

Professional Licensee Work Experience Record Guide

Professional Licensee Eligibility

P.L. (Eng./Geo.) applications are evaluated in accordance with section 77(1) of the General Regulations of the *Engineering and Geoscience Professions Act*. Applicants who have academic qualifications other than a university engineering or geoscience degree and meet the following:

- 2 years of post-secondary education acceptable to the Board of Examiners in areas relate to the practice of engineering or geoscience
- 6 years of referenced experience in the work of an engineering or geoscientific nature that is acceptable to the Board of Examiners
- Minimum 2 years of experience in defined scope of professional practice under the supervision and control of a Professional Member

Completing the Work Experience Record

Please use this checklist to complete your Work Experience Record. Please fill out the form using font Calibri (Body), size 11 pt. Any errors on the submitted WER will delay the processing of your application.

Summary Tab	✓
Provide at least six (6) years of experience of an acceptable engineering nature, supported by at least three (3) references. At least two (2) years of the referenced experience must be within a Defined Scope of Practice (DSOP). A minimum total of 6 years needs to be referenced. This must include a sufficient number of references who are registered as a Professional Member (P.Eng., P.Geo., P.Geol., P.Geoph.) with a Canadian engineering and/or geoscience licensing body, that can reference a total minimum of 2 years of your proposed DSOP; for which your work was under their direct supervision and control. Your experience outside of your DSOP may be referenced by a registered Professional Member, Licensee, Professional Licensee, or an equivalent senior practitioner. Experience that is not referenced by a Professional Member is subject to acceptability by APEGA's Board of Examiners. It is to the benefit of the applicant to enter as much referenced experience information as they can. APEGA will only contact references using non-generic email addresses or full mailing addresses (i.e. Yahoo, Gmail, Hotmail, etc. will not be accepted).	
The experience must be entered in reverse chronological order (without overlaps), separated by job title or employer. This includes holding different position titles consecutively (if applicable) within one employer.	
If applicable, list all gaps in employment, unrelated employment, and parental leave. Do not include detailed descriptions of the gaps.	
In the "Summary of Engineering Experience" section, list only brief details of the engineering work that was performed.	

DSOP WER Details Form Tab



Scope Development Guidelines

The format of the proposed scope of practice should consist of the following:

- Discipline of Practice
- Field of Practice
- Limitations within the Field of Practice (engineering tasks)
- Scope Exclusions if applicable

The purpose of the "DSOP WER Details Form" is to develop your Defined Scope of Practice (DSOP) and to demonstrate at least two (2) years of engineering practice under this proposed scope.

If you require another DSOP WER Details Form to demonstrate engineering for another structure, work or process under the same discipline and field of practice, please email professionallicensee@apega.ca.

1. DISCIPLINE

Please choose your discipline from the drop-down menu.

2. FIELD OF PRACTICE

Field of practice is the subset of the discipline in which you wish to offer professional services and is the specific industry or area within which you have practiced engineering; AND does not include the word, "engineering". *The wording of the Field of Practice is not intended to be a drawn-out sentence, but merely a brief few words.*

If you are unsure as to what your area of practice, please consult the person(s) who are currently taking professional responsibility for your engineering work, as they will be attesting to your competence in the proposed field of practice.

For instrumentation applicants. There is no instrumentation engineering discipline recognized in the APEGA engineering syllabus. If you have been practicing instrumentation, you must pick the main discipline that best suits your engineering practice and specify instrumentation as the field of practice.

3. ENGINEERING TASKS

Engineering tasks make up your scope of practice, as indicated in the EGP Act. Please only select the engineering task(s) that apply to your scope by using the drop-down. You must select the engineering task (licencing activity) starting from #LA1. If applicable, you may choose more than one engineering task that may apply to a single structure, work or process.

Each licenced engineering task needs to have (and supported references for) a minimum of two years of experience which were completed under the direct supervision and control of a professional member.

Please note the engineering task (licencing activity) must require the professional application of math, chemistry, physics or a related subject.

4. STRUCTURE, WORK, OR PROCESS

State the specific component or process that relate to the engineering task(s) you are proposing for licensure.

Examples:

"... testing procedures to facilitate high pressure testing of hydraulic fracturing equipment used in oil & gas wells"

"... PLC and SCADA systems used in oil and gas facilities"

This section is not intended to be a long paragraph. Numerical limitations (such as voltage levels, pressure, building size, etc.) should be specified if applicable.

5. EXCLUSIONS

Exclusions are not required for all scopes. Typical exclusions can be numerical (e.g. drilling rig systems exceeding 150T), OR code or standard specific (e.g. Systems governed by the Boiler and Pressure Vessel Safety Act', 'applications outside the scope of National Fire Protection Association Codes & Standards') or descriptive ('retaining walls')

6. DETAILS OF ENGINEERING WORK PERFORMED

Only type in the space provided. *Do not go past the cell limits.* If you require more room type in the next cell below. Failure to comply will result in lost information when converting your work record into PDF format.

In this section, your engineering work should be written in first person explaining how you performed the engineering task(s) that you have listed AND how you used engineering principles and theory to accomplish the engineering task(s). Focus on technical engineering details.

For example: *"I determined XXX by doing YYY type calculations. I prepared engineering specifications by calculating XXX"*

7. REFERENCE LIST

In this section of the form you must list all your applicable references. As previously stated in the summary section:

- A sufficient number of references, must reference a total minimum of 2 years of your proposed DSOP; for which your work was under their direct supervision and control. These references must be registered as a Professional Member (P.Eng., P.Geo., P.Geol., P.Geoph.) with a Canadian engineering and/or geoscience licensing body,
- Experience outside of your DSOP may be referenced by a registered Professional Member, Licensee, Professional Licensee, or an equivalent senior practitioner.

When filling out the Reference List form, please indicate the supervisor's name and designation (if applicable) as well as an acceptable reference for each Work Record. The form allows you to provide multiple references for each Work Record. If your reference *is not* your supervisor, you must provide a reason why the supervisor is not indicated as a reference, even if the reason is trivial (eg. supervisor not a P.Eng., lost contact with supervisor, supervisor retired, deceased).

Examples

Fig. 1: Samples of the WER Summary form filled out (minimum 6 years must be submitted)

WORK EXPERIENCE RECORD SUMMARY			
Applicant Legal Surname	Tesfaye	Date (MM/DD/YYYY)	August 3, 2017
Applicant First Name	Abel	APEGA ID#	For office use only
PLEASE FILL IN POSITIONS IN REVERSE CHRONOLOGICAL ORDER FROM THE MOST RECENT.			
WORK RECORD 1			
Employer	Company A	Country	Canada
Job Title	Manufacturing Engineering Technologist		
Start Date (mmm-YYYY)	Sep-10		
Finish Date (mmm-YYYY)	Nov-15		
Total Months	62		
Summary of <u>Engineering</u> experience.			
Design upgrades to downhole tool assemblies to facilitate automated high pressure testing of equipment between 5000 to 10000 psi.			
Evaluated NCRs for components and assemblies that did not conform to the product design and manufacturing specifications and disposition the part to: use as is, rework OR scrap			
Developed manufacturing specification documents outlining procedures for secondary finishing processes (eg. nickel plating) for components			
WORK RECORD 2			
Employer	Company B	Country	Canada
Job Title	Mechanical Designer		
Start Date (mmm-YYYY)	Jan-09		
Finish Date (mmm-YYYY)	Sep-10		
Total Months	20		
Summary of <u>Engineering</u> experience.			
Mechanical and structural design of automated material handling equipment for oilfield drilling packages requiring 3D CAD layout, development of assembly and fabrication drawings, stress analysis of structural members, loading analysis to select and size machine components (eg. bearings, gears, cylinders) and weld strength and sizing calculations, force and motion analysis			
WORK RECORD 3			
Employer	Company C	Country	Canada
Job Title	Mechanical Designer		
Start Date (mmm-YYYY)	Apr-06		
Finish Date (mmm-YYYY)	Dec-08		
Total Months	32		
Summary of <u>Engineering</u> experience.			
Mechanical and structural design of workcell stations used for the assembly and testing of control valves and actuators requiring 3D CAD layout, design/development of assembly and test fixtures, stress analysis, loading analysis, machine component section			

In the details section of the WER summary, it is not expected to put significant details of the work performed (like the DSOP WER details form). However, it is highly recommended to indicate some high-level points of the engineering work performed at each position (e.g. structural analysis, FEA analysis, arc flash studies, process simulation)

Fig. 2: Sample of DSOP WER Details Form 1 (for visibility only a portion of the form is shown)

DETAILS OF ENGINEERING WORK			
Applicant Legal Surname	Tesfaye	Date (DD-MMM-YYYY)	3-Aug-2017
Applicant First Name	Abel	Applicant APEGA ID	
Scope Development			
In the discipline of:	Mechanical Engineering		
In the Field of:	Oil and Gas Operations		
Engineering Task(s)			
LA1	Evaluating,	LA4	LA7
LA2	Preparing Plans and Specifications for,	LA5	
LA3		LA6	
Structure, Work, or Process	hydraulic fracturing equipment with burst and collapse rating		
Exclusions	Cementing Equipment Limited Entry Equipment		
Company information for validating at least 24 months demonstrating each licencing activity specified for the Defined Scope of Practice			
Company Name:	Company A	Start (mmm-YYYY)	Sep-10
		End (mmm-YYYY)	Nov-15
		Total Months	62
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Details of the Engineering Work Performed For Engineering Task(s)			
<p>I prepared the following plans and specifications for hydraulic fracturing equipment, Technical Assembly Procedures, work instructions, and test procedures. For technical assembly procedures (TAPs) I would determine the most feasible way to assemble the equipment by conducting a technical review of the design drawings to ensure proper assembly steps would not compromise the design and function of the assembly. Referring to the thread manufacturers data sheets, I would note the thread lubricant and optimal torque rating of the thread to calculate the RPM required from the custom automated assembly machine to make up the thread connection. This data would be noted into the technical assembly procedure. Furthermore, from the design of the equipment if it involved custom assembly tooling, I would perform qualification testing of the assembly tooling to determine if we were getting reproducible and repeatable results. This could (depending on the application) require myself to develop an experiment to collect and analyze force measurement data to determine optimal push forces to install sleeve components. Based on analyzing the data (eg. install forces vs. the wear rate of sleeve and port), the optimal install force was selected and noted in the TAP document for assembly.</p> <p>I also developed work instructions to outline and inspect finishing processes for components that required precise surface finishes and thicknesses (eg. nickel plating). This required research and knowledge of the actual process and reviewing the machining tolerances of the component to determine critical surface finishes and desired fits. I also had to design a test coupon and develop a bend experiment to apply a bend load to the test coupon. I then analyzed the component after testing to assess the surface finish and to determine if there was any flaking and/or other surface deterioration. Once it was determined what thickness was optimal from a manufacturing point of view, I developed experiments on the downhole tool assembly to determine through function testing to assess the surface damage due to operation of the component. Once determined, the thickness of nickel plating to be noted in the written specification taking into consideration the test results (eg. surface damage and finish, design of the equipment and limitations of the coating process). Once all results were analyzed, the optimal thickness was determined and noted in the work instructions.</p>			

Start from LA1 when specifying engineering task(s) for the proposed DSOP

In the example above, the **total number of months** shown must be at least 24 months **for each** licencing activity (LA) indicated on the form. If any of the licencing activities indicates is less than 24 months, you cannot propose that licencing activity in your scope.

Fig. 3: Sample of DSOP WER Details Form 2

DETAILS OF ENGINEERING WORK			
Applicant Legal Surname	Tesfaye	Date (DD-MMMM-YYYY)	3-Aug-2017
Applicant First Name	Abel	Applicant APEGA ID	
Scope Development			
In The discipline of:	Mechanical Engineering		
In the Field of:	Oil and Gas Operations		
Engineering Task(s)			
LA1	Designing,	LA4	LA7
LA2		LA5	LA8
LA3		LA6	LA9
Structure, Work, or Process	material handling equipment used in oilfield drilling packaged equipment		
Exclusions			
Company Information for validating at least 24 months demonstrating <u>each</u> licencing activity specified for the Defined Scope of Practice			
Company Name:	Company B	Start (mmm-YYYY)	Sep-08
		End (mmm-YYYY)	Sep-10
		Total Months	24
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Company Name:		Start (mmm-YYYY)	
		End (mmm-YYYY)	
		Total Months	0
Details of the Engineering Work Performed For Engineering Task(s)			
<p>I designed material handling equipment for drilling rig packaged equipment. I determined the geometry and motion of the equipment using CAD design software where I would simulate (as best as can be) the operation of the equipment in terms of mechanical motion of all the major components and geometry. I sized and selected the appropriate cylinders using the CAD model to simulate the motion to determine stroking requirements and performed force motion calculations to determine suitable bore size (keeping in mind the geometry of the overall design). I calculated the reaction forces and shear stresses as certain points of the machine to size and select material of various machine components such as bearings, bushings and pins. I performed strength analysis calculations (shear, bending, and combined loading) to determine structural integrity of the structural members. This would involve calculating the maximum stresses as noted above (bending and shear) and applying formulas from the ASIC design code to ensure they were not exceeding allowable stress limits. I also performed strength analysis equations to calculate sizes of welds (ensuring to not exceed allowable weld stress limits as defined in the AWS standard). From the weld sizes calculated the next standard size up would be chosen for the weld size to be used (eg. if weld thickness of 0.205" was calculated, I would select a weld size of 1/4").</p> <p>From all this analysis in the design, I would prepare the engineering drawings, fabrication drawings and machining noting all the pertinent weld sizes and types of welds and hole features with proper thread callouts and surface finishes. If the component required any precise fit GD&T would also be applied taking into account fit, form and function.</p>			

DSOP WER Details Form 2 is only required if you are performing different licencing activities for a different "Structure, Work, or Process". Please contact APEGA if you require Form 2 in your application (see above for contact information).

Fig. 3: Sample of Reference List filled out

REFERENCE LIST			
WORK RECORD 1			
Employer	Company A	Start Date:	Sep-10
Supervisor's Name & Designation (if applicable)	Gordon Sumner, P.Eng.	End Date:	Nov-15
		Total Months:	62
Reference's Name & Designation (if applicable)	Reference Contact information (email OR post mailing address)		
Gordon Sumner, P.Eng.	gsumner@companyA.ca		
Additional References (list up to 3 with designation if necessary)			
Name	Contact Information (Email OR post mail address)		
If supervisor is not used as the reference, please explain why in the space below.			
WORK RECORD 2			
Employer	Company B	Start Date:	Sep-08
Supervisor's Name & Designation (if applicable)	Geddy Lee	End Date:	Sep-10
		Total Months:	24
Reference's Name & Designation (if applicable)	Reference Contact information (email OR post mailing address)		
Alex Lifeson, P.Eng.	alifeson@companyB.ca		
Additional References (list up to 3 with designation if necessary)			
Name	Contact Information (Email OR post mail address)		
Niel Peart, P.Eng.	npeart@companyB.ca		
If supervisor is not used as the reference, please explain why in the space below.			
Supervisor is not a P.Eng.			

Adding additional references on a single Work Record is optional

You must provide a reason why a supervisor is not being used as a reference, even if trivial.