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HT8-2018

PO&C

PERFORMANCE OBJECTIVES AND CRITERIA

PO&C | 2013-1 (EP)

October 2017

How to Review PO&C 2013-1 (EP)

Emergency Preparedness and Severe Accident Management Review and Assistance

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APPLICABILITY

THIS WANO PERFORMANCE OBJECTIVES AND CRITERIA HOW TO REPORT APPLIES TO ALL REACTOR TYPES

How to Review | PO&C 2013-1 (EP)
Revision History

Author	Date	Reviewer	Approval
Moscow Centre	2013	C Dawes	D Crabtree
Reason for Changes: First issue in line with PO&C 2013-1			

Author	Date	Reviewer	Approval
Vasiliy Galkin, WANO-MC	October 2013	David Clark Harri Tuomisto Joël Goubeaux Ryuichi Yoshinaga Andriy Lukyanenko Andriy Pidipryhora Sergiy Vybornov, Sr.	Alan Smith
Reason for Changes: Re-issued to reflect the newly issued combined Emergency Preparedness and Severe Accident Management Performance Objectives and Criteria.			

How to Review | PO&C 2013-1 (EP)
Emergency Preparedness and Severe Accident Management (EP.1, EP.2, EP.3)

References

- WANO PO&C 2013-1, Performance Objectives and Criteria, March 2013
- Combined Emergency Preparedness and Severe Accident Management Performance Objectives and Criteria, October 2017
- Emergency Preparedness Self-Assessment Guide, April 2016
- INPO 10-007 – Equipment Important to Emergency Response, August 2017
- Severe Accident Management Self-Assessment Guide, April 2016
- Severe Accident Management Draft PO&C for Self-Assessment, April 2016
- WANO Programme Guideline WPG15 – Emergency Response Support

Overview

This document provides guidance for the review of the key elements of the Emergency Preparedness and Severe Accident Management and is intended to assist the reviewer(s) in critically reviewing this area. This document addresses techniques and activities for review of the station's application of day-to-day activities in this area. It is applicable to all organisations and designs of nuclear power plants.

A peer review is a result-oriented process. Conclusions are valid only if they are supported by facts. These facts are usually compared and linked to a set of recommended performance objectives. WANO Peer Review teams use the Performance Objectives and Criteria document (PO&C) as the basis for the review.

The new combined EP/SAM PO&Cs define the standards of excellence for emergency preparedness and now include the specifics of severe accident management.

The performance objectives are broad in scope and if they are met, they show the excellence. The supporting criteria are narrower in scope and typically describe a specific activity that contributes to the achievement of a performance objective. The methods for achieving the desired results are generally not stated. Therefore, considerable judgment is required in applying the criteria.

This document is intended as a tool to stimulate and focus reviewer(s) thoughts to important Emergency Preparedness and Severe Accident Management issues. This document should not be used as an audit checklist.

If you feel the diagnostic questions and review actions do not cover a point, you are free to use the EP/SAM Performance Objectives and Criteria for reference.

The review of the area should provide positive and negative findings. Positive findings can be shared across the industry.

Definitions:

Severe accident is a beyond-design-basis accident involving significant damage to nuclear fuel, risk of containment failure and the possibility of large radioactive releases to the environment.

Severe accident management (SAM) is the taking of a set of actions during the evolution of a beyond-design-basis event including extreme natural events and indirect initiating events, (a) to prevent the escalation of the event into a severe accident, (b) to mitigate the consequences of a severe accident and (c) to achieve a long-term safe stable state.

SAM programme: A program or system that establishes plans and preparatory measures undertaken to ensure that the plant and the personnel are adequately prepared to take effective actions to prevent or to mitigate the consequences of a severe accident.

SAM guideline: A set of pre-established documented instructions which provide actions in response to a wide range of conditions to prevent or mitigate the consequences of a severe accident and bring the plant to a controlled state.

SAM strategy: A strategy is a pre-considered approach or course of action in support of severe accident management goals.

Station and plant refer to a nuclear generating station or a nuclear power plant, or other facility that contains nuclear material (i.e. reprocessing plants).

Emergency Response: All necessary actions to address conditions ranging from minor events to severe accidents including beyond-design-basis, multiple unit, multiple station and external events

Prior to the Review

About one month before the peer review, you will receive a documentation package from the plant. You are expected to review the package to identify focus areas and develop a review plan. Typically, document reviews are conducted during preparation and analysis week based on information provided by the station. Other information may be requested from the station as deemed necessary. Examples of information and documentation typically requested from the station to support a peer review include the following:

- EP procedures:
    - Emergency plan
    - Emergency plan implementing procedures
    - EP department administrative procedures
    - Corporate EP procedures
    - Work management procedures describing the identification, prioritisation, and scheduling of work for EP-related equipment, systems and facilities (if different than station work management procedures)
- EP drill and exercise information, including fire drills and SAM exercises:
    - Schedule for the current and preceding year
    - Drill and exercise reports for the last two years (including augmentation drills)

- Emergency response organisation (ERO) information:
    - Organisation chart
    - Organisational interfaces to support SAM within the ERO
    - Team/member rosters
    - On-call expectations
    - List of individuals filling key ERO positions that completed initial qualification in the last 12 months
- ERO training programme description and related documents:
    - Training procedures including evaluation, accreditation, and remediation processes
    - Lesson plans for emergency classification, emergency notifications, protective actions, and dose assessment
    - Schedule, lesson plan, and assessment documents for ERO continuing training conducted in the previous two years
- EP programme health reports, or equivalent
- EP performance indicators
- Reports and evaluations/critiques for any declared emergencies in the past two years.
- EP-related regulator event notification reports and notices of violation.
- Strategic/long-term EP improvement plans.
- SAM-specific information, including:
    - Relevant regulatory requirements
    - Description of the plant systems and equipment important to SAM
    - Summary report on PSA level 1 and, if available, level 2 or other documents showing plant vulnerabilities
    - List of symptoms used for preventive and mitigative actions
    - Tasks and tools of the technical support centre (TSC)
    - Overview of the EOPs and SAMGs
    - Overview of computerized aids for SAM, if any
    - Overall description of the Severe Accident Programme or Accident Management Program (AMP)
    - Approved list of the selected accident sequence classes and their categorization
    - Programmes for verification and validation of SAM procedures and guidelines

- Severe accident management training programmes, including description of software tools

On-Site Observations and Interviews

Interviews

Interviews should probe existence and understanding of standards and expectations, policies and procedures in the area of emergency and severe accident preparedness and response.

Interviews should also probe evidence on how personnel (plant and external personnel) are prepared to face emergencies, including beyond-design-basis and severe accidents.

Depending on the gap focus areas identified prior to the review, the interview candidates may include (but are not limited to) the following personnel:

- Emergency response organisation managers
- Emergency response centre staff
- Station shift manager and main control room staff
- Simulator instructors
- Off-site dosimetry personnel
- Shelter team members
- Medical centre personnel
- Rescue team members
- Persons in charge of the notification and communication equipment
- Persons in charge of personnel accounting
- Persons in charge of evacuation vehicles
- Persons in charge of summoning and transporting emergency team members to the site (e.g. during on-call duty)
- Fire brigade manager and personnel
- Security personnel
- Operations manager
- Training manager
- Engineering and maintenance personnel in charge of emergency and severe accident response equipment, facilities and materials

- Engineering personnel in charge of writing and maintaining the emergency operating procedures and severe accident management guidelines
- Emergency drill and exercise coordinators, supervisors, and evaluators

Depending on the gap focus areas identified prior to the review, the on-site observations may cover the following:

- Shelters
- Muster points
- Emergency and severe accident management equipment, including their maintenance, accessibility, storage, use for purposes other than emergency or severe accident response
- Mobile equipment, including connection points
- Technical Support Centre (Crisis Centre) – both on-site and offsite
- Notification and communication equipment
- Evacuation vehicles
- Reactor hall and spent fuel pool
- Hydrogen recombiners, containment filtered vents and other SAM equipment in the radiologically controlled area
- Off-site dosimetry control laboratory
- Off-site emergency centre
- Main control room and emergency control room
- Emergency drills and exercises: the reviewer should observe how people behave in emergency drills and exercises, what the main problems are (e.g. there are cases when mobile equipment cannot be connected). Emergency drills also give information on how managers are involved in emergency response (managers in the field programme, field observation reports, debriefings etc.).[1]
- If the drill/exercise scenarios include main control room performance in the simulator, coordinate with the OP reviewer team to include an observation in the simulator.
- The reviewer should observe, if possible, managers' or first-line supervisors' behaviour in the field, notably to check how expectations are reinforced.

[1] WANO is developing a guideline on Emergency Drills Observations during peer reviews, based on a draft worked out at WANO-TC

Diagnostic Questions/Review Actions to Aid in the Identification of Performance Gaps

EP.1: Emergency and Severe Accident Preparedness Leadership

Performance Objective

Leaders align the organisation to prepare for and respond to emergencies and severe accidents, mitigate plant damage, achieve a long-term safe stable state and protect the health and safety of on-site personnel and the public.

Please see WANO PO&C 2013-1 for the supporting criteria.

General EP.1 Diagnostic Questions/Review Actions	Notes/Examples
Management and Leadership 1. Review documentation showing the relationship between emergency plan commitments, minimum staff for activation and full staff operations. 2. Validate effective command and control of risk-significant response functions in terms of classification, notification, protective action recommendations and on-site protective measures. 3. Review special measures for ERO notification, staffing, and protective measures during security and severe weather conditions. 4. Is the emergency response organisation structured using a "team concept" or an "all-can" concept to fill available positions: a. Number of teams and members b. Fitness-for-duty considerations c. Contingency for member unavailability 5. Review the selection process for emergency response organisation membership. a. Who owns the ERO? (E.g. emergency preparedness staff, line management, facility owner or function owner.) b. Are there ERO position qualifications/prerequisites? 6. Confirm on-shift minimum staffing is defined.	

General EP.1 Diagnostic Questions/Review Actions	Notes/Examples
a. Verify that there are sufficient personnel assigned to each shift to perform all duties prescribed to them by procedures. b. Assure no overlap of duties (e.g. fire brigade and communications and operations, or security and communications and fire brigade). c. Verify the roles of the various emergency response positions are clearly defined. 7. Verify there are site requirements for "minimum staff" responders that consider response time to the facility. On-call duty and associated expectations are defined and expected response times for responders are provided. 8. Review the maintenance of the emergency response organisation staff. a. How do personnel get off the ERO? b. Are replacements required prior to persons leaving the ERO? c. What is the average percent of positions unfilled? d. What is the average percent of members filling more than one position? 9. Verify that changes to the emergency response organisation or management control systems have not adversely affected the administration or management of the overall Emergency Preparedness programme. These changes include items such as: a. Changes in personnel availability which may impact augmentation of the emergency organisation. b. Reorganisation involving either the corporate or plant staffs that might	

General EP.1 Diagnostic Questions/Review Actions	Notes/Examples
result in some functional responsibilities not being covered or loss of alternate or backup function. c. Assignment and qualification of new individuals. Review the training and qualification records of individuals assigned functional responsibilities since the last review. d. Changes in key off-site support personnel or methodology of coordination. e. Changes in agreements with off-site support organisations 10. Performance Indicator Analysis a. Verify performance indicators associated with drill participation b. How does the station PI compare to the industry? c. Review selected key positions to verify the use of coaching and controlling is not being used excessively for participation credit. 11. Drill Participation: a. Has everyone participated within the past two years? b. Have all full-staff ERO members participated within the past two years? c. Has emergency preparedness staff assigned ERO positions participated within the past two years? d. Ask personnel at different levels: What type of emergency response drills, exercises and training have you participated in during the last two years? 12. Emergency Planning Staff a. Review the reporting structure	

General EP.1 Diagnostic Questions/Review Actions	Notes/Examples
b. How visible is emergency preparedness at the station? c. Representation in key management meetings d. Opportunities to interface and report to senior executives 13. How many full-time and part-time employees are needed to fulfil the emergency preparedness function? a. Emergency preparedness staff (including overtime) b. Training c. Siren system and facility maintenance d. Scenario development e. Off-site planning 14. Estimate the staff's time in the following areas: a. Off-site planning and interface b. Scenario development c. Drill d. Corrective actions e. Training of emergency reactor operators f. Self-assessment and performance improvement g. Other major time expenditures	
Emergency and Severe Accident Response Organisation and Interfaces 1. What is the scope and authority of the emergency preparedness staff with regard to off-site planning efforts? 2. What formal agreements exist with off-site support organisations and governmental authorities regarding preparedness and	

General EP.1 Diagnostic Questions/Review Actions	Notes/Examples
response actions? 3. Review rotations and on-site staff augmentation arrangements to verify the ERO can be adequately staffed to carry out sustained duties during a prolonged (>1 week) event. 4. Off-site agency and support organisations: a. How is off-site law enforcement, fire/rescue, or other off-site response agencies notified? b. Is this response adequately handled, or similar to non-emergency plan notification? c. Is there a staging area for off-site response organisations? 5. Station emergency response organisation a. Response expectations are reasonable and clear b. Team callout or “all-call” responders c. Methods of notification d. Pagers, auto dialers, dedicated service providers e. Backup systems and methods f. Testing, surveillance methods g. Evaluation of test results h. Actual “off-hours” callout test i. Contingency measures for adverse weather and security situations 6. Off-site agencies expected to respond to station facilities have adequate space and communication equipment (national, local, joint information centre, etc.). What is the basis for cooperation with those agencies (written or verbal, when was the last time they communicated, etc.)	

EP.2: Emergency and Severe Accident Preparedness

Performance Objective

Personnel, plans, procedures, facilities and equipment are maintained ready to respond to emergencies, from minor events to severe accidents.

Please see WANO PO&C 2013-1 for the supporting criteria.

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
Emergency Response Plan, Process and Procedure Development 1. Review mechanisms used to capture needed revisions as a result of drill activities and training sessions and evaluate the timeliness of revisions. Are any pending revisions major? 2. Review pending and recent revisions to procedures which implement significant planning standards (i.e. classification, notification, protective action recommendations and on-site protective measures). 3. Interview a representative sample of ERO members, responsible for using procedures which implement risk-significant planning standards (RSPS) and determine their impression of procedure quality. 4. Review drill reports, quality assurance (QA) reports and corrective action database to determine if performance issues are procedure driven. 5. Review listing of affected procedures; who owns these procedures? If not emergency preparedness, how does emergency preparedness know when performance occurs and if changes to procedures are made? 6. Review a listing of job aids, facility posting, user guides and reference materials used in emergency response to ensure appropriate and adequate controls. 7. Review Emergency Plan staff functions and ensure adequate procedures are developed, reviewed and followed to perform those functions. 8. Review, approval and revision of the Emergency Plan are controlled. The Emergency Plan and	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
Emergency Plan Implementing Procedures (EPIPs) are periodically reviewed and updated.	
Severe Accident Management Programme, Strategies, Guidelines 1. Is there a SAM programme in place as one of the objectives to enhance safety? 2. What is the scope of the SAM programme? Does the SAM programme consider internal and external initiating events that potentially lead to nuclear fuel damage and large radioactive releases including, but not limited to, external beyond-design-basis impacts, indirect initiating events, multi-unit accidents, loss of all AC and/or DC power and/or loss of ultimate heat sink? 3. Are the main SAM objectives identified? 4. How is it ensured that any plant changes do not negatively impact the implementation of the SAM programme? 5. Have the plant vulnerabilities been identified and assessed to obtain a comprehensive set of insights on the behavior of the plant during beyond-design-basis accidents and severe accidents? 6. What were the methods to support identification of plant vulnerabilities? 7. Are SAM strategies available for each individual significant challenge or plant vulnerability that are identified to obtain a comprehensive set of insights on the behaviour of the plant during beyond-design-basis events and severe accidents? 8. Are strategies with respective guidelines in place to maintain and restore core cooling, containment integrity, spent fuel pool integrity, cooling and reactivity control using installed and portable equipment during the initial response to an extended loss of electrical AC power, without off-site support? 9. At a multi-unit site, are strategies in place to address beyond-design-basis and severe	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
accidents simultaneously at each unit, including a loss of all AC and/or DC power and/or loss of ultimate heat sink simultaneously at each reactor and each spent fuel pool? 10. Are SAM guidelines in place to provide a set of actions to mitigate the consequence of severe accidents according to the chosen SAM strategies? 11. Are any onsite power restoration procedures in place for the cases when all AC and DC power is lost? 12. Do the SAM guidelines comply with the emergency plan and with the emergency operating procedures, have clear and unambiguous entry and exit points, and provide guidance on the actions for recovery? 13. Do the SAM guidelines address beyond-design-basis faults, external events and all possible plant operating states (power operation, shutdown, refuelling, etc.) depending on the type of the reactor or nuclear facility? 14. Do the SAM guidelines provide detailed instructions for the use of necessary temporary and non-dedicated equipment (i.e. not originally planned to manage accidents), including connection points, and the list of available resources that can be used for accident management? 15. Are the precursors and symptoms of core damage during loss of core cooling in each plant state as well as the precursors and symptoms of fuel damage in the spent fuel pool determined, included in the SAM guidelines and available to the control room operators? 16. Do the SAM guidelines for spent fuel pools provide actions to monitor and maintain the spent fuel pool inventory, sub-criticality and cooling to prevent fuel damage, including during a loss of AC and DC power? 17. Do the SAM guidelines provide methods to limit the release of radioactive products in the event of damage to facilities and equipment used for	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
fuel storage (e.g. canisters for dry fuel storage)? 18. Are protected and habitable control facilities (e.g. main control room, emergency control room, technical support centre) provided for severe accident management in all identified situations? a. Documents required for SAM are available and updated. b. Check habitability of control facilities is ensured even in case of SBO or any severe accident conditions (fire incident, radioactive releases, loss of ultimate heat sink …). c. Check survival ventilation is available. d. Check emergency lighting is available all the time even in case of SBO. e. Check whether protected and habitable backup control facilities are provided for severe accident management in situations when the main control facilities fail or become uninhabitable. f. Check if the following is available: Personal radiation protective equipment; Radiological monitoring instruments; External telecommunication tools; and Essential commodities (food & water) 19. Verify measures are in place to restore power supply during station blackout events such as: portable electrical supply units with associated cables and connections. 20. Verify measures are in place to ensure water injection and core cooling for the cases of lost heat sink plus SBO, such as makeup pumps, diversified water sources, motored pumps, fire engines, energising high-pressure safety injection pumps, connecting portable electrical supply units to the switchgear of the pump motors and associated valves, water supply to steam generators, etc. 21. Verify measures are in place to prevent flooding	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
such as reinforcement of the inside doors to critical components, building drainage capabilities, watertight penetrations and doors, water barrier or fences, etc. 22. Verify provisions are in place for spent fuel makeup and cooling in the event of a SBO plus loss of heat sink, such as energizing pumps from an alternative power source, making up from alternative water sources, taking consideration of dilution, etc. 23. Verify storage of critical SAM equipment such as mobile diesel-generators, mobile pumps, pipelines, cable, etc. 24. Verify measures are in place to ensure containment integrity in the event of a station blackout plus loss of heat sink, such as alternative measures for containment depressurisation, filtered vents, hydrogen recombiners, etc. 25. Verify if there any provisions for corium stabilisation. 26. Verify if essential post-accident instrumentation is provided for monitoring the core, containment and spent fuel pool.	
Staffing, Training and Qualification 1. Review the ERO training programme and ensure it identifies initial and continuing training for the ERO. a. Identify the department and functional training programmes that are needed to fulfil EP training requirements for ERO. b. Interview trainees for these programmes to determine their level of understanding of ERO training requirements. c. Determine interface activities with the EP staff regarding training requirements. d. Review a sample of ERO training records to verify documentation of training	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
needs and successful course completion. e. Determine the average percentage of lapsed training qualifications and the organisational ramifications for allowing training to lapse. f. Review the EP staff training programme. g. Verify EP staff members have current training. h. Identify EP continuing training opportunities. i. Is a formal qualification process used to evaluate the knowledge and skills of emergency response personnel before they are designated to fill an EP position? How does this process ensure emergency response personnel have sufficient knowledge and skills to recognise and assess accident conditions? Does qualification include the recognition of the potential for further degradation? 2. Review the EP staff training programme. a. Verify EP staff members have current training. b. Identify EP continuing training opportunities. 3. Is a formal qualification process used to evaluate the knowledge and skills of emergency response personnel before they are designated to fill an EP position? How does this process ensure emergency response personnel have sufficient knowledge and skills to recognize and assess accident conditions? Does qualification include the recognition of the potential for further degradation? 4. Are lessons learned from emergency preparedness self-assessments, drills and actual events included into future training that is developed for emergency response personnel?	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
5. Through observation of a drill, document review, and interviews, determine if Emergency Preparedness staff possess necessary knowledge, skills, and qualifications to perform staff (not ERO) duties. 6. Review training trends (comment sheets, feedback forms) to determine if training is effective. a. Review drill reports for past failures and trends. b. Review corrective action programmes for trends. c. Drills include focus on correcting adverse trends or training deficiencies d. Training contains operating experience from past drills/exercises and the industry. e. Results from the last self-assessment of EP training. 7. Initial training develops emergency task-related skills and knowledge, and includes the following: a. Emergency Plan b. Implementation Procedures (EPIPs) c. emergency facilities and equipment d. communications e. special precautions or limitations f. SAM Guidelines 8. Training, exercises and drills provide training methods and evaluation standards. 9. ERO member requalification is timely and, if not, qualifications are pulled. a. Controls preclude a responder with overdue training or pulled qualifications from filling an ERO position in an emergency.	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
b. ERO staff is evaluated as a drill/exercise participant in accordance with station procedure. 10. Plant staff general employee training adequately addresses emergency planning issues. 11. Are desktop and, if appropriate, full-scale simulators used to assist operators in preparing for beyond-design-basis and severe accidents? 12. Maintenance of the emergency response organisation staff a. How do personnel get off the ERO? b. Are replacements required prior to persons leaving the ERO? c. What is the average percent of positions unfilled? d. What is the average percent of members filling more than one position? 13. Emergency Preparedness Staff a. Review the reporting structure b. How visible is emergency preparedness at the station? c. Representation in key management meetings d. Opportunities to interface and report to senior executives 14. What is the scope and authority of the emergency preparedness staff with regard to off-site planning efforts? 15. Determine average emergency preparedness experience per staff member 16. Estimate the staff's time in the following areas: a. Off-site planning and interface b. Scenario development	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
c. Drill d. Corrective actions e. Training of emergency reactor operators f. Self-assessment and performance improvement g. Other major time expenditures 17. How many full-time and part-time employees are needed to fulfil the emergency preparedness function? a. Emergency preparedness staff (including overtime) b. Training c. Siren system and facility maintenance d. Scenario development e. Off-site planning 18. Review succession planning and short-term retirement effects.	
Drills and Exercises 1. Evaluate drill/exercise programme and the station emergency plan. Review: a. Verify the existence of a standard set of objectives which are scheduled and tracked. b. Review past scenarios for diversity of initiating and transition events. c. Verify “facility activation” is clearly defined and evaluated. d. Verify “command and control” is clearly defined and evaluated. e. Verify “accountability” is defined and evaluated during drills/exercise. f. Verify radiological “release” is defined and carries through to public	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
information. 2. Review past drill/exercise reports for scenario and drill control-related items to identify trends and issues. 3. Verify scenario development includes an appropriate amount of diversity in application of EALs. 4. Verify that predictability in sequence of events is minimised, while scenario flow is challenging. 5. Verify diverse initiating/transitioning events are used to ensure "fresh" challenge to the ERO. (Show examples) 6. Evaluate the critique process: a. Is there an established process? b. Are ERO members trained on the process? c. Is the EP staff trained on the process? d. Is the team self-critical? Give examples. e. Does the critique involve players, controllers, and evaluators? f. Is there line ownership in the critique? g. Do drill and exercise critiques identify procedure deficiencies? h. Are critique results documented in a report and corrective action items initiated? 7. Review the various exercises and drills that are conducted at the facilities. Some examples are provided below as suggestions: a. Exercise - Annual b. Exercise - every six years c. One between 18:00 and 04:00	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
d. Communication Drills e. Monthly - state and local within the Emergency Planning Zone (EPZ) f. Quarterly - national emergency response organisation and regions within the ingestion pathway g. Annual - between facility, field assessment teams, regional and local EOCs h. Fire Drills - per tech specs i. Medical Emergency Drills j. Contaminated injured person to off-site facility annually k. Radiation Monitoring Drill - Annual l. Including sampling all required media - communications and record keeping - local organisations shall participate. m. Health Physics Drills - Semi-Annual n. Rapid Response Drills - Annual o. (Unannounced) - One drill per team p. Comprehensive drill with national and local government. q. Plant drill with the corporate HQs. r. Table-top exercise for ER commanders. s. Field exercises for each ER frontline function t. (may be different at each NPP in each country)	
Facilities and Equipment 1. Emergency Response Facilities: a. Size and accommodations match the emergency plan and station expectations for off-site agency	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
response. b. Review recent enhancements and upgrade plans to incorporate technology improvements. c. Review recent drill/exercise reports to determine deficiencies noted and corrective action taken. d. Review data transfer capabilities and communication systems for adequacy. e. Backup facility capabilities and testing. f. Review systems and equipment in simulator designed to duplicate control room alarm and notification systems. g. Review facility inventory and readiness procedure for adequacy and failure trends. 2. Alert and Notification System: a. Review changes to ANS have been documented and reviewed/approved, as necessary. b. Review changes to ANS due to population changes in the neighborhood. c. Review adequacy of maintenance and testing activities. Determine when the last acoustical surveys or some other method were conducted to account for changes (geographical, vegetation, buildings and population distribution)? 3. Does the station clearly differentiate the difference between plant equipment and emergency preparedness equipment? 4. Diversified communication systems with Back-up tools:	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
a. Intra-facility b. Off-site system c. ERO augmentation systems (pagers, callout, etc.) d. Two-way radio e. Local Law Enforcement Agency (LLEA) and off-site support f. Verify plant public address and/or site emergency signal is functional 5. Dose calculation models 6. Meteorological tower 7. Equipment important to emergency response. 8. Support equipment at off-site emergency operations centers, support hospitals and remote assembly areas. 9. Facility support systems such as the following: a. Electrical and backups b. Ventilation/filtration c. Radiological monitoring 10. Personnel protective equipment such as the following: a. Dedicated respiratory protection equipment, both SCBAs and respirators b. Protective clothing c. Iodine tablets for the station staff 11. Equipment needed for classification: a. Review a sample of emergency action levels initiating conditions, and determine if design changes or modifications are planned. 12. Identify processes used to ensure equipment important to emergency response is available or adequately compensated for through	

General EP.2 Diagnostic Questions/Review Actions	Notes/Examples
contingency measures. 13. Are software tools to simulate plant behaviour during severe accidents available in engineering/analytical simulators to allow for plant-specific analyses, training of the technical support centre staff and to assist operators in preparing for severe accident management?	

EP.3: Emergency and Severe Accident Response

Performance Objective

Emergency and severe accident response actions protect the health and safety of the public and station personnel, mitigate plant damage, achieve a long-term safe stable state and support response actions by off-site authorities and emergency organisations.

Please see WANO PO&C 2013-1 for the supporting criteria.

General EP.3 Diagnostic Questions/Review Actions	Notes/Examples
Initial Response 1. Station emergency response organisation a. Response expectations are reasonable and clear b. Team callout or "all-call" responders i. Methods of notification ii. Pagers, auto dialers, dedicated service providers iii. Backup systems and methods iv. Testing, surveillance methods v. Evaluation of test results c. Actual "off-hours" callout test d. Contingency measures for adverse weather and security situations 2. For off-site response agencies, review the letter of agreement holders indicated in the	

General EP.3 Diagnostic Questions/Review Actions	Notes/Examples
emergency plan and determine the following: a. Last face-to-face or one-on-one verbal communication with agency about expected response or concept of operations? b. When is the last time the letter of agreement holder participated in an exercise or drill activity with the station? c. For the organisation expected to respond to the station, have they visited the station since increased security measures were initiated? d. For those who do not respond, how are they contacted? When was the last time they were contacted during an emergency? 3. Station emergency response organisation a. Response expectations are reasonable and clear i. Team callout or "all-call" responders ii. Methods of notification iii. Pagers, auto diallers, dedicated service providers iv. Backup systems and methods v. Testing, surveillance methods vi. Evaluation of test results b. Actual "off-hours" callout test c. Contingency measures for adverse weather and security situations	
Emergency Response Managers 1. Validate effective command and control of risk-significant response functions and document in terms of classification, notification, protective action recommendations and on-site protective	

General EP.3 Diagnostic Questions/Review Actions	Notes/Examples
measures. 2. What formal agreements exist with off-site support organisations and governmental authorities regarding preparedness and response actions? a. Off-site agency and support organisations b. How are off-site law enforcement, fire/rescue, or other off-site response agencies notified? c. Is this response adequately handled or similar to non-emergency plan notification? d. Is there a staging area for off-site response organisations? 3. Off-site agencies expected to respond to station facilities have adequate space and communication equipment, including actual experiences with off-site agency response and associated action items.	
Emergency and Severe Accident Response Actions 1. Annual Public Information a. What type of public information materials are used? b. What participation do the state/local authorities have with the materials? c. How are fluctuations in population handled? d. Have effectiveness reviews been conducted on public information materials? e. What are the key locations of transient populations in the EPZ? f. How is the information made available to these people?	

General EP.3 Diagnostic Questions/Review Actions	Notes/Examples
2. Does the station have a concept of operations of emergency public information and the emergency news centre? a. Is the location and facility setup at the joint information centre/emergency news centre adequate to handle the media? b. Review drill/exercise reports for a baseline of issues regarding news centres, press releases, and media briefings. c. Review any ongoing or recent enhancements to facilities and processes. d. Review the selection criteria and training provided to spokespersons. e. Are the procedures used to disseminate emergency information during an emergency exercise the same as would be used in an actual emergency? f. Are emergency facilities capable of handling today's mobile news media? How does the station/media staff know? g. Review the results of the most recent media briefing day or training session? 3. Media releases are timely and accurate. a. Radiation dose data is standardised. b. The terms are understandable. c. Review problem reports, self-assessment findings and drill critiques for Joint Information Centre issues. d. Provisions are made for the response to public questions and rumour control. e. The ability is verified that transients can be notified of emergencies and any protective actions.	

General EP.3 Diagnostic Questions/Review Actions	Notes/Examples
4. Information Centre procedures are appropriately integrated into site EP procedures. a. Determine the relationship of Joint Information Centre organisation with the corporate organisation. b. Information Centre organisation is notified of early stages of an event. c. Information Centre organisation monitors news broadcasts and reports for misinformation. d. Corporate public affairs/relations organisation participates in drills and exercises. e. Corporate public affairs/relations organisation endorses the plan and function of the Joint Information Centre. 5. The News Centre participates in drills. a. Review drill documentation. b. Performance criteria are established. c. Deficiencies are identified and evaluated, corrective actions assigned and drill objectives established to test effectiveness. d. Results are incorporated into training. 6. The Information Centre procedures provide for integrated response by the Information Centre personnel with regional or national authorities. 7. Technical personnel are assigned to the public information organisation and are trained in the practices of public communication. 8. Station emergency response organisation a. Response expectations are reasonable and clear	

General EP.3 Diagnostic Questions/Review Actions	Notes/Examples
b. Team callout or "all-call" responders i. Methods of notification ii. Pagers, auto diallers, dedicated service providers iii. Backup systems and methods iv. Testing, surveillance methods v. Evaluation of test results c. Actual "off-hours" callout test d. Contingency measures for adverse weather and security situations 9. Off-site agency and support organisations a. How is off-site law enforcement, fire/rescue, or other off-site response agencies notified? b. Is this response adequately handled, or similar to non-emergency plan notification? c. Is there a staging area for off-site response organisations? 10. Off-site agencies expected to respond to station facilities have adequate space and communication equipment. 11. For off-site response agencies, review the letter of agreement holders indicated in the emergency plan and determine the following: a. Last face-to-face or one-on-one verbal communication with agency about expected response or concept of operations? b. When is the last time the letter of agreement holder participated in an exercise or drill activity with the station? c. For the organisation expected to	

General EP.3 Diagnostic Questions/Review Actions	Notes/Examples
respond to the station, have they visited the station since increased security measures were initiated? d. For those who do not respond, how are they contacted? When was the last time they were contacted during an emergency?	

Sample Interview Questions

Management:

1. Please explain the process for assignment, approval or removal of personnel to/from the Emergency Response Organisation (ERO).
2. Please explain how line management takes ownership of the ERO, including the items listed below:
    a. Ensures qualified personnel are selected to fill ERO positions
    b. Approves any personnel being assigned an ERO position or removed from an ERO position
    c. Ensures retraining is completed in a timely manner to ensure ERO members do not become disqualified.
3. Is your ERO adequately staffed to perform the emergency functions identified in your Emergency Plan? If additional staffing is needed, please identify the positions/areas that require additional staffing.
4. Can you identify any weaknesses in the manner in which your ERO is being maintained or any items that should be pursued to improve the maintenance of your ERO?
5. What is your ERO position? What is your normal job? What aspects of your normal job make you uniquely qualified to do your ERO job?
6. Which procedures govern your ERO responsibilities associated with fitness for duty, on call?
7. What action could be expected for a failure to meet these expectations?
8. What is the EP organisation structure and resources?
9. What level of management attends audit exits, or exercise exits?
10. Is the backlog of EP corrective actions increasing/decreasing/steady? Why?
11. Is there a method to identify/document EP problems? Briefly describe.
12. Is there a screening process to determine if a root cause should be performed for an EP issue? If so, who does the process and who does the root cause?
13. Is there an evaluation for reportability? If yes, who does this?
14. Is there a method of assigning responsibility for implementation of corrective actions? Describe.
15. Is there a tracking and trending system? Describe.
16. Is there a method to escalate the corrective action to the appropriate level of management? Describe.
17. Is there a method to close out the corrective action and disseminate information to the appropriate personnel? Describe.
18. Who provides/determines corrective actions for drill/exercise findings? Are they assigned to EP or line organisations?
19. How is the owner controlled area defined?

20. Are contractors involved with EP equipment maintenance and testing? What oversight from utility staff do they receive?

