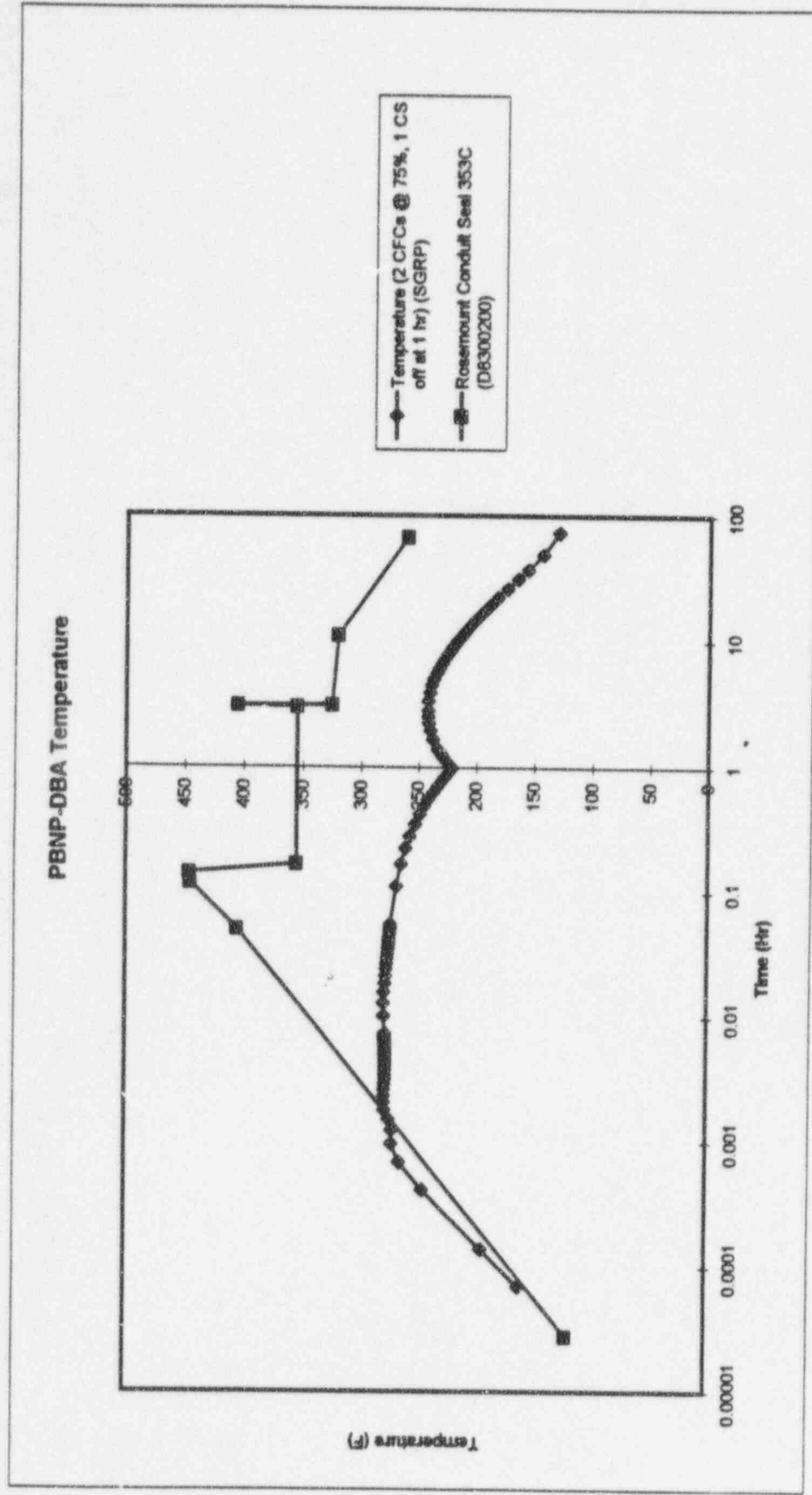
PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method	
Qualified Temperature (F)		300	Graphical and Analytical	
Met		Yes		
Margin		7.1%		



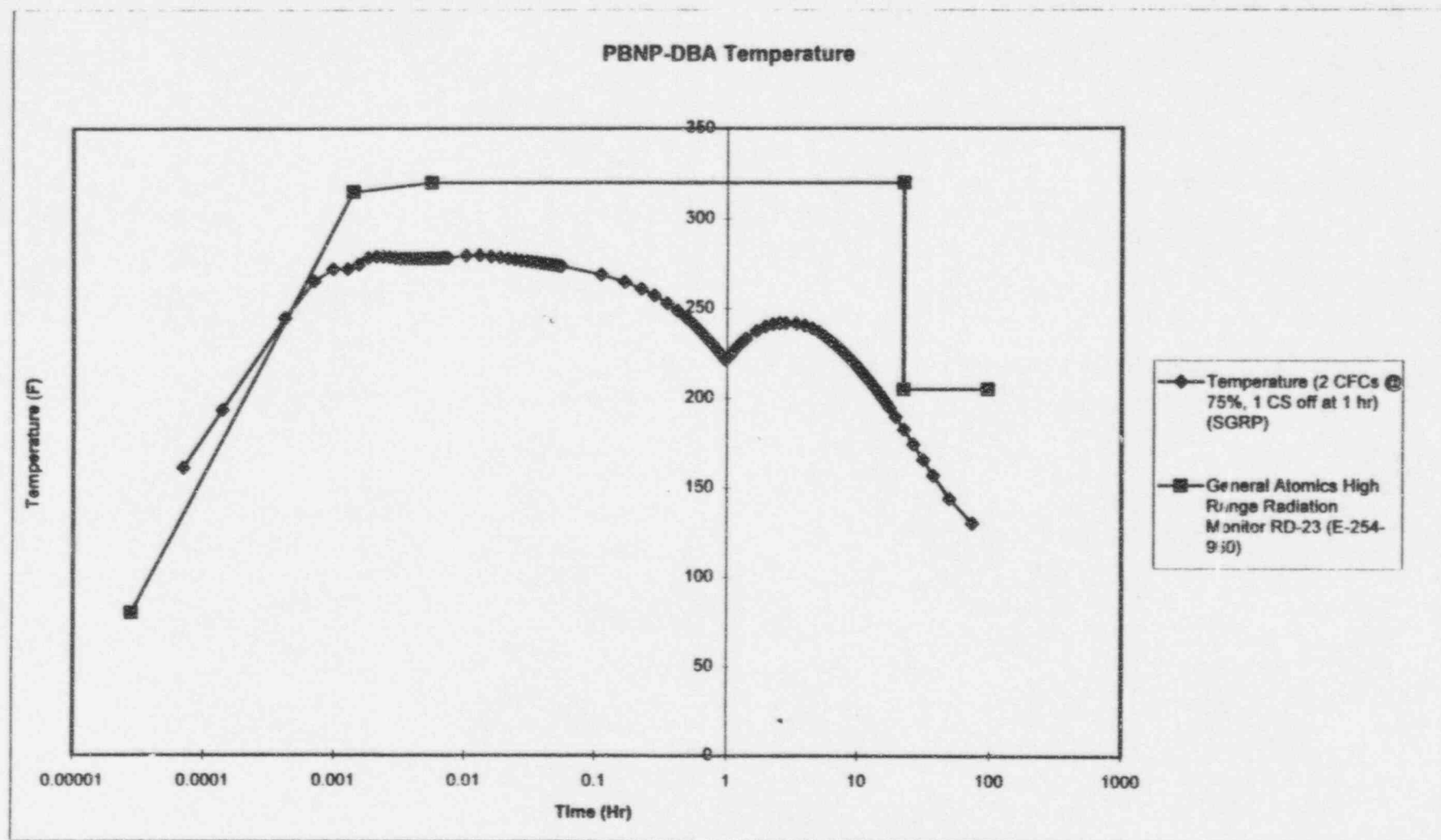
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	450	
Met	Yes	
Margin	60.7%	
		Graphical



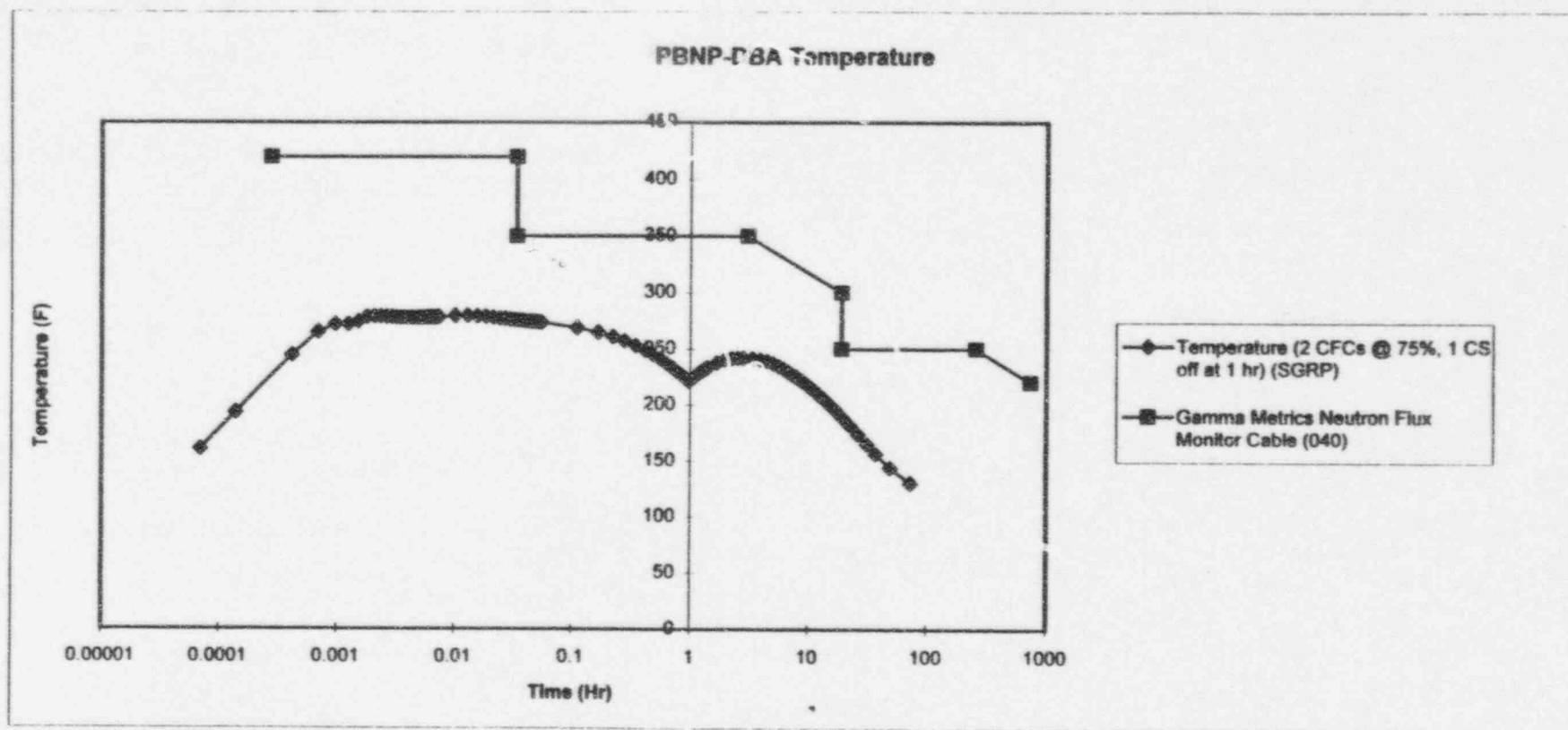
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	420	
Met	Yes	Graphical
Margin	50.0%	



