ATTACHMENT C

Integrity Management Plan

NISKA
GAS STORAGE

Wild Goose Storage

Gas Integrity Management Program Manual

30-inch Pipeline System

Revised June 2012

Table of Contents

REVISION HISTORY

June 2012	
1. Revised Item 13 on the Compliance Calendar to reflect current requirement in §192.1007(g). See also Item 4 below. 2. Added Paragraph 2.2, Additional Pipeline Systems which describes the 18-inch and 24-inch pipelines. It notes that they do not currently have any High Consequence Areas (HCAs) and establishes the requirement that these pipelines be evaluated annually for HCAs. 3. Revised Section 3 HCAs. Changed identification method from Method 2 to Method 1 to be consistent with the method originally selected in 2004 to identify HCAs on the 30-inch pipeline. Added form for documenting annual HCA reviews. 4. Revised Paragraph 7.1 Performance Measures to be consistent with the latest revision of §192.1007(g) (February 1, 2011). 5. Added fields for approvals on revision history. 6. Minor editing throughout to correct typographical errors and formatting.	
Approved by:	**Date:**
Approved by:	**Date:**
September 2011	
1. Revised Paragraph 3.2.2, Input from Public Officials: Removed the requirement for either an annual letter to, or face-to-face meetings with, public officials to get input on identified sites and changed title to "External Data Sources". The local office of emergency services does not make a physical survey of land use changes and does not have information to provide input on identified sites. 2. Deleted Paragraph 3.2.3 which stated "Letters or minutes from face-to-face meetings will be filed under the Records tab in this manual".	
December 2010 Issued For Use	
The Wild Goose Storage Integrity Management Plan Manual, Rev 2009 was entirely rewritten to address findings identified during an audit of the Integrity Management Program performed by the California Public Utilities Safety and Reliability Branch from December 8-10, 2009 and to update program requirements and processes.	

COMPLIANCE CALENDAR

Item No.	Task	Section Reference	Responsible Person	Frequency or Due Date
1	Review for new HCAs	3.3.1	Production Coordinator	Once / calendar year
2	Review data in Master Data Set spreadsheet	4.3.3	Production Coordinator	Once / calendar year
3	Risk result validation	4.4.6	Manager, E&O SPS/WGS	Once / calendar year
4	Review priority risk ranking	4.4.7	Manager, E&O SPS/WGS	Once / calendar year
5	Include pipeline segments in new HCAs or new pipe impacting an existing HCA into Integrity Management Program	5.1.4	Production Coordinator	Within 1 year of date identified
6	Assess pipeline segments in new HCAs or new pipe impacting an existing HCA	5.14	Production Coordinator	Within 10 years of date identified
7	Notify PHMSA/CPUC of use of other technology as an assessment method	5.2.1 5.3.3	Manager, E&O SPS/WGS	180 days before conducting assessment
8	Reassessment of covered segment on which Baseline Assessment was conducted	5.3.2	Manager, E&O SPS/WGS	No later than 7 years after Baseline Assessment
9	Request for waiver from required assessment interval	5.3.6	Manager, E&O SPS/WGS	180 days before end of required interval
10	Discovery of a condition	5.4.2	Manager, E&O SPS/WGS	180 days after assessment has been completed
11	Examination of an immediate repair condition	5.5.1	Production Coordinator	Not later than 5 days of discovery
12	Remediate one-year conditions	5.5.2	Production Coordinator	Within 1 year of discovery
13	Submit performance metrics to PHMSA	7.1.1	Manager, E&O SPS/WGS	Annually no later than March 15 for the previous year
14	Notify PHMSA/CPUC of significant changes to program, implementation or schedules	7.3.5	Manager, E&O SPS/WGS	Within 30 days after the change is adopted
15	Conduct review of program and QA process	8.5.1	Superintendent SPS/WGS	Annually, not to exceed 18 months
16	Conduct program audit	8.6.1	Manager, E&O SPS/WGS	Every 3 years (last performed 12/09)

1.0 INTRODUCTION

1.1 Purpose

This document describes Wild Goose Storage, LLC's (WGS) Pipeline Integrity Management Program and the processes used to maintain compliance with Department of Transportation (DOT) 49 CFR 192, Subpart O Pipeline Integrity Management.

1.2 Approach

1.2.1 The WGS Integrity Management Program is a prescriptive-based integrity management program. The following documents have been used as a guide in the development of the program:

- ASME Code B31.8S, Managing System Integrity of Gas Pipelines.
- OPS Gas Integrity Management Protocols Results Form (September 2007)

1.2.2 Other documents incorporated by reference include:

- NACE RP-0502-2002, Standard Recommended Practice – Pipeline External Corrosion Direct Assessment Methodology
- Niska Gas Storage Corporate Gas Emergency Plan
- WGS Operating and Maintenance Procedures
- WGS Environmental, Health, and Safety Procedures

2.0 PIPELINE SYSTEM DESCRIPTION

2.1 Covered Pipeline System

The pipeline system covered by the WGS Integrity Management Program consists of a single 30-inch diameter, coated steel, X-70 DSAW pipeline. The 25-mile pipeline begins at the Pacific Gas and Electric (PG&E)/WGS interconnection at Delevan Meter Station and terminates inside the Wild Goose Gas Storage Facility in Gridley, CA. The pipeline was constructed in 2003 and is piggable over its entire length. The MAOP of the pipeline is 1050 psig.

The pipeline system is maintained in compliance with 49 CFR Part 192 requirements and was placed under cathodic protection during commissioning.

The pipeline system currently has one identified High Consequence Area (HCA).

2.2 Additional Pipeline Systems

WGS also operates an 18-inch diameter, coated steel, X-65 DSAW pipeline and a 24-inch diameter, coated X-65 DSAW pipeline that begin at the Wild Goose

Gas Storage Facility and extend 4.5 miles to the Well Pad southwest of the facility.

These pipelines do not have any HCAs; however, they are evaluated annually for new HCA's using the same criteria as the 30-inch pipeline.

3.0 HIGH CONSEQUENCE AREAS (HCAs)

3.1 HCA Identification Method

3.1.1 Method 1 as defined by §192.903(1) will be used to identify high consequence areas and will be applied to the entire 30-inch pipeline. Under Method 1, an HCA is defined as the area within a potential impact circle containing:

- A Class 3 location under §192.5; or
- A Class 4 location under §192.5; or
- Any area in a Class 1 or Class 2 location where the potential impact radius is greater than 660 feet, and the area within a potential impact circle contains 20 or more buildings intended for human occupancy; or
- Any area in a Class 1 or Class 2 location where the potential impact circle contains an identified site.

An identified site is defined as:

- Outside area or open structure occupied by 20 or more persons at least 50 days a year. Examples include: beach, playground, recreational facilities, camp grounds, outdoor theater, stadium, or area outside a religious facility.
- Building occupied by 20 or more persons 5 days a week, 10 days a year. Examples include: religious facility, office building, community center, stores, etc.
- Facility occupied by persons who are confined, of impaired mobility, or difficult to evacuate. Examples include: hospitals, schools, day-care facilities, retirement or assisted living facilities.

3.1.2 If the method of identifying HCAs is changed at a later date to Method 2, an analysis will be made to determine if the change results in a significant difference in the amount of system mileage that is considered to be HCA. A significant difference (e.g., 25%) may constitute a change in IMP that must be communicated to Pipeline and Hazardous Materials Safety Administration (PHMSA) and the California Public Utilities Commission (CPUC) Utilities Safety and Reliability Branch as required by Section 7.3, Management of Change (MOC).

3.2 Identified Sites

The location of identified sites will be established by reviewing data from routine maintenance and operation activities and external data sources. Input may also be solicited from public officials with safety or emergency response responsibilities if there is any doubt as to the validity of the data sources selected.

3.2.1 Maintenance and Operating Data Sources

Sources include but are not limited to pipeline aerial and ground patrol reports (e.g., evidence of new construction in the vicinity of the pipeline, change in existing building use, etc.); class location studies; pressure test reports; and documentation of new pipeline installation, pipeline replacements or relocations, MAOP changes, and throughput changes.

3.2.2 External Data Sources

One or more of the following external data sources, as appropriate, will be used to identify potential sites:

- Visible marking (e.g., sign).
- Site is licensed or registered by a Federal, State, or local government agency.
- The site is on a list (including a list on an internet web site) or map maintained by or available from a Federal, State, or local government agency and available to the general public.

3.3 HCA Identification Process

3.3.1 Annual Review

The Production Coordinator or delegate will conduct a review for new HCAs or changes to the existing HCA whenever there are changes in pipeline operating conditions, but at least once each calendar year. The pipeline data sources listed in Paragraph 3.2.1 will be reviewed to determine changes. Document the annual review on Form HCA02 see Forms tab).

3.3.2 New HCAs

When information is received indicating a change in conditions that would lead to the creation of a new HCA, the following steps will be taken:

i. Make a field investigation of the area.

ii. Evaluate the area using Method 2 as described in Section 3.1 above and document the evaluation on Form HCA01(see Forms tab).

iii. Utilize the data in Master Data Set spreadsheet (see Section 4.2 to make an initial analysis of the pipeline segments that are located in the area.

iv. If the field investigation and Master Data Set spreadsheet analysis confirm that the area is a new HCA, incorporate the HCA into the

Baseline Assessment Plan (see Paragraph 5.1) no later than one year from the date it is identified.

v. Update the Master Data Set spreadsheet.

3.3.3 Removal of an Existing HCA

When information is received indicating that an area previously determined to be an HCA may no longer be an HCA, the following steps will be taken:

i. Make a field investigation of the area.

ii. Evaluate the area using Method 1 as described in Section 3.1 above and document the evaluation on Form HCA01 (see Forms tab).

iii. If the area is confirmed to no longer be an HCA, update the Master Data Set spreadsheet and the Integrity Management Plan.

3.3.4 Completed forms will be filed under the Records tab of this manual.

3.4 Documenting HCAs

3.4.1 The location of pipeline segments that are located in high consequence areas may be documented by either of the two methods described below.

Laser Range Finder

A laser range finder will be used by standing directly over the pipeline and pointing the laser range finder at the closest portion of the potential identified site. The findings must be recorded on the "Annual HCA Determination" form. Also, the error factor shall be documented on these forms and supported by manufacturer's technical documentation. When technical information from the manufacturer cannot be obtained, a minimum of ten feet will be use for laser range finder error factor.

Aerial Photography Map with Pipeline Overlay

Location of the pipeline should be within ten feet of actual location as defined by as-built drawing alignment sheets and/or with GPS points using sub-meter Trimble GPS instrument. Ten feet will be added to aerial photography over lay to account for potential minimum errors in alignment sheets and/or collection of GPS data points.

3.4.2 The completed "Annual HCA Determination" form and Form HCA01or aerial map will be filed under the Records tab of this manual.

4.0 THREATS, DATA INTEGRATION, AND RISK ASSESSMENT

4.1 Threat Identification

4.1.1 Each covered pipeline segment within an HCA will be evaluated for potential threats. Threat categories to be evaluated are listed in Table 1 below.

Table 1
Prescriptive Program Threat Categories

	Time Dependent Threats
1.	External corrosion
2.	Internal corrosion
3.	Stress corrosion cracking
	Static (stable) or Resident Threats
4.	Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects.
5.	Welding or fabrication related defects ▪ Defective pipe girth weld ▪ Defective fabrication weld ▪ Stripped threads, broken pipe, coupling failure
6.	Equipment failures ▪ Gasket O-ring failure ▪ Control/Relief equipment malfunction ▪ Seal/pump packing failure
	Time-Independent Threats (Random)
7.	Third party/mechanical damage
8.	Incorrect operations (including human error)
9.	Weather related and outside force damage ▪ Cold weather ▪ Lightning, heavy rains or floods ▪ Earth movement
	Additional Threats
10.	Cyclic fatigue or other loading condition.
11.	All other potential threats.

4.1.2 In addition to the threat categories listed in Table 1, interactive threats from different categories (e.g., manufacturing defects activated by pressure cycling, corrosion accelerated by third party or outside damage) will be evaluated for covered segments.

4.1.3 A threat will not be eliminated from consideration for a specific segment unless there is documented justification based on sound engineering practices. The unavailability of data is not an acceptable justification for excluding a threat from consideration. Depending on the importance of the data, additional inspection actions or field data collection efforts may be required.

4.2 Data Collection and Integration

4.2.1 Data required for identifying and evaluating the potential pipeline threats listed in Table 1 will be collected for covered and non-covered pipeline segments.

4.2.2 A pipeline segment is defined whenever a pipeline attribute changes (wall thickness, coating, diameter, etc.). Pipeline segments falling within the boundaries of the HCA are defined as covered pipeline segments.

4.2.3 The as-built pipeline alignment stationing will be used to integrate pipeline data and correlate the data to individual pipeline segments. The data will be tabulated in the Master Data Set spreadsheet. The spreadsheet will be filed under the Records tab of this manual.

4.2.4 Required data categories and data elements are listed in Table 2 below.

Table 2
Prescriptive Program Data Elements

Attribute Data	
Pipe Wall Thickness	Manufacturing Date
Diameter	Material Properties
Seam Type & Joint Factor	Equipment Properties
Manufacturer	
Construction	
Year of Installation	Pressure Test
Bending Method	Soil, Backfill
Depth of Cover	Inspection Reports
Crossings/Casings	Cathodic Protection Installed
Joining Meth, Proc, & Insp Results	Coating Type
Operational	
Gas Quality	OD/ID Corrosion Monitoring
Flow Rate	Pressure Fluctuations
Normal Max & Min Op Pressure	Regulator/Relief Performance
Leak/Failure History	Encroachments
Coating Condition	Repairs
CP System Performance	Vandalism
Pipe Wall Temperature	External Forces
Pipe Inspection Reports	
Inspection	
Pressure Tests	Close Interval Surveys
In-Line Inspections	Coating Condition Inspections
Geometry Tool Inspections	Audits and Reviews
Bell Hole Inspections	

4.2.5 Acceptable data sources for required data are listed in Table 3 below.

Table 3
Acceptable Data Sources

Pipeline Alignment Drawings
Original Construction Inspector Notes/Records
Pipeline Aerial Photography
Facility Drawings/Maps including As-Built Drawings & P&IDs
Material Certifications
Survey Reports/Drawings
Safety Related Condition Reports
Incident Reports

Standards/Specifications – Internal and Industry
O&M Procedures
O&M Records (Corrosion, Patrolling, etc.)/Maintenance History
Emergency Response Plan
Inspection Records
Test Reports/Records
Design/Engineering Reports & Technical Evaluations
OEM Data

4.3 Data Quality and Validation

4.3.1 If the required data needed to assess a particular threat is not available (e.g., not currently tracked) or if the data is unsubstantiated due to missing or poor supporting documentation or records, the threat is assumed to apply to the covered segment being evaluated and conservative assumptions are used in the risk assessment for that threat and pipeline segment.

4.3.2 The Master Data Set spreadsheet will be updated with new or updated data identified through the Management of Change (MOC) process (see Section 7.3) in a timely manner.

4.3.3 The Production Coordinator or delegate will review the data maintained in the Master Data Set spreadsheet whenever there are changes, but at least once each calendar year for completeness and accuracy.

4.4 Risk Assessment

The results of the risk assessment will be used to prioritize covered pipeline segments for baseline and continual assessments (see Section 5.0) and to determine any additional preventive and mitigative measures that are needed for covered pipeline segments (see Section 6.0).

4.4.1 Approach

WGS Integrity Management Program team members, including internal and external Subject Matter Experts (SMEs), having the required knowledge and expertise will review the data set for covered and non-covered pipeline segments and determine the relative rating of the likelihood of failure for each threat and the severity of the resulting consequences. See Section 8.4 for team members and SMEs.

4.4.2 Failure Consequence Categories

Consequences resulting from a pipeline failure are to be considered and incorporated into the pipeline risk analysis. The following consequence categories will be considered in the risk analysis:

i. Impacts on public/worker safety

ii. Property damage

iii. Impacts on processes/operations

iv. Environmental damage

v. Impact to Company

4.4.3 Risk Analysis Method

The risk analysis method will address all of the threat categories listed in Paragraph 4.1.1, Table 1 and the interactive threats described in Paragraph 4.1.2. For a covered segment of pipeline with unique threat and consequence factors, the risk will be defined as follows:

$Risk_i = L_i \times S_i$ for a single threat

For threat categories 1 - 9

Total Segment Risk = $L_1 \times S_1 + L_2 \times S_2 + \ldots + L_9 \times S_9$

Where

L = failure likelihood due to threat

S = severity of the consequence

The likelihood and consequence severity ratings determined by the SMEs as in described in Paragraph 4.4.1 will be used in the risk calculation.

Instructions for assigning likelihood and consequence ratings along with rating definitions and weighting are provided in Appendix A.

4.4.4 Risk Calculation

The Manager, E&O SPS/WGS or delegate is responsible for maintaining the risk algorithm and generating the priority risk ranking. Prior to conducting a risk assessment, ensure that:

i. The assigned likelihood and consequence severity values have been reviewed and confirmed.

ii. Any prior version of the risk algorithm and risk calculation has been documented.

4.4.5 Documentation of Risk Assessment

Results from the risk assessment including threat likelihood and consequence ratings determined by the SMEs and risk rankings must be completely documented and filed under the Records tab in this manual.

4.4.6 Risk Result Validation

The Manager, E&O SPS/WGS or delegate will conduct a risk result validation at least once each calendar year to ensure that the results are logical and consistent with WGS's and other industry experience.

Risk results may be validated by conducting inspections, examinations, and evaluations at locations that are indicated as either high risk or low risk to determine if the methods are correctly characterizing the risks.

Results may also be validated by:

i. Considering other location's information regarding the condition of a pipeline segment and the condition determined during maintenance action or prior remedial efforts.

ii. A special risk assessment performed using known data prior to the maintenance can indicate if meaningful results are being generated.

4.4.7 Updates to Risk Assessments

The Manager, E&O SPS/WGS or delegate will review the priority risk ranking at least once each calendar year. The review will include consideration of any new information identified during the annual review of HCAs (see Paragraph 3.3.1), results of threat and consequence assessments conducted during the year, and any changes to the pipeline system or its operations.

If there are changes, the risk assessment will be updated to reflect the changes and the results used to modify the baseline assessment plan and other integrity management program actions (e.g., additional mitigative measures) as required.

5.0 INTEGRITY ASSESSMENT

5.1 Baseline Assessment

5.1.1 Baseline assessments must be completed for all covered pipeline segments by December 17, 2012.

5.1.2 Covered segments meeting the following conditions will be prioritized as high risk segments:

i. Contain low frequency resistance welded (ERW) pipe or lap welded pipe that satisfy the conditions specified in ASME B31.8S Appendix A4.3 and 4.4, and any covered or non-covered segments with such pipe that has experienced seam failure, or operating pressure on the covered segment has increased over the maximum operating pressure experienced during the preceding five years. (Not applicable to WGS.)

ii. Have manufacturing or construction defects (including seam defects) where any of the following changes occurred in the covered segment: operating pressure increases above the maximum operating pressure experienced during the preceding five years; MAOP increases; or the stresses leading to cyclic fatigue increase.

5.1.3 Baseline assessment plans must:

i. Include a description of the potential threats to each covered segment.

ii. Include a description of the method(s) that will be used to assess integrity based on the threats identified for each covered segment (see Paragraph 5.2).

iii. Include a schedule for completing the assessments including the risk factors used in determining schedule priorities.

iv. Incorporate and be in compliance with WGS environmental, health, and safety policies and practices to minimize environmental and safety risks.

5.1.4 Pipeline segments in newly identified HCAs and newly installed pipe that impacts an existing HCA must be included in the Baseline Assessment Plan within one year after their identification and assessed within ten years of their identification.

5.1.5 Baseline assessment plans will be modified or updated whenever new information, applicable threats, and risks leads to a change in inspection priorities, assessment methods or other improvements to the program. Significant modifications will be documented as required by the MOC process (see Section 7.0) and will include the reason(s) for the change and sign-off by the person approving the change.

5.1.6 File summary results of Baseline Assessments under the Baseline Assessment tab in the Records portion of this manual.

5.2 Integrity Assessment Methods

5.2.1 Integrity assessments will be conducted using the appropriate assessment method to address the identified threats and risk assessment results for the covered segments (see Section 4.0). Assessment methods that can be used are:

i. In-line inspection (ILI) – Must specify proper tools to address the identified threat(s)

ii. Pressure testing – Must satisfy requirements of 49 CFR 192 Subpart J

iii. Direct assessment (DA) – Not used by WGS

iv. Other technology – Requires notification to PHMSA/CPUC Utilities Safety and Reliability Branch at least 180 days before conducting the assessment

5.2.2 Acceptable methods for assessing threats are provided in Table 4 below.

Table 4
Threats and Integrity Assessment Methods

Threat	Primary Assessment Method	Supplemental Method
Time Dependent Threats		
External corrosion	Pressure Test	ILI or DA
Internal corrosion	Pressure Test	ILI or DA
Stress corrosion cracking	Bell hole exam and evaluation or Hydrotest	ILI or DA
Static (stable) or Resident Threats		
Construction and manufacturing-related defects, including the use of low frequency electric resistance welded (ERW) pipe, lap welded pipe, flash welded pipe, or other pipe potentially susceptible to manufacturing defects.	Analyze manufacturer's records. Conduct Pressure Test only if MAOP upgrade is planned.	
Welding or fabrication related defects ▪ Defective pipe girth weld	Analyze QC/Integrity records and evaluate potential for	Pressure Test or ILI

Threat	Primary Assessment Method	Supplemental Method
▪ Defective fabrication weld ▪ Stripped threads, broken pipe, coupling failure	ground movement.	
Equipment failures ▪ Gasket O-ring failure ▪ Control/Relief equipment malfunction ▪ Seal/pump packing failure	Analyze records from inspections conducted per O&M procedures.	
Time-Independent Threats (Random)		
Third party/mechanical damage	Analyze records from patrols and leak surveys per O&M procedures,	ILI
Incorrect operations (including human error)	Conduct audits/reviews of operating procedures and operator performance.	Maintain OQ Program
Weather related and outside force damage ▪ Cold weather ▪ Lightning, heavy rains or floods ▪ Earth movement	Analyze records from patrols and other inspections. If on-going subsidence, monitor progress of movement.	

5.3 Continual Evaluation and Reassessment

5.3.1 Pipeline integrity will be evaluated periodically based on data integration and risk assessment of the entire pipeline to identify the threats specific to each covered segment and the risk represented by these threats. The evaluation will consider the following:

i. Past and present assessment results

ii. Data integration and risk assessment information

iii. Decisions about remediation

iv. Additional preventive and mitigative measures

5.3.2 Covered segments on which a baseline assessment was conducted will be reassessed no later than seven (7) years after the baseline assessment of that covered segment unless the periodic evaluation indicates an earlier reassessment.

5.3.3 One or more the following methods will be used for reassessments depending on the applicable threats:

i. An internal inspection tool(s) capable of detecting corrosion and any other threats that will be addressed using this tool.

ii. A pressure test conducted in accordance with subpart J.

iii. Direct assessment (DA) – Not used by WGS

iv. Other technology – Requires notification to PHMSA/CPUC Utilities Safety and Reliability Branch at least 180 days before conducting the assessment.

v. Confirmatory direct assessment when used on a covered segment that is scheduled for a reassessment period longer than seven years – Not used by WGS

vi. Low stress assessment method – Not used by WGS

5.3.4 Reassessments will be conducted in accordance with WGS Operating and Maintenance (O&M) procedures and Environmental, Health, and Safety (EH&S) procedures to ensure precautions will be implemented to protect employees, members of the public, and the environment from safety hazards during reassessments. Additional job specific procedures will be developed as needed and identified via the Management of Change procedures.

5.3.5 If a decision is made in the future to establish a reassessment interval greater than seven years, the following requirements will apply:

i. A confirmatory direct assessment will be performed at intervals not to exceed 7 years followed by a reassessment at the established interval.

ii. The maximum reassessment interval will not exceed the values listed in Table 5 below.

iii. If the reassessment method is a pressure test, ILI, or other technology, the interval will be based on either 1) the identified threat(s) for the covered segment and on the analyses of the results from the last integrity assessment, and a review of data integration and risk assessment; or 2) the intervals specified for different stress levels of pipeline listed in ASME/ANSI B31.8S, Section 5, Table 3.

Table 5
Maximum Reassessment Intervals

Assessment Method	Pipeline Operating At or Above 50% SMYS	Pipeline Operating At or Above 30% SMYS, Up to 50% SMYS	Pipeline Operating Below 30% SMYS[2]
Internal Inspection Tool, Pressure Test, or Direct Assessment	10 years[1]	15 years[1]	20 years[3]
Confirmatory Direct Assessment	7 years	7 years	7 years
Low Stress Reassessment	Not Applicable	Not Applicable	7 years plus ongoing actions specified in §192.941

[1]A confirmatory direct Assessment as describe in §192.931 must be conducted by year 7 in a 10-year interval and years 7 and 14 of a 15-year interval.

