

PREPARED TESTIMONY OF WILLIAM J. SHELLEY  
MATTER OF KERR-McGEE CORPORATION  
AMENDMENT TO SOURCE MATERIAL LICENSE SUB-1010  
ATOMIC ENERGY COMMISSION

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As Director of Regulation and Control for Kerr-McGee Corporation, I have the responsibility for preparing and filing Applicant's Environmental Reports. Supplement #3 to the Environmental Report, Docket No. 40-8027, discusses the various alternatives in the disposal of liquid raffinate wastes, including a cost-benefit analysis. A copy of Supplemental #3 is attached hereto and made a part hereof. It is still the opinion of Kerr-McGee that the use of the deep well for disposing of liquid raffinates provides the least hazard to the environment of any of the possible processes and is the most cost-effective of the possible processes.

In preparation for this hearing, the Quality Control Laboratory at the Kerr-McGee Sequoyah Facility and the Analytical Section of the Kerr-McGee Technical Center prepared at my direction a typical analysis of the liquid raffinate proposed to be disposed of in the deep well at Sequoyah Facility and the formation water found in the Arbuckle Formation in the proposed disposal well. These analyses were made at my direction, under my general supervision and control and are true and correct to the best of my knowledge

*what does  
this mean  
how come it  
differs from  
application*

and belief. The typical analysis of these liquids is shown on Figure 1, attached hereto and made a part hereof.

In Exhibits I and H to its Application, Kerr-McGee explained its Monitoring Program for Surface and Shallow Subsurface Liquids and Deep Well Liquids. After further study of the monitoring problems, Kerr-McGee proposes the following program. *MCN?*

#### MONITORING PROGRAM

##### SURFACE AND SHALLOW SUBSURFACE

A monitoring program of surface and shallow subsurface liquids from nearby streams, run-off collection ponds, and shallow wells will be carried out to confirm that the deep well reservoir containing fluid and injected wastes are being confined at the lower levels as planned. In the unlikely event that some type of loss of confinement occurred which was not detected by other means as planned, the monitoring program will provide early warning so that environmental effects will be avoided or minimized through the appropriate action. *what action means?* *what kind of action*

The monitoring program of sampling and analyses shown in the attached table will detect the presence of either waste fluids or formation waters which are very high in calcium, sodium, chlorides, and bicarbonates.

Sample Source	Sample Volume	Sampling Frequency		Sample Analyses Performed									
		Collection	Analysis	=	S	U	F	N	Ra	Ca	Na	Cl	HCO3
<u>Rivers and Creeks</u>													
a) Arkansas River-Upstream	1 gal	Weekly	Monthly	X	X	X	X	X	X (Qtrly)	X	X	X	X
b) Arkansas River-Downstream	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
c) Illinois River-Upstream	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
d) Illinois River-Downstream	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
e) Salt Fork Creek	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
f) Vian Creek	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
g) Dirty Creek	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
h) K-M South Creek (Terrell Branch)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
<u>Lakes and Ponds</u>													
a) Tenkiller Lake (7 miles North of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
b) Sourface Pond (1/4 mile South of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
c) Surface Pond (1/2 mile East of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
d) Surface Pond (1/4 mile Southeast of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
e) Surface Pond (1/2 mile Southeast of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X



Sample Source	Sample Volume	Sampling Frequency		Sample Analyses Performed									
		Collection	Analysis	α	β	U	F	N	Ra	Ca	Na	Cl	HCO <sub>3</sub>
<u>Shallow Wells</u>													
a) K-M Monitor Well (3/4 mile East-Southeast of Facility)	1 gal	Weekly	Monthly	X	X	X	X	X	X (Qtrly)	X	X	X	X
b) Carlisle School Well (1 mile East-Northeast of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
c) Domestic Well (1/4 mile South of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X
d) Residence Well (1/2 mile Northeast of Facility)	1 gal	"	"	X	X	X	X	X	X "	X	X	X	X

Why one  
month  
stems  
short  
only?  
sample?

Does this  
include  
the

## DEEP WELL

Based upon the observations by H. J. Gruy and Associates and their conclusion as to the sensitivity of their model, Kerr-McGee would employ the model to predict the time versus

volume relationship of the falloff curve. A sensitive down-hole pressure measuring instrument would be used initially until pressure in the well builds sufficiently to permit reliance on wellhead pressure measuring equipment.

Initially a program to confirm the model would be conducted. This program would consist of the injection of neutralized and diluted fluid from the storage ponds (to avoid cavitation of the well bore) in a series of approximately five sequences conducting a test for pressure falloff subsequent to each sequence. Upon collection of this data, the results of the falloff curve would be matched against the model as were the original test results. Currently, each sequence contemplates the placement of 16,000 barrels or 672,000 gallons for a total accumulation of 80,000 barrels or 3,360,000 gallons. It is believed that these test sequences would result in building the bottom hole pressure to approximately 15 lbs. after 10 days of falloff time so that pressure measuring instrument sensitivity would be eliminated as an uncertainty in the model versus historical pressure falloff comparison.

Subsequent to this test series, upon confirmation of the exact accuracy of the model, raw raffinate would be injected and a pressure falloff test would be conducted monthly for the first three months, then quarterly until

the end of the first year. At this time, a pressure fall-off test would again be conducted and the model adjusted for the cavitation expected to occur as a result of the disposal of acidic raffinate. Based upon this test, the model would be revised to accurately predict the results of such cavitation and a pressure falloff test conducted each six months to confirm the results predicted by the model. In the event of significant mismatch of actual and model predictions, additional consultation would be arranged to evolve the ongoing program. ||?

During operation of the well, the flow injection pressure, injection temperature, annular pressure would be indicated and recorded as described in Appendix H to the original application. The material received in the automatic sampler shown on the surge tank discharge of the surge tank (Fig. 1, Exhibit H to Application) would be analyzed each eight hour period for the radionuclides discharged.

In the documents submitted to the Board appear two reports from Dr. Don L. Warner, Consultant for the Atomic Energy Commission, dated November 27, 1972 and December 22, 1972, evaluating the material supplied by Kerr-McGee in support of its request for license amendment permitting disposal of liquid raffinates in a deep disposal

well and recommending that if the Commission approves the use of such disposal well that three monitor wells be drilled. At my request, Mr. Bill O. Holliday, a petroleum engineer in the Oil and Gas Division of Kerr-McGee Corporation, prepared estimates of the costs of drilling and completing the various monitor wells proposed by Dr. Warner. A copy of the Report of Estimated Costs of Proposed Additional Wells is attached hereto and made a part hereof. The total costs of drilling the monitor wells proposed by Dr. Warner, depending on whether the first proposed well is drilled only to the first marker formation or is completed through the Arbuckle Formation, are \$290,800 or \$361,500.

In view of the testimony of Mr. H. L. Gruy that monitoring of the disposal well in the manner outlined above will provide the information necessary to determine if any injected raffinate or formation water are escaping from the fault block and in view of the substantial cost of drilling the proposed monitor wells, it appears that the expense of drilling, completing and maintaining of such proposed monitor wells cannot be justified especially since Kerr-McGee proposes a comprehensive system of surface as well as subsurface monitoring of the disposal well and the fault block

into which the raffinate will be pumped to determine if there is such an escape.

Although the testimony of consultants for Kerr-McGee shows that the fault block into which the raffinate is to be disposed is bounded on all sides, the proposed monitoring program will amply protect the public from the possibility of escape since early warning will be given of the possibility of escape and action can be taken to resolve the problem.

*what is the planned action?*

When all factors are considered, it is apparent that the disposal of raffinate from the Sequoyah Facility in the deep well as proposed in Kerr-McGee's Application can be done with safety and is the most cost-effective method. Kerr-McGee, therefore, requests the Atomic Safety and Licensing Board to grant its Application for Amendment to its Source Material License SUB-1010 and permit Kerr-McGee to dispose of raffinate from its Sequoyah Facility in the deep well drilled by it for such purpose.

KERR-McGEE CORPORATION

APPLICANTS ENVIRONMENTAL REPORT

USAEC

Docket No. 40-8027

Uranium Hexafluoride Plant

August 1973

SUPPLEMENTAL #3

*86-071-159* *30pp*

URANIUM HEXAFLUORIDE PLANT  
DISPOSAL OF LIQUID RAFFINATE WASTE

Discussion of Alternates

The disposal of raffinate has been discussed in previous Applicants' Environmental Reports provided by Kerr-McGee in December 1971, Supplement #1 of June 1972 and Supplement #2 of January 1973. These environmental reports describe the source, the current method of storage, and the details of pond construction and the monitoring system employed to assure no adverse environmental impact from this source.

The USAEC has requested in a letter dated May 17, 1973, further discussion of the alternatives to disposal of this raffinate, including a cost benefit analysis considering and balancing the environmental effects. This discussion fulfills the request of this letter.

As discussed in previous Environmental Reports, a liquid raffinate from the solvent extraction system of the Sequoyah Facility contains varying amounts of metal contaminants, residual uranium, radionuclide daughters of uranium, and measures .5 to 1 molar in free nitric acid. As is common with most waste materials, treatment of low concentrations of a multi-ion solution of this nature to completely remove all contaminants down to detectable levels is an extremely difficult and tedious process. In the case of the raffinate solution, the radionuclide removal is the most difficult.

I. Disposal History

Raffinate materials similar to that discharged by the Sequoyah Plant have previously been discharged by AEC facilities located at Fernald, Ohio, and Weldon Spring, Missouri. At these locations, the raffinate solutions were combined with other wastes, neutralized with a slurry of lime and discarded to permanent holding ponds. As ponds filled with solid, the supernatant liquid overflowed to the nearest rivercourse.

II. Sequoyah Disposal Methods

A. As Designed

The initial design of the plant contemplated the discharge of the liquid acid raffinate to a deep disposal well located near the point of discharge. The well was drilled into an Arbuckle limestone strata of appropriate permeability



approximately 3200 ft. deep. This strata was saturated with highly mineralized liquid containing a total of approximately 140,000 parts per million dissolved solids and radium 226 at a concentration of approximately 1400 pCi/l.

The use of this well was not permitted at the time License SUB-1010 was issued. Subsequent applications for the use of the well after further investigation of the size, structure and containment potential of the underground reservoir have not been approved. Kerr-McGee has requested a formal hearing on this subject from the Commission, which is scheduled for August 28, 29, 1973.

#### B. Interim Disposal

As a result of the disapproval of the use of the deep well for disposal of acidic raffinates, holding ponds were constructed and equipment installed to neutralize the acidic raffinate with lime slurry as had been the past practice, storing the resultant neutralized raffinate in the ponds until permission to use the well could be secured or a permanent method of disposal could be determined. Subsequently it was determined, as reported in previous reports, that the use of ammonia for the neutralization of raffinate was less expensive and more efficient than the use of lime. Consequently the raffinate neutralization with ammonia commenced in November 1971 when the second and larger storage pond was completed and put to use.

It soon became evident, however, that such a system was not adequate since the small net evaporation of the climate in this area could not maintain pond levels without excessive dilution by rainfall. Consequently, it is currently expected that the capacity of the present ponds will be reached during the fall of 1973 without some other method of preventing the accumulation of rainfall in the storage ponds.

Construction, contents and monitoring of these ponds is thoroughly described in previous environmental reports including the environmental effect of the loss of a retaining wall of the pond.

#### C. Proposed Raffinate Disposal Methods

By the fall of 1972, it was evident that a permanent disposal method, a method of removing the rainwater and concentrating the stored raffinate solution or additional ponds would have to be constructed in 1973. As a consequence, an Amendment to License SUB-1010 was proposed and approved to permit the evaporation of pond liquids by the use of submerged combustion

evaporator and a test of treating the raffinate pond liquids for the removal of radionuclides and disposal of the resultant liquid as an ammonium nitrate containing liquid fertilizer to the portion of the Sequoyah property immediately in front of the plant.

Also the installation of an additional pond was investigated and the location and probable cost were determined.

In addition to these temporary measures to avoid filling the ponds prematurely with excessive amounts of rainwater, three additional treatment systems have been considered and evaluated in an effort to secure a permanent disposal method for raffinate are described below.

#### 1. Solar Evaporation

While the current situation with the raffinate ponds due to a large amount of rainfall appears to preclude the use of solar evaporation, historical records from the Corps of Engineers at Tenkiller Ferry Reservoir concludes that this area has a net evaporation each year, based upon a 10-year average, of approximately 2 inches. If such an evaluation is generally true, it would be possible to build sufficient holding ponds so that the net evaporation would maintain the pond levels and meet the needs of raffinate production. Such a pond system would require approximately 120 acres of evaporative surface to accommodate the design capacity of the plant of 5,000 short tons of uranium per year. The cost of such a ponding system would approximate \$6 million including an allowance of \$3.2 million for impervious hypalon lining material.

Such a pond system would present the same environmental hazards of pond rupture as those described in the Supplementary Environmental Report dated June 1972. In addition, the uncertainties of rainfall quantities and extreme cost preclude the choice of this method as a permanent solution.

#### 2. Evaporation of Pond Liquid

Rather than permanent storage of the produced liquids and the resultant rainfall into the pond, it is feasible to install some method of artificial heating so that the liquids produced will be concentrated and the rainfall received will be evaporated from the storage ponds. Two methods to achieve this have been considered, the first installed and the second in the construction phase, awaiting the delivery of equipment.

a. Waste Heat Evaporation (See Flow Sheet)

