DRAFT

UNIT SHUTDOWNS AND POWER REDUCTIONS PER 7,000 CRITICAL HOURS

Purpose
This indicator monitors the number of unit shutdowns and reductions in average daily power level of greater than 20 percent of full power. It may provide leading indication of risk-significant events but is not itself risk-significant. The indicator is calculated per 7,000 critical hours to monitor the number of plant power changes for a typical year of operation.

Indicator Definition
The number of unit shutdowns and reductions in average daily power level of greater than 20 percent of full power during the previous four quarters per 7,000 critical hours.

Data Reporting Elements
The following data are reported for each reactor unit:

- the number of unit shutdowns and reductions in average daily power level of greater than 20 percent of full power in the previous quarter
- the number of critical hours in the previous quarter

Calculation
The indicator is determined using the values for the previous four quarters as follows:

$$\text{value} = \frac{(\text{number of unit shutdowns and power reductions in the previous 4 qtrs})}{(\text{number of critical hours in the previous 4 qtrs})} \times 7{,}000 \text{ hrs}$$

Definition of Terms
Average Daily Power Level is the net electrical energy generated during the day (measured from 0001 to 2400 hours inclusive) in megawatt-hours, divided by 24 hours.

Net electrical energy generated is the gross electrical output of the unit measured at the output terminals of the turbine-generator during the reporting period, minus the normal station service electrical energy utilization. If this quantity is less than zero, a negative number should be used.

Clarifying Notes
7,000 hours is used because it represents one year of reactor operation at about an 80% availability factor.

2,400 critical hours is the minimum number of critical hours in four consecutive quarters for which an indicator value is calculated. Rate indicators can produce misleadingly high values when the denominator is small; for critical hours under 2,400, a single shutdown can produce a value that crosses the green-white threshold. Therefore, the displayed value will be N/A. All data elements must nevertheless be reported.

Attachment 5

Unit shutdowns and power reductions that <u>are not</u> counted are (1) those that are scheduled prior to startup from a refueling outage (i.e., mid-cycle maintenance outages and the next refueling outage); (2) those that are directed by the load dispatcher under normal operating conditions due to load demand and economic reasons, or for grid stability or nuclear plant safety concerns arising from external events outside the control of the nuclear unit; (3) anticipatory unit shutdowns or power reductions due to external events, such as hurricanes, tornadoes, or range fires, that threaten the safety of the nuclear unit or its transmission lines; (4) certain proceduralized unit shutdowns or power reductions in response to expected problems, such as accumulation of marine debris or biological contaminants in certain seasons (each situation is different and should be identified to the NRC for a determination as to whether it should be counted); and (5) those that are included in the unplanned scram indicator.

Unit shutdowns and power reductions that <u>are</u> counted are all those not excluded by the above paragraph.