NUCLEAR MANAGEMENT AND RESOURCES COUNCIL

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Thomas E. Tipton
Vice President & Director
Operations, Management and
Support Services Division

August 28, 1992

Mr. Dennis M. Crutchfield
Associate Director for
Advanced Reactors and Licensing Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Crutchfield:

The purpose of this letter is to transmit to you an example of the draft Plant Parameter Envelop (PPE) under development by the Early Site Permit Demonstration Program (ESPDP) as promised in our letter dated August 10, 1992. The PPE provides an Early Site Permit (ESP) applicant with plant information that may be used in site safety and environmental suitability determinations required by NRC regulations in cases where actual plant information is not yet available, e.g., the ESP applicant may not have contracted for purchase of a specific Advanced Light Water Reactor(s) (ALWR) design. The PPE provides postulated plant information for the development of ESP environmental reports and ESP requirements specified by 10 CFR Parts 50, 52, and 100 as described in the enclosure to our previous letter.

We have provided a description of the methods used to develop the PPE along with a draft example to assist in your review. NRC acceptance is requested for the use of the PPE method and the industry's proposed approach to supply required plant information in the ESP process. This is needed to ensure a mutual understanding between the NRC and industry regarding the principles of this process, and to help achieve the goal of our October 1992 siting conference of communicating an accurate understanding of NRC's requirements and practices. We also request your suggestions to improve the PPE so we can produce a usable final product.

T001 1/1

We are looking forward to our meeting scheduled for September 3, 1992, where a more full discussion of the PPE and its intended use in ESP applications will be possible. Should you or your staff have any questions on the enclosed material, feel free to call John Ronafalvy, John Schmitt, or me.

Sincerely,

Thomas E. Tipton

TET/JPR:mls
Enclosure

cc: John Craig, NRC/NRR
Barry Zalcman, NRC/NRR

PLANT PARAMETERS ENVELOPE DEVELOPMENT

OVERVIEW OF APPROACH

AND

WORK PRODUCT EXAMPLE

Note: The purpose of this document is to illustrate the methodology currently being used to develop plant parameter envelopes. The methodology and example provided represent work in progress and are subject to change as the task progresses.

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INTRODUCTION

The Nuclear Regulatory Commission (NRC) has added a new regulation which provides for issuance of early site permits and for future construction and operation of Advanced Light Water Reactors. 1/

The Department of Energy, through Sandia National Laboratories, initiated a project to demonstrate the practical implementation of this new regulation for early site permits.

In conjunction with these developments, a Nuclear Power Oversight Committee was formed. This organization, "NPOC", has senior executive members representing utility organizations, reactor suppliers, architect engineers, and utility companies. NPOC prepared a "Strategic Plan for Building New Nuclear Power Plants" 2/, which contains Building Blocks for accomplishing the Plan. One of these blocks calls for obtaining NRC approval of suitable sites for new nuclear plants.

The overall lead for the siting plan is shared by the Electric Power Research Institute, EPRI, and the Nuclear Management and Resources Council, NUMARC. EPRI and NUMARC formed the Industry Siting Group in January 1991 to assist in implementing the siting approval plan.

In early 1991, the Joint Contractors, JC, 3/ were successful in responding to the Department of Energy's request for proposals for an Early Site Permit Demonstration project. As a part of the siting project, the JC undertook development of ALWR plant parameters to characterize plant/site interfaces; development of individual plant parameter envelopes by determining individual quantitative values for each parameter; and development of generic envelopes for Evolutionary, Passive, and "Composite" Plants 4/ by compiling this information.

This paper provides a description of the methodology currently in use to develop the plant parameter envelopes. As the project work proceeds, the methodology and resulting envelopes may change.

DEVELOPMENT OF PLANT PARAMETERS LIST

Summary of Methodology

The first step in the process involved compiling a list of qualitative parameters, and then identifying those parameters which characterize the plant's:

Functional or operational needs (requirements) from the site's natural/environmental resources, or

Capability to withstand the natural or man-made environmental hazards inherent to a site, or

Direct impact on the site's natural/environmental resources (soil, rock, water, or air).

Following development of the qualitative parameters list, individual ALWR quantitative parameters lists were determined. This was accomplished by assigning appropriate numerical values to the qualitative parameters. Numerical values were obtained from:

EPRI Utility Requirements Documents (URDs),

Vendor design information, or

Engineering assessments

The quantitative parameters were then analyzed and envelopes created by selecting the limiting value for each qualitative parameter for:

Both evolutionary plant designs,

Both passive plant designs, and

A generic envelope addressing the four ALWR designs.

The quantified plant parameters are then juxtaposed with the site quantities for each corresponding parameter to assess the acceptability of a proposed site, as illustrated below:

PLANT PARAMETERS		SITE PARAMETERS
Plant functional or operational needs (e.g. maximum normal raw water flow rate to the circulating water system	$\leq$	Site's capacity to satisfy plant needs (e.g. raw water available from site or nearby water sources)
Plant capability to withstand natural or manmade environmental hazards (e.g. design basis safe shutdown earthquake ground acceleration)	$\geq$	Site specific hazards (e.g. site specific earthquake ground acceleration)
Plant's direct impact on the site's natural/environmental resources (e.g. circulating water system thermal effluent)	$\leq$	Site's capacity to accommodate plant operation (e.g. federal, state, and local discharge limitations

Qualitative Plant Parameters List

The qualitative plant parameters list was initially compiled by identifying the review categories, such as hydrology, meteorology, seismology, land use, and water quality, appearing in NRC documents related to early site permits. The plant structures, systems and components (SSC) related to each review category with a plant/site interface were determined. Finally, parameters necessary to quantify the effect on the site or plant were listed.

The resulting list of parameters characterizing the plant/site interface was reviewed, with each parameter assigned to one of the following categories.

Plant — Those parameters that firmly specify the reference plants' requirements for site resources, design capacity to withstand site conditions or effluents to the site and environs. (Typically, these parameters are quantified in the URDs or by the vendors). (Examples are Tornado Wind Speed, Condenser Duty)

Plant/Site (P/S) — Those parameters that describe typical nuclear plant features interfacing with the site that are not specified in the reference plant designs and are not of such site variability as to preclude development of reasonable quantities for inclusion in the plant envelope. (Examples are Cooling Tower Height, Flue Gas Effluents)

Site — Those parameters specifying site conditions which have a direct, significant impact on plant SSCs but are of such site specific variability that customized analyses or design features are necessary to ensure suitability with the ALWR plants.

Detail — Those parameters specifying design details of plant SSCs that generally can be designed to accommodate a variety of site specific conditions, or whose requirements or impacts can be stated in terms of another SSC with a more direct interface with the site.

The parameters categorized as PLANT or P/S represent the parameters necessary to describe the ALWR plant designs for an early site permit application, and constitute the generic qualitative plant parameters list.

The parameters are organized by the plant SSCs that potentially interface with the site. Two additional parameters are included - Plant Characteristics and Construction, for a total of 29. Each SSC is assigned a number from 1 to 29. This number then becomes the initial digit(s) in the individual parameter numbers. See Tables 1 through 5.

Primary and secondary parameters are identified for each SSC. These characterize the interface between the plant SSC and the site. There is no relative importance implied by the terms primary and secondary. This simply permits the parameters list to logically address design options and/or multiple characteristics of a particular interface point. Primary and secondary parameters are assigned a sequential number within their applicable SSC. The numbers are used to complete the unique parameter number for each parameter. For example, as illustrated in Table 6, parameter number 24.1.2 is the unique number for:

24 SSC ..... Heating, Ventilation and Air Conditioning System

24.1 Primary Parameter ..... Ambient Air Requirements

24.1.2 Secondary Parameter .... Non-safety HVAC Max Ambient Temp (1% exceed)

Plant Applicability Matrix

The plant applicability matrix uses the qualitative plant parameters list to identify the applicability of the parameters to the reference ALWR designs. The left hand half of each matrix sheet lists the SSCs, primary and secondary parameters of the qualitative plant parameters list. The column labelled "PRMTR TYPE" identifies the categorization of the individual parameters, PLANT or P/S. The right half of each matrix sheet consists of four columns, each headed by the name of one of the ALWR designs. If a parameter is applicable to an ALWR design, then an "X" is placed in the appropriate column. Some parameters are included in the qualitative plant parameters list and plant applicability matrix even though these parameters are not applicable to any of the ALWR designs. These parameters are included to provide flexibility in the lists and envelopes to address design options that are not specifically included in the reference ALWR designs.

Table 6 shows the applicability matrix for parameter 24. Note, for example, that items 24.1.4 and 24.1.5 are not applicable for the SBWR. Tables 7 through 10

demonstrate the quantitative values for parameter 24 for each plant.

Parameter Quantity Summary Sheets

For each PLANT and P/S parameter, a Parameter Quantity Summary (PQS) sheet is prepared. Each PQS provides the following information:

Structure, System, Component
Parameter Identification
Parameter Definition
Parameter Units
Parameter Design Envelope
Parameter Basis

When the parameter value is defined by the URD or vendor information, a specific document citation is included on the plant parameters list and the associated PQS simply states URD or vendor value. In some cases, minor clarifications to the use of the vendor values are also included.

For those parameters with neither a URD nor vendor value, engineering assessments are performed. A summary of each assessment is provided in the basis section of the PQS and the PQS sheet is listed on the plant parameters list as the reference for the numerical value. Engineering assessments consist of review of relevant industry literature, surveys of existing similar plants, simple numerical assessments and engineering judgment.

The bases section of the PQS is intended to provide a description of the assessment sufficient to permit adjustment of the enveloping value should a utility, site or evolving plant specific information warrant.

General Approach to Engineering Assessments

For those parameters which required engineering assessments, the following approach is used.

1. Define the parameter based upon the plant qualitative parameters list.

2. Assign a responsible engineering discipline.

3. Collect data - Potential sources are:

   ALWR Vendor information

   Existing licensing related plant information (FSAR, ER)

   Existing plant design or supplier information

   WASH-1355

   NUREG-1437

4. Evaluate data and determine an approach (Note: formal design calculations are not employed)

   Simple numerical assessments using established design relationships and ALWR or existing plant data (e.g., evaporation rate, blowdown rate, acreage)

   Extrapolation from existing plant data and engineering judgment (e.g., cooling tower height, potable water use)

   Combination of both

5. Review by Preparer, assigned Reviewer, and Chief Engineer

6. Project Team review.

Margin in Engineering Assessments

In conducting engineering assessments, no systematic factors are applied to generate conservative values. However, reasonable margins are typically included in the values as a result of:

Assumptions

Rounding up to the nearest value of reasonable precision

Use of existing plant data, recognizing that best-available technology should provide better performance/efficiency

Consensus of engineering review

Literature searches

Where design options result in widely divergent values, then the resulting assessments are reported separately.

Plant Parameters Envelopes

Table 14 illustrates a draft plant parameter envelop for the evolutionary, passive and generic plants. This is the envelop for parameter 24, Heating, Ventilation and Air Conditioning System.

The envelope utilizes the qualitative plant parameters list and the numerical values from the individual plant parameters lists to arrive at the most limiting value for each parameter and to display it accordingly. The left half of the envelop incorporates the qualitative plant parameters. The numbering of parameters is consistent between the plant applicability matrix, individual plant parameters lists and plant parameters envelopes.

On the right side, three columns identify the envelope values. The first column is for the evolutionary plant. This column shows the most limiting numerical value for parameters applicable to the ABWR or System 80+ designs and the reference for the value. The middle column shows the most limiting numerical value for the passive plant designs, AP600 or SBWR. The final column shows the most limiting numerical value from the previous two columns and represents the generic plant envelope.

The following rules were used in determining the appropriate values to insert in the envelopes:

For any parameter with a value taken from the Utility Requirements Document (URD), the URD value is always used as the envelope value.

In cases where not all vendors provided values, engineering assessments are performed. When both an engineering assessment and vendor value exist, the vendor value is used as the plant envelope value.

For any parameter with neither an URD value nor vendor value, the value developed by engineering assessment is used.

FOOTNOTES

1/ 10 CFR part 52, Early Site Permits; Standard Design Certifications and Combined Operating Licenses for Nuclear Power Reactors

2/ "Strategic Plan for Building New Nuclear Plants" was first issued in November 1990. The First Annual Update was issued in November 1991.

3/ Southern Electric International, Commonwealth Research Corporation, and Public Service Corporation of New Jersey.

4/ "Composite" means combining the features of the 4 ALWR designs and creating one generically applicable envelope.

PARAMETERS APPLICABILITY MATRIX LIST

1. STRUCTURES
2. NORMAL PLANT HEAT SINK
3. ULTIMATE HEAT SINK
4. CONTAINMENT HEAT REMOVAL SYSTEM (POST-ACCIDENT)
5. POTABLE WATER/SANITARY WASTE SYSTEM
6. DEMINERALIZED WATER SYSTEM
7. FIRE PROTECTION SYSTEM
8. MISCELLANEOUS DRAIN
9. UNIT VENT/AIRBORNE EFFLUENT RELEASE POINT
10. LIQUID RADWASTE SYSTEM
11. GASEOUS RADWASTE SYSTEM
12. SOLID RADWASTE SYSTEM
13. REACTOR COOLANT SYSTEM
14. RCS CLEANUP SYSTEM
15. CVCS LETDOWN SUBSYSTEM
16. CVCS PURIFICATION SUBSYSTEM
17. CVCS SHIM/BLEED SUBSYSTEM
18. SPENT FUEL STORAGE
19. STEAM GENERATOR BLOWDOWN SYSTEM
20. STANDBY-GAS TREATMENT SYSTEM
21. AUXILIARY BOILER SYSTEM
22. CONDENSATE CLEANUP SYSTEM
23. GAS STORAGE SYSTEM
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM
25. ONSITE/OFFSITE ELECTRICAL POWER SYSTEM
26. STANDBY POWER SYSTEM
27. SEVERE ACCIDENT FEATURES
28. PLANT CHARACTERISTICS
29. CONSTRUCTION

PARAMETERS LIST FOR ABWR

1. STRUCTURES
2. NORMAL PLANT HEAT SINK
3. ULTIMATE HEAT SINK
4. CONTAINMENT HEAT REMOVAL SYSTEM (POST-ACCIDENT)
5. POTABLE WATER/SANITARY WASTE SYSTEM
6. DEMINERALIZED WATER SYSTEM
7. FIRE PROTECTION SYSTEM
8. MISCELLANEOUS DRAIN
9. UNIT VENT/AIRBORNE EFFLUENT RELEASE POINT
10. LIQUID RADWASTE SYSTEM
11. GASEOUS RADWASTE SYSTEM
12. SOLID RADWASTE SYSTEM
13. REACTOR COOLANT SYSTEM
14. RCS CLEANUP SYSTEM
15. CVCS LETDOWN SUBSYSTEM
16. CVCS PURIFICATION SUBSYSTEM
17. CVCS SHIM/BLEED SUBSYSTEM
18. SPENT FUEL STORAGE
19. STEAM GENERATOR BLOWDOWN SYSTEM
20. STANDBY-GAS TREATMENT SYSTEM
21. AUXILIARY BOILER SYSTEM
22. CONDENSATE CLEANUP SYSTEM
23. GAS STORAGE SYSTEM
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM
25. ONSITE/OFFSITE ELECTRICAL POWER SYSTEM
26. STANDBY POWER SYSTEM
27. SEVERE ACCIDENT FEATURES
28. PLANT CHARACTERISTICS
29. CONSTRUCTION

PARAMETERS LIST FOR SYS80+

1. STRUCTURES
2. NORMAL PLANT HEAT SINK
3. ULTIMATE HEAT SINK
4. CONTAINMENT HEAT REMOVAL SYSTEM (POST-ACCIDENT)
5. POTABLE WATER/SANITARY WASTE SYSTEM
6. DEMINERALIZED WATER SYSTEM
7. FIRE PROTECTION SYSTEM
8. MISCELLANEOUS DRAIN
9. UNIT VENT/AIRBORNE EFFLUENT RELEASE POINT
10. LIQUID RADWASTE SYSTEM
11. GASEOUS RADWASTE SYSTEM
12. SOLID RADWASTE SYSTEM
13. REACTOR COOLANT SYSTEM
14. RCS CLEANUP SYSTEM
15. CVCS LETDOWN SUBSYSTEM
16. CVCS PURIFICATION SUBSYSTEM
17. CVCS SHIM/BLEED SUBSYSTEM
18. SPENT FUEL STORAGE
19. STEAM GENERATOR BLOWDOWN SYSTEM
20. STANDBY-GAS TREATMENT SYSTEM
21. AUXILIARY BOILER SYSTEM
22. CONDENSATE CLEANUP SYSTEM
23. GAS STORAGE SYSTEM
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM
25. ONSITE/OFFSITE ELECTRICAL POWER SYSTEM
26. STANDBY POWER SYSTEM
27. SEVERE ACCIDENT FEATURES
28. PLANT CHARACTERISTICS
29. CONSTRUCTION

PARAMETERS LIST FOR AP600

1. STRUCTURES
2. NORMAL PLANT HEAT SINK
3. ULTIMATE HEAT SINK
4. CONTAINMENT HEAT REMOVAL SYSTEM (POST-ACCIDENT)
5. POTABLE WATER/SANITARY WASTE SYSTEM
6. DEMINERALIZED WATER SYSTEM
7. FIRE PROTECTION SYSTEM
8. MISCELLANEOUS DRAIN
9. UNIT VENT/AIRBORNE EFFLUENT RELEASE POINT
10. LIQUID RADWASTE SYSTEM
11. GASEOUS RADWASTE SYSTEM
12. SOLID RADWASTE SYSTEM
13. REACTOR COOLANT SYSTEM
14. RCS CLEANUP SYSTEM
15. CVCS LETDOWN SUBSYSTEM
16. CVCS PURIFICATION SUBSYSTEM
17. CVCS SHIM/BLEED SUBSYSTEM
18. SPENT FUEL STORAGE
19. STEAM GENERATOR BLOWDOWN SYSTEM
20. STANDBY-GAS TREATMENT SYSTEM
21. AUXILIARY BOILER SYSTEM
22. CONDENSATE CLEANUP SYSTEM
23. GAS STORAGE SYSTEM
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM
25. ONSITE/OFFSITE ELECTRICAL POWER SYSTEM
26. STANDBY POWER SYSTEM
27. SEVERE ACCIDENT FEATURES
28. PLANT CHARACTERISTICS
29. CONSTRUCTION

PARAMETERS LIST FOR SBWR

1. STRUCTURES
2. NORMAL PLANT HEAT SINK
3. ULTIMATE HEAT SINK
4. CONTAINMENT HEAT REMOVAL SYSTEM (POST-ACCIDENT)
5. POTABLE WATER/SANITARY WASTE SYSTEM
6. DEMINERALIZED WATER SYSTEM
7. FIRE PROTECTION SYSTEM
8. MISCELLANEOUS DRAIN
9. UNIT VENT/AIRBORNE EFFLUENT RELEASE POINT
10. LIQUID RADWASTE SYSTEM
11. GASEOUS RADWASTE SYSTEM
12. SOLID RADWASTE SYSTEM
13. REACTOR COOLANT SYSTEM
14. RCS CLEANUP SYSTEM
15. CVCS LETDOWN SUBSYSTEM
16. CVCS PURIFICATION SUBSYSTEM
17. CVCS SHIM/BLEED SUBSYSTEM
18. SPENT FUEL STORAGE
19. STEAM GENERATOR BLOWDOWN SYSTEM
20. STANDBY-GAS TREATMENT SYSTEM
21. AUXILIARY BOILER SYSTEM
22. CONDENSATE CLEANUP SYSTEM
23. GAS STORAGE SYSTEM
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM
25. ONSITE/OFFSITE ELECTRICAL POWER SYSTEM
26. STANDBY POWER SYSTEM
27. SEVERE ACCIDENT FEATURES
28. PLANT CHARACTERISTICS
29. CONSTRUCTION

07/23/92

PARAMETERS APPLICABILITY MATRIX
(PLANT)

Structure, System, Component	Primary / Secondary	Parameter	Prmtr Type	ABWR	SYS80+	AP600	SBWR
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM							
		24.1 AMBIENT AIR REQUIREMENTS					
		24.1.2 NON-SAFETY HVAC MAX AMBIENT TEMP (1% EXCEED)	PLANT	[X]	[X]	[X]	[X]
		24.1.3 NON-SAFETY HVAC MIN AMBIENT TEMP (1% EXCEED)	PLANT	[X]	[X]	[X]	[X]
		24.1.4 SAFETY HVAC MAX AMBIENT TEMP (0% EXCEED)	PLANT	[X]	[X]	[X]	[ ]
		24.1.5 SAFETY HVAC MIN AMBIENT TEMP (0% EXCEED)	PLANT	[X]	[X]	[X]	[ ]
		24.1.6 VENT SYSTEM MAX AMBIENT TEMP (5% EXCEED)	PLANT	[X]	[X]	[X]	[X]
		24.1.7 VENT SYSTEM MIN AMBIENT TEMP (5% EXCEED)	PLANT	[X]	[X]	[X]	[X]

Table 6

Structure, System, Component / Primary / Secondary Parameter	Prmtr Type	[A] URD:Val/Refer/Rev	VENDOR:Val/Refer/Rev	BECHTEL:Val/Refer/Rev
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM				
24.1 AMBIENT AIR REQUIREMENTS				
24.1.2 NON-SAFETY HVAC MAX AMBIENT TEMP (1% EXCEED)	PLANT	[X] 100 F DB/ 77 F WB COINCIDENT	URD	
		VOL II,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 3	REV B,AMEND 16	
24.1.3 NON-SAFETY HVAC MIN AMBIENT TEMP (1% EXCEED)	PLANT	[X] -10 F	URD	
		VOL II,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 1	REV B,AMEND 16	
24.1.4 SAFETY HVAC MAX AMBIENT TEMP (0% EXCEED)	PLANT	[X] 115 F DB/80 FWB COINCIDENT	115 F DB/82 F WB COINCIDENT	
		VOL II,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 4	REV B,AMEND 16	
24.1.5 SAFETY HVAC MIN AMBIENT TEMP (0% EXCEED)	PLANT	[X] -40 F	URD	
		VOL II,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 1	REV B,AMEND 16	
24.1.6 VENT SYSTEM MAX AMBIENT TEMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE		
		VOL II,CHAP 9,8.2.1.1.1		
		REV 4		
24.1.7 VENT SYSTEM MIN AMBIE EMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE		
		VOL II,CHAP 9,8.2.1.1.1		
		REV 4		

Table 7

PARAMETERS LIST FOR SYS80+

Structure, System, Component / Primary / Secondary Parameter	Prmtr Type	[A] URD:Val/Refer/Rev	VENDOR:Val/Refer/Rev	BECHTEL:Val/Refer/Rev
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM				
24.1 AMBIENT AIR REQUIREMENTS				
24.1.2 NON-SAFETY HVAC MAX AMBIENT TEMP (1% EXCEED)	PLANT	[X] 100 F DB/ 77 F WB COINCIDENT	URD	
		VOL II,CHAP 1,T1.2-6	CESSAR DC,T2.0-1	
		REV 3	AMEND J	
24.1.3 NON-SAFETY HVAC MIN AMBIENT TEMP (1% EXCEED)	PLANT	[X] -10 F	URD	
		VOL II,CHAP 1,T1.2-6	CESSAR DC,T2.0-1	
		REV 1	AMEND J	
24.1.4 SAFETY HVAC MAX AMBIENT TEMP (0% EXCEED)	PLANT	[X] 115 F DB/80 FWB COINCIDNT	URD	
		VOL II,CHAP 1,T1.2-6	CESSAR DC,T2.0-1	
		REV 4	AMEND J	
24.1.5 SAFETY HVAC MIN AMBIENT TEMP (0% EXCEED)	PLANT	[X] -40 F	URD	
		VOL II,CHAP 1,T1.2-6	CESSAR DC,T2.0-1	
		REV 1	AMEND J	
24.1.6 VENT SYSTEM MAX AMBIENT TEMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE	URD	
		VOL II,CHAP 9,8.2.1.1.1	TELECON 7/15/92	
		REV 4		
24.1.7 VENT SYSTEM MIN AMBIENT TEMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE	URD	
		VOL II,CHAP 9,8.2.1.1.1	TELECON 7/15/92	
		REV 4		

Table 8

Structure, System, Component / Primary / Secondary Parameter	Prmtr Type	[A] URD:Val/Refer/Rev	VENDOR:Val/Refer/Rev	BECHTEL:Val/Refer/Rev
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM				
24.1 AMBIENT AIR REQUIREMENTS				
24.1.2 NON-SAFETY HVAC MAX AMBIENT TEMP (1% EXCEED)	PLANT	[X] 100 F DB/ 77 F WB COINCIDENT	URD	
		VOL III,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 2	REV 0	
24.1.3 NON-SAFETY HVAC MIN AMBIENT TEMP (1% EXCEED)	PLANT	[X] -10 F	URD	
		VOL III,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 0	REV 0	
24.1.4 SAFETY HVAC MAX AMBIENT TEMP (0% EXCEED)	PLANT	[X] 115 F DB/80 F WB COINCIDENT	URD	
		VOL III,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 2	REV 0	
24.1.5 SAFETY HVAC MIN AMBIENT TEMP (0% EXCEED)	PLANT	[X] -40 F	URD	
		VOL III,CHAP 1,T1.2-6	SSAR,T2.0-1	
		REV 0	REV 0	
24.1.6 VENT SYSTEM MAX AMBIENT TEMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE	URD	
		VOL III,CHAP 9,8.2.1.1.1	MEETING 7/1/92	
		REV 3		
24.1.7 VENT SYSTEM MIN AMBIENT TEMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE	-10F	
		VOL III,CHAP 9,8.2.1.1.1	MEETING 7/1/92	
		REV 3		

Structure, System, Component / Primary / Secondary Parameter	Prmtr Type	[A] URD:Val/Refer/Rev	VENDOR:Val/Refer/Rev	BECHTEL:Val/Refer/Rev
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM				
24.1 AMBIENT AIR REQUIPEMENTS				
24.1.2 NON-SAFETY HVAC MAX AMBIENT TEMP (1% EXCEED)	PLANT	[X] 100 F DB/ 77 F WB COINCIDENT VOL III,CHAP 1,T1.2-6 REV 2	URD BLTR 6/24/92	
24.1.3 NON-SAFETY HVAC MIN AMBIENT TEMP (1% EXCEED)	PLANT	[X] -10 F VOL III,CHAP 1,T1.2-6 REV 0	URD BLTR 6/24/92	
24.1.4 SAFETY HVAC MAX AMBIENT TEMP (0% EXCEED)	PLANT	[ ]	BOTTLED AIR SYSTEM BLTR 6/24/92	
24.1.5 SAFETY HVAC MIN AMBIENT TEMP (0% EXCEED)	PLANT	[ ]	BOTTLED AIR SYSTEM BLTR 6/24/92	
24.1.6 VENT SYSTEM MAX AMBIENT TEMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE VOL III,CHAP 9,8.2.1.1.1 REV 3	NOT USED FOR SBWR BLTR 6/24/92	
24.1.7 VENT SYSTEM MIN AMBIENT TEMP (5% EXCEED)	PLANT	[X] 5% EXCEEDANCE VOL III,CHAP 9,8.2.1.1.1 REV 3	NOT USED FOR SBWR BLTR 6/24/92	

PARAMETER QUA..ITY SUMMARY

HVAC SYSTEMS
Structure, System, Component

PRIMARY PARAMETER: Ambient Air Requirements

SECONDARY PARAMETER: Non-safety HVAC Max. Ambient Temp. (1% exceed) (24.1.2)
Non-safety HVAC Min. Ambient Temp. (1% exceed) (24.1.3)

DEFINITION: The maximum and minimum ambient temperatures for design of non safety-related HVAC systems based upon 1% exceedance values. The maximum conditions to be stated in terms of dry bulb and coincident wet bulb temperatures.

UNITS: Degrees Fahrenheit

DESIGN ENVELOPE:

BASIS: URD Value

Prepared By:_____ Date:_____
Reviewed By:_____ Date:_____

PARAMETER QUANTITY SUMMARY

HVAC SYSTEMS
Structure, System, Component

PRIMARY PARAMETER: Ambient Air Requirements

SECONDARY PARAMETER:
Safety HVAC Max. Ambient Temp. (0% exceed) (24.1.4)
Safety HVAC Min. Ambient Temp. (0% exceed) (24.1.5)

DEFINITION: The maximum and minimum ambient temperatures for design of safety-related HVAC systems based upon 0% exceedance values. The maximum conditions to be stated in terms of dry bulb and coincident wet bulb temperatures.

UNITS: Degrees Fahrenheit

DESIGN ENVELOPE:

BASIS: URD Value

Prepared By:_____ Date:_____
Reviewed By:_____ Date:_____

PARAMETER QUANTITY SUMMARY

HVAC SYSTEMS
Structure, System, Component

PRIMARY PARAMETER:	Ambient Air Requirements
SECONDARY PARAMETER:	Vent System Max. Ambient Temp. (5% exceed) (24.1.6) Vent System Min. Ambient Temp. (5% exceed) (24.1.7)
DEFINITION:	The maximum and minimum ambient temperature for design of ventilation systems (no air conditioning) based upon 5% exceedance values.
UNITS:	Degrees Fahrenheit
DESIGN ENVELOPE:	
BASIS:	URD Value

Prepared by:_____ Date:_____
Reviewed By:_____ Date:_____

PLANT PARAMETERS ENVELOPES
(P-Plant, P/S-Plant/Site)

Structure,System,Component/Primary Par./Secondary Par.	Prmtr Type	EVOLUTIONARY Plant (Value/Refer/Rev)	PASSIVE Plant (Value/Refer/Rev)	GENERIC Plant (Value)
24. HEATING, VENTILATION AND AIR CONDITIONING SYSTEM				
24.1 AMBIENT AIR REQUIREMENTS				
24.1.2 NON-SAFETY HVAC MAX AMBIENT TEMP (1% EXCEED)	P	100 F DB/ 77 F WB COINCIDENT VOL II,CHAP 1,T1.2-6 REV 3	100 F DB/ 77 F WB COINCIDENT VOL III,CHAP 1,T1.2-6 REV 2	100 F DB/ 77 F WB COINCIDENT
24.1.3 NON-SAFETY HVAC MIN AMBIENT TEMP (1% EXCEED)	P	-10 F VOL II,CHAP 1,T1.2-6 REV 1	-10 F VOL III,CHAP 1,T1.2-6 REV 0	-10 F
24.1.4 SAFETY HVAC MAX AMBIENT TEMP (0% EXCEED)	P	115 F DB/80 FWB COINCIDENT VOL II,CHAP 1,T1.2-6 REV 4	115 F DB/80 F WB COINCIDENT VOL III,CHAP 1,T1.2-6 REV 2	115 F DB/80 FWB COINCIDENT
24.1.5 SAFETY HVAC MIN AMBIENT TEMP (0% EXCEED)	P	-40 F VOL II,CHAP 1,T1.2-6 REV 1	-40 F VOL III,CHAP 1,T1.2-6 REV 0	-40 F
24.1.6 VENT SYSTEM MAX AMBIENT TEMP (5% EXCEED)	P	5% EXCEEDANCE VOL II,CHAP 9,8.2.1.1.1 REV 4	5% EXCEEDANCE VOL III,CHAP 9,8.2.1.1.1 REV 3	5% EXCEEDANCE
24.1.7 VENT SYSTEM MIN AMBIENT TEMP (5% EXCEED)	P	5% EXCEEDANCE VOL II,CHAP 9,8.2.1.1.1 REV 4	5% EXCEEDANCE VOL III,CHAP 9,8.2.1.1.1 REV 3	5% EXCEEDANCE

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