ATTACHMENT B

Memorandum

40-8943

APR 1990 RECEIVED

DOCKETED MAY 01 1990 USNRC MAIL SECTION DOCKET CLERK

TO: Gale Hutton
Bill Gidley

FROM: Dennis Grams D.G.

RE: UIC Permit - Ferret Exploration Company of Nebraska, Inc.

DATE: April 24, 1990

I have reviewed the Hearing Officer's Report of April 20, 1990 which summarizes testimony from the public hearing conducted on May 11, 1989 in Crawford, Nebraska. The Hearing Officer, Noel DeKalb, also responded to major issues raised at the hearing.

Based on that Report and on your staff's recommendation, I concur with the Recommendations of the Hearing Officer and I propose to sign the permit which is to be issued as soon as possible.

Attached is the original of the Report which should be kept in your files along with the Attachments.

/ds

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RETURN ORIGINAL TO PDR, HQ.

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DESIGNATED ORIGINAL
Certified By Mary C. Hood

Nebraska Department of Environmental Control Box 98922 State House Station Lincoln, Nebraska 68509 (402) 471-2186

MEMORANDUM

TO: Dennis Grams

FROM: Noel S. DeKalb, Hearing Officer

DATE: April 20, 1990

RE: Public Hearing Held May 11, 1989 - UIC Permit #NE0122611
Ferret Exploration Company of Nebraska, Inc.
Commercial In-situ Uranium Mining Facility

I. INTRODUCTION

On May 11, 1989, a public hearing was held by the Nebraska Department of Environmental Control (NDEC) at Howard Dodd Hall in the Main Lodge, Fort Robinson State Park, Crawford, Nebraska, regarding the application of Ferret Exploration Company of Nebraska, Inc., for issuance of an Underground Injection Control permit to operate a commercial scale in-situ uranium mining facility known as the Crow Butte Uranium Project near Crawford, Nebraska. The purpose of the hearing was to obtain public comment and information on whether the permit should be issued in its proposed draft form, or with modifications, or if the application should be denied.

This document is the report of the Hearing Officer. As such it summarizes the background of this application and sets forth the Department's position prior to the hearing. The report then summarizes the testimony and evidence received at the hearing and during the comment period. Finally, it provides a recommendation to the Director regarding disposition of the application and issuance of the permit. The general procedure followed at the hearing is set out in Chapter 15 of Title 115, Rules of Practice and Procedure, Nebraska Administrative Code.

The public hearing began approximately 30 minutes after the announced time of 7:00 p.m. Mountain Daylight Time due to the fact that the crowd of approximately 130 people continued to enter the hall for that length of time. Twenty-two (22) members of the public offered testimony at the hearing, fourteen in favor of granting of the permit, and eight (8) in opposition. No neutral testimony was offered. During the comment period prior to the hearing, seven written comments were received by NDEC. Four (4) were in favor of granting the permit, one (1) was neutral, and two (2) were opposed to granting of the permit. Of the latter, one was an official request with supporting documentation, from Richard Sommer Chairperson of Western Nebraska Resources Council (WNRC), requesting that the public hearing be held as announced. The record was left open at the close of the hearing for a period of sixty (60) days to receive any written comments. A total of eleven additional written comments were received within the additional comment period, three (3) in favor of granting the permit, six (6) neutral, and two (2) opposing the granting of the permit.

II. BACKGROUND

In the late 1970's, a "world class" uranium deposit was discovered in Dawes County, Nebraska, by a Kansas-Nebraska Natural Gas (now, Kansas-Nebraska Energy) subsidiary, Wyoming Fuel Company, in conjunction with Ferret Exploration Company, a Delaware corporation. A "world class" deposit is defined as a deposit of such magnitude that if fully developed it would affect the world price of uranium. The site, named the Crow Butte Uranium Project, is located south and east of Crawford, Nebraska. The ore bearing unit is in the basal Chadron Formation.

On July 22, 1983, Wyoming Fuel Company submitted a petition for aquifer exemption as provided in Title 122 - Rules and Regulations for Underground Injection and Mineral Production Wells. Notice as to date, time and place for a public hearing in regard to the petition was issued by the Department.

The public hearing began on the evening of September 14, 1983, at the Crawford High School auditorium and reconvened on September 15, 1983, in the District Courtroom of the Dawes County Courthouse.

At the hearing, Wyoming Fuel Company identified and described a portion of the aquifer which it proposed for exemption. Testimony at that time indicated that the portion of the aquifer for which exemption was sought was not currently a source of drinking water, the water was of such poor natural quality that it would be economically impractical to render it fit for human consumption and that it would not, in the future, serve as drinking water for the same reason. Concerns were raised that the aquifer above the uranium bearing formation (the Brule) might become contaminated by the mining activity.

On March 23, 1984, the aquifer exemption as petitioned for was granted by NDEC. On March 28, 1984, NDEC submitted to the United States Environmental Protection Agency (USEPA) a request for concurrence on that portion of the Chadron aquifer (approximately 2000 surface acres) approved by NDEC. After publication in the Federal Register on February 7, 1985, USEPA exempted only 6.7 acres of the area exempted by NDEC. This limited area was approved for a research and development (R&D) area and an R&D project was approved by the United States Nuclear Regulatory Commission (USNRC) and NDEC.

In May or June of 1986, Wyoming Fuel Company's interest in the Crow Butte Project was acquired by Ferret Exploration Company of Nebraska (FEN) which was incorporated in 1981. FEN successfully operated the R&D project (pilot project) from July 1986 to January 1987.

The mining of the uranium ore in the aquifer is accomplished by reversing the natural processes by which the uranium was deposited. An oxidizing solution is injected into the basal Chadron Formation to oxidize and dissolve the uranium. The uranium bearing solution is then drawn through the aquifer and to the surface by pumping from recovery wells. Once on the surface the uranium is removed from the solution by an ion exchange process.

In February of 1987, restoration of the R&D project site began pursuant to the Restoration Plan submitted to USNRC on October 9, 1986. The results demonstrated that the restoration values established in Underground Injection Control (UIC) permit NE0114162 were met in all wells, except that concentrations of Vanadium and Radium 226 (Ra-226) in one well each, and Ammonia in four wells, were above the established restoration values. Upon review, it was discovered that the restoration values for those contaminants had been improperly established, and the permit was modified on December 2, 1988 to reflect the proper values, all of which had been met in the restoration.

In September of 1987, FEN submitted its Application to USNRC for a Commercial Source Material License. In November 1987, FEN applied to NDEC for a permit to operate a commercial scale in-situ uranium mining facility. USEPA held a public hearing on August 23, 1988, at Fort Robinson State Park, regarding expansion of the aquifer exemption area beyond the 6.7 acres previously approved for the R&D project. USEPA has not yet released its decision. However, on December 29, 1989, USNRC issued to FEN Source Material License SUA-1534 based upon the finding that "with the inclusion of the attached license conditions, your uranium recovery operation will be protective of human health and the environment." One of the permit conditions requires FEN to make suitable arrangements for disposal of radioactive waste prior to injecting lixiviant or producing byproduct materials.

On November 12, 1987, NDEC received the "Application and Supporting Environmental Report for State of Nebraska Underground Injection Control Program Commercial Permit" prepared and submitted by Ferret Exploration Company of Nebraska, Inc. The application was extensively reviewed and some modifications were made to the Application by FEN. Information gathered during operation of the pilot project was also reviewed. Following these reviews NDEC concluded that FEN had demonstrated that it could successfully operate and restore a Class III in-situ uranium mine without damage to the environment. After coordination with other state and federal authorities, NDEC produced a draft permit. The draft permit sets out specific constraints for operating the in-situ mine and for restoring the basal Chadron aquifer to its pre-mining uses. NDEC made tentative staff determination that the mining operation could be conducted within the statutory and regulatory authority established to protect human health and safety and the environment.

On March 13, 1989, NDEC published Notice of its intent to issue Permit Number NE0122611 to FEN and Notice of Hearing if Hearing was requested or substantive comments were received. By letter dated March 28, 1989 and received by NDEC on March 30, 1989, Richard Sommer, Chairperson, on behalf of the Board of Directors and membership of the Western Nebraska Resources Council, formally requested NDEC to hold a hearing on the granting of the permit. Attached to the cover letter was additional documentation which was determined by the department to be substantive comment in opposition to the granting of the permit. Therefore, plans were completed to conduct the hearing, as announced, at 7:00 p.m.MDT at Howard Dodd Hall in the Main Lodge at Fort Robinson State Park. Arrangements were made with the Nebraska Game and Parks Commission to assure that normal park entrance fees would not be charged to those present merely for attendance at the hearing.

On May 8, 1989, Mr. Jeff Tracy and Mr. Andrew Reid, representatives of WNRC, filed a complaint with the Nebraska Attorney General's office, which contained two basic allegations which can be summarized as follows:

1. That FEN officials and employees committed perjury when testifying under oath concerning fracturing and faulting present at the Crow Butte Project.

2. That ownership and Board membership of FEN violated Neb. Rev. Stat. §76-400 through §76-415, because the majority of the ownership and the Board membership consisted of foreign nationals.

After a lengthy investigation of the allegations, the Attorney General, on September 18, 1989, issued a press release which found, in regard to the first issue, that at most there is a scientific controversy concerning whether faulting or fracturing is present at the project site and that WNRC's allegations concerning perjury or false statements were without merit. However, in regard to the second issue, the Attorney General found that "FEN appears to have a majority of stockholders who are aliens as well as a majority of its Board of Directors who are aliens, which bring it under the alien property provisions." Consequently, the Attorney General indicated that the Dawes County Attorney would be asked to begin forfeiture proceedings pursuant to Neb. Rev. Stat. §76-408, and that the Secretary of State would be asked to bring an action to forfeit the charter and dissolve FEN and its wholly owned subsidiary, Crow Butte Land Company. Additionally, in a letter to Dennis Grams dated September 19, 1989, the Attorney General requested that NDEC take no further action in issuing further permits to either entity "pending the outcome of the action by the Secretary of State to forfeit their charters and dissolve them."

Subsequently, on January 29, 1990, the Attorney General issued another press release which concluded that the two corporations "are no longer in violation of Neb. Rev. Stat. §§76-400 through 76-415 (Reissue 1986) because of recent changes in the Board of Directors and stockholders of the corporations." Specifically, it was found that "FEN has a majority of the Board of Directors who are American citizens, and a majority of stock is owned by Ferret Exploration Company, Inc., an American corporation. In an accompanying cover letter to Dennis Grams, the Attorney General authorized resumption of appropriate action in regard to permit applications before the agency. (See, copies of Press Releases and cover letters in NDEC's Permits and Compliance Section files regarding the Ferret Exploration Company of Nebraska, Inc., hereinafter referred to as "FEN Files".)

III. TESTIMONY AND EVIDENCE PRESENTED AT THE PUBLIC HEARING AND IN PUBLIC COMMENTS

The hearing began at approximately 7:30 p.m. May 11, 1989, with an explanation by the Hearing Officer of the purpose of the hearing and the procedure to be followed. Comments which had been received prior to the public hearing were marked as exhibits and received into evidence. Testimony began with a brief presentation by NDEC explaining the background and events leading to the hearing and the reasons why NDEC proposed granting the permit. This was followed by testimony of fourteen proponents

for granting of the permit, including two representatives of the applicant. There were no witnesses who offered neutral testimony. Eight individuals testified in opposition to the granting of the permit. At least five of those persons identified themselves as board members, officers, staff or otherwise associated with WNRC, which had requested the hearing. At the close of the testimony, summations were made by one spokesperson for each of WNRC, FEN and NDEC. At the request of WNRC, the hearing record was left open for additional public comment for a period of 60 days from the date of the hearing. Subsequently, State Senator Sandra Scofield requested, within the 60 day time period to extend the comment period for yet an additional 30 day comment period. The Director granted the Senator an additional two weeks, or until July 24, 1989, in which to submit any further comments. The written comments received prior to the hearing, as indicated above, were marked as Exhibits and introduced and received at the Public Hearing. They are found in Exhibits 6 through 11 in Volume I - Exhibits of the hearing record. The comments received subsequent to the hearing are marked as Exhibits 27 through 40, and are to be found in Volume IA - Exhibits.

Because the hearing testimony has been transcribed (Volume II of the Hearing Record), no attempt is made here to summarize the testimony of each individual witness. Also, each of the written comments is available for review, so no attempt is made to summarize them. Rather, substantive issues which were raised by opponents of the granting of the permit either in oral testimony or in written comments, or which were raised in neutral comment letters, have been identified and are set out with the responses of the Hearing Officer. The Hearing Officer's responses to the identified issues have been made after extensive review of the hearing testimony as preserved in the hearing record. (Volume II-Testimony, hereinafter Transcript, or T.), the written comments received by NDEC (Volume I, Exhibits 6 through 11, and Volume IA, Exhibits 27 through 40), and other evidence in the record (Volume I, Exhibits 1-2, 4-5, and 12 through 26, and Exhibit 3). In addition, the Hearing Officer hereby takes official notice of, and has considered relevant materials in, the NDEC's FEN Files in making his responses and recommendations to the Director.

For purposes of this hearing report, testimony and comments of general public proponents are not addressed in detail, because they have not raised any permitting issues not previously considered by the NDEC and included within the draft permit. In general, proponent testimony and comment letters favor granting of the commercial scale permit for one or more of the following reasons:

1. economic benefit to the area,
2. FEN has been a good corporate citizen,
3. FEN employees are honest, conscientious people,
4. need for energy that uranium can supply,
5. no observable surface environmental damage,
6. local water wells have not been adversely affected by the project, and
7. need to reduce pollution caused by fossil fuel burning powerplants.

ISSUE #1: ALIEN OWNERSHIP AND COMPOSITION OF THE BOARD OF DIRECTORS

Several individuals raised questions regarding the role of foreign companies or foreign individuals in the corporate structure of Ferret Exploration Company of Nebraska, Inc., either in ownership of the corporation itself or by presence on the board of directors. The same issue was raised in relation to the Crow Butte Land Company, a wholly owned subsidiary of FEN. These questions were raised because Neb. Rev. Stat. §76-401 through §76-415 prohibit, with some stated exceptions, majority ownership or composition of the board of directors by aliens. It was questioned whether NDEC should even consider issuing a permit to an entity if it was potentially in violation of the statutes and, therefore, subject to dissolution.

A related issue questioned the integrity of FEN personnel for failure to fully disclose the alien involvement in the corporations.

A considerable amount of time at the hearing involved the foregoing allegations in testimony of opponents, and by FEN's attorney as he attempted to respond to the anticipated allegations. NDEC's representative in the opening statement announced that the matter was being reviewed by the Attorney General. The Hearing Officer, during the hearing, stated that it was NDEC's intent to hold the permit process until the Attorney General's opinion was received.

RESPONSE TO ISSUE #1

As indicated, at the time of the hearing, the Nebraska Attorney General's staff was reviewing the matters of alien involvement and the legality of the involved corporations. Because of the serious nature of th allegations, NDEC staff determined that a decision on whether or not to issue the permit would be delayed until notification was received from the Attorney General indicating the permitting process could proceed.

Corporate ownership details have never been a significant part of NDEC's permitting process because it is the operator's duty under NDEC's regulations to obtain the required permit when a facility is owned by one person or entity and operated by another (Title 122, Chapter 11.002). Additionally, NDEC has no constitutional or statutory duty, or authority, nor the manpower and means to investigate each permit applicant for nationality of owners and individual board members.

Therefore, the matters regarding alien ownership and board membership, and also whether specific statutory exemptions applied to FEN as its representatives claimed, were deferred pending the Attorney General's determination.

On September 18, 1989, the Attorney General issued a press release in which it was stated, among other things, that "FEN appears to have a majority of stockholders who are aliens as well as a majority of its Board of Directors who are aliens, which bring it under the alien property provisions." Because of this finding that FEN violated the statutes and

both FEN and its subsidiary, Crow Butte Land Company, were subject to forfeiture and dissolution proceedings, the Attorney General requested that NDEC take no further action in the permitting process (FEN Files).

However, before any forfeiture action was begun by the Dawes County Attorney, and before the Secretary of State began any dissolution proceeding, FEN and Crow Butte Land Company apparently took corrective action in regard to stock ownership and board membership. Thus, on January 29, 1990, the Attorney General issued another press release stating that the two corporations "are no longer in violation of Neb. Rev. Stat. §§76-400 through 76-415 (Reissue 1986) because of recent changes in the Board of Directors and stockholders of the corporations" (FEN Files).

Based upon the foregoing determination and upon receiving the Attorney General's authorization, the permitting process was resumed by NDEC.

ISSUE #2: THE PRESENCE OF GEOLOGICAL FAULTS, THEIR EFFECTS ON CONFINEMENT OF MINING FLUIDS AND WHETHER THAT INFORMATION WAS WITHHELD FROM NDEC.

A major issue raised by several individuals in testimony or in written comment letters addressed to NDEC and to the USNRC (Nuclear Regulatory Commission) is whether there is significant faulting in the proposed mining area, and, if present, its effect under in-situ mining conditions. Letters written by John Peterson of Pearce, Arizona (Exhibits 10 and 39) to the USNRC, copies of which were sent to NDEC within the relevant comment periods, allege that faulting is a major factor controlling the location of the mineralized zones at the Crow Butte mining area. Mr. Peterson, and others, contend that if such faults do exist, they could also act as effective pathways or conduits for the movement of groundwater between aquifers, and thus also for ". . . uranium-laden solvents injected into the ore zone . . ." (Exhibit 10).

A related allegation charges that information on faulting in the area was purposefully withheld from NDEC and other regulatory agencies.

RESPONSE TO ISSUE #2:

The possibility of faulting within the proposed mining area has been raised in the past on several occasions. Roy Elliott and David Thomssen of HWS, Inc., in a letter dated June 21, 1984, proposed an alternate interpretation of the geology of the area. (Exhibit 26). That interpretation suggested that there could be faults within the mining area with vertical displacements in excess of 300 feet. Only one aquifer test (pumping test #1) had been conducted at that time.

It was suggested that additional pumping tests were needed to determine if the lower Chadron had adequate confinement or whether the aquifer was hydraulically connected to other aquifers, either above or below (Exhibit 26). In response to those concerns, an additional aquifer test (pumping test #2) was conducted between June 30 and July 3, 1987 (FEN Files).

On the question of the origin of the uranium ore, whether fault controlled as alleged by Elliot, Thomssen, Peterson and others, or by roll front as maintained by FEN, NDEC staff recognize that there may be differences of opinion regarding the origin of the ore (FEN Files; Exhibits 10, 11, 33 and 40). It is not necessary for the NDEC to make a decision regarding this controversy. The issue that must be addressed by the NDEC rather, is whether or not faults or fractures, if they are present, will act as conduits to the vertical movement of mining fluids (Exhibit 33). This issue can best be addressed directly in two ways: (1) by reviewing the results of the aquifer tests (pumping tests #1 and #2) and (2) by reviewing the results of operating the pilot-scale, in-situ uranium mining facility.

Although the presence or absence of faults and fractures may never be absolutely resolved, NDEC staff have determined that the bottom line is whether or not those faults or fractures affect the migration of groundwater and/or mining fluids. The aquifer tests (pumping tests #1 and #2) were recently reviewed by personnel in the Ground Water Section of the NDEC, the Conservation and Survey Division and the Department of Geology, University of Nebraska-Lincoln. All reviewers agree that the aquifer tests do not show any signs of leakage above or below the Chadron aquifer. In other words, the aquifer tests demonstrate that the Chadron aquifer is adequately confined above and below (FEN Files).

In addition to the aquifer tests, the operation of the pilot-scale, in-situ mining operation has demonstrated that it is feasible to mine the uranium ore zone without the excursions of fluids outside of the wellfield. If any excursion had occurred, it should have been detected in monitoring wells that were sampled by NDEC personnel on a quarterly basis throughout three years of operation. During the three years of operation of the pilot-scale facility, no excursions of fluids were detected laterally or vertically. (Testimony of Ralph Knode, Transcript, p.15; FEN Files).

Regarding allegations that information on faulting had been withheld from NDEC personnel, it appears that FEN and its partner companies may have had differences of opinion on the origins of the uranium ore. Although all the details of those controversies may not have been presented to the NDEC, the Department was well aware of the issue of faulting and how it might affect confinement. The Department does not have reason to believe that there has been any systematic attempt to withhold information from the NDEC. No substantive evidence was presented at, or subsequent to, the public hearing in support of this allegation.

Much has been made of the allegation that FEN has been required to submit to NDEC "only 10% of well logs" (Testimony of Richard Sommer, Transcript p.41), and not make full disclosure of all of the "raw data" (Reid, T.79, Tracy, T.67-68). In fact, NDEC has had access to all of the raw data. On-site visits were made to compare non-submitted data to that which was previously submitted as required. During those visits, data was picked at random by the NDEC staff who then reviewed this data in light of the data already reviewed. It was determined that "the submitted data was representative geologically" (Exhibit 33). Additionally, a comparison was made of previously non-submitted well logs with logs that had been

submitted. "Nothing in any of those reviews indicated that the data were selected in any way to represent a favorable viewpoint for FEN" (Exhibit 33). This resulted in the conclusion: ". . . [T]he data submitted in the permit application is representative both geographically and geophysically of the Crow Butte Project as outlined in the application" (Exhibit 33).

The results of aquifer tests and the pilot-scale operation have demonstrated to the satisfaction of all reviewers, including those within NDEC, that any faulting present does not affect confinement within the Chadron aquifer.

ISSUE #3: RESTORATION OF THE AQUIFER AFTER MINING

A major issue raised at the hearing by Dr. James Warner of Colorado State University (T.44-54), and repeated in his written comments submitted both prior to and following the hearing (Exhibits 6a and 37), concerned restoration of the aquifer after the mining phase was completed. He questioned some of the procedures being used and suggested several ways to test the effectiveness of the restoration process.

RESPONSE TO ISSUE #3:

FEN was able to successfully restore the aquifer after completing its in-situ, solution mining in Wellfield #2 during the pilot-scale operation (Testimony of William Gidley, T.10; Ralph Knode, T.14-15; FEN Files). During the mining and subsequent restoration phase, there were no excursions detected in the surrounding ring of monitoring wells.

Dr. Warner's concern about excursions taking place due to fluid movement along faults has already been addressed as issue #2 above. His suggestions regarding additional monitoring wells and changes in the pumping patterns might be of academic interest, but they do not seem warranted, based upon the success of the restoration process demonstrated by FEN using established technologies.

Five specific restoration issues raised by Dr. Warner, and NDEC's response to each of them, are as follows:

Dr. Warner first proposed that an additional monitoring well should be located at the midpoint of one of the sides of each five spot pattern. Dr. Warner's contention was that the additional monitoring well would detect any "stagnant contaminated groundwater" or "stagnant pockets of contaminated groundwater."

NDEC staff maintains that this type of monitoring is not necessary because computer modeling indicates that an adequate flow regime will exist at these points.

Dr. Warner's second proposal is that an additional monitoring well be located outside of the mining cell (five spot pattern) but still in the immediate vicinity of the wellfield to determine if contaminated groundwater still exists in the area surrounding the wellfield. The NDEC technical staff generally concurs with the validity of this suggestion. To implement this proposal, the NDEC staff will review each block of mining

cells upon receipt of a restoration plan. This review may require the installation of additional monitoring wells outside of the cells if the restoration plan does not provide for such wells. The Hearing Officer recommends that the language for restoration procedures in Part II D.3 of the draft permit be revised to clarify the Department's authority to require additional monitoring wells. Suggested wording for such change is contained in the Revised Draft UIC Permit #NE0122611, attached.

Third, Dr. Warner suggests that during restoration the wellfield should, as an alternative, be overpumped, in order to induce any contaminated water in the surrounding area to migrate into the wellfield, and thus be detected. The NDEC staff reviewers again concur with Dr. Warner's suggestion on a prospective basis. That is, the volume pumped may need to be increased significantly to assure restoration. The actual volume of groundwater to be pumped will be determined when the restoration plans are evaluated, pursuant to the authority already contained in Part II D.3 of the draft permit by which NDEC may determine the amount of over-pumping required before approving the restoration plan.

Dr. Warner's fourth concern is that adding the reducing agent sodium sulfide to the formation during the stabilization phase at the R&D project created an "artificial environment" that was left in place during that phase, only eventually to be displaced by natural ground water. Dr. Warner proposed that natural groundwater from unaffected areas be injected and circulated through the wellfield to simulate the natural premining environment to determine if remobilization of contaminants would occur and whether desorption of contaminants from the clay lenses in the ore body would occur. Whether Dr. Warner's suggestion was made as a means to collect data to prove whether restoration was accomplished at Wellfield No. 2 of the R&D project, or as a means to facilitate restoration in the commercial mining project is unclear. As restoration of Wellfield No. 2 has already been accomplished pursuant to the requirements of the pilot project permit, the suggestion to use this as a means to gather additional data is moot. In regard to any such method being utilized in the commercial wellfield, the NDEC staff maintains that the reductant injected during the restoration phase is necessary to neutralize the oxidation caused by the mining activity.

There is no guarantee that ground water from another "unaffected" site would have the same chemical composition as the ground water in the immediate mining area. Because of this, natural conditions still could not be assured if this "unaffected" ground water were to be injected into the mining area. It should further be noted that the natural ground water in the immediate mining area is a reducing environment, which accounts for the presence of the uranium ore in the first place. Therefore, the eventual movement of natural ground water into a stabilized wellfield, as Dr. Warner states will occur, should enhance additional precipitation and retention of potential contaminants in their reduced or insoluble phase as attained during the restoration.

Further, the injection of additional water from other areas may force contaminants in nearby cells of production to move beyond these cells, thus making their neutralization difficult. If necessary, detection of possible

contaminants in the immediate area of any cell in the commercial mining area can be attained by converting injection wells into monitoring wells.

Finally, Dr. Warner expressed concern over restoring Ra-226 levels to acceptable levels in all wells in Wellfield No. 2. He felt that this could indicate that other radioactive contaminants freed up by the mining process may not have been fully restored. The NDEC technical staff recognize that there may be differences in concentrations of Ra-226 between wells. Cleanup levels in the commercial mining operation will take this difference into account and will thus be based on the average levels of Ra-226 of individual wells within each mining unit, thus compensating for the differences between wells. It is understood by the NDEC staff that certain radioactive and nonradioactive contaminants will also be solubilized in trace quantities during the mining process. Chemical analyses by FEN during the pilot project show that the majority of these contaminants will be removed by reverse osmosis. The parameters required to be monitored in the permit are indicators of other compounds that are also treated during restoration (FEN Files).

In summary, the NDEC reviewers have taken seriously the concerns expressed by Dr. Warner. The substantive proposals made by Dr. Warner with which NDEC concurs as contained in this report, can be incorporated into the restoration plan for the project and utilized as needed on a cell by cell basis. The Hearing Officer recommends that the draft permit be revised in Part II D.3 as indicated in the revised draft permit attached to this report, so that there will be no room to doubt the NDEC's authority.

ISSUE #4: SIZE OF THE PERMIT AREA

Issuing a permit for a large area (about 2500 acres) was disputed on two fronts: (1) the area is greatly in excess of the projected needs for the first five or ten years (all within part of Section 19, 640 acres) and (2) the permit area extends outside of the areas covered by the two aquifer tests (pumping tests).

RESPONSE TO ISSUE #4

The permit is intended to cover the area expected to be mined during the life of the project, not just the first five years. Apparently, the criticism was based upon the assumption that the permit would be issued for five years only. Pursuant to T.122, Chapter 23 - Permit Duration, Section 001, the permit would be issued for the operating life of the facility. However, there is included in that section and in the permit itself, a requirement that the permit be reviewed at least every five years to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made.

Regarding the permit area outside of the areas covered by the two aquifer tests, no mining will be allowed outside of the areas covered by the aquifer tests until additional aquifer tests are conducted to cover those areas which establish confinement of the aquifer in which the mining activity takes place (Draft Permit, Exhibit 4, and Revised Draft Permit, attached, Part II A.4).

ISSUE #5: ADEQUACY OF BONDING (FINANCIAL RESPONSIBILITY)

The questions were raised whether the amount of the proposed bond is adequate to cover a contaminated aquifer and whether a bond issued to Ferret Exploration Company the operator, rather than to the Crow Butte Land Company, the present owner of the land and leases, could be collected at all.

RESPONSE TO ISSUE #5:

The financial instrument is an "irrevocable letter of credit," which is much more accessible than a "bond". The amount of the letter of credit that has been posted $5 million. That amount has been determined by the NDEC to be more than adequate to restore the contaminated aquifer, in addition to plugging all wells, removing all surface facilities, removing all roads and reclaiming all surface lands disturbed during mining (FEN Files). The USNRC has made an independent determination of the amount of money needed for restoration and reclamation. That agency determined that $4.9 million was well in excess of the amount necessary (FEN Files, USNRC Source Material License and cover letter).

Regarding the question of ownership, the Letter of Credit may be redeemed by NDEC at any time to pay for cleanup costs, regardless of which entity actually owns or controls the leases of the property (See, T. 122, Chapter 37, sections 007 and 011).

ISSUE #6: FINDING AN ACCEPTABLE DISPOSAL SITE FOR THE RADIOACTIVE WASTES

A major question raised during testimony at the public hearing was whether or not the commercial permit should be issued to FEN prior to its finding an acceptable site for disposal of radioactive waste (Testimony of Mike Johnson, T. p.57ff.).

RESPONSE TO ISSUE #6:

The disposal of radioactive waste is a part of the USNRC license and is not a part of this permit. The Source Material License SUA-1534 issued by the USNRC prohibits FEN from engaging in commercial mining activities (injecting lixiviant or producing byproduct materials) prior to making suitable arrangements for waste disposal. Those arrangements for waste disposal must have the written concurrence of USNRC. (FEN Files, USNRC Source Material License and cover letter).

ISSUE #7: THE NEED FOR "INDEPENDENT" EXPERTS TO REVIEW THE PROJECT

Both in testimony (Richard Sommers, T. 42F.) and in written comments (Senator Scofield, Exhibits 31, 32, and 35) critics have repeatedly requested that "independent" experts be provided access to propriatary data of FEN, or be hired by NDEC to conduct duplicative testing at FEN's expense. These requests apparently have resulted, not only from a distrust

of FEN, but also of the whole regulatory process (Testimony of Richard Sommers, T. 42).

RESPONSE TO ISSUE #7:

A large number of experts have been involved in the review of this project between the time the application was received for the pilot project in 1983 and the present. A list of geologists and other experts that have reviewed information on the Crow Butte project was compiled for a letter to state Senator Sandra Scofield from Dennis Grams, director of the NDEC, dated June 21, 1989. A copy of that list is enclosed.

That list includes 25 people from six different state and federal agencies or universities. The Hearing Officer concludes that these reviewers have acted "independently," as they do not have any vested interest in promoting the FEN project and have been assigned the task of evaluating the project as independent reviewers. It would be difficult to believe that all 25 persons from six agencies have conspired to present reviews that are not objective.

Additionally, it should be noted that while it may request the opinion of independent experts, as it has done, the NDEC has the statutory responsibility to make an objective and independent determination of issues involving issuance of a UIC permit. It is the Hearing Officer's opinion that the department cannot assign the task of making that determination to some third party without a breach of its legally assigned responsibilities.

IV. ENVIRONMENTAL ASSESSMENT OF USNRC

In addition to the extensive review undertaken by NDEC in processing and assessing all relevant information and data received during the permitting process, it must also be noted that the USNRC was making an independent assessment of this project for purposes of determining whether to issue its commercial source materials license.

As part of the licensing process, USNRC prepared an environmental assessment which evaluated potential impacts on-site and off-site that may occur during the course of the in-situ leach uranium recovery operation at the Crow Butte project. The result of the Environmental Assessment was issuance on December 12, 1989 of a Final Finding of No Significant Impact (FEN Files).

This resulted, as indicated in the Background Statement, Section II above, in the issuance by USNRC to FEN the Source Material License SUA-1534 authorizing the commercial mining operation (FEN Files)

V. RECOMMENDATION

After reviewing all of the testimony and evidence offered at the public hearing, the written comments received both prior to and following the public hearing, and after reviewing the FEN Files and the relevant statutes, and rules and regulations, the Hearing Officer finds no substantive concerns have been raised that cannot be effectively resolved by making minor revisions in Part II, D.3 of the draft permit.

The Hearing Officer further recommends that, in the interest of clarity, Part I of the draft permit be rearranged as contained in the revised draft permit attached.

Therefore, it is the recommendation of the Hearing Officer that UIC Permit #NE0122611 be revised as indicated in the body of this hearing report and as contained in the revised draft permit attached hereto, and that UIC Permit #NE0122611, as revised, be issued to the applicant, Ferret Exploration Company of Nebraska, with all of the other conditions that have been previously proposed by the NDEC and which are fully set out in the revised permit.

Noel S. DeKalb

Noel S. DeKalb

Attachments:
- Witness List
- Exhibit List
- List of Comment Letters Received
- List of Independent Experts
- Hearing Record - Volume I - Exhibits
- Hearing Record - Volume 2 - Testimony
- Hearing Record - Volume 1A - Exhibits

Public Hearing - Witness List
Issuance of UIC Permit NE0122611
Ferret Exploration Company of Nebraska (FEN)
Howard Dodd Hall
Fort Robinson State Park
Crawford, Nebraska
May 11, 1989

Opening

Noel DeKalb, Hearing Officer

Department Presentation

William C. Gidley, NDEC Permits and Compliance Section Supervisor

Proponents

Ralph Knode, FEN
Richard Fanyo, Attorney for FEN
Gale Land
Rollin Curd
Arthur Fredrickson
Jake Kane
Cecil Avey
Ben Ferguson
Leonard Beaver
Leonard Chubb
D.J. Guggenmos
James Bunch
Virlyn Norgard
Russ Corbin

Neutral

None

Opponents

Richard Sommer, Chairperson, WNRC
James Warner, P.E., Hydrogeologist, Colorado State University
Richard Smith
Mike Johnson, Board Member, WNRC
Jeff Tracy, Staff, WNRC
Clayton Barker
Andrew Reid, Attorney for WNRC
Rae Ann Schmitz

Closing Comments

Richard Sommer
Richard Fanyo
William Gidley
Noel DeKalb

Public Hearing - Exhibit List
Issuance of UIC Permit NE0122611
Ferret Exploration Company of Nebraska (FEN)
Howard Dodd Hall
Fort Robinson State Park
Crawford, Nebraska
May 11, 1989

1. Order Appointing Hearing Officer
2. Affidavits of Publication
3. Application for Permit
4. Draft Permit
5. Fact Sheet
6. Request for Hearing with Supporting Documentation
7. Letter, Nona L. and Charles Ferguson
8. Letter, LaVerne E. Stetson, P.E.
9. Letter, Gretchen Hedberg
10. Letter, John Peterson
11. Two letters, Thor Gjelsteen and Stephen Collings
12. Fourteen proponent letters
13. Written testimony of Ralph Knode
14. Omaha World Herald Article, August 24, 1988
15. Letter, Jeptha Hill
16. Memorandum to Stephen Collings from Paul Adamek, July 12, 1988
17. Chart, FEN Board of Directors
18. Flowchart, ownership
19. Continued Flowchart of ownership
20. Flowchart, Crow Butte Land Company ownership
21. Neb. Rev. Stat. §76-401 through §76-415, Escheats and Alien Ownership of Land
22. Assignment, Transfer and Quitclaim to Crow Butte Land Co.
23. Domestic Corporation Occupation Tax Report, FEN, Calendar Year 1989
24. Memorandum, April 5, 1988
25. Written Testimony of Gale Land, and "Survey" of proponents with 162 signatures
26. Letter, Roy Elliott, HWS Consulting, June 21, 1984
27. Letter, Jim and Ann Mapes
28. Letter, Response of USNRC to FEN
29. Letter, Barb Ferguson
30. Letter, Dale and Arlene Wellnitz
31. Letter, Sen. Sandra Scofield
32. Letter, Sen. Sandra Scofield
33. Letter with enclosures, Pam French
34. Letter, Synthia Maginnis
35. Letter with enclosures, Sendra Scofield
36. Letter, Professor John F. Schroeder (to Richard Sommer)
37. Letter, Professor James W. Warner
38. Letter with enclosure (URI Review), Jeff Tracy
39. Letter (to USNRC), John Peterson
40. Letter, Response of USNRC to John Peterson

Issuance of UIC Permit NE0122611
Ferret Exploration Company of Nebraska (FEN)
Comment Letters Received

Comment Letters Received Prior to Hearing

For Granting of Permit

1. Nona and Charles Ferguson (Exhibit 7)
2. LaVerne Stetson (Exhibit 8)
3. Thor Gjelsteen (To USNRC) (Exhibit 11)
4. Stephen P. Collings (to USNRC) (Exhibit 11)

Neutral

5. Gretchen Hedbert (Exhibit 9)

Against Granting of Permit

6. Richard Sommer, WNRC requesting Hearing, including supporting documentation and comments (Exhibit 6)
   a. James W. Warner
   b. Cost Analysis Critique by Skip Laitner and Donald W. Macke
   c. Literature Search: Integrity of Pierre Shale, Deb Rogers
   d. Report on Crawford Municipal Water Supply, Knapp Consulting Associates
7. John Peterson (to USNRC) (Exhibit 10)

Comment Letters Received After Hearing

For Granting of Permit

1. Jim and Ann Mapes (Exhibit 27)
2. USNRC Response to FEN (Exhibit 28)
3. Barb Ferguson (Exhibit 29)
4. USNRC Response to John Peterson (Exhibit 40)

Neutral

4. Dale and Arlene Wellnitz (Exhibit 30)
5. Senator Sandra Scofield, May 9, 1989 (Exhibit 31)
6. Senator Sandra Scofield, May 17, 1989 (Exhibit 32)
7. Pam French (Exhibit 33)
8. Synthia Maginnis (Exhibit 34)
9. Senator Sandy Scofield, July 21, 1989 (Exhibit 35)
10. Professor John F. Schroder (to Rich Sommer, WNRC) (Exhibit 36)
11. Professor James W. Warner (Exhibit 37)

Against Granting of Permit

12. Jeff Tracy, including URI Review (Exhibit 38)
13. John Peterson (to USNRC) (Exhibit 39)

List of Geologists and other experts who have reviewed information on the Crow Butte in-situ Uranium mine. Comments from these individuals were considered in drafting UIC Permit #NE0122611.

Department of Environmental Control

Pam French
David Charlton
David Chambers
Steve Smith
Jon Atkinson

EPA

Angela Ludwig
Ted Fritz
Harold Owens
Ralph Langemier
Bob Fenemore
Duane Knott
Bill Brink

USNRC

Gary Konwinski
Scott Grace
Sandy Wastler

Contractor Peer Review for USNRC

Frank Reilly (USGS)
Roy Williams (University of Idaho)

Conservation & Survey Division of UNL

Marv Carlson
Ray Borchett
Jim Swinehart
Harold DeGraw
Jerry Ayers
Roy Spaulding
Perry Wiggly
Vern Souders