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Ref: 10CFR50.90

CPSES-200101357
Log # TXX-01102
File # 00236

June 18, 2001

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION AND SUPPLEMENT TWO TO LICENSE AMENDMENT REQUEST (LAR) 00-05: REVISION TO TECHNICAL SPECIFICATION SPENT FUEL ASSEMBLY STORAGE RACKS AND FUEL STORAGE CAPACITY
(TAC NOS. MB0207 and MB0208)

REF:
1) TXU Electric Letter logged TXX-00144, from C. L. Terry to the NRC dated October 4, 2000
2) NRC Letter from David H. Jaffe to C. Lance Terry dated March 14, 2001, Request for Additional Information
3) NRC Letter from David H. Jaffe to C. Lance Terry dated March 22, 2001, Request for Additional Information
4) TXU Electric Letter logged TXX-01074, from C. L. Terry to the NRC dated April 30, 2001

Gentlemen:

Pursuant to 10CFR50.90, TXU Electric requested, via Reference 1, an amendment to the CPSES Unit 1 Operating License (NPF-87) and CPSES Unit 2 Operating License (NPF-89) to increase the spent fuel storage capacity by incorporating changes to the CPSES Unit 1 and 2 Technical Specifications. Supplement 1 to this request was transmitted via Reference 4.

A001

In summary, the proposed LAR, as submitted by Reference 1 and supplemented by Reference 4 and this letter, will revise Technical Specification (TS) 3.7.17, "Spent Fuel Assembly Storage," and TS 4.3, "Fuel Storage." These changes revise the specifications for fuel storage to increase the spent fuel storage capacity by: (1) replacing the existing twenty low density racks of spent fuel pool one with three Holtec racks and nine Westinghouse racks, (2) adding three Holtec racks to the nine existing Westinghouse racks in spent fuel pool two, (3) revising the spent fuel storage curves in TS 3.7.17, (4) updating the criticality discussion in TS 4.3.1, and (5) increasing the spent fuel storage capacity from "2,026" to "3,373" fuel assemblies in TS 4.3.3. These changes apply equally to CPSES Units 1 and 2.

The purpose of this letter is: (1) to update the commitments previously submitted in Reference 4, (2) to update the proposed changes to the Final Safety Analysis Report for information only, and (3) to respond to the NRC Staff Requests for Additional Information (RAIs) provided via References 2 and 3.

Attachment 1 is the required affidavit. Attachment 2 provides additional proposed changes to the Final Safety Analysis Report for information only. These FSAR changes will be processed per CPSES site procedures after the LAR is approved and implemented. Attachment 3 provides the TXU Electric response to the RAIs.

Enclosure 1 provides a copy of the CPSES procedures referenced in Attachment 3. Enclosure 2 provides the replacement pages to the "Licensing Report for Spent Fuel Rack Installation at Comanche Peak Steam Electric Station" that supports the license amendment request. The replacement pages in Enclosure 2 contain no proprietary information. Enclosure 3 provides Westinghouse Letter, WPT-16160, "NSAL-00-015, Axial Burnup Shape Reactivity Bias," for CPSES (without Attachment 2).

Enclosure 4 provides Westinghouse Letter, WPT-16168, "Attachment 2 to NSAL-00-15," and contains proprietary information to Westinghouse Electric Company. It is supported by an affidavit (Enclosure 5) signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.790 of the Commission's regulations. Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse (Enclosure 4) be withheld from public disclosure in accordance with 10 CFR Section 2.2790 of the Commission's regulations. Correspondence with respect to the copyright or proprietary aspects of Enclosure 4 or the supporting Westinghouse Affidavit should reference CAW-01-1464 and should be addressed to H. A. Sepp, Manager, Regulatory and Licensing Engineering, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, PA 15230-0355. Enclosure 6 provides a non-proprietary version of Enclosure 4.

The Commitment number is used by TXU Electric for the internal tracking of CPSES commitments.

Commitment Number 27210

Commitment Description (as described by Reference 4)

Comanche Peak's corrective action program has identified that the impact of spent fuel pool heat loads and heat loads of previous modifications were not properly maintained current in the CCW thermal load analysis. The analysis will be updated by June 18, 2001. The CCW System will continue to perform its intended safety functions. This LAR will be supplemented should these conclusions change. (Page 15 of Attachment 2 to this letter).

Comments:

The CCW thermal load analysis has been updated.

Updated Commitment Description:

Comanche Peak's corrective action program has identified that the impact of spent fuel pool heat loads and heat loads of previous modifications were not properly maintained current in the CCW thermal load analysis. The effect of temperature changes on piping and pipe supports will be evaluated prior to implementation of LAR 00-05.

Commitment Number 27212

Commitment Description (as described by Reference 4)

Comanche Peak's corrective action program has identified that the effect of the revised building responses on the balance of Fuel Building structures, systems, and components was not properly considered. A revised analysis will be complete and results will be incorporated into Section 8 of Enclosure 1, by June 18, 2001. It is anticipated that the design of the Fuel Building structures, systems, and components will remain adequate and that any necessary modifications to the balance of the Fuel Building (none are expected) would be completed prior to implementation of the proposed reracking. This LAR will be supplemented with the final results by June 18, 2001. (Page 20 of Attachment 2 to this letter).

Comments:

Section 8 of Enclosure 1 to Reference 1 has been supplemented with the results of revised analyses and is provided as Enclosure 2 to this letter.

Updated Commitment Description:

Comanche Peak's corrective action program has identified that the effect of the revised building responses on the balance of Fuel Building structures, systems, and components was not properly considered. Section 8 of Enclosure 1 to Reference 1 has been supplemented with the results of revised analyses. No modifications to the balance of the Fuel Building are required. The supporting calculations for these revised analyses will be completed by July 12, 2001. No changes are expected to the conclusions of these analyses. This LAR will be supplemented should these results change.

This communication contains the following new commitment which will be completed as noted:

Commitment Number	Commitment
27235	Comanche Peak's corrective action program has identified a discrepancy in documentation for the designated safe load area for the Fuel Building Overhead Crane. Prior to making any heavy load lifts through the designated safe load area, a risk assessment will be performed in accordance with the maintenance rule. (Response to SPLB-6, Page 10 of Attachment 3)
27236	Comanche Peak's corrective action program has identified a potential issue with the Criticality Analysis Report provided in Enclosure 2 to TXX-01074. The gap spacing between Region II rack modules for the planned installation in SFP1 is less than the 3 inches assumed in the report. SFP2 is not affected by this issue. The issue will be resolved by July 18, 2001, and the NRC Staff will be notified of the resolution of this issue. The LAR will be supplemented as necessary. (Response to SRXB-1, Page 17 of Attachment 3)

Should you have any questions, please contact Mr. Jack Hicks at (254) 897-6725.

Sincerely,

C. L. Terry

By: Roger D. Walker
Roger D. Walker
Regulatory Affairs Manager

JCH/jch

Attachments
1. Affidavit
2. Markup of Final Safety Analysis Report Section 3
3. Response to RAIs

Enclosure
1. CPSES Procedures referenced in Attachment 3
2. Licensing Report for Spent Fuel Rack Installation at Comanche Peak Steam Electric (Non-Proprietary), Revision 3, Replacement Pages
3. Westinghouse Letter logged WPT-16160, Rev. 1, from J. S. Wyble to C. L. Terry, dated December 6, 2000, "NSAL-00-15, Axial Burnup Shape Reactivity Bias" (without Attachment 2)
4. Westinghouse Letter logged WPT-16168, from J. S. Wyble to C. L. Terry, dated December 19, 2000, Attachment 2 to NSAL-00-015 (Proprietary)
5. Affidavit (request to withhold proprietary information)
6. Westinghouse Letter logged WPT-16168, from J. S. Wyble to C. L. Terry, dated December 19, 2000, Attachment 2 to NSAL-00-015 (Non-Proprietary)

c - E. W. Merschoff, Region IV
J. I. Tapia, Region IV
D. H. Jaffe, NRR
Resident Inspectors, CPSES

Mr. Authur C. Tate
Bureau of Radiation Control
Texas Department of Public Health
1100 West 49th Street
Austin, Texas 78704

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
TXU Electric	)	Docket Nos. 50-445
	)	50-446
(Comanche Peak Steam Electric Station,	)	License Nos. NPF-87
Units 1 & 2)	)	NPF-89

AFFIDAVIT

Roger D. Walker being duly sworn, hereby deposes and says that he is Regulatory Affairs Manager of TXU Electric, the licensee herein; that he is duly authorized to sign and file with the Nuclear Regulatory Commission this supplement to License Amendment Request 00-05; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

Roger D. Walker
Regulatory Affairs Manager

STATE OF TEXAS)
)
COUNTY OF Somervell)

Subscribed and sworn to before me, on this 18th day of June, 2001.

Gayle R. Peck Jespersen
Notary Public

NOTARY PUBLIC STATE OF TEXAS
Gayle R. Peck Jespersen
Notary Public, State of Texas
My Comm. Expires 03/16/02

ATTACHMENT 2 to TXX-01102

Markup of Selected Text from FSAR Section 3

Replacement Pages

3-xiv and Insert A

3.7B(A)-13 and Insert 1

3.7B(A)15 and Insert 2

Table 3.7B(A) (Sheet 2 of 2) and Inserts 1 and 2

New Pages

3.8-74

3.8-75

3.8-76

TABLE OF CONTENTS (Continued)

REPLACE WITH INSERT A

Insert # A TOC

a gradient through the shell thickness, and simplified input for weight of the shell or earthquake forces.

This computer program has been qualified by comparing it's results against those of hand calculations.

3.7B(A).17 TIMHIS6 (TIME HISTORY ANALYSIS)

The TIMHIS6 Program [26] computes time history response and amplified response spectra (ARS) at any mass location of a lumped mass system due to a synthetic earthquake input. The responses are computed by integration of the modal equations of the system by exact methods. The program's main application is the generation of ARS.

This program has been documented by bench marking procedures against the STARDYNE computer program. STARDYNE is a recognized program in the public domain.

3.7B(A).18 SBMMI (SINGLE BARRIER MASS MISSILE IMPACT)

THE SBMMI computer program [27] computes the elastic-plastic structural response of a barrier due to the following loads: (a) static loads; (b) suddenly applied constant dynamic loads which remain permanently on the structure; (c) suddenly applied constant dynamic loads representing missile impact with a finite force and specific momentum; and (d) suddenly applied dynamic loads of zero time duration and specific momentum representing missile impact. The barrier is modelled as a single barrier mass and a non-linear spring, with the above loads applied. The equation of motion is integrated in time assuming constant acceleration in each time step.

INSERT 1

This computer program has been qualified by comparing it's results against those of hand calculations.

23

3.7B(A).19 OTHER COMPUTER PROGRAMS

There are other small programs not described above. These programs are developed for the purpose of bulk data manipulation to replace regular manual calculations. From time to time, additional small programs of this kind are developed to suit particular needs. The verification of these programs is generally accomplished by sample calculations.

REFERENCES

1. IBM Application Program, 1130 Scientific Subroutine Package, Programmer's Manual, Program Number 1130-CM-02X.

2. McCormick, Caleb, W., October 11, 1971, NASTRAN Basic Training Manual for CDC 6000 Series, the MacNeal Schwendler Corporation, 7442 No. Figueroa, Los Angeles, California 90041.

Insert 1 Section 3.7B(A)

3.7B(A).19 CLASSI (CONTINUUM LINEAR ANALYSIS OF SOIL STRUCTURE INTERACTION)

The program CLASSI is a computer code generated to calculate the three-dimensional dynamic response of structures including soil-structure interaction effects. CLASSI is based on a specialized form of substructuring which uses the finite element method to perform the detailed analysis of the superstructure and uses the continuum mechanics method to calculate the interaction of the foundation with the soil medium and with incident seismic waves. These substructuring procedures are made possible by balancing the forces and moments at the foundation, which serves as the common ground for both the superstructure and the soil medium.

The capabilities of CLASSI in modeling systems which combine the soil, the foundation, and the structure are:

a. The soil profile may consist of multiple layers lying over a homogenous halfspace. The layers may have different shear moduli, Poisson's ratio, density, depth, and material damping characteristics.
b. The foundation can be of arbitrary geometry but must be surface mounted. The foundation can be discretized into regular (square or rectangular) segments. The stress distribution between the foundation and the soil depends on the degree of discretization of the foundation since constant stress is assumed for each segment.
c. The structural model can be developed using any standard finite element program. The fixed base structural modal properties obtained from the finite element program are subsequently used as input to CLASSI. In this way, the structure can have any degree of complexity.

The CLASSI substructure approach divides the SSI problem into the following three steps:

1. Determination of the foundation scattering matrices.
2. Determination of the frequency-dependent impedance functions.
3. Analysis of the coupled soil-structure system, using results from steps 1 and 2 and the dynamic properties of the structure.

In the first step, CLASSI evaluates the harmonic response of the rigid, massless foundation bonded to the soil and subjected to a given incident seismic wave in the absence of the superstructure. The free field motion is then used in conjunction with the complex, frequency-dependent scattering matrix in order to determine the foundation input motion.

In the second step, the foundation impedances corresponding to a rigid foundation on a uniform or layered viscoelastic media are developed.

In the third step, analysis of the coupled soil-structure system is carried out by CLASSI in the frequency domain. Time history of responses are obtained by inverse Fourier transform techniques.

3.7B(A).20 RESPEC (Response Spectra Generator)

The computer program RESPEC computes the response spectra of acceleration time histories digitized at equal intervals. Spectral accelerations are computed for frequencies and damping ratios selected by the user. Each spectral value is obtained by computing the maximum response of a damped single-degree-of-freedom oscillator subjected to the specified acceleration time history. The response is computed by explicit integration of the differential equations of motion, assuming "at rest" initial conditions. The program uses the numerical method set forth by Nigam and Jennings in Earthquake Engineering Research Laboratory report "Digital Calculation of Response Spectra from Strong-Motion Earthquake Records." The spectral velocity and spectral displacement may also be calculated.

3.7B(A).21 LS-DYNA

The computer program LS-DYNA (developed by Lawrence Livermore Laboratories) is used to perform an elasto-plastic finite element analysis of a spent fuel handling accident. The program simulates the transient collision event with full consideration of plastic, large deformation, wave propagation, and elastic/plastic buckling modes.

3.7B(A).22 MR216 (DYNARACK)

The computer program DYNARACK is used to perform non-linear, direct integration finite element analyses of the Whole Pool Multi-Rack (WPMR) configuration for the spent fuel storage racks. The program uses a step-by-step solution in time employing a central difference algorithm to evolve to a converged solution. Using the structural model for every set of 22-DOF rack models that comprise a Whole Pool Multi-Rack simulation, equations of motion corresponding to each degree-of-freedom are obtained using Lagrange's Formulation of the dynamic equations of motion. The system kinetic energy includes contributions from solid structures and from trapped and surrounding fluid. The final system of equations obtained have the matrix form:

$$[M] \{d^2 q / dt^2\} = \{Q\} + \{G\}$$

where:

[M] = total mass matrix (including structural and fluid mass contributions). The size of this matrix will be (22 x NOR) x (22 x NOR). NOR = number of racks in the spent fuel pool.

{q} = the nodal displacement vector relative to the pool slab displacement.

{G} = a vectgor dependent on the given ground acceleration.

{Q} = a vector dependent on the spring forces (linear and nonlinear) and the coupling between degrees-of-freedom.

The equations can be rewritten as:

$$\{d^2 q / dt^2\} = [M]^{-1} \{Q\} + [M]^{-1} \{G\}$$

This equation set is mass uncoupled, displacement coupled at each instant in time. The numerical solution uses a central difference scheme built into the proprietary computer program. Results are archived at appropriate time intervals for permanent record and for performing subsequent post-processing for structural integrity evaluation.

This computer program has the capability to to execute concurrent sliding, rocking, bending, twisting, and other motion forms compatible with the freestanding rack design. The program has the capability to effect momentum transfers which occur due to rattling of fuel assemblies inside storage cells and the capability to simulate lift-off and subsequent impact of support pedestals.

19. I.W. Dingwell of Arthur D. Little, Inc., April 1977, ADLPIPE, Static and Dynamic Pipe Design and Pipe Stress Analysis, Input Preparation Manual, Cambridge, Massachusetts.

20. Greenstadt, J., 1959, The Determination of the Characteristic Roots of a Matrix by the Jacobi Method, Chapter 7, in Mathematical Methods for Digital Computers, John Wiley, New York.

21. Documentation of ADLPIPE for Static and Dynamic Loads and Stress Evaluation, September 1973, Arthur D. Little, Inc., Cambridge, Massachusetts.

22. ANSYS, Engineering Analysis System, December 1, 1971, User's Manual, John A. Swanson, Ph.D., Swanson Analysis System, Inc., 870 Pine View Drive, Elizabeth, Pennsylvania 15037.

23. SUPERPIPE, Static and Dynamic Loads and Stress Evaluation of Piping Systems, Program Version Number 15c, Impell Corp., San Francisco, Calif.

24. STRUDL-SW, "Structural Design Language," Stone and Webster Engineering Corporation, April 1980.

25. SHELL-1, "Thin Shell of Revolution Under Arbitrary Loading," Stone and Webster Engineering Corporation, September 1971.

26. TIMHIS6, "Time History Analysis," Stone and Webster Engineering Corporation, March 1978.

27. SBMMI, "Single Barriers Mass Missile Impacts," Stone and Webster Engineering Corporation, January 1981.

INSERT 2

Insert 2 Section 3.7B(A)

28. CLASSI (Continuum Linear Analysis of Soil Structure Interaction), "A Computer Program for Soil-Structure Interaction Using a Substructuring Technique," Version v.0.0, Impell Corporation.

29. RESPEC, "A Computer Program for the Generation of Response Spectra," Version v.6/10/75, Impell Corporation.

30. LS-DYNA, Version 950, Livermore Software Technology Corporation, 1999.

31. MR216, "Multi-Rack Transient Analysis Code", Holtec International, v 2.0 Code.

TABLE 3.7B(A)-1

(Sheet 2 of 2)

LIST OF COMPUTER PROGRAMS USED

Computer Program Version	Software or Operating System	Computer Hardware	Note
April 1973	SCONV	CDC 6600	b
1974	SPECTRA	CDC 6600	b
May 1974	TIME	CDC 6600	b
V03/L03	STRUDL-SW	IBM 3081	c
V01/L07	SHELL-1	IBM 3081	c
V00/L02	TIMHIS6	IBM 3081	c
V00/L00	SBMMI	IBM 3081	c
4.2A	ANSYS	IBM 3081	a

INSERT 1

NOTES:

a. Recognized computer program in public domain.

b. Computer program developed, verified, and documented by G&H.

c. Computer program developed, verified and documented by SWEC.

INSERT 2

Insert 1 Table 3.7B(A)-1

Computer Program Version	Software or Operating System	Computer Hardware	Note
5.4	ANSYS	Compac/DEC Alphaserver 1200	a
0.0	CLASSI	CYBER	d
June 1975	RESPEC	CYBER	d
v 2.0	DYNARACK	Personal Computer	e
950	LS-DYNA	Personal Computer	a

Insert 2 Table 3.7B(A)-1

NOTES:

d. Computer program verified and documented by Impell.

e. Computer program verified and documented by Holtec International.