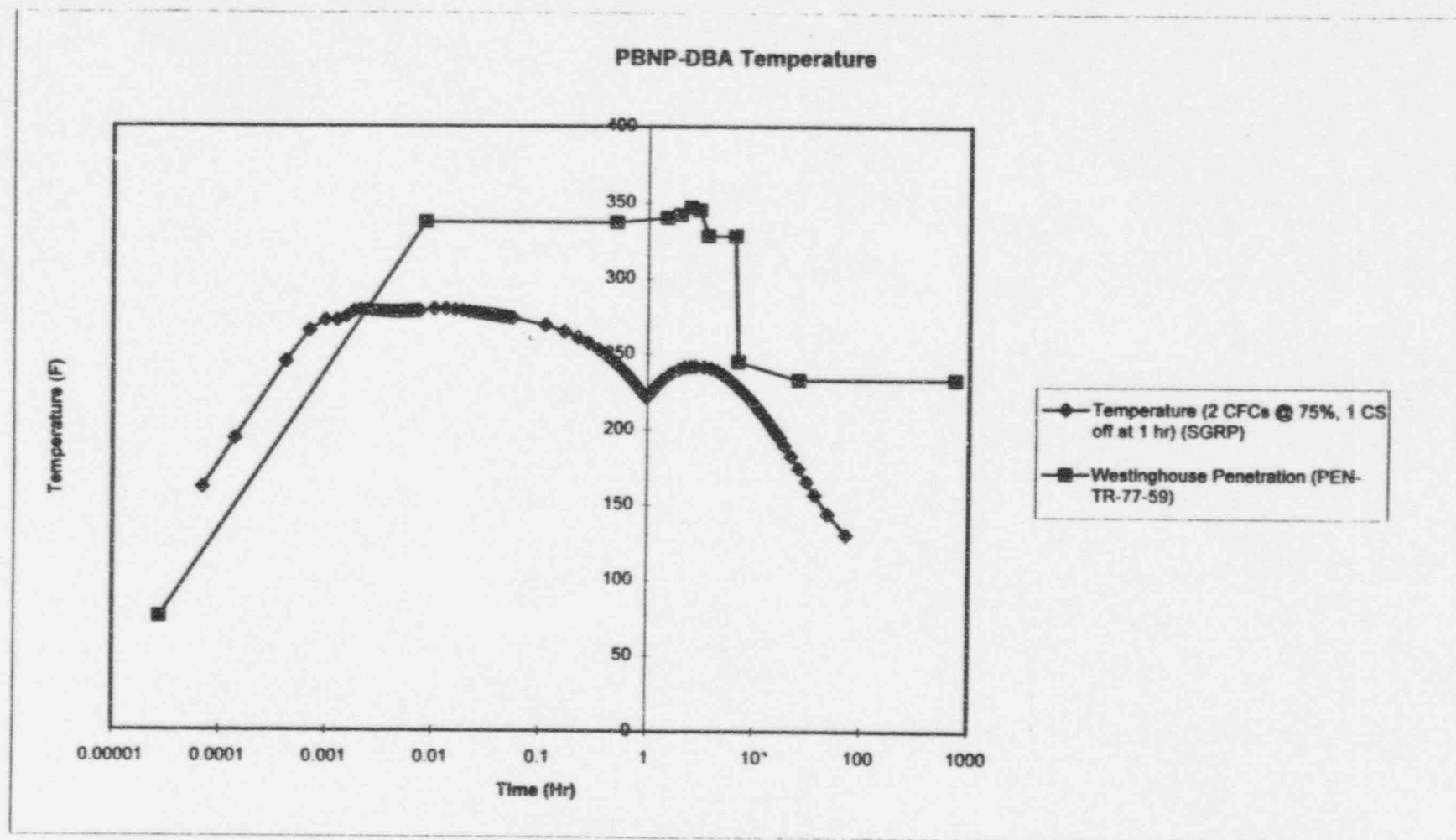
PBNP Temperature Requirement (F) : 280		Degradation Equivalency Method	
Qualified Temperature (F)		Graphical	
Met		Yes	
Margin		59.3%	



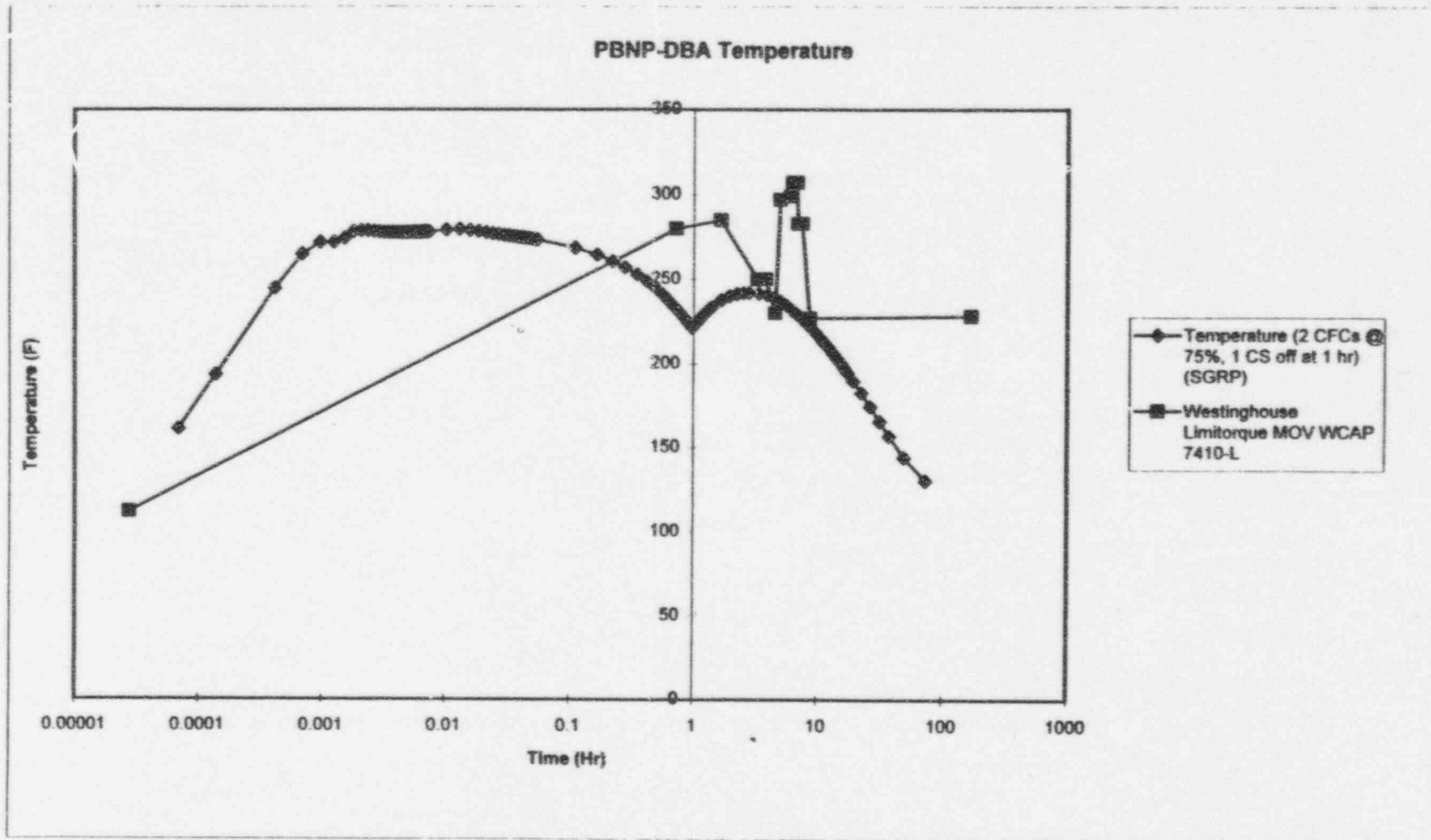
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	320	
Met	Yes	
Margin	14.3%	



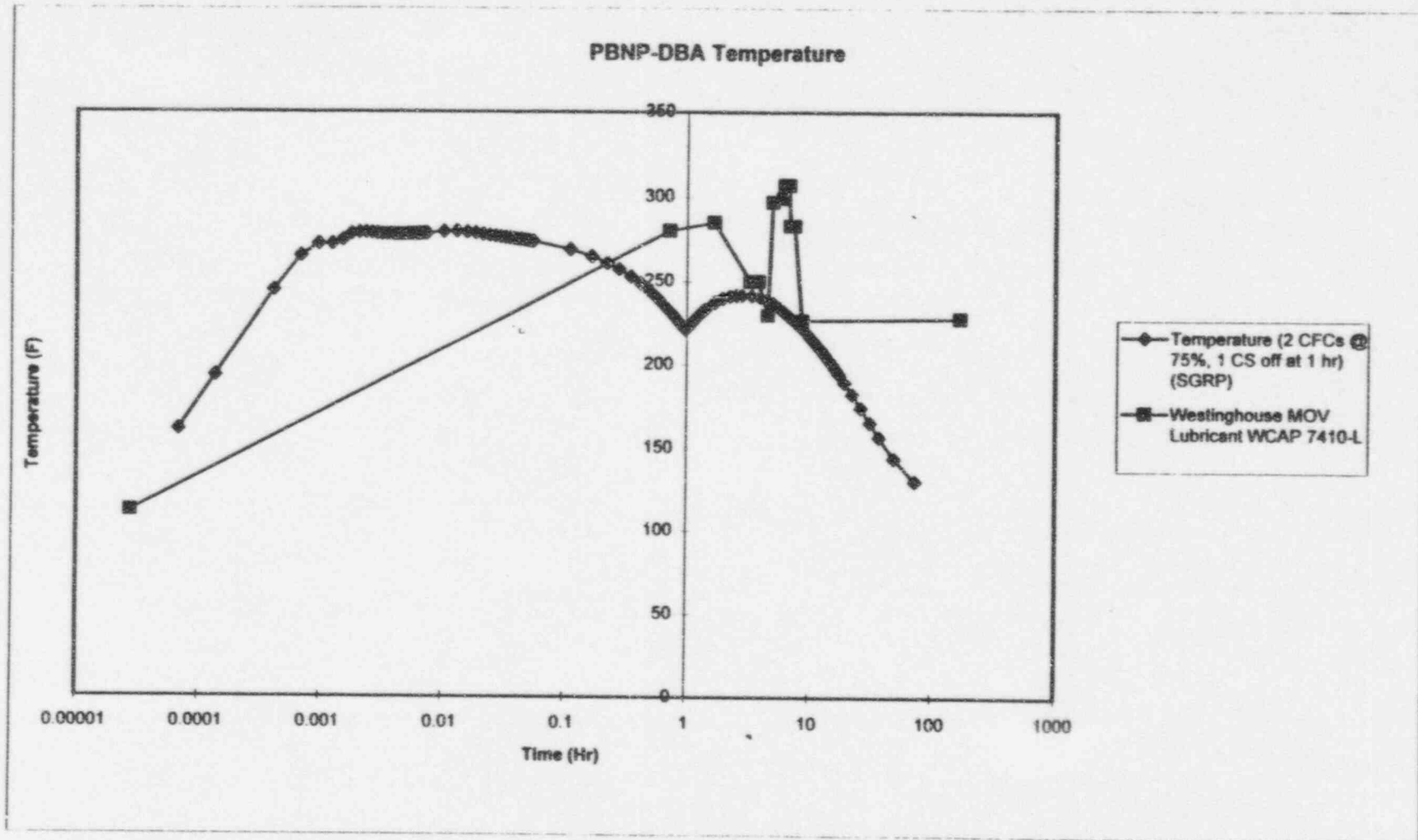
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	420	
Met	Yes	
Margin	50.0%	



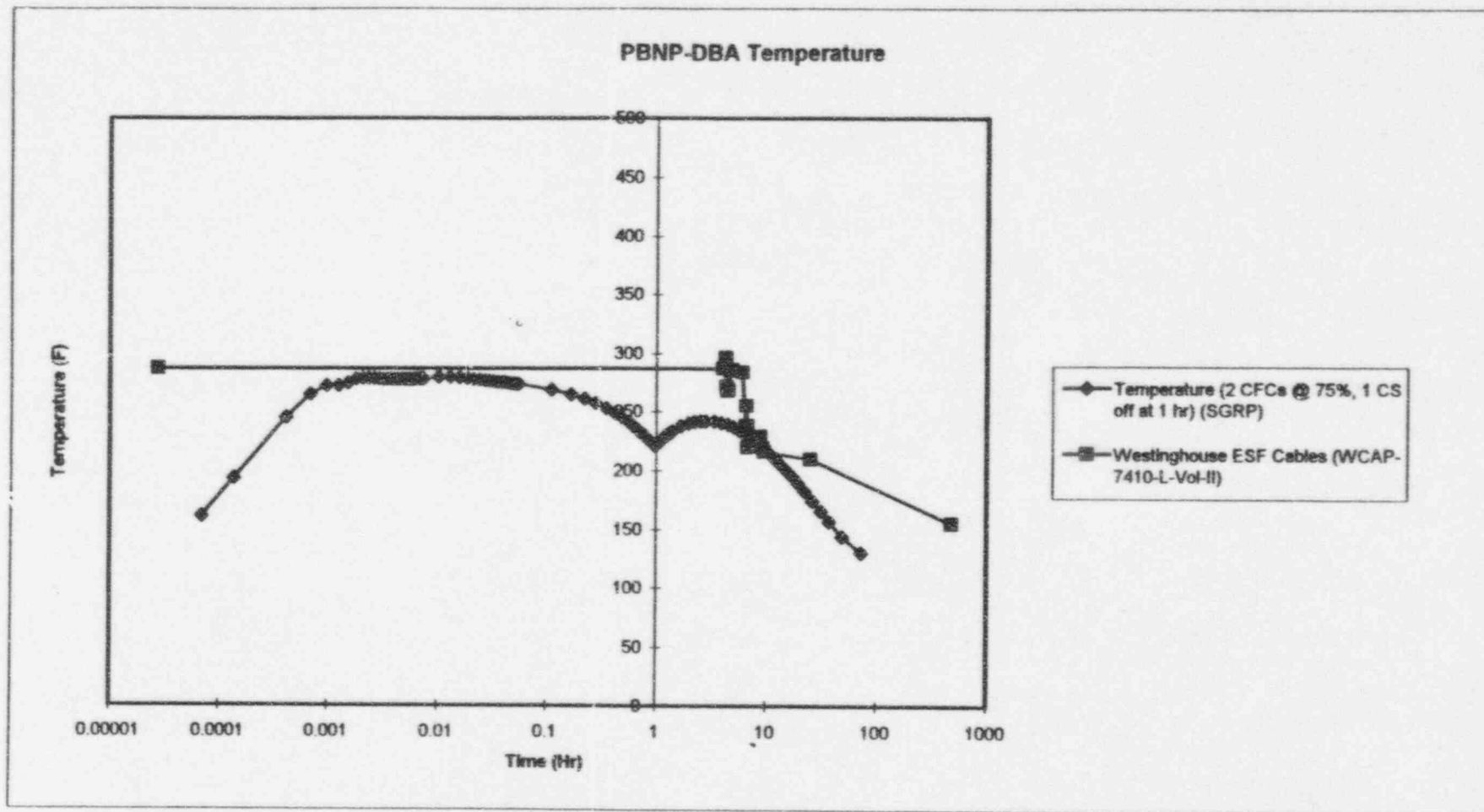
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	347	
Met	Yes	
Margin	23.9%	



