

ST-100 Advanced SONARtrac® Installation, Commissioning and Maintenance Training Course Outline

SYNOPSIS:

This is a two-day intensive course using lectures and hands-on work to provide Process Engineering, Reliability and Maintenance personnel a comprehensive understanding of the SONARtrac Process Flow Monitoring System. Class is limited to 3 people per session.

OBJECTIVES:

Students will gain a comprehensive, full range of skill sets to perform installation, set-up, troubleshooting, as well as data retrieval from SONARtrac systems. Those completing the course will be able to:

- Employ best practices for installation of SONARtrac system;
- Learn how to remove equipment from pipes and store properly for later installation (essential for applications that require removal for pipe rotation);
- Replace the cover seals, stainless steel cover flange gaskets, pre-amp modules;
- Learn the difference between installation of fiberglass and stainless steel sensor head covers (and perform an installation on a process pipe spool piece);
- Install an HD series sensor band on a process pipe spool piece;
- Upload and download data using a SONARstick™ USB memory stick;
- Learn how to troubleshoot SONARtrac system;
- Understand the principles of Gas Volume Fraction (GVF) and how it impacts process variability and measurement certainty;
- Understand maintenance and spare parts requirements;
- Leverage SONARtrac system diagnostics and data acquisition to enhance knowledge of process.

TOPICS INCLUDE:

- Principles of Operation
- Sensor Head Installation Training;
- Sensor Head Removal & Storage Procedure;
- Transmitter Training;
- SONARstick (USB Memory Stick) Training;
- Secure Website Introduction;
- Troubleshooting Procedures;
- Gas Volume Fraction (GVF) and Why it is Important
- SONARtrac Diagnostics and Data Acquisition Capability;
- Oil Sands Application Case Studies.

PREREQUISITES:

All attendees must **read** the SONARtrac Installation Manual prior to the start of training. Manuals can be accessed through CiDRA's website at http://www.cidra.com/document_library/20822-01TAB_SONARtrac_Manual_Firmware_04-01-16_and_Above.pdf

CiDRA will provide a hard copy of the SONARtrac Installation Manual at time of course.

LENGTH: 2 days **FOR MORE INFORMATION (Costs and Scheduling)**, please contact Aja Garner, Client Services, +1.203.626.3492.



CiDRA Oilsands Ltd. *SONARtrac*[®] Training Agenda

Course: ST-100 Advanced *SONARtrac* Installation, Commissioning and Maintenance Training Course Outline

Day 1:	
Morning	<p>Review Course Objectives, CiDRA Overview <i>SONARtrac</i> Technology / Product Review</p> <p>Module Goal: Students will gain an understanding of how the technology works and will learn about the <i>SONARtrac</i> family of products (HDVF, VF, and VF/GVF dual functionality)</p> <p><i>SONARtrac</i> Sensor Head Installation Training</p> <p>Module Goal: Students will gain the knowledge to enable them to install the <i>SONARtrac</i>[®] sensor assembly.</p> <p>Students will learn how to select the best installation site, learn why it is important and how to properly prepare the pipe for sensor mounting. Students will learn how to install sensor assembly using actual hardware on a training spool piece of pipe. Students will learn how to install fiberglass and stainless steel enclosure assembly over the sensor assembly they had installed on the pipe spool piece.</p>
Afternoon	<p><i>SONARtrac</i> Transmitter Training</p> <p>Module Goal: Students will gain a working knowledge to enable them to install and start up the <i>SONARtrac</i>[®] transmitter assembly.</p> <p>Students will learn how to select the best installation site and why it is important for the transmitter. They will learn how to install the sensor head to transmitter cable assembly, power cable and output cables. Students will also learn how to access and navigate the transmitter menus that will enable them to configure the system as well as to perform system diagnostics using the onboard transmitter capabilities.</p> <p><i>SONARtrac</i> SONARstick (USB Memory Stick) Training</p> <p>Module Goal: Students will gain the knowledge to enable them to use the USB port and memory stick.</p> <p>Students will learn how to download data from the transmitter, install system configuration files, and how to re-program the transmitter using a memory stick.</p>



Course: ST-100 Advanced Installation etc. Training (continued)

Day 2:	
Morning	<p>SONARtrac HD-Series Sensor Installation Training Module Goal: Students will learn how to install the HD series of sensors. Students will install a HD series sensor band on a process pipe spool piece.</p> <p>SONARtrac Stainless Steel Sensor Head Cover Installation Training Module Goal: Students will learn how to install stainless steel sensor head covers. Students will learn the differences between installation of fiberglass and stainless sensor head covers.</p> <p>SONARtrac Troubleshooting Procedures Module Goal: Students will learn how to and be able to perform basic troubleshooting and identify problems with the SONARtrac family of products. Students will use a troubleshooting guide in order to systematically identify problems with the system they had previously installed on a process pipe spool piece. The instructor will cause faults on systems. Students will be required to identify and correct faults.</p> <p>SONARtrac Process Monitoring System Removal and Re-installation Module Goal: Students will learn how to and be able to properly remove and re-install a SONARtrac system. Students will learn the “Dos” and (most importantly) “Don’ts” of how to remove, store, and re-install SONARtrac systems. They will learn how to inspect system parts upon removal and when to replace system parts (sensor band screw assemblies and gaskets).</p> <p>Recommended Spare Parts Module Goal: Students will learn which parts should be normally spared and readily available for their use as replacements. (Does not apply to customers who have SONARtrac Assurance contracts)</p>
Afternoon	<p>SONARtrac Sensor Head Rework Procedures Module Goal: Students learn how to and be able to decide when and how to properly rework and replace SONARtrac sensor head components. Students will replace the cover seals on the fiberglass cover they had previously installed on the process pipe spool piece. They will learn how to replace the stainless steel cover flange gaskets. They will learn how to replace the pre-amplifier module unit found in the cover assembly.</p> <p>CiDRA Secure Website Module Goal: Students will learn how to and be able to upload and download data from the CiDRA Secure Website. They will also learn where to find the latest System Manuals, Technical Bulletins, Rework Procedures, etc. Students will be given access codes and passwords for use on the Secure Website. Assuming we have internet access, they will go on line and upload and download data and information.</p> <p>What is Gas Volume Fraction (GVF)? Module Goal: Students will learn about Gas Volume Fraction in process pipes and why this measurement is important in certain applications.</p> <p>Oil Sands Application Case Studies Module Goal: Students will learn of some issues and solutions involved in the SONARtrac process through demonstrations and discussions and from corresponding case studies.</p>



Training Equipment and Resources Needed

Purpose: To document a list of resources required to support an ST-100 training session.

Assumptions:

1. Up to 3 persons per training session
2. 1 training session of 1-day duration each
3. One CiDRA Certified Trainer

*Note: The * items will be left with trainees*

Item #	Description	Supplied By	
		CiDRA	Customer
1	Training Room	x	
2	Tables ~3 ft X 6 ft long	x	
3	Chairs (assuming 10 trainees per session)	x	
4	Electrical outlets and extension cords	x	
5	Video projector	x	
6	Video screen	x	
7	Laptop computer		optional
8	Training binders	x	
9	SONARtrac transmitter with USB	x	
10	Sensor Bands and Covers 6 or 8 inch	x	
11	Spool piece for sensors	x	
12	Tool kits as per manual		optional*
13	Installation & Startup Manual	x	
14	USB Memory Sticks	x	
15	Ethernet access for training (Secured Website)	x	
16	18" or larger sensor cover	x	
17	Extra sets of boot gasket bands	x	
18	18" or larger spool piece for cover	x	
19	8-10 ft sensor head to transmitter cables	x	
20	Fiberglass cover gasket rework kits	x	
21	Spool piece supports	x	
22	Paper pads	x	
23	Training certificates	x	
24	Training evaluation forms	x	
25	Breakfast, lunch and drinks	x	

*Must order through CiDRA prior to training.

