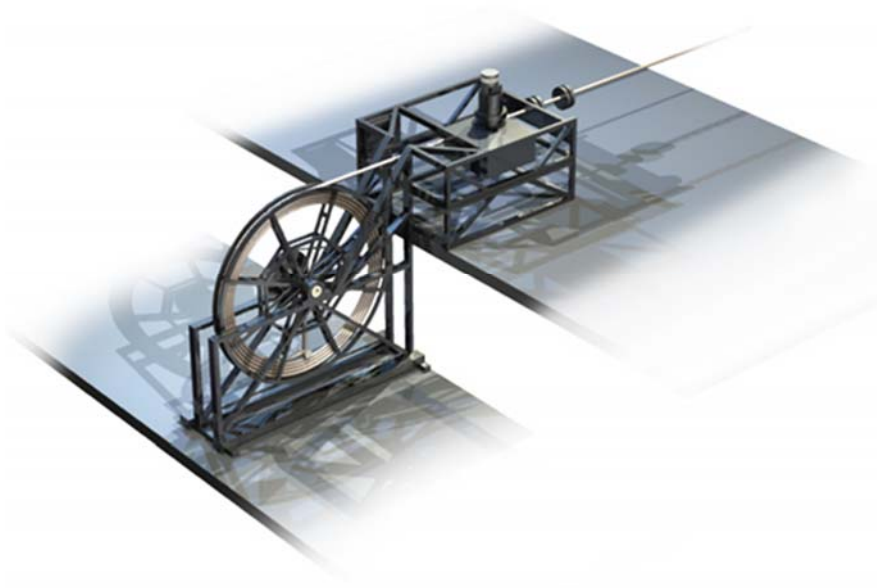




MN-PV-CIS-044

Snout Lance Competency Manual

**MN-PV-CIS-044 – Snout Lance Competency Manual
Rev 4**

Updated: January 10, 2023

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Training Expectation Letter

It is required that this document is completed prior to the Employee starting training on Snout Lancing. This document will serve as formal record that all parties have reviewed and understand the expectations for training on the Snout Lance.

Trainee Name:

Date of Discussion:

Expectations of Supervisor/Leader

- Ensuring trainee has scheduled time for training.
- Ensure trainee has reviewed and understand the technical documentation
- Ensure trainee has been provided a demonstration on equipment operation
- Verify field competency sign offs once completed
- Ensure trainee is working with a competent mentor until they are competent themselves
- Provide support for the assessor, mentor, trainer and trainee whenever possible.
- Ensure training documentation is sent to CEDA Training Department

Expectations of Trainer, Mentor, assessor

- Must be qualified in the position for which he/she is training.
- Educate and support trainee with technical review package.
- Ensure trainee has been provided a demonstration on equipment operation
- Review trainee's technical knowledge and verify acceptable understanding
- Educate and support trainee with field tasks identified in the competency check sheet
- Verify trainee has the ability to perform tasks identified in the competency check sheet
- Communicate to Supervisor that the technical review and field competency is complete

Expectations of Trainee

- Complete all prerequisites outlined within the training program.
- Understand the training process outlined in this document.
- Understanding systems and spending time in the field.
- Ensure all lessons and tasks are signed off by the appropriate personnel as indicated on the training documents.
- Inform Supervisor/Leader on progress of training through face to face meetings.
- Will utilize all the materials provided to ensure a comprehensive training program is followed.
- Provide feedback on the training process and any updates that are required to the training material.
- Inform Supervisor/Leader of any training barriers that may exist during the training process.

Training Expectation Acceptance Agreement

I, _____ understand the expectations of me as a trainee as outlined in this document

(Operator Name)

Operator\Trainee

Name

Signature

Date (MM\DD\YY)

Supervisor/Leader

Name

Signature

Date (MM\DD\YY)



Acknowledgement

This manual has been developed using information and knowledge obtained from manufacturer's documentation and input from experienced Operators. Additionally, this manual has been validated by numerous Subject Matter Experts at CEDA. We welcome any comments or suggestions pertaining to this manual and its contents.

Many thanks to those who have demonstrated a clear dedication to CEDA and our values by participating in the creation of this program.





Objective

Welcome to CEDA Snout Lancing Operations

This program is designed to provide you with the training necessary to carry out your job in a manner that safeguards yourself, those around you and our environment. Upon Completion of this Module you will be able to:

- 44.01 Review Snout Lance Operations
- 44.02 Operate Snout Lance
- 44.03 Maintain/ Troubleshoot Snout Lance

Employee(s) will demonstrate knowledge & skill in the proper application of equipment through practical application.

Instructions

All material must be completed in the order presented to ensure that prerequisites are met.

