

**SOLUTION MINING
RESEARCH INSTITUTE**

3336 Lone Hill Lane
Encinitas, California 92024, USA

Telephone: 858-759-7532 ♦ Fax: 858-759-7542
www.solutionmining.org ♦ smri@solutionmining.org

**Technical
Paper**



**Practical Use of Alternative Cushion Gas
in Salt Cavity Storage
Part II – Pressure and Content Performance**

M. R. Tek

**Consultant
Kailua-Kona, Hawaii, USA**

**Spring 1996 Meeting
15 – 16 April
Houston, Texas, USA**

PRACTICAL USE OF ALTERNATIVE CUSHION GAS IN SALT CAVITY STORAGE

Part II Pressure - Content Performance

M.R.Tek

ABSTRACT

Alternative cushion gas in underground storage has been of interest since the late seventies when Colonna and Dussaud first presented the concept of inert gas injection as a partial substitute to cushion gas in aquifer storage reservoirs^{1*}. The complete substitution of alternative cushion gas in salt cavity storage was first suggested during early nineties by this author^{2,3}.

The economic advantage related to savings in the relative cost of the cushion gas and the full saving of the cost of dehydration provided the incentive for subsequent studies which indicated that there was yet another advantage of using a separate cushion gas confined to the cavity. This was to increase the top gas ratio of natural gas marketed during each cycle. The paper shows that this ratio drastically increases from 25 to 50% in the case of conventional salt cavity storage to some 95% + in storage using alternative cushion gas. The paper discusses the pressure-volume-temperature effects expected to occur in a cavity, the volume of which is shared by a top gas contained in the bladder and a substitute cushion in the cavity outside the bladder.

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