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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	Shift In Charge Furnace: Ferro Alloys (ISC/Q5301)		
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	Shift in-charge for entire production process		
Proposed level of the qualification in the NSQF.	5		
Anticipated volume of training/learning required to complete the qualification.	200 hrs		
Entry requirements / recommendations.	Diploma (metallurgical / mechanical, /electrical) pass and 18 years of age		
Progression from the qualification.	Unit Incharge – Ferro Alloys		
Planned arrangements for RPL.	RPL arrangements and policies are under development. The guidelines should be ready in 2-3 months.		
International Comparability	<p>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.</p> <p>However Numeracy, literacy and basic science levels are lower in order to match with the existing Indian conditions.</p>		
Formal structure of the qualification			
Title of unit or other component (include any identification code used)	Mandatory/ Optional	Estimated size (learning hours)	Level
ISC/N5301: Carry out shift operation	Mandatory	200	5
ISC/N5302: Carry out reporting and documentation	Mandatory		
ISC/N5303: Carry out quality checks	Mandatory		
ISC/N5304: Carry out problem identification and escalation	Mandatory		
ISC/N0008: Use basic health and safety practices at the work place	Mandatory		

ISC/N009: Works effectively with others and manage team members	Mandatory		
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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

Shift In Charge Furnace: Ferro Alloys

ISC/Q5301

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/N5301: Carry out shift operation	PC 1. Understand various chemical reactions that are taking place in the furnace	400	45	15	30
	PC 2. Understand the importance of gases that are evolved during operation		10	5	5
	PC 3. Understand activities that are involved in Gas Cleaning system		10	5	5
	PC 4. Understand the Metal & Slag chemistry		10	5	5
	PC 5. Ensure periodical checks for Quality Assurance		10	5	5
	PC 6. Operate at rated capacity		40	15	25
	PC 7. Understand Electrode Management and balancing uniform currents		40	15	25

PC 8. Ensure timely feed to the furnace	40	15	25
PC 9. Ensure timely evacuation of the hot metal	20	5	15
PC 10. Check Raw material day bins and the quality reports available on daily basis	15	5	10
PC 11. Ensure periodical calibration of scales involved (PLC / Microprocessors)	15	5	10
PC 12. Prepare material balance and verify the burden preparation.	25	10	15
PC 13. Communicate with immediate supervisor for any deviation on quality	7	2	5
PC 14. Carry out corrections for moisture variations	7	2	5
PC 15. Ensure to collect raw material analysis reports for preparation of burden	7	2	5
PC 16. Interpret Metal & Slag tapping analysis	10	5	5
PC 17. Carry out intermediate corrections if required and inform to supervisor	10	5	5
PC 18. Customer requirements and segregation of non-conformities	7	2	5
PC 19. Ensure equipment availability post discussion with Mechanical / Electrical shift In charges	10	5	5
PC 20. To spare equipment timely for preventive maintenance and avoid break-downs	7	2	5
PC 21. Ensure evacuation of Finished goods with Logistic & product handling departments	7	2	5
PC 22. Ensure availability of reports from Quality assurance team	5	3	2
PC 23. Ensure availability of man power and check absenteeism / additional	7	2	5

	requirements with HR				
	PC 24. Ensure Safety & Environmental precautions in coordination with respective departments		7	2	5
	PC 25. Ensure Tap to Tap product handling		7	2	5
	PC 26. Ensure safety precautions while hot metal is handled		7	2	5
	PC 27. Transfer of slag and Metal to respective areas		5	2	3
	PC 28. Identify non conformities and take precautionary steps		10	5	5
		Total	400	150	250
ISC/N5302: Carry out reporting and documentation	PC1. Report data/problems/incidents as applicable in a timely manner	100	15	5	10
	PC2. Report to the appropriate authority as laid down by the company		15	5	10
	PC3. Follow reporting procedures as prescribed by the company		20	5	15
	PC4. Identify documentation to be completed relating to one's role		5	2	3
	PC5. Record details accurately an appropriate format		5	2	3
	PC6. Complete all documentation within stipulated time according to company procedure		5	2	3
	PC7. Ensure that the final document meets with the requirements of the persons who requested it or make any amendments accordingly		15	5	10
	PC8. Make sure documents are available to all appropriate authorities to inspect		5	2	3
	PC9. Take back up and preserve them in CD wherever applicable		5	3	2

	PC10. Respond to requests for information in an appropriate manner whilst following organizational procedures		5	2	3
	PC11. Inform the appropriate authority of requests for information received		5	2	3
		Total	100	35	65
ISC/N5303: Carry out quality checks	PC1. Ensure that total range of checks are periodically regularly and consistently performed	150	25	10	15
	PC2. Use appropriate measuring instruments, equipment, tools, accessories etc. as required		25	10	15
	PC3. Identify non-conformities to quality assurance standards		1	0	1
	PC4. Identify potential causes of non-conformities to quality assurance standards		14	5	9
	PC5. Identify impact on final product due to non-conformance to company standards		15	5	10
	PC6. Evaluating the need for action to ensure that problems do not recur		15	5	10
	PC7. Take corrective action to address problem		15	5	10
	PC8. Review effectiveness of corrective action		15	10	5
	PC9. Interpret the results of quality check		1	0	1
	PC10. Inform any non-conformity to the appropriate authority within the stipulated time.		4	2	2
	PC11. Record of results of action taken		5	2	3
	PC12. Record adjustments not covered by established procedures for future reference		5	2	3

	PC13. Review effectiveness of action taken		5	2	3
	PC14. Follow reporting procedures where the cause of defect cannot be identified		5	2	3
		Total	150	60	90
ISC/N5304: Carry out problem identification and escalation	PC1. Identify defects/indicators of problems	100	5	2	3
	PC2. Identify any wrong practices that may lead to problems		5	2	3
	PC3. Identify practices that may impact the final product quality		5	2	3
	PC4. Identify if the problem has occurred before		5	2	3
	PC5. Identify other operations that might be impacted by the problem		5	2	3
	PC6. Ensure that no delays are caused as a result of failure to escalate problems		3	0	3
	PC7. Take appropriate materials and sample to conduct tests		5	2	3
	PC8. Evaluate results to confirm suspected reasons for non-conformance (where required)		5	2	3
	PC9. Consider possible reasons for identification of problems		5	2	3
	PC10. Consider applicable corrections and formulate corrective action		5	2	3
	PC11. Formulate action in a timely manner		5	2	3
	PC12. Communicate problem/remedial action to appropriate parties		3	0	3
	PC13. Take corrective action in a timely manner		3	0	3

	PC14. Report/document problem and corrective action in an appropriate manner		5	2	3
	PC15. Monitor corrective action		3	0	3
	PC16. Evaluate implementation of corrective action taken to determine if the problem has been resolved		5	2	3
	PC17. Ensure that corrective action selected is viable and practical		3	0	3
	PC18. Ensure that correct solution is identified to an identified problem		5	2	3
	PC19. Take corrective action for problems identified according to the company procedures		5	2	3
	PC20. Ensure that no delays are caused as a result of failure to take necessary action		3	0	3
	PC21. Escalate problem as per laid down escalation matrix		3	0	3
	PC22. Escalate the problem within stipulated time		3	0	3
	PC23. Escalate the problem in an appropriate manner		3	0	3
	PC24. Ensure that no delays are caused as a result of failure to escalate problems		3	0	3
		Total	100	28	72
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/N0096: Work effectively with others and manage team members	PC1. Accurately receive, absorb and share information and instructions from the supervisor and fellow workers, getting clarification where required	100	5	0	5
	PC2. Display appropriate communication etiquette while working		10	0	10

PC3. Display active listening skills while interacting with others at work	10	0	10	
PC4. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	5	0	5	
PC5. Display helpful behaviour by assisting others in performing tasks in effective manner	10	0	10	
PC6. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks	10	0	10	
PC7. Demonstrate responsible and disciplined behaviours at the workplace	5	0	5	
PC8. Escalate grievances and problems to superiors	5	0	5	
PC9. Communicate day-to-day objectives, instructions etc. to team members	15	5	10	
PC10. Guide the team members to manage day-to-day issues at work	5	0	5	
PC11. Gather concerns, feedback from team members and convey them to appropriate authorities	15	5	10	
PC12. Escalate grievances and problems to superiors	5	0	5	
	Total	100	10	90

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 IISSSC

- 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:

- Knowledge on various reactions & activities taking place in the process
- Operate the furnace on optimum levels
- Feed raw material to the furnace & Burden preparation
- Carry out Quality Assurance and control
- Co-ordinate with shift maintenance & service departments
- Handle hot metal and transfer Finished goods
- Carry out Recording and Documentation
- Carry out quality checks to identify problems & take corrective actions
- Identify problems across materials, products, equipment etc. & take corrective action

- Escalate unresolved identified problems
- 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 effective behaviours for team work
- Ensure engagement of team members through on-the job handholding & support

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.

Shift In Charge: Ferro Alloys (ISC/Q5301)					
Process required	Professional Knowledge	Professional Skills	Core Skills	Responsibility	Level
The job holder is expected to be responsible for particular shift for the entire operation of the furnace starting from raw material feed till final product is tapped and transferred with an assurance of quality product. The activities involved are checking raw materials and feeding them to the furnace carry out quality assurance &	The job holder is expected to understand the various chemical reactions that are taking place in the furnace. The role holder should have knowledge of basic understanding of the SAF design, preparation of the material balance, about the importance of gases that are evolved during operation, potential problems in	The job holder should be able to operate the furnace on optimum levels, feed raw material to the furnace, prepare material balance and verify the burden preparation. The job holder is also expected to interpret metal & slag tapping analysis, carry out intermediate corrections if required. He should be able to analyse the behaviour of the SAF, interpret the	The job holder is expected to express ideas with clarity, understand the job requirements, health and safety instructions, maintain log sheets & log books, interpret technical data & activity logs, perform mathematical operations to analyse	The job holder is responsible for entire operation of the furnace starting from raw material feed till final product is tapped and transferred with an assurance of quality product. He is responsible for monitoring his subordinates, providing them proper assistance & appropriate guidance &	5

control, transferring the finished goods, carries out reporting & documentation, quality checks etc. The job requires well developed skill with clear choice of procedures in familiar context.	operational process, activities that are involved in gas cleaning system, understand the metal & slag chemistry. The job requires knowledge of facts, principles, process and general concepts.	data and take necessary steps if required in the process, control various processes based on the chemical & physical analytical reports that are available periodically. The job holder is expected to accomplish tasks & solve problems	chemical reaction, perform basic mathematical principles, such as numbers & space & techniques such as estimation & approximation etc. The job requires mathematical skill and some skill of collecting & organising information	feedback for improvement. He should be able to identify and troubleshoot problems of usual nature. He should report defects precisely to the supervisor if it is beyond the scope of his role .The job holder is responsible for own work and learning and some responsibility for other's works & learning.	
Level 5	Level 5	Level 5	Level 5	Level 5	

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: