

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Directorate General of Training (DGT)
Government of India, Ministry of Skill Development and Entrepreneurship,
1st and 2nd Floor, CIRTES Building
Next to Pusa ITI, Pusa Campus
New Delhi - 110012

Name and address of submitting body:

Directorate General of Training (DGT)
Government of India, Ministry of Skill Development and Entrepreneurship,
1st and 2nd Floor, CIRTES Building
Next to Pusa ITI, Pusa Campus
New Delhi - 110012

Name and contact details of individual dealing with the submission

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List of documents submitted in support of the Qualifications File

1. Competency-based curriculum (Annexure 1)
2. Advertisements of different organisations for posts relevant to NTC in the trade

Model Curriculum to be added which will include the following:

- **Indicative list of tools/equipment to conduct the training:** Enclosed with curricula
- **Trainers qualification:** Indicated in the curriculum

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- **Lesson Plan:** All NCVT curricula are designed indicating specific practical to be carried out during training along with details of trade theory. Based on this the concerned instructor prepares the Lesson Plan with support of Reference Books and IMPs developed by DGT.

Distribution of training duration into theory/practical/OJT component: Indicated in the curriculum.

1	Qualification Title	'Marine Engine Fitter'
2	Qualification Code, if any	N/A
3	NCO code and occupation	7233.0300 - Mechanic, Petrol Engine, 8211.0600 - Assembler, Stationary Diesel Engine
4	Nature and purpose of the qualification (Please specify whether qualification is short term or long term)	National Council for Vocational Training (NCVT) (long term qualification)
5	Body/bodies which will award the qualification	National Council for Vocational Training (NCVT) affiliates the ITIs as per DGT guidelines issued from time to time
6	Body which will accredit providers to offer courses leading to the qualification	National Council for Vocational Training (NCVT)
7	Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)	Yes. The accreditation/ affiliation norms for all training providers are as per DGT guidelines issued from time to time with approval of NCVT.
8	Occupation(s) to which the qualification gives access	Marine Engine Fitter has a wide scope of Employability ranging from self-employment, contractual employment to Industrial jobs. On successful completion of this course, the candidates shall be gainfully employed in the industries for following occupations: • Assembler, Stationary Diesel Engine • Mechanic, Petrol Engine
9	Job description of the occupation	Indicated in the curriculum
10	Licensing requirements	N/A
11	Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)	N/A

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12	Level of the qualification in the NSQF	Level 4		
13	Anticipated volume of training/learning required to complete the qualification	Sl. No.	Course Element	Notional Training Hours
		1	Professional Skill (Trade Practical)	1200
		2	Professional Knowledge (Trade Theory)	288
		3	Workshop Calculation & Science	96
		4	Engineering Drawing	144
		5	Employability Skills	110
		6	Library & Extracurricular activities	82
		8	Revision & Examination	160
			Total	2080
14	Indicative list of training tools required to deliver this qualification	As per Annexure enclosed in the curriculum		
15	Entry requirements and/or recommendations and minimum age	Passed 10th class examination under 10+2 system of education with Science and Mathematics or its equivalent.		
16	Progression from the qualification (Please show Professional and academic progression)	Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC).		
17	Arrangements for the Recognition of Prior learning (RPL)	- At present the students who have passed 10th class with minimum 3 years' experience in relevant field can appear for NCVT theory and practical semester examination directly. - The students who have passed SCVT examination in 'Marine Engine Fitter trade can also appear for the NCVT Examination in the relevant semester and Trade directly.		
18	International comparability where known (research	Existence of any official document suggesting the comparability of the		

