



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

July 6, 1976

Docket No.

50-329 /330

Applicant:

Consumers Power Company

Facility:

Midland Plant, Units 1 and 2

SUMMARY OF MEETING TO DISCUSS CRITERIA TO BE USED FOR ANALYSIS
OF BREAKS IN HIGH-ENERGY LINES

A meeting was held in Bethesda on May 21, 1976, to discuss the criteria to be used for the analyses of high-energy lines for the Midland Plant. Attendees at the meeting are indicated in Enclosure 1.

The meeting was held at the request of the applicant, following an agenda proposed by the applicant (Enclosure 2). This matter has been the subject of previous correspondence with the applicant, an earlier meeting held on September 11, 1973, and an Amendment (#25) to the PSAR. The applicant's representatives stated that the current project status is such that design decisions being made regarding protection from high-energy breaks are being translated into steel and concrete in place. Thus, the applicant is concerned that the criteria being used are acceptable to the staff, such that there will be no cause for design changes at a later date. The representatives of the applicant pointed out that the purpose of the meeting was not to attempt to negotiate any variances from staff requirements. Rather, the meeting was called to assure that the applicant, the Architect-Engineer, and the vendor all have a clear understanding of the staff requirements.

1. The first item for discussion (see Enclosure 2) involved the interpretation of piping runs, branch runs, and terminal end points. The applicant stated that for the design, piping runs and branch runs for piping inside and outside containment are treated as a total piping system between fixed points (anchors). The stress analysis is performed for the total system, considering stress intensification factors and flexibility factors as applicable for the various piping components. The applicant thus is postulating pipe breaks at the system terminal points (anchors) and at all points where the calculated stress exceeds the stress criteria of Regulatory Guide 1.46. Branch connections to main piping are not considered as terminal ends. In practice, since the piping at no point exceeds the stress criteria of Regulatory Guide 1.46, the two most highly stressed points within the piping system

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(main and branch lines within anchors) are selected as the locations for postulated breaks.

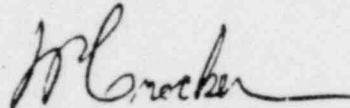
The staff agreed that the applicant's approach is correct and is in accordance with our criteria.

2. The applicant stated that, in accordance with Branch Technical Position MEB 3-1, longitudinal slot breaks in high-energy lines are not postulated to occur at terminal end points for that piping which does not have longitudinal welds. The staff agreed with this interpretation of the criteria, noting that we are accepting the criteria of MEB 3-1 for piping both inside and outside of containment.
3. The applicant also proposed that, in accordance with MEB 3-1, longitudinal slot breaks in high-energy piping would not be postulated at the intermediate locations (minimum of two) required by Regulatory Guide 1.46 to be considered for break locations. The staff agreed that this also is a correct interpretation of our criteria.
4. Item 4 on the agenda concerned a question in a letter dated October 18, 1974, to the applicant, requesting a discussion of the effects of critical cracks in high-energy lines on essential equipment. In view of the acceptance by the staff that, in accordance with MEB 3-1, slot type breaks need not be postulated at terminal and intermediate points, it was agreed that this question no longer is applicable. Accordingly, the staff withdraws this question.
5. The last agenda item pertained to the need for an analysis of moderate energy lines for the Midland plant. The applicant stated that, based on the meeting in September of 1973, they understood that such an analysis was not required. The staff does not have this understanding.

The staff does want an analysis of moderate energy lines. We pointed out that such an analysis does not have to be in great detail. What is involved is a check of the moderate energy lines to determine which run in the proximity of safety related equipment. At these points of proximity then, the applicant may either provide adequate protection for a postulated failure or may show by stress analysis that a failure will not occur.

The applicant voiced a concern that there may not be time to provide this analysis of the moderate energy lines in the FSAR at the time of submittal. The staff indicated that while it did not anticipate that a great deal of time or effort would be required, the analysis could be provided subsequent to submittal of the FSAR if necessary.