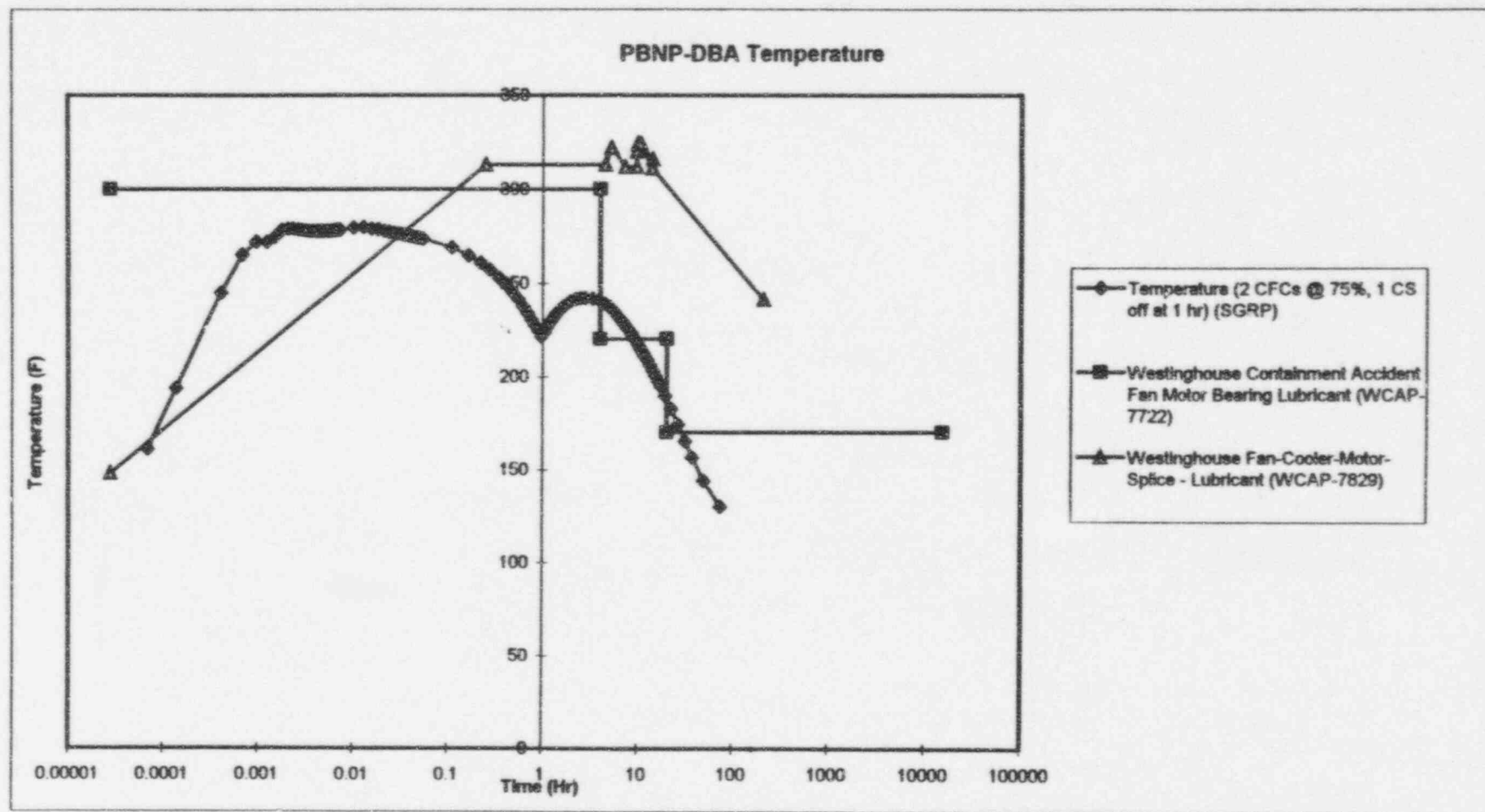
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method Graphical
Qualified Temperature (F)	307	
Met	Yes	
Margin	9.6%	



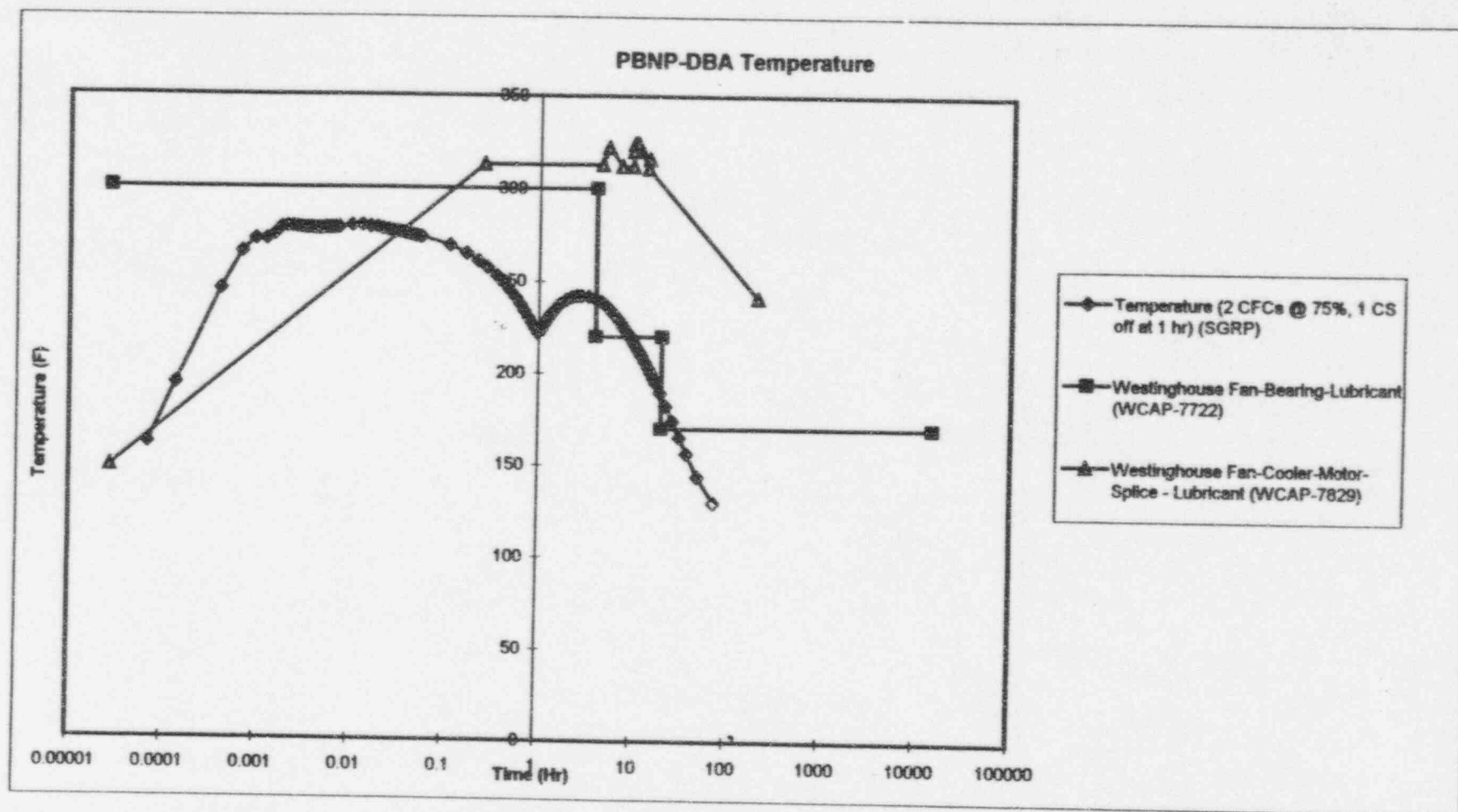
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	307	
Met	Yes	
Margin	9.6%	
		Graphical



