UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	
TEXAS UTILITIES GENERATING COMPANY, et al.	)	Docket Nos. 50-445 50-446
	)	
(Comanche Peak Steam Electric Station, Units 1 and 2)	)	

AFFIDAVIT OF ROGER E. LINNEMANN, M.D.
CONCERNING INTERVENORS' CONTENTION 22 ON
EMERGENCY PLANNING

My name is Roger E. Linnemann, M.D. My business address is 3508 Market Street, Philadelphia, Pennsylvania, 19104. A statement of my educational and professional qualifications is attached hereto as Attachment A. I am Vice-Chairman of Radiation Management Corporation (RMC), which provides Texas Utilities Generating Company (TUGCO) with emergency medical assistance in the event of an accident at the Comanche Peak Steam Electric Station (CPSES). The purpose of my affidavit is to discuss subparts (c), and (e) of Intervenor's Contention 22 on emergency planning, which read as follows:

> c. There is no discussion of the arrangements for services of physicians and other medical personnel qualified to handle radiation emergencies and arrangements for the

transportation of injured or contaminated individuals beyond the site boundary.

e. There is no provision for medical facilities in the immediate vicinity of the site, which includes Glen Rose.

Contention 22.c relates to two aspects of emergency planning, viz., arrangements for medical services for radiation emergencies and arrangements for transportation of injured or contaminated individuals beyond the site boundary. Contention 22.e relates to the provisions for medical facilities near the site.

Sections 1.3.1.4 and 10.0 of the CPSES Emergency Plan describe the medical support services. A copy of the Plan is attached to the Affidavit of Richard A. Jones that is being filed simultaneously herewith.

Hood General Hospital in Granbury, Texas, located approximately sixteen road miles from CPSES, is the primary facility for treatment of radiological injuries resulting from an emergency at CPSES. TUGCO has obtained a Letter of Agreement from Hood General Hospital to receive and treat injured persons who are contaminated with radioactive material or who have an overexposure requiring medical evaluation. A copy of the Letter of Agreement is included in the CPSES Emergency Plan at Section 15, Appendix H. Backup medical services, support, and definitive care are provided through a Letter of Agreement with the Radiation Management Corporation and its

affiliation with a medical center for definitive care at Northwestern Memorial Hospital in Chicago. A copy of the Letter of Agreement between RMC and Northwestern Hospital is attached hereto as Attachment B. A copy of the Letter of Agreement between RMC and TUGCO is found at Appendix H to Section 15.0 of the CPSES Emergency Plan. Injured persons whose medical treatment is not complicated by radiological considerations may be sent to either Hood General Hospital or Marks English Hospital, which is approximately eight road miles distant, in Glen Rose, Texas. (CPSES Emergency Plan, §§ 1.3.1.4, 10.0, and 15.0 Appendix H)

Hood General Hospital serves as the local support hospital for contaminated victims, providing gross decontamination, life saving activities, and patient stabilization. In the event a victim requires more definitive evaluation and treatment, the individual may be sent to the Radiation Management Corporation facilities at Northwestern Memorial Hospital in Chicago. Capabilities at the Northwestern Memorial Hospital include a fully equipped radiosurgery suite, reverse isolation units, facilities for white cell transfusion, bone marrow transfusion, and chromosome analysis. (CPSES Emergency Plan §§ 1.3.1.4, 10.0, 15.0 Appendix H)

Transportation of a radiologially injured patient to Chicago will be arranged by RMC with private surface and air transportation services. Appropriate protective measures (such as isolated transportation, if necessary, and attendance by technicians trained in transporting and handling radiologically

contaminated patients) will be instituted by RMC and TUGCO.

Additional support provided by RMC includes around-the-clock, seven-day-per-week availability of expert consultation and services of a radiation emergency medical team consisting of a licensed physician experienced in radiation medicine, a certified health physicist, and technicians with portable instruments to respond to an accident victim at CPSES or Hood General Hospital as requested by TUGCO. RMC will provide the services of its bioassay laboratory and whole body counting facility if requested. RMC will also conduct a semi-annual review of plant and hospital procedures; provide annual training for plant, ambulance, and hospital personnel involved in the radiation emergency medical program; preparation of a radiation accident scenario, coordination of a medical emergency drill, and evaluation reports. Additionally, RMC will conduct an annual seminar on management of radiation accidents for physicians and other medical personnel. (CPSES Emergency Plan § 1.3.1.4, 10.0, 15.0 Appendix H).

Under the county emergency operations plan, the Hood County Hospital Administrator is responsible for coordinating medical care and treatment for injured individuals (both contaminated and non-contaminated) with local medical facilities, establishing medical care and treatment centers if needed, maintaining medical records, establishing resupply requirements, providing emergency medical care to persons in shelters, and establishing triage centers if necessary. (Hood County Plan, § VI(10)). This is detailed further in Annex F, Section V(J), the

"Hood County Fixed Nuclear Facility Response Plan", a copy of which is attached to the Affidavit of Richard A. Jones as Attachment B. In addition, specific procedures to be followed by the hospital/emergency medical group are provided in Section IV of the "Manual of Emergency Procedures for Incidents Involving the Comanche Peak Steam Electric Station" as an Appendix to the County Fixed Nuclear Facility Response Plan. These procedures include specific instructions to the Hospital Administrator and procedures to be followed in the event of an Unusual Event, an Alert, a Site Area Emergency, and a General Emergency at CPSES. The Somervell County-City of Glen Rose Emergency Operation Plan (Section VI(9)), Fixed Nuclear Facility Response Plan (Annex F, Section V(J)), and Manual of Emergency Procedures (Section IV) contain provisions for hospital and medical personnel in Somervell County similar to those for Hood County. A copy of the Somervell County Plans and Procedures is attached to Mr. Jones Affidavit as Attachment B.

TUGCO has obtained written agreements with the Glen Rose/Somervell County Volunteer Fire Department Ambulance Service and the Hood General Hospital Ambulance Service to provide back-up assistance to TUGCO for transporting injured and contaminated victims for medical assistance. A copy of those agreements are included in the CPSES Emergency Plan at Section 15.0 Appendix H. The CPSES Plan is being submitted as Attachment A to Mr. Jones Affidavit. Hood General Hospital Ambulance Service can provide one ambulance with an emergency medical technician and paramedic and Somervell County can provide one ambulance. A TUGCO ambulance

is available at CPSES to transport injured personnel, who may also be radiologically contaminated, to the appropriate medical facility. RMC will train and exercise ambulance service personnel in the transportation and handling of radiologically injured patients. CPSES Emergency Plan § 15.0 Appendix H. CPSES Emergency Plan Procedure, EPP-308, "Transporting of Contaminated Injured Personnel" describes the specific requirements for transporting injured and contaminated victims. (CPSES Emergency Plan §§ 1.3.1.3, 10.2, 15.0 Appendix H).

Contention 22.e raises concern about the adequacy of medical facilities in the immediate vicinity of the site, including the City of Glen Rose. As previously stated, arrangements have been made and agreements obtained with the Hood County General Hospital and Radiation Management Corporation to provide medical care for contaminated, injured personnel from CPSES. (CPSES Emergency Plan § 15.0 Appendix H). These are the primary facilities for care of radiologically contaminated persons from CPSES. Injured individuals who are not radiologically contaminated may receive care at the Marks English Hospital in Glen Rose and contaminated individuals, once decontaminated, could be transferred to Marks English Hospital for treatment of non-radiological injuries. (CPSES Emergency Plan §§ 1.3.1.4, 10.1, 15.0 Appendix H).

In summary, arrangements for transporting injured or contaminated individuals and for qualified medical services to handle radiation emergencies are adequate and capable of being implemented.

Roger E. Linnemann, M.D.

STATE OF PENNSYLVANIA
COUNTY OF _____

Subscribed to and sworn
before me, this _____
day of August, 1982.

_____
Notary Public

My Commission expires:

SHELLY KOFFLER
Notary Public, Phila., Phila Co.
My Commission Expires March 23, 1985

ATTACHMENT A

CURRICULUM VITAE

ROGER E. LINNEMANN, M.D.
Vice Chairman
Radiation Management Corporation

SUMMARY

EDUCATION: My education is in medicine and science. I am a graduate of the University of Minnesota Medical School, with an internship and residency in radiology at Walter Reed Army Hospital, Washington, D.C.

PROFESSIONAL LIFE: My professional life has been devoted to the field of ionizing radiation with special interest in the evaluation and treatment of radiation injuries and radiation health and safety. My research activities include the use of protective agents against radiation injury and the use of radioactive isotopes in the evaluation of renal disease. I spent twelve years in the U.S. Army Medical Corps in clinical medicine, research and command operational activities concerned with the organization of medical facilities on a nuclear battlefield. I have academic and teaching appointments at the University of Pennsylvania School of Medicine and the Northwestern University Medical School. My bibliography includes over 20 articles on radiation.

MANAGEMENT: My management experience comes from the organization and development of Radiation Management Corporation (RMC), a business corporation incorporated in the State of Pennsylvania in 1969. RMC provides an emergency medical response capability for nuclear facilities in twelve states, as well as routine consulting and laboratory services in radiation health and safety, waste disposal, radiation and non-radiation environmental problems. As Chief Executive Officer I am responsible for the total operation, development and planning of RMC. Presently RMC has sales over $6 million, employs 160 people and has seven offices throughout the United States.

SPECIAL INTERESTS: My personal interest has always been in foreign activities. While in the U.S. Army, I lived in Germany for seven years. I was a U.S. delegate to NATO Medical and Radiation Committees. I taught a seminar in German at the University of Freiburg in 1967. I studied the Russian language for three years. On numerous occasions I was asked to participate in conferences on radiation at the International Atomic Energy Agency in Vienna. Since I have been with Radiation Management Corporation I have been invited to numerous countries (Germany, Sweden, Spain, Korea, Japan) to conduct seminars and consult on radiation health matters.

ROGER E. LINNEMANN, M.D.
Vice Chairman
Radiation Management Corporation
3508 Market Street
University City Science Center
Philadelphia, PA 19104
(215)243-2950

EDUCATION

University of Minnesota, Minneapolis, MN; B.A. (Cum Laude) 1952

University of Minnesota, Minneapolis, MN; B.S., M.D. 1956

Walter Reed Army Hospital, Washington, D.C.; INTERNSHIP 1956-1957

Walter Reed Army Hospital, Washington, D.C.; RESIDENCY (Radiology) 1962-1965

****

Certified by American Board of Radiology 1964

Certified by American Board of Nuclear Medicine 1972

Licensed to practice Medicine in 1) Commonwealth of Pennsylvania; 2) Illinois; and 3) Minnesota

****

Sandia Base, New Mexico; Nuclear Weapons Orientation Course 1961

Walter Reed Army Institute of Research, Washington, D.C.; Medical Aspects of Nuclear Warfare 1962

US Department of Agriculture Graduate School (Evening), Washington, D.C. Russian Language 1963-1965

****

PROFESSIONAL EXPERIENCE

1981-present	Vice Chairman and Chief Medical Officer, Radiation Management Corporation
1969-1981	President/Chief Executive Officer, Radiation Management Corporation
1974-present	Clinical Associate Professor of Radiology, University of Pennsylvania School of Medicine
1977-present	Visiting Associate Professor, Clinical Radiology, Northwestern University Medical School
1969-1974	Assistant Professor, Clinical Radiology, University of Pennsylvania School of Medicine
1968-1969	Nuclear Medicine Consultant, Philadelphia Electric Company

PROFESSIONAL EXPERIENCE (Continued)

Jan-Aug 1968 — Assistant Professor, Radiology, University of Minnesota School of Medicine investigated use of isotopes in kidney function evaluation)

1957-1968 — Employed by United States Army ....

1965-1968: Commanding Officer, Nuclear Medicine Research Detachment, Europe; Radiological Health Consultant, US Army-Europe. (responsible for plans, procedures and training of military hospitals and personnel in the evaluation, evacuation and treatment of radiation casualties. In January, 1966 sent to Palomaris, Spain for evaluation of medical and environmental aspects of the mid-air collision involving nuclear weapons)

1961-1962: Research Associate, Department of Radiobiology, Walter Reed Army Institute of Research, Washington, D.C. (investigated use of anti-radiation drugs in treatment of cancer)

1957-1961: General Medical Officer, Europe

Languages: German, Russian

****

PROFESSIONAL APPOINTMENTS

1979-present — Health Physics Society Standards Committee

1978-present — General Dynamics Electric Boat Division Radiological Health Consultant

1978-present — Edison Electric Institute Utility Radiation Standards Group

1973-present — University of Pennsylvania Radiation Safety Committee

1973-present — The Atomic Industrial Forum, Inc. Public Affairs & Information Committee

1970-present — The American Nuclear Society Subcommittee for Writing Emergency Procedures Standards

1969 & 1975 — Atomic Energy Commission ad hoc Committee on Medical Aspects of Radiation Accidents

1966-present — American College of Radiology ....

1969-present Commission on Radiologic Units, Standards and Protection
1969-present Committee on Radiation Exposure of Women
1969-present Committee on Radiological Aspects of Disaster Planning
1967-1978 International Affairs Committee

1965-1968 — U.S. Delegate to NATO Radiation Protection Committee & Medical Aspects of Nuclear Warfare Committee

PROFESSIONAL APPOINTMENTS (Continued)

1971-present — Department of Defense & Environmental Protection Agency
Medical Liaison Officer's Network (MLON)-State of Pennsylvania Representative

****

PROFESSIONAL MEMBERSHIPS

American College of Radiology
American Public Health Association
American Medical Association
Society of Nuclear Medicine
Philadelphia Roentgen Ray Society
Pennsylvania Medical Society
College of Physicians of Philadelphia
Radiological Society of North America, Inc.
American Institute of Physicists/American Association of Physicists in Medicine
American College of Nuclear Physicians
American Council on Germany
Union League of Philadelphia

****

AWARDS & HONORS

1978 — Association of Medicine & Security, Madrid, Spain
(Honorary Member)

1968 — University of Minnesota Radiological Research Scholar
(National Research Council)

1968 — United States Army Legion of Merit

****

PRESENTATIONS

1980 — Korea Women's Association (Seoul, Korea)
presented paper, "Energy: The Basis for Health in Developing and Developed Countries", at International Symposium on the Expulsion of Environmental Pollution

1980 — Korean Association for Radiation Protection (Seoul, Korea)
presented seminar on emergency management of radiation injuries

1980 — Ministry of Health (Madrid, Spain)
presented paper, "Definitive Treatment of Radiation Injuries", at First Seminar on Assistance to Those Wounded by Radioactive Elements and Ionizing Radiations

PRESENTATIONS (Continued)

1979 Reinisch-Westfalisches Elekrizitatswerk (Essen, Germany) presented paper, "Energy: The Basis for Health in Developing and Developed Countries", at The Seventh Energy Workshop

1978 The Swedish State Power Board (Vallingby, Sweden) presented seminar, "Management and Treatment of Radiation Injuries", and conducted radiation emergency medical exercise at the Ringhauls Nuclear Power Plant

1978 Deutsche Gesellschaft fur Wiederaufarbeitung (Hannover, Germany) appeared before the Prime Minister and Parliament of Lower Saxony as an International expert to testify on the safety of a reprocessing plant at Gorleben, Germany

1978 International Atomic Energy Agency (Vienna, Austria) presentation at Symposium on Late Effects of Ionizing Radiation

1978 Associacion de Medicina y Seguridad en el Trabajo de Unesa para la Industria Electrica (Madrid, Spain) presented one-day seminar entitled, "Primary Management of Radiation Injury"

1977 International Atomic Energy Agency (Vienna, Austria) presented paper, "Emergency Medical Assistance Programs for Nuclear Power Reactors", at Symposium on Handling of Radiation Accidents

1967 University of Freiburg Institute of Radiobiology (Freiburg, Germany); presented seminar on diagnosis and treatment of radiation injuries

PROFESSIONAL TESTIMONY

in progress	Southern California Edison Company Emergency Planning Hearings for the San Onofre Nuclear Generating Station
in progress	Florida Power & Light Company Turkey Point Steam Generator Repair Hearings
in progress	Pennsylvania Power & Light Company Susquehanna Steam Electric Station Operating License Hearings
in progress	John Benek v. Pennsylvania Power Company et al. #199 of 1977 Eminent Domain
1979	Gorleben Nuclear Fuels Reprocessing Plant Hearings before the Prime Minister and Parliament of Lower Saxony, Hannover, Germany
1979	Florida Power & Light Company Turkey Point Nuclear Station Operating License Hearings
1971	Long Island Lighting Company Shoreham Nuclear Power Station Operating License Hearings
1970	Baltimore Gas & Electric Company Calvert Cliffs Nuclear Power Plant Operating License Hearings
1970	Northeast Utilities Service Company Millstone Nuclear Power Station Operating License Hearings

PUBLICATIONS

1. Linnemann, Roger E. "Berlin: The Young-Old City". Senior Citizen (September 1961)

2. Linnemann, Roger E. "This Way to Berlin". The American Benedictine Review:14, No. 4 (December 1963)

3. Linnemann, Roger E. "The Acute Radiation Syndrome and its Impact on the Chain of Evacuation". Medical Bulletin, U.S. Army Europe:22, No. 12 (December 1965)

4. Linnemann, Roger E. and Robert T. Wangemann. "Medical Support of Nuclear Weapons Accidents". Medical Bulletin, U.S. Army Europe (November 1967)

5. Linnemann, Roger E. and O. Messerschmidt. *"Erholungsvorgaenge bei Grosstieren nach Ganzkoerperbestrahlung"*, :dem 6, Jahrbuch von der vereinigung Duetscher Strahlenschutzaerzte (1968)

6. Linnemann, Roger E. "Command Radiation Guidance". Military Medicine: 33, pp. 771-716 (September 1968)

7. Loken, Merle K., Linnemann, Roger E. and George S. Kush. "Evaluation of Renal Function Using a Scintillation Camera and Computer". Radiology: 93, No. 1, pp. 85-94 (July 1969)

8. Linnemann, Roger E., Loken, Merle K. and Colin Markland. "Computerized Compartmental Renograms to Study Kidney Function". Journal of Urology: 103, pp. 533-537 (May 1970)

9. Linnemann, Roger E. and J.W. Thiessen. "Regional Approach to the Management of Radiation Accidents". Journal of the American Public Health Association: 61, No. 6, pp. 1229-1235 (June 1971)

10. Linnemann, Roger E. and Robert H. Holmes. "Nuclear Accidents and Their Management". Emergency Medical Care, pp. 281-292, Spitzer, Stanley and Wilbur W. Oaks (eds.) New York: Brune and Stratton, Inc. (1971)

11. Linnemann, Roger E., Rasmussen, N.C. and F.K. Pittman. Nuclear Energy: Issues and Answers. Atomic Industrial Forum, Inc. in cooperation with Pennsylvania Power & Light Company (April 1973)

12. Linnemann, Roger E. "Accentuate the Positive". Trial: 10, No. 4, p. 13 (July/August 1974)

13. Linnemann, Roger E. "Accentuate the Positive". Congressional Record: 109, pp. 4964-4967. Washington, D.C." United States of America Proceedings and Debates of the 93rd Congress, Second Session (July 23, 1974)

14. Linnemann, Roger E. and J.W. Thiessen. Editorial, "In Defense of Radiation and Cells". The New York Times (May 23, 1974)

(Continued)

Roger E. Linnemann - Publications

15. Linnemann, Roger E. Nuclear Radiation and Health. Springville, NY Nuclear Fuel Services, Inc. (September 23, 1974)

16. Linnemann, Roger E. Editorial, "In Defense of Nuclear Power Plants", The Philadelphia Inquirer, p. 11A (March 6, 1975)

17. Linnemann, Roger E. "Nuclear Power Plants Pose Minimal Health Risks", Perspective. News Bureau of the University of Pennsylvania, Philadelphia, PA (February 1975)

18. Linnemann, Roger E. "Medical Aspects of Power Generation". Impulse. Massachusetts: Electrical Council of New England (June 1975)

19. Linnemann, Roger E. "Bugs in the Nuclear Fuel Cycle". Spectrum, p. 59, Gadi Kaplan (ed.) Piscataway, NJ: The Institute of Electrical and Electronic Engineers, Inc. (September 1975)

20. Linnemann, Roger E. and Fred A. Mettler, Jr. "Emergency Medical Assistance Programs for Nuclear Power Reactors". International Atomic Energy Agency Symposium on the Handling of Radiation Accidents, IAEA-SM-215/22, Vienna Austria (1977)

21. Linnemann, Roger E. "Why ALARA?" Transactions of 1979 American Nuclear Society Conference, Atlanta, GA (June 3-7, 1979), Vol. 32, TANS AO 32 1 832 ISSN 0003-018x (1979)

22. Linnemann, Roger E., Hackbarth, C.J. and Ray Crandall. "The Contaminated and Injured Patient". Proceedings of Twenty-fourth Annual Meeting of the Health Physics Society, July 9-13, 1979 (Philadelphia, PA)

23. Linnemann, Roger E. "The Three Mile Island Incident in 1979: The Utility Response". The Medical Basis for Radiation Accident Preparedness, K.F. Hubner and S.A. Fry (eds.), Elsevier/North-Holland, pp. 501-509 (1980)

24. Linnemann, Roger E. "Initial Management of Radiation Injuries". Journal of Radiation Protection, 5, No. 1, pp. 11-25 (December 1980)

25. Linnemann, Roger E. "Facilities for Handling the Contaminated Patient". Radiation Accident Preparedness: Medical and Managerial Aspects, Science-Thru-Media Company: New York (1980)

26. Linnemann, Roger E. "A Systems Approach to the Initial Management of Radiation Injuries". Systems Approach to Emergency Medical Care, Appleton-Century-Crofts: New York (1980)

27. Linnemann, Roger E., Stephen M. Kim and Frazier L. Bronson. "Three Mile Island: Medical and Public Health Aspects of a Radiation Accident". Journal of Radiation Protection, 6, No. 1, pp. 45-52 (October 1981)

Northwestern Memorial Hospital

ATTACHMENT B

A consolidation of
Chicago Wesley and Passavant
Memorial Hospitals

Prentice Women's Hospital and Maternity Center
Institute of Psychiatry

Superior Street and Fairbanks Court
Chicago, Illinois 60611
312 649-2000

May 20, 1982

Roger E. Linnemann, M.D.
President
Radiation Management Corporation
Suite 400
3[illegible]8 Market Street
Philadelphia, PA 19104

Dear Dr. Linnememann:

Northwestern Memorial Hospital agrees to accept referrals for the evaluation and treatment of radiation injuries from Radiation Management Corporation (RMC) and/or the nuclear power plants currently associated with RMC's Emergency Medical Assistance Program (list attached). The clinical management and decisions regarding the need for hospitalization and/or other treatment shall be under the direction of W. Harrison Mehn, M.D.

Northwestern Memorial Hospital has and will maintain the clinical and medical capability to treat persons injured as a result of overexposure to ionizing radiation, which includes but is not limited to controlled patient environment, bone marrow transplant, white cell transfusions, karyotyping and a radiosurgery decontamination unit. Northwestern Memorial Hospital agrees to make these special facilities and equipment available for radiation injury victims referred to Northwestern Memorial Hospital by RMC and/or its participants in their Emergency Medical Assistance Program. Northwestern Memorial Hospital agrees to continue the integration of these facilities into its regular teaching and hospital care program.

Further, Northwestern Memorial Hospital will maintain a Radiation Emergency Coordinating Committee and hold an annual meeting to review accident cases and update knowledge regarding radiation injuries and procedures. Northwestern Memorial Hospital will hold an annual training and drill for its staff in the care of the radioactively contaminated patient and evaluation of overexposure to radiation injuries.

It is understood that RMC will assist Northwestern Memorial Hospital in maintaining its capabilities to handle radiation injuries and provide consultation and laboratory radiation injuries.

This agreement shall remain in effect until terminated by sixty days notice given by Northwestern Memorial Hospital or Radiation Management Corporation.

Sincerely,

George L. Heidkamp
Executive Vice President

GLH/bl

cc: W. Harrison Mehn, M.D.

EMERGENCY MEDICAL ASSISTANCE PROGRAM CLIENTS

Baltimore Gas & Electric Company
Cleveland Electric Illuminating Company*
Commonwealth Edison Company (6 sites)
Detroit Edison Company*
General Public Utilities (2 sites)
Georgia Power Company (2 sites)
Illinois Power Company
Indiana & Michigan Electric Company
Long Island Lighting Company
Mississippi Power & Light Company
Niagara Mohawk Power Corporation
Northeast Utilities Service Company (2 sites)
Pennsylvania Power & Light Company
Philadelphia Electric Company (2 sites)
Public Service Electric & Gas Company (2 sites)
Public Service Company of Indiana*
Rochester Gas & Electric Corporation
Southern California Edison Company
Texas Utilities Service Company*
Union Electric Company*

*denotes utilities with reactors in the construction phase who have indicated participation as the reactors are activated

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	
TEXAS UTILITIES GENERATING COMPANY	)	Docket Nos. 50-445
	)	50-446
	)	
(Comanche Peak Steam Electric Station, Units 1 and 2)	)	

NOTICE OF APPEARANCE

Notice is hereby given that the undersigned attorney herewith enters an appearance in the captioned matter. In accordance with 10 C.F.R. § 2.713, the following information is provided:

Name - Jeb Curtis Sanford

Address - Debevoise & Liberman
1200 Seventeenth Street, N.W.
Washington, D.C. 20036

Telephone - (202) 857-9800

Admission - Supreme Court of Texas

Jeb C. Sanford

Jeb C. Sanford

Dated at Washington, District of Columbia this 23rd day of August, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	
TEXAS UTILITIES GENERATING COMPANY, et al.	)	Docket Nos. 50-445 50-446
	)	
(Comanche Peak Steam Electric Station, Units 1 and 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "Applicants' Motion for Summary Disposition of Intervenor's Contention 22 Regarding Emergency Planning", "Applicants' Statement of Material Facts Not Genuinely in Issue", "Affidavit of Richard A. Jones Concerning Intervenor's Contention 22 on Emergency Planning", "Affidavit of Bobby T. Lancaster Concerning Intervenor's Contention 22 on Emergency Planning", "Affidavit of Roger E. Linnemann, M.D. Concerning Intervenors' Contention 22 on Emergency Planning", and "Notice of Appearance", in the above-captioned matter were served upon the following persons by hand delivery (*) or by overnight express (+) or by deposit in the United States Mail, first class postage prepaid, this 23rd day of August, 1982:

*Marshall E. Miller, Esq.
Chairman, Atomic Safety and Licensing Board
U.S. Nuclear Regulatory
Washington, D.C. 20555

+Dr. Kenneth A. McCollom
Dean, Division of Engineering Architecture and Technology
Oklahoma State University
Stillwater, Oklahoma 74074

*Dr. Richard Cole, Member
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Chairman, Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Lucinda Minton, Esq.
Atomic Safety & Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Marjorie Ulman Rothschild, Esq.
Office of the Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Chairman, Atomic Safety and
Licensing Appeal Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

David J. Preister, Esq
Assistant Attorney General
Environmental Protection
Division
P.O. Box 12548
Capitol Station
Austin, Texas 78711

*Mr. Scott W. Stucky
Docketing & Service Branch
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

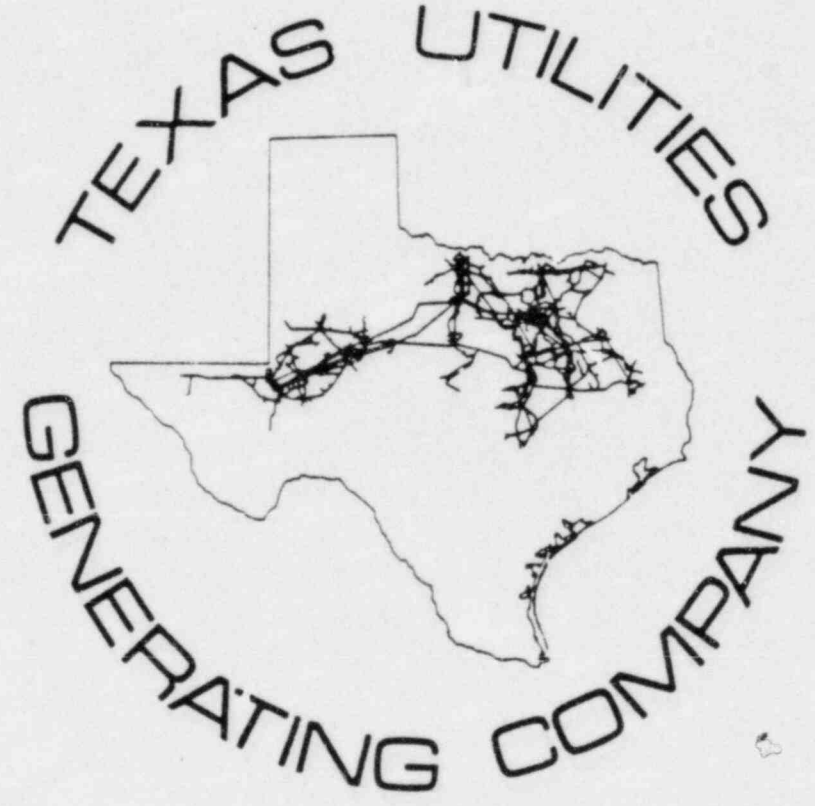
+Mrs. Juanita Ellis
President, CASE
1426 South Polk Street
Dallas, Texas 75224

Jeb C. Sanford

cc: Homer C. Schmidt
Spencer C. Relyea, Esq.

ATTACHMENT A

COMANCHE PEAK STEAM ELECTRIC STATION



EMERGENCY PLAN

0218

COMANCHE PEAK STEAM ELECTRIC STATION

EMERGENCY PLAN

(CPSES/EP)

Approved: R. A. Jones
Manager, Plant Operations

Date: 5/13/82

Revision 3

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*EOS - End of the Section

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LIST OF FIGURES

EP/FSAR TABLE AND FIGURE CROSS REFERENCE

The following Emergency Plan Tables and Figures are subject to change. Refer to the appropriate Table or Figure in the CPSES Final Safety Analysis Report if more detail is required.

EP	FSAR
Table 6.1 (6 Sheets)	Table 12.3-8 (6 Sheets)
Table 6.2 (4 Sheets)	Table 11.5-1 (4 Sheets)
Table 6.3 (1 Sheet)	Table 12.5-1 (1 Sheet)
Table 6.4 (1 Sheet)	Table 12.5-2 (2 Sheets)
Table 6.6 (1 Sheet)	Table 7.2-3 (3 Sheets)
Table 6.7 (9 Sheets)	Table 7.5-1 (9 Sheets)
Table 6.8 (10 Sheets)	Table 7.5-2 (13 Sheets)
Figure 6.1	Figure II.A.1.2-2
Figure 6.2	Figure 11.5-1
Figure 6.3	Figure 3.7B-54
Figure 6.4 (Sheet 1)	Figure 9.5-38
Figure 6.4 (Sheet 2)	Figure 9.5-39
Figure 6.4 (Sheet 3)	Figure 9.5-40
Figure 6.4 (Sheet 4)	Figure 9.5-41

PREFACE

The objective of the Comanche Peak Steam Electric Station (CPSES) Emergency Preparedness Program illustrated by the Emergency Plan is to protect the health and safety of the general public, persons temporarily visiting or assigned to the station, and station employees in the event of an emergency at the Station. To meet this objective, this Plan creates a high order of preparedness and ensures an orderly and timely decision-making process in times of stress. Emphasis is placed on maintaining emergency preparedness through training, exercises, and drills. It further assures the availability of equipment, supplies, and essential services. This Plan also provides for the coordination of onsite and offsite emergency response efforts.

Specific details for the execution of the Emergency Plan are incorporated into implementing procedures, referred to as Emergency Plan Procedures. While this document outlines the overall aspects of emergency planning, the Emergency Plan Procedures contain specific individual responsibilities and detailed instructions for accomplishing specific tasks. A list of the Emergency Plan Procedures is contained in Section 15.0, Appendix K.

The Emergency Plan provides the direction and coordination of the Emergency Organization. Emergency Plan Procedures are used to detail the various job functions in support of the Emergency Plan and to assure a smooth transition from a normal mode to an emergency mode. The assignment of key personnel and alternates to the job functions is discussed in this Emergency Plan. Additional assistance is provided to the onsite group by offsite company personnel, local, state, and federal agencies, and contract personnel as required.

The normal organization of station personnel is discussed in Section 1.0 of this Plan, describing and assigning the immediate onsite positions of responsibility, and noting the authority and responsibility for declaring an emergency. Upon the declaration of an Emergency Action Level, the individuals in the normal operating organization assume responsibilities in the Emergency Organization.

Selected criteria are established to promptly determine the Emergency Action Level. The Emergency Action Levels for CPSES are Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency. The degree of involvement of onsite, local, state, and federal

personnel is dependent upon the declared Emergency Action Level. At the least severe end of the emergency spectrum, Notification of Unusual Event, the situation may have no potential for escalation to a more severe emergency condition and there may be no effect on the Station operating status. The response to this situation should involve only onsite personnel and would not necessitate the mobilization of the offsite Emergency Organization. If the emergency falls in a classification such that offsite consequences may require protective action, then local, state, federal agencies, and additional company personnel would be involved as described in this Plan to assist in the mitigation of the emergency. Activation of the Offsite Emergency Organization will be initiated in the event of an Alert condition or higher.

This plan does not address itself to operation of the station equipment as this is adequately covered in operating, abnormal operating, and emergency operating procedures. This Plan and its implementing procedures are designed so that they do not interfere with the objectives of the Security Plan. The CPSES Emergency Plan is designed to complement Appendix 7 to Annex L of the Texas Emergency Management Plan and to interface with the Hood and Somervell County Emergency Operations Plans.

The Comanche Peak Steam Electric Station Emergency Plan is designed to provide guidance when confronting an emergency. The Emergency Plan Procedures provide guidance and specific information to ensure the purpose of the Emergency Plan is achieved. The Emergency Plan reflects management's recognition of a need to cope with a broad spectrum of potential consequences and prescribes the actions necessary for onsite personnel to activate support groups and establish communications in a timely manner to protect the public and this station.

1.0 ORGANIZATION

The Comanche Peak Steam Electric Station Organization is structured to form either the normal operating organization or the CPSES Emergency Organization. In support of this organization there are offsite emergency groups formed by the Texas Utilities Corporate structure, and the local, state and federal governments. The functional interfaces among these organizations are illustrated in Figure 1.1. The responsibilities of each agency and key individuals are delineated below.

1.1 NORMAL OPERATING ORGANIZATION

The CPSES staff organization is shown in Figure 1.2. The Manager, Plant Operations is in charge of CPSES and is responsible for its operation. In his absence, one of the following persons will assume the responsibility for the operation of the Station.

Operations Superintendent

Engineering Superintendent

Maintenance Superintendent

Administrative Superintendent

During backshift and weekend periods when the above personnel are not onsite, the Shift Supervisor is responsible for all activities at CPSES. Figure 1.3 illustrates the TUGCo Nuclear Organization which provides support and training to the CPSES staff organization.

1.2 CPSES EMERGENCY ORGANIZATION

In the event of an emergency situation, the Shift Supervisor is the individual responsible for initiating the CPSES Emergency Plan in accordance with procedures and as he deems appropriate. He shall endeavor to maintain the Station in a safe condition, take action to protect the health and safety of the public and the Station personnel, and call for assistance as needed or as required by the Plan. At the onset of an emergency situation, the Shift Supervisor, who is onsite 24 hours per day, is designated the Emergency Coordinator and serves in this capacity until relieved by the Manager, Plant Operations or a designated alternate. Station personnel who are members of the Emergency Organization are notified as specified in the Emergency Plan Procedure EPP-203 "Emergency Notification and Communications" and

EPP-204 "Emergency Facility Activation". These procedures provide the notification instructions and emergency facility staffing requirements pursuant to the declared Emergency Action Level.

An up-to-date call list is maintained in the Control Room, Technical Support Center (TSC), Emergency Operations Facility (EOF), and the Central Alarm Station (CAS). Other call lists used to notify offsite officials and request offsite assistance are maintained in EPP-203 "Emergency Notification and Communications". The CPSES Emergency Organization, shown in Figure 1.4, illustrates the overall organizational structure. Table 1.2 lists the emergency functions and illustrates a graded emergency organization response for each Emergency Action Level. The emergency facilities are described in Section 6.0.

1.2.1 CPSES EMERGENCY ORGANIZATION - RESPONSIBILITIES AND AUTHORITIES

1.2.1.1 Emergency Coordinator

The Emergency Coordinator has the responsibility and authority for continued evaluation, coordination and control of all onsite activities related to an emergency until the recovery organization is formed. The responsibilities assigned to the Emergency Coordinator are:

a. Assess the plant status and determine the required Emergency Action Level.

b. Notify the NRC, DPS in Waco, and any other emergency organizations as appropriate.

c. Activate and direct the CPSES Emergency Organization.

d. Establish and maintain communications with the offsite emergency operations centers. Also provide utility contact for those Federal, State, and Local authorities who will be at the EOF.

e. Ensure that the CPSES Emergency Organization is fully and correctly staffed.

f. Evaluate the offsite radiological conditions in order to recommend evacuation or other protective actions to the offsite authorities.

g. Promptly notify the State and/or local officials of the projected dose to the population-at-risk based on the Emergency Action Level.

h. Personnel accountability with the assistance of Security and each department supervisor or senior individual.

i. Designate personnel within the organization to maintain logbooks of significant events, actions and data.

j. Authorize all re-entries into evacuated onsite areas.

k. Concurs with all public information and/or news media releases made from CPSES.

l. Supports and assists efforts by Federal, State and local personnel both at the EOF and at the various other emergency operations centers.

m. Coordinates all offsite CPSES emergency response activities with those activities conducted onsite.

n. If the EOF is activated, he directs those activities conducted from the EOF.

The Emergency Coordinator shall not delegate his decision making authority for notifying or making recommendations to the offsite authorities concerning evacuation or other protective actions, or for re-entering evacuated onsite areas.

The line of succession for the Emergency Coordinator when the Manager, Plant Operations is unavailable is as follows:

Engineering Superintendent

Maintenance Superintendent

Operations Superintendent

Operations Engineer

Shift Supervisor, on duty

For each Emergency Action Level (EAL), an individual is assigned the position of Emergency Coordinator (E.C.). The initial E.C. is the Shift Supervisor, regardless of the EAL. When the emergency escalates, the other emergency facilities are activated accordingly and the duties and responsibilities of the E.C. are transferred to the facility manager as soon as practical. The transfer is consummated by an exhange of information between the emergent E.C. and the current E.C. concerning current reactor status and mitigating actions taken or in process. The Emergency Coordinator shall retain these responsibilities until the Recover Organization is functional and a similar exchange occurs between the E.C. and the Recovery Manager.

1.2.1.2 Communications Coordinator

Emergency Communications consists of telecommunications to and from onsite and offsite response organizations that are pertinent to the mitigation of the emergency. These communicatons shall be logged for the purposes of collecting and preserving historical information. A description of the communications system is in Section 4 "Emergency Communications".

An individual in each CPSES emergency response facility, designated as a communicator by that facility manager shall handle emergency communications. The responsibilities of the communicators as specified in EPP-203 "Notification and Communications" include: coordinating onsite communications, maintaining communications with the principle offsite response organizations, logging communications, seeking additional assistance and equipment through the Emergency Coordinator and assisting the facility manager as necessary. This procedure also provides support organization call lists, emergency message formats for use by the communicators and explanations on the operation of the equipment. Control room personnel make the initial contact with the offsite response organizations as prescribed by the notification procedure and as instructed by the Emergency Coordinator. Upon activation of the TSC and EOF, the primary communications responsibility shall transfer to these facilities with the EOF ultimately becoming the communications center. To facilitate communications, the communicator in the EOF shall be the Communications Coordinator. Communicators in the other facilities shall continue as instructed by the facility manager.

Functions of the EOF Communications Coordinator include:

a. Coordinating and directing the activities of those communicators stationed at the EOF.

b. Ensuring that communications procedures are properly implemented and that records of incoming and outgoing messages are maintained by CPSES emergency response personnel.

c. Ensuring that communications within the CPSES Emergency Response Organization and with the Federal, State, and local emergency response organizations are maintained.

d. Initiating requests for any assistance required for the repair and maintenance of communications equipment through the Logistical Support Coordinator.

e. Initiating requests for additional communications equipment required through the Logistical Support Coordinator.

f. Providing general support to the Emergency Coordinator as required.

1.2.1.3 Public Information Coordinator

The Public Information Coordinator is responsible for and has the authority to coordinate information releases made to the news media. The Public Information Coordinator may also handle rumors. He reports to the EOF during a Site Area or General Emergency. The official company spokesman at CPSES shall be the Manager, Nuclear Operations or his designated alternate. Procedure EPP-212 "Release of Emergency Related Information to the Public", provides instructions to the Public Information Coordinator concerning the notification of the news media, arranging press releases and coordinating the information to be released with corporate, Federal, State and local public information personnel.

The Public Information Coordinator assists the Emergency Coordinator in the following items:

a. Activates the Media Center.

b. Formulates all TUGCo news releases concerning the emergency condition, insuring that they are up-to-date and technically accurate; and assists the CPSES spokesperson in their presentation.

c. Coordinates news releases and rumor control activities with county and state public information personnel.

d. Coordinates with the Emergency Coordinator to obtain approval for all news releases.

e. Arranges and coordinates any press conferences conducted at the Media Center.

f. Acts as a liaison between CPSES and Corporate public information personnel.

1.2.1.4 Security Supervisor

The Security Supervisor is responsible for and has the authority to coordinate the following security activities:

a. Security of the entire plant site.

b. The movement and badging of all personnel entering the site to provide support.

c. Ensure that all non-essential site personnel are evacuated and that unauthorized personnel cannot enter the site.

d. Assist with the implementation of any security requirements imposed upon offsite support required by the plant (e.g. medical or fire).

e. Coordinate the assembly and accountability of personnel at the designated plant assembly point.

f. Initiate personnel accountability procedures and maintains accountability records during the emergency.

g. Coordinate search and rescue efforts with the Operational Support Center (OSC) Supervisor.

Security personnel are responsible for maintaining station security, for controlling site and vital area access and for maintaining personnel accountability information. Selected security personnel are members of the station fire fighting team.

The Security Supervisor or his designated alternate may contact the local or state law enforcement agencies as necessary. A Security Coordinator is the primary alternate to the Security Supervisor. Their emergency duty station is the EOF during a Site Area or General Emergency.

1.2.1.5 Logistics Support Coordinator

The Administrative Superintendent is responsible for and has the authority to implement the following functions:

a. Coordinates, directs and responds to requests for administrative and logistical assistance from the CPSES Response Organization.

b. Coordinates recall and deployment of administrative support personnel as needed to respond to the emergency.

c. Ensures that the general needs of emergency response personnel are met (e.g., communications and equipment repair, food, sleeping facilities, office supplies, etc.).

d. Ensures the timely completion of all offsite logistical assistance provided in support of emergency response and recovery efforts.

e. Supervises and coordinates the retrieval of drawings and documents for the CPSES Emergency Organization.

f. Ensures that onsite records management support and recordkeeping efforts are being carried out.

g. Arranges transportation and temporary housing for support personnel as needed.

h. Aids emergency communications personnel in obtaining additional communications equipment as needed.

Administrative personnel shall be available to temporarily relieve members of the CPSES Emergency Organization. Also, they shall be available as necessary to operate communications and office equipment. Administrative personnel are individuals from the accounting and warehouse groups and from the secretarial pool.

The alternate for the Administrative Superintendent is the Administrative Supervisor. The Logistical Support Coordinator reports to the EOF during a Site Area or General Emergency.

1.2.1.6 Radiation Protection Coordinator

The Radiation Protection Coordinator has the responsibility and the authority to exercise the following functions:

a. Provide environmental, radiological, and health physics support to the emergency response effort.

b. Coordinate the TUGCo onsite and offsite radiological monitoring efforts.

c. Ensure that emergency sampling, radiological monitoring, radiological safety, bioassay, access control, and decontamination procedures are properly implemented.

d. Ensure that personnel radiation exposures are maintained in accordance with plant administrative limits and 10 CFR, Part 20 limits, except when authorized by the Emergency Coordinator for life saving or an urgent plant emergency situation.

e. Assist in planning personnel rescue operations, if necessary.

f. Assist in the transfer of injured and non-essential personnel if radiation or contamination hazards are involved.

g. Request, through the Engineering Team Coordinator, any engineering evaluations of temporary shielding on special tools and equipment.

h. Request, through the Logistical Support Coordinator, the following as necessary:

   1. Additional radiation monitoring equipment.

   2. Additional health physics support personnel.

   3. Additional instrumentation and equipment as required.

i. Advise the Emergency Coordinator on matters involving radiological safety.

j. Review and evaluates all radiological data, including appropriate chemical and radiochemical results.

k. Maintain appropriate records of radiological monitoring and dose assessment activities.

l. Coordinate the TUGCo offsite radiological assessment activities with those of the counties and State.

m. Correlate, assesses and predicts current and anticipated release rates and radiation levels.

n. Assist the Emergency Coordinator in the formulation of recommendations to be submitted to the counties and State regarding the protective action measures to be implemented.

o. Obtain current meterological data and determines its effects upon the radiological release and dose projections.

p. Provide the Public Information Coordinator with an accurate assessment of the radiological situation which is suitable for release to the public.

The Chemistry and Environmental Engineer alternates with the Radiation Protection Engineer in the EOF during a Site Area or General Emergency.

The Radiation Protection Section is responsible for all aspects of radiation protection. Designated individuals within the section shall provide an interface between the Radiation Protection Engineer and the Emergency Radiological Teams. A Radiation Protection Technician on shift shall be qualified to implement radiation protection and chemistry sampling procedures and to perform the necessary radiological surveys until additional Radiation Protection or Chemistry personnel arrive on site. Radiation Protection personnel shall also be qualified in the methods of decontaminating personnel, equipment and areas. The decontamination effort may also involve personnel from the Operations and the Maintenance Departments.

The on-shift Radiation Protection personnel shall respond promptly to

the Emergency Coordinator's requests during emergency situations.

1.2.1.7 Onsite Radiological Coordinator

The Onsite Radiological Coordinator is a technician from the Radiation Protection staff who reports to the Radiation Protection Coordinator. His duty station is the EOF during a Site Area or General Emergency and he is responsible for the following:

a. Ensures that emergency sampling and radiological survey procedures are being implemented, and that the resultant information is available to the Emergency Operations Facility, Technical Support Center, and Control Room.

b. Accumulates, tabulates, and evalutes data on plant conditions, such as meteorological and area radiation monitoring readings, and radiation survey results.

c. Ensures that the use of protective clothing, respiratory protection and access control within the plant is implemented as deemed necessary.

d. Ensures that appropriate bioassay procedures have been implemented for onsite personnel when a radiological incident has occurred.

e. Ensures that personnel radiation exposures are maintained in accordance with plant administrative limits and 10 CFR, Part 20.

f. Ensures that personnel are properly decontaminated, if necessary.

g. Assists in planning personnel rescue operations, if necessary.

h. Assists in the transfer of injured and non-essential personnel if radiation or contamination hazards are involved.

i. Requests through the Radiation Protection Coordinator the following as necessary:

    1. additional radiation monitoring equipment.

    2. engineering evaluations of temporary shielding on special tools and equipment.

3. additional health physics support personnel.

4. additional instrumentation and equipment as required.

j. Advises the Radiation Protection Coordinator on matters involving radiological safety.

k. Reviews and evaluates all onsite radiological data, including appropriate chemical and radiochemical results.

l. Maintains appropriate records of onsite emergency response activities.

1.2.1.8 Offsite Radiological Coordinator

The Offsite Radiological Coordinator is a technician from the Radiation Protection staff who reports to the Radiation Protection Coordinator during a Site Area or General Emergency. His duty station is the EOF and his principal functions are:

a. Coordinates and directs the activities of the TUGCo offsite radiological monitoring teams.

b. Receives radiological survey data obtained by the radiological monitoring teams.

c. Coordinates with TUGCo offsite radiological assessment activities with those of the counties and State.

d. Correlates, assesses and predicts current and anticipated release rates and radiation levels.

e. Assists the Radiation Protection Coordinator and Emergency Coordinator in the formulation of recommendations to be submitted to the counties and State regarding protective action measures to be implemented.

f. Obtains current meteorological data and determines its effects upon the radiological release and dose projections.

g. Provides input and advice to county and State radiological monitoring teams regarding ingestion pathway monitoring (e.g.,

vegetation, water and milk supplies).

h. Maintains appropriate records of radiological monitoring and dose assessment activities.

1.2.1.9 Technical Support Center Manager

The Technical Support Center (TSC) Manager has the responsibility and authority to manage the onsite emergency activities required to bring the plant to a safe shutdown condition. Specific responsibilities of the TSC Manager are:

a. Directs the operation of the Technical Support Center.

b. Relieves the Control Room personnel of the administrative functions and decisions.

c. Assumes control of coordination and direction of all onsite activities conducted from the TSC including:

   1. establishment of proper communications with the Control Room, Operational Support Center, Emergency Operations Facility, and other emergency response facilities as appropriate.

   2. determination of the extent of the emergency and the current status of the emergency response actions.

   3. coordination and direction of all emergency response operations performed by TUGCo personnel within the protected area of the site.

d. Receives and distributes plant status and technical information received in the Technical Support Center.

e. Maintains communications with the Emergency Coordinator in order to provide plant condition information, to review any plant manipulations that might affect offsite consequences and to recommend offsite protective actions.

f. Coordinates Engineering and Maintenance support of emergency response activities.

g. Initiates rescue or repair/damage control operations as appropriate.

h. Provides input to NRC representatives in the TSC regarding plant operating license requirements.

The TSC Manager is the Operations Superintendent. His alternate is the Operations Engineer.

1.2.1.10 Technical Support Center Advisor

The Technical Support Center Advisor is responsible for the following functions:

a. Coordinates the emergency repair and damage control effort with the Operational Support Center (OSC) Supervisor.

b. Maintains an up-to-date knowledge of plant status and communicates this information to the TSC Manager, Engineering Team Coordinator, and all other concerned parties.

c. Coordinates the research and information gathering effort of any required technical data which may be provided by industry and other country-wide sources.

d. Verifies technical accuracy and adequacy of all public information releases prior to their dissemination to the media.

e. Assists the Engineering Team Coordinator in the technical assessment of plant status and emergncy conditions.

This position shall be filled by the Maintenance Superintendent, the Maintenance Engineer or the Reactor Engineer.

1.2.1.11 Engineering Team Coordinator

An Engineering Team is managed by the Engineering Team Coordinator whose primary function is to interface between the engineering team and the TSC Manager. He is also responsible for the following:

a. Verifies that emergency response engineering support personnel with TSC assignments are in position, or have been notified and are proceeding to the TSC.

b. Assumes the detailed direction and coordination of the Engineering Team.

c. Coordinates and directs efforts to technically assess plant status and emergency conditions.

d. Advises the Emergency Coordinator and TSC Manager on technical matters relating to the NSSS, fuel integrity, plant systems and equipment, and electrical systems and instrumentation.

Personnel such as the Results Engineer, the I&C Engineer or the Engineering Superintendent shall perform these functions.

1.2.1.12 Engineering Team

The Engineering Team assembles in the Technical Support Center and is composed of engineers of various disciplines and specialists from different departments. As a minimum, the team shall consists of four members with backgrounds in nuclear, mechanical and electrical engineering, and operations. The primary function of this team is to evaluate plant parameters and radiological conditions, both historical and current, and recommend corrective or preventative actions to the Engineering Team Coordinator.

1.2.1.13 Technical Support Center Health Physicist

The Technical Support Center Health Physicist is a Health Physicist from the Radiation Protection section. In addition to performing the functions of the Onsite Radiological Coordinator in the TSC, he also coordinates initial onsite radiological monitoring efforts until the activities can be reassigned by the Radiation Protection Coordinator and provides Radiation Protection expertise to the Engineering Team and the Technical Support Center Manager.

1.2.1.14 Operations Support Center Supervisor

The Operations Support Center (OSC) Supervisor is responsible for the following:

a. Activates and establishes communications at the Operations Support Center.

b. Supervises those personnel assigned to the OSC and maintains a reserve operating staff.

c. As instructed by the TSC Manager, dispatches personnel to assist in repair/damage control activities, radiation surveys, rescue operations, establishing control areas, and initiating recovery actions.

d. Coordinates the emergency repair and damage control effort with the TSC advisor.

The OSC Supervisor shall be the Mechanical Maintenance Supervisor. The Electrical Maintenance Supervisor is his alternate.

1.2.1.15 Operations Support Center Personnel

Operations Support Center Personnel, provided by the Mechanical, the Electrical and the Instrument and Control sections, supplemented by Radiation Protection and Operations personnel, are assigned the responsibilities of emergency repair, damage control, first aid, rescue and operations support. The Emergency Repair and Damage Control Group (ERDC), under the direction of the OSC Supervisor, shall effect any repairs or modifications necessary to mitigate the emergency condition, to minimize the damage and to initiate recovery actions. The ERDC Group is also capable of performing rescue operations and providing first aid treatment.

When the ERDC Group is unavailable, Operations personnel may initiate temporary damage control measures, perform rescue operations and perform initial first aid treatment.

1.2.1.16 Station Operations and Fire Fighting

The Operations Department is responsible for all Station Operations. The normal operating crew (see Appendix A) is able to handle emergency operations and is capable of aiding in other area of emergency response. Off duty operations personnel shall be called upon as necessary to augment the on-shift operation crew. At all times, the Shift Supervisor or his designated alternate, is in charge of the control room unless he is properly relieved by a qualified company individual.

The Operations Department and Security personnel and augmented, if required, by the local volunteer fire departments, shall provide a five man fire team on each shift in accordance with the CPSES Fire Protection Program. Operations personnel are also available to assist the ERDC teams as necessary.

A record of all significant Operations events shall be recorded by the operating crew in a Control Room log book.

1.2.1.17 Shift Technical Advisor

A Shift Technical Advisor (STA) shall be assigned to each operating shift and be capable of reporting to the control room within minutes. The STA's functions include evaluating plant conditions and providing advice to the Shift Supervisor during plant transients, accidents, and on matters related to Operational Safety.

During emergency situations, after the TSC is functional (refer to Section 6), the primary responsibility of the STA is to advise the Shift Supervisor shall be transferred to the TSC Manager. The STA shall remain in the control room and shall continue in a supplemental advisory and technical support role to the Shift Supervisor. The STA is also available to confer directly with the Emergency Engineering Team and to be a liaison between the TSC and the Shift Supervisor.

1.2.2 MANPOWER AVAILABLE FOR EACH EMERGENCY ACTION LEVEL

The minimum staffing requirements for an emergency are shown in Table 1.1. Table 1.2 illustrates the emergency organization response for each Emergency Action Level to ensure that the all emergency functions are satisfied.

1.2.3 CORPORATE SUPPORT

In addition to the Comanche Peak Steam Electric Station staff, the Texas Utilities Company System has numerous resources which are available to support CPSES during an emergency or during the recovery phase of operations following an emergency. The Emergency Coordinator is the individual onsite who will request Corporate support services as required by the emergency condition. This request will be made to the Vice-President Nuclear, the Recovery Manager or their designees. The required resources shall be made available by TUGCO-Nuclear Operations,

TUGCO-Lignite Operations, or other Texas Utilities Company departments, when requested by the TUGCO Vice-President, Nuclear, the Recovery Manager or their designated alternate. The Vice-President, Nuclear, in addition to the above activities, also supports the CPSES Emergency Organization in the following:

a. Interfaces with TUGCo Corporate management to obtain policy decisions in a timely manner and to ensure that all TUGCo resources are available to support the emergency response and recover efforts.

b. Maintains close contact with personnel located in the corporate offices to keep them informed of the progress of the emergency response and recovery efforts.

c. Responds to requests from the Emergency Coordinator.

d. Acts as a liaison between TUGCo and those governmental officials not directly involved in the emergency response or recovery efforts.

The following is representative of the support available from the above resources:

1.2.3.1 TUGCO Nuclear

a. Engineering and Administrative Services: approximately 5 mechanical, nuclear and electrical engineers.

b. Nuclear Operations staff: An Independent Safety Analysis Group, approximately 12 engineers - nuclear, mechanical, electrical, civil and architectural engineers with experience in Plant Operations, Fire Protection, Chemistry and Radiochemistry, Shielding Design, Instrumentation and Controls, Transient Analysis and System Interaction, Structural Design, Thermal Hydraulics, and Mechanical and Electrical Systems.

c. Health Physics: approximately 4 Health Physicists to assist the plant Radiation Protection staff and perform independent analyses.

d. Quality Assurance: The TUGCO Quality Assurance Department shall provide personnel to assist recovery operations.

1.2.3.2 TUGCO-Lignite Operations

TUGCO currently operates 8 lignite fueled units at three locations each of which has associated mining operations. This group is capable of furnishing personnel, equipment and supplies when required. Equipment available includes: bulldozers, scrapers, front-end loaders, dump trucks, fork lifts, mobile lifting equipment, pumps and air compressors.

Electricians, mechanics, instrument and control technicians, and chemistry technicians are available for assistance to CPSES if requested.

1.2.3.3 Other Texas Utilities Support Organization

a. Texas Utilities Services, Inc. - TUSI Engineering and Construction shall provide technical and analytical support required by the plant staff, including design modifications of systems and structures, to ensure the plant can be maintained in a safe condition. TUSI Engineering and Construction will furnish manpower, tools, equipment, and materials for engineering and construction services to provide temporary facilities, power, and communication services as required.

   TUSI Engineering and Construction maintains an on-site staff of approximately 50 experienced engineers in the following disciplines: nuclear, mechanical, electrical, instrumentation and control, and civil.

b. Legal - The law firm of Worsham, Forsythe and Samples has been retained by Texas Utilities to provide legal assistance and support regarding CPSES. If needed, in the event of an emergency condition at CPSES, Worsham, Forsythe and Samples shall provide legal assistance for the handling of claims and litigation, and in providing legal counsel for other Company actions regarding the emergency.

c. Insurance - The TUSI Risk Management and Insurance Department shall advise other groups and departments of those activities involving TUGCO's nuclear property insurance, property loss control, and damage cost accumulation, and coordinate activities involving TUGCO's liability insurance carrier. They shall investigate all injuries to Company personnel and the public, and major incidences of property damage to establish cause.

d. Purchasing - The TUSI Purchasing Group shall provide materials, contract services, and transportation support functions. They shall contact the appropriate State and county agencies to determine travel conditions for transportation of personnel and equipment to the site.

e. Security - The Director, Corporate Security, shall have the responsibility for providing security for news conferences in Corporate office facilities, augmenting the site security supervisory staff, and assisting the site Security Supervisor in obtaining additional contract security personnel.

f. Human Resources - The TUSI Human Resources Group shall provide and coordinate additional manpower in support of an emergency response effort.

g. Environmental Group - The TUSI Environmental Group shall provide support in environmental monitoring. This support may be in the form of additional personnel to take vegetation and ground samples for radiological analysis during the post-accident sampling of the ingestion exposure pathway, providing technical expertise for enviromental analysis, or providing contact with additional testing laboratories.

h. Public Information - The Texas Utilities Information Services Group shall coordinate information and news releases to the news media with local, State and Federal officials and agencies. A cooperative effort between the Director of Information Services and the Public Information Coordinator at the site EOF shall ensure a timely coordination of this task.

1.3 EMERGENCY RESPONSE SUPPORT ORGANIZATIONS

The following private, local, State and Federal agencies provide personnel to support or augment the CPSES Emergency Organization. When personnel from these agencies are on the Station property, they are subject to the authority of the Emergency Coordinator. This means that for reasons of safety and security, they shall commence or cease their actions when so directed by the Emergency Coordinator.

1.3.1 LOCAL AGENCIES

The key emergency planning organizations involved at the local level with emergencies at CPSES are the Hood and Somervell County Emergency Organizations. These organizations are responsible for protective measures for citizens in their respective counties. Each organization consists of numerous agencies which perform various duties during an accident. The County Judge is in charge of the emergency organization and directs the operations of the agencies described below. Letters of agreement with individual agencies delineate their support and are included in Section 15.0, Appendix H. Each county has an "Emergency Operations Plan" and "Manual of Emergency Procedures" which are predicated on the county's ability to respond and which prescribe a response based on the declared emergency action level.

1.3.1.1 Sheriff's Department

Agreements have been reached with the Somervell County and Hood County Sheriff's departments to support the CPSES emergency response with a commitment of officers and vehicles to assist in evacuation efforts, traffic control, and security.

The Sheriff's departments are also responsible for county communications during an accident including notification of the county officials needed for the emergency organization. The Sheriff's office will be used as the primary County Emergency Operations Center (EOC) in their respective counties.

1.3.1.2 Fire Department

Local fire fighting support is provided to CPSES through written agreements with the Somervell County Fire Department in Glen Rose and the Granbury Fire Department. The two organizations consist of a total force of approximately fifty volunteers. Each can respond to the site in approximately thirty (30) minutes with at least one truck. The Somervell County Fire Department is located eight road miles from CPSES and is the primary contact if offsite support is required. The Granbury Fire Department is located sixteen road miles from CPSES and provides additional support as required.

1.3.1.3 Ambulance Service

Written agreements with the Glen Rose/Somervell County Volunteer Fire Department Ambulance Service and the Hood General Hospital Ambulance

Service describe their support in providing back-up assistance to the CPSES emergency vehicle to transport victims for medical assistance. Hood General Hospital Ambulance Service can provide one (1) ambulance with an EMT and paramedic in 30 minutes. Somervell County can provide one (1) ambulance in 30 minutes.

1.3.1.4 Medical Support

Hood General Hospital in Granbury, Texas, is located approximately sixteen road miles from CPSES. A letter of agreement has been obtained from Hood General to receive and treat injured personnel from CPSES who are contaminated with radioactive material or who have an overexposure requiring medical evaluation. The Hood General Hospital facilities can handle at least five injured persons simultaneously. Backup medical services, support and definitive care are provided through a contract and a letter of agreement with Radiation Management Corporation and their affiliated hospital at the University of Pennsylvania.

Injured personnel whose medical treatment is not complicated by radiological considerations may be sent to either Hood General Hospital or Marks English Hospital, which is approximately eight road miles distant, in Glen Rose, Texas.

Medical support for CPSES is discussed in greater detail in Section 10.0.

1.3.2 STATE AGENCIES

1.3.2.1 Texas Department of Health

The Bureau of Radiation Control of the Texas Department of Health (TDH) is the responsible agency in the State of Texas for radiological emergencies. Radiological emergency planning is contained in Appendix 7 to Annex L of the Texas Emergency Management Plan.

In the event of an emergency condition at CPSES, the TDH is notified by the DPS office in Waco.

Direction and control for overall State agency activities is the responsibility of the Director, Division of Emergency Management. Emergency Radiological response is the responsibility of the Chief, Bureau of Radiation Control.

Upon notification of a General Emergency at CPSES, the TDH shall send a Response Team to the 10-mile EPZ under the direction of the Chief of Field Operations. This Response Team is capable of supporting the emergency organization in the following areas:

a. Environmental and radiological monitoring, including bringing a mobile radiological laboratory to the site. (It is expected that this mobile laboratory can be onsite in approximately four (4) hours.)

b. Assessment of offsite hazards and protective actions.

1.3.2.2 Texas Department of Public Safety

A written agreement with the Texas Department of Public Safety (DPS) confirms their support for the CPSES Emergency Plan. The District Commander of the DPS will provide support to local law enforcement agencies for the evacuation of the public from the EPZ. The communications network of the DPS is essential in coordinating with local agencies such as sheriff and fire departments within the 50 mile EPZ. The area around CPSES is under the jurisdiction of the Region 6A Headquarters in Waco.

1.3.3 FEDERAL AGENCIES

The Nuclear Regulatory Commission (NRC), Federal Emergency Management Agency (FEMA) and Department of Energy (DOE) are the primary Federal response organizations in the event of an emergency at CPSES. Additional Federal agencies, such as the Environmental Protection Agency, Federal Aviation Administration, Department of Commerce, National Weather Service, et al, may provide ancillary services and support to the primary agencies. Management of the Federal response, which is divided into technical or radiological aspects and non-technial aspects, requires the coordination of the three primary agencies with each other, with Texas Utilities officials and with State and local authorities. NRC and DOE are responsible for the technical response and FEMA for the non-technical response; the overall responsibility is shared by the three primary agencies.

To support Federal response efforts, the following facilities are available within sixty (60) miles of CPSES.

Airports:	Granbury, Cleburne, Stephenville, Meacham in Ft Worth, Love in Dallas and Dallas-Ft. Worth Regional
Motels:	Glen Rose, Granbury, Cleburne, Stephenville, Fort Worth and Dallas
CPSES:	Space available in and near the EOF, telephone lines and electrical service connections for equipment brought to the site to be used by the Federal agencies.

1.3.3.1 Nuclear Regulatory Commission

The Nuclear Regulatory Commission (NRC) reviews and approves the CPSES radiological emergency response plan and program and evalutes the compatability of the CPSES plan with the State and the local emergency plans. The NRC, because of its familiarity with CPSES operations and reactor specific terminology, is responsible for coordinating the overall technical aspects of the Federal response. Primarily, NRC activities are focused on the activities occurring onsite and the mitigation of the emergency.

Upon receiving notification of an emergency, the NRC will respond pursuant to the emergency classification. If a Site Area Emergency or General Emergency has been declared, the NRC dispatches emergency response personnel to the site.

1.3.3.2 Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) provides assistance to the state and local governments in the preparation, review and testing of radiological emergency response plans. FEMA is also the normal interface between other Federal agencies and the local governments.

FEMA coordinates the non-technical aspects of the Federal response. This includes assistance to Federal, State, and local organizations in matters such as transportation, communications and housing, implementing offsite protective action measures and other matters not

specifically the responsibility of the NRC. FEMA will send at least one individual to the EOF to coordinate the non-technical activities with the NRC, CPSES and the State and local governments.

1.3.3.3 Department of Energy

The DOE is the third segment of the Federal response. They are responsible for coordinating Federal offsite radiological monitoring and assessment and for relaying this information to the NRC assessment personnel at the site.

The Department of Energy (DOE) has a regional Coordinating Office for Radiological Assistance located in Albuquerque, New Mexico. This agency is available on a 24 hour-per-day basis to provide emergency radiological teams in support of the CPSES Emergency Organization. The Emergency Coordinator or the Recovery Manager are the only two utility personnel at the site who may request DOE assistance. They will respond within 24 hours with resources that include:

a. Radiological assistance teams.

b. Communication equipment (including microwave capabilities).

c. Aircraft for airborne monitoring and transportation and mobile labs for surface monitoring.

d. Specialties (technical and administrative personnel not directly involved in field operations, such as information officers, clerical workers, etc.).

e. A DOE coordinator will be dispatched to the EOF to direct the DOE resources pursuant to the requests of the Emergency Coordinator.

1.3.4 PRIVATE AGENCIES

1.3.4.1 Squaw Creek Park, Inc.

Squaw Creek Park, Inc. (SCPI) operates and maintains Squaw Creek Park, a 470-acre recreation area adjacent to Squaw Creek reservoir and north of the station. The park and reservoir are owned by Texas Utilities. SCPI is responsible for controlling access to the park and reservoir. The park and reservoir are accessible via a single public road from

State Road 144. The letter of agreement details the responsibilities of SCPI during a Site Area or General Emergency at CPSES. SCPI is responsible for accountability and evacuation of the park and reservoir.

1.3.4.2 Westinghouse Electric Corporation

The nuclear steam supply system at CPSES was supplied by Westinghouse Water Reactors Division (WRD). In its capacity as a supplier, Westinghouse can provide emergency assistance to CPSES on an around-the-clock basis. The Westinghouse Emergency Response Plan (Section 15, Appendix R) addresses the following:

1. Describes the WRD emergency response organization, its role, scope, functions and responsibilities, and how it is activated.

2. Identifies the key WRD individuals to be available in the early phase of an emergency response.

3. Defines the WRD interfaces with other involved parties.

4. Defines the WRD role in emergency news communications and its interaction with CPSES Public Information personnel and the news media.

CPSES/EP

TABLE 1.1

STAFFING REQUIREMENTS FOR EMERGENCIES

Functional Area	Task	Position Title	On Shift	Additions Within Min. 40	70
Station Operation	Assessment of Operational Aspects	Shift Supervisor (SRO)	1		
		Asst. Shift Supervisor (SRO)	1		
		Reactor Operators (RO)	2		
		Auxiliary Operators	3		
Emergency Direction and Control		Shift Supervisor (SRO)**	1*		1
Communications	Notify Station personnel and maintain communications	Member of Shift Operating Personnel	1*	1	1
Station System Engineering	Technical Support	Shift Technical Advisor	1		
		Nuclear Engineer	-	1	
		Electrical Engineer	-		1
		Mechanical Engineer	-		1
		Health Physicist	-	1	
		Operations Engineer	-		1
Radiological Assessment	Station Surveys	R.P. Technician	2***	1	1
	Chemistry/Radiochemistry	Chem. & Envir. Technician	-		1
	Offsite Surveys	R.P. Technicians	-	1	3
	Onsite Surveys	R.P. Technicians	-	1	1
	Dose Assessments	R.P. Engineer	-		1
System Corrective Actions	Damage Control	Mechanic	1*	1	1
		Electrician	1*	1	
		I&C Technician	1*	1	
		Auxiliary Operator	1*		1
Protective Actions	Radiation Protection a. Access Control b. Personnel Monitoring c. Dosimetry	R.P. Technician	2*	2	2
Firefighting	-----	-----	5*	Local Support	
Rescue Operations and First Aid	-----	-----	2*	Local Support	
Site Access Control and Personnel Accountability	Security, firefighting, Communications, personnel accountability	Guards	Per Security Plan	Local Support	
TOTAL			10	11	16

* May be provided by shift personnel assigned other functions.

** Shift Supervisor serves in this capacity until relieved by the Manager, Plant Operations or his alternate.

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*** As a minimum, one Radiation Protection Technician shall be qualified to initiate the post accident sampling and analysis process.

GRADED EMERGENCY ORGANIZATION RESPONSE

Table 1.2

	Notification of Unusual Event	Alert	Site Area or General
Function	On Duty Personnel Off-Site Support	On Duty Personnel TSC Activated OSC Activated (limited) Off-Site Support	On Duty Personnel TSC Activated OSC Fully Activated EOF Activated Off-Site Support
Station Operations	Shift Supervisor Control Room Personnel	Shift Supervisor Control Room Personnel	Shift Supervisor Control Room Personnel
Overall Direction Control	Shift Supervisor (Emergency Coord.)	TSC Manager (Emergency Coord.)	Emergency Coordinator EOF
Communications	Control Room Personnel	TSC Personnel Supplemented Control Room Personnel	Communications Coordinator EOF
Security	Shift Supervisor/Security	TSC Manager	Security Supervisor EOF
Radiation Protection	Shift Supervisor Radiation Protection Techs.	TSC Health Physicist RP Tech.	Radiation Protection Coordinator and personnel EOF/TSC/OSC
Technical Support	Shift Tech. Advisor	Engineering Team Coordinator Engineering Team	Engineering Team Coordinator Engineering Team
Damage Control	Control Room, Radiation Protection Techs	OSC Supervisor	OSC Supervisor
Fire Fighting	Operations & Security	Operations & Security	Operations & Security
Public Info.	Shift Supervisor	TSC Manager	Public Information Coordinator - EOF
Logistics	Shift Supervisor	TSC Manager	Logistical Support Coordinator - EOF

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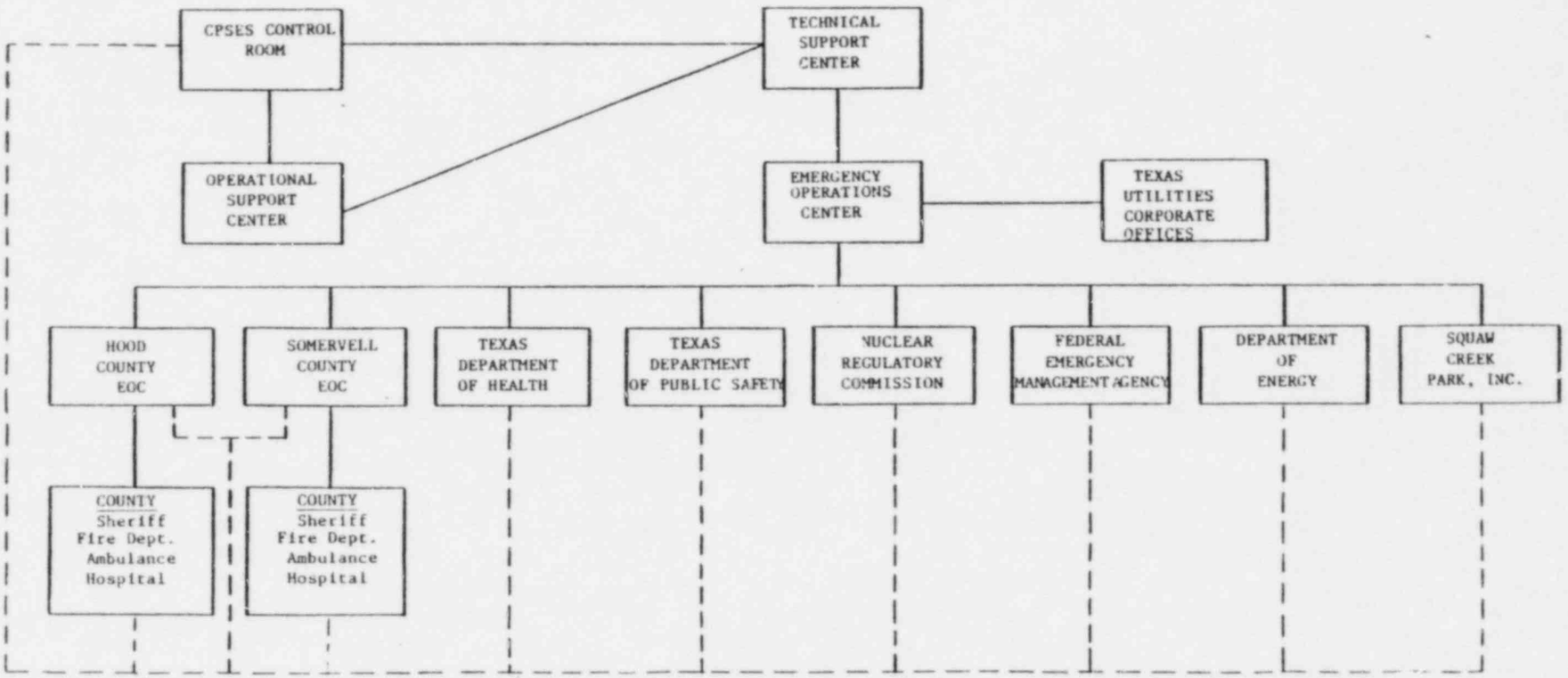
Figure 1.1

FUNCTIONAL INTERFACES



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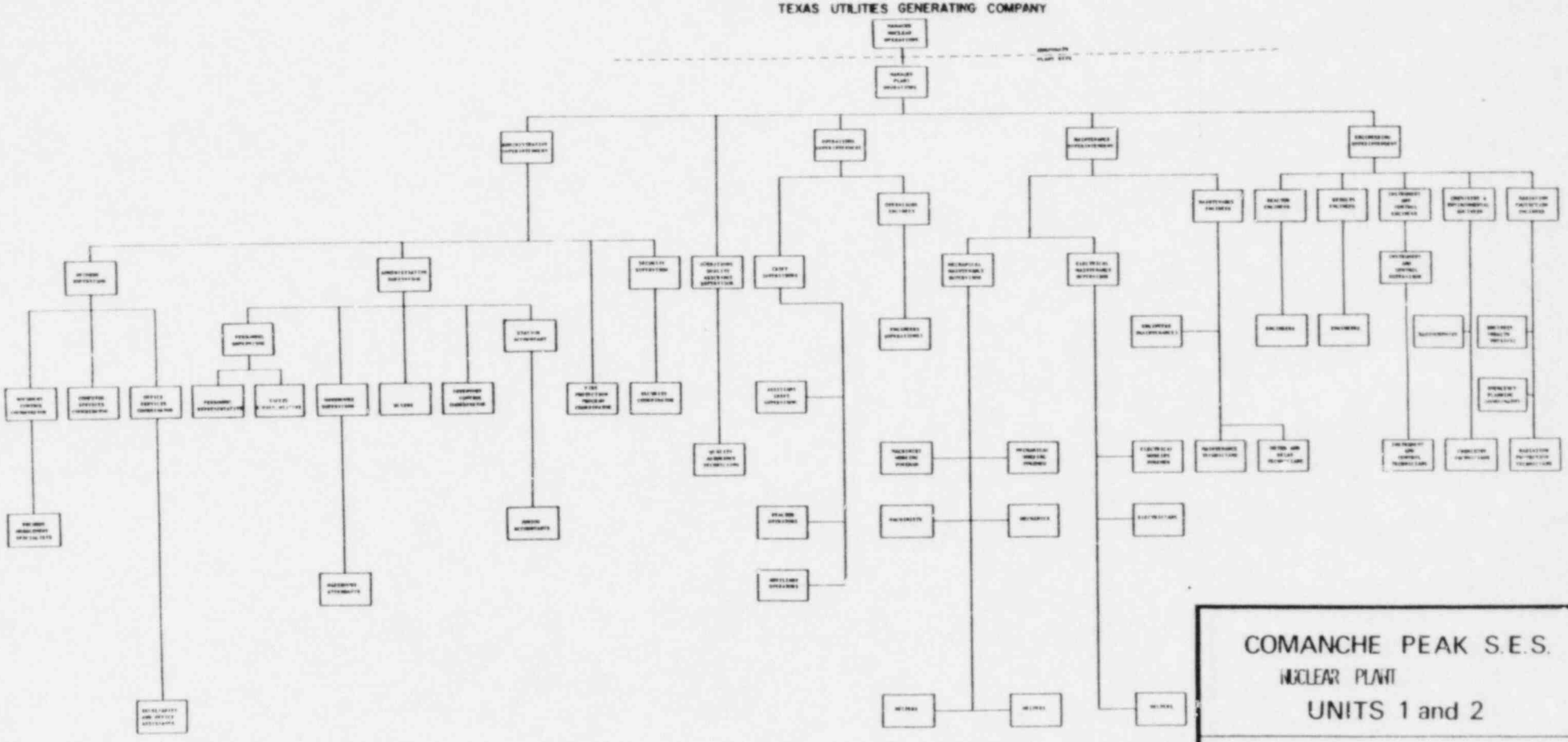
COMANCHE PEAK STEAM ELECTRIC STATION

TEXAS UTILITIES GENERATING COMPANY



COMANCHE PEAK S.E.S.
NUCLEAR PLANT
UNITS 1 and 2

STATION ORGANIZATION

FIGURE 1.2

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TUGCO NUCLEAR ORGANIZATION

FIGURE 1.3

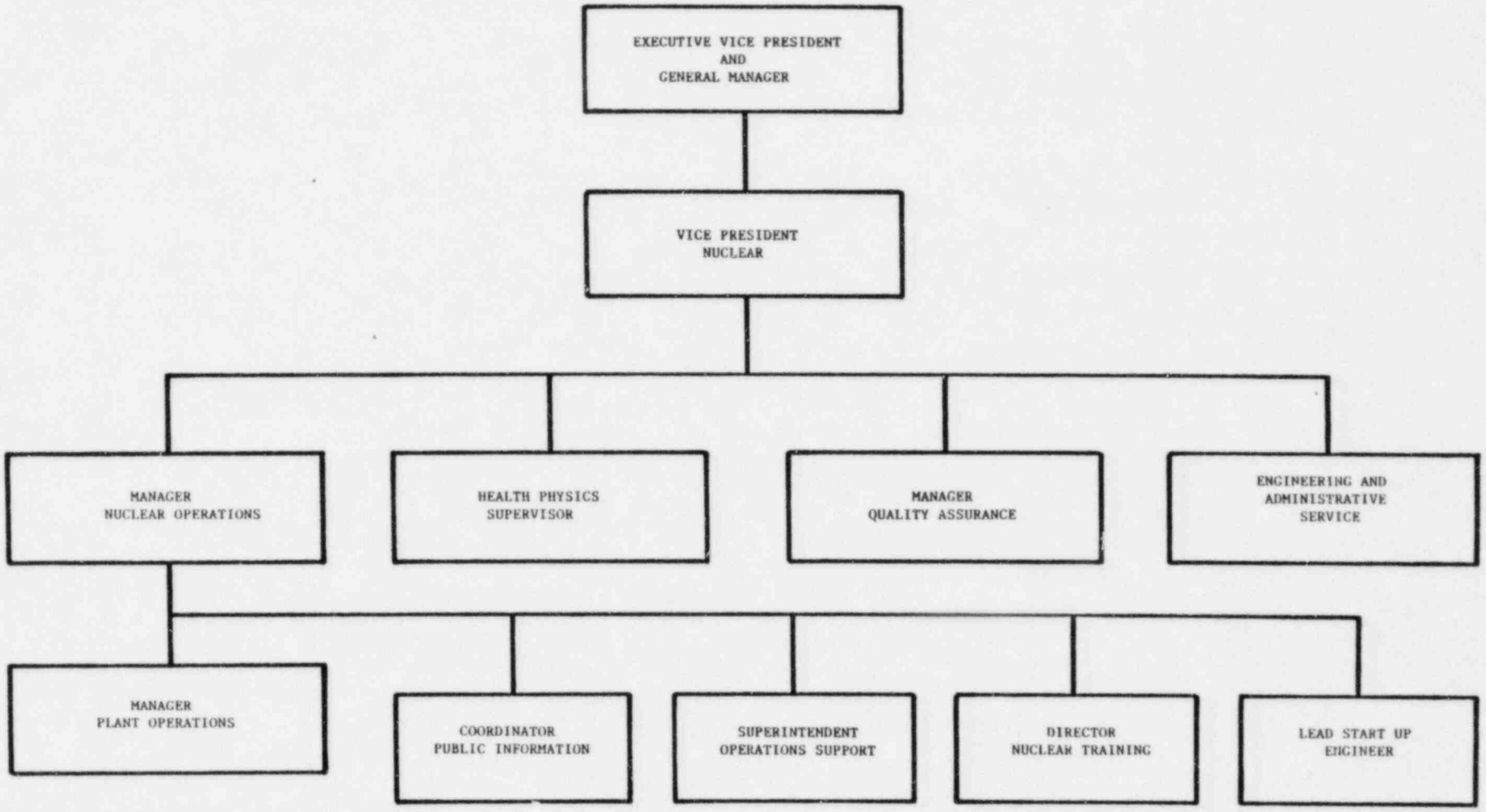

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FIGURE 1.3

COMANCHE PEAK STEAM ELECTRIC STATION

EMERGENCY ORGANIZATION

FIGURE 1.4

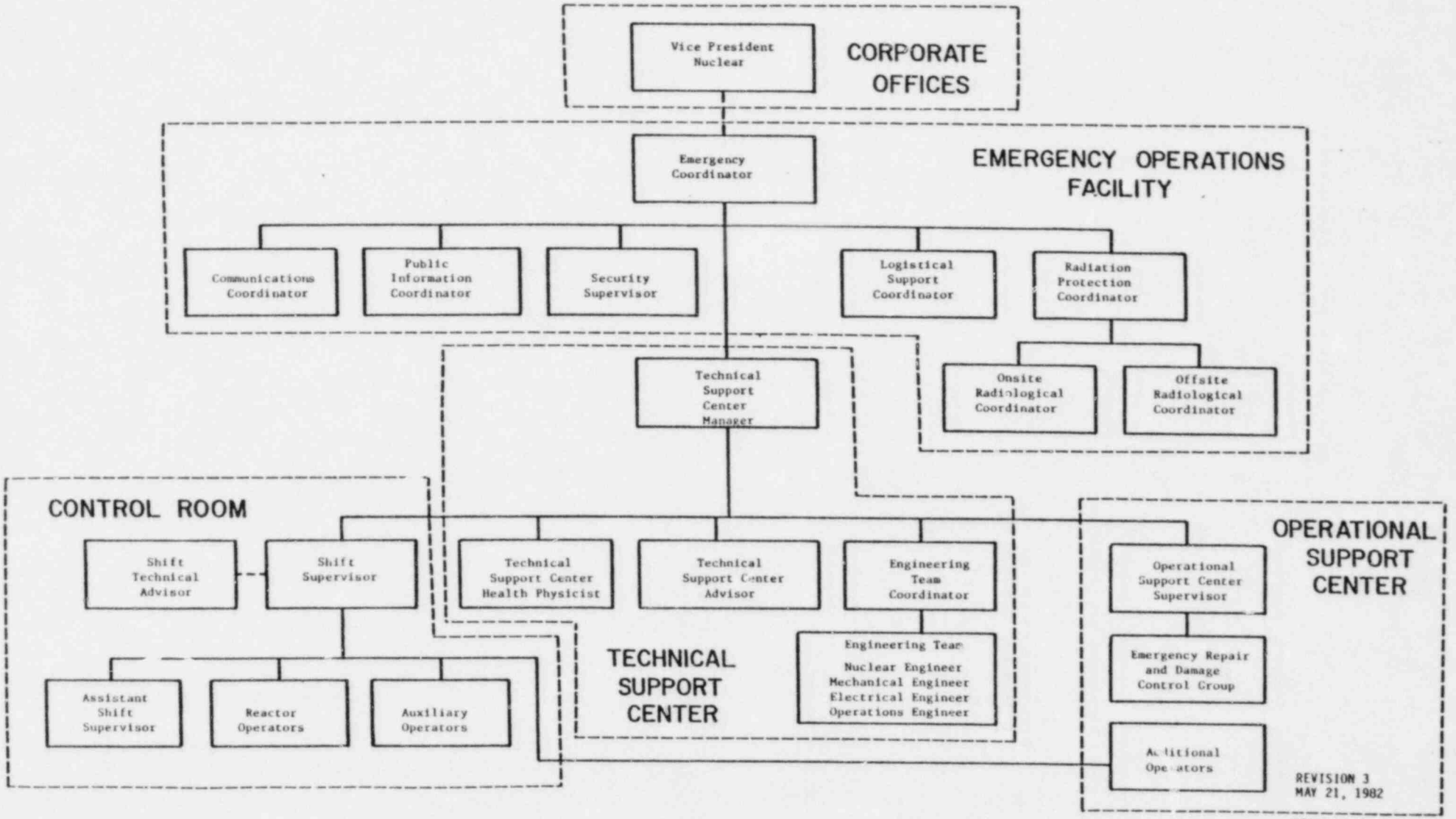


FIGURE 1.4

2.0 EMERGENCY CLASSIFICATION SYSTEM

Emergency classifications are those in which situations are occuring which cause or threaten to cause radiological hazards affecting the health and safety of employees or the public or resulting in damage to property. These situations range from those which result in no effect to those which result in severe consequences to the public. These situations have been categorized into four Emergency Action Levels.

2.1 EMERGENCY ACTION LEVELS

The four classes of Emergency Action Levels are:

a. Notification of Unusual Event.

b. Alert.

c. Site Area Emergency.

d. General Emergency.

The first two classes are designed to provide early notification to offsite agencies of minor events which might lead to more serious consequences due to incorrect personnel actions or equipment failure. The Site Area Emergency class includes conditions in which significant releases are occuring or are expected to occur, but a core meltdown situation is not indicated. The General Emergency class is the situation in which actual or imminent core degradation or melting occurs with the potential for loss of containment. A gradation of responses is provided to assure prompt action whether the seriousness of the event intensifies or diminishes.

The following tables list examples of initiating parameters for the Emergency Action Levels. These tables provide guidance for the development of the implementing procedure, EPP-201 "Assessment of Emergency Action Levels and Plan Activation". This procedure details the parameters for determining emergency action level and prescribes the necessary actions to set the Emergency Response Program in motion.

2.1.1 NOTIFICATION OF UNUSUAL EVENT

This is the lowest category of the Emergency Action Levels which requires offsite notification. In this category are unusual events which have occurred or are in progress which indicate a potential degradation of the level of safety of the plant. A general

description of this category of events is found in Table 2.1 and examples of initiating conditions are in Table 2.2.

TABLE 2.1

NOTIFICATION OF UNUSUAL EVENT

Description	Actions
Unusual events are in process or have occured which indicate a potential degradation of the level of safety of the plant. Purpose Purpose of offsite notification is to (1) assure that the first step in any response later found to be necessary has been carried out, (2) provide current information on unusual events, and (3) provide a periodic unscheduled test of the offsite communication link. Release Potential No releases of radioactive material requiring offsite response or monitoring are expected unless futher degradation of safety systems occurs.	1. Promptly inform NRC and DPS in Waco of nature of the unusual conditions. 2. Augment on-shift resources as needed. 3. Assess and respond. 4. Escalate to a more severe class. or Close out with verbal summary to the NRC and to DPS; followed by written summary within 24 hours.

TABLE 2.2 (SHEET 1 OF 4)

INITIATING CONDITIONS: NOTIFICATION OF UNUSUAL EVENT

	Abnormal Condition	Examples of Initiating Parameter
1.	Any high energy line break large enough to cause an ECCS initiation.	Any advertent Safety Injection Actuation signal caused by a steamline break, feedwater line break, or a loss of coolant accident or any inadvertent Safety Injection.
2.	Radioactive effluent release to the environment above allowable levels.	Exceeding Radiological Effluent Technical Specifications (T.S.): T.S. 3/4.11.1 for Liquid Effluents. T.S. 3/4.11.2 for Gaseous Effluents.
3.	Fuel degradation indication.	A. Analysis of Reactor Coolant sample showing abnormally high gamma activity and abnormally high fission product activity. T.S.3/4.4.8 B. Abnormally high reading from failed fuel monitor.
4.	Abnormal coolant temperature and/or pressure or abnormal fuel temperatures.	A. Exceeding the pressure, temperature limits of T.S.3/4.4.9. B. Unexplained high readings from Incore thermocouples.
5.	High primary system leak rate.	Exceeding primary system Technical Specification leak rate. Applicable modes 1, 2, 3, 4. (T.S. 3/4.4.6).

TABLE 2.2 (SHEET 2 OF 4)

6.	Failure of a pressurizer or steam generator safety valve to close or a failure of a pressurizer or steam generator power operated relief valve to close that cannot be isolated.	A. From valve position indication in Control Room. B. Inferred from leak detection methods.
7.	Complete loss of offsite power or loss of onsite AC power capability.	A. Station blackout with emergency diesel generators available. B. Loss of standby AC power with offsite power still available.
8.	Loss of containment integrity requiring shutdown.	See T.S. 3/4.6.1 Primary Containment Integrity.
9.	Loss of engineered safety feature or fire protection system function requiring shutdown.	Specific attention should be given to the following technical specifications: T.S. 3/4.3.2 ESF Actuation System Instrumentation. T.S. 3/4.5 Emergency Core Cooling Systems. T.S. 3/4.6 Containment Systems. T.S. 3/4.7.1 Section 3.7.1.2 Auxiliary Feedwater System. T.S. 3/4.7.1 Section 3.7.1.3 Condensate Storage Tank. T.S. 3/4.7.4 Service Water System. T.S. 3/4.7.11 Fire Suppression.
10.	Fire lasting more than 10 minutes within the boundaries of the protected area and not threatening safety systems.	

TABLE 2.2 (SHEET 3 OF 4)

11.	Indications or alarms on process or radiological instrumentation not functional in the control room to an extent requiring plant shutdown, or other significant loss of assessment or communication capability.	Loss of instrumentation requiring shutdown by Technical Specifications 3/4.3 Instrumentation.
12.	Security threat.	A. Bomb threat. B. Group attempting to trespass.
13.	Natural phenomenon being experienced or projected beyond usual levels.	A. Any earthquake indicated by seismic instrumentation. B. 50 year flood. C. Water level in SSI dropping and approaching the low water level. D. Any tornado observed approaching plant site.
14.	Other hazards being experienced or projected.	A. Aircraft crash onsite or unusual aircraft activity over facility. B. Train derailment onsite or nearsite posing safety threat to the plant or employees. C. Near or onsite explosion. D. Near or onsite toxic or flammable gas release. E. Spill of a significant quantity of hazardous material. No significant release to the environment and not affecting safety systems.

TABLE 2.2 (SHEET 4 OF 4)

15.	Other plant conditions exist that warrant increased awareness on the part of the State and/or local offsite authorities or require plant shutdown or involve other than normal controlled shutdown.	As determined by the Station Operations Review Committee or the Manager, Nuclear Operations, his designated alternate, or by Technical Specification requirements.
16.	Transportation of a contaminated injured individual from the site to an offsite hospital.	

2.1.2 ALERT

In this action level are events which have occured or are in progress which involve an actual or potentially substantial degradation of the level of safety of the plant. These events are serious enough to require activation of the TSC.

Prompt notification of DPS of the plant condition is essential, with possible notification also to local authorities.

A description of this action level is in Table 2.3, with examples of initiating conditions in Table 2.4.

TABLE 2.3

ALERT

Description

Events are in process or have occured which involve an actual or potentially substantial degradation of the level of safety of the plant.

Purpose

Purpose of offsite alert is to (1) assure that emergency personnel are readily available to respond if situation becomes more serious or to perform confirmatory radiation monitoring if required, (2) provide offsite authorities current status information, and (3) provide possible unscheduled tests of response center activation.

Release Potential

Limited releases of up to 10 curies of I-131 equivalent to 10^4 curies of Xe-133 equivalent.

Actions

1. Promptly inform NRC, DPS in Waco, and possibly local authorities of the Alert.
2. Augment resources by activating Technical Support Center.
3. Assess and respond.
4. Dispatch onsite monitoring teams and associated communications.
5. Provide periodic plant status updates to offsite authorities.
6. Provide periodic meteorological assessments to offsite authorities and, if any releases are occuring, dose estimates for actual releases.
7. Escalate to a more severe class.

or

Close out by verbal summary to offsite authorities followed by written summary within 8 hours of close-out or class reduction.

TABLE 2.4 (SHEET 1 OF 4)

INITIATING CONDITIONS: ALERT

Abnormal Conditions	Examples of Initiating Parameter
1. Severe failure of fuel cladding.	A. A reactor coolant sample indicating very high gamma activity and very high fission product activity, exceeding Technical Specification limits. T.S. 3.4.8. B. Very high reading from the failed fuel monitor.
2. Steam generator tube failure with loss of offsite power.	A. Safety injection with high steam generator blowdown activity or condenser vacuum pump exhaust high radiation alarm. B. Station blackout with automatic start of emergency diesel generators.
3. Gross failure of steam generator tubes.	Primary to secondary leak resulting in high charging rate with decreasing pressurizer level.
4. Steam line break with greater than 10 gpm primary to secondary leak rate or with MSIV malfunction.	Safety injection with steam line break indication coincident with high activity in steam generator blowdown or high condenser vacuum pump exhaust radiation alarm.
5. Primary coolant leak rate greater than 50 gpm.	A. High Containment Activity. B. Rising containment sump level not attributed to other sources. C. Abnormally high charging requirements or large makeup water requirements.

TABLE 2 (SHEET 2 OF 4)

6.	High radiation levels or high airborne contamination which indicate a severe degradation in the control of radioactive materials.	A. Large increase (several decades above normal) in area radiation monitor readings. B. High airborne contamination indicated by high reading on P.I.G. monitors.
7.	Loss of offsite power and loss of onsite AC power for less than 15 minutes.	Station blackout with emergency diesel generators failure to start.
8.	Loss of all vital onsite DC power for less than 15 minutes.	DC voltage indicates low.
9.	Loss of Reactor Coolant flow leading to fuel failure.	Loss of flow reactor trip with subsequent high fission product activity in Reactor Coolant sample.
10.	Loss of functions needed for plant cold shutdown.	Loss of Auxiliary Feedwater System, two or more steam generators inoperable, or inability to borate to cold shutdown. Failure of both trains of ECCS.
11.	Failure of the reactor protection system to initiate and complete a trip which brings the reactor subcritical.	A. Operation exceeding automatic reactor trip setpoints. B. Any anticipated transient without trip event.
12.	Spent fuel handling accident with release of radioactivity to containment or the Fuel Building.	High radiation levels indicated by containment and fuel building area radiation monitors.

TABLE 2.4 (SHEET 3 OF 4)

13.	Fire potentially affecting safety systems.	Fire in cable spreading room.
14.	All alarms (annunciators) lost for less than 15 minutes.	
15.	Radiological effluents greater than 10 times Technical Specifications instantaneous limits.	A. Determined by very high reading on effluent monitors. B. Error found on pre-release sample or analysis. C. Radiological Technical Specifications: T.S. 3/4.11.1 or T.S. 3/4 11.2.
16.	Ongoing Security compromise.	
17.	Severe natural phenomena being experienced or projected.	A. An earthquake greater than on Operating Basis Earthquake. B. Any flood in the Safe Shutdown Impoundment (SSI). C. Any tornado striking the facility. D. Low water in the SSI.
18.	Other hazards being experienced or projected.	A. Aircraft crash into facility buildings or structures. B. Missile impact from whatever source causing damage to facility structures. C. Known explosion damage to facility affecting plant operation. D. Entry into facility environs of toxic or flammable gases. E. Main turbine generator failure causing damage to buildings or structures. F. Significant release of hazardous material to the environment of spill affecting safety systems.

TABLE 2.4 (SHEET 4 OF 4)

19.	Other plant conditions exist that warrant precautionary activation of Technical Support Center.	
20.	Evacuation of Control Room anticipated or required with control of shutdown systems established from remote shutdown panel within 15 minutes.	Control Room not habitable.

2.1.3 SITE AREA EMERGENCY

This action level addresses situations which involve actual or imminent failures of plant systems which are necessary for protection of the public. Implementation of the site Emergency Organization as well as State and Local organizations is required.

A description of this action level is in Table 2.5, with examples of the initiating conditions in Table 2.6.

TABLE 2.5 (SHEET 1 OF 2)

SITE AREA EMERGENCY

Description

Events are in process or have occurred which involve actual or potential major failures of plant functions needed for protection of the public.

Purpose

Purpose of the Site Area Emergency warning is to (1) assure that response centers are manned, (2) assure that monitoring teams are dispatched, (3) assure that personnel required for evacuation of near-site areas are at duty stations if situation becomes more serious, (4) provide current information for and consultation with offsite authorities and public, and (5) provide possible unscheduled test of response capabilities.

Release Potential

Releases of up to 1000 Ci of I-131 equivalent or up to 10^6 Ci of Xe-133 equivalent.

Actions

1. Promptly inform NRC, DPS and/or county EOC's of Site Area Emergency status and reason for emergency.
2. Augment resources by activating Technical Support Center, Operational Support Center, and Emergency Operations Facility.
3. Assess and respond.
4. Dispatch onsite and offsite monitoring teams and associated communications.
5. Provide a dedicated individual for plant status updates to offsite authorities and periodic press briefings.
6. Make senior technical and management staff onsite available for consultation with NRC and State on a periodic basis.

TABLE 2.5 (SHEET 2 OF 2)

7. Provide meteorological and dose estimates to offsite authorities for actual releases.

8. Provide release and dose projections based on available plant condition information and foreseeable contingencies.

9. Escalate to General Emergency class.

or

Close out or recommend reduction in emergency class by briefing of offsite authorities at EOF followed by written summary within 8 hours of close-out or class reduction.

TABLE 2.6 (SHEET 1 OF 4)

INITIATING CONDITIONS: SITE AREA EMERGENCY

	Abnormal Condition	Examples of Initiating Parameters
1.	Known loss of coolant accident greater than charging pumps capacity.	High charging flow rate with decreasing pressurizer level.
2.	Degraded core with possible loss of coolable geometry.	A. Core subcooling monitor indicates core temperature at or above saturation. B. RCS activity indicates massive fuel failure. C. Containment area radiation monitors reading very high levels.
3.	Gross failure of steam generator tubes with loss of offsite power.	Safety injection actuation with high secondary activity levels, coincident with station blackout resulting in auto start of emergency diesel generators.
4.	Steam line break with greater than 50 gpm primary to secondary leakage and indication of fuel damage.	Steam line break resulting in Safety Injection Actuation, coincident with high activity levels in the steam generator and high fission product activity present in steam generator and the Reactor Coolant System.
5.	Loss of offsite AC power and loss of onsite AC power for more than 15 minutes.	Station blackout and failure of emergency diesel generators to start.