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	evidence to be provided)	qualification with the qualifications in other countries is not known. 2. However, ITI passed out trainees are getting employment in many Gulf countries, European countries, Australia, New Zealand, Singapore etc.	
19	Date of planned review of the qualification.	March 2023	
20	Formal structure of the qualification		
	Mandatory components		
	Title of component and identification code/NOSs/Learning outcomes	Estimated size (learning hours)	Level
(i)	Plan and organize the work to make job as per specification applying different types of basic fitting operation and check for dimensional accuracy. [Basic fitting operation: marking, hack sawing, chipping, filing, drilling, Tapping]	160	4
(ii)	Demonstrate different joining operations observing standard procedure. [Different joints – bolt joints, riveting, gas welding arc welding, brazing, lock nut, cotter split pin etc.]	200	4
(iii)	Perform dismantling & assembling of multi-cylinder marine engine as per Makers' manual and check functionality.	440	4
(iv)	Overhaul Oil pump, Filters, Radiator, Cooling system and check functionality.	80	4
Semester – II			
(v)	Overhaul air compressor, turbo charger and perform Gas charging & leak Testing of engine refrigeration.	80	4
(vi)	Check the cooling & lubrication	40	4

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	system and conduct necessary maintenance as per requirement		
(vii)	Diagnosis engine faults Erect & Install Engines and ensure functionality.	360	4
(viii)	Repair & maintain Fuel feed systems, fuel Injection pump.	280	4
(ix)	Maintain shop floor tools & Equipments as per standard procedure.	80	4
(x)	Measure and test Electrical / Electronics circuits/ components and check performance.	120	4
(xi)	Revision, Project work and Examination	240	
	Sub Total (A)	2080	
	Optional components	N/A (All components are compulsory)	
	Title of component and identification code/NOSs/ Learning outcomes	Estimated size (learning hours)	Level
	Sub Total (B)		
<u>Total (A+B)</u>		<u>2080</u>	

SECTION 1
ASSESSMENT

21	Body/Bodies which will carry out assessment: National Council for Vocational Training (NCVT)									
22	How will RPL assessment be managed and who will carry it out? 1. At present the students who have passed 10th class with minimum 3 years' experience can appear for NCVT theory and practical semester examination directly. 2. The students who have passed SCVT examination in 'Marine Engine Fitter' trade can also appear for the NCVT Examination in the relevant semester and Trade directly. NCVT will carry out the assessment and State Directorates advertise in newspapers for informing the prospective candidates.									
23	Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF. (1) Assessment process: The assessment for the semester-based qualification is carried out by conducting formative assessments, and end-of-semester examinations. The internal assessments for theory subjects and practical are conducted by the concerned instructors for evaluating the knowledge and skill acquired by trainees and the behavioural transformation of the trainees. This internal assessment is primarily carried out by collecting evidence of competence gained by the trainees by evaluating them at work based on assessment criteria, asking questions and initiating formative discussions to assess understanding and by evaluating records and reports, and sessional marks are awarded to them. Theory and practical examinations are conducted in Trade theory, Workshop Calculation & Science, Engineering Drawing and Employability Skills. The question papers for the theory Examinations contain objective type questions. Trade practical examinations are conducted by the respective State Governments. However, the question papers for the Trade practical are prepared by NCVT. The marking pattern and distribution of marks for the qualification are as under: <table><tr><th colspan="3">Marking Pattern</th></tr><tr><th>Sl. No.</th><th>Subject for the trade test</th><th>Maximum marks for the each subject</th></tr><tr><td>a)</td><td>Practical</td><td>300</td></tr></table>	Marking Pattern			Sl. No.	Subject for the trade test	Maximum marks for the each subject	a)	Practical	300
Marking Pattern										
Sl. No.	Subject for the trade test	Maximum marks for the each subject								
a)	Practical	300								

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b)	Trade Theory	200
c)	Employability Skills	Objective type Written test of 200 marks (Trade Theory 150 marks & Employability Skills 50 marks)
d)	Work shop Calculation and Science.	100
e)	Engineering Drawing	Objective Type Written test of 100 marks (Engineering Drawing 50 marks & Work shop Calculation and Science 50 marks)
f)	Internal assessment	100
TOTAL:		700

(2) Minimum pass marks:

The minimum pass percentage for Practical is 60% & minimum pass percentage for Theory subjects is 40%. For the purposes of determining the overall result, 50% weightage is applied to the result of each semester examination.

(3) Testing and certifications for the course:

- OMR sheet based question paper.
- A panel of expert paper setters, who are graduates in the concerned field with minimum 5-7 years experience, is prepared for setting question papers for the Trade. The panel is vetted by the Member Secretary, NCVT.
- Paper setters are appointed from the panel after the approval of the competent authority for setting the question paper.
- The question papers are then moderated by the Board of Moderation to see if the paper is set as per the requirement and syllabus.
- The manuscripts of the moderated question papers are sent to Government Printing Presses for printing.
- Printed question papers, packed in sealed covers, are despatched to Banks/Police Stations for keeping in safe custody.
- The question papers are handed over to the Chairman/Principal of the Testing Centre two hours before the commencement of the Examination.
- An Examination Board consisting of representatives of

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	industry/Employer/State Government are set up to supervise and monitor the conduct of Examinations at every Centre. • Theory and practical Examinations are carried out with invigilators/examiners with the overall supervision of the Examination Board. • Examiners called for evaluation of practical should have minimum technical qualification of a Diploma in the respective engineering field. However, when diploma holders not available, the qualification is suitably relaxed. • Examiners for practical Examinations are appointed preferably from Polytechnics/ Engineering colleges/ Industry of repute/ Government Departments or from amongst retired qualified personnel possessing requisite qualifications and sufficient experience in the trade/discipline. • Each State Directorate prepares a panel of Examiners according to the norms as mentioned above and the Examiners are appointed from the panel. • Flying squads from State Governments as well as the Central Government are constituted to check malpractices during the conduct of Examinations. • OMR based answer sheets are evaluated by the third party evaluator only. Third party evaluator is selected for three years by open bidding process. • Evaluation of every practical examination is carried out by the concerned examiner (from industry/ polytechnics) with the overall supervision of the Examination Board in a free and fair manner as per the assessment criteria. • Till 2014, the marks were compiled by the State Governments as per NCVT guidelines and the results were declared by the State Governments. At present, the marks are compiled by NCVT on its portal www.ncvtmis.gov.in and the results are declared by the State Governments. • The successful trainees are awarded National Trade Certificates. Overall assessment strategy: Assessment of the qualification evaluates trainees to show that they can integrate knowledge, skills and values for carrying out relevant tasks as per the defined assessable outcomes and assessment criteria. The trainees may choose the preferred language for assessment. The underlying principle of assessment is fairness and transparency. While assessing the trainee, assessor is directed to assess as per the defined assessment criteria against the assessable outcomes. The evidence of the competence acquired by the trainees can be obtained by conducting theory and practical
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	examinations, observing the trainees at work, asking questions and initiating formative discussions to assess understanding and evaluating records and reports. The ultimate objective of the assessment is to assess the candidates as per the defined assessment criteria for the assessable/ learning outcomes. Specific Arrangements for assessment: • Assessment is outcome-based. • There are formative and summative assessments in Theory and Practical. • Assessment is carried out in Trade theory, Trade Practical, Workshop Calculation and Science, Engineering Drawing and Employability Skills. • While Trade Theory and Trade Practical are used for assessing Trade-related jobs, Workshop Calculation and Science is used to test trainee's numerical skills, Drawing is used to test the ability of the trainee to draw and read sketches and Employability skills is used to test the communication and language skills of the trainee. • In addition to demonstration of theory and practical knowledge, trainees get a chance to present total personality. Quality assurance activities: • Question papers are set by external paper setters • Evaluation of Theory Examinations is done by third-part agency. Third party evaluator is selected for three years by open bidding process. • Trade Practical is examined by External Examiner (as explained above).
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Please attach most relevant and recent documents giving further information about assessment and/or RPL.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

ASSESSMENT EVIDENCE

Complete a grid for each component as listed in “Formal structure of the the qualification” in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – ie Learning Outcomes to be assessed, assessment criteria and the means of assessment.

24. Assessment evidences

Title of Component: Marine Engine Fitter

GENERIC LEARNING/ ASSESSABLE OUTCOME:

Outcomes to be assessed/NOSs to be assessed	Assessment criteria for the outcome
1. Recognize & comply safe working practices, environment regulation and housekeeping.	1.1 Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements.
	1.2 Recognize and report all unsafe situations according to site policy.
	1.3 Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1.4 Identify, handle and store / dispose off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.
	1.5 Identify and observe site policies and procedures in regard to illness or accident.
	1.6 Identify safety alarms accurately.
	1.7 Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	1.8 Identify and observe site evacuation procedures according to site policy.
	1.9 Identify Personal Productive Equipment (PPE) and use the same as per related working environment.
	1.10 Identify basic first aid and use them under different circumstances.
	1.11 Identify different fire extinguisher and use the same as per requirement.