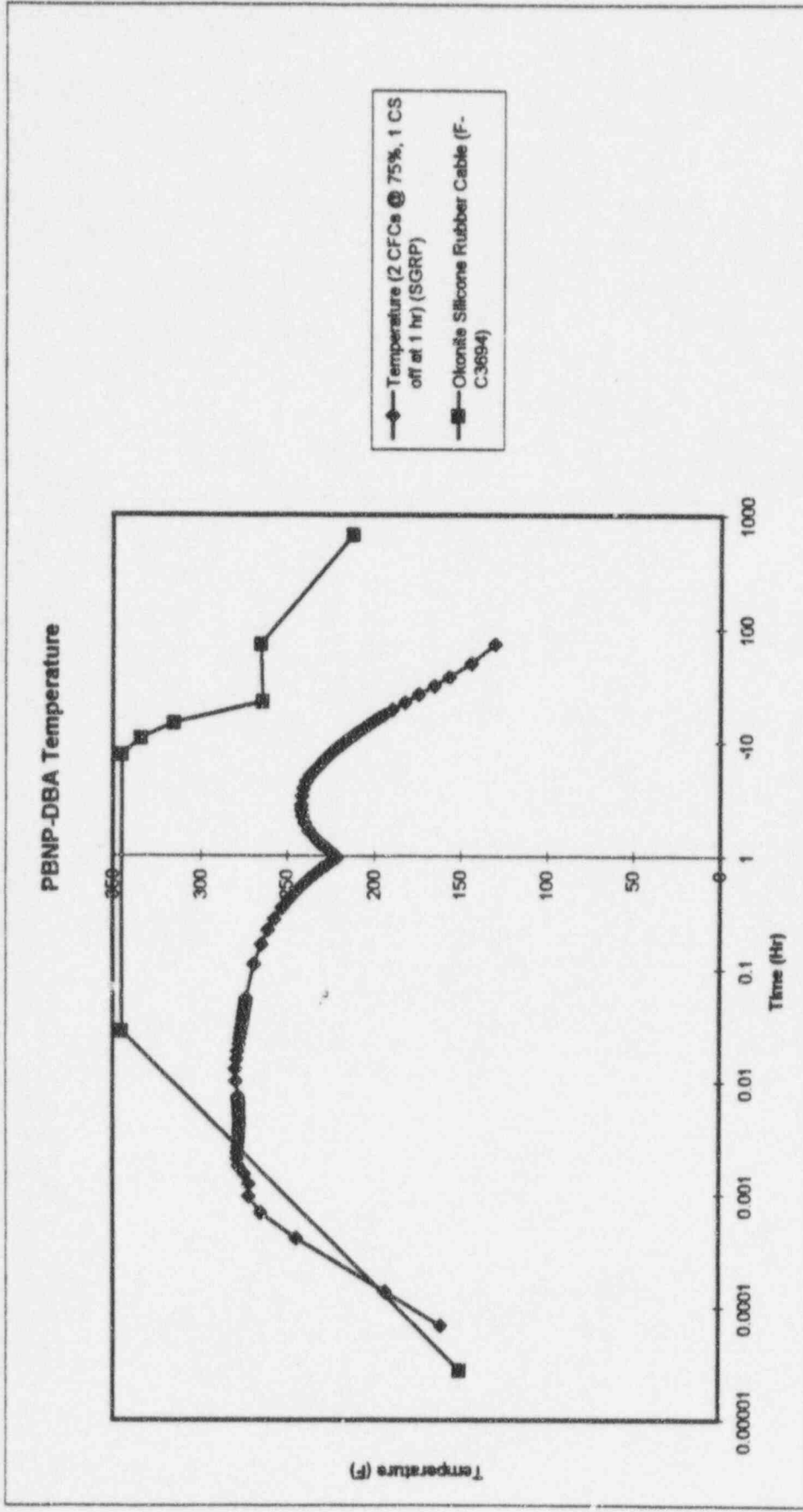
PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	296	
Met	Yes	
Margin	5.7%	
		Graphical



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	324	
Met	Yes	Graphical
Margin	15.7%	Westinghouse WCAP-7829 is bounding.



PBNP Temperature Requirement (F) :	280	Degradation Equivalency Method
Qualified Temperature (F)	324	
Met	Yes	Graphical
Margin	15.7%	Westinghouse WCAP-7829 is bounding.



PBNP Temperature Requirement (F) :		280	Degradation Equivalency Method	
Qualified Temperature (F)		345	Graphical	
Met		Yes		
Margin		23.2%		

TEST VS REQUIREMENTS CALCULATION

Item Description:

CALCULATION INPUT

Activation Energy: 0.7800

Aging Temperature: 200.00 F

ACCIDENT REQUIREMENTS

Plant Name: POINT BEACH 2ND

Zone Name: CS OFF @ 1 HR

TIME	UNITS	STARTING TEMPERATURE	UNITS	ENDING TEMPERATURE	UNITS
150.00	S	221.30	F	223.60	F
250.00	S	223.60	F	226.20	F
250.00	S	226.20	F	228.40	F
250.00	S	228.40	F	230.30	F
250.00	S	230.30	F	231.90	F
250.00	S	231.90	F	233.30	F
1000.00	S	233.30	F	237.50	F
1000.00	S	237.50	F	240.00	F
1000.00	S	240.00	F	241.30	F
1000.00	S	241.30	F	241.80	F
1000.00	S	241.80	F	241.90	F
2000.00	S	241.90	F	241.60	F
2000.00	S	241.60	F	240.60	F
2000.00	S	240.60	F	239.00	F
2000.00	S	239.00	F	237.00	F
2000.00	S	237.00	F	234.60	F
2000.00	S	234.60	F	232.10	F
2000.00	S	232.10	F	229.80	F
2000.00	S	229.80	F	227.50	F
2000.00	S	227.50	F	225.30	F
2000.00	S	225.30	F	223.20	F

