



Duquesne Light

Nuclear Division
P.O. Box 4
Shippingport, PA 15077-0004

Telephone (412) 456-6000

May 5, 1982

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Attn: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
Washington, D. C. 20555



Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Amendment of Request for Technical Specification Change
No. 1A-66

Gentlemen:

Our February 23, 1982 letter forwarded a summary of the Reload Safety Evaluation for Cycle 3 along with a number of requests for amendment to the Beaver Valley Technical Specifications. On April 19 and 26, 1982, Duquesne Light Company submitted additional information requested by the Staff related to the Reload Safety Evaluation and the proposed Technical Specifications. After extensive discussions with the Staff, Duquesne Light Company hereby withdraws the proposed Technical Specifications 3/4 1.3.1 and 3/4 1.3.2 submitted with our February 23, 1982 letter.

The Company proposes to replace the Technical Specifications related to Rod Position Indication with new proposed specifications and basis, attached hereto. Three originals and 37 copies of this proposed Technical Specification are supplied for your use and distribution.

The Technical Specifications proposed by this submittal fully address the Staff concerns as well as Company concerns as expressed in our April 19, 1982 letter. This new proposed Technical Specification limits the combined effect of Rod Position Indication instrument error and maximum Rod Position Indication analog indicated misalignment to ± 24 steps, which is in full agreement with the original licensing basis of the facility. In addition, the specification provides the flexibility necessary to fully envelop the equipment and operational constraints which we have observed, measured and evaluated. Further, this proposed specification minimizes the impact on human factors which more complex solutions to this problem bring about.

As explained in our previous submittals, the Rod Position Indication system at our facility exhibits three characteristics which affect instrument accuracy. These effects are:

- 1) Steady state nonlinearity in the relationship between rod position and analog indication. This nonlinearity is fixed, measurable and reproducible.
- 2) Transient thermal drift, which is due to the change in detector characteristics caused by cooling of the CRDM extension after rod withdrawal. This transient effect is measurable and predictable and the detector output returns to essentially the steady state value within about one hour.
- 3) A steady state thermal effect which causes the analog position indication to increase with increasing reactor power. This effect is measurable, predictable and reproducible.

The proposed specification will envelop all of these observed effects by the following means:

1. The Company will develop "custom made" meter scales for each analog indicator by careful, controlled testing of the RPI system prior to startup. These "custom made" meter scales will exactly correspond to the associated group demand indicator throughout the full range of rod movement. The test program used to develop these meter scales will provide for a sufficiently long "soak" time to eliminate the thermal transient due to rod motion as an effect on the calibration.
2. The proposed Technical Specification relies upon the group demand indicator as the initial indicator of rod position and permits a one hour "soak" time prior to reliance upon the analog indicator for an indication of rod misalignment. This eliminates the effect of the thermal transient due to rod motion. Further, a misaligned rod can be seen by the operator by observing the analog indicators even during the one hour "soak" time since the thermal transient affects all rods in a group in relatively the same way.

3. The + 12 step margin permitted by the proposed Technical Specification is sufficient to fully envelop the instrument inaccuracies which are related to reactor power level.

The proposed Technical Specification also contains a provision whereby primary detector voltage may be used as a backup means of determining rod position. Our experience in testing this system has determined that the instrument inaccuracies in this system are less pronounced at the detector primary than they are at the detector output.

The calibration program which we plan will permit the rod bottom lights to be set to operate in their normal range, thus eliminating uncertainty in rod position as a consideration in operator response to reactor trip and dropped rod incidents.

We believe that this proposed Technical Specification is fully consistent with the original licensing basis of the facility, fully envelops all inaccuracy which we have observed and measured, is satisfactory from a human factors standpoint and presents all indications of rod position to the operator necessary for safe operation of the reactor in a comprehensible manner.

The Onsite Safety Committee and the Offsite Review Committee have reviewed this proposed Technical Specification and have determined the following:

- 1) The proposed Technical Specification does not increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the Safety Analysis Report.
- 2) This proposed Technical Specification does not create the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report.
- 3) The proposed Technical Specification does not reduce the margin of safety as defined in the basis for any Technical Specification.

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Amendment Of Request For TS Change No. 1A-66
May 5, 1982
Page 4

Safety Evaluation

The original accident analysis for Beaver Valley Power Station is based upon a maximum rod deviation of 24 steps, i.e. 12 steps actual known position deviation (Technical Specification 3.1.3.1) plus 12 steps instrumentation inaccuracy in rod position indication (Technical Specification 3.1.3.2). The proposed Technical Specification requires that the calibration of each rod position indicator channel be no greater than ± 12 steps. The Company proposes to meet this requirement by installing "custom made" meter scales that exactly correspond to the individual calibrations of the rod position indication channels. Instrument inaccuracies due to transient thermal drift due to rod motion are compensated for by permitting the operator to rely upon the group demand indicator as the primary indicator of group rod position during the one hour "soak" time permitted by the Specification to allow the rod position analog indicators to stabilize. Misaligned rods can be detected by the operator using the rod position analog indicators during the one hour soak period since the indicators in a given rod bank are subject to the same thermal effects.

Extensive testing has demonstrated that the use of primary detector voltages to determine rod position is a reliable and repeatable method which is less subject to thermal effects. Because of human factors considerations, this method of determining rod position is to be used as a backup method only. The NRC Staff has reviewed the use of primary detector voltages to determine control rod position in its approval of Amendment No. 35 to Facility Operating License DPR-66.

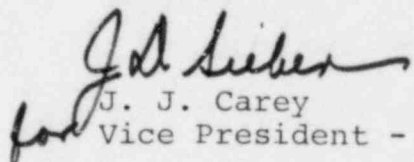
To assure an overall ± 12 step instrument accuracy, the 6-step accuracy of the voltage method which has been established by testing infers that an immediate remeasurement must be made after another rod movement of another 6 steps. Therefore, if the position of each rod in the bank has been shown by voltage measurement to be within six steps other than within the past four hours, then additional voltage measurements would be made following intentional rod motion of 12 steps or greater. The proposed Technical Specification continues to maintain the overall ± 24 step inaccuracy limits when primary detector voltage measurements are used to indicate rod position.

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Amendment Of Request For TS Change No. 1A-66
May 5, 1982
Page 5

It is therefore concluded that this proposed Technical Specification poses no unreviewed safety question and that there is reasonable assurance that the public health and safety will not be endangered by operation in the proposed manner.

Should you have any questions concerning this proposed Amendment of the Technical Specifications, do not hesitate to contact my office. Since return to power operation is expected by May 23, 1982, your prompt review is requested.

Very truly yours,


J. J. Carey
for Vice President - Nuclear

cc: BVFS Unit 1 NRC Resident Inspector
Beaver Valley Power Station

Mr. R. C. Haynes, Regional Administrator
USNRC Region 1

USNRC Document Management Branch

COMMONWEALTH OF PENNSYLVANIA)

COUNTY OF BEAVER

} SS:

On this 5th day of May, 1982, before me, Sheila M. Fattore Notary Public in and for said Commonwealth and County, personally appeared J. D. Sieber, who being duly sworn, deposed, and said that (1) he is Manager, Nuclear Safety and Licensing, of Duquesne Light, (2) he is duly authorized to execute and file the foregoing Submittal on behalf of said Company, and (3) the statements set forth in the Submittal are true and correct to the best of his knowledge, information and belief.

Sheila M. Fattore

SHEILA M. FATTORE, NOTARY PUBLIC
SHIPPINGPORT BORO. BEAVER COUNTY
MY COMMISSION EXPIRES SEPT. 16, 1985
Member, Pennsylvania Association of Notaries