

# Steamfitter/Pipefitter

## Transition Plan

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## Abbreviations

<b>CCDA</b>	Canadian Council of Directors of Apprenticeship
<b>CL</b>	Current level (2011)
<b>DA</b>	Direct Access (ITA's registration system)
<b>F2F</b>	Face to face (a training delivery method)
<b>FDN</b>	Foundation program
<b>HL</b>	Harmonized level (April 2019)
<b>NOA</b>	Red Seal National Occupational Analysis
<b>RSOS</b>	Red Seal Occupational Standard; replaces NOA
<b>SFPF</b>	Steamfitter/Pipefitter
<b>SLE</b>	Standardized Level Exam
<b>TP</b>	Training provider
<b>TT</b>	Technical training
<b>TW</b>	Trade worker
<b>WBT</b>	Work-based training

## Introduction: Harmonization

The Canadian Council of Directors of Apprenticeship (CCDA) is responsible for the Red Seal Program, which develops common interprovincial standards and examinations. The CCDA is undertaking the Harmonization Initiative in 30 Red Seal trades by 2020. British Columbia is an active participant in this initiative.

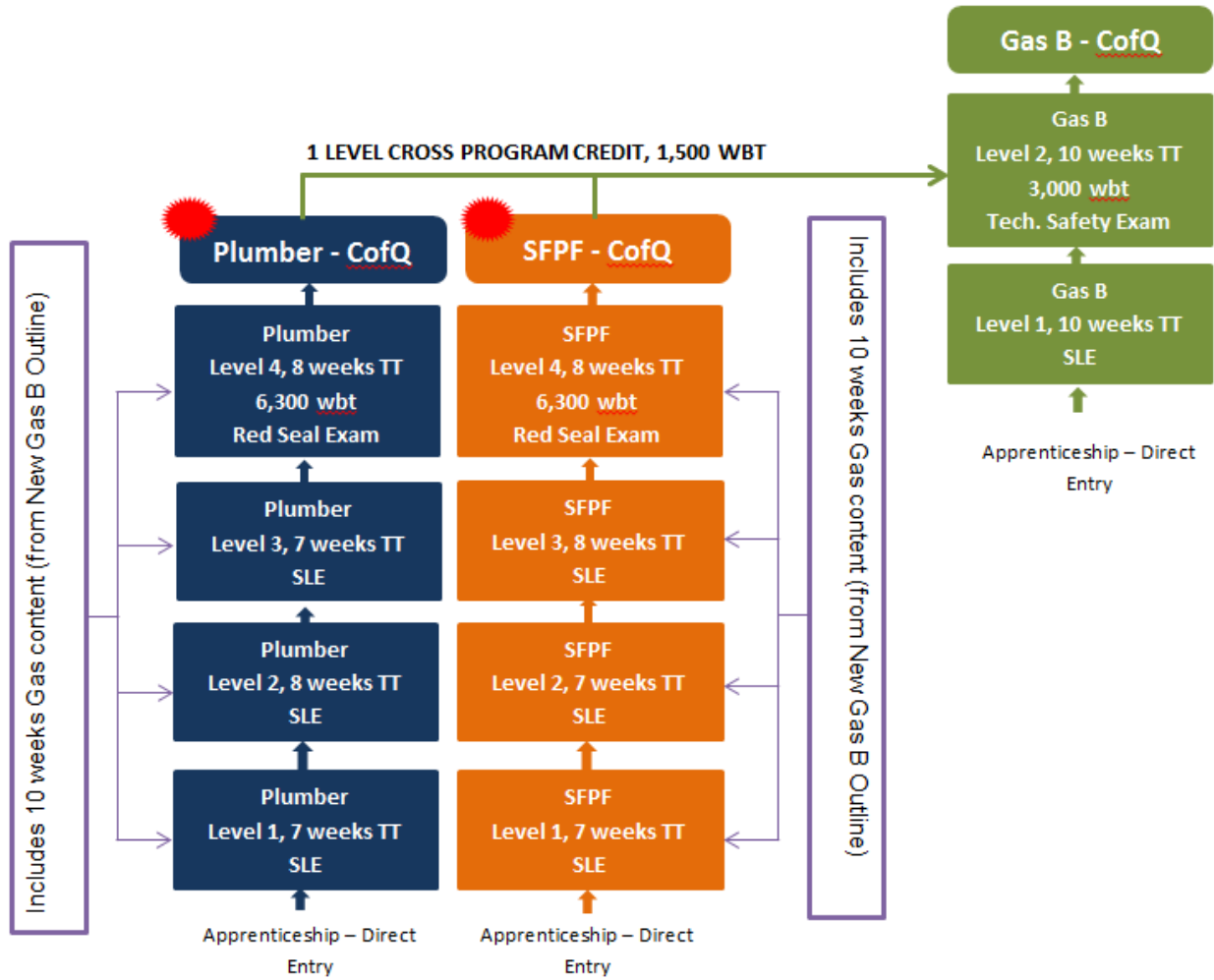
The goal is to substantively align apprenticeship systems across Canada by making apprenticeship training requirements more consistent in the Red Seal trades.

Harmonization Priorities

1. Use of Red Seal trade name
2. Consistent total training hours (in-school and on-the-job)
3. Same number of training levels
4. Consistent sequencing of training content, including use of most recent Red Seal Occupational Standard (RSOS).

What's changing for <b>STEAMFITTER/ PIPEFITTER</b>	Changing in BC?	What will it be?
<b>TRADE NAME</b>	NO	Steamfitter/ Pipefitter
<b>NUMBER OF TRAINING LEVELS</b>	NO	4
<b>TOTAL HOURS</b> technical + work-based training	YES	7200 hours
<b>TRAINING SEQUENCE</b> order of subjects taught	YES	Changes to sequence

# Gas B Licensing Pathway – Harmonized Programs

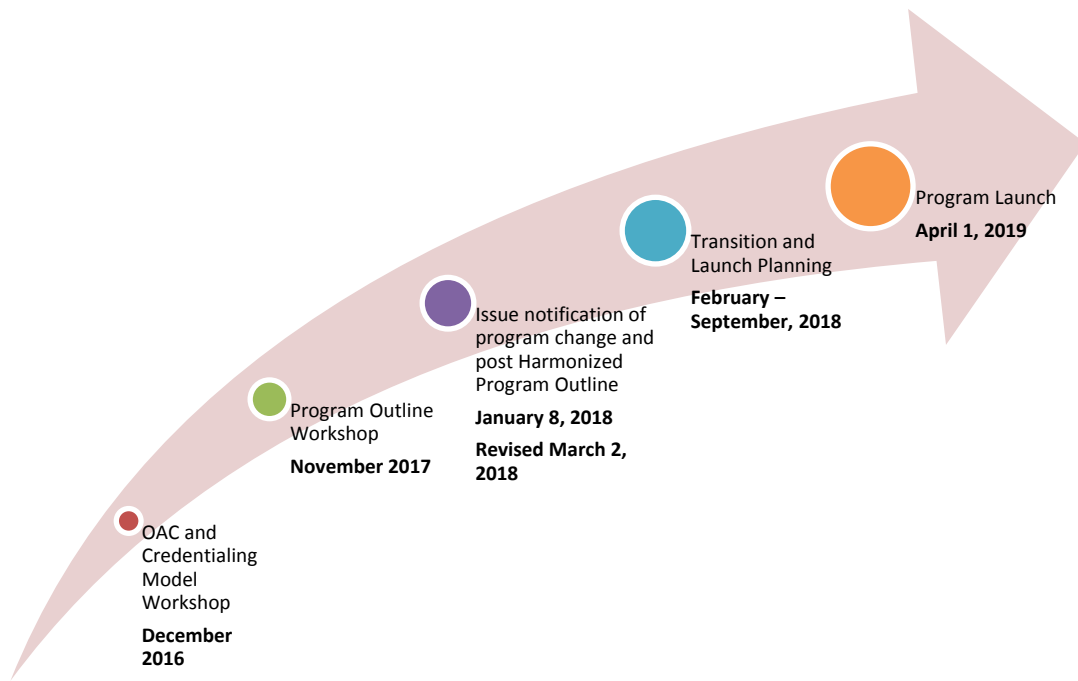


## Transition Planning

The re-sequencing of the Steamfitter/Pipefitter program through the Harmonization Initiative has resulted in significant changes to the sequencing of technical training.

We consulted with the 6 public and 1 private post-secondary institutions that deliver the Steamfitter/Pipefitter program, and also considered the input of our internal partners. We evaluated a number of scenarios, and the transition plan outlined in this document was identified as the best option. We have also ensured that there are options for all current apprentices to complete their apprenticeship.

# BC Program Development

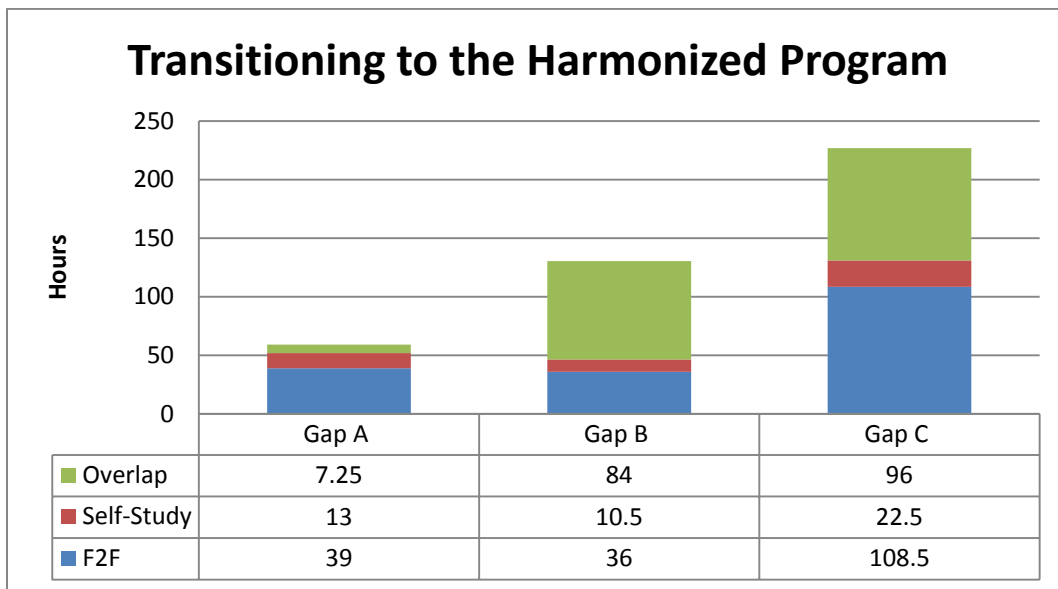


## Training Providers (7)

BC Institute of Technology  
Camosun College  
College of New Caledonia  
College of the Rockies

Okanagan College  
UA Piping Industry College  
Thompson Rivers University

## The Gaps



**Gap A (CL1→HL2)** applies to a student who has completed Current Level 1 or Foundation and is moving into Harmonized Level 2.

**Gap B (CL2→HL3)** applies to a student who has completed Current Levels 1 & 2 and is moving into Harmonized Level 3.

**Gap C (CL3→HL4)** applies to a student who has completed Current Level 1, 2 & 3 and is moving into Harmonized Level 4.

**Gap** is an estimate of the hours of self-study and face-to-face instruction a student would need in order to complete the missing competencies if they transition to the harmonized program.

**Overlap** refers to the hours of content that a student who transitions to the harmonized program will be repeating.

**Note:** If a TW completes their training in the current program, they will not face a gap in their training. Gaps and overlaps only apply to apprentices who miss their opportunity to train out of the current program.

\*\*See [Appendix A: Details of Gaps](#) for a list of the missing competencies\*\*



## Transition Scenario

### Phased-in with Gap Training and Dual Streaming

Implementation Timelines	
Level 1	April 1, 2019
Level 2	April 1, 2020
Level 3	April 1, 2021
Level 4	April 1, 2022

<b>Year 0</b> 18/19	CL1	CL2	CL3	CL4
<b>Year 1</b> 19/20	HL1	CL2	CL3	CL4
<b>Year 2</b> 20/21	HL1	HL2 Gap A 5 days	CL3	CL4
<b>Year 3</b> 21/22	HL1	HL2 Gap A 5 days	HL3 CL3	CL4
<b>Year 4</b> 22/23	HL1	HL2 Gap A <i>(If needed)</i>	HL3 CL3	HL4 CL4
<b>Year 5</b> 23/24	HL1	HL2	HL3	HL4 CL4
<b>Year 6</b> 24/25	HL1	HL2	HL3	HL4

*Training Providers will be required to fill out an ITA Technical Training Result Report to report completion of Gap A Training.*

*The form can be found at <http://www.itabc.ca/sites/default/files/docs/apply/forms>.*

*An example of the form can be found in Appendix D: ITA Technical Training Result Report.*

## Pathways for Apprentices

- **Completed CL1** – complete CL2 (by March 2020), CL3 (by March 2023) and CL4 (by March 2024)
- **Completed CL1 and CL2** – CL3 (by March 2023) and CL4 (by March 2024)
- **Completed CL1, CL2 and CL3** – complete CL4 (by March 2024)
- **Completed HL1** – complete HL2, HL3 and HL4, do not take CL2, CL3 or CL4
- **Completed HL1 and HL2** – complete HL3 and HL4, do not take CL3 or CL4
- **Completed HL1, HL2 and HL3** – complete HL4, do not take CL4

## Risks

Apprentices may take the wrong course (i.e. a CL1 student takes HL2, or an HL1 student takes CL2).

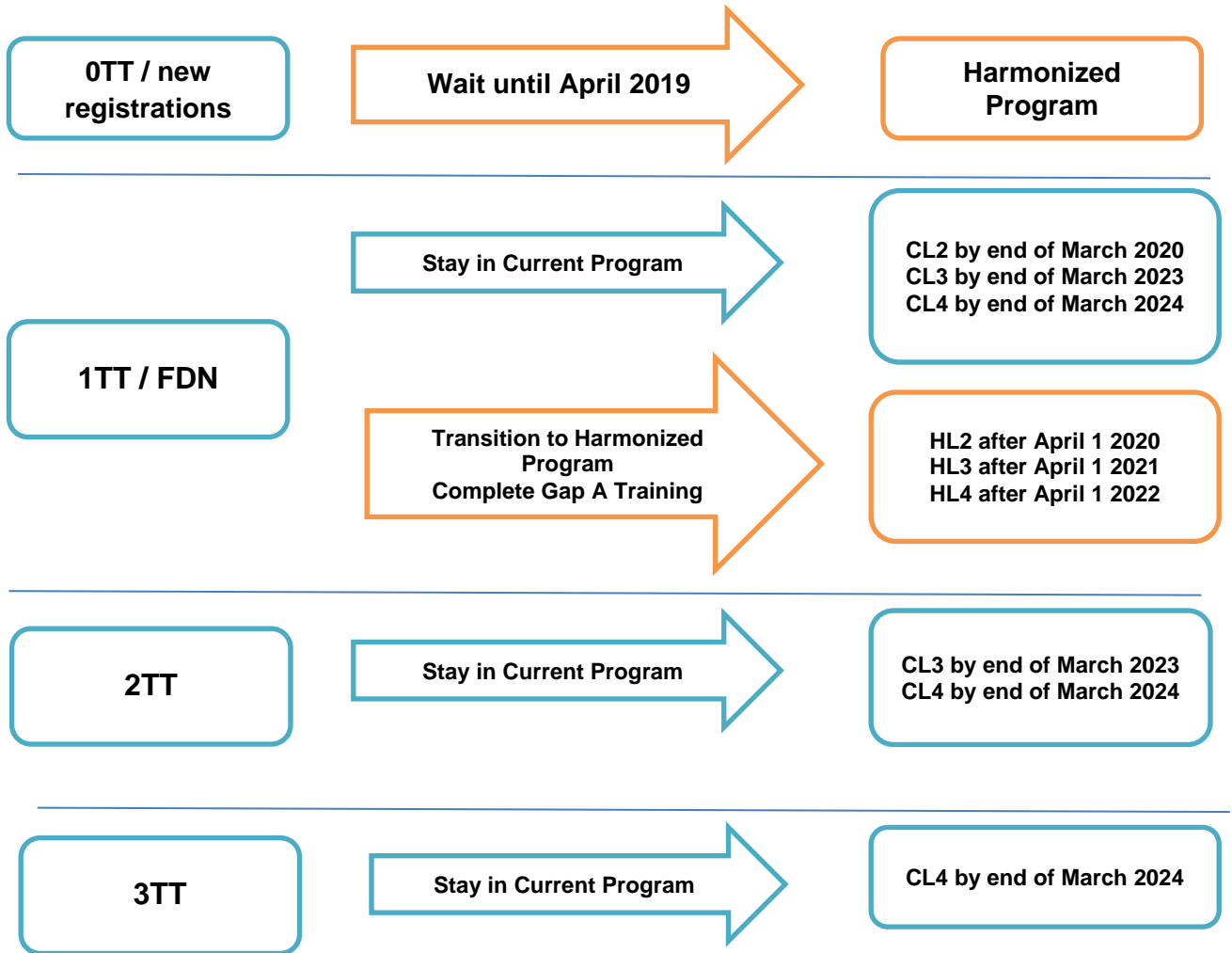
Apprentices who take HL1 must wait until HL2 is implemented before continuing their training. This applies for other HLs as well.

## Mitigation Strategies

Ensure that apprentices are registered for the correct course. Check in DA to verify whether apprentice is in the harmonized (HL) or current program (CL).

Communicate with TW and ER that the apprentice cannot take CL2, but must wait for HL2 to be implemented. This applies for other HLs as well.

## Pathways for Current Apprentices (Summary)



## Total Training Hours

The following changes to training time for Steamfitter/Pipefitter will come into effect **April 1, 2019**:

- Increased technical training hours in order to accommodate content added to the Red Seal Occupational (RSOS) and Gas B competencies **(increase of 30 hours and Level 1 and 2, and an increase of 60 hours at Level 3)**
- Increase of work-based training (WBT) hours in order to align with the harmonized standard of 7,200 hours of total training **(increase of 680 hours)**

### Apprenticeship Pathway

Current Program	Hours
<b>Technical Training</b>	780
Level 1 = 180 hours	
Level 2 = 180 hours	
Level 3 = 180 hours	
Level 4 = 240 hours	
<b>WBT Hours</b>	5,620
<b>Current Total Training Hours</b>	<b>6,400</b>

Harmonized Program	Hours
<b>Technical Training</b>	900
Level 1 = 210 hours	
Level 2 = 210 hours	
Level 3 = 240 hours	
Level 4 = 240 hours	
<b>WBT Hours</b>	6,300
<b>Harmonized Total Training Hours</b>	<b>7,200</b>

### Challenge Pathway and Sign-off Authority

Current Program	Hours
<b>WBT Hours</b>	5,620
<b>ITA Formula for Calculating Challenge WBT</b>	X 1.5
<b>Current Challenge WBT Hours</b>	<b>8,430</b>

Harmonized Program	Hours
<b>Harmonized WBT Hours</b>	6,300
<b>ITA Formula for Calculating Challenge WBT</b>	X 1.5
<b>Harmonized Challenge WBT Hours</b>	<b>9,450</b>

**NOTE:** If TWs complete the current program, the WBT hours for that program will apply. If they transition, they will need to complete under the new requirements.

# Exams

## Exams for the Harmonized Program

Because the harmonized Steamfitter/Pipefitter program has four levels of technical training there will be a standardized level exam (SLE) for HL1, HL2 and HL3. Apprentices completing HL4 will take the IPSE as their final exam.

Exam	Exam Development	Exam Launch (tentative)
HL1	Summer 2018	Fall 2019
HL2	Summer 2019	Fall 2020
HL3	Summer 2020	Fall 2021

Each harmonized SLE will need to be piloted with the first cohort of apprentices that complete each harmonized level and then further validated by peer review. This means the respective harmonized SLEs will not launch until the at least the tentative launch schedule. For any harmonized classes that finish before the launch of the harmonized SLE, the final mark for the level will be based solely on in-class assessments. **An OPSN will be sent to announce the launch of each harmonized SLE.**

The SLEs for current levels will be available for those classes. It will be crucial to ensure that classes are writing the exam that matches the course they have completed. ***When requesting an exam, please indicate whether it is for a harmonized (HL) or current (CL) class.***

## Appendix A: Details of Gaps

### GAP A: CL1→HL2

#### Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 1 (CL1) and then take Harmonized Level 2 (HL2).

	Competency	Objectives/LT	Self-Study	F2F	Achievement Criterial
B1	Use Common Tools and Equipment	Use leveling equipment to establish elevations	1	0	N
B4	Rigs Loads for Cranes	Describe crane safety Describe crane types	3	0	N
B5	Use Welding Equipment	Describe metallurgy Describe safety requirements and precautions for arc welding Identify welding processes, types positions, joints and symbols Describe the arc welding process and equipment Use arc welding equipment	3	3	Y
D5	Perform Maintenance, Troubleshooting, Repairs and Testing on Valves	Describe valve maintenance procedures Describe valve troubleshooting procedures Describe valve repair procedures Describe valve testing procedures	0	6	N
E1	Fabricate Brackets, Supports, Hangers, Guides and Anchors	Describe the forces that affect a piping system Describe types of hangers, supports, guides and fasteners Describe the installation of supports and hangers Fabricate brackets, supports, hangers, guides and anchors	0	30	Y
F1	Use Communication Techniques	Describe effective communication practices	6	0	N
		<b>Total Gap Hours</b>	<b>13</b>	<b>39</b>	

### Overlap (Repeated Content)

This table lists the content that a student will be **repeating** if they have completed Current Level 1 (CL1) and then take Harmonized Level 2 (HL2).

	Competency	Objectives	Overlap Hours
B8	Use Technical Instruments and Testers	Describe pressure and measuring tools Use manometers and mechanical gauges Interpret pressure readings Describe temperature measuring instruments Use temperature measuring instruments Describe electrical testing meters Use electrical testing meters	5.25
C3	Use Codes, Regulations and Standards	Describe the application of codes and standards	1
C4	Use Manufacturer and Supplier Documentation	Describe manufacturer and supplier documentation Source manufacturer documentation	1
		<b>Total Overlap Hours</b>	<b>7.25</b>

## GAP B: CL2→HL3

### Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 2 (CL2) and then take Harmonized Level 3 (HL3).

	Competency	Objectives/LT	Self-Study	F2F	Achievement Criterial
B4	Rigs Loads for Cranes	Describe crane safety Describe crane types	3	0	N
B8	Use Technical Instruments and Testers	Use combustible gas indicator	0.5	0	N
C1	Use Mathematics and Science	Describe the chemistry of combustion Calculate air requirements and products of combustion Describe draft Describe the building as a system	0	13	N
C3	Use Codes, Regulations and Standards	Describe the B149 Gas Code Interpret sections of the B149 Gas Code	0	2	N
F1	Use Communication Techniques	Describe effective communication practices	6	0	N
H2	Install Equipment for Hydronic Systems	Describe switches Describe relays Select relays Install relays	0	9	Y
K1	Use the Principles of Electricity	Describe single phase power characteristics Describe three phase power characteristics Identify transformers	1	0	N
L3	Select Gas-Fired Appliances	Describe gas-fired appliances	0	12	N
		<b>Total Gap Hours</b>	<b>10.5</b>	<b>36</b>	

### Overlap (Repeated Content)

This table lists the content that a student will be **repeating** if they have completed Current Level 2 (CL2) and then take Harmonized Level 3 (HL3).

	Competency	Objectives	Overlap Hours
B3	Use Rigging, Hoisting, Lifting and Positioning Equipment	Describe complex and critical lifts Use hoisting, lifting and rigging equipment in a multi-point lift for an unbalanced load Perform a multi-point lift for an unbalanced load (practical assessment)	12
C3	Use Codes, Regulations and Standards	Describe sections of the American Standard of Mechanical Engineers (ASME) code	6



	Competency	Objectives	Overlap Hours
H2	Install Equipment for Hydronic Systems	Describe the principles of electrical controls Describe control systems for hydronic systems	4
H3	Install Piping for Hydronic Systems	Describe the sizing of pipe and components for hydronic systems Describe the installation of hydronic heating and cooling generating systems	10
H4	Test Hydronic Systems	Describe testing procedures for hydronic systems, components and controls	1
H5	Repair Hydronic Systems	Describe repair procedures for hydronic systems	3
P1	Install Equipment for Hydraulic Systems	Describe the principles of hydraulic and fluid power Describe hydraulic systems Describe hydraulic system equipment Describe the installation of hydraulic system equipment	8
P2	Install Piping, Tubing and Hoses for Hydraulic Systems	Describe hydraulic piping Describe the installation of hydraulic piping <b>Assemble a hydraulic piping system (can be switched with pneumatic practical)</b>	7
Q1	Install Equipment for Compressed Air and Pneumatic Systems	Describe compressed air and pneumatic systems Describe compressed air and pneumatic system equipment Describe the installation of compressed air and pneumatic system equipment	8
Q2	Install Piping, Tubing and Hoses for Compressed Air and Pneumatic Systems	Describe compressed air and pneumatic piping and tubing Describe the installation of compressed air and pneumatic piping and tubing <b>Assemble a pneumatic piping system (can be switched with hydraulic practical)</b>	7
Q3	Test Compressed Air and Pneumatic Systems	Describe testing for compressed air and pneumatic systems	1
Q4	Repair Compressed Air and Pneumatic Systems	Describe repair procedures for compressed air and pneumatic systems	2
U1	Prepare System for Commissioning, Start-up and Turnover	Describe the preparation of a system for commissioning Describe the preparation of a system for start-up	6

	<b>Competency</b>	<b>Objectives</b>	<b>Overlap Hours</b>
U2	Balance and Commission Systems	Describe commissioning requirements for piping assemblies Describe commissioning documentation	6
		<b>Total Overlap Hours</b>	<b>84</b>

## Gap C: CL3→HL4

### Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 3 (CL3) and then take Harmonized Level 4 (HL4).

	Competency	Objectives/LT	Self-Study	F2F	Achievement Criteria
B4	Rigs Loads for Cranes	Describe crane safety Describe crane types	3	0	N
B8	Use Technical Instruments and Testers	Use combustible gas indicator (CGI)	0.5	0	N
C1	Use Mathematics and Science	Describe the chemistry of combustion Calculate air requirements and products of combustion Describe draft Describe the building as a system	0	13	N
C3	Use Codes, Regulations and Standards	Describe the B149 Gas Code series Interpret sections of the B149.1 Gas Code	0	2	N
F1	Use Communication Techniques	Describe effective communication practices	6	0	N
J1	Install Equipment for Industrial Water and Waste Systems	Describe industrial water and waste systems Describe industrial water and waste system equipment Describe the installation of industrial water and waste equipment	0	10	N
J2	Install Piping for Industrial Water and Waste Systems	Describe industrial water and waste system piping Describe the installation of industrial water and waste system piping	0	10	N
J3	Test Industrial Water and Waste Systems	Describe testing for industrial water and waste systems	0	1	N
J4	Repair Industrial Water and Waste Systems	Describe repair procedures for industrial water and waste systems	0	3	N
K1	Use the Principles of Electricity	Describe single phase power characteristics Describe three phase power characteristics Identify transformers	1	0	N
K2	Use Electrical Wiring and Diagrams	Identify electrical diagrams Sketch a circuit Analyze simple circuits Describe appliance circuits Sketch a ladder diagram	0	18	Y
K5	Apply Wiring Practices	Describe wiring components Describe conductor installation Describe wire termination	0	12	N
K6	Interpret the Canadian Electrical Code (CEC)	Describe the Canadian Electrical Code Part 1	0	6	N

	Competency	Objectives/LT	Self-Study	F2F	Achievement Criteria
		Interpret the Electrical Safety Regulations Size conductors Describe wiring installation Describe grounding and bonding techniques			
L2	Select Regulators, Valves and Valve Train Components	Describe manual valves Describe automatic valves Describe pressure regulators Describe gas valve trains for appliances 400 MBH or less Describe the operation of a gas valve train	0	12	N
L3	Select Gas-Fired Appliances	Describe gas-fired appliances	0	12	N
L4	Select Flame Safeguards	Describe flame detectors Describe ignition systems Describe standing pilot/thermocouple systems	0	6	N
M3	Install Regulators, Valves and Valve Trains	Describe the installation of pressure regulators	0	3.5	N
N1	Install Equipment for Medical Gas Systems	Describe medical gas systems Describe medical gas equipment Describe the installation of medical gas equipment	4	0	N
N2	Install Piping and Tubing for Medical Gas Systems	Describe the installation of piping for medical gas systems	4	0	N
N3	Test Medical Gas Systems	Describe testing for medical gas systems	2	0	N
N4	Repair Medical Gas Systems	Describe repair procedures for medical gas systems	2	0	N
		<b>Total Gap Hours</b>	<b>22.5</b>	<b>108.5</b>	

### Overlap (Repeated Content)

This table lists the content that a student will be **repeating** if they have completed Current Level 3 (CL3) and then take Harmonized Level 4 (HL4).

	Competency	Objectives	Overlap Hours
B3	Use Rigging, Hoisting, Lifting and Positioning Equipment	Describe complex and critical lifts Use hoisting, lifting and rigging equipment in a multi-point lift for an unbalanced load Perform a multi-point lift for an unbalanced load	12
I1	Install Equipment for Steam Systems (high pressure)	Describe high pressure steam systems Describe high pressure steam equipment Describe sizing and selection of high pressure steam equipment Describe the installation of high pressure steam equipment Describe the installation of high pressure steam piping system components and their functions Describe the installation and the purpose of water columns, including pipe sizing	13
I2	Install Piping for Steam and Condensate Systems	Describe the sizing of pipe Describe the installation of high pressure steam piping	13
I3	Test Steam and Condensate Systems	Describe hydrostatic testing for high pressure steam systems	1
I4	Repair Steam and Condensate Systems	Describe repair procedures for high pressure steam systems	3
M7	Commission Fuel/Air Delivery Systems	Describe piping and tubing testing requirements Describe piping and tubing pressure testing procedures Describe purging procedures for piping and tubing under 4 inch diameter	6
P1	Install Equipment for Hydraulic Systems	Describe the principles of hydraulic and fluid power Describe hydraulic systems Describe hydraulic system equipment Describe the installation of hydraulic system equipment	8
P2	Install Piping, Tubing and Hoses for Hydraulic Systems	Describe hydraulic piping Describe the installation of hydraulic piping Assemble a hydraulic piping system (can be switched with pneumatic	7

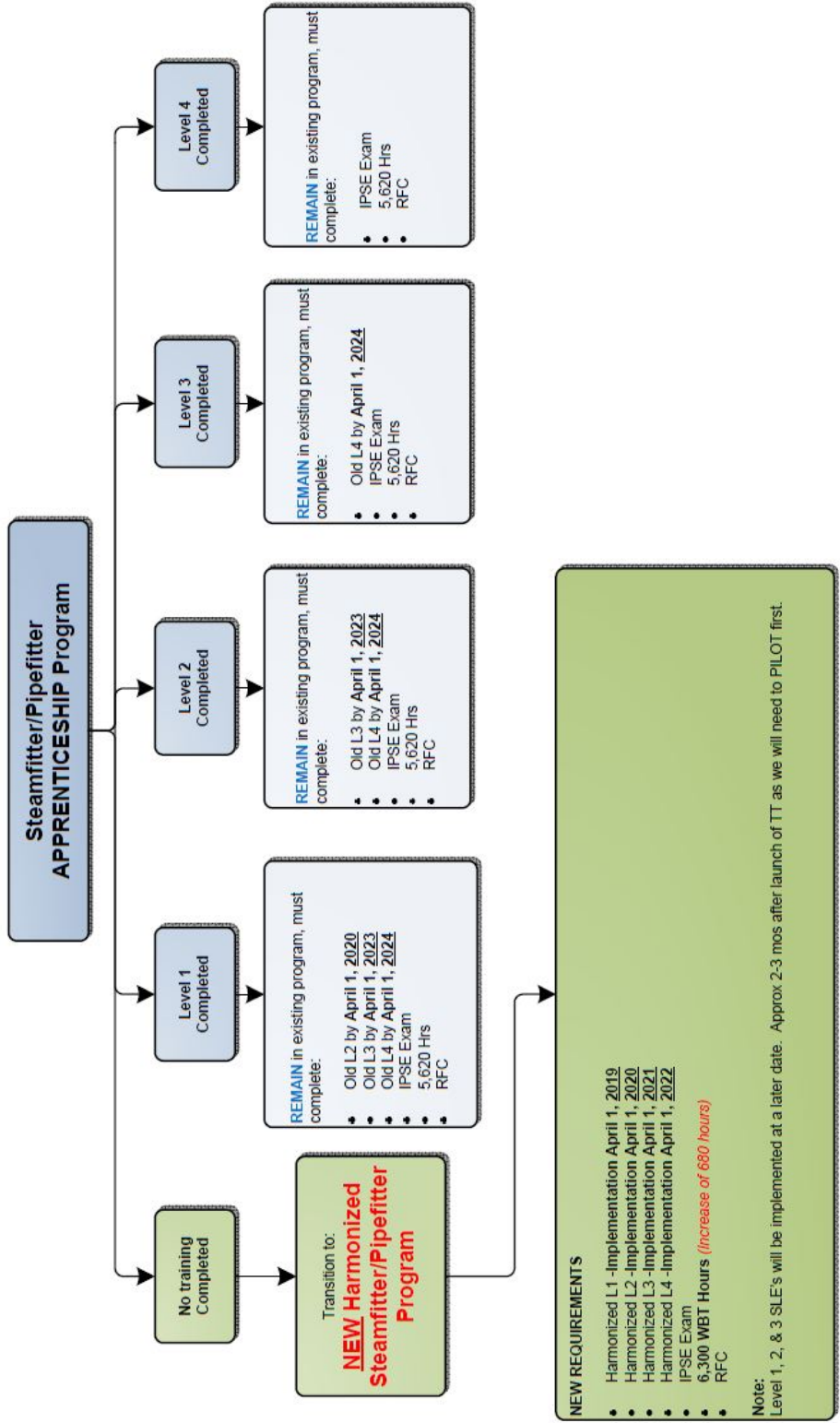
	<b>Competency</b>	<b>Objectives</b>	<b>Overlap Hours</b>
		practical)	
P3	Test Hydraulic Systems	Describe testing for hydraulic systems	1
P4	Repair Hydraulic Systems	Describe repair procedures for hydraulic systems	2
Q1	Install Equipment for Compressed Air and Pneumatic Systems	Describe compressed air and pneumatic systems Describe compressed air and pneumatic system equipment Describe the installation of compressed air and pneumatic system equipment	8
Q2	Install Piping, Tubing and Hoses for Compressed Air and Pneumatic Systems	Describe compressed air and pneumatic piping and tubing Describe the installation of compressed air and pneumatic piping and tubing Assemble a pneumatic piping system (can be switched with hydraulic practical)	4
Q3	Test Compressed Air and Pneumatic Systems	Describe testing for compressed air and pneumatic systems	1
Q4	Repair Compressed Air and Pneumatic Systems	Describe repair procedures for compressed air and pneumatic systems	2
U1	Prepare System for Commissioning, Start-up and Turnover	Describe the preparation of a system for commissioning Describe the preparation of a system for start-up	6
U2	Balance and Commission Systems	Describe commissioning requirements for piping assemblies Describe commissioning documentation	6
		<b>Total Overlap Hours</b>	<b>96</b>

## Appendix B: Overall Communication Plan

Audience	Purpose	Mode
<b>Training Providers</b>	To announce the changes to training standards and the publication of a new Program Outline and Program Profile on the trade webpage on the ITA website	Official Program Standards Notification (OPSN) via email and posting on trade webpage
<b>Training Providers</b>	To plan for transitioning to the new program	Webinar(s), phone calls and/or face to face meetings
<b>Training Providers</b>	To announce the final transition plan	Program Update and Transition Plan via email and posting on trade webpage
<b>Training Providers</b>	To announce the launch of the harmonized level exams	OPSN via email and posting on trade webpage
<b>Employers</b>	To gather input on transition scenarios	Webinar(s), phone calls and/or face to face meetings
<b>Employers</b>	To inform on the upcoming changes to the program and the pathways to completion for their apprentices	Letters sent through ITA Direct Access (DA)
<b>Employers</b>	To inform on the upcoming changes to the program and the pathways to completion for their apprentices	Presentations at Program Advisory Committees (PAC) and other industry events
<b>Apprentices</b>	To inform on the upcoming changes to the program and their pathways to completion	Letters sent through ITA Direct Access (DA)
<b>Apprentices</b>	To inform on the upcoming changes to the program and their pathways to completion	Targeted outreach via phone and email
<b>Apprentices</b>	To inform on the upcoming changes to the program and their pathways to completion	Classroom visits by Apprenticeship Advisors

# Appendix C: Transition Map

## Steamfitter/Pipefitter Transition Map EFFECTIVE April 1, 2019



Last Updated: May 29, 2018



# Appendix D: ITA Technical Training Result Report



## ITA TECHNICAL TRAINING RESULT REPORT

ITA Customer Service  
800 - 8100 Granville Ave  
Richmond, BC V6Y 3T6  
Tel: 778-328-8700  
Toll Free: 1-866-660-6011  
examrequest@itabc.ca

Please complete this form and email it to ITA no later than 15 days after class end-date. Missing information may delay the process. The completed form should be emailed to examrequest@itabc.ca

### 1 GENERAL INFORMATION

Training Provider Name	Training Provider Location	Instructor Email	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
Training Provider Session ID	Program and Level	Start Date (mm/dd/yyyy)	End date (mm/dd/yyyy)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

\*If Applicable, please indicate if student has completed Gap Training.

### 2 TECHNICAL TRAINING RESULTS

ITA Individual ID #	Legal Last Name	Legal First Name	Result (%)	*Completed Gap Training	ITA Use Only
1				<input type="checkbox"/>	
2				<input type="checkbox"/>	
3				<input type="checkbox"/>	
4				<input type="checkbox"/>	
5				<input type="checkbox"/>	
6				<input type="checkbox"/>	
7				<input type="checkbox"/>	
8				<input type="checkbox"/>	
9				<input type="checkbox"/>	
10				<input type="checkbox"/>	
11				<input type="checkbox"/>	
12				<input type="checkbox"/>	
13				<input type="checkbox"/>	
14				<input type="checkbox"/>	
15				<input type="checkbox"/>	
16				<input type="checkbox"/>	
17				<input type="checkbox"/>	
18				<input type="checkbox"/>	
19				<input type="checkbox"/>	
20				<input type="checkbox"/>	

### 3 SIGNATURE

Signature of authorized representative of the training provider	Date (mm/dd/yyyy)
<input type="text"/>	<input type="text"/>

Please download the PDF of this form at  
<http://www.itabc.ca/sites/default/files/docs/apply/forms>.