[2]Not applicable to WGS

[3]A low stress reassessment or confirmatory direct assessment must be conducted by years 7 and 14 of the interval

5.3.6 A waiver from the required assessment interval may be requested only in cases where the appropriate internal inspection tools are not available or conducting the assessment would imperil gas supply. Application for waiver must be made at least 180 days before the end of the required assessment interval and must be approved by the Manager, E&O SPS/WGS.

5.4 Condition Discovery and Remediation Schedule

5.4.1 Results of integrity assessments will be reviewed in a timely manner. Integrity assessments are considered complete on the date on which final field activities related to that assessment are performed, not including repair activities for ILI tool runs and direct assessments (e.g., when a hydrostatic test is completed or when the last ILI tool run of a scheduled series of tool runs is performed).

5.4.2 Discovery of a condition occurs when there is adequate information about the condition to determine that it presents a potential threat to the integrity of the pipeline. This information must be obtained no later than 180 days after an integrity assessment has been completed, unless it can be demonstrated that it is impracticable to obtain the information within the time limit.

5.4.3 The actual date of discovery must be documented on the remediation schedule.

5.4.4 Once the discovery is made, a schedule that prioritizes evaluation and remediation of anomalous conditions will be developed. If the schedule cannot be met, the reason(s) why the schedule cannot be met and the basis for why the revised schedule will not jeopardize public safety must be documented and retained in file.

5.4.5 If required timelines for responding to conditions cannot be met, the operating pressure of the pipeline must be temporarily reduced, or other action must be taken that will ensure safety of the covered segment.

5.4.6 Temporary reduction in operating pressure must be determined using ASME/ANSI B31G or AGA Pipeline Research Committee Project PR-3-805 ("RSTRENG), or by reducing the operating pressure to a level not to exceed 80% of the level at the time the condition was discovered.

5.4.7 Notification must be made to the PHMSA and the CPUC Utilities Safety and Reliability Branch if:

i. The schedule for evaluation and remediation cannot be met and safety cannot be provided through temporary reduction in operating pressure or other action.

ii. Pressure reduction exceeds 365 days. The notification must explain the reason for the remediation delay and include a technical justification that the continued pressure reduction will not jeopardize the integrity of the pipeline.

5.5 Classification of Anomalies

5.5.1 Immediate Repair Conditions

An immediate repair condition requires a temporary pressure reduction or shut down of the pipeline upon discovery and must be examined within a period not to exceed five (5) days. Immediate repair conditions are classified as:

i. Calculated remaining strength indicates a failure pressure that is less than or equal to 1.1 times MAOP.

ii. Dent having any indication of metal loss, cracking, or stress riser.

iii. Indication or anomaly that is judged by the person designated to evaluate assessment results as requiring immediate action.

iv. Metal-loss indications affecting a detected longitudinal seam if that seam was formed by direct current or low-frequency electric resistance welding or by electric flash welding.

v. Indication of stress corrosion cracks.

vi. Indications that might be expected to cause immediate or near-term leaks or ruptures based on their known or perceived effects on the strength of the pipeline.

5.5.2 One-Year Conditions

One-year conditions require remediation within one year of discovery. One-year conditions are classified as:

i. A smooth dent located between the 8 and 4 o'clock positions (upper 2/3) of the pipe with a depth greater than 6% of the pipeline diameter.

ii. Dent with a depth greater than 2% of the pipeline's diameter that affects pipe curvature at a girth weld or at a longitudinal seam weld.

5.5.3 Monitored Conditions

Monitored conditions are conditions which must be monitored until the next assessment. These anomalies will be recorded and monitored during subsequent risk or integrity assessments for any change in their status that would require remediation. Monitored conditions are classified as:

i. Dent with a depth greater than 6% of the pipeline diameter located between the 4 and 8 o'clock (lower 1/3) of the pipe.

ii. Dent located between the 8 and 4 o'clock position (upper 2/3) of the pipe with a depth greater than 6% of the pipeline diameter, and engineering analysis to demonstrate critical strain levels are not exceeded.

iii. Dent with a depth greater than 2% of the pipeline diameter, that affects pipe curvature at a girth weld or a longitudinal seam weld, and engineering analysis of the dent and girth or seam weld to demonstrate critical strain levels are not exceeded.

5.5.4 Other Conditions

Threat conditions that do not meet the criteria in 5.5.1 through 5.5.3 above will be scheduled and remediated according to the provision of ASME/ANSI B31.8S, Section 7, and Figure 4.

6.0 PREVENTIVE AND MITIGATIVE MEASURES

6.1 Identification of Additional Measures

Risk assessments performed on covered segments (see Section 4.4) will be used to identify the need for additional preventive and mitigative measures to protect high consequence areas and to enhance public safety. Additional measures could include, installing automatic shut-off or remotely operated valves, installing computerized monitoring and leak detection systems, replacing pipe segments with heavier wall pipe, providing additional training on emergency or abnormal operations response procedures, conducting drills with local emergency responders, and implementing additional inspection or maintenance programs.

6.2 Measures for Third Party Damage Threats

6.2.1 The following minimum preventive measures will be implemented as part of the WGS damage prevention program to address third-party damage threats:

i. Use of qualified personnel for mark and locate activities and direct supervision of known excavation work.

ii. Participation in the Underground Service Alert (USA) one-call system.

iii. Maintaining location-specific information on excavation damage that occurs in covered and non-covered segments in Master Data Set spreadsheet (see Section 4.2). This information must include recognized damage that is not required to be reported as an incident under Part 191. Any root cause analysis supporting identification of targeted additional preventative and mitigative measures in the high consequence areas must be filed under the Records tab in this manual.

iv. Monitoring of excavations conducted on covered pipeline segments by pipeline personnel.

1. If there is physical evidence of encroachment involving an excavation near a covered segment that was not monitored, the area near the encroachment must either be excavated or an above ground survey using methods defined in NACE RP-0502-2002 must be conducted.

2. If any above ground survey is conducted, the company will verify that any indication of coating holidays or discontinuities warranting direct examination must be excavated and remediated in accordance with ANSI/ASME B31.8S Section 7.5 and §192.333.

6.2.2 If the threat of third party damage is determined, comprehensive additional preventive measures will be developed and implemented.

6.3 Measures for Outside Force Damage Threats

If the threat of outside force damage such as earth movement or flooding is determined, additional measures will be developed and implemented. Measures could include, but are not limited to, increasing frequency of patrols, adding external protection, reducing external stress, and in extreme situations, relocating the affected segment of the pipeline.

6.4 Measures for Corrosion Threats

6.4.1 If internal or external corrosion that could adversely affect the integrity of the pipeline is found on a covered segment, the following minimum actions will be taken:

i. The corrosion will be evaluated and remediated, as necessary, for all covered and non-covered pipeline segments with similar material coating and environmental characteristics.

ii. A schedule will be established for evaluating and remediating, as necessary, the similar segments consistent with WGS maintenance and operating procedures for testing and repair.

6.5 Automatic Shut-off and Remote Operated Valves

6.5.1 The need for additional automatic shut-off or remotely operated valves will be evaluated whenever operating conditions change or when indicated by the results of ongoing data gathering and data integration. A risk based evaluation using the risk analysis approach described in Section 4.4 that considers the following factors will be performed:

i. Swiftness of leak detection and pipe shutdown capabilities

ii. Type of gas being transported

iii. Operating pressure

iv. Rate of potential release

v. Pipeline profile

vi. Potential for ignition

vii. Location of nearest response personnel

7.0 PROGRAM MANAGEMENT

7.1 Performance Measures

7.1.1 The performance metrics listed below must be reported and submitted to PHMSA as part of the annual report required by §191.11 by March 15 of each year for the previous year. Reports are submitted electronically via the PHMSA online reporting system and filed under the Records tab in this manual.

i. Number of hazardous leaks either eliminated or repaired as required by §192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by cause.

ii. Number of excavation damages.

iii. Number of excavation tickets (receipt of information by the underground facility operator from the notification center).

iv. Total number of leaks either eliminated or repaired, categorized by cause.

7.2 Record Keeping

7.2.1 The following minimum records will be maintained for the life of the facility:

i. Written gas integrity management plans.

ii. Threat identification and risk assessment documentations.

iii. Baseline assessment plans.

iv. Supporting documentation for decisions, analyses, and processes developed and used to implement and evaluate each element of the baseline assessment plan and integrity management program.

v. Training program documentation and training records.

vi. Remediation schedule and technical basis documentation.

vii. Direct assessment plan documentation (Not used by WGS).

viii. Confirmatory assessment documentation (Not used by WGS).

ix. Documentation of Notifications to PHMSA and the CPUC Utilities Safety and Reliability Branch.

7.2.2 The Production Coordinator will retain and maintain hardcopy and electronic records at the facility.

7.3 Management of Change (MOC)

7.3.1 Changes that affect the integrity management program will be analyzed for implications to the program, documented, reviewed, approved, and communicated to affected parties prior to implementation. Examples of changes that fall within the scope of this section include, but are not limited to:

i. Changes to operating parameters such as MAOP or flow.

ii. Modifications or additions to equipment.

iii. Changes to procedures, technology.

iv. Changes in the organization.

v. Changes in right-of-way activity or land use.

vi. Regulatory or code changes.

vii. Changes in personnel qualification.

7.3.2 WGS Document No. WGS MOC Form, Management of Change Form will be used to document changes, reviews, and approvals (see Forms tab).

i. The change and reason for the change must be completely described. Any time limitations (e.g., reporting or implementation time frames) that might apply to the change must also be described.

ii. The Hazards Assessment Screening (page 2 of the form) must be completed to determine if a full hazard assessment is required.

iii. The Change Follow Through form (page 3 of the form) must be completed to verify that integrity management program or system changes have been implemented and that the risk analysis process and outputs and any other related integrity management documentation have been updated as required to reflect changes to applicable data.

7.3.3 Changes will be inputted and tracked electronically via the WGS computerized change management tracking system.

7.3.4 Approvals will be consistent with WGS delegation of authority.

7.3.5 When there are significant changes to the integrity management program, program implementation, or schedules, PHMSA and the CPUC Utilities Safety and Reliability Branch must be notified within 30 days after the change is adopted.

7.4 Internal and External Communications

7.4.1 The Manager, E&O SPS/WGS is responsible for ensuring that:

i. The Integrity Management Program Executive Sponsor is given a briefing at least once each calendar year on overall program effectiveness and results, including performance measures and findings from program audits and annual reviews. More frequent briefings may be given as needed to ensure understanding and support for the program.

ii. The requirements of and changes to the integrity management program are communicated in a timely manner to WGS personnel and contractors who perform integrity management tasks.

7.4.2 The Manager, E&O SPS/WGS is responsible for ensuring that notifications or briefings regarding integrity management related issues (e.g., HCAs) are provided to affected landowners and tenants along the pipeline right-of-way; public officials (other than emergency responders); local and regional emergency responders; and the general public when required.

7.4.3 Safety concerns raised by PHMSA or the CPUC Utilities Reliability and Safety Branch during audits or inspections will be addressed in a timely manner and within any required time frames.

8.0 QUALITY ASSURANCE

8.1 Program Documentation

The documentation and document retention requirements for the Integrity Management Program are specified in Section 7.2, Record Keeping.

8.2 Team Charter and Authority

8.2.1 Program responsibility and statement of authority are documented in the WGS Integrity Management Program (IMP) Team Charter. The charter is filed under the Quality Assurance tab in this manual and specifies:

i. IMP leadership team objectives and organization

ii. Key activities and milestones

iii. Program deliverables

iv. Benefits and measures

v. Executive sponsor approval and authority

8.3 Roles and Responsibilities

8.3.1 Specific program roles and responsibilities are delineated in the WGS IMP Roles and Responsibilities Matrix. For each task listed, there is an assigned lead, responsible person, and consulted person(s) (if applicable).

8.3.2 The Superintendent, SPS/WGS or delegate will review and update the roles and responsibilities matrix whenever changes to the team occur, but at least once each calendar year.

8.3.3 The Roles and Responsibilities Matrix is filed under the Quality Assurance tab in this manual.

8.4 Personnel Qualification and Training Requirements

8.4.1 WGS Integrity Management Program team members, including any internal and external SMEs must have the appropriate training or experience for their assigned responsibilities. The minimum qualification requirements are listed in the Integrity Management Program Team Qualification Requirements table filed under the Quality Assurance tab in this manual.

8.4.2 WGS and contractor personnel who mark and locate buried structures, directly supervise excavation work, or implement preventive or mitigative measures must be qualified for their assigned responsibilities.

8.4.3 Qualification and training requirements for integrity management program tasks that are also operator qualification (OQ) covered tasks will be defined by the WGS OQ program.

8.4.4 Vendor contracts, when appropriate, will include specific requirements of qualification and training (e.g., ILI vendor contracts).

8.4.5 Records for WGS personnel and contractors including resumes, training certificates, or class attendance logs that demonstrate qualification requirements are met will be retained as part of WGS training and OQ records.

8.5 Annual Program and QA Process Reviews

8.5.1 The Superintendent, SPS/WGS or delegate will ensure that a review of the integrity management program and quality assurance process is conducted on an annual basis not to exceed 18 months. The scope of the program review will include review of the integrity management procedures and their effectiveness, and the effectiveness of the quality assurance process.

8.5.2 A review of all key documents and data for each covered segment will be conducted concurrently with the program and process reviews.

8.5.3 Recommended actions to correct deficiencies or to improve the program or process will be documented and submitted to the Manager, E&O SPS/WGS for concurrence.

8.5.4 A master action item log will be developed to track items through completion.

8.6 Integrity Management Program Audits

8.6.1 The Manager, E&O SPS/WGS or delegate will ensure that a program audit is conducted at least once every three (3) years. The scope of the audit will include:

i. A review of process activities required by 49 CFR 192, Subpart O using the PHMSA protocol checklist found on the PHMSA web site.

ii. A complete review of the integrity management program to ensure all activities are performed accurately and in a timely manner.

iii. A review of the performance measures to determine if they should be updated to more accurately measure the program.

8.6.2 The audit may be performed in-house as a self-assessment, by a third party, or as part of an audit by the CPUC Utilities Safety and Reliability Branch.

8.6.3 Recommended actions to correct deficiencies or to improve the program will be documented.

8.6.4 A master action item log will be developed to track items through completion.

8.6.5 Additional audits or program evaluations may be initiated as a result of management of change issues (see Section 7.3).

8.7 Invoking Non-Mandatory Statements in Standards

As a rule, WGS will incorporate the non-mandatory requirements from industry standards or other standards referenced in 49 CFR 192, Subpart O into its plan and implement as recommended in the standard. Any exceptions to the rule must be submitted via the Management of Change (MOC) process (see Section 7.3).

APPENDICES (Listing)

A Risk Analysis Method

ATTACHMENT D

Environmental Health and Safety Handbook for US Operations

ENVIRONMENTAL HEALTH & SAFETY *Handbook*

SAFE

NISKA GAS STORAGE

United States Operations

Version 1 — February 2008

24-HOUR EMERGENCY CONTACT TELEPHONE NUMBERS

California Contacts	Telephone
Butte County Environmental Health Division (EHD)	1-530-691-2727
Butte County Air Quality Management District (AQM)	1-530-691-2727
CAL-OSHA	1-530-895-4761
California Fish and Game Department (CFGD)	1-530-868-5722
California Office of Emergency Services (COES)	1-800-852-7550
California Public Utilities Commission (CPUC)	1-800-235-1076 or 1-800-235-7128
Central Valley Regional Water Board	1-530-224-4788
Division of Oil, Gas and Geothermal Resources (DOGGR)	1-916-322-1110
Gridley Fire Department	911 or 1-530-846-5711
US Department of Transportation	1-800-424-8802
US National Response Center (NRC)	1-800-424-8802
Central Valley Regional Water Quality Control Board (WQB) – Redding Office	1-530 224-4788
Wild Goose Facility Contact	WG Control Room: (530) 846-7351 After Hours: (530) 869-8450

Oklahoma Contacts	Telephone Number
Salt Plains Facility Contact	SPS Control Room: (580) 694-2249 After Hours: (866) 832-7356
Occupational Safety & Health Administration	1-800-321-6742 or 1-405-278-9560
Oklahoma Corporation Commission	1-405-375-5570
US Fish & Wildlife Service, Oklahoma	1-580-626-4794
US Department of Transportation	1-800-424-8802
US National Response Centre (NRC)	1-800-424-8802
Oklahoma Department of Environmental Quality	Air Quality Management Division: (405) 702-4157 Water Quality Division: (405) 702-8187
Environmental Protection Agency-Region 6	1-800-887-6063
Oklahoma Corporation Commission	(405) 521-2211
Manchester Fire Department	(580) 694-2300
Manchester Police Department	(580) 395-2356

NON-EMERGENCY TELEPHONE NUMBERS

Person & Position	Location	Non-Emergency
Kelly Baltimore – EHSS Coordinator	Calgary	Ph: (403) 513-8663
		Cell: (403) 988-7041
Simon Dupéré – Chief Operations Officer	Calgary	Wk: (403) 513-8709
		Cell: (403) 803-8904
Glen Thauberger - Plant Superintendent	Salt Plains	Wk: (580) 694-2249 Cell: (580) 554-6113
	Wild Goose	Wk: (530) 846-7386 Cell: (530) 624-0112
Gary Theberge – Manager E&O (SPS &WGS)	Calgary	Wk: (403) 513-8631
		Cell: (403) 580-8586

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Environmental Health & Safety Policy Statement

Impact to the environment, protection against harm to the public or its workers, prevention of damage to company materials and property are core business values of Niska Gas Storage (Niska).

Every Niska employee has the right to a safe work place. Niska embraces a 100% safe culture and places the protection of people from injury or illness above all other management considerations and is dedicated to continuing our commitment of operating our facilities to the highest standard of environmental, health and safety compliance.

Niska will conduct and treat people fairly and communicate promptly, completely and accurately with our customers, employees, suppliers, community members, shareholders, regulators and all others with whom we do business. Niska is obligated to our employees to provide the resources and training necessary to provide a safe work place and Niska employees have the obligation to adhere to safety regulations and safe work procedures.

Niska will ensure that:

- Safety and environmental compliance come first, regardless of the magnitude or urgency of the job.
- Personnel are available to provide the resources and guidance necessary for continuous improvement to safety procedures.
- Personal Protective Equipment is available and used when required.
- Safe work procedures are developed, reviewed by all affected workers prior to the commencement of work and adhered to.
- Our employees are provided with the tools and training necessary to allow them to conduct their work in a safe and productive manner.
- Workers on Niska work sites adhere to government laws and regulations.
- Our facilities are operated in an economical, environmentally sustainable and socially responsible manner and to reduce waste, emissions and discharges from our operations.

Niska Gas Storages safety program also contributes to worker morale and quality of work as a result of our employees participating in identifying work place hazards and the development of safe work practices and procedures.

Niska Gas Storage is committed to ensuring that all relevant legislation is incorporated into the Niska Gas Storage safety program and that all workers comply with those requirements.

The success of the Niska Environmental, Health & Safety program depends on the adherence and cooperation of all Niska Gas Storage employees and contractors. We must all strive to protect the environment and the health and safety of ourselves, fellow workers and the general public.

No job is so important that we cannot take the time to do it safely.

David Pope
President, Niska Gas Storage
October, 2006

1.0 INTRODUCTION

This Environmental Health and Safety (EH&S) Handbook (the Handbook) outlines minimum EH&S expectations for all workers and visitors working or visiting a Niska Gas Storage (hereafter referred to as Niska) United States operations work site. It supplements the OSHA Regulations and Codes, other applicable laws, and various industry codes and documents. Niska standards will be followed for all work. In the event of a conflict between the language of a contract and the language of this document, the contract will dictate the required work specification.

This Handbook meets the requirements of California's Injury and Illness Prevention Plan: 8 CCR sec. 3202 (1) Authority and Responsibility; 8 CCR sec. 3202 (2) Employee Compliance; 8 CCR sec. 3202 (3) Communication with Employees; 8 CCR sec. 3202 (4) Identify and Evaluate Workplace Hazards; 8 CCR sec. 3202 (5) Accident Investigations; 8 CCR sec.. 3202 (6) Correcting Workplace Hazards; 8 CCR sec. 3202 (7) Employee Training; and 8 CCR sec. 3202 (8) Recordkeeping.

For questions on any policy or procedure, contact your Niska representative or facility Production Coordinator to bring the issue to the attention of Environmental Health & Safety (EH&S) personnel. It is the Responsibility of all Production Coordinators, Lead Operators, and Field Project Coordinators to ensure that all workers working for them are familiar with and have access to the Handbook and are able to produce a signed Orientation Acknowledgement Card prior to commencing work on Niska work sites or facilities. This Handbook shall be reviewed annually by all workers employed on a Niska work site.

Important:

> Throughout this Handbook, the use of the words **"shall"**, **"must"**, and **"will"** indicates a mandatory requirement. The word **"should"** indicates a recommendation, and the word **"may"** is used to express permissible alternatives.

1.1 Deviation Requests

Any deviation from this Handbook requires approval from the Niska Environmental Health Safety & Security Coordinator. Before submitting a deviation request, discussions should be conducted with the applicable Niska representative. Deviation Requests require a written submission to the EHS&S Department and must include the following information:

a) Your name, date, facility;

b) What section and subsection of the Handbook you are requesting a deviation from;
c) Your reason for requesting the deviation; and
d) How you plan on addressing and mitigating the risks of the activity (e.g. an alternate Safe Work Practice).

All deviations granted by the Environmental Health Safety & Security (EHS&S) Coordinator require, as a minimum, two signatures, one being the Manager of the EHS&S Department or their designate and the other being the Operations Superintendent or their designate. Deviations from the Handbook will not be considered as granted until a written response to the request has been issued by the EHS&S Coordinator and has been received by the requester.

2.0 HEALTH AND SAFETY RESPONSIBILITIES

Three Obligations:

As a worker on a Niska work site, you have three basic obligations:

1. You are obligated to refuse to take any action you consider to be unsafe, may cause property damage or to perform a task for which you are not properly trained or do not have the proper tools and to report your concerns to your Supervisor.

2. You are obligated to confront anyone performing or about to perform an unsafe act or a task for which they are not properly trained.

3. You are obligated, if confronted by someone who is pointing out to you an unsafe act or condition, to immediately stop what you are doing and resolve the concern, even if it requires others being contacted to help resolve the issue.

2.1 Contractors, Subcontractors and Consultants

Contractors, Subcontractors and Consultants are responsible for:

a) Having an effective environmental, health and safety program in place;
b) Insisting on safe performance throughout their operations by ensuring their workers are competent to perform their work correctly;
c) Ensuring their employees and subcontractors meet the contractor's and Niska's environmental, health and safety expectations;
d) Ensuring their safety programs and operations comply with Niska's contractual and OHSA regulatory requirements;
e) Providing the required time and resources to allow subcontractors and their employees to perform their work correctly and safely;
f) Ensuring that workers under their supervision know and are prepared to deal with the hazards associated with their work and any specific hazards on the work site;
g) Ensuring that PPE is available, properly used, stored, maintained, and replaced when necessary;
h) Reporting all accidents and/or incidents to Niska as soon as possible;

i) Complying with their responsibilities as stated in the OSHA Act, Regulations and/or Codes by ensuring:
   i. Unsafe conditions and behavior are corrected immediately.
   ii. Daily Tailgate meetings, Pre-job Hazard Assessments and Job-specific Hazard Assessments are conducted, and documented safe work practices or procedures are developed by the contractor and are being adhered to.
   iii. The correct equipment or tools to conduct the task are available and maintained.
   iv. Hazards are identified and removed where practicable.

2.2 Inspectors (Niska Employee or Contracted)

When acting as a Niska representative, Inspectors are responsible for ensuring that safety on the work site is maintained in compliance to Niska standards.
Where a construction project is taking place on a Niska work site the Lead or Chief Inspector is the on-site authority on EH&S matters. The Inspector shall not direct work, unless he has been designated as the job supervisor.

The Inspector is responsible for ensuring that:

a) An immediate work stoppage is initiated when any reportable or serious event occurs;
b) All work stoppages as identified in Section 5.3 and 5.4 are reported immediately to the Niska project coordinator;
c) Preliminary Incident Announcement Reports forms are completed and submitted to the Niska project coordinator within 24 hours should a Level 2 or 3 incident occur;
d) First aid services (including first aid training), equipment and supplies required by the OSHA regulations are available at the work site;
e) An Emergency Response Plan (ERP) exists for project work, is reviewed by all workers prior to the commencement of the project, is made available to all workers and is followed in the event of an emergency;
f) Safe Work Permits are issued to contractors authorizing work to be done;
g) Regular site inspections are conducted and documented; and
h) All workers and visitors entering the work site are informed of site hazards and are accounted for.

