



Spectrum Operator - Diamond Processing

QP Code: G&J/Q4204

Version: 3.0

NSQF Level: 3

GJSCI || Gem Jewellery Skill Council of India, 4th Floor, Business Facilitation Centre, SEEPZ SEZ, Andheri (E)

Mumbai 400096 || email:standards.qa@gjsci.org

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G&J/Q4204: Spectrum Operator - Diamond Processing

Brief Job Description

Individuals on this job use the spectrometer, light table and the D to Z machine (computer) to colour grade diamonds by analyzing the spectrum graph drawn and after passing light through the parallel windows created in the rough diamond in order to select the optimum plan. The spectrum operator evaluates the fluorescence in the rough diamond before assigning the final grades. In the diamond processing industry, the spectrum operator provides the colour grading to the various planned cuts of the diamond.

Personal Attributes

The job requires the individual to have: attention to detail; good eyesight; the ability to work for long hours in a sitting position in front of the computer; a high level of concentration; and a lot of patience.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [G&J/N4204: Use spectrum for colour grading of the diamond](#)
2. [G&J/N9901: Coordinate with others](#)
3. [G&J/N9902: Maintain health and safety at workplace](#)

Qualification Pack (QP) Parameters

Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Diamond Planning
Country	India
NSQF Level	3
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/Nil
Minimum Educational Qualification & Experience	10th Class with 1 Year of experience relevant experience OR I.T.I (After 10 th)

Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	NA
NSQC Approval Date	
Version	3.0

G&J/N4204: Use spectrum for colour grading of the diamond

Description

This OS unit is about using the spectrum machine to judge the expected colour of the various planned cuts of the rough diamond.

Scope

The scope covers the following :

- Preparing rough for spectrum operation
- Operating the spectrum set-up
- Maintaining Quality of output
- Achieving Productivity
- Controlling defects

Elements and Performance Criteria

Preparing rough for spectrum operation

To be competent, the user/individual on the job must be able to:

- PC1.** collect rough diamond packet and match specifications such as shape, size, dimensions, etc., of the rough received as per those mentioned on the packet
- PC2.** check the planning of the rough provided
- PC3.** inspect the rough diamond using an eye glass and check if there is any damage
- PC4.** check if the existing windows are sufficient, else mark and send for more window
- PC5.** check if there was any damage during windowing or extra weight loss
- PC6.** check the parallel window, by placing it on the light table, if the light passes through it or not
- PC7.** ensure there is no dirt on the rough diamond. clean it before further processing

Operating the spectrum set-up

To be competent, the user/individual on the job must be able to:

- PC8.** ensure accurate placement of the windowed rough on the light table for passing light and imaging
- PC9.** ensure accurate use of the spectrometer to create the graphs
- PC10.** ensure the data entered of the parameters such as dimensions, are correct
- PC11.** ensure accurate sharing and transfer of data from one unit to another

Maintaining quality of output

To be competent, the user/individual on the job must be able to:

- PC12.** ensure apt process of carrying out colour estimation
- PC13.** optimize the planning
- PC14.** ensure accurate marking of the rough for windowing
- PC15.** ensure correct bagging and labelling of the rough packets before returning

Achieving productivity

To be competent, the user/individual on the job must be able to:

PC16. achieve the productivity in terms of carats or number of pieces as set by the company

PC17. ensure timely delivery for further processing

Controlling defects

To be competent, the user/individual on the job must be able to:

PC18. ensure no damage to the rough diamond is caused during the spectrum process

PC19. spot fluorescence in a rough and adjust the colour grade

PC20. assess that the marking is correct for the parallel window required and will not damage the diamond

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company's policies on: acceptable limits of weight loss; incentives; delivery standards; safety practices and hazards; security and performance measurement

KU2. nondisclosure of confidential information provided by the company either orally or in writing marked as confidential

KU3. liability arising out of loss, theft, or inadvertent disclosure of confidential information

KU4. work flow involved in company's diamond processing

KU5. importance of the individual's role in the workflow

KU6. reporting structure

KU7. issue return procedures followed by the company

KU8. typical customer profile and market trends

KU9. specialization area of the company (size, clarity, shape, quality, etc. of diamonds)

KU10. diamond processing objective of the company, e.g. maximizing yield, maximizing clarity, etc.

