SECTOR SKILLS COUNCIL FOR SCIENCE, ENGINEERING AND MANUFACTURING TECHNOLOGIES

NATIONAL OCCUPATIONAL STANDARDS: EXPLOSIVE SUBSTANCES AND ARTICLES (ESA)

RESEARCH, DESIGN AND DEVELOPMENT (KEY ROLE 1)

February 2006

CONTENTS

INTRODUCTION

The standards defined here describe the required competences of people working in the Design, Research and Development of explosive substances and/or articles.

The functions of Technicians working in explosives laboratories are described elsewhere, by the Laboratory and Associated Technical Activities (LATA) National Occupational Standards. The LATA NOS are not repeated here, although the unit and element titles are listed in the contents page, for ease of reference.

Unit 1.1 Create the complex specification for explosive substances and/or articles

Contexts

- Requirements: where a complex detailed technical requirement is provided; where a general requirement is provided
- Constraints: resource limitations; possible conflicts of interest
- Solutions for addressing needs: existing; adaptations to existing solutions; novel solutions

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b identify or confirm accurately the underlying needs of the customer

c assess objectively the feasibility of the customer's requirement

d determine objectively the best methods by which these needs can be addressed

e explain fully and clearly to the customer, and any other relevant people, the basis for any decisions

f identify accurately any operational constraints that could affect the research and development of the explosive substance and/or article

g provide relevant advice to the customer, expressed in a way that meets their requirements

h alert the customer promptly to any additional information or implications that may be in their best interests

i consult others who may be affected, and build their feedback into your specification

j create a specification that clearly addresses all the customer's requirements and your success criteria

k create a clear and concise specification that contains sufficient detail to enable research planning to take place

l confirm the customer's level of satisfaction, and use the information to make further improvements

m maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's strategic and operational policies and objectives

vi how to carry out a feasibility study

vii how to establish success criteria

viii alternative options for meeting the customer's needs

ix the underlying needs of the customer's requirements

x when and how to challenge a customer's brief

xi when and how to advise a customer to pursue a different course of action

xii the constraints that may affect your decisions and plans

xiii your own level of authority, and that of others with whom you work

xiv the requirements of confidentiality

Unit 1.2 Create the specification for an explosive substance or article

Contexts

- Customer requirements: where a detailed technical requirement is provided; where a general description of requirements is provided
- Constraints: resource limitations; possible conflicts of interest
- Solutions for addressing customer needs: existing; adaptations to existing solutions

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b identify or confirm accurately the customer's underlying needs

c assess objectively the feasibility of the customer's requirement

d determine objectively the best methods by which these needs can be addressed

e explain fully and clearly to the customer, and any other relevant people, the basis for any decisions

f identify accurately any operational constraints that could affect the research and development of the explosive substance or article

g provide relevant advice to the customer, expressed in a way that meets their requirements

h alert your manager promptly to any additional information or implications that may be in the customer's best interests

i consult others who may be affected, and build their feedback into your specification

j create a specification that clearly addresses all the customer's requirements

k create a clear and concise specification that contains sufficient detail to enable research planning to take place

l maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi how to carry out a feasibility study

vii alternative options for meeting the customer's needs

viii when and how to challenge a customer's brief

ix when and how to advise your manager that the customer should pursue a different course of action

x the constraints that may affect your decisions and plans

xi the intellectual property requirements for the build processes

xii your own level of authority, and that of others with whom you work

xiii the requirements of confidentiality

Unit 1.3 Assimilate and evaluate the information on explosive substances and/or articles

This unit comprises the following elements:

1.3.1 Identify sources and gather the information on explosive substances and/or articles
1.3.2 Evaluate and present the information on explosive substances and/or articles

Unit 1.3 Assimilate and evaluate the information on explosive substances and/or articles

1.3.1 Identify sources and gather the information on explosive substances and/or articles

Contexts

- Information sources: databases; from your own informal network; from formal sources outside your own organisation; published sources
- Range of information: from your own specialism; from other specialisms
- Obstacles: when information is not readily available; legal considerations; confidentiality

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b identify the type and range of information to be examined, in line with the research specification

c identify accurately any sources that can provide the necessary information

d utilise your own professional network of contacts to generate information, in line with the specification

e take action to generate contacts most likely to provide suitable information

f explain clearly the purpose of the enquiry to potential providers of information, whilst maintaining confidentiality

g identify and follow organisational procedures when accessing information

h identify any obstacles to the collection of information, and take steps to deal with them

i ensure that the information you gather is accurate and up to date

j record the information, and its source

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's strategic and operational policies and objectives

vi the different types of information, and how to access them

vii the action needed to generate contacts (networking, membership of professional groups, conference speaking)

viii techniques for accessing and interrogating information

ix the nature and extent of the research specification

x ethical and legal issues about the interrogation and use of information

xi your own level of authority, and that of others with whom you work

xii the requirements of confidentiality

Unit 1.3 Assimilate and evaluate the information on explosive substances and/or articles

1.3.2 Evaluate and present the information gathered on explosive substances and/or articles

Contexts

- Additional information: from sources already interrogated; from new sources
- Presentations: within your organisation; outside your organisation; written reports; group presentations
- Evaluation techniques: quantitative; qualitative

