



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

January 30, 1990

Docket No. 50-412

MEMORANDUM FOR : John F. Stolz, Director, Project Directorate I-4,
Division of Reactor Projects I/II

FROM : Peter S. Tam, Senior Project Manager, Project
Directorate I-4, Division of Reactor Projects I/II

SUBJECT : Beaver Valley Unit 2 -- Closeout of TAC 73439,
Hydrogen Gas Accumulation in the Charging Pump Piping

The subject issue was initiated by a letter from the licensee dated May 16, 1989. It was addressed in an Information Notice dated January 5, 1989 (IN 88-23, Supp. 1).

As a result of the concern at Beaver Valley Unit 2, we conducted a site visit to observe the licensee's use of a clear plastic model to study the phenomenon. (See letter, P. Tam to J. D. Sieber dated June 7, 1989). Enclosure 1 is the handout used by licensee personnel (Jim Szyslowski et al.) in their presentation.

The purpose of this memorandum is to close out the subject TAC number on the following bases: (1) there is no standing request for approval from the licensee, (2) staff members who participated in the site visit did not ask for follow-up actions under the Beaver Valley 2 docket, and (3) a new TAC number can be taken out to cover future actions when needed.

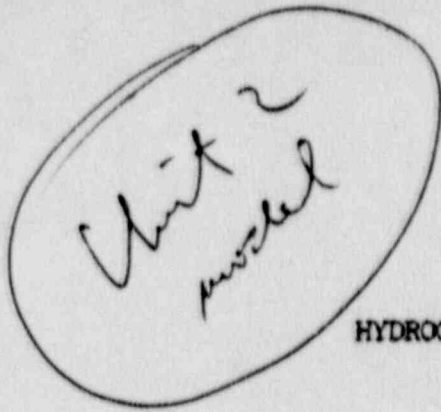
Peter S. Tam, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects I/II

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HYDROGEN VOID MODEL

- PHASE 1
 - INVESTIGATE SOURCE(S) OF VOIDS
 - MINIFLOW ORIFICE

- PHASE 2
 - BUBBLE TRANSPORT STUDIES
 - DUPLICATE PLANT GAS COLLECTION LOCATIONS

- PHASE 3
 - INVESTIGATE POTENTIAL PLANT MODIFICATIONS
 - LOOP SEALS
 - CONTINUOUS VENTING

*Piping i.d. full-scale
Elevations are relative i.e. VCT
is a high point*

MODELLING TECHNIQUE

◦ $(Fr)_M = (Fr)_P$

◦ $Fr = V / \sqrt{g \cdot D}$ • FROUDE NUMBER

◦ $(ID)_M = (ID)_P$

◦ $(V)_M = (V)_P$

◦ $(Q)_M = (Q)_P$

← make all
Froude No. same
for model as
plant

MODEL FEATURES

- CLEAR ACRYLIC PIPING (SOME PVC)
- 1 PUMP -- 2 PUMPS TO BE ADDED
- INJECT N₂
- READ Q, P, T
- VOID FRACTION MONITORING SYSTEM

VOID FRACTION MONITORING SYSTEM

- WESTINGHOUSE PROVIDED INSTRUMENT
- BASED ON ELECTRICAL CONDUCTIVITY, WHICH VARIES WITH DENSITY
- MONITOR AT PUMP SUCTION AND DOWNSTREAM OF MINIFLOW ORIFICE