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	1.12 Identify environmental pollution & contribute to avoidance of same.
	1.13 Take opportunities to use energy and materials in an environmentally friendly manner
	1.14 Avoid waste and dispose waste as per procedure
	1.15 Recognize different components of 5S and apply the same in the working environment.
2. Understand and explain different mathematical calculation & science in the field of study including basic electrical. <i>[Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry, Mensuration, Trigonometry, Heat & Temperature, elasticity]</i>	2.1 Explain concept of basic science related to the field such as Material science, Mass, weight, density, heat & temperature, heat treatment.
	2.2 Measure dimensions as per drawing
	2.3 Use scale/ tapes to measure for fitting to specification.
	2.4 Comply given tolerance.
	2.5 Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.
	2.6 Ensure dimensional accuracy of assembly by using different instruments/gauges.
	2.7 Explain basic electricity, insulation & earthing.
3. Interpret specifications, different engineering drawing and apply for different application in the field of work. <i>[Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, Different Projections, Assembly drawing, Sectional views, Estimation of material]</i>	3.1 Read & interpret the information on drawings and apply in executing practical work.
	3.2 Read & analyse the specification to ascertain the material requirement, tools, and assembly /maintenance parameters.
	3.3 Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.

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4. Select and measure dimension of components and record data.	4.1	Select appropriate measuring scale/tape/gauges.
	4.2	Measure dimension of the components/assembly & compare with given drawing/measurement.
5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	5.1	Explain the concept of productivity and quality tools and apply during execution of job.
	5.2	Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.
	5.3	Knows benefits guaranteed under various acts
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	6.1	Explain the concept of energy conservation, global warming, pollution and utilize the available recourses optimally & remain sensitive to avoid environment pollution.
	6.2	Dispose waste following standard procedure.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	7.1	Explain personnel finance and entrepreneurship.
	7.2	Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	7.3	Prepare Project report to become an entrepreneur for submission to financial institutions.
8. Plan and execute the work related to the occupation.	8.1	Use documents, drawings and recognize hazards in the work site.
	8.2	Plan workplace/ assembly location with due consideration to operational stipulation
	8.3	Communicate effectively with others and plan project tasks
	8.4	Execute the task effectively.

Specific Assessable Outcome:

LEARNING/ ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
Semester-I	
9. Plan and organize the work to make job as per specification applying different types of basic fitting operation and check for dimensional accuracy. [Basic fitting operation: marking, hack sawing, chipping, filing, drilling, Tapping]	9.1 Observe safety procedure during all the operations as per the standard norms and guidelines.
	9.2 Plan the various operations involved, identify the tools and instruments and make this available in time.
	9.3 Obtain suitable raw material free from defects.
	9.4 Mark the dimensions on the job with marking tools as per standards
	9.5 Carryout the operations like hack sawing, chipping, filing etc as per the specification.
	9.6 Inspect the finished job as per the standard procedure and to ensure dimensions are within prescribed limit.
10. Demonstrate different joining operations observing standard procedure. [Different joints – bolt joints, riveting, gas welding arc welding, brazing, lock nut, cotter split pin etc.]	10.1 Plan and select appropriate tools and materials for timely use.
	10.2 Set the equipments observing safety
	10.3 Perform joining as per requirement
	10.4 Check the joint for conforming standard procedure of standard requirement
	10.5 Avoid waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.
11. Perform dismantling & assembling of multi-	11.1 Plan & select appropriate tools equipment for the work and make it available timely.

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cylinder marine engine as per Makers' manual and check functionality.	11.2 Dismantle the different components of multi cylinder marine engine.
	11.3 Check for any defects/correctness & measure dimensions of the components using appropriate instruments.
	11.4 Demonstrate possible solutions within the team using desired mathematical skills, knowledge of facts, principles, processes and general concept in the field of work.
	11.5 Solve problems during operation by selecting and applying basic methods, tools, materials and collect and organize information for quality output
	11.6 Assemble components & check functionality of engine.
12. Overhaul Oil pump, Filters, Radiator, Cooling system and check functionality.	12.1 Understand the procedure of the dismantling, servicing and assembling of the oil Pumps.
	12.2 Check the dismantled pumps and its parts and assemble the pumps in systematic order.
	12.3 Check filters during cleaning and re-assembly and precautions to be taken while working
	12.4 Identify Radiator, cooling system of Marine engine
	12.5 Check water pump refitting, adjustment of fan belt tension and connection of water pump with radiator hoses & flushing cooling system of the engine
Semester-II	
13. Overhaul air compressor, turbo charger and perform Gas charging & leak Testing of engine refrigeration.	13.1 Demonstrate risks involved in working with compressed air for auxiliary purposes.
	13.2 Overhaul Air compressor & Turbo charger
	13.3 Check & measure components by using appropriate instruments
	13.4 Charge gas to Refrigeration plants and check the performance
	13.5 Perform leak testing and maintenance of

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	compressor and connected equipments
14. Check the cooling & lubrication system and conduct necessary maintenance as per requirement.	14.1 Identify various parts of cooling and lubrication system and their functions.
	14.2 Plan & select appropriate tools to carry out the work
	14.3 Remove the parts of cooling & lubrication system and perform required maintenance as per standard procedure.
	14.4 Avoid waste, ascertain unused materials and components for disposal, store these in an environmentally appropriate manner and prepare for disposal.
	14.5 Observe safety/ precaution during the work.
	14.6 Test the cooling & lubrication system to check functionality
15. Diagnosis engine faults Erect & Install Engines and ensure functionality.	15.1 Plan & Collect relevant information to perform trouble shooting of Engine
	15.2 Diagnose the various defect & fault of engine
	15.3 Practice in erecting overhauled engines on stands & foundation
	15.4 Starting engine on foundation and observing for permissible vibrations
16. Repair & maintain Fuel feed systems, fuel Injection pump	16.1 Select appropriate tools & equipment and make use of them timely manner
	16.2 Dismantle fuel injector & feed pump
	16.3 Assemble and adjust the feed pump & Injector
	16.4 Test fuel feed system performance.
	16.5 Check the fuel injection pump performance as per set procedure
17. Maintain shop floor tools & Equipments as per standard procedure.	17.1 Collect relevant information related to shop floor equipment performance.
	17.2 Prepare Maintenance schedule to check daily, weekly, monthly for different Engines & Auxiliary Machines.
	17.3 Record the shop floor equipment on their utilization and maintenance.
18. Measure and test Electrical /	18.1 Study of AC & DC Current

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Electronics components and performance.	circuits/ and check	18.2	Identify the Basic Electrical & Electronic Parts
		18.3	Test for the simple circuits
		18.4	Check the performance as set procedure

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Means of assessment 1

Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

Means of assessment 2

Add boxes as required.

Pass/Fail

The minimum pass percentage is 40% for each Theory Examination and 25% for each part/section of the Examination separately, and 60% marks for each Trade practical Examination.

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SECTION 2

25. EVIDENCE OF LEVEL

OPTION A

Title/Name of qualification/component: Marine Engine Fitter			Level: 4
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	Familiar, Predictable, Routine Situations of Clear Choice - Plan and organize the work to make job as per specification applying different types of basic fitting operation and check for dimensional accuracy. [Basic fitting operation: marking, hack sawing, chipping, filing, drilling, Tapping] - Demonstrate different joining operations observing standard procedure. [Different joints – bolt joints, riveting, gas welding arc welding, brazing, lock nut, cotter split pin etc.] - Perform dismantling & assembling of multi-	In all the learning outcomes for example ‘Perform dismantling & assembling of multi-cylinder marine engine as per Makers’ manual and check functionality’ and ‘Overhaul air compressor, turbo charger and perform Gas charging & leak Testing of engine refrigeration’, the learner will be required to choose appropriate tools, equipments, Procedures as per the requirement of the job. The work will however be done within a familiar, predictable and routine range of situations to achieve the tolerance levels and accuracy demanded as per the job. Thus the learner requires to demonstrate ability to work in familiar, predictable, routine, situation of clear choice.	4

