COURSE OVERVIEW DE0420
API 6A: X-mas Tree & Wellhead Operations, Maintenance & Testing

Course Title
API 6A: X-mas Tree & Wellhead Operations, Maintenance & Testing

Course Reference
DE0420

3.0 CEUs (30 PDHs) AWARD

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Option(s)	Date	Venue
1	July 20-24, 2025	Tourath Meeting Room, Al Bandar Rotana-Creek, Dubai, UAE
2	August 03-07, 2025	
3	August 10-14, 2025	

Course Description

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of API 6A: X-mas Tree & Wellhead Operations, Maintenance & Testing. It covers the components of a wellhead system and the fundamentals of API 6A standard; the X-mas tree system and its functionality in production and injection wells; the wellhead components and functions covering casing heads, casing spools, tubing heads and hangers, sealing mechanisms and load shoulders; the pressure ratings and temperature classes including materials and product specification levels (PSL); the installation procedures for wellhead equipment; and the X-mas tree assembly and installation.

Further, the course will also discuss the BPV (back pressure valve), TWCV (tubing wing check valve) and VR plug installation; the visual and dimensional checks and hydrostatic pressure testing; the leak testing and functional tests and documentation and test records; the maintenance schedules for wellhead and tree components and greasing and seal replacement; the valve maintenance and seat repair and troubleshooting common issues; and the tools and equipment for wellhead maintenance and types of valves in X-mas tree.

During this interactive course, participants will learn the valve operation, maintenance and surface safety systems and SCSSV, emergency shutdown (ESD) and safety protocols; the control panel operations, data logging and performance monitoring; the well integrity testing principles, hydrostatic and gas leak testing, BPV/TWCV and VR plug testing; the non-destructive testing (NDT) methods, flange and stud inspection and test documentation and QA/QC records; the common operational challenges and troubleshooting procedures; the hazard identification for wellhead activities, safe work practices (SWP), job safety analysis (JSA) and barrier management; the isolation of zones and plugging and valve sealing and pressure verification; and the use of plugs and barriers and re-entry planning and safety.

Course Objectives

Upon the successful completion of this course, each participant will be able to: -

- Apply and gain an in-depth knowledge on X-mas tree and wellhead operations, maintenance and testing in accordance with API 6A standards
- Identify the components of a wellhead system and the fundamentals of API 6A standard
- Discuss X-mas tree system and its functionality in production and injection wells
- Recognize wellhead components and functions covering casing heads, casing spools, tubing heads and hangers, sealing mechanisms and load shoulders
- Identify pressure ratings and temperature classes including materials and product specification levels (PSL)
- Carryout installation procedures for wellhead equipment as well as X-mas tree assembly and installation
- Apply BPV (back pressure valve), TWCV (tubing wing check valve) and VR plug installation
- Implement visual and dimensional checks, hydrostatic pressure testing, leak testing and functional tests and documentation and test records
- Employ maintenance schedules for wellhead and tree components, greasing and seal replacement, valve maintenance and seat repair and troubleshooting common issues
- Recognize tools and equipment for wellhead maintenance and types of valves in X-mas tree
- Employ valve operation, maintenance and surface safety systems and SCSSV, emergency shutdown (ESD) and safety protocols
- Carryout control panel operations, data logging and performance monitoring
- Discuss well integrity testing principles and apply hydrostatic and gas leak testing, BPV/TWCV and VR plug testing
- Apply non-destructive testing (NDT) methods, flange and stud inspection and test documentation and QA/QC records
- Recognize common operational challenges and employ troubleshooting procedures
- Employ hazard identification for wellhead activities, safe work practices (SWP), job safety analysis (JSA) and barrier management
- Apply isolation of zones and plugging, valve sealing and pressure verification, use of plugs and barriers and re-entry planning and safety

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides a complete and up-to-date overview of X-mas tree and wellhead for those who are involved in its operations, maintenance and testing. Field operations, production, maintenance, petroleum, reservoir and field engineers, wellhead maintenance supervisors, wellhead operations supervisors and other staff will definitely benefit from this course.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 8,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Dr. Chris Kapetan, PhD, MSc, is a **Senior Petroleum Engineer** with over **30 years** of international experience within the **onshore** and **offshore oil** & **gas** industry. His wide experience covers **Decision Analytic Modelling Methods** for **Economic Evaluation**, **Probabilistic Risk Analysis** (**Monte Carlo Simulator**) **Risk Analysis Foundations**, **Global Oil Demand**, Crude Oil Market, Global Oil Reserves, Oil Supply & Demand, Governmental Legislation, Contractual Agreements, **Financial** Modeling, **Oil Contracts**, **Project Risk Analysis**, **Feasibility Analysis** Techniques, **Capital Operational Costs**, Oil & Gas Exploration Methods, **Reservoir** Evaluation, **Extraction of Oil & Gas**, **Crude** Oil Types & Specifications, Sulphur, Sour Natural Gas, **Natural Gas Sweeting**, **Petroleum Production**, Field Layout, **Production** Techniques & Control, **Surface Production** Operations, **Oil Processing**, Oil Transportation-Methods, **Flowmetering & Custody Transfer** and **Oil Refinery**. Further, he is also well-versed in Enhanced Oil Recovery (**EOR**), Electrical Submersible Pumps (**ESP**), **Oil Industries Orientation**, **Geophysics**, Cased Hole **Formation Evaluation**, Cased Hole **Applications**, Cased Hole **Logs**, Production **Operations**, Production **Management**, Perforating **Methods & Design**, Perforating **Operations**, **Fishing** Operations, **Well & Reservoir** Testing, **Reservoir Stimulation**, **Hydraulic Fracturing**, **Carbonate** Acidizing, **Sandstone** Acidizing, **Drilling Fluids Technology**, Drilling **Operations**, **Directional** Drilling, **Artificial Lift**, **Gas Lift Design**, **Gas Lift Operations**, **Petroleum Business**, **Petroleum Economics**, **Field Development Planning**, **Gas Lift Valve** Changing & Installation, **Well Completion** Design & Operation, Well **Surveillance**, Well **Testing**, Well **Stimulation** & **Control** and **Workover Planning**, **Completions** & **Workover**, **Rig Sizing**, **Hole Cleaning** & **Logging**, **Well Completion**, **Servicing** and **Work-Over Operations**, Practical **Reservoir Engineering**, **X-mas Tree & Wellhead** Operations, Maintenance & Testing, **Advanced Petrophysics/Interpretation** of **Well Composite**, **Construction Integrity** & **Completion**, **Coiled Tubing Technology**, **Corrosion Control**, **Slickline**, **Wireline & Coil Tubing**, **Pipeline Pigging**, **Corrosion Monitoring**, **Cathodic Protection** as well as Root Cause Analysis (**RCA**), Root Cause Failure Analysis (**RCFA**), **Gas Conditioning & Process Technology**, **Production Safety** and **Delusion of Asphalt**. Currently, he is the **Operations Consultant** & the **Technical Advisor** at **GEOTECH** and an independent **Drilling Operations Consultant** of various engineering services providers to the international clients as he offers his expertise in many areas of the **drilling & petroleum discipline** and is well **recognized & respected** for his process and procedural expertise as well as ongoing participation, interest and experience in continuing to promote technology to producers around the world.

