**Safe Work Requirement**

Working At Height Procedure

Contents

[1. Purpose 1](#_Toc53771100)

[2. Scope 2](#_Toc53771101)

[3. Document Control 2](#_Toc53771102)

[4. Definitions, Terms and Abbreviations 2](#_Toc53771103)

[Competent Person, Fall Arrest Equipment 2](#_Toc53771104)

[5. Responsibility 2](#_Toc53771105)

[6. Application of this procedure 3](#_Toc53771106)

[7. Procedure 3](#_Toc53771107)

[7.1 Introduction 4](#_Toc53771111)

[7.2 Fall Protection Equipment 4](#_Toc53771112)

[7.3 Anchor System 5](#_Toc53771113)

[7.4 Anchorage Connectors 5](#_Toc53771114)

[7.5 Anchor Slings 6](#_Toc53771115)

[7.6 Inspection, Care and Maintenance of Anchorage Connectors 6](#_Toc53771116)

[7.7 Snap Hooks 6](#_Toc53771117)

[7.8 Karabiner 7](#_Toc53771144)

[7.9 Lanyards 8](#_Toc53771145)

[**A.** **Lanyards should be checked bef** 10](#_Toc53771146)

[**B.** **Inspection, Care and Maintenance of Lanyard only:** 10](#_Toc53771147)

[7.10 Self Retracting Lanyards & Self Retracting Lifelines 10](#_Toc53771148)

[7.11 Full Body Harness 12](#_Toc53771149)

[7.12 Horizontal Lifelines 16](#_Toc53771150)

[7.13 Basket strechers 16](#_Toc53771151)

[7.14 Rescue 17](#_Toc53771152)

[7.15 Man riding 17](#_Toc53771153)

[7.16 Inspection - fall protection equipment 19](#_Toc53771154)

[Fall protection equipment requires to be inspected in the following manner: 19](#_Toc53771155)

[7.17 Drops prevention during working at height. 21](#_Toc53771156)

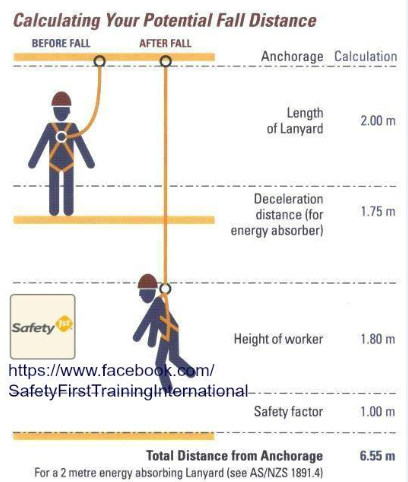
[7.18 Summary 24](#_Toc53771157)

[8. Appendix Glossary: 24](#_Toc53771158)

|  |
| --- |
| Purpose ECDC highlight the process control of working at height operation and avoid DROPS incident happen. Drops refer to ECDC Dropped Object Prevention Guidelines and ECDC Drops Standard.  To define the requirements for employees working within **ECDC Well Operations** which requires working at height in order that they can work safely. This represents acceptable HSE Standards for a wide variety of operations.  Individual operating and/or specifications should reflect these standards, and should be consulted, where appropriate, prior to start of work. This guide identifies the principal issues of HSE that are involved in the operation and use of Fall Protection Equipment. It addresses all aspects of the selection, safe use, care, maintenance and inspection of this equipment when handling goods and materials associated with this topic.  Anyone who is responsible at a manager or supervisor level needs to be aware of the responsibility to manage all fall protection aspects of their department along with their departmental duties. Employees directly associated with fall protection tasks must ensure that all work is carried out in a safe and efficient manner in accordance with relevant Regulations, Standards and Guidelines.  The following sections of this guide provide managers and employees with information required to safely carry out their daily tasks relating to Lifting and Fall Protection. It is by no means a complete reference guide and should be read in conjunction with the Regulations, Standards and Guides listed in the reference section to this guide. Our first consideration must, at all times, be directed towards personal safety and to the safety of all persons in the vicinity or likely to enter the vicinity. It is important you contact your supervisor if you have any questions about the fall arrest equipment, work positioning, or fall arrest system you are using! Scope This HSE procedure applies to all scopes of works within **ECDC** rig sites facilities & yards. Document Control  1. This HSE procedure is a controlled document as required by the HSE Management and issued in accordance with the general procedure Control of Documents and Data. 2. Revisions of this document will be issued in accordance with that general procedure when the main text changes or when an appendix is added. Revised appendices for substitution will be issued separately and, where appropriate, will include a separate schedule of contents. 3. Document revision and appendix issue status are shown in the Register of Management System Documents, a copy of which may be obtained from the Quality Manager upon request.  Definitions, Terms and AbbreviationsCompetent Person, Fall Arrest Equipment A person trained by the manufacturer or an approved third party from manufacturer or has sound knowledge of the standards and application of fall protection equipment, their use and limitations. Responsibility  1. The General Manager/Country Manager has overall responsibility for implementing this HSE procedure. 2. Individual Rig Managers at respective worksites are responsible for ensuring that the workers in their section comply with these requirements. 3. Individual workers are responsible for ensuring that they are given the necessary equipment and that it is safe to use and they are trained instructed by their supervisors in the safe use. 4. Contractors will ensure that ALL working at height tasks comply with the required company policies and will ensure guidance from respective site in charge in case of any question. Only authorised trained and experienced personnel will be involved at height activities. Programs are in place to raise the awareness of users and operators of this equipment to the hazards they may encounter in performing their duties. Appropriate training is provided for all personnel required to work at heights. Storage and handling facilities are adequate, and regular inspections and audits are conducted on all Fall Protection equipment and registers are kept up to date, documenting equipment usage and history. Line Managers are responsible for ensuring the information contained in this guide is implemented and maintained.  Application of this procedure This procedure is applicable on all ECDC rig sites and warehouse where there is a hazard of a free fall up to **2m** or there is an unprotected edge. Some examples are;-   1. Working on monkey board 2. Working on roofs 3. Working on edges of ditches or holes 4. Working on BOPs 5. Working on structure beams 6. Working in cellars where means of access and egress not proper 7. Working on crowns 8. etc.  Procedure All who working at height should use fall protection equipment when he working at the height about **2m** or there is an unprotected edge. He should follow this procedure and all working at height activities shall be controlled by permit to work system.       Introduction The primary means of achieving safe working conditions when working at height is to provide adequate and sufficient access and egress arrangements and suitable working platforms at the place of work.  Toolbox Talks will be given to each group carrying out work at height. Following an assessment of the risks (or JSA), supervisors will instruct personnel on the procedures and precautions to be followed when working at height.  Approved full body safety harnesses should only be used as a last resort where conditions make it impracticable to provide a safe working platform. Fall Protection Equipment  1. **Conventional Fall Protection**   Handrails and guardrails are considered conventional forms of fall protection. These structures are usually permanent and found in high traffic areas. Training required for conventional fall protection is minimal; however, these systems are not always available.   1. **Fall Protection Considerations**   Limit the Fall Distance: The shorter the fall distance, lessens the risk of injury. There are simple and effective ways to limit the fall distance Shorten the connecting lanyard means and ensure the anchor is above the worker.   1. **Swing Fall Hazard**   The danger of swing fall is that the worker may come in contact with a structure during the fall or that the lanyard may be severed if it runs over a sharp edge. Whenever possible, the anchorage point should be directly above the worker.   1. **Fall Restraint Systems**   This method of fall protection prevents the worker from approaching an edge. A full body harness worn in conjunction with a work-positioning lanyard secured to a strong point is used for this type of fall protection.   1. **Fall Arrest Systems**   This system prevents the worker from free falling to the ground. Only approved full body harnesses may be used ECDC rig sites. A non-conforming waist belt **MUST NOT** be used for this type of fall protection. The goal of any fall arrest system is to limit the free fall distance.  There are four main categories to consider for any fall arrest system,   1. Anchor System 2. Connecting Means 3. Body Holding Device 4. Means of Rescue  Anchor System Anchorages used for fall protection should be located directly above the work area. Anchorages used for fall protection are either engineered or improvised. The anchorage point or system should allow for the following variables:   1. Work area access 2. Potential falling distance 3. Shock absorption 4. Weight of falling worker 5. Ease of rescue.   Anchorage points randomly selected by an inexperienced or untrained worker may not be strong enough to arrest a fall. A suitable and strong anchorage point shall always be chosen which can withhold the weight of the employee. Anchorage and anchorage connectors or systems can be permanent (fixed), such as a roof or wall anchor, or temporary (portable) such as a davit arm or tripod. Anchorage Connectors Improvised anchorages must be unquestionably strong and used with certified anchorage connectors use two independent improvised anchor points when possible; and **DO NOT** attach to: Utility Pipe; Electrical Conduits; Ductwork; or any other unstable or questionable points. Anchor Slings There are a variety of modes and types of anchorage connectors. Two common types include cable and web slings. Where possible, two anchorage connectors should be used in combination. This will provide an appropriate margin of safety for slightly worn or previously loaded slings. There are many configurations of slings for creating improvised anchor points. Inspection, Care and Maintenance of Anchorage Connectors Inspect all components of an anchor system. This includes the anchorage and component of the anchorage connector. Beware of:   1. Wear points; 2. Abrasion; and 3. Damaged threads or swages.   For synthetic slings, inspect all sewing and loops.  For cable slings, look for excessive kinking or damaged steel fibres. Check integrity of swages and ensure eye thimbles remain in place.  **Note:**  Always refer to manufacturer’s recommendations for inspection, care and maintenance. The components necessary for connecting a fall protection system typically includes the self-locking snap hook or auto-locking karabiner, the lanyard, and shock absorber. Many factors must be considered when analysing fall distance – always ensure that total fall distance does not exceed clearance requirements. Snap Hooks **Snap Hooks** should always be self-closing and self-locking when used for fall protection.  **Warning:**  The use of non-locking snap hooks can lead to roll-out, the accidental disengagement of connecting hardware. Attaching or girth-hitching two non-locking snap hooks can also cause roll-out. Even with locking snaps, one must beware of forced roll-out. |



|  |
| --- |
| Karabiner Karabiners are a highly specialised tool for industrial purposes. Training in proper use is essential.   1. **Inspection, Care & Maintenance of Hardware (Snap Hook & Karabiner)**   Always inspect the hardware on a regular basis. Beware of:   1. Discolouration; 2. Deformation; 3. Cracks, chips; and Abrasions. 4. Discontinue use if any of the following occur:  * Snap hook or Karabiner sustains a fall * Spring breaks * Gate bends; and Keeper does not function correctly.  1. **Cleaning:** 2. Clean gates by applying solvent to hinge and work until operation is smooth 3. Immerse in boiling water for 20 to 30 seconds to thoroughly remove cleaning agent; and Dry snap with soft cloth and return to service.  Lanyards Lanyards must meet British Standard requirements. Shock absorbers integrally connected to lanyards must meet British Standard.  Lanyards must not exceed a length of **4 feet** (**1.2 m**) to reduce maximum free fall distance. Overall length must include the measurement of shock absorbing devices. Lanyards must be used with locking hardware only.  When full-body harnesses and lanyards are required, they must be used in accordance with the following guidelines:-   1. When full-body harnesses are used for fall protection, they should be attached with proper lanyards. Shock absorbing lanyards should be used whenever possible. The lanyard must be fastened to the full-body harness and secured to substantial objects 2. The lanyard must not allow a fall distance of more than 5 feet (1.5 metres) and must be secured from above. If the worker is using a shock absorber lanyard, it must extend up to a further 3.5 feet (1 metre) 3. Lanyards and full-body harnesses must not be used for any purpose other than fall protection 4. The lanyard length should always be kept to the minimum requirement for the job 5. Employees required to wear a full-body harness must be trained in the use of the equipment 6. Full-body harnesses and lineman's belts must fit snugly and comfortably   As AS/NZS 1891.4, The height restrictions that should be imposed on fall arrest lanyards with break out packs(shock absorber) is that minimum total distance from anchorage is 6.55m(if you define the height of worker is 2.0m, it is 6.75m), the details show as follows; |



|  |  |
| --- | --- |
| 1. **Lanyards should be checked bef** 2. **ore each use for the following:** 3. Check soft materials for: Abrasion; Discolouration; Cuts; Torn stitching; and any abnormalities; 4. Avoid sharp or abrasive surfaces; padding should be used where needed; 5. The synthetic lanyard should remain in service a maximum of five years; 6. Do not use for any purpose other than fall protection 7. Any unit which has seen fall arresting service should not be used after such service. 8. **Inspection, Care and Maintenance of Lanyard only:** 9. Inspect the lanyard periodically. Check rope, webbing or cable while setting up and throughout workday 10. Check all components for: Abrasion; Discolouration; Cracks; Torn stitching; any abnormalities. 11. **Storage**   When not in use, lanyards should be hung up or stored loosely in a bag or container. This will protect the lanyard from elements that could cause damage.   1. **Removal from Service**   Remove the lanyard from service under the following conditions:   1. After a hard fall 2. If fitted, when the integral shock absorber has been deployed 3. If the lanyard has been used for any purpose other than fall protection. 4. Launder the lanyard regularly or when excessively dirty.  Self Retracting Lanyards & Self Retracting Lifelines Self -Retracting Lanyards and Self-Retracting Lifelines must meet British Standard requirements for fall arrest devices. Self -retracting Lanyards (also referred to as web retractors) range between 5 & 20 ft. in length. These units operate by a spring mechanism which allows a length of webbing to pay in or out automatically. If the user should fall, an internal lock-off device will prevent the webbing from continuing to pay out.  The retractable lanyard must not be used to move horizontally away from the anchorage point. Self-Retracting Lifelines are usually longer in length (20 – 170 feet). When the user falls at more than approximately 1.2 m (4.5 ft) per second, the device automatically locks off to arrest the fall. The device will remain locked until released and then resume normal operation. Always inspect the area to ensure that the retractable lifeline will not come in contact with sharp edges in the event of a fall; and  Self-retracting devices should have an indicator, swivel and auto-locking hardware.   1. **Warning:**   Swing fall is a hazard if the user moves away from the anchor point above.   1. **Storage**   Store the items in a cool, dry and clean environment out of the direct sunlight. Avoid areas where chemical-vapours might exist. Inspect device after extended periods of storage.   1. **Removal from Service**   There is no recommended retirement age for the self-retracting device. If properly used, stored and maintained, it will provide many years of service. A competent person should determine removal from Service. If inspection reveals any defect, remove device from service immediately and contact authorised service centre.   1. **Inspection, Care and Maintenance of the Self Retracting Lifeline:**   Self Retracting devices should be inspected before each use and more thoroughly inspected by a competent person regularly:   1. Check for signs of wear in the line and damage to the housing 2. The self-retracting device should be returned to the manufacturer once a year for inspection, maintenance and re-certification. Depending on the environment, this may be required more often than once a year 3. Always refer to manufacturer’s instructions regarding nature of indicator mechanism. 4. **Warning:**   Individuals not qualified to service these devices must not attempt to do so, serious injury may result from dislodging the heavily tension spring. Full Body Harness  1. Full body harnesses are designed to distribute the force of a fall over a large area of the torso. Fastening points of the harness can be fitted with a variety of designs. The full body harness must be worn for fall arrest. 2. Full body harnesses must meet British Standard requirements. 3. Full body harnesses are certified for use by one worker, weighing a maximum 140 kg (310lb) including tools and equipment, using compatible fall arrest equipment that does not allow fall arrest forces of greater than 1800 lbs (8kN). 4. **Warning:**   Harnesses, lanyards and such apparatus, present a significant risk of entanglement when used in close proximity to rotating machinery. Always remove the apparatus from the body when not required.   1. **Harness Donning**   Always refer to manufacturer’s recommendations for proper fit and adjustment.  The following is a typical donning sequence for a Cross-Over style Fall Arrest, Ladder Climbing and Work Positioning Harness with quick-fit buckles     1. Spread harness out on a flat surface with the Dorsal D-ring down. Undo and lay out leg loops and waist belt. The colour of the straps located at the dorsal D-ring will denote shoulder or upper straps 2. Put the harness on with the upper straps over the shoulder. Locate the sub pelvic strap 3. Adjust the sub pelvic strap to fit snugly below the buttocks by adjusting the front adjuster buckles. (This is most easily done by sliding the strap keepers well back from the buckles) 4. Be sure that the shoulder strap ends are equally balanced 5. Pass the leg strap (from behind) between the legs, around the front of the groin and through the harness adjuster buckle (quick connect) located on the front of the hip and adjust to a snug fit. Do not over-tighten. Repeat on the other leg 6. Rear Dorsal D-ring should be located between the shoulder blades. A buddy pulling the D-ring while moving it back and forth in a “walking” motion adjusts this 7. Adjust and connect the cross-over strap to the hip buckle making sure that the strap colours match and the connection has not been made to the leg adjuster buckle 8. Buckle keepers are positioned under the edge of the buckles to minimise creep. Strap end keepers should be pushed as close to the end of the strap as possible. 9. **Note:**   Directions for donning a harness should never be a substitute for proper training. Instructions may also vary slightly according to harness style.   1. **Safety Checks**   The “buddy system” will ensure that harness fit and adjustment is correct. It is often easier to spot errors in harness adjustment and twists in the webbing when another person checks it for you. Regardless of experience, checking one another’s work should be instinctive for all workers.  Before beginning, take the time for a partner to do a “head-to-toe” methodical inspection. Remember to check all points of the harness and all personal equipment. Then check the entire system for errors paying close attention to anchors, snaps, Karabiners and other components.   1. **Harness (front):** 2. Keepers positioned 3. Waist belt secured 4. Leg loops snug 5. No twisted or turned sections of webbing or hardware (D-etc). 6. **Harness (back):** 7. Dorsal D-ring between shoulder blades; 8. Sub pelvic strap beneath buttocks; 9. Straps flat and not twisted; 10. No loose clothing; 11. Proper footwear; 12. Proper attachment to fall protection system 13. No twisted or turned sections of webbing or hardware (D-ring buckles, etc.)   When checking a harness buckle touch or point at it. Touching the equipment or device being inspected forces one to pay greater attention to what is being checked, and also helps to slow the pace. When ready to commence, run through a mental checklist of what was done to ensure the greatest margin of safety.   1. **Warning:**   When wearing the Full Body Harness, the harness should be completely donned and fastened at all times. This will eliminate the risk of a worker proceeding to work with a harness that is not fastened and adjusted properly. The effects of this mistake could result in very serious injury or death.   1. **Inspection, Care and Maintenance of the Full Body Harness**   Inspect the full body harness daily or prior to each use:   1. Inspect hardware of harness (i.e. Buckles, D-rings, back pad, keepers, etc.) for damage, distortion, sharp edges, burrs, cracks, worn parts and corrosion. Make sure buckles work freely. 2. Inspect webbing of harness for fray’s cuts and broken fibres. Check for tears, abrasions, mould, burns, discolouration, etc. Check for cut or pulled stitches; broken stitches may be an indication that the harness has seen an impact and should be removed from service. 3. Inspect labels and ensure that they are all present and legible; they should be replaced if they are illegible or missing. 4. Follow all associated manufacturer’s instructions for inspection of the specific full body harness and associated components. 5. Damaged or questionable full body harnesses must be immediately replaced. 6. **Warning:**   If the full body harness has been subjected to fall arrest, impact forces, or if inspection reveals an unsafe condition it must be immediately removed from service and returned to a competent person for re-certification or destruction.   1. **Cleaning**   Full body harnesses should be cleaned on a regular basis with water and mild soap detergent, ensuring that all soap or detergent is rinsed from the harness as it will attract further dirt. Wipe off hardware with a clean, dry cloth and hang to air dry. Do not apply heat to the harness. Additional maintenance and servicing (i.e. replacement parts) must be completed by factory authorised service centre. Do not attempt to disassemble the harness.   1. **Storage**   Store the full body harness in a cool, dry, clean location out of direct sunlight. Avoid areas where chemical vapours may exist. Dedicated harnesses should be stored in a personal locker when not in use.   1. **Removal from Service**   If the full body harness has seen fall arrest or inspection reveals an unsafe condition it should be immediately removed from service and returned to a competent person to be destroyed or returned to the manufacturer for servicing. Full body harnesses should only remain in service for maximum of five (5) years. Horizontal Lifelines The horizontal lifeline is a very complex component of a fall arrest system. When properly incorporated with other fall arrest equipment, it can allow two and sometimes three-dimensional movement. The horizontal lifeline can be either permanent or temporary. Horizontal lifelines are usually incorporated on to the rear of most derricks to allow safe traversing of the derrick when it is laid over.  Forces on the end anchorages of a horizontal lifeline are considerably greater than impact forces in the vertical plane! Basket strechers A basket or cradle used for man lifting must conform to the requirements given in the HSE procedure Lifting by Crane and the following:   1. The SWL should be clearly marked on the basket or cradle together with the maximum number of persons it can carry and must be inspected by a Competent Person, Cranes and Lifting Equipment annually. 2. The basket stretcher lifting equipment shall be of patent design and manufacture comprising four separate wires connected to a common ring of suitable dimensions to fit over the crane hook and to be secured behind the ‘Clevis’ catch. The four remaining wires shall be terminated at the basket pad eyes by bolt type shackles complete with split pins. This assembly shall not be separated from its original basket or used for any other purpose. 3. The top guardrail height must be 910mm to 1.15m. 4. The toe board height must be a minimum of 150mm and a mid-rail must also be fitted no higher than 605mm. 5. The crane used for man lifting must be fitted with powered lowering facilities Men must never be lowered in free fall conditions. 6. Personnel working in basket strechers must wear a full body safety harness and attach their lanyard to a chain or sling, **which is attached to the crane hook**. 7. Personnel working over water are not required to wear a full body safety harness but must wear a life jacket.  Rescue Every fall arrest system must account for a method of rescue or escape. There are several methods of rescue, escape and/or retrieval. They include:   1. Manual Descent Control 2. Automatic Descent Control 3. Belaying 4. Rescue Retrieval Systems   For detailed Rescue from height refer “**Rescue at height plan”.**  **Warning:**  Any worker involved in performing a rescue must be trained in the proper techniques for the rescue system, fall protection equipment that is in place, or incorporated into the rescue procedure.   1. Fall hazards; 2. Light and visibility restrictions; and 3. Cramped working conditions.  Man riding If there is no alternative to Man Riding, the man riding activity should only be undertaken in accordance with Rig – Site Specific Procedures for this activity.  Have you considered alternatives to man riding to complete the task?   1. Is it absolutely necessary to do this task? (Seek alternatives) 2. Has a full Task Risk Assessment been undertaken? (See Permit To Work) 3. Have you comprehensively checked all equipment? 4. Man riding equipment and wire 5. Harness and connectors (shackles) 6. Considered Simultaneous Operations? 7. Is everyone familiar with the equipment and how to use it? 8. Are there enough trained, competent people available to carry out the task? 9. Permit To Work in place? 10. Has a pre job meeting held and considered? 11. Is everybody involved in attendance? 12. Have handovers been discussed? 13. Does everyone understand the task and their role in it? 14. Are hand signals fully understood and agreed upon? 15. Does everyone know who is supervising this task? 16. If anything changes from the agreed plan **STOP** and assess the situation.   Man Riding Equipment should be certified or approved by the applicable local authority. Consider the following at all times:   1. **Winch** 2. Independent secondary braking system 3. Control lever; Returns to neutral (STOP);Push lever away = pay out (LOWER);Pull lever = heave in (RAISE) 4. Arrow signage showing UP & DOWN directions 5. Crown Block Sheave designed for Man riding. (Fall protection for whole assembly including sheave) 6. All sheaves to have fall restraining devices in place 7. Emergency stop facility (unobstructed) 8. Wire rope termination to comply with current standards 9. Spooling device 10. Drum guard 11. **Harness** 12. Full body type; 13. ‘D’ rings for carrying hand tools; 14. Rescue or fall arrest lanyard; and 15. Safe system for tools aloft (lanyards etc). 16. **Personal Protective Equipment** 17. Always fit and use a chin-strap on the hard hat. 18. Connecting Devices 19. Must incorporate a simple locking device which can only be manually activated; and 20. Over hoist protection placed 4 feet above Man rider (e.g. oversize end link). 21. **Secondary Fall Arrest Equipment**   Use an additional safety device (where practical) attached to a safe part of the harness (fall arrester, inertia reel, line locker, pennant line). Inspection - fall protection equipmentFall protection equipment requires to be inspected in the following manner: Description: C:\Users\USER\AppData\Roaming\Tencent\Users\1045450198\QQ\WinTemp\RichOle\9()ZOWMEV62ULA~JU5}NRW4.png  Inspection of webbing or rope shall consist of running the material through the hands to find cuts and abrasions. The following examples will lead to scrapping of components:-   1.  Cuts of 1mm or more, for example where lanyards have been hitched around steelwork 2.  Surface abrasion across the face of webbing and on the loops 3.  Abrasion at the edges, particularly if localised 4.  Damage to stitching 5.  Knots in lanyards 6.  Chemical attack showing as flaking on the surface 7.  Heat or friction damage showing as a glazed look 8.  Partially deployed energy absorbers 9.  Internal contamination (dirt, grit or sand) 10.  Damaged or deformed fittings 11.  Damage to ropes 12. **Lanyards shall be withdrawn by the issuing stores if:-**   There is no evidence of inspection for the last 6 months   1.  Identification is not evident 2.  There is no Certifying Authority mark 3.  It is thought to be defective 4.  The lanyard has been used to arrest a fall, it should be destroyed or returned to the manufacturer 5. **Pre-use checklists for the following items are demonstrated:-** 6.  Recoverable Inertia Reels 7.  Inertia Reels 8.  Full Body Harnesses   All damaged or no longer serviceable working at height equipment must be controlled and cut, remove from working site immediately to avoid misusing.  ECDC should give sub-contractor specific W@H training if the sub-contractor involves in working at height operations. All third party and sub-contractors ‘working at height equipment and personnel certificate should be checked according to working at height checklist and Client Hired Contractors on site Pre - Checklist , their activity shall be controlled by ECDC PTW system, Third party and sub-contractor shall provide their JSA/RA and work program to ECDC rig manager, HSE and client site representative to review, TBT shall be conducted before work start to explain all work related hazards and prevention, keep the related documents and ensuring third party and sub-contractor’s activities are record in ECDC permit to work register. Drops prevention during working at height. With regard to the successful management of potential dropped objects while “working at height”， the following statement and qualifiers should be considered and are most valid.  Work operations often involve work at height. Many operations therefore contain an element of risk in that   1. Personnel are exposed to work or equipment above them. 2. Personnel below are exposed to the work. 3. Personnel working at height could fall and therefore become a dropped object. 4. **Rescue from Height**   Anyone using personal protective equipment against falls from height must have documented training (including rescue method training). The necessary rescue equipment and trained personnel must always be available at the workplace when work at height is performed.  Supervisors of persons working at elevated positions, and using fall protection, must when carrying out a pre-job planning or risk assessment, develop a rescue plan in the event a worker falls.  Consideration shall be given to the safety of rescue personnel, the means of retrieval of the fallen person, and the method to be used to lower or raise the fallen person, perhaps in an injured condition, to the floor, the deck, or the ground.  The use of cranes, air hoists, or specially provided and rigged equipment should be considered.  Fall arrest equipment must of an approved type, incorporate an anti-trauma safety device and comply with an accepted standard and any personnel anchor point for suspension must be rated to 2270Kg (23kN).  Working at height equipment (for personnel use) should be checked at least every 6 months by a competent person. Thereafter Inertia reels and other fall arrest equipment should be clearly marked within an effective system (color coding) to indicate to the user that they are “in date”.   1. **Working at Height Equipment**   Where it is not practicable or possible to secure all items personnel must consider and employ catchment below the work area using tarpaulins, fire blankets, nets, etc. Otherwise the area shall be barriered off and all personnel removed.   1. **Tools at Height**   The use of Tools at Height must be completed in conjunction with the most recent DROPS guidance available.  Before work starts and when the work is complete; a full check must be carried out to ensure that no loose material or equipment has been left behind.  All tools and portable equipment used at height shall be adequately secured to either the user or the work place (as deemed appropriate by risk assessment).  Tools heavier than 2kg should not be secured to the body but secure to the adjacent worksite structure and lanyards used to secure tools should be in conjunction with the latest DROPS guidance and/ or OEM guidance.  Tools used at height and secured by a lanyard will be done so in a way that does not compromise the tool’s effectiveness and it is prohibited for any tool, securing assembly or lanyard to be altered from the OEM design (unless a suitable and sufficient ECDC approved Management of Change process has been followed and the relevant engineering approval given).  Carrying pouches must always be used for radios and any other portable equipment without certified securing points. Locks on pouches must have a double securing mechanism to prevent unintentional opening. Belt clips that allow equipment to become detached when turned 180º should not be used.  Tools used at height should be kept separate from those which are for general use. These tools should be kept secured within a toolkit and inventoried. The inventory of each tool kit should be kept at the site of the toolkit and be verified by a responsible person at suitable intervals (for example: the beginning and/or end of each shift).  Procedures should be in place to ensure that upon request of a “work at height” tool the responsible key holder should issue the tool and, along with the person intending to use the tool, sign a Tool Issue Register stating (as a minimum) that it has been inspected, is fit for purpose, where it will be used and the time and date it was issued. The Tool Issue Register will also be signed by both parties upon return of the tool.  No personnel may work at height with tools unless they have been deemed competent to do so by their supervisor and the risks involved have been identified (and suitably controlled) as a result of an appropriate risk assessment carried out by a competent person.   1. **Derrick / Mast Access**   Procedures should be in place to ensure that prior to ascending a derrick, mast or other elevated work space dictated as relevant by the DROPS Focal Point, an Access Log must be signed by the Rig Manager (or designee) and the person intending to climb the structure. As a minimum this log should record the following   1. The name and signature of the individual and Rig Manager (or designee), 2. The time and date of ascent, 3. The area intended to be accessed (for example: Crown block) 4. The tools and equipment taken with the work party.   This log must be counter-signed again by both the individual and the Rig Manager (or designee) when the work is completed. Summary A Competent Person, Cranes and Lifting Equipment must regularly inspect fall protection equipment, at least every six months. This does not relieve the end user from inspecting his equipment on a daily basis. It should also be maintained so that it remains satisfactory for use during the construction period. Effective actions must be taken to rectify any defects observed as a result of these inspections.  Fall protection equipment that has been deployed in a fall must be examined by a Competent Person, Cranes and Lifting Equipment and repaired prior to its re-use, or if necessary destroyed.  Fall protection devices and systems shall not be used for any purpose other than that for which they are designed. Appendix Glossary:  1. **Anchor System:** The term used to describe the combination of the anchorage and anchorage connector(s). The combination, and components of the combination, maybe be engineered or improvised. All equipment should be for the exclusive purpose of fall protection. 2. **Anchorage Connector**: (Also anchor points or anchor): The means by which the fall protection system is secured to the anchorage. This could be a man rated eye-bolt, a steel cable sling, tripods, davit arms or any other device designed to suspend human loads and capable as either improvised or engineered. 3. **Anchorage:** A secure structure, which safely withstands forces exerted by fall protection and rescue equipment. This structure is in the form of a beam, girder, column or floor. Anything attached to the anchorage is considered the anchorage connector. In most instances the anchorage is not specifically constructed for fall protection, but is a structure considered to be unquestionably strong. 4. **Approved:** Deemed acceptable by a person or body having authority to establish regulations or standards. 5. **Buckle:** A connector used for attaching strap or webbing segments together or to themselves. 6. **Chest Strap**: A strap that is part of the harness, passing horizontally across the chest and around the body. 7. **Competent Person:** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorisation to take prompt corrective measures to eliminate them. 8. **Connecting Means**: This is the method by which a rope, web or cable can be attached to an eyebolt, D-ring or many other specific locations. A lanyard, with all component parts such as splices, terminations and hardware, is the most common connecting means. Locking snap hooks are generally used to terminate lanyards as well as having many other industrial applications. The Karabiner, a versatile rescue tool, has a wider gate opening and can typically accommodate more slings or rope within it. 9. **D-ring (Dee-Ring):** A D-ring is the Drop-forged piece of steel used in the manufacture of body holding devices where the connecting means is attached. For Fall Protection, the D-ring is located dorsally. 