

QUALIFICATION FILE– Micro Credentials

Green Hydrogen System Design

☒ Public ☐ Private

☒ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA

☐ General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☒ Future Skills ☐ OEM

NCrF/NSQF Level: 6

Submitted By:

Hydrocarbon Sector Skill Council

Chief Executive Officer

OIDB Bhawan, Block G+3, 2nd Floor,

Plot No.2, Vikas Marg, Sector – 73,

Noida, Uttar Pradesh -201301

Contact Details: +91 9871115360;

Email id: ceo@hsscindia.in

Table of Contents

Section 1: Basic Details..... 3

Section 2: Training Related..... 5

Section 3: Assessment Related 5

Section 4: Evidence of the need for the Qualification..... 5

Section 5: Annexure & Supporting Documents Check List..... 6

Annexure: Evidence of Level 6

Annexure: Tools and Equipment (Lab Set-Up) 8

Annexure: Industry Validations Summary* 9

Annexure: Training & Employment Details 9

Annexure: Detailed Assessment Criteria 11

Annexure: Assessment Strategy..... 12

Annexure: Acronym and Glossary 13

Section 1: Basic Details

1.	Micro Credential-Qualification Name	Green Hydrogen System Design																
2.	Sector/s	Hydrocarbon																
3.	National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	NM-06-HY-03836-2025-V1-HSSC & V-1.0	4. NCrF/NSQF Level: 6															
5.	Brief Description of the Qualification	An individual in this job role is responsible for designing and implementing systems to produce green hydrogen, a sustainable and environmentally friendly energy carrier. Individual in this job role typically encompass a range of responsibilities and qualifications that covers Project Planning and Feasibility, Design and Engineering, Renewable Energy Integration, Electrolysis System Design, Process Optimization, Instrumentation and Control, Environmental and Safety Compliance, Economic Analysis, Procurement and Construction Oversight, Collaboration and Communication, Continuous Learning. The person at this job shall have deep understanding of the mechanical and electrical principles and processes involved in air separation and hydrogen generation. Adherence to process Safety and safety protocol during the production process is also one of the primary responsibilities of the Plant Manager.																
6.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table><thead><tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr></thead><tbody><tr><td>1</td><td>Completed 4th year BE/B.tech engineering in Chemical/Industrial/ Petrochemical / Electrical Mechanical branch</td><td>with 1.5 years of relevant experience</td></tr><tr><td>2</td><td>Completed 3-Year UG Degree in Science (Mechanical/ Electrical/chemical)</td><td>with 3 years of relevant experience</td></tr><tr><td>3</td><td>Previous relevant Qualification of NSQF level 5.5</td><td>with 1.5 years of relevant experience</td></tr><tr><td>4</td><td>Previous relevant Qualification of NSQF level 5</td><td>with 3 years of relevant experience</td></tr></tbody></table> b. Age: 22		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1	Completed 4th year BE/B.tech engineering in Chemical/Industrial/ Petrochemical / Electrical Mechanical branch	with 1.5 years of relevant experience	2	Completed 3-Year UG Degree in Science (Mechanical/ Electrical/chemical)	with 3 years of relevant experience	3	Previous relevant Qualification of NSQF level 5.5	with 1.5 years of relevant experience	4	Previous relevant Qualification of NSQF level 5	with 3 years of relevant experience
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)																
1	Completed 4th year BE/B.tech engineering in Chemical/Industrial/ Petrochemical / Electrical Mechanical branch	with 1.5 years of relevant experience																
2	Completed 3-Year UG Degree in Science (Mechanical/ Electrical/chemical)	with 3 years of relevant experience																
3	Previous relevant Qualification of NSQF level 5.5	with 1.5 years of relevant experience																
4	Previous relevant Qualification of NSQF level 5	with 3 years of relevant experience																
7.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	1	8. Common Cost Norm Category – Category (I)															
9.	Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)	NA																
10.	Expected Outcomes of the Micro Credential	Terminal learning outcomes are: Properties of Green Hydrogen and its production pathways																