ERO:

1. What ERO position do you hold?
2. Are there emergency planning procedures for your position? What are they?
3. Describe how they provide sufficient direction for you to do your ERO job.
4. Are these procedures used during drills and exercises? How is this verified? Do you verify that all required checklists are completed?
5. Are there other checklists, job aides, guides or assist documents used (obtain and review).
6. Are the documents mentioned in question 5 used in place of the procedures?
    a. If yes, determine the rigour applied to ensure changes to these documents get adequate reviews.
7. Do you find the procedures help you perform the responsibilities of your position?
8. Do the procedures assist different people holding the same position perform their duties consistently?
9. What aspect of your procedures would you suggest to another plant's EP programme?
10. What aspect of your procedures would you not recommend to another plant's EP staff?
11. Overall, do you consider your emergency plan procedures to be effective? Why/why not?
12. What aspect of your emergency response facilities are you most proud of? Why?
13. Which aspect of your emergency response facility would you like to see improved? What have you done to see this issue resolved?
14. Who “owns” ER Facilities? Please describe how this ownership is demonstrated. Is this the correct ownership?
15. Who does the maintenance and testing of the EP facilities and equipment? Do you have contractors involved in any part of your EP programme? Who provides oversight of contractors?
16. Is there any quality oversight of the EP facilities and equipment?
17. Describe the process used to test EP facilities and equipment. Is this process consistent with industry standards and expectations?
18. Does the layout of your emergency response facilities provide for rapid, thorough and efficient response?
19. What is your Emergency Response Organisation (ERO) position (assignment)?
20. How long have you been a member of the ERO in your current position?
21. What types of training are required to be completed prior to filling your assigned ERO position (e.g. classroom, drill, observation, CBT, other)?
22. How often are you required to be re-qualified for your ERO position? What does that “requalification” entail?
23. What is the process used to inform you when your qualification will expire for specific training requirements? What is the lead time that you are informed prior to the expiration date? How long is the grace period, if any, following the expiration date? What is the process if your qualification lapses?
24. What methods are employed to provide you (ERO Member) with any lessons learned from:
    a. Previous drills/exercises?
    b. Industry experience?
    c. Corrective action programme?
25. How are you informed of and trained on emergency plan procedure changes?
26. How do you rate the effectiveness of your ERO training to ensure that you are prepared to fulfil your ERO position?
    a. Excellent
    b. Good

c. Fair
d. Needs Improvement

27. If you answered "Needs Improvement", what recommendations do you have that could improve training effectiveness? And how have you made these known?

EP Staff/Training/ANS administrator:

1. As a manger/supervisor, how do you verify adherence to EP policies and procedures, reinforce EP expectations and identify and correct EP problems?
2. Who does the maintenance and testing of the ANS system? If you use a contractor, who provides oversight for them?
3. Is there any quality oversight of the ANS maintenance and testing?
4. Describe the process used to test ANS. Is this process consistent with industry standards and expectations?
5. How has industry experience been used to improve the site ANS?
6. What are the responsibilities of the on-site staff with regards to the off-site's emergency planning staff and response programmes?
7. How are EP staff responsibilities integrated with off-site agencies?
8. How often does the EP organisation interface with off-site agencies on EP issues?
9. Has the organisation been responsive to the needs or concerns expressed by the off-site agencies within the past year? Provide examples.
10. Does anyone other than EP staff interface with off-site agencies?
11. How would you characterise the working relationship between the EP organisation and off-site agencies regarding emergency preparedness issues?
12. What training has been offered to off-site agencies by the station?
13. Was it timely?
14. Did it meet their expectations?
15. What feedback was provided to the station staff concerning this training?
16. Is there any training that off-site agencies have they asked for from the station that they have not received?
17. If so, what was the station response?
18. How would you characterise the responsiveness by station staff to requests for assistance/suggestions for emergency preparedness improvements made by off-site agencies?
19. What are your responsibilities in the EP organisation?
20. Do you work overtime (whether paid or unpaid)?
21. If yes, how much per week?
22. What improvements would you make to the EP/ERO organisations?
23. EP changes
24. Station changes
25. Without discussing Safeguards material, what effects have the Security issues had on EP staffing? Has the role of security officers in emergency response changed as a result of security threat changes? Who, if anyone, has assumed duties formerly performed by security (EMT, fire brigade, etc.)?

Information Centre:

1. Is the Joint News Centre referenced in the site Emergency Plan and associated implementing procedures? (List section and/or procedure number)

2. Are there separate procedures for the Joint News Centre? If yes, are the procedures controlled the same as other implementing procedures?
3. Is the operation of the Joint News Centre integrated into the Emergency Operations Facility or other site response facilities?
4. Are specific site Emergency Response Organisation personnel designated to interface with the Joint News Centre? Where are they located and to whom do they report?
5. Do these personnel receive training and understand their role with regard to their interface with the Joint News Centre?
6. How often do state/local personnel participate in drills and/or training evolutions with Joint News Centre personnel? Are any off-site organisations overdue for participation? Why?