API Tanks and the Fire Code

Background

Tanks used by the mid and upstream oil industry are typically manufactured to an API specification. Individuals that work in those sectors are often confused when trying to select appropriate storage tanks. Before explaining acceptable tanks, it's important to discuss which regulation must be followed. Essentially, there are two sets of regulations. The upstream sector is regulated by the Alberta Energy Regulator (AER). Very simply put, if the tank is to store products used in the exploration, production or transmission of crude oil or natural gas, and are covered under license from the AER, the tanks are regulated by Directive 55. There are some exceptions to this rule, and this is where things can be confusing. If, for example, the AER licensed facility includes a fuelling facility for company vehicles, the tank facility would fall under the Alberta Fire Code. If your tanks store chemicals that are used in the upstream industry but the facility itself is not covered under an AER license, the tank farm is regulated by the Fire Code. Tank facilities that are not directly controlled by the AER are regulated by the Fire Code. Enforcement of tank regulations of the Fire Code is shared between the PTMAA and some municipalities. This website lists all municipalities which fall under PTMAA jurisdiction.

Directive 55 and the Fire Code have basic differences in terms of objective. Directive 55 was primarily designed as a document to prevent contamination of the environment. Although protection of the environment is an objective of the Fire Code, the primary objective is to prevent fire and explosion. These differences can impact a choice of tank and the secondary containment system being planned for. This article focuses on tanks but you are encouraged to contact the PTMAA before designing a secondary containment system. The Alberta Fire Code Part IV provides regulations for storage tank systems for flammable or combustible liquids. To qualify as flammable or combustible, the product must have a flash point below 93.3^0 Centigrade. Consult with MSDS documents to determine the flash point of the product you are storing. It's important to note that methanol/water blends qualify as flammable or combustible, even with a high water concentration.

API Tanks

Once you've determined that your tank farm will be regulated by the Fire Code it's very important to know what tanks can be used. The Fire Code lists several API tanks – 12B, 12D, 12F and 650. The most commonly used tank in the upstream industry is API 12F. The Fire Code restricts API 12 tanks to, "*used only for the storage of crude petroleum at oil fields*". The Alberta Fire Code closely aligns with the National Fire Code and mention of API 12 tanks does create some confusion. The storage of crude petroleum at oil fields is regulated by the AER and not fire personnel. An API 12F tank upgrading program was previously available which allowed owners to upgrade their tanks to meet minimum requirements of the Fire Code. That program expired in 2011 and will not be available in the future.

So, why are API 12 tanks not acceptable in Alberta Fire Code jurisdiction? It's important to note that metal fabricators do not have to qualify to manufacture API tanks. The tank can be labelled as being manufactured to a particular API specification but the American Petroleum Institute does not have to approve fabricators or audit their welding procedures, etc. By contrast, Underwriters Laboratory Canada plays a significant role in quality assurance for tanks listed to a ULC Standard. As mentioned earlier, the Fire Code's primary objective is to prevent fires and explosions. Under the 12F specification a tank can be designed to not include emergency venting if the tank is used in a "remote location". During a pool fire the pressure inside a storage tank can be significantly increased and must have a way of escaping. Standard API 12 F venting includes a 3" normal vent and, possibly, an 8" thief hatch. This is not sufficient. A good illustration of the consequences of inadequate ventilation on a tank exposed to fire can be viewed at:
http://www.youtube.com/watch?v=6qcrwNM74sg

API 650 Tanks

API 12 tanks are not permitted for use in Fire Code regulated applications. Tank owners often look to oilfield tank manufacturers to satisfy their storage requirements. API 650 is an acceptable solution under the Fire Code. However, caution should be taken by the owner to ensure that the tank you order is truly a 650 tank. If you really want to buy an API tank and not a ULC tank it's important to know what is required under the 650 specification. A very popular tank capacity is 400 barrels. That size tank measures 12' diameter and 20' in height. Under the 650 specification, any tank measuring more than 10.5 feet in diameter must have ¼" shell thickness. 12F shell thickness only needs to be 3/16th". Ensure that your tank has ¼" shell thickness if the capacity is 400 barrels or greater. A Fire Code requirement is that normal and emergency venting is provided in accordance with API 2000 or the Standard to which the tank was constructed. If the PTMAA is the agency that will be reviewing plans for a tank farm that involves API 650 tanks we will want to know how the venting

requirements are being met so it should be documented before committing to the tank. If you choose to purchase an API 650 tank, the specification requires that the manufacturer provides the purchaser with a letter certifying that the tank has been furnished in accordance with requirements of the standard.

API Tank Manufacturers

AGI Envirotank
PO Box 879
Biggar, SK
S0K 0M0
1-800-746-6646
www.envirotank.com

Alberta Tank Fabrication
Box 478
Ryley, AB
T0B 4A0
1-780-801-0985
www.albertatankfabrication.com

Argo Sales Ltd.
#1300, 717 7th Ave. SW
Calgary, AB
T2P 0Z3
1-403-265-6633
www.argosales.com

Automated Tank Manufacturing
4601 49th Ave.
Kitscoty, AB
T0B 2P0
www.autotanks.ca

Clemmer Steelcraft
4006 60th Ave.
Innisfail, AB
T4G 1S7
1-800-661-2851
www.steelcraftinc.com

Foremost
6614 50th Ave.
Lloydminster, AB
T9V 2W8
1-780-875-6161
www.foremost.ca

Foremost
9816 100 Ave.
Hythe, AB
T0H 2C0
1-780-356-2200
www.foremost.ca

HC Piper Manufacturing
10630 Enterprise Way SE
Calgary, AB
T4V 4B2
1-403-212-5750
www.hcpiper.com

Hot Pass Welding
4424 50th Ave.
Calmar, AB
T0C 0V0
1-780-985-3838

Huge L Steel
PO Box 466
Regina, SK
S4N 3A2
1-306-591-1401
www.hugelsteel.com

Meridian Manufacturing
4232 38 Street
Camrose, AB
T4V 4B2
1-780-672-4516
www.meridianmfg.com

NWP Industries Inc.
PO Box 6280
Innisfail, AB
T4G 1S9
1-403-213-3425
www.nwp.ca

Prism Production Products
PO Box 728
Forestburg, AB
T0B 1N0
1-877-264-1050
www.prismcorp.net

Remo Manufacturing
PO Box 728
Redcliff, AB
T0J 2P0
1-403-548-0078

Revolve Oilfield Manufacturing
817 Central Ave. W
Linden, AB
T0M 1J0
www.revolvemfg.com

Tanksafe Inc.
#208, 3112 11th St. NE
Calgary, AB
T2E 7J1
1-403-291-3937
www.tanksafe.com

Western Manufacturing
9808 100 Ave.
Hythe, AB
T0H 2C0
780-356-2599
www.westernmanufacturing.ca

Westeel
Box 1718
Tisdale, SK
S0E 1T0
1-306-873-4531
www.westeel.ca

Shield Industries
7100 64 St.
Taber, AB
T1G 2J1
1-403-223-2544
www.shieldindustries.ca

Note: Some of these
companies may not be
in business any longer. There
may also be manufacturers not
included.