



ION Geophysical Corporation

Land Imaging Systems Training Course Catalog

“Dedicated to providing our customers and clients with the right tools”



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www.iongeo.com



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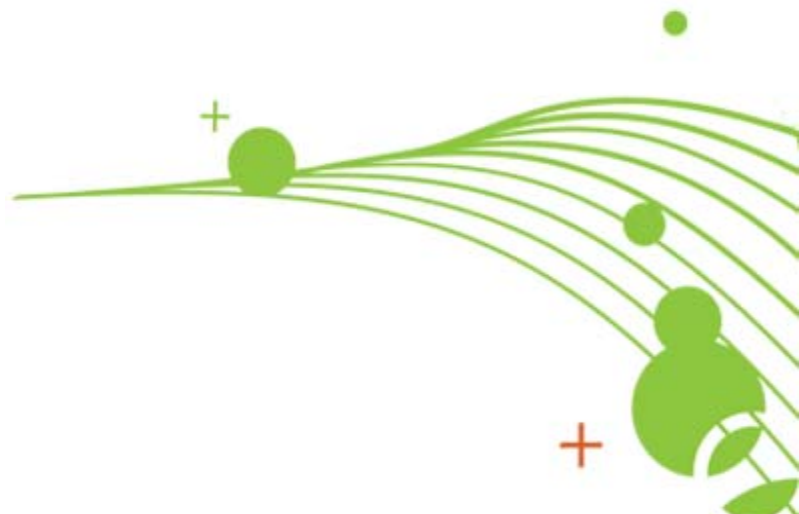
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**ION Geophysical Corporation
Land Imaging Systems
Training Group**

1.1 Training

1.1.1 Definitions

- 1.1.1.1 One (1) “training day” means eight (8) hours of instruction time per student, including breaks.
- 1.1.1.2 One “unit” of training is equal to the number of training days specified as the duration of the course in the individual course descriptions.

1.1.2 Terms and Conditions

- 1.1.2.1 The purchase of one (1) unit of training is equal to the number of training days specified as the duration of the course in the individual course descriptions for one (1) individual.
- 1.1.2.2 Training units may be used after delivery of the system to Buyer, but will expire one (1) year after system delivery.
- 1.1.2.3 Class size will be limited to a maximum of six (6) students and require a minimum of four (4) students unless otherwise agreed to in writing by Buyer and Seller.
- 1.1.2.4 The training location will be agreed to by Buyer and Seller. The training location is required to, at all times, meet reasonable health and safety conditions. If, in the instructor’s opinion, a location selected by the Buyer at any time fails to satisfy the above conditions, the instructor may postpone the class until such time that the location satisfies the above conditions.
- 1.1.2.5 The Buyer will be responsible for all travel related expenses (including but not limited to airfare, lodging, meals, and local transportation) of their personnel attending training at any ION facility unless agreed to in writing by Buyer and Seller.
- 1.1.2.6 If Buyer requests that training be made available at Buyer’s site, Buyer will be responsible for travel and lodging expenses for the Seller’s instructor. Buyer will also be responsible for portal-to-portal charges and wage expenses for Seller’s instructor if travel is required outside of the standard ION workday and workweek.



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- 1.1.2.7 Seller's training classes delivered at the Buyer's site will be performed at such times to conform to the standard ION workday and workweek unless agreed to in writing by Buyer and Seller. Buyer will be responsible for wage expenses for Seller's instructor if training is required outside of the standard ION workday and workweek.
- 1.1.2.8 Training will be conducted in English. If a translator is required, the Buyer will be responsible for providing, at Buyer's expense, a translator for the duration of the training.
- 1.1.2.9 If buyer requests documentation in any language other than English, the Buyer will be responsible for all costs associated with the translation of said documentation.
- 1.1.2.10 Additional training days may be purchased from ION. The current price per training day as of October 1, 2008 is \$500.00. This price is subject to change without prior notification.
- 1.1.2.11 Buyer has the right to cancel any confirmed class or attendance of any prior registered student up to ten (10) business days prior to class start date with no charge to Buyer. If Buyer cancels the confirmed class or attendance of any registered student within ten (10) days prior to class start date, Buyer will pay 50% of the standard course cost per seat cancelled in cash.
- 1.1.2.12 Seller has the right to cancel any confirmed class up to ten (10) business days prior to class start date with no charge to Seller. If Seller cancels a confirmed class within ten (10) business days or misses the confirmed class date, Seller will deliver the subsequent class at 50% of the standard course cost to Buyer. If Seller is forced to cancel a confirmed class for reasons outside of Seller's control, such as weather, acts of terrorism, labor disputes, emergencies, fire, laws or regulations, or other reasons, Seller may cancel any confirmed class at any time at no charge to Seller.



Scorpion System Operations Training

Level 1 (ION Part Number: 1019-010001)

Course Information

Course Description:

Students study and learn the theory of operation of the Scorpion cable-based land recording system and associated ground electronics. Hands-on demonstrations will cover system menu familiarization, building prospects and maps, setting shooting parameters, use of project manager wizards, building seismic process flows, use of global icons and map view components, interpretation of unsolicited messages, shot management, and data acquisition. An introduction to basic troubleshooting will be covered, as well as software back-up and restoration procedures for the CRS (Central Recording System).