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b assess the information you have gathered for its currency, completeness, validity and value

c identify any gaps, and take action to find additional information to fill or answer them

d use methods correctly and consistently to analyse the information

e make evaluations and conclusions, based on the information

f record all conclusions accurately, in the correct format for subsequent use

g assess accurately the impact of conclusions on the research specification

h present the information gathered, in the appropriate format

i acknowledge all sources of information

j maintain the requirements of confidentiality at all times

k make a clear distinction between the information gathered and your evaluation of it

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's strategic and operational policies and objectives

vi techniques for accessing and interrogating information

vii techniques for evaluating information

viii presentation techniques

ix the nature and extent of the research specification

x the ethical and legal issues about the use of information

xi your own level of authority, and that of others with whom you work

xii the requirements of confidentiality

xiii the requirements of record keeping

Unit 1.4 Gather and interpret the information on explosive substances and/or articles

This unit comprises the following elements:

1.4.1 Gather information from identified sources on explosive substances and/or articles
1.4.2 Interpret and present the information on explosive substances and/or articles

Unit 1.4 Gather and interpret the information on explosive substances and/or articles

1.4.1 Gather information from identified sources on explosive substances and/or articles

Contexts

- Information sources: databases; from formal sources outside your own organisation; published sources
- Obstacles: when information is not readily available; confidentiality

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b identify the type and range of information to be examined, in line with the research specification

c identify the sources that can provide the necessary information

d explain clearly the purpose of the enquiry to potential providers of information, whilst maintaining confidentiality

e identify and follow the procedures when accessing information

f identify any obstacles to the collection of information, and take steps to deal with them

g ensure that the information you gather is accurate and up to date

h record the information, and its source

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi the different types of information, and how to access them

vii techniques for accessing, interrogating and validating information

viii the nature and extent of the research specification

ix the ethical and legal issues about the use of information

x your own level of authority, and that of others with whom you work

xi the requirements of confidentiality

Unit 1.4 Gather and interpret the information on explosive substances and/or articles

1.4.2 Interpret and present the information on explosive substances and/or articles

Contexts

- Additional information: from sources already interrogated; from new sources
- Presentations: within your team; to other colleagues beyond your own team; written reports; group presentations
- Information analysis techniques: quantitative; qualitative

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b assess the information you have gathered for its currency, completeness and value

c identify any gaps, and take action to find additional information to fill or answer them

d use methods correctly and consistently to analyse the information

e make justified interpretations and conclusions, based on the information

f record all conclusions accurately and fully, in the correct format for subsequent use

g assess the relevance of your conclusions on the research specification

h present the information gathered, in the appropriate format

i acknowledge all sources of information

j maintain the requirements of confidentiality at all times

k make a clear distinction between the information gathered and the interpretation you place upon it

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi techniques for analysing information

vii techniques for accessing, interrogating and validating information

viii presentation techniques

ix the nature and extent of the research specification

x the ethical and legal issues about the use of information

xi your own level of authority, and that of others with whom you work

xii the requirements of confidentiality

xiii the requirements of record keeping

Unit 1.5 Identify and gather the information on explosive substances and/or articles

Contexts

- Information sources: databases; published sources
- Obstacles: when information is not readily available; confidentiality
- Reporting formats: written; verbal

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b confirm the type and range of information to be gathered, in line with the research specification

c identify all sources that can provide the necessary information

d explain clearly the purpose of the enquiry to potential providers of information, whilst maintaining confidentiality

e follow the correct procedures when accessing information

f identify and report promptly any obstacles to the collection of information

g ensure that the information you gather is accurate and up to date

h record the information, and its source

i report your findings in the correct format

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your team's objectives, and the purpose of the research specification

vi the different types of information, and how to access them

vii to whom to report problems and issues

viii your own level of authority, and that of others with whom you work

ix the requirements of confidentiality

x the correct format for reporting information

Unit 1.6 Prepare the research strategy for explosive substances and/or articles

Contexts

- Research requirements: current business needs; likely future requirements
- Constraints: resources (human, financial, facilities); technology; suppliers; legislative changes
- Expertise: from your own specialism; from other specialisms
- Stakeholders; within your organisation; outside your organisation

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b keep records of the ideas considered, and the justification for their selection or dismissal, acknowledging input from others

c assess realistically the potential utility and impact of further study

d ensure that your strategy addresses the current and likely future needs of your customer

e identify and address any operational constraints that could affect the research strategy

f consult customers and other stakeholders who have a legitimate interest, and build their feedback into the strategy

g ensure that your strategy clearly addresses your customers' and stakeholders' requirements, and your organisation's strategic objectives

h validate the final strategy through a peer review

i ensure compatibility between the research strategy and the business plan

j identify and express clearly in the research strategy the aims, objectives and expected outcomes

k prioritise and justify your research strategy

l maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's strategic and operational policies and objectives

vi the business risks associated with the research strategy

vii the potential uses of the research

viii the current and likely future strategic and operational requirements of your customers

ix current trends and policies, and forecasted changes in your area of the explosives substances and articles-related industry

x current trends and forecasted changes in your area of specialism and related areas

xi your stakeholders, and the nature of their interest

xii the requirements of the business plan, and the business planning cycle

xiii the required format for the strategy

xiv the peer review process

xv your own level of authority, and that of others with whom you work

xvi the requirements of confidentiality

Unit 1.7 Prepare the research programme for explosive substances and/or articles

Contexts

- Constraints: resources (human, financial, facilities); technology; suppliers; legislative changes
- Stakeholders; within your organisation; outside your organisation

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b keep records of the ideas considered, and the justification for their selection or dismissal, acknowledging input from others

c ensure that your programme addresses the research strategy

d identify and address any operational constraints that could affect the research programme

e identify and express clearly in the research programme the aims, objectives, expected outcomes, timescale and resources to be used

f ensure that your outline budgets are realistic

g ensure that colleagues and stakeholders are fully involved in research programme preparation, and are briefed

h prioritise your proposed research activities within the programme, in line with the research strategy

i maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi the requirements of the research strategy

vii the business risks associated with the research programme

viii current trends in your area of specialism and related areas

ix your stakeholders, and the nature of their interest

x the requirements of the programme planning cycle

xi the different ways in which you might overcome any operational constraints

xii any required formats for the research programme

xiii the peer review process

xiv your own level of authority, and that of others with whom you work

xv the requirements of confidentiality

Unit 1.8 Submit proposals for research work for explosive substances and/or articles

Contexts

- Funding: for new projects; for continuations to existing projects
- Proposals: for individual research; for collaborative ventures

Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b state the aims and objectives of the research in the proposal

c present the significance and value of the proposed research and its outcomes, with reference to previous and ongoing research work

d specify the main stages and tasks of the research, and the method to be used

e justify the selection of particular methods, and the setting of priorities in the research

f state the required contribution of all parties toward achieving the goals of the research

g set timescales, resources, staffing and budgets for the work, in sufficient detail to enable decisions to be made

h record and communicate any amendments to the proposal

i obtain the appropriate authorisation prior to submitting the proposal

j ensure that the proposal arrives at its destination, in the correct format, within the required timescale

k maintain the requirements of confidentiality at all times

Knowledge

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi the requirements of the research strategy

vii the nature of funding body interest

viii the staff, facilities and equipment needed to carry out the research

ix what needs to be costed in the proposal, and how to calculate those costs

x the strengths and weaknesses of your team or partners

xi the required format for presenting your proposal, and the timetable for doing so

xii any possible opposition to the research, and its potential impact

xiii the existence of any similar research in explosives being carried out elsewhere

xiv current trends in your area of specialism and related areas

xv planning techniques

xvi ethical and legal issues

xvii the requirements of confidentiality

Unit 1.9 Plan the research into explosive substances and/or articles

This unit comprises the following elements:

1.9.1 Decide the research protocols for explosive substances and/or articles
1.9.2 Draw up research plans for explosive substances and/or articles

Unit 1.9 Plan the research into explosive substances and/or articles

1.9.1 Decide the research protocols for explosive substances and/or articles

Contexts

- Scope of the research; individually; collaboratively
- Resources: with limited resources; with full resources

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b establish the evaluation criteria to determine the success of the research

c review critically and assess the suitability of existing methods, techniques and apparatus

d select the methods, techniques and apparatus for the purpose of the research

e adapt existing methods, techniques and apparatus before new ones are developed

f pilot new methods, techniques and apparatus, testing and evaluating their fitness for purpose and making modifications

g develop new methods, techniques and apparatus, in line with regulatory guidelines

h report your findings, in the correct format

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi the requirements of the research strategy

vii the business risks of the research strategy

viii the range of possible methods to achieve the desired outcomes, and their relative advantages and disadvantages

ix methods for evaluating the fitness for purpose of the methods, techniques and apparatus

x methods for evaluating the success of the research

xi problem solving techniques

xii the impact of the cost of developing or adapting new methods, techniques and apparatus

Unit 1.9 Plan the research into explosive substances and/or articles

1.9.2 Draw up research plans for explosive substances and/or articles

Contexts

- Scope of the research; individually; collaboratively
- Resources: with limited resources; with full resources

Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b record the details of all methods, techniques and apparatus to be used

c specify in the plan the time and resource requirements of the research

d identify factors that might affect the timescale of the research, and incorporate this information into the research plan

e specify the relationship or dependencies between research tasks

f make provision for compliance with any regulatory constraints

g include detailed evaluative success criteria

h report your findings, in the correct format

i maintain the requirements of confidentiality at all times

Knowledge

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi the requirements of the research programme and protocol

vii the business risks of the research programme

viii the resources available (including expertise)

ix project management techniques

x the deadline for each research task

xi the significance and impact of any relationships or dependencies between research tasks

xii any specific requirements for the format of the research plan

xiii methods for evaluating the success of the research

xiv problem solving techniques

xv the requirements of confidentiality

Unit 1.10 Carry out the research strategy and analyse the information collected on explosive substances and/or articles

This unit comprises the following elements:

1.10.1 Carry out investigations into explosive substances and/or articles
1.10.2 Analyse and evaluate research information on explosive substances and/or articles

Unit 1.10 Carry out the research strategy and analyse the information collected on explosive substances and/or articles

1.10.1 Carry out investigations into explosive substances and/or articles

Contexts

- Scope of the investigation; individually; collaboratively with internal colleagues; collaboratively with external colleagues
- Interested parties: research team; project Steering Groups; external collaborators
- Risks relating to: people; the organisation; the research programme; confidentiality; facilities; materials; equipment; services failure

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b set up the investigation, in line with the research plan

c manage relationships with interested parties, in accordance with agreements made

d use methods, techniques and apparatus, in line with the relevant procedures

e utilise a network of contacts to generate information

f document all unexpected outcomes or incidents as they occur, making reports and modifying the research

g report any delays or problems experienced to interested parties, and adjust the research plan accordingly

h pay attention to hazards and risks arising from the investigation, and take steps to minimise them

i document the details of the investigation and its outcomes, in the format suitable for further use

j maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's strategic and operational policies and objectives

vi the requirements of the research strategy, programme and plan

vii how to generate contacts

viii project management techniques

ix the availability and suitability of equipment

x the availability, strengths and limitation of the research team

xi the deadline for each research task

xii the significance and impact of any relationships or dependencies between research tasks

xiii problem solving techniques

xiv the courses of action to minimise risks or hazards

xv your own level of authority, and that of others with whom you work

xvi reporting lines

xvii the requirements of confidentiality

Unit 1.10 Carry out the research strategy and analyse the information collected on explosive substances and/or articles

1.10.2 Analyse and evaluate research information on explosive substances and/or articles

Contexts

- Analytical and evaluation techniques: established; adapting established techniques
- Resources: human; financial; time
- Scope of the evaluation: individually; collaboratively with internal colleagues; collaboratively with external colleagues
- Conduct of the evaluation: by yourself; by colleagues

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b select, adapt or devise new techniques of analysis and evaluation

c manage the evaluation when it is carried out by others, providing a clear and specific brief

d ensure that the analysis and evaluation techniques are cost-effective and can be applied using the available resources

e confirm your conclusions through the peer review process, and act on the resulting feedback

f meet your deadlines, taking action in the event of delays

g deliver the agreed outputs within budget, or take action in the case of expected overspends

h report your findings, in the correct format

i maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's strategic and operational policies and objectives

vi the requirements of the research strategy, programme and objectives

vii the basis on which you would carry out the evaluation yourself, delegate it to your team or contract out to an external organisation

viii your role in sub-contracting the evaluation

ix the nature of any conflicts of interest

x any specific quality requirements

xi the deadline for the evaluation phase

xii your available budget, and any constraints

xiii problem solving techniques

xiv the peer review process

xv your own level of authority, and that of others with whom you work

xvi reporting lines

xvii the requirements of confidentiality

Unit 1.11 Carry out investigations and analyse the information collected on explosive substances and/or articles

This unit comprises the following elements:

1.11.1 Carry out investigations into explosive substances and/or articles
1.11.2 Analyse and evaluate research information on explosive substances and/or articles

Unit 1.11 Carry out investigations and analyse the information collected on explosive substances and/or articles

1.11.1 Carry out investigations into explosive substances and/or articles

Contexts

- Scope of the investigation: individually; collaboratively
- Interested parties: team colleagues; other colleagues beyond your team; externally
- Risks relating to: materials; equipment; services failure

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b set up the investigation, in line with the research plan

c manage relationships with interested parties, in accordance with agreements made

d use methods, techniques and apparatus, in line with the procedures

e document any unexpected outcomes or incidents, as they occur

f report any delays or problems experienced, to all interested parties, and adjust the research plan

g pay attention to hazards and risks arising from the investigation, and take steps to minimise them

h report your findings, in the correct format

i maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi the requirements of the research programme and plan

vii the stakeholders, and the nature of their interest

viii project management techniques

ix the availability and suitability of equipment

x the availability, strengths and limitation of the research team

xi the deadline for each research task

xii the significance and impact of any relationships or dependencies between research tasks

xiii problem solving techniques

xiv the possible courses of action open to you to minimise risks or hazards

xv your own level of authority, and that of others with whom you work

xvi reporting lines

xvii the requirements of confidentiality

Unit 1.11 Carry out investigations and analyse the information collected on explosive substances and/or articles

1.11.2 Analyse and evaluate research information on explosive substances and/or articles

Contexts

- Analytical and evaluation techniques: established; adapting established techniques
- Scope of the evaluation: individually; collaboratively with internal colleagues
- Reporting results: in writing; verbally

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b select techniques of analysis and evaluation that are fit for purpose

c ensure the consistency of the evaluation

d obtain confirmation to your conclusions, and act on the resulting feedback

e verify the correctness and quality of the analysis, using accepted and valid techniques

f record the results of the analysis, in the correct format

g maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's operational policies and objectives

vi the requirements of the research programme and plan

vii any specific quality requirements

viii the deadline for the evaluation phase

ix problem solving techniques

x your own level of authority, and that of others with whom you work

xi reporting lines

xii the requirements of confidentiality

Unit 1.12 Contribute to carrying out investigations and analysing the information collected on explosive substances and/or articles

This unit comprises the following elements:

1.12.1 Contribute to investigations into explosive substances and/or articles
1.12.2 Contribute to analysing research information on explosive substances and/or articles

Unit 1.12 Contribute to carrying out investigations and analysing the information collected on explosive substances and/or articles

1.12.1 Contribute to investigations into explosive substances and/or articles

Contexts

- Scope of the investigation: individually; collaboratively with team members

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b follow the research plan

c collaborate as a team member

d use all methods, techniques and apparatus, in line with the procedures

e document and report all unexpected outcomes or incidents, as they occur

f pay attention to hazards and risks arising from the investigation

g report any delays, problems, hazards and risks experienced to your manager

h document the details of the investigation, and its outcomes, in the required format

i maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your team's objectives

vi the requirements of the research plan

vii the roles of those involved in the project

viii the availability and serviceability of equipment

ix the consequences of equipment or service failure

x the deadline for each research task

xi problem solving techniques

xii the courses of action to minimise risks or hazards

xiii your own level of authority, and that of others with whom you work

xiv reporting lines

xv the requirements of confidentiality

Unit 1.12 Contribute to carrying out investigations and analysing the information collected on explosive substances and/or articles

1.12.2 Contribute to analysing research information on explosive substances and/or articles

Contexts

- Analytical techniques: manual calculations; using a computer; graphically; tabular
- Reporting results: in writing; verbally

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b ensure that the research information collected is accurate, complete and up to date

c apply correctly the analytical techniques

d confirm the appropriateness of the techniques with your manager

e collate, record and analyse information, to produce justifiable results, in line with the research objectives

f check that the analysis is correct, using accepted and valid techniques

g record the results of the analysis, in the correct format

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your team's objectives

vi the requirements of the research plan

vii any specific quality requirements

viii the deadline for the analysis and evaluation phase

ix analytical techniques (eg calculating means, variances, ranges)

x problem solving techniques

xi your own level of authority, and that of others with whom you work

xii reporting lines

xiii the requirements of confidentiality

Unit 1.13 Evaluate and document complex research and findings on explosive substances and/or articles

This unit comprises the following elements:

1.13.1 Evaluate the effectiveness of results in meeting complex research objectives for explosive substances and/or articles

1.13.2 Document research and findings on explosive substances and/or articles

Unit 1.13 Evaluate and document complex research and findings on explosive substances and/or articles

1.13.1 Evaluate the effectiveness of results in meeting complex research objectives for explosive substances and/or articles

Contexts

- Presentation of recommendations: orally; in writing
- Appropriate people: research team; project Steering Groups; external collaborators
- Evaluation carried out by: yourself; colleagues; third parties

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b confirm that the results have been validated

c verify that any work carried out by third parties has delivered its objectives

d evaluate the results, using valid and consistent methods

e ensure that the evaluation of the results is logical and objective

f evaluate the conclusions of the research, in comparison with the original objectives and strategy

g identify any area(s) in which the research fails to meet its objectives

h explain any identified causes for failure

i present the recommendations for areas of further work

j make arguments for changes in the research strategy, where your findings indicate a need for changes

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the validation process

vi the range of evaluative methods that could be used

vii the requirements of the research strategy, programme and plan

viii how to establish the criteria against which to evaluate the significance of the research

ix the particular strengths, specialisms or weaknesses of any third party carrying out the evaluation

x the uses to which the information will be put

xi the deadline for the evaluation of the research findings

xii the impact of your recommendations on the organisation's research strategy

xiii your own level of authority, and that of others with whom you work

xiv reporting lines

xv the requirements of confidentiality

Unit 1.13 Evaluate and document complex research and findings on explosive substances and/or articles

1.13.2 Document the research and findings on explosive substances and/or articles

Contexts

- Audiences: colleagues; sponsors; Steering Groups; technical experts; non-technical
- Format for dissemination: internal reports; reports to sponsors; publications; presenting at conferences

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b ensure that the research documentation is complete and up to date (including details of the original objectives, the activities undertaken, and contributors to the research)

c ensure that all findings, results and views have been recorded, whether they are positive or negative

d make distinctions between the results and your interpretation

e explain in full the rationale for your conclusions and recommendations

f record the research and findings, in the correct format for further use

g disseminate your research and findings to the audience, in line with the dissemination plan

h ensure that the documentation complies with legal requirements

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the requirements of the research strategy, programme and plan

vi the research dissemination strategy and plan

vii the particular strengths, specialisms or weaknesses of everyone involved in the reporting and dissemination processes

viii the deadline for the dissemination phase

ix communication techniques

x your own level of authority, and that of others with whom you work

xi reporting lines

xii the requirements of confidentiality

Unit 1.14 Assess and document research and findings on explosive substances and/or articles

This unit comprises the following elements:

1.14.1 Assess the effectiveness of results in meeting research objectives for explosive substances and/or articles
1.14.2 Document research and findings on explosive substances and/or articles

Unit 1.14 Assess and document research and findings on explosive substances and/or articles

1.14.1 Assess the effectiveness of results in meeting research objectives for explosive substances and/or articles

Contexts

- Presentation of recommendations: verbally; in writing
- People: colleagues; superiors; sponsors

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b confirm that the results have been validated

c interpret the results, using valid and consistent methods

d ensure that the interpretation of the results is logical and objective

e evaluate the conclusions of the research, in comparison with the original objectives

f identify any area(s) in which the research fails to meet its objectives

g explain any identified causes for failure

h present your recommendations for areas of further work

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the validation process

vi the range of interpretative methods that could be used

vii the requirements of the research programme and plan

viii the deadline for the assessment of the research findings

ix your own level of authority, and that of others with whom you work

x reporting lines

xi the peer review process

xii the requirements of confidentiality

Unit 1.14 Assess and document research and findings on explosive substances and/or articles

1.14.2 Document the research and findings on explosive substances and/or articles

Contexts

- Audiences: colleagues; sponsors; technical experts; non-technical
- Format for dissemination: verbal; written

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b ensure that your research documentation is complete and up to date (including details of the original objectives, the activities undertaken, and contributors to the research)

c record all findings, results and views, whether they are positive or negative

d make distinctions between the results and your interpretation

e explain the rationale for your conclusions and recommendations

f record the research and findings, in a suitable format for further use

g disseminate your research and findings to the audience, in line with the dissemination plan

h ensure that the documentation complies with legal requirements

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the requirements of the research programme and plan

vi the deadline for the reporting phase

vii the format required for the report

viii communication techniques

ix your own level of authority, and that of others with whom you work

x reporting lines

xi the requirements of confidentiality

Unit 1.15 Develop a dissemination plan for explosive substances and/or articles

Contexts

- Approval from: your manager; your sponsor; collaborators
- Target audiences: colleagues; sponsors; technical experts; non-technical

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b define the dissemination plan, containing specific, measurable and timely objectives

c ensure that the dissemination plan objectives are consistent with those of the research strategy, and with intellectual property rights

d ensure that the dissemination plan meets regulatory requirements

e ensure that your plans are achievable, within the allocated resources and specified timescale

f select dissemination methods that are capable of reaching your target audience

g obtain approval for your plan, in accordance with your organisation's procedures

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the requirements of the research programme and plan

vi the research dissemination strategy

vii the different dissemination methods, and their respective advantages and disadvantages

viii regulatory requirements affecting the dissemination and publication of information

ix the information needs of your target audience

x constraints relating to intellectual property

xi planning techniques

xii who may be affected by the dissemination plan, and in what way

xiii your own level of authority, and that of others with whom you work

xiv reporting lines

xv the requirements of confidentiality

Unit 1.16 Carry out small scale processing for explosive substances and/or articles

Contexts

- Resources: facilities; equipment; services; consumables; other people
- Reporting: verbally; in writing

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines
b confirm the suitability and correct set-up of the equipment, prior to use
c ensure that the resources are available and are serviceable, prior to use
d establish and maintain the required controlled conditions
e produce the required quantities, within specification, in accordance with the processing plan
f recommend modifications to the procedures
g reinstate the work area to a safe condition after processing
h take action in the event of unplanned occurrences, and record and report them in the correct format
i record information, using the correct documentation

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work
ii the relevance of personal protective equipment (PPE)
iii the nature, characteristics, hazards and risks of the explosive substances and/or articles
iv the actions to be taken in response to an unplanned event
v the small scale processing procedure to be followed
vi the risks and consequences inherent in the processing procedure
vii the necessary conditions, and how to maintain them
viii how to calibrate and operate the equipment
ix the action to be taken in the event of deviations or problems
x the documentation requirements
xi reporting line and procedures
xii how to consign waste and other products for disposal

Unit 1.17 Design the scale-up process for explosive substances and/or articles

Contexts

- Suitability: cost; safety
- Resources: limited; full

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b establish the evaluation criteria, to determine the success of the scale-up

c assess the suitability of existing processes, techniques, and plant and equipment

d explore the possibility of adapting existing processes, techniques and equipment, before new ones are developed

e develop and validate new processes, techniques and equipment, in line with regulatory guidelines

f ensure that your scale-up design demonstrates reproducibility, with the required properties

g write clear and concise process procedures

h document fully the rationale, and the choice of processes, techniques and equipment

i report your findings, in the correct format

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the research programme and plan

vi the required properties of the substance(s) being scaled up

vii the range of possible processes, and their advantages and disadvantages

viii the critical factors in scale-up processes

ix the available facilities and equipment, and their constraints

x the competences of the personnel involved

xi the information needed to draw up processing procedures

xii whom to consult, and where to go for further advice

xiii methods for evaluating the fitness for purpose of the processes, techniques, plant and equipment

xiv methods for evaluating the success of the scale-up

xv problem solving techniques

xvi the impact of the cost of developing or adapting new processes, techniques, plant and equipment

xvii the documentation requirements

xviii how to consign residues and other products for disposal

Unit 1.18 Create the specification for the design of complex explosive articles

Contexts

- People: customers; colleagues; sponsors; collaborators
- Presentation: verbally; in writing
- Environmental factors: pressure; temperature; humidity; vibration; shock

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b ensure that the technical requirements are understood and specified

c verify that the requirements are interpreted correctly

d determine how your organisation can best respond to the requirements, in terms of workload and resources

e identify and prioritise the key aspects of the design specifications

f specify the quality assurance requirements, referencing relevant regulations and standards

g record information, in accordance with organisational requirements

h prepare and present specifications, using the correct format

i maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your organisation's business and research strategies

vi the customer's needs (including component interfaces and specifications)

vii information sources, and document types

viii the environmental factors relating to the intended use of the explosive article

ix your organisation's requirements for the specification, in terms of structure, format and content

x analytical methods and techniques

xi evaluation methods and techniques

xii your organisation's capabilities, capacity and constraints

xiii the roles and responsibilities, strengths and weaknesses of your collaborative partners

xiv the requirements of quality standards and guidelines

xv reporting lines

xvi communication techniques

xvii your own level of authority, and that others you work with

xviii the requirements of confidentiality

Unit 1.19 Create the specification for the design of an explosive article

Contexts

- People: customers; colleagues, sponsors
- Presentation: verbally; in writing
- Environmental factors: pressure; temperature; humidity; vibration; shock

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b ensure that the technical requirements are understood and specified

c check and obtain agreement that the requirements are interpreted correctly

d determine how best your team can respond to the requirements, in terms of workload and resources

e specify the quality assurance requirements, referencing relevant regulations and standards

f record information, in accordance with organisational requirements

g prepare and present specifications, using the correct format

h maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the customer's underlying needs

vi information sources and document types

vii the environmental factors relating to the intended use of the explosive article

viii your organisation's requirements for the specification, in terms of structure, format and content of specifications

ix analytical methods and techniques

x evaluation methods and techniques

xi your teams' capabilities, capacity and constraints

xii the requirements of any relevant quality standards and guidelines

xiii reporting lines

xiv communication techniques

xv your own level of authority, and that of others you work with

xvi the requirements of confidentiality

Unit 1.20 Identify and analyse the factors applicable to the explosive article design specification

Contexts

- Input: from within own specialism; from outside own specialism
- Information sources: informal; internal reports; external publications

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b confirm your understanding of the design requirements

c decide, prioritise and document the factors that will affect the design specification, using appropriate methods of analysis, supported by relevant evidence

d prepare and present recommendations for any further investigation and analysis, in the correct format

e show clearly where the analysis suggests the need for further investigation

f maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the required functioning of the explosive substance or article

vi the requirements of the explosive article design specification

vii the appropriateness of analytical methods and techniques, and their impact on the design

viii information sources and document systems

ix current thinking within your own area of specialism

x communication techniques

xi reporting lines

xii your own level of authority, and that of others you work with

xiii the requirements of confidentiality

Unit 1.21 Generate design options for explosive articles

Contexts

- Information sources: informal; internal specifications; external publications
- People: your manager; the customer
- Format: verbal; written

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b confirm your understanding of the design requirements

c deal with problems relating to the design requirements

d identify and develop design options, in sufficient detail to enable evaluation

e prepare costings and timescale, in accordance with the specification

f document all generated design options

g present your findings, in the correct format

h maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the required functioning of the explosive substance or article

vi current thinking within your own specialism

vii information sources and document systems

viii the requirements of the structure and content of the design specification, and the factors that may impact on your design

ix communication techniques

x reporting lines

xi your own level of authority, and that of others you work with

xii the requirements of confidentiality

Unit 1.22 Evaluate design options for explosive articles

Contexts

- Appropriate persons: your manager; the customer
- Format: verbal; written
- Evaluation techniques: established; adapting established techniques

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b confirm and agree your understanding of the design requirements and identified factors

c evaluate and prioritise design options, against the specification

d recommend the most appropriate design option, detailing supporting evidence

e confirm that the costings and timescale for the most appropriate design option are in accordance with the specification

f prepare recommendations for any further investigation and analysis

g present the evaluation, in the correct format

h maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the required functioning of the explosive substance or article

vi current thinking and policies for the design of explosive articles

vii the requirements of the structure and content of the design specification, and the factors that may impact on the design

viii evaluation techniques

ix communication techniques

x reporting lines

xi your own level of authority, and that of others you work with

xii the requirements of confidentiality

Unit 1.23 Gather information to assist in generating explosive article design options

Contexts

- Information sources: informal; internal reports; external publications
- Format: verbal; written; graphic

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b confirm your understanding of the design requirements

c obtain and review information that will affect the design

d document the information, in the correct format

e present the information, acknowledging all sources

f show where any gaps in the information suggest the need for further investigations

g maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the required functioning of the explosive substance or article

vi information sources and document systems

vii the requirements of the structure and content of design specifications

viii how to present the information

ix reporting lines

x your own level of authority, and that of others you work with

xi the requirements of confidentiality

Unit 1.24 Build prototype(s) of selected design(s) for complex explosive articles

This unit comprises the following elements:

1.24.1 Prepare drawings for complex explosive article prototype(s)
1.24.2 Carry out assembly-related activities to build complex explosive article prototype(s)

Unit 1.24 Build prototype(s) of selected complex design(s) for explosive articles

1.24.1 Prepare drawings for complex explosive article prototype(s)

Contexts

- Drawings: assembly of discrete parts; complex assembly of multi-part components
- People: colleagues; your manager; quality control representative; design manager/authority

Performance Criteria

You need to:

a work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines

b use up-to-date standards and technical requirements

c identify the features required for the drawings and material specifications

d identify the formats and conventions to be used

e deal with any problems associated with the technical information and its interpretation

f produce drawings, assembly procedures or sequences, that are clear and concise

g use codes and other references that follow the required conventions

h obtain approval to drawings, within agreed timescales, by authorised people

i ensure that drawings are properly registered and stored securely

j maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v your team's capabilities, capacity and constraints

vi component assembly methods, tools and techniques

vii the deadline for the work

viii your organisation's requirements in terms of quality, the structure, format and content of drawings, designs and materials

ix the type and sources of technical information required for drawings and assembly procedures

x reporting lines

xi your own level of authority, and that of others you work with

xii the requirements of confidentiality

Unit 1.24 Build prototype(s) of selected complex design(s) for explosive articles

1.24.2 Carry out assembly-related activities to build complex explosive article prototype(s)

Contexts

- Type of components to be assembled: explosive; non-explosive
- Resources: yourself; your team

Performance Criteria

You need to:

a work safely at all times, complying with health and safety and other relevant regulations, legislation and guidelines

b confirm the requirements of the specification, and ensure that you have up-to-date documentation

c confirm the availability and suitability of any resources required

d obtain the required components, where available, and manufacture new ones where required by the specification

e take adequate precautions to prevent damage to components, tools and equipment during assembly

f construct the prototype(s), in the correct sequence, using the approved tools and techniques

g report any inaccuracies or discrepancies in drawings, specifications or components, and take action within your level of authority

h record and make any necessary adjustments to the components required during construction of the prototype

i maintain documentation, in accordance with organisational procedures

j maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the design specification for the explosive article

vi how to read a technical drawing

vii component assembly methods, tools and techniques, as prescribed in the relevant documentation

viii the methods of preventing damage to the prototype

ix the precautions required to prevent unintentional functioning of the prototype

x your organisation's procedures for quality and configuration control

xi strengths, weaknesses and competences of your team

xii the documentation requirements

xiii reporting lines and procedures

xiv your own level of authority, and that of others you work with

xv the requirements of confidentiality

Unit 1.25 Build prototype(s) of selected design(s) for explosive articles

This unit comprises the following elements:

1.25.1 Prepare drawings for explosive article prototype(s)
1.25.2 Carry out assembly-related activities to build explosive article prototype(s)

Unit 1.25 Build prototype of selected design(s) for explosive articles

1.25.1 Prepare drawings for explosive article prototype(s)

Contexts

- Drawing: discrete part; assembly of discrete parts
- People: colleagues; your manager; quality control representative

Performance Criteria

You need to:

a work safely at all times, complying with health and safety and other relevant regulations, legislation and guidelines

b use up-to-date standards and technical requirements

c identify the features required for the drawings and material specifications

d identify the formats and conventions to be used

e report, to your manager, any problems with the technical information and its interpretation

f produce drawings and assembly procedures or sequences, that are clear and concise

g use codes and other references that follow the required conventions

h obtain approval to drawings, within agreed timescales, by authorised people

i ensure that drawings are properly registered and stored securely

j maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the deadline for the work

vi the structure, format, content and quality of designs, materials and conventions used for drawings

vii types and sources of technical information required for drawings

viii selection of data and features for inclusion in the technical information

ix reporting lines and organisational procedures

x your own level of authority, and that of others you work with

xi the requirements of confidentiality

Unit 1.25 Build prototype of selected design(s) for explosive articles

1.25.2 Carry out assembly-related activities to build explosive article prototype(s)

Contexts

- Type of components to be assembled: explosive; non-explosive
- Adjustments: minor[1]; major[2]

Performance Criteria

You need to:

a work safely at all times, complying with health and safety and other relevant regulations, legislation and guidelines

b confirm the requirements of the specification and ensure that you have up-to-date documentation

c confirm the availability and suitability of any resources required

d obtain the required components, where available, and manufacture new ones where required by the specification

e take adequate precautions to prevent damage to components, tools and equipment during assembly

f construct the prototype(s), in the correct sequence, using the approved tools and techniques

g report any inaccuracies or discrepancies in drawings, specifications or components

h record and make any necessary minor adjustments to the components required during construction of the prototype

i report promptly any problems or major adjustments required

j maintain documentation, in accordance with organisational procedures

k maintain the requirements of confidentiality at all times

Knowledge Requirements

You need to know and understand:

i the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work

ii the relevance of personal protective equipment (PPE)

iii the nature, characteristics, hazards and risks of the explosive substances and/or articles

iv the actions to be taken in response to an unplanned event

v the explosive article design specification

vi how to read a technical drawing

vii component assembly methods, tools and techniques, as prescribed in the relevant documentation

viii the methods of preventing damage to the prototype

ix the precautions required to prevent unintentional functioning of the prototype

x your organisation's procedures for quality and configuration control

xi the documentation requirements

xii reporting lines and procedures

xiii your own level of authority

xiv the requirements of confidentiality

[1] ie within the tolerances of the design specification

[2] ie requiring authorisation