Employees will demonstrate knowledge and skill in the proper application of equipment through practical demonstration and application.

NOTE: All forms and procedures included are those required by CEDA. Work must be performed in accordance with these standards. On Client work sites, there may be additional standards and modified work procedures that will also have to be met.

Description: This is a knowledge and practical skill that requires written material to be reviewed along with the completion of an on-the-job demonstration prior to the test being written.

Whenever possible, the on-the-job demonstration should be completed at a job site or the shop under controlled conditions.

Arrange a time with your Mentor/Supervisor/Trainer to complete the On-the-Job Demonstration, where you will observe the proper operation of the Steamer unit and its components.

Assessment of Competency: Successful completion of this competency requires:

- A score of 100% on the written examination.
- A successful demonstration by trainee requiring a sign-off from Trainer.



Prerequisites

- CEDA Orientation
- CEDA Introduction to High Pressure Water Blasting
- Specific work location Orientation
- Fall Arrest Training

Below is a list of the learning resources that are included and others you must obtain the most recent version from your Supervisor.

- Set Up Water Supply Procedure
- Pre-Snout Lancing Procedure
- Snout Lancing Procedure
- Snout Lancing Removal Procedure
- CEDA Coiled Tube Lance Component Data Book
- High Volume Water Pump Manual (unit specific)
- Site specific documentation
- Job Hazard Analysis for the work
- CEDA FLHA
- Other CEDA procedures and practices that pertain to the job being completed

NOTE: All forms and procedures included are those required by CEDA. Work must be performed in accordance with these standards and can be found in CEDA Health, Safety and Environment Management System (HSEMS) or be requested from your Leader. On Client work sites, there may be additional standards and modified work procedures that will also have to be met.

Renewal Period

The entire Module must be redone after:

- Leaving the employ of CEDA for a 6-month period,
- Leaving Snout Lancing operations for a period of 6 months,
- As deemed required by CEDA.

General Overview

Federal & Provincial Legislation

All work must be completed in accordance with applicable Municipal, Provincial, & Federal Acts & Regulations, including but not limited to:

Transportation of Dangerous Goods (TDG)

- Vehicle must be DOT Approved and be equipped with appropriate safety devices
- DOT approved vehicles will have sticker on side of unit
- Operator must place appropriate placards on side of vehicle
- Operator must prepare bill of lading prior to transporting materials

The Workplaces Hazardous Materials Information System (WHMIS)

- All CEDA field employees working with or around equipment will have WHMIS and TDG training prior to starting work.

Occupational Health & Safety (OH&S)

Seat Belts

Anytime a vehicle (CEDA owned or personal) is being operated during business hours for business use, or on CEDA property, the occupants must be wearing seatbelts.



Personal Protective Equipment (PPE)

When conducting Snout Lancing, employees must have and utilize the following personal protective equipment (PPE):

- CSA Certified Hard Hat with Face Shield
- CSA Certified Safety Boots (Boot Grips when required)
- Fire Retardant Coveralls
- Hearing Protection (plugs or muffs)
- Approved Gloves for the Site/Task
- Safety Glasses with Side Shields.
- Rain Gear as Required



Workplace Organization

CEDA's goal is to reduce waste (time, energy and materials) by maintaining an orderly and clean workplace, including our trucks and equipment. We ask that you take pride in the equipment you operate; treat it as if it were your own. A clean and organized vehicle/workspace is a safer vehicle/workspace. There are many ways to eliminate waste:

Allocation & Utilization of Resources: Have the right people and equipment in the right place, at the right time. Use equipment and resources on tasks and activities that are required and add value to our business.

Improve Productivity: Eliminate redundant or unnecessary steps/tasks without negative impact to the safety or quality of our products and services.

Use of Materials: Ensure equipment is stocked with required supplies (filter bags, duct tape etc.) before leaving for jobsite – replace the materials you have used during the shift to ensure that the next crew is adequately stocked. Use the correct materials in the quantities required to do the job safely & correctly.

Preventative Maintenance: Tools and equipment should be assessed as per the performance maintenance schedule to ensure safe operation. Regular maintenance will reduce costly breakdowns in the field.

There are steps we can take to improve our current state and move towards a more productive, organized and safe work environment. Improving workplace organization will reduce costs, improve morale and create a safer work environment. The following steps outline how best to achieve an organized workplace:

Sort, organize and eliminate unnecessary items from the workplace to eliminate clutter. Keep only essential items.

- Tools and equipment that are not utilized for day-to-day operations should be repurposed within the organization or discarded.
- Garbage or loose items should be removed or properly stored.

Prioritize tools, parts and materials based on usage and keep them in easily-accessible places.

- A place for everything and everything in its place.

