National Certificate in Petrochemical Industry (Production) (Level 4) with strands in Control Room Operations; Field Operations; Steam Generation; Storage, Transmission and Transfer; and Supervision and Quality

Level **4**

Credits **109-149 depending on strand**

This qualification is **expiring**. The last date to meet the requirements is 31 December 2010.

Purpose

People awarded this qualification will have demonstrated competence in the advanced specialised skills and knowledge required for employment in the production sector of the petrochemical industry.

The core compulsory component of this qualification recognises demonstrated knowledge and competence in the operational, technical, health, safety, and environmental (HSE), and administration activities and skills required by the petrochemical industry. People awarded this qualification have also demonstrated competence in advanced specialised production skills through meeting the requirements of at least one of the following strands: Control Room Operations; Field Operations; Steam Generation; Storage, Transmission and Transfer; and Supervision and Quality.

This qualification follows on from the skills and knowledge recognised by the National Certificate in Petrochemical Industry (Production) (Level 3) [Ref: 0980]. A diagram indicating the petrochemical qualification pathways can be found at the end of this document.

People who have been awarded or are working towards the National Certificate in Energy and Chemical Plant (Process Operation) (Level 4) with optional strands in Refrigeration, Steam Generation, Ancillary Operations, Geothermal, Waste Treatment, and Co-generation [Ref: 0141], may have already gained credit for some of the unit standards in this qualification, as the two qualifications share common credit requirements.

Replacement Information

This qualification and National Certificate in Energy and Chemical Plant (Process Operation) (Level 4) with optional strands in Refrigeration, Steam Generation, Ancillary Operations, Geothermal, Waste Treatment, and Co-generation [Ref: 0141] have been replaced by the National Certificate in Energy and Chemical Plant (Process Operation) with optional strands in Steam Generation; Turbine Operations; Waste Treatment; Refrigeration; Chemical Continuous Process; Chemical Batch Process; Solid Handling; Petrochemical Field Operations; Petrochemical Control Room Operations; Petrochemical Production Storage; Kraft Cycle Operations; Kraft Bleach and Chemical Operations; and Kraft Pulping and Chemical Plant [Ref: 1344].

Special Notes

It is recommended that people seeking award of this qualification have achieved prior award of the National Certificate in Petrochemical Industry (Production) (Level 3) [Ref: 0980], or can demonstrate equivalent knowledge and skills.

Credit Range

	Core Compulsory	**Control Room Operations Strand**	
		Compulsory	**Elective**
Level 3 credits	12	4	0-20
Level 4 credits	50	7	0-101
Level 5 credits	5	24	0-8
Minimum totals	67	35	25
Qualification total with strand		127	

	Field Operations Strand		**Steam Generation Strand**	
	Compulsory	**Elective**	**Compulsory**	**Elective**
Level 2 credits	-	0-4	-	-
Level 3 credits	-	0-27	-	0-13
Level 4 credits	7	0-120	36	0-51
Level 5 credits	-	0-20	-	0-20
Minimum totals	7	40	36	30
Qualification total with strand	114		133	

	Storage, Transmission and Transfer Strand		**Supervision and Quality Strand**	
	Compulsory	**Elective**	**Compulsory**	**Elective**
Level 2 credits	-	0-4	-	-
Level 3 credits	-	0-29	26	0-10
Level 4 credits	17	0-41	38	0-22
Level 5 credits	-	0-24	8	0-8
Minimum totals	17	25	72	10
Qualification total with strand	109		149	

Requirements for Award of Qualification

This qualification will be awarded to people who have met the requirements of the core compulsory section and who have met the requirements of one of the following strands.

- Control Room Operations Strand
- Field Operations Strand
- Steam Generation Strand
- Storage, Transmission and Transfer Strand
- Supervision and Quality Strand

Award of NQF Qualifications

Credit gained for a standard may be used only once to meet the requirements of this qualification.

Unit standards and achievement standards that are equivalent in outcome are mutually exclusive for the purpose of award. The table of mutually exclusive standards is provided in section 7 of the New Zealand Qualifications Authority (NZQA) *Rules and Procedures* publications available at http://www.nzqa.govt.nz/ncea/acrp/index.html.

Reviewed standards that continue to recognise the same overall outcome are registered as new versions and retain their identification number (ID). Any version of a standard with the same Id may be used to meet qualification requirements that list the ID and/or that specify the past or current classification of the standard.

Detailed Requirements

Core Compulsory

The following standards are required

Business > Management > Quality Management

Id	Title	Level	Credit
8085	Demonstrate knowledge of quality and its management	3	4

Engineering and Technology > Petrochemical Industry > Petrochemical Operations Communication and Responses

Id	Title	Level	Credit
9518	Prepare, write, and issue technical reports in a petrochemical environment	5	5
9603	Identify health, safety and environmental policies and procedures in a petrochemical environment	3	5
9624	Produce and review operational procedures in a petrochemical environment	4	6

Humanities > Communication Skills > Interpersonal Communications

Id	Title	Level	Credit
9696	Apply problem solving strategies	4	4
11101	Participate in groups and/or teams to recommend solutions to problems	4	3

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

Id	Title	Level	Credit
3032	Operate valves in an energy and chemical environment	4	5
3033	Operate pumps, compressors and fans in a chemical and energy environment	4	7
3039	Purge systems in an energy and chemical environment	4	4
3043	Isolate and recommission systems in an energy and chemical environment	4	4

Id	Title	Level	Credit
3049	Carry out controlled start up and shut down procedures in an energy and chemical environment	4	6
3050	Operate control systems in an energy and chemical environment	4	7

Manufacturing > Energy and Chemical Plant > Safety and Legislation for Energy and Chemical Plant

Id	Title	Level	Credit
3063	Explain chemical spill contingency procedures in an energy and chemical environment	3	3
3066	Operate anti-pollution control systems in an energy and chemical environment	4	4

Control Room Operations Strand
Meet the requirements of all of the following sets

- Control Room Operations Compulsory
- Control Room Operations Elective

Control Room Operations Compulsory
The following standards are required

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
9616	Control emergency and unplanned shut downs in a petrochemical environment	5	12
9617	Commission systems in a petrochemical environment	4	7
18422	Utilise distributed control systems in a petrochemical environment	3	4
18725	Monitor and analyse processes and respond to deviations in a petrochemical environment	5	12

Control Room Operations Elective
A minimum of 25 credits

Computing and Information Technology > Computing > Generic Computing

Id	Title	Level	Credit
2785	Create a computer spreadsheet to provide a solution for organisation use	3	5
5940	Produce a presentation using a desktop presentation computer application	3	5

Education > Generic Education and Training > Assessment of Learning

Id	Title	Level	Credit
4098	Use standards to assess candidate performance	4	5
11281	Prepare candidates for assessment	4	3

Engineering and Technology > Petrochemical Industry > Petrochemical Operations Communication and Responses

Id	Title	Level	Credit
9524	Establish the causes and location of faults in a petrochemical environment	4	5
9630	Demonstrate knowledge of HAZOP study and QRA in a petrochemical environment	4	4

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
18733	Operate equipment for distillation in a petrochemical environment	5	8

Engineering and Technology > Petrochemical Industry > Petrochemical Product Transmission and Transfer

Id	Title	Level	Credit
9583	Manage product storage and transfer facilities in a petrochemical environment	4	6
18421	Demonstrate knowledge of compression equipment in a petrochemical environment	4	6

Health > Occupational Health and Safety > Occupational Health and Safety Practice

Id	Title	Level	Credit
17589	Monitor, control and audit work permit systems	4	5
17590	Issue work site specific work permits	3	6

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

Id	Title	Level	Credit
3035	Operate fired pressure equipment (above 20 MW) in an energy and chemical environment	4	10
3037	Operate steam generation equipment (above 20MW) in an energy and chemical environment	4	14
3038	Operate refrigeration equipment and control processes in an energy and chemical environment	4	10
3041	Operate boiler feed water treatment systems (above 20 MW) in an energy and chemical environment	4	12

Id	Title	Level	Credit
3044	Operate steam turbines in an energy and chemical environment	4	14
3045	Operate solid handling systems in an energy and chemical environment	3	4
3048	Operate product storage equipment in an energy and chemical environment	4	4

Manufacturing > Energy and Chemical Plant > Safety and Legislation for Energy and Chemical Plant

Id	Title	Level	Credit
3064	Control chemical reactions in an energy and chemical environment	4	3

Field Operations Strand
Meet the requirements of all of the following sets

- Field Operations Compulsory
- Field Operations Elective

Field Operations Compulsory
The following standard is required

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
9617	Commission systems in a petrochemical environment	4	7

Field Operations Elective
A minimum of 40 credits

Computing and Information Technology > Computing > Generic Computing

Id	Title	Level	Credit
2785	Create a computer spreadsheet to provide a solution for organisation use	3	5
5940	Produce a presentation using a desktop presentation computer application	3	5

Education > Generic Education and Training > Assessment of Learning

Id	Title	Level	Credit
4098	Use standards to assess candidate performance	4	5
11281	Prepare candidates for assessment	4	3

Engineering and Technology > Petrochemical Industry > Petrochemical - Operation of Vehicles, Crafts, and Equipment

Id	Title	Level	Credit
9581	Administer helicopter landing operations in a petrochemical environment	4	8
9602	Operate and launch safety marine craft on a petrochemical off shore installation	4	5

Engineering and Technology > Petrochemical Industry > Petrochemical Operations Communication and Responses

Id	Title	Level	Credit
9524	Establish the causes and location of faults in a petrochemical environment	4	5
9630	Demonstrate knowledge of HAZOP study and QRA in a petrochemical environment	4	4

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
18422	Utilise distributed control systems in a petrochemical environment	3	4
18725	Monitor and analyse processes and respond to deviations in a petrochemical environment	5	12
18733	Operate equipment for distillation in a petrochemical environment	5	8

Engineering and Technology > Petrochemical Industry > Petrochemical Product Transmission and Transfer

Id	Title	Level	Credit
18421	Demonstrate knowledge of compression equipment in a petrochemical environment	4	6

Health > Occupational Health and Safety > Occupational Health and Safety Practice

Id	Title	Level	Credit
17589	Monitor, control and audit work permit systems	4	5
17590	Issue work site specific work permits	3	6

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

Id	Title	Level	Credit
3035	Operate fired pressure equipment (above 20 MW) in an energy and chemical environment	4	10
3037	Operate steam generation equipment (above 20MW) in an energy and chemical environment	4	14

Id	Title	Level	Credit
3038	Operate refrigeration equipment and control processes in an energy and chemical environment	4	10
3040	Operate raw water treatment systems in an energy and chemical environment	4	12
3041	Operate boiler feed water treatment systems (above 20 MW) in an energy and chemical environment	4	12
3044	Operate steam turbines in an energy and chemical environment	4	14
3045	Operate solid handling systems in an energy and chemical environment	3	4
3048	Operate product storage equipment in an energy and chemical environment	4	4
3052	Operate auxiliary internal combustion engines in an energy and chemical environment	2	4
3053	Operate gas turbines in an energy and chemical environment	3	3

Manufacturing > Energy and Chemical Plant > Safety and Legislation for Energy and Chemical Plant

Id	Title	Level	Credit
3064	Control chemical reactions in an energy and chemical environment	4	3

Steam Generation Strand

Meet the requirements of all of the following sets

- Steam Generation Compulsory
- Steam Generation Elective

Steam Generation Compulsory

The following standards are required

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

Id	Title	Level	Credit
3035	Operate fired pressure equipment (above 20 MW) in an energy and chemical environment	4	10
3037	Operate steam generation equipment (above 20MW) in an energy and chemical environment	4	14
3041	Operate boiler feed water treatment systems (above 20 MW) in an energy and chemical environment	4	12

Steam Generation Elective
A minimum of 30 credits

Engineering and Technology > Petrochemical Industry > Petrochemical Operations
Communication and Responses

Id	Title	Level	Credit
9524	Establish the causes and location of faults in a petrochemical environment	4	5
9630	Demonstrate knowledge of HAZOP study and QRA in a petrochemical environment	4	4

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
9617	Commission systems in a petrochemical environment	4	7
18422	Utilise distributed control systems in a petrochemical environment	3	4
18725	Monitor and analyse processes and respond to deviations in a petrochemical environment	5	12
18733	Operate equipment for distillation in a petrochemical environment	5	8

Engineering and Technology > Petrochemical Industry > Petrochemical Product Transmission and Transfer

Id	Title	Level	Credit
18421	Demonstrate knowledge of compression equipment in a petrochemical environment	4	6

Health > Occupational Health and Safety > Occupational Health and Safety Practice

Id	Title	Level	Credit
17589	Monitor, control and audit work permit systems	4	5
17590	Issue work site specific work permits	3	6

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

Id	Title	Level	Credit
3038	Operate refrigeration equipment and control processes in an energy and chemical environment	4	10
3044	Operate steam turbines in an energy and chemical environment	4	14
3053	Operate gas turbines in an energy and chemical environment	3	3

Storage, Transmission and Transfer Strand
Meet the requirements of all of the following sets

- Storage, Transmission and Transfer Compulsory
- Storage, Transmission and Transfer Elective

Storage, Transmission and Transfer Compulsory
The following standards are required

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
9617	Commission systems in a petrochemical environment	4	7

Engineering and Technology > Petrochemical Industry > Petrochemical Product Transmission and Transfer

Id	Title	Level	Credit
9583	Manage product storage and transfer facilities in a petrochemical environment	4	6

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

Id	Title	Level	Credit
3048	Operate product storage equipment in an energy and chemical environment	4	4

Storage, Transmission and Transfer Elective
A minimum of 25 credits

Computing and Information Technology > Computing > Generic Computing

Id	Title	Level	Credit
2785	Create a computer spreadsheet to provide a solution for organisation use	3	5
5940	Produce a presentation using a desktop presentation computer application	3	5

Education > Generic Education and Training > Assessment of Learning

Id	Title	Level	Credit
4098	Use standards to assess candidate performance	4	5
11281	Prepare candidates for assessment	4	3

Engineering and Technology > Petrochemical Industry > Petrochemical Operations Communication and Responses

Id	Title	Level	Credit
9524	Establish the causes and location of faults in a petrochemical environment	4	5

Id	Title	Level	Credit
9630	Demonstrate knowledge of HAZOP study and QRA in a petrochemical environment	4	4

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
9609	Monitor atmospheric emissions in a petrochemical environment	3	3
9616	Control emergency and unplanned shut downs in a petrochemical environment	5	12
18422	Utilise distributed control systems in a petrochemical environment	3	4
18725	Monitor and analyse processes and respond to deviations in a petrochemical environment	5	12

Engineering and Technology > Petrochemical Industry > Petrochemical Product Transmission and Transfer

Id	Title	Level	Credit
9582	Conduct petrochemical road or rail tanker loading activities	4	3
9585	Conduct basic pigging activities in a petrochemical environment	3	3
18421	Demonstrate knowledge of compression equipment in a petrochemical environment	4	6

Health > Occupational Health and Safety > Occupational Health and Safety Practice

Id	Title	Level	Credit
17589	Monitor, control and audit work permit systems	4	5
17590	Issue work site specific work permits	3	6

Humanities > Communication Skills > Interpersonal Communications

Id	Title	Level	Credit
1312	Give oral instructions in the workplace	3	3

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

Id	Title	Level	Credit
3038	Operate refrigeration equipment and control processes in an energy and chemical environment	4	10
3052	Operate auxiliary internal combustion engines in an energy and chemical environment	2	4

Supervision and Quality Strand
Meet the requirements of all of the following sets
- Supervision And Quality Compulsory
- Supervision And Quality Elective

Supervision And Quality Compulsory
The following standards are required

Business > Management > First Line Management

Id	Title	Level	Credit
15190	Develop and implement work unit plans	4	5
16612	Use effective business writing skills as a first line manager	4	4
17497	Lead a team or group to complete routine tasks within set timeframes	3	4
18336	Demonstrate team-building skills	4	5

Business > Management > Quality Management

Id	Title	Level	Credit
8077	Participate in a team to achieve specified quality improvement objectives	3	4
8086	Demonstrate knowledge required for quality auditing	4	4
8087	Use core quality management tools	3	5

Education > Adult Education and Training > Delivery of Adult Education and Training

Id	Title	Level	Credit
7114	Coach adult learners	5	8

Education > Generic Education and Training > Assessment of Learning

Id	Title	Level	Credit
11281	Prepare candidates for assessment	4	3

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
9486	Identify quality management processes in a petrochemical environment	3	4

Health > Occupational Health and Safety > Occupational Health and Safety Practice

Id	Title	Level	Credit
17589	Monitor, control and audit work permit systems	4	5

Id	Title	Level	Credit
17590	Issue work site specific work permits	3	6

Humanities > Communication Skills > Interpersonal Communications

Id	Title	Level	Credit
1296	Conduct a one to one interview	4	3
9679	Participate in formal meetings	4	3
9704	Manage interpersonal conflict	4	6
9705	Give and receive feedback	3	3

Supervision And Quality Elective
A minimum of 10 credits

Business > Management > First Line Management

Id	Title	Level	Credit
18337	Implement training and development activities for teams and individuals in the workplace	4	5

Community and Social Services > Fire and Rescue Services > Fire and Rescue Services - Generic Fire Fighting

Id	Title	Level	Credit
3321	Lead a petrochemical emergency response team	5	8

Computing and Information Technology > Computing > Generic Computing

Id	Title	Level	Credit
2785	Create a computer spreadsheet to provide a solution for organisation use	3	5
5940	Produce a presentation using a desktop presentation computer application	3	5

Education > Generic Education and Training > Assessment of Learning

Id	Title	Level	Credit
4098	Use standards to assess candidate performance	4	5

Engineering and Technology > Petrochemical Industry > Petrochemical Operations Communication and Responses

Id	Title	Level	Credit
9524	Establish the causes and location of faults in a petrochemical environment	4	5

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
18286	Control the disposal of hazardous substances and waste materials in a petrochemical environment	4	7

Transition Arrangements

Version 4 was issued to indicate that this qualification is expiring. This qualification and National Certificate in Energy and Chemical Plant (Process Operation) (Level 4) with optional strands in Refrigeration, Steam Generation, Ancillary Operations, Geothermal, Waste Treatment, and Co-generation [Ref: 0141] have been replaced by the National Certificate in Energy and Chemical Plant (Process Operation) with optional strands in Steam Generation; Turbine Operations; Waste Treatment; Refrigeration; Chemical Continuous Process; Chemical Batch Process; Solid Handling; Petrochemical Field Operations; Petrochemical Control Room Operations; Petrochemical Production Storage; Kraft Cycle Operations; Kraft Bleach and Chemical Operations; and Kraft Pulping and Chemical Plant [Ref: 1344].

For detailed information see Review Summaries on the NZQA website.

Previous versions of the qualification

Version 3 was issued following the review of the Quality Management unit standards.

Changes to structure and content
- Credits for unit standard 8087 decreased from 6 to 5
- Level for unit standard 8086 increased from 3 to 4
- Level for unit standard 8077 decreased from 4 to 3 and title updated
- Title of unit standard 8085 updated
- EXITO telephone and facsimile contact numbers updated
- Qualification total with Supervision and Quality strand decreased from 150 to 149, changing the overall qualification total to 109-149 depending on strand.

People working toward version 1 or 2 of this qualification could either complete the requirements for that version or transfer their results to version 3 of the qualification.

This qualification contains standards that replace earlier standards. For the purposes of this qualification, people who have gained credit for the expiring standards are exempt from the requirement to gain credit for the replacement standards – see table below.

Credit for	Exempt from
9595	18422
9615	18733
9619	17590

Credit for	Exempt from
9620	17589
9593 and 9594	18725
9608 and 9610	18286

Version 2 was issued following reviews of the Fire and Rescue Services, Energy and Chemical Plant, and Adult Education and Training unit standards. The Standard Setting Body information was updated following the amalgamation of the Gas and Petrochemical Industry Training Organisation with the NZ Extractive Industries Training Organisation.

Changes included an increase in credits for unit standard 3321, the level for unit standard 7114 increased, the titles for unit standards 3035, 3037, and 3041 were updated, and the qualification pathway diagram was updated.

There were no transition implications.

Version 1 was registered in December 2002 and was one of five qualifications [Refs: 0977-0981] for the petrochemical industry that replaced:

- National Certificate in Petrochemical Industry (Level 2) with optional strands in Drilling, and Production [Ref: 0494]
- National Certificate in Petrochemical Industry (Level 3) with optional strands in Drilling, Laboratory Operations, Production, and Transmission [Ref: 0495]
- National Certificate in Petrochemical Industry (Level 4) with optional strands in Drilling, Laboratory Operations, Production, Supervision and Quality, and Transmission [Ref: 0496].

There were significant differences between the replacement qualifications and the originals and no direct one-to-one relationship was established. The transition for the replaced qualifications expired in December 2003.

NQF Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	December 2002	December 2010
Revision	2	June 2004	December 2010
Revision	3	December 2004	December 2010
Review	4	December 2007	December 2010

Standard Setting Body

NZ Extractives Industry Training Organisation
PO Box 2623
CHRISTCHURCH

Telephone: 03 964 4710
Email: info@exito.org.nz

Other standard setting bodies whose standards are included in the qualification

Fire and Rescue Services Industry Training Organisation
New Zealand Industry Training Organisation – Industrial Health and Safety Advisory Group
NZQA

Certification

The certificate will display the logos of NZQA and the NZ Extractive Industries Training Organisation.

Classification

This qualification is classified according to the NQF classification system and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

NQF Classification		**NZSCED**	
Code	**Description**	**Code**	**Description**
321	Engineering and Technology > Petrochemical Industry	030303	Engineering and Related Technologies > Process and Resources Engineering > Mining and Resources Engineering

Quality Management Systems

Providers and Industry Training Organisations must be accredited by a recognised Quality Assurance Body before they can register credits from assessment against standards. Accredited providers and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Accreditation requirements and the moderation system are outlined in the associated Accreditation and Moderation Action Plan (AMAP) for each standard.

Appendix 1

Petrochemical Industry Qualification