10. **Egress:** To exit from, or the route to exit from a work area. The opposite of access 11. **Fall Arresting Device:** A device that provides a means of arresting the accidental vertical or near vertical fall of an individual and subsequent to the arrest shall not, by itself, permit the release or further lowering of the individual. 12. **Fall Protection System:** The system utilised to minimise the chance for injury during a fall. It consists of an anchorage point, connecting means and a body holding device. A well-rounded Fall Protection program considers rescue and methods to extricate a fallen worker. 13. **Fall Restraint System:** A system of components designed to eliminate the chance of an accidental fall. This may be accomplished by use of barricades and hand railing or may utilise an anchorage, a connecting means (such as a lanyard), and a body supporting device (such as a full body harness). 14. **Free Fall Distance:** The distance a worker may fall before a fall arrest system engages and begins to slow the fall. 15. **Full Body Harness:** A device made primarily out of straps for containment of the torso and pelvic area (and optionally the waist area). Designed to support the user during and after the arrest of an accidental fall and/or during a rescue operation and/or during work activities, depending on the group classification of the harness 16. **Hardware:** All components used to connect a fall protection or rescue system together. This would include snap hooks, Karabiners. D-rings, buckles, anchorage eye bolts, etc. These are either ‘Drop-forged’ or carbon steel. 17. **Horizontal Lifeline System:** These systems consist of an anchorage, anchorage connector, the lifeline itself and a variety of sub-systems in the horizontal plane. The entire system, from the anchorage to the body holding device, should be designed and approved by a qualified professional engineer. 18. **Integral:** Not removable from the component, sub-system or system without mutilating any element or without use of a special tool.      1. **Karabiner:** A connector component usually comprised of a trapezoidal or oval shaped body with a normally closed gate or similar arrangement. The Karabiner opens to permit the body to receive an object and, when released, automatically closes to retain the object. The steel auto-locking Karabiner is most applicable for industrial purposes. 2. **Lanyard:** A flexible length of webbing, rope or cable used to secure a body holding device to an appropriate anchorage point. Usually a terminated locking snap hooks and an integral shock absorber. The longest recommended length is 6’ (lanyards should never be chained together to achieve greater length). 3. **Lifeline:** Synthetic rope or steel cable, which is independent of the adjacent walking or climbing, means. The lifeline can therefore be either vertical or horizontally installed when used in conjunction with the proper sliding attachment units such as a forged ring (horizontal) or fall arrester (vertical).      1. **Qualified Person:** One who, by profession of a recognised degree, certificate, or professional standing, or who by extensive knowledge training, and experience has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project 2. **Roll Out:** Phenomena whereby a non-locking snap hook is connected to an anchoring eye bolt of insufficient size. If the snap hook “rolls” due to jarring or from loading and unloading of the system, the small eye bolt could engage the gate keeper, dislodging the system from the anchorage point. Easily overcome with locking snap hooks and/or larger eye-bolts. 3. **Self-Retracting Device (SRL):** Performs a tethering function, which allows unrestricted vertical movement to the device while arresting the user’s fall. It has housing, normally attached to the anchorage of a fall arrest system that contains a drum-wound lifeline. The retracting end of the lifeline will unwind from the drum under slight tension during normal movement below the device. When tension is removed, the drum will automatically retract the lifeline. Quick movement, typically applied at the onset of a fall, locks the drum and arrests the user’s motion. The self-retracting device is designed to arrest a fall while minimising fall distance and impact forces. 4. **Shock Absorber:** An energy dissipating device that is part of a complete fall protection system. Fall distance is increased as the friction created by the shock absorber reduces the stress loading to both the user and the anchor point. After a fall, which tears a portion of the webbing, the shock absorber must be retired.      1. **Shock Absorbing Lanyard:** A lanyard with an integrally connected personal shock absorber (PSA). This definition will include non shock absorbing lanyards when they have been correctly coupled to a PSA which is integrally connected to a full-body harness or rope grab, provided that the overall coupled length does not exceed six feet. 2. **Swing Fall:** Pendulum-like fall that can result from moving horizontally away from a fixed anchorage. Swing falls generate the same amount of energy as a fall through the same distance vertically but with the additional hazard of colliding with an obstruction or the ground. 3. **Waist Strap:** A strap that is part of the harness, which passes around the body at   the   1. waist 2. . 3. **Record**   9.1 BSA-ECDC-HS-CL-S006-01-Working at Height Equipment Register v1.0  9.2 BSA-ECDC-HS-CL-S006-02-Safety Harness, Lanyard and Fall Arrestor Weekly Check v1.0  9.3 BSA-ECDC-HS-CL-S006-03-Tools\_Aloft\_Log v1.0  9.4 BSA-ECDC-HS-CL-S006-04-Rescue Team Attendance Sheet v1.0  9.5 BSA-ECDC-HS-CL-S006-05-Portable Ladder Check v1.0  9.6 BSA-ECDC-HS-CL-S006-06-Working At Height Rescue Kit Pre-Use and Monthly Checklist v1.0  9.7 BSA-ECDC-HS-CL-S006-07-Derrickman Escape Device Check v1.0 |  |