

**Summary of Testimony
Statement by Daniel M. Evans
Project Manager
Fluor Federal Petroleum Operations, LLC**

**Hearing on
“DOE Modernization:
Legislation to Authorize a Pilot Project to
Commercialize the Strategic Petroleum Reserve”**

July 24, 2018

- As a result of Congressionally mandated crude oil sales, the SPR anticipates having approximately 300 million barrels of unused cavern storage capacity by the end of FY2027.
- SPR caverns are designed for long-term storage. Consequently, they can sustain relatively few storage and retrieval cycles.
- To protect the cavern asset, considerable investment and a significant period of construction are necessary to develop a salt brine source to support product retrieval operations.
- In addition to fiscal matters, Congress should carefully consider two policy issues prior to finalizing any leased storage program:
 1. The future inventory requirements of the SPR, as the government forecasts that net imports will be negligible by 2030.
 2. Whether the SPR should accept crude oil for storage under a single specification, allowing commingling of oil by multiple lessees, or only storage segregated from the SPR inventory as well as other lessees.

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**Project Manager
Fluor Federal Petroleum Operations, LLC
Contractor to the U. S. Department of Energy**

**Before the
Subcommittee on Energy
House Committee on Energy and Commerce
U.S. House of Representatives**

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Commercialize the Strategic Petroleum Reserve”**

July 24, 2018

Good morning, Chairman Upton, Ranking Member Rush, and Members of the Energy and Commerce Subcommittee on Energy. My name is Dan Evans. I am the Project Manager of Fluor Federal Petroleum Operations (“FFPO”), the current Management and Operations (“M&O”) contractor for the U.S. Department of Energy (“DOE”) at the Strategic Petroleum Reserve (“SPR”). Today, I am representing our more than 500 employees located at six SPR facilities in Louisiana, Texas, and Mississippi.

Fluor Corporation

Founded in 1912, Fluor Corporation is one of the world’s largest publicly traded engineering, procurement, construction, maintenance and project management companies. A Fortune 500 company with over 56,000 employees, Fluor serves multiple business segments, including energy and chemicals, industrial and infrastructure, power, as well as providing services to United States Government and international agencies across the globe.

In 2017, 55% of Fluor’s revenue came from the energy, chemicals, and mining business segment. Projects around the world include building production facilities, pipelines, refineries, liquid natural gas, and petrochemical plants. Our government business line accounted for about 6% of revenue in 2017, supporting largely the Department of Energy, the Department of Defense, and the Department of Homeland Security. Fluor’s partnership with the Department of Energy dates back to the Manhattan project. Today, in addition to the SPR, we currently have active roles at DOE facilities as part of the Environmental Management and National Nuclear Security Administration missions.

Fluor also has over 50 years of experience in the oil and gas industry and continues to expand on its experience in the Gulf Coast, from the construction of refineries, to recently completing expansions on those refineries, and providing maintenance support to clients into the future. Our ability to deliver experience both in the commercial and government sectors contributes to the success at SPR.

SPR Background

The mission of the SPR is to protect the United States economy from severe petroleum supply interruptions through the acquisition, storage, distribution, and management of emergency petroleum stocks, and to carry out U.S. obligations under the International Energy Program, which established the International Energy Agency (“IEA”).

The SPR currently has a crude oil storage capacity of 713.5 million barrels (“MMB”) and an inventory of approximately 660 MMB. As required by Congress, the SPR inventory level will be reduced to about 405 MMB by the end of FY 2027. Primarily distributed across three of the four SPR storage sites (Bryan Mound and Big Hill in Texas, and West Hackberry in Louisiana)

there will be approximately 300 MMB of unused storage capacity available by that year. The fourth and by far smallest SPR storage site, Bayou Choctaw in Louisiana, is not anticipated to significantly contribute to the volumes sold.

It is important to note that when the mandated sales are completed, the SPR will be unable to fully deliver its current mission requirement (under current IEA guidelines) of 4.4 MMB per day to the commercial marketplace for a period of 90 days. This will be a consequence of a lack of sufficient inventory distributed among the SPR's 60 storage caverns. Of course, any additional reduction of inventory (through sales or for other purposes) may limit the ability to maintain compliance with international requirements. Congress should consider the drawdown requirements if it decides to transition to a new role for the SPR.

Current Maintenance and Operations

At the SPR, crude oil is stored within salt caverns, large cavities mined in salt domes. These caverns typically have containment volumes ranging from 11 MMB (442 million gallons) up to 35 MMB (1.47 billion gallons) and crude oil storage capacities of approximately one-half a million barrels less than the full cavern volume. Their nominal replacement value is \$5 USD per barrel, or typically \$55 million per cavern.

The caverns are created by solution mining: the injection of water which dissolves the salt of the dome, creating a salt brine solution that is disposed of. Similarly, stored crude oil is produced from a cavern by injecting water to displace the crude oil, driving it into the product delivery infrastructure. Both the creation of the storage volume and the production of crude oil from storage dissolve the salt containment, increasing cavern volume. A finite quantity of salt

can be dissolved before the cavern becomes mechanically unstable and no longer suitable for crude oil storage.

Consequently, the number of times a storage cavern experiences a drawdown determines the operable lifetime of a cavern. SPR storage caverns were designed for infrequent use -- five complete drawdowns of stored crude oil, or five cycles of water injection. Absent significant infrastructure improvements, the caverns' operable lifetime can be quickly depleted through more frequent use.

The infrastructure required to maintain cavern integrity is a means of accessing large volumes of salt brine on demand, as a substitute for water during cavern drawdown. Salt brine has minimal effect upon the dissolution of a cavern's salt containment as it is already partially or fully saturated with salt; as a result, it is unable to accept significant volumes of additional salt into solution. Consequently, the useful life of a cavern is extended. The salt brine volumes required to empty a cavern could be in the range of 10 MMB (hundreds of millions of gallons). Regardless of the means of production, these volumes of brine cannot be sourced without significant investment.

The Congressionally mandated sales have changed the day-to-day operations of the SPR dramatically. The sites have gone from a 4.4 million barrel per day drawdown readiness posture to maintaining drawdown readiness while conducting intermittent, variable-rate deliveries from the reserves. FFPO has met this challenge. One example is the response to the impacts of Hurricane Harvey. We were able to maintain mission drawdown readiness throughout the event and deliver approximately 5MMB of crude oil to refineries in need. I would like to note that to support this need, certain employees volunteered to leave their own houses and families to

endure the hurricane at the Bryan Mound site in Freeport, TX. Throughout the storm employees monitored site conditions and provided real time updates on the readiness of the site to fulfill its mission. The dedication of SPR employees to the mission is American exceptionalism at its finest.

The sales have and continue to put a significant level of stress on aging SPR infrastructure. In some cases, we have had to postpone plans for planned maintenance and divert funding to address emergency repairs. As we continue the drawdown over the next nine years, Congress should not lose sight of the importance of SPR's annual funding to be able to address the needs of the sites, and make necessary repairs to safely execute the current planned drawdown schedule.

Potential Leasing of Underutilized SPR Storage Facilities

FFPO stands ready to support the leasing and operation of underutilized storage capacity and since 2014 has demonstrated its good stewardship of taxpayer money. We appreciate that in the draft legislation, the Committee has provided the authorization, without further appropriation, to use a portion of the lease revenue for the costs related to the storage and removal of petroleum products incurred by the SPR as a result of the leases.

FFPO believes that certain investments will need to be made in facility modifications prior to engaging in a pilot storage program. Although the draft legislation provides for reimbursement of costs incurred during leasing activities, it does not explicitly provide funding for necessary facility modifications. The extent of the modifications required will vary depending upon the lease terms. Long-term storage (many months to years) is more readily

accommodated by the current infrastructure; shorter lease periods (weeks to a few months) will require significant investment to extend the operational lifetime of the assets.

Leased Storage Models

Commercially leased petroleum storage presently operates under one of two models: segregated or commingled. In segregated storage, typical of above-ground storage of tank farms, the product accepted for storage is the same product that is ultimately delivered. This is a relatively simple accounting method.

Under the commingled model, a limited range (type, quality) of products are accepted for storage. All comparable products (*e.g.*, crude oils conforming to a particular specification) are stored without regard to preserving ownership identity. When a withdrawal is made, a product of agreed-to specification is provided that is equivalent to the product that was accepted for storage. Commingled storage is practiced by cavern storage operations similar to the SPR; a relevant example is the Louisiana Offshore Oil Port (“LOOP”) that accepts only defined grades of sour crude oil for storage.

Either model presents challenges to leasing storage in SPR facilities while maintaining government inventories. Presently the government practices intensive inventory management, segregating crude oil by two specifications (maximum sulfur content of 0.5% by volume and 0.5+ to 2% sulfur content) and tracking the volumes to the barrel, not only across storage caverns but within piping and pipelines and crude oil storage tanks. Current practices are not readily amenable to commingled storage.

Segregated storage also presents challenges. If the SPR designates specific caverns for leased storage, commingling inventory only to the extent that it is all sourced from lessees, the

cavern is nonetheless integrated into the site infrastructure. A storage cavern requires the ability to convey crude oil, water, and salt brine into and out of the cavern for purposes of preventative and corrective maintenance. The cycling of fluids in and out of a leased cavern with equipment in common with the SPR storage caverns will inevitably lead to commingling of government and commercial assets. This commingling will lead to complex accountability issues which may drive the need for additional capital investments to ensure that the differing inventories are appropriately segregated.

Conclusion

Two issues require resolution prior to implementing a leased storage concept. The first is the target inventory level of the SPR, as this will determine the storage capacity available for lease. The SPR inventory goal has traditionally been rooted in satisfying our International Energy Agency (IEA) obligations to possess an inventory equivalent to 90 days of net crude oil imports. DOE and Congress are currently working to determine the appropriate level of SPR reserves based on global market conditions that are markedly different from the mid-1970s.

Congress should also carefully consider the overall leasing concept to be adopted by the SPR. At issue are such things as inventory segregation and minimum storage period, as discussed above. FFPO believes that the time period prior to the completion of legislatively mandated crude oil sales, at which time sufficient excess storage space becomes available, would most productively be spent in addressing these and other policy driven issues, and arriving at an agreement among all stakeholders as to the approach to be adopted. Congress should ensure that, once it defines any new mission, it allows for adequate time to develop and physically implement the SPR storage site enhancements necessary to facilitate storage space leasing.

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Mr. Chairman, thank you again for the opportunity to appear here today. I would be happy to answer any questions you may have.