



More skills ... more opportunities

# **Professional Skills Record**

## **Refrigeration and Air Conditioning Mechanic**

### **NOC 7313**

## ***ACKNOWLEDGEMENTS***

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This project is the result of the collaboration of the following dedicated adult educational consultants in Prince Edward Island:

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# Journeyperson's Handbook

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This handbook is designed to help skilled trades Journeypersons manage the skills and learning of their Apprentices who are using a Professional Skills Record.

## **1 Why Do I Need this Handbook?**

Eighty percent of all learning in a trade happens on the job. This means the apprentice has the responsibility to learn and you, as their journeyperson, have the responsibility to mentor and teach.

Signing off for the learning an apprentice has completed under your supervision is a huge responsibility. With all the skills needed in a trade, it is important that both you and the apprentice have a tool to help you record and sign off on that learning.

## **2 But We Have Logbooks**

When a tradesperson registers as an apprentice in most provinces or territories in Canada, they are given a Logbook.

A Logbook:

- is issued by the apprenticeship authority within a jurisdiction
- is created from the National Occupational Analysis (NOA) in a trade
- is a list of all the general skill areas (**Blocks and Tasks**) in a trade
- records an apprentice's progress in the general skill areas of a trade
- is signed off by a journeyperson to guarantee that an apprentice is performing these tasks to Industry Standard.

A Logbook lists the Blocks and Tasks from the NOA **but** the Interprovincial Red Seal exam and trades training courses in colleges and trade schools use **all** the information in the NOA. This includes the Blocks, Tasks, **Sub-tasks and the Knowledge and Abilities** listed in the NOA.

Each apprentice needs a tool that lists **all** the skills and learning they need in their trade career. Then, if they have one employer or several employers over their entire term of apprenticeship, both the apprentice and the journeyperson know what learning has been completed:

- the journeyperson knows what skills they are signing off to verify what has been taught; and
- the apprentice knows what they need to learn to be successful in their Red Seal exam.

### **3 What is a National Occupational Analysis (NOA)?**

The Canadian Council of Directors of Apprenticeship, which is made up of managers and directors of apprenticeship from every province and territory in Canada, guides a Human Resources and Skills Development Canada (HRSDC) sponsored program to develop NOAs.

Under this partnership, joint planning committees made up of tradespeople who have a Certificate of Qualification, Red Seal endorsement from each province and territory in Canada, come together in Ottawa every four to five years to review and revise the NOA in all of the 45 skilled trades.

Each NOA is accepted as the national standard in that trade. The NOA is then used to:

- identify and group tasks performed by skilled workers in each trade in every province and territory in Canada
- group these tasks by Blocks, Tasks, Sub-tasks, Knowledge, Skills and Abilities (also called "**competencies**") required in a trade
- give information on the breakdown of questions from all sections of the NOA in the Interprovincial Red Seal exam
- create all the questions for the Red Seal exam
- create curriculum for trade school programs and Block Release/Period/Level\* programs in a trade.

\* *The in-school portion of apprenticeship has several names across Canada. In some provinces and territories it is called Block Release, in others it is called Period Training or Level.*

## **4 If there is an NOA, why do we need a Professional Skills Record (PSR)?**

The NOA is designed to be used for creating curriculum and for developing test questions for the Red Seal exam.

The PSR is designed to be used by an apprentice and a journeyperson in the workplace. The PSR provides a fair and objective assessment tool to record the apprentice's learning and skills.

The PSR has been developed **with** apprentices during a three-year research project on PEI called Trade Essentials. Recommendations made by the apprentices who tested the tool have been built into the document.

The PSR was then validated by teams of tradespeople who have a Certification of Qualification, Red Seal endorsement in each trade who came together and discussed what an apprentice is expected to learn from their journeyperson in the workplace.

The apprentice has the main responsibility for completing the PSR. It is designed as a self-assessment tool so the apprentice can keep track of his/her skills and learning and make plans to fill any technical skills training gaps.

The PSR takes information from the NOA and:

- lays it out in a chart
- lists the percentage and number of questions for the Red Seal exam from each task on every page
- takes the skills from the NOA and describes them in terms of what a tradesperson does on the job, for example:
  - In the **NOA**, the skill says – "knowledge of blueprints and drawings"
  - In the **PSR**, the skill says – "read and interpret blueprints and drawings"
- has a rating chart so the apprentice can judge his/her level of learning and have it all recorded for you to review
- provides you, the journeyperson, with a tool to discuss details of an apprentice's skill areas that are great and areas that may need to improve
- helps the apprentice make a plan so he/she can improve skills
- helps you know what skills you still have to teach the apprentice.



## **5 Am I expected to teach all the skills in a PSR?**

No. A PSR contains **all** the skills and learning a tradesperson has to learn over all their years as an apprentice. You, as their journeyperson, can help make this tool useful by completing the sign-off on the learning and skill you know they have. Some of the ways you can assess the skills your apprentice has are:

- **OBSERVATION** – you watch them use their knowledge, skills and abilities or competencies to perform a task or sub-task

For example, you ask them to select a tool for a specific job, then watch them use that tool to do a task.

- **INTERVIEW** – you have a discussion with your apprentice to find out if they can demonstrate an understanding of what they are doing

For example, you ask them to tell you about any safety precautions that have to be followed before they start a certain task.

- **DOCUMENTATION** – an apprentice may have a document that provides proof of skills they already have. You can use the PSR to sign-off on tasks the document covers. The document or certificate could be from:

- another employer,
- a trade school or college,
- an industry training course,
- another province or territory,
- or even from another country.

For example, you need all your employees to be trained in WHMIS. A new apprentice you just hired shows you a WHMIS certificate he/she have from a job they were working on a couple of months ago in northern Canada.

Apprentices will also tell you, through their self-assessments, the best way they think they can prove the skills they have. This can help guide you, as their mentor, to choose a way to assess your apprentice that works best for both of you.

## 6 Are there any tips on how to be a good mentor to my apprentice?

Mentoring has always been the foundation of apprenticeship. In trades, a mentor is a person who has a great deal of learning and skills from experience in a trade who helps a less experienced person by guiding, teaching and sharing their skills and learning.

Along with having learning and experience in their trade, the most successful mentors are:

- **Patient** - and understand the apprentice needs time to learn and practise their skills to become as good as their mentor.
- **Organized** - and set a schedule to meet regularly with their apprentice to track their learning and make plans for new learning.
- **Positive** – and supportive in helping an apprentice tackle new learning and encourage them to keep working on skills they find difficult to learn.
- **Respectful** – so that other employees in the workplace accept the apprentice and are willing to help and encourage the new apprentice.

As a mentor, you are a role model for your apprentice. To create a successful relationship between you and your apprentice you can:

- **Lead by example.** If you set safety and quality assurance as firsts on your list each and every day, so will your apprentice.
- **Build trust.** If you want your apprentice to trust and respect you, you can show trust in them by assigning them some responsibility as soon as you see an opportunity.
- **Communicate.** Communication is a two-way street. Be willing to listen as you give directions and be available to your apprentice when they need you. Always treat every question seriously. If your apprentice has the confidence to ask, it is important to give a respectful answer.
- **Be reliable.** Your apprentices need to know they can depend on you when they run into a problem. Create supportive relationships with other employees so if you are away from the workplace, your apprentice feels confident in approaching another employee for help.

## 6.1 Tips

- **Give clear instructions.** When assigning a task and giving direction, give step-by-step instructions, then ask your apprentice to repeat the instructions. This gives them the opportunity to ask questions on things that might not be clear to them.

### Checklist for giving instructions:

- ✓ **explain the task**
  - ✓ **show them how it is done**
  - ✓ **answer their questions**
  - ✓ **oversee the work**
  - ✓ **give them time to practise**
  - ✓ **give feedback on how they are doing**
  - ✓ **take time to show them how to do the task better**
- **Give feedback.** Giving feedback often helps your apprentice to have a clear understanding of what you want them to do and how you want them to perform. The PSR helps you to give feedback because each knowledge, skills and ability (competency) statement is clear.

There are three types of feedback that work best in the workplace:

**Positive** feedback means you want your apprentice to continue what they are doing. People are motivated by hearing they are doing a good job. They usually do more and try harder.

**Constructive** feedback means you want your apprentice to change how or what they are doing. Offering support and guidance to your apprentice to make the changes you need usually brings the best results.

**Direct** feedback focuses on what you have seen, not on secondhand information. Focus on how the apprentice is doing and what you have planned for them to do.

- **Give your apprentice experience in many skills.** Sometimes apprentices end up performing the same set of skills over and over again because they are really good at them. They are required to learn the scope of the entire trade during their apprenticeship. If you have the capability, it would be helpful to take advantage of the opportunity to cover a wide range of skills by moving your apprentice from one set of skills to another on a regular basis.
- **Track and Document learning.** Every employer cannot offer an apprentice training in every skill in a trade because each workplace is unique. Some workplaces are specialists in one area of a trade.

As a journeyperson, you have the responsibility to sign off on the skills your apprentice learns under your guidance in your workplace. A PSR can help you identify those skills.

Setting a regular review date once every month or two, and keeping that time just for you and your apprentice, can increase their scope in their trade and increase their knowledge which will be an asset in the workplace.

This meeting time gives you the best opportunity to:

- monitor your apprentice's progress,
- make a plan with him/her to learn more skills, and
- find out if there are any problem areas where he/she may need help.

Regular meeting dates also help your apprentice to be prepared and able to track his/her learning. This can be done by using a Professional Skills Record (PSR).

## **7 So how do I use a Professional Skills Record (PSR) with my apprentice?**

The PSR is laid out in a chart. Each skill your apprentice has to learn has an action word to tell them how they are supposed to perform a skill. It gives you a level you can use to judge whether they are performing that skill properly. **Industry standard** is the term used to describe when your apprentice can complete a task to the level and quality of performance required by industry without assistance or supervision.

When you see the words "demonstrate an understanding of," you may find it easier to ask them questions about the skill to make sure they know what they are doing.

## PROFESSIONAL SKILLS RECORD (PSR) JOURNEYPERSON'S HANDBOOK

Your apprentice has the responsibility to complete the "Knowledge, Skills and Abilities – Competencies" section.

When you are sure your apprentice has proven to you they have completed the learning they say they have, you verify it by initialing the sub-task.

|  |
|--|
| <b>Trade Name</b><br><br>IP Exam – 125 Questions<br><br>BLOCK A<br>5% - 6 questions on the IP<br><br><u>Learning Category</u><br>OCCUPATIONAL<br>SKILLS  |
| <b>Task 1 – A</b><br>3 questions on the IP exam<br><br><u>Learning Outcome</u><br><b>Uses and maintains tools and equipment</b>  |
| Journeyperson<br>Sign-off<br>Task 1<br><br><div style="display: flex; justify-content: space-between; align-items: center;"> <span>Complete</span> <input style="width: 30px; height: 20px; border: 1px solid black;" type="checkbox"/> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <span>Incomplete</span> <input style="width: 30px; height: 20px; border: 1px solid black;" type="checkbox"/> </div> |



Knowledge, Skills and Abilities - Competencies

|  |   |   |
|--|---|---|
| <b>SUB-TASK<br/>1.01</b><br><br><u>Learning Objective</u><br><b>Uses hand tools</b><br><br><b>JP Sign-off</b> ____ | <b>1.01.01</b><br>Identify boring tools<br><br><div style="display: flex; justify-content: space-between;"> <span>Rating ____</span> <span>Complete</span> </div> <div style="display: flex; justify-content: space-between;"> <span>Proof ____</span> <input style="width: 30px; height: 20px; border: 1px solid black;" type="checkbox"/> </div> <div style="display: flex; justify-content: space-between;"> <span>Use ____</span> <input style="width: 30px; height: 20px; border: 1px solid black;" type="checkbox"/> </div> | <b>1.01.02</b><br>Identify hand cutting tools<br><br><div style="display: flex; justify-content: space-between;"> <span>Rating ____</span> <span>Complete</span> </div> <div style="display: flex; justify-content: space-between;"> <span>Proof ____</span> <input style="width: 30px; height: 20px; border: 1px solid black;" type="checkbox"/> </div> <div style="display: flex; justify-content: space-between;"> <span>Use ____</span> <input style="width: 30px; height: 20px; border: 1px solid black;" type="checkbox"/> </div> |
|--|---|---|



When your apprentice proves to you that he/she has finished enough sub-tasks to have a good grasp of the task, you verify that learning by initialing "complete".



If your apprentice has not completed enough sub-tasks or you do not agree with the ratings they have given themselves, initial "incomplete".

| <b>Task I</b><br><b>Learning Needs</b>  |  |
|---|--|
| <b>Sub-Tasks</b><br><u>Learning Objectives</u><br>to be completed<br>Comments |  |
|   |  |

## Learning Objectives



You might

- You have now created a learning plan for your apprentice using a PSR.

The PSR can help you give a fair assessment of your apprentice's ability to perform each technical skill task. If you are assigned an apprentice from another employer, province, territory or country, you can use the PSR to review his/her skills so you do not waste your valuable time teaching them skills they already know and can do.



# PROFESSIONAL SKILLS RECORD

A tool for recording and recognizing skills and learning of trade apprentices

## Refrigeration and Air Conditioning Mechanic NOC 7313

A project of:  
The Province of PEI  
and  
Human Resources and Skills Development Canada



Human Resources and  
Skills Development Canada

Ressources humaines et  
Développement des compétences Canada





The **Professional Skills Record (PSR)** is a technical skills assessment tool designed to be used in the workplace by an apprentice and a journeyperson. The PSR has taken the content from the National Occupational Analysis (NOA) and arranged it so apprentices can use it to measure their progress in their trade from the time they sign up for apprenticeship through to Red Seal certification.

This PSR has been through a validation process with a team of trade professionals with Certificate of Qualification, Red Seal endorsement, who reached agreement on the wording of each and every knowledge and skill (*competency*) to make it measurable.

The PSR was originally designed as a tool to help apprentices move through a Recognition for Skills and Learning (RSL) process so they can receive recognition for skills they have, no matter where they learned them. Through completion of a PSR, they can avoid relearning what they already know and can do by entering the apprenticeship Block/Period/Level in-school process at a higher level. For example, move directly into Block/Period/Level three rather than relearning Block/Period/Level One and Two.

Feedback from testing and validation of the PSR has opened many new possibilities for using this tool. The PSR can be used:

- as a tool for valid assessment in a Recognition for Skills and Learning (RSL) process
- as a tool that new Canadians and people planning to emigrate can use, to assess their skills against Canadian standards, receive recognition for skills they already have and, if necessary, make a plan to fill any technical skill gaps they may still have
- in the secondary-school system and in post-secondary trades training so students can know the full scope of the trade they are entering
- as a tool to guide journeypersons while they are mentoring apprentices so they are aware of all the skills apprentices need to learn to be fully competent in their professional trade designation.

#### INFORMATION SITES:

PROJECT SITE  
[www.tradeessentials.ca](http://www.tradeessentials.ca)

CANADIAN RED SEAL SITE  
[www.red-seal.ca](http://www.red-seal.ca)

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## Refrigeration and Air Conditioning Mechanic Trade Information

Name: \_\_\_\_\_ Full Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_  
Phone: Home \_\_\_\_\_ Work \_\_\_\_\_ Cell \_\_\_\_\_

## Technical Skills Journey person Assessor/s

Name: \_\_\_\_\_ Business Name: \_\_\_\_\_  
Phone: Home: \_\_\_\_\_ Work: \_\_\_\_\_ Cell: \_\_\_\_\_ Business Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_

Name: \_\_\_\_\_ Business Name: \_\_\_\_\_  
Phone: Home: \_\_\_\_\_ Work: \_\_\_\_\_ Cell: \_\_\_\_\_ Business Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_

Name: \_\_\_\_\_ Business Name: \_\_\_\_\_  
Phone: Home: \_\_\_\_\_ Work: \_\_\_\_\_ Cell: \_\_\_\_\_ Business Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_

Apprenticeship Program Start Date \_\_\_\_\_ Completion Date: \_\_\_\_\_ Red Seal Certification Date \_\_\_\_\_

Apprenticeship Training Officer:

Provincial/Territorial Apprenticeship Manager:

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Province/Territory: \_\_\_\_\_

## Professional Skills Record (PSR) Development

### Professional Skills Record (PSR)

The Professional Skills Record (PSR) is designed as a tool of assessment. Learning and skills are validated through the PSR when they are signed-off by a journeyperson in the trade in which the apprenticeship is being served.

All skills and learning assessed in this PSR are measured against the standards listed in the National Occupational Analysis (NOA). The NOA is recognized by the Canadian Council of Directors of Apprenticeship (CCDA) as the national standard for the occupation of Refrigeration and Air Conditioning Mechanic.