2.3 Workers

All workers, Niska and contracted, are responsible for:

a) Being aware of their environmental, health and safety responsibilities;

b) Taking reasonable care to protect themselves, their co-workers, the public, the environment and company property;
c) Knowing the emergency response plan, where emergency equipment, alarms and emergency response numbers are located, and how and where to evacuate when working at facilities or work sites;
d) Participating in all required training, including health and safety training;
e) Correctly using all required protective and safety equipment;
f) Following safety standards and safe work procedures as set out by Niska or their employer;
g) Consulting their immediate supervisor if there is any doubt regarding the job procedure or the safety requirements before proceeding with an assigned task;
h) Refusing to conduct work for which they are not trained or when unsafe conditions exist;
i) Immediately reporting injuries, near misses, or other incidents to their supervisor;
j) Conducting inspections of safety equipment, tools and equipment, and PPE prior to using them;
k) Knowing the type, location and operation of emergency equipment; and
l) Reporting directly to the Lead or Chief Inspector or Niska Representative in charge of the site where project work is taking place in order to be advised of any site-specific hazards that may affect their health or safety.

2.4 Visitors

All visitors to a Niska work site are responsible for:
a) Following the instructions of the Niska representative;
b) Wearing the specified PPE where required;
c) Staying in close proximity to the Niska representative; and
d) Reporting directly to the Lead or Chief Inspector or Niska representative in charge of the site where construction or project work is taking place in order to be advised of any site-specific hazards that may affect their health or safety

Note:
Due to the inherent hazards found on active construction work sites, visitors without the training requirements stated in Section 8.21 may not be permitted access

2.5 OSHA General Duty Clause

The OSHA Occupational Safety and Health Act states:
"Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

2.6 Refusing to Work Because Conditions are Dangerous

When you believe working conditions are unsafe or unhealthful, you should call your employer's attention to the problem. If your employer does not correct the hazard or disagrees with you about the extent of the hazard, you also may file a complaint with OSHA.

Refusing to do a job because of potentially unsafe workplace conditions is not ordinarily an employee's right under the Occupational Safety Health Administration (OSHA) Act. (A union contract or state law may, however, give you this right, but OSHA cannot enforce it.) Refusing to work may result in disciplinary action by the employer. However, employees do have the right to refuse to do a job if they believe in good faith that they are exposed to an imminent danger. "Good faith" means that even if an imminent danger is not found to exist, the worker had reasonable grounds to believe that it did exist.

But, as a general rule, you do not have the right to walk off the job because of unsafe conditions. If you do and your employer fires or disciplines you, OSHA may not be able to protect you. So, stay on the job until the problem can be resolved.

Your right to refuse to do a task is protected if all of the following conditions are met:

- Where possible, you have asked the employer to eliminate the danger, and the employer failed to do so; and
- You refused to work in "good faith." This means that you must genuinely believe that an imminent danger exists. Your refusal cannot be a disguised attempt to harass your employer or disrupt business; and
- A reasonable person would agree that there is a real danger of death or serious injury; and
- There isn't enough time, due to the urgency of the hazard, to get it corrected through regular enforcement channels, such as requesting an OSHA inspection.

When all of these conditions are met, you take the following steps:

- § Ask your employer to correct the hazard;
- § Ask your employer for other work;
- § Tell your employer that you won't perform the work unless and until the hazard is corrected; and
- § Remain at the worksite until ordered to leave by your employer.

2.7 Workers' Compensation

All US employees are covered under Workers Compensation law. All injuries and illnesses are covered providing they are work related and include everything from first-aid type injuries to serious accidents.

What you need to do if you sustain an injury while working for Niska:

- q Seek treatment as soon as possible
- q Immediately notify your supervisor.
- q Complete the Workers Compensation form that describes the injury, and how, when, and where it happened.
- q Return the form to your supervisor as soon as possible.
- q Prompt reporting is the key to prompt benefits.

Benefits in California

- q The California Workers Compensation law guarantees four types of benefits:
- q Medical treatment to cure an injury with no deductibles.
- q Tax-free payments to replace lost wages while temporarily disabled. Additional payments may be made if the injury results in permanent handicap or death.
- q Rehabilitation services necessary to get back to work will be provided if required.
- q Death benefits.

All benefits are set by the California State Legislature: The amount of the payments, and when and how they are paid, are part of State law. Only the State Legislature can change the amounts.

3.0 ENVIRONMENTAL RESPONSIBILITIES

There are many regulations that govern the release of substances into the air and water by industry. Niska obtains all of the permits required by these regulations and follows the procedures specified in each permit. Niska renews the permits according to the regulatory requirement and complies with air and water requirements that are not associated with a permit.

3.1 Storm Water Runoff

The Federal Water Pollution Control Act (also known as the Clean Water Act) covers two major categories of discharges. Point source discharges, or pollutants that are emitted from a discrete source such as a pipe, and storm-water discharges, that result from the runoff of precipitation from natural and/or constructed storm-water systems. WGS LLC does not have any Point Source discharges.

The Clean Water Act requires National Pollution Discharge Elimination System (NPDES) permits for storm water discharges associated with industrial activity. Niska is exempt from the NPDES permit requirements. The regulation, 40CFR 122.26(c) (1) (iii), states that the operator of an existing or new discharge composed entirely of storm water from oil or gas exploration, production, processing, or treatment operation, or transmission facility is not required to submit a permit application unless it will contribute to a water quality standard violation or has a discharge of a reportable quantity for which notification is required.

3.2 Compressor Facility Storm Water Discharge Procedure

Rainwater accumulates in secondary containment structures. The following guideline is to be followed before any rainwater is released:

1. When an Operator determines one or more of the secondary containment structures are in need of rainwater release, the Operator will first visually inspect the water for signs of oil or any other pollutant.
2. If an operator observes an oily sheen an oil absorbent pad will be placed on the water to absorb the oil.
3. Once the oil sheen has been removed, the Operator will obtain a water sample from the secondary containment structure and have it analyzed for the suspected contaminant(s). A water sample should be taken from each of the secondary containment structures before the first release of the season.

No rainwater will be released until the laboratory results are known.

4. If the laboratory results show there is no detectable amount or an amount considered of minimal concern, the rainwater will be released onto facility property. If the laboratory results show contamination that is of concern, the water will either be pumped into the underground storage tank that holds brine water or a vacuum truck will be scheduled to come and pump out the contents of the secondary structure[1]. WGS LLC follows the Central Valley Regional Water Quality Control Board recommendations as an example < 1ppm of oil or grease.
5. The volume of water discharged is documented each time.
6. There will be a weekly account of water volumes of all secondary containments or vaults and will be recorded and kept on file at each facility.

3.3 Well Pad Storm Water Discharge Procedure

Rainwater may accumulate into the general well pad area and/or into the caissons. The following guideline is to be followed before any rainwater is released.

General Well Pad Area

1. Before the first rain, the valve on the discharge pipe needs to be closed.
2. After the first rain, the Operator should visually check the accumulated water at the well pad for oil. If no oil sheen is observed, the valve is opened for the remainder of the wet season.
3. If an oil sheen is observed the Operator will arrange for a vacuum truck to vacuum out the oil contaminated rainwater.

Well Pad Caissons

1. When the Operator determines one or all of the caissons needs to have the rainwater released, the Operator will first visually inspect the water for any oil.
2. If no oil is observed, the rainwater will be released onto the well pad property.
3. If oil is observed, the Operator will call a vacuum truck to vacuum out the oil contaminated rainwater.
4. The volume of water discharged is documented each time.

In California only:

In California, Wild Goose Storage LLC is under a Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for discharges from utility vaults and underground structures to surface waters (General Permit) CAG990002. This permit is

automatically reissued as long as Wild Goose Storage Inc. submits a Notice of Intent to the State Water Resources Control Board, NPDES Regulations Unit. Wild Goose Storage Inc. follows the requirements in the permit (WDID identification number 9000U000059) issued by the Central Valley Regional Water Quality Control Board.

Spill Response Procedures

Storage facilities containing hazardous materials including fuels and solvents must have secondary containment. The location of temporary storage tanks must be approved by your supervisor and must comply with the secondary containment requirements.

Leaks from storage tanks and associated piping are a major source of soil and groundwater contamination. Storage of flammable and/or toxic liquids and gases can potentially be a hazard to public safety. Selecting appropriate tanks, placing these tanks in an appropriate location, and using proper secondary containment facilities can reduce these hazards.

All spills must be reported to your supervisor immediately and be managed in accordance with regulatory requirements.

Refer to the facility Emergency Response Plan.

3.4 Underground Storage Tanks

You are required to comply with either the Federal or State underground storage tank regulations depending upon the location of the facility. The purpose of the regulations is to prevent groundwater and surface water contamination. The requirements are:

- Maintain a Permit to Operate for the tanks.
- Pay the annual tank fee.
- Comply with the construction standards.
- Comply with the leak detection standards.
- Report releases to the appropriate agencies.

In California:

- Designate an Underground Storage Tank System Operator.
- Pay a quarterly fee to Butte County based on amounts of stored oils in tanks 302 and 302-2.
- The Underground Storage Tank System Operator is certified by the International Code Council by taking a test once every two years.
- The Underground Storage Tank System Operator maintains the leak detection system and ensures it is working properly.
- The Underground Storage Tank System Operator trains the employees annually.

2.5 Waste Management

- Wastes generated at Niska facilities must be managed in accordance with the regulatory requirements.
- Waste materials shall be stored in a safe and environmentally responsible manner.
- Records must be kept of all wastes generated, stored, and disposed of.
- Waste management starts with material and process selection. When selecting a material (i.e. a degreaser) plan for disposal or recycling of the excess and the waste material prior to ordering.
- When waste materials are generated, they should be segregated in a way that minimizes the need to dispose and that minimizes the costs of disposal.
- Recyclables should be separated from non-recyclable materials. Mixing (i.e. mixing of waste oil with a non-recyclable liquid) may reduce disposal options and increase the disposal costs.

For further information regarding hazardous waste management procedures, go to Section 9.14 Hazardous Waste Management and Transportation.

2.6 Water Crossing and Diversion

Water crossings include, but are not limited to, temporary and permanent bridges, road crossings using culverts, pipeline crossings and cable crossings. Water crossings are regulated under State and/or Federal legislation. Ensure that you have proper authorization to construct any water crossings and understand and comply with any and all conditions associated with the crossing authorization.

The State and/or Federal legislation requires that an approval or license be obtained prior to undertaking a construction activity in a water body or diverting or using water from a surface water body or groundwater source. Ensure that proper authorization is obtained to withdraw and use surface water from any location.

(Footnotes)
[1] (Consult with Central Valley Regional Water Quality Control Board, California Department of Fish and Game and Butte County Environmental Health)

4.0 MASTER SERVICE & SUPPLY AGREEMENT (MSSA)

a) Prior to undertaking any work on a Niska work site, all contracted employers must have an approved and current MSSA or other management-approved agreement in place.
b) Prior to authorizing any work on a Niska work site, each Niska project coordinator is responsible for ensuring that every contracted employer contracted by them has a signed MSSA or similar service/construction agreement in place and on file.

Note:
Employing a contracted employer without a signed MSSA or contract is not permitted without managerial approval.

4.1 Service Provider Notification Guideline

a) Service providers shall give, as a minimum, 24 hours notice to the Niska representative as to their intended arrival to the work site.
b) Service providers working on a system that could effect production must call into the Niska Control Center when arriving and/or leaving the work site.
c) Contractors must obtain a Safe Work Permit from a Niska representative prior to the commencement of any work.

5.0 EMERGENCY RESPONSE PLANNING AND REPORTING

5.1 Niska Emergency Response Plan (ERP)

The Niska ERP utilizes the Incident Command System (ICS) which allows for the effective coordination among local, state and federal emergency responders at the scene of an incident thereby ensuring successful responses to major incidents. Consult the ERP for your facility for further information.

a) Any Serious or Major incident as identified in the Niska Risk Matrix will initiate the Niska ERP. Refer to the facility Emergency Response Plan for details.

1. Emergency Preparation

Workers at each work site must know the following:

a) Pre-arranged emergency signals and evacuation procedures;
b) Where the ERP and telephone numbers are kept;
c) Which employees have a hearing impairment that could affect their ability to communicate with their co-worker;
d) How many workers are on site; and
e) Where the first aid kit, eye wash stations, showers, firefighting and spill response equipment are located.

2. Handling Emergency Calls

If you are the receiver of an emergency call, document as neatly as possible the following information:

a) Name, phone number, location of caller;
b) Nature of the incident;
c) Cause of incident and how serious it is;
d) Specific location and time of incident;
e) Others that are affected or likely to be affected; and
f) Time and date you received the call/information.

3. At The Scene

a) **Resist the urge to rush into an incident scene.** Assess the scene to determine what happened, how many people are injured and ensure that there is no further danger to yourself or to injured personnel.
b) If required, all personnel must evacuate the site and meet at the main gate or at a designated evacuation point.
c) Call for help. Contact 911 and advise them of the incident.
d) Enlist the aid of others and if safe to do so, attempt to prevent further injury and/or damage.
e) Perform first aid as required.

f) Secure the area to unauthorized personnel and control on-going hazards.
g) Contact the local police department, fire department, and/or ambulance if required.
h) In the event of an uncontrolled incident activate the Emergency Shutdown (ESD) of the system and advise the Niska Control Center.
i) Call your Supervisor. If the incident involves injury, ensure the employer (Niska or Contracted employer's office) is contacted immediately.
j) If able, be prepared to provide assistance to emergency response personnel and arrange the transportation of injured personnel.

Important:
All Safe Work Permits are immediately rescinded when an emergency, incident, unanticipated gas detector alarm, station alarm or shutdown occurs at a Niska work site.

5.2 Incident Reporting and Legislative Requirements

An incident occurs when a person or object receives an amount of energy or hazardous material that cannot be absorbed or handled safely. The energy or hazardous material is the direct cause of the incident. The direct cause is usually the result of one or more unsafe acts, unsafe conditions, or both. These unsafe acts and conditions are the indirect causes. A good incident investigation is designed to discover the basic causes of the incident. The basic cause of the incident is the action or condition that resulted in an undesired event. The purpose of reporting incidents is so that an investigation and analysis of the immediate and basic causes can be conducted in such a way that it encourages learning and so that recurrence of a similar event can be prevented and opportunities for improvement can be maximized.

a) Any worker involved in or witness to any incident including personal injury, damage to equipment, loss of production, unanticipated gas detector alarm, or other hazards involving environmental, health or safety shall, as a minimum, verbally report the details to a Niska Representative as soon as practical on the same day.
b) By law, an employer shall report fatalities or serious incidents forthwith to regulatory agencies and make every reasonable effort to prevent alteration of the incident scene and/or stop work until unsafe conditions are resolved.

c) Any occurrence involving an injury to a worker(s), significant property loss or damage, a reportable incident that requires reporting to any regulatory agencies, or injury to a third party, shall be investigated and a written report immediately forwarded to a Niska representative or at a time agreed to by Niska management.
d) The employer is responsible for any notifications to the nearest Workplace Health and Safety office for employee work-related illnesses, injuries and reportable incidents.

5.3 Near Miss Reporting

In addition to reporting and investigating incidents where harm occurred to a worker, property, process/operations or the environment, near miss incident must also be reported and investigated. The value in capturing these in a report is to allow for shared communications so others can take the necessary precautions or modify their activities to prevent similar reoccurrences.
A near miss is an incident that, under slightly different circumstances, could have resulted in personal harm, property damage, process or environmental loss.
Reporting near miss incidents is an excellent opportunity to improve safety and reduce losses gained from observing a condition or event that has the potential for more serious consequences.
Like any incident investigation, reporting near miss incidents is not conducted to lay blame or for fault-finding. Reporting near miss incidents in strongly encouraged by Niska management and there is no disciplinary action when you submit a report.

Near miss incidents include, for example:

- Unsafe conditions (e.g. tripping hazard or a bull plug was left out of a drain valve of a toxic chemical)
- Unsafe behavior (e.g. not wearing the specified PPE as required by this Handbook)
- Events where injury or damage could have occurred but did not (e.g. while backing up your truck you failed to see someone walking by)
- Events where a safety barrier was challenged or alarm was sounded. (e.g. gas detector alarm for explosive gases)
- Potential wildlife encounters while driving to and from or while at work.

For further information, review the Niska Incident Reporting and Investigation Guideline.

6.0 HAZARD IDENTIFICATION, ASSESSMENT AND CONTROL

Hazards can be defined as a physical situation with a potential for personal injury, damage to equipment or materials, or harm to the environment. While a work site may contain many hazards, the risk of injury or loss can be managed by identifying the hazard, assessing the risk and implementing effective control measures such as using equipment guarding, safe work procedures, wearing appropriate personal protective equipment, etc.

Hazards can be classed in the following categories:

- Physical hazards: contact hazards that can cause injury such as cuts, burns, abrasions, etc.;
- Chemical hazards: fumes, gases, aerosols, corrosives, alkalis, chemicals, solvents, sprays, heavy metals, poisons, and pesticides, etc.;
- Environmental hazards: hazards such as noise, heat, cold, etc.;
- Biological hazards: hazards that can cause illness, such as hantavirus, allergies, etc.;
- Psycho-social hazards: stress, fatigue, boredom, long term effects of shift work, etc.
- Ergonomic hazards: cramped workspaces, improperly adjusted equipment, repetitive tasks, etc.

6.1 Hazard Assessment

Hazards are addressed by using the hierarchy of controls in the following highest-to-lowest priority:

1. Isolation, substitution or elimination;
2. Engineering;
3. Administrative; and
4. Personal Protective Equipment.
   a) In order to control and manage hazards found on the work site, whether conducting a low hazard job, a non-routine job or accessing a work site a hazard assessment must be conducted.
   b) Hazard assessments must be conducted, documented, dated and relayed to all affected workers by a competent person:
      - When non-routine jobs are to be performed on a Niska work site;
      - Prior to the commencement of work; and
      - When the scope of work changes, a new work process is introduced, or a work process or operation changes.
   c) For low hazard jobs perform an informal hazard assessment before accessing a work site to ensure that the site is safe to enter.

d) When conducting a non-routine job, the hazard assessment and control consists of the following five steps:
   1. **Performing an Informal Hazard Assessment** before accessing a work site to ensure that the site is safe to enter;
   2. **Conducting a Tailgate Safety Meeting** before the job starts with all affected workers on the work site in order to:
      i. Inform all parties of the planned work for that day and any site-specific hazards that those workers should be aware of, as hazards may be posed by other work activities on the work site;
      ii. Determine what the control measures will be for those hazards; and
      iii. Determine who is responsible for implementing those control measures.
   3. **Conducting a Pre-Job Hazard Assessment** to identify the hazards, the controls, and who is responsible for controlling those hazards when dealing with a specific task. For most work the Niska Safe Work Permit incorporates the requirements of a Pre-Job Hazard Assessment. However, the on-site supervisor may require, on a discretionary basis, a detailed Job Task Analysis (JTA) for any job.
   4. **Developing and reviewing a written JTA** would for complex activities involving higher risk work or when close supervision is required for assessing the competency of workers or contractors who are unfamiliar or new to the job or work site. Developing or reviewing a JTA must also be conducted:
      i. For each non-routine job if deemed warranted by the competent person on the work site. The JTA must be reviewed by all affected workers so that fully comprehend all facets of the task. A JTA may exist already for a certain job task. In such cases the JTA needs to be reviewed for site-specific hazards;
      ii. At intervals that reasonably and practicably prevent the development of unsafe working conditions;
      iii. When a new work process is introduced; or
      iv. If conditions change in the work area.

Note:
The JTA must be documented and kept on site by the recipient of the Safe Work Permit for the duration of the work activity

5. **Issuing a Safe Work Permit (SWP),** authorizing work to be performed is required for all non-routine tasks, regardless of who the workers are employed by.

7.0 ENVIRONMENTAL, HEALTH AND SAFETY (EH&S) ORIENTATIONS AND MEETINGS

7.1 Site-Specific Orientations

When a contracted worker reports to a Niska work site, a site-specific orientation for that particular site must be conducted and documented by a Niska Representative or by an authorized and competent person outlining the following:

a) Workers' responsibilities for environment, health and safety;
b) Verification of worker competency and core training certification, (first aid, Hazardous Waste Operations Emergency Response - HAZWOPPER);
c) Site specific hazards that may be encountered, including fire, first aid, prohibited or restricted areas at the site, flammable or chemical hazards;
d) Safe work procedures/ Job Task Analysis;
e) Emergency response and rescue procedures;
f) Work attire;
g) PPE and the expectations around provision and use;
h) Assignment of job duties;
i) Specific job conditions;
j) The expectation to report an incident, a near miss or a job hazard; and
k) Any other safety or environmental particulars about the site that the worker may be unfamiliar with or has not encountered before.

7.2 EH&S Meetings

All EH&S Meeting reports, minutes or forms applicable to a project must be forwarded to the Niska Project Coordinator or district office within 7 working days of the meeting.

1. **Pre-Project Meeting**
   This meeting is conducted prior to the commencement of field activities on a project, led by the project coordinator and with operations and EH&S review and consultation.
2. **Project Safety Meeting**
   This meeting is held immediately prior to the commencement of the field activity portion of the project by reviewing the hazard assessment and the conditions of the Safe Work Permit. Doing so will:
   a) Ensure workers know and understand the job requirements and their responsibilities.

b) Ensure workers have the required PPE, equipment, and tools to perform the work safely.
c) Remind workers that if they are uncertain about any aspect of the job, it is their responsibility to learn the procedure before continuing. Every worker should know it is always okay to ask, if in doubt.
d) Test the worker's knowledge of the job procedure by the supervisor asking questions (particularly useful for new workers).
e) Ensure workers are familiar with the emergency response and rescue procedures.

3. **Tailgate Safety Meeting**

This meeting is held to make workers aware of the potential hazards at the work site or for specific tasks for a specific job. A tailgate meeting will:

- Alert workers of unsafe work practices or when work site conditions change;
- Discuss a specific task or set of instructions; and
- Ensure workers and equipment operators who missed the Project Safety Meeting are briefed on the hazard assessment and all meeting discussions prior to starting any work.

4. **Monthly Safety Meetings**

Safety meetings are usually held on a regular basis (e.g. monthly). This is an opportunity for all workers to gather to discuss general safety concerns which can result from incidents or changing conditions at the work site or to introduce improvements to maintain safe work conditions. This time may also be used as a safety training or orientation session. Speakers or trainers may also be asked to make a presentation.

The following business Safety Meeting agenda should be used:

a) Previous business arising from minutes;
b) Old hazards: solutions, safety training, incident/near miss review;
c) New concerns or hazards, required training, action assignment;
d) Educational segment: regulations review, procedures review, safety equipment review;
e) Schedule next meeting date; and
f) Minutes are to be recorded, posted and distributed to the EHS department in Calgary for review and retention.

8.0 GENERAL PERSONAL SAFETY PRACTICES

8.1 Health Considerations

8.1.1 Bloodborne Pathogens

Occupational Safety and Health Administration (OSHA) issued the Bloodborne Pathogens Standard to reduce the risk of employees being exposed to bloodborne pathogens, such as, Hepatitis B virus, Hepatitis C virus, and Human Immunodeficiency Virus (HIV). This standard applies only to employees that might be exposed to blood or other potentially infectious materials based on their job responsibilities.

8.1.2 Bloodborne Pathogen Exposure Control

Bloodborne pathogens are microorganisms present in human blood and other potentially infectious materials and can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B virus, Hepatitis C virus, and HIV.
All employees whose job responsibilities include providing first aid or emergency response are considered to have a potential occupational exposure to bloodborne pathogens. Occupational exposure is the reasonably anticipated contact of skin, eye, or mucous membrane with blood or other potentially infectious materials, (for example, saliva contaminated with blood or any other body fluid).
You are not required to provide first aid and do so under the "Good Samaritan" clause. "Good Samaritans" require post-exposure follow up as specified by this procedure. Supervision is to advise you if you are not designated to provide first aid that your response to medical emergencies is as a "Good Samaritan" and that you have the potential to be exposed to bloodborne pathogens.

8.1.3 Handling Bloodborne Pathogens

The following outlines compliance methods to handle bloodborne pathogens:

1. Treat all human blood and human body fluids as if they are infected with Hepatitis B, Hepatitis C, HIV, and other bloodborne pathogens.
2. When an exposure or potential exposure to blood or body fluids has occurred, immediately wash the area with soap and water and rinse thoroughly. The person should be taken to a hospital for medical evaluation and treated immediately (at least within 2 hours). Medical treatment involves taking medication

for 28 days. Treatment may include Zidovudine (AZT), an antiviral agent that reduces the risk of HIV infection by approximately 79%. In addition to AZT, Lamivudine (3TC) will usually be recommended for increased antiviral activity against many AZT resistant strains. A third drug, a protease inhibitor, (Indinavir) may be offered under certain circumstances, where there is increase risk of infection.