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Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	cylinder marine engine as per Makers' manual and check functionality. • Overhaul Oil pump, Filters, Radiator, Cooling system and check functionality. • Overhaul air compressor, turbo charger and perform Gas charging & leak Testing of engine refrigeration. • Check the cooling & lubrication system and conduct necessary maintenance as per requirement • Diagnosis engine faults Erect & Install Engines and ensure functionality. • Repair & maintain Fuel feed systems, fuel Injection pump. • Maintain shop floor tools & Equipments as per standard procedure. • Measure and test Electrical / Electronics circuits/ components and check performance.	Hence the NSQF level as per this descriptor will be 4.	

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Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Professional knowledge	Factual Knowledge of field of Knowledge or study • Description of hand tools, Safety precautions, care and maintenance and material from which they are made. • Systems of measurement conversion of English into metric measurement and vice versa – marking. • Study of sheet metal workers hand tools	The learner demonstrates factual knowledge of field of Occupational Safety & Health: Health, Safety and Environment guidelines, legislations & regulations as applicable. The learner also demonstrates knowledge of Quality control as required while assembling the Marine Engine as per Industry/Manufacturer's Standards. The learner understands and is able to demonstrate knowledge of Internal and	4

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Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	their description and uses • Two stroke cycle diesel engine types of scavenging uniflow and loop flow scavenge • Combustion chambers - open and closed types, advantages and disadvantages compression ratio & compression pressures. • Engine Valves & valves operation - mechanism - parts and function of each valve timing diagram, cam shaft and timing, gears • Friction - its meaning and importance methods to reduce friction in engines - use of lubricants - oil grease high detergent oil for diesel engine lubricants. • Need for cooling an engine general description & types of air and water • Description & operation of Air compressor, turbo chargers and common troubles & maintenance. • Step by Step method of diagnosis of	External Combustion Engines, Classification of IC engines, Principle & working of 2 & 4-stroke diesel engine (Compression ignition Engine (C.I) etc. Also the learner demonstrates knowledge of Conventional and Advanced Diesel Fuel Systems Diesel fuel system components , Electronic Diesel control systems. Hence NSQF Level 4 for this Descriptor	

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Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	troubles in the lubrication and cooling system, reasons for engine overheating & remedies for the same. • Reasons for excessive exhaust smoke overheating, vibration missing & hunting noises • Engine assembling practice for overhauling of engine - procedure, observations, precautions • Fuel injection Nozzles description and operation of each type spray angles and orifices • Fuel feed system in diesels - Air injection and airless injection systems their general description • Constructional details of fuel injection pumps, feed pumps and governors - explanation of function and operation. • Importance of periodical maintenance and upkeep of shop equipments. • BASIC ELECTRICAL WORK Simple		

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Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Professional skill	electrical circuit series & parallel circuits - identification of alternating current • Plan and organize the work to make job as per specification applying different types of basic fitting operation and check for dimensional accuracy. [Basic fitting operation: marking, hack sawing, chipping, filing, drilling, Tapping] • Demonstrate different joining operations observing standard procedure. [Different joints – bolt joints, riveting, gas welding arc welding, brazing, lock nut, cotter split pin etc.] • Perform dismantling & assembling of multi-cylinder marine engine as per Makers' manual and check functionality. • Overhaul Oil pump, Filters, Radiator, Cooling system and check functionality. • Overhaul air compressor, turbo charger and perform Gas charging & leak Testing	The learner after the trainer will be able to work independently and recall and demonstrate practical skill, routine and repetitive in narrow range of application for the learning outcomes such as 'Repair & maintain Fuel feed systems, fuel Injection pump' and 'Measure and test Electrical / Electronics circuits/ components and check performance'. This can be ascertained by reading the Assessment Criteria. The learning outcomes like Dismantle & assemble of Diesel Engine along with other accessories (torqueing methods, handling parts), Service Diesel Fuel System and check proper functionality , all of which involve making independent decisions using appropriate rule and tools.	4