### PSR Refrigeration and Air Conditioning Mechanic Document Validation

**To conduct a reliable assessment through a formal recognition process, skills and learning statements must be measurable. To assess skills and learning using a PSR in the trades, the Knowledge, Skills and Abilities listed in the NOA have been made into measurable competency statements by adding an “action word.” This action word describes the skill and learning level which must be reached by an apprentice on the job in order to meet industry standards. Each PSR has been validated by a trades team, all of whom hold a Certificate of Qualification with Red Seal endorsement, and who reached consensus on each action word used in every knowledge, skill and ability statement.**

## Where Technical Trade Learning Happens

This Professional Skills Record (PSR) records and recognizes directly related trade technical skills and knowledge learned through:

- **Formal Learning** – structured learning that occurs in formal education and training institutions (for example, high school, trades school, apprenticeship programs, registered union and industry training programs)
- **Non-formal Learning** – learning that happens through planned, structured training or education outside the formal education system (for example, workshops, seminars, community school)
- **Informal/Experiential Learning** – learning that results from experience, occurs outside a structured environment, and is controlled by the learner (for example, experience on-the-job, volunteer work, self-study and life experiences). Informal or experiential learning must be current and essential to the trade.

*Definitions: Adopted and/or interpreted from Work-related Informal Learning: Research and Practice in the Canadian Context, CAPLA 2008*

## Academic Trade Requirement

**Trade Designation: Refrigeration and Air Conditioning Mechanic National Occupational Classification (NOC) 7313**

One of the following prerequisites must be met before writing the Interprovincial Red Seal exam: an academic Grade 12 certificate or a General Education Diploma (GED) or successful assessment in the following Essential Skills.

Essential Skills common to all trades are listed in Appendix A of this document. Specific Essential Skills for the Refrigeration and Air Conditioning Mechanic trade are listed on the Red Seal website: [www.red-seal.ca](http://www.red-seal.ca). (Once on that site, you will find the Essential Skills Profiles under “National Occupational Analysis.”)

A document can prove valuable learning that is recognized by industry and learning institutions.

**Record and save every document earned in industry, trade school or union.**

[illegible]

## Prior Learning Assessment and Recognition (PLAR). . . Recognition for Skills and Learning (RSL)

PLAR is a formal recognition process in which a variety of tools are used to help people identify, demonstrate and receive recognition for skills and learning they have from the workplace, educational institutions, credentialing organizations or regulatory bodies.

The **Professional Skills Record (PSR)** is a tool designed to assist a trades apprentice to record skills and learning, and then receive recognition for the skills and learning through a PLAR trades process called:

### RECOGNITION FOR SKILLS AND LEARNING (RSL)

Traditionally, 80% of learning in a trade happens in the workplace. Through a **Recognition for Skills and Learning (RSL)** process, an apprentice can advance in a trade when they prove they have the required hours, skills and learning for that trade. Proof of skills and learning is **recorded** by the apprentice in a **PSR** and **verified** when signed-off by a journeyperson in that trade.

Through the completion of a **PSR**, an apprentice can avoid relearning what they already know and can do. Through an **RSL** process, a trade apprentice can submit a PSR for assessment to:

- advance in Block/Period/Level in-school training by not having to complete a Block/Period/Level in which proof is provided that skills and learning have already been achieved for that Block/Period/Level.
- transfer common skills from one trade to another - **Skills and learning must be transferred prior to writing the Interprovincial Red Seal exam. The same skills and learning cannot be recognized toward certification in two trades.**
- compare skills and learning in a trade from another country to Canadian standards (**as stated in the National Occupational Analysis**) and receive recognition for the skills and learning that meet Canadian standards.



The following assessment indicators (Rating, Proof, Use) have been developed to help record and then assess skills and learning in accordance with the standards of the trade outlined in the National Occupational Analysis (NOA).

| Assessment Standard ONE   |        |  |
|---|--------|--|
| Rating: Self-assessment performance rating in the workplace   |        |  |
| Workplace Performance   | Rating | Examples of Workplace position/s   |
| Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to meet or shorten task timelines</li> <li>- beyond the expected level and quality of performance required by industry</li> <li>- can <b>manage, lead and train others</b> to perform this task and series of sub-tasks</li> </ul>          | 6      | <b>Journeyman with a Certificate of Qualification, Red Seal endorsement</b> and/or <b>Gold Seal tradesperson</b> who is an expert in their field <ul style="list-style-type: none"> <li>- Project Manager/Foreman</li> <li>- Highly skilled and experienced Manager/Supervisor</li> <li>- Expert who comes from industry to serve as an instructor in a trades training program</li> </ul> |
| Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to meet or shorten task timelines</li> <li>- to the highest level and quality of performance required by industry</li> <li>- take the initiative to <b>respond to unexpected situations when they arise and supervise others</b></li> </ul> | 5      | <b>Highly skilled and experienced journeyman with a Certificate of Qualification, Red Seal endorsement</b> to whom co-workers turn for direction and help  |
| Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to meet task timelines</li> <li>- to the <b>highest level and quality required by industry without supervision</b></li> </ul>   | 4      | <b>Experienced, skilled journeyman with a Certificate of Qualification, Red Seal endorsement</b>   |
| Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to the level and quality required by industry <b>without assistance or supervision</b></li> </ul>   | 3      | <b>Newly certified journeyman with a Certificate of Qualification, Red Seal endorsement</b>  |
| Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to the required level and quality of performance <b>with direction, some assistance and supervision</b></li> </ul>  | 2      | <b>Apprentice working under the direction of a journeyman with a Certificate of Qualification, Red Seal endorsement</b>  |
| Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to the required level and quality of performance <b>with assistance and constant supervision</b></li> </ul>   | 1      | <b>A helper or new apprentice who must work directly under the constant supervision of a journeyman with a Certificate of Qualification, Red Seal endorsement</b>  |

**Proof: Self-assessment options to prove skills and learning have been achieved**

### Type of Proof – Observation ... Interview ... Documentation

#### Observation

When you choose “Observation” to prove that you can perform a task, the person who verifies your work must be Red Seal Certified in the trade in which you are an apprentice.

#### Interview

When you choose “Interview” to prove that you can perform the task, the person who verifies your work must be Red Seal Certified in the trade in which you are an apprentice. In the case of a panel, at least one person on the panel must be Red Seal Certified in the trade in which you are an apprentice.

#### Documentation

When you choose “Documentation” to prove that you can perform a task, the document must be from a certified training school or from an industry training course. Course content must be part of the requirements of your trade. If the document is from another country, it must be verified as equivalent to Canadian requirements in the trade.

**NOTE: Gather all your documents and keep them with your PSR.**

## Assessment Standard THREE

**Use: Self-assessment rating to help make a plan for additional learning and skill updates needed to be successful in achieving goals in a trade**

|   |                |                |                 |                |
|---|----------------|----------------|-----------------|----------------|
| <b>Use of Knowledge, Skills and Abilities –</b> | <b>1 Daily</b> | <b>2 Often</b> | <b>3 Seldom</b> | <b>4 Never</b> |
|---|----------------|----------------|-----------------|----------------|

Show how often you use a skill. This will help you to know:

- ♦ what skills you do well because you do them on a regular basis
- ♦ what skills you have to update if you want to transfer to another employer or move to another province or territory
- ♦ what skills you have to get from a training school, industry program or other employer

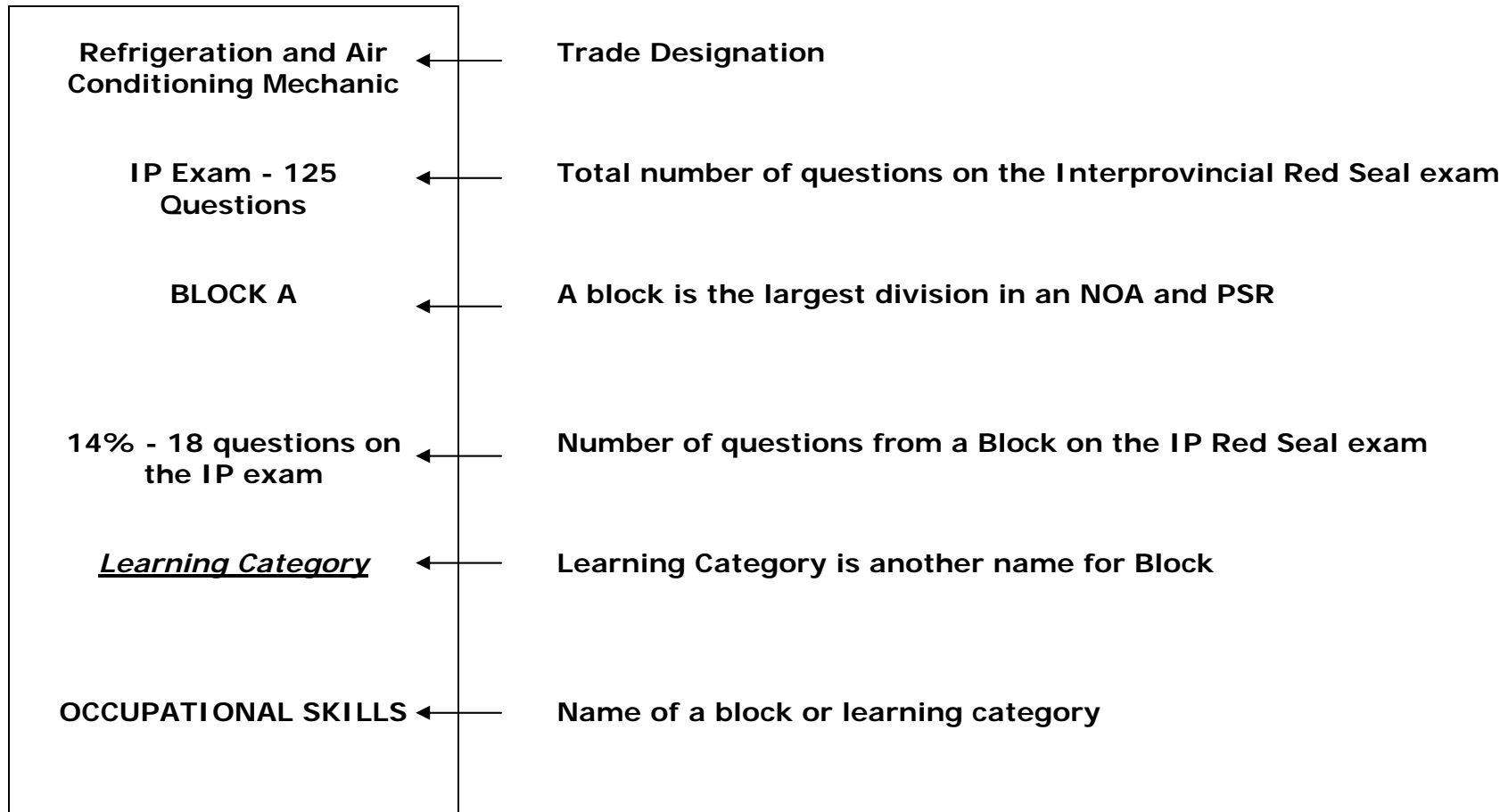
### Completing this PSR can help you:

- ♦ know the full scope of your trade by exploring all the technical skills in your trade
- ♦ highlight the skills you already have
- ♦ identify any gaps that you may have to fill so you can be successful in writing your Interprovincial Red Seal certification exam
- ♦ create a plan you can follow to fill these technical skills gaps

## Professional Skills Record (PSR) Components

Information from the National Occupational Analysis (NOA) is the foundation document for the Professional Skills Record (PSR). The PSR has been designed so that information is easily found to help a trade apprentice take control and direct his/her own individual skills and learning path.

Information in the PSR includes:



## Professional Skills Record (PSR) Components (cont'd)

|  |   |   |
|--|---|---|
| <b>Task 1 – A</b>  | ← | Task Number and Block/Category (letter number)            |
| <b>3 questions on the IP exam</b>  | ← | Number of questions on the IP Red Seal exam from the task |
| <b><u>Learning Outcome</u></b>   | ← | Learning Outcome is another name for a task               |
| <b>Utilizes mechanical and architectural drawings, acts, codes, standards, legislation and service and operating manuals</b> | ← | Task or learning outcome description                      |

|                                      |                          |  |
|--------------------------------------|--------------------------|--|
| <b>Journeyperson Sign-off Task 1</b> |                          |  |
| Complete                             | <input type="checkbox"/> | ← Journeyperson's initials verify that an apprentice can perform the task to industry standards.   |
| Incomplete                           | <input type="checkbox"/> | ← Journeyperson's initials indicate "incomplete" when the apprentice requires more work because the task is not being performed to industry standards. |

## Professional Skills Record (PSR) Set-up (cont'd)

|  |
|--|
| <p><b>Task 1</b></p> <p><b>Learning Needs</b></p> <p>Sub-Tasks</p> <p><b><u>Learning Objectives</u></b></p> <p>To be completed</p> <p>Comments</p> |
|--|

Journeyperson lists any Sub-Tasks (Learning Objectives that an apprentice must improve before they can have their Task (Learning Outcome) signed off).

← **When completed, this column becomes a learning plan for the apprentice.**

|   |
|---|
| <p><b>Sub-Task</b></p> <p><b>1.02</b></p> <p><b><u>Learning Objective</u></b></p> <p>Interprets service and operating manuals, technical bulletins and warranties</p> <p><b>JP Sign-off</b> _____</p> |
|---|

← Sub-Task Number

← Learning Objective is another name for sub-task

Sub-task or learning objective description

← Journeyperson assesses and signs off when the apprentice can perform a sub-task or learning objective to industry standard

## How to Self-Assess Skills and Learning Using a PSR

For easier use, the self-assessment charts have been shortened into an assessment key which is located at the top of each two-page section in a PSR. The “3” rating is considered “Industry Standard.”

### RATING:

- 6 - Expert perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

### TYPE OF PROOF:

O - Observation    I - Interview    D - Documentation

### USE:

1 – Daily                      2 – Often                      3 – Seldom                      4 - Never

## How to Record Skills and Learning Using a PSR

Self-assessment takes place where the learning of skills takes place in each of the Knowledge, Skills and Abilities. (Knowledge, Skills and Abilities can also be called Competencies).

### 1.02.01

Determine operation of equipment and components

← Skill and Learning that must meet industry standard.

Rating       5  

← Choose and insert a number from the RATING key that best describes your level of performance in the workplace.

Proof       I  

← Choose and insert a letter from the PROOF key that indicates your best choice to provide proof that you have this knowledge, skill and ability in the trade.

Use       2  

← Choose and insert a number from the USE key that indicates how often you use the knowledge, skills and ability (competency).

Complete



← Insert a check mark in the box to indicate completion of the competency to industry standard.

Tips to making sure you get recognition for all your skills and learning:

- take your **time** when you are working on your PSR
- do not try to complete **too much** at any one time
- be **fair and honest** with yourself; remember, this is a **self-assessment** tool
- **focus** on each task (*learning outcome*) and sub-task (*learning objective*)



**Refrigeration and Air Conditioning**  
**IP Exam - 125 Questions**

**BLOCK A**  
**14% - 18 Questions on the IP exam**

Learning Category  
**FUNDAMENTAL OCCUPATIONAL SKILLS**

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
  - 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
  - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
  - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
  - 2 - Complete a task with some assistance and supervision
  - 1 - Complete task with assistance and constant supervision

**Type of Proof:**            O - Observation                    I - Interview                    D - Documentation

**Use:**                            1 - Daily                            2 - Often                            3 - Seldom                            4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 1 - A**  
**3 questions on the IP exam**

Learning Outcome  
 Utilizes mechanical and architectural drawings, acts, codes, standards, legislation and service and operating manuals

Journeyperson  
 Sign-off  
 Task 1

Complete ☐

Incomplete ☐

**Task 1**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

|  |   |   |  |  |  |
|--|---|---|--|--|--|
| <b>SUB-TASK 1.01</b><br><br><u>Learning Objective</u><br><b>Interprets blueprints, drawings and schematics</b><br><br><b>JP Sign-off _____</b>                               | <b>1.01.01</b><br>Identify all types and formats of drawings and schematics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                          | <b>1.01.02</b><br>Demonstrate an understanding of drawing conventions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>1.01.03</b><br>Identify information contained on drawings and schematics such as dimensions, tolerances and components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.01.04</b><br>Read system drawings<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>1.01.05</b><br>Recognize symbols and abbreviations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>1.01.06</b><br>Calculate dimensions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>1.01.07</b><br>Visualize three dimensional structures, components, piping and ducting<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                       | <b>1.01.08</b><br>Perform unit conversions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>1.01.09</b><br>Document changes to drawings and schematics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.01.10</b><br>Prepare sketches<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                    |
| <b>SUB-TASK 1.02</b><br><br><u>Learning Objective</u><br><b>Interprets service and operating manuals, technical bulletins and warranties</b><br><br><b>JP Sign-off _____</b> | <b>1.02.01</b><br>Determine operation of equipment and components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                    | <b>1.02.02</b><br>Read service/ operating manuals<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>1.02.03</b><br>Read technical bulletins<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>1.02.04</b><br>Interpret warranties<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>1.02.05</b><br>Define equipment specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____     |
|  | <b>1.02.06</b><br>Locate product information, operating service procedures and maintenance schedules<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.02.07</b><br>Access information from the Internet, compact discs or supplier/ manufacturer representative<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.02.08</b><br>Recognize need for and locate technical updates and technical bulletins<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                 |  |  |

**Task 1 - A  
(cont'd)**

Learning Outcome  
Utilizes mechanical and architectural drawings, acts, codes, standards, legislation and service and operating manuals

**Task 1  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |   |   |   |
|---|---|---|---|
| <b>SUB-TASK<br/>1.03</b><br><br><u>Learning Objective</u><br><b>Interprets tables, charts and diagrams</b><br><br><b>JP Sign-off</b> ____ | <b>1.03.01</b><br>Read all types of refrigeration tables, charts and diagrams<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.03.02</b><br>Read and interpret refrigeration and electrical and gas, acts, codes, legislation, regulations and specifications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.03.03</b><br>Recognize mechanical, electrical, pneumatic, electronic and communication symbols and abbreviations<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   |   |   |   |

|   |  |   |  |  |   |
|---|--|---|--|--|---|
| <b>SUB-TASK<br/>1.04</b><br><br><u>Learning Objective</u><br><b>Interprets manufacturers' specifications</b><br><br><b>JP Sign-off</b> ____ | <b>1.04.01</b><br>Identify operating conditions such as voltage, pressures, amperage, capacities and temperature<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.04.02</b><br>Determine design data such as tolerances, dimensions, weights, sound ratings, vibrations, volumes and speed<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.04.03</b><br>Evaluate energy consumptions<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.04.04</b><br>Recognize inconsistencies between specifications and equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.04.05</b><br>Recognize limitations of equipment design<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   |  |   |  |  |   |

|  |   |   |  |  |   |
|--|---|---|--|--|---|
| <b>SUB-TASK<br/>1.05</b><br><br><u>Learning Objective</u><br><b>Complies with government acts, codes, standards and regulations</b><br><br><b>JP Sign-off</b> ____ | <b>1.05.01</b><br>Read and interpret government standards and regulations such as OHSA, ASHRAE, WHMIS and TDG<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.05.02</b><br>Recognize safety regulations, inspections and standards<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.05.03</b><br>Demonstrate an understanding of federal, provincial/territorial and municipal codes and by-laws such as fire, gas, building, plumbing and electrical<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.05.04</b><br>Identify types of permits such as electrical, gas, mechanical and hoisting<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>1.05.05</b><br>Follow procedures to obtain permits and inspections<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>1.05.06</b><br>Locate and access standards, codes and regulations<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>1.05.07</b><br>Apply standards, codes and regulations<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                  | <b>1.05.08</b><br>Document inspections<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   |  |   |

**Task 2 - A**  
4 questions on the IP  
exam

Learning Outcome  
**Operates and maintains  
tools and equipment**

Journeyperson  
Sign-off  
Task 2

Complete ☐  
Incomplete ☐

**Task 2**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|   |  |   |  |  |  |
|---|--|---|--|--|--|
| <b>SUB-TASK<br/>2.01</b><br><br><u>Learning Objective</u><br><b>Utilizes hand tools</b><br><br>JP Sign-off _____                          | <b>2.01.01</b><br>Identify types and functions of common hand tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>2.01.02</b><br>Identify metric and imperial tool sizes<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>2.01.03</b><br>Follow operating procedures and techniques for hand tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>2.01.04</b><br>Select hand tools required for task to be performed<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                 | <b>2.01.05</b><br>Clean and lubricate hand tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                      |
|   | <b>2.01.06</b><br>Store hand tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>2.01.07</b><br>Perform minor repairs such as sharpening, straightening and cleaning<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>2.01.08</b><br>Calibrate hand tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |  |  |
| <b>SUB-TASK<br/>2.02</b><br><br><u>Learning Objective</u><br><b>Utilizes portable and stationary power tools</b><br><br>JP Sign-off _____ | <b>2.02.01</b><br>Identify types and functions of air, electric and hydraulic portable and stationary power tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.02.02</b><br>Determine operating procedures for air, electric and hydraulic portable and stationary power tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.02.03</b><br>Recognize capabilities and limitations of air, electric and hydraulic portable and stationary power tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.02.04</b><br>Identify power supply requirements for selected portable and stationary power tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.02.05</b><br>Read and follow maintenance schedules for equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>2.02.06</b><br>Select the portable and stationary power tools for the job to be performed<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                      | <b>2.02.07</b><br>Clean and lubricate portable and stationary power tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>2.02.08</b><br>Perform minor repairs such as replacing power cord ends, air line connectors and hydraulic or air hoses<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>2.02.09</b><br>Store portable power tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>2.02.10</b><br>Calibrate power tools<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               |

**Task 2 - A  
(cont'd)**

Learning Outcome  
**Operates and maintains  
tools and equipment**

**Task 2  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|  |   |  |  |   |  |
|--|---|--|--|---|--|
| <b>SUB-TASK<br/>2.03</b><br><br><u>Learning Objective</u><br><b>Utilizes oxy-fuel and air-fuel equipment</b><br><br><b>JP Sign-off</b> _____ | <b>2.03.01</b><br>Identify types and functions of oxy-fuel and air-fuel equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>2.03.02</b><br>Follow operating procedures for oxy-fuel and air-fuel equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>2.03.03</b><br>Recognize capabilities and limitations of oxy-fuel and air-fuel equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                             | <b>2.03.04</b><br>Read and interpret local fire codes and safety legislation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____     | <b>2.03.05</b><br>Select oxy-fuel and air-fuel equipment for the job to be performed<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              |
|  | <b>2.03.06</b><br>Clean oxy-fuel and air-fuel equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                            | <b>2.03.07</b><br>Perform minor repairs such as replacing o-rings, hoses and gauges, and tightening connections<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.03.08</b><br>Store, transport and secure oxy-fuel and air-fuel equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |   |  |
| <b>SUB-TASK<br/>2.04</b><br><br><u>Learning Objective</u><br><b>Utilizes recovery and recycle equipment</b><br><br><b>JP Sign-off</b> _____  | <b>2.04.01</b><br>Read and interpret government legislation, codes and regulations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.04.02</b><br>Identify types, functions and limitations of recovery and recycle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                   | <b>2.04.03</b><br>Determine application of recovery and recycle equipment to refrigeration and air conditioning systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.04.04</b><br>Identify types of refrigerants and oils and their compositions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.04.05</b><br>Identify techniques and procedures to recover and recycle refrigerants and oils<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>2.04.06</b><br>Select handling and storage techniques for refrigerants and oils<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.04.07</b><br>Operate recovery and recycle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>2.04.08</b><br>Maintain recovery and recycle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>2.04.09</b><br>Transport recovered and recycled refrigerants and oils<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____         |  |

**Task 2 - A  
(cont'd)**

Learning Outcome  
**Operates and maintains  
tools and equipment**

**Task 2  
Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

**Knowledge, Skills and Abilities - Competencies**

|  |  |   |   |  |   |
|--|--|---|---|--|---|
| <div>SUB-TASK<br/>2.05</div> <div><u>Learning Objective</u><br/>Utilizes evacuation equipment and tools</div> <div>JP Sign-off _____</div> | <div>2.05.01</div> <div>Read and interpret government legislation, codes and regulations</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.05.02</div> <div>Identify types and functions of evacuation equipment and tools</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div>            | <div>2.05.03</div> <div>Demonstrate techniques and procedures for evacuation and dehydra-tion of refrigeration and air conditioning systems</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.05.04</div> <div>Identify and demonstrate an understanding of vacuum levels and durations required for refrigeration and air conditioning application</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.05.05</div> <div>Recognize effects of temperature, electrical connections, power interruptions and line sizing on evacuation</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> |
|  | <div>2.05.06</div> <div>Operate evacuation equipment and tools</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div>                           | <div>2.05.07</div> <div>Maintain evacuation equipment and tools such as replacing vacuum pump oil</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.05.08</div> <div>Interpret vacuum readings to adequately evacuate and dehydrate</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div>  |  |   |
|  |  |   |   |  |   |

|  |   |  |   |  |   |  |
|--|---|--|---|--|---|--|
| <div>SUB-TASK<br/>2.06</div> <div><u>Learning Objective</u><br/>Utilizes charging equipment and tools</div> <div>JP Sign-off _____</div> | <div>2.06.01</div> <div>Read and interpret government legislation and regulations</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.06.02</div> <div>Identify types and functions of charging equipment and tools such as charging cylinders, charging scales and sight glass</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.06.03</div> <div>Demonstrate an understanding of techniques and procedures for operation of charging equipment and tools</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.06.04</div> <div>Determine refrigerant types and properties</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> | <div>2.06.05</div> <div>Calculate system refrigerant charge</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div> |  |
|  | <div>2.06.06</div> <div>Interpret name plate data</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div>                                 | <div>2.06.07</div> <div>Interpret manufacturer's charging instructions</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div>   | <div>2.06.08</div> <div>Operate charging equipment and tools</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div>  | <div>2.06.09</div> <div>Maintain charging equipment and tools</div> <div>Rating _____ Complete</div> <div>Proof _____ <input type="checkbox"/></div> <div>Use _____</div>      |   |  |
|  |   |  |   |  |   |  |

**Task 2 - A  
(cont'd)**

Learning Outcome  
**Operates and maintains  
tools and equipment**

**Task 2  
Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |  |  |   |   |  |
|---|--|--|---|---|--|
| <b>SUB-TASK<br/>2.07</b><br><br><u>Learning Objective</u><br><b>Utilizes access/egress<br/>equipment</b><br><br><b>JP Sign-off</b> _____        | <b>2.07.01</b><br>Identify types of access/<br>egress equipment such as<br>ladders, staging and<br>scaffolding<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.07.02</b><br>Demonstrate an<br>understanding of load<br>bearing capacity of access<br>equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                   | <b>2.07.03</b><br>Read and interpret<br>standards, specifications and<br>regulations for access<br>equipment such as OHSR<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.07.04</b><br>Secure access equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>2.07.05</b><br>Employ fall arrest equipment<br>such as harnesses, safety<br>belts and lines<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>2.07.06</b><br>Erect, dismantle and<br>maintain stationary/rolling<br>scaffolding<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                           | <b>2.07.07</b><br>Erect, dismantle and<br>maintain staging<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   |   |   |  |
| <b>SUB-TASK<br/>2.08</b><br><br><u>Learning Objective</u><br><b>Utilizes hoisting and<br/>rigging equipment</b><br><br><b>JP Sign-off</b> _____ | <b>2.08.01</b><br>Identify government<br>legislation, codes and<br>regulations<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                 | <b>2.08.02</b><br>Identify types and functions<br>of hoisting, tugging and lifting<br>devices such as jacks, hoists<br>and come-alongs<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.08.03</b><br>Identify types and functions<br>of rigging equipment such as<br>belts, ropes, cables and<br>slings<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____      | <b>2.08.04</b><br>Use operating procedures<br>and techniques for hoisting,<br>tugging and lifting devices<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.08.05</b><br>Determine hoisting, tugging<br>and lifting capacities<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                        |
|   | <b>2.08.06</b><br>Determine loads and weights<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>2.08.07</b><br>Clean, lubricate and store<br>rigging, hoisting, tugging and<br>lifting devices<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                      | <b>2.08.08</b><br>Recognize damaged, worn,<br>defective and leaking<br>components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>2.08.09</b><br>Perform minor repairs and<br>replenish fluids<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   |  |

**Task 2 - A  
(cont'd)**

Learning Outcome  
**Operates and maintains  
tools and equipment**

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|   |   |   |   |  |   |
|---|---|---|---|--|---|
| <b>SUB-TASK<br/>2.09</b><br><br><u>Learning Objective</u><br><b>Utilizes mechanical<br/>measuring equipment</b><br><br><b>JP Sign-off _____</b> | <b>2.09.01</b><br>Identify types and functions of mechanical measuring equipment such as vernier calipers, micrometers and dial indicators<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____ | <b>2.09.02</b><br>Apply operating procedures for mechanical measuring equipment<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____            | <b>2.09.03</b><br>Select handling and storage requirements for mechanical measuring equipment<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____    | <b>2.09.04</b><br>Check mechanical measuring equipment for accuracy and calibration<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____       | <b>2.09.05</b><br>Convert between metric and imperial measurements<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____                                   |
|   | <b>2.09.06</b><br>Identify damaged or worn mechanical measuring equipment<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____  | <b>2.09.07</b><br>Clean mechanical measuring equipment<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____                                     | <b>2.09.08</b><br>Store mechanical measuring equipment<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____   | <b>2.09.09</b><br>Calibrate mechanical measuring equipment<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____                                |   |
|   | <b>SUB-TASK<br/>2.10</b><br><br><u>Learning Objective</u><br><b>Utilizes electric and electronic diagnostic tools</b><br><br><b>JP Sign-off _____</b>   | <b>2.10.01</b><br>Identify types and functions of electric and electronic diagnostic tools<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____ | <b>2.10.02</b><br>Determine proper care and handling of electric and electronic diagnostic tools<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____ | <b>2.10.03</b><br>Apply operating procedures for electric and electronic diagnostic tools<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____ | <b>2.10.04</b><br>Determine capabilities and limitations of electric and electronic diagnostic tools<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____ |
|   | <b>2.10.05</b><br>Interpret readings and fault codes<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____   | <b>2.10.06</b><br>Hook up electric and electronic diagnostic tools<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____                         | <b>2.10.07</b><br>Perform minor maintenance such as changing batteries or cleaning connectors<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____    | <b>2.10.08</b><br>Store electric and electronic diagnostic tools<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____                          | <b>2.10.09</b><br>Calibrate electric and electronic diagnostic tools<br><br>Rating ____ Complete ____<br>Proof ____<br>Use ____                                 |

Task 2 - A  
(cont'd)

Learning Outcome  
Operates and maintains  
tools and equipment

Task 2  
Learning Needs

Sub-Tasks  
Learning Objectives  
to be completed  
Comments

| Knowledge, Skills and Abilities - Competencies |   |  |  |   |  |
|--|---|--|--|---|--|
| SUB-TASK<br>2.11                               | <b>2.11.01</b><br>Identify techniques and procedures to interface computer equipment with refrigeration and air conditioning systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.11.02</b><br>Identify hardware and software requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.11.03</b><br>Determine and perform computer operations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.11.04</b><br>Follow manufacturer's specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>2.11.05</b><br>Interface computer to refrigeration and air conditioning automated control system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  |   |  |  |   |  |
|  | <b>2.11.06</b><br>Confirm communication link with refrigeration and air conditioning system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |  |  |   |  |



**Task 3 - A**  
5 questions on the IP exam

Learning Outcome  
**Demonstrates work practices and procedures**

Journeyperson  
Sign-off  
Task 3

Complete ☐  
Incomplete ☐

**Task 3**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|  |  |   |   |   |  |
|--|--|---|---|---|--|
| <b>SUB-TASK 3.01</b><br><br><u>Learning Objective</u><br><b>Installs fasteners, brackets and hangers</b><br><br><b>JP Sign-off</b> _____           | <b>3.01.01</b><br>Identify types, styles, purposes and sizes of fasteners, brackets and hangers<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.01.02</b><br>Determine capabilities and limitations of fasteners, brackets and hangers<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>3.01.03</b><br>Follow replacement procedures and techniques for fasteners, brackets and hangers<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.01.04</b><br>Determine torque limits<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                    | <b>3.01.05</b><br>Identify required lubricants and sealants on fittings, brackets and hangers<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>3.01.06</b><br>Determine isolation, vibration and seismic conditions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                         | <b>3.01.07</b><br>Select fasteners, brackets and hangers compatible with job specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>3.01.08</b><br>Torque fasteners<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>3.01.09</b><br>Lubricate and seal fasteners<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>3.01.10</b><br>Apply fasteners for seismic loads<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |
| <b>SUB-TASK 3.02</b><br><br><u>Learning Objective</u><br><b>Performs lock-out tagging and isolation procedures</b><br><br><b>JP Sign-off</b> _____ | <b>3.02.01</b><br>Determine hazardous energy sources<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>3.02.02</b><br>Follow lock-out, tag-out, blank-off and hold-off procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.02.03</b><br>Determine site lock-out procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>3.02.04</b><br>Implement hazardous energy lock-out and tag-out procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.02.05</b><br>Affix restraints, tags and signage<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |

**Task 3 - A  
(cont'd)**

Learning Outcome  
**Demonstrates work  
practices and procedures**

**Task 3  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

Knowledge, Skills and Abilities - Competencies

|   |  |   |  |  |  |
|---|--|---|--|--|--|
| <b>SUB-TASK<br/>3.03</b><br><br><u>Learning Objective</u><br><b>Installs piping and<br/>tubing</b><br><br><b>JP Sign-off</b> ____ | <b>3.03.01</b><br>Select types and sizes of<br>piping and tubing and their<br>applications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.03.02</b><br>Determine specific techniques<br>and procedures such as<br>soldering, brazing, threading,<br>flaring, swaging, compression<br>and barbed fittings to join<br>material types<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.03.03</b><br>Identify components to be<br>joined<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____        | <b>3.03.04</b><br>Determine techniques for<br>piping practices such as<br>nitrogen purging, pre- and<br>post-cleaning, piping and<br>tubing supports<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.03.05</b><br>Determine applications<br>requiring piping and tubing<br>such as refrigeration and air<br>conditioning, secondary<br>refrigerant, water and<br>pneumatic<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>3.03.06</b><br>Mount and secure piping and<br>tubing<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                    | <b>3.03.07</b><br>Cut, prep and join piping and<br>tubing such as soldering<br>compression fittings and<br>brazing<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>3.03.08</b><br>Connect piping and tubing to<br>components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.03.09</b><br>Bend, flare, ream or thread<br>and swage piping and tubing<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>3.03.10</b><br>Route piping and tubing<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  |

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|---|--|---|---|
| <b>SUB-TASK<br/>3.04</b><br><br><u>Learning Objective</u><br><b>Applies sealants and<br/>adhesives</b><br><br><b>JP Sign-off</b> ____ | <b>3.04.01</b><br>Identify and select types and<br>properties of adhesives and<br>sealants<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.04.02</b><br>Determine application<br>techniques for sealants and<br>adhesives<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.04.03</b><br>Apply sealants and<br>adhesives<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|---|--|---|---|

|   |   |  |  |  |  |
|---|---|--|--|--|--|
| <b>SUB-TASK<br/>3.05</b><br><br><u>Learning Objective</u><br><b>Cleans and lubricates<br/>parts and components</b><br><br><b>JP Sign-off</b> ____ | <b>3.05.01</b><br>Select cleaning equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____             | <b>3.05.02</b><br>Select lubricating equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>3.05.03</b><br>Identify characteristics,<br>applications, qualities and<br>capabilities of lubricants and<br>cleaners<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.05.04</b><br>Follow cleaning and<br>lubricating equipment<br>operating procedures and<br>techniques<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.05.05</b><br>Use personal and work area<br>protective equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>3.05.06</b><br>Determine ventilation<br>requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.05.07</b><br>Determine and follow<br>environmental protection<br>requirements for cleaners<br>and lubricants such as<br>recovery, disposal, storage<br>and handling<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>3.05.08</b><br>Apply lubricants<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>3.05.09</b><br>Operate cleaning equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>3.05.10</b><br>Operate lubricating<br>equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                   |

**Task 3 - A  
(cont'd)**

Learning Outcome  
Demonstrates work  
practices and procedures

**Task 3  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>3.06<br><br><u>Learning Objective</u><br><b>Performs internal<br/>electrical wiring of<br/>systems</b><br><br>JP Sign-off _____ | 3.06.01<br>Identify types, sizes and<br>gauges of wire<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 3.06.02<br>Determine electrical<br>requirements of the system<br>and components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____     | 3.06.03<br>Determine internal power<br>wiring procedures and<br>techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 3.06.04<br>Determine termination<br>procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 3.06.05<br>Select wire size and type<br>compatible with the<br>application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|---|---|--|---|--|---|
|   | 3.06.06<br>Cut, join and crimp wiring<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                  | 3.06.07<br>Label, verify and record<br>installation of internal wiring<br>of system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 3.06.08<br>Check continuity of wiring<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                      | 3.06.09<br>Route and secure internal<br>wiring of system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____      | 3.06.10<br>Terminate internal wiring of<br>system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                          |

**Task 4 - A**  
**4 questions on the IP exam**

Learning Outcome  
 Coordinates refrigeration and air conditioning installation and maintenance

Journeyperson  
 Sign-off  
 Task 4

Complete ☐

Incomplete ☐

**Task 4**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

|  |  |   |   |  |
|--|--|---|---|--|
| <b>SUB-TASK<br/>4.01</b><br><br><u>Learning Objective</u><br><b>Estimates work requirements</b><br><br><b>JP Sign-off</b> ____ | <b>4.01.01</b><br>Identify system specifications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.01.02</b><br>Determine types, sizes, prices, sources and availability of parts and accessories<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.01.03</b><br>Determine substitute equipment, parts and accessories<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.01.04</b><br>Estimate quantities, times and costs<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|--|--|---|---|--|

|  |   |   |  |   |   |
|--|---|---|--|---|---|
| <b>SUB-TASK<br/>4.02</b><br><br><u>Learning Objective</u><br><b>Conducts work area inspection</b><br><br><b>JP Sign-off</b> ____ | <b>4.02.01</b><br>Select components to be installed<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.02.02</b><br>Create inspection check lists<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.02.03</b><br>Read equipment and system specifications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.02.04</b><br>Recognize work area hazards<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.02.05</b><br>Select hoisting and rigging equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>4.02.06</b><br>Document work area inspections<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____    |   |  |   |   |

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| <b>SUB-TASK<br/>4.03</b><br><br><u>Learning Objective</u><br><b>Coordinates work requirements</b><br><br><b>Continued next page</b> | <b>4.03.01</b><br>Determine coordination techniques<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.03.02</b><br>Read equipment and system specifications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.03.03</b><br>Identify suppliers, vendors and outside sub-trades<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.03.04</b><br>Read and interpret material lists, work orders and permits<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.03.05</b><br>Recognize service reports<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                    |
|   | <b>4.03.06</b><br>Organize work<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                     | <b>4.03.07</b><br>Consult with end user on a project<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____       | <b>4.03.08</b><br>Process work orders<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                | <b>4.03.09</b><br>Confirm materials availability<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                             | <b>4.03.10</b><br>Identify system specific tools and equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |

**Task 4 - A  
(cont'd)**

Learning Outcome  
Coordinates refrigeration and air  
conditioning installation and  
maintenance

**Task 4  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|   |  |   |   |
|---|--|---|---|
| <b>SUB-TASK<br/>4.03<br/>Continued</b><br><u>Learning Objective</u><br><b>Coordinates work requirements</b><br><br>JP Sign-off ____ | <b>4.03.11</b><br>Select parts and equipment to correspond to system specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.03.12</b><br>Store and secure equipment and accessories<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.03.13</b><br>Coordinate with other trades<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
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| <b>SUB-TASK<br/>4.04</b><br><u>Learning Objective</u><br><b>Maintains customer relations</b><br><br>JP Sign-off ____ | <b>4.04.01</b><br>Read and interpret warranties, guarantees, return and exchange policies<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.04.02</b><br>Demonstrate an understanding of features and benefits of refrigeration and air conditioning systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.04.03</b><br>Perform customer service practices such as follow up<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.04.04</b><br>Respond to end user queries<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                   | <b>4.04.05</b><br>Instruct end user on operation and maintenance<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  |  |  |   |  |   |
|  |  |  |   |  |   |
|  |  |  |   |  |   |
|  | <b>4.04.06</b><br>Clarify end user problems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>4.04.07</b><br>Recommend corrective action<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>4.04.08</b><br>Process claim forms<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                  | <b>4.04.09</b><br>Demonstrate features of equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____             | <b>4.04.10</b><br>Handle end user complaints<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                     |
|  |  |  |   |  |   |
|  |  |  |   |  |   |
|  |  |  |   |  |   |
|  | <b>4.04.11</b><br>Recommend service and maintenance requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                          | <b>4.04.12</b><br>Solicit approval to perform service or maintenance requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                     | <b>4.04.13</b><br>Demonstrate equipment operation and maintenance<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____      | <b>4.04.14</b><br>Follow up with end user on system performance<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |   |

**Task 4 - A  
(cont'd)**

Learning Outcome  
Coordinates refrigeration and air  
conditioning installation and  
maintenance

**Task 4  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |  |   |   |  |  |
|---|--|---|---|--|--|
| <b>SUB-TASK<br/>4.05</b><br><br><u>Learning Objective</u><br><b>Clarifies end user<br/>problems with<br/>refrigeration and air<br/>conditioning systems</b><br><b>JP Sign-off _____</b> | <b>4.05.01</b><br>Identify end users' system<br>such as location, type of<br>equipment and controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.05.02</b><br>Verify operation of equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>4.05.03</b><br>Assess repair/ maintenance<br>history<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>4.05.04</b><br>Identify common types of<br>problems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>4.05.05</b><br>Confirm end user contacts<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |
|   | <b>4.05.06</b><br>Question client regarding<br>problem<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>4.05.07</b><br>Qualify/paraphrase end user<br>information<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>4.05.08</b><br>Interpret customer<br>information<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>4.05.09</b><br>Develop troubleshooting plan<br>of action<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |  |
|   | <b>SUB-TASK<br/>4.06</b><br><br><u>Learning Objective</u><br><b>Completes work-<br/>related documentation</b><br><br><b>JP Sign-off _____</b>                                      | <b>4.06.01</b><br>Identify required work-related<br>documents such as repair<br>orders, preventative/<br>predictive maintenance sheets<br>and government inspection<br>forms<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.06.02</b><br>Determine information<br>required for specific work-<br>related documents such as<br>work performed, date<br>performed, signature, time<br>required and parts replaced<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>4.06.03</b><br>Complete TDG (transport of<br>dangerous goods) forms<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>4.06.04</b><br>Update service records such<br>as equipment logs and<br>service cards<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>4.06.06</b><br>Process TDG forms<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>4.06.07</b><br>Process refrigerant<br>management records<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |   | <b>4.06.05</b><br>Process manufacturers' pre-<br>start-up and start-up sheets,<br>purchase orders, warranties<br>and material return sheets<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |  |

**Task 4 - A  
(cont'd)**

Learning Outcome

Coordinates refrigeration and air conditioning installation and maintenance

**Task 4  
Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>4.07<br><br><u>Learning Objective</u><br><b>Generates maintenance<br/>documentation</b><br><br>JP Sign-off _____ | 4.07.01<br>Recognize normal machine<br>operating conditions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 4.07.02<br>Follow company's policy<br>relating to reporting<br>procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 4.07.03<br>Log machine operating<br>conditions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 4.07.04<br>Organize operating<br>information for report<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 4.07.05<br>Interpret operating conditions<br>such as reading and work<br>completed<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|--|--|--|---|--|---|
|  | 4.07.06<br>Prepare reports and<br>documentation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____             |  |   |  |   |

**Task 5 - A**  
**2 questions on the IP exam**

Learning Outcome  
 Performs system components, accessories and materials acquisition and handling

Journeyperson  
 Sign-off  
 Task 5

Complete ☐

Incomplete ☐

**Task 5**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

|   |  |  |  |  |  |
|---|--|--|--|--|--|
| <b>SUB-TASK<br/>5.01</b><br><br><u>Learning Objective</u><br><b>Requisitions equipment</b><br><br><b>JP Sign-off</b> _____        | <b>5.01.01</b><br>Identify equipment requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                     | <b>5.01.02</b><br>Identify equipment suppliers and vendors<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>5.01.03</b><br>Apply and follow company rental and purchasing policies<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>5.01.04</b><br>Complete material order/requisition<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____           | <b>5.01.05</b><br>Track orders<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              |
|   | <b>5.01.06</b><br>Arrange and schedule deliveries<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                     |  |  |  |  |
| <b>SUB-TASK<br/>5.02</b><br><br><u>Learning Objective</u><br><b>Receives materials/ equipment</b><br><br><b>JP Sign-off</b> _____ | <b>5.02.01</b><br>Read specifications for materials/equipment ordered<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                 | <b>5.02.02</b><br>Read transportation documents such as bills of lading, packing slips and invoices<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>5.02.03</b><br>Follow special storage requirements for received goods<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>5.02.04</b><br>Conduct visual inspection for damage and loss<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>5.02.05</b><br>Remove packaging material<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>5.02.06</b><br>Process packing slips, bills of lading, invoices and damage reports<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>5.02.07</b><br>Verify equipment specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |  |  |  |



**Task 5 - A  
(cont'd)**

Learning Outcome  
Performs system components,  
accessories and materials  
acquisition and handling

**Task 5  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>5.03<br><br><u>Learning Objective</u><br>Transfers equipment to<br>designated location<br><br>JP Sign-off _____ | 5.03.01<br>Identify designated<br>destination<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 5.03.02<br>Verify equipment<br>specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____          | 5.03.03<br>Determine rigging<br>requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 5.03.04<br>Determine special handling<br>requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 5.03.05<br>Determine transfer permits,<br>obstruction permits and<br>transportation restrictions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|---|--|---|---|--|---|
|   | 5.03.06<br>Schedule transfer<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                  | 5.03.07<br>Operate materials and<br>handling equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 5.03.08<br>Perform pre-site inspection<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____       |  |   |

Refrigeration and  
Air Conditioning

**BLOCK B**  
38% - 47 Questions on the IP  
exam

Learning Category  
REFRIGERATION AND AIR  
COOLING SYSTEMS

**Task 6 - B**  
6 questions on the IP exam

Learning Outcome  
Plans installations of  
refrigeration and air cooling  
systems

Journeyperson  
Sign-off  
Task 6

Complete ☐

Incomplete ☐

**Task 6**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |  |  |  |  |   |
|---|--|--|--|--|---|
| <b>SUB-TASK<br/>6.01</b><br><br><u>Learning Objective</u><br><b>Verifies refrigeration and<br/>air cooling system<br/>parameters and<br/>requirements</b><br><br><b>JP Sign-off</b> _____ | <b>6.01.01</b><br>Identify design criteria and<br>parameters<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                       | <b>6.01.02</b><br>Read and interpret trade<br>engineering standards such<br>As ASHRAE (American<br>Society of Heating, Refrigera-<br>tion and Air Conditioning<br>Engineers)<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>6.01.03</b><br>Identify load calculation<br>methods such as<br>manufacturers' load charts<br>and calculations<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>6.01.04</b><br>Apply load calculation<br>methods<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.01.05</b><br>Calculate load<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  |
|   |  |  |  |  |   |
| <b>SUB-TASK<br/>6.02</b><br><br><u>Learning Objective</u><br><b>Selects refrigeration and air<br/>cooling components,<br/>equipment and accessories</b><br><br><b>JP Sign-off</b> _____   | <b>6.02.01</b><br>Identify design criteria,<br>parameters and code<br>requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>6.02.02</b><br>Determine types, sizes,<br>capacities, limitations and<br>applications of refrigeration<br>and air cooling equipment,<br>components and accessories<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____        | <b>6.02.03</b><br>Read and interpret<br>manufacturers' specifications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.02.04</b><br>Identify system requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>6.02.05</b><br>Choose refrigeration and air<br>cooling equipment/<br>components/accessories to<br>match application to optimize<br>performance<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   |  |  |  |  |   |
| <b>SUB-TASK<br/>6.03</b><br><br><u>Learning Objective</u><br><b>Prepares components,<br/>equipment and<br/>accessories layout</b><br><br><b>JP Sign-off</b> _____                         | <b>6.03.01</b><br>Read and interpret<br>manufacturers' specifications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____              | <b>6.03.02</b><br>Determine site restrictions<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.03.03</b><br>Determine function and<br>application of components,<br>equipment and accessories<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____              | <b>6.03.04</b><br>Identify where components,<br>equipment and accessories<br>are located in system<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>6.03.05</b><br>Select locations of<br>components, equipment and<br>accessories for optimum<br>performance and<br>accessibility<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                 |
|   | <b>6.03.06</b><br>Plan components, equipment<br>and accessories locations<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____          | <b>6.03.07</b><br>Assess external energy<br>sources<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.03.08</b><br>Produce a layout plan<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  |  |   |
| <b>SUB-TASK<br/>6.04</b><br><br><u>Learning Objective</u><br><b>Selects refrigerant</b><br><br><b>JP Sign-off</b> _____   | <b>6.04.01</b><br>Identify design criteria,<br>parameters and mechanical<br>codes<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.04.02</b><br>Identify refrigerant types and<br>properties<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>6.04.03</b><br>Assess refrigerant<br>performance<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.04.04</b><br>Read and interpret<br>manufacturer's requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                | <b>6.04.05</b><br>Choose refrigerant for<br>application<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   |
|   |  |  |  |  |   |

**Task 6 - B  
(cont'd)**

Learning Outcome  
Plans installations of  
refrigeration and air cooling  
systems

**Task 6  
Learning Needs**

**Sub-Tasks  
Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

**Knowledge, Skills and Abilities - Competencies**

|   |   |  |   |
|---|---|--|---|
| <b>SUB-TASK<br/>6.05</b><br><br><u>Learning Objective</u><br><b>Sizes piping</b><br><br><b>JP Sign-off</b> ____       | <b>6.05.01</b><br>Assess pipe sizing methods for fluids and gases such as primary/ secondary refrigerant, fuels and water<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>6.05.02</b><br>Determine piping practices such as flow, velocity and oil return<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>6.05.03</b><br>Select piping and tubing to match system requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
| <b>SUB-TASK<br/>6.06</b><br><br><u>Learning Objective</u><br><b>Lays out piping</b><br><br><b>JP Sign-off</b> ____    | <b>6.06.01</b><br>Identify layout methods and techniques<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.06.02</b><br>Follow manufacturers' recommended procedures<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                     | <b>6.06.03</b><br>Produce a piping layout plan<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                          |
| <b>SUB-TASK<br/>6.07</b><br><br><u>Learning Objective</u><br><b>Selects insulation</b><br><br><b>JP Sign-off</b> ____ | <b>6.07.01</b><br>Identify types, application and rating of insulation<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>6.07.02</b><br>Follow manufacturers' recommended application<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                    | <b>6.07.03</b><br>Choose insulation for the application<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                 |

**Task 7 - B**  
**14 questions on the IP exam**

Learning Outcome  
**Installs refrigeration and air cooling systems**

Journeyperson  
 Sign-off  
 Task 7

Complete ☐

Incomplete ☐

**Task 7**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

|   |   |   |   |  |   |
|---|---|---|---|--|---|
| <b>SUB-TASK 7.01</b><br><br><u>Learning Objective</u><br><b>Prepares site/location</b><br><br><b>JP Sign-off</b> ____ | <b>7.01.01</b><br>Determine specifications of refrigeration and air conditioning equipment such as size, weight and capacity<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.01.02</b><br>Identify installation requirements related to utilities, roofing and structure support<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.01.03</b><br>Schedule project activities related to sub-trades and end user deadlines<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.01.04</b><br>Calculate labour requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.01.05</b><br>Schedule project teams<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|---|---|---|---|--|---|

**7.01.06**  
 Schedule connection of system to utilities  
  
 Rating \_\_\_\_ Complete  
 Proof \_\_\_\_ ☐  
 Use \_\_\_\_

|  |   |   |   |   |  |
|--|---|---|---|---|--|
| <b>SUB-TASK 7.02</b><br><br><u>Learning Objective</u><br><b>Assembles refrigeration and air cooling components, equipment and accessories</b><br><br><b>JP Sign-off</b> ____ | <b>7.02.01</b><br>Follow equipment manufacturer's recommended assembly techniques and procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.02.02</b><br>Identify equipment application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.02.03</b><br>Remove protective applications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.02.04</b><br>Follow assembly instructions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.02.05</b><br>Verify assembly<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|--|---|---|---|---|--|

Knowledge, Skills and Abilities - Competencies

|  |   |   |   |  |   |
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| <b>SUB-TASK 7.03</b><br><br><u>Learning Objective</u><br><b>Positions and secures refrigeration and air cooling components, equipment and accessories</b><br><br><b>JP Sign-off</b> ____ | <b>7.03.01</b><br>Follow equipment manufacturer's installation techniques and procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.03.02</b><br>Determine isolation and vibration requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.03.03</b><br>Determine service accessibility requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.03.04</b><br>Select equipment location<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.03.05</b><br>Select fastening and positioning equipment and accessories<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|--|---|---|---|--|---|

**7.03.06**  
 Anchor components, equipment and accessories in position  
  
 Rating \_\_\_\_ Complete  
 Proof \_\_\_\_ ☐  
 Use \_\_\_\_

**7.03.07**  
 Verify installation of refrigeration and air cooling components, equipment and accessories  
  
 Rating \_\_\_\_ Complete  
 Proof \_\_\_\_ ☐  
 Use \_\_\_\_

**Task 7 - B  
(cont'd)**

Learning Outcome  
Installs refrigeration and air  
cooling systems

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|  |   |  |  |   |   |  |
|--|---|--|--|---|---|--|
| <b>SUB-TASK<br/>7.04</b><br><br><u>Learning Objective</u><br><b>Routes and connects<br/>refrigerant piping</b><br><br><b>JP Sign-off</b> _____ | <b>7.04.01</b><br>Identify piping layout<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                           | <b>7.04.02</b><br>Determine techniques and<br>procedures for routing and<br>connecting refrigerant piping<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.04.03</b><br>Calculate sizes and capacity<br>of refrigerant piping<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>7.04.04</b><br>Determine vibration<br>elimination and support<br>requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.04.05</b><br>Interpret refrigerant piping<br>schematics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |  |
|  | <b>7.04.06</b><br>Install refrigerant piping<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                       | <b>7.04.07</b><br>Terminate refrigerant piping<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |  |   |   |  |
|  |   |  |  |   |   |  |
|  |   |  |  |   |   |  |
| <b>SUB-TASK<br/>7.05</b><br><br><u>Learning Objective</u><br><b>Performs leak test on<br/>system</b><br><br><b>JP Sign-off</b> _____           | <b>7.05.01</b><br>Identify types and properties<br>of refrigerants<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.05.02</b><br>Determine application of leak<br>detectors<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>7.05.03</b><br>Determine techniques and<br>procedures for leak testing<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>7.05.04</b><br>Evaluate site conditions such<br>as temperature and hazards<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | <b>7.05.05</b><br>Operate test equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                     |  |
|  | <b>7.05.06</b><br>Select test procedure for<br>application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____         | <b>7.05.07</b><br>Interpret test results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>7.05.08</b><br>Document test results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                   |   |   |  |
|  |   |  |  |   |   |  |
|  |   |  |  |   |   |  |

**Task 7 - B  
(cont'd)**

Learning Outcome  
**Installs refrigeration and air  
cooling systems**

**Task 7  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

Knowledge, Skills and Abilities - Competencies

|  |  |  |  |  |
|--|--|--|--|--|
| <p><b>SUB-TASK<br/>7.06</b></p> <p><u>Learning Objective</u><br/><b>Evacuates system</b></p> <p><b>JP Sign-off</b> _____</p> | <p><b>7.06.01</b><br/>Apply vacuum pump fundamentals</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>                                     | <p><b>7.06.02</b><br/>Connect vacuum pump and vacuum gauge</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>                               | <p><b>7.06.03</b><br/>Operate evacuation systems</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>7.06.04</b><br/>Interpret vacuum readings</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>  |
| <p><b>SUB-TASK<br/>7.07</b></p> <p><u>Learning Objective</u><br/><b>Charges system</b></p> <p><b>JP Sign-off</b> _____</p>   | <p><b>7.07.01</b><br/>Determine refrigerant requirements such as volume, type and weight</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>7.07.02</b><br/>Follow manufacturer's specifications for required refrigerant type</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>7.07.03</b><br/>Weigh in refrigerant</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>       | <p><b>7.07.04</b><br/>Operate charging equipment</p> <p>Rating ____ <b>Complete</b><br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> |

**Task 8 - B**  
12 questions on the IP exam

Learning Outcome  
Commissions refrigeration and air cooling systems

Journeyperson  
Sign-off  
Task 8

Complete ☐  
Incomplete ☐

**Task 8**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|   |  |  |  |  |   |
|---|--|--|--|--|---|
| <b>SUB-TASK 8.01</b><br><br><u>Learning Objective</u><br><b>Performs pre-start-up checks</b><br><br>JP Sign-off ____                        | <b>8.01.01</b><br>Follow manufacturer's recommendations for pre-start inspection and source of energy<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.01.02</b><br>Identify available energy sources and utilities<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____           | <b>8.01.03</b><br>Verify that equipment specifications match energy sources and utilities<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.01.04</b><br>Verify energy sources and utilities' connection integrity<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.01.05</b><br>Check phase rotation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____               |
|   | <b>8.01.06</b><br>Check isolation valve positions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>8.01.07</b><br>Verify movement of drives and rotating equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____          | <b>8.01.08</b><br>Make adjustments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>8.01.09</b><br>Complete pre-start-up sheets<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                              |   |
| <b>SUB-TASK 8.02</b><br><br><u>Learning Objective</u><br><b>Starts up refrigeration and air conditioning system</b><br><br>JP Sign-off ____ | <b>8.02.01</b><br>Follow manufacturer's recommended start-up procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>8.02.02</b><br>Perform start-up procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>8.02.03</b><br>Verify equipment application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>8.02.04</b><br>Determine sequence of operation for system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                | <b>8.02.05</b><br>Coordinate activation of utilities<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>8.02.06</b><br>Connect instrumentation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>8.02.07</b><br>Follow manufacturer's recommended procedures for start-up<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.02.08</b><br>Make adjustments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>8.02.09</b><br>Document start-up<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |   |

**Task 8 - B  
(cont'd)**

Learning Outcome  
**Commissions refrigeration  
and air cooling systems**

**Task 8  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |   |   |  |  |  |
|---|---|---|--|--|--|
| <b>SUB-TASK<br/>8.03</b><br><br><u>Learning Objective</u><br><b>Completes system<br/>charge</b><br><br><b>JP Sign-off</b> _____ | <b>8.03.01</b><br>Identify pre-charge<br>refrigerant weight and type<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.03.02</b><br>Select charging procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.03.03</b><br>Determine optimum<br>operating conditions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                             | <b>8.03.04</b><br>Verify operation of regulating<br>valves and metering devices<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.03.05</b><br>Verify operation of system<br>equipment and components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |
|   | <b>8.03.06</b><br>Operate charging equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                         | <b>8.03.07</b><br>Weigh added refrigerant<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | <b>8.03.08</b><br>Measure operating<br>conditions such as pressures<br>and temperatures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.03.09</b><br>Interpret operating conditions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                | <b>8.03.10</b><br>Adjust operating components<br>such as metering devices,<br>pressure regulating valves,<br>pneumatic controls, test<br>operations and safety controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>8.03.11</b><br>Verify operation of safety<br>controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____             |   |  |  |  |

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| <b>SUB-TASK<br/>8.04</b><br><br><u>Learning Objective</u><br><b>Sets up primary and<br/>secondary refrigeration<br/>system adjustable switches,<br/>values and regulators</b><br><br><b>JP Sign-off</b> _____ | <b>8.04.01</b><br>Determine operating control<br>system for primary and<br>secondary systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.04.02</b><br>Determine sequence of<br>operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.04.03</b><br>Verify control application and<br>function for primary and<br>secondary systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.04.04</b><br>Adjust controls for primary<br>and secondary systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>8.04.05</b><br>Interpret control readings for<br>primary and secondary<br>systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|---|---|---|--|---|---|



**Task 9 - B**  
15 questions on the IP exam

Learning Outcome  
Maintains refrigeration and air cooling systems

Journeyperson  
Sign-off  
Task 9

Complete ☐  
Incomplete ☐

**Task 9**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|   |   |   |   |  |  |
|---|---|---|---|--|--|
| <b>SUB-TASK 9.01</b><br><br><u>Learning Objective</u><br><b>Inspects refrigeration and air cooling systems</b><br><br><b>JP Sign-off</b> ____ | <b>9.01.01</b><br>Identify components of refrigeration and air cooling systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.01.02</b><br>Read and interpret equipment specifications and limitations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | <b>9.01.03</b><br>Evaluate equipment and system design<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.01.04</b><br>Apply inspection procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                            | <b>9.01.05</b><br>Conduct visual, physical, odour and noise examination of equipment for worn, damaged or fouled components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>9.01.06</b><br>Recognize loose, worn, damaged or fouled components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____          | <b>9.01.07</b><br>Recommend corrective action<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                    |   |  |  |
| <b>SUB-TASK 9.02</b><br><br><u>Learning Objective</u><br><b>Tests electrical and electronic components</b><br><br><b>JP Sign-off</b> ____     | <b>9.02.01</b><br>Apply fundamental electricity principles<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                     | <b>9.02.02</b><br>Identify and select electrical and electronic test instruments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.02.03</b><br>Determine types of components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____        | <b>9.02.04</b><br>Read and interpret equipment electrical and electronic specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.02.05</b><br>Verify equipment operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |
|   | <b>9.02.06</b><br>Select test procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>9.02.07</b><br>Simulate a condition<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.02.08</b><br>Operate test instruments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____             | <b>9.02.09</b><br>Isolate electrical/ electronic faults<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                 | <b>9.02.10</b><br>Interpret and report test results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |

**Task 9 - B  
(cont'd)**

Learning Outcome  
**Maintains refrigeration and  
air cooling systems**

**Task 9  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

Knowledge, Skills and Abilities - Competencies

|  |   |   |  |   |  |
|--|---|---|--|---|--|
| <b>SUB-TASK<br/>9.03</b><br><br><u>Learning Objective</u><br><b>Tests mechanical<br/>components</b><br><br><b>JP Sign-off</b> _____  | <b>9.03.01</b><br>Identify mechanical test<br>instruments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>9.03.02</b><br>Determine types of<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                     | <b>9.03.03</b><br>Follow equipment<br>specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.03.04</b><br>Determine equipment<br>operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                             | <b>9.03.05</b><br>Determine test procedures<br>and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |
|  | <b>9.03.06</b><br>Simulate an environmental<br>condition<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                         | <b>9.03.07</b><br>Operate test equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>9.03.08</b><br>Isolate mechanical faults<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.03.09</b><br>Interpret and report test<br>results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                         |  |
| <b>SUB-TASK<br/>9.04</b><br><br><u>Learning Objective</u><br><b>Recommends corrective<br/>action</b><br><br><b>JP Sign-off</b> _____ | <b>9.04.01</b><br>Determine repairs/<br>replacement procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                   | <b>9.04.02</b><br>Evaluate repair/ replacement<br>alternatives/options<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.04.03</b><br>Identify and assess criteria<br>such as cost, time and<br>availability of equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.04.04</b><br>Recognize potential<br>consequences of<br>recommended action<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.04.05</b><br>Follow company<br>repair/replacement policies<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>9.04.06</b><br>Read and interpret<br>warranties and maintenance<br>agreements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.04.07</b><br>Estimate repair/ replacement<br>costs<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                | <b>9.04.08</b><br>Determine repair options<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.04.09</b><br>Report fault and explain<br>options to end user<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              | <b>9.04.10</b><br>Secure approval<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               |
|  | <b>9.04.11</b><br>Schedule repair<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.04.12</b><br>Prepare report<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                       |  |   |  |

**Task 9 - B  
(cont'd)**

Learning Outcome  
**Maintains refrigeration and  
air cooling systems**

**Task 9  
Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

**Knowledge, Skills and Abilities - Competencies**

|  |  |   |   |   |  |
|--|--|---|---|---|--|
| <b>SUB-TASK<br/>9.05</b><br><br><u>Learning Objective</u><br><b>Selects refrigeration<br/>and air cooling<br/>equipment and<br/>components</b><br><b>JP Sign-off _____</b> | <b>9.05.01</b><br>Determine refrigeration and<br>air cooling<br>equipment/component<br>specifications such as<br>voltages and sizes<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.05.02</b><br>Determine refrigeration and<br>air cooling equipment<br>sources and availability<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.05.03</b><br>Identify equipment<br>alternatives such as original<br>equipment manufacturer or<br>generic<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.05.04</b><br>Follow company acquisition<br>policies such as preferred<br>suppliers and purchasing<br>procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.05.05</b><br>Assess time constraints<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____               |
|  | <b>9.05.06</b><br>Evaluate equipment options<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.05.07</b><br>Evaluate logistical<br>requirements such as<br>transportation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                    |   |   |  |
| <b>SUB-TASK<br/>9.06</b><br><br><u>Learning Objective</u><br><b>Replaces defective<br/>components and<br/>equipment</b><br><b>JP Sign-off _____</b>                        | <b>9.06.01</b><br>Follow required replacement<br>procedures/ techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.06.02</b><br>Select tools, equipment and<br>resources required to<br>complete job<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____             | <b>9.06.03</b><br>Recognize components and<br>equipment limitations/<br>specifications such as weight,<br>capacity, voltages, limitations,<br>tolerances and programming<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.06.04</b><br>Shut down system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.06.05</b><br>Isolate/lock out system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____               |
|  | <b>9.06.06</b><br>Access equipment and<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.06.07</b><br>Dismantle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.06.08</b><br>Assemble equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.06.09</b><br>Adjust equipment/<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.06.10</b><br>Recover and dispose of<br>refrigerant<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  |  |   |   | <b>9.06.11</b><br>Pressure test, evacuate and<br>charge system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |  |

**Task 9 - B  
(cont'd)**

Learning Outcome  
**Maintains refrigeration and  
air cooling systems**

**Task 9  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|  |  |   |   |  |  |
|--|--|---|---|--|--|
| <b>SUB-TASK<br/>9.07</b><br><br><u>Learning Objective</u><br><b>Repairs/overhauls<br/>defective components<br/>and equipment</b><br><br><b>JP Sign-off _____</b>                 | <b>9.07.01</b><br>Determine repair/ overhaul<br>procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                   | <b>9.07.02</b><br>Identify equipment/<br>component specifications<br>including tolerances and<br>limitations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.07.03</b><br>Interpret manufacturer's<br>specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.07.04</b><br>Shut down system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.07.05</b><br>Isolate/lock out and tag out<br>system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                          |
|  | <b>9.07.06</b><br>Dismantle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.07.07</b><br>Assemble equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.07.08</b><br>Recover refrigerant<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>9.07.09</b><br>Pressure test, evacuate and<br>charge system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>9.07.10</b><br>Fabricate components such<br>as brackets, hangers and<br>mounts<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>9.07.11</b><br>Repair/replace defective<br>parts<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |   |   |  |  |
|  |  |   |   |  |  |
| <b>SUB-TASK<br/>9.08</b><br><br><u>Learning Objective</u><br><b>Verifies refrigeration<br/>and air cooling system<br/>and component<br/>function</b><br><b>JP Sign-off _____</b> | <b>9.08.01</b><br>Assess refrigeration and air<br>conditioning<br>equipment/component<br>operation/function<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.08.02</b><br>Select test equipment for<br>refrigeration and air<br>conditioning systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                 | <b>9.08.03</b><br>Verify original design<br>parameters<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____       | <b>9.08.04</b><br>Determine equipment<br>specifications such as<br>capacity, voltages and<br>sequence<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>9.08.05</b><br>Simulate an environmental<br>condition<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                          |
|  | <b>9.08.06</b><br>Test component operation<br>for functionality<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>9.08.07</b><br>Interpret and report test<br>results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |   |  |  |

**Task 9 - B  
(cont'd)**

Learning Outcome  
**Maintains refrigeration and  
air cooling systems**

**Task 9  
Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|  |  |  |   |   |   |
|--|--|--|---|---|---|
| <p><b>SUB-TASK<br/>9.09</b></p> <p><u>Learning Objective</u><br/><b>Performs predictive<br/>maintenance</b></p> <p>JP Sign-off _____</p>   | <p><b>9.09.01</b><br/>Identify predictive<br/>maintenance procedures</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>  | <p><b>9.09.02</b><br/>Assess the need for non-<br/>destructive testing such as<br/>oil analysis, refrigerant<br/>analysis, eddy current and X-<br/>rays</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>9.09.03</b><br/>Conduct non-destructive<br/>testing</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>        | <p><b>9.09.04</b><br/>Operate test equipment</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>   | <p><b>9.09.05</b><br/>Interpret and report test<br/>results</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>  |
| <p><b>SUB-TASK<br/>9.10</b></p> <p><u>Learning Objective</u><br/><b>Performs preventative<br/>maintenance</b></p> <p>JP Sign-off _____</p> | <p><b>9.10.01</b><br/>Determine preventative<br/>maintenance requirements<br/>such as schedule and<br/>manufacturer's<br/>recommendations</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>9.10.02</b><br/>Follow preventative<br/>maintenance procedures</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>  | <p><b>9.10.03</b><br/>Assess the need to replace<br/>consumables</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>9.10.04</b><br/>Replace consumables such<br/>as belts, filters, lubricants<br/>and electrical controls</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>9.10.05</b><br/>Conduct maintenance<br/>activities such as cleaning,<br/>lubricating, tightening and<br/>adjusting</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> |
|  | <p><b>9.10.06</b><br/>Return systems to operation</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>   |  |   |   |   |

Refrigeration and Air Conditioning

**BLOCK C**  
29% - 36 Questions on the IP exam

Learning Category  
HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

10 - C  
5 questions on the IP exam

Learning Outcome  
Plans installation of heating, ventilating and air conditioning systems

Journeyperson  
Sign-off  
Task 10

Complete ☐

Incomplete ☐

**Task 10**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>10.01<br><u>Learning Objective</u><br>Verifies heating, ventilating and air conditioning systems, parameters and requirements<br><br>JP Sign-off _____ | 10.01.01<br>Identify and select design criteria and parameters   | 10.01.02<br>Determine types of heating, ventilating and air conditioning equipment and applications  | 10.01.03<br>Follow manufacturer's requirements  | 10.01.04<br>Assess energy sources available at site  | 10.01.05<br>Observe indoor poor air quality indicators  |
|--|--|--|---|--|---|
|  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |
|  | 10.01.06<br>Verify the heating, ventilating and air conditioning systems design<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 10.01.07<br>Verify the heating, ventilating and air conditioning systems specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 10.01.08<br>Test indoor air quality, air distribution and humidity<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 10.01.09<br>Match energy source with equipment requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 10.01.10<br>Determine system needs with end user<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | 10.01.11<br>Schedule utility connection<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |  |   |  |   |

10 - C  
(cont'd)

Learning Outcome  
Plans installation of  
heating, ventilating and air  
conditioning systems

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|  |  |   |   |  |  |
|--|--|---|---|--|--|
| <b>SUB-TASK<br/>10.02</b><br><u>Learning Objective</u><br><b>Selects heating, ventilating<br/>and air conditioning<br/>components and<br/>equipment</b><br><br>JP Sign-off _____ | <b>10.02.01</b><br>Identify types, sizes,<br>capacities and applications of<br>heating, ventilating and air<br>conditioning equipment and<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>10.02.02</b><br>Follow manufacturer's<br>specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>10.02.03</b><br>Identify site restrictions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>10.02.04</b><br>Evaluate equipment/<br>component function and<br>application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>10.02.05</b><br>Verify equipment/ component<br>location in systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>10.02.06</b><br>Choose heating, ventilating<br>and air conditioning<br>equipment/ components to<br>match applications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>10.02.07</b><br>Plan heating, ventilating and<br>air conditioning equipment<br>and component location<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>10.02.08</b><br>Select equipment/<br>component locations for<br>optimum performances<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____        |  |  |
| <b>SUB-TASK<br/>10.03</b><br><u>Learning Objective</u><br><b>Confirms heating,<br/>ventilating and air<br/>conditioning components</b><br><br>JP Sign-off _____                  | <b>10.03.01</b><br>Identify heating, ventilating<br>and air conditioning systems/<br>components such as diffusers,<br>grills, terminal devices,<br>balancing dampers, boilers,<br>evaporators and humidistats<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>10.03.02</b><br>Determine heat capacity<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>10.03.03</b><br>Assess air flow/air quality<br>psychrometric calculations<br>and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>10.03.04</b><br>Calculate air flow/air quality<br>requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____               | <b>10.03.05</b><br>Calculate heating capacity<br>requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____         |
|  | <b>10.03.06</b><br>Calculate psychrometric<br>values such as quantity and<br>quality<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |   |   |  |  |

**11 - C**  
**10 questions on the IP exam**

Learning Outcome  
**Installs heating, ventilating and air conditioning systems**

Journey person  
 Sign-off  
 Task 11

Complete ☐

Incomplete ☐

**Task 11**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

|   |  |  |  |   |  |
|---|--|--|--|---|--|
| <b>SUB-TASK</b><br><b>11.01</b><br><br><u>Learning Objective</u><br><b>Prepares heating, ventilating and air conditioning equipment site/location</b><br><br><b>JP Sign-off</b> _____ | <b>11.01.01</b><br>Read and interpret specifications of heating, ventilating and air conditioning equipment such as size, weight and capacity<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>11.01.02</b><br>Determine installation and equipment related to utilities, roofing, venting and structural support<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>11.01.03</b><br>Schedule project activities related to sub-trades and end user deadlines<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>11.01.04</b><br>Calculate labour requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>11.01.05</b><br>Schedule project teams<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____       |
|   | <b>11.01.06</b><br>Schedule connection of system to utilities<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |  |  |   |  |
| <b>SUB-TASK</b><br><b>11.02</b><br><br><u>Learning Objective</u><br><b>Assembles heating, ventilating and air conditioning equipment</b><br><br><b>JP Sign-off</b> _____              | <b>11.02.01</b><br>Follow equipment manufacturer's recommended assembly techniques and procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>11.02.02</b><br>Determine equipment application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>11.02.03</b><br>Evaluate equipment layout<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>11.02.04</b><br>Remove protective material<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | <b>11.02.05</b><br>Follow assembly instructions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>11.02.06</b><br>Verify assembly of components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |  |  |   |  |



11 - C  
(cont'd)

Learning Outcome  
Installs heating, ventilating  
and air conditioning  
systems

Task 11  
Learning Needs

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
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**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>11.03  | 11.03.01   | 11.03.02  | 11.03.03  | 11.03.04  | 11.03.05  |
|--|--|---|---|---|---|
|  | Follow equipment manufacturer's installation techniques and procedures     | Select isolation, vibration and seismic requirements                                    | Determine service accessibility requirements                            | Determine sequence of positioning and connecting accessories and components | Determine types, sizes and function of components and accessories       |
| <u>Learning Objective</u><br>Positions and secures heating, ventilating and air conditioning equipment | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                 | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____     | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | JP Sign-off ____   |   |   |   |   |
|  | 11.03.06   | 11.03.07  | 11.03.08  | 11.03.09  | 11.03.10  |
|  | Select equipment location  | Anchor equipment and components in position   | Sequence accessories and components                                     | Connect components and accessories to manufacturer's specifications         | Position and secure prefabricated ducting and accessories               |
|  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                 | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____     | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | 11.03.11   | 11.03.12  |   |   |   |
|  | Verify installation of heating, ventilating and air conditioning equipment | Coordinate connection of heating, ventilating and air conditioning systems to utilities |   |   |   |
|  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                 |   |   |   |

**12 - C**  
**9 questions on the IP exam**

Learning Outcome  
**Commissions heating, ventilating and air conditioning systems**

Journey person  
 Sign-off  
 Task 12

Complete ☐

Incomplete ☐

**Task 12**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

|  |  |   |   |   |  |
|--|--|---|---|---|--|
| <b>SUB-TASK 12.01</b><br><br><u>Learning Objective</u><br><b>Performs pre-start-up checks</b><br><br><b>JP Sign-off</b> _____                                  | <b>12.01.01</b><br>Follow manufacturer's recommendations for pre-start inspections and energy sources<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____               | <b>12.01.02</b><br>Evaluate available energy sources and utilities<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____       | <b>12.01.03</b><br>Evaluate air psychometrics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>12.01.04</b><br>Verify energy sources and utilities' connection integrity<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>12.01.05</b><br>Verify that equipment specification match energy sources<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>12.01.06</b><br>Verify movement of drives and rotating equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>12.01.07</b><br>Make adjustments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                      | <b>12.01.08</b><br>Complete pre-start-up sheets<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |   |  |
| <b>SUB-TASK 12.02</b><br><br><u>Learning Objective</u><br><b>Starts up heating, ventilating and air conditioning systems</b><br><br><b>Continued next page</b> | <b>12.02.01</b><br>Read and interpret manufacturer's recommended start-up procedures and documentation requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>12.02.02</b><br>Determine start-up procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                         | <b>12.02.03</b><br>Verify start-up conditions such as ambient temperatures, pressures, voltage and current<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>12.02.04</b><br>Verify equipment application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                              | <b>12.02.05</b><br>Determine sequence of operation for systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              |
|  | <b>12.02.06</b><br>Determine operation of system equipment and components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>12.02.07</b><br>Demonstrate an understanding of flame characteristics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>12.02.08</b><br>Demonstrate an understanding of draft characteristics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                   | <b>12.02.09</b><br>Coordinate activation of energy sources<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                   | <b>12.02.10</b><br>Connect diagnostic instrumentation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                       |

12 - C  
(cont'd)

Learning Outcome  
Commissions heating,  
ventilating and air  
conditioning systems

**Task 12**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>12.02<br>Continued<br><u>Learning Objective</u><br>Starts up heating,<br>ventilating and air<br>conditioning systems<br><br>JP Sign-off _____ | 12.02.11<br>Follow manufacturer's<br>recommended procedures<br>for start-up<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 12.02.12<br>Measure operating<br>conditions for heating,<br>ventilating and air<br>conditioning systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 12.02.13<br>Interpret operating conditions<br>for heating, ventilating and<br>air conditioning systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 12.02.14<br>Test operation of safety<br>controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 12.02.15<br>Verify operation of safety<br>controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|---|--|--|---|---|---|
|   | 12.02.16<br>Make adjustments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | 12.02.17<br>Verify flame characteristics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | 12.02.18<br>Document start-up<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |   |   |

**Task 13 - C**  
12 questions on the IP exam

Learning Outcome  
**Maintains heating, ventilating and air conditioning systems**

Journey person  
Sign-off  
Task 13

Complete ☐  
Incomplete ☐

**Task 13**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |  |  |  |  |   |
|---|--|--|--|--|---|
| <p><b>SUB-TASK 13.01</b></p> <p><u>Learning Objective</u><br/>Inspects heating, ventilating and air conditioning systems</p> <p>JP Sign-off _____</p>                                   | <p><b>13.01.01</b><br/>Identify components of heating, ventilating and air conditioning systems</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>13.01.02</b><br/>Determine equipment specifications and limitations</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>           | <p><b>13.01.03</b><br/>Evaluate equipment and system design</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>13.01.04</b><br/>Apply inspection procedures and techniques</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>                   | <p><b>13.01.05</b><br/>Conduct visual, physical, odour and noise examination of equipment for worn, damaged or fouled components</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> |
|   | <p><b>13.01.06</b><br/>Recognize loose, worn, damaged or fouled components</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>                      | <p><b>13.01.07</b><br/>Recommend corrective action</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>                                  |  |  |   |
| <p><b>SUB-TASK 13.02</b></p> <p><u>Learning Objective</u><br/>Tests electrical/ electronic components in heating, ventilating and air conditioning systems</p> <p>JP Sign-off _____</p> | <p><b>13.02.01</b><br/>Apply electricity principles</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>   | <p><b>13.02.02</b><br/>Identify and select electric and electronic test instruments</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>13.02.03</b><br/>Identify types of components</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>         | <p><b>13.02.04</b><br/>Determine equipment electrical and electronic specifications</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p> | <p><b>13.02.05</b><br/>Verify equipment operation</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>  |
|   | <p><b>13.02.06</b><br/>Follow test procedures and techniques</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>                                    | <p><b>13.02.07</b><br/>Simulate a condition</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>   | <p><b>13.02.08</b><br/>Operate test instruments</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>             | <p><b>13.02.09</b><br/>Isolate electrical/electronic fault</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>                          | <p><b>13.02.10</b><br/>Interpret and report test results</p> <p>Rating ____ Complete<br/>Proof ____ <input type="checkbox"/><br/>Use ____</p>   |

**Task 13 - C  
(cont'd)**

Learning Outcome  
**Maintains heating,  
ventilating and air  
conditioning systems**

**Task 13  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>13.03<br><u>Learning Objective</u><br>Tests mechanical<br>components in heating,<br>ventilating and air<br>conditioning systems<br><br>JP Sign-off _____ | 13.03.01<br>Identify mechanical test<br>instruments   | 13.03.02<br>Identify types of components   | 13.03.03<br>Read equipment<br>specifications  | 13.03.04<br>Verify equipment operation  | 13.03.05<br>Follow test procedures and<br>techniques                    |
|--|---|--|---|---|---|
|  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | 13.03.06<br>Simulate an environmental<br>condition<br><br><br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.03.07<br>Operate test<br>equipment/instruments<br><br><br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.03.08<br>Isolate mechanical fault<br><br><br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.03.09<br>Interpret and report test<br>results<br><br><br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |   |

**Task 13 - C  
(cont'd)**

Learning Outcome  
**Maintains heating,  
ventilating and air  
conditioning systems**

**Task 13  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

Knowledge, Skills and Abilities - Competencies

|   |  |  |   |  |   |
|---|--|--|---|--|---|
| <b>SUB-TASK<br/>13.04</b><br><br><u>Learning Objective</u><br><b>Recommends corrective<br/>action</b><br><br><b>JP Sign-off</b> _____   | <b>13.04.01</b><br>Determine repair/<br>replacement procedures<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.04.02</b><br>Evaluate repair/ replacement<br>alternatives/ options<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.04.03</b><br>Assess potential<br>consequences of<br>recommended action<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                    | <b>13.04.04</b><br>Follow company<br>repair/replacement policies<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.04.05</b><br>Read and interpret<br>warranties and maintenance<br>agreements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>13.04.06</b><br>Estimate repair/<br>replacement costs<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.04.07</b><br>Determine repair options<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>13.04.08</b><br>Report fault and explain<br>options to end user<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>13.04.09</b><br>Secure approval<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.04.10</b><br>Schedule repair<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  |
| <b>SUB-TASK<br/>13.05</b><br><br><u>Learning Objective</u><br><b>Selects heating, ventilating<br/>and air conditioning<br/>equipment and<br/>components</b><br><br><b>JP Sign-off</b> _____ | <b>13.05.01</b><br>Determine heating,<br>ventilating and air<br>conditioning systems'<br>equipment/component<br>specifications such as<br>voltages and sizes<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.05.02</b><br>Identify heating, ventilating<br>and air conditioning systems'<br>equipment sources and<br>availability<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.05.03</b><br>Determine equipment<br>alternatives such as original<br>equipment manufacturer or<br>generic<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.05.04</b><br>Follow of company<br>acquisition policies such as<br>preferred suppliers and<br>purchasing procedures<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.05.05</b><br>Assess time constraints<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  |
|   | <b>13.05.06</b><br>Order equipment/<br>components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>13.05.07</b><br>Evaluate equipment options<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>13.05.08</b><br>Evaluate logistical<br>requirements such as<br>transportation<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                | <b>13.05.09</b><br>Fabricate components such<br>as brackets, hangers and<br>mounts<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                       |   |

**Task 13 - C  
(cont'd)**

Learning Outcome  
**Maintains heating,  
ventilating and air  
conditioning systems**

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

**Task 13  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

**Knowledge, Skills and Abilities - Competencies**

| SUB-TASK<br>13.06<br><u>Learning Objective</u><br>Replaces defective heating,<br>ventilating and air<br>conditioning components and<br>equipment<br><br>JP Sign-off _____ | 13.06.01<br>Follow required replacement<br>procedures/ techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                    | 13.06.02<br>Select tools, equipment and<br>resources required to<br>complete job<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.06.03<br>Determine components and<br>equipment limitations/<br>specifications such as weight,<br>capacity, voltages and<br>programming<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.06.04<br>Schedule required<br>equipment, human<br>resources, tools and material<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.06.05<br>Source required tools,<br>resources and equipment<br>such as cranes, helicopter<br>and lifts<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|---|---|---|--|---|---|
|   | 13.06.06<br>Transport or arrange<br>transportation of required<br>tools and equipment to job<br>site<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.06.07<br>Shut down system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | 13.06.08<br>Isolate/lock out and tag out<br>system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | 13.06.09<br>Access equipment and<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                     | 13.06.10<br>Dismantle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |
|   | 13.06.11<br>Assemble equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | 13.06.12<br>Adjust equipment/<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                      |  |   |   |

**Task 13 - C  
(cont'd)**

Learning Outcome  
**Maintains heating,  
ventilating and air  
conditioning systems**

**Task 13  
Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |  |   |  |  |  |
|---|--|---|--|--|--|
| <b>SUB-TASK<br/>13.07</b><br><u>Learning Objective</u><br><b>Repairs/overhauls defective<br/>components and equipment<br/>for heating, ventilating and air<br/>conditioning systems</b><br><br><b>JP Sign-off</b> _____ | <b>13.07.01</b><br>Follow repair/ overhaul<br>procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.07.02</b><br>Identify and determine<br>equipment/component<br>specifications including<br>tolerances and limitations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.07.03</b><br>Interpret manufacturer's<br>specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.07.04</b><br>Recommend adjustments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>13.07.05</b><br>Shut down system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                       |
|   | <b>13.07.06</b><br>Isolate/lock out and tag out<br>system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.07.07</b><br>Dismantle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>13.07.08</b><br>Assemble equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                         |  |  |
| <b>SUB-TASK<br/>13.08</b><br><u>Learning Objective</u><br><b>Verifies heating,<br/>ventilating and air<br/>conditioning systems and<br/>component function</b><br><br><b>JP Sign-off</b> _____                          | <b>13.08.01</b><br>Determine heating,<br>ventilating and air<br>conditioning systems<br>equipment/component<br>operation/function<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.08.02</b><br>Select test equipment for<br>heating, ventilating and air<br>conditioning systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                       | <b>13.08.03</b><br>Determine original design<br>parameters<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | <b>13.08.04</b><br>Identify equipment<br>specifications such as<br>capacity, voltages and<br>sequence<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>13.08.05</b><br>Simulate an environmental<br>condition<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>13.08.06</b><br>Test component operation<br>for functionality<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>13.08.07</b><br>Interpret specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>13.08.08</b><br>Interpret and report test<br>results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____       |  |  |
| <b>SUB-TASK<br/>13.09</b><br><u>Learning Objective</u><br><b>Performs predictive<br/>maintenance on heating<br/>system</b><br><br><b>JP Sign-off</b> _____  | <b>13.09.01</b><br>Demonstrate an<br>understanding of system<br>analyzing and testing<br>procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>13.09.02</b><br>Conduct system analysis and<br>testing procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |  |  |  |



**Task 13 - C  
(cont'd)**

Learning Outcome  
**Maintains heating,  
ventilating and air  
conditioning systems**

**Task 13  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation      I - Interview      D - Documentation

**Use:**

1 - Daily      2 - Often      3 - Seldom      4 - Never

**Knowledge, Skills and Abilities - Competencies**

| SUB-TASK<br>13.10<br><u>Learning Objective</u><br><b>Performs preventative<br/>maintenance on heating,<br/>ventilating and air<br/>conditioning systems</b><br><br>JP Sign-off _____ | 13.10.01<br>Determine preventative<br>maintenance requirements<br>such as schedule and<br>manufacturer's<br>recommendations  | 13.10.02<br>Follow preventative<br>maintenance procedures  | 13.10.03<br>Identify local water<br>conditions  | 13.10.04<br>Assess the need to replace<br>consumables                   | 13.10.05<br>Replace consumables such<br>as belts, filters, cylinders and<br>elements |
|--|--|--|---|---|--|
|  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              |
|  | 13.10.06<br>Conduct maintenance<br>activities such as cleaning,<br>lubricating, tightening and<br>adjusting<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.10.07<br>Check flame characteristics<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 13.10.08<br>Return system to operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |   |  |

Refrigeration and Air Conditioning

**BLOCK D**  
19% - 24 Questions on the IP exam

Learning Category  
**CONTROLS SYSTEMS**

**Task 14 - D**  
4 questions on the IP exam

Learning Outcome  
**Plans installation of control systems**

Journeyperson  
Sign-off  
Task 14

Complete ☐

Incomplete ☐

**Task 14 Learning Needs**

**Sub-Tasks Learning Objectives**  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|  |   |   |   |  |  |
|--|---|---|---|--|--|
| <b>SUB-TASK 14.01</b><br><br><u>Learning Objective</u><br><b>Selects controls</b><br><br><b>JP Sign-off</b> ____ | <b>14.01.01</b><br>Determine end user requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____       | <b>14.01.02</b><br>Read and interpret trade standards such as ASHRAE<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.01.03</b><br>Identify types and applications of controls such as electric, electronic, pneumatic and direct digital controls (DDC)<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.01.04</b><br>Read and interpret manufacturer's specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.01.05</b><br>Apply control fundamentals and strategies<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____      |
|  | <b>14.01.06</b><br>Determine system control requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.01.07</b><br>Identify control programming methods<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              | <b>14.01.08</b><br>Specify design criteria and parameters<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>14.01.09</b><br>Outline sequence of operations of control system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.01.10</b><br>Assess compatibility of controls with a system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>14.01.11</b><br>Choose controls to match application<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |   |   |  |  |

|   |   |  |   |  |   |
|---|---|--|---|--|---|
| <b>SUB-TASK 14.02</b><br><br><u>Learning Objective</u><br><b>Lays out control system components and wiring</b><br><br><b>JP Sign-off</b> ____ | <b>14.02.01</b><br>Identify installation methods and requirements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | <b>14.02.02</b><br>Determine wiring and connecting methods and procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.02.03</b><br>Identify equipment function and operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.02.04</b><br>Determine sequence of operations of control system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.02.05</b><br>Demonstrate an understanding of layout techniques and terminology<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>14.02.06</b><br>Assess electrical requirements of control systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>14.02.07</b><br>Optimize control system functions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                      | <b>14.02.08</b><br>Produce a layout plan<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                     |  |   |

15 - D  
5 questions on the IP exam

Learning Outcome  
Installs control systems

Journey person  
Sign-off  
Task 15

Complete ☐

Incomplete ☐

**Task 15**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

- Rating:**
- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
  - 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
  - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
  - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
  - 2 - Complete a task with some assistance and supervision
  - 1 - Complete task with assistance and constant supervision

**Type of Proof:** O - Observation      I - Interview      D - Documentation

**Use:** 1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

|   |   |  |   |   |  |
|---|---|--|---|---|--|
| <b>SUB-TASK</b><br><b>15.01</b><br><br><u>Learning Objective</u><br><b>Prepares site/location for control system</b><br><br><b>JP Sign-off</b> ____       | <b>15.01.01</b><br>Identify available locations for control panels and components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                     | <b>15.01.02</b><br>Determine installation requirements related to utilities such as communication network and electrical<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>15.01.03</b><br>Determine control system operation and application<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>15.01.04</b><br>Schedule project activities related to sub-trades and end user deadlines<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>15.01.05</b><br>Calculate labour requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   |
|   | <b>15.01.06</b><br>Schedule project teams<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>15.01.07</b><br>Schedule connection of control system to utilities<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  |   |   |  |
| <b>SUB-TASK</b><br><b>15.02</b><br><br><u>Learning Objective</u><br><b>Positions and secures control system components</b><br><br><b>JP Sign-off</b> ____ | <b>15.02.01</b><br>Follow equipment manufacturer's recommended installation techniques and procedures<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>15.02.02</b><br>Determine equipment application<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>15.02.03</b><br>Determine isolation and vibration requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____     | <b>15.02.04</b><br>Ensure service accessibility requirements<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                | <b>15.02.05</b><br>Determine sequence of positioning and connecting accessories and components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>15.02.06</b><br>Assess types, sizes and function of components and accessories<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                     | <b>15.02.07</b><br>Anchor components in position<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>15.02.08</b><br>Sequence accessories and components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                | <b>15.02.09</b><br>Connect components and accessories to manufacturer's specifications<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____      | <b>15.02.10</b><br>Verify installation of control system components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                            |

15 - D  
(cont'd)

Learning Outcome  
Installs control systems

Task 15  
Learning Needs

Sub-Tasks  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

| <b>SUB-TASK<br/>15.03</b><br><br><u>Learning Objective</u><br><b>Connects system wiring<br/>and tubing</b><br><br><b>JP Sign-off</b> _____ | <b>15.03.01</b><br>Follow equipment<br>manufacturer's specifica-<br>tions, procedures and<br>techniques for installing<br>control systems<br><br><b>Rating</b> ____ <b>Complete</b><br><b>Proof</b> ____ <input type="checkbox"/><br><b>Use</b> ____ | <b>15.03.02</b><br>Identify electrical noise<br>interference<br><br><b>Rating</b> ____ <b>Complete</b><br><b>Proof</b> ____ <input type="checkbox"/><br><b>Use</b> ____ | <b>15.03.03</b><br>Select types, sizes and<br>capacities of tubing<br><br><b>Rating</b> ____ <b>Complete</b><br><b>Proof</b> ____ <input type="checkbox"/><br><b>Use</b> ____ | <b>15.03.04</b><br>Apply tube routing<br>techniques and company's<br>labelling strategies<br><br><b>Rating</b> ____ <b>Complete</b><br><b>Proof</b> ____ <input type="checkbox"/><br><b>Use</b> ____ | <b>15.03.05</b><br>Terminate mechanical<br>connections<br><br><b>Rating</b> ____ <b>Complete</b><br><b>Proof</b> ____ <input type="checkbox"/><br><b>Use</b> ____ |
|--|--|---|---|--|---|
|  | <b>15.03.06</b><br>Label/tag controls, wiring and<br>tubing<br><br><b>Rating</b> ____ <b>Complete</b><br><b>Proof</b> ____ <input type="checkbox"/><br><b>Use</b> ____   |   |   |  |   |

16 - D  
6 questions on the IP exam

Learning Outcome  
Commissions control  
systems

Journeyperson  
Sign-off  
Task 16

Complete ☐

Incomplete ☐

Task 16  
Learning Needs

Sub-Tasks  
Learning Objectives  
to be completed  
Comments

Rating:

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

Type of Proof:      O - Observation                      I - Interview                      D - Documentation

Use:                      1 - Daily                      2 - Often                      3 - Seldom                      4 - Never

Knowledge, Skills and Abilities - Competencies

|   |   |   |  |  |   |
|---|---|---|--|--|---|
| <div>SUB-TASK<br/>16.01</div> <div>Learning Objective<br/>Performs pre-start-up checks</div> <div>JP Sign-off _____</div> | <div>16.01.01</div> <div>Follow manufacturer's recommendations for pre-start inspections and sources of energy</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div> | <div>16.01.02</div> <div>Identify site specific conditions such as controller, sensor, computer and actuator locations</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div> | <div>16.01.03</div> <div>Evaluate available energy sources</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>  | <div>16.01.04</div> <div>Verify energy sources and connection integrity</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>   | <div>16.01.05</div> <div>Comply with equipment specifications</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>      |
|   | <div>16.01.06</div> <div>Verify movement of drives and rotating equipment</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>                                      | <div>16.01.07</div> <div>Check isolation devices, disconnect switches and valves</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>                                       | <div>16.01.08</div> <div>Verify required voltage</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>  | <div>16.01.09</div> <div>Verify completion of controls, wiring and tubing</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div> | <div>16.01.10</div> <div>Make adjustments</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>                          |
|   | <div>16.01.11</div> <div>Complete pre-start-up sheets</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>  |   |  |  |   |
| <div>SUB-TASK<br/>16.02</div> <div>Learning Objective<br/>Sets operating parameters</div> <div>JP Sign-off _____</div>    | <div>16.02.01</div> <div>Identify site-specific operating parameters</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>   | <div>16.02.02</div> <div>Follow manufacturer's programming and configuration</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>   | <div>16.02.03</div> <div>Program controllers such as microprocessors, timers and analog control systems</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div> | <div>16.02.04</div> <div>Verify operating parameters</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div>                      | <div>16.02.05</div> <div>Interpret control system's specifications</div> <div>Rating ____ Complete</div> <div>Proof ____ <input type="checkbox"/></div> <div>Use ____</div> |

16 - D  
(cont'd)

Learning Outcome  
Commissions control  
systems

Task 16  
Learning Needs

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>16.03<br><br><u>Learning Objective</u><br>Starts up control system<br><br>JP Sign-off _____ | 16.03.01<br>Follow manufacturer's recommended start-up procedures and documentation requirements                                  | 16.03.02<br>Determine start-up procedures   | 16.03.03<br>Identify equipment application   | 16.03.04<br>Determine sequence of operation for system  | 16.03.05<br>Verify operation of system equipment and components   |
|---|---|---|--|---|---|
|   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                     | Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |
|   | 16.03.06<br>Coordinate activation of energy source<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 16.03.07<br>Connect diagnostic instrumentation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 16.03.08<br>Follow manufacturer's recommended procedures for start-up<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 16.03.09<br>Make adjustments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 16.03.10<br>Verify safety and operating controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | 16.03.11<br>Document start-up<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                      | 16.03.12<br>Create and save a backup file<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____      |  |   |   |

17 - D  
9 questions on the IP exam

Learning Outcome  
Maintains control systems

Journey person  
Sign-off  
Task 17

Complete ☐

Incomplete ☐

**Task 17**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

**Rating:**

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
 2 - Complete a task with some assistance and supervision  
 1 - Complete task with assistance and constant supervision

**Type of Proof:**      O - Observation                      I - Interview                      D - Documentation

**Use:**                      1 - Daily                      2 - Often                      3 - Seldom                      4 - Never

Knowledge, Skills and Abilities - Competencies

|  |  |   |  |  |  |
|--|--|---|--|--|--|
| <b>SUB-TASK</b><br><b>17.01</b><br><br><u>Learning Objective</u><br><b>Inspects control systems</b><br><br><b>JP Sign-off</b> ____                 | <b>17.01.01</b><br>Identify components of control system<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                 | <b>17.01.02</b><br>Determine equipment specifications and limitations<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.01.03</b><br>Evaluate equipment and system design<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>17.01.04</b><br>Determine inspection procedures and techniques<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.01.05</b><br>Conduct visual, physical, odour and noise examination of equipment for worn, damaged or fouled components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>17.01.06</b><br>Recognize loose, worn, damaged or fouled components<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.01.07</b><br>Recommend corrective action<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                        |  |  |  |
| <b>SUB-TASK</b><br><b>17.02</b><br><br><u>Learning Objective</u><br><b>Verifies and resets operating parameters</b><br><br><b>JP Sign-off</b> ____ | <b>17.02.01</b><br>Apply electricity, pneumatic and hydraulic principles<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.02.02</b><br>Select test instruments<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                            | <b>17.02.03</b><br>Identify operating parameters<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                               | <b>17.02.04</b><br>Demonstrate an understanding of control strategies such as PID loops, proportional control and on/off control<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.02.05</b><br>Follow manufacturer's specifications, tolerances and ranges<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____   |
|  | <b>17.02.06</b><br>Identify interface equipment<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                          | <b>17.02.07</b><br>Interface devices<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                                  | <b>17.02.08</b><br>Simulate conditions such as temperature, current or voltage<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.02.09</b><br>Test and confirm functionality<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.02.10</b><br>Adjust parameters such as set points, differentials, scheduling and sequences<br><br>Rating ____ <b>Complete</b><br>Proof ____ <input type="checkbox"/><br>Use ____                             |

17 - D  
(cont'd)

Learning Outcome  
Maintains control systems

Task 17  
Learning Needs

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|  |  |   |   |   |   |
|--|--|---|---|---|---|
| <b>SUB-TASK<br/>17.03</b><br><br><u>Learning Objective</u><br><b>Tests electrical/ electronic components in control system</b><br><br><b>JP Sign-off</b> _____ | <b>17.03.01</b><br>Apply electricity principles<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.03.02</b><br>Select electric and electronic test instruments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.03.03</b><br>Identify types of control system components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.03.04</b><br>Read and interpret equipment's electrical and electronic specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.03.05</b><br>Verify equipment operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____            |
|  | <b>17.03.06</b><br>Demonstrate an understanding of test procedures and techniques including voltage, amperage and ohm tests<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.03.07</b><br>Operate test instruments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>17.03.08</b><br>Simulate a condition<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        | <b>17.03.09</b><br>Isolate electrical/electronic fault<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                     | <b>17.03.10</b><br>Interpret and report test results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____     |
| <b>SUB-TASK<br/>17.04</b><br><br><u>Learning Objective</u><br><b>Test mechanical components in control system</b><br><br><b>JP Sign-off</b> _____              | <b>17.04.01</b><br>Select mechanical test instruments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.04.02</b><br>Identify types of components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                    | <b>17.04.03</b><br>Read and interpret equipment specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.04.04</b><br>Verify equipment operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.04.05</b><br>Follow test procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|  | <b>17.04.06</b><br>Operate test equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.04.07</b><br>Isolate a mechanical fault<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                      | <b>17.04.08</b><br>Simulate an environmental condition<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____         | <b>17.04.09</b><br>Interpret and report test results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                       |   |



17 - D  
(cont'd)

Learning Outcome  
Maintains control systems

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
2 - Complete a task with some assistance and supervision  
1 - Complete task with assistance and constant supervision

Type of Proof:

O - Observation      I - Interview      D - Documentation

Use:

1 - Daily      2 - Often      3 - Seldom      4 - Never

**Task 17**  
**Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

| SUB-TASK<br>17.05<br><br><u>Learning Objective</u><br>Recommends corrective<br>action<br><br>JP Sign-off _____ | 17.05.01<br>Determine repair/<br>replacement procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                    | 17.05.02<br>Evaluate repair/ replacement<br>alternatives/options<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.05.03<br>Assess criteria such as cost,<br>time and availability of<br>equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.05.04<br>Evaluate potential<br>consequences of<br>recommended action<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.05.05<br>Follow company<br>repair/replacement policies<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|--|---|---|---|--|--|
|  | 17.05.06<br>Read and interpret<br>warranties and maintenance<br>agreements<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.05.07<br>Estimate repair/ replacement<br>costs<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                | 17.05.08<br>Determine repair options<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | 17.05.09<br>Report fault and explain<br>options to end user<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____             | 17.05.10<br>Secure approval<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                               |
|  | 17.05.11<br>Schedule repair<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | 17.05.12<br>Prepare report<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                       |   |  |  |

17 - D  
(cont'd)

Learning Outcome  
Maintains control systems

Task 17  
Learning Needs

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |   |  |   |  |  |
|---|---|--|---|--|--|
| <b>SUB-TASK<br/>17.06</b><br><br><u>Learning Objective</u><br><b>Selects control system<br/>equipment and<br/>components</b><br><br><b>JP Sign-off</b> ____     | <b>17.06.01</b><br>Read and interpret control<br>system equipment/<br>component specifications<br>such as voltages and sizes<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.06.02</b><br>Identify control system<br>equipment sources and<br>availability<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____     | <b>17.06.03</b><br>Determine equipment<br>alternatives such as original<br>equipment manufacturer or<br>generic<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              | <b>17.06.04</b><br>Follow company policies<br>such as preferred suppliers<br>and purchasing<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.06.05</b><br>Evaluate time constraints<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |
|   | <b>17.06.06</b><br>Coordinate ordering of<br>equipment/components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.06.07</b><br>Evaluate equipment options<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.06.08</b><br>Evaluate logistical<br>requirements such as<br>shipping<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.06.09</b><br>Expedite orders<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.06.10</b><br>Fabricate components such<br>as brackets, hangers and<br>mounts<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                              |
| <b>SUB-TASK<br/>17.07</b><br><br><u>Learning Objective</u><br><b>Replaces defective control<br/>components and<br/>equipment</b><br><br><b>JP Sign-off</b> ____ | <b>17.07.01</b><br>Identify required replacement<br>procedures/ techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.07.02</b><br>Select tools, equipment and<br>resources required to<br>complete job<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.07.03</b><br>Evaluate equipment<br>limitations/specifications<br>such as weight, capacity,<br>voltages and programming<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.07.04</b><br>Schedule required<br>equipment, human<br>resources, tools and<br>materials<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.07.05</b><br>Source required tools,<br>resources and equipment<br>such as meters, gauges and<br>recorders<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>17.07.06</b><br>Transport or arrange<br>transportation of required<br>tools and equipment to job<br>site<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                  | <b>17.07.07</b><br>Shut down system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.07.08</b><br>Isolate/lock out and tag out<br>system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.07.09</b><br>Access equipment and<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.07.10</b><br>Dismantle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |
|   | <b>17.07.11</b><br>Assemble equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.07.12</b><br>Adjust equipment/<br>components<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                      |   |  |  |

17 - D  
(cont'd)

Learning Outcome  
Maintains control systems

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
 2 - Complete a task with some assistance and supervision  
 1 - Complete task with assistance and constant supervision

**Type of Proof:**

O - Observation

I - Interview

D - Documentation

**Use:**

1 - Daily

2 - Often

3 - Seldom

4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 17**  
**Learning Needs**  
  
**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

| SUB-TASK<br>17.08<br><br><u>Learning Objective</u><br>Repairs/overhauls<br>defective components and<br>equipment for control<br>system<br>JP Sign-off _____ | 17.08.01<br>Identify repair/ overhaul<br>procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.08.02<br>Read and interpret<br>equipment/component<br>specifications including<br>tolerances and limitations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.08.03<br>Interpret manufacturer's<br>specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.08.04<br>Recommend adjustments<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____    | 17.08.05<br>Shut down system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                        |
|---|---|--|---|---|--|
|   | 17.08.06<br>Isolate/lock out and tag out<br>system<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                 | 17.08.07<br>Dismantle equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | 17.08.08<br>Assemble parts<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                             | 17.08.09<br>Override/bypass controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | 17.08.10<br>Reprogram and adjust<br>control systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | 17.08.11<br>Create backup of data<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                  | 17.08.12<br>Restore original parameters<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |   |   |  |

17 - D  
(cont'd)

Learning Outcome  
Maintains control systems

Task 17  
Learning Needs

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

|   |   |   |  |   |  |
|---|---|---|--|---|--|
| <b>SUB-TASK<br/>17.09</b><br><br><u>Learning Objective</u><br><b>Verifies control system component function</b><br><br>JP Sign-off _____          | <b>17.09.01</b><br>Determine control system equipment/component operation/function<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.09.02</b><br>Select test equipment for control systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.09.03</b><br>Determine original design parameters<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.09.04</b><br>Read and interpret equipment specifications such as capacity, voltages and sequence<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.09.05</b><br>Follow calibration techniques and procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |
|   | <b>17.09.06</b><br>Identify interface equipment such as computers, micro-processors and hand-held modules<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                      | <b>17.09.07</b><br>Evaluate implications/possible consequences of adjustments to items such as set points, schedules and sequences<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.09.08</b><br>Simulate fault conditions<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____              | <b>17.09.09</b><br>Test component operation for functionality<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.09.10</b><br>Interpret specifications<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   |
|   | <b>17.09.11</b><br>Interpret and report test results<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.09.12</b><br>Override/bypass controls<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.09.13</b><br>Calibrate controllers and transmitters<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.09.14</b><br>Utilize interface equipment<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____   | <b>17.09.15</b><br>Adjust parameters such as set points, differentials, scheduling and sequences<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____          |
| <b>SUB-TASK<br/>17.10</b><br><br><u>Learning Objective</u><br><b>Performs preventative maintenance on control system</b><br><br>JP Sign-off _____ | <b>17.10.01</b><br>Read an interpret preventative maintenance requirements such as schedule and manufacturer's recommendations<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.10.02</b><br>Follow preventative maintenance procedures<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  | <b>17.10.03</b><br>Assess the need to replace consumables<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.10.04</b><br>Replace consumables such as filters and batteries<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____                                   | <b>17.10.05</b><br>Conduct maintenance activities such as cleaning, lubricating, tightening and adjusting<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|   | <b>17.10.06</b><br>Return system to operation<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____  |   |  |   |  |

17 - D  
(cont'd)

Learning Outcome  
Maintains control systems

Rating:

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
 2 - Complete a task with some assistance and supervision  
 1 - Complete task with assistance and constant supervision

Type of Proof:

O - Observation      I - Interview      D - Documentation

Use:

1 - Daily      2 - Often      3 - Seldom      4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 17  
Learning Needs**

**Sub-Tasks**  
**Learning Objectives**  
to be completed  
Comments

| <b>SUB-TASK<br/>17.11</b><br><br><u>Learning Objective</u><br><b>Calibrates operating and safety controls</b><br><br>JP Sign-off _____ | <b>17.11.01</b><br>Identify operation of control systems<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.11.02</b><br>Determine testing and calibration procedures and techniques<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.11.03</b><br>Test operating and safety controls for range of calibration<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.11.04</b><br>Calibrate controls to specified range<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ | <b>17.11.05</b><br>Calibrate controllers and transmitters<br><br>Rating ____ Complete<br>Proof ____ <input type="checkbox"/><br>Use ____ |
|--|---|---|---|---|--|
|--|---|---|---|---|--|

## APPENDIX A

| ESSENTIAL SKILL          | REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES  |
|--------------------------|---|
| <b>Technical Reading</b> | <ul style="list-style-type: none"> <li>➤ Find and use information from one source - i.e., a book, Internet, and work order</li> <li>➤ Find and use information from many parts of a single source - i.e., a code book</li> <li>➤ Recognize what is important from several sources of information</li> <li>➤ Interpret information using more than one source</li> <li>➤ Apply information to the task</li> </ul>  |
| <b>Document Use</b>      | <ul style="list-style-type: none"> <li>➤ Use large or difficult documents which are organized into units, headings chapters or sub-headings -i.e., a code book</li> <li>➤ Find information in large or very specialized documents which may have many smaller documents - i.e., operations manuals, safety manuals</li> <li>➤ Find information from many sources - i.e., code books, blueprints, work manuals</li> <li>➤ Enter information into pre-set documents and forms - i.e., accident report forms, order forms</li> <li>➤ Combine information from several sources and use it – i.e., alter a work order using information from code books, manuals and blueprints</li> <li>➤ Create new documents using information from a variety of sources – i.e., create work orders, material lists, time log sheets</li> </ul> |

| ESSENTIAL SKILL | REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES   |
|-----------------|--|
| <b>Writing</b>  | <ul style="list-style-type: none"> <li>➤ Write information into a pre-set form – i.e., contract, lease, building permit</li> <li>➤ Write short messages, explanations, requests or directions – i.e., write a work order, memo, written message for a foreman, supervisor or client</li> <li>➤ Write longer messages, explanations, requests or directions – i.e., write an accident report, a detailed message to a foreman, supervisor or client</li> <li>➤ Write a longer article which may need to be organized into headings with a table of contents, i.e., work report, section of a work manual</li> <li>➤ Write detailed, non-routine articles – i.e., make recommendations, use technical language to give directions to or ask for information from other tradespeople</li> </ul> |
| <b>Math</b>     | <ul style="list-style-type: none"> <li>➤ Perform math calculations using formulas, fractions, decimals and percent</li> <li>➤ Combine one or more math operations to solve a problem</li> <li>➤ Estimate numbers</li> <li>➤ Convert between imperial and metric measurement systems</li> <li>➤ Solve equations</li> <li>➤ Use trigonometry to solve problems (not a requirement in every trade)</li> </ul>   |

| ESSENTIAL SKILL           | REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES  |
|---------------------------|---|
| <b>Computer Use</b>       | <ul style="list-style-type: none"> <li>➤ Perform basic computer operations needed to produce a document – i.e., a letter</li> <li>➤ Find information on the Internet</li> <li>➤ Find information in workplace databases</li> <li>➤ Send and receive e-mail</li> <li>➤ Enter data into a set format – i.e., form, spreadsheet, chart</li> <li>➤ Manage electronic information – i.e., save files</li> <li>➤ Choose and use the best software program for the task</li> </ul>                             |
| <b>Oral Communication</b> | <ul style="list-style-type: none"> <li>➤ Take directions from a supervisor or co-workers on work-related projects</li> <li>➤ Give directions to co-workers on work-related projects</li> <li>➤ Exchange information using trade terminology</li> <li>➤ Provide details on facts</li> <li>➤ Provide opinions on work-related projects</li> <li>➤ Organize, present and interpret ideas in a logical manner</li> <li>➤ Communicate one-on-one or in a group about complex work-related matters</li> </ul> |



| ESSENTIAL SKILL            | REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES   |
|----------------------------|--|
| <b>Thinking Skills</b>     | <ul style="list-style-type: none"> <li>➤ Identify problems</li> <li>➤ Apply learning from previous experiences to identify possible solutions to a problem</li> <li>➤ Find, evaluate and choose appropriate information to solve a problem</li> <li>➤ Evaluate the best possible solution to a problem</li> <li>➤ Make decisions</li> <li>➤ Plan and organize job tasks to set time-lines</li> <li>➤ Ensure quality control standards are met</li> </ul> |
| <b>Working with Others</b> | <ul style="list-style-type: none"> <li>➤ Complete tasks to industry standard under supervision</li> <li>➤ Complete tasks to industry standard without supervision</li> <li>➤ Complete assigned tasks to meet time-lines that meet project deadlines</li> <li>➤ Accept feedback</li> <li>➤ Give feedback</li> <li>➤ Evaluate and apply recommendations from co-workers</li> <li>➤ Resolve conflict</li> <li>➤ Mentor an apprentice</li> </ul>             |

| ESSENTIAL SKILL            | REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES   |
|----------------------------|--|
| <b>Continuous Learning</b> | <ul style="list-style-type: none"> <li>➤ Identify work/career strengths and areas for improvement</li> <li>➤ Develop a work/career learning plan</li> <li>➤ Set goals</li> <li>➤ Participate in learning opportunities to meet workplace goals</li> <li>➤ Apply new learning in the workplace environment</li> <li>➤ Revisit, reflect and revise the learning plan regularly</li> <li>➤ Engage in learning opportunities to keep skills current and meet career goals</li> </ul> |