TABLE 2.6 (SHEET 2 OF 4)

6.	Loss of all vital onsite DC power for more than 15 minutes.	Low DC voltage indication.
7.	Loss of functions needed for plant hot shutdown.	A. Inability to trip the control rods. B. Loss of decay heat removal capability at hot shutdown.
8.	Major damage to spent fuel in containment or fuel building.	A. Object damages spent fuel or spent fuel assembly dropped, resulting in damage to fuel cladding. B. Loss of water in spent fuel pool below fuel level. C. High area radiation readings in containment and fuel building.
9.	Fire affecting safety systems.	Actual loss of a safety train or train-related component due to a fire.
10.	All alarms (annunciators) lost for more than 15 minutes and plant is not in cold shutdown or a plant transient is initiated while all alarms lost.	

TABLE 2.6 (SHEET 3 OF 4)

11.	Dose rates at the site boundary for adverse meteorological conditions are at levels corresponding to 50 mr/hr for 1/2 hour or greater than 500 mr/hr W.B. for two minutes (or five times these levels to the thyroid).	Dose rates may be determined several ways: A. Using effluent monitor readings and meteorological parameters from the Radiation Monitoring System Computer. B. Measuring containment activity and calculating containment leak rate for the present containment pressure. C. Measuring dose rates at the site boundary using fixed dosimeters or portable field measurement devices.
12.	Imminent loss of physical control of the plant.	
13.	Severe natural phenomena being experienced or projected with plant not in cold shutdown.	A. Earthquake greater than a Safe Shutdown Earthquake. B. Flood, or SSI low water level beyond design levels or failure of vital equipment at lower levels. C. Winds in excess of design levels.
14.	Other hazards being experienced or projected with plant not in cold shutdown.	A. Aircraft crash affecting vital structures by impact or fire. B. Severe damage to safe shutdown equipment from missiles or explosion. C. Entry of toxic or flammable gases into vital areas.

TABLE 2.6 (SHEET 4 OF 4)

15. Other plant conditions exist that warrant activation of emergency centers and monitoring teams and a precautionary public notification.

16. Evacuation of Control Room and control of shutdown systems not established from remote shutdown panel or local stations in 15 minutes.

2.1.4 GENERAL EMERGENCY

This is the highest class of Emergency Action Level and involves actual or imminent substantial core degradation or meltdown with a potential for loss of containment integrity. The purpose of the General Emergency is to initiate predetermined protective actions for the public and to continually appraise the emergency condition with appropriate responses.

A description of this action level with appropriate responses is in Table 2.7, with examples of the initiating conditions in Table 2.8.

TABLE 2.7 (SHEET 1 OF 2)

GENERAL EMERGENCY

Description

Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.

Purpose

Purpose of the General Emergency warning is to (1) initiate predetermined protective actions for public, (2) provide continuous assessment of information from onsite and offsite measurements, (3) initiate additional measures as indicated by event releases or potential releases, and (4) provide current information for and consultation with offsite authorities and public.

Release Potential

Releases of more than 1000 Ci of I-131 equivalent or more than 10^6 Ci of Xe-133 equivalent.

Actions

1. Promptly inform NRC, DPS in Waco and county EOC's of General Emergency status and reason for emergency. (Parallel notification of NRC/DPS/COUNTY).
2. Augment resources by activating Technical Support Center, Operational Support Center and Emergency Operations Facility.
3. Assess and respond.
4. Dispatch onsite and offsite monitoring teams and associated communications.
5. Provide a dedicated individual for plant status updates to offsite authorities and periodic press briefings.
6. Make senior technical and management staff onsite available for consultation with NRC and State on a periodic basis.
7. Provide meteorological and dose estimates to offsite authorities for actual releases.

TABLE 2.7 (SHEET 2 OF 2)

8. Provide release and dose projections based on available plant condition information and foreseeable contingencies.

9. Close out or recommend reduction of emergency class by briefing of offsite authorities at the EOF and by phone followed by written summary within 8 hours of close-out or class reduction.

TABLE 2.8 (SHEET 1 OF 2)

INITIATING CONDITIONS: GENERAL EMERGENCY

	Abnormal Condition	Examples of Initiating Parameter
1.	Dose rates at the site boundary under actual meteorological conditions are at levels corresponding to 1 rem/hr W.B. or 5 rem/hr to the thyroid.	Dose rates may be determined by several ways: A. Using effluent monitor readings and meteorological system parameters from the Radiatior Monitoring System Computer. B. Measuring containment activity levels and calculating containment leak rate for the present containment pressure. C. Measuring dose rates at site boundary using fixed dosimeters or portable field measurement devices.
2.	Loss of fission product barriers with a potential loss of the final barrier.	Massive fuel clad failure from a loss of coolant accident, and a high potential for a breach of containment.
3.	Loss of physical control of the facility.	

TABLE 2.8 (SHEET 2 OF 2)

4.	Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short period possible.	Some Example Sequences are: A. LOCA's with failure of ECCS to perform leading to severe core degradation or melt. Ultimate failure of containment possible for melt sequences. B. Transient initiated by loss of feedwater and condensate systems followed by failure of auxiliary feedwater system for extended period. Core melting possible in several hours. Ultimate failure of containment possible. C. Transient requiring operation of shutdown systems with failure to trip. Core damage possible. Additional failure of core cooling and makeup systems could lead to core melt. D. Failure of offsite and onsite power along with total loss of emergency feedwater makeup capability for several hours. May lead to core melt and possible failure of containment.

3.0 NOTIFICATION METHODS AND PROCEDURES

A procedure EPP-203, "Emergency Notification and Communications" delineates the notification criteria for each Emergency Action Level, the time constraints on initial and close-out information messages, the methodology for notifying emergency response personnel and the details on call back verification of telephone and radio communications. This procedure also contains pre-determined emergency notification messages, which are intended for the supporting emergency response organizations, based on items listed below.

Public notification is accomplished using an outdoor alerting system consisting of forty (40) acoustical devices rated at 125 decibels (at 100 feet) and a warning system that utilizes the Emergency Broadcast System. Texas Utilities retains ownership of and maintains the outdoor system; however, each county is responsible for activating the portion of the system that is within their jurisdiction and for ensuring that EBS has the proper message to broadcast. All forty devices can be activated simultaneously from either county's Emergency Operations Center. This system complies with NUREG 0654, Appendix 3.

Prepared messages intended for the public for information purposes, are attached to the Procedure EPP-212, "Release of Emergency Related Information to the Public".

3.1 NOTIFICATION MESSAGES

Notification messages fall into two categories: inital and follow-up. Initial messages provide a minimum of information and are intended to be used one time: when communications with the response organizations are initiated. The follow-up messages are to be used for subsequent information exchange and to provide sufficient information to these organizations so they can accurately assess conditions at the site.

3.1.1 INITIAL NOTIFICATION MESSAGES

Initial Notification Messages shall contain information about the class of emergency, whether a release is taking place, potentially affected population and areas and whether protective measures are necessary.

3.1.2 FOLLOW-UP EMERGENCY MESSAGES

Follow-up Emergency Messages shall contain the following information if it is known and appropriate:

a. location and incident and name and telephone number (or communications channel identification) of caller;

b. date/time of incident;

c. class of emergency;

d. type of actual or projected release (airborne, waterborne, surface spill), and estimated duration/impact times;

e. estimate of quantity of radioactive material released or being released and the points and height of releases;

f. chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates;

g. meteorological conditions at appropriate levels (wind speed, direction (to and from), indicator of stability, precipitation, if any);

h. actual or projected dose rates at site boundary; projected integrated dose at site boundary;

i. projected dose rates and integrated dose at the projected peak and at 2, 5 and 10 miles, including sector(s) affected;

j. estimate of any surface radioactive contamination inplant, onsite or offsite;

k. licensee emergency response actions underway;

l. recommended emergency actions, including protective measures;

m. request for any needed onsite support by offsite organizations; and

n. prognosis for worsening or termination of event based on plant information.

4.0 EMERGENCY COMMUNICATIONS

A comprehensive communications system is provided to ensure reliable intraplant communications, plant to offsite telephone and carrier communications, and offsite emergency communications capabilities with public safety agencies. Effective communication between personnel during plant startup, operation, shutdown, refueling, and maintenance activities is provided by the use of private automatic branch exchange (PBX) telephone, sound-powered telephone, public address, or two-way radio systems. Figure 4.1 illustrates the CPSES communication network.

A sound-powered telephone system, independent of all other systems and external power sources, is provided to serve two purposes: to provide communications in critical areas and serve as a backup to the public address system in these areas and to provide uninterruptible communication channels for maintenance, calibration, testing, and refueling activities. These diverse means of communication are independent to prevent the loss of all systems as a result of a single failure. An emergency alarm system is installed which provides a unique alarm signal to ensure personnel evacuation.

The procedure, EPP-203, "Emergency Notification and Communications", provides instructions for the initial notification of all necessary personnel and agencies who are to respond to or be cognizant of an emergency at CPSES. Included are personnel and agency call lists, instructions for telephone operators and notification message formats to ensure accurate information is given to the support agencies.

Communication responsibilities for the organizations are described in Table 4.1, "Emergency Communication Responsibilities." This table lists the titles of the individuals who have the primary responsibility for emergency communications. Individuals with responsibility for implementing communications are listed, as applicable.

4.1 SYSTEM DESCRIPTION

The following systems comprise the intraplant and plant-to-offsite communication systems for both units.

4.1.1 PUBLIC ADDRESS SYSTEM

The intraplant communication system (public address system) provides two separate and independent channels of communication, namely page and party lines. The page-party line loud speakers are powered by individual amplifiers, and power to this system is supplied from a source which is available upon loss of offsite power.

The system layout permits communication between the Control Room and all plant areas and buildings of the two units. The system also permits two-way communication between two or more locations. Speakers and microphone handsets are installed at locations vital to the operation of the plant and the safety of personnel. The voice paging channel output is audible over the expected noise levels under both normal and accident conditions.

Five separate and independent party lines are provided to permit communication between handsets only, thereby making the page channel available to others. All five party lines are available at all handset stations, except those in elevators where only one party line is available. Selection of a desired channel is achieved by a multiposition switch provided as a part of the handset station. Both the page channel and the party line channels, which are independent, may be used simultaneously without interference.

A page-party line (with only one party line) handset station is installed in each elevator to permit communication in emergency situation.

4.1.2 INTRAPLANT TELEPHONE SYSTEM

An independent touchtone telephone system, the PBX telephone system, is provided for uninterrupted private communication between the following areas: the Control Room, Fuel Building, health/physics and instrument shop areas, remote shutdown panel area, hot shop, Guard House, reactor operating platform areas, intake structures, Maintenance Building offices, Technical Support Center, Emergency Operations Facility, Nuclear Operation Support Facility and Administration Building offices and work areas.

The PBX telephone system is integrated with the Intraplant Communication System through an isolating device to ensure that a single failure in either one of these two systems does not affect safe and reliable operation of the other system. Power is supplied to the PBX telephone system from the non-ESF bus. When the PBX telephone system's normal AC power supply is lost, a number of predetermined telephone stations remain operable which derive their power from the public telephone system.

4.1.3 INTRAPLANT SOUND-POWERED TELEPHONE SYSTEM

This system consists of three subsystems per unit as follows:

Subsystem One: Maintenance Loops - Consists of a two channel hard-wired communication link between the control room area and critical plant areas.

Subsystem Two: Refueling Loops - Consists of a two-channel hard-wired communication link between the Control Room area, fuel handling area, and reactor operating floor. This subsystem is primarily provided for refueling operations.

Subsystem Three: Emergency Loops - Consists of a two-channel, hard-wired communication link between the hot shutdown panel and safety-related equipment areas. The cables of this subsystem are routed in separate conduits from other subsystems. This subsystem is primarily provided for communications in the unlikely event the Control Room becomes inaccessible.

The headset jack stations are conveniently located on panels in the Control Room and in critical areas.

Communication can be established between the Control Room and any local panel or between two local panels by suitably plugging the headsets into jack stations which are mounted either in the panel or nearby. This system provides standby communication capability and does not depend on external sources of power other than the human voice.

The number and location of sound-powered telephone system receptacles are adequate to bring the plant to a hot shutdown or a cold shutdown from the Control Room or from the hot shutdown panel and other areas. The sound-powered telephone system can be used as a backup to the Intraplant Communication System in the critical equipment areas of the plant. One independent howler loop per unit is provided for sound-powered signaling purposes.

4.1.4 INTRAPLANT PORTABLE RADIO TRANSMITTER RECEIVER SYSTEM

Two separate communication channels of unique wavelengths for the operating personnel, maintenance personnel, and fire fighting squad are provided to enable two-way radio communication between the Control Room and various plant buildings. The Control Room is equipped with the hand-held transmitter-receivers. Portable transmitter receivers operating on either one or both channels are provided for use by operations, maintenance, and fire fighting personnel for communication between various areas of the plant.

To improve reception from various plant buildings, monitor receivers or coaxial slotted cables, or both, are installed as required in these buildings. The radio transmitter carrier frequencies are chosen to preclude interference with the Reactor Building radio controlled crane and carrier frequencies used by the Switchyard remote supervisory carrier current equipment.

4.1.5 PUBLIC TELEPHONE SYSTEM

The public telephone system is interconnected to the Intraplant Telephone System (PBX telephone system) by trunk lines. This permits access to the public telephone system from the Control Room, TSC, EOF, NOSF, health/physics and instrument shop areas, remote shutdown panel, Guard House, hot shop, Maintenance Building offices, Administration Building offices and work areas, reactor operating platform area, and intake structures.

4.1.6 TWO-WAY RADIO TRANSMITTER-RECEIVER SYSTEM (PLANT-TO-OFFSITE)

The two-way radio transmitter-receiver system is provided for emergency communication between plant and offsite public safety agencies.

The system description is provided in the Security Plan.

4.1.7 DIRECT TELEPHONE LINE TO THE SYSTEM DISPATCHER

As an aid to power plant and transmission system operation, a direct leased telephone line and speaker circuit is available to the CPSES operator in the Control Room. This direct line is independent of the PBX system. The System Operations Center, which is manned at all times, makes the direct line available for outside communication in case of emergency.

4.1.8 EMERGENCY EVACUATION ALARM SYSTEM

The evacuation alarm is generated by a solid state multifrequency audio oscillator capable of producing five distinctive tones which can be heard over all plant paging zones via the Intraplant Communication System. One of the distinctive tones is designated for the evacuation alarm signal.

The evacuation alarm system, including the multifrequency audio oscillator, is powered by a source available upon loss of offsite power and ESF bus and provides a unique alarm signal to ensure personnel evacuation in case of an emergency. The alarm is initiated by the Control Room operator in the event of a plant site evacuation emergency.

4.2 EMERGENCY NOTIFICATION SYSTEM

The Emergency Notification System (ENS) is a direct and dedicated telephone from CPSES to the NRC Operations Center. CPSES initiates contact with the NRC office, which is manned continuously by NRC technical staff "Duty Officers", by merely lifting the receiver from its cradle. This action causes a ring at the Operations Center. At CPSES, ENS extensions are located in the Control Room, the Technical Support Center and the Emergency Operations Facility. During emergencies, this line shall be used exclusively for transmitting unevaluated data for which the audience is limited.

4.3 HEALTH PHYSICS NETWORK

The Health Physics Network (HPN) is a direct and dedicated telephone system, akin to a long distance intercom system. Extensions of this system appear at the Health Physics office, Emergency Operations Facility, resident inspector's office and the Technical Support

Center. In contrast to the ENS, the Health Physics Network telephones are not used for immediate notification. The system is activated by NRC in the beginning of an incident and will remain open throughout the incident, for the collection of radiological and environmental information.

4.4 FACSIMILE COMMUNICATIONS

Facsimile Communications capability is provided via the PBX between the TSC, EOF and the NRC. The facsimile transceivers utilize dial up telephones and must be attended in order to transmit or receive.

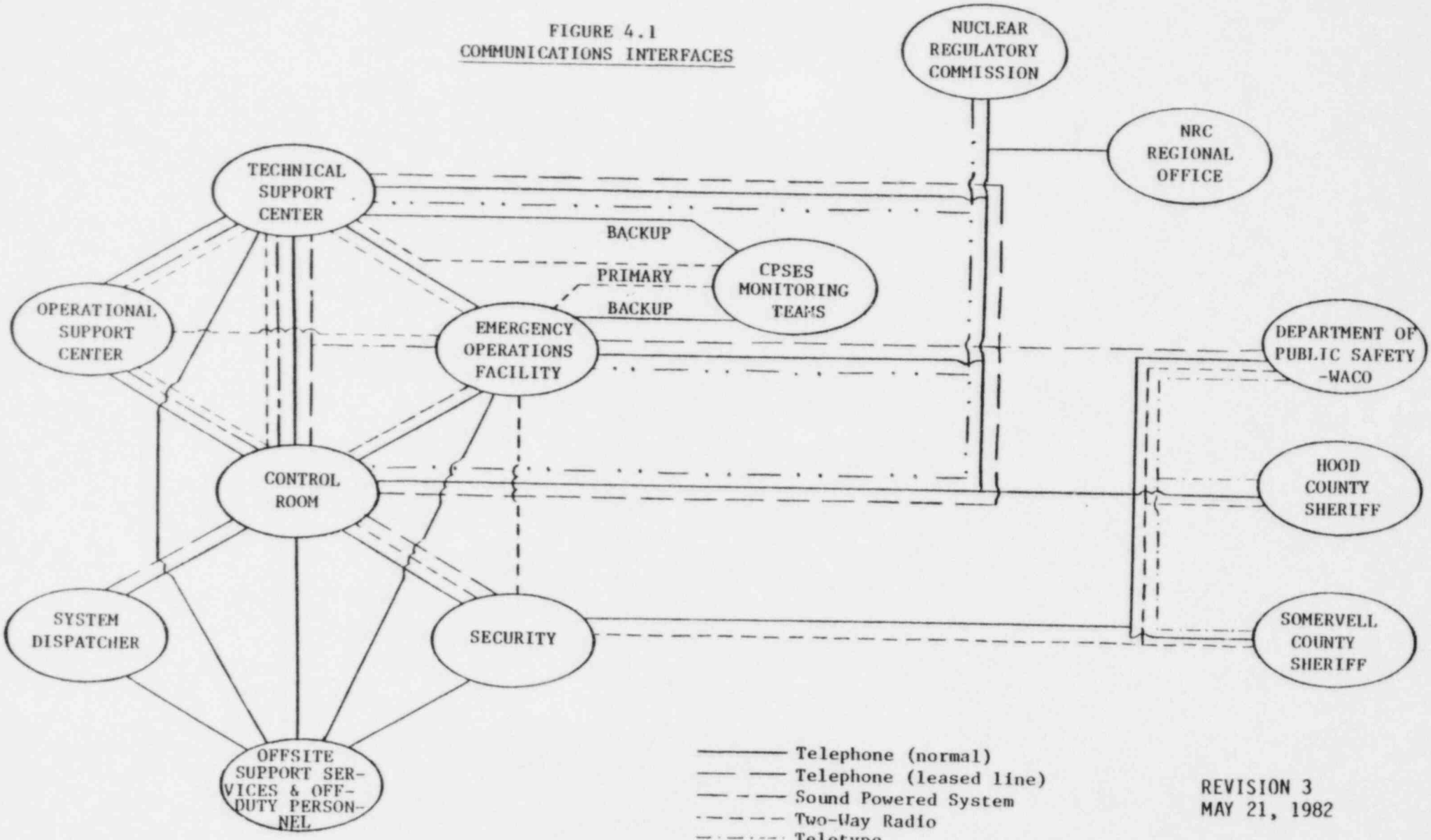
Table 4.1

Emergency Communication Responsibilities

EMERGENCY CENTER	RESPONSIBILITY/IMPLEMENTATION
CPSES EOF	Emergency Coordinator/ Communicator
CPSES TSC	TSC Manager/Communicators
CPSES CONTROL ROOM	Shift Supervisor/Control Room Personnel
HOOD COUNTY EOC	Hood County Sheriff/ Dispatcher
SOMERVELL COUNTY EOC	Somervell County Sheriff/ Dispatcher
TEXAS DPS, DISTRICT 6A	Commander/Dispatcher
CPSES RADIOLOGICAL MONITORING TEAMS	Field Team Communicator
HOOD GENERAL HOSPITAL	Hospital Administrator/ Hospital Operator
NRC HEADQUARTERS	Duty Officer
NRC - REGION IV	Duty Officer

CPSES/EP

FIGURE 4.1
COMMUNICATIONS INTERFACES



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5.0 PUBLIC EDUCATION AND INFORMATION

In order to keep the public in the plume exposure EPZ adequately informed a program will be formulated which will insure proper dissemination of general station information and emergency action information, which, coupled with media releases, should minimize rumors.

The program will be jointly developed among the local governments, the Division of Emergency Management, Texas Department of Health and Comanche Peak Steam Electric Station. An information package will be prepared and distributed annually to each residence within the designated plume exposure EPZ. Revisions will be distributed as necessary. An independent company provides a mailing list that includes all residents in the two counties. This list, updated annually, is used to distribute a periodic newsletter and the annual emergency information package. Public meetings may be held occasionally to answer questions the residents may have about CPSES and Emergency Preparedness. The initial distribution of information packages will be made prior to fuel loading. Public notices and pamphlets placed in the various parks and commercial buildings should inform the transient population. Persons visiting the Squaw Creek Reservoir shall receive information concerning their responsibilities and expected response should circumstances require that the Squaw Creek Park and Reservoir area be evacuated.

This information package shall include, but is not limited to, educational information radiation, a contact phone number for additional information, a list of protective measures (including advice about what to do if these actions are recommended) and instructions to the handicapped if assistance is required.

Prior to each annual exercise, a press briefing will be conducted by TUGCO Public Information personnel to acquaint the news media with the purpose of the exercise, and to present information and answer questions regarding emergency preparedness activities at CPSES.

In the event of an emergency at CPSES, the news media will be invited to press briefings conducted by the designated Company spokesperson at the Nuclear Operations Support Facility auditorium or other alternate facility. To the extent possible, the Public Information Coordinator will coordinate these press briefings with State and local public information personnel.

6.0 EMERGENCY FACILITIES AND EQUIPMENT

This section identifies, locates and describes the emergency facilities and equipment utilized by the CPSES Emergency Organization. The Control Room, because of its role in normal station operations is always functional and thus not considered in this discussion. Activation of a facility and the level of staffing is dependent upon the Emergency Action Level. Specific details concerning the activation and staffing of each facility are delineated in the Procedure EPP-204 "Emergency Facility Activation". A facility is considered functional when at least half of its assigned station personnel and the facility manager have arrived at the facility. These facilities are capable of continuous operations for a protracted period of time.

6.1 TECHNICAL SUPPORT CENTER

The Technical Support Center (TSC) is located in the observation area, elevation 840'6" of the Control Building, above the Control Room. In this location the TSC has the same radiological and ventilation protection as the Control Room and the TSC personnel can observe the activity in the Control Room. The TSC is approximately 1500 sq. ft. in size. It contains interactive terminals to the Safety Parameter Display System (SPDS) and the Radiation Monitoring System (RMS), as-built station drawings and flow diagrams, status boards, a technical library and communications equipment.

The TSC staff consists of management and engineering personnel. The TSC Manager is supplemented by the TSC Advisor who is the liaison between the TSC and the OSC and by the Emergency Engineering team which is directed by the Engineering Team Coordinator. The TSC staff is augmented by five representatives from the NRC.

The TSC staff, aided by the SPDS, RMS, Control Room supplied data and the technical library, assesses the engineering aspects of the accident, evaluates possible solutions and assesses the current offsite and onsite radiological conditions. In addition, the TSC staff relieves the Control Room staff of peripheral duties, such as communications with offsite authorities and administrative functions and decisions, thus allowing the Control Room staff to concentrate on reactor operations. For a Site Area Emergency or General Emergency; i.e., when the EOF is activated, the TSC shall continue assisting the

Control Room and assessing in-plant situations and transfer all offsite related activities to the EOC.

6.2 OPERATIONS SUPPORT CENTER

The Operations Support Center (OSC) is located south of the Turbine Building at elevation 810' and is approximately 1000 square feet in size. Upon the declaration of an Alert or higher class emergency, the Emergency Repair and Damage Control Group and other station personnel as needed shall assemble at the OSC unless otherwise directed by the Emergency Coordinator.

The OSC shall contain emergency kits, respiratory protection equipment, auxiliary lighting, communications equipment and first aid equipment to supply the emergency response teams and expedite their efforts.

6.3 EMERGENCY OPERATIONS FACILITY

The Emergency Operations Facility (EOF), attached to the Nuclear Operations Support Facility (NOSF), is located 1.2 miles west of the station in an optimum meteorological sector. This location allows convenient access to onsite and offsite areas. Decontamination facilities, a control room simulator, nuclear operations training personnel, laboratories and classrooms, a library, equipment for processing personnel monitoring devices, interactive terminals for the SPDS and RMS, and the news media/visitors center within the NOSF are available to the CPSES Emergency Organization. If evacuation of this facility is required, the Emergency Operations Center in either Somervell County or Hood County shall be utilized as an alternate EOF.

The working space in the EOF, approximately 3200 square feet, should accommodate 35 persons, including 10 federal emergency response personnel. Provisions for State and local personnel may be made available as necessary. Within the working space dose assessment, communications and decision making activities are performed. Field monitoring samples shall be isotopically analyzed at the EOF or a similarly equipped facility and the data transmitted to the dose assessment personnel.

The EOF shall be activated for a Site Area Emergency or General Emergency. Once activated, the EOF personnel shall be responsible for the following functions: recommending protective actions to the public officials; maintaining communications and coordination of personnel exposures with offsite support and emergency response organizations; assisting TSC and control room personnel in the evaluation of plant parameters and proposed corrective actions; and management of the overall CPSES response. These activities are accomplished with the aid of the RMS and SPDS computer terminals.

The decontamination facility is designed to accommodate personnel evacuating from the station who may be contaminated and personnel returning from the field or from planned reentries into the station environs. The facility contains a sink, three showers, two personnel survey areas, dressing area and an interim radioactive waste and material storage room. Water used for decontamination purpose shall be retained in a storage tank for later sampling and processing, if required. The solid waste shall be introduced into the station radioactive waste system when it is appropriate to do so.

6.4 STATE AND LOCAL EMERGENCY OPERATIONS CENTERS

The State of Texas Emergency Operations Center (EOC) serving CPSES is located in Waco, Texas, and is the Department of Public Safety (DPS) District 6A Office. This office is staffed 24 hours per day with the commanding Highway Patrol Officer in charge of the Regional EOC. Any notification of an emergency at CPSES should be transmitted to the Regional EOC by way of a dedicated telephone line from CPSES to the Regional EOC. The EOC in Waco shall notify the State EOC in Austin from where the State's emergency operations response would then be activated. The "Texas Management Plan" is the operating document for the State.

The Emergency Operations Centers for the two county governments surrounding CPSES are the Hood County and Somervell County Sheriff's Offices. The Sheriff's offices will normally be notified of an emergency at CPSES by the DPS; however, CPSES may contact them directly. The Sheriff's office shall initiate the county "Emergency Operations Plan". A Texas Utilities representative, familiar with station systems and the CPSES Emergency Plan, shall be sent to the local EOC's, if required by the local EOC Manager. He functions as an

advisor to the local EOC Manager and could act as a liaison between that Manager and CPSES. He is not a spokesperson for the Company.

6.5 EMERGENCY AID FACILITIES

First aid stations are located in the Turbine Building across from the Health Physics office and in the NOSF. These stations are equipped with standard first aid supplies and stretchers.

Decontamination stations are located in the turbine building and the NOSF. These stations are equipped for personnel decontamination with showers, sinks, supplies and spare clothing. The NOSF decon facility sinks, showers and floor drains normally drain to a non-radioactive waste system; however, if need for radiological purposes, all water generated in this area is diverted to a holdup tank for subsequent processing.

6.6 EMERGENCY EQUIPMENT AND SUPPLIES

Each Emergency Response facility (the Control Room, TSC, EOF and OSC and the Hood General Hospital) is supplied with emergency equipment and supplies commensurate to the response expected from that facility. The inventory of supplies in Section 15.0, Appendix J is representative of that stored in the facilities. Complete equipment lists and the surveillance requirements are available in the Procedure EPP-310 "Surveillance of Emergency Supplies". This procedure dictates an inventory check of the supplies once each calendar quarter and after each use or periodic testing. Exchange or removal of items shall be controlled such that the prescribed inventory levels are maintained.

The EOF emergency supplies consist of three field monitoring kits, protective clothing, respiratory protection equipment, portable radiation monitoring equipment and miscellaneous maintenance-type equipment. These supplies are available for use by the field monitoring teams, personnel stationed at the EOF, and personnel who may require to reenter the site. The TSC and Control Room are also stocked with emergency supplies to ensure their preparedness in the event of an emergency. A detailed check list of this equipment and instructions concerning periodic testing and inventory are addressed in EPP-310 "Surveillance of Emergency Supplies". The OSC is also equipped with the necessary emergency supplies and equipment for use

in an emergency condition. These supplies are available for use by the OSC personnel, reentry teams, adn ERDC personnel.

Thyroid blocking drugs shall be kept in bulk at the EOF. On hand supplies will provide protection for at least 200 station employees for 5 days. Smaller quantities shall be maintained in the field monitoring kits, the TSC and the OSC.

The supplies maintained at the Hospital shall contain protective clothing, monitoring equipment, and contamination control supplies and selected procedures for use by the Hospital staff.

The following systems and equipment are used by the Emergency Organization to assess operating systems status, in-plant and offsite radiological conditions and the overall safety status of the plant.

6.6.1 SAFETY PARAMETER DISPLAY SYSTEM

The Safety Parameter Display System (SPDS) provides assistance to Control Room personnel in evaluating the safety status of the plant. The SPDS serves to concentrate a minimum set of plant parameters from which the plant safety status can be accessed. More detailed plant information is provided by secondary displays.

The SPDS information is based on software and displays developed for the Safety Assessment System (SAS). The SAS provides a centralized, flexible, computer-based data and display system to assist Control Room, TSC and EOF personnel in evaluating the safety status of the plant. This is accomplished by providing to these personnel a high level graphical display containing a minimum set of key plant parameters. All graphical displays are presented to the Control Room personnel on a high resolution multi-color CRT.

All data displayed by the SAS is validated by comparing redundant sensors, checking the value against reasonable limits, calculating rates of change and checking temperature versus pressure curves. These displays (data) are updated and validated on an essentially real-time basis.

The SPDS vis-a-vis SAS is displayed on a CRT located in the Control Room. This CRT contains the high-level display from which the overall safety status of the plant is assessed. A dedicated function button

panel allows the operator to select from several predetermined second level displays at any time. The SPDS displays are also available to TSC and EOF personnel.

The primary display consists of bar graphs of selected parameter values, digital status indicators for important safety system parameters and digital values. The parameters indicated by bar graphs and digital values include: RSC pressure, RCS temperature, pressurizer level, steam generator levels and steam generator pressures. Status indicators are provided for containment environment and secondary system radiation. Reactor vessel level (if available), core exit temperature, amount of subcooling and containment radiation are indicated by digital values. Each of the bar graphs indicate wide-range values. If a parameter's value is outside the normal range, the bar color will turn red.

In addition, there is a message area which will be used to indicate that an appropriate secondary display provides further information in case an off-normal value is detected or an event is occurring.

Secondary displays may be selected by the operator. Trend graph groups of selected parameters, showing the last thirty minutes of plant operation are available. These trend groupings were chosen to keep like parameters or related parameters on one display "page".

The total SPDS is not Class 1E and does not meet the single-failure criterion. The sensors and signal conditioners (such as preamplifiers, isolation devices, etc.) are designed and qualified to meet Class 1E standards for those SPDS parameters that are also used by safety systems. Furthermore, sensors and signal conditioners for those parameters of the SPDS identical to the parameters specified within Reg. Guide 1.97 are designed and qualified to the criteria stated in Reg. Guide 1.97.

The SPDS used in the Control Room is designed to an operational unavailability goal of 0.01. The cold shutdown unavailability goal for the SPDS during the cold shutdown and refueling modes for the reactor is 0.2. The unavailability goal of 0.01 is more stringent than can be reasonably achieved without some redundancy. Therefore, dual minicomputers, data multiplexors, and other critical peripherals will be installed. Power supply is from Non-1E Battery, Uninterrupted Power Supply System.

6.6.2 EMERGENCY RESPONSE FACILITY COMPUTER SYSTEM

The Emergency Response Facility (ERF) computer system for CPSES consists of a system configuration as shown in Figure 6.1. The overall system principally consists of:

a. Isolation devices with integral digiting equipment which will provide 12 bit resolution of the parameter ranges.
b. Fiber optic cable runs between the remote multiplexors/isolators and ERF computer.

This system is considered to be the Data Acquisition System (DAS). The DAS will be powered by a non-1E, highly reliable power source. (UPS-battery system)

Redundant minicomputers provide the data processing/distribution/and record keeping functions required. The minicomputers are located in the same room as the plant process computer, but do not rely on the process computer for any of its ERF System functions. The minicomputers are powered from a highly reliable non-1E battery/UPS system.

The display system consists of color graphics display units implementing the Safety Assessment System Software. Two displays are located in the control room, three in the TSC, and two in the EOF. One of the control room displays is dedicated to the display of SPDS type parameters. The other displays have full display capability, including the SPDS type parameters, in addition to all other parameters available to the computer. The Control Room and TSC displays will be powered from non-1E, battery/UPS power supplies.

The integrated ERF Computer System reliability design goal is to achieve 0.01 unavailability during all plant operating modes above cold shutdown.

6.6.3 RADIATION MONITORING SYSTEM

The Radiation Monitoring System includes the Area Radiation Monitoring System (ARMS) and the Process Radiation Monitoring System (PRMS). A block diagram is shown on Figure 6.2.

The basic ARMS (integrated with PRMS) comprises two dedicated

microcomputers in communication with each other (one in each of two central display consoles), distributed dedicated microprocessors (one for each local detector/monitor assembly), and a report computer. At each monitor, control, data processing, data storage, and multilevel alarming are performed locally by the dedicated microprocessor; also, processed data are communicated to central consoles. These monitor functions are performed at each monitor independently of the rest of the system. This independence is insured by use of optical couplers in monitor input/output circuits and by the distances separating monitors. The Process Radiation Monitoring System provides a means for measuring and controlling radioactive process streams and effluents throughout the plant.

The RM-21 report computer is part of the PRMS. The function of the RM-21 report computer is to help nuclear plant operators meet the requirements of the U.S. Nuclear Regulatory Commission (NRC) governing the assessment of routine and accident radiation doses. The RM-21 generates two basic calculations for atmospheric dispersion, (1) routine releases and (2) accident releases. For routine releases, dispersion is calculated using the sector-average version of the equations for atmospheric relative concentration (atmospheric dispersion factor) (X/Q). For accident releases, the sector-average and the centerline versions of the X/Q equations are used. These calculations are made in accordance with methodology in NRC Reg. Guide 1.111 for routine releases and, to some extent, in NRC Reg. Guide 1.145 for accident releases (except that effluent plume meander is not calculated for accident conditions). Each release point is considered separately so that the height of release and vent conditions are accounted for. All calculations use the Gaussian plume model.

The RM-21 also generates dose calculations for routine and accident conditions using the computed hourly effluent radionuclide releases, dilution/deposition rates and site-specific data constants.

Dose calculations for accident conditions are for doses caused by exposure to the plume, that is, beta (skin), gamma (whole body), thyroid (inhalation). Dose is computed by using the X/Q value and the Q (release) value, using the most recent data available. Results of the dose calculations are printed for operator use or may be displayed graphically as the gaseous release isopleth. Complete information on these systems is located in the FSAR sections 11.5 and 12.3.4.

6.6.3.1 Area Radiation Monitoring System

The Area Radiation Monitoring System (ARMS) continually monitors radiation fields in various representative regions within the plant. Table 6.1 lists the parameters for this system.

6.6.3.2 Process Radiation Monitoring System

The Process Radiation Monitoring System (PRMS) provides a means for assessing radioactivity levels in plant process and effluent streams, and controls plant process and effluent streams including the handling and processing of radioactive waste. Table 6.2 lists the parameters for this system.

6.6.4 HEALTH PHYSICS INSTRUMENTATION

The Radiation Protection Section maintains a supply of Health Physics laboratory and portable surveying equipment. While this equipment is used routinely for normal operations, it is also available to supplement the emergency radiological monitoring equipment. Tables 6.3 and 6.4 list this equipment.

6.6.5 METEOROLOGICAL MEASUREMENTS PROGRAM

The meteorological measurements program of the Comanche Peak Steam Electric Station shall consist of the following:

1. A primary meteorological measurements system.

2. A backup meteorological measurements system.

3. A system for making real-time predictions of the atmospheric effluent transport and diffusion.

   To accomplish these goals, the pre-operational meteorological instrument system, Table 6.5, will be modified to transmit meteorological parameters to the Meteorological Instrument Panel in the Control Room and the Radiation Monitoring System computer.

The parameters, which are wind speed and wind direction at 10 and 60 meter levels and delta-temperature between the 10 and 30 and 10 and 60 meter levels, will be 1) continuously recorded at the Meteorological

Instrument Panel and 2) scanned once per minute by the Radiation Monitoring System computer where they will be averaged each hour and stored. A time-history of the meteorological data will be available in analog form (strip charts) and from the hourly averaged digital data provided by the computer.

The ambient temperature at the 10-meter level will also be displayed on strip chart recorders on the Meteorological Instrument Panel in the Control Room.

The computer will keep track of current averages of diffusion meteorology, measured effluent release rates, and the inventory for fission products released. The system will include the required software which will permit plant operators to make real-time, site specific estimates and predictions of atmospheric effluent transport and diffusion during and immediately following an accidental airborne radioactivity release from the plant.

A viable backup system to provide measurements representative of site conditions of wind speed and direction and delta-temperature for substitution of lost or invalid primary data will be available before fuel load of Unit One.

The operational program will be conducted in accordance with the requirements specified in Regulatory Guides 1.21 and 4.1, proposed revision 1 to Regulatory Guide 1.23, and revision 1 to NUREG-0654. Further details of the program are described in the CPSES FSAR, Section 2.3.

In the event of an emergency condition at CPSES, should additional meteorological data or forecasts be required, the National Weather Service office in Fort Worth would be contacted.

TABLE 6.5

METEOROLOGICAL INSTRUMENTATION
(Preoperation Phase)

Measurement	Level (meters)	Instrument
Wind Speed	10 & 60	6 cup Anemometer
Wind Direction	10 & 60	Wind Vane
Temperature	10, 30 & 60	Thermistor Composite
		Aspirated Shield (Temp., Dewpoint, & ΔT)
Dewpoint	10 & 60	Lithium Chloride Dewcell
Delta Temperature (ΔT)	10-30 and 10-60	Thermistor Composite
Precipitation	Surface	Tipping Bucket Rain Gauge
Total Solar Radiation	1	Pyranometer
Net Solar Radiation	1	Net Radiometer

Note: The meteorological equipment is being upgraded to comply with NUREG-0654 and Reg. Guide 1.23. This equipment modification shall be reflected in the plan when it becomes available.

6.6.6 SEISMIC MONITORING

Seismic monitoring is provided within the plant so that in case of an earthquake, sufficient data is generated to permit verification of the dynamic analysis of the plant and evaluation of the safety of continued operation.

The seismic instrumentation comprises the following instruments:

1. A triaxial time history accelerograph, which consists of triaxial acceleration sensors, a seismic trigger, a magnetic tape recorder and controls, and a magnetic playback unit. The function of the triaxial time history accelerograph is to measure and permanently record absolute acceleration as a function of time during an earthquake.

2. A triaxial peak accelerograph, which is designed to permanently record peak seismic accelerations of seismic Category I equipment and piping.

3. A passive response spectrum recorder, which is designed to permanently record spectral accelerations corresponding to specified frequencies and located at the foundation of the Containment Building and the supports of the seismic Category I equipment and piping.

4. A response spectrum switch, which is designed to provide a signal for remote, immediate indication that any specified, preset, spectral acceleration has been exceeded.

5. A seismic switch, which is designed to provide a signal for remote immediate indication that a specified, preset, acceleration has been exceeded.

The seismographic instrumentation is fully described in section 3.7B.4 of the FSAR.

6.6.6.1 Location and Description of Instrumentation

The seismic instruments enumerated in the previous section are situated at the following locations:

1. The triaxial time history accelerograph has three triaxial acceleration sensors. The first is located at the top of the Containment Building mat, the second is located on the exterior face of the Containment Building wall at elevation 1000 ft. 6 in., and the third is located in the "free field". These sensors have the function of sensing the absolute seismic accelerations in two horizontal orthogonal directions and in the vertical direction at the Containment foundation, on the Containment structure, and in the "free field". The data collected by the sensors are transmitted to the recorder.

   In addition, a seismic trigger is installed on the Containment Building foundation and is connected to all three sensors and the recorder. The function of the seismic trigger is to start the time history accelerograph whenever a preset threshold is exceeded for any of the three directions. A time delay device keeps the entire system operating for five seconds after the last motion above the threshold of the trigger.

   The triaxial time history accelerograph also includes a magnetic tape recorder and a playback unit which records the signals for accelerations versus time in the three orthogonal directions and provides immediate visual display of the recorded time histories on a strip chart.

2. The triaxial peak accelerograph is a passive instrument that requires no power source to sense motion and to record data. It is used at one of the steam generators, on the reactor piping, and on one of the safety injection pumps in the Safeguards Building for recording the peak seismic accelerations on the equipment and systems.

3. The passive response spectrum recorder is used on the Containment Building foundation, on one of the steam generator compartment walls, and near one of the safety injection pumps in the Safeguards Building for recording seismic responses at these locations for different preset frequencies.

4. The response spectrum switch is located on the Containment Building foundation and is used for transmitting to the Control Room a signal whenever the response in any of the three orthogonal directions exceeds a preset value.

5. The seismic switch is located on the Containment Building foundation and is used for transmitting to the Control Room a signal whenever the acceleration in one of the three orthogonal directions exceeds a preset value.

A schematic diagram indicating the locations of all seismic instrumentation is presented on Figure 6.3.

Based upon the information contained in Section 2.5 of both the CPSES FSAR and ER, which discuss the low probability of a significant seismic event occurring within the CPSES area, the requirement for accessing offsite seismic monitoring equipment is considered unnecessary.

6.6.6.2 Control Room Notification

In case of any seismic activity of sufficient intensity to activate the seismic instrumentation, the Control Room is alerted by means of the seismic annunciation system, which consists of visual and audible alarms. Approximately 15 seconds after the basement acceleration falls below the threshold level, the recorders are shut off. Operations personnel then obtain the strip chart records of the acceleration time history in the longitudinal, transverse, and vertical directions. These records are then compared with previously prepared templates, on which allowable acceleration amplitudes have been clearly marked, to determine whether continued plant operation is considered safe or the plant should be shut down pending further evaluation.

The seismic trigger is set to activate the instrumentation at an acceleration level slightly above normal ambient vibrations and well below the postulated OBE "free field" ground acceleration. Any response of the seismic instrumentation above this predetermined threshold is monitored by Operations personnel as previously described.

In addition to this data, the operator obtains the response spectra to aid him in taking appropriate action if an earthquake larger than the OBE has occurred. These response spectra are generated by several response spectrum recorders installed at selected locations in or near seismic Category I structures, systems, and components, as described in Section 6.6.6.1.

6.6./ HYDROLOGICAL MONITORING

The hydrological monitoring equipment used by CPSES provides data on the water level Squaw Creek Reservoir. The level indicator is not capable of being read in the Control Room. To compensate, operators periodically read the level indicator and relay the information to the Control Room.

Based upon the information contained in Section 2.4 of both the CPSES FSAR and ER, which discuss the low probability of a significant hydrological event occurring within the CPSES area, the requirement for accessing offsite hydrological monitoring equipment is considered unnecessary.

6.6.8 PROCESS MONITOR INSTRUMENTATION

The SPDS system and ERF computers provide graphic displayed data to the Control Room personnel and to the CPSES Emergency Organization personnel in the TSC and EOF. This information is also available to the operators by remote monitoring indicators located on the operators' control board. The following three tables list the principal systems:

Table 6.6 Reactor Trip System Instrumentation

Table 6.7 Control Board Indicators

Table 6.8 Control Board Indicators' Parameters

6.6.9 FIRE DETECTION INSTRUMENTATION

This section identifies and describes the Fire Detection Instrumentation used at CPSES. This information is found on Figures 6.4. A complete description of the CPSES Fire Protection Program is located in the FSAR section 9.5.1.

6.6.9.1 Detection System

Columns 19 and 20 on Figure 6.4, the Fire Hazards Analysis chart, list the fire detectors utilized at CPSES. The following information explains these detectors.

1. Column 19 Fire Detection Systems - Type

This column identifies the number and type of detectors located in each fire area, according to the component of combustion (i.e., heat or products of combustion). Detectors are selected in accordance with the class of combustible material, the type of equipment located in a fire area, the type of fixed fire protection system installed in the area and the physical arrangement of the area. The types are as follows:

a. Ionization detectors (ID) respond to products of combustion.

b. Thermal detector (TD) responds to heat of combustion.

c. Infrared detector (IR) responds to the presence of flame.

The term "none" shall indicate that there are no detectors in the area.

2. Column 20 Fire Detection Systems - Intended Service

This column identifies the designated function of the Fire Detection System, subsequent to activation, in an individual fire area. The respones subsequent to actuation consist of:

a. Local alarm (LA), which annunciates an alarm in the specific fire area.

b. Remote alarm (RA), which annunciates an alarm in the Control Room and throughout the plant.

c. Fixed system actuation (FSA), which actuates the fixed fire protection system in the specific fire area.

d. Water flow alarm (FA) which annunciates an alarm indicating water flow to a fixed extinguishing system.

6.6.10 POST ACCIDENT SAMPLING SYSTEM

The CPSES Post Accident Sampling System (PASS) is supplied by the Reactor Plant Services division of Reactor Plant Services division of General Dynamics in Groton, Connecticut. It is comprised of two

independent units: Reactor Coolant PASS and Containment Air PASS.

The reactor coolant PASS is capable of collecting a primary coolant or containment sump liquid sample as required by NUREG-0737. The reactor coolant PASS is a dual module unit consisting of one sample module and one remote operating module. The sample module is located in the Primary Plant Sample Room and contains the valves and components required to physically collect the sample. The remote operating module is located in the Switchgear Room (a low radiation area) and contains the sample system mimic board, electrical controls, and instrumentation readout necessary to operate the sample module remotely.

The Containment Air PASS has the capability of collecting a sample of containment air as required by NUREG-0737. The Containment Air PASS is a dual module unit consisting of one sample module and one remote operating module. The sample module is located in the Primary Plant Sample Room and contains the valves and components required to physically isolate a sample of containment air. The remote operating module is located in the Switchgear Room (a low radiation area) and contains the sample system mimic board, slave valves, and nitrogen flask required to operate the sample module remotely.

Operating procedures for the Reactor Coolant and Containment Post Accident Sampling Systems will be developed prior to operation.

6.6.11 OFFSITE RADIOLOGICAL MONITORING PROGRAM

The Offsite Radiological Monitoring Program is addressed in the Radiological Effluent Technical Specifications and conforms to the Branch Technical Positions requirements.

The Offsite Radiological Monitoring System include the following equipment: 9 airborne monitoring stations and 43 TLD's. The 9 airborne monitoring stations are designed for collecting particulate and radioiodine samples. The airborne monitoring stations are located in and around the plant perimeter. The TLD's are designed for determining gamma dose and are located as follows: 16 TLD's are located on the plant perimeter (1 in each sector), 16 TLD's are located between 4-5 miles from the plant (1 in each sector), and the remaining 11 TLD's are placed in selected areas. For exact locations and directions to the air sample station and TLD's refer to figure 6.1 and procedure EPP-303, "Emergency Radiological Surveys."

