DMEA Form 9
Rev. 6/57

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE

Idm-E NO._____

DMEA NO. 5009

24 JUN 1958 1220

Application
- [ ] Denied
- [ ] Withdrawn

Contract
- [ ] Terminated - Not Certified
- [ ] Terminated - Certified

- [ ] Cancelled
- [ ] Royalty Agreement

The records contained in this file are marked (x) and arranged in this order:

Folder No. 1:

Left Side

- [ ] Royalty Audits
- [ ] Certification of Discovery
- [ ] Closing Letter
- [x] Cost Audits
- [ ] Termination Notice or Agreement
- [ ] Recision Notice
- [ ] Assignment of Contract
- [ ] Contract Amendments
- [ ] Contract with all exhibits and annexes
- [ ] Owner's Consent to Lien and Subordination Agreement
- [X] Application and attachments

Right Side

- [x] Project summary (final)
- [x] Work Comoleted analysis (final)
- All other material filed in chronological order including the following reports if checked:
- [ ] Field Team Semi-Annual Report for Certified Project
- [x] Final Field Team Report (Tab)
- [x] Operator's Final Report (Tab) see folder #2
- [x] Interim Field Team Reports
- [ ] Operator's monthly reports and all attachments
- [x] On-site Exam Report (Tab)
- [ ] Settlement Sheets
- [ ] Drill Logs

Additional Folders:

Left Side

Folders No. 2 : Reports
- [ ] Analysis of Semi-Annual Inspection Reports
- [ ] Project Summary (Interim) by DMEA Engineers

Right Side

- [ ] Field Team Semi-Annual Report for Certified Project
- [ ] Field Team Interim Reports
- [x] Operator's Monthly Reports with transmittal, narrative and maps.

Folders No._____: Maps (Use pocket folder or envelope)

Folders No._____: Settlement Sheets

Folders No. 3 : Drill Logs

Folders No._____: Royalty material

Closed

To M & F when Audit submits list

17861

EXTRA COPY O. M. E. RECEIVED FEB 19 1959		
DATE	INITIALS	CODE

OFFICE OF MINERALS EXPLORATION
CONTRACT ADMINISTRATION AND AUDIT DIVISION

REPORT OF REVIEW

I have reviewed the Monthly Reports of:

Food Machinery and Chemical Corporation
161 East 42nd Street,
New York 17, New York

pertaining to Exploration Project Contract No. [illegible], DMEA No. 5009, for the period June 24, 1958 to October 4, 1958, inclusive, covering a project for the exploration of Uranium on property known as N ½ Sec. 21, T 13 N, R 9 W, located in McKinley County, New Mexico.

My review included an examination of the Monthly Reports (Form [illegible]-104) and supporting documents attached thereto, comparison of the costs claimed with the contract and pertinent schedules, verification of work performed by reference to Field Team reports and correspondence, and a determination of the reasonableness and propriety of the costs.

This review was made in lieu of a final audit of the Operator's accounts and records for the reasons given on the attachment to this report.

The review disclosed the following facts in regard to the amount paid or to be paid the contractor:

Total cost as billed by Contractor		$21,469.60
Exceptions: (Schedule attached)		
Prior to this review	$3,854.34	
Less: Reinstatement by review	0.00	
Herewith	0.00	3,854.34
Total Accepted Cost		$17,615.06

The contract calls for a 50 percent participation of exploration expenses by the United States Government. Therefore, payment to the contractor by the Government in the amount of Eight Thousand, Eight Hundred Seven and 53/100ths Dollars is valid and proper, provided that the Regional Executive Officer, the Director, or other competent official has accepted or will accept the project as having otherwise met the terms of the contract.

Amount payable to Operator	$8,807.53
Amount reimbursed	8,307.53
Balance due Operator	$ 500.00

Cd to apv 2/20/59

Donald T. Finch
Donald T. Finch
Chief Auditor

February 17, 1959

REASONS FOR REPORT OF REVIEW IN LIEU OF FINAL AUDIT

CONTRACT NO. Idm-K1220 DOCKET NO. DMEA-5009

FOOD MACHINERY AND CHEMICAL CORPORATION

(a) The monthly reports were supported by documentary proof of that portion ($14,697.80) of the costs which covered work performed at unit rates under independent contract (per summary attached)

(b) The balance($2,917.26) of the costs incurred were under a contract provision for payment by the Government on the basis of fixed unit costs of work actually performed; and

(c) The administrative cost to the Government of an audit would be excessive in relation to the estimated amount of possible further cost disallowances thereunder.

FOOD MACHINERY AND CHEMICAL CORPORATION

CONTRACT NO. Idm-81220 DOCKET NO. IMEA 5009

SCHEDULE OF EXCEPTIONS

Disallowances by Field Team

1.25 hours of Bulldozing not performed at $12.00 per hour	$ 15.00	
3,599 feet of excessive non-core drilling at 65¢ per hour	2,339.35	
13.5 hours of unauthorized standby time	202.50	
3,456 feet of excessive probing and lagging at 75¢ per foot	259.21	
3,599 feet of excessive incidental allowance footage at 14.5¢ per foot	521.86	
Incidental allowance claimed at rate in excess of contract authorization of 14.5¢ per foot of acceptable drilling	516.62	
TOTAL PRIOR DISALLOWANCES		$3,854.54

FOOD MACHINERY AND CHEMICAL CORPORATION

CONTRACT NO. Idm-E1220 DOCKET NO. IMEA 5099

SUMMARY OF DOCUMENTED COSTS

Independent Contracts		
Bulldozing		
10 hours at $12.00 per hour	$ 120.00	
Non-core drilling		
20,119 feet at 65¢ per foot	13,077.35	
Probing and Logging		
20,006 feet at 7.5¢ per foot	1,500.45	
Total Independent Contracts		$14,697.80
Fixed Unit Costs		
Incidental Allowance		
20,119 feet of acceptable drilling completed at 14.5¢ per hour		2,917.26
TOTAL ACCEPTED COSTS		$17,615.06

DMEA
RECEIVED JUN 26 1958

DATE	INITIALS	CODE

MF-200
(Revised June 1954)

Government's copy

Docket No. DMEA 5009

Commodity Uranium

Contract No. Idm-E 1220

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

EXPLORATION PROJECT CONTRACT[1]

It is agreed this 24 JUN 1958 day of ....., 195...., between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] Food Machinery and Chemical Corporation, a Delaware corporation (Westvaco Mineral Products Division), whose mailing address is 161 East 42nd Street New York 17, New York, hereinafter called the "Operator," as follows:

ARTICLE 1. *This contract* is entered into under the authority of the Defense Production Act of 1950, as amended. It consists of this form (MF-200), the attached Exhibit "A," Annex I, ~~xxx~~ Annex II, and map (Figure 3.)

The Operator shall not transfer or assign this contract or any right thereunder without the written consent of the Government.

ARTICLE 2. *Operator's property rights.*—(a) The land which is the subject of this contract (hereinafter called "the land") is in the State of New Mexico, County of McKinley, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] Lessee of [5] the rights to uranium and associated minerals in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a [6] Lease and Agreement recorded in Book -, page -, official records of said County; and

(2) The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: Interest of Lessor

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] Insert name, and if an organization, its nature (corporation and place of incorporation, partnership with names of partners, etc.).
[3] State on a separate sheet marked "Annex I" the legal description or enough to identify the property, particularly excluding any areas from which the production is not to be subject to the Government's percentage royalty.
[4] Insert "owner," "lessee," "contract purchaser," "locator," etc.
[5] Insert "the entire interest," "the mineral rights," "an undivided one-third," etc.
[6] Insert "deed," "lease," "contract," "location notice," "patent," etc.
[7] If not recorded, so indicate by inserting "un."

of the land (lessor, seller, optionor, etc.), are attached, as follows: A Surety Company's Performance Bond is attached hereto in lieu of Consent to Lien and Subordination Agreement of Santa Fe Pacific Railroad Company, lessor

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 8, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 8(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of Uranium The work to be performed is described in Exhibit "A." The Operator on or before August 15, 1958 shall commence the work, and on or before November 30, 1958 (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall xxxxx have completed the work xxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxx, except as otherwise provided in Exhibit "A" with respect to stages of work. (See Annex II)

ARTICLE 4. *Performance of the work.*—(a) *Operator's responsibility.*—The work shall be performed with reasonable diligence, efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for liability insurance covering employment; and with suitable and adequate equipment, facilities, materials, supplies, and labor, to bring it to completion within the time fixed.

(b) *Independent contracts.*—To the extent that the allowable costs are estimated in Exhibit "A" with express reference to performance by independent contractors on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations), the work may be so performed; but if the reference in Exhibit "A" to any such independent contract requires the Government's approval thereof, payments under such contract will not be allowable costs unless the Government gives its written approval of the contract. Any such independent contract shall refer to some specific and identifiable part of the work, and shall be subject to all of the pertinent terms and conditions of this exploration contract; but the Government shall not be considered a party thereto, and its rights under this contract, including the right to terminate its contributions, shall not be affected thereby. Regardless of the provisions of any such independent contract and regardless of the Government's approval thereof, the Government will participate in payments to the independent contractor only on account of work performed in accordance with the provisions of this exploration project contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable.

(c) *Government may inspect.*—The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract, and also after a certification of discovery or development to inspect production operations and underground workings. The operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $ 22,200.00
The Government shall contribute 50 percent of the allowable costs as they are incurred in a total sum not in excess of $11,100.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last

voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work or not in excess of the amount of the Government's contribution to the cost of property which is or may become subject to disposal as provided in Article 9(c), whichever is greater. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 7(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. "Costs incurred" mean costs that have been paid or have become due and payable, or that in the opinion of the Government have become an obligation. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Estimated costs.*—(a) *Categories of costs.*—The allowable costs of the work to which the Government shall contribute are limited to those that are direct, reasonable, necessary, and that are estimated in Exhibit "A" by categories as specified in this article. If any category or subcategory is omitted from the estimate of costs, or if the word "none" is annexed to the listing thereof, costs under such category or subcategory are not allowable. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost, and any excess over the estimated total allowable cost of the work, shall not be allowable. Any excess over the estimate of any category, subcategory, or item, either as to requirement or related cost, not indicated as a maximum shall be allowable within the limit of the estimated total allowable cost of the work. To the extent that excesses over maximums other than the estimated total allowable cost of the work may be necessary for the performance of the work, the Operator shall incur such excesses for his own account without contribution by the Government; ~~but except for any such excesses, and excesses in items therein, the Operator is not obligated to incur more than his agreed percentage of the estimated total allowable cost of the work~~ See Annex II.

To the extent specified in this article or in Exhibit "A" the following categories, subcategories, and elements thereof are maximums; but if not so specified either here or in Exhibit "A" they are not maximums, and may be exceeded within the limit of the estimated total allowable cost of the work:

CATEGORY (1)—INDEPENDENT CONTRACTS.—Work to be performed under independent contracts (see Article 4(b)). The estimated total amount of this category and the estimated cost of each unit of work for performance under an independent contract are maximums. See Annex II.

CATEGORY (2)—PERSONAL SERVICES.

Subcategory (a)—Supervision.—All elements of this subcategory (number of supervisors, periods of employment, rates of pay, and total) are maximums.

Subcategory (b)—Technical services.—All elements of this subcategory (number of technicians, periods of employment, rates of pay, and total) are maximums.

Subcategory (c)—Labor.

CATEGORY (3)—OPERATING MATERIALS AND SUPPLIES.—Includes such items as drill bits and steel, explosives, fuel, pipe, power, small tools costing less than $50 each, timber, track.

CATEGORY (4)—OPERATING EQUIPMENT.

Subcategory (a)—Rental.—The number of each object to be rented [6 mine cars, 1 truck], the rate of rental [$100 per month, $5 per hour], and the total of this subcategory are maximums.

Subcategory (b)—Purchases.—The estimated total of this subcategory is a maximum.

Subcategory (c)—Depreciation.—All elements of this subcategory (time periods, rate of depreciation, and subcategory total) are maximums.

CATEGORY (5)—INITIAL REHABILITATION AND REPAIRS.—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

Subcategory (a)—Initial rehabilitation and repairs of existing buildings, fixtures, and installations (exclusive of mine workings).—The estimated total of this subcategory is a maximum.

Subcategory (b)—Initial rehabilitation and repairs of operating equipment.—The estimated total of this subcategory is a maximum.

CATEGORY (6)—NEW BUILDINGS, FIXTURES, AND INSTALLATIONS (EXCLUSIVE OF MINE WORKINGS).—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

CATEGORY (7)—MISCELLANEOUS.—Repairs and maintenance (other than initial) of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, communications, and any other items of requirement or cost that do not fall within any of the first 6 categories.

THE ESTIMATED TOTAL ALLOWABLE COST of the work is a maximum.

(b) *Nonallowable costs.*—The following costs are not allowable for contribution by the Government:

(1) *Costs of the land,* such as rental, depreciation, depletion, or other cost of acquiring, owning, or holding possession;

(2) *Indirect costs,* such as general overhead, corporate management, interest, taxes (other than payroll and sales taxes), insurance (other than liability insurance covering employment), damages to persons, damages to property (other than necessary repairs or replacements of equipment or other property used in the work);

(3) *Previous work* performed or costs incurred before the date of this contract; and

(4) *Deferred payments.*—Any costs incurred by the Operator under any rental-purchase agreement, installment-purchase agreement, or any agreement for the purchase of goods under the provisions of which payment of the full purchase price is deferred more than 90 days from the delivery of the goods; unless the purchase agreement is approved by the Government in writing.

(c) *Reductions in costs.*—The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original estimated total cost. This provision does not apply to receipts from production which are subject to the Government's percentage royalty under the provisions of Article ~~2~~ 8. See Annex II.

ARTICLE 7. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. If the Government elects to audit said records and accounts relating to the exploration work by certified public accountant, it may do so as a cost of the work to which the Operator shall contribute. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing detailed costs incurred during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and costs incurred for each type of work; and (3) a Narrative Report of the work performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

(c) *Final report.*—Upon completion of the work or termination of the Government's obligation to contribute to costs, the Operator shall furnish the Government with five copies of a final report (in addition to the final progress report and voucher). This final report shall include a geological and engineering evaluation of the results of the work performed under the contract with an estimate of the ore reserves resulting from such work, complete assay data, adequate geological and engineering maps or sketches, and a summary of the work performed and related costs incurred.

(d) *Report of sales.*—The Operator shall provide the Government with suitable accounting and documentary evidence covering all production to which the Government's percentage royalty relates, such as copies of smelter or concentrator settlement sheets, and certified accounts of production and sale or other disposition of production.

(e) *Compliance with requirements.*—If in the opinion of the Government any of the Operator's reports, records, or accounts are insufficient or incomplete, or if the Operator fails to make them, the Government may procure the making or completion of such with suitable attachments as an expense of the work to which the Operator shall contribute. The Government may withhold approval and payment of any vouchers relating to insufficient or incomplete reports, records, or accounts.

ARTICLE 8. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 7) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

(b) *Royalty on production.*—The Operator, as principal if the Operator is the producer, or as surety if the Operator is not the producer, shall pay to the Government a royalty on all minerals mined or produced from the land, as follows: (1) regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first; or (2) if the Government makes a certification of discovery or development, within a period of ten years from the date of the contract, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first. **See Annex II.**

(c) *Basis for computation.*—The Government's royalty shall be a percentage of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrates, metal, or equivalent), at the point of delivery (the f. o. b. point); *except,* that charges of *the buyer* arising in the regular course of business, and shown as deductions on the buyer's settlement sheets, on account of the cost of treatment processes performed by *the buyer,* sampling and assaying to determine the value of the production sold, and freight paid by *the buyer* to a carrier (not the Operator), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. Any costs of treatment processes, sampling or assaying, or transportation, performed or paid by the Operator or by anyone other than the buyer, are not deductible in arriving at the "gross proceeds" as that term is here used. The term "treatment processes," as here used, means those processes (such as milling, concentrating, smelting, refining, or equivalent) applied to the crude ore or other production after it is extracted from the ground, to put it into a commercially marketable form; excluding fabricating or manufacturing.

(d) *Unsold production.*—If any production (ore, concentrates, metal, or equivalent), after the lapse of six months from the date the ore was extracted from the ground, remains neither sold nor used by the Operator in integrated manufacturing or fabricating operations (for instance, if it is stockpiled), the Government, at its option, as long as it so remains, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrates, metal, or equivalent) it is in when the Government elects to require computation and payment. If any production is used by the Operator in integrated manufacturing or fabricating operations before the Government makes its election, the Government's royalty on such production shall be computed on the value therof in the form in which and at the time when it is so used. "Value" as here used means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination, or the market value, whichever is greater.

(e) *Percentages of royalty.*—The percentages of the Government's royalty shall be as follows:

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½)

percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

(For instance: the royalty on an amount of five dollars ($5.00) per ton would be one and one-half (1½) percent; on an amount of ten dollars ($10.00) per ton, three and one-half (3½) percent.)

(f) *Time for computation and payment.*—The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be, as above provided in this article.

(g) *Lien for payment.*—To secure the payment of its percentage royalty, there is hereby granted to the Government a lien upon the land or the Operator's interest in the land and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(h) *Notice to purchasers.*—The Operator shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Administrator, Defense Minerals Exploration Administration, or his successor, and his estimate thereof shall be final and binding upon the Operator.

(i) *No obligation to produce.*—Nothing in this contract is to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

(j) *Government not obligated to buy.*—Nothing in this contract shall be construed as imposing any obligation on the Government to purchase any minerals mined or produced from the land.

ARTICLE 9. *Interests in purchased property.*—(a) *Title and ownership.*—All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions, although title thereto shall be taken in the name of the Operator.

(b) *Preservation of property.*—Until the final disposal of any property in which the Government has an interest the Operator shall preserve and protect same for the best interest of the Government, any reasonable and necessary costs thereof to be treated as an allowable cost of the project. After the completion of the work or termination of the Government's obligation to contribute, or when such property is not in use for or needed for the work, the Operator shall neither use it without the written consent of the Government nor without paying a reasonable rental to be fixed by the Government for its interest.

(c) *Disposal of property.*—Upon the completion of the work or termination of the Government's obligation to contribute to costs, or when the property is no longer needed for the work, the Operator shall promptly dispose of salable or salvageable property in which the Government has an interest for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator or the Government at a price at least as high as could be obtained from others, unless the Government in writing waives its interest in any such property. Without advance approval of the sales price by the Government the Operator shall not sell at any price any item of property the cost of which was more than $500, and shall not sell at less than 25 percent of the purchase price any item of property which cost $500 or less. The Government, in lieu of approving the sales price for any such item, may itself purchase the item at the best price which the Operator is able to obtain or himself cares to give. Property remaining upon any termination of the work shall be considered in groups or categories (such as drill steel, or explosives, or pipe, or rails), and if the original cost of the remaining unexpended portion of any such group or category is less than $50, the Government waives its interest therein. If necessary to accomplish the disposal of any item the Operator shall dismantle and sever it from the land, the cost thereof to be treated as a cost of the project.

(d) *Default of the Operator re disposal.*—If within 90 days after the completion of the work or termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, or after such further time as the Government may in writing allow, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may pursue one of the following two courses: (1) the Government, by written notice to the Operator, may place upon such property what in its opinion is a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the

date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; or (2) the Government may enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 10. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon: (1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

(b) If in the opinion of the Government the Operator is in any manner in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon: (1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting. The remedy provided for the Government in this paragraph "(b)" is in addition to any other remedy provided in this contract, and in addition to any other remedy the law may provide for breach of contract.

(c) The giving of any notice by the Government under the provisions of this Article 10 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 11. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 12. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 13. *Changes and added provisions.*—

See Annex II.

N.

Austin Sawyer

App'd. Sol. Off.

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By C O Mittendorf
Administrator, Defense Minerals
Exploration Administration

FOOD MACHINERY AND CHEMICAL CORP.
(Westvaco Mineral Products Division)
(Operator)

By W. N. Williams

Title Vice President

I, M.E. Gilbert, certify that I am the Assistant secretary of the corporation named as Operator herein; that W.N. Williams who signed this contract on behalf of the Operator, was then Vice President of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

M E Gilbert

[CORPORATE SEAL]

Ching
Kusuzi
Talbut
Selfridge
Johnson

U. S. GOVERNMENT PRINTING OFFICE 16—70617-1

35485

EXPLORATION PROJECT CONTRACT
FOOD MACHINERY AND CHEMICAL CORPORATION
(WESTVACO MINERAL PRODUCTS DIVISION)
DOCKET NO. DMEA-5009

ANNEX I

The land referred to in Article 2 of the Contract consists of the E½ sec. 21, T. 13 N., R. 9 W., N.M.P.M.&B., McKinley County, New Mexico.

The land is shown on the map entitled "Figure 3 - Map of Section 21, T. 13 N., R. 9 W., N.M.P.M. Showing the Locations of Previously Drilled Holes and Proposed Locations of Stage I DMEA Holes...", attached hereto and made a part hereof.

The Operator represents and undertakes that it is in possession of the land and entitled to possession for the purposes of this Contract pursuant to a "Uranium Mining Lease and Agreement" with Sante Fe Pacific Railroad Company, dated March 15, 1957. The term of the lease is for five years, renewable for an additional three years.

EXPLORATION PROJECT CONTRACT
FOOD MACHINERY AND CHEMICAL CORPORATION
(WESTVACO MINERAL PRODUCTS DIVISION)
DOCKET NO. DMEA-5009

ANNEX II

Article 13. Changes and added provisions.-

(a) That part of the last sentence of Article 3 beginning with the word "either" is deleted and replaced by the words "have completed the work, except as otherwise provided in Exhibit "A" with respect to stages of work."

(b) That part of the last sentence in the first paragraph of Article 6(a) commencing after the semicolon is deleted.

(c) Categories (2) through (6) of Article 6(a) are deleted.

(d) In addition to the costs of work estimated in Exhibit "A" by categories of actual costs, the costs of work requirements specified in Exhibit "A" as "Fixed Unit Costs" are allowable costs of the project. The Government will contribute to the fixed unit costs as work units are performed. A "Fixed Unit Cost" is an agreed price for each unit of work to be performed regardless of costs incurred by the Operator. Costs set forth in Exhibit "A" include all allowable costs of the work to be performed under the Contract.

(e) In the last sentence of Article 6(c), the words "Article 8" are substituted for the words "Article 9".

(f) Notwithstanding any other provision of the Contract, the allowable unit cost per foot of a drilling item is the average unit cost per foot computed on the basis of all the actual unit costs of said drilling item incurred by the Operator: Provided, That the Government will not contribute to any portion of an average unit cost of a drilling item that exceeds the estimated unit cost of said item set forth in the Contract.

(g) In Article 8(b), the words "all minerals mined or produced" mean, for the purposes of this Contract, uranium-bearing ore and minerals or products associated therewith.

FED.INS.CO. BOND NO.7870279

STANDARD FORM 25
REVISED NOVEMBER 1950
PRESCRIBED BY GENERAL
SERVICES ADMINISTRATION
GENERAL REGULATION NO. 5

PERFORMANCE BOND

(See Instructions on Reverse)

DATE BOND EXECUTED

June 25th, 1958

PRINCIPAL

FOOD MACHINERY AND CHEMICAL CORPORATION, a Delaware Corporation

SURETY

FEDERAL INSURANCE COMPANY, a New Jersey Corporation,
of 90 John Street, New York 38, New York

PENAL SUM OF BOND (*express in words and figures*)	CONTRACT NO.	DATE OF CONTRACT
ELEVEN THOUSAND ONE HUNDRED AND 00/100 ($11,100.00) DOLLARS	Idm-E 1220-DMEA-Docket No.5009	June 24th, 1958

KNOW ALL MEN BY THESE PRESENTS, That we, the **PRINCIPAL** and **SURETY** above named, are held and firmly bound unto the United States of America, hereinafter called the Government, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Government, numbered and dated as shown above and hereto attached;

NOW THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In Presence of:

WITNESS		INDIVIDUAL PRINCIPAL	
1.	as to		[SEAL]
2.	as to		[SEAL]
3.	as to		[SEAL]
4.	as to		[SEAL]

WITNESS		INDIVIDUAL SURETY	
1.	as to		[SEAL]
2.	as to		[SEAL]

Attest:

M. E. Gilfert

Assistant Secretary

CORPORATE PRINCIPAL
FOOD MACHINERY AND CHEMICAL CORPORATION
BUSINESS ADDRESS
161 East 42nd Street, New York, N.Y.
BY W. S. Freeman
TITLE Vice President

AFFIX CORPORATE SEAL

(Attest:)

And Matilda Smith
Matilda Smith, Attorney-in-Fact

CORPORATE SURETY
FEDERAL INSURANCE COMPANY
BUSINESS ADDRESS
90 John Street, New York 38, N. Y.
BY Willis Koenig
TITLE Willis Koenig, Assistant Secretary

AFFIX CORPORATE SEAL

STANDARD FORM 25
NOVEMBER 1950 EDITION

EXECUTED IN SIX COUNTERPARTS

16—30441-2

The rate of premium on this bond is $7.50 per thousand.

Total amount of premium charged, $ 83.25

(The above must be filled in by corporate surety)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, M. E. Gilbert, certify that I am the Assistant secretary of the corporation named as principal in the within bond; that W. N. Williams, who signed the said bond on behalf of the principal, was then Vice President of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed, and attested for and in behalf of said corporation by authority of its governing body.

M E Gilbert [CORPORATE SEAL]

INSTRUCTIONS

1. This form shall be used for construction work or the furnishing of supplies or services, whenever a performance bond is required. There shall be no deviation from this form except as authorized by the General Services Administration.

2. The surety on the bond may be any corporation authorized by the Secretary of the Treasury to act as surety, or two responsible individual sureties. Where individual sureties are used, this bond must be accompanied by a completed Affidavit of Individual Surety for each individual surety (Standard Form 28).

3. The name, including full Christian name, and business or residence address of each individual party to the bond shall be inserted in the space provided therefor, and each such party shall sign the bond with his usual signature on the line opposite the scroll seal, and if signed in Maine or New Hampshire, an adhesive seal shall be affixed opposite the signature.

4. If the principals are partners, their individual names shall appear in the space provided therefor, with the recital that they are partners composing a firm, naming it, and all the members of the firm shall execute the bond as individuals.

5. If the principal or surety is a corporation, the name of the State in which incorporated shall be inserted in the space provided therefor, and said instrument shall be executed and attested under the corporate seal as indicated in the form. If the corporation has no corporate seal the fact shall be stated, in which case a scroll or adhesive seal shall appear following the corporate name.

6. The official character and authority of the person or persons executing the bond for the principal, if a corporation, shall be certified by the secretary or assistant secretary, according to the form herein provided. In lieu of such certificate there may be attached to the bond copies of so much of the records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.

7. The date of this bond must not be prior to the date of the instrument in connection with which it is given.

U. S. GOVERNMENT PRINTING OFFICE : 1955—O—337010

CITY, COUNTY & STATE OF NEW YORK, ss:

On this 25th day of June 1958, before me personally came Willis Koenig and Matilda Smith to me known, who, being by me duly sworn, did depose and say that they reside in Glen Head, N. Y. and Franklin Square, N.Y. respectively; that they are Assistant Secretary and Attorney-in-Fact respectively of the Federal Insurance Company, the corporation described in and which executed the annexed instrument; that they know the corporate seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order and authority of the Board of Directors of said corporation, and that they signed their names thereto by like order and authority.

CLARA MALAHY
NOTARY PUBLIC, State of New York
No. 41-7677550
Qualified in Queens County
Cert. filed with New York County Clerk
Term Expires March 30, 1960

Sworn to and Acknowledged before me on the date above written

Clara Malahy
(Notary's Signature, Description and Seal)

Certified Copy of Resolution Authorizing Execution of Bonds

At a regular meeting of the Board of Directors of the **FEDERAL INSURANCE COMPANY,** duly held at the office of the Company in New York, N. Y. on the 14th day of October, 1957, a quorum being present, on motion it was unanimously

"RESOLVED, That Percy Chubb 2nd, President or Nathan Mobley or Junius L. Powell or James G. Cannon or Thos. R. Dew or Ernest W. Fields or Alexander Kerner or George F. Meredith, Vice Presidents of this Company, or Joseph J. Magrath, Secretary of this Company, AND Frederick C. Gardner or John C. Harden or Willis Koenig or Arthur A. Kuhne or Fred Moran or Horace C. Neville or Stephen Plum or Davis Quinn or Daniel F. Randolph or George C. Josephson, Assistant Secretaries of this Company; OR that any one of said persons AND Mary E. Asplund or Marie C. Gotthard or Donald H. Haeseker or Edgar R. Heckman or Richard G. Hight or M. C. Hoefer or Emily Kraft or B. Britton May, Jr., or Adelaide Natale or Richard D. O'Connor or Donald E. Rapp or Matilda Smith, who are hereby appointed Attorneys-in-Fact of this Company for the purposes specified in this resolution; be and they are hereby authorized to jointly execute under their respective designations, in this Company's name and to affix its corporate seal to, and deliver for and on its behalf, as surety thereon or otherwise, bonds or obligations given or executed in the course of this Company's business, and any instruments amending or altering the same, and consents to the modification or alteration or assignment of any instruments referred to in said bonds or obligations, and the execution of any and all instruments in this Company's name and on its behalf as surety thereon or otherwise by such persons in the authorized manner and under their respective designations, under the seal of this Company, in pursuance of the authority hereby conferred, shall be valid and binding upon this Company."

Financial Statement of Federal Insurance Company as of December 31, 1957

Assets	
United States Government Bonds	$ 55,300,033
State and Municipal Bonds	20,734,859
Other Bonds	6,826,746
Preferred and Guaranteed Stocks	5,606,935
Common Stocks	46,427,010
Capital Stock of Vigilant Insurance Company	12,473,971
Capital Stock (97%) of The Colonial Life Insurance Company of America	4,527,084
Total Investments	151,896,638
Cash	9,628,828
Premiums Receivable	9,945,922
Reinsurance Recoverable on Paid Losses	180,483
Other Assets	4,897,043
Total	176,548,914
Deduct: Premiums over 90 days due and other non-admitted assets	3,075,189
Reinsurance Premiums Payable	4,007,761
	7,082,950
Total Admitted Assets	$169,465,964

Liabilities and Surplus to Policyholders	
Unearned Premiums	$ 41,418,483
Outstanding Losses and Claims as Estimated by Company	26,600,686
Dividends Payable	1,235,166
Taxes and Expenses	3,947,315
Funds Held under Reinsurance Treaties	3,524,744
Non-Admitted Reinsurance	5,011,442
Total Liabilities	81,737,836
Capital Stock—$4 Par Value—3,087,916 shares	12,351,664
Surplus	47,766,738
Unrealized Appreciation of Investments	27,609,726
Surplus to Policyholders	87,728,128
Total Liabilities and Surplus to Policyholders	$169,465,964

Note: Investments are valued in accordance with requirements of the National Association of Insurance Commissioners. On the basis of market values at December 31, 1957 for all investments other than affiliates, Total Investments would be decreased by $403,426 and Surplus to Policyholders would be $87,324,702.

Investments valued at $6,899,359 are deposited with government authorities as required by law.

Certification

CITY, COUNTY & STATE OF NEW YORK, ss:

I, George C. Josephson Assistant Secretary of the **FEDERAL INSURANCE COMPANY,** do hereby certify that I have compared the foregoing resolution with the original thereof as recorded in the Minute Book of said Company, and that the same is a correct and true copy of the whole of said original resolution and that said resolution has not been modified or rescinded; that the Company is duly and legally incorporated under the laws of the State of New Jersey and has complied with the provisions of the Act of Congress August 13, 1894, as amended, allowing certain corporations to be accepted as Surety on bonds; that the Company is duly licensed in each of the States of the United States of America, Alaska, Hawaii and Puerto Rico to transact a Fidelity and Surety business; and that the above statement of such Company's assets and liabilities is true and correct.

Given under my hand and seal of said Company at the City of New York, this 25th day of June, 1958

George C. Josephson
Assistant Secretary

Form 11158-F Rev. (2-58)
F-3852 (4M)

EXPLORATION PROJECT CONTRACT
FOOD MACHINERY AND CHEMICAL CORPORATION
(WESTVACO MINERAL PRODUCTS DIVISION)
DOCKET NO. DMEA-5009

EXHIBIT "A"

Description of the Work

General Provisions

The work consists of exploration by non-core drilling to test the Poison Canyon sandstone of the Jurassic Morrison formation for uranium.

Drilling depths are expected to average 200 feet. All drill holes shall completely penetrate the Poison Canyon sandstone but the Operator shall exercise diligence to avoid excessive drilling below the lower Poison Canyon contact.

Samples shall be taken at 2-foot intervals from the top of the Poison Canyon sandstone to the bottom of each hole. Cuttings shall be collected with a Duclone sample collector or equivalent unit of another make, unless wet drilling is necessary, in which case provision shall be made for taking satisfactory sludge samples. All samples shall be checked for radioactivity and those indicating significant mineralization shall be split. One portion shall be analyzed chemically for uranium and the other portion shall be properly labeled and stored for the use of the Government. The non-mineralized samples also shall be labeled and stored for inspection by the Government. Any stored samples may be disposed of by the Operator upon approval by the Government.

All cuttings from the drill holes shall be logged geologically. All holes shall be probed radiometrically and gamma ray and resistivity logs graphically recorded. The record of such logging and probing, together with certified copies of all assay certificates, shall be submitted with the Operator's monthly progress reports.

No hole shall be drilled closer than 100 feet to the outer boundaries of the land described in Annex I.

The Government will not contribute to any costs of an incompleted drill hole.

Access roads and drill sites shall be prepared, when required, with a D-6 bulldozer, or an equivalent unit of the same or another make.

The project shall be supervised at all times by a geologist or mining engineer, who shall devote full time to the project work.

The locations, directions, inclinations, and extent of all project work are subject to the approval of the Government.

The work is divided into two stages as hereinafter described. The Operator shall complete Stage I and shall perform as much of Stage II as the Government approves in writing in advance.

Stage I

Prepare access roads and drill sites and drill approximately 83 holes, aggregating an estimated 16,600 feet, at the locations indicated on the attached map (Figure 3). The holes shall be drilled in five north-south rows spaced approximately 500 feet apart, with the holes in each row spaced not less than 300 feet apart and staggered with respect to holes in adjoining rows. As indicated on the map, holes are omitted in areas that were previously drilled. If more than 16,600 feet of drilling are required to reach the desired horizon, the additional footage and funds required may, with the written approval of the Government, be transferred and deducted from Stage II.

Stage II

Prepare access roads and drill sites and drill not more than 40 holes, aggregating not more than 8,000 feet as offsets to previously drilled holes showing favorable mineralization. Offset holes shall be drilled

not closer than 100 feet to any previously drilled hole that completely penetrated the Poison Canyon sandstone.

Estimated Cost of the Project

Stage I

Actual Costs

Category (1) Independent Contracts (See Annex II (f))

16,600 feet non-core drilling @ $0.65/ft.	$10,790.00	
16,600 feet probing and logging @ $0.075/ft.	1,245.00	
20 hours bulldozing @ $12.00/hr.	240.00	
Categories (2) through (6)	None	
Category (7) Miscellaneous		
None except:		
80 chemical analyses @ $3.50 each sample	280.00	$12,555.00

Fixed Unit Costs (See Annex II (d))

Incidental allowance 1/ for each foot of hole drilled, 16,600 feet @ $0.145/ft.	2,407.00
Estimated Total Cost of Stage I	$14,962.00

Stage II

Actual Costs

Category (1) Independent Contracts (See Annex II (f))

8,000 feet non-core drilling @ $0.65/ft.	$ 5,200.00

8,000 feet probing and logging @ $0.075/ft.	$ 600.00	
10 hours bulldozing @ $12.00/hr.	120.00	
Categories (2) through (6)	None	
Category (7) Miscellaneous		
None except:		
45 chemical analyses @ $3.50 each sample	157.50	$ 6,077.50
Fixed Unit Costs (See Annex II (d))		
Incidental allowance 1/ for each foot of hole drilled, 8,000 feet @ $0.145/ft.		1,160.00
Estimated Total Cost of Stage II		$ 7,237.50

Summary of Costs

Estimated Total Cost of Stage I	$14,962.00
Estimated Total Cost of Stage II	7,237.50
Estimated Total Cost of the Project (rounded)	$22,200.00
Government Participation @ 50%	$11,100.00

1/ Includes all allowable costs of the project under Categories (1) through (7) of Article 6(a), except as otherwise scheduled in Exhibit "A".

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

OFFICIAL FILE COPY
DMEA
RECEIVED
DATE | | |
5/9 | C | 220
" | EWE | 700

224 New Customhouse
Denver 2, Colorado
May 7, 1958

Memorandum

To: Secretary to the Operating Committee

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Uranium) Food Machinery and Chemical Company (E½, S. 21, T. 13 N., R. 9 W.) McKinley County, New Mexico

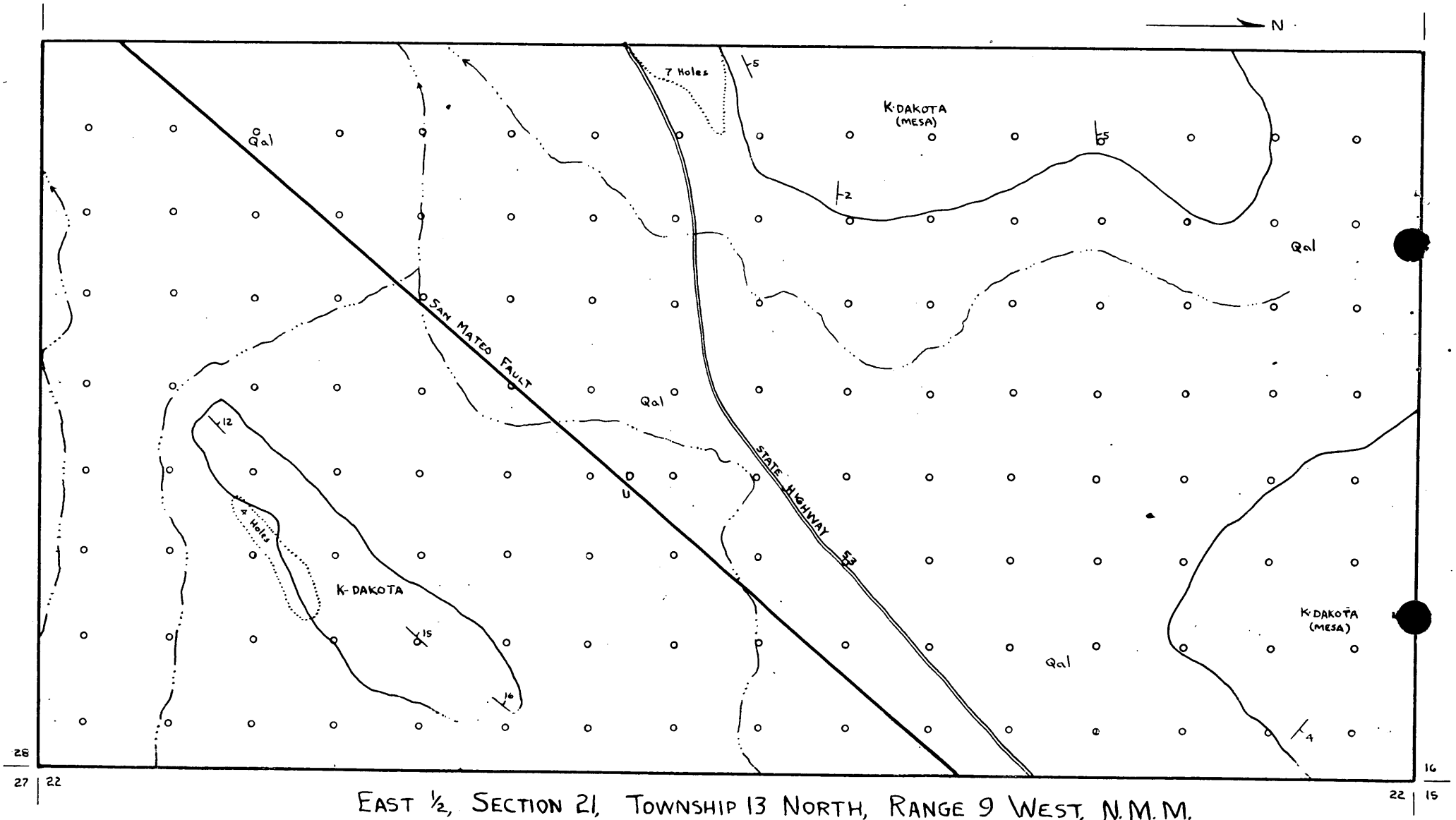
DMEA-5009

Enclosed are two copies of a map submitted by the Applicant showing the location of the proposed DMEA holes. No letter of transmittal accompanied the maps. Two more copies were duplicated in this office, one of which will accompany our copy of the application and one copy is being forwarded to the Grand Junction Office, DMEA to be included with their copy of the application.

E. N. Harshman

E. N. Harshman

DMEA
DEPARTMENT OF THE INTERIOR
MAY 6 1958
REGION III
DENVER, COLORADO



EAST ½, SECTION 21, TOWNSHIP 13 NORTH, RANGE 9 WEST, N.M.M.
McKINLEY COUNTY, N.M.

o Proposed DMEA holes

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 8 1958

224 New Customhouse
Denver 2, Colorado
May 5, 1958

Memorandum

To: Secretary to the Operating Committee

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Uranium) Food Machinery and Chemical Corporation (E.½, S. 21, T. 13 N., R. 9 W.) McKinley County, New Mexico

Enclosed are the original and one copy of the subject application in the amount of $41,244.00. One copy of the application is being retained in our file and one copy is being forwarded the Grand Junction Office, DMEA.

E. N. Harshman

E. N. Harshman

CONTRACT FILE COPY
DMEA
RECEIVED MAY 8 1958
DATE | INITIALS | CODE
Recd

224 New Customhouse
Denver 2, Colorado
May 5, 1958

Memorandum

To: J. W. Hasler

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Uranium) Food Machinery and Chemical Corporation (E. ½, S. 21, T. 13 N., R. 9 W.) McKinley County, New Mexico

Enclosed is one copy of the subject application which was received from the Applicant May 5, 1958.

Original signed by
E. N. HARSHMAN

E. N. Harshman

ENH:dp

cc: Exec. Op. Comm. (2)
Harshman
Salsbury
Docket
Chron.

Doff
HMC

FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION

WESTVACO MINERAL PRODUCTS DIVISION

May 2, 1958

CHRYSLER BUILDING EAST
161 EAST 42ND STREET
NEW YORK 17, N. Y.

ASSISTANT TO THE PRESIDENT

ORIGINAL FILE COPY
DMEA
RECEIVED MAY 8 1958
DATE | INITIALS | CODE

Mr. W. H. King, Executive Officer,
Defense Minerals Exploration Administration,
224 New Customhouse,
Denver 2, Colorado.

Dear Mr. King:

Herewith are applications in quadruplicate for aid with two exploration projects in McKinley County, New Mexico.

Please advise docket numbers as soon as they have been assigned for these two cases. Your favorable consideration will be very much appreciated.

Very truly yours,

H. C. Messman
Asst. to President
WESTVACO MINERAL PRODUCTS DIVISION

LBQ

DMEA
DEPARTMENT OF THE INTERIOR
MAY 5 1958
DENVER COLORADO

Form MF-103
Revised Oct. 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Budget Bureau No. 42-R1035.3
Approval expires June 30, 1958

RECEIVED MAY 8 1958

APPLICATION FOR AID IN AN EXPLORATION PROJECT

PURSUANT TO DMEA ORDER I, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

NAME OF APPLICANT (Full legal name and mailing address as it should appear on contract if one is executed)

Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
161 east 42nd street
New York, 17, N.Y.

DMEA
DEPARTMENT OF THE INTERIOR
MAY 5 1958
REGION III
DENVER, COLORADO

APPLICANT NOT TO USE THIS BLOCK

Docket Number	DMEA-5009
Date Received	5-8-58
Government Participation %	
Region	III
Division Code	700

BUSINESS ORGANIZATION (Check one)

- Individual [ ]
- Corporation [XX]
- Partnership [ ]
- Other (Specify) [ ]

State in which firm is organized

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

Name	Address	Title
Paul F. Davies,	San Jose, Calif.	Chairman of Board
Ernest Hart	" " "	President
Benjamin C. Carter	" " "	Exec. Vice-Pres.
J.D. Fennebresque	" " "	" " "
James M. Hait	" " "	" " "
Carl F. Prutton	New York 17, N.Y.	" " "
Wm. N. Williams	" " " "	Vice-President

Mineral(s) for which you wish to explore: Uranium

Estimated Cost of Project
$ 41,244.00

LOCATION OF PROPERTY

Name	County	State
E½, Section 21	McKinley	New Mexico
T.18N., R.9W.,N.M.M.		

GENERAL INSTRUCTIONS

Before filling out this application, please read DMEA Order-I, Revised, "Government Aid in Defense Exploration Projects." To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit four copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 1, existing mine workings and geology in item 2, and the proposed exploration project in item 4. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 2(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals*, of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest DMEA Field Office.*

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

MAY 2 - 1958
Dated

W. N. Williams
BY *(Signature)*

Vice-President
Title

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

INFORMATION REQUIRED WITH THIS APPLICATION

Applicant's Property Rights:

(a) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all land adjacent to the proposed project area which you own or control. Describe any part of the project land or workings which should not be subject to Government lien for royalty payments. If the land consists of unpatented claims, state the book and page number for each recorded location notice, including amended locations, and the place where recorded (courthouse, recorder's office, county, and state).

(b) State all the names by which you know the property.

(c) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise. If you are not the owner, submit with this application one exact copy of the lease, contract, or other document (with address of owner) under which you control the property.

(d) Describe all liens, mortgages, or other encumbrances on the property.

2. *Physical Description:*

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the lands, including existing mine workings. Describe all production facilities.

(b) State your interest, if any, in operations stated in 2*(a)*.

(c) State, as far as you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves on the property giving quantities and grades and sampling methods used, supporting your statement with copies of assay certificates and assay maps if available.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) State your reasons for expecting to find ore, and if you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you may have, indicating on each whether you require its return to you.

3. *Accessibility of Project:*

(a) To aid DMEA representatives who may be required to examine the property, state the name and address of the person who will meet the DMEA representative; give directions for reaching the property; and describe accessibility of the property including the mine workings.

(b) Name the shipping and supply points and places where employees reside and state the distances between them and the property.

4. *The Exploration Project:*

(a) Describe fully the proposed exploration project giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and longitudinal and cross sections as necessary. Show the location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show also the relation of the proposed work to any existing mine workings and to *property boundaries* or to the closest identifiable corner.

(b) If an access road to the project must be built, show the location on the property map and state the length, type, and construction methods proposed.

(c) In the event that an exploration contract with DMEA is executed, how soon will the work start and how many months will be required to complete it? State your anticipated average daily or monthly rate of progress for each type of work.

5. *Experience:*

State your operating experience and background with relation to your ability to carry out this exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of Costs:*

Furnish detailed estimates of the costs *for each item of the work proposed in 4(a)* under the headings listed below with a total for each heading and the estimated total cost of the project. Costs for any work to be performed by an independent contractor should be shown separately under category *(a)* below. Costs for any work that is not to be performed by an independent contractor should be given in detail under categories *(b)* through *(g)*.

(a) Independent contracts. State the cost of any proposed independent contract for the performance of all or any part of the work, expressed in units of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. *(Note* – If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. For necessary supervision, engineering and geological services, and labor, include an itemized schedule of numbers, classes, rates of wages, salaries or fees, and periods of employment. State whether these technicians and employees are available.

(c) Operating materials and supplies. List items of material and supplies with their cost. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of operating equipment to be used giving specifications and indicating how each item is to be acquired – i.e., rented, purchased, or provided by the applicant. If it is rented or purchased, state the estimated rental or purchase price. If it is to be furnished by the applicant, give its present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of necessary *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant, which will be used on the exploration project.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration project stating specifications and cost including labor, materials and supervision.

(g) Miscellaneous. For the operating equipment listed in 6*(d)*, describe the type and estimate the cost of repairs and maintenance expected during project operations. Do not repeat initial repairs listed in 6*(e)*. Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories.

Note – No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. *(a)* State whether you are prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation stated in Sec. 7 of DMEA Order–I, Revised.

(b) Explain to what extent you propose to furnish your share of the costs by providing money, by use of equipment owned by you, or otherwise.

* * * * * *

INT.-DUP. SEC., WASH., D.C. 25960

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DMEA
RECEIVED MAY 8 1958

Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
161 East 42nd Street
New York, 17, New York

Attachment to DMEA Form MF-103

PROPERTY STATUS

The property concerned in this application is legally described as:

East ½, Section 21, Township 13 North, Range 9 West, New Mexico Meridian, McKinley County, New Mexico.

All property is leased from the Santa Fe Pacific Railroad Company (see attached lease agreement). Adjacent lands also leased by Westvaco are Sections 9, 17, 29, and 33, T. 13 N., R. 9 W.

This property is known by no other name than the section number.

ACCESSIBILITY

Section 21 is easily accessible and can be reached by paved highways. From the junction of U.S. Highway 66 and New Mexico State Highway 53, proceed north on N.M. 53 for 13.1 miles. At this point, the southwest corner marker for Section 21 is approximately 300 feet to the west, or left, of the road. By continuing another 1.2 miles, the east section line is crossed at the cattle guard.

Company offices are maintained at Cactus Gardens, two miles west of Grants, New Mexico, on U.S. Highway 66. The mailing address is--Star Route, Box 24, Grants, New Mexico.

Shipping, supply, living and other facilities are available in Grants.

GEOLOGY

Topographically, the east half of the section is flat except for two small mesas, capped by Dakota sandstone, which extend into the area from the north and west. The mesa tops are approximately 100 feet above the valley floor.

Regionally, the section is on the northeast flank of the Zuni Uplift and locally, on the south rim of the Ambrosia Lake Basin.

The uppermost formation present is the Dakota sandstone which is underlain by the Morrison formation. Because of varied

lithology, the Morrison is subdivided into these members (in descending order): Brushy Basin shales, Poison Canyon sandstone, Brushy Basin shale, Westwater sandstone, and the Recapture shale. Although these two sandstones are usually separated by a layer of Brushy Basin shale, it is not unnatural for them to coalesce at irregular intervals. These sandstones are the potential ore-bearing horizons.

The east half of Section 21 is cut by the San Mateo fault which trends about N. 30 E. with the west side upthrown. This fault cannot be definitely located due to the widespread alluvial cover. Undoubtedly, the main fault is paralleled by numerous subsidiary faults; however, the width of the faulted zone is not known.

Considerable drag has taken place in the sediments of the southeast block, resulting in the increased dips in the Dakota outcrop in the southeast quarter-section.

MINERALIZATION

Westvaco has conducted exploration drilling on Section 21, mostly in the west half. In the east half of the section, as covered by this application, 11 holes have been drilled, all of which were weakly mineralized or barren.

Practically all drilling was confined to the west half due to the discovery of two small ore bodies in the Poison Canyon sandstone. These ore bodies are bedded and are of the coffinite type. One of the deposits is located just across the center line, adjoining the map area showing a 7 hole drill area.

Other mineralized sandstone areas in surrounding sections include:

Section 20 -- Four mines, production over 30,000 tons. Numerous mineralized areas.
Section 16 -- Mineralized areas in western half.
Section 22 -- Mineralized in the northwest quarter.

The above mineralized areas are mostly in the Poison Canyon sandstone. Only minor amounts of drilling have penetrated through the Westwater sandstone, thus it has not been properly evaluated.

It should be noted that mineralization has been found on both sides of the San Mateo fault.

To date, no mining operations have been conducted on Section 21; however, Westvaco is planning to sink a shaft on the ore body along the center line in the near future.

PROPOSED EXPLORATION

Westvaco proposes exploration drilling of the east half of

Section 21 because of the excellent potential for ore discovery. Among the favorable indications are:

- -- the widespread mineralization in the west half of the section
- -- the favorable 55 foot thickness of the Poison Canyon sandstone
- -- the ore and mineralization in surrounding sections.

To explore this half section, Westvaco proposes a drilling program of 128 holes, using a grid pattern at 330 feet (see map). Average hole depth to the base of the Poison Canyon sandstone is 200 feet, and continued drilling through the Westwater is an additional 110 feet.

It is also proposed that 20 of these holes be drilled through the Westwater to partially evaluate that sandstone.

All drilling is non-core, as core is of insufficient value to warrant the expense. Total estimated footage is 28,000.

No access roads are necessary.

Work would be started immediately after contract approval, and would take an estimated two months to complete.

EXPERIENCE

Westvaco is well qualified to conduct a DMEA exploration program for uranium. During the past two years, the company has received and completed three DMEA Uranium Exploration Contracts, one of which was successful in locating a commercial ore deposit.

The Company personnel who would conduct the program are well experienced in uranium exploration. In addition to two competent geologists, the Grants office is staffed by a surveyor, an assay laboratory technician and a draftsman. Facilities are available for radiometric assaying and analytical work would be performed in the laboratories of the parent corporation--Food Machinery and Chemical Corporation.

ESTIMATE OF COSTS

Item	Dollars per foot
Contract drilling (tri-cone rotary)	$ 0.700
Site preparation	0.008
Probing	0.016
Core boxes, sample sacks, etc.	0.015
Salaries	0.245
Living costs	0.080
Labor	0.008
Office Rental	0.020
Car Rental	0.031
Car Repairs	0.015
Gas & Oil	0.031
Office Supplies	0.081
Telephone and Telegraph	0.018
Bookkeeping, clerical, etc.	0.031
Mapping	0.026
Drafting and Printing	0.014
	$ 1.339
Contingency at 10%	0.134
Total	$ 1.473

Estimated Total Cost for 28,000 ft.
at $1.473 per foot -- $41,244.00.

The applicant is prepared to pay that portion of the cost not covered by the Government contribution.

STEWART BROS. & PARKER DRILLING COMPANY
EXPLORATION DRILLING CONTRACTORS
P. O. BOX [illegible] 15[illegible] PHONE 427-4416
[illegible]
Grants, New Mexico
November 10, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 8 1958

DATE	INITIALS	[illegible]

Westvaco Mineral Products
Box 24, Star Route
Grants, New Mexico

Gentlemen:

In compliance with your request for bid on 28,000 feet of non-core drilling in the East half of Section 21, T13N, R9W, NMPM, McKinley County, New Mexico, we submit the following:

0 - 400 feet @ 70¢ per foot

If we can be of further service to you, please call on us.

Sincerely yours,

H. W. Stewart

CLYDE L. JONES DRILLING COMPANY
Box 3236 -- Albuquerque, N.M.

November 8, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 8
DATE | INITIALS

Westvaco Mineral Products
Star Route - Box 24
Grants, New Mexico

Gentlemen:

I wish to submit the following bid on Section 21, Township 13 North, Range 9 West, McKinley County, New Mexico:

Non-core Drilling:

28,000 ft. @ an average depth of 400 ft. or less $.65 per ft.

Any consideration given this bid will be appreciated.

Yours very truly,

CLYDE L. JONES DRILLING COMPANY

(s) Clyde L. Jones

C. C. SMITH DRILLING CO.

EXPLORATION DRILLING CONTRACTOR

PORTABLE ROTARY AND SPUDDER DRILLING MACHINES

DIAL 2-3452
P. O. BOX 325
LUBBOCK, TEXAS

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 8 1958

DATE	INITIALS	CODE

November 10,1957

Drilling Bid To:

Westvaco Mineral Products Inc.
Grants, New Mexico.

Bid for drilling to be done by The Westvaco Mineral Products Inc. McKinley County, New Mexico, on the East half Section 21- T -3-N- R-9-W. For 28000 ft. of plugg drilling.

From 0 to 400 ft.
0 to 400 ft..... @ $ 0.75 per foot.

All Geological information and data obtained by reason of, or in connection with the drilling of the test holes, shall be the exclusive property of the Westvaco Mineral Products Inc. C.C. Smith Drilling Co Will keep all such information and data strictly confidential, and will not divulge or use, or permit their employees to divulge or use, any information or data so abtained.

Signed:_____

Approved:_____

_____

C.C. Smith Drilling Co
200 Leach Ave.
Grants, New Mexico

C.C. Smith Drilling Co.
Box 325
Lubbock, Texas

Lease No. SFP 9789

URANIUM MINING LEASE AND AGREEMENT

THIS INDENTURE, entered into in duplicate this [illegible] day of [illegible], 1957, by and between SANTA FE PACIFIC RAILROAD COMPANY, a corporation created by Act of Congress approved March 3, 1897, first party, hereinafter called the "Lessor," and [illegible] second party, hereinafter, whether one or more, called the "Lessee."

WITNESSETH, that the parties hereto, for the considerations hereinafter expressed, covenant and agree as follows:

1. Lessor, upon the terms and conditions and subject to the reservations hereinafter set forth, hereby grants to Lessee the exclusive right and privilege for a period of twelve (12) months, beginning with the date hereof, to search and explore for uranium-bearing ore by methods used and recognized in the industry and, thereafter for a period of five (5) years, to conduct mining operations on areas where uranium ore is discovered on the following described lands situated in the Count[illegible] of [illegible], State of [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible], acres,

OFFICIAL [illegible]

RECEIVED [illegible]

DATE	INIT[illegible]

Lessee accepts this lease subject to and agrees to comply with the provisions of that certain Purchase Agreement between Anaconda Copper Mining Company and Santa Fe Pacific Railroad Company, dated July 14, 1952, which gives Anaconda the first right to purchase any limestone gangue, low-vanadium ores produced by Santa Fe.

including the right to construct and maintain thereon at the sole cost and expense of Lessee all works, buildings, plants, waterways, roads, telegraph or telephone lines or other structures necessary and desirable in the exploration, development or support of mining operations upon said lands.

SUBJECT to the rights of grantees, lessees and licensees of the surface of said lands under deeds, contracts of purchase or other agreements heretofore made by Lessor and to the obligations of Lessor under the provisions thereof.

SUBJECT ALSO to all leases or agreements now outstanding for use of said lands, or any portion thereof, for grazing or other purposes, but Lessor represents that there are no such leases or agreements valid and subsisting made by Lessor for the development and production of uranium-bearing and associated minerals, as hereinafter defined.

SUBJECT ALSO to the right of Lessor (which right is hereby expressly reserved) to enter into leases, permits, or other agreements with others covering said lands or any portion thereof for any purpose whatsoever not inconsistent with the rights of Lessee hereunder.

It is understood that the Lessee is hereby granted the right to [illegible] only within the exterior boundaries, extended vertically downward, of the land hereby leased.

2. Lessee agrees on or before the expiration of the first twelve (12) months period above-mentioned to surrender to Lessor by an appropriate instrument, in writing, all of the land described above on which uranium ore has not been discovered, retaining only such lands as appear to contain uranium-bearing ore in commercial quantities. Lessee further agrees the retained lands shall be divided into units, to be designated by Lessee of not exceed six hundred and forty (640) acres each, conforming as nearly as possible to legal subdivisions, and that all of the terms and covenants of this lease shall separately apply to each such unit as fully as if covered by a separate lease.

3. Lessee agrees to enter into and upon the said premises within sixty (60) days from the date hereof and to work and operate on the leased premises steadily and continuously during the period of this lease in accordance with approved methods so as to discover, mine and remove the greatest amount of uranium-bearing ore possible in a manner proper and necessary to good and economical mining with due regard to the development and preservation of the said premises as mining ground. Lessee further agrees that all work done in and upon said premises and property shall be done in full compliance with the mining laws and regulations of the State, the United States or any other competent public authority.

4. Lessor reserves the right through its agents or representatives to enter from time to time into and upon all parts of said premises and workings thereon for the purpose of inspection, surveys, or taking samples therefrom, and Lessee agrees to render said agents or representatives proper assistance in making said inspection, surveys or examinations. Lessee shall furnish quarterly reports to the Lessor, including maps, showing all exploration data and all of the mining and exploration work done, or in progress, upon the property, together with assays of the ore encountered, during the preceding quarter.

5. On all ores mined or removed from the demised premises for the purpose of milling, treatment, stockpiling after weighing and assaying, sale, or other disposition, Lessee shall pay Lessor, or deliver for Lessor's account, a royalty, or royalties, as set forth below:

(a) On all ores mined from underground and purchased by the United States of America, or agents thereof, a percentage of mine value per dry ton as shown below:

Mine Value per Dry Ton	Royalty Percentage of Mine Value per Dry Ton
$ 0.01 to $10.01	10.0%
$10.01 to $20.01	11.0%
$20.01 to $30.01	12.0%
$30.01 to $40.01	13.0%
$40.01 to $50.01	15.4%
$50.01 or more	16.5%

(b) On all ores mined from underground and purchased by others than the United States of America, or agents thereof, a percentage of the mine value per dry ton as shown below:

Mine Value per Dry Ton	Royalty Percentage of Mine Value per Dry Ton
$ 0.01 to $10.01	10.0%
$10.01 to $20.01	11.0%
$20.01 to $30.01	12.0%
$30.01 to $40.01	13.0%
$40.01 to $50.01	15.4%
$50.01 or more	16.5%

[illegible] if the mine value per dry ton under the above schedule for [illegible] less than the following [illegible], the following tabulation [illegible] required to be paid per dry ton of ore:

Ore Content U_3O_8 Percent	Minimum Royalty Per Ton Dry Weight	Ore Content U_3O_8 Percent	Minimum Royalty per Ton Dry Weight	Ore Content U_3O_8 Percent	Minimum Royalty per Ton Dry Weight	Ore Content U_3O_8 Percent	Minimum Royalty per Ton Dry Weight
0.10	$ 0.30	0.25	$ 2.01	0.40	$ 4.03	0.55	$ 6.78
0.11	0.37	0.26	2.10	0.41	4.14	0.56	6.91
0.12	0.46	0.27	2.19	0.42	4.25	0.57	7.05
0.13	0.55	0.28	2.50	0.43	4.36	0.58	7.19
0.14	0.64	0.29	2.60	0.44	4.47	0.59	7.33
0.15	0.75	0.30	2.70	0.45	4.58	0.60	7.47
0.16	0.86	0.31	2.80	0.46	4.69	0.61	7.61
0.17	0.99	0.32	2.90	0.47	4.80	0.62	8.30
0.18	1.23	0.33	3.01	0.48	4.91	0.63	8.45
0.19	1.38	0.34	3.11	0.49	5.02	0.64	8.60
0.20	1.54	0.35	3.21	0.50	5.14	0.65	8.75
0.21	1.63	0.36	3.31	0.51	6.22	0.66	8.89
0.22	1.73	0.37	3.41	0.52	6.36	0.67	9.04
0.23	1.82	0.38	3.52	0.53	6.50	0.68	9.19
0.24	1.91	0.39	3.92	0.54	6.64	0.69	9.34
						0.70	9.49

Minimum royalty for ores exceeding 0.70% U_3O_8 content shall be computed at the rate of 16.5% of the dry ton value of the ore in accordance with Section 60.5A, Schedule I, of A.E.C. Domestic Uranium Program Circular No. 5, revised and amended October 9, 1953.

(c) On all ores mined from underground and purchased by others than the United States of America, or agents thereof, Lessor may at its sole option, to be exercised and reexercised at intervals of not less than six (6) months, take its royalty in kind by means of the following procedure.

Lessee shall deliver at the ore processing site free of expense to Lessor for account of Lessor to a Lessor designated eligible purchaser, the quantities of U_3O_8 contained in concentrate of grade acceptable to A.E.C. which would accrue according to the following tabulation:

Ore Content U_3O_8 Percent	Corresponding Pounds U_3O_8	Ore Content U_3O_8 Percent	Corresponding Pounds U_3O_8	Ore Content U_3O_8 Percent	Corresponding Pounds U_3O_8	Ore Content U_3O_8 Percent	Corresponding Pounds U_3O_8
0.10	.0375	0.25	.2513	0.40	.5038	0.55	.8475
0.11	.0463	0.26	.2625	0.41	.5175	0.56	.8638
0.12	.0575	0.27	.2738	0.42	.5313	0.57	.8813
0.13	.0688	0.28	.3125	0.43	.5450	0.58	.8988
0.14	.0800	0.29	.3250	0.44	.5588	0.59	.9163
0.15	.0938	0.30	.3375	0.45	.5725	0.60	.9338
0.16	.1075	0.31	.3500	0.46	.5863	0.61	.9513
0.17	.1238	0.32	.3625	0.47	.6000	0.62	1.0375
0.18	.1538	0.33	.3763	0.48	.6138	0.63	1.0563
0.19	.1725	0.34	.3888	0.49	.6275	0.64	1.0750
0.20	.1925	0.35	.4013	0.50	.6425	0.65	1.0938
0.21	.2038	0.36	.4138	0.51	.7775	0.66	1.1113
0.22	.2163	0.37	.4263	0.52	.7950	0.67	1.1300
0.23	.2275	0.38	.4400	0.53	.8125	0.68	1.1488
0.24	[illegible]	0.39	.4900	0.54	[illegible]	0.69	1.1675
						[illegible]	[illegible]

On ore exceeding 0.70% U_3O_8 content, the corresponding pounds of acceptable U_3O_8 concentrates to be delivered to Lessor shall be computed at the rate of 16.5% of the dry ton value of the ore in accordance with Section 60.5A, Schedule I, of the A.E.C. Domestic Uranium Program Circular No. 5, revised and amended October 9, 1953, converted to the equivalent pounds U_3O_8 at the value of $8.00 per pound.

(d) On all ores mined by open pit method which are purchased by the United States of America, or agents thereof, a percentage of mine value per dry ton as shown below:

Mine Value per Dry Ton	Royalty Percentage of Mine Value per Dry Ton
$ 0.01 to $10.01	10.0%
$10.01 to $20.01	14.0%
$20.01 to $30.01	18.0%
$30.01 to $40.01	22.0%
$40.01 to $50.01	28.6%
$50.01 or more	33.0%

(e) On all ores mined by open pit method which are purchased by others than the United States of America, or agents thereof, a percentage of mine value per dry ton as shown below:

Mine Value per Dry Ton	Royalty Percentage of Mine Value per Dry Ton
$ 0.01 to $10.01	10.0%
$10.01 to $20.01	14.0%
$20.01 to $30.01	18.0%
$30.01 to $40.01	22.0%
$40.01 to $50.01	28.6%
$50.01 or more	33.0%

provided that if the mine value per dry ton under the above schedule for ore yields less than the following tabulation, the following tabulation shall be the royalty required to be paid per dry ton of ore:

Ore Content U_3O_8 Percent	Royalty per Ton	Ore Content U_3O_8 Percent	Royalty per Ton	Ore Content U_3O_8 Percent	Royalty per Ton	Ore Content U_3O_8 Percent	Royalty per Ton
0.10	$ 0.30	0.25	$ 2.56	0.40	$ 6.82	0.55	$ 12.58
0.11	0.37	0.26	2.67	0.41	7.01	0.56	12.84
0.12	0.46	0.27	2.79	0.42	7.19	0.57	13.10
0.13	0.55	0.28	3.74	0.43	7.38	0.58	13.36
0.14	0.64	0.29	3.90	0.44	7.57	0.59	13.61
0.15	0.75	0.30	4.05	0.45	7.76	0.60	13.87
0.16	0.86	0.31	4.20	0.46	7.94	0.61	14.13
0.17	0.99	0.32	4.36	0.47	8.13	0.62	16.60
0.18	1.56	0.33	4.51	0.48	8.32	0.63	16.90
0.19	1.76	0.34	4.66	0.49	8.50	0.64	17.19
0.20	1.96	0.35	4.82	0.50	8.69	0.65	17.49
0.21	2.08	0.36	4.97	0.51	11.55	0.66	17.79
0.22	2.20	0.37	5.12	0.52	11.81	0.67	18.03
0.23	2.32	0.38	5.27	0.53	12.07	0.68	18.38
0.24	2.44	0.39	6.63	0.54	12.33	0.69	18.68
						0.70	18.98

Minimum royalty for ores exceeding 0.70% U_3O_8 content shall be computed at the rate of 33.0% of the dry ton value of the ore in accordance with Section 60.5A Schedule I of A.E.C. Domestic Uranium Program Circular No. 5, revised and amended October 9, 1953.

(f) On all ores mined by the open pit method and purchased by others than the United States of America, or agents thereof, Lessor may at its sole option, to be exercised and reexercised at intervals of not less than six (6) months, take its royalty in kind by means of the following procedure:

Lessee shall deliver at the ore processing site free of expense to the Lessor for account of Lessor to a Lessor designated eligible purchaser, the quantities of U_3O_8 contained in concentrate of grade acceptable to A.E.C. which would accrue according to the following tabulation:

Ore Content U_3O_8 Percent	Corresponding Pounds U_3O_8	Ore Content U_3O_8 Percent	Corresponding Pounds U_3O_8	Ore Content U_3O_8 Percent	Corresponding Pounds U_3O_8
0.10	.0375	0.30	.5063	0.50	1.0863
0.11	.0463	0.31	.5250	0.51	1.4438
0.12	.0575	0.32	.5450	0.52	1.4763
0.13	.0688	0.33	.5638	0.53	1.5088
0.14	.0800	0.34	.5825	0.54	1.5413
0.15	.0938	0.35	.6025	0.55	1.5725
0.16	.1075	0.36	.6213	0.56	1.6050
0.17	.1238	0.37	.6400	0.57	1.6375
0.18	.1950	0.38	.6588	0.58	1.6700
0.19	.2200	0.39	.8288	0.59	1.7013
0.20	.2450	0.40	.8525	0.60	1.7338
0.21	.2600	0.41	.8763	0.61	1.7663
0.22	.2750	0.42	.8988	0.62	2.0750
0.23	.2900	0.43	.9225	0.63	2.1125
0.24	.3050	0.44	.9463	0.64	2.1488
0.25	.3200	0.45	.9700	0.65	2.1863
0.26	.3338	0.46	.9925	0.66	2.2238
0.27	.3488	0.47	1.0163	0.67	2.2600
0.28	.4675	0.48	1.0400	0.68	2.2975
0.29	.4875	0.49	1.0625	0.69	2.3350
				0.70	2.3725

On ore exceeding 0.70% U_3O_8 content, the corresponding pounds of acceptable U_3O_8 concentrates to be delivered to Lessor shall be computed at the rate of 33.0% of the dry ton value of the ore in accordance with Section 60.5A Schedule I of the A.E.C. Domestic Uranium Program Circular No. 5, revised and amended October 9, 1953, converted to the equivalent pounds U_3O_8 at the value of $8.00 per pound.

"MINE VALUE PER DRY TON," wherever used herein, is hereby defined as the dollar value per dry ton of crude ores at the mine as determined by the application to the valuable metal content of such ore of the price schedules for such ores established and currently in effect by the Atomic Energy Commission or other government authorized agency, but excluding any allowance for transportation or development, and all mine pro-

duction bonuses. However, if the government at any time hereafter does not establish or have in effect a price schedule for the purchase of such ores on a fixed or scheduled dollar value per dry ton of crude ores at the mine, or said ores contain salable minerals, some, or all, of which are disposed of to a custom treatment plant or smelter for treatment and sale, then mine value per dry ton shall be the gross value per dry ton of said crude ores paid therefor by the Atomic Energy Commission, or other government authorized agency, or by a mill or other buyer less any allowances or reimbursements for the following specific items:

(1) Transportation of ores.

(2) Allowances paid to Lessee by the Atomic Energy Commission or other government authorized agency for exploration for or development of ores.

Wherever minerals or other products associated with uranium-bearing ore are recovered from the ores which are not included in determining "mine value per dry ton" as heretofore defined, there shall be paid by Lessee to the Lessor for such minerals or other products, a royalty of ten percent (10%) of the gross value of such products, less milling cost charged to Lessee thereon.

All royalty payments to be made by Lessee to Lessor shall be made on or before the twentieth day of the month next following receipt by Lessee of payments for the products sold or disposed of.

Lessee shall keep accurate account of all mining and milling operations, showing the sales, prices, dates, purchasers, and the whole amount of minerals mined and milled, the amount extracted and the gross receipts derived therefrom, together with any bonus or other payments, and furnish to Lessor sworn monthly reports thereon not later than the twentieth day of the succeeding month.

6. In addition to the payments hereinabove mentioned, Lessee shall pay Lessor as rental for the leased premises upon the execution of this lease the sum of One Dollar ($1.00) per acre and thereafter One Dollar ($1.00) per acre a year for each year this lease may be in effect, to be paid annually in advance; provided, however, that beginning with the second year and each year thereafter the rental so paid for any one year shall be credited on the royalty due to Lessor for that year.

7. Lessee shall not subject Lessor or the leased premises to any liability or lien for or on account of any work done or improvements made or materials placed on or used upon said premises, and if by reason of the failure of Lessee to pay bills or expenses incurred by Lessee any lien or liens shall be filed against the leased premises, Lessor may forthwith pay and discharge the same and hold Lessee bound to repay to Lessor all sums so advanced or paid to clear said premises from liens which may be filed as aforesaid, and Lessor may also at its election declare a forfeiture of this

lease. Lessee agrees to post forthwith and keep posted on said property in all places required by law, a notice of nonliability of the Lessor for labor or materials furnished the Lessee, and the Lessor agrees to furnish such notices.

8. Lessee shall file returns with the proper taxing authorities covering the mineral estate hereby leased, the uranium-bearing ore or other minerals produced from the leased premises, and all personal property which may be placed upon said premises by Lessee; and shall pay, before the same shall become delinquent, all taxes, charges, rates and assessments which may during the term of this lease, be levied upon or assessed in any respect upon or against said mineral estate, ore, mineral products or personal property, together with all increases in such charges, rates or assessments upon the land by reason of the discovery or production of such minerals or on account of improvements erected upon said land, including buildings, machinery and other fixtures placed thereon by Lessee. Where any such taxes, charges, rates or assessments may be embraced in the general amount of taxes charged upon the leased premises, separately or in conjunction with other property of the Lessor or of the surface owner, and the Lessor shall pay such taxes or refund the same to the surface owner, then Lessee shall promptly repay or refund to Lessor the amount or part of the tax, charge, rate of assessment attributable under this lease to Lessee. All such payments by Lessor on account of Lessee shall bear interest at the rate of eight percent (8%) per annum until paid.

9. Lessee shall save harmless and indemnify Lessor against all claims, demands, suits, judgments, expenses and costs of any and every kind on account of the injury to or death of persons or loss of or damage to property arising in any manner out of or in connection with the operations of Lessee hereunder and Lessee shall at Lessee's sole cost and expense defend all such claims, demands or suits; and if at any time Lessee employs any person or persons to work upon the leased premises, Lessee shall comply with the provisions of the Workmen's Compensation Act of _____ and all regulations and requirements of competent public authority.

10. At the expiration of this lease, or upon its earlier termination as herein provided, Lessee shall surrender the leased premises in good order and condition and remove therefrom all machinery, tools, and improvements, except such as may become the property of the Lessor under this lease by purchase or otherwise; provided, however, that no such tools, machinery, or improvements shall be removed while Lessee may be in any manner indebted to Lessor under any obligation incurred under this lease. Lessee shall not, however, remove any timbers or improvements which may be necessary or desirable to leave in the workings to protect same from subsidence or as a mining property unless requested by Lessor to do so.

11. Any notice to be given by Lessor to Lessee hereunder shall be deemed to be properly served if the same be deposited in a United States post office, registered mail postpaid, return receipt requested, addressed to

[redacted]

and any notice to be given by Lessee to Lessor hereunder shall be deemed to be properly served if the same be deposited in a United States post office,

registered mail postpaid, return receipt requested, addressed to Santa Fe Pacific Railroad Company, attention Secretary, Room 220, 920 Jackson Street, Topeka, Kansas, or at such other address as Lessor may request.

12. Lessor does not warrant the quiet possession of said lands by the Lessee and Lessor shall in no event become liable for damage arising from any lack or failure of title in the Lessor to said lands or eviction of the Lessee therefrom by title paramount to the title of the Lessor. The Lessor covenants, however, and warrants that it has made no agreement on its part in reference to said lands, or any conveyance thereof which will give to third parties right to interfere in any way with the operations of the Lessee under this lease.

Lessor has, however, sold and conveyed all of said lands by deed, in which it has expressly reserved and excepted all oil, gas, coal and minerals whatsoever, already found or which may be found upon or under said lands, with the right to prospect for, mine and remove the same, and to use so much of the surface of said lands as shall be necessary and convenient for shafts, wells, tanks, pipe lines, rights of way, railroad tracks, storage purposes and other and different structures and purposes necessary and convenient for the digging, drilling, and working of any mines or wells which may be operated on said lands. Lessee accepts this lease and agreement subject to the terms and provisions of said deed reservation.

Lessee agrees (a) to pay all damages to the surface owner's buildings and growing crops caused by the erection or construction of facilities to be used in connection with mining operations; (b) that all pipe lines shall be buried below plow depth where such lines cross cultivated lands; and (c) that where there are fences, to construct gates or cattle guards therein where necessary for Lessee to cross the same, and to keep such gates and cattle guards in repair and the gates closed.

Lessee will also indemnify and save Lessor harmless from any and all claims of or liability to the owner or owners of the surface of the land leased by reason of the failure of Lessee to perform the requirements mentioned in clauses (a), (b) and (c) hereof.

Any amounts which Lessor shall be required to pay to any such surface owner or owners by reason of the failure of the Lessee to perform such obligations shall be refunded by Lessee to Lessor within thirty (30) days after demand therefor, and upon failure to make such payment within said time, all amounts so due shall become a lien upon all property of the Lessee upon said premises and all of the Lessee's interest in any uranium ore produced therefrom and the proceeds thereof.

13. No termination of this lease, whether by lapse of time or otherwise, shall release Lessee from any liability or obligation hereunder, whether of indemnity or otherwise, resulting from any acts, omissions, or events happening prior to the date of such termination.

14. Lessee shall not assign this lease or any interest therein nor sublet any portion of the leased premises except with the written consent of Lessor first had and obtained in each instance.

15. Lessor agrees that if during the term of this lease Lessee has found and is, at the expiration hereof, producing uranium-bearing ore in commercial quantities from the demised premises, Lessor will, upon written request from Lessee, made prior to the expiration date hereof, renew this lease for an additional three-year period, upon the same terms and conditions, including the right to like and successive renewals thereafter, upon the same conditions, subject always during any such extended period to termination whenever uranium-bearing ore in commercial quantities shall cease to be produced for sixty (60) consecutive days; provided, however, that in all instances in which Lessee is required to perform any particular act or to begin or to carry on any operation, except payment of rentals or other money due Lessor, any delay on account of floods, washouts, strikes, lockouts, the elements, acts of God or the public enemy, or other causes beyond Lessee's control, shall not be computed as any part of the time within which any such act shall be begun or performed. Lessor shall be under no obligation to renew this lease at any time or times if Lessee shall then be in default hereunder, or if this lease has been previously terminated by reason of any such default.

16. Lessee may, at any time, surrender any unit of the leased premises to the Lessor by an appropriate instrument, in writing, duly executed and acknowledged so as to entitle the same to be recorded, and thereupon all rights and obligations of the parties hereto, one to the other, shall cease and determine as to the premises thereby surrendered, provided, however, the Lessee shall have first paid all rentals, taxes or royalties due and shall have performed all obligations of the Lessee hereunder.

17. If Lessor at any time believes that Lessee is in default under the terms and provisions of this lease, it shall notify Lessee in writing of the particular default claimed, and if such default shall not be cured within thirty (30) days after the giving of such notice, Lessor may terminate this lease by written notice to Lessee. In the event Lessee shall fail to make any payment of rentals or royalties or other fixed amounts when due, Lessor may terminate this lease upon ten (10) days' written notice to Lessee and Lessee's failure to pay the full amount due within that time.

18. All of the covenants and agreements of this lease shall extend to and be binding upon and every benefit hereof shall inure to the heirs, executors, administrators, successors or assigns of the parties hereto, as the case may be.

IN WITNESS WHEREOF, this lease and agreement has been executed by the parties thereunto duly authorized the day and year first above written.

