LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.11.C. Minimum Critical Power Ratio (MCPR) During steady state power operation the MCPR for each type of fuel at rated power and flow shall not be lower than the limiting value specified in the Core Operating Limits Report for two recirculation loop operation. If, at any time during steady state operation it is determined by normal surveillance that the limiting value for MCPR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the steady state MCPR is not returned to within the prescribed limits within two (2) hours, reduce reactor power to ≤ 25% of rated power within the next four (4) nours. Surveillance and corresponding action shall continue until the prescribed limits are again being met. For one recirculation loop operation the MCPR limits are 0.01 higher than the comparable two-loop values.	4.11.C. Minimum Critical Power Ratio (MCPR) MCPR shall be determined daily during reactor power operation at) 25% rated thermal power and following any change in power level or distribution that could cause operation on the operating limit MCPR.

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3.11 Bases: (Cont'd)

C. Minimum Critical Power Ratio (MCPR)

The required operating limit MCPRs at steady state operating conditions as specified in Specification 3.11C are derived from the established fuel cladding integrity Safety Limit and an analysis of abnormal operational transients (References 2 and 11). For any abnormal operating transient analysis evaluation with the initial condition of the reactor being at the steady state operating limit it is required that the resulting MCPR does not decrease below the Safety Limit MCPR at any time during the transient assuming instrument trip setting given in Specification 2.1.

To assure that the fuel cladding integrity Safety Limit is not exceeded during any anticipated abnormal operational transient, the more limiting transients have been analyzed to determine which result in the largest reduction in critical power ratio (CPR). The models used in the transient analyses are discussed in Reference 1.

Flow-dependent and power-dependent MCPR limits ($MCPR_f$ and $MCPR_p$) are used to define the required Operating Limit MCPR (OLCPR) such that the above Safety Limit MCPR requirement is met for all power/flow conditions. $MCPR_f$ provides the thermal margin required to protect the fuel from transients resulting from inadvertent core flow increases. $MCPR_p$ protects the fuel from the other limiting abnormal operating transients, including localized events such as a rod withdrawal error.

Direct scram on Turbine Stop Valve Closure or Turbine Control Valve fast closure provides the fastest response to an abnormal operating transient such as load rejection, turbine trip, or feedwater controller failure. These direct scrams are bypassed at low power (P_{bypass}), to reduce the frequency of scrams during power ascension. For operation at or above P_{bypass} (30% of rated power), the required OLMCPR is the larger of $MCPR_f$ or $MCPR_p$ at the existing core power/flow state; where $MCPR_f$ and $MCPR_p$ are determined in the Core Operating Limits Report by multiplying the scram time dependent MCPR limit for rated power and flow MCPR(100) by the K_p factor. Below 30% of rated power, when the direct scrams are bypassed, a slightly more severe transient response results. To compensate for the more severe transient response, two power dependent MCPR limits are established, one for high flow (>50% of rated) conditions and one for low flow (≤50% of rated) conditions. These limits are specified in the Core Operating Limits Report. Further information on the MCPR operating limits for off-rated conditions is presented in Reference 11.

References for Bases 3.11

1. "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A. (The approved revision at the time the reload analyses are performed.) The approved revision number shall be identified in the Core Operating Limits Report.

2. "Supplemental Reload Licensing Submittal for Cooper Nuclear Station," (applicable reload document).

3-8. Deleted

9. Letter (with attachment), R. H. Buckholz (GE) to P. S. Check (NRC), "Response to NRC Request for Information on ODYN Computer Model," September 5, 1980.

10. "Cooper Nuclear Station Single-Loop Operation," NEDO 24258.

11. "Extended Load Line Limit and ARTS Improvement Program Analysis for Cooper Nuclear Station Cycle 14," NEDC-31892P, Revision 1, May 1991.