6. Not on the agenda, but discussed at the meeting, was the question of how to handle variations between commitments made by the applicant in Amendment 25 to the PSAR and the present staff positions as enunciated in Regulatory Guide 1.46 and Branch Technical Position MEB 3-1. It was agreed that there is no need for the applicant to pursue Amendment 25 any further at this time, since the staff agrees that the design as it is proceeding is in accord with present staff criteria. The applicant will issue necessary change notices to its design and construction forces to assure that the plant is erected in accordance with the present criteria, and the actual documentation of criteria used can await submittal of the FSAR.
7. Also mentioned during the meeting is the question of guard pipes. The applicant pointed out that use of guard pipes would be considered only for those instances where piping was already installed and could not be re-routed, and then only as a last resort. The applicant feels that an augmented inservice inspection of the piping is a preferable solution. The staff agrees in general with this approach.



L. P. Crocker
Senior Project Manager
Light Water Reactors Branch 4
Division of Project Management

Enclosures:

1. List of Attendees
2. Meeting Agenda

ENCLOSURE 1

ATTENDANCE LIST

MEETING WITH CONSUMERS POWER CO.

May 21, 1976

Consumers Power Company

R. C. Bauman, Project Engineer

Bechtel

M. O. Rothwell, Assistant Project Engineer

J. L. Hurley, Assistant Project Engineer

D. Riat, Supervisor, Piping Stress

D. L. Mesang, Midland Project Nuclear Group

D. W. Tooker, Midland Project, High-Energy Line Break Analysis

Babcock & Wilcox

C. E. Mahaney, Project Manager for Midland

H. W. Behnke, Licensing

R. B. Borsum, Bethesda Representative

J. M. Anderton, Senior Engineer

NRC

L. P. Crocker, Licensing Project Manager

P. R. Mathews, Section Leader, APCS

W. T. LeFave, APCS

P. C. Hearn, APCS

H. L. Brammer, DSS-MEB

J. M. Kovacs, DSS-MEB

R. K. Fink, Mechanical Engineer, SD/EMSB

R. Muller, ACRS Staff

Enclosure 2

PROPOSED HIGH ENERGY LINE BREAK ANALYSIS

MEETING AGENDA

I. Interpretation of piping runs, branch runs, and terminal end points

We propose that piping runs and branch runs for piping inside and outside containment be treated as a total piping system between fixed points (anchors) since the stress analysis performed considers it as such. We perform thermal, dead weight, and seismic stress analyses for the total system including branch lines (within anchors). The analysis considers all of the stress intensification factors and flexibility factors as applicable to various piping components. Thus, we propose that breaks be postulated within the system as follows:

1. Terminal end points (anchors)
(Branch connections to main piping are not considered as terminal ends.)
2. At all points which exceed the stress criteria of R.G. 1.46
(As a minimum, two (2) intermediate breaks will be selected for each piping system, [main and branch lines within anchors])

II. Longitudinal slot breaks at terminal end points

We propose that longitudinal slot breaks not be postulated to occur at terminal end points for piping without longitudinal welds. This proposal is in accordance with Section 3b(2)(a) of the Branch Technical Position MEB 3-1 and should be a reasonable assumption for Midland Units 1 and 2 both inside and outside of containment.

III. Longitudinal slot breaks at intermediate locations

We propose that longitudinal slot breaks not be postulated to occur at intermediate locations where the Regulatory Guide 1.46 criterion for a minimum number of break locations must be satisfied. This proposal is in accordance with section 3b(2)(b) of the Branch Technical Position MEB 3-1 and should be a reasonable assumption for Midland Units 1 and 2 both inside and outside containment.

IV. Discussion of item 3 of A. Schwencer (NRC) to S. Howell (CPCo) letter of October 18, 1974, pertaining to Amendment 25 to the Midland PSAR.

V. Moderate Energy Analysis

Based on agreements reached in the meeting with the NRC on September 11, 1973, it is our understanding that moderate energy analysis is not required for Midland.

~~MEETING NOTICE~~

D I S T R I B U T I O N

Docket File
NRC PDR
Local PDR
TIC
LWR #5 File
NRR Reading (M. Groff)
B. Rusche
E. Case
J. Miller
R. Boyd
R. C. DeYoung
R. Denise
D. Skovholt
F. J. Williams
J. Stolz
K. Kniel
O. Parr
W. Butler
R. Clark
T. Speis
P. Collins
C. Heltemes
R. Houston
R. Heineman
H. Denton
ACRS (16)
S. Varga
H. Berkow
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Attorney, OELD
IE (3)
SD (7)
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B. Faulkenberry, IE

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W. T. LeFave
P. C. Hearn
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J. M. Kovacs
R. K. Fink
R. Muller, ACRS staff
M. Service