SANTA FE PACIFIC RAILROAD COMPANY

By _____
Vice President

LESSOR

ATTEST:

_____
Assistant Secretary

[illegible] CORPORATION
[illegible] DIVISION)

By _____

ATTEST: _____
Assistant Secretary

LESSEE

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 8 1958

DATE	INITIALS	CODE

[illegible])
[illegible]) ss
[illegible] COUNTY)

The foregoing instrument was acknowledged before me this [illegible] day of September, 1957, by [illegible] Shepper, Vice President of [illegible] PACIFIC RAILROAD COMPANY, a corporation organized and [illegible] under and by virtue of an Act of Congress approved March 3, 1877, [illegible] of said corporation.

Notary Public

[illegible] expires November 8, 1959

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DMEA
RECEIVED MAY 8 1958

DATE	INITIALS	CODE

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 8 1958

DATE	INITIALS	CODE

STATE OF NEW YORK)
COUNTY OF NEW YORK) ss

The foregoing instrument was acknowledged before me this ____ day of _____, 1957, by W. N. Williams and Harold Vogel _____ of Food Machinery and Chemical Corporation, a _____ corporation, on behalf of said corporation.

_____
Notary Public

(Notarial Seal)

Docket Copy

Knowsc

Project Summary Report

By: Michael Ching

May 8, 1959

1. Docket No. DMEA-5009 (Uranium)
   Contract No. Idm-E1220

   Operator - Food Machinery and Chemical Corporation
   (Westvaco Mineral Products Division)
   161 East 42nd Street
   New York 17, N. Y.

   Property - E½ Sec. 21, T. 13 N., R. 9 W., N.M.P.M.&B., McKinley County, New Mexico.

   Operator's Property Rights -

   Controls the land through a Uranium Mining Lease and Agreement dated March 15, 1957, with Santa Fe Pacific Railroad Company. Performance Bond dated June 25, 1958, issued by Federal Insurance Company, submitted in lieu of Consent to Lien and Subordination Agreement of Santa Fe.

2. Contract (Long Form) dated June 24, 1958.

Final contract starting date	- Aug. 15, 1958
Actual starting date	- Aug. 15, 1958
Contract completion date	- Nov. 30, 1958
Actual completion date	- Oct. 4, 1958

Work Authorized -

Test the Poison Canyon sandstone of the Jurassic Morrison formation for uranium by non-core drilling in two stages as follows:

Stage I (Approximately 83 holes)

Actual Costs

16,600 feet non-core drilling @ $0.65/ft.	$10,790.00	
16,600 feet probing and logging @ $0.075/ft.	1,245.00	
20 hrs. bulldozing @ $12.00/hr.	240.00	
80 chemical analyses @ $3.50 each	280.00	

Fixed Unit Costs

16,600 feet @ $0.145/ft. incidental allowance	2,407.00	$14,962.00

Stage II (Not more than 40 holes)

Actual Costs

8,000 feet non-core drilling @ $0.65/ft.	$ 5,200.00	
8,000 feet probing and logging @ $0.075/ft.	600.00	
10 hrs. bulldozing @ $12.00/hr.	120.00	
45 chemical analyses @ $3.50 each	157.50	

Fixed Unit Costs

8,000 feet @ $0.145/ft. incidental allowance	1,160.00	$ 7,237.50
Estimated total cost of the project		$22,200.00
Government participation @ 50%		$11,100.00

Amendments - None.

Work Completed (Work was confined to Stage I)

Stage I (81 holes)

20,119 feet non-core drilling @ $0.65/ft.	$13,077.35	
20,006 feet probing and logging @ $0.075/ft.	1,500.45	
10 hrs. bulldizing @ $12.00/hr.	120.00	
20,119 feet @ $0.145/ft. incidental allowance	2,917.26	
Total cost of the project		$17,615.06
Government participation @ 50%		$ 8,807.53

Final Reports Received

Operator's - dated Dec. 16, 1958, received Feb. 16, 1959
Field Team's - dated Feb. 1959, received Feb. 20, 1959.

3. Auditor's Report of Review - dated Feb. 17, 1959

Total cost as billed by Operator	$21,469.60
Exceptions	3,854.54
Total accepted cost	$17,615.06
Government participation @ 50%	$ 8,807.53

4. Certification of Discovery - None.

5. Results and Comments

The 81 holes were drilled in five north-south rows spaced approximately 500 feet apart, with the holes in each row spaced not less than 300 feet apart and staggered with respect to holes in adjoining rows. One authorized hole was abandoned in a fractured zone at a shallow depth and another was not drilled because the site was inaccessible.

The Operator's interpretation of the Westwater Canyon member as a part of the Poison Canyon sandstone caused a considerable amount of excess drilling which was disallowed. However, the contract estimate of 16,600 feet for Stage I was inadequate for all holes to reach the desired horizon, and the Field Team approved the transfer of 3,519 feet of drilling from Stage II to Stage I.

All holes drilled in Stage I were either barren or weakly mineralized. The results did not justify further work under Stage II, nor a certification of discovery.

Aside from the misinterpretation of allowable drilling depths, the Operator prosecuted the work efficiently. Three Model 1500 Failing rotary rigs were used. Wet drilling was required in all holes. Including disallowed footages, a total of 24,954 feet of hole were drilled in about 45 working days, or approximately 555 feet per day.

Michael Ching
Michael Ching

MChing/fw/5/8/59
cc: Docket
Dir. Read. File
Mr. Ching

17

OFFICE OF MINERALS EXPLORATION

WORK COMPLETED ANALYSIS

___ Certified — After final audit or review report is received, prepare in duplicate. File original in official docket. Send copy to Code 210.

Operator: Food Machinery and Chemical Corporation

Actual Cost: X

State: New Mexico

Agreed Unit Cost:

Final Report of Audit:

Commodity: Uranium

Docket No.: DMEA-5009

Final Report of Review: 2-17-59

Contract No.: Idm-E1220

Type of Work (Use these categories only)	Authorized by Contract and Amendments		Completed and Paid for		Net cost after sale of Gov't. Property
	Units	Cost 1/	Units	Cost 1/	
Drifting & Crosscutting					
Raising					
Shafts					
Winzes					
Drilling (Specify) Non-Core	24,600'	$ 21,402.00	20,119'	17,495.00	17,495.00
Surface Excavation					
Underground Excavation					
Roads and Trails		360.00		120.00	120.00
Operating Equipment Purchased					
Surface Rehabilitation & Repairs					
Underground Rehabilitation					
New Building, Improvements, etc.					
Other (Specify) Chem. Analyses		437.50		–	–
Totals		$ 22,200.00		$ 17,615.00	2/ $ 17,615.00

1/ Round off to dollars.
2/ Net cost total must agree with final report of audit or review.

Prepared by Michael Ching Date 4-24-59

52616

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/18	Ching	700
5/19	Kwong	~~700~~
6/9/5	Talbot	800
4/25	Bob Tone	120
		110
		~~100~~
		220
		700

JUN 25 1959

Mr. W. N. Williams
Vice President
Food Machinery and Chemical Corporation
141 East 42nd Street
New York 17, New York

Re: Docket No. DMEA-5009 (Uranium)
Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico
Contract No. Idm-E1220

Dear Mr. Williams:

Reference is made to your terminated exploration contract with the Government.

We sincerely regret that the work performed did not result in a certification of discovery or development under the provisions of the contract. In the absence of such certification, the Government retains no claim or lien against the property subject to the contract or any future production therefrom. We, therefore, are closing our books and records on this project. Your attention, however, is called to the provisions of the contract which require the Operator to keep and preserve certain records for the period indicated.

We appreciate your interest and participation in the DMEA exploration program which has now been succeeded by the Office of Minerals Exploration program.

Sincerely yours,

(signed) FRANK E. JOHNSON

Acting Director

Copy to Federal
Insurance Company

MChing/fw-5/8/59
cc: Docket
Dir.Read.File
Contract Adm.&Audit Div.
OME Field Team, Reg. III (2)
Mr. Ching (2)

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/18	Ching	700
5/18	Knopke	700
6/25	Talbert	800
6/25	Robinson	120
		110
		~~100~~
		220
		700

JUN 25 1959

Mr. Willis Koenig
Assistant Secretary
Federal Insurance Company
90 John Street
New York 38, New York

Re: Docket No. DMEA-5009 (Uranium)
Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico
Contract No. Idm-E1220

Dear Mr. Koenig:

Enclosed is a copy of a self-explanatory letter of today to the Operator under the above-cited contract.

The property as set forth in the contract is covered by your Performance Bond No. 7370279, dated June 25, 1958, under the captioned name and contract number.

In the absence of certification the Government retains no claim against the bonding company that assumed the responsibility for performance under the contract.

Sincerely yours,

(signed) FRANK E. JOHNSON

Acting Director

Enclosure

MChing/fw-5/8/59
cc: Docket
Dir.Read.File
Contract Adm.&Audit Div.
Mr. Ching (2)
Field Team, Reg. III (2)

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

224 New Customhouse
Denver 2, Colorado
February 27, 1959

OFFICIAL FILE COPY
O. M. E.
RECEIVED Mar. 2 1959

DATE	INITIALS	CC
3/2		220
"		110
		700

Memorandum

To: Chairman, Operating Committee, OME

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Contract Idm-E1220, Food Machinery and Chemical Corporation, (E½ Sec. 21, T 13 N, R 9 W) McKinley County, New Mexico - FINAL PAYMENT

Enclosed are two copies of a memorandum to T. A. Christensen, dated February 25, 1959, relative to final payment under the terms of the subject contract.

J. W. Townsend

Enclosures

OFFICIAL FILE COPY
RECEIVED [redacted] 2 1959

DATE	INITIALS	CODE

[redacted] New Customhouse
Denver 2, Colorado
February 25, 1959

Memorandum

To: W. A. Christensen

From: Executive Officer, GMK Field Team, Region III

Subject: Docket No. [redacted] 9089 (Uranium) Contract [redacted]
Food Machinery and Chemical Corporation ([redacted] Sec. [redacted],
T 13 N, R 9 W) McKinley County, New Mexico -
FINAL PAYMENT

Reference is made to our memorandum of February 10, 1959, whereby we forwarded the final Form [redacted]-10[redacted], Operator's Monthly Report and Voucher, for the period from August 15, 1958, through October 4, 1958, and requested that you withhold an amount of $500.00, from reimbursement to the Operator, pending resolution of matters prerequisite to closing the account.

The Operator's final report has been received, therefore, final payment to the Operator is to be made on the following basis, which is in accordance with the Report of Review of reported project costs, by the Contract Administration and Audit Division, [redacted], dated February 17, 1959.

Basis for Final Payment

Total accepted cost	$17,615.06
Government participation at 50 percent	8,807.53
Total prior payments	8,307.53
Balance due the Operator	$ 500.00

Original signed by
J. W. TOWNSEND

J. W. Townsend

JWC:mh

cc: [redacted] Op. Comm. (2)
[redacted]
[redacted]
[redacted], GMK/Tuc.
Corres.file, Reg.III
[redacted]-10[redacted] file, Reg.III
Cooper
Curran

$500.00
2/26/59 [redacted] 59-90

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O. M. E.
RECEIVED FEB 2 1959

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UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
224 New Customhouse
Denver 2, Colorado
February 25, 1959

Memorandum

To: Chairman, Operating Committee, OME

From: OME Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Contract Idm-E1220 Food Machinery and Chemical Corporation, ($E\frac{1}{2}$ Sec. 21, T 13 N, R 9 W) McKinley County, New Mexico - FINAL SUMMARY REPORT

The Operator's final report was included as a part of its final accounting report and voucher for the period from August 15, 1958, through October 4, 1958, two copies of which were forwarded by memorandum of February 13, 1959. The original and two copies of a Joint Final Engineering and Geologic Report, by W. L. Emerick, Geologist, Geological Survey, and T. M. Romslo, Mining Engineer, Bureau of Mines, were forwarded by memorandum of February 17, 1959.

The contract was considered completed on completion of 81 of the possible 83 holes under Stage I, and the Operator was so notified by our letter of January 19, 1959.

Final payment of the Operator's account was processed by this office February 25, 1959, in conformance with the Report of Review of reported project costs, by the Contract Administration and Audit Division, OME, dated February 17, 1959.

Exploration work completed consisted of the drilling of 81 holes, aggregating 20,119 feet of acceptable non-core drilling. Additional work or service incident to the drilling consisted of radiometric probing of 20,006 feet, 10 hours of bulldozer work, and incidental allowance for 20,119 feet of drilling; all at a total accepted cost of $17,615.06, toward which the Government contributed 50 percent, or $8,807.53.

The exploration work completed did not result in the discovery of a significant quantity of uranium ore, therefore, certification of the project as a discovery or development is not recommended.

By J. W. Townsend
J. W. Townsend

By E. N. Harshman
E. N. Harshman

F.T.'S FINAL SUMMARY

DMEA FORM 6 REFERENCE SLIP

REV. 12-56 DEFENSE MINERALS EXPLORATION ADMINISTRATION

TO:	INITIALS	DATE
1. 110		
2. 800		2/25
3. 700		
4.		
5.		
FROM:		

FOR: Check items for action desired

____ Action ____ Reply for signature of _____

____ Approval ____ Investigate ____ Surname

____ Comment ____ Recommendations ____ Signature

____ Conference ____ Rewrite ____ File

____ Instructions ____ Your information

REMARKS:

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

224 New Customhouse
Denver 2, Colorado
February 17, 1959

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 20 1959

DATE	INITIALS	CODE
2/20	C	220
2/20	JG	130
2/24	JG	130
2/24	C	220
		700

Memorandum

To: Chairman, Operating Committee, OME

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Contract Idm-E1220 Food Machinery and Chemical Corporation, (Westvaco Mineral Products Division) (E½ Sec. 21, T 13 N, R 9 W) McKinley County, New Mexico - Final Joint Engineering and Geologic Report

Enclosed are the original and two copies of a Joint Final Engineering and Geologic report dated February 1959, by W. L. Emerick, Geologist, Geological Survey, and T. M. Romslo, Mining Engineer, Bureau of Mines, pertaining to work completed under the subject contract.

The exploration work completed did not result in the discovery of a significant quantity of uranium ore, therefore certification of the project as a discovery or development is not recommended.

The Field Team's Final Summary Report will be submitted as soon as all matters prerequisite to closing the account have been resolved.

J. W. Townsend

Enclosures

Reviewed by
OME OPERATING COMMITTEE
2-24-59
(date)

F.T. FINAL REPORT

Checked 2-17-59

MINERAL DEPOSITS
IN REPLY REFER TO:
O M E
RECEIVED
FEB 16 1959
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 20 1959

DATE	INITIALS	CODE
2/24	JLB	130
		220

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
OFFICE OF MINERALS EXPLORATION
Box 4126 University Station
Tucson, Arizona

February 13, 1959

MEMORANDUM

To: J. W. Townsend, Executive Officer
OME Field Team, Region III

From: T. M. Romslo
W. L. Emerick

Through: E. N. Harshman

Subject: Docket No. DMEA-5009 (Uranium), Contract No. Idm-E1220,
Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
E 1/2 Sec. 21, T. 13 N., R. 9 W., McKinley County, N.Mex.
Final joint engineering and geologic report.

Enclosed are the original and 10 copies of a final joint engineering and geologic report on the above subject docket.

No significant amounts of uranium were encountered in the drilling project; therefore a Certificate of Discovery or Development is not recommended.

T M Romslo
T. M. Romslo
U. S. Bureau of Mines

W L Emerick
W. L. Emerick
U. S. Geological Survey

TMR:WLE:ms

cc: J. W. Townsend (10)
OME/TUC (2)

OME
DEPARTMENT OF THE INTERIOR
FEB 16 1959
DENVER, COLORADO

Reviewed by
OME OPERATING COMMITTEE
2-24-59
(date)

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 20 1959

DATE	INITIALS	CODE
2/24	24B	130
		220

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

OFFICE OF MINERALS EXPLORATION

FINAL JOINT ENGINEERING AND GEOLOGIC REPORT
REGION III

OME
DEPARTMENT OF THE INTERIOR
FEB 16 1959
DENVER, COLORADO

DMEA-5009 (Uranium) Contract Idm-E1220

Food Machinery and Chemical Corp.

(Westvaco Mineral Products Division)

E 1/2, Sec. 21, T. 13 N., R. 9 W.

McKinley County, New Mexico

W. L. Emerick, Geologist
U. S. Geological Survey

T. M. Romslo, Mining Engineer
U. S. Bureau of Mines

February 1959

Reviewed by
OME OPERATING COMMITTEE
2-24-59
(date)

DMEA-5009 (URANIUM) CONTRACT Idm-E1220
FOOD MACHINERY AND CHEMICAL CORP.
(WESTVACO MINERAL PRODUCTS DIVISION)
E 1/2, SEC. 21, T. 13 N., R. 9 W.
McKINLEY COUNTY, NEW MEXICO

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INTRODUCTION

The East 1/2, Sec. 21, T. 13 N., R. 9 W., McKinley County, New Mexico, was explored for uranium during mid-1958 by the Westvaco Mineral Products Division of Food Machinery and Chemical Corporation, 161 East 42nd Street, New York, 17, N. Y., with governmental aid authorized by the Defense Production Act of 1950, as amended.

The corporation's application for aid in the exploration was received and assigned docket number DMEA-5009 by the Defense Minerals Exploration Administration on May 5, 1958. Field investigations requested by the Operating Committee were carried out for the Field Team, Region III, by F. H. Shawe, U. S. Geological Survey, and H. F. Robertson, U. S. Bureau of Mines, on May 6, 1958. The applicant was represented by W. S. Cavender, manager of exploration.

An exploratory project recommended by the examining team and approved by the Field Team and Operating Committee was authorized by contract Idm-E1220, dated June 24, 1958. Hereafter, as in the contract, the corporation is called the "Operator".

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The property of the exploratory project is situated in southeastern McKinley County, New Mexico, in what is commonly referred to as the Ambrosia Lake uranium area. It is adjacent to several previously explored properties, a few of which have been developed into presently producing mines.

The Poison Canyon sandstone unit near the base of the Brushy Basin mudstone member of the Morrison formation is the principal ore-bearing bed in the area of Section 21. Dropping and tilting of the formations occurred along the San Mateo fault that strikes diagonally across the E 1/2 of Section 21. The Poison Canyon sandstone underlying the property was found unfavorable to uranium mineralization and no significant reserves are present.

The exploratory project of Docket DMEA-5009, Contract Idm-E1220, was designed to test for uranium in the Poison Canyon sandstone by non-core drilling. Stage I of the project, comprising 83 authorized holes with an authorized total drilling footage of 16,600 feet, was completed after the drilling of 81 of the 83 holes. One hole was abandoned because of drilling difficulties and one was not drilled because of inaccessibility. Drilling footage under Stage I totalled 24,954 feet and logging footage 24,928 feet.

In addition to disallowances on the total drilling and logging footages made voluntarily by the Operator amounting to 1,360 feet and 1,466 feet respectively, the field examiners disallowed an additional 3,475 feet of drilling footage and 3,456 feet of logging footage after an analysis of electrical logs of each hole. The field examiners recommended and approved 3,519 feet of drilling footage and 3,406 feet of logging footage for transfer from Stage II to Stage I. The total pre-audit cost of the project was $17,615.06, of which the Government's share at 50 percent was $8,807.53.

No significant amount of uranium was encountered in the drilling project and no certification of discovery is recommended.

ACKNOWLEDGMENTS

The authors acknowledge extraction of certain sections and material from the Report of Examination by F. R. Shawe, U. S. Geological Survey, and H. F. Robertson, U. S. Bureau of Mines.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The property explored by work authorized under contract Idm-E1220 is approximately 13 air miles northeast of Grants, New Mexico, in what is now commonly referred to as the Ambrosia Lake uranium mining district. It comprises the East 1/2 of sec. 21, T. 13 N., R. 9 W., NMPM & B, McKinley County, New Mexico (figs. 1 and 2).

The approximate center of the property may be reached from Grants, the largest nearby town and a shipping point on the Atchison, Topeka and Santa Fe Railroad, by traveling about 2½ miles westerly on U. S. Highway 66 to its junction with State Highway 53, and thence northeasterly on the latter highway for 14.3 miles.

The property is situated in a northerly trending valley between the Entrada Cliffs on the west and the Mesa Verde Cliffs on the east. Altitudes range from about 6900 feet on the valley floor to over 8000 feet on the mesas bounded by the cliffs. The property is essentially flat except for 2 small mesas that extend a few hundred feet into the area from the north and west. The tops of these mesas are approximately 100 feet above the valley floor.

Vegetation on the valley floor consists of forage grasses and a few scrub cedar trees. Mesa lands support medium to heavy growths of both scrub cedar and pinon pine.

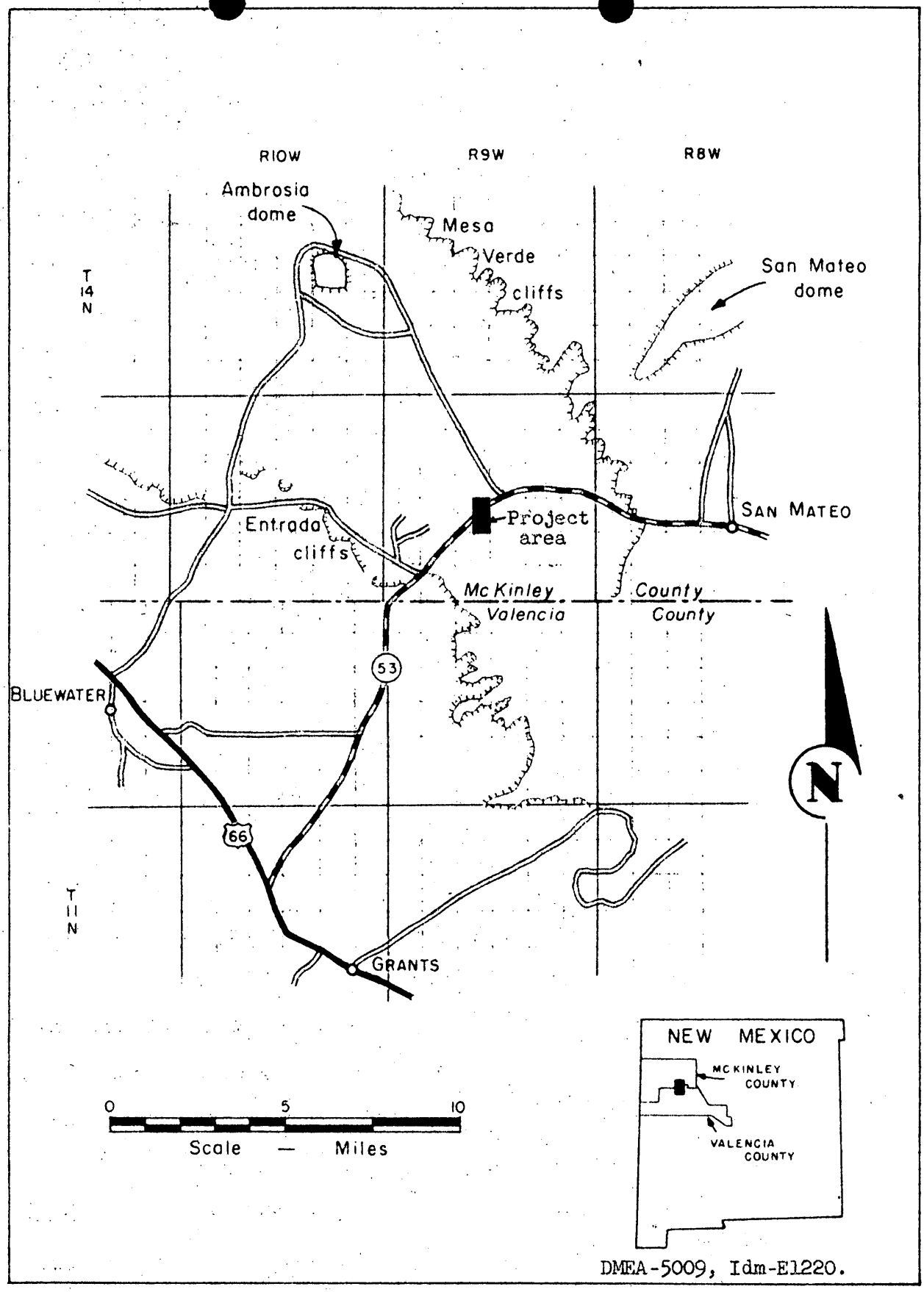

Figure 1. Location Map, E ½ Sec. 21, T. 13 N., R. 9 W., Westvaco Mineral Products Division, Food Machinery and Chemical Corporation, McKinley County, New Mexico.

There is a wide range in temperature in the Grants area. Readings of near zero in the winter and around 100 degrees in the summer are not uncommon. Annual precipitation of 15 to 20 inches occurs principally as heavy summer thunder showers and as light winter rains and snowfalls.

Year-round operations are feasible except for short periods during and following storms.

PROPERTY

History and Production

The examining team* reported:

"Discovery of uranium in the Grants area dates from 1949 when a party of California geologists noted uranium minerals in the Todilto limestone of Jurassic age. The first discovery of ore in commercial quantities was made by an Indian sheepherder in 1951. Since then exploration has revealed large reserves of uranium ore in the Dakota and Morrison formations as well as the Todilto.

"There have been a number of DMEA projects in the Grants area. Of these, 5 are of immediate interest. These are as follows:

Table I

Operator	DMEA No.	Contract No.	Property	Location
Westvaco 1/	3939	E-934	Santa Fe RR lease	Sec. 7, T.13N.,R.9W.
Colamer Corp.	3632	E-797	State claims (located)	Sec. 8, T.13N.,R.9W.
Westvaco 1/	3943	E-932	Santa Fe RR lease	Sec. 9, T.13N.,R.9W.
Colamer Corp.	4017	E-940	Located claims	Sec.10, T.13N.,R.9W.
Westvaco 1/	4845	E-1167	Santa Fe RR lease	Sec.17, T.13N.,R.9W.

1/ Westvaco Mineral Products Division of Food Machinery and Chemical Corporation.

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*See acknowledgment.

"There has been no production to date from any of the properties in Table I. Results of DMEA exploration were negative except on section 8 where an ore body 1,100 feet long by 500 feet wide with an average thickness of 7.5 feet was found in the northwest corner of the section. The calculated reserve in a smaller, minable portion of this ore body, together with production and reserves from other mines in the vicinity are as follows:

Table II.--Production and ore reserves of the Brushy Basin and Westwater Canyon members of the Jurassic Morrison formation in Sections 7, 8, 9, 16, 17, 18, 19, 20, and 21, T. 13 N., R. 9 W., NMPM, McKinley County, New Mexico

				Production 1/		RESERVES			
						Indicated 1/		Inferred 1/	
Sec.	No. Deposits	Host Rock		Tons	Grade	Tons	Grade	Tons	Grade
7	0								
8 2/	1	Westwater				54000	0.22	18000	0.22
9	0								
16	0								
17 3/	1	Brushy Basin				3100	0.15		
18 2/	1	Brushy Basin		4988	0.56	10000	0.40		
19 2/	1	Brushy Basin		150950	0.25	213000	0.23	74000	0.23
20 2/	4	1 Westwater 3 Brushy Basin		75059	0.23	46415	0.32	14383	0.29
21	2	Brushy Basin				300	0.55	3000	0.20
Totals				200,997		326,815		92,383	

1/ In percent U_3O_8.

2/ From Production and Reserve file of the A.E.C.

3/ Furnished by the applicant."

During the period extending from the date of the DMEA examination to late in October 1958, all of the active properties of Table II are believed to have continued production and the most easterly of the 2 deposits of section 21 was developed into the productive Doris mine by Westvaco. Mining and shipping of ore from the Doris mine started in August 1958 after completion of an inclined shaft. Ore produced and shipped during the following 2 months totalled about 2,000 tons of approximately 0.22 percent U_3O_8. Production continued from zones which the Operator estimated contained an additional 2,000 tons of ore.

Ownership and Operator's Rights

The previously described land which was explored by the work authorized under contract Idm-E1220 is owned by the Santa Fe Pacific Railroad Company.

The Operator's possession of the land and the rights to possession for the purposes of the contract are vested in a "Uranium Mining Lease and Agreement" with the owners, dated March 15, 1957. The term of the lease is for 5 years, renewable for an additional 3 years.

Present Status

The property which contains no buildings or equipment has been inactive except during 2 periods when the Operator drilled a total of 92 test holes. The 92 holes include the 81 holes that were drilled by the project described in this report, and 11 holes that had been drilled previously.

GEOLOGY

General

The general area of Section 21, T. 13 N., R. 9 W., is on the northeast flank of the Zuni uplift and the southwest flank of the San Juan Basin. Ambrosia Lake dome, a small structural high on the gently dipping east flank of the Zuni uplift lies a few miles toward the north. Dips vary, but are generally less than 10 degrees northeasterly. Formations encountered in the uranium operations in this area are, from oldest to youngest: Entrada sandstone, Todilto limestone, Summerville formation, Bluff sandstone and Morrison formation of Jurassic age, Dakota sandstone and Mancos shale of Cretaceous age. Topographically, the east half of Sec. 21 is largely flat and underlain by widespread alluvial cover. Two small mesas, capped by Dakota sandstone, extend into the east half of Section 21 from the west and the north. Remnants of Dakota sandstone crop out in the southeast part of the section. Important uranium deposits are found in the Morrison formation and Todilto limestone and minor deposits are known to occur in the Dakota sandstone.

Stratigraphy

Drill holes driven through the alluvium in the E 1/2 of Section 21 penetrated Mancos shale of Late Cretaceous age in places underlying the alluvium (Fig. 3). Underlying the Mancos shale in order are Cretaceous Dakota sandstone and the Morrison formation of Late Jurassic age. Succeeding members of the Morrison formation, as well as lower formations, are also believed to be present but no drill holes were driven on the project below the Recapture shale member of the Morrison formation. The alluvium, including basal sand and gravel beds in places,

ranges from 10 to 133 feet in thickness and averages about 69 feet. The thicker sections of alluvium are principally in the central part of the area overlying the San Mateo fault zone.

The formations involved in mining operations in the immediate area are summarized in Table III. Because no uranium-bearing ground is known in the Dakota sandstone on the property and the Todilto limestone is considered too deep to be a target horizon in the vicinity, only the Morrison formation is described.

Table III.--Uranium-producing formations and related formations in the vicinity of section 21, T. 13 N., R. 9 W., NMPM, McKinley County, New Mexico.

Age	Formation	Member	Approximate Thickness	Description
Cretaceous	Dakota		50' - 75' (top not present)	Massive, light colored sandstone underlain by black carbonaceous shale; contains small uranium deposits.
Jurassic	Morrison	Brushy Basin	150'	Reddish gray and greenish gray, bentonitic mudstone with sandstone lenses; includes ore-bearing "Poison Canyon" sandstone.
		Westwater Canyon	80' - 150'	Light colored, arkosic sandstone; crossbedded; contains uranium deposits.
		Recapture	125'	Red and gray mudstone with intercalated, buff orange sandstone lenses.

The Morrison formation, in the Grants area, is divided into three members; these members are, from oldest to youngest: the Recapture shale member, the Westwater Canyon sandstone member, and the Brushy Basin mudstone member. The Recapture member consists of thin even-bedded, fine to coarse sandstone, clayey sandstone and clayey siltstone with a few mudstone lenses. Color ranges from gray through red in the clayey material and is mostly various shades of buff-orange in the cleaner, more pure sandstone.

The Westwater Canyon sandstone is a medium- to coarse-grained, massive, arkosic sandstone, light grayish red to light brown and various shades of buff-orange in color. Lenses of gray-green, arenaceous shale are contained in the sandstone. Low angle, broadly sweeping crossbeds are prominent. Scour and fill structures are common throughout, and the contact with the underlying Recapture member is gently undulating where the sandstone fills shallow scours in the underlying Recapture member. In the E 1/2 of Sec. 21 the sandstone ranges from 8 to 97 feet in thickness and averages about 55 feet.

The Westwater Canyon sandstone is the principal uranium ore-bearing unit in the Grants-Ambrosia Lake area. However, five previous DMEA programs which tested the Westwater Canyon sandstone in the immediate area of Section 21 were unsuccessful; therefore the unit was not considered a target horizon on the subject property.

The Brushy Basin member consists of light greenish-gray to dark red-gray bentonitic mudstone and silty mudstone with interlayered

coarse sandstone. Both mudstone and silty mudstone are often mottled, and the sandstone is usually buff-orange. In a few places the sandstone is conglomeratic. In the E 1/2 of Section 21 the total thickness of the Brushy Basin member, where differential erosion was not effective, ranges from about 133 to 197 feet and averages about 163 feet. One thick sandstone bed near the base of the member, locally called the "Poison Canyon sandstone," is the principal ore-bearing bed in the Brushy Basin member and is the ore-bearing horizon of Section 21.

The Poison Canyon sandstone unit is composed of gray arkosic, limey and cherty sandstones containing gray-green arenaceous and limey shale lenses. The sandstone unit ranges from fine- to coarse-grained, and the coarser and more pebbly beds appear to be at or near the base of the sandstone. Thin mudstone splits are common in the sandstone unit. Beneath the E 1/2 of Section 21, the sandstone unit ranges from 7 to 84 feet in thickness and averages about 38 feet. Everywhere in the drilling area the Poison Canyon sandstone unit is underlain by variable thicknesses of mudstone, averaging about 22 feet, of the basal part of the Brushy Basin member.

The Poison Canyon sandstone unit of the Brushy Basin member and the underlying Westwater Canyon sandstone member are nearly the same lithologically and are known to coalesce. The lower Brushy Basin and upper Westwater Canyon members were partly contemporaneous, and there apparently was no break in sedimentation between them. Some workers in the district, on

the basis of drilling data in other areas, consider the Poison Canyon sandstone as a unit or tongue of the Westwater Canyon member. Based upon the drilling data of the DMEA project, the Poison Canyon sandstone unit in this area does not anywhere lie directly upon, coalesce with, or appear to be a tongue of the Westwater Canyon member.

With the exception of several holes in the southeast corner of the section and one hole in the north-central part of the drilling area adjacent to the San Mateo fault, the Poison Canyon sandstone unit was penetrated in all other DMEA holes carried to completion. Drilling depths to penetrate through the sandstone unit ranged from 98 to 463 feet and averaged about 227½ feet. The greater depths necessary in some holes (see Appendix) were due to the faulting and tilting of the formations in the San Mateo fault zone.

Structure

The structure in the area of Section 21 is relatively simple. The rocks, dipping at an average of about 5° toward the northeast, form the northeast flank of the Zuni uplift and the southwest flank of the San Juan Basin. Gentle warps superimposed upon this homocline cause dips as high as 10°; flat-lying beds may be seen in a few places. Drilling and mining operations in surrounding sections have disclosed the presence of several small shear zones, but no pattern to this faulting is known and the shears do not seem to have any bearing upon the position of an ore deposit. The principal fault on the E 1/2 of Section 21 is the southern extension of the San Mateo fault which passes diagonally, roughly 35°-40° northeast, across the property. The San Mateo fault

pattern is composed of downthrown and tilted blocks of sediments (Fig. 3). Downthrown side of the fault is to the southeast where the throw ranges from 150 or less to about 380 feet. Displacement on parallel subsidiary faults ranges from less than 100 feet to as much as 180 feet. The tilted blocks on the southeast side of the fault have an average dip of about 17½ degrees northwest, whereas those on the northwest side of the fault are generally flatter, and probably approximate the 4 to 6 degree northwest dip of the sediments exposed on the northwest side of the drilling area.

Ore Deposits

The ore deposits in the area of this project, where found at the depth presumed for the Poison Canyon sandstone unit of the lower Brushy Basin member, may occur at almost any stratigraphic position within the sandstone, but they seem to be found usually about midway between the top and the bottom of the sandstone. The uranium mineral associated with the ore deposits is generally of the coffinite type. The host rock surrounding ore deposits in the Poison Canyon sandstone is bleached to light gray. However, these bleached areas are very large and cannot be used to determine the presence or absence of ore deposits on the subject property. Private drilling has indicated that probably all of section 21 is underlain by a bleached zone. Thicker and coarser portions of the sandstone contain most of the ore deposits, but some good ore deposits have been found in thinner and less coarse portions. No positive correlation is apparent between the localization of ore and the thickness and/or grain size of the sandstone host rock. Carbon is abundant in and close to ore deposits. Ore is found both in large

tabular bodies and as clusters of small discontinuous lenses. Deposits ranging in size from 5,000 to almost 500,000 tons might be discovered.

An east trending ore-bearing zone is suggested by the areal relationships of deposits in Sections 20 and 21. The ore-bearing zone on this trend in the W 1/2 of Section 21 does not appear to extend into the E 1/2 of Section 21. The Operator reported that the physical appearance of drill cuttings from the Poison Canyon sandstone unit underlying the E 1/2 of section 21 were unfavorable relative to uranium mineralization; there was little or no carbonaceous material present; and only occasional or scattered occurrences of pyrite were noted.

THE PROJECT

The following description of the authorized work and estimated cost of the project have been abstracted from Exhibit "A" of contract Idm-E1220.

Description of the Authorized Work

The work consists of exploration by non-core drilling to test the Poison Canyon sandstone of the Jurassic Morrison formation for uranium.

Drilling depths are expected to average 200 feet. All drill holes shall completely penetrate the Poison Canyon sandstone but the Operator shall exercise diligence to avoid excessive drilling below the lower Poison Canyon contact.

Samples shall be taken at 2-foot intervals from the top of the Poison Canyon sandstone to the bottom of each hole. Cuttings shall be collected with a Duclone sample collector or equivalent unit of another make, unless wet drilling is necessary, in which case provision shall be made for taking satisfactory sludge samples. All samples shall be checked for radioactivity and those indicating significant mineralization shall be split. One portion shall be analyzed chemically for uranium and the other portion shall be properly labeled and stored for the use of the Government. The non-mineralized samples also shall be labeled and stored for inspection by the Government. Any stored samples may be disposed of by the Operator upon approval by the Government.

All cuttings from the drill holes shall be logged geologically. All holes shall be probed radiometrically and gamma ray and resistivity logs graphically recorded. The record of such logging and probing, together with certified copies of all assay certificates, shall be submitted with the Operator's monthly progress reports.

No hole shall be drilled closer than 100 feet to the outer boundaries of the land described in Annex I.

The Government will not contribute to any costs of an incompleted drill hole.

Access roads and drill sites shall be prepared, when required, with a D-6 bulldozer, or an equivalent unit of the same or another make.

The project shall be supervised at all times by a geologist or mining engineer, who shall devote full time to the project work.

The locations, directions, inclinations, and extent of all project work are subject to the approval of the Government.

The work is divided into two stages as hereinafter described. The Operator shall complete Stage I and shall perform as much of Stage II as the Government approves in writing in advance.

Stage I

Prepare access roads and drill sites and drill approximately 83 holes, aggregating an estimated 16,600 feet, at the locations indicated on the attached map (Figure 2). The holes shall be drilled in five north-south rows spaced approximately 500 feet apart, with the holes in each row spaced not less than 300 feet apart and staggered with respect to holes in adjoining rows. As indicated on the map, holes are omitted in areas that were previously drilled. If more than 16,600 feet of drilling are required to reach the desired horizon, the additional footage and funds required may, with the written approval of the Government, be transferred and deducted from Stage II.

Stage II

Prepare access roads and drill sites and drill not more than 40 holes, aggregating not more than 8,000 feet as offsets to previously drilled holes showing favorable mineralization. Offset holes shall be drilled not closer than 100 feet to any previously drilled hole that completely penetrated the Poison Canyon sandstone.

Estimated Cost of the Project

Stage I

Actual Costs

Independent Contracts

16,600 feet non-core drilling @ $0.65/ft.	$10,790.00	
16,600 feet probing and logging @ $0.75/ft.	1,245.00	
20 hours bulldozing @ $12.00/hr.	240.00	
80 chemical analyses @ $3.50 each sample	280.00	$12,555.00

Fixed Unit Costs

Incidental allowance for each foot of hole drilled, 16,600 feet @ $0.145/ft.	2,407.00
Estimated Total Cost of Stage I	$14,962.00

Stage II

Actual Costs

Independent Contracts

8,000 feet non-core drilling @ $0.65/ft.	$5,200.00	
8,000 feet probing and logging @ $0.075/ft.	600.00	
10 hrs. bulldozing @ $12.00/hr.	120.00	
45 chemical analyses @ $3.50 each sample	157.50	$ 6,077.50

Fixed Unit Costs

Incidental allowance for each foot of hole drilled, 8,000 feet @ $0.145/ft.	1,160.00
Estimated Total Cost of Stage II	$ 7,237.50

Summary of Costs

Estimated Total Cost of Stage I	$14,962.00
Estimated Total Cost of Stage II	7,237.50
Estimated Total Cost of the Project (rounded)	$22,200.00
Government Participation @ 50%	$11,100.00

Work Performed with Costs

Mr. William D. Tipton, mining geologist, Grants, New Mexico, working under the direction of Mr. R. C. Kirchman, the corporation's superintendent of mines, supervised all phases of the exploratory operations.

