



Prepared By: Dale Berndt

Approved By:	
/s/Thomas W. Meagher	10/15/02
<b>Tom Meagher,</b>	<b>Date</b>
<b>Acting Safety Assurance Manager</b>	
/s/B. Gaydosh for	10/15/02
<b>E&amp;NS Concurrence</b>	<b>Date</b>
/s/Gregory T. Warner	10/15/02
<b>QA Concurrence</b>	<b>Date</b>

*Procedure:*

# Reporting Occurrences in Accordance with DOE Order 232.1A

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## 1.0 Objective

This procedure establishes a system for the timely identification and reporting of events for categorizing and reporting occurrences in accordance with the US Department of Energy (DOE) Order 232.1A, *Occurrence Reporting and Processing of Operations Information (ORPS)* and its associated manual, DOE M 232.1-1A. Reporting of such events will ensure that personnel from the DOE Office of River Protection (ORP), Safety Review Official (SRO), and Bechtel National, Inc. (BNI) management are kept informed, on a timely basis, of events that could affect the safeguards and security interests of DOE, or the health and safety of the public or workers.

## 2.0 Scope

This procedure applies to all personnel and activities at BNI's Hanford Tank Waste Treatment and Immobilization Plant (WTP) Richland office buildings and the construction site, including activities conducted by subcontractors under BNI authority. The requirements contained in this procedure shall be followed when any event or condition identified in Attachment A, Occurrence Category and Criteria, is discovered. This procedure has been developed to categorize and report occurrences during the design and construction phase of BNI's WTP. This procedure will be revised to reflect conditions that will be encountered during cold commissioning and start up.

This procedure implements the requirements of Order 232.1A, DOE M 232.1-1A and is consistent with the Authorization Basis.

## 3.0 Procedure

### 3.1 Definitions

**Abnormal Event.** An event that does not meet the site, area, or general emergency criteria, but is significant enough to generate the immediate interest of offsite agencies or the media or generate public concern. Abnormal event is a Hanford term used to decide when timely notification of offsite agencies is required.

**Business day.** The normal administrative day in which normal work activities are conducted. It is not meant to encompass the 24 hours in a day, even if operated or maintained on a 24 hour basis.

**Condition.** Any as-found state, whether or not resulting from an event, that may have adverse safety, health, quality assurance, security, operational, or environmental implications. A condition is usually programmatic in nature; for example, an error in analysis or calculation; an anomaly associated with design or performance; or an item indicating a weakness in the management process are all conditions.

**Defective item, material, or service.** Any item, material, or service that does not meet the commercial standard or procurement requirements as defined in catalogues, proposals, procurement specifications, design specifications, testing requirements, contracts, or similar sources. It includes those items or services found, during acceptance testing, pre-operational testing, operations, inspections, or audit, not to meet the quality or reliability requirements appropriate to the use or specificity of the item or service procured. It also includes misrepresentation of the specifications or trademarks associated with the parts or service marking, packaging, or certification and identification stamps. It does not include parts or services which fail or are otherwise found to be inadequate because of random failures or errors within the accepted reliability level.

**Discharge.** Includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil, but excludes discharges in compliance with a permit under Section 402 of the *Clean Water Act* (CWA), discharges resulting from circumstances identified and reviewed and made a part of the public record with respect to a permit issued or modified under Section 402 of the CWA, and subject to a condition in such permit, or continuous or anticipated intermittent discharges from a point source, identified in a permit or permit application under Section 402 of the CWA, that are caused by events occurring within the scope of relevant operating or treatment systems.

**Event.** Something significant and real-time that happens (for example pipe break, valve failure, loss of power, environmental spill, earthquake, tornado, or flood).

**Facility.** Structures, buildings, equipment, and processes that support activities at the construction site. This does not include temporary office trailers, parking lots, or the Richland office buildings.

**Facility Representative (FR).** The term Facility Representative, as used in this procedure, refers to the Office Of River Protection (ORP) organizational position that has been designated to fulfill ORP's occurrence reporting responsibilities during the construction phase of the WTP and that will be the point-of contact between BNI and ORP on all matters related to occurrence reporting addressed by this procedure.

**Federally permitted release.** Any release that satisfies the definition of "federally permitted release" in 40 CFR 302.3.10.

#### **Hazardous Substance or Material.**

**DOE's Office of Safeguards and Security Hazardous Material.** Any solid, liquid, or gaseous material that is chemically toxic, flammable, radioactive, or unstable upon prolonged storage, and that exists in quantities that could pose a threat to life, property, or the environment.

**Department of Transportation Hazardous Materials (see 49 CFR 171.8 and 172.101).** A substance or material, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when, transported in commerce and which has been so designated.

**Environmental Response, Compensation and Liability Act (CERCLA) Hazardous Substances (see 40 CFR 302).**

**Occupational Safety and Health Administration (OSHA) Hazardous Chemical.** Any chemical that is a physical or a health hazard.

**Superfund Amendments and Reauthorization Act Title 3 Extremely Hazardous Substances (see 40 CFR 355).** These are not defined but appear on a list in Appendix A and B of 40 CFR 355.

**Lessons learned.** A "good work practice" or innovative approach that is identified and shared, or an adverse work practice or experience that is shared to avoid recurrence.

**Lost workdays.** The number of days (consecutive or not) after, but not including, the day of injury or illness, during which the employee would have worked but could not do

so; that is, could not perform all or any part of his or her normal assignment during all or any part of the workday or shift because of the occupational injury or illness.

**Member of the public.** Persons who are not occupationally associated with the DOE construction site or WTP Richland office buildings or operations; that is, persons whose assigned occupational duties do not require them to enter the DOE site.

**Notification Occurrence Report.** The initial documented report, to DOE, of an event or condition that meets the reporting criteria defined in the Occurrence Reporting Requirements Documents.

**Occurrence.** An event or a condition that adversely effects, or may adversely effect, DOE or contractor personnel, the public, property, the environment, or the DOE mission. Events or conditions meeting the criteria threshold identified in Attachment A are occurrences.

**Occurrence investigation.** An investigation conducted according to this procedure or when determined by DOE that a Type A or B accident investigation is required by DOE 225.1, *Accident Investigations*.

**Occurrence Notification Center (ONC).** A facility that is staffed 24 hours per day, seven days per week, to provide infrastructure for reporting Hanford Site occurrences. The ONC staff is responsible for communicating information regarding occurrences to responsible management, DOE Headquarters (HQ), and offsite agencies.

**Occurrence Report (OR).** A documented evaluation of an event or condition that is prepared in sufficient detail to enable the reader to assess its significance, consequences, or implications and to evaluate the actions being proposed or employed to correct the condition or to avoid recurrence.

**Occurrence Report Coordinator (ORC).** The person assigned by the Site Manager to carry out the responsibilities for categorization, notification, and reporting requirements identified in this procedure.

**Occurrence Reporting and Processing System (ORPS).** The unclassified central computerized operational data base maintained by DOE for reporting and processing occurrence reports entered by the ORC.

**Offsite transportation event.** Involves movement of materials which are considered to be in commerce, thus requiring compliance with Department of Transportation Hazardous Materials Regulations 49 CFR Parts 106-180, 200-250, and 350-399.

**Oil.** Oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

**Onsite transportation event.** Movement of materials not in commerce and subject to DOE onsite procedures and safety requirements.

**Performance degradation.** Failure or degradation of a process, system or component that reduces the reliability of critical components whose loss or degradation prevents the system from performing its intended function. Performance degradation does not include:

- a burned out power indicator light, on a piece of radiation monitoring equipment, that does not prevent the equipment from detecting elevated radiation levels and alarming as designed
- a piece of equipment that is determined to be out of calibration on the conservative side (such as a low level alarm that alarms at a higher level than it should)
- temporary loss of a component where redundant components are maintained operable or in operation and the Authorization Basis is not compromised

**Program Manager.** The DOE Headquarters individual or designee, designated by and under the direction of a Secretarial Officer, who is directly involved in the operation of facilities under his or her cognizance and holds signature authority to provide technical direction through Heads of Field Elements/Operations Offices to operating personnel for these facilities.

**Project Manager.** That individual or designee who has direct line responsibility for operation of the construction site, including authority to direct physical changes to the construction site. During construction, the Project Manager has assigned the Site Manager as designee.

**Release.** Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or otherwise disposing of substances into the environment. This includes abandoning or discarding any type of receptacle containing substances in an unenclosed containment structure, but does not include permitted containment structures.

**Reportable quantity.** For any CERCLA hazardous substance, including radionuclides and Superfund Amendments, and Reauthorization Act Title 3 extremely hazardous substances, with quantities established in 40 CFR Part 302 and Part 355, respectively, release of which requires notification unless permitted.

**Responsible Manager (RM).** The manager or field superintendent who has “ownership” of a specific area or group.

**Root Cause Analysis Team (RCAT).** A group of WTP personnel or a person appointed by management to analyze an event and determine its causal factors. Depending upon the severity and complexity of the event, the RCAT may be considered complete with only one person assigned. The Root Cause Analysis Team Leader (RCATL) and at least one more member of the RCAT will investigate occurrences categorized as unusual.

**Substantial safety hazard.** A loss of safety function to the extent that there is a major reduction in the degree of protection provided to public or worker health and safety.

**Supplier.** An organization furnishing items or services. An all-inclusive term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, distributor, consultant, or subtier supplier.

**Transportation event.** Any real-time occurrence involving any of the following transportation activities: material classification, packaging, marking, labeling, placarding, shipping paper preparation, loading or unloading, separation and segregation, blocking and bracing, routing, accident reporting, and movement of materials. Transportation events with injuries may also require reporting in accordance with Group 3 criteria.

**WTP Occurrence Reporting phone number. (371-4727)** A point of contact manned 24 hours a day, 7 days a week, to which WTP employees, and subcontractors under BNI's authority, can report abnormal events identified in this procedure.

### 3.2 Responsibilities

#### Occurrence Report Coordinator (ORC)

- Shall be available 24 hours per day, seven days a week or a designated alternate
- Determine the level and type of investigation to be conducted when an event has been categorized as an occurrence
- Categorize events as occurrences and identify abnormal events
- Make applicable notifications as the result of an occurrence or abnormal event
- Prepare applicable reports
- Ensure the ORPS database is reviewed regularly to identify good practices and lessons learned from other facilities in the DOE complex that can be used at the WTP project
- Review the WTP occurrences and use the information for trending analysis and for early identification and correction of deteriorating conditions
- Ensure that the ORPS database is monitored at frequent intervals for accepted and rejected ORs and that the appropriate actions are initiated to revise the rejected ORs
- Track incomplete ORPS corrective action status and update the ORPS database as needed from information provided by Responsible Managers
- Submit ORPS corrective actions into internal deficiency tracking system
- Forward a copy of Final Occurrence Reports to ONC for dissemination to the appropriate reading rooms

#### Project Manager

- Appoint an ORC that is available at all times to carry out the responsibilities for categorization, notification, and reporting requirements identified in this procedure

#### Safety Assurance Manager

- Review and approve the Notification Occurrence Report, Update Occurrence Report, Roll-Up Report, and Final Occurrence Report prior to the ORC uploading the report into the ORPS data base

#### Responsible Manager

- Contact the ORC to report events and conditions which have caused or have the potential to cause an adverse effect on safety, health, quality assurance, security operational or environmental implications
- Initiate and stabilize the project or operation and ensure any injuries are treated
- Take appropriate actions to preserve conditions for future investigations; this includes recording pertinent information, such as method of discovery, date and time of the event, and actions taken to stabilize conditions

- Be familiar with the occurrence reporting thresholds criteria in order to bring significant events to the ORC for categorizing
- Ensure corrective actions with past due completion dates have written justification from the Responsible Manager's immediate next level manager before a new target date will be accepted and entered into the ORPS database
- Support the investigation process

#### **Root Cause Analysis Team (RCAT)**

- Independently review and analyze any event to which it is assigned, when directed by the ORC, and under the direction of the Root Cause Analysis Team Leader

Members shall have appropriate degree of technical expertise in the event under investigation.

Members shall be an independent, knowledgeable persons with no bias or vested interest in the results of the investigation.

#### **Employee**

- Notify supervisor or manager immediately to report events and conditions which have caused or have the potential to cause adverse effects on safety, health, quality assurance, security, or have construction or environmental implications

#### **Commissioning and Training**

- Provide the necessary initial and periodic refresher training to the applicable personnel (for example, procedure revisions or changes to DOE Order), specifying the requirements set forth in DOE Order M 232.1A and this procedure. Training will be commensurate with their job responsibilities. Training will include the following:
  - Purpose of DOE Order 232.1A and its implementation for the Project Manager, Project Manager Designee and ORC
  - Each employee's duty to report occurrences
  - Indoctrination in the philosophy of occurrence reporting
  - Identification of reportable occurrences and their categorization, notification, and associated reporting requirements
  - Utilization of ORPS including input of occurrence reports and obtaining information from the database.

### **3.3 Event Discovery and Reporting**

Employees - if observing events or conditions that have or could have an adverse effect on personnel safety and health, quality assurance, security, operations, or the environment:

- Contact your Responsible Manager immediately
- Stabilize and mitigate the consequences of the event without endangering yourself or others
- Initiate Stop Work if applicable

Responsible Manager - if observing events or conditions that have or could have an adverse effect on personnel safety and health, quality assurance, security, operations, or the environment, or if such events are reported to you by an employee:

- Immediately call the WTP Occurrence Reporting phone number (371-4727). (This can be performed by the Responsible Manager's designee)
- Initiate or complete immediate actions necessary to stabilize the project or operation and ensure injured personnel are treated.

Necessary actions to stabilize the work area or operation to a safe condition shall take precedence over notifications.

- Take appropriate actions to preserve conditions for future investigations

### 3.4 Abnormal Event Identification

ORC - when notified of an event, accumulate sufficient information to determine if the event meets the categories listed in Attachment G, Notification Criteria for Abnormal Events.

- If the event or condition meets one of the categories listed in Attachment G, then as soon as possible after event's identification (within 30 minutes), verbally notify the ONC at 376-2900 of any preliminary information pertaining to the event. Identification is defined as the time the ORC is informed of the event.

ONC - evaluate event or conditions reported to determine if the conditions of an abnormal event have been met.

ORC - if ONC declares an abnormal event has occurred, verbally notify [Safety Assurance Manager](#), Responsible Manager, and the FR, as soon as possible, of the declaration.

ONC - initiate the abnormal event internal and off-site agencies notifications per HFID 232.1B, *Notification, Reporting, and Processing Of Operations Information*:

Responsible Manager - provide follow up information to the ORC as soon as practical if or as more details on the event are available.

ORC - provide the follow up information to the ONC (376-2900) and the FR as soon as practical.

ONC - provide the additional information pertaining to the abnormal event to required persons and agencies per HFID 232.1B.

ORC - review the abnormal event to determine if it meets the criteria of Attachment A, Occurrence Categories and Criteria, then proceed to Section 3.5, Occurrence Categorization, of this procedure.

### 3.5 Occurrence Categorization

ORC - when notified of an event, accumulate sufficient information to determine if the event meets the categories listed in Attachment A. This categorization shall be

completed within two hours of an event's identification. Identification is defined as the time the ORC was informed of the event.

- If the category is not clear or the occurrence exceeds the threshold of more than one criteria, the ORC shall categorize the occurrence at the higher level being considered and the FR shall be notified in accordance with this procedure. The occurrence categorization shall either be elevated, maintained, or lowered as information is made available. Any changes in categorization shall be documented in an Update Occurrence Report and submitted before the close of the next business day from the time of re-categorization (not to exceed 80 hours). A justification for the new categorization shall be included in the report.
- For similar occurrences previously documented in a non-final occurrence report or similar occurrences previously documented in an approved Final Occurrence Report, the ORC, with concurrence from the FR, may submit a Roll-Up Report in lieu of a new occurrence report.
- If events that have or could have an adverse effect on personnel safety and health, quality assurance, security, operations, or the environment, falls below the reporting thresholds identified in Attachment A, the ORC will notify the Responsible Manager by the close of business (or within 80 hours). The Responsible Manager will review the event and, at his or her discretion, initiate an investigation.
- The Responsible Manager should use the graded approach when determining the level of effort required to investigate the cause of an event. The graded approach is based on the severity or risk associated with the event. The investigation can take the form of a meeting with involved individuals, a single person gathering information, or an RCAT trained in accident investigation techniques conducting a formal investigation. The investigation can be documented by written report or verbal instructions to the individual indicating the corrective actions to be taken to prevent recurrence.

### 3.6 Notifications for Off-Normal Occurrences

ORC - notify, as soon as practical, the [Safety Assurance](#) Manager, Responsible Manager, Price Anderson Amendments Act (PAAA) Coordinator and the FR that an event has been categorized as an Off-Normal Occurrence.

- ORC shall notify the ONC (376-2900) within two hours of categorization and provide details of the occurrence, initial categorization, and immediate actions taken.

### 3.7 Notifications for Unusual Occurrences

ORC - orally notify the FR and the ONC (376-2900) of an Unusual Occurrence. The notification shall be made within 90 minutes of categorization. Use Attachment B, Notification of Unusual Occurrence, and provide details of the event. The ONC will make necessary off-site notifications per HFID 232.1B

- If the Unusual Occurrence meets the criteria of an abnormal event, notification shall be made to the ONC and FR within 30 minutes.
- ORC - notify the [Safety Assurance](#) Manager, Responsible Manager, and PAAA Coordinator that an event has been categorized as an Unusual Occurrence as soon as practical but within 2 hours of categorization.

ORC - if the event has been re-categorized, make follow-up oral notifications to the [Safety Assurance](#) Manager, FR, and ONC (37632900), as soon as practical but no later than two hours following re-categorization, to provide the following information:

- An Off-Normal Occurrence has been upgraded to an Unusual Occurrence
- Any further degradation in the level of safety or impact on the environment, safeguards and security, health, or operations of the construction site, or other worsening conditions subsequent to the previous notifications
- If changes to any occurrence report are made in conjunction with the ORPS administrators, such changes shall be provide to the ONC on the same day the changes are completed.

### 3.8 Occurrence Investigation and Analysis

ORC - after the occurrence, initiate the collection of information pertaining to the event. Collection of data should be conducted with the assistance of the Responsible Manager or other individuals deemed necessary.

- The graded approach should determine the level of effort required to investigate the cause of an occurrence. The graded approach is based on the severity or risk associated with the event. Using the graded approach, all occurrences must have some degree of investigation. The investigation can take the form of a meeting with involved individuals, a critique, a single person gathering information, or an RCAT trained in accident investigation techniques conducting a formal investigation. The investigation can be documented by completing the required ORPS fields when uploading a respective report into the ORPS database.

### 3.9 Preparation of Notification Occurrence Report

ORC - when any event has been categorized as an occurrence, a Notification Occurrence Report shall be completed and submitted into the ORPS database using the ORPS software program. A Notification Occurrence Report shall be prepared and submitted before the close of the next business day from the time of categorization (not to exceed 80 hours).

ORC - obtain approval of the [Safety Assurance](#) Manager prior to uploading the Notification Occurrence Report into the ORPS database. The approval will be documented by signing the ORPS generated report.

- ORC should notify the FR prior to uploading the Notification Occurrence Report.
- Occurrence reports not submitted within the time frame established in DOE Order M 232.1-1A shall include an explanation for the deviation.
- To cancel an occurrence report, check the block under Report Type for Final Occurrence Report as well as the block for “cancelled” under occurrence category (Item 3) on the ORPS PC software. Cancelled reports must be finalized and go through the same approval process as all other occurrence reports; however, Fields 20 through 35 are not required for cancelled reports. Once signed by the FR and Program Manager, the occurrence report will be removed from the active database.

### 3.10 Preparation of An Update Occurrence Report

ORC - shall complete an Update Occurrence Report and submit it into the ORPS database if there is any significant and new information about the occurrence to include in the status of the investigation. Recurring consequences, or the identification of additional component defects resulting from the occurrence investigation, are activities associated with the occurrence and shall be included in Update Occurrence Reports.

ORC - obtain approval of the [Safety Assurance](#) Manager prior to uploading the Update Occurrence Report to the ORPS database. The approval will be documented by signing the ORPS generated report.

- ORC should notify the FR prior to uploading the Update Occurrence Report to the ORPS data base.
- Any changes in categorization shall be documented in an Update Occurrence Report and submitted into the ORPS database before the close of the next working day from the time of re-categorization (not to exceed 80 hours). A justification for the new categorization shall be included in the report. ORC shall obtain [Safety Assurance](#) Manager's signature prior to uploading the report to the ORPS database.
- When additional occurrences are to be included in a Roll-Up Report, an Update Occurrence Report shall be submitted by the close of the next working day from the time of categorization (not to exceed 80 hours).
- To cancel an occurrence report, check the block under Report Type for Final Occurrence Report as well as the block for "cancelled" under occurrence category (Item 3) on the ORPS PC software. Cancelled reports must be finalized and go through the same approval process as all other occurrence reports; however, Fields 20 through 35 are not required for cancelled reports. Once signed by the FR and Program Manager (PM), the occurrence report will be removed from the active database.

### 3.11 Preparation of Final Occurrence Report

ORC - shall complete a Final Occurrence Report when an analysis of the occurrence has been completed, and the significance, nature, and extent of the event or condition identified, the root cause, contributing cause(s), direct cause(s) identified, corrective action(s) to be taken to correct the condition and prevent recurrence scheduled, and lessons learned identified. A Final Occurrence Report shall be prepared as soon as practical but within 45 calendar days of categorization of the occurrence.

ORC - shall obtain approval of the [Safety Assurance](#) Manager prior to uploading the Final Occurrence Report to the ORPS database. The approval will be documented by the ORC signing the ORPS generated report.

- ORC should notify the FR prior to uploading the Final Occurrence Report to the ORPS database.
- If the required analysis cannot be completed within 45 calendar days after categorization, an Update Occurrence Report shall be submitted within 45 days. The Update Occurrence Report shall explain the delay and provide an estimated date for submittal of the Final Occurrence Report. This information shall be reported in the "Evaluation" block of the occurrence report. The FR shall be notified of the change.

- To cancel an occurrence report, check the block under Report Type for Final Occurrence Reports as well as the block for “cancelled” under occurrence category (Item 3) on the ORPS PC software. Cancelled reports must be finalized and go through the same approval process as all other occurrence reports; however, Fields 20 through 35 are not required for cancelled reports. Once signed by the FR and Program Manager, the occurrence report will be removed from the active database.
- Retain all supporting information pertaining to each occurrence report (that is, graphs, analyses, and formal investigation reports) in accordance with Department Records Disposition Schedules.

### **3.12 Final Occurrence Reports Not Approved**

If the Final Occurrence Report is not approved by the FR, or Program Manager, the report shall be returned to the ORC with an explanation of reasons for disapproval.

- The revised Final Occurrence Report shall be resubmitted within 21 calendar days of disapproval. If it cannot be resubmitted within this time, an Update Occurrence Report shall be submitted, within the 21 calendar days, explaining the delay and providing an estimated date for resubmittal of the Final Occurrence Report. This information shall be reported in the “Evaluation” block of the occurrence report.

### **3.13 Roll-Up Reports for Off-Normal Occurrences**

ORC - create a Roll-Up Report for similar occurrences previously documented in non-final occurrence report.

A Roll-Up Report can be submitted in lieu of a new occurrence report when a similar reportable event occurs and the previously uploaded Final Occurrence Report documenting the similar type event has not been finalized. The Roll-Up Report will be completed per the instructions in Attachment D, Instructions for Completing a Roll-Up Report. A Roll-Up Report can only be issued when the conditions listed below have been met.

- An occurrence report has been initiated, to include notification or update reports, but not finalized.
- The preliminary investigation identifies the subsequent occurrence to be similar and have the same root cause code.
- The preliminary investigation identifies the subsequent occurrence to have the same or similar direct and contributing causes as the initial occurrence.
- The preliminary corrective actions for the initial occurrence are expected to correct the same root cause type of failure.
- Appropriate corrective actions have been added to address direct or contributing causes identified for each new occurrence added to the report.
- The FR and Program Manager (and EM-76 for transportation reports), agree to include these occurrences in a Roll-Up Report.
- The FR agrees to the addition of each new occurrence.
- The notification of the added occurrence is made through the issuance of an Update Occurrence Report within the normal time period required for issuance of a Notification Occurrence Report, changing Field 4 appropriately per Attachment D.

ORC - create a Roll-Up Report for similar occurrences based on corrective actions in an approved Final Occurrence Report.

A Roll-Up Report can be submitted in lieu of a new Notification Occurrence Report for those occurrences that meet the threshold requirements of Attachment A for which a Final Occurrence Report has been approved by the FR. The Roll-Up Report will be completed per the instructions in Attachment D, Instructions for Completing Roll-Up Report. The candidates for Roll-Up Reports must have the same causal factors and corrective actions identified in the final approved report. A Roll-Up Report can only be issued when the conditions listed below have been met.

- A Final Occurrence Report has been approved by the FR and Program Manager to include the corrective actions and associated schedules for implementation.
- Similar occurrences with the same root cause and corrective actions occur in the time between the approval of the original occurrence report and completion of the corrective actions identified therein.
- The FR and PM (and EM-76 for transportation reports) agree to include these occurrences in a Roll-Up Report.
- Notification of the new occurrence is complete through the issuance of a Notification Occurrence Report that references the previous report.
- The FR agrees to the addition of each new occurrence.
- Notification of the added occurrence is completed through the issuance of an Update Occurrence Report in accordance with the normal time period required for issuance of a Notification Occurrence Report, changing Field 4 appropriately per Attachment D.
- Once the original approved Final Occurrence Report corrective actions are completed (for example, a new system is installed and operating), a Final Occurrence Report must be submitted for any open Roll-Up Reports referencing this original occurrence report as justification for a Roll-Up Report. This original approved Final Occurrence Report cannot be used as the basis for future Roll-Up Reports, that is, subsequent occurrences must be reported individually in compliance with this procedure.

ORC - obtain the approval of the [Safety Assurance](#) Manager prior to uploading the Roll-Up Report to the ORPS database.

- The approval will be documented by signing the ORPS generated report.

### **3.14 Distribution of Final Occurrence Reports to Public Reading Rooms**

ORC - review all Final Occurrence Reports and remove the following information:

- Information considered trade secrets, or commercial and financial information obtained as personal or business, privileged or confidential.
- Information which may be considered pre-decisional and deliberative.
- Information of a personal or private nature which constitutes an invasion of individual privacy, such as a person's name or information which could lead the reader to identify the individual involved.
- Information compiled for law enforcement purposes.

ORC - forward a copy of the Final Occurrence Report to the ONC for dissemination per the requirements of HFID 232.1B. The report shall be distributed within 2 weeks after the Program Manager's approval.

#### 4.0 Records

Documentation generated by this procedure shall be submitted to PDC for logging, issuance, distribution, and records retention to meet project records management requirements.

The following records are generated by this procedure:

- Checklist – Appendix B
- Reports generated by Occurrence Reporting and Processing System Database.

**Reason for Revision:** Editorial changes necessitated by Project transition.

#### 5.0 References

10 CFR 835, *Occupational Radiation Protection*

24590-WTP QAM-QA-01-001, *Quality Assurance Manual*

40 CFR Part 302, *Designation, Reportable Quantities, and Notification*

40 CFR Part 355, *Emergency Planning and Notification*

49 CFR Parts 106-180, 200-250, and 350-399, *Transportation*

49 CFR 171.8, *Department of Transportation Hazardous Materials*

49 CFR 172.101, *Purpose and Use of Hazardous Materials Table*

*Clean Water Act*, Section 402

*Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)*

DOE M 232.1A-1A, *Occurrence Reporting and Processing of Operations Information, Manual*

DOE O 225.1, *Accident Investigations*

DOE O 232.1A, *Occurrence Reporting and Processing of Operations Information*

DOT Regulations

Hazardous Material Regulations

HFID 232.1B, *Notification, Reporting, and Processing Of Operations Information:*

Federal Motor Carrier Regulations

*NIOSH Pocket Guide To Hazardous Chemicals*, June 1997

RL/Reg-2000-04, *Industrial Hygiene and Safety Regulatory Plan*

24590-WTP-LCAR-ESH-01-001, *Limited Construction Authorization Request*

*Superfund Amendments and Reauthorization Act (SARA)*, Title 3, Extremely Hazardous Substances

## ***Attachment A: Occurrence Categories and Criteria***

This attachment gives criteria for categorizing Unusual and Off-Normal Occurrences. For easy reference, the criteria are presented in ten groups, each relating to a specific area of the WTP activity.

These criteria are not all inclusive; they are minimum standards for the use in categorization of adverse events or conditions.

Categorizing an occurrence and uploading into the ORPS database does not mean that the required reports to other agencies need not be made.

### **Categorization of Occurrences by Group**

#### ***Group 1 - Facility Condition***

##### **A Nuclear Criticality Safety**

###### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

###### **Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

##### **B Fires/Explosions**

###### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

###### **Off-Normal**

- (1) Any fire or explosion not required to be reported as an Unusual Occurrence that activates a fire suppression system (such as halon discharge, sprinkler heads activating) or seriously disrupts a significant amount of work activities at the construction site
- (2) An unplanned fire that takes longer than 10 minutes to extinguish following the arrival of fire protection personnel; this does not include fires that do not disrupt normal construction activities and which are in the initial or beginning stage that can be controlled or extinguished by portable fire extinguishers, Class II standpipe, or small hose systems without the need for protective clothing or breathing apparatus.

##### **C Safety Status Degradation**

###### **Unusual Occurrence**

- (1) NOT APPLICABLE DURING CONSTRUCTION
- (2) NOT APPLICABLE DURING CONSTRUCTION
- (3) NOT APPLICABLE DURING CONSTRUCTION

(4) Any occurrence that would prevent immediate offsite emergency response capabilities or emergency response at the construction site.

(5) NOT APPLICABLE DURING CONSTRUCTION

#### **Off-Normal**

(1) A significant deficiency in the AB, excluding typographical or editorial errors (that is, correcting the AB would require prior ORP/OSR approval of the change) Example: A non-Important To Safety (ITS) LCAR activity is determined to be ITS.

(2) A substantial nonconformance with AB (that is, nonconformance that, if uncorrected, could have serious effect on safety, operability of systems, structures or components, or product quality or is determined to be reportable under the PAAA).

(3) An activity that is not bounded by the Limited Construction Authorization Agreement that could affect radiological, nuclear, or process safety (RNPS) (that is, any activity that could involve a radiological hazard during limited construction or that could affect RNPS for the completed WTP facility that is not addressed in the AB and authorized in the Limited Construction Authorization Agreement

#### **D Loss of Control of Radioactive Material/Spread of Radioactive Contamination**

Note: The Radiological Control Manager will provide information necessary and will assist in categorization of any event within this group.

Note: Refer to Attachment C when an event has been categorized within this group.

#### **Unusual Occurrence**

(1) Discovery of major amounts of radioactive contamination (that is contamination levels that requires more than 8 field man hours to remediate)

Note: Requires stopping work activities in the affected area

(2) NOT APPLICABLE DURING CONSTRUCTION

(3) NOT APPLICABLE DURING CONSTRUCTION

#### **Off-Normal**

(1) NOT APPLICABLE DURING CONSTRUCTION

(2) NOT APPLICABLE DURING CONSTRUCTION

(3) Identification of radioactive contamination onsite that is not located within a Controlled Area, Fixed Contamination Area, or Soil Contamination Area, and is in excess of two times the total contamination levels in Attachment F.

(4) NOT APPLICABLE DURING CONSTRUCTION

(5) NOT APPLICABLE DURING CONSTRUCTION

(6) Events related to activities involving the use of industrial radioactive sources or material requiring the notification of a federal, state, or local entity not otherwise reportable under this procedure.

## **E Safety Structure/System/Component Degradation**

### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

### **Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

## **F Violation/Inadequate Procedures**

### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

### **Off-Normal**

(1) Any violation resulting in actual equipment damage in excess of \$10,000.

(2) Use of inadequate procedures or deviations from written procedures that result in adverse effects on performance, safety, or reliability.

(3) NOT APPLICABLE DURING CONSTRUCTION

## **G Oversight Activities**

### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

### **Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

## **H Operations**

### **Unusual Occurrence**

(1) NOT APPLICABLE DURING CONSTRUCTION

(2) NOT APPLICABLE DURING CONSTRUCTION

(3) Weather conditions/natural phenomenon causing serious disruption of work activities at the construction site.

(4) NOT APPLICABLE DURING CONSTRUCTION

(5) Any evacuation of the construction site (excluding office space) in response to an actual occurrence, not including a precautionary evacuation, for an event that can be controlled and mitigated by employees or maintenance personnel.

#### **Off-Normal**

(1) Any unplanned and unexpected change in a process condition or variable adversely effecting safety, security, environment, or health protection performance sufficient to require termination (stopping or putting on hold) of a procedure related to major construction activities for greater than 4 hours.

Note: This does not apply when the procedure or plan governing performance of the procedure contains direction to stop or hold when certain conditions are encountered. This does not apply when stopping to clarify or question a procedure, retrieve tools, supplies, parts, and when responding to alarms or evacuations.

(2) Any unplanned electrical outages or unexpected consequences from a planned outage which seriously disrupt construction activities for one week

(3) Any unplanned outages of service systems (such as phones, communication systems) or unexpected consequences from a planned outage which:

- disrupt construction activities for one week or longer
- which adversely effect safety, security, environment, or health protection performance.

(4) NOT APPLICABLE DURING CONSTRUCTION

(5) NOT APPLICABLE DURING CONSTRUCTION

### ***Group 2 - Environmental***

#### **A Radionuclide Releases**

##### **Unusual Occurrence**

(1) During excavation activities, detection of evenly distributed contamination with detection readings greater than 500,000 dpm/probe beta/gamma, or greater than 200 dpm/probe above background alpha.

Note: Requires stop work per radioactive Air Emissions Notice of Construction.

(2) NOT APPLICABLE DURING CONSTRUCTION

##### **Off-Normal**

(1) NOT APPLICABLE DURING CONSTRUCTION

(2) NOT APPLICABLE DURING CONSTRUCTION

- (3) NOT APPLICABLE DURING CONSTRUCTION
- (4) NOT APPLICABLE DURING CONSTRUCTION
- (5) Radiological events that require reporting to other federal, state, or local agencies that would not otherwise be reportable under this procedure.

## **B Release of Hazardous Substances/Regulated Pollutants/Oil**

### **Unusual Occurrence**

- (1) Release of a hazardous substance, or regulated pollutant that exceeds a CERCLA reportable quantity per 40 CFR 302 and 40 CFR for chemicals and extremely hazardous substances.
- (2) NOT APPLICABLE DURING CONSTRUCTION
- (3) Any discharge of 100 gallons or more of oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

### **Off-Normal**

- (1) Release of a hazardous substance or regulated pollutant to controlled or uncontrolled areas that is not part of a normal, monitored release and which exceeds 50% of a CERCLA reportable quantity as specified for such material per CFR 302.
- (2) Any discharge of greater than 42 gallons but less than 100 gallons of oil of any kind or in any form: including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil outside of a permitted containment area.
- (3) Any detection of a toxic or hazardous substance in a sanitary or storm sewer, or any holding points where such a material is not expected to be found, considering the current detection method and historical detection method used.

Note: Detection means confirmation of toxic or hazardous substance by analysis

- (4) Any controlled, uncontrolled, or accidental release not classified as an Unusual Occurrence but which will be reported in writing to State/local agencies in a format other than routine periodic reports.

Note: Oral notifications to regulatory agencies that are considered “courtesy” will not be categorized as an occurrence. Courtesy oral notification requiring a follow-up written report to a regulatory agency will also not be categorized as an occurrence.

- (5) Any controlled release of hazardous/regulated material that occurs as a monitored part of normal operation but exceeds what historical data and/or analysis shows is expected as a result of normal operations.
- (6) Any general environmental monitoring where concentration increases to a level which exceeds what historical data and/or analysis shows is expected as a result of normal operations.

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**C Hazardous Material Contamination****Unusual Occurrence**

- (1) Discovery of onsite or offsite contamination due to construction activities that does not represent an immediate threat to the public but exceeds a reportable quantity for such material per 40 CFR.302.
- (2) NOT APPLICABLE DURING CONSTRUCTION

**Off-Normal**

Discovery of onsite contamination due to construction activities operations that exceeds 50% of a reportable quantity for such material per 40 CFR 302.

**D Ecological Resources****Unusual Occurrence**

Any occurrence causing significant impact to any ecological resource for which the DOE is a trustee (such as destruction of a critical habitat, damage to a historic/archeological site, damage to wetlands).

**E Environmental Agreement/Compliance Activities****Unusual Occurrence**

Any occurrence under any agreement or compliance area that requires notification of an outside regulatory agency within 4 hours or less, or triggers any outside regulatory agency action level.

Note: Oral notifications to regulatory agencies that are considered “courtesy” will not be categorized as an occurrence. Courtesy oral notification requiring a follow-up written report to a regulatory agency will also not be categorized an occurrence.

**Off-Normal**

- (1) Any agreement, compliance, remediation or permit-mandated activity for which formal notification of enforcement has been received from the relevant outside regulatory agency that activities pertaining to the construction of the WTP is considered to be in noncompliance with a schedule or requirement (such as Notice of Violation, Notice of Deficiency, Notice of Intent to Sue, Notice of Noncompliance, Warning Letter, Finding of Violation, Finding of Alleged Violation, or a similar type enforcement action).
- (2) Any occurrence under any agreement or compliance area that will be reported to outside agencies in a format other than routine periodic reports.

Note: Oral notifications to regulatory agencies that are considered “courtesy” will not be categorized as an occurrence. Courtesy oral notification requiring a follow-up written report to a regulatory agency will also not be categorized an occurrence.

## ***Group 3 - Personnel Safety***

Note: The [Safety Assurance](#) Manager will provide the ORC with the necessary information and assistance in making these categorizations

### **A Occupational Illness/Injuries**

#### **Unusual Occurrence**

- (1) Any occurrence due to operations at the WTP resulting in a fatality or terminal injury or illness.
- (2) Any one occurrence resulting in 3 or more lost workday cases.
- (3) Any occurrence requiring in-patient hospitalization of 3 or more personnel or that has a high probability of resulting in a permanent disability.
- (4) Personnel exposures to sufficient levels of hazardous substances or hazards that require the administration of medical treatment on the same day as the exposure and are above limits contained in RL/Reg-2000-04, Industrial Hygiene and Safety Regulatory Plan. These include:
  - a) Noise
  - b) Non-ionizing radiation
  - c) Chemical Agents
  - d) Physical Agents
- (5) Exposures to an Immediately Dangerous to Life and Health (IDLH) (as defined by NIOSH Pocket Guide To Hazardous Chemicals, June 1997) condition without both appropriate personal protective equipment and procedures in place.

#### **Off-Normal**

- (1) Any occupational illness or injury that results in inpatient hospitalization.
- (2) Series of occupational illnesses from one event involving 3 or more people where at least one is a lost work day case.
- (3) Personnel exposure in a single event to hazardous substances or hazards in excess of limits, as established by RL/Reg-2000-04, Industrial Hygiene and Safety Regulatory Plan. These include:
  - a) Noise
  - b) Non-ionizing radiation
  - c) Chemical Agents
  - d) Physical Agents

### **B Vehicular Incidents**

This section covers vehicular transportation incidents. Group 6 should also be considered in categorization for reporting. Transportation incidents without injury (such as those involving hazardous or radioactive material or financial loss) must be reported per the requirements of Group 6 or 7.

#### **Unusual Occurrence**

- 1) Any vehicular incident resulting in fatality(s), injury(s), or illness classified under Group 3.A, Unusual Occurrence.
- 2) Any vehicular incident involving departmental property with a fatality(s) to a person(s) other than DOE personnel or WTP personnel

**Off-Normal**

- (1) Any vehicular incident with injury(s) involving departmental property resulting in a lost workday case.
- (2) Any vehicular incident involving departmental property with injury(s) to a person(s) other than DOE personnel or WTP personnel.

**C Safety Concerns****Off-Normal**

- (1) Unapproved use of flammable, toxic, explosive, corrosive, or other unsafe or dangerous processes, chemicals, materials, or methods not in accordance with standard operating procedures or work plans.
- (2) Any shutdown of a construction work activity taken as a result of an Occupational Safety and Health Administration standards (such as trenching without adequate shoring or working at elevated levels without fall protection, when required).

***Group 4 - Personnel Radiological Protection***

Note: The Radiological Safety Manager will provide necessary information to the ORC and assist in making these categorizations.

**A Radiation Exposure**

Unless specified otherwise, all doses specified in the following requirements are calculated as the total effective dose equivalent, which is the sum of the committed effective dose equivalent due to radionuclides taken into the body (internal exposure) and the effective dose equivalent due to external exposure.

**Unusual Occurrence**

Radiation exposure relative to the use of industrial sources such as soil density gauges or radiography cameras.

- (1) Determination of a dose that exceeds the limits specified in Attachment H.

**Off-Normal**

- (1) Any single occupational exposure that exceeds an expected exposure by 100 mrem.
- (2) A single unplanned exposure onsite to a minor or member of the public that exceeds 50 mrem.
- (3) NOT APPLICABLE DURING CONSTRUCTION

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**B Personnel Contamination**

Note: Refer to Attachment C when an event has been categorized within this group.

**Unusual Occurrence**

- (1) Any single occurrence resulting in the contamination of five or more personnel or clothing (excluding protective clothing) measured (prior to washing or decontamination) in accordance with Attachment E, at a level exceeding the values for total contamination limits identified in Attachment F. The contamination level shall be based on direct measurement and not averaged over any area.
- (2) Any occurrence requiring offsite medical assistance for contaminated personnel.
- (3) NOT APPLICABLE DURING CONSTRUCTION

**Off-Normal**

- (1) NOT APPLICABLE DURING CONSTRUCTION
- (2) A measurement of personnel or clothing contamination (excluding protective clothing) at a level exceeding the total contamination limits identified in Attachment F, measured (prior to washing or decontamination) in accordance with Attachment E. The contamination level shall be based on direct measurement and not averaged over any area.

***Group 5 - Safeguards and Security*****A Criminal Acts**

Initial notification of events in this section shall follow normal occurrence reporting timelines. When reporting an occurrence that is the subject of an ongoing investigation under this subgroup, the report shall be tailored to prevent jeopardizing the investigation. Full reporting may be delayed until completion of criminal investigations, if the reports would jeopardize the investigation.

**Unusual Occurrence**

- (1) NOT APPLICABLE DURING CONSTRUCTION
- (2) Violent assault/battery, murder, or unjustified use of deadly force while at BNI's Richland Office Buildings and construction site.
- (3) Theft/diversion/intentional destruction of Government property valued greater than \$1,000,000.
- (4) Racketeering or other organized criminal activity onsite.

**Off-Normal**

- (1) At the BNI's WTP Richland Office Buildings and construction site:
  - a) location of a suspicious device or noncredible bomb threat;

- b) noncredible terrorist threat
  - c) noncredible sabotage threat.
- (2) Theft/diversion/intentional destruction of government property valued between \$10,000 and \$1,000,000.
- (3) Onsite felony conspiracies (that is, blackmail, fraud, embezzlement, extortion and forgery) not involving classified information.

## **B Unaccounted for Classified Matter or Compromised Information**

### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

### **Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

## **C Substance Abuse**

### **Off-Normal**

- (1) Any reportable occurrence under this procedure at least partially attributable to the use of alcohol or illegal drugs. "Partially attributable to the use of alcohol or illegal drugs is defined when an employee is drug tested and receives a confirmed positive test.
- (2) A detection of personnel not fit for duty attributable to the use of alcohol or illegal drugs. "Not fit for duty" is defined when an employee is drug tested and receives a confirmed positive test.

## **D Intelligence Activities**

### **Unusual Occurrence**

- (1) NOT APPLICABLE DURING CONSTRUCTION
- (2) Espionage, intelligence activities, treason, or subversive activities by or directed at WTP personnel.

### **Off-Normal**

- (1) NOT APPLICABLE DURING CONSTRUCTION
- (2) When WTP personnel believe that they may be the target of an attempted exploitation by an inimical interest, foreign or domestic.

## **E Physical Security System Computer**

### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

**Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

**F Unplanned/Unscheduled Outage of Site Security System****Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

**Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

**G Demonstrations/Protests****Unusual Occurrence**

- (1) Disruptive activities impeding vehicular or employees access/egress to the construction site.
- (2) Attempted or actual trespass. Interpreted as protesters attempting to or gaining access into the construction site.
- (3) Malevolent activities causing property damage or bodily harm.

**Off-Normal**

- (1) Lawful activities warranting deployment of additional protective measures.

**H Firearms****Unusual Occurrence**

- (1) Unauthorized firearms discharge resulting in personnel injury.
- (2) NOT APPLICABLE DURING CONSTRUCTION

**Off-Normal**

- (1) Unauthorized firearms discharge resulting in no personnel injury.

**I Other Security Concerns****Unusual Occurrence**

- (1) Unauthorized use, possession, or alteration of a security badge, credential, shield, or other form of official identification (to include blank badge stock/form) to gain access to the construction site.

**Off-Normal**

- (1) Discovery of prohibited items within the fenced area of the construction site that:

- a) are suspected of being positioned for the purpose of aiding and abetting a malevolent act;  
or
- b) are, of themselves, illegal

Note: Items discovered outside the fenced area of the construction site that are legal under Federal, State, and local laws are not reportable, even if the discovery of such items would otherwise be reportable under this paragraph.

- (2) Onsite death of a DOE or WTP personnel by unnatural causes (such as suicide, drug overdose).
- (3) Loss of security badges in excess of 5 percent in a calendar year.
- (4) Onsite malicious mischief, disorderly conduct, or vandalism which disrupts construction site activity for greater than one hour or causes damage between \$10,000 and \$100,000 at the construction site.

## **J Material Control and Accountability**

### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

### **Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

## ***Group 6 - Transportation***

Transportation of DOE Hazardous Materials. Transportation occurrences are incidents related to the transportation of DOE materials, including hazardous materials, hazardous substances, and hazardous wastes by vehicular or rail mode. The requirements for reporting noncompliances and violations associated with such transfers are qualified in this procedure. The Federal regulations for offsite transportation are found in 49 CFR Parts 106-180, 200-250, and 350-399. For onsite transportation (within controlled boundaries of the construction site), the transportation regulations for hazardous materials transfers are the same as offsite (DOT's Hazardous Materials Regulations).

DOE facilities receiving materials from a DOE shipper that are not in compliance with appropriate regulations, as qualified by this procedure, must report the discrepancies to the DOE shipper who will prepare an occurrence report and implement suitable corrective actions. If such a shipment is received from a non-DOE shipper and meets the reporting criteria of this procedure, the DOE organization will notify the non-DOE shipper of the apparent noncompliance and will prepare an occurrence report stating that the non-DOE shipper has been notified. These reporting criteria are in addition to any required by DOT for contractors subject to the DOT regulations.

### **Unusual Occurrence**

- (1) Any packaging or transportation activity (including loading, unloading, or temporary storage) involving a reportable quantity of a hazardous substance, or marine pollutants.

- 
- (2) NOT APPLICABLE DURING CONSTRUCTION
  - (3) Any shipment or onsite transfer of hazardous waste that arrives at its destination with an unaccounted for package or an irreconcilable shipping paper, waste manifest, or onsite transfer authorization.
  - (4) A vehicle accident (without personal injury) that presents significant impact on the ability to conduct transportation operations and:
    - a) results in release of hazardous materials above levels identified in 49 CFR Parts 106-180,200-250,350-399.
    - b) involves performance degradation of safety equipment
    - c) is the result of failure or degradation of administrative controls required to ensure safety.
  - (5) Violations of the Federal Motor Carrier Safety Regulations or the Hazardous Materials Regulations if those violations are determined by DOT inspection and result in a fine (monetary penalty).
  - (6) Exceedance of any environmental permit condition identified in 49 CFR Parts 106-180,200-250,350-399

**Off-Normal**

- (1) Any packaging or transportation activity involving:
  - a) the offsite release of or any quantity of hazardous waste above reportable quantities per 40 CFR 302.
  - b) the onsite release of hazardous substances or hazardous waste above reportable quantities per 40 CFR 302.
- (2) A vehicle accident (without personal injury) that affects the ability to conduct offsite shipment of hazardous waste from the construction site and:
  - a) results in release of hazardous materials below limits established by 40 CFR 302 but must be reported to State or local agencies
  - b) is the result of operational procedural violations, including maintenance or administrative procedures.
- (3) Noncompliances (potential violations) of 49 CFR Parts 106-180,200-250,350-399. involving:
  - a) errors made by the shipper in materials description, marking, labeling, or placarding
  - b) an unqualified person signing shipping papers
  - c) the highway routing selection requirements for highway route controlled shipments or the notification requirements for spent-fuel shipments not being observed
  - d) the separation and segregation tables for hazardous materials not strictly adhered to

- e) the applicable packaging requirements for the assembly, handling, or selection of a package not being in accordance with the applicable regulations

(4) Noncompliances (potential violations) of the Federal Motor Carrier Safety Regulations involving:

- a) a contractor driver operating a DOE-owned motor vehicle after a positive drug test or failure of an alcohol test
- b) an unqualified driver operating a vehicle (medical, driver's license, or training not in compliance)
- c) the carrier (contractor management) not having required insurance
- d) a vehicle that failed inspection not being removed from service
- e) a specification cargo tank with expired inspection being in service with hazardous materials
- f) a driver's log book is deliberately misrepresented
- g) the carrier (contractor management) failing to perform random or periodic drug or substance-abuse testing.

(5) Any violation of the Hazardous Material Regulations or Federal Motor Carrier Safety Regulations if that violation is determined by DOT inspection and does not result in a penalty.

### ***Group 7 - Value Basis Reporting***

Value basis reporting includes items based on cost or the identification of defective items, materials, or services. A defective item, material, or service shall be identified and reported to allow the initiation of a Headquarters investigation and make all Departmental Elements aware of the defect and initiate actions to eliminate common mode failures due to substandard, counterfeit, misrepresentation, or fraudulent practices of suppliers.

#### **A Cost Based Occurrences**

Any occurrence specifying cost as a basis for reporting, unless otherwise stated, will be classified by the following monetary values necessary to repair, replace, or otherwise restore systems/components to acceptable operation. Costs used for reporting should be reasonable initial estimates.

#### **Unusual Occurrence**

- (1) Estimated loss or damage to DOE or other property amounting to \$1,000,000 or more, or estimated costs of \$1,000,000 or more required for cleaning (including decontamination), renovating, replacing, or rehabilitating structures, equipment, or property.

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**Off-Normal**

- (1) Estimated loss or damage to DOE or other property amounting to between \$10,000 and \$1,000,000 (for vehicle/aircraft the lower limit is \$5,000 or, for insurance purposes, considered a total loss. Such damage to vehicles has to occur as the result of one accident not as the result of multiple accidents over an extended period of time) or estimated costs within these limits required for cleaning (including decontamination), renovating, replacing or rehabilitating structures, equipment, or property.

**B Defective Item, Material, or Service****Off-Normal**

- (1) Discovery of any actual or potential defective item, material, or service, including any suspect, counterfeit, or substandard product, in any application whose failure could result in a substantial safety hazard. Examples include the identification of suspect, counterfeit or substandard products found in:
  - a) cranes, elevators, and fork lifts - items used in the critical load bearing path of such handling and lifting equipment
  - b) NOT APPLICABLE DURING CONSTRUCTION
  - c) vehicles - items used in engines, brakes or steering mechanisms
  - d) critical components used in personnel safety equipment
  - e) construction site
    1. items used to contain:
      - a. radioactive fluids
      - b. high temperature or pressure steam or fluids
      - c. other hazardous material
    2. Important to Safety (ITS) Structure, Systems, or components (SSCs) supporting the safe operation or shutdown of equipment, system, or process that could result in a performance degradation.

Note: Guidance in the identification and follow-up actions are contained in DOE Quality Alerts or other bulletins.

- (2) Discovery of any actual or potential defective item, material, or service, including any suspect, counterfeit, or substandard product, in any application whose failure could not result in a substantial safety hazard. This does not include office supplies, equipment, or household products.

Note: The definition of defective item, material, or service does not include parts or services which fail or are otherwise found to be inadequate because of random failures or errors within accepted reliability levels.

- (3) Defects in ITS SSC, such as defects in design, manufacture, fabrication, or installation, of SSCs that if left uncorrected could have resulted in a substantial safety hazard (that is, the defect could have prevented the function of a hazard control strategy or initiated an accident).

Note: Per the 24590-WTP QAM-QA-01-001, Quality Assurance Manual, procurement documents shall specify the purchaser's reporting of nonconformances and the purchaser approval of the disposition of nonconformances.

## ***Group 8 – Facility Status***

This section involves the change of status that may affect the construction activities. Performance goals are necessary to accomplish construction per project schedule.

### **A Facility/Activity Unscheduled Shutdown**

#### **Off-Normal**

- (1) Any unscheduled shutdown of construction activity that resulted or may result in the failure to meet approved performance goals.

### **B Existing Facility/Process/Activity Shutdown Extension**

#### **Off-Normal**

- (1) Any increase in an approved shutdown schedule of 1 month or greater or that resulted or may result in the failure to meet approved construction performance goals or activities.

### **C New Facility/Process/Activity Start-up Delay**

**NOT APPLICABLE DURING CONSTRUCTION**

## ***Group 9 - Nuclear Explosive Safety***

#### **Unusual Occurrence**

**NOT APPLICABLE DURING CONSTRUCTION**

#### **Off-Normal**

**NOT APPLICABLE DURING CONSTRUCTION**

## ***Group 10 - Cross-Category***

### **A Collectively Significant Related Occurrences**

#### **Unusual Occurrence**

- (1) A series of related occurrences which individually do not warrant reporting under preceding criteria but which collectively are considered significant enough to warrant reporting by the ORC.

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**Off-Normal**

- (1) Systematic failures of one or more administrative controls described in the AB that results in 1) multiple instances of nonconforming conditions, or 2) indeterminate conformance with the AB.

**B Near Miss Occurrences****Unusual Occurrence**

- (1) A near miss to one of the reporting classifications under preceding categories where the conditions necessary to cause an Unusual Occurrence existed (that is, all barriers to event initiation were compromised).

**Off-Normal**

- (1) A near miss to one of the reporting classifications under preceding categories where the conditions necessary to cause an Off-Normal Occurrence existed (that is, all barriers to event initiation were compromised).
- (2) A near miss to one of the reporting classifications under preceding categories where the conditions necessary to cause a reportable occurrence were prevented from existing by one remaining barrier after other barriers had been compromised (that is, one additional independent failure/degradation was necessary for event initiation to be possible).

**C Potential Concerns/Issues****Unusual Occurrence**

- (1) An occurrence that may result in a significant concern, by the press or general population, particularly in the offsite transportation and radiological areas, or could damage the credibility of the Department.
- (2) Identification of potential concerns or issues that are deemed to be worthy of reporting by the ORC.

**Off-Normal**

- (1) Any event resulting in the initiation of a Type A or B investigation as categorized by DOE Order 225.1, ACCIDENT INVESTIGATIONS.
- (2) Identification of potential concerns or issues, that are deemed to be worthy of reporting by the Site Manager, such as major labor relations issues and degradation in safety.

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## ***Attachment B: Notification of Unusual Occurrence***

This checklist will be used as a guide to report Unusual Occurrences to the ONC.

<b>Occurrence Notification Center</b>
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<b>Phone: 376-2900 Fax: 376-3781</b>
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1. Name of Facility:
2. Facility Function:
3. Name and telephone number of Occurrence Report Coordinator:
4. Occurrence Report Number:
5. Occurrence Category: Unusual \_\_\_\_\_ Off-Normal \_\_\_\_\_
6. Division or project:
7. DOE Secretarial Office:
8. Systems, Building, or Equipment:
9. UCNI: No \_\_\_\_\_ Yes \_\_\_\_\_
10. Plant Area:
11. Date and Time Discovered:
12. Date and Time Categorized:
13. Facility Representative Notification:
14. Other Notifications:
15. Subject or Title Occurrences:

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16. Nature of Occurrence: (Check up to three):

- Group 1. Facility Condition
- Group 2. Environmental
- Group 3. Personnel Safety
- Group 4. Personnel Radiological Protection
- Group 5. Safeguards and Security
- Group 6. Transportation
- Group 7. Value Basis Reporting
- Group 8. Construction Activities Status
- Group 9. Nuclear Explosive Safety
- Group 10. Cross-Category Items

17. Description of Occurrence:

18. Operating Conditions of Facility at Time of Occurrence:

19. Immediate Actions Taken and Result:

## ***Attachment C: Reporting Radiological Contamination Occurrences***

The information provided on the following pages provides guidance for completing an occurrence report under Group 1D or Group 4B of Attachment A.

The information provided for the following items should be completed or reviewed by qualified radiological control personnel (that is, the Radiological Control Manager, health physicists, qualified radiological control technicians, or supervisory personnel): Item 16, “Description of Contamination Occurrence”; Item 19, “Immediate Action in Response to Contamination Occurrence”; and Item 27, “Impact on Worker Health Due to Contamination Occurrence”. The health consequence (that is, severity or significance) of the contamination occurrence is specified in Item 27 of an occurrence report.

Where the information regarding an occurrence is preliminary, the notification of such occurrences should be prefaced with remarks to the effect that:

“The contamination occurrence is based on preliminary information available at the time of the report. This information will be updated when further evaluation has been completed.”

### **Personnel Contamination Occurrences**

#### **Description of Contamination Occurrence – Item 16**

<b>Type of Information</b>	<b>Suggested Statements</b>
Number and types of individual	<ul style="list-style-type: none"> <li>a. Contamination event involves single individual.</li> <li>b. Contamination event involves _____ individuals.</li> <li>c. Type of individual: radiation worker, general employee, member of the public, minor, visiting scientist or researcher, visiting DOE or other Federal employee.</li> </ul>
Type of contamination event	<ul style="list-style-type: none"> <li>a. Only personal clothing of worker contaminated.</li> <li>b. Skin contamination involved.</li> <li>c. Potential internal contamination from inhalation/ingestion, further assessment being performed.</li> <li>d. Facial/nasal contamination, possible internal contamination.</li> <li>e. Internal contamination confirmed by bioassay.</li> <li>f. Radionuclide(s) involved, if known. State general category (such as beta and/or gamma, alpha) if unknown.</li> </ul>
Extent of contamination	<ul style="list-style-type: none"> <li>a. Appropriate description of clothing (such as pants, shoes, shirt).</li> <li>b. Confined to limited area of body (such as tip of right index finger, hot particle on left shoulder, palm of right hand)</li> <li>c. If not confined, state area of body involved.</li> <li>d. Maximum detected activity: _____ dpm/100 cm<sup>2</sup></li> </ul>
Location (area) where contamination occurred & worker activity	<ul style="list-style-type: none"> <li>a. Occurred inside of radiological area (such as Contamination Area, High Contamination Area, and Airborne Radioactivity Area).</li> <li>b. Occurred outside of radiological area, but onsite or within the facility.</li> <li>c. State worker activity being performed at time of occurrence.</li> </ul>

Type of Information	Suggested Statements
Significance of occurrence relative to operations	<ul style="list-style-type: none"> <li>a. Isolated event confined to room/facility/building/area.</li> <li>b. Event resulting from equipment or protective clothing malfunction.</li> <li>c. Event resulting from procedural violation or deficiency.</li> <li>d. Recurrent event.</li> </ul>

### Immediate Action in Response to Contamination Occurrence – Item 19

Type of Information	Suggested Statements
Status of decontamination	<ul style="list-style-type: none"> <li>a. Personal clothing retained.</li> <li>b. Individual(s) successfully decontaminated below detectable levels.</li> <li>c. Individual(s) decontaminated below reporting criteria; however, residual contamination persists.</li> <li>d. Medical assistance required.</li> </ul>

### Impact on Worker Health Due to Contamination Occurrence – Item 27

Type of Information	Suggested statements
Relative health consequence	<ul style="list-style-type: none"> <li>a. Less than/Approaching ___% of the annual deep or shallow DOE skin, lens of the eye, extremity, and/or committed effective dose limit (for any internal intake), as applicable. (Do not provide comparison to site or facility administrative control level). No health consequence to individual(s).</li> <li>b. Greater than applicable DOE limit, potential health consequence being evaluated. Evaluation to be initiated pursuant to DOE O 225.1 requirements.</li> <li>c. Concurrent injury requiring medical assistance onsite/offsite. State option a or b, as applicable, and nature of injury.</li> <li>d. No concurrent injury. State option a or b, as applicable. Indicate whether decontamination required onsite/offsite medical assistance.</li> </ul>

## Area or Facility Contamination Occurrences

### Description of Contamination Occurrence – Item 16

Type of Information	Suggested statements
Location of Occurrence	<ul style="list-style-type: none"> <li>a. Room</li> <li>b. Building</li> <li>c. Facility</li> <li>d. Area</li> <li>e. Site</li> </ul>
Type of Contamination	<ul style="list-style-type: none"> <li>a. Spill or loss of containment.</li> <li>b. Airborne release.</li> <li>c. Fixed/loose surface contamination.</li> <li>d. Radionuclide(s) involved, if known. State general category (such as beta and/or gamma, alpha) if unknown.</li> </ul>

Type of Information	Suggested statements
Extent of Contamination	<ul style="list-style-type: none"> <li>a. Total area involved is ____ft<sup>2</sup></li> <li>b. Confined within room/building/facility/area/site.</li> <li>c. Release beyond or containment within above locations, as applicable.</li> </ul>
Impact on Operations	<ul style="list-style-type: none"> <li>a. Normal operation not impacted.</li> <li>b. Designated equipment removed from service.</li> <li>c. Personnel access restricted until cleanup is completed.</li> </ul>

### Immediate Action in Response to Contamination Occurrence – Item 19

Type of information	Suggested statements
Status of Control & Decontamination	<ul style="list-style-type: none"> <li>a. Effected area controlled and/or isolated to prevent spread of contamination.</li> <li>b. Decontamination initiated or completed.</li> </ul>

### Impact on Worker Health Due to Decontamination Occurrence – Item 27

Type of Information	Suggested statements
Status of Control	<ul style="list-style-type: none"> <li>a. No contamination of individual(s) onsite.</li> <li>b. No potential for further spread of contamination.</li> <li>c. Affected area decontaminated.</li> </ul>
Significance Relative to Applicable Limits	<ul style="list-style-type: none"> <li>a. Maximum contamination levels ____dpm/100 cm<sup>2</sup> and units of curie per 100 cm<sup>2</sup>.</li> <li>b. Comparison with Attachment F. Evaluation to be initiated pursuant to DOE) 225.1 dependent upon level by which Appendix D limits are exceeded.</li> <li>c. General area dose rate as measure at 1 meter above contaminated surface.</li> <li>d. If worker involved, relate dose rate to actual dose received based on occupancy time spent in the contaminated area.</li> <li>e. No health consequence to worker if less than applicable dose limit. If worker contaminated, implement responses for personnel contamination provided above.</li> </ul>

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## ***Attachment D: Instructions for Completing a Roll-Up Report***

A Roll-Up Report may remain open for a period not to exceed 90 calendar days from categorization of the first occurrence reported therein or when the number of occurrences reported equals 30. Once either of those limits is reached, a Final Occurrence Report must be submitted.

If after initial roll-up of an occurrence, the causes and corrective actions of that occurrence are found to be different than originally thought, then that specific occurrence will be deleted from the Roll-Up Report through the submittal of an Update Occurrence Report followed by the submittal of a new occurrence report.

Field 4, “Number of Occurrences”, should be continually updated as new occurrences are identified and should reflect the total number of occurrences reported. The first occurrence in a Roll-Up Report will be identified as “1”.

Field 16, “Description of the Occurrence”, and Field 19, “Immediate Actions Taken and Results”, should clearly identify each new occurrence with a heading such as “Occurrence No. 1, 2, 3,...” and include a discussion of each additional occurrence. Field 16 should also include the appropriate information described in Fields 7, 10, 11, 13, 17, and 18 for each subsequent occurrence.

### Roll-Up Report Format for Similar Occurrences Documented in Non-Final Occurrence Report.

- 1 Field 14, “Subject/Title of the Occurrence”, Should contain the work “Roll-Up” enclosed in parentheses at the end of the title.
- 2 Field 20 and 21 should reflect the direct and/or contributing cause(s).
- 3 Field 22 should identify the single root cause code of the occurrences, such as “Design Problem – Inadequate or Defective Design” for radiation monitors in need of design improvements.
- 4 Field 26 should contain corrective actions required to correct all of the identified causes, that is, direct, contributing, and root, of all the occurrences.

### Roll-Up Report Format for Similar Occurrences Previously Documented in an Approved Final Occurrence Report.

- 1 Field 4 should also indicate the occurrence report number of the original approved Final Occurrence Report.
- 2 Field 14, “Subject/Title of the Occurrence”, should be the same as the original approved Final Occurrence Report with the word “Roll-Up” enclosed in parentheses at the end of the title.
- 3 Field 20 - 22 should contain the same root cause, direct, and contributing causes as the approved Final Occurrence Report.
- 4 Field 26 should contain the corrective actions and schedule identified in the approved Final Occurrence Report.

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## ***Attachment E: Contamination Levels***

1. Personnel shall [per CFR 835.1102(d), Occupational Radiation Protection] perform a whole body frisk immediately upon entry into an uncontaminated area after exiting Contamination Areas, High Contamination Areas, and Airborne Radioactivity Areas and shall [per CFR 835.104] perform a whole body frisk as directed by the RWP or the Radiological Control Organization.
2. In addition to the above, personnel exiting a Radiological Buffer Area containing Contamination, High Contamination or Airborne Radioactivity Areas should, at a minimum, perform a hand and foot frisk. This frisk is optional if the Radiological Buffer Area exit is immediately adjacent to the location where the exiting worker has already performed a whole body frisk.
3. Where frisking cannot be performed at the exit from Contamination Areas, High Contamination Areas or Airborne Radioactivity Areas due to high background radiation levels, personnel shall [per CFR 835.1102(a), CFR 835.1102(d)]:
  - a. Remove all protective equipment and clothing at the exit
  - b. Proceed directly to the nearest designated monitoring station
  - c. Conduct a whole body frisk.
4. Personnel frisking shall be performed after removal of protective clothing and prior to washing or showering.
5. Personnel frisking shall [per CFR 835.401(b)(2) and (3)] be performed using instruments that meet the minimum detection requirements contained in CFR 835, Appendix D.
6. The use of automated personnel contamination monitors is encouraged.
7. Personal items, such as notebooks, papers and flashlights, shall [per CFR 835.1101(a)] be subject to the same frisking requirements as the person carrying them.
8. Instructions for personnel frisking should be posted adjacent to personnel frisking instruments or monitors.
9. The personnel frisking requirements contained in this Attachment are not applicable at those facilities that contain only radionuclides, such as tritium, that cannot be detected by currently available hand-held or automated frisking instrumentation. At such facilities, additional emphasis should be placed on worker bioassay programs and routine contamination and air sampling programs.

## Attachment F: Summary of Surface Contamination Values

Radionuclide	Surface Contamination Values (dpm/100 cm <sup>2</sup> ) <sup>a</sup>	
	Removable <sup>b,d</sup>	Total (Fixed + Removable) <sup>b,c</sup>
U-nat, U-235, U-238, and associated decay products	1,000 <sup>g</sup>	5,000 <sup>g</sup>
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	20	500
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	200	1,000
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above <sup>e</sup>	1,000	5,000
Tritium and tritiated compounds <sup>f</sup>	10,000	N/A

<sup>a</sup> The values in this table, with the exception noted in footnote f below, apply to radioactive contamination deposited on, but not incorporated into the interior or matrix of, the contaminated item. Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides apply independently.

<sup>b</sup> As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

<sup>c</sup> The levels may be averaged over one square meter provided the maximum surface activity in any area of 100 cm<sup>2</sup> is less than three times the value specified. For purposes of averaging, any square meter of surface shall [835, App. D, Note 3] be considered to be above the surface contamination value if: (1) from measurements of a representative number of sections it is determined that the average contamination level exceeds the applicable value; or (2) it is determined that the sum of the activity of all isolated spots or particles in any 100 cm<sup>2</sup> area exceeds three times the applicable value.

<sup>d</sup> The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by swiping the area with dry filter or soft absorbent paper, applying moderate pressure, and then assessing the amount of radioactive material on the swipe with an appropriate instrument of known efficiency. (Note - The use of dry material may not be appropriate for tritium.) When removable contamination on objects of surface area less than 100 cm<sup>2</sup> is determined, the activity per unit area shall [835, App. D, Note 4] be based on the actual area and the entire surface shall [835, App. D, Note 4] be wiped. It is not necessary to use swiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

<sup>e</sup> This category of radionuclides includes mixed fission products, including the Sr-90, which is present in them. It does not apply to Sr-90 that has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

<sup>f</sup> Tritium contamination may diffuse into the volume or matrix of materials. Evaluation of surface contamination shall [835, App. D, Note 6] consider the extent to which such contamination may migrate to the surface in order to ensure the surface contamination value provided in this table is not exceeded. Once this contamination migrates to the surface, it may be removable, not fixed; therefore, a "Total" value does not apply.

<sup>g</sup> Alpha.

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## ***Attachment G: Notification Criteria for Abnormal Events***

### **Facility Condition**

1. Any fire onsite requiring suppression by fire department personnel
2. Any unplanned explosion onsite
3. Any radioactive contamination offsite expected to have originated from the WTP
4. Any event or condition disrupting facility operations (excluding false indicators) or causing degradation of ITS SSC
5. Any unplanned construction site evacuation, excluding those caused by false indicators

### **Environmental**

6. Any unplanned release of a or hazardous substance above established limits defined in applicable regulations, and requiring verbal notification to a regulator
7. Any event or condition affecting ecological resources (such as destruction of a critical habitat, damage to a historic or archeological site, or damage to wetlands) or agreement/compliance area reportable to a regulator

### **Personnel Safety**

8. Any occupational (work related) illness or injury resulting in medical transport to a local hospital
9. Any vehicular or aircraft incident onsite resulting in a fatality, or an injury resulting in medical transport to a local hospital
10. Any unplanned exposure to a radiological or hazardous material resulting in medical transport to a local hospital

### **Safeguards and Security**

11. Any criminal, malevolent, or significant disruptive activities causing injury or property damage, or that disrupts normal construction site activities

### **Cross-Category Items**

12. Any activation of an Incident Command System in response to an actual event
13. Any event which results or may result in media attention or public concern

## ***Attachment H: Summary of Dose Limits***

Exposures shall [10 CFR 835, Subpart C, 835.1003(b)] be below the limits in this table and maintained as low as reasonably achievable. The Administrative Control Levels for limiting exposure are described in Article 211.

<b>Type of Exposure</b>	<b>Annual Limit</b>
General Employee : Whole Body TEDE (internal + external)	5 rem
General Employee : Lens of Eye	15 rem
General Employee : Skin and extremities (shallow dose equivalent)	50 rem
General Employee : Any organ or tissue (other than lens of eye) (internal + external)	50 rem
Declared Pregnant Worker: Embryo/Fetus (internal + external)	0.5 rem per gestation period
Minors occupationally exposed: Whole Body TEDE (internal + external)	0.1 rem
Minors occupationally exposed: Lens of the eye, skin, and extremities	10 % of General Employee Limits

### Notes:

1. Internal dose to the whole body shall [835.203(a)] be calculated as committed effective dose equivalent. The committed effective dose equivalent is the resulting dose committed to the whole body from internally deposited radionuclides over a 50-year period after intake. Determinations of the effective dose equivalent shall [835.203(b)] be made using the weighting factor values provided in Appendix 2B.
2. The annual limit of exposure to “any organ or tissue” is based on the committed dose to that organ or tissue resulting from internally deposited radionuclides over a 50-year period after intake plus any deep dose equivalent to that organ or tissue during the year.
3. Doses from background, therapeutic and diagnostic medical radiation, and participation as a subject in medical research programs shall [835.202(c)] not be included in dose records or in the assessment of compliance with the occupational dose limits.
4. Non-uniform exposures of the skin from X-rays, beta radiation, and/or radioactive material on the skin shall [835.205] be assessed as specified in Appendix 2C.
5. The total effective dose equivalent during a year shall [835.203(a)] be determined by summing the effective dose equivalent from external exposures and the committed effective dose equivalent from intakes during the year.