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DAVIS-BESSE 1 BHR DESIGN

Toledo Edison Company has justified their capability to bring their plant to below 212°F within 24 hours (in spite of a single active component failure) by installing a manual bypass around the RHR suction valves inside containment. Enclosed is a discussion which provides the resulting doees to the operator and to the site boundary. Please review this material for acceptability of radiological consequences. Since we are currently writing our SER input, your conclusions by August 11, 1975 would be appreciated.

Original Signed By
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7.6.1 (10/4/74) From our review of the Decay Heat Removal (DHR) System (Sections 7.6.1.1, 6.3.2.16, and Figure 6.17), we have concluded that this system is required for safety, i.e., to achieve cold shutdown at any point. The present design does not meet the single failure criterion with respect to failure (to open) of either of two serially connected isolation valves (DH11 & DH12) in the suction line of the (DHR) pumps.

We will require that the (DHR) system design meet the single failure criterion from the standpoint of assuring decay heat removal (i.e., cold shutdown) and from the standpoint of precluding overpressurization of the system, and that the associated instrumentation, control and electrical systems conform with IEEE Std 279-1971 and IEEE Std 308-1971. Therefore, modify your design to meet these requirements, or justify the present design on some other defined basis.

RESPONSE

System changes have been made. The manual bypass has been changed as follows:

1. The removable section of piping has been inserted permanently into the bypass.

2. Both valves on the bypass will be designed for primary system pressure and 10

3. The two "bypass" valves will be locked closed, with the necessary administrator controls.

Single failure of one of the motor-operated isolation valves could be accommodated by a member of the operations staff entering the containment after sufficient purging if deemed necessary, and opening the manual bypass valves. The resultant dose to the man entering the containment is 0.23 rem. The site boundary doses are shown in figure P7.6.1-1.

The doses are based on the following assumptions:

1. A primary system leak of 140 gpm is assumed to occur continuously. (This is a break which the makeup pumps can keep up with.)

2. Purging does not occur until 6.5 hours after the break. At this time the operator would discover that the main direct line can not be used. He would then initiate the purge.

3. The operator enters the containment with a Scott air pack and takes ten minutes to open the bypass valves and exit containment.

4. Entry into the containment could be made after two hours. The benefit of waiting more than two hours is minimal and results in an increase

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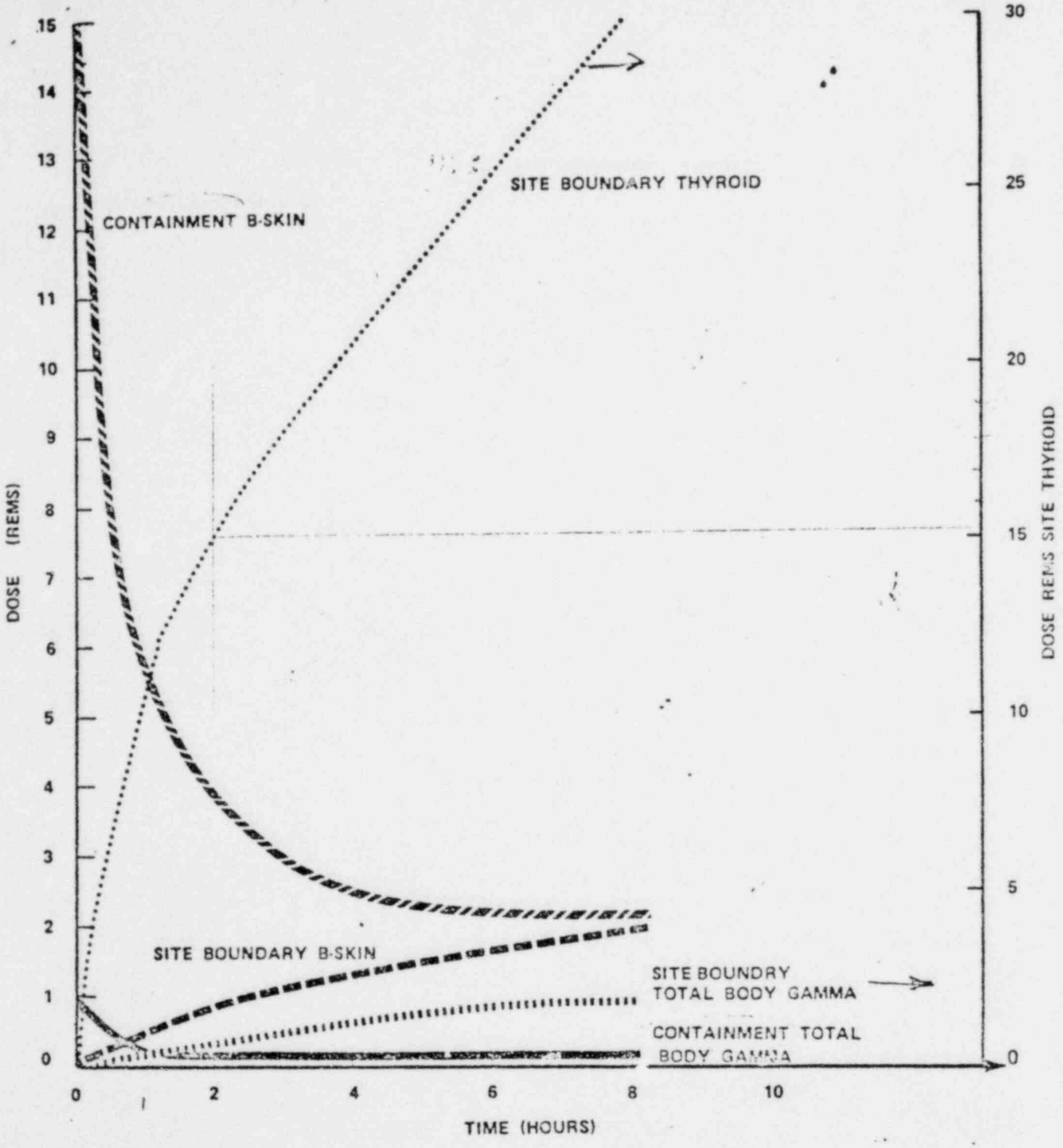
in the site boundary dose. The site boundary dose resulting from a two hour purge would be 15.5 rem thyroid, 0.42 rem whole body.

5. To reduce beta skin doses, protective clothing was assumed to be worn.

6. One percent failed fuel was assumed. 10

Thyroid dose to the operator is reduced significantly by the use of the Scott air pack and in all cases is negligible compared to the gamma dose. If the man were to enter the containment without purging, the resultant gamma dose would be only 0.91 rems.



DAVIS-BESSE NUCLEAR POWER STATION
DOSES VS. TIME
FIGURE P7.6.1-1

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