July 29, 2005

SAFETY INFORMATION BULLETIN: SB05-02

SUBJECT
Hot Tap and Line Stopping Guidelines for Pressure Equipment

SCOPE
The attachment of branch connections to an existing pressure piping system constitutes an alteration as defined in the Boilers and Pressure Vessels Regulation. This bulletin applies to all hot tap and line stopping operations performed on pressure equipment regulated by the Technical Standards and Safety Act, Boilers and Pressure Vessels Regulation.

HOT TAP DEFINITION
A hot tap is the attachment of a branch connection to a pressurized system on which a cutting machine is then installed for mechanical cutting of a hole through the pressure boundary via the branch connection, while the system is under internal pressure, without leakage of the contained fluid. On completion of the hot tap operation, the cutting machine is removed from the branch connection after closure of a valve or attachment of a blanking flange. A hot tap may include a line stopping operation.

BACKGROUND
The various codes for piping systems and in-service requirements e.g. ASME B31.1, ASME B31.3 and the National Board Inspection Code do not provide rules for hot taps. See ASME code Interpretations B31.1, Interpretation 20-7, which provides some general guidance for power piping, and ASME B31.3, Interpretation 13-04, which states that the code does not apply to hot taps on existing piping.

The preferred method for adding branch connections to a system is with the use of the appropriate branch fitting, in accordance with the code of construction, while the system is not under pressure. However, when this is not possible, the owner is responsible for deciding if a hot tap can be safely performed.

This document provides guidelines and references applicable to hot tap or line stopping operations that an owner or contractor should refer to prior to starting any hot tap or line stopping work.

Caution: This document does not provide all of the information required to perform a hot tap on pressurized equipment. It is the responsibility of the owner, or any other organization performing hot tap work, to ensure that all of the necessary engineering, installation and safety requirements are addressed for any given hot tap operation. The guideline documents listed below may assist in this regard.

HOT TAP ACTIVITIES
Hot tap activities may be handled in a number of different ways such as:

1) All of the work may be performed in house by the pressure system owner/user who holds a valid TSSA certificate of authorization to perform the work.

2) Turnkey operations, where all of the work may be performed by a subcontracted hot tap organization holding a valid TSSA certificate of authorization to perform the work.
3) Various portions of the work may be done by different qualified organizations holding valid TSSA certificates of authorization to perform the work.

Caution: Where more than one organization is involved in the various activities required for the hot tap, the owner shall ensure that all of the organizations to be involved are co-ordinated and advised of their responsibilities to ensure that no important steps in the operation are missed.

The decision to perform a hot tap is the responsibility of the owner. Determination of the suitability of the area for the hot tap operation shall be performed and documented by the owner prior to any work being commenced. This documentation shall be made available to the TSSA Authorized Inspector.

All parts of a hot tap operation shall be performed in accordance with written procedures that include all of the necessary safety precautions. This includes inspection prior to commencement, preparation and welding in the area where the hot tap branch connection is to be made before attaching the hot tap machine, and after removal of the machine from the branch connection.

Prior to a hot tap or line stopping operation being performed, a site safety meeting shall be convened by the owner or user to ensure that all personnel involved in the attachment of the branch connection and the hot tap or line stopping operation are familiar with their responsibilities and the applicable safety procedures. The Authorized Inspector shall be invited to each of these meetings. The TSSA Authorized Inspector shall have access to the work area where the hot tap or line stopping operation is to be performed and all documentation related to the work shall be available for the TSSA Authorized Inspector’s review.

QUALITY PROGRAM
Organizations welding hot tap fittings to a pressure boundary prior to the hot tap operation, or attaching the hot tap machine and performing a hot tap or line stopping operation, shall hold a TSSA certificate of authorization to perform alterations to the pressure boundary. The program shall address all of the steps necessary to ensure that the hot tap or line stopping activities to be performed by the organization are properly planned, performed and documented. Welding requirements for hot tap branch connections shall clearly outline any additional requirements that are applicable for procedure and personnel qualification.

Caution: The literature (see Guideline Documents on page 3) indicates that control of welding is critical to the success of the hot tap operation. Welding procedures and welders that are qualified to ASME Section IX may not be adequate for the attachment of hot tap fittings to a pressure boundary. Prior to starting the work ensure that appropriate welding procedures are qualified for the attachment of the hot tap connection and ensure welders have performance qualification tests that cover any more stringent applications that may apply.

It is the responsibility of the owner and/or the contractor to ensure that personnel performing a hot tap or line stopping operation are suitably qualified by competency evaluation in the safe operation and maintenance of hot tap and line stopping equipment. Documentation of such competence shall be available to the TSSA Authorized Inspector upon request.
DESIGN REGISTRATION
Only fittings having a valid Canadian Registration Number (CRN) from TSSA shall be used for hot tap or line stopping operations.

REGULATION REFERENCES
Boilers and Pressure Vessels Regulation
Section 4(4) Where the designer, manufacturer, installer or owner of a boiler, pressure vessel, fitting or piping proposes a change to its registered design, as determined in accordance with the code adoption document, they shall submit the design and specifications of the change to the director and obtain registration before beginning to make the change. O. Reg. 220/01, s. 4(4).

Section 7(1) No person shall alter a boiler, pressure vessel, fitting or piping unless the alteration is registered and is inspected by an inspector O. Reg. 220/01, s. 7(1).

Caution: Other acts and regulations may apply e.g. the Occupational Health and Safety Act and Regulations. The owner or any other organizations performing hot tap or line stopping work are responsible for ensuring all legal requirements are met.

GUIDELINE DOCUMENTS
The following documents are referenced as part of this guideline document because they contain important information related to hot tap work. They should be referred to for assistance in the development of techniques and procedures to be used for each hot tap operation, to ensure a safe and reliable installation takes place.

API 570 Piping Inspection Code; Inspection, Repair, Alterations, and Repairing of In-Service Piping Systems
API 2201 Procedures for Welding or Hot Tapping on Equipment Containing Flammables
API 510 Pressure Vessel Inspection Code; Maintenance Inspection, Rating, Repair, and Alteration.
API 653 Tank Inspection, Repairs, Alteration & Reconstruction
API 1107 In Service Welding
API 1104 Pipeline Maintenance Welding Practices
CSA Z662 Welding on Pipelines and Related Facilities, Appendix B – In Service Welding
Canadian Oil & Gas Pipeline Code, Section 10.9 - Maintenance Welding, Section 10.10 - Pipeline Hot Taps.

Note: This guideline is intended to assist organizations in understanding the requirements when performing hot tap and line stopping operations. It is not a substitute for the Technical Standards and Safety Act (Act), Boilers and Pressure Vessels Regulation (Regulation). Should this guideline differ from the Act or Regulation then the Act or Regulation shall apply.