3. Provide hand-washing facilities. When this is not feasible, provide either an appropriate antiseptic hand cleanser and clean paper towels or antiseptic towelettes. Hands must be washed with soap and running water as soon as feasible after cleaning with an antiseptic hand cleanser and clean paper towels or antiseptic towelettes.
4. Before responding to an incident where exposure to human blood or body fluids is likely or possible, put on Personal Protective Equipment including Nitrile gloves, goggles, face masks, and CPR face shield, as appropriate to prevent direct contact with skin or mucous membranes.
5. Wash hands immediately (or as soon as feasible) after removing gloves or other Personal Protective Equipment. Supervisors must ensure that you wash hands and other skin with soap and water or flush mucous membranes with water immediately (or as soon as feasible) following contact with blood or other potentially infections materials.
6. Provide Nitrile gloves, hypoallergenic gloves, powderless gloves, or other similar alternatives for employees who are allergic to the gloves normally provided (notify your supervisor if you require hypoallergenic gloves).
7. Remove garment penetrated by blood or other potentially infectious materials immediately (or as soon as feasible) and place in a labeled plastic bag.
8. Replace disposable gloves as soon as feasible if they are torn, punctured or when their functional ability as a barrier is compromised. Do not wash or decontaminate disposable (single-use) gloves for re-use.
9. Use engineering and work practice controls to eliminate or minimize employee exposure.
10. Do not eat, drink, smoke, apply cosmetics or handle contacts in areas where medical services are rendered.
11. Perform all medical or first aid procedures involving blood or other potentially infectious materials in a manner that minimizes splashing, spraying, spattering, etc. of these substances. Do not suction blood or other potentially infectious materials by mouth.

8.1.4 Cleaning Procedures

- q Clean and decontaminate all equipment, and other surfaces contaminated with blood or potentially infectious materials using household bleach (1 part bleach to 9 parts water).
- q Begin cleanup immediately (or as soon as feasible) following a spill of blood or other potentially infectious material and after completing first aid procedures.
- q Repeat cleanup at the end of the work shift if possibly contaminated since the last cleaning.
- q Personnel doing cleanup must be trained and use protection specified in this exposure control plan including PPE.

8.1.5 Contaminated Materials

- q Provide biohazard trash bags in or near first aid kits to contain or dispose of contaminated materials.
- q Once contaminated items are placed in a biohazard bag, close the bag immediately, or as soon as feasible. If the outside of the bag becomes contaminated, place it in another biohazard bag and close it.
- q Store used biohazard bags in an area not normally accessible to workers. Only authorized personnel must collect and dispose of bio-hazardous materials.
- q Place warning labels on containers used to store, transport or ship blood or potentially infectious materials, and on contaminated equipment, stating which portion is contaminated.

8.1.6 Hepatitis B Vaccination

Hepatitis B is a serious infection of the liver caused by a virus found in blood or other bodily fluids. After receiving the bloodborne pathogen training, and within 10 working days of initial assignment to work involving the potential for occupational exposure to bloodborne pathogens, offer the Hepatitis B vaccination to the employee at no cost, unless:

1. The employee has previously received the complete Hepatitis B vaccination series (3 injections over 6 months);
2. Antibody testing has revealed that the employee is immune; or
3. The vaccine is contraindicated for medical reasons.

If you decline the Hepatitis B vaccination you must sign a copy of the Hepatitis B Vaccine Declaration. If the employee initially declines the Hepatitis B vaccination but at a later date, while still covered under this procedure, decides to accept the vaccination, the Hepatitis B vaccination will be made available at that time at no cost.

If the U.S. Public Health Service recommends a routine booster of Hepatitis B vaccine at a future date, such booster dose(s) must be made available.

Note: At this time, there is no vaccine for Hepatitis C.

8.1.7 Exposure Incident - Medical Evaluation

Following the report of an exposure incident, immediately provide the exposed employee a confidential medical evaluation to determine exposure to Hepatitis B, and Hepatitis C, HIV, and follow-up at no cost to the employee. The immediate supervisor is responsible to conduct an incident investigation immediately (or as soon as feasible) at the site of the exposure incident.

Employees will be offered a repeat Hepatitis B, and Hepatitis C, HIV, testing to exposed employees 6 weeks after exposure and periodically thereafter (12 weeks and 6 months after exposure). If the employee consents to baseline blood collection but does not give consent at that time for HIV serologic testing, preserve the sample for at least 90 days. If the employee elects to have the baseline sample tested within 90 days of an exposure incident, provide such testing as soon as feasible.

When the source individual's consent is not required by law, test the source individual's blood for Hepatitis B, and Hepatitis C, HIV and document the results. If consent is needed, provide testing as soon as feasible after obtaining written consent. If consent is not obtained, document that the legally required consent cannot be obtained. Consult with the Legal Department prior to determining whether to test the source individual's blood.
The medical provider must provide the results of the individual's testing to the exposed employee, and inform the employee of applicable laws and regulations on disclosing the identity and infectious status of the source individual.

The health care professional evaluating an employee after an exposure incident, and the health care professional who is responsible for the employee getting the Hepatitis B vaccination, is provided the following information:

1. A copy of 29 CFR 1910.1030, for California 8 CCR 5193 (California only);
2. A description of the exposed employee's duties as they relate to the exposure incident;
3. Documentation of the exposure route(s) and circumstances under which exposure occurred;

4. Results of the source individual's blood testing, if available; and
5. All medical records the company is responsible to maintain (including vaccination status) relevant to the employee's treatment.
6. The health care professional's written opinion for post-exposure evaluation and follow-up must be limited to the following:
   - That the employee has been informed of the evaluation results, and
   - That the employee has been told about any medical conditions resulting from the exposure that requires further evaluation or treatment.

All other findings or diagnoses must remain confidential and must not be included in the written report.

8.1.8 Training

Bloodborne pathogen training must be conducted initially as part of a regular safety meeting. Thereafter, an annual refresher class will be provided during a normal safety meeting. A copy of the regulation is available to any employee at any time.

8.1.9 Recordkeeping

Keep documentation on first aid, CPR, AED and bloodborne pathogen training for at least 3 years from the training date.
Keep records for each employee with occupational exposure for the duration of employment plus 30 years. In California, employers are required to keep an Exposure Log. If an employee is exposed or potentially exposed to a bloodborne pathogen, it must be recorded in an Exposure Log.
Medical records are to be kept confidential, except for information allowed and required to be reported to Niska. Include the following in the record:

- q Name and social security number;
- q A copy of employee's Hepatitis B vaccination status, including the dates of all
- q Hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination (i.e., the employee has previously received the complete Hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons);
- q A copy of all results of examinations, medical testing, and follow-up procedures;
- q A copy of the information provided to the health care professional;

- A copy of the health care professional's written opinion;
- Hepatitis B Vaccine Declination Form; and
- Incident Investigation Report Form.

8.2 First Aid

The immediate treatment of injured workers and proper first aid coverage on a Niska worksite is essential to the health and well being of all employees and contracted workers.

- Every Niska field employee will be trained and keep current certification in Standard First Aid and Cardiopulmonary resuscitation (CPR);
  Note: if the facility is equipped with an Automated External Defibrillator (AED) each employee will be trained to the American Heart Association standard of every 3 years.
- All facilities will be equipped or provided with first aid supplies;
- First aid incidents must be documented using the First Aid Report form as well as reported using the Incident Investigation Report form. These reports must be kept for 3 years and must not be posted or distributed for public review;
- One first aid kit will be conspicuously located and maintained in each field office and in each company vehicle;

8.3 Extreme Weather Working Condition Responsibilities

a) Niska Management and contracted employers working on Niska work sites shall ensure that their employees are properly equipped to deal with extreme weather hazards, special requirements, and the limitations on activities when working in extreme weather conditions.

b) Niska employees shall assess the work environment in extreme weather conditions, identify the controls to address those hazards and implement those controls.

8.4 Heat Stress

In general, an environment is "hot" if it is very humid and above 85°F. Environmental factors of temperature, humidity, and air movement affect the body's ability to dissipate heat. This combined with human factors, such as clothing and body weight, and job factors, such as heat generation from work activity, can result in a heat imbalance thereby elevating the body's core temperature and causing heat stress.

The following are examples of actions that can be taken to reduce heat stress:

- Workers must adapt to working in the heat by pacing themselves until they become adequately acclimatized to the hot environment.
- Drink plenty of fluids in order to replenish the fluids the body loses through perspiration and evaporation from the skin. Avoid caffeine, alcohol, large amounts of sugar, and very cold drinks; this can cause cramps.
- Take rest breaks as appropriate for the work being done. If a worker is feeling faint, experiencing cramping, or becoming fatigued, the body is warning of potential heat stress.
- The worker should move to a cooler area to rest (work-rest cycle). If required, schedule work for the coolest periods of the day.
- If workers will be working in an enclosed or confined area without natural air movement, obtain fans or other means of ventilating the work area to provide for cooling.
- Workers should recognize the potential physical disorders possible from exposure to heat. They include:
  a) **Heat stroke:** total shutdown or failure of the body's thermal regulatory system (life threatening - red, hot, dry skin, sweating has stopped).
  b) **Heat exhaustion and heat cramps:** excessive loss of salt from the body and water imbalance.
  c) **Heat fatigue:** behavioral change (confusion, distractibility).
  d) **Heat rash:** disorder and blockage of the sweat glands.
- Personal protective approaches that can reduce heat stress include:
  a) Absorptive undergarments (removes perspiration from the skin promoting cooling),
  b) Shirt or light skin cover in preference to bare skin (lightweight, loose-fitting clothing), and
  c) Cooling vests in extreme cases.

Minimize Sun Exposure

Too much ultraviolet (UV) radiation can damage skin cells, which may lead to sunburn, premature aging of the skin, or even skin cancer. UV radiation can also damage your eyes and weaken your immune system.

These basic precautions will help reduce the damaging effects of UV:

- Reduce your time in the sun, especially between 11 A.M. and 4 P.M.
- Protect your eyes with ANSI approved UV-rated sunglasses with side-shields or wrap-around frames;
- Keep hardhat on;
- Apply sunscreen to uncovered skin. Use a sun protection factor of at least 15 (SPF 15). Sunscreen should protect

from both UVA and UVB. Reapply sunscreen frequently, especially if you've been in the water or if sweating.

- Be especially careful about UV protection when near water and sand, as they can reflect UV radiation.
- Be aware of the daily UV index, which can be found in weather reports or on the Internet.

8.5 UV Index and Sun Protection Messages

Heat Index Chart
Temperature (°F) vs. Relative Humidity

	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%
115	111	115	120	127	135	143	151								
110	105	108	112	117	123	130	137	143	151						
105	100	102	105	109	113	118	123	129	135	142	149				
100	95	97	99	101	104	107	110	115	120	126	132	136	144		
95	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136
90	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113
85	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97
80	75	76	77	77	78	79	79	80	81	81	82	83	85	86	86
75	70	71	72	72	73	73	74	74	75	75	76	76	77	77	78

Heat Index/Heat Disorders

Heat Index	Possible heat disorders for people in higher risk groups
130 or higher	Heatstroke/sunstroke highly likely with continued exposure.
105-130	Sunstroke, heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.
90-105	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.
80-90	Fatigue possible with prolonged exposure and/or physical activity

Table 1 - Heat Index Chart

UV Index	Description	Sun Protection Actions
0-2	Low	Wear sunglasses on bright days If outside for more than one hour, cover up and use sunscreen
3-5	Moderate	Take precautions — cover up, wear a hat, sunglasses and sunscreen — especially if you will be outside for 30 minutes or more. Look for shade near midday when sun is strongest.
6-7	High	Reduce time in the sun between 11 AM and 4 PM and take full precautions (as above)
8-10	Very High	Extra precautions required — unprotected skill will be damaged and can burn quickly.

Table 2 - UV Index Risks

8.6 Working in the Cold

Working in the cold is a fact of life for Niska workers in Oklahoma. Every year people die from over-exposure to the cold, and many more suffer injuries from hypothermia and frostbite. Wind chill can play a major role in such health hazards because it speeds up the rate at which your body loses heat.

How much heat you lose depends not only on the wind chill, but on other factors as well. Good quality clothing with high insulating properties traps air, creating a thicker boundary layer around the body which keeps in the heat. Wet clothing or footwear loses its insulated value, resulting in body-heat loss nearly equal to that of exposed skin. Your body type also determines how quickly you lose heat-- people with a tall slim build become cold much faster than those that are shorter and heavier.

The best way to avoid the hazards of wind chill is to check the weather forecast before going outside, and be prepared by dressing warmly. As a guideline, keep in mind that the average person's skin begins to freeze at a wind chill of -13^{0}F, and freezes in minutes at -31^{0}F.

A simple way to avoid wind chill is to get out of the wind. The National Weather Service wind chill forecasts are based on the wind you would experience on open ground. Taking shelter from the wind can reduce or even eliminate the wind chill factor. However, you would still feel cold from the outside temperature alone.

In a cold environment, body heat must be conserved to maintain a core temperature at normal levels and to ensure adequate blood flow to the brain and extremities. Environmental factors affecting conservation of body heat are temperature and wind chill. This combined with human factors, such as protective layers of clothing, and job factors, such as work activity, determine whether one is adequately protected from the extremes of cold weather.

The following are examples of actions that can be taken to reduce cold stress:

- Workers must adapt to working in the cold by pacing themselves until they become adequately acclimatized to the cold environment.
- Prior to working outside (includes operating a snowmobile) or in unheated buildings, determine the wind chill index and check the weather forecast for possible changes.
- Ensure a means of communication is available when working in a wind chill below -22^{o}F, so that a rescue can be affected in case of an accident.
- Plan work so that a heated location, such as a vehicle, is available for warm-up if needed.
- Schedule rest breaks regularly, so workers can warm up and

replenish their fluids.

- Provide thermal cushioned insulation on tool handles.
- Workers should recognize the potential health problems from working in cold environments.
  They include:
  a) **Frostbite:** freezing of the skin, loss of sensation, cold pale and waxy skin.
  b) **Trench foot/Immersion foot:** intense pain in foot with swelling. Discoloration of the skin may be caused by long immersion in cold water. Water temperature does not need to be below freezing to cause trench foot.
  c) **Hypothermia:** cold extremities which are numb and clumsy; severe shivering along with reduced mental alertness with irritability and lack of concentration. The normal shivering process stops in severe hypothermia.
- Personal protective approaches that can reduce cold stress include:
  a) Mittens and gloves should have removable insulated liners. Liners that cannot be removed and dried every day will gradually absorb moisture, which will speed up the loss of body heat.
  b) Boots should be of the insulated type and have a removable insole. They should be worn with wool or nylon blend socks.
  c) Cold weather mask or woolen toque and scarf should be worn during severe wind chill conditions; check facial skin frequently for frostbite.
  d) Have a spare change of clothing available during cold weather. Clothing that has become wet from perspiration or weather-related precipitation should be changed as soon as possible. If heavy perspiration has taken place, the worker should exercise caution before removing outer clothing while resting outdoors in order to prevent chilling and possible hypothermia.
- **Three layers** of clothing have been found to be effective in managing cold stress.
  1. An **inner layer** such as long, cotton underwear to absorb moisture.
  2. The **second layer** is an insulating one, which keeps a layer of air trapped around the body. Use wool, synthetic insulation, or down for thermal insulation.
  3. The **third layer** protects the previous layers from dust, dirt, wind, and moisture. Waterproof cotton twill is ideal for this layer. Although nylon and/or other synthetics are also suitable for thermal use, they can develop electrostatic

charge and therefore fire-retardant outwear (Nomex) may still be required.

The potential for accidental exposure to severe cold must be included in plans to control exposures. If a worker complains of symptoms of cold stress, they must be removed from the exposure and assessed by appropriate medical personnel.

Wind Speed (mph)	Temperature (°F)																	
	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	62	-69	-76	-84	-91	-98

Frostbite Times — 30 minutes — 10 minutes — 5 minutes

Table 3 - Wind Chill Chart

Wind Chill Hazards		
Wind Chill	**Description**	**Hazard**
32° F to 16° F	Low	• Slight increase in discomfort
14 ° F to -11° F	Moderate	• Uncomfortable • Exposed skin feels cold • Risk of hypothermia if outside for long periods
-12° F to -44° F	Cold	• Risk of skin freezing (frostbite) • Check face, finger, toes, ears and nose for numbness or whiteness • Risk of hypothermia if outside for long periods
-45° F and colder	Extreme	• Outdoor activities are hazardous, be ready to cut short or cancel • Exposed skin may freeze in minutes • Check face, finger, toes, ears and nose for numbness or whiteness • Serious risk of hypothermia if outside for long periods

Table 4 - Wind Chill Hazards Chart

8.7 West Nile Virus (WNv)

West Nile Virus (WNv) is a mosquito-borne virus that causes swelling and inflammation of the brain and spinal cord in horses, birds, and humans. Humans can become infected after being bitten by an infected mosquito with WNv.

Most persons infected with WNv have either mild symptoms or no symptoms at all. Symptoms typically include fever, fatigue, headache and muscle or joint pain. Any worker who suspects they have symptoms of WNv should seek medical attention.

General Safety Precautions

- If possible, eliminate sources of standing water at the work site as mosquito breeding takes place in standing water.
- Use insect repellent containing DEET and apply to exposed, unbroken skin according to the manufacturer's instructions.
- Wear light-colored, long-sleeved shirts, long trousers, and socks.
- Conditions may warrant wearing bug hats/jackets or wearing two layers of clothing.
- Wear rubber gloves when handling dead wildlife.

8.8 Hantavirus

Hantavirus is a rare but serious (can be fatal) illness. Deer mice are the main carriers of Hantavirus, although it is possible that other rodent species such as field mice, voles and rats may carry the disease. Hantavirus can cause a serious lung infection called Hantavirus Pulmonary Syndrome (HPS).

Exposure to the virus may occur through inhalation of dust contaminated with dried mouse droppings, and urine and saliva from infected rodents. Other possible means of infection include contact with the eyes, contact with open wounds, rodent bites, and eating or drinking contaminated food. There is no evidence that household pets or infected humans can transmit the disease.

First stage symptoms include fever, fatigue, weakness and chills, muscle aches (lower back and thighs), abdominal pain, headaches and nausea, mild diarrhea and possible cough. The second stage starts with shortness of breath. This is due to the collection of fluid in the lungs. Do not delay medical treatment if you experience the above symptoms. If you have had recent contact with rodents or their droppings, make sure the doctor is aware of exposure history.

8.9 Personal Protective Equipment (PPE)

a) Niska will provide all required PPE to their employees. However, PPE for non-Niska employees will not be supplied by Niska unless approved by the Niska Superintendent of Operations.
b) PPE shall be used wherever indicated by Niska. Any worker who does not comply with Niska's PPE requirements will be removed from the Niska work site.
c) All workers must:
   - Use their PPE in accordance with the training and instruction received;
   - Inspect their PPE prior to use; and
   - Not perform the task or use the PPE if the equipment's condition makes it unable to perform the function for which it was designed.
d) Basic PPE that must be utilized by Niska employees at all Niska work sites includes:
   - q ANSI approved hardhats;
   - q ANSI approved Grade 1 safety boots;
   - q ANSI approved eye protection (safety glasses or goggles as appropriate) prescription safety glasses must have side shields;
   - q ANSI approved hearing protection (plugs or muffs) is required if there is a risk of exposure to noise equal to or greater than 85 dBA; and
   - q Flame resistant outer wear, whenever there is the potential for flash fires (i.e. whenever you are working in proximity to hydrocarbons).
e) The following information outlines Niska's PPE requirements for all workers and visitors, unless a workplace hazard assessment has been completed, which indicates that the specified PPE is not necessary. The Production Coordinator or their designate is responsible for ensuring completion of this assessment.

8.10 Flame Resistant Clothing (FRC)

a) FRC outerwear, which meets or exceeds NFPA 2112 Standard on Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire, is mandatory for all Niska employees working on or visiting a Niska work site.
b) FRC outer wear for electricians must meet the requirements as identified in NFPA 70E and ASTM F1506-12 standards.
c) FRC must be worn as the outer layer of clothing.
d) All clothing worn beneath flame-resistant outerwear must be made of 100% natural fibers such as wool, silk, and cotton, which do not melt when exposed to heat. Nylon clothing, including nylon ski jackets and fleece, are strictly prohibited.
e) Cotton or linen underclothing is recommended by Niska as

they will produce less static electricity than clothing made of wool or silk.

f) Outerwear excessively contaminated or soiled with hydrocarbons must be changed and laundered, as it will pose a fire hazard. Do not clean clothing by washing in gasoline, kerosene or solvent.

g) Compressed air must NEVER be used for blowing dirt or dust from a worker or their clothing.

g) FRC raingear must meet the ASTM (American Society for Testing and Materials) Standard F1930.

h) Cotton 'hoodies' must be covered by flame resistant clothing and must not be exposed to potential flash fire.

i) FRC 'hoodies' must not be worn between a workers head and their hard hat.

j) FRC parka hoods or "hoodies" worn over a worker's hard hat must be worn in such a way that they do not restrict a worker's peripheral vision.

h) High-visibility apparel must be worn by all workers on a Niska work site when there is a potential hazard of being struck by mobile equipment or other type of vehicle. This includes new construction projects as well as maintenance and repairs on existing facilities where there is a high volume of equipment traffic.

Note:
Non- FRC vests are not allowed on Niska work sites.

8.11 Protective Eyewear

All workers and visitors accessing Niska process plants, property, pipeline rights-of-way property, work sites, construction, and/or maintenance projects are required to wear protective eyewear (safety glasses) that meets or exceed the latest ANSI Standard, regarding industrial eye and face protection.

a) As a guideline, safety glasses are not specifically required in:
   - Offices
   - Break rooms
   - Enclosed cabs of motor vehicles
   - Control rooms
   - Parking lots

b) Other forms of eye and face protection such: as goggles, face shields, shaded lenses, chipping goggles, welding helmets, welding goggles, etc. are required for specific jobs, where safety glasses with side shields alone do not provide adequate protection.

c) Wearing safety glasses is recommended while driving on gravel roads to minimize the risk of glass fragments entering a worker's eyes in the event the windshield is struck by flying debris.
d) Dark tinted lenses must not be worn in low-light conditions (i.e. indoors, caissons, process buildings or at night).
e) Both safety glasses and a face shield **must** be worn when operating a hand-held or stationary grinder.
f) Welders must not conduct arc welding when other workers could be potentially be exposed to arc flash injury, unless all workers are wearing suitable eye protection or are protected by a welding screen or suitable device.
g) Workers who wear contact lenses shall inform their employer, who in turn may advise them of potential job site hazards such as dust, welding, chemicals, etc., and any alternatives to wearing contact lenses. Use of contact lenses while wearing SCBA is permitted.
h) Eye protection is required at all times, even in excluded areas, if the work being performed presents a hazard.
i) Prescription safety eyewear having bifocal, trifocal, or progressive glass lenses must not be used if there is danger of impact unless it is worn behind equipment meeting the requirements of subsection.

8.12 Protective Footwear

All workers and visitors accessing Niska process plants, property, pipeline rights-of-way property, work sites, construction, and/or maintenance projects are required to wear safety footwear which meets or exceeds ANSI Standard 29 CFR 1910.136 Occupational Footwear.

a) Workers and visitors must wear protective footwear that is appropriate to the hazards associated with the work being performed.
b) Safety footwear must have non-slip soles and should have uppers that cover and support the ankle.
c) Safety footwear may be slip-on or lace-up styles.
d) Additional safety footwear requirements, as identified by a workplace hazard assessment, shall take precedence over the previously identified minimum standards.
e) Protective footwear must be maintained in good condition to be effective for the intended purpose.
f) Exposed steel toes are not acceptable and shall not be allowed on any Niska work site.

8.13 Head Protection

a) As a minimum, all workers and visitors accessing Niska process plants, property, pipeline rights-of-way property, work sites, construction, and/or maintenance projects are required to wear approved hard hats, which meet or exceed ANSI Z89.1-1986, Class E.
b) Metal hard hats, **"Fibremetal"** brand hard hats, normally worn by welders and Class C hard hats are all electrically conductive and are not permitted on Niska work sites.
c) Welders in the act of welding are permitted to wear a welding face shield only. Upon completion of the welding, a hard hat must be worn.
d) Hard hats shall not be painted, have holes drilled in them, or otherwise be modified.
e) It's recommended that Niska field employees replace their hard hats upon the expiry date and that contracted workers follow the same practice. Hard hats are considered outdated 5 years after the stamped date on the underside of the hat brim.
f) Hard hats that show signs of damage or have received a severe blow must be replaced. Although a hard hat may not show any signs of deterioration, UV rays subject the protective headwear to damaging effects.
g) Hard hat suspension should be replaced on an annual basis or when damaged.
h) Excessive numbers of stickers should not be applied to the outer shell of a hard hat as they may hide defects.
i) As a guideline, hard hats are not specifically required in:
   - Offices
   - Break rooms
   - Enclosed cabs of motor vehicles
   - Control rooms
   - Parking lots
j) When required, only flame-resistant hard hat liners, that are correctly installed, shall be used.
k) Hard hats are required at all times (even in excluded areas) if the work being performed, or being done in the vicinity, presents a Hazard.