Create storage areas that are easy to access and clearly laid out:

- Tools and equipment should be stored clean and ready for use.
- Storage areas and stored items should be properly identified using signage, labels or a visual outline.

Set clear standards for workplace organization:

- Hold yourself and others accountable for keeping the work areas clean and safe. Make workplace organization a standard work rule in your area.
- Clean general work areas and equipment after each shift.

- Put clean tools away in the proper place.
- Note any spills, leaks or other messes – clean and report if equipment requires maintenance
- Inspect the area(s) regularly and immediately record and correct any infractions. Handle deviations from work rules in a timely manner.
- Review processes and procedures regularly and adjust as required.

Equipment Overview

Snout Lancing

A “Snout Lance”, also known as “Super Lance” is a special device used to clean inside the snouts and gas outlet tubes of cokers. The super lance removes coke deposits by applying a high-pressure water spray to the cyclone snouts. The super lance is forced hydraulically through a packing and shroud very slowly, down into the snout to perform the cleaning procedure. Water required for the high pressure water blasting is supplied via a system of pumps connected by hoses.

By removing the coke deposits from the snout, the client is able to extend coker operating time between shutdowns, and therefore increases the client's efficiency.



Snout Lance Unit Preparing for Rigging

The high pressure water jets from the tip of the lance remove coke in three ways:

1. Spalling of coke due to thermal shock,
2. Penetration of water into crevices, where it vaporizes and spalls off coke, and
3. Drill action of high-speed water jet impacting on the coke surface.

The super lance must be rigged into position and attached to the side of the coker walkways in order to perform the cleaning job.

General Principles

Snout lancing is performed by a crew of five (5) CEDA employees. Two employees run the pumps and manage the water supply necessary for the high pressure water blasting performed by the lance, and three employees work on the platform. On the platform, one team member is designated as a panel operator and operates the controls that advance and withdraw the lance from the snout. Employees communicate via a combination of two-way radio, hand signals, and verbally when possible.

During a snout lance procedure, the client will also have representation on site. Responsibilities of the client's personnel and CEDA personnel will be detailed and reviewed at a pre-job meeting.

Before lancing can begin, a 1½" pipe (called a "**shroud**") is installed in the valve. This shroud guides the lance as it enters the snout. The shroud is lifted up to the platform by a crane and rigging crew.

When performing work on site, the client must provide one maintenance person and one operator.



Crane Lowering Shroud To Platform



Shroud Installed

Since snouts are located quite high up the side of the coker, a crane is used to lift the super lance unit into place. CEDA employees are responsible for ensuring that a new reel is in place on the super lance before the lift begins. Reels and tips are used only once.

Riggers, generally working in a team of two, rig the super lance to the crane in preparation for the lift, and attach the super lance to the coker platform. The riggers may be qualified CEDA employees or qualified external contractors.

Once the shroud is installed and the super lance is connected to the coker platform, all water and hydraulic hoses are connected. The lance tubing is then fed through the injector assembly and positioned for entry into the shroud.



Crane Lifting Snout Lance

The panel operator controls the injector that feeds the lance tip and tube, and must take note of measurements and pressures (hydraulic and water) throughout the process. As well, the client has representation during the entire process and also monitors operational measurements and pressures. CEDA employees are to adhere to all operational standards and procedures as set forth by the client. The client may alter procedures on a job-to-job basis, or even during a job.

Once the reel successfully passes through the shroud and into the snout, it cleans the coker cyclone snouts by removing the coke deposits by applying a high-pressure water spray. The snout lance is forced hydraulically through a packing and shroud **very slowly**, down into the snout to perform the cleaning procedure. The high pressure water is provided by a pump capable of delivering large volumes of water at high pressure (up to 7500 psi).

Snout Lance Components

The key components of the snout lancing operation are listed below. Refer to the corresponding operators' manual for more detail as required.



Super Lance



Reel



End of Reel

Super Lance Tip



Shroud



Injector Assembly



Operator Panel
(with controls, digital pressure and distance displays)

Hydraulic Hoses and Connections



Hydraulic Hoses before connection to Control Panel



Hydraulic Hoses connect to back of Control Panel

(hoses are color coded to aid in proper installation)

Packing Box and Valve Installation

The packing box contains packing that will prevent any water, steam, coke, and H₂S from escaping from the snout.

Upon snout lance removal, as the lance is being retracted the operator must stop at predetermined lengths as set out by client so the client operator can check if the two inch valve will close. The purpose of this is to avoid any chemical (H₂S, coke, steam, etc.) from coming out of the shroud and potentially hitting employees or equipment.



Water Supply

Since snout lancing uses high pressure water to clean the snouts, water must be pumped up to the lancing unit. Two pump operators continuously run and monitor the pump operations. These operators communicate with the operators on the lance deck via two way radios to start, stop, and adjust water flow and pressure. Below is some general information about the water supply.

Fire Hydrant

Water is supplied from a fire hydrant (shown on the right) and travels through an attached water (fire) hose at 150 psi.



Fire Hydrant
(with attached water (fire) hose)

Water Filters

The filter systems are used to filter the water before entering the high volume pumps.

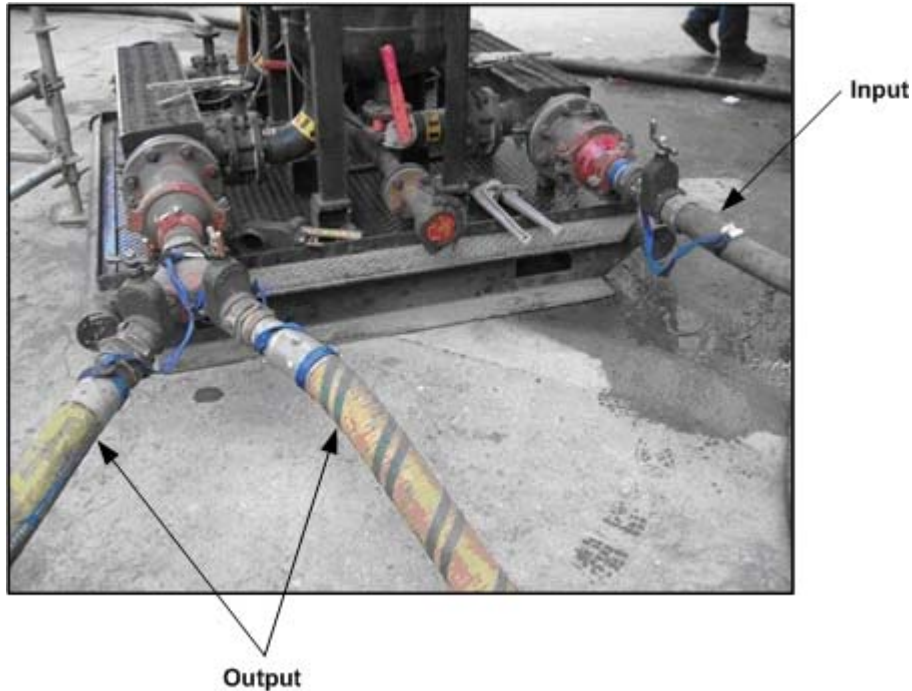


Side View



Front View
(with Inlet and Outlet Pressure Gauges)

As shown in the picture below, the hose on the right supplies water to the filters, also called **Input**. Water passes through the filters, and exits the hoses on the left, where the flow is split between two hoses, also known as **Output**. Each of the output hoses is attached to one of the diesel pumps used to generate the force required to pump the water at high pressure up to the snout lancing platform.

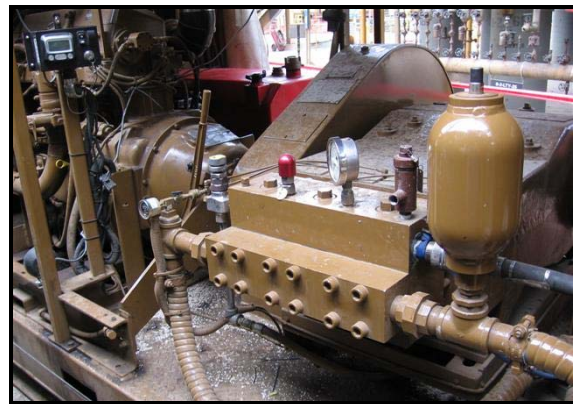


High Volume Water Pumps

Water travels through the hoses from the filters to high pressure pumps. Three pumps are on site, two are used during the snout lancing procedure, and the third is a spare. Water pumps are operated by using controls on the pump control panel.



Front View (area flagged and tagged)



Side View (with hose entering pump on right)

A hydraulic line is connected from the water valve to the control panel so that the panel operator can dump water at any time if necessary. Similarly, if the hydraulic line is disconnected for any reason, (e.g. If the line is accidentally kicked off), then the pressurized water will automatically be diverted from the lance and dumped.

All dump systems must be connected to the chute. The chute diverts the water away from operations and down the side of the coker to a drain on the ground.



Valve, Needle Valve, and High Pressure Gauges



High pressure water line
(with whip check exiting pump on left)



Pump Control Panel

The two high pressure lines exiting the high pressure water pumps (one from each pump) pass through a one-way check valve; are connected by a "T" valve to create one high pressure water line, and pass through a flow meter. From the flow meter, the high pressure water line is connected to the permanent high pressure water hoses to transport the water up to the snout lancing deck.

