Technical Safety Authority of Saskatchewan

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Application for the Registration of a Pressure Piping Design

Policy Paper TSASK-2016-07-01

Contents

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1. Scope

This policy paper details the requirements for the registration of pressure piping systems. Links to relevant flowcharts, documents and forms provide applicants the ability to build their application using this paper and the links to the other information pieces.

This document refers the reader to several different information papers for specific details. To ensure the reader does not miss any component of the application, TSASK recommends that the applicant read this document in its entirety. Failure to provide the information required may result in a delay in processing the application.

Refer to flowchart on Pressure Piping Design - Technical Safety Authority Saskatchewan (TSASK) for the *Application for the Registration of a Pressure Piping Design*.

2. Definition of Pressure Piping

A pressure piping system as defined in *The Boiler and Pressure Vessel Act* of Saskatchewan:

- means pipes, tubes, conduits, gaskets, bolts and other fittings making up a system, the sole purpose of which is the conveyance of an expansible fluid under pressure and the control of the flow of an expansible fluid under pressure between two or more points (Clause 2(r)).

3. Exemptions from *The Act*

Pressure piping systems are exempt from the *Act* if the pressure piping system:

- is a pipeline as defined by *The Pipelines Act, 1998:*
  Clause 2(j) "pipeline":
  (i) means a pipe or system of pipes for the transportation of:
  (A) liquid hydrocarbons, including crude oil, multiphase fluids containing hydrocarbons, oil and water emulsions, condensate, liquid petroleum products, natural gas liquids and liquefied petroleum gas;
  (B) gaseous hydrocarbons, including natural gas, manufactured gas and synthetic gas;
  (C) water, steam or any other substance where the water, steam or other substance is incidental to or used in the production of crude oil or natural gas; or
  (D) carbon dioxide;
  (ii) includes any of the following that are incidental to or used in connection with the pipeline:
  (A) tanks, tank batteries, pumps, compressors and racks;
  (B) storage facilities, loading facilities, terminal facilities and other similar facilities;
- is a gas installation as defined in *The Gas Licensing Act:*
  Clause 2(k) "gas installation" means the installation of a system of gas piping in or on any land, building or premises from the meter or regulator where gas is delivered therein or thereon up to the point or points where the gas can be consumed or used therein or thereon by any gas consuming equipment and includes the connection of any such gas piping with any of that equipment and any part of the gas system, and the alteration, extension and repair of that gas piping, but does not include any electrical installation within the meaning of *The Electrical Licensing Act*;
- is a non-expansible fluid;
- contains hot water:
  - at a pressure of 1,103 kilopascals (160 psig) or less; or
  - at a temperature of 121°C (250°F) or less; AND
  - forms part of a low pressure boiler plant;
- is not connected to nor used in connection with a boiler or pressure vessel;
- is a medical gas piping systems; or
- air piping with a diameter of 25.4 millimetres (1") or less.

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4. Exemption from Registration

4.1. *New Construction with Aggregate Volume <0.5 m^3*

The design of a pressure piping system with an aggregate internal capacity (volume) of ***0.5 cubic meters*** or less is not required to be registered. The aggregate internal capacity is based on the **entire system** at the location and may include the work of multiple designers or fabricators.

Although exempt from registration, all fabrication/construction shall be in accordance with a registered Quality Control Program (QCP) or Quality Management System (QMS) and by a licensed Contractor. Copies of *TSK-1001 Completion of Construction* and *TSK-1002 Construction Data Report for Pressure Piping Systems* shall be submitted to Codes & Standards Compliance (C&SC) at TSASK by:

- email at CodesandStandards@tsask.ca; or
- regular mail to Codes & Standards Compliance, TSASK, 2202 2nd Avenue, Regina, SK S4R 1K3

Originals shall remain with the owner. Scanned copies are acceptable as long as they are signed and complete.

The 0.5 m^3 exemption from registration shall not apply to *IP-2016-07-03 Application for the Registration of a Pressure Piping Design Using Multiple Submission Packages*. The overall aggregate volume is the total of the entire system which may be covered by several submission packages and cannot be assessed based on each individual submission.

4.2. *Repairs*

Fabricators shall complete *TSK-1002* for all repairs (like for like) and retain for their records as per their QCP/QMS programs. *TSK-1002* for repairs does not need to be submitted to C&SC for retention but shall be made available to TSASK upon request.

5. Pressure Piping Design Audits – Quality Control Program (QCP) & Quality Management System (QMS) Manual Holders Only

If the QCP or QMS program has provision for an audit of pressure piping design systems, then TSASK will not do a full review of a pressure piping submission. In order to qualify for the audit, QCP/QMS companies are required to register their Piping Material Specifications with TSASK and keep TSASK up-to-date on any changes to the specifications.

Please refer to Information Paper – *IP-2016-07-01 Pressure Piping Design Registration Audit Reviews – QMS/QCP Manual Holders Only*

6. Pressure Relief Path Stop Valves

If the pressure piping design to be surveyed for registration has any stop valves (including process valves) in the relief path of pressure equipment and piping, the owner of the system shall have a Pressure Relief Path (PRP) Stop Valve Control (SVC) program registered with TSASK. QMS owners may opt to include a section on PRP SVC Program in their QMS manual in lieu of a separate manual.

Refer to *IP-2016-07-07 Application for the Registration of a Pressure Relief Path Stop Valve Control Program* and *IP-2016-07-08 Pressure Relief Path Stop Valve Control Program Manual Requirements* for more information.

7. Considerations before Selecting an Application Type

7.1. *Single versus Multiple Submission Packages*

7.1.1. *Pressure Relief Device Common Discharge Header Limitation*

Multiple pressure piping design package submissions which have PRD common relief discharge headers that span all or part of the packages may not be able to be reviewed separately.

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The design review of PRDs is an important part of the registration process. If the Design Reviewer does not have all of the information required to perform the review for the individual packages, the Design Reviewer may opt to delay registration until all the information required is available.

The Design Reviewer may also opt to register the design with conditions that cannot be removed until the packages with the remaining PRD common discharge header piping pieces are reviewed. Either way, the Design Reviewer will notify the applicant of what is required and the potential options.

7.1.2. All Information is available at time of Submission

Owners or their designate shall determine if all of the information for the pressure piping system design is available to submit in one package. Such things as off-site fabrication of piping packages, separate equipment skid packages (like compressors or filter banks) and separate packages for different construction companies are all examples of where possible multiple submission packages would make sense. Owners or their designate have to decide if there is benefit in splitting up the submissions for registration.

7.1.3. State of the Design

Another consideration when making the decision is the state of the design. In some cases, the main piping system is ready to be constructed; but, the information on the smaller pieces of the system is not yet complete. Rather than holding up construction, the owner or their designate may decide to apply for registration using more than one submission so the main fabrication/construction may be started without waiting for the rest of the design to be finalized.

7.1.4. Multiple Designers

Finally, parts of the pressure piping system may be designed by different companies. For example, an air compressor with all the dryers and the air receiver are being designed by one company; but, the main air system piping is being designed by another company. The main air system piping is ready to be registered but the compressor details are still being decided. This might be a case for multiple submissions in order to start fabrication/construction of the main air system piping.

Sometimes confidentiality prevents one designer from sharing the details with another. In this case, a multiple design may be the best option. Both designers may register their designs independently with TSASK.

7.2. Application for the Registration of a Pressure Piping Design Using a Single Submission Package

In order to be reviewed and registered:

- there is only one Application for the Registration of a Pressure Piping Design;
- all the piping systems, whether to be supplied by others or not, are identified on the application and included in the line list with all P&IDs submitted;
- all vessel information is included on the drawings or on a separate list;
- all information for supplied equipment packages that may be supplied by one or more vendors (if applicable) are included in the submission; and
- the owner or their designate has ensured that all the information required to do the review is included within the package submitted.

Failing to supply the required information for the design survey of the pressure piping system may result in a delay in the registration of the system.

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Refer to Information Paper *IP-2016-07-02 Application for the Registration of a Pressure Piping Design Using a Single Submission Package*.

7.3. Application for the Registration of a Pressure Piping Design with Multiple Submission Packages

This type of application uses multiple submission packages to get the pressure piping design registered. This means that more than one pressure piping package shall be submitted in conjunction with the system at this location.

In order to be reviewed and registered:

- an application is submitted for each package with reference to the tracking number issued by the owner or their designate;
- the total number of packages to be submitted (or close approximation) for the overall pressure piping design at that location;
- all vessel information in the specific package is included on the drawings or on a separate list; and
- the owner or their designate has ensured that all the information required to do the review of the submissions is included.

The exemption of 0.5 cubic meters aggregate volume does not apply to this type of submission.

Refer to Information Paper *IP-2016-07-03 – Application for the Registration of a Pressure Piping Design Using Multiple Submission Packages* for more details.

8. Registration of Skid Designs

Often, manufacturers make equipment skids that are identical. All that changes are the serial numbers on the vessels.

When reviewing designs, manufacturers are required to submit the same information to TSASK Codes & Standards Compliance for every pressure piping design that has their skid as part of the design. TSASK has recognized, that in many cases, these stand-alone skids should not have to be reviewed again.

TSASK has developed a system where manufacturers of skids may register their designs – much like a fitting registration. The skid design registration number then need only be referenced in the designer's application. This registration of skids shall reduce the number of times a skid is reviewed.

8.1. Program Requirements and Manufacturer Obligations

8.1.1. Definition

TSASK defines a skid as:

- a metal plate or frame pallet used for mounting pressure piping and/or pressure equipment.

8.1.2. Aggregate Volume

The exemption of 0.5 m^3 does not apply to registered skid designs.

8.1.3. Expiration of Design

All registered skid designs shall expire 10 years from the registration date. TSASK may suspend the design earlier for cause.

8.1.4. Design Drawing Changes

No changes to the registered design shall be made without TSASK approval. TSASK shall review the change and either acknowledge that the change did not affect the registered design or issue a new registration number for the skid design.

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Notification of drawing changes may be done by email. Part 13 contains all the contact information for TSASK Codes & Standards Compliance.

8.1.5. Nameplates

All manufacturers shall submit with the application an example of a nameplate that shall be attached to the registered skid. The manufacturer shall ensure the information on the nameplate is correct. The nameplate shall be attached to fabricated skids once *TSK-1002 Construction Data Report for Pressure Piping Systems* has been completed.

Refer to Information Paper *IP-2016-07-04 Application for the Registration of a Skid Design* for more information.

9. Pressure Relief Device (PRD) Common Discharge Header Sizing

TSASK accepts the use of PRD common discharge headers in pressure piping system designs. TSASK follows the requirements of CSA B51-14 (except for Clauses 12.2.2.7 and 12.2.2.8) and ASME Section XIII.

Designers shall be familiar with the requirements of information paper *IP-2016-07-06 Pressure Relief Device Common Discharge Header Sizing* for details on design requirements.

10. Alterations of Existing Pressure Piping Systems

QMS manual holders are exempt from registering alterations to existing pressure piping designs provided their piping material specifications have been registered with TSASK.

For everyone else, re-registration of a pressure piping system is required if ***any change*** (alteration) is made to an existing pressure piping system that was previously registered. The aggregate volume of 0.5 m^3 does not apply to alterations. Some examples include:

- changing a pressure relief device (i.e. increasing/decreasing the set pressure or increasing the size of valve) from the settings or size that was registered with the original piping system;
- adding/removing a pressure vessel(s). If a TSASK regulated pressure vessel is removed from service, TSASK form *TSK-0007 Pressure Equipment Status Report*, shall be completed by the owner and submitted online at:
  http://www.tsask.ca/update-information/pressure-equipment-status-update
  TSASK does not consider the removal of a pressure vessel an alteration as long as the PRD for the vessel did not protect multiple pressure components.
- derating the system pressure or temperature;
- increasing the system pressure or temperature;
- changing the schedule or size of a pipe;
- adding a pressure relief device discharge common header; and/or
- reduction or increase in the corrosion allowance.

TSASK recognizes that there are many other situations that would require the pressure piping system to be re-registered. Unless replacing "*like for like*" components and piping, a re-registration is required. Any alteration in the original design parameters requires re-registration.

11. Submission of Completion of Construction Form (TSK-1001) and Piping Data Reports (TSK-1002)

As piping systems are completed or at the end of the project, the owner or designate shall ensure that all *TSK-1002 Construction Data Report for Pressure Piping Systems* have been sent in to TSASK Codes & Standards Compliance for retention.

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Upon completion of any project and as per the QMS/QCP system of the company or companies involved in the project, the owner or designate shall submit *TSK-1001 Completion of Construction* form to TSASK Codes & Standards Compliance for retention. This is a mandatory requirement for all QMS/QCP holders.

QMS/QCP manual holders risk the loss of their Certificate of Authorization for their programs if they do not comply. TSASK will be tracking the completion of reviewed/audited pressure piping systems to ensure compliance. Owners shall be contacted directly if the forms are not submitted in a timely manner.

Do not let delays in paperwork prevent the start-up of pressure piping systems.

12. Failure to Respond to Issues Raised During the Registration Process

If the TSASK Codes & Standards Compliance Design Reviewer attempts to contact applicants with a deficiency list or comments and the applicants fail to reply within 60 calendar days, the Design Reviewer shall reject the pressure piping design.

When a design is rejected, an invoice for the review shall be sent to the applicant. The invoice from the first review shall be paid before TSASK will review the resubmission.

13. Design Registration Applications

All pressure piping design applications shall be made through the TSASK Design Portal Home - Design Registration System

14. Additional Information & Questions

14.1. *Design of Pressure Piping Systems Inquiries*

If possible, applicants should contact their Design Reviewer directly with questions. Be sure to include the TSASK reference number or provide enough detail that the Design Reviewer will know which application is being referenced.

For all other design inquiries, please contact TSASK Codes & Standards Compliance:

- By email at info@tsask.ca;
- By phone at (866) 530-8599. Please ask to speak to either a TSASK Design Reviewer or the Manager, Codes & Standards Compliance; or
- Visit the TSASK website at www.tsask.ca for more information.

14.2. *QMS/QCP and Inspection Inquiries*

For additional information or if there are any further questions or concerns, please contact TSASK:

- By email at info@tsask.ca;
- By phone at (866) 530-8599. Please ask to speak to a TSASK inspector or the Manager, Boiler and Pressure Vessel Safety; or
- Visit the TSASK website at www.tsask.ca for more information.

The requirements of Policy Paper ***TSASK-2016-07-01 Application for the Registration of a Pressure Piping Design*** and the referenced information papers supersedes all previous TSASK documents on this topic.