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Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	of engine refrigeration. - Check the cooling & lubrication system and conduct necessary maintenance as per requirement - Diagnosis engine faults Erect & Install Engines and ensure functionality. - Repair & maintain Fuel feed systems, fuel Injection pump. - Maintain shop floor tools & Equipments as per standard procedure. - Measure and test Electrical / Electronics circuits/ components and check performance.	The same can be ascertained by reading the Assessment Criteria. The learning outcomes like” Check the cooling & lubrication system and conduct necessary maintenance as per requirement” requires the learner to perform the tasks assigned as per quality standards using quality concepts. The learner will also be responsible for own quality of work and will have to use quality tools to check own work to ensure conformance to requirements of the job. Hence NSQF Level is 4 for this descriptor	
Core skill	Language to communicate written or oral, with required clarity - Obtain sources of information and recognize information. - Use and draw up technical drawings and	The work of Mechanic Marine Engine Fitter involves Service, Repair & Overhaul of Marine Diesel Engines and Diesel Systems which requires competence in written language with required clarity in order to understand the work enlisted in the job card/service card.	4

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(Approved in 20th NSQC dated 9th April 2018)

Marine Engine Fitter

Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	documents. • Use documents and technical regulations and occupationally related provisions. • Conduct appropriate and target oriented discussions with higher authority and within the team. • Present facts and circumstances, possible solutions & use English special terminology. • Resolve disputes within the team • Conduct written communication. Desired Mathematical Skills • Demonstrate basic mathematical concept and principles to perform practical operations. • Basic skills in Arithmetic, Algebra, Trigonometry and statistics and apply knowledge of specific area to perform practical operations. Basic understanding of social political and	The learner will also need to communicate with team supervisor to understand the job and explain ones work which requires competence in oral language, with required clarity. The learner will also need to have basic understanding of social political and natural environment as mentioned in the learning outcome for example 'Comply environment regulation and housekeeping' Hence NSQF Level is 4 for this descriptor	

NSQF QUALIFICATION FILE

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Marine Engine Fitter

Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	natural environment • Understand and explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality. • Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources. • Explain entrepreneurship and manage/organize related task in day to day work for personal & societal growth. • Comply environment regulation and housekeeping. • Identify environmental pollution & contribute to the avoidance of instances of environmental pollution. • Deploy environmental protection legislation & regulations • Take opportunities to use energy and materials in an environmentally friendly manner		

NSQF QUALIFICATION FILE**(Approved in 20th NSQC dated 9th April 2018)****Marine Engine Fitter**

Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	• Avoid waste and dispose waste as per procedure • Recognize different components of 5S and apply the same in the working environment.		
Responsibility	• Plan and organize the work to make job as per specification applying different types of basic fitting operation and check for dimensional accuracy. [Basic fitting operation: marking, hack sawing, chipping, filing, drilling, Tapping] • Demonstrate different joining operations observing standard procedure. [Different joints – bolt joints, riveting, gas welding arc welding, brazing, lock nut, cotter split pin etc.] • Perform dismantling & assembling of multi-cylinder marine engine as per Makers' manual and check functionality. • Overhaul Oil pump, Filters, Radiator,	The role of Mechanic Marine Engine Fitter is independently responsible to perform the work as per specifications and their own analysis of what needs to be done based on their understanding of Diesel Engine working and Compression Ignition Engine Operation and basic Electrical& Electronics concepts, processes, principles and standards. This is indicated in all the learning outcomes. Hence NSQF Level is 4 for this descriptor	4

NSQF QUALIFICATION FILE**(Approved in 20th NSQC dated 9th April 2018)****Marine Engine Fitter**

Title/Name of qualification/component: Marine Engine Fitter		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	Cooling system and check functionality. • Overhaul air compressor, turbo charger and perform Gas charging & leak Testing of engine refrigeration. • Check the cooling & lubrication system and conduct necessary maintenance as per requirement • Diagnosis engine faults Erect & Install Engines and ensure functionality. • Repair & maintain Fuel feed systems, fuel Injection pump. • Maintain shop floor tools & Equipments as per standard procedure. • Measure and test Electrical / Electronics circuits/ components and check performance.		

NSQF QUALIFICATION FILE**(Approved in 20th NSQC dated 9th April 2018)**

Marine Engine Fitter

OPTION B

Title/Name of qualification/component: Enter the title here number			Level: Add level
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process			
Professional knowledge			
Professional skill			
Core skill			
Responsibility			

SECTION 3**EVIDENCE OF NEED**

26	What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate? <table border="1"> <tr> <th data-bbox="339 571 624 710">Basis</th><th data-bbox="624 571 818 710">In case of SSC</th><th data-bbox="818 571 1398 710">In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</th></tr> <tr> <td data-bbox="339 710 624 884">Need of the qualification</td><td data-bbox="624 710 818 884"></td><td data-bbox="818 710 1398 884">The proposed qualification is running in the system for last few decades and passed out candidates are engaged in various related industries.</td></tr> <tr> <td data-bbox="339 884 624 1310">Industry Relevance</td><td data-bbox="624 884 818 1310"></td><td data-bbox="818 884 1398 1310">The job role defined for the qualification is as per the National Qualification of Occupation 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. This justifies the qualification is very much relevance for industry.</td></tr> <tr> <td data-bbox="339 1310 624 1485">Usage of the qualification</td><td data-bbox="624 1310 818 1485"></td><td data-bbox="818 1310 1398 1485">The Proposed qualification is running in ITI system across the country successfully over the period of time.</td></tr> <tr> <td data-bbox="339 1485 624 1606">Estimated uptake</td><td data-bbox="624 1485 818 1606"></td><td data-bbox="818 1485 1398 1606">The present seating capacity is approximately 210</td></tr> </table>	Basis	In case of SSC	In case of other Awarding Bodies (Institutes under Central Ministries and states departments)	Need of the qualification		The proposed qualification is running in the system for last few decades and passed out candidates are engaged in various related industries.	Industry Relevance		The job role defined for the qualification is as per the National Qualification of Occupation 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. This justifies the qualification is very much relevance for industry.	Usage of the qualification		The Proposed qualification is running in ITI system across the country successfully over the period of time.	Estimated uptake		The present seating capacity is approximately 210
Basis	In case of SSC	In case of other Awarding Bodies (Institutes under Central Ministries and states departments)														
Need of the qualification		The proposed qualification is running in the system for last few decades and passed out candidates are engaged in various related industries.														
Industry Relevance		The job role defined for the qualification is as per the National Qualification of Occupation 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. This justifies the qualification is very much relevance for industry.														
Usage of the qualification		The Proposed qualification is running in ITI system across the country successfully over the period of time.														
Estimated uptake		The present seating capacity is approximately 210														
27	Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences. This qualification is run by Ministry of Skill Development and Entrepreneurship and different industries under the related line ministry are also generally consulted before finalizing the curricula.															

Marine Engine Fitter

28	What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification The qualification is originally designed and approved by NCVT for the Craftsmen Training Scheme and is in existence for the last 60 years. NCVT has been entrusted with the responsibilities of prescribing standards and curricula for craftsmen training, advising the Government of India on the overall policy and programmes, conducting All India Trade Tests and awarding National Trade Certificates.
29	What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? Specify the review process here • Mentor Council (MC) for the Production and Manufacturing sector was formed in 2014 to review the curriculum of this qualification under the sector. • CSTARI, the research wing of DGT, reviews and updates the qualification, in consultation with industries and other stakeholders, on a regular basis by conducting trade committee meetings. • DGT will keep on doing continuous comparative study in the trade by referring to relevant upcoming qualifications in the National Qualifications Register (NQR) and relevant sectors.

Please attach most relevant and recent documents giving further information about any of the topics above.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

SECTION 4

EVIDENCE OF PROGRESSION

30	What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector? <i>Show the career map here to reflect the clear progression</i> • Qualifying trainee will obtain an NCVT Certificate in Marine Engine Fitter trade which gives the following options of progression to the trainee: i) National Apprenticeship Certificate or ii) lateral entry to Diploma in notified branches of Engineering, as permitted by State Boards of
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	Technical Education
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Please attach most relevant and recent documents giving further information about any of the topics above.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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