GAS PROCESSORS ASSOCIATION
MIDSTREAM'S GREATEST RESOURCE

July 31, 2014

LPG.interim.advisory@epa.gov

United States Environmental Protection Agency
Office of Solid Waste and Emergency Response
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Docket No. EPA 540-F-14-001, Interim Chemical Accident Prevention

Dear Docket Clerk:

In January 2014, in response to Executive Order 13650, the United States Environmental Protection Agency published an "Interim Chemical Accident Prevention Advisory: Design of LPG Installations at Natural Gas Processing Plants." In this interim advisory, EPA asks for comments on specific rulemaking, industry standards, and the hazards they address.

Gas Processors Association (GPA) serves the midstream energy industry and is an incorporated non-profit trade association serving member companies since 1921. Our corporate members represent over 90% of all natural gas liquids produced in the United States and operate over 236,000 miles of domestic gas gathering lines.

We are the primary advocates for a sustainable Midstream Industry focused on enhancing the viability of natural gas and natural gas liquids. We provide local, regional and global forums to develop standards, conduct industry research, educate our workforce and improve operational safety. As advocates, we work with legislators and regulators to promote a safe and viable Midstream Industry.

GPA's comments to the EPA Chemical Accident Prevention Advisory ("Advisory") dated January 2014 can be summarized as follows:

- If the federal government wants to significantly reduce public exposure to the inherent risk in LPG tank farm/terminal installations, then their support to 1) expand the NGL pipeline industry's footprint into new gas fields and 2) expedite the approval of any new large NGL fractionators and new ethylene manufacturing plants would be a huge "Win/Win" achievement for all;
- GPA counsels prudence as overregulation of RAGAGEP[1] will undoubtedly present unintended and unwanted consequences;
- GPA supports the EPA's contention that LPG tank farms and terminals represent the type of risk targeted by EO 13650;

[1] Recognized and Generally Accepted Good Engineering Practice

- GPA does <u>not</u> agree gas processing facilities, separate from LPG tank farms and terminals, warrant expanded regulation;
- GPA suggests ten (10) industry standards as necessary RAGAGEP for LPG tank farms and terminals;
- To be considered RAGAGEP, API 2510 will require updating; and
- Many of the forty-one (41) standards listed by the EPA in the advisory are not applicable to the design of natural gas processing plants and/or LPG tank farms and terminals.

Federal Statutes and Industry Standards

Because an industry standard alone cannot provide the best practice for every element of design in every situation, engineers and designers require the freedom to choose the best specification and/or standard or the option to develop their own criteria. Industry standards are not revised at a speed matching technological change. API 2510 is evidence of that. Federal regulation moves even slower. And just because an industry group has published a standard, this does not mean it is absolutely correct or up-to-date or that everyone agrees with the standard. NFPA 56 is an example of that. Engineers need the freedom to exercise their own engineering judgment, to make their own informed decisions based on the nature of the facility being designed, the degree of operating risk, and their own technical expertise. Indeed, most industry standards themselves include language to this effect.

Codifying RAGAGEP in a federal regulation will most certainly create situations where engineers are forced into less than optimal design, because federally mandated conformance to industry standard design requirements may not meet the specific situation. How are new technologies going to be developed if federal RAGAGEP prohibits the idea? Must the inventor convince the entire industry of the merit of the design prior to implementation in the field?

GPA understands other industry standards have been codified previously and the federal government intends to act similarly to further the objectives of EO 13650. Then GPA urges *prudence* and further advocates minimizing the list of industry standards codified into law to a core group that focuses on the specific risks targeted by EO 13650 and the dominant, root elements of causation.

In addition, GPA would stress the inclusion of a retroactivity clause in each of these standards. The listed standards are intended for <u>*new*</u> facilities. Enforcing standards retroactively on existing facilities would not be tenable and would most likely drive industries to cease updating their standards.

GPA would also like to address how these requirements would be enforced. If all industry standards were revised on a frequent basis and everyone agreed on their content, there is a concern it would be very difficult, if not impossible, to prove to a federal auditor a facility was constructed properly according to all codified industry standards.

If the plant is 30 years old and has gone through numerous revisions in that time period and each of the federally mandated industry codes have been revised every two years, then both the operator and the federal auditor are going to have to be familiar with every line item in (let's assume) ten (10) codes each revised 15 times or 150 codes.

How is an operator going to prove to a federal auditor that a specific design element brought into question was within code when it was designed and constructed? How is the federal auditor going to be able to prove it wasn't?

GPA does not want to overstate the issue, but it is a concern of its membership. Paperwork documentation of OSHA PSM standards consumes a large amount of line supervisors' and engineers' time. The extra time required for additional paperwork would likely take time away from activities such as training operators or tending to the operation itself. The less time plant supervisors and engineers spend in the control room, the greater the operating risk present in the facility. At some point, the volume of paperwork unintentionally and indirectly creates more risk than it mitigates.

Types of Gas Processing Facilities

First, GPA would like to make a distinction between gas processing in the "field" and gas processing in a refinery. Field gas processing occurs between the producer's wellhead and the large intrastate and interstate pipelines. Gas plants in the field perform some or all of the following services:

- Dehydration – Removal of water;
- Contaminant Rejection – Removal of nitrogen, carbon dioxide, and sulfur-based compounds;
- Btu Conditioning – Lowering of NGL content in order to meet intra/interstate pipeline specifications for maximum heating value (as a service when NGL recovery is not profitable);
- NGL recovery – Condensation of liquid hydrocarbon components such as ethane, propane, butane, and natural gasoline (for profit); and
- Compression to interstate/intrastate pipeline pressure.

According to the last Oil and Gas Journal's annual survey, there are more than 600 field gas processing and treating facilities in the United States. It is estimated more than 90% of these plants are located in rural/remote areas with few public stakeholders nearby.

Every one of our nation's 124 refineries contains at least one gas plant, as well. These plants receive and process all of the waste gases from the various crude-rendering unit operations. As opposed to field plants, refinery gas processing facilities are substantially more complicated, their inlet compositions vary constantly, and the number of different compounds flowing to the inlet is greater and more diverse. More importantly, refineries require more employees to operate and maintain the facility. The area surrounding the refinery expands to support industry, commerce, and residential neighborhoods. Engineers and designers cogitate their charge differently when the plant is in a remote location vs. a refinery inside a community along the Houston Ship Channel. One standard does not necessarily fit all plants.

Today, the ownership of these two types of gas processors varies substantially. Most refineries are owned by the multi-national, major oil companies, such as Exxon, BP, Chevron, and Shell. Most field gas processing facilities are owned by a large number of smaller producers and gas pipeline companies. GPA represents both groups of gas processors, as well as, the owners of the NGL fractionators downstream.

Since the EPA made API 2510, "Design and Construction of LPG Installations," a central example for most of the Advisory, GPA would like to continue with that specification to illustrate its points.

Field Gas Processing

As a quick primer, raw natural gas exiting a producer's wellhead usually contains 75 to 94% methane with the remainder being ethane, propane, butanes, and heavier components in decreasing amounts. Nitrogen and carbon dioxide are almost always present in some, usually small, percentage. For example, the number of molecules of each component might breakdown as follows:

Nitrogen	0.9 %	
Carbon Dioxide	0.3	
Methane (C1)	82.0	Sold as residue gas for fuel
Ethane (C2)	9.8	
Propane (C3)	3.9	LPG
Butanes (C4)	1.7	LPG
Pentanes & Heavier (C5+)	1.4	aka, "Natural Gasoline"
Total	100.0 %	

When API 2510 was originally developed, most gas plants in the field were of the lean oil extraction type which recovered only small amounts of ethane and focused on the recovery of propane and heavier components leaving the bulk of the ethane in the gas phase to be sold with the methane for use as residential/commercial/industrial fuel.

The resulting liquid consisting of propane-and-heavier mix could be sold as an "X"-grade or "LPG" mix[2] or it could be fractionated into separate components. With the exception of the bottom fraction termed "Natural Gasoline", all of the remaining products could also be termed "LPG" as they contained predominantly propane and butane. Fractionated or mixed, the mix or the individual components would be sold via pipeline, rail or truck.

Delivery of fractionated product required tank farms containing several shapes and sizes of pressurized storage tanks, atmospheric tanks, and sometimes underground storage caverns as a buffer to facilitate the logistics delivering product to market. This operation could be akin to a fire bucket brigade. The water pump (the gas plant) runs continuously and the buckets (transport trucks) arrive as quickly as possible filling directly from the water pump's spout, but some water (LPG) falls on the ground. Insert a horse trough (tank farm) below the pump outlet and 100% of the water is contained and the buckets load more quickly from the trough.

The development of cryogenic gas processing was a watershed moment for the hydrocarbon industry. First developed in 1960, cryogenics allowed energy-efficient and high-yield recovery of ethane. Cheap ethane started a wave of investment in the chemical industry. Increasing fuel costs drove fractionator designers to larger, more energy-efficient plants. The *deminimis* size for an efficient and competitive fractionator became 100,000 BPD which was large enough to separate mixed product from dozens of gas plants. To optimize the investment in tank farms and terminaling, most of the fractionators

[2] The term Liquefied Petroleum Gas (or LP Gas or LPG) is defined in API 2510 sec 3.5 as any material in liquid form that is composed predominantly of any of the following hydrocarbons or a mixture thereof: propane, propylene, butanes (normal or isobutane), and butylenes.

congregated around the refineries and chemical plants located near Mont Belvieu, Texas and Conway, Kansas.

Back at the gas plants in the fields, high-ethane recovery doubled the volume of liquids produced from a given feed stream. In fact, the industry term applied to the high-ethane product changed to "NGL", or Natural Gas Liquids, since the dominant component was now ethane (>40%) instead of propane and butane. Ethane has a much higher vapor pressure than LPG which drove the composite pressure of the NGL mix high enough to render pressurized storage no longer economic. Instead, the new NGL mix was now continuously streamed into a new network of NGL pipelines obviating the need for storage tank farms and terminals.

In fact, only a remote few field cryogenic gas processing facilities do store NGL product onsite. The typical cryogenic gas plant contains only enough product within its fences to provide, on average, thirty (30) *minutes* (±) of surge time to assure smooth operation of the process and full degassing of the liquid. By comparison, most LPG tank farms provide at least three (3) *days* of storage.

Thus, just as lean oil recovery yielded to cryogenic processing, the small fractionators gave way to a new, more expansive network of NGL pipelines and much larger fractionators congregated primarily in just two areas. At the turn of the century there were only a few lean oil processes in the U.S. and the number of independent fractionators and LPG tank farms had shrunk substantially, as well.

Therefore, API 2510 largely ceased being utilized, because almost none of the field cryogenic gas plants built in the last 40 years were associated with "LPG Installations."

However, the gas processing industry appears to have taken one step back recently in areas where cryogenic plants are being built to process production in the new shale plays currently outside the nation's NGL pipeline network, e.g., the Marcellus Shale. While these plants were designed for deep ethane recovery, the NGL pipeline network has yet to extend to these areas. Therefore, the ethane is left in the residue gas and a lower vapor pressure LPG mix is sold via truck or rail. These pressurized transports move the liquid long distances across the country to the most economic market. Thus, in addition to a new set of LPG tank farms, a large, growing fleet of pressurized LPG tanker trucks are carrying LPG on the nation's highways and railways.

Therefore, if the primary objective of EO 13650 is to reduce the risk to the public derived from LPG tanks and terminals, would it not make more sense for the federal government to sponsor changes in infrastructure to eliminate the need for them? If so, then GPA proposes the federal government proactively sponsor and expedite projects favorable to the recovery of ethane. These would include assistance with the following types of projects:

- Expansion of the nation's NGL pipeline network into new areas;
- New NGL fractionators; and,
- New ethylene plants and any other type of facility that utilizes ethane.

Pipelining is the safest, most reliable, most energy efficient, and most economic form of fluid transportation. However, challenges to eminent domain and the long process required for environmental permitting add years to the project schedule for such large industry investments.

The federal government's sponsoring the expansion of such facilities would substantially reduce the public's risk exposure, speed investment dollars into the economy, and expedite the creation of permanent jobs in sectors of the country still suffering from the most recent economic downturn.

RAGAGEP

The Advisory's central concern was gas processing facilities were not being designed in accordance with "RAGAGEP" as already required by the EPA's Risk Management Plan (40 CFR 68) and OSHA's Process Safety Management of Highly Hazardous Chemicals (29 CFR 1910.119).

GPA considers the following industry standards the necessary RAGAGEP to ensure safe design of LPG tank farms and terminals:

- ASTM B31.3, "Process Piping"
- ASTM B31.4, "Pipeline Transportation Systems for Liquids and Slurries"
- ASTM Section VIII, "Boiler and Pressure Vessel Code"
- API RP 520, "Sizing, Selection, and Installation of Pressure-Relieving Devices in Refineries"
- API RP 521, "Guide for Pressure-relieving and Depressuring Systems: Petroleum, Petrochemical, and Natural Gas Industries"
- API RP 500, "Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities"
- API RP 2003 "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents"
- API RP 2510A "Fire-Protection Considerations for the Design and Operation of Liquefied Petroleum Gas (LPG) Storage Facilities"
- NFPA 70, "National Electric Code"

GPA also agrees a standard similar to API 2510, "Design and Construction of LPG Installations" is necessary; however, the existing standard requires substantial modernization if it is to be considered RAGAGEP.

An incident of the magnitude presented by EO 13650, to reach beyond the boundaries of the facility in question, requires an explosion. Explosions occur when a pressure vessel suffers catastrophic failure, i.e., the walls fail and, the pressurized container breaks open, the flammable contents of an LPG tank ignite, propelling part of the tank away and a concussive pressure wave advances at the speed of sound in all directions. A primary safety system is the pressure safety valves (PSVs) protecting the tank. Engineers review multiple scenarios for failure in designing these valves. Usually, the guiding design case for the PSVs is the "fire case" which simulates a prolonged fire. Thus, for the purposes of EO 13650 it would make sense to focus on the design of pressure vessels[3] and their associated safety systems[4] in the "fire case".

[3] ASME Sec. VIII
[4] API RP 520 and 521

Fire requires fuel, oxygen, and a source of ignition. The keys to preventing tank farm and terminal fires are 1) containment of the hydrocarbon[5], and 2) elimination of sources of ignition[6]. The industry standards listed above are the codes central to these two objectives. The needs are basic; No other industry codes or standards are required.

Atmospheric containment of hydrocarbons, such as in an API 650 or API 12F cone roof tank, does not represent the magnitude of risk similar to pressurized LPG storage. The contents are not nearly as volatile as propane or butane, the concussive force upon ignition is significantly less, the tanks are diked for containment, and there is no risk of a detonation to launch the tanks. Therefore, GPA contends atmospheric tankage should not be part of the discussion w.r.t. EO 13650's purposes.

API 2510

GPA concurs with the use of API 2510 spacing requirements over NFPA 58. However, this industry standard is not as widely accepted as it once was for the following reasons:

- The utility of the standard declined as did the number of LPG tank farms;
- Some of the practices advocated in the standard are either out-of-date or are less widely-accepted;
- The proliferation of new industry standards addressing equipment spacing[7], and,
- Today's operators of LPG tank farms are not as active in the API, and therefore, have not had as much chance to participate in the standard's maintenance.

GPA proposes to work in collaboration with API to get appropriate representation on the committee and the standard be revised or that the GPA develops its own standard to be submitted as RAGAGEP.

Other Industry Standards

Based on the reasoning above, the members of GPA are in agreement the *only* RAGAGEP necessary to ensure the safe design of LPG tank farms and terminals are those listed above. The Advisory discusses several other NFPA standards and submits a list of others as a query. With respect to these other industry standards, GPA offers the following response:

NFPA 58, the "Liquid Petroleum Gas Code" and API 2510 codify similar principles to the handling and storage of LPG. The key difference is the facilities/locations to which each applies. Two high level summary statements can be made to help understand the difference in applicability between NFPA 58 and API 2510:

1. NFPA 58 applies to the storage and handling of LPG by commercial and public transporters, distributors, and end users.
2. At the facilities which produce and process LPG, API 2510 applies only to parts of the facility classified as storage and handling of LPG.

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[5] ASME Sec. VIII, ANSI B31.3, ANSI B31.4, API 2510
[6] API RP 500, API RP 2003, NFPA 70
[7] For example, Process Industry Practices (PIP) PNE00003 *Process Unit and Offsites Layout Guide*, Global Asset Protection Services (GAP)2.5.2 *Oil and Chemical Plant Layout and Spacing, and the* Chemical Process Safety (CCPS) *Guidelines for Facility Siting and Layout*

GPA agrees API 2510 is the more appropriate standard for LPG tank farms and terminals. It is surmised the reason these new plants utilized NFPA 58 was the state they were building in told them to use it. States new to gas processing, such as West Virginia, do not possess as large a corporate knowledge of the subject as does, for example, the Texas Rail Road Commission. Thus, they probably required conformance to the standard they had on their books which most closely fit the situation and that was NFPA 58 for the commercial LPG business.

Another reason to standardize on API 2510 is it was written by petrochemical industry professionals for use by petrochemical industry professionals. API 2510 utilizes the knowledge and expertise of those following the code to use good engineering judgment and best practices to arrive at the most appropriate, safest design. An example of this is Sec 5.3, which requires understanding the physical properties of the LPG at the site conditions to be able to assess the phase (vapor or liquid) of a potential leak so that the potential for thermal shock can be incorporated into the appropriate design. As compared to NFPA 58 which is written for the layman that does not have the same level of expertise, the same sophistication of design is not possible.

NFPA 30, **"The Flammable and Combustible Liquids Code"** covers the use, transfer, storage and processing of flammable and combustible liquids, and provides a vehicle to ensure compliance with OSHA requirements. The code excludes cryogenic liquids from its scope, which by its definition of fluids with a flash point below -130 F, excludes propane (an LPG component) and lighter compounds, but applies to heavier mixtures, including most NGL streams extracted during processing.

NFPA 30 was written by an organization largely comprised of fire control and insurance professionals and covers design for a wide range of industries. Conversely, the standard is broad making it somewhat cumbersome for a designer from a specific industry as much of the text will be immaterial. Rather than require an engineer to sift through the standard and attempt to determine what does and does not apply, GPA recommends that API 2510 be updated to provide a more concise resource focused on the specific design requirements of LPG tank farms and terminals.

For an industry standard to truly fit the definition of RAGAGEP, the industry in question should have strong participation in its development or the definition fails. While GPA agrees portions of NFPA 30 can be applied to LPG tank farms and terminals, of the roughly 200 NFPA committee memberships listed as contributing to NFPA 30, only seven (7) of those memberships come from U.S. Midstream operators and all of those come from major, multi-national energy companies. The numerous Midstream operators representing the large majority of gas processing facilities in the field have no (0) direct representation. To appropriately address the goals of EO 13650, GPA prefers a standard of greater specificity that focuses on the type of facilities addressed in the Advisory developed by professionals working directly in that industry. Otherwise, the definition of RAGAGEP fails. For this reason, GPA recommends against the utilization of NFPA 30 as RAGAGEP.

Remaining Standards: The Advisory listed a total of forty-one (41) industry standards. As previously indicated, several of these standards are considered by GPA as necessary RAGAGEP to ensure safe design of LPG tank farms and terminals; however, remaining standards are simply not applicable to the safe design of gas processing or LPG tank farms and terminals as framed by the EPA in the Advisory.

- Some of them are specifications paralleling existing API standards;
- Many of them are not applicable to gas processing or LPG tank farms and terminals;

- Many of them are not *design* standards, as they are intended for operations and maintenance; and,
- Some are not necessary RAGEGEP for the purposes of the advisory as they do not represent the risks inherent in the goals of EO 13650.

Each of the remaining standards referenced by the EPA in the Advisory are discussed in more detail in the attached Appendix "A".

Existing Environmental Regulation

Several existing environmental regulations apply to both gas processing and LPG tank farms and terminals:

- The General Duty Clause (GDC) under the Clean Air Act Section 112(r)(1) requires operators "to identify hazards which may result from (such) releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur."
- The Chemical Accident Prevention Program under the Clean Air Act Section 112(r) is dedicated to recognizing hazards and preventing accidents. It differs from the GDC as it requires facilities using listed toxic or flammable chemicals above certain thresholds to implement a specified set of accident prevention and emergency response program elements and to submit a document called a risk management plan (RMP) to EPA.
- The Clean Water Act Oil Pollution Prevention Rule in 40 CFR 112 requires operators of storage vessels containing flammable liquids located at these facilities to evaluate and develop a Spill Prevention, Control and Countermeasure (SPCC) plan.

The General Duty Clause (GDC), since November 1990, applies to any stationary source producing, processing, handling, or storing regulated substances or other extremely hazardous substances as defined by 40 CFR Part 68 (the RMP rule). This would include both gas processing facilities and LPG tank farms and terminals. Therefore, operators of these types of facilities are already responsible for designing and maintaining a safe facility to prevent accidental release, and to minimize the consequences if such a release does occur.

Generally, the GDC already states operators should adopt or follow any relevant industry codes, practices or consensus standards. The standards listed by GPA above, other than API 2510, are so ubiquitous within the energy industry that anyone intentionally operating outside of them is obviously doing so outside the confines of the GDC.

Thus, when one takes into account these three federal environmental regulations, OSHA's PSM regulations, and whatever state and local regulations exist, gas processing facilities and LPG tank farms and terminals are already heavily regulated.

With respect to the stated purpose of EO 13650, as applied to these types of facilities, the only content missing from the library of necessary RAGAGEP is that addressed by API 2510. After API 2510 is updated or another similar document is developed by GPA, the new document would supersede NFPA 58 for gas processing facilities and LPG tank farms and terminals. Retail LPG facilities would continue to follow NFPA 58 as stated in its scope as it is considered RAGAGEP for that sector of the industry.

Closing

In closing, GPA appreciates the EPA's consultation in this matter and the opportunity to provide input and guidance. It also would like to express appreciation to the many individuals in the industry who contributed to this response.

The membership of the Gas Processors Association possesses a broad and deep technical knowledge of the facilities in question and their operations. Prior to publishing proposed guidance the GPA would like to offer to share their knowledge with the EPA in a face-to-face setting, the earlier the better.

To summarize, GPA offers the following in response to the EPA's Advisory:

- The most effective way for the federal government to minimize the risk of LPG tank farms and terminals to the public is to sponsor and promote the development of the nation's NGL pipeline network into these new areas under development, and help expedite permitting for new large NGL fractionators, and new ethane-consuming chemical facilities such as ethylene plants;
- GPA is concerned the federal definition of RAGAGEP will create unintended consequences contrary to the goal of EO 13650 and counsels prudence in that regard;
- GPA supports EPA's contention that LPG tank farms and terminals represent the type of risk targeted by EO 13650;
- Gas processing facilities and LPG tank farms and terminals should be considered two different types of facilities;
- On their own, gas processing facilities do not represent a threat to the public similar to an ammonium sulfate plant or an LPG storage terminal and should not be considered candidates for expanded regulation;
- If EPA decides to publish standards, GPA supports listing ten (10) industry standards as necessary RAGAGEP for LPG tank farms and terminals;
- API 2510 does not apply to gas processing facilities, *per se*;
- To be considered RAGAGEP, API 2510 will require updating;
- Most of the industry standards listed in the EPA's advisory are not applicable to the design of gas processing facilities and/or LPG tank farms and terminals;
- Both gas processing facilities and LPG tank farms and terminals are already heavily regulated under existing federal regulations; and,
- As almost all gas processing facilities are already regulated by OSHA via the PSM Standards, it is requested any increase in requirements or oversight be addressed through the changes in that existing standard as a matter of efficacy for the federal government and efficiency for the owner/operators.

Respectfully Submitted,

Johnny Dreyer
Sr. VP and Corporate Secretary

APPENDIX "A"

SUMMARY OF OTHER INDUSTRY STANDARDS

API 6A ***Specification for Wellhead and "Christmas Tree" Equipment*** API 6A is a specification for the design, materials, testing, inspection, welding, marking, handling, storing, shipment, purchasing, repair and remanufacture of wellhead and "christmas tree" equipment for use in the petroleum and natural gas industries. Equipment covered by this standard includes housings, spools, connectors, fittings, hangers, valves, chokes, actuators, gaskets, bushings, etc. used to control well production. This equipment is utilized at wellhead sites, upstream of pipeline gathering and gas processing facilities.

API Series 12 is primarily intended to cover production operations between wellhead and flow line. As such, production equipment may be part of a temporary installation rather than a permanent installation such as a gas processing facility or LPG tank farm/terminal.

API 12GDU – "Specification for Glycol-Type Gas Dehydration Units"

It appears that API has withdrawn this standard.

API 12F "Specification for Shop Welded Tanks for Storage of Production Liquids"

API 12F is a specification for the design, material, fabrication, and testing requirements for shop-fabricated vertical, cylindrical, aboveground, closed top, welded steel storage tanks in various standard sizes and capacities for internal pressures approximately atmospheric. Within a gas processing plant, API 12F storage tanks may be utilized for condensate or other liquid storage downstream of gas processing equipment. These tanks are small, usually less than 600 Bbls, and therefore, do not represent the amount of risk targeted by EO 13650.

API 12J "Specification for Oil and Gas Separators"

This specification covers the design, fabrication, and shop testing of oilfield separators used in the production of oil and/or gas. The specification is intended to be used in upstream operations, and is not applicable to the midstream industry.

The equivalent requirements for the midstream industry are contained in ASME VIII Div 1 & 2.

API 12K "Specification for Indirect-Type Oilfield Heaters"

This specification covers the design, fabrication, and shop testing of oilfield indirect type fired heaters used in the production of oil, gas, and their associated fluids. These types of heaters are not typically used in gas processing. The specification specifically excludes heater exchangers typically used in gas processing, i.e. steam and other vapor generators, reboilers, indirect heaters employing heat media other than water solutions, all types of direct fired heaters, shell-and-tube bundles, and electrical heating elements. The heaters are utilized in production facilities and are located on the producing flow-line between the wellhead and pipeline, and are used to prevent hydrate or wax formation, or to prevent liquids from condensing in the gathering line.

API 12R1 ***Recommended Practice for Setting, Maintenance, Inspection, Operation, and Repair of Tanks in Production Service***

API RP 12R1 is a recommended practice that provides guidance for tanks fabricated to API

Specifications 12B, D, F, and P on:

(a) the collection of well or lease production
(b) gauging
(c) delivery to pipeline carriers for transportation
(d) other production storage and treatment operations.

Within a gas processing plant, API 12R1 would be applicable to any 12B, D, F, or P condensate (or other liquids) storage tanks that may be located downstream of gas processing equipment.

ASME A13.1 – *Scheme for the Identification of Piping Systems*

ASME A13.1 Scheme for the Identification of Piping Systems is intended to establish a common system to assist in identification of hazardous materials conveyed in piping systems used in industrial, commercial and institutional installations, and in buildings used for public assembly. This standard is NOT widely utilized in gas processing.

API RP *51R Environmental Protection for Onshore Oil and Gas Production Operations and Leases*

This standard provides environmentally sound practices, including reclamation guidelines, for domestic onshore oil and gas production operations. Although the RP does include gas compression for transmission, this is a gas transmission operation, and not strictly a gas processing operation. Environmental protection is well covered in the gas processing sector by the EPA, its delegates such as USACE, and state and local environmental protection agencies.

API 54 – "Recommended Practice for Occupational Safety for Oil and Gas Well Drilling and Servicing Operations"

Overall, the standard is very specific to exploration and related services pertaining to exploration (i.e., drilling and well servicing (e.g., wire-line services and work-over rigs)).

API 74 - *Recommended Practice for Occupational Safety for Onshore Oil and Gas Production Operations*

This standard contains items which are already included in 1910.119:

- Hot work
- Safe Work Practices – LOTO, confined space entry, load lifting
- Procedures for changes to critical equipment (except Like-in-kind) (MOC)

This is not a design standard.

API 75L – *Guidance Document for the Development of a Safety and Environmental Management System for Onshore Oil and Natural Gas Production Operations and Associated Activities,*

This RP is very similar to the fourteen elements of OSHA's PSM 1910.119, which our industry is already regulated under. Nor is it a design standard.

This standard should not be considered because applying this standard would be a redundant exercise since the midstream industry is already regulated by OSHA's PSM and the EPA's RMP.

API 76 *Contractor Safety Management for Oil and Gas Drilling and Production Operations*

API 76 is the development and implementation of a contractor safety program specific to E&P activities. This program includes:

- The Operators and Contractors informing the contract employees of the potential hazards which exist in the workplace or with the work to be performed.
- The contractor training their employees in the work they are performing.
- The Contractor complying with the operator's emergency response plan.
- The Operator performing a review of a contractor's safety performance before awarding a contract.

Each of these items is already covered in OSHA's 1910.119(h), Contractors. Therefore, applying this standard would be a duplication of steps already required by regulation.

API 505 "Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class 1, Zone 0 and Zone 2"

This standard mimics API 500 and is the standard used in other countries in the design of process facilities. It is not used in the US.

API 510 "Pressure Vessel Inspection Code: In-service Inspection, Rating, Repair, and Alteration"

API Standard 510 is an inspection code that covers the in-service inspection, repair, alteration, and rerating activities for pressure vessels and the pressure-relieving devices protecting these vessels. This inspection code applies to all hydrocarbon and chemical process vessels that have been placed in service. It is not a code for design.

API 570 – *Piping Inspection Code – Inspection, Repair, Alterations, and Rerating of In-service Piping Systems*

API 570 covers inspection, repair, alteration, and rerating procedures for metallic piping systems that have already been put in-service, i.e., it is not a design standard as targeted by the Advisory. API 570 was developed for the petroleum refining and chemical process industries but may be used for any piping system, where practical, and would be applicable for gas processing plants. API 570 applies to piping systems for process fluids, hydrocarbons, and similar flammable or toxic fluid services. It is not applicable for piping systems on movable structures (e.g., trucks, barges); that are integral to rotating equipment (e.g., pumps, compressors, turbines); internal piping of heaters, boilers, pressure vessels; plumbing, sewer, sanitary service; or non-metallic piping. The specification is also not intended to be used as a substitute for original design and construction requirements.

API RP 576 – "Inspection of Pressure-relieving Devices"

API RP 576 is a Recommended Practice (RP) for the inspection and repair of automatic pressure-relieving devices commonly found in the oil and petrochemical industries, i.e., it is not a design standard. It covers such automatic devices as pressure-relief valves, pilot-operated pressure-relief valves, rupture discs, and weight-loaded pressure-vacuum vents. RP 576 is meant to supplement other API specifications related to pressure relieving devices including API 510, 520, 521, 526, and 527. RP 576 is applicable as recommended practices for covered pressure-relieving devices in gas processing plants.

API 618 – "Reciprocating Compressors for Petroleum, Chemical, and Gas Industry Services "

Designers of gas plants primarily utilize ISO 13631 (which superseded API 11P) in the design of their compression. On the whole, API 618 is primarily utilized by the refining and chemical industries more than US Midstream. Midstream designers will utilize portions of both API 618 and API 11P.

More importantly, this specification has very little bearing on the goals targeted by EO 13650 as the equipment is not associated with any large volumes of hydrocarbon liquid.

API 650 "Welded Tanks for Oil Storage"

API Standard 650 establishes minimum requirements for material, design, fabrication, erection, and inspection of vertical, cylindrical, aboveground, welded storage tanks that are utilized for the storage of petroleum, petroleum products, and other liquid products for which internal pressures are approximately atmospheric pressure. This standard is primarily utilized for storage of large amounts (>10,000 Bbls) of crude oil, gasoline, and diesel fuel and is not widely employed in the design of gas processing plants. These tanks can be, however, found storing Natural Gasoline in LPG tank farms.

API 653 "Tank Inspection, Repair, Alteration, and Reconstruction"

API Standard 653 is the companion document to API 650 for the maintenance of such tankage and does not generally apply directly to gas processing activities nor is it a standard for design.

API 752 "Management of Hazards Associated with Location of Process Plant Permanent Buildings"

API 752 is a RAGAGEP already referenced by OSHA in the PSM standard. No requirements in this standard are going to *prevent* an explosion, vapor cloud or fire, and, therefore, it should not be reiterated herein as it does not fit the purposes stated in the EPA's Advisory.

API 753 "Management of Hazards Associated with Location of Process Plant Portable Buildings"

API 753 is a RAGAGEP already referenced by regulatory agencies for construction or maintenance activities in process facilities. API 753 addresses the location of portable buildings with respect to hazardous environments in processing facilities. It is intended to restrict placing portable occupied buildings in locations that could be subject to explosions, vapor clouds, and fire. At the same time, nothing in this standard is going to prevent an explosion, vapor cloud or fire, and, therefore, should not be considered part of the RAGAGEP oriented towards that endeavor.

API 2000 "Venting Atmospheric and Low-Pressure Storage Tanks"

API Standard 2000 covers normal and emergency vapor venting requirements for aboveground storage tanks designed for operation at pressures from full vacuum through 15 psig (excluding external floating roof tanks). Within a gas processing plant, the requirements of API 2000 apply to natural gasoline and water storage tanks that may be located downstream of gas processing equipment.

API HF 1 ***Hydraulic Fracturing Operations-Well Construction and Integrity Guidelines***

API HF 2 ***Water Management Associated with Hydraulic Fracturing***

API HF 3 ***Practices for Mitigating Surface Impacts Associated with Hydraulic Fracturing***

All three of these documents are restricted to hydraulic fracturing operations which have nothing to do with gas processing or LPG tank farms and terminals.

ISO 13631 "Petroleum and Natural Gas Industries – Packaged Reciprocating Gas Compressors"

The ISO standard 13631 is based on API 11P Specification For Packaged Reciprocating Compressors For Oil and Gas Production Services (and superseded API 11P in 2002). The standard covers the minimum requirements for a packager supplied, designed and fabricated, skid-mounted reciprocating, high speed compressor(s) with lubricated cylinders and its prime movers used in oil and gas production services. The standard (or API 11P prior to 2002) is applicable for gas processing plants for packaged high speed reciprocating compressors.

Similar to API 618, these compressors have very little, if any, impact on the potential for conflagration and explosion resulting from gas processing or LPG tank farm/terminal operations.

ASME B31.1 – "Power Piping"

AMSE B31.1 Power Piping is one Section of the ASME Code for Pressure Piping, B31. ASME B31.1 is intended for applications which include piping typically found in electric power generating stations, in industrial and institutional plants, geothermal heating systems and central and district heating and cooling systems. RAGAGEP for gas processing piping design is ASME B31.3.

ASME B31.8 – "Gas Transmission and Distribution Piping Systems"

ASME B31.8 Gas Transmission and Distribution Piping Systems is one Section of the ASME Code for Pressure Piping, B31. ASME B31.8 covers the design, fabrication, installation, inspection, and testing of pipeline facilities for the transportation of gas. B31.8 is not intended to be used for piping within gas processing plants. To the extent a gas processing plant interconnects with gas transmission systems (e.g., compressor units, metering stations, pig launchers/receivers); some of the interconnected facilities may be considered part of the gas transmission system where B31.8 would be applicable.

International Fire Code

International Mechanical Code

The only elements ever applied to gas processing from either of these codes are the wind loadings used in the design of tall structures such as distillation columns. These codes are generally intended for use in architectural design of buildings and similar structures. They are not intended for use in the hydrocarbon industry.

NFPA 15 "Standard for Water Spray Fixed Systems for Fire Protection"

This code is a companion document to NFPA 30, however, API 2510A has been promulgated as a parallel standard more appropriate to the design of LPG tank farms and terminals.

NFPA 497 "Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas"

This code is intended to work with NFPA 30 and NFPA 70. It provides guidance on how to classify areas depending on the materials present. However, API RP 500 is the document considered RAGAGEP for achieving the same ends in gas processing and LPG tank farm/terminal design.

Steel Tank Institute SP001 "Standard for the Inspection of Above Ground Storage Tanks"

STI SP001 provides inspection and evaluation criteria required to determine the suitability for continued service of aboveground storage tanks until the next scheduled inspection. Storage tanks include shop-fabricated tanks, field-erected tanks and portable containers storing stable, flammable and combustible liquids at atmospheric pressure with a specific gravity less than approximately 1.0. STI SP001 would be applicable for gas processing plant unless the inspection of above ground storage tanks is covered by other standards such as API 653, and/or 12R1.