



Lusail Real Estate Development Company

Health, Safety, Security, Environment, Logistics & Quality Department

Lusail Operation Safety Procedural Forms/Checklists – People, Environment, Equipment, Procedures, Organisation (PEEPO) – Data Collection

Document No LUS-HSE-WG3-446-066.00 Rev 0

Uncontrolled Copy Controlled Copy Date 17-Nov-2015

COMPANY PROPRIETARY INFORMATION

Prior to use, ensure this document is the most recent revision by checking the Master Document List. To request a change, submit a Document Change Request to the Document Control Representative. Master copy of this document will be maintained by the LREDC QA/QC Manager. Not controlled if printed.

Introduction

The investigation team must gather as many relevant facts as possible so as to understand the incident and the events leading up to it,

For each and the below 5 data categories, the team should identify all conditions, actions or deficiencies, which may have been contributing factors to the incident.

Data Category		Collection Methods
P	People Witnesses Associated people	Interview Written Statements Observations
E	Environment Weather Workplace Incident Scene	Observation / Review Inspection / Photography Event Reconstruction**
E	Equipment Vehicles, plant, tools infrastructure, etc.	Inspection Testing Operation
P	Procedures Existing maps, charts, documents, reports and photographs etc.	Review / Comparison
O	Organisation	Review / Comparison

To ensure that all the facts are uncovered, ask the following questions for each category:

Who?, What?, When?, Where?, Why?, and How?

For most of these questions, an important follow-up question is:

If not, why not?

Make note of the below table:

To aid in the prevention of recurrence, investigations must provide data from incidents to determine:
Who did what, when, where, how and why?
What specific behaviour increased the likelihood of an undesired outcome?
What specific behaviour mitigated or prevented the undesired outcome?
What behaviour is preferred within the operational context?
How can the preferred behaviour be achieved?

1. People

Review personnel records (work history, training records, time sheets, pre-employment medical records, workers compensations records, etc.) as required. Try to identify all the people who might have information about the Event and get statements from them as soon as possible. Interview people individually away from distractions. If possible interview them at the scene of the Event to confirm at the scene information.

Item	Detail	Comment
Records	Personnel, medical, training and incident history records.	
Roster	Time sheets, shift rosters and work cycles.	
History	Previous 72 hour history of key personnel involved.	

Item	Detail	Comment
Psychology	Assessment of personality, safety attitude, motivation, conflict, stress, external influences, i.e. social and domestic pressures.	
Physiology	Assessment of physical and mental stage prior to the incident including fatigue, substance abuse, physical stress, illness or impairments, environmental discomfort, age, physical condition.	
Ability	Assessment of training, experience and competence for the task.	
Supervision	Levels and quality of supervision.	
Alertness	Assessment of situational and hazard awareness.	
Supervision	Levels and quality of supervision.	
Alertness	Assessment of situational and hazard awareness.	
Communication	Assessment of communication adequacy and effectiveness	
Teamwork	Assessment of teamwork, workload sharing and coordination of effort.	

Ask the interviewees:

- To fully describe work in progress and conditions leading up to the Event.
- To fully describe the Event sequence – start to finish.
- If they noticed anything unusual prior to Event (sights, sounds, smells).
- What was your role in the Event sequence?
- What conditions influenced the Event (weather, time of day, equipment, etc.).
- How did people influence the Event (actions, inactions, etc.).
- What do you think caused the Event?
- How do you think the Event could have been prevented?
- List other possible witnesses.
- Any additional comments/observations

It is important to determine:

- Were those involved in the Event experienced in the task?
- Had they been adequately trained?
- Are they physically capable of conducting the task?
- What was the status of their health?
- Was fatigue a factor?
- Were they under stress or time pressures (work or personal)?

2. Environment

Examine the scene of the Event for information and to help understand the nature of the task being conducted and the local environmental conditions. The physical environment, especially sudden changes to that environment are factors that may need to be identified. The situation at the time of the Event is important, not what the "usual" conditions were.

Item	Detail	Comment
Illumination	Too much or too little light that was a negative influence on vision.	
Precipitation	Climatic precipitation that has a negative influence on human or equipment performance. This includes condensation, fog, frost, hail, ice, mist, rain, sleet or snow.	
Contaminants	Natural or man-made elements that render material or the environment unsatisfactory for human or equipment use and have a negative influence on performance. These include carbon, dioxide, carbon monoxide, chemicals, dust, foreign objects, debris, fumes, gases, impurities, mists, smog, smoke, toxic materials, or vapours.	
Noise	Unwanted sound that produces hearing loss, disturbs/distracts attention from the task at hand, or interferes with communication.	
Temperature/ humidity	Extremes of heat, cold, and humidity that have a negative influence on human or equipment performance.	
Wind/ turbulence	Natural or man-made air movement that has a negative influence on human or equipment performance.	
Vibration	Repeated/periodic motions that have a negative influence on human or equipment performance.	
Acceleration/ deceleration	Forces experienced by personnel/equipment due to rate of change of velocity.	
Radiation	Radiant energy emitted in waves or particles that have a negative influence on human or equipment performance. This includes alpha radiation, beta radiation, gamma radiation, ionising, laser, maser, neutron radiation, non-ionising, radio waves, sunlight, ultraviolet, or X radiation.	
Work surface/ space	Conditions (excluding precipitation) of natural or man-made work surfaces on which personnel and equipment operate that have a negative influence on performance. This includes holes, inclines, rocky, rough, rutted, slippery, steep, or uneven wave action.	
Electricity	Natural or man-made electrical current that has a negative influence on human or equipment performance. This includes burn out, electrocution, discharge, earth faults, lightning, shock, short or static.	
Air pressure	Sudden or gradual changes in air pressure that have a negative influence on human or equipment performance. This includes altitude, bends, blast, chokes, decompression, explosion, or hypoxia.	

Item	Detail	Comment
Wildlife	The actions or presence of animals that injure personnel cause personnel to make errors, damage equipment, or cause equipment to malfunction.	

It is important to determine:

- What were the weather conditions?
- Was housekeeping a problem?
- Was it too hot or too cold?
- Was noise a problem?
- Was there adequate light?
- Were toxic or hazardous gases, dusts, or fumes present?

3. Equipment

Examine any equipment that may have been involved in the Event looking at the condition of equipment, anything that may have changed or be out of the ordinary e.g. abnormal stress, modifications, substitutions, distortions, fractures etc. Identify any design flaws, mismatched components or confusing labelling or marking. Ensure that the equipment was appropriate for the task being conducted.

Item	Detail	Comment
Design	The design of the equipment should be adequate to meet the requirements and operational conditions under which they were being used.	
Construction	The equipment should be constructed to specifications within the design standard.	
Testing	The equipment should be tested to ensure that it meets the design standard and construction specifications.	
Inspection	There should be an inspection procedure of monitoring the status of the equipment on initial delivery, periodically throughout its life, at critical times before, during and after operation.	
Modification	Equipment modifications should be carried out by controlled procedure to ensure performance, safety and reliability are not adversely affected. Modifications should also account for changes to maintenance procedures, inspection procedures, operating procedures, ergonomics and man-machine interface.	

It is important to determine:

- Was there an equipment failure?
- What caused it to fail?
- Was the machinery poorly designed?
- Were hazardous substances involved?
- Were they clearly identified?
- Was a less hazardous substance possible and available?

- Was the raw material substandard in some way?
- Should PPE have been used?
- Was the PPE used?

4. Procedures

The Detail of data collection. Review the task that was being conducted. Examine the work procedures and the scheduling of the work to ascertain whether they contributed to the Event. Examine the availability, suitability, use and supervisory requirements of standard operating procedures or work instructions.

Item	Detail	Comment
Utilisation	The documented procedures should be used for conducting the operation in a correct, safe and efficient manner.	
Content	The documented procedures should be adequate for the scope of the work to be conducted. The procedure should cover all tasks, contain emergency provisions, cover exemptions where the entire procedure does not apply.	
Criteria	The procedures should contain the necessary information, in a user friendly language. The format should successfully link people and equipment to provide a risk minimised or risk eliminated operation.	
Validated	The procedures should be reviewed, checked and tested by qualified people to ensure that the personnel that use the procedure can carry out the operation correctly, safely and efficiently.	
Control	The procedure should have a method of revision control to ensure only currently procedures are in use.	

It is important to determine:

- Was a work procedure used?
- Were written procedures available?
- Was a JHA (JSA) conducted prior to the task?
- Had conditions changed to make the normal procedure unsafe?
- Were the appropriate tools and materials available?
- Were they used?
- Was isolation (lockout) used when necessary?
- Were safety devices working properly?

5. Organisation

Management holds the legal responsibility for the safety of the workplace and the workforce. The role of supervisors and management must always be considered in an Event investigation.

Item	Detail	Comment
Organisational culture	The organisation should have a systemic approach to safety. There should be evidence of management leadership and commitment to setting high standards of safety, quality and productivity performance. Measurable factors include: people management, provision and quality of tools and equipment, commercial and operational pressures, planning, maintenance of facilities and equipment, communication.	
Training programme	The organisation should have a structured training programme for the provision and consolidation of technical skills, safety awareness and safety knowledge. The effectiveness of training should be measurable.	
Visible support	The organisation should demonstrate support for the work site operational staff including provision of adequate manning levels, suitable equipment and material and adequate facilities and services.	
Operational feedback processes	The organisation should have a formal and effective operational feedback system for system monitoring and improvement.	

It is important to determine:

- Were safety rules communicated /understood by all employees?
- Were they being enforced?
- Was there adequate supervision?
- Were workers trained to do the work? When? Is it still valid?
- Had hazards been previously identified?
- Had procedures been developed to overcome them?
- Were unsafe conditions corrected?
- Was regular maintenance of equipment carried out?
- Were regular safety inspections carried out?
- Were there any changes to equipment, environment, people or procedures?