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TABLE 6.1
(Sheet 1 of 6)

AREA RADIATION MONITORING SYSTEM PARAMETERS

Channel Nos. Unit 1	Unit 2	Detector Type	Monitor Location	Specified Instrument Range (mR/hr)
Containment Building				
1RE 6290A	2RE 6290A	Ionization Chamber	Elevation 905 ft 9 in.	1.0E 03 to 1.0E 10
1RE 6290B	2RE 6290B	Ionization Chamber	Elevation 905 ft 9 in.	1.0E 03 to 1.0E 10
1RE 6250	2RE 6250	G-M tube	Elevation 905 ft 9 in.	1.0E-01 to 1.0E 04
1RE 6251	2RE 6251	G-M tube (criticality monitor)	Elevation 860 ft 0 in. manipulator crane area	1.0E-01 to 1.0E 04
1RE 6252	2RE 6252	G-M tube (criticality monitor)	Elevation 860 ft 0 in.	1.0E-01 to 1.0E 04
1RE 6253	2RE 6253	G-M tube (criticality monitor)	Elevation 860 ft 0 in.	1.0E-01 to 1.0E 04
1RE 6255	2RE 6255	Ionization Chamber	Elevation 808 ft 0 in.	1.0E 02 to 1.0E 07

AREA RADIATION MONITORING SYSTEM PARAMETERS

Channel Nos. Unit 1	Unit 2	Detector Type	Monitor Location	Specified Instrument Range (mR/hr)
1RE 6256	2RE 6256	Ionization Chamber	In-core instrumentation room Elevation 849 ft 0 in.	1.0E 02 to 1.0E 07
1RE 6285	2RE 6285	Ionization Chamber	Below in-core instrumentation room, Elevation 831 ft 6 in.	1.0E 02 to 1.0E 07
Safeguards Building				
1RE 6257	2RE 6257	G-M tube	Personnel airlock Elevation 831 ft 6 in.	1.0E-01 to 1.0E 04
1RE 6259A	2RE 6259A	Ionization Chamber	Mechanical Penet. area Elevation 810 ft 6 in.	1.0E+02 to 1.0E+07
1RE 6260B	2RE 6260B	Ionization Chamber	RHR Pump room Elevation 773 ft 0 in.	1.0E02 to 1.0E07
1RE 6260A	2RE 6260A	Ionization Chamber	RHR Pump room Elevation 773 ft 0 in.	1.0E 02 to 1.0E 07
1RE 6259B	2RE 6259B	Ionization Chamber	Mechanical Penet. area Elevation 810 ft 6 in.	1.0E02 to 1.0E07
1RE 6286	2RE 6286	G-M tube	Hot shutdown panel area Elevation 831 ft 6 in.	1.0E-01 to 1.0E 04
1RE 6261	2RE 6261	G-M tube	Sampling Room Elevation 810 ft 6 in.	1.0E-01 to 1.0E 04

AREA RADIATION MONITORING SYSTEM PARAMETERS

Channel Nos. Unit 1	Unit 2	Detector Type	Monitor Location	Specified Instrument Range (mR/hr)
1RE 6291A	2RE 6291A	Ionization Chamber	Valve isolation tank room Elevation 790 ft 6 in.	1.0E02 to 1.0E07
1RE 6291B	2RE 6291B	Ionization Chamber	Valve isolation tank room Elevation 790 ft 6 in.	1.0E02 to 1.0E07
1RE 6292	2RE 6292	Ionization Chamber	Electrical Penet. area Elevation 810 ft 6 in.	1.0E02 to 1.0E07
1RE 6293	2RE 6293	Ionization Chamber	Piping Penet. area Elevation 831 ft 6 in.	1.0E02 to 1.0E07
1RE 6294	2RE 6294	Ionization Chamber	Electrical Penet. area Elevation 831 ft 6 in.	1.0E02 to 1.0E07
1RE 6295	2RE 6295	Ionization Chamber	Personnel airlock Elevation 831 ft 6 in.	1.0E02 to 1.0E07
1RE 6296	2RE 6296	Ionization Chamber	Electrical Penet. area Elevation 852 ft 6 in.	1.0E02 to 1.0E07
1RE 6297	2RE 6297	Ionization Chamber	Emergency airlock Elevation 896 ft 6 in.	1.0E02 to 1.0E07
Auxiliary Building				
XRE 6262	XRE 6263	Ionization Chamber	Charging pump area Elevation 810 ft 6 in.	1.0E 02 to 1.0E 07

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AREA RADIATION MONITORING SYSTEM PARAMETERS

Channel Nos. Unit 1	Unit 2	Detector Type	Monitor Location	Specified Instrument Range (mR/hr)
XRE 6264	XRE 6265	Ionization Chamber	Filter - demineralizer area, Elevation 831 ft 6 in. and 842 ft 0 in.	1.0E 02 to 1.0E 07
XRE 6266	XRE 6267	G-M tube	Evaporator area Elevation 810 6 in.	1.0E-01 to 1.0E 04
XRE 6268	XRE 6269	G-M tube	Gas decay tank area Elevation 852 ft 6 in. and 862 ft 6 in.	1.0E-01 to 1.0E 04
XRE 6270		Ionization Chamber	Recycle holdup tank area, Elevation 810 ft 6 in.	1.0E 02 to 1.0E 07
XRE 6271		G-M tube	Hydrogen recombiner area, Elevation 810 ft 6 in.	1.0E-01 to 1.0E 04
XRE 6287		G-M tube	Reverse osmosis concentration tank area, Elevation 790 ft 6 in.	1.0E-01 to 1.0E 04
XRE 6277		G-M tube	Filter drop area Elevation 810 ft 6 in.	1.0E-01 to 1.0E 04
XRE 6288		G-M tube	Fuel Building entrance area, Elevation 860 ft 0 in.	1.0E-01 to 1.0E04

AREA RADIATION MONITORING SYSTEM PARAMETERS

Channel Nos. Unit 1	Unit 2	Detector Type	Monitor Location	Specified Instrument Range (mR/hr)
1RE 6298	2RE 6298	Ionization Chamber	Ventilation Penet. area Elevation 873 ft 6 in.	1.0E02 to 1.0E07
1RE 6299	2RE 6299	Ionization Chamber	Ventilation Penet. area Elevation 886 ft 6 in.	1.0E02 to 1.0E07
Fuel Building				
XRE 6272	XRE 6273	G-M tube (criticality monitor)	Operating floor Elevation 860 ft 0 in.	1.0E-01 to 1.0E 04
XRE 6274	XRE 6275	G-M tube (criticality monitor)	Operating floor Elevation 860 ft 0 in.	1.0E-01 to 1.0E 04
XRE 6278		G-M tube	General area Elevation 810 ft 6 in.	1.0E-01 to 1.0E 04
XRE 6279		-M tube	Vicinity of wet cask pit, Elevation 838 ft 9 in.	1.0E-01 to 1.0E 04
XRE 6289		G-M tube	Drum fill area, Elevation 810 ft 6 in.	1.0E-01 to 1.0E 04
Turbine Building				
XRE 6280		G-M tube	Hot shop area Elevation 810 ft 6 in.	1.0E-01 to 1.0E 04

AREA RADIATION MONITORING SYSTEM PARAMETERS

Channel Nos. Unit 1	Unit 2	Detector Type	Monitor Location	Specified Instrument Range (mR/hr)
1RE 6284	2RE 6284	G-M tube	Condensate polisher area, Elevation 803 ft 0 in.	1.0E-01 to 1.0E 04
	XRE 6283	G-M tube	Hot lab area Elevation 810 ft 6 in.	1.0E-01 to 1.0E 04
Electrical and Control Building				
XRE 6281	XRE 6282	G-M tube	Control room Elevation 830 ft 0 in.	1.0E-01 to 1.0E 04

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PROCESS RADIATION MONITORING SYSTEM PARAMETERS

Detector Nos.**							
Unit 1	Unit 2	Detector Type	Monitor Service	Monitor Locations (El., Column Coord., Figure Numbers)	Principa Isotopes Monitored	Monitored Medium	Specified Instrument Range (uCi/cm^3)
Auxiliary Building							
XRE 5568A XRE 5568B		Beta scintillator	Plant vent effluent - air Particulate (off-line)	El.873 feet 6 in. (Fig. 1.2-35, 1.5A-JA and 8.5A-JA	I-131, I-133, Cs-134, Cs-137*, Co-58, Co-60	Air	5E-11 to 5E-07
XRE 5575A XRE 5575B		Gamma scintillator	Plant vent effluent -- iodine (off-line)	El.873 feet 6 in. (Fig. 1.2-35, 1.5A-JA and 8.5A-JA)	I-131*, I-133	Air	4E+4 cpm/UCi
XRE 5570A XRE 5570B		Beta scintillator	Plant vent effluent -- noble gases (off-line)	El.873 feet 6 in. (Fig. 1.2-14; 8S-ES and Fig. 1.2-20, 9S-ES) Flow diagram 9.4-9	Kr-85, Xe-135 Xe-133*	Air	1E-06 to 1E+05
XRE 5701		Beta scintillator	Auxiliary Building ventilation air - noble gases (in-line)	Vent duct, El.873 ft. 6 in. (Fig. 1.2-35, 2.5A-FA) Flow diagram Fig. 9.4-2	Kr-85, Xe-135 Xe-133*	Air	1E-04 to 1E 00
1RE 5637	2RE 5637	Beta scintillator	Main steam and feedwater area ventilation air-- noble gases (in-line)	Vent duct, El.852 ft. 6 in. (Fig. 1.2-13, 4S-CS) and Fig. 1.2-19, 13S-CS) Flow diagram Fig. 9.4-4	Kr-85, Xe-135 Xe-133*	Air	1E-04 to 1E 00
XRE 5250	-	Beta scintillator	Waste gas (on-line)	GWPS, El. 862 feet 6 in. (Fig. 1.2-34, 3A-GA) Flow diagram Fig. 11.3-1	Kr-85, Xe-135 Xe-133*	Gas	1E-01 to 1E+04
1RE 4269 1RE 4270	2RE 4269 2RE 4270	Gamma scintillator	Service water (off-line)	El. 790 feet 6 in. (Fig. 1.2-31, 4A-GA) Flow diagram Fig. 9.2-1	I-131, I-133 Cs-134, Cs-137,	Water	1E-05 to 1E-01
1RE 4509 1RE 4510 1RE 4511	2RE 4509 2RE 4510 2RE 4511	Gamma scintillator	Component cooling water (off-line)	El. 810 feet 6 in. (Fig. 1.2-32, 4A-FA to JA and 6A-FA to JA) Flow diagram Fig. 9.2-3	I-131, I-133 Cs-134, Cs-137, Co-58, Co-60*	Water	1E-05 to 1E-01
XRE 5380	-	Gamma scintillator	Boron recycle fluid (in-line)	El. 852 feet 6 in. (Fig. 1.2-34, 4A-KA) Flow diagram 9.3-11	I-131, I-133, Cs-134, Cs-137,	Water	1E-05 to 1E-01

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PROCESS RADIATION MONITORING SYSTEM PARAMETERS

Detector Nos.**							
Unit 1	Unit 2	Detector Type	Monitor Service	Monitor Locations (El., Column Coord., Figure Numbers)	Principal Isotopes Monitored	Monitored Medium	Specified Instrument Range (uCi/cm^3)
XRE 5251 XRE 5252 XRE 5253		Gamma scintillator	LWPS fluids (in-line)	El. 790 feet 6 in. (Fig. 1.2-31, 6A-HA, 2.5A-HA, and 3A-FA) Flow diagrams Fig.s 11.2-4 and 11.2-5	I-131, I-133, Cs-134, Cs-137, Co-58, Co-60*	Water	1E-05 to 1E-01
XRE 4180 XRE 4181		Gamma scintillator	Spent fuel pool demineralizer sample (off-line)	El. 852 feet 6 in. (Fig. 1.2-34, 5A-KA and 6A-KA) Flow diagram Fig. 9.1-13	I-131, I-133, Cs-134, Cs-137, Co-58, Co-60*	Water	1E-05 to 1E-01
XRE 3230	-	Gamma scintillator	Auxiliary steam condensate (off-line)	El. 790 feet 6 in. (Fig. 1.2-31, 3A-LA) Flow diagram Fig. 10.4-16	Co-60*, Co-58, Cs-134, Cs-137	Water	1E-05 to 1E-01
1RE 5698	2RE 5698	Beta scintillator	Safeguards building ventilation air (in-line)	Vent duct, El. 873 ft. 6 in. (Fig. 1.2-35, 2A-HA and 8A-HA) Flow diagram Fig. 9.4-2	Xe-133*, Xe-135 Kr-85	Air	1E-04 to 1E-00
XRE 5700	-	Beta scintillator	Fuel Building ventilation air (in-line)	Vent duct, El.886 ft. (Fig. 1.2-35, 4A-KA) Flow diagram Fig. 9.4-2	Xe-133*, Xe-135 Kr-85	Air	1E-04 to 1E-00
XRE 5702	-	Beta scintillator	HVAC room ventilation air (in-line)	Vent duct, El.873 ft 6 in. (Fig. 1.2-35, 4A-KA) Flow diagram Fig. 9.4-2	Xe-133*, Xe-135 Kr-85	Air	1E-04 to 1E-00
Safeguards Building							
1RE 4200	2RE 4200	Gamma scintillator	Steam generator blowdown sample (off-line)	El. 810 feet 6 in. (Fig. 1.2-11, 6S-CS and Fig. 1.2-17, 11S-CS) Flow diagram Fig. 9.3-4	I-131, I-133, Cs-134, Cs-137 Co-58, Co-60*	Water	1E-05 to 1E-01
1RE 5179	2RE 5179	Gamma scintillator	Steam generator Blowdown Processing System fluid (off-line)	El. 810 feet 6 in. (Fig. 1.2-11, 6S-CS and Fig. 1.2-17, 11S-CS) Flow diagram Fig. 10.4-10	I-131, I-133, Cs-134, Cs-137, Co-58, Co-60*	Water	1E-05 to 1E-01
1RE 5502	2RE 5502	Beta scintillator	Containment air - particulate (off-line)	El. 831 feet 6 in. (Fig. 1.2-12, 6S-DS and Fig. 1.2-18, 11S-DS) Flow diagram Fig. 9.4-6	Cs-137*, Rb-88, I-133	Air	5E-11 to 5E-07

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PROCESS RADIATION MONITORING SYSTEM PARAMETERS

Detector Nos.**							
Unit 1	Unit 2	Detector Type	Monitor Service	Monitor Locations (El., Column Coord., Figure Numbers)	Principal Isotopes Monitored	Monitored Medium	Specified Instrument Range (uCi/cm^3)
1RE 5566	2RE 5566	Gamma scintillator	Containment air iodine (off-line)	El. 831 feet 6 in. (Fig. 1.2-12, 6S-DS and Fig. 1.2-18, 11S-DS) Flow diagram Fig. 9.4-6	I-131*, I-133	Air	4E+4 cpm/UCi
1RE 5503	2RE 5503	Beta scintillator	Containment air noble gas (off-line)	El. 831 feet 6 in. (Fig. 1.2-12, 6S-DS and Fig. 1.2-18, 11S-DS) Flow diagram Fig. 9.4-6	Xe-133*, Kr-85 Xe-135	Air	1E-06 to 1E-02
1RE 406	2RE 406	Geiger-Mueller tube	Reactor coolant letdown line liquid (off-line)	El. 831 feet 6 in. (Fig. 1.2-12, 4.5S-ES and 1.2-18, 12.5S-ES) Flow diagram Fig. 9.3-10	Co-60*, Co-58 Cs-134, Cs-137	Water	1E-00 to 1E+05
1RE 2325	2RE 2325	Geiger-Mueller tube	Main steam noble gas (on-line)	El. 873 feet 6 in. (Fig. 1.2-14, 6S-ES and Fig. 1.2-20, 11S-ES) Flow diagram Fig. 10.3-1	Xe-133*, Kr-85 Xe-135	Steam	1E-01 to 1E+03
1RE 2326	2RE 2326	Geiger-Mueller tube	Main steam noble gas (on-line)	El. 873 feet 6 in. (Fig. 1.2-14, 6S-ES and Fig. 1.2-20, 11S-ES) Flow diagram Fig. 10.3-1	Xe-133*, Kr-85 Xe-135	Steam	1E-01 to 1E+03
1RE 2327	2RE 2327	Geiger-Mueller tube	Main steam noble gas (on-line)	El. 873 feet 6 in. (Fig. 1.2-14, 6S-ES and Fig. 1.2-20, 11S-ES) Flow diagram Fig. 10.3-1	Xe-133*, Kr-85 Xe-135	Steam	1E-01 to 1E+03
1RE 2328	2RE 2328	Geiger-Mueller tube	Main steam noble gas (on-line)	El. 873 feet 6 in. (Fig. 1.2-14, 6S-ES and Fig. 1.2-20, 11S-ES) Flow diagram Fig. 10.3-1	Xe-133*, Kr-85 Xe-135	Steam	1E-01 to 1E+03
Fuel Building							
XRE 4863 XRE 4864		Gamma scintillator	Spent fuel pool water (off-line)	El. 810 feet 6 in. (Fig. 1.2-38, 5F-CF) Flow diagram Fig. 9.1-13	I-131, Cs-137, Co-60*, Co-58	Water	1E-05 to 1E-01

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PROCESS RADIATION MONITORING SYSTEM PARAMETERS

Detector Nos.**							
Unit 1	Unit 2	Detector Type	Monitor Service	Monitor Locations (El., Column Coord., Figure Numbers)	Principal Isotopes Monitored	Monitored Medium	Specified Instrument Range (uCi/cm^3)
Electrical and Control Building							
XRE 5895 XRE 5896		Beta scintillator	Control Room ventilation intake air (off-line)	El. 854 feet 4 in. (Fig. 1.2-34, 2.9A-DA and 7.1A-DA) Flow diagram 9.4-1	Xe-133*, Xe-135 Kr-85	Air	1E-06 to 1E-02
Turbine Building							
1RE 2959	2RE 2959	Beta scintillator	Condenser off-gas (off-line)	El. 778 feet (Fig. 1.2-22, 7T-FT and Fig. 1.2-27, 8T-FT) Flow diagram Fig. 10.4-3	Kr-85, XE-133* Xe-135	Gas	1E-05 to 1E-01
1RE 5100	2RE 5100	Gamma scintillator	Turbine building drains liquid (off-line)	El. 775 feet 3 in. (Fig. 1.2-22, 4T-FT and 1.2-27, 11T-FT) Flow diagram Fig. 9.3-8	Co-60*, Co-58, Cs-134, Cs-137	Water	1E-05 to 1E-01

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TABLE 6.3

Health Physics Laboratory Equipment

Instrument	Radiation Detected	Detector	Number	Location	Remarks
Gamma Spectroscopy System	Gamma	Ge(Li) & NaI(Tl)	1	Counting Lab	Used primarily for effluents and environmental samples. Includes redundant MCA.
Gas Proportional Counter	Alpha, Beta, Gamma	--	2	Counting Lab	Used for counting smears and radiochemistry samples.
Liquid Scintillation	Beta	--	1	Counting Lab	Used primarily for tritium determinations.
TLD Reader System	Beta, Gamma Neutrons	--	1	Health Physics Office	Used for personnel dosimetry program. Includes redundant manual reader.
Scalers	Alpha, Beta, Gamma	Alpha probe, GM Tube	2	Counting Lab or Hot Lab	Used for counting high level smears or samples.
Pocket Dosimeter Charger	--	--	3	Health Physics Office	Used for charging pocket dosimeters.

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TABLE 6.4

PORTABLE HEALTH PHYSICS EQUIPMENT

Instrument	Radiations	Range	Types of Monitoring
GM Survey Meter	Beta, Gamma	0-500,000CPM	Contamination
GM Survey Meter	Beta, Gamma	0-2 R/HR	Working Area Radiation
GM Survey Meter	Beta, Gamma	0-1000 R/HR	Working Area Radiation
Survey Meter	Beta, Gamma	0-10,000 R/HR	Working Area Radiation
Survey Meter	Beta, Gamma	0-200 R/HR	Working Area Radiation
Neutron REM Meter	Neutron	0-5 REM/hr	Working Area Radiation
Neutron REM Meter	Neutron	0-50 REM/hr	Working Area Radiation
Scintillation Counter	Alpha	0-50,000 CPM	Contamination
Portal Monitor	Beta, Gamma	Variable range switch	Personnel Contamination
Individual Personnel Monitor	Beta, Gamma	0-999 mR	Individual Exposure
Pocket Dosimeter	Gamma	0-500 mR	Individual Exposure
Pocket Dosimeter	Gamma	0-5R	Individual Exposure
Pocket Dosimeter	Gamma	0-100R	Individual Exposure

TABLE 6.5

REFER TO PAGE 6-11

CPSES/EP
TABLE 6.6

REACTOR TRIP SYSTEM INSTRUMENTATION

	Reactor Trip Signal	Range
1.	Power range high neutron flux	1 to 120% full power
2.	Intermediate range high neutron flux	8 decades of neutron flux overlapping source range by 2 decades
3.	Source range high neutron flux	6 decades of neutron flux (1 to 10^6 counts/sec)
4.	Power range high positive neutron flux rate	+15% of full power
5.	Power range high negative neutron flux rate	-15% of full power
6.	Overtemperature N-16	N-16 0 to 15% power T_C 510 to 630°F P_{PRZR} 1700 to 2500 psig $F(\Delta\phi)$ -50 to +50 N-16 setpoint 0 to 150%
7.	Overpower N-16	0 to 150% power T_C 510 to 630°F N-16 setpoint 0 to 150%
8.	Pressurizer low pressure	1700 to 2500 psig
9.	Pressurizer high pressure	1700 to 2500 psig
10.	Pressurizer high water level	Entire cylindrical portion of pressurizer (distance between taps)
11.	Low reactor coolant flow	0 to 120% of rated flow
12.	Reactor coolant pump undervoltage	0 to 100% rated voltage
13.	Reactor coolant pump underfrequency	50 to 65 Hz
14.	Low-low steam generator water level	$\pm\sim$6 ft from nominal full load water level
15.	Turbine trip a. Stop valve position b. Trip fluid pressure	 N/A 0 to 500 psig

TABLE 6.7 (Sheet 1 of 9)

CONTROL BOARD INDICATORS AND/OR RECORDERS
AVAILABLE TO THE OPERATOR (CONDITION II, III AND IV EVENTS)

1. Wide range T_{hot} and T_{cold}

   a. The following minimum requirements are provided:

      Two T_{hot} and two$_{cold}$ indicator channels. The T_{hot} channels are on a separate power supply from the T_{cold} channels. The capability of recording either T_{hot} or T_{cold} in one nonisolated loop is provided by recording each T_{hot} and T_{cold} of each loop.

   b. Range - 0 to 700^{o}F.

   c. Purpose

      1) Maintain the plant in a safe shutdown condition

      2) Ensure proper cooldown rate

      3) Ensure proper relationship between system pressure and temperature

TABLE 6.7 (Sheet 2 of 9)

2. Pressurizer water level

   a. The following minimum requirements are provided:

      Two channels on separate power supplies with one channel selected for recording.

   b. Range - entire distance between taps.

   c. Purpose

      1) Maintain coolant reactor coolant inventory

      2) Detemine return of water level to pressurizer following steam break and steam generator tube ruptures

3. System wide range pressure

   a. The following minimum requirements are provided:

      Two channels on separate power supplies with one channel recorded.

   b. Range - 0 to 3000 psi.

TABLE 6.7 (Sheet 3 of 9)

c. Purpose

1) Ensure proper relationship between system pressure and temperature

4. Containment pressure - narrow range

a. The following minimum requirements are provided:

Two channels on separate power supplies. Means are provided to record one of the channels following a high energy line break inside Containment.

b. Range - -5 to +60 psig

c. Purpose

1) Monitor Containment conditions following primary or secondary system break inside Containment

5. Steam line pressure

a. The following minimum requirements are provided:

Two channels per steam line on separate power supplies with one channel per steam line recorded.

b. Range - 0 to 1300 psig.

TABLE 6.7 (Sheet 4 of 9)

c. Purpose

1) Needed to determine type of accident that has occurred and the proper recovery procedure to use

2) Determine that plant is in a safe shutdown condition

6. Steam generator water level (narrow and wide range)

a. The following minimum requirements are provided:

Two channels (one narrow and one wide) per steam generator on separate power supplies with the wide range recorded.

b. Range - 0 to 100% of span for both wide and narrow range.

c. Purpose

1) Maintain adequate heat sink following an accident.

2) Needed in recovery procedure following steam generator tube rupture

TABLE 6.7 (Sheet 5 of 9)

	3) Ensure that steam generator tubes are covered following a LOCA	

7. Refueling water storage tank level

   a. The following minimum requirements are provided:

      Two channels on separate power supplies. Means are provided to record one of the channels following a safety injection signal.

   b. Range - 0 to 100% of span.

c. Purpose	Time Needed After Accident
1) Determine when to perform the necessary manual actions following switchover from the injection phase to the recirculation phase of safety injection after a LOCA	12 hours

8. Boric acid tank level (2 tanks)

   a. The following minimum requirements are provided:

      Two level channels per tank on separate power supplies. Means are provided to record one of the channels prior to Reactor Coolant System boration.

TABLE 6.7 (Sheet 6 of 9)

b. Range - 0 to 100% level.

c. Purpose

1) To ensure that borated water is available for boration

9. Containment temperature

a. The following minimum requirements are provided:

Two channels on separate power supplies with each channel recorded.

b. Range - 0 to 300°F.

c. Purpose

1) Monitor Containment conditions following primary or secondary system break inside Containment

10. Containment flood level

a. The following minimum requirements are provided:

Two channels on separate power supplies.

b. Range - 0 to 9'-6" above floor elevation 808'-0".

TABLE 6.7 (Sheet 7 of 9)

c. Purpose

1) Indicate containment flood level during recirculation mode of safety injection/ Containment spray following a LOCA

11. Containment hydrogen concentration

a. The following minimum requirements are provided:

Two channels on separate power supplies to be available within 12 hours following a LOCA. Both channels are indicated and recorded locally. Control room indication only.

b. Range - 0 to 10% H_2 by volume.

c. Purpose

1) Monitor post-accident hydrogen concentrations inside Containment

12. Condensate storage tank level

a. The following minimum requirements are provided:

Two channels on separate power supplies, one channel is recorded.

b. Range - 0 to 45 ft.

TABLE 6.7 (Sheet 8 of 9)

c. Purpose

1) Monitor Auxiliary Feedwater supply availability

13. Containment Spray System monitoring

a. The following minimum requirements are provided:

For each Containment spray pump, either pressure or flow is sufficient to monitor performance of essential accident function. One channel each of low and pressure (per pump) is indicated and recorded. Recording status at the onset of a LOCA. Both diverse channels are derived from the same power supply as associated pumps. (Note: 4 x 50% pumps are provided.)

b. Range

1) Pressure - 0 to 400 psig

2) Flow - 0 to 4000 gpm

c. Purpose

1) Monitor Containment Spray System for essential accident functions

TABLE 6.7 (Sheet 9 of 9)

14. Containment pressure - wide range

    a. The following are provided:

       Two wide-range channels on separate power supplies. One of the channels is recorded.

    b. Range - 0 to 150 psig.

    c. Purpose

       1) To monitor containment pressure to three times design.

15. Radiation level inside containment

    a. The following are provided:

       Two mutually redundant, separated monitors for each unit, designed and qualified to function in an accident environment.

    b. Range - 1 to 10^7 R/hr (60keV to 3MeV photons)

    c. Purpose

       Monitor gross containment radiation levels following a loss of coolant accident

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
Nuclear Instrumentation					
1. Source range					
a. Count rate	2	1 to 10^6 counts/sec	Both channels indicated; either may be selected for recording	Control board	One 2-pen recorder is used to record any of the 8 nuclear channels (2 source range, 2 intermediate range and 4 power range)
b. Startup rate	2	-0.5 to 5.0 decades/ min.	Both channels indicated	Control board	-
2. Intermediate range					
a. Flux level	2	8 decades of neutron flux (corresponds to 0 to full scale analog voltage) overlapping the source range by 2 decades	Both channels indicated; either may be selected for recording using the recorder in item 1 above	Control board	-
b. Startup rate	2	-0.5 to 5.0 decades/ min.	Both channels indicated	Control board	-

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
3. Power range					
a. Uncalibrated ion chamber current (average of the two top and average of the two bottom uncompensated ion chambers)	4	0 to 120% of full power current	All 8 groups of the ion chamber current signals	NIS racks in control room	-
b. Calibrated ion chamber current (average of the two top and average of the two bottom uncompensated ion chambers)	4	0 to 120% of full power current	All 8 groups of the ion chamber current signals recorded (four 2-pen recorders) Recorder 1 - average of the upper two detector currents for 2 diagonally opposed detectors Recorder 2 - average of the upper two detector currents for remaining detectors Recorder 3 - average of the lower two detector currents for 2 diagonally opposed detectors Recorder 4 - average of the lower two detector currents for remaining detectors	Control board	-

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
c. Average of the upper and average of the lower ion chamber current difference	4	-60 to +60%	Diagonally opposed channels may be selected for recording at the same time using recorder in item 1	Control board	-
d. Average flux of the average of the top and average of the bottom ion chambers	4	0 to 120% of full power	All 4 channels indicated. Any 2 of the four channels may be recorded using recorder in item 1 above.	Control board	-
e. Average flux of the average of the top and average of the bottom ion chambers	4	0 to 120% of full power	All 4 channels recorded	Control board	-
f. Flux difference of the average of the top and average of the bottom ion chambers	4	-30 to +30%	All 4 channels indicated	Control board	-

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
Reactor Coolant System					
1. $T_{average}$ (measured)	1/loop	530° to 630°F	All channels indicated	Control board	-
2. N-16 Power (measured)	1/loop	0 to 150% of full power	All channels indicated; one channel is selected for recording	Control board	-
a. T_{cold} or T_{hot} (measured, wide range)	1-T_{hot}, 1-T_{cold} per loop	0 to 700°F	All T_{hot} channels are recorded on one multipoint recorder; all T_{cold} channels are recorded on another multipoint recorder	Control board	-
3. Overpower N-16 setpoint	1/loop	0 to 150% of full power	All channels indicated; one channel is selected for recording	Control board	-
4. Overtemperature N-16 setpoint	1/loop	0 to 150% of full power	All channels indicated; one channel is selected for recording	Control board	-
5. Pressurizer pressure	4	1700 to 2500 psig	All channels indicated	Control board	-

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
6. Pressurizer level	3	Entire distance between taps	All channels indicated; one channel is selected for recording	Control board	Two pen recorders used, second pen records reference level signal
7. Primary coolant flow	3/loop	0 to 110% of rated flow	All channels indicated	Control board	-
8. Reactor coolant pump current	1/loop	0 to 800 amps	All channels indicated	Control board	One channel for each pump; one indicator with a four position selector switch
9. Reactor coolant pump frequency	1/loop	55 to 65 Hz	All channels indicated	Control board	One channel for each pump; one indicator with a four position selector switch
10. System pressure wide range	2	0 to 3000 psig	All channels indicated and recorded	Control board	-
Reactor Control System					
1. Demanded rod speed	1	0 to 100% of rated	The one channel is indicated	Control board	-
2. Auctioneered T_{avg}	1	530^{o} to $630^{o}F$	The one channel is recorded	Control board	Any one of the T_{avg} channels into the auctioneer may be bypassed

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

	Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
3.	$T_{reference}$	1	530^{o} to 630^{o}F	The one channel is recorded	Control board	-
4.	Control rod position					If system not available, borate and sample accordingly
	a. Number of steps of demanded rod withdrawal	1/group	0 to 230 steps	Each group is indicated during rod motion	Control board	The signals are used in conjunction with the measured position signals (item 4c) to detect deviation of any individual rod from the demanded position; a deviation will actuate an alarm and annunciator
	b. Full length rod measured position	1 for each rod	0 to 228 steps	Each rod position is indicated	Control board	-
5.	Control rod bank demanded position	4	0 to 230 steps	All 4 control rod bank positions are recorded along with the low-low limit alarm for each bank	Control board	1. One channel for each control bank 2. An alarm and annunciator is actuated when the last control bank to be withdrawn reaches the withdrawal limit, when any rod control bank reaches the low insertion limit and when any rod control bank reaches the low-low insertion limit

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
Containment System					
1. Containment pressure	4	-5 to +60 psig	All 4 channels indicated and one is recorded	Control board	-
2. Containment temperature	5	0 to 300°F	All 5 channels indicated and recorded	Control board	- Note b
3. Containment sump level	1 per sump	0 to 36 inches	Both channels indicated	Control board	- Note b
Feedwater and Steam Systems					
1. Auxiliary feedwater flow	1/feed line	0 to 300 gpm	All channels indicated	Control board	Two channels to measure the AFW flow to each steam generator. Note b
2. Auxiliary feedwater pump suction pressure	1 per sump	0 to 25 psig	All channels indicated	Control board	Note b
3. Auxiliary feedwater pump discharge pressure	1 per sump	0 to 200 psig	All channels indicated	Control board	Note b
4. Steam generator level (narrow range)	3/steam generator	+7 to -5 ft from nominal full load level	All channels indicated; the channels used for control are recorded	Control board	-

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

	Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
5.	Steam generator level (wide range)	1/steam generator	+7 to -41 ft from nominal full load level	All channels recorded	Control board	-
6.	Programmed steam generator level signal	1/steam generator	+7 to -5 ft	All channels indicated		
7.	Main feedwater flow	2/steam generator	0 to 120% of maximum calculated flow	All channels indicated; the channels used for control are recorded	Control board	-
8.	Magnitude of signal controlling main and bypass feedwater control valves	1/main 1/bypass	0 to 100% of valve opening	All channels indicated	Control board	1. One channel for each main and bypass feedwater control valve 2. OPEN/SHUT indication is provided in the control room for each main and bypass feedwater control valve
9.	Steam flow	2/steam generator	0 to 120% maximum calculated flow	All channels indicated; the channels used for control are recorded	Control board	Accuracy is equipment capability; however, absolute accuracy depends on applicant calibration against feedwater flow
10.	Steam line pressure	3/loop	0 to 1300 psig	All channels indicated and one is recorded	Control board	-

CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
11. Steam dump modulate signal	1	0 to 100% of steam dump valves open	The one channel is indicated	Control board	OPEN/SHUT indication is provided in the control room for each steam dump valve
12. Turbine impulse chamber pressure	2	0 to 120% of maximum calculated turbine load	Both channel indicated	Control board	OPEN/SHUT indication is provided in the control room for each turbine stop valve
Engineered Safety Features Supporting Systems					
1. Component Cooling Waster System pressure	1/heat exchanger	0 to 200 psig	Indicator	Control board	Note b
2. Component Cooling Water System flow	1/heat exchanger	0 to 20,000 gpm	Indicator	Control board	Note b
3. Component Cooling Water System surge tank level	2	0 to 100%	Indicated and recorded	Control board	Used for Component Cooling Water System leak Note b
4. Station Service Water System Pressure	1/pump	0 to 100 psig	Indicator	Control board	Note b
5. Station Service Water System flow	1/pump	0 to 20,000 gpm	Indicator	Control board	Note b

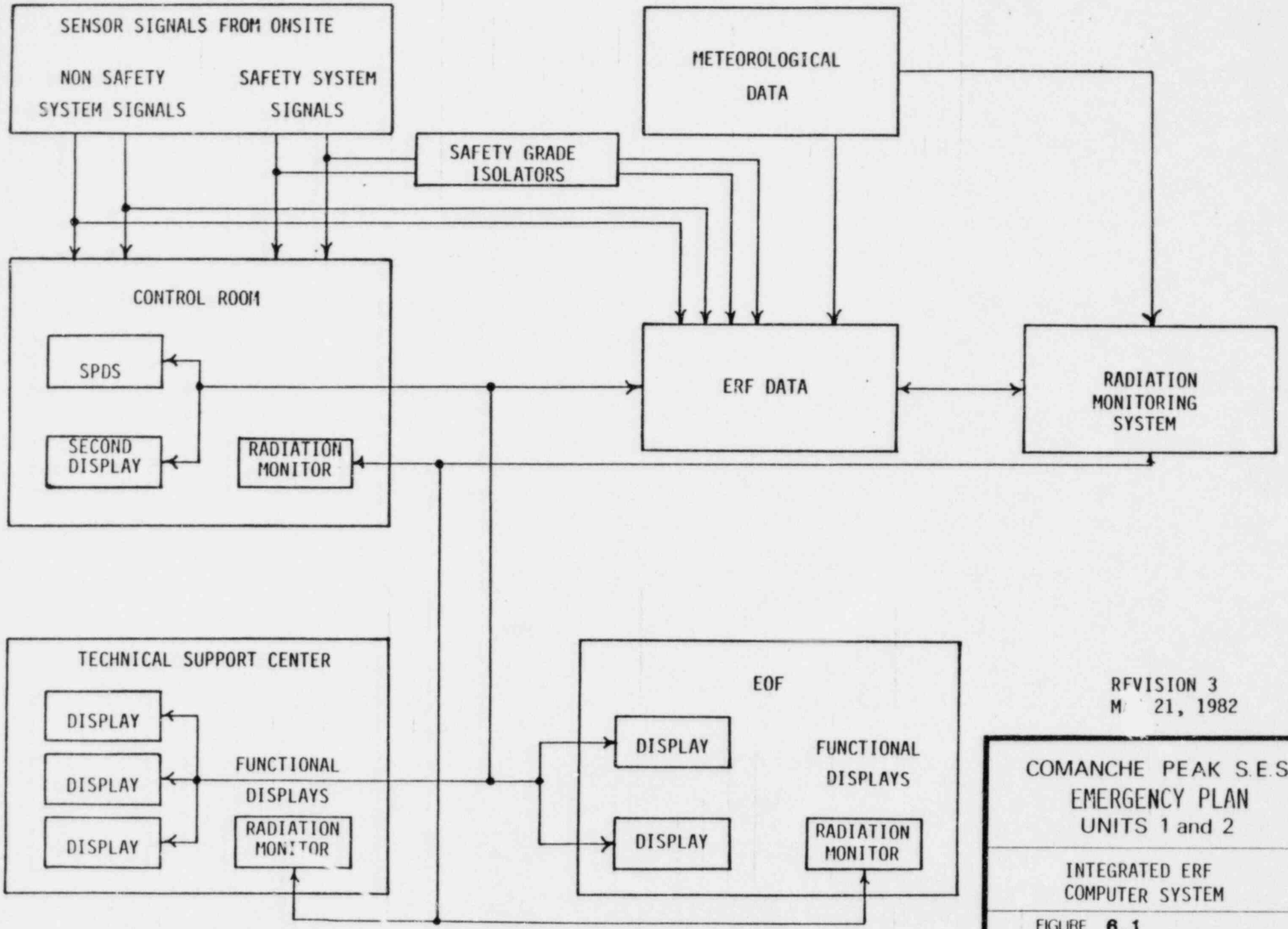
CONTROL ROOM INDICATORS AND/OR RECORDERS AVAILABLE TO THE OPERATOR TO MONITOR SIGNIFICANT PLANT PARAMETERS DURING NORMAL OPERATION

	Parameter	No. of Channels Available	Range	Indicator/ Recorder	Location	Notes
6.	Control Room intake duct radiation level	2	10^{-6} to 10^{-2} μCi/cc	Indicator/recorder	Control room common area	Used for control room intake isolation
7.	Control room to atmospheric pressure diff.	2	0 to 0.5 in. H_2O	Indicator	Control room common area	Note b

[a] Includes channel accuracy and environmental effects.

[b] These monitors are part of ESF analog display. The operability of these monitors includes both normal and postulated accident conditions. See Section 7.5.5.2 of the FSAR.

INTEGRATED ERF COMPUTER SYSTEM

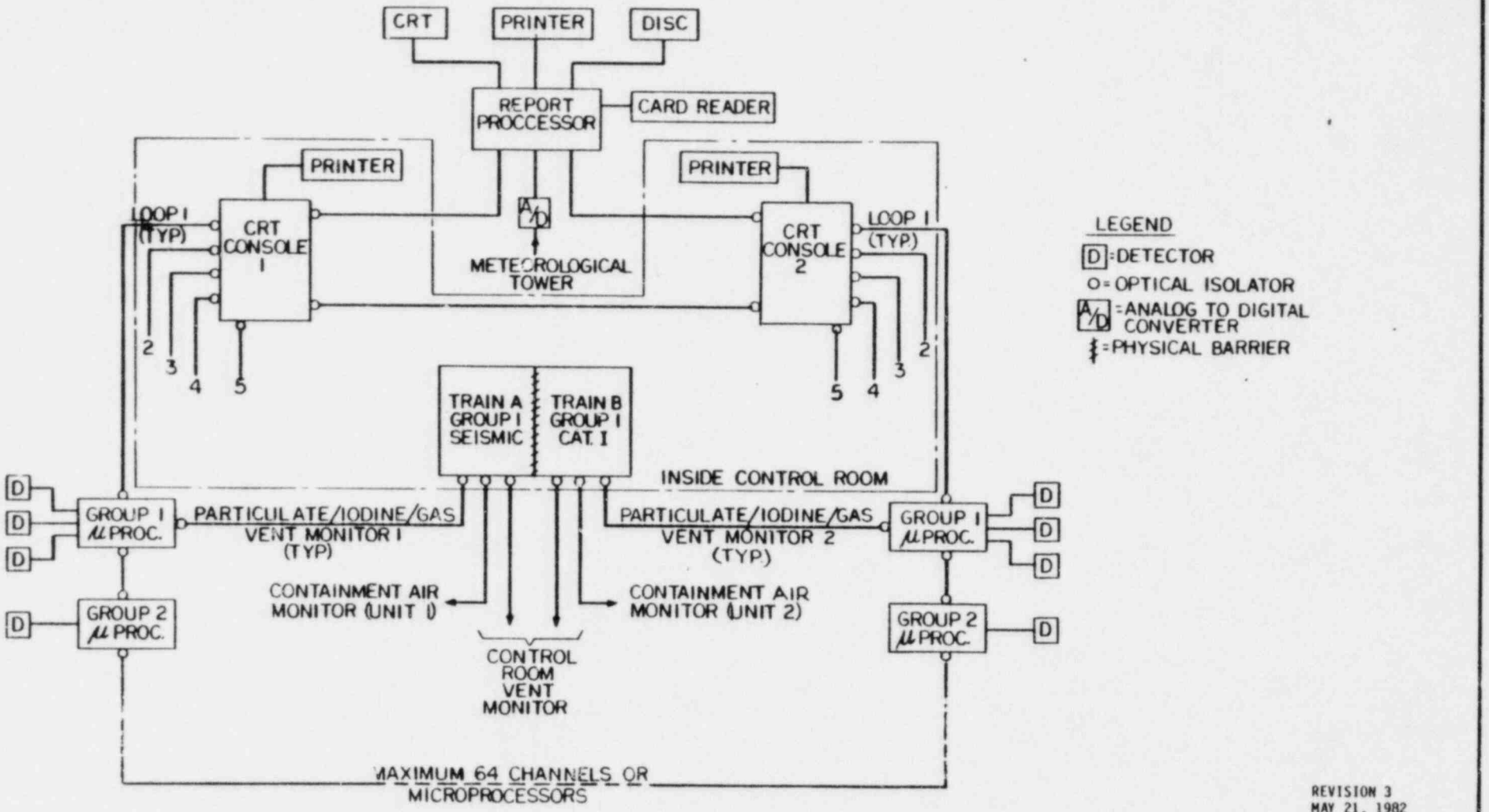


REVISION 3
MAY 21, 1982

COMANCHE PEAK S.E.S.
EMERGENCY PLAN
UNITS 1 and 2

INTEGRATED ERF COMPUTER SYSTEM

FIGURE 6.1



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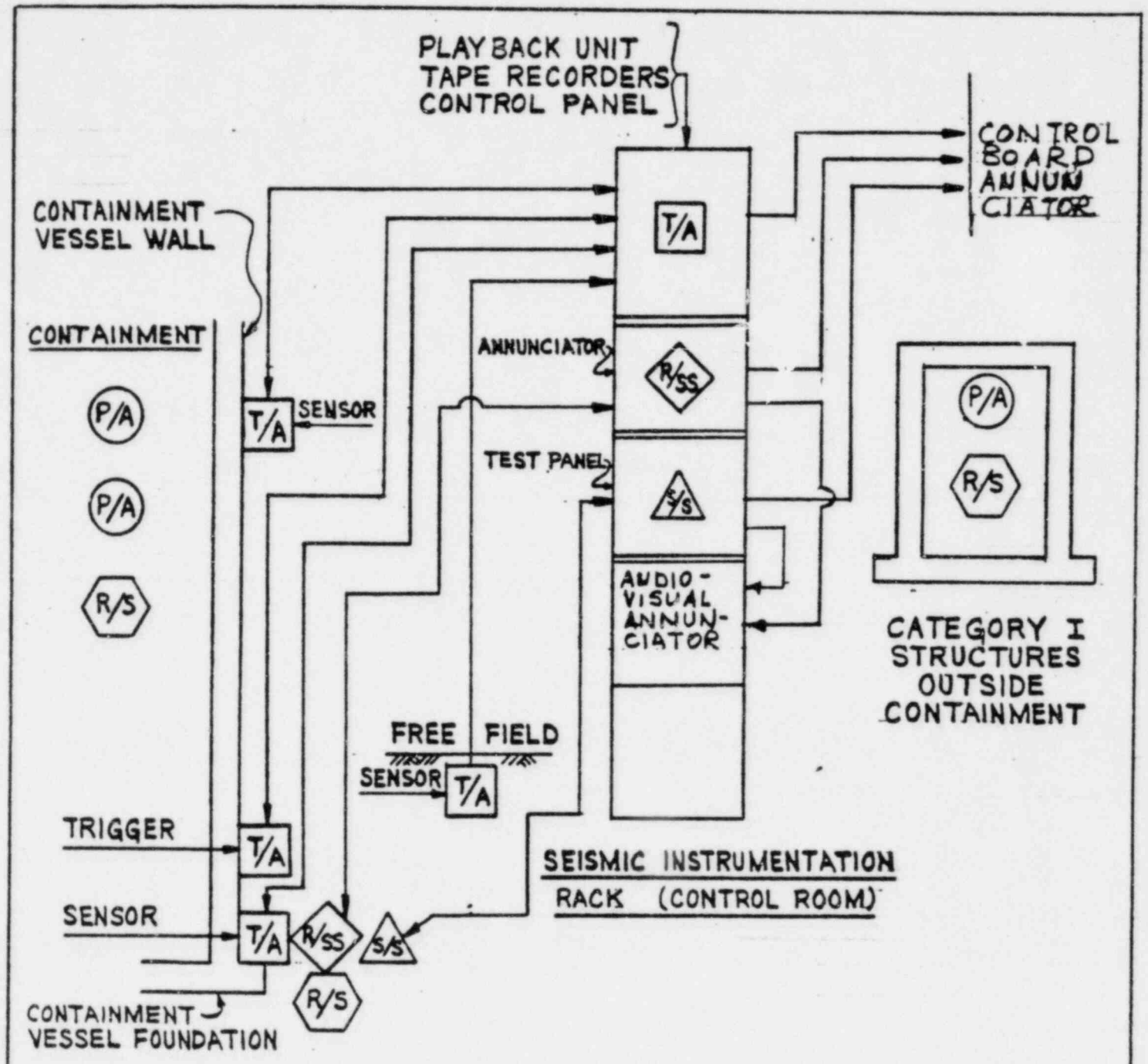
COMANCHE PEAK S E S
EMERGENCY PLAN
UNITS 1 and 2

BLOCK DIAGRAM
DIGITAL RADIATION
MONITORING SYSTEM

FIGURE 6.2



LEGEND

- T/A — TIME HISTORY ACCELEROGRAPH
- P/A — PEAK RECORDING ACCELEROGRAPH
- R/S — RESPONSE SPECTRUM RECORDER
- R/SS — RESPONSE SPECTRUM SWITCH
- S/S — SEISMIC SWITCH

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UNITS 1 and 2

SEISMIC INSTRUMENTATION
SCHEMATIC DIAGRAM

FIGURE 6.3

ANALYSIS OF FIRE HAZARDS

Fire Areas: Designation (1)	Safety Class (2)	Elevation (3)	Room: Number (4)	Room: Name & Equipment Located Within (5)	Constr. Elev. Fire Rating in Hours (6)	Combustibles: Material (7)	Total Heat of Combust. (BTU) (8)	Surface Area Exposed to Fire (FT²) (9)	Heat Release (BTU/FT²) (10)	Fire Hazard Class. (11)	Fixed: Type (12)	Fixed: Density (13)	Fixed: Actuation (14)	Portable Extinguishers: Type (15)	Capacity (16)	UL Rating (17)	Quant. (18)	Fire Detection Systems: Type (19)	Intended Service (20)	Remarks (21)
SAFEGUARDS BUILDING UNIT NO 1																				
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP HHA	10 LBS 15 LBS	2A 30B:C 30B:C	3 1	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	2	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HHA	15 LBS	30B:C	3	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NONE	—	—	—	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NONE	—	—	—	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP HHA	10 LBS 15 LBS	2A 30B:C 30B:C	7 4	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HHA	15 LBS	30B:C	2	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	2	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	NONE	—	—	—	[illegible]	—	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HHA	15 LBS	30B:C	3	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	HHA	15 LBS	30B:C	2	[illegible]	[illegible]	[illegible]
AUXILIARY BUILDING																				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP HHA	10 LBS 15 LBS	2A 30B:C 30B:C	6 1	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	7	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	NONE	—	—	—	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP HHA	10 LBS 15 LBS	2A 30B:C 30B:C	8 1	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	4	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP HHA	10 LBS 15 LBS	2A 30B:C 30B:C	3 [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	NONE	—	—	—	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	NONE	—	—	—	[illegible]	—	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	NONE	—	—	—	[illegible]	—	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B:C	1	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HMP	10 LBS	2A 30B	[illegible]	[illegible]	[illegible]	

REF. DWG. FHA-45 DATE: 3-6-81

ABBREVIATIONS

PORTABLE EXTINGUISHERS

HMP - HANDHELD MULTI-PURPOSE EXTINGUISHER
HHA - HANDHELD HALON EXTINGUISHER
WMP - WHEELED MULTI-PURPOSE EXTINGUISHER

FIXED SYSTEMS

AWS - AUTOMATIC WET PIPE SPRINKLER SYSTEM
ADS - AUTOMATIC DELUGE SYSTEM
ACS - AUTOMATIC CABLE TRAY SPRINKLERS [illegible]
MDS - MANUALLY ACTUATED DELUGE SYSTEM
FHS - FIXED HALON SYSTEM
HS - HOSE STATION

DETECTORS

I.D. - IONIZATION DETECTORS
T.D. - THERMAL DETECTORS
F.R. - FLAME DETECTORS
T.S. - THERMISTOR STRIP DETECTORS

INTENDED SERVICE

L.A. LOCAL ALARM
R.A. REMOTE ALARM
FSA FIXED SYSTEMS ACTUATION
FA WATER FLOW ALARM

MISCELLANEOUS ABBREVIATIONS

N.S.R. NON SAFETY RELATED
SR SAFETY RELATED
NS NOT SIGNIFICANT
NA NOT APPLICABLE

REVISION 3
MAY 21, 1982

COMANCHE PEAK SES
EMERGENCY PLAN
UNITS 1 and 2

TABULATIONS OF FIRE HAZARDS

FIGURE 6.4 (SHEET 1)

ANALYSIS OF FIRE HAZARDS

FIRE AREAS						COMBUSTIBLES					FIRE PROTECTION SYSTEMS							FIRE DETECTION SYSTEMS		REMARKS
			ROOM								FIXED			PORTABLE EXTINGUISHERS						
			NUMBER	NAME & EQUIPMENT LOCATED WITHIN		MATERIAL	TOTAL HEAT OF COMBUST. (BTU)	SURFACE AREA EXPOSED TO FIRE (FT^2)	HEAT RELEASE (BTU/FT^2)	FIRE HAZARD CLASS	TYPE	DENSITY	ACTUATION	TYPE	CAPACITY	FIL RATING	QUANT.	TYPE	INTENDED SERVICE	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
AUXILIARY BUILDING cont'd																				
50	SA	860 6	205		3	2 GAL TRANS. COMBUSTIBLES	3.40×10^7	6732	278	LOW	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	1	S.D.	LA & RA	
51	SA	860 6	204		3	LUBE OIL / 2 GAL TRANS. COMBUSTIBLES	5.05×10^7	666	758	LOW	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	1	S.D.	LA & RA	
53	SA	860 6	205		3	LUBE OIL / 2 GAL TRANS. COMBUSTIBLES	5.05×10^7	666	758	LOW	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	1	S.D.	LA & RA	
54	SA	859 6	220		3	2 GAL TRANS. COMBUSTIBLES	3.40×10^7	238	440	LOW	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	1	NONE	—	
56	SA	859 6	222		3	2 GAL TRANS. COMBUSTIBLES	3.40×10^7	238	440	LOW	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	1	NONE	—	
57	SA	859 6	224		3	2 GAL TRANS. COMBUSTIBLES	3.40×10^7	238	440	LOW	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	1	NONE	—	
58	SA	873 6	245		3	2 GAL TRANS. COMBUSTIBLES, FILTERS	3.62×10^7	6258	2533	LIGHT	[illegible]	[illegible]	AUTOMATIC MANUAL	HWP	10 LBS.	2A 30B C	4	27-10	LA RA & TSA	[illegible]
59	SA	873 6	244		3	[illegible] CHEMICAL ADSORBER, CHARCOAL ADSORBER,	4.32×10^7	7648	10 700	MEDIUM	[illegible]	[illegible]	AUTOMATIC MANUAL	HWP	15 LBS.	2A 30B C	3	28-10, 9-10	LA RA & TSA	[illegible]
60	SA	886 6	246		3	[illegible] CHEMICAL ADSORBER, CHARCOAL ADSORBER,	6.75×10^7	9648	10 400	MEDIUM	[illegible]	[illegible]	AUTOMATIC MANUAL	HWP	10 LBS.	2A 30B C	4	18-10, 9-10	LA RA & TSA	[illegible]
ELECTRICAL CONTROL BUILDING																				
43	SA	778 6	147		3	[illegible] 2 GAL TRANS. COMB.	7.18×10^7	5300	13 600	MEDIUM	[illegible]	[illegible]	AUTOMATIC MANUAL	HWP	10 LBS.	2A 30B C	4	10-10	LA RA & TSA	[illegible]
44	MSA	778 6	144		3	2 GAL TRANS. COMB. HYDRAZINE	8.82×10^7	70	84 000	MEDIUM	HS. IN ASU AREA	1/500	MANUAL	NONE	—	—	—	S.D.	LA & RA	
45	MSA	[illegible]	[illegible]		2	NONE	—	—	—	—	NONE	—	—	NONE	—	—	—	NONE	—	
46	MSA	778 6	—		2	NONE	—	—	—	—	NONE	—	—	NONE	—	—	—	NONE	—	
47	MSA	778 6	145		3	2 GAL TRANS. COMB.	5.62×10^7	409	850	LOW	HWS	[illegible]	AUTOMATIC	NONE	—	—	—	S.D.	LA RA & TSA	
48	SA	792 6	146		3	2 GAL TRANS. COMB. PLASTIC BATTERY CASE	1.91×10^7	764	53 000	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
49	SA	792 6	147		3	2 GAL TRANS. COMB. PLASTIC BATTERY CASE	1.38×10^7	764	53000	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
50	SA	792 6	148		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB	1.98×10^7	325	48 900	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
52	SA	792 6	149		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB	1.36×10^7	325	41 900	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
53	SA	792 6	150		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB	1.74×10^7	541	51 000	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
55	SA	792 6	151		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB	1.63×10^7	541	47 800	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
54	SA	792 6	152		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB	7.61×10^6	516	14 900	LIGHT	HWS	[illegible]	AUTOMATIC MANUAL	HWS	15 LBS.	30B C	2	2-10	LA & RA	
55	SA	792 6	123		3	2 GAL TRANS. COMB. PLASTIC BATTERY CASE	1.38×10^7	780	49 300	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA RA & TSA	
56	SA	792 6	124		3	2 GAL TRANS. COMB. PLASTIC BATTERY CASE	1.36×10^7	780	48 300	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
57	SA	792 6	125		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB.	7.77×10^6	516	15 400	LIGHT	HWS	[illegible]	AUTOMATIC MANUAL	HWS	15 LBS.	30B C	2	2-10	LA & RA	
58	SA	792 6	126		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB.	1.01×10^7	336	50 000	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	3-10	LA RA & TSA	
59	SA	792 6	127		3	2 GAL TRANS. COMB. PLASTIC BATTERY CASE	2.75×10^7	443	61 800	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
61	SA	792 6	128		3	2 GAL TRANS. COMB. PLASTIC BATTERY CASE	2.73×10^7	443	61 600	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
62	SA	792 6	129		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB.	9.40×10^6	326	41 700	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	15 LBS.	30B C	2	2-10	LA & RA	
42	MSA	[illegible]	[illegible]		2	NONE	—	—	—	—	NONE	—	—	NONE	—	—	—	NONE	—	
63	SA	807 6	154		3	ELECTRICAL CABLES, 2 GAL Wood, COMB.	2.27×10^7	1184	16×10^3	HIGH	[illegible]	[illegible]	AUTOMATIC MANUAL	HWS	15 LBS.	30B C	2	24-10	LA RA FA & TSA	
64	SA	807 6	155		3	ELECTRICAL CABLES, 2 GAL TRANS. COMB.	2.25×10^7	1184	30×10^3	HIGH	[illegible]	[illegible]	AUTOMATIC MANUAL	HWS	15 LBS.	30B C	2	24-10	LA RA FA & TSA	
65	SA	830 6	[illegible]		3	[illegible] 2 GAL TRANS. COMB.	4.24×10^7	15 571	3.12×10^3	LIGHT	HS	1/500	MANUAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
66	MSA	830 6	156		3	2 GAL TRANS. COMB. PLASTIC	3.04×10^7	487	62 300	MEDIUM	FHS	—	AUTOMATIC	NONE	—	—	—	10-10, 4-10	LA & RA	
67	MSA	830 6	157	FILE AREA	3	ORDINARY COMBUSTIBLES	NFPA 75 - OFFICE SPACE			LIGHT	NONE	—	—	NONE	—	—	—	2-10	LA RA & TSA	
68	MSA	830 6	146	CHARTS & SUPPLIES STORAGE	3	ORDINARY COMBUSTIBLES	NFPA 75 - OFFICE SPACE			LIGHT	NONE	—	—	NONE	—	—	—	1-10	LA & RA	
69	MSA	830 6	147	COMPUTER ROOM	3	2 GAL TRANS. COMB. PLASTIC	3.04×10^7	525	52 300	MEDIUM	FHS	—	AUTOMATIC	NONE	—	—	—	1-10	LA & RA	
70	MSA	840 6	[illegible]	OFFICE	3	ORDINARY COMBUSTIBLES	NFPA 75 - OFFICE SPACE			LIGHT	NONE	—	—	NONE	—	—	—	2-10	LA RA & TSA	
71	MSA	840 6	148	OFFICE	3	ELECTRICAL CABLES, ORDINARY COMB.	1.51×10^7	516	91 400	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	3	2-10	LA & RA	
72	MSA	840 6	149	OFFICE	3	ELECTRICAL CABLES, ORDINARY COMB.	1.51×10^7	54	75 400	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	3	2-10	LA & RA	
73	SA	854 6	150	MECHANICAL EQUIP ROOM	3	ELECTRICAL CABLES, 2 GAL TRANS. COMB. LUBE OIL, CHEMICAL, CHEMICAL	2.09×10^7	3622	57 700	MEDIUM	[illegible]	[illegible]	AUTOMATIC MANUAL	HWP	10 LBS.	2A 30B C	1	1-10	LA & RA	
74	SA	854 6	151	MECHANICAL EQUIP ROOM	3	ELECTRICAL CABLES, 2 GAL TRANS. COMB. LUBE OIL, CHEMICAL, CHEMICAL, FIBERGLASS	1.55×10^7	3622	42 800	MEDIUM	[illegible]	[illegible]	AUTOMATIC MANUAL	HWP	10 LBS.	2A 30B C	1	10-10, 2-10	LA RA FA & TSA	[illegible]
75	MSA	854 6	[illegible]	MECHANICAL EQUIP ROOM	3	ELECTRICAL CABLES, LUBE OIL, FIBERGLASS	4.84×10^7	2972	65 300	LIGHT	[illegible]	[illegible]	MANUAL	HWP IN ADJACENT AREA	10 LBS.	2A 30B C	2	10-10	LA & RA	
80	MSA	840 6	160	PROCESS MONITOR PANEL	3	ELECTRICAL CABLES, 2 GAL TRANS. COMB.	5.42×10^7	95	56 800	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	3	1-10	LA & RA	
81	MSA	840 6	160	PROCESS MONITOR RACKS	3	ELECTRICAL CABLES, 2 GAL TRANS. COMB.	1.05×10^7	95	11 300	MEDIUM	HS. IN CORRIDOR	1/1000	MANUAL	WHP IN CORRIDOR	10 LBS.	2A 30B C	1	2-10	LA & RA	

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TABULATION OF FIRE HAZARDS

FIGURE 9.4 (SHEET 2)

ANALYSIS OF FIRE HAZARDS

FIRE AREAS						COMBUSTIBLES				FIRE PROTECTION SYSTEMS							FIRE DETECTION SYSTEMS		REMARKS
			ROOM							FIXED			PORTABLE EXTINGUISHERS						
			NUMBER	NAME & EQUIPMENT LOCATED WITHIN		MATERIAL				TYPE			TYPE				TYPE		
SAFEGUARDS BUILDING UNIT NO 2																			
													HMP	30 LBS	2A 30B C	1			
													NONE				NONE		
													HMP	30 LBS	2A 30B C	1			
													NONE						
													HMP	30 LBS	2A 30B C	1			
													NONE				NONE		
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	1			
													NONE				NONE		
													HMP	30 LBS	2A 30B C	1			
													NONE						
													NONE						
													HMP	30 LBS	2A 30B C	1			
													NONE				NONE		
													NONE				NONE		
													NONE						
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	A 5 B C	2			
													HHA	25 LBS	30B C	3			
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	1			
													NONE						
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	1			
													NONE						
													HMP	30 LBS	2A 30B C	1			
													HHA	25 LBS	30B C	4			
													HHA	25 LBS	30B C	2			
													HMP	30 LBS	2A 30B C	2			
													NONE				NONE		
													HMP	30 LBS	2A 30B C	1			
													HHA	25 LBS	30B C	1			
													HMP	30 LBS	2A 30B C	1			
													HHA	25 LBS	30B C	2			
FUEL HANDLING BUILDING																			
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	1			
													NONE				NONE		
													HMP	30 LBS	2A 30B C	4			
													NONE						
													HMP	30 LBS	2A 30B C	1			
													HMP	30 LBS	2A 30B C	2			
													HMP	30 LBS	2A 30B C	2			
													NONE				NONE		

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Tabulation of Fire Hazards

FIGURE 6.4 (SHEET 3)

ANALYSIS OF FIRE HAZARDS

FIRE AREAS						COMBUSTIBLES					FIRE PROTECTION SYSTEMS							FIRE DETECTION SYSTEMS		REMARKS
			ROOM								FIXED			PORTABLE EXTINGUISHERS						
[illegible]	SAFETY CLASS	ELEVATION	NUMBER	NAME & EQUIPMENT LOCATED WITHIN	[illegible]	MATERIAL	[illegible]	[illegible]	HEAT RELEASE	FIRE HAZARD	TYPE	DENSITY	ACTUATION	TYPE	CAPACITY	U.L. RATING	AMOUNT	TYPE	INTENDED SERVICE	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
CONTAINMENT BUILDING UNIT Nº 1																				
[illegible]	[illegible]	[illegible]	153	[illegible]	[illegible]	2 GAL TRANS COMB	5.42 × 10⁷	857	399	LOW	NONE	—	—	NONE	—	—	—	LATER	—	
[illegible]	[illegible]	[illegible]	154	[illegible]	[illegible]	ELECTRICAL CABLES, HYDRAULIC FLUID, LUBE OIL, 2 GAL TRANS COMB	3.23 × 10⁸	8534	38,700	LIGHT	HS	3/100	MANUAL	HMP	10 LBS	2A-30B-C	6	LATER	LA & RA	
[illegible]	[illegible]	[illegible]	157	[illegible]	[illegible]	LUBE OIL, 2 GAL TRANS COMB	1.39 × 10⁸	3085	45,400	MEDIUM	NONE	—	—	NONE	—	—	—	LATER	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	CHARCOAL, FIBERGLASS, ELECTRICAL CABLES, 2 GAL TRANS COMB	4.58 × 10⁸	6760	67,800	MEDIUM	[illegible]	[illegible] 3/100	AUTOMATIC MANUAL	HMP	10 LBS	2A-30B-C	5	LATER, 2-T.D.	LA, RA & FSA	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2 GAL TRANS COMB	5.42 × 10⁷	282	193	LOW	NONE	—	—	NONE	—	—	—	LATER, 2-T.D.	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ELECTRICAL CABLES, LUBE OIL, 2 GAL TRANS COMB	3.88 × 10⁸	6820	56,900	MEDIUM	HS	3/100	MANUAL	HMP	10 LBS	2A-30B-C	5	LATER, 2-T.D.	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ELECTRICAL CABLES, 2 GAL TRANS COMB	3.45 × 10⁸	1325	26,100	LIGHT	NONE	—	—	NONE	—	—	—	LATER, 2-T.D.	—	
[illegible]	[illegible]	[illegible]	160	[illegible]	[illegible]	RADWASTE COMPACTOR, LUBE OIL, 2 GAL TRANS COMB	1.26 × 10⁷	6087	2070	LOW	HS	2/100	MANUAL	HMP	10 LBS	2A-30B-C	4	LATER, 2-T.D.	LA & RA	
CONTAINMENT BUILDING UNIT Nº2																				
[illegible]	[illegible]	[illegible]	153	[illegible]	[illegible]	2 GAL TRANS COMB	5.42 × 10⁷	857	399	LOW	NONE	—	—	NONE	—	—	—	LATER	—	
[illegible]	[illegible]	[illegible]	154	[illegible]	[illegible]	ELECTRICAL CABLES, HYDRAULIC FLUID, LUBE OIL, 2 GAL TRANS COMB	3.23 × 10⁸	8534	38,700	LIGHT	HS	3/100	MANUAL	HMP	10 LBS	[illegible]	6	LATER	LA & RA	
[illegible]	[illegible]	[illegible]	157	[illegible]	[illegible]	LUBE OIL, 2 GAL TRANS COMB	1.39 × 10⁸	3085	45,670	MEDIUM	NONE	—	—	NONE	—	—	—	LATER	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	CHARCOAL, FIBERGLASS, ELECTRICAL CABLES, 2 GAL TRANS COMB	4.58 × 10⁸	6760	67,800	MEDIUM	[illegible]	[illegible]	AUTOMATIC MANUAL	HMP	10 LBS	2A-30B-C	5	LATER	LA, RA & FSA	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2 GAL TRANS COMB	5.42 × 10⁷	282	193	LOW	NONE	—	—	NONE	—	—	—	LATER	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ELECTRICAL CABLES, LUBE OIL, 2 GAL TRANS COMB	3.88 × 10⁸	6820	56,900	MEDIUM	HS	3/100	MANUAL	HMP	10 LBS	2A-30B-C	5	LATER	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ELECTRICAL CABLES, 2 GAL TRANS COMB	3.45 × 10⁸	1325	26,100	LIGHT	NONE	—	—	NONE	—	—	—	LATER	—	
[illegible]	[illegible]	[illegible]	160	[illegible]	[illegible]	RADWASTE COMPACTOR, LUBE OIL, 2 GAL TRANS COMB	1.26 × 10⁷	6087	2070	LOW	HS	2/100	MANUAL	HMP	10 LBS	2A-30B-C	4	LATER	LA & RA	
SERVICE WATER INTAKE STRUCTURE																				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3	LUBE OIL, FUEL OIL, 2 GAL TRANS COMB	1.73 × 10⁸	[illegible]	[illegible]	MEDIUM	ADS	[illegible]	AUTOMATIC	NONE	—	—	—	1-T.D.	LA, RA & FSA	
[illegible]	[illegible]	[illegible]	[illegible]	SERVICE WATER PUMPS SUCTION NOZZLE [illegible]	NA	[illegible]	—	—	—	—	NONE	—	—	NONE	—	—	—	NONE	—	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3	LUBE OIL, 2 GAL TRANS COMB	1.04 × 10⁸	[illegible]	[illegible]	LOW	[illegible]	[illegible]	AUTOMATIC MANUAL	HMP HHA	[illegible]	[illegible]	[illegible]	4-T.D. 8-I.D.	LA, RA & FA	ONLY PORTIONS OF THE AREA ARE SPRINKLERED
TURBINE BUILDING UNIT Nº1																				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	[illegible]	[illegible]	AUTOMATIC	HMP	20 LBS	2A-30B:C	2	T.S.	LA, RA & FA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	[illegible]	[illegible]	AUTOMATIC MANUAL	HMP	20 LBS	2A-30B:C	1	T.S.	LA, RA & FA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	[illegible]	[illegible]	AUTOMATIC MANUAL	HMP	20 LBS	2A-30B:C	2	T.S.	LA, RA & FA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ELECTRICAL CABLES, LUBRICATING OIL	[illegible]	[illegible]	[illegible]	LIGHT	[illegible]	[illegible]	AUTOMATIC MANUAL	HMP	20 LBS	2A-30B:C	10	2-T.D. T.S.	LA, RA & FSA	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ELECTRICAL CABLES, LUBRICATING OIL	[illegible]	[illegible]	[illegible]	LIGHT	[illegible]	[illegible]	AUTOMATIC MANUAL	HMP HHA	20 LBS 25 LBS	2A-30B:C 30B:C	10 2	4-T.D. T.S.	LA, RA & FSA	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6,338	17,503	LIGHT	NONE	—	—	NONE	—	—	—	6-T.D.	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	[illegible]	[illegible]	MANUAL	HMP	[illegible]	[illegible]	[illegible]	NONE	FA	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	22 × 10⁸	57	385,946	HIGH	NONE	—	—	NONE	—	—	—	1-T.D.	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3575 × 10⁸	1504	237,699	HIGH	ADS	[illegible]	AUTOMATIC	HMP	20 LBS	2A-30B:C	1	3-T.D.	LA, RA & FSA	
[illegible]	[illegible]	[illegible]	[illegible]	UNIT 1 & 2 FIRE PROTECTION VALVE ROOM B	[illegible]	[illegible]	—	—	—	LOW	NONE	—	—	NONE	—	—	—	NONE	—	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2508 × 10⁸	600	[illegible]	HIGH	ADS	[illegible]	AUTOMATIC	NONE	—	—	—	5-T.D.	LA, RA & FSA	
[illegible]	[illegible]	[illegible]	[illegible]	SWITCHGEAR ROOM	[illegible]	[illegible]	240 × 10⁸	9400	[illegible]	LIGHT	HS	1/100	AUTOMATIC	HHA	25 LBS	30B:C	3	[illegible]-T.D.	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	HS	3/100	MANUAL	HMP HHA	20 LBS 25 LBS	2A-30B:C 30B:C	6 1	8-T.D.	LA & RA	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	72 × 10⁸	2400	30000	LIGHT	NONE	—	—	HMP	20 LBS	2A-30B:C	2	4-T.D.	LA & RA	
[illegible]	[illegible]	[illegible]	[illegible]	UNIT 1 & 2 FIRE PROTECTION VALVE ROOM A	[illegible]	[illegible]	—	—	—	LOW	NONE	—	—	NONE	—	—	—	NONE	—	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	NONE	—	—	NONE	—	—	—	NONE	—	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LIGHT	FHS	—	AUTOMATIC	HHA	25 LBS	30B:C	1	2-T.D.	LA, RA & FSA	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	FHS	—	AUTOMATIC	HHA	25 LBS	30B:C	1	2-T.D.	LA, RA & FSA	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	LOW	NONE	—	—	NONE	—	—	—	NONE	—	

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Tabulation of Fire Hazards

FIGURE 6.4 (SHEET 4)

ANALYSIS OF FIRE HAZARDS

FIRE AREAS						COMBUSTIBLES					FIRE PROTECTION SYSTEMS							FIRE DETECTION SYSTEMS		REMARKS
			ROOM								FIXED			PORTABLE EXTINGUISHERS						
			NUMBER	NAME & EQUIPMENT LOCATED WITHIN		MATERIAL					TYPE	DENSITY	ACTUATION	TYPE	CAPACITY	U.L. RATING	QUANT.	TYPE	INTENDED SERVICE	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
TURBINE BUILDING UNIT N°2																				
							—	—	—	LOW	AWS		AUTOMATIC	HMP	20 LBS	2A 30B C	2	T.S.	LA,RA&FA	
							—	—	—	LOW	AWS		AUTOMATIC	HMP	20 LBS	2A 30B C	1	T.S.	LA,RA&FA	
							—	—	—	LOW	AWS		AUTOMATIC	HMP	20 LBS	2A 30B C	2	T.S.	LA,RA&FA	
											AWS/ADS		AUTOMATIC	HMP	20 LBS	2A 30B C	10	2-T.D.T.S.	LA,RA&FSA	
						ELECTRICAL CABLES	221×10³	6338	17503	LIGHT	AWS/ADS		AUTOMATIC	HMP	20 LBS	2A 30B C	4	4-T.D.,T.S.	LA,RA&FSA	
											NONE	—	—	NONE	—	—	—	16-T.D.	LA&RA	
							—	—	—	LOW	MOD		MANUAL	HMP	20 LBS	2A 30B C	10	NONE	FA	
							—	—	—	LOW	NONE	—	—	NONE	—	—	—	NONE	—	
							—	—	—	LOW	NONE	—	—	NONE	—	—	—	NONE	—	
							357.5×10³	1504	23589	HIGH	ADS		AUTOMATIC	HMP	20 LBS	2A 30B C	1	3-T.D.	LA,RA&FSA	
							250×10³	1100	26682	HIGH	ADS		AUTOMATIC	NONE	—	—	—	3-T.D.	LA,RA&FSA	
							240×10³	9400	25532	LIGHT	HS		MANUAL	HHA	20 LBS	2A 30B C	3	39-T.D.	LA&RA	

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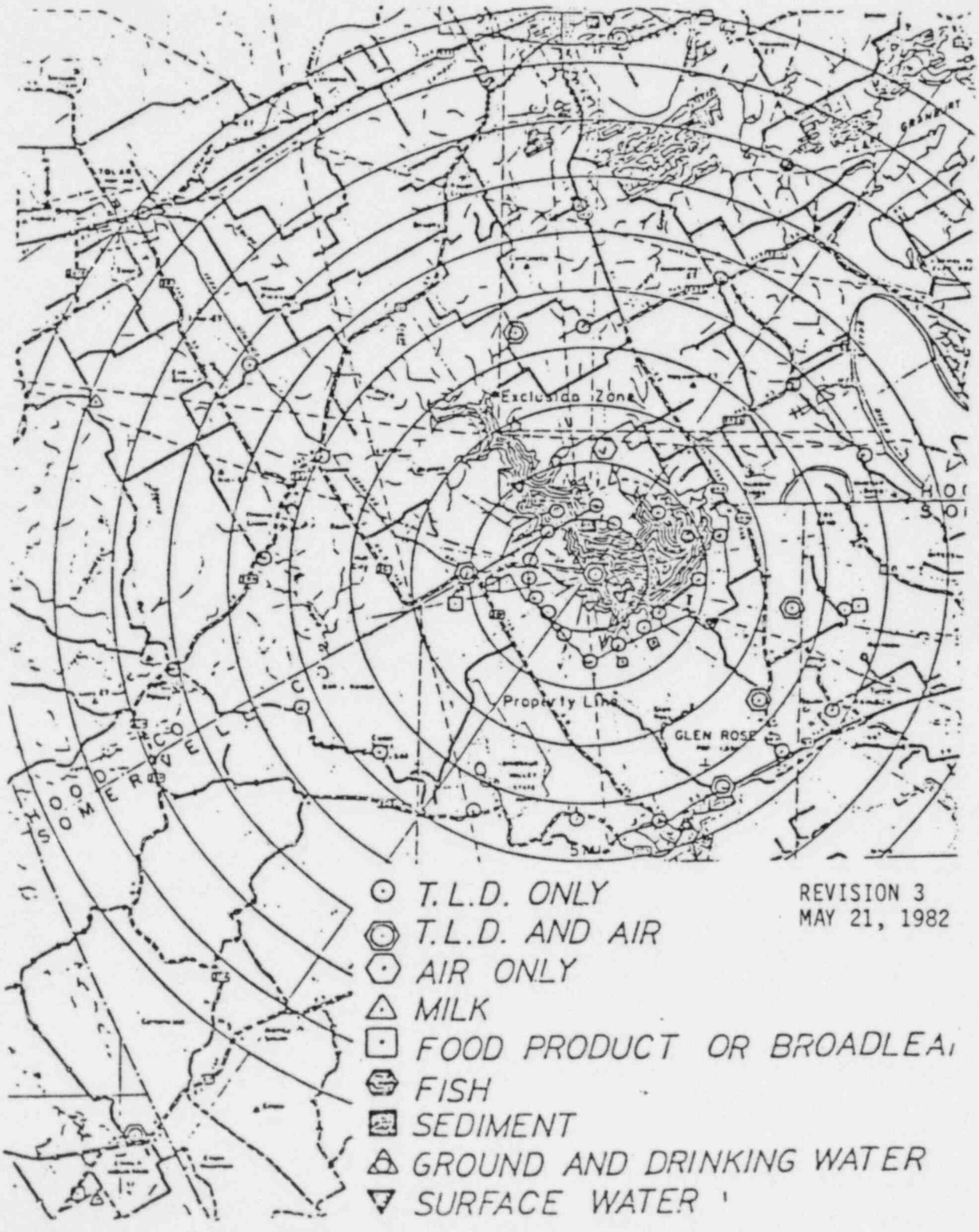
Tabulation of Fire Hazards

FIGURE 6.4 (SHEET 5)

CPSES/EP

Figure 6.5

ENVIRONMENTAL MONITORING LOCATIONS



7.0 ACCIDENT ASSESSMENT

Assessment of the accident is accomplished using the Radiation Monitoring System and the Process Monitoring System which are described in Section 6.6. Also, discussed in Section 6 is the Post Accident Sampling System, the Area Radiation Monitoring System and the Radiation Process Monitoring System. The Radiation Monitoring System is capable of evaluating current Radiological data or accepting manually input data and projecting the dose isopleths. Procedure EPP-201, "Assessment of Emergency Action Levels and Plan Activation", provides detailed examples and specific parameters to aid the Emergency Coordintor in accurately accessing and declaring an Emergency Action Level. Quick, accurate assessment of the emergency ensures that the proper emergency resources and actions are employed. The following is a general discussion of the monitoring programs for onsite and offsite assessment of radiological conditions.

7.1 CONTROL ROOM ASSESSMENT OF RADIOLOGICAL CONDITIONS

The Radiation Monitoring System (RMS) receives data from several plant systems. The projections made by the RMS gives the Emergency Coordinator the necessary information to determine the consequences to the environment and the public and recommend protective actions to offsite officials. The Emergency Coordinator can utilize the Procedure EPP-301, "Control Room Accessment of Radiological Conditions", if the RMS System fails or for any other reason. This procedure utilizes the radiation monitor remote displays in the control room to provide radiological data to the Emergency Coordinator. With this data, the Emergency Coordinator should be able to evaluate the off-site consequences with some degree of accuracy.

7.2 MANUAL ASSESSMENT OF RADIOLOGICAL CONDITIONS

Should the RMS fail or the instruments that supply data fail or the reading go off scale, a prediction of the offsite consequences is made using worst case radiological data to ensure the safety of the public.

If data is available and the RMS is not functional, each emergency response facility is equipped with a programmable battery powered calculator. This allows Radiation Protection personnel to continue an accurate assessment of the radiological conditions. The Procedure, EPP-302, "Off-Site Dose Calculations", contains the necessary

equations, instructions and basic forms to support a totally manual effort of calculating the offsite consequences. Also, if the RMS is inoperable, two Dose Assessment Kits are available. Each contains a ten (10) mile base map and seven (7) plume projection overlays to visually illustrate the plume path and the affected sectors.

Data is also available from the field. CPSES field teams are equipped with a variety of survey equipment which includes a battery powered multi-channel analyzer. This equipment allows for field evaluation of air samples and should detect radioiodine concentrations as low as 1 x 10E-7 uCi/cc (micro-Curies per cubic centimeter).

7.3 ONSITE AND OFFSITE RADIOLOGICAL CONDITIONS

Normally, a release to the environment is monitored by permanently installed, real time monitoring instruments located at the effluent release points. These instruments are checked as necessary to estimate the release reate and/or magnitude of the release. In those cases where the unavailability of monitoring instruments does not make the above possible, (due to monitors being off-scale or inoperable) design basis accident values or onsite monitoring team data shall be used. This information is provided for in Procedure EPP-301 "Control Room Assessment of Radiological Conditions".

In the event of a release, protection of onsite personnel shall be given high priority. Onsite monitoring is conducted with the following objectives:

1. To determine whether external dose rates warrant evacuation.

2. To determine whether iodine sampling is necessary.

In the early stages of assessment, it may not be necessary to collect air samples if it has been determined that radioiodine is not a problem. Since noble gases always accompany iodine in a release, and in general will be released in substantially greater quantities, it is possible to set an upper limit on possible airborne iodine based upon a measurement of the external gamma dose rate. In general, air samples shall be collected if the general area gamma dose rate increases and/or inplant iodine monitor readings increase or alarm.

7.3.1 ONSITE RADIOLOGICAL ASSESSMENT

During an Unusual Event, the on-shift Radiation Protection technician performs the necessary onsite radiological assessment and sampling activities as directed by the Shift Supervisor.

In the event that the emergency condition escalates to an Alert, the responsibilities for onsite radiological asssment are assumed by the TSC Health Physicist. As CPSES Emergency Organization personnel become available, onsite radiological survey teams are formed as required and dispatched by the TSC Health Physicist. Onsite radiological survey teams consist of at least two members; one shall be a Radiation Protection technician. The onsite radiological assessment team or teams shall perform the required surveys in accordance with Procedure EPP-303 "Emergency Radiological Surveys".

In the event that the emergency condition escalates to a Site Area or General Emergency, the responsibility for onsite radiological assessment is assumed by the Radiation Protection Coordinator.

Communications between the Control Room, TSC, OSC, EOF and the onsite radiological assessment teams will be conducted in accordance with Section 4.0 of this plan.

Transportation will be available to facilitate obtaining onsite radiological data. Based on the availability of a vehicle and the arrival time of CPSES Emergency Organization personnel, onsite radiological survey teams should be deployed within 15 to 30 minutes after arrival onsite. Deployment time may vary due to the following factors: the duration of the onsite briefing session; the time required to obtain and don protective equipment; and the time required to obtain and check the equipment specified in Appendix J of this plan.

7.3.2 OFFSITE RADIOLOGICAL ASSESSMENT

In the event that a Site Area or General Emergency is declared, the Offsite Radiological Coordinator assumes the responsibilities for coordinating offsite radiological monitoring activities. The offsite radiological monitoring teams consists of at least two members; one shall be a Radiation Protection technician.

The Radiation Protection Coordinator shall dispatch the offsite radiological assessment team to the effected downwind sectors. This team shall perform external dose measurements, obtain air samples, determine contamination levels, and obtain vegetation and liquid samples, as required. This monitoring shall continue, as required, throughout the duration of the accident so that the need for protection measures can be quickly assessed. It is important that the locations at which environmental measurements are made be clearly identified. Offsite environmental survey locations are identified in Procedure EPP-303 "Emergency Radiological Surveys".

Communications between the TSC, EOF, and the offsite radiological assessment teams will be conducted in accordance with Section 4.0 of this plan.

Transportation will be available to facilitate obtaining offsite radiologial data. Based on the availability of vehicles and the arrival time of CPSES Emergency Organization personnel, Offsite Radiological Assessment Teams should be deployed within 15 to 45 minutes after arrival onsite. Deployment time may vary due to the following factors: the duration of the onsite briefing session; the time required to obtain and don protective equipment; and the time required to obtain and check the equipment specified in Appendix J of this plan.

8.0 PROTECTIVE RESPONSE

Protective actions are ultimate measures taken when an uncontrolled release of radioactive materials has occurred. All unescorted personnel at the Station shall be given appropriate orientation to ensure that they are aware of how to respond in the event of an emergency. All escorted personnel are directed by their escorts in an emergency. Occupants in the EPZ are sent information concerning how they are to be notified and what they are expected to do in the event of an emergency. The nature of protective actions to be implemented, the criteria for their application, and the area involved or groups of persons for whom the protective actions would be taken are given below.

8.1 ONSITE PROTECTIVE ACTIONS

8.1.1 EVACUATION

In the event of an emergency, evacuation of specific onsite area or the site may be necessary to protect the people working at CPSES. An evacuation serves to reduce personnel exposure to the hazard. to warn other personnel to avoid the hazard and to aid in accounting for personnel. An evacuation, when ordered by the Emergency Coordinator, shall be initiated by an announcement over the station page system. The announcement should indicate the nature of the emergency, its location or the area to be evacuated and avoided, and the assembly area best suited for the incident. A site evacuation, or a Fuel Handling Building or Containment evacuation announcement should be succeeded by an audible alarm. Section 4 contains a description of this alarm.

CPSES personnel not assigned to the emergency response, visitors and construction personnel shall remain at the assembly area until either the emergency is terminated or they are released. Visitors shall remain with their escort or another CPSES individual for security and safety. Emergency response personnel shall gather at their designated assembly area unless directed to another location by the Emergency Coordinator.

The assembly areas include the hallway outside the Containment personnel hatch, the restricted area access point for the restricted area, the Administration Building parking lot for administrative

personnel and those individuals inside the Protected Area and outside the restricted area, and the EOF for a site evacuation. The evacuation procedure, EPP-210, details the actions that shall be taken if an evacuation is required. Evacuation routes for the 10-mile EPZ are illustrated on a map in Section 15, Appendix N.

A site evacuation affects the exclusion area around CPSES as well as the Station. Personnel in the emergency facilities shall remain in these facilities unless the situation or a complication warrants their evacuation. Squaw Creek Park and reservoir are also affected by a site evacuation. Squaw Creek Park, Inc. (SCPI) operates the park and is responsible for access to the reservoir during the parks hours of operation. SCPI is also responsible for the accountability and evacuation of the people in the park and on the reservoir. SCPI shall initiate their evacuation procedure when they are notified of a Site Area Emergency. As required, individuals evacuated under emergency conditions shall be directed to a location designated by the Emergency Coordinator for radiological evaluation. Security is ultimately responsible for controlling access to the exclusion area and may, with assistance from the county sheriff, aid SCPI in the evacuation effort.

8.1.2 PERSONNEL EVACUATED FROM THE SITE

Personnel evacuated from the site shall assemble as prescribed in Procedure EPP-210, "Evacuation". At this point, Procedure EPP-307, "Radiological Monitoring of Site Evacuees" is utilized. Control points will be established and personnel found contaminated shall be routed to the NOSF to be decontaminated.

8.1.3 INDIVIDUAL PROTECTIVE ACTIONS

Personnel arriving or remaining onsite shall be afforded sufficient protective clothing to insure their ability to perform emergency response operations as needed. Respiratory protection is available as necessary and consists of full-face respirators with filters or self-contained breathing apparatus (SCBA). As a minimum, the Control Room is supplied with 6 SCBA's and 30 hours of reserve air supplies. The TSC, EOF and OSC are also supplied with SCBA's. Spare bottles will be available and can be refilled from onsite breathable air compressors and air reservoirs. A thyroid blocking agent, Potassium Iodide (KI), is made available to personnel in the CPSES Emergency Organization.

8.1.4 PERSONNEL ACCOUNTABILITY

Each Station supervisor or the senior individual onsite from his group is responsible for accounting for all persons working in or visiting with his group. Each emergency response facility manager is responsible for accounting for the personnel in their facility. Accountability is determined for each group and reported to the Emergency Coordinator in the event of an Alert, Site Area or General Emergency. This process shall be accomplished in accordance with Procedure EPP-209, "Personnel Accountability" and should not require more than 30 minutes to complete.

Security personnel, with the aid of their computer, shall be responsible for continuously accounting for individuals thereafter.

8.1.5 PERSONNEL MONITORING

Personnel monitoring is the responsibility of the Radiation Protection Section. They shall be supported by the Chemistry/Environmental Section.

A TLD reader is available in the EOF in order to maintain up-to-date exposure information on individuals during an emergency. Personnel exposure records are also available in the EOF.

Equipment and personnel are available at the NOSF to check individuals for contamination if suspected. The NOSF also has decontamination facilities available if any contaminated individuals are encountered.

8.1.6 EMERGENCY RESPONSE TIME

The time estimate for evacuating the site is projected to be 58 minutes. Justification for this time estimate is provided by the discussion and formula in Section 15.0, Appendix M.

8.1.7 CONTROL OF PUBLIC ACCESS

During normal operations, Security shall control access to the Station. The public access road to Squaw Creek Park and Reservoir

shall be controlled by Squaw Creek Park, Inc. There will be no direct access to the Station from the reservoir or park.

For emergency operations, Squaw Creek Park, Inc. shall evacuate the park and relinquish access control to Security. The Security organization may be augmented by State or local law enforcement agencies, as required.

8.2 OFFSITE PROTECTIVE ACTIONS

The Texas Department of Health is the lead agency in Texas responsible for offsite protective actions involving emergency conditions at nuclear power facilities. State and local law enforcement agencies are responsible for controlling access to the 10 mile EPZ. Offsite protective actions are based on recommendations from the CPSES Emergency Coordinator to State and county officials. Instructions to the public regarding implementation of protective actions shall be provided by the county and State officials via the EBS network. Previously prepared messages intended for the public shall be released to the news media by the county officials in conjunction with the EBS announcements. These messages are contained in the county Emergency Plan procedures and are consistent with the CPSES Emergency Action Level classification scheme.

Specific guidance for notification, evacuation, access control, control of public water supplies, control of distribution of affected agricultural products, and evacuation routes is available in Appendix 7 of the Texas Emergency Management Plan and the local county plans. Evacuation time estimates for the surrounding population have been developed by CPSES and are provided in Section 15.0, Appendix N.

8.2.1 EMERGENCY PLANNING ZONES

The Emergency Planning Zones (EPZ's) are defined as those areas for which planning is needed to insure that prompt and effective actions can be taken to protect the public in the event of an accidental release of radioisotopes. The Ingestion Pathway EPZ, 50 mile-radius, are divided into 16 equal sectors (22.5 degrees each) so that in an emergency only those affected sectors need be addressed. The Plume Exposure EPZ and the Plume Exposure EPZ, 10-mile radius, is also divided into concentric circles of one mile increments with the plant at the center. Refer to Appendices F and G for maps of the CPSES EPZ.

Responsibility for notification of the population within the affected sectors in an emergency lies with the local authorities and is outlined in each county's Emergency Operations Plan. The Emergency Coordinator provides to the State and local authorities the status of the emergency and recommends protective actions to be taken. Once the local authorities have decided that protective actions are to be taken the entire population within the affected sectors of the EPZ must be notified in a reasonable time frame. Notification of the public is the responsibility of local government. The notification system is described in Section 3.

Protective actions recommended to the county and State officials are based on the guidelines expressed in the EPA "Manual of Protective Action Guides" (EPA-520/1-75-001); "Public Protection Strategies for Potential Nuclear Reactor Accidents: Sheltering Concepts with Existing Public and Private Structures" (SAND 77-1725), Sandia Laboratory, and "Examination of Offsite Radiological Emergency Measure for Nuclear Reactor Accidents Involving Core Melt" (SAND 78-0454), Sandia Laboratory.

9.0 RADIOLOGICAL EXPOSURE CONTROL

To ensure proper radiological exposure control is maintained even during emergencies, there are two Radiation Protection Technicians on site 24 hours per day, 7 days per week. Routine TLD processing is done in the OSC; however, a manual processor is maintained at the Emergency Operations Facility along with another terminal to the radiation records management system.

For emergency conditions, the procedure EPP-305, "Personnel Dosimetry for Emergency Conditions", is utilized. This procedure specifies the responsibilities and actions of the Radiation Protection Engineer and his section regarding the use of high-range dosimeters, the processing frequency of dosimetry and the criteria which allows emergency personnel to receive a radiation dose in excess of the limits set down in 10 CFR 20. Unless a life saving or urgent plant emergency necessitates over-exposure, all emergency actions shall be performed so as not to exceed the exposure limits established in 10 CFR 20. Radiation Protection procedures governing the frequency of dosimeter evaluation and maintenance of exposure records exist for routine operations. These procedures discuss the proper use of self-reading dosimeters and establish the frequency and criteria for TLD evaluation.

9.1 EMERGENCY EXPOSURE CRITERIA

The emergency exposure criteria to be used at CPSES are those recommended by the National Council on Radiation Protection and Measurements and are published in the NCRP Report No. 39, "Basic Radiation Protection Criteria." The provisions of the guidance shall be followed and the dose limits held to the lowest practicable level. Only the Emergency Coordinator with the concurrence of the Radiation Protection personnel can authorize emergency workers to receive doses in excess of 10 CFR Part 20 limits.

For life-saving actions such as searching for and removing injured persons, or entering contaminated areas to prevent conditions that would probably injure numbers of people:

a. Rescue personnel should be CPSES volunteers or professional rescue personnel.

b. Rescue personnel should be familiar with the consequences of exposure.

c. Women capable of reproduction should not take part in these actions.

d. Other things being equal, volunteers above the age of 45 should be selected.

e. Planned dose to the whole body shall not exceed 100 rems.

f. Internal exposure should be minimized by the use of the best available respiratory protection and contamination should be controlled by the use of available protective clothing.

g. Normally, exposure under these conditions shall be limited to once in a lifetime.

h. Persons receiving exposures as indicated above should avoid procreation for a period up to a few months.

For actions in less urgent emergencies where it is desirable to enter a hazardous area to protect facilities, eliminate further escape of effluents, or to control fires:

a. Persons performing the planned action should be CPSES volunteers familiar with exposure consequences.

b. Women capable of reproduction shall not take part.

c. Planned whole body dose shall not exceed 25 rems.

d. Planned dose of hands and forearms shall not exceed 100 rems.

e. Internal exposure shall be minimized by respiratory protection and contamination controlled by the use of protective clothing.

f. Normally the action shall be limited to once a life time.

9.2 CONTAMINATION CONTROL

The results of onsite and offsite contamination surveys, taken in accordance with procedure EPP-303, "Emergency Radiological Surveys," shall be used as the basis for determining and posting contaminated areas.

Access control, to contaminated areas, shall be handled in accordance with CPSES Radiation Protection Section procedures.

The release of contaminated areas shall be determined based on survey results and carried out in accordance with CPSES Radiation Protection Section procedures.

Contamination control of drinking water and food supplies shall be handled in accordance with CPSES Radiation Protection Section procedures.

9.3 DECONTAMINATION

Decontamination of contaminated personnel will be under the direction of the Radiation Protection Section and will be performed in accordance with the procedure EPP-307, "Radiological Monitoring of Site Evacuees". This procedure prescribes the limits at which decontamination is deemed necessary, lists decontamintion methods and techniques and the actions to be taken in the event of suspected internal contamination.

The plant decontamination facility, figure 9.1, is located on elevation 810' at the normal radiological access control point in the Turbine Building adjacent to the Radiation Protection office. An additional decontamination facility, figure 9.2, is located at the nearsite EOF for use in emergency situations.

The decontamination of personnel, equipment, or areas will be dependent on the conditions present at that time, and will be directed to minimize personnel exposure both to the contaminated person and to the person performing the decontamination. Radiation Protection procedures for routine operations list the methods, limits and precautions necessary for decontamination activities. These procedures shall also be referenced for area posting and material release requirements.

During an emergency, areas of the station which are normally unrestricted access may become contaminated such that they become restricted access areas. Radiation Protection personnel will monitor the station and make changes as necessary during the course of the emergency. If the immediate area around the station should become contaminated, then a restricted area access point may be established at the EOF. The decontamination facility at the EOF would then be used for personnel leaving the station who are contaminated.

Decontamination of equipment and areas of the Station will be performed as the emergency condition permits with priority given to equipment or areas essential to recovery of the station to a safe condition. Contaminated areas and equipment shall be classified as such when the levels prescribed in the radiation protection procedure concerning area and equipment decontamination are exceeded.

9.4 RADIOACTIVE WASTE

Radioactive waste generated or accumulated by the hospital, ambulance or other emergency personnel may be brought to the EOF for storage. As conditions permit, this radioactive waste should be returned to the station for processing.

CPSES/.

Figure 9.1

Decomtamination and First Aid Facility
in the Plant

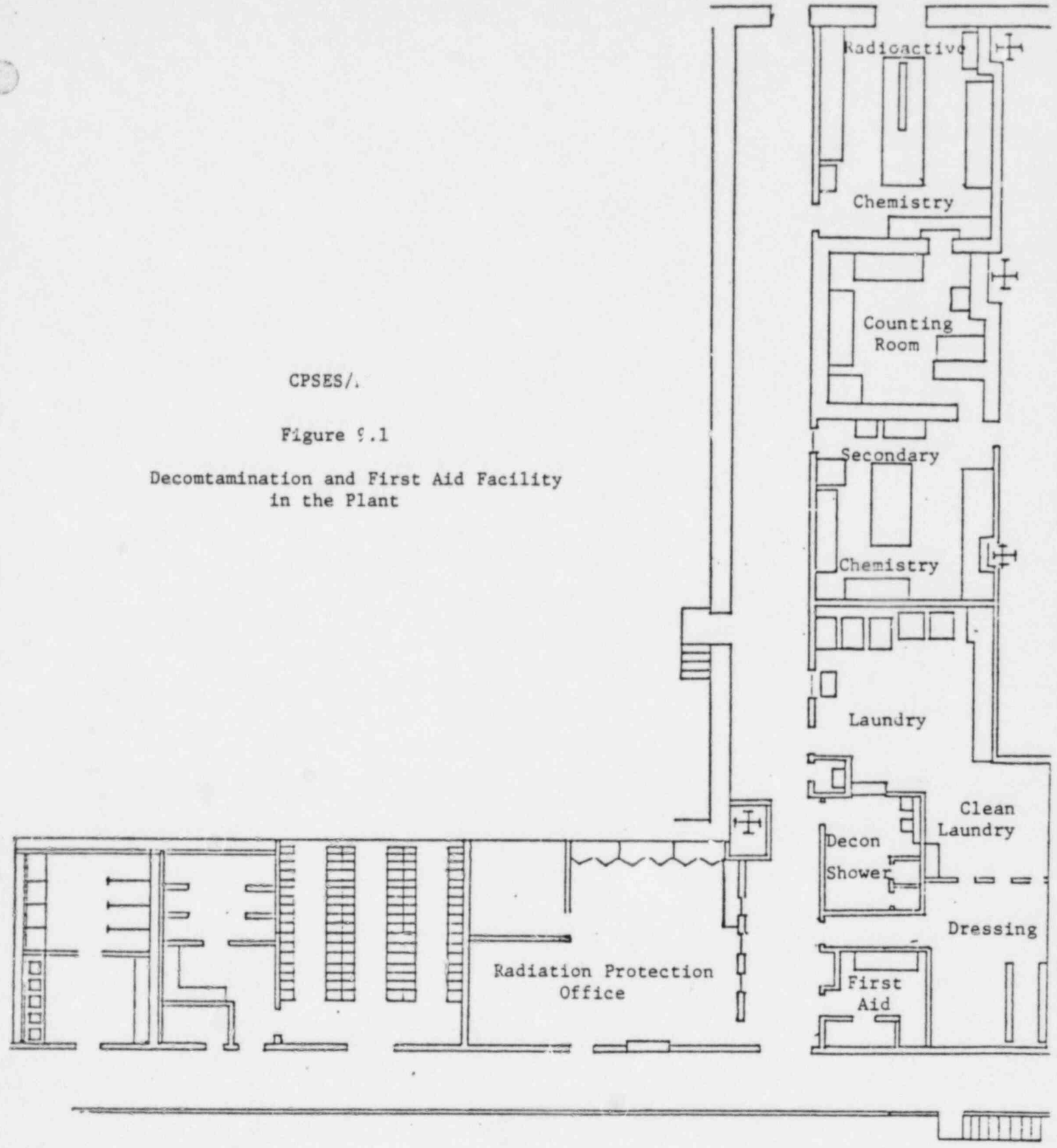
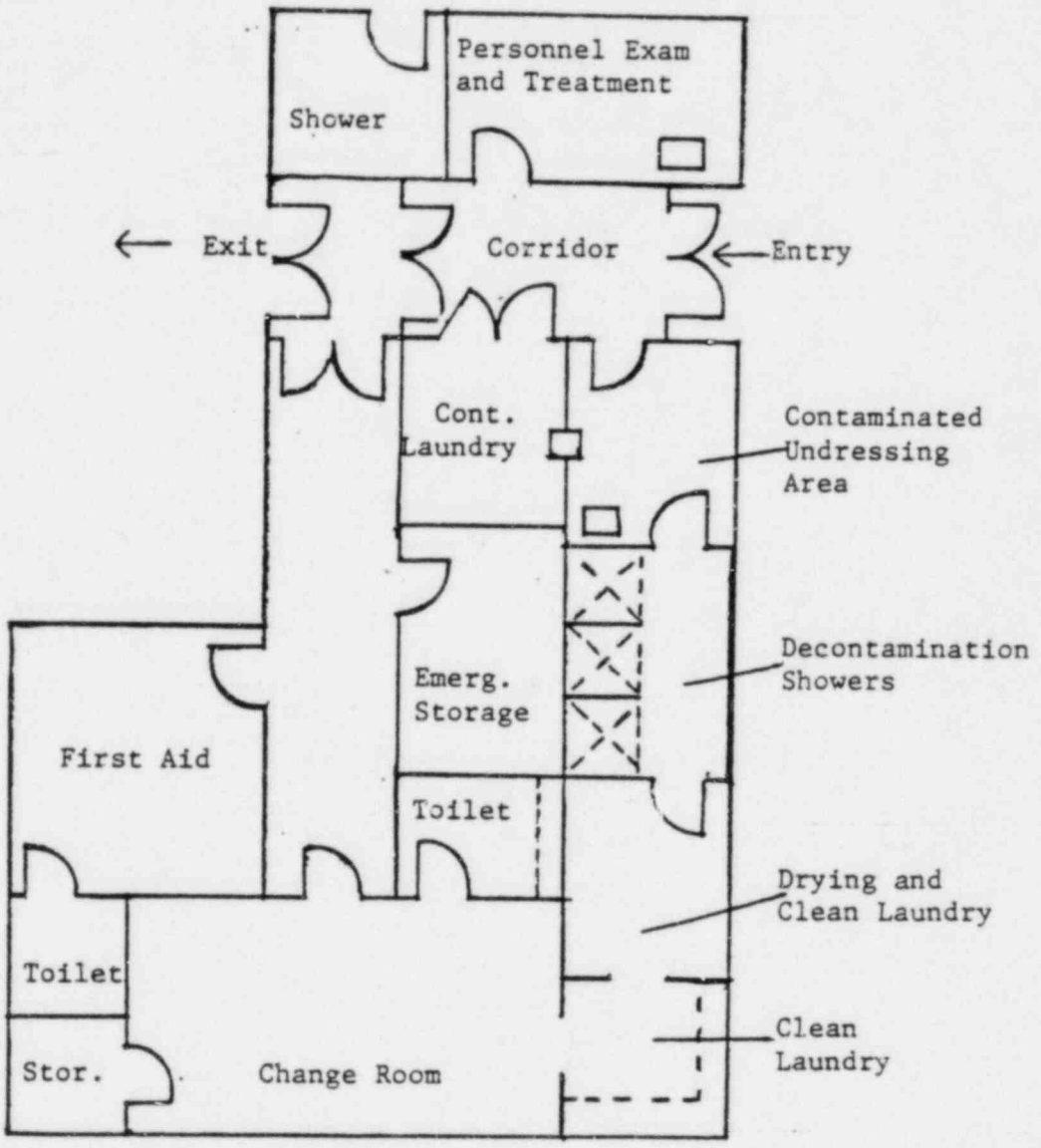


Figure 9.2

Emergency Operations Decontamination
and First Aid Facilities in the
Nuclear Operations Support Facility



10.0 MEDICAL AND PUBLIC HEALTH SUPPORT

10.1 MEDICAL TREATMENT

As discussed in Section 1.3 two local hospitals are available for accepting injured persons from CPSES. In conjunction with these hospital arrangements, Texas Utilities Generating Company has contracted with Radiation Management Corporation (RMC) to provide expertise, facilities, and equipment to assure a comprehensive emergency medical assistance program. RMC will assist in the specification of facilities at the local hospital, training of personnel, and conduct of drills. Capabilities at the University of Pennsylvania Hospital in Philadelphia include a fully equipped radiosurgery suite, reverse isolation units, facilities for white cell transfusion, bone marrow transfusion and chromosome analysis. Medical consultation is available from specialists in a variety of related disciplines.

Hood General Hospital serves as the local support hospital for contaminated victims, providing gross decontamination, life saving activities, and patient stabilization. In the event the victim requires more definitive evaluation and treatment, the individual may be sent to the RMC facilities at the University of Pennsylvania Hospital in Philadelphia. Additional support provided by RMC includes the around-the-clock, seven day per week availability of expert consultation and services of a Radiation Emergency Medical (REM) Team, consisting of a licensed physician and a certified health physicist to respond to an accident victim at CPSES as requested by TUGCO. RMC will provide the services of their Bioassay Laboratory and Whole Body Counting Facility if requested. This hospital also serves as a back up to Hood General Hospital.

The Marks English Hospital in Glen Rose is not prepared to handle radiologically related injuries from CPSES; however, the facilites may be utilized for non-radiological injuries. Since no special services are required of the Marks English Hospital staff, a letter of agreement is not required.

Letters-of-agreement with Hood General Hospital and the Radiation Management Corporation are included in Section 15.0, Appendix H.

10.2 MEDICAL TRANSPORTATION

A company ambulance is available to CPSES to transport injured personnel, who may also be radiologically contaminated, to the appropriate medical facility. As discussed in Section 1.3, agreements with local ambulance services supply back-up assistance as needed. Protective clothing, shielding and dosimetry requirements for transportaing injured and contaminated victims are described in the Emergency Plan Procedure, EPP-308, "Transporting of Contaminated Injured Personnel".

10.3 FIRST AID

The first aid station for CPSES is located on elevation 810' of the Turbine Bulding across the hallway from the Radiation Protection office. The station is equipped with standard first aid supplies such as bandages, splints, non-prescription medications, first aid manual, and a stretcher. First aid kits, stretchers, and eye-wash stations are also located throughout the plant at appropriate locations. First aid treatment facilities and equipment are also maintained in the NOSF.

11.0 RECOVERY AND REENTRY

Once emergency conditions have subsided, and the situation is no longer considered a threat to onsite personnel or the general public, efforts shall be initiated to restore the affected unit(s) to full operation or place the affected unit(s) in a long-term safe shutdown condition until full operation can be resumed. The scope of these efforts is dependent upon the severity of the emergency, ranging from a simple close-out to a full-scale mobilization of personnel and resources to support a long-term recovery effort. If a recovery effort is deemed necessary, the CPSES Recovery Organization shall be established to ensure that personnel and resources are properly applied to that effort.

The transition from the CPSES Emergency Organization to the CPSES Recovery Organization is dictated by the severity of the emergency conditions experienced onsite and offsite. Once the designated Emergency Coordinator has established the fact that the emergency conditions have subsided, he and other appropriate TUGCo personnel shall assess the need for initiating a recovery effort. Whether it is decided that the event should be closed out or that the CPSES Recovery Organization should be established, this decision shall be discussed with, and agreed to and approved by, the appropriate TUGCo management personnel. The appropriate TUGCo management personnel, who shall be involved in this decision-making process, are shown in Table 11.1. For an Alert or higher EAL, the State and county emergency organizations shall be notified prior to closing out the event or entering the recovery phase. In all cases, the NRC shall be notified of the decision.

If established, overall technical direction and control of the CPSES Recovery Organization is assumed by the Recovery Manager. The CPSES Recovery Organization absorbs the existing CPSES Emergency Organization and management of all activities from the EOF is assumed from the Emergency Coordinator by the Recovery Manager. The Emergency Coordinator shall continue to direct the Emergency Organization and Emergency Organization personnel should continue functional assignments. The Coordinator shall inform the supporting emergnecy response organizations of the change in Station status and of the CPSES organizational transition. Procedure EPP-215 "Recovery and Reentry" delineates the requirements and actions to be taken for recovery phase activities, including the transition to the CPSES

Recovery Organization, and for personnel reentry into evacuated onsite areas.

Recovery operations include the evaluation of historical and real-time data and reports, the selection of the proper corrective action and restoration activities, and the acquisition of the equipment and personnel to accomplish those activities.

Reentry into the environs of the Station by selected personnel is one of the most important sources of information available to the CPSES Recovery Organization. These activities should aid in ascertaining the resources, manpower and recovery actions necessary to restore the station to operational status.

The Emergency Coordinator has the responsibility for authorizing reentry into a previously evacuated area. Reentries shall be made in accordance with the criteria established in Procedured EPP-215, "Recovery and Reentry", and the exposure guidelines established in Procedure EPP-305, "Personnel Dosimetry for Emergency Conditions". This procedure provides specific instructions and criteria for exposure control and, if necessary, a planned over-exposure. All efforts shall be made to keep exposures as low as reasonably achievable (ALARA).

The decision to deescalate or close-oute the activities of the CPSES Recovery Organization shall be made with the concurrence of the Recovery Manager and the Emergency Coordinator, and the approval of the Vice-President, Nuclear. The decision made may be based on a number of criteria, such as:

a. Completion of all corrective action or restoration activities.

b. Availability of the affected unit(s) to resume power operation.

c. Reduced need for specialized talents and resources to perform recovery activities.

11.1 RECOVERY ORGANIZATION

The CPSES Recovery Organization is composed of both onsite and offsite personnel. Corporate and contract personnel are utilized as needed to expand the capabilities of onsite personnel. Since the magnitude of

any recovery effort is dependent upon the scope of the event the CPSES Recovery Organization staffing requirements are difficult to predict in advance; therefore, this Plan only predesignates certain management level positions in the CPSES Recovery Organization. The managers form their respective groups as they deem appropriate to deal with the recovery effort.

The CPSES Recovery Organization chart is shown in Figure 11.1.

11.1.1 RECOVERY ORGANIZATION - JOB FUNCTIONS

11.1.1.1 Recovery Manager

The Recovery Manager is responsible for directing the actions of the CPSES Recovery Organization and for restoring CPSES to a fully operational status. The Manager, Nuclear Operations is the principal Recovery Manager. In his absence, the Vice President, Nuclear or a designated member of senior management may serve as the Recovery Manager.

The responsibilities assigned to the Emergency Coordinator in Section 1.2.1.1 are transferred to the Recovery Manager when the recovery phase begins. This shall ensure the continuity of resources, communications and other activities initiated by the CPSES Emergency Organization.

11.1.1.2 Emergency Coordinator

During recovery operations, the Emergency Coordinator shall retain control of the Emergency Organization and shall report to the Recovery Manager. His primary responsibilities include:

a. Maintaining a liaison between the Recovery Manager and the Emergency Organization.

b. Coordinating onsite and offsite radiological monitoring and dose assessment activities.

c. Advising the Recovery Manager concerning Station operations, public information releases and protective action recommendations for the public.

11.1.1.3 Operations Support

Operations Support personnel are responsible for analysis and development of plans and procedures in direct support of operations with the objective of restoring the Station to operational status. Their prime responsibilities include:

a. Provide direct support to shift operations.

b. Analyze instrument and control problems and develop modification and repair plans.

c. Analyze conditions and develop guidance for shift operations personnel regarding core protection.

d. Develop out-of-normal and emergency procedures for operations support.

11.1.1.4 Technical Support

Technical Support personnel are responsible for the following:

a. Determine the need for and provide engineering and technical specialists to support other managers as required.

b. Assure that design and construction activities are adequately staffed and equipped to provide timely support.

c. Provide direct contact between CPSES and others on administrative matters.

d. Direct, coordinate, and approve all engineering, design and construction activities conducted onsite during the recover phase.

e. Develop any required modifications for radwaste systems in support of recovery operations.

f. Provide expertise for Station repair and modification in support of mechanical and electrical problems.

g. Provide qualified personnel to augment repair and damage control teams.

11.1.1.5 Corporate Office Support

Texas Utilities Corporate office personnel augment the CPSES Recovery Organization and support recovery activities as requested by the Recovery Manager. The Corporate Purchasing and Public Information departments shall support the CPSES Recovery Organization and assist in procuring of services and equipment and disseminating information to the public. Refer to Section 1.2.3 of the Plan for details.

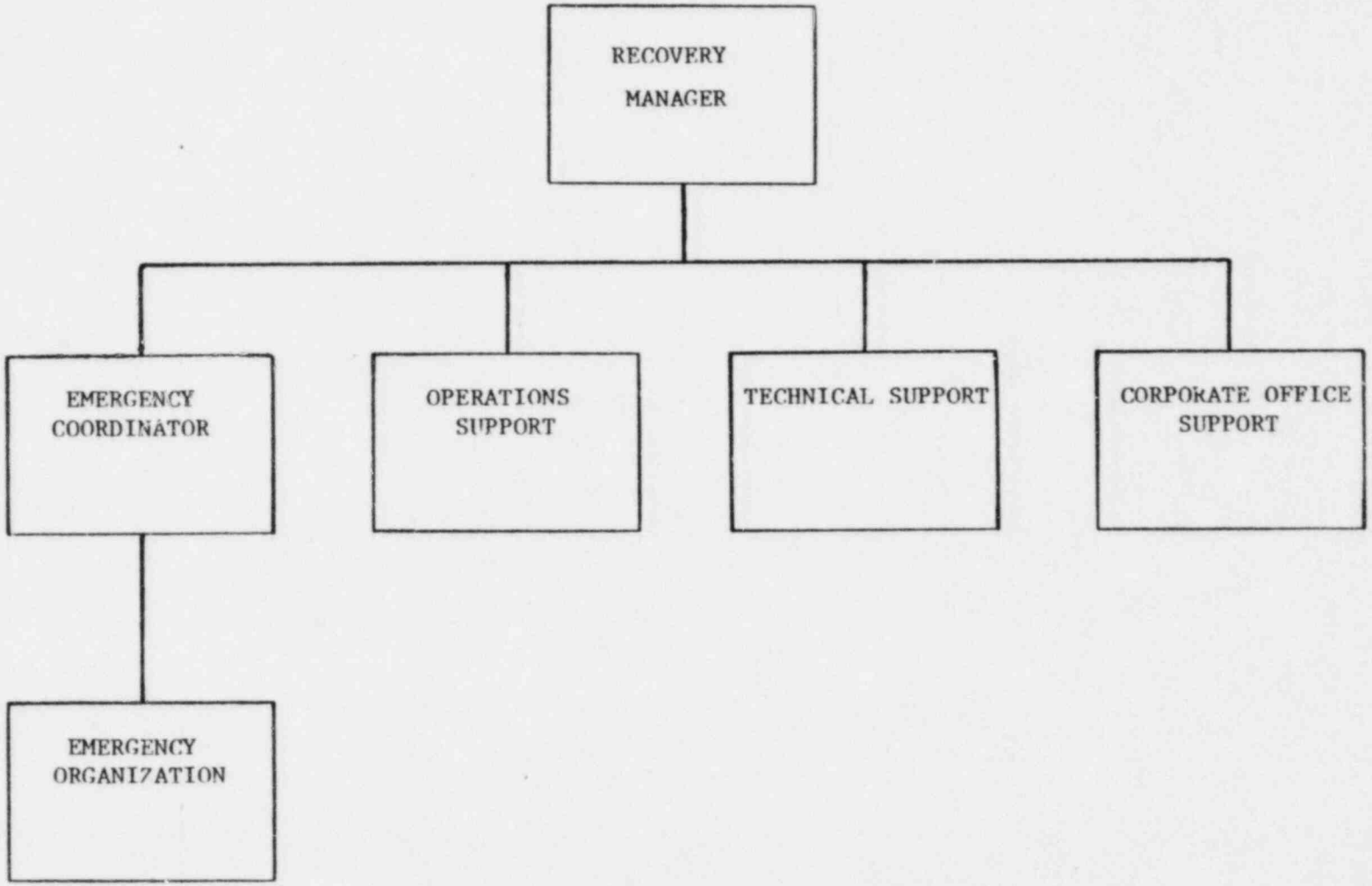
TABLE 11.1

DECISION-MAKING PROCESS FOR EVENT CLOSE-OUT
OR TRANSITION TO RECOVERY PHASE

Event Severity (EAL)	Designated Emergency Coordinator	Other Required TUGCO Decision-Makers	TUGCO Approval Authority	Recommended Offsite Notifications
Unusual Event	Shift Supervisor	Manager, Plant Operations	Manager, Plant Operations	None Required
Alert	TSC Manager	Manager, Nucler Operations Manager, Plant Operations	Manager, Plant Operations	State, Counties
Site Area Emergency	Emergency Coordinator	Manager, Nuclear Operations; Vice-President, Nuclear	Vice-President, Nuclear	State, Counties
General Emergency	Emergency Coordinator	Manager, Nuclear Operations; Vice-President, Nuclear	Vice-President, Nuclear	State, Counties

FIGURE 11.1

RECOVERY ORGANIZATION



CPSES/EP

12.0 EXERCISES AND DRILLS

Exercises are conducted to evaluate the integrated capability and a major portion of the basic elements of the emergency response. Drills are conducted to develop and maintain key skills, to evaluate segments of the overall emergency response and to periodically confirm the availability and operability of emergency equipment. Deficiencies identified as a result of these exercises and drills shall be corrected.

As soon as practicable after an exercise or drill, a critique shall be held to identify strengths and weaknesses exposed during the activity. A formal evaluation should result from the critique. Procedure EPP-104, "Emergency Preparedness Drills and Exercises", provides guidelines for developing, conducting, evaluating and documenting emergency preparedness drills and exercises and the responsibilities for implementing this procedure.

12.1 EXERCISES

To adequately test the Emergency Plan and to familiarize personnel with their duties and responsibilities, an annual radiological emergency preparedness exercise will be performed at CPSES. The exercise will involve emergency situations based upon a preplanned scenario developed in accordance with Procedure EPP-104. The annual exercise shall include the mobilization of TUGCO, State and local personnel and resources to the extent that the adequacy of the integrated emergency response capability can be verified. Critical communications links between participating organizations shall also be tested. The exercise scenario shall be varied from year to year to ensure that all basic elements of the various emergency plans and emergency organizations associated with CPSES are tested within a five-year period. The exercise scenario shall include provisions to start at least one exercise between the hours of 6:00 p.m. and midnight, and another between the hours of midnight and 6:00 a.m. within a six-year period. Some exercises should be unannounced.

Selected individuals will be chosen as observation team members. The observation team members shall observe and record the actions of the CPSES Emergency Organization and the performance of the individual members. At the conclusion of the exercise, a critique shall be held, in which the reports from the observers are reviewed and discussed.

A news media orientation shall be conducted in conjunction with the annual exercise to inform the media of the emergency preparedness program and the purpose of the exercise at CPSES, provide information concerning CPSES and its function and dispell any rumors.

12.2 DRILLS

Drills for testing, developing and maintaining skills in particular areas shall be conducted periodically. In some areas, practical drills shall be used to evaluate personnel and allow for "hands on" training. The drills should follow preplanned scenarios developed to thoroughly test the response of the personnel involved. State personnel should periodically participate in the radiological monitoring and Health Physics drills. The following drills are required:

12.2.1 COMMUNICATION DRILLS

The communication links between CPSES, DPS in Waco and the Hood County and Somervell County centers shall be tested monthly. Communications between CPSES, and State and Federal agencies involved in the ingestion pathway response shall be tested quarterly. Communications between CPSES, the State and local emergency operations centers, and the radiological monitoring teams shall be tested annually. Communication drills shall also include the aspect of understanding the content of messages.

12.2.2 FIRE DRILLS

The members of the onsite fire team shall participate in quarterly drills and the annual exercise. Drills shall be conducted in accordance with the CPSES Technical Specifications. The local county volunteer fire departments should participate in either the annual exercise or one of the periodic drills.

12.2.3 EMERGENCY MEDICAL DRILLS

Onsite personnel who are assigned to the Emergency Repair and Damage Control Group shall receive annual instruction in handling injured contaminated individuals. Offsite ambulance and medical support services shall participate in an annual drill or the annual exercise.

12.2.4 RADIOLOGICAL MONITORING DRILLS

Station personnel who are assigned to the radiological monitoring teams shall participate in annual drills which will involve responses to all aspects of environmental monitoring, both on and offsite.

These drills shall include collection and analysis of all sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping.

12.2.5 HEALTH PHYSICS DRILLS

Health Physics drills shall be conducted semi-annually which involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment.

Analysis of inplant liquid samples with actual elevated radiation levels including use of the post-accident sampling system shall be included in Health Physics drills on an annual basis.

12.2.6 REPAIR AND DAMAGE CONTROL

Personnel who are assigned to the Emergency Repair and Damage Control Group shall participate in annual drills which involve response to various scenarios concerning repair or recovery of damaged equipment and plant functions. The annual drill may be conducted as part of the annual exercise.

12.3 SCENARIOS

Scenarios shall be developed to provide a mechanism with which to effectively test and evaluate the CPSES emergency preparedness program. These scenarios should allow free play for decision-making and shall include the following minimum criteria:

a. The basic objective(s) of each drill and exercise and appropriate evaluation criteria;

b. The date(s), time period, place(s) and participating organizations;

c. The simulated events;

d. A time schedule of real and simulated initiating events;

e. A narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities; and

f. A description of the arrangements for and advance materials to be provided to official observers.

13.0 RADIOLOGICAL EMERGENCY RESPONSE TRAINING

All CPSES personnel and visitors, including those onsite on a temporary basis or in a training status who will be unescorted in the plant, shall receive an orientation on the CPSES Emergency Plan to ensure their safety in an emergency. Station personnel shall be kept informed of changes in the Emergency Plan and Emergency Plan Procedures as appropriate, by annual retraining or as directed by the Manager, Plant Operations. Persons with specific duties during an emergency shall receive training appropriate to their respective assignments.

The responsibility for coordinating their training is that of the Director, Nuclear Training. Retraining shall be conducted annually.

13.1 EMERGENCY COORDINATOR TRAINING

Shift Supervisors along with members of the Station management staff who may serve as the Emergency Coordinator shall receive training in the CPSES Emergency Plan and their assingned duties and responsibilities.

13.2 RADIOLOGICAL MONITORING TRAINING

This training shall be given to Station personnel who are required to perform surveys during an emergency. It includes instruction in the selection and use of survey instruments and air sampling equipment and in re-entry criteria. Selected personnel shall also receive training in the use of the computer-based and manual methods of dose assessment.

13.3 FIRST AID TRAINING

Selected CPSES personnel shall attend Red Cross Multi-Media or equivalent first aid training to ensure that first aid qualified personnel are always available at the site.

13.4 FIRE CONTROL

A training program for the plant employees who serve on the fire fighting teams shall be coordinated by the Director, Nuclear Training. This course shall cover methods and equipment for fighting various

types of fires that could occur on the site. Appropriate emphasis will be placed on the radiological aspects of fire fighting.

13.5 REPAIR AND DAMAGE CONTROL

The training program for Station employees who serve on the Emergency Repair and Damage Control (ERDC) Group is coordinated by the Director, Nuclear Training. This training shall cover damage control equipment and techniques, procedures, and station equipment layout. The ERDC members shall also be trained on radiological protection, station safety and first aid.

13.6 OFFSITE GROUPS

Offsite groups such as fire departments and rescue and ambulance services that participate in emergency preparedness and response activities shall receive instructions as appropriate to ensure that they are familiar with the CPSES Emergency Plan, general site layout, and their expected response actions in the event of an incident. Retraining to ensure emergency preparedness is conducted on an annual basis.

13.7 OFFSITE MEDICAL PERSONNEL

Selected staff members from the offsite medical facilities shall receive training concerning medical aspects of radiological injuries on an annual basis.

13.8 EMERGENCY COMMUNICATIONS PERSONNEL

CPSES personnel designated as telephone operators and communicators shall be trained in the use of CPSES communications equipment, the techniques of transmitting and receiving emergency messages, and the maintaining of communications log books.

13.9 EMERGENCY ORGANIZATION PERSONNEL

All CPSES Emergency Organization personnel not covered in Sections 13.1 through 13.8 shall receive training according to their areas of assigned responsibility. This training shall be conducted annually and will cover such items as use of the TSC equipment for those assigned to the TSC.

13.10 EMERGENCY PLANNING PERSONNEL

CPSES personnel involved in emergency planning activities should attend formal training courses to maintain and improve their proficiency in all facets of emergency planning. The FEMA Radiological Accident Assessment Course, courses offered by Oak Ridge and participation in seminars, work shops and other utility emergency preparedness drills and exercises may be used for this training.

14.0 RESPONSIBILITY FOR THE PLANNING EFFORT: DEVELOPMENT, PERIODIC REVIEW AND DISTRIBUTION OF THE EMERGENCY PLANS

The Manager, Plant Operations, has the overall authority and responsibility for radiological emergency response planning. The Station Operating Review Committee is responsible for the annual review of the execution of the Emergency Plan in the annual exercise. The Emergency Planning Coordinator updates the Emergency Plan and Emergency Plan Procedures as needed and ensures that corrective actions identified during the exercise critique, periodic reviews and surveillances are implemented. After each testing of the CPSES Emergency Plan, a critique will be held which should be instrumental in assuring that the Emergency Plan is an effective and viable document. In addition, an independent review of the Emergency Plan and Procedures shall be conducted each twelve months. This also includes reviews of emergency preparedness training, drills, exercises and equipment. These reviews shall be documented and the documentation shall be retained for a period of five years. This review is the responsibility of the Corporate Health Physics Supervisor.

Copies of the CPSES Emergency Plan and Emergency Plan Manual shall be distributed to individuals responsible for emergency planning concerning CPSES and authorized by the Emergency Planning Coordinator. These documents shall be assigned a control number. Revisions are issued in accordance with CPSES procedural requirements to holders of controlled documents to ensure these individuals are in possession of up to date manuals. The Procedure EPP-203 "Emergency Notification and Communications" shall be reviewed quarterly to update the call lists.

The Emergency Planning Coordinator is a Health Physicist in the Radiation Protection Section. He is responsible and has the authority to coordinate the planning effort with all supporting agencies. In addition to maintaining the CPSES Emergency Plan and Emergency Plan Procedures, he is responsible for planning and coordinating exercises and drills, for evaluating equipment needs and for identifying and working with the training department to develop Emergency Plan related training.

15.0 APPENDICES

A. CPSES Shift Crew Chart

B. Time/Distance/Dose (Thyroid) Curve for a LOCA condition at CPSES

C. Time/Distance/Dose (Whole body, Gamma) Curve for a LOCA condition at CPSES

D. Time/Distance/Dose (Whole body, Total) Curve for a LOCA condition at CPSES

E. CPSES Site Map

F. CPSES 0 - 10 miles

   1. Demographic Information

   2. Area Map

G. CPSES 10 - 50 miles

H. Letters of Agreement

J. List Emergency Kit Equipment and Supplies List

K. List of Emergency Plan Procedures

M. CPSES Evacuation Time Estimates and Staffing Evaluations

N. EPZ Evacuation Time Estimates

P. Cross Index to NUREG-0654

Q. Definitions and Acronyms

R. Westinghouse Electric Corp., Water Reactor Div., Emergency Response Plan

Note: The letters "I," "L," and "O" are not used as appendix designators.

APPENDIX A

CPSES Shift Crew Chart

11. With two units licensed to operate and one or both operating, each shift crew shall have at least eight members, including one Shift Supervisor, one Assistant Shift Supervisor and three USNRC Licensed Operators.

Table A.1

MINIMUM SHIFT CREW COMPOSITION

MODE	UNIT LICENSED TO OPERATE	
	UNIT 1	UNIT 1 AND 2
ONE OR BOTH UNITS IN MODE 1, 2, 3, or 4	1 S. S. 1 Ass't. S. S. 2 R. O. 2 A. O.	1 S. S. 1 Ass't. S. S. 3 R. O. 3 A. O.
TOTAL	6	8
BOTH UNITS IN MODE 5 OR 6	1 S. S. 1 R. O. 1 A. O.	1 S. S. 2 R. O. 3 A. O.
TOTAL	3	6

POSITION (1)		USNRC LICENSE
SHIFT SUPERVISOR	- S. S.	SRO
ASSISTANT SHIFT SUPERVISOR	- Ass't. S. S.	SRO
REACTOR OPERATOR	- R. O.	RO
AUXILIARY OPERATOR	- A. O.	NONE

(1) Any qualified and USNRC Senior Licensed member of management may be used to satisfy the minimum Shift Supervisor or Assistant Shift Supervisor requirement. Any qualified and USNRC Licensed individual may be used to satisfy the Reactor Operator requirement.

APPENDIX B

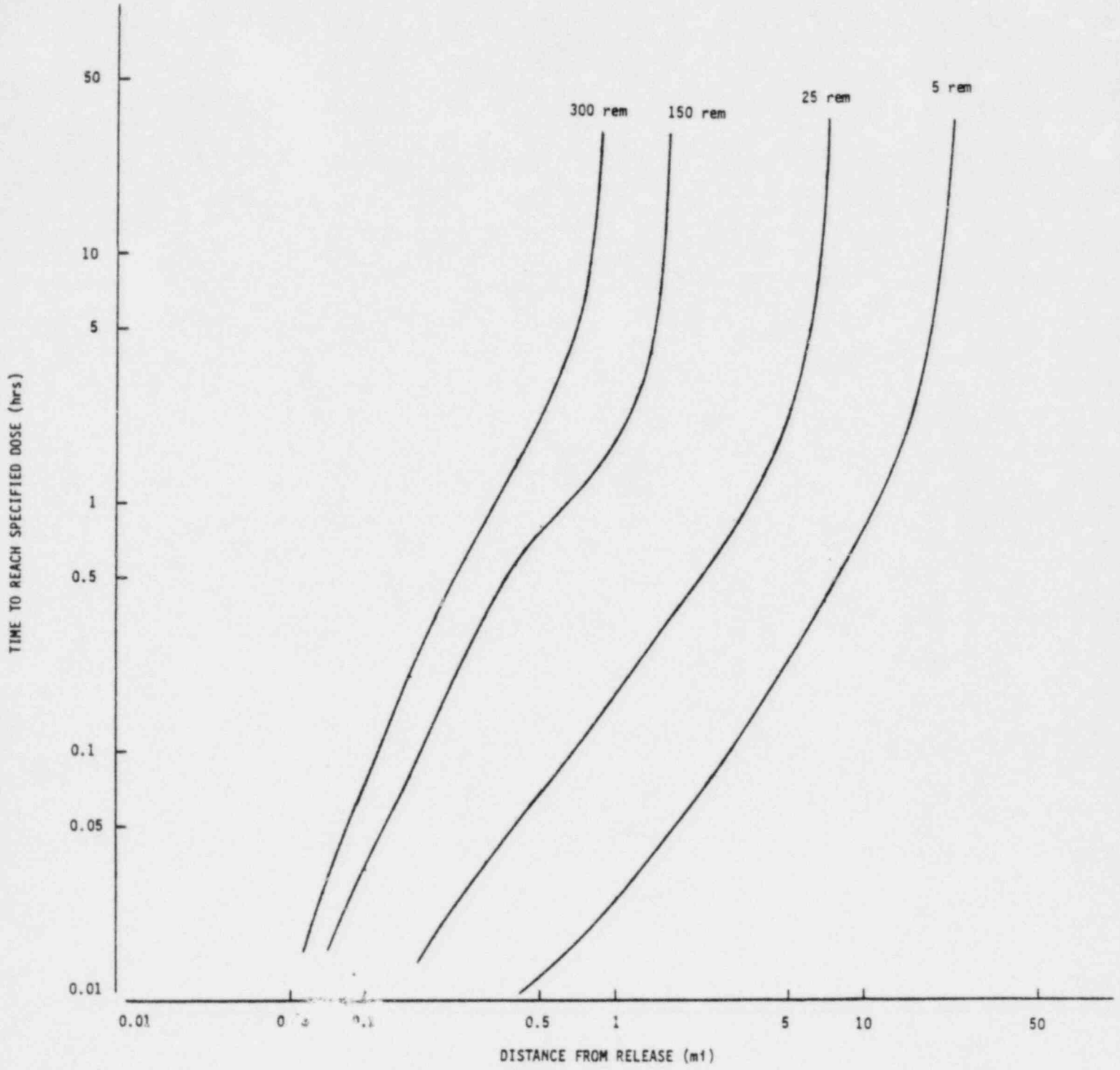
Time/Distance/Dose (Thyroid) Curve

for a LOCA condition at CPSES

CPSES/LP

THYROID DOSE FOLLOWING LOCA

Figure B.1



REVISION 3
MAY 21, 1982

APPENDIX C

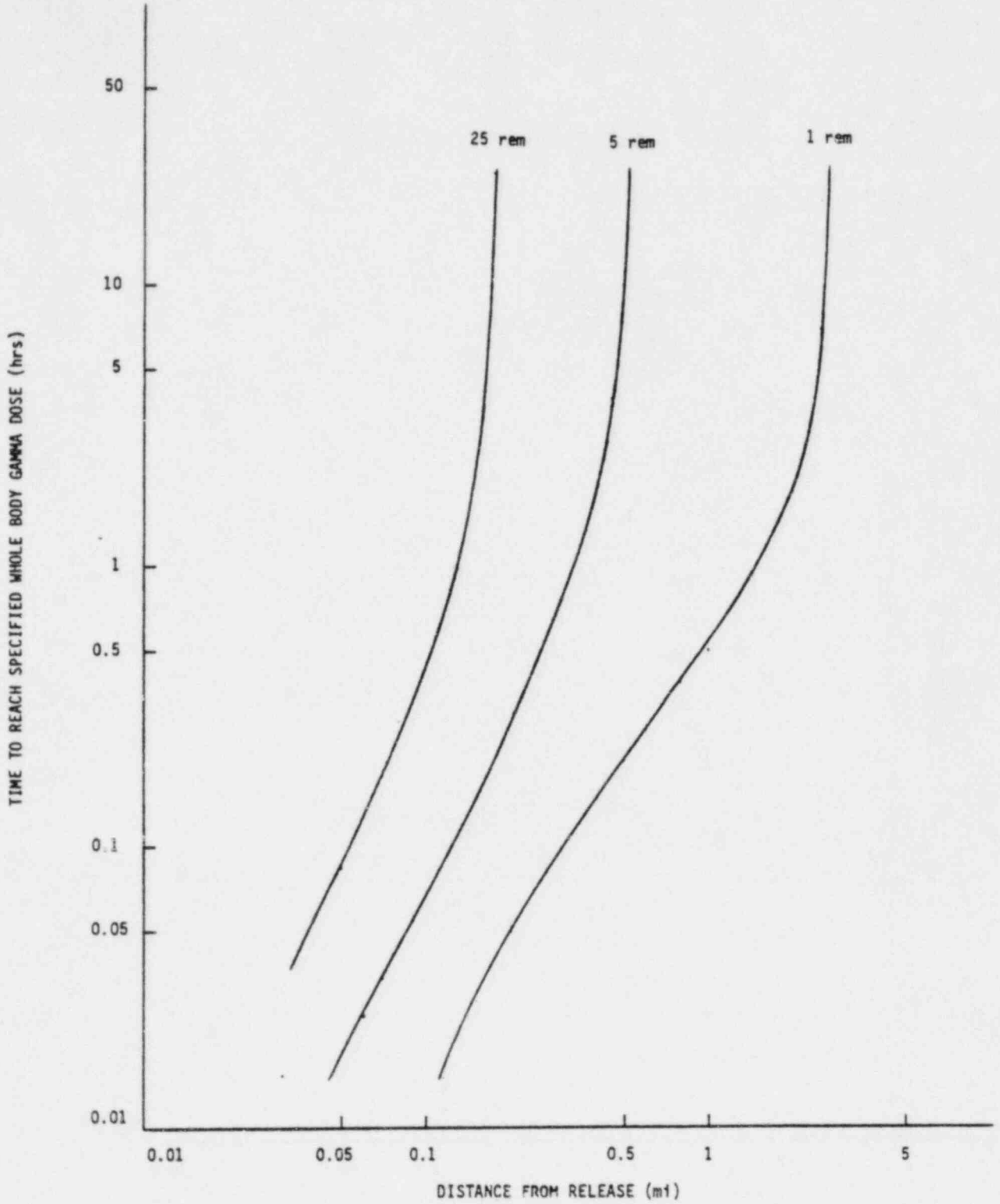
Time/Distance/Dose (Whole body, Gamma)

Curve for a LOCA condition at CPSES

CPSES/EP

WHOLE BODY GAMMA DOSE FOLLOWING LOCA

Figure C.1



REVISION 3
MAY 21, 1982

APPENDIX D

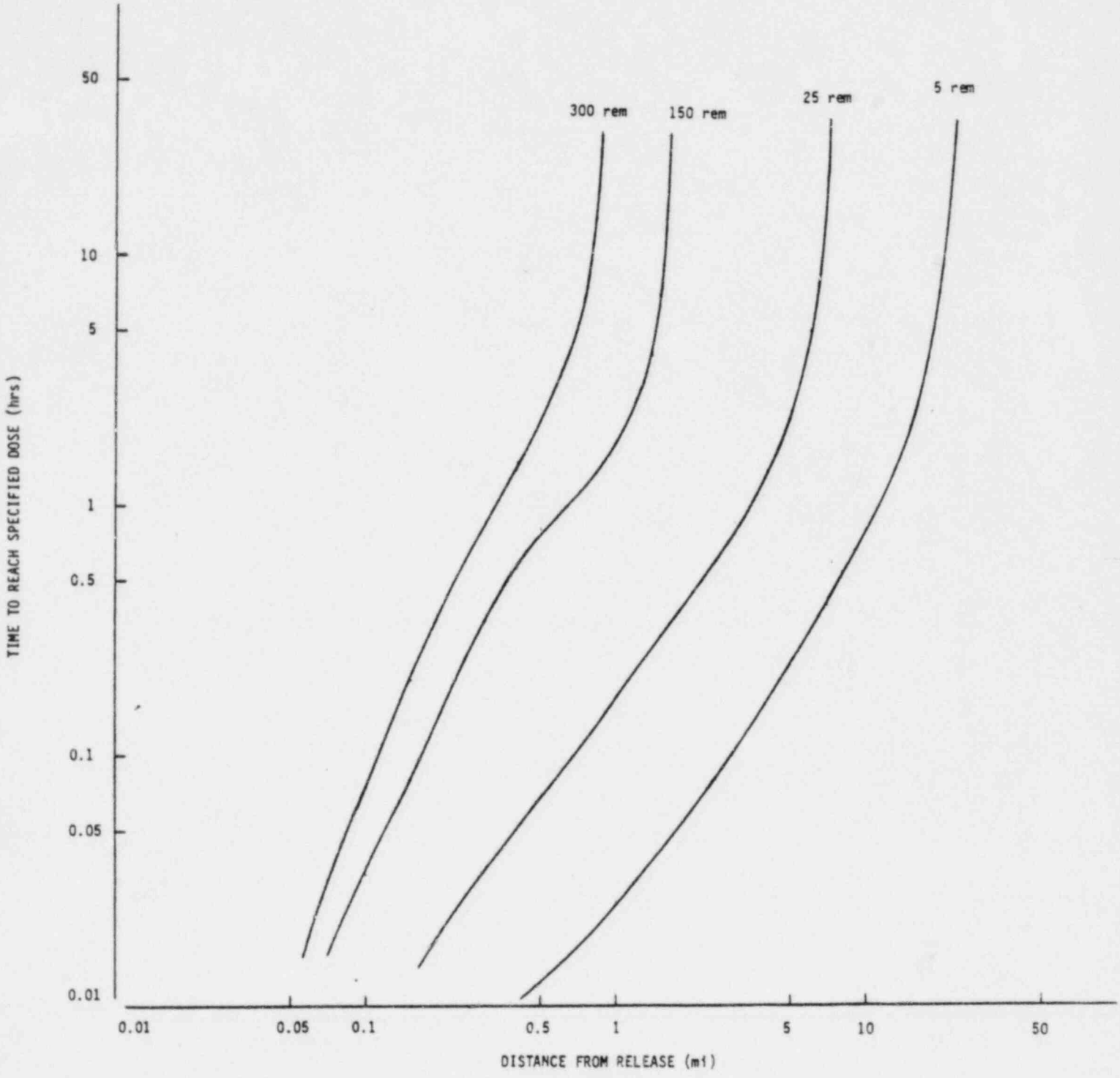
Time/Distance/Dose (Whole body, Total)

Curve for a LOCA condition at CPSES

CPSES/EP

THYROID DOSE FOLLOWING LOCA

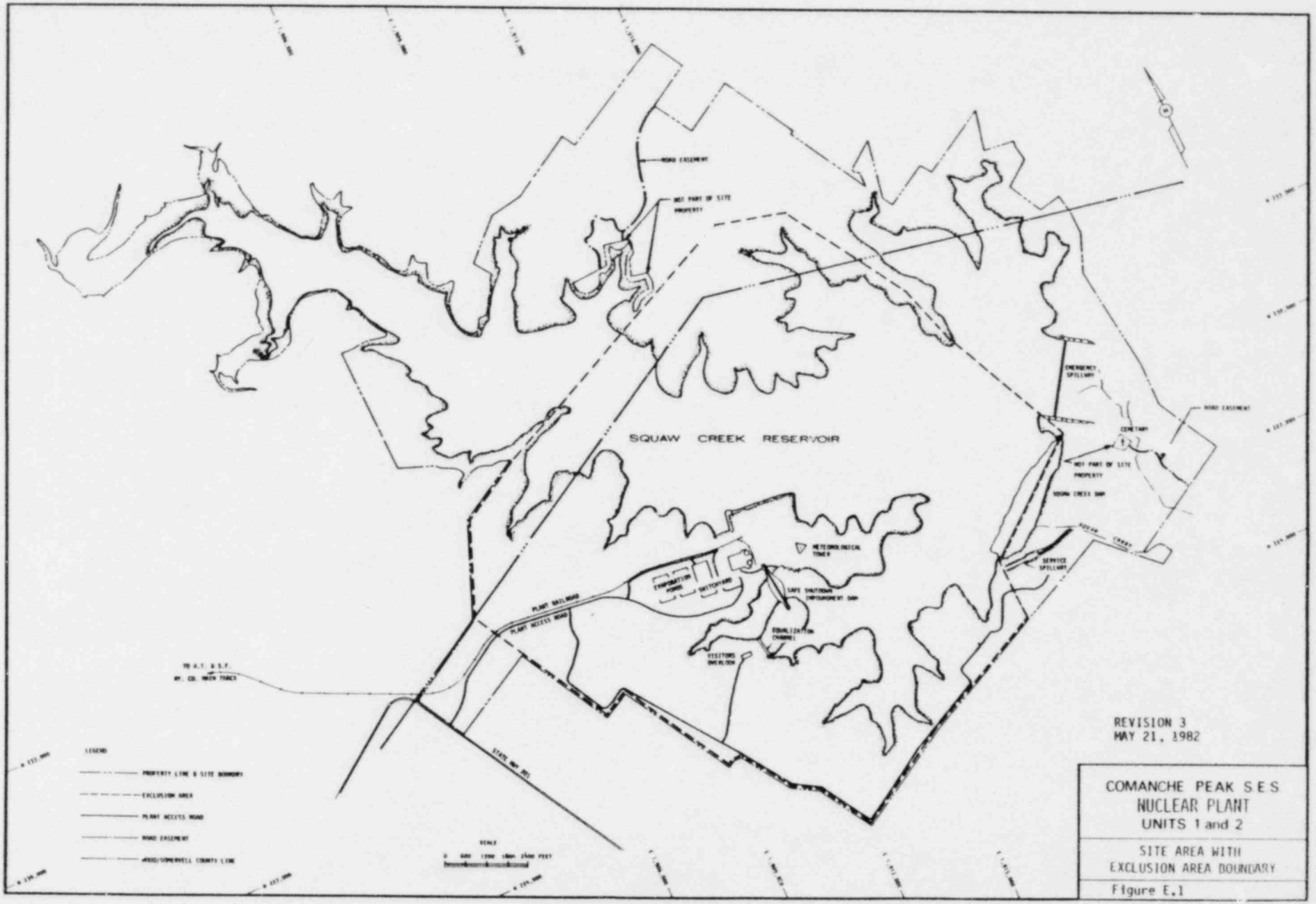
Figure B.1



REVISION 3
MAY 21, 1982

APPENDIX E

CPSES Site Map



REVISION 3
MAY 21, 1982

COMANCHE PEAK S.E.S.
NUCLEAR PLANT
UNITS 1 and 2

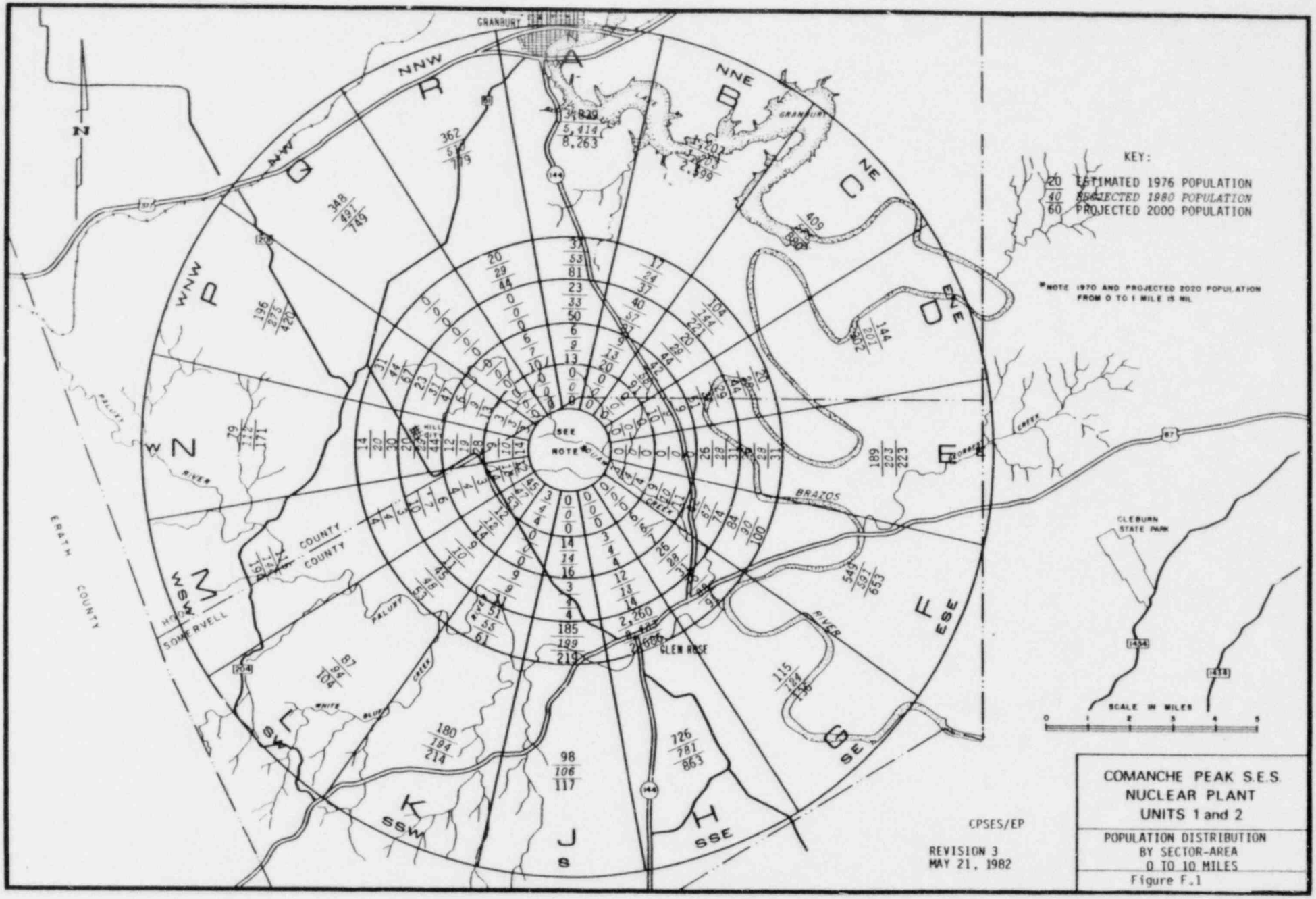
SITE AREA WITH
EXCLUSION AREA BOUNDARY

Figure E.1

APPENDIX F

CPSES 0 - 10 Miles

1. Demographic Information Map
2. Area Map


GRANBURY
NNW
NNE
NW
NE
WNW
ENE
WSW
ESE
SW
SSW
SSE
SE
N
A
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C
D
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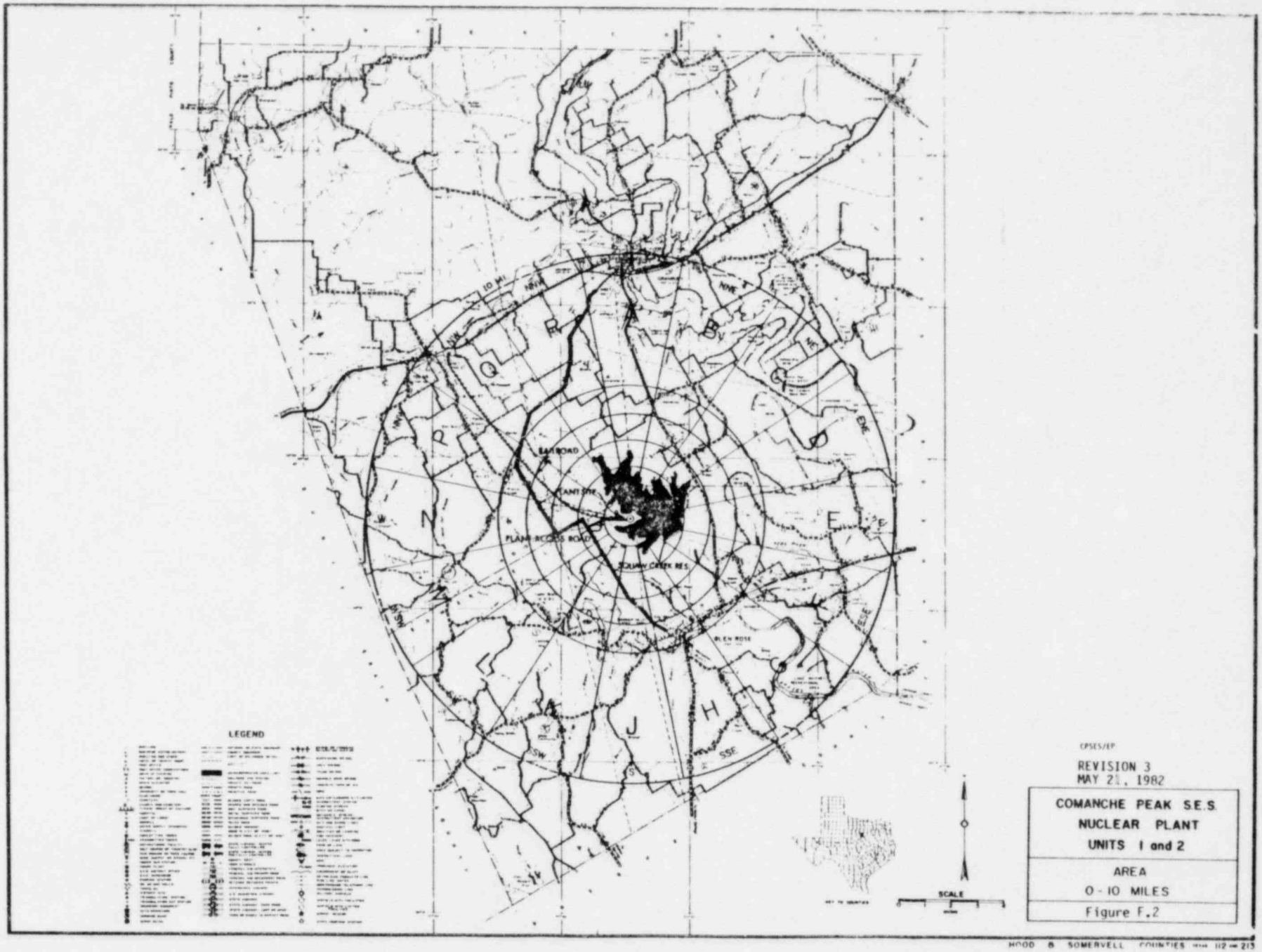
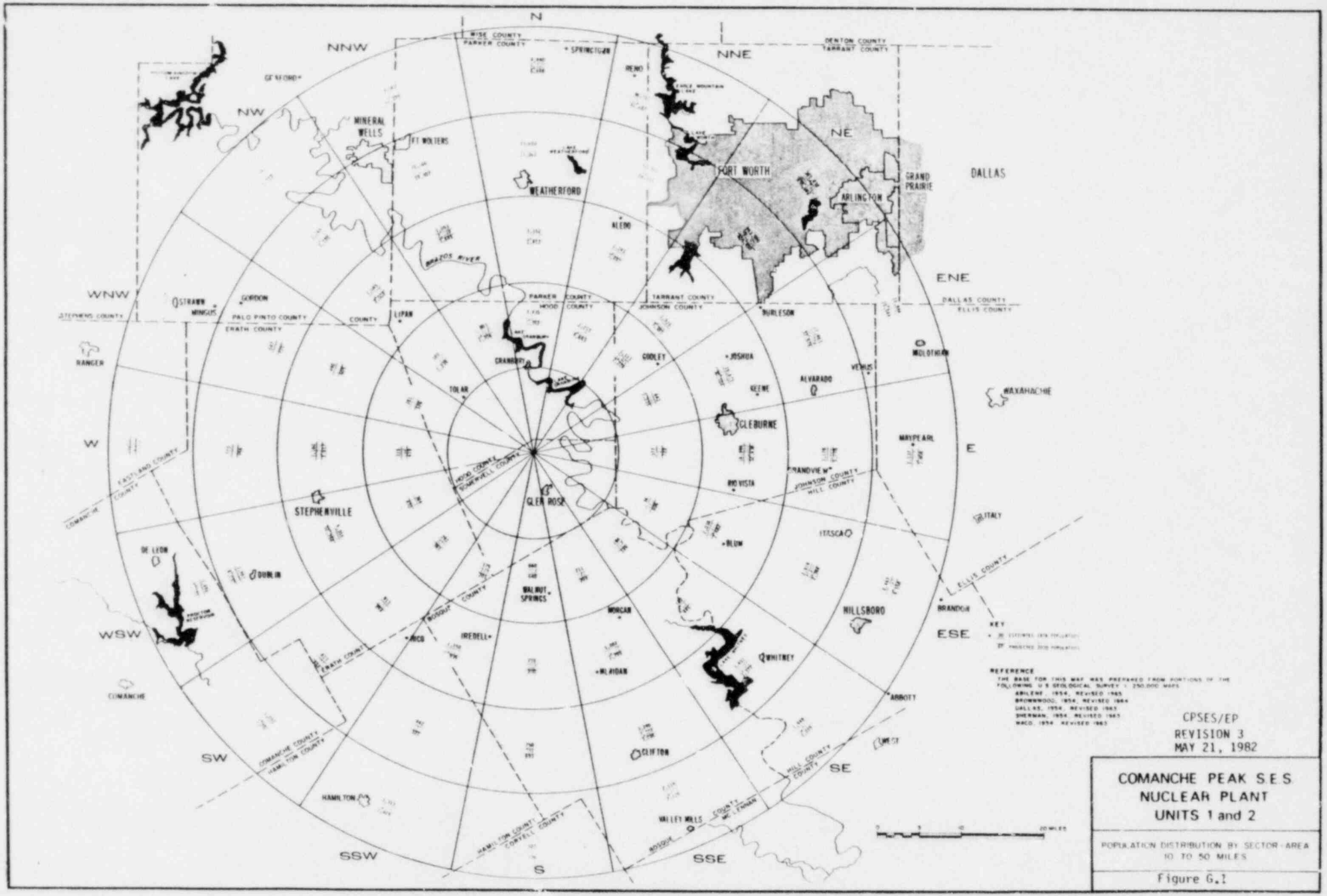
H
J
K
L
M
N
P
Q
R
S
KEY:
20 ESTIMATED 1976 POPULATION
40 PROJECTED 1980 POPULATION
60 PROJECTED 2000 POPULATION
NOTE 1970 AND PROJECTED 2020 POPULATION FROM 0 TO 1 MILE IS NIL
SEE NOTE
BRAZOS
RIVER
PALUXY
CREEK
COUNTY
SOMERVELL
GLEN ROSE
CLEBURN STATE PARK
SCALE IN MILES
0 1 2 3 4 5
CPSES/EP
REVISION 3
MAY 21, 1982
COMANCHE PEAK S.E.S.
NUCLEAR PLANT
UNITS 1 and 2
POPULATION DISTRIBUTION
BY SECTOR-AREA
0 TO 10 MILES
Figure F.1


LEGEND
SCALE
CPSES/EP
REVISION 3
MAY 21, 1982
COMANCHE PEAK S.E.S.
NUCLEAR PLANT
UNITS 1 and 2
AREA
0 - 10 MILES
Figure F.2
HOOD & SOMERVELL COUNTIES

APPENDIX G

CPSES 10 - 50 Mile Map



CPSES/EP
REVISION 3
MAY 21, 1982

COMANCHE PEAK S.E.S.
NUCLEAR PLANT
UNITS 1 and 2

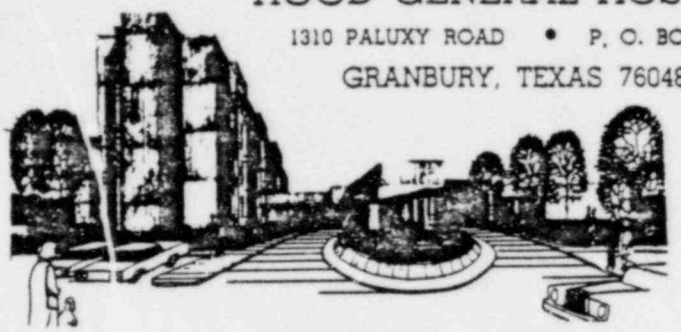
POPULATION DISTRIBUTION BY SECTOR-AREA
10 TO 50 MILES

Figure G.1

APPENDIX H

Letters of Agreement

HOOD GENERAL HOSPITAL
1310 PALUXY ROAD • P. O. BOX 490
GRANBURY, TEXAS 76048



Phone 573-2683
Ft. Worth Ph. 443-0351

April 20, 1992

Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
P.O. Box 2300
Glen Rose, Texas 76043

Dear Sir:

The Hood General Hospital herein agrees and assures that the following assistance will be provided to the Comanche Peak Steam Electric Station (CPSES) upon request:

1. The Hood General Hospital shall provide on a twenty-four (24) hour per day basis, personnel and facilitiesfor normal and emergency services to personnel at CPSES who may be injured or require routine physical examination, whether or not they are radioactively contaminated or overexposed.

2. Hood General Hospital personnel shall participate in site specific exercises, drills and training provided for that purpose by TUGCo. The drills and exercises to be followed by a critique and written evaluation.

It is understood and agreed that:

A. TUGCo will assist in the development of detailed emergency procedures to be followed by the Hospital staff when dealing with a radiologically contaminated or overexposed patient.

B. TUGCo will notify the Hood General Hospital as quickly as possible once it is recognized that assistance from the Hospital may be required.

C. TUGCo will provide technical assistance, radiological monitoring equipment and personnel monitoring devices necessary to evaluate the radiological condition of the patient.

D. The Hood General Hospital Staff shall include a physician who has received training in the handling of radiation accident victims.

E. Hood General Hospital would, on the basis of expert consultation, discharge patients to be transferred to other medical facilities, should the treatment required for radiation injury extend beyond the capabilities of the Hospital.

Cont'd

F. Both parties will coordinate, to the extent possible, all information disseminated to the public regarding the severity and magniture of an incident at CPSES,

G. Hood General Hospital will periodically review the status of their plans, procedures, agreements and capabilities which may require revision and/or further development; and to conduct drills or exercises involving radiological emergency response.

H. Compensation for the services and facilities of Hood General Hospital shall be paid to the Hospital by TUGCo on the basis of the usual and customary fee for each service required, subject to the following:

1. Hood General Hospital shall provide, under separate cover, to TUGCo a listing of such standard fees for services as are set forth above.

2. As changes are made to these standard fee schedules, updated copies shall be provided to TUGCo prior to implementation.

3. Charges for Hood General Hospital services shall be invoiced to TUGCo following performance of the service. These invoices shall itemize the specific charges, as listed in standard fee schedules, including the date of any charges, the number of man-hours or service units, the type of service provided and identification, as appropriate, of any patients treated.

4. All charges assessed under this agreement shall be those as listed on standard fee schedules. All other costs including administration, overhead, rent, insurance, office costs, travel costs and payroll costs, except as noted on the fee schedules, shall be borne by the Hospital.

5. Charges for approved modifications and preparation of Hospital facilities for receipt of contaminated patients will be paid by TUGCo, on the basis of the actual cost of the required modification and preparations.

6. TUGCo sould be responsible, in the case of a radioactively contaminated patient, for any damages to, or cleanup of, hospital facilities resulting from radioactive contamination as a direct result of the handling and admittance of such person prior to his decontamination, and for the disposal of contaminated dressings, coverings, cleaning materials, etc., resulting from treatment of contaminated patients.

The aforementioned agreements and assurances shall continue unless expressly modified in writing to the Manager, Plant Operations, CPSES. This Agreement shall be reviewed annually and updated as appropriate.

Sincerely yours,

Joe S. Langford
Administrator

JSL/cp

TEXAS UTILITIES GENERATING COMPANY

OFFICE MEMORANDUM

To Reviewer Glen Rose, Texas May 13, 1982

Subject Letter of Agreement

The letter of agreement with the Granbury Volunteer Fire Department is being re-negotiated and will be added to the plan when it becomes available.

G. L. Bell

G. Bell
HP-EPC

GB/dlm

EDWIN TOMLINSON
SHERIFF
HOOD COUNTY
1402 W. Pearl
Granbury, Texas 76048

P. O. Drawer H

Phone 817/573-1123

Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
Glen Rose, Texas 76043

Dear Sir:

The Hood County Sheriff's Department herein agrees and assures that assistance shall be provided, in the event of an emergency, to the Comanche Peak Steam Electric Station (CPSES),upon request, as detailed in the Hood County Emergency Operations Plan. Specifically, Hood County Sheriff's Department equipment and personnel shall be made available, as applicable to a specific event, to:

1. Authenticate the notification of an emergency by calling back the agency which made the initial notification;
2. Notify the key officials as described in the appropriate "Call List."
3. Activate the warning of Hood County citizens within the ten (10) mile emergency planning zone (EPZ).
4. Provide traffic control and coordinate with the Granbury Police Department and the Texas Department of Public Safety in establishing road blocks within Hood County on roadways at the outer boundary of the 10 mile EPZ. The purpose of the road blocks is to control traffic exiting and prevent traffic entering the affected area.
5. Coordinate with the Granbury Police Department and the Texas Department of Public Safety to establish detour routes, if required, around the affected area within Hood County.

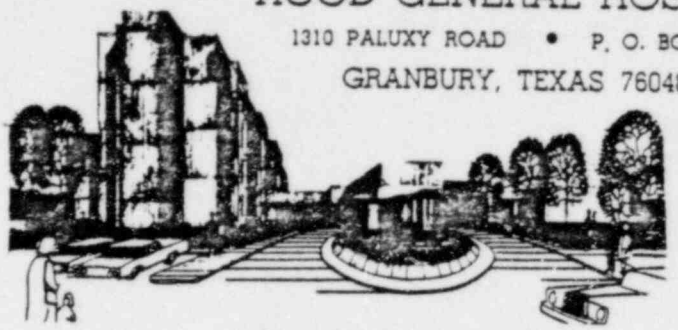
It is also understood and agreed that appropriate Hood County Sheriff Department personnel will participate in periodic drills, an annual exercise and site specific emergency response training sessions provided by TUGCO personnel at mutually agreed times and locations. The training sessions shall include as a minimum procedures for communication shall include as a minumum procedures for communication, the CPSES Emergency Plan and the CPSES Emergency Facilities.
The aforementioned agreements and assurances shall continue unless expressly modified in writing to the Manager, Plant Operation, CPSES.
This agreement shall be reviewed annually and updated as appropriate.

Very truly yours,

Edwin Jordan

Hood County Sheriff

HOOD GENERAL HOSPITAL
1310 PALUXY ROAD • P. O. BOX 490
GRANBURY, TEXAS 76048



Phone 573-2683
Ft. Worth Ph. 443-0351

April 20, 1982

Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
P.O. Box 2300
Glen Rose, Texas 76043

Dear Sir:

The Hood General Hospital Ambulance Service herein agrees and assures that the following assistance will be provided to the Comanche Peak Steam Electric Station (CPSES) upon request:

1. Provide ambulance service, including administration of first aid, on a twenty-four (24) hour per day basis to injured personnel at CPSES, whether or not they are radiologically contaminated or overexposed, for transportation to Hood General Hospital or, as required, to other medical facilities.

2. Hood General Hospital Ambulance Service agrees to coordinate the request for back-up ambulance request, if required.

It is also understood and agreed that:

A. Should the assistance of the Hood General Hospital Ambulance Service be required at CPSES, they will be notified by the CPSES Emergency Coordinator or designee, who will provide available information regarding the number of injured personnel, their condition and location.

B. The Hood General Hospital Ambulance Service may verify the authenticity of the request by calling the CPSES Control Room.

C. Unless requested otherwise, on arriving at CPSES the Hood General Hospital Ambulance Service personnel will report to the Security Gate and allow TUGCo Security to escort them to the location of the injured personnel.

D. At the location of injured personnel, the Hood General Hospital Ambulance Service personnel shall coordinate actions with the CPSES Emergency Coordinator or designee.

Cont'd

E. Should an injured individual requiring ambulance transportation be located in a radiation area, Hood General Hospital Ambulance Personnel shall follow the instructions of the CPSES staff trained in radiation safety for the protection of the Ambulance Service personnel .

F. Should it be necessary to transport a radiologically contaminated person, CPSES personnel may take the necessary precatuions to prevent or minimize the spread of contamination, a member of the CPSES staff trained in health physics snall accompany the injured to the hospital.

G. Appropriate Hood General Hospital Ambulance personnel will participate in periodic drills in annual exercise and site specific emergency response training sessions provided by TUGCo personnel at mutually agreed times and locations. The training sessions shall include as a minimum procedures for notification, basic radiation protection, the CPSES Emergency Plan and emergency facilities and site access procedures.

The aforementioned agreements and assurances shall continue unless expressly modified in writing to the Manager, Plant Operations, CPSES. This Agreement shall be reviewed annually and updated as appropriate.

Sincerely,

Joe S. Langford
Administrator

JSL/lb

FRANK J. LARAMORE
Sheriff - Somervell County
P.O. Box 1000
Glen Rose, Texas 76043
Phone 817-897-2242

March 26, 1982

Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
P.O. Box 2300
Glen Rose, Texas 76043

Dear Sir:

The Somervell County Sheriff's herein agrees and assures that assistance shall be provided, in the event of an emergency, to the Commanche Peak Steam Electric Station (CPSES), upon request as detailed in the Somervell County Emergency Operations Plan. Specifically, Somervell County Sheriff's Department equipment and personnel shall be made available, as applicable to a specific event, to:

1. Authenticate the notification of an emergency by calling back the agency which made the initial notification.
2. Notify the key officials as described in the appropriate "Call List".
3. Activate the warning of Somervell County citizens within the ten (10) miles emergency planning zone (EPZ).
4. Provide traffic control and coordinate with the Texas Department of Public Safety in establishing road blocks within Somervell County on roadways at the outer boundary of the ten (10) mile EPZ. The purpose of the road blocks is to control traffic exiting and prevent traffic entering the affected area.
5. Coordinate with the Texas Department of Public Safety to establish detour routes, if required, around the affected area within Somervell County.
6. Provide security of the affected area within Somervell County.
7. Coordinate communication assets with other county agencies and provide backup communication.

It is also understood and agreed that appropriate Somervell County Sheriff's Department personnel will participate in periodic drills, an annual exercise and site specific emergency response training sessions provided by TUGCo personnel at mutually agreed times and locations. The training sessions shall include as a minimum procedures for communication, the CPSES emergency Plan and the CPSES Emergency Facilities.

The aforementioned agreements and assurnaces shall continue unless expressly modified in writing to the Manager, Plant Operations, CPSES. This agreement shall be reviewed annually an updated as appropriate.

Very truly yours,

Frank J. Laramore

Frank J. Laramore
Sheriff, Somervell County

FJL/vjh

GLEN ROSE-SOMERVELL COUNTY
VOLUNTEER FIRE DEPARTMENT
P.O. Box 279
Glen Rose, Texas 76043

Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
P.O. Box 2300
Glen Rose, Texas 76043

Dear Sir:

The Glen Rose/Somervell County Volunteer Fire, Rescue and Ambulance Service herein agrees and assures that the following assistance will be provided to the Comanche Peak Steam Electric Station (CPSES) upon request:

1. Provide fire-fighting personnel and equipment as necessary to assist the CPSES Fire Brigade in extinguishing fires at CPSES and on adjacent CPSES property.
2. In the event additional manpower or equipment is needed, such additional assistance will be coordinated and requested by the Glen Rose/Somervell County Volunteer Fire, Rescue and Ambulance Service.

It is also understood and agreed that:

A. Should the assistance of the Glen Rose/Somervell County Fire, Rescue and Ambulance Service be required at CPSES, they will be called by the CPSES Emergency Coordinator or designee.

B. The Somervell County dispatcher may verify the authenticity of the request by calling the CPSES Control Room.

C. Unless requested otherwise, on arriving at CPSES, the Glen Rose/Somervell County Volunteer Fire, Rescue, and Ambulance Service personnel will report to the Security Gate and allow TUGCo Security to escort them to the scene of the fire.

GLEN ROSE-SOMERVELL COUNTY
VOLUNTEER FIRE DEPARTMENT
P.O. Box 279
Glen Rose, Texas 76043

D. At the scene of the fire, the Glen Rose/Somervell County Fire Chief or designee shall coordinate actions with the CPSES Fire Brigade leader or designee.

E. Should a fire-fighting effort be required in a radiation area, personnel shall follow the instructions of CPSES staff trained in radiation safety for the protection of these emergence personnel.

It is also understood and agreed that appropriate Glen Rose/ Somervell County Volunteer Fire, Rescue, and Ambulance Service personnel will participate in periodic drills, an annual exercise and site specific emergence response training sessions provided by TUGCo personnel at mutually agreed times and locations. The training sessions shall include as a minimum procedures for notification, basic radiation protection, site access procedures and emergency response functions.

The aforementioned agreements and assurances shall continue unless expressly modified in writing to the Manager, Plant Operations, CPSES. This Agreement shall be reviewed annually and updated as appropriate.

Very truly yours,

(Principal Party)
Glen Rose/Somervell County Fire Chief

rmc

radiation
management
corporation

UNIVERSITY CITY
SCIENCE CENTER

3508 MARKET STREET
PHILADELPHIA, PA 19104
(215) 243-2950

16 December 1977

Mr. Robert J. Gary
Executive Vice President & General Manager
Texas Utilities Generating Company
2001 Bryan Tower
Dallas, Texas 75201

SUBJECT: Emergency Medical Assistance Program

Dear Mr. Gary:

This confirms an agreement between Radiation Management Corporation (RMC) and Texas Utilities Generating Company, wherein RMC agrees to furnish certain services to nuclear generating stations operated by Texas Utilities Generating Company. These services comprise a program that is identified by RMC as an Emergency Medical Assistance Program (EMAP). With regard to Comanche Peak, the EMAP contains the following provisions:

1. Semi-annual review of plant and hospital procedures, equipment and supplies; one of these audits will be in conjunction with (6.) below;

2. Twenty-four-hour per day availability of expert consultation on management of radiation accidents;

3. Availability of Bioassay Laboratory for evaluation of radiation accidents;

4. Twenty-four-hour-per day access to a Radiation Emergency Medical Team consisting of a physician, certified health physicist, and technicians with portable instrumentation to location of accident victim;

5. Availability and access to the University of Pennsylvania facilities and staff necessary to provide definitive evaluation and care of radiation accident victims;

6. Annual training for the plant, ambulance and hospital personnel who may be directly or indirectly involved in the execution of the radiation medical emergency program;

7. Preparation of an "accident" scenario for use as a training aid in a radiation medical emergency drill;

rmc

8. Coordination of a radiation medical emergency drill based on the scenario; umpired, video-taped and critiqued by RMC.

9. Submission of two Drill Evaluation Reports; one relating to the observations made at the station, and another relating to observations made at the hospital; and

10. Participation in an annual one-day seminar in Philadelphia on the management of radiation accidents for physicians. Each plant site may send one person, and each utility company may send one person.

RADIATION MANAGEMENT CORPORATION

Roger E. Linnemann, M. D.
President

REL:FGR:pg

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

1100 West 49th Street
Austin, Texas 78756
(512) 458-7111

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Hermas L. Miller
Deputy Commissioner
Management and Administration

April 29, 1982

Mr. R. A. Jones
Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
P. O. Box 2300
Glen Rose, Texas 76043

Dear Mr. Jones:

The Bureau of Radiation Control, Texas Department of Health is required by the Texas Disaster Act of 1975, as amended, and the Texas Emergency Management Plan to perform advance planning and respond appropriately to accidents within the state. Tab 1 of Appendix 7 to Annex L, Radiological Emergency Response, of the Texas Emergency Management Plan provides necessary guidelines, procedures and instructions for emergency situations involving fixed nuclear facility accidents. Contained within the Tab are specific duties, assignments, and responsibilities. Among these are:

- Radiological monitoring within the Plume Exposure and Ingestion Exposure Pathways.
- Accident Classification System
- Bureau of Radiation Control response levels
- Response Team Composition
- Accident Assessment
- Contamination Survey Techniques
- Personnel Monitoring and Decontamination
- Recovery From an Accident
- Area Decontamination
- Training
- Exercises and Drills

The Bureau of Radiation Control will respond to emergencies at Comanche Peak Steam Electric Station with sufficient qualified personnel and equipment to fully support local government(s) in its mitigation and recovery effort. The Agency will maintain close liaison with the Texas Utilities Generating Company (TUGCo), utilizing facilities provided by TUGCo at its Near Site Emergency Operations Facility.

This agreement shall remain in force until expressly modified in writing by the Chief, Bureau of Radiation Control to the Manager, Plant Operations, Comanche Peak Steam Electric Station; it shall be reviewed annually and updated as appropriate.

Yours truly,

David K. Lacker

David K. Lacker, Chief
Bureau of Radiation Control

TEXAS DEPARTMENT OF PUBLIC SAFETY

5805 N. LAMAR BLVD. · BOX 4087 · AUSTIN, TEXAS 78773

April 5, 1982

Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
P. O. Box 2300
Glen Rose, Texas 76043

Dear Sir:

The Texas Department of Public Safety (TDPS) herein agrees and assures that the following assistance will be provided to the Comanche Peak Steam Electric Station (CPSES):

1. In the event of an emergency at CPSES, the TDPS will serve as the primary communication contact and coordinate emergency communications between CPSES and the State of Texas, Hood and Somervell Counties.

2. The TDPS will coordinate with the local law enforcement officials and assist in maintaining traffic control, protecting life and property, establishing road-blocks and alerting and warning persons in the affected area.

It is also understood and agreed that:

A. The Texas Department of Public Safety will participate in periodic communication drills and exercises.

B. This Letter of Agreement shall not serve to limit any actions of the Texas Department of Public Safety, under the laws of Texas, to carry out its responsibilities in all areas not prohibited by law.

The aforementioned agreements and assurances shall continue unless expressly modified in writing to the Manager, Plant Operations, CPSES. This Agreement shall be reviewed annually and updated as appropriate.

Sincerely,

J. R. Allen, Major
Department of Public Safety
Region VI - Waco

JRA/mc

Department of Energy
Albuquerque Operations Office
P.O. Box 5400
Albuquerque, New Mexico 87115

B. R. CLEMENTS

Mr. B. R. Clements
Vice President
Texas Utilities Generating Company
2001 Bryan Tower
Dallas, Texas 75201

MAR 15 1982

Dear Mr. Clements:

Please reference your letter dated February 9, 1982, to Mr. Jack R. Roeder of my staff, and the letter from Herman E. Roser, Manager, Albuquerque Operations Office, dated June 3, 1977, to Mr. R. J. Gary, Executive Vice President and General Manager, of your company.

This letter is to provide assurance that the Department of Energy (DOE) will respond to requests for radiological assistance from licensees, Federal, state and local agencies, private organizations or individuals involved in or cognizant of an incident believed to involve source, by-product, or special nuclear material as defined by the Atomic Energy Act of 1954, as amended, or other ionizing radiation sources. Assistance as indicated above would be made available to the Comanche Peak Steam Electric Station upon request and provided in consonance with response activities conducted by state, local and private industry preparedness personnel.

Unless the DOE or a DOE contractor is responsible for the activity, ionizing radiation source, or radioactive material involved in an incident, DOE radiological assistance will be limited to advice and emergency action essential for the control of the immediate hazards to health and safety. Radiological emergency assistance will be terminated as soon as the emergency situation is under control. Therefore, responsibility for postincident recovery, including further action for the protection of individuals and the public health and safety, should be assumed by the appropriate responsible Federal, state or local government, or private authority as soon as the emergency conditions are stabilized.

Requests for DOE emergency radiological assistance may be made on a twenty-four hour basis to the Region IV Radiological Assistance Plan Coordinating Office, telephone: (505) 844-4667.

Sincerely,

Thomas R. Cook

for R. G. Romatowski
Manager

cc:
L. J. Deal, ONS, HQ, EP-34
John Collins, Regional Administrator
Region IV, NRC, Arlington, Texas
J. D. Winkle, Acting Regional Director
Region VI, FEMA, Denton, Texas
Dr. Robert Bernstein, Commissioner
Texas Department of Health,
Austin, Texas

SQUAW·CREEK PARK

Manager, Plant Operations
Texas Utilities Generating Company
Comanche Peak Steam Electric Station
P.O. Box 2300
Glen Rose, Texas 76043

April 29, 1982

Dear Sir:

Squaw Creek Park, Inc. (SCPI) herein agrees and assures that the following assistance will be provided to Comanche Peak Steam Electric Station (CPSES):

1. In the event of an emergency at CPSES, SCPI is responsible for the evacuation of the Squaw Creek Park and Reservoir and the accountability of all park visitors.

2. SCPI is responsible for access to Squaw Creek Park and reservoir and for responding to accidents occuring in the park and the reservoir.

It is also understood and agreed that:

A. SCPI will coordinate with CPSES personnel the development of written procedures for emergency actions;

B. SCPI will make available brochures and emergency information to all park visitors;

C. SCPI may be required to participate in exercises, drills and site specific training, and

D. TUGCo Security, by request, may assist SCPI in evacuating the park and reservoir.

The aforementioned agreements and assurances shall continue unless expressly modified in writing to the Manager, Plant operations, CPSES. This Agreement shall be reviewed annually and updated as appropriate.

Very truly yours,

C. M. Marsh, President

Roger Crawford

Roger Crawford, Vice President
Squaw Creek Park, Inc.

APPENDIX J

Emergency Kits

Equipment and Supplies List

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Rubber Gloves - Pair
Glove Liner - Each
Disposable Shoe Covers
Caps
Hoods
Beta Gamma TLD's
External TLD's
Low Range Dosimeter
High Range Dosimeter
Dosimeter Charger
Chirpers
FM Transceiver
Spare Battery
Chargers
Smear Counter - Man.
Plastic Bags - medium/large
Signs and Inserts
Barricade Rope/Ribbon
Stepoff Pads
55 gal Drums
Decon Supplies
Tape - Roll - Paper
Tape - Roll - Duct
Portable Lights
Batteries
Tools

II. Field Monitoring Kit

Dose Rate Instrument
Count Rate Instrument
Pancake GM Detector
Spare GM Tube
NaI Detector
Portable MCA
Full Face Respirator without Filter
Particulate Cannister
Sorbent Cannisters
Potassium Iodide
Air Sampler
Sample Heads

APPENDIX K

List of

Emergency Plan Procedures

Procedure No.	Title	Emergency Plan Reference
EPP-301	Control Room Assessment of Radiological Conditions	7.0
EPP-302	Off-Site Dose Calculations	7.0
EPP-303	Emergency Radiological Surveys	7.0
EPP-304	Protective Action Guides	8.0
EPP-305	Personnel Dosimetry for Emergency Conditions	9.0
EPP-306	Use of Thyroid Blocking Agents	8.0
EPP-307	Radiological Monitoring of Site Evacuees	8.0
EPP-308	Transporting of Contaminated Injured Personnel	10.0
EPP-310	Surveillance of Emergency Supplies	6.6

APPENDIX M

CPSES Evacuation Time Estimates

and

Staffing Estimates

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is predicted to be 10,000 persons per hour. Using two traffic lanes and adjusting the lane capacity stated above to a more conservative condition of 20 miles per hour and two persons per car, it is projected that travel time for 1,500 persons will be 31 minutes.

Time estimate for evacuating personnel from the Exclusion Area by vehicle is projected to be 57 minutes. Justification of this projection is provided by the following formula and discussion.

$$T(ev) - Td + Tn + Tm + Tt$$

where

T(ev) = (57 minutes) Time required to evacuate persons from the Exclusion Area. A typical situation could be notification and evacuation of individuals working on pumps located below Squaw Creek Reservoir Dam.

Td = (15 minutes) Time required for the detection of the accident, data analysis, and decision to evacuate.

Tn = (28 minutes) Time to notify individuals to evacuate affected area. 10 minutes estimated to have boat lake-ready. 18 minutes for actual travel time.

Tm = (5 minutes) Time required for individuals to make ready and get under way.

Tt = (18 minutes) Travel time required to leave affected area.

20% of employees reside in Cleburne, Stephenville, Tolar and Ft. Worth

Actual travel times are:

Glen Rose to CPSES - 10 to 20 minutes

Granbury to CPSES - 25 to 30 minutes

Cleburne to CPSES - 30 to 35 minutes

Stephenville to CPSES - 40 to 45 minutes

Ft. Worth to CPSES - 50 to 55 minutes

Therefore the following percentages are used:

Tt = 10 minutes - 20% of employees

20 minutes - 20% of employees

30 minutes - 40% of employees

40 minutes - 10% of employees

50 minutes - 10% of employees

Where

Ta = (50 minutes) Activation Time

Tn = (10 minutes) Notification Time

Tp = (10 minutes) Personnel Preparation Time

Tt = (30 minutes) Transit Time for Essential Personnel

The Transit Time of 30 minutes was established in a statistical staffing study and supported by contacting several individuals. Inclement weather (ice storms) would add approximately 30 minutes to the travel time, yielding an activation time of 80 minutes.

APPENDIX N

EPZ Evacuation Time Estimates

TABLE 2: Summary of Results of Evacuation Times Analysis

AREAS	Permanent Population	Permanent Pop. Vehicles	Special Facility Population	Special Facility Vehicles *	Evacuation Capacity per hour	Notification Time	Preparation Time	Travel Time Normal Conditions	Travel Time Adverse Conditions			General Pop. Evac. Time-normal Conditions (total)	General Pop. Evac. Time-Adverse Conditions (total)	Confirmation Time **	Special Pop. Evac. Time Normal Conditions	Special Pop. Evac. Time Adverse Conditions
Within Two Miles																
NE 0-2	0	0	0	0	1000 veh/hr/ln	0	0	0	0			0	0	0	0	0
SE 0-2	4	2	0	0		5 min	20	18	29			43	54	108/135	0	0
SW 0-2	64	35	0	0		"	20	20	32			45	57	113/143	0	0
NW 0-2	13	8	0	0		"	20	16	26			41	51	103/128	0	0
Within Five Miles																
NE 0-5	495	272	0	0	1000 veh/hr/ln	"	20	19	27			44	52	110/130	0	0
SE 0-5	2793	1535	1353	38/201		"	15	42	50			62	70	248/280	55	64
SW 0-5	430	236	450	150		"	20	19	31			44	56	176/224	50	60
NW 0-5	201	110	0	0		"	20	15	23			40	48	100/120	0	0
Within Ten Miles																
NE 0-10	8389	4609	3444	128/298	1000 veh/hr/ln	"	15	96	105			116	125	464/500	42	45
SE 0-10	4492	2468	1875	38/375		"	20	52	58			77	83	308/332	52	57
SW 0-10	968	532	450	150		"	15	26	37			46	57	184/228	50	61
NW 0-10	1589	873	0			"	20	26	33			51	58	128/145	0	0

*upper number represents vehicles used by schools @ 20 persons per vehicle
**upper number represents normal conditions; lower, adverse conditions

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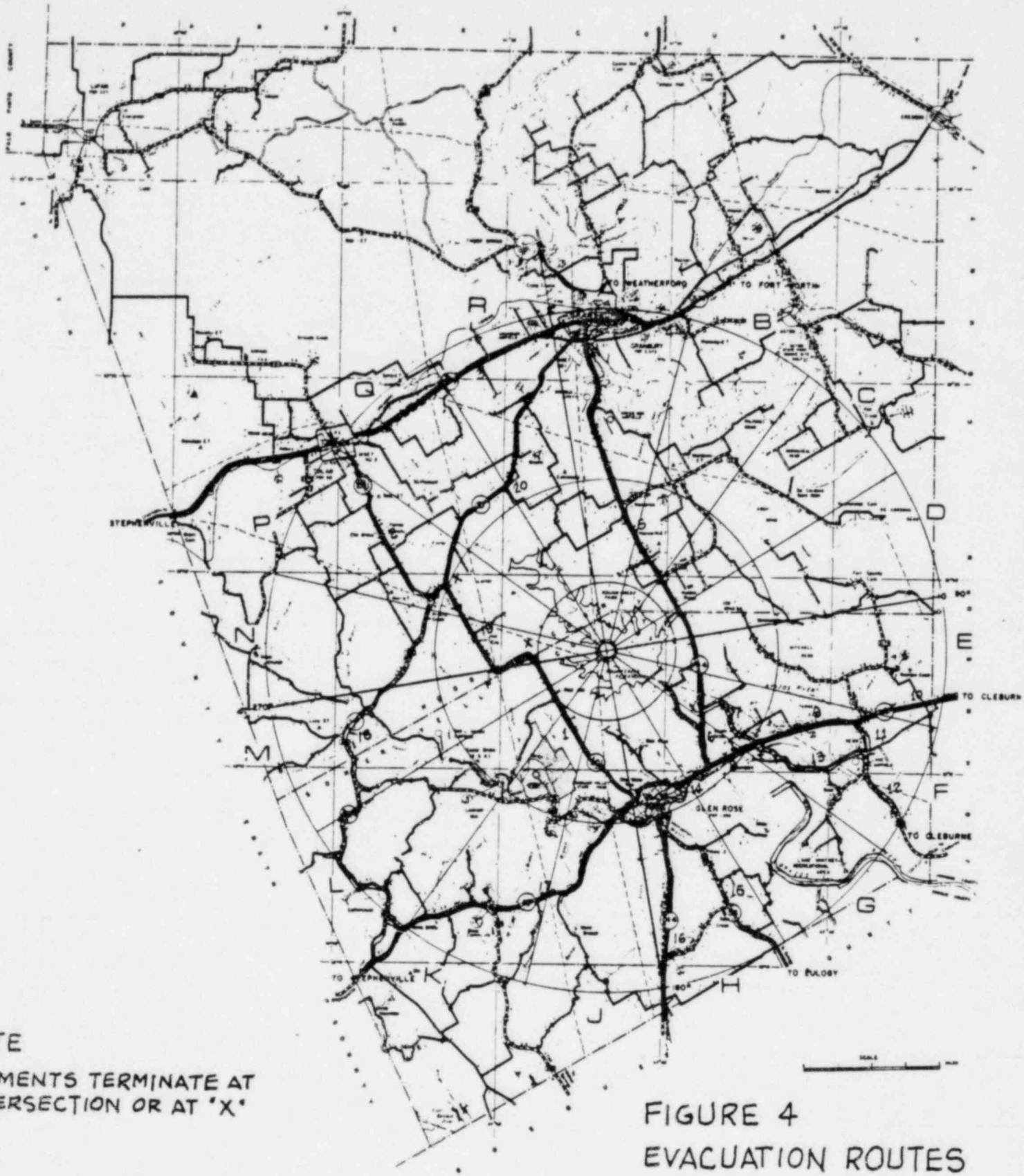

NOTE

SEGMENTS TERMINATE AT INTERSECTION OR AT 'X'

FIGURE 4

EVACUATION ROUTES

PRIMARY

SECONDARY

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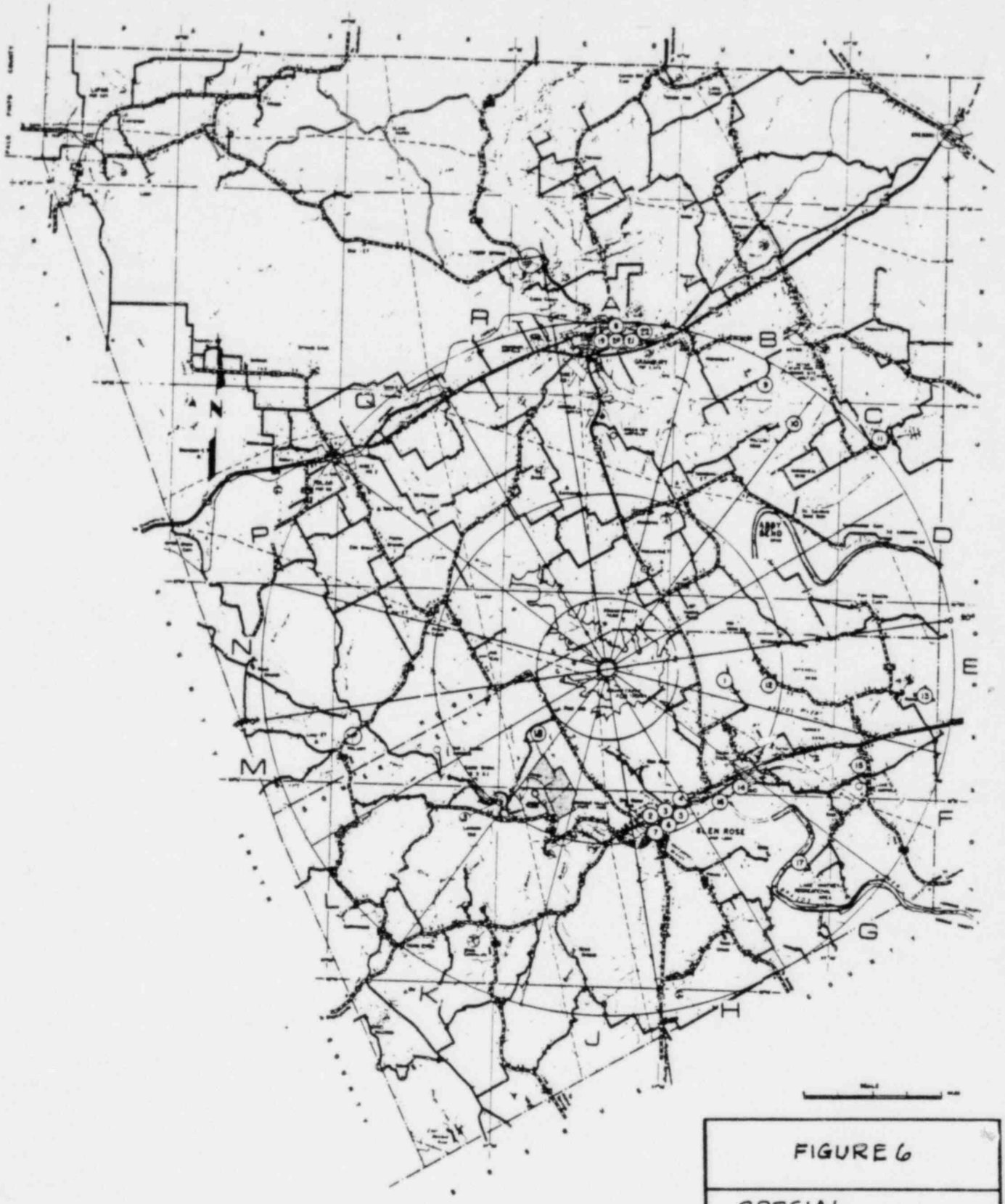

FIGURE 6

SPECIAL FACILITIES

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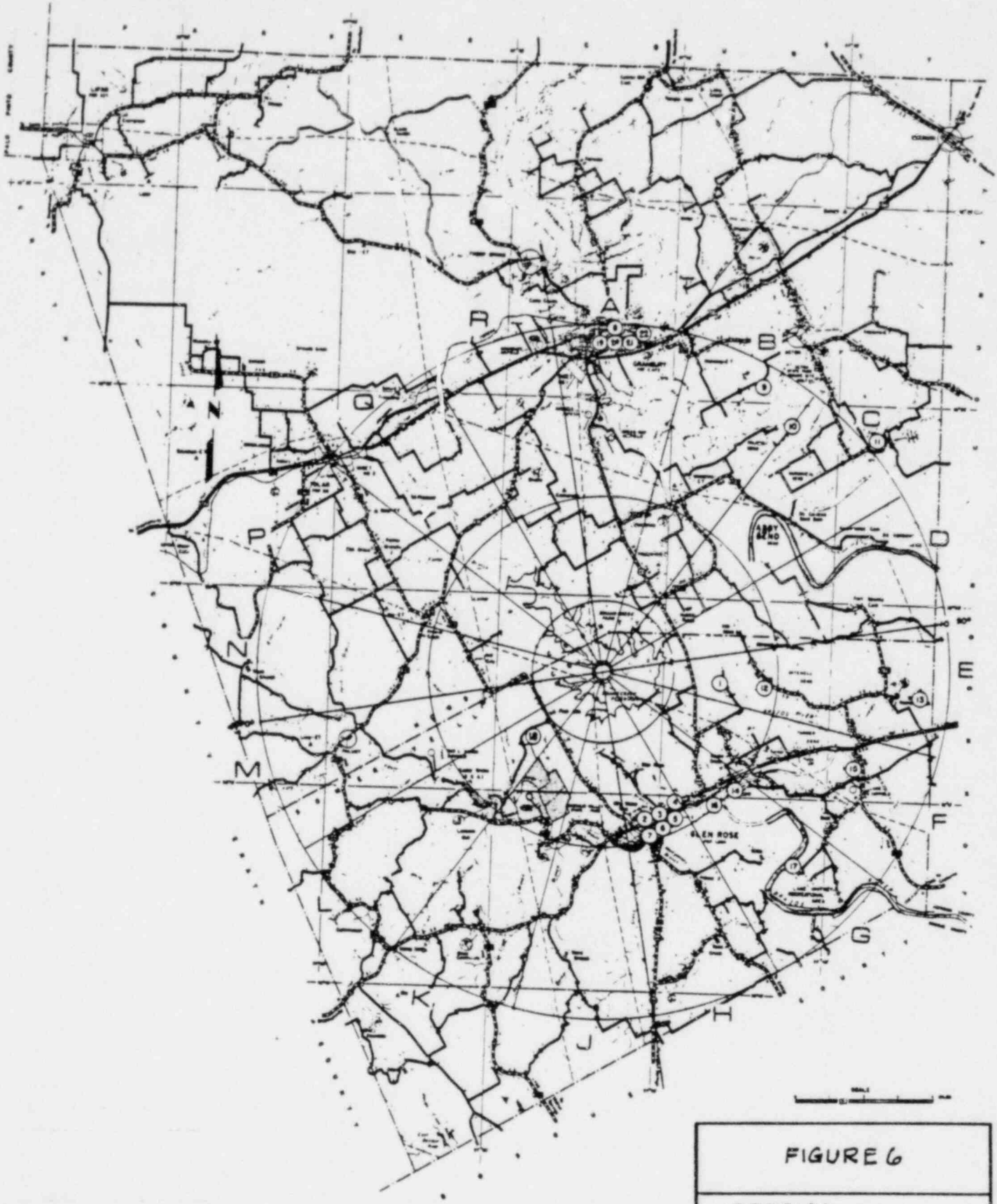

FIGURE 6

SPECIAL FACILITIES

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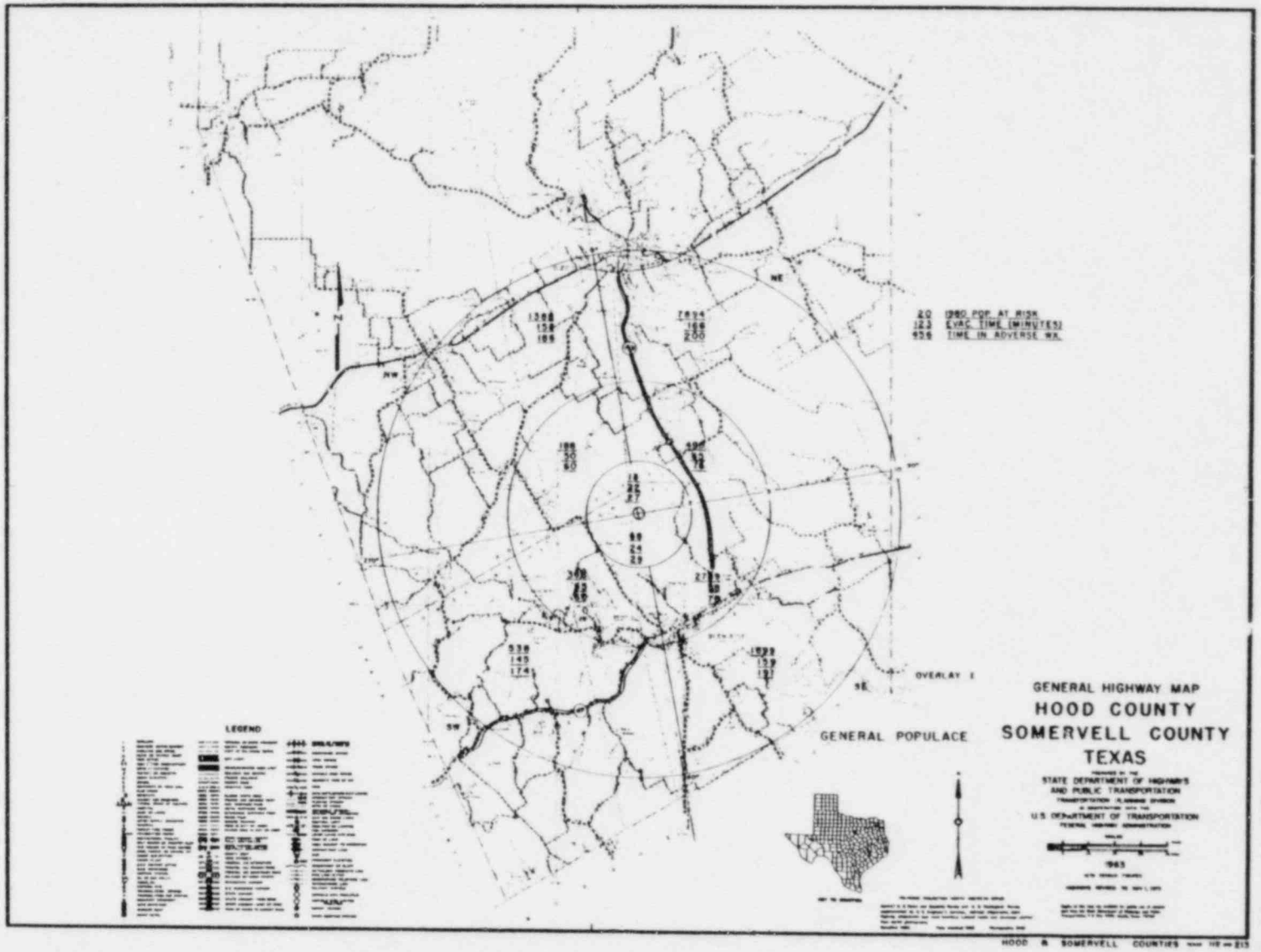

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APPENDIX P

Cross Index to NUREG-0654

APPENDIX P

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A-1.d	1.2.11
A-1.e	1.2
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A-2.b	N/A
A-3	Appendix H
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B-1	1.2.1
B-2	1.2.1.1
B-3	1.2.1.1
B-4	1.2.1.1
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APPENDIX Q

Definitions and Acronyms

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AS BUILT DRAWINGS

Drawings which provide the actual location, configuration or design of buildings, systems, and components throughout CPSES.

CENTRAL ALARM STATION (C.A.S.)

The principal monitoring and dispatching station of security activities for the Security Organization.

CONTRACT PERSONNEL

Any person or persons contracted directly by Texas Utilities Generating Company to perform specific functions relating to the operation, maintenance, or refueling of the plant. These do not include personnel directly involved in construction of the plant.

CONTROL ROOM

A location within the plant from where all plant systems are operated and monitored. It is located on the 830' level of the Control Building.

DECONTAMINATION

The transference of radioactive material (contamination) from an item or person where it is undesirable to a place where it is desirable (i.e., wipe it off or wash it off).

DEDICATED TELEPHONE

Any telephone (instrument) so designated will have the same restrictions imposed as on a dedicated telephone line.

DEDICATED TELEPHONE LINE

Any telephone line, either within CPSES or outgoing from CPSES, that is designated for a specific use during an emergency. In the event this line is not in use, other uses of this line are prohibited until termination of the emergency situation and the plant is restored to normal operation.

DEPARTMENT OF ENERGY (D.O.E.)

In the event of an emergency, the D.O.E. will furnish advice, consultation, and assistance regarding the protection of personnel, treatment of injured and/or exposed persons, minimization of further exposure and contamination, protection of materials, determination of existence and extent of decontamination, public and press relations and cleanup of radioactive materials.

DOSE ISOPLETHS

A see-through overlay that when placed on an associated map will show projected doses at specific locations around CPSES.