Throughout his long career life, Dr. Chris has worked for many international companies and has spent several years **managing** technically **complex wellbore interventions** in both **drilling** & **servicing**. He is a **well-regarded** for his **process** and **procedural expertise**. Further, he was the **Operations Manager** at **ETP Crude Oil Pipeline Services** where he was fully responsible for optimum operations of crude oil pipeline, **workover** and **directional drilling**, **drilling rigs** and equipment, drilling of various geothermal deep wells and **exploration wells**. Dr. Chris was the **Drilling** & **Workover Manager** & **Superintendent** for **Kavala Oil** wherein he was responsible for supervision of **drilling operations** and **offshore exploration**, quality control of performance of **rigs**, **coiled tubing**, crude oil transportation via pipeline and abandonment of **well** as per the API requirements. He had occupied various key positions as the **Drilling Operations Consultant**, **Site Manager**, **Branch Manager**, **Senior Drilling** & **Workover Manager** & **Engineer** and **Drilling** & **Workover Engineer**, **Operations Consultant**, **Technical Advisor** in several petroleum companies responsible mainly on an **offshore** sour oil field (under water flood and gas lift) and a gas field. Further, Dr. Chris has been a **Professor** of the **Oil Technology College**.

Dr. Chris has **PhD** in **Reservoir Engineering** and a **Master** degree in **Drilling & Production Engineering** from the **Petrol-Gaze Din Ploiesti University**. Further, he is a **Certified Surfaced BOP Stack Supervisor** of **IWCF**, a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and has conducted **numerous short courses**, **seminars** and **workshops** and has published several technical books on **Production Logging**, **Safety Drilling Rigs** and **Oil Reservoir**.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Overview of Wellhead Systems*** *Definition & Components of a Wellhead System • Types of Wellheads: Surface & Subsea • Functions of a Wellhead • Relationship with X-Mas Tree*
0930 – 0945	*Break*
0945 – 1030	***API 6A Standard Fundamentals*** *Scope & Structure of API 6A • Key Definitions & Terminology • Specification Levels (PSL) • Product Specification & Performance Ratings*
1030 – 1130	***X-Mas Tree System Overview*** *X-Mas Tree versus Wellhead – Differences & Integration • Vertical & Horizontal X-Mas Tree Designs • Functionality in Production & Injection Wells • Importance of Pressure Control*
1130 – 1215	***Wellhead Components & Functions*** *Casing Heads & Casing Spools • Tubing Heads & Hangers • Sealing Mechanisms & Load Shoulders • Test Plugs & Lockdown Screws*
1215 – 1230	*Break*
1230 – 1330	***Pressure Ratings & Temperature Classes*** *Understanding Working Pressure Ratings • Temperature Class Requirements in API 6A • Material Class & Performance Rating Codes • Operating Envelope of Equipment*
1330 – 1420	***Materials & Product Specification Levels (PSL)*** *PSL 1 To PSL 4 Applications • Material Selection (AA To HH) • NACE MR0175/ISO 15156 Requirements • Corrosion & Sour Service Considerations*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Installation Procedures for Wellhead Equipment*** *Pre-Installation Inspection & Preparation • Installation Sequence (Casing Head, Spool, Tubing Head) • Alignment & Torqueing Procedures • Use of Running Tools*
0830 – 0930	***X-Mas Tree Assembly & Installation*** *Installation Guidelines for Vertical & Horizontal Trees • Stud Tensioning & Bolt-Up Practices • Sealing & Lockdown Systems • Pressure Testing After Installation*
0930 – 0945	*Break*
0945 – 1100	***BPV/TWCV & VR Plug Installation*** *BPV (Back Pressure Valve): Function & Types • TWCV (Tubing Wing Check Valve): Application & Removal • VR Plug Types & Installation Tools • Safety Considerations During Installation/Removal*

1100 – 1215	***Inspection & Testing of Equipment*** *Visual & Dimensional Checks • Hydrostatic Pressure Testing • Leak Testing & Functional Tests • Documentation & Test Records*
1215 – 1230	*Break*
1230 – 1330	***Preventive & Corrective Maintenance*** *Maintenance Schedules for Wellhead & Tree Components • Greasing & Seal Replacement • Valve Maintenance & Seat Repair • Troubleshooting Common Issues*
1330 – 1420	***Tools & Equipment for Wellhead Maintenance*** *Running & Retrieval Tools • Pressure Testing Kits • Torque Wrenches & Hydraulic Equipment • Safety Gear & Barriers*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Types of Valves in X-Mas Tree*** *Master Valves: Lower & Upper • Wing Valves: Production & Kill Line • Swab Valves & Crossover Valves • Valve Configurations*
0830 – 0930	***Valve Operation & Maintenance*** *Manual versus Actuated Valves • Greasing & Seal Replacement • Testing & Calibration • Valve Seat Repair & Changeout*
0930 – 0945	*Break*
0945 – 1100	***Surface Safety Systems & SCSSV*** *Surface-Controlled Subsurface Safety Valve (SCSSV) • Hydraulic Control Systems • Emergency Shutdown Valves • Testing & Validation*
1100 – 1215	***Emergency Shutdown (ESD) & Safety Protocols*** *Overview of ESD Systems • Safety Valve Fail-Safe Mechanisms • H2S & High-Pressure Handling • Lockout/Tagout Procedures*
1215 – 1230	*Break*
1230 – 1330	***Control Panel Operations (Surface Control Panel)*** *Pneumatic & Hydraulic Controls • Pressure Settings & Adjustments • Valve Position Indicators • Integration with DCS/PLC*
1330 – 1420	***Data Logging & Performance Monitoring*** *Recording Valve Operations • Vibration & Pressure Sensors • Use of Digital Twin & Condition Monitoring • Integration with SCADA Systems*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Well Integrity Testing Principles*** *Primary & Secondary Barriers • Surface & Subsurface Testing • Pressure Buildup & Bleed-Off • Leak Paths & Identification*
0830 – 0930	***Hydrostatic & Gas Leak Testing*** *Test Procedures & Equipment • Acceptable Limits & Evaluation • Safety & Pre-Test Checklists • Post-Test Reporting*

0930 – 0945	Break
0945 – 1100	***BPV/TWCV & VR Plug Testing*** *Test Bench Procedure for BPV • In-Situ VR Plug Test Methods • Pressure Hold & Leak Detection • Removal, Re-Inspection & Reinstallation*
1100 – 1215	***Non-Destructive Testing (NDT) Methods*** *Ultrasonic & Magnetic Particle Testing • Dye Penetrant & Radiographic Inspection • Criteria for Acceptance & Rejection • Certification & Documentation*
1215 – 1230	Break
1230 – 1330	***Flange & Stud Inspection*** *Surface Condition Evaluation • Bolt Torque & Tension Testing • Re-Tightening Protocols • Stud & Gasket Replacement*
1330 – 1420	***Test Documentation & QA/QC Records*** *Test Plans & Procedures • Recordkeeping Per API 6A • Acceptance Criteria • Digital Records & Traceability*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	Lunch & End of Day Four

Day 5

0730 – 0830	***Common Operational Challenges*** *Valve Sticking & Leakage • Pressure Anomalies • Seal Degradation & Corrosion • Poor Alignment or Torque Errors*
0830 – 0930	***Troubleshooting Procedures*** *Root Cause Analysis • Isolation of Faulty Components • Use of Diagnostic Tools • Repair versus Replacement Decision-Making*
0930 – 0945	Break
0945 – 1100	***Risk Assessment & Mitigation*** *Hazard Identification for Wellhead Activities • Safe Work Practices (SWP) • Job Safety Analysis (JSA) • Barrier Management*
1100 – 1230	***Case Studies & Industry Incidents*** *Real-Life Failures & Lessons Learned • Best Practices Adopted Post-Incident • Failure Modes & Effects Analysis (FMEA) • Regulatory Responses & Changes*
1230 – 1245	Break
1245 – 1345	***Well Abandonment & Re-Entry*** *Isolation of Zones & Plugging • Valve Sealing & Pressure Verification • Use of Plugs & Barriers • Re-Entry Planning & Safety*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	Lunch & End of Course

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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