Drilling operations were carried out by the Stewart Bros. and Parker Drilling Co., Grants, New Mexico, and the radiometric logging of holes was done by Log Master Services, Inc., Enid, Oklahoma.

Drilling operations were started August 15, 1958, after the Operator had completed necessary transit surveys. Three Model 1500 Failing rotary rigs were employed in the wet drilling of all holes to a diameter of $4\frac{1}{2}$ inches. The drilling operations were completed October 4, 1958. Eighty-one of the 83 authorized holes were completed for a total of 24,954 feet. Of the uncompleted holes, 1 was abandoned in a fractured zone at a shallow depth, and the other was not drilled because the site was inaccessible. The radiometric logging operations were initiated late in August and were completed a few days after the last hole was drilled. A total of 24,928 feet of hole was logged. Geologic logging and testing of the drill cuttings with a Geiger Counter were done in accordance with the contract specifications.

Disallowances of a part of the total drilling and logging footages submitted by the Operator were recommended by the field examiners because of disagreement with the Operator's interpretation of members and units of the Morrison formation, particularly in the disregard of the Westwater Canyon sandstone member and the Operator's designation of it as "Poison Canyon sandstone (lower)." The Operator's designation

does not conform to the stratigraphic divisions generally recognized in the district and as the Operator described in the application for aid in this project and applied to a previous DMEA project.

An analysis of electrical logs was made by the field examiners for each of the 81 holes drilled to establish the stratigraphic divisions upon which recommendations for disallowances were made. In establishing allowable footages the field examiners allowed footages to a maximum of 25 feet below the base of the Poison Canyon sandstone, or to a maximum of 25 feet below the first recognizable contact where applicable. Drilling footages as submitted by the Operator for certain holes were allowed in their entirety where obscure relations, indefinite contacts, or unrecognizable contacts made specific contact determinations impossible.

Total drilling footage reported in the Operator's Progress Report of December 16, 1958 was 24,954 feet. The Operator disallowed 1,360 feet of drilling footage and claimed 23,594 feet for reimbursement. The field examiners disallowed an additional 3,475 feet and allowed a total footage of 20,119 feet. The contract provided for a total drilling footage of 16,600 feet under Stage I; therefore 3,519 feet of drilling footage was recommended and approved for transfer from Stage II to Stage I.

The logging contractor reported a total logging footage of 24,928 feet, of which 1,466 feet was disallowed by the Operator for a total of 23,462 feet claimed for reimbursement. An additional disallowance of 3,456 feet of logging footage was recommended by the field examiners for a total allowable logging footage of 20,006 feet. The contract provided for a total logging footage of 16,600 feet under Stage I;

therefore 3,406 feet of logging footage was recommended and approved for transfer from Stage II to Stage I.

A recapitulation of the drilling and logging footages follows:

Drilling footages		
(1) Reported by drilling contractor	25,078	feet
(2) Difference (footage overcharged by drilling contractor in reporting Hole 2850N-3450E)	124	"
(3) Total footage (operator and logging contractor)	24,954	"
(4) Disallowed by Operator	1,360	"
(5) Claimed by Operator	23,594	"
(6) Additional disallowance by field examiners	3,475	"
(7) Allowed by field examiners	20,119	"
(8) Allowed by Stage I of contract	16,600	"
(9) Approved for transfer from Stage II	3,519	"
Electrical logging footages		
(1) Reported by logging contractor	24,928	feet
(2) Disallowed by Operator	1,466	"
(3) Claimed by Operator	23,462	"
(4) Additional disallowance by field examiners	3,456	"
(5) Allowed by field examiners	20,006	"
(6) Allowed by Stage I of contract	16,600	"
(7) Approved for transfer from Stage II	3,406	"

The approved costs that follow are before an audit of the project accounts by the Office of Minerals Exploration.

Actual Costs:		
Drilling, 20,119 feet @ $0.65 per foot	$13,077.35	
Logging, 20,006 feet @ $0.075 per foot	1,500.45	
Bulldozing, 10 hours @ $12.00 per hour	120.00	$14,697.80
Fixed Costs:		
Incidental allowance, 20,119 feet @ $0.145 per ft.		2,917.26
Total Cost of Project		$17,615.06
Government's share of 50 percent		8,807.53

Efficiency of the Operations

As previously mentioned, a considerable amount of drilling was done below the objective stated in the contract because of the Operator's incorrect interpretation of the members of the Morrison formation. With this exception, all phases of the project were efficiently carried out in accordance with acceptable standards.

Ore Reserves

No reserves are present in the E 1/2 of Section 21. None of the DMEA drill holes or holes drilled previously by the Operator on the E 1/2 of Section 21 penetrated significant amounts of uranium (see Appendix). Consequently, certification of discovery is not recommended.

APPENDIX

Summary of Drill Hole Logs

Hole No. N E	Total Depth (Ft.)	Mineralized zone (Ft.) Interval	Thickness	Classification	% eU_3O_8	Remarks
300-2950	449	421.5-422.5	1	Weakly mineralized	0.015	Contact of Westwater-Recapture
600-2950	435	-	-	Barren	-	
900-2950	225	-	-	"	-	Lost circulation Hole abandoned
1200-2950	465	-	-	"	-	
1500-2950	255	-	-	"	-	
1800-2950	185	-	-	"	-	
2100-2950	229	187.0-188.0	1	Weakly mineralized	0.02	Contact of Brushy Basin-Westwater
2700-2950	229	215.0-216.0	1	"	0.015	Contact of Westwater-Recapture
3000-2950	335	-	-	Barren	-	
3300-2950	330	-	-	"	-	
3600-2950	335	229.0-230.0	1	Weakly mineralized	0.01	P.C.-mudstone contact
		321.5-322.5	1		0.01	Westwater-Recapture contact
3900-2950	320	-	-	Barren	-	
4200-2950	316	-	-	"	-	
4500-2950	350	-	-	"	-	
4800-2950	274	-	-	"	-	
5100-2950	288	-	-	"	-	
150-3450	264	-	-	"	-	
450-3450	270	-	-	"	-	
750-3450	330	-	-	"	-	

Summary of Drill Hole Logs - Cont'd

Hole No. N E	Total Depth (Ft.)	Mineralized zone (Ft.) Interval	Thickness	Classification	% eU_3O_8	Remarks
1050-3450	366	-	-	Barren	-	
1350-3450	512	500.5-502.0	1.5	Weakly mineralized	0.012	Contact of Westwater-Recapture
1650-3450	495	-	-	Barren	-	
1950-3450	220	-	-	"	-	
2250-3450	300	-	-	"	-	
2550-3450	262	-	-	"	-	
2850-3450	225	215.5-216.5 217.5-218.5	2.0	Weakly mineralized	0.025	2 zones in Recapture
3150-3450	220	-	-	Barren	-	
3450-3450	280	129.0-130.5	1.5	Weakly mineralized	0.015	Mudstone below Poison Canyon
3750-3450	305	-	-	Barren	-	
4050-3450	250	-	-	"	-	
4350-3450	270	-	-	"	-	
4650-3450	280	-	-	"	-	
4950-3450	250	-	-	"	-	
300-3950	150	-	-	"	-	
600-3950	210	-	-	"	-	
900-3950	301	-	-	"	-	
1200-3950	416	-	-	"	-	
1500-3950	379	-	-	"	-	
1800-3950	488	-	-	"	-	
2100-3950	426	408.0-409.0	1	Weakly mineralized	0.07	Base of Poison Canyon

Summary of Drill Hole Logs - Cont'd

Hole No. N E	Total Depth (Ft.)	Mineralized zone (Ft.) Interval	Thickness	Classification	% eU_3O_8	Remarks
2400-3950	510	-	-	Barren	-	
2700-3950	238	-	-	"	-	
3000-3950	330	203.0-203.5	0.5	Weakly mineralized	0.02	In mudstone below Poison Canyon
3300-3950	245	-	-	Barren	-	
3600-3950	270	-	-	"	-	
3900-3950	255	-	-	"	-	
4200-3950	285	-	-	"	-	
4500-3950	270	-	-	"	-	
4800-3950	360	-	-	"	-	
5100-3950	270	-	-	"	-	
150-4450	142	135.0-136.5	1.5	Weakly mineralized	0.014	Mudstone below Poison Canyon
450-4450	164	-	-	Barren	-	
750-4450	120	-	-	"	-	
1350-4450	230	-	-	"	-	
1650-4450	290	-	-	"	-	
1950-4450	318	-	-	"	-	
2250-4450	396	-	-	"	-	
2550-4450	470	-	-	"	-	
2850-4450	470	-	-	"	-	
3150-4450	475	-	-	"	-	
3450-4450	390	-	-	"	-	
3750-4450	225	-	-	"	-	

Summary of Drill Hole Logs - Cont'd

Hole No. N E	Total Depth (Ft.)	Mineralized zone (Ft.) Interval	Thickness	Classification	% eU_3O_8	Remarks
4050-4450	316	-	-	Barren	-	
4350-4450	255	-	-	"	-	
4950-4450	300	-	-	"	-	
300-4950	320	-	-	"	-	
600-4950	228	137.5-139.0	1.5	Weakly mineralized	0.04	Mudstone below Poison Canyon
900-4950	162	152.5-155.0	2.5	"	0.015	"
1200-4950	86	-	-	Barren	-	
1500-4950	149	-	-	"	-	
1800-4950	170	-	-	"	-	
2100-4950	320	-	-	"	-	
2400-4950	290	-	-	"	-	
2700-4950	442	-	-	"	-	
3000-4950	465	-	-	"	-	
3300-4950	466	-	-	Barren	-	
3600-4950	562	-	-	"	-	
3900-4950	405	-	-	"	-	
4200-4950	240	-	-	"	-	
4500-4950	240	-	-	"	-	
4800-4950	210	-	-	"	-	
5100-4950	341	-	-	"	-	

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DATE	INITIALS	CODE
2/25	C	220
		700

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Washington 25, D. C.

Date February 24, 1959
DMEA Docket No. 5009
DMEA Contract No. Idm-E1220
Commodity Uranium
Name of Applicant Food Machinery and Chemical Co.
Location of property McKinley County, New Mexico
Estimated cost of project $17,615.06

Memorandum

To: Frederick L. Knouse, Acting Director, OME
Rare and Misc. Minerals Division

From: James Paone, Bureau of Mines Member JP
Uranium Commodity Committee

Subject: Review of Final Report
(Application, Field Team Report, etc.)

1. Date of subject document: 2/17/59 2. Date received by reviewer: 2/20/59.

3. Prior reports on this property known to reviewer: Yes ☐ No ☐

4. Prior reports on nearby properties known to reviewer: Yes ☐ No ☐

5. Information available on past production: Yes ☐ No ☐

6. Other pertinent factors known to reviewer: Yes ☐ No ☐

7. Explain items marked 'yes' above:

8. Factors needing special consideration:

a. Location ☐
b. Ownership ☐
c. Evidence of mineralization ☐
d. Geology ☐
e. Proposed exploration method ☐
f. Alternate exploration method ☐
g. Costs
h. _____ ☐

9. Action advised:

a. Obtain information from applicant ☐
b. Refer to Field Team ☐
c. Denial ☐
d. Agree with Field Team ☒
e. Disagree with Field Team ☐
f. Suggest alternate plan ☐
g. Request another examination ☐
h. Approval ☐
i. Consult with Mr. _____ at _____ AEC Office.

10. Remarks: (Use back of page if necessary). Recommend that no certification of project as a discovery or development be issued.

AEC Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
2/19	G. McCarthy	800
2/19	[illegible]	800
2/20	[illegible]	220
		700

FEB 19 1959

Mr. Donald T. Finch
GME Auditor
224 New Customhouse
Denver 2, Colorado

Re: Docket No. DMEA-5009 (Uranium)
Food Machinery and Chemical Corporation
Contract No. Idn-E1228

Dear Mr. Finch:

Your Report of Review on the above-referenced project is acceptable and normal distribution is authorized.

Sincerely yours,

(Signed) J. L. Chambers

Jay L. Chambers
Contract Administration
and Audit Division

GMcCarthy/GMcC
February 19, 1959

cc: Docket
Director's Reading File
Mr. Chambers

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

224 New Customhouse
Denver 2, Colorado
February 13, 1959

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O. M. E.
RECEIVED FEB 16 1959

DATE	INITIALS	CODE
2/16		220
2/17		110
		700

Memorandum

To: Chairman, Operating Committee, OME

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Contract Idm-E1220 Food Machinery and Chemical Corporation, (Westvaco Mineral Products Division) McKinley County, New Mexico - Operator's Monthly and Final Progress Report for the period, August 15 through October 4, 1958

Enclosed are two copies of voucher and accounting Forms MF-104 and MF-104A, Operator's Narrative Report, and supporting data for the period, August 15, through October 4, 1958.

The Operator's narrative report is intended to serve also as its final report as required under Article 7 (c) of the contract form. The report appears to be satisfactory, therefore we recommend that it be accepted as complying with the contract requirements.

J. W. Townsend

Enclosures

See MF-104 August 15, 1958, thru October 4, 1958 in Folder No. 2

OPR'S FINAL REPORT

OFFICIAL FILE COPY
M. E.
RECEIVED FEB 16 1959

DATE	INITIALS	CODE
2-16	CB	220
2/16	[illegible]	800
	[illegible]	700

224 Mon Centennial
Denver 2, Colorado
February 13, 1959

Mr. R. C. Kirchman,
Superintendent of Mines
Food Machinery and Chemical Corporation
P. O. Box 327
Grants, New Mexico

Re: Contract No. AEC-5009 (Drawbaugh)
Contract No. [illegible]
Food Machinery and Chemical Corporation
([illegible] Sec. 22, T 13 N, R 9 W)
McKinley County, New Mexico

Dear Mr. Kirchman:

Form AF-10A, Operator's Monthly Report and Voucher, for the period August 15, 1958, through October 1, 1958, has been received in this office and is being processed for payment. The following deductions have been made:

Disallowance, Drilling, Radiometric Logging and Incidental Allowance

As indicated in our letter of January 23, 1959, a considerable amount of drilling was performed below the objective stated in the contract, and the excess drilling could have been avoided by applying controls which are in use in the project area. The reported costs for the following excess footages are disallowed, based on the attached photocopy of a tabulation showing the allowable and excess drilling and radiometric logging footages for each hole:

Non-core drilling:

Footage reported	23,718 feet
Allowable footage	20,119 "
Excess footage	3,599 feet

Radiometric logging:

Footage reported	23,462 feet
Allowable footage	20,006 "
Excess footage	3,456 feet

Incidental Allowance:

Reported, Incidental Allowance for---------- 23,718 feet
Allowable, Incidental Allowance for---------- 20,119 "
Excess, Incidental Allowance for---------- 3,599 feet

Note: The Fixed Unit Cost of $0.145 per foot for Incidental Allowance is a firm committment on the Government and on the Operator, regardless of the actual cost incurred. You have reported a cost of $0.167 per foot for this item, therefore the excess over $0.145 per foot for the acceptable footage, is also disallowed.

Disallowance, Bulldozing

As established in the contract, the unit cost of $12.00 per hour for bulldozing is a maximum unit cost which cannot be exceeded regardless of the method of reporting. The billing from the bulldozing contractor indicates that only 10 hours of bulldozing was performed, therefore, the reported bulldozing cost in excess of 10 hours at $12.00 per hour, is disallowed.

Amount Withheld

An amount of $500.00 is withheld from reimbursement to you pending release to this office of a Certificate and Report of Audit, or Report of Review of reported project costs by the Contract Administration and Audit Division, OME.

You will be informed of the details of the above deduction by means of an Administrative Audit Difference Statement, which will be forwarded to you by the Finance Office, Region III.

Very truly yours,

Original signed by
J. W. TOWNSEND

J. W. Townsend
Executive Officer, OME
Field Team, Region III

JDC:hmh

cc: Chman. Op. Comm. (2)
Harshman
Emerick
Romslo, OME/Tuc.
Corres.file, Reg.III
Cooper
Chron

w/tabulation of allowable and excess footages

Hole No. X	Y	Drillec	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
300	4950	320	---	[illegible]	---	[illegible]	[illegible]
600	4950	225	---	[illegible]	---	[illegible]	[illegible]
900	4950	412	---	[illegible]	---	[illegible]	[illegible]
1200	[illegible]	85	[illegible]	[illegible]	32	[illegible]	[illegible]
1500	[illegible]	149	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1800	[illegible]	170	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2100	4950	280	285	[illegible]	62	[illegible]	[illegible]
2400	4950	225	[illegible]	[illegible]	217	[illegible]	[illegible]
2700	4950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3000	4950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3300	4950	465	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3600	4950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3900	4950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4200	4950	[illegible]	285	[illegible]	809	[illegible]	[illegible]
4500	4950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4800	4950	240	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5100	4950	[illegible]	250	[illegible]	[illegible]	[illegible]	[illegible]
5400	4950	270	***NR	[illegible]	[illegible]	[illegible]	[illegible]
150	4450	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
450	4450	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]
750	4450	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]
1050	4450	120	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1350	4450	230	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1650	4450	290	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1950	4450	315	[illegible]	[illegible]	[illegible]	[illegible]	279
2250	4450	395	[illegible]	[illegible]	[illegible]	[illegible]	315
2550	4450	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	399
2850	4450	478	[illegible]	[illegible]	[illegible]	[illegible]	439
3150	4450	[illegible]	---	[illegible]	[illegible]	[illegible]	461
3450	4450	390	***NR	[illegible]	[illegible]	[illegible]	235
3750	4450	225	***NR	[illegible]	[illegible]	[illegible]	412
4050	4450	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4350	4450	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4650	4450						
4950	4450	300	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
300	3950	190	***NR	[illegible]	[illegible]	190	[illegible]
600	3950	210	***NR	[illegible]	[illegible]	[illegible]	[illegible]
900	3950	[illegible]	***NR	[illegible]	[illegible]	257	[illegible]
1200	3950	[illegible]	391	[illegible]	[illegible]	303	303
1500	3950	319	***NR	[illegible]	[illegible]	370	370
1800	3950	[illegible]	470	[illegible]	[illegible]	392	392
2100	3950	420	***NR	[illegible]	420	425	425
2400	3950	510	***NR(?)	[illegible]	[illegible]	510	509

Remarks

[illegible] below first [illegible]

[illegible] contact at [illegible]

[illegible]

[illegible]

[illegible]

[illegible] base of [illegible]

[illegible] with [illegible] not [illegible]

[redacted]

[illegible] Bar Holes [illegible]

[illegible] depth allowed because artesian water not [illegible] or [illegible] section owing to [illegible] zone.

[illegible]

[illegible]

								Notes
[illegible]	[illegible]	[illegible]	***[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	120	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] appear to [illegible] facies than usual.
[illegible]	[illegible]	[illegible]	***[illegible]	[illegible]	[illegible]	201	[illegible]	[illegible] obscure below Polson Canyon.
[illegible]	3950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	155	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	149	149	
[illegible]	3950	[illegible]	[illegible]	244	[illegible]	[illegible]	161	
[illegible]	3950	[illegible]	[illegible]	231	149	170	[illegible]	
[illegible]	3950	100	[illegible]	229	[illegible]	170	170	
[illegible]	3950	210	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	3950	[illegible]	[illegible]	[illegible]	[illegible]	223	223	
[illegible]	3450	210	***[illegible]	[illegible]		[illegible]	225	
350	3450	330	***[illegible]	[illegible]	[illegible]	330	329	
[illegible]	3450	[illegible]	[illegible]	280	[illegible]	320	320	Examiners interpret Polson Canyon as 2 sandstones with mud split.
[illegible]	3450	512	[illegible]	[illegible]	[illegible]	397	397	
[illegible]	3450	495	***[illegible]	[illegible]	[illegible]	410	410	
[illegible]	3450	220	[illegible]	[illegible]	[illegible]	210	210	
[illegible]	3450	300	[illegible]	[illegible]	159	[illegible]	[illegible]	
[illegible]	3450	202	[illegible]	[illegible]	[illegible]	204	204	
[illegible]	3450	225	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	3450	120	[illegible]	[illegible]		[illegible]	[illegible]	
[illegible]	3450	210	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	3450	105	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	140	140	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	322	
[illegible]	[illegible]	[illegible]	***[illegible]	[illegible]	[illegible]	[illegible]	329	
900	2950							Not completed -- lost circulation.
1200	2950	[illegible]	***[illegible]	[illegible]	[illegible]	[illegible]	395	All allowed -- indeterminate -- lower part of hole unrecognizable.
1500	2950	[illegible]	***[illegible]	208	[illegible]	205	205	
[illegible]	2950	[illegible]	***[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2100	2950	[illegible]	***[illegible]	[illegible]	[illegible]	200	200	
2400	2950	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	140	
3000	2950	335	[illegible]	310	[illegible]	[illegible]	208	
3300	2950	350	[illegible]	350	[illegible]	[illegible]	250	
3600	2950	335	[illegible]	345	230	[illegible]	255	
3900	2950	320	[illegible]	[illegible]	[illegible]	[illegible]	255	
4200	2950	[illegible]	[illegible]	[illegible]	[illegible]	240	240	
4500	2950	320	[illegible]	[illegible]	[illegible]	150	150	
4800	2950	[illegible]	[illegible]	[illegible]	202	[illegible]	[illegible]	
5100	2950	[illegible]	150	[illegible]	[illegible]	192	192	
Total								
31 Holes		24,95[illegible]		[illegible]		20,119	20,006	

Denver 2, Colorado
224 New Customhouse
February 10, 1959

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O. M. E.
RECEIVED FEB 12 1959

DATE	INITIALS	CODE
2/12	C	220
	[illegible]	700

Memorandum

To: Donald T. Finch, OME Auditor, Region III

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. ERDA 5809 (Uranium) Contract Ida-E1220
Food Machinery and Chemical Corporation, (Westvaco
Mineral Products Division) McKinley County, New Mexico

The subject contract was considered completed on completion of 81 of the possible 83 holes under Stage I, and the Operator was so informed by our letter of January 19, 1959, a copy of which is attached for your records.

The Operator has rendered its final report and final account, therefore final payment of the Operator's account is in order, contingent on release to this office of a Certificate and Report of Audit, or Report of Review of reported project costs, whichever the case indicates.

Acceptable units of work or service performed on a "Fixed Unit Cost" basis consisted of Incidental Allowance of 29,119 feet of drilling.

An amount of $500.00 was withheld from reimbursement to the Operator in processing its final accounting report, which was for the period, August 15, 1958, through October 4, 1958.

Original signed by
J. W. TOWNSEND

J. W. Townsend

Enclosures

JBO:mak

cc: Chan. Op. Comm. (2)
Earshman
Emerick
Romalo, OME/Tuc.
Corres.file, Reg.III
Cooper
Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
224 New Customhouse
Denver 2, Colorado

OFFICIAL FILE COPY
RECEIVED JAN 29 1959

DATE	INITIALS	CODE
1-29	C	220
		700

January 23, 1959

Memorandum

To: Chairman, Operating Committee, OME

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Contract No. ~~Idm-E1220~~
Food Machinery and Chemical Corporation ($E\frac{1}{2}$ Sec. 21, T 13 N, R 9 W) McKinley County, New Mexico

Enclosed are three copies of approval issued by the OME Field Team, Region III for the transfer of drilling and radiometric probing footage and incidental allowance, together with applicable funds, from Stage II to Stage I, to permit completion of eighty-one (81) Stage I holes to their stated objectives.

Also enclosed are three copies of a joint memorandum from T. M. Romslo, Mining Engineer, Bureau of Mines and W. L. Emerick, Geologist, Geological Survey, pertaining to the matter. Two copies of the Operator's letters of November 5, 1958 and December 20, 1958, requesting the transfer of drill footage and funds, were forwarded by our memoranda of November 12, 1958 and December 24, 1958 to the field examiners.

The units of work and funds transferred from Stage II to Stage I are based on a hole-by-hole analysis contained in the report by the OME field examiners, and are considerably less than was requested by the Operator.

Copies of the work approval have been distributed to the Operator, the Finance Office, and others concerned in Region III.

J. W. Townsend

Enclosure

OFFICIAL FILE COPY
O. M. E.
RECEIVED JAN 29 1959

DATE	INITIALS	CODE

25th New Construction
Denver 2, Colorado
January 23, 1959

Mr. R. C. Kirchman,
Superintendent of Mines
Food Machinery and Chemical Corporation
P. O. Box 327
Grants, New Mexico

Re: Docket No. [illegible] (Vrendenburg)
Contract [illegible]
Food Machinery and Chemical
Corporation
([illegible] Sec. 21, T 13 N, R 9 W)
McKinley County, New Mexico

Dear Mr. Kirchman:

Reference is made to your letter of November 5, 1958, whereby you requested Government approval to transfer drilling and radiometric logging footage, together with related funds from Stage II to Stage I, to permit completion of 21 of the 83 holes authorized under Stage I of the contract to certain objectives.

Review of the data submitted with Form MF-104, Operator's Monthly Report and Vouchers, for the period from August 15, 1958, through October 4, 1958, and inspection of the project work in the field indicates that a considerable amount of the reported drilling was performed below the objective period in the contract, and that the same drilling could have been avoided by applying methods which are in use in the immediate vicinity of the project area, and elsewhere in the district.

This constitutes the Government's approval to transfer but to exceed the following units of work and service, together with applicable funds from Stage II to Stage I, to permit completion of 21 Stage I holes to their stated objectives. The Government's determination of the additional units required is based on a hole-by-hole analysis of the Stage I drilling:

Item	Units Transferred from Stage II to Stage I
Non-core drilling	1319 feet
Incidental chlorinate	1319 feet
Radiometric probing and logging	3406 feet

The foregoing transactions will provide for Government contribution to the cost of items which that directly into the September Campaign, expenses incurred due to the changes of the Polaris/Sparrow missile and other items which cause the contracts were implemented due to funding. The subject involved are [illegible]:

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Nothing in this work approval shall be construed to increase the contracted value each of the projects, the aggregate amount which the Government may be required to contribute, the final work of any item or work, nor any item of allowable cost which is separately designated "unallowed".

Very truly yours,

[illegible] Field Team, Region III

By _____
J. V. [illegible]

By _____
E. N. [illegible]

JEC:lmk

cc: Chief, Sp. Comm. (3)
Finance Office, Reg. III
Accounting File, Reg. III
Burnham
Emerick
Fiscal, OSE/Tod.
Contrs. File, Reg. III
Cooper
Ogden

MINERAL DEPOSITS
O M E
RECEIVED
JAN 12 1959
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

RECEIVED JAN 25 1959

DATE	INITIALS	CODE

OME
DEPARTMENT OF THE INTERIOR
JAN 12 1959
REGION III
DENVER, COLORADO

Memorandum

To: [illegible]

From: T. M. Romig
W. S. Murphy

Through: [illegible]

Subject: Docket No. [illegible] (Wildcat), Contract No. [illegible], Ind Anchorage and Uranium Corporation
(S 1/2 Sec. [illegible], T. [illegible], R. [illegible])
McKinley County, New Mexico.

Reference is made to memorandum by [illegible], Executive Officer, OME Field Team, Region III, dated December [illegible], 1958, relative to the Operator's request of November 3, 1958, for transfer of drilling footages from Stage II to Stage I. This memorandum relative to transfer of drilling footages from Stage II to Stage I is submitted by the field examiners as their recommendations regarding amounts of drilling footage to be transferred. The basis for the recommendations contained in this memorandum was a complete analysis of the Operator's Progress Report of December 16, 1958.

The field examiners' interpretations of the stratigraphic sections present in the area of Sec. [illegible], T. 13 N., R. 9 W., McKinley County, New Mexico, are based upon the geologic divisions of the Morrison formation as recognized in the District and as given in the Operator's application. This division of the Morrison formation from the top down is Brushy Basin member, including the Poison Canyon sandstone unit, Westwater Canyon sandstone member, and the Recapture Shale member. Additional reference was made by the field examiners to the information resulting from a previous contract, Docket No. [illegible], Contract [illegible], in the Operator's Sec. 17, T. 13 N., R. 9 W., in which the accepted geologic designations were applied to the Morrison formation.

Shallowness of drilling footages by the field examiners were applied principally because of disagreement with the Operator's interpretation of the members and units of the Morrison formation, particularly in the Operator's disregard of the Westwater Canyon sandstone member and the Operator's designation of it as "Poison Canyon sandstone (lower)."

With an awareness that the drilling area of the N 1/2 of Sec. 21 embraces a large fault zone and uncertainty in identification of the geologic units by visual inspection of the drill cuttings could be understandable and permissible locally at times, the field engineers believe from the standpoint of hindsight that the Operator should have discontinued drilling of holes here doubt existed until geologic sections based on electrical logs were made. Such a procedure was used by the Operator on the previous Sec. 17 contract. The reason for the element of uncertainty in identification by visual inspection of the drill cuttings is contained on page 9 of the Report of Exploration, and we quote:

> "The Poison Canyon sandstone of the Brushy Basin member and the underlying Westwater Canyon sandstone member are nearly the same lithologically and are known to coalesce. However, about 20 feet of Brushy Basin shale lies between them on Section 21. There apparently is no break in sedimentation between the Brushy Basin and Westwater Canyon members, and the Poison Canyon sandstone could well be referred to as a tongue of the Westwater Canyon sandstone; the lower Brushy Basin and upper Westwater Canyon being in part contemporaneous."

However, fairly discrete identifications and separations of the Poison Canyon and Westwater Canyon sandstones based to a large extent on the data obtained from electrical logs were made on the adjacent Sec. 17 contract and are being made elsewhere in the district.

There appears to be a wide range in thicknesses of the Brushy Basin member, Poison Canyon sandstone unit, and the Westwater Canyon sandstone member in the district. In Section 17 the Poison Canyon sandstone unit ranged from 27 to 86 feet in thickness; the underlying Brushy Basin sandstone ranged from 10 to 38 feet in thickness; and the Westwater Canyon member ranged from 30 to 90 feet in thickness. Results of drilling on the subject contract in the N 1/2 of Sec. 21 indicate that, in general, the Poison Canyon sandstone unit ranges from 7 to 34 feet in thickness; the underlying Brushy Basin sandstone from 6 to 51 feet in thickness; and the Westwater Canyon sandstone member from 8 to 97 feet in thickness.

Drilling on the project was started in the southeast corner of Sec. 21. Surface geology as observed in the field by us and as shown on a Geologic and Topographic Map of the Westvaco Mineral Production Division, dated 1955, shows Cretaceous Dakota sandstone outcropping and dipping approximately 17 to 19 degrees northwest in this area. The Brushy Basin and Westwater Canyon members of the Morrison unconformably underlie the Dakota sandstone in this area, although covered by alluvium. Cross sections and drill hole data of holes

collared in the Dakota sandstone of this southeast area show a complete stratigraphic section down to and within the Naccupture shale member of the Morrison formation. In addition, stratigraphic control is further possible through holes collared in Dakota sandstone dipping 4 degrees to the northeast in the northwest parts and essentially flat-lying in the northeast parts of the S 1/2 of Sec. 21. Therefore we believe that there is sufficient control for correlation of units even in the central fault zone of the drilling area.

In the southeast part of Sec. 21 footages were allowed to 25 feet below the first recognizable contact, where applicable, on holes 300N-49W, 600N-49W, 900N-49W, 1500N-49W, and 4500N-49W, inasmuch as the contract permitted drilling in this area where surface geology indicated the holes would probably penetrate formations normally underlying the Poison Canyon sandstone unit of the Brushy Basin member. After penetrating alluvial fill the first four holes went into what the field examiners interpret as the Westwater Canyon member; hole 4500N-49W appears to have penetrated the basal part of the Brushy Basin member underlying the Poison Canyon unit and was bottomed in the Westwater Canyon member. No Poison Canyon sandstone was interpreted as being present in any of these five holes.

The field examiners' reasons for allowance of the total footages drilled in holes 4800N-49W, 3150N-44W, 2400N-39W, and 1200N-29W are given under Remarks on the sheets of Analysis of Drilling included in this memorandum. In these holes the factors of nearness to faults, obscure relations, indefinite contacts, unrecognizable units, and the like, made identification difficult or impossible.

Drilling footages allowed by the field examiners for all of the remaining holes are equal to a maximum of 25 feet below the base of the Poison Canyon sandstone, where applicable, as determined from the electrical logs. We feel that the drilling to a maximum of 25 feet below the Poison Canyon sandstone should be allowable because of the inherent difficulties in recognizing a electrical contact from visual inspection of the cuttings during drilling operations.

According to the Operator's Progress Report of November 14, 1956, the drilling contractor reported a total drilling footage of 25,878 feet. This footage includes 128 feet overcharged on Hole 4500N-44W. Both the Operator and logging contractor report 887 feet total depth for this hole; the drilling contractor 349 feet. Total footage reported by the Operator and logging contractor amounted to 24,954 feet.

The Operator disallowed 1,360 feet of footage and claimed 23,594 feet. The field examiners disallowed an additional 1,475 feet and allow a total footage of 22,119 feet, based upon their analysis. Inasmuch as the contract provides for a total drilling footage of 16,600 feet under Stage I, 5,519 feet of drilling footage is approved for transfer from Stage II to Stage I.

The logging contractor reported a total log footage of 24,[illegible] feet of which 1,[illegible] feet was disallowed by the operator, making a total of 23,[illegible] feet claimed for reimbursement. An additional disallowance of 3,[illegible] feet of log footage, giving a total allowable log footage of 20,[illegible] feet, was made by the field examiners. Inasmuch as the contract provides for a total logging footage of 16,600 feet under Stage I, 3,[illegible] feet of logging footage is approved for transfer from Stage II to Stage I.

A recapitulation of drilling and log footages follows:

Recapitulation (drilling footages)	
(1) Reported by drilling contractor	25,078 feet
(2) Difference (footage overcharged by drilling contractor in reporting Hole [illegible])	124 "
(3) Total footage (operator and logging contractor)	24,[illegible] "
(4) Disallowed by operator	1,[illegible] "
(5) Claimed by operator	23,[illegible] "
(6) Additional disallowances by field examiners	3,[illegible] "
(7) Allowed by field examiners	20,[illegible] "
(8) Allowed by Stage I of contract	16,600 "
(9) Approval for transfer from Stage II	3,[illegible] "

Recapitulation (electrical logging footages)	
(1) Reported by logging contractor	24,[illegible] feet
(2) Disallowed by operator	1,[illegible] "
(3) Claimed by operator	23,[illegible] "
(4) Additional disallowances by field examiners	3,[illegible] "
(5) Allowed by field examiners	20,[illegible] "
(6) Allowed by Stage I of contract	16,600 "
(7) Approval for transfer from Stage II	3,[illegible] "

In conclusion, the field examiners believe that had the operator followed the accepted divisions of the Morrison formation in interpreting results, as was done on the [illegible] drilling in Section 17, and had the operator exercised diligence to avoid excessive drilling below the lower Pulsen Canyon contact as specified in the contract, the total footage drilled probably would have approximated that approved by the field examiners.

The field engineers recommend that 3,510 feet and 3,946 feet of drilling and logging, respectively, together with authorized funds for drilling, logging and laboratory operations, be transferred from Stage II to Stage I.

W. H. Pendola
T. H. Morris
U. S. Bureau of Mines

W. Kinnick
V. L. Smith
U. S. Geological Survey

TMM:dkjkcm

cc: Executive Officer (9)
Chg/NCOCE (2)

ANALYSIS OF DRILLING
DMEA 5009, Idm-E1220

*Actually Westwater Canyon-Recapture contact.
**Base of Poison Canyon sandstone as determined by examining team plus 25 feet where applicable.
***Not reached.

Hole No. N.	Hole No. E.	Drilled	Operator's Base* of Poison Canyon	Footage claimed by Operator	Base of Poison Canyon	**Footage allowed by Field Examiners	Allowable Logging	Remarks
300	4950	320	---	105	---	106	106	Footage allowed to 25 feet below first recognizable contact, or Westwater Canyon-Recapture contact at 81'; see text for explanation.
600	4950	228	---	169	---	149	149	" " " " " " " " " " " "
900	4950	162	---	162	---	162	162	Hole stopped at 10' below Westwater Canyon-Recapture contact.
1200	4950	86	***NR	86	72	86	86	
1500	4950	149	***NR	149	139	149	147	
1800	4950	170	***NR	170	163	170	168	
2100	4950	320	285	311	217	242	242	
2400	4950	290	***NR	290	269	290	290	
2700	4950	442	429	442	308	333	333	
3000	4950	465	465	465	375	400	400	Operator does not indicate Westwater-Recapture contact.
3300	4950	466	***NR	466	415	440	440	
3600	4950	562	555	562	463	488	488	
3900	4950	405	362	405	320	345	345	Operator's base of Poison Canyon more likely at 390'.
4200	4950	240	219	240	146	171	171	
4500	4950	240	202	227	139	164	164	
4800	4950	210	***NR	210	203?	210	203	Bottom 7' of hole filled with debris and not electrically logged; [redacted].
5100	4950	341	271	296	213	238	238	
150	4450	142	---	142	---	142	139	See remarks for Holes 300-4950, 600-4950, 900-4950.
450	4450	164	---	164	---	164	145	" " " " " " " .
750	4450	120	***NR	120	109	120	118	
1350	4450	230	***NR	230	207	230	230	
1650	4450	290	***NR	290	254	279	279	
1950	4450	318	***NR	318	302	318	318	
2250	4450	396	***NR	396	364	389	389	
2550	4450	470	***NR	470	414	439	439	
2850	4450	470	***NR	470	436	461	461	
3150	4450	475	---	475	---	475	475	Total depth allowed because critical units not recognizable by either logging method owing to Fault zone.
3450	4450	390	***NR	390	210	235	235	
3750	4450	225	***NR	225	147	172	172	
4050	4450	316	210	261	159	184	184	
4350	4450	255	223	250	182	207	207	
4650	4450							Not drilled -- inaccessible.
4950	4450	300	285	300	219	244	244	
300	3950	150	***NR	150	125	150	149	
600	3950	210	***NR	210	195	210	208	
900	3950	301	***NR	301	232	257	257	
1200	3950	416	391	416	278	303	303	
1500	3950	379	***NR	379	345	370	370	
1800	3950	488	470	488	367	392	392	
2100	3950	426	***NR	426	420	426	425	
2400	3950	510	***NR(?)	510	468	510	509	Examiners allow all below top Poison Canyon contact because of nearness to fault and possible drag increasing section & otherwise obscuring definite contacts.

ANALYSIS OF DRILLING (CONT'D)
DMEA 5009, Idm-E1220

Hole No. N.	Hole No. E.	Drilled	Operator's Base* of Poison Canyon	Footage claimed by Operator	Base of Poison Canyon	**Footage allowed by Field Examiners	Allowable Logging	Remarks
2700	3950	238	***NR	223	198	223	223	
3000	3950	330	184	209	184	209	209	Westwater appears to have a muddier facies than usual.
3300	3950	245	***NR	206	183	208	208	Relationship obscure below Poison Canyon.
3600	3950	270	196	221	108	133	133	
3900	3950	255	210	236	120	145	145	
4200	3950	285	218	244	136	161	161	
4500	3950	270	224	231	145	170	170	
4800	3950	360	225	229	151	176	176	
5100	3950	270	232	257	162	187	187	
150	3450	264	257	264	198	223	223	
450	3450	270	***NR	270	260	270	269	
750	3450	330	***NR	330	318	330	329	
1050	3450	366	348	366	348	366	366	Examiners interpret Poison Canyon as 2 sandstones with mud split.
1350	3450	512	503	512	372	397	397	
1650	3450	495	***NR	495	435	470	470	
1950	3450	220	172	199	155	180	180	
2250	3450	300	175	201	159	184	184	
2550	3450	262	196	221	179	204	204	
2850	3450	225	180	206	98	123	123	
3150	3450	220	213	220	120	145	145	
3450	3450	280	200	227	117	142	142	
3750	3450	305	203	230	121	146	146	
4050	3450	250	215	241	136	161	161	
4350	3450	270	229	253	149	174	174	
4650	3450	280	230	253	160	185	185	
4950	3450	250	238	250	165	190	190	
300	2950	449	418	440	326	351	351	
600	2950	435	***NR	435	370	395	395	
900	2950							Not completed -- lost circulation.
1200	2950	465	***NR	465	?	465	395	All allowed -- indeterminate -- lower part of hole unrecognizable.
1500	2950	255	***NR	206	180	205	205	
1800	2950	185	***NR	185	180	185	184	
2100	2950	229	***NR	224	175	200	200	
2700	2950	229	213	229	121	146	146	
3000	2950	335	306	330	243	268	268	
3300	2950	330	317	330	225	250	250	
3600	2950	335	315	335	230	255	255	
3900	2950	320	298	320	215	240	240	
4200	2950	316	239	269	155	180	180	
4500	2950	350	320	345	242	267	267	
4800	2950	274	255	274	173	198	198	
5100	2950	288	250	277	167	192	192	
Total 81 Holes		24,954		23,594		20,119	20,006	

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
224 New Customhouse
Denver 2, Colorado
January 19, 1959

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O. M. E.
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DATE	INITIALS	CODE
1/26	C	220
		130
		700

Memorandum

To: Chairman, Operating Committee, OME

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Contract Idm-E1220
Food Machinery and Chemical Corporation, (E½ Sec.21, T 13 N, R 9 W) McKinley County, New Mexico

Enclosed are three copies of a letter dated January 19, 1959, whereby we advised the Operator that the Contract is considered to be completed on completion of 81 of the 83 holes authorized under Stage I of the contract.

Also enclosed are three copies of a joint memorandum dated January 8, 1959, from T. M. Romslo, Mining Engineer, Bureau of Mines, and W. L. Emerick, Geologist, Geological Survey, containing their recommendations relative to termination of the contract and certification as a discovery or development. Two copies of the Operator's relative letter of November 5, 1958, were forwarded with copies of our memorandum of November 12, 1958, to the field examiners.

Based on the negative results of the drilling under Stage I, the field examiners recommend that the project not be certified as a discovery or development, in which this office concurs.

J.W. Townsend

Enclosures

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DATE	INITIALS	CODE

224 New Customhouse
Denver 2, Colorado
January 19, 1959

Mr. B. G. Kirchman,
Superintendent of Mines
Food Machinery and Chemical Corporation
P.O. Box 327
Grants, New Mexico

Re: Docket No. DMEA 5009 (Uranium)
Contract Ida-E1220
Food Machinery and Chemical
Corporation
(NE Sec. 21, T 13 N, R 9 W)
McKinley County, New Mexico

Dear Mr. Kirchman:

Reference is made to your letter of November 5, 1958, whereby you indicate that additional drilling under the captioned contract is not warranted.

Due to negative results of the drilling completed under Stage I, we concur that additional project work is not warranted, therefore, the contract is considered to be completed upon completion of 81 of the 83 holes authorized for drilling under Stage I.

Receipt is acknowledged of your final accounting report and voucher and the narrative report, which you indicate is intended to serve as your final report as required under Article 7(c) of the contract form.

Very truly yours,
Original signed by
J. W. TOWNSEND

J. W. Townsend
Executive Officer, OME
Field Team, Region III

JWC:hmh

cc: Chairman, Sp. Comm. (3)
Finance Office, Reg. III
Contract file, Reg. III
Marshman
Emerick
Romalo, OME/Tuc.
Corres. file, Reg. III
Cooper
Chron

OME
DEPARTMENT OF THE INTERIOR
JAN 12 1959
REGION III
DENVER, COLORADO

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DATE	INITIALS	CODE

MINERAL DEPOSITS
O M E
RECEIVED
JAN 12 1959
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

OFFICE OF MINERALS EXPLORATION
Box 4128 University Station
Tucson, Arizona

January 8, 1959

Memorandum

To: J. W. Townsend, Executive Officer, OME Field Team, Region III

From: W. L. Emerick
T. M. Donald

Through: E. W. Marchman EWM

Subject: Docket No. DMEA-3009 (Uranium) Contract No. Ida-8122, Ford Machinery & Chemical Corp. (E ½ Sec. 21, T. 13 N., R. 9 W.), McKinley County, New Mexico

Reference is made to the last paragraph of your memorandum of November 12, 1958, relative to termination of the captioned contract.

Our analysis of the radiometric logs of 21 of 23 exploratory holes of Stage I shows that above background radioactivity was confined to 13 zones in 12 of the holes. The maximum thickness of the zones is about 2.5 feet, and the maximum indicated eU_3O_8 content of the zones is approximately .04 percent.

On the basis of the unfavorable findings we recommend (1) that the contract be considered complete without drilling the 2 remaining holes, and (2) that the project should not be certified as a discovery.

Our recommendation relative to non-certification of the project is based not only on the unfavorable findings of the project but also on the probability that a possible extension of any deposit into the project area probably would not contain significant amounts of uranium ore.

T. M. Donald
U. S. Bureau of Mines

W. L. Emerick
U. S. Geological Survey

WLE:TMD:ms
cc: Townsend (5)
OME/Tucson (2)

OFFICIAL ... FORM
O. M. E.
... JAN 12 1959

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1/12	and	800
		700

[redacted]

[redacted]
Denver 2, Colorado
January 9, 1959

[redacted]

To: E. N. Harshman

From: Executive Officer, OSE Field Team, Region III

Subject: Contract No. [redacted] (Vendor) Contract No. [redacted], Ford Motor Co. and Chrysler Corporation, (Sec. 21, 7 U.S.C. 2 & 9 V) Military Group, Ser Review

Enclosed is one copy of the Operator's Monthly Report for the period, August 15, through October 4, 1958, with maps and supporting data, which is also intended to serve as the final engineering and geological report required under Article 7(a) of the contract.

Original signed by
E. N. HARSHMAN
for J.M. [redacted]

Enclosure

JMC:bch

cc: Final Report file, Reg. III
[redacted], Op. Com. (2)
Rendle, OSE/Wa.
Shorick
Operat. file, Reg. III
Cooper
Chase

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O. M. E.
RECEIVED DEC 30 1958

DATE	INITIALS	CODE
12/30	N. J.	22C
		~~[illegible]~~
12/31	[illegible]	700

[illegible] New Cumberland
Denver 2, Colorado
[illegible] 26, 1958

Mr. R. C. Hirchman,
Superintendent of Mines
Food Machinery and Chemical Company
P. O. Box 327
Grants, New Mexico

Re: Project No. MRA 5009 (Uranium)
Contract No. [illegible]
Food Machinery and Chemical Corporation
(T 1 Sec. 21, T. 13 N., R. 9 W.)
McKinley County, New Mexico

Dear Mr. Hirchman:

Receipt is acknowledged of the original and five copies of data forwarded by and listed in the covering letter of December 20, 1958, except that six copies of map No. 1, and six copies of map No. 2, as listed, were not received.

Concerning other records that are to be made a part of each accounting report yet are referred to the last paragraph on the first page of EXHIBIT "I", attached to the contract, which is quoted as follows:

> "All cuttings from the drill holes shall be logged geologically. All holes shall be probed radiometrically and gamma ray and resistivity logs graphically recorded. The results of such logging and probing, together with certified copies of all assay certificates, shall be submitted with the Operator's monthly progress reports."

We fail to find graphic radiometric probe records or geologic logs, as required. Therefore, please forward 6 copies each of maps Nos. 1 and 2 and 6 copies each of the above records to Mr. T. E. Busala, Mining Engineer, Bureau of Mines, P. O. Box 1047, Tucson, Arizona, for his attachment to all sets of the first above-mentioned data which have been forwarded to him for field audit.

When the required records are received, we will then be in a position to review presenting your request for transfer of drill footage and funds from Stage II to Stage I.

Resolution of the foregoing matter is a prerequisite to processing Form MF-104, Operator's Monthly Report and Voucher, covering work performed during the period, August 15, through October 4, 1958.

Very truly yours,

Original signed by
J. W. TOWNSEND

J. W. Townsend
Executive Officer, OME
Field Team, Region III

JWT:hmh

cc: Chmn. Op. Comm. (2)
Harshman
Emerick
Romslo, OME/Tuc.
Corres. file, Reg. III
Cooper
Chren

OFFICIAL FILE COPY
O. M. E.
RECEIVED DEC 30 1958
CODE

20th New Customhouse
Denver 2, Colorado
December 24, 1958

Memorandum

To: T. M. Ramala, OME/Tucson - w/enclosures

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. RMGA 5489 (Uranium) Contract IAm-21520, Reed Machinery and Chemical Corporation, (E 1/2, Sec. 21, T. 13 N. R. 9 W.) McKinley County, New Mexico

Enclosed are the original and five copies of the Operator's letter of December 20, 1958, with attached data listed therein, except for maps Encl. 1 and 2. Also enclosed is a copy of a self-explanatory letter from this office to the Operator requesting that additional records would be forwarded to you for inclusion with each set of the enclosed data.

The enclosed data is submitted by the Operator as the sole accounting report and their final engineering and geologic report pertaining to work completed under Stage I of the contract.

It appears that action by you and Mr. Emerick on the Operator's request for transfer of drill footage and funds from Stage II to Stage I must be deferred until the required records are received by you. As indicated in the letter to the Operator it will be necessary that the above matter be resolved before Form MP-104 can be processed by you, therefore, please submit as soon as possible your joint report containing recommendations concerning the transfer of drill footage and funds.

Original signed
J. W. TOWNSEND
J. W. Townsend

JWT:bmh

cc: Chem. Sp. Comm. (2)
Hershman
Emerick
Central File, Reg. III
Cooper
Chron

w/copy of Operator's letter of 12/20/58 and our letter to Operator dated 12/24/58

FOOD MACHINERY AND CHEMICAL CORPORATION

MINERAL DEVELOPMENT DEPARTMENT

CHEMICAL DIVISIONS

FOOD MACHINERY AND CHEMICAL CORPORATION

OFFICIAL FILE COPY
PLEASE REPLY TO
P. O. BOX 327,
GRANTS, NEW MEXICO
TELEPHONE: TRINITY 8-8379

RECEIVED DEC 24 1958

DATE	INITIALS	CODE

12-20-58

Mr. J. W. Townsend
Executive Officer, O.M.E
Field Team, Region III
224 New Customhouse
Denver 2, Colorado

Re: Docket No. DMEA 5009
(Uranium) Contract IDM-K1220
Food Machinery & Chemical Corp
E/2 Sec 21, T. 13N. R. 9W.
McKinley County, New Mexico

Dear Mr. Townsend:

Stage I exploration of the above captioned contract was started Aug. 15, 1958 and completed Oct. 4, 1958. The required information and evidence pertaining to the work and costs thereof are submitted to that office as follows:

- 6 copies, Map no. 1 (Drill hole map)
- 6 copies, Map no. 2 (Stratigraphic and structural sections)
- 1 Original and 5 copies of Log Master logs for each drill hole drilled in the E/2 Sec. 21, T. 13N. R. 9W. as listed and shown on map no. 2.
- 1 Original and 5 copies of narrative report.
- 1 Original and 5 copies, Stewart Bro's and Parker statement.
- 1 Original and 5 copies Jack Elkins statement.
- 1 Original and 5 copies Grants Engineering Co. statement.
- 1 Original and 5 copies USDA - DMEA form MF 104 (rev)
- 1 Original and 5 copies USDA - DMEA form MF 104 A.

Explanation of the Exploration program, in considerable detail, is included in the report.

Hoping the required information is complete and contained in the transmittal.

Yours very truly,

R C Kirchman

R. C. Kirchman
Supt of Mines

1 copy of each item listed above to
E. M. Romslo, Mining Engineer,
Bureau of Mines
Box Box 1097, University Sta.
Tucson Arizona

OFFICIAL FILE COPY O. M. E. RECEIVED DEC 30 1958		
DATE	INITIALS	CODE
12/30	[illegible]	[illegible]
12/31	[illegible]	[illegible]

[illegible] Bar Continental
Grants 2, Colorado
December 24, 1958

Memorandum

To: J. H. Ramald, OGE/Ton. - w/enclosure
W. L. Ramlik - w/enclosure

From: Executive Officer OGE Field Team, Region III

Subject: Docket No. [illegible] 5009 (Uranium) Contract [illegible]
Foss Machinery and Chemical Corporation, (N. 2 Sec. 21, T. 13 N. R. 9 W) McKinley County, New Mexico

Supplementing material forwarded by our memorandum of November 12, 1958, enclosed is a copy of the Operator's letter of December 20, 1958, pertaining to transfer of drill footage and funds from Stage II to Stage I, to permit completion of all of the Stage I drill holes to their objectives.

Original signed by
J. W. TOWNSEND

J. W. Townsend

JWTjmb

cc: Chief, Op. Comm. (2)
Hardinsky
Contra. File, Reg. III
Cooper
Chiron

} w/copy of Operator's letter of 12/20/58

OFFICIAL FILE COPY
C. M. E.
RECEIVED DEC 30 1958
DATE | INITIALS | OFFICE

12-20-58

M. J. W. Townsend
Executive Officer CME
Field Team, Region III
224 New Customhouse
Denver 2, Colorado

Re: Docket No. DMEA 5009
(Uranium) Contract IDM - M1220
Food Machinery & Chemical Corp.
E/2 Sec. 21, T. 13N. R. 9W.
McKinley County, New Mexico

Dear Mr. Townsend:

It was necessary to drill the exploratory holes in the E/2 sec. 21 deeper than the Stage I estimate in order to adequately explore the Poison Canyon sandstone host unit or units. Explanation of the drilling depths is contained in the report and more particular under the exploration section of the report and map no. 2 (Stratigraphic and structural sections).

In accordance with the provision of the contract under Stage I, it is requested that $6,507.60 of Stage II allowance be transfered to Stage i, allowance. The transfer would then bring Stage I allowance up to $21, 469.60 which is the amount of Food Machinery and Chemical Corp., is requesting DMEA participation.

Sincerely yours,

R. G. Kirchman

R. G. Kirchman
Supt. of Mines

RGK:CB

FOOD MACHINERY AND CHEMICAL CORPORATION

OME
DEPARTMENT OF THE INTERIOR
DEC 17 1958
REGION III
DENVER, COLORADO

MINERAL DEVELOPMENT DEPARTMENT
CHEMICAL DIVISIONS

FOOD MACHINERY AND CHEMICAL CORPORATION

PLEASE REPLY TO
P. O. BOX 327
GRANTS, NEW MEXICO
TELEPHONE: TRINITY 6-2379

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O. M. E.
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December 15, 1958

Mr. J. W. Townsend
Executive Officer, OME Field Team
Region 111
Denver 2, Colorado

Re: Docket No. DMM 5009 (Uranium)
Contract NO. Im-E1220
Food and Chemical Corp.
(E/2 sec. 21, T 13 N, R 9 W)
McKinley, County, New Mexico

Dear Mr. Townsend:

You are advised that stage 1 exploration drilling was completed October 4, 1958. Assimilation and preparation of the information and data was begun shortly after completion of the drilling program. However, due to delay because of certain operational work pressure the information and reports related to the above captioned exploration program has been somewhat delayed.

The required maps and reports have been completed and the government are now in preparation. The most that remains to be done is printing, assembling the various parts of data and information and mailing. This work should all be done within the next two days.

Yours very truly,

R. C. Kirchman

R. C. Kirchman
Supt. of Mines

12-17-58
Copies dist. to:
Chief Op. Comm (2)
Hardman
Emerick
Romero, OME/Tuc.
Corres file, Reg III
Cooper

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12/16	[illegible]	700

224 New Customhouse
Denver 2, Colorado

December 11, 1958

Mr. R. C. Kirchman, Supt. of Mines
P. O. Box 327
Grants, New Mexico

Re: Docket No. DMEA 5009 (Uranium)
Contract No. Ida-E1220
Food Machinery and Chemical Corp.
(B½ Sec. 21, T 13 N, R 9 W)
McKinley County, New Mexico

Dear Mr. Kirchman:

Reference is made to your letter of 11/5/58 concurring that further drilling under the contract is not warranted and wherein you request approval for the transfer of 8,000 feet of drilling from Stage II to Stage I to permit completion of the Stage I holes to their objective.

Action in the matter has been deferred pending receipt of your monthly progress report covering the balance of the drilling completed. Our records indicate that the last drilling was completed prior to October 14, 1958; therefore, the progress report pertaining to the work is long overdue.

Under the provisions of Article 3 of the contract form, all work under the contract shall have been completed before November 30, 1958, unless the operator's obligation to prosecute the work is terminated as provided for under Article 10 of the contract form.

If the contract is to be considered completed in its present status without requiring completion of the balance of work provided for in the contract, it is necessary that it be terminated by a Termination Agreement executed by the Government and the Operator. Before Government consideration can be given the matter of terminating the contract in its present status, it is necessary that your progress report pertaining to and the results of the last work performed be available for review. In addition, it is necessary that we be advised the date the last work was completed as was requested in the last paragraph of our letter to you on October 29, 1958.

The contract cannot be maintained in an indefinite status; therefore, your prompt attention to the matter is requested.

Very truly yours,

J. W. Townsend

J. W. Townsend
Executive Officer
OME Field Team, Region III

JWT/ad
cc: Chmn. Op. Comm. (2)
Harshman
Emerick
Romslo, OME/TUC
Corres. File
Cooper (2)
Chron.

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xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
OFFICE OF MINERALS EXPLORATION
[illegible] Bay Customhouse
Denver 2, Colorado
November 19, 1958

Mr. R.C. Kirchman,
Superintendent of Mines
Food Machinery and Chemical Corporation
P. O. Box 387
Grants, New Mexico

Re: Docket No. DMEA 3009 (Uranium)
Contract Ida-41220
Food Machinery and Chemical Corporation
(E½ Sec. 21, T 13 N, R 9 W)
McKinley County, New Mexico

Dear Mr. Kirchman:

Reference is made to your letter of November 5, 1958, whereby you requested Government approval to transfer 8000 feet of drilling footage and incident costs from Stage II to Stage I, because the actual drilling depths required to penetrate the Poison Canyon sandstone were in excess of the original estimated depths.

The Government cannot take action on your request until complete data pertaining to the Stage I drilling is received; therefore, please forward to the OME office at Tucson, Arizona, as soon as possible, your monthly accounting report and voucher covering the Stage I work, including the excess drilling footage involved. The report must be complete with lithologic logs, radiometric probing records, and maps. As a part of the narrative section of the report please include a tabulation showing the total footage involved for each Stage I drill hole.

Very truly yours,

Original signed by
J. W. TOWNSEND

J. W. Townsend
Executive Officer, OME
Field Team, Region III

JDC:hmh

cc: Comm. Op. Comm. (2)
Harshman
Emerick
Romslo, OME/Tuc.
Corres. file, Reg. III
Cooper
Chron

} w/copy of rel. joint Memo. by Emerick & Romslo, dated 11/13/58

OME
DEPARTMENT OF THE INTERIOR

NOV 18 1958
REGION III
DENVER, COLORADO

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O. M. E.
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MINERAL DEPOSITS
O. M. E.
RECEIVED
NOV 17 1958
U. S. GEOLOGICAL SURVEY
DENVER, COLORADO

OFFICE OF MINERALS EXPLORATION
Box 4126 University Sta.
Tucson, Arizona

November 13, 1958
Airmail

Memorandum

To: J. W. Townsend, Executive Officer, OME Field Team, Region III

From: W. L. Emerick
T. M. Romalo

Through: E. N. Harshman

Subject: Docket No. DMEA-5009 (Uranium) Contract No. Idm-E1220, Food Machinery & Chemical Corp. (E 1/2 Sec. 21, T. 13 N, R. 9 W.) McKinley County, New Mexico

Reference is made to your memorandum of November 12, 1958.

During an inspection of the project October 15, 1958, we found, as reported in W. L. Emerick's memorandum to you of October 23, 1958, that 81 of the 83 holes of Stage I had been completed. Of the 2 uncompleted holes, one was abandoned because of drilling difficulties, and the other was not drilled because of unfavorable terrain. A rough check indicated that approximately 25,148 feet was drilled in the 81 holes. The average depth per hole was about 310 feet or about 110 feet more than the estimated 200-foot average depth of the contract. Unsuspected block faulting made it necessary to drill holes deeper than estimated, in order to penetrate the Poison Canyon sandstone.

Our recommendation as to how much drilling footage should be transferred from Stage II to Stage I will be made after receipt of the Operator's Progress Report. A hole by hole analysis will then be made. We will also submit as requested our separate recommendation relative to further work. Our analysis of the Operator's report is not expected to alter our present opinion that the contract should be terminated.

T. M. Romalo
U. S. Bureau of Mines

W. L. Emerick
U. S. Geological Survey

TMR:WLE:ms

cc: J. W. Townsend (9)
E. N. Harshman
OME/TUC (2)

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OFFICE OF MINERALS EXPLORATION
224 New Customhouse
Denver 2, Colorado
November 12, 1958

AIR MAIL

Memorandum

TO: Mr. T. M. Romslo, OME/Tuc.
Mr. W. L. Emerick } w/enclosures

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. DMRA 5009 (Uranium) Contract No. Idm-E1220 Food Machinery & Chemical Corp. (E½ Sec. 21, T 13 N, R 9 W) McKinley County, New Mexico

Enclosed is a copy of the Operator's letter of November 5, 1958, wherein the Operator indicates concerrnns that further drilling under the contract is not justified, and in addition, requests that 8,000 ft. of drilling be transferred from Stage II to Stage I, to enable completion of the Stage I holes to their objectives.

Since the drilling footage requested for transfer is the entire amount provided for under Stage II, please submit a Memorandum Report containing your recommendations in the matter.

Should you recommend transfer of Stage II drilling to Stage I, your report should include a hole by hole analysis of the additional footage required for the holes to reach their stated objectives.

In addition, and as a separate memorandum, please submit your recommendations relative to considering the contract completed upon completion of the 81 holes under Stage I.

Original signed by
J. W. TOWNSEND

J. W. Townsend

Enclosure

JWT:ltm

cc: Chmn. Op. Comm. (2)) w/copy of
Harshman) Operator's
Corres. File) letter
Cooper
Chron.

OME
DEPARTMENT OF THE INTERIOR
NOV 10 1958
REGION III
DENVER, COLORADO

OFFICIAL FILE COPY
O. M. E.
RECEIVED NOV 14 1958

DATE	INITIALS	CODE

11-5-58

Acting Excutive Officer
OME Field Team, Region III
224 New Customhouse
Denver 2, Colorado

Re. Docket No. DMEA 5009
(Uranium)
Contract Idm-1220
Food Machinery & Chemical Corp.
(E½ Sec. 21, T. 13 N. R. 9 W.)
McKinley County, New Mexico

Dear Mr. Harshman:

Refering to your letter of October 29, 1958 concerning the Second Stage drilling of Section 21, we must concure that further drilling is not justified.

The contract calls for all holes to penetrate the Poision Canyon Sandstone. This has been done. However due to the proximity of the San Mateo Fault the total drilling to penetrate the Poision Canyon has exceeded the allowable under Stage I of the contract.

We therefore respectfully request that the additional footage and funds allowed under Stage II be transfered to Stage I.

There has been a total of 25,078 feet drilled under Stage I. There is a difference of 9,078 feet drilled. We therefore request the full 8,000 allowed under Stage II.

Sincerly yours,

R C Kirchman

R. C. Kirchman
Supt. of Mines
FOOD MACHINERY & CHEMICAL

c.c. O. A. Power
H. B. Fowler

RCK:cb

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OFFICE OF MINERALS EXPLORATION
224 New Customhouse
Denver 2, Colorado

October 30, 1958

Memorandum

TO: T. M. Romalo
M. L. Emerick

From: Executive Officer, OME Field Team, Region III

Subject: Docket No. DMEA-5009 (Uranium), Contract No. Idm-E1223
Food Machinery and Chemical Corporation (E½ Sec. 21,
T 13 N, R 9 W), McKinley County, New Mexico

Reference is made to the last paragraph of your memorandum of October 24, 1958 regarding certification of the subject project.

As a policy matter we do not know how the Washington office will rule; however, it is the opinion of this office that since the drilling performed under the DMEA Contract did not actually result in a discovery or development of a significant quantity of Uranium Ore that there is no firm basis on which to certify the project as a discovery or development. However, you should make such recommendations as are fitting in your belief.

Original signed by
J. W. TOWNSEND

J. W. Townsend

JWT:lat
Enclosures

cc: Chem. Op. Comm (2)) w/copy Joint
Harshman) Field Memo.
Corres. File) dated 10/24/58
Cooper
Chron.

OCT 26

OME
DEPARTMENT OF THE INTERIOR

OCT 29 1958

REGION III
DENVER, COLORADO

October 24, 1958

Memorandum

To: Executive Officer, OME Field Team, Region III

From: T. M. Romslo
W. L. Emerick

Through: E. N. Harshman EHH

Subject: Docket No. DMEA-5009 (Uranium), Contract No. Idm-E1220, Food Machinery and Chemical Corporation, McKinley County, New Mexico.

During an inspection of the subject project on October 14, 1958, we found that (1) the work of Stage I was completed on October 6, 1958 after drilling 81 of the authorized 83 holes and (2) that above background radioactivity was recorded in only one hole in an estimated 1-foot thick zone containing about 0.03 percent eU_3O_8. The location of the mineralized hole, as shown on Figure 3 of the contract, is about 300 feet from the west boundary of the project area and about 500 feet easterly from a small producing mine (the Doris) owned by the operator of the captioned contract.

An inspection of the ore deposit in the Doris mine shows that the ore zones are small pod-like masses in the Poison Canyon sand connected by narrow, sinuous bands of ore. The small pod-like masses, as well as the narrow connecting bands, could easily be entirely missed by drill holes from the surface.

The ore deposit in the Poison Canyon sand at a slightly higher horizon than the weakly mineralized zone of the contract drill hole, is opened by an inclined shaft. The deposit is being exploited by small open stopes off of drifts and raises, some of which were driven to ore zones found by short diamond-drill holes. At the present time diamond drilling is to the east toward the project area.

CC Executive Officer (9)
E. N. Harshman
OME - DMEA-5009
W. L. Emerick
DF

TMRomslo:WLEmerick:frj

Owing to contact limitations in regard to other previously drilled holes and to boundaries and because of terrain difficulties, the locations of additional drill holes west of the weakly mineralized contract hole would be limited. Furthermore, even though the weakly mineralized hole is fairly close to a producing mine we do not believe offset drilling of the area under Stage II is warranted, because (1) the showing in the discovery hole probably does not meet the contract requirement of favorable or significant mineralization, and (2) possible extensions of the narrow and sinuous deposits of the mine offer too small a target for surface drilling.

It is our opinion, after discussions with the project supervisor, that the operator will soon propose that the contract be terminated because the findings of Stage I do not warrant additional exploration. Nevertheless the operator may suggest that the project be certified as a Discovery in view of the possible extension of the Doris deposit into the contract area. We too feel that the project should be certified in order to protect the Government's interest, but we would appreciate information on DMEA policy in the past on similar circumstances before making such a recommendation.

Original signed by
T. M. Romslo
T. M. Romslo
U. S. Bureau of Mines

W L Emerick

W. L. Emerick
U. S. Geological Survey

UNITED STATES
DEPARTMENT OF THE INTERIOR
~~DEFENSE MINERALS EXPLORATION ADMINISTRATION~~
OFFICE OF MINERALS EXPLORATION
224 New Customhouse
Denver 2, Colorado
October 29, 1958

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O. M. E.
RECEIVED OCT 31 1958
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Memorandum

To: Chairman, Operating Committee, OME

From: Acting Executive Officer, OME Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Contract Idm-E1220, Food Machinery and Chemical Corporation, (E½ Sec. 21, T 13 N, R 9 W) McKinley County, New Mexico

Enclosed are the original and two copies of a memorandum report, dated October 23, 1958, of an interim inspection of the subject property by W. L. Emerick, Geologist, U. S. Geological Survey.

Also enclosed are two copies of a letter from this office to the Operator, dated October 29, 1958, pertaining to future work under the contract.

E. N. Harshman

E. N. Harshman

Enclosures

224 New Customhouse
Denver 2, Colorado
October 29, 1958

Mr. W. S. Cavender
Food Machinery and Chemical Corporation
Box 24, Star Route
Grants, New Mexico

Re: Docket No. DMEA 5009 (Uranium)
Contract Idm-E1220
Food Machinery and Chemical
Corporation
(E½ Sec. 21, T 13 N, R 9W)
McKinley County, New Mexico

Dear Mr. Cavender:

A report of recent inspection of the referenced property discloses that 81 of the 83 possible holes under Stage I have been drilled, and that the two remaining holes will not be completed because of unfavorable terrain and drilling difficulties.

It is our understanding that Stage I drilling did not disclose favorable mineralization to the extent of qualifying for offset drilling, as provided for under Stage II of the contract.

Under the circumstances, if our information is correct, it appears that further operations under the contract are not justified.

Please advise as to whether or not you concur in that conclusion, and if so, advise the date the last work was performed under the contract.

Very truly yours,

Original signed by
E. N. HARSHMAN
E. N. Harshman
Acting Executive Officer
OME Field Team, Region III

JWF:hmh

cc: Chmn. Op. Comm. (2)
Harshman
Emerick
Romslo, OME/Tuc.
Corres. file, Reg. III
Cooper
Chaty

W.O

IN REPLY REFER TO

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OME
DEPARTMENT OF THE INTERIOR

OCT 27 1958
REGION III
DENVER, COLORADO

OFFICE OF MINERALS EXPLORATION
Box 4126 University Station
Tucson, Arizona

MINERAL DEPOSITS
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RECEIVED
OCT 27 1958
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

October 23, 1958

Memorandum

To: Executive Officer, OME Field Team, Region III

From: W. L. Emerick Through: E. N. Harshman

Subject: Docket No. DMEA 5009 (Uranium) Contract Idm-E1220, Food Machinery and Chemical Corporation, McKinley County, New Mexico - interim inspection.

An inspection of the above subject project was made on October 14 and 15, 1958 in the company of T. M. Romslo, U. S. Bureau of Mines, and W. Tipton, project supervisor.

The operator completed 81 of the authorized 83 holes of the contract in the E½ Sec. 21, T. 13 N., R. 9 W. One hole was not drilled because of unfavorable terrain and location in an area surrounded by barren holes, and one hole was abandoned before completion because of drilling difficulties. All of the 81 holes, except one, were barren. Weak mineralization was found in one hole for an interval of 1 foot at a depth of about 185 feet in the Poison Canyon sand. Probing of the hole indicated that the uranium mineralization was less than 0.05 percent eU_3O_8. The hole lies about 300 feet from the west boundary of the drilling area and about 500 feet from the producing Doris mine.

Most of the E½ of Sec. 21 is covered by alluvium of variable depths, in places over 100 feet thick, that conceals most of the pertinent underlying geologic features. Dakota sandstone and the Brushy Basin and Westwater Canyon members of the Morrison formation, dipping 17 to 19 degrees northwest, crop out in the southeast corner of the drilling area; dips of the same formations on the rim to the west of the drilling area are from 4 to 6 degrees northwest. The dips of the formations on either side of the drilling area would appear to indicate simple normal faulting. However, a zone across the lower two-thirds of the drilling area, extending diagonally from the northeast to the southwest and ranging from 500 to 900 feet wide, appears to mark a position of major faulting involving either a series of closely-spaced step faults or down-dropped blocks of sediments.

The average drilling depths in most of the E½ of Sec. 21 were around 200 to 250 feet in order to reach the Recapture shale member, but

the depths of drilling in the faulted zone ranged from 379 to 562 feet and averaged about 437 feet. Displacement of the formations in the zone appears to be not less than 100 feet vertically.

Some difficulty was experienced by the operator in correlating formations between adjacent holes, particularly in the northeast part of Sec. 21. Slumping of the formations has occurred in this part of Sec. 21 and the disturbed condition of the formations is probably related to it.

The field examiners visited the Doris mine in the center of Sec. 21, which lies about 200 feet over the west boundary of the project area. The mine, owned by the subject operator, is producing uranium ore from the Poison Canyon sand. The ore in the mine is being followed to the west by drifting, and possible extensions of the ore to the east were being tested by diamond-drill holes from short headings on that side. The ore zones are narrow and sinuous but open up in places to small pod-like deposits. Several tight northeast trending fractures, approximately parallel to the large fault zone in the drilling area, occur in the mine. There appears to be some relationship in this mine between the faulting and ore deposition. The mine has produced about 2,000 tons of ore since the beginning of operations two months ago, and the operator estimates a reserve of an additional 2,000 tons.

W L Emerick

W. L. Emerick
U. S. Geological Survey

Executive Officer (9)
ENHarshman
OME/TUC
Emerick

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
224 New Customhouse
Denver 2, Colorado
September 16, 1958

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Memorandum

To: Chairman, Operating Committee, DMEA

From: Alternate Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium), Contract No. Idm-E1220, Food Machinery and Chemical Corporation (Westvaco Mineral Products Division), (E½ Sec. 21, T 13 N, R 9 W), McKinley County, New Mexico

Enclosed are two copies of a memorandum, dated September 10, 1958, from T. M. Romslo, Mining Engineer, Bureau of Mines, and two copies of a letter from the Operator, dated September 6, 1958, pertaining to work performed during the period from August 14, 1958 to September 1, 1958.

Drilling was commenced on August 14, 1958 and is expected to be completed about the end of September, 1958.

J. W. Townsend

J. W. Townsend

Enclosures

OFFICIAL FILE COPY
DMEA
RECEIVED SEP 19 1958
DATE

DMEA
DEPARTMENT OF THE INTERIOR
SEP 16 1958
REGION III
DENVER, COLORADO

Memorandum

September 10, 1958

To: J. W. Townsend, Alternate Acting Executive Officer, DMEA
Field Team, Region III

From: T. M. Romslo, Mining Engineer, Tucson, Ariz.

Subject: Interim Progress Report for August 4 to September 1, 1958, Docket DMEA-5009 (Uranium) Contract Idm-E1220, Food Machinery and Chemical Corporation (Westvaco Mineral Products Division) McKinley County, N. Mex.

Attached are the original and 4 copies of the Operator's Interim Report which I requested during my brief inspection of the project on September 3, 1958.

Findings during the inspection indicated that the project is being carried out in accordance with the contract and that all of Stage Drilling probably will be completed before my first regular inspection of the project early in October.

Messrs. R. C. Kirchman and W. D. Tipton the corporation's Superintendent of Mines and Geologist, respectively, reported that no zones of above background radioactivity had been penetrated by the 16 completed holes.

T. M. Romslo

CC Alt. Acting Exec. Of. (Orig. & 8)
DMEA-5009
DF

TMRomslo:kj

OFFICIAL FILE COPY
D M E A
RECEIVED SEP 15 1958
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DMEA
DEPARTMENT OF THE INTERIOR
SEP 15 1958
REGION III
DENVER, COLORADO

Sept. 6, 1958

Executive Officer
DMEA Field Team Region III
224 New Customhouse Bldg.
Denver 2, Colorado

Re: Docket N o. DMEA - 5009
(Uranium) E 1/2 Sec. 21
T. 13 N. R. 9 W. McKinley County
New Mexico

Dear Sir:

The following interim report covers work on Docket No - DMEA - 5009 for August 14, 1958 to September 1, 1958.

Drilling was commenced on Aug. 14, 1958 by Stewart Bros. & Parker Drilling Contractors. There were 16 holes drilled to the first of September.

The Geologist in charge of the drilling for the Company is Mr. William D. Tipton. He is logging holes and mapping as the drilling progresses.

Due to excessive moisture in the formations it is necessary to drill with water. When the Poison Canyon Sand has been penetrated Sludge Samples are taken on 2 foot intervals.

Surveying and laying out of the drill holes has been completed by a Company Engineer.

All holes are being Logged by the Electric Logging method with Log Master Services Inc., doing the work.

Drilling should be completed about the end of September.

Sincerly yours,

R. C. Kirchman
Supt. of Mines
FOOD MACHINERY & CHEMICAL CORP.
Mineral Development Dept.

RCK:cb

DATE	INITIALS	CODE
7/16	C	220
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7/17	[illegible]	700

25th New Customhouse
Denver 2, Colorado
July 14, 1958

Mr. W. S. Cavender
Food Machinery and Chemical Corporation
Box 24, Star Route
Grants, New Mexico

Re: Docket No. DMEA 4845 (Uranium)
Contract Idm-X1167
Food Machinery and Chemical Corporation
(Sec. 17, T 13 N, R 9 W)
McKinley County, New Mexico

Docket No. DMEA 5009 (Uranium)
Contract Idm-X1220
Food Machinery and Chemical Corporation
(Sec. 21, T 13 N, R 9 W)
McKinley County, New Mexico

Dear Mr. Cavender:

Enclosed for your information are copies of our letters dated March 31, 1958, and July 7, 1958, concerning operations under Contracts Idm-X1167 and Idm-X1220 respectively. The original of each letter was forwarded to the New York office of Food Machinery and Chemical Corporation.

The field work in connection with both contracts will be conducted by DMEA personnel stationed at Tucson, Arizona, therefore the addresses listed on pages 1 and 2 of our letter of July 7, 1958, will be applicable for both contracts.

Very truly yours,

Original signed by
J. W. TOWNSEND

J. W. Townsend
Alternate Acting Executive Officer
DMEA Field Team, Region III

JWC:bmb

cc: Chem. Sp. Comm. (4)
Harshman (2)
Emerick (2)
DMEA/Tucson (2)
Corres. file, Reg. III (2)
Cooper (2)
Chron

ORIGINAL FILE COPY
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Oak Ridge Operations
Denver 2, Colorado
July 7, 1958

Memorandum

To: J. A. Christensen

From: Alternate Acting Executive Officer, DMEA Field Team, Region XI

Subject: Contract No. DMEA 5009 (Western), Contract No. Ion-21220, Food Machinery and Chemical Corporation (Western Mineral Products Division), (T. Rec. 21, T 13 N, R 9 W), McKinley County, New Mexico

Enclosed is the Finance Office copy of Exploration Project Contract No. Ion-21220, which has been executed and is in force.

Also enclosed is a copy of a letter from this office, dated July 7, 1958, whereby we forwarded blank report forms, instructions relative to reporting on work performed under the contract, and procedures to be followed in corresponding with this office in all matters pertaining to the contract.

The Contract, dated June 24, 1958, provides for exploration work estimated to cost $22,500.00, toward which the Government will contribute 50 percent, or not in excess of $11,100.00.

Original signed by
J. W. TOWNSEND

J. W. Townsend

Enclosures

JWTsgrl

cc: Finance
Chem. Op. Chief-2 } w/copy of letter
Contrac. Div. } to Operator.
Enclosure
Mail/Express-Denver } w/copy of contract
Durick } and letter to
Historical } Operator.
Chron.

ORIGINAL FILE COPY
O M E A
RECEIVED JUL 11 1958

DATE	INITIALS	CODE

[illegible] New Customhouse
Denver 2, Colorado
July 7, 1958

Mr. Henry C. Hanson
Food Machinery and Chemical Corporation
(Interstate Mineral Products Division)
161 East 42nd Street
New York 17, New York

Re: Contract No. [illegible] (Amended)
Contract No. [illegible]
Food Machinery and Chemical Corporation
(Interstate Mineral Products Division)
([illegible] Sec. [illegible], T [illegible] S, R [illegible] W)
McKinley County, New Mexico

Dear Mr. Hanson:

Reference is made to Exploration Project Contract No. [illegible], forwarded to you by the Washington Office, DMEA, by letter of June [illegible], 1958.

Enclosed are six copies of Form EP-104, "Operator's Monthly Report and Vouchers," and six copies of Form EP-104A, "Operator's Daily Drill and Progress Report." At the end of the first calendar month after work is commenced, and monthly thereafter, you are required to submit the original and four copies of each form to the

Defense Minerals Exploration Administration
P. O. Box 4097, University Station
Tucson 5, Arizona.

The extra copy is for your records.

Forms EP-104 and EP-104A are to be combined into five sets of one of each form. Each set of the combined forms is to be accompanied by a map or sketch, showing the location and extent of work performed, and a brief narrative report which describes the work performed, conditions encountered, and results of the work. The monthly accounting report will not be processed for reimbursement unless it is accompanied by a brief narrative report and other required or pertinent data. Additional copies of Forms EP-104 and EP-104A will be furnished to you each month on receipt of your report for the prior month.

The U. S. Bureau of Mines and the U. S. Geological Survey, contacts offices in buildings on the campus of the University of Arizona, and ERDA representatives of the two Bureaus, who will administer the contract in the field as representatives of this office, may be addressed as follows:

> F. M. Murphy, Mining Engineer, Bureau of Mines,
> Engineering Building, or
> Mail Address: P. O. Box 1837, University Station,
> Tucson, Arizona.
>
> W. L. Reynolds, Geologist, Geological Survey,
> Mining and Geological Building, or
> Mail Address: P. O. Box 1428, University Station,
> Tucson, Arizona.

For your information, and in reply to many questions that have been asked, after Phase IV-DDD and IV-EEE are completed, it contract will start progress on the project but rather your contract, after which the report Phases will be forwarded to this office for administrative consideration and monitoring. If the report is in order, a check will be issued by the Treasury Department for the Government's portion of the approved costs. If you have any difficulty in completing these phases and the reports, please call on either the field representatives or this office for assistance.

In the matter of your claim for reimbursement of drilling costs under the terms of the contract, reimbursement to you will be on the basis of a bid or bids accepted on the drilling, which has, or have, been drilled in compliance with the conditions under the "Special Provisions" portion of Exhibit "A" of the contract and the specific conditions pertaining to the drilling under each stage. However, your monthly report should include only such holes which are completed to that extent and the required records made a part of your claim for reimbursement.

The contract is prepared on Form IP-800, and under its provisions and as outlined in Exhibit "A" attached to the contract, the allowable costs are a combination of "Actual Costs" and "Fixed Unit Costs", with a maximum average unit cost established for the drilling under Category (1) and maximum unit costs established for the remaining items of work or services under Category (2) and other authorized categories. Under the provisions of the contract, the work outlined in Exhibit "A" under Category (3) is to be performed by an independent contractor. The unit cost established for each item of work for both Stages I and II is a maximum unit cost based which the Government will contribute the appropriate share as provided for in the contract, except for drilling, which is handled in another manner,

and an expenditure provided for on a maximum allowable unit cost basis. The costs of work completed under Category (1) are to be recorded under item (1) of Form 19-164 and must be supported and documented by a signed or certified true copy of the billing from the subcontractor. The costs of sample analysis, under Category (7), are to be recorded under item (7) of Form 19-164 and must be supported by a copy of the assay report and a signed or certified true copy of the billing from the assayer. Amounts reported on the books of "Flood Hill Gold" regarded as documentation, as they are otherwise verified. However, costs on the "Flood Hill Gold" books are also to be recorded on Form 19-164 under item (1).

In reference to the drilling work under Category (2) of Exhibit "A", please refer to item (f) of Annex II attached to the contract pertaining to the average unit cost. If costs incurred any month cause the average unit cost to be in excess of the maximum allowable average unit cost, such excess costs will be suspended, subject to reimbursement at a later date when the aggregate of such suspensions, should the costs incurred by subsequent months cause the average unit cost to fall below the maximum allowable average unit cost. The foregoing applies to each separate class of drilling under each work stage.

In the event you desire to perform the work under Category (1) on company account instead of subcontracting it, as provided in the contract, it will be necessary that you request and obtain an appropriate amendment to the contract before reimbursement can be made to you for the Government's portion of the allowable assaying work.

Your requests to this office for such approval, changes in the contract, or any other communication pertaining to operations under the contract, must be in writing, of which please supply the original and five copies, each copy complete with maps or other pertinent data. Such requests for action by this office must pertain to one matter only. Such requests are not to be incorporated in quarterly report discussions or monthly progress report forms 19-164 and 19-164a.

The location of holes to be drilled under Stage I are indicated on the map, "Figure 3," attached to the contract. Should conditions encountered necessitate or make desirable a change in the location of any of the holes, approval of this office for the change must be obtained prior to performance of the drilling. Otherwise, the drilling may not be acceptable for reimbursement to you under the terms of the contract.

Your attention is directed to the provision that Stage II work is contingent on results obtained from Stage I, and performance of the work under Stage II is subject to the prior written approval of the Government.

When work under Stage I has been completed, or sufficiently so to permit evaluation of the results of the work, you must request approval from this office for the work you propose to perform under the next stage. Your request for the work approval must be accomplished, and may consist of a map showing the location and extent of the work completed and the location of the additional work proposed. Also, your request must include an evaluation of the work completed and include along pictures and any other pertinent data which will be of value to the Government in appraising results of the work.

If the work under Stage I is completed to its entirety before requesting approval for work under Stage II, you should anticipate a cooperation of operations between Stage I and II, to enable the Geologist, Geologist and engineer to evaluate results of the work completed and make recommendations to this office relative to the additional work you propose.

To eliminate as much delay to operations as possible, if that is of serious consideration, you should expedite furnishing of the results of the work completed and your request for the Government's approval of the additional work you propose.

No oral statement of any person shall be competent to modify or change the terms of the contract. Field representatives of the Government are not authorized to approve any changes for the work program or contract provisions. Such approval can be given only by the Washington office, NPA, or by the NPA Field Team, Region III.

It is a contract provision that reimbursement for the cost of work accomplished prior to the date of the contract will not be allowed. As is a requirement and incentive that you notify this office in writing the date work actually commenced under the contract. In addition, please advise the name and address of your field representative who will supervise work on the project on a full time basis, as stipulated in the contract.

Very truly yours,

Original signed by
J. W. TOWNSEND

J. W. Townsend
Alternate Acting Executive Officer
NPA Field Team, Region III

JWT:jrl
cc: Chem. Op. Comm. (2)
Finance Office, Reg. III
Accounts File, Reg. III
Hyrdman
NPA/Tucker (Nevada)
Emerick
Corres. File
Townsend
Chron.

AND CHEMICAL
CORPORATION

CHEMICAL DIVISIONS

DMEA
DEPARTMENT OF THE INTERIOR

JUL 9 - 1958
REGION III
DENVER, COLORADO

161 EAST 42ND STREET
NEW YORK 17, N. Y.

July 3, 1958

Mr. E.N. Harshman, Acting Executive Officer
DMEA Field Team, Region III,
224 New Customhouse,
Denver, 2, Colorado.

7/14 C 220 700

Dear Mr. Harshman:

Re: Contract No. Idm-E-1220
DMEA Docket No. 5009

It has been requested that we name a representative to whom you may address official notices and other communications pertaining to subject contract.

We so designate Mr. W.S. Cavander, Box 24 Star Route, Grants, New Mexico, who has charge of our uranium exploration activities in that area.

Very truly yours,

W.N. Williams

W.N. Williams
Vice President

Copies distributed to:
Chm. Op. Comm (2)
Harshman
Emerick
DMEA, Tucson
Cooper
Corres file, Reg III

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
6/27	Ching	700
6/27	Kyrouac	700
"	Chambers	800
6/30	GCS	130
"	Jones	110
"	Chatterton	100
		340
6/30	C	220
		700

JUN 30 1958

Mr. J. W. Townsend
Alternate Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-5009 (Uranium)
Contract No. Idm-K1220
Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico

Dear Mr. Townsend:

Enclosed are the Field Team and Finance Office copies of an executed long-form contract between the Government and Food Machinery and Chemical Corporation. Also enclosed are two copies of the Operator's letter of June 25, an extra copy of the contract, and two extra copies each of Annexes I and II, Exhibit "A," and the map (Figure 3) for the use of the Field Team.

Please refer to our letter of June 24 to the Operator, forwarding the contract for execution, for an explanation of the unusual procedure followed in this case. It is suggested that you issue the Field Team's usual letter of instruction at this point.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (JLB)

Enclosures

APPROVED:

A. D. McMahon (JLB)
Member, Bureau of Mines

Thor H. Kiilsgaard (JLB)
Member, Geological Survey

MChing/izm 6-27-58
cc: Mr. Ching
Admr.'s Reading File
Operating Committee
THKiilsgaard, 5224

8623

FOOD MACHINERY AND CHEMICAL CORPORATION

WESTVACO MINERAL PRODUCTS DIVISION

FILE COPY
DMEA
RECEIVED JUN 26 1958

INITIALS	CODE
6/26 C	220
6/26 B	215
" Ching	700

CHRYSLER BUILDING EAST
161 EAST 42ND STREET
NEW YORK 17, N. Y.

June 25, 1958

ASSISTANT TO THE PRESIDENT

United States Department of the Interior
Defense Minerals Exploration Administration,
Washington, 25, D.C.

Attention: Mr. C.O. Mittendorf, Administrator

Re: DMEA Docket No. 5009

Gentlemen:

Many thanks for your letter of June 24th and for your contract No. Idm-E-1220 submitted with it. We have executed this contract in quintuplicate and four copies are herewith returned in accordance with your instructions.

Also enclosed is a bond in the amount of $11,100. to guarantee performance as agreed.

Your having expedited approval of subject application for assistance is very much appreciated and we trust that the above mentioned enclosures are in order.

Very truly yours,

Henry C. Messman

Henry C. Messman

HCM:al
Encl.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
6/23/58	Ching	700
6/23	Kupsar	700*
6/24	Talbut	880
"	Johnson	110
"	Rutkowski	100
6/24	J.G.	220
		700
6/24	GCL	130
		800*

JUN 24 1958

Mr. W. N. Williams, Vice President
Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
161 East 42nd Street
New York 17, New York

Re: Docket No. DMEA-5009 (Uranium)
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico

6/24 Gilgaard (130)
6/24 Lamb (130)

Dear Mr. Williams:

Enclosed are the original and four copies of a proposed long-form contract between the Government and your corporation, signed by me on behalf of the Government. The contract consists of Form MF-200, Annex I, Annex II, Exhibit "A," and a map (Figure 3).

If the proposed contract meets with your approval, it is ready for execution by your corporation as indicated on the last page of the contract form, provided that a Performance Bond in the amount of $11,100.00 is attached to the contract in lieu of the Consent to Lien and Subordination Agreement of the Santa Fe Pacific Railroad Company, as required under Article 2(c).

You will note from the attached Release of June 6, 1958, that no new DMEA contracts will be approved after June 30, 1958. To be effective, it is imperative that the subject contract be executed, complete with all attachments, by June 30. If mailed by your corporation, the forwarding must be postmarked by midnight June 30.

Our usual procedure is to forward proposed contracts through the Executive Officer of the region in which the property is located. Because of the approaching deadline, we are forwarding the documents to you direct.

After attachment of the Performance Bond and execution of the contract, please return the original and all copies except that marked "Operator" to this office. The usual instructions regarding operating procedures will be forwarded to you later by our Executive Officer in Denver.

MChing/gla 6-23-58
cc to: Admr.'s Reading File
Operating Committee
THKiilsgaard, 5224
Mr. Ching

Sincerely yours,

C. O. Mittendorf (for)

Administrator

Enclosures
DMEA FT, Region III (2)

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON 25, D. C.

JUN 23 1958

Memorandum

To: Administrator, DMEA
Through: Director, Division of Rare and Miscellaneous Metals

From: Associate Solicitor, Division of Mineral Resources

Subject: Docket No. DMEA-5009, Food Machinery and Chemical Corporation

As requested in Mr. Knouse's memorandum dated June 18, 1958, we have prepared the attached contract.

The surety company's performance bond, referred to in Article 2(c) of the contract, is required prior to execution.

Robert P. Dwyer

Attachments

FOOD MACHINERY AND CHEMICAL CORPORATION

WESTVACO MINERAL PRODUCTS DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

ASSISTANT TO THE PRESIDENT

CHRYSLER BUILDING EAST
161 EAST 42ND STREET
NEW YORK 17, N. Y.

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 25 1958

DATE	INITIALS	CODE
6/26	C	220
6/25	Ching	700

June 20, 1958

United States Department of the Interior,
Defense Minerals Exploration Administration,
Washington 25, D. C.

Attention: Mr. Michael Ching

Gentlemen: Re: DMEA Docket 5009

Your recent conversation with Mr. P. H. Groggins has been discussed with our counsel. He points out that our lease does not require actual mining at this time. Neither does it provide for any statement of approval or disapproval by the Santa Fe with respect to exploration, development or mining activities that we may conduct.

In his opinion, this lease does require that we surrender the property if uranium ore in commercial quantities does not appear to be present and that we pursue exploration, development and mining work diligently.

The presence of uranium ore on section twenty-one has been proved. We commenced sinking an inclined shaft on March 3rd, 1958. As of the end of May it had penetrated to a depth of 165 feet and work has continued steadily since that time. We make regular reports to the Santa Fe, as required by our lease, and have no reason to believe that they disapprove of our activities on this property.

Trusting that the above will reassure you concerning the status of subject lease, we take this occasion to express our appreciation for the helpful interest you have taken in our several DMEA projects.

Very truly yours,

H. C. Messman

LBQ

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
6/18/58	Ching	700
6/19	Laduke	700
		225

June 18, 1958

Memorandum

To: The File

From: Michael Ching, Mining Engineer
Division of Rare and Miscellaneous Metals

Subject: Proposed Contract Costs
Docket No. DMEA-5009 (Uranium)
Food Machinery and Chemical Corp.
Westvaco Mineral Products Division
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico

The following costs are based upon those recommended by the field examiners in a report, dated May, 1958. Costs for gamma ray and resistivity logs were modified in accordance with J. W. Townsend's memorandum of June 3, 1958.

The Incidental Allowance was increased from $0.12 to $0.145 per foot by allowing an extra one-half month time factor to cover preliminary work prior to drilling, delays between stages, and the preparation of the final report and accounts. With this increase the figure remains $0.035 per foot less than in Contract Idm-E1167, Docket DMEA-4845. The latter project is in the same neighborhood, and drilling conditions and other factors are very similar to those under the subject project.

Independent Contracts

24,600 feet non-core drilling @ $0.65/ft.	$15,990.00	
24,600 feet probing and logging @ $0.075/ft.	1,845.00	
30 hrs. bulldozing @ $12.00/hr.	360.00	$18,195.00

Incidental Allowance

Engineer-geologist and assistant 2½ mos. @ $1,000/mo.	$2,500.00	
Operating materials and supplies, 2½ mos.	209.90	
Operating equipment, 2½ mos.	150.00	
Miscellaneous	676.20	
Rounded total equivalent to 24,600 ft. @ $0.145/ft.		3,567.00

8623

Other Actual Costs

125 chemical analyses @ $3.50 each	$437.50
Total Cost of the Project (rounded)	$22,200.00

Michael Ching

Michael Ching

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
6/18/58	Ching	700
6/19	Knouse	700
		140

June 18, 1958

Memorandum

SOLICITOR

JUN 19 1958

INTERIOR DEPT.

To: Associate Solicitor
Division of Mineral Resources

From: F. L. Knouse, Acting Director
Division of Rare and Miscellaneous Metals

Subject: Proposed Contract
Docket No. DMEA-5009 (Uranium)
Food Machinery & Chemical Corp.
(Westvaco Mineral Products Division)
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico

Please prepare a long-form contract between the Government and the subject Applicant in accordance with the attached draft.

Attached are eight copies of the map (Figure 3) for use with the contract.

Applicant's representative in Washington has advised us that the mining operations phase of the Uranium Mining Lease and Agreement, dated March 15, 1957, is now in operation for section 21, inasmuch as mining operations are being carried on in the west ½ of the section.

We were also advised that a Performance Bond will be supplied in lieu of a Consent to Lien and Subordination Agreement.

It would be appreciated if special attention is given to the preparation of this contract as we believe that it may be executed before the June 30 deadline.

/s/ F. L. Knouse

F. L. Knouse

MChing/gla
cc to: Mr. Ching

8623

DRAFT
6/18/58
MChing/gla

Docket copy

MF-200
(Revised June 1954)

Docket No. DMEA 5009

Commodity Uranium

Contract No. Idm-E

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

EXPLORATION PROJECT CONTRACT[1]

It is agreed this ..... day of ....., 195...., between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] Food Machinery and Chemical Corporation, a Delaware corporation (Westvaco Mineral Products Division),

whose mailing address is 161 East 42nd Street
New York 17, New York,

hereinafter called the "Operator," as follows:

ARTICLE 1. *This contract* is entered into under the authority of the Defense Production Act of 1950, as amended. It consists of this form (MF-200), the attached Exhibit "A," Annex I, ~~and~~ Annex II, and map (Figure 3)

The Operator shall not transfer or assign this contract or any right thereunder without the written consent of the Government.

ARTICLE 2. *Operator's property rights.*—(a) The land which is the subject of this contract (hereinafter called "the land") is in the State of New Mexico, County of McKinley, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the[4] Lessee of[5] the rights to uranium in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a[6] Lease and Agreement[7] recorded in Book -, page -, official records of said County; and

(2) The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: Interests of Lessor

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] Insert name, and if an organization, its nature (corporation and place of incorporation, partnership with names of partners, etc.).
[3] State on a separate sheet marked "Annex I" the legal description or enough to identify the property, particularly excluding any areas from which the production is not to be subject to the Government's percentage royalty.
[4] Insert "owner," "lessee," "contract purchaser," "locator," etc.
[5] Insert "the entire interest," "the mineral rights," "an undivided one-third," etc.
[6] Insert "deed," "lease," "contract," "location notice," "patent," etc.
[7] If not recorded, so indicate by inserting "un."

of the land (lessor, seller, optionor, etc.), are attached, as follows: **A Performance Bond is attached hereto in lieu of Consent to Lien and Subordination Agreement of Santa Fe Pacific Railroad Company, lessor.**

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 8, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 8(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of **Uranium** The work to be performed is described in Exhibit "A." The Operator on or before **August 15, 1958** shall commence the work, and on or before **November 30, 1958** (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall either have completed the work or shall have incurred allowable costs (see Article 6) in a sum not less than the estimated total allowable cost set forth in Exhibit "A." **See Annex II**

ARTICLE 4. *Performance of the work.*—(a) *Operator's responsibility.*—The work shall be performed with reasonable diligence, efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for liability insurance covering employment; and with suitable and adequate equipment, facilities, materials, supplies, and labor, to bring it to completion within the time fixed.

(b) *Independent contracts.*—To the extent that the allowable costs are estimated in Exhibit "A" with express reference to performance by independent contractors on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations), the work may be so performed; but if the reference in Exhibit "A" to any such independent contract requires the Government's approval thereof, payments under such contract will not be allowable costs unless the Government gives its written approval of the contract. Any such independent contract shall refer to some specific and identifiable part of the work, and shall be subject to all of the pertinent terms and conditions of this exploration contract; but the Government shall not be considered a party thereto, and its rights under this contract, including the right to terminate its contributions, shall not be affected thereby. Regardless of the provisions of any such independent contract and regardless of the Government's approval thereof, the Government will participate in payments to the independent contractor only on account of work performed in accordance with the provisions of this exploration project contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable.

(c) *Government may inspect.*—The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract, and also after a certification of discovery or development to inspect production operations and underground workings. The operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $**22,200.00**
The Government shall contribute **50** percent of the allowable costs as they are incurred in a total sum not in excess of $**11,100.00**: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last

voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work or not in excess of the amount of the Government's contribution to the cost of property which is or may become subject to disposal as provided in Article 9(c), whichever is greater. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 7(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. "Costs incurred" mean costs that have been paid or have become due and payable, or that in the opinion of the Government have become an obligation. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Estimated costs.*—(a) *Categories of costs.*—The allowable costs of the work to which the Government shall contribute are limited to those that are direct, reasonable, necessary, and that are estimated in Exhibit "A" by categories as specified in this article. If any category or subcategory is omitted from the estimate of costs, or if the word "none" is annexed to the listing thereof, costs under such category or subcategory are not allowable. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost, and any excess over the estimated total allowable cost of the work, shall not be allowable. Any excess over the estimate of any category, subcategory, or item, either as to requirement or related cost, not indicated as a maximum shall be allowable within the limit of the estimated total allowable cost of the work. To the extent that excesses over maximums other than the estimated total allowable cost of the work may be necessary for the performance of the work, the Operator shall incur such excesses for his own account without contribution by the Government; but except for any such necessary excesses in categories, subcategories, or items thereunder the Operator is not obligated to incur more than his agreed percentage of the estimated, total allowable cost of the work. **See Annex II**

To the extent specified in this article or in Exhibit "A" the following categories, subcategories, and elements thereof are maximums; but if not so specified either here or in Exhibit "A" they are not maximums, and may be exceeded within the limit of the estimated total allowable cost of the work:

CATEGORY (1)—INDEPENDENT CONTRACTS.—Work to be performed under independent contracts (see Article 4(b)). The estimated total amount of this category and the estimated cost of each unit of work for performance under an independent contract are maximums. **See Annex II**

CATEGORY (2)—PERSONAL SERVICES.

Subcategory (a)—Supervision.—All elements of this subcategory (number of supervisors, periods of employment, rates of pay, and total) are maximums.

Subcategory (b)—Technical services.—All elements of this subcategory (number of technicians, periods of employment, rates of pay, and total) are maximums.

Subcategory (c)—Labor.

CATEGORY (3)—OPERATING MATERIALS AND SUPPLIES.—Includes such items as drill bits and steel, explosives, fuel, pipe, power, small tools costing less than $50 each, timber, track.

CATEGORY (4)—OPERATING EQUIPMENT.

Subcategory (a)—Rental.—The number of each object to be rented [6 mine cars, 1 truck], the rate of rental [$100 per month, $5 per hour], and the total of this subcategory are maximums.

Subcategory (b)—Purchases.—The estimated total of this subcategory is a maximum.

Subcategory (c)—Depreciation.—All elements of this subcategory (time periods, rate of depreciation, and subcategory total) are maximums.

CATEGORY (5)—INITIAL REHABILITATION AND REPAIRS.—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

Subcategory (a)—Initial rehabilitation and repairs of existing buildings, fixtures, and installations (exclusive of mine workings).—The estimated total of this subcategory is a maximum.

Subcategory (b)—Initial rehabilitation and repairs of operating equipment.—The estimated total of this subcategory is a maximum.

CATEGORY (6)—NEW BUILDINGS, FIXTURES, AND INSTALLATIONS (EXCLUSIVE OF MINE WORKINGS).—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

CATEGORY (7)—MISCELLANEOUS.—Repairs and maintenance (other than initial) of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, communications, and any other items of requirement or cost that do not fall within any of the first 6 categories.

THE ESTIMATED TOTAL ALLOWABLE COST of the work is a maximum.

(b) *Nonallowable costs.*—The following costs are not allowable for contribution by the Government:

(1) *Costs of the land,* such as rental, depreciation, depletion, or other cost of acquiring, owning, or holding possession;

(2) *Indirect costs,* such as general overhead, corporate management, interest, taxes (other than payroll and sales taxes), insurance (other than liability insurance covering employment), damages to persons, damages to property (other than necessary repairs or replacements of equipment or other property used in the work);

(3) *Previous work* performed or costs incurred before the date of this contract; and

(4) *Deferred payments.*—Any costs incurred by the Operator under any rental-purchase agreement, installment-purchase agreement, or any agreement for the purchase of goods under the provisions of which payment of the full purchase price is deferred more than 90 days from the delivery of the goods; unless the purchase agreement is approved by the Government in writing.

(c) *Reductions in costs.*—The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original estimated total cost. This provision does not apply to receipts from production which are subject to the Government's percentage royalty under the provisions of Article 9. **See Annex II**

ARTICLE 7. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. If the Government elects to audit said records and accounts relating to the exploration work by certified public accountant, it may do so as a cost of the work to which the Operator shall contribute. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing detailed costs incurred during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and costs incurred for each type of work; and (3) a Narrative Report of the work performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

(c) *Final report.*—Upon completion of the work or termination of the Government's obligation to contribute to costs, the Operator shall furnish the Government with five copies of a final report (in addition to the final progress report and voucher). This final report shall include a geological and engineering evaluation of the results of the work performed under the contract with an estimate of the ore reserves resulting from such work, complete assay data, adequate geological and engineering maps or sketches, and a summary of the work performed and related costs incurred.

(d) *Report of sales.*—The Operator shall provide the Government with suitable accounting and documentary evidence covering all production to which the Government's percentage royalty relates, such as copies of smelter or concentrator settlement sheets, and certified accounts of production and sale or other disposition of production.

(e) *Compliance with requirements.*—If in the opinion of the Government any of the Operator's reports, records, or accounts are insufficient or incomplete, or if the Operator fails to make them, the Government may procure the making or completion of such with suitable attachments as an expense of the work to which the Operator shall contribute. The Government may withhold approval and payment of any vouchers relating to insufficient or incomplete reports, records, or accounts.

ARTICLE 8. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 7) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

(b) *Royalty on production.*—The Operator, as principal if the Operator is the producer, or as surety if the Operator is not the producer, shall pay to the Government a royalty on all minerals mined or produced from the land, as follows: (1) regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first; or (2) if the Government makes a certification of discovery or development, within a period of ten years from the date of the contract, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first. **See Annex II**

(c) *Basis for computation.*—The Government's royalty shall be a percentage of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrates, metal, or equivalent), at the point of delivery (the f. o. b. point); *except,* that charges of *the buyer* arising in the regular course of business, and shown as deductions on the buyer's settlement sheets, on account of the cost of treatment processes performed by *the buyer,* sampling and assaying to determine the value of the production sold, and freight paid by *the buyer* to a carrier (not the Operator), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. Any costs of treatment processes, sampling or assaying, or transportation, performed or paid by the Operator or by anyone other than the buyer, are not deductible in arriving at the "gross proceeds" as that term is here used. The term "treatment processes," as here used, means those processes (such as milling, concentrating, smelting, refining, or equivalent) applied to the crude ore or other production after it is extracted from the ground, to put it into a commercially marketable form; excluding fabricating or manufacturing.

(d) *Unsold production.*—If any production (ore, concentrates, metal, or equivalent), after the lapse of six months from the date the ore was extracted from the ground, remains neither sold nor used by the Operator in integrated manufacturing or fabricating operations (for instance, if it is stockpiled), the Government, at its option, as long as it so remains, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrates, metal, or equivalent) it is in when the Government elects to require computation and payment. If any production is used by the Operator in integrated manufacturing or fabricating operations before the Government makes its election, the Government's royalty on such production shall be computed on the value therof in the form in which and at the time when it is so used. "Value" as here used means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination, or the market value, whichever is greater.

(e) *Percentages of royalty.*—The percentages of the Government's royalty shall be as follows:

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½)

percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

(For instance: the royalty on an amount of five dollars ($5.00) per ton would be one and one-half (1½) percent; on an amount of ten dollars ($10.00) per ton, three and one-half (3½) percent.)

(f) *Time for computation and payment.*—The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be, as above provided in this article.

(g) *Lien for payment.*—To secure the payment of its percentage royalty, there is hereby granted to the Government a lien upon the land or the Operator's interest in the land and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(h) *Notice to purchasers.*—The Operator shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Administrator, Defense Minerals Exploration Administration, or his successor, and his estimate thereof shall be final and binding upon the Operator.

(i) *No obligation to produce.*—Nothing in this contract is to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

(j) *Government not obligated to buy.*—Nothing in this contract shall be construed as imposing any obligation on the Government to purchase any minerals mined or produced from the land.

ARTICLE 9. *Interests in purchased property.*—(a) *Title and ownership.*—All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions, although title thereto shall be taken in the name of the Operator.

(b) *Preservation of property.*—Until the final disposal of any property in which the Government has an interest the Operator shall preserve and protect same for the best interest of the Government, any reasonable and necessary costs thereof to be treated as an allowable cost of the project. After the completion of the work or termination of the Government's obligation to contribute, or when such property is not in use for or needed for the work, the Operator shall neither use it without the written consent of the Government nor without paying a reasonable rental to be fixed by the Government for its interest.

(c) *Disposal of property.*—Upon the completion of the work or termination of the Government's obligation to contribute to costs, or when the property is no longer needed for the work, the Operator shall promptly dispose of salable or salvageable property in which the Government has an interest for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator or the Government at a price at least as high as could be obtained from others, unless the Government in writing waives its interest in any such property. Without advance approval of the sales price by the Government the Operator shall not sell at any price any item of property the cost of which was more than $500, and shall not sell at less than 25 percent of the purchase price any item of property which cost $500 or less. The Government, in lieu of approving the sales price for any such item, may itself purchase the item at the best price which the Operator is able to obtain or himself cares to give. Property remaining upon any termination of the work shall be considered in groups or categories (such as drill steel, or explosives, or pipe, or rails), and if the original cost of the remaining unexpended portion of any such group or category is less than $50, the Government waives its interest therein. If necessary to accomplish the disposal of any item the Operator shall dismantle and sever it from the land, the cost thereof to be treated as a cost of the project.

(d) *Default of the Operator re disposal.*—If within 90 days after the completion of the work or termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, or after such further time as the Government may in writing allow, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may pursue one of the following two courses: (1) the Government, by written notice to the Operator, may place upon such property what in its opinion is a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the

date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; or (2) the Government may enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 10. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon: (1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

(b) If in the opinion of the Government the Operator is in any manner in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon: (1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting. The remedy provided for the Government in this paragraph "(b)" is in addition to any other remedy provided in this contract, and in addition to any other remedy the law may provide for breach of contract.

(c) The giving of any notice by the Government under the provisions of this Article 10 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 11. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 12. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 13. *Changes and added provisions.*—

See Annex II

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By .....

.....
(Operator)

By .....

.....

I, ..., certify that I am the ..... secretary of the corporation named as Operator herein; that ..... who signed this contract on behalf of the Operator, was then ..... of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

.....

[CORPORATE SEAL]

U. S. GOVERNMENT PRINTING OFFICE 16—70617-1

DRAFT
6/18/58
MChing/gla

EXPLORATION PROJECT CONTRACT
FOOD MACHINERY AND CHEMICAL CORPORATION,
(WESTVACO MINERAL PRODUCTS DIVISION)
DOCKET NO. DMEA-5009

ANNEX I

The land referred to in Article 2 of the Contract consists of the E½ sec. 21, T. 13 N., R. 9 W., N.M.P.M.&B., McKinley County, New Mexico.

The land is shown on the map entitled "Figure 3 - Map of Section 21, T. 13 N., R. 9 W., N.M.P.M. Showing the Locations of Previously Drilled Holes and Proposed Locations of Stage I DMEA Holes - - - - - - - ," attached hereto and made a part hereof.

ARTICLE II

(a) That part of the last sentence of Article 3 beginning with the word "either" is deleted and replaced by the words "have completed the work, except as otherwise provided in Exhibit 'A' with respect to stages of work."

(b) That part of the last sentence in the first paragraph of Article 6(a) commencing after the semicolon is deleted.

(c) Categories (2) through (6) of Article 6(a) are deleted.

(d) In addition to the costs of work estimated in Exhibit "A" by categories of actual costs, the costs of work requirements specified in Exhibit "A" as "Fixed Unit Costs" are allowable costs of the project. The Government will contribute to the fixed unit costs as work units are performed. A "Fixed Unit Cost" is an agreed price for each unit of work to be performed regardless of costs incurred by the Operator. Costs set forth in Exhibit "A" include all allowable costs of the work to be performed under the Contract.

(e) In the last sentence of Article 6(e), the words "Article 8" are substituted for the words "Article 9."

(f) Notwithstanding any other provision of the Contract, the allowable unit cost per foot of a drilling item is the average unit cost per foot computed on the basis of all the actual unit costs of said drilling item incurred by the Operator: Provided, That the Government will not contribute to any portion of an average unit cost of a drilling item that exceeds the estimated unit cost of said item set forth in the contract.

~~(g) In Article 8(b), the words "all minerals mined or produced" mean, for the purposes of this Contract, uranium-bearing ore and minerals or products associated therewith.~~

DRAFT
6/18/58
MCbing/gla

EXHIBIT "A"

Description of the Work

General Provisions

The work consists of exploration by non-core drilling to test the Poison Canyon sandstone of the Jurassic Morrison formation for uranium.

Drilling depths are expected to average 200 feet. All drill holes shall completely penetrate the Poison Canyon sandstone but the Operator shall exercise diligence to avoid excessive drilling below the lower Poison Canyon contact.

Samples shall be taken at 2-foot intervals from the top of the Poison Canyon sandstone to the bottom of each hole. Cuttings shall be collected with a Duclone sample collector or equivalent unit of another make, unless wet drilling is necessary, in which case provision shall be made for taking satisfactory sludge samples. All samples shall be checked for radioactivity and those indicating significant mineralization shall be split. One portion shall be analyzed chemically for uranium and another portion shall be properly labeled and stored for the use of the Government. The non-mineralized samples also shall be labeled and stored for inspection by the Government. Any stored samples may be disposed of by the Operator upon approval by the Government.

All cuttings from the drill holes shall be logged geologically. All holes shall be probed radiometrically and gamma ray and resistivity logs graphically recorded. The record of such logging and probing, together with certified copies of all assay certificates, shall be submitted with the Operator's monthly progress reports.

No hole shall be drilled closer than 100 feet to the outer boundaries of the land described in Annex I.

The Government will not contribute to any costs of an incompleted drill hole.

Access roads and drill sites shall be prepared, when required, with a D-6 bulldozer, or an equivalent unit of the same or another make.

The project shall be supervised at all times by a geologist or mining engineer, who shall devote full time to the project work.

The location, direction, inclination, and extent of all project work are subject to the approval of the Government.

The work is divided into two stages as hereinafter described. The Operator shall complete Stage I and shall perform as much of Stage II as the Government approves in writing in advance.

Stage I

Prepare access roads and drill sites as required, and drill approximately 83 holes, aggregating an estimated

16,600 feet, at the locations indicated on the map (Figure 3) referred to in Annex I. The holes shall be drilled in five north-south rows spaced not less than 500 feet apart, with the holes in each row spaced not less than 300 feet apart and staggered with respect to holes in adjoining rows. As indicated on the map, holes are omitted in areas that were previously drilled. If more than 16,600 feet of drilling are required to reach the desired horizon, the additional footage and funds required may, with the written approval of the Government, be transferred and deducted from Stage II.

Stage II

Prepare access roads and drill sites, as required, and drill not more than 40 holes, aggregating not more than 8,000 feet as offsets to previously drilled holes showing favorable mineralization. Offset holes shall be drilled not closer than 100 feet to any previously drilled hole that completely penetrated the Poison Canyon sandstone.

Estimated Cost of the Project

Stage I

Actual Costs

Category (1) Independent Contracts

16,600 feet non-core drilling @ $0.65/ft.	$10,790.00
16,600 feet probing and logging @ $0.075/ft.	1,245.00
20 hrs. bulldozing @ $12.00/hr.	240.00

Categories (2) through (6)
None

Category (7) Miscellaneous

None except:

80 chemical analyses @ $3.50 each ___$280.00___ $12,555.00

Fixed Unit Costs (See Annex II-d)

Incidental allowance 1/ for each foot of hole drilled, 16,600 feet @ $0.145/ft. ___2,407.00___

Estimated Total Cost of Stage I $14,962.00

Stage II

Actual Costs

Category (1) Independent Contracts

8,000 feet non-core drilling @ $0.65/ft. $5,200.00

8,000 feet probing and logging @ $0.075/ft. 600.00

10 hrs. bulldozing @ $12.00/hr. 120.00

Categories (2) through (5)

None

Category (7) Miscellaneous

None except:

45 chemical analyses @ $3.50 each ___157.50___ $6,077.50

Fixed Unit Costs (See Annex II-d)

Incidental allowance 1/ for each foot of hole drilled, 8,000 feet @ $0.145/ft. ___1,160.00___

Estimated Total Cost of Stage II $7,237.50

Summary of Costs

Estimated Total Cost of Stage I	$14,962.00
Estimated Total Cost of Stage II	7,237.50
Estimated Total Cost of the Project (rounded)	$22,200.00
Government participation @ 50%	$11,100.00

1/ Includes all allowable costs of the project under Categories (1) through (7) of Article 6(a) except as otherwise scheduled in Exhibit "A."

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DMEA
IN REPLY REFER TO:
RECEIVED JUN 12 1958

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

June 11, 1958

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of Field Examination Report, DMEA 5009 (Uranium) Food Machinery and Chemical Corporation, S. 21, T. 13 N., R. 9 W., McKinley County, New Mexico

The examining team report that geologic conditions on the applicant's property are favorable for the presence of undiscovered uranium ore deposits. They recommend approval of a DMEA contract that would provide for 24,600 feet of non-core drilling at a total estimated cost of $22,199.

The applicant wishes to do exploration work on the east half of Section 21. Exploration to date on Section 21 consists of 203 holes on the west half and 11 drill holes on the east half. Thirty-eight of the holes on the west half of the section penetrated ore. The past drilling in the section has indicated the presence of at least two ore deposits. Several mines in the Morrison formation in the immediate area are known. These mines have had a total production of 200,997 tons of ore with an average grade of about 0.25 percent U_3O_8. The mines have a total indicated and inferred reserve of over 400,000 tons of ore of like grade. The property is located only 5 to 10 miles from the Ambrosia Lake area with its many millions of tons of indicated ore. Past drilling on the property has shown that the Poison Canyon member is of favorable thickness. The examining team conclude that their proposed exploration drilling project would have a reasonable chance of discovering significant ore reserves. I agree with the findings and recommendations of the examining team. I further agree that gamma-ray and resistivity logging should be used in the project as pointed out by the alternate Acting Executive Officer, DMEA Field Team Region III.

W. P. Williams

W. P. Williams

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Washington 25, D. C.

Date June 10, 1958

DMEA Docket No. 5009
DMEA Contract No.
Commodity Food Machinery and Chemical Corp.
Name of Applicant S. 21, T. 13 N., R. 9 W.
Name of Property McKinley County, New Mexico
Location of property
Estimated cost of project $22,199.50

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee
From: James Paone, Bureau of Mines Member
Uranium Commodity Committee
Subject: Review of Field Team Report
(Application, Field Team Report, etc.)

1. Date of subject document: 5/3/58. 2. Date received by reviewer: 6/5/58

3. Prior reports on this property known to reviewer: Yes ☐ No ☐

4. Prior reports on nearby properties known to reviewer: Yes ☐ No ☐

5. Information available on past production: Yes ☐ No ☐

6. Other pertinent factors known to reviewer: Yes ☐ No ☐

7. Explain items marked 'yes' above:

8. Factors meriting special consideration:

a. Location ☐
b. Ownership ☐
c. Evidence of mineralization ☐
d. Geology ☐
e. Proposed exploration method ☐
f. Alternate exploration method ☐
g. Costs
h. ☐

9. Action advised:

a. Obtain information from applicant ☐
b. Refer to Field Team ☐
c. Denial ☐
d. Agree with Field Team ☒
e. Disagree with Field Team ☐
f. Suggest alternate plan ☐
g. Request another consultation ☐
h. Approval ☒
i. Consult with Mr. _____ at _____

10. Remarks: (Use back of page if necessary)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado
June 3, 1958

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DMEA
RECEIVED JUN 5 1958

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AIR PARCEL POST

Memorandum

To: Secretary to the Operating Committee

From: Alternate Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 5009 (Uranium) Food Machinery and Chemical Corporation (S. 21, T. 13 N., R. 9 W.) McKinley County, New Mexico - Joint Geologic and Engineering Report

ON-SITE EXAM. REPORT

Enclosed are the original and two copies of the Joint Report of Examination on the subject property by F. R. Shawe, USGS, and H. F. Robertson, USBM.

The field examiners conclude that the probability for making a significant discovery is sufficiently promising to justify Government participation. They recommend that the Applicant's work proposal be approved as modified by them, in which the Field Team concurs.

It is noted that the lease included in the Applicant's brochure expired on March 15, 1958, unless the shaft sinking operation on Section 21 qualifies as "conducting mining operations".

Although the examiners recommend only Gamma-ray logging for this project, we believe that they intended to recommend Gamma-ray and resistivity logging; in any event we recommend that both be used on this project.