D.P.S. - THE TEXAS DEPARTMENT OF PUBLIC SAFETY

The chief Agency, within the State of Texas, involved in disaster preparedness and offsite response during an accident at CPSES affecting areas outside the plant boundaries.

DRILL

A supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation.

EMERGENCY ACTION LEVELS

Specific radiation levels associated with airborne, waterborne, or surface-deposited concentrations of radioactive materials; or specific instrument indications (including their rates of change) that may be used as thresholds for initiating such specific emergency measures as designating a particular class of emergency, initiating a notification procedure, or initiating a particular protective action.

1. NOTIFICATION OF UNUSUAL EVENT

   Any abnormal condition, minor in nature, presenting no potential for the release of radioactive material, and requiring no offsite response or monitoring, is classed as an Unusual Event unless further degradation of safety systems occur.

2. ALERT

Events are in progress, or have occurred, which involve an actual or potentially substantial degradation of the level of safety of the plant. At the Alert action level, small release of radioactivity may occur.

3. SITE AREA EMERGENCY

Events which are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public, but a core meltdown is not indicated based on current information. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundaries. However, care must be taken in alerting offsite authorities to distinguish whether the release is merely potential, likely, or actually occurring.

4. GENERAL EMERGENCY

Accident situations involving actual or imminent substantial core degradation or melting with the potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels for more than the immediate site area.

EMERGENCY COMMUNICATIONS PERSONNEL

All persons involved with onsite and/or offsite communications at any time during an unusual situation in which emergency communications are established.

EMERGENCY COORDINATOR

Designated onsite individual having the responsibility and authority for implementing the Emergency Response Plan and who will, when assigned the duty, direct all site efforts to limit the consequences of the emergency and bring it under control.

EIC

The Eberline Instrument Corporation.

EMERGENCY OEPRATIONS FACILITY (E.O.F.)

An area located near the site (1.2 miles West of plant Security Building) with a usable physical facility that will be utilized to continually evaluate and coordinate activities related to an emergency having or potentially having environmental consequences. The facility will accommodate representatives from Federal, State and Local governments, as appropriate.

10-MILE E.P.Z. (EMERGENCY PLANNING ZONE)

That area, approximately 10 miles in radius from the center of CPSES, for which emergency planning considerations of the plume exposure pathway have been given in order to assure that prompt and effective actions can be taken to protect the public and property in the event of an accident.

50-MILE E.P.Z. (EMERGENCY PLANNING ZONE)

That area, approximately 50 miles in radius from the center of CPSES, for which emergency planning considerations of the ingestion exposure pathway has been given in order to assure that effective actions can be taken to protect the public.

EXPOSURE PROJECTIONS

A calculated or expected exposure that would be received by population-at-risk individual(s) from direct radiation from a radioactive gaseous plume resulting from a radiological emergency if no protective actions are taken.

EXCLUSION AREA

"That area surrounding the reactor, in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area ...." (Ref. Code of Federal Regulations, Title 10, Part 100).

EXERCISE

An event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations.

F.E.M.A. - FEDERAL EMERGENCY MANAGEMENT AGENCY

This agency will provide guidance intended for use by State and Local governments that guide the emergency planning and preparedness activities. FEMA will make contributions when requested to assist in the development of State and Local plans.

FSAR

The Final Safety Analysis Report.

N.R.C. - NUCLEAR REGULATORY COMMISSION

The Federal Agency charged with the responsibility of insuring that Nuclear Power Plants are operated within Federal Guidelines and, should an abnormal situation occur, that all necessary actions are taken to regain control of the situation and prevent the situation from escalating to a larger problem.

OFFSITE EMERGENCY OPERATIONS CENTERS

Emergency centers established, outside of CPSES property boundaries, for the express purpose of assisting CPSES in the mitigation of an emergency situation.

OWNER CONTROLLED AREA

The area around the station that is owned by and, therefore, controlled by Texas Utilities. This area includes the exclusion area.

P.I.G. MONITOR

A particulate, Iodine and gaseous airborne radioactivity monitor.

PLUME EXPOSURE PATHWAY PREDICTIONS

Exposure predictions from a plume (radioactive cloud) are based principally on:

A. Whole body external exposure to gamma radiation from the plume and from deposited materials, and

B. Inhalation exposure from the passing radioactive plume.

The time of exposure could range in length from hours to days.

PROTECTIVE CLOTHING

Special clothing (gloves, plastic or rubber shoe covers, coveralls, hoods, and respiratory protection devices) designed to prevent the wearer from becoming contaminated when entry into a contaminated area is required.

RADIOLOGICAL MONITORING TEAMS

Teams of technicians, fully qualified in all phases of radiological monitoring, that can be dispatched to conduct various types of surveys outside of the plant containment, in order to determine the actual magnitude of any release of radioactive materials.

RMS COMPUTER

The Digital Radiation Monitoring System Computer maintains a constant check on radiation levels, liquid concentrations, airborne concentration, and meteorological data during normal plant operations and emergency situations and can supply rapid assessments when needed.

TECHNICAL SUPPORT CENTER (T.S.C.)

A center outside of the Control Room that supplies technical information for use by technical and designated management personnel in support of plant operations and control during emergency conditions. It is located adjacent to the Control Room viewing area, on the 840' level of the Control Building.

THYROID BLOCKING DRUGS

A medication given to personnel who may be exposed to airborne radioactive iodine concentrations above the limits prescribed in 10CFR20, Appendix B, Table I, Column 1.

SHIFT SUPERVISOR

A member of management who holds a Senior Reactor Operator's license who is designated as being in charge of all Control Room functions. This individual is in the plant at all times.

STATION ENVIRONS

Any inhabitable area within the CPSES boundaries.

SUPPORT ORGANIZATIONS

Any organization or agency that is called upon to assist in the mitigation of an unusual situation.

APPENDIX R

Westinghouse Electric Corp.,

Water Reactor Div., Emergency Response Plan

EMERGENCY RESPONSE PLAN
WATER REACTORS DIVISIONS
WESTINGHOUSE ELECTRIC CORPORATION

Approved J. J. Taylor
V.P and General Manager
Water Reactors Division

Date: 6/1/80

2698A

REVISION 3
MAY 21, 1982

TABLE OF CONTENTS

*For internal Westinghouse use only.

Westinghouse
Water Reactors Divisions
Emergency Response Plan

1.0 PURPOSE AND SCOPE

To define the Emergency Response Plan (ERP) for the Westinghouse Water Reactors Divisions (WRD) following an abnormal occurrence involving a nuclear power plant that releases or has the potential of releasing above normal amounts of radioactivity. This plan is primarily applicable to nuclear power plants located in the United States which have a Westinghouse designed Nuclear Steam Supply System (NSSS), but may be activated for other cases contingent upon the ability of WRD to provide meaningful assistance and specific Westinghouse management approval. It is the intent of WRD to supply emergency assistance to our utility customers through this Emergency Response Plan (ERP) on a 24 hour/day, 7 day/week basis.

This plan is intended to define WRD operations as support to utilities emergency activities. Specifically this plan:

1. Defines the WRD emergency response organization, role, scope, functions and responsibilities and how it is activated.

2. Identifies the key WRD individuals to be available in the early phase of an emergency response.

3. Defines the prime WRD interfaces with involved parties.

4. Defines the WRD role in emergency news communications and the interrelationship with the utility site Emergency News Communications Center and the news media.

Emergency Response Plan Director

When activated the WRD Emergency Response plan becomes a functioning organization under the management of the plan Director. The ERP Director is a senior WRD manager who during the time the plan is

activated has the same managerial authority as a division General Manager. The Director will report to the Vice President of WRD, the Vice President of NES, and other Westinghouse corporate management as appropriate, and will be responsible for similar high level interactions with the utilities senior manager responsible for Emergency Response and Recovery.

The ER Director's Staff consists of 5 individuals:

Deputy Director: Responsible to manage the internal operation of the Plan. The Deputy makes the initial notifications to mobilize the operation of the plan and is responsible to maintain internal communication between the functioning parts of the plan.

Emergency News Communications Manager: Responsible for external communications management as described in the Plan and in Appendix C, Emergency News Communication Center Plan.

Service Response Manager: Responsible for mobilizing and directing plant and operational services as described in the Plan and in Appendix D, Service Response Plan.

Technical Support Manager: Responsible for all technical advice provided to the Utility site and for mobilizing and managing the required technical resources as described in the Plan and in Appendix E, Technical Support Plan.

Logistics and Administration Manager: Responsible for administration and facilities and equipment needs as described in the Plan and in Appendix F, Logistics and Administration Plan.

2.0 ACTIVATION OF THE EMERGENCY RESPONSE PLAN

2.1 Introduction

This activation plan has been devised so that when the Director of the Emergency Response Team receives word of an abnormal occurrence in a Westinghouse-designed nuclear power plant, he takes certain actions that trigger decisions by himself and other responsible managers. These actions (A) and decisions (D) are shown as a series of alternatives in Figure A-1, which schematically describes how the functional organizations set up in WRD will respond to a variety of situations.

2.2 Stages of an Event and Activation

Any event is treated in a series of five stages from beginning to end and all alternative actions are considered along with the decisions for response as may be required. The stages are as follows:

Stage 1: This includes initial notification from any one of a number of sources, analysis of the problem, and the decision for the depth of response.

Stage 2: This covers the activation of all, part, or none of the response units within WRD.

Stage 3: According to the magnitude of effort, the organizations in the Emergency Response Plan are made operational.

Stage 4: During this period all activated functional organizations are managed to ensure that all available resources within WRD are applied toward informing the utility, the Nuclear Regulatory Commission (NRC), and the public.

Stage 5: This step includes all actions taken which lead to deactivation of the plan.

2.3 Stage 1 - Initial Response

The first word regarding an incident may come from a number of sources in addition to the normally expected utility contact. Examples of potential reporting sources which might contact organizations within the Corporation such as an executive level, advocacy programs, a functional department, or a telephone operator are as follows:

- Nuclear Regulatory Commission
- News media (local news media, wire service etc.)
- State or local agencies
- Federal Emergency Management Administration
- Atomic Industrial Forum
- An employee

The actions and decisions described in paragraphs 2.3.1 and 2.3.2 cover any of these eventualities.

In any case, initial notification of an incident will trigger actions and decisions by either (or both) the Regional Service Manager (RSM) and the Emergency Response Plan Director (ERPD). Through all stages of an event WRD/NES Executive Management is consulted. The alternatives facing the RSM and ERP Director upon initial notification of an event are described in the following paragraphs.

2.3.1 Regional Service Manager

The Regional Service Manager receives notification of an incident from the utility and he takes the following actions:

a. Gathers available information about the incident.

b. Establishes a communications interface with the ERP Director.

c. Maintains the primary communications link with the utility until the ERP director has the WRD response organization in place.

The Regional Service Manager has the following choice of decisions:

a. Based on available-information, he judges that the ERP should be activated. He calls the ERP Director and makes his recommendation.

b. If activation in his opinion is questionable, he may call appropriate NSD managers to arrive at a joint decision. Cognizant NSD managers may then call the ERP Director, to request activation.

c. Either singly, or in joint consultation with NSD managers, is decided that only functional organizations need be activated for response to the utility problem then the ERP is not activated.

2.3.2 Emergency Response Plan Director

a. Inform Vice President WRD of incident and action he recommends.

b. Inform the Regional Service Manager of which action is to be taken.

When notified of an incident, the ERP Director has the following decisions to make:

a. He may pass on the response directly to the responsible functional organization within WRD (NSD, NTD, NFD, etc) without activating the Emergency Response Plan.

b. In consultation with the VPs WRD/NES he decides to activate the ERP and advises his Deputy Director to do so.

c. He may return the responsibility of a response to the Regional Service Manager.

d. Inform the Regional Service Manager of which action is to be taken.

2.3.3 Special Cases

If an event takes place at a non-Westinghouse nuclear steam supply system, the WRD Emergency Response Plan may be activated by the ERP Director with the appropriate approvals. Requests for assistance and the manner of handling it are funneled through the ERP Director. In addition, a legal/commercial basis must be established to define the terms of assistance.

If an event occurs in an overseas Westinghouse Nuclear Steam Supply System, the WRD Emergency Response Plan may be activated with corporate approvals to support the in-country agreements set up by WNI/PSPD. In this case, primary interfaces will be established on a country-by country basis.

2.4 Stage 2 - Plan Activation

At this point, the decision for total or partial activation has been made. The (A)ction, (D)ecision phase involves only the Director of the Emergency Response Plan. In Stage 2 the ERP Director acts as follows:

a. He activates the Emergency News Communication Center (ENCC), whose director has the discretion to forward information as he deems necessary, with approvals of higher management and after appropriate consultation with the affected utility news communicator.

b. He activates only the WRD Communications Network, a skeleton organization of key communications and technical personnel who maintain lines of information among WRD, NRC, the pertinent utility, and the public.

c. He activates the entire Emergency Response Plan. In addition to the ENCC, he will activate the appropriate service response organizations, the Technical Support Team (in MNC 418A/415D), the Command Center (in MNC 501/502C), and the Logistics and Administration Sup

port functions. Having established contact with RSM, as described in Stage 1, he will advise the RSM to maintain site contact with the utility until ERP members have arrived at their assembly points in the Nuclear Center , at which time they will be ready to respond to the situation. The Site Response Team (three specialists and an appropriate RSM) with the approval of the utility will have been dispatched to the site to participate as needed in the recovery operation and feed back information to the ERP Director.

2.5 Stage 3 - Operation of Response Organizations

There are three key persons involved during this stage of an incident. They are the Service Response Manager, the Technical Support Manager, and the Logistics and Administration Manager. The actions and decisions they must make are described in the following paragraphs.

2.5.1 Service Response Manager

The Service Response Manager has the primary responsibility for directing all service activities in coordination with the Emergency Response Plan Director. Based on the severity (urgency) and definition of the incident and the need for on-site presence of specialists from within WRD, he is faced with the following decisions to be made:

a. Activate the Site Response Team immediately and dispatch them to the site by the fastest means available, enlisting the aid of the Logistics and Administration Manager if necessary.

b. Place the Site Response Team on a standby basis with the SRT leader moving to the MNC Command Center.

c. Contact the appropriate functional (service) organization and advise it to respond as appropriate.

2.5.2 Technical Support Manager

The Technical Support Manager is responsible for technical advice relayed to the customer and for obtaining the approval of higher management as he judges necessary. He has one of the following decisions to make:

a. Fully activate the Emergency Technical Center (MNC 418/415) and assemble all members. He then serves as the group's interface with the Command Center and other functional groups, requesting whatever additional support is needed.

b. Partially activate the Emergency Technical Center to include members fully conversant only with those areas of immediate concern. The remaining members of the ETC are placed on standby.

c. Do not activate the Emergency Technical Center, but request support directly from the appropriate functional group.

2.5.3 Logistics and Administration Manager

The Logistics and Administration Manager will have the primary responsibility for supplying material, facilities, transportation, and communications links based upon the decisions and actions of other ERP members. These responsibilities may include any or all of the following:

a. Update security force on anticipated arrival/departure of news media personnel, based on depth of operation of ENCC.

b. Arrange transportation, equipment transfers, purchases, cash advances, etc., to support service response activities.

c. Rearrange furniture or other equipment within WRD facilities in support to ERP team needs.

d. Establish special communications links (telephones, wire services, intercoms, etc.) as dictated by the situation.

e. Provide for movement of information from the Information Resources Center or Records Center as needed.

f. Supply additional graphics/audio visual/video support needed by ERP operations.

g. Call for a standby situation for various support services as described in Section 2.3.2a.

h. Relinquish responsibilities to functional organizations.

2.6 Stage 4 - Response by Functional Organizations

During this stage the recovery process is under way. The ERP Director and the ERP staff manage all of the organizations that have been activated to assist the utilities in its efforts to control and recover from the incident. Responsibility is transferred in an orderly fashion to expedite the work of functional organizations or appropriate special project or task forces that may have been established.

2.7 Stage 5 - Deactivation of Emergency Response Organization

This is the final stage and formal end of the Emergency Response Plan. Responsibility is moved out of the ERP framework at such time as the ERP Director is satisfied that the emergency is terminated and the ERP is no longer needed. The ERP Director will then formally advise all involved i.e. utility, NRC, and the Westinghouse organization involved, that the plan has been deactivated.

3.0 READINESS ASSURANCE

3.1 Audits/Drills

Annually the Emergency Response Plan Director will arrange for a complete operational evaluation of this plan. This will include a sample audit of the Emergency Technical Center Reference Library, phone communications network and may include drills.

WRD will also participate, as requested, in utility initiated drills.

These audits and drills will be documented for review by Westinghouse corporate management.

3.2 Training

The Emergency Response Plan Director will also hold annual familiarization sessions and establish specific training based on feedback from these sessions.

4.0 COMMERCIAL BASIS

Westinghouse will furnish Emergency Assistance Services as specifically described in the "Westinghouse Emergency Response Plan," to the utility requesting such services (hereinafter "User"). The emergency assistance period begins at the time of initial notification by the User to Westinghouse of an abnormal occurrence involving its nuclear power plant that releases or has the potential of releasing above normal amounts of radioactivity and shall terminate when the Westinghouse Emergency Response Organization and the Emergency Response Plan is deactivated.

Compensation

Westinghouse will perform the Emergency Assistance Services stated herein at no cost to the utility during the first three (3) days of such emergency. The remaining period of performance of such services shall be performed on a firm price basis, with or without price adjustment, and/or on a time and material basis, said basis to be agreed upon prior to the expiration of said three (3) day period.

The remaining terms and conditions during activation of any part of the Westinghouse Emergency Response plan will be provided in a separate document.

APPENDIX A
ERP COMMUNICATIONS PLAN

If an event at a Westinghouse designed NSSS occurs that might require full scale Westinghouse Emergency response, the plant operator should:

1. Immediately contact the Westinghouse Regional Service Manager (RSM).

Two numbers are provided, the "off hours" (home) number listed is a special dedicated line which is equipped with an answering device which when the RSM is not available, will give the caller instructions, take a message and when the caller hangs up, will automatically begin calling both of the RSM alternates until it gets an answer and an acknowledgment tone.

2. If in a reasonable period no response is received the Reactor Plant Operator should contact the Service Response Manager.

This will initiate the actions described in the plan and shown in Figure A-1.

Upon full activation, communication links and advisories will be established as shown on Figure A-2. The primary link will be between the site and the RSM until the plan is fully activated. At this time the prime link is betwen the ERP Director and the Utility Recovery Manager. Support links will be established with the Site Response Team upon their arrival on site, the Onsite Technical Support Center and the Site Emergency News Communications Center. Advisory communications will be made, as appropriate with the U.S. NRC, (RRG), Institute for Nuclear Power Operating Regulatory Response, NSA, other Westinghouse plants, Architect/Egnineers, etc.

FIGURE A-1

ERP COMMUNICATION PLAN - ACTIVATION

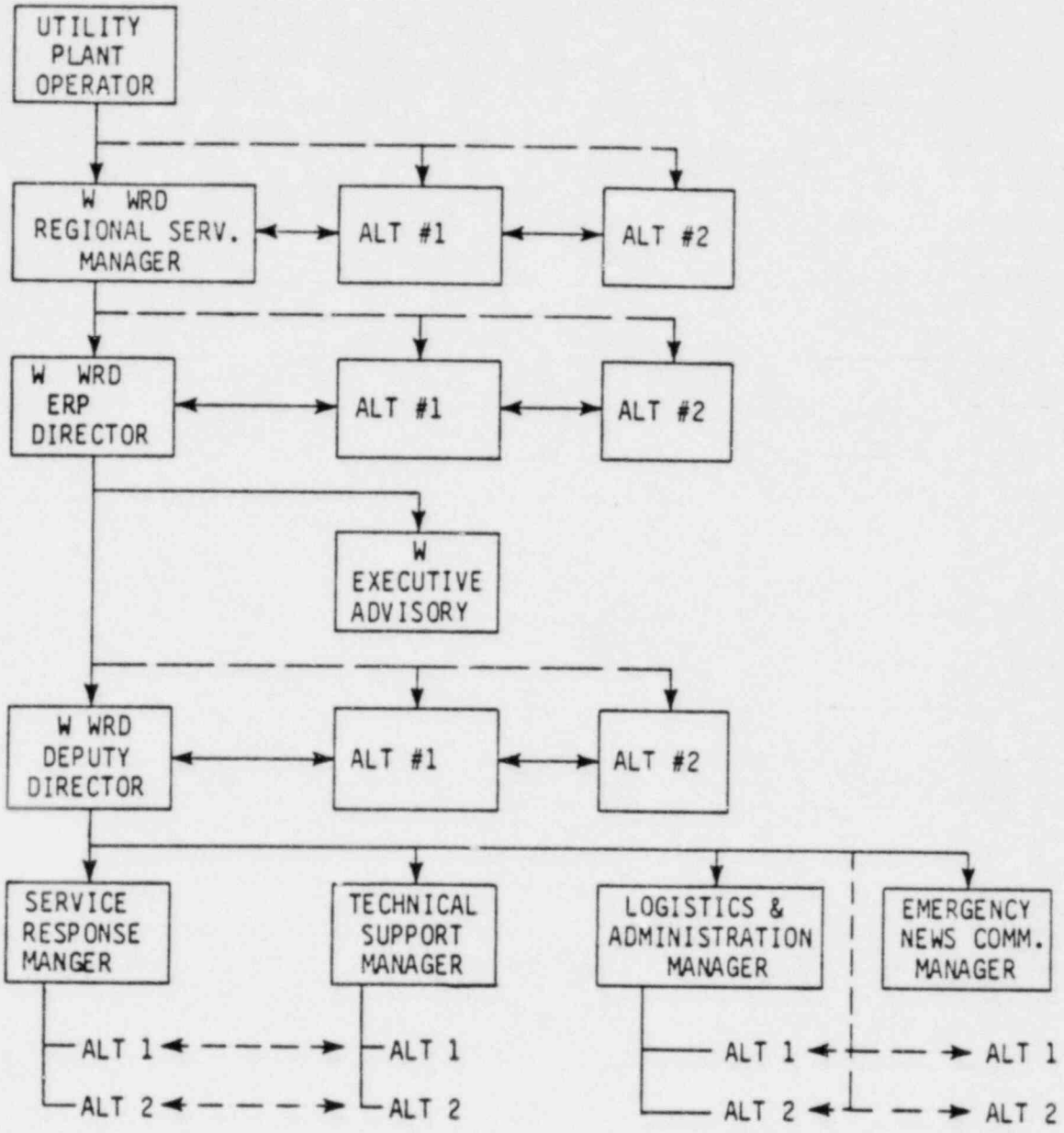

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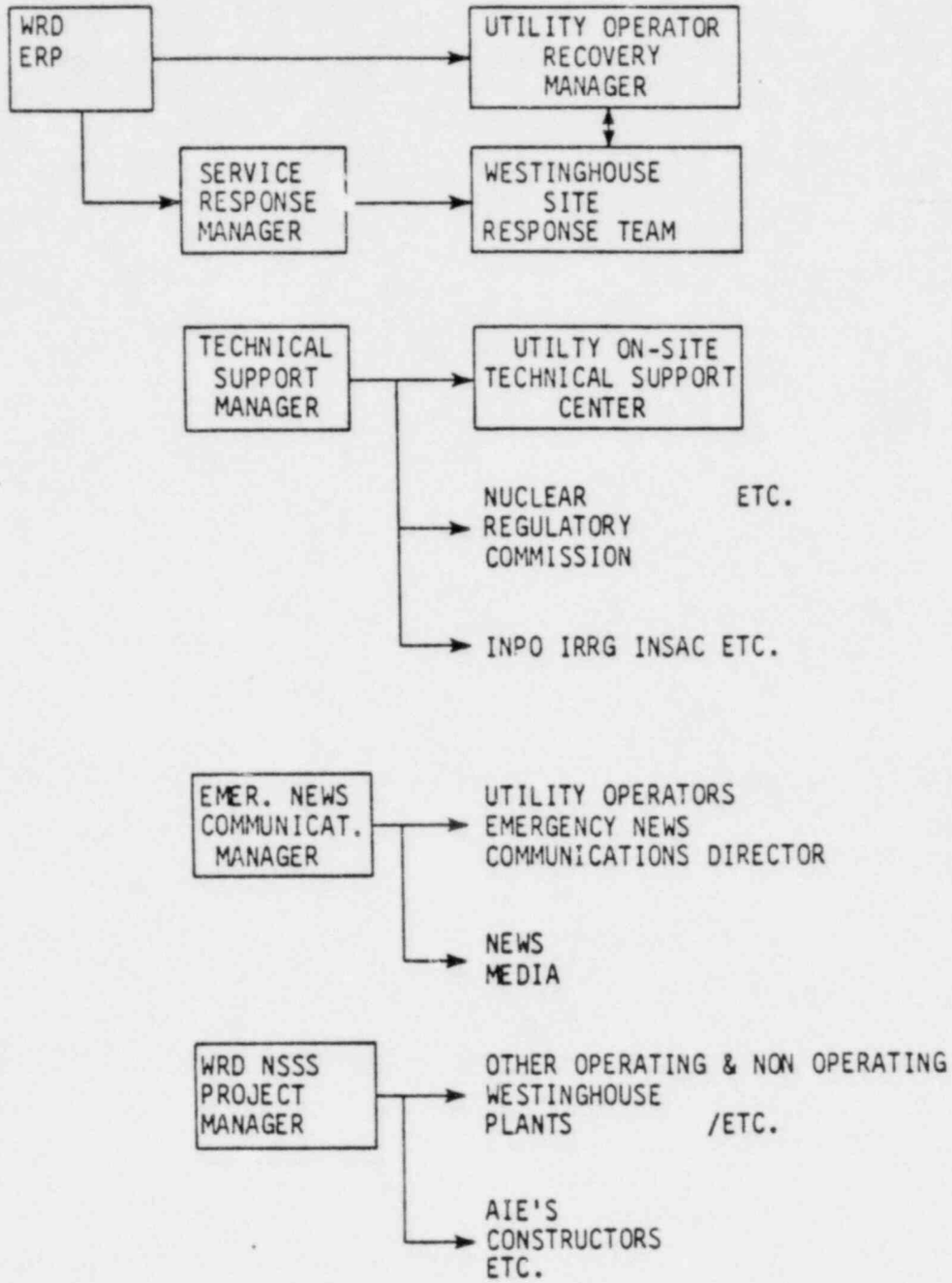
FIGURE A-2

ERP COMMUNICATION PLAN - ADVISORY



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APPENDIX B

READINESS ASSURANCE PLAN

In order to assure readiness WRD will Drill/Audit and train as outlined in Section 3 of the plan. The Deputy Director will be responsible for these actions.

Training: At least once a year the Deputy Director will hold a plan familiarization session where all major facets of the plan will be reviewed. The training will include:

a) Review of procedures
b) Review of facilities
c) Review of responsibilities of contact personnel

The general outline of the review and those participating will be documented and made available for Westinghouse Corporate Audit.

Drills: A Drill Master will be assigned by the Deputy Director to ensure that at least one unannounced drill is held during each 12 month period. This drill may be initiated in co-operation with a utility initiated drill or by the Westinghouse ERP Drill Master. In all cases each drill instruction will begin with the words "This is a Drill, repeat drill of the WRD Emergency Response Plan" before providing instructions. From time to time communications network drills will be held to assure minimum team manning capability. The Westinghouse ERP Drill Master will be responsible for maintaining records of these drills for Westinghouse Corporate Audit.

Audits: Audits on an annual basis will be made by a Westinghouse corporate Audit group to assure readiness and accuracy and completeness of response plans training and reference materials. The results of these audits can be made available to operating utilities on written request.

APPENDIX E

TECHNICAL SUPPORT PLAN

Functions

The Emergency Technical Center (ETC) functions as a part of the WRD Emergency Response Plan.

The ETC provides the key communications link with the utility Technical Support Center (TSC) through which pertinent plant data and system conditions are received by Westinghouse.

The Emergency Technical Center shall provide dedicated and timely assistance to utilities in the early stages of an emergency involving release or potential release of above normal amounts of radioactivity.

This assistance will derive from an established technical capability or understanding which the utility may not readily possess or for which the utility desires additional or corroborating effort.

Assistance can consist of analysis support, technical evaluations, advice, or any other form appropriate to the emergency at hand.

This technical support and data communications shall be provided to the utility and other organizations of the WRD Emergency Response Plan via the Early Response Team (ERT) in the Emergency Response Command Center.

Activation

Activation is by decision of the Early Response Team through the ETC Manager or designated alternate.

Activation shall be affected on a case-by-case basis as soon as it has been determined that data acquisition and plant technical support is desired.

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Once authorized, activation and organization of the ETC function shall proceed in parallel with assembly of the ERT under the authority of the ETC Director, who is designated by the Technical Center Manager.

RESPONSIBILITIES

Technical Center Manager

The Technical Center Manager is responsible for assuring that necessary equipment and resources within the ETC are complete and in operating order.

The Technical Center Manager will assure that an adequate roster of key personnel is provided to the ETC Director and is continually updated to support ETC staffing requirements.

The Technical Center Manager is responsible for providing the ERT with timely plant data as received from the utility technical support center or other sources via the ETC communications links.

The Technical Center Manager is responsible for all technical support and recommendations provided for the use of the utility, NRC or other organizations by the ETC staff.

The Technical Center Manager will serve as the single Westinghouse spokesman for technical support.

The Technical Center Manager is responsible for informing the appropriate Nuclear Safety line organization of the existence and nature of the emergency and to authorize Nuclear Safety line organization effort or involvement as appropriate to the situation at hand. The intent is to anticipate and effect the eventual transition to normal line management responsibility.

The Technical Center Manager is responsible for assuring that appropriate records are maintained for ETC operations.

The Technical Center Manager will judge when the state of emergency is over and recommend to the Emergency Response Director that the ETC be deactivated. Upon approval of the Emergency Response Director, he will:

1. Assign continued line management responsibilities as appropriate, and

2. Direct the preparation of an event report describing the nature and progress of the emergency including:

   a. A chronological sequence of key events

   b. A description and summary of ETC efforts and results

   c. A critique of the event itself and the ETC operations with appropriate recommendations.

ETC Director:

The ETC Director is responsible for initial ETC staffing and maintaining an effective staffing level throughout the emergency.

The ETC Director is responsible for all ETC data communications, recommendations, and technical support provided to the ETC Manager.

The ETC Director will serve as the single ETC spokesman for communications with the WRD Emergency Response Command Center.

The ETC Director is responsible for overall direction of ETC technical activities associated with each particular emergency, including documentation of ETC efforts.

The ETC Director is responsible for serving as communication link to obtain plant/event data from NRC when directed by the Technical Center Manager.

STAFFING

Initial staffing of the ETC will be by selection from a roster of key personnel maintained by the Technical Center Manager at all times. Candidates for appointment as ETC Director, depending on the particular emergency, shall be identified on the ETC Staffing roster. The Technical Center Manager and his designated alternate, the Emergency Response Director and his designated alternate and all key personnel on the ETC staffing roster will possess copies of this roster at all times. The roster will be on continuous and conspicuous display in the ETC while actuated.

The ETC Director, once appointed, will effect the initial staffing of the ETC by appropriate selection from this roster.

The requirements for this roster are as follows:

1. A minimum of five individuals shall be identified by name from each of the following second level groups:

    a. Licensing and Safety Evaluation

    b. Reactor Protection

    c. Safeguards Engineering

    d. Fluid Systems Design

    e. Systems Analysis and Operations

2. Each individual shall be identified by:

    a. Name

    b. Group

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c. Area(s) of technical expertise

d. Plants or groups of plants for which the individual may have special familiarity

e. Work extensions and home telephone numbers

f. Any other special characteristics which may be relevant.

3. Individuals shall be selected such that, collectively and as a minimum, technical capability exists in the followin, areas:

a. Safeguards Systems

b. BOP Systems Design

c. Functional Analysis

d. Nuclear Operations

e. Reactor Protection Analysis

f. Safeguards Analysis

g. Mechanical and Fluid Systems Evaluation

h. Emergency/Abnormal Operating Procedures

i. Environmental and Operational Safety

4. The names and telephone numbers of the managers of the following groups shall also be provided on the roster sheet:

a. Manager, Steam Generator Systems & Materials

b. Manager, Plant Systems

c. Manager, Fluid Systems Design

d. Manager, Electrical Systems Application

e. Manager, Applied Mechanics Department

f. Manager, Systems Analysis and Operations

g. Manager, Licensing and Safety Evaluation

h. Manager, Safeguards Engineering

i. Manager, Reactor Protection

j. Manager, Nuclear Engineering

k. Manager, Fuel Performance Engineering and Evaluation

OPERATIONS

The Technical Center Manager shall assume all responsibilities of the ETC and the ETC Director until such time as the ETC Director has established functional operation of the ETC.

The Technical Center Manager shall report directly to the Command Center (MNC 501) from where all technical support to the utility will be authorized.

The designated ETC Director shall report directly to the ETC (MNC, CR 418) and assure establishment of the following:

1. Initial staffing level

2. Communications link with Technical Center Manager in the Command Center

3. Utility-Westinghouse data communications link

The ETC Director shall establish initial staffing of the ETC consistent with the staffing criteria outlined above, and designate individual responsibilities to the ETC staff for, at minimum, the following functions:

1. Site Communications Function

   - Responsible for continued ongoing interface with site Technical Support Center.

   - Obtains plant status as often as warranted, and fills out Plant Event Data Sheet.

   - Obtains basic information on event, site evaluation of probable event prognosis, and site recovery plans.

   - Along with ETC Director, is only external interface from ETC.

2. Emergency Procedure Function

   - Establishes likely post-accident operator actions based on plant specific procedures.

   - Compares plant-specific procedures with applicable Westinghouse reference instruction.

   - Identifies likely future course of action based on plant procedures

   - Evaluates applicability of Westinghouse Reference EOI"s for future reference and recommendations.

   - Evaluates plant transient against the analytical basis for Westinghouse/Utility emergency guidelines.

3. Data and Facility Management

- Responsible for Plant Event Data Board updates and maintenance.

- Continual log of ETC activity including chronological data sheets.

- Reports to ETC Director for duties related to ETC staffing, facility organization and in-house plant data availability.

- Establishment of ETC hardware required for emergency telecommunications with the site and the ETC communications system with the Emergency Command Center and the ENCC.

4. Event Analysis/Evaluation

- Responsible for evaluation of site data as to data consistency and sufficiency for event evaluation.

- Provide event evaluation as to recovery alternatives, concerns and event diagnosis verification.

- Provide radiological evaluation for past and potential future releases.

Initial Operation of the ETC consistent with the functional responsibilities identified above is expected to consist of one manager, five to seven engineers and one engineering aide.

Access to the ETC areas shall be restricted to those identified by either the Technical Center Manager of the designated Technical Center Director of Operations.

A functional diagram depicting ETC organization structure is provided in Figure 1.

Communications requirements for effective ETC operation may be categorized as follows:

Plant Site Data Communications

- In the near term, prior to realization of advanced plant site Technical Support Centers, the primary communication mechanism for plant data and status will be via a two-way speaker phone. This line should also be connected as a reception - only intercom in the Command Center.

- A redundant headphone with sound actuated microphone equipped with a long extension cord connected to the same line as the speaker phone should also be provided in the ETC. This would permit mobility by the site communications engineer when required, without disruption of other ETC activities.

- A telecopy machine for printed material should be immediately available to the individual performing the data management function. The telecopier facilities in the Word Processing Center on the fourth floor, MNC, should serve this purpose.

- A tape recorder to be used for information verification of plant conditions obtained from the speaker phone link is necessary. Operation of this recorder is under the authority and responsibility of the ETC Director.

Command Center Communications

- Closed circuit T.V. feed of the Plant Event Data Board should be continuously provided to a monitor in the Command Center and available for viewing on the monitors already located in the ENCC (MNC, Auditorium).

- A headphone equipped with sound actuated microphone should be provided as a direct link from the ETC Director to the Technical Center Manager located in MNC 501. The capability should exist for this line to also operate as a normal speakerphone.

- An additional speakerphone should be available in C.R. 415 for ETC use to other internal and external resource centers.

- In order to facilitate receiving information from NRC when authorized, the capability for applying a separate phone line as a three-way hookup with the ETC Director and the Technical Center Manager should exist.

Attachment 2

Northern Service Region

Emergency Communication Network

	Title	Name	Office	Home	*HHL
1.	Regional Service Manager	Bob Kelly			
	1st Alternate	Tom Dent			
	2nd Alternate	Bob Grimm			
2.	Service Response Manager	Joe Leblang			
	1st Alternate	Bob Stokes			
	2nd Alternate	Lee Cunningham			
3.	Emergency Response Director	Hank Ruppel			
4.	Emergency Response Deputy Director	Ron Lehr			
5.	Emergency News Communications	Mike Mangan			

Please inform one Westinghouse contact, using this list in the order shown, to ensure early notification to W of an emergency occurring at your plant. Please be prepared to discuss as many facts as are available at the time of the call and identify a cognizant individual in your organization to provide continuing communications and updates to W.

*Home Hot Line (HHL). These phones are to be used only during "off" hours. Any emergencies occurring during regular office hours are to be channeled through the office phones. The emergency (HHL) phones answer 24 hours/day and are especially designated as emergency numbers. They are equipped with automatic call forwarding features in the event that no one answers. The system works in the following manner: The phone will answer requesting you to state your name (please provide the spelling if there is room for confusion), your phone number, and the nature of the problem. Please note that you must stay on the line for a minimum of fifteen (15) seconds to initiate the call forwarding. After you finish your message and hang up, the phone will then ring two (2) pre-programmed numbers, each every four (4) minutes until a phone is answered and the message given. If after leaving a message with a call forwarding device, no one has contacted you within ten (10) minutes, call the second name on the list, and, if necessary, repeat the process.

Note: Unless indicated otherwise, all phone numbers are area code 412. Where an area code other than 412 is shown, it applies to the office, home, and HHL numbers.

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Attachment 2

Southern Service Region

Emergency Communication Network

	Title	Name	Office	Home	*HHL
1.	Regional Service Manager	Steve Longdon			
2.	1st Alternate	John Willis			
3.	2nd Alternate	Dave Richards			
4.	Service Response Manager	Joe Leblang			
	1st Alternate	Bob Stokes			
	2nd Alternate	Lee Cunningham			
5.	Emergency Response Director	Hank Ruppel			
6.	Emergency Response Deputy Director	Ron Lehr			
7.	Emergency News Communications	Mike Mangan			

Please inform one Westinghouse contact, using this list in the order shown, to ensure early notification to W of an emergency occurring at your plant. Please be prepared to discuss as many facts as are available at the time of the call and identify cognizant individual in your organization to provide continuing communications and update to W.

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Attachment 2

Eastern Service Region

Emergency Communication Network

	Title	Name	Office	Home	*HHL
1.	Regional Service Manager	Frank Noon			
	1st Alternate	Ray Sabol			
	2nd Alternate	Dallas Lokay			
	Service Response Manager	Joe Leblang			
	1st Alternate	Bob Stokes	(Alt)		
	2nd Alternate	Lee Cunningham	(Alt)		
3.	Emergency Response Director	Hank Ruppel			
4.	Emergency Response Deputy Director	Ron Lehr			
5.	Emergency News Communications	Mike Mangan			

Please inform one Westinghouse contact, using this list in the order shown, to ensure early notification to W of an emergency occurring at your plant. Please be prepared to discuss as many facts as are available at the time of the call and identify a cognizant individual in your organization to provide continuing communications and updates to W.

*Home Hot Line (HHL). These phones are to be used only during "off" hours. Any emergencies occurring during regular office hours are to be channeled through the office phones. The emergency (HHL) phones answer 24 hours/day and are especially designated as emergency numbers. They are equipped with automatic call forwarding features in the event that no one answers. The system works in the following manner: The phone will answer requesting you to state your name (please provide the spelling if there is room for confusion), your phone number, and the nature of the problem. Please note that you must stay on the line for a minimum of fifteen (15) seconds to initiate the call forwarding. After you finish your message and hang up, the phone will then ring two (2) pre-programmed numbers, each every four (4) minutes until a phone is answered and the message given. If after leaving a message with a call forwarding device, no one has contacted you within ten (10) minutes, call the second name on the list, and, if necessary, repeat the process.

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Attachment 2

Western Service Region

Emergency Communication Network

	Title	Name	Office	Home	*HHL
1.	Regional Service Manager	Lee Cunningham			
	1st Alternate	Cliff Lissenden (Alt)			
	2nd Alternate	Pat Docherty			
2.	Service Response Manager	Joe Leblang			
	1st Alternate	Bob Stokes			
	2nd Alternate	Lee Cunningham (Alt)			
3.	Emergency Response Director	Hank Ruppel			
4.	Emergency Response Deputy Director	Ron Lehr			
5.	Emergency News Communications	Mike Mangan			

Please inform one Westinghouse contact, using this list in the order shown, to ensure early notification to W of an emergency occurring at your plant. Please be prepared to discuss as many facts as are available at the time of the call and identify a cognizant individual in your organization to provide continuing communications and updates to W.

*Home Hot Line (HHL). These phones are to be used only during "off" hours. Any emergencies occurring during regular office hours are to be channeled through the office phones. The emergency (HHL) phones answer 24 hours/day and are especially designated as emergency numbers. They are equipped with automatic call forwarding features in the event that no one answers. The system works in the following manner: The phone will answer requesting you to state your name (please provide the spelling if there is room for confusion), your phone number, and the nature of the problem. Please note that you must stay on the line for a minimum of fifteen (15) seconds to initiate the call forwarding. After you finish your message and hang up, the phone will then ring two (2) pre-programmed numbers, each every four (4) minutes until a phone is answered and the message given. If after leaving a message with a call forwarding device, no one has contacted you within ten (10) minutes, call the second name on the list, and, if necessary, repeat the process.

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Attachment 3

Technical Center Library

I. PLANT LAYOUT DRAWINGS

A. Plot Plan

B. Nuclear Tank Farm General Arrangement

C. Primary Aux. Bldg. Arrangements

D. Aux. Feed Pump Bldg. Arrangements

E. Waste Holdup Tank Pit Arrangement

F. Fuel Storage Bldg. Arrangement

G. Turbine Bldg. Heater Bay Arrangements

H. Containment Bldg. Arrangements

II. SYSTEMS DESCRIPTIONS

A. RCS

B. Auxiliary Coolant System

C. CVCS

D. Waste Disposal System

E. ESF

F. Main and Reheat Steam

G. Feedwater, Extraction Steam and Heater Drain Systems

H. Service Water and Cooling Water

III. FLOW DIAGRAMS

A. RCS

B. CVCS

C. SIS

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D. ACS

E. Waste Disposal System

F. Nuclear Equipment Drains

G. Sampling System

H. Main Steam

I. Condensate and Boiler Feed Pump Suction

J. Cond. and Boiler Feed Pump Suction Electrical Freeze Protection

K. Boiler Feedwater

L. Service and Cooling Water River Water and Fresh Water

M. Service Water System

IV. FUNCTIONAL LOGIC DIAGRAMS

A. Reactor Trip Signals

B. Turbine Trip Signals

C. 6900 v. Bus Auto Transfer

D. Nuclear Instrumentation Trip Signals

E. Nuclear Instrumentation Permissives and Blocks

F. Emergency Generator Starting

G. Safeguards Sequence

H. Pressurizer Trip Signals

I. Steam Generator Trip Signals

J. Reactor Coolant System Trip Signals and Manual Trip

K. Safeguards Actuation Signals

L. Feedwater Isolation

M. Rod Stops and Turbine Load Cutback

N. Setpoints for Reactor Control and Protection Systems

V. SINGLE LINE DIAGRAMS

A. 480 Volt Motor Control Centers and Instrument Buses

B. D.C. System

VI. INTERLOCK SHEETS

A. RCS

B. Auxiliary Coolant System

C. CVCS

D. Waste Disposal Systems

E. ESF

VII. ALARM & CONTROL SETPOINTS

A. RCS

B. Auxiliary Coolant System

C. CVCS

D. Waste Disposal System

E. ESF

VIII. COOLANT ACTIVITY DATA

IX. STEAM GENERATOR OPERATING HISTORY

X. INDEX OF READOUTS, ALARMS, AND CONTROL SWITCHES ON MAIN CONTROL BOARDS

A. RCS

B. Auxiliary Coolant System

C. CVCS

D. Waste Disposal System

E. ESF

F. Main Steam

G. Main Feedwater

H. Auxiliary Feedwater

I. Service Water

Mr. D. V. Shaller, Plant Manager
D. C. Cook Nuclear Plant
Indiana and Michigan Power Company
P. O. Box 458
Bridgman, Michigan 49106

jcc: R. W. Jurgensen
J. E. Dwyer W

Mr. R. H. Graves, Plant Superintendent
Haddam Neck Plant
Connecticut Yankee Atomic Power Company
RR#1, Box 127E
East Hampton, Connecticut 06424

jcc: J. M. Kufel
R. P. Traggio
R. F. Wille W

Mr. J. A. Werling,,Plant Superintendent
Beaver Valley Power Station
Duquesne Light Company
P. O. Box 4
Shippingport, Pennsylvania 15077

jcc: G. W. Moore
R. E. Martin
H. P. Williams
J. J. Carey
J. D. Sieber
F. W. Knowles W

Mr. W. A. Monti, Manager
Nuclear Power Generation
Consolidated Edison Company of New York, Inc.
Broadway and Bleakley
Buchanan, New York 10511

jcc: M. F. Shatkouski
J. Curry
A. A. Nespoli
J. M. Makepeace
A. V. Jaffe
G. J. Keane
E. R. McGrath
P. Zarakas
W. J. Cahill
M. L. Lee
E. V. Somers
W. G. Cheney W

Mr. S. S. Zulla, Superintendent of Power
Power Authority of the State of New York
P. O. Box 215
Buchanan, New York 10511

jcc: J. P. Bayne
P. J. Early
K. S. Sunder Raj
P. W. Lyon
W. A. Josiger
G. J. Keane
J. M. Clabby
E. V. Somers
W. G. Cheney W

Mr. F. P. Librizzi, General Manager
Electric Production
Public Service Electric and Gas Company
80 Park Place
Newark, New Jersey 07101

jcc: H. J. Midura
H. J. Heller
R. D. Rippe
L. A. Reiter
R. A. Uderitz
F. Meyer
E. N. Schwalje
T. N. Taylor
D. J. Jagt
C. F. Barclay W

Mr. B. A. Snow, Plant Superintendent
Ginna Nuclear Station
Rochester Gas and Electric Corporation
1503 Lake Road
Ontario, New York 14519

jcc: J. C. Noon
L. D. White
L. S. Lang
J. E. Arthur
R. E. Smith
J. C. Hutton
R. C. Mecredy
C. R. Anderson
A. E. Curtis
J. L. Carlson W

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Mr. H. A. Autio, Plant Superintendent
Yankee Atomic Electric Company
Rowe, Massachusetts 01367

jcc: N. N. St. Laurent
D. E. Moody
P. T. Conroy W

Mr. R. L. Sullivan, Project Administrative Engineer
Portland General Electric Company
121 S. W. Salmon Street
Portland, Oregon 97204

jcc: P. Yundt
S. R. Christensen
J. W. Lentsch
C. Goodwin
J. W. Martindell W

Mr. J. M. Curran, Plant Manager
San Onofre Nuclear Generating Station Unit 1
P. O. Box 128
San Clemente, California 92672

jcc: H. L. Ottoson
J. G. Haynes
K. P. Baskin
D. K. Nelson
J. L. DeHass W

Mr. H. O. Thrash, Manager
Nuclear Generation
Alabama Power Company
600 North Eighteenth Street
Birmingham, Alabama 35291

jcc: J. T. Young
O. D. Kingsley, Jr.
O. Batum
M. C. Brickell
W. G. Hairston, III
R. W. Wise W

Mr. B. J. Furr, Vice President
Nuclear Operations
Carolina Power & Light Company
P. O. Box 1551
Raleigh, North Carolina 27602

jcc: R. M. Coats
R. B. Starkey
E. G. Hollowell
B. H. Webster
J. F. Halifax W

Mr. C. O. Woody, Manager
Power Resources, Nuclear
Florida Power & Light Company
P. O. Box 529100
Miami, Florida 33152

jcc: A. D. Schmidt
W. H. Rogers, Jr.
H. E. Yaeger
J. K. Hays
E. V. Rutledge W

Mr. B. R. Sylvia, Manager
Nuclear Operations and Maintenance
Virginia Electric and Power Company
P. O. Box 26666
Richmond, Virginia 23261

cc: J. T. Rhodes
E. A. Baum
J. L. Wilson
L. M. Girvin
J. L. Perkins
F. M. Alligood
W. R. Cartwright
V. W. Lockman W

Mr. N. E. Wandke, Superintendent
Commonwealth Edison Company
Zion Station
101 Shiloh Boulevard
Zion, Illinois 60099

jcc: J. D. Deress
T. R. Tramm
L. G. Soth
G. P. Wagner
J. S. Bitel
F. A. Palmer
J. J. Marianyi
F. D. Hurd
D. L. Peoples
W. M. Kiefer
J. A. Johnson
C. M. McKenzie

Mr. F. P. Tierney, Jr., Plant Manager
Prairie Island Nuclear Generating Station
Northern States Power Company
Route #2
Welch, Minnesota 55089

jcc: E. L. Watzl
G. T. Goering
D. E. Gilberts
L. R. Eliason
L. O. Mayer
F. M. Sovis W

Mr. G. A. Reed
Manager of Nuclear Operations
Wisconsin Electric Power Company
Point Beach Nuclear Plant
6610 Nuclear Road
Two Rivers, Wisconsin 54241

jcc: D. K. Porter
S. Burstein
C. W. Fay
D. B. Ralsten W
C. A. Lins W

Mr. D. C. Hintz, Plant Manager
Wisconsin Public Service Corporation
Kewaunee Nuclear Power Plant
Route #1, P. O. Box 48
Kewaunee, Wisconsin 54216

jcc: C. W. Giesler
M. E. Stern
C. R. Luoma
K. H. Weinhauer
C. A. Lins W

Mr. J. D. Woodward, Manager
Operating Plants Service
Westinghouse Nuclear Belgium
73 Rue de Stalle
1180 Brussels, Belgium

jcc: R. M. Shepard

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