When connecting high pressure water lines to the reel, a high pressure hose is connected to the Baird Valve.

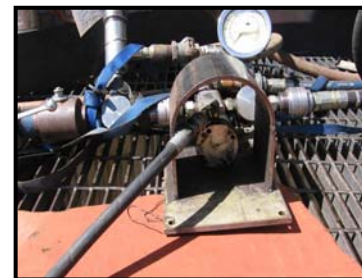
The Baird Valve is the pressure release valve attached to the water line in case of over-pressurization of the lance.

A drain line is attached so that in the case of over-pressurization, the water can be diverted away from the deck/ work area.

The Baird Valve is set to open at 500 psi above the operating pressure of the lance.



"T" Valve with Flow Meter connected



Baird Valve
Hydraulically Activated Bypass System



Snout Lance Operation

Set Up Water Supply Procedure

ACTION	NOTES
1. OBTAIN permits, as required...	<i>... obtain all permits, such as Hydrant Permit and Hot Work Permit. ... permit receiver needs to know which water supply (e.g. fire hydrant) is to be used.</i>
2. REVIEW permit, toolbox talk, procedures, emergency meeting points and assembly areas with all personnel.	
3. VISUALLY inspect equipment, hoses, and fittings...	<i>... for wear or damage, and fix or replace as required. Stop procedure in order to complete repairs. Inspection must be ongoing throughout the lancing procedure.</i>
4. CONNECT water supply hoses...	<i>... from water supply to pumps.</i>
5. INSTALL whip checks...	<i>... required on all water hose connections.</i>
6. CONNECT water supply hose to water filters.	
7. CONNECT water hoses to high pressure pumps.	
8. CONNECT high pressure lines from high pressure pumps to "T" Valve.	
9. ATTACH flow meter...	<i>... flow meter should read 80 - 90 gpm during operation.</i>
10. CONNECT high pressure line to pressure hoses.	
11. START high volume skid pumps...	<i>... turn on water supply, open ball valve at pump's filter pot, engage clutch, slowly bring up to desired pressure, and constantly monitor gauges.</i>

Pre-Snout Lancing Procedure

ACTION	NOTES
1. ENSURE job box contains necessary equipment...	... job box is a storage box kept near the lancing deck and contains supplies required during the lancing procedure. CEDA Foreman should have inventory list and ensure box is stocked properly.
2. RIG IN water hoses.	
3. INSTALL shroud.	
4. RIG IN super lance.	
5. CONNECT hydraulic hoses...	... CEDA is responsible for connecting hoses between lance and control panel.
6. TEST hydraulic hoses...	... CEDA operators are responsible for testing fittings and connections, and are also responsible for any repairs or maintenance. ... if Teflon tape is required for proper fitting of hose connections, only apply tape as far as the last thread so the end is not covered.
7. CONNECT high pressure water lines to reel...	...a high pressure hose is connected to the Baird Valve.
8. CONNECT emergency dump valve...	... so the panel operator can dump water at any time if necessary.
9. PERFORM water flush...	... before injection, ensure water is flowing clearly through the hoses by performing a flush. Flushing will remove debris, air, and any other chemicals in the reel. To perform the flush see procedure below.
Water Flush 10. ATTACH water flush tool to end of reel. 11. SET HP Water Valve to “dump” on control panel. 12. CONNECT high pressure water hose to lance. 13. SWITCH HP Water Valve to “close” to flush hose. 14. INSTRUCT pump operators to give hydrant pressure to get water flowing. 15. SWITCH HP Water Valve back to “dump” once water has flowed freely and clearly.	 Flush Tool
16. ATTACH packing box...	... performed by client and CEDA operators.

Snout Lancing Procedure

ACTION	NOTES
1. TEST panel controls...	<i>... to ensure hoses are connected properly.</i>
2. ADJUST injection pressure and drum tension on control panel...	<i>... when starting up.</i>
3. FEED tubing through injector.	
4. ADVANCE lance towards packing box...	<i>... by using the control stick on the control panel.</i>
5. RESET gauges to zero (0) on control panel...	<i>... once lance enters the packing box. This allows the panel operator to accurately determine how far the lance is traveling in the snout.</i>
6. MAINTAIN injector pressure at about 100 psi to a depth of 18 inches...	<i>... so the lance does not hit the packing block valve at a high rate.</i>
7. BACK UP lance approximately two (2) inches...	<i>... after the lance touches the packing block valve so the valve can be opened.</i>
8. OPEN packing block valve and 2 inch valve...	<i>...client to open. ... at the same time, contact the pump operator and have the pump operator begin hydrant pressure to supply water.</i>
9. RESET “tubing depth/inches” and “tubing rate inches/min” gauges to zero (0)...	<i>... by flipping “reset” switch on control panel. This is the last time these gauges will be reset to zero (0) during the process. Injector pressure and hydraulic supply pressure will remain as per client’s requirements.</i>
10. INSERT lance slowly into the block valve and travel to end of shroud...	<i>... begin to pressure up unit as per client’s procedure.</i>
11. PROCEED with injection...	<i>... according to “CFA Super Lance State Nozzle Positions” as posted on control panel. ... be aware that the client may change some of these values at their discretion, and it is the responsibility of the operators to check with the client to make sure they are working with the correct values.</i>
12. OBSERVE typical operating limits and record in log book...	<i>... drum tension pressure is about 200 psi; hydraulic supply pressure is about 2500 psi (minimum operating pressure is 2000 psi); maximum injector pressure is 300 psi; injector speed control dial is kept “off”.</i>



ACTION	NOTES
13. OBSERVE “load” limits...	... CEDA does not have a readout for “load” pressure, and operators will need to observe the client’s readouts. ... “Load” measures the pressure of the super lance against the platform framework. This load is created by the force generated by the injector feeding the lance into the snout against the framework on which the super lance is set up. ... Max HH (Maximum High High) load pressure is 4500 psi. If load pressure goes above this level, it is an indication that the lance is not advancing and the panel operator should stop advancing the lance until the cause for the pressure increase can be determined. If the lance becomes stuck, it may be necessary to withdraw and attempt to re-enter.
14. ADVANCE lance to distance limits...	... as determined by client and displayed on the “CFA Super Lance State Nozzle Positions” as posted on control panel.

Snout Lance Removal Procedure

Once the lancing procedure is completed, the lance will need to be removed.

ACTION	NOTES
1. REVERSE injector...	... and retract lance.
2. INCREASE reel pressure on control panel...	... to approximately 800 psi. Higher pressure is required as reel is fuller.
3. CHECK if two inch valve closes...	... as lance is being retracted, stop at predetermined lengths as set out by client so the client operator can check if the two inch valve will close.
4. INSTALL pins in reel...	... once tubing is fully retracted.
5. DISCONNECT panel...	... and store in case.
6. DISCONNECT water hoses.	



Maintain Snout Lance and Components

As with any equipment used regularly, all super lance components must receive the appropriate preventative maintenance in order to properly operate.

It is important to identify the following components and perform the required maintenance for routine operation.

Part/Device	Required Maintenance	Frequency
Reels	Regular maintenance at approved maintenance facility	After each use
Control Panel	Regular maintenance at approved maintenance facility	After all snouts are completed
Injector	Regular maintenance at approved maintenance facility	After all snouts are completed
Pumps	Regular maintenance at approved maintenance facility	Every 250 hours
Nozzles	Replace	As required
Rigid Lances	Replace	As required
High Pressure Water Hoses/ Lines	Inspect for damage or wear	Before, during and after every use
Hose Feeder Chains	Adjust	As required
Hydraulic lines	Inspect for damage or wear	Before, during and after every use

Troubleshoot Snout Lance

To efficiently operate the super lance, the operator must be aware of the common failures that might prevent smooth operation. The following is a list of common problems encountered.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
Broken chain on super lance	Excessive wear	Operator to replace.
Low water pressure	Plugged filters	Switch to next filters and replace plugged filters.
Non-functioning or broken water pump	Bad packings in pump	Notify personnel on lance deck of pump problem, take broken pump off line and hook up 3 rd pump. Water pressure will be reduced until 3 rd pump is hooked up and running.
Lance will not move forward or backward	No Hydraulic Pressure	Check hydraulic hose connections and hydraulic power unit.



	Shear key broken - coupler on hydraulic motor turns but injector chains do not move	Replace shear key.
	Injector connecting chain loose or broken	Adjust or replace.
	Reduced injector chain clamp force - injector chains slip on coiled tubing	Adjust.
Lance will not move forward, but moves backward	Reel pins not removed	Remove reel pins and check lance for damage, if damaged, lance can not be used and reel must be replaced.
	Reel pin/ bolt binding on framework	Adjust reel alignment.
	Reduced injector chain clamp force - injector chains slip on lance	Adjust.
	Blockage in shroud	Remove shroud and clean or replace.
	Nozzle end of lance not properly prepared or straightened	Retract lance and check lance end with gauge pipe - replace reel if needed.
SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
Lance will not move backward	Injector connecting chain loose	Adjust.
	Reduced injector chain clamp force - injector chains slip on lance	Adjust.
	Lance is bent, deformed or ruptured	Refer to Safe Operating Procedure.
Lance moves very slowly at startup during cold weather	Hydraulic oil too cold/ thick	Warm up hydraulic oil by connecting pressure and return line together and allow oil to circulate.
Reel will not wind up lance	Reel pin/ bolt binding on framework	Adjust reel alignment.
	Reel chain broken	Replace chain.
	Reel hydraulic motor key broken or sprocket hub broken	Replace key or sprocket.
Loss of or reduced Water Pressure	Dump valve is open - no hydraulic pressure	Check hydraulic hose connections & hydraulic power unit.
	Water pump problems	Check water pump (as per pump troubleshooting) Notify lance deck personnel of pump problem, take broken pump off line and hook up spare pump. Water pressure & flow will be reduced until spare pump is hooked up and running.
	Ruptured lance	Refer to Safe Operating Procedure.



	Lance drilling into coke, plugging nozzle jet/ flow path	Reduce pump speed/ water pressure.
Increased Water Pressure	Nozzle jet plugged	Reduce pump speed/ water pressure, in future ensure water system is properly flushed to remove all debris, before tip is installed.



Multiple Choice Questions (Technical Quiz)

Complete the following test, and have it graded by your assessor. If any questions are answered incorrectly, your assessor will explain what the correct answer is, and why it is correct. Once you understand the correct answer, both the assessor and students initials are required to indicate that mentoring or coaching has taken place.

Question	Assessor's Initials	Student's Initials
1. A snout lance removes coke deposits by applying a high pressure water blast to the cyclone snouts. a. True b. False		
2. Snout lancing is typically performed by how many CEDA employees? a. 5 b. 6 c. 4 d. None of the above		
3. Before lancing can begin, a 1 ½ inch pipe called a _____ is installed in the valve to guide the lance as it enters. a. reel b. snout c. shroud d. none of the above		
4. Three high volume water pumps are used for the snout lancing operation, with two working and one kept as a spare: a. True b. False		
5. CEDA's clients WILL NOT have representation on site during the snout lancing operations. a. True b. False		
6. The panel control operator controls the injector that feeds the lance tip and tube into the snout. a. True b. False		
7. Riggers are responsible for: a. rigging the lance super lance to the crane in preparation for lifting. b. attaching the lance to the coker platform. c. only "a" d. both "a" and "b".		
8. Water travels through the following order of equipment: a. hydrant, pumps, filters, flow meter b. hydrant, flow meter, filters, pumps c. hydrant, filters, pumps, flow meter d. none of the above.		
9. Whip checks are installed: a. on all water hoses and high pressure lines. b. on water hoses connected to the pumps. c. on water hoses connected to the filters. d. on high pressure water lines connected to the snout lance.		



10. How many high volume water pump operators are used in the snout lancing operation? a. 1 b. 3 c. 2 d. 2, but they can leave once the pumps are running.		
11. All equipment, including hoses and fittings, must be inspected: a. before the lance operations can begin b. after the lance operations have ended c. when the equipment goes back to the shop for servicing d. before, after, and continuously throughout the lancing procedure.		
12. Hydraulic hoses connect to the control panel are color coded to assist in proper connection. a. True b. False		
13. In the case of over pressurization, all water pressure can be diverted from the lance. a. True b. False		
14. The pressure release valve attached to the high pressure water line is called the: a. 2 inch valve b. Baird Valve c. Pressure Stop Valve d. Water Dump Valve.		
15. Before injection, a water flush must be performed on the reel to remove any: a. debris b. air c. chemicals d. all of the above.		
16. The packing block valve prevents any water, steam, coke, and H ₂ S from escaping the coker. a. True b. False		
17. The panel operator will advance the lance according to the client's depth and rate specifications. These specifications may change on a job-to-job basis, or even during a job. a. True b. False		
18. While observing "load limits", the maximum high high load pressure is: a. 3000 psi b. 3500 psi c. 4000 psi d. 4500 psi.		
19. When removing the lance, the client will check to see how soon the 2 inch valve can be closed so that: a. no steam, coke, H ₂ S or other chemical comes out and damages equipment b. no steam, coke, H ₂ S or other chemical comes out and hurts personnel		



	c. both "a" and "b" d. neither "a" or "b".		
20.	Reels are sent back to Edmonton for maintenance after each use: a. True b. False		
21.	Pumps are set for regular maintenance every _____ hours: a. 100 b. 250 c. 350 d. 500		
22.	The control panel gets regular maintenance in the Edmonton shop: a. once per year. b. twice per year. c. every 500 hours. d. after all snouts are completed.		
23.	Hydraulic lines should be inspected for damage or wear: a. before the lance operations can begin. b. after the lance operations have ended. c. when the equipment goes back to the shop for servicing. d. before, after, and continuously throughout the lancing procedure.		
24.	If the third pump needs to be brought online, the pump operators must notify the operators on the lance deck. a. True b. False		
25.	A possible cause of low water pressure is plugged filters. a. True b. False		



Practical Assessment – Snout Lance Operations

This form is to be filled out by the assessor as they observe the student successfully demonstrate these items in order to be deemed competent.

Assessment Check List

Section 1			
The following items must be identified and their purpose, inspection requirements, and preventative maintenance must be explained. Failure to successfully explain inspection and maintenance requirements does not constitute a FAIL, but will require a mentorship agreement to bring the employees level of knowledge to an acceptable level.			
ITEM		YES	NO
1	Super Lance		
2	Reel		
3	End of Reel		
4	Snout Lance Tip		
5	Injector assembly		
6	Shroud		
7	Packing Box and Valve		
8	Hydraulic hoses and connections		
9	Operator Panel with controls and digital pressure and distance displays		
10	Water hoses and connectors		
11	Three High Volume Water Pumps		
12	Pump Control Panel		
13	Valve, Needle Valve, and High Pressure Gauges on pumps		
14	High Pressure Water Line		
Section 2			



The following tasks must be completed in the prescribed sequence. Any exceptions must be noted in the comments section with justification. Assessor will check YES column if the item was actioned satisfactorily, or circle the number in the NO column if it was not. If enough demerits are accumulated to warrant a fail, or employee performs an unsafe or dangerous action, the assessment may be terminated immediately. If necessary, all near-miss/incident reporting requirements must be met.

**Copies of the completed Daily Inspection, FLHA and Procedure must be attached to the assessment.*

TASK		YES	NO
Set Up Water Supply			
1	Obtain permits, as required.		
2	Review permit, toolbox talk, procedures, emergency meeting points and assembly areas with all personnel.		
3	Visually inspect equipment, hoses, and fittings.		
4	Connect water supply hoses.		
5	Install whip checks.		
6	Connect water supply hose to water filters.		
7	Connect water hoses to high pressure pumps.		
8	Connect high pressure lines from high pressure pumps to "T" valve.		
9	Attach flow meter.		
10	Connect high pressure line to permanently installed pressure hoses on site at Syncrude.		
11	Start high volume skid pumps.		
Pre-Snout Lancing			
1	Ensure job box contains necessary equipment.		
2	RIG IN water hoses.		
3	INSTALL shroud.		
4	RIG IN super lance.		
5	Connect hydraulic hoses.		
6	Test hydraulic hoses.		
7	Connect high pressure water lines to reel.		
8	Connect emergency dump valve.		
9	Perform water flush.		
10	Attach packing box.		
Snout Lancing			
1	Test panel controls.		



2	Adjust injection pressure and drum tension on control panel.		
3	Feed tubing through injector.		
4	Advance lance towards packing box.		
5	Reset gauges to zero (0) on control panel.		
6	Maintain injector pressure at about 100 psi to a depth of 18 inches.		
7	Back up lance approximately 2 inches.		
8	Open packing block valve and 2 inch valve.		
9	Reset "tubing depth/ inches" and "tubing rate inches/min" gauges to zero (0).		
10	Insert lance slowly into the packing block valve.		
11	Proceed with injection.		
12	Observe typical operating limits and record in log book.		
13	Observe "load" limits.		
14	Advance lance to distance limits.		
Snout Lancing Removal			
1	Reverse injector.		
2	Increase pressure on control panel.		
3	Check if 2 inch valve closes.		
4	Install pins in reel.		
5	Disconnect panel.		
6	Disconnect water hoses.		
Comments:			



Assessment Sign Off

All boxes must be completed before signing an employee competent.

- ☐ Expectation Letter Signed
- ☐ Minimum 100 hours of on the job training completed
- ☐ On the Job Practical Assessment Completed by an approved Assessor
- ☐ Has reviewed and understands the operator manuals
- ☐ Reviewed and understands Procedures and Safety Documentation
- ☐ Technical review and Knowledge Exam complete
- ☐ Training documentation sent to CEDA Training Department

Assessor

I, _____ have taken the below named employee through this Assessment, and he/she has successfully demonstrated competence in the areas identified.

Signature Date

Student

I, _____ have completed this competency, including the on-job demonstration, practical assessment and multiple-choice questions. I understand the information presented and agree to follow all of the rules and procedures set out by CEDA.

Signature Date



Revision Log

Revision Date	Section Affected	Changes Made
January 10, 2023	All	Updated Template, multiple changes throughout.



Training Change Request Form

Date: _____

Location: _____

Name: _____

Contact information: _____

Email/Phone number

Description

Please use the back of this sheet to make additional comments.

Section Name: _____

Page Number: _____

Description of Problem/ Suggested Resolution:
