



January 18, 2005

NRC-05-007  
10 CFR 50.54(q)

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Kewaunee Nuclear Power Plant  
Docket 50-305  
License No. DPR-43

Emergency Plan Revision 27

Modifications have been made to the Kewaunee Nuclear Power Plant (KNPP) Emergency Plan. A description of the changes and the effectiveness evaluation is included as Enclosure 1 to this letter. A copy of the revised Emergency Plan in its entirety is included as Enclosure 2 to this letter. These changes do not decrease the effectiveness of the plan, and continue to meet the standards of 10 CFR 50.47(b) and the requirements of Part 50, Appendix E. The changes are made in accordance with 10 CFR 50.54(q) and prior Nuclear Regulatory Commission approval is not required.

Pursuant to 10 CFR 50.4, two additional copies of this letter and enclosures are hereby submitted to the U.S. Nuclear Regulatory Commission, Region III. As required, one copy of this letter and enclosures is also provided to the KNPP Senior Resident Inspector.

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Site Vice President, Kewaunee Nuclear Power Plant  
Nuclear Management Company, LLC

Enclosures (2)

cc: Senior Resident Inspector Kewaunee, USNRC (w/enclosures)  
Regional Administrator, USNRC, Region III (w/enclosures)  
Mr. Kenneth Riemer, USNRC, Region III (w/enclosure 1 and CDs (2))  
Public Service Commission of Wisconsin (w/o enclosures)  
QA Vault (w/enclosures)

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**ENCLOSURE 1**  
**DESCRIPTION OF CHANGES AND EFFECTIVENESS EVALUATION**

Kewaunee Nuclear Power Plant (KNPP) Emergency Plan Revision 27 is primarily a maintenance update to the plan. These changes include:

- Title and organizational changes have been made to reflect the KNPP and the Emergency Preparedness Group current staffing.
- Steps were reworded to clarify the KNPP Emergency Preparedness Program implementation of regulations.
- Update letters of agreement to include Carlton Hill and remove Wisconsin Public Service Kewaunee Office.
- Typographical errors are corrected.

The following pages provide:

- A detailed explanation of the changes
- Reason / justification for each change
- An assessment / effectiveness evaluation for the change

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
All Sections		Site Emergency	Site Area Emergency	Standard terminology / consistent with other Wisconsin Plants	Standardize Terminology. This change does not reduce effectiveness of the Emergency Plan
Plan Policy Statement	2 <sup>nd</sup>	..... training, etc., of NMC's emergency preparedness program in general terms. The EIPs more accurately reflect the actual approach to how a particular situation will be addressed, specific assignment of personnel, placement of equipment, etc.	..... training, etc., of Kewaunee Nuclear Power Plant (KNPP) emergency preparedness program. The EIPs provide details on how a particular situation will be addressed, specific assignment of personnel, placement of equipment, etc.	A major reason for this revision to the plan is to ensure it reflects NMCs commitment to industry planning standards and brings commitments made in EIPs back into the Plan.  Old Wording implied procedures control NMC Emergency Program vs. Emergency Plan  New wording more accurately reflects that commitments are made in the plan and implemented by the EIPs	Clarifies hierarchy of documents. EIPs are still required to have 50.54(q) reviews and to implement requirements of the Plan. This change does not reduce effectiveness of the Emergency Plan
Plan Policy Statement	3 <sup>rd</sup>	As long as the differences between specific implementing procedures are not substantive and the intent or commitment of the plan is not compromised, the procedure will reflect the actual plant activity or commitment.	As long as the differences between specific implementing procedures meet or exceed the intent of program commitments in the plan, the differences will be allowed until the next scheduled plan review/revision.	Wording stated that if there are differences between Plan and EIPs "the procedure will reflect the actual plant activity or commitment."  The Plan is the governing document and procedures cannot reduce commitments outlined in the Plan.	Clarifies hierarchy of documents. This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 1.1	1 <sup>st</sup> Item 5	Establish procedures to identify and classify emergency conditions.	Establish procedure requirements to identify and classify emergency conditions.	Plan does not actually establish procedure.	An EAL Technical Basis Document and Classification Procedure is required and used for actual event classification. This change does not reduce effectiveness of the Emergency Plan.
Section 1.1	2 <sup>nd</sup>	States "... Procedures have been developed and are available for use ..."	Changed to: "... Procedures have been developed and will be used ..."	More clearly states the NMC commitment to develop and use EPIPs	This change does not reduce effectiveness of the Emergency Plan.
Section 1.2	1st	States "The KPB Site Services Manager, supported by the KPB Emergency Preparedness Manager and on-site by Emergency Preparedness Coordinators ..."	Changed to: "The KNPP Business Support Manager, supported by the KNPP Emergency Preparedness Manager and Emergency Preparedness Staff ..."	Changes in site position titles.  EP Staffing no longer combined with Point Beach.	Regulations only require identification of EP Manager by title. This change does not reduce effectiveness of the Emergency Plan.
Section 1.3	2nd	"NOTE: In most cases Emergency Response Director positions, will be filled by the Nuclear Management Company (NMC) personnel. In some cases director positions will be filled by the Wisconsin Public Service Corporation (WPSC) personnel. In All cases the qualified individuals will be listed in the KPB Emergency Telephone Directory."	Removed	Does not fit in definitions section.	Key positions are described in section 5.0 of plan.  This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 1.3	Various	Contained definitions of ERO positions	Removed all definitions of positions and moved to Section 5 as appropriate.	Section 5, Organizational Control Of Emergencies describes ERO positions and duties. Having positions described in definitions could lead to conflicting position information.	This change does not reduce effectiveness of the Emergency Plan.
Section 1.3			Added definition of "Source Term"	Improved list of definitions. Note: definition comes from 10CFR50 Section 50.2	This change does not reduce effectiveness of the Emergency Plan.
Section 2.1	1 <sup>st</sup>	.... 1,650 megawatts thermal and gross plant electrical output is approximately 561 megawatts electrical.	.... 1,772 megawatts thermal and gross plant electrical output is approximately 590 megawatts electrical.	Reflects Power Upgrade	This change does not reduce effectiveness of the Emergency Plan.
Section 2.2	1 <sup>st</sup>	<i>"This Emergency Plan is the basis for plant and corporate emergency preparedness but should not, by itself, be considered the primary working document to be used during an emergency. It should be utilized with the Emergency Plan Implementing Procedures, other appropriate plant procedures and the Emergency Response Plans of Federal, state, local, and private emergency support organizations. "</i>	<i>"This Emergency Plan is the basis for plant and corporate emergency preparedness program. It describes the required contents of the Emergency Plan Implementing Procedures, other appropriate plant procedures and identifies the Emergency Response Plans of federal, state, local, and private emergency support organizations used to respond to an emergency at the facility."</i>	The Emergency Plan is a governing document not intended to be used by ERO members during an actual event. EIPs are developed to implement the plan.	Change more clearly reflects actual operations of KNPP Emergency Response Organization. This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of Intent	New Wording or description of Intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 2.2.1	1 <sup>st</sup>  Last 2 sentences	<i>"In addition to the EIPs, plant emergency operating procedures may also be implemented in response to emergency conditions described in this plan. These procedures provide instructions to the plant operations staff."</i>	Removed	The EOPs are not controlled by the Emergency Plan. CR Staff will implement them separately from or in conjunction with EIPs.	This change does not reduce effectiveness of the Emergency Plan.
Section 2.2.3	Last Bullet	Ameritech (Wisconsin Bell)	SBC (or current telephone service)	Change in company Name	This change does not reduce effectiveness of the Emergency Plan.
Section 3.0	3rd	Specifies EPIP number	Removed EPIP number	Not necessary to place number in body of Plan as Plan contains cross-reference to EIPs. Having exact numbers in body of plan may lead to reference errors if numbers are changed.	The Plan still identifies the requirement for implementing procedure. This change does not reduce effectiveness of the Emergency Plan.
Table 4-1	Chart A(1)	1 <sup>st</sup> column contained wording sending reader to chart in procedure EPIP-AD-02	Removed column	Makes this page consistent with other pages in table. Charts are labeled in the EPIP this column added nothing to Plan and inconsistency could lead to confusion in tables intent.	This change does not reduce effectiveness of the Emergency Plan.
Section 5.2	Various	Wording "(see the KPB Emergency Telephone Directory)" and similar wording with different page numbers.	Removed each appearance of text	Paragraph at beginning of section states list of qualified individuals can be located in Emergency Telephone Directory.	This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 5.2	Various	Wording "(see Emergency Plan Appendix A, page 6)" and similar wording with different page numbers.	Removed each appearance of text	Paragraph at beginning of section states Appendix A contains additional information on positions. Placing exact page number in body of text may lead to errors.	This change does not reduce effectiveness of the Emergency Plan.
Section 5.2	Last	Wording: "correlates emergency organization job titles with the qualified individual who can fill those positions."	Changed individual to individuals	Current wording implies either: only one person is qualified for a position or one person fills multiple positions.	Change more clearly states intent. This change does not reduce effectiveness of the Emergency Plan.
Section 5.2.1	Next to Last	Current Wording: "Recommending protective actions to the state and local authorities responsible for off-site emergency measures is the joint responsibility of the Emergency Director and the Emergency Response Manager. Until the arrival of the Emergency Response Manager, the Emergency Director has this responsibility."	New wording: "Recommending protective actions to the state and local authorities responsible for off-site emergency measures is the responsibility of the Emergency Director until the arrival of the Emergency Response Manager. The responsibility is then transferred to the Emergency Response Manager in the EOF."	Current wording does not clearly state ERM takes over responsibility.	Change more clearly states one individual has the responsibility to make PARs.  This change does not reduce effectiveness of the Emergency Plan.
Section 5.2.1	Next to Last	"Upon arrival, the Emergency Response Manager will assume the responsibility of recommending protective actions."	Removed Sentence	Redundant to wording at beginning of paragraph.	This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 5.2.1	Last	Current Wording <i>"When an emergency has been terminated, the appropriate federal, state and local officials will be notified by the Emergency Director or Emergency Response Manager."</i>	<i>New Wording "When an emergency has been terminated, the appropriate federal, state and local officials will be notified by the Emergency Director or Emergency Response Manager if the EOF has been activated."</i>	Clarifies who makes notifications.	This change does not reduce effectiveness of the Emergency Plan.
Section 5.2.2 #1	1st	Current Wording <i>"Upon declaration of an emergency condition, the Shift Manager has the responsibility for taking measures to return the plant to a stable condition as dictated by the Plant's Emergency Operating Procedures".</i>	Removed the Words <i>"Emergency Operating"</i> from sentence.	In many cases an emergency can be declared that requires action not outlined in EOPs and may be guided by other plant procedures.	The Emergency Plan does not govern the use of EOPs.  This change does not reduce effectiveness of the Emergency Plan.
Section 5.2.2 #1	3 <sup>rd</sup>	Deleted last sentence.... <i>"Off-shift STAs are designated to fill the Severe Accident Management analysis team leader position."</i>	Removed sentence	Individuals qualified as team leaders fill the SAM team leader position. This may be STAs or other qualified personnel.	Individuals are still chosen based on experience and qualified to perform required duties. This change does not reduce effectiveness of the Emergency Plan.
Section 5.2.2 #6	1st	Current Wording: <i>"The minimum complement for a Fire Brigade consists of five ..."</i>	New Wording: <i>"The minimum onshift complement for a Fire Brigade consists of five ..."</i>	Adding word "onshift" clarifies where fire brigade team members are drawn from. This better aligns with original plan statement giving Fire Brigade a response time.	This change does not reduce effectiveness of the Emergency Plan.



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Section 5.2.2 #8	Last		Added: <i>"The Security force may also provide vehicles and drivers to support emergency activities"</i> .	Commitment from Rev 0 of plan.	This restates an item that was in the original Plan and reflects actual practices. This change does not reduce effectiveness of the Emergency Plan.
Section 5.2.3	h	Old Wording: <i>"Directing plant recovery operations and post-accident planning."</i>	New Wording: <i>"Directing extent of plant recovery operations and post-accident planning."</i>	Eliminates procedure conflicts with who is directing actual plant activities. Item from baseline review.	Wording more clearly outlines the fact that corporate officers will set agenda, which is actually carried out by the KNPP Organization. This change does not reduce effectiveness of the Emergency Plan.
Section 5.3.3.1	1 <sup>st</sup>	Old Wording: <i>".... NRC Operations Headquarters, Bethesda, Maryland,;"</i>	New Wording: <i>".... NRC Operations Headquarters, Rockville, Maryland,;"</i>	Proper location for NRC headquarters.	This change does not reduce effectiveness of the Emergency Plan.
Section 5 Figure 5-1			Changed position titles to reflect current KNPP organization.	Aligns plan with normal site organizations	This change does not reduce effectiveness of the Emergency Plan.
Section 6.2.3	Last	Old wording: <i>"These dose projections are used to determine whether protective actions need to be recommended."</i>	New wording: <i>"These dose projections are one of the tools used to determine whether protective actions need to be recommended."</i>	PARs are also made based on plant conditions and/or actual field team readings.	PARs are determined base on more than just dose projections. This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 6.2.3	Last	Old wording: <i>"The atmospheric dispersion factors, dose conversion factors, and isotopic concentrations or release rates will be used in these procedures."</i>	New wording: <i>"The atmospheric dispersion factors, dose conversion factors, and isotopic concentrations or release rates are calculated using methods described in NUREG 1741."</i>	Better describes actual process used.	RASCAL program is used to calculate plume dispersion and projected doses from a release. This change does not reduce effectiveness of the Emergency Plan.
Section 6.2.3	Last	Old wording: <i>"The atmospheric dispersion factors are selected according ... "</i>	New wording: <i>"The atmospheric dispersion factors are calculated according ... "</i>	Dispersion factors are calculated base on various inputs such as wind speed and stability class.	This change does not reduce effectiveness of the Emergency Plan.
Section 6.2.3	Last	Old wording: <i>"... response to NUREG 0578"</i>	New wording: <i>"... response to NUREG 1150"</i>	The current reference used by RASCAL for source term mixes	This change does not reduce effectiveness of the Emergency Plan.
Section 6.2.3	Last	Old wording: <i>"When specific mixtures are identified or when using predicted mixtures conversion factors given in Regulatory Guide 1.109, Revision 1, will be used to calculate dose projections."</i>	New wording: Removed sentence	Sentence not current with use of RASCAL to perform dose assessments.	RASCAL uses approved guidance to calculate offsite affects of a radiological release. This change does not reduce effectiveness of the Emergency Plan.
Section 6.2.5	1 <sup>st</sup>	Old Wording: <i>"A three-person analysis team comprised of a Shift Technical Advisor level individuals, a core hydraulics specialist and an individual with operations knowledge will perform this function."</i>	New Wording: <i>"A three-person analysis team comprised of a Team, a core hydraulics specialist and an individual with operations knowledge will perform this function."</i>	SAM Team Leaders drawn from larger pool than just STAs.	Individuals must be trained and qualified to fill SAM positions. If an individual moves to a new management level job at the site they can retain SAM quals. This change does not reduce effectiveness of the Emergency Plan.

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Section 6.4.1.3		Old Wording: <i>"After initial staffing of the emergency response facilities, authorization for non-emergency response organization personnel or non-plant badged (P-Badge) ... "</i>	New Wording: <i>"After initial staffing of the emergency response facilities, authorization for non-emergency response organization personnel or non-plant badged ... "</i>	P-Badges are no longer used	P-Badges were previously used for visitors, non-plant badged sufficiently describes these individuals. This change does not reduce effectiveness of the Emergency Plan.
Section 6.7.4	2 <sup>nd</sup>	Old Wording: <i>"All hospital equipment and supplies utilized in treating a contaminated patient shall be surveyed and decontaminated before being released in accordance with procedure HP-01.020, "Contamination Control of the Aurora Medical Center."</i>	New Wording: <i>"Hospital equipment and supplies utilized in treating a contaminated patient shall be surveyed and decontaminated before being released in accordance with Health Physics procedures."</i>	Removed word "All" – only supplies and equipment used in the initial phases of treatment which may be contaminated will be surveyed.  Removed reference to specific HP Procedure which could cause unidentified reference errors if HP procedure numbers or titles change.	Change does not eliminate or alter any commitment to survey potentially contaminated equipment or supplies or the need for a HP Procedure. This change does not reduce effectiveness of the Emergency Plan.
Section 6.8.3	1 <sup>st</sup> and 3 <sup>rd</sup>	Old wording: referred to mobile sirens	New wording: "Local Law Enforcement Agency (LLEA) mobile public address system"	More accurately describes notification system.	This change does not reduce effectiveness of the Emergency Plan.
Section 7.0	Figure 7-1		Added circle to indicate a fax machine is in the Control Room	Fax Machine in CR	Added communications system. This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 7.2	# 6	Old Wording: "A radio base station ..."	New Wording: "A handheld radio .." Also Base Station now referred to as portable console stations and reference to use of PCS phones added	Base Station is no longer in the Control Room, they now use PCS phones and updated hand held radios.	Reflects updated radio system and use of Plant Cell Phones. This is an enhancement. This change does not reduce effectiveness of the Emergency Plan.
Section 7.2	# 6	Old Wording: "... , 24 hours a day from the Control Room to the Kewaunee County Sheriff's Department"	New Wording: "... , 24 hours a day from the KNPP to the Kewaunee County Sheriff's Department"	Two Radios available in Security's CAS and SAS	Reflects actual location of radios. This change does not reduce effectiveness of the Emergency Plan.
Section 7.3.1.1	1 <sup>st</sup>		Added Paragraph "The KNPP Meteorological measurement system has been designed to address the criteria provided in NUREG 0654, Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants," as described in the responses for item III.A.2.2 of NUREG 0737."	Clarification of guidance used for the KNPP Meteorological measurement system.  See T-Track Item OTH005464	Added information. This change does not reduce effectiveness of the Emergency Plan.
Section 8.1	1 <sup>st</sup>	Old Wording: "The Kewaunee/Point Beach (KPB) Emergency Preparedness Manager"	New Wording: "The Kewaunee Nuclear Plant (KNPP) Emergency Preparedness Manager"	Plants now have separated EP Managers.	This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 8.1		Old Wording: <i>"The Training Supervisor Radiation Protection (RP) / ....."</i>	Removed all reference to training supervisors – Responsibilities transferred to EP Manager and other KNPP Directors, Managers and/or Supervisors	EP leads in all Emergency Plan Training and is supported by all other managers.	This is a reassignment of training duties; actual training is still conducted as outlined in other sections of the plan. This change does not reduce effectiveness of the Emergency Plan.
Section 8.1	Item 2	None	Added Item: <i>"Maintain knowledge of state and local emergency plans and interfaces with KNPP Plan."</i>	Item was previously listed under Reg. Affairs Manager	The interface between Emergency Plans is the responsibility of the EP Manager. This change does not reduce effectiveness of the Emergency Plan.
Section 8.1	Item 1 under Reg. Affairs Manager	Old Wording: <i>"Maintaining current knowledge of changes in federal regulations, state and local emergency plans, and other guidance that impact emergency planning activities."</i>	New Wording: <i>"Maintaining current knowledge of changes in federal regulations and other guidance that impact emergency planning activities."</i>	Item moved to EP Manager	The interface between Emergency Plans is the responsibility of the EP Manager. This change does not reduce effectiveness of the Emergency Plan.
Section 8.1		Old Wording: <i>"The Supervisors, Managers, and Superintendents reporting ..."</i>	New Wording: <i>"The Directors, Managers and Supervisors reporting ..."</i>	No longer any Superintendents identified in KNPP organization.	This change does not reduce effectiveness of the Emergency Plan.
Section 8.1		Old Wording: <i>"Assist the Training Supervisor RP / Chem / EP to coordinate and provide emergency preparedness training on EPIPs"</i>	Moved to item a under 3. and reworded to: <i>"Assist in coordinating and providing emergency preparedness training on EPIPs."</i>	The EP Manager is now responsible for EP training.	All management personnel are still responsible in ensuring EP Training, new wording more accurately describes current policy. This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 8.1			Added item #3 under Directors, Mangers and Supervisors <i>"Ensuring the appropriate subject matter experts are provided to review and assist as needed in Emergency Plan Training."</i>	More clearly describes development and conduct of training.	This change does not reduce effectiveness of the Emergency Plan.
Section 8.1	Last		Added wording: <i>"In addition to the annual Emergency Plan Audit the Nuclear Oversight Group should conduct surveillances of drills, exercises and other aspects of the E-Plan training program."</i>	NRC Commitment 89-129	Added oversight requirement.  This change does not reduce effectiveness of the Emergency Plan.
Section 8.2.1	2 <sup>nd</sup>	Old Wording: <i>".... escort during the initial stages of a declared emergency shall be provided."</i>	New Wording: <i>".... escort during a declared emergency shall be provided."</i>	Escort training for a declared emergency not just the initial stages.	This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 8.2.2	1 <sup>st</sup>		<p>Added new paragraph: <i>"Federally prescribed exercises are conducted at the station in order to test the adequacy of timing and content of implementing procedures and methods; to test emergency equipment and communication networks; and to ensure that emergency personnel are familiar with their duties. These exercises will be evaluated by participants, KNPP assigned evaluators and possibly Federal Evaluators. The ability of KNPP personnel to self evaluate weaknesses and identify areas for improvement is key to the successful conduct of exercises."</i></p>	<p>NRC Commitment 92-303: The emergency plan will be revised to define the self critique process.</p>	<p>Added description of evaluation process. This change does not reduce effectiveness of the Emergency Plan.</p>
Section 8.2.2	2 <sup>nd</sup>		<p>Added new paragraph: <i>"Drills are conducted for the purpose of testing, developing, and maintaining the proficiency of emergency responders."</i></p>	<p>The wording in rev 26 of the plan did not differentiate between drills and exercises. This paragraph along with the new 1<sup>st</sup> helps clarify differences between two events.</p>	<p>Change more clearly describes purpose of drills. This change does not reduce effectiveness of the Emergency Plan.</p>

Plan Section	Paragraph	Old Wording or description of Intent	New Wording or description of Intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 8.2.2 2d		<p>Old Wording: <i><u>"Radiological Monitoring and Health Physics Drills - Radiological Monitoring and Health Physics drills shall be conducted semi-annually. Both of these drills shall involve a response to, collection of, and analysis of simulated radiologically elevated airborne and ground contamination samples. Direct radiation measurements shall also be taken in the environment."</u></i></p>	<p>Replace with New d: <i><u>"Radiological Monitoring Drills Environs and radiological monitoring drills (onsite and offsite) are conducted annually. These drills include collection and analysis of all sample media (such as, water, vegetation, soil, and air), and provisions for communications and record keeping."</u></i>                      And New e: <i><u>"Health Physics Drills Health Physics Drills involving a response to, and analysis of, simulated airborne and liquid samples and direct radiation measurements within the plant are conducted semi-annually."</u></i></p>	<p>NRC Commitment 89-128 is to clarify frequencies of Annual Radiological Drills and Semi-annual Health Physics Drills.</p> <p>New wording clarifies that these are separate events with HP Drills involving elevated reading within the plant and Radiological Monitoring Drills involving on and offsite areas outside the actual plant.</p>	<p>Change more clearly matches NUREG 0654 description of required drills. This change does not reduce effectiveness of the Emergency Plan.</p>
Section 8.2.2	2h		<p>Added new item: <i><u>"Augmentation Drills: Augmentation drills serve to demonstrate the capability of the process to augment the on-shift staff with a TSC, OSF and EOF in a short period after declaration of an emergency. At least once per drill cycle (every 6 years), an off-hours unannounced activation of the ERO Notification System with actual response to the emergency facilities is conducted by the plant."</u></i></p>	<p>NRC Commitment 84-004 Revise E-Plan to describe Shift Augmentation Drills including the frequency.</p>	<p>Added requirement reflecting regulatory guidance. This change does not reduce effectiveness of the Emergency Plan.</p>



Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Section 8.3.1			Added New Item 8: <i>"Evaluation of the adequacy of interfaces with State and Local Governments in preparations for and response to an emergency at KNPP."</i>	Addresses Commitment 85-225, made to the NRC 10/21/85 and NRC Commitment 91-100	This change does not reduce effectiveness of the Emergency Plan.
Section 9.2	1 <sup>st</sup>	Old wording: <i>"Wisconsin Public Service Corporation is responsible for performing all plant recovery measures to restore the Kewaunee Nuclear Power Plant to a normal operating condition."</i>	New wording: <i>"Wisconsin Public Service Corporation and NMC are responsible for plant recovery measures to restore the Kewaunee Nuclear Power Plant to a normal operating condition or permanent safe shutdown."</i>	WPSC and NMC are responsible for plant recovery.  After an accident the plant may not be returned to normal operations it may be permanently shutdown.	Wording accurately describes actual recovery responsibilities.  This change does not reduce effectiveness of the Emergency Plan.
Appendix A	Page A-2  1 <sup>st</sup> line	Old Wording <i>"Reports to: KNP Site Vice-President"</i>	Removed wording	When the Emergency Plan is Implemented one individual is responsible for KNPP response. With overall authority to bring company resources to bear for the protection of the public and site personnel.	This change does not reduce effectiveness of the Emergency Plan.
Appendix A	Page A-2		Added Item 10: <i>"Reviews and approves news statements prior to being released to the media."</i>	More accurately reflects New Statement process and ERM duties.	This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of Intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Appendix A	Page A-2 1 <sup>st</sup> line	Old Wording: <i>“Coordinates: Operation of the Emergency Operations Facility”</i>	New Wording: <i>“Coordinates: Overall KNPP and NMC Emergency Response to the emergency event.”</i>	More clearly states position responsibilities and authorities. Agrees with item 1. - Listed under responsibilities.	This change does not reduce effectiveness of the Emergency Plan.
Appendix A	Page A-3 Item 1 JPIC Manager	Old Wording: <i>“Serves as the liaison to the news media during an emergency. Approves news statements and announcements.  Presides at formal news briefings.”</i>	New Wording: <i>“Serves as the liaison to the news media during an emergency. Reviews news statements and announcements. Presides at formal news briefings.”</i>	JPIC Manager will review News Statements ERM will “approve” them	This change does not reduce effectiveness of the Emergency Plan.
Appendix A	Page A-4 Item 6 Administrative/ Logistics Director	Old Wording: <i>“Arranges for telephone service and provides special radio equipment such as mobile units and radio pagers if required.”</i>	New Wording: <i>“Arranges for telephone service and other communications equipment such as mobile units, cell phones and radio pagers if required.”</i>	Update terminology to be consistent with equipment used in today’s environment.	This change does not reduce effectiveness of the Emergency Plan.
Appendix A	Page A-6 ED		Added Item # 10: <i>“Reviews and approves News Statements prior to release to the media (prior to the Emergency Response Manager assuming this responsibility).”</i>	Responsibility prior to ERM being in place	Change more clearly state responsibilities of ED. This change does not reduce effectiveness of the Emergency Plan.
Appendix A	Page A-10 SPD		Added Item #5: <i>“Provide direction to the Site Security Force.”</i>	Clearly states responsibility of Site Protection Director to direct security activities during event.	This change does not reduce effectiveness of the Emergency Plan.

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Appendix A	Page A-12 Spokesperson	Old Wording: <i>"Formulation and approval of news statements."</i>	New Wording: <i>"Formulation and review of news statements."</i>	ED or ERM approve news statements.	This change does not reduce effectiveness of the Emergency Plan.
Appendix C			Map changed to reflect changes made to site access during Security Upgrades	Old Evacuation Routes not Valid after Security Upgrades	This change does not reduce effectiveness of the Emergency Plan.
Appendix D	All	Contained dates for letters of agreement	Removed Dates	Letters of agreement are updated at different times of the year (or in some cases every 2 years)	Since dates on letters change at several different times actual dates can only be verified by viewing actual letters. Removing dates in this appendix does not alter any commitment to have current Contracts or Letters of agreement. This change does not reduce effectiveness of the Emergency Plan.
Appendix D	I.A	Agreement between KNPP and NRC was dated	Asterisks placed in date written column with <i>"Perpetual letter established"</i> placed at bottom of table.	Perpetual agreement established	This change does not reduce effectiveness of the Emergency Plan.
Appendix D	IV.B	Old Wording: <i>"City of Kewaunee Fire Department Contract (Annual Renewal)"</i>	New Wording: <i>"City of Kewaunee Fire Department Contract (24 month contract)"</i>	Contract with Fire Department is now for 24 months	This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Appendix D	V.H	Old Wording: "WPSC Kewaunee District"	New Wording: "Town of Carlton"	Change in designated site relocation area.	WPSC site not used in any EIPs, Carlton Hall now designated to be used as ERO staging area in needed. This change does not reduce effectiveness of the Emergency Plan.
Appendix D	V.I		Added: "Nuclear Power Plant Operating Services Agreement (NPPOSA) between WPSC and NMC"	Perpetual agreement for use of WPSC facilities during emergencies and drills.	This change does not reduce effectiveness of the Emergency Plan.
Appendix F	Page 2		Added "Technical Requirements Manual" to TSC list of reference materials	The Technical Requirements Manual is a new document related to the T.S.	Adding new resource to TSC. This change does not reduce effectiveness of the Emergency Plan.
Appendix F	Page 4		Added "Self-Contained Breathing Units" to the Health Physics inventory.	Listing of SCBAs reflects current facility inventory as listed in HP inventory procedure.	Identifying resource available to ERO. This change does not reduce effectiveness of the Emergency Plan.
Appendix F	Page 8	Old Wording "See Security Procedure, SCP 30.2"	Old Wording "See Security Procedure, SIP 30.02"	Correct typo in current rev of plan	This change does not reduce effectiveness of the Emergency Plan.

Plan Section	Paragraph	Old Wording or description of intent	New Wording or description of intent	Reason for Change / Justification	Change Assessment / Effectiveness Evaluation
Appendix H Section I	Last		<p>Added Wording: <i>"The ETE is considered an addendum to this Emergency Plan maintained under a separate cover. The ETE is updated approximately every 10 years as census data is updated."</i></p>	<p>Old plan contained many details removed from ETE and placed in Appendix H. As the Methodologies and data used in the ETE are revise after each census it is more appropriate to treat the entire ETE as part of the plan rather than transferring only part of information.</p>	<p>The ETE is a stand-alone document which identifies key data and methodologies used for planning evacuations. By making it part of the Plan all information it contains is available This change does not reduce effectiveness of the Emergency Plan.</p>
Appendix H			<p>Updated EPZ map and ETE tables.</p>	<p>New data from 2000 census</p>	<p>A new ETE was completed based on 2000 census and any changes in roads which occurred since last ETE study  This change does not reduce effectiveness of the Emergency Plan.</p>

**ENCLOSURE 2**

**KEWAUNEE NUCLEAR POWER PLANT EMERGENCY PLAN**

**159 pages follow**

# DOCUMENT TRANSMITTAL

FROM: DIANE FENCL - KNPP

TRANSMITTAL DATE 12-23-2004

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Index dated 12-23-2004.

**Remove the entire Emergency Plan and replace it with the attached new Revision 27.**

Return a signed and dated copy of this transmittal letter, within 10 days of transmittal date, to the sender.  
If you have any questions or comments, please contact Jerrie Coleman at ext. 8719.

