1.0 DISCUSSION

Emergency measures begin with the identification and classification of an emergency and the activation of the appropriate emergency organization. Activation of the emergency response organization is outlined in EP 5.0. Emergencies are arranged into four distinct classifications. Descriptions for each classification and initial protective actions are outlined in EP 4.0. Criteria for classifying emergency situations and examples of emergencies in each classification are described in the EPIPs. The details of the initial corrective and protective emergency measures are contained in the EPIPs.

2.0 ASSESSMENT ACTIONS

2.1 Responsibility for Assessment

Effective coordination and direction of all elements of the emergency organization require continuing assessment throughout the emergency.

2.2 Types of Assessment Actions

The different types of assessment actions are described in Table 6-1. The details of the assessment function are incorporated in the EPIPs for each emergency classification. Continued assessment will be performed as required, with updating of offsite response agencies. In addition, the results may require additional notifications, emergency actions, or reclassification of the accident.

2.3 Methods of 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 plant has an extensive system for monitoring radioactive materials released to the environment (e.g., liquid process, containment purge exhaust and auxiliary building ventilation exhaust, air ejector vent monitors). As a general requirement, the various process monitors are capable of initiating appropriate alarms or actuating control equipment to provide containment of radioactive materials if pre-established limits are reached. These systems will allow for monitoring releases of radioactivity during accident conditions. In any accident condition where releases are not monitored or able to be monitored, EPIPs provide the basis for calculating theoretical worst-case release rates corresponding to a design basis accident described in the PBNP FSAR.

In addition, the site has a permanent meteorological installation so that wind speed and direction, standard deviation of wind direction as well as change of temperature with height, are recorded continuously in the Control Room. Wind speed, direction, and standard deviation of wind direction are also available from a backup tower on site and from an inland tower located several miles west of PBNP. The inland tower is used to identify lake effect winds. In the event the above instrumentation is inaccessible or inoperative, such information can be obtained from Kewaunee Nuclear Power Plant, the local Coast Guard Station, or the National Weather Service in Green Bay.

Upon determination of any emergency or potential emergency condition anticipated to have significant offsite dose consequences, appropriate EPIPs are initiated to project doses. The Emergency Director is responsible for ensuring that the appropriate EPIPs are performed. Airborne radioactivity concentration levels will be verified by offsite field monitoring teams deployed with portable radiological measurement and communications equipment. This information will aid state and county authorities in evaluating emergency action responses.

3.0 CORRECTIVE ACTIONS

Plant procedures contain steps to take corrective actions in order to avoid or mitigate serious consequences. Operator training is a vital factor in ensuring that corrective actions are taken in an expeditious manner. Instrumentation, plant parameter system monitors, and the radiation monitoring system provide indications used by the operators to regulate systems necessary for the safe and proper operation of the plant.

Plant system indicators provide the operator with the information and controls needed to start up, operate at power, and shut down the plant. The system indicators and controls also provide the information and means needed to cope with abnormal operating conditions should they occur. Control of systems and display of information from these various systems are centralized in the Control Room. This instrumentation provides a basis for initiation of corrective actions.

When necessary, the following additional corrective actions can be implemented during emergency situations:

3.1 Fire Fighting

Detailed procedures for responding to fire situations are defined in the PBNP Fire Protection Manual. The Fire Protection Manual contains instructions on fire protection and fire fighting along with specifying the fire protection organization and individual responsibilities. If outside assistance is needed, the Two Creeks Fire Department is called in to assist in extinguishing the fire.

3.2 Damage Control and Repair

For minor emergencies, the plant personnel will normally be able to handle the cleanup, repair, and damage control. For major emergencies, the support of other company personnel or specialized outside contractors may be required to assist in the damage control, cleanup, and repair operation. Emergency response operations will be handled with the assistance of agencies available for that purpose.

Personnel exposure to radiation and radioactive materials during corrective actions should be controlled as stipulated in EP 6.0, Section 5.1.

4.0 PROTECTIVE ACTIONS

The EPIP used in classifying emergencies has predetermined EALs that, when met or exceeded, will require protective actions to be taken. In addition, the Shift Manager may initiate EPIPs when they are determined to be necessary. EPIPs include assessment actions, corrective actions, and protective actions as appropriate.

Protective actions will ensure that personnel, both on and offsite, will be notified and actions initiated for their protection in the event radiation or airborne activity levels from a radiological emergency onsite exceed or are predicted to exceed predetermined values, or when other situations threaten personnel safety.

Protective actions taken within the exclusion and protected area (onsite) are the responsibility of the SM and TSC Manager with input from the Operations Coordinator, while those taken offsite fall under the jurisdiction of Wisconsin Emergency Management with the resources of the State Division of Health and Family Services, Radiation Protection Unit, and the Manitowoc and Kewaunee County Emergency Managements. Recommendations of protective actions to be taken offsite will be made only by the Emergency Director. It is recognized that at the beginning of an emergency evolution, the Shift Manager will have the responsibility and authority of the Emergency Director until relieved.

4.1 Protective Actions, Evacuation, and Personnel Accountability

This subsection provides for the timely relocation of individuals to prevent or minimize exposure to direct or airborne radiation or toxic/flammable gas intrusion.

4.1.1 Exclusion Area

a. Action Criteria

Protective actions for personnel onsite shall be taken when a radiological emergency has occurred, or may occur, which will result in concentrations of airborne activity or radiation levels that exceed normal limits for a specific area or areas and cannot be readily controlled. In addition, protective actions shall be taken for onsite personnel in such situations as toxic/flammable gas intrusion, fire, meteorological danger, etc., where personnel safety is threatened.

b. Notification Time for Onsite Personnel

The actuation of fire alarms, radiation alarms, plant evacuation alarm, telephone calls, paging system, and public address announcements, as applicable, will alert onsite personnel to hazardous conditions and to actions they must take. These actions may be to assemble, to report to Emergency Response Facilities, to evacuate specific areas within the plant, or to evacuate the plant. Table 6-2 describes the assembly areas for onsite personnel (which could include plant personnel, contractor personnel, and visitors) to protect them from direct radiation or airborne radioactivity or toxic/flammable gas hazards according to evacuation classification The best estimate for initial notification of onsite personnel would be a minimum of 10 minutes, depending on instrumentation response and assessment capability at the time of the incident. It is important to note that most credible accidents in a nuclear power plant develop slowly and "defense-in-depth" concepts delay the release of significant amounts of radioactivity.

c. Security Access Control

The security program at PBNP is designed to deter, detect, and delay an intruder. The plant protected area is enclosed by a security fence. Plant personnel reporting to the plant during an emergency will enter via the SBCC. Security personnel will control access, log incoming personnel, and provide assistance, as required or requested. In the event these areas are uninhabitable, security control will be performed at an alternate location.

Provisions to restrict access to areas of the site outside the fenced protected area shall be accomplished under the direction of the Security Shift Commander. The Security Shift Commander will assign a security force to control access to the plant property by barricading and staffing the site roads with appropriate placement of lights, chains, traffic cones, padlocks, and gates. Access control shall be performed with the aid and cooperation of the Manitowoc County Sheriff's Department, as well as assistance from the Wisconsin State Patrol.

Plant security procedures are found in the PBNP Security Plan.

d. Assembly and Evacuation

Personnel assembly, and evacuation at PBNP will depend on the nature of the emergency and the extent of the area affected. The Shift Manager, or the TSC Manager if the TSC is activated, shall initiate any limited evacuation or full-site assembly, and/or evacuations. These protective actions shall be made after careful consideration of the benefits and risks involved. The details of these protective actions are included in the EPIPs. In general, these protective actions shall be in accordance with the following:

1. A limited evacuation (withdrawal of personnel from affected portion(s) of the plant) shall be considered when any of the following conditions exist:

   (a) Unscheduled area radiation monitor high-level alarm.

   (b) Conditions which indicate a valid containment high-flux-at-shutdown alarm is necessary.

   (c) Unevaluated airborne radioactive concentrations in excess of the derived air concentrations (DACs) specified in Appendix B to 10 CFR 20.

   (d) Excessive radioactive surface contamination levels.

   (e) Other emergency conditions, such as fire, or toxic/flammable gas intrusion that may endanger human life or health.

   The criteria for these radiation levels, alarms and conditions do not apply to anticipated increases or alarms resulting from planned operations.

   When a limited evacuation is ordered, personnel in the room, area, or building will proceed as directed. If evacuation is from areas within the RCA, personnel will proceed to the RP station for accountability and contamination monitoring.

   If a hazard continues to increase in severity or spreads to other areas, and the Shift Manager or TSC Manager deems it necessary, an evacuation or an assembly and subsequent evacuation may also be ordered.

2. An evacuation, or an assembly and subsequent evacuation shall be ordered upon the classification of an Alert, or higher.

3. An Exclusion Area assembly or an assembly and subsequent evacuation shall be considered when:

   (a) The conditions of a limited evacuation continue to increase in severity or spread to other areas.

   (b) The general area radiation levels outside of the Radiation Control Area exceed prescribed limits.

4. When an Exclusion Area assembly or an assembly and subsequent evacuation is ordered, personnel shall proceed as listed below (Reference Table 6-2):

   (a) Public visitors on the beach, fishing pier, and Energy Center will proceed to the SBCC Security Checkpoint, to receive further direction.

   (b) Duty Shift Operations personnel will report immediately to the Control Room and remain there unless instructed otherwise.

   (c) Personnel with assigned emergency duties shall proceed to their pre-assigned emergency response facility or designated assembly area.

   (d) All personnel who do not have an emergency assignment shall proceed to the nearest designated assembly areas listed in Table 6-2 unless directed otherwise.

5. When an Exclusion Area evacuation is ordered, personnel shall proceed as listed below (ReferenceTable 6-2):

   (a) Public visitors on the beach, fishing pier, and Energy Center will proceed to the SBCC Security Checkpoint, to receive further direction.

   (b) Duty Shift Operations personnel will report immediately to the Control Room and remain there unless instructed otherwise.

   (c) Personnel with assigned emergency duties shall proceed to their pre-assigned emergency response facility or designated assembly area.

   (d) All other personnel shall proceed to the Security Checkpoint at SBCC to be released.

6. At the discretion of the TSC Manager, the assembled non-ERO personnel may be evacuated from the site when chemical, radiological, or meteorological conditions allow, or if conditions warrant, take additional actions, such as radiological monitoring and relocation.

7. Evacuation of a specific emergency response facility (ERF) will be considered when habitability or function of that facility is questionable

e. Personnel Accountability

Assembly and Evacuation actions are contained in Step 4.1.1d and Table 6-2. Personnel accountability shall be conducted at an Alert classification or higher. Accountability is the responsibility of the Shift Manager or TSC Manager, in conjunction with the Security Coordinator. During an emergency situation that requires personnel in the plant to assemble in the various assembly areas, management personnel should help ensure that all their personnel are accounted for.

Accountability, within the Protected Area of the plant, should take no longer than 30 minutes from the time of the announcement. The Security Supervisor will verify complete accountability using the security computer or the manual accountability procedure, and will forward this information to the TSC Manager. If the TSC is not activated, this information will be forwarded to the Shift Manager. If personnel are unaccounted for, teams will be dispatched to locate and, if necessary, rescue the personnel. Personnel accountability procedures are included in the EPIPs.

Accountability outside the Protected Area is accomplished by Security physically entering the plant buildings to check for personnel. Aid to affected personnel will be provided as specified in Section 6.0.

f. Radiological Monitoring of Personnel Evacuated from Site

Requirements for external radiation exposure monitoring are contained in Section 5.0. A combination of checking SRDs/EPDs, if worn, and questioning of evacuees will be used to determine if there were any significant external exposures received prior to evacuation. Section 6.0 addresses appropriate actions for any known or suspected overexposures

If normal contamination monitoring is not possible, monitoring for contamination and internal exposure at the OSRPF and OSC shall be accomplished by using portable instrumentation, as necessary. Any persons suspected or known to have ingested or inhaled radioactive material will be whole body counted to assess internal exposure as soon as conditions permit.

4.1.2 Offsite Area (Area Beyond the Exclusion Area)

a. Action Criteria

Required protective actions for offsite areas are discussed in the state and county plans. The ERO shall classify the accident (reference EP 4.0)and notify the federal, state, and county authorities. The State plan has adopted the U.S. Environmental Protection Agency's Protective Action Guides for initiating actions to protect public health and safety. The county and state agencies have detailed plans for activating their agencies, taking various protective actions, and performing social services. Protective Action Recommendations for people offsite shall come from the Emergency Director.

The criteria for recommending protective action strategies to be taken in areas beyond the Exclusion Area encompass a number of factors and considerations. The determination of what emergency protective actions should be implemented in any given accident situation must be based on the actual plant conditions that exist or that are projected at the time of the accident, with the consideration of weather conditions, local protection factors for typical residential units, evacuation times, release potential, and projected or potential doses. Therefore, the effective means in utilizing and applying protective actions in the event of an accident is an important consideration to reduce radiation exposure to the general public.

Protective Actions for the public beyond the site boundary would apply to a radius of two miles in all directions from the plant and a larger radius of 5 miles from the plant in a sector greater than 60° (up to 360°) centered on the average downwind direction.

There are various types of protective actions that can be implemented by the state and counties which include the following:

1. Population sheltering

2. Evacuation

3. Controlling food, milk, and water distribution

4. Prophylaxis (e.g., thyroid protection)

5. Individual protective actions (e.g., respiratory protection equipment and protective clothing)

Table 6-3 lists protective actions that may be recommended for various accident phases and approximate time periods as a function of exposure pathways following an initiation of an accident. This information should be useful for appropriate state and county agencies in making value judgments that are necessary to plan actions in limiting the radiation exposure to the general public during an emergency at PBNP.

(a) Sheltering and Evacuation

Protective actions such as sheltering and evacuation can provide protection for the public against exposure to gaseous radioactive fission products released during an accident at PBNP. Evacuation of the population in the plume exposure pathway to minimize public exposure to a passing radioactive cloud could be potentially 100% effective. However, the protective action of population sheltering may be more appropriate at the time of the accident with the consideration of such factors as weather conditions, wind direction, roadway conditions, duration and type of exposure, and projected or potential doses to the population.

(b) Shielding

Shielding estimates for several distinct building types have been made by using currently available shielding technology. Table 6-4 through Table 6-6 present these estimates and indicate the wide range of potential shielding factors afforded by normally inhabited structures, and that basements of both homes and large buildings offer very effective shielding against radiation. The shielding effectiveness of a structure is expressed in terms of a shielding factor which is the ratio of the dose received inside the structure to the dose that would be received outside the structure. The benefits of population sheltering can be maximized by recommending that windows and doors of homes be closed and sealed, and ventilation systems turned off to minimize the turnover rate of air within the building.

(c) Exposure Pathways

If there were an atmospheric release of radioactive materials, doses to the public could occur by external radiation as the cloud passes, by exposure to external radiation from radionuclides deposited on the ground and other surfaces, or by internal exposure due to inhalation or ingestion of radionuclides. Levels in excess of accepted protective action guides would generally occur closer to the source so that the protective actions could be recommended on a two-phased approach. The first phase would be to protect individuals in these closer areas (i.e., within a 2-mile radius), while the second phase could be a recommendation to take shelter and institute food, water, and milk control since the need for evacuation versus sheltering in the 2- to 10-mile area may not be evident. However, beyond 10 miles, there is little apparent distinction between the effectiveness of evacuation and sheltering in terms of minimizing projected health effects.*

The protective actions discussed above are only a few of the alternate courses of action which could be taken in a radiological emergency.

b. Licensee Responsibilities During an Emergency

The responsibilities of the licensee during an emergency include the following:

1. To provide the best possible effort to resolve the emergency onsite and thus alleviate the offsite conditions.

2. To notify participating agencies in accordance with EP 5.0, Figure 5-7. In addition, the licensee will provide the best possible information, protective action recommendations (PARs), and support services to these agencies.

3. To coordinate actions with those of federal, state, and county agencies involved.

4. In some unlikely cases, it is possible for a radiological release to exceed the 10-mile EPZ. In such cases, additional PARs could be issued and tracking support provided if the counties so desire.

c. Participating Agency Responsibilities

* Examination of Offsite Emergency Protective Measures for Core Melt Accidents. Aldrich, D. C., McGrath, P. E., Ericson, D. M., Jr., and Jones, R. B., of Sandia Laboratories, Albuquerque, New Mexico, and Rasmussen, N. C., Department of Nuclear Engineering, M. I. T., Cambridge, Massachusetts, as presented at the American Nuclear Society Topical Meeting on Probabilistic Analysis of Nuclear Reactor Safety, May 8-10, 1978.

Participating agency responsibilities are denoted in EP 5.0, Section 5.0 and are further explained in the letters of agreement referenced in Appendix D.

d. Notification and Response Time

Notification of businesses, property owners and tenants, school administrators, recreation facility operators, and the general public within the EPZs will be accomplished by county and state authorities as described in their response plans. An integrated siren system and the Emergency Alerting System (EAS) will be used to notify the general public of an emergency requiring protective action. The State of Wisconsin has the responsibility of determining public protective actions and coordinating the activation of the integrated siren system with the county agencies.

The counties have the responsibility to activate the sirens at the predetermined time and to disseminate EAS messages to the public which are consistent with the protective action recommendations made by the State of Wisconsin. These messages will include protective action instructions as well as general information concerning emergencies. The siren system controls are operated by the Sheriffs Dispatch of Manitowoc and Kewaunee counties. The siren system operability is tested routinely.

The details of the means and the times to evacuate the above persons are discussed in Appendix J.

4.2 Onsite Protective Equipment and Supplies

Protective equipment and supplies, as presented in Table 6-7, will be used to minimize external and internal radiological exposure and contamination to ERO members on and offsite. Typical emergency equipment lists are located in the EPMPs. Detailed procedures on the use of protective equipment and supplies are in the Radiation Protection procedures and the EPIPs (see Appendix I).

4.3 Contamination Control Measures

4.3.1 Exclusion Area

a. Measures are taken on a continual basis to prevent or minimize direct exposure to or ingestion of radioactive materials within the Exclusion Area. Controls have been established at the plant to minimize and control the spread of contamination.

b. The details of routine contamination control measures for onsite areas may be referenced in the Radiation Protection procedures. The following is a brief outline of these procedures:

1. All tools and equipment used in radiologically controlled areas are checked for contamination before being taken from the radiologically controlled area. If the item is found to be contaminated and decontamination is not practical, the item remains controlled. Equipment and tools are unconditionally released for use outside the radiologically controlled areas if the items are free from detectable radioactive contamination. (Reference NP 4.2.25)

2. Removal of material and equipment from an RCA with radiation and contamination levels in excess of the allowable limits must be approved for "conditional" release by Radiation Protection (RP) personnel. Any item approved for "conditional" release will be packaged, sealed, labeled, and handled in accordance with applicable regulations to prevent the release of any contamination. (Reference NP 4.2.25)

3. Personnel working within a radiologically controlled area are periodically monitored by RP personnel. Radiation work permits (RWPs) are required for all personnel working in radiologically controlled areas. Specific instructions, precautions, and limitations are listed on the RWP. (Reference NP 4.2.20)

4. Individuals leaving the RCA are to monitor themselves for contamination before entering the clean area of the plant. (Reference NP 4.2.19)

5. The accumulation of radionuclides in the body shall not exceed that which would result from exposure to the derived air concentrations (DACs) of radionuclides in air or drinking water for occupational exposure as indicated in 10 CFR 20.1201. In general, exposure to airborne concentrations higher than the DACs are prevented or avoided to the extent practicable. If exposures are necessary, the wearing of appropriate, properly fitted, respiratory protective equipment may be required as determined by an RP supervisor. Periodic air samples are taken in selected operational and work areas to ensure that DAC levels are not exceeded.

c. In addition, contamination control measures following a radiological emergency shall include:

1. Decontamination of personnel and equipment will be conducted in accordance with approved routine RP practices. (Reference HP 2.1.2)

2. Area access control will be controlled by Radiation Protection personnel.

3. Access to drinking water and food supplies will be controlled by Radiation Protection personnel.

4. RP shall determine criteria for return of areas and items to normal use.

4.3.2 Offsite (Areas Beyond the Exclusion Area)

Wisconsin Emergency Management and the Division of Health and Family Services, Radiation Protection Section, are responsible for assessment and evaluation and determination of protective actions to be taken within the EPZs. The State of Wisconsin Radiological Response Team(s) will identify hazards and control access within the affected area. Other State agencies shall take actions, as necessary, under the direction of the Administrator of the Wisconsin Emergency Management, to assess and control the dairy and agricultural products within the affected area(s). In addition, the Administrator of the Wisconsin Emergency Management, along with principal supportive State agencies, will provide advisory information regarding the use of potentially affected home food and water supplies throughout the EPZ. These State agencies will also be responsible for ensuring that contamination levels are below the established criteria before normal use is restored.

Table 6-8 provides guidelines and recommendations for use by appropriate State and county agencies involved with response planning. This includes radiation protection activities involving protection against ingestion of contamination from the release of radioactivity to the environment. This table describes action levels and recommended protective actions for ground, food, milk, and water contamination control.

5.0 PERSONNEL EMERGENCY RADIATION EXPOSURE

5.1 Emergency Personnel Exposure Monitoring (External Dose)

ERO personnel within the Exclusion Area of the plant, who have radiologically controlled area access, are issued personnel monitoring devices capable of measuring the dose received from external sources of ionizing radiation. This device is a thermoluminescent dosimeter (TLD), which is normally used for permanent record. TLDs are required to be worn in radiologically controlled areas. In addition to a TLD, a self-reading dosimeter (SRD) or electronic personnel dosimeter (EPD) is worn in radiologically controlled areas for day-to-day indication of external radiation exposures. For personnel not routinely monitored, the use of paired TLDs located throughout the plant, may be used to reconstruct exposure. Non-monitored plant personnel will be issued radiation monitoring devices when their services are required during an emergency. It is the responsibility of RP personnel to ensure issuance of personnel monitoring devices to these personnel. Personnel monitoring devices are available at the RP station, gatehouses, TSC/OSC, and the EOF/OSRPF.

5.1.1 ERO Members

In all situations, every reasonable effort will be made to minimize exposure to emergency personnel Plant management may authorize emergency workers to receive up to the maximum PBNP administrative radiation dose levels. These levels are summarized in Table 6-9. The ED may authorize emergency workers to receive doses in excess of the administrative dose levels. The Rad/Chem Coordinator, Dose/PAR Coordinator and respective OSC Leaders are responsible to carefully control exposure to emergency workers.

In some situations, it is possible that certain activities or duties for the protection of persons or the substantial protection of property may result in doses in excess of 10 CFR 20.1201 limits. In these situations, dose levels may be authorized to those listed in Table 6-10. The Emergency Director shall authorize the dose extension based on recommendations from the Rad/Chem Coordinator or Dose/PAR Coordinator. However, the Emergency Director (SM) has the authority to take immediate actions and authorize dose extensions as required.

Decisions to accept doses in excess of occupational limits will be on a volunteer basis and approved by the Emergency Director, based on the recommendation of the Rad/Chem Coordinator or Dose/PAR Coordinator. The prospective volunteer shall be made aware of the risks. Whole body doses in the order of 100-200 rem may result in radiation sickness, and whole body doses in excess of 300 rem involve a risk of fatality to 50% of those exposed, if medical treatment is not provided. Individuals exposed to more than 25 rem TEDE shall be removed from further emergency duty and referred to a physician for evaluation. (Reference EPA-R-92-001)

5.1.2 Other Emergency Responders

The emergency exposure criteria for non-plant personnel and volunteers involved in providing first aid, decontamination, ambulance service, and medical treatment to injured persons and deployed National Guard and State Police (Reference RIS 2002-21) shall be limited to the following criteria:

a. Non-plant personnel (except medical, fire and National Guard and State Police personnel) are evacuated from the area and denied reentry.

b. The EPA dose limits in Table 6-10 may be applied to medical, fire, and National Guard and State Police personnel

c. In the event of some emergencies, the provisions of emergency exposure criteria that were set for plant personnel shall be applied to assisting non-plant personnel in the emergency response effort. When an assisting agency, e.g., DOE Region V Radiological Assistance Team or State of Wisconsin Radiation Protection Section, has its own emergency plan, the provisions of that agency's plan shall apply to that agency's personnel.

5.2 Emergency Exposure Criteria for Airborne Concentrations (Internal Dose)

In the event of an emergency, exposure to airborne radioactivity shall be limited by the following:

5.2.1 Whenever practicable, the total exposure of any individual during an emergency should be limited to the limits allowed in 10 CFR 20.1201. If external radiation fields are minimal, the total exposure of any individual should be limited to 2,000 DAC-hours, where 2,000 DAC-hrs may be considered to be equivalent to 5 rem committed effective dose equivalent for radionuclides that have their DACs based on the committed effective dose equivalent or 50 rem CDE for radionuclides that have DAC based on CDE. DAC-hours are calculated by multiplying the concentration of airborne radioactivity in terms of the number of DACs by the total time of exposure.

5.2.2 In the event emergency operations demand life-saving or rescue actions and external radiation fields are minimal individuals may be allowed exposures of 10,000 DAC-hours. If external radiation fields are not minimal, the sum of the external and internal doses should be limited to 25 rem TEDE. Exposures above 2,000 DAC-hours should be received only with the approval of the Emergency Director.

5.2.3 Respiratory protection and stable iodine shall be used whenever appropriate to control inhalation doses. (Also, see Step 6.6 for details on administering thyroid-blocking agents.)

5.2.4 It is the responsibility of all plant personnel, the respective OSC Leaders,the Rad/Chem Coordinator and Dose/PAR Coordinator and to carefully control the exposure permitted by 5.2.1 and 5.2.2, above.

5.2.5 Personnel who have been exposed to more than 10,000 DAC-hours shall be removed from further emergency duty and referred to a physician for evaluation.

5.2.6 Limits for exposure to Xe-133 and other noble gases are based on beta plus gamma dose limits to the skin.

5.3 Exposure Records and Control

Exposure records and forms for emergency workers are maintained for plant personnel at the South Service Building, OSC and OSRPF. This information will be utilized to determine emergency team assignments. It is the responsibility of the Rad/Chem Coordinator, Dose/PAR Coordinator, and their designated personnel to establish and maintain the personnel monitoring program during emergency situations.

Provisions for establishing an emergency dosimeter service within 24 hours are provided, as is distribution of self-reading dosimeters or EPDs to determine doses received by emergency personnel. Detailed procedures for personnel monitoring are included in the EPIPs (see Appendix I).

6.0 AID TO AFFECTED PERSONNEL

Provisions have been made to assist personnel who are injured or have received high radiation exposures. Many plant employees and some contractor personnel are trained in first aid and radiation protection procedures. First aid and decontamination facilities are available onsite and offsite, and necessary transportation services are also available. The following subsections describe measures to be used to provide necessary assistance.

6.1 Radiation Overexposure

For any known or suspected overexposures, the TLDs will be read as soon as possible, and further investigation will be conducted to determine the amount of exposure and the necessary action to be taken. Checking SRDs/EPDs and questioning evacuees may be used to determine if there were any significant external exposures involved in the emergency.

6.2 Decontamination

Facilities and supplies for decontaminating personnel are available at the RP station, OSC, and OSRPF. All personnel leaving the RCA or leaving a contaminated area will be monitored for contamination. During emergencies, other onsite personnel will be checked for contamination as necessary. Measures will be taken to minimize the spread of contamination.

Such measures may include isolating affected areas, placing contaminated personnel in clean protective clothing before moving, and decontaminating personnel, their clothing, and equipment prior to release. Personnel found to be contaminated will be decontaminated under the direction of RP personnel.

6.3 First Aid

Emergency first aid and medical treatment will be given to injured or ill personnel. Onshift personnel trained in first-aid are available onsite, 24 hour-per-day, and will assist injured or ill personnel either at the scene of the accident or in the first-aid room. If personnel must be transported to medical facilities, measures will be taken to prevent the spread of contamination if present. Such measures may include the placing of affected personnel in clean protective clothing or wrapping in blankets. If the injured individual is contaminated, the organizations who will provide the transportation and treatment shall be informed. The plant maintains an onsite first-aid room located in the Extension Building. The first-aid room is equipped with facilities suitable for the temporary care of a victim of an accident or illness until the services of a physician or transport can be obtained. Additional first-aid supplies are available at the following locations: gatehouses, turbine building, switchyard, Unit 1 and Unit 2 facades, EOF, TSC, RCA checkpoint, Control Room, Sewage Treatment Plant and RCA Maintenance Shop.

6.4 Medical Transportation

In the event that offsite emergency medical transportation is required, the Manitowoc County Sheriff's dispatcher will be called. The dispatcher will determine who should respond to the emergency. Normally, the Mishicot emergency vehicle will respond first. If the Mishicot emergency vehicle is unavailable, the City of Two Rivers Fire Department emergency vehicle will respond.

6.5 Medical Treatment

Arrangements have been made with Aurora Medical Center - Manitowoc County for treatment of personnel working at PBNP. Hospital personnel have been instructed and trained in treating potentially contaminated patients. In addition, arrangements have been made with two area physicians who maintain a medical affiliation with the Aurora Medical Center - Manitowoc County for the medical treatment of potentially contaminated personnel from PBNP. The University of Wisconsin Hospital and Clinics in Madison, Wisconsin, will provide backup services in the event that the services of Aurora Medical Center - Manitowoc County become unavailable or that additional services are required. The University Hospital provides instruction and training on handling radiological accident patients. Letters of Agreements with respect to arrangements for both hospitals and medical services are referenced in Appendix D.

6.6 Iodine Prophylaxis (Thyroid Protection)

6.6.1 Background

A number of chemical compounds can be ingested before or shortly after inhalation of radioactive material to inhibit the biological assimilation of inhaled radionuclides. Of these, stable iodine has received more attention as a chemical prophylactic agent than other elements because inhaled radioiodine presents a radiological hazard under certain types of nuclear reactor accidents.

Radioiodine is quickly absorbed into the blood stream and concentrates primarily in the thyroid gland. This can result in significant doses to the thyroid. Therefore, a protective action to be considered after an accident involving the release containing radioactive iodine is the use of stable iodine as a thyroid-blocking agent. This can reduce the accumulation of radioactive iodine in the thyroid gland.

6.6.2 Criteria for Use

The criteria for administering a thyroid-blocking agent (Potassium Iodide) to emergency personnel depends on the projected absorbed dose to the thyroid based on the severity and magnitude of the accident. If the initial estimate indicates a thyroid committed dose equivalent of 25 rem CDE or more, a thyroid-blocking agent will be distributed to plant emergency and support personnel. Prior to distribution, the Rad/Chem Coordinator or Dose/PAR Coordinator will make this recommendation with final approval by the Emergency Director.

For the greatest effectiveness, the thyroid-blocking agent should be administered as soon as possible, preferably before the exposure or within two hours of exposure. For most individuals the majority of radioiodine uptake by the thyroid occurs within 12 hours after a short-term exposure. The initial administration of a blocking agent will be of some value even as long as 4-8 hours after the exposure period. The determination of whether the thyroid-blocking agent should be continued on a daily basis will be made by the Medical Services Division after evaluation of the situation.

7.0 REFERENCES

Regulatory Issue Summary, RIS 2002-21, National Guard and Other Emergency Responders Located in the Licensee's Controlled Area. November 8, 2002.

NP 4.2.14, Administrative Dose Levels/Dose Level Extension Procedure

NP 4.2.19, General Rules for Work in a Radiologically Controlled Area

NP 4.2.20, Radiation Work Permit

NP 4.2.25, Release of Material, Equipment and Personal Items from Radiologically Controlled Areas

HP 2.1.2, Personnel Contamination Monitoring, Decontamination and Documentation

SAND 77-1725, Public Protection Strategies for Potential Nuclear Reactor Accidents Sheltering Concepts with Existing Public and Private Structures. February 1978.

EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents. May 1992.

NUREG-0654 FEMA-REP-1 Rev.1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Plants," November 1980.

8.0 BASES

None

TABLE 6-1

ASSESSMENT ACTIONS*

	Action	Description
1.	Surveillance of Control Room Instrumentation	Radiation levels, pressures, temperatures, levels, flows, and meteorological data are monitored. The Control Room operators can assess plant status by observing instrumentation readout. Most indicators have visual and audio alarms. Primary and secondary system data will be provided to the Shift Technical Advisor as necessary for their assessment. Control Room operators will take corrective actions as necessary
2.	In-plant Radiological Surveys	The re-entry teams with RP personnel assigned, as necessary, will perform these surveys. The radiation levels on the plant's fixed area and process monitoring systems will be obtained from the TSC or Control Room to assist in these evaluations. Surveys of equipment and personnel for contamination are done with portable equipment from the emergency lockers or other devices used routinely.
3.	Site Boundary Control Center Surveys	Handled in same fashion as in-plant surveys by the RP personnel teams.
4.	Offsite Consequence Assessment	The radiological assessment personnel will use effluent monitors and meteorological data to make projections of offsite consequences. Radiation Field Monitoring Teams will take direct readings (air, water, soil, vegetation).
5.	Environmental Monitoring	Samples of various environmental media are collected and analyzed by either PBNP personnel or an outside contractor laboratory. Results will be evaluated by plant emergency response personnel.

***NOTE: Detailed assessment actions are described in the EPIPs.**

TABLE 6-2

ASSEMBLY AND EVACUATION ACTIONS

Evacuation Classification	Public Visitors (Energy Center, Beach)	Emergency Response Organization	Plant Personnel, Corporate Personnel, Contractors, Temporary Employees and Visitors Not Assigned Emergency Duties[1]
Limited Evacuation	Take Action as Directed	Take Action as Directed	Take Action as Directed
Protected Area Assembly	Immediately leave Exclusion Area via SBCC Security Checkpoint; follow instructions	Report to Assigned Emergency Response Facility.	Report to NSB Cafeteria, Admin. Bldg. El. 26′, NES Cafeteria, Training Building North Foyer or Warehouse #4
Exclusion Area Assembly	Immediately leave Exclusion Area via SBCC Security Checkpoint; follow instructions	Report to Assigned Emergency Response Facility, or designated assembly area	Training Building North Foyer or Warehouse #4
Exclusion Area Evacuation	Report to SBCC Security Checkpoint. Go to Two Creeks Town Hall or Two Rivers National Guard Armory as directed.	Report to Assigned Emergency Response Facility.	Report to SBCC Security Checkpoint. Go to Two Creeks Town Hall or Two Rivers National Guard Armory as directed.

NOTE: At an Alert or higher classification, on-site protective actions comprising a plant and exclusion area evacuation may be initiated. Plant and exclusion area evacuation may be waived for certain scenarios in which the classification would be terminated prior to evacuation or for security reasons. Assembly (on-site or off-site) may be required depending on environmental conditions. Emergency Response Organization (ERO) members will report to their Emergency Response Facilities given acceptable environmental and security related conditions.

TABLE 6-3 (page 1 of 2)

STATE AND COUNTY AGENCIES POSSIBLE PROTECTIVE ACTIONS

ACCIDENT PHASE	EXPOSURE PATHWAY	EXAMPLES OF ACTIONS TO BE IMPLEMENTED
Emergency Phase 1 (0.5 to 24 hours)*	Inhalation of gases, radio iodine, or particulate	Evacuation, access control, shelter, respiratory protection, thyroid protection
	Direct whole body exposure	Evacuation, access control, shelter
Intermediate Phase 2 (24 hours to 30 days)*	Ingestion of milk	Take cows off pasture, prevent cows from drinking surface water, discard contaminated milk or divert to stored products such as cheese.
	Ingestion of fruits and produce	Wash all produce or impound produce, delay harvest until approved, substitute uncontaminated produce.
	Ingestion of water	Isolate contaminated supplies, substitute from other sources, filter, demineralize.
	Whole body exposure and inhalation	Relocation, access control, decontamination

TABLE 6-3 (page 2 of 2)

STATE AND COUNTY AGENCIES POSSIBLE PROTECTIVE ACTIONS

ACCIDENT PHASE	EXPOSURE PATHWAY	EXAMPLES OF ACTIONS TO BE IMPLEMENTED
Long Term Phase 3 (over 30 days)*	Ingestion of food and water contaminated from the soil either by re-suspension or uptake through roots	Decontamination, condemnation or destruction of food, deep plowing, condemnation or alternate use of land
	Whole body exposure from deposition material or inhalation of re-suspended material.	Relocation, access control, decontamination, deep plowing
Assessment Reporting	In the case of offsite consequences, the federal, state, and county agencies are immediately notified in accordance with the Emergency Plan. Predetermined criteria are used to recommend various protective actions for the population at risk.	

(1) Emergency phase - Time period of majority of release and subsequent plume exposure.

(2) Intermediate phase - Time period of moderate continuous release with plume exposure and contamination of environment.

(3) Long-Term Phase - Recovery period.

* "Typical" post-accident time periods.

TABLE 6-4

REPRESENTATIVE SHIELDING FACTORS FROM GAMMA CLOUD SOURCE*

Structure or Location	Shielding Factor (1)	Representative Range
Outside	1.0	--
Vehicles	1.0	--
Wood-frame house (2) (no basement)	0.9	
Basement of wood house	0.6	0.1 to 0.7 (3)
Masonry House (no basement)	0.6	0.4 to 0.7 (3)
Basement of masonry house	0.4	0.1 to 0.5 (3)
Large office or industrial building	0.2	0.1 to 0.3 (3, 4)

(1) The ratio of the dose received inside the structure to the dose that would be received outside the structure.

(2) A wood frame house with brick or stone veneer is approximately equivalent to a masonry house for shielding purposes.

(3) This range is mainly due to different wall materials and different geometries.

(4) The shielding factor depends on where the personnel are located within the building (e.g., the basement or an inside room).

*Taken from SAND 77-1725 (Unlimited Release)

TABLE 6-5

SELECTED SHIELDING FACTORS FOR AIRBORNE RADIONUCLIDES*

Wood house, no basement	0.9
Wood house, basement	0.6
Brick house, no basement	0.6
Brick house, basement	0.4
Large office or industrial building	0.2
Outside	1.0

*Taken from SAND 77-1725 (Unlimited Release)

TABLE 6-6

REPRESENTATIVE SHIELDING FACTORS FOR SURFACE DEPOSITED RADIONUCLIDES*

Structure of Location	Representative Shielding Factor (1)	Representative Range
1 m above an infinite smooth surface	1.00	--
1 m above ordinary ground	0.70	0.47-0.85
1 m above center of 50′ road-ways, 50% decontaminated	0.55	0.4-0.6
Cars on 50′ road:		
Road fully contaminated	0.5	0.4-0.7
Road 50% decontaminated	0.5	0.4-0.6
Road fully decontaminated	0.25	0.2-0.5
Trains	0.40	0.3-0.5
One and two-story wood-frame house (no basement)	0.4(2)	0.2-0.5
One and two-story block house (no basement)	0.2(2)	0.04-0.40
House basement, one or two walls fully exposed:	0.1(2)	0.03-0.15
One story, less than 2′ of basement, walls exposed	0.05(2)	0.03-0.07
Two stories, less than 2′ of basement, walls exposed	0.03(2)	0.02-0.05
Three- or four-story structures, 5,000 to 10,000 ft^2 per floor:		
First and second floors	0.05(2)	0.01-0.08
Basement	0.01(2)	0.001-0.07
Multi-story structures >10,000 ft^2 per floor:		
Upper floors	0.01(2)	0.001-0.02
Basement	0.005(2)	0.001-0.015

(1) The ratio of dose received inside the structure to the dose that would be received outside the structure.
(2) Away from doors and windows.

*Taken from SAND 77-1725 (Unlimited Release)

TABLE 6-7 (page 1 of 2)

USE OF PROTECTIVE EQUIPMENT AND SUPPLIES

Equipment	Criteria for Issuance*	Storage Location	Means of Distribution
a. Respiratory Equipment:			
1) Full-Face Respirator (Filter)** Protection Factor-50	For areas of airborne particulate activity only (Notes 3 and 4).	(a) RP Station	(a) Used as needed by reentry personnel (b) Issued under the control of Radiation Protection (c) Issue Full-Face Respirators and filters for OSRPF as needed from TSC / OSC Facility.
2) Continuous Flow Air- Line (Supplied Air, Regulated Air) Supply through SCBA Protection Factor - 1,000	(a) For areas of airborne particulate, iodine, gas activity, or combinations of same (Notes 2 and 4). (b) Not to be used in IDLH atmosphere.	(a) Control Room	(a) Used as needed by Control Room personnel (b) Issued under the control of Radiation Protection
3) Self-Contained Breathing Apparatus Protection Factor - 10,000	(a) Inhalation hazard during fire fighting (b) For areas of airborne particulate iodine, gas activity, or combination of same (Notes 1, 2 and 4). (c) Any time IDLH atmosphere is suspected or unknown chemical concentration.	(a) Control Room (b) TSC (OSC) (c) Fire Brigade Lockers	(a) Used as needed by reentry personnel, Control Room personnel, **OR** (b) Issued under the control of Radiation Protection

* Significance of qualifying notes must be recognized.

** The proper type of air-purifying filters, cartridges, and canisters with the respirator must be chosen for the hazard present in the atmosphere.

TABLE 6-7 (page 2 of 2)

USE OF PROTECTIVE EQUIPMENT AND SUPPLIES

Equipment	Criteria for Issuance*	Location	Means of Distribution
b. Protective Clothing (Coveralls, Hoods, Boots, Gloves)	As needed in areas of known contamination	(a) Various areas of the plant (b) OSRPF	Used as needed by reentry personnel
c. Potassium Iodide for Thyroid Blocking	Reduce accumulation of radioactive iodine in the thyroid gland, used during a radiation emergency only	(a) Control Room (b) TSC (OSC) (c) OSRPF	Issued as needed under direction of RP personnel after approved by Emergency Director

NOTES

(1) This type of respirator provides the greatest protection and is preferred emergency device in unknown or high airborne concentrations.

(2) Limitations on occupancy in gaseous atmospheres will typically be governed by external dose limits.

(3) Respirators with mechanical filters provide no protection against gaseous activity or in oxygen-deficient atmospheres.

(4) Where airborne tritium is involved, filter type respirators are not suitable for protection. Supplied air apparatus (air line or self-contained) are not recognized as effective for concentrations greater than two times DAC.

TABLE 6-8 (page 1 of 2)

GUIDELINES FOR PROTECTION AGAINST INGESTION OF CONTAMINATION

1.0 SURFACE CONTAMINATION

1.1 Action Levels

1.1.1 Projected gamma dose ≥2 rem.

1.1.2 Surface contamination levels ≥200 $\mu Ci/m^2$ one hour post-accident.

1.1.3 Exposure rate ≥1 mR/hr at 1 meter above the ground one hour post-accident.

1.2 Recommended Protective Actions

1.2.1 Evacuate the affected area.

1.2.2 Restrict entry to contaminated offsite areas until radiation levels have decreased to state of Wisconsin approved levels.

2.0 FOOD AND WATER CONTAMINATION

2.1 Action Levels*

Nuclide**	Concentration in Milk or Water		Total Intake via All Food and Water Pathways		Pasture Grass (Fresh Weight)	
	Prev Level (μCi/l)	Emerg Level (μCi/l)	Prev Level (μCi)	Emerg Level (μCi)	Prev Level (μCi/kg)	Emerg Level (μCi/kg)
I-131	0.015	0.15	0.09	0.9	0.05	0.5
Cs-134	0.15	1.5	4.0	40.0	0.8	8.0
Cs-137	0.24	2.4	7.0	70.0	1.3	13.0
Sr-90	0.009	0.09	0.2	2.0	0.18	1.8
Sr-89	0.14	1.4	2.6	26.0	3.0	30.0

Prev = Preventive Emerg = Emergency

* The preventive level corresponds to a 1.5 rem projected dose commitment to the thyroid or 0.5 rem projected dose commitment to the whole body, bone marrow, or any other organ. The emergency level corresponds to a 15 rem projected dose commitment to the thyroid or 5 rem projected dose commitment to the whole body, bone marrow, or any other organ.

** If other nuclides are present, Regulatory Guide 1.109 will be used to calculate the dose to the critical organ. Infants are the critical segment of the population.

Reference: U.S. EPA Publication EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, May 1992.

TABLE 6-8 (page 2 of 2)

GUIDELINES FOR PROTECTION AGAINST INGESTION OF CONTAMINATION

2.2 Recommended Protective Actions

Preventive	Emergency
1. Removal of lactating cows from contaminated pasture and substitution of uncontaminated feed.	Isolate food and water from its introduction into commerce after considering:
2. Substitute source of uncontaminated water.	a. Availability of other possible actions;
3. Withhold contaminated milk from market to allow radioactive decay	b. Importance of particular food in nutrition;
4. Divert fluid milk to production of dry whole milk, butter, etc.	c. Time and effort to take action;
	d. Availability of other foods.

TABLE 6-9

MAXIMUM YEARLY ADMINISTRATIVE DOSE LEVELS [1]

Category	Max. Level
1. All doses received in current year, TEDE [2]	4.5 rem
2. The sum of the deep-dose equivalent and the committed dose equivalent to any organ other than the lens of the eye	45 rem
3. Eye dose equivalent	13.5 rem
4. Skin shallow-dose equivalent	45 rem
5. Extremity shallow-dose equivalent	45 rem

Notes:

1. Levels are from the Radiation Protection Procedure NP 4.2.14.

2. Total effective dose equivalent (TEDE) is the sum of the deep-dose equivalent (for external exposure) and the committed effective dose equivalent (for internal exposures).

TABLE 6-10

GUIDANCE ON DOSE LIMITS FOR WORKERS PERFORMING EMERGENCY SERVICES (1)

Dose Limits (rem) (2)	Activity	Condition
5	all	
10	protecting valuable property	lower dose not practicable
25	life saving or protection of large populations	lower dose not practicable
>25	life saving or protection of large populations	only on a voluntary basis to persons fully aware of the risks involved

(1) Levels are from EPA 400-R-92-001, manual of Protective Action Guides and Protective Actions for Nuclear Incidents

(2) Sum of external effective dose equivalent and committed effective dose equivalent to non pregnant adults from exposure and intake during an emergency situation. Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and body extremities) to ten times the listed value. These limits apply to all doses from an incident, those received in unrestricted areas as members of the public during the intermediate phase of the incident.

1.0 DISCUSSION

The Point Beach Nuclear Plant (PBNP) is located in Manitowoc County, Wisconsin, approximately eight miles north of the city of Two Rivers, Wisconsin. The Emergency Planning Zone (EPZ) encompasses an approximate ten-mile radius around PBNP, including the towns of Mishicot and Two Rivers, and the Dominion Energy Kewaunee Power Station.

2.0 DETERMINATION OF EVACUATION SECTORS AND SUBAREAS

For evacuation time estimation purposes, the area in the vicinity of PBNP was divided into the sectors and areas shown in Figure 1. A depiction of major highways of the PBNP EPZ is shown in Figure 2.

2.1 Sectors

2.1.1 The 0- to 2-mile zone is one 180° sector with a 2-mile radius as specified in the reporting format. A second 180° sector consists of the remainder of the 2-mile radial area over Lake Michigan.

2.1.2 The land area between the 5-mile and 10-mile radius lines was divided into six 45° sectors in a manner that would avoid the bisection of the City of Two Rivers and the Village of Mishicot.

2.1.3 The EPZ is also divided into additional segments, each representing 22.5° sectors around the compass, that also represent wind directions.

2.2 Subareas

2.2.1 The State of Wisconsin Emergency Management has subdivided the EPZ into nine subareas that reflect a best match between geographic boundaries and two-, five-, and ten-mile radii around the plant.

2.2.2 It should be noted that Wisconsin Emergency Management (WEM) uses an subarea designation whereby subareas 2, 5N, 5W, and 5S were combined to form subarea 5.

2.3 Protective Action Recommendations

2.3.1 PBNP emergency response personnel will specify which sectors(s) and distance from PBNP (2-, 5-, or 10-miles) are affected; then make protective action recommendations to offsite state and risk county Emergency Managements based on the severity and nature of the emergency and weather conditions (e.g., wind strength and direction). The offsite Emergency Management Directors will implement protective action recommendations in accordance with their emergency plan requirements by subarea(s). The affected subareas are those subareas that are intersected by the affected sectors.

2.3.2 The set of possible combinations of affected subareas were compiled and are given in Table 1. These combinations are hereafter referred to as Evacuation Regions. Evacuation Regions 1 through 5 refers to those subareas for various radii but for all wind directions. Regions 6 through 11 refer to the affected subareas from 5 miles to the EPZ edge for various wind directions. Regions 12 through 17 refer to the affected subareas from 0 miles to the EPZ edge for various wind directions. A summary of the affected permanent population is also given in Table 1

2.3.3 Tables 2 and 3 includes sets of evacuation time estimates: Table 2 is an estimate for normal weather conditions. Table 3, an estimate for adverse weather conditions.

3.0 NORMAL WEATHER AND EVACUATION PROCEDURE ASSUMPTIONS

In order to estimate evacuation times for normal weather conditions, the following assumptions were made:

3.1 The accident occurs during normal weather conditions, e.g., a clear or cloudy day with low or moderate winds, such that traffic flow would not be impeded by weather conditions.

3.1.1 All roads and streets in the area are serviceable.

3.1.2 Residents of the area are involved in their normal everyday activities.

3.2 All steps required in the PBNP Emergency Plan have been implemented, including the notification of appropriate local and emergency government authorities.

3.3 The Manitowoc County Sheriff's Office and Wisconsin Emergency Management have been mobilized and have established command posts.

3.4 Emergency personnel and vehicles are available and utilized for an accident requiring evacuation of the 0- to 2-mile zone and a 90° sector area encompassing both the City of Two Rivers and the Village of Mishicot. In accordance with the Manitowoc County Evacuation Plan, notifying personnel would be drawn from various agencies; e.g., the Sheriff's Department, the Wisconsin State Patrol, Two Rivers Police Department, State of Wisconsin Emergency Management, and local firefighting agencies.

3.5 Establishment of traffic control measures to maintain the flow of traffic in the area and facilitate evacuation are assumed. These measures include the routing of rural traffic away from the City of Two Rivers and Village of Mishicot to reduce the potential for congestion problems. In the City of Two Rivers, maintenance of flow over the four bridges available for crossing the East and West Twin Rivers is also assumed.

3.6 The primary means of notifying residents would be by a fixed civil defense siren system, police and emergency vehicles driving in the area with "yelp" sirens on, mobile public address system, and door-to-door personal contact.

3.7 Other means of notification to be used include broadcast media, telephones, tone alert radio and citizen band radio. Warning to higher and lower echelons of government including telephone, radio, and wire systems of communication.

3.8 Evacuation takes place as the notification process progresses. A portion of the population will respond to broadcast media notifications and implement evacuation without personal contact notification.

3.9 School superintendents are alerted as part of the emergency mobilization process, and the required number of school buses to be used in the process of driving to or from schools are on standby.

3.10 Residents evacuate the area principally by private automobile, with an average of about 1.2 vehicle per residence.

3.11 The evacuation time estimates were developed assuming that all special facilities (e.g., schools, group homes) will be informed to evacuate at the same time as the general population.

3.12 Transport-dependent, including special needs individuals, would be evacuated by bus, van, ambulance, or other suitable means as coordinated by State and County, and municipal emergency preparedness officials.

4.0 ADVERSE WEATHER ASSUMPTIONS

In order to estimate evacuation times for adverse weather conditions, the following assumptions were made, based on the normal preparedness for snow conditions in Wisconsin.

4.1 The accident occurs immediately following a heavy snowstorm. An accident during a snowstorm would require approximately 25% additional time for evacuation. At the same time, it is recognized that radiological impact could be reduced due to radioiodine and particulate washout by snowfall or rainfall.

4.2 Plowing or salting of interstate and state highways and major county roads is in progress to the extent of minimum serviceability.

4.3 Lesser-traveled county roads and local town roads and city streets have not been plowed.

4.4 All rural roads are accessible to police and emergency vehicles and private vehicles equipped with snow tires and/or chains.

4.5 The residents of the area normally have their own snow removal equipment and have the capability to exit their own property during emergency situations in a reasonable time.

5.0 POPULATION DESCRIPTIONS

Regulatory guidance suggests that three population segments should be considered: permanent residents, transients, and special facility residents.

5.1 Permanent residents were defined as those individuals residing at a primary residence that is within the EPZ. There are approximately 22,885 people, 9,555 residences, and 11,420 vehicles.

5.2 Persons considered transients included tourists in various lodging accommodations (e.g., hotels, bed and breakfasts, etc.) and employees not residing in the EPZ, consisting of approximately 165 people and 80 vehicles. Other transients are persons located in parks and recreational areas, consisting of approximately 110 people with 30 vehicles in winter and 715 people and 220 vehicles in summer.

5.3 The special facility population included those residents confined to hospitals and nursing and group homes. There are approximately 180 people, including staff members.

5.4 School populations (students and staff) were considered part of the special facility population. There are approximately 4200 people, including staff members.

5.5 Employees in the EPZ consist of approximately 2980 on day shifts, 790 on night shifts, and 550 on weekend shifts. Adjusted person figures consist of approximately 1420 on day shifts, 380 on night shifts, and 275 on weekend shifts. The number of vehicles was approximated to the same numbers as adjusted person figures. The employee population figures were adjusted to reflect that some of the employees in EPZ workplaces commute into the EPZ and were not already counted in the permanent population.

6.0 EVACUATION TIME ESTIMATES

Trip generation times can be thought of as descriptions of how vehicles begin to move on the roadway network. In this study, it was assumed that no vehicles would begin evacuating for at least 30 minutes (maximum 15 minute notification time and 15 minute trip preparation time) after the declaration of an emergency.

It was assumed that the transient population would be informed of the evacuation within 30 minutes. While employees may be expected to remain at the workplace to facilitate workplace shutdowns, it was assumed that such activities would not last longer than 30 minutes. Other components of the transient population (i.e.; hotel and motel patrons) would likely act similarly.

Schools will be evacuated, at the Site Area Emergency level, directly to reception centers as soon as transportation resources arrive at the schools. It was assumed that bus mobilization times would be about an hour. Accordingly, the schools population could be expected to evacuate within ninety minutes of an evacuation decision.

6.1 For 0 to 2-Mile Zone

6.1.1 There are approximately 77 residences and 6 commercial or public buildings within the 0- to 2-mile zone. The estimated resident population of this area is 551 persons. By use of the civil defense siren system, those notifications would be completed in 15 minutes for both good and adverse weather conditions.

6.1.2 Evacuation would begin as notification progresses. Evacuation would take place principally by private automobile. With an average of 1.2 vehicle per residence and three vehicles per business or other uses, approximately 110 vehicles would be involved; hence, no traffic problems are anticipated. Using the civil defense siren system, evacuation of the zone could be completed 50 minutes after commencement of notification during good weather. During adverse poor weather, using the civil defense siren system, the evacuation should be complete within 80 minutes.

6.1.3 The estimated average total time to evacuate the zone is 55 minutes during normal conditions and 70 minutes during adverse poor weather conditions if the civil defense siren system is used. These estimates allow for the overlap of the types of activities (notification and implementation) involved.

6.2 For 2 to 5-Mile Zone

Evacuation time estimates for the evacuation regions (90° sectors and overlapping subareas) from the 2- to 5-mile range from 60 to 80 minutes during normal weather conditions, and 60 to 90 minutes during adverse weather conditions.

6.3 For 5 to 10-Mile Zone

For the evacuation regions (90° sectors and overlapping subareas) from 5 to 10 miles, the estimates range from 110 to 130 minutes during normal conditions and 120 to 170 minutes during adverse weather conditions.

7.0 EVACUATION ROUTE SEGMENT CAPACITIES

7.1 Capacity estimations were made for two-lane roads, multi-lane roads, multi-lane freeways, and freeway ramps. Estimates for roads and freeways were done on a "per lane" basis.

7.2 To represent the varying road types and geometries, roads were categorized in the following manner:

7.2.1 10-foot lanes with 1-foot shoulders

7.2.2 11-foot lanes with 2-foot shoulders

7.2.3 12-foot lanes with 6-foot shoulders

7.3 Estimates were made for both two-way and one-way traffic. Highway capacity was estimated to be 1,000 vehicles per hour per lane. Freeway capacity was estimated to be 1,692 vehicles per hour per lane and freeway ramp capacity was estimated to be 1,333 vehicles per hour.

8.0 REFERENCES

Evacuation Time Estimate Study for the Point Beach Nuclear Plant Emergency Planning Zone (EPZ), TOMCOD, Inc., January 31, 2005

FIGURE 1
10-MILE EPZ SECTORS AND SUBAREAS

The Point Beach Nuclear Plant EPZ including major roadways, the nine subareas and the location of the Dominion Energy Kewaunee Power Station. The Wisconsin Emergency Management (WEM) uses an subarea designation whereby subareas 2, 5S, 5W, and 5N were combined to form subarea 5

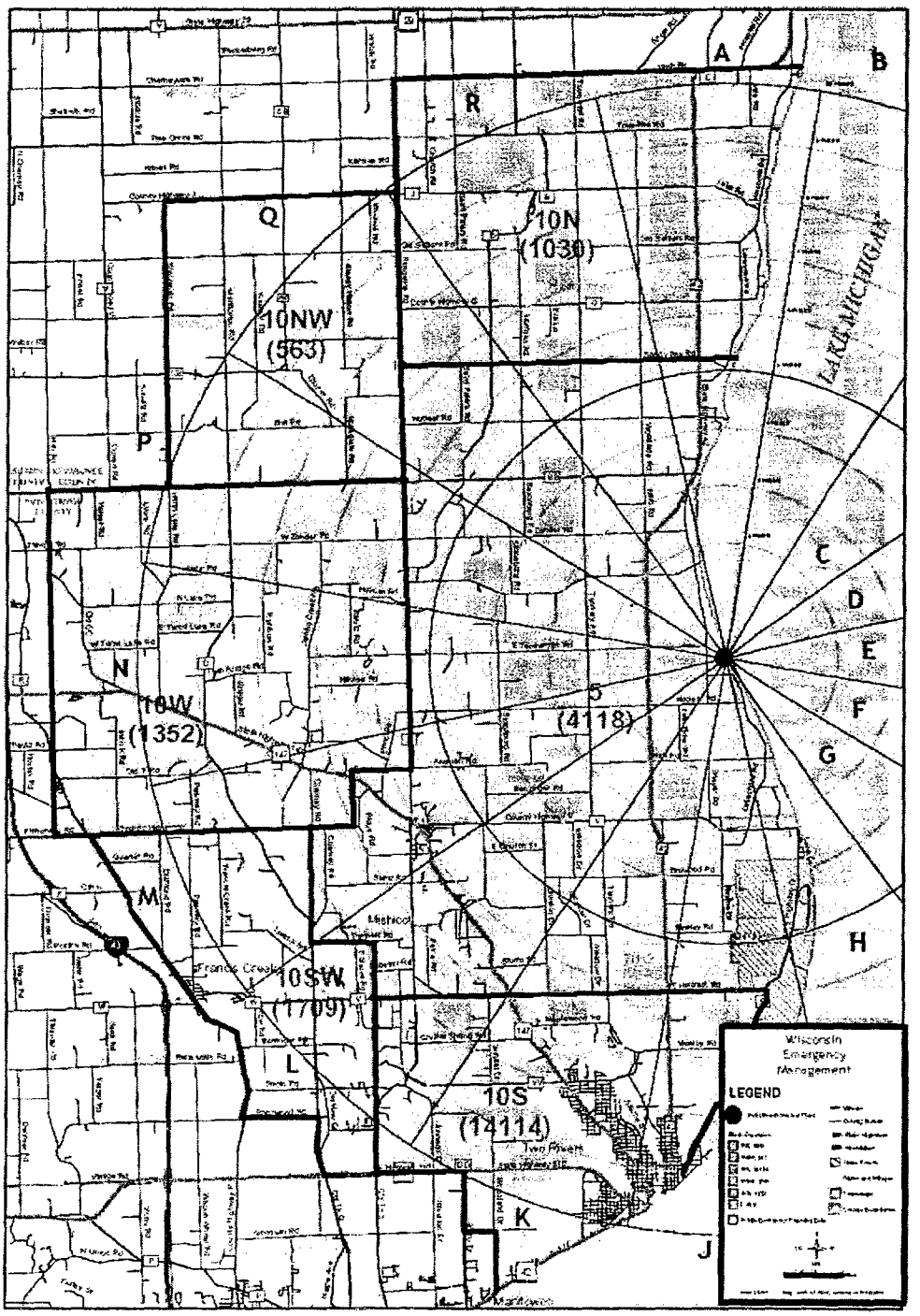

FIGURE 2
MAJOR HIGHWAYS IN THE VICINITY OF POINT BEACH NUCLEAR PLANT

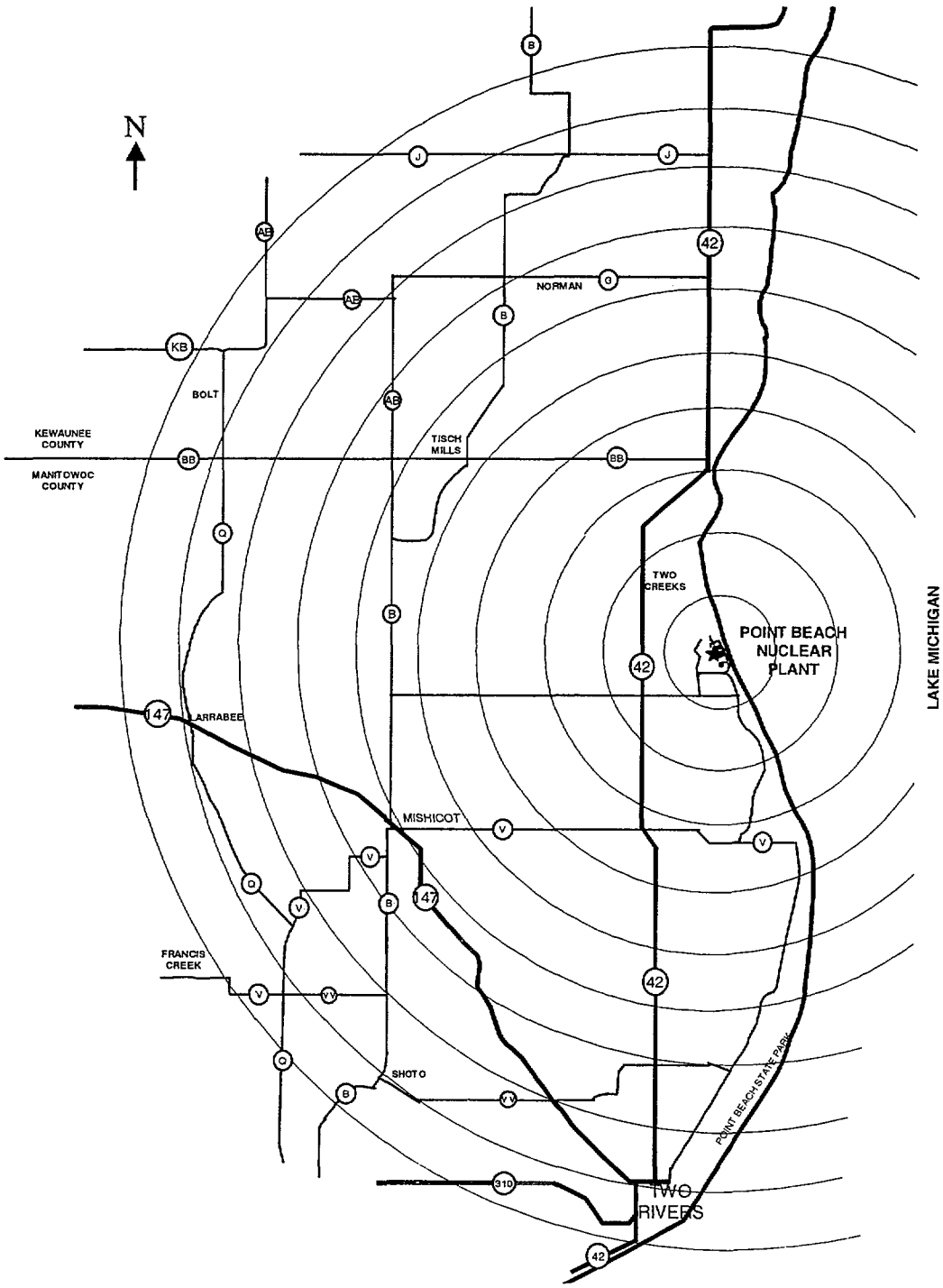

TABLE 1
EVACUATION REGIONS FOR THE POINT BEACH NUCLEAR PLANT EPZ

Evac. Region	Wind Direction	Affected Sectors	Affected Subareas							Affected Permanent Population			
			0-2 Miles	2-5 Miles	5 miles -EPZ Edge					0-2 Miles	2-5 Miles	5 miles -EPZ Edge	TOTALS
1	0 – 2 miles		5							551			551
2	2 – 5 miles			5							3567		3567
3	5 – 10 miles				10N	10NW	10W	10SW	10S			18768	18768
4	2 – EPZ edge			5	10N	10NW	10W	10SW	10S		3567	18768	22335
5	0 – EPZ edge		5	5	10N	10NW	10W	10SW	10S	551	3567	18768	22886
6	S	R, A			10N							1030	1030
7	SSE	Q, R, A			10N	10NW						1593	1593
8	SE ESE	P, Q, R N, P, Q			10N	10NW	10W					2945	2945
9	E ENE NE	M, N, P L, M, N K, L, M				10NW	10W	10SW				3624	3624
10	NNE	J, K, L						10SW	10S			15823	15823
11	N NNE	H, J, K G, H, J							10S			14114	14114
12	S	R, A	5	5	10N					551	3567	1030	5148
13	SSE	Q, R, A	5	5	10N	10NW				551	3567	1593	5711
14	SE ESE	P, Q, R N, P, Q	5	5	10N	10NW	10W			551	3567	2945	7063
15	E ENE NE	M, N, P L, M, N K, L, M	5	5		10NW	10W	10SW		551	3567	3624	7742
16	NNE	J, K, L	5	5				10SW	10S	551	3567	15823	19941
17	N NNE	H, J, K G, H, J	5	5					10S	551	3567	14114	18232

TABLE 2

SUMMER EVACUATION TIMES ESTIMATES (IN MINUTES) FOR SCENARIOS 1-8

	Scenarios							
Region	1	2	3	4	5	6	7	8
	Summer Weekend Midday Fair	Summer Weekend Midday Poor	Summer Weekend Evening Fair	Summer Weekend Evening Poor	Summer Weekday Midday Fair	Summer Weekday Midday Poor	Summer Weekday Evening Fair	Summer Weekday Evening Poor
1	50	50	50	50	60	70	50	60
2	60	70	60	70	70	80	70	70
3	110	110	110	120	120	130	120	130
4	120	120	110	130	120	150	130	140
5	120	120	110	130	120	150	130	140
6	40	50	40	50	50	60	50	60
7	50	50	50	50	60	60	60	70
8	50	60	50	60	70	70	60	60
9	60	60	60	60	70	80	70	70
10	100	110	120	110	110	110	90	100
11	90	100	90	100	110	110	90	90
12	50	50	60	70	50	60	50	60
13	50	50	50	60	60	60	60	70
14	50	60	50	60	70	70	60	60
15	60	60	60	60	70	80	70	70
16	100	120	100	110	120	120	90	100
17	90	100	90	110	120	120	90	90

TABLE 3

WINTER EVACUATION TIMES ESTIMATES (IN MINUTES) FOR SCENARIOS 9-16

	Scenarios							
Region	9	10	11	12	13	14	15	16
	Winter Weekend Midday Fair	Winter Weekend Midday Poor	Winter Weekend Evening Fair	Winter Weekend Evening Poor	Winter Weekday Midday Fair	Winter Weekday Midday Poor	Winter Weekday Evening Fair	Winter Weekday Evening Poor
1	50	60	50	60	60	80	50	70
2	60	70	60	70	70	90	70	80
3	120	130	120	120	130	170	130	150
4	140	140	120	130	120	220	160	190
5	140	140	120	130	120	220	160	190
6	40	50	40	50	50	60	50	60
7	50	50	50	50	60	60	60	70
8	50	60	50	60	70	70	60	60
9	60	60	60	60	70	80	70	70
10	100	110	110	120	120	120	100	110
11	100	100	100	100	110	110	90	90
12	50	50	60	70	50	60	50	60
13	50	50	50	60	60	60	60	70
14	50	60	50	60	70	70	60	60
15	60	60	60	60	70	80	70	70
16	120	130	120	140	130	150	110	110
17	120	120	120	130	120	150	110	110

August 29, 2005

NRC 2005-0112
10 CFR 50.54(q)

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

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
License Nos. DPR-24 and DPR-27

Revision To Emergency Plan Implementing Procedures

In accordance with 10 CFR 50.54(q), Nuclear Management Company, LLC (NMC), evaluated eleven proposed procedure revisions to the Point Beach Nuclear Plant (PBNP) Emergency Plan Implementing Procedures (EPIPs). The evaluation concluded that the changes did not result in a decrease of the effectiveness of the PBNP Emergency Plan.

Enclosed are revisions to the following procedures:

- EPIP 1.1, "Course Of Actions," Revision 49, Issued July 29, 2005
- EPIP 1.2, "Emergency Classification," Revision 45, Issued July 29, 2005
- EPIP 1.2.1, "Emergency Action Level Technical Basis," Revision 0, Issued July 29, 2005
- EPIP 1.3, "Dose Assessment And Protective Action Recommendations," Revision 35, Issued July 29, 2005
- EPIP 1.3.1, "Dose Assessment Using RMS-SS," Revision 1, Issued July 29, 2005
- EPIP 1.3.2, "Dose Assessment Using Offsite Field Measurements," Revision 1, Issued July 29, 2005
- EPIP 1.3.3, "Dose Assessment Using Manual Calculations," Revision 1, Issued July 29, 2005

AV45

- EPIP 2.1, "Notifications - ERO, State And Counties, And NRC," Revision 34, Issued July 29, 2005
- EPIP 12.1, "Emergency Event De-Escalation or Termination," Revision 13, Issued July 29, 2005
- EPIP 12.2, "Recovery Implementation," Revision 18, Issued July 29, 2005

Also enclosed is Revision 124 to the EPIP Index, Issued July 29, 2005.

EPIP 1.4, "Credible Security Event," Revision 9, was also issued July 29, 2005. However, EPIP 1.4 is exempt from public disclosure in accordance with 10 CFR 2.390 and is only being provided to the Incident Response Center.

Personal privacy information has been redacted from the procedures being provided to the Document Control Desk.

A copy of the complete PBNP EPIP Manual, containing the revised procedures, is being provided to the NRC Region III Incident Response Center on CD-ROM.

This letter contains no new commitments and no revisions to existing commitments.

Dennis L. Koehl
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosures (11)

cc: Incident Response Center, Region III (copy of PBNP EPIP Manual on CD-ROM)
Resident Inspector, Point Beach Nuclear Plant, USNRC

EPIP 1.3

DOSE ASSESSMENT AND PROTECTIVE ACTION RECOMMENDATIONS

DOCUMENT TYPE: Technical

CLASSIFICATION: Safety Related

REVISION: 35

EFFECTIVE DATE: July 29, 2005

REVIEWER: Plant Operations Review Committee

APPROVAL AUTHORITY: Department Manager

PROCEDURE OWNER (title): Group Owner

OWNER GROUP: Emergency Preparedness

Verified Current Copy: _____ _____ _____
Signature Date Time

List pages used for Partial Performance

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Controlling Work Document Numbers

_____ _____
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TABLE OF CONTENTS

1.0 PURPOSE

Several methods are available to project offsite dose due to a release of radioactive material during a declared plant event. This procedure provides instructions for using the computer application WEDAP, and actions to take if WEDAP is not available. These dose projections will be used to provide Protective Action Recommendations (PARs) to the State and Counties.

2.0 PREREQUISITES

2.1 Responsibilities

2.1.1 The Shift Manager (SM), as the Emergency Director in the Control Room, is responsible for the radiological dose assessment and protective action recommendations using prior to TSC/EOF activation and formal transfer of responsibilities to the Emergency Director in the EOF. If available, the SM may assign this task to the Operating Supervisor(s) or the Shift Technical Advisor (STA).

2.1.2 The Emergency Director in the EOF may delegate the performance of radiological release evaluation portion of this procedure to the Dose/PAR Coordinator. The Dose/PAR Coordinator will advise the Emergency Director of the need to escalate the emergency classification or change protective action recommendations based upon radiological conditions.

2.1.3 The Dose/PAR Coordinator is responsible for the continuing dose assessment and Protective Action Recommendations to the Emergency Director.

2.1.4 **IF** the Dose/PAR Coordinator is unable to perform radiological release evaluations,
THEN the Rad/Chem Coordinator in the TSC will assume this responsibility.

2.2 Equipment

2.2.1 Wisconsin Electric Dose Assessment Program (WEDAP)

2.2.2 Radiation Monitoring System-System Server (RMS-SS)

2.2.3 Plant Process Computer System (PPCS)

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Complete this procedure regardless of changing plant conditions.

3.2 PARs are made to the State and Counties by the Shift Manager, or the Emergency Director depending on the status of emergency facility activation. The Dose/PAR Coordinator (or the Rad Chem Coordinator if the EOF is not activated), performs dose projections and monitors offsite radiological conditions, develops the associated PARs and provides the PARs and basis to the Emergency Director.

