703

file Containment

March 13, 1964

Mr. William B. Cottrell
Oak Ridge National Laboratory
P. O. Box Y
Oak Ridge, Tennessee

14-2

Dear Mr. Cottrell:

Your letters dated February 14 and February 18 to Mr. R. F. Fraley requested comments on draft chapters 7 and 9 of the Reactor Containment Handbook.

We have obtained comments from appropriate members of the ACRS and these are attached for your use.

Sincerely yours,

Signed R. H. Wilcox

R. H. Wilcox
Assistant to Executive Secretary
ACRS

Attachments:
Comments on draft chapters 7 & 9
Reactor Containment Handbook.

cc: R. R. Newton, AEC-DRD
R. F. Griffin, Bechtel Corp.
J. J. DiNunno, AEC-DLAR

bcc: H. Kouts
W. D. Manly
D. A. Rogers

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COMMENTS ON CHAPTER 7 - CONTAINMENT PROOF TESTING, REACTOR CONTAINMENT HANDBOOK, FINAL DRAFT - FEBRUARY 1964

(1) Sufficient emphasis is not given to the fact that containment testing program is directed to assuring that tightness of the system will always be better and never poorer than specifications. Retests of the system should first be made with no correction to penetrations or closure mechanisms to assure that the system has been performing adequately and that more frequent testing is therefore not required.

(2) The desirability of frequent exercising of penetration closure control apparatus should be considered.

(3) The need for and methods of testing external portions of primary coolant systems of boiling water reactors should be considered.

(4) Where external adjuncts to containment, such as blowdown tanks for relief valves, are used, what periodic testing of these and their accessories should be done?

(5) In secondary containments operating at very low gage pressure, either positive or negative, wind pressure external to the containment may reverse the pressure differential on one side of the structure from that assumed in design. What should be done in testing to insure that this does not occur?

(6) In periodic retesting after long periods of operation, massive portions of equipment inside the containment are at high temperature and will cool off slowly affecting temperature uniformity during the test.

(7) In terms of pressure technology, "proof testing" has generally been taken to mean an over-pressure hydraulic or pneumatic test. The significance is broadened here to include leak-testing.

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COMMENTS ON CHAPTER 9 (EXCEPT SECTION 9-6)
DESIGN DETAILS, REACTOR CONTAINMENT HANDBOOK,
FINAL DRAFT - FEBRUARY 1964

(1) Design of concrete containment vessels to ACI Standards for buildings is design lower in requirements, quality and inspection than is provided in the BPV code. Great care has gone into such factors as design of nozzles for penetrations, assurance of quality of materials, inspection during fabrication.

(a) Testing of prototype penetrations should be required since these have not been previously developed.

(b) Integrity of the structure depends on reinforcing. The quality of reinforcing bar is not adequately specified or controlled for this service. Adequate information as to bar composition and processing is not available to assure satisfactory joints. Inspection of every joint should be required in construction, along with qualification of welders and joint design.

(2) This chapter is entitled "Design Details" but it fails to give adequate treatment to design penetrations and their closure including support for penetrating pipes.

(3) There is some question as to the adequacy of containment of boiling water reactors with primary steam lines penetrating the containment and especially of the reliability of shut-off valves.

(4) The important subject of ventilation penetrations and shut-offs, and of vacuum breakers is not considered.

(5) Design and reliability of seals on access doors is not considered.

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(6) The problems of external (to the containment vessel) portions of the containment is not mentioned. This includes such items as containment for relief valve discharge, containment of high pressure steam lines from boiling water reactors to turbines, containment of low pressure portions of the primary coolant cycle and the boiler feed pumps in boiling water reactors.

It seems that Chapter 10 may answer many of the above questions.

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COMMENTS ON CHAPTER 9 - SECTION 9-6,
REACTOR CONTAINMENT HANDBOOK,
FINAL DRAFT - FEBRUARY 1964

(1) This section does not appear appropriate in a containment handbook.

(2) It would seem advisable to expand section 9-3 to include considerations of embrittlement. Neutron embrittlement could be covered briefly in such a section.

(3) If an extensive section on neutron embrittlement is desired, a completely fresh start on such a section would appear to be warranted.

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