

RVL 4-8-1

Historical Information
H.2 Biological Studies

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Book 1

Ad Hoc Rulison Review Panel
Comments Regarding Re-Entry,
Gas Reservoir Testing and Flaring,
November 21, 1969

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4-8-1

November 21, 1969

Mr. Robert E. Miller, Manager
Nevada Operations Office
U. S. Atomic Energy Commission
Post Office Box 14100
Las Vegas, Nevada 89114

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Dear Mr. Miller:

Members of the Ad Hoc Rulison Review Panel met on 20 and 21 November, 1969, at the AEC's San Francisco Operations Office to review data concerning predictions and evaluations of bio-environmental as well as engineering aspects associated with re-entry, gas reservoir testing and flaring. Considerable discussion was stimulated during the review period and the Panel appreciates the opportunity to participate in this Plowshare activity. In general the Panel feels complete confidence in the adequacy of safety preparations and that the extremely small potential risks are well within acceptable limits.

The comments of the Panel are presented herein in two parts: (1) engineering and (2) bio-environmental aspects of the re-entry and testing operation. In addition a rather precise statement of our conclusions concerning the safety aspects of the operation is appended.

ENGINEERING

Comments on Appendix "A"

The plans and equipment described in Appendix "A" provide a near minimum risk operation. Several points, however, are worth consideration.

1. In view of the previous problems with mud contamination of stream water, a dike or holding pit arrangement should be provided to catch any drilling or washdown fluids which might escape the circulating or storage pits.
2. The testing procedure outlined for the BOP system is excessive to the point that it will be detrimental to safety. The daily

operation of RAM-type BOP's is desirable, but pressure testing weekly is preferable since pressure applications eventually degrade the integrity of the various seals included in BOP's. More important is a restriction on testing of the Hydril. It should be tested to its working pressure once when installed. Thereafter, testing should be restricted to weekly operation and pressure application restricted to 1,000 psi. At these tests the Hydril should be closed only on the largest diameter pipe normally run through it.

3. Every effort should be made as soon as possible and periodically to sample the gas from the R-E well. Several purposes will be served. Analyses will be invaluable when re-entering the chimney. Withdrawal of a small amount of gas may aid in determining the condition of the stemming material in the well bore.
4. For practical purposes, no hazard is existent in this procedure except for a few relatively short periods. Although these periods are critical, they are conditions which are encountered in normal oil and gas drilling operations (often unexpectedly) and techniques are readily available for their control.

Fractures may radiate outward from the chimney to some distance. Should such fractures be encountered, a partial loss of drilling fluid may occur. It is also possible that some gas may be circulated to the surface with the returning drilling fluid. This gas and the drill cuttings returning with it would be radioactive and it would be necessary to adequately control and dispose of these materials. The pressure in the chimney is insufficient to blow 9.0 ppg fluid from the hole should the pressure be encountered below 6,500 feet.

Should the bit encounter the chimney void space without warning the drilling fluid will drop rapidly and the well pressure will be applied at the surface.

The most critical operation to be performed is the removal of the drill pipe and insertion of the downhole production equipment. These operations should take place only in daylight hours. Testing, flaring and effluent handling procedures and equipment are adequate and pose no problems. Possible leakage from all tanks, vessels, and receptacles should be protected by adequate dikes. A 24-hour guard patrol should be provided on site after testing commences.

In summary all of the plans and procedures for re-entering and testing represent standard operating procedures for oil and gas drilling and production operations. These procedures are

dependable to the degree that the probability of an occurrence of the AEC's maximum credible accident is in the order of less than one in one million.

BIO-ENVIRONMENTAL

The Panel is pleased to note that the safety aspects of Rulison involve the standard operation procedures followed by the Nevada Operations Office as well as additional activities specifically designed for Rulison. We realize that some of these additional activities are not warranted from an implied risk, but are highly desirable as a result of unique problems arising from public concern.

Essentially our comments can be summarized as follows:

1. It is vital that reliable radionuclide background values for selected foods and water of wildlife, domestic livestock and humans be obtained prior to re-entry. Emphasis should be on tritium levels.
2. Engineering operations during and following re-entry (2 or 3 days) should not be conducted under periods of unusually heavy rainfall.
3. Available data on fetal mortality, cancer incidence, current cancer cases, medical resources, and characteristics of the medical data available should be obtained prior to re-entry for the surrounding communities, even though we firmly believe that there will not be an increase in cancer or fetal mortality resulting from Rulison.
4. Predictions of radionuclide contamination in the environs should not only include the worst possible case but, more appropriately, the most probable case. That is, we encourage consideration of the worst case provided that it is accompanied by a statement of the probability of such an event as well as an evaluation of the most probable event.
5. In all future sitings of detonations for oil and gas fields, consideration should be given to biomedical and ecological factors as assessed by professionals in these fields.
6. Ecological effects in the natural environment, distinguished from that of man and his domestic species, are not anticipated, e.g., on the deer populations and their winter ranges.
7. Although not specifically applicable to Rulison, we feel that consideration should be given to monitoring select personnel in future operations of this type, as research opportunities exist and not because of our concern for undetected injuries in the past. For example, this might be done by monitoring urine samples of the rad-safe monitors.

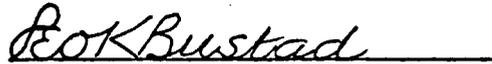
SUMMARY

Based on implementation of the above recommendations and the material presented to us during this review, we believe that completion of Rulison can be accomplished within accepted safety standards.

Respectfully submitted,



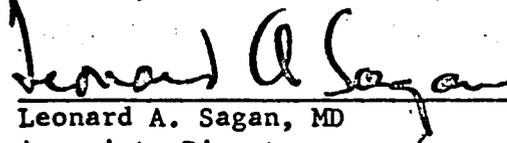
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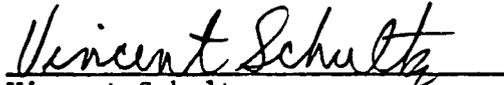
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