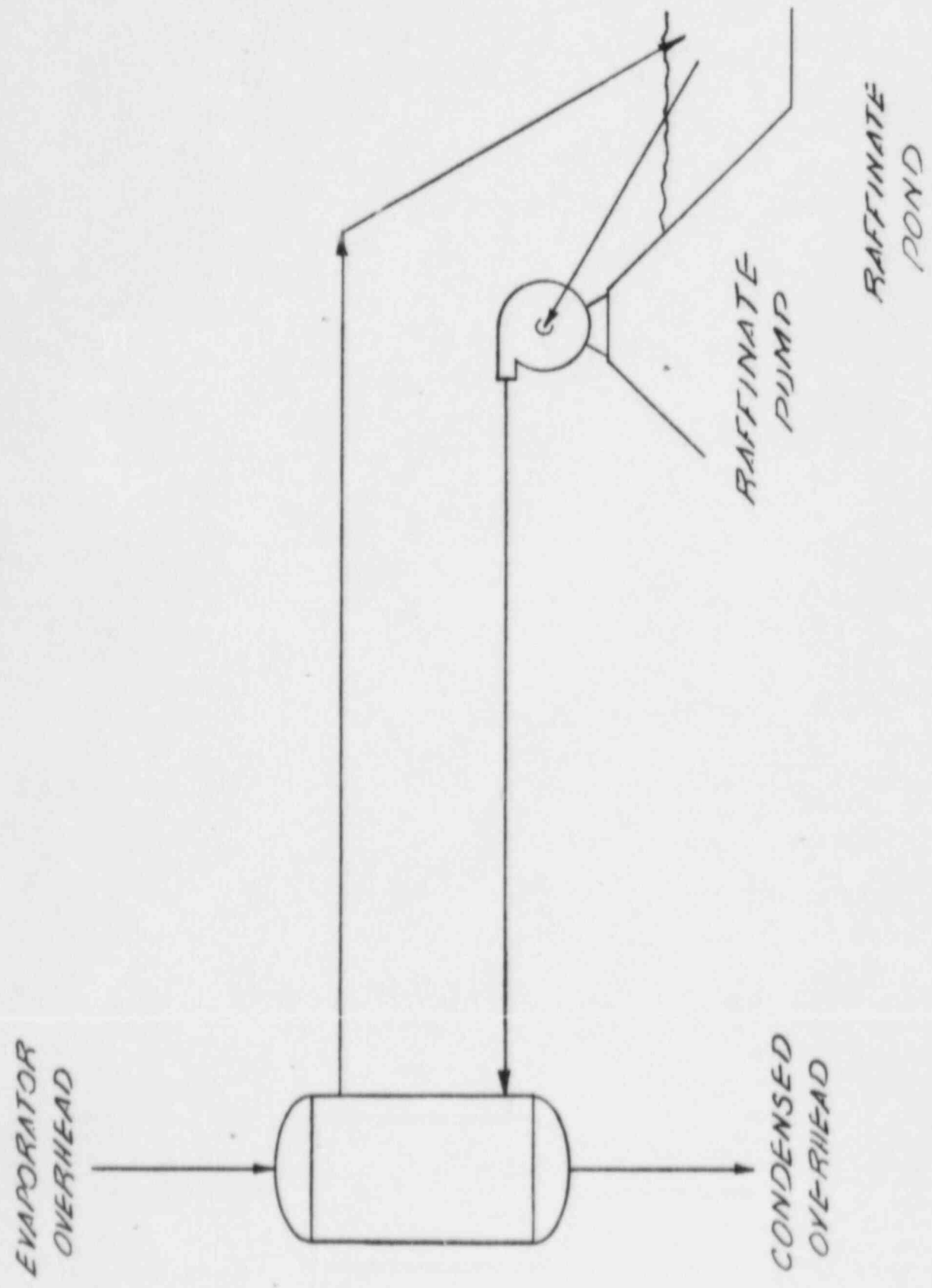
In considering methods of temporarily maintaining liquid levels in the ponds, it became apparent that a source of heat had been overlooked in earlier considerations. The UNH evaporator is equipped with a condenser using water to condense the water evaporated from the UNH. This condensing process would supply approximately 12 million BTU/hr. at full capacity. It was recognized that any increase in pond temperature with consequent increase in vapor pressure would result in measurable increase in evaporation rate, thus improving the heat economy of the plant and eliminating some of the surplus liquid in the storage ponds. Consequently, the system shown on the attached flow sheet marked "waste heat evaporator" was immediately installed at a cost of approximately \$15,000. The exact operating cost is not known at this time due to the probability and extent of scaling and/or corrosion increasing the maintenance cost of the condenser.

Since the system is enclosed and does not add to airborne effluents, the environmental impact should be no greater than the hazard of maintaining the pond dikes. Approximately 120 ft. (total 800 ft.) of the pipeline to and from the UNH evaporator condenser is above ground and cannot be ditched nor otherwise protected in the event of pipe failure. This total of 280 ft. of upstream and downstream piping is located near the Sequoyah SX Plant where any leak would be quickly observed and would be detected by pressure indications from the UNH evaporator and loss of inlet coolant pressure alarm in the control room. In the event of total pipe rupture unobserved for a period of time, the raffinate pumped would drain to the sanitary pond which then overflows into the effluent stream from the plant. This effluent stream is monitored each four hours for nitrate and a leak would be then recognized.

The loss of approximately 250,000 gallons of raffinate would be diluted by the normal effluent stream so that the resultant nitrate concentration in the effluent would be approximately 30 parts per million, and the radium 226 concentration would be approximately  $70 \times 10^{-8}$  uCi/ml. or 23 x MPC.

It is believed that such an unobserved accident is not creditable since welded carbon steel pipe operating at 35 psi would not be likely to fail completely without prior warning.

WASTE HEAT EVAPORATOR



b. Submerged Combustion Evaporator (See Flow Sheet)

Another method of heating of the raffinate pond liquids is to install a submerged combustion heater capable of releasing 15 million BTU/hr. when burning 250 SCFM of natural gas. The heat output from the natural gas flame will be directly injected into the raffinate liquid which will then be separated in a vapor-gas separator. The gas passes through a spray demister using pond liquid, and then an SS mesh demister. Approximately 5 gallons per minute of liquid is evaporated directly. The remainder of the raffinate is heated to approximately 150° F. and returned to the raffinate pond. It is estimated that the increase in pond temperature will result in an additional 20 gallons per minute of evaporation from the pond surface.

Air effluent will be specifically monitored for the release of ammonia, oxides of nitrogen, uranium, thorium and radium.

The submerged combustion evaporator will consume approximately  $16 \times 10^6$  SCF of natural gas each year. Outside of the hazard of pond dike rupture, the possibility of a gas explosion exists. Such an explosion would undoubtedly wreck the body of the evaporator or separator, consequently, the evaporator will be set in a curbed area with capacity to hold the contents of the vessel and provide drainage back into the raffinate pond. The gas mixture exhausted from the vapor liquid separator will be monitored continuously for explosive concentrations and the gas automatically shut off in the event of a positive detection. As a result of these safety precautions, it does not seem that a gas explosion would be a credible accident to this equipment.

c. Combined Results

The installation of these two evaporation systems is currently estimated to have the result on the pond level shown on the attached graph based upon plant production rates, estimated rainfall, and the efficiency of the waste heat evaporator during one month of operation in June. Reduced efficiency of the evaporator, additional rainfall above the estimate given would result in lengthening the period required to evaporate to dryness and seriously endanger exceeding the minimum reasonable freeboard of the pond.

TO  
ATMOS.

GAS

MIXER

AIR

BURNER

DEMISTER &  
SPRAY NOZZLE

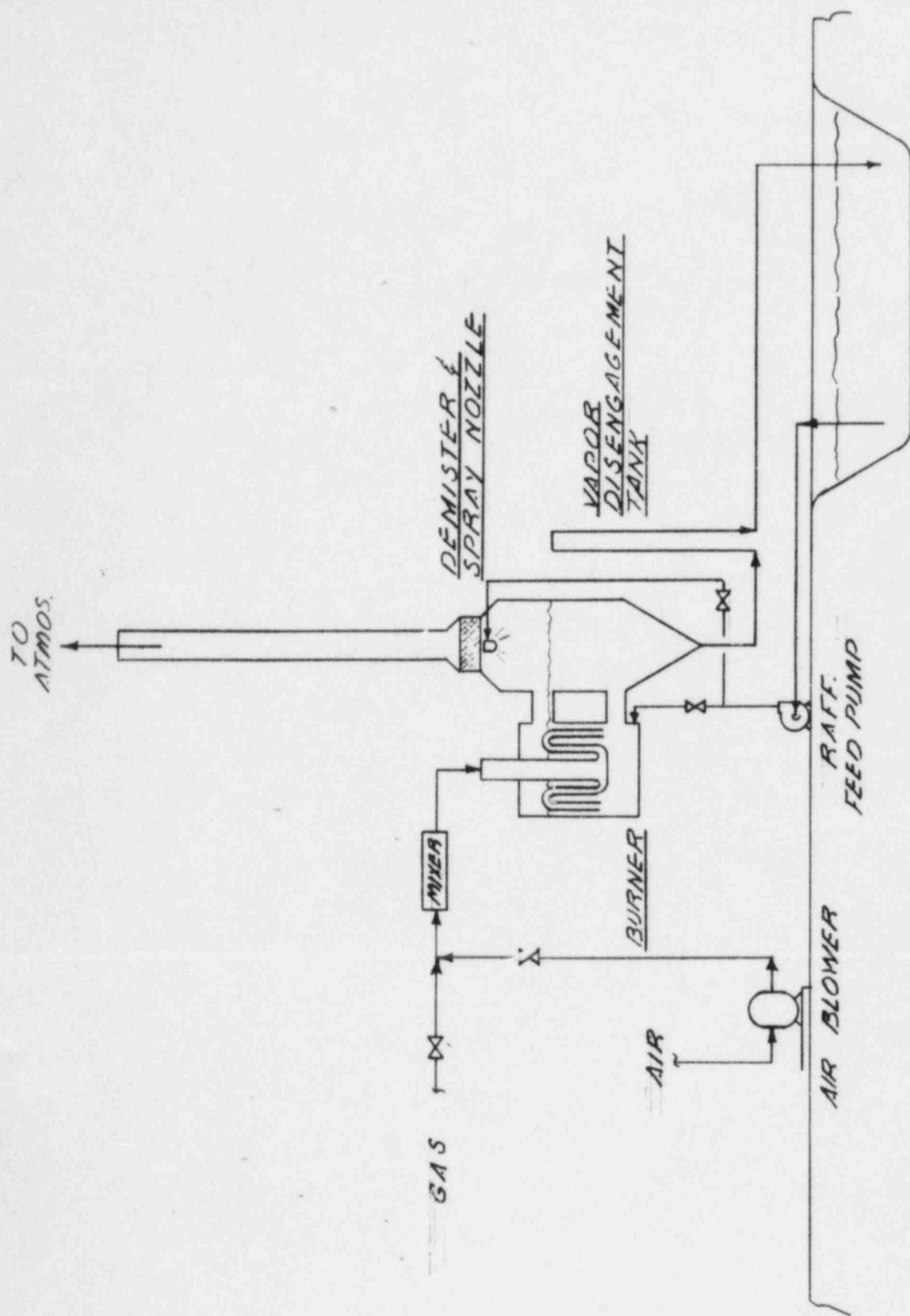
VAPOR  
DISENGAGEMENT  
TANK

AIR BLOWER

RAFF. FEED PUMP

SUBMERGED COMBUSTION

EVAPORATOR







Consequently, a qualified soil engineering consultant is investigating the feasibility of increasing the height of pond #2 to provide extra safety factor for this contingency. It is believed that with the installation of a submerged combustion evaporator and the extension of the dike wall, the level in the raffinate ponds will be maintained during the coming months.

d. Concentration to Dryness

In the AEC's letter of May 17, it was suggested that concentration of the raffinate ponds be achieved by the installation of one or more submerged combustion burners with the eventual purpose of emptying the ponds so that any concern in regard to environmental impact from seepage be eliminated. The discussion above indicates that based upon current planned evaporative capacity, it may be possible to achieve the goal. No engineering studies have been conducted toward the eventual elimination of all solids from the pond with subsequent burial or recycling to an appropriate mill. Such a path is obviously feasible technically. However, achieving total dryness of residual solids might involve greater difficulties and attendant risks than the handling of a thickened slurry. Certainly, it may be feasible to consider elimination of this problem in combination with some chemical treatment method described below.

3. Chemical Treatment

The processes described above contemplate a method whereby the raffinate liquids and rainfall received in the ponds can be eliminated by evaporation. Such a procedure, while preserving the capacity of currently installed storage facilities would result in the eventual accumulation of thickened slurries or wet solids in the bottom of the ponds and dependent upon bulk, moisture content and absolute composition could eventually fill the ponds with solids or semi-fluid slurries posing a difficult disposal problem.

Several processes have been considered for the total elimination of the solids content of the as-produced raffinate.

a. Removal of Radionuclide

The first process considered is the treatment of raffinate either from the pond or as produced in



order to eliminate the radionuclides producing a usable dilute solution of ammonium nitrate. This solution could be used directly or be fed to an evaporative system for concentration to commercial levels and subsequent sale.

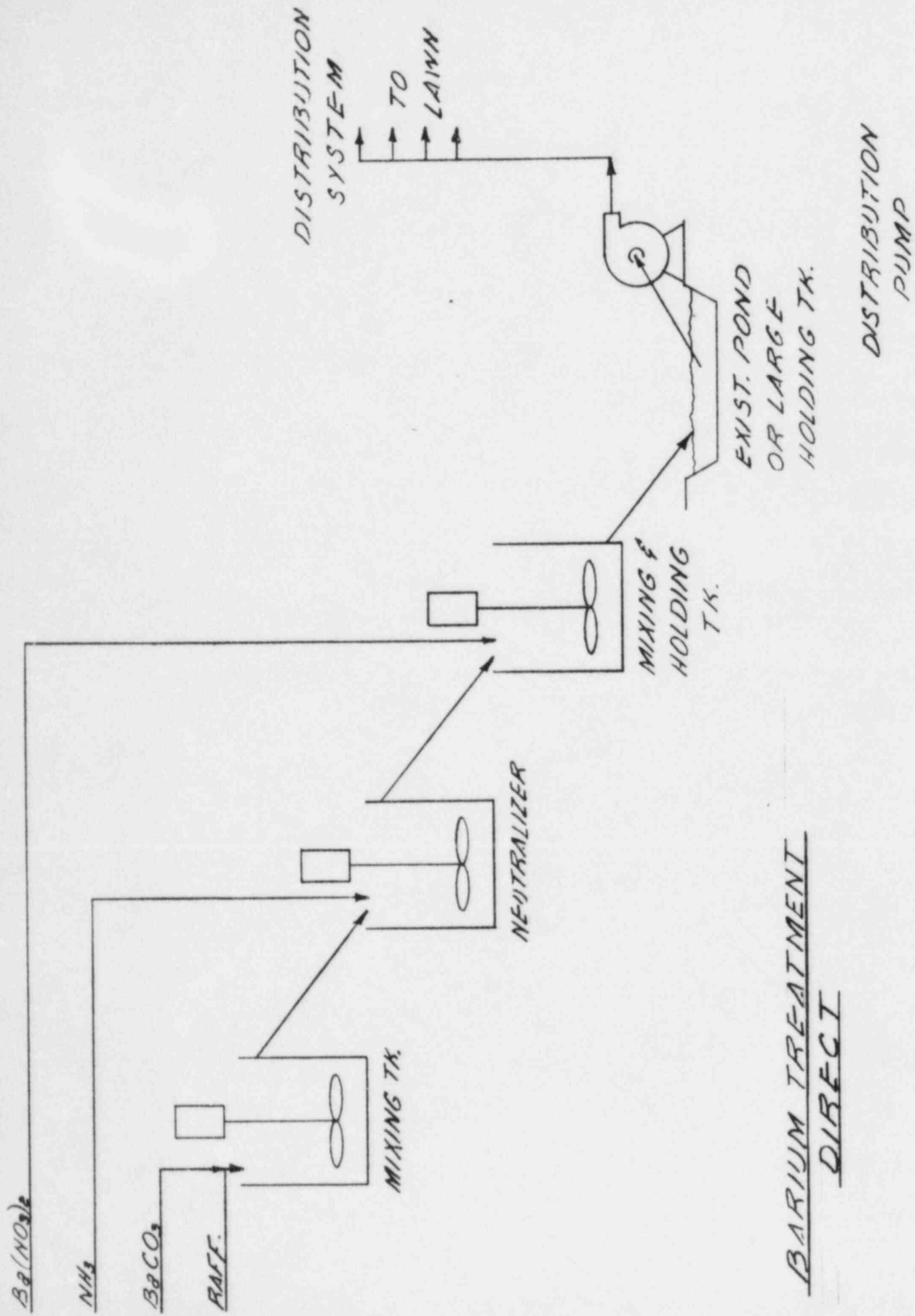
Radionuclide removal requires neutralization of the raffinate to remove residual uranium and thorium and the addition of a soluble barium compound to remove radium 226. Modifications of this process might include the use of barites for partial removal and subsequent complete removal with soluble barium. Uranium and thorium are removed as hydrous oxides along with most of the heavy metals present in the liquids. The radium removal requires the presence of sulfate and is thought to occur by the occlusion of insoluble radium sulfate in a matrix of precipitated barium sulfate. Theoretical considerations would suggest that adding the barium prior to neutralization would result in more uniform distribution of barium prior to neutralization and subsequently slower growth of the barium and radium sulfate matrix during neutralization. Upon completion of precipitation, these solids may be removed by filtration or settling and subsequently the clear filtrate can be used directly as a liquid fertilizer or concentrated to commercial levels and sold as a liquid fertilizer.

This system provides several advantages in that during the neutralization and subsequent radium precipitation, opportunities are available for physical separation of precipitants of uranium, thorium and radium in a form in which they can be readily consumed as recycle or packaged and buried. Further treatment to the precipitate may be necessary to eliminate corrosion hazards in burial containers.

This method of radionuclide removal has been proposed and preliminary studies have been made of attendant costs.

(1). Direct Disposal (See Flow Sheet)

Direct disposal after neutralization and radium precipitation to an area that can be compared to control areas and is subject to sampling for accumulation of nitrate and radium is authorized by the USAEC for 1973. Current difficulties include reduction of radium content to 1 pCi/l, approximately one-third of



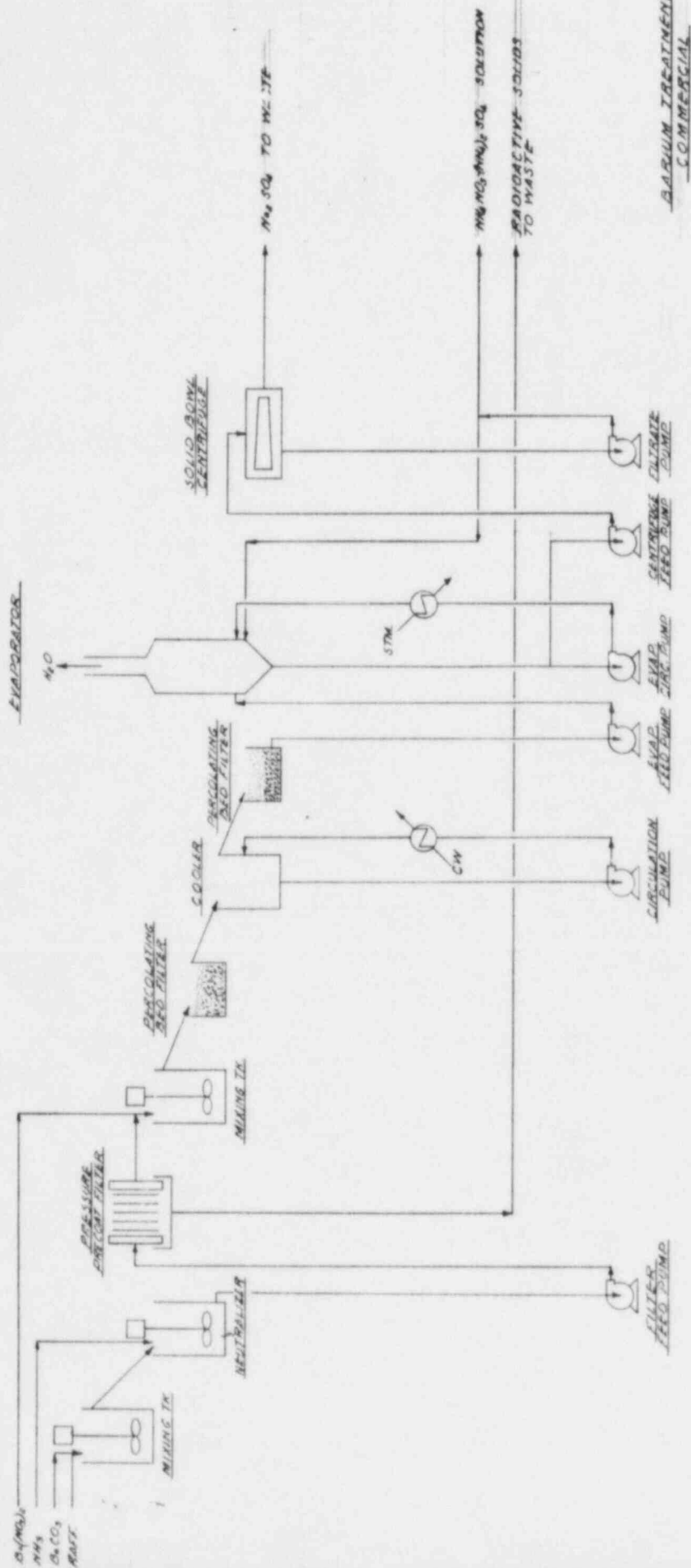
drinking water standards and 1/30 of current CFR 20 limits. Conducting this precipitation in a continuous matter will require careful study during this test period to insure adequate mixing of reagents and settling and/or filtration of solids.

Hazards attendant to this process involve the lack of sufficient control over precipitation to secure adequate radium removal which is readily corrected by filtrate recycle, or excessive concentration of water and ammonium nitrate on a particular species of vegetation in the disposal area. It has been demonstrated on the laboratory scale (not yet on a continuous basis) that the radionuclide content can be reduced to approximately levels permitted by the "Drinking Water Standards." At these levels, it has been previously stated in the "Report of the National Technical Advisory Committee to the Secretary of the Interior on Water Quality Criteria," 1968, page 163, that irrigation water containing maximum permissible concentrations of radium 226 would not have detrimental effect on the soil for at least 40 years.

It is expected that the test will serve to partially answer these questions. Certainly, installation of a full scale system would require initial monitoring to assure that excessive concentrations of water and ammonium nitrate do not damage cropland and result in excessive nitrate concentrations in runoff rainfall.

(2). Commercial Disposal (See Flow Sheet)

Dilute ammonium nitrate solution can be further concentrated by heating and evaporation of water to commercial concentrations of approximately 32%. Such concentrations are normally handled by dissolving solid ammonium nitrate in local water supplies and distributing through sprinkler equipped vehicles, tanks or trucks, to a relatively localized market. Such distribution is normal in relatively arid areas where additional moisture is required or routinely added by irrigation. For some crops, sprinkling the solution on the foliage results in more rapid growth.



BARIUM TREATMENT  
COMMERCIAL

A preliminary engineering study has been made and costs and resource consumption estimated for the installation of such a process.

Hazards existing with this method of disposal would amount to those described above for direct application though it may be expected that radionuclide content may be slightly higher though still well below maximum permissible concentrations in drinking water.

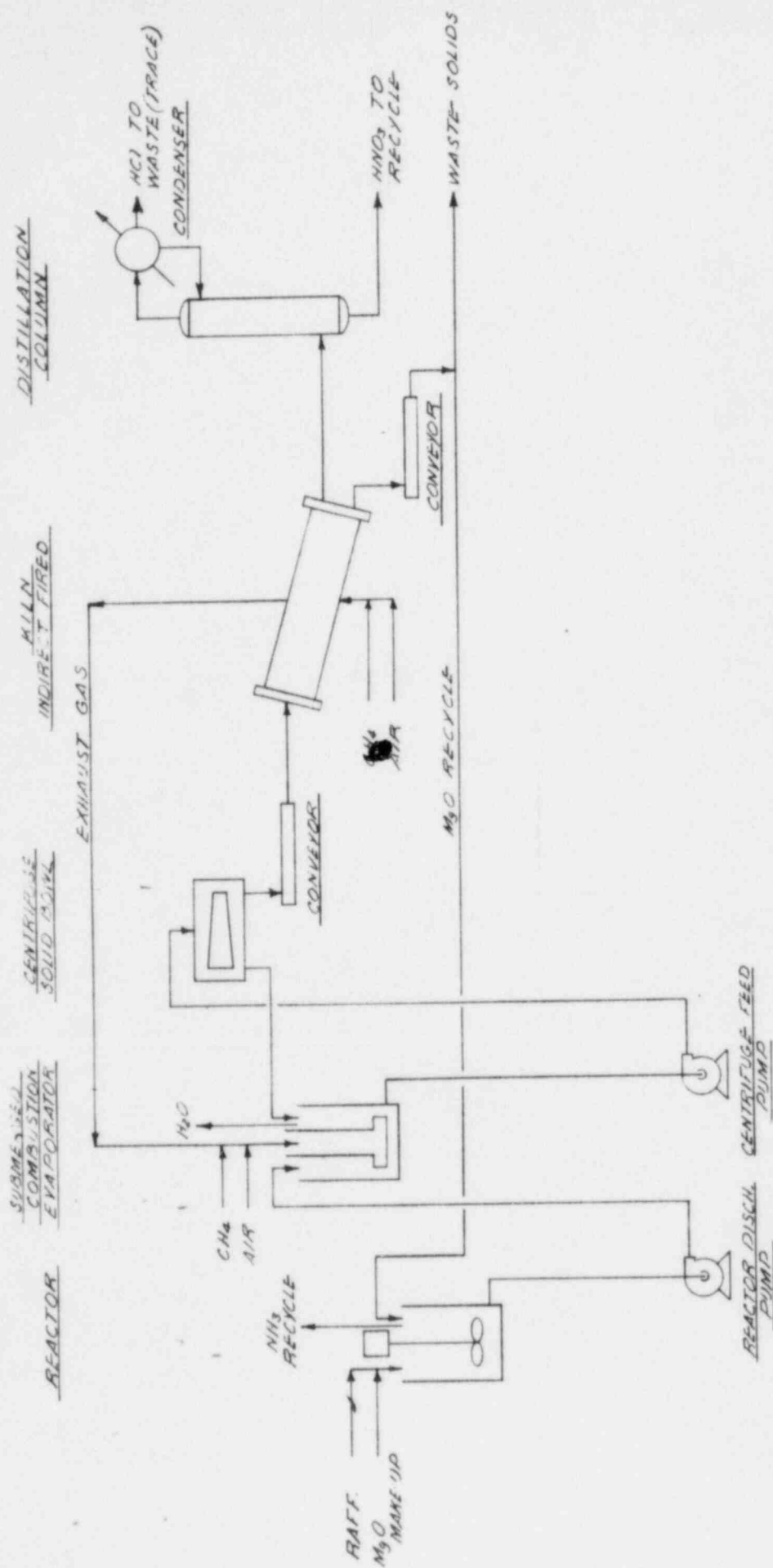
b. Decomposition Methods.

A third alternate path to the disposal of liquid raffinates would be the evolution of a process which would result in the separation of the dissolved solids, both radionuclides and metallic impurities as solids for recycle or burial, and the decomposition of the ammonium nitrate solution into its ultimate components of nitrogen and water vapor. Two such processes have been proposed as technically feasible and preliminary engineering studies have been made.

These processes when successfully developed offer the advantage of no real accidental threat to the environment but concurrently consume a large amount of chemical and fossil fuel resources.

(1). MgO Carrier (See Flow Sheet)

As produced raffinate is neutralized with magnesium oxide and ammonia released and collected for recycle. The resulting magnesium nitrate hydrate solution is evaporated in a submerged combustion unit and the resultant slurry is centrifuged and the solid fed to an indirectly fired kiln, the liquid returned to the evaporator. The solid is dried and a portion recycled and the balance of it containing radionuclides and metal oxides contained in the raffinate is packaged for burial. The indirectly fired kiln flue exhaust is enriched with natural gas and used as fuel to the submerged combustion evaporation unit. Nitric acid and hydrochloric acid vapors are evolved during firing of the wet magnesium nitrate hydrate and fractionated in a distillation column and the hydrochloric acid is exhausted as waste while the nitric acid is recycled for reuse.



DECOMPOSITION  
H<sub>2</sub>O CARRIER



Consumption of natural gas as a fuel for this process presents nominal explosive hazards but of no greater seriousness than those several places in a chemical processing plant. Consumption of natural gas is a commitment of natural resource value. Disposal of the waste hydrochloric acid since its quantity is in the part per million range in the raffinates will present no undue environmental hazard.

(2). Thermal Decomposition (See Flow Sheet)

A second decomposition method involves the neutralization of raffinate with ammonia to form ammonium nitrate solution contaminated with metallic hydroxides and radionuclides. The ammonium nitrate solution is evaporated, and the resultant solids are centrifuged and fed to a hot fluidized bed reactor of ilmenite to decompose the nitrate into  $\text{NO}_x$  and water. The gas evolved is then fed to a catalytic burner to further decompose the  $\text{NO}_x$  to oxygen and nitrogen. Waste heat from the catalytic decomposer is used after enrichment with natural gas as the fuel for a submerged combustion burner during the initial neutralized raffinate evaporation. Ilmenite contaminated with metallic oxides and radionuclides is screened for removal of contaminants and reused in the fluid bed. Waste solids containing radionuclides are packaged and buried.

The main resource commitment to this process is the natural gas consumed in heating the fluid bed and concentration of the neutralized raffinate solution.

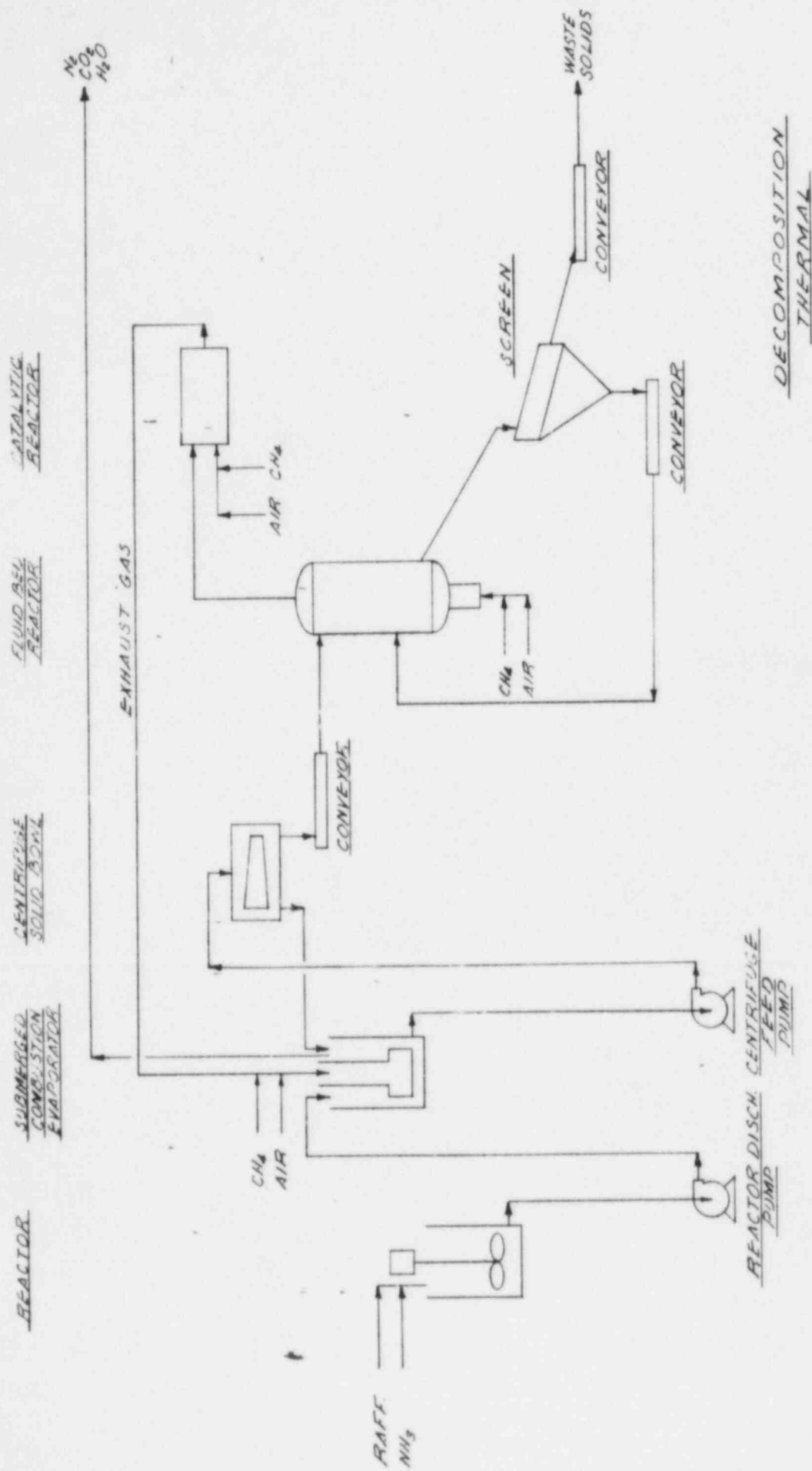
*how much gas?*

### Cost Benefit Discussion

Capital, operating costs, resource consumption and resource penalty for the alternate methods are summarized in Table I. As noted above, the precision of these estimates are not all equal in that the engineering and technical consideration have not penetrated to the same depth. All operating costs have in common the expenditure of labor, consumption of chemicals, and energy. Some penalty to the environment is present in all cases. These are discussed further below.

#### 1. Deep Well Disposal

The penalty of deep well operation on which all capital costs have been accumulated is only that of the very low probability of reservoir broaching and an unexpected release. As presented in our application, with appropriate instrumentation, breakdown of containment can be immediately recognized and well operations





stopped and alternate processes employed if the broaching is not readily corrected. In view of the geological structure surrounding the injection well, it is Kerr-McGee's belief that this alternate has the highest benefit with the lowest environment risk.

## 2. Surface Storage

As discussed previously the penalty of surface pond storage is the high capital cost and the very unlikely possibility of a massive fracture of the retaining dikes with resulting loss of liquid to surface waters. Eventual reuse of the land may be prohibited due to unremovable radionuclide contamination. With appropriate filling and planting of ground cover, residual radionuclides should not be a hazard to surface biota.

## 3. Evaporation

Evaporation of current pond contents would result in the accumulation of solids in the ponds with the need to eventually construct additional ponds and while the amount of areas involved would be less than solar evaporation, the same penalties and threats exist.

## 4. Barium Treatment

Barium treatment requires a nominal amount of chemical resources and the possibility of beneficial use of by-product material.

## 5. Decomposition

Decomposition provides a complete elimination of hazard at the Sequoyah site with the consumption of energy and an expensive capital installation.

## 6. Solids

All processes would accumulate approximately 578,000 lbs. of metallic oxide compounds each year. Precipitation of sulfates would result in 856,000 lbs. Due to the complex chemistry involved, actual accumulation will undoubtedly be someplace between these two extremes. Solids would need to be eventually drummed and buried or reprocessed. Costs of burial or reprocessing have not been estimated due to lack of knowledge as to bulk, water content and chemical composition.

## Conclusion

It is the belief of Kerr-McGee that the use of the deep well for disposing of liquid raffinates at this time provides the superior method from a cost benefit basis.

It is believed that testing the use of the disposal well is the superior method at this time and does not involve any significant hazard and may well be the optimum cost benefit method under the favorable conditions at the Sequoyah site.

The combined waste heat evaporator and submerged combustion system should maintain liquid levels in current raffinate storage ponds and produce a concentrated raffinate slurry but will eventually require removal of collected solids and substantial burial expense.

The treatment of SX raffinate and disposal as a dilute solution on adjacent land is the least consumer of electrical power and funds with the least contamination of the environment along with recovery of usable by-products.

TABLE I

	Deep Well	Existing Ponds and Raffinate Treatment	Raffinate Pond No. 3	Waste Heat Evaporator	Submerged Combustion Evaporator	Barium Treatment		Decomposition	
						Direct	Commercial	MgO	Thermal
Capital Cost	613,688		262,120	14,975	132,000	113,000	400,000	1,000,000	800,000
Gross Operating Cost	none	24,500	24,500	26,500	74,500	90,186	211,986	169,200	156,400
Sales Realizations							94,950	181,500	
Net Cost	none	24,500	24,500	26,500	74,500	90,186	117,036	(12,300)	156,400
Capacity									
Storage (Gals.)	NA	23,650,000	12,250,000						
Process (Annual) (Gals/Raffinate)	All			9,760,000(5)	7,670,000(5)	6,000,000	6,000,000	6,500,000	6,500,000
Resource Consumption (Annual)									
Energy									
Gas (SCF)					15.8x10 <sup>6</sup>		45x10 <sup>6</sup>	86,000	36,000
Electric (KWHx10 <sup>6</sup> )				Nominal	.1	.27	1.11	.32	.37
Chemical	none								
Ammonium (Tons)		477	477	477	477	420	420		455
Barium Salts (Tons)						16	16		
Other (Tons)								59	
Environmental Penalty									
Land	1,4	(1,2)	(1,2,3)	1,2	1,2	2	2	2	2

1. Use of current pond area (approx. 10A)
2. Burial of 250-450 tons of oxides or recycle through operating mill
3. Use of approximately 15 A
4. Ponds would remain in standby
5. Excess heat capacity to overcome rainfall

# TYPICAL ANALYSIS

	<u>Raffinate</u>	<u>Disposal Well</u>
Total Dissolved Solids (ppm)		140,000
Calcium	<1	11,300
Magnesium	4	2,470
Chlorides	141	88,300
Sulfates	6,700	120
Carbonates	--	0
Bicarbonates	--	159
Total Iron	.4	22
Sodium	580	39,700
Specific Gravity @75°		1.104
pH	HNO <sub>3</sub> IM	7.00
Resistivity @75°	--	.093
Strontium (ppm)	--	--
Uranium	.05 - .5 g/l	<1 ppm
Radium-226 (uCi/ml)	340x10 <sup>-8</sup>	140x10 <sup>-8</sup>
Total Thorium (uCi/ml)	3000x10 <sup>-8</sup>	<0.5x10 <sup>-8</sup>
Suspended Matter (ppm)	53	720
Gross Alpha (pCi/g)	800	204
Gross Beta (pCi/g)	140	166

NITRATES

Figure 1.

SEQUOYAH NUCLEAR FACILITY

SUMMARY OF PROPOSED ADDITIONAL WELLS

- #1 (A)&(B) approx. 2800' NE of existing well on K-M owned surface  
#2 approx. 800' NE of existing well on K-M owned surface  
#3 approx. 2400' SW of existing well on K-M owned surface

Relative elevations and estimated tops (from Topo map and Geological structure

Well No.	Elevation		Simpson		Arbuckle		Granite	
	GL	KB	Subsea	KB	Subsea	KB	Subsea	KB
Existing well	563	579	-511	1090	-758	1332	-2523	3102
#1	500	516	-411	927	-658	1174	-2428	2944
#2	563	579	-475	1054	-725	1314	-2505	3084
#3	513	529	-561	1074	-808	1337	-2578	3107

Well #1 (A)

Well to be drilled to top of Wapanucka Limestone which should be no deeper than 500' deep if geological interpretation of fault location is correct. If this is the case, the well would be plugged and abandoned. Due to shallow problems encountered in drilling of the existing disposal well, approximately 150' of 13-3/8" conductor pipe will be set (in all cases; either 13-3/8" or 16"), 12-1/4" hole will be drilled to top of Wapanucka, or 500'.

Estimated cost \$39,950 P&A'd

Well #1(B)

Assuming the fault does not exist, set 8-5/8" surface casing at 500', drill 7-7/8" hole to TD of approximately 2950' in Granite, coring as necessary; set 5-1/2" casing into top of Arbuckle at approximately 1400'. Run 2" tubing and packer and equip well to monitor the Arbuckle (injection zone) and annulus. Assume use of surface pressure indicators and recorders locally (on or near wellhead). Bottom hole pressure would be run when and as required using conventional wireline tools.

Estimated cost \$110,650

Well #2

Well to be drilled into top of Arbuckle to estimated TD of 1400'. Set cement plug to above Arbuckle top, set 5-1/2" casing into top of Simpson at approximately 1100', leaving Simpson open hole. Run 2" tubing and packer so Simpson Zone can be monitored, as well as the tubing-casing annulus. Local monitoring.

Estimated cost \$74,175

Well #3

To be drilled to estimated TD of 3125' and equipped in essentially the same manner as the existing disposal well, including approximately 60' of 7" Carpenter 20 alloy pipe on bottom, 3-1/2" tubing internally coated with plasticap and coated tension packer. Well can be used either for monitoring the disposal zone (Arbuckle) or as standby disposal well. Cost estimate includes costs for internally coated injection line to well, and provisions for monitoring pressures (and injection rate) from remote location within the plant site.

Estimated cost \$171,675

General Comments

- (1) AFE total cost of existing well (drilled November 69) through wellhead was \$133,242.
- (2) Location for all proposed wells are on Kerr-McGee owned surface, however, oil and gas rights appear to be owned by Gulf Oil.

Page Two

Summary of Proposed Additional Wells

- (3) Consideration was not given in this report for continuous downhole monitoring.
- (4) Experience in drilling the existing disposal well revealed harder drilling than originally estimated, with several insert type bits used. Comparable drilling times were used for these estimates.

*BOH*

Bill O. Holliday

150' - 13-3/8" Condctr.  
 Drill 12-1/4" hole to  
 500'

**COST ESTIMATE SHEET** NM-3128

PROJECT NAME Well #1, approximately 2800' NE of Existing Well  
 #1(A) Drill to 500' maximum, log, P&A

	Acc. No.	Description		Totals
INTANGIBLES	101	Labor & Related Cost	1,800	1,800
	102	Transportation	250	250
	103	Location Surveys & Damage	1,750	1,750
	104	Fuel and Water	450	450
	105	Contract Rig Cost	13,500	13,500
	106	Bits, Reamers & Coring	3,150	3,150
	107	Mud & Mud Additives	1,000	1,000
	108	Cement & Cementing Services	2,500	2,500
	109	Well Logging	1,000	1,000
	110	Completion & Perforating	---	---
	111	Formation Treating	---	---
	112	Equipment Rentals	---	---
	113	Contract Services	500	500
	114	District & Overhead Expense @ \$50/day	450	450
	115	Miscellaneous Expense 10%	3,400	3,400
		MI cost	8,000	8,000
		TOTAL INTANGIBLES	37,750	37,750
TANGIBLES	160	Non-Controllable Equipment		
	161	Tubular Goods	1,500	1,500
	162	Pumping Equipment	---	
	163	Platform & Caissons	---	
	164	Well Head Equipment	---	
	165	Production Equipment	---	
	166	Miscellaneous Equipment	500	500
		TOTAL TANGIBLES	2,000	2,000
		TOTAL COST P&A'd	39,950	39,950

**DRY HOLE COST**

	SUB NO.	DESCRIPTION	AMOUNT	SUB NO.	DESCRIPTION	AMOUNT
INTANGIBLES	102 Transportation	Trucking, Csg, misc.	250	105 Contract Rig Cost	8 days @ \$1500/day	12,000
					1 day @ \$1500/day, P&A	1,500
	109 Well Logging	Total logging-2 rns	1,000	112 Equipment Rentals		
	113 Contract Services	Sample Analys., misc.	500	Other Intangible Cost		
TANGIBLES	161 Tubular Goods	13-3/8" OD H-40 Conductor			QUANTITY COND. PRICE AMOUNT	150' A 10.00 1,500
	Other					

Remarks

DATE

10/1/73

PREPARED BY

BOH

AFE NO



Set 150' 13-3/8" Conductor  
Set 500' 8-5/8" @ 500'  
Drill 7-7/8" Hole to  
approx. 2950' (Granite) Set  
5-1/2" csg into Arbuckle  
2" tbq & pkr.

# COST ESTIMATE SHEET

PROJECT NAME Well #1, approximately 2800' NE of Existing Well  
#1(B) Approximate 2950' TD

	Acc. No.	Description			Totals
INTANGIBLES	101	Labor & Related Cost	5,500		5,500
	102	Transportation	500		500
	103	Location Surveys & Damage	1,750		1,750
	104	Fuel and Water @ \$50/day	1,300		1,300
	105	Contract Rig Cost	41,300		41,300
	106	Bits, Reamers <del>36,000</del>	12,150		12,150
	107	Mud & Mud Additives	3,000		3,000
	108	Cement & Cementing Services	5,000		5,000
	109	Well Logging	2,750		2,750
	110	Completion & Perforating	---		---
	111	Formation Treating	---		---
	112	Equipment Rentals	1,000		1,000
	113	Contract Services	3,250		3,250
	114	District & Overhead Expense @ \$50/day	1,450		1,450
	115	Miscellaneous Expense 10%	8,700		8,700
		MI costs	8,000		8,000
		TOTAL INTANGIBLES	95,650		95,650
TANGIBLES	160	Non-Controllable Equipment	300		300
	161	Tubular Goods	9,700		9,700
	162	Pumping Equipment			
	163	Platform & Coissons			
	164	Well Head Equipment	1,500		1,500
	165	Production Equipment			
	166	Miscellaneous Equipment, Pkr.	500		500
		Monitor equip, gauges, recorders	3,000		3,000
		TOTAL TANGIBLES	15,000		15,000
		TOTAL COST	110,650		110,650

## DRY HOLE COST

INTANGIBLES				TANGIBLES				
	SUB NO.	DESCRIPTION	AMOUNT		SUB NO.	DESCRIPTION	AMOUNT	
INTANGIBLES	102 Transportation	Trkng, Csg, Tbq&Misc.	500	105 Contract Rig Cost		26 days @ \$1500/day	39,000	
						36 hrs Svc.Unit @ \$50/hr + 500 mi	2,300	
	109 Well Logging	Total logging-2 rns	2,750	112 Equipment Rentals		Power tong & Csg tools	1,000	
	113 Contract Services	Corng-incl bit wear	2,500	Other Intangible Cost				
		Analys. Core & Smpls	750					
TANGIBLES	161 Tubular Goods	DESCRIPTION			QUANTITY	COND	PRICE	AMOUNT
		13-3/8" OD H-40 Conductor			150'	A	10.00	1,500
		8-5/8" OD J-55 Surface Casing			500'	A	4.50	2,250
		5-1/2" OD long string			1400'	A	3.25	4,550
		2-3/8" OD tubing			1400'	A	1.00	1,400
	Other							

Remarks

DATE

10/1/73

PREPARED BY

BOH

AFE NO

Set 150' 13-3/8" Conductor  
 Set 500' 8-5/8" @ 500'  
 Drl 7-7/8" hole into top  
 of Arbuckle, cmt plug to  
 above Arbuckle top, run  
 5-1/2" Csg into Simpson  
 (1100').

# COST ESTIMATE SHEET

PROJECT NAME: Well #2 approximately 800' NE of Existing Well  
 #2 To monitor Simpson TD approximately 1400'

Acc No.	Description			Totals
INTANGIBLES	101 Labor & Related Cost		3,500	3,500
	102 Transportation		500	500
	103 Location Surveys & Damage		1,750	1,750
	104 Fuel and Water @ \$50/day		800	800
	105 Contract Rig Cost		26,300	26,300
	106 Bits, Reamers & Coring		7,150	7,150
	107 Mud & Mud Additives		2,000	2,000
	108 Cement & Cementing Services		4,500	4,500
	109 Well Logging		2,000	2,000
	110 Completion & Perforating		---	---
	111 Formation Treating		---	---
	112 Equipment Rentals		1,000	1,000
	113 Contract Services		2,500	2,500
	114 District & Overhead Expense @ \$50/da		950	950
	115 Miscellaneous Expense		---	---
	Rig MI		2,000	2,000
	TOTAL INTANGIBLES		60,450	60,450
TANGIBLES	160 Non-Controllable Equipment		300	300
	161 Tubular Goods		8,425	8,425
	162 Pumping Equipment			
	163 Platform & Caissons			
	164 Well Head Equipment		1,500	1,500
	165 Production Equipment, Pkr		500	500
	166 Miscellaneous Equipment, gauges, recorders		3,000	3,000
	TOTAL TANGIBLES		13,725	13,725
	TOTAL COST		74,175	74,175

## DRY HOLE COST

	SUB NO.	DESCRIPTION	AMOUNT		SUB NO.	DESCRIPTION	AMOUNT
INTANGIBLES	102 Transportation	Trkng, Csg, Tbg, etc.	500	105 Contract Rig Cost		16 days @ \$1500/day	24,000
						36 hrs Svc. Unit + 500mi	2,300
	109 Well Logging	Total logging	2,000	112 Equipment Rentals		Power tongs, tools	1,000
	113 Contract Services	Coring, incl bit wear	2,000	Other Intangible Cost			
		Analys, core & sampl	500				
TANGIBLES	161 Tubular Goods	DESCRIPTION		QUANTITY	COND	PRICE	AMOUNT
		13-3/8" OD H-40 Conductor		150'	A	10.00	1,500
		8-5/8" OD J-55 Surface Casing		500'	A	4.50	2,250
		5-1/2" Long string		1100'	A	3.25	3,575
		2-3/8" Tubing		1100'	A	1.00	1,100
	Other						

Remarks

DATE 10/1/73

PREPARED BY BOH

APPROVED BY

Set 150' 16" Conductor  
Set 500; 10-3/4" Sfc Csg  
(15" hole)  
Set 1000' 7"-9-7/8" hole  
into Arbuckle. 2 Jts Car-  
penter 20 3-1/2" Int. Ctd  
Tbg, Ctd Pkr.

# COST ESTIMATE SHEET

PROJECT NAME: Well #3, approx. 2400' SW of Existing Well  
#3 TD estimated @ 3125'

Acc. No.	Description			Totals
INTANGIBLES	101 Labor & Related Cost	6,800		6,800
	102 Transportation	750		750
	103 Location Surveys & Damage	1,750		1,750
	104 Fuel and Water @ \$50/day	1,450		1,450
	105 Contract Rig Cost	49,500		49,500
	106 Bits, Reamers	18,950		18,950
	107 Mud & Mud Additives	3,500		3,500
	108 Cement & Cementing Services	6,500		6,500
	109 Well Logging	3,000		3,000
	110 Completion & Perforating	---		---
	111 Formation Treating	3,000		3,000
	112 Equipment Rentals	2,250		2,250
	113 Contract Services	9,350		9,350
	114 District & Overhead Expense @ \$50/day	1,950		1,950
	115 Miscellaneous Expense 10%	12,300		12,300
	MI, MO	4,000		4,000
	Other	10,000		10,000
	TOTAL INTANGIBLES	135,050		135,050
TANGIBLES	160 Non-Controllable Equipment	500		500
	161 Tubular Goods	32,625		32,650
	162 Pumping Equipment			
	163 Platform & Caissons			
	164 Well Head Equipment	2,500		2,500
	165 Production Equipment			
	166 Miscellaneous Equipment, Pkr	1,000		1,000
	TOTAL TANGIBLES	36,625		36,625
	TOTAL COST	171,675		171,675

## DRY HOLE COST

	SUB NO.	DESCRIPTION	AMOUNT		SUB NO.	DESCRIPTION	AMOUNT
INTANGIBLES	102 Transportation	Trkng, Csg, Tbg, Misc	750	105 Contract Rig Cost		29 days @ \$1500/day	43,500
						10 days Compl unit @ \$600/day	6,000
	109 Well Logging	Total Logng-2 runs	3,000	112 Equipment Rentals		Power tongs, tools	1,250
						Pump Trk, Inj. test	1,000
	113 Contract Services	Corng, incl bit wear	5,000	Other Intangible Cost			
		Core & Sampl analys	750				
		Lay 2400' flowline	3,600				
TANGIBLES	161 Tubular Goods	DESCRIPTION		QUANTITY	COND	PRICE	AMOUNT
		16" OD Conductor pipe		150'	A	12.00	1,800
		10-3/4" OD Surface casing		500'	A	6.50	3,250
		7" OD Long string		1540'	A	3.75	5,775
		2 Jts 7" Carpenter 20 Alloy Casing		60'	A	150.00	9,000
		3-1/2" OD Tubing, Int. coated w/Plasticap		1600'	A	3.50	5,600
		4-1/2" OD Line pipe, Int. & Ext. Ctd.		2400'	A	3.00	7,200
	Other	Required pressure and flow sensors, transducers, power cables circuitry for remote read-out @ plant site, est. tot	10,000				

Remarks

DATE

10/1/73

PREPARED BY

BOH

AFE NO

### QUALIFICATIONS OF WILLIAM J. SHELLEY

William J. Shelley is Director of Regulation and Control for the Nuclear Division of Kerr-McGee Corporation.

Mr. Shelley was born March 15, 1922, and received his elementary education in Wichita, Kansas public schools. In February, 1948, he received his Bachelor of Science Degree in Chemical Engineering and in February, 1949, he received his Master of Science Degree in Chemical Engineering, both from the University of Michigan, at Ann Arbor, Michigan.

Mr. Shelley now resides in Oklahoma City, Oklahoma, at 3808 Northwest 69th Street.

Mr. Shelley was employed by Mallinckrodt Chemical Works from 1949 to 1967. During this period he served as Project Engineer with assignments in construction, research and development, and plant start-ups; Administrative Assistant responsible for the operation of division purchasing, office services, material accountability and classification section; Production Control Manager responsible for production scheduling, production reporting and material accountability functions; Director of Administration; and Assistant Division Manager.

For six years he was General Manager of the Uranium Division, in which capacity he was responsible to the U. S. AEC for the operation of its \$50,000,000.00 chemical refining and metal fabrication facilities located at Weldon Spring, Missouri. He was also responsible for planning and directing applied research in process and product improvement to meet changing requirements of consumer sites. During this period he worked closely with the parent company management for satisfactory performance under contract and close coordination of personnel placement and training activities. He served for three years as Vice President of Mallinckrodt Chemical Works, and as a member of the Corporate Operating Committee.

In May, 1967, Mr. Shelley joined Kerr-McGee Corporation, Nuclear Division, as its Manager of Manufacturing where he was responsible for operation of a uranium fuels plant located North of Oklahoma City, involving the production of enriched commercial fuel element pellets, enriched uranium alluminum alloys for test reactor fuel, and recovery of enriched scrap for Atomic Energy Commission and government contracts. He participated with a project group and The Architect Engineering firm in the design of the \$20,000,000.00 concentrate to UF<sub>6</sub> Conversion Facility located in Eastern Oklahoma, known as Kerr-McGee's Sequoyah Facility. He developed the plans for staffing, start-up and operation of the facility upon completion of construction. In addition, he supervised the design and construction of the Plutonium-Uranium Mixed Oxide Fuel Plant located North of the Oklahoma City site, and he developed planning for start-up training and operation on initial fuel element contracts.

From September, 1969 to June, 1971, Mr. Shelley was Assistant to the Group Vice President in charge of the Nuclear Division, providing advice and recommendations on all problems of operational management, including problems of production scheduling, cost forecasting and control, material and quality control, engineering and equipment modification. Since June, 1971, Mr. Shelley has been Director of Regulation and Control with responsibility for dealing with all federal, state and local regulatory agencies, including monitoring the operations, reporting as required, auditing and instituting changes to equipment, and discussing discrepancies with regulatory personnel and Kerr-McGee Management. In addition, all production quality and process control groups at the various Nuclear Division Plants report to Mr. Shelley. His duties in this regard involve supervision, personnel evaluation, program direction and evaluation of acceptable procedures for chemical and physical testing.



*File  
Kerr-Mc GEE  
Hearing*

UNITED STATES ATOMIC ENERGY COMMISSION

---

IN THE MATTER OF:

KERR-MC GEE CORPORATION

Docket No. 1010

Place - Washington, D. C.

Date - Tuesday, 14 August 1973

Pages 1 - 46

Telephone:  
(Code 202) 547-6222

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UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

- - - - -X

In the matter of: :

:

Kerr-McGee Corporation :

Docket No. 1010

:

- - - - -X

Court Room #1  
U. S. Tax Court  
1111 Constitution Avenue, N.W.  
Washington, D. C.

Tuesday, 14 August 1973

The prehearing conference in the above-entitled matter  
was convened, pursuant to notice, at 10:00 a.m.

BEFORE:

JOHN FARMAKIDES, Chairman, Atomic Safety and  
Licensing Board.

DR. DALE BABCOCK, Member.

LESTER KORNBLITH, Member.

APPEARANCES:

On behalf of the Applicant:

FRANCIS S. IRVINE, Esq., Kerr, Davis, Irvine, Burbage  
& Foster, Inc., 600 Fidelity Plaza, Oklahoma City,  
Oklahoma.

On behalf of the Intervenor Natural Resources Defense  
Council:

SHELDON, Karin, 1712 N Street, N. W., Washington,  
D. C. 20008.

On behalf of the Regulatory Staff:

ROY E. KINSEY, JR. Esq. and JAMES P. MURRAY, JR., Esq.,  
U. S. Atomic Energy Commission, Washington, D. C.



arl

P R O C E E D I N G S

CHAIRMAN FARMAKIDES: It is now 10:00 o'clock,  
and the hearing will be in order.

This is a prehearing conference in the matter of  
application of Kerr-McGee Corporation to amend its source  
material license so as to authorize subsurface disposal  
of certain liquid radioactive waste.

On July 10, 1973, the AEC issued a notice of  
hearing, published in the Federal Register at 38 FR 18921,  
directing that a hearing be held to consider this application  
by the Kerr-McGee Corporation.

The application was filed on May 10, 1972.

The amendment requested would permit the licensee  
to utilize deep well disposal of Raffinate wastes generated  
from its solvent extraction, uranium purification process  
at its Sequoyah facility.

By letter dated September 29, 1973, the Deputy  
Director advised the licensee that its amendment request  
had been denied and specified the reason therefor.

After consideration of additional information  
submitted by the licensee, the Deputy Director, by letter  
dated March 14, 1973 affirmed the denial of September 29,  
1972. On April 5, 1973, the licensee requested a hearing  
on the matter of the denial pursuant to the provisions of  
10 CFR 2.103.

1           The notice of hearing directed this Board to  
2 consider and to decide as the issues in this proceeding  
3 whether, pursuant to AEC Act of 1954 as amended and in  
4 accordance with 10 CFR 40.32 (c) and (d), the following  
5 two issues:

6           (1) The licensee's equipment, facilities and  
7 procedures proposed for use pursuant to the requested amend-  
8 ment are adequate to protect health and minimize danger,  
9 life or property, and

10          (2) The issuance of the amendment will be  
11 inimical to the health and safety of the public.

12          This Board is composed of Dr. Dale Babcock, to  
13 my right, a nuclear engineer. To my left is Mr. Lester  
14 Kornblith, also a nuclear engineer. My name is John  
15 Farmakides. I am an attorney.

16          I would like to have the parties state their  
17 appearance, please.

18          MR. IRVINE: Francis S. Irvine, attorney, Oklahoma  
19 City, Oklahoma.

20          CHAIRMAN FARMAKIDES: Staff?

21          MR. KINSEY: Roy Kinsey, counsel for the  
22 Regulatory Staff.

23          MR. MURRAY: I am James P. Murray, Jr., associated  
24 with Mr. Kinsey. I am chief rulemaking and enforcement  
25 counsel, AEC.

1 CHAIRMAN FARMAKIDES: Thank you.

2 Gentlemen, I think there are any number of ways  
3 we can proceed. One that I think would be pertinent in  
4 this case, and perhaps would lead to an orderly disposition  
5 of the proceeding is to suggest to the parties that they  
6 frame a statement or joint statement of the issues before  
7 this Board, and that this joint statement reflect not only  
8 those issues which are in agreement between the parties,  
9 but also those issues on which they do not agree.

10 We think that would be an extremely important  
11 assist in helping the Board resolve the issues  
12 before us. This would indicate to you that the Board does  
13 not quite understand the joinder of issues between the  
14 parties, and we think this could be clarified considerably  
15 by the two parties.

16 Secondly, we thought that one way of proceeding  
17 here is to have the parties certify for the Board, if you  
18 will, the record that has previously been made with respect  
19 to the application for amendment of the Applicant, and then  
20 to advise the Board how you wish to augment the record.

21 I understand at our last prehearing conference  
22 that discovery will be minor, that the position of the two  
23 parties is, as far as they are concerned, pretty well  
24 established, and they can proceed.

25 Am I correct, gentlemen?

1 MR. IRVINE: That's correct, sir.

2 MR. KINSEY: That's correct, Mr. Chairman.

3 CHAIRMAN FARMAKIDES: In other words, you are  
4 saying no further discovery is necessary, and you can  
5 proceed without any further documentation of the record  
6 except for what the Board has just indicated to be necessary?

7 MR. IRVINE: Yes, as far as the Applicant is  
8 concerned, there will be no further documentation needed.  
9 I think we have essentially all the documents that have been  
10 submitted at any time by either of the parties, so far as  
11 we know.

12 MR. KINSEY: That is right.

13 CHAIRMAN FARMAKIDES: For the Staff?

14 MR. KINSEY: Yes, Mr. Chairman, we have no need  
15 for further discovery.

16 CHAIRMAN FARMAKIDES: Of course, the Board has  
17 questions. We find the record before us is not adequate,  
18 and Dr. Babcock will address that point later, and insofar  
19 as we find the record is not adequate, we will expect you  
20 to augment that record.

21 Is there anything else that you would like to  
22 raise at this time?

23 MS. SHELDON: Mr. Chairman, I am Karin Sheldon,  
24 representing the National Resources Defense Council.

25 We filed with you a petition requesting the

1 reissuance of the notice in this proceeding, and I wonder  
2 if this would be an appropriate time to make a comment on  
3 this, or if you would prefer to let the petition stand on  
4 its own.

5 CHAIRMAN FARMAKIDES: I would very much appreciate  
6 a comment. Let me ask the parties if there is anything else  
7 of a preliminary nature that you want to raise with respect  
8 to the proceeding as it is now scheduled.

9 Mr. Irvine?

10 MR. IRVINE: You are speaking primarily of this  
11 proceeding today?

12 CHAIRMAN FARMAKIDES: Yes, sir. Well, we are  
13 preparing for the evidentiary sessions.

14 MR. IRVINE: Yes, I realize that, but the time  
15 of the evidentiary sessions may or may not need to be  
16 changed depending on what occurs here today. So we are not  
17 addressing ourselves specifically to that at this time.

18 CHAIRMAN FARMAKIDES: All right.

19 MR. KINSEY: Mr. Chairman, you have before you  
20 the Staff response.

21 CHAIRMAN FARMAKIDES: Yes, which we haven't read  
22 yet.

23 MR. KINSEY: If I could briefly summarize the  
24 Staff's response, we would interpose no objection.

25 CHAIRMAN FARMAKIDES: Fine. Before you do that,

1 let me ask Ms. Sheldon to make an appearance and ask  
2 about the notification here. Please address yourself to the  
3 fact that your first two lines indicate that you are  
4 petitioning the AEC, which would seem to indicate you are not  
5 petitioning this Board.

6           However, at the very end of your petition, you  
7 indicate that you have, in the last paragraph, you are  
8 simultaneously filing this petition with the Commission.  
9 So I am not really -- the Board isn't quite sure what you are  
10 doing and what this, in fact, is. If you could, address  
11 yourself to that.

12           MS. SHELDON: I will. I am representing the  
13 National Resources Defense Council with respect to this  
14 petition. Basically, the issue at hand is what is the best  
15 way to effectuate what we consider to be an AEC policy as  
16 well as a matter that is stated in AEC regulations, that  
17 persons whose interests are affected by AEC proceedings have  
18 a right to intervene and participate in those proceedings.

19           The petition which we have filed was intended to  
20 be addressed to you, because we feel that you do have the  
21 authority to decide this matter, and to order a reissuance  
22 of the notice of hearing, if you so wish.

23           By stating the Atomic Energy in the first sentence,  
24 this included you as representatives of the Commission.

25           CHAIRMAN FARMAKIDES: Well, let's clarify that.

1 I don't think we are representatives of the Commission.  
2 We are a body separately established. We have no direct  
3 connection at all. We have a connection in a sense that  
4 our decision can be reviewed by the Commission. Is that what  
5 you mean?

6 MS. SHELDON: Yes, that is what we mean. We  
7 mean you are carrying out adjudicatory functions as part  
8 of the Atomic Energy Commission, not the commissioners  
9 themselves, but the Commission as a regulatory and  
10 adjudicatory agency.

11 The question that we have and the reason that  
12 we included the statement in the last paragraph was to  
13 assure timely resolution of this matter, and to prevent  
14 any problems that might arise if you decided that you did  
15 not have the jurisdiction to reissue the notice of hearing.

16 In that case, we wanted this matter to go to  
17 the Commission itself quite rapidly, so that there would be  
18 no delay of these hearings, and with respect to notice,  
19 and one could be issued promptly if found to be necessary.

20 We were not trying to drag the proceedings out.  
21 Certainly we have no intention of doing that, because as is  
22 clear from this, we are not even intervening at this point.  
23 The only question that we are addressing in this petition  
24 concerns the notice which was issued about the hearings.

25 CHAIRMAN FARMAKIDES: Do I understand you correctly



1 that you are not seeking to intervene at this point?

2 MS. SHELDON: No. I think the petition, as you  
3 will see, is not sufficient to be a petition for interven-  
4 tion. It does not state what our interests are in this  
5 matter, and does not meet the requirements of 10 CFR 314.  
6 I have no authority, for example, to intervene on behalf of  
7 NRDC in this proceeding. So we are asking the notice be  
8 reissued, because we feel the rights of persons affected  
9 by this proceeding, those rights which are stated in the  
10 Commission's regulations, are meaningless unless persons who  
11 are able to exercise those rights are informed of their  
12 existence.

13 There may be questions that the rights to inter-  
14 vene are limited to construction license or operating  
15 license for a production facility, or a nuclear power plant.  
16 However, a review of 10 CFR 40 reveals that no particular  
17 procedures are specified therein, and certainly no different  
18 procedures which are to be applicable to hearings conducted  
19 for source material licenses. If we read the whole of  
20 10 CFR Part 2, which specifies general rules of practice  
21 for the Commission, we see that in 2.1, which covers the  
22 scope of the rules, it indicates that the rules are to be  
23 applicable to all proceedings under the Atomic Energy Act,  
24 and that includes, of course, proceedings such as the one  
25 that is being contemplated here for an amendment to the

1 source license.

2 Now, the problem, as we see it, and as it is  
3 addressed in our petition, is that the petition set forth  
4 all the requirements of the hearing without notifying persons  
5 that they had a right to intervene, specifying the amount of  
6 time that they had a right to exercise this right of inter-  
7 vention, or stating the procedures to be followed.

8 Now, in the response of the Staff, which I have  
9 briefly read this morning, they indicate they have no  
10 objection to this notice of reissuance of the notice, and  
11 they acknowledge that this right does in fact exist, and  
12 that people should be informed of it.

13 The difficulty which the Staff finds with our  
14 petition involves our interpretation of Section 2.105.  
15 It is this section that we have determined indicates what  
16 should be specified in the notice of hearing.

17 Now, I would like to say that even if it is  
18 determined that Section 2.105 does not apply to hearings of  
19 this kind, the policy and the regulations set forth in  
20 Section 2.714 and 715 mean that some means must be available  
21 to the public to notify them of their rights to intervene.  
22 Even without a specific notation of what is to be included  
23 in a notice of hearing, there must be some provision which  
24 sets forth in the notice that the public has a right to  
25 intervene.

1 CHAIRMAN FARMAKIDES: Let me interrupt. Perhaps  
2 at this time we might go back and accept the Staff's offer  
3 to discuss their response to our motion, since you are,  
4 in effect, responding to theirs. We will give you plenty of  
5 time to respond to their response, as it were.

6 The thought I would like to ask, too, is that you  
7 might, while the Staff is responding to your petition,  
8 and before you then respond to their response, could you  
9 address the penultimate paragraph on page 5 of your  
10 petition in which you say that we do have authority, and  
11 could you also address that in view of the interaction of  
12 7103, 7105, and -- I am sorry -- 2.103, and 2.105, and  
13 2.703?

14 We very much would welcome your help in outlining  
15 for us what authority you feel we have here, and especially  
16 as to the interaction of 104 and 105 and 703. So I will  
17 give you some time to consider that, and we can go, I think,  
18 at this time -- unless you want to clarify your petition  
19 further.

20 MS. SHELDON: Why don't I do that briefly, so  
21 I leave in your minds a clear idea of what we are getting  
22 at?

23 CHAIRMAN FARMAKIDES: What we will do following  
24 that is let them respond to your petition, and you can  
25 reply to them.

1 All right. Okay.

2 MS. SHELDON: Really, the argument can be stated  
3 very simply. It is rather an equitable, fundamental due  
4 process argument. The Commission has, through its  
5 regulations and through its policy, granted persons whose  
6 interests are affected by their proceedings the right to  
7 intervene, and participate. This is a rather fundamental  
8 right.

9 CHAIRMAN FARMAKIDES: All proceedings?

10 MS. SHELDON: All proceedings, unless otherwise  
11 specifically specified. This is the right that exists on  
12 the one hand.

13 On the other hand, that right, in order to be  
14 exercised by persons who are eligible to exercise that  
15 right, must be an informed one. In other words, the right  
16 without a notice of the existence of that right is meaning-  
17 less, and the notice which the Commission provides through  
18 the Federal Register indicating when hearings are going to  
19 be held, and unless in the Federal Register notices,  
20 specified statements are included to tell people that they  
21 have a right to intervene and tell them what procedures are  
22 to be followed, then the rights themselves are unable to  
23 be exercised and are, as we said, therefore, meaningless.

24 CHAIRMAN FARMAKIDES: You are saying the rules as  
25 published by the Commission are not an effective means of

1 putting people on notice as to their rights?

2 MS. SHELDON: I would venture to say very few  
3 people, members of the public, whom I generally represent  
4 in proceedings of this kind, have access to the Code of  
5 Federal Regulations or would have familiarity with it. Most  
6 of them are not represented by counsel. They learn of these  
7 things through newspapers and through the Federal Register.

8 Thank you.

9 CHAIRMAN FARMAKIDES: Sir?

10 MR. KINSEY: Two points which are contained in  
11 our response which we filed with you this morning:

12 The first point is that we do not believe that  
13 either 2.104 or 2.703, which govern the issuance of notices  
14 of hearing, requires any explicit statement inviting interested  
15 persons to intervene in these proceedings. The regulations  
16 are clear on their face under 2.714 in the Atomic Energy  
17 Act of 1954, which is exclusively clear that any interested  
18 person whose interests may be affected by a proceeding may  
19 petition to become a party to that proceeding.

20 CHAIRMAN FARMAKIDES: Is that your response to  
21 Ms. Sheldon's comment that rules are really not available  
22 and they cannot act as proper notice as to the right of  
23 petitioner to intervene?

24 MR. KINSEY: Yes. In that regard, I might say  
25 the rules are available, but are not available normally to

1 persons who wish to intervene.

2 CHAIRMAN FARMAKIDES: Proceed.

3 MR. KINSEY: Insofar as their argument on Section  
4 2.105 requiring notice of proposed action and also pursuant  
5 to that provision requiring specific language inviting  
6 persons to intervene, it is the Staff's position that this  
7 section is inapplicable to the instant proceeding in that  
8 this is a hearing required under the act and therefore there  
9 would be notice under 104.

10 CHAIRMAN FARMAKIDES: Come back again on that.  
11 You are saying this is a proper hearing under 2.104?

12 MR. KINSEY: That's correct, sir, and therefore  
13 it is a hearing required pursuant to the Atomic Energy Act.  
14 Section 2.105 concerns notices of proposed action.  
15 That is, prior to the Director of Regulation taking action  
16 in granting the license, he publishes a notice in the Federal  
17 Register indicating he proposes to take this action.  
18 Specific language pursuant to 105 must be incorporated  
19 inviting the Applicant to request a hearing and inviting  
20 any interested person whose interests may be affected by  
21 the granting of a license or an amendment also the right to  
22 petition to intervene and request a hearing.

1 CHAIRMAN FARMAKIDES: Mr. Kinsey, let me be clear  
2 here. Under 2.104A, "In the case of an application on which  
3 a hearing is required by the Act," is this proceeding required  
4 by the Act?

5 MR. KINSEY: I believe so, sir.

6 CHAIRMAN FARMAKIDES: What part of the Act?

7 MR. MURRAY: Section 189.

8 CHAIRMAN FARMAKIDES: So you are maintaining this  
9 proceeding is required by the Act?

10 MR. MURRAY: Yes, sir.

11 CHAIRMAN FARMAKIDES: All right. I am sorry.  
12 Proceed, sir.

13 MR. KINSEY: That basically is the point, or  
14 the two points, contained in our response. Notwithstanding our  
15 arguments with respect to the petitioner's arguments, Staff  
16 would interpose no objection should the Board determine that  
17 as a matter of policy that a supplementary notice of hearing  
18 should issue.

19 CHAIRMAN FARMAKIDES: By whom?

20 MR. KINSEY: We also believe in this regard that  
21 the Board under the notice of hearing issued by the Commission  
22 would have jurisdiction to issue such a notice in that you  
23 now have jurisdiction over this case, and by the same token  
24 you also have jurisdiction to set time, place and date.

25 CHAIRMAN FARMAKIDES: In other words, you are



1 suggesting that this Board could very easily issue an order  
2 in which we -- a prehearing conference order, for example,  
3 in which we narrate what has happened today, and in which we  
4 then advise the public that petitions to intervene will be  
5 accepted up to three days from that notice.

6 Once that happens, that would, in fact, then be --  
7 supplement the actual notice of hearing issued by the  
8 Commission?

9 MR. KINSEY: That is right.

10 CHAIRMAN FARMAKIDES: All right. Anything else,  
11 Mr. Kinsey?

12 MR. KINSEY: No.

13 CHAIRMAN FARMAKIDES: Mr. Irvine?

14 MR. IRVINE: As the Applicant here, we want to  
15 be in the position that whatever is done by this Board is  
16 done in a lawful sort of way. We don't want to be in the  
17 position of going up to appeal on some kind of notice  
18 technicality, so to speak.

19 However, we do feel that we agree with the Board's  
20 position that this is a hearing required by law, and that the  
21 notice of this under Section 104 has been given and is proper.

22 CHAIRMAN FARMAKIDES: Are you saying you agree with  
23 the Staff's position?

24 MR. IRVINE: Yes, I agree with the Staff's position  
25 on that. Therefore, we feel the notice has been given, that

1 the notice is proper.

2 I do not know that I necessarily agree with the  
3 Staff's position that this Board may now give a new notice  
4 or order a new notice, although I suppose that you may order  
5 done almost anything that you desire to have done. But in  
6 order to give this Board authority, the notice has to be  
7 published, and then the Board is appointed, as I understand  
8 the regulations. So that the Board becomes a functioning body  
9 as a result of the requests for hearing and the publication of  
10 the notice.

11 So, therefore, I am not certain that the Board,  
12 therefore, has the authority to go back and to say the notice  
13 was improper and, therefore, new notice must be issued.

14 CHAIRMAN FARMAKIDES: Thank you, sir.

15 Ms. Sheldon, would you like to respond now, or do  
16 you want a couple more minutes?

17 MS. SHELDON: This is fine. I trust these comments  
18 will be responsive.

19 To begin with, Mr. Chairman, it is our position  
20 that the Section 2.104 notice of hearing is not applicable  
21 to these proceedings.

22 Section 2.105 is.

23 For this reason, the Section 2.103 gives the  
24 Applicant the right to demand a hearing if he so wishes,  
25 after the Director of Regulations has taken initial action.

1           The hearing is at the option of the particular  
2 licensee involved. He does not have to demand if it he does  
3 not wish to.

4           Consequently, I don't feel this makes this a hearing  
5 which is required under the Act.

6           Now, our view of what is a hearing which is  
7 required under the Act is one which is set forth as absolutely  
8 required. It must take place. It is not the option or within  
9 the discretion of any party to hold or not to hold a hearing.  
10 It is specified as one which must take place.

11           In this case, if Kerr-McGee had not demanded a  
12 hearing we wouldn't be here today. Therefore, we don't feel  
13 2.104 applies, but 2.105 does apply because this hearing is  
14 not required by the Act.

15           CHAIRMAN FARMAKIDES: To that point, isn't that  
16 point moot if we accept the Staff's suggestion that all we  
17 need do at this point in time is to issue an order which out-  
18 lines an opportunity for the public to petition to intervene  
19 say thirty days from the date of that order?

20           Doesn't that accommodate your position?

21           MS. SHELDON: Certainly.

22           CHAIRMAN FARMAKIDES: Then the position of whether  
23 this is a 104 or 105 is no longer pertinent, if you agree with  
24 the Staff's position on the authority of this Board to issue  
25 an order in which we permit petitions to intervene for thirty

1 days.

2 MS. SHELDON: The important thing to us is granting  
3 persons whose interests are affected the right to intervene,  
4 or notifying them that this right exists. We would accept the  
5 order of the Board or reissuance of the notice on this matter  
6 as an appropriate response, regardless -- this is not as  
7 critical to the argument as the question of exercising.

8 CHAIRMAN FARMAKIDES: You can appreciate our  
9 position. If we can solve a problem at one level, there is no  
10 sense going to a different level.

11 MS. SHELDON: Yes.

12 CHAIRMAN FARMAKIDES: It seems to me the Staff is  
13 in agreement with the Natural Resources Defense Council, and  
14 the Applicant stated at one point that it also agreed with  
15 Staff's position, and then it went on to perhaps disagree to  
16 a certain extent.

17 Is there anything further with respect to these  
18 points made by Ms. Sheldon, Mr. Kinsey?

19 MR. KINSEY: I would concur in your remarks that if  
20 we can resolve it at one level, there is no need to take it  
21 to another.

22 Again, our position is that we would have no  
23 objection in this instance to the Board taking what action is  
24 deemed necessary.

25 CHAIRMAN FARMAKIDES: Without joining issue on 104

1 and 105?

2 MR. KINSEY: Correct.

3 MS. SHELDON: Mr. Chairman, may I ask you, then, if  
4 the suggestion of an order is the solution?

5 CHAIRMAN FARMAKIDES: This is going to be a Board  
6 action, and it isn't mine, and I haven't talked to my colleagues  
7 yet.

8 It seems to me that if you two in essence -- and I  
9 think you have agreed in essence that this would be proper  
10 notice or sufficient notice for your purposes, this would be a  
11 very preferred course of action.

12 Now --

13 MS. SHELDON: The only thing that troubles me about  
14 that -- and this is -- I don't know what the immediate scope of  
15 this proceeding is -- what will happen the next time around?

16 CHAIRMAN FARMAKIDES: What do you mean?

17 MS. SHELDON: If a situation of this kind arises  
18 again and the notice is put in the Federal Register and does  
19 not contain what we feel is the requisite information, if we  
20 will have to proceed once more on this.

21 CHAIRMAN FARMAKIDES: Well, if you are suggesting  
22 this is a good test case for you to take up, that will be your  
23 decision to make, but in terms of this Board we are here to  
24 resolve an issue.

25 MS. SHELDON: That is the only thing that troubles

1 me.

2 CHAIRMAN FARMAKIDES: Well, you will have to think  
3 about that.

4 MS. SHELDON: We feel the Staff's position and  
5 ours is close enough so that no further difficulty is ahead  
6 of us.

7 CHAIRMAN FARMAKIDES: In view of that, I was going  
8 to ask for briefs this morning. I read the petition, of  
9 course, and I wasn't quite sure to whom it was addressed or  
10 whether it was properly before us, but assuming it was it  
11 doesn't appear I now need briefs, unless you people think you  
12 want to file briefs.

13 MR. MURRAY: Of course you have our position,  
14 Mr. Chairman, in the response to the petition.

15 CHAIRMAN FARMAKIDES: I haven't read it yet,  
16 Mr. Murray.

17 MR. MURRAY: That constitutes our brief and legal  
18 argument, demonstrating our views.

19 CHAIRMAN FARMAKIDES: Do the other two parties  
20 want to file a paper here?

21 MR. IRVINE: We received this rather late, and I  
22 was away from Oklahoma City yesterday and over the weekend,  
23 so I have not had an opportunity to prepare anything.

24 If you would like, we would be happy to prepare  
25 a response along the lines we have suggested.

1 CHAIRMAN FARMAKIDES: No, sir. I am just asking  
2 you if you wish to respond to it.

3 I think at this point in time I feel confident  
4 that we have enough information here to resolve the issue.  
5 But I am asking you if you would like to respond to the  
6 petition to require litigation filed by the National  
7 Resources Defense Council.

8 No?

9 MR. IRVINE: No.

10 MS. SHELDON: Mr. Chairman, if you would like a  
11 more complete statement of our reasons and perhaps a more  
12 detailed response to your questions this morning, I would be  
13 happy to provide you with that.

14 CHAIRMAN FARMAKIDES: Ms. Sheldon, I welcome that.  
15 It appears to me again that if you and the Staff are so close  
16 perhaps you are really in agreement and the application is  
17 basically in agreement.

18 I don't see that we have to beat a dead horse, and  
19 I think we can resolve it very easily.

20 I have to talk to the other members to see if  
21 this is a Board position or merely a proposal.

22 Is there anything further on this petition?

23 (No response.)

24 Thank you.

25 Let me, Ms. Sheldon, ask one more thing. Assuming



1 we go that route, do you have any advice to give the Board as  
2 to whether or not you would petition to intervene?

3 MS. SHELDON: Not at this point I don't. I know  
4 the National Resources Defense Council has been very  
5 interested in the question of disposition of nuclear waste  
6 materials and has been involved in other proceedings on this  
7 issue.

8 I also know they are collecting information on this  
9 particular issue and are seeking to be as informed as  
10 possible.

11 That will be a decision which they will have to  
12 make themselves, and most likely if they do, they will  
13 intervene on their own behalf, since most of their  
14 members have lawyers.

15 I would assume that intervention would be made  
16 by one of their own counsel.

17 CHAIRMAN FARMAKIDES: Let's make the assumption  
18 that they do intervene. How much discovery time would you  
19 need?

20 MS. SHELDON: I have not looked at the materials.  
21 That I really am not in a position to say. I really don't  
22 know what they have, or how long they would need to do that.

23 CHAIRMAN FARMAKIDES: All right. Let's make  
24 certain assumptions just to be certain that the record is  
25 ample for our consideration, the Board's consideration.

1           This is August 14. Assuming an order of the time  
2 we are talking about issues in a couple of days, let's say just  
3 for using round numbers August 20, then thirty days will  
4 expire September 20, on or about September 20.

5           Perhaps then we will be able to respond to any  
6 petitions to intervene within a matter of a week or two weeks.  
7 So that means we will be prepared to proceed with a second  
8 prehearing conference, if necessary, October 15, the week of  
9 October 15.

10           We then would be able to go to evidentiary hearing,  
11 assuming no time for discovery, within a couple of weeks.

12           Assuming time for discovery, I would think we would  
13 be going into December.

14           MR. MURRAY: Mr. Chairman, one of our principal  
15 witnesses is a professor of geology at the University of  
16 Missouri. He starts back to school on the 27th. It looks like  
17 he will be out for Christmas vacation at the time this hearing  
18 goes forward.

19           CHAIRMAN FARMAKIDES: Do you have any suggestions,  
20 Mr. Murray?

21           MR. MURRAY: I suggest that the Chairman give  
22 consideration to cutting down on the period you are talking  
23 about, the thirty-day period for interventions.

24           If NRDC wants to intervene, it seems to me they  
25 are on actual notice. There is no question about that.

1 CHAIRMAN FARMAKIDES: Yes. We could certainly ask  
2 NRDC that if they wish to intervene they commence informal  
3 discovery immediately.

4 MR. MURRAY: And the public document room is  
5 filled with materials on this proceeding, as you know.

6 CHAIRMAN FARMAKIDES: Let me put NRDC on notice. If  
7 you do wish to intervene I think you should begin informal  
8 voluntary discovery at the earliest time and that you could  
9 petition to intervene at an early moment so that we can  
10 proceed without delay.

11 Mr. Murray, I am not thinking of NRDC, but with  
12 respect to the position with respect to the public, are you  
13 suggesting that we give less than thirty days' notice?

14 MR. MURRAY: I am suggesting that the public is  
15 already on notice as of the notice of hearing that was filed  
16 in the Federal Register in this proceeding, fully on notice in  
17 conjunction with the Atomic Energy Act and the regulations,  
18 and any additional notice that the Board deems appropriate  
19 to give will be simply a gratuitous notice.

20 CHAIRMAN FARMAKIDES: That is contrary to the  
21 position stated earlier.

22 MR. MURRAY: No, sir. We have no objection to the  
23 notice. It is not contrary to our view, as the filing made  
24 clear. Therefore, the opportunity should be taken to cut  
25 down the period of notice given.

1           We are all in favor of notice, and we think it has  
2       been adequate. We don't think thirty days' additional notice  
3       is required.

4           MS. SHELDON: The problem is that without specifying  
5       that persons have a right to intervene, the notice falls short  
6       of putting persons on notice that they have to get busy with  
7       discovery and participate.

8           If they don't know that they have a right to do so,  
9       how can they exercise that? And cutting down that time  
10      period certainly in our view is an abrogation of the rights  
11      that we are trying to establish.

12          Now, our concern is not with NRDC alone, although  
13      I am representing them here. Our petition was for all the  
14      members of the public, particularly people in the area of  
15      concern in Oklahoma, that they receive proper notice which  
16      advises them that this hearing is going to be held and tells  
17      them how they can become involved if they feel their interests  
18      are going to be affected thereby.

19          We feel this is legally required, and we would like  
20      to see every possible step taken without dragging this hearing  
21      out intolerably to provide the right time of notice, which  
22      not only includes the fact that a hearing is going to be held,  
23      but a statement of participation and procedures and so on.

24          CHAIRMAN FARMAKIDES: I understand your position,  
25      Ms. Sheldon.

1 MR. IRVINE: Let me address myself to this one more  
2 time. Equity cuts both ways, and Kerr-McGee now has followed  
3 through with every procedure possible in order to bring this  
4 thing to as early a hearing as we possibly can do.

5 Now, we are looking three more months down the line  
6 for the continuation of this hearing.

7 Now, quite frankly, the people who are interested  
8 in Oklahoma are quite well aware of the situation that has  
9 been developed. It has been taken through the Oklahoma  
10 Public Health Service, the Oklahoma Public Health Service, the  
11 Oklahoma Water Resources Board, the state agencies who are  
12 particularly interested in this aspect of this matter, or the  
13 disposal of wastes in deep wells.

14 It has also been before our Corporation  
15 Commission and that is a great deal to do with the disposal  
16 of underground wastes by oil wells.

17 As a consequence, these people are well aware of  
18 this, and as a matter of fact I was asked to present today  
19 a letter from the Oklahoma Public Health Service to go as a  
20 part of the record in here in which they recognize and are  
21 aware of this.

22 So I think that to go back now and to say we must  
23 issue an order and notify the public at large that they have  
24 a right to intervene would be not necessarily contrary to the  
25 spirit, but certainly contrary to the exact language of the

1 regulations.

2 CHAIRMAN FARMAKIDES: Mr. Irvine, excuse me, sir.  
3 How would the thirty-day delay affect adversely the Kerr-McGee  
4 Corporation?

5 MR. IRVINE: Well, sir, we have several pits out  
6 there in which we are now under temporary license from the  
7 AEC disposing of this material. If it is at all possible, we  
8 need to get those pits emptied out.

9 We have had a lot of rain in Oklahoma this year  
10 and we need to get started emptying these pits into the well  
11 if it is at all possible.

12 An additional three months' delay gives us that many  
13 more problems that we have to deal with from a physical stand-  
14 point.

15 CHAIRMAN FARMAKIDES: Can you be more specific?  
16 What does this mean in terms of your time schedules, your  
17 costs? Do you have any information in hand that you can supply  
18 the Board?

19 MR. IRVINE: I did not have specifically the costs  
20 at hand, but it will mean within a short period of time that  
21 we either are going to have to dig additional pits at  
22 considerable cost on there to temporarily handle these wastes,  
23 unless we can get some sort of relief to put them into this  
24 well.

25 Now, I can get you those, and I will submit those

1 to you if you desire.

2 CHAIRMAN FARMAKIDES: I think we have had enough  
3 information provided to us on this point. Let's now go to the  
4 second point which is perhaps more substantive, and that is  
5 the question of adequate documentation for the record.

6 Dr. Babcock has a number of questions on which he  
7 wishes to clarify, and I think it is terribly important that  
8 the Applicant take notes.

9 I guess you will have the transcript, too, but  
10 it would seem that absent this kind of information the Board  
11 will not have a sufficient basis on which to make a finding.

12 Also, the Staff is going to be asked to supply  
13 certain documentation.

14 Dr. Babcock?

15 DR. BABCOCK: I assume that Kerr-McGee is placing  
16 major reliance on the fact that this well will, or will not  
17 be a satisfactory mechanism for the disposal of the wastes.  
18 Major reliance is being placed upon the tests in which you  
19 pump water down the well. You have got the response to this  
20 pumping by shutting the thing off and measuring the decay  
21 of the pressure. Then you submitted certain data to  
22 a computer, and you attempted to duplicate the pressure  
23 responses that you had made.

24 CHAIRMAN FARMAKIDES: We are quoting from  
25 documentation that has been available to us and is now in



1 the record.

2 MR. IRVINE: You are quoting from Mr. Gruy's report,  
3 Exhibit A to our application?

4 DR. BABCOCK: Yes, Exhibit A.

5 Yes. I believe it would be quite helpful to this  
6 Board if, at the next meeting, if Kerr-McGee would give some  
7 kind of resume of experimental work that was done and the  
8 input that was fed to the computer and how they took this  
9 input and arrived at the conclusions that you present.

10 In other words, I have difficulty, and I believe  
11 the other members of the Board also have difficulty, in  
12 seeing how the data that was given can be translated into  
13 the conclusions that you came up with.

14 In other words, we want to be a little more  
15 knowledgeable about the process that you people went through.

16 MR. IRVINE: Mr. Farmakides and Mr. Babcock, is it  
17 permissible to interrupt you as we go along and perhaps  
18 clarify these things?

19 DR. BABCOCK: If you are asking me, yes.

20

21

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1 MR. IRVINE: Sir, both the Staff attorneys and  
2 myself have conferred in connection with this matter, and  
3 although we are aware of the fact that the regulations provide  
4 that testimony will be submitted in written form, we had both  
5 felt that testimony in this instance might better be given in  
6 verbal form, and it was our intention to give an extensive  
7 verbal testimony in connection with this very matter.

8 We would, I suppose now would be as good a time as  
9 any to find out whether this would be an acceptable matter or  
10 not.

11 CHAIRMAN FARMAKIDES: I would like to know why.  
12 I prefer written testimony. I think it makes good sense. It  
13 helps the Board move, and provides the technical members with  
14 sufficient time to absorb the material before the fact, and  
15 we can then cross-file, I think, more effectively.

16 Is there a reason why you are suggesting oral  
17 testimony? Is there a problem you have?

18 MR. IRVINE: Not a specific problem. We intended  
19 to bring Mr. Gruy here to explain the system he used and how  
20 he did it, and we felt he could explain it more fully by  
21 verbal testimony.

22 CHAIRMAN FARMAKIDES: Why couldn't he do it in  
23 written testimony?

24 MR. IRVINE: You can do almost anything in written  
25 form that you could verbalize, but I felt the testimony would be

1 more effective, would answer specific questions.

2 CHAIRMAN FARMAKIDES: I would hope he would be here  
3 anyway, even if he presented written testimony.

4 Excuse me. (Pause.)

5 I think we prefer to go along with the rules and  
6 require written testimony, sir, and you can certainly  
7 summarize it orally, and I think that would be to the advantage  
8 of the Board and the parties, especially if we have an inter-  
9 vention. I think it would be very clear that written  
10 testimony is preferred.

11 Perhaps in order to expedite the hearing this  
12 morning, or the hearing conference here, Dr. Babcock might  
13 simply give you the areas in which we need clarification, and  
14 then you and the Staff could get together on those areas later  
15 and decide if there is any discovery needed. I don't see that  
16 there is any such need.

17 However, if we can proceed this way, I think we will  
18 save some time.

19 DR. BABCOCK: What I have given so far has been kind  
20 of a generality situation. I will now give you a few examples  
21 of the types of specific questions we would like to see  
22 delineated further.

23 Question one: What are the constants that were  
24 introduced into the simulation run?

25 Two: What are the variables that were then left to

1 be adjusted by the simulation operator?

2 MR. IRVINE: Dr. Babcock, I am trying to write these  
3 down.

4 CHAIRMAN FARMAKIDES: You will have the transcript.  
5 It is just for additional clarification.

6 MR. IRVINE: Thank you.

7 DR. BABCOCK: Question three: How accurate a fit of  
8 the simulator data to the actual data is required in order to  
9 say for sure that:

10 (a) The well casing does not have a leak that  
11 communicates to a vertical fissure and allows major escape of  
12 the waste water that eventually leaks to the surface?

13 (b) Let us assume that there is a quarter-inch  
14 pipe that penetrates the arbuckle formation. Would the  
15 leakage through this pipe be detected in the simulator test?

16 (c) How much leakage through the nearest fault can be  
17 detected or predicted by the simulator test? In other words,  
18 I am trying to get an idea of the magnitude of possible error  
19 in your conclusion that there is not major leakage.

20 Going to question four now: I note that the  
21 computer printout does not basically follow the pressure fall-  
22 off as measured. The computer printout falls off less slowly  
23 than the measured during the initial portion of the test. It  
24 falls off more rapidly than the actual test in the final  
25 portion.

1           The question I am asking you is, is that a  
2 significant item? Are you greatly concerned about that  
3 deviation which you did not discuss?

4           Question five: What is the significance of the  
5 continued divergence between the simulator and the actual data  
6 beyond the test duration, which I believe was something like  
7 150 hours. You are obviously concerned with many tens of  
8 thousands of hours, and if there is a divergence there at the  
9 end of 150 hours, does this affect the conclusions that you  
10 have given?

11           Question six: I note that you predict that there is  
12 a fault some 1100 feet from the well, but in the verbal  
13 description of faults, you say the nearest fault is  
14 approximately one mile away. I would like to have this  
15 divergence discussed.

16           MR. IRVINE: Pardon me, Dr. Babcock. Just to be  
17 specific, sir, what verbal discussion of this were we  
18 referring to, sir? I don't recall.

19           DR. BABCOCK: I am sorry. I was using verbal in the  
20 sense that it is words, not oral. I was speaking about this  
21 document (indicating), the engineering study by H. J. Gruy.  
22 That report mentioned the fact that there were known faults  
23 around the simulator test -- the simulator test predicted a  
24 fault at a further distance, and I wanted that explained.

25           MR. IRVINE: Fine. Thank you, sir.

1 DR. BABCOCK: The next set of questions is of a  
2 somewhat different nature, so I will take up this next set and  
3 we will start a new numbers system, because you will note  
4 they are not quite like the others.

5 These are really related to alternatives that might  
6 be something different than what you have proposed as your  
7 mechanism of putting this water down the well.

8 My question one is: Would an increase in the  
9 density of the injected fluid be helpful in keeping the water  
10 that is injected from eventually finding a way to the  
11 surface?

12 My point there is, I am wondering if the fact that  
13 the injected fluid would be more dense than the fluid that is  
14 there now, would that give it a vector to go down as opposed  
15 to a vector to go up in the present situation?

16 If this has any merit at all, I would like to have  
17 some kind of a discussion of the cost of doing this kind of  
18 thing.

19 If the mechanism of increasing the density of the  
20 water that you considered turned out to be evaporation, which is  
21 the most obvious way of doing it, would the reduction in the  
22 amount of water that you got in order to increase the density,  
23 would the reduction be helpful in your well injection  
24 procedure?

25 I believe that is a sample of what I am talking

1 about. Just a moment. (Pause.)

2 Mr. Farmakides thought my last question was not  
3 quite as precise as it ought to be.

4 When I say would it be helpful, what I meant was  
5 would there be benefits accrued to the Kerr-McGee operation  
6 by reducing the volume one third in addition to the benefit  
7 that you would get if you did increase the density?

8 MR. KORNBLITH: I don't have questions as finely  
9 honed as Dr. Babcock, but I would like to make one point that  
10 we were talking about before. The Board members, at least  
11 one of the Board members, had a good technical background, but  
12 not related to the areas of petroleum engineering, well  
13 evaluation, and this sort of thing, and we would -- or I  
14 would -- like to see included in this written testimony we have  
15 discussed enough material to give a person with a reasonable  
16 but not specialized technical background an appreciation of how  
17 one goes about evaluating the performance of a well as it  
18 affects this application.

19 I think this sort of thing is the sort of thing  
20 that I might want to read once or twice before I come into  
21 the hearing, rather than to rely upon having to absorb it  
22 orally while I am sitting here, and I think this is basically  
23 the reason why the Board has asked that this testimony be put  
24 in writing.

25 I am sure there will be a number of detailed



1 questions during the hearing that by their nature have to be  
2 answered orally, but I think what I was referring to basically  
3 is background material, which we would like to have in written  
4 form.

5 In addition to the types of areas that Dr. Babcock  
6 has been addressing, I feel we need some additional information  
7 from the Staff in order to relate their conclusions to the  
8 material that has been provided in the record. We have a  
9 substantial amount of data that the applicant has submitted  
10 that Dr. Babcock has been discussing. We have some rather  
11 short, brief evaluations of these data by the Staff consultants,  
12 and we have some ultimate conclusions by the Staff, but we  
13 don't have much that serves to connect these three things.  
14 This is one of the things the Board would like to see.

15 Thank you. That is all I have.

16 CHAIRMAN FARMAKIDES: Do you have any questions of  
17 the Board we could be helpful on?

18 MR. IRVINE: May I ask, Mr. Kornblith, is the  
19 information that you are particularly interested in in  
20 connection with wells the method, general methods of operation  
21 of disposal wells?

22 MR. KORNBLITH: I am concerned more with the  
23 question of methods of determining the suitability of a well  
24 for disposal purposes.

25 MR. IRVINE: That helps me. Thank you.

1 MR. KORNBLITH: How one gets from the physical data  
2 that one can measure to an understanding of the performance  
3 of the well, disposal well.

4 MR. IRVINE: Thank you.

5 MR. KINSEY: Mr. Chairman?

6 CHAIRMAN FARMAKIDES: Mr. Kinsey?

7 MR. KINSEY: This may be premature in light of our  
8 earlier discussions concerning the petition.

9 Do you want to discuss document stipulation at this  
10 point?

11 CHAIRMAN FARMAKIDES: I don't know that it is neces-  
12 sary to discuss them, if you people get together and agree.  
13 That is perfect. We can do it as soon as you are ready to  
14 submit it. That will be fine with us, or perhaps if we do go  
15 along with the resolution of the issue posed this morning by  
16 giving 30 days' notice, and if we do that, I have been looking  
17 at the calendar, and now I see that if we issued an order today  
18 or tomorrow with respect to the resolution of the issue, and  
19 this gives the assumption that for purposes of planning we  
20 do give 30 days, and then that 30 days expires on September 14,  
21 we could then have another prehearing conference that could  
22 occur the very next Monday or Tuesday, September 18, and that,  
23 then, would indicate that we could go to an evidentiary  
24 hearing, I would feel, within a very short period of time  
25 thereafter, unless there is a real reason why discovery has

1 got to be implemented.

2 MR. IRVINE: Yes, sir.

3 CHAIRMAN FARMAKIDES: How does that schedule meet  
4 with the approval of the parties, or with your disapproval?

5 MR. IRVINE: It certainly meets with our approval  
6 a great deal more than thinking about some time in December.

7 CHAIRMAN FARMAKIDES: Fine.

8 Mr. Kinsey?

9 MR. KINSEY: That is agreeable with us.

10 CHAIRMAN FARMAKIDES: Of course, this all depends  
11 on what happens when the notice goes out.

12 MR. KINSEY: I might add in that regard, insofar as  
13 discovery would be concerned, there is, I have to say, not that  
14 much documentation entailed in this as opposed to other types  
15 of proceedings.

16 CHAIRMAN FARMAKIDES: This additional time may well  
17 be helpful in the applicant's ability, or his opportunity to  
18 resolve questions posed by Dr. Babcock.

19 MR. IRVINE: I might say, not only the opportunity,  
20 but the absolute necessity to do so.

21 CHAIRMAN FARMAKIDES: All right. We feel the same  
22 thing. We felt the record had to be documented more.

23 MR. IRVINE: It would take us more time than  
24 between now and the hearing date now set to do it adequately.

25 CHAIRMAN FARMAKIDES: I think what we will do -- is

1 there anything further, gentlemen?

2 What we will do is recess. The Board will continue  
3 its thinking on the matter and come up with a resolution this  
4 morning or this afternoon, and we will issue an order as  
5 quickly as possible, probably today or tomorrow. Then that  
6 order will govern the proceedings.

7 It would seem to me that in view of the questions  
8 posed by Dr. Babcock and Mr. Kornblith that the 27th of August  
9 date is unrealistic, and we perhaps should abandon it in any  
10 event.

11 Is that agreeable with the parties?

12 MR. IRVINE: Yes.

13 CHAIRMAN FARMAKIDES: All right.

14 So, let's consider the hearing scheduled now for  
15 the 27th and 28th could be canceled, and we will come out with  
16 another date for that hearing.

17 We have one more request to make.

18 DR. BABCOCK: The operation we were just describing,  
19 pumping water down the hole, stopping the pumping and allowing  
20 the decay of the pressure to take place, and then put on  
21 a simulator, is a relatively well understood and relatively  
22 common technique for chemical engineers to analyze. This is  
23 similar to a radioactive decay. In other words, it is a decay  
24 to a steady state.

25 MR. IRVINE: Yes.

1 DR. BABCOCK: The methods used for analyzing radio-  
2 active decay or other diffusional operations, those that decay  
3 to a steady state, are well recognized by chemical engineers,  
4 and you can draw straight lines, for example, through various  
5 portions of the data and can draw conclusions from these  
6 straight lines.

7 I was wondering if Kerr-McGee had done such an  
8 analysis of the data, and if they have, would they present that,  
9 also.

10 MR. IRVINE: Yes, sir.

11 DR. BABCOCK: In other words, I want the first order  
12 analysis of the data on graph form using appropriate equations  
13 or appropriate scales that are different from the linear  
14 scale that you showed me.

15 MR. IRVINE: Yes, sir.

16 CHAIRMAN FARMAKIDES: Is there anything further?

17 MR. IRVINE: Yes. May we address ourselves to the  
18 earlier requests on framing a joint statement of the issues?

19 Both the Staff and myself have visited in connection  
20 with this matter, and I am not at all sure that we can frame  
21 anything that really says it much better than the issues are  
22 stated in the notice here.

23 CHAIRMAN FARMAKIDES: We can't litigate on those  
24 issues; they are so broad.

25 MR. KINSEY: Not the issues for the Board to resolve,

1 sir.

2 MR. IRVINE: On page 2 of the notice.

3 MR. MURRAY: On page 2.

4 CHAIRMAN FARMAKIDES: Right, but they are so broad.  
5 I think you can join issue on much more specific facts or  
6 points than the general issues posed on page 2.

7 Off the record.

8 (Discussion off the record.)  
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1 CHAIRMAN FARMAKIDES: Back on the record.

2 Is there anything further, gentlemen?

3 MR. IRVINE: What timing are we looking at for  
4 the submission of written testimony? Or will that be  
5 decided at the next prehearing conference?

6 CHAIRMAN FARMAKIDES: We could certainly do it  
7 at that time. I feel the very best way to get a proceeding  
8 underway and get it concluded to the satisfaction of all the  
9 parties and the Board is to let the parties make as many  
10 decisions as possible, consistent, of course, with the  
11 desire of the Board to develop a full and complete record.

12 If you people get together and come up with a  
13 proposed schedule, that would be very welcome by the Board.  
14 As a matter of fact, we would be looking to you to suggest  
15 what is your best schedule for proceeding, and then in the  
16 light of what is convenient for you, the Board would then  
17 be able to also fit its schedule into your full schedule,  
18 if at all possible; and if not, we could certainly adapt  
19 a compromise schedule.

20 So what you can do in the course of you people  
21 speaking to each other, you can certainly develop a  
22 schedule that will meet your needs and will meet the rules.  
23 The Staff has certain commitments under the rules.  
24 You can present that schedule to us. This has been done  
25 time and time and time again by licensing Boards and it



1 works very well.

2 If we do modify that schedule, it won't be very  
3 much, and that gives you tremendous flexibility coming up  
4 with a schedule that is agreeable to both parties.

5 Now, if other parties become involved, of course,  
6 you have to talk to those parties, too.

7 MR. KORNBLITH: In this particular case, the  
8 technical material we have submitted is a little outside  
9 the scope of the matters we normally consider in these hear-  
10 ings. It would therefore be helpful to the Board if we had a  
11 little more time to study and review that material before  
12 the hearing than we otherwise might have done.

13 MR. MURRAY: You are referring to the five-  
14 difficulty prescription?

15 MR. KORNBLITH: I think if we could have the  
16 material in our hands 10 days or two weeks before the  
17 hearings, it would be helpful.

18 CHAIRMAN FARMAKIDES: Yes. That is just a  
19 caution to you that when you prepare your proposed schedule,  
20 give us some time. Otherwise, we won't accept it or will  
21 modify it to suit what Mr. Kornblith indicated.

22 MR. IRVINE: We are not looking at a further pre-  
23 conference hearing until some time shortly after the 14th of  
24 September.

25 CHAIRMAN FARMAKIDES: If there is no petition to

1 intervene, we can go to hearing on the 14th of September.  
2 If there is, then what you said is out. If there is no  
3 petition to intervene, let's be very clear. We are ready to  
4 go to trial that week.

5 MR. MURRAY: We really won't know until the final  
6 day is up, and these folks file usually on the last day.

7 CHAIRMAN FARMAKIDES: Well, we will play it the  
8 way it occurs, you know.

9 MR. IRVINE: You do not anticipate a further pre-  
10 conference hearing unless there is a petition to intervene?

11 CHAIRMAN FARMAKIDES: That is right, unless you  
12 people can see a reason for it.

13 MR. IRVINE: I might state at this stage of the  
14 game that I have been furnished the copy of the list of  
15 documents that have been submitted by the Staff, and so far  
16 as that list is concerned, since there may not be a further  
17 pre-conference hearing, we would stipulate as to authenticity  
18 of those, unless you need that in writing.

19 CHAIRMAN FARMAKIDES: We would like to have it  
20 in writing, sir.

21 MR. IRVINE: All right.

22 CHAIRMAN FARMAKIDES: That will be fine, and the  
23 fact that you are aware of all those documents, and you  
24 have no objection to having them made available to us,  
25 we would appreciate that.

1           Could we have a copy of that, too, Mr. Kinsey?

2           MR. KINSEY: Yes.

3           CHAIRMAN FARMAKIDES: I appreciate receiving those.  
4           There is one more thing that I welcome in the hearings. I  
5           welcome communication between the parties. I think it is  
6           essential for an expeditious and an efficient hearing, and if  
7           you need me, if you need me either as a legal member or  
8           as Chairman of the Board, call me in a conference call and  
9           I will talk to you all. If you have any problem on discovery,  
10          call that. The telephone is a marvelous tool, and we can  
11          use it.

12          MR. MURRAY: I have heard it called other things.

13          CHAIRMAN FARMAKIDES: I am aware of that, too.

14          MR. KINSEY: One final question: In the possi-  
15          bility that we may not have another prehearing conference,  
16          and that is, the Staff would like to reserve the right to  
17          qualify and use a technical interrogator during the course  
18          of the proceeding.

19          CHAIRMAN FARMAKIDES: I have found that that  
20          helps a lot. We lawyers have -- some people say we lawyers  
21          have limitations, you know.

22          MR. IRVINE: Obviously a mistake.

23          CHAIRMAN FARMAKIDES: Gentlemen, thank you very much.

24          This will conclude the prehearing conference.

25          (Whereupon, at 11:18 a.m., the conference was  
adjourned.)