**Safe Work Requirement**

Dropped Object Prevention Guidelines

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| Purpose To evaluate dropped object risk for operations and activities in work sites. To assess the consequence of dropped objects on work over, drilling and other operation. To develop conclusions and recommendations for related activities based on dropped object risk. To describe measures to prevent the occurrence of dropped objects, align with industry best practices and meet legislative requirements.  Dropped Object Prevention Management also evaluates lifting operations over live equipment and in the vicinity of a number of drill pipes, mast, and substructure. It was joint target that the risk from dropped objects could be reduced to low level, dropped object impact protection was considered practicable; recommendations were made to reduce risk by restricting lifting operations in specific “no go” zones, and for updating lifting procedures with specific requirements for lifts near live equipment. Scope This document describes the management of objects that could fall and harm people or damage property during operations performed on rigs under the control of ECDC . These guidelines can also be applied to other areas of operations where working at heights or elevated equipment poses a risk of a falling object.  They apply to all ECDC personnel, contractors and subcontractors working on sites under our operational control. Objectives **To reduce the potential of dropped objects by the following means:**   1. Identification and understanding of potential workplace dropped objects hazards. 2. Understanding the various levels of protection that are available to prevent dropped objects. 3. Ensuring dropped object inspections are completed prior to equipment use and to maintain inspection during the operational period of the equipment. 4. Ensuring that adequate levels of mitigation are chosen and implemented. 5. Raising the overall awareness of dropped objects amongst staff, contractors and sub-contractors.   **To achieve these objectives we shall undertake the following**:   1. Ensure maintenance schedules include third party surveys and weekly routines (carried out by members of the rig crew). 2. Third party survey shall consist of both a derrick inventory check and a derrick structural inspection in accordance with API specifications. 3. By closing out all defects at the time of detection or as soon as practicable. 4. By ensuring any outstanding defects are highlighted within the corrective action system and appropriate correct action request raised. 5. By ensuring all relevant safety alerts, procedure changes, etc. are forwarded and implemented where appropriate. 6. By removing redundant equipment highlighted within the derrick inventory.   The drive to reduce the potential of dropped objects is based on competent third party inspections and scheduled maintenance procedures being carried out, with all discrepancies found being raised and closed through the correct reporting channels. Definition of a dropped object A dropped object is:  “Any object, with the potential to cause death, injury or equipment/environmental damage, that falls from its previous static position under its own weight.”  When referring to dropped objects, consider:   1. Hand tools being used at heights 2. Hand tools/equipment left behind after working at height 3. Operations conducted at height 4. Equipment mounted at a height that, following contact, vibration or environmental conditions, could fall, i.e., piping, lights, cameras, lifting gear, etc. 5. Temporary equipment at height 6. Where personnel are working on  The potential consequences of Dropped Objectives Dropped objects are regularly the principal causes of incidents in the oil and gas industry and contribute to the total risk level for operations.  The consequences of a falling object include:   1. Personal injury/death 2. Structural damage 3. Damage to equipment 4. Release of hydrocarbons/fire  Potential for dropped objects The potential for a dropped object is real at almost any facility. The following areas are a non-exhaustive list of risk areas susceptible to presenting a dropped object.   1. Rig derricks/drill floor 2. Areas below lifting operations 3. Cranes – mobile or fixed 4. Elevated work areas or platforms 5. Work spaces where equipment is mounted overhead 6. Ladders or Scaffolding 7. Temporary/portable equipment 8. Pipe racks 9. Forklift trucks   Poor stacking of materials; e.g. unsecured materials on a container roof.  **Photographic Examples of Activities that may cause Dropped Object Incidents.**  ~$IZBIYT]A_[R)}K79Z0WNE  **Improper Manual Handling**  XHV@2ZCDL%RZ$HK{@WOK}OE  **Tools Without Lanyard**  6JNB%K`1{@_FC4HI7C2K5{J  **Improper Storage**  O6@CLR7]UJ@B0$M6NAN~@7W  **Unsecured Cargo on Forklift**  DX8(@)41S7TF$6F@P`~IX_I  **Wrong Buckle Type of Crane Main hook**  `SFHQ{}M(@%{K7%~@D4IR0W  **Right Buckle Type of Crane Main hook**  74`86(9E$BEC_DWRSN__A}1  **Wrong Buckle Type of Crane Small hook**  W@T4744D~2NSL{U[8ORLW[0  **Right Buckle Type of Crane Small hook**    **Unsecured Loads on Trucks**  DSC03488.JPG  DSC03455.JPG  **Human Error or System Malfunction**  [6A_H$0PM3%_5Z74PQQT54H  **Unsafe behaviour during rig down rig floor hand rail near brake bar** Causes of Dropped Objects The following are possible causes of dropped objects:   1. Drilling and work over operations (Jarring, Power swivel) 2.  Poor housekeeping 3.  Scrap and debris left aloft 4.  No equipment maintenance 5.  Poor designs 6.  Weather 7.  No restraints 8.  No planning 9.  Load miscalculation 10.  Lack of risk assessment 11.  Errors in space requirements 12.  Instability 13.  Ineffective control of equipment or tools taken aloft 14.  No lanyards on tools used at height 15.  Improperly secured or inappropriate loads 16.  No regular inspection procedures or actual inspections 17.  Oblivious to changes in activity (dynamic risk assessment) 18. Carrying equipment while at height  Effects of a Dropped Object Even a small object falling from a height can cause serious or fatal injuries.  A static object at a height has what is called potential energy (PE). As an object falls from rest, its potential energy is converted to kinetic energy (KE). In basic physics the conservation of energy principle dictates that a falling object has energy as it falls. If this object hits a person or critical equipment the outcomes could be serious or even catastrophic.  A simple example being if a 1kg object falls 20m, ignoring wind friction, it will release almost 200 Joules of energy and be travelling at 20 m/s (over 70 Km/hr) immediately before impact.  Further information can be found in the free downloads section of http://www.dropsonline.org/. Recommended Actions  1. Create a dropped objects work group specific to the site. 2. Complete a derrick or work site dropped objects inventory. 3. Use the inventory to develop an inspection program. 4. Introduce working at height procedures. 5. Introduce specific toolkits for working at height. Implement processes to account for tools. 6. Improve overall dropped objects identification and mitigation among the workforce. 7. Train relevant personnel to identify and mitigate dropped objects processes. 8. Secure tools from dropping to lower levels. 9. Following Job Safety Assessment (JSA) guidelines, erect signage and physical barriers to restrict access before work is conducted overhead. 10. All lifting risk assessments require consideration of the risks involved in moving equipment at height. 11. Review and revise JSAs for dropped objects potential. 12. Introduce regular dropped objects campaigns. 13. Schedule regular Hazard Hunts. 14. Review handling and securing procedures for tubular components. 15. Add secondary retention systems 16. Inspect personal protective equipment (PPE), for example, safety harness, and lanyard and chin straps. 17. Inspect all overhead equipment and locations for loose items that may present a hazard during maintenance activities.  Secondary Retention Secondary retention systems are many and varied and the method selected should be done so by taking into account the equipment, operating and weather conditions, elevation, accessibility, location etc.  **Secondary Securing Devices (SSD)**  A secondary securing device secures a component at height, if the primary securing method fails. This could be a secondary safety wire SSD selection should consider the shock loading that may occur if the primary securing method fails. The integrity of the SSD will deteriorate over time and exposure to the elements and needs to be inspected.  **Secondary Safety Systems**  Secondary safety systems are fail-safe systems incorporated into equipment to ensure integrity of that equipment if the primary safety system fails. For example, a racking arm runs along a beam and is hoisted and lowered with a wire. If the wire fails, an inertia brake prevents the arm from freefalling to the ground.  **Examples show as per Appendix in ECDC Drops Standard.** Actively preventing Dropped Objects  1. Maintain good levels housekeeping – clean-as-you-go 2. Stop unsafe activities. 3. Make observations and report incidents. 4. Review and follow procedures. 5. Recognize known hazards, and follow the controls in place. 6. Consider dropped objects in all Toolbox Talks. 7. Consider dropped objects in all JSAs. 8. Check areas after all work is completed, even if it is permit-controlled. 9. Investigate all incidents, including near misses. 10. Secure all tools and equipment when working at height.  Regular Inspections One of the most important aspects of a good dropped objects program is the ability to inspect all equipment aloft.   1. Periodic inspections identify potential hazards. 2. Report all non-conformities found in these inspections for correction immediately.   Dropped object inspections shall be performed, as applicable to the specific equipment or facility being evaluated. Temporary Equipment Any temporary equipment brought into the site is subjected to the same guidelines as fixed equipment.   1. Site management ensures inspection of any third-party equipment before installation. 2. To ensure all temporary items are accounted for and have been removed, document the temporary equipment. 3. Review all temporary equipment to ensure hazards from dropped or falling objects are identified and monitored.  Pre-Job Risk Assessment Complete a pre-job risk assessment such as a JSA before beginning any job/task, with the following goals in mind:   1. Identify any dropped object hazards before starting a job or task and communicate these at a toolbox talk. 2. Include discussions on tools and equipment in the JSA. 3. Ensure all personnel are involved in the discussion, understand the associated hazards and implement the mitigation. 4. Use a dropped objects checklist.  ECDC Drops Application Documents  1. ECDC Drops Prevention Policy 2. ECDC Rig Site Dropped Object Survey Picture Book 3. ECDC Typical Dropped Object Survey |