



## **Additional Q&As**

- **Has Sun built similar high pressure pipelines in PA, and what is their safety record?**

We have operated pipelines safely and according to federal regulations for over 80 years, many of those lines operating at above 1000 psi. Additionally, we have transported natural gas liquids via pipeline between refineries in the Philadelphia region for decades. Our Mariner East 1 system has been transporting ethane and propane safely since December 2014.

Our Inkster-Sarnia line, now part of the Mariner West system, has carried natural gas liquids safely since 1958 through urban, suburban and rural areas of Ohio and Michigan that are not unlike areas of Delaware County.

- **Has Sun discussed emergency response procedures if there is ever a break in the pipeline?**

We have held training sessions with firefighters in Delaware County and with counties all along the Mariner East 2 route. They have been able to tour our facilities, understand the product we are transporting, and how we would work with them in the event of an emergency.

- **What is the safety oversight after the pipeline is installed?**

Both the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration and the Pennsylvania Public Utility Commission regulate us for safety.

- **What will the pipeline be transporting? Will the pipe transport ethane or propane?**

The pipe will be carrying primarily propane and butane, though it may also transport ethane or other natural gas liquids, such as natural gasoline. The pipelines are monitored 24 hours-a-day, 7 days-a-week from Sunoco Logistics control center in Sinking Spring, Pa., in addition to periodic inspections using instruments as well as monitoring on the ground as well as from the air.

- **Will there be any eminent domain acquisition of land?**

As a public utility, Sunoco Pipeline possesses the power of eminent domain under Pennsylvania Law. However, we prefer to negotiate with landowners and only use eminent domain when those negotiations fail.

- **Does Pennsylvania have regulatory authority to oversee intrastate gas pipelines.**

The Pennsylvania Public Utility Commission oversees the safety of intrastate pipelines, along with the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA). That includes periodic audits and inspections, in addition to regulatory standards and required self-reporting.

**Question: What are Failure Rates on in-ground Sunoco Logistics Pipeline?**

Regarding Sunoco Logistics safety statistics, we report everything to the U.S. Department of Transportation Pipeline and Hazardous Materials Administration.

The summary of those incidents is below:

**Sunoco Pipeline L.P.**

**All Incidents, All Pipeline Systems <sup>(3)(4)</sup>: 2006 - 2016**

Year	Number	Fatalities	Injuries	Property	Gross Barrels Spilled (Haz Liq) (B)	Net Barrels Lost (Haz Liq) (B)(C)
				Damage (A)		
2006	28	0	0	\$957,179	1,423	545
2007	25	0	1	\$4,462,834	2,696	1,491
2008	23	0	0	\$2,274,784	577	257
2009	23	0	0	\$2,282,837	5,041	2,557
2010	26	0	0	\$1,571,302	324	269
2011	21	0	0	\$1,789,272	1,537	1,127
2012	25	0	0	\$19,734,998	2,142	1,378
2013	36	0	0	\$8,165,845	1,863	772
2014	19	0	0	\$1,270,649	505	165
2015	31	0	0	\$4,452,222	1,346	95
2016 YTD	12	0	0	\$594,950	281	59
<b>Totals</b>	269	0	1	\$47,556,872	17,742	8,721

These statistics should be regarded with the following in mind:

- Of the 269 reported incidents, most were small in nature and **70 percent happened on Sunoco Pipeline facilities**. The vast majority (90 percent) were completely contained on those facilities. (Slides attached, PIPELINES VS FACILITIES)
- **Virtually all of the “Property Damages” are damages sustained by Sunoco Pipeline or dollars paid by Sunoco Pipeline for cleanup.**
- **In the last five years, Sunoco Pipeline reported a total of 3 pipeline releases in Pennsylvania**, plus 13 releases that were totally contained on Sunoco Pipeline facilities, including 9-barrell release in May at the Twin Oaks terminal in Aston. (See attached Excel spreadsheet, LIQUIDS PIPELINE STATS - MIDDLETOWN, chart SUNOCO PIPELINE PA)

- **In the last 20 years, for all operators of liquids pipelines in Pennsylvania (Mariner East 1 & 2), there have been no deaths resulting from pipeline releases, and two injuries.** One of those injuries was a 70-year old man who went to the hospital for observation after striking a Sunoco gasoline pipeline.
- Sunoco Pipeline takes seriously its responsibility to protect the communities we serve and the environment, and we proactively continue to take significant steps toward the goal of zero releases along our pipeline systems.

Since our current leadership team took over in 2012, Sunoco Pipeline has enhanced and improved our integrity management program to include more frequent inline testing, pressure testing and more frequent external monitoring. We have accelerated our inspection programs, and between 2012 and 2015, for instance, we doubled the number of miles we inspected with in-line tools or hydrotested with water at high pressures to confirm pipeline strength and condition. Many of these actions exceed federal regulations.

These measures were based on an in-depth analysis of previous pipeline integrity results, which found a high number of incidents at facilities and on some crude pipelines. Specifically, we found that low-flow crude pipelines – pipeline systems that are used intermittently – were a significant source of releases. We developed a program to reassess, repair, and/or shut down those crude lines as necessary, and installed a new leak detection system.

The analysis did not show similar issues on our refined products or natural gas liquids pipelines. Nevertheless, for our Mariner NGL systems, we are taking an aggressive approach to the safety of those lines, installing advanced safety systems and accelerating safety inspections and testing programs in excess of federal regulations. We patrol the pipeline right-of-way twice a week, for instance, when we are only required to survey twice a month.

We also instituted an Operations Excellence team, which augments our integrity efforts with better procedures, training and overall management of the assets. The group is currently engaged in the implementation of a Pipeline Safety Management System, which follows the American Petroleum Institute recommended practice and is fully supported by the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration.

Regarding our facilities, we have implemented aggressive new standards, training and protocols, which have already shown results, according to internal and external audits. Between 2013 and 2015, according to PHMSA data, Sunoco Pipeline cut by 2/3 the number of barrels lost when compared with the previous three years, indicating that our actions are working.

- **Number of inspectors during construction and ongoing**

Project briefings have been underway with officials from the Department of Transportation's Office of Pipeline Hazardous Material Safety Administration (PHMSA) and Pennsylvania Public Utility Commissions Pipeline Safety.

Inspection personnel have been granted access to an internal work site to ensure information is readily available to inspection personnel and teams assigned to the project.

As the question relates to staffing levels of regulatory authorities, we agreed to not list names or numbers of inspectors as that should come from the PHMSA or PA PUC agency leader(s).

Both PHMSA and PUC officials have indicated that each agency would staff the project appropriate to the level of construction activity in progress.

In addition to PHMSA and PUC Inspectors, additional inspectors are assigned:

- Subcontracted inspectors exceed one per crew for construction and welding.
- There is one inspector with every crew and the inspectors are task specific qualified.
- In addition we also have environmental specialists, Quality Assurance /Quality Control inspectors, and inspection supervision that maintain responsibility across our pipeline construction.

The only exception is station work.

- For work stations, there is one inspector full time to the site.
- Environmental and electrical inspectors will cover 2-3 sites and move between the sites dependent upon where the work is place.
- Welding is still one inspector per site.

We cannot provide exact numbers at this time since it is still being determined the exact number of work crews each contractor intends to put on the project.

- **Who monitors Sunoco monitoring the pipeline during and after construction?**

Both the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration and the Pennsylvania Public Utility Commission regulate safety during construction and after. We are also subject to inspections during construction by the Army Corps of Engineers, the Pennsylvania Department of Environmental Protection, U.S. Fish and Wildlife, PA Historical and Museum Commission, and other agencies.

- **Manufacturing of the pipeline and its installation**

All of the pipe that is going to be used on ME2 has been manufactured in accordance with the widely used, industry standard; American Petroleum Institute (API) 5L - Specification for Line Pipe. The pipe Specification is PSL 2, Grade X65, and has a Specified Minimum Yield Strength (SMYS) of 65,000 psi with a wall thickness is 0.380" (0.456" for bores and drills).

Increased pipe thickness (0.456") is used for horizontal bores and horizontal directional drilling to account for additional stresses that may be exerted on the pipe when it gets pulled through the drilled hole. The drill machines are equipped with strain gauges to monitor and ensure the pipe stress is not exceeded during the pull back. Additionally, cryogenic effects have been taken into consideration in selection of both the pipe specification, as well as the welding procedures.

- **Is a "Water Hammer Type Effect" a concern?**

In response to the question about "water hammer", the entire pipeline has been modeled in a computerized database, and advanced flow models were created to evaluate the effect of a sudden valve closure on the line. This is known as a Surge Analysis, or Surge Study.

- **How long does it take close automated valves?**

The automated valves are designed to close in 60-120 seconds, yet we performed the calculations with a 2.5 second closure rate against full flow with each product type/mixture that can flow through the line. All scenarios in the Surge Analysis exceed federal requirements, and these surge studies are required to be provided to PHMSA for review prior to putting the line into service.