

## OELG Event Categories

The table below outlines a proposed set of event categories. These have been developed from the MOD event categories and those used previously by the OELG. The aim of the work has been to simplify the list of event categories and ensure they focus on events rather than the causes of events. An outline of what is included under each event category is included after the table.

<b>Categories</b>	
<b>1. Radiological</b>	
1.1	Radioactive contamination of a person or persons.
1.2	Unintentional release of radioactive material.
1.3	Unplanned or unexpected increase in radiation dose rates.
1.4	Radiation dose control not As Low as Reasonably Practicable (ALARP).
1.5	Containment Event.
1.6	Nuclear fuel Event.
1.7	Control of radioactive substances.
1.8	Loose article control.
<b>2. Operations</b>	
2.1	Fire, explosion or other serious Event.
2.2	Uncontrolled reactivity addition or unexpected plant dynamic behaviour.
2.3	Mechanical plant Event.
2.4	Electrical plant Event.
2.5	Violation of, or errors with, Authorised Operating Documentation.
2.6	Complex planned plant operations.
<b>3. Integrity of Plant</b>	
3.1	Any primary plant alarm
3.2	Violation of a Plant Operating Zone boundary.
3.3	Primary or secondary chemistry out of specification.
3.4	Chemical contamination of primary system surfaces.
3.5	Foreign body inside the primary fluid system boundary.
3.6	Degradation of Plant protection systems.
3.7	Mechanical damage to the Plant and associated systems.
<b>4. Plant Control, Indication and Protection</b>	
4.1	Unplanned Plant shutdown.
4.2	Violation of the control rod programme.
4.3	Plant Power measurement errors.
<b>5. Maintenance, Repair and Reliability</b>	
5.1	Violation of a Nuclear Procedure or Test Document.
5.2	Errors or violations in the control of nuclear work.
5.3	Equipment failure or defect.
<b>6. Support Facilities</b>	
6.1	Shortfalls in external support services.
6.2	External environmental Event.
6.3	Any support equipment Event.
6.4*	Security Event.
6.5*	Failure in Quality Control.
6.6*	Transport Event.
6.7	Emergency Arrangements.
<b>7. Build, Upkeep and Disposal</b>	
7.1	Build, Upkeep or Disposal Event not covered by any other heading.

<b>8. Conventional Health and Safety Event</b>	
8.1	Minor slips, trips and falls.
8.2	Exposed to an explosion or fire.
8.3	Exposed to, or in contact with, a harmful substance.
8.4	Contact with electricity or an electrical discharge.
8.5	Contact with moving machinery or material being machined.
8.6	Entrapment.
8.7	Drowning or asphyxiation.
8.8	Fall from height.
8.9	Hit by an object moving, flying, falling, fixed or stationary.
8.10	Injured by an animal.
8.11	Injured while handling, lifting or carrying.
8.12	Physically assaulted by a person.
<b>9. Environmental Event</b>	
9.1	Breach of Environmental Permission.
9.2	Breach of waste management requirements.
9.3	Impact on protective and historical sites.
9.4	Impact on protective species and habitats.
9.5	Nuisance - Dust, Noise, Odour, Vibration, Visual Impact.
9.6	Pollution - Air, Land, Water, Sewage System.
9.7	Spillage.
<b>10. Catch-All</b>	
10.1	Required by the Licensee or Operating Documentation, not being covered by any other heading.
10.2	An opportunity to feedback LfE to other Plant operators or authorities.
10.3	Human error or violation in operation, maintenance or repair.
10.4	Any other Event.

## 1. Radiological

### 1.1 Radioactive contamination of a person or persons.

Skin contamination by a radioactive substance.

### 1.2 Unintentional release of radioactive material.

Events where radioactive material is spilled, leaked, discharged or released to the environment either unintentionally or in excess of authorised limits for a planned discharge, but does not lead to contamination of a person or persons. In this context, the environment means external to the intended containment or catchment for that radioactive material. It also includes discharges from primary coolant systems that are tested to be inactive.

### 1.3 Unplanned or unexpected increase in radiation dose rates.

Any unplanned or unexpected increase in the radiation dose rates to staff or members of the public.

### 1.4 Radiation dose control not As Low As Reasonably Practicable (ALARP).

Any occasion when it is assessed that the ALARP principle has not been applied to radiation dose control or any dose limit for classified and non-classified radiation workers is exceeded.

### 1.5 Containment Event.

Errors, violations or defects that have an impact upon either the primary or secondary containment boundary or challenge the operators' ability to comply with the rules for containment state.

### 1.6 Nuclear Fuel Event.

Errors or violations during the carriage or handling of nuclear fuel. This requirement does not distinguish between used or unused fuel.

### 1.7 Control of radioactive substances

Errors or violations in the control of radioactive substances.

### 1.8 Loose article control

Errors or violations in the control of loose articles in a safety critical area of the plant.

## **2. Operations**

### 2.1 Fire, explosion or other serious Event.

A fire, explosion or other serious Event that has or could have compromised the safe operation or integrity of the plant.

### 2.2 Uncontrolled reactivity addition or unexpected plant dynamic behaviour.

Any uncontrolled reactivity addition or unexpected plant dynamic behaviour.

### 2.3 Mechanical plant Event.

This includes abnormal mechanical plant Events such as:

- a. Abnormal flow operation.
- b. Prolonged operation with a reduced secondary system.
- c. Unauthorised coolant pump combination.
- d. Any other abnormal mechanical plant configuration that might reduce the integrity or safe operation of the plant.

This does not include short standalone periods with degraded secondary systems and abnormal secondary plant operation with no direct effect on the plant.

### 2.4 Electrical plant Event.

This includes operation in any abnormal or unauthorised configuration of the main electrical distribution system except for:

- a. Operation in line with normal maintenance requirements.
- b. Operation following a plant failure or alarm which leads to an abnormal but safe system line up.
- c. Critical and shutdown electrical plant Events, including external supply Events.

Some discretion is necessary to avoid the reporting of relatively minor electrical distribution system defects and anomalies. An assessment of the risk presented to the plant should be made; for example the loss of a non safety essential breaker probably does not warrant reporting whilst a defect with an important load centre or coolant pump breaker might.

### 2.5 Violation of, or errors with, authorised operating documentation.

Violation of, or errors with authorised operating documentation that present an increased risk to the safe operation of the plant. Authorised documentation includes:

- a. Standard Operating Procedures (SOPs).
- b. Plant publications.

c. Maintenance documentation.

Examples of violations or errors warranting a report include:

- a. Errors in conduct of primary plant evolutions (warm up, cooldown, valve movements etc).
- b. Omissions in the conduct of safety checks.
- c. Missed or late plant tests.
- d. Errors or omissions in the conduct of primary plant and chemistry routines.

#### 2.6 Complex planned plant evolutions.

Any complex plant evolution that could serve to educate and inform other plant operators.

### **3. Integrity of Plant**

#### 3.1 Any primary plant alarm.

The triggering of any primary plant alarm.

#### 3.2 Violation of a Plant Operating Zone boundary.

Any event that violates the plant operating zone boundary.

#### 3.3 Primary or secondary chemistry out of specification, where:

- a. Cause is not known, is unexpected or is resultant from a defect; the attempt to restore chemistry within limits requires changes or limitations to plant operation.
- b. The period out of specification is prolonged.

#### 3.4 Chemical contamination of primary system surfaces.

Any contamination of the primary systems surfaces that affects the operation of the primary system.

#### 3.5 Foreign body inside the primary fluid system boundary.

Any foreign body inside the primary fluid system boundary.

#### 3.6 Degradation of Plant protection systems.

Any Event that inadvertently reduces the integrity or responsibility of Plant automatic or manual protection systems and places the plant, its operators and the public at greater risk due to the inability of safety systems to work as they are intended.

#### 3.7 Mechanical damage to the Plant and associated systems.

Any mechanical damage to the Plant and its associated systems that affects their operation.

### **4. Plant Control, Indication and Protection**

#### 4.1 Unplanned Plant shutdown.

All shutdowns except those carried out as part of a normal shutdown or for planned training. This includes rod control failures, manually initiated partial and full shutdowns conducted as part of immediate action and any shutdowns resultant from equipment defect or operator error.

#### 4.2 Violation of the control rod programme.

Non-authorized deviation from the planned programme.

#### 4.3 Plant Power measurement errors.

Errors in the conduct of Plant Power measurements that have or could have led to incorrect detector channel re-alignment.

## **5. Maintenance, Repair and Reliability**

### 5.1 Violation of a Nuclear Procedure or Test Document.

This reporting requirement overlaps with 2.5 (operating documentation) but is listed to capture Nuclear Procedure errors and violations in construction, maintenance and repair of the Plant.

### 5.2 Errors or violations in the control or conduct of nuclear work.

Includes all problems related with the control or conduct of Nuclear Safety Significant or Implicated work that are not a specific procedural violation. Examples include:

- a. Work without authorised documentation.
- b. Incorrect or unclear documentation.
- c. Problems experienced in the conduct of nuclear work, through human error or other means.
- d. Missed safety critical maintenance.
- e. Authorised documentation includes Nuclear Procedures, Test Procedures, Nuclear Logic and possibly other forms of test, trials and repair documentation.

### 5.3 Equipment failure or defect.

Any plant equipment failure or defect that is considered to compromise the safe operation or reliability of the plant.

## **6. Support Facilities**

### 6.1 Shortfalls in external support services.

Reduced confidence in or threat to external services to the plant, e.g. repeated loss of external electrical supply or cooling water supplies or cascade failure of primary / alternative then standby supplies. This category also includes operation of external support facilities outside the parameters of the approved Site Safety Justification.

### 6.2 External Environmental Event.

Any environmental Event that impacts on the safe operation of the plant, for example: flooding, Tsunami, high winds, drought etc.

### 6.3 Any support equipment Event.

Such as dropped load or crane and fork lift truck Events that have affected, or have the potential to affect, nuclear safety.

### 6.4 Security Event

Any Event that affects the security of the plant or its workers including:

- a Physical breach - unauthorised entry into a controlled area.
- b Information breach - loss of or unauthorised access to official material including laptops.
- c Personal security event – theft from a member of staff.

## 6.5 Failure in Quality Control.

Any quality Event including:

- a. Documentation – quality issues with documentation
- b. Data - quality issues with data used in reports and/or calculations
- c. Production – quality issues with equipment or materials used.

## 6.6 Transport Event.

Any transport Event including road traffic accidents with or without the transport of nuclear material.

## 6.7 Emergency Arrangements

Any failings in the emergency arrangements that affect the integrity of the plant and/or the safety of workers or the public.

## **7. Build, Upkeep and Disposal**

### 7.1 Build, Upkeep or Disposal Event.

Any Event in the Build, Upkeep or Disposal life cycle phases of the plant that may have safety implications for the operation of the plant or that undermines the design, manufacture, assembly or commissioning standards of the plant.

## **8. Conventional Health and Safety Event**

### 8.1 Minor slips, trips and falls

Any slip, trip or fall that results in a minor injury or near miss.

### 8.2 Exposed to an explosion or fire

Any uncontrolled or unexpected exposure of a member of staff or the public to an explosion or fire.

### 8.3 Exposed to, or in contact with, a harmful substance

Any uncontrolled or unexpected exposure of a member of staff or the public to a harmful substance.

### 8.4 Contact with electricity or an electrical discharge

Any uncontrolled or unexpected contact with electricity or an electrical discharge.

### 8.5 Contact with moving machinery or material being machined

Any uncontrolled or unexpected contact with moving machinery or material being machined

### 8.6 Entrapment

Any entrapment of a person.

### 8.7 Drowning or asphyxiation

Drowning or asphyxiation from liquids or gases.

### 8.8 Fall from height

Any fall from height.

### 8.9 Hit by an object moving, flying, falling, fixed or stationary

Any event that results in someone being hit by an object which is moving, flying, falling, fixed or stationary.

### 8.10 Injured by an animal

Any injury caused by an interaction with an animal.

8.11 Injured while handling, lifting or carrying

Any injury caused while handling, lifting or carrying an object.

8.12 Physically assaulted by a person

Any physical assault.

**9. Environmental Event**

9.1 Breach of Environmental Permission

Any breach of Environmental Permission associated with operating a site.

9.2 Breach of waste management requirements

Any breach of waste management requirements associated with operating a site.

9.3 Impact on protective and historical sites

Any event that results in an impact on protective and historical sites.

9.4 Impact on protective species and habitats

Any event that results in an impact on protective species and habitats.

9.5 Nuisance - Dust, Noise, Odour, Vibration, Visual Impact

Any event that results in a dust, noise, odour, vibration and/or visual impact that causes a nuisance to those working on or living around the site.

9.6 Pollution - Air, Land, Water, Sewage System

Any event that results in pollution to the air, land, water and/or sewage system.

9.7 Spillage

Any spillage of materials that requires remedial actions.

**10. Catch-All**

10.1 Required by the Licensee or Operating Documentation.

An Event not specifically listed in which a report is called for by the Licensee or by the Operating Documentation organisation.

10.2 An opportunity for feedback to other nuclear plant operators or authorities.

Any Event not specifically listed which may provide valuable feedback to other nuclear plant operators or nuclear plant support authorities.

10.3 Human error or violation in operation, maintenance or repair.

Events where it is considered that human factors (error, violation, poor judgement etc.) have played a significant part in the Event cause. Restrict use to Events where it is assessed that human factors are a significant contributor and the organisation should be addressing issues such as training, supervision, manning levels, program pressure, fatigue management and work-life balance to avoid recurrence.

#### 10.4 Any other Event.

An Event not specifically listed that is considered to meet the requirements of the plant reporting system:

- a. To monitor any challenges to the maintenance of the plant Safety Justification.
- b. To monitor lapses in the company's nuclear plant operator performance.
- c. To monitor lapses in the company's radiation safety performance.
- d. To monitor any reduction in standards of nuclear support facilities to the plant.
- e. To provide OEF.
- f. To promote a positive Nuclear Safety culture.
- g. To inform failure studies and influence future plant design.
- h. To ensure timely Ministerial notification when required.
- i. To provide a corporate memory of plant Events and Near Misses.