		- Green hydrogen production processes, - Hydrogen Production Design, - Safety Protocols and Regulations, - Environmental Impact Assessment & Project Management																							
11.	Training Duration by Modes of Training Delivery (<i>Specify Total Duration as per selected training delivery modes and as per requirement of the qualification</i>)	☒ Offline ☐ Online ☐ Blended																							
		<table border="1"> <thead> <tr> <th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr> </thead> <tbody> <tr> <td>Classroom (offline)</td><td>20</td><td>10</td><td>-</td><td>-</td><td>30</td></tr> <tr> <td>Online</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>						Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	20	10	-	-	30	Online					
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																				
Classroom (offline)	20	10	-	-	30																				
Online																									
		(Refer Blended Learning Annexure for details)																							
12.	Assessment Criteria	<table border="1"> <thead> <tr> <th>Theory (Marks)</th><th>Practical (Marks)</th><th>Project (Marks)</th><th>Viva (Marks)</th><th>Total (Marks)</th><th>Passing %age</th></tr> </thead> <tbody> <tr> <td>46</td><td>24</td><td>0</td><td>0</td><td>70</td><td>70</td></tr> </tbody> </table>						Theory (Marks)	Practical (Marks)	Project (Marks)	Viva (Marks)	Total (Marks)	Passing %age	46	24	0	0	70	70						
Theory (Marks)	Practical (Marks)	Project (Marks)	Viva (Marks)	Total (Marks)	Passing %age																				
46	24	0	0	70	70																				
13.	Other Indian languages in which the Micro Credential will be implemented	Hindi																							
14.	Is similar Micro Credentials Qualification(s) available on NQR-if yes, justification for this qualification	☐ Yes ☒ No																							
15.	Is the Job Role Amenable to Persons with Disability	☐ Yes ☒ No																							
		If "Yes", specify applicable type of Disability:																							
16.	How Participation of Women will be Encouraged	This job is gender neutral and focus during training should be on enrolment of women in each batch. SSC will encourage the TP and other training bodies to enrol women candidates.																							
17.	Name and Contact Details of Submitting / Awarding Body SPOC (In case of CS or MS, provide details of both Lead AB & Supporting ABs)	Name: Mr. SK Bose Email: ceo@hsscindia.in Contact No.: +91 9871115360 Website: www.hsscindia.in																							
18.	Final Approval Date by NSQC: 18/02/2025	19. Validity Duration: Three Years from the date of Approval			20. Next Review Date: 17/02/2028																				

Section 2: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Post Graduation in Chemistry with 6 years of relevant industry and 5 years of training experience in relevant field
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Post Graduation in Chemistry with 6 years of relevant industry and 6 years of training experience in relevant field
3.	Tools and Equipment Required for Training	☒ Yes ☐ No (If "Yes", details to be provided in Annexure)
4.	In Case of Revised Qualification, Details of Any Upskilling Required for Trainer	NA

Section 3: Assessment Related

	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Post Graduation in Chemistry with 6 years of relevant industry and 5 years of training experience in relevant field
	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Post Graduation in Chemistry with 6 years of relevant industry and 5 years of training experience in relevant field
	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Post Graduation in Chemistry with 6 years of relevant industry and 6 years of training experience in relevant field
	Assessment Mode (Specify the assessment mode)	Both – Online and Offline
	Tools and Equipment Required for Assessment	☒ Same as for training ☒ Yes ☐ No (details to be provided in Annexure-if it is different for Assessment)

Section 4: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	Latest Skill Gap Study (not older than 2 years) (Yes/No): Yes
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes
3.	Government /Industry initiatives/ requirement (Yes/No): Yes
4.	Number of Industry validation provided: 10 (Due to limited number of Industries available in Oil & Gas Sector; endorsed by MoPNG through Letter)
5.	Estimated nos. of persons to be trained and employed: Green Hydrogen System Design specialize in creating innovative and efficient facilities. Their expertise spans layout optimization, dispenser placement, hydrogen storage, and adherence to safety standards. Trained in state-of-the-art technologies, they ensure seamless station operation and user-friendly experiences. Committed to sustainability, their designs prioritize environmental impact reduction. These professionals contribute significantly to the growth of sustainable transportation, supporting the development of a robust network of Green Hydrogen Production Design Development. Through their skills in design, they play a crucial role in advancing clean energy solutions and fostering a more eco-friendly and resilient energy infrastructure.
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: The Ministry of Petroleum & Natural Gas (MoPNG) which is the Line Ministry for Hydrocarbon Sector has been requested to accord the concurrence

	If “No”, why:
--	---------------

Section 5: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	Annexure: NCrF/NSQF level justification based on NCrF level/NSQF descriptors (<i>Mandatory</i>)	Annexure: NCrF/NSQF level justification based on NCrF level/NSQF descriptors
2.	Annexure: List of tools and equipment relevant for qualification (<i>Mandatory, except in case of online course</i>)	Annexure: List of tools and equipment relevant for qualification
3.	Annexure: Detailed Assessment Criteria (<i>Mandatory</i>)	Annexure: Detailed Assessment Criteria
4.	Annexure: Assessment Strategy (<i>Mandatory</i>)	Annexure: Assessment Strategy
5.	Annexure: Blended Learning (<i>Mandatory, in case selected Mode of delivery is “Blended Learning”</i>)	Annexure: Offline Learning Mode
6.	Annexure: Multiple Entry-Exit Details (<i>Mandatory, in case qualification has multiple Entry-Exit</i>)	Annexure: NA
7.	Annexure: Acronym and Glossary (<i>Optional</i>)	Annexure: Acronym and Glossary
8.	Supporting Document: Model Curriculum (<i>Mandatory – Public view</i>)	Supporting Document: Model Curriculum
9.	Supporting Document: Career Progression (<i>Mandatory - Public view</i>)	Supporting Document: Career Progression – Occupational Map
10.	Supporting Document: Occupational Map (<i>Mandatory</i>)	Supporting Document: Occupational Map
11.	Supporting Document: Assessment SOP (<i>Mandatory</i>)	Supporting Document: Assessment SOP
12.	Any other document you wish to submit:	Any other document you wish to submit: NA

Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/ NSQF Level
Professional Theoretical Knowledge/Process	An individual needs a strong background in chemical engineering, renewable energy, and process optimization. Proficiency in electrochemical technologies, water electrolysis, and knowledge of catalysts is crucial. Familiarity with safety protocols, environmental regulations, and project management skills are essential. Theoretical understanding of thermodynamics, fluid dynamics, and renewable energy systems is vital for efficient design. Stay updated on emerging technologies, market trends, and innovation in the green energy sector to contribute effectively to sustainable hydrogen production.	- Advanced knowledge about a multi-disciplinary/ interdisciplinary/ cross disciplinary field of technology/ skills/ job role, with specialized in-depth knowledge in one or more related fields. - Has awareness and knowledge of the emerging and futuristic developments and issues in the chosen fields of technology/ skills/ job role. - Has advanced understanding and Knowledge about the Change management processes and systems.	6

		• Acquired advanced knowledge and skills on a wide range of sources for identifying problems and issues relating to the chosen fields of learning, and future improvements.	
Professional and Technical Skills/ Expertise/ Professional Knowledge	An individual in this job role demands expertise in chemical engineering, process optimization, and renewable energy technologies. Proficiency in electrochemical processes, particularly water electrolysis, is essential. Technical skills encompass knowledge of catalysts, reactor design, and renewable energy integration. Strong analytical abilities, problem-solving skills, and a deep understanding of safety standards are crucial. Additionally, proficiency in project management, collaboration, and staying abreast of advancements in green energy technologies are vital for success in this dynamic field.	• Possesses a range of advanced cognitive, professional and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of technology/ skills/ job role. • Wide range of cognitive and practical skills required to create innovative and feasible solutions to complex problems and situations in uncertain environment. • Project Management Skills • Understanding and application of techno-Commercial aspect of technology/associated skills or job role. • Skills to adapt to the future of work and to the demands of the fast pace of innovations and technological developments.	6
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	An individual in this job role includes effective communication to convey complex technical concepts, project management for coordinating multifaceted design processes, and adaptability to navigate evolving industry trends. Entrepreneurial skills, such as innovation and strategic thinking, are crucial for developing sustainable and cost-effective solutions. Additionally, networking and business acumen are essential for establishing collaborations, securing funding, and navigating regulatory landscapes. A proactive mindset and the ability to identify opportunities in the emerging green energy sector contribute to success in this dynamic field.	• Excellent leadership, Communication, collaboration and organizational skills • Possesses Administrative outlook and leadership traits for managing technical workforce. • Organisation and Time Management • Creative thinking and Innovation • Organizing, analyzing, interpreting and acting on the information and effectively communicating and presenting/ using its outcome for decision making. • A keen sense of observation, enquiry, and capability for asking relevant/ appropriate questions, • Managing complex technical or professional activities or projects, requiring effective, envisioning, planning & full personal responsibility for output of own work as well as for the outputs of the group as a member of the group/team • Apply leadership skills to manage people and resources for achieving organizational objectives and outcomes. Emotional intelligence	6
Broad Learning Outcomes/Core Skill	An individual in this job role involves acquiring a deep understanding of renewable energy systems, with a focus on hydrogen production, storage, and dispensing technologies. Proficiency in electrical and mechanical engineering, instrumentation, and sustainability principles is essential. Individuals should develop problem-solving skills to address complex challenges, stay abreast of evolving industry standards and technologies, and exhibit effective communication and collaboration in multidisciplinary teams. Additionally, a comprehensive grasp of	• Applies advance theoretical knowledge and specialized professional and technical skills involving complex variable environment and contexts. • Examine and assess the implications and consequences of emerging developments and critical issues. • Can identifying problems and issues relating to the chosen fields of learning, and ways of future improvements	6

	regulatory frameworks, environmental considerations, and entrepreneurial acumen are key for successfully contributing to the development of efficient and environmentally friendly green hydrogen refueling stations.	Exercises judgement based on evaluation of evidence from a range of sources to arrive at a solution to complex real-life problems in chosen fields of technology/ skills/ job role.	
Responsibility	An individual in this job role encompass designing and overseeing the implementation of efficient and sustainable hydrogen infrastructure. This includes conducting feasibility studies, developing technical specifications, and ensuring compliance with safety standards and environmental regulations. Professionals in this role are tasked with optimizing hydrogen production, storage, and dispensing systems, employing innovative solutions, and collaborating with multidisciplinary teams. Project management skills are crucial for coordinating various aspects of design, construction, and commissioning. Continuous research on emerging technologies and industry trends is also vital to ensure the development of cutting-edge and environmentally friendly refueling stations.	The individual is majorly responsible for his own job and self-learning process which justifies the pegging of the QP at level 6 Can perform all non-standard procedures and non-routine tasks with confidence.	6

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Hydrogen Dispensers, Compressors, Hydrogen Storage Tanks, Dispenser Communication Systems, Hydrogen Sensors, Payment and Authorization Systems, Safety Systems, Ventilation Systems, SCADA Systems, Backup Power Systems, Hydrogen Purification Systems, Remote Monitoring Systems, Pressure Relief Devices, Fuel Cell Vehicles Simulator, Weather Protection, Information Displays, Training Materials, Backup Storage Systems, Hydrogen Leak Detection Equipment, Maintenance Tools		NA
2	Personal Protective Equipment (PPE): Safety helmet, safety glasses, ear protection, respiratory protection (if required), protective gloves, safety boots.		NA

Classroom Aids

The aids required to conduct sessions in the classroom are:

- White / Black board and Projector
- Digital Presentation
- Computer/Laptop
- Public Addressing System

Annexure: Industry Validations Summary*

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)
1	OIL	Shri Jayant Barua	CEO		9435348638	jayantbarua@oilindia.in	
2	BPCL	Shri Vishwas Saxena	Dy. General Manager		9669320555	vishwassaxena@bharatpetroleum.in	
3	HPCL	Imtiyaz Arshad	CEO & Secretary		8332864450	iarshad@hpcl.in	
4	IOCL	Apurva Nagmote	DGM (Learning & Skill Development)		8373919522	nagmoteas@indianoil.in	
5	GAIL	Shri M. A. Qureshi	CM (Training)		9179061305	maqureshi@gail.co.in	
6	CPCL	Shri Ayyamuthu A	Assistant Manager (Personnel)		9732492888	ayyamuthu@cpcl.co.in	
7	CHT	Shri Kishore Kumar Bhimwal	Additional Director		9958798282	kishore.bhimwal@cht.gov.in	
8	MRPL	Shri Venkateswarlu Kumbha	Chief Manager (TS)		9035044404	venkat_kumbha@mrpl.co.in	
9	SOM Projects PVT. LTD.	Shri Kuldeep Kumar	Manager			spplusar@gmail.com	
10	EIL	Shri Tathagat Sahoo	SR Manager HR		9702088305	tathagat.sahoo@eil.co.in	

Annexure: Training & Employment Details**Training and Employment Projections: 1350**

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2024	350	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given tom college students	150	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given tom college students	20	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given tom college students
2025	450	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given tom college students	200	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given tom college students	20	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given tom college students

2026	550	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given to college students	250	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given to college students	20	Green Hydrogen is new in India, so training is given to develop future workforce. Training will be given to college students
------	-----	--	-----	--	----	--

Data to be provided year-wise for next 3 years

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET “Guidelines for Blended Learning for Vocational Education, Training & Skilling” available on:

<https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf>

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☐ Theory/ Lectures - Imparting theoretical and conceptual knowledge		Offline
2	☐ Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners		Offline
3	☐ Showing Practical Demonstrations to the learners		Offline
4	☐ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		Offline
5	☐ Tutorials/ Assignments/ Drill/ Practice		Offline
6	☐ Proctored Monitoring/ Assessment/ Evaluation/ Examinations		Offline
7	☐ On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training		Offline

Annexure: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Green Hydrogen production pathways, processes and its design	<i>Definition of Green Hydrogen and its production pathways</i>				
	PC1. Definition of Green Hydrogen and its production pathways	2	1		
	PC2. Emerging technologies and advancements in the field of green hydrogen production and cost optimization	2	1		
	PC3. Stay updated on emerging technologies and advancements in the field	2	1		
	PC4. Develop a strong understanding of renewable energy sources, such as solar and wind, as they are integral to green hydrogen production.	2	1		
	PC5. Understand of hydrogen's properties, including its flammability, explosive limits and potential hazards.	2	1		
	<i>Green hydrogen production processes</i>				
	PC6. Understand different green hydrogen production methods, including electrolysis (alkaline, PEM, and solid oxide), biomass gasification, and thermochemical processes.	2	1		
	PC7. Understand electrolyser-based hydrogen production, focus on electrochemistry principles.	2	1		
	PC8. Familiarize with power systems and grid integration to optimize hydrogen production using renewable energy.	2	1		
	PC9. Gain expertise in chemical process engineering, especially in processes related to hydrogen production, purification, and compression.	2	1		
	PC10. Understand the design and operation of electrolyzers, including alkaline, PEM, and solid oxide electrolyzers.	2	1		
	PC11. Understand reaction kinetics, thermodynamics, and mass transfer.	2	1		
	<i>Safety in Hydrogen Production Design</i>				
	PC12. Apply critical safety requirements for electrical equipment used in green hydrogen production, minimizing electrical hazards.	2	1		
	PC13. Understanding about instrumentation and control systems used in hydrogen production facilities.	2	1		
	PC14. Understanding process control to ensure efficient and safe operation.	2	1		
	PC15. Familiarize with safety protocols and regulations specific to hydrogen production and handling.	2	1		
	PC16. Build awareness about standard practices for the safe venting of hydrogen and oxygen, applicable industry standards and performance requirements for equipment and hoses, ensuring safe gas handling procedures.	2	1		

	PC17. Acquire knowledge on relevant industry standards and guidelines.	2	1		
	<i>Environmental Impact Assessment & Project Management</i>				
	PC18. Acquire Knowledge on environmental impact of hydrogen production methods and develop strategies for minimizing the carbon footprint.	2	1		
	PC19. Develop awareness about sustainability standards and certifications.	2	1		
	PC20. Acquire Project management skills to oversee the design, construction, and commissioning of green hydrogen production facilities.	2	1		
	PC21. Acquire Knowledge about procurement, scheduling, and budget management.	2	1		
	PC22. Adequacy of Communication and teamwork skills to collaborate effectively with multidisciplinary teams.	2	1		
	PC23. Develop skill to engage with stakeholders, including government agencies, investors, and community members.	2	2		
Total Marks		46	24		
Grand Total		46	24		

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SIDH or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- HSSC monitors the assessment process & records

2. Testing Environment:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIDH
- Check the duration of the training.
- Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels/Framework:

- Question bank is created by the Subject Matter Experts (SME) of Hydrocarbon Sector are verified by the Industry Experts, each performance criteria have its marks for theory based on the level of question i.e., easy, medium and difficult.

- Questions are mapped to the specified assessment criteria
- Assessor must be ToA certified & trainer must be ToT Certified

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Centre photographs with signboards and scheme specific branding
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:

- Surprise visit to the assessment location
- Random crosschecking with candidate over audio/video call or physical visit
- Random audit of the batch

6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored
- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
- Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

7. **On the Job:**

1. The evidence record of OHT will be done through organized Monitoring Reports
2. During the OJT, every trainee is required to fill the OJT monitoring report which is required to be signed by his/her supervisor and the HR of that company.
3. During assessment, each module will be assessed separately.
4. The candidate must score 60% in each module to successfully complete the OJT.
5. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and perform Soft Skills effectively:
 - Videos of Trainees during OJT
6. Assessment of each Module will ensure that the candidate is able to:
 - Effective engagement with the customers
 - Understand the working of various tools and equipment

Annexure: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)

NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf