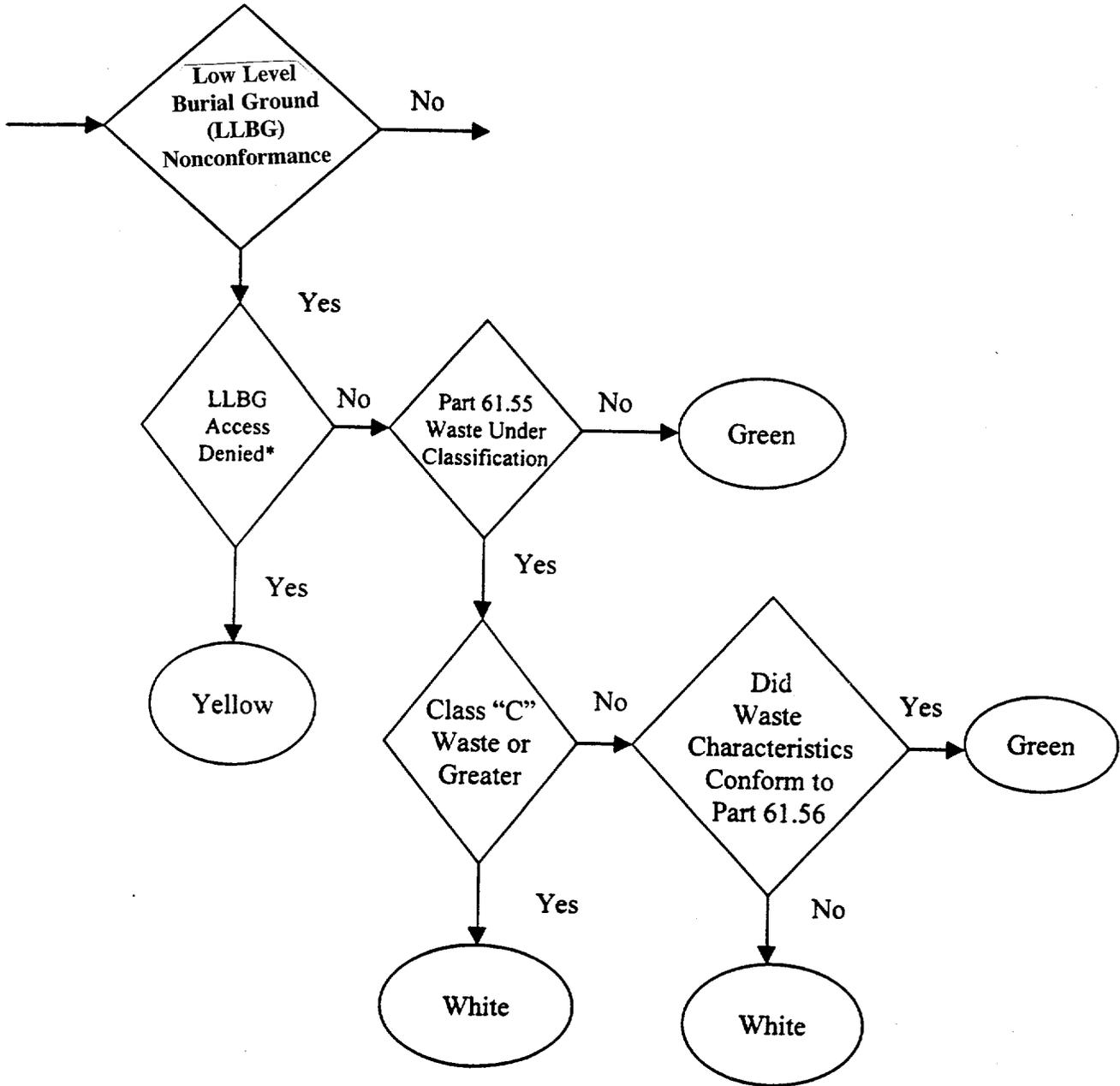


# DRAFT

## Low level Burial Ground



(assuming a breach) focus on public and occupational doses that occur as a result of the loss of control of package contents. These are actual doses to real individuals, and depending on the level, would lead to either YELLOW or RED findings. Note that for a member of the public, the dose would in almost all cases be an estimate. Designated on-scene trained responders (e.g., local county Hazmat emergency team) would be designated occupational workers, subject the occupation dose limits.

The greater-than-Type A branch provides for a YELLOW finding, assuming no loss of control of package contents. A RED finding would result if package contents control was lost. An example of a YELLOW finding is where a receiving facility finds the incoming shipment (irradiated components) package's drain valve on the package open -- a direct pathway to environment, but no potential for loss of control of materials (assuming normal conditions of transport). A RED finding is appropriate for the same "open valve" scenario if the package contents were spent fuel -- fission product gases released continuously to the environs during the shipment, assuming normal conditions of transport. However, in the event of a transportation accident that led to loss of fuel integrity, public dose consequences could exceed acceptable levels before adequate protective measures could be implemented.

Low Level Burial Ground Access ← *Nonconformance*

Nuclear power plants ship low-level waste (LLW) to licensed LLW burial grounds. These facilities (typically licensed by the host State) have the responsibility and authority to grant access to licensees for disposal of LLW. These LLW burial grounds have specific disposal criteria (aside from DOT/NRC shipping regulations) that licensees must meet (e.g., Waste Characterization, Part 61.56). In the past, some NRC licensees did not meet the acceptance standards of the LLW burial ground, and were issued temporary bans (i.e., the burial ground would not accept LLW from non-compliant licensees for extended time periods). As the receiving party, the LLW burial facilities are required to inspect for certain non-compliances with shipping regulations. Repeated failures to meet these and the disposal grounds requirements can weigh in on the LLW facilities decision to prohibit access to the LLW burial site. While recent NRC licensee performance has been excellent, if a licensee is banned for an extended period of time (typically one month, based on repeated performance failures and shortcomings), the finding is YELLOW.

Part 61 Finding

~~If a licensee ships waste and it is determined that the waste was under-classified, contrary to the requirements of 10 CFR Part 61.55 (e.g., waste classified at Class A, but later found to be Class B), then the finding is WHITE.~~

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Part 61 Finding

If a licensee ships Class C or greater waste and it is determined that the waste was under-classified, contrary to the requirements of 10 CFR 61.55 (e.g., waste classified as Class A or Class B, but later found to be Class C or greater), then the finding is WHITE. In addition, if a licensee ships Class A or Class B waste and it is determined that the waste was under-classified, contrary to the requirements of 10 CFR Part 61.55 (e.g., waste classified as Class A, but later found to be Class B), and resulted in the improper disposal of the waste, contrary to the requirements of 10 CFR Part 61.56, then the finding is WHITE. If the under-classification of Class A or Class B waste did not result in the improper disposal of the waste (i.e., not resulting in an actual increase in risk), then the finding is GREEN.

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Determination of the acceptability of the waste for disposal is made by the applicable regulatory agency for the waste disposal facility; either NRC or the Agreement State. Agreement States have the authority under the Atomic Energy Act to promulgate regulations that are compatible with NRC's disposal regulations in 10 CFR Part 61. They also have the authority and responsibility to issue disposal facility licenses under their Part 61 compatible regulations, and to disposition a non-compliance by the licensee.

Failure to Make Notifications or Provide Emergency Information

This branch of the logic diagram focuses on vital communication and information, and notification requirements that must be provided by the licensee. Shippers of hazardous materials are required to provide emergency response information. Failure to provide these required notifications could seriously hamper or prevent the ability of the federal, state and local agencies to adequately respond as needed to transportation events and accidents. By hampering or preventing this regulatory response, the public health and safety could be negatively impacted, with an attendant loss of public confidence.

These requirements (in 49 CFR Part 172, Subpart G, Section 172.600) apply to any shipment which is required to have shipping papers. Shipments of excepted radioactive material packages (limited quantities, "empty" packages, etc) are not subject to the emergency response information.

NRC regulations (10 CFR 71.97) require advance notification to state governors for shipments of irradiated reactor fuel and nuclear waste under certain conditions. These notifications include quantity and form, and type of shipping container required. Notifications must be made in a timely manner to all the states hosting the radioactive material shipment. Additionally, 10 CFR 20.1906 requires receivers of certain packages of radioactive materials to perform timely external and surface contamination radiation monitoring upon receipt of the packages. If applicable radiation limits are exceeded, the receiving licensee must then report the event to the appropriate NRC Regional Office.

For Block N1 (10 CFR 71.97 non-compliance), if the licensee fails to make the required notifications before the shipment entered the State's boundary (crossed the State line) for interstate shipments, the finding would be WHITE. For intrastate shipments, if the shipment was put on public roads/rails before the Governor received the required notification, then a finding would be WHITE. Note that any other timeliness non-compliance (e.g., notification not postmarked at least 7 days before the 7 day shipment period), these findings would be GREEN.

For Block N2 (49 CFR 172.602 non-compliance), if the licensee fails to provide the required emergency response information to the shipment carrier (the shipment leaves the licensee's facility and control without the required information), the finding is WHITE. If the carrier misplaces or loses the ~~material~~ <sup>information</sup> (beyond the licensee's control), the finding is GREEN.

For Block N3 (49 CFR 172.604 non-compliance), if during an actual emergency the licensee does not respond in a timely manner in accordance with the requirements (or had not provided the 24-hour telephone number), the finding is WHITE.

For Block N4 (10 CFR 20.1906), if the licensee's receipt surveys show 1) the package's external radiation levels in excess of the Part 71 limits, or 2) the surface radioactive contamination level in excess of five times the Part 71 (49

CFR 173) limits, and the ~~facility~~ fails to make an immediate report, then the finding is WHITE. Other non-compliances are GREEN.

Certificates of Compliance

Pursuant to 10 CFR 71.3, a licensee may not deliver or transport licensed material without a general or specific license. The general license for the use of an NRC-approved package is discussed in 10 CFR 71.12. Section 71.12 grants a general license to a licensee to transport or deliver to a carrier for transport, licensed material in a package for which a license, certificate of compliance (CoC), or other approval has been issued by the NRC. Additionally, Section 71.5 requires the licensee to comply with the applicable DOT regulations in 49 CFR.

Usually, the form of approval issued by the NRC is a CoC. For purposes of readability, consider the CoC as discussed here to mean any NRC issued approval for a package. The CoC approves a specific package design, including a detailed allowable contents description consistent with the use of the general license of Section 71.12. The CoC also lists the requirements or "conditions" for the use and maintenance of the package in block 4 of the CoC. Frequently, these conditions include references to the package's Safety Analysis Report (SAR) or procedures supplied by the CoC holder to the package owner or user. The user of the package must comply with the requirements of 10 CFR Part 71, the applicable regulations of 49 CFR, the CoC and their own transportation program instructions, including quality assurance requirements, to ship material.

Discussion

The following discussion provides a step-by-step description of the decision steps which make up the Certificate of Compliance (COC) portion of the Significance Determination Process (SDP) flowchart for Transportation & Part 61. It is anticipated that the inspector will have properly followed the Transportation and Part 61 SDP flowchart through the Radiation Limit Exceeded and Breach of Package decision points to the decision point where this COC branch begins. It is also expected that the inspector follows previous guidance concerning multiple findings on a single incident. That is, a finding with a package breach which resulted in a YELLOW determination and a CoC deficiency which resulted in a GREEN determination, would be considered to be a YELLOW finding. This is because the YELLOW signifies a more serious problem with the package breach aspect of the finding, than the CoC deficiency aspect of the finding.

This branch of the logic diagram resolves an NRC, or licensee, identified finding that deals with package preparation, use and maintenance. It includes a noncompliance with a CoC specification(s) or condition(s) for a transportation package/cask. The following is a list of all the decision blocks contained in the COC SDP flowchart for Transportation & Part 61.

## **PUBLIC RADIATION SAFETY CORNERSTONE DRAFT REVISED SDP GUIDANCE**

### **DRAFT**

What would and would not be a finding in the Radioactive Material Control portion of the SDP?

A contaminated item (i.e., tool, equipment, clothes, etc., but not a person) that gets out of a radiation controlled area (RCA), as long as there is a final radiation survey point (portal monitor at the guard house) that the item has to go through prior to being "free to go anywhere", is still considered to be under the control of the licensee. This type of situation would typically not be a finding because the final radiation portal has an opportunity to detect the item and prevent its free release. The licensee should be given credit for the final radiation survey. However, if the item could get out of the protected area without a radiation survey (no portal monitor or carried out in a box on a truck) or the portal is not sensitive to the item, then the item is available to enter the unrestricted area and any member of the public can be exposed to it. This would be a finding and count as an occurrence.

However, because a contaminated item got out of the RCA probably represents a non-compliance with a plant procedure, there can be two potential outcomes. For low levels of contamination, it can be a minor issue and resolved through the licensee's corrective action program. For high levels of contamination that may represent a potential risk to non-occupationally classified plant workers (i.e., member of the public), the issue should be assessed as more than minor and evaluated by the SDP.

In summary, if the licensee caught the contaminated item in their own controlled area and there was a final radiation survey point that could detect it, and there was low risk to non-occupationally classified plant workers, then it should not be a finding. But, if there is no final radiation survey point or the radiation portal monitor was not sensitive to the contaminated item, or there was risk to non-occupationally classified plant workers, then it is a finding that should be run through the SDP, and counted as an occurrence.

To determine the number of occurrences, it is not simply the number of items that were found. The number of occurrences needs to be related to the "root cause" for the loss of control over the items. For example, a technician performing inadequate radiation surveys in which 20 contaminated items were released to the unrestricted area during one work shift; this should be counted as one occurrence with multiple examples. However, if there are a number of different root causes or one that was repetitive over time (i.e., different work shifts) that allowed multiple contaminated items to be released, then the number of occurrences should be based on the number of separate occurrences.

**DRAFT**

Note: Revised portion of FAQ 131 is in *italics*.

### 130

**Question:**

For high radiation areas (>1 rem) where a flashing light is used as a TS required control, is it considered an occurrence under the Occupational Exposure high radiation area reporting element as failure of administrative controls if it is discovered that the flashing light has failed some time after the control was implemented? Failure of the light could be due to loss of its power source (dead battery or external power loss), mechanical failure (light bulb), etc.

**Response:**

No, The PI is intended to capture radiation safety program failures, not isolated equipment failures. The answer presumes that the controls (i.e., lights, batteries, etc.) are subject to a reasonable preventative maintenance and replacement schedule, the occurrence was isolated, and was corrected in a timely manner. However, if the light had been secured (removed, unplugged, etc.) in an unauthorized manner, without the approval of the HP management and the implementation of compensatory 10 CFR Part 20 controls, then this program failure would be a PI hit.

### 131

**Question:**

This question refers to radiography work performed at a plant under another licensee's 10 CFR Part 34 license. If there is an occurrence associated with the radiography work involving loss of control of a very high radiation area or unintended dose, does this count under the occupational radiation safety performance indicator (PI)?

**Response:**

No. Generally, radiography work conducted at a plant under another licensee's 10 CFR Part 34 license is outside the scope of the PI. Responsibility for barriers, dose control, etc., resides with the Part 34 licensee. The reactor regulatory oversight PIs apply to Part 50 licensee activities. However, if an individual (Part 50 licensee employee) violates any Part 50 licensee's radiation protection program requirements concerning radiography activities, it would be a PI hit if the violation (barrier failure) results in an unintended exposure greater than 100 mrem TEDE (or other equivalent PI dose value, e.g., 10% of SDE to the skin). For example, a licensee establishes a RWP for entry into the barricaded high radiation area associated with

radiography work. A licensee employee, or visitor, fails to comply with one or more of the RWP requirement, enters such an area, and gets a 100 mrem DDE unintended exposure.

*Although not required by the regulations, power plant licensees can help increase worker safety by augmenting the radiographer's controls. Lessons learned from previous radiography incidents at nuclear power plants clearly point to the enhanced safety value of Part 50 licensee continuing these voluntary, added controls during radiography operations. While providing this oversight increases the risk of a PI hit, NRC believes the real-time benefit to workers' safety far outweighs that low probability PI risk. See NRC Information Notice 85-43, "RADIOGRAPHY EVENTS AT POWER REACTORS" for further information.*

## Draft for Discussion

Occupational Exposure Control Effectiveness Performance Indicator (PI)  
Frequently Asked Question (FAQ) on "*comparable requirements in 10 CFR 20  
applicable to technical specification high radiation area (>1 rem per hour).*"

Question: A Technical Specification High Radiation Area Performance Indicator occurrence is defined as a nonconformance with technical specifications and "comparable requirements in 10 CFR 20 applicable to high radiation areas (>1 rem per hour)" that results in the loss of radiological control. What are the "comparable requirements" in 10 CFR 20 applicable to these high radiation areas?

Answer: The comparable requirements in 10 CFR 20 applicable to technical specification high radiation areas (>1 rem per hour) are found in 10 CFR 20, §20.1601, "*Control of access to high radiation areas.*" Subparagraphs §20.1601(a), (b), (c), and (d) apply.

## Draft for Discussion

Occupational Exposure Control Effectiveness Performance Indicator (PI)  
Frequently Asked Question (FAQ) on “concurrent” occurrences.

Question: Because of a breakdown in communications between the radwaste and health physics groups, a post-job survey was not performed following completion of a resin sluicing evolution in which resin was transferred to a tank within a room posted as a Radiation Area. Dose rate levels determined from a survey performed prior to the resin sluicing evolution were 20-40 mrem per hour at 30 cm from the the tank. On the day following the resin sluicing evolution, two operators entered the tank room to inspect equipment. After the operators entered the room, their electronic dosimeters alarmed, whereupon they exited the room and notified health physics about the situation. A health physics technician was dispatched and performed a survey of the tank room that indicated dose rate levels of 2,000 mrem per hour at 30 cm from the tank. The health physics technician secured the room and posted it as a High Radiation Area. How many occurrences does this situation represent with regard to the occupational exposure effectiveness PI?

Answer: This situation represents one occurrence due to the failure to survey the tank room following the resin sluicing operation that would have indicated that the tank room was a technical specification high radiation area (> 1,000 mrem per hour). The subsequent failure to post and control access to the area, including the access to the area by the operators on the following day, are “concurrent” with the initial cause of the occurrence, i.e., the failure to survey, and therefore are not counted as separate occurrences.

## Draft for Discussion

Occupational Exposure Control Effectiveness Performance Indicator (PI)  
Frequently Asked Question (FAQ) on “determined circumvention of a physical barrier.”

Question: A physical barrier was erected to conform with the plant’s technical specification on high radiation areas and prevent access to an area where dose rates were in excess of 1 rem per hour. Specifically, a barrier (6-foot high “snow fence”) was erected in a manner in which it could not be passed without the use of tools to create a pathway for entry. After it was erected, the barrier was checked by a health physics technician to verify that it was intact. A check of the barrier several hours later showed that a portion of the barrier was no longer intact, in that the fence was still physically present but tie wraps holding the fence to immovable structures had been cut across a portion of the bottom of the barrier, thus creating a pathway by which one could crawl under the fence. Maintenance workers who had been in the area during the interim period had been instructed to avoid any tampering with the barrier. A follow-up investigation determined that a maintenance worker had cut the tie wraps to enable him to shift the fence to perform his work more easily. Is this a PI occurrence?

Answer: No, this is not considered a PI occurrence because it does not represent a breakdown in the radiation protection program within the scope of the PI. This type of situation goes beyond the intent of the regulatory requirements and technical specifications governing high radiation areas. This is discussed in NRC Regulatory Guide 8.38, Control of Access to High and Very High Radiation Areas of Nuclear Plants, which provides the following guidance:

“Physical barriers (such as chain-link fencing or fabricated walls) may be used to prevent unauthorized personnel access to high and very high radiation areas. Physical barriers surrounding high radiation areas should be sufficient to prevent inadvertent entry (e.g., a 2-meter [6-foot] fence, with worker training and signs or procedures to deter climbing, may be adequate for controlling access to a high radiation area). Physical barriers should, to the extent practicable, completely enclose very high radiation areas sufficient to thwart<sup>(1)</sup> undetected circumvention of the barrier (i.e., fencing around very high radiation areas should extend to the overhead and preclude anyone from climbing over the fencing)...

Footnote:

1. Determined circumvention of a physical barrier, with wire cutters or other tools, cannot be prevented absolutely. Such instances should be addressed with appropriate disciplinary action.”