



Sakhalin Energy Investment Company Ltd. Controlled Document

Sakhalin Energy Assets							
Asset	Origin	Module	Discipline	Doc Type	Doc No.	Sheet No.	Language
Document Number:	1000	S	90	04	O	0184 00	E
<p>Title:</p> <p style="text-align: center;">DROPPED OBJECTS PREVENTION STANDARD</p> <p style="text-align: center;">СТАНДАРТ ПО ПРЕДОТВРАЩЕНИЮ ПАДЕНИЯ ПРЕДМЕТОВ</p>							
Custodian: Jan Brouwer, Corporate Safety Manager				Classification: Unclassified			
Revision	Issue Purpose	Signed by		Signatures	Date		
01	AFU - Approved For Use	Originator: Anastasia Shenina, Safety Engineer (Sakhalin Energy)			16.12.15		
		Checker: Stephanie Lock, HSE General Manager (Sakhalin Energy)			16.12.15		
		Approver (Sakhalin Energy): Ruslan Obekov, Technical Director			18-12-15		
		Technical Assurance (Sakhalin Energy): N/A					

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DROPPED OBJECTS PREVENTION STANDARD

REV. 01

DOCUMENT REVISIONS HISTORY

Rev.	Location of Change	Brief Description of Change
01	Whole document	Document supersedes 0000-S-90-04-O-0025-00 (due transferring from corporate to departmental level) Annual review to reflect changes since 2013 revision.
01	Section 1.3 Definitions and abbreviations Section 2 item 4 Section 2 items 8.d, 8.e Section 2 item 24 Section 4 item 8 "References" Appendix 2	Securing methods definitions were widen. Secondary or Safety Securing Method definition added. Additional DROPS Calculator functions added. The list of restricted equipment is expanded. Due to the nature of Drilling Operations, prohibited areas for rig floors are defined by Shell Dropped Object Prevention Manual (WS.38.80.00.15-Gen.) , with implementation of clear No-Go and Red Zone's requirements. Reference to DROPS Reliable Securing Booklet Revision 03 added. Risk assessment for potential consequences when object dropped from vertical to a horizontal position from ground to ground level (where DROPS calculator are not applicable) info added.



TABLE OF CONTENTS

DOCUMENT REVISIONS HISTORY..... 2

1 INTRODUCTION 4

1.1 PURPOSE 4

1.2 SCOPE 4

1.3 DEFINITIONS AND ABBREVIATIONS..... 4

2 STANDARD REQUIREMENTS 5

2.1 COMPANY CORPORATE SAFETY MANAGER IS ACCOUNTABLE FOR REQUIREMENTS 1 TO 5: 5

2.2 ASSET MANAGERS AND FUNCTIONAL MANAGERS ARE ACCOUNTABLE AND SITE LEADS AND CONTRACT HOLDERS ARE RESPONSIBLE FOR REQUIREMENTS 6 TO 17 IN THEIR OWN ORGANIZATION: 5

2.3 ASSET OR FUNCTIONAL HSE MANAGERS AND DROPS LEADS ARE RESPONSIBLE FOR REQUIREMENTS 18 TO 20 IN THEIR OWN ORGANIZATION:..... 6

2.4 PERFORMING AUTHORITIES ARE RESPONSIBLE FOR REQUIREMENTS 21 TO 23 IN THEIR OWN ORGANIZATION: 7

2.5 EMPLOYEES ARE RESPONSIBLE FOR REQUIREMENTS 24 TO 27: 7

3 PERFORMANCE MANAGEMENT 8

4 REFERENCES 9

APPENDIX 1 DROPPED OBJECTS PREVENTION COMMITTEE TERMS OF REFERENCE10

APPENDIX 2 DROPS CALCULATOR AND DROPPED OBJECTS RISK ASSESSMENT..... 11

APPENDIX 3 EXAMPLE OF INSPECTION CHECKLIST 13

APPENDIX 4 DROPPED OBJECTS AWARENESS TRAINING SPECIFICATION..... 14



1 INTRODUCTION

1.1 PURPOSE

Dropped objects have accounted for many potential and actual fatalities, injuries, asset damage and loss containment in the oil & gas industry.

Sakhalin Energy Investment Company (hereinafter referred to as Company) conducts a number of activities with high potential for dropped objects including lifting, working at height, transportation, drilling and other activities in restricted spaces around and below objects and equipment stacked, stored and fastened at height. The climate in the region presents additional hazard due to heavy winds, snow and icicles formation.

This standard specifies the requirements for the prevention of dropped objects and mitigation of the consequences if they occur.

Who is this for?

- *Managers and Supervisors;*
- *Employees and (Sub)contractors (hereinafter referred to as Employees);*
- *HSE specialists.*

1.2 SCOPE

This document applies to all Sakhalin Energy Assets, Facilities, Operations, Projects and Activities, including activities undertaken by (Sub) Contractors on behalf of the Company.

Drilling and well service contractors shall adhere to Shell Dropped Object Prevention Manual (WS.38.80.00.15-Gen.) in addition to this Standard.

1.3 DEFINITIONS AND ABBREVIATIONS

- **Shall** – indicates a mandatory course of action.
- **Should** – indicates a preferred course of action.
- **Incident** – an unplanned event or a sequence of events that leads or may lead to an injury, illness, damage to property, environment or the Company's reputation.
- **A dropped object** is any item that falls from its previous position.
 - **Static dropped object** – any object that falls from its previous position under its own weight due to the force of gravity.
 - **Dynamic dropped object** – any object that falls from its previous position due to applied force from collisions, excessive vibration, wind, etc.
- **DROPS** – Dropped Objects Prevention Scheme, the commonly used name for the overall initiative.
- **DROPS Lead** – a subject matter expert at individual asset responsible for standard implementation.
- **Primary Securing Method** – principal method by which an item is installed, mounted and secured to prevent the item falling, e.g. bolted connections, screws, pins, buckles, clips, welds etc.
- **Secondary Retention** – the engineered method for securing the primary securing to prevent loss of clamping force or displacement of fastening components, e.g. locking washers, locking wire, split pins etc.
- **Secondary or Safety Securing Method** – an additional engineered method applied to or around the item and secured back to the main structure, designed to restrain the item should the primary fixing fail, e.g. rated steel or synthetic nets, baskets, wires, slings etc.



2 STANDARD REQUIREMENTS

2.1 COMPANY CORPORATE SAFETY MANAGER IS ACCOUNTABLE FOR REQUIREMENTS 1 TO 5:

1. Corporate Safety Manager shall act as a dropped objects focal point and coach management and supervision to ensure all personnel are aware of the Dropped Object Prevention Standard and how it affects their activities.
2. The Sakhalin Energy Dropped Object Prevention Committee (Appendix 1) should meet regularly to discuss issues related to dropped objects prevention.
3. DROPS Train the Trainer Seminars should be conducted regularly to ensure that all assets have trained personnel to be appointed as DROPS Leads.
4. The DROPS Calculator and other tools (Appendix 2) shall be used to determine the potential severity of a dropped object and employed where appropriate in conjunction with the Risk Assessment Matrix.
5. Dropped object safety alerts, awareness posters, DROPS Calculators, information about reliable securing and other best practices should be made available for all employees.

2.2 ASSET MANAGERS AND FUNCTIONAL MANAGERS ARE ACCOUNTABLE AND SITE LEADS AND CONTRACT HOLDERS ARE RESPONSIBLE FOR REQUIREMENTS 6 TO 17 IN THEIR OWN ORGANIZATION:

6. Each asset and function shall appoint a DROPS Lead to ensure standard implementation, sufficient amount of inspections and training of personnel, participate in the Sakhalin Energy Dropped Object Prevention Committee and act as subject matter expert in advising best practice for reliable securing, inspection and reporting.
7. Employees identified as at risk of dropped objects shall complete the Sakhalin Energy Dropped Objects Awareness Training programme.
8. The following equipment and practices shall be considered prohibited and removed from practice:
 - a. Uncertified lifting equipment including 'home-made' lifting devices.
 - b. Home-made or customized tools.
 - c. Use of welding rods, wire or tie wraps instead of properly engineered split pins or safety pins.
 - d. Use of two part shackles on any long term or permanently suspended equipment and on personnel lifting devices, or in any application where the pin can roll under load and unscrew.
 - e. Use of hooks on any part of the rigging on winch lines in derricks, masts and other dynamic environments.
 - f. Wire slings wrapped around beams.
 - g. Unsecured water bottles, radios, phones, hand tools, etc. at height.
 - h. Use of scaffolding equipment for permanent structures or mountings, including uncertified use of scaffold for lifting equipment.
 - i. Leaving fall arrestors un-retracted when not in use.
 - j. Use of hammers with wooden handles at height.

If immediate removal is currently impracticable, the affected area shall be controlled with barriers and barrier watchers as identified by risk assessment in accordance with Pan Asset Barrier Philosophy (1000-S-90-04-P-0151-00). Where it is practical to do so, ensure appropriate



DROPPED OBJECTS PREVENTION STANDARD

REV. 01

secondary safety securing devices are employed. A risk-based plan taking into account the potential dropped object location and weight shall be in place to discontinue the prohibited practice as soon as reasonably practicable.

9. Work at height, lifting operations and any other activities where a potential for dropped objects has been identified shall be controlled with a permit to work. Barriers shall be installed as per Pan Asset Barrier Philosophy (1000-S-90-04-P-0151-00).
10. All loads shall be carefully inspected for loose items prior to transportation, and all loose items shall be removed. Appropriate securing measures shall be put in place for transportation and checked prior and after the loading.
11. All lifting equipment and activities shall comply with Corporate Standard for Use of Cranes and Lifting Equipment (0000-S-90-04-O-0264-00). Personnel lifting equipment and activities shall comply with the Corporate Standard for Personnel Lifting (0000-S-90-04-O-0287-00).
12. The maintenance management system should contain a risk-based list of permanent equipment at height and their individual maintenance requirements and frequency. Maintenance activities (including visual and NDT inspections) shall be performed in accordance with the system requirements and shall include additional risk-based dropped object inspection requirements.
13. Regular inspections shall be undertaken at all worksites with the following purposes:
 - a. to eliminate loose tools, redundant equipment and prohibited practices;
 - b. to identify and assess equipment and structural elements including temporary equipment that present potential dropped objects;
 - c. to ensure that all manufacturer recommended fixings and fastenings are in place, correctly fitted and of good quality.Wherever practical, dropped object inspections may be incorporated into regular maintenance activities.
14. Where primary fixings are assessed to be inadequate in preventing the item from becoming a static dropped object, best engineering practices shall be applied in determining the requirement for secondary securing. (DROPS Reliable Securing Booklet Revision 3)
15. Where a potential for a dynamic dropped object due to regularly applied force is identified, consideration should be given to relocation of the item and / or removal of the force.
16. The Management of Change procedure (0000-S-90-01-P-0268-00) shall be followed prior to mounting any new fixture to existing structures or equipment, including additional secondary securing methods, or installing new equipment at height.
17. All dropped objects, regardless of how small, shall be recorded and investigated in accordance with the Incident Reporting and Follow-Up Standard (0000-S-90-04-O-0020-00).

2.3 ASSET OR FUNCTIONAL HSE MANAGERS AND DROPS LEADS ARE RESPONSIBLE FOR REQUIREMENTS 18 TO 20 IN THEIR OWN ORGANIZATION:

18. Inspection checklists shall be developed at each facility and employed where appropriate to ensure that regular visual checks are made of each item that is used at height or secured to structures and equipment in all areas of all facilities (see Appendix 3 as an example)
19. The Sakhalin Energy Dropped Objects Awareness Training program (Appendix 4) shall consist of a presentation approved by dropped objects focal point and participation in DROPS Inspection.



DROPPED OBJECTS PREVENTION STANDARD

REV. 01

20. All personnel who undertook the Sakhalin Energy Dropped Objects Awareness Training programme should contribute to inspections. Incentive scheme can be introduced to encourage participation.

2.4 PERFORMING AUTHORITIES ARE RESPONSIBLE FOR REQUIREMENTS 21 TO 23 IN THEIR OWN ORGANIZATION:

21. Permit to work for work at height shall have as a control, and the toolbox talk prior to work at height shall emphasize that:

- a. All items related to work at height shall be appropriately secured.
- b. Unnecessary items, including personal items, are not carried aloft.
- c. All tools and equipment required to be used at height are adequately secured with a lanyard to either the user (e.g. tool bag or belt) or the workplace. Attachment point shall enable the tool to be used effectively.
- d. There are no loose items in pockets.
- e. Hard hats are secured with a chin strap or other retention device.

22. Where the potential for a dynamic dropped object during a course of work is identified, the object shall be relocated or protected and / or barriers shall be installed.

23. All barriers and associated signage must be assessed, selected and implemented in accordance with Pan Asset Barrier Philosophy (1000-S-90-04-P-0151-00).

2.5 EMPLOYEES ARE RESPONSIBLE FOR REQUIREMENTS 24 TO 27:

24. Walking or performing any activity under suspended load shall be prohibited as per Life Saving Rules. Safety Consequences Management Standard (0000-S-90-04-O-0007-00) shall be applied in case of violations. Due to the nature of Drilling Operations, prohibited areas for rig floors are defined by [Shell Dropped Object Prevention Manual \(WS.38.80.00.15-Gen.\)](#), with implementation of clear No-Go and Red Zone's requirements,

25. In that case, only unauthorized entry into No-Go or Red Zone shall be considered as a violation. All dropped objects, regardless of how small, shall be immediately reported to supervision.

26. Dropped object hazards, i.e. unsafe acts or conditions that may lead to a dropped object incident, shall be reported using the Hazard ID and Intervention cards, unless there is a potential for fatality. If a potential is 4 or 5 per Risk Assessment Matrix, Fountain shall be used.

27. All employees shall assess potential for dropped objects in the course of their work and intervene if additional controls are required.



3 PERFORMANCE MANAGEMENT

The implementation and management of dropped object prevention at each facility shall be routinely monitored to ensure compliance.

Audits shall be conducted to measure performance at each asset to ensure that the following controls are in place:

- Competence Assurance for HSE critical task roles that include supervision of lifting and hoisting.
- All lifting and hoisting equipment is certified (including personnel harnesses and fall protection devices).
- Non-routine lifts are covered by lift plan and permit to work.
- DROPS Leads have been assigned to the worksite.
- Relevant personnel have attended Sakhalin Energy Dropped Objects Awareness Training programme.
- All cargo and loads are inspected prior to movement and transportation.
- Regular dropped object prevention inspections are conducted.
- Seasonal weather factors have been identified and included.
- Proper tools at height are being used.
- High risk areas are restricted by means of barriers.
- Sakhalin Energy DROPS Campaign Materials are available on site.

When practical, the above scope shall be included into scope of HSE Audits.



