Douglas R. Gipson
Senior Vice President
Nuclear Generation

Detroit Edison

Fermi 2
6400 North Dixie Highway
Newport, Michigan 48166
(313) 586-5249

December 22, 1995
NRC-95-0139

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) Detroit Edison Letter to NRC, "One-Time Technical Specification Revision to Allow Extension of the Fermi 2 Operating Cycle," NRC-95-0096, dated September 20, 1995

Subject: Response to Informal Request for Information
Use of Historical Plant Drift Data in Calculating Nominal Trip Setpoints for Extended Surveillance Intervals

The enclosed information is provided as a follow-up to the telephone conference call between Fermi 2 and NRC personnel on December 8, 1995 related to use of historical plant data in calculating nominal trip setpoints for extended surveillance intervals. The request was made to support NRC staff review of the Reference 2 sumbittal to allow extending the present Fermi 2 operating cycle.

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If you have any questions, please contact Mr. Robert Newkirk at (313) 586-4211.

Sincerely,

Enclosure

cc: T. G. Colburn
H. J. Miller
M. Jordan
A. Vegel

ENCLOSURE

Method of Evaluating Historical Data

and

Sample Nominal Trip Setpoint Calculation

Using Plant Historical Drift Data

Method of Evaluating Historical Data

The method of evaluating the historical data for the Rosemount transmitters and trip units for determining drift in instrument channels is discussed below. The reactor dome pressure channel is selected as an illustration of this method. The objective of the evaluation is to validate that the Technical Specification Nominal Trip Setpoint (NTSP) is not exceeded. (See results of sample calculation in the following section).

The NTSP is validated by using the drift value from plant historical data. The as found and as left data are collected from the previously performed surveillances. The difference between the current as found reading and the previous as left reading is conservatively assumed to be the drift value for 18 months. This value includes also vendor accuracy, and calibration equipment accuracy. The drift value for a longer calibration period is calculated as:

NewDrift = SQRT(Desired Interval/18) x (Difference between as found reading and the previous as left tolerance for 18 month

Sample Calculation

The main objective is to show how the drift is treated. The following parameters are not calculated to keep this calculation focused on the drift treatment. The following values are extracted from Design Calculation 4522 for B21N078B.

SQRT = Square Root
AI = Channel Accuracy
= 13.8 psig
CI = Channel Calibration Equipment Accuracy
= 6 psig
PMA = Process Measurement Error
= 0.12 psig
PEA = Primary Element Accuracy
= 0.02 psig
AL = Analytical Limit
=1126 psig
NTSP = Nominal Trip Setpoint, Tech Spec value
= 1093 psig
SP = Span of the Channel
= 1500 psig
UR = Upper Range
= 3000 psig
tuD = Trip unit drift
= 5 psig

The following steps illustrate the validation of NTSP using vendor and historical data:

Note: During calibration, the transmitter is left within its as left tolerance.

- Data from previously performed surveillances (RF03 and RF04) were retrieved.

- The difference between the two calibration periods, RF02 and RF03 is calculated as follows:

  PALT1 = 0.006 volt (Assume that the transmitter is left at the least conservative tolerance during RF02)

  AFR1 = -0.026 volt (Greatest as found reading error during RF03)

  The difference can be calculated as:

  DD1 = AFR1 - PALT1
  DD1 = 0.006 + 0.026 = 0.032 volt

- The difference between the two calibration periods, RF03 and RF04 is calculated as follows:

  PALT2 = 0.002 volt (Greatest as left reading error during RF03)

  AFR2 = -0.014 volt (Greatest as found reading error during RF04)

  The difference can be calculated as:

  DD2 = AFR2 - PALT2
  DD2 = 0.002 + 0.014 = 0.016 volt

- To be conservative, the larger difference is used to represent transmitter drift. Since DD1 is larger than DD2, DD1 is assumed to represent transmitter drift for 18 months.

- Convert DD1 to process units:

  Drift = DD1= (0.032/4)*1500 DD1 = 12 psig
  (4 volts is the voltage span)

- Calculate DD1 for 36 month (30 month is less conservative with respect to the validation of NTSP)

  newD = SQRT (36/18)*DD1 newD = 16.97

  Calculate channel drift

  newDL = SQRT($tuD^2 + newD^2$) newDL = 17.69

- Validate the NTSP using newDL:

  NTSP = AL - 0.8225*SQRT($Al^2 + Cl^2 + PMA^2 + PEA^2 + newDL^2$)
  NTSP = 1126 - 0.8225*SQRT($13.8^2 + 6^2 + 0.12^2 + 0.02^2 + 17.69^2$)
  NTSP = 1106.9 psig

  The Technical Specification NTSP is validated since the calculated NTSP (1106.9 psig) is higher than the Tech. Spec. NTSP (1093 psig) for the analyzed interval.