



INFORMATION BULLETIN

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SUBJECT: **STATE FIRE MARSHAL'S POSITION ON
DOUBLE-WALLED PIPING FOR HAZARDOUS
LIQUID PIPELINE SYSTEMS**

The California State Fire Marshal (CSFM) prohibits the installation of double-walled pipe for jurisdictional hazardous liquid pipeline systems. Our opposition is based on reasons of legal jurisdiction, design and construction difficulties, operation and maintenance problems, risk to the public and to the environment, and economic impact. Let us explain each of these in more detail.

Legal Jurisdiction: We believe that other state or local agencies are preempted by law from issuing requirements concerning the safety of any hazardous liquid pipeline.

The federal Hazardous Liquid Pipeline Safety Act of 1979 establishes the basic safety standards for the transportation of hazardous liquids and pipeline facilities. Authority for enforcement of this law rests with the US Department of Transportation's Office of Pipeline Safety (OPS). Specific federal regulations concerning the safety of hazardous liquid pipelines are found in parts 190, 195, 199 and 40 of the Code of Federal Regulations. CSFM's Pipeline Safety Program has been authorized by OPS to enforce these federal standards.

Hand-in-hand with the federal regulations, the Elder California Pipeline Safety Act (Chapter 5.5, California Government Code) directs that CSFM has "exclusive safety, regulatory and enforcement authority over intrastate hazardous liquid pipelines" within this State. This authority extends to the design, construction, operation and maintenance of these pipelines. As such, this code preempts other requirements which are inconsistent with standards enforced by CSFM.

Design and Construction: Difficulties in designing and constructing a double-walled system will be numerous and complicated. However, three of the more significant issues are:

- **Cathodic Protection:** If the outer pipe is to serve as secondary containment, both inner and outer pipes must be cathodically protected. In addition to the considerable engineering and installation difficulties involved (such as the installation of test leads on the inner pipe), this duplicate system may be a serious economic burden to the pipeline operator due to increased installation and maintenance costs.
- **Valves:** Installation of block valves or other appurtenances will be extremely difficult in a double-wall system.

- **Bends:** Installation of pipelines requires fabrication of directional bends and turns in the field. This task will be significantly complicated with the introduction of two concentric pipes of different diameters.

Operation and Maintenance: Double-wall pipe used in hazardous liquid pipeline service will make it extremely difficult if not impossible for the pipeline operator to comply with normal operation and maintenance requirements and may profoundly affect the operator's ability to respond quickly during an emergency. For example:

- **Corrosion:** The operator will have difficulty identifying general corrosion that has reduced wall thickness of the inner pipe to less than that required for maximum operating pressure. It will also be difficult to identify areas of localized corrosion pitting to the degree where leakage might result.
- **Unintended Movement/Abnormal Loading:** The operator will have difficulty assessing the effects on the serviceability of the inner pipe from unintended movement or abnormal loading of the pipeline caused by events such as earthquake, landslide or flood.
- **Leak Detection and Hazard Mitigation:** The operator will have more difficulty detecting and locating the site of a leak or rupture. Should a release occur, hydrocarbons will tend to fill the voids of the annular spaces between the inner and outer pipes. Presence of these flammable or combustible vapors make repair operation more dangerous, more arduous, more time-consuming and more costly for the emergency responders (fire, health, police agencies, etc.) and the operator.
- **Thermal Stress:** Double-walled pipe introduces serious stress on the pipeline system due to thermal expansion and contraction. While significant, the impact of this effect varies with the differing diameter and thermal environment of each pipe.
- **Electrical Short Circuiting:** Electrical isolation of the inner and outer pipe is necessary to avoid electrical shorts. Any metal-to-metal contact of inner and outer pipes caused by the previously identified thermal expansion-contraction may result in an electrical short form currents generated by the cathodic protection of the pipeline. In addition, the complications arising from field fabrication of pipe bends will most probably allow areas where the distances between the inner and outer pipes may be compromised. This underscores two serious problems:
 - (a) There is an added risk of pipeline failure caused by corrosion pitting due to electrical shorts rendering the cathodic protection system useless; and ,
 - (b) The short may act as a source of ignition if flammable or combustible vapors have been released through pinhole leaks. This situation could result in a catastrophic incident.

Risk to the Public and to the Environment: Regulations have been established at the federal and state level to assure minimal risk to the public and the environment. The design, construction, operation and maintenance difficulties listed above serve as some examples of how the proposed installation of double-wall pipeline is contrary to established law, regulation and established engineering principles and could compromise public and environmental safety.

Each case where the design and installation of the system is made more difficult results in increasing the chance that a mistake will be made. Each instance where there is more difficulty

in identifying corrosion, pipe stress, or cathodic protection failures increases the risk that the operator will not be able to successfully identify a problem before it becomes a crisis. All of these result in increasing the risk to the safety of the public and the environment.

Economic Impact: As is done across this country, compliance with established federal and state standards assures that crude oil and petroleum products may be transported with minimal risk to the public and the environment. The economic impact of operating and maintaining a pipeline meeting the requirements of federal and State standards is not a consideration. However, in this case, the proposal for double-wall construction adds significant operator costs for design, construction, operation and maintenance while increasing the risk to the public and the environment.

Questions regarding this Bulletin or any issue concerning pipeline safety may be directed to:

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