Signature \_\_\_\_\_

Date \_\_\_\_\_

# EMERGENCY PLAN

## Table of Contents

Section	Title	Revision	Date
	Policy Statement	27	12/23/04
1.0	Introduction 1.1 Fundamental Objectives of the Emergency Plan 1.2 Responsibilities with Respect to Maintaining Emergency Preparedness 1.3 Definition of Terms	27	12/23/04
2.0	Scope and Applicability 2.1 Facility Description 2.2 Emergency Plan Interrelationships <ul style="list-style-type: none"><li>• Emergency Plan Implementing Procedures and Supporting Plant Procedures</li><li>• Interfaces with Governmental Agencies</li><li>• Local Services Support</li><li>• Contractors and Other Utilities</li></ul>	27	12/23/04
3.0	Summary of the Emergency Plan	27	12/23/04
4.0	Emergency Conditions 4.1 Emergency Classification System <ul style="list-style-type: none"><li>• Unusual Event</li><li>• Alert</li><li>• Site Area Emergency</li><li>• General Emergency</li></ul> 4.2 Spectrum of Postulated Accidents <ul style="list-style-type: none"><li>• Accident Detection Instrumentation</li><li>• Classification of Postulated Accidents</li></ul>	27	12/23/04
5.0	Organizational Control of Emergencies 5.1 Normal Nuclear Organization <ul style="list-style-type: none"><li>• Plant Operating Shift Organization</li></ul>	27	12/23/04



# EMERGENCY PLAN

## Table of Contents

Section	Title	Revision	Date
	<p><b>5.2 Emergency Response Organization</b></p> <ul style="list-style-type: none"> <li>• Direction and Coordination</li> <li>• Plant Staff Assignments                             <ul style="list-style-type: none"> <li>▪ Plant Systems Operations</li> <li>▪ Notification/Communication</li> <li>▪ Radiological Accident Assessment</li> <li>▪ Damage Control and Repair</li> <li>▪ In-Plant Protective Actions and Decontamination</li> <li>▪ Fire Fighting</li> <li>▪ Rescue and First Aid</li> <li>▪ Site Access Control and Personnel Accountability</li> </ul> </li> <li>• Headquarters Support                             <ul style="list-style-type: none"> <li>▪ Technical and Administrative</li> <li>▪ Public Information</li> </ul> </li> </ul> <p><b>5.3 Augmentation of the Emergency Response Organization</b></p> <ul style="list-style-type: none"> <li>• Private and Area Support Services</li> <li>• State and Local Government Agencies</li> <li>• Federal Government</li> </ul>		
6.0	<p><b>Emergency Measures</b></p> <p><b>6.1 Activation of Emergency Response Organization</b></p> <p><b>6.2 Assessment Actions</b></p> <ul style="list-style-type: none"> <li>• In-Plant Monitoring</li> <li>• Source Term Evaluation</li> <li>• Dose Assessment</li> <li>• Field Monitoring</li> <li>• Severe Accident Management</li> </ul> <p><b>6.3 Corrective Actions</b></p>	27	12/23/04

# EMERGENCY PLAN

## Table of Contents

Section	Title	Revision	Date
	<p><b>6.4 Protective Actions</b></p> <ul style="list-style-type: none"><li>• Site<ul style="list-style-type: none"><li>▪ Notification and Response Times</li><li>▪ Personnel Accountability</li><li>▪ Site Access Control</li><li>▪ Evacuation</li></ul></li><li>• Off-Site</li></ul> <p><b>6.5 Use of Protective Equipment and Supplies</b></p> <ul style="list-style-type: none"><li>• Individual Respiratory Protection</li><li>• Protective Clothing</li><li>• Use of Radioprotective Drugs</li></ul> <p><b>6.6 Contamination Control Measures</b></p> <ul style="list-style-type: none"><li>• Site</li><li>• Off-Site</li></ul> <p><b>6.7 Aid to Affected Personnel</b></p> <ul style="list-style-type: none"><li>• Radiological Exposure Control<ul style="list-style-type: none"><li>▪ Emergency Exposure Criteria for Personnel</li><li>▪ Emergency Exposure Criteria for Airborne Concentration</li><li>▪ Exposure Records and Control</li></ul></li><li>• Decontamination</li><li>• Medical Transportation</li><li>• Medical Treatment</li></ul> <p><b>6.8 Methods of Notification</b></p> <ul style="list-style-type: none"><li>• Nuclear Regulatory Commission (NRC) Notification</li><li>• Notifications of Off-Site Agencies</li><li>• Notification of General Public</li></ul>		

# EMERGENCY PLAN

## Table of Contents

Section	Title	Revision	Date
7.0	Emergency Equipment and Facilities	27	12/23/04
	7.1 Emergency Response Facilities		
	<ul style="list-style-type: none"><li>• Control Room</li><li>• Technical Support Center</li><li>• Radiological Analysis Facility and Radiation Protection Office</li><li>• Operational Support Facility</li><li>• Emergency Operations Facility</li><li>• Joint Public Information Center</li><li>• Site Boundary Facility</li></ul>		
	7.2 Communication Systems		
	7.3 Assessment Facilities and Equipment		
	<ul style="list-style-type: none"><li>• Site Assessment Facilities and Equipment<ul style="list-style-type: none"><li>▪ Geophysical Phenomena Monitors</li><li>▪ Radiation Monitoring System</li><li>▪ Portable Radiation Monitors</li><li>▪ Laboratory Facilities</li><li>▪ High Radiation Sample System</li><li>▪ Fire Detection and Suppression Equipment</li></ul></li><li>• Off-Site Assessment Facilities and Equipment<ul style="list-style-type: none"><li>▪ Geophysical Phenomena Monitors</li><li>▪ Environmental Radiological Monitoring and Sampling</li><li>▪ Alternate Laboratory Facilities and Equipment</li></ul></li></ul>		
	7.4 Protective Facilities and Equipment		
	7.5 First Aid and Medical Facilities		
	7.6 Damage Control Equipment		

# EMERGENCY PLAN

## Table of Contents

Section	Title	Revision	Date
8.0	Maintaining Emergency Preparedness 8.1 Emergency Preparedness Responsibilities 8.2 Emergency Response Personnel Training <ul style="list-style-type: none"><li>• Emergency Preparedness Training Program<ul style="list-style-type: none"><li>▪ GAT (General Access Training)</li><li>▪ Module 1 - Initial Training</li><li>▪ Module 2 - Continuing Training</li><li>▪ Module 3 - Specialized Training</li><li>▪ Off-Site Agency Training</li></ul></li><li>• Drills and Exercises<ul style="list-style-type: none"><li>▪ Exercises</li><li>▪ Drills</li></ul></li></ul> 8.3 Review and Updating of the Emergency Plan and Emergency Plan Implementing Procedures <ul style="list-style-type: none"><li>• Emergency Plan and Emergency Plan Implementing Procedures Review</li><li>• Review and Updating Written Agreements</li></ul> 8.4 Maintenance and Inventory of Emergency Equipment and Supplies	27	12/23/04
9.0	Plant Recovery 9.1 Plant Recovery Organization 9.2 Plant Recovery Operations 9.3 Plant Recovery Termination	27	12/23/04

# EMERGENCY PLAN

## Table of Contents

Section	Title	Revision	Date
Appx A	Emergency Organizational Structure Functions and Responsibilities	27	12/23/04
Appx B	Monitor Indication for Emergency Class Determination	27	12/23/04
Appx C	Maps – Index	27	12/23/04
Appx D	Index of Letters of Agreement	27	12/23/04
Appx E	Radiological Emergency Response Plans	27	12/23/04
Appx F	Emergency Equipment, Supplies and Reference Materials - Index	27	12/23/04
Appx G	List of EIPs and Cross-References to the Emergency Plan	27	12/23/04
Appx H	Evacuation Time Estimates	27	12/23/04
Appx I	Cross-Reference Between NUREG 0654 and the Emergency Plan	27	12/23/04

# EMERGENCY PLAN

## Table of Contents

### List of Tables

Section	Table	Title	Revision	Date
4	4-1	Emergency Action Level Charts	27	12/23/04
	4-2	Classification of Postulated Accidents	27	12/23/04
5	5-1	Correlation Between Normal and Emergency Organization Titles	Deleted	03/30/95
6	6-1	Recommended Protective Actions to Reduce Whole Body and Thyroid Dose from Exposure to a Gaseous Plume for the General Population	27	12/23/04
Appx H	H-3	Evacuation Table KNPP/EPZ	27	12/23/04

# EMERGENCY PLAN

## Table of Contents

### List of Figures

Section	Figure	Title	Revision	Date
2	2-1	Interrelationship of Overall Emergency Response Organization	27	12/23/04
5	5-1.1	WPSC Nuclear Organization	Deleted	03/06/00
	5-1.2	WPSC Nuclear Organization	Deleted	03/06/00
	5-1.3	WPSC Nuclear Organization	Deleted	03/06/00
	5-1.4	WPSC Nuclear Organization	Deleted	03/06/00
	5-1.5	WPSC Nuclear Organization	Deleted	03/06/00
	5-1	Kewaunee Nuclear Power Plant Organization	27	12/23/04
	5-2	Organization of Normal Operating Shift Crew	27	12/23/04
	5-3	Emergency Organizational Structure	27	12/23/04
6	6-1	Plant and Corporate Notification	27	12/23/04
	6-2	Initial Off-Site Notification	27	12/23/04
7	7-1	Site Communications Network	27	12/23/04
	7-2	Off-Site Communications Network	27	12/23/04
Appx C	C-2	KNP Site Map & Evacuation Routes	27	12/23/04
	C-3	Kewaunee Nuclear Site Map Including Site Boundary	27	12/23/04
	C-4	Population Distribution by Evacuation Areas	27	12/23/04
	C-6	Location of JPIC and Media Briefing Center Map	27	12/23/04
	C-7	Deleted	20	03/18/98
Appx H	H-4	Kewaunee County Congregate Care Locations and Travel Routes	27	12/23/04
	H-5	Manitowoc County Congregate Care Locations and Travel Routes	27	12/23/04

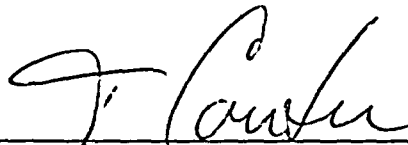
## POLICY STATEMENT - EMERGENCY PLAN

The Nuclear Management Company (NMC) is fully committed to the establishment and maintenance of an effective emergency preparedness program. This program will not only encompass the Emergency Plan itself, but also the procedures, facilities, equipment and training needed to accomplish the standards set forth in the Emergency Plan. All levels of management have a strong commitment to emergency preparedness, and each employee must take responsibility for actions necessary to implement a successful emergency preparedness program.

The Nuclear Management Company (NMC) recognizes the fact that at times there will be differences between portions of this Emergency Plan and the Emergency Plan Implementing Procedures (EPIPs). The Emergency Plan is the guiding document, to which the procedures are written, and as such it describes the organization, emergency measures, training, etc., of Kewaunee Nuclear Power Plant (KNPP) emergency preparedness program. The EPIPs provide details on how a particular situation will be addressed, specific assignment of personnel, placement of equipment, etc.

As long as the differences between specific implementing procedures meet or exceed the intent of program commitments in the plan, the differences will be allowed until the next scheduled plan review/revision.

Approved By



12/17/04

T. Coutu, Kewaunee Nuclear Plant (KNPP), Site Vice-President / Date



## SECTION 1

### 1.0 INTRODUCTION

The Kewaunee Nuclear Power Plant (KNPP) Emergency Plan has been developed to ensure an adequate level of preparedness and an effective response to emergencies at the Kewaunee Nuclear Power Plant. The plan applies to emergency situations at the Kewaunee Nuclear Power Plant, which involve actual or potential concerns for the safety of plant personnel or the general public. The concepts presented in this plan address the regulations stipulated in 10 CFR Part 50.47, "Emergency Plans" and 10CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities" and are consistent with the guidelines established in NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." Additional NRC criteria based on lessons learned at Three Mile Island, NUREGs and other emergency planning guidance have been used in preparing this plan.

### 1.1 FUNDAMENTAL OBJECTIVES OF THE EMERGENCY PLAN

The Emergency Plan outlines the activities and responsibilities of the Kewaunee Nuclear Power Plant (KNPP), The Nuclear Management Company (NMC) supported by Wisconsin Public Service Corporation (WPSC) and off-site support organizations in the event of an emergency at the Kewaunee Nuclear Power Plant. The primary objectives of the plan are to:

1. Outline the most effective course of action that shall be taken to safeguard the health and safety of the public and plant personnel in the event of an emergency.
2. Establish an emergency response organization with pre-assigned responsibilities in order to rapidly respond to an emergency condition or radiological incident and to limit the consequences of the incident.
3. Identify protective and corrective actions that could be used to mitigate the consequences of an emergency.
4. Establish organizational and individual responsibilities for the control of on-site and off-site response activities including notification and coordination of off-site supporting organizations as required.
5. Establish procedure requirements to identify and classify emergency conditions.
6. Identify the appropriate responses for each emergency classification.
7. Provide guidelines for recommending protective actions for the general public and for implementing any protective actions deemed appropriate to protect plant personnel.

8. Provide a basis for the training of all members of the emergency response organization and the appropriate off-site local emergency response personnel.
9. Describe the emergency facilities and communication systems available and their use by emergency response personnel and organizations.
10. Identify the federal, state and local authorities that are available for emergency assistance and the specific supporting services each will provide.

In addition to the Emergency Plan, detailed Emergency Plan Implementing Procedures (EPIPs) and a Nuclear Emergency Public Information Plan and Procedures have been developed and will be used at Kewaunee Nuclear Power Plant. Administrative Directives (NAD) and Emergency Plan Maintenance Procedures (EPMP) have been developed for maintaining the emergency preparedness program and are available in the plant library.

A cross-reference between the Emergency Plan sections and corresponding EPIPs appears in Appendix G of this Emergency Plan.

## **1.2 RESPONSIBILITIES WITH RESPECT TO MAINTAINING EMERGENCY PREPAREDNESS**

As the licensed operator of a nuclear power reactor under 10CFR Part 50, the Nuclear Management Company (NMC) has the primary responsibility for the planning and implementation of emergency measures within the site boundaries of the Kewaunee Nuclear Power Plant. The Kewaunee Nuclear Plant Site Vice-President has the overall authority and responsibility for radiological emergency response planning, to assure that an adequate level of emergency preparedness is established and maintained by the NMC in support of the Kewaunee Nuclear Power Plant. The KNPP Business Support Manager, supported by the KNPP Emergency Preparedness Manager and Emergency Preparedness Staff, are responsible for assuring that adequate nuclear power production support is provided to the emergency preparedness program.

The Nuclear Management Company (NMC) recognizes that advance agreements with federal, state, and local organizations are necessary to obtain additional emergency support services and equipment. The agencies with which the NMC has agreements are listed in Appendix D of this plan and the letters of agreement are kept on file by the NMC. The Nuclear Management Company coordinates its efforts with federal, state, and local organizations in planning emergency response activities and operations.

### 1.3 DEFINITION OF TERMS

This section provides definitions of terms that are used in the Kewaunee Nuclear Power Plant Emergency Plan. Terms capitalized in the text of the definitions indicate that they are defined elsewhere in this section.

Accountability - The act of taking roll call of all personnel assembled in emergency duty locations or designated ASSEMBLY AREAS within the PROTECTED AREA of KNPP for the purpose of identifying any missing persons.

Assembly - The act of gathering personnel in designated areas (to facilitate; performance of ACCOUNTABILITY, determining the availability of personnel resources, and conduct of personnel evacuation, if warranted.)

Assembly Area - Designated on-site locations to which non-emergency response organization personnel and visitors report upon sounding of the plant emergency alarm.

Assessment Actions - Those actions taken during or after an INCIDENT to obtain and process information necessary to make decisions to implement specific emergency measures.

Clean Areas - All areas in the plant within the PROTECTED AREA, which are not, designated as RADIOLOGICAL CONTROLLED AREAS. Refer to the Kewaunee Nuclear Power Plant General Access Training Manual for details on radiation and contamination levels.

Control Room - The Control Room contains the controls, instruments, and communications equipment necessary for operation of the plant under both normal and emergency conditions. It is operated under the direction of the Shift Manager and serves as the primary location where conditions are monitored and CORRECTIVE ACTIONS for the plant are taken to mitigate any abnormal occurrence. It is the location where initial assessment and classification of an INCIDENT takes place and reactor conditions are monitored.

Corrective Actions - Those emergency measures taken to mitigate or terminate an emergency situation at or near the source of the problem in order to prevent an uncontrolled release of radioactive material or to reduce the magnitude of a release (e.g., equipment shutdown, fire fighting, equipment repair, and damage control).

Design Basis Accident - A hypothetical accident assuming a fission product release from the core based upon a major accident at the plant. The hazards that could potentially occur from this postulated accident would not exceed those resulting from any credible accident described in the Updated Safety Analysis Report.

Emergency - The situation or condition which may result in damage to property or risk to the health and safety of the general public or plant personnel.

Emergency Action Levels (EALs) - EALs are threshold values or conditions for initiating specific emergency measures such as the declaration of a particular class of emergency, the implementation of a notification procedure or the recommendation or implementation of a particular PROTECTIVE ACTION. EALs are comprised of predetermined specific plant conditions, environmental conditions, and radiological dose rates or projected doses.

Emergency Classification System - A classification system that categorizes INCIDENTS in order of increasing severity and outlines a recommended course of action. For the purposes of this plan, four emergency classifications are defined. They are listed below in order of decreasing severity:

- General Emergency (GE)
- Site Area Emergency (SAE)
- Alert
- Unusual Event (UE)

These classifications are further defined in Section 4 of this EMERGENCY PLAN.

KNPP Emergency Duty Location - The emergency facilities by the Kewaunee Nuclear Emergency Plan to which EMERGENCY RESPONSE ORGANIZATION personnel report in the event of a declared emergency at KNPP.

Emergency Operations Facility (EOF) - A designated area in the WPSC Green Bay Division Office Building, located in the city of Green Bay, Wisconsin. The facility is used for evaluating off-site accident conditions and recommending PROTECTIVE ACTIONS for emergency situations that may affect the general public. The operation of this facility is under the direction of the Emergency Response Manager (ERMs). The facility serves as the center for the coordination of emergency activities between the plant and federal, state, and local authorities.

Emergency Plan - This document provides guidance for dealing with both ON-SITE and off-site consequences of emergency conditions at the Kewaunee Nuclear Power Plant.

Emergency Plan Implementing Procedures (EPIP) - Specific procedures describing actions needed to implement this EMERGENCY PLAN.

Emergency Plan Maintenance Procedures (EPMP) - Specific procedures describing the methods established to maintain and monitor the emergency preparedness program.

Emergency Planning Zone (EPZ) - An area around a nuclear power plant for which emergency planning is conducted (in accordance with NUREG-0654/FEMA-REP-1, Revision 1). For the PLUME EXPOSURE PATHWAY, the EPZ has a corresponding radius of approximately 10 miles; and for the INGESTION EXPOSURE PATHWAY, the EPZ has a corresponding radius of approximately 50 miles.

Emergency Response Organization (ERO) - Individuals who have been assigned an emergency response position within the KNPP Emergency Preparedness Program.

GAT Radiation Protection Training Manual - Is a Kewaunee Nuclear Power Plant training manual covering both generic and plant-specific radiation protection information.

Incident - An unforeseen and/or unintentional event and its consequences that may result in an EMERGENCY.

Ingestion Exposure Pathway - The EPZ within an approximate 50-mile radius from the plant in which the principal exposure is from the ingestion of contaminated water or foods such as milk, livestock feed, or vegetables. Depending on the magnitude and nature of the radiological emergency, the duration of potential exposure may range from hours to years.

Joint Public Information Center (JPIC) - This center is located in the WPSC Green Bay Division Office building, in the city of Green Bay, Wisconsin. The facility operates under the direction of the JPIC management team. The NMC (WPSC) representative to this team is the JPIC Manager. The JPIC serves as a single-point contact for disseminating information from WPSC, county, state and federal agencies to news media personnel and the general public.

Low Population Zone - An area approximately two miles in radius surrounding the Kewaunee Nuclear Power Plant in which the total residential population and population density are such that appropriate PROTECTIVE ACTIONS can be readily taken in the event of a serious radiological emergency.

Off-Site - The areas beyond the SITE BOUNDARY of the Kewaunee Nuclear Power Plant.

Operational Support Facility (OSF) - Is located in the southeast section of the TECHNICAL SUPPORT CENTER. The facility operates under the direction of the Support Activities Director (SAD) and serves as an assembly, planning, and staging area for operational and maintenance support personnel.

Personnel Monitoring Equipment - Radiation exposure measuring devices designed to be worn or carried by an individual for the purpose of measuring the radiation dose received (i.e., pocket dosimeters, and/or TLDs).

Plume Exposure Pathway - The EPZ within an approximate 10-mile radius from the plant in which a radioactive cloud (plume) can expose the POPULATION-AT-RISK and/or plant personnel to radiation or contamination. The duration of potential exposure could range from hours to days. The principal exposure sources for this pathway are:

- a. Whole body external exposure to Gamma radiation from the radioactive plume and from deposited material.
- b. Inhalation exposure from the passing radioactive plume.

Population-at-Risk - Those persons, including plant personnel, for whom PROTECTIVE ACTIONS are being or would be taken.

Priority Entry - Means an entry into the plant under unknown conditions to perform a task considered to be vitally important for swiftly mitigating actual or potential radiological consequences. A priority entry allows bypassing normal administrative procedures provided that entrants are briefed on known conditions and are continuously accompanied by a Radiation Technologist qualified to provide the same level of protection normally afforded by a Radiation Work Permit. Administrative documents shall be completed post-entry.

Projected Dose - An estimate of the radiation dose, which affected individuals could potentially receive if PROTECTIVE ACTIONS are not taken.

Protected Area - That area within the perimeter of the Kewaunee Nuclear Power Plant security fence.

Protective Actions - Those measures taken in anticipation of or after an inadvertent release of radioactive material for the purpose of preventing or minimizing radiological exposures to persons.

Protective Action Guides - Projected radiological dose or dose commitment values to individuals in the general population that are used to institute PROTECTIVE ACTION recommendations.

Radiation Emergency Teams - Teams (In-plant Radiation Emergency Team and Emergency Chemistry Team) that operate under the direction of the Radiological Protection Director (RPD).

Radioactive Release - Any atmospheric or liquid release of radioactive material to the environment. In context of an event notification, it is bounded by "related to the event being reported."

Radiological Analysis Facility (RAF) - An area adjacent to the TECHNICAL SUPPORT CENTER where sample analyses are normally performed during declared emergencies. It is utilized for monitoring and controlling personnel radiation exposures, controlled area entries, and for directing first aid activities within the plant. It operates under the direction of the Radiological Protection Director (RPD) and is equipped with portable radiation monitoring equipment, Gamma spectroscopy equipment, protective clothing and other miscellaneous radiation protection supplies.

Radiological Controlled Areas - The areas within the PROTECTED AREA in which radioactive materials and radiation are present or could normally be expected to be present in sufficient quantities to require protective measures. These areas typically include the Containment Building and a large portion of the Auxiliary Building. Refer to the Kewaunee Nuclear Power Plant General Access Training Manual for details on radiation and contamination levels.

Recovery - Off-Site - Those efforts made by federal, state and county agencies to reclaim land and property where its use or function was lost due to contamination from a nuclear plant accident.

Recovery - Plant - Efforts made to return the plant to normal operating following a severe incident. Plant recovery may be entered directly from a declared level of emergency provided plant conditions are stable with no further degradation expected. In some instances, de-escalation or closeout of the emergency may occur rather than plant recovery.

Severe Accident Management (SAM) - A process by which severe core damaging accidents that go beyond design basis can be systematically assessed such that any and all means available to maintain the core and the plant in a controlled stable state may be implemented.

Site - All areas within the SITE BOUNDARY of the Kewaunee Nuclear Power Plant.

Site Boundary - The perimeter of the land owned by WPSC surrounding the plant. (See Appendix C, page C-3).

Site Boundary Facility (SBF) - A facility located at the western edge of the SITE BOUNDARY that serves as a staging area for the environmental monitoring teams. This facility may be used as an access control point or radiological monitoring and decontamination station.

Source Term - Source Term refers to the magnitude and mix of the radionuclides released from the fuel expressed as fractions of the fission product inventory in the fuel as well as their physical and chemical form, and the timing of their release.

Technical Support Center (TSC) - A plant facility located in a building north of and adjacent to the Auxiliary and Turbine Buildings. The facility has the capability to supply and display technical information for use by technical and designated management personnel in support of plant operations and CONTROL ROOM functions during emergency and plant recovery operations. It operates under the direction of the Technical Support Center Director (TSCD).

## SECTION 2

### 2.0 SCOPE AND APPLICABILITY

This section describes the plant facility and its surrounding area. It also summarizes the interrelationship of the plan with other plant procedures and the response of support organizations.

### 2.1 FACILITY DESCRIPTION

The Kewaunee Nuclear Power Plant is a single unit light water cooled reactor operated by the Nuclear Management Company (NMC). The plant utilizes a pressurized water reactor Nuclear Steam Supply System furnished by the Westinghouse Electric Corporation. The reactor design core power is 1,772 megawatts thermal and gross plant electrical output is approximately 590 megawatts electrical. The physical layout of the plant is illustrated in Appendix C, page C-2.

The plant is located in Kewaunee County, in east central Wisconsin, along the west shore of Lake Michigan (see Appendix C, page C-3). The site covers an area of approximately 908 acres. The topography of the region is gently rolling to flat, with elevations varying from 10 to 100 feet above the level of Lake Michigan. The land surrounding the site slopes gradually east towards Lake Michigan from the higher elevations in the west. At the northern and southern perimeters of the site, bluffs form the boundary between the plant site and Lake Michigan.

Kewaunee County and the adjacent counties of Manitowoc, Brown, and Door surrounding the site are predominantly rural. The dairy industry is the major industry within a 20-mile radius of the plant. Land is used primarily for agriculture. Dairy products and livestock account for over three-quarters of farm production with field crops and vegetables comprising the remainder.

The most densely populated communities in the vicinity of the plant are to the south in Two Rivers and Manitowoc. Smaller population concentrations within 10 miles from the plant include the townships of West Kewaunee (including the City of Kewaunee), Carlton, Mishicot, Franklin, and Montpelier. The nearest population centers with greater than 25,000 people are Manitowoc (17 miles SSW), Green Bay (27 miles WNW), Appleton (43 miles West), and Sheboygan (42 miles SSW). The population distribution by evacuation sectors is illustrated in Appendix C, page C-4.



## **2.2 EMERGENCY PLAN INTERRELATIONSHIPS**

This Emergency Plan is the basis for plant and corporate emergency preparedness program. It describes the required contents of the Emergency Plan Implementing Procedures, other appropriate plant procedures and identifies the Emergency Response Plans of federal, state, local, and private emergency support organizations used to respond to an emergency at the facility. These procedures and plans will be jointly used to mitigate the consequences of an emergency at the Kewaunee Nuclear Power Plant. The following subsections describe the interrelationship of this plan with other supporting plant procedures and the interface with federal, state, local, and private organizations. The interrelationships among NMC and federal, state, local, and private organizations are shown in FIGURE 2-1. Details of the emergency assistance that will be provided by supporting organizations are presented in Section 5.3 of this Emergency Plan.

### **2.2.1 Emergency Plan Implementing Procedures and Supporting Plant Procedures**

The Kewaunee Nuclear Power Plant Emergency Plan Implementing Procedures (EPIPs) describe detailed actions to be taken by individuals in responding to plant emergency conditions and for directing the implementation of this plan. These procedures specify actions such as emergency classification, notification, activation, and staffing of emergency response facilities, personnel accountability, and other emergency response measures that will be used to ameliorate emergency conditions at the Kewaunee Nuclear Power Plant.

Chemistry and Health Physics procedures provide additional instructions for performing surveys, analyzing samples, operating health physics/radiation protection equipment, and other activities. The Kewaunee Nuclear Power Plant General Access Training Manual further defines administrative controls and procedures for the use of radiological monitoring devices, protective clothing and equipment. This manual also states radiological control limits and precautions.

The Emergency Plan Maintenance Procedures (EPMPs) provide instructions for maintaining specific program elements such as, equipment tests and inventories.

Nuclear Administrative Directives (NADs) govern changes to the Emergency Plan and its implementing procedures.

### **2.2.2 Interfaces with Governmental Agencies**

Coordination and liaison with Federal, State, and county governmental agencies having radiological emergency planning responsibilities and functions are necessary for the effective implementation of this plan. This preplanned coordination ensures the proper interfacing of emergency response activities between governmental agencies and the plant. Governmental agencies with emergency response functions include:

- Kewaunee County, Emergency Government
- Manitowoc County, Emergency Management
- Wisconsin Department of Military Affairs, Wisconsin Emergency Management
- Wisconsin Department of Health and Family Services, Division of Public Health, Radiation Protection Section
- Wisconsin State Patrol
- U.S. Department of Energy
- U.S. Nuclear Regulatory Commission, Emergency Operations Center
- U.S. Nuclear Regulatory Commission, Region III

### **2.2.3 Local Services Support**

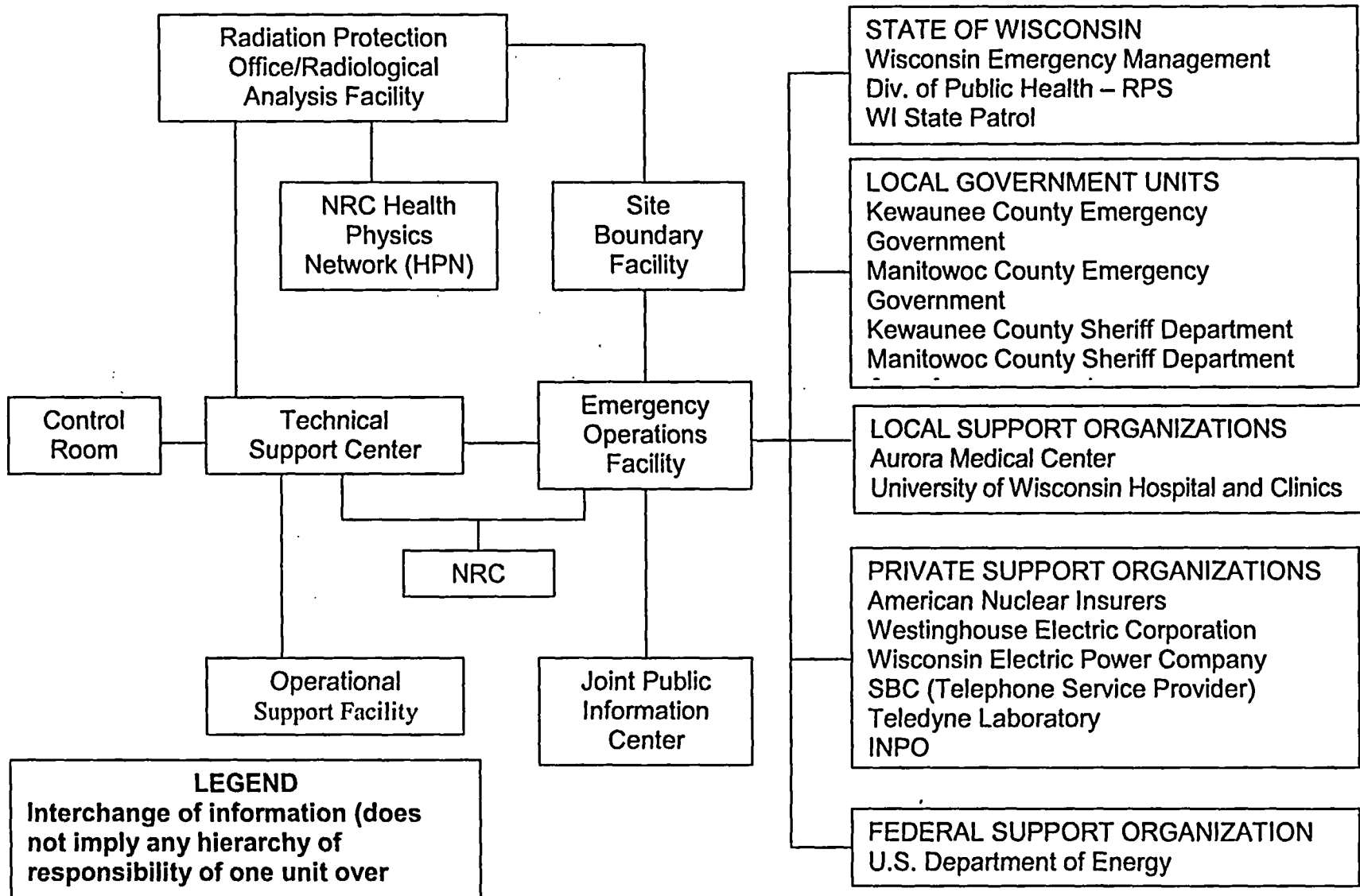
In addition to the federal, state and county agencies listed above, various local agencies and organizations have, by prior arrangement, agreed to respond to requests for assistance at the Kewaunee Nuclear Power Plant. Coordinated planning efforts have ensured effective interfacing of this plan with the emergency response functions of these local support organizations. These local agencies include:

- City of Kewaunee Fire Department
- Kewaunee County Sheriff's Department
- Manitowoc County Sheriff's Department
- Aurora Medical Center
- University of Wisconsin Hospital and Clinics
- Kewaunee Ambulance Service
- Mishicot Area Ambulance Service
- Two Rivers Fire Department Ambulance
- SBC (or current telephone service)

### **2.2.4 Contractors and Other Utilities**

During an emergency, additional assistance may be required from private support groups. These support groups are comprised of personnel from various contractors and utilities. The Nuclear Management Company has acquired mutual assistance agreements, which are indexed in Appendix D of this Plan.

**FIGURE 2-1**  
**Interrelationship Of Overall Emergency Response Organization**



## SECTION 3

### 3.0 SUMMARY OF THE EMERGENCY PLAN

The Emergency Plan defines the actions and responsibilities of Kewaunee Nuclear Power Plant, Nuclear Management Company and supporting Wisconsin Public Service Corporation personnel in the event of an emergency and delineates the support required from Federal, state, local, and private organizations during certain emergency situations. In general, the Emergency Plan describes the following basic actions:

1. Detection of the emergency
2. Classification of the emergency
3. Activation of the emergency response organizations
4. Assessment of plant status and conditions
5. Initiation of corrective actions
6. Initiation of protective actions
7. Aid to affected persons
8. Plant recovery operations

These basic actions are explained in detail in specific sections of the plan. The contents of these sections are summarized below.

**Section 4** describes emergency classifications, and philosophy of the classification process. This section directs the reader to the Emergency Preparedness Implementing Procedures (EPIPs) where plant-specific indications are provided for the emergency action levels identified in this Plan. The Emergency Action Levels (EALs) detailed in the implementing procedure and corresponding actions noted are based upon design and operating characteristics specific to a pressurized water reactor type plant and upon NRC regulatory guides for nuclear power plants. In addition, this section describes corresponding plant and state/local actions in response to various postulated emergency situations.

**Section 5** describes the functions and responsibilities of the organizations utilized in controlling emergencies. Beginning with the normal plant and corporate organization as a base, this section describes the emergency response organization and the assistance that can be provided by federal, state and local emergency support agencies, and private organizations.

**Section 6** specifies the emergency measures, including activation of the emergency organization, notification of emergency personnel, assessment actions, corrective actions, protective actions, and aid to affected persons which would be used to mitigate the consequences of an incident.

**Section 7** describes the facilities and equipment available to assess emergency conditions and support emergency operations. This section identifies the locations of emergency response facilities and first aid facilities. It describes the communication links between on-site and off-site emergency response facilities and support agencies.

**Section 8** describes individual responsibilities and the methods for maintaining an effective Emergency Plan and adequate level of emergency preparedness. It describes the following elements of program maintenance:

1. Key personnel and department responsibilities
2. Emergency response training
3. Review and update requirements for the plan and its implementing procedures
4. Maintenance of emergency equipment
5. Coordination of a Public Information Program

**Section 9** outlines the plant recovery organization. It summarizes the plans and measures to be implemented during these recovery operations

## SECTION 4

### 4.0 EMERGENCY CONDITIONS

This section describes emergency classifications, initiating events, accident detection, emergency action levels, and corresponding plant, state, and local actions in response to various postulated emergency situations.

### 4.1 EMERGENCY CLASSIFICATION SYSTEM

The Emergency Plan provides for an Emergency Classification System based on NUREG-0654/FEMA-REP-1, Revision 1, Appendix 1, "Emergency Action Level Guidelines for Nuclear Power Plants," issued November, 1980. The Emergency Classification System covers an entire spectrum of possible radiological and non-radiological emergencies at the Kewaunee Nuclear Power Plant. The Emergency Classification System categorizes accidents and/or emergency situations into one of four emergency classes depending on emergency conditions at the time of the incident. The emergency classes, in order of increasing severity, are Unusual Event, Alert, Site Area Emergency, and General Emergency. Each of these emergency classes requires notification of and/or immediate actions by plant personnel as well as federal, state, and local agencies.

Incidents may be classified in a lower emergency class at first and then escalated to a higher classification if the situation deteriorates. Each of the four emergency classes has characteristic Emergency Action Levels (EALs). These levels consist of specific values of various plant parameters (i.e., instrument indications, system status, etc.) that are used to classify the emergency and to initiate notification and activation of the appropriate members of the emergency response organization. The philosophy taken for classification will always be to immediately declare the highest class for which an Emergency Action Level has been exceeded. For example, a Site Area Emergency would be declared directly if a Site Area Emergency action level is exceeded, without having previously been in the lower, Alert emergency class.

The State of Wisconsin in its "Emergency Operations Plan" has adopted a system based upon this emergency classification system and in accordance with Environmental Protection Agency (EPA) recommended Protective Action Guidelines.

The following subsections summarize each of the emergency classes, the related EALs for each emergency class, and a description of immediate plant actions. The specific Emergency Action Levels described in this subsection are not intended to be totally descriptive or all-inclusive. The Emergency Director will declare an appropriate emergency classification whenever, in his judgment, the plant status warrants such a declaration. Actual parameter values, annunciators, and equipment status are used by emergency response personnel to identify various events and assign them to the appropriate emergency classes. Table 4-1 provides guidance to emergency response personnel for determining the emergency class. Additional guidance on emergency classification is provided in the appropriate Emergency Plan Implementing Procedures.

#### **4.1.1 Unusual Event**

This classification is the least severe of the four emergency classifications defined by this Emergency Plan. The Unusual Event classification applies to an unusual plant condition in progress or impending, which if left unattended has the potential to cause a degradation of overall plant safety. Inherently, however, this is a situation in which time is available to take precautionary and constructive steps to prevent a more serious event or to mitigate any consequences that may occur. The purposes of declaring an Unusual Event are to:

1. Bring the Emergency Response Organization (ERO) to a state of readiness.
2. Initiate the systematic handling of information and decision making.
3. Augment shift personnel, if needed.

No significant release of radioactive material is expected, therefore, off-site response or environmental monitoring is not necessary. Federal, state, and local government authorities will be notified of any Unusual Event. The Unusual Event status will be maintained until an escalation in emergency class occurs or the event is terminated. Off-site authorities will be informed of the change in the emergency status and the necessary documentation will be completed as specified in the Emergency Plan Implementing Procedures.

#### **4.1.2 Alert**

An Alert classification is declared when events are in progress or have occurred which involve an actual or a potentially substantial degradation of overall plant safety. Although the potential for limited releases of radioactive material may exist, any resulting projected doses are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline exposure levels. It is unlikely that an off-site hazard will be created. The purposes of declaring an Alert are to:

1. Activate Emergency Response Organization (ERO).
2. Initiate immediate and follow-up notification including current plant status information to off-site authorities.
3. Activate the Emergency Response Facilities.

Events in this classification will cause substantial modification of plant operations with the activation of the Emergency Response Facilities and the augmentation of the on-shift resources. In addition, due to the nature of the emergency situation (releases of radioactive material may be possible), radiological assessment or monitoring actions shall be initiated.

The Alert status shall be maintained until an escalation or de-escalation in emergency class occurs, the plant establishes recovery operation, or the event is terminated. The plant may enter recovery operation without de-escalating from a declared Alert. Off-site authorities will be informed of the change in the emergency status and the necessary documentation shall be completed as specified in the Emergency Plan Implementing Procedures.

#### **4.1.3 Site Area Emergency (SAE)**

The Site Area Emergency classification includes events, which involve an actual or likely failure of the plant functions needed for protection of the public. In these events, the off-site releases of radioactive material and resulting projected doses are not expected to exceed Environmental Protection Agency (EPA) Protective Action Guideline exposure levels except near the site boundary. The purposes of declaring a Site Area Emergency are to:

1. Activate the Emergency Response Facilities.
2. Activate the Radiation Emergency Teams and Environmental Monitoring Teams.
3. Initiate assembly and/or evacuation measures, if necessary.
4. Initiate consultation with off-site authorities and provide them with updates on emergency conditions for release to the news media and the general public.

Unlike the two previously described emergency classes, a Site Area Emergency is likely to involve some release of radioactive material to off-site areas. Although extensive and immediate protective actions may not be required, declaration of a Site Area Emergency shall require initiation of emergency response operations by KNPP personnel and off-site support organizations.

If not already accomplished, the Emergency Director shall augment resources and personnel and initiate activation of all emergency response facilities. Radiation Emergency Team(s) and Environmental Monitoring Teams will be deployed to assess radiation levels to be used as input for the evaluation of recommending protective actions to off-site authorities.

The Emergency Response Manager at the Emergency Operations Facility shall provide status updates and protective action recommendations to off-site authorities. These status briefings, if applicable, will be comprised of meteorological information and projected dose estimates based on both actual and projected long-term releases (calculated on foreseeable plant conditions). A NMC (WPSC) Plant Spokesperson will obtain information from the Emergency Response Manager concerning the status of the incident and with the assistance of the JPIC Manager, prepare news statements for the news media and the general public.



The Site Area Emergency status will be maintained until an escalation or reduction in emergency class occurs, the plant establishes recovery operation, or the event is terminated. The plant may enter recovery operation without de-escalating a declared Site Area Emergency. Off-site authorities will be informed of the change in the emergency status and the necessary documentation will be completed as specified in the Emergency Plan Implementing Procedures.

#### **4.1.4 General Emergency (GE)**

This is the most severe classification of emergency defined by this Emergency Plan. The General Emergency classification includes incidents, which involve actual or imminent substantial core degradation with the potential for large releases of radioactive material and/or loss of containment integrity. Actual, potential or projected doses can be reasonably expected to exceed Environmental Protection Agency (EPA) Protective Action Guideline exposure levels off-site for more than the immediate site area. Therefore, the purposes of declaring a General Emergency are to:

1. Initiate predetermined protective actions/recommendations for the population at risk and any additional measures that should be taken due to releases or potential releases.
2. Activate the emergency organization to provide continuous accident assessment and monitoring of plant conditions and relay current information concerning emergency conditions to off-site authorities and the general public.

There will be prompt notification to the appropriate state and local off-site authorities of the General Emergency status. Plant resources and personnel will be augmented by the activation of the emergency organization as described in Section 5 of this Emergency Plan. The Environmental Monitoring Teams will be dispatched. The Emergency Response Manager at the Emergency Operations Facility will provide status updates to appropriate off-site authorities. These briefings will include information on the plant status, release of radioactive materials, meteorological conditions, radiological dose projections, and affected Emergency Planning Zone areas. A NMC (WPSC) Plant Spokesperson will obtain information from the Emergency Response Manager concerning the status of the incident and with the assistance of the JPIC Manager, prepare news statements for the news media and the general public.

The General Emergency status will be maintained until a reduction in emergency class occurs, the plant establishes recovery operation, or the event is terminated. The plant may enter recovery operation without de-escalating a declared General Emergency. Off-site authorities will be informed of the change in the emergency status and the necessary documentation will be completed as specified in the Emergency Plan Implementing Procedures.

## **4.2 SPECTRUM OF POSTULATED ACCIDENTS**

This section of the Kewaunee Nuclear Power Plant Emergency Plan describes the detection and classification of the postulated accidents investigated in the Kewaunee Nuclear Power Plant Updated Safety Analysis Report (USAR). Methods for detecting and evaluating these events include the use of installed systems, instrumentation, alarms, approved procedures and specialized training. The principal detection methods and classifications for these events are summarized in the following subsections. A complete discussion of these events may be found in Section 14 of the USAR.

### **4.2.1 Accident Detection Instrumentation**

Abnormal conditions and accidents at the Kewaunee Nuclear Power Plant can be detected in a number of ways. The principal accident detection methodology and equipment include: the monitoring of Control Room instrumentation, annunciators, and alarm systems by trained operations personnel; and the actuation/operation of engineered safety features such as the fire detection and protection systems. In addition, routine practices, such as sampling and analyzing process systems, and recording data on significant system parameters are performed. It should be noted that the instrumentation to be used for prompt detection of accidents at the plant is discussed in detail in the Kewaunee Nuclear Power Plant USAR, TABLE 4-1 and EPIP-AD-02 provides guidance and plant indications to assist plant personnel in classifying the emergency.

The plant systems available to identify excessive radiological conditions include the Process and Effluent Radiation Monitoring Systems and the Area Radiation and Airborne Radioactivity Monitoring Instrumentation. Each of these systems will provide information necessary to initiate the appropriate emergency procedures, as well as continuing accident assessment during an accident. The magnitude of the source term or release potential will be determined based on plant system monitors and appropriate plant sampling procedures. Emergency Plan Implementing Procedures include the methodology for determining the release rate and/or projected doses within the site boundary and off-site areas.

### **4.2.2 Classification of Postulated Accidents**

The events postulated in Section 14 of the USAR may be categorized into one or more of the four emergency classifications. TABLE 4-2 lists each of these design basis events and the emergency classifications that most likely relate to the event according to the classification criteria discussed in Section 4.1.

**TABLE 4-1**

**EMERGENCY ACTION LEVEL CHARTS**

The charts on the following pages are separated into different abnormal operating conditions which may, depending upon their severity, be classified as an Unusual Event, Alert, Site Area Emergency, or General Emergency. These charts, along with "KNPP Indications," can be found in EPIP-AD-02.

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART A(1)**  
**ABNORMAL RADIOLOGICAL EFFLUENT**

EMERGENCY CLASSIFICATION CRITERIA	CLASSIFICATION
Effluent monitors detect levels corresponding to greater than 1 rem/hr whole body or 5 rem/hr thyroid at the site boundary under " <u>actual meteorological</u> " conditions.	GENERAL EMERGENCY
Projected or measured in the environs dose rates greater than 1 rem/hr whole body or 5 rem/hr thyroid at the site boundary.	GENERAL EMERGENCY
Effluent monitors detect levels corresponding to greater than 50 mr/hr for ½ hour OR greater than 500 mr/hr for two minutes (or five times these levels to the thyroid) OR for "adverse meteorology."	SITE AREA EMERGENCY
At the site boundary, projected or measured dose rates greater than 50 mr/hr for ½ hours OR greater than 500 mr/hr for two minutes (or five times these levels to the thyroid) or EPA Protective Action Guidelines (PAGs) are projected to be exceeded outside the site boundary.	SITE AREA EMERGENCY
Radiological effluents greater than 10 times ODCM instantaneous limits.	ALERT
Radiation levels or airborne contamination which indicate a severe degradation in the control of radioactive materials (e.g., radiation levels suddenly increase by a factor of 1000).	ALERT
Off-site Dose Calculation Manual limits exceeded.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART B**  
**FUEL DAMAGE INDICATION**

EMERGENCY CLASSIFICATION CRITERIA	CLASSIFICATION
Plant conditions exist that make the release of large amounts of radioactivity in a short time period possible.	GENERAL EMERGENCY
Major damage to spent fuel in Containment or Auxiliary Building.	SITE AREA EMERGENCY
<u>Severe loss of fuel cladding</u> a. Very high coolant activity sample b. Failed fuel monitor indicates greater than 1% fuel failures within 30 minutes or 5% total fuel failures.	ALERT
Fuel damage accident with release of radioactivity to Containment or Auxiliary Building.	ALERT
High reactor coolant activity sample.	UNUSUAL EVENT
Failed fuel monitor indicates greater than 0.1% equivalent fuel failures within 30 minutes.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART C**  
**PRIMARY LEAK TO LOCA**

**NOTE:** This chart does not apply when leakage from the Reactor Coolant System is caused by a Steam Generator tube rupture.

EMERGENCY CLASSIFICATION CRITERIA	CLASSIFICATION
(1) Loss of coolant accident, <u>AND</u> (2) Initial or subsequent failure of ECCS, <u>AND</u> (3) Containment failure or potential failure exists (loss of 2 of 3 fission product barriers with a potential loss of 3rd barrier).	GENERAL EMERGENCY
Reactor Coolant System leakage greater than make-up pump capacity.	SITE AREA EMERGENCY
Reactor Coolant System leak rate greater than 50 GPM.	ALERT
Exceeding Reactor Coolant System leak rate, Technical Specifications, requiring reactor shutdown.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART D**  
**PRIMARY TO SECONDARY LEAK**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
Rapid failure of steam generator tubes with loss of off-site power.	SITE AREA EMERGENCY
Rapid gross failure of one steam generator tube with loss of off-site power.	ALERT
Rapid failure of multiple steam generator tubes.	ALERT
Exceeding Primary to Secondary leak rate Technical Specification.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART E**  
**LOSS OF POWER**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
Failure of off-site and on-site AC power, <u>AND</u> Total loss of auxiliary feedwater makeup capability for greater than 2 hours. (Loss of power plus loss of all AFW would lead to clad failure and potential containment failure.)	<b>GENERAL EMERGENCY</b>
Loss of off-site power, <u>AND</u> Loss of on-site AC power (for more than 15 minutes).	<b>SITE AREA EMERGENCY</b>
Loss of all vital on-site DC power (for more than 15 minutes).	<b>SITE AREA EMERGENCY</b>
Loss of all vital on-site DC power (for less than 15 minutes).	<b>ALERT</b>
Loss of off-site power, <u>AND</u> Loss of on-site AC power (for less than 15 minutes.)	<b>ALERT</b>
Loss of off-site power, <u>OR</u> Loss of on-site power capability.	<b>UNUSUAL EVENT</b>
Loss of off-site power, <u>AND</u> Loss of on-site AC power (for more than 15 minutes).	<b>UNUSUAL EVENT</b>



**TABLE 4-1**  
**EPIP-AD-02**  
**CHART F**  
**ENGINEERED SAFETY FEATURE ANOMALY**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
Complete loss of any function needed when RCS > 200°F.	SITE AREA EMERGENCY
Complete loss of any function needed when RCS ≤ 200°F.	ALERT
Failure of the Reactor Protection System to initiate and complete a reactor trip which brings the reactor subcritical.	ALERT
Inability to reach required shutdown within Tech Spec limits	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART G**  
**LOSS OF INDICATION**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
Most or all alarms (annunciators) lost and a plant transient initiated or in progress.	SITE AREA EMERGENCY
Most or all alarms (annunciators) lost.	ALERT
Indications or alarms on process or effluent parameters not functional in control room to an extent requiring plant shutdown or other significant loss of assessment capability.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART H**

(DELETED)

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART I**  
**SECONDARY SIDE ANOMALY**

EMERGENCY CLASSIFICATION CRITERIA	CLASSIFICATION
Steam line break, <u>AND</u> primary to secondary leak > 50 GPM, <u>AND</u> Indication of Fuel Damage.	SITE AREA EMERGENCY
Steam line break with significant (greater than 10 GPM) primary to secondary leakage. (Applies even if events occur in opposite steam generators.)	ALERT
Turbine rotating component failure causing rapid plant shutdown.	UNUSUAL EVENT
Rapid depressurization of the secondary side.	UNUSUAL EVENT

**TABLE 4-1**

**EPIP-AD-02**

**CHART J**

**MISCELLANEOUS ABNORMAL PLANT CONDITIONS**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
<p>Other plant conditions that make a release of large amounts of radioactivity in a short time period possible; e.g., any core melt situation.</p> <p>Examples:</p> <ul style="list-style-type: none"><li>- Failure of main FW and AFW systems for greater than 30 minutes without Safety Injection and Residual Heat Removal flow. Plus a containment failure is imminent.</li><li>- Transient requiring the operation of shutdown systems with a failure of these shutdown systems. In addition, failure of SI and RHR and containment failure is imminent.</li></ul>	<p><b>GENERAL EMERGENCY</b></p>
<p>Evacuation of control room and control of shutdown systems required from local stations.</p>	<p><b>SITE AREA EMERGENCY</b></p>
<p>Other plant conditions that warrant increased awareness on the part of plant staff or state and/or local authorities.</p>	<p><b>UNUSUAL EVENT</b></p>

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART K**  
**FIRE AND FIRE PROTECTION**

EMERGENCY CLASSIFICATION CRITERIA	CLASSIFICATION
A fire compromising the functions of safety systems.	SITE AREA EMERGENCY
A fire potentially affecting safety systems.	ALERT
A fire within the plant lasting more than 10 minutes.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART L**  
  
**(DELETED)**

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART M**  
**EARTHQUAKE**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
An earthquake greater than Design Basis Earthquake (DBE).	SITE AREA EMERGENCY
An earthquake greater than Operational Basis Earthquake (OBE).	ALERT
An earthquake felt in plant or detected on station seismic instrumentation.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART N**  
**HIGH WINDS OR TORNADO**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
Sustained winds in excess of design levels with plant not in cold shutdown.	SITE AREA EMERGENCY
Any tornado striking facility.	ALERT
Any tornado on-site.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART O**  
**FLOOD, LOW WATER, OR SEICHE**

<b>EMERGENCY CLASSIFICATION CRITERIA</b>	<b>CLASSIFICATION</b>
Flood, low water, or seiche near design levels.	ALERT
50-year flood, low water level or seiche.	UNUSUAL EVENT

**TABLE 4-1**  
**EPIP-AD-02**  
**CHART P**  
**EXTERNAL EVENTS AND CHEMICAL SPILLS**

EMERGENCY CLASSIFICATION CRITERIA	CLASSIFICATION
Aircraft crash affecting vital structures by impact <u>OR</u> fire.	SITE AREA EMERGENCY
Severe damage to safe shutdown equipment from missiles or explosion.	SITE AREA EMERGENCY
Uncontrolled release of toxic or flammable gas is confirmed within vital area.	SITE AREA EMERGENCY
Aircraft crash on facility.	ALERT
Missile impact from whatever source on facility.	ALERT
Uncontrolled release of toxic or flammable gas is confirmed within the protected area.	ALERT
Known explosion damage to facility affecting plant operation.	ALERT
Aircraft crash on-site or unusual aircraft activity over facility.	UNUSUAL EVENT
Uncontrolled release of toxic or flammable gas is confirmed on site.	UNUSUAL EVENT



**TABLE 4-1**  
**EPIP-AD-02**  
**CHART Q**  
**SECURITY CONTINGENCY**

EMERGENCY CLASSIFICATION CRITERIA	CLASSIFICATION
Loss of physical control of the plant.	GENERAL EMERGENCY
Imminent loss of physical control of the plant.	SITE AREA EMERGENCY
Ongoing security compromise.	ALERT
Security threat or attempted entry or attempted sabotage.	UNUSUAL EVENT

**NOTE:** Security staff will not act as notifier during security events. Utilize Control Room staff for notifications.

**TABLE 4-2**  
**CLASSIFICATION OF POSTULATED ACCIDENTS**

These events are based upon the worst case conditions described in Chapter 14 of the USAR for the Kewaunee Nuclear Power Plant. To fully understand the event, the USAR must be consulted.

EVENT	EMERGENCY CLASSIFICATION	USAR SECTION
(1) Uncontrolled RCCA withdrawal from a subcritical condition.	*	14.1.1
(2) Uncontrolled RCCA withdrawal at power.	*	14.1.2
(3) RCC assembly misalignment.	*	14.1.3
(4) Chemical and Volume Control System malfunction.	*	14.1.4
(5) Start-up of an inactive reactor coolant loop.	*	14.1.5
(6) Excessive heat removal due to Feedwater System malfunctions.	*	14.1.6
(7) Excessive load increase incident.	*	14.1.7
(8) Loss of reactor coolant flow lock rotor of RC pump.	ALERT	14.1.8
(9) Loss of external electrical load.	*	14.1.9
(10) Loss of normal feedwater.	*	14.1.10
(11) Anticipated transient without scram.	ALERT	14.1.11
(12) Loss of AC power to the plant auxiliaries.	UNUSUAL EVENT	14.1.12
(13) Fuel handling accidents major failure of one element's cladding.	SITE AREA EMERGENCY	14.2.1
(14) Accidental release - recycle or waste liquid.	*	14.2.2
(15) Accidental release - water gas Gas decay tank rupture Volume control tank rupture	UNUSUAL EVENT UNUSUAL EVENT	14.2.3
(16) Steam generator tube rupture.	ALERT	14.2.4

\* The immediate results of these events taken alone are less than the criteria for notification of an unusual event.

**TABLE 4-2**  
**CLASSIFICATION OF POSTULATED ACCIDENTS**

EVENT	EMERGENCY CLASSIFICATION	USAR SECTION
(17) Rupture of steam pipe upstream of main steam isolation valves.	UNUSUAL EVENT	14.2.5
(18) Rupture of a control rod drive mechanism housing (RCC assembly ejection).	SITE AREA EMERGENCY	14.2.6
(19) Turbine missile damage to spent fuel pool including fuel damage.	ALERT	14.2.7
(20) Loss of reactor coolant from small ruptured pipes or cracks in large pipes, which actuate emergency, core cooling.	ALERT TO SITE AREA EMERGENCY	14.3.1
(21) Major reactor coolant pipe ruptures (loss of coolant accident).	SITE AREA EMERGENCY	14.3.2

\* The immediate results of these events taken alone are less than the criteria for notification of an unusual event.

## SECTION 5

### 5.0 ORGANIZATIONAL CONTROL OF EMERGENCIES

Using the Nuclear Management Company (NMC) / Kewaunee Nuclear Power Plant (KNPP) nuclear organization as a base, this section of the plan describes the overall emergency organization that would be used during emergency situations at the plant. This section delineates the responsibilities and assignments of plant and corporate emergency response personnel and describes their functional areas of emergency response activities. The latter part of this section describes the emergency response functions of federal, state, local and private organizations.

### 5.1 NORMAL NUCLEAR ORGANIZATION

The Kewaunee Nuclear Power Plant (KNPP) Site Vice-President is responsible for high level oversight of plant activities and day-to-day interface with off-site organizations. Reporting to the KNPP Site Vice-President are the Site Director, Performance Improvement Manager, Business Support Manager. In addition, the KNPP Site Vice-President has a direct working relationship with the KNPP Nuclear Oversight Manager (see FIGURE 5-1).

The functions of operations, maintenance, communications to the public, engineering, nuclear oversight, assessment, business, training, planning and scheduling, emergency preparedness, radiation protection, chemistry, security, licensing, office support, and information technology are in place to effectively run the Kewaunee Nuclear Plant.

The Kewaunee Plant organization is on-site during regular working hours, Monday through Friday, holidays excluded, with the following exceptions: the plant operating shift organization, which includes operations, radiation protection, and security personnel, are on duty on a 24-hour basis, the chemistry needs of the plant are normally fulfilled by using a 16-hour shift schedule, but as a minimum, provides day and evening shifts on Monday through Friday, and day shift only on weekends and holidays. The following subsection describes this plant operating shift organization.

### **5.1.1 Plant Operating Shift Organization**

The plant operating shift staff consists of eight plant staff personnel and an appropriate number of security personnel. The Shift Manager, who holds a Senior Reactor Operator (SRO) license, is in direct charge of all plant operations during his assigned shift and is responsible for the supervision and actions of the operating personnel on the shift. The Shift Manager will be assisted by a Control Room Supervisor who also holds a SRO license. Additional shift personnel include: two Nuclear Control Operators who hold Reactor Operator (RO) licenses, two Nuclear Auxiliary Operators, a Radiation Technologist, a Shift Technical Advisor, and a Chemistry Technologist (per the shift schedule stated in 5.1 above).

The duties and responsibilities of the operating staff are defined in the Nuclear Administrative Directives. In addition, a Security Shift Captain, with supporting security officers, fill security positions as well as fill the position of Notifier during declared emergencies until a designated ERF Communicator-Control Room reports to the Control Room. Figure 5-2 shows the composition of the plant operating shift organization.

## **5.2 EMERGENCY RESPONSE ORGANIZATION**

In the event of a declared emergency, appropriate groups of the emergency response organization shall be activated. The pre-assignment of Nuclear Management Company (NMC) and Wisconsin Public Service Corporation (WPSC) personnel to key functional areas of emergency activities ensures automatic, unambiguous manning and coordination of the emergency response organization and immediate response capabilities during emergency situations.

The emergency response organization can be activated during normal or off-normal working hours. During normal working hours, the emergency response organization will be formed through transition of the normal nuclear organization (see Figures 5-1 and 5-2) into an emergency mode of operation depending on the situation and emergency classification. During off-normal working hours, the emergency response organization shall consist of the plant operating shift staff (see Figure 5-2) augmented by additional members of the plant and KNPP staff as required.

To augment the plant operating shift staff with additional personnel in an emergency, NMC and WPSC emergency response personnel are provided with radio pagers. It has been established that emergency response personnel not on-site at the initiation of an emergency could begin to arrive approximately 15 minutes after notification that an emergency has been declared at the Kewaunee Nuclear Power Plant. Emergency response personnel are pre-assigned and trained to meet the functional staffing requirements stipulated in Table B-1 of NUREG-0654/FEMA-REP-1, Revision 1.

The following subsections describe the pre-assigned emergency responsibilities of NMC and WPSC personnel for events classified as an Unusual Event, Alert, Site Area Emergency, or General Emergency. Figure 5-3 shows the overall emergency organizational structure for the Kewaunee Nuclear Power Plant. Emergency Plan Appendix A provides the emergency titles, the locations, and the primary responsibilities of the key emergency response personnel. The KNPP Emergency Telephone Directory, "Kewaunee Emergency Response Organization (ERO) Call List" correlates emergency organization job titles with the qualified individuals who can fill those positions.

### **5.2.1 Direction and Coordination**

The Emergency Director is responsible for the overall supervision of plant emergency response operations. In the event of an incident, the Shift Manager is initially the Emergency Director until relieved by a designated member of the plant management staff. If for some reason the Shift Manager is incapacitated, the Control Room Supervisor will assume the position of Emergency Director until relieved.

The Emergency Director has the authority and responsibility to declare an emergency and to immediately and unilaterally initiate any emergency actions that may be required. The Emergency Director is responsible for ensuring that assessment actions are conducted, the emergency is properly classified, corrective actions are taken and appropriate protective actions are carried out for personnel at the site. The Emergency Director is designated the severe accident management "Decision Maker". In that capacity the Emergency Director will facilitate consensus with the Shift Manager and other Technical Support Center directors before providing final approval for the implementation of accident mitigative actions recommended by the Severe Accident Management Team. The responsibilities of the Emergency Director which may not be delegated include changing the emergency classification; providing protective action recommendations to off-site authorities (until relieved of this responsibility by a designated Emergency Response Manager) and authorizing exposures in excess of 10CFR Part 20 limits.

Overall coordination of NMC and off-site emergency activities is the responsibility of the Emergency Response Manager. The Emergency Response Manager is a designated member of the KNPP staff or WPSC. He will direct activities at the Emergency Operations Facility and will interact with the Emergency Director concerning emergency response operations. In addition, the Emergency Response Manager is responsible for directing personnel and communications within the EOF; providing follow-up communications with federal, state, and local emergency response agencies (after the initial contact has been made at the direction of the Emergency Director); contacting NMC and WPSC headquarters to assure continuity of resources (technical, administrative, and material); and requesting assistance from needed federal, state, local, and private support agencies.

Recommending protective actions to the state and local authorities responsible for off-site emergency measures is the responsibility of the Emergency Director until the arrival of the Emergency Response Manager. The responsibility is then transferred to the Emergency Response Manager in the EOF. The Radiological Protection Director will provide information to the Emergency Director for use in determining if protective actions are required. The Emergency Response Manager will consult with the Emergency Director, the Radiological Protection Director, and the Environmental Protection Director when evaluating the need for recommending protective actions.

When an emergency has been terminated, the appropriate federal, state and local officials will be notified by the Emergency Director or Emergency Response Manager if the EOF has been activated.

### **5.2.2 Plant Staff Assignments**

The following subsection describes the primary emergency assignments of the plant staff. In order to minimize confusion and to assist in the control of the emergency response, emergency assignments have been established for specific positions to ensure the implementation of specific emergency duties. The functional areas of the emergency organization are summarized below:

#### **1. Plant Systems Operations**

Upon declaration of an emergency condition, the Shift Manager has the responsibility for taking measures to return the plant to a stable condition as dictated by the Plant's Procedures.

During abnormal or emergency conditions, the Control Room Supervisor (licensed SRO), the two Nuclear Control Operators (licensed ROs), the two Nuclear Auxiliary Operators on each shift assists in plant operational control by performing immediate operator actions stipulated in approved procedures. They are responsible for verifying that automatic control actions take place and for taking immediate operator action when the safety of the reactor, personnel, or the environment is in jeopardy. This includes initiating a reactor trip when a reactor protection signal set point is exceeded. If Severe Accident Management Guidelines are implemented, the operations staff will be designated the "implementers" of the approved recommendations from the analysis team.

A Shift Technical Advisor (STA) serves as an on-shift technical advisor to the Shift Manager and assists in reviewing plant status conditions. The STA provides additional technical and analytical assistance to the plant operating shift staff in diagnosing abnormal events.

In addition, the Event Operations Director, upon arrival, advises the Shift Manager on Control Room operations and activities. The Event Operations Director maintains communications with the Emergency Director and Technical Support Center staff relative to plant status. The Event Operations Director must hold a SRO license or be a member of senior management who is an engineer trained in nuclear operations. The Event Operations Director may request additional plant operational staff and technical assistance from the Emergency Director or Technical Support Center staff if needed.

## 2. Notification/Communication

Initial notifications to off-site agencies and NMC (WPSC) emergency response personnel will be directed by the Shift Manager with the assistance of a Notifier or a designated ERF Communicator-Control Room. The Notifier position will be filled by a security force supervisor and will be available during all shifts. The Notifier will provide short-term assistance in performing pre-formatted notifications to off-site agencies and NMC (WPSC) emergency response personnel. The ERF Communicator-Control Room position will be filled from a group of designated NMC response personnel. The ERF Communicator-Control Room will relieve the Notifier upon arrival at the Control Room and assist the Shift Manager in additional notifications and communication activities as needed.

Upon activation of other emergency response facilities, the responsibility to perform off-site notifications will be transferred to the Technical Support Center or the Emergency Operations Facility as is appropriate. Ultimately, the responsibility for off-site notifications will rest with the Emergency Response Manager at the Emergency Operations Facility. However, some off-site communications will be continued by the Technical Support Center Director at the Technical Support Center (e.g., the NRC and Westinghouse Electric Corporation).

The communication systems available to the Control Room, Technical Support Center, and Emergency Operations Facility are discussed in Section 7.0 of this plan.



### 3. Radiological Accident Assessment

Upon the occurrence of an incident which involves the release of radioactive material, the Shift Manager with the plant operating shift staff, will perform the initial assessment of the amount of radioactive material released and the potential for further releases based upon readouts from installed plant process and radioactive effluent monitors. A Radiation Technologist (designated an In-Plant Radiation Emergency Team member within the emergency response organization) is assigned to each shift to support the Control Room personnel in performing radiation surveys and obtaining radiological samples.

The Radiological Protection Director will normally be located in the Technical Support Center. However, during the early stages of an event, the Radiological Protection Director may be in either the Radiation Protection Office (RPO) or the Radiological Analysis Facility (RAF). The Radiological Protection Director is responsible of determining the extent and magnitude of the radiological hazard associated with the emergency situation. He directs the analyses of dose projections, preparation of on-site radiological assessments and recommends on-site radiological protection measures, directs the analyses and evaluation of reactor coolant samples to determine core conditions and release potentials, and directs decontamination actions. In order to provide continuous coverage of radiological accident assessment and health physics operations, the Radiological Protection Director may request additional personnel and equipment through the Emergency Director if needed.

The Radiological Protection Director also directs the activities of the in-plant Radiation Emergency Team(s) which perform in-plant and on-site radiation surveys. In the early stages of an emergency, he also assumes responsibility for direction and control of the Environmental Monitoring Teams, which perform off-site radiological environmental sampling and analyses, surveys and sampling.

When the Environmental Protection Director arrives in the Emergency Operations Facility, he will assume responsibility for direction of the Environmental Monitoring Teams and the analysis and assessment of radiological samples outside the protected area. In addition, he makes off-site dose projections and reports protective action evaluations to the Emergency Response Manager.

#### 4. Damage Control and Repair

The Shift Manager and the plant operating shift staff respond to initial plant maintenance requirements. Functional aspects of on-shift mechanical and electrical support is provided by the operating crew on-shift until mechanical and electrical support can be called in. Additional maintenance and repair support is obtained through the Support Activities Director. The Support Activities Director is responsible for coordinating activities of maintenance and support personnel at the Operational Support Facility (OSF). The Support Activities Director directs activities required to repair equipment or systems damaged during the emergency and carry out requests for modifications to systems and components needed to stabilize plant conditions. In addition, the Support Activities Director advises the Emergency Director concerning the prioritization of emergency maintenance. The staff reporting to the Support Activities Director shall include Maintenance (Mechanical, Electrical and I&C), and off-shift operational personnel. This maintenance staff can be augmented by support personnel from other NMC or WPSC facilities or private contractors. The Support Activities Director may request additional personnel, equipment and other materials through the Emergency Director, if needed.

#### 5. In-Plant Protective Actions and Decontamination

Radiation protection activities performed by the In-Plant Radiation Emergency Team(s) will be conducted from the Radiation Protection Office (RPO) if general radiation levels permit it. If necessary, radiation protection functions can be transferred to the Radiological Analysis Facility (RAF). This facility serves as the normal access control point for the controlled area and provides a base for radiation protection support to in-plant personnel (e.g., fire team(s), search-and-rescue personnel, radiation emergency team(s), and damage and repair personnel) and serves as the central monitoring point for contamination control of in-plant emergency response personnel and equipment. The RPO will be staffed with Radiation Technologists and radiation protection supervisory personnel, as required.

## 6. Fire Fighting

Personnel trained in fire fighting techniques are divided into two response groups, one for immediate response (Fire Brigade) and the other for control, extinguishment and relief (Fire Team). The Fire Protection Process Owner is responsible for the administration and training for fire fighting operations. The minimum onshift complement for a Fire Brigade consists of five members, as defined in the Kewaunee Nuclear Power Plant Fire Plan. For each shift, a Fire Brigade member is designated as a Fire Brigade Leader. The Fire Brigade Leader coordinates the efforts of the Fire Brigade with the Shift Manager until needed relief is supplied by the Fire Team. The Fire Team consists of members of the plant staff specially trained in fire fighting techniques. In addition, the Emergency Director, upon recommendation from the Fire Brigade/Team Leader, will determine if outside fire support is required. When outside fire support is summoned to the plant, the Fire Chief of the outside support agency will receive direction from the Fire Brigade/Team Leader on the location and type of fire and needed assistance from their agency.

## 7. Rescue and First Aid

The Kewaunee Nuclear Power Plant maintains a sufficient number of plant personnel that receive training in first aid and rescue procedures so that qualified individuals are available during each shift. In situations where personnel injury involves radiation or contamination, procedures for handling the treatment of injured/contaminated personnel shall be implemented. During off-normal hours, an on-shift Radiation Technologist shall provide initial radiation protection coverage during the treatment of these individuals until additional assistance can be obtained.

Support for first aid during rescue operations within the site boundary is the responsibility of the Radiological Protection Director. The Radiological Protection Director and the Environmental Protection Director are responsible for obtaining off-site assistance when NMC (WPSC) vehicles are involved in an accident during an emergency.

## 8. Site Access Control and Personnel Accountability

The functions and responsibilities of the Security Force are identified in the Security Manual for the Kewaunee Nuclear Power Plant. In the event of a non-security emergency, the Security Force under the direction of the Site Protection Director is responsible for personnel accountability, access control, issuing dosimetry to incoming personnel and providing a Notifier for performing initial off-site notifications. The Security force may also provide vehicles and drivers to support emergency activities.

### 5.2.3 Headquarters Support

#### 1. Technical and Administrative

The corporate headquarters support functions include, but are not limited to:

- a. Providing emergency management support of the emergency response organization.
- b. Providing liaison and communications with federal, state, and local government organizations. When requested, NMC (WPSC) will send representatives to the appropriate state and local emergency operations centers.
- c. Providing public information and coordinating the development of news statements.
- d. Obtaining assistance from appropriate engineering, technical, and contractor resources.
- e. Providing radiological environmental monitoring and sample analysis.
- f. Coordinating the restoration and/or operation of all electrical generation, transmission, and distribution facilities.
- g. Supplying logistics support for emergency response personnel (e.g., transportation, temporary quarters, food and water, sanitary facilities, and procurement of special equipment and supplies).
- h. Directing extent of plant recovery operations and post-accident planning.
- i. Assigning post-accident investigation and review responsibilities.

Technical and administrative support services are available from the WPSC and NMC corporate engineering organization. Corporate personnel will respond, as necessary, to emergencies at the Kewaunee Nuclear Power Plant.

The Emergency Director will ensure that the Emergency Response Manager is kept informed of emergency situations. The Emergency Response Manager assisted by the Emergency Director will determine the extent and type of support that is needed from WPSC and NMC.

## 2. Public Information

The NMC Nuclear Emergency Public Information Plan (NEPIP) has been written to address the means of informing the public and the media of the events associated with a declared emergency at the Kewaunee Nuclear Power Plant. Many of the non-nuclear WPSC Departments are involved and support this plan.

During a declared emergency, the JPIC Manager implements this plan and coordinates the company's activities to inform various publics. A company Plant Spokesperson will be designated who will present plant and company emergency related information to the news media during regularly scheduled news briefings.

The Emergency Response Manager and the Emergency Director will support the public information effort by supplying timely and accurate emergency related information to the Plant Spokesperson and the JPIC Manager.

The JPIC Manager will also ensure NMC and WPSC information is coordinated with federal, state and local agencies. This effort will be conducted in the Joint Public Information Center (JPIC). The JPIC also includes a Media Center where the news media are updated by agency spokespersons.

The Nuclear Management Company will monitor local and national news media for accuracy and will identify any misinformation being broadcast. The NMC will then take steps in conjunction with federal, state and local agencies to correct the identified misinformation. The NMC will provide timely information within the company and provide the means by which employees can obtain the latest emergency information. Incoming calls concerning the emergency will be routed to the appropriate off-site agency or NMC representative. Copies of the Nuclear Public Information Plan will be located and maintained in the Joint Public Information Center and the Emergency Operations Facility.

### 5.3 AUGMENTATION OF THE EMERGENCY RESPONSE ORGANIZATION

This section describes the assistance that may be provided by federal, state, local, and private organizations. Letters of Agreement, as appropriate, are referenced in Appendix D of this Emergency Plan. These letters delineate the scope of services and assistance that would be furnished by these organizations.

#### 5.3.1 Private and Area Support Services

During an emergency at the Kewaunee Nuclear Power Plant, it may become necessary to request and utilize assistance from local and private organizations and agencies. Since it is essential that this support be available, the following agreements and understandings have been made:

1. City of Kewaunee Fire Department - A formal contract is maintained with the City of Kewaunee Fire Department to provide backup assistance to the Plant Fire Brigade and Fire Teams. The City of Kewaunee Fire Department is a volunteer department headquartered about 10 miles north of the plant. Depending on concurrent emergencies in their jurisdiction, they could respond with an aerial truck and pumper truck within approximately twenty minutes from the time of initial notification. This support agency would be utilized for plant fires outside the Protected Area and for major fires within the Protected Area.
3. Aurora Medical Center - Arrangements have been made for medical services with the Aurora Medical Center, located approximately fourteen miles south of the Kewaunee Nuclear Power Plant. The agreement includes a commitment by the hospital to accept and treat plant personnel with routine industrial injuries as well as injuries complicated by radioactive contamination or radiation exposure. The Aurora Medical Center maintains the capability and facilities to provide decontamination, first aid, and emergency stabilization medical treatment to injured personnel. These services and facilities are available 24 hours a day.
4. University of Wisconsin Hospital and Clinics - An agreement has been reached with the University of Wisconsin Hospital and Clinics to serve as a referral source in the event of a serious radiation incident at the Kewaunee Nuclear Power Plant. The University of Wisconsin Hospital and Clinics are available 24 hours a day for either consultation or treatment.
5. Kewaunee County Sheriff's Department - An agreement is maintained with the Kewaunee County Sheriff's Department to provide emergency assistance in the following areas:
  - a. Supervision of traffic and crowd control.
  - b. Backup communication facilities if necessary.
  - c. Implementation of Protective Actions for the public.
  - d. Other actions within the responsibility of local law enforcement.

The Kewaunee County Sheriff and Kewaunee County Traffic Chief have squads available with backup assistance from the cities of Algoma, Kewaunee, and Luxemburg. An Auxiliary Deputy Force with approximately 60 members trained in crowd control and response to natural disasters can be contacted by telephone network.

6. Manitowoc County Sheriff's Department - An agreement is maintained with the Manitowoc County Sheriff's Department to provide backup emergency assistance to the Kewaunee County Sheriff's Department when requested. Their assistance coincides with the actions set forth by the Kewaunee County Sheriff's Department.

7. American Nuclear Insurers (ANI) - A contract is maintained by which ANI will assume responsibility for promptly assisting members of the public who may be adversely affected by an incident at the Kewaunee Nuclear Power Plant. This agreement alleviates the immediate financial burden that may be incurred by members of the public due to evacuation and relocation activities associated with an incident at the plant. ANI will have their representatives on the scene, prepared and ready to commence the distribution of emergency funding. The timetable of implementation of emergency response is commensurate with the speed at which the public needs arise.
8. Westinghouse Electric Corporation - In the event of an emergency at the Kewaunee Nuclear Power Plant, the Westinghouse Emergency Operations Center can provide technical support to KNPP as requested.
9. Environmental, Inc., (Midwest Laboratory) - An agreement is maintained by which Environmental, Inc. agrees to assist in performing radiological environmental monitoring, sampling, and analysis during emergencies at the Kewaunee Nuclear Power Plant. This assistance includes providing field-team personnel to perform environmental measurements and sampling as well as laboratory analysis support.
10. Radiation Protection Support Services - A support agreement between KNPP and a radiation protection support service contractor is maintained to provide additional radiation protection personnel and support services to the Kewaunee Nuclear Power Plant during emergency situations. See Appendix D for the vendor currently providing this service.
11. Institute of Nuclear Power Operations (INPO) - As a member of INPO, KNPP (NMC) can request emergency support from various organizations associated with the institute. An emergency resources manual is maintained by INPO that identifies the numbers of personnel that various organizations (e.g., utilities, service companies; A/E's and reactor vendors) could reasonably expect to make available in response to an emergency at the Kewaunee Nuclear Power Plant. In using this manual for emergency support, KNPP (NMC) has the option of communicating directly with the organization who is providing the support or of using INPO as an agent to arrange for and coordinate the required support. The individuals to be contacted in the various organizations along with their telephone numbers are listed in the manual.

### **5.3.2 State and Local Government Agencies**

The State of Wisconsin, through the Department of Military Affairs, Wisconsin Emergency Management (WEM), has the responsibility for the control of off-site actions during an emergency at the Kewaunee Nuclear Power Plant. The concept of operations with a discussion of the responsibilities and authorities assigned to various State and local government agencies is contained in Attachment A of the State of Wisconsin "Emergency Operations Plan" (see Appendix E). Kewaunee County and Manitowoc County are the local government units within the 10-mile plume exposure pathway EPZ surrounding the Kewaunee Nuclear Power Plant. The Kewaunee County local government has been designated as the lead unit in the event of a declared emergency at the Kewaunee Nuclear Power Plant and will keep Manitowoc County informed of situations that would affect their county.

A brief description of the involvement and responsibilities of the key State and local government agencies is summarized in the following paragraphs. For a complete discussion of authority, assigned responsibilities, activation, capabilities, and communication arrangements, refer to the State of Wisconsin "Emergency Operations Plan."

1. Wisconsin Department of Military Affairs, Wisconsin Emergency Management (WEM)

The Administrator of the WEM has been designated by the Governor of the State of Wisconsin as the State officer having the primary responsibility and authority for radiological emergency response planning. The WEM coordinates the emergency response efforts of other State agencies. The WEM briefs the Governor on the situation and actions taken by the Federal, State, and local agencies and activates the State Emergency Operating Center (EOC) in the Department of Military Affairs Building in Madison, Wisconsin if necessary.

2. Wisconsin Department of Military Affairs

The Governor has the authority to order all or any part of the Wisconsin National Guard personnel and/or equipment into active State service for public emergencies, disturbances or disasters. The National Guard can provide additional traffic control, communications, food, radiological monitoring and decontamination services. The Army National Guard has helicopters and fixed wing aircraft available for use. These can provide reconnaissance and surveillance, insertion of personnel and equipment, aeromedical evacuation, aerial supply, illumination, communications and command and control.



3. Wisconsin Department of Health and Family Services (DHFS), Division of Public Health-Radiation Protection Section

The Department of Health and Family Services, under the Radiation Protection Act, WIS STATS 140.50 to 140.60, is responsible for preventing exposure to ionizing radiation in amounts which are detrimental to health according to nationally accepted standards. Designated individuals from the Radiation Protection Section of the DHFS are assigned as the State Radiological Coordinator (SRC) of the State Radiological Response Team. The State Radiological Response Team is comprised of designated Radiation Section personnel augmented by personnel from the WEM and other State agencies. They are responsible for the following actions: Conducting an initial survey to determine direct radiation levels and/or the severity and extent of the contaminated area; making food chain dose estimates; and checking evacuees for contamination and exposure.

4. Wisconsin Department of Transportation, Division of Enforcement and Inspection, State Patrol

The Wisconsin State Patrol supports the Division of Highways and local law enforcement agencies by controlling access into the area and by providing security at the site. If necessary, the State Patrol is available to take the State Radiological Response Team to the site and to deliver samples to the State Laboratory of Hygiene for analysis. All the State Patrol field cars have standard civil preparedness radiation monitoring survey meters. In addition, the Department of Transportation has a communication van, which can serve as a Forward Command Post at the site. Each district has a supply of walkie-talkies that are available for state and local emergency communications.

5. Wisconsin Department of Natural Resources, Division of Enforcement

The Conservation Wardens of the Division of Enforcement, Department of Natural Resources, provides support to the local law enforcement agencies. The wardens have mobile radios in their cars on the Wisconsin State Police frequency and are equipped with standard civil preparedness radiation monitoring survey meters. The Department can provide courier service by motor vehicle and plane.

6. Wisconsin Department of Transportation, Division of Highways

The Division of Highways, Department of Transportation, under the direction of the Administrator of WEM, is responsible for implementing the Emergency Highway Traffic Regulation Plan in support of access control operations.

7. Wisconsin Department of Agriculture

The Department of Agriculture gathers samples of milk and crops to determine radionuclide and related stable element concentrations. The Department advises dairies as to the disposition of milk, farmers as to placing their cows on stored feed, and growers on how to restore land to productivity. Arrangements can be made by the Department for the handling of animals exposed to radioactive contamination. The Department can ban the sale of contaminated foods and can make recommendations regarding the use, sale, or disposal of animal feeds that are radioactively contaminated.

8. Manitowoc and Kewaunee County

Under the provisions of the Wisconsin Statute 22.16 and the Manitowoc County Emergency Management and Kewaunee County Emergency Government Ordinances, the County Board Chairman of both counties have the responsibility and authority to coordinate off-site emergency activities in the event of a radiological incident.

Each county has prepared an "Emergency Operations Plan" applicable to emergencies at the Kewaunee Nuclear Power Plant (see Appendix E).

Upon notification of an emergency at Kewaunee Nuclear Power Plant, which requires participation of local or county agencies, each County activates its emergency organization. Each emergency organization is under the direction of the County Board Chairman and is composed of representatives from various participating agencies which include the County Sheriff, County Emergency Government Director, County Highway Commissioner, fire fighting organizations, and school administrators. The Manitowoc and Kewaunee County Emergency Organizations provide assistance in the following emergency response activities:

- a. Provide notification to county and support agencies and local area residents that an incident has occurred at the Kewaunee Nuclear Power Plant, if necessary.
- b. Provide liaison and communication capabilities with the plant facility and appropriate federal, state and local organizations.
- c. Assist in providing news statements, which contain accurate public information concerning the off-site consequences of the emergency through all available media. In addition, advise and instruct area residents on what protective actions should be taken.
- d. Assist in providing for medical treatment, health and sanitation services and mass care for members of the general public.
- e. Assist in the evacuation of affected off-site locations, if such an action should be required.

### 5.3.3 Federal Government

If an incident occurs at the Kewaunee Nuclear Power Plant, notification, reports, or requests for assistance may be made by the Nuclear Management Company to various federal agencies and organizations. Technical assistance from certain federal agencies in the area of communications, radiological monitoring and sampling, transportation, weather forecasts, and disaster relief may be required. The following agencies may, as the situation warrants, require notification, reports, or provide assistance:

1. U.S. Nuclear Regulatory Commission (NRC)

The NRC, as stipulated in 10CFR Part 50.72, has requested immediate notification of the NRC Operations Headquarters, Rockville, Maryland, whenever an incident occurs at the Kewaunee Nuclear Power Plant that could affect the local populace. In addition, the NRC is notified of abnormal exposures or release rates from the plant as stipulated in 10 CFR Part 20.403 and 10 CFR Part 20.405.

The NRC provides assistance during emergencies by advising other federal, state and local agencies of the radiological consequences. Subsequent reports to the NRC concerning plant status, dose predictions, requests, etc., are provided by NMC management personnel.

2. U.S. Department of Energy (DOE)

The U.S. Department of Energy's response to nuclear power plant radiological emergencies is carried out in accordance with the Federal Radiological Monitoring and Assessment Plan (FRMAP). The Chicago Operations Regional Office (CORO) of DOE responds to radiological emergencies at the Kewaunee Nuclear Power Plant upon request of the NMC or by state and local governmental agencies. The CORO can dispatch a team of specialists to the Kewaunee Nuclear Power Plant area to provide radiological assistance and aid in recommending actions to counteract and control off-site hazards associated with the radiological emergency.

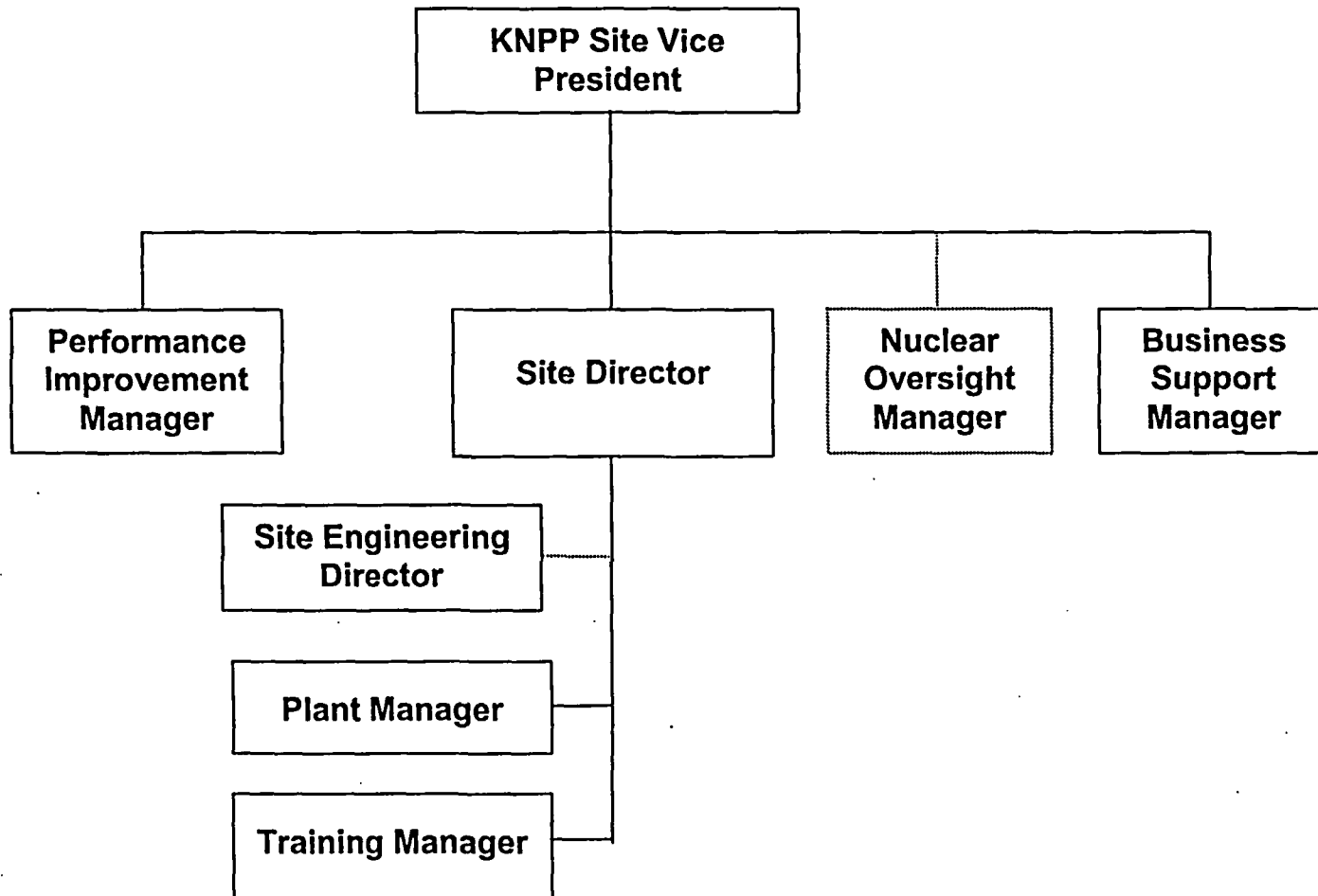
A letter of agreement between the NMC and DOE is maintained in support of this Plan.

3. U.S. Coast Guard

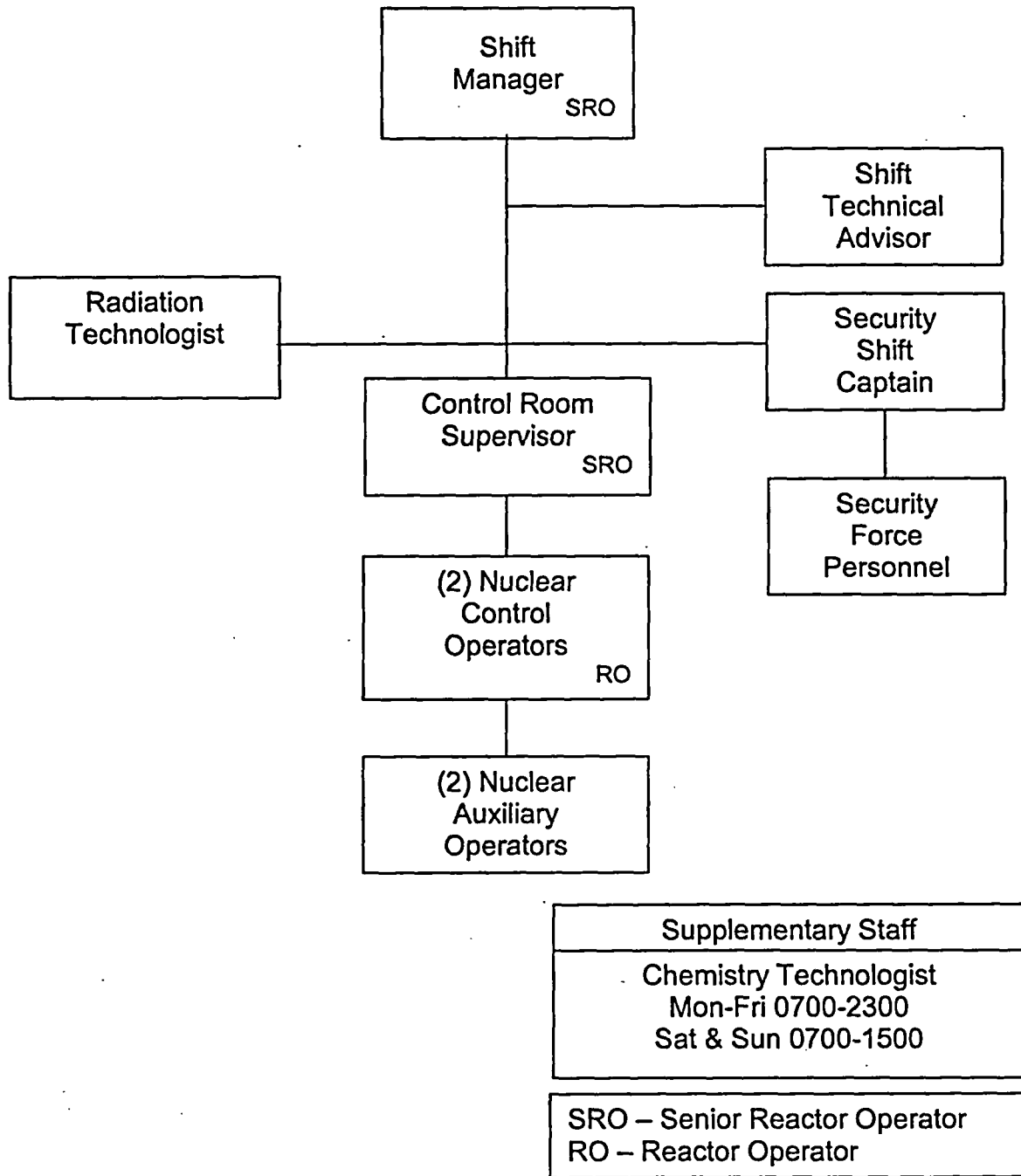
Cognizant state and local emergency governments have a single point of contact with the U.S. Coast Guard which is manned 24 hours a day. The U.S. Coast Guard response will include:

- a. When requested by the cognizant state or local emergency governments, making a marine broadcast and issuing a Notice to Mariners, warning all craft of the danger in the area. Contents of the broadcast will be supplied by the cognizant emergency governments.
- b. Considering requests for additional assistance on a case-by-case basis from the Federal Emergency Management Agency (FEMA) or their designated representative. The decision to commit U.S. Coast Guard resources (i.e., vessels, aircraft and personnel) will be made by the Commander, Ninth Coast Guard District.

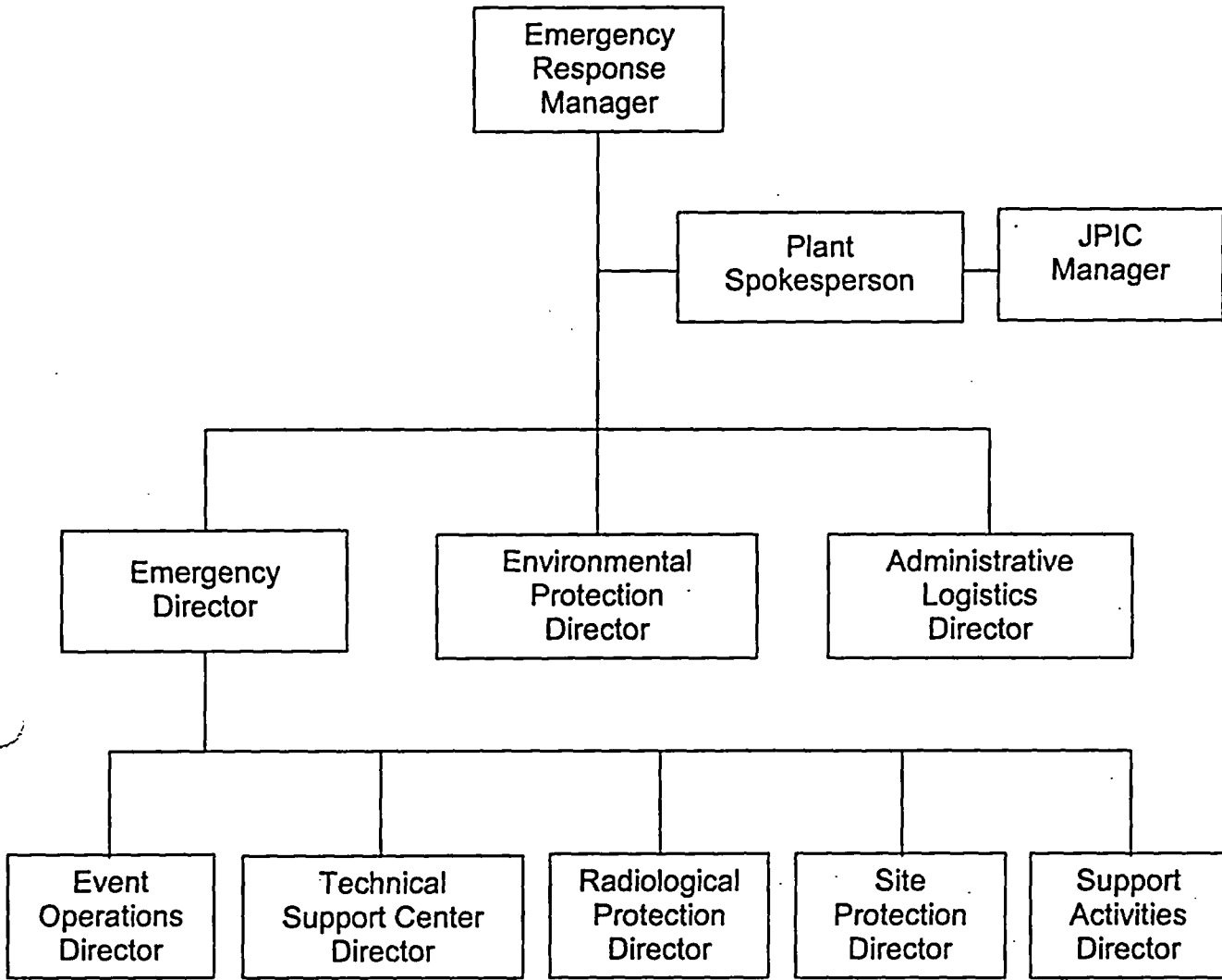
**KEWAUNEE NUCLEAR POWER PLANT ORGANIZATION  
FIGURE 5-1**



**FIGURE 5-2  
ORGANIZATION OF NORMAL OPERATING SHIFT CREW**



**FIGURE 5-3**  
**EMERGENCY ORGANIZATIONAL STRUCTURE**



## SECTION 6

### 6.0 EMERGENCY MEASURES

This section identifies the measures that shall be taken for each class of emergency. These measures are described in detail in specific KNPP Integrated Plant Emergency Operating Procedures (IPEOPs) and Emergency Plan Implementing Procedures (EPIPs).

These emergency measures include:

1. The recognition and declaration of an emergency classification (including verification).
2. Notification of the applicable agencies for each emergency classification (including verification).
3. Mobilization of the appropriate portions of the emergency response organization.
4. Assessment actions.
5. Corrective actions.
6. Protective actions.
7. Aid to affected personnel.

The following subsections describe these emergency measures.

#### 6.1 ACTIVATION OF EMERGENCY RESPONSE ORGANIZATION (ERO)

The various classes of emergencies can occur individually or in some order of progression over a period of time. The emergency response organization shall be activated upon the decision of the Emergency Director. The emergency response organization consists of plant and corporate staff personnel who are readily available during normal working hours and on a call-in basis during other than normal working hours. These emergency response personnel are notified by the use of the plant public address system (Gai-tronics), telephones and radio pagers. The notification of the ERO personnel is illustrated in FIGURE 6-1. Activation of off-site emergency response organizations will be accomplished according to the severity of the emergency class. Specific Emergency Plan Implementing Procedures provide message formats for notification of off-site agencies as well as message verification procedures (see Section 6.8). The initial notification of supporting groups and agencies is shown in FIGURE 6-2.



## **6.2 ASSESSMENT ACTIONS**

Continuous accident assessment is necessary throughout the duration of an emergency. Each emergency class will involve similar assessment methods, however, each classification necessitates a different magnitude of effort. The following subsections describe the methods, systems and equipment for assessing and monitoring actual or potential consequences resulting from an emergency.

### **6.2.1 In-Plant Monitoring**

The Kewaunee Nuclear Power Plant is equipped with instrumentation for monitoring plant systems parameters and radioactive releases to the environment. Plant systems parameters include primary and secondary system pressures, temperatures, water levels, and flow rates. Radiological parameters include general area radiation levels and gaseous and liquid effluent activities. This instrumentation is capable of initiating the appropriate alarms or actuating control equipment when pre-established limits are reached. When this instrumentation indicates an actual or potential emergency condition, immediate steps will be taken to assess the situation and confirm the indications.

### **6.2.2 Source Term Evaluation**

The appropriate EIPs describe the methods used to determine the extent of gaseous and liquid effluent releases. For gaseous effluent releases, the technique involves obtaining grab samples of the gaseous effluents being discharged from the Auxiliary or Shield Building Vent. The analysis of the samples is performed in the counting room or Radiological Analysis Facility to determine which isotopes are being discharged and concentrations of each. Samples can also be transported to the Point Beach Nuclear Plant (PBNP) Laboratory Facility for analysis.

Additionally, EIPs have been developed to determine concentrations or release rates of radionuclides by observing readouts and stack flow rates from Auxiliary and Shield Building Vent Stack SPING monitors. These monitors measure particulates, iodines, and noble gases.

Liquid effluent releases are determined by taking grab samples at appropriate points in the release path. These release paths may include the Steam Generator Blowdown, Liquid Rad Waste, Containment Fan Coil Cooling Water, Auxiliary Building Service Water and Turbine Building Sump. A Gamma scan is taken on these liquid samples to determine the quantity of isotopes present or being discharged.

Since source term evaluation relies on specific plant indications and instrumentation, and since it can be postulated that any combination of these plant indicators or instruments can be off-scale or inoperable, radiological environmental monitoring can be utilized to determine gaseous and liquid effluent releases. Environmental samples are obtained by environmental monitoring team within the plume exposure pathway. This environmental monitoring data can be used to calculate radiation exposures or determine source terms (see Subsection 6.2.4 for further details).

### **6.2.3 Dose Assessment**

Accidents involving releases of radioactive materials to the environment require special methods of assessment to ensure that responses are appropriate for the protection of the population-at-risk, as well as plant personnel. The radiological assessment will include estimating whole body and thyroid doses for both site and off-site areas. However, as personnel, facilities, and information become available, more sophisticated analyses will be performed to determine the total integrated dose for the total population in the plume exposure pathway. These analyses will initially be the responsibility of the Radiological Protection Director at the Kewaunee Nuclear Power Plant. Dose assessment responsibilities will be transferred to the Environmental Protection Director upon activation of the Emergency Operations Facility for dose assessment functions. In addition, EIPs have been developed to not only allow for recognizing Unusual Event, Alert, Site Area Emergency and General Emergency EALs based upon radiation readouts from the Auxiliary Building Vent Monitors (see Chart A(2) of EPIP-AD-02), but also to provide for a protective action recommendation to be made based on the declared event and general plant conditions.

Dose projections will be prepared using plant effluent monitor data or grab sample results to project doses from releases of noble gases, iodines and particulates. Environmental radiological measurements and samples shall be used to confirm or adjust initial dose projections. These dose projections are one of the tools used to determine whether protective actions need to be recommended. The EIPs incorporate a computerized method for determining projected doses. This method is available on the network, stand-alone and laptop computers as appropriate for the Emergency Operations Facility and the Radiological Analysis Facility. Backup power is available in both of these facilities. The atmospheric dispersion factors, dose conversion factors, and isotopic concentrations or release rates are calculated using methods described in NUREG 1741. The atmospheric dispersion factors are calculated according to the stability class, wind speed, and distance from the plant. Dose projections are based on isotopic mixture predictions from the Westinghouse Owners Group response to NUREG 1150 and references TID 14844.

#### **6.2.4 Field Monitoring**

Field monitoring within the plume exposure pathway will be performed by Environmental Monitoring Team(s). Team members are trained to perform field surveys, air sampling and environmental sampling. Each team is provided with air sampling equipment, personnel dosimetry, radiological survey instruments, procedures, portable radios, and transportation. Methods for detecting and measuring radioiodine concentrations of  $1 \times 10^{-7}$   $\mu\text{Ci/cc}$  in air have been established.

The Site Boundary Facility (SBF) will serve as an equipment supply center for field monitoring activities. Teams will be deployed in a manner that will provide a preliminary estimate of plume exposure rates. An EPZ Grid Map referenced by grid coordinates will be utilized (see Appendix C, page C-5). The information collected will be forwarded to the Environmental Protection Director located at the Emergency Operations Facility. Sample analysis will be coordinated through the Radiological Analysis Facility using site facilities or facilities available through letter of agreement (see Appendix D).

#### **6.2.5 Severe Accident Management**

Analysis of severe accident events will be accomplished in a designated area of the Technical Support Center. A three-person analysis team comprised of a Team Leader, a core hydraulics specialist and an individual with operations knowledge will perform this function. Access to computer based plant-monitoring systems and access to information directly from the Control Room will be available. Pre-established severe accident event analysis guidelines as well as computational aids will be maintained and available in the Control Room and the Technical Support Center. In the early stages of an event, core damage assessment may be performed in the Emergency Operations Facility.

Using guidelines, computational aids, plant data, and other information, the team will formulate and recommend mitigating actions to the Emergency Director. The Emergency Director will facilitate consensus and provide final approval for the implementation of accident mitigative actions recommended by the Severe Accident Management Team.

Following the implementation of mitigating actions the Severe Accident Management Team will monitor the effect of those actions and, if needed, provide modifying or new recommendations.

### **6.3 CORRECTIVE ACTIONS**

Corrective actions are taken to prevent or mitigate the serious consequences that could result from an emergency. Normal operating procedures as well as emergency operating procedures and Severe Accident Management Guidelines describe the corrective actions that can be used to place the plant in a safe and stable condition.

Operator training is a vital factor in ensuring that corrective actions are taken in an expeditious manner.

Instrumentation, control system monitors and the Radiation Monitoring System provide indications and readings needed by operators for safe operation of the plant. These systems provide the operator with the information and controls needed to start up, operate at power, shutdown the plant and initiate corrective actions.

When necessary, the following additional mitigating actions can be implemented during an emergency situation:

#### Fire Fighting

Strategies have been developed for fire fighting and fire protection in specific critical areas of the plant. Administrative procedures describe the fire protection organization and individual responsibilities. If outside support is needed, the City of Kewaunee Fire Department will be called in to assist in extinguishing the fire.

#### Damage Control and Repair

For minor emergencies, plant personnel will normally be able to handle cleanup, repair, and damage control. For major emergencies, the support of other NMC personnel or specialized outside contractors may be required to assist in damage control, cleanup, and repair operations.

### **6.4 PROTECTIVE ACTIONS**

Protective actions are taken during or after an emergency situation to minimize or eliminate any hazards to the health and safety of plant personnel and the general public. Such actions taken at the site are the responsibility of NMC, while those taken off-site fall under the jurisdiction of the State of Wisconsin and other off-site emergency response organizations. The following subsections describe on-site and off-site protective actions.

## 6.4.1 Site

### 1. Notification and Response Times

If personnel assembly and accountability are required, all individuals at the site (including employees without emergency assignments, visitors and contractor and construction personnel) shall be notified of an emergency over the public address system and by the sounding of the plant siren. The best estimate for initial notification of all individuals at the site is expected to be within ten to twelve minutes of the occurrence of an emergency situation.

### 2. Personnel Accountability

Personnel accountability is the responsibility of the Site Protection Director with assistance from the Accountability Coordinators. During an emergency situation, which requires plant personnel to report to an assembly area, the Accountability Coordinators are responsible for ensuring that all personnel are accounted for and the results are reported to the Site Protection Director. The security force shall furnish a list of all visitors and construction workers to ensure complete accountability. If personnel are unaccounted for, teams shall be dispatched to locate, and if necessary, rescue the personnel. Personnel accountability can be accomplished within 30 minutes using the existing implementing procedure.

### 3. Site Access Control

Access to site areas is directed and controlled by the Site Protection Director. Individuals entering or leaving the site shall use the normal access/egress routes through the Security Building. If radiological conditions prohibit direct access to the plant through the Security Building, the Site Protection Director and the Radiation Protection Director, will determine and establish another location appropriate for the existing emergency conditions. After initial staffing of the emergency response facilities, authorization for non-emergency response organization personnel or non-plant badged personnel to enter or exit the site may be received from a director of the emergency response organization or the Shift Manager: Access control operations are described in the EIPs.

### 4. Evacuation

Evacuation from the Kewaunee Nuclear Power Plant will depend on the nature of the emergency and the extent of the area affected. The Emergency Director will order the evacuation of plant personnel after careful consideration of the benefits and risks involved. The detailed responsibilities and functions of plant personnel during an evacuation are contained in the appropriate EPIP.

When an evacuation is ordered, personnel shall proceed to designated assembly areas and await further instructions.

A plant evacuation is considered when the conditions that require an evacuation are not confined to a plant building or when general area radiation levels outside the radiological controlled area exceed prescribed limits. In addition, a plant evacuation may be initiated if a hazard continues to increase in severity, or spreads, or the Emergency Director deems it necessary that nonessential personnel be evacuated from the plant. Transportation shall be provided by NMC (WPSC) or private vehicles. The Emergency Director and the Site Protection Director with the assistance of the Radiological Protection Director shall coordinate evacuation and monitoring activities with off-site officials. The evacuation EIPs take into consideration evacuation routes (primary and alternate routes) and alternatives for inclement weather and radiological conditions.

#### **6.4.2 Off-Site**

Required Protective Actions for off-site areas are discussed in the state and local plans. As stated, the plant will classify the incident and will notify the appropriate Federal, state and local authorities. The State plan has adopted the U.S. Environmental Protection Agency's Protective Action Guides for initiating actions to protect the health and safety of the public. These are provided in Table 6-1.

There are various types of actions that can be taken to protect the public. These include:

1. Taking shelter
2. Evacuation
3. Access control
4. Food, milk, water, and livestock distribution control
5. Individual protective actions (e.g., respiratory protection equipment and protective clothing)

The Environmental Protection Agency, Protective Action Guides serve as the basis for recommending protective actions to the public. The type, amount, and duration of the release and weather conditions must be considered when recommending protective actions. In particular, when considering the protective action options of sheltering and evacuation, plume travel time, evacuation time estimates, and shielding factors must be taken into account.

Projected doses to the public can be correlated to the dose ranges and accompanying recommended actions in Table 6-1.

The Emergency Response Manager and the Emergency Director have the responsibility to recommend protective actions to off-site authorities (see Section 5.2.1). However, implementation of the protective actions is at the discretion of the off-site authorities.

Protective Action Guidelines used by off-site authorities are described in Chapter E, "Protective Action Guides," found in the Wisconsin Department of Health and Family Services, Radiation Protection Section, "Nuclear Incident Response Plan."

## **6.5 USE OF PROTECTIVE EQUIPMENT AND SUPPLIES**

Protective equipment and supplies shall be utilized to minimize external and internal radiological exposure and contamination to individuals at the site. These supplies include respiratory equipment, protective clothing and radioprotective salt (potassium iodide, KI). Details on the use of protective equipment and supplies are provided in the Kewaunee Nuclear Power Plant General Access Training Manual and the appropriate Emergency Plan Implementing Procedures.

### **6.5.1 Individual Respiratory Protection**

Respiratory protection devices shall be issued as required to emergency teams entering areas of suspected or known high airborne radioactivity concentrations. Self-contained breathing apparatus shall be used in areas with oxygen deficient atmospheres or unknown conditions. Respiratory equipment is maintained at various assembly areas and emergency response facilities.

### **6.5.2 Protective Clothing**

Protective clothing shall be issued as required to personnel working in areas of suspected or known radioactive contamination. Protective clothing includes items such as coveralls, plastic suits, plastic hoods, rubber gloves and plastic booties. The protective clothing is stored at the Radiation Protection Office, Radiological Analysis Facility, and the Site Boundary Facility.

### **6.5.3 Use of Radioprotective Drugs**

The radioprotective salt, potassium iodide (KI), can be utilized to affect iodine saturation of the thyroid thus preventing the uptake and accumulation of radioactive iodine in the thyroid gland. The criteria for making KI available to NMC (WPSC) emergency response personnel depends on the projected absorbed dose to the thyroid and the severity and magnitude of the incident. Quantities of KI are available at the Technical Support Center, Control Room, and the Site Boundary Facility.

## **6.6 CONTAMINATION CONTROL MEASURES**

Preventive measures shall be taken to minimize direct exposure to or ingestion of radioactive materials. These contamination control measures are described in detail in the Kewaunee Nuclear Power Plant General Access Training Manual and are summarized below in the following subsections.

### **6.6.1 Site**

To avoid personnel contamination or the spread of contamination in the plant, contaminated areas shall be designated and clearly identified. Access to these areas shall be controlled and personnel shall use appropriate protective clothing and care to ensure that they neither contaminate themselves nor spread the contamination. Limits for contamination and required protective clothing guidelines are contained in the Kewaunee Nuclear Power Plant General Access Training Manual.

Drinking water and food supplies are not allowed in contaminated or potentially contaminated areas. If the potential for contamination exists in areas containing drinking water or food, the area and food/water shall be surveyed. If contamination is discovered, appropriate actions shall be taken based on the level and location of the contamination.

In general, contaminated areas and materials are permitted to return to normal use when these areas meet the contamination limits, which are applied to them under normal operating conditions. However, some areas and equipment may have to be returned to its original function prior to achieving these limits. In such cases, special precautions and measures will be taken to prevent personnel contamination and to limit the spread of contamination. These precautions include protective clothing, painting and covering the item/area.

### **6.6.2 Off-Site**

For areas beyond the Site Boundary, the Wisconsin Department of Military Affairs, Division of Emergency Management with the resources of the Department of Health and Family Services, Radiation Protection Section, is responsible for assessment and evaluation and will determine which Protective Actions should be taken within the Emergency Planning Zones.

The State of Wisconsin Radiological Response Team(s) will identify levels and control access within the affected area. Other state agencies will take actions, as necessary, under the direction of the Administrator of the Division of Emergency Management, to assess and control dairy and agricultural products within the affected area. In addition, the Administrator of the Division of Emergency Management, assisted by the appropriate state agencies, will provide advisory information regarding the use of potentially affected home food and water supplies throughout the Ingestion Exposure Pathway EPZ. These state agencies will also be responsible for ensuring that contamination levels are below the established criteria before normal usage is restored. The Nuclear Management Company will inform the State of Wisconsin of any identified areas of surface contamination outside the protected area of the plant and within the EPZ.



## 6.7 AID TO AFFECTED PERSONNEL

Provisions have been made to assist personnel who are injured and/or have received high radiation exposures. Designated personnel have been trained in first aid and radiation emergency team procedures. First aid and decontamination facilities are available at the site. Additional assistance is available from off-site facilities and emergency transportation services. The following subsections describe the means for providing assistance for emergency response personnel at the Kewaunee Nuclear Power Plant.

### 6.7.1 Radiological Exposure Control

All reasonable measures shall be taken to control the radiation exposure to emergency response personnel providing rescue, first aid, decontamination, emergency transportation, medical treatment services, or corrective or assessment actions within applicable limits specified in 10CFR Part 20. Conditions and methods for permitting volunteers to receive emergency radiation exposures are described in Health Physics procedures. These procedures and associated training allow volunteers to make rapid decisions based upon a knowledge of potential risks associated with emergency level exposure and the benefits expected from the action.

#### 1. Emergency Exposure Criteria for Personnel

The Emergency Director has the responsibility upon notification of an existing emergency to authorize plant and emergency response personnel to receive doses in excess of 10CFR Part 20 limits if necessary. This authorization is coordinated with the Radiological Protection Director. Table 6-1 contains the guidelines for emergency exposure criteria, which is consistent with the "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400-R-92-001)".

#### 2. Emergency Exposure Criteria for Airborne Concentration

In the event of a major radiation emergency, exposure to airborne concentrations of radioactivity shall be limited by the following:

- a. Whenever practicable, total internal exposure of any individual during an emergency should be limited to 40 DAC-hours.
- b. If emergency operations demand, total internal exposure of any individual shall be limited to 1,200 DAC-hours. This is equivalent to 3 Rem/CEDE internal radiation exposure.
- c. Respiratory protection devices shall be used whenever appropriate to control internal doses (see subsection 6.5 for details on the use of protective equipment and supplies). Potassium Iodide may be used, as deemed appropriate to supplement respiratory protective devices.

- d. Limits for exposure to Xe-133 and other noble gases are based on the Beta plus Gamma dose limits to the skin.
- e. An integrated exposure of 10,000 DAC-hours for nuclides with short effective half-lives is CEDE equivalent to a dose of 25 Rem and should be received only with the approval of the Emergency Director and concurrence from the Radiological Protection Director. Similar exposure to nuclides with long effective half-lives (> 1 day) are to be avoided and should be restricted to 1,200 DAC-hours as in "b" above.
- f. Personnel who have been exposed to more than 4,000 DAC-hours shall be removed from further emergency duty, whole-body counted, and referred to a physician for medical consultation.

### 3. Exposure Records and Control

In an emergency situation, dosimetry service for all emergency response personnel shall be provided on a 24-hour per day basis. It is the responsibility of the Radiological Protection Director and his designated personnel to establish and maintain the personnel monitoring program. Dosimetry will be issued in accordance with procedure HP-03.11, "Dosimetry Issuance and Record Keeping". Personnel monitoring devices will be issued from either the Security Building, the Radiation Protection Office, Radiological Analysis Facility or the Site Boundary Facility. For documentation purposes, exposure records shall be kept. This information shall be evaluated and utilized to determine emergency assignments and to assure that personnel do not exceed exposure guidelines. The EIPs shall detail the procedural steps for dosimetry issuance, record keeping, and personnel monitoring.

#### 6.7.2 Decontamination

Decontamination of personnel, supplies, equipment and instruments shall be performed by following established radiation practices and procedures. Decontamination is conducted under the direction of the Radiological Protection Director. The action levels for determining the need for decontamination are specified in the appropriate EIPs. Radioactive waste shall be disposed of in accordance with established plant procedures.

Personnel decontamination will be performed primarily in the Personnel Decontamination Area, located in the Auxiliary Building and the Radiological Analysis Facility. These areas are equipped with a sink, a shower and the required cleaning agents for decontaminating personnel. Relocated site personnel can be decontaminated at the Site Boundary Facility. Decontamination supplies, spare clothing and contamination survey instruments are available at the Site Boundary Facility. In addition, equipment and instruments can be decontaminated in the plant decontamination room in the Auxiliary Building.

### **6.7.3 Medical Transportation**

Vehicles are maintained at the plant to transport ill or personnel with minor injuries to off-site medical facilities if required. If immediate professional medical help is required, local ambulance services are available to assist in the transport of seriously injured personnel.

### **6.7.4 Medical Treatment**

Arrangements have been made with the Aurora Medical Center for the medical treatment of plant personnel. Hospital personnel have been instructed and trained in the treatment and care of patients with contamination and radiation overexposure.

Ill or injured personnel transported to the Aurora Medical Center while in a contaminated condition shall be accompanied by a NMC (WPSC) or support person trained in radiological monitoring who will stay in attendance and maintain radiological control. Hospital equipment and supplies utilized in treating a contaminated patient shall be surveyed and decontaminated before being released in accordance with Health Physics procedures." University of Wisconsin Hospital and Clinics has agreed to serve as a referral source in the event of a serious radiation accident at the Kewaunee Nuclear Power Plant. Its services are available 24 hours a day for either consultation or treatment.

## **6.8 METHODS OF NOTIFICATION**

This section outlines the general methodology for notifying the NRC and state and local emergency response organizations. It also describes the basic means that will be used to notify and provide general instructions to the general public living within the plume exposure pathway Emergency Planning Zone.

### **6.8.1 Nuclear Regulatory Commission (NRC) Notification**

The NRC is notified in accordance with 10CFR Part 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors" and 10CFR Part 20.2202, "Notification of Incidents". These documents include immediate and 24 hour notification requirements.

## **6.8.2 Notifications of Off-Site Agencies**

Off-Site emergency response organizations shall be notified as appropriate depending on the nature and severity of the incident. The initial notification message to the appropriate state and local organizations shall contain information about the class of the emergency, whether a release is occurring, potentially affected population and areas, and whether protective measures may be necessary. Follow-up communication with off-site agencies shall consist of periodic messages, which contain the following information (if it is known and appropriate):

- a. Location of incident and name and telephone number (or communications channel identification) of caller;
- b. Date and time of incident;
- c. Class of emergency;
- d. Type of actual or projected release (airborne, waterborne, surface spill) and estimated duration and arrival time;
- e. Estimate of quantity of radioactive materials released or being released,
- f. Chemical and physical form of released material, including estimates of the relative quantities and concentrations of noble gases, iodines, and particulates;
- g. Prevailing weather (wind velocity, direction, temperature, atmospheric stability, presence, and form of precipitation);
- h. Actual or projected dose rates at Site boundary and projected integrated dose at Site boundary,
- i. Projected dose rates and integrated dose at about 2, 5, and 10 miles from the plant, including sector(s) (and/or counties) affected;
- j. Estimate of any surface radioactive contamination;
- k. Emergency response actions underway;
- l. Recommended emergency actions, including protective measures;
- m. Request for any needed support by off-site organizations; and
- n. Prognosis for worsening or termination of event based upon plant information.

Emergency Plan Implementing Procedures provide notification message formats, message authentication schemes for each emergency classification and verification of notification arrangements with each agency notified. In addition, the State of Wisconsin and Kewaunee and Manitowoc County emergency response plans have prepared text messages for informing the public of a nuclear power plant incident. These messages include instructions on protective actions and where to get additional emergency information. The follow-up messages from the Kewaunee Nuclear Power Plant to the appropriate state and county agencies will provide the supporting information for the prepared text messages.

### **6.8.3 Notification of General Public**

Initial notification of the public will be accomplished by a combination of fixed sirens, Local Law Enforcement Agency (LLEA) mobile public address system, the Emergency Alerting System (EAS) and marine band radio broadcasts. This system covers essentially all of the Kewaunee Nuclear Power Plant emergency-planning zones, which effects both Manitowoc and Kewaunee Counties.

Because of the overlap of Kewaunee Nuclear Power Plant and Point Beach Nuclear Plant emergency planning zones, the fixed siren portion of the system is shared by both utilities. In total there are twenty-seven (27) fixed siren sites within the combined emergency planning zones.

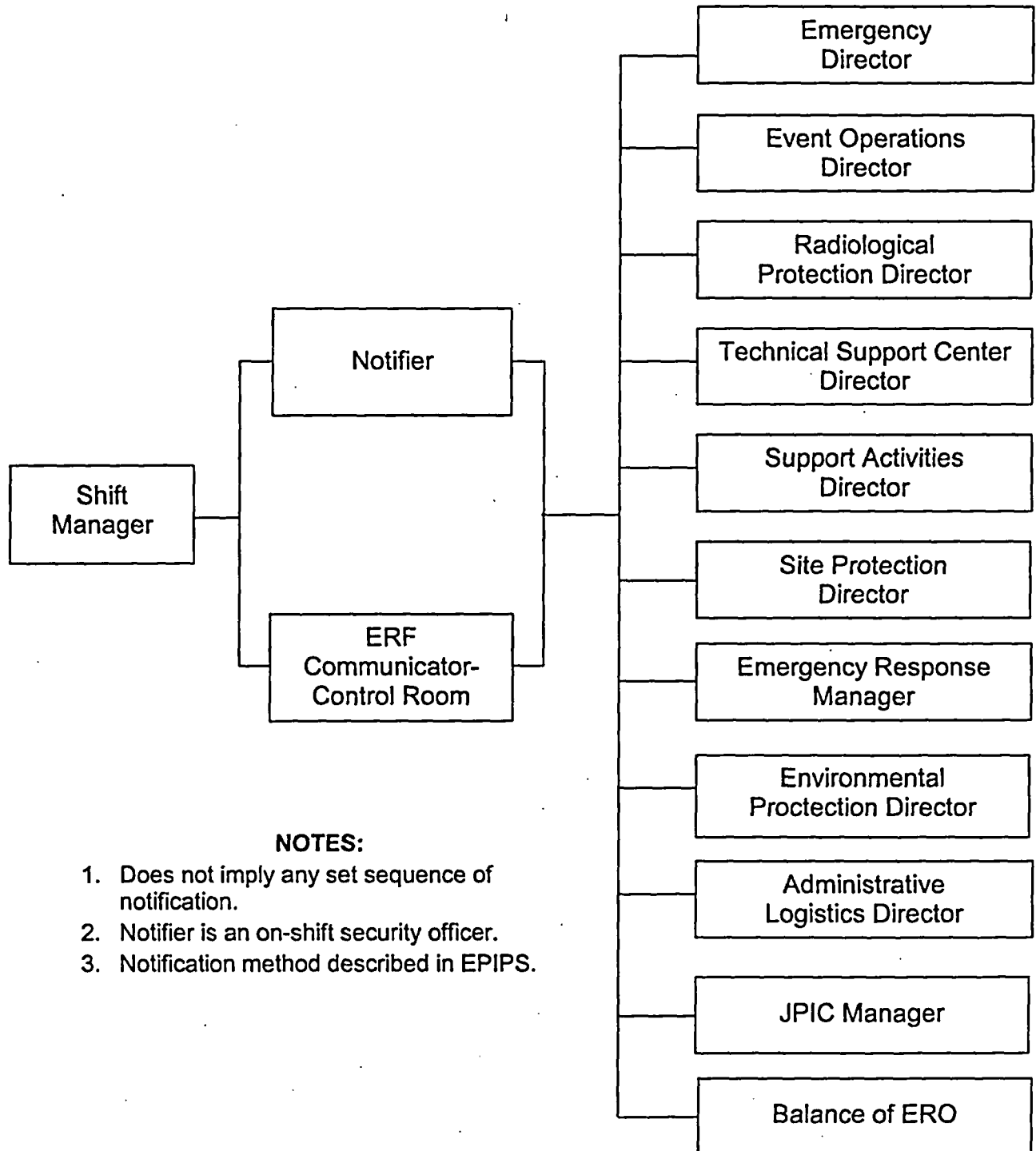
Essentially 100% of the Kewaunee Nuclear Power Plant emergency planning zone is covered by fixed sirens. Areas that are normally covered by fixed sirens that experience a siren temporarily out-of-service or experience a random activation failure will be covered by Local Law Enforcement Agency (LLEA) mobile public address system, which will travel prescribed routes at a slow rate of speed.

The activation of this system is the responsibility of the emergency governments for both Manitowoc and Kewaunee Counties and will be activated whenever an emergency situation at the Kewaunee Nuclear Power Plant requires public protective actions to be implemented.

The fixed siren portion of the system is able to be activated by the sheriff's office for both Manitowoc and Kewaunee Counties. The alerting sound produced should remind area residents to tune their radios to an EAS radio station. The sirens will be tested on a periodic basis.

An EAS message, which contains protective action recommendations and emergency information for the general public, will be broadcast. These broadcasts will occur in conjunction with the sounding of the siren.

**FIGURE 6-1**  
**PLANT AND CORPORATE NOTIFICATION**

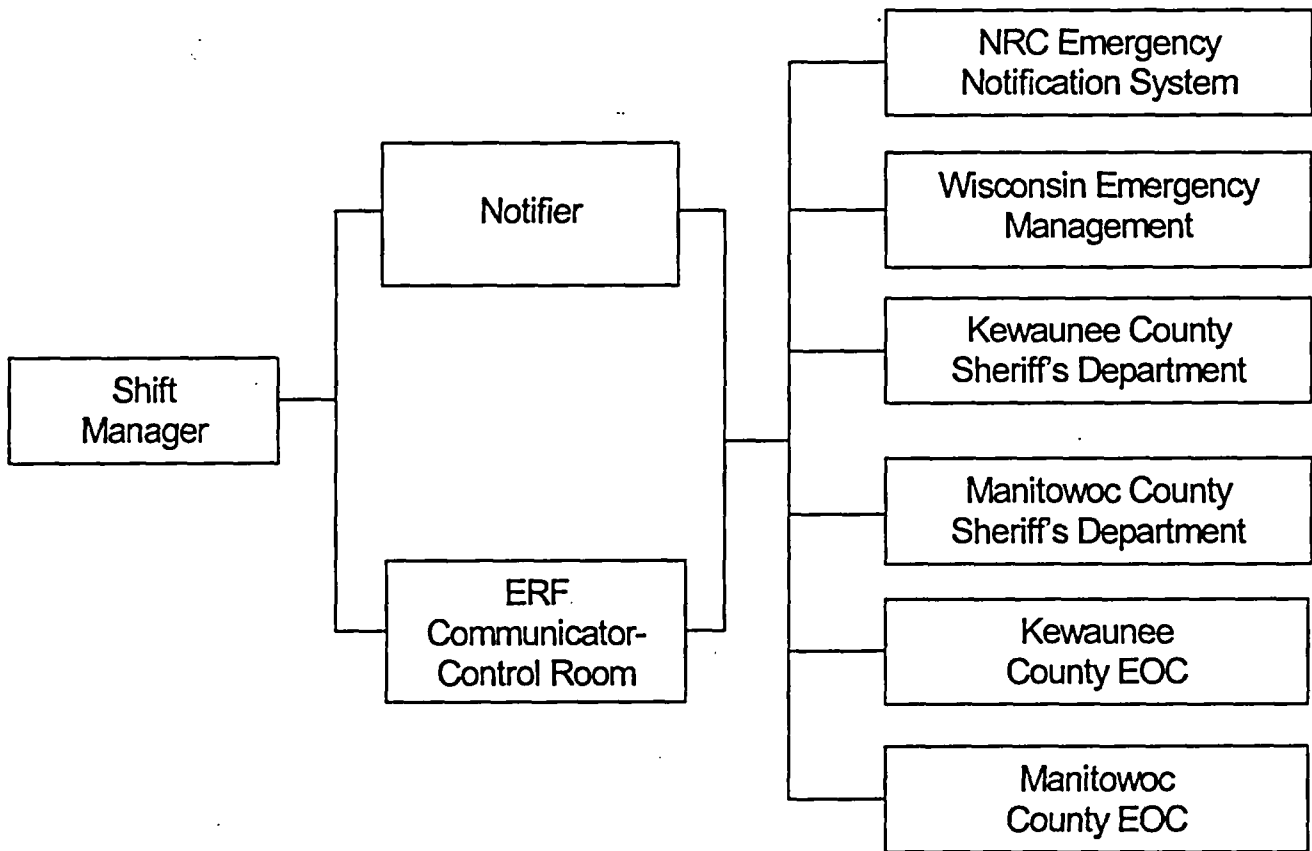


**NOTES:**

1. Does not imply any set sequence of notification.
2. Notifier is an on-shift security officer.
3. Notification method described in EPIPS.

FIGURE 6-2

INITIAL OFF-SITE NOTIFICATION



**NOTES:**

1. Does not imply any set sequence of notification.
2. Notifier is an on-shift security officer.
3. Notification method described in EPIPS.

**TABLE 6-1**  
**RECOMMENDED PROTECTIVE ACTIONS TO REDUCE WHOLE BODY AND**  
**THYROID DOSE FROM EXPOSURE TO A GASEOUS PLUME**  
**FOR THE GENERAL POPULATION**

PROJECTED DOSE (REM) TO THE POPULATION	RECOMMENDED ACTIONS <sup>(a)</sup>	COMMENTS
TEDE < 1 Rem Thyroid < 5 Rem	No planned protective actions. <sup>(b)</sup> Monitor environmental radiation levels.	Previously recommended protective actions may be reconsidered or terminated.
TEDE > 1 Rem Thyroid > 5 Rem	Recommend evacuation in affected sectors. Monitor environmental radiation levels and adjust sectors recommended for evacuation based on these levels. Control access.	Seeking shelter would be an alternative, if evacuation were not immediately possible.
<b>Projected Dose (Rem) to Emergency Team Workers</b>		
TEDE < 5 Rem All other Organs < 50 Rem TODE	Control exposure of emergency workers to these levels except for those instances listed below. (Appropriate controls for emergency workers, include time limitations, respirators, and stable iodine.)	"All Other Organs", include; Skin Extremities, and Thyroid. Stable Iodine may be made available for use where predicted doses exceed 25 Rem to the thyroid. Although respirators and stable iodine should be used where effective to control dose to emergency team workers, thyroid dose may not be a limiting factor for lifesaving missions.
TEDE < 10 Rem All other Organs < 100 Rem TODE	Emergency workers exposure should be controlled below these levels when their mission involves protecting valuable property.	
TEDE < 25 Rem All other Organs < 250 Rem TODE	Emergency workers exposure should be controlled below these levels when their mission involves life saving or protection of large populations.	For Environmental/Monitoring Teams refer to KR Dose "Maximum Doses at selected Distances" output screen. Check bone, lung thyroid doses.
TEDE > 25 Rem All other Organs > 250 Rem TODE	Exposures above these levels to emergency workers will be on a voluntary bases only to persons fully aware of the risks involved.	

- (a) These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration. These conditions include containment activity, probability of containment failure, plume transport time, release duration, and any other pertinent conditions.
- (b) At the time of the incident, officials may implement low-impact protective actions consistent with maintaining radiation exposures as low as reasonably achievable.

Note: The source for this table is the Wisconsin Department of Health and Family Services, Radiation Protection Section, "Nuclear Incident Response Plan".



## **SECTION 7**

### **7.0 EMERGENCY EQUIPMENT AND FACILITIES**

This section of the plan identifies and describes the emergency response facilities, the communication systems, the assessment and protective facilities and equipment, the first aid and medical facilities and the damage control equipment that can be utilized during an emergency.

### **7.1 EMERGENCY RESPONSE FACILITIES**

Several emergency response facilities have been established to support emergency response operations (see Appendix C, pages C-2 and C-6 for locations). These emergency response facilities operate as a coordinated group but are physically separated to minimize interference and confusion. Dedicated communication lines between the facilities ensure an uninterrupted flow of data and instructions. The emergency response facilities contain water, sanitary and other provisions for use by emergency personnel. Supplementary services, such as food and additional equipment, are readily obtainable thus ensuring the capability of long term, uninterrupted emergency response operations. Appendix F lists the emergency equipment and materials located in each emergency response facility. A detailed list of Control Room equipment and instrumentation is provided in Section 7 of the Updated Safety Analysis Report (USAR).

#### **7.1.1 Control Room**

The Control Room is the primary facility at the Kewaunee Nuclear Power Plant in which plant conditions are monitored and controlled and corrective actions are taken to mitigate any abnormal occurrence. It is operated under the direction of the Shift Manager and is the location where initial assessment, emergency classification and emergency response begins.

The controls and instrumentation necessary to operate the plant under both normal and emergency conditions are located in the Control Room. The Control Room is equipped with plant parameter instrumentation such as area and process radiation monitoring systems and alarm annunciators that give early warning of a potential emergency and provide for a continuing evaluation of the emergency situation. Additional equipment such as portable radiation survey instruments, meteorological readouts and communications equipment are also located in the Control Room. The Control Room has communications capability with all on-site and off-site emergency response facilities via the plant PBX phone system. Should the PBX system fail, other non-PBX system phone lines are installed in the Control Room (dedicated incoming lines). In addition, the Control Room has communications capability with all on-site emergency response facilities via the in-plant public address system, and communications capability with off-site state and local authorities via Dial Select System. The Control Room also has the capability to communicate with the NRC over the Emergency Notification System.

The Control Room is designed to be habitable under emergency conditions. The ventilation system, shielding and structural integrity of the Control Room permit continuous occupancy during postulated design basis accidents described in Section 14 of the USAR.

### **7.1.2 Technical Support Center**

The Technical Support Center (TSC) is located north of and adjacent to the Auxiliary and Turbine Buildings. This location is in close proximity to the Control Room. It is approximately 4,000 ft<sup>2</sup> in area and capable of accommodating more than 25 people. Plant engineering data and safety parameter displays to support Control Room operations are installed in the TSC.

The TSC is activated upon the declaration of an Alert, Site Area Emergency or General Emergency. It operates under the direction of the TSC Director and serves as the coordination point for technical support during emergency response operations.

The TSC provides the communications interface between the Control Room, the Radiological Analysis Facility, the Operational Support Facility, the Emergency Operations Facility, and the Site Boundary Facility. Follow-up communications with federal, state and local response organizations will be coordinated in the TSC prior to the activation of the Emergency Operations Facility (EOF). The TSC has communications capabilities with all on-site and off-site emergency response facilities via the plant PBX phone system. Should the PBX system fail, additional non-PBX phone lines are installed in the TSC (dedicated incoming lines). In addition, the TSC also has communications capability with all on-site emergency response facilities via the in-plant public address system. The TSC also has direct (dial-select) communication lines to the Emergency Operations Centers (EOC) for both Kewaunee and Manitowoc Counties; the State of Wisconsin EOC in Madison; the Point Beach Nuclear Plant's TSC and EOF; and the Kewaunee Nuclear Power Plant's EOF. The TSC also has the capability to communicate with the NRC over the Emergency Notification System and Health Physics Network telephones.

Adequate equipment exists in the TSC to provide the TSC staff with the capability to monitor reactor systems status and to evaluate plant system abnormalities. This equipment includes signal display instrumentation, data displays, and information storage and retrieval devices. The data displays will provide current indications and time history displays of plant parameters. A remote terminal will have the capability of displaying selected data from the plant process computer.

The TSC staff will provide information on radiological process and effluent monitors to the Radiological Analysis Facility for use in predicting radiological consequences in addition to analyzing plant data and information to make recommendations to the Emergency Director concerning accident mitigation and recovery operations.

The TSC is designed to have the same radiological habitability as the Control Room under accident conditions and has permanent monitoring systems, which indicate radiation dose rates and airborne radioactivity concentrations. The air purification system design includes particulate and charcoal filters to meet post-accident habitability requirements.

### **7.1.3 Radiological Analysis Facility and Radiation Protection Office**

The Radiological Analysis Facility (RAF) operates in conjunction with the Radiation Protection Office (RPO) in coordinating and directing radiation protection activities. The RAF and RPO are activated during an Alert, Site Area Emergency, or General Emergency. These facilities are operated under the direction of the Radiological Protection Director.

The RPO is located in the Auxiliary Building and serves as the normal access control point for the Radiological Controlled Area and as an assembly area for personnel accountability purposes. It is the headquarters for plant radiation protection activities, which include radiological surveys, personnel monitoring, decontamination, reentry, and rescue operations. The RPO is equipped with radiation monitoring and sampling equipment, protective clothing, respiratory protection devices, and other miscellaneous supplies for use during emergency situations. The RPO has the capability to communicate with all on-site and off-site emergency response facilities via the plant PBX phone system and with all on-site emergency response facilities via the in-plant public address system.

The RAF is located adjacent to the TSC. The RAF is the central location for directing plant radiological activities during emergency situations. Survey equipment, maps, and radio counting equipment are available in the RAF for making dose projections and for tracking gaseous and liquid effluents.

The RAF serves as an emergency access point into the Auxiliary Building. Since the RAF is in the same building as the TSC, it will be habitable throughout the duration of an incident. The RAF has communications capability with all on-site and off-site emergency response facilities via the plant PBX phone system, and with all on-site emergency response facilities via the in-plant public address system. In addition, the RAF has the capability to communicate with the NRC over the Health Physics Network System.

#### **7.1.4 Operational Support Facility**

The Operational Support Facility (OSF) is located adjacent to the TSC. The OSF is activated during an Alert, Site Area Emergency or General Emergency. It is operated under the direction of the Support Activities Director and is where operational and maintenance support personnel report for emergency assignment or assembly when they are not actively engaged in emergency duties. The OSF serves as a staging area for briefing plant maintenance and non-shift operating personnel. The OSF has communications capability with all on-site and off-site emergency response facilities via the plant PBX phone system. In addition, the OSF has communications capability with all on-site emergency response facilities via the in-plant public address system. Since the OSF is in the same building as the TSC, it will be habitable throughout the duration of an incident.

#### **7.1.5 Emergency Operations Facility**

The Emergency Operations Facility (EOF) is located in the Wisconsin Public Service Corporation (WPSC) Green Bay Division Building, in the city of Green Bay, Wisconsin.

The EOF is activated during an Alert, a Site Area Emergency or a General Emergency. It is operated under the direction of the Emergency Response Manager. The EOF has adequate space to accommodate representatives from various Federal, State and local organizations.

The EOF is the focal point for the coordination of on-site and off-site emergency response activities. Management and technical personnel assigned to the EOF are responsible for protective action recommendations, liaison with off-site governmental organizations and response facilities and overall management of the emergency organization.

The EOF can communicate with all on-site and off-site emergency response facilities via the WPSC Corporate Office PBX system. Should the PBX system fail, additional non-PBX phone lines are installed in the EOF. In addition, the EOF has direct (dial-select) communication links to; the Kewaunee and the Manitowoc County Emergency Operations Centers (EOC); the Point Beach Nuclear Plant's TSC and EOF; the State of Wisconsin's EOC in Madison; and Kewaunee Nuclear Power Plant TSC. Branches of the Emergency Notification System and Health Physics Network System are available in the EOF.

### **7.1.6 Joint Public Information Center**

The Joint Public Information Center (JPIC) is located within the WPSC Corporate Offices at 600 North Adams Street in the City of Green Bay, Wisconsin. The JPIC is activated during an Alert, a Site Area Emergency, a General Emergency or at the direction of the Emergency Response Manager. The JPIC Manager supervises NMC activities at the JPIC and assists the Plant Spokesperson. The JPIC is utilized to formulate and coordinate the development of news statements for the news media concerning the emergency. This facility provides periodic updates of the emergency situation and coordinates the general public information activities of the NMC and the appropriate Federal, state and local agencies to ensure that only authorized news statements are released. The general public shall be provided with a telephone number to call for the latest information regarding plant conditions. A Plant Spokesperson shall be located at the JPIC to receive information from the EOF concerning plant status. The Plant Spokesperson shall coordinate the information with the JPIC Manager.

### **7.1.7 Site Boundary Facility**

Upon the declaration of an Alert, Site Area Emergency, or General Emergency, the Site Boundary Facility (SBF), located near the site boundary, west of State Highway 42, shall be activated to serve as a staging area for off-site environmental monitoring. Environmental monitoring and sample results shall be relayed to the Environmental Protection Director at the EOF. As radiological conditions require, and at the direction of the Emergency Director, the SBF may be used as the coordinating center for access control if the Security Building is not available. Radiological monitoring of personnel and equipment entering and leaving the site can be performed at the SBF. It will be staffed with Environmental Monitoring Team or Security Force members appropriate with emergency conditions.

The SBF has telephone communications via the plant PBX system, and radio communications to the RAF and EOF. It is equipped with emergency radiation monitoring, counting and sampling equipment, protective clothing, and other supplies for use during an emergency.

## **7.2 COMMUNICATION SYSTEMS**

A comprehensive communication system with back-up capabilities has been designed to provide reliable communication links between various emergency response facilities and with off-site support organizations. The system consists of the plant PBX telephone system, the plant public address system, commercial telephone lines, a two-digit ring-down telephone network, and a radio pager system and radio communications. The details of the site and off-site emergency communication networks are illustrated in FIGURES 7-1 and 7-2. A brief description of the communication systems is summarized below:

1. The stored program PBX telephone system at the Kewaunee Nuclear Power Plant is the primary and most reliable communications system used to transmit information and data between all the emergency response facilities. The overall reliability of the PBX system is established due to the following system design characteristics.
  - a. The system is powered from an uninterruptable power supply.
  - b. The system has an internal battery pack to supply power if the primary source is lost.
  - c. The systems computer will automatically re-load the base program if the computer memory is for some reason lost. If there is a complete and total loss of the system there will still be at least seven (7) independent trunk lines available from an outside source.
2. The Plant public address system operates independent of the telephone system. The system has five paging channels and includes handset stations and loud speakers. The public address system has options for making general announcements or holding conversations via any of the five channels. Diesel generators serve as an emergency power source for the public address system.
3. Plant and corporate emergency response personnel have been issued pocket radio pagers. Pagers are activated through a computer based activation system. The system has redundant equipment to prevent single point failure.
4. The Dial-Select Telephone System is the primary means for providing initial subsequent notification of Declared Emergencies. This system provides a communication link with the Point Beach Nuclear Plant's Control Room, TSC, EOF and Alt-EOF; the Kewaunee and Manitowoc Counties' EOCs and Sheriff's Dispatch Centers; the State of Wisconsin EOC in Madison, the State Highway Patrol Dispatch Center, and the Kewaunee Nuclear Power Plant's Control Room, TSC and EOF.
5. Direct phone lines have been installed to provide rapid, uninterrupted communication with the NRC. The Radiological Analysis Facility, the Technical Support Center and the Emergency Operations Facility have direct lines to the NRC Health Physics Network. The Control Room, the Technical Support Center, and the Emergency Operations Facility have dedicated lines into the NRC Emergency Notification System.
6. A handheld radio is located in the Control Room, with portable console stations in the RAF and the EOF. The radios and PCS phones will be used to communicate with the Radiation Emergency Teams and Environmental Monitoring Teams. A transmit/receive capability exists, on an independent frequency, 24 hours a day from the KNPP to the Kewaunee County Sheriff's Department.

7. Dedicated commercial telephone lines are established to facilitate state and local authorities in contacting NMC representatives. The first line allows direct access to the Control Room, Technical Support Center, or Emergency Operations Facility as appropriate for state and local emergency government data verification calls. A second line is available to receive two calls at one time (holding feature). The third line allows direct access to the Radiological Analysis Facility or Emergency Operations Facility, as appropriate, for the State Radiological Coordinator to obtain plant, meteorological and radiological information.

### **7.3 ASSESSMENT FACILITIES AND EQUIPMENT**

This section describes the monitoring instruments and laboratory facilities used to initiate emergency measures and provide continuing assessment of conditions throughout the course of an emergency.

#### **7.3.1 Site Assessment Facilities and Equipment**

1. **Geophysical Phenomena Monitors**

The KNPP Meteorological measurement system has been designed to address the criteria provided in NUREG 0654, Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants," as described in the responses for item III.A.2.2 of NUREG 0737.

Geophysical phenomena monitors are grouped into meteorological, seismic and hydrological categories. The meteorological equipment at the site consists of three sets of wind-speed and direction transmitters, signal translators, and recorders. In addition, the temperature measurement consists of two recorders and three resistance temperature detectors (RTDs). Two RTDs on the primary tower, one at the ten (10) and sixty (60) meter levels are used to monitor ambient temperature and calculate differential temperature. Recorded ambient temperature comes from the ten (10) meter RTD. A third RTD at the ten (10) meter level on the backup tower is available for monitoring ambient temperature. Signals generated from the tower instruments are transmitted to both equipment enclosures at the base of each tower and the Technical Support Center. Recorders are run continuously in the tower enclosures and are available when needed in the Technical Support Center. Meteorological data will also be fed from the Technical Support Center to both the Control Room and the Emergency Operations Facility via the plant process computer system. These parameters are utilized in making site boundary and off-site dose projections in accordance with Emergency Plan Implementing Procedures. The meteorological measurement system has been designed to address the criteria provided in NUREG-0654, Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants."



The seismic instrumentation at the plant is designed in accordance with the requirements of Safety Guide No. 12, "Instrumentation for Earthquakes" published March 10, 1971. This system provides data on the frequency, amplitude and phase relationship of all accelerometer channels for future analytical review.

The seismic event recording system consists of three basic types of modules: field mounted triaxial accelerometers with analog outputs to a central recording panel and a read-out panel. The starting accelerometer, which is located on the base slab, senses the initial acceleration associated with a seismic event. This sensing and recording system is normally in a quiescent state but will start recording data when the intensity of the acceleration reaches a preset level as detected by the starting accelerometer. The output of each accelerometer channel provides an independent analog signal to the recording panel via interconnecting electrical cables. The starting accelerometer actuates remote indicator lights at three separate trigger levels. Recordings will be made on the playback unit and a prompt determination of the magnitude of the recorded acceleration experienced at any of the accelerometers will be made.

The hydrologic recording instrumentation consists of a forebay level indicator located in the Control Room. In addition to this, level gauge markings are painted on one of the forebay walls for direct observation. The instrumentation measures percent forebay level on a continual basis. Methods have been established enabling forebay level to be correlated to Lake Michigan level.

## 2. Radiation Monitoring System

The Radiation Monitoring System provides continuous radiological surveillance of plant systems and work areas. The system performs the following basic functions:

- a. Warns operating personnel of radiological health hazards, which have developed.
- b. Gives early warning of certain plant malfunctions, which might lead, to a radiological health hazard or plant damage.
- c. Prevents or minimizes the effects of inadvertent releases of radioactivity to the environment by consequence-limiting automatic responses.
- d. Provides routine monitoring of controlled off-site plant releases.

The Radiation Monitoring System is divided into two sub-systems. The Process Radiation Monitoring System monitors various liquid and air streams for indication of radiation levels within those streams. The Area Radiation Monitoring System monitors radiation levels in many areas of the plant.

Each channel of the system consists primarily of a radiation detector, an amplifier with associated power supplies, indicators and computer-meter outputs. The Radiation Monitoring System channels have a corresponding read-out in the Control Room, RAF, Computer Points, and local read-outs to allow continual observation by plant personnel.

Additionally, a post-accident radiation monitoring system has been installed at the plant. The system consists of SPING, Area, and Beta Air Monitors. The SPING monitors sample the Auxiliary and Containment Building Vent Stacks and measure radioactive particulate, iodine, noble gas concentrations, and area radiation levels. The Area and Beta Air Monitors are strategically located throughout the plant. Read-outs from these monitors are available at Data Acquisition Modules (DAM), on the plant process computer and at central control consoles located in the Radiation Protection Office (RPO) and Radiological Analysis Facility (RAF).

### 3. Portable Radiation Monitors

Portable radiation monitoring instruments and sampling equipment normally utilized and maintained by the Radiation Protection group is available for emergency use. This portable equipment includes low and high range ion chambers, GM-Tube survey meters, neutron survey meters, alpha survey meters, and air samplers.

### 4. Laboratory Facilities

Facilities for analyzing radioactive samples are equipped with an alpha scintillation system, a liquid scintillation system for low energy Beta emitters, gas flow proportional counters and GeLi Gamma spectroscopy system with automatic spectrum analysis. If the 642' level count room facility should become uninhabitable, samples can be analyzed in the Radiological Analysis Facility count room, 586' elevation, adjacent to the Technical Support Center. If the volume of incoming samples becomes too large for the in-plant countrooms to accommodate, alternate laboratory facilities are available (see Subsection 7.3.2(3)).

5. High Radiation Sample System

The high radiation sample system provides a radiologically safe environment for sampling various process streams and the Containment atmosphere. Both chemical and radiological analyses can be performed to aid in evaluating an accident situation.

6. Fire Detection and Suppression Equipment

The fire protection system has been designed to detect and extinguish potential fires, which might occur at the plant. The system is designed in accordance with the standards of the National Fire Protection Association (NFPA) and is based generally on the recommendations of the Nuclear Energy Property Insurance Association (NEPIA).

Fire detectors have been installed throughout the plant with alarms and indicators located in the Control Room.

The specific types of detectors used vary with the area covered and include ionization detectors, vendor-supplied equipment contacts, manual pull stations, flame detectors, flow switches, temperature detectors, and rate-of-rise detectors.

The fire protection system also includes a water spray system, a carbon dioxide system, fire extinguishers, standpipe and water-fog hose stations, fire pumps and fire hydrants. A more detailed description of the fire protection system is presented in Section 9.6.1 of the USAR.

**7.3.2 Off-Site Assessment Facilities and Equipment**

1. Geophysical Phenomena Monitors

In addition to the data available from the plant meteorological tower, backup meteorological data is available from the Green Bay National Weather Service Station in Green Bay and the Point Beach Nuclear Plant in Two Creeks. These facilities are equipped with instrumentation to monitor wind speed and wind direction.

The Department of Geological Sciences at the University of Wisconsin - Milwaukee operates a standard seismograph station equipped with three component short period seismometers and three component long period seismometers. The output of these instruments is recorded continuously on direct writing, standard earthquake drum recorders. The information recorded by these instruments is available as a backup source to the plant's seismic event recording system. Additionally, the University of Wisconsin - Milwaukee has two digital, portable seismographs and several portable seismographs equipped with smoked-paper drum recorders that can be deployed in the epicentral area to monitor any aftershock activity that might occur following a large event.

2. Environmental Radiological Monitoring and Sampling

During the declared emergency, direct radiation readings, air samples and environmental samples will be taken as directed by the Environmental Protection Director. The Environmental Protection Director will base sampling point decisions on prevailing meteorological conditions and will direct the field teams with reference to the EPZ Grid Map. The environmental monitoring may include water, soil, vegetation and air sampling. Ambient radiation levels will be determined by portable high sensitivity radiation detection instruments. The Kewaunee Nuclear Power Plant maintains a routine Environmental Monitoring and Surveillance program using environmentally sound thermoluminescence dosimeters. After any radiological hazard has passed and after the declared emergency has been terminated, this system would be used to calculate a total population whole body dose for all areas within the EPZ.

3. Alternate Laboratory Facilities and Equipment

The Point Beach Nuclear Plant laboratory facility will provide backup assistance in the radiological and chemical analysis of air, water, and other needed samples during an emergency at the Kewaunee Nuclear Power Plant if requested.

If additional laboratory facilities and equipment are needed, the NMC can request assistance from the Chicago Operations and Regional Office (CORO) of the Department of Energy (DOE).

#### **7.4 PROTECTIVE FACILITIES AND EQUIPMENT**

The Control Room, the Technical Support Center, Operational Support Facility and the Radiological Analysis Facility (located adjacent to the TSC) serve as the plant protective facilities. They are designed to be habitable under accident conditions. Emergency lighting, auxiliary power, air filtration and ventilation systems, and shielding walls enable continuous occupancy during postulated design basis accidents as described in Section 14 of the USAR. These facilities are also equipped with portable radiation instruments, respiratory equipment, portable lighting and a variety of communication systems.

#### **7.5 FIRST AID AND MEDICAL FACILITIES**

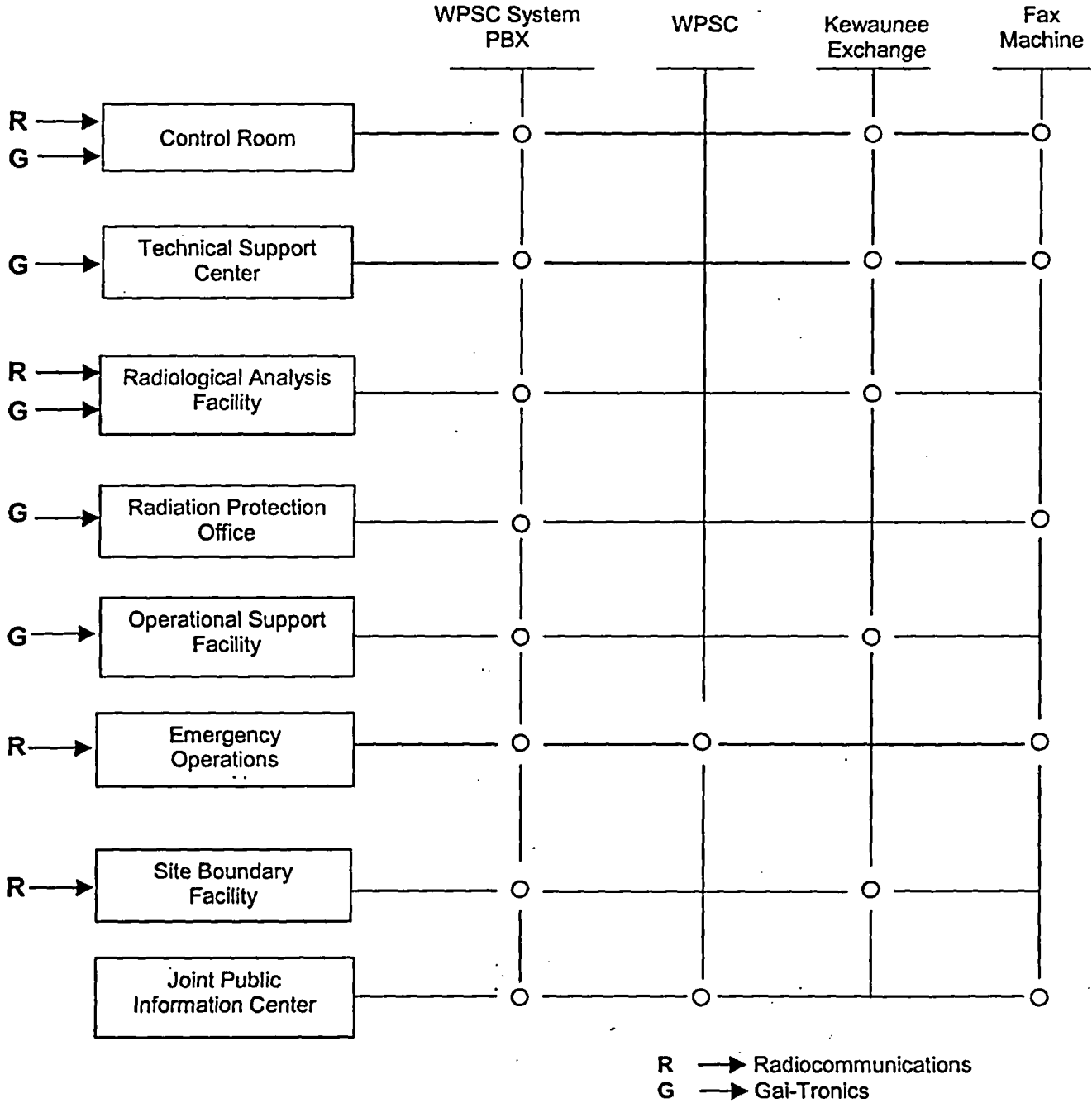
The Kewaunee Nuclear Power Plant maintains first aid equipment for all personnel working at the site. Medical supplies needed to provide emergency first aid treatment are provided on the site. Stretchers are available for transporting non-mobile, injured personnel. First Aid kits are available at various plant locations and in company owned vehicles.

#### **7.6 DAMAGE CONTROL EQUIPMENT**

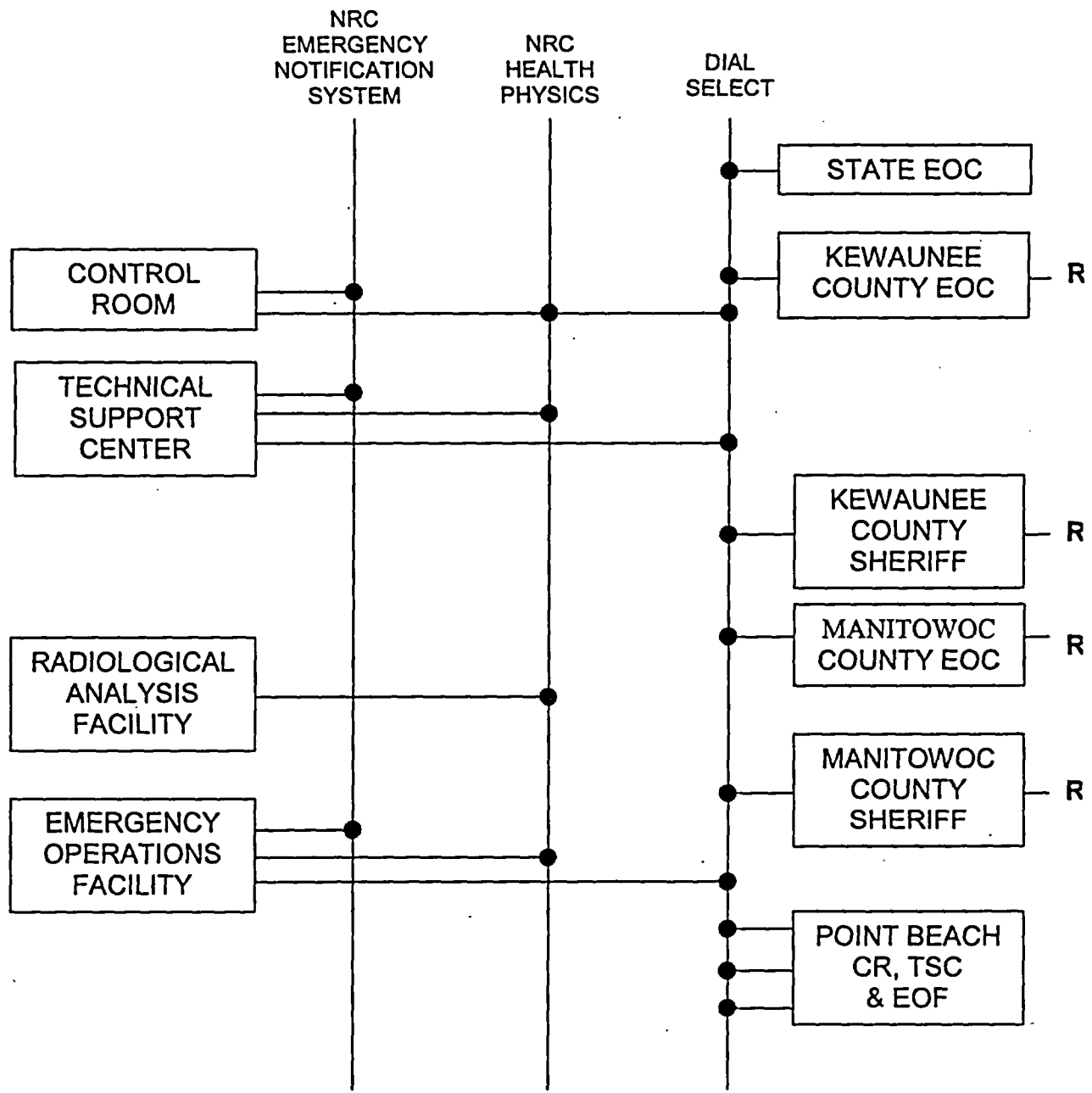
The Kewaunee Nuclear Power Plant is extensively equipped to maintain and repair mechanical, structural, electrical and control instrumentation and equipment found in the plant. In addition to the equipment and materials required for normal maintenance other equipment such as steam suits and self-contained breathing apparatus is available to handle extraordinary maintenance jobs that might develop. If necessary, additional equipment may be requested from other NMC or WPSC facilities or private contractors.

FIGURE 7-1

SITE COMMUNICATIONS NETWORK



**FIGURE 7-2  
OFF-SITE COMMUNICATIONS NETWORK**



R = Radio Communication

## SECTION 8

### 8.0 MAINTAINING EMERGENCY PREPAREDNESS

It is important that a state of emergency preparedness be maintained at all times at the Kewaunee Nuclear Power Plant. To ensure a state of readiness, the Kewaunee Nuclear Power Plant emergency preparedness program was designed to provide each of the following objectives:

1. Formal designation of management personnel responsible for the emergency preparedness program.
2. Establishment of an Emergency Preparedness Training Program.
3. Planning and conducting periodic drills and exercises.
4. Annual review and updating of the Emergency Plan and the Emergency Plan Implementing Procedures (EPIPs).
5. Routine calibration, maintenance and inventory of emergency equipment and supplies.
6. Establishment of a Public Information Program.

This section of the Emergency Plan summarizes the emergency preparedness program that has been established for the Kewaunee Nuclear Power Plant.

### 8.1 EMERGENCY PREPAREDNESS RESPONSIBILITIES

The Kewaunee Nuclear Power Plant (KNPP) Emergency Preparedness Manager is responsible to the KNPP Business Support Manager for emergency response planning. This responsibility includes ensuring that the overall emergency preparedness program is maintained and implemented as described in this Plan. The KNPP Emergency Preparedness Manager is responsible for the following tasks:

1. Coordinate the development and implementation of the emergency preparedness program.
2. Maintain knowledge of state and local emergency plans and interfaces with KNPP Plan.
3. Ensure that all drill and exercise commitments stated in the plan are met.
4. Schedule, coordinate, and monitor emergency preparedness training programs, drills and exercises for NMC and WSPC response personnel and off-site supporting agencies.



5. Coordinate and monitor material readiness of all emergency response facilities, and procedures to ensure adequate preparedness in accordance with this plan.
6. Coordinate adequate personnel coverage for specific emergency duties to assure optimal manpower coverage.
7. Obtain and maintain agreements of understanding between the NMC and federal, state, local, and private organizations so that an adequate level of emergency backup support is available.
8. Assure that the Emergency Plan and its Emergency Plan Implementing Procedures are reviewed and updated annually.
9. Provide a summary of all Emergency Plan revisions and an effectiveness evaluation following the annual review.
10. Monitor the development of all EPIPs and ensure all EPIPs receive an adequate technical review. Review all EPIP revisions to prevent the compromise of other EPIPs or the Emergency Plan.
11. Assure that the Nuclear Emergency Public Information Plan is maintained and that the annual mailing of public information is accomplished.
12. Assure that post-drill and exercise critiques are performed in accordance with established procedures.
13. Develop and distribute action plans to address drill and exercise deficiencies.
14. Compile off-site agency/utility interface problems from QA audits and technical reviews and forwards them to state and county emergency government officials.
15. Provide training support for both on-site and off-site emergency response organization members.
16. Review and update the Emergency Preparedness Training Program to incorporate program changes based on deficiencies noted during drills and exercises as well as Emergency Plan and EPIP revisions.

**The KNPP Regulatory Affairs Manager** reports to the NMC Regulatory Services Director and is responsible for the following tasks:

1. Maintaining current knowledge of changes in federal regulations and other guidance that impact emergency planning activities.
2. Reviews proposed changes to the Emergency Plan in accordance with the provisions of 10CFR50.54 (q).

3. Submit Emergency Plan and related controlled document revisions to the NRC.

**The Directors, Managers and Supervisors** reporting directly or indirectly to the KNPP Site Vice President are responsible for the following tasks:

1. Develop and update the EIPs and EPMPs assigned to them.
2. Ensuring the appropriate subject matter experts are provided to review and assist as needed in Emergency Plan Training.
3. Assist the KNPP Emergency Preparedness Manager with the following aspects of emergency preparedness:
  - a. Assist in coordinating and providing emergency preparedness training on EIPs.
  - b. Assignment of personnel to emergency response organization positions.
  - c. Response facility floor plans, status boards and logistics.
  - d. Response facility material and equipment inventories.

**The Plant Operations Review Committee (PORC)** is responsible for reviewing proposed revisions to the designated EIPs and EPMPs.

**The Nuclear Oversight Group** shall conduct an independent performance based audit of the Emergency Preparedness Program, which includes the Emergency Plan. This audit shall be conducted in accordance with the Operational Quality Assurance Program, at least every 12 months in accordance with 10CFR50.54(t); and shall include an assessment of the adequacy of interface with state and local governments, drills, exercises, personnel capabilities, and procedures.

The lead auditor conducting this audit shall have no direct responsibility for the implementation of the emergency preparedness program. However, managers and process leaders responsible for or knowledgeable of specific aspects of the Emergency Preparedness Program may request a technical review of specific areas of the program.

The results of the audit shall be formally documented in an audit report and retained for the life of the plant. This audit report shall be distributed to the appropriate NMC Management in accordance with Directive QP-14.05.01, "Performance of Audits".

State and local governments shall be notified of inadequacies involving NMC/government interface. The Nuclear Oversight Group shall forward NMC/government interface issues to the KNPP Site Vice-President.

In addition to the annual Emergency Plan Audit the Nuclear Oversight Group should conduct surveillances of drills, exercises and other aspects of the E-Plan training program.

## **8.2 EMERGENCY RESPONSE PERSONNEL TRAINING**

All aspects of emergency preparedness training administration are specified in the Emergency Preparedness Training Program. This program identifies the level and the depth to which individuals are to be trained. In addition to this program, appropriate personnel will be trained in the areas of radiation protection, respiratory protection, and multi-media first aid or its equivalent as part of the Kewaunee Nuclear Power Plant's General Access Training Program.

Plant Emergency Preparedness Group staff should receive training on emergency preparedness topics annually if appropriate programs are available in the industry.

### **8.2.1 Emergency Preparedness Training Program**

The emergency preparedness training is a combination of General Access Training and training identified in the Emergency Preparedness Training Program. Together the training needs of not only KNPP and WPSC employees who have assigned ERO duties, but also the training needs of non-ERO KNPP employees, visitors, vendors, and off-site agencies who may be on-site at the time of an incident or who may respond to the Kewaunee Nuclear Power Plant in support of the Emergency Plan. The training requirements of individuals assigned emergency response duties are defined in the Emergency Preparedness Training Program. Individuals shall meet all the applicable training requirements prior to being assigned to an emergency position.

General Access Training (GAT) shall be given to all personnel who are badged for unescorted access to the Kewaunee Nuclear Power Plant. Information pertaining to their safety and the safety of visitors under escort during a declared emergency shall be provided.

This general training shall include the following Emergency Preparedness topics:

1. Basic Emergency Plan and EPIP information.
2. The meaning of plant alarms and the emergency classification system
3. Use of plant communication systems
4. Personnel accountability and evacuation procedures

GAT shall be given annually for all individuals who remain in badged unescorted status.

The training requirements of individuals assigned emergency response duties are defined in the Emergency Preparedness Training Program. Individuals shall meet all the applicable training requirements prior to being assigned to an emergency response position. The training program identifies three training modules. They are: Initial Training, Continuing/Requalification Training, and Specialized Training.

Initial Training is intended for the new Emergency Response Organization members, those transferring to new ERO positions and those who were once members but who have been out of the organization for an extended period of time. This module shall provide a general understanding of the overall Emergency Preparedness Program, job skills specific to the position they shall be filling and training focused on the facility in which their position reports.

Continuing Training is intended as annual refresher training for Emergency Response Organization members who have completed initial training. This module shall focus on changes to the plan, procedures, equipment and regulations. Industry lessons learned as well as review of response skills and knowledge basics shall be covered.

Specialized Training is intended to meet the training needs of individuals who have an active role in supporting the Kewaunee Nuclear Power Plant, Emergency Preparedness Program. This training shall include, but not limited to, drill and exercise controller training, specific training for off-site agencies.

Training provided to off-site agencies shall be structured to meet the needs of that agency or organization with respect to the nature of their support. Topics such as event notification, basic radiation protection and interface activities between the off-site organization and NMC (WPSC) shall be made available.

The Point Beach Nuclear Power Plant and the Kewaunee Nuclear Power Plant share the services of the same off-site organizations and agencies. A memorandum of understanding has been established between the two plants to keep each other informed of emergency preparedness training being presented, thus allowing the two utilities to alternate presentations that are similar to both and therefore minimize redundant training to the off-site agencies.

### **8.2.2 Drills and Exercises**

Federally prescribed exercises are conducted at the station in order to test the adequacy of timing and content of implementing procedures and methods; to test emergency equipment and communication networks; and to ensure that emergency personnel are familiar with their duties. These exercises will be evaluated by ERO participants, KNPP assigned evaluators and possibly Federal Evaluators. The ability of KNPP personnel to self evaluate weaknesses and identify areas for improvement is key to the successful conduct of exercises.

Drills are conducted for the purpose of testing, developing, and maintaining the proficiency of emergency responders.

Periodic drills and exercises shall be conducted at the Kewaunee Nuclear Power Plant. The primary objectives of the drills and exercises are the following:

1. Test and verify the knowledge of emergency response personnel with respect to their implementation of the Emergency Plan and EPIPs.
2. Ensure that the participants are familiar with their duties and responsibilities.
3. Verify the adequacy of emergency planning methods and procedural steps.
4. Check the availability and operability of emergency equipment, including communications equipment.
5. Verify that previously identified problems associated with the Emergency Plan or EPIPs have been corrected.

The scenarios used for these drills and exercises will include, but not be limited to, the following:

1. The basic objective(s) of each drill or exercise.
2. The date(s), time period, place(s), and participating organizations.
3. A time schedule of real and simulated initiating events.
4. A narrative summary describing the conduct of the drill or exercise to include such items as simulated casualties, off-site fire assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities.

In conjunction with any scenario developed, arrangements shall be made for qualified observers to evaluate the drill or exercise. Critiques shall be scheduled at the conclusion of each exercise to evaluate the performance of the organizations involved in the exercise.

Nuclear Management Company will invite observers from Federal, state, and local governments, when requested, to observe scheduled drills or exercises.

1. Exercises

The Kewaunee Nuclear Power Plant shall conduct an emergency response exercise every two years to demonstrate the effectiveness of the Emergency Plan. During the interval between exercises a Facility-Wide Drill shall be conducted that encompasses the principle functions of emergency response. Exercise scenarios shall be developed such that all aspects of the Emergency Plan are exercised within a six-year cycle. An off-hours exercise will be scheduled to start between 6:00 pm and 4:00 am once every six years. An exercise with full participation of the state government shall be conducted at least once every six years. The local emergency governments within the Kewaunee Nuclear Power Plant EPZ shall participate in one full-scale exercise per year. Since the EPZ of both the Kewaunee Nuclear Power Plant and the Point Beach Nuclear Plant affect the same local governments, these local emergency governments shall alternate full participation each year between the Kewaunee and the Point Beach exercises.

## 2. Drills

A drill is a supervised instruction period for training, developing, and maintaining skills for a particular emergency response operation. Scheduled drills shall be held involving plant and corporate personnel as well as appropriate off-site emergency response agencies. Examples of drills that shall be conducted and their frequency include:

- a. Communication Drills - Communications with state and local governments within the plume exposure pathway EPZ shall be tested monthly. Communications with Federal and state emergency response organizations within the ingestion pathway EPZ shall be tested quarterly. Communications between the Kewaunee Nuclear Power Plant, state and local emergency operations centers, and field assessment teams shall be tested annually. These communication drills will include the aspect of understanding the content of messages.
- b. Fire Drills - This Emergency Plan commitment has been transferred to the Kewaunee Nuclear Power Plant Fire Protection Program. Implementation will be in accordance with Fire Protection Procedure FPP 8-3, "Fire Plan Qualification, Training, and Drills".
- c. Medical Emergency Drills - A medical emergency drill involving a simulated contaminated individual and containing provisions for participation by the Aurora Medical Center shall be conducted at least once a year. The off-site portions of the drill may be performed as part of the required annual exercise or as an independent drill.

Both the Kewaunee Nuclear Power Plant and Point Beach Nuclear Plant share the facilities provided by the Aurora Medical Center. To minimize redundant training for the hospital staff, the two plants will alternate development and conduct of the drill each year. The KNPP Emergency Preparedness staffs shall remain cognizant of drill development and results of the drill during their off year.

- d. Radiological Monitoring Drills - Environs and radiological monitoring drills (onsite and offsite) are conducted annually. These drills include collection and analysis of all sample media (such as, water, vegetation, soil, and air), and provisions for communications and record keeping.

The drills shall also include the identification of and gross radiation measurement of simulated radiologically contaminated areas located within the Emergency Planning Zone. Provisions for communications and record keeping shall be included in this drill.

- e. Health Physics Drills – Health Physics Drills involving a response to, and analysis of, simulated airborne and liquid samples and direct radiation measurements within the plant are conducted semi-annually.
- f. Site Accountability and Evacuation Drills - A site evacuation drill shall be conducted annually so that all personnel are aware of the proper routes and assembly areas. The accountability procedure shall be checked as part of the evacuation drill.
- g. Radio Pager Response Drill - an unannounced radio pager response drill shall be conducted quarterly.
- h. Augmentation Drills – Augmentation drills serve to demonstrate the capability of the process to augment the on-shift staff with a TSC, OSF and EOF in a short period after declaration of an emergency. At least once per drill cycle (every 6 years), an off-hours unannounced activation of the ERO Notification System with actual response to the emergency facilities is conducted by the plant.

### **8.3 REVIEW AND UPDATING OF THE EMERGENCY PLAN AND EMERGENCY PLAN IMPLEMENTING PROCEDURES**

#### **8.3.1 Emergency Plan and Emergency Plan Implementing Procedures Review**

The Kewaunee Nuclear Power Plant Emergency Plan and the Emergency Plan Implementing Procedures (EPIP) are reviewed and updated annually, in accordance with procedure NAD 5.15, "Revision and Control of the Emergency Plan," EPMP-05.02, "Preparation and Control of Emergency Plan Implementing Procedures (EPIPs)", respectively. The review shall encompass the need for changes based upon the following aspects:

1. Written critiques and evaluations of drills and exercises.
2. Changes in key plant and corporate personnel involved in the emergency response organization.
3. Changes in the organizational structure.
4. Changes in the functions and capabilities of supporting agencies.



5. Changes in Federal or State regulations.
6. Modifications to the plant facility, site, or operating status which would affect emergency planning.
7. Recommendations or agreement changes received from other organizations, such as federal, state and local agencies, or other private support groups.
8. Evaluation of the adequacy of interfaces with State and Local Governments in preparations for and response to an emergency at KNPP.

Any needed changes shall be incorporated in the Emergency Plan and appropriate EIPs. Emergency telephone numbers shall be updated at least quarterly.

All proposed EPIP changes will be reviewed prior to issue to ensure that the change would not compromise the effectiveness of any other EPIP or degrade the effectiveness of the Emergency Plan.

#### **8.3.2 Review and Updating Written Agreements**

The letters of agreement with the various support agencies shall be reviewed with the support agency every two years. Any necessary changes shall be made and the agreements renewed. The Nuclear Management Company reserves the right to enter agreements or contracts which are perpetual and free from biennial renewal, or of a period other than biennial if mutually agreed upon by the co-signers of the agreement letter or contract. However, a letter designated as perpetual agreements shall be reviewed by the NMC at a minimum biennially and the agreements subsequently updated if necessary.

#### **8.4 MAINTENANCE AND INVENTORY OF EMERGENCY EQUIPMENT AND SUPPLIES**

Appendix F, "Emergency Equipment, Supplies and Reference Materials," lists each of the emergency response facilities and the required equipment, supplies and reference materials that are to be maintained in each facility. The appendix also references the appropriate procedures used to conduct facility inventories.

Procedure EPMP-10.01, "Emergency Equipment Inventory," establishes the inventory frequency, the responsibility for performing the inventories, and stipulates where final documentation will be maintained.

Procedure EPMP-09.02, "Emergency Communication System Verification," establishes the monthly and quarterly communication system tests required.

Portable radiation monitoring equipment included in these inventories is checked and calibrated in accordance with approved procedures. Reserve instruments/equipment are used to replace those, which are removed from the emergency inventory for extended calibration or repair. Equipment, supplies, and parts having finite shelf lives shall be checked and replaced as necessary. Any deficiencies found shall either be corrected immediately or documented for prompt corrective action by the responsible supervisor.

## **8.5 PUBLIC INFORMATION PROGRAM**

### **8.5.1 General Public Education**

The Nuclear Management Company shall work with the Emergency Management Agencies of the State of Wisconsin, Kewaunee County, and Manitowoc County to provide for annual update and dissemination of information to the public regarding how they will be notified and what their actions should be during an emergency. This information may include, but is not limited to:

- a. Educational information on radiation.
- b. Contacts for additional information.
- c. Respiratory protection.
- d. Sheltering.
- e. Evacuation routes and relocation centers.
- f. Special needs of the handicapped.

The means for disseminating this information may be accomplished by one or more of the following:

- a. Posting information in public places.
- b. Distributing publications through mass mailing.

The Public Information Program is designed to reach the permanent and transient adult population within the plume exposure pathway EPZ.

### **8.5.2 News Media Information and Familiarization**

The Nuclear Management Company shall annually provide information to acquaint local area news media with the Kewaunee Nuclear Power Plant Emergency Plan. The State of Wisconsin in conjunction with Kewaunee and Manitowoc Counties also provide the local media with information on points and methods of contact. These programs shall provide information on contact points for the release of public information, operation and function of the Joint Public Information Center and educational material concerning radiation.

## SECTION 9

### 9.0 PLANT RECOVERY

#### 9.1 PLANT RECOVERY ORGANIZATION

The plant recovery organization will be based on both the normal Kewaunee Nuclear Power Plant (KNPP) and Nuclear Management Company (NMC) organizations and would function in a similar manner to an outage for refueling with the KNPP Site Vice-President being responsible for directing all site activities.

In addition a Recovery Manager would be designated by and report to the KNPP Site Vice-President prior to initiation of plant recovery operations. The Recovery Manager would be a NMC supervisor and would be responsible for overall direction of the plant recovery operation and interface with government agencies and private support groups. If deemed necessary, an Environmental Liaison would also be designated by the KNPP Site Vice-President. The Environmental Liaison would be a NMC supervisor who would report to the Recovery Manager and be responsible for coordinating environmental monitoring efforts for the NMC. The Environmental Liaison shall interface with government agencies performing environmental monitoring and assisting these agencies to determine re-entry plans for evacuated populations when requested.

In general the manpower needs would be a blend of plant and corporate staffs with the support of appropriate vendor and consultant personnel as needed. All KNPP and NMC staffs will be made available for the plant recovery operation effort. Written assistance agreements are already in place with architect engineer and NSSS vendor organizations to provide needed support.

#### 9.2 PLANT RECOVERY OPERATIONS

Wisconsin Public Service Corporation and NMC are responsible for plant recovery measures to restore the Kewaunee Nuclear Power Plant to a normal operating condition or permanent safe shutdown. The responsibility for off-site recovery rests with state and local authorities. The notification of on-site personnel and off-site response organizations that the plant recovery operation is to commence will be performed in accordance with Emergency Plan Implementing Procedures.

The extent and nature of the corrective and protective measures and the extent of plant recovery operations will depend on the emergency conditions at hand and the status of plant areas and equipment. The general goals for plant recovery operation are:

1. An orderly evaluation of the cause and effect of the emergency and the implementing of solutions to prevent the immediate recurrence of the incident.

2. A planned approach for returning the plant to a normal operational status by obtaining the appropriate manpower, materials, and equipment needed to accomplish that end.
3. A planned approach to work with off-site authorities to identify and resolve situations that may impact the general public and their health and welfare.
4. An evaluation of the radiation exposure records for all NMC and WPSC emergency response personnel involved in the incident.
5. A planned approach to ensure that radiation exposures and contamination control are in keeping with the ALARA program described within directive NAD-01.23, "ALARA Program."
6. To ensure that all nuclear safety related procedures written to effect the recovery operation are submitted to the Plant Operations Review Committee (PORC) for review and approval prior to their implementation.

During all declared emergencies, a point will be reached at which the plant will be placed in a stable condition. Also, factors, which could pose a threat to the health and safety of the general public, will be identified and controlled. With the understanding that this condition could be attained even though specific Emergency Action Levels are still exceeded, the Emergency Director in conjunction with the Emergency Response Manager will determine that there is no longer a need to keep the emergency organization in effect and to begin plant recovery operations. Although de-escalation to a lower emergency level may be performed, it is not necessary to de-escalate prior to initiating plant recovery operations. However, classification and recovery EIPs should be carefully reviewed before plant recovery is initiated.

Plant recovery activities shall be in accordance with the plant technical specifications and other license documents. During plant recovery operations, the radiation exposure limits of 10 CFR 20 shall apply. Compliance with these specifications and regulations shall be the responsibility of the KNPP Site Vice-President.

If, during plant recovery operations, an emergency situation again occurs, the NMC emergency response organization would be activated in accordance with this plan and its EIPs. Plant recovery efforts will be suspended until the emergency condition is resolved. The Emergency Director and the Emergency Response Manager will re-evaluate plant conditions and public impact prior to resuming plant recovery operations.

### **9.3 PLANT RECOVERY TERMINATION**

The plant recovery operation will be terminated by the KNPP Site Vice-President in conjunction with the KNPP Plant Manager and the Recovery Manager when the plant has been returned to a normal operational condition and all requirements stated in EPIP-AD-15, "Recovery Planning and Termination" have been addressed and documented.

**APPENDICES**

**APPENDIX A**

**Emergency Organizational Structure Functions and Responsibilities**

Emergency Response Manager ..... A-2

JPIC Manager..... A-3

Administrative/Logistics Director..... A-4

Environmental Protection Director ..... A-5

Emergency Director ..... A-6

Event Operations Director ..... A-7

Technical Support Center Director ..... A-8

Support Activities Director ..... A-9

Site Protection Director..... A-10

Radiological Protection Director ..... A-11

Plant Spokesperson ..... A-12

## EMERGENCY RESPONSE MANAGER

Location: Emergency Operations Facility

Coordinates: Overall KNPP and NMC response to the emergency event.

Primary Responsibilities:

1. Directs the overall emergency response activities of plant and corporate personnel.
  2. Assures the continuity of resources for long-term operation of the emergency response organization.
  3. Directs the emergency activities at the Emergency Operations Facility (EOF). Maintains communications from the EOF with the Control Room, OSF, SBF, TSC, RAF, and JPIC.
  4. Maintains communications with the off-site authorities designated in the Emergency Plan. Relates to off-site authorities the appropriate information needed for implementation of their emergency plans.
  5. Directs the Environmental Protection Director in acquiring off-site radiological environmental samples and in performing dose projections to be used for off-site radiological assessment.
  6. \* Makes recommendations to the state regarding the initiation of protective actions for the public.
  7. Requests assistance from federal, state, local, and private agencies.
  8. Ensure any services needed from the architect/engineer constructor or Nuclear Steam System Suppliers.
  9. Resolves questions concerning plant-licensing requirements with NRC representatives.
  10. Reviews and approves news statements prior to being released to the media.
- \* Responsibility may not be delegated.



## **JPIC MANAGER**

**Reports to:**      Emergency Response Manager

**Location:**        Joint Public Information Center

**Coordinates:**    Public Information Personnel

**Primary Responsibilities:**

1.      Serves as the liaison to the news media during an emergency. Reviews news statements and announcements. Presides at formal news briefings.
2.      Directs the activities at the Joint Public Information Center. Relays information to other employees at the center and supervises all communication operations at the center.
3.      Coordinates the dissemination of information with the public information officers from Federal, state and local agencies and private companies involved with the emergency to ensure an accurate and timely flow of information and rumor control.

## ADMINISTRATIVE/LOGISTICS DIRECTOR

Reports to: Emergency Response Manager

Location: Emergency Operations Facility

Coordinates: Administration and Logistics

Primary Responsibilities:

1. Serves as the purchasing agent responsible for contract negotiation/administration and material control.
2. Arranges for engineering support from Westinghouse Electric Corporation, INPO or other resources.
3. Meets the manpower request needs in both the technical and craft disciplines. Ensures that clerical support is available and provides labor relations assistance as required.
4. Provides general office support services such as typing, reproduction, and the acquisition of office supplies and office furniture. Arranges for special services such as photography and facility/area maps.
5. Handles motel, airline and trailer arrangements. Conducts registration and general personnel orientation.
6. Arranges for telephone service and provides other communications equipment such as mobile units, cell phones and radio pagers if required.
7. Administers expense accounts.
8. Provides the necessary transportation for emergency response personnel.
9. Provides for food deliveries, field kitchen operations and sanitary facilities and trash disposal.

## ENVIRONMENTAL PROTECTION DIRECTOR

Reports to: Emergency Response Manager

Location: Emergency Operations Facility

Supervises: Environmental Monitoring Teams

Primary Responsibilities:

1. Supervises the environmental monitoring teams and directs the teams in the acquisition of environmental samples and radiation readings for the purpose of plume tracking and dose assessment.
2. Performs off-site dose projections and protective action evaluations.
3. Ensures that the appropriate protective actions are taken for the environmental monitoring teams.
4. Obtain off-site medical assistance if environmental vehicles are involved in an accident.

## EMERGENCY DIRECTOR

Reports to: Emergency Response Manager

Location: Technical Support Center / Control Room

Supervises: Event Operations, Technical Support Center, Support Activities, Security and Radiological Protection Directors

Primary Responsibilities:

1. Supervises and directs plant emergency response operations.
  2. \* Approves changes in the emergency classification based on plant, equipment and radiological conditions.
  3. \* Makes protective action recommendations to state and local authorities during the initial phases of an emergency until relieved by the Emergency Response Manager.
  4. Assures that information relayed to the Emergency Response Manager for release to the news media and the public is technically accurate.
  5. Directs the implementation of any corrective actions needed to return the plant to a stable condition.
  6. Directs the necessary protective actions to safeguard plant personnel.
  7. Ensures continuous accident assessment throughout the duration of the emergency.
  8. \* Reviews and approves all exposures in excess of 10 CFR Part 20 limits.
  9. Is designated Severe Accident Management "Decision Maker." In that capacity the Emergency Director will facilitate consensus with the Shift Manager and other Technical Support Center directors before providing final approval for the implementation of accident mitigative actions recommended by the Severe Accident Management Team.
  10. Reviews and approves News Statements prior to release to the media (prior to the Emergency Response Manager assuming this responsibility).
- \* Responsibility may not be delegated.

## EVENT OPERATIONS DIRECTOR

Reports to: Emergency Director

Location: Control Room

Supervises: Control Room Personnel, Fire Brigade/Fire Team and Operations Personnel

Primary Responsibilities:

1. Monitors plant systems and operation.
2. Advises the Shift Manager on implementation of any corrective actions needed to return the plant to a stable condition.
3. Provides the Emergency Director with operational and plant radiological assessment evaluations.
4. Provides plant-monitoring data to the Radiological Protection Director for use in performing on-site and off-site dose projections.
5. Monitors fire fighting operations.
6. Provides communications from the Control Room to the Technical Support Center (TSC) or to other emergency centers if required.
7. Requests additional technical assistance from the TSC staff or Emergency Director if necessary.

## TECHNICAL SUPPORT CENTER DIRECTOR

Reports to: Emergency Director

Location: Technical Support Center

Supervises: Technical Support Center Staff

Primary Responsibilities:

1. Directs the activities of the Technical Support Center staff, which includes systems engineering, core physics, and quality control operations.
2. Provides plant technical support and logistics planning.
3. Supervises the acquisition/documentation of plant data and the control of technical records.
4. Directs communications from the TSC to the Control Room and other emergency centers.
5. Advises the Shift Manager and the Emergency Director in plant accident assessment.

## SUPPORT ACTIVITIES DIRECTOR

Reports to: Emergency Director

Location: Operational Support Facility

Supervises: Maintenance/Instrument and Control Personnel

Primary Responsibilities:

1. Supervises electrical and mechanical maintenance operations.
2. Directs maintenance personnel in the repair and modification of existing equipment and the installation of new equipment.
3. Obtains damage control equipment needed for maintenance operations.
4. Directs instrument and control personnel in modifying existing equipment and repairing defective equipment.
5. Directs all search and rescue operations.

## SITE PROTECTION DIRECTOR

Reports to: Emergency Director

Location: Technical Support Center

Supervises: Plant Security Personnel

Primary Responsibilities:

1. Supervises personnel accountability.
2. Supervises access control operations to ensure that accountability is maintained at Emergency Response Facilities.
3. Provides for the issuance of personnel dosimetry.
4. Supports the Support Activities Director during search and rescue operations.
5. Provide direction to the Site Security Force.



## **RADIOLOGICAL PROTECTION DIRECTOR**

**Reports to:** Emergency Director

**Location:** Radiological Analysis Facility/Radiation Protection Office

**Supervises:** Radiation Emergency Teams

**Primary Responsibilities:**

1. Directs the Radiation Emergency Teams in monitoring, controlling and evaluating plant chemical and radiological conditions.
2. Implements emergency in-plant and site radiological survey monitoring procedures.
3. Evaluates on-site and off-site doses based on radiation monitoring and sampling performed by Radiation Emergency Teams, and Environmental Monitoring Teams.
4. Provides for personnel monitoring by issuing appropriate dosimetry.
5. Performs on-site and off-site dose projections needed to determine appropriate protective action recommendations (prior to EOF activation).
6. Directs Radiation Emergency Teams in conducting decontamination activities.
7. Directs Radiation Emergency Teams in processing and controlling radioactive waste.
8. Supervises on-site first aid activities and obtains off-site medical assistance when needed.
9. Supports the Support Activities Director during search and rescue operations in the controlled areas of the plant.

## PLANT SPOKESPERSON

Reports to: Emergency Response Manager

Location: Joint Public Information Center

Primary Responsibilities:

1. Receive and interpret plant status updates.
2. Inform upper management of NMC, WPSC and plant partners of emergency status.
3. Formulation and review of news statements.
4. Conduct news briefings on NMC and WPSC issues and respond to media inquiries.

## **APPENDIX B**

### **Monitor Indication For Emergency Class Determination**

#### **INDEX**

**NOTE:** This appendix has been deleted and the information has been incorporated into the criteria and associated levels of the Emergency Classification tables as presented in Section 4 of this Plan and the KNPP Indications of Emergency Plan Implementing Procedure, EPIP-AD-02, "Emergency Class Determination."

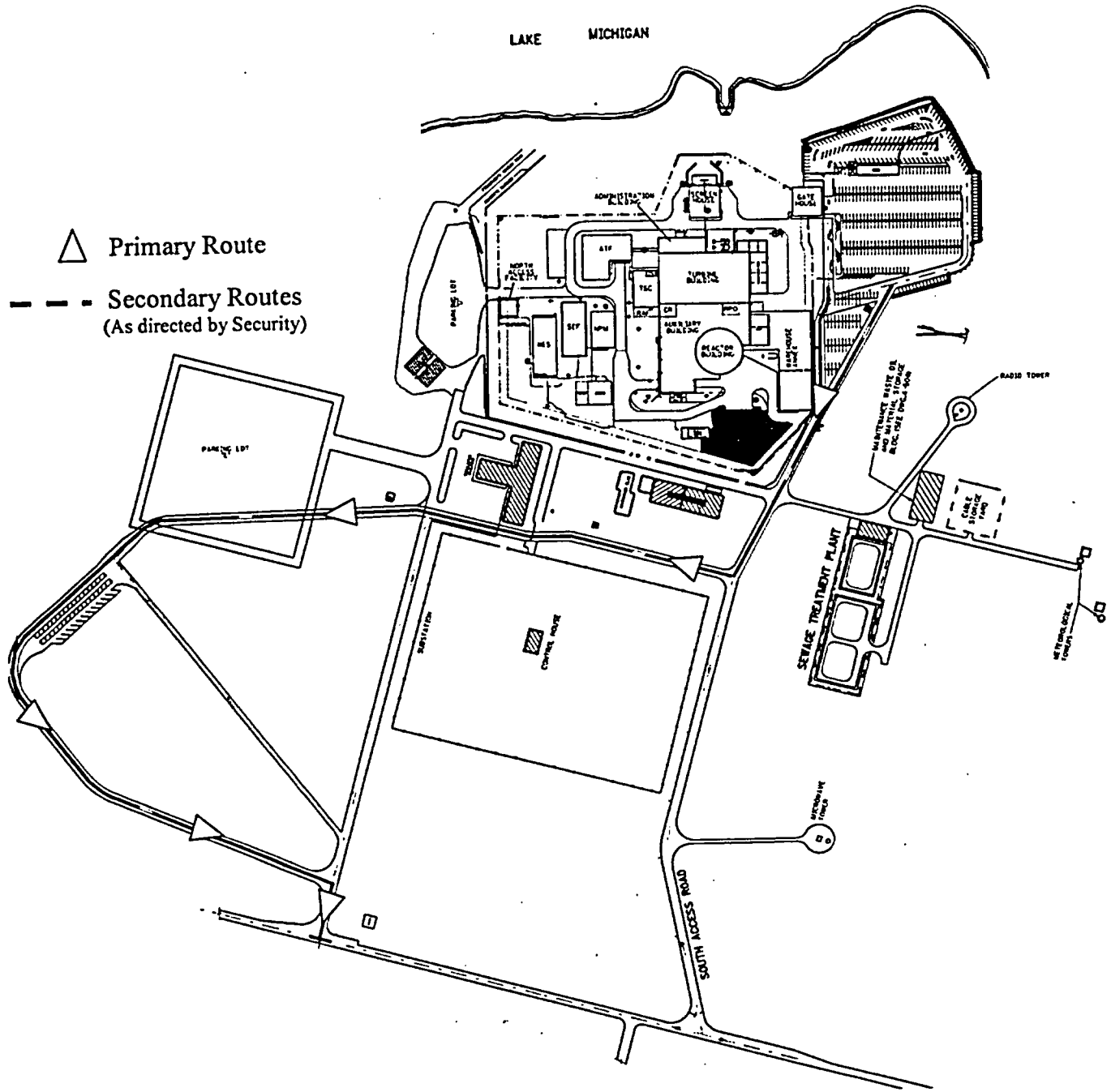
## APPENDIX C

### Maps

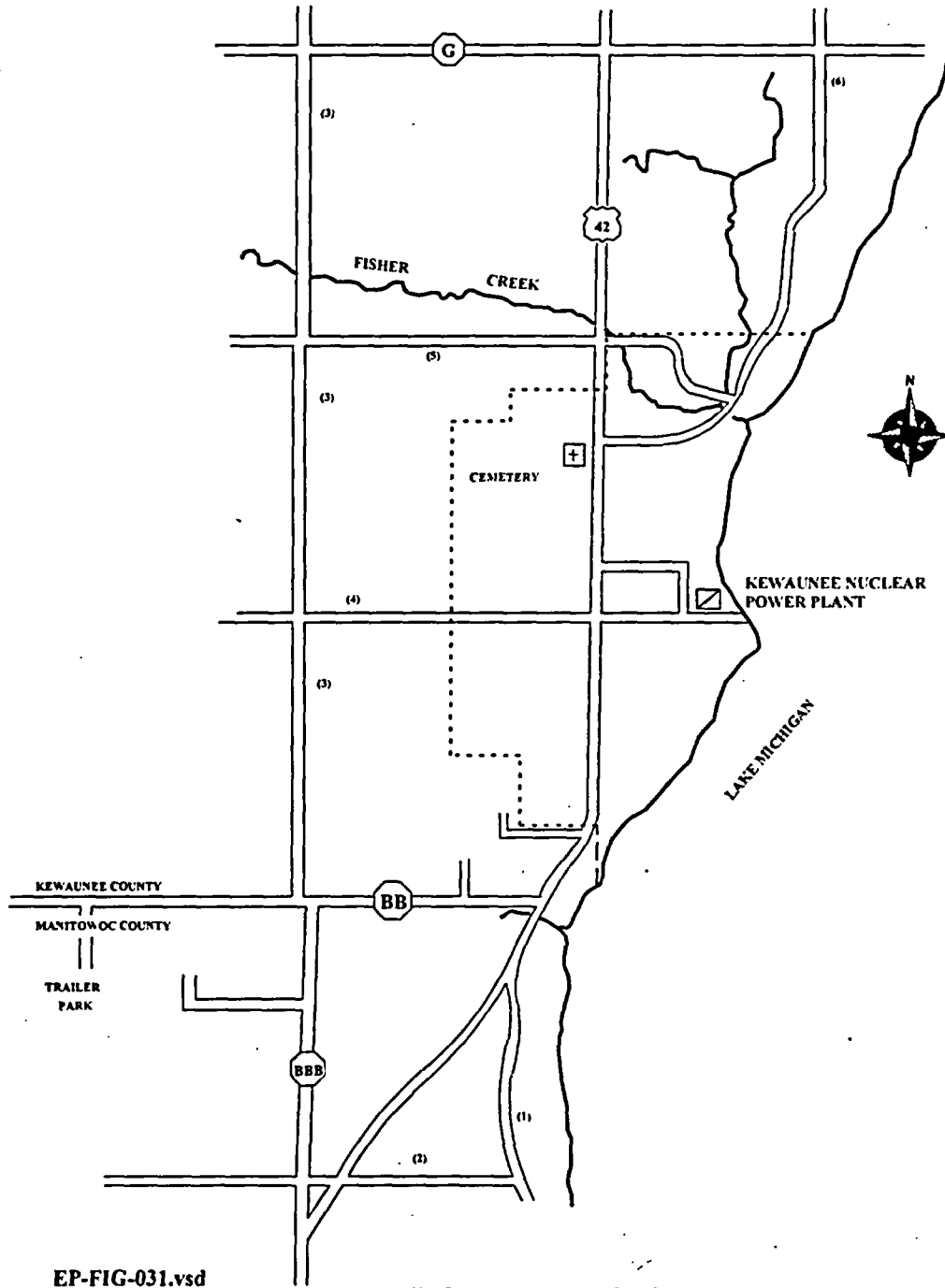
### INDEX

Title	Figure Number	Page
KNPP Site Map and Evacuation Routes - including emergency response facilities	EP Fig-026	C-2
Kewaunee Nuclear Site Map - including site boundary	EP Fig-031	C-3
Population Distribution by Evacuation Areas	EP Fig-014	C-4
Environmental Monitoring EPZ Grid Map	N/A	C-5
Location of JPIC and Media Briefing Center Map	EP Fig-024	C-6

# KNPP SITE MAP & EVACUATION ROUTES



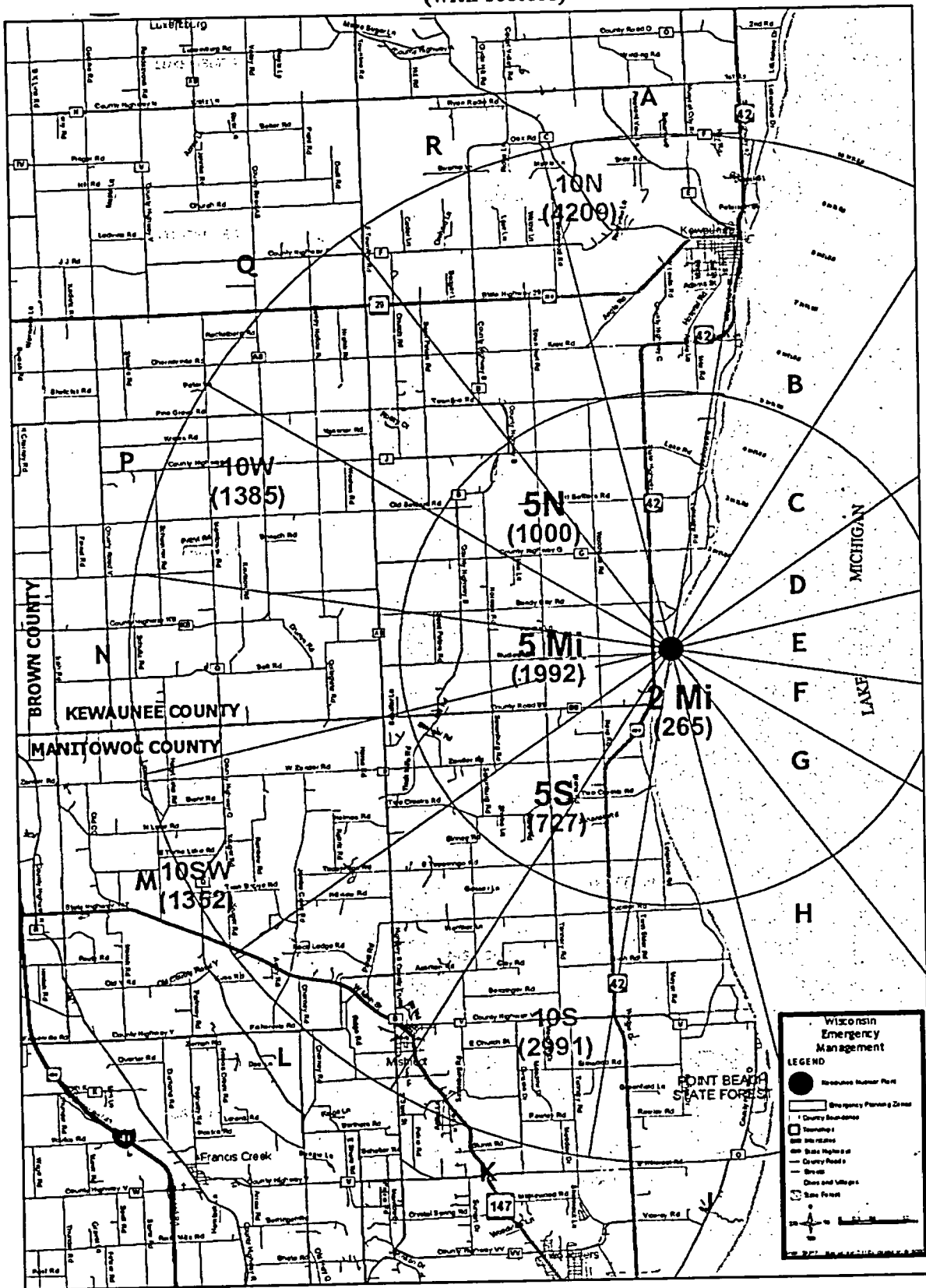
# KNPP SITE MAP



EP-FIG-031.vsd

(---) INDICATES BORDER OF KNPP OWNED PROPERTY

# POPULATION DISTRIBUTION BY GEOGRAPHICAL SUB-AREAS (with sectors)

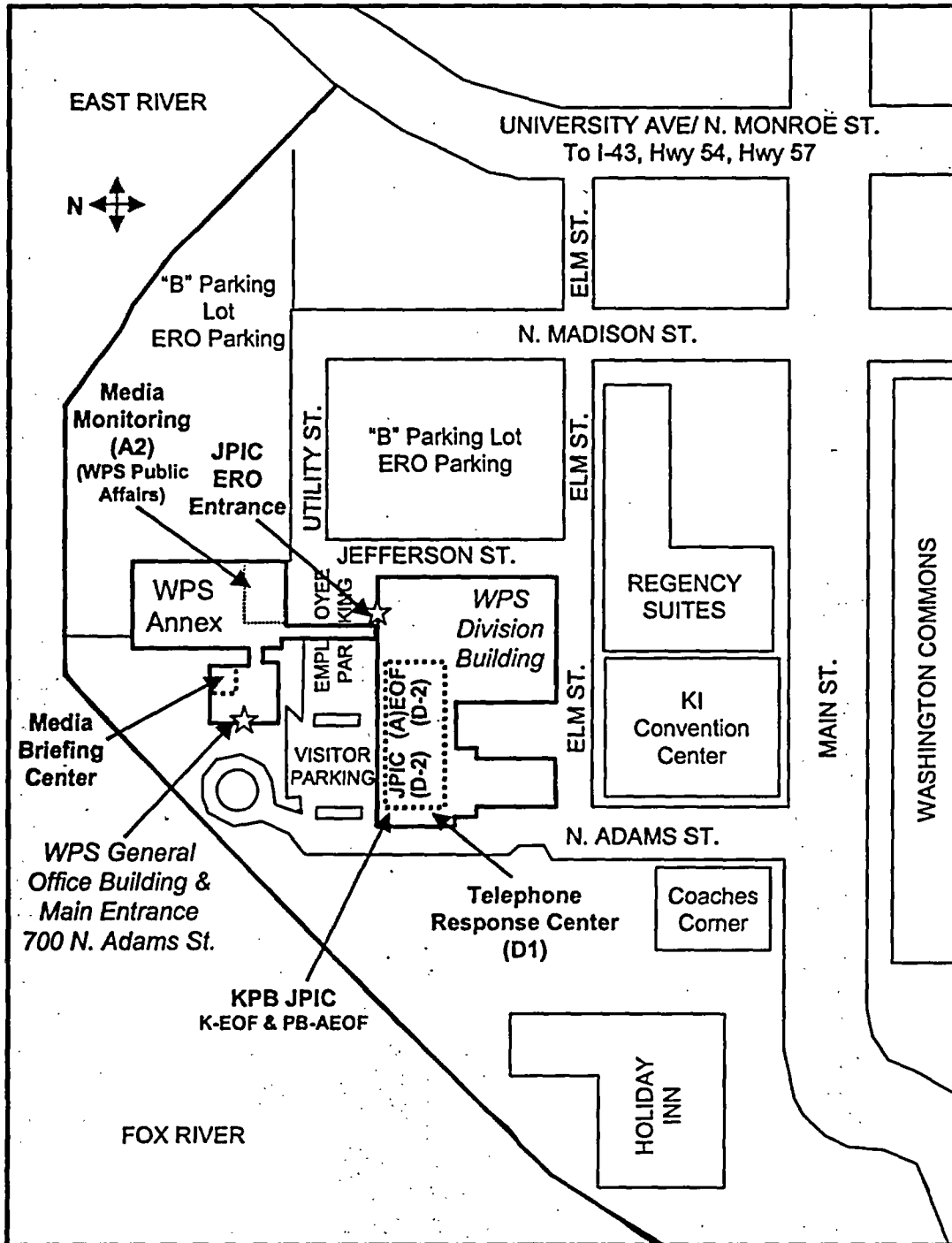


**ENVIRONMENTAL MONITORING EPZ GRID MAP**  
(copies located in the facilities listed below)

1. Technical Support Center
2. Emergency Operations Facility
3. Site Boundary Facility
4. Radiation Protection Office/Radiological Analysis Facility



# LOCATION OF JPIC & MEDIA BRIEFING CENTER MAP



Take I-43 north to Green Bay - Exit 187 Webster Avenue. Go south to University Avenue. Take University Avenue west across the East River to the next intersection, Elm Street. Take Elm Street west to N. Adams Street

EP-FIG-024  
06-20-02

**APPENDIX D**  
**Index of Letters of Agreement**

TITLE	LOCATION
<b>I. FEDERAL</b>	
A. U.S. Nuclear Regulatory Commission *	Emergency Plan Files
B. U.S. Department of Energy	Emergency Plan Files
<b>II. STATE</b>	
A. Department of Military Affairs - Division of Emergency Management	Emergency Plan Files
1. The following agencies will respond as directed by the Department of Military Affairs:	
a. Department of Agriculture	
b. Department of Health and Family Services, Division of Health	
c. Department of Administration	
d. Department of Natural Resources, Division of Enforcement	
e. Department of Transportation, Division of Highways	
f. Department of Transportation, Division of Enforcement and Inspection, State Patrol	
B. University of Wisconsin - Hospital and Clinics	Emergency Plan Files
C. University of Wisconsin - Milwaukee	Emergency Plan Files
<b>III. COUNTY</b>	
A. Kewaunee County Emergency Government	Emergency Plan Files
B. Kewaunee County Sheriff's Department	Emergency Plan Files
C. Manitowoc County Emergency Management	Emergency Plan Files
D. Manitowoc County Sheriff's Department	Emergency Plan Files

\* Perpetual letter established

TITLE	LOCATION
<b>IV. CITY/TOWN</b>	
A. Ambulance Service	
1. Kewaunee Ambulance Service	Emergency Plan Files
2. Mishicot Area Ambulance Service	Emergency Plan Files
3. Two Rivers Fire Department Ambulance	Emergency Plan Files
B. Fire Service	
1. City of Kewaunee Fire Department (24 month contract)	Emergency Plan Files
<b>V. PRIVATE ORGANIZATIONS</b>	
A. Institute of Nuclear Power Operations	Emergency Plan Files
B. Bartlett Nuclear, Inc.	Emergency Plan Files
C. Environmental, Inc. (Midwest Laboratory)	Emergency Plan Files
D. Aurora Medical Center (Two Rivers Community Hospital)	Emergency Plan Files
E. *Westinghouse Electric Corporation	Emergency Plan Files
F. SBC (Telephone Service Provider)	Emergency Plan Files
G. WPSC Eastern Region	Emergency Plan Files
H. Town of Carlton	Emergency Plan Files
I. Nuclear Power Plant Operating Services Agreement (NPPOSA) between WPSC and NMC*	Emergency Plan Files

\* Perpetual letter established

**APPENDIX E**  
**Radiological Emergency Response Plans**

1. STATE OF WISCONSIN EMERGENCY OPERATIONS PLAN (EOP)
2. KEWAUNEE COUNTY EMERGENCY OPERATIONS PLAN (EOP)
3. MANITOWOC COUNTY EMERGENCY OPERATIONS PLAN (EOP)

(Copies are located in the Technical Support Center, Emergency Operations Facility, and the office of the Principle - Emergency Preparedness Coordinator)

**APPENDIX F**  
**Emergency Equipment, Supplies and Reference Materials**  
**INDEX**

TECHNICAL SUPPORT CENTER.....	F-2
CONTROL ROOM.....	F-3
HEALTH PHYSICS .....	F-4
OPERATIONAL SUPPORT FACILITY .....	F-5
EMERGENCY OPERATIONS FACILITY .....	F-6
SITE BOUNDARY FACILITY.....	F-7
SECURITY BUILDING .....	F-8

**See EPMP-10.01 for Inventory Requirements.**

## TECHNICAL SUPPORT CENTER

### ITEM

Emergency Plan

Emergency Plan Implementing Procedures

State of Wisconsin EOP

Kewaunee County EOP

Manitowoc County EOP

Updated Safety Analysis Report

Technical Specifications

KNPP Integrated Plant Emergency Operating Procedures (IPEOPs)

Operating Procedures

Plant Drawing Aperture Card

10-Mile EPZ, Sector/Grid Map

Potassium Iodide

X/Q Meteorological Overlays

Beta Air Monitor

Portable Air Sampler/Filters (Available in adjacent RAF)

Portable Radiation Monitor (Available in adjacent RAF)

Computer Terminal with Access to Plant Process Computer

Technical Requirements Manual

**See EPMP-10.01 for Inventory Procedure.**

## CONTROL ROOM

### ITEM

Emergency Plan

Emergency Plan Implementing Procedures

Potassium Iodide

Portable Radiation Monitor

10-Mile EPZ, Sector/Grid Map

**See RT-SAE-83 for Inventory Procedure.**

## HEALTH PHYSICS

### ITEM

#### Radiation Protection Office

Emergency Plan

Emergency Plan Implementing Procedures

High Band Portable Radios and Chargers

#### Radiological Analysis Facility

Emergency Plan

Emergency Plan Implementing Procedures

Radio Remote Console

High Band Portable Radios

10-Mile EPZ Sector/Grid Map

X/Q Meterological Overlays

Self-contained Breathing Units

**See HPF-115 for Inventory Procedure.**



## OPERATIONAL SUPPORT FACILITY

### ITEM

Emergency Plan Implementing Procedures (Available in TSC outside the OSF door)

Portable Radiation Monitor (Available in adjacent RAF)

See EPMP-10.01 for Inventory Procedure.

## EMERGENCY OPERATIONS FACILITY

### ITEM

Emergency Plan

Emergency Plan Implementing Procedures

Technical Specifications

Updated Safety Analysis Report

KNPP Integrated Plant Emergency Operating Procedures (IPEOPs)

Nuclear Emergency Public Information Plan

Domestic Drawing Micro-Film Aperture Card Library  
(Covering: Structural, Mechanical, and Electrical)

State of Wisconsin EOP

Kewaunee County EOP

Manitowoc County EOP

50-mile EPZ Ingestion Pathway Map

10-mile EPZ Sector/Grid Map

**See EPMP-10.01 for Inventory Procedure.**

## SITE BOUNDARY FACILITY

### ITEM

Emergency Plan

Emergency Plan Implementing Procedures

Protective Clothing

Dosimetry Equipment

Portable Radiation Monitor

Environmental Monitoring Team Kits

Communication Equipment

**See HPF-115 for Inventory Checklist.**

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**SECURITY BUILDING**

**ITEM**

Emergency Plan

Emergency Plan Implementing Procedures

**See Security Procedure, SIP 30.02**

## APPENDIX G

### List of EIPs and Cross-References to the Emergency Plan

Emergency Plan Implementing Procedures		Emergency Plan Section
A. <u>Administrative Procedures</u>		
1.	EPIP-AD-01 Personnel Response to the Plant Emergency Siren	6.4.1
2.	EPIP-AD-02 Emergency Class Determination	4.1, 4.2
3.	EPIP-AD-03 KNPP Response to An Unusual Event	4.1.1
4.	EPIP-AD-04 KNPP Response to Alert or Higher	4.1.2, 4.1.3, 4.1.4
5.	EPIP-AD-05 Emergency Response Organization Shift Relief Guideline	
6.	EPIP-AD-06 Deleted	
7.	EPIP-AD-07 Initial Emergency Notifications	4.1.1, 6.1
8.	EPIP-AD-08 Deleted	
9.	EPIP-AD-09 Deleted	
10.	EPIP-AD-10 Deleted	
11.	EPIP-AD-11 Emergency Radiation Controls	6.5.1, 6.5.2
12.	EPIP-AD-12 Deleted	
13.	EPIP-AD-13 Deleted	
14.	EPIP-AD-14 Deleted	
15.	EPIP-AD-15 Recovery Planning and Termination	9.0
16.	EPIP-AD-16 Deleted	
17.	EPIP-AD-17 Deleted	
18.	EPIP-AD-18 Potassium Iodide Distribution	6.5.3
19.	EPIP-AD-19 Determining Protective Action Guidelines	6.4.2

**Emergency Plan Implementing Procedures**

**Emergency Plan Section**

20. EPIP-AD-20 KNPP Response to a Security Threat

6.1

**B. Emergency Operations Facility Procedures**

1. EPIP-EOF-01 Deleted

2. EPIP-EOF-02 Emergency Operations Facility (EOF)  
Activation

4.1.2, 7.1.5

3. EPIP-EOF-03 EOF Staff Action for Unusual Event

4.1.1, 6.1

4. EPIP-EOF-04 EOF Staff Action for Alert or Higher

4.1.2, 4.1.3, 4.1.4, 6.1

5. EPIP-EOF-05 Deleted

6. EPIP-EOF-06 Deleted

7. EPIP-EOF-07 Deleted

8. EPIP-EOF-08 Continuing Emergency Notification

4.1.2, 4.1.3, 4.1.4, 6.1

9. EPIP-EOF-09 Deleted

10. EPIP-EOF-10 Deleted

11. EPIP-EOF-11 Internal Communications and Documentation  
Flow

7.2

12. EPIP-EOF-12 Media Center/Emergency Operation  
Facility/Joint Public Information Center  
Security

5.2.3

**C. Operational Procedures**

1. EPIP-OP-01 Deleted

2. EPIP-OP-02 Deleted

3. EPIP-OP-03 Deleted

**D. Operational Support Facility Procedures**

1. EPIP-OSF-01 Deleted

2. EPIP-OSF-02 Operational Support Facility Operations

4.1.2, 7.1.4

**Emergency Plan Implementing Procedures****Emergency Plan Section**

3.	EPIP-OSF-03	Work Orders During an Emergency	5.2.2, 6.3
4.	EPIP-OSF-04	Search and Rescue	6.4.1
<b>E. <u>Security Procedures</u></b>			
1.	EPIP-SEC-01	Deleted	
2.	EPIP-SEC-02	Security Force Response to Emergencies	5.2.2
3.	EPIP-SEC-03	Personnel Assembly and Accountability	5.2.2, 6.4.1
4.	EPIP-SEC-04	Security Force Actions for Dosimetry Issue	5.2.2, 6.7.1
5.	EPIP-SEC-05	Personnel Evacuation	6.4.1
<b>F. <u>Radiation Emergency Team Procedures</u></b>			
1.	EPIP-RET-01	Deleted	
2.	EPIP-RET-02	In-Plant Radiation Emergency Team	1.3, 4.1.2, 5.2.2, 6.2.1, 6.6.1
3.	EPIP-RET-02A	RPO-RAF Activation	4.1.2, 7.1.3
4.	EPIP-RET-02B	Gaseous Effluent Release Path, Radioactivity, and Release Rate Determination	6.2.2, 6.2.3
5.	EPIP-RET-02D	Emergency Radiation Entry Controls and Implementation	6.6.1, 6.7.1, 6.7.2
6.	EPIP-RET-02E	Deleted	
7.	EPIP-RET-02F	Deleted	
8.	EPIP-RET-03	Chemistry Emergency Team	5.2.2, 6.2.2
9.	EPIP-RET-03A	Liquid Effluent Release Paths	6.2.2
10.	EPIP-RET-03B	Deleted	
11.	EPIP-RET-03C	Post Accident Operation of the High Radiation Sample Room	7.3.1
12.	EPIP-RET-03D	Containment Air Sampling Analysis Using CASP	7.3.1

**Emergency Plan Implementing Procedures**

**Emergency Plan Section**

- |                  |   |                   |
|------------------|---|-------------------|
| 13. EPIP-RET-03E | Deleted   |                   |
| 14. EPIP-RET-04  | SBF Activation  | 1.3, 5.2.2, 6.6.1 |
| 15. EPIP-RET-04A | Deleted   |                   |
| 16. EPIP-RET-04B | Deleted   |                   |
| 17. EPIP-RET-04C | Deleted   |                   |
| 18. EPIP-RET-04D | Deleted   |                   |
| 19. EPIP-RET-05  | Site Boundary Dose Rates During Controlled Plant Cooldown | 6.2.3, 7.3.2(1)   |
| 20. EPIP-RET-05A | Deleted   |                   |
| 21. EPIP-RET-06  | Deleted   |                   |
| 22. EPIP-RET-07  | Deleted   |                   |
| 23. EPIP-RET-08  | Deleted   |                   |

**G. Environmental Procedures**

- |                  |  |                                    |
|------------------|--|------------------------------------|
| 1. EPIP-ENV-01   | Environmental Monitoring Group Organization and Responsibilities | 1.3, 5.2, 5.2.2, 6.2.4, Appendix A |
| 2. EPIP-ENV-02   | Environmental Monitoring Team Activation                         | 4.1.2, 7.1.7                       |
| 3. EPIP-ENV-03A  | Deleted  |                                    |
| 4. EPIP-ENV-03B  | Deleted  |                                    |
| 5. EPIP-ENV-03C  | Dose Projection Using RASCAL Software                            | 6.2.3, 7.3.2(1)                    |
| 6. EPIP-ENV-03D  | Deleted  |                                    |
| 7. EPIP-ENV-03E  | Deleted  |                                    |
| 8. EPIP-ENV-03F  | Deleted  |                                    |
| 9. EPIP-ENV-03G  | Deleted  |                                    |
| 10. EPIP-ENV-03H | Deleted  |                                    |



## **Emergency Plan Implementing Procedures**

## **Emergency Plan Section**

- |                  |   |                 |
|------------------|---|-----------------|
| 11. EPIP-ENV-04A | Portable Survey Instrument Use                    | 6.2.4, 7.3.2(2) |
| 12. EPIP-ENV-04B | Air Sampling and Analysis                         | 6.2.4, 7.3.2(2) |
| 13. EPIP-ENV-04C | Ground Deposition Sampling and Analysis           | 6.2.4, 7.3.2(2) |
| 14. EPIP-ENV-04D | Plume Tracking for Environmental Monitoring Teams | 6.2.4, 7.3.2(2) |
| 15. EPIP-ENV-04E | Deleted   |                 |
| 16. EPIP-ENV-05A | Deleted   |                 |
| 17. EPIP-ENV-05B | Deleted   |                 |
| 18. EPIP-ENV-05C | Deleted   |                 |
| 19. EPIP-ENV-05D | Deleted   |                 |
| 20. EPIP-ENV-05E | Deleted   |                 |
| 21. EPIP-ENV-06  | Deleted   |                 |
| 22. EPIP-ENV-08  | Deleted   |                 |

## **H. Technical Support Center Procedures**

- |                 |  |                        |
|-----------------|--|------------------------|
| 1. EPIP-TSC-01  | Technical Support Center Organization and Responsibilities | 5.2, 5.2.2, Appendix A |
| 2. EPIP-TSC-02  | Technical Support Center Activation                        | 4.1.2, 7.1.2           |
| 3. EPIP-TSC-03  | Plant Status Procedure                                     | 6.2.1, 6.3, 7.1.2      |
| 4. EPIP-TSC-04  | Emergency Modifications                                    | 6.3                    |
| 5. EPIP-TSC-05  | Deleted  |                        |
| 6. EPIP-TSC-06  | Deleted  |                        |
| 7. EPIP-TSC-07  | RV Head Venting Time Calculation                           | 7.3.1                  |
| 8. EPIP-TSC-08A | Calculations for Steam Release from Steam Generators       | 7.3.1                  |
| 9. EPIP-TSC-08B | STMRLS Computer Program                                    | 7.3.1                  |

**Emergency Plan Implementing Procedures**

**Emergency Plan Section**

10. EPIP-TSC-09A Core Damage Assessment

7.3.1

11. EPIP-TSC-09B Deleted

12. EPIP-TSC-10 Technical Support for IPEOPs

I. Appendices

A. Communications

7.2

B. Forms

7.2. 8.3

## **APPENDIX H**

### **Evacuation Time Estimates**

#### **I. General**

The evacuation time estimates for the Kewaunee Nuclear Plant were prepared based on current Nuclear Regulatory Commission Guidance. These estimates were prepared with assistance from the Kewaunee Sheriff's Department, the Manitowoc County Sheriff and their respective Emergency Management Directors.

The enclosed tables and maps include the estimated population involved, major evacuation routes and estimated times for evacuation.

The "Evacuation Time Estimate Study for the Kewaunee Nuclear Power Plant Emergency Planning Zone", prepared by TOMCOD Inc., (ETE) contains details values and on methodologies used in calculating values. The ETE is considered an addendum to this Emergency Plan maintained under a separate cover. The ETE is updated approximately every 10 years as census data is updated.

#### **II. Responsibilities**

The Governor, under a State of Emergency, would be responsible for issuing the evacuation order through Wisconsin Emergency Management. If circumstances warrant, due to rapid and substantial degradation of the level of safety at the plant, immediate evacuation may be requested by plant authorities to the County Sheriff, who may issue an evacuation order. It would be the responsibility of the County Executive and the County Emergency Management Office to coordinate all facets of the evacuation, utilizing all county, state and Federal agencies, as necessary.

The Kewaunee and Manitowoc County Emergency Management Directors will coordinate evacuation efforts such that the most effective evacuation plan is implemented using the combined resources of the two counties.

#### **III. Concept of Operations**

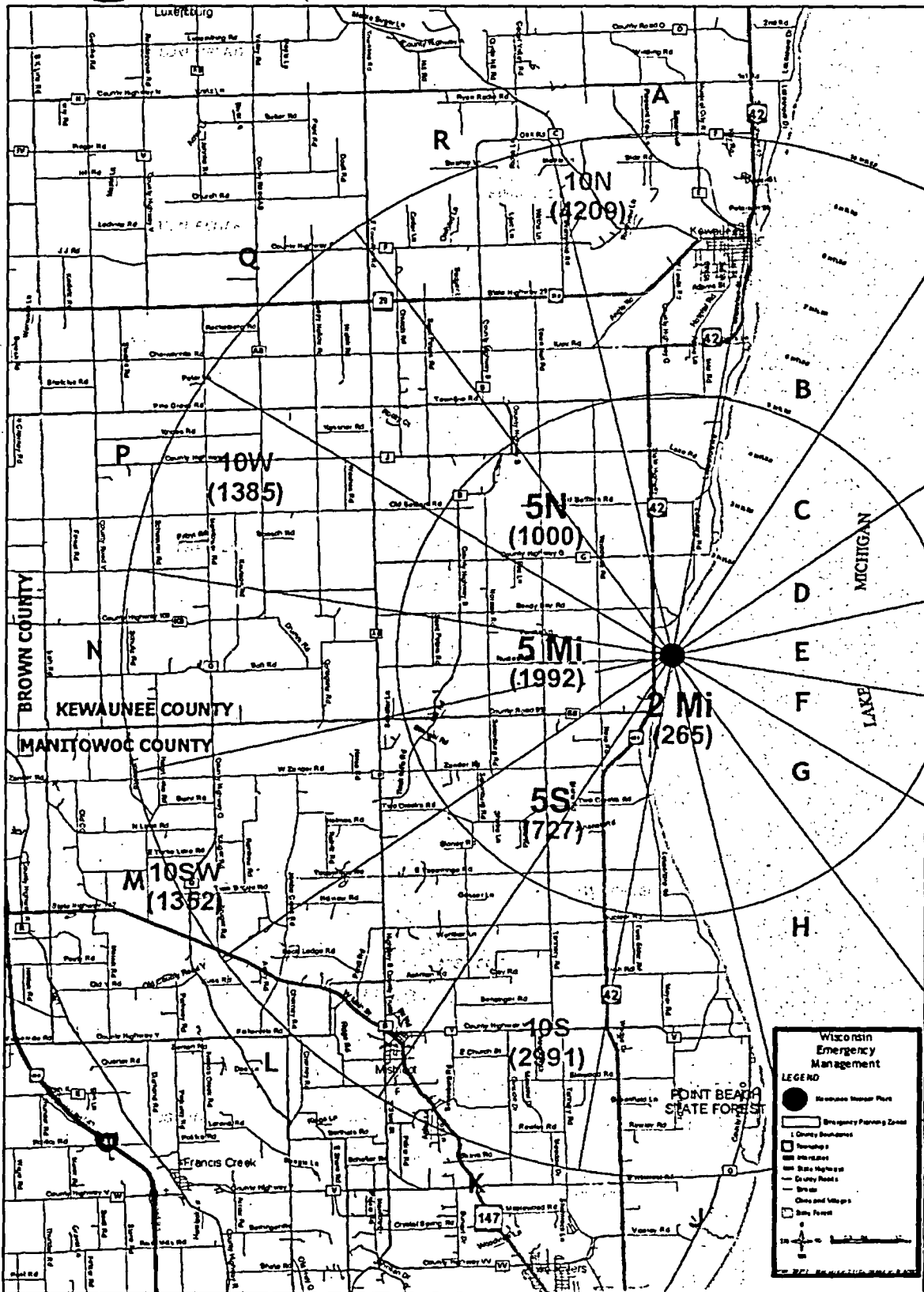
For specific details on how the evacuation operation would be carried out, please refer to the respective county Emergency Operations Plan, under "Evacuation."

#### **IV. References**

Population distribution data was obtained from the following resources:

1. Evacuation Time Estimate Study (ETE) for the Kewaunee Nuclear Power Plant Emergency Planning Zone, Rev 0, prepared by TOMCOD, Inc,

# Subareas with Population Distribution



**EVACUATION TABLE  
KNPPP/EPZ**

Table based on combination of evacuation subareas

Subarea	Evacuation Time Estimates for Given Scenario (in minutes)								
	1	2	3	4	5	6	7	8	17
2 Mile	50	60	60	70	60	60	50	60	100
2 Mile, 5N and 5S	50	70	70	70	60	70	60	60	150
2 Mile, 5N and 10N	90	110	100	100	130	140	100	120	350
2 Mile, 5N, 10N & 10W	120	130	130	140	160	180	110	120	360
2 Mile, 5N, 10W & 10SW	80	90	80	90	110	120	90	90	200
2 Mile, 5N, 10SW & 10S	140	140	130	150	150	150	100	110	210
2 Mile, 5S, 10SW & 10S	140	140	150	160	180	180	160	170	150
2 Mile, 5S, & 10S	140	140	150	150	180	180	170	170	150
Entire 10 Mile EPZ	160	170	150	150	200	230	160	150	360

**Scenarios:**

1. Summer, Weekend, Midday, Fair Weather
2. Summer, Weekend, Midday, Poor Weather
3. Summer, Weekend, Evening, Fair Weather
4. Summer, Weekend, Evening, Poor Weather
5. Summer, Weekday, Midday, Fair Weather
6. Summer, Weekday, Midday, Poor Weather
7. Summer, Weekday, Evening, Fair Weather
8. Summer, Weekday, Evening, Poor Weather
17. Summer, Weekend, Midday, Fair Weather (Trout Festival)

**EVACUATION TABLE  
KNPPP/EPZ**

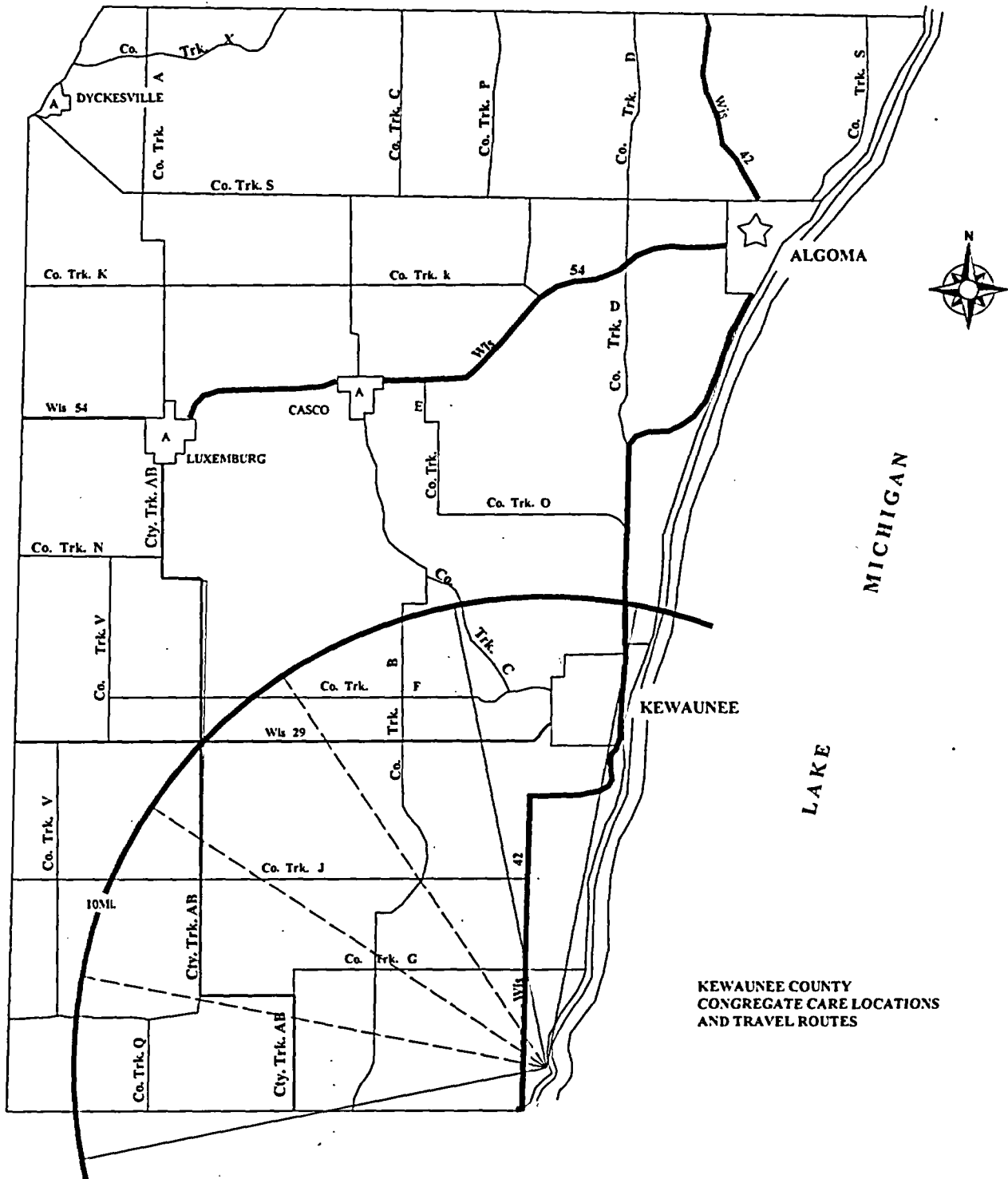
Table based on combination of evacuation subareas

Subarea	Evacuation Time Estimates for Given Scenario (in minutes)							
	9	10	11	12	13	14	15	16
2 Mile	60	90	70	90	60	100	60	60
2 Mile, 5N and 5S	60	90	70	100	60	100	60	90
2 Mile, 5N and 10N	90	160	100	140	130	200	100	140
2 Mile, 5N, 10N & 10W	120	130	130	140	170	200	110	140
2 Mile, 5N, 10W & 10SW	100	120	80	90	110	120	90	90
2 Mile, 5N, 10SW & 10S	140	150	130	180	150	190	100	110
2 Mile, 5S, 10SW & 10S	140	140	150	170	180	180	160	170
2 Mile, 5S, & 10S	140	140	150	160	180	180	170	170
Entire 10 Mile EPZ	170	190	180	200	210	330	160	170

**Scenarios:**

9. Winter, Weekend, Midday, Fair Weather
10. Winter, Weekend, Midday, Poor Weather
11. Winter, Weekend, Evening, Fair Weather
12. Winter, Weekend, Evening, Poor Weather
13. Winter, Weekday, Midday, Fair Weather
14. Winter, Weekday, Midday, Poor Weather
15. Winter, Weekday, Evening, Fair Weather
16. Winter, Weekday, Evening, Poor Weather

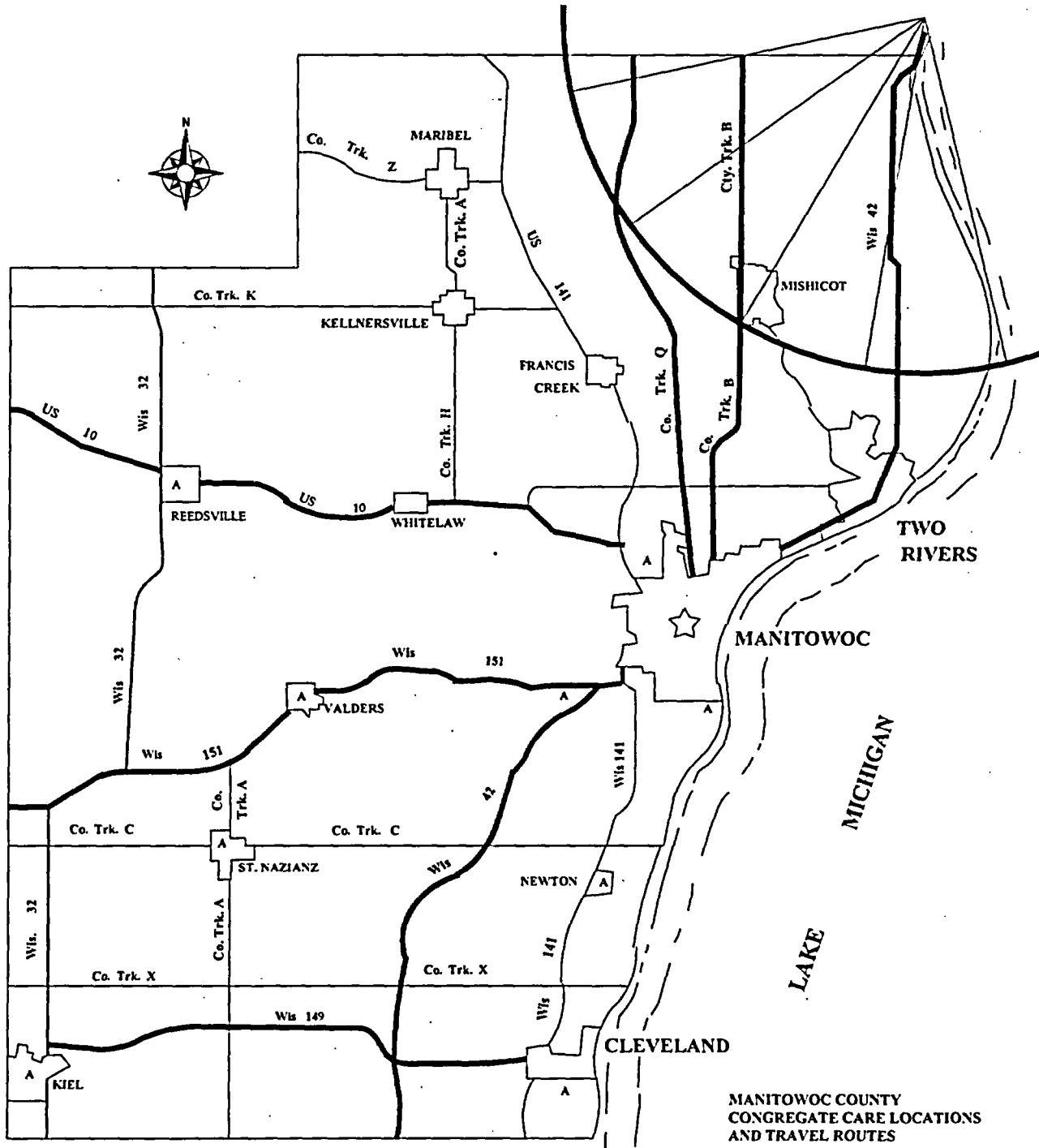
# KEWAUNEE COUNTY EVACUATION MAP



THIS IS A SIMPLIFIED MAP OF KEWAUNEE COUNTY SHOWING THE TRAVEL ROUTES WITHIN AND AWAY FROM THE 10 MILE "RISK" AREA SURROUNDING KEWAUNEE NUCLEAR POWER PLANT. COUNTY AND STATE HIGHWAYS MAY BE USED TO TRAVEL FROM THE "RISK" AREA TO CONGREGATE CARE FACILITIES IN ALGOMA, CASCO, LUXEMBURG AND DYCKESVILLE. THE PUBLIC AND NON-PUBLIC SCHOOLS OF KEWAUNEE COUNTY WILL BE UTILIZED AS CONGREGATE CARE FACILITIES. THEY HAVE ADEQUATE EMERGENCY LIVING CAPABILITY TO ACCOMMODATE ALL OF THE "RISK" AREA. FOR DETAILS SEE KEWAUNEE COUNTY EMERGENCY OPERATIONS PLAN.

# MANITOWOC COUNTY EVACUATION MAP

EP-FIG-033.vsd  
Rev. 09/30/02



MANITOWOC COUNTY  
CONGREGATE CARE LOCATIONS  
AND TRAVEL ROUTES

THIS IS A SIMPLIFIED MAP OF MANITOWOC COUNTY SHOWING TRAVEL ROUTES WITHIN AND AWAY FROM THE 10 MILE "RISK" AREA SURROUNDING KEWAUNEE NUCLEAR POWER PLANT. COUNTY AND STATE HIGHWAYS MAY BE USED TO TRAVEL FROM THE "RISK" AREA TO CONGREGATE CARE FACILITIES IN MANITOWOC COUNTY, REEDSVILLE, VALDERS, ST. NAZIANZ, KIEL, NEWTON, AND CLEVELAND. PUBLIC AND NON-PUBLIC SCHOOLS OF MANITOWOC COUNTY WILL BE UTILIZED AS CONGREGATE CARE FACILITIES. THEY HAVE ADEQUATE EMERGENCY LIVING CAPABILITY TO ACCOMMODATE ALL OF THE "RISK" AREA. FOR DETAILS SEE MANITOWOC COUNTY EMERGENCY OPERATIONS PLAN.



## APPENDIX I

### Cross-Reference Between NUREG 0654 and the Emergency Plan

The following is a cross-reference between NUREG 0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" published in November 1980 and this Emergency Plan. In many cases, the material related to a specific criteria element may appear in more than one section of the plan. Careful attention to this cross-reference and the index will facilitate the reading of this plan.

<b>NUREG 0654 CRITERIA ELEMENT</b>	<b>EMERGENCY PLAN SECTION</b>
A.1a	2.2.2, 2.2.3, 2.2.4, 5.3
A.1b	5
A.1c	Figure 2-1
A.1d	5.2.1
A.1e	5.1, 5.1.1
A.2a,b	Not Applicable
A.3	Appendix D
A.4	5.2, Appendix A-4
B.1	5.1, 5.1.1, 5.2, 5.2.1, 5.2.2, Figure 5-1.6 Figure 5.2, Figure 5.3
B.2	5.2.1, Appendix A-6
B.3	5.2.1,
B.4	5.2.1, Appendix A-2
B.5	5.2, 5.2.1, 5.2.2, Appendix A
B.6	5.2.3, 5.3.1, 5.3.2, Figure 2-1
B.7a,b,c,d	5.2.3, Appendix A
B.8	5.3.1
B.9	5.3.1, 6.7.3, 6.7.4, Appendix D
C.1a	5.2.1
C.1b	5.3.3
C.1c	7.1, 7.2
C.2a	Not Applicable
C.2b	5.2.3
C.3	7.3.1, 7.3.2
C.4	2.2.2, 2.2.3, 2.2.4, 5.3.1, 5.3.2, 5.3.3, Appendix D

**NUREG 0654**  
**CRITERIA ELEMENT**

**EMERGENCY PLAN**  
**SECTION**

D.1	4.1, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.2, Table 4-2
D.2	4.2.2, Table 4-2
D.3	Not Applicable
D.4	Not Applicable
E.1	6.1, 6.8.2
E.2	5.2.2, 6.1, 7.2
E.3	6.8.2
E.4a-n	6.8.2
E.5	Not Applicable
E.6	6.8.3
E.7	6.8.2
F.1a,b	7.2, Figure 7-2
F.1d	7.2, Figures 7-1, 7-2
F.1e	5.2.2, 6.1, 6.8.2, 7.2
F.1f	7.2
F.2	6.7.3, 6.7.4, 7.1
F.3	8.4
G.1	8.5.1
G.2	8.5.1
G.3a	7.1.5, 7.1.6, 8.5.2, Appendix A-2
G.3b	7.1.6
G.4a	Appendix A-3, 7.1.6
G.4b	4.1.3, 4.1.4
G.4c	7.1.6, Appendix A-3
G.5	8.5.2
H.1	7.1.2, 7.1.4
H.2	7.1.5
H.3	Not Applicable
H.4	5.2
H.5	7.3.1
H.5a	7.3.1
H.5b	7.3.1
H.5c	7.3.1

**NUREG 0654**  
**CRITERIA ELEMENT**

**EMERGENCY PLAN**  
**SECTION**

H.5d	7.3.1
H.6a	7.3.2
H.6b	7.3.2
H.6c	7.3.2
H.7	6.2.4, 7.3.2
H.8	7.3.1, 7.3.2
H.9	7.1.3, 7.1.4
H.10	8.4
H.11	Appendix F
H.12	6.2.4, 7.1.7
I.1	Table 4-1
I.2	4.2.1, 7.3.1
I.3a	6.2.2
I.3b	6.2.2, 6.2.3
I.4	6.2.3
I.5	7.3.1, 7.3.2
I.6	6.2.2
I.7	6.2.4
I.8	6.2.3, 6.2.4
I.9	6.2.4
I.10	6.2.3, 6.2.4, Table 6-1
I.11	Not Applicable
J.1a,b,c,d	6.4.1 (1) (2)
J.2	6.4.1 (3)
J.3	6.4.1 (4)
J.4	6.4.1
J.5	6.4.1
J.6a,b,c	6.5, 6.5.1, 6.5.2, 6.5.3
J.7	6.4.2, Table 6-1
J.8	Appendix H
J.9	Not Applicable
J.10a	Appendix C, Figure C-5
J.10b	Appendix C & H, Figure C-4
J.10c	6.8.3

**NUREG 0654**  
**CRITERIA ELEMENT**

**EMERGENCY PLAN**  
**SECTION**

J.10d-1	Not Applicable
J.10m	6.4.2, Table 6-1, Appendix H
J.11	Not Applicable
J.12	Not Applicable
K.1	6.7.1, Table 6-1, 6.7.2
K.2	6.7.1
K.3a	6.7.1
K.3b	6.7.1
K.4	Not Applicable
K.5a	6.7.2
K.5b	6.7.2
K.6a,b,c	6.6.1
K.7	6.7.2
L.1	5.3.1, 6.7.4
L.2	6.7.2, 7.5
L.3	Not Applicable
L.4	6.7.3
M.1	9.0
M.2	9.1
M.3	9.2
M.4	6.2.3
N.1a,b	8.2.2
N.2a	8.2.2 (2) a
N.2b	8.2.2 (2) b
N.2c	8.2.2 (2) c
N.2d	8.2.2 (2) d
N.2e	8.2.2 (2) d
N.3a,b,c,d,e,f	8.2.2
N.4	8.2.2
N.5	8.2.2
O.1	8.2
O.1a	8.2.1
O.2	8.2
O.3	8.2.1

**NUREG 0654**  
**CRITERIA ELEMENT**

O.4  
O.5  
P.1  
P.2  
P.3  
P.4  
P.5  
P.6  
P.7  
P.8  
P.9  
P.10

**EMERGENCY PLAN**  
**SECTION**

8.2.1  
8.2.1  
8.1  
8.1  
8.1  
8.3.1, 8.3.2  
8.3.1  
Appendix E  
Appendix G  
Table of Contents, Appendix I  
8.1  
8.3.1