

Yankee Cycle 20
Core Operating Limits Report
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1.0 INTRODUCTION

This report provides the cycle-specific limits for operation of the Yankee Nuclear Power Station through Cycle 20. It includes the limits for control rod insertion and reactor power. In this report, Cycle 20 will frequently be referred to as the Present Cycle. If any of these limits are exceeded, the action will be taken as defined in the Technical Specifications.

This report has been prepared in accordance with the requirements of Technical Specification 6.9.4. The core operating limits have been developed using the NRC-approved methodologies listed in Technical Specification 6.9.4.

2.0 CORE OPERATING LIMITS

These Present Cycle operating limits have been defined using NRC-approved methodologies. The Present Cycle must be operated within the bounds of these limits and all others specified in the Technical Specifications.

2.1 Power Dependent Insertion Limit (PDIL)

Figure 1 provides the PDIL. The PDIL is based on the requirements of the steam line break transient analysis and is also an important consideration in the analysis of the loss of coolant flow and boron dilution transients, since it limits the minimum shutdown margin available.

2.2 Peak Linear Heat Generation Rate (LHGR)

Figure 2 provides the allowable peak rod LHGR. Limiting the peak LHGR during Condition I events provides assurance that the initial conditions assumed for the LOCA analyses are met and the ECCS acceptance criteria limits of 10CFR50.46 are not exceeded.

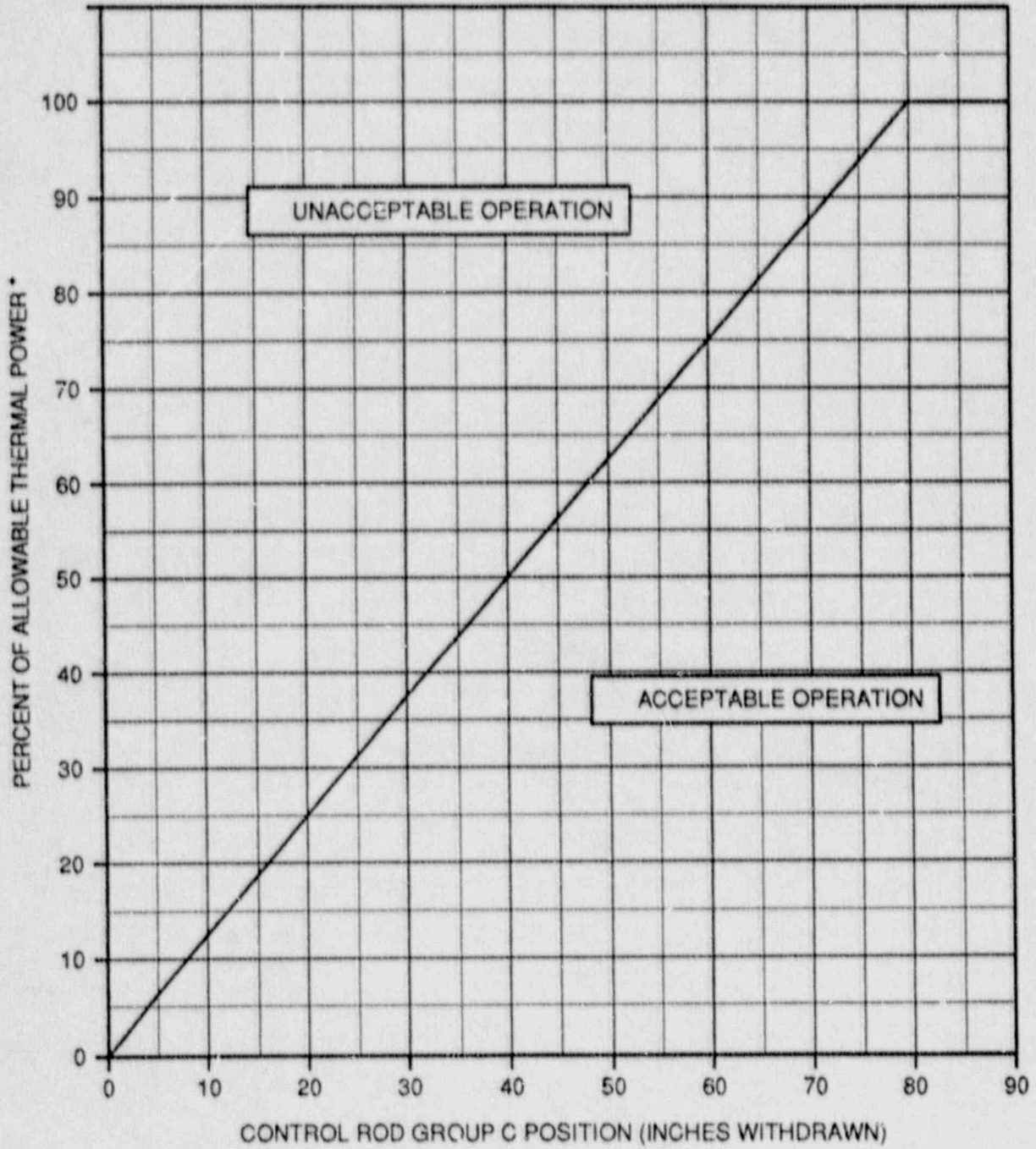
2.3 Xenon Redistribution Multiplier

Figure 3 provides the xenon redistribution multiplier. The xenon multiplier was selected to conservatively account for the effect of xenon redistribution transients on LHGR which can result from control rod motion at full power.

2.4 Reduced Power Multiplier

Figure 4 provides the reduced power multiplier. This multiplier was selected to prevent exceeding the allowable LHGR limits within the first few hours following return to power after control rod insertion outside the operating band for 100% allowable power as provided in Figure 1.

FIGURE 1
POWER DEPENDENT INSERTION LIMIT
TECHNICAL SPECIFICATION 3.1.3.5



* ALLOWABLE THERMAL POWER BASED ON THE MAIN COOLANT PUMP COMBINATION IN OPERATION

FIGURE 2
ALLOWABLE PEAK ROD LHGR VERSUS CYCLE BURNUP
TECHNICAL SPECIFICATION 3.2.1/4.2.1.1

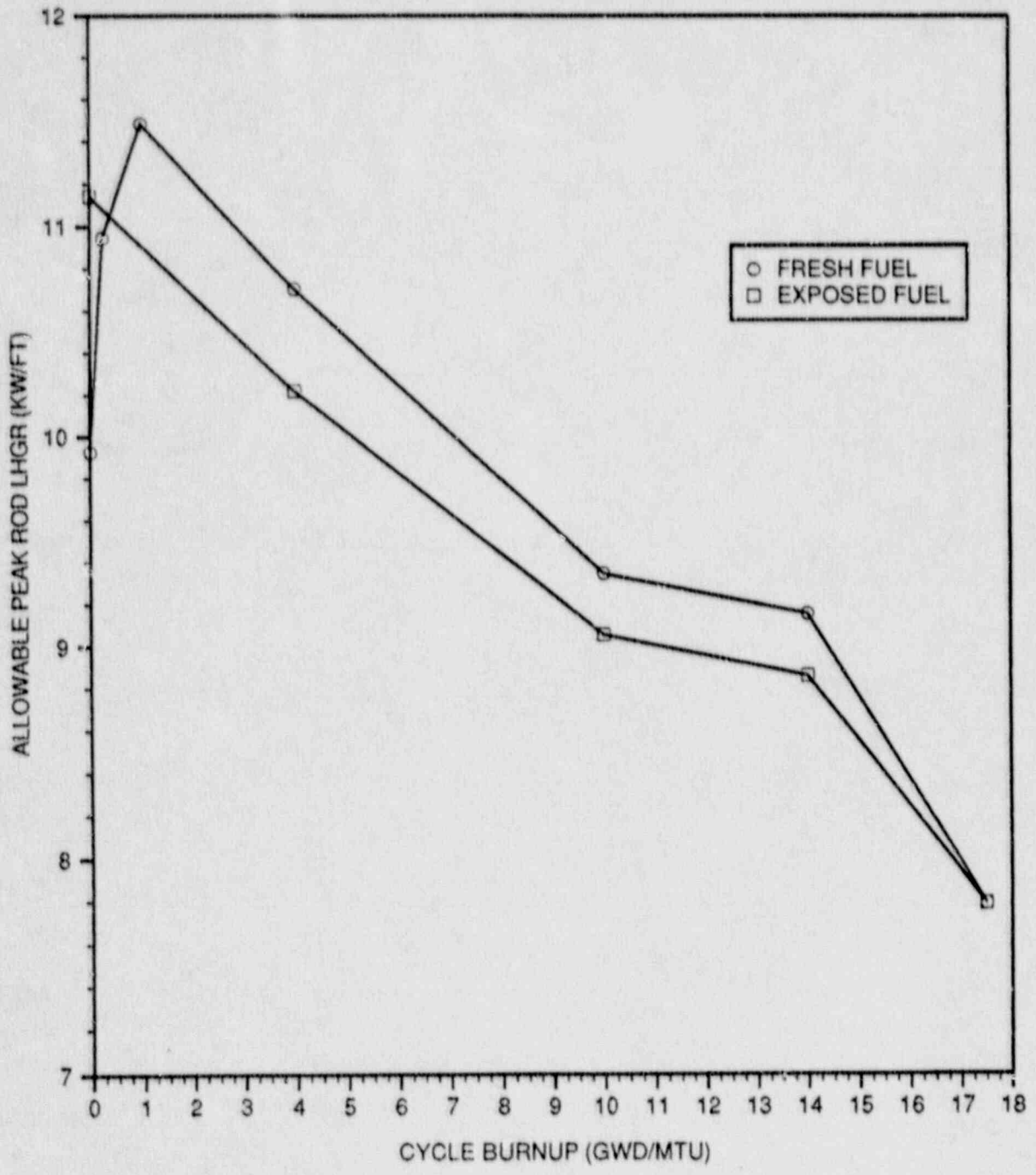


FIGURE 3
MULTIPLIER FOR XENON REDISTRIBUTION VERSUS CYCLE BURNUP
TECHNICAL SPECIFICATION 4.2.1.2

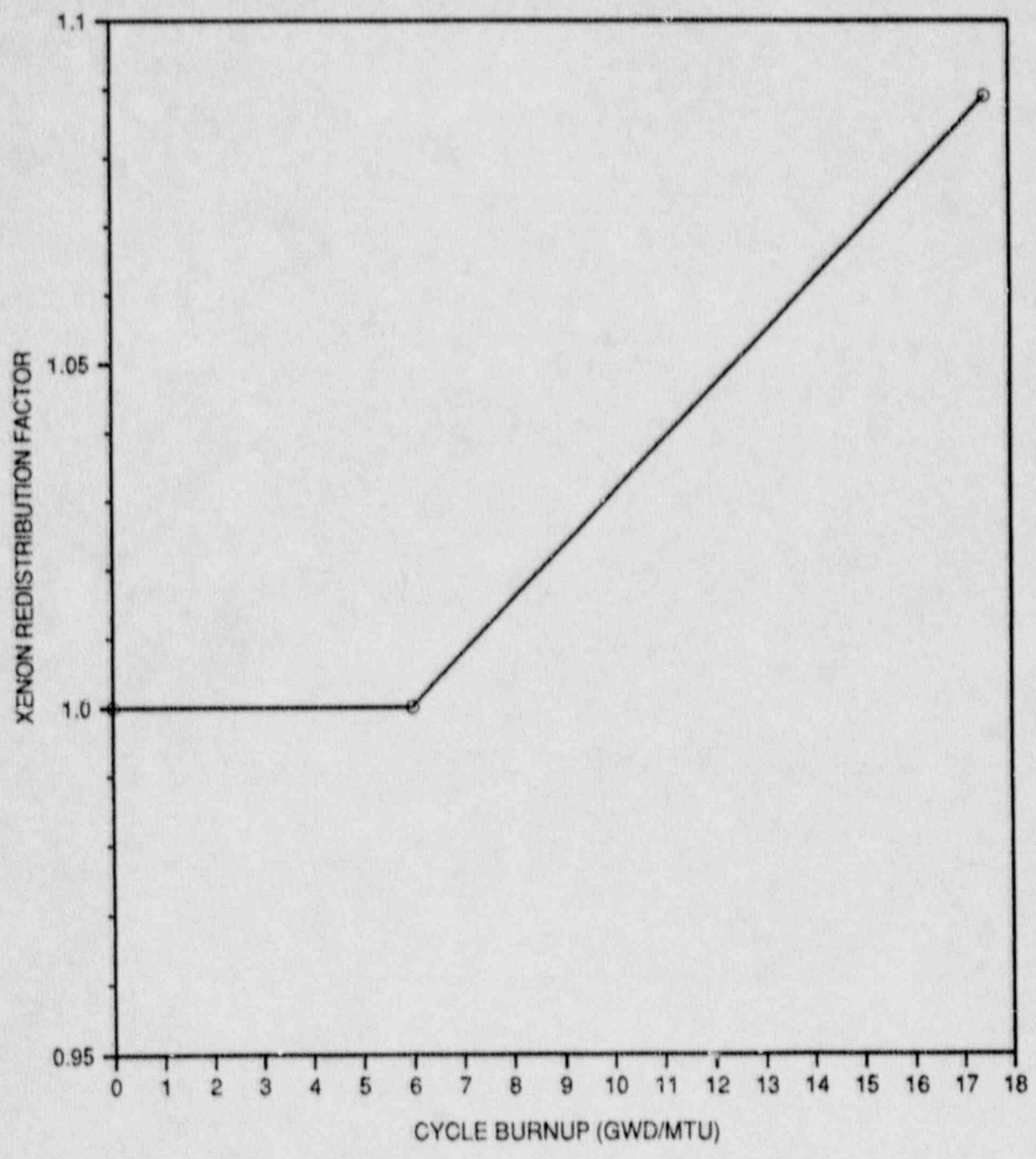


FIGURE 4
MULTIPLIER FOR REDUCED POWER VERSUS CYCLE BURNUP
TECHNICAL SPECIFICATION 4.2.1.2