If you will refer to a letter from Century Geophysical Corporation to Mr. C. O. Mittendorf, dated March 12, 1958, regarding costs of hole probing, you will note that their costs for combined Gamma-ray - resistivity logging in the area of this project (Zone 1, Schedule III attached to the letter) is $7\frac{1}{2}$ cents per foot with one hour of stand by time at no additional cost. We recommend that the cost of 10 cents per foot recommended in the attached report be reduced to $7\frac{1}{2}$ cents per foot as currently charged by Century.

Also enclosed are eight extra copies of Figure 3 for use in the contract.

J. W. Townsend

J. W. Townsend

Reviewed by
DMEA OPERATING COMMITTEE
6-9-58
(date)

MINERAL DEPOSITS
IN REPLY REFER TO:
DMEA
RECEIVED
JUN 2 1958
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

DMEA
DEPARTMENT OF THE INTERIOR
JUN 2 - 1958
REGION III
DENVER, COLORADO

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. Box 360
Grand Junction, Colorado

6/9 JHB 130 220

May 29, 1958

Memorandum

To: Alternate Acting Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman

From: J. William Hasler

Subject: Transmittal of a joint engineering and geologic report of examination on DMEA Docket 5009 (Uranium), Food Machinery and Chemical Corporation, Sec. 21, T. 13 N., R. 9 W., McKinley County, New Mexico.

Enclosed are 10 copies of a joint report of examination on section 21, T. 13 N., R. 9 W., McKinley County, New Mexico, by F. R. Shawe, U.S. Geological Survey, and H. F. Robertson, U. S. Bureau of Mines.

An application for Government assistance on the above mentioned parcel of land by Food Machinery & Chemical Corporation was submitted to the field for an examination and appraisal. The examination was made on May 6, 1958 while an examining team was in the area on other DMEA business, and was accompanied by W. S. Cavender, the applicant's resident geologist.

The applicant applied for aid in exploring the east half of section 21, after having had considerable success in discovering some 3,000 tons of indicated and inferred reserves on the west half of section 21.

Ore deposits in the immediate area are found largely in the "Poison Canyon sandstone" unit of the Brushy Basin member of the Morrison formation of Jurassic age and the chances are good that additional uranium reserves may be found as a result of further exploration work, and it is recommended that the alternate program herein proposed be prepared and included in a DMEA contract.

I concur with the conclusions and recommendations of the examining team.

Reviewed by DMEA OPERATING COMMITTEE 8-5-6 (date)

Enclosed are ten copies of each of 3 figures included in the report of examination as well as 11 additional copies of figure 3, map of section 21, T. 13 N., R. 9 W., showing location of previously drilled holes and proposed locations of Stage I DMEA holes, Westvaco Mineral Products Division, Food Machinery & Chemical Corporation, McKinley County, New Mexico.

The Atomic Energy Commission was consulted relative to the appraisal of the property and memoranda of review from James Paone, U.S.B.M., and W. P. Williams, U.S.G.S., were noted.

J. William Hasler

J. William Hasler,
Geologist

TRANSMITTED
JUN 3 1958

Enclosures

FOR GOVERNMENT USE ONLY

DMEA
6/9 : 246 : 130
220

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

TRANSMITTED

JUN 3 1958

DMEA 5009

FOOD MACHINERY AND CHEMICAL CORPORATION

(WESTVACO MINERALS PRODUCTS DIVISION)

SECTION 21, T. 13 N., R. 9 W.

McKINLEY COUNTY, NEW MEXICO

Uranium

Joint Geologic and Engineering Report

by

F. R. Shawe
U. S. Geological Survey

H. F. Robertson
U. S. Bureau of Mines

May 1958

Reviewed by
DMEA OPERATING COMMITTEE
6-9-58
(date)

DMEA 5009
FOOD MACHINERY AND CHEMICAL CORPORATION
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DMEA 5009
FOOD MACHINERY AND CHEMICAL CORPORATION
(WESTVACO MINERALS PRODUCTS DIVISION)
SECTION 21, T. 13 N., R. 9 W.
McKINLEY COUNTY, NEW MEXICO

INTRODUCTION AND SUMMARY

The Westvaco Mineral Products Division of Food Machinery and Chemical Corporation, 161 East 42nd Street, New York 17, New York, has applied for DMEA assistance to explore for uranium in sec. 21, T. 13 N., R. 9 W., NMPM, McKinley County, New Mexico.

The original proposal called for 128 dry non-core holes averaging 200 feet in depth on a 330-foot grid to explore the east half of section 21. The estimated drilling footage was 28,000 feet and the total cost was $41,244.00.

The property was visited by the Examining Team on May 6, 1958. The applicant was represented by W. S. Cavender, the resident geologist.

The known ore-bearing horizon of the area is the "Poison Canyon sandstone" unit of the Brushy Basin member of the Morrison formation. Previous exploration on the west half of section 21, has resulted in an indicated and inferred reserve of 3,000 tons of ore with a content of 0.20 percent U_3O_8 or more, and 300 tons of ore with a content of 0.55 percent U_3O_8. In the immediate vicinity of section 21, 4 DMEA projects have been completed: sec. 7, DMEA 3939, Contract E-934; sec. 8, DMEA 3632, Contract E-797; sec. 9, DMEA 3943, Contract E-932; sec. 10, DMEA 4017, Contract E-940. An operating project on sec. 17, DMEA 4845, Contract E-1167 has completed all Stage I work. The "Poison Canyon sandstone" was the target in each case. Exploration results in secs. 7, 9, 10, and 17 were negative. On sec. 8, the Colamer Corporation developed ore deposits calculated to contain an indicated 139,982

tons of ore averaging 7.5 feet thick with an average content of 0.178 percent U_3O_8, according to the final DMEA report on the project. Ore reserves in sec. 8 as computed by the A.E.C. differ considerably from the DMEA figures and are given in Table II.

It is concluded that on section 21, the Poison Canyon member is favorable in thickness and within the known belt of mineralization in the area. Even though the frequency of occurrence of ore deposits has been low, and not all deposits found to date have contained minable grade ore in commercial tonnages, nevertheless there appears to be a reasonable chance of finding significant tonnages of ore which, although perhaps not minable now, would represent a future reserve.

A revised drilling plan was agreed on in a conference with the applicant's representative. A two-stage project requiring an estimated 24,600 feet of non-core drilling at a maximum cost of $22,199.50 is recommended for approval. Government participation at 50 percent would be $11,099.75.

ACKNOWLEDGMENTS

The applicant submitted with the application a brief report with map and drilling plan, 3 drilling bids from independent contractors, and a cost estimate. Data from the 5 previous DMEA projects in the immediate area, from Geological Survey and A.E.C. investigations, and from A.E.C. production and reserve records were used.

Memoranda of review from James Paone, U.S.B.M., and W. P. Williams, U.S.G.S., were noted.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The property to be subordinated is the east $\frac{1}{2}$ of section 21, T. 13 N., R. 9 W., NMPM, McKinley County, New Mexico (fig. 1). It is reached by traveling 14.3 miles north on the hard-surfaced New Mexico Highway 53 from its junction with U. S. Highway 66 just west of Grants, New Mexico, a shipping point on the Santa Fe Railroad.

The surface at the property consists of upper Morrison formation rocks with a few Dakota sandstone mesas projecting above the general ground level. Vegetation consists of scrub cedar, pinon pine, and desert grasses. Drill sites will require little preparation.

There is a wide variation in temperature and precipitation with extremes of both heat and cold. The climate is generally arid with violent storms of short duration at any season. Year-round surface operations are usually feasible.

There are no unusual problems of supply, power, or access. Limited ore tonnages can be marketed at the A.E.C. Grants buying station and at several operating mills within a few miles of the project area. Water for drilling is available from the applicant's mine shaft on section 29. Dry, non-core drilling is preferred for exploration purposes insofar as it is feasible if the thickness and relationship of the lithologic units in the section has been determined.

Skilled labor and housing facilities are both in demand. The proposed exploration project would be carried on by a drilling contractor who would furnish operating personnel already based in the Grants area.

HISTORY, PRODUCTION, AND OWNERSHIP

Discovery of uranium in the Grants area dates from 1949 when a party of California geologists noted uranium minerals in the Todilto limestone of Jurassic age. The first discovery of ore in commercial quantities was made by an Indian sheepherder in 1951. Since then exploration has revealed large reserves of uranium ore in the Dakota and Morrison formations as well as the Todilto.

There have been a number of DMEA projects in the Grants area. Of these, 5 are of immediate interest. These are as follows:

Table I

Operator	DMEA No.	Contract No.	Property	Location
Westvaco 1/	3939	E-934	Santa Fe RR lease	Sec. 7,T.13N.,R.9W.
Colamer Corp.	3632	E-797	State claims (located)	Sec. 8,T.13N.,R.9W.
Westvaco 1/	3943	E-932	Santa Fe RR lease	Sec. 9,T.13N.,R.9W.
Colamer Corp.	4017	E-940	Located claims	Sec.10,T.13N.,R.9W.
Westvaco 1/	4845	E-1167	Santa Fe RR lease	Sec.17,T.13N.,R.9W.

1/ Westvaco Mineral Products Division of Food Machinery and Chemical Corporation.

There has been no production to date from any of the properties in Table I. Results of DMEA exploration were negative except on section 8 where an ore body 1,100 feet long by 500 feet wide with an average thickness of 7.5 feet was found in the northwest corner of the section. The calculated reserve in a smaller, minable portion of this ore body, together with production and reserves from other mines in the vicinity are as follows:

Table II.--Production and ore reserves of the Brushy Basin and Westwater Canyon members of the Jurassic Morrison formation in Sections 7, 8, 9, 16, 17, 18, 19, 20, and 21, T. 13 N., R. 9 W., NMPM, McKinley County, New Mexico.

Sec.	No. Deposits	Host Rock	Production 1/		RESERVES Indicated 1/		RESERVES Inferred 1/	
			Tons	Grade	Tons	Grade	Tons	Grade
7	0							
8 2/	1	Westwater			54000	0.22	18000	0.22
9	0							
16	0							
17 3/	1	Brushy Basin			3100	0.15		
18 2/	1	Brushy Basin	4988	0.56	10000	0.40		
19 2/	1	Brushy Basin	150950	0.25	213000	0.23	74000	0.23
20 2/	4	1 Westwater 3 Brushy Basin	75059	0.23	46415	0.32	14383	0.29
21	2	Brushy Basin			300	0.55	3000	0.20
Totals			200,997		326,815		92,383	

1/ In percent U_3O_8

2/ From Production and Reserve file of the A.E.C.

3/ Furnished by the applicant.

The applicant's property rights are vested in a lease, No. S.F.P. 9589, covering section 21, T. 13 N., R. 9 W., granted by the owner, the Santa Fe Pacific Railroad Company. The lease included in the applicant's brochure expired on March 15, 1958 unless the shaft sinking operation on section 21 qualifies as "conducting mining operations". In this event, the lease would not expire until March 15, 1963. The operator has performed previous DMEA exploration under the same type of lease. The Washington office DMEA suggests that the applicant can be expected to furnish, when required, an extension to the exploration period of the Mining Lease and a Performance Bond in lieu of a Consent to Lien.

PRESENT STATUS

Exploration and Development

Exploration to date on section 21 consists of 203 holes in the west half. A total of 38 of the holes penetrated ore (greater than 0.10 percent U_3O_8) and 16 were mineralized (between 0.04 and 0.10 percent U_3O_8). Eleven holes, all essentially barren, were widely distributed over the east half of the section.

As a result of the small ore bodies indicated in the west half of section 21, the applicant has commenced a shaft about the center of the section but, as of June 1, 1958, had not reached the ore horizon.

Mining Equipment and Other Facilities

The applicant has no equipment on the east half of section 21. The proposed exploration would be done by independent contractors furnishing their own equipment and personnel. Facilities such as access roads, field

offices, and housing for personnel are maintained on the nearby section 29 in conjunction with other company activities in the Grants area.

GEOLOGY

General

The general area of section 21, T. 13 N., R. 9 W., is on the northeast flank of the Zuni uplift and the southwest flank of the San Juan Basin. Ambrosia Lake dome, a small structural high on the gently dipping east flank of the Zuni uplift,lies a few miles toward the north. Dips vary, but are generally less than 10 degrees northeasterly. Formations encountered in the uranium mining operations in this area are, from oldest to youngest: Entrada sandstone, Todilto limestone, Summerville formation, Bluff sandstone and Morrison formation of Jurassic age and Dakota sandstone of Cretaceous age. Only the Dakota sandstone crops out on the property. Important uranium deposits are found in the Morrison formation and Todilto limestone and minor deposits are known to occur in the Dakota sandstone.

Stratigraphy

The formations present in mining and exploration operations on sec. 21 are summarized in Table III. Because no uranium-bearing ground is known in

Table III.--Uranium-producing formations and related formations in the vicinity of section 21, T. 13 N., R. 9 W., NMPM, McKinley County, New Mexico.

Age	Formation	Member	Approximate Thickness	Description
Cretaceous	Dakota		50' - 75' (top not present)	Massive, light colored sandstone underlain by black carbonaceous shale; contains small uranium deposits.

Table III (con't.)

Age	Formation	Member	Approximate Thickness	Description
		Brushy Basin	150'	Reddish gray and greenish gray, bentonitic mudstone with sandstone lenses; includes ore-bearing "Poison Canyon" sandstone.
Jurassic	Morrison	Westwater Canyon	80' - 150'	Light colored, arkosic sandstone; crossbedded; contains uranium deposits.
		Recapture	125'	Red and gray mudstone with intercalated, buff orange sandstone lenses.

the Dakota sandstone on the property and the Todilto limestone is considered too deep to be a target horizon in the vicinity, only the Morrison formation is described.

The Morrison formation, in the Grants area, is divided into three members; these members are, from oldest to youngest, the Recapture shale member, the Westwater Canyon sandstone member, and the Brushy Basin member. The Recapture member consists of thin even bedded, fine to coarse sandstone, clayey sandstone and clayey siltstone with a few mudstone lenses. Color ranges from gray through red in the clayey material and is mostly various shades of buff-orange in the cleaner, more pure sandstones.

The Westwater Canyon sandstone is a coarse, massive, arkosic sandstone that is light grayish red to light brown and various shades of buff-orange. Low angle, broadly sweeping crossbeds are prominent. Scour and fill structures are common throughout, and the contact with the underlying Recapture member is gently undulating where the sandstone fills shallow scours in the underlying Recapture member.

The Westwater Canyon sandstone is the principal uranium ore-bearing unit in the Grants-Ambrosia Lake area, however in the immediate area of section 21, testing the Westwater Canyon under the 5 previous DMEA programs was unsuccessful and therefore this unit is not considered a target horizon on the subject property.

The Brushy Basin member consists of light greenish-gray to dark red-gray bentonic mudstone and silty mudstone with interlayered coarse sandstone. Both mudstone and silty mudstone are often mottled, and the sandstone is usually buff-orange. In a few places the sandstone is conglomeratic. One thick sandstone bed near the base of the member, locally called the "Poison Canyon sandstone", is the principal ore-bearing bed in the Brushy Basin member and is the ore-bearing horizon of section 21. It reaches a maximum thickness of about 70 feet and averages 55 feet on the subject property. This "Poison Canyon sandstone" of the Brushy Basin member and the underlying Westwater Canyon sandstone member are nearly the same lithologically and are known to coalesce. However, about 20 feet of Brushy Basin shale lies between them on section 21. There apparently is no break in sedimentation between the Brushy Basin and Westwater Canyon members, and the "Poison Canyon sandstone" could well be referred to as a tongue of the Westwater Canyon sandstone; the lower Brushy Basin and upper Westwater Canyon being in part contemporaneous.

Structure

The structure in the immediate area is relatively simple. The rocks have an average dip of about 5° toward the northeast, forming the northeast flank of the Zuni uplift and the southwest flank of the San Juan Basin. Gentle warps superimposed upon this homocline cause dips as high as 10°; flat-lying beds may be seen in a few places. Drilling and mining operations

in surrounding sections have disclosed the presence of several small shear zones, but no pattern to this faulting is known and the shears do not seem to have any bearing upon the position of an ore deposit. The principal fault on the property is the southern extension of the San Mateo fault which crosses the southeast part of the area. Drag along this fault has also caused dips to steepen--as much as 20° in a few places.

ORE DEPOSITS

Two occurrences of ore grade material are known on section 21. Prior drilling in the W½ of the section has indicated one deposit containing 300 tons of 0.55 percent U_3O_8 and another deposit of about 3,000 tons of 0.20 percent U_3O_8. In addition to these deposits, 16 of the holes drilled by the company have penetrated mineralized ground (0.05-0.15 percent U_3O_8). (See figure 3)

Several mines in the Morrison formation in the immediate area are known (see table II and fig. 3). These mines have had a total production of 200,997 tons of ore with an average grade of about 0.25 percent U_3O_8 and have a total indicated and inferred reserve of over 400,000 tons of ore of like grade. Five to ten miles northerly is the Ambrosia Lake area with its many millions of tons of indicated ore. Although many Todilto ore deposits have been mined in this general vicinity, no production or reserve figures will be quoted here as the Todilto formation is not considered as a part of this application.

The ore deposits in this area, where found at the depth presumed for the lower Brushy Basin member are of the coffinite type. It may occur at almost any stratigraphic position within the sandstone but seems to be found usually about midway between the top and the bottom of the sandstone. The

host rock surrounding ore deposits in the "Poison Canyon sandstone" is bleached to light gray. However, these bleached areas are very large and cannot be used to determine the presence or absence of ore deposits on the subject property; private company drilling has indicated that probably all of section 21 is underlain by this bleached zone. Thicker and coarser portions of the sandstone contain most of the ore, however, some good ore deposits have been found in thinner and less coarse portions. No positive correlation between the localization of ore and thickness and/or grain size of the sandstone host rock is apparent. Carbon is abundant in and close to ore deposits. Ore is found both as large tabular bodies and as clusters of small discontinuous lenses; deposits ranging in size from 5,000 to almost 500,000 tons may be discovered.

Because the presence of ore or significant mineralization is the only criterion for finding ore in this immediate area, a moderately close-spaced (300' x 500') drilling pattern is required.

An east trending ore-bearing "zone" is suggested by the areal relationships of deposits in sections 20 and 21. This "zone" includes the Holly Mesa Top mine and the small deposits in the W½ of section 21 and may project into the central part of the area considered in this report of examination.

MINABLE ORE RESERVES

In the W½ of section 21, the following ore reserves based on the applicant's data has been calculated:

300 tons with a content of 0.55 percent or more U_3O_8

2,000 tons with a content of 0.20 percent U_3O_8.

The applicant is now sinking an incline on the 300-ton ore body and plans to mine the larger deposit at some future date.

PROJECT PROPOSALS WITH COSTS

The applicant proposed a drilling project in one stage requiring an estimated 28,000 feet of non-core rotary drilling in 128 holes on a 330-foot grid, not utilizing previously drilled holes in the pattern. The cost of the proposed exploration was estimated at $41,244.00. Government participation at 50 percent would have been $20,622.00.

Core drilling in the area has not proven to be successful because of very poor core recovery. In fact, one DMEA project which provided for core drilling was later changed to non-core drilling, and adequate information was obtained from the work. Two previous DMEA contracts in the immediate area provided for three stages of drilling. In contract Idm-E 797, Stage I consisted of drilling on a 400- by 800-foot pattern followed by a 200-foot by 400-foot pattern in a second stage. Stage III consisted of a 100- by 200-foot pattern in favorable ground as established in Stages I and II. In contract Idm-E 940, two north-south rows of holes 4,000 feet apart spaced on 400-foot centers in each row were provided in Stage I to evaluate the "Poison Canyon sandstone". Stage II consisted of intermediate north-south rows 800 feet apart with spacing within a row of 400 feet, confined to favorable ground established in Stage I. Stage III consisted of offset holes on 100-foot centers around previously drilled holes which penetrated significant mineralization.

Previous company drilling in the W½ of section 21 has indicated the possible presence of ore deposits. In addition, a few scattered holes have been drilled on the E½ of the section which can be utilized in a drill pattern. It has been determined that the Poison Canyon member is of favorable thickness.

It remains to be determined whether significant mineralization occurs in the unexplored portions of the area. There does not appear to be justification for the density of drilling proposed by the applicant. The minimum target size which is believed to be worthwhile exploring is 400 feet by 600 feet, the size of the deposits in the W½, including the non-commercial low grade material surrounding minable ore. The deposit found in sec. 8, including low grade mineralization, has dimensions of approximately 500 feet by 1,100 feet. The revised drilling plan in the present proposal calls for a first stage with a pattern of holes spaced 300 feet apart north-south on rows 500 feet apart; holes to be staggered on alternate rows. Completion of this work would establish the presence or absence of individual deposits with minimum dimensions of 400 feet by 600 feet. While the minable portions of deposits may not be large enough to insure being spotted by such a drilling pattern, there is a good probability that the mineralized areas, if present, are large enough so that some evidence of them would be obtained through penetration of low-grade mineralization at least.

The applicant proposed that 20 holes should be drilled through the underlying Westwater member. The DMEA drilling in sections 7, 8, 9, 10 and 17 that penetrated the Westwater Canyon was unsuccessful (the section 8 deposit is placed in the "Poison Canyon sandstone" by DMEA geologists and placed in the Westwater Canyon sandstone by A.E.C. geologists. See table II); and the DMEA examining team does not believe that this unit warrants testing on the subject property. "Poison Canyon" deposits are more numerous in the area of the subject property than are Westwater Canyon deposits, and for this reason the examining team believes the probability of finding ore in the higher horizon is greater than in the lower horizon.

Stage I, then, in the revised proposal, consists of 83 holes as shown in figure 3. The average depth of the holes to penetrate the Poison Canyon member is estimated at 200 feet, for a total of 16,600 feet of non-core drilling.

Stage II provides for a maximum of 40 holes offsetting Stage I holes that penetrate significant mineralization; Stage II holes are not to be drilled less than 100 feet from any previously drilled hole. The second stage will require a maximum of 8,000 feet of non-core drilling.

Estimated Cost of Applicant's Proposal

The brochure included three drilling bids on the proposed project. The bids are shown below:

Clyde L. Jones Drilling Company		
Non-core drilling	0-400 feet	$0.65 per foot
Stewart Bros. & Parker Drilling Company		
Non-core drilling	0-400 feet	$0.70 per foot
C. C. Smith Drilling Company		
Non-core drilling	0-400 feet	$0.75 per foot

The applicant's cost estimate utilized the bid of $0.70 per foot by Stewart Bros. & Parker, although it was not the lowest bid received.

In comparison to normal costs for the proposed exploration program, consisting of 128 holes totaling 28,000 feet of non-core drilling, to be completed in an estimated two months, the applicant's estimate is rather excessive for most items as evident from the following summary.

Item	Unit Cost/ft.	Amount
Contract drilling	$0.700	$19,600.00
Site preparation	0.008	224.00
Probing	0.016	448.00
Core boxes, sample sacks, etc.	0.015	420.00
Salaries	0.245	6,860.00
Living costs	0.080	2,240.00
Labor	0.008	224.00
Office rental	0.020	560.00
Car rental	0.031	868.00
Car repairs	0.015	420.00
Gas and oil	0.031	868.00
Office supplies	0.081	2,268.00
Telephone and telegraph	0.018	504.00
Bookkeeping, clerical, etc.	0.031	868.00
Mapping	0.026	728.00
Drafting and Printing	0.014	392.00
Contingencies	0.134	3,752.00
Totals	$1.473	$41,244.00

Estimated Cost of Examiner's Proposal

The estimated cost of the two-stage program recommended by the examiners, is based on the lowest drilling bid, $0.65 per foot, submitted by the Clyde L. Jones Drilling Company. Two of the rotary type drill rigs should be used, each rig capable of completing an average of 250 feet of hole per day. Assuming that the drills will operate 25 days per month, the drilling should progress at a rate of about 12,500 feet per month. An estimated 2 months, including preliminary work and evaluation between stages should be sufficient to complete the project.

The estimated cost of the recommended project is shown below. Some revisions have been made in unit costs where the applicant's estimate was excessive.

(1) Independent Contracts:

Drilling, non-core 24,600 feet at $0.65/ft.	$15,990.00	
Bulldozing, Caterpillar D-6 or equiv. 30 hours at $12.00/hr.	360.00	
Logging, gamma-ray 24,600 feet at $0.10/ft.	2,460.00	
Total independent contracts		$18,810.00

(2) Supervision and Technical Services:

1 supervising engineer-geologist 2 months at $600/month	$ 1,200.00	1500
1 assistant 2 months at $400/month	800.00	1000
Total supervision and technical services		$ 2,000.00

(3) Operating Materials and Supplies:

Office and field supplies (including fuel and repairs on vehicles) 2 months at $75.00/mo.	$ 150.00	187.50
Sample sacks (paper) 2,000 at $11.20/thousand	22.40	22.40
Total operating materials and supplies		$ 172.40

(4) Operating Equipment:

Depreciation-2 vehicles valued at $1,800 each, depreciated on 60 mo. basis-2 mos. at $30/mo./vehicle	$ 120.00	150.00
Total operating equipment		$ 120.00

(5) and (6) Rehabilitation, Repairs, New Buildings, etc.

None

(7) Miscellaneous:

Direct accounting costs 2 months at $50/mo.	$ 100.00	125.00
Payroll taxes and insurance at 7 percent of $2,000.00	140.00	175.00
New Mexico school tax at 2 percent of $18,810.00	376.20	376.20
Chemical assays, 125 samples analyzed for U_3O_8 at $3.50/sample	437.50	
Total miscellaneous		$ 1,053.70

Total estimated cost of Project		$22,156.10
Overall cost per foot of drilling	$\frac{\$22,156.10}{24,600 \text{ ft.}}$ =	$ 0.90
Incidental allowance (all costs less independent contracts and chemical assays) 3534.10 per foot	$\frac{\$2,908.60}{24,600 \text{ ft.}}$ =	$ 0.12

Summary of Costs Suggested for Contract Use

Stage I - 83 holes - Estimated time for completion - $1\frac{1}{4}$ months

Actual Cost Items:

Drilling, non-core 16,600 feet at $0.65/ft.	$10,790.00	
Logging (gamma-ray) 16,600 feet at $0.10/ft.	1,660.00	
Bulldozing, Caterpillar D-6 or equiv. 20 hours at $12.00/hr.	240.00	
Total actual cost items, Stage I		$12,690.00

Fixed Unit Cost Items:

Chemical assays for U_3O_8 80 samples at $3.50 each	$ 280.00	
Incidental allowance 16,600 feet at $0.12/ft.	1,992.00	
Total fixed unit cost items, Stage I		$ 2,272.00
Total Stage I		$14,962.00

Stage II - 40 holes - Estimated time for completion - 3/4 month

Actual Cost Items:

Drilling, non-core 8,000 feet at $0.65/ft.	$ 5,200.00	
Logging (gamma-ray) 8,000 feet at $0.10/ft.	800.00	
Bulldozing, Caterpillar D-6 or equiv. 10 hours at $12.00/hr.	120.00	
Total actual cost items, Stage II		$ 6,120.00

Fixed Unit Cost Items:

Chemical assays for U_3O_8 45 samples at $3.50 each	$ 157.50	
Incidental allowance 8,000 feet at $0.12/ft.	960.00	
Total fixed unit cost items, Stage II		$ 1,117.50
Total Stage II		$ 7,237.50
Total for Project		$22,199.50
Government participation at 50 percent		$11,099.75

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that there is a reasonable probability of discovering significant ore reserves (containing thousands of tons of ore averaging 0.20 percent U_3O_8 or more) on section 21. A drilling program as outlined in this report is recommended for approval at an estimated maximum cost of $22,199.50. Government participation at 50 percent would be $11,099.75.

The usual provisions governing operation should be incorporated. Inasmuch as no drill core is to be obtained, graphically-recorded probing logs should be required, and samples of cuttings representing not more than 5-foot intervals should be taken for radiometric and visual examination. Portions of cutting samples which show radioactivity should be preserved and assayed for comparison with probing results. Chief reliance for evaluation of holes is placed, however, on probing. For this reason, provision is made in the cost estimate for radiometric probing of the drill holes by a commercial gamma-ray logging company.

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
MAY 1958
DOCKET 5009

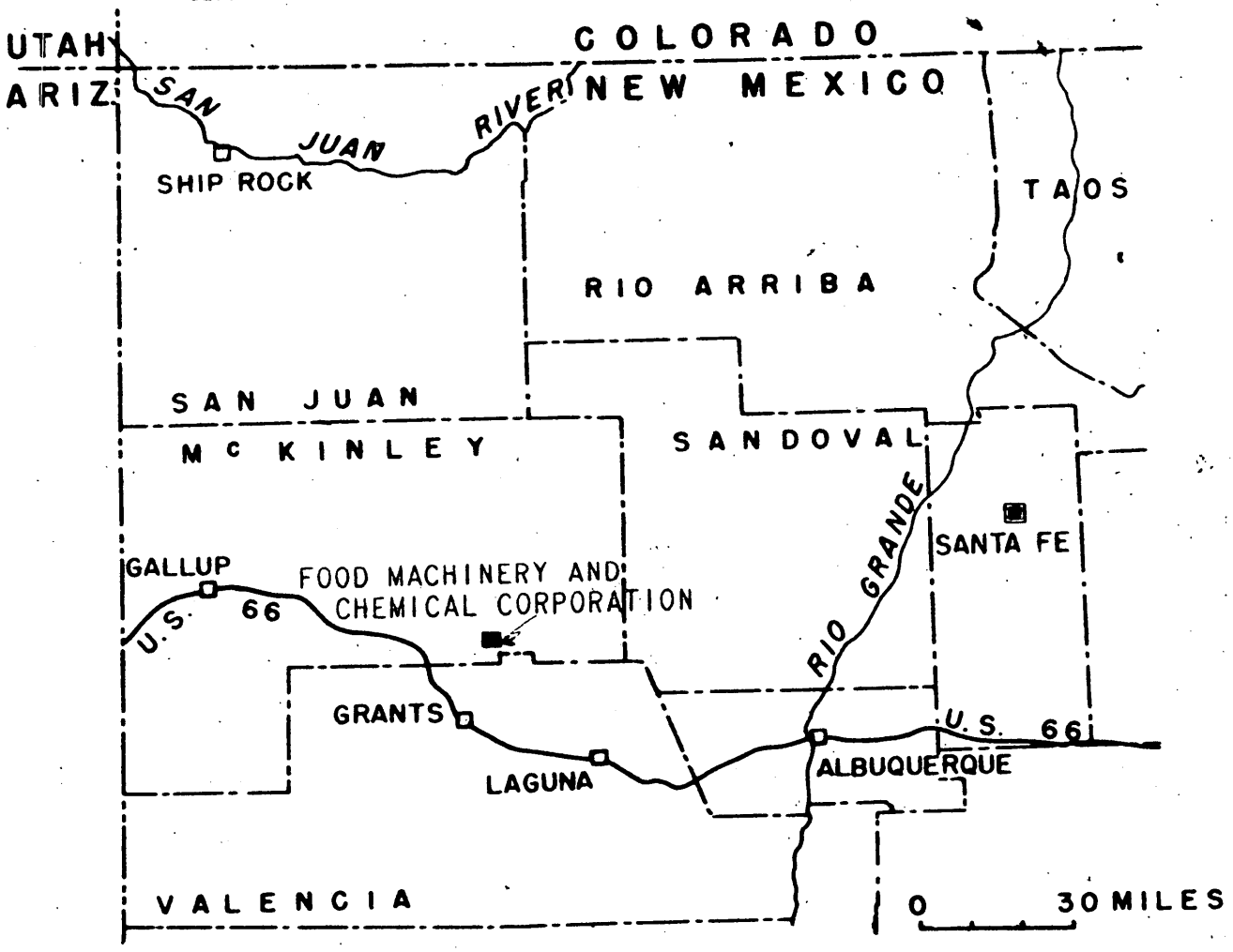


Figure 1.--INDEX MAP OF NORTHWEST NEW MEXICO SHOWING THE LOCATION OF SECTION 21, T.13 N., R.9 W., N.M.P.M., WESTVACO MINERAL PRODUCTS DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, McKINLEY COUNTY, NEW MEXICO.

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
MAY 1958
DOCKET 5009

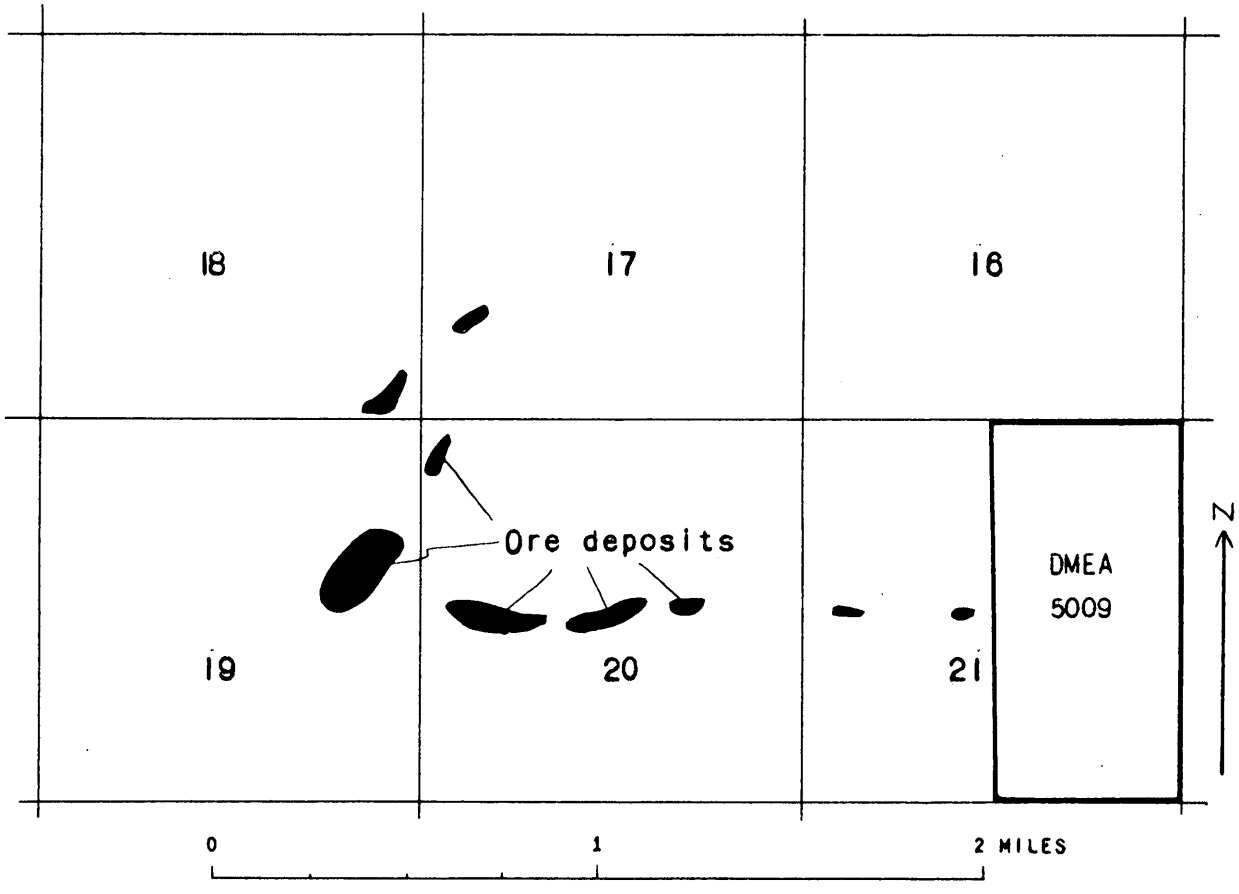


FIGURE 2.--SKETCH MAP OF PART OF T.13 N., R.9 W., N.M.P.M., SHOWING THE LOCATIONS OF KNOWN ORE DEPOSITS, WESTVACO MINERAL PRODUCTS DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, McKINLEY COUNTY, NEW MEXICO.

OFFICIAL FILE COPY
O M E A
RECEIVED JUN 5 1958

DATE	INITIALS	CODE

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 22 1958

DATE	INITIALS	CODE
5/22	C	220
"	AC	700

25th Year Anniversary
Denver Ex Schedule
May 20, 1958

Memorandum

To: J. W. Butler w/enclosures 1-4
M. E. Salisbury w/enclosures 1-5

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 1009 (Uranium) Paul Hockney and Personal Corporation, Defunct Mineral Products Division (S ½ S. 22, T. 11 N., R. 9 W.) McKinley County, New Mexico

For your information, enclosed are the following:

1. Memorandum of Review of the application by Jaime Fuenz, DMEA.

2. Memorandum of Review of the application by F. F. Williams, DMEA.

3. Letter of transmittal of the foregoing from the Chairman, Operating Committee.

4. Routing control sheet.

5. Copy of the application.

Original signed by
E. N. HARSHMAN

E. N. Harshman

Enclosures

cc: Exec. Sp. Asst. 2
Manager
DMEA/DFS
Docket
Chron.

FOOD MACHINERY AND CHEMICAL CORPORATION

WESTVACO MINERAL PRODUCTS DIVISION

CHRYSLER BUILDING EAST
161 EAST 42ND STREET
NEW YORK

CABLE "CAUSTIC" NEW YORK
TELEPHONE MURRAY HILL 7-7400

May 20, 1958

Office of the Director
DMEA
RECEIVED MAY 21 1958

DATE	INITIALS	CODE
5/21		226
5/22		760

Mr. E.N. Harshman,
Acting Executive Officer,
DMEA Field Team, Region III,
224 New Customhouse Building,
Denver 2, Colorado.

Re: Docket No. DMEA 5009
Docket No. DMEA 5010

Dear Mr. Harshman:

Replying to your inquiry of May 16th, we plan to furnish Performance Bonds in lieu of owner's Consent to Lien and Subordination Agreements, in event the Government contracts with us to participate in the exploration described by subject dockets.

No doubt we should have included statements along this line with our applications, and we appreciate your having written us about them.

Very truly yours,

H.C. Mossman

HCM:al

cc: Defense Minerals Exploration Administration,
U.S. Department of the Interior,
Washington 25, D.C.
Attention: Mr. C.O. Mittendorf, Administrator

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 19 1958
DATE
5-19
11 C
230
700

20th New Customhouse
Denver 2, Colorado
May 16, 1958

Mr. H. C. Meesman
Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
161 East 42nd Street
New York 17, New York

Re: Docket No. DMEA 5009
Docket No. DMEA 5010

Dear Mr. Meesman:

Your company has had several DMEA contracts to date and in all cases Performance Bonds were submitted in lieu of owner's Consent to Lien and Subordination Agreements. Should the Government agree to participate with you in the mentioned dockets, we assume you will furnish Performance Bonds in lieu of Consent to Lien and Subordination Agreements. Will you please advise.

Very truly yours,

Original signed by
E. N. HARSHMAN

E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III

ENH:dp

cc: Chm. Op. Comm. &
Harshman
Healey
Salisbury
Docket 5009
Docket 5010
Chron.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/15	Ching	700
5/15	Ellis	700
5/16	GCS	130
"	Shaw	110
"	Hartenden	100
		360
5/19	C	220
		700

Mr. E. M. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

MAY 16 1958

Re: Docket No. DMEA-5009 (Uranium)
Food Machinery and Chemical Corporation
Westvaco Mineral Products Division
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico

Dear Mr. Harshman:

The subject application is being referred to you for investigation, a field examination if warranted, and recommendations.

Enclosed for your information are memoranda, dated May 13, 1958, by James Paone, USBM, and W. P. Williams, USGS, relating to the application. Also enclosed is a copy of the application for the use of the Field Team.

As in former applications, we can expect the Applicant to furnish, when required, an extension to the exploration period of the Mining Lease and a Performance Bond in lieu of a Consent to Lien.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (24B)

Enclosures
APPROVED:

Frank D. Lamb (24B)
Member, Bureau of Mines

Thor H. Kiilsgaard (24B)
Member, Geological Survey

MChing/izm 5-15-58
cc: Mr. Ching
Admr.'s Reading File
Operating Committee
THKiilsgaard, 5224

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/15	Ching	700
"	Ellis	700
5/16	Selfridge	130
"	[illegible]	110
	Mittendorf	100
5/16	Lamb	130
5/16	Selfridge	130
		220
		700

Mr. William N. Williams, Vice President
Food Machinery and Chemical Corporation
(Westvaco Mineral Products Division)
161 East 42nd Street
New York 17, New York

MAY 16 1958

Re: Docket No. DMEA-5009 (Uranium)
E½ Sec. 21, T. 13 N., R. 9 W.
McKinley County, New Mexico

Dear Mr. Williams:

The application for assistance in exploring your property, under the captioned docket number, has been reviewed by the Division of Rare and Miscellaneous Metals of the Defense Minerals Exploration Administration. It has been referred to:

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

The Regional Office will contact you in regard to your project if additional information is required.