INSERT 3.8-74 (A)

Hydrostatic pressures are included in this category. Ground water level is discussed in Subsection 3.8.5.1.5

c. To = thermal effects and loads during normal operating or shutdown conditions, based on the most critical transient or steady-state condition

d. Ro = pipe reactions during normal operating or shutdown conditions, based on the most critical transient or steady-state condition

2. Severe Environmental Loads

Severe environmental loads are those loads that could be encountered infrequently during the plant life. They include the following:

a. Feqo = loads generated by half the SSE = OBE

b. W = loads generated by the design wind specified for the plant

3. Extreme Environmental Loads

Extreme environmental loads are those loads which are credible but highly improbable. They include the following:

a. Feqs = loads generated by the SSE

b. Wt = loads generated by the design tornado specified for the plant: the loads include those caused by the tornado wind pressure, tornado-created differential pressures, and tornado-generated missiles.

INSERT 3.8-74 (B)

4. Abnormal Loads

Abnormal loads are those loads generated by a postulated high-energy pipe break accident within a building or compartment thereof, or both. They include the following:

a. Pa = pressure-equivalent static load within or across a compartment or building, or both, generated by the postulated break; it includes an appropriate dynamic factor to account for the dynamic nature of the load

b. Ta = thermal loads under thermal conditions generated by the postulated break and including To

c. Ra = pipe reactions under thermal conditions generated by the

INSERT 3.8-74 (A)

Hydrostatic loads from the water contained in the spent fuel pools and transfer canal may be treated as dead load (D) since they are maintained filled and the water level is maintained within specified tolerances.

INSERT 3.8-74 (B)

c. Fd = impact effects and loads resulting from a fuel handling accident in the Spent Fuel Pool

postulated break and including Ro

d. Yr = equivalent static load on the structure generated by the reaction on the broken high-energy pipe during the postulated break; it includes an appropriate dynamic factor to account for the dynamic nature of the load.

e. Yj = jet impingement equivalent static load on a structure generated by the postulated break; it includes an appropriate dynamic factor to account for the dynamic nature of the load.

f. Ym = Missile impact equivalent static load on a structure generated by or during the postulated break, e.g., pipe whipping; it includes an appropriate dynamic factor to account for the dynamic nature of the load

INSERT 3.8-75 (A)

In determining an appropriate equivalent static load for Yr, Yj, and Ym, elastoplastic behavior is assumed with appropriate ductility ratios as long as excessive deflections do not result in loss of function.

5. Other Definitions

a. For structural steel, S is the required section strength based on the elastic design methods and the allowable stresses defined in Part 1 of AISC Specification.

The 33-percent increase in allowable stresses for concrete and steel because of seismic or wind loadings is not permitted.

b. For concrete structures, U is the section strength required to resist design loads based on methods described in ACI 318-71.

c. For structural steel, Y is the section strength required to resist design loads based on plastic design methods described in Part 2 of the AISC Specification.

3.8.4.3.2 Load Combinations and Acceptance Criteria for Other Seismic Category I Concrete Structures

1. Load Combinations for Service Load Conditions

a. $U = 1.4 D + 1.7 L$

b. $U = 1.4 D + 1.7 L + 1.9 Feqo$

c. $U = 1.4 D + 1.7 L + 1.7 W$

If thermal stresses due to To and Ro are present, the following also apply:

INSERT 3.8-75 (A)

For evaluation of the Fuel Building Spent Fuel Pool walls and slabs the effects of gamma heating shall be included along with To and Ta.

d. $U = .75 (1.4 D + 1.7 L + 1.7 To + 1.7 Ro)$

e. $U = .75 (1.4 D + 1.7 L + 1.9 Feqo + 1.7 To + 1.7 Ro)$

f. $U = .75 (1.4 D + 1.7 L + 1.7 W + 1.7 To + 1.7 Ro)$

L is considered for its full value or for its complete absence, and the following combinations are also satisfied:

g. $U = 1.2 D + 1.9 Feqo$

h. $U = 1.2 D + 1.7 W$

2. Load Combinations for Factored Load Conditions

For these conditions, which represent extreme environmental, abnormal environmental, abnormal/severe environmental, and abnormal/extreme environmental conditions, respectively, the following load combinations are satisfied:

a. $U = D + L + To + Ro + Feqs$

b. $U = D + L + To + Ro + Wt$

c. $U = D + L + Ta + Ra + 1.5 Pa$

d. $U = D + L + Ta + Ra + 1.25 Pa + 1.0 (Yr + Yj + Ym) + 1.25 Feqo$

e. $U = D + L + Ta + Ra + 1.0 Pa + 1.0 (Yr + Yj + Ym) + 1.0 Feqs$

INSERT 3.8-76 (A)

In combinations shown in Items c, d, and e, the maximum values of Pa, Ta, Ra, Yj, Yr, and Ym, including an appropriate dynamic factor, are used, unless a time-history analysis is performed to justify otherwise. Combinations (b), (d), and (e) and the corresponding structural acceptance criteria should be satisfied first without the tornado missile load in (b) and without Yr, Ym, Yj, in (d) and (e). For combinations shown in Items b, d and e, local stresses caused by the concentrated loads Wt, Yr, Yj, and Ym may exceed the allowables when there is no loss of function of any safety-related system.

L is considered for its full value or for its absence.

3.8.4.3.3 Load Combinations and Acceptance Criteria for other Seismic Category I Steel Structures

1. Load Combinations for Service Load Conditions

INSERT 3.8-76 (A)

For the evaluation of local bearing effects in the spent fuel pools resulting from postulated fuel handling accidents, the following load combination shall be used:

f. $U^* = D + L + To + Fd$

* U is determined per the tri-axial compressive strength methodology described in NUREG/CR-6608.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING SPENT FUEL STORAGE RACKS AND SPENT FUEL STORAGE CAPACITY

Operator Licensing, Human Performance and Plant Support Branch (IOLB)

IOLB-1. **Discuss how the increased number of fuel assemblies stored in the Comanche Peak Steam Electric Station (CPSES) spent fuel pools (SFPs) will affect the dose rates in any accessible areas adjacent to the sides or bottoms of the SFPs. State whether the increased storage capacity in the CPSES SFPs will necessitate any radiation zoning changes to any of the surrounding areas.**

TXU Electric Response:

Accessible Zone II and Zone III areas below and adjacent to the pools are shown on FSAR Figures 12.3-18, 19, and 20.

CPSES has evaluated the effects of storing an array of the worst case fuel assemblies by performing a bounding analysis of the Region II racks. Dose rates were calculated for rooms adjacent to 9 ft., 6 ft., and 5 ft. thick concrete walls and the 6 ft. 0.75 in. thick concrete floor. The expected general accessible area dose rates remain below the 2.5 mrem/hr Zone II limit for all cases. Since the SFP area, excluding the pool itself, is a Zone II or higher radiation area, there is no need to change any existing radiation zones.

It is noted that the calculated dose rates in Room 247 (FSAR Figure 12.3-18) adjacent to a 5 ft. thick wall segment are marginally above the Zone II limit in the overhead. In the worst case, the dose rate becomes less than 2.5 mrem/hr approximately 18 ft. above the floor in the subject room. This area is considered the overhead (8 ft. above the floor is the overhead at CPSES) and is not generally accessible without radiation protection involvement. It is also noted that the dose rates in the overhead decay relatively quickly with time and that the dose rate estimate calculation utilizes very conservative bounding assumptions. Therefore, it is acceptable to leave this particular area as a Zone II radiation area since the general accessible area dose rates are expected to be below 2.5 mrem/hr.

IOLB-2. **Provide a description of any sources of high radiation, other than spent fuel assemblies, that may be in the CPSES SFPs during any diving operations needed to remove the old spent fuel racks and to install the new fuel racks. Discuss what precautions (such as shuffling of high radiation sources, use of diver tethers, use of physical or visual barriers, etc.) will be used to ensure that the divers will maintain a safe distance from any high radiation sources in the SFPs.**

TXU Electric Response:

The Spent Fuel Pools at CPSES contain sources other than spent fuel that are typical of an operating power reactor (e.g., filters, incore thimble tube sections, etc.). The Spent Fuel Pool is used as a holding point for such items to ensure proper control and exposure minimization. In accordance with currently approved CPSES station procedures for Radiation Work Control (STA-656) and Control of High Radiation Areas (STA-660), these sources and the spent fuel will be shuffled, as necessary, to appropriate locations within the pool to ensure the personnel exposure is ALARA. Additional guidance is provided in the Radiation Protection Instruction for Radiological Controls for Diving Operations (RPI-611).

IOLB-3. **Discuss the need for any additional lighting in or above the SFPs to ensure that both the diver work area is adequately illuminated and the dive tenders above the SFPs can maintain visual surveillance of the divers in the SFPs at all times.**

TXU Electric Response:

The Fuel Building and Spent Fuel Pool have installed overhead and underwater lighting for all routine maintenance and fuel handling activities associated with power reactor operations and maintenance. Presently there are no plans to use additional lighting. Additional overhead and underwater lighting may be needed to support re-racking operations and will be available to ensure there is a safe and properly lighted working environment

IOLB-4. **Discuss the personnel monitoring and protective clothing requirements for personnel performing the SFP reracking operation.**

Discuss the availability of airborne monitoring equipment for use in areas where there may be a potential for significant airborne activity during removal/installation of the fuel racks in the SFPs.

TXU Electric Response:

Personnel monitoring and protective clothing requirements for personnel performing the Spent Fuel Pool re-racking operation will be controlled by currently approved CPSES station procedures for Radiation Work Control (STA-656), Exposure Monitoring Program (STA-655) and the Radiation Protection Instruction for Radiological Controls for Diving Operations (RPI-611). These procedures provide the guidance and instructions for proper personnel monitoring of, and protective clothing requirements for, personnel involved in the re-racking operation.

Airborne radioactivity is not expected during the Spent Fuel Pool re-racking operation. Routine air samples and continuous air monitoring will be conducted in accordance with the currently approved CPSES Radiation Protection Instruction for Radiological Surveillance and Posting (RPI-602). This procedure provides the guidance and instructions for proper airborne radioactivity monitoring.

IOLB-5. **Describe how you plan to monitor the doses received by the divers during the reracking operation (e.g., use of extremity or multiple thermoluminescent detectors (TLDs), alarming dosimeters, remote readout radiation detectors). Describe how you plan to maintain continuous communication with the divers while they are in the SFPs.**

TXU Electric Response:

Radiation exposure monitoring for personnel performing the Spent Fuel Pool re-racking operation will be controlled by currently approved CPSES station procedures for Radiation Work Control (STA-656), Exposure Monitoring Program (STA-655), and the Radiation Protection Instruction for Radiological Controls for Diving Operations (RPI-611). These procedures provide the guidance and instructions for proper exposure monitoring of personnel involved in the re-racking operation.

Procedure RPI-611 (Radiological Controls for Diving Operations) also provides guidance for communication with the divers as well as other

aspects of personnel radiological safety to ensure proper and safe diving operations.

IOLB-6. Describe how you plan to survey the portions of the SFPs where divers may be used to ensure that you have an accurate dose rate map of these underwater areas. Verify that you will perform updated dose rate surveys in the SFPs any time that there is a change in location of the high radiation sources in the SFPs.

TXU Electric Response:

All radiological surveys are performed in accordance with the currently approved CPSES Radiation Protection Instruction for Radiological Surveillance and Posting (RPI-602). This procedure provides the guidance and instructions for proper radiation, contamination and airborne radioactivity surveying. Additional radiation survey guidance for underwater diving operations is provided in the Radiation Protection Instruction for Radiological Controls for Diving Operations (RPI-611).

IOLB-7. Discuss how the storage of the additional spent fuel assemblies will affect the releases of radioactive liquids from the plant.

TXU Electric Response:

The volume of water in the Spent Fuel Pool Cooling System is reduced as a result of the increase in the number spent fuel assemblies stored in the pool. Increase in the number of spent fuel assemblies in the spent fuel pool will not significantly affect the volume of radioactive liquids released from the plant. Liquid released from the Spent Fuel Pool and Cooling system is predominantly a function of processing solid radioactive waste (e.g., spent resin from the Spent Fuel Cooling System). As stated in Section 9.2 of Enclosure 1 to Reference 1, there will be no significant increase in the amount of solid waste and, as such, no increase in the amount of liquid needed to process this waste.

Other means of loss of liquid that would result in processing and releasing liquid waste include system leakage and routine maintenance of valves, pumps and other components requiring a system breach. There are no changes to the frequency of maintenance and no new sources of leakage and as a result, no increase in the volume of liquid waste. In conclusion,

increasing the number of spent fuel assemblies stored in the spent fuel pool will not significantly affect the volume of radioactive liquids released from the plant.

IOLB-8. Provide an estimate of the total anticipated personnel dose associated with the SFP reracking operation. Provide a dose breakdown by job to show how you arrived at this dose estimate.

TXU Electric Response:

Presently an estimate of the total anticipated personnel dose associated with the SFP re-racking operation is not available. All of the operations involved in re-racking will utilize detailed procedures which implement ALARA principles. Formal ALARA Planning and Exposure Estimates will be performed in accordance with CPSES station procedures for the ALARA Program (STA-651), ALARA Job Planning/Debriefing and Radiation Work Control (STA-656). Radiation Work Permits for the re-racking operation will receive planning and review commensurate with the estimate and in accordance with the referenced procedures. Dose estimates will be developed and properly reviewed prior to the start of work as required by STA-657, ALARA Job Planning/Debriefing.

Plant Systems Branch (SPLB)

SPLB-1. On Pages 14 and 15 of Attachment 2 to the October 4, 2000, amendment request (TXX-00144) (Reference 1), TXU Electric (the licensee or TXU) stated that:

> **"The decay heat bounding analysis performed to support License Amendment Request 94-22 (Reference 1(a)) was based on a core thermal power of 3411 megawatt thermal power (MWt) for Unit 1 and Unit 2. The decay heat bounding analysis has been updated to consider the effect of increasing the core thermal power of 3411 MWt by 4.5% (i.e., 3565 MWt) for Unit 1 and Unit 2. Therefore the decay heat of the previous bounding analyses (License Amendment 46/32, based on an assumed total capacity of 3386 spent fuel assemblies) is increased slightly. The conclusions of the previous bounding**

analyses (e.g., criticality, decay heat, thermal-hydraulic, structural [concrete temperature], total heat rejected to the environment) have been evaluated and determined to remain acceptable...."

For the most limiting design basis scenario (a planned full core offload with a single failure of one cooling train), in the previous thermal analysis for SFP cooling to support LAR 94-22, TXU calculated the peak bulk SFP temperature to be 191 F which is below the design temperature of 200 F as specified in the CPSES Final Safety Analysis Report (FSAR) for SFP support system components. In order to allow the Nuclear Regulatory Commission (NRC) staff to determine whether the calculated peak SFP temperature remains below the design temperature of 200 F, please provide the calculated SFP temperature (a curve to show the temperature as a function of time for the most limiting design basis scenario) resulting from the power uprate.

TXU Electric Response

We have not calculated SFP temperature as a function of time. However, SFP heat load as a function of time for a rated thermal power of 3565 MWt and a storage capacity of 3386 spent fuel assemblies is shown in Figure 1on Page 19 of Attachment 3. The maximum design heat load, "I. Max Design", is 58.2 X 10E6 BTU/hr for a full core offload seven days after shutdown.

The bulk pool temperature for the maximum design heat load (i.e., full core offload) with a single failure of one train is 195 degrees F, which bounds the present re-rack submittal. This is less than the design basis of 200 degrees F stated in FSAR Section 9.1.3.1.1. This calculated temperature is a result of the reanalysis for the 1% uprate (LAR 98-10, Amendment 72 to Facility Operating License No. NPF-089) which was performed with a 4.5% uprate assumption. This change in assumptions resulted in a four degree F increase from the previous 191 degrees F calculated for LAR 94-022 (Amendments 46 and 32 to Facility Operating License No. NPF-087 and NPF-089 respectively) which assumed 3411 MWt and a storage capacity of 3386 spent fuel assemblies.

SPLB-2. **As a result of plant operations at the proposed uprated power level, the decay heat load for any specific fuel discharge scenario will increase. TXU stated, on Page 15 of Attachment 2 to TXX-00144, that the decay heat for the bounding analyses increased slightly; however, in Enclosure 1 to Reference 1, Holtec International (Holtec) Report HI-2002402, Revision 1 (Reference 2), Section 5.3, "Decay Heat Analysis," Holtec stated:**

> **"There are no changes to the current CPSES decay heat analysis and maximum pool temperatures created by this submittal. This is because previous licensing submittals (rerack activities associated with...License Amendment 74...of SFP 2 with Region II racks utilized the ultimate storage capacity of 3386 fuel assemblies...and evaluated the spent fuel pool cooling and associated support systems up to the maximum calculated power rating) enveloped the decay heat values and corresponding maximum pool temperatures associated with this submital...."**

The above Holtec statement contradicts what TXU stated in TXX-00144 concerning the SFPs decay heat analysis. Please provide clarification for this discrepancy.

TXU Electric Response:

The decay heat and maximum pool temperature analyses have been performed with a storage capacity of 3386 fuel assemblies and include a full 4.5% power uprate as described in Section 1.0 of the Holtec International (Holtec) Report HI-2002402. These analyses were done prior to the present re-rack submittal. In other words, these analyses bound the original re-rack submittal, the credit for soluble boron submittal, the 1% power up-rate submittal, the proposed 1.4% power up-rate for both units submittal and the current re-rack submittal. The re-rack submittal does not result in an increase in decay heat from what has been previously analyzed for past license amendment requests for power uprate.

The discussion on Page 14 and 15 of Attachment 2 to TXX-00144 discusses the change in decay heat analysis from LAR 94-22 which used 3411 MWt and 3386 spent fuel assemblies to the decay heat used in this LAR (00-005) which uses 3565 MWt and 3386 spent fuel assemblies. It is the change in assumed core thermal power which

results in a slight increase (4.5%) in the decay heat from the previous bounding analyses submitted by LAR 94-22. The bounding total number of spent fuel assemblies (3386) has not changed.

The actual portion of the bounding total decay heat for the increase in spent fuel storage capacity from 2,026 to 3,373 is 4.4 X 10E6 BTU/Hr as shown as "Added by Reracking" on Figure 1 (SPLB-1). This is less than 8% of the maximum design heat load as shown on the figure.

SPLB-3. **In the Holtec report, Section 5.4.4, "Impact on Spent Fuel Pool Cleanup System," Holtec stated:**

> **"...In order to protect the resins in the demineralizers, the maximum temperature of the water to the purification loops is 140 F for either one or two pump operation. The increased spent fuel storage capacity does not affect the design basis or functional requirements of the cleanup system."**

Please provide detailed information to show why the elevated SFP temperature resulting from the increased spent fuel storage capacity does not affect the design bases or functional requirements of the cleanup system.

TXU Electric Response:

The spent fuel pool heat exchanger (SFP H/X) maximum outlet temperature was conservatively calculated to be less than 140 F for the maximum design heat load (see the response to SPLB-1) for both one and two pump operation. The outlet temperature of the SFP H/X is the same as the inlet to the demineralizers. Since this temperature is less than the 140 F required to protect the resins in the demineralizers neither the design bases or functional requirements of the SFP cleanup system are affected as described in the FSAR.

SPLB-4 **The submittal (Reference 1) states that cranes to be used to move the spent fuel racks will have a suitably rated capacity. Discuss the design capacity of the lifting system (the spent fuel rack handling crane and the Fuel Building overhead crane including any special lifting and rigging devices used to handle and lift the racks), and any testing criteria that is used to support and verify the reliability of the system**

and the associated devices. Also cite the source of the criteria (e.g., state whether the single failure proof crane is in accordance with NUREG-0554 (Reference 2)).

TXU Electric Response:

The spent fuel racks will be handled by safety related, Seismic Category I, single-failure-proof cranes which conform to the requirements of NUREG-0544. The cranes to be used are the Fuel Building Overhead Crane (CPX-MESCFC-01) and the rack handling crane (a.k.a. the WonderHoist: CPX-FHSHFC-01).

The Fuel Building Overhead Crane is described in FSAR Section 9.1.2.2, Section 9.1.4.2.3 Paragraph 15, Section 9.1.4.2.4, Section 9.1.4.3.1, Section 15.7.5, FSAR Figure 9.1-15, and FSAR Table 17A-1. Information regarding the Fuel Building Overhead Crane's compliance with the single-failure-proof provisions of Regulatory Guide 1.104, "Single-Failure Proof Overhead Crane Handling Systems for Nuclear Power Plants" (Draft 3, Revision 1, October 1978) is provided in TXX-3659 submitted on June 8, 1983.

The WonderHoist rack handling crane is a temporary crane used to support re-racking activities. This crane was previously used at CPSES during 1995 for re-racking activities, as described in TXX-94325, and has been used at other sites, such as Maine Yankee and Seabrook. The crane is described in Section 3.4.2 of Enclosure 1 to TXX-94325 submitted on December 30, 1994. This crane complies with Section 5.1.1 of NUREG-0612 on general criteria.

The new high-density spent fuel racks will be handled with a special lifting device designed in accordance with ANSI N14.6 design requirements.

SPLB-5 **If the crane is not a single failure proof crane in accordance with NUREG-0554, discuss the potential impact of a load drop onto the liner of the spent fuel pool and any compensatory measures that would be implemented to minimize and manage the damage from the drop, including, the capability of the leak detection system to limit any leaks, and the capabilities to provide adequate makeup to avoid uncovering the fuel stored in the spent fuel pools.**

TXU Electric Response:

The only non-single-failure-proof heavy load lifts over the liner in either spent fuel pool are during the removal of the existing Westinghouse spent fuel racks located in Spent Fuel Pool No.1.

During installation and removal of the WonderHoist crane system, the spent fuel pool swing gates in both Spent Fuel Pool Nos. 1 and 2 (SFP1 and SFP2) will be closed in order to isolate the transfer canal from the pools. In the event of a postulated drop of the crane system over either the cask pit or transfer canal, a tear in the liner would not lead to a loss of spent fuel pool inventory or cooling function in either pool.

During removal of existing low-density spent fuel racks from SFP1, the spent fuel pool gates on SFP1 and SFP2 will be closed. All spent fuel will be moved from SFP1 to SFP2 prior to removing low-density spent fuel racks from SFP1. In the event of a drop of an existing spent fuel rack, a tear in the SFP1 liner will not affect stored spent fuel.

SPLB-6 **Describe the safe load path for the transfer of the spent fuel racks from the point of receipt and unloading to the point of staging and for the installation of the spent fuel racks.**

TXU Electric Response:

The spent fuel racks and WonderHoist crane will be moved to/from the railway bay on the east end of the Fuel Building at El. 810' to/from the spent fuel operating deck at El. 860'. This path is within the designated safe load area for the Fuel Building Overhead Crane as described in TXX-3659 dated June 8, 1983, except that the New Fuel Vault will be included in the safe load area. A discrepancy in documentation for this safe load area has been identified and entered into the CPSES Corrective Action Program. Prior to making any heavy load lifts through the designated safe load area, a risk assessment will be performed in accordance with the maintenance rule.

The existing and new spent fuel racks for SFP1 will not be carried over SFP2. Likewise the new Region I high-density spent fuel racks for SFP2 will not be carried over stored spent fuel in spent fuel racks in SFP1. The movement of racks to and from each pool is limited by the physical

limitations of the Fuel Building Overhead Crane and physical travel limits for the WonderHoist.

For movement of the Region I high-density spent fuel racks in SFP2, their safe load path will be restricted to the west end of the pool where no spent fuel or existing Region II high-density fuel storage racks exist. Thus, no racks will be carried over spent fuel in SFP2.

For installation and removal of the WonderHoist and for movement of the existing and new spent fuel racks to and from SFP1, no new fuel will be stored inside the New Fuel Vault. Therefore a loss of a heavy load over the New Fuel Vault will not affect any stored new fuel.

SPLB-7 **Reference 1 discusses how the proposed changes affect the design bases events regarding the drop of a fuel cask or a tornado. Discuss the impact of this change with regard to the potential drop of a spent fuel storage rack onto a rack with stored fuel.**

TXU Electric Response:

The new spent fuel racks will be handled by single-failure-proof crane systems and appropriate lifting devices; specifically the Fuel Building Overhead Crane and the WonderHoist and a special lifting device. Therefore a postulated drop of a new spent fuel rack is not considered to be a credible event. In addition, loads in excess of 2150 pounds are prohibited from travel over fuel assemblies in the storage pools in accordance with the CPSES Technical Requirements manual. Therefore, even if a new spent fuel rack were to be dropped, it would not impact a stored fuel assembly.

The WonderHoist crane is the only crane capable of handling a spent fuel rack from SFP1. This crane has the ability to travel over either spent fuel pool. The WonderHoist will be physically restricted through the use of both rail stops and administrative controls from moving spent fuel racks over SFP2 during the removal of existing low-density spent fuel racks in SFP1. Therefore a drop of a spent fuel rack onto a spent fuel rack with stored spent fuel in SFP2 is not possible and hence is not a credible event.

Mechanical and Civil Engineering Branch (EMEB)

EMEB-1. **The licensee indicated in Chapter 6 of Reference 2 that the structural analyses of the spent fuel racks were performed in compliance with the US NRC Standard Review Plan (SRP) and the former US NRC Office of Technology Position Paper related to spent fuel storage. With respect to the dynamic fluid-structure interaction analyses using the computer code, DYNARACK, in Reference 2, provide the following:**

(b) **Provide references to the documentation of the validation of the appropriateness of using the analytical model available in the version of the DYNARACK code for the dynamic analyses of the highly complicated, nonlinear, hydrodynamic, fluid-rack structure interactions and behavior of the fuel assemblies and the box-type rack structures. Provide the results of any existing experimental study that verifies the correctness or adequacy of simulation of the fluid coupling utilized in the numerical analyses for the fuel assemblies, racks and walls. If no such experimental study is available, provide justification that the current level of the DYNARACK code verification is adequate for engineering application and could be accepted without further experimental verification work.**

(c) **Provide the physical dimensions of the gaps among adjacent racks, and the gaps between the racks and the SFP walls, and compare them with the actual displacements under any simulation discussed in Section 6.9 of Reference 2 to show any potential for rack to rack, or rack to SFP wall impacts.**

TXU Electric Response:

(b) Data supplied by Scavuzzo to simulate the experiment using the pre-processor CHANBP6 and the solver DYNARACK was used. The results of the comparisons have been incorporated into the Holtec validation manual for DYNARACK (HI-91700) as an additional confirmation of the fluid coupling methodology. This validation manual , along with additional supporting documentation and discussions, have been previously submitted to the NRC in April, 1992, under dockets 50-315 and 50-316 for D. C. Cook station and for Waterford 3. The submittal for Waterford contained the evaluation of the Scavuzzo theory and experiment and demonstrated that the WPMR general formulation was in agreement with the experimental results.

(c) The dimensions of the gaps between the racks and the SFP walls are provided in Figure 1.1 of Enclosure 1 to Reference 1. The gaps between adjacent rack cells are as follows; Region I to Region I is 2 inches (+0.25", -0"), Region I to Region II is 2 inches (+0.25", -0"), Region II to Region II is 1.5 inches (+0.25", -0.25").

EMEB-2. The licensee indicated in Reference 2 that the design conditions described in SRP 3.8.4, American Concrete Institute (ACI) Code 318-71 and ACI Code 349-76 were used as guidance in the calculations of SFP capacity. With respect to the SFP capacity calculations using the ANSYS computer code presented in Chapter 8 of Reference 2:

(a) Provide the details of liner plate and the anchorages, including their material properties used in the structural analysis. Explain how the interface between the liner and concrete slab is modeled, and also, how the liner anchors are modeled; explain how such modeling accurately represents the real structural behavior.

(b) Provide the calculated governing factors of safety in a tabular form for the axial, shear, bending, and combined stress conditions in the various structural elements of the SFP.

TXU Electric Response:

(a) Details for the liner plate and the anchorages are provided in Figures 8.3.1 through 8.3.4 of the revision to Chapter 8 of the "Licensing Report for Spent Fuel Rack Installation at Comanche Peak Steam Electric Station". The revised Chapter 8 was included as Enclosure 1 of Supplement One of License Amendment Request (LAR) 00-005 submitted in TXU Electric letter logged TXX-01074 and dated April 30, 2001. The revised text in Chapter 8, Section 8.3 also describes how the interface between the liner and the concrete slab is modeled. The evaluation of the spent fuel pool concrete structural elements does not take credit for any load carrying capacity of the pool liner. The liner and anchors, however, are evaluated for stresses/strains induced by deformations in the spent fuel pool walls and slab under all loading conditions described in Chapter 8, including thermal expansion. This modeling is representative of the real structural behavior because the concrete structural elements are massive in comparison to the liner. The liner will deform with the concrete and experience loading due to this deformation.

(b) The revision to Chapter 8 of the "Licensing Report for Spent Fuel Rack Installation at Comanche Peak Steam Electric Station" submitted via TXX-01074 includes provisions for tabular summaries of the governing safety factors for each wall and slab of the spent fuel pools. This information will be provided in a follow-up submittal, as committed in TXX-01074.

EMEB-3. **Provide a table showing the maximum bulk pool temperatures for different fuel offload scenarios to demonstrate that the temperatures do not exceed 150 F, which is the allowable ACI Code 349 limit for concrete temperature for normal operation or any other long term period. If they do exceed the limit, justify such exceedance. Provide the assumptions used in the table.**

TXU Electric Response:

The spent fuel pool bulk water temperatures are maintained at less than 150 degrees F for normal operation in accordance with ACI Code 349. The fuel offload scenarios and bounding design assumptions are described in FSAR Section 9.1.3.1.1 and FSAR Table 9.1-1.

EMEB-4. **The licensee stated in Section 7.5.2, "Deep Drop Events" in Enclosure 1 of Reference 1, that the deep drop through an exterior cell does produce some deformation of the baseplate and localized severing of the baseplate/cell welds. The licensee further stated that the fuel assembly support surface is lowered by a maximum of 2.14 inches, which is less than the distance of 7.5 inches from the baseplate to the liner. Provide the design limit of the allowable deformation of the baseplate based on its material strength characteristics, and discuss the long term impact of the accumulated plastic deformation of the baseplate and the localized severing of the baseplate/cell wall welds on the integrity of the racks and the fuel assemblies.**

TXU Electric Response:

For the deep drop event, the allowable deformation of the baseplate is not determined by its material strength characteristics; it is determined rather by the continued ability of the rack to store fuel in a subcritical configuration. In other words, the baseplate shall not be damaged or

deformed to the extent that the criticality acceptance criteria are violated. To that end, the baseplate deformation must not:

(a) lead to a gross structural collapse of the fuel rack;
(b) lower the enriched zone of the fuel assembly far enough below the rack's "poisoned" region to violate subcriticality.

At Comanche Peak, detailed analyses have been performed to confirm that neither situation occurs as a result of the postulated deep drop event. As reported in Chapter 7 of Reference [3], the damage to the rack is of a local nature, and the maximum fuel assembly lowering of 2.14 inches causes no significant changes to the reactivity.

The impact on the integrity of the racks depends on the severity of the actual deep drop event and how the rack responds. In the aftermath of a fuel handling accident, damage to the rack must be evaluated to determine whether it can continue to function and withstand the design loads such as seismic events and another fuel handling accident. All such evaluations and any remedial actions taken would be conducted and documented under the Corrective Action Program at CPSES.

References:

1. Radke, Edward F., "Experimental Study of Immersed Rectangular Solids in Rectangular Cavities," Project for Master Science Degree, The University of Akron, Ohio, 1978.

2. Scavuzzo, R.J., et al, "Dynamics Fluid Structure Coupling of Rectangular Modules in Rectangular Pools", ASME Publication PVP-39, 1979, pp. 77-87.

3. Holtec report HI-2002402, "Licensing Report for Spent Fuel Rack Installation at Comanche Peak Steam Electric Station," Rev. 2.

Reactor Systems Branch (SRXB)

SRXB-1. Regarding the Westinghouse criticality analysis methodology used for Region II (3/4 and 4/4) storage configurations determining the reactivity bias to account for axial or three-dimensional burn-up effects, please provide the resolution to this issue consistent with Reference 1.

TXU Electric Response:

The evaluation of the axial burn-up effects on the burn-up credit was performed by Westinghouse. The previously determined generic bias reported in Westinghouse Spent Fuel Rack Criticality Methodology (WCAP-14416) was found to be non-conservative for the CPSES Region II (3/4 and 4/4) storage configurations. Axial burn-up profiles from 3D-ANC reactor core models for recent operating cycles were used to determine the axial burn-up effects. The 3D-ANC depletion calculations were performed conservatively with Control Bank D insertion at 200 steps withdrawn, and the limiting burn-up shapes were determined for various assembly average burn-ups. The axial burn-up bias was generically calculated for an infinite array (x-y direction) of storage racks using the PHOENIX-P/3D-ANC codes. These 3-D calculations included top and bottom axial reflectors which were modeled with six inches of pure water with reflective boundary conditions which conservatively eliminated axial neutron leakage. A six-inch axial mesh size was used. The axial biases were determined by comparing the reactivity of the non-uniform axial burn-up cases to those of the uniform axial burn-up cases with the same models. The PHOENIX-P/3D-ANC results were benchmarked against calculations performed using KENO code to confirm the axial burn-up bias results. The calculations were performed for high enrichment fuel assemblies and the results are shown below:

Fuel Assembly Burn-up (MWD/MTU)	Axial Bias (Delta-K)
15210	-0.00233
36790	0.01662
44736	0.02323
54507	0.03461

For CPSES, the axial bias was inferred from the above table at the required burn-up for the fuel assemblies at the highest allowable enrichment (5.0 w/o) in each storage configuration. The use of the 5.0 w/o fuel assemblies results in the highest required burn-up where the axial bias is expected to be the most limiting.

On December 6, 2000, Westinghouse issued Nuclear Safety Advisory Letter (NSAL) 00-015 to CPSES (Enclosure 3) and revised Attachment 2 to NSAL-00-015 on December 19, 2000 (Enclosure 4). These documents contain an assessment of this issue. On February 5, 2001, Westinghouse

issued a revised criticality analysis report for the Region II 3/4 and 4/4 storage configurations. The report describes how reactivity credits from certain excess conservatisms in the previous criticality analysis for CPSES are obtained to sufficiently offset the effect of the increased axial burn-up bias. It was concluded that the burn-up credit curves for the 3/4 and 4/4 storage configurations in the previous criticality report remain valid with the exception of the decay time credit (The decay time credit is still being evaluated by Westinghouse and therefore is deleted in the revised report). Per the NRC's request, on March 21, 2001, a copy of the new Westinghouse criticality analysis was provided to the NRC in a TXU Electric letter (TXX-01052). Per the NRC's request, On April 11, 2001, a conference call was held among TXU Electric, Westinghouse and the NRC staff (Mohan Thadani, et. al) to discuss the Westinghouse criticality analysis and answer questions by the NRC.

Comanch Peak's corrective action program has identified a potential issue with the Criticality Analysis Report provided in Enclosure 2 to TXX-01074. The gap spacing between Region II rack modules for the planned installation in SFP1 is less than the 3 inches assumed in the report. SFP2 is not affected by this issue. This issue will be resolved by July 18, 2001, and the NRC Staff will be notified of the resolution of this issue. The LAR will be supplemented as necessary.

SRXB-2. **It is not clear to the NRC staff, if the boron credit analysis was performed by Westinghouse methodology (Reference 9 of Reference 1), or by Holtec, or by both. Provide a clarification.**

TXU Electric Response:

The boron credit criticality analysis for the CPSES Region II spent fuel racks was performed using the Westinghouse methodology. TXU Electric performed the boron dilution analysis which supports the boron credit analysis.

SRXB-3. **On page 9 of Attachment 2 to Reference 1, the last sentence of the last paragraph regarding Region I states that "...150 ppm soluble boron is required to meet the regulatory guidelines...." Provide a reference for these regulatory guidelines.**

TXU Electric Response:

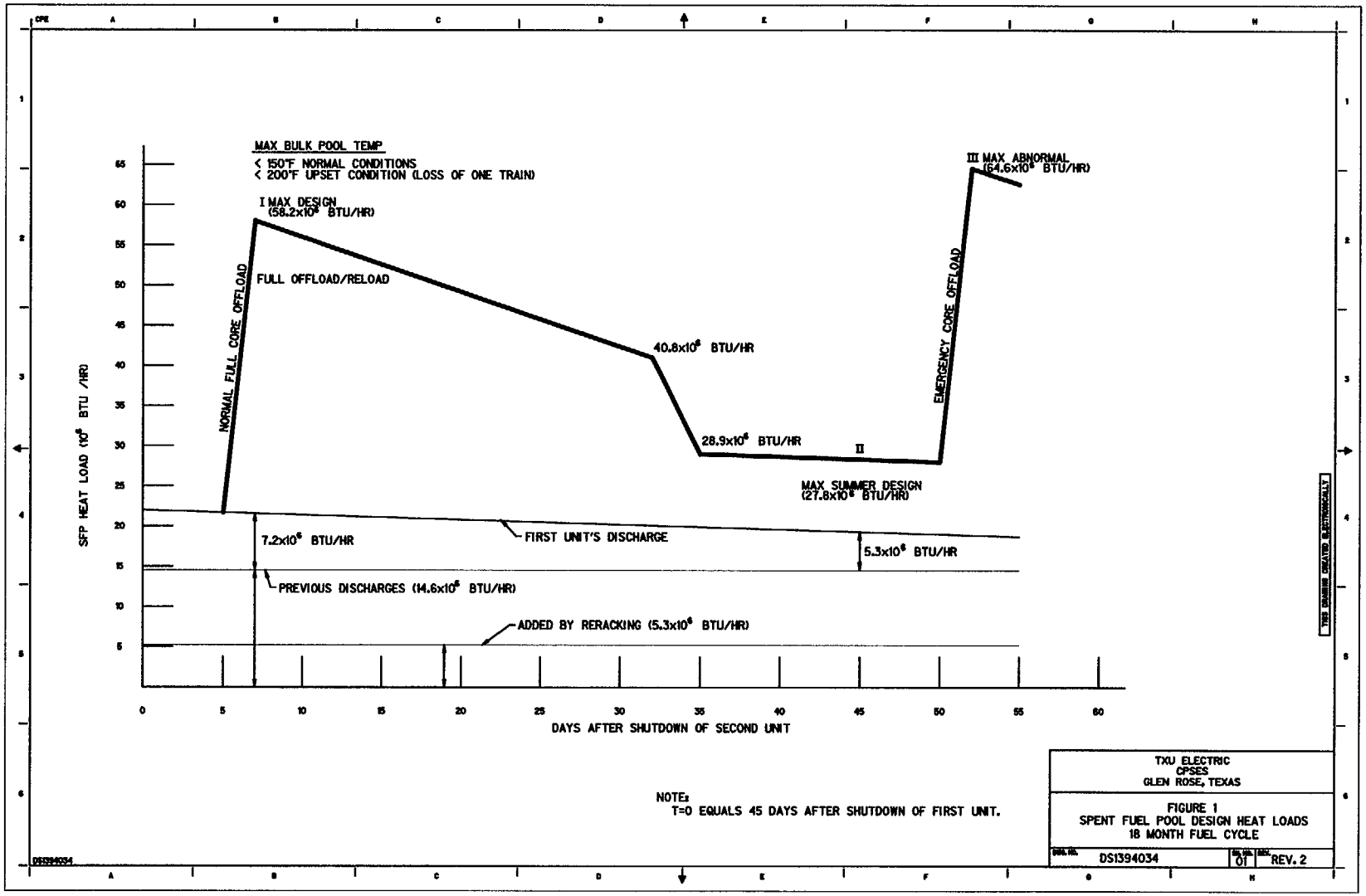
This is the double contingency principle as described on page 4 of a NRC paper, "GUIDANCE ON THE REGULATORY REQUIREMENTS CRITICALITY ANALYSIS OF FUEL STORAGE AT LIGHT-WATER REACTOR POWER PLANTS", by Laurence I. Kopp of the U.S. NRC, June 1998. The double contingency principle states that one is not required to assume two unlikely, independent, concurrent events to ensure protection against a criticality accident. Thus, for the accident scenario of placing a fresh fuel assembly outside and adjacent to the Region I rack module, the presence of 150 ppm soluble boron in the storage pool water can be assumed as a realistic initial condition since not assuming its presence would be a second unlikely event.

Materials and Chemical Engineering Branch (EMCB)

EMCB-1. Provide information on the materials of construction for the high density spent fuel racks to be installed in Region II of both SFPs. The information should include the types of material used for different elements of the racks including the weld material.

TXU Electric Response:

The high-density spent fuel racks to be installed in Region II are the same as those presently installed in SFP2. The materials of construction for these racks were described in Enclosure 1 to TXX-94325 dated December 30, 1994, " CPSES Fuel Storage Licensing Report: CPSES Expansion of Spent Fuel Storage Capacity, Section 2.2.1, High Density Rack Design Criteria, Revision 0, December 9, 1994.


MAX BULK POOL TEMP
< 150°F NORMAL CONDITIONS
< 200°F UPSET CONDITION (LOSS OF ONE TRAIN)
I MAX DESIGN (58.2x10⁶ BTU/HR)
FULL OFFLOAD/RELOAD
NORMAL FULL CORE OFFLOAD
40.8x10⁶ BTU/HR
28.9x10⁶ BTU/HR
II
III MAX ABNORMAL (64.6x10⁶ BTU/HR)
EMERGENCY CORE OFFLOAD
MAX SUMMER DESIGN (27.8x10⁶ BTU/HR)
SFP HEAT LOAD (10⁶ BTU /HR)
FIRST UNIT'S DISCHARGE
7.2x10⁶ BTU/HR
5.3x10⁶ BTU/HR
PREVIOUS DISCHARGES (14.6x10⁶ BTU/HR)
ADDED BY RERACKING (5.3x10⁶ BTU/HR)
DAYS AFTER SHUTDOWN OF SECOND UNIT
NOTE:
T=0 EQUALS 45 DAYS AFTER SHUTDOWN OF FIRST UNIT.
TXU ELECTRIC
CPSES
GLEN ROSE, TEXAS
FIGURE 1
SPENT FUEL POOL DESIGN HEAT LOADS
18 MONTH FUEL CYCLE
DS1394034
01
REV. 2

ENCLOSURE 1 to TXX-01102

CPSES Procedures referenced in Attachment 3

STA-655, "Exposure Monitoring Program"

STA-656, "Radiation Work Control"

STA-660, "Control of High Radiation Areas"

RPI-602, "Radiological Surveillance and Posting"

RPI-611, "Radiological Controls for Diving Operations"

CPSES PROCEDURE CHANGE FORM

SECTION I

DATE *6-15-99* PREPARER *B. Knowles* (PRINT NAME) EXT. 5780

PCN *STA-655-R13-01* /OTPCN N/A ,WO# N/A

TITLE *Exposure Monitoring Program*

CHANGED PAGE NO(s). *2. and 24*

CHANGE JUSTIFICATION **STA-655 Revision 13 is being changed using PCN STA-655-R13-01 to reference the Improved Technical Specifications. Detailed report information is being removed from page 24 to refer to STA-502.**

PREPARER (Signature/Date) B Knowles 6/24/99

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-205, Attachment 8.B, do not require Technical Review or Safety Evaluation Screen.

TECHNICAL REVIEWER: **Scott Bradley** Scott E Bradley (Printed Name and Signature)

Date: 6/24/99 EXT. 5455

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: ________ (Printed Name and Signature)

Date: ________ EXT. ________

SHIFT or UNIT SUPERVISOR: ________ (Printed Name and Signature)

Date: ________ EXT. ________

REMARKS ________

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)

TRAINING/READING REQUIRED: YES___ NO X IF YES, THEN SPECIFY: ________

SORC Meeting No.
and Date (If Applicable) 99-029 06-24-99 EFFECTIVE DATE: 06-30-99

APPROVED BY: WR Blevins DATE: 6.24.99
(Signature) (Print name if not approval authority and change is editorial)

COMANCHE PEAK STEAM ELECTRIC STATION

STATION ADMINISTRATION

QUALITY-RELATED

EXPOSURE MONITORING PROGRAM

PROCEDURE NO. STA-655

REVISION NO. 13

SORC MEETING NO.: 98-035 DATE: 06-05-98

EFFECTIVE DATE: ~~06-22-98~~ DJC 7/1/98
9/12/98 DJC 9/8/98

PREPARED BY (Print): Mike Macho EXT: 5698

TECHNICAL REVIEW BY (Print): Deb O'Connor EXT: 0151

APPROVED BY: MR Blevins DATE: 6.8.98

PLANT MANAGER

1.0 PURPOSE

The purpose of this procedure is to describe the requirements for the Exposure Monitoring Program. The Exposure Monitoring Program specifies the dosimetry requirements associated with the monitoring of occupational exposures to ionizing radiation at CPSES.

2.0 APPLICABILITY

This procedure is applicable to all personnel who require access to radiologically controlled areas at CPSES. In addition, Section 6.12, of this procedure "Medical Treatment" is applicable to all personnel onsite at CPSES.

3.0 REFERENCES

3.1 EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry

3.2 RPI-105, Exposure Records

3.3 STA-302, Station Records

3.4 STA-501, Nonroutine Reporting

3.5 STA-502, Routine Reporting

3.6 STA-656, Radiation Work Control

3.7 TRA-102, Radiation Worker Training

3.8 10CFR19, Notices, Instructions, and Reports to Workers; Inspections

3.9 10CFR20, Standards for Protection Against Radiation

3.10 ANI/MAELU Information Bulletin 80-1A, Nuclear Liability Insurance Records Retention

3.11 CPSES Technical Specification 6.9.1.2 (ITS 5.6.1)

3.12 INPO 91-014, Guidelines for Radiological Protection at Nuclear Power Stations

3.13 NRC Regulatory Guide 1.16, Reporting of Operating Information-Appendix A Technical Specifications

3.14 NRC Regulatory Guide 8.13, Instruction Concerning Prenatal Radiation Exposure

3.15 NRC Regulatory Guide 8.36, Radiation Dose to Embryo/Fetus

3.16 NCRP 91, Recommendations on Limits for Exposure to Ionizing Radiation

3.17 Supreme Court Opinion, No. 89-1215, in review of United Auto Workers, et.al vs. Johnson Controls, Inc.

4.0 DEFINITIONS/ACRONYMS

4.1 Committed Dose Equivalent (CDE) - The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

4.2 Committed Effective Dose Equivalent (CEDE) - The sum of the products of the weighing factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

4.3 Contract Personnel - Those individuals who are not TU Electric employees.

4.4 Declared Radiation Worker - A female Radiation Worker who has voluntarily informed her employer, in writing, of her pregnancy and estimated date of conception. Also applies to Escorted Radiation Workers who choose to declare their pregnancy.

4.5 Deep Dose Equivalent - (DDE) - The dose equivalent to the (external) whole body at a tissue depth of 1000 mg/cm^2.

4.6 Electronic Dosimeter - A device used to determine estimated dose. Except in unusual circumstances when record dose is required and TLD data is unavailable all data determined by electronic dosimetry should be considered unofficial and/or estimated dose.

4.7 Escorted Radiation Worker - An individual who is not a qualified Radiation Worker, requires a qualified escort to gain access to CPSES radiologically controlled area(s) to perform work related to their employment.

4.8 Extremity - Hand, elbow, arm below the elbow, foot, knee and leg below the knee.

4.9 Eye Dose Equivalent (LDE) - External exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 300 mg/cm^2.

4.10 Final Occupational Exposure Report - An exposure report (NRC Form 5, equivalent) that is based on TLD readings or official dose calculations and provided to radiation workers. The report should be signed by a representative of the issuing company.

4.11 Monitoring - Use of a thermoluminescent dosimeter (TLD) to quantify dose.

4.12 National Voluntary Laboratory Accreditation Program (NVLAP) - A National Institute of Standards and Technology program whose function is to accredit public and private dosimeter processors.

4.13 Occupational Dose - The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation and/or to radioactive material from licensed or unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research, or as a member of the public.

4.14 Official Estimate - A report of estimated total effective dose equivalent for a radiation worker. These reports are normally identified by the words "interim report" or "estimate." The report should be signed by a representative of the issuing company.

4.15 Personnel Contamination Monitors (PCM)- Contamination monitors which in addition to identifying external contamination may be utilized for passive internal monitoring and the performance of qualitative whole body counting.

4.16 Planned Special Exposures - An infrequent exposure to radiation, separate from and in addition to, the annual dose limit; and that, if not provided for, would create a severe handicap to the plant's operation.

4.17 Public Dose - The dose received by a member of the public from exposure to radiation and/or radioactive material released by a licensee or to any other source of radiation under the control of a licensee. It does not include occupational dose or doses received from background radiation, as a patient from medical practices, or from voluntary participation in medical research programs.

4.18 Qualitative Whole Body Count - An in-vivo measurement performed with a personnel contamination monitor as a screening process to identify the presence of radioactive material internally.

4.19 Quantitative Whole Body Count- An in-vivo measurement performed with the Chair or Stand-up whole body counter which provides isotopic identification and quantification of radioactive material for dose analysis.

4.20 Radiation Worker - An individual who may receive occupational dose and who is qualified for unescorted access to CPSES radiologically controlled area(s). Exposures to radiation workers should be determined by TLD and shall be reportable to the individual and to the NRC.

4.21 Radiologically Controlled Area (RCA) - Any area where access is controlled by the licensee for the purpose of protection of individuals from exposure to radiation and radioactive materials.

4.22 Skin of the whole body - The skin covering all areas of the whole body, as defined for whole body and is taken as the dose equivalent at a tissue depth of 7 mg/cm^2.

4.23 Termination - For TU Electric employees and contract employees, termination is the end of the employment at CPSES, or the transfer of the employee to a department or location where radiologically controlled area access is no longer required.

4.24 Total Effective Dose Equivalent (TEDE) - The sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

4.25 Total Organ Dose Equivalent (TODE) - The sum of the deep dose equivalent and committed dose equivalent to any individual organ or tissue other than the lens of the eye.

4.26 Visitor - A member of the public who is not assigned duties related to employment which may potentially involve radiation and/or radioactive material. Dose received by a member of the public cannot be permitted to exceed the public dose limit, even if the individual is receiving that dose while in a restricted area.

4.27 Whole body - For purposes of external exposure, head and trunk (including male gonads), arms above the elbow, or legs above the knee.

5.0 RESPONSIBILITIES

5.1 The Plant Manager is responsible for:

5.1.1 Approval of Total Effective Dose Equivalent Administrative Exposure Level extensions above 4000 mrem in one year.

5.1.2 Maintaining the Prenatal Exposure Policy as specified by this procedure.

5.1.3 Approval for all planned special exposures (PSE).

5.2 Radiation Protection Manager (RPM) is responsible for:

5.2.1 Developing and implementing the exposure monitoring program for Radiation Workers at CPSES.

5.2.2 Implementing the objectives of the Prenatal Exposure Policy as specified by this procedure.

5.2.3 Approval of Total Effective Dose Equivalent exposure extensions ≤ 4000 mrem in one year.

5.2.4 Maintaining Dosimetry Program accreditation through the National Voluntary Laboratory Accreditation Program.

5.2.5 Maintaining this procedure current.

5.3 Radiation Protection Supervisor is responsible for:

5.3.1 Ensuring that personnel exposure and dosimetry processing records are maintained in accordance with the applicable procedures and regulations.

5.3.2 Development and maintenance of Radiation Protection Instructions required to implement the Exposure Monitoring Program.

5.4 Chemistry Manager is responsible for:

5.4.1 Notifying the Radiation Protection Manager if reactor coolant tritium levels exceed 10 μCi/cc.

5.4.2 Providing reactor coolant tritium levels, as requested by Radiation Protection. Following are the tritium levels Radiation Protection is interested in:

- Divers in pools of water with tritium concentrations greater than or equal to 0.01 μCi/cc.

- Workers who routinely sample, and may be sprayed with, or otherwise come in contact with, water with tritium concentrations greater than or equal to 0.01 μCi/cc.

5.5 Station Supervisors are responsible for:

5.5.1 Identifying personnel under their direction who should be designated as Radiation Workers as specified in Definition 4.20, on the "ESR" form. The supervisor should ensure that the number of Radiation Workers in their area is kept to a minimum.

5.5.2 Ensuring that Radiation Workers under their direction maintain their Radiation Worker training qualifications current.

5.5.3 Ensuring that Radiation Workers under their direction notify Radiation Protection Dosimetry at the Personnel Processing Center (EXT - 5491) as follows:

- Upon termination of employment or radiation worker status.
- Upon transfer to another department.
- Upon transfer to another site.
- Prior to an extended leave of absence (e.g., greater than 30 days).
- Prior to a military leave of absence.
- Upon return from another facility, if individual was monitored at the facility.

5.5.4 Informing Radiation Protection when an employee has declared her pregnancy.

5.5.5 Managing the exposure of Declared Radiation Workers within the limits specified by this procedure.

5.5.6 Requesting additional training from the Training Department or Radiation Protection, as necessary.

5.6 Radiation Workers are responsible for:

5.6.1 Maintaining their exposure ALARA.

5.6.2 Remaining cognizant of their current exposure and ensuring they do not exceed the exposure levels as set forth by CPSES.

5.6.3 Providing documentation of all current year occupational radiation exposure from other facilities if they have been monitored.

5.6.4 Maintaining an updated STA-655-8 on file with Radiation Protection Dosimetry.

5.6.5 Notifying Radiation Protection Dosimetry whenever leaving site for an extended period of time (e.g. greater than 30 days) or prior to military leave of absence.

5.6.6 Notifying Radiation Protection Dosimetry upon return from another facility where they have been monitored.

5.6.7 Participating in whole body counting procedures as required by Radiation Protection.

5.6.8 Notifying Radiation Protection if they are receiving occupational exposure due to work for another licensee while employed at CPSES.

5.6.9 Female Radiation Workers shall complete training covering the Prenatal Exposure Policy.

5.6.10 Adhering to the Dosimetry guidelines listed in Attachment 8.C.

5.7 Escorted Radiation Workers are responsible for:

5.7.1 Completing Section I of STA-656-3 to request Escorted Radiation Worker status, in accordance with STA-656.

5.7.2 Female Escorted Radiation Workers shall complete training covering the Prenatal Exposure Policy upon declaration of pregnancy.

5.8 All Personnel at CPSES are responsible for;

5.8.1 Notifying Radiation Protection if planned medical treatment involving radioactive material will be received. Workers are not required to report medical X-rays.

6.0 INSTRUCTIONS

6.1 Requirements for Exposure Monitoring

> CAUTION: No individuals should enter an RCA unless they are eighteen years of age or older.

6.1.1 Radiation Workers

6.1.1.1 The immediate supervisor or contract coordinator should ensure the employee's job function requires access to radiologically controlled areas.

6.1.1.2 The immediate supervisor or contract coordinator should select 'Process as Radiation Worker' on the ESR Form.

[C] 6.1.1.3 The employee shall complete Radiation Worker Training (RWT) and receive an initial whole body count. [C-00800],[C-01806]

6.1.1.4 The employee should provide copies of all official exposure records from other facilities at which official monitoring was provided for the current year.

6.1.1.5 The employee should complete Form STA-655-8, TLD Issue Request, for Radiation Protection Dosimetry.

6.1.1.6 NRC Form 4s which are countersigned by a licensee or the current employer and NRC Form 5s are acceptable documentation of previous occupational exposure.

6.1.1.7 If the employee does not have all previous exposure records for the current year, the individual should sign an authorization to release previous exposure records to TU Electric and thereby receive interim dosimetry and interim exposure margin.

6.1.1.8 If exposure records for the current year cannot be obtained, the individual may initiate Form STA-655-12 to document his/her year-to-date exposure to be used as a dose of record at CPSES.

6.1.1.9 Upon receipt of all final exposure records for the current year, the individual should report to Radiation Protection Dosimetry to authenticate the exposure records. Annual administrative dose levels may be increased to 4000 mrem.

6.1.2 Escorted Radiation Workers

6.1.2.1 Escorted Radiation Workers should be provided access to the Radiologically Controlled Area(s) in accordance with STA-656.

6.1.3 NRC/INPO Personnel

6.1.3.1 NRC/INPO personnel should provide documentation of current Radiation Worker Training. The documentation may include, but is not limited to the following:

- A letter from the NRC certifying individual's qualifications.
- Verification from the TU Nuclear Training Department certifying the individual's qualifications (verbal or written).
- Documentation of successful completion of an INPO accredited Radiation Worker Training class from another facility/plant.

6.1.3.2 NRC/INPO personnel may complete STA-655-4 in lieu of STA-655-8.

1. NRC personnel issued a TLD under STA-655-4 should be limited to 500 mrem per year at this site.

2. Have the individual step into a PM-7 and document on the STA-655-8 Form or STA-655-4 as applicable, that no alarm occurred. If an alarm occurs on the PM-7 a quantitative whole body is required prior to entry into the RCA.

6.2 Exposure Limits

6.2.1 Administrative exposure levels and Federal exposure limits for occupational exposure to ionizing radiation are provided in Attachments 8.A and 8.B, respectively.

[C] 6.2.2 Exposure estimates for gamma radiation exposure(s) may be evaluated by methods such as pocket ionization chambers, electronic dosimeters or survey data if other methods are unavailable. [C-03942]

6.2.3 Based on estimates provided on STA-655-8 for the Total Effective Dose Equivalent (TEDE), the RP Supervisor may initiate lower TEDE Administrative levels.

6.2.4 Radiation Protection Dosimetry should inform the individual's supervisor of the reduced Total Effective Dose Equivalent (TEDE) Administrative levels.

6.3 Declaration of Pregnancy and Exposure Limits [C-26820]

[C] 6.3.1 Female Radiation Workers or Female Escorted Radiation Workers may elect to limit exposure to their embryo/fetus by formally declaring their pregnancy in writing. This option allows the employee to pursue continued active employment at CPSES while providing means to protect the embryo/fetus in accordance with USNRC Regulatory Guide 8.13 and NCRP-91 guidance. [C-23006]

6.3.2 Upon declaration of pregnancy, reduced exposure limits shall be implemented to minimize risk to the embryo/fetus from ionizing radiation.

6.3.3 It is the sole responsibility of the female Radiation Worker or Escorted Radiation Worker to decide whether or not to limit her occupational exposure.

6.3.3.1 A female Radiation Worker or Escorted Radiation Worker requesting a formal declaration of pregnancy should do so by notifying her employer or escort and Radiation Protection Dosimetry by completing STA-655-10, Declared Radiation Worker Agreement.

6.3.3.2 Attachment 8.D, Acknowledgment of Training and Female Radiation Exposure Declaration, should be provided to the individual as part of the Declaration process.

6.3.4 A female Radiation Worker or Escorted Radiation Worker has the right to rescind her declaration at any time by informing her Supervisor or escort and Radiation Protection Dosimetry by completing STA-655-10, Declared Radiation Worker Agreement.

[C] 6.3.5 TU Electric, CPSES, shall provide training consistent with Regulatory Guide 8.13 and other applicable regulations and guidelines to employees in order for them to make informed decisions regarding the potential radiation effects on the embryo/fetus. Radiation Protection/Training is available if employees have any additional questions. [C-23006]

6.3.6 TU Electric, CPSES, is taking all practical measures to assist females in reducing potential fetal radiation exposure within the stated guidelines. However, Declared Radiation Workers or Declared Escorted Radiation Workers are responsible for maintaining their exposure within the limits set forth by this procedure.

6.3.7 Administrative exposure levels for the embryo/fetus of a Declared Radiation Worker or Declared Escorted Radiation Worker are defined in Attachment 8.A.

6.3.8 Upon delivery (birth), the Declared Radiation Worker should initiate Form STA-655-10 to record the delivery date and inform Radiation Protection Dosimetry in order to reinstate normal administrative exposure levels.

6.3.9 All estimates of the dose to the embryo/fetus of a Declared Radiation Worker shall be made in accordance with NRC Regulatory Guide 8.36.

6.4 Administrative Exposure Level Extensions

6.4.1 CPSES Administrative Levels for exposure to ionizing radiation may be extended provided the following conditions are met:

6.4.1.1 The individual has a current STA-655-8 on file. (Depending on the circumstances, Form STA-655-1 may be requested to be complete).

6.4.1.2 The current assigned TLD may be processed as determined by Radiation Protection.

6.4.2 The total occupational dose shall not exceed any NRC limit as specified in Attachment 8.B.

6.4.3 Administrative Exposure Level Extension Process

6.4.3.1 To obtain an extension above 4000 mrem, the individual's immediate supervisor should complete Part 1 of STA-655-3 and provide justification as to the necessity of exceeding the administrative level.

6.4.3.2 The individual's supervisor should obtain the appropriate approval signatures as follows:

1. The Plant Manager should approve any extension above 4000 mrem in one year.

2. The Radiation Protection Manager should approve any extensions up to and including, 4000 mrem in one year.

6.4.3.3 The immediate supervisor should forward STA-655-3 to Radiation Protection Dosimetry.

6.4.3.4 Radiation Protection Dosimetry should update the Radiation Protection Computer System with the new limits and file the extension in the individual's exposure record.

[C] 6.4.4 Under declared emergency conditions, Administrative Levels do not apply. The federal limits in 10CFR20 are applicable. Emergency exposure extensions in excess of the applicable federal limits and TLD issuance shall be processed in accordance with EPP-305. [C-6380]

6.5 Planned Special Exposures

6.5.1 A Planned Special Exposure (PSE) may be requested for an individual or a crew to complete a vital task for the continued operation of the plant or to complete a critical job.

6.5.2 A PSE shall not be utilized as a means for extending dose limits.

6.5.3 A PSE shall only be used for exceptional situations of which their appropriateness may be reviewed by the NRC. Following are some examples of exceptional situations:

- Not enough skilled worker(s) are available for a critical path job.
- Shielding is not practical for reducing exposures.
- Collective dose to personnel may be reduced.

6.5.4 Once an exposure is authorized as a PSE, it cannot later be treated as a routine occupational exposure, even if the exposure was significantly less than anticipated; and therefore all of the unique limitations, reporting, and record keeping requirements apply.

6.5.5 Radiation Protection Dosimetry should initiate STA-655-11 by completing Section I, providing justification for the exceptional situation.

6.5.6 Radiation Protection shall determine prior dose.

6.5.6.1 Dosimetry shall process TLDs and obtain all previous doses due to other PSEs and all doses in excess of the routine occupational limits for each individual.

6.5.6.2 Doses received in excess of routine occupational dose limits, including accidents and emergencies, shall also be subtracted from the limits for PSEs.

6.5.6.3 If complete lifetime records (Form STA-655-1) are not available, then the individual shall not be eligible for the PSE.

6.5.6.4 Dosimetry Records shall sum the outstanding dose (Section 6.5.6.1) for each individual and record the final result on Form STA-655-11.

6.5.6.5 The PSE may be approved if the sum of the outstanding dose from Section 6.5.6.2 above and the exposure estimate of the PSE does not exceed the dose limits in Attachment 8.A for PSEs.

6.5.6.6 Radiation Protection Dosimetry should sign and date the final result.

6.5.6.7 Radiation Protection Dosimetry should forward Form STA-655-11 to the Plant Manager.

6.5.7 Obtain approval for the PSE from the Plant Manager and the individual's employer if the employer is not TU Electric.

6.5.8 ALARA Pre-Job Briefing Checklist should be performed in accordance with STA-657, for the individual(s) involved. Ensure the following are documented:

- Informed of the PURPOSE of the planned operation.
- Informed of the estimated doses and potential risks and other conditions involved in performing the task.
- Instructed in measures to be taken to keep the dose ALARA while considering other risks which may be present.

6.5.9 Attach the ALARA Pre-Job Briefing Checklist documentation to the PSE.

6.5.10 A written report notifying the Administrator of the NRC Regional Office of the PSE shall be presented within 30 days, in accordance with STA-502, Routine Reporting.

6.6 Administrative Termination of Radiologically Controlled Area Access

Radiation Worker access to radiologically controlled areas may be terminated under any of the following conditions:

- Disregard or violation of radiological procedures or radiation work permits.
- Failure to complete whole body count requested by Radiation Protection.
- Failure to maintain the required training for access to radiologically controlled areas.

6.7 Visiting Other Sites or Leaving CPSES for an Extended Period

6.7.1 Radiation Workers leaving site for an extended period of time (e.g., greater than 30 days) or military leave of absence should report to Radiation Protection Dosimetry for out processing.

Examples of circumstances under which out processing is required:

- Transfer to another department where radiologically controlled area access is not required.
- Extended leave of absence for medical, education, military, etc.

6.7.2 While visiting the other facilities, TU Electric personnel should limit their radiation exposure to the CPSES Administrative Levels unless prior approval is obtained from the Radiation Protection Manager.

6.7.3 Prior to leaving the facility being visited, personnel should obtain an estimate of their exposure.

6.7.4 When returning to CPSES, personnel should notify Radiation Protection (Dosimetry) and provide their dose estimate as soon as possible. When final exposure records are provided to the individual, a copy should be forwarded to Radiation Protection (Dosimetry) at the PPC.

6.8 Radiation Worker Termination

6.8.1 Radiation Workers terminating employment with TU Electric should out-process with Radiation Protection Dosimetry at the ASCAN Facility located in Alternate Access Point (AAP) or the Personnel Processing Center (PPC).

6.8.2 Contract Radiation Workers visiting other facilities where radiation exposure may be received should comply with Section 6.7 of this procedure.

6.8.3 If a Radiation Worker terminates under adverse conditions and cannot out-process through Radiation Protection Dosimetry, the supervisor should notify the Radiation Protection Supervisor within 24 hours of the individual's termination.

6.9 Training Extension

6.9.1 Responsible Managers should not initiate Form STA-655-7, unless extenuating circumstances are associated with the failure to attend training within the specified time period.

6.9.2 The responsible manager should complete Form STA-655-7, CPSES Training Extension Request.

6.10 Dosimetry Program

[C] 6.10.1 Automatic TLD Readers are available for prompt processing of TLD badges. [C-10824]

6.10.2 The Radiation Protection Dosimetry Program shall maintain accreditation through the National Voluntary Laboratory Accreditation Program (NVLAP) as required by 10CFR20.

6.10.3 In the event that outside TLD processing services are required, only NVLAP accredited processors may be used.

[C] 6.10.4 Dosimetry equipment such as multibadging and alarming and integrating devices are available for those assignments that require special dosimetry. [C-00791]

[C] 6.10.5 Station and support personnel or visitors who enter radiologically controlled areas at CPSES are monitored for external radiation exposure using TLDs or alarming electronic dosimeters. Issuance of TLDs or alarming dosimeters, TLD processing and dose determination are performed in accordance with approved station procedures. [C-00297],[C-07782]

6.11 Whole Body Counting Program

6.11.1 The bioassay and whole body counting programs should be implemented in accordance with Radiation Protection Instructions.

6.11.2 Baseline whole body counts measure radioactive material present in the body prior to beginning and upon completion of radiologically controlled area work at CPSES.

6.11.3 Exposure control whole body counts and bioassays verify that the practices and procedures used at CPSES for controlling and limiting internal exposure are effective in maintaining these exposures ALARA.

6.11.4 Personnel refusing to participate in the whole body count or bioassay program should have their radiologically controlled area access revoked.

6.11.4.1 Reinstatement of access to the Radiologically Controlled Area requires the approval of the Radiation Protection Manager.

6.11.4.2 Form STA-655-5 should be used to document this process.

[C] 6.11.5 All radioactive sources used for calibration of bioassay measurement equipment shall be traceable to the National Institute of Standards and Technology. [FX-97-753]

6.12 Medical Treatment

NOTE: This section is applicable to all personnel onsite at CPSES.

6.12.1 Personnel should inform Radiation Protection Dosimetry if medical treatment involving radioactive material is being received or has recently been received. The individual should initiate Form STA-655-9 and provide to Radiation Protection, who will determine the impact of the treatment on the exposure monitoring program and the radiological controls of the plant's waste streams. Restrictions should be commensurate with the level and type of medical treatment.

6.12.1.1 If the medical treatment impacts the exposure monitoring program then Radiation Protection may restrict the individual from the RCA.

6.12.1.2 All decisions regarding any restrictions will be handled on a case-by-case basis.

6.12.1.3 Radiation Protection should maintain the STA-655-9 in a file until the individual can pass through the portal monitors or for an appropriate amount of time dependent on the isotopes administered. The form should then be sent to the Operations Record Center (ORC).

6.13 Reports

6.13.1 Supervisors should be notified by Radiation Protection of personnel under their direction who have reached 80 percent of an administrative level.

6.13.2 Current Total Effective Dose Equivalent (TEDE) exposure is displayed by the RP Computer System for individual Radiation Workers upon entry and exit from the RCA. A hard copy report of this data may be generated upon request.

[C] 6.13.3 Current Total Effective Dose Equivalent (TEDE) exposure reports for Radiation Workers should routinely be sent to supervisors and/or managers. These reports may vary in frequency based on plant conditions or as requested. [C-00820]

6.13.4 Any Radiation Worker or Escorted Radiation Worker may request to be furnished with reports showing his/her exposure to radiation or radioactive materials in accordance with 10CFR19.

6.13.5 When a request is made from another utility or agency to use whole body counting or bioassay services at CPSES for any individual not assigned to or planning to enter CPSES, Form STA-655-6, "Bioassay Analysis Waiver and Release of Claims" should be completed.

6.13.6 INPO's Director, Radiological Protection and Emergency Preparedness Division shall be notified at (770)644-8000 by Radiation Protection of each instance in which an individual receives more than 5.0 rem (TEDE) in a calendar year. "Non-Routine Reporting" shall be generated in accordance with STA-501.

6.13.7 Exposure reports of TEDE (NRC Form 5) for terminated Radiation Workers who are monitored by TLD, shall be submitted to the individual in accordance with 10CFR19.

6.13.8 An Occupational Exposure Report of TEDE (RPI-105-6) containing the PSE total effective dose equivalent shall be forwarded to the respective individual(s) within 30 days of the PSE.

6.13.9 The dose to an embryo/fetus shall be maintained with the records of dose for the Declared Radiation Worker or Declared Escorted Radiation Worker; and available only upon request. The embryo/fetus dose report (NRC Form 5) is not included in the annual report to the NRC.

6.13.10 Annual 10CFR20.2206 exposure reports for all individuals for whom monitoring was provided shall be submitted to the NRC by means of hardcopy (Form RPI-105-6) or electronic media containing all the information required by NRC FORM 5, in accordance with STA-502.

6.13.11 Annual 10CFR19.13(b) exposure reports for all individuals for whom monitoring was provided shall be submitted to each respective individual, in accordance with STA-502.

1. A final Occupational Exposure Report for those individuals terminated during the year meets the requirement of Section 6.13.11 and 10CFR19.13(b).

6.13.12 A personnel exposure report shall be prepared annually (by March 1) for submittal with the Annual Operating Report, as required by CPSES Technical Specification (T.S. 6.9.12 / ITS 5.6.1). This report shall be prepared and submitted in accordance with STA-502.

1. Personnel exposures attributed to "special maintenance" of Section 6.13.12 should include a description of the maintenance.

7.0 FIGURES

None

△1 6/15/99

8.0 ATTACHMENTS/FORMS

8.1 Attachments

8.A Attachment 8.A, Administrative Exposure Levels

8.B Attachment 8.B, NRC Exposure Limits

8.C Attachment 8.C, Dosimetry Guidelines

8.D Attachment 8.D, Acknowledgment of Training and Female Radiation Exposure Declaration

8.2 Forms

8.2.1 Form STA-655-1, Cumulative Occupational Exposure History

8.2.2 Form STA-655-3, Exposure Extension Authorization

8.2.3 Form STA-655-4, NRC/INPO Unfettered Access Form

8.2.4 Form STA-655-5, Bioassay Analysis Refusal

8.2.5 Form STA-655-6, Bioassay Analysis Waiver and Release of Claims

8.2.6 Form STA-655-7, CPSES Training Extension Request

8.2.7 Form STA-655-8, TLD Issue Request

8.2.8 Form STA-655-9, Medical Treatment Evaluation

8.2.9 Form STA-655-10, Declared Radiation Worker Agreement

8.2.10 Form STA-655-11, Planned Special Exposure

8.2.11 Form STA-655-12, Statement of Unavailable Occupational Radiation Dose Records

9.0 RECORDS

[C] When completed, the following forms, reports, or other documents generated in response to this procedure shall be dispositioned in accordance with STA-302, "Station Records." [C-06876], [C-07460]

9.1 Form STA-655-1, Cumulative Occupational Exposure History

9.2 Form STA-655-3, Exposure Extension Authorization

9.3 Form STA-655-4, NRC/INPO Unfettered Access Form

9.4 Form STA-655-5, Bioassay Analysis Refusal

9.5 Form STA-655-6, Bioassay Analysis Waiver and Release of Claims

9.6 Form STA-655-7, CPSES Training Extension Request

9.7 Form STA-655-8, TLD Issue Request

9.8 Form STA-655-9, Medical Treatment Evaluation

9.9 Form STA-655-10, Declared Radiation Worker Agreement

9.10 Form STA-655-11, Planned Special Exposure

9.11 Form STA-655-12, Statement of Unavailable Occupational Radiation Dose Records

ATTACHMENT 8.A
PAGE 1 OF 2
ADMINISTRATIVE EXPOSURE LEVELS

RADIATION WORKERS

DEEP DOSE

PERIOD	CALCULATION	LEVEL
Annual TLD	TEDE (Total Effective Dose Equivalent)	4 rem
Annual	TODE - (The SUM of Deep-Dose Equivalent and Committed Dose Equivalent to any individual organ or tissue other than the lens of the eye).	40 rem

PERIOD	EVENT	LEVEL
Annual	Planned Special Exposure (PSE)	4 rem
	NOT TO EXCEED:	
Lifetime	Planned Special Exposure (PSE)	Five times the annual dose limit.

EMBRYO/FETUS OF DECLARED PREGNANT RADIATION WORKER

PERIOD	RECEPTOR	LEVEL
Gestation	Declared Radiation Worker **OR** Declared Escorted Radiation Worker	200 mrem (Not to exceed 50 mrem/month)

NOTE: If the dose to the embryo/fetus is found to have exceeded 200 mrem by the time the woman declares pregnancy, then any additional dose should not exceed 50 mrem during the remainder of the pregnancy.

NOTE: Administrative Exposure Levels are based on PIC or Electronic Dosimeter estimates.

ATTACHMENT 8.A
PAGE 2 OF 2
ADMINISTRATIVE EXPOSURE LEVELS

ESCORTED RADIATION WORKERS

DEEP DOSE

PERIOD	CALCULATION	LEVEL
Monitoring Period	DDE (Deep Dose Equivalent) (with TLD)	100 mrem
	With appropriate authorization:	
Annual	DDE (Deep Dose Equivalent) (with TLD)	<= 4000 mrem

MEMBER OF THE PUBLIC (VISITOR)

DEEP DOSE

PERIOD	CALCULATION	LEVEL
Quarter	DDE (Deep Dose Equivalent)	20 mrem

NOTE: A Visitor is not allowed into a contaminated or airborne area and therefore a committed dose equivalent should not be calculated.

NOTE: Administrative Exposure Levels are based on PIC or Electronic dosimeter estimates.

ATTACHMENT 8.B
PAGE 1 OF 2

NRC EXPOSURE LIMITS

RADIATION WORKERS

PERIOD	CALCULATION	LIMIT
Annual	TEDE (Total Effective Dose Equivalent)	5 rem
	OR	
Annual	TODE (The SUM of Deep-Dose Equivalent and Committed Dose Equivalent to any individual organ or tissue other than the lens of the eye).	50 rem

PERIOD	RECEPTOR	LIMIT
Annual	Lens of the Eye Dose Equivalent (LDE)	15 rem
Annual	Shallow Dose Equivalent for the Skin (SDE_{WB})	50 rem
Annual	Shallow Dose Equivalent for each Extremity (SDE_{ME})	50 rem

PERIOD	EVENT	LIMIT
Annual	All Planned Special Exposures	5 rem
Lifetime	Planned Special Exposure (PSE)	Five times any annual dose limit.

ATTACHMENT 8.B
PAGE 2 OF 2

NRC EXPOSURE LIMITS

EMBRYO/FETUS OF A DECLARED PREGNANT RADIATION WORKER

PERIOD	RECEPTOR	LIMIT
Gestation	Embryo/Fetus	500 mrem

NOTE 1: If the dose to the embryo/fetus is greater than 450 mrem by the time the declaration is made, then the licensee is in compliance if the additional dose does not exceed 50 mrem during the remainder of the gestation period.

MEMBER OF THE PUBLIC

PERIOD	CALCULATION	LIMIT
Annual	TEDE (Total Effective Dose Equivalent)	100 mrem

ATTACHMENT 8.C
PAGE 1 OF 1

DOSIMETRY GUIDELINES

- Personnel entering the RCA should wear their dosimetry at all times. Unless otherwise instructed, dosimetry should be worn on the upper front part of the body between the head and waist.

- Electronic alarming dosimeters or Pocket Ion Chambers (PIC) must be worn at approximately the same location (e.g., within a hand's width) as the TLD, however, they should not shield each other. Electronic dosimeters should be worn with the clip closest to the body so the detector is not shielded.

- Workers should read their electronic alarming dosimeters or PICs periodically when in Radiation Areas (e.g., once or twice per hour) and frequently in High Radiation Areas (e.g., at one half or one third of the job entry time, or every 15 minutes, whichever is shorter) to ensure that doses received are consistent with expectations. Alarming electronic dosimeters or PICs shall be read upon egress from an RCA and recorded.

- PICs may be read by pointing them toward a light source and observing the position of the hairline indicator on the scale. PIC estimate should be recorded and zeroed prior to or when it reaches 75% of full scale.

- Special or additional dosimetry may be required as specified on the RWP for a given task.

- Exit the RCA immediately and report to Radiation Protection if dosimetry becomes lost, damaged, or you observe your PIC reading to be off scale or at 75% of full scale (e.g., 150 mR for a 200 mR range PIC). Report to Radiation Protection immediately if the preset dose alarm goes off on the alarming electronic dosimeter.

- Questions pertaining to dosimetry should be directed to Radiation Protection Dosimetry.

- Inform Radiation Protection if medical treatment involving radiation (other than normal X-ray examinations) is being received. Radiation Protection will determine the required action, if any, which may include dose restrictions or restriction from the RCA or Protected Area.

ATTACHMENT 8.D
PAGE 1 OF 1

ACKNOWLEDGMENT OF TRAINING AND FEMALE RADIATION EXPOSURE DECLARATION

I understand that TU Electric is obliged by applicable law to take the position that protection of the health of the unborn child is the immediate and direct responsibility of the prospective parent(s). While the medical profession and the Company can support the parent(s) in the exercise of this responsibility, the Company cannot assume it for the parent(s) without, according to the courts, simultaneously infringing upon individuals' rights. I also understand that policies which, as a rule, inhibit a woman's activities in the workplace on the basis of fetal protection concerns, are improper under the law of the United States, unless a woman voluntarily requests more protective dose limits be applied to her or in cases in which sex or pregnancy actually interferes with the employee's ability to perform the job.

I have received training from TU Electric concerning the radiological hazards of employment in a nuclear power plant. I have also received training regarding the effects of radiation on an unborn child (such as mental retardation and birth size, childhood cancer, radiation-induced genetic effects, the radio-sensitivity of the embryo/fetus.) I also received training regarding the matters discussed in NRC Regulatory Guide 8.13, entitled "Instruction Concerning Parental Radiation Exposure," Rev. 2, December, 1987. I have read the summary of STA-655 "Exposure Monitoring Program" which outlines the Company's prenatal exposure policy. This instruction was presented to me both orally and in written form.

I had the opportunity to ask questions concerning all aspects of the presentation and as a Radiation Worker I achieved a passing score on an examination covering the subject matter of NRC Regulatory Guide 8.13.

I understand that the National Council on Radiation Protection and Measurement has recommended a separate dose level of 500 mrem to the unborn child from occupational exposure of the expectant mother for the term of the pregnancy. I understand that limiting the dose to the embryo/fetus for the term of the pregnancy may result in lowering the occupational dose which I may receive." I understand that I must declare in writing, whether I wish to be considered a Declared Radiation Worker. As a Declared Radiation Worker I will be restricted to an administrative exposure level of 200 mrem for the entire gestation period, not to exceed 50 mrem per month. If I choose instead to be considered a Radiation Worker, my annual administrative exposure level will be 4000 mrem.

NRC FORM 4
(6-92)
10 CFR PART 20

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0005
EXPIRES:

CUMULATIVE OCCUPATIONAL EXPOSURE HISTORY (rem)

1. NAME (LAST, FIRST, MIDDLE INITIAL)	2. IDENTIFICATION NUMBER	3. ID TYPE	4. SEX MALE / FEMALE	5. DATE OF BIRTH

6. MONITORING PERIOD		7. LICENSEE NAME		8. LICENSEE MUMBER		9. RECORD / ESTIMATE / NO RECORD	10. ROUTINE / PSE
11. DDE	12. LDE	13. SDE, WB	14. SDE, ME	15. CEDE	16. CDE	17. TEDE	18. TODE
6. MONITORING PERIOD		7. LICENSEE NAME		8. LICENSEE MUMBER		9. RECORD / ESTIMATE / NO RECORD	10. ROUTINE / PSE
11. DDE	12. LDE	13. SDE, WB	14. SDE, ME	15. CEDE	16. CDE	17. TEDE	18. TODE
6. MONITORING PERIOD		7. LICENSEE NAME		8. LICENSEE MUMBER		9. RECORD / ESTIMATE / NO RECORD	10. ROUTINE / PSE
11. DDE	12. LDE	13. SDE, WB	14. SDE, ME	15. CEDE	16. CDE	17. TEDE	18. TODE
6. MONITORING PERIOD		7. LICENSEE NAME		8. LICENSEE MUMBER		9. RECORD / ESTIMATE / NO RECORD	10. ROUTINE / PSE
11. DDE	12. LDE	13. SDE, WB	14. SDE, ME	15. CEDE	16. CDE	17. TEDE	18. TODE
6. MONITORING PERIOD		7. LICENSEE NAME		8. LICENSEE MUMBER		9. RECORD / ESTIMATE / NO RECORD	10. ROUTINE / PSE
11. DDE	12. LDE	13. SDE, WB	14. SDE, ME	15. CEDE	16. CDE	17. TEDE	18. TODE
6. MONITORING PERIOD		7. LICENSEE NAME		8. LICENSEE MUMBER		9. RECORD / ESTIMATE / NO RECORD	10. ROUTINE / PSE
11. DDE	12. LDE	13. SDE, WB	14. SDE, ME	15. CEDE	16. CDE	17. TEDE	18. TODE

19. SIGNATURE OF MONITORED INDIVIDUAL	20. DATE SIGNED	21. CERTIFYING ORGANIZATION	22. SIGNATURE OF DESIGNEE	23. DATE SIGNED

EXPOSURE EXTENSION AUTHORIZATION

PART 1: REQUEST (Please Print)

NAME:_____ SSN:_____
(LAST) (FIRST) (MI)

BIRTHDATE:_____/_____/_____ (MM/DD/YY) AGE:_____

Individual's Requested Annual Limit: _____ (rem)

Justification for Extension:_____

_____

_____

Requested By:_____ Date:_____ Phone Ext:_____
(Supervisor or Designee)

Part 2: OBTAIN LIMITS AND MARGINS FROM RADIATION PROTECTION DOSIMETRY

TEDE (rem) Year:

Current Limit:_____ (rem)

Record Exposure:_____ (rem)

Estimated Exposure:_____ (rem)

Total Exposure:_____ (rem)

COMMENTS:_____

_____

Recommended Limit:_____ (rem)

_____ _____
Signature Date

Part 3: REQUESTING SUPERVISOR MUST OBTAIN APPROVAL SIGNATURES

Annual Limit Extension if ≤ 4000 mrem

_____ _____
Radiation Protection Manager Date

Annual Limit Extension > 4000 mrem

_____ _____
Plant Manager Date

Part 4: RADIATION PROTECTION DOSIMETRY

RP Signature/Date:

1. Verify that a current STA-655-8 and current year STA-655-1 is on file._____
2. Process TLD if margin within 200 mrem of requested limit. _____
3. Enter new limits in RP computer system. _____

NOTE: *The expiration of the extension is at the end of the current year.*

NRC/INPO
UNFETTERED ACCESS FORM

Part 1: To be completed by the Individual *(PLEASE PRINT CLEARLY)*

Name: _____ SSN: _____
Last First MI

Date of Birth: _____

Address: _____
Street Apt. Number

Sex: ☐ Male ☐ Female

_____ Est Annual Exp: _____ mrem
City State Zip Code

I certify that the information above is correct and I agree to abide by the procedures established at CPSES for unescorted access into an RCA. Also, I understand that my access will be granted with the following limitations:

My annual exposure limit is 500 mrem unless I submit current year exposure records and initiate STA-655-8 to Radiation Protection.

_____ _____
Signature of Individual ***Date***

I certify that a qualitative whole body count has been performed using a PM-7 for internal radioactive material and no alarms occurred.

_____ _____
Signature of Individual ***Date***

Part 2: To be completed by Radiation Protection

Radiation Worker Training Date:
- ☐ NRC Letter
- ☐ CPSES RWT
- ☐ Other: _____

☐ Quantitative WBC Performed
☐ Quantitative WBC Not Required

Completed By: _____ _____
Signature Date

Access Control:

If the Dosimetry Group is not available, give the individual a TLD and write the TLD # here: _____

Although a TLD is issued, the individual does not need an escort.
Use manual access control until the Dosimetry Group enters the individual into the RP computer system.

Part 3: To be completed by Dosimetry

Slot Number: _____ TLD Number: _____

Enter the individual into the RP computer system with a 500 mrem dose limit

Entry Completed By: _____ _____
Signature Date

Second Review By: _____ _____
Signature Date

BIOASSAY ANALYSIS REFUSAL

Name: _____ SSN: _____ Date: _____

Type of Analysis:
- ☐ Whole Body Count
- ☐ Urinalysis
- ☐ Other: _____

I have been requested to submit to the test specified above and have refused to have the analysis performed. I understand that the analysis is required by plant procedure (STA-655) and by the Code of Federal Regulations (10CFR20.1204). I also understand that my dosimetry will be removed from service and will not be reissued until written authorization has been received from the RPM.

_____
Signature Date

(Optional) I have refused the analysis for the following reasons:

_____

_____

_____

_____
Signature Date

The above named individual has refused to submit to the analysis listed above. He/she has been informed that this analysis is required by plant procedures and by 10CRF20. In addition, he/she has been made aware that his/her dosimetry will be removed and not reissued without the authorization of the Radiation Protection Manager.

_____
RP Supervisor (Dosimetry) Date

Authorization to Reissue Dosimetry

☐ Approved ☐ Denied

_____

_____

_____
Radiation Protection Manager Date

BIOASSAY ANALYSIS
WAIVER AND RELEASE OF CLAIMS

In exchange for good and valuable consideration, _____, acting for himself/herself and, to the fullest extent that he/she may lawfully do so, for his/her successors, assigns, and affiliates, and their respective successors, assigns, and affiliates, hereby agrees to release, acquit and forever discharge TU Electric and its officers, directors, shareholders, affiliates, agents, servants, and employees, as well as other TU Electric Company System companies and their respective officers, directors, shareholders, affiliates, agents, servants, and employees (hereinafter TU Electric), from and against any and all claims, losses, expenses, damages, demands, judgments, causes of action, suits, and liability in tort, contract, or any other basis and of every kind and character whatsoever, which _____ has held or may hold against TU Electric, arising out of or incident to, directly or indirectly, any and all radiation screening and activities related thereto, to include the use of whole body counters, performed by TU Electric at the request of _____.

By: _____

Date: _____

CPSES Training Extension Request

Please Print

Affected Individual: _____ SSN: _____
Last First MI

Requesting Supervisor: _____ Dept: _____ Mail Code: _____

Reason for requesting extension: _____

The extension of training may not exceed 30 days.

	Due Date:	Requested Extended Date:
☐ RPT	_____	_____
☐ RWT	_____	_____
☐ Maskfit	_____	_____

Requested by: _____ Date: _____
Supervisor

Forward to Radiation Protection Manager for Approval

Approved by: _____ Date: _____
Radiation Protection Manager

Forward Original to Dosimetry/Records for Disposition.

TLD ISSUE REQUEST

(PLEASE PRINT CLEARLY)

Full Legal Name: _____ (Last) _____ (First) _____ (MI)

☐ **Male** ☐ **Female** **Date of Birth** _____ **Age:** _____ **SSN:** _____ / _____ / _____

Company Name: _____ **Dept. Name:** _____

IN ACCORDANCE WITH 10CFR20.2104, I CERTIFY THAT I:

☐ **HAVE NOT** been monitored for occupational radiation exposure during the current calendar year.

☐ **HAVE BEEN** monitored for occupational radiation exposure during the current calendar year. (have received an NRC Form 5).

If you have been monitored for occupational radiation exposure during the current calendar year, then enter your estimated dose from your NRC Form 5 report:

_____ (mrem).

List current year employment involving radiation or radioactive materials, for which you DO NOT have records.

PLANT NAME	MONITORING PERIOD DATES (FROM)	(TO)	TEDE	RP USE ONLY		
				Request Letter Sent	Records Received	Records Updated

PLEASE COMPLETE ONE OF THE FOLLOWING:

1. ☐ I have never been monitored for occupational radiation exposure.
2. ☐ Documented Lifetime Exposure, Less Current Year: _____ rem
3. ☐ Estimated Lifetime Exposure, Less Current Year: _____ rem
4. ☐ I do not know my lifetime exposure

Whole Body Count Data

I certify that a qualitative whole body count has been performed using a PM-7 for internal radioactive material.

☐ **NO ALARM OCCURRED** ☐ **AN ALARM OCCURRED**

I certify that all information provided above is accurate and complete to the best of my knowledge and belief. I have provided an accurate current year estimated dose and an itemized current year Exposure Record, as applicable. If I have attached a Form 4, including a PADS Form 4, I have read, signed and dated the Form 4 and/or PADS Form 4 indicating it is correct to the best of my knowledge. I hereby authorize TXU/CPSES to use this information for controlling exposure I receive at CPSES.

_____ **Signature** _____ **Date**

THIS SECTION FOR RADIATION PROTECTION USE ONLY

☐ Verified Active on PADS TLD NUMBER: _____ SLOT NUMBER: _____ DCL: _____

COMMENTS: _____

TLD Issued By: _____ **DATE:** _____

Second Review By: _____ **DATE:** _____

MEDICAL TREATMENT EVALUATION

SECTION I Background Information

Name: _____ Date: _____

Social Security Number: _____

Supervisor's Name: _____ Phone: _____

Date of medical treatment: _____

Type of medical treatment: _____

Known administered radioisotopes: _____

Upon completion of Section 1 forward to Radiation Protection O05A

SECTION II Radiation Protection Recommendation

_____

_____

_____

_____

Restriction: _____ Date: _____

Radiation Protection Technician

Restriction Deletion: _____ Date: _____

Radiation Protection Technician

STA-655-9
Rev. 7

Declared Radiation Worker Agreement

Radiation Worker's Name: _____ **Tele:** _____
Last First MI

Department: _____ **Supervisor:** _____

Social Security #: _____ **Today's Date:** _____

- ☐ I wish to declare my pregnancy. My expected due date is: _____
- ☐ I wish to inform Radiation Protection of Delivery Date: _____ and to reinstate my admin exposure level.
- ☐ I wish to rescind my declaration of pregnancy.

Section I - Declared Radiation Worker Consultation

The following identified items have been discussed.

- ☐ Health risks to the embryo/fetus as a result of a radiation environment.
- ☐ Review of Regulatory Guide 8.13 requirements.
- ☐ Recommended administrative limits for the gestation period have been provided. (200 mrem for the gestation period)
- ☐ Acknowledgment of Training and Female Radiation Exposure Declaration at CPSES.

Section II - Declared Radiation Worker Agreement

- ☐ My questions regarding Declared Radiation Worker status have been answered.
- ☐ I have been informed of the effects of radiation on the embryo/fetus.
- ☐ I have been informed of the administrative dose levels to be used for the duration of my pregnancy and understand that it is my responsibility to keep my dose within these limits.

Signatures:

_____ _____
Radiation Worker Date

_____ _____
Individual's Supervisor Date

_____ _____
Personnel Representative Date

_____ _____
Radiation Protection Representative Date

_____ _____
Radiation Protection Manager Date

Section III - Disposition

Declared Radiation Worker administrative levels updated in the RP Computer System _____ _____
Initials Date

Planned Special Exposure

Name: _____ *SSN:* _____ *Ext:* _____
Last First Middle

Justification for PSE: _____

_____

_____

Supervisor: _____ *Co/Dept:* _____ *Ext:* _____
Last First Middle

Individual's Lifetime Dose: _____ *(rem)* *Maximum Allowable PSE:* _____ *(rem)*

Completed by: _____ *Date:* _____
Dosimetry Technician

Individual Briefed On:	*RP Initials*	*Individual's Initials*	*Date*
Pre-job Briefing	_____	_____	_____
Enter RWP# here: _____			
Purpose of Operation	_____	_____	_____
Estimated Dose and Potential Risks	_____	_____	_____
Specific Radiation Levels and Existing Conditions	_____	_____	_____

Estimated Planned Special Exposure (TEDE): _____ *(rem)*

Approved by: _____ *Date:* _____
Employer (if other than TU Electric)

Approved by: _____ *Date:* _____
Vice President of Nuclear Operations

	RP Initials	*Individual's Initials*	*Date*
Post-Job Debrief	_____	_____	_____

Comments: _____

_____

Final PSE Dose (TEDE): _____ *(rem)*

Completed by: _____ *Date:* _____
Dosimetry

Completed by: _____ *Date:* _____
Radiation Protection Manager

Statement of Unavailable Occupational Radiation Dose Records

In accordance with 10CFR20.2104 (c),

I, _____ , SSN _____ ,
Print Name

certify that the following information is correct and accurate to the best of my knowledge and may be used as a record of occupational radiation dose in lieu of NRC Form 5 documentation for the respective monitoring period.

Part I: CURRENT YEAR (rem)

Date Range From	To	Location	TEDE	TODE	LDE	SDE,WB	SDE,ME

Part II: LIFETIME

Dose: _____ rem

I understand that this document will be used as an official record of occupational radiation dose and that intentional falsification of occupational dose is considered a felony and the NRC may prosecute if the evidence is apparent.

Signature: _____ Date: _____

CPSES PROCEDURE CHANGE FORM

SECTION I

DATE 8/8/00 PREPARER DAN BARTON (PRINT NAME) EXT. 5121

PCN STA-656 RIC-2 /OTPCN NA ,WO# NA

TITLE Radiation Work Control

CHANGED PAGE NO(s). 12, 3, 11

CHANGE JUSTIFICATION To conform to changes made to STA-656 3 and Compute-RWP format

PREPARER (Signature/Date) Dan Barton 9-19-00

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-205, Attachment 8.B, do not require Technical Review or Safety Evaluation Screen.

TECHNICAL REVIEWER: Michael Mashe (Printed Name and Signature)

Date: ~~9-19-00~~ 9/19/00 EXT. 5095

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)

TRAINING/READING RECOMMENDED: YES ✓ NO ___ IF YES, THEN SPECIFY: RWP

SORC Meeting No. and Date (If Applicable) 00-039 10-05-00 EFFECTIVE DATE: 10-19-00

APPROVED BY: MC Blevins DATE: 10-5-00

(Signature) (Print name if not approval authority and change is editorial)

CPSES PROCEDURE CHANGE FORM

SECTION I

DATE *6-15-99* PREPARER *B. Knowles* (PRINT NAME) EXT. *5780*

PCN *STA-656-R10-01* /OTPCN *N/A* ,WO# *N/A*

TITLE *Radiation Work Control*

CHANGED PAGE NO(s). *2, and 20*

CHANGE JUSTIFICATION **STA-656 Revision 10 is being changed using PCN STA-656-R10-01 to reference the Improved Technical Specifications**

PREPARER (Signature/Date) B Knowles 6/15/99

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-205, Attachment 8.B, do not require Technical Review or Safety Evaluation Screen.

TECHNICAL REVIEWER: **John Blaikie** John M Blaikie (Printed Name and Signature)

Date: 6-16-99 EXT. 0844

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)

TRAINING/READING REQUIRED: YES___ NO_X_ IF YES, THEN SPECIFY: _____

SORC Meeting No. and Date (If Applicable) 99-029 06-24-99 EFFECTIVE DATE: 06-30-99

APPROVED BY: NR Bhuiyan (Signature) (Print name if not approval authority and change is editorial) DATE: 6.24.99

QUALITY RELATED

RADIATION WORK CONTROL

PROCEDURE NO. STA-656

REVISION NO. 10

SORC MEETING NO.: 98-035 DATE: 06-05-98

EFFECTIVE DATE: ~~06-22-98~~ DJ 7/1/98

9/12/98 DJ 9/8/98

PREPARED BY (Print): Mike Macha EXT: 5698

TECHNICAL REVIEW BY (Print): Deb O'Connor EXT: 6151

APPROVED BY: MR Blevins DATE: 6.8.98

PLANT MANAGER

1.0 PURPOSE

[C] The purpose of this procedure is to provide a method for the control of access to Radiologically Controlled Areas, provide exposure accountability and assure that radiological conditions are identified to Radiation Workers, Escorted Radiation Workers, and Visitors prior to access to the Radiologically Controlled Areas. (C-07325)

2.0 APPLICABILITY

This procedure is applicable to all personnel entering Radiologically Controlled Areas.

3.0 REFERENCES

3.1 CPSES, FSAR Section 12, Radiation Protection

3.2 EPP-116, Emergency Repair & Damage Control and Immediate Entries

3.3 STA-302, Station Records

3.4 STA-655, Exposure Monitoring Program

3.5 STA-657, ALARA Job Planning/Debriefing

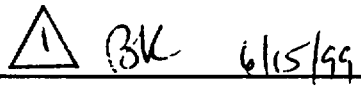
3.6 STA-902, Access to Protected and Vital Areas

3.7 CPSES Technical Specification 6.12.1 (ITS 5.7.1)

4.0 DEFINITIONS/ACRONYMS

4.1 Dose Margin - The amount of radiation exposure an individual may receive before reaching the most restrictive administrative level or federal limit.

4.2 Electronic Dosimeter - A device used to determine estimated dose. Except in unusual circumstances when record dose is required and TLD data is unavailable, all data determined by electronic dosimetry should be considered unofficial and/or estimated dose.



4.3 Escorted Radiation Worker - An individual who is not a qualified Radiation Worker, requires a qualified escort to gain access to CPSES radiologically controlled area(s) to perform work related to their employment.

4.4 General Access Permit (GAP) - A general radiation work permit issued to allow RCA entry for routine inspections, testing and equipment operation. General Access Permits are used only for areas where radiation hazards are known and not expected to change frequently or rapidly.

4.5 Monitoring - Use of a thermoluminescent dosimeter to quantify dose.

4.6 Occupational Dose - The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to sources of radiation and/or to radioactive material from licensed or unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research, or as a member of the public.

4.7 Personnel Contamination Monitors - (PCM) - Contamination monitors which in addition to identifying external contamination may be utilized for passive internal monitoring and performance of qualitative whole body counting.

4.8 PRISM - An acronym that means: Plant Reliability - an Integrated System of Management. This is the computer software program that is used as an aid to the administration, tracking and scheduling of maintenance, calibration, inspection, testing and approved modification activities.

4.9 Public Dose - The dose received by a member of the public from exposure to radiation and/or radioactive material released by a licensee or to any other source of radiation under the control of the licensee. This dose does not include occupational dose or doses received from background radiation, as a patient from medical practices, or from voluntary participation in medical research programs.

4.10 Qualitative Whole Body Count - An in-vivo measurement performed with a personnel contamination monitor as a screening process to identify the presence of radioactive material internally.

4.11 Quantitative Whole Body Count - An in-vivo measurement performed with the Chair or Stand-Up Whole Body Counter which provides isotopic identification and quantification of radioactive material for dose analysis.

4.12 Radiation Worker - An individual who may receive occupational dose and who is qualified for unescorted access to CPSES radiologically controlled area(s). Exposures to radiation workers should be determined by TLD and shall be reportable to the individual and to the NRC.

4.13 Radiation Work Permit (RWP) - A document issued for a specific task, job, or series of tasks specifying the radiological precautions to be followed while conducting the particular activity. Radiation Work Permits are used to provide accurate exposure usage accounting for specific tasks.

4.14 Radiologically Controlled Area (RCA) - Any area where access is controlled by the licensee for the purposes of protection of individuals from exposure to radiation and radioactive materials.

4.15 Visitor - A member of the public who is not assigned duties related to employment which may potentially involve radiation and/or radioactive material. Dose received by a member of the public cannot be permitted to exceed the public dose limit, even if the individual is receiving that dose while in a restricted area.

5.6 Escorted Radiation Workers

5.6.1 Responsible for providing information for completion of required data on STA-656-3, and STA-655-8 if applicable.

5.6.2 Responsible for providing current year exposure estimate.

5.6.3 Responsible for remaining with their escort at all times.

5.7 Escorts

5.7.1 Responsible for fulfilling those responsibilities of the escort as discussed in STA-902.

5.7.2 Responsible for ensuring that the Escorted Radiation Worker/Visitor receives the proper dosimetry from RP prior to entering the RCA.

5.7.3 Responsible for adhering to posted areas in regard to the restriction placed on escorted radiation workers or visitors (member of the public).

6.0 INSTRUCTIONS

6.1 Prerequisites

6.1.1 Eating, smoking, dipping, chewing or loitering in an RCA is prohibited. Drinking is allowed only when approved by the Radiation Protection Manager.

6.1.2 All routine entries into an RCA require an RWP/GAP.

6.1.2.1 Escorted Radiation Workers and Visitors are exempt from RWP/GAP requirements. Responsibilities for Escorted Radiation Workers and Visitors are specified in Section 6.5 and 6.7, respectively.

6.1.3 Entries to Radiologically Controlled Areas during accident or emergency conditions shall be in accordance with EPP-116.

6.1.4 Armed Security personnel responding to intruders should have unrestricted access:

6.1.4.1 The on-coming Security shift should obtain their TLD and a Pocket Ion Chamber prior to assuming a post.

6.1.4.2 In the event of a drill or actual intrusion by unauthorized personnel, responders may enter the RCA at any location without logging in.

6.1.4.3 After the drill or intrusion is terminated, responders should exit Unit 2 Access Control for manual dose tracking and contamination monitoring.

6.1.5 Personnel should not enter an RCA with open wounds, cuts or abrasions. If entry is necessary, a bandage shall be applied and Radiation Protection shall be notified of the injury prior to entry.

[C] 6.1.6 All permanent station personnel who are required to work in radiologically controlled areas (RCA's shall complete Rad Worker Training prior to their being allowed to work in RCA's. (C-00800)

6.2 Radiation Work Permits/General Access Permits

6.2.1 Any Organization responsible for work in an RCA should complete the appropriate portions of the Impact Screen in PRISM or have previous permission from Radiation Protection to assign a RWP/GAP number on the Work Order. The complete work package should be submitted at least 24 hours prior to job initiation as planning/scheduling allows, but preferably sooner to ensure adequate time for ALARA planning.

[C] 6.2.2 RWPs should have ALARA Planning in accordance with the requirements of STA-657. (C-00796)

[C] 6.2.3 An RWP/GAP should be initiated as necessary upon review of the Impact Screen in PRISM. An RWP/GAP number may be assigned at this time. (C-00796)

[C] 6.2.4 The RWPs are reviewed and approved by a Radiation Protection Supervisor, or designee. RWPs are reviewed and approved by the ALARA Coordinator or designee if ALARA planning is required. (C-00796)

[C] 6.2.5 GAPs are reviewed and approved by the Radiation Protection Manager or ALARA Coordinator. (C-00796)

6.2.6 The original RWP/GAP may be maintained in the Radiation Protection office. Copies of the RWP/GAP should be readily available for individuals to review.

[C] 6.2.7 If a RWP/GAP becomes invalid due to a change in radiological conditions, the RWP/GAP should be revised and reissued. (C-00796)

[C] 6.2.8 At the end of the job, Radiation Protection should terminate the RWP/GAP and transmit the original to Station Records in accordance with STA-302. (C-00796)

6.2.8.1 GAPs are normally active from date of initiation to December 31 of the respective year.

6.2.8.2 RWPs are active for the duration of the specific task, which includes any post work testing.

ES 7/19/00

6.3 General Access Control Requirements

6.3.1 Individuals entering the Radiologically Controlled Area should review the latest survey data for the work area and their respective RWP/GAP.

[C] 6.3.2 Access and egress to the primary RCA should be made through Access Control. (C-06591)

6.3.3 Individuals should limit the amount of paperwork taken into the RCA. Tools for use in the RCA are available from the Hot Tool Room. Tools obtained from facilities outside the RCA that are readily available from the hot tool room should not be taken into the RCA.

[C] 6.3.4 While in the RCA, protective clothing should be donned and removed as specified in STA-654, "Personnel and Discrete Radioactive Particle Contamination Control." (C-10819)

6.3.5 Individuals should frisk periodically while in the RCA and at any time contamination is suspect.

[C] 6.3.6 Individuals should release personal items from the RCA using the Small Article Monitors (SAM-9) located at Access Control. Any items left for release by Radiation Protection should be tagged, as necessary, with the appropriate department, contact and extension. (C-00816)

[C] 6.3.7 Potentially contaminated items should not be placed in individual's personal clothing to ensure proper monitoring is performed prior to exiting the RCA. (C-00816)

[C] 6.3.8 Individuals shall be monitored by a Personal Contamination Monitor or shall perform a whole body frisk prior to exiting the RCA at any point. (C-00816) (C-01811)

6.4 Processing Radiation Workers for RCA Access

6.4.1 Radiation Workers should obtain their TLD at the TLD Storage Racks on the 810' Hallway.

6.4.2 Radiation Workers should obtain an electronic dosimeter at Access Control.

[C] 6.4.3 Radiation Workers should log into the RP Computer System by: (C-01806)

6.4.3.1 Provide SSN BarCode for identification.

6.4.3.2 Provide TLD No. BarCode for verification

6.4.3.3 Specifying their RWP/GAP and Task numbers.

6.4.3.4 Providing the appropriate response to the electronic signature for RWP authorization.

6.4.3.5 Inserting their electronic dosimeter to set up parameters and reset the dosimeter.

6.4.4 Upon exit from the RCA, Radiation Workers should log out of the RP Computer System by:

6.4.4.1 Providing their SSN BarCode identification.

6.4.4.2 Inserting their electronic dosimeter to record dose and log off the system.

6.4.5 In the event of a RP Computer System failure, entry should be made using electronic dosimeters/PICs and manual entry.

6.5 Escorted Radiation Workers

[C] Individuals performing work inside an RCA should normally obtain Radiation Worker Training qualifications. Under unusual/extenuating circumstances, the individual may be allowed entry into the RCA as an Escorted Radiation Worker. (C-00786)

6.5.1 Individuals should not be granted Escorted Radiation Worker status without the authorization of a RP Supervisor or Qualified Radiation Protection Technician.

[C] 6.5.2 Escorted Radiation Workers shall be escorted at all times by a qualified Radiation Worker. (C-03943)

6.5.2.1 The qualified radiation worker performing escort duties may turn the Escorted Radiation Worker over to another qualified radiation worker in the field, without initializing any additional documentation.

6.5.3 Individuals should not be granted Escorted Radiation Worker status for jobs that require special dosimetry.

6.5.4 During emergencies, personnel from offsite agencies or unqualified site personnel should be allowed immediate access to the Radiologically Controlled Area as Escorted Radiation Workers. STA-656-3 should be completed immediately after the entry. Radiation Protection should provide a qualified Radiation Worker escort for emergency personnel entering the RCA. The whole body count requirement prior to RCA entry should be waived by the RP Supervisor or designee, as appropriate.

6.5.5 Deleted

△2

△2 ES 9/15/00

6.5.6 If the Escorted Radiation Worker requests that his exposure record be entered on PADS; he must sign an NEI standard consent form. The consent form should be stapled to Form STA-656-3 for dosimetry.

6.5.7 Escorted Radiation Workers shall complete Section I of Form STA-656-3. The individual should provide an estimate of current year exposure. Escorted Radiation Workers should have a qualitative whole body count performed using a PM-7 prior to entry into the RCA. Have the individual step into a PM-7 and document on the STA-656-3 Form that no alarms occurred. If the individual alarms the PM-7 a quantitative whole body count is required prior to RCA entry.

6.5.8 If an Escorted Radiation Worker declares her pregnancy, have her report to the PPC to complete the necessary paper work. RP (Dosimetry) should initiate an STA-655-8. RP (Dosimetry) should ensure the Escorted Radiation Worker understands the monitoring requirements in STA-655 and that she is responsible for adhering to the requirements.

6.5.9 Escorted Radiation Workers should NOT be allowed access to Locked High Radiation Areas or Very High Radiation Areas, unless sufficient training is provided or documented.

6.5.10 Escorted Radiation Workers should be limited to 100 mrem during the monitoring period. In the event pre-job dose estimates indicate a projected dose greater than 100 mrem, initiate restriction changes in accordance with Section 6.6, Restriction Changes for Escorted Radiation Workers.

6.5.11 Verify the individual does not already have a TLD assigned. Assign a TLD and record the TLD number on Form STA-656-3. Complete the TLD label with the individual's name and SSN.

6.5.12 Verify that Section I of STA-656-3 has been completed properly and brief the Escorted Radiation Worker on the radiological conditions in the area(s) to be entered. Complete Section II of STA-656-3.

2 FB 03/14/00

6.5.13 Radiation Protection should provide the Escorted Radiation Worker a copy of "Instructions for Radiation Workers Entering the CPSES Radiologically Controlled Area," Attachment 8.A.

6.5.14 If there are no restriction changes, then draw through Section III and "NA."

[C] 6.5.15 The Escorted Radiation Worker shall be issued an electronic dosimeter. (C-00297)

6.5.16 The Escorted Radiation Worker's name and SSN should be recorded on page 2 of STA-656-3. Each Access Event should be recorded on page 2 of Form STA-656-3.

1. Radiation Protection should record the following information for entry.

   - Escorted Radiation Worker's Name & SSN
   - Dose Level
   - Date
   - MG Serial Number
   - Time In/Dose Reading In
   - The Radiation Worker Escort should record SSN and sign their name

2. Radiation Protection should record the following information for exit:

   - Time Out/Dose Reading Out
   - The Escorted Radiation Worker should sign their name for dose verification purposes
   - Radiation Protection should initial entry as being complete and verified correct.
   - Radiation Protection should total the dose estimate and verify the escorted radiation worker's dose margin remaining.

6.5.17 STA-656-3 forms should be forwarded to Dosimetry for processing in accordance with STA-655 , Exposure Monitoring Program, to document the Escorted Radiation Worker's estimated dose.

6.6 Restriction Changes for Escorted Radiation Workers

6.6.1 Escorted Radiation Workers requesting restriction changes such as access to Contamination Areas, Airborne Radioactivity Areas, or to increase their Admin. Exposure Level, must have Section III of STA-656-3 completed. An RP Supervisor or designee should complete Section III of Form STA-656-3 by initializing each required change and signing the authorization line.

6.6.2 If the Escorted Radiation Worker's Administrative Exposure Level is increased to greater than 100 mrem, or if their current year estimate is greater that 2000 mrem then initiate STA-655-8.

6.6.3 The Escorted Radiaiton Worker should complete Form STA-655-8. Ensure the individual includes the required exposure data and that the form is signed and dated.

6.6.4 The individual should complete the Qualitative WBC Data portion of the form as well. This may be a duplicate signature/date from STA-656-3.

6.6.5 Staple STA-655-8 to the respective Form STA-656-3, for Dosimetry.

5.0 RESPONSIBILITIES

5.1 Radiation Protection Manager

[C] 5.1.1 Responsible for providing Radiation Work and General Access Permits for activities performed in Radiologically Controlled Areas. (C-00796)

[C] 5.1.2 Responsible for ensuring that current radiological information is available for Radiation Work and General Access Permits. (C-07325)

[C] 5.1.3 Responsible for supporting the Operations, Maintenance, and Engineering departments and provides radiation protection coverage for activities that involve exposure to radiation or radioactive material. (C-01151)

5.1.4 Responsible for maintaining this procedure current.

5.2 Responsible Organization

5.2.1 Responsible for requesting Radiation Work and General Access Permits for activities in RCA(s).

5.3 Nuclear Training Manager

5.3.1 Responsible for providing training to Radiation Workers on this procedure.

5.4 Radiation Workers

5.4.1 Responsible for reading and following the appropriate GAP/RWP.

5.5 Visitors (Member of the Public)

5.5.1 Responsible for providing information for completion of STA-656-6.

5.5.2 Responsible for remaining with their escort at all times.

6.7 Visitors

[C] 6.7.1 Visitors shall be escorted at all times by a qualified Radiation Worker while inside the Radiologically Controlled Area. (C-00786, C-03943)

6.7.2 Visitors should be limited to a deep dose equivalent of 20 mrem per calendar quarter.

6.7.3 Visitors shall not be allowed access to Contamination Areas, Airborne Radioactivity Areas, High Radiation Areas, Locked High Radiation Areas, or Very High Radiation Areas.

6.7.4 Visitors should not perform work.

[C] 6.7.5 Visitors shall wear an electronic dosimeter while in the Radiologically Controlled Area. A TLD is not required. (C-00297)

6.7.6 The visitor should print his/her name, Social Security number, and sign the signature block on STA-656-6.

6.7.7 The visitor's qualified Radiation Worker escort should print his/her name and sign the Escort's signature block on Form STA-656-6.

6.7.8 A qualified Radiation Protection Technician should log the date, electronic dosimeter number, Time In and Dose In, the appropriate section of STA-656-6.

6.7.9 Radiation Protection should issue an electronic dosimeter to the Visitor.

6.7.10 Radiation Protection should provide the Visitor a copy of "Instructions for Visitors Entering the CPSES Radiologically Controlled Area," Attachment 8.B.

6.7.11 When the Visitor exits the Radiologically Controlled Area, Radiation Protection should read the electronic dosimeter, inform the Visitor of his/her exposure (if any), enter the exit time, exit dose and total the dose on STA-656-6.

6.7.12 Form STA-656-6 does NOT require Radiation Protection Dosimetry review.

6.7.13 Upon completion of STA-656-6, Radiation Protection should forward the form to the Operations Records Center in accordance with STA-302.

6.8 Changing RWP/GAP in the RCA

6.8.1 At Radiation Protection's discretion, personnel anticipating the need to change from one RWP/GAP to another while inside an RCA may do so provided the following conditions are met:

1. The individual has reviewed the applicable RWP requirements prior to making the change.

2. The individual has attended any necessary pre-job briefs or mockup training.

3. The individual has followed normal entry/exit procedures at an island workstation of the RP Computer System within the RCA.

6.9 Other RCAs

[C] Alternate RCAs consisting of radiation and/or contamination areas may be established outside of the Primary Plant. Radiation Protection personnel are responsible for determining and posting the entry and exit requirements of the areas. As a minimum, the requirements shall include provisions for the use of an RWP/GAP. (C-06591)

6.10 Exposure Reports

Current total effective dose equivalent (TEDE) exposure is displayed by the RP Computer System for individual Radiation Workers upon entry and exit from the RCA. A hardcopy report of this data may be generated upon request.

7.0 FIGURES

None

8.0 ATTACHMENTS/FORMS

8.1 Attachments

8.A Instructions for Escorted Radiation Workers Entering the CPSES Radiologically Controlled Area

8.B Instructions for Visitors Entering the CPSES Radiologically Controlled Area

8.2 Forms

8.2.1 STA-656-2, Radiation Work Permit

8.2.2 STA-656-3, Escorted Radiation Worker Access Permit

8.2.3 STA-656-4, General Access Permit

8.2.4 STA-656-5, Authorized Access List

8.2.5 STA-656-6, Visitor Access Log

9.0 RECORDS

When completed, the following forms, reports, or other documents generated in response to this procedure shall be dispositioned in accordance with STA-302, "Station Records."

9.1 STA-656-2, Radiation Work Permit

9.2 STA-656-3, Escorted Radiation Worker Access Permit

9.3 STA-656-4, General Access Permit

9.4 STA-656-5, Authorized Access List

9.5 STA-656-6, Visitor Access Log

ATTACHMENT 8.A
PAGE 1 OF 3

INSTRUCTIONS FOR ESCORTED RADIATION WORKERS ENTERING THE CPSES RADIOLOGICALLY CONTROLLED AREA

[C] 1. You shall be escorted by a qualified Radiation Worker at all times. (C-00796)

[C] 2. You shall be issued an electronic dosimeter and TLD. The electronic dosimeter and TLD should be worn on the upper front of your body between the head and the waist unless instructed by a Radiation Protection Technician to wear it in another location. The clip should be placed in the back. (C-00297)

3. You should be limited to a dose of 100 mrem for the duration of your visit unless you have requested a change in Radiation Worker Status by completing Forms STA-656-3, and STA-655-8.

4. If at any time, you lose, misplace or damage your electronic dosimeter or TLD, you should report directly to your escort and then immediately return to Access Control.

5. If at any time, you receive a dose alarm indication on your electronic dosimeter you should report immediately to Radiation Protection at the Access Control office.

[C] 6. Areas of the facility where radiation or radioactive materials are present are marked with a magenta and yellow sign containing the standard three bladed radiation symbol. You and your escort shall obey such postings as you travel through the plant. Your escort may have access to areas which you do not have access. (C-10860)

[C] 7. You shall NOT enter any of the following radiologically posted areas without the express written authorization (Restriction Changes) from Radiation Protection: Contamination Areas or Airborne Radioactivity Areas. Remember that your escort may have access to these areas but you do not. If you or your escort have questions concerning entry to posted areas, contact Radiation Protection at extension 8081 or on the plant page system. (C-10860)

ATTACHMENT 8.A
PAGE 2 OF 3

INSTRUCTIONS FOR ESCORTED RADIATION WORKERS
ENTERING THE CPSES RADIOLOGICALLY CONTROLLED AREA

8. In accordance with T.S. 6.12.1 (ITS 5.7.1), an escorted radiation worker is exempt from RWP requirement(s) during the performance of assigned duties in high radiation areas, provided they follow plant procedures for entering into a high radiation area(s). These requirements have been incorporated in plant procedures. Therefore, adherence to plant procedures will meet the intent of the Technical Specifications.

9. Under NO circumstances should an Escorted Radiation Worker enter a Locked High Radiation Area or Very High Radiation Area unless sufficient training is provided or documented.

10. You shall NOT eat, smoke, dip or chew in the RCA. Drinking is allowed only when approved by the Radiation Protection Manager.

Effects of Radiation Exposure

While it is generally accepted in the scientific community that exposure to low levels of ionizing radiation is safe, T.U. Electric is firmly committed to keeping exposure to radiation as low as reasonably achievable. Should you have questions on the effects of radiation, please contact a member of the Radiation Protection staff.

Pre-natal Radiation Exposure

The Nuclear Regulatory Commission has prescribed that the radiation dose to an unborn child as a result of exposure to the mother not exceed 500 millirem for the gestation period. If you are pregnant, or think you might be pregnant, and wish to formally declare your pregnancy, notify Radiation Protection before you enter the RCA and initiate STA-655-10. In addition, R.G. 8.13, Instruction Concerning Prenatal Radiation Exposure, should be provided to the individual prior to entering the radiologically controlled area, whether or not a declaration is made.

1 BVC 6/15/99

ATTACHMENT 8.A
PAGE 3 OF 3

INSTRUCTIONS FOR ESCORTED RADIATION WORKERS ENTERING THE CPSES RADIOLOGICALLY CONTROLLED AREA

Emergencies

Should an abnormal event occur resulting in an emergency, your escort is trained to handle the situation. Your first indication will be one of several loud siren-like alarms. The alarm signal shall identify the type of emergency and dictate the actions your escort will take. If there is a building evacuation in the RCA, your escort will direct you to the designated assembly area where you should await further instructions.

Violations and Suggestions

[C] If during your employment at the site, you observe a situation which appears to be a violation of federal laws, or which causes unnecessary exposure of individuals to radiation, please bring it to the attention of your escort. (C-10860)

ATTACHMENT 8.B
PAGE 1 OF 2

INSTRUCTIONS FOR VISITORS ENTERING THE CPSES RADIOLOGICALLY CONTROLLED AREA

[C] 1. You shall be escorted by a qualified Radiation Worker at all times. (C-00786)

[C] 2. You shall wear an electronic dosimeter. (C-00297)

3. You should be limited to a dose of 20 mrem for the duration of your visit.

4. The electronic dosimeter should be worn on the upper front of your body between the head and the waist. The clip should be placed in the back.

5. If at any time, you receive an alarm indication on your electronic dosimeter, you should contact Radiation Protection at extension 8081.

6. If at any time, you lose, misplace, or damage your dosimeter you should report directly to your escort and then immediately return to Radiation Protection at Access Control.

[C] 7. Areas of the facility where radiation or radioactive materials are present are marked with a magenta and yellow sign containing the standard three bladed radiation symbol. You and your escort shall obey such postings as you travel through the plant. (C-10860)

[C] 8. You shall NOT enter any of the following radiologically posted areas: High Radiation Area, Locked High Radiation Area, Very High Radiation Area, Contamination Area, or Airborne Radioactivity Area. If you or your escort have questions concerning entry to posted areas contact Radiation Protection at extension 8081 or on the plant page system. (C-10860)

9. You shall NOT eat, smoke, dip or chew in the RCA. Drinking is allowed only when approved by the Radiation Protection Manager.

ATTACHMENT 8.B
PAGE 2 OF 2

INSTRUCTIONS FOR VISITORS
ENTERING THE CPSES RADIOLOGICALLY CONTROLLED AREA

Effects of Radiation Exposure

While it is generally accepted in the scientific community that exposure to low levels of ionizing radiation is safe, TU Electric is firmly committed to keeping exposure to radiation as low as reasonably achievable. Should you have questions on the effects of radiation, please contact a member of the Radiation Protection staff.

Pre-natal Radiation Exposure

The Nuclear Regulatory Commission has prescribed that the radiation dose to an unborn child as a result of exposure to the mother not exceed 500 millirem for the gestation period. If you are pregnant, or think you might be pregnant, and wish to formally declare your pregnancy, notify Radiation Protection before you enter the RCA and initiate STA-655-10. In addition, R.G. 8.13, Instruction Concerning Prenatal Radiation Exposure, should be provided to the individual prior to entering the radiologically controlled area, whether or not a declaration is made.

Emergencies

Should an abnormal event occur resulting in an emergency, your escort is trained to handle this situation. Your first indication will be one of several loud siren-like alarms. The alarm signal shall identify the type of emergency and dictate the actions your escort will take. If there is a building evacuation in the RCA, your escort will direct you to the designated assembly area where you should await further instructions.

Violations and Suggestions

[C] If during your employment at the site, you observe a situation which appears to be a violation of federal laws, or which causes unnecessary exposure of individuals to radiation, please bring it to the attention of your escort. (C-10860)

CPSES PROCEDURE CHANGE FORM

SECTION I

DATE 11-23-98 PREPARER JOHN BLAIKIE (PRINT NAME) EXT. 0844

PCN STA-656-5 RS-1/OTPCN N/A, WO# N/A

TITLE STA-656-5 REV 5 PCN 1; CPSES RADIOLOGICALLY CONTROLLED AREA AUTHORIZED ACCESS LIST

CHANGED PAGE NO(s). 1

CHANGE JUSTIFICATION EDITORIAL CHANGE TO MAKE FORM CONSISTENT WITH PROCESS OF ENTERING DATA

PREPARER (Signature/Date) John Blaikie 11-23-98

If change is editorial, THEN circle or mark "YES". (YES)

Editorial changes, as limited by STA-205, Attachment 8.B, do not require Technical Review or Safety Evaluation Screen.

TECHNICAL REVIEWER: N/A (Printed Name and Signature)

Date: N/A EXT. N/A

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: ~~N/A~~ (Printed Name and Signature)

Date: ~~N/A~~ EXT. ~~N/A~~

SHIFT or UNIT SUPERVISOR: ~~N/A~~ (Printed Name and Signature)

Date: ~~N/A~~ EXT. ~~N/A~~

REMARKS ~~N/A~~

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
~~N/A~~	~~N/A~~	
	~~N/A~~	

TRAINING/READING REQUIRED: YES X NO ___ IF YES, THEN SPECIFY: Required reading for all RP Technicians

SORC Meeting No. and Date (If Applicable) N/A

EFFECTIVE DATE: 11-25-98

APPROVED BY: SCOTT BRADLEY Scott E Bradley (Signature) (Print name if not approval authority and change is editorial) DATE: 11/23/98

CPSES RADIATION WORK PERMIT

RWP NUMBER	TASK NUMBER	REVISION	BUILDING	ELEVATION	AREA
1998-1009	1	00	XX	XX	XX

RWP TITLE EXAMPLE RWP TITLE

TASK TITLE EXAMPLE TASK

WORK DESCRIPTION EXAMPLE RWP DESCRIPTION

MAX RADIATION LEVELS (mrem / hr) 00 @CONTACT 00 @12" 00 GENERAL AREA

CONTACT RP FOR CURRENT RADIOLOGICAL CONDITIONS!!!

RWP CATEGORY / TYPE	ROUTINE / PSE	ALARMS (mR)		ACCRUED		ESTIMATE	
ROUTINE / RWP	ROUTINE	DOSE:	100	DOSE(R):	0.000	DOSE(R):	10.00
		RATE:	100	HOURS:	0	HOURS:	1000

DOSIMETRY REQUIREMENTS

JOB COVERAGE REQUIREMENTS

START OF JOB

WORKER INSTRUCTIONS

SAMPLE

PROTECTIVE CLOTHING REQUIREMENTS

COMMENTS

PREPARED BY / DATE

JMB - 10/19/98

APPROVED BY / DATE

EXPIRATION DATE

12/31/98

TERMINATED BY / DATE

ESCORTED RADIATION WORKER ACCESS PERMIT

Section I: **To be completed by the Escorted Radiation Worker or Work Group** **(PRINT CLEARLY)**

Name:_____ SSN:_____
LAST FIRST MI

Address:_____ SEX: ☐ Male ☐ Female
Street Apt. Number

_____ Date of Birth:_____ Age:_____
City State Zip Code

Reason for requesting Escorted Radiation Worker status: _____

Estimated duration of visit:_____

Company:_____ Phone No._____ Currest Year Exposure Est. _____ mrem

I have received a copy of Instruction for Escorted Radiation Workers Entering the CPSES Radiologically Controlled Area. I certify that a qualitative whole body count has been performed using a PM-7 for internal radioactive material.

No Alarm Occurred____ Alarm Occurred____

_____ _____
Escorted Radiation Worker Signature Date

Declaration of Pregnancy: ☐ **No** ☐ **N/A** ☐ **Yes** **If Yes contact Dosimetry**

Section II: To be completed by Radiation Protection
ESCORTED RADIATION WORKER - 100 MREM PER MONITORING PERIOD, THIS SITE ONLY. **RP Initials**

1. **Verify the individual does not already have another TLD issued during this monitoring period.** _____
2. **Verify the individual has properly completed ALL BLANKS in Section I, USING BLACK INK.** _____
3. **Verify the individual has received a briefing on the radiological conditions for the work area.** _____
4. **Assign a TLD number: _____. Complete a TLD label** _____

Section III: RESTRICTION CHANGES - To be completed by RP Supervisor or designee ONLY when NEEDED.

_____ **Authorized to enter Airborne Areas.** _____ **Authorized to enter Contaminated Areas.**

Administrative Exposure levels raised to _____ **mrem**

Restriction Changes Approved By:_____ _____
RP Supervisor or Designee **Date**

Section IV: Exposure Records **RP Intitals**

1. **Verify current year exposure estimate. If > 2000 mrem, contact Dosimetry and initiate STA-655-8.** _____
2. **Verify the Admin. Exposure Level. If > 100 mrem, Initiate STA-655-8.** _____

TLD Issued By:_____ _____
RP Signature **Date**

Section V: RECORD OF DOSE - To be completed by Dosimetry

RP Initials

1. **Input the individual into the RP computer system.** _____
2. **Total the electronic dosimeter doses on the back of this form.** _____
3. **Write the individual's name in the Termination Log Book.** _____
4. **Second review performed by:** _____
5. **Compare the estimated dose to the TLD dose. TLD Dose:**_____**mrem**

Completed By:_____ _____
Signature **Date**

ESCORTED RADIATION WORKER ACCESS PERMIT

ESCORTED RAD WORKER'S NAME:_____ SSN:_____

ACCESS CONTROL - To be completed by Radiation Protection Technician

SECTION I:
1. Admin. Exposure Level _____ mrem
2. Document each entry into and exit from the RCA.
3. Issue an electronic dosimeter.
4. Maintain this form until end of monitoring period.

DATE	INITIATING ESCORT'S SIGNATURE SSN	MG Serial No.	TIME IN	TIME OUT	DOSE READING IN	DOSE READING OUT	[1]ESCORTED RADIATION WORKER SIGNATURE	RP TECH INIT

[1]Signature indicates individual is cognizant of assigned estimated dose.

TOTAL

NOTE TO ACCESS CONTROL:
Verify dose margin prior to each entry.

COMANCHE PEAK STEAM ELECTRIC STATION
GENERAL ACCESS PERMIT

GAP NUMBER:	VALID	
JOB CLASSIFICATION:	FROM: / /	TO: / /
LOCATION:		
WORK DESCRIPTION:		

ENTRY INTO THE FOLLOWING AREAS IS PROHIBITED UNDER THIS GAP:
EXCEPTIONS / CONDITIONS:

GAP REQUIREMENTS
REMARKS AND SPECIAL INSTRUCTIONS:

PREPARED BY: _____ RADIATION PROTECTION		DATE ___/___/___
APPROVED BY: _____ RADIATION PROTECTION MANAGER		DATE ___/___/___
CANCELLED : _____ RADIATION PROTECTION SUPERVISOR		DATE ___/___/___

CPSES RADIOLOGICALLY CONTROLLED AREA AUTHORIZED LIST

NAME (Printed) / Signature	SSN	PIC or MG#	RWP/ TASK	ENTRY			EXIT			RPCS UPDATED (INITIAL/DATE)
				DATE	TIME	DOSE	DATE	TIME	DOSE	
			/							
			/							
			/							
			/							
			/							
			/							
			/							
			/							
			/							
			/							
			/							

NOTE: For RCA entry, your signature acknowledges that you have read, understand, and will comply with the requirements of the listed RWP/GAP and TASK and the CPSES policy to maintain exposure ALARA.

1 11-23-98

Visitor Access Log

Visitor's Name (Printed) Social Security Number Visitor's Signature	Current Address City, State ZIP	Escort's Name (Printed) Escort's Signature	Date Dosimeter #	Time In	Dose In	Time Out	Dose Out	Total Dose

STA-656-6
Rev. 1

CPSES PROCEDURE CHANGE FORM

SECTION I

DATE *6/15/99* PREPARER *B. Knowles* (PRINT NAME) EXT. *5780*

PCN *STA-660-R7-02* /OTPCN N/A ,WO# N/A

TITLE *Control of High Radiation Areas.*

CHANGED PAGE NO(s). *2, and 11*

CHANGE JUSTIFICATION **STA-660 Revision 7 is being changed using PCN STA-660-R7-02 to reference the Improved Technical Specifications and also add a clarifying statement to Attachment 1 to allow Locked High Radiation Areas to be locked using security locks when a boundary door is a security door.**

PREPARER (Signature/Date) 6/15/99

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-205, Attachment 8.B, do not require Technical Review or Safety Evaluation Screen.

TECHNICAL REVIEWER: **John Blaikie** (Printed Name and Signature)

Date: 6-16-99 EXT. 0844

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: (Printed Name and Signature)

Date: EXT.

SHIFT or UNIT SUPERVISOR: (Printed Name and Signature)

Date: EXT.

REMARKS

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)

TRAINING/READING REQUIRED: YES___ NO_X_ IF YES, THEN SPECIFY:

SORC Meeting No. and Date (If Applicable) 99-029 06-24-99 EFFECTIVE DATE: 06-30-99

APPROVED BY: DATE: 6.24-99
(Signature) (Print name if not approval authority and change is editorial)

CPSES PROCEDURE CHANGE FORM

SECTION I

DATE *9-24-98* PREPARER *B. Knowles* (PRINT NAME) EXT. 5780

PCN *STA-660-R7-01* /OTPCN N/A ,WO# N/A

TITLE *Control of High Radiation Areas.*

CHANGED PAGE NO(s). *4, 6, 7, and 8*

CHANGE JUSTIFICATION **STA-660 Revision 7 is being changed using PCN STA-660-R7-01 to allow Locked High Radiation Areas to be locked using security locks when a boundary door is a security door. This change also removes all references to Operations responsibilities. The Operations department requirements for obtaining a key will be satisfied by Radiation Protection personnel providing a "Rad key" when emergency access is needed to a Locked High Radiation Area.**

PREPARER (Signature/Date) BKnowles 10/2/98

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-205, Attachment 8.B, do not require Technical Review or Safety Evaluation Screen.

TECHNICAL REVIEWER: Scott E Bradley Scott E Bradley (Printed Name and Signature)

Date: 9/24/98 EXT. 5495

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)

TRAINING/READING REQUIRED: YES *X* NO___ IF YES, THEN SPECIFY: _____

Required reading for all Radiation Protection, Nuclear Training, EP, and Chemistry personnel qualified to perform job coverage during entry into a Locked High Radiation Area.

SORC Meeting No. and Date (If Applicable) 98-049 10-02-98 EFFECTIVE DATE: 10/6/98

APPROVED BY: DR Moore D.R. MOORE FOR MRR DATE: 10/2/98 (Signature) (Print name if not approval authority and change is editorial)