

Safety & Hazard Assessment Written Assignment

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FILE	11971_JENNIFER_LOUISE_MUNGHAM_SAFETY_HAZARD_ASSESSMENT_WRITTEN_ASSIGNMENT_345382_143241189.DOCX (44.53K)		
TIME SUBMITTED	06-MAY-2021 11:45PM (UTC+0100)	WORD COUNT	2147
SUBMISSION ID	152058814	CHARACTER COUNT	11766

Hazard & Safety Assessment Written Assignment

ACDA5013

JENNIFER MUNGHAM

Part 1 – Risk Assessment

Task Description	Hazard Description	Pre-Controls Risk Estimate			Controls & Mitigations	Post-Controls Risk Estimate		
		Frequency	Severity	Score		Frequency	Severity	Score
Manoeuvring AJAX	Loss of communications with AJAX operator during movements - Could lead to AJAX moving in unexpected/unanticipated ways which could place loading staff in the path of the vehicle - Driver could be harmed/unwell and unable to call for assistance - Driver could be out of control of vehicle and unable to call for assistance or warn surrounding staff	Med	High	High	- Briefing to be held at the beginning of any task – this will include emergency procedures and evacuation plans - All communications to be carried on "Peltor" radio system provided on the vehicle - Hand signals will be given to stop maneuvers - All non-essential staff to be removed from the operating area before movements take place - All staff in vicinity will wear high visibility jackets/vests - Maneuver coordinator will always stay within view of vehicle driver - First aid trained staff will be present on task - Driver to Use four-way signals if they experience a fault	Low	High	Med
Manoeuvring AJAX	Crush/pinch/entrapment - Loading staff could be injured by crush/pinch or entrapment by the AJAX during its planned manoeuvres - Unplanned manoeuvres could cause staff to be caught	High	High	High	- Staff to wear high visibility vests when working around vehicles - Manoeuvres to be discussed with all staff in advance - No lone working on any task - Appropriate PPE ie Boots and gloves to be worn whilst handling AJAX/ramps/chains etc	Low	High	Med

	between AJAX and infrastructure or low-loader vehicle				- Staff to be in line of sight of each other at all times - Staff to be trained in safety hand signals - Trained first aider to be on-site through all work tasks			
Manoeuvring AJAX	Unintended movements of parts of AJAX (winch, turret, crane, etc) - Moving machinery could come into contact with loading staff - Moving machinery could come into contact with low-loader vehicle - Moving machinery could come into contact with surrounding infrastructure causing damage and presenting secondary hazards such as disturbed ground, flying shards, sharp surfaces etc.	Low	High	Med	- Manoeuvres to be discussed with all staff in advance - No lone working on any task - Appropriate PPE ie Boots and gloves to be worn whilst handling AJAX/ramps/chains etc - Staff to be in line of sight of each other at all times - Staff to be trained in safety hand signals - Trained first aider to be on-site through all work tasks - Loading staff to remain out of reach of moving parts of AJAX where possible - Loading staff to remain out of reach of moving parts of AJAX throughout manoeuvres	Low	Med	Low
Manoeuvring AJAX Manoeuvring Low-Loader	Driver incompetence - Incompetent driver could make mistakes in the manoeuvring of the vehicles, placing it in unexpected positions and causing damage to surrounding infrastructure/other vehicles/loading staff - Driver incompetence could lead to improper handling/briefing of loading staff placing them in harm's way	Low	High	Med	- Appropriate training courses attended (as determined by senior technical lead) - Provide proof of qualifications to crew/facility before starting task - Driver to be signed off by supervisor as competent - Regular review of competency by supervisor - Maneuvers to be planned in advance of task - Clear instructions for each maneuver during task - First aid trained staff will be present during task	Low	Med	Low

Loading AJAX	Ramp failure - Ramp structure could fail and break causing AJAX to topple which would injure driver and surrounding staff and damage low-loader vehicle or infrastructure - Attachment of ramp to low-loader vehicle could fail causing AJAX to fall and potentially topple which would injure driver and surrounding staff and damage low-loader vehicle or infrastructure	Low	High	Med	- Ramps and fittings will be inspected for compatibility with vehicles before use - Ramps and fittings will be inspected for damage or wear prior to use - Ramps will under go annual inspected by outside contractor - Staff will remain out of topple reach of the AJAX when it is moving on and into position of the ramps - Driver will remain fully in vehicle and strapped into position whilst manoeuvring vehicle on ramps - If remote winching of AJAX onto ramps is available, this should be used in place of being driven onto the ramps - Staff will not use the ramps to gain access to the rear of the low-loader but use the appropriate steps.	Low	Med	Med
Securing AJAX	Rope/chain failure - Wear, damage or fatigue could cause securing ropes and chains to break causing sudden unintended movement of vehicles - Breaking chains could produce sharp edges and fragments which could strike staff, vehicles or infrastructure	High	Med	High	- Ropes/chains will be inspected for compatibility with vehicles before use - Ropes/chains will be inspected for damage or wear prior to use - Ropes/chains will undergo annual inspected by outside contractor - Staff will remain out of topple reach of the AJAX when it is moving on and into position of the ramps - Driver will remain fully in vehicle and strapped into position whilst manoeuvring vehicle on ramps	Low	Low	Low
All Tasks	Adverse weather conditions Icy weather may make hazardous ground conditions	High	High	High	Task lead to check weather before activities begin to ensure there are no unacceptable metrological conditions that will affect task.	Med	Low	Low

	- Hot weather may lead to heat-stress, dehydration and fatigue - Cold weather may lead to hypothermia, and fatigue - Lightning could strike vehicles or staff - Poor visibility could lead to loss of communications and staff being in unexpected/unintended positions in vicinity of vehicle				- Task lead to check suitability of provided welfare facilities and location of medical services before task begins. - Task lead will brief team of weather conditions at the beginning of task. - Regular breaks will be taken throughout task. - Suitable PPE will be supplied as required. - Suitable welfare facilities will be provided as required - First Aid trained staff to be on-site whilst work being undertaken - Weather conditions will be monitored throughout task - Grit provided if ground is icy			
All Tasks	Electric Shock - Bare wiring in vehicles could provide shock to driver or loading staff - Mains infrastructure for lighting etc could cause shock to staff if damaged	Low	High	Med	- Vehicles to be inspected regularly for damage - Vehicles to be inspected by drivers prior to use for damage - Staff to wear rubber soled boots where possible - Loading site staff to inspect site regularly for damage - RCDs to be located on all main power - Staff to inspect any electrical items for damage before use - PAT testing to be done annually on all appropriate equipment 16 Amp power to be used outside - Electrical equipment used outside should have IP56 rating	Low	Med	Low

Part 2

Adverse Weather

The risk from adverse weather during the manoeuvring of vehicles and loading of an AJAX vehicle onto another low-loader type vehicle was reduced from a high risk, with high frequency and severity to a low risk with medium frequency and low severity.

Without management, adverse weather can present a range of unique hazards throughout the year, in summer, the hot weather can lead to heat-stroke and dehydration. Summer also carries a higher likelihood of thunderstorms and lightning strikes, which would be particularly hazardous when working in a large flat open area, such as an outdoor vehicle loading facility, with large metal machinery. Winter can be cold temperatures which can lead to hypothermia when unmanaged and increases the likelihood of slips and falls in icy conditions. Low visibility can be hazardous throughout the year; from reflections, rain, fog, snow or dust storms. All of these led to adverse weather having a high frequency when unmanaged, especially considering multiple hazards from the same weather and from different weather conditions can be present in a single day.

It would not be possible to reduce the weather hazards entirely without incurring massive costs and even sometimes adding extra hazards to the situation. For example, the task could be delayed until suitable weather was available, but given the range and frequency of potential, weather related hazards, there would only be a few days each year where conditions could be determined to have a low hazard from the weather. This would cause huge delays to the schedule of delivering and testing the AJAX vehicle systems. This has a cost to the manufacturers and purchasers but also to the personnel using the vehicles in the field that are due for a replacement.