Sincerely yours,

C. O. Mittendorf

Administrator

MChing/izm 5-15-58
cc: Mr. Ching
Admr.'s Reading File
DMEA FT Reg. 3 (2)

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/16	Dakan	200
5/15	C	225
1:1	MC	700

MAY 15 1958

Food Machinery and Chemical Corporation
Chrysler Building East
161 East 42nd Street
New York 17, New York

Attention: Mr. H. C. Messman

Dear Sir:

Thank you for calling our attention to the ambiguity in our acknowledgment letter of May 12th.

Docket No. 5009 is assigned to the application covering exploration on parts of Section 21 and Docket No. 5010 applies to the application for work in Section 29.

Sincerely yours,

Allen S. Dakan, Director
Operations Control and
Statistics Division

ASDakan:kb - May 14, 1958

Copy to: Admin. Reading File

Chron.

8623

FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION

WESTVACO MINERAL PRODUCTS DIVISION

3/14	C	220

CHRYSLER BUILDING EAST
161 EAST 42ND STREET
NEW YORK 17, N. Y.

ASSISTANT TO THE PRESIDENT

May 13, 1958

Defense Minerals Exploration Administration,
U.S. Department of the Interior,
Washington, 25, D.C.

Attention: Operations, Control and Statistics Division

Gentlemen:

cont 1/2 Sec 21

Ref: DMEA 5009 and 5010

Many thanks for your letters dated May 12th, reporting assignment of subject docket numbers. We are unable to determine which of these numbers applies to our application covering a portion of section 21 and which to the application on part of section 29 (both in Twp. 13N., R. 9W, NMM, McKinley County, New Mexico).

It will be very much appreciated if you can clarify these designations for us.

Very truly yours,

H.C. Messman

HCM:al

cc: Executive Officer, Region III
Defense Minerals Exploration Administration,
224 New Customhouse,
Denver, 2, Colo.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

IN REPLY REFER TO:

DMEA
RECEIVED MAY 14 1958

DATE	INITIAL	CODE
5/14	C	220
"	EWE	700
	MC	

May 13, 1958

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of application, DMEA 5009 (Uranium) Food Machinery and Chemical Corporation, East ½ Sec. 21 T.13 N.R. 9 W., McKinley County, New Mexico

The applicant proposes to explore for uranium ore deposits on a half-section of land located on the south rim of the Ambrosia Lake Basin. The applicant proposes a drilling program consisting of a total of 128 holes for a total of 28,000 feet of drilling. Total estimated cost of the project is $41,244.00.

The objective of the proposed drilling project would be to seek for ore deposits in the Poison Canyon and Westwater Canyon members of the Morrison formation. Significant ore deposits have been found in the general vicinity on neighboring sections of land in the Poison Canyon sandstone. Only minor amounts of drilling have penetrated through the Westwater member; thus the Westwater may not so far have been properly evaluated. The proposed drilling is limited to the east half of the section. Mineralization has been found in the west half of the same section.

The applicant proposes to arrange his drill holes on a straight grid pattern. Drilling footage might be saved if holes could be grouped in favorable areas.

I recommend that the application be referred to the Field Team for further analysis and report.

W. P. Williams

W. P. Williams

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 14 1958

DATE	INITIALS	CODE
5/14	C	220
"	EWE	700
	MC	

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Washington 25, D. C.

Date May 13, 1958

DMEA Docket No. 5009
DMEA Contract No.
Commodity Uranium
Name of Applicant Food Machinery & Chemical Corp.
Name of property
Location of property McKinley County, N. Mex.
Estimated cost of project $41,244.00

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: James Paone, Bureau of Mines Member JP
Uranium Commodity Committee

Subject: Review of Application
(Application, Field Team Report, etc.)

1. Date of subject document: 5/7/58. 2. Date received by reviewer: 5/12/58

3. Prior reports on this property known to reviewer: Yes ☐ No ☒

4. Prior reports on nearby properties known to reviewer: Yes ☒ No ☐

5. Information available on past production: Yes ☐ No ☒

6. Other pertinent factors known to reviewer: Yes ☐ No ☒

7. Explain items marked 'yes' above:

DMEA Docket 3989, Idm-E933

8. Factors needing special consideration:
a. Location ☐
b. Ownership ☐
c. Evidence of mineralization ☐
d. Geology ☐
e. Proposed exploration method ☐
f. Alternate exploration method ☐
g. Costs
h. ☐

9. Action advised:
a. Obtain information from applicant ☐
b. Refer to Field Team ☒
c. Denial ☐
d. Agree with Field Team ☐
e. Disagree with Field Team ☐
f. Suggest alternate plan ☐
g. Request another coordination ☐
h. Approval ☐
i. Consult with Mr. _____ at _____ AEC office.

10. Remarks: (Use back of page if necessary) Possibility of combining subject application with DMEA-5010 should be considered.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

May 8, 1958

Food Machinery & Chemical Corporation
(Westvaco Mineral Products Division)
161 East 42nd Street
New York 17, New York

Subject: DMRA-5009

Gentlemen:

Your application for exploration assistance, dated May 2, 1958 submitted to our office at Denver, Colorado has been assigned Docket Number DMRA-5009 and referred to the Rare and Miscellaneous Metals Division in the Washington office. Kindly identify all future correspondence relating to your application by this Docket Number.

Sincerely yours,

Allen S. Dakan, Director
Operations Control and
Statistics Division

Copy to: Region III.

ORIGINAL FILE COPY
D.M.E.A.
RECEIVED MAY 9 1958

DATE	INITIALS	CODE
5/9	C	220
	~~EWL~~	700
	ehm	

224 New Customhouse
Denver 2, Colorado
May 7, 1958

Memorandum

To: J. W. Hasler

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Uranium) Food Machinery and Chemical Company (Bg, S. 21, T. 13 N., R. 9 W.) McKinley County, New Mexico

Enclosed is a copy of a map showing the location of the Applicant's proposed DMEA holes on the subject property. Will you please place this map with your copy of the application.

Original signed by
E. N. HARSHMAN

E. N. Harshman

HNC:dp

cc: Sec. Op. Comm. (2)
Harshman
DMEA/DPG
Salsbury
Docket
Chron.

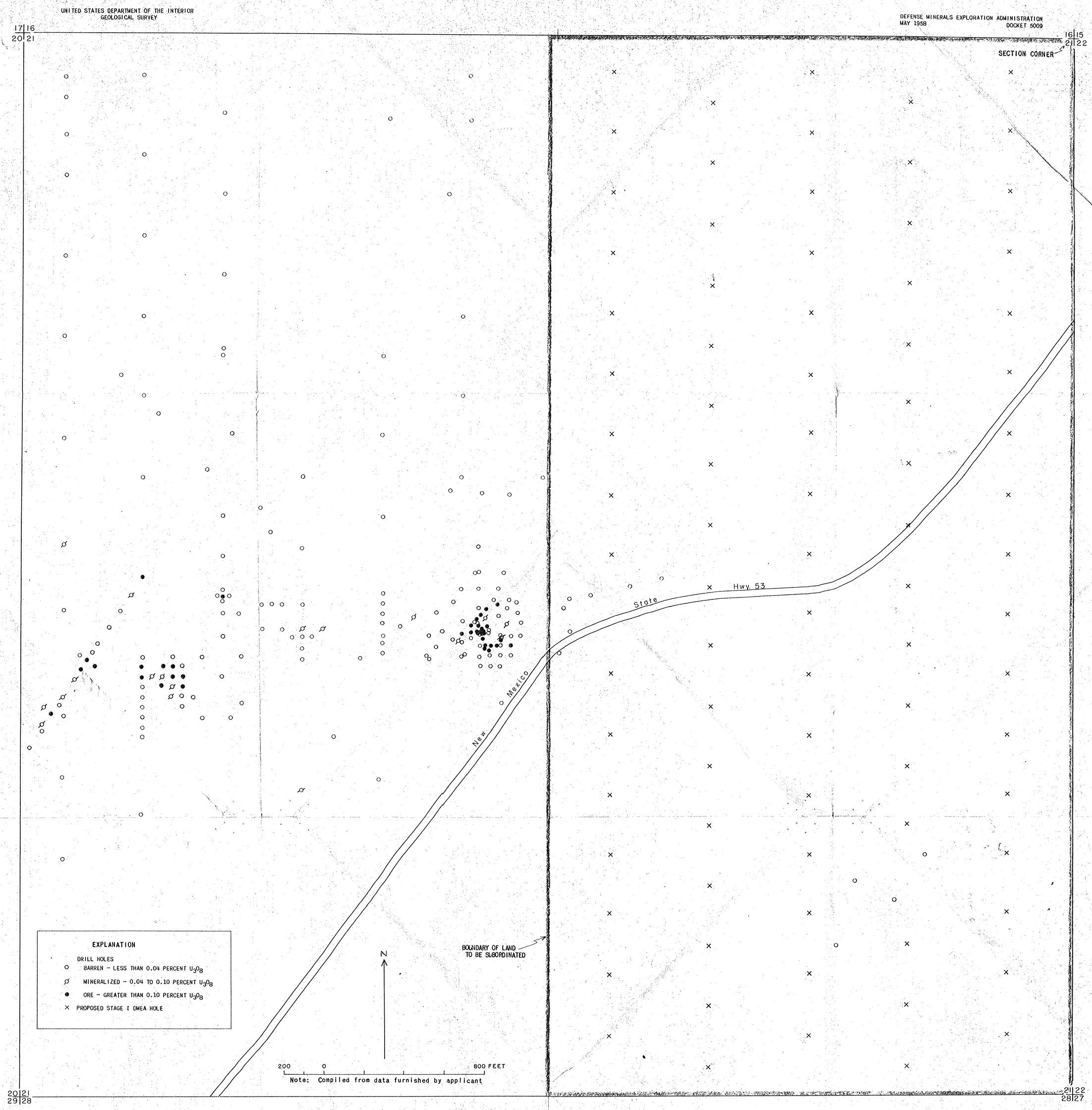
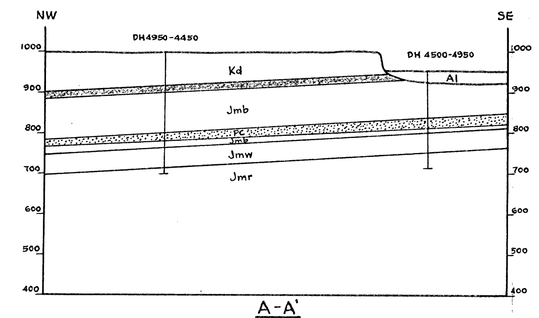
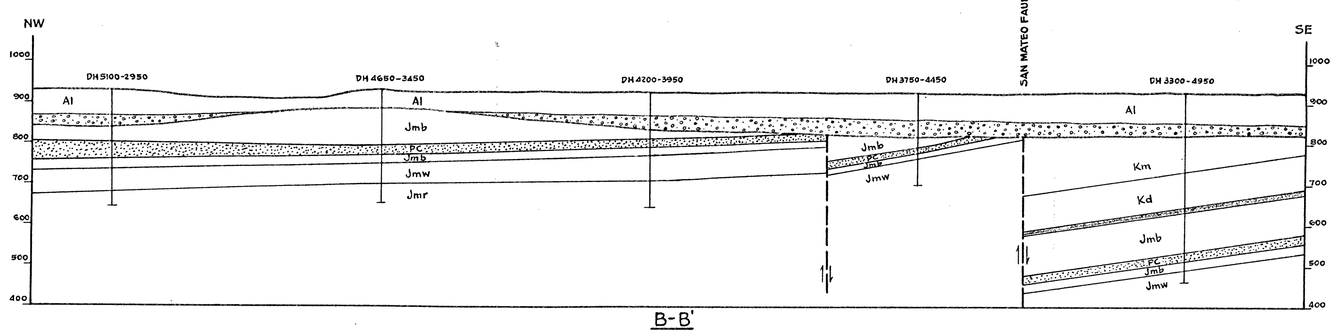
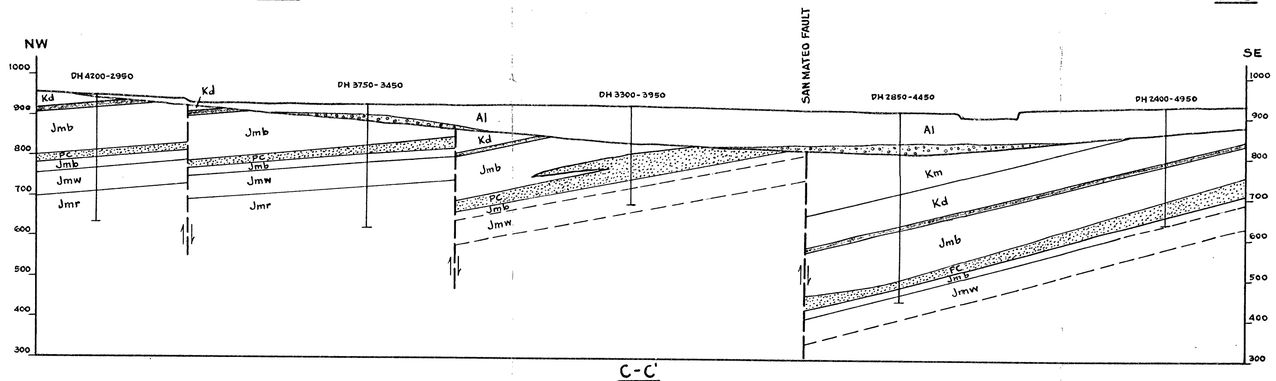
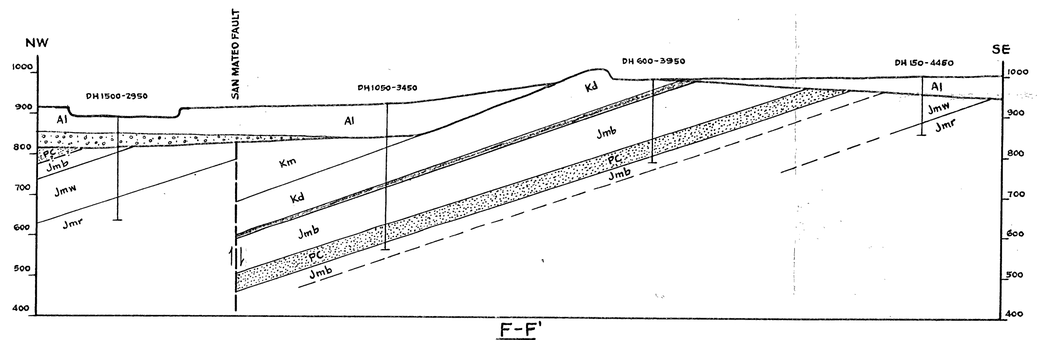


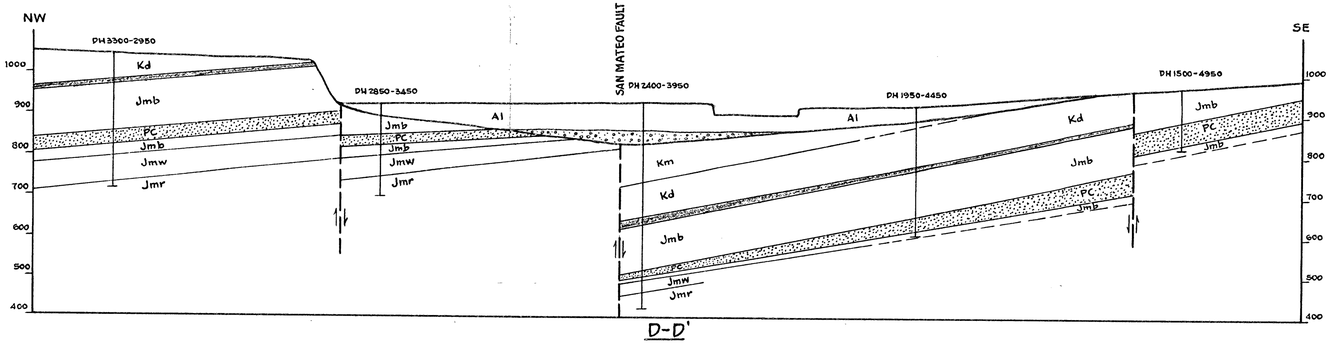
Figure 3.--MAP OF SECTION 21, T.13 N., R.9 W., N.M.P.M. SHOWING THE LOCATIONS OF PREVIOUSLY DRILLED HOLES AND PROPOSED LOCATIONS OF STAGE I DMEA HOLES, WESTVACO MINERAL PRODUCTS DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, McKINLEY COUNTY, NEW MEXICO.

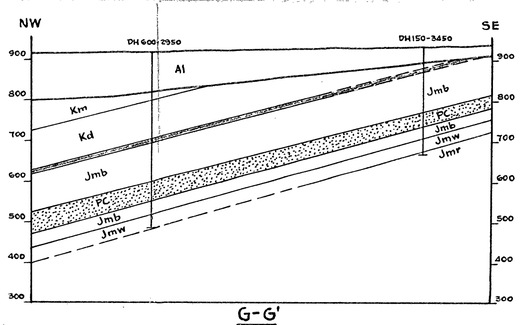


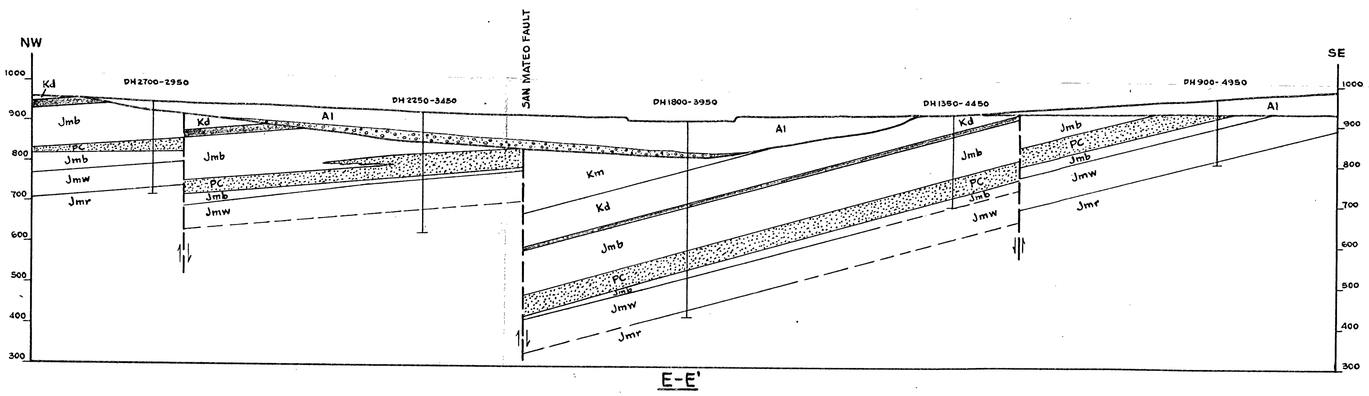












EXPLANATION

RECENT	Al	Alluvium (fill, soil, sand).
	Sand and gravel.	
LATE CRETACEOUS	Km	Mancos shale.
EARLY CRETACEOUS	Kd	Dakota sandstone with silty carbonaceous Purgatoire unit at base.
LATE JURASSIC, MORRISON FORMATION	Jmb, PC, Jmb	Brushy Basin mudstone member with Poison Canyon sandstone unit near base.
	Jmw	Westwater Canyon sandstone member.
	Jmr	Recapture mudstone member.

— — Contact; dashed where inferred.

Fault; location approximate.

DH 600-2950 — DMEA drill hole.

HORIZONTAL AND VERTICAL SCALES
1" = 200'

(SECTIONS COMPILED FROM DRILL HOLE AND ELECTRIC LOG DATA)
SEE FIGURE 2 FOR LOCATION OF SECTIONS.

DMEA 5009 Contract Idm-E1220

FIGURE 3.- GEOLOGIC CROSS SECTIONS, E ½ OF SECTION 21, T. 13 N., R. 9 W., N.M.P.M., WESTVACO MINERAL PRODUCTS DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, McKINLEY COUNTY, NEW MEXICO.

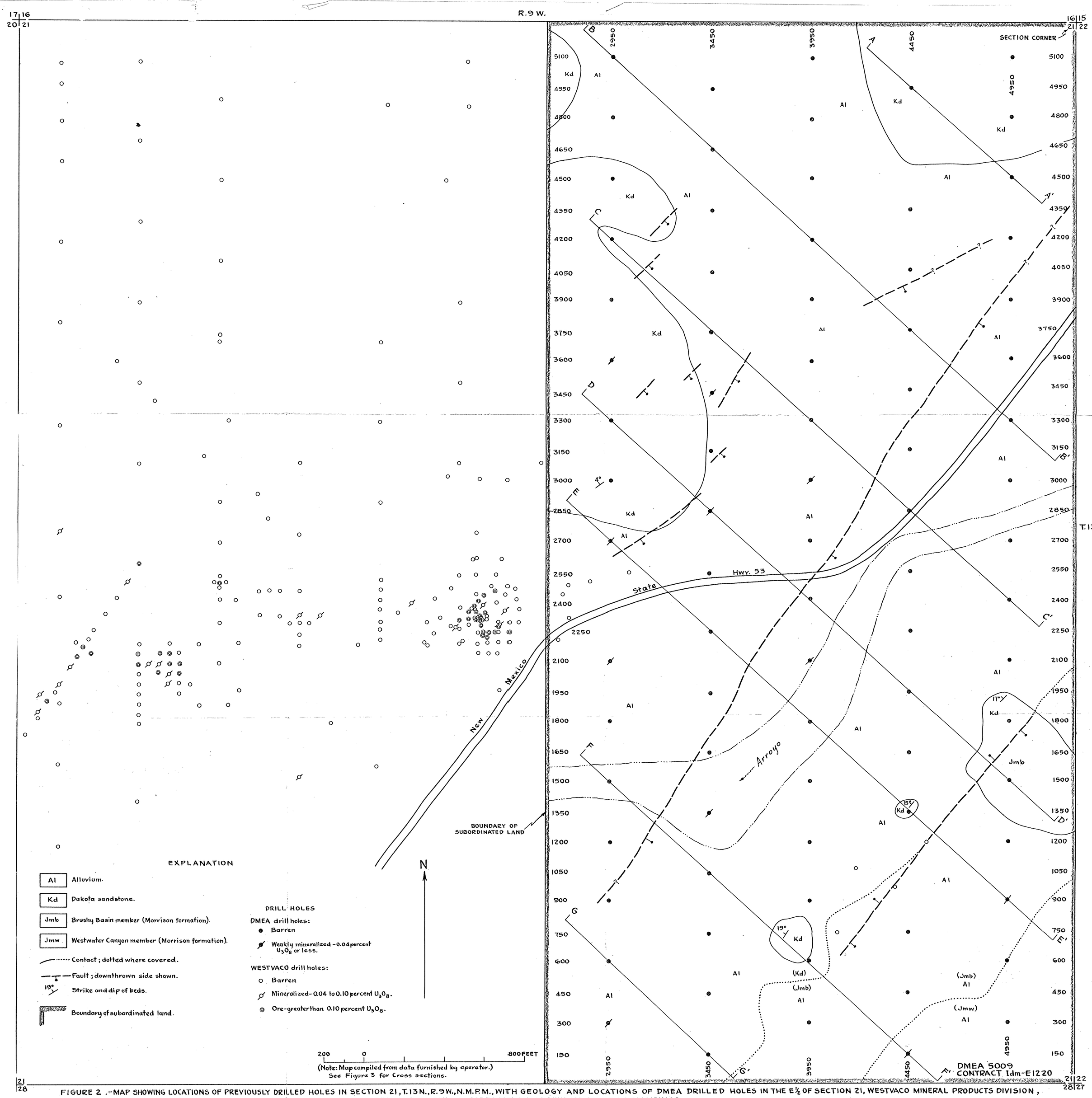


FIGURE 2.-MAP SHOWING LOCATIONS OF PREVIOUSLY DRILLED HOLES IN SECTION 21, T.13N., R.9W., N.M.P.M., WITH GEOLOGY AND LOCATIONS OF DMEA DRILLED HOLES IN THE E½ OF SECTION 21, WESTVACO MINERAL PRODUCTS DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, McKINLEY COUNTY, NEW MEXICO.

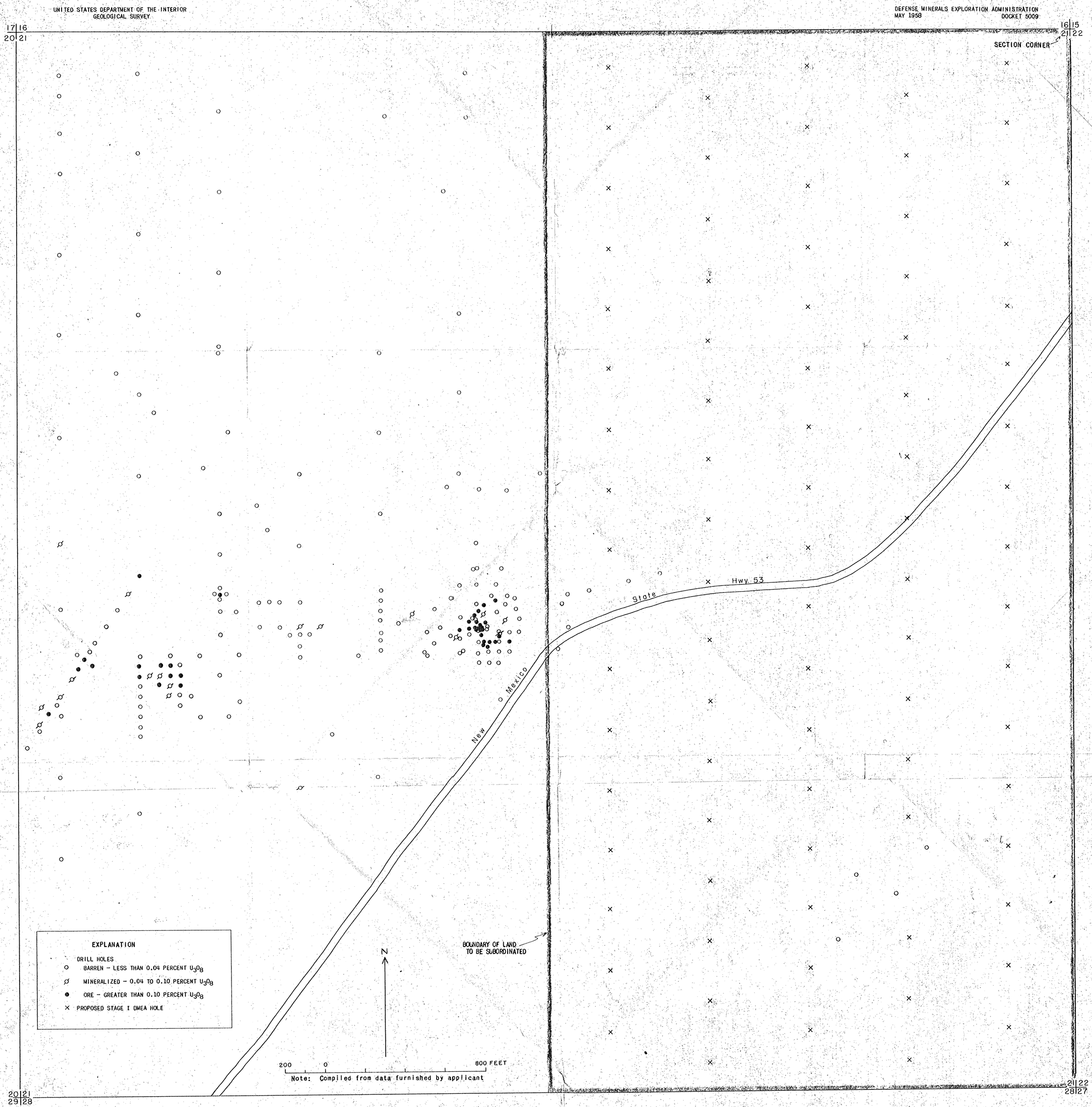


Figure 3.--MAP OF SECTION 21, T.13 N., R.9 W., N.M.P.M. SHOWING THE LOCATIONS OF PREVIOUSLY DRILLED HOLES AND PROPOSED LOCATIONS OF STAGE I DMEA HOLES, WESTVACO MINERAL PRODUCTS DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, McKINLEY COUNTY, NEW MEXICO.

Log-Master Services, Inc.
P.O. Box
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

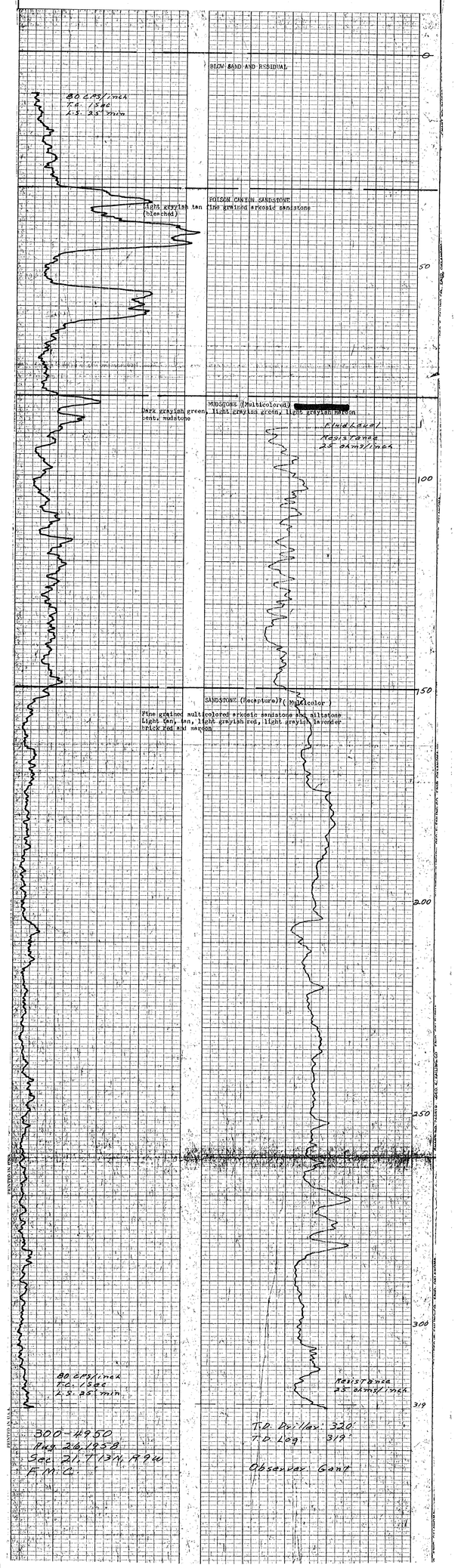
Well	300-4950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21, T 13N, R 9W
County	McKinley
State	New Mexico

Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec 21, T 13N, R 9W
Date	Aug 26, 1958
Well	300-4950

Depth Datum	Ground Level	Elev.	973.8'
Bottom Depth: Log	319'	Driller	320'
Size Hole	4½" 0'-320'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial No. 101
Crystal Size 3x1½"
Calibration Standard No 2
Truck No. 101

Date Aug 26, 1958 Observer Bob Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

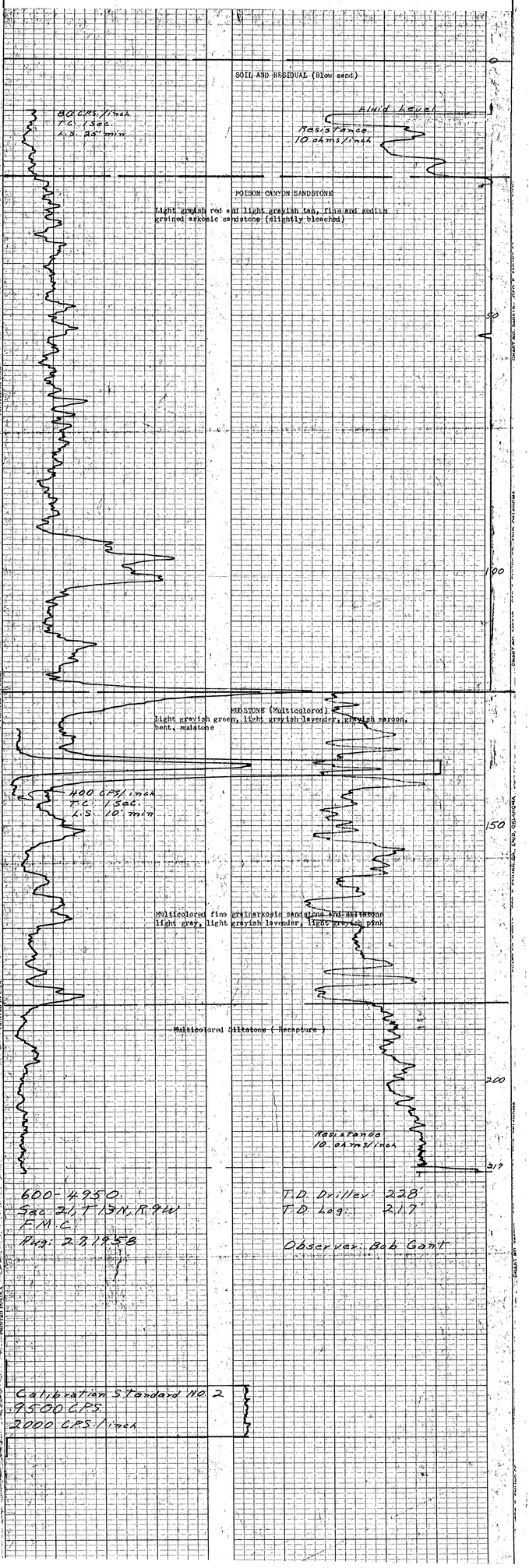
Well	600-4950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T 13N, R 9W
County	McKinley
State	New Mexico

Well	600-4950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T 13N, R 9W
Date	Aug. 27, 1958

Depth Datum	Ground Level	Elev.	971.9'
Bottom Depth: Log	217'	Driller	228'
Size Hole	4 1/2" 0' - 228		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial No 101
Crystal Size 3/4" X 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Aug. 27, 1958 Observer Bob Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Well: 2100-4950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec 21, T13N-R9W
Date: August 29, 1958

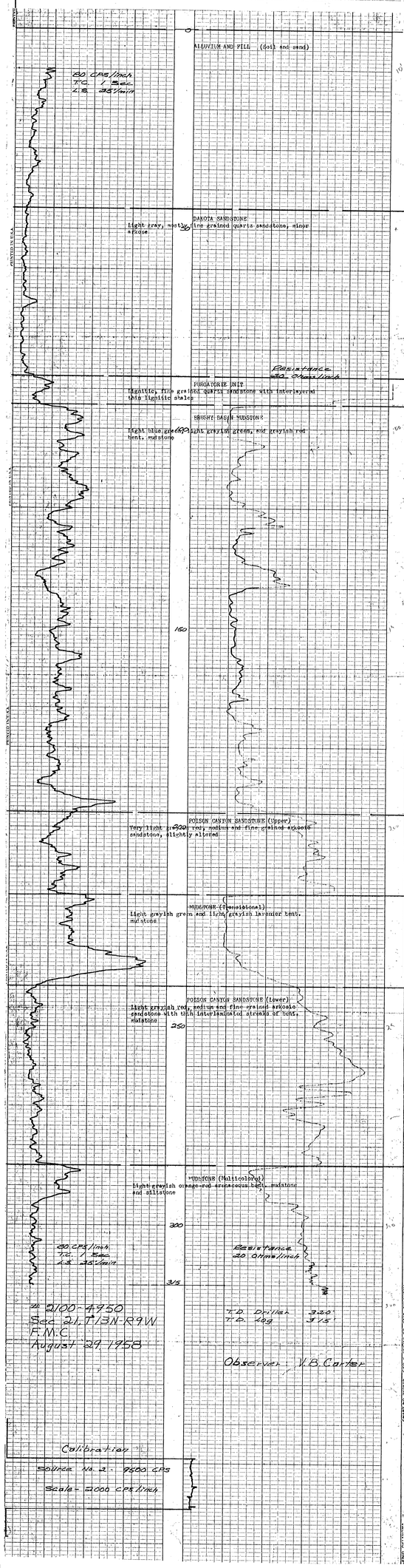
TYPE OF SURVEY: GAMMA RAY - RESISTANCE

Well	2100-4950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21, T13N-R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	9328'
Bottom Depth: Log	315'	Driller	320'
Size Hole	4 1/2"		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial 101.
Crystal Size 3/4" - 1 1/2".
Calibration Source No. 2.
Truck No. 101

Date: August 29, 1958 Observer: V.B. Carter



Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance

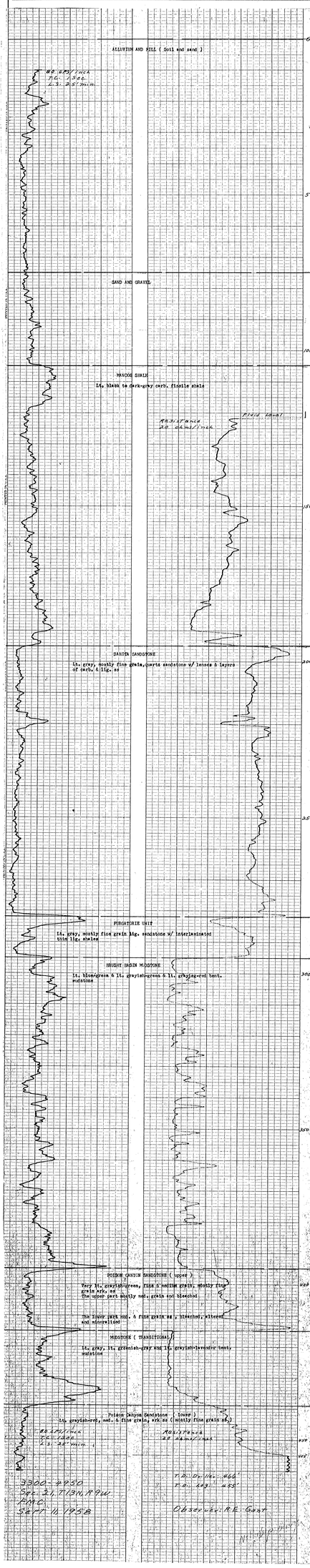
Well	3300 - 4950
Field	Ambrosia
Company	FMC
Location	Sec 21, T 13N, R 9W
County	Mc Kinley
State	New Mexico

Well	3300-4950
Company	F.M.C.
County	Mc Kinley
State	New Mexico
Location	Sec 21 T13N R9W
Date	Sept 11 1958

Depth Datum	Ground Level	Elev.	9271'
Bottom Depth: Log	455'	Driller	466'
Size Hole	4½" 0' - 466'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model SMS-200 Serial No 101
Crystal Size 2x2 Inch
Calibration Standard No 2
Truck No. 101

Date Sept. 11, 1958 Observer R.E. Gant



3300-4950
Sec 21, T13N, R9W
FMC
Sept 11, 1958

Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

Well 3000-4950
Company F.M.C.
County McKinley
State New Mexico
Location Sec 21, T13N, R9W
Date Sept. 10, 1958

Well: 3000 - 4950
Field: Ambrosia
Company: F.M.C.
Location: Sec 21, T13N, R9W
County: McKinley
State: New Mexico

Depth Datum: Ground Level — Elev. 920.9'
Bottom Depth: Log 465' — Driller 465'
Size Hole: 4½" 0' - 465'
Mud: Kind Natural — Weight
Viscosity — Resistivity °F.
Casing Data: None

Remarks: Scintillation Probe model XMS-200 Serial No. 101
Crystal Size ¾" X 1½"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 10, 1958 — Observer: R.E. Gant

3000-4950
Sec 21, T13N, R9W
F.M