

SOLUTION MINING RESEARCH INSTITUTE

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Gérard Durup, Research Coordinator

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SMRI Request for Proposals RFP 2013-1

Tools for designing the safe distance of salt caverns to a domal boundary

Background

As more caverns are developed within the boundaries of a salt dome, the caverns are progressively getting closer to the flanks of the salt dome. Recent occurrences of cavern collapse and sinkhole formation have highlighted the necessity to further examine the design or operation of these caverns located in close proximity to domal boundaries and the need to better define and monitor the relationship between the cavern limits and the salt dome flank. SMRI considers that our industry must pursue efforts (1) to improve the quality of current mechanical stability assessments for salt caverns positioned near the edge of salt domes and to better define for our industry what is the safe distance between a salt cavern and the edge of a salt dome, and (2) to identify what methods are available for accurately measuring the distance from the cavern boundaries to the edge of a salt dome, and what are the corresponding accuracies. Thus, the potential maximum capacity of a cavern field on a salt dome could be more accurately assessed.

The SMRI recognizes that the development of such improvements will require research efforts in several directions, including for example the identification/development of adequate techniques to define reliably salt dome geometry and boundaries, improved characterization of the sediments surrounding the salt dome for a better evaluation of their impact on cavern stability, more adapted geomechanical assessment procedures, or adapted schemes of monitoring, etc.

The present RFP addresses all research that can potentially improve the reliability of stability assessments of salt caverns located in close proximity to the boundary of salt domes.

Scope of Work

The SMRI solicits proposals to develop a document titled “Improvements for evaluating the structural stability of salt caverns located near domal boundaries”, consisting of a main document with a maximum of 50 (fifty) pages, plus appendices. This deliverable will focus on the underground stability aspects of a solution-mined salt cavern, specifically developed at the proximity of a salt dome boundary will highlight all those aspects which are of primary importance/interest for the long-term structural stability of the cavern at the dome edge, will identify/recommend/develop tools for improving the definition of the “safe” distance to the edge of the dome, and will include but not be restricted to, at least the following items:

- an overview of the existing state-of-the-art methods for locating salt caverns at the edge of a salt dome in major “salt cavern countries”;
- the identification/development of adequate techniques to reliably identify salt dome geometry and boundaries and definition of the accuracy of said techniques
- recommendations and methods for an improved characterization of the surrounding sediments, dome structure and boundary zones, to improve the evaluation of their potential impact on cavern stability;
- recommendations and methods for enhancing geomechanical assessment procedures;
- recommendations for appropriate monitoring measures to enable a fast response in case of undesired developments;
- Other relevant items.

The SMRI recognizes that this study will require a wide range of competences: geology, geomechanics, geophysics, logging, seismic measurements, solution mining, etc. And that additionally, it needs to integrate existing knowledge and practices from different countries. Consequently, it will favour responses from international research teams re-grouping experts covering the anticipated range of intervening competences.

Proposal Instructions

Respondents to this RFP should provide a reasonably brief proposal (less than 5 pages) describing the proposed effort, a specific discussion of the research technical approach, the intended working structure within the research group, the project schedule, the project cost, and the respondent’s qualifications for executing the effort.

Proposals should include an option for presenting semi-annual progress reports and final project results to the SMRI membership at future SMRI meetings. Proposals should clearly state the cost and schedule for performing the proposed work, and a separate cost for the presentations noted.

Proposals should be submitted in electronic form via email to Gérard Durup (gerardd@solutionmining.org), SMRI Research Coordinator, by December 31, 2013. Any questions relating to the RFP should be directed in writing to the Research Coordinator. The SMRI will review all proposals and determine those proposal(s) worthy of funding. SMRI has the right to select or reject any or all proposals. Please state if SMRI may make your proposal available to our members and/or the public.

Contract Award

The SMRI expects to award one or more **fixed price contracts** for this effort at the latest at its 2014 spring meeting in San Antonio, TX, if an acceptable proposal(s) is submitted. The contract(s) will require submittal of a draft report at a date to be specified in the proposal. The SMRI will provide comments on the draft report within four weeks and a final report responding to the review comments will be due within four weeks following receipt of the SMRI comments on the draft report.

The SMRI will pay for the contracted effort, only following acceptance of the final report.