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**Workover of Domal Cavern Wells Under Gas Pressure  
Without Snubbing**

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# WORKOVER OF DOMAL CAVERN WELLS UNDER PRESSURE WITHOUT SNUBBING

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## Abstract

The long-term operation of salt caverns requires periodic wellhead replacement and wireline inspections which often necessitates removing hanging strings from the wellbore. The safest option for wellhead replacement on a gas cavern is to de-pressure the cavern by filling it with brine or water. However, there are various situations that make liquid filling unsafe, impractical, uneconomical, or generally undesirable from a geomechanical perspective.

Snubbing is the accepted way to perform workovers with cavern pressure, but it is not an option for larger diameter hanging strings and is not always the safest, fastest, or most economical option for other hanging string sizes.

This case study describes steps used to drop hanging strings into large capacity, domal salt caverns in the southern United States and subsequently replace the wellheads while maintaining gas pressure on the caverns.

These gas workovers were conducted with cavern pressures of 700-1,100 psig and included dropping hanging strings with diameters of 4-1/2" to 16" (114.3-406.4 mm). The strings were cut via wireline using split shots, severing tools, and mechanical pipe cutters with additional cuts made on coil tubing using mechanical and hydraulic cutters.

Cavern gas pressure was isolated for wellhead replacement using wireline-run, capillary-set inflatable bridge plugs which were covered in cement in some scenarios. Bridge plugs were tested before wellhead replacement using negative tests and by measuring the volume to fill the casing. In most cases, the gas pressure was counteracted by filling the casing with a liquid of appropriate depth and density to create enough hydrostatic pressure to leave the bridge plug with little or no differential pressure.

These gas workovers have proven to be a safe, economical option when the latest bridge plugs and appropriate testing methodology are used.

**Key words:** Caverns for Gas Storage, Caverns for Liquid Storage, Workover, Wellhead, Snubbing, MIT