8.14 Hearing Protection

a) Hearing protection must be worn by workers exposed to noise levels in excess of 85 dBA $L_{ex.}$ Refer to Table 3 for details.
b) Wherever noise hazards in excess of 82 dBA L_{ex} exist and a worker will be in the area for more than either (8) hours, the worker must wear approved hearing protection.

c) Wherever work activities may generate noise levels in excess of 85 dBA, signage for hearing protection requirements will be posted.
d) A good 'Rule-of-thumb' to determine whether or not you need hearing protection or not is to stand at arms distance away from a co-worker and talk to them in a normal voice. If you have to raise your voice to be heard, you should probably be wearing hearing protection while in that area or while conducting that task.

8.14.1 Audiometric Testing

Niska field employees must undergo baseline and annual audiometric testing. A contracted testing organization will perform audiometric tests using qualified personnel meeting the requirements of 29 CFR 1910.95 (g) and (h) or 8 CCR 5097 (c) (3). Audiometric testing equipment must meet the requirements of 29 CFR 1910.95, or 8 CCR 5097 Appendix B.
The audiogram will be repeated at least annually for employees exposed at or above the action level. The results will be compared to the baseline audiogram to determine validity and any shifts in employee hearing acuity.

8.14.2 Training

Hearing conservation training will be provided initially and at least annually to personnel included in the Hearing Conservation Program (HCP). This training will usually be conducted during a safety meeting. Training must consist of at least the following:

- The effects of noise on hearing
- The purpose of hearing protectors
- The advantages and disadvantages of various types of hearing protection
- Instructions for selecting, fitting, using, and caring for hearing protection devices
- The purpose of audiometric testing, and
- An explanation of audiometric test procedures.

Niska will provide a copy of 29 CFR 1910.95 or and 8 CCR 5095-5100, Occupational Noise Exposure, to affected employees or their representatives upon request and make it available at locations where the action level (85 dBA) for noise is exceeded.

8.14.3 Record Keeping

An accurate record of all audiometric testing in accordance with the 29 CFR 1910.95(m) or 8 CCR 5100 is maintained by the contract testing organization. Records of noise exposure monitoring must be

maintained by each facility. Training records must be maintained by the contract testing organization and each facility.

Sound Level dBA slow response	Duration/Day, Hours
90	8 Hrs
92	6 Hrs
95	4 Hrs
97	3 Hrs
100	2 Hrs
102	1.5 Hrs
105	1 Hrs
110	30 min.
115	15 minutes or less

Table 5 - OSHA Permissible Noise Exposures

8.15 Hair, Jewelry and Loose Fitting Clothing

a) All workers who may come into contact with moving parts or machinery must confine or cut their head and/or facial hair to prevent it from becoming snagged or caught in the work process.

b) Where required to don respiratory protective equipment a workers' facial hair that could affect a respirator seal must be clean-shaven. Clean-shaven means shaving within the past 24 hours.

Note:
Visitor exemptions will only be granted with supervisory approval and direct supervision while in attendance at a Niska work site

c) Where there is risk of a worker coming into contact with moving parts of machinery or with electrically energized equipment, or where the work process is such that a similar hazard exists, the following shall apply:
- Workers' clothing shall fit closely about the body.
- Dangling neckwear, bracelets, earrings, metal wristwatches or watches with Velcro® straps, rings, or other similar articles are strictly prohibited.

8.16 Intoxicating Beverages and Medications

a) Possession of, or being under the influence of, illegal drugs or alcoholic beverages is strictly prohibited on Niska work sites and shall be cause for removal from the work site.
b) Workers shall ensure that legitimate use of over-the-counter medications or prescription drugs does not impair their ability to perform their job safely.

8.17 Smoking

a) All Niska work sites, including company vehicles are designated smoke-free.
b) Niska management shall approve designated smoking areas.
c) Designated smoking areas will not be permitted within 75 feet/25 yards of wellheads, drilling or service rigs, process or storage facilities or other hazardous areas.
d) Signs will be posted so that smoking and non-smoking areas are clearly identified.
e) Additional breaks to allow smoking outside of an employee's normal work breaks will not be permitted.
f) The use of smokeless tobacco is prohibited at all times in all offices, meeting room areas and lunchrooms.
g) Only safety matches (ignited on a box or folder) or lighters with enclosed or covered mechanisms are permitted on field location work sites. Strike-anywhere matches or open-mechanism disposable lighters are prohibited.

8.18 Firearms

The possession and use of firearms on Niska work sites or company vehicles is strictly prohibited unless approved in writing from Niska management. If the possession and use of firearms is authorized it will require the written approval of the Chief Operations Officer and will take into consideration the anticipated risk, terms of engagement, local laws and regulations, and qualifications of individuals being given authorization.

8.19 Photographic Equipment

The use of photographic equipment on Niska property, without permission from a Niska representative, is strictly prohibited.

8.20 Pets

Pets of any description are not allowed on Niska work sites.

8.21 Special Health Considerations

It is strongly recommended that workers or visitors with special health considerations (e.g. epilepsy, diabetes or allergies to insect bites) inform their supervisor, work site escort, other workers, or first aid attendants of their condition and the specific first aid requirements to deal with those issues.

8.22 Training Requirements

a) All workers must be orientated to the Niska EH&S Handbook prior to commencing work on a Niska work site. EH&S Handbook orientations are valid for approximately 1 year and are not to exceed 15 months.
b) A valid wallet sized EH&S Handbook Orientation Acknowledgement Cards must be carried while on Niska work sites to indicate successful completion of the orientation. Proof of orientation shall be provided upon request by a Niska representative. If unable to produce an orientation card, a time and date will be scheduled for orientation. In the interim, access to Niska work sites will be limited and/or under the direct supervision of an authorized Niska representative.
c) All workers, other than visitors and administrative staff, must be trained in safe work practices and hold, as a minimum, current safety training certificates common to the oil and gas industry which includes:
   - Basic First Aid/CPR or an equivalent training course;
   - Department of Transportation (DOT) Operator Qualification depending on which state the employee is working in, (California requirements are considerably different than Oklahoma); and
   - Hazard Material Identification System (HMIS)
d) Upon request, workers shall verify these training requirements prior to starting the job by providing the original training certificates to the Niska representative. Photocopies are not accepted as proof of certification.
e) Additional required training may include firefighting, confined space entry and rescue, defensive driving, ground disturbance or spill management, as determined for a work activity or project at the Pre-Project Safety Meeting.
f) Visitors may not be allowed on Niska work sites where hazards exist that make specialized training mandatory for all persons.
g) Only those workers who are trained and authorized to operate mobile, hand-held or shop equipment will be allowed to do so.

8.23 Working Alone

Work alone means working alone at a work site in circumstances where assistance is not readily available in the event of an injury, illness or emergency.

a) Working alone regulations apply to any worker working alone on a Niska work site or field office where they are out of view or have no direct contact with another worker.
b) Employees who typically work in an office environment must also be in contact with another worker when traveling alone on secondary roads. The worker must be informed of their co-worker's travel plans before the trip begins and must be periodically contacted throughout the course of the travel period.
c) The following is a list of Non-Routine tasks that must not be conducted by an Employee Working Alone:
    1. Level II or Level III confined space entry.
    2. Working above 10 feet where fall protection is required;
    3. Any work requiring the use of a self-contained breathing apparatus (SCBA) or Supplied-Air Breathing Apparatus (SABA);
    4. Hot work;
    5. Manual resetting of tripped high voltage (751 volts) electrical breakers;
    6. Conducting maintenance or repair on high voltage equipment (751 volts);
    7. Confronting intruders, dealing with irate landowners or any situation that could present a violent confrontation; and
    8. Driving from an office to a worksite during inclement weather and conditions are considered hazardous (i.e. visibility or road conditions are such that response times to an employee, who is working alone and requires assistance, is not 'readily' available).
d) When traveling alone, communication of travel plans must be conveyed where weather, road or other circumstances warrant.
e) Workers who will be working alone must have an effective means of communication before proceeding to work alone (e.g. cell phone, radio, call-in schedule).
f) Check-in intervals with a co-worker for worker's working alone depends on the hazards associated with the work, location of the work, weather conditions and effectiveness of the communication system between the two workers. As a minimum, check-in intervals for low hazard tasks must be conducted in the morning, at mid-day and at the end of the day.

8.24 Visitor Guidelines

a) All persons, including Niska employees, visiting any Niska work site must:
   - Provide a minimum 24-hour notification of their intended visit to the Niska representative or facility office; and
   - Check-in with the Niska representative, field inspector or facility office when they arrive on site to ensure that it's safe to enter the work site, and then when they leave the work site to acknowledge their safe departure.

b) Visitors, including members of employees' families, are not allowed in/on Niska restricted operating areas or premises except by special permission from authorized Niska personnel.

c) If there's a question about visitor status, a Niska representative will determine whether a person or persons meets the visitor or worker definition.

d) Visitors are expected to:
   - Follow the direction of their work site escort;
   - Remain in close proximity with their escort at all times and not touch any equipment while on Niska property;
   - Wear the required Personal Protective Equipment (PPE); and
   - Report to their escort any incident or hazard that comes to their attention.

e) The work site escort is expected to:

- Orientate the visitor to the work site;
- Set the limits of visitor movement;
   - Supervise visitors in an emergency; and
   - Inform others of the visitor's intended visit.

Note:
Due to the inherent hazards found on active construction work sites, visitors without the training requirements stated in Section 8.10 may not be permitted access.

9.0 WORK SITE SAFE WORK PRACTICES

9.1 Access and Egress

a) All entrances and exits to facilities and buildings at Niska work sites and facilities must be kept free of ice and snow to prevent worker injuries from slips, trips and falls, or vehicle accidents.
b) Aisles, stairways and walkways, and access to safety, firefighting equipment and first aid equipment must be kept clear of obstructions (i.e., equipment deliveries, office supplies, etc.) and/or tripping hazards.
c) All fire lanes, access roads, and evacuation routes must be kept clear of equipment, materials, and parked vehicles at all times.

9.1.1 Alarm Systems to Detect Explosive Gases, and Fire

a) Alarm systems are installed at Niska facilities to detect explosive gases and fire. Operations personnel at each Niska facility must familiarize themselves with the detection and alarm systems installed, and must be adequately trained in the use of, and response to, plant alarms.

b) Monitor and alarm systems are inspected regularly. Alarm systems will not be left in a bypass mode or be altered in any way (even minor changes could introduce hazards). If the detection system malfunctions, make arrangements for immediate repairs by a qualified service technician.

c) Should an alarm (high LEL gas or fire) occur, notify all personnel at the work site of the alarm condition, suspend all hot work immediately, evacuate the area to a safe location (especially when LEL readings exceed 10%) and proceed with emergency response and investigation of alarm conditions.

9.1.2 Building Entry

Workers entering well sites or facility process buildings must ensure that it is safe to do so by understanding and exercising their responsibilities to ensure that the activities can be carried out safely and with minimal risk to people, the environment, public, private, or company property. A hazard assessment and use of precautionary measures must be considered as "routine work practice" when entering well sites and facilities.

Typical hazards include:

- Flammability, explosive, pressure;
- Confined spaces, oxygen displacement, and toxic atmospheres;
- Static electricity;
- Chemicals such as methanol, biocide, demulsifiers, scavengers, etc.

Typical precautionary measures include:

- Hazard assessment,
- Bonding and grounding practices before entry,
- PPE appropriate to the nature of the hazard, and
- Working alone practices and emergency preparedness.

9.2 Cathodic Protection (CP)

CP is used to reduce corrosion of tanks, pipelines, and other buried structures. CP can involve the flow of a large amount of electrical current in the soil and pipelines, which can lead to electrocution or sparking hazards. All Niska pipelines, tanks and buried station facilities are subject to CP. In order to prevent mechanical contact with a CP system, contact the Niska Production Coordinator prior to excavating on a Niska work site.

The following shall be considered when working on cathodic protected facilities:

a) Prior to cold cutting or breaking a pipe flange connection, ensure that the facility operations and electrical department has been consulted to identify all CP rectifier locations required to be turned off and locked out;
b) Any work such as cold cutting a line or breaking a flange may cause an arc or spark creating a fire hazard. Electrical continuity bonds (jumpers) must be used to maintain a safe path for the flow of electrical current;
c) Upon completion of the work and reassembly of pipelines or flanges, jumper cables shall be removed and rectifiers shall be turned back on;
d) Only qualified Niska electricians are authorized to adjust CP rectifier tap settings; and
e) Only qualified Niska electricians or qualified CP technicians shall conduct service or maintenance on a CP rectifier.

9.3 Confined Space Entry

9.3.1 OSHA General Industry Standards

29CFR 1910.146 Permit-Required Confined Spaces for General Industry identifies a confined space that has one or more of the following characteristics:

- q Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- q Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- q Is not designed for continuous employee occupancy.

Note:
Niska employees are not authorized to enter Permit-Required Confined Spaces unless they have successfully completed a Niska approved Confined Space Entry training course.

9.3.2 Basic Rules of Confined Space Entry:

a) Unusual or site-specific requirements for confined space entry must be discussed with the Niska representative at the Pre-Project meeting or during the work as the need arises.
b) All supervisors, entrants and attendants working on a confined space project will be able to verify successful completion of a Niska-approved Confined Space Entry Training Course.
c) All entrants into any level of confined space must continuously monitor the atmosphere by way of a 4-head electronic gas detector and especially if there is a potential for the atmosphere to change unpredictably after a worker enters the confined space.
d) Worker's working alone are permitted to enter a Level I confined space (i.e. caisson) providing they:
   i. Have contacted a co-worker who can be readily available to respond to an emergency involving the entrant;
   ii. Have established a call-in time with their co-worker;
   iii. Have a two-way communication device on their person while entering the Level I confined space; and
   iv. Are equipped with a four-head electronic gas detector capable of detecting an oxygen (O_2) deficient or enriched atmosphere, explosive gases and Carbon Monoxide (CO)
e) A worker who is working alone must not enter a level II or Level III confined space for any reason.

9.3.3 Two Types of Confined Spaces

Permit-Required Confined Space Entry Requirements
An example of a permit-required confined space would be a 10% LEL reading in a caisson or an atmospheric concentration of any substance with an acutely toxic effect above the permissible exposure limit (PEL) and any atmospheric condition that is immediately dangerous to life or health (IDLH).

- Niska employees and contingent staff must not enter permit-required confined spaces unless they have been trained in confined space entry procedures. Entry of such spaces may only be performed by properly trained and qualified personnel following the entry requirements Stated in 29 CFR 1910.146 Permit-Required Confined Spaces for General Industry.
- Niska field supervision will inform the contractor/employee of any permit-required confined spaces and ensure that a pre-job hazard assessment is performed prior to entry. When contracted to perform confined space entry, contractors are required to utilize their own confined space entry permit program for entry or contractually adopt Niska's program. Niska will not write a confined space entry permit for a contractor. A Niska representative should be on-site at any permit-required entry by a contractor.
- All permit-required confined spaces must be identified and labeled as such. At a minimum, the label must contain the following wording:

DANGER!

PERMIT-REQUIRED CONFINED SPACE.

ENTRY BY PERMIT ONLY.

Non-Permit Confined Spaces

Non-Permit confined spaces are confined spaces that do not actually or potentially contain hazards that could cause death or serious physical harm. Examples of non-permit confined spaces at Niska gas storage facilities are:

- Drop ceilings;
- Mechanical equipment closets; and
- Motor control cabinets

For further information on Confined Space Entry requirements consult the Niska Gas Storage Confined Space Entry Standard

Important: When in doubt, treat as a Permit Required Confined Space.

9.4 Drilling and Completions Rig Hazards and Control

Unique hazards are present during drilling completion and well work-over activities. Drilling and Completions and Well Work-over contractors are expected to understand and mitigate these hazards to ensure a safe work area. These unique hazards include, but are not limited to:

- Heavy equipment traffic
- High pressure liquid and gas lines
- Rotating Equipment
- Steam lines and de-icing equipment
- Overhead hazards
- Boilers
- Draw works
- Mud and fluid handling systems
- Pipe and casing handling

It is essential that any work being conducted concurrent with, or adjacent to, active drilling and completions and well work-over operations be coordinated with the drilling and completions supervisor. Your supervisor will coordinate the communication between construction operations and drilling and completions operations. Hazards and control measures resulting from concurrent or adjacent construction/drilling/completions will be communicated to all employees and contractors during regular safety meetings.

> Note:
> Do not enter a well pad site where drilling and completion and well work-over activities are ongoing without the authorization of your supervisor.

9.5 Electrical Equipment

a) Only competent and certified journeyman electricians and/or authorized electrical apprentices will perform maintenance on electrical installations.

> Exception:
> The only exception is when site-specific minor electrical-related activities (e.g., changing light bulbs, disconnecting small motors, opening CP rectifiers) have been exempted from this requirement by the provincial authority. However, recognized courses must be taken, equipment-specific electrical training is required, and workers must be authorized by their employer.

b) Any maintenance or repairs shall conform to the requirements of the National Electrical Code - NFPA 70.

c) Only authorized and qualified persons trained in high voltage awareness are permitted to operate, lock out or reset tripped high voltage equipment.
d) Resetting of tripped high voltage breakers will not be conducted if working alone.
e) Only those workers who have been trained and authorized by Niska shall conduct electrical system lockouts.
f) PPE requirements for non-routine electrical work must either meet or exceed the requirements identified in NFPA 70E - Electrical Safety in the Workplace.

9.6 General Electrical Safety Practices

When performing electrical work, always take appropriate precautions against the hazards likely to be encountered when performing the job. In particular:

- Consider every circuit to be energized until otherwise proven. Follow TEST BEFORE TOUCH procedures.
- Turn off the electrical power before changing a light bulb.
- When operating electrical equipment where there is a possibility of an arc flash, always stand to one side to avoid exposure to arc flash energy.
- Do not overload electrical systems.
- In an emergency when power lines are down, consider every wire, including fences and guy wires, to be energized. Only qualified personnel shall handle them.
- Electrical equipment must be kept clear of all obstructions; do not store materials inside, in front, behind, or on top of this equipment.
- All rooms, vaults, and other spaces containing electrical equipment are to be kept clean with unobstructed walking and working areas around them. Do not use these areas for storage of any materials.
- Report broken wire poles, guy lines, and any other equipment requiring repair to your supervisor when discovered. Repairs must be made promptly.
- Use the proper stopping control for all motors. The motor should only be disconnected by the main breaker in an emergency.
- All electrical equipment shall be provided with a local control station within the sight of the controlled equipment.
- All electrical maintenance tools must be in good condition and approved and certified for the work being done.
- Cleaning of electrical equipment must be done by a qualified person. Only approved materials may be used.

- Work must not be performed on pole lines, outdoor electrical services, or associated equipment during electrical storms except during an emergency.
- Wet rags are never to be placed on electrical equipment either to cool down the equipment or to dry the rags.
- The use of water for washing down equipment in the vicinity of electrical apparatus is not permitted.
- Poles supporting electrical wires or any type of electrical equipment are not to be used as a snub or dead man for winch lines on trucks or pickups.
- Any connected wire that is found on or near the ground shall not be touched by anyone except qualified electrical personnel.

9.7 Elevating Platforms, Man Baskets and Man Lifts

When working from an elevating platform (i.e. scissor lift) man basket or man lift, workers must meet the following operating requirements:

- Only trained workers shall operate man lifts or elevating platforms (i.e., scissor lifts).
- Follow the manufacturer's operating instructions and do not exceed their rated load limits.
- A complete fall protection system consisting of a full-body harness and lanyard, equipped with a shock absorbing device, must be worn by each person moving or operating a man lift and their lanyard must be attached to the anchor point as per the manufactures instructions or by that as designed by a professional engineer as per 29 CFR 1910.
- Never tie a safety lanyard to an adjacent structure.

Note:
When connected to the anchor point, the lanyard must be short enough to prevent the workers from being ejected from the equipment but also long enough to allow the worker to perform their work.

9.8 Elevated Workspace

a) All scaffolding used on Niska work sites must comply with 29 CFR 1910. This regulation provides rules and requirements for the design, fabrication, erection, inspection, testing, maintenance and use of scaffolding equipment, materials and equipment where scaffolds are erected to provide working platforms for workers and materials during the construction, alteration, repair or demolition of buildings and other structures.

b) Tagging of scaffolding must be used at all phases of assembly and disassembly and is required to let workers know that a particular scaffold is safe for use, that a potential or unusual hazard is present, or the scaffold is unsafe for use.
c) Tags must be placed at each point of entry to the scaffold.
d) The tagging of scaffolds following visual inspection is required for the following types of scaffolds:
   - bracket scaffold;
   - double-pole scaffold;
   - needle-beam scaffold;
   - outrigger scaffold;
   - single-pole scaffold;
   - suspended scaffold; and
   - swing-stage scaffold

Color of inspection tag	Wording to appear on tag
Green	"Safe for Use" or similar wording
Yellow	"Caution: Potential or Unusual Hazard" or similar wording
Red	"Unsafe for Use" or similar wording

Table 6 - Summary of Scaffold Inspection Tag Requirements

9.9 Energy Isolation & Lock-Out Tag Out

General

a) Only those workers who have been trained and authorized by Niska are authorized to conduct electrical system lockouts.
b) **Every** affected worker is required to lock out equipment or machinery and must work under the protection of their own personal safety lock which is **not** keyed alike to any other worker's safety lock on site, and must keep the key to that lock in their possession.
c) When performing repair or maintenance work on pneumatic,

electrical, hydraulic or process equipment, all workers shall lock out in accordance with the OSHA 29CFR 1910.147

d) Under normal conditions, the facility operator will de-energize and apply the 'first lock' if equipment is to be serviced, repaired, tested or adjusted.
e) Work shall not be performed until that equipment has come to a complete stop; and
f) The facility operator has locked and tagged the equipment, and removed and rendered safe any hazardous conditions; or
g) Otherwise rendered the equipment inoperative in a manner that prevents its accidental reactivation and provides equal or greater protection than the protection afforded by the previous clause; and
h) Each affected worker has applied their own personal safety lock and tag to the lock out device, (e.g. lock out scissors or group lock box).

9.10 Excavation and Trenching (Ground Disturbance)

In general terms, ground disturbance is any work, operation or activity that results in a disturbance of the earth, including without limitation; surveying, excavating, digging, trenching, plowing, rig anchor installation, drilling, funneling, auguring, back-filling, blasting, topsoil stripping, land leveling, peat removing, quarrying, clearing, grading, pounding a ground rod, fencing and hydrovacing for the purpose of excavation.

It is not a ground disturbance if the ground penetration is less than one foot deep and does not result in a reduction of the earth cover over a pipeline to a depth less than the cover provided when the pipeline was installed.

The definition of ground disturbance is if a work operation or activity on or under the existing surface results in a disturbance or displacement of the soil, but not if the disturbance or displacement is a result only of:

(1) Routine, minor road maintenance,
(2) Agricultural cultivation to a depth of less than 18 inches below the ground surface over a pipeline, or
(3) Hand-digging to a depth of no more than one (1) foot below the ground surface, as long as it does not permanently remove cover over a buried facility.

General Requirements

a) All excavations on Niska work sites shall comply with the Niska Ground Disturbance Practice.

b) Ground disturbance procedures must be followed for any ground disturbance work to protect workers, public, property and the environment.
c) Perform atmospheric monitoring in excavations that are greater than 4 feet deep and where a potential exists for a hazardous atmosphere. Treat these excavations as a confined space.
d) All underground facilities such as: water, sewage, oil, natural gas lines, chemicals, cablevision services, electric energy; or electric, telephonic and telegraphic communications must be marked before any ground disturbance is undertaken
e) Facility owners must be notified and have their facilities marked on the surface prior to starting work.
f) A pre-job meeting must be held for all personnel and contractors involved in the ground disturbance.
g) Spoil piles must be at least three (3) feet from the side of the excavation and have a slope of 45° or less. Power line poles, adjacent to excavations, must be protected from cave-ins.
h) Proper barricades must be installed to warn people of the dangers of an open trench and to protect co-workers, the public, livestock, and wildlife from falling into the excavation. In a trench or excavation of 12.5 in depth or less, proper engineered shoring must be used.
i) Workers must know and understand the safe working distances for heavy equipment from exposed underground facilities in their jurisdiction.
j) Mechanical excavation must not take place within two (2) feet of a buried pipeline unless the use of the equipment is under the direct supervision of a representative of the owner of the buried pipeline.
k) Only the facility owner representative can direct or permit heavy equipment to operate within two (2) feet of an exposed facility.
l) All buried facilities situated within the excavation and within 16 feet of the work area must be hand exposed prior to mechanical excavation.
m) Ensure that survey markers, line locates and/or paint marks are not obscured by such things as materials, vehicles, equipment or spoil piles;
n) In order to determine the stability of excavation walls, the soil being excavated must be classified into one of the three types in the following table by a competent person.

Soil characteristics	SOIL TYPE		
	Type I	Type II	Type III
	Hard and compact soil	Likely to crack and crumble soil	Soft, sandy or loose soil
Consistency	Hard, very dense in compactive condition	Stiff, compact in compactive condition	Firm to very soft, loose to very loose in compactive condition
Ability to penetrate	Only with difficulty by a small, sharp object	With moderate difficulty with a small, sharp object	With ease
Appearance	Dry	Damp after it is excavated, has low to medium natural moisture content	Appears solid but flows or becomes unstable when disturbed. Can be dry, running easily into a well-defined conical pile, or wet
Ability to excavate with hand tools	Extremely difficult	Moderately difficult	With ease
Water seepage	Shows no sign of water seepage	Shows signs of localized water seepage	
Other	Does not include previously excavated soil	Shows signs of surface cracking	Is granular soil below the water table, unless the soil has been dewatered Exerts substantial hydraulic pressure when a support system is used.

Table 7 - Soil Characteristics

9.10.1 Training Requirements

Workers representing Niska on a ground disturbance must possess a valid Supervisor Level ground disturbance training certification or jurisdiction specific equivalent certification and are familiar with Niska's Ground Disturbance Practice.

All personnel involved in the planning, supervision and execution of ground disturbances are required to understand and comply with the Ground Disturbance Practice. It is your responsibility to identify, to the best of your ability, what is in the ground you plan to dig BEFORE the digging takes place.
Upon proposing to undertake a ground disturbance all reasonable precautions must be taken to ascertain whether or not underground facilities exist in the area of the proposed work prior to breaking ground.

9.10.2 Soil Conservation

All excavation, earth moving, soil stripping and brush clearing activities must be conducted in a manner that preserves the soil and permits future land reclamation or restoration.

- Competent personnel must identify soil horizons.
- Topsoil and other soil horizons must be kept separate during construction.
- Measures to control soil wind and water erosion must be implemented.
- Erosion barriers (silt fences) and surface contouring should be used as appropriate.
- Construction and heavy traffic must be limited to times when conditions are dry or frozen to the extent practical.

9.11 Fall Protection

- All workers working 6 feet or higher above ground level are required to use approved ladders, scaffolds, and/or fall protection equipment.
- Fall protection and fall arrest equipment must be certified for its intended use.

9.11.1 Application

All workers working on a Niska work site must follow Fall Protection regulations when conducting any one of the following tasks:

1. Working 6 feet or more above ground.
2. Working near a leading edge that is 6 feet or more above the lower level.

3. Working on an aerial device, such as a scissor lift, boom lift or vertical lift.
4. Working on an elevated work platform that has guardrails less than 39 inches high.
5. Working from thrustouts or similar structures, such as, beams, trusses, purlins or plates of 4 inches in horizontal width or greater and 15 feet above ground and where temporary guardrails are impracticable.

Note 1:
If it is unclear whether fall protection equipment is necessary, ask your supervisor. The guideline is "Whenever there is risk of a fall, the fall protection system should be used."

Note 2:
When working near an excavation that is 6 feet or more deep a guardrail system must be used.

9.11.2 General Information

Fall protection equipment must be used only for that purpose, not for hoisting tools or equipment. Only workers trained in the proper use of fall protection equipment shall use the equipment or work at elevations where fall protection equipment is required.

9.11.3 Fall Protection Equipment

- Body Harness
- Lanyard
- Anchoring Devices
- Carabineer – Used to hook retractable lifelines and vertical drop lines to an overhead anchor point.

9.11.4 Component Compatibility

Fall protection equipment should be used as a complete system. That is, the lanyard and body harness should always be used together and they should be made by the same manufacturer. There should be no component substitution unless approved by the supervisor.

9.11.5 Design and Performance Requirements and Test Methods

Fall protection equipment has many design and performance requirements and test methods specified in the regulation (8 CCR 3299 Appendix A, B and C). A safety inspection must be conducted prior to use.

9.11.6 Rescue Considerations

- q Every employer utilizing fall protection equipment on a Niska work site must plan to have means available to promptly rescue an employee should a fall occur, since the suspended employee may not be able or incapable of reaching the work level independently.
- q Fall protection equipment subjected to impact loading must be immediately removed from service and must not be used again until inspected or repaired by the manufacturer or authorized personnel or replaced.
- q In California repaired or replaced components or component parts must meet the performance and testing requirements of 8 CCR 3299 Appendix C.

9.11.7 Free Fall Considerations

Cal-OSHA requires that impact force in a fall not exceed 1,800 pound limit with an approved harness.

Fall Protection Equipment Checklist:

Before Use

- q Inspect body harness and lanyard for defects and compatibility.
- q If there are any problems, obtain or order another body harness and lanyard.
- q Adjust body harness to fit your body snugly in the center of the size range.
- q Have co-worker inspect harness for:
  - D-ring in the center of your back.
  - Snap hook is completely closed and locked.
- q Attach other end of lanyard to approved anchor point (Structural beams and eyebolts are often used).
- q Anchor point must be directly above the worker and above the harness D-ring.
- q Neither high enough so that worker can not fall more than 6 feet nor contact any lower level obstacle.
- q The equipment must support 5000 pounds per worker.

After Use

- q Wipe body harness and lanyard with clean, damp cloth.
- q Inspect for defects and tag "defective" if appropriate.
- q Lubricate connectors and snap hooks.
- q Return to storage area.

9.12 Fuel Gas as Instrument Gas

Before using fuel gas as instrumentation or power gas, ensure the fuel gas is compatible with the equipment and materials. Potential hazards include:

- Asphyxiation
- Fire and explosion
- Pressure releases
- Premature equipment failure

A hazard assessment must be completed as part of issuing the Safe Work Permit. Review the MSDS of the pipe contents.

Safety Precautions

- All instrumentation gas, power gas, and all gas from regulators must be vented outside and away from any potential ignition source. Prevailing wind direction must be considered.
- Ensure all liquids present in the system can be safely trapped and removed.
- Vent lines should be sized and designed to eliminate back pressure on instrumentation or line freezing.
- Where sour fuel gas is used, the potential exposure concentrations must be addressed.
- Fuel gas must not be used as a substitute for air in portable power tools (e.g., impact drivers, sprayers, pumps).
- Establish and maintain a strict preventive maintenance schedule to look for and correct all types of leaks (i.e., instrument-controlled gasket door leaks).

9.13 Gas and Liquid Sampling

All workers who are required to sample gas or liquids will undergo on-the-job training and demonstrate their competence to the on-site supervisor.

Hazards associated with gas and liquid samplings include:

- Burns from hot fluids, gases, chemicals, and frost
- Chemical exposure from inhaling toxic substances
- Asphyxiation
- Dermatitis or skin irritation
- Fire and explosion from using improper sampling containers
- Plugged sample lines and faulty valves
- Static electricity

Based on the results of the hazard assessment and prior to issuing a Safe Work Permit, a work-specific procedure must be developed to eliminate or control the potential hazards associated with gas and liquid sampling.

Additional PPE may include:

- Goggles and face shields
- Coveralls
- Rubber gloves when working with caustic/acid samples
- Personal monitor
- Self-Contained Breathing Apparatus (SCBA)

For detailed information on "Gas and Liquid Sampling", refer to site-specific procedures.

9.14 Hazardous Waste Management and Transportation

These guidelines were developed to provide information on the safe handling, storage, labeling, and disposal of hazardous wastes based of the regulations. Follow these guidelines for the protection of yourself, your co-workers, and for the protection of the environment.

> Hazardous Waste is defined as any waste substance that can harm people, the environment or property.
>
> For California, the legal definition can be found in the California Health and Safety Code 25122.

9.14.1 List of Hazardous Wastes

Hazardous wastes generated at Niska gas storage facilities may consist of:

- Empty compressed gas cylinders – i.e. oxygen or nitrogen
- Empty Containers (smaller than 5 gallons) that held chemicals
- Empty Containers (greater than 5 gallons) that held chemicals
- Empty aerosol containers (non-RCRA – Resource Conservation and Recovery Act, the Federal hazardous waste law)
- Used Dehydrating Chemicals – for example, ethylene glycol and triethylene glycol
- Waste (contaminated) Diesel
- Waste (contaminated) Gasoline
- Used Oils and Lubricants
- Used Oil Filters
- Used Oily Rags
- Waste Solvents, degreasers or paints

9.14.2 Empty Container Disposal Guideline

"Empty" means that no hazardous material can be poured or drained from the container when the container is held in any orientation, or that, if the material is not pourable, no material remains in the container that can be removed by scrapping or chipping.

9.14.3 Less than 5 gallon containers

For chemicals listed by RCRA ("RCRA = Federal hazardous waste") or is listed as an "acutely hazardous waste," the containers must be disposed of as hazardous waste.
When the container is "empty", remove the label and dispose of it in the trash. Nozzles from aerosol cans must be removed prior to disposal in trash. In California this procedure only applies to containers that held "California listed hazardous wastes."

9.14.4 Greater than 5 gallon sized containers

When the container is emptied as much as possible, label "empty" and dispose of as a hazardous waste.

9.14.5 Safe Handling of Hazardous Wastes

Safe handling procedures and Personal Protective Equipment recommendations must be presented in the Material Safety Data Sheet (MSDS) for each material. Access to msds' for hazardous materials and wastes are available through an internet based service called msdsBinders © found on the Niskanet.

9.14.6 Storage Areas for Hazardous Wastes

Hazardous wastes can be stored in two areas:

- Satellite Accumulation Areas
- Hazardous Waste Storage Area
  - The Satellite Accumulation Area is for storing up to 55 gallons of each waste type for up to 1 year. The Satellite Accumulation Areas must be near where the waste is generated. For example, a mechanic can dispose of waste oil pads into a 55 gallon metal drum near where he works, as long as he has direct control of the drum. When the drum is 90% full or not more than 1 year has passed, the drum is moved to the Hazardous Waste Storage Area.
  - The Hazardous Waste Storage Area is for storing all the other hazardous wastes containers for up to 3 months. There is no limit to the amount of hazardous waste stored there.

9.14.7 Container and Disposal Procedures for Hazardous Wastes

All hazardous wastes must be stored in a non-leaking, Department of Transportation approved container for that specific waste as specified in the following table:

Hazardous Wastes	Container	Disposal Procedures
Empty Compressed Gas Cylinders – for example, oxygen, acetylene, propane, hydrogen (leak detector), nitrogen, and calibration gases.	Not Applicable	In general, empty cylinders must be taken to the vendor and filled the day they are emptied. If that is not done, then, empty cylinders must be labeled "empty" and stored in the designated area. For cylinders that are not refilled, ensure they are empty, punch out the valve and place in the trash.
Empty Containers (smaller than 5 gallons and contained no "RCRA" chemicals)	Not Applicable	Ensure container is empty, remove label, if possible, and place in trash.
Empty Aerosol Containers (contained no "RCRA" chemicals)	Not Applicable	Ensure container is empty, and if possible remove label and nozzle, place in trash.
Empty Containers (smaller than 5 gallons and contained "RCRA" chemicals) For example, brake cleaner and spray paints	Metal 55 gallon drum	Ensure container is empty, and place in labeled, metal container in the Satellite Accumulation Area.
Empty Containers (greater than 5 gallons) that held chemicals (RCRA or non-RCRA)	Metal 55 gallon drum	Ensure container is empty, and place in labeled, metal container in the Satellite Accumulation Area.
Used Dehydrating Chemicals – for example, triethylene glycol	Underground storage tank	Contact vendor to empty tank.
Used Glycol Filters Drain filters as long as possible, at least 24 hours	Metal 55 gallon drum	Place in labeled, metal container in Satellite Accumulation Area or Hazardous Waste Storage Area.
Used Oils and Lubricants	Underground storage tank	Contact vendor to empty tank.
Used Oil Filters Drain filters as long as possible, at least 24 hours	Metal 55 gallon drum	Place in labeled, metal container in Satellite Accumulation Area or Hazardous Waste Storage Area.
Used Oily Rags and absorbent pads	Metal 55 gallon drum	Place in labeled, metal container in Satellite Accumulation Area.
Waste (contaminated) Diesel	Metal 55 gallon drum	Place in labeled, metal container in Satellite Accumulation Area or Hazardous Waste Storage Area.
Waste (contaminated) Gasoline	Metal 55 gallon drum	Place in labeled, metal container in Satellite Accumulation Area or Hazardous Waste Storage Area.
Waste Solvents	Metal 55 gallon drum	Contact vendor to remove and recycle.

Table 8 - Hazardous Wastes - Container and Disposal

9.14.8 Container Labels of Hazardous Wastes

All containers in the Satellite Accumulation Areas and Hazardous Waste Storage Area must be labeled. The requirements are:

9.14.9 Satellite Accumulation Area Label Requirements

- Name of hazardous waste – for example waste oily rags/pads.
- Date waste was first placed in container.

9.14.10 Hazardous Waste Storage Area Label Requirements

- Detailed information required on a specific type of label. Contact your supervisor for assistance.

9.14.11 Weekly Inspection of Hazardous Waste Storage Area

Once a week the Hazardous Waste Storage Area must be inspected and an inspection checklist completed.

9.14.12 Hazardous Waste Transporter and Manifests

The Niska Gas Storage facility supervisor will advise Niska employees the certified hazardous waste transporter for your facility. The transporter of the hazardous waste will complete the hazardous waste manifest. The Niska supervisor should review all manifests to ensure the information is correct. Hazardous waste manifests must be kept forever. The generator of hazardous waste is responsible for the product forever. The manifest documents details that may become important in a Superfund (Federal law) cleanup situation.

9.14.13 Hazard Communication Program

The Hazard Communication Program provides information to you so you can work safely with chemicals, understand the hazards associated with the chemicals, and understand how to minimize exposure to the chemicals.

9.14.14 Responsibilities

The supervisor is responsible for implementing and maintaining the Hazard Communication Program. You are responsible for understanding and following the Hazard Communication Program and to always, perform job tasks in a safe manner. If it is unclear whether the job is safe to do, ask your supervisor before beginning the job.
All workers have a right to information about the chemicals they work with. In addition to the Hazard Communication training,

employees may review the Hazard Communication Program, the Hazard Communication regulation, and Material Safety Data Sheets (MSDS's) at any time.

9.14.15 Requirements

The five requirements in the Hazard Communication Program are:

1. Prepare a list of hazardous substances at the facility.
2. Collect and maintain MSDS's for those hazardous substances. The chemical MSDS's must be available to all affected Niska employees.
3. Train you on the hazards associated with the hazardous substances and how to work safely and minimize exposure to those hazardous substances and understand the product's short and long-term health effects;
4. Label all hazardous substance containers with the common name and applicable hazards, such as, gasoline and flammable substances.
5. Prepare a written Hazard Communication Program.
6. Labeling Chemical Containers
   All chemical containers need two pieces of information on the container:
   - Chemical or common name (for example, gasoline)
   - Appropriate hazard warning (for example, flammable)

If you cannot read the existing label, a legible label needs to be put on the container.

9.14.16 Labeling of Pipes

The content of facility piping is indicated by a color coding system: Outdoor piping is typically marked using a color banding at regular intervals and indoor piping is typically marked using a solid color. These colors are available at all field offices

9.14.17 Working with Unlabeled Pipes

Prior to working on an unlabeled pipe check with a Niska representative. All workers are responsible for knowing the contents of the pipe and the proper work procedures, safe work practices and Personal Protective Equipment necessary for the job.

9.14.18 Non-Routine Tasks Using Chemicals

Prior to starting a non-routine task, affected workers are responsible for reading the label and the MSDS for the chemicals used in the non-routine task. Workers must understand the hazards related to

the chemical and how to minimize those hazards. Workers that do not understand the information on the label or MSDS must talk to your supervisor prior to using the product.

9.14.19 Contractors and Visitors

Contractors and visitors must be informed of general chemical hazards at the facility by the employee they are working for or meeting with. Contractors must be required to provide an MSDS for chemicals brought onto or used at a Niska facility.

a) Only chemicals permitted by the Niska EH&S department shall be used on a Niska work site. Service providers must be in possession of an MSDS for all of the controlled substances/ materials they intend to bring onto the site
d) Due to topical exposure to hydrocarbon liquids, when being exposed to crude oil or condensate liquids Nitrile® gloves must be worn.
e) Regardless if a worker is wearing leather gloves, Nitrile® gloves must be worn underneath the leather gloves.
f) **Do Not Use** leather gloves that are saturated with either crude oil or condensate.
g) All controlled products used, stored, handled or disposed of in the workplace must be properly labeled, and a MSDS for that product must be made available to all affected workers.

9.14.20 NFPA Warning Sign

National Fire Protection Association (NFPA) 704 Signs may be required by the local Fire Marshall. The purpose of the sign is to inform the emergency responders of the potential dangers at a facility. The signs can also be read by other personnel to understand the hazards at a facility. The signs must be a diamond shape with four different colors in each corner of the diamond.

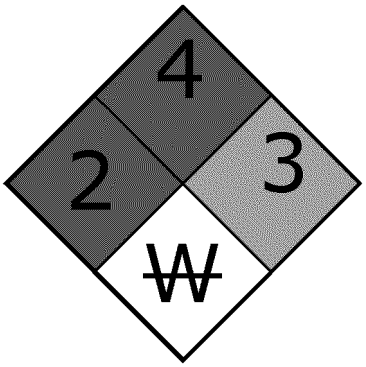


Table 9 - NFPA Warning Sign

The signs must be typically located at the entrance to a facility and/or on buildings and on above ground storage tanks that contain chemicals. Below is an explanation of what the colors and numbers on the colors communicate.

Blue – Health Hazard (left diamond)
4 = Deadly hazardous
3 = Extreme danger
2 = Hazardous
1 = Slightly hazardous
0 = No health hazard

Red – Fire Hazard (upper diamond)
4 = Extremely flammable
3 = Ignites at normal temperatures
2 = Ignites when heated
1 = Must be preheated to burn
0 = Will not burn

Yellow – Reactivity Hazard (right diamond)
4 = May detonate at normal temperatures
3 = Strong shock or heat may detonate
2 = Possible violent chemical change
1 = Unstable if heated
0 = Normally stable

White – Special Hazard (lower diamond)
Cor = corrosive chemicals
OXY = oxidizing chemicals
~~W~~ = reacts with water

9.15 Hot Work

Hot work is defined as work in which a flame is used or sparks or other sources of ignition may be produced. This includes:

a) Cutting, welding, burning, air gouging, riveting, drilling, grinding, and chipping;
b) Using electrical equipment not classified for use in a hazardous location; and
c) Introducing a combustion engine to a work process.

Hot work will not be conducted on any Niska work site until:

a) A hot work permit is issued that indicates the:
   (1) Nature of the hazard;
   (2) Type and frequency of atmospheric testing required;
   (3) Safe work procedures and precautionary measures to be taken, and
   (4) Protective equipment required,

b) The hot work location is:
   (1) Cleared of combustible materials, or
   (2) Is suitably isolated from combustible materials,
c) Procedures are implemented to ensure continuous safe performance of the hot work, and
d) Testing shows that the atmosphere does not contain:
   (1) A flammable substance, in a mixture with air, in an amount exceeding 20 percent of that substance's lower explosive limit for gas or vapors; or
   (2) The minimum ignitable concentration for dust.

9.16 Ladders

Portable ladders must meet all regulatory requirements and shall, as a minimum, meet the following:

a) Portable ladders used on Niska work sites must be equipped with safety feet on hard surfaces or spike feet for soft surfaces.
b) Ladders must be free of weak or damaged steps.
c) Extension ladders must be tied off at the top with tag lines or held by another worker, and extended at least 3 feet beyond the top bearing point. The upper and lower sections of extension ladders should overlap by at least three rungs.
d) Ladders must be non-conductive if used for electrical work.
e) The base of the ladder must be set at least one quarter of its vertical length from the base of the wall or structure.
f) Work must not be conducted from either of the top two rungs of a portable single or extension ladder.
g) Work must not be conducted from either of the top two rungs of a stepladder, except where the stepladder is equipped with a railed platform.
h) Workers must never climb or step onto piping, tubing or electrical conduits.
i) Ladders placed near doors or in passageways shall be protected against being struck by doors, traffic or personnel. The area surrounding the ladder must be barricaded off to prevent contact with the ladder.
j) Do not use ladders when working above 20 feet.
k) Check the ladder for broken rungs, split side rails, loose screws or bolts, worn or broken non-slip feet, frayed or damaged ropes. Tag it "out of service" and have it replaced.
l) Get help when handling heavy or long ladders.
m) Before climbing a ladder, clean your boots if they are muddy or slippery. Avoid climbing with wet soles.

9.17 Livestock Protection

Niska personnel will work closely with landowners to ensure all livestock issues and concerns are addressed. Niska operations must be managed to minimize impacts to livestock and the potential for animal health issues. Gates and cattle guards must be in place, where necessary, to protect Niska facilities from livestock and to prevent entry of livestock onto leases or other Niska property.

Niska shall exercise due care:

- In closing and opening gates and fences,
- Ensuring cattle guards are maintained and in place,
- Repairing or replacing fences,
- Guarding open ditches and excavations with temporary fences or barricades, and
- Ensuring that crossings for livestock and vehicles are installed, where necessary, to permit free access to watering places, feeding areas, etc.

9.18 Manual Lifting

Niska recommends mechanical lifting of materials that exceed a worker's physical capability of manual lifting. When manually lifting any object, proceed with the following steps:

1) Clear any obstructions in your path of movement before lifting;
2) Plant your feet securely and set position of feet close to object. This allows for better balance and keeps the center of gravity above the feet and muscles in the legs;
3) Lower your body by bending at the knees; never bend from the waist. Do not bend back when squatting – try to keep the natural curve of the back. Key is to not stoop or crouch over the load;
4) Point your chin to the ceiling to keep your back straight, forcing you to use your legs;
5) Firmly grip the object to be lifted, and lift with your leg muscles while avoiding any twisting of your back;
6) When lifting jagged or sharp-edged objects, use gloves to protect your hands; and
7) Ensure that a clear line of sight is maintained at all times when lifting and moving items and never turn until the lift is complete, only your feet should move.

9.19 Pipeline Pigging & Pigging Valves

a) Regardless of how many workers are on site, when pigging, all valves related to the procedure will be locked out and tagged by each affected worker.
b) Open valves slowly to avoid sudden pressure changes in the pipe which can produce enough force to blow a valve or gasket. Valves should never be operated by a worker who has not been properly trained to do so.
c) Always push a ball valve handle whenever opening the valve, never pull the handle toward you. The pressure differential across the surface of the ball valve could cause the valve and attached handle to swing open with great force and has the potential to severely injure a worker.

9.20 Pipeline Isolation

a) When long-term isolation is required to conduct repairs or modifications to equipment, pipes or pipelines, all hazardous substances must be removed from the equipment and pipes being worked on, and a blind flange installed to provide positive isolation.
b) When used, a double-block and bleed must be situated directly upstream of the work area. This means that if flow in the pipe can come from more than one direction, a double-block and bleed setup is required on each upstream side. The valves of a double-block and bleed system must be secured to ensure an acceptable level of safety.
c) Securing of a double-block and bleed must be by a "positive" mechanical means that is either:
   (1) Lockable (operated by a key or similar device) and attached to or integral with the securing device, or
   (2) Not lockable but is strong enough to withstand inadvertent/unauthorized opening without the use of excessive force, unusual measures, or destructive techniques e.g. metal-cutting tools.
d) Blind flanges must be of sufficient rating according to engineering specifications to withstand the highest possible pressure that may result should an isolation device such as a block valve fail.
e) Any unit in which a blind flange has been installed must be clearly marked as containing the device.
f) Before reactivating the piping, all blind flanges must be removed and accounted for.

9.21 Portable and Fixed Grinders

Grinders (portable and fixed) must be used, maintained, and inspected regularly according to the manufacturer's recommendations.

- Workers who are grinding or buffing must wear full face shields and safety glasses with side shields.
- Prior to starting a grinder, inspect the abrasive wheels and discs for defects (cracks and chips).
- Check the position of the safety guards;
- Do not use grinders without guards.
- Do not use abrasive wheels and discs for side grinding unless designed for that purpose.
- A work or tool rest for a grinding wheel must have a maximum clearance of 1 / 8 inch from the abrasive wheel, must be positioned at the center line of the abrasive wheel, and must not be adjusted while the abrasive wheel is in motion

9.22 Overhead Work

a) When work is being conducted overhead of workers, rope off or barricade the area below the work platform and post visible signs reading "Danger - Men Working Overhead".
b) For high traffic areas or if traffic conditions dictate, an attendant may be required to warn of overhead hazards.
c) Take every precaution to ensure that tools worker's may be using do not fall on others working below.
d) Attach tools to a fixed point; if they are light in weight, attach to the worker.
e) Use tag lines to guide overhead loads; do not use for the manual handling of materials.
f) Do not use vessels or piping as support for any lifting or moving operations.
g) Do not fasten cables or ropes to operating piping or vessels.

9.23 Overhead Power Lines

An overhead power line does not have to be hit to cause electric contact; electricity can arc through the air between two conductors. If an energized overhead power line is inadvertently struck, occupants in a vehicle should remain in the vehicle and never step from the cab to the ground. By contacting the ground and an electrified vehicle, the circuit is completed and electrocution can result. Wait for the power line to be de-energized before leaving the vehicle.

All workers shall adhere to the following practices wherever overhead power line crossings may be encountered or when working in proximity to power lines at Niska construction sites.

a) When performing operations in close proximity (23 feet or less) to overhead power lines, there shall be a designated safety standby or observer at the site or the line shall be de-energized where possible.
b) Equipment shall always be kept away from overhead power lines following the minimum requirements indicated in Table 5 - Safe Minimum Clearances When Working Near Overhead Power Lines.
c) All equipment with movable booms must cross under power lines with the boom in the lowered position.
d) In all cases, the height of power lines shall be established before moving a high load underneath them.
e) If unsure of what the power line voltage is, and if the power lines are not de-energized, operate equipment in the area ONLY if a safe minimum clearance is maintained as follows:
    - At least 10 feet for lines rated 50 kilovolts or below;
    - At least 10 feet plus 0.4 inch for each kilovolt above 50 kilovolts; or maintain twice the length of the line insulator (but never less than 10 feet)
f) Where it is difficult for equipment operators to maintain safe clearance by visual means, designate a person to observe the clearance and to give immediate warning when equipment approaches the limits of safe clearance.
g) Do not use cage-type boom guards, insulating links, or proximity warning devices as a substitute for de-energizing and grounding lines or maintaining safe clearance.
h) Before beginning operations near electrical lines, notify the owners of the lines or their authorized representatives and provide them with all pertinent information: type of equipment (including length of boom) and date, time, and type of work involved. Request the cooperation of the owner to de-energize and ground the lines or to help provide insulated barriers. NIOSH encourages employers to consider de-energization (where possible) as the primary means of preventing injury from contact between cranes and power lines.
i) "Danger Overhead Power Lines" signage shall be installed and maintained in pipeline rights-of-way during all operations including clearing and equipment move-out. This signage will be visible from both directions and printed in clear lettering in a contrasting color to the background.
f) Warning poles with wire strung on both sides of a power line may be used in lieu of a designated safety standby or observer

on pipeline rights-of-way, except where power line crossings involve a busy roadway crossing (or construction sites as above).

g) Work in the vicinity of power lines shall only be conducted during daylight hours.
h) Do not store material or equipment directly under or adjacent to an overhead power line.
i) Do not place earth or other material under or adjacent to an overhead power line in such a manner that the minimum ground clearance would be reduced.

9.24 Mechanical Contact with an Energized Underground or Overhead Power Line

If mobile equipment contacts a power line:

- Advise the operator to stay on the machine until the boom or equipment is cleared or the current is shut off.
- Don't let anyone approach within 30 feet of the machine. (Electricity will take any path to the ground. Anyone touching the machine would supply less resistance than the machine, causing a 'touch potential'.
- If the machine that is in contact with an over head power line is on fire and the operator has to leave a machine, the operator must jump clear of the machine. The operator must NOT, under any circumstances, step down and allow part of their body to be in contact with the ground while any other part of their body is touching the machine.
- To avoid 'step potential' when you jump, ensure you are not touching the machine and the ground at the same time. Bunny hop with feet together until you are at least 30 feet from the equipment.
- All contacts with sources of electrical energy must be immediately reported to a Niska representative and OSHA.

Power Line Voltage Phase to Phase	Minimum Safe Clearance (feet)
50 or below	10
Above 50 to 200	15
Above 220 to 350	20
Above 350 to 500	25
Above 500 to 750	35
Above 750 to 1,000	45

Table 10 – Safe Minimum Clearances When Working Near Overhead Power Lines

9.25 Safe Welding Practices

Welding on a Niska work site and especially within a process plant area is an activity which requires extreme caution and proper procedures. Welding and other hot work are not considered to be routine operations. Great care and consideration must be taken before welding onto or cutting into any production lines.
Adequate controls must be in place to offset the hazards associated with welding or cutting on any work site.

a) A Safe Work Permit is required for welding on Niska work sites. In areas where sparks could pose a fire hazard, blankets or tarps shall be used to isolate the work area. This applies to work such as welding, grinding and oxy/acetylene cutting.

b) Areas for structural steel and pipe fabrication require welding screens to protect nearby workers from welding flash injuries.
c) The amount of general structural fabrication within the area subject to flammable hazards must be kept to a minimum. General fabrication shall be done outside of the area subject to the permit, wherever possible.
d) Contractors shall use only competent certified welders to operate cutting and welding equipment.
e) When welding on anything other than mild, uncoated steel, respiratory protection is required.
f) Hot tapping and stress relieving require; detailed procedures, pre-job discussions between the Niska Representative and the contractor and a Safe Work Permit prior to starting the work.
g) Each hose of an oxygen-fuel system e.g. oxy/acetylene torch system that uses the gases acetylene and oxygen, must have a:
    i. Flashback device installed at either the torch end or the regulator end; and
    ii. A back-flow prevention device installed at either the torch end or regulator end.
h) Gas cylinders must have a valve-cover cap in place when the cylinders are not in use.
i) Always ensure that the gas cylinder(s) is turned off at the tank(s), and that the nozzle or torch head and the hose(s) are drained of its contents to prevent uncontrolled gas release should the hose be damaged.
j) When welding, fire extinguishers must be easily accessible to the welder.
k) The welding ground return shall be placed on the material being welded and as close to the arc as possible, unless an alternative method is approved.
l) Welding electrodes must be removed from an electric welding machine left running and unattended.
m) Welding machines shall be turned off at the end of each day's work or when left unattended.
n) Ensure adequate ventilation is present in the welding or cutting area.
o) Ensure the compressed gas cylinders are regularly checked for signs of defects, deep rusting or leakage.
p) Ensure cylinders, cylinder valves, couplings, regulators, hoses, and apparatus is kept free of oily or greasy substances.

9.26 Safe Work Permit (SWP)

Safe Work Permits perform many functions. They are an agreement between the issuer and the receiver used for controlling and coordinating work to establish and maintain safe working conditions. They also ensure that all foreseeable hazards have been considered and that the appropriate precautions are identified and carried out in the correct sequential order.

- A SWP is also a written record that authorizes specific work at specific work location for a specific period of time.
- Every attempt must be made to issue SWP in person so that the issuing and receiving parties can discuss the job particulars, face to face.
- Qualified individuals authorized to fill out a SWP must be fully knowledgeable about all aspects of the form and the hazards associated with the work to be conducted. Questions raised during the filling out process shall be cleared with a Niska representative before the permit is signed.
- The issuer and receiver must carry out all safety checks before work begins.
- A SWP cannot be altered in any way or transferred from one individual to another.
- SWP are required for all jobs conducted by contracted workers.
- A SWP must be issued by a Niska representative when work is being performed by an Niska employee, outside agency, contractor or employer for any non-routine work on a Niska work site.

Note:
All SWP's are immediately considered rescinced and/or suspended should an emergency, unexpected gas detector alarm, incident, reportable spill, reportable incident or site alarm occur.

9.27 Walkways and Steps

- Stairways and walkways must be kept free of debris and tripping hazards as well as snow and ice as well as free-standing water and mud.
- Use anti-slip material if required.
- Handrails are to be kept clean.
- Steps or walkways with handrails must be installed over firewalls.

Avoid carrying tools or materials in a way which would prevent free use of hands while going up or down stairways; use the handrails.

10.0 CHEMICALS AND MATERIALS

10.1 Work Site Housekeeping Behavior

All workers shall ensure that good housekeeping practices are continuously observed at Niska work sites. Such practices include, but are not limited to, the following:

a) Keep all exits and emergency equipment clear of obstructions;
b) Leave work sites in an orderly fashion at the end of each workday and at the end of the job;
c) Keep all building entrances and exits free of snow and ice;
d) Store combustibles and flammable materials in covered receptacles and identify with appropriate warning signs;
e) Collect all rubbish or excess building materials and place in the appropriately marked bins or barrels. Take to an approved disposal site or area designated by a Niska Representative. Never let waste blow off of the right-of-way or lease onto the landowner's property or into ditches;
f) Properly dispose of hazardous wastes or controlled products and according to waste control;
g) Do not burn trash at Niska work sites without the permission of the Niska representative;
h) Ensure material storage is on level ground and that materials, which may be blown about by the wind, are secured or covered by tarps; and
i) Perform site safety and environmental inspections periodically, and document and correct all findings in a timely manner.

10.2 Respiratory Protection

a) Approved respiratory protective equipment must be worn when sandblasting or applying paints, coatings or polyurethane insulating materials.
b) All exposed workers shall wear respiratory protection when conditions dictate.
c) Personal Niska-supplied air-purifying respiratory protective equipment is for Niska employees' use only and will not be shared with contracted or subcontracted workers.
d) Consult the relevant material safety data sheet (msds) prior to working with a controlled product to determine what, if any, respiratory protective equipment is required.

10.3 Compressed Gas Cylinders

Compressed gas cylinders used of stored on a Niska work site shall:

a. Have an identification and product label as to its contents and hazards;
b. Be secured in an upright position;
c. Be kept away from heat, fire, or electric power lines; and
d. Be stored away from general traffic paths and not adjacent to vehicle paths.
e. Storage areas should be divided and marked as areas for "Full" and "Empty".
f. Appropriate measures must be taken to separate cylinders containing substances that could produce an explosive atmosphere if mixed (i.e. oxygen and acetylene).
g. Protective caps shall be placed over cylinder valves when not in use or during transport.
h. An approved gas cylinder carrier shall be used whenever lifting gas cylinders by mobile crane.
i. Unused cylinders shall be returned to the storage area and should never be left about the work site.
j. Flammable (i.e. acetylene and propane) gas cylinders must never be used or stored in a horizontal position.

Note:
Acetylene is very unstable. Acetylene cylinders are packed with porous material that is saturated in acetone in which the acetylene is dissolved. If the cylinder is laid on its side, the acetone will separate from the porous material and can be drawn out of the cylinder when put into use thereby causing an unstable mixture and potential explosion.

k) Always ensure that gas cylinders are turned off at the tank and that the nozzle or torch-head and the hose are drained of its contents and pressure, to prevent uncontrolled gas release in the event the hose becomes damaged.
l) Hoses, gauges and regulators shall be inspected before equipment is used and, if defective, must be repaired immediately. Only approved equipment shall be used for replacement.
m) Oxy/Acetylene units must be fitted with suitable flashback arrestors.
n) Compressed gas cylinders shall be removed from all confined spaces at the end of each job or when the confined space is left unattended overnight.

10.4 Compressors and Compressed Air

- Air compressors must be equipped with pressure relief valves and pressure gauges.
- Air compressor intakes must be installed and equipped to ensure only clean air enters the compressor.
- Air filters must be installed on the compressor intake.
- Safety devices on the compressed air system must be checked frequently.
- Signs must be posted to warn of automatic starting feature of the compressors.
- The belt drive system is totally enclosed to provide protection for the front, back, top, and sides.
- You are prohibited from using highly compressed air for cleaning purposes.
- You are prohibited from directing compressed air towards a person.
- You are prohibited to use compressed air to clean up or move combustible dust.
- Before repair work is done on the pressure system of the compressor, the pressure is bled off and the system is locked out.
- Safety chains or other suitable safety devices must be used at couplings of high pressure hose lines where a connection failure would create a hazard.
- Before compressed air is used to empty containers of liquid, the safe working pressure of a container is checked.
- When compressed air is used with abrasive blast cleaning equipment, the operating valve must be manually held open.

10.5 Compressed Air Receivers

- A current operating permit, from the local jurisdiction must be maintained if required
- Every receiver is equipped with a pressure gauge and with one or more automatic spring-loaded safety valves.
- The total relieving capacity of the safety valve is capable of preventing pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent.
- Every air receiver is provided a drain pipe and valve at the lowest point for the removal of accumulated oil and water.
- The compressed air receivers must be periodically drained of moisture and oil.
- All safety valves must be tested frequently and at regular intervals to determine whether they are in good operating condition.

- q The inlet of the air receivers and piping system must be kept free of accumulated oil and carbonaceous materials.

10.6 Static Electrical Charge in Hydrocarbons

Static electrical charges can be generated whenever hydrocarbons are pumped through piping or hose into pails, containers, storage tanks or vessels.

The following should also be noted about static electricity:

a. If static electricity builds up sufficiently, it can cause a spark resulting in an explosion or fire;
b. Although grounding prevents a static electrical charge between the tank or container and the earth, this does not prevent a spark from occurring inside the tank or container, between the liquid and the tank or container;
c. Highly polar liquids such as acetone or isopropanol are electrical conductors; consequently grounding equipment is necessary to reduce the danger from static electrical charge causing a spark;
d. Less conductive liquids can generate static electrical charge build up at the start of pumping when equipment first goes back into service after being idle;
e. Loading a tank or container by top-filling will cause a static electrical charge to build up on the surface of the liquid and can also form a mist in the tank, which, like a flammable dust, is explosive; and
f. Use a dip-type fill pipe that transfers liquid as close as possible to the bottom of the tank.
g. Workers must discharge potential static buildup in their clothing by grounding themselves prior to undertaking these activities.
h. Wellheads or wellbores are not deemed to be a sufficient grounding system. Scale and deposits may form to insulate the steel from the surrounding earth.
i. Do not use plastic pails for flammable or combustible liquids due to the generation and conduit characteristics to support static electricity;
j. When loading and unloading product or chemicals, ensure all trucks (contracted or other) are bonded;

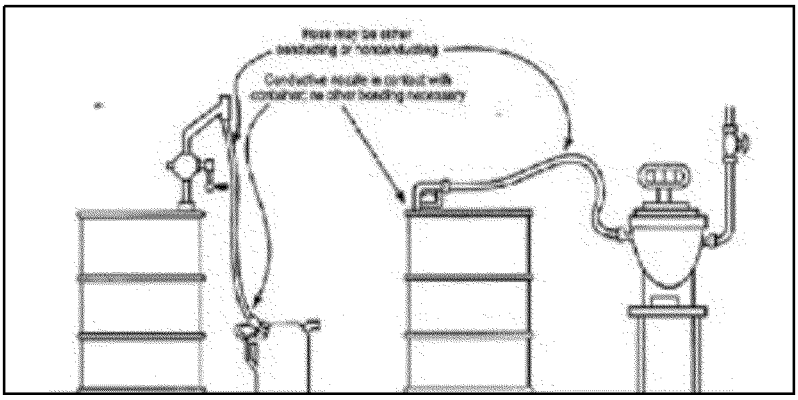
The usual precaution to avoid static electricity sparking is proper bonding or grounding. Proper bonding and grounding is required to prevent ignition due to static electricity sparks when:

- Drawing samples into containers;
- Transferring flammable liquids between containers,;

- Unloading or loading tank trucks;
- Using portable electrical equipment and tools; and
- Entering or working in a confined space.

Note:
The terms "bonding" and "grounding" should not be used interchangeably, because the two processes have distinctly different functions. Bonding eliminates a difference in potential between objects, while Grounding eliminates the difference in potential between objects and the ground. Bonding and grounding are only effective when applied to conductive bodies.

10.7 Bonding Requirements for Decanting of Liquids



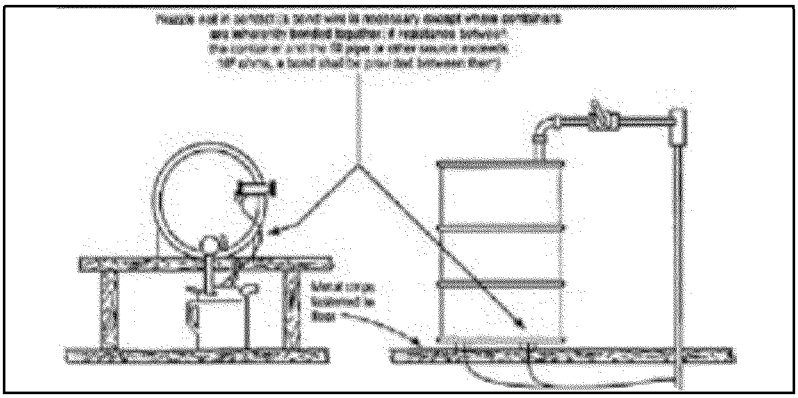


Table 11 - Bonding Requirements for Decanting of Liquids

10.8 Handling and Storage of Line Pipe

a) Pipe racks shall be set on a level foundation designed to support the load placed on them and to prevent accidental rolling off of any tubular goods. It is good practice to use spacers between the layers of pipe on a rack.
b) No worker shall be on top of a load or between the load and the racks during pipe handling operations.
c) The unloading area must have adequate access and egress and be free of debris that could impede unloading activities.
d) Load tie-downs shall not be removed until lifting slings and the hoist line have been attached to the material and slack taken up.
e) Trailers used as pipe racks shall have guards the full length of both sides of the trailer.
f) All workers involved in loading or unloading of pipe from pipe racks or trucks must be competent.
g) Load tie-downs shall not be removed until lifting slings and the hoist line have been attached to the material and the slack taken up.
h) When unloading the pipe, position the truck so that the pipe can roll directly off the truck onto the pipe rack.
i) If a picker truck is used to load or unload pipe, use tag lines so workers can work from the ends of the pipe well away from the swing radius of the boom.
j) Refuse to unload unstable/unsafe loads.
k) No personnel should be permitted in the area parallel to the truck trailer once the load tie downs have been removed.
l) During unloading the driver should return to the cab of the truck or wait at a safe location clear of unloading operations.
m) If for any reason a line pipe load arrives on site that upon visual inspection does not look safe and stable all work on that load must be stopped and the unsafe situation corrected. Under no circumstances should unloading commence until it is safe to do so.

10.9 Equipment, Tools and Materials

All workers shall meet the following requirements:

a) No worker shall use any tool or piece of equipment without proper training in its correct usage, unless directly supervised by a worker competent in the use of that specific tool or equipment;
b) Power tools shall be operated in accordance with manufacturer's specifications;
c) Shut off power to tools any time they are left unattended;

d) All equipment and tools required to complete a task must be in good working order and condition;
e) Tools damaged or in need of repair shall be tagged "out of service" and must not be used until repaired or replaced;
f) All portable lamps, extension cords, and electrical tools shall have proper grounding and shall be certified for the electrical classification of the work area in which they are to be used;
g) Before leaving pneumatic tools unattended, bleed air pressure from the airline; and
h) When using electrical tools in a wet area, use ground fault interrupter (GFI) circuit breakers on the power line or check that equipment insulation is sound. Use an insulating platform and wear rubber gloves to minimize shock hazard.

Note:
- All non-classed; portable electronic devices, tools, PDA, laptop computers etc., require a hazard assessment prior to usage in a hazardous location and must be documented on a Niska Safe Work Permit.
- Only intrinsically safe portable electronic devices may only be used within 75 feet of production facilities or other sources of hydrocarbons.

10.10 Fire prevention

Explosive Limits

a) Explosive limits give the concentration range (usually expressed in percent by volume) at which a flammable vapor or gas in air will ignite or explode, once the ignition temperature is reached. The lowest percentage at which this will occur is the Lower Explosive Limit (LEL) and the highest percentage is the Upper Explosive Limit (UEL). This range varies from substance to substance.
b) No work shall take place on a Niska work site where the atmosphere exceeds 10% of the LEL.
c) Properly calibrated combustible gas indicators will check the presence of such a condition at both LEL and UEL concentrations.

Note:
LEL gas detectors will not operate correctly by themselves and must be used in conjunction with an oxygen detector, in the presence of 19.5% - 23% oxygen.

d) Any work capable of giving rise to an ignition source (Hot Work) shall not take place in the presence of a flammable atmosphere > 10% of the Lower Explosive Limit (LEL). Any question as to the possibility of an explosive or flammable atmosphere shall be referred to the Niska representative or contractor representative, who has the responsibility for making such determinations as to the presence of explosive or flammable substances.
e) Personal communication devices including cellular phones, pagers, and radios are not normally intrinsically safe. These devices should not be on work sites where flammable atmospheres could exist unless a worker is equipped with a 4-head electronic gas detector and the atmosphere has been determined to be safe. It is recommended that these devices remain in your vehicle.
f) Internal combustion engines shall not be located in a Zone 0 hazardous location as defined in the latest version of the NFPA 70 E Standard for Electrical Safety in the Workplace or in a part of a Division 1 hazardous location as defined in the NFPA 70 E Standard for Electrical Safety in the Workplace that meets the description of a Zone 0 location.

10.11 Fired Equipment

All workers who are required to light fired equipment (boilers, line heaters or re-heaters) must be properly trained, must follow the manufacturer's instructions, and must have demonstrated their competency to their immediate supervisor. Improper lighting of fired equipment is a common source of injury and fire.

Safety guidelines for lighting fired equipment include:

- A wand designed for lighting fired equipment should be used;
- Never use a "torch" made of rags and flammable liquids to ignite fired equipment;
- Never light fired equipment manually, if it is equipped with an automatic ignition system. Obtain the services of an instrument technician to determine why the unit is not lighting;
- Prior to any adjustments or repairs to a burner, check the wind direction and ensure all vents and hatches are closed;
- When fired equipment has been down for maintenance, for an extended period of time, or during freezing weather, a worker should remain at the location (along with a fire extinguisher), during the firing-up operation, until it is determined through checks that the equipment is operating

properly; and
- When fired equipment is open for cleaning, inspection or repairs, extreme caution should be exercised to avoid explosions due to open fires, matches, or sparks around the open vessel and that fuel gas is isolated and locked out by all affected workers.

10.12 Fire Safety Guidelines

All workers and visitors at Niska work sites shall adhere to the following fire safety guidelines:

a) Understand the work site evacuation procedure;
b) Follow pertinent safe work procedures;
c) Take a proactive approach in fire prevention measures. The major causes of fire include:
   - Electrical overloads or malfunctions,
   - Poor housekeeping,
   - Smoking,
   - Improper welding procedures, and
   - Poor equipment maintenance.
d) Inform your immediate supervisor and co-workers of potential fire hazards; and
e) Perform all tasks relating to the inspection and maintenance of fire extinguisher equipment.
f) Vacuuming or using water to wash work areas is done whenever possible rather than blowing or sweeping combustible dust.
g) Flammable and combustible material spills must be cleaned up promptly.
h) The transfer/withdrawal of flammable and combustible liquids is performed by trained personnel.
i) Storage procedures must be followed to minimize the risks of fire or spontaneous combustion.
j) Oily rags and other combustible waste materials must be placed in covered, metal, fire-resistant containers and stored in designated areas.
k) Flammable and combustible liquids must be stored in approved containers and tanks.
l) Connections on drums and combustible liquid piping must be vapor and liquid tight.
m) Flammable and combustible liquids must be kept in closed containers when not in use (for example, solvent drum).
n) Bulk drums of flammable liquids must be grounded and bonded to containers during dispensing.
o) Storage rooms for flammable and combustible liquids have intrinsically safe lighting and mechanical or gravity ventilation.

p) Spare propane tanks used for forklifts etc. or otherwise, must be stored in accordance with regulations.
q) Storage tanks must be adequately vented to prevent excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes.
r) Storage tanks must be equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure.

10.13 Fire Prevention and Protection Equipment

The following fire prevention and protection equipment requirements shall be met:

a) Store all flammable or combustible liquids in approved fire-resistant containers. All such containers will be grounded or bonded when pouring flammable substances (See 'Static Electrical Charge in Hydrocarbon's for further information);
b) Never allow combustible or flamable materials (e.g., used adsorbent materials, soaked rags, waste and packaging) to accumulate;
c) Contractors shall supply and maintain their own fire extinguishers and ensure that all workers under their direction are proficient in the proper use, maintenance, and inspection of fire extinguishers;
d) Ensure all fire extinguishers are suitable to the hazard. Niska vehicles must be equipped with, as a minimum, a 20 lb dry chemical (Purple K or other ABC type) extinguisher with the appropriate DOT and HMIS labels;
e) Inspect, maintain and locate all fire extinguishers in accordance with NFPA 10 Standard for Portable Fire Extinguishers by conducting the following:

10.14 Monthly Portable Fire Extinguisher Inspections

- Facility Operations personnel will conduct monthly inspections of portable fire extinguishers by ensuring the following;
- The fire extinguisher is in its designated place;
- The 'tamper proof seal' is in place and it has not been broken;
- The canister gauge reads full or the pressure indicator is not sticking up;
- There is no visible damage to the canister or hose, (dents, rust, frayed or plugged hose). If there is any damage, the extinguisher must be sent to an authorized maintenance company for repairs.
- There must be no obstructions that will prevent quick access to the fire extinguisher.

- q After the monthly inspection is completed of all fire extinguishers, the inspector of the fire extinguisher will complete the Fire Extinguisher Record Form.

10.15 Annual Inspections

- q A Certified Company specializing in the maintenance of fire extinguishers will do the Annual Inspections.
- q Ensure all workers are familiar with the location and use of firefighting equipment at the work site;
- q A worker must not attempt to extinguish a fire if:
  - The fire is quickly spreading beyond its point of origin;
  - The fire could block your safe egress; or
  - That worker is unsure how to use a fire extinguisher.
- q When using a portable fire extinguisher:
  - Never place the fire between yourself and a safe exit;
  - Never turn your back on any fire;
  - Always keep your back to the exit; and
  - Remember the PASS method when using a portable handheld fire extinguisher;

    P - Pull the tamper proof pin.

    A - Aim the extinguisher nozzle at the base of the fire while standing back 8 – 12 feet away from the fire.

    S - Squeeze the handle expelling the extinguishing agent onto the fire.

    S - Sweep the nozzle of the fire extinguisher side-to-side while aimed at the fire extending 12 inches on either side of the fire.

10.16 Fire Classifications

The universal fire types may be divided into four basic categories: Class A, B, C and D. The classification depends largely on the methods of extinguishment and on the combustible materials involved in the fire.

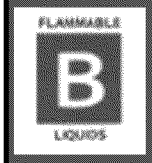
Class 'A' 	• Ordinary combustible materials such as paper, wood or cloth. • Letter "A" in Green Triangle identifies extinguishing equipment for this type of fire. • Class A fires require the cooling effect of water or water solutions, or the coating effect of certain dry chemicals that retard combustion.
Class 'B' 	• Vapour combustion over surface of flammable/ combustible liquid such as grease, oil, or gasoline. • Letter "B" in Red Square identifies extinguishing equipment for this type of fire. • The most effective means of extinguishment calls for the exclusion of air from the fire inhibiting the release of combustible vapours.
Class 'C' 	• Electrical fires. Circuit may be live so non-conducting extinguishing agents shall be used. • Letter "C" in Blue Circle identifies extinguishing equipment for this type of fire. • The safe response to an electrical fire calls for de-energization of the electrical equipment, the applying a Class A or Class B method of extinguishment.
Class 'D' 	• Highly reactive flammable liquids or combustible metals or powders like magnesium, titanium or sodium. • Letter "D" in Yellow Star identifies extinguishing equipment for this type of fire. • A Class "D" fire requires a heat-absorbing extinguisher that is not reactive with the burning product.

Table 12 - Fire Classification

11.0 OTHER SAFETY PRACTICES

11.1 Defensive Driving/Motor Vehicle Operation

1. Driving Safety

a) Niska vehicles must be operated in a defensive manner.
b) Drivers must examine their vehicles daily before operating them. If unsafe conditions are found, the vehicle must not be used. These conditions or defects shall be reported to their immediate supervisor for immediate correction.
c) In winter, allow for extra stopping distances, especially on bridges or intersections prone to icing. Drivers should become familiar with skid control procedures for the vehicle type they are driving (front-, rear- or four-wheel drive).
d) During slippery or icy conditions it is highly recommended that cruise control is not used.
e) Ensure your vehicle is in good running order and is equipped with basic emergency equipment such as a cellular phone or radio phone, explosion-proof flashlight, jack, spare tire, flares, triangular road reflectors or three road flares, shovel, tow rope, booster cables, first aid kit, fire extinguisher (ABC dry chemical), extra clothing and blankets for inclement weather, and a survival kit.
f) Niska vehicles that breakdown shall be parked with all wheels off the main road and one reflector shall be placed approximately 100 feet to the rear of the disabled vehicle.
g) No vehicle shall approach or park within 25 feet of any wellhead, piping, process vessel, or tank containing combustible fluids unless a Safe Work Permit for maintenance/vehicle entry has been issued.
h) Flammable or explosive materials shall not be transported in the cab of any vehicle on a Niska work site.

2. Vehicle Operation Guidelines

Each worker operating a motor vehicle on a Niska work site shall ensure that they:

a) Are the holder of a valid operators license for the vehicle that they plan to operate;
b) Report to their employer the loss of driving privileges due to suspension or restriction as soon as possible;
c) Drive vehicles in accordance with all local, state and federal laws and company requirements;
d) Report to their employer any traffic tickets received while operating a company vehicle or engaged in work for the company;
e) Do not operate a vehicle if driving conditions or the condition of the vehicle is believed to be unsafe;

f) Report all accidents to the authorities and a Niska representative, (i.e. your immediate supervisor;
g) Wear seatbelts when riding or driving in a Niska vehicle or on Niska property; and
h) Ensure vehicles are parked safely and are secured when left unattended.

3. Recommended Safe Driving Practices

a) Keep maintenance schedules for vehicles.
b) Drive with headlights and marker lights on.
c) During daylight with good, dry roads and low traffic volume, you can ensure you're a safe distance from the car ahead of you by following the "three-second rule."
d) In heavy traffic, at night, or when weather conditions are not ideal (eg. light rain, light fog, light snow), double the three second rule to six seconds, for added safety.
e) If the weather conditions are very poor, eg. heavy rain, heavy fog, or heavy snow, start by tripling the three second rule to nine seconds to determine a safe following distance
f) Back-in parking is recommended at all Niska facilities.
g) Secure tools and loads inside and outside the vehicle. Loose items shall be placed or secured to ensure they do not pose a hazard to occupants or other vehicle operations.

4. Electronic Communication Device (ECD) Usage While Operating a Motor Vehicle

Recommended practices to follow while operating a motor vehicle and using an ECD (cell phone, Blackberry etc):

a) When behind the wheel minimize distraction and ensure driving is always your first priority;
b) Using an ECD while driving a Niska owned, leased or rented motor vehicle is not permitted;
c) If your ECD rings while you are driving let the call go to a voice message. If you must answer the call, pull over to the side of the road and park in a safe location before you answer.

11.2 Vehicle Rescue Practices

1. Extrication of a Vehicle

a) It is recommended that a tow truck service capable of safely extricating or towing the unit be used.
b) Only nylon tow ropes, nylon-webbed tow straps or load-related chains are to be utilized when rescuing. The tow rope or strap shall be in good repair, load rated and of sufficient strength to safely carry out the rescue operation.
c) Chains and cables must not be jerked during the rescue procedure.

d) If a clevis is used, it must be the threaded pin type and have the load-rated capacity and sufficient strength to safely carry out the rescue operation.
e) Under no circumstances will ropes or straps equipped with metal eyelet hook and chain tail ends or any other type of clevis, other than the type stated, be permitted.
f) If winching a vehicle is required:
   - Workers should never be between the winching vehicle and the load being winched;
   - Always wear leather gloves when handling cable to avoid injury from pieces of wire protruding from the cable; and
   - Use hand over hand action; the winch line should not be allowed to slip through the hands.

11.3 Vehicles and Heavy Equipment

The following vehicle and heavy equipment requirements shall be met:

a) All vehicles must be parked in a safe area away from work being conducted and in a location that allows for safe exit in the case of an emergency;
b) All diesel engines vehicles or equipment on Niska work sites must be equipped with an automatic positive-air shut-off system; or
   i. Engines not equipped with an automatic positive-air shut-off system must be equipped with a manual positive-air shut-off system and the operator of the unit must be stationed in such a way that they can immediately activate the emergency shutdown device, i.e. in the cab; or
   ii. The unit must be shut off if the vehicle or piece of equipment is to be left unattended.
c) Do a walk around check of the equipment before and after operating it. Check the fluid levels, hydraulic system, lights, tire pressure, and check for loose parts.
d) Any vehicle with restricted vision is not to be moved in the vicinity of other workers or equipment except under the direction of a designated guide; this person must be in a position to see if the path to be traveled is "all clear".
e) All vehicles and heavy equipment shall meet and be operated in accordance to manufacturers instructions and state and/or federal regulations while on Niska work sites;
f) Refueling a motorized vehicle or piece of equipment while the engine is running is not allowed;
g) All contractor vehicles will have an acceptable exhaust system, including mufflers;

h) Operators must have valid operating licenses;
i) Authorization to allow Off-Highway Vehicles (OHV), such as quads, to be used on Niska worksites must be gained by the Deviation Process described in Section 1;
j) Vehicles shall contain only as many passengers as there are seats and seat belts;
k) Only Authorized Persons (i.e. the operator) are permitted to ride on mobile equipment;
l) All cargo loads shall be contained, immobilized or secured so that they cannot:
    i. Leak, spill, blow off, fall from, fall through or otherwise be dislodged from the vehicle, or
    ii. Shift upon or within the vehicle to such an extent that the vehicle's stability or maneuverability is adversely affected
m) Trucks handling loose materials shall have a tailgate and tarp covering the load. If any materials fall off in transit, drivers are expected to stop and safely remove these from the roadway;
n) Individuals transporting dangerous products shall comply with DOT Regulations, including the requirements for worker certifications, manifests and placards;
o) If vehicles or heavy equipment are left unattended on Niska property overnight, the operator shall notify a Niska representative to ensure that all security measures have been taken to deter unauthorized entry or movement of the vehicle (e.g. removing the key and locking the cab door);
p) Cranes, rat-hole diggers or auguring machines that have swing-type arms shall have barricades or flags to prevent workers from entering the swing radius;
q) Movement of mobile cranes or boom equipment on a Niska work site requires the use of a signal man or boom walker; and
r) Permission from a Niska representative is required to operate crane booms or mechanical equipment over or under a pipe or conduit rack.

11.4 Cranes, Hoists and Lifting Devices

11.4.1 Annual Testing and Inspection

Only certified contracted maintenance personnel will perform annual test and inspection of cranes, hoists and lifting devices. Annual testing and inspection must meet the OSHA requirements of 29 CFR 1910.179 (J) (3) and (K) (1). The Preventive Maintenance Program includes annual testing, detailed inspections, visual inspections, and following the manufacturer's maintenance instructions.

11.4.2 Pre-Use and Operational Inspections

A pre-use inspection will be done prior to operating any lifting device. This is a visual inspection ensuring key components are intact and operational. Operational inspections will be conducted on a daily basis if the lifting device is being used for more than one day.

Cranes, hoists, and lifting devices must be operated only by competent/qualified personnel. Prior to using any equipment, the area must be inspected to determine if any hazards exist such as overhead power lines, ditches, soft spots on the ground, or underground facilities (e.g., pipelines, drains, gas mains, etc.).

1. Requirements

- A traffic vest is required for signal person.
- Operators must refuse to lift any load that exceeds the crane's rated capacity. All cranes, excluding manually operated hoists, with a lifting capacity of 2,000 kilograms or more are required to have logbooks (i.e., repairs, maintenance, certifications, examinations, checks or tests, lifts 50% or greater of rated capacity).
- Tag lines must be used.
- Never work or cross under any suspended load.
- Never ride the load or hook.
- All areas of a specific swing path for a suspended load shall be identified and protected (using barricades or rope with warning signs) against inadvertent personnel traffic during the lift.
- Operators and workers must be made aware of a safe location to position themselves for all lifts, should the crane fail.
- The signal person must always be in clear view of the operator.
- The operator is to agree on a signaling system with the signaler prior to operating the equipment. Only one person shall give hand signals to the operator.
- Only commercially manufactured and certified lifting devices will be used on a Niska work site.

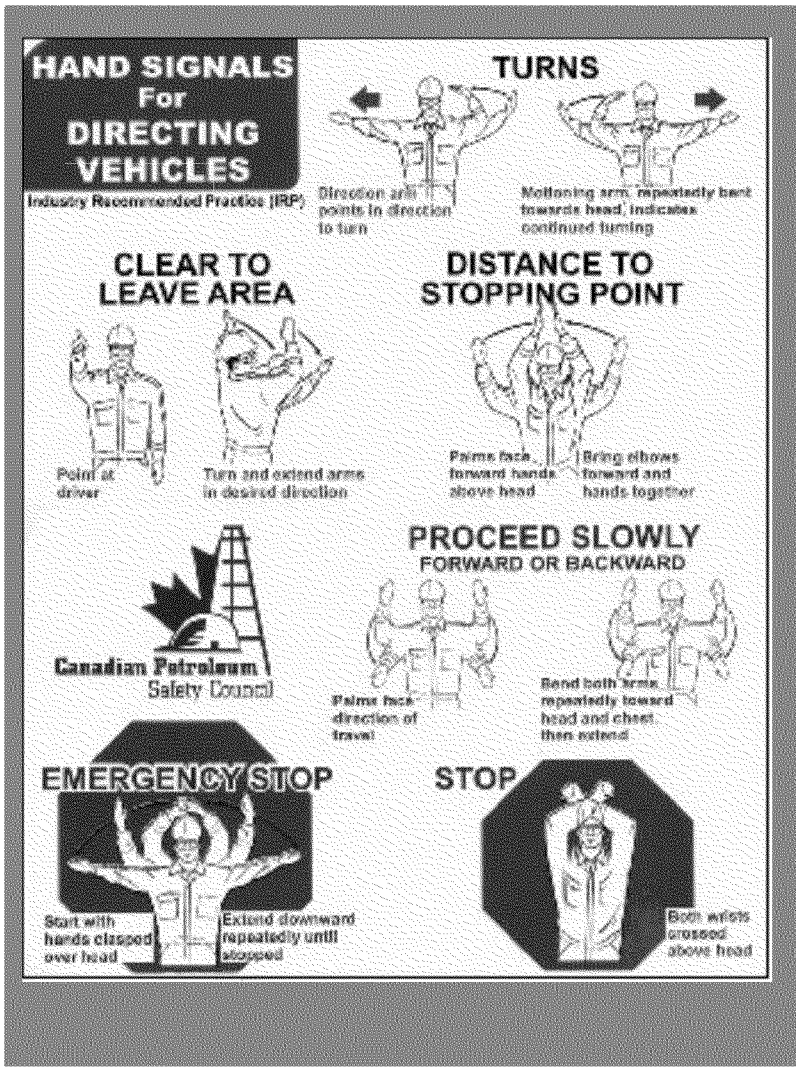


Table 13 - Hand Signals for Directing Vehicles

11.5 Truck Mounted Cranes

All operators of hoisting, lifting and mobile equipment must be competent, and possess required regulatory certifications. Equipment operators must conduct a visual hazard assessment and inspection of the work site and their equipment prior to commencement of work. All equipment must be operated within the manufacturer's specifications.
All lifting equipment including rigging below the hook must display valid certifications and rated capacities.

11.6 Truck Loading and Unloading of Hazardous Materials

1. **General Safety Requirements**
   a) Wheel chocks must be used at all times to prevent movement of the vehicle.
   b) Bonding cables must be connected before attaching product unloading hose to riser and disconnected after removing hose from riser to prevent static electricity.
   c) Cam-lock fittings shall be properly secured to prevent accidental uncoupling.
   d) Drivers shall not exceed posted speed limits and shall drive according to the weather and road conditions.
   e) Trucks must be driven to the loading area slowly, making sure the path is clear of loading hoses or cables, etc.
   f) No loading/unloading is permitted during an electrical storm.

11.7 Industrial Trucks

While not an inclusive list of proper operating practices, Industrial trucks (lift truck) shall be operated in a safe manner in accordance with the following operating rules:

1. Only drivers authorized by Niska and trained in the safe operations of industrial trucks are be authorized to operate such vehicles.
2. Stunt driving and horseplay are strictly prohibited.
3. Only the operator is permitted on industrial trucks while in operation.
4. Employees shall not ride on the forks of lift trucks.
5. Employees shall not place any part of their bodies outside the running lines of an industrial truck or between mast uprights or other parts of the truck where shear or crushing hazards exist.
6. Employees are not allowed to stand, pass, or work under the elevated portion of any industrial truck, loaded or empty, unless it is effectively blocked to prevent it from falling.

7. The lift truck operator must check the vehicle at the beginning of each shift, and if it is found to be unsafe, the matter shall be reported immediately to their immediate supervisor and the vehicle will kept out of service until it has been made safe. Attention shall be given to the proper functioning of tires, horn, lights, battery, controller, brakes, steering mechanism, cooling system, and the lift system for fork lifts (forks, chains, cable, and limit switches).
8. No truck shall be operated with a leak in the fuel system.
9. Trucks shall not be loaded in excess of their rated capacity.
10. A loaded vehicle shall not be moved until the load is safe and secure.
11. Operators shall look in the direction of travel and shall not move a vehicle until certain that all persons are in the clear.
12. The forks shall always be carried as low as possible, consistent with safe operations.
13. When leaving a vehicle unattended (the operator is over 25 feet from or out of sight of the industrial truck), the brakes are set, the mast is brought to the vertical position, and forks are left in the down position, either:
    - The power shall be shut off and, when left on an incline, the wheels shall be blocked; or
    - The power may remain on provided the wheels are blocked, front and rear.
14. When the operator of an industrial truck is dismounted and within 25 feet (7.6 meters) of the truck which remains in the operator's view, the load engaging means shall be fully lowered, controls placed in neutral, and the brakes set to prevent movement.

12.0 Definitions

Accident: An undesired event that results in physical harm to a person or damage to property.

ACM (Asbestos Containing Material): The generic term for a group of naturally occurring fibrous minerals with high tensile strength, flexibility and resistance to thermal, chemical and electrical conditions.

ANSI: American National Standards Institute.

Authorized Person: A person who is designated by an appropriate authority as having the responsibility and authority to conduct certain activities.

Bump or Function Test: The required method to ensure that an electronic gas detector is fully functional. The test is conducted at the start of each shift or before the gas detector is used, by subjecting it to a known concentration of calibration or bump gas.

Cold Work: A work procedure that does not generate heat and does not cause sparks or an open flame, which could result in an explosion or flash fire.

Competent Person: A person who:

a) Is qualified because of their knowledge, training and experience to organize the work and its performance;
b) Is familiar with the provisions of the Federal, State and local laws, Acts and Regulations and all applicable Niska Standards and Procedures that apply to the work; and
c) Has knowledge and the capability to identify any potential or actual hazardous conditions to health and safety at the work site and has the authority to take prompt corrective measures to eliminate or mitigate those hazards.

Confined Space:

a) An enclosed or partially enclosed space not designed or intended for continuous human occupancy that may become hazardous to a Worker entering it due to the following:
   - Its design, construction, location, work activities or atmosphere.
   - The material or substances in it.
   - Any hazards relating to it.

b) An enclosed or partially enclosed space not designed or intended for continuous human occupancy that has limited or restricted means of entry or exit and that may complicate the provision of first aid, evacuation, rescue or other emergency response service.

Contractor: A person, partnership, or group of persons who, through a contract, agreement or ownership, directs the activities of one or more employers involved in work at a work site.

Dangerous Goods: A product, substance or organism included by its nature or by the regulations and any of the classes listed in the Transportation of Dangerous Goods (TDG) Regulations and the United States Department of Transportation.

dBA Lex: The level of a Worker's total exposure to noise in dBA (decibels) averaged over the entire workday and adjusted to an equivalent 8-hour exposure.

Emergency: An unplanned event that calls for immediate action to counteract a threat to life or significant loss of property or environmental damage.

Employee: A person who is employed for wages or salary.

Employer: A person who:

a) Is self employed in an occupation;
b) Employs one or more workers;
c) Is designated by an employer as his representative; or
d) Is a director or officer of a corporation who oversees the occupational health and safety of the workers employed by the corporation.

ERP (Emergency Response Plan): A response action plan to help address Emergency situations on Niska facilities or properties.

FR (Flame-Resistant Fabric): The characteristic of a fabric that causes it not to burn in air. Flame resistant is often confused with flame retardant, which is a term used to describe a chemical substance that imparts flame resistance in a fabric.

Ground Disturbance: Any work, operation or activity that results in the disturbance of the earth, including, without limitation, excavating, digging, trenching, plowing, drilling, tunneling, auguring, pile driving, backfilling, topsoil stripping,

land leveling, clearing, grading and fencing above or near any pipeline, power line, cable or utility, but does not include:

a) A disturbance of the earth to a depth of less than 1 foot that does not result in a reduction of the earth cover over the pipeline to a depth that is less than the cover provided when the pipeline was installed;
b) Cultivation to a depth of less than 1.5 feet below the surface of the ground; or
c) Any work, operation or activity that is specified in the Regulations not to be a Ground Disturbance.

Hazard: Any circumstances or conditions that pose the risk of an incident.

Hazard Assessment: A thorough examination of an operation or activity at a work site, shop, etc. to identify what actual and potential hazards exist.

Hazardous Substance (Cal OSHA): Any substance which is a health hazard or a physical hazard or is included in the List of Hazardous Substances prepared by the Director pursuant to Labor Code section 6382.

Health Hazard (Cal OSHA): A substance for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. Refer to Appendix C in the regulation for a more detailed definition of health hazard.

Health Hazard (Federal OSHA): A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system and agents which damage the lungs, skin, eyes or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered in this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for the purpose of this standard.

Hot Work: Any work involving flames, sparks or high enough temperatures to ignite flammable materials, or release materials.

Ignition Sources: Heat, flame, sparks and static electricity that are capable of causing a fuel mixture to burn.

Incident: Any unplanned or unwanted event that results in damage or injury, or an event that could have resulted in damage or injury (including Near Misses).

Informal Hazard Assessment: An evaluation of potential or existing hazards at a work site that is conducted prior to entering the facility.

Niska: Niska Gas Storage.

Niska Representative: A Niska Employee that has decision rights over a specific area or process.

Intrinsically Safe: Any spark or thermal effect that may occur in normal use, or under any conditions of fault likely to occur in practice, and is incapable of causing an ignition of the prescribed flammable gas, vapor or dust.

LEL (Lower Explosive Limit): Lower limit of flammability or explosiveness of a gas or vapor at ordinary ambient temperatures expressed as a percentage of gas or vapor in air by volume.

Near Miss: An incident that, under slightly different circumstances, could have resulted in personal harm, Property Damage or loss.

Owner: A person who:

a) Is in legal possession of the work site, or
b) Has an ownership interest in the work site and who requests that the work be done, even if the person in legal possession does not request the work.

Physical Hazard (Cal OSHA): A substance for which there is scientifically valid evidence that it is in a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

Physical Hazard (Federal OSHA): A chemical for which there is a scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

PPE (Personal Protective Equipment): PPE includes, but is not limited to, safety boots, hard hats, safety glasses with side shields, flame-resistant clothing, respirators and/or breathing air systems, chemical protective clothing, face shields, gloves, aprons and hearing protection. Personal gas monitoring equipment can also be included in this category.

Project Coordinator: A Niska representative who is responsible for managing the execution of a project, which may include, but is not limited to, the work timing, project execution and scope of the project activity.

Note:
The Project Coordinator could be any Niska Employee (e.g. a Niska representative, Production Coordinator or Project Engineer).

Property damage: Any incident that causes damage to property or equipment regardless of severity.

SWP (Safe Work Permit): A method of authorizing specific work to be done at a work site or location. All hazards are noted and the required precautions are assigned to individuals. The permit is normally valid only for a specific time period before re-testing and/or reissuing is required. All Safe Work Permits are automatically cancelled in the event of an Accident, incident or Emergency.

Tailgate Safety Meetings: Meetings that are held before work activity commences on a work site between the foreman and/or supervisors with their employees to review safety requirements, job procedures, and Employee questions or concerns. Tailgate Safety Meetings must be documented.

TDG (Transportation of Dangerous Goods): Refers to the current Act and Regulations.

UEL (Upper Explosive Limit):

a) Maximum proportion of vapor or gas in the air above which propagation of flame does not occur.

b) Upper limit of the flammable or explosive range.

Visitor: Anyone invited by Niska, or where Niska is aware of their presence, who enters a Niska work site or property for purposes other than performing actual services.

Worker: A Niska Employee, Contracted employer or Employee, Contractor or Consultant who is engaged in an occupation for Niska or who works at a Niska work site.

Work site: Any Niska field property, right-of-way, field construction or maintenance project location or area, including vehicle or mobile equipment, occupied by a Worker in the course of or in connection with the work.

USER COMMENTS

If you have comments for Handbook improvements, we would appreciate hearing them. Please feel free to fax, phone or mail them to the Niska EH&S Department or contact your Niska Representative.

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Environment, Health, Safety and Security Coordinator

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Safety First

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