Another possibility for removing the weather hazards would be to undertake this activity in an indoor facility. It is unlikely that a suitable facility would be available at each test site where the vehicle may need to be loaded for return transport and so an astronomical cost would have to be spent in building the appropriate facilities which would also lead to a large time delay in the delivery of the system. Even if indoor facilities were available at each location, the correct loading of a vehicle with ramps onto another vehicle can be time consuming. This could lead to a large build up of fumes in the indoor space which could be immediately hazardous for visibility and provide longer-term health risks. Each facility would require climate control systems to maintain a suitable working temperature and air filtration to keep the CO₂ and CO levels to less than 1,000ppm [1] and 9ppm [2] respectively. This is unlikely to be met in temporary facilities such as tents/marquees and requires significant infrastructure such as power. This again would add considerable costs and delays to the task which would outweigh the hazards presented by the weather when managed correctly and reduced to as low as reasonably practicable (ALARP). The HSE costs a human life at approximately £1.3million [3], it would cost significantly more than this to build suitable; well-lit, covered, climate controlled and air purified facilities at each site where an AJAX vehicle may be loaded.

By managing the adverse weather hazards, they can be reduced in both frequency and severity to be as low as reasonably practicable. The first step in this is identifying the hazards by looking at weather forecasts, and making a decision for each task, whether the likely weather makes the hazard at the particular site significant. For example; if there was a thunderstorm warning and the loading site was a large flat area with no lightning protection, the adverse weather hazard would be deemed significant and work would be delayed unless extra measures could be brought in to reduce the likelihood and severity of a lightning strike occurring during the task. The task-lead would also be required to brief all the members of staff on the likely weather hazards as informed by the weather forecast; this highlights the potential hazards in a hope to reduce the likelihood, and presents an opportunity to explain the measures available which have been introduced to reduce the hazard.

These measures consist of generic items, such as the suggested use of weather suitable PPE, location of provided welfare facilities for the production of warm drinks in cold weather, or cool drinks for hot weather. The measures may also include more weather specific measures such as a store of grit for slippery surfaces.

Regular breaks should be taken throughout the task as standard, but these may need to be increased and/or lengthened to account for weather conditions.

In the event on in incident occurring, a trained first aider should be present to see to minor injuries and supervise victims until more qualified first aiders arrive for major injuries. It was deemed unnecessary for ALARP conditions to have more substantial healthcare facilities on permanent standby throughout the task. This is because, the likelihood of serious injury has been lowered through the use of the previously mentioned controls and that, holding an ambulance, for instance, on standby, could be depriving someone in greater need. This may need to be reconsidered if the task is to take place in an inaccessible or extremely remote environment where substantial healthcare facilities could not be accessed in a timely manner.

To maintain an ALARP level for the task, it should be reviewed annually which will allow for new ideas to be suggested or new technologies which might reduce the hazards to be identified and included. This could be new standards for weather related PPE, new lightning protection systems or better weather forecasting.

The introduction of electric vehicles would reduce the potential harm from CO and CO₂ when loading in an enclosed area and so these technologies should be watched, particularly for the low-loader type vehicle. With air purification needs reduced, it may be possible to use temporary pop-up structures in low-wind weather conditions as technology advances.

References

- [1] S. Bonino, "Carbon Dioxide Detection and Indoor Air Quality Control," OHS Online, 1 April 2016. [Online]. Available: <https://ohsonline.com/articles/2016/04/01/carbon-dioxide-detection-and-indoor-air-quality-control.aspx#:~:text=Carbon%20dioxide%20levels%20and%20potential,of%20drowsiness%20and%20poor%20air>. [Accessed 30 April 2021].
- [2] EPA, "What is the average level of carbon monoxide in homes?," EPA, 1 August 2019. [Online]. Available: <https://www.epa.gov/indoor-air-quality-iaq/what-average-level-carbon-monoxide-homes#:~:text=A%20passive%20monitor%20is%20currently%20under%20development.&text=No%20standards%20for%20CO%20have,35%20ppm%20for%201%20hour..> [Accessed 30 April 2021].
- [3] HSE, "Appraisal Values or Unit Costs," HSE, [Online]. Available: <https://www.hse.gov.uk/economics/eauappraisal.htm>. [Accessed 30 April 2021].

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FINAL GRADE

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GENERAL COMMENTS

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