

Revision made by NSDA\_25 May, 2015

### QUALIFICATION FILE – CONTACT DETAILS OF SUBMITTING BODY

Name and address of submitting body:

Indian Iron and Steel Sector Skill Council

Address:- Royal Exchange, 6 N.S. Road, Kolkata- 700 001

Tel: 09831052652

### Name and contact details of individual dealing with the submission

Name: Parimal Biswas

Position in the organisation: Chairman of NOS Committee & Director IISSSC

Address if different from above

*Same as above*

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### List of documents submitted in support of the Qualifications File

1. Qualification Pack
2. RFP for development of Occupational Standards
3. IISSSC Protocol for Accreditation of Assessment Agencies and Assessment Framework.
4. Sample of assessors guide
5. Occupational Map & Progression matrix
6. List of companies and Industry associations participated in the development of this qualification.
7. List of QP/NOS validating companies.

## 8. QUALIFICATION FILE SUMMARY

Qualification Title	Cast House Senior Operator		
Body/bodies which will assess candidates	Affiliated Assessment Agencies		
Body/bodies which will award the certificate for the qualification.	Indian Iron & Steel Sector Skill Council		
Body which will accredit providers to offer the qualification.	Indian Iron & Steel Sector Skill Council		
Occupation(s) to which the qualification gives access	Cast House Senior Operator		
Proposed level of the qualification in the NSQF.	4		
Anticipated volume of training/learning required to complete the qualification.	190 hours		
Entry requirements / recommendations.	Class 10 <sup>th</sup> Pass, ITI Pass and 18 years of age		
Progression from the qualification.	Furnace Foreman		
Planned arrangements for RPL.	RPL arrangements and policies are under development. The guidelines should be ready in 2-3 months.		
International Comparability	While writing the NOSs the European, Australian and Canadian NOSs were also referred to and an effort was taken to maintain comparability in the technical part of the NOSs. However Numeracy, literacy and basic science levels are lower in order to match with the existing Indian conditions.		
Formal structure of the qualification			
Title of unit or other component (include any identification code used)	Mandatory/ Optional	Estimated size (learning hours)	Level
ISC/N0424: Understand the assigned job for cast house preparation and operation	Mandatory	190	4
ISC/N0425: Understand the operational practice of blast furnace stoves	Mandatory		
ISC/N0426: Understand the operational practice of stock house	Mandatory		
ISC/N0008: Use basic health and safety practices at the workplace	Mandatory		
ISC/N0009: Work effectively with others	Mandatory		

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum or Qualification Pack.

Give details of the document here: Qualification pack is sent with the Qualification file

## SECTION 1

### ASSESSMENT

Name of assessment body:

Prima Competencies Pvt. Ltd.

Will the assessment body be responsible for RPL assessment?

YES

Selection and due diligence of applicants are done as per IISSSC Protocol for Assessment Bodies and Assessment Framework.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF:

The emphasis is on 'learning-by-doing' and practical demonstration of skills and knowledge based on the performance criteria. The assessment papers are developed by Subject Matter Experts (SME) available with the Assessment Agency as per the performance and assessment criteria mentioned in the Qualification Pack. The assessments papers are also checked for the various outcome based parameters such as quality, time taken, precision, tools & equipment requirement etc. The assessment sets are then reviewed by IISSSC official for consistency. The assessments are designed so as to assess maximum parts during the practical hands on work. Duties and responsibility of a welder are also assessed. The technical limitations at the training centres are taken care in theory and viva. Criteria such as use of lift to pick heavy objects or selection of fire extinguisher during a fire, first aid are also assessed under theory/viva.

Different NDT as well as Destructive Testing carried out on the job as per welding standard.

The assessment agencies are 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 minimum 15 years industry experience as an ITI graduate / minimum 10 years' industry experience as diploma engineer and minimum 5 years' industry experience as Graduate Engineer / Master Degree holder.

The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to IISSSC Assessment Framework, competency based assessments, assessors guide etc.

The assessors are provided with assessors guide developed by the Subject Matter Expert of the assessment agency as per the assessment framework. The assessment guides are developed to ensure the maximum possible consistency / transparency in the assessment by different assessors and elaborate on the following

1 Qualification Pack Structure

2 Guidance for the assessor to conduct theory, practical and viva assessments

3 Guidance for trainees to be given by assessor before the start of the assessments.

4 Guidance on assessments process, practical brief with steps of operations practical observation checklist Attendance Sheet and mark sheet

5 Viva guidance for uniformity and consistency across the batch

6 Guidance on assessment evidence collection

A sample format of Assessment Guide for Fitter-Fabrication is attached. Similar Assessor Guides are developed and shared with the assessors before the start of the assessments as standard practices for all assessments by IISSSC. The Sample of Assessor Guide is attached as Annexure.

The assessment results are backed by evidences collected by assessors.

1 The assessor needs to collect a copy of the attendance for the training done under the scheme.

The attendance sheets are signed and stamped by the In charge /Head of the Training Centre.

2 The assessor needs to verify the authenticity of the candidate by checking the photo ID card issued by the institute as well as any one Photo ID card issued by the Central/Government. The same needs to be mentioned in the attendance sheet. In case of suspicion, the assessor should authenticate and cross verify trainee's credentials in the enrolment form.

3 The assessor needs to punch the trainee's roll number on all the test pieces. Different sections can have alpha numbering. For example a student roll number is ABC then the three pieces can be numbered and punched as ABC1, ABC2 and ABC3.

4 The assessor needs to take a photograph of all the students along with the centre name/banner at the back as evidence.

5 The assessor needs to carry a camera to click photograph of the trainees working on the job and giving theory exam as evidence.

6 The assessor also needs to carry a photo ID card.

7 The assessor also needs to take the photographs as evidence from appropriate angles/sides of the final work piece/job submitted by the trainee.

8 The assessor needs to indicate the parts for different Destructive testing as per standards mentioned in the assessment guide.

The details on assessment framework are elaborated in IIS SSC Protocol for Accreditation of Assessment Agencies and Assessment Framework.

All IIS SSC accredited Assessment Agency follow the "IIS SSC Protocol for Accreditation of Assessment Agencies and Assessment Framework". The assessment by assessment agency will be completely based on the assessment criteria as mentioned in the Qualification Pack. Each NOS in the Qualification Pack (QP) will be assigned a relative weightage for assessment based on the criticality of the NOS. Therein each Performance Criteria in the NOS will be assigned marks for or practical based on relative importance, criticality of function and training infrastructure.

The following tools are proposed to be used for final assessment:

1 Practical Assessment: This will comprise of a test hands on job to be prepared as per figure/engineering drawing by following appropriate working steps, using necessary tools, equipment and instruments.

Candidate's aptitude, safety consciousness, quality consciousness etc. will be ascertained by observation and will be marked in observation checklist.

The end product will be measured against the specified dimensions and standards (like tolerance, finish, accuracy, time etc.) to gauge the level of his skill achievements

2 Viva/Structured Interview: This tool will be used to assess the conceptual understanding and the behavioural aspects as regards the job role and the specific task at hand. It will also include questions on safety, quality, environment, tools and equipment's etc.

3 Written Test: Under this test few key items which cannot be assessed practically will be assessed. The written assessment will comprise of

- i. True / False Statements
- ii Multiple Choice Questions
- iii Matching Type Questions.

Optical Mark Recognition (OMR)/ Online System for this will be preferred on place of written test subject to available required infrastructure.

Please attach any documents giving further information about assessment and/or RPL.

Give details of the document(s) here:

**ASSESSMENT EVIDENCE**

Complete the following grid for each grouping of NOS, assessment unit or other component as per the assessment criteria. Insert the required number of rows.

CRITERIA FOR ASSESSMENT OF TRAINEES

Cast House Senior Operator  
ISC/Q0407  
Indian Iron & Steel Sector Council

Guidelines for Assessment

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 proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS further each trainee must also score a minimum of 40% in each element assessed within every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessable Outcome	Assessment Criteria	Marks Allocated			
		Total Marks 1000	Out Of	Theory	Practical
ISC/N0424: Understand the assigned job for cast house preparation and operation	PC1. Interpret the log book report for the previous shift	300	20	10	10
	PC2. Ensure the cleanliness of the cast house including hot metal and slag runners including: <ul style="list-style-type: none"> <li>• Tap hole maintenance</li> <li>• Trough preparation (desirable and non-desirable)</li> <li>• Metal runner preparation</li> <li>• Slag runner preparation</li> <li>• Diamond crossing preparation</li> <li>• Spout jam removal</li> </ul>		25	5	20
	PC3. Plan as appropriate to carry out the casting schedule as per Standard Operating Procedure (SOP) e.g. making hook, clay spoon dally etc.		30	10	20

	PC4. Ensure proper operation of cast house equipment (mud gun, tap hole drill machine, overhead crane etc.) including mud gun cleaning and filling and EOT crane operation (remote or pendant)		25	5	20
	PC5. Ensure disposing the scrap and debris as per standard practice including house keeping		20	5	15
	PC6. Ensure the tap hole is ready for opening the cast		25	5	20
	PC7. Ensure that the hot metal ladle, cast house granulation plant is ready / slag ladles are ready for opening the cast		30	10	20
	PC8. Open the cast with the help of tap hole drill machine		25	5	20
	PC9. Ensure casting schedule and practices		25	5	20
	PC10. Ensure closing the tap hole properly with the help of mud gun after finishing of cast including trough discharge, discharge hole cleaning and closing, discharge runner preparation etc.		25	5	20
	PC11. Ensure lancing of tap hole and tuyer during shutdown and break down		25	5	20
	PC12. Carry out tuyer muddling and cleaning during shutdown		25	5	20
		Total	300	75	225
ISC/N0425: Understand the operational practice of blast furnace stoves	PC1. Ensure to maintain the temperature and blast pressure steady for smooth operation of blast furnace	250	35	10	25
	PC2. Ensure supply of blast furnace gas steadily for stove heating		35	10	25
	PC3. Ensure steady air pressure and volume is available from the blower		35	10	25



	PC4. Ensure proper functioning of all stove valves e.g. hot blast, clod blast, chimney valves, control/ measuring instruments and automatic regulators		40	10	30
	PC5. Ensure stove changing as per norms (one and half hour on blast, three hours on gas)		35	5	30
	PC6. Ensure blast furnace gas is properly clean with respect to dust and moisture		35	10	25
	PC7. Ensure proper ratio of blast gas and air for combustion		35	5	30
		Total	250	60	190
ISC/N0426: Understand the operational practice of stock house	PC1. Ensure steady operation of skip car, scale car and stock level at the bunker	200	40	10	30
	PC2. Ensure charging through conveyor system steadily		40	10	30
	PC3. Ensure steady stock level as per furnace operating condition		40	10	30
	PC4. Ensure proper sequence of charge mix e.g. Coke-Coke-Ore-Ore-Stone (C-C-O-O-S) depending on the temperature and peripheral gas pressure		40	10	30
	PC5. Ensure CO2 contain in blast furnace gas along the radius and centre of the furnace is same or 1-2% less		40	10	30
		Total	200	50	150
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	150	10	5	5
	PC2. State the name and location of people responsible for health and safety in the workplace		5	0	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		1	0	1

PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace	9	5	4
PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role	10	5	5
PC6. State location of general health and safety equipment in the workplace	5	0	5
PC7. Inspect for faults, set up and safely use steps and ladders in general use	5	0	5
PC8. Work safely in and around trenches, elevated places and confined areas	5	0	5
PC9. Lift heavy objects safely using correct procedures	5	0	5
PC10. Apply good housekeeping practices at all times	1	0	1
PC11. Identify common hazard signs displayed in various areas	6	5	1
PC12. Retrieve and/or point out documents that refer to health and safety in the workplace	4	0	4
PC13. Use the various appropriate fire extinguishers on different types of fires correctly	9	5	4
PC14. Demonstrate rescue techniques applied during fire hazard	10	5	5
PC15. Demonstrate good housekeeping in order to prevent fire hazards	1	0	1
PC16. Demonstrate the correct use of a fire extinguisher	4	0	4
PC17. Demonstrate how to free a person from electrocution	5	0	5

	PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		10	5	5
	PC19. Demonstrate basic techniques of bandaging		5	0	5
	PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		10	5	5
	PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments		5	0	5
	PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		5	0	5
	PC23. Demonstrate the artificial respiration and the CPR Process		5	0	5
	PC24. Participate in emergency procedures		5	0	5
	PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		9	5	4
	PC26. Demonstrate correct method to move injured people and others during an emergency		1	0	1
		Total	150	45	105
ISC/N0009: Work effectively with others	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	5	5

PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt	10	5	5	
PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand	10	0	10	
PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible	10	5	5	
PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks	10	5	5	
PC6. Display appropriate communication etiquette while working	10	0	10	
PC7. Display active listening skills while interacting with others at work	10	0	10	
PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	10	5	5	
PC9. Demonstrate responsible and disciplined behaviours at the workplace	15	5	10	
PC10. Escalate grievances and problems to supervisor	5	0	5	
	Total	100	30	70

## SECTION 2

### EVIDENCE OF NEED

What evidence is there that the qualification is needed?

While collecting data from the companies for the occupational map, we also took feedback from industry, which was collected with respect to roles for which qualification packs development, was to be prioritized. This was largely based on volume of people required, quantitative and qualitative shortfall which the Industry feels they face. Governing council of IISSC gave final approval and endorsement for the same.