DROPPED OBJECTS PREVENTION STANDARD

REV. 01

4 REFERENCES

1. Management of Change Procedure [0000-S-90-01-P-0268-00-E](#)
2. Corporate Standard for Use of Cranes and Lifting Equipment
[0000-S-90-04-O-0264-00-E](#)
3. Corporate Standard for Personnel Lifting [0000-S-90-04-O-0287-00-E](#)
4. Production Directorate Operations Pan Asset Procedure Barrier Philosophy
[1000-S-90-04-P-0151-00-E](#)
5. Incident Reporting and Follow Up Standard [0000-S-90-04-O-0020-00-E](#)
6. Safety Consequences Management Standard [0000-S-90-04-O-0007-00-E](#)
7. Dropped Object Prevention Manual EP2009 9039
8. DROPS Reliable Securing Booklet Revision 03
9. [Shell Dropped Object Prevention Manual \(WS.38.80.00.15-Gen.\)](#)



APPENDIX 1 DROPPED OBJECTS PREVENTION COMMITTEE TERMS OF REFERENCE

The Sakhalin Energy Dropped Object Prevention Committee should meet regularly to discuss issues related to dropped objects prevention.

Company Corporate Safety Manager is the Committee chairman. The secretary is appointed from the Corporate Safety Team.

The Committee should include staff and contractor representation from:

- Corporate Safety Team
- Asset HSE Managers
- Asset DROPS Leads and trainers
- Procurement
- Maintenance and Integrity
- Lifting and Hoisting
- Scaffolding
- Other Personnel as appropriate (e.g. equipment operators)

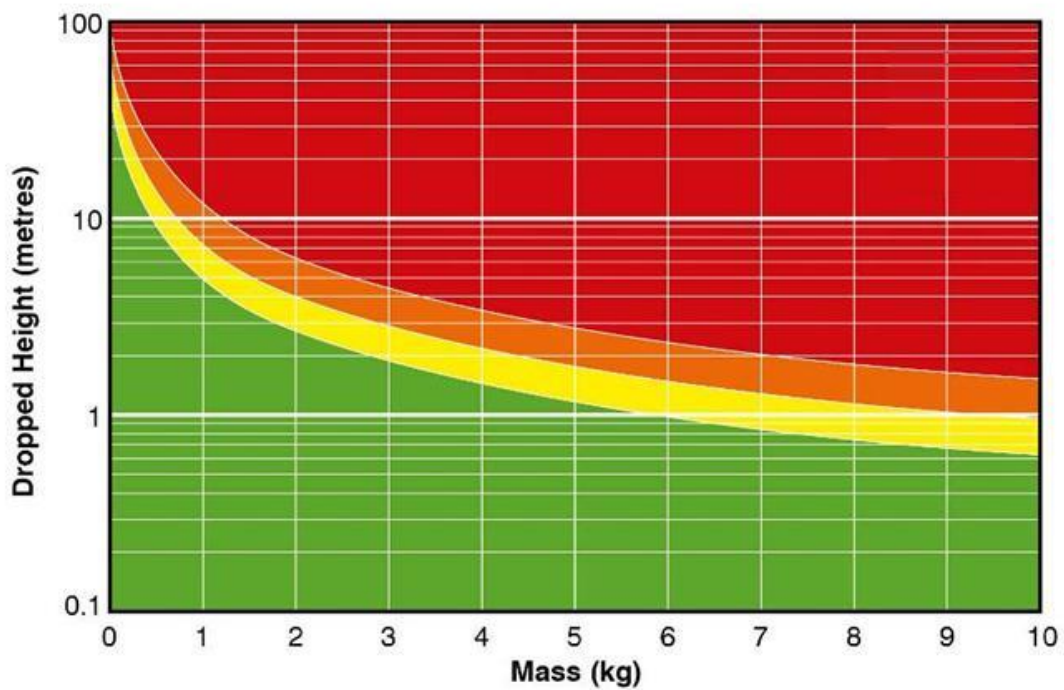
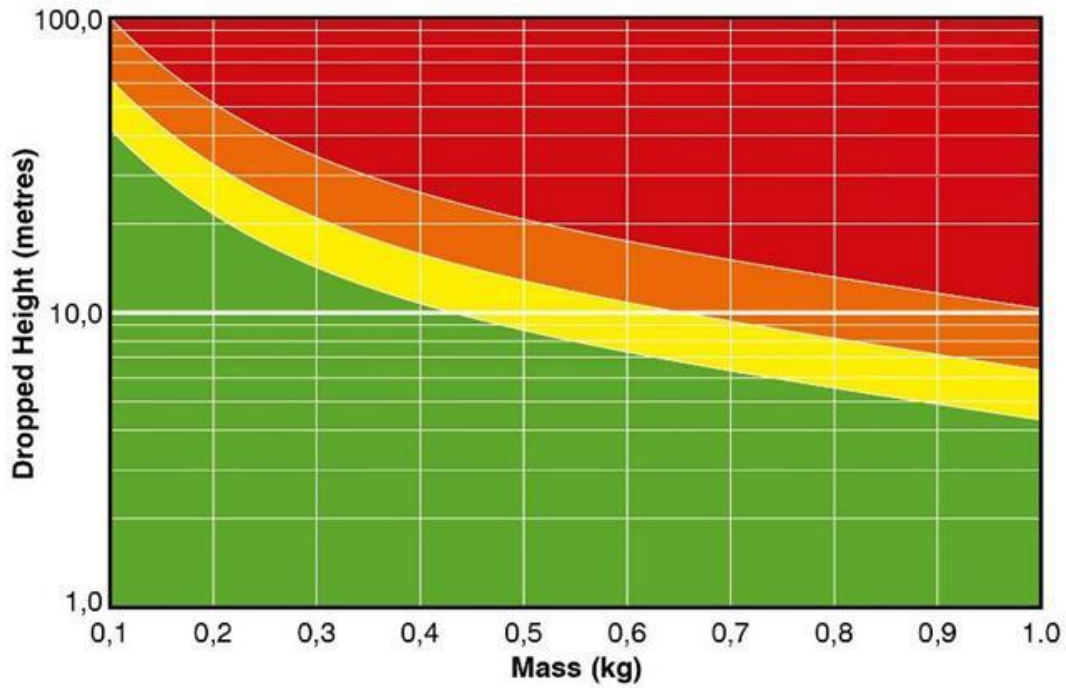
The following items should be included in the Committee meeting agenda:

- Dropped object incident reports (Company-wide, local and regional industry)
- Observations and outstanding corrective actions (including Hazard ID and Interventions)
- Review of Dropped Object inspections since the last meeting
- Review of latest DROPS Forum presentations and best practice guidance
- Assets feedback

The Committee minutes shall be sent to all attendees, Company HSE Extended Leadership Team and Lifting and Hoisting Steering Committee.



APPENDIX 2 DROPS CALCULATOR AND DROPPED OBJECTS RISK ASSESSMENT





DROPPED OBJECTS PREVENTION STANDARD

REV. 01

Key considerations when using calculator:

- The height in the above formula / calculator is the distance between the dropped object initial location and solid floor / deck / ground. The height of a person does not factor in this calculation.
- The calculator formula assumes a blunt object so is not compatible with broken glass, metal shards etc.
- The wearing of standard PPE is assumed in the calculator.

Risk assessment using the calculator:

- Incident potential severity is established using the calculator, regardless of the (potential) dropped object location.
- Location of a dropped object inside or outside barriers, in a walkway, etc. shall be taken into account when establishing incident likelihood.

Risk assessment for potential consequences when object dropped from vertical to a horizontal position from ground to ground level (where DROPS calculator are not applicable):

- Classification of the items that tip or slide is based on calculations of gravitation, points of balance, acceleration of gravity, applied force and taking inclusive of the center of masses.

Suggest for these situations to classify on the basis if likely injury potential.

This will depend on:

- The height of the item; how much momentum was it able to build up and would it cover the length of a person being trapped underneath;
- The center of gravity is the average location of the weight of an object (in case of the mass (and weight) may not be uniformly distributed throughout the object).
- Additional forces acting such as the wind or a collision tipping something over and creating more impact;
- The weight of the item;
- The environment for the person to be trapped in or pinned against other items of equipment; with sharp edges the impact on the body could be concentrated (severe head trauma).

Location of a potential dropped object should be taken into account when establishing priority of taking preventing actions. Timely elimination or control of the potential dropped object must be carefully assessed by appropriate authorities.



DROPPED OBJECTS PREVENTION STANDARD

REV. 01

APPENDIX 3 EXAMPLE OF INSPECTION CHECKLIST

Names / Имена: _____

Date / Число: _____

Equipment Description and ID Описание и номер оборудования	Issue Описание проблемы	Risk Potential Потенциальный риск	Action Taken Предпринятые действия	Action Required Требуемые действия
		Consequences per calculator / последствия по калькулятору _____ Above regular walkway? Y / N Над местом, где обычно ходят люди? D / N		

**APPENDIX 4 DROPPED OBJECTS AWARENESS TRAINING SPECIFICATION**

Training course: Dropped Objects Awareness Training

Training course: Dropped Objects Awareness Training

1. General provisions**1.1 Purpose**

The purpose of the course is to provide trainees with knowledge and instruments to identify, assess and control hazards presented by dropped objects.

1.2 Scope of application

This document is effective at all facilities, structures, works, projects and activities of Sakhalin Energy including those performed by all contractors (subcontractors) upon Company's request.

1.3 Definitions

In accordance with the document: Dropped Objects Prevention Standard 1000-S-90-04-O-0184-00

1.4 User Notes

The requirements of this document shall be complied with on a mandatory basis.

Deviations from these requirements are allowed only if authorised via the procedure described in the Corporate Documentation Standard (0000-S-90-01-O-0002-00) is available.

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2. Risks and controls

In case of incompliance with the general provision the following risks can arise:

- Inability of a worker to timely identify and control a potential dropped object can result in an incident. Dropped objects have accounted for many potential and actual fatalities, injuries, asset damage and loss containment in oil & gas industry.

3. Areas of responsibility

DROPS Leads shall ensure the timely provision of the Sakhalin Energy Dropped Objects Awareness Training programme to each employee exposed to dropped object hazards.

Sakhalin Energy HSE Department shall be responsible for training the trainers to ensure each department and asset has enough personnel to deliver the training.

Each Company's Line Manager is responsible to ensure all subordinates exposed to dropped object hazards shall undertake the Sakhalin Energy Dropped Objects Awareness training.

Each Contract Holder and Company's representative is responsible for (sub-) contractors exposed to dropped object hazards to undertake the Sakhalin Energy Dropped Objects Awareness training.

Each employee exposed to dropped object hazards shall attend training course on Dropped Objects Awareness in time.



4. References

1. Dropped Objects Prevention Standard 1000-S-90-04-O-0184-00

5. Procedure

Procedure on arrangement and performance

The training is mandatory for all personnel and (sub-) contractors exposed to dropped objects hazards.

The training shall be provided by the Tutor with the following qualification and experience (as minimum):

- Completion of DROPS Train the Trainer Dropped Objects Prevention Training and Familiarization Course
- 3 years of experience in the industry

Scope of training

on the Sakhalin Energy Dropped Objects Awareness Programme consists of 1 hour (60 min) presentation and participation in a workplace inspection.

The course includes the following stages:

- Definition of a dropped object, including static and dynamic dropped objects.
- Explanation of hazards related to dropped objects at each stage of company business / supply chain.
- Explanation of DROPS calculator as instrument to assess dropped objects incidents potential.
- Discussion of dropped objects causes.
- Explanation and discussion of dropped objects controls.
- Participation in dropped objects inspection with the use of checklist adopted at the asset.

Elements/education forms:

- Presentation with interactive discussions
- Inspection

Documenting and frequency of training

Documenting is performed in the form of protocol of course attendance and registration in SAP HCM database.

There are no mandatory requirements on frequency of the training course.