NOTE: If a PAR change is required the new PAR should include all previous and currently recommended sectors.

3.3 PARs are developed from current rather than forecasted weather conditions. PARs are revised due to actual weather condition changes (e.g., wind shift occurs or atmospheric stability class changes) only when a revised dose projection or offsite radiological condition results in a change in PAR.

3.4 If conditions that constitute KNOWN IMPEDIMENTS to EVACUATION exist, a Shelter rather than an Evacuation recommendation should be made. These are conditions which make evacuation of the public impractical. Conditions include Inclement Weather (ice/snow storms where driving would be dangerous), and known impacts on the ability to execute public evacuations (severe damage to roads/infrastructure, etc.). It is not the intent of this procedure to cause the Emergency Director and/or organization to obtain information not currently known to them.

3.5 Use a realistic estimate of release duration in these calculations whenever possible.
IF the duration of the radiological release can **NOT** be determined from the current plant conditions,
THEN, assume a duration of four hours.

3.6 **IF** the meteorological data can **NOT** be obtained from the PPCS or the control room instruments,
THEN obtain the below data from any of the following sources using ETD 02:

3.6.1 Kewaunee Nuclear Power Plant

3.6.2 National Weather Service in Green Bay

NOTE: Only wind speed, wind direction and lake breeze are available from the Two Rivers Coast Guard Station

3.6.3 Two Rivers Coast Guard Station

3.6.4 Data to request

a. Stability Class

b. Wind Direction

c. Wind Speed

d. σ_θ (sigma theta) if greater than 3 mph, if available

e. $\Delta T/\Delta H$ (lapse rate), if available

3.7 In some unlikely cases, it is possible for a radiological release to exceed the 10-mile EPZ. In such cases, additional PARs could be issued and tracking support provided if the counties so desire.

4.0 INITIAL CONDITIONS

4.1 EPIP 1.1, Course of Actions, in progress.

4.2 RMS or plant conditions suggest that a radiological release is in progress or anticipated.

5.0 PROCEDURE

NOTE 1: Emergency Classifications and PARs shall be made to the State and Counties within 15 minutes of the emergency classification being declared, change in radiological release status, OR identification of a change in the required PAR.

NOTE 2: There are no PARs required for Site Area Emergency, Alert, or Unusual Event emergency classifications.

5.1 Protective Action Recommendations (PARs)

5.1.1 Determine PARs using Attachment A.

5.1.2 Determine downwind sections using Attachment B.

5.1.3 PARs shall be documented on the Nuclear Accident Reporting System (NARS) form from EPIP 1.1 or EPIP 2.1.

5.1.4 **IF** a release is occurring or is imminent,
THEN radiological release evaluation and dose projection shall be completed using Section 5.2 as applicable to determine or revise the emergency classification and/or PAR.

5.2 Wisconsin Electric Dose Assessment Program (WEDAP)

NOTE 1: The "Source Term" and "Release Path" categories have drop-down menus to determine the severity of the event and should be opened to select the appropriate category for the event. When opened, each drop-down menu has been organized to list the options from the least severe to the most severe.

NOTE 2: IF WEDAP is NOT available in the Control Room,
THEN go to EPIP 1.3.1, Dose Assessment Using RMS-SS,
OR,
IF WEDAP is **NOT** available in the EOF (TSC backup),
THEN go to Attachment C, "Reinstallation of WEDAP Software."

5.2.1 Power up the designated personal computer (PC) using the master power switch to "boot up" into Windows NT, selecting "stand-alone" if presented with a selection of configurations during bootup, **DO NOT** "dial in" because WEDAP is a Level A application.

5.2.2 Log on to the PC using the PC number (label affixed to PC) as both the identification number and password, entering it in lower case.

5.2.3 Launch WEDAP by selecting "Business Applications – WEDAP" or the "WEDAP icon."

5.2.4 Select "Start" when prompted at WEDAP introduction screen.

5.2.5 Enter a "Title" for this dose assessment case to provide retrievability if the case is saved.

5.2.6 Click on "Data" on the toolbar and select the option "Case Basis."

5.2.7 Click on the appropriate "Accident Type" for the event.

5.2.8 Update **all** the data fields in the "Source Term" section.

5.2.9 Update **all** the data fields in the "Release Path" section.

5.2.10 Click "OK" to return to the summary page.

5.2.11 Verify details in the "Accident Data" section are based upon the data selected in Steps 5.2.5 - 5.2.9, returning to "Data" and "Case Basis" to make corrections if necessary.

5.2.12 Update "Reactor Shutdown Time" data field with the correct data if applicable.

5.2.13 Update "Release Start" by entering the time the release to environment began.

5.2.14 Update "Release End" by entering the correct data for an estimated time the release to environment will terminate.
IF release duration is unknown,
THEN use four hours as a default value.

5.2.15 Update the "Meteorological Data" section categories by clicking on each data field and selecting/entering the correct data:

NOTE: Normally meteorological data is available from PPCS. If PPCS is not available, then use alternate sources listed in Step 3.6.

a. Met Date

b. Stability Class (automatically updates "Building Wake" check box)

NOTE: Sigma theta is "STD. DEV." in Control Room, on Met/Forebay Lvl Recorder.

c. Sigma Theta (Only key-in value from PPCS if stability class unavailable and >3 mph wind speed).

NOTE: Lapse rate is "Delta T" in Control Room, on Met/Forebay Lvl Recorder.

d. Lapse Rate, ΔT/ΔH (Only key-in value from PPCS if stability class is unavailable and <3 mph wind speeds)

e. Precipitation (Yes/No)

NOTE 1: If PPCS is unavailable, compare inland and primary/backup tower wind direction indicators in Control Room, on Met/Forebay Lvl Recorder.

NOTE 2: Lake breeze conditions exist if the difference between actual wind direction values for inland and primary/backup meteorological towers is greater than 90°.

f. Lake Breeze (Yes/No)

g. Wind Speed

h. Wind Direction

5.2.16 Verify the data on the WEDAP main screen and make corrections if appropriate.

5.2.17 Click on the "Calculate" icon to perform the final dose assessment calculations, which automatically updates the dose assessment data fields.

5.2.18 Review the dose assessment result tabs (a single click for simple data OR double-click for expanded data).

a. Dose

b. Dose Rate

c. Event Classification

d. PARs (must be evaluated against Attachment A)

5.2.19 Compare the results of Step 5.2.18 against the current classification and PARs.

NOTE 1: If a PAR change is required the new PAR should include all previous and currently recommended sectors.

NOTE 2: In some cases (e.g., short-duration puff release, inclement weather), sheltering may be an appropriate recommendation. (Reference Step 3.4).

NOTE 3: Emergency Classifications and PARs shall be made to the State and Counties within 15 minutes of the emergency classification being declared, change in radiological release status, OR identification of a change in the required PAR.

NOTE 4: There are no PARs required for Site Area Emergency, Alert, or Unusual Event emergency classifications.

NOTE 5: Review Section 3.0 prior to revising the PAR.

a. **IF** in the Control Room **AND** the result of this assessment is an escalation of classification and/or PARs,
THEN go to EPIP 1.1,
OR exit this procedure, if **NOT** an escalation.

b. **IF** in the EOF (TSC backup) **AND** the result of this assessment is an escalation of classification and/or PARs,
THEN immediately inform the Emergency Director and assist with EPIP 2.1 for initiating notifications,
OR proceed to the next step for a continuous dose assessment if **NOT** an escalation:

NOTE 1: The "View" icon on the toolbar may be used to access additional tables and maps available for reference use.

NOTE 2: To save the data from a series of case assessments, click on "File," "Save Scenario File," and then reclick on "File" and "Restart WEDAP" to start a new scenario with new cases.

5.2.20 Click on the "Print Case" icon to create a hard copy of the current case.
IF the printer connection is not established,
THEN go to EPIP 1.3, Attachment C, Step 2.0.

5.2.21 Click on the "Add Case" or "Insert Case" icon as appropriate to run the next dose assessment.

a. Determine if this case is to be based upon a cumulative dose and change the field as appropriate.

b. Repeat Steps 5.2.5 - 5.2.20

c. **IF** time permits to run a more detailed dose assessment case, **THEN** implement the following steps:

- Click on "Data," select the option "Equipment Status," enter the Unit affected, and update all the data fields in the "Equipment Status" section.

- Click on "Data," select the option "Measured Data," and select one of the following options for entering values from **actual** data sources:

  (a) "RMS Data - Manual Input" and update the field with the RMS monitors and readings in high alarm status.

  (b) "Offsite Measurements - Isotopic Data" and update the fields with the correct data, including selecting the nuclides involved.

  (c) "Offsite Measurements - Survey Reading" and update the fields with the correct data.

  (d) "Isotopic Release Rate" and select the nuclides involved, updating with the correct data.

NOTE: Cases can be generated on actual event data or "what-if" scenarios.

d. **IF** the case was built on a "what-if" scenario, **THEN** repeat Step 5.2.17, Step 5.2.18, and Step 5.2.20, **THEN** click on the "Delete Case" icon, **AND** repeat Step 5.2.21.

e. **IF** the case was built on the actual events in progress, **THEN** repeat Steps 5.2.17 - 5.2.20.

Performed By:	
_____/_____	_____/_____
Performer (Print and Sign)	Date / Time

6.0 REFERENCES

6.1 EDS Report to Wisconsin Electric Power Company concerning NUREG-0578, March 7, 1980.

6.2 EPIP 1.1, Course of Actions

6.3 EPIP 2.1, Notifications - ERO, State & Counties, and NRC

6.4 EPIP 1.3.1, Dose Assessment Using RMS-SS

6.5 ETD 02, Offsite Agency Call List.

6.6 NUREG/BR-0150, Volume 1, Revision 4, RTM-96, Response Technical Manual, Figures A-5 and A-6, March 1996.

6.7 Radiation Monitoring System Alarm Setpoint & Response Book

6.8 Radiological Engineer to Plant Manager/EP Coordinator memo dated June 13, 1988.

6.9 Reactor Engineer to Plant Manager memo dated April 6, 1984.

6.10 TID 14844, Calculation of Distance Factors for Power and Test Reactor Sites, March 23, 1962.

6.11 U. S. NRC Regulatory Guide 1.109, Calculation of Annual Doses to Man from Routine Release of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, Revision 1, October 1977.

6.12 U. S. NRC Regulatory Guide 1.4, Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of Coolant Accident for Pressurized Water Reactors, Revision 2, June 1976.

7.0 BASES

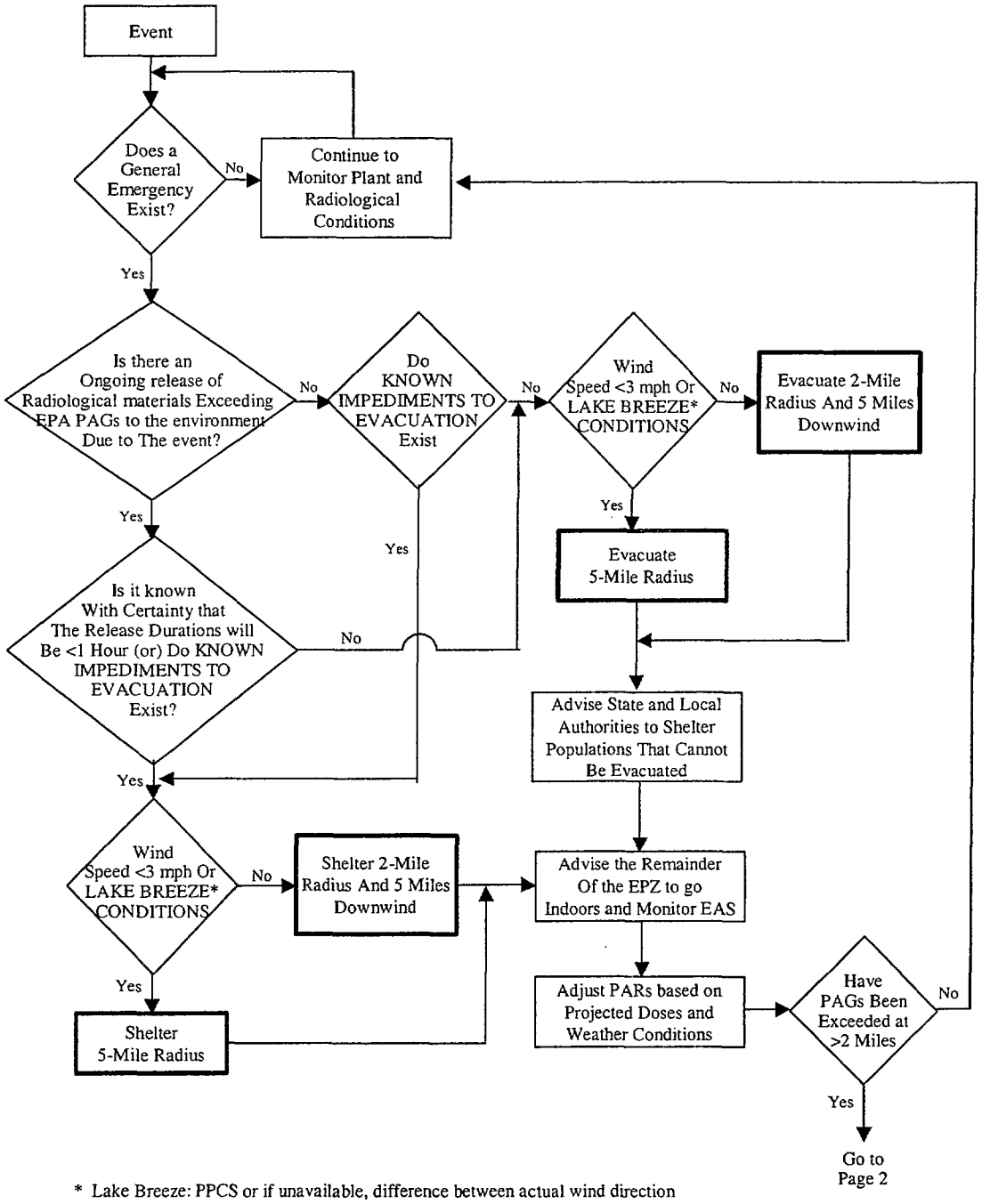
B-1 NUREG-0654, Revision 1, Supp. 3, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, July, 1996.

B-2 Point Beach Nuclear Plant, Emergency Plan, Appendix J, Evacuation Time Estimates for the Area Surrounding the Point Beach Nuclear Plant.

B-3 RIS 2004-13, Supplement 1, Consideration of Sheltering in Licensee's Range of Protective Action Recommendations, August 2004

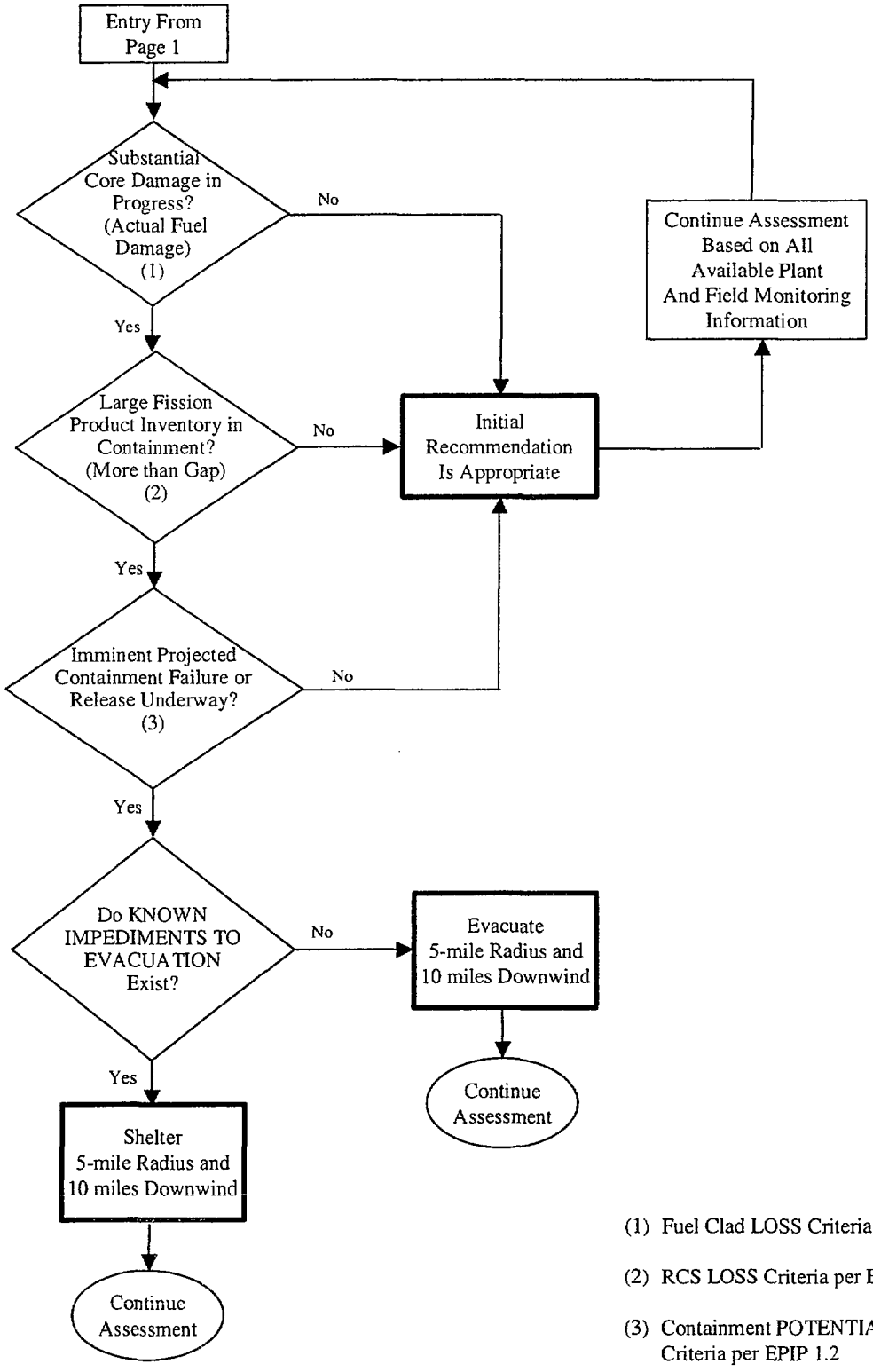
B-4 EPA 400-R-92-001, Manual of Protective Action Guidelines for Nuclear Incidents, May, 1992.

ATTACHMENT A
PROTECTIVE ACTION RECOMMENDATIONS
Page 1 of 2



* Lake Breeze: PPCS or if unavailable, difference between actual wind direction values for inland and near shore meteorological towers is greater than 90°.

ATTACHMENT A
PROTECTIVE ACTION RECOMMENDATIONS
Page 2 of 2



(1) Fuel Clad LOSS Criteria per EPIP 1.2

(2) RCS LOSS Criteria per EPIP 1.2

(3) Containment POTENTIAL LOSS Criteria per EPIP 1.2

ATTACHMENT B
AFFECTED SECTORS BASED ON WIND DIRECTION

NOTE 1: If wind speed is less than three (3) mph or lake breeze conditions exist, then recommend protective actions for all sectors (360°) 0-5 miles. Lake breeze conditions exist if the difference between actual wind direction values for inland and near shore meteorological towers is greater than 90°.

Wind Direction* (Degrees From)	Affected Downwind Sectors
>351 – 9 (>351 – 369**)	H, J, K
>9 – 13 (>369 – 373**)	H, J, K, L
>13 – 32 (>373 – 392**)	J, K, L
>32 – 36 (>392 – 396**)	J, K, L, M
>36 – 54 (>396 – 414**)	K, L, M
>54 – 58 (>414 – 418**)	K, L, M, N
>58 – 77 (>418 – 437**)	L, M, N
>77 – 81 (>437 – 441**)	L, M, N, P
>81 – 99 (>441 – 459**)	M, N, P
>99 – 103 (>459 – 463**)	M, N, P, Q
>103 – 122 (>463 – 482**)	N, P, Q
>122 – 126 (>482 – 486**)	N, P, Q, R
>126 – 144 (>486 – 504**)	P, Q, R
>144 – 148 (>504 – 508**)	P, Q, R, A
>148 – 167 (>508 – 527**)	Q, R, A
>167 – 171 (>527 – 531**)	Q, R. A, B
>171 – 189 (>531 – 549**)	R, A, B
>189 - 193	R, A, B, C
>193 - 212	A, B, C
>212 - 216	A, B, C, D
>216 - 234	B, C, D
>234 - 238	B, C, D, E
>238 - 257	C, D, E
>257 - 261	C, D, E, F
>261 - 279	D, E, F
>279 – 283	D, E, F, G
>283 – 302	E, F, G
>302 – 306	E, F, G, H
>306 – 324	F, G, H
>324 – 328	F, G, H, J
>328 – 347	G, H, J
>347 – 351	G, H, J, K

* As read on PPCS or Control Room instruments.

** > 360° as read on chart recorder.

ATTACHMENT C
REINSTALLATION OF WEDAP SOFTWARE

1.0 NOTEBOOK PERSONAL COMPUTER (PC) ACCESS

The Wisconsin Electric Dose Assessment Program (WEDAP) is a resident of the hard drive of the Level A notebook personal computers (PC) in the Control Room and EOF (TSC as a backup) dose assessment areas.

1.1 **IF** the WEDAP directory and files are **NOT** found on the hard drive of the notebook PC in the EOF (TSC),
THEN the notebook PC must be recloned and WEDAP reinstalled using the CD-Roms located in the EOF (TSC) inventory cabinet.

1.1.1 Recloning the notebook PC

a. Insert the cloning "Install" CD-Rom.

b. Reboot the notebook PC.

c. Wait for the prompt, following any instruction prompts given.

1.1.2 Installing WEDAP from the cloning CD.

a. Insert the "WEDAP" application CD-Rom.

b. Select the "Start Bar - Enterprise Applications - Application Install - Install/Update Application" (top choice).

c. Click on "Install" to run the auto-install.

1.2 Return to EPIP 1.3, Step 5.2.1
OR IF WEDAP is still unavailable,
THEN go to EPIP 1.3.1, Dose Assessment Using RMS-SS.

2.0 PRINTING DATA TO LOCAL PRINTER IN THE EOF (TSC)

2.1 Ensure the laserjet printer in the EOF (TSC) is connected to the notebook PC via the printer cable and the printer is in the "ON" position.

2.2 From WEDAP, select "File - Print" **OR** the "Printer Icon" to print a case.

ATTACHMENT C
REINSTALLATION OF WEDAP SOFTWARE

2.3 Return to EPIP 1.3, Step 5.2.20 **IF** able to print.

2.4 **IF** still unable to print,
THEN reset the printer connection.

2.4.1 Select "Start - Settings - Printers - HP LaserJet 4000" and verify the printer properties have LPT1 selected for the port connection.

2.4.2 From WEDAP, select "File - Print" **OR** the "Printer Icon" to print a case.

2.4.3 Return to EPIP 1.3, Step 5.2.20 **IF** able to print.

2.5 **IF** still unable to print,
THEN reinstall the printer drivers.

2.5.1 Obtain the cloning "Install" CD-Rom from the EOF (TSC) inventory cabinet and place in the notebook PC while still logged on.

2.5.2 Select Start - Settings - Printers

2.5.3 Execute "Add Local Printer"

2.5.4 Select "My Computer" and "Next" arrow

2.5.5 Select "LPT1" local port and "Next" arrow

2.5.6 At "Add Print Wizard" select "Have Disk...."

2.5.7 At "Install From Disk" select "Browse..."

2.5.8 When message of "A:\ Isn't Accessible" select "Cancel"

2.5.9 At "Local File Window" Select "My Computer"

2.5.10 Select "D"\Prntdrvs\1386\HP4000~1\PC16\Oemnt40.inf **OR** other appropriate printer.

2.5.11 Select "OK" at "Install from Disk"

2.5.12 Select "HP LaserJet 4000 Series PCL 6" **OR** other appropriate printer and "Next" arrow.

2.5.13 Name the printer HPLJ4000 **OR** other appropriate name and "Next" arrow

ATTACHMENT C
REINSTALLATION OF WEDAP SOFTWARE

2.5.14 Select "Not Shared" and "Next" arrow

2.5.15 Select "Yes" to print a test page and "Finish" when completed

2.5.16 Select the newly installed printer as the "Default"

2.5.17 **IF** printer prints test page,
THEN retry printing per Attachment C, Step 2.2

2.5.18 **IF** printer still does not print,
THEN initiate a call for computer support.

2.6 Return to EPIP 1.3, Step 5.2.20.