This course is recommended for entry-level land system Party Managers, Field Service Engineers, Geophysicists, Observers, Instrument Technicians and Seismic Sales Staff, without previous experience on ION Geophysical data acquisition systems.

Prerequisites:

Competence with computers and MS Windows operating system. Knowledge or work experience in 2D or 3D geophysical survey is preferred. Associates degree in electronics, computer technology or equivalent work experience is recommended.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for Level 1 Scorpion System Operations Training

Day One

1. Classroom - Introduction to the Scorpion System
 - Scorpion System Overview
 - Scorpion System Hardware Components
 - Central System Software Overview
2. Hands-on
 - Startup and Shutdown procedures for the Scorpion System

Day Two

1. Classroom - Operating the Scorpion System
 - Control Panel
 - Setting up a Prospect/Project
 - Importing a SPS Survey
 - RANS – Receiver Associations
 - SANS – Source Associations
 - Source Controllers
 - BITs – Built-In Tests
 - Status Pulls
 - Sweep Descriptions
 - Test Oscillators
 - Fleet Profiles
 - Display Configurations
 - Procedure/Flow Modules
 - Seismic Process Flows
 - Reports
2. Hands-on
 - Demonstration of discussed Scorpion System operations

Day Three

1. Classroom - Operating the Scorpion System
 - File Menu
 - Prospect
 - Survey
 - Commands
 - Source Manager
 - Domain Views
 - Options
 - View
 - Window
 - Map View
 - Help Menu



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2. Hands-on

- Demonstration of discussed Scorpion System operations

Day Four

1. Classroom – Operating the Scorpion System

- Prospect Setup
- Creation of Flows
- Source Controllers
- Sweep Setup
- Using the Spread Manager
- Source Aware Setup
- Shot Manager Setup
- Introduction to Troubleshooting

2. Hands-on

- Demonstration of discussed Scorpion System operations

Day Five

1. Hands-on

- Output Domain
- Plotter Output
- Noise Monitor
- Excel Reports
- Prepare and Fire Acquisition Shots
- Ghost Backup of CRS
- Ghost Restore of CRS

2. Course Summary and Q&A

3. Final Exam

4. Course Evaluation



Scorpion System Operations Training Level 2 (ION Part Number: 1019-010008)

Course Information

Course Description:

The focus of this course is hands-on operation of the Scorpion cable-based land recording system. The extensive hands-on laboratory will cover building prospects, maps, setting shooting parameters, use of project manager wizards, building seismic process flows, use of global icons and map view components, shot management, interpreting unsolicited messages, data acquisition, configuration of source controllers, setting plotter and output displays, deploying and testing the spread, shooting, creating reports, ground electronics firmware verification and revision update, running diagnostics and utilities.

Recommended for individuals with experience operating land acquisition systems, such as Seismic Party Managers, Field Service Engineers, Geophysicists, Observers, and QC Inspectors.

Prerequisites:

Successful completion of Level 1 Scorpion Operations Training, or experience on previous versions of ION Geophysical land acquisition systems.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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2. Hands-on

- Demonstration of discussed Scorpion System operations

Day Four

1. Classroom – Operating the Scorpion System

- Prospect Setup
- Creation of Flows
- Source Controllers
- Sweep Setup
- Using the Spread Manager
- Source Aware Setup
- Shot Manager Setup
- Introduction to Troubleshooting

2. Hands-on

- Demonstration of discussed Scorpion System operations

Day Five

1. Hands-on

- Output Domain
- Plotter Output
- Noise Monitor
- Excel Reports
- Prepare and Fire Acquisition Shots
- Ghost Backup of CRS
- Ghost Restore of CRS

2. Course Summary and Q&A

3. Final Exam

4. Course Evaluation



**ION Geophysical Corporation
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- Work with the Seis/BBU Domain
- Work with Seis/BBU Cable Domain
- Work with the Truck Domain
- Run VectorSeis Receiver (SVSM) Tests
- Standard Analog Line Unit (A- & AU2) Tests
- Run BIT Tests
- Ground Electronics Firmware Verification and Revision Update

Day Four

1. Demonstration and Hands-on

- Interpreting Components in Map View
- Work with Map Views
- Work with Skip Gaps in Map View
- Work with Snakes in Map View
- Importing/Exporting SPS
- Shooting – Fleets & any Shooter

Day Five

1. Demonstration and Hands On

- Running Diagnostics & Utilities
- CRS (Central Recording System) Software Back-up and Restoration

2. Course Summary and Q&A

3. Final Exam

4. Course Evaluation

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System Four Operations Training

Level 1 (ION Part Number: 1019-010007)

Course Information

Course Description:

Students study and learn the theory of operation of the System Four cable-based land recording system and associated ground electronics. Hands-on demonstrations will cover system menu familiarization , building prospects and maps, setting shooting parameters, use of project manager wizards, building seismic process flows, use of global icons and map view components, interpretation of unsolicited messages, shot management, and data acquisition. An introduction to basic troubleshooting will be covered, as well as software back-up and restoration procedures for the CRS (Central Recording System).

This course is recommended for entry-level land system Party Managers, Field Service Engineers, Geophysicists, Observers, Instrument Technicians and Seismic Sales Staff, without previous experience on ION Geophysical data acquisition systems.

Prerequisites:

Competence with computers and MS Windows operating system. Knowledge or work experience in 2D or 3D geophysical survey is preferred. Associates degree in electronics, computer technology or equivalent work experience is recommended.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for Level 1 System Four Operations Training

Day One

1. Classroom - Introduction to the System Four
 - System Four Overview
 - System Four Hardware Components
 - Central System Software Overview
2. Hands-on
 - Startup and Shutdown procedures for the System Four

Day Two

1. Classroom - Operating the System Four
 - Control Panel
 - Setting up a Prospect/Project
 - Importing a SPS Survey
 - RANS – Receiver Associations
 - SANS – Source Associations
 - Source Controllers
 - BITs – Built-In Tests
 - Status Pulls
 - Sweep Descriptions
 - Test Oscillators
 - Fleet Profiles
 - Display Configurations
 - Procedure/Flow Modules
 - Seismic Process Flows
 - Reports
2. Hands-on
 - Demonstration of discussed System Four operations

Day Three

1. Classroom - Operating the System Four
 - File Menu
 - Prospect
 - Survey
 - Commands
 - Source Manager
 - Domain Views
 - Options
 - View
 - Window
 - Map View
 - Help Menu



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2. Hands-on

- Demonstration of discussed System Four operations

Day Four

1. Classroom – Operating the System Four

- Prospect Setup
- Creation of Flows
- Source Controllers
- Sweep Setup
- Using the Spread Manager
- Source Aware Setup
- Shot Manager Setup
- Introduction to Troubleshooting

2. Hands-on

- Demonstration of discussed System Four operations

Day Five

1. Hands-on

- Output Domain
- Plotter Output
- Noise Monitor
- Excel Reports
- Prepare and Fire Acquisition Shots
- Ghost Backup of CRS
- Ghost Restore of CRS

2. Course Summary and Q&A

3. Final Exam

4. Course Evaluation



System Four Operations Training Level 2 (ION Part Number: 1019-010009)

Course Information

Course Description:

The focus of this course is hands-on operation of the System Four cable-based land recording system. The extensive hands-on laboratory will cover building prospects, maps, setting shooting parameters, use of project manager wizards, building seismic process flows, use of global icons and map view components, shot management, interpreting unsolicited messages, data acquisition, configuration of source controllers, setting plotter and output displays, deploying and testing the spread, shooting, creating reports, ground electronics firmware verification and revision update, running diagnostics and utilities.

Recommended for individuals with experience operating land acquisition systems, such as Seismic Party Managers, Field Service Engineers, Geophysicists, Observers, and QC Inspectors.

Prerequisites:

Successful completion of Level 1 System Four Operations Training, or experience on previous versions of ION Geophysical land acquisition systems.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for Level 2 System Four Operations Training

Day One

1. Demonstration and Hands-on exercises

- Domain Views
- Map Views
- Pelton Program Usage
- Preparing the Spread
- Search for a Component in a List
- Undeploying Spread Boxes
- Print a list
- Sort Data
- Filter Data
- Graph Data
- Power Up/Down the Line

Day Two

1. Demonstration and Hands-on exercises

- Fire a Shot
- Check Shot Status
- Set Source Information
- Modify a Template
- Modify Source Aware Attributes
- Set a Receiver Association (RAN)
- Set an Anchor
- Clear Error Messages
- Clear an Anchor
- Set a Stop Point
- Clear a Stop Point
- Set Operation Modes
- Set Error Message Levels
- Set the Color of Error Messages According to Level

Day Three

1. Demonstration and Hands-on exercises

- Work with the PSS Domain
- Work with the PFS Domain
- Work with the PPS Domain
- Work with the XLU Domain
- Work with the SVSM Domain
- Work with the Analog Sensor Domain



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- Work with the Seis/BBU Domain
- Work with Seis/BBU Cable Domain
- Work with the Truck Domain
- Run VectorSeis Receiver (SVSM) Tests
- Standard Analog Line Unit (A- & AU2) Tests
- Run BIT Tests
- Ground Electronics Firmware Verification and Revision Update

Day Four

1. Demonstration and Hands-on

- Interpreting Components in Map View
- Work with Map Views
- Work with Skip Gaps in Map View
- Work with Snakes in Map View
- Importing/Exporting SPS
- Shooting – Fleets & any Shooter

Day Five


1. Demonstration and Hands On

- Running Diagnostics & Utilities
- CRS (Central Recording System) Software Back-up and Restoration

2. Course Summary and Q&A

3. Final Exam

4. Course Evaluation



Ground Electronics Theory & Testing Training

(ION Part Number: 1019-010011)

Course Information

Course Description:

Students study and learn the theory of operation of Ground Electronics hardware, such as, the SVSM (VectorSeis Receiver), A- (Analog) and D- (Digital) Units, BBU (Battery Booster Unit), and XLU (Cross-Line Unit). This training includes familiarization and hands-on exercises with the RTS (Remote Test Station) to conduct extensive test on the ground electronics hardware. Use of the TIU (Tester Interface Unit) shall be emphasized during the testing process. Students will identify the different types of test cables, set-up power supplies, layout test configurations, and perform software update procedures for the SVSM, A-Units and D-Units, BBU , XLU, and self-testing the TIU. Students will launch test sequences required on each hardware layout option and read displayed results or retrieve results of previously run tests.

Prerequisites:

An understanding and familiarity with personal computers and seismic data acquisition/collection methods. Three years experience in troubleshooting and repairing digital data equipment. Associates degree in electronics or equivalent work experience is preferred.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for Ground Electronics Theory & Testing Training

Day One

1. Introduction to Ground Electronics hardware
2. Theory of Operation of the following:
 - SVSM (VectorSeis Receiver)
 - A- (Analog) and D- (Digital) Units

Day Two

1. Theory of Operation of the following:
 - A-Units and D-Units... continuation
 - BBU - Battery Booster Unit
 - XLU – Cross Line Unit

Day Three

1. Familiarization of the RTS (Remote Test Station) hardware, cabling, and functional block diagram
 - PC - Personal Computer
 - TIU - Test Interface Unit
 - Power Supplies – 12VDC and 48VDC
 - UPS – Uninterruptible Power Supply
 - Test Cables
2. Operation of the RTS

Day Four

1. Layout & Testing procedure, updates, and test results analyses
 - A-Unit
 - D-Unit and SVSM
 - BBU - Battery Booster Unit
 - XLU - Cross Line Unit



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Day Five

1. Hands-on using RTS
2. Course Summary and Q&A
3. Final Exam
4. Course Evaluation

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RTS (Remote Test Station) Training

(ION Part Number: 1019-010010)

Course Information

Course Description:

Students study and learn the operation of the RTS (Remote Test Station). It includes familiarization and hands-on exercises with the RTS to conduct extensive tests on ground electronics hardware. Use of the TIU (Tester Interface Unit) shall be emphasized during the testing process. Training includes identification of test cables, setting-up of power supplies, layout of test configurations, and performing software update procedures for the SVSM (VectorSeis Receiver), A (Analog) and D (Digital) Acquisition Units, BBU (Battery Booster Unit), XLU (Cross-Line Unit), and self testing the TIU. Students will launch test sequences required on each hardware layout option and read displayed results or retrieve results of previously run tests. Functional description of the operation of each unit under test shall likewise be given as part of the course.

Prerequisites:

An understanding and familiarity with personal computers, and seismic data acquisition/collection methods. Three years experience troubleshooting and repairing digital data equipment. Associates degree in electronics or equivalent work experience is preferred.

Course Fee: \$1500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 3 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for RTS (Remote Test Station) Training

Day One

1. Familiarization of the RTS (Remote Test Station) hardware, cabling, and functional block diagram
 - PC - Personal Computer
 - TIU - Test Interface Unit
 - Power Supplies – 12VDC and 48VDC
 - UPS – Uninterruptible Power Supply
 - Test Cables
2. Operation of the RTS
3. Overview of the functional features and operation of Ground Electronics Hardware
 - Ground Electronics Hardware Cables
 - A-Unit
 - D-Unit
 - BBU – Battery Booster Unit
 - XLU – Cross-Line Unit

Day Two

1. Layout & Testing procedure, updates, and test results analyses
 - A-Unit
 - D-Unit
 - BBU - Battery Booster Unit
 - XLU – Cross-Line Unit

Day Three

1. Hands-on using RTS (Remote Test Station)
2. Course Summary and Q&A
3. Final Exam
4. Course Evaluation

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Fiber Optic Repair Training

Inline Fusion (ION Part Number: 1019-010002)

Course Information

Course Description:

Students study and learn the basic theory of fiber optic cable transmission, troubleshooting, laser and chemical safety, fiber handling precautions, repair procedures for fiber optic cable inline fusion splicing, and integrated media converter termination and assembly procedures. Students will be provided with the materials for performing intensive hands-on laboratory exercises with emphasis on the proper use of tools, handling of optical fibers, polishing steps, inspection, termination, testing, and assembly procedures.

Prerequisites:

Three years experience in troubleshooting, repair of data transmission lines, and use of special hand tools and test instruments. Associates degree in electronics or equivalent work experience is preferred.

Course Fee: \$1750.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 3 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for Fiber Optic Cable Repair Training (Inline Fusion)

Day One

1. Overview of Fiber Optic Theory, Light Sources and Optical Detectors
2. Safety practices and handling procedures of fiber optic cable, laser devices, adhesive, lubricant, and sealants
3. Familiarization of fiber optic cable test instruments and repair tools
4. Fiber optical cable fault location, troubleshooting techniques, and analysis report

Day Two

1. Familiarization of fiber optic cable fusion machine, cleaver, fusion sleeves and enclosures
2. Optical fiber cable preparation, fiber fusion and testing procedures
3. Hands-on: Optical fiber cable preparation, fusion, testing and assembly

Day Three

1. Optical fiber cable preparation, polishing procedures and terminal inspection
2. IMC termination, testing and assembly procedures
3. Hands-on: IMC termination, testing, and assembly
4. Course Summary and Q&A
5. Final Exam
6. Course Evaluation



Fiber Optic Repair Training Inline Mechanical (ION Part Number: 1019-010003)

Course Information

Course Description:

Students study and learn the basic theory of fiber optic cable transmission, troubleshooting, laser and chemical safety, fiber handling precautions, repair procedures for fiber optic cable inline mechanical splicing, and integrated media converter termination and assembly procedures. Students will be provided with the materials for performing intensive hands-on laboratory exercises with emphasis on the proper use of tools, handling of optical fibers, polishing steps, inspection, termination, testing, and assembly procedures.

Prerequisites:

Three years experience in troubleshooting, repair of data transmission lines, and use of special hand tools and test instruments. Associates degree in electronics or equivalent work experience is preferred.

Course Fee: \$2000.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 3 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for Fiber Optic Cable Repair (Inline Mechanical)

Day One:

1. Overview of Fiber Optic Theory, Light Sources and Optical Detectors
2. Safety practices and handling procedures of fiber optic cable, laser devices, adhesive, lubricant, and sealants
3. Fiber optic cable preparation, polishing procedures and termini inspection

Day Two:

1. Inline Mechanical fiber splicing, termination, testing, and assembly procedures
2. Hands-on: Inline Mechanical splicing, termination, testing, and assembly

Day Three:

1. IMC (Integrated Media Converter) terminal optical fiber cable preparation, polishing procedures, and termini inspection
2. IMC termination, testing, and assembly procedures
3. Hands-on: IMC termination, testing, and assembly
4. Course Summary and Q&A
5. Final Exam
6. Course Evaluation



Shot Pro II Operations and Applications Training (ION Part Number: 1019-010004)

Course Information

Course Description:

Students study and learn the theory of operation of the Shot Pro II Source Control. This comprehensive course covers the operation and application of the Shot Pro II System, associated equipment and use of related computer programs. They study and learn the Shot Pro II features, operation of Vib Pro with Shot Pro II, encoder operation, interfacing with recording systems, master-slave encoder and repeater operation, GPS with Shot Pro II, parameter entry, installation, Shot Pro II computer programs, backpack operations, and truck interface. Emphasis is placed on quality control and safety. The course also covers the use of the up-hole simulator, component level circuit discussions and survey of block diagrams.

Prerequisites:

An understanding and familiarity with personal computers and basic understanding of seismic data acquisition and collection methods. Working experience in the operation of digital circuits is preferred.

Course Fee: \$2000.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 4 days

Scheduling: Please send request to training@iongeo.com



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**Daily Modules for Pelton Shot Pro II Operations & Applications
Training**

Day One

1. History
2. Operational Modes
3. Timing Diagrams
4. Fire Sequence

Day Two

1. Shot Pro II Menus
2. Version Information

Day Three

1. RTI
2. Radio
3. Computer Applications

Day Four:

1. GPS Operations
2. Up-hole Simulator
3. Course Summary and Q&A
4. Final Exam
5. Course Evaluation



Vib Pro Operations and Applications Training

(ION Part Number: 1019-010005)

Course Information

Course Description:

Students study and learn the correlation principles and considerations as it applies to Vibroseis form of energy source, phase control, force control, and quality control. The course includes the Vib Pro computer software, encoder and vibrator control, sweep generation, radio and force meter similarities, PSS data acquisition analysis, data processing, Shot Pro II and GPS programs, special purpose utilities, computer related issues and interfacing with the recording system, radio antenna, DR servo valve, timing diagrams, harmonic distortion, master-slave operation, zero-time adjustment and troubleshooting.

Prerequisites:

An understanding and familiarity with personal computers and basic understanding of seismic data acquisition and collection methods. Working experience in the operation of digital circuits and electromechanical devices is preferred.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for Pelton Vib Pro Operations & Applications Training

Day One

1. Brief History & Overview of Vibroseis
2. Vibrator Mechanical Overview
3. Vibrator Control Loops

Day Two

1. Vib Pro System Overview
2. Vib Pro Menus

Day Three

1. Recording Truck Interface & Polarity
2. Introduction to Pelton Computer Software

Day Four

1. Quality Control
2. Computer Related Issues
3. GPS with the Vib Pro System

Day Five

1. VSS (Vibrator Source Signature)
2. Vib Pro Firmware Revision History
3. Course Summary and Q&A
4. Final Exam
5. Course Evaluation



AHV IV Vibrator Maintenance Training

(ION Part Number: 1019-010006)

Course Information

Course Description:

Students will discuss the theory of Vibroseis operation, energy sources, data acquisition, vehicle construction and location of major components. In depth discussion of the electrical, hydraulic, and drive system, covering operations, adjustments, calibration and maintenance.

Prerequisites:

An understanding and familiarity with personal computers and seismic data acquisition/collection methods. Three years experience in troubleshooting and repairing mechanical and hydraulic systems. Advanced training in proportional hydraulics or equivalent work experience is preferred.

Course Fee: \$5000.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 10 days

Scheduling: Please send request to training@iongeo.com



ION Geophysical Corporation
12300 Parc Crest Drive
Stafford, TX 77477 USA
Tel: 1 281 552 3000
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www.iongeo.com

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Daily Modules for AHV-IV Vibrator Maintenance Training

Day One

1. Vibroseis Theory of Operation
 - Vibroseis Theory
 - Energy Sources
 - Data Collection & Geophones
 - Force Mass & Acceleration
2. Vibrator Vehicle
 - Vibrator Vehicle Construction
 - PLS (PreLoad Series) Theory
 - Vibrator Vehicle Specification Sheet
 - Major Components
 - Frame and General Assembly
 - Engine/Pump Package
 - Drive Train
 - Vibrator and Lift Assemblies
3. Locate Major Components as discussed in class on the Vibrator Vehicle

Day Two

1. Introduction to Basic Electricity and Electronics
2. Introduction to AC Circuits
3. Reading Electrical and Electronic Schematics
4. Locate Major Components as discussed in class on the Vibrator Vehicle

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Day Three

1. Vehicle Electrical System
2. DDEC III Engine Protection System
3. Vibrator Control System
4. Locate Major Components as discussed in class on the Vibrator Vehicle

Day Four

1. Fundamental of Hydraulics
2. Reading Hydraulic Schematics Basics
3. Basic Vehicle Theory of Operation
4. Locate Major Components as discussed in class on the Vibrator Vehicle

Day Five

1. Relationship between Auxiliary, Vibrator and Drive Hydraulics Systems
2. Auxiliary Hydraulic System Theory and Maintenance
3. Auxiliary Manifold
4. Locate Major Components as discussed in class on the Vibrator Vehicle

Day Six

1. Drive System Theory and Maintenance
2. Locate Major Components as discussed in class on the Vibrator Vehicle

Day Seven

1. Vibrator System Theory and Maintenance
2. Reaction Mass
3. Vibrator Maintenance and Repair

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Day Eight

1. Settings, Adjustment and Calibration
2. Engine Maintenance

Day Nine

1. Hydraulic System Troubleshooting

Day Ten

1. Air-conditioning Operation
2. Legal and Environmental Considerations
3. Recommended Lubrication and Fluid Changes
4. Contamination
5. Course Summary and Q&A
6. Final Exam
7. Course Evaluation



AHV IV Vibrator Operator Training

(ION Part Number: 1019-010012)

Course Information

Course Description:

Students will receive academic instruction as well as practical hands-on. Topics covered during the classroom portion of the course include AHV IV essential systems, techniques for safe operation, weight distribution, oil and hydraulic systems, correct interpretation of system gauges, controls, situation awareness and safety. Hands-on exercises will require the participant to perform a pre-start inspection, start the vehicle, and shutdown the vibrator vehicle, leaving it in a safe state. Safe operation of the vehicle must be demonstrated in various modes over a route determined by the instructor. The route will include operation in close proximity to obstructions, tight turns, differing off-road terrain and on-road driving. Successful completion is determined through written test and demonstrated driving skill.

Prerequisites:

Adequate mechanical knowledge to properly check and replenish vehicle fluid levels. Previous experience in the operation of heavy equipment is preferred.

Course Fee: \$500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 1 day

Scheduling: Please send request to training@iongeo.com



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Daily Modules for AHV-IV Vibrator Vehicle Training

Day One

1. Classroom Training (8:00am – Noon)
 - General Safety Guidelines
 - Identification of Interior Controls and Indicators
 - Explanation of Function
 - Identification of Exterior Controls and Indicators
 - Explanation of Function
 - Hydraulic System
 - Analysis of Interior Indicators
2. Field Operation (1:00pm – 5:00pm)
 - Pre-Start Inspection
 - Exterior Pre-Start Checklist
 - Interior Pre-Start Checklist
 - Engine Operation
 - Start-up Procedure
 - Shutdown Procedure
 - Vehicle Operation
 - Gear Selection
 - Differential Locking
 - Demonstration of Driving Abilities
 - Vibe System Operation
 - Auxiliary Lift Circuit
 - Pelton Vib Pro
 - Generating an Energy Point (EP)
3. Course review
4. Final Course Evaluation



FireFly CSC (Central Station Computer) Operator Training

(ION Part Number: 1019-010013)

Course Information

Course Description:

Students will receive instructor led academic training as well as perform practical hands-on activities. Topics covered during the course include working with Domain Views (CSC Map, CSC Spread Manager, Deployment Manager, Shot Manager, Field Station Unit) and Data Management. In-depth CSC instruction will include setting up a Prospect, initializing the Spread, preparing for Data Acquisition, and Shooting (Dynamite and Vibroseis). Hands-on exercises will be conducted using system simulators in conjunction with live operation of the CSC and associated ground electronics. Successful completion is determined through a written test and demonstrated skills.

