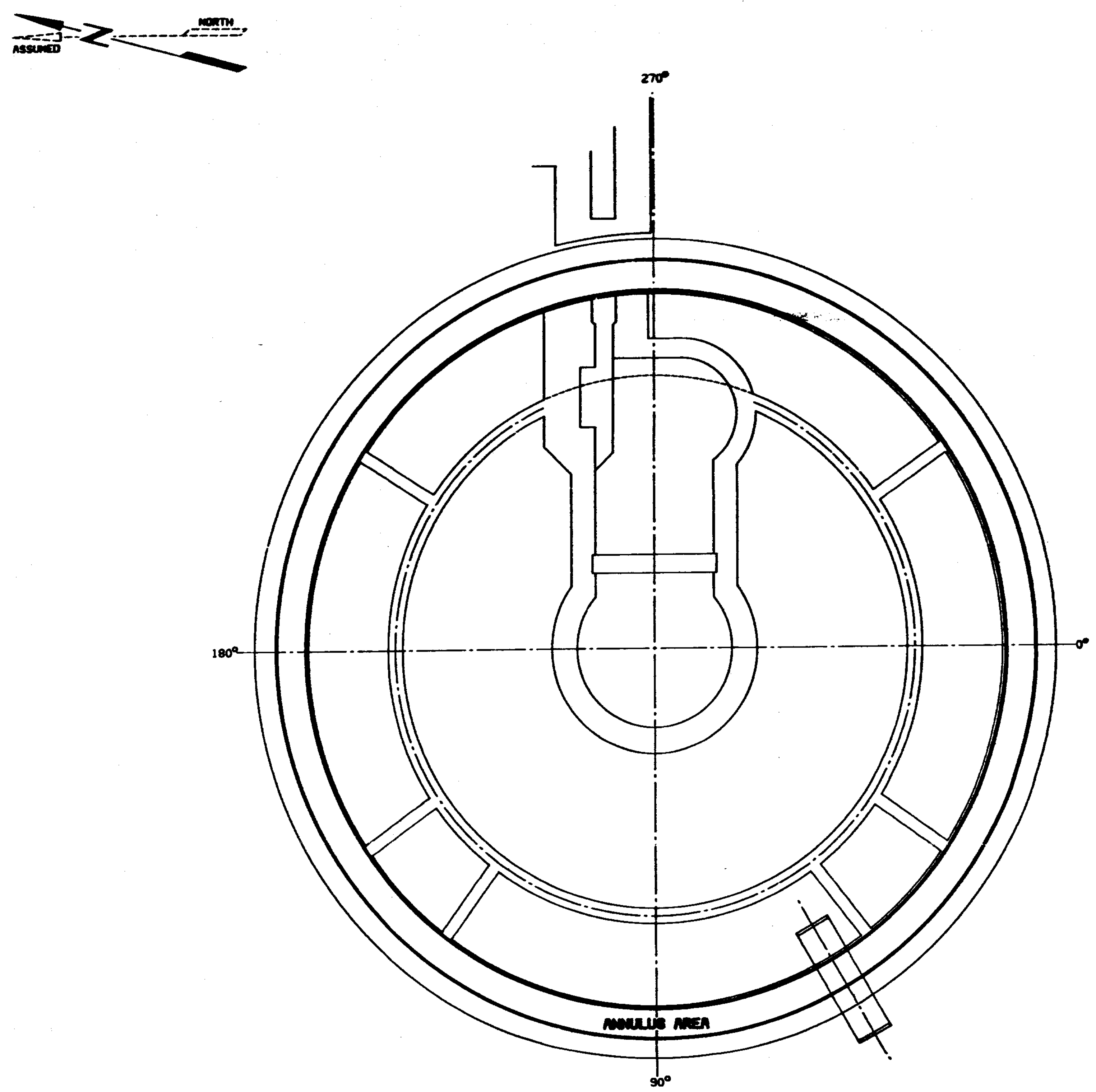
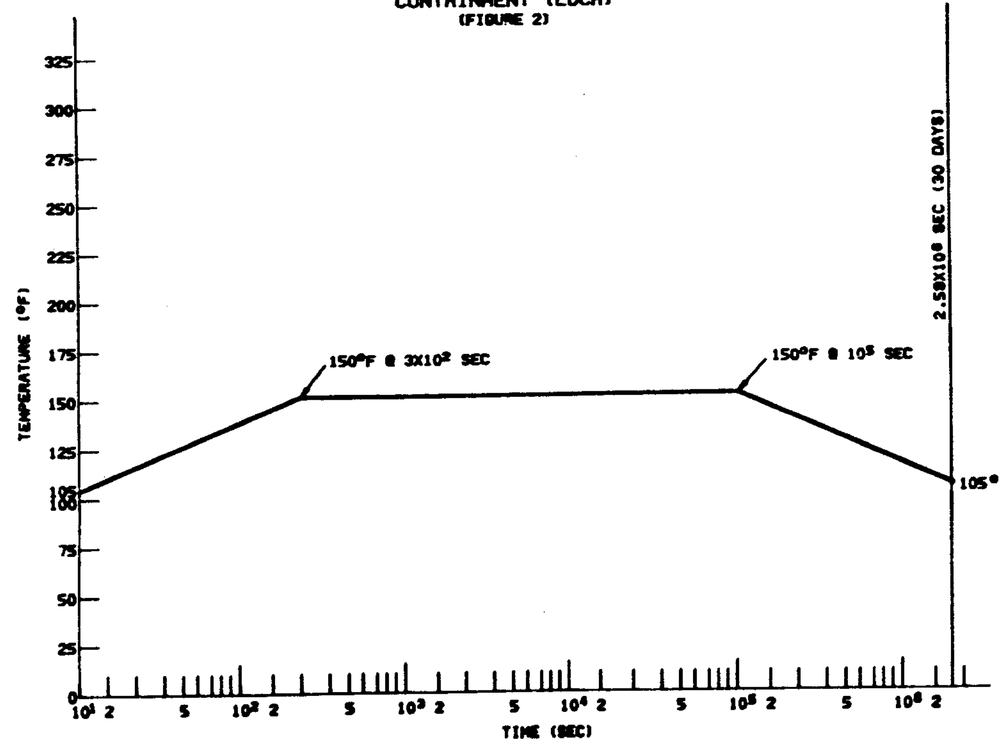


PLAN-LOWER COMPARTMENT

BUILDING LOCATION AND ROOM NUMBER	OPERATIONAL CONDITION (NOTE 1)	TEMPERATURE (°F)	RELATIVE HUMIDITY (%)	PRESSURE (PSIA) (NOTE 2)	TOTAL 40 YEAR INTEGRATED DOSE (RADS) (NOTE 11)	INTEGRATED ACCIDENT DOSE (RADS) (NOTE 11)	AREA TYPE (NOTE 12)	FLOODING
REACTOR BUILDING CONTAINMENT ANNULUS AREA	1	AVG 105 MAX 110 MIN 50	55 80 30	ATM (-) ATM (-) ATM (-)	NA NOTE 24 NA	NA NA NA	C	NA
	2	MAX 120 MIN 40 } NOTE 8	90 10 } NOTE 10	ATM (-) ATM (-)	NA NA	NA NA		NA
	3	150 FIGURE 2	100	ATM (-)	NA	5 X 10^7		NOTE 5
	5	NA	NA	NOTE 4 NODE 1	NA	NA		NA
	6	NA	NA	ATM(-) NOTE 19	NA	NA		NOTE 5

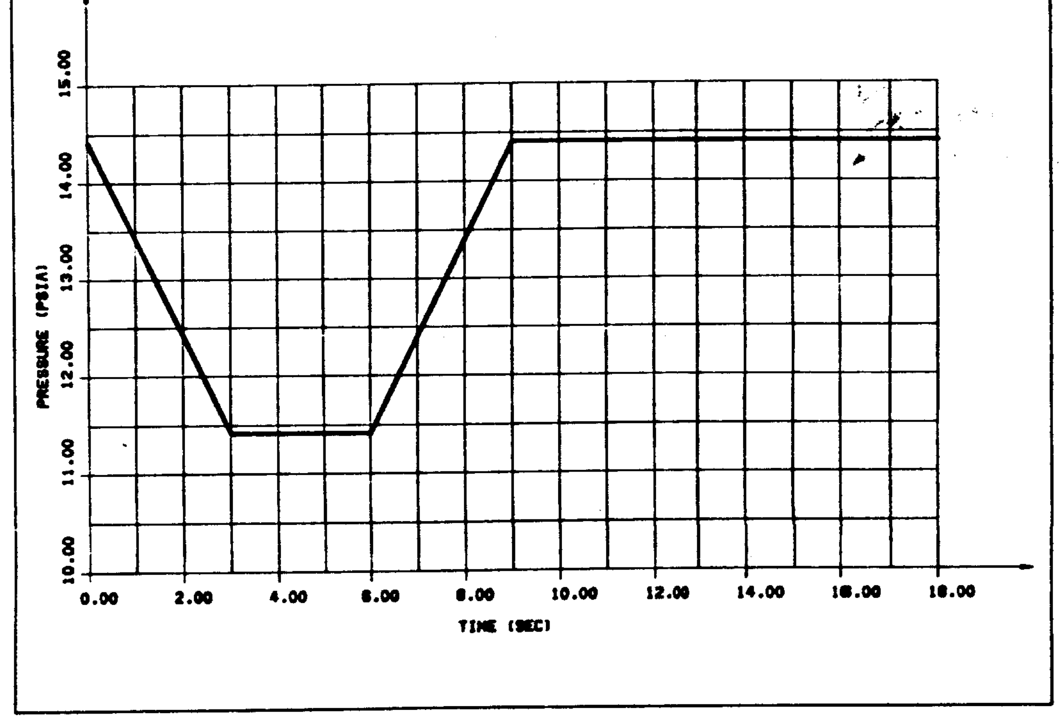
ANNULUS TEMPERATURE RESPONSE TO A WORST CASE DOUBLE ENDED PUMP SUCTION BREAK INSIDE PRIMARY CONTAINMENT (LOCA)

(FIGURE 2)



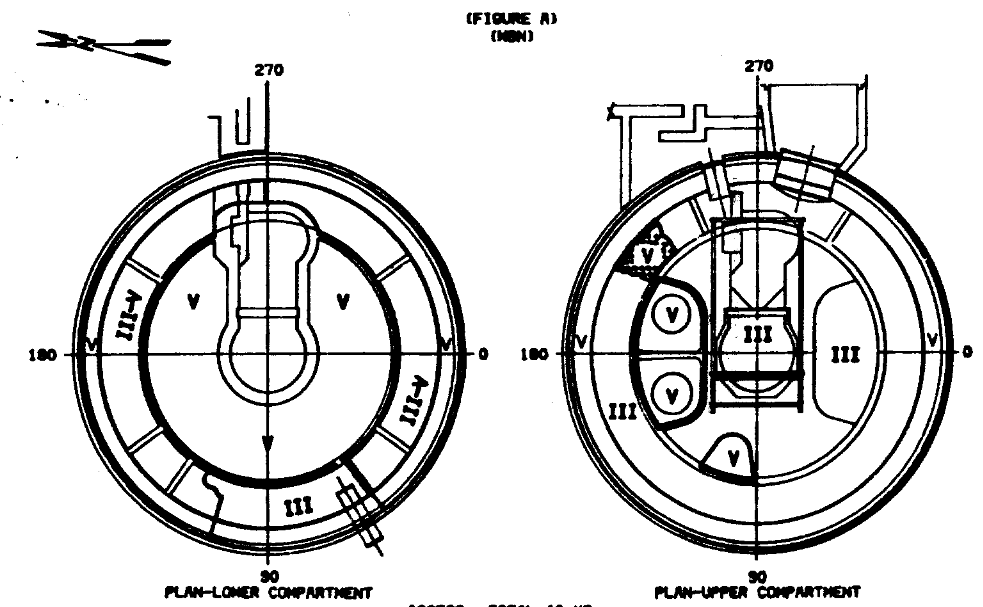
TORNADO PRESSURE VS TIME
NODE 1

(ANNULUS AREA)



RADIATION PROTECTION ARRANGEMENT PLAN
UPPER AND LOWER COMPARTMENTS

(FIGURE A)
(WBN)



ACCESS TYPE	TOTAL 40 YR. INT. DOSE
III	≤3.5 X 10^4 RADS
IV	≤ 3.5 X 10^5 RADS
V	2 X 10^7 RADS

GENERAL NOTES: FIGURE AND NOTE NUMBERS CORRESPOND TO THOSE OF REFERENCE 1. ALL FIGURES AND NOTES REQUIRED FOR THE AREA(S) ARE GIVEN.

NOTES:

1. OPERATIONAL CONDITION DEFINITIONS:
   1. NORMAL
   2. ABNORMAL
   3. LOCA/HELB INSIDE PRIMARY CONTAINMENT (WORST CASE SMALL BREAK FOR TEMPERATURE - LARGE BREAK FOR PRESSURE)
   4. HELB OUTSIDE PRIMARY CONTAINMENT
   5. TORNADO (SUDDEN PRESSURE DROP OF 3 PSI)
   6. INADVERTENT CONTAINMENT SPRAY INITIATION - SEE NOTES 19, 22

2. ATM -INDICATES ATMOSPHERIC PRESSURE EXISTS. NORMAL ATMOSPHERIC PRESSURE AT WBN IS APPOXIMATELY 14.4 PSIA.

   ATM(+) -INDICATES A POSITIVE PRESSURE WITH RESPECT TO THE ATMOSPHERE.

   ATM(-) -INDICATES A NEGATIVE PRESSURE WITH RESPECT TO THE ATMOSPHERE. THE ANNULUS IS MAINTAINED AT A NOMINAL PRESSURE OF -5.0 INCHES OF WATER DURING ALL NORMAL AND ABNORMAL CONDITIONS. DURING AN ACCIDENT CONDITION (OPERATIONAL CONDITION 3) AND DURING PERIODS OF TESTING THE EGTS, ANNULUS PRESSURE WILL BE MAINTAINED AT -0.5 INCHES OF WATER.

4. PRIMARY CONTAINMENT IS NOT AFFECTED BY DEPRESSURIZATION DURING A TORNADO CONDITION. THE PROBABILITY OF A TORNADO IS 3.36X10⁻⁵ OR APPROXIMATELY ONCE EVERY 30,000 YEARS.

5. FOLLOWING AN ACCIDENT INSIDE PRIMARY CONTAINMENT THE CONTAINMENT SPRAY SYSTEM WOULD BE ACTIVATED AND FLOODING WOULD LIKELY OCCUR. THIS WOULD ALSO BE TRUE FOR AN INADVERTENT CONTAINMENT SPRAY (SEE OPERATIONAL CONDITION 6). SAFETY RELATED SYSTEMS AND EQUIPMENT SHOULD BE LOCATED ABOVE THE MAXIMUM POSSIBLE FLOOD ELEVATION, OR OTHERWISE HAVE FLOOD PROTECTION. ALL ACCESSES AND PENETRATIONS BELOW THE OUTSIDE MAXIMUM PROBABLE FLOOD LEVEL IN THE SHIELD BUILDING ARE DESIGNED TO BE WATERTIGHT; THEREFORE, THE ANNULUS AND CONTAINMENT ARE NOT AFFECTED BY THIS DBE. THE SURGE FLOOD LEVEL INSIDE THE CRANE WALL IS 723.8 FT (21.0 FT) WHILE THE STEADY STATE LEVEL IS 717.7 FT (14.9 FT). THE INSTRUMENT ROOM WILL FLOOD TO THE STEADY STATE ELEVATIONS. THE DURATION OF THE CONTAINMENT SPRAY IS ≤30 DAYS. CONTAINMENT SPRAY FLOW RATE IS EQUAL TO 9500 GAL/MIN OR 0.92 GPM PER SQUARE FOOT OF CONTAINMENT CROSS SECTION.

8. THESE MAXIMUM AND MINIMUM ABNORMAL TEMPERATURES COULD OCCUR AS A RESULT OF OUTSIDE TEMPERATURE EXCURSIONS; TEMPORARY GREATER THAN DESIGN HEAT LOADS; OR DEGRADED ENVIRONMENTAL CONTROL SYSTEM OPERATION. THIS CONDITION COULD EXIST FOR UP TO EIGHT HOURS PER EXCURSION AND WILL OCCUR LESS THAN 1% OF THE PLANT LIFE.

10. THESE MAXIMUM AND MINIMUM ABNORMAL HUMIDITIES COULD EXIST FOR UP TO 8 HRS PER EXCURSION AND WILL OCCUR LESS THAN 1% OF THE PLANT LIFE.

11. ALL 40 YR INTEGRATED DOSES SHOWN ARE UPPER LIMITS FOR THE SUMMATION OF THE GAMMA AND BETA CONTRIBUTIONS UNLESS OTHERWISE INDICATED. RADIATION DOSE INFORMATION WAS TAKEN FROM THE FSAR SECTION 3.11.2, FIGURES 12.3-1 THRU 12.3-7. THE INTEGRATED ACCIDENT DOSE GIVEN IS FOR A LOCA. TOTAL RADIATION DOSE IS OBTAINED BY ADDING THE 40 YR INTEGRATED AND INTEGRATED ACCIDENT DOSES FOR SPACES WHICH HAVE 40 YR INTEGRATED DOSES >1.75X10³. USE 1X10⁴ RADS FOR AREAS WHICH HAVE 40 YR INTEGRATED DOSES ≤1.75X10³ RADS AND INTEGRATED ACCIDENT DOSES <1X10⁴ RADS.

12. AREAS LISTED ARE DIVIDED INTO THREE CATEGORIES DEFINED AS FOLLOWS:

    A. SPACES THAT ARE SERVED BY SAFETY-RELATED REDUNDANT ENVIRONMENTAL CONTROL SYSTEMS BACKED BY ONSITE EMERGENCY ELECTRICAL POWER.

    B. SPACES NOT MAINTAINED BY REDUNDANT ENVIRONMENTAL CONTROL SYSTEMS BACKED BY ONSITE EMERGENCY ELECTRICAL POWER.

    C. SPACES SERVED BY NON SAFETY-RELATED ENVIRONMENTAL CONTROL SYSTEMS DURING NORMAL CONDITIONS AND REDUNDANT SAFETY-RELATED SYSTEMS DURING ACCIDENT CONDITIONS.

19. ADVERSE CONDITIONS RESULTING FROM INADVERTENT CONTAINMENT SPRAY (CONDITION 6) WILL EXIST FOR UP TO ONE HOUR THEN RETURN TO NORMAL LINEARLY WITHIN 8 HOURS. THIS EVENT SHOULD BE CONSIDERED TO OCCUR NO MORE THAN 5 TIMES DURING PLANT LIFE.

24. FIGURE A DEFINES THE TOTAL 40 YEAR INTEGRATED DOSE INSIDE THE CONTAINMENT AND ANNULUS RELATIVE TO LOCATION.

28. NA INDICATES NOT APPLICABLE FOR THIS OPERATIONAL CONDITION.

REFERENCE:

1. SUMMARY OF HARSH ENVIRONMENTAL CONDITIONS FOR SEQUOYAH AND WATTS BAR NUCLEAR PLANTS (NEB 82-0726-235).

Docket # 50-390
Control # 8311160119
Date 83/11/07 of Document
REGULATORY DOCKET FILE

SCALE: EXCEPT AS NOTED

REACTOR BUILDING
UNITS 1 & 2

ENVIRONMENTAL DATA ENVIRONMENT - HARSH ANNULUS AREA

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED | RECOMMENDED | APPROVED

INSPECTED AND APPROVED FOR ISSUE

ECN-3606

KNOXVILLE 8-26-83 | 85 | W | 47E235-44 | R0

RECORD DRAWING AS CONSTRUCTED

PHOTOGRAPHED