



**Florida
Power**
CORPORATION

POST OFFICE BOX 219 - CRYSTAL RIVER, FLORIDA 32629 - TELEPHONE: (904) 795-3802

December 12, 1984
NL-84-0209

Snubber Information Exchange Meeting Attendees:

Enclosed for your information and use are:

1. Summary of the Snubber Information Exchange Meeting held in St. Petersburg, Florida on December 6, 1984.
2. Initial Snubber Data Base Information
3. Snubber Industry Group Membership Form Letter

The membership form letter should be returned to Florida Power Corporation by December 21, 1984 in order to support a late January meeting. Thank you again for your participation.

Very truly yours,

Dan Green

DGG:pkt

Enclosures 3

xc K. R. Wilson
Document Control

SUMMARY OF
SNUBBER INFORMATION EXCHANGE MEETING
DECEMBER 6, 1984
ST. PETERSBURG, FLORIDA

1. NRC SNUBBER RELIABILITY CONCERNS

In summary, the NRC Office of Analysis and Evaluation of Operational Data (AEOD) has issued an evaluation concerning large hydraulic snubbers. This evaluation is attached. As it turns out, the Office of Nuclear Reactor Regulation (NRR) basically concurs with the conclusions and recommendations in the evaluation. Briefly, AEOD concluded that:

Doubt exists as to whether existing programs are adequate to assure snubber operability.

They went on to recommend the following:

- a. Initiating a case study to determine generic implications.
- b. Expedite implementing the proposed Technical Specification on all plants.
- c. Consider expediting the initial surveillances required by Technical Specifications such that they would be performed sooner than the 18 months allowed by Technical Specifications.
- d. Add a new section to Technical Specifications requiring confirmation of snubber load capability.

They realize that while the evaluation was performed for large hydraulic snubbers, it may also apply to large mechanical snubbers since approximately 20 plants with large mechanical snubbers had not incorporated the new Technical Specification. Therefore, AEOD believes that this is a potentially generic concern.

Further, AEOD states that past operational events illustrate the need for action to assure snubber operability. However, they believe that several aspects of this issue could be handled more effectively by an industry group. They also indicated that attention by an industry group could heighten awareness of the problems by all licensees and lead to timely resolution of their concerns.

2. INSERVICE TESTING

The NRC (Horace Shaw) believes that the testing interval could be extended with the utilization of service life. The next generation Technical Specification is expected to include this concept. In view of this, it would probably be a good idea to start a seal life program to develop an optimized seal changeout schedule based on plant specific information.

Duke Power indicated that for mechanical snubbers undergoing transient conditions, they perform freedom of motion tests - stroke tests. The new Technical Specification allows this without having to go into random sampling.

3. TESTING METHODS

Surry indicated that they had tested their large bore snubbers. They pressure-tested the pressure boundary of the snubber with the control valve removed. The control valve is functionally tested separately. The results of these tests were mixed. However, it is not clear that the NRC would accept this type of testing in the future.

V. C. Summer performs drag and displacement tests and does not perform full load tests. PSA has just recently informed the utilities to not full load test their snubbers. They go on to state that the utilities are not qualified to perform these tests. However, it appears that there is no valid basis for this.

In-situ snubber testing was briefly discussed. It appears that there is a need for topical reports which correlate bench testing results to in-situ test results.

Test machines were discussed along with the problems associated with those made by Wyle and Paul Monroe. A data base with information about each utility's test machine will be created and distributed.

4. TEFZEL SEALS

Many utilities are considering the use of tefzel seals. These seals have a 40 year life. However, it is a very hard seal and, therefore, has a tendency to score the shaft, which results in leakage. Leakage of these seals has occurred at Seabrook and Comanche Peak. There is a softer seal on the market made by Taylor that has a 40 year life that may be worth evaluating.

5. SEAL LEAKAGE

A discussion concerning seal leakage pointed out the need for acceptance criteria for leakage. Many I & E Inspectors believe there should be no leakage. However, this is unreasonable since many snubbers have been found to be operable even with low fluid level. A data base with this information could help establish this criteria. Florida Power and Light has taken care of this problem by putting level alarms on the fluid reservoirs to provide some indication of excessive leakage.

6. FAILURES

Failure modes and rates were discussed. As it turns out, the investigations performed concerning failure modes prove that there are appropriate uses for hydraulic and mechanical snubbers. For example, high vibration uses can destroy mechanical snubbers. High vibration can result in ball nut wear, tang wear, and flat spots on the thrust bearing balls. Also, under high heat conditions, the lubricant in PSA mechanical snubbers turns to dust, causing the snubber to fail functional tests.

7. SNUBBER OPTIMIZATION AND LEAK-BEFORE-BREAK

Several utilities have utilized snubber optimization/reduction programs. The results were mixed. Houston Light and Power has successfully used

these programs, however, they are still in the construction phase. Cleveland Electric Illuminating indicated that they had utilized a similar program, but required that no existing loads be changed. Snubber optimization in this case was not successful. The bottom line appears to be that if original analysis was rigorous, then snubber optimization/reduction programs may not be very successful.

Florida Power Corporation is utilizing both snubber optimization/reduction and leak-before-break to remove 24 of the 32 large bore snubbers. The results show that the remaining eight snubbers could be 400 instead of 2,000 kip capacity snubbers. This primarily results from the fact that, at Crystal River Unit 3, the loss-of-coolant accident (LOCA) loads, not seismic loads, dominate analysis. The B & W leak-before-break analysis (an analysis that shows that the pipe will leak before it breaks) has been submitted to the NRC. However, it is not clear if the NRC will approve its use for the removal of existing equipment.

8. ASME (OM-4)

Duke Power discussed the work that the OM-4 Committee was conducting. They explained that the intention is that OM-4 will someday be incorporated into Technical Specifications. A draft should be published by October 1985. However, it is felt that it will be two to three years before implementation. They also indicated that it was difficult to understand. A flow diagram showing how OM-4 works is attached. It was decided that a detailed explanation of OM-4 should be presented to the group at a later date.

9. SNUBBER INDUSTRY GROUP

It was agreed during the meeting that a snubber industry group should be formed. The group would be an ad hoc committee. A core committee would be formed to organize and maintain continuity within the group. This group would allow the industry to present a united front to the NRC, vendors, and the OM-4 Code Committee. It would also allow information to be shared among the utilities. Some topics for the group to address are:

- a. Implementation of OM-4
- b. Response for the NRC's steam generator large bore snubber concerns.
- c. Revision of the visual examination table in Technical Specifications to be realistic.

A letter stating the goals of the group and soliciting management approval for representation in the snubber industry group is attached. This letter should be signed and returned as soon as possible to Florida Power Corporation.

10. TOPICS FOR FUTURE MEETINGS

Some future agenda item topics in which interest was expressed are as follows:

- a. Snubber optimization/reduction programs utilizing:
 - 1. Increased Damping
 - 2. Independent Support Motion
 - 3. Peak Shifting
 - 4. Leak-Before-Break
 - 5. Rigorous Structural Analysis Computer Codes
 - 6. Active and Passive Energy Absorbers
- b. Optimization of the snubber test program, Section XI, and Technical Specification requirements.
- c. Refinement of the snubber test program by application of failure modes.
- d. Test Machines
 - 1. Full Load Capability and Need
 - 2. Utility experiences with their machines.
- e. Service experience with Paul Monroe hydraulic snubbers that have tefzel seals.
- f. Inservice Testing - Methods that are acceptable to the NRC (particularly in-situ testing).
- g. PSA Rebuilding Program

Should you identify anymore items that you would like discussed, please contact Dan Green (FPC) at (904) 795-3802, extension 110.



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December 12, 1984

Snubber Information Exchange Meeting Attendees

Dear Sir:

SUBJECT: Snubber Industry Group

It was agreed during the Snubber Information Exchange Meeting held on December 6, 1984 in St. Petersburg, Florida that a Snubber Industry Group should be formed. The goals of the group would be as follows:

1. Proactively interact as a united utility group with the NRC, vendors, and the ASME Code Committee on snubber matters.
2. Share snubber information among the member utilities.
3. Increase utility members' efficiency in the procurement of snubbers and snubber-related materials through the use of a snubber data base.

This would be an ad hoc utility group which would attempt to stabilize the industry relative to snubber matters. A core committee would exist to organize and maintain continuity in the group. It is planned that the group would meet semiannually. All information shared within the group will be confidential and for use by utility members only. No membership costs are involved with the group. However, should funding for a project be needed in the future, management approval from the members must first be obtained.

Two items already identified for the group to address are:

1. Responding to the NRC concerns regarding steam generator large bore snubber testing.

**SNVIBBER UTILITY
GROUP MEETING**

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