Prerequisites:

Adequate knowledge to properly operate a computer running Windows Server 2003. Previous experience in the operation of seismic measuring equipment is preferred.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for the Central Station Computer (CSC)

Day One

1. Introduction to the CSC & Getting Started

- Overview of CSC Architecture & Theory of Operations
 - Start FireFly Application
- Utilize Domain Views:
 - Access Domain Views
 - Perform Domain Tasks by Resizing, Selecting, Sorting, Refreshing, Filtering, Saving, and Searching Data
- CSC Tools:
 - Map View
 - Spread Manager
 - FSU Domain
 - Deployment Manager Domain
 - Shot Manager
 - FireFly Server

2. Operate the CSC

- Understand the CSC Workflow
- Phase 1: Set up Prospect
 - Setup Prospect for the First Time
 - View Survey Parameters
 - Activate the Prospect
- Phase 2: Initialize Spread
 - Discover FSUs
 - Deploy FSUs
 - Wake up FSUs
 - Power on Sensors



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- Phase 3: Prepare for Data Acquisition
 - Understand Steps Required to Acquire Data
 - Create a SAN
 - Build Source Controller Parameter Module
 - Build a Fleet Profile
 - Build Acquisition Module

Day Two

1. Operate the CSC (continued)

- Phase 3: Prepare for Data Acquisition (continued)
 - Build a Seismic Flow
 - Build Sweep Description
 - Send Parameters to Encoder & Decoder
 - Setup Source Aware
 - Ensure Spread Quality for Shooting
- Phase 4: Take a Shot
 - Understand Workflow Associated with Shooting
 - Understand the Types of Production and Shooting Modes
 - Add Source Points to the Shot Manager
 - Set Source Information
 - Take a Shot
 - Create Reports for Shots
 - Verify QC Display
 - Create a QC Display
- Shooting Scenarios with CSC
 - Create Dynamite Shooting Scenario
 - Create Vibroseis Shooting Scenario



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- Phase 5: Shut Down the CSC
 - Verify Sleep Group Parameters
 - End the Day
 - Undeploy Field Service Units
 - Save CSC Data

Day Three

2. Additional CSC Functions

- FireFly Client
 - Overview of Usage & Requirements
 - Start the FireFly Server
 - Start the FireFly Client
 - Functions Not Available to the FireFly Client
- Export Data
 - Export Prospect Data
 - Export FSU Data
 - Export Shot Logs
- Manage Prospects
 - Create, Activate, Close, and Delete Prospects
 - Create a Backup of a Prospect
 - Restore from a Backup of a Prospect
- CRU Logger
 - Start the CRU Logger
 - View CRU Messages
 - Change Log Settings
 - Control the CRU



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Day Four

1. Hands-on using the CSC
 - Layout FSUs using Navtool
 - Take Shots with Vib Pro Simulator
 - Troubleshoot any issues

Day Five

1. More Hands-on using CSC
2. Course Summary and Q&A
3. Final Exam
4. Course Evaluation



FireFly Base Nav Server (BNS) Operator Training

(ION Part Number: 1019-010014)

Course Information

Course Description:

Students will receive academic instruction as well as perform practical hands-on training on a BNS system. Topics covered during the course include Survey Preparation, Survey Operation, Launching the BNS, Setting Project properties and Magnetic Variation, Managing Map Data, Export Layers, Configuring Crew Details. Students will Configure the Equipment, Define and Edit Vib Arrays, add vehicles and their Offsets, Create Exclusion and Hazard Buffers, Identify a Range, Load a Dynamic Template, Shoot from a Layout Plan, Save Blocks, Write Blocks and Hazards to Data stores, and Create a Zone. In-depth hands-on exercises utilizing a BNS will prepare the student for actual field operations. Successful completion is determined through a written test and demonstrated skills.

Prerequisites:

Adequate knowledge to properly operate a computer running Windows Server 2003. Previous experience in the operation of seismic measuring equipment is preferred.

Course Fee: \$2500.00 per person (see [Terms and Conditions](#))

Facility: Stafford, TX USA

Duration: 5 days

Scheduling: Please send request to training@iongeo.com



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Daily Modules for FireFly Base Nav Server (BNS) Operator Training

Day One

1. Introduction to the BNS & Theory of Operation

- Overview of BNS & ESRI ArcMap Application
- Survey Preparation Phases
 - Survey Data Import
 - Configuration
 - Data Preparation
 - Survey manipulation
- Survey Operation Phases
 - Pre-deployment
 - Deployment
 - Post-deployment

2. Launching BNS Software and Logon

- Launch BNS Application & Adjust the Database Settings
- Set the Project Properties (Coordinate System)
- Set the Magnetic Variation

3. BNS Map Manipulation and Configuration

- Add Map Data:
 - Add Feature (vector) Data
 - Load GeoTiff File
 - Load DEM File
 - Check & Reload the Layers
- Set the Height layer
- View, Add, Remove, and Customize Map View & Layers
- Store, Retrieve & Plot Maps



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4. Survey Design

- Overview of Survey Design
- Load the Survey Design
- Realign the Columns
- Import the Survey Design
- Export Layers to SPS, GeoTIFF, and Shapefile Formats

5. Crew Configuration

- Start Project Configuration Module
- Add Crew Details for Company, Personnel, Crew
- Assign Personnel to a Crew
- Set the Buffer and Corridor Width for a Crew
- Set the Task Boundaries

Day Two

1. Equipment Configuration

- Add a new Source/Receiver Definition
- Define & Edit the Vibe Array Geometry
- Add Vehicle and Battery Definitions

2. Exclusions and Hazards

- Overview of Hazards & Exclusions
- Define Feature Types
- Generate Exclusion/Hazards Buffers

3. Skidding

- Overview of Skidding
- Skid Points
 - Run the Skid Wizard
 - Skid Results
 - Skid Report
 - View a Stored Report

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- Reset Previously Skidded Points
 - Leave Previously Skidded Points
 - Reset All Points
 - Reset Specific Points
- Skid Points Manually
 - Import Points to a Zone
 - Select, Skid, and Kill point

4. Survey Configuration

- Overview of the Survey Configuration Phase
- Use Dynamic Templates to Plan the Shooting
- Layout from Shooting Plan
- Shooting from Layout Plan
- Create Blocks & Zones

Day Three

1. Document Control

- Overview of Document Control
- Organize Documents
 - View Stored Documents
 - Add a Category
 - Add a Document
 - Edit & Delete a Document
- Manipulate Document Groups
 - Edit Document Groups
 - Create a New Group
 - Create a New Group from an Existing Group
 - Add & Remove a Document from a Group
- View Document Users



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2. Pre-deployment of Crews

- Introduction to Pre-deployment of Crews
- Save Device Settings
- Create Work Instructions
 - Restrict to Area of Displayed Template Range
 - Open the Crew task List and select the Task Type
 - Assign & Save Points
- Assign Devices to Crews & Add an HSE Message
- Check Downloads
 - Monitor Downloads
 - Check Full Status of a Device
 - Check Datastore & Dismount USB Keys
- Export to Central

3. Post-deployment of Crews

- Introduction to Post-deployment of Crews
- Load Data from Datastore
- Import from Central
- Evaluate QC Results
 - View Task Results
 - Evaluate Laid Not to Spec Results
- Display Query Results
 - Add a Display Rule to a Set of Query Results
 - Select the Rule and Property Type
 - Specify How to Display the Results & Display Results
- Generate Reports
- Use the HSE Monitor
- Set the Time Period
- View the routes taken by Crews & Individual Vehicles
- View Track Info



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Day Four

1. Reports

- Introduction to Reports and Types of Reports in BNS
- Generate Various Types of Reports discussed

2. Hands-on using the BNS

- Layout FSU's using NavTool
- Take Shots with Vib Pro Simulator
- Troubleshoot any issues
- Pickup Units and Synchronize NavTools to BNS using Sync Monitor
- View Reports

Day Five

1. Additional Hands-on using BNS
2. Course Summary and Q&A
3. Final Exam
4. Course Evaluation



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1.1 Training

1.1.1 Definitions

1.1.1.1 One (1) “training day” means eight (8) hours of instruction time per student, including breaks.

1.1.1.2 One “unit” of training is equal to five (5) training days.

1.1.2 Terms and Conditions

1.1.2.1 The purchase of one (1) unit of training is equal to five (5) days of training for one (1) individual.

1.1.2.2 Training units may be used after delivery of the system to Buyer, but will expire one (1) year after system delivery.

1.1.2.3 Class size will be limited to a maximum of eight (8) students and require a minimum of four (4) students unless otherwise agreed to in writing by Buyer and Seller.

1.1.2.4 The training location will be agreed to by Buyer and Seller. The training location is required to, at all times, meet reasonable health and safety conditions. If, in the instructor’s opinion, a location selected by the Buyer at any time fails to satisfy the above conditions, the instructor may postpone the class until such time that the location satisfies the above conditions.

1.1.2.5 The Buyer will be responsible for all travel related expenses (including but not limited to airfare, lodging, meals, and local transportation) of their personnel attending training at any ION facility unless agreed to in writing by Buyer and Seller.

1.1.2.6 If Buyer requests that training be made available at Buyer’s site, Buyer will be responsible for travel and lodging expenses for the Seller’s instructor. Buyer will also be responsible for portal-to-portal charges and wage expenses for Seller’s instructor if travel is required outside of the standard ION workday and workweek.

1.1.2.7 Seller’s training classes delivered at the Buyer’s site will be performed at such times to conform to the standard ION workday and workweek unless agreed to in writing by Buyer and Seller. Buyer will be responsible for wage expenses for Seller’s instructor if training is required outside of the standard ION workday and workweek.

1.1.2.8 Training will be conducted in English. If a translator is required, the Buyer will be responsible for providing, at Buyer’s expense, a translator for the duration of the training.



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- 1.1.2.9 If buyer requests documentation in any language other than English, the Buyer will be responsible for all costs associated with the translation of said documentation.
- 1.1.2.10 Additional training days may be purchased from ION. The current price per training day as of 07/01/07 is \$500.00. This price is subject to change without prior notification.
- 1.1.2.11 Buyer has the right to cancel any confirmed class or attendance of any prior registered student up to ten (10) business days prior to class start date with no charge to Buyer. If Buyer cancels the confirmed class or attendance of any registered student within ten (10) days prior to class start date, Buyer will pay 50% of the standard course cost per seat cancelled in cash.
- 1.1.2.12 Seller has the right to cancel any confirmed class up to ten (10) business days prior to class start date with no charge to Seller. If Seller cancels a confirmed class within ten (10) business days or misses the confirmed class date, Seller will deliver the subsequent class at 50% of the standard course cost to Buyer. If Seller is forced to cancel a confirmed class for reasons outside of Seller's control, such as weather, acts of terrorism, labor disputes, emergencies, fire, laws or regulations, or other reasons, Seller may cancel any confirmed class at any time at no charge to Seller.