ACCIDENT TEST

Test Name: GEMS-DELAVAL (PART)

Report Number: WYLE 45700-2

TIME	UNITS	STARTING TEMPERATURE	UNITS	ENDING TEMPERATURE	UNITS
3880.00	S	300.00	F	300.00	F

ACCIDENT TEST...Continued

Test Name: GEMS-DELAVAL (PART)

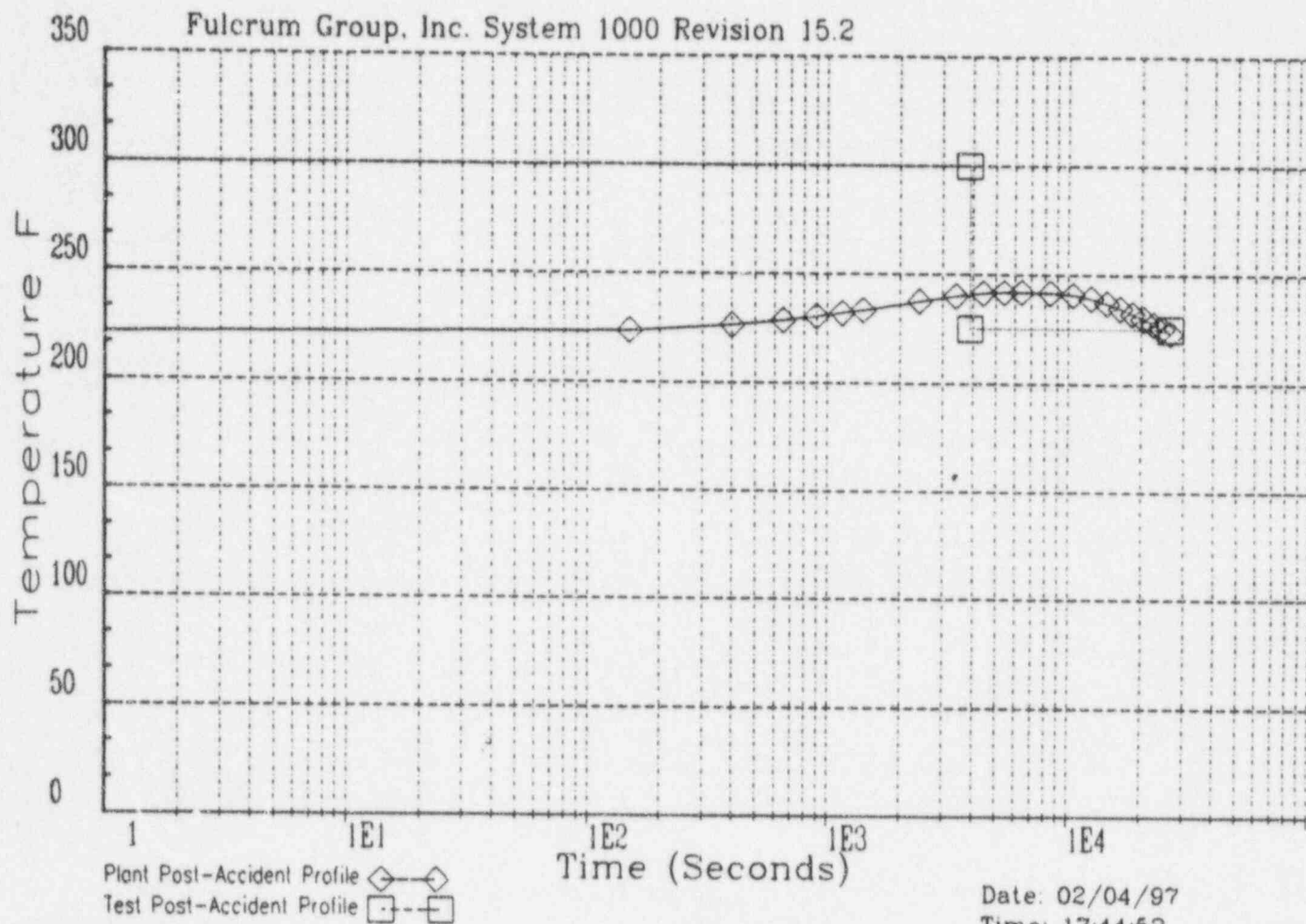
Report Number: WYLE 45700-2

TIME	UNITS	STARTING TEMPERATURE	UNITS	ENDING TEMPERATURE	UNITS
20.00	S	300.00	F	225.00	F
22500.00	S	225.00	F	225.00	F

CALCULATION RESULTS: 63.76%

Prepared By: Marge B. BauerDate: 2-11-97Reviewed By: Thomas C. PerryDate: 02/11/97

Fulcrum Group, Inc. System 1000 Revision 15.2



Minimum Margin: 63.76 %

Item Description:

Date: 02/04/97

Time: 17:44:52

TEST VS REQUIREMENTS CALCULATION

Item Description: Rome Cable in Wyle 17740-1

CALCULATION INPUT

Activation Energy: 1.3700

Aging Temperature: 200.00 F

ACCIDENT REQUIREMENTS

Plant Name: POINT BEACH

Zone Name: FIRST 26.22 HR

TIME		STARTING UNITS TEMPERATURE	ENDING UNITS TEMPERATURE	UNITS
0.25	S	161.20	F	161.20 F
0.25	S	161.20	F	193.80 F
1.00	S	193.80	F	244.90 F
1.00	S	244.90	F	265.30 F
1.00	S	265.30	F	272.20 F
2.00	S	272.20	F	274.60 F
1.00	S	274.60	F	278.40 F
1.00	S	278.40	F	279.00 F
12.50	S	279.00	F	279.80 F
160.00	S	279.80	F	279.80 F
7.00	S	279.80	F	273.90 F
10.00	S	273.90	F	273.60 F
200.00	S	273.60	F	268.90 F
200.00	S	268.90	F	264.70 F
653.00	S	264.70	F	264.70 F
250.00	S	264.70	F	248.70 F
1500.00	S	248.70	F	248.70 F
250.00	S	248.70	F	224.20 F
350.00	S	224.20	F	221.30 F
150.00	S	221.30	F	223.60 F
250.00	S	223.60	F	226.20 F
250.00	S	226.20	F	228.40 F
250.00	S	228.40	F	230.30 F
250.00	S	230.30	F	231.90 F
250.00	S	231.90	F	233.30 F
1000.00	S	233.30	F	241.90 F
8000.00	S	241.90	F	241.90 F
2000.00	S	241.90	F	239.00 F
2000.00	S	239.00	F	237.00 F
2000.00	S	237.00	F	234.60 F
2000.00	S	234.60	F	232.10 F
10000.00	S	232.10	F	232.10 F
2000.00	S	232.10	F	219.00 F

ACCIDENT REQUIREMENTS...Continued

Plant Name: POINT BEACH

Zone Name: FIRST 26.22 HR

TIME		STARTING		ENDING	
		UNITS	TEMPERATURE	UNITS	TEMPERATURE
10000.00	S	219.00	F	219.00	F
1.00	H	219.00	F	206.16	F
1.00	H	206.16	F	203.15	F
1.00	H	203.15	F	200.24	F
1.00	H	200.24	F	197.44	F
1.00	H	197.44	F	194.73	F
2.00	H	194.73	F	189.60	F
3.00	H	189.60	F	182.56	F
4.00	H	182.56	F	174.26	F

ACCIDENT TEST

Test Name: ROME EQ TEST (PART)

Report Number: WYLE 17740-1

TIME		STARTING		ENDING	
		UNITS	TEMPERATURE	UNITS	TEMPERATURE
6.00	S	150.00	F	210.00	F
4.00	S	210.00	F	250.00	F
5.00	S	250.00	F	310.00	F
5.00	S	310.00	F	345.00	F
3.00	S	345.00	F	328.00	F
5.00	S	328.00	F	347.00	F
2.00	S	347.00	F	350.00	F
4.00	S	350.00	F	334.00	F
8.00	S	334.00	F	350.00	F
3.00	S	350.00	F	346.00	F
6.00	S	346.00	F	336.00	F
4.00	S	336.00	F	330.00	F
4.00	S	330.00	F	350.00	F
1.00	S	350.00	F	320.00	F
5.00	S	320.00	F	336.00	F
5.00	S	336.00	F	328.00	F
5.00	S	328.00	F	322.00	F
10.00	S	322.00	F	338.00	F
10.00	S	338.00	F	330.00	F
15.00	S	330.00	F	330.00	F
60.00	S	330.00	F	338.00	F
120.00	S	338.00	F	320.00	F
240.00	S	320.00	F	320.00	F
70.00	S	320.00	F	310.00	F

ACCIDENT TEST...Continued

Test Name: ROME EQ TEST (PART)

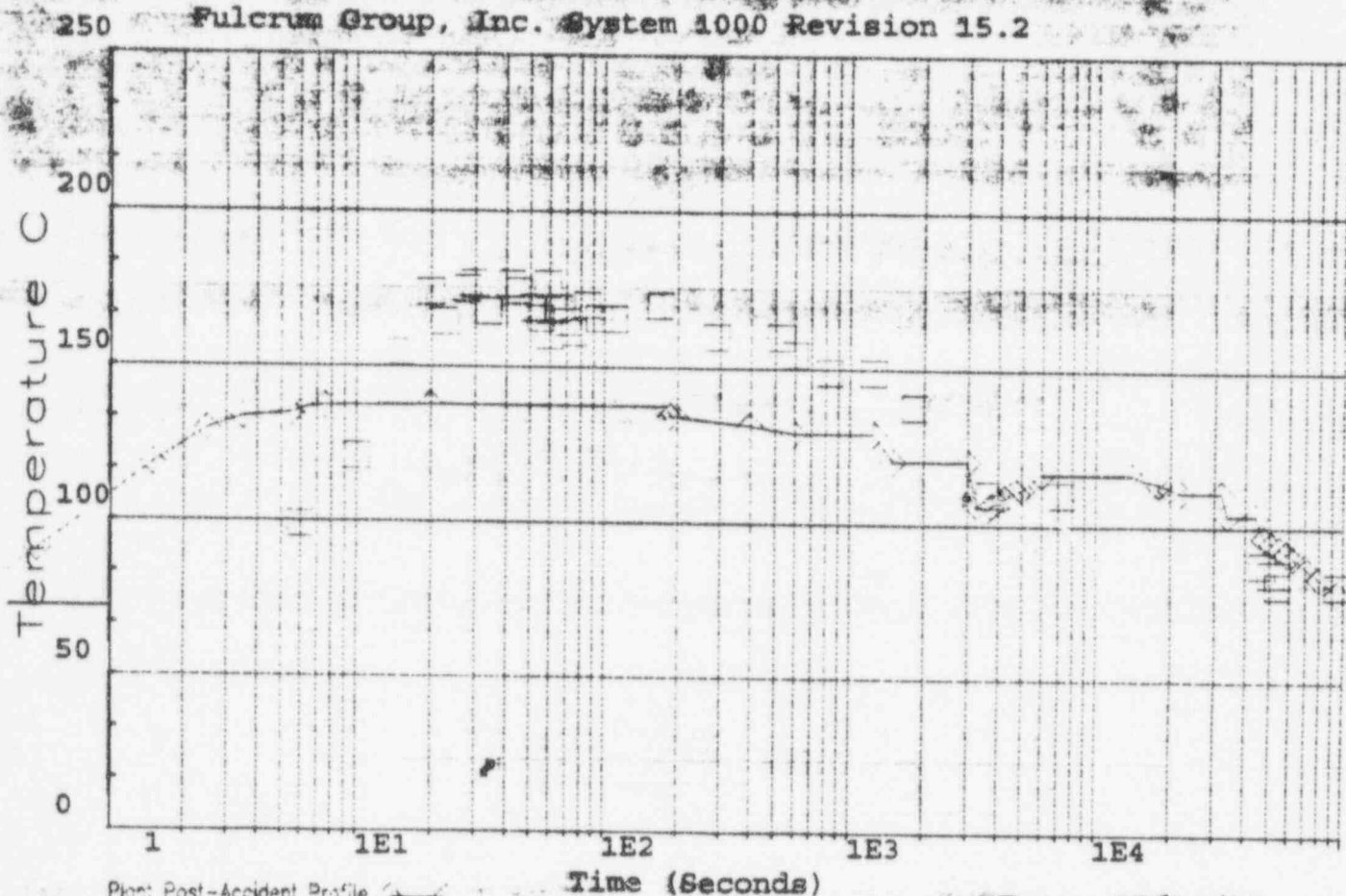
Report Number: WYLE 17740-1

TIME	STARTING		ENDING	
	UNITS	TEMPERATURE	UNITS	TEMPERATURE
230.00	S	310.00	F	300.00
420.00	S	300.00	F	300.00
600.00	S	300.00	F	280.00
1800.00	S	280.00	F	230.00
1.00	H	230.00	F	230.00
39650.00	S	230.00	F	190.00
1.00	H	190.00	F	185.00
1.00	H	185.00	F	185.00
100.00	S	185.00	F	178.00
40200.00	S	178.00	F	178.00

CALCULATION RESU130.86%

Prepared By: Wayne Bruce Date: 2-14-97Reviewed By: Thomas A. Perry Date: 02/14/97

Fulcrum Group, Inc. System 1000 Revision 15.2



Plant Post-Accident Profile

Time (Seconds)

Test Post-Accident Profile

Date: 02/14/97

Time: 14:50:30

Minimum Margin: 130.86 %

Item Description: Rome Cable in Wyle 17740-1