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

November 30, 1976

DOCKETS NOS.: 50-269/270/287/289/302/312/313/320/346

VENDOR: BABCOCK & WILCOX COMPANY (B&W)

FACILITIES: OCONEE 1, 2, AND 3
RANCHO SECO-1
ARKANSAS NUCLEAR ONE-1
THREE MILE ISLAND 1 AND 2
DAVIS-BESSE 1
CRYSTAL RIVER -3

SUMMARY OF MEETING HELD ON NOVEMBER 3, 1976, TO DISCUSS B&W'S PROPOSED REACTOR VESSEL INTEGRATED SURVEILLANCE PROGRAM

On November 3, 1976, representatives of B&W and some of the owners of B&W reactors met with the staff to discuss several matters related to surveillance of B&W reactor vessels including a possible Integrated Surveillance Program for reactor vessel materials. A list of attendees is attached.

Holder Tube Status

The first topic discussed was the status of the redesigned Surveillance Specimen Holder Tubes (SSHT's). B&W reported that redesigned SSHT's had been installed at Davis-Besse 1 and Crystal River 3. The acceptability of the new design is being tested during the Hot Functional Test currently underway at Davis-Besse 1. Reports describing the new design and the instrumentation to be used during the tests at Davis-Besse 1 have been submitted to the NRC for review. B&W plans to request a meeting with the staff to discuss the results obtained from the Davis-Besse 1 tests as soon as the results are available.

Integrated Reactor Vessel Surveillance Program

The next topic discussed was a contemplated Integrated Reactor Vessel Surveillance Program (IRVSP) for B&W 177 fuel assembly reactors. B&W representatives stated that the IRVSP would be discussed in a generic sense only and asked that the record reflect that no utilities have yet committed to the program.

As background for the program, B&W reported the projected times at which the vessels at the various B&W plants would reach an upper shelf energy of 50 ft-lbs. In many cases it appeared that this limit would be reached well before the end of reactor life. Per 10CFR50, Appendix G, Paragraph V.C., when this limit is reached, additional measures are required to assure continued reactor vessel integrity. One of these measures is the performance of a fracture analysis for the vessel in question. B&W noted that because only limited experimental data are currently available for use in such an analysis one of the objectives of the IRVSP was to include specimens which would be useful in developing additional experimental data. B&W also described how the data could be used in fracture mechanics analyses.

B&W next reported that information developed over the past year on the effects of copper and phosphorus impurities on weld sensitivity leads them to the conclusion that all limiting welds in B&W vessels are not represented in the current sets of surveillance specimens. Accordingly their plan for an IRVSP also includes provisions for replacing some of the current specimens which do not represent limiting welds with specimens which do.

Staff questioning clarified the fact that the IRVSP being discussed by B&W at this meeting differed from the IRVSP's previously requested by Arkansas-1 and Rancho Seco. In those requests there was no substantial change in the makeup of the surveillance specimen sets from those initially installed in these reactors.

B&W described three testing alternatives they were considering to develop additional fracture toughness data:

1. Research oriented capsules in the reactor vessel surveillance program.

2. Test reactor irradiation program.

3. Combination of test reactor and operating reactor irradiation.

B&W then described the composition of the capsules that would be employed, how the capsules would be utilized in an Integrated Reactor Vessel Surveillance Program for the various testing alternatives, the schedule by which data would be available, and the advantages and disadvantages of each testing option. The description also addressed how B&W's definition of the needed exposure data could be obtained without exposing any specimens in Crystal River 3 during its first operating cycle.

Surveillance Specimen Holder Tube Installation

B&W described the procedure which would be followed in installing redesigned SSHT's in irradiated reactors. This would involve removal of all fuel from the reactor to the spent fuel storage pool and removal of the core support structure from the vessel to the internals storage stand in the fuel transfer canal. Utilizing water shielding, the holder tubes would then be installed underwater using long-handled, specially designed tools operated from platforms and bridges above the water shielding. B&W also described some of the problems involved in the installation, such as drilling and tapping blind holes in the core barrel, shimming to obtain proper alignment, etc. B&W stated that to date they have only developed a fraction of the tools required for the installation. They also expressed their view that all needed irradiation data could be obtained from B&W plants about the startup so that there was no need to install the holders in irradiated plants.

Needed Action

B&W stated that the following action was needed:

1. NRC permit operation of Crystal River-3 during first cycle without surveillance specimens.

2. NRC approve integrated surveillance program at Davis-Besse, TMI-2 and Crystal River-3.

3. NRC indicate licensing usefulness of specimen irradiation data from test reactors.

4. B&W to supply additional information on proposed integrated surveillance program on a generic basis until such information is needed on a specific docket. B&W will also schedule a meeting with the NRC in the near future on the subject of neutron fluence prediction.

The staff advised B&W that items 1 and 2 were currently under active review and that item 3 would be studied.

Original signed by

G. B. Zwetzig, Project Manager
Operating Reactors Branch #4
Division of Operating Reactors

Attachment:
~~List of Attendees~~

OFFICE ➤		ORB#4:DOR				
SURNAME ➤		GZwetzig:rm				
DATE ➤		11/30/76				

MEETING WITH B&W

NOVEMBER 3, 1976

B&W

W. J. Keyworth
L. H. Bohn
C. D. Thompson
A. L. Lowe, Jr.
A. F. Eckert
E. O. Hooker
C. E. Barksdale
R. R. Steinke
K. E. Suhrke
D. H. Roy

Duke Power

R. O. Sharpe

MetEd

J. J. Moran

Florida Power Corp.

J. Alberdi
J. T. Rodgers

NRC

D. K. Davis
G. B. Zwetzig
W. E. Converse
R. P. Snaider
D. Neighbors
R. Reid
R. Klecker
P. Randall
V. Noonan
J. R. Hawthorne
P. A. Kiefer
J. E. Ouzts
J. A. Dyer
K. G. Hoge
L. Shao
W. Hazelton

ACRS

E. G. Igne

Consumers Power Company

A. John Birkle

Arkansas Power & Light

Donald A. Rueter
Garry G. Young