KU11. computer and spectrum machine operations

KU12. diamond planning

KU13. shape, cut, clarity, carat, colour and physical characteristics of the diamond

KU14. spectrum process

KU15. operations of light table, spectrometer and d z machine

KU16. colour grading of a diamond

KU17. file sharing on company's server

KU18. valuation of a diamond

KU19. potential ways that may cause damage to a diamond

KU20. windowing process

KU21. use of various scopes in diamond processing

KU22. geometry to understand the angles and symmetry

KU23. fluorescence level

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** to document work done for status and performance appraisal
- GS2.** to report diamond losses via documentation as per company policy
- GS3.** to read descriptions on the diamond packets/ bags
- GS4.** to make various entries on the computer
- GS5.** to understand the results displayed by the computer and read manuals
- GS6.** to discuss task, schedules, and work-loads with co-workers and supervisors
- GS7.** to share work load as required
- GS8.** to assist others who require help
- GS9.** to share knowledge with co-workers
- GS10.** to understand instructions
- GS11.** report problems such as: difficulty in plan selection, inability to decide planes for creating parallel windows, damage to the rough while windowing, machine / software failures, reasons for anticipated delays that may adversely affect delivery
- GS12.** to decide the final colour grade to be assigned to each cut planned
- GS13.** to decide on the placement of the marking for creating parallel window
- GS14.** to plan the parallel windows of the rough
- GS15.** to use the graphs displayed by the spectrometer
- GS16.** to select the best plan of the diamond to maximize value
- GS17.** to plan work for maximum productivity
- GS18.** resolve difficulties in plan selection with the help of supervisor
- GS19.** to assess the accuracy of the windowing of the rough given
- GS20.** to analyze the options as per company's objectives before final plan selection
- GS21.** to devise new means of working to improve productivity
- GS22.** to suggest different or innovative plans, which may yield higher returns for the company
- GS23.** to spot process disruptions and delays

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Preparing rough for spectrum operation</i>	5	15	-	-
PC1. collect rough diamond packet and match specifications such as shape, size, dimensions, etc., of the rough received as per those mentioned on the packet	-	2	-	-
PC2. check the planning of the rough provided	1	2	-	-
PC3. inspect the rough diamond using an eye glass and check if there is any damage	1	2	-	-
PC4. check if the existing windows are sufficient, else mark and send for more window	1	3	-	-
PC5. check if there was any damage during windowing or extra weight loss	1	2	-	-
PC6. check the parallel window, by placing it on the light table, if the light passes through it or not	1	2	-	-
PC7. ensure there is no dirt on the rough diamond. clean it before further processing	-	2	-	-
<i>Operating the spectrum set-up</i>	4	9	-	-
PC8. ensure accurate placement of the windowed rough on the light table for passing light and imaging	1	4	-	-
PC9. ensure accurate use of the spectrometer to create the graphs	1	2	-	-
PC10. ensure the data entered of the parameters such as dimensions, are correct	1	2	-	-
PC11. ensure accurate sharing and transfer of data from one unit to another	1	1	-	-
<i>Maintaining quality of output</i>	2	11	-	-
PC12. ensure apt process of carrying out colour estimation	-	4	-	-
PC13. optimize the planning	-	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. ensure accurate marking of the rough for windowing	1	3	-	-
PC15. ensure correct bagging and labelling of the rough packets before returning	1	1	-	-
<i>Achieving productivity</i>	2	3	-	-
PC16. achieve the productivity in terms of carats or number of pieces as set by the company	1	2	-	-
PC17. ensure timely delivery for further processing	1	1	-	-
<i>Controlling defects</i>	1	8	-	-
PC18. ensure no damage to the rough diamond is caused during the spectrum process	-	3	-	-
PC19. spot fluorescence in a rough and adjust the colour grade	1	2	-	-
PC20. assess that the marking is correct for the parallel window required and will not damage the diamond	-	3	-	-
NOS Total	14	46	-	-

National Occupational Standards (NOS) Parameters

NOS Code	G&J/N4204
NOS Name	Use spectrum for colour grading of the diamond
Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Diamond Planning
NSQF Level	3
Credits	TBD
Version	2.0
Last Reviewed Date	24/11/2017
Next Review Date	24/02/2027
NSQ Clearance Date	24/02/2022

G&J/N9901: Coordinate with others

Description

This OS unit is about communicating with colleagues, seniors and outside parties in order to achieve the deliverables as per schedule

Elements and Performance Criteria

Interacting with supervisor

To be competent, the user/individual on the job must be able to:

- PC1.** coordinate for receiving work instructions and raw materials from reporting supervisor
- PC2.** communicate to the reporting supervisor about process flow improvements, product defects received from previous process, repairs and maintenance of tools and machinery as required
- PC3.** communicate to reporting supervisor about operation details and hazards
- PC4.** interact with supervisor regarding compliance of company policy and rules

Interacting with colleagues within and outside the department

To be competent, the user/individual on the job must be able to:

- PC5.** coordinate with colleagues to share work, as per the workload in order to achieve team goals
- PC6.** communicate and discuss work flow related difficulties in order to find solutions with mutual agreement
- PC7.** coordinate and receive feedback from quality control department
- PC8.** resolve conflicts by communicating with colleagues and other departments
- PC9.** communicate and discuss work coordinate with colleagues regarding multitasking in other departments with requirements

Interacting with outside parties

To be competent, the user/individual on the job must be able to:

- PC10.** adhere to nondisclosure policy of the company in all outside coordination

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** companys policies on: preferred language of communication, reporting and escalation policy, quality delivery standards and personnel management
- KU2.** companys policies on non-disclosure of confidential information provided by the company either orally or in writing marked as confidential
- KU3.** liability arising out of loss, theft or inadvertent disclosure of confidential information
- KU4.** reporting structure
- KU5.** various categories of people that one is required to communicate and coordinate within the organization
- KU6.** importance of effective communication in the workplace like expressing and addressing grievances appropriately and effectively
- KU7.** importance of teamwork in organization and individual success
- KU8.** various components of effective communication

- KU9.** barriers to effective communication
- KU10.** common reasons for interpersonal conflict
- KU11.** what constitutes disciplined behavior for a working professional

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write instructions, remarks, job sheets, basic information, technical details etc. in preferred local language of communication and english
- GS2.** read preferred language of communication as prescribed by the company
- GS3.** read job sheets and interpret technical details mentioned in the job sheet
- GS4.** discuss task lists, schedules, and work-loads with co-workers
- GS5.** be a good listener
- GS6.** be effective in communicating the issues faced, to the supervisor
- GS7.** avoid using jargon, slang or acronyms when communicating
- GS8.** how to spot and communicate potential areas of disruptions in the work process and report the same
- GS9.** how to report supervisor or deal with a colleague individually, depending on the type of concern
- GS10.** how to plan work for maximum productivity
- GS11.** how to plan and organize the schedule for maintenance of tools and machines
- GS12.** how to convey accurate information to relevant internal as well as external customers
- GS13.** how to handle critical situations caused due to communication issues at workplace and solve problems without blaming others
- GS14.** how to analyse the work processes by interacting with others and adopting best practices
- GS15.** how to use prior experience to observe and reflect for development of ideas
- GS16.** how to think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS17.** how to deal with clients lacking the technical background to solve the problem on their own
- GS18.** how to spot process disruptions, delays and report and communicate with solutions
- GS19.** how to identify immediate or temporary solutions to resolve delays
- GS20.** how to apply, analyze and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interacting with supervisor</i>	-	6	-	-
PC1. coordinate for receiving work instructions and raw materials from reporting supervisor	-	1	-	-
PC2. communicate to the reporting supervisor about process flow improvements, product defects received from previous process, repairs and maintenance of tools and machinery as required	-	1	-	-
PC3. communicate to reporting supervisor about operation details and hazards	-	1	-	-
PC4. interact with supervisor regarding compliance of company policy and rules	-	3	-	-
<i>Interacting with colleagues within and outside the department</i>	2	10	-	-
PC5. coordinate with colleagues to share work, as per the workload in order to achieve team goals	-	3	-	-
PC6. communicate and discuss work flow related difficulties in order to find solutions with mutual agreement	-	2	-	-
PC7. coordinate and receive feedback from quality control department	1	1	-	-
PC8. resolve conflicts by communicating with colleagues and other departments	-	2	-	-
PC9. communicate and discuss work coordinate with colleagues regarding multitasking in other departments with requirements	1	2	-	-
<i>Interacting with outside parties</i>	1	1	-	-
PC10. adhere to nondisclosure policy of the company in all outside coordination	1	1	-	-
NOS Total	3	17	-	-

National Occupational Standards (NOS) Parameters

NOS Code	G&J/N9901
NOS Name	Coordinate with others
Sector	Gem & Jewellery
Sub-Sector	Jewellery Retail, Cast and diamonds-set jewellery
Occupation	Appraising and Valuation
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQ Clearance Date	24/02/2022

G&J/N9902: Maintain health and safety at workplace

Description

This OS unit is about being aware of, communicating and taking steps towards minimizing potential hazards and dangers of accidents on the job and maintaining health and safety at workplace.

Elements and Performance Criteria

Health and safety in work area

To be competent, the user/individual on the job must be able to:

- PC1.** identify and use appropriate protective clothing/equipment for specific tasks and work
- PC2.** identify hazardous job activities in his/her job and communicate the possible causes of risks or accidents in the workplace
- PC3.** carry out safe working practices while dealing with hazards to ensure safety of self and others
- PC4.** identify and avoid doing any tasks or activities in a wrong posture
- PC5.** practice appropriate working postures to minimise occupational health related issues

Fire safety

To be competent, the user/individual on the job must be able to:

- PC6.** use the appropriate fire extinguishers on different types of fire
- PC7.** demonstrate rescue techniques applied during fire hazard
- PC8.** demonstrate good housekeeping in order to prevent fire hazards
- PC9.** demonstrate the correct use of any fire extinguisher

Emergencies, rescue and first aid procedures

To be competent, the user/individual on the job must be able to:

- PC10.** administer appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.
- PC11.** respond promptly and appropriately to an accident or medical emergency
- PC12.** participate in emergency procedures such as raising alarm, safe evacuation, correct means of escape, correct assembly point etc.,

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** companys policies on: safety and hazards and personnel management
- KU2.** names and location of documents that refer to health and safety in work place
- KU3.** reporting structure
- KU4.** meaning of hazards and risks
- KU5.** health and safety hazards commonly present in the work place and related precautions
- KU6.** various dangers associated with use of electrical equipment
- KU7.** preventative and remedial actions to be taken in case of exposure to toxic material
- KU8.** methods of accident prevention

- KU9.** how different chemicals react and the related hazards
- KU10.** how to use machines and tools without causing any accident
- KU11.** importance of using protective clothing/ equipment while working
- KU12.** precautionary activities to prevent the fire accident
- KU13.** various causes of fire
- KU14.** techniques of using different fire extinguishers
- KU15.** different materials used for extinguishing fire
- KU16.** rescue techniques applied during a fire hazard
- KU17.** various types of safety signs and their meaning
- KU18.** appropriate basic first aid treatment relevant to different condition e.g. bleeding, minor burns, eye injuries etc.,
- KU19.** casualty lifting in case of an accident caused to a person

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and comprehend basic content to read labels, charts, signages
- GS2.** read and comprehend basic english to read manuals of operations
- GS3.** communicate effectively the risk of not following safety measures
- GS4.** respond to emergencies/accidents, by taking an appropriate and timely decision
- GS5.** organize work schedule, work area, tools, equipment and material to minimize health and safety risk
- GS6.** ensure appropriate action in case of any emergencies, accidents or fire at the work location
- GS7.** analyze untoward incidents from the past and implement correct use of machines, tools or hazardous chemicals
- GS8.** critically analyze the processes carried out by self and colleagues in the department to spot potential hazards and safety issues

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Health and safety in work area</i>	1	7	-	-
PC1. identify and use appropriate protective clothing/equipment for specific tasks and work	-	2	-	-
PC2. identify hazardous job activities in his/her job and communicate the possible causes of risks or accidents in the workplace	-	1	-	-
PC3. carry out safe working practices while dealing with hazards to ensure safety of self and others	-	1	-	-
PC4. identify and avoid doing any tasks or activities in a wrong posture	-	2	-	-
PC5. practice appropriate working postures to minimise occupational health related issues	1	1	-	-
<i>Fire safety</i>	-	6	-	-
PC6. use the appropriate fire extinguishers on different types of fire	-	1	-	-
PC7. demonstrate rescue techniques applied during fire hazard	-	2	-	-
PC8. demonstrate good housekeeping in order to prevent fire hazards	-	1	-	-
PC9. demonstrate the correct use of any fire extinguisher	-	2	-	-
<i>Emergencies, rescue and first aid procedures</i>	2	4	-	-
PC10. administer appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.	-	1	-	-
PC11. respond promptly and appropriately to an accident or medical emergency	1	2	-	-
PC12. participate in emergency procedures such as raising alarm, safe evacuation, correct means of escape, correct assembly point etc.,	1	1	-	-
NOS Total	3	17	-	-

National Occupational Standards (NOS) Parameters

NOS Code	G&J/N9902
NOS Name	Maintain health and safety at workplace
Sector	Gem & Jewellery
Sub-Sector	Jewellery Retail, Cast and diamonds-set jewellery
Occupation	Appraising and Valuation
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 50

(**Please note:** Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
G&J/N4204.Use spectrum for colour grading of the diamond	14	46	0	0	60	80
G&J/N9901.Coordinate with others	3	17	-	-	20	10
G&J/N9902.Maintain health and safety at workplace	3	17	-	-	20	10
Total	20	80	-	-	100	100

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

<p>Organisational Context</p>	<p>Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.</p>
<p>Technical Knowledge</p>	<p>Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.</p>
<p>Core Skills/ Generic Skills (GS)</p>	<p>Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.</p>
<p>Electives</p>	<p>Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.</p>
<p>Options</p>	<p>Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.</p>