

MEMO TO FILE

Re; ^SCreswell Statement that GDC 13 Criteria were not met with regard to water level instrumentation

After consultation with Tom Cox and Joe Scinto, it appears that this is not quite accurate. GDC 13 is written with the same standard as many GDC criterion: The instrumentation required to meet this grade ("safety grade") is only that as appropriate to assure adequate safety. (GDC 13). Since the water level instrumentation was not deemed necessary to bring a plant to shutdown, it was not safety graded and therefore need not meet GDC 13.

The point seems to be that the reactor could be shut down without water level instrumentation. ECCS etc. was all automatic.

A second point is that even if this water level instrumentation had been deemed safety grade, if it existed only in the Pressurizer it wouldn't have made any difference in the TMI-2 accident, as the Pressurizer indication read properly. It was the ~~an~~ unanticipated void in the reactor which caused the problems.

THE ISSUE all of this raises for me is the uselessness of the GDC. If all (as it seems) are written with such loopholes (that may be too strong) of what value is it? I guess this goes to be the central point about the GDCs: they ~~are~~ are not dictates of design but provide only guidance.

Joe Scinto recommended that we see the response to Creswell's memo on this subject. He also pointed out that the accident at Oyster Creek (a BWR) in no way was minimized by the proper functioning of ~~the~~ water level instrumentation, although he agreed such instrumentation is necessary to assess the consequences of an accident.

RE: DAVIS-BESSE TRANSIENT
cc: Bill Parler

dje

8001180 321 P

FRAN
CRESWELL
TO
STREETER
MEMO
2/8/79

The safety analysis of more severe cooldown transients, such as the loss of feedwater event, indicates that the water volume could decrease to less than the system volume exclusive of the pressurizer. During such an event, the emptying of the pressurizer would be followed by a pressure reduction below the saturation point and the formation of small voids throughout much of the primary system. This would not result in the loss of core cooling because the voids would be dispersed over a large volume and forced flow would prevent them from coalescing sufficiently to prevent core cooling. The high pressure coolant injection pumps are started automatically when the primary pressure decreases below 1600 psi. Therefore, any pressure reduction which is sufficient to allow voiding will also result in water injection which will rapidly restore the primary water to normal levels.

For these reasons, we believe that the inability of the pressurizer and normal coolant makeup system to control some transients does not provide a basis for requiring more capacity in these systems.

General Design Criterion 13 of Appendix A to 10 CFR 50 requires instrumentation to monitor variables over their anticipated range for "anticipated operational occurrences". Such occurrences are specifically defined to include loss of all offsite power. The fact that T cold goes off scale at 520°F is not considered to be a deviation from this requirement because this indicator is backed up by wide range temperature indication that extends to a low limit of 50°F. Neither do we consider the makeup flow monitoring to deviate since the amount of makeup flow in excess of 160 gpm does not appear to be a significant factor in the course of these occurrences.

The loss of pressurizer water level indication could be considered to deviate from GDC 13, because this level indication provides the principal means of determining the primary coolant inventory. However, provision of a level indication that would cover all anticipated occurrences may not be practical. As discussed above, the loss of feedwater event can lead to a momentary condition wherein no meaningful level exists, because the entire primary system contains a steam water mixture.

It should be noted that the introduction to Appendix A (last paragraph) recognizes that fulfillment of some of the criteria may not always be appropriate. This introduction also states that departures from the Criteria must be identified and justified. The discussion of GDC 13 in the Davis Besse FSAR lists the water level instrumentation, but does not mention the possibility of loss of water level indication during transients. This apparent omission in the safety analysis will be subjected to further review.

POOR ORIGINAL!

CHECK WITH TOM COX WHETHER THIS SAME DEFICIENCY EXISTS IN TMI FSAR. THE POINT HERE, IN MY OPINION, IS THAT THE REGULATORY SYSTEM ALLOWED THIS D-B FAILURE TO SLIP BY. HAD IT BEEN PROPERLY EVALUATED WOULD WE HAVE SEEN THE INSTRUMENT FAILURE DURING TRANSIENT PROBLEM IN ADVANCE, ALLOWING FOR SHUTDOWN ORDER?

FSAR
6/20/79
TOM to look at TMI-2