Abstract

Conventional underground storage sites are being considered for further development. Potential locations and additional sites are in the process of being identified to support the energy needs of the region. Many large underground gas storage caverns are currently operating in the United States. However, several are in the process of being abandoned because of low deliverability. The U.S. Department of Energy has concluded that the U.S. has the capacity to develop additional underground storage capacity in many areas, and these sites are being developed to support the energy needs of the region.

Need for natural gas storage - Southeastern U.S.

Statement of Problem

The need for additional natural gas storage is essential for the energy needs of the region. It is estimated that the U.S. has the capacity to develop additional underground storage capacity in many areas, and these sites are being developed to support the energy needs of the region.

Preferred Storage Option

Underground Storage of Refrigerated Natural Gas in Granites of the Southeastern U.S.

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Underground Storage of Refrigerated Natural Gas in Granites of the Southeastern U.S.

Underground Storage instead of surface storage is preferred to prevent emergency shortages in the event of natural disasters or terrorist attacks. But conventional underground storage sites (depleted oil and gas reservoirs, salt caverns, etc.) have limitations. The need for underground storage justifies the higher costs of underground excavations, such as the type described by PB-KBB corporation, these facilities = $345 million ($1999); Sofregas facility = $173 million ($1998). The impermeable, high strength rock mass eliminates the need for liner construction. PB-KBB (1998) studies indicate the rock mass is capable of sustaining large underground openings, with suitable thermal properties.

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We propose an additional refrigerated underground storage cavern type of cavern for the Southeastern U.S. The cavern is designed to store refrigerated natural gas at pressures up to 1250 psig and temperatures below -20°F. The cavern is designed as a refrigerated mined storage cavern, with a capacity of 5 BCF at a cost of ~$200 million. Nominal RMC depth is 3,000 ft. RMC facilities provide high security, emergency supplies during natural or man made attacks and underground storage requires less surface land. But conventional underground storage sites (depleted oil and gas reservoirs, salt caverns, etc.) have limitations. Underground Storage instead of surface storage is preferred to prevent emergency shortages in the event of natural disasters or terrorist attacks.

Technical report NGS 2018-14

Statement of Problem

Need for natural gas storage - Southeastern U.S.

Preferred Storage Option

Refrigerated Mined Cavern (RMC)

The RMC cavern has the potential to store large volumes of refrigerated natural gas. The cavern is designed as a refrigerated mined storage cavern, with a capacity of 5 BCF at a cost of ~$200 million. Nominal RMC depth is 3,000 ft. RMC facilities provide high security, emergency supplies during natural or man made attacks and underground storage requires less surface land. But conventional underground storage sites (depleted oil and gas reservoirs, salt caverns, etc.) have limitations. Underground Storage instead of surface storage is preferred to prevent emergency shortages in the event of natural disasters or terrorist attacks.

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