Model Curriculum

QP Name: Assistant Technician-Production (Oil & Gas)

QP Code: HYC/Q 0102

QP Version: 2.0

NSQF Level: 4

Model Curriculum Version: 2.0

Hydrocarbon Sector Skill Council
9th Floor, Hindustan Times House, Kasturba Gandhi Marg
New Delhi 110001

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Training Parameters

Sector	Hydrocarbon
Sub-Sector	Upstream
Occupation	Production
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	
Minimum Educational Qualification and Experience	Class X with minimum 2 years of relevant experience **OR** Class XII (Science) **OR** ITI in engineering trade (after class 10th) or 3-years Diploma in relevant field
Pre-Requisite License or Training	
Minimum Job Entry Age	18 years

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Operate systems and equipment used Oil and Gas production process
- Carryout start up, control, monitor, and shut down of system and sub-systems at Oil and Gas production facility.
- Follow occupational health and safety (OHAS) procedures
- Focus on safe operations while achieving production targets
- Perform effective role as a team member in completing tasks as per given time and standards

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	**04:00**	**Nil**	**04:00**	**08:00**
Module 1: Introduction to Hydrocarbon sector and the job role of Assistant Technician-Drilling (Oil & Gas)	04:00	Nil	04:00	08:00
HYC/ N0104 – Carryout patrolling of hydrocarbon pipeline **NOS Version No. –1.0 NSQF Level – 4**	**120:00**	**180:00**	**80:00**	**380:00**
Module 2: Drilling Machine Operations	120:00	180:00	80:00	380:00
HYC/ N0102 – Occupational Health And Safety (OHAS) **NOS Version No. – 1.0** **NSQF Level – 4**	**100:00**	**150:00**	**66:00**	**316:00**
Module 3: Health, Safety and Security Procedures	100:00	150:00	66:00	316:00
HYC/N0103 – Work effectively with colleagues and Supervisor **NOS Version No. – 2.0** **NSQF Level – 5**	**96:00**	**150:00**	**50:00**	**296:00**
Module 4: Effective working in a team	96:00	150:00	50:00	296:00
Total Duration	**320:00**	**480:00**	**200:00**	**1000:00**

Module Details

Module 1: Introduction to Hydrocarbon Sector and the job role of Assistant Technician - Drilling (Oil and Gas)

Bridge Module

Terminal Outcomes:

- Discuss the Hydrocarbon Sector
- Discuss the job of a Assistant Technician - Drilling (Oil and Gas)

Duration: 04:00	**Duration**: 00:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the oil and natural gas sector and its subsectors. • Explain the importance of an Assistant Technician-Production (Oil & Gas). • Explain the roles and responsibilities of Assistant Technician- Production (Oil & Gas).	
Classroom Aids:	
• White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System	
Tools, Equipment and Other Requirements	
NA	

Module 2: Carryout patrolling of hydrocarbon pipeline

Mapped to HYC/ N0104 v 1.0

Terminal Outcomes:

- Oil & Gas Production Processes
- Production Techniques
- Maintenance Techniques
- Maintenance Hand Tools
- Health and Safety in Production operations and Maintenance jobs
- Oil & Gas Production Processes (onsite training)

Duration: 120:00	**Duration: 180:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe production process in Oil and Gas field operations • Describe safe working practices in maintenance workshop • Describe the list of tools, equipment and materials that would be required for a range of basic routine offshore Oil and Gas production tasks • Describe the Oil and Gas production data • Describe basic routine maintenance techniques • Describe the key features of prime movers • Explain the maintenance requirements of prime movers • Describe the key features of transmission systems and components • Outline typical maintenance requirements of transmission systems and components • Describe the key features of distribution and separation systems • Describe preventive maintenance requirements • Describe the HSE requirement • Describe emergency response roles and responsibility	• Demonstrate the processing operations such as well surveillance, monitoring and maintenance, wireline operation, Oil and Gas production processes, compressor, static as well as mobile boilers, multi-phase separation in separators and emulsion treaters • Demonstrate the production activities such as pigging, hot tapping, new flow line laying, replacement of existing flow lines, clearing of flow lines plugging, gas dehydration, produced water, water injection • Demonstrate how to do various well stimulation, servicing units and wireline unit's operation • Demonstrate the operation of crude oil upliftment through bowsers, monitoring and maintenance of field indirect heaters, emulsion treaters and crude oil storage tanks, Oil and Gas processing operations and gas treatment • Perform the process of correct manual handling techniques for maintenance tasks • Demonstrate how to identify relevant emergency requirements for a maintenance workshop • Demonstrate how to select correct personal protection equipment for maintenance tasks • Demonstrate how to clean the workspace and dispose of waste • Perform the production task with required equipment and materials • Perform appropriate cleaning routines using the correct cleaning agents • Perform routine lubrication using the

	correct lubricant for the application • Demonstrate how to check oil levels and add oil as required • Perform the process to tighten fastenings using correct tools and equipment • Demonstrate the process of basic visual inspection for common faults • Demons treat how to clear work areas following pre and post production tasks • Demonstrate how to categorize the key features of tank systems, oil and gas transport systems, features of SRP systems, gas lift systems and rotating equipment and tools • Demonstrate the key features of oil and gas well • Demonstrate the process of maintenance requirements of rotating equipment and tools, measurement systems and equipment, control systems and equipment and protection and detection systems •
Classroom Aids:	
• White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System	
Tools, Equipment and Other Requirements	
Chemical Mask, Leather gloves, flame proof aprons, Flame proof overalls buttoned to neck, cuffless (without folds) trousers, Reinforced footwear, Helmets/hard hats, cap and shoulder covers, Ear defenders/plugs, safety boots, Knee pads, Particle masks, Glasses/goggles/visors, Full body harness, Hand shields, Machine guards, Residual current devices, Shields, Dust sheets, respiration Suite, evacuation Suite, fire extinguishers, ,First aid equipment, Safety instruments and clothing, safety installations.	

Module 3: Health, Safety and Security Procedures

Mapped to HYC/N0102 v 1.0

Terminal Outcomes:

- Carry out Fire Safety and Emergency Procedures
- Emergencies, rescue and first aid procedures

Duration: 100:00	**Duration**: 150:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain importance of using PPE like face mask, hand gloves, goggle, protective clothing/equipment, etc. at workplace. • Explain how to monitor the health and safety of self and other team members. • Explain the hazard and risk associated with mishandling various tools and equipment. • Discuss safe work practices as per the company's guidelines and procedures. • Explain the good housekeeping practices to prevent any hazard. • Explain how to record and report all incidents, damages or injury. • Explain importance of personal and workplace hygiene.	• Demonstrate how to appropriately wear and discard PPE kit. • Demonstrate how to respond promptly and appropriately to an accident. • Demonstrate how to administer first aid. • Demonstrate various rescue techniques. • Demonstrate how to use fire extinguishers. • Show the correct way to lift heavy objects.
Classroom Aids:	
• White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System	
Tools, Equipment and Other Requirements	
Chemical Mask, Leather gloves, flame proof aprons, Flame proof overalls buttoned to neck, cuffless (without folds) trousers, Reinforced footwear, Helmets/hard hats, cap and shoulder covers, Ear defenders/plugs, safety boots, Knee pads, Particle masks, Glasses/goggles/visors, Full body harness, Hand shields, Machine guards, Residual current devices, Shields, Dust sheets, respiration Suite, evacuation Suite, fire extinguishers, ,First aid equipment, Safety instruments and clothing, safety installations.	

Module 4: Effective working in a team

Mapped to HYC/N0103 v 1.0

Terminal Outcomes:

- Describe how to interact with others effectively and appropriately.
- Demonstrate how to deal with colleagues at workplace

Duration: 96:00	**Duration**: 150:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe methods to communicate clearly with the supervisor and reporting authorities. • Explain how to share information in line with organisational requirements. • Explain the organisation's policies and procedures. • Explain how to identify causes of interpersonal conflict at workplace. • Describe ways/methods to resolve interpersonal conflict. • Explain the importance of gender equality. • Explain the importance of supporting and respecting colleagues and other members of the organisation without any bias based on gender, culture, disability etc. • Explain the importance of gender neutral behaviour while interacting with others.	• Demonstrate ways to handle interpersonal conflict at the workplace. • Demonstrate the ways of developing suitable rapport with other team members. • Demonstrate how to respond during emergencies. • Demonstrate how to communicate in a manner that is respectful of gender, culture and disability.
• Classroom Aids:	
• White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System	
Tools, Equipment and Other Requirements	
• Dummy team	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma	Mechanical Engineering/Petroleum Engineering	5	-	1	-	Total experience 5 years

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Assistant Technician-Drilling (Oil & Gas)" mapped to QP: "HYC/Q0101". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601". Minimum accepted score is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma	Mechanical Engineering/Petroleum Engineering	5	-	1	-	Total experience 5 years

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Assistant Technician-Drilling (Oil & Gas)" mapped to QP: "HYC/Q0101". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Assessor", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score is 80%.

Assessment Strategy

The assessment of candidates/trainees will be on the basis on assessment outcome/assessment criteria of the Qualification. In the assessment criteria for each NOS marks have been defined for theoretical and practical skills, on which the candidate will be assessed. The emphasis is on 'learning-by-doing' and performance criteria is based on the practical demonstration of skills and knowledge.

Theory/Knowledge test– This section will test the trainee on his/her knowledge on the subject/trade. The test will be carried out online/offline with a set of random Question paper. that include multiple choice questions in multilingual, True/False Statement, audio-video question etc.

The Question Bank will be developed by Subject Matter Experts (SME) of the hydrocarbon sector and these questions again be vetted by the Industry Experts, each performance criteria have its marks for theory based on the level of question i.e. easy, medium and difficult.

Practical/Demonstration Test– This stage involves the face to face interaction between Assessor and each trainee. The practical knowledge will be tested through trade test which demonstrates the skill required for the job, by which assessor would be able to evaluate the trainee for his/her practical knowledge on respective Qualification.
To ensure the maximum possible consistency in the assessment by different assessors at different locations, orientation of the assessors is also required about the stages involved in the assessment and the assessor role in the assessment process. The assessor must have knowledge of the following concepts before assessment:

- Qualification Pack Structure
- Guidance for the assessor to conduct theory and practical assessments
- Guidance for trainees to be given by assessor before the start of the assessments.
- Guidance on assessments process, practical brief with steps of operations practical observation checklist
- Practical/Demonstration Test guidance for uniformity and consistency.
- Guidance on assessment evidence collection (signed attendance copy, verification of the authenticity of the candidate by checking the photo ID card, Photographs-while assessment undergoing etc.)

The empanelled assessment agencies will be instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments. The assessment agencies are instructed to ideally have assessor with sufficient amount of relevant industry experience related to Qualification. The assessors will also have scrutinized and have to undergo orientation of assessment framework, competency-based assessments etc.

Recognition of Prior Learning (RPL)

Under the Recognition of Prior Learning (RPL), the candidates enrolled and the assessment will be carried out as per the assessment criteria and assessment outcome of the full Qualification and the process of assessment will be carry out by the body/bodies empanelled by Hydrocarbon Sector Skill Council

In RPL, the candidate already has the skills and knowledge while working on the job from long, the learners only requires to undergo a brief orientation training and the subsequent assessment process and certification is awarded to those candidates who successfully clears the assessment. The tentative process of RPL would include the flowing stages:

1 Cluster Mapping and Mobilization of the candidates
2 Counselling & Pre-Screening
4 Candidate registration, batch creation and enrolment
5 conduction of an orientation program for candidates before assessment
7 Assessment by HSSC
8 Evaluation of Assessment Result
9 Issuance of the Certificate to successful candidates

Assessment Strategy:

- For each Qualification Pack assessment criteria has been developed, which describe the weightage for each NOS/Performance criteria (PC) and assigned marks based on each NOS separately for theoretical and practical skills
- The question bank will be developed by the subject matter experts to assess the theoretical and practical knowledge.
- The accredited assessment agency will carry out the assessment process on the date proposed after completion of the training. The assessment will be carried out on the basis of the two parameters i.e. Theoretical test and Practical test.
- The result of the assessment will be shared by assessment body to the HSSC for review and compliance, after that result will be processed and certificates will be generated
- Assessments shall be conducted in the regional languages in case of any specific requirement from the concerned Training Provider.
- For ensuring the impartial assessment it will be ensured that the Assessment Bodies (AB) are not involved in any type of training delivery with respect to this project.

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Recommended Pass % aggregate for QP: 70%

References

Glossary

Term	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Occupational Standards(OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria(PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards(NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack(QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding(KU)	Knowledge and Understanding (KU) are statements that together specify the technical, generic, professional and organizational specific knowledge that an individual need in order to perform to the required standard.
Organizational Context	Organizational context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/Generic Skills(GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication-related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to

	specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.

Acronyms and Abbreviations

Term	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
OS	Occupational Standard(s)
QP	Qualifications Pack
KU	Knowledge and Understanding
GS	Generic Skills
DMA	Direct Marketing Agent
PNG	Piped Natural Gas
FAQ	Frequently Asked Questions
BP	Business Partner
KYC	Know Your Consumer
FAB	Feature Advantage Benefit