What is the estimated uptake of this qualification and what is the basis of this estimate?

Skills Gap analysis Reports for industry demand and secondary research data, though these do not lend to accurate demand projection. The link to NSDC Human Resource & Skills Requirement in IISSC

- Feedback from industry for demand though again sample size may not lend to accurate figures
- Training duration, and current and potential training capacity envisaged
- An LMIS development initiative is being put in place to be more precise regarding the demand and supply

What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF?

NSDC list of Approved and Under-Development QPs was checked prior to commissioning the work

NSDC QRC team also confirmed the same

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?

Agencies have been appointed by the SSC to interact with training providers to gather feedback in implementation.

Employer feedback will be sought post- placement.

A formal review is scheduled after two year time.

Please attach any documents giving further information about any of the topics above.  
Give details of the document(s) here:

### SECTION 3

#### SUMMARY EVIDENCE OF LEVEL

Summary of Direct Evidence:

- Understand the job/operations, processes including cast house accessories before cast
- Open the tap hole for casting along with all necessary preparation
- Maintain smooth casting to run steady operation of blast furnace
- Ensure steady operation of blast furnace stoves
- Ensure functioning of all blast furnace stove valves
- Maintain heating schedule of blast furnace stoves
- Ensure steady operation of stock house charging system
- Regulate proper charge sequence for utilization of thermal and chemical energies

- Use Health and safety procedures, Fire safety procedures & Emergencies, rescue and first-aid procedures at workplace
- Ensure appropriate communication with superiors, peers and others as applicable at work place
- Demonstrate appropriate behaviour and etiquette at work place

Justify the NSQF level allocated to the QP by building upon the five descriptors of NSQF. Explain the reasons for allocating the level to the QP.

Generic NOS is/are linked to the overall authority attached to the job role.

Cast House Senior Operator (ISC/Q0407)					
Process required	Professional Knowledge	Professional Skills	Core Skills	Responsibility	Level
The job deals with operating cast house equipment e.g: cast house crane, mud-gun, tap hole drill machine, trough heating, preparation of mud-gun clay and necessary preparation for maintaining the cast schedule. The activities involved are opening the tap hole for casting, maintaining smooth casting to run steady operation of blast furnace, ensuring steady operation of blast furnace stove, ensuring functioning of all blast furnace stove valves, maintaining	The job holder is expected to be aware of capacity of handling equipment working practices with the equipment and its applications, tools and tackles required for handling equipment, He should have knowledge of normal running characteristics of relevant equipment operation of the cast house crane, etc. functioning of blast furnace stove including valve operation	The job holder should be able to Identify problems with work planning, procedures, output, behaviour and their implications, prioritize and plan for problem solving communicate problems appropriately to others identify sources of information and support for problem solving seek assistance and support from other sources to solve problems identify effective resolution techniques select and apply	The job holder should be able to construct simple sentences, & express ideas clearly through written communication, fill up appropriate activity logs, read & interpret previous shift log book, health & safety instruction, memos, reports, job cards etc., respond appropriately to queries. The job holder is expected to communicate with the supervisor & subordinates	The job holder is responsible for operating cast house equipment e.g. cast house crane, mud-gun. He is responsible for planning, organizing and prioritizing the job as received from the supervisor, managing the schedule plan for the operators and helpers on the line/shift validating all process/ equipment manuals organizing information, tools & tackles	4

heating schedule of blast furnace stoves, regulating proper charge sequence for utilization of thermal and chemical energies. The job holder is expected to work in familiar, predictable & routine situation of clear choice.	(hot and cold blast valve), functioning of blower, chimney valves and stove changing, blow stock and tuyer stock charging activities during shutdown. The job holder is expected to have factual knowledge of field of study.	resolution techniques, seek evidence for problem resolution. The job holder is expected to recall & demonstrate practical skill, routine & repetitive in nature & involves narrow range of application.	with clarity & have basic understanding of social political & natural environment	required for the job, manuals etc. on the shop floor reorganizing resources on the line/ shift in case of change of plans. The job holder is expected to be responsible for own work & learning	
Level 4	Level 4	Level 4	Level 4	Level 4	

**OTHER EVIDENCE OF LEVEL** [This need only be filled in where evidence other than primary outcomes was used to allocate a level] (Optional)

Summary of other evidence (if used):

Accepted by QRC and validated by industry

## SECTION 4

### EVIDENCE OF RECOGNITION OR PROGRESSION

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?

Horizontal and vertical mobility options have been articulated

Please attach any documents giving further information about any of the topics above.  
Give details of the document(s) here: