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

MAINE YANKEE ATOMIC POWER COMPANY

DOCKET NO. 50-309

MAINE YANKEE ATOMIC POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 113
License No. DPR-36

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Maine Yankee Atomic Power Company (the licensee), dated December 28, 1988, and as clarified May 30, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by a change to 2.B.6(a) Maximum Power Level and changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.B(6)(b) of Facility Operating License No. DPR-36 is hereby amended to read as follows:

(a) Maximum Power Level

The licensee is authorized to operate the facility at steady-state reactor core power levels not in excess of 2700 megawatts thermal.

(b) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 113, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective immediately.

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance:
July 10, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 113

FACILITY OPERATING LICENSE NO. DPR-36

DOCKET NO. 50-309

Revise Appendix A as follows:

Remove Pages	Insert Pages
2	2
2.1-1	2.1-1
2.1-4	2.1-4
2.1-5	2.1-5
2.2-1	2.2-1
3.10-9	3.10-9
3.10-13	3.10-13
3.10-14	3.10-14
3.10-19	3.10-19

Cold Shutdown Boron Concentration

The boron concentration shall be sufficient to maintain the reactor at least 5% delta k/k subcritical.

Hot Shutdown Boron Concentration

The boron concentration shall be sufficient to maintain the reactor at least 5% delta k/k subcritical.

Reactor Critical

The reactor is considered critical for purposes of administrative control when the neutron flux logarithmic range channel instrumentation indicates greater than 10^{-4}% of rated power. The reactor is considered subcritical when it is not critical.

Shutdown Margin

Shutdown margin shall be the sum of:

(1) the reactivity by which the reactor is subcritical in its present condition, and

(2) the reactivity associated with the withdrawn trippable CEAs less the reactivity associated with the highest worth withdrawn trippable CEA.

Low Power Physics Testing

Testing performed under approved written procedures to determine control rod worths and other core nuclear properties. Reactor power during these tests shall not exceed 2% of rated power, not including decay heat, and primary system temperature and pressure shall be in the range of 260°F to 550°F and 415 psia to 2300 psia, respectively. Certain deviations from normal operating practice which are necessary to enable performing some of these tests are permitted in accordance with the specific provisions of these Technical Specifications.

Power Range Physics Testing

Tests performed under approved written procedures to verify core nuclear design properties at power and plant response characteristics. Reactor power may be greater than 2% during these measurements. Primary system average temperature and pressure shall be in the range of 500°F to 580°F and between 1700 psia tc 2300 psia, respectively. Certain deviations from normal operating practices which are necessary to enable the performance of some of these tests are permitted in accordance with specific provisions of these Technical Specifications.

Rated Power

A steady-state reactor core output of 2700 MWt.

Quadrant Power Tilt

The difference between nuclear power in any core quadrant and the average in all quadrants.

$$\text{TILT} = \left[\frac{\text{Power in any quad}}{\text{Avg. power of all quad}}\right] - 1$$

2.1 LIMITING SAFETY SYSTEM SETTING - REACTOR PROTECTION SYSTEM

Applicability

Applies to reactor trip settings and bypasses for the instrument channels monitoring the process variables which influence the safe operation of the plant.

Objective

To provide automatic protective action in the event that the process variables approach a safety limit.

Specification

The Reactor Protective System trip setting limits and bypasses for the required operable instrument channels shall be as follows:

2.1.1 Core Protection

a) Variable Nuclear Overpower:

Less than or equal to Q + 10, or 106.5 (whichever is smaller) for Q greater than or equal to 10 and less than or equal to 100, and less than or equal to 20 for Q less than or equal to 10.

Where

Q = percent thermal or nuclear power, whichever is larger.

b) Thermal Margin/Low Pressure:

Greater than or equal to: $A\ Q_{DNB} + BT_C + C$, or 1835 psig (whichever is larger).

Where

T_C	=	cold leg temperature, °F
A	=	2070.6
B	=	17.9
C	=	-10053.0
Q_{DNB}	=	$A_1 \times QR_1$

A_1 and QR_1 are given in Figures 2.1-1a and 2.1-1b, respectively.

This trip may be bypassed below 10% of rated power.

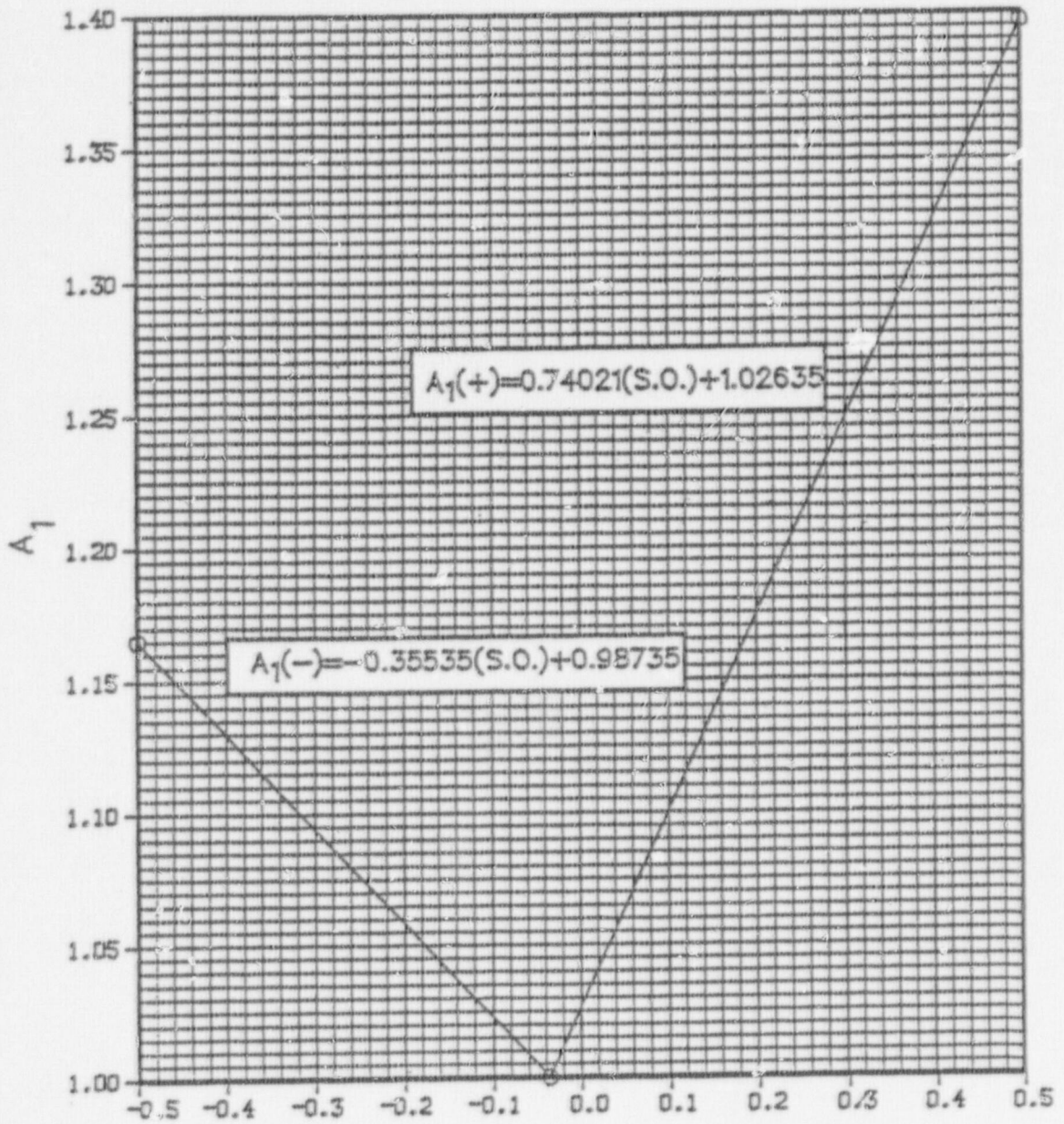
c) The symmetric offset trip function shall not exceed the limits shown in Figure 2.1-2 for three loop operation. This trip may be bypassed below 15% of rated power.

Amendment No. 40, 48, 58, 68, 74, 78, 88, 113

WHERE: $Q_{DNB} = A_1 * QR_1$

AND $P_{VAR}^{TRIP} = 2070.6\ Q_{DNB} + 17.9T_C - 10053.0$

T_C = COLD LEG TEMPERATURE, °F

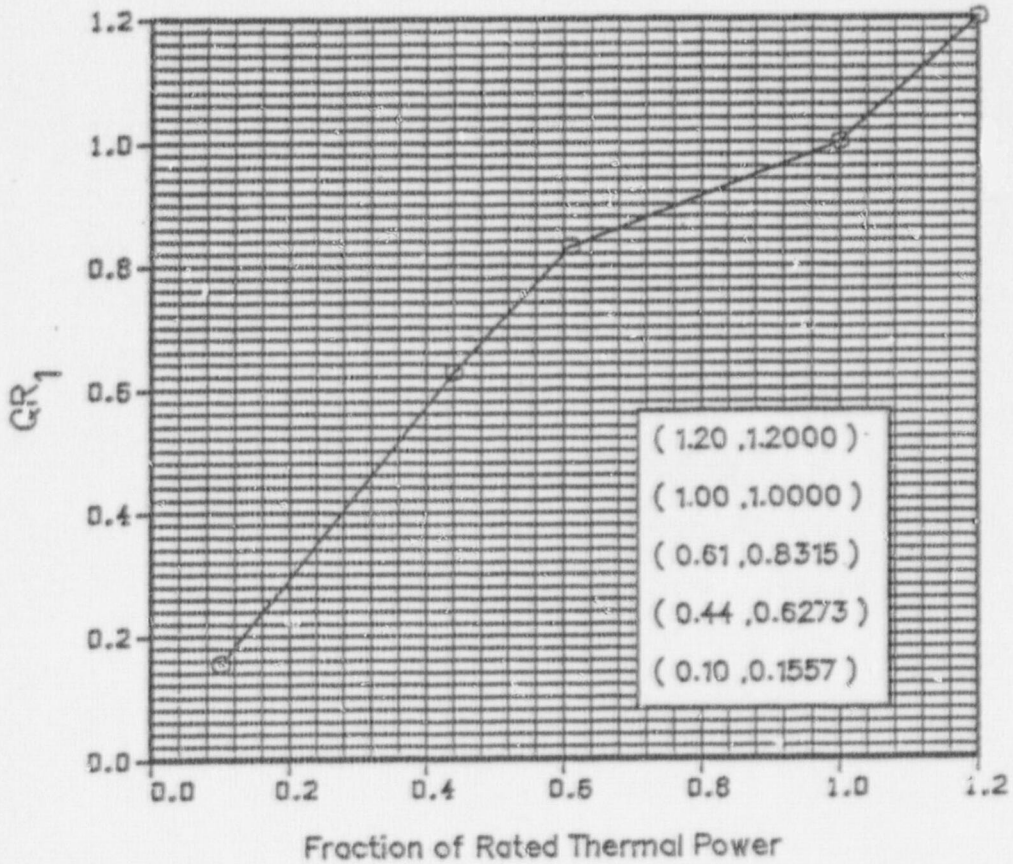


MAINE YANKEE Technical Specification	Thermal Margin/Low Pressure Trip Setpoint Part 1 (A_1 versus Y_1) 2.1-4	Figure 2.1-1a

WHERE: $Q_{DNB} = A_1 * QR_1$

AND $P_{VAR}^{TRIP} = 2070.6\ Q_{DNB} + 17.9T_C - 10053.0$

T_C = COLD LEG TEMPERATURE, °F



MAINE YANKEE Technical Specification	Thermal Margin/Low Pressure Trip Setpoint Part 2 (QR_1 versus Fraction of Rated Thermal Power)	Figure 2.1–1b

2.2 SAFETY LIMITS - REACTOR CORE

Applicability

Applies to the limiting combinations of reactor power, and Reactor Coolant System flow, temperature, and pressure during operation.

Objective

To maintain the integrity of the fuel cladding and prevent the release of significant amounts of fission products to the reactor coolant.

Specifications

A. The reactor and the Reactor Protection System shall be operated such that the following Specified Acceptable Fuel Design Limit (SAFDL) on the departure from nucleate boiling heat flux ratio (DNBR) is not exceeded during normal operation and anticipated operational occurrences.

DNBR = 1.20 using the YAEC-1 DNB heat flux correlation

B. The reactor and the Reactor Protection System shall be operated such that the following SAFDLs for prevention of fuel centerline melting are not exceeded during normal operation and anticipated operational occurrences.

A steady-state peak linear heat generation rate (LHGR) equal to:

Fuel Type	LHGR Limit, kw/ft	
	BOC	EOC
M,L	20.8	20.1
N	21.2	20.1
P	22.3	21.1
Q	23.2	22.2

where the LHGR limit for each fuel type decreases linearly with Cycle Average Burnup (CAB), and the EOC Burnup for the purposes of establishing a linear relationship is 14,500 MWD/MTU CAB.

Basis

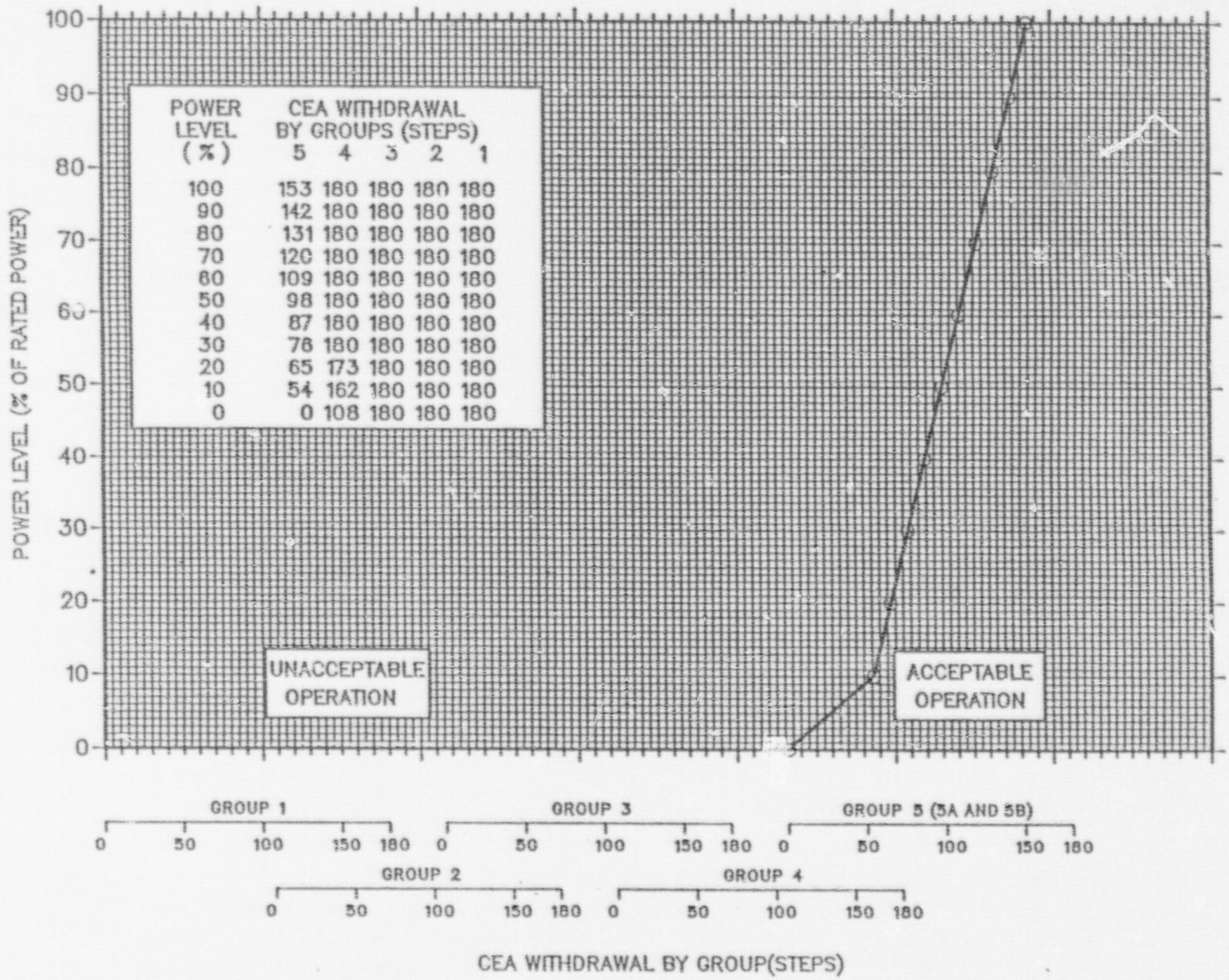
To maintain the integrity of the fuel cladding, thus preventing fission product release to the Primary System, it is necessary to prevent overheating of the cladding. This is accomplished by operating within the nucleate boiling regime of heat transfer, and with a peak linear heat rate that will not cause fuel centerline melting in any fuel rod. First, by operating within the nucleate boiling regime of heat transfer, the heat transfer coefficient is large enough so that the maximum clad surface temperature is only slightly greater than the coolant saturation temperature. The upper boundary of the nucleate boiling regime is termed "Departure from Nucleate Boiling" (DNB). At this point, there is a sharp reduction of the heat transfer coefficient, which would result in higher cladding temperature and the possibility of cladding failure.

Power Dependent Insertion Limit
(PDIL)
for CEA's

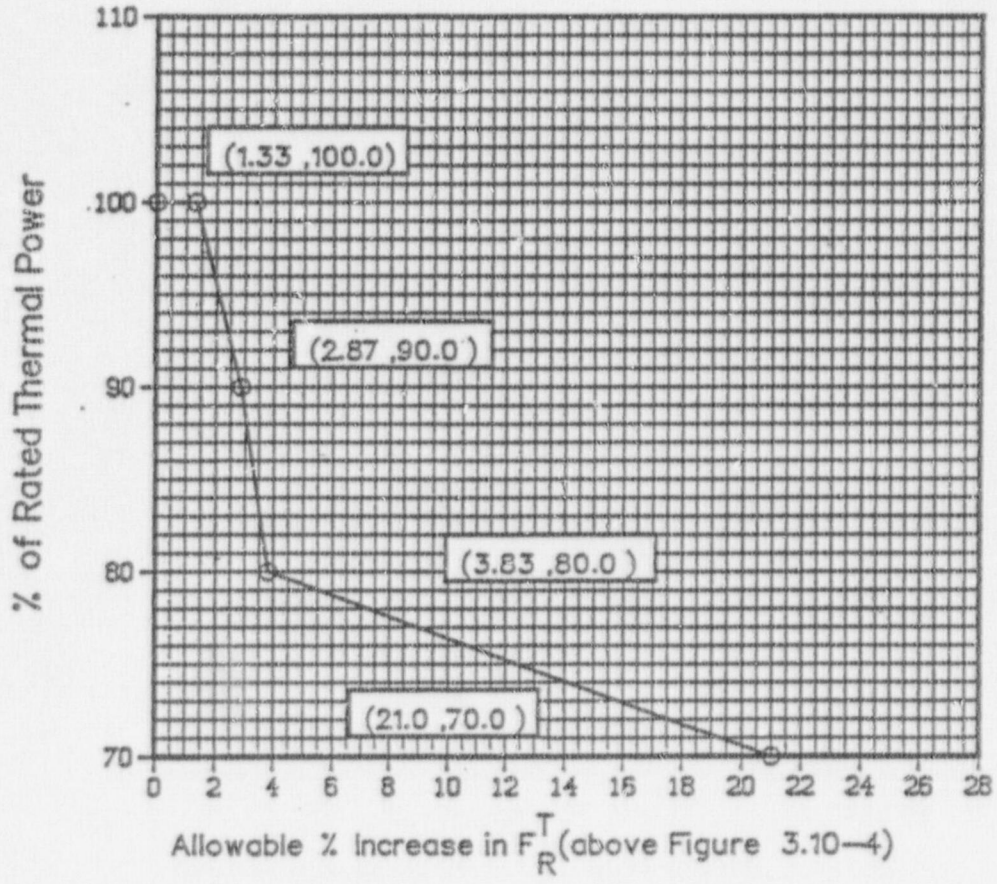
Figure
3.10-1

MAXIMUM POWER LEVEL (% OF RATED POWER) VS. CEA WITHDRAWAL (STEPS)

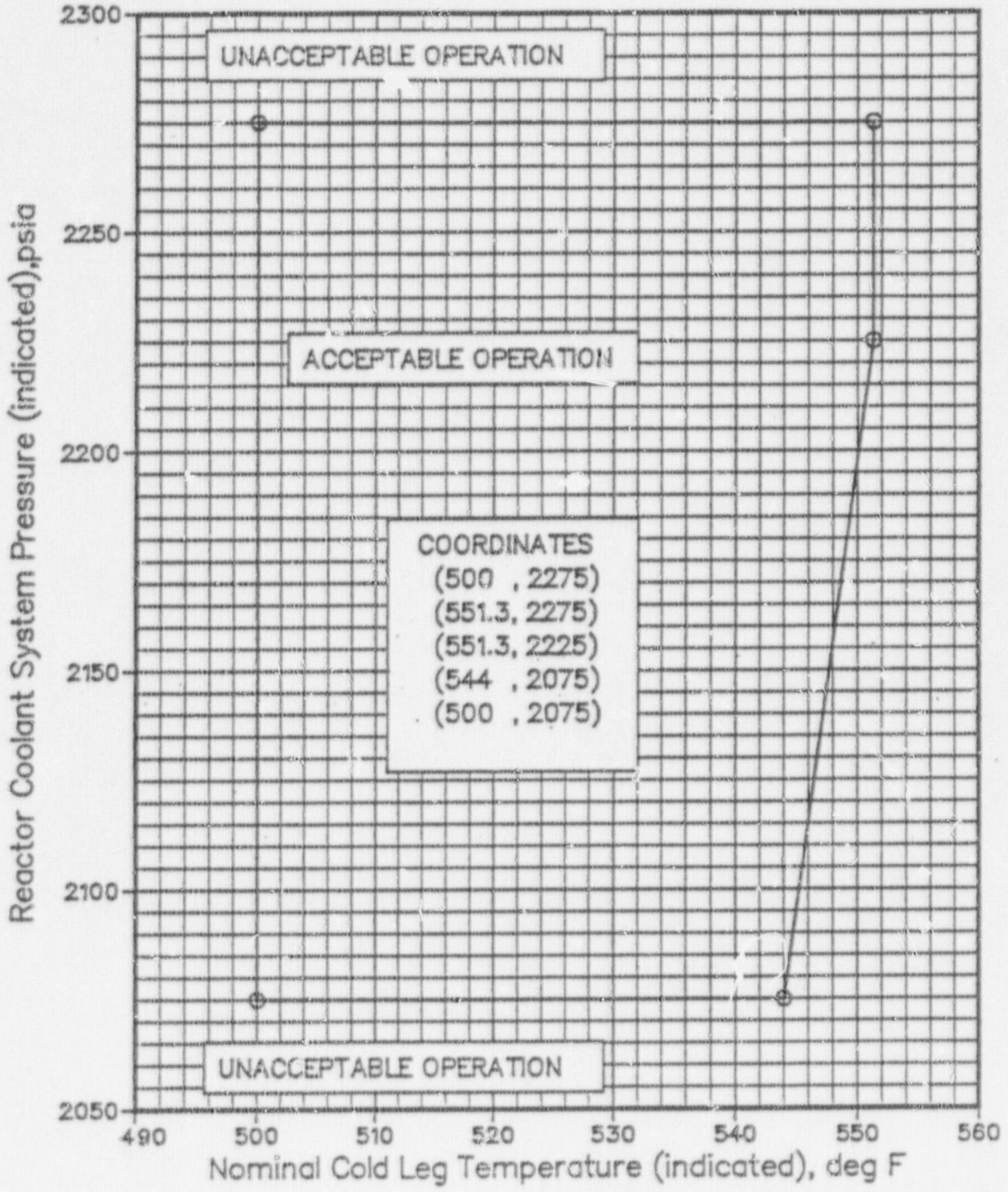
POWER LEVEL (%)	CEA WITHDRAWAL BY GROUPS (STEPS) 5	4	3	2	1
100	153	180	180	180	180
90	142	180	180	180	180
80	131	180	180	180	180
70	120	180	180	180	180
60	109	180	180	180	180
50	98	180	180	180	180
40	87	180	180	180	180
30	78	180	180	180	180
20	65	173	180	180	180
10	54	162	180	180	180
0	0	108	180	180	180



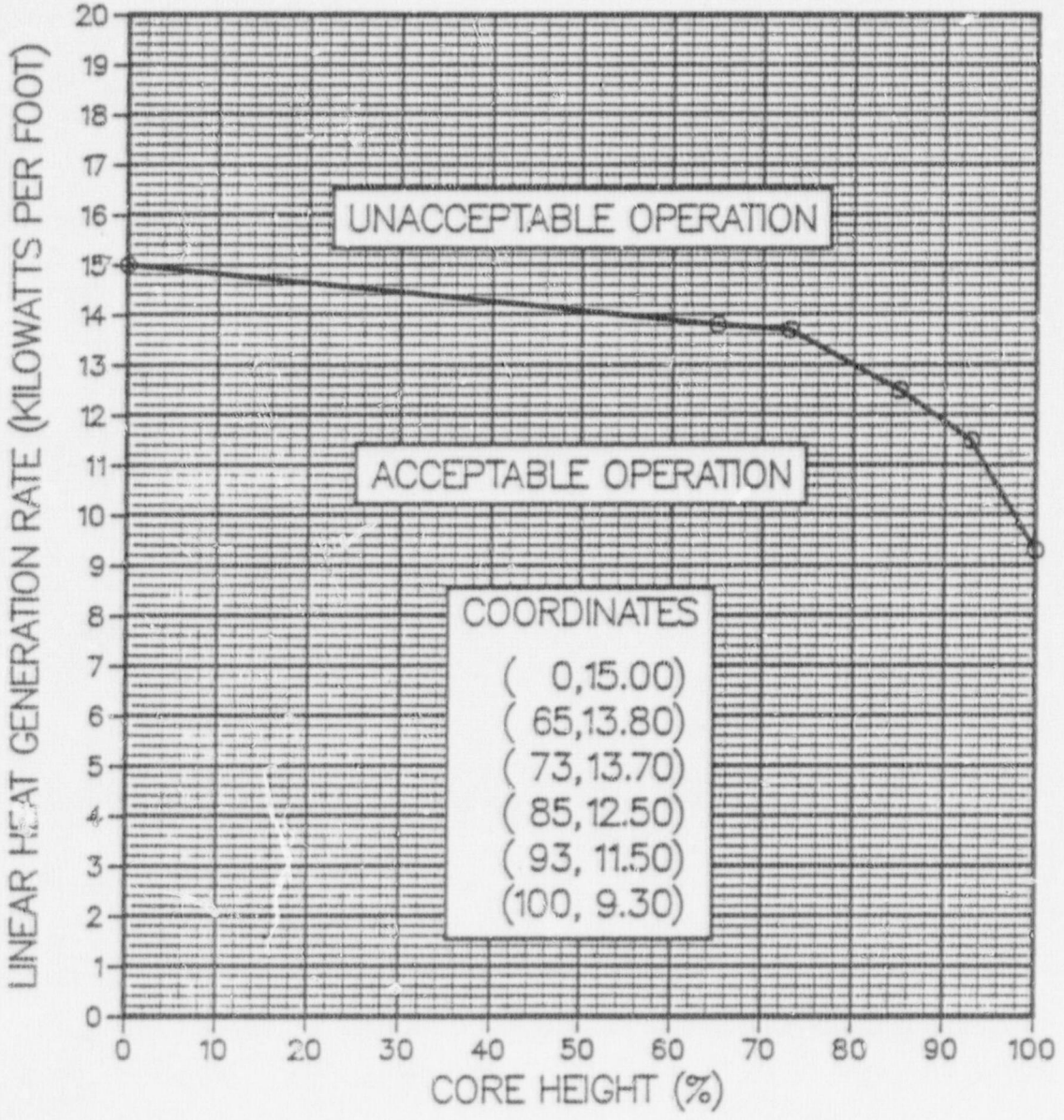
NOTE: CEA's are maintained at or above 100% power insertion limit when applying 3.10.C.2.2.2



MAINE YANKEE Technical Specification	Allowable Power Level vs. Increase in Total Radial Peak	Figure 3.10–5



MAINE YANKEE Technical Specification	Allowable 3 Loop Steady State Coolant Conditions 3.10–14	Figure 3.10–6



MAINE YANKEE Technical Specification	Linear Heat Generation Rate (LHGR) Limits Versus Core Height	Figure 3.10–11