

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

**Course Objective:** This two-day course utilizes lectures and hands-on training to provide an in-depth, comprehensive technical expertise, allowing attendees to independently, install, configure, troubleshoot and maintain the SONARtrac family of products. In addition, best-practice case studies are utilized to enhance the student's ability to leverage the SONARtrac technology for process improvement.

**Course Goals:** Attendees will become familiar with SONARtrac process monitoring equipment, installation requirements, and gain an intimate knowledge of the hardware, system installation, set-up and maintenance requirements. At the successful completion of the course, the attendees will have the knowledge to install the flow sensor, configure the transmitter, and also have the skills required to download and upload system information from the transmitter via USB port.

## Requirements:

1. It is required that all attendees **read** the SONARtrac Installation Manual prior to the start of training. **CiDRA will provide SONARtrac Installation Manual prior to the start and training coordinator will distribute it to attendees.**
2. Students should not be interrupted during the training sessions.
3. This initial training course is necessary for all technicians who will be involved in the installation, removal and storage of CiDRA SONARtrac systems; additional sessions for "refresher" courses recommended every year. (See ST-50-R Course Outline).

**Training Format:** Training is "hands on". Training is best accomplished with groups of two students per training system. Ideal class size is typically four to six students (2 groups of 2-3 students) per trainer. Participants are encouraged to ask questions as they come up (do not wait until the end).

**Length:** Training will last two full 9-10 hour days – required in order to cover all topics.

**Training Site:** Training is typically held in a class room environment. Each group of students should have a 4 ft x 8 ft table with chairs or a work bench. Electrical power is necessary for presentation of training materials, transmitters and computers. A video projection screen is needed for presentations. Access to internet is extremely desirable.

**Training Materials:** Training manuals and class materials are provided by CiDRA.

## CiDRA CONTACTS:

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## CiDRA Oilsands Ltd. SONARtrac® Training Agenda



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

Day 1:	
<b>Morning</b>	<p><b>Review Course Objectives, CiDRA Overview</b>  <b>SONARtrac Technology / Product Review</b>  <b>Module Goal:</b> Students will gain an understanding of how the technology works and will learn about the SONARtrac family of products (HDVF, VF, and VF/GVF dual functionality)</p> <p><b>SONARtrac Sensor Head Installation Training</b>  <b>Module Goal:</b> Students will gain the knowledge to enable them to install the SONARtrac® sensor assembly.            Students will learn how to select the best installation site 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>
<b>Afternoon</b>	<p><b>SONARtrac Transmitter Training</b>  <b>Module Goal:</b> Students will gain a working knowledge to enable them to install and start up the SONARtrac® transmitter assembly.            Students will learn how to select the best installation site for the transmitter. They will learn how to install the sensor head to transmitter cable assembly, power cable and output cables. Students will 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><b>SONARtrac SONARstick (USB Memory Stick) Training</b>  <b>Module Goal:</b> Students will gain the knowledge to enable them to use the USB port and memory stick.            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>



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

Day 2:	
<b>Morning</b>	<p><b>SONARtrac HD-Series Sensor Installation Training</b>  <b>Module Goal:</b> 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><b>SONARtrac Stainless Steel Sensor Head Cover Installation Training</b>  <b>Module Goal:</b> 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. They will perform an installation on a process pipe spool piece.</p> <p><b>SONARtrac Troubleshooting Procedures</b>  <b>Module Goal:</b> Students will learn how to and be able to troubleshoot 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><b>SONARtrac Process Monitoring System Removal and Re-installation</b>  <b>Module Goal:</b> 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><b>Recommended Spare Parts</b>  <b>Module Goal:</b> Students will learn which parts should be normally spared and readily available for their use as replacements.</p>
<b>Afternoon</b>	<p><b>SONARtrac Sensor Head Rework Procedures</b>  <b>Module Goal:</b> 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><b>CiDRA Secure Website</b>  <b>Module Goal:</b> 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><b>What is Gas Volume Fraction (GVF)?</b>  <b>Module Goal:</b> Through the use of a table top demonstration unit, students will learn about Gas Volume Fraction in process pipes.</p> <p><b>Oil Sands Application Case Studies</b>  <b>Module Goal:</b> Through demonstrations and discussions, from corresponding case studies students will learn of some issues and solutions involved in the SONARtrac process.</p>



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# Training Equipment and Resources Needed

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

**Assumptions:**

1. Up to 6 persons per training session / 2 trainees per group
2. 1 training session of 1-day duration each
3. One CiDRA Certified Trainer
4. Set-up for training the day prior to first session.

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

Item #	Description	Quantity	Supplied By		Comments
			CiDRA	Customer	
1	Training Room				
2	Tables ~3 ft X 6 ft long				
3	Chairs (assuming 10 trainees per session)				
4	Electrical outlets and extension cords				
5	Video projector				
6	Video screen				
7	Laptop computer				
8	* Training binders				
9	SONARtrac transmitter with USB				
10	Sensor Bands and Covers 6 or 8 inch				
11	Spool piece for sensors 6" or 8" x 36" long				
12	Tool kits as per manual				
13	Installation & Startup Manual				
14	* USB Memory Sticks				
15	OPTIONAL Ethernet access for training (Secured Website)				
16	18" or larger sensor cover				
17	Extra sets of boot gasket bands				
18	18" or larger spool piece for cover				
19	8-10 ft sensor head to transmitter cables				
20	* Paper pads				
21	* CiDRA pens				
22	* CiDRA coffee mugs				
23	* Training certificates				
24	Training evaluation forms				
25	Morning coffee, donuts, lunch, drinks				
26	Fiberglass cover gasket rework kits				
27	Spool piece supports				



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# ST-100 Advanced *SONARtrac*<sup>®</sup> Installation, Commissioning and Maintenance Training Course Outline

## SYNOPSIS:

This two-day intensive course uses lectures and hands-on work to provide a comprehensive, in-depth, hands-on technical training that will allow attendees to independently install, set-up, troubleshoot, and maintain the *SONARtrac* family of process monitoring equipment.

## OBJECTIVES:

Students will learn a comprehensive, full range of skill sets to be able to do what's necessary to install, set up, troubleshoot, and retrieve data 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*<sup>™</sup> 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:

- Sensor Head Installation Training;
- Sensor Head Removal & Storage Procedure;
- Transmitter Training;
- *SONARstick* (USB Memory Stick) Training;
- Secure Website Introduction;
- Troubleshooting procedures;
- What is Gas Volume Fraction (GVF)?
- *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. To this end, **CiDRA will be providing, in advance, the *SONARtrac* Installation Manual.**

**LENGTH:** 2 days

**FOR MORE INFORMATION (Costs and Scheduling),** please contact Bob Markoja, Technical Training Manager, 203-626-3399 ([bmarkoja@cidra.com](mailto:bmarkoja@cidra.com)) or Wendy Erickson, Manager, Client Services & Support, 203-626-3421 ([werickson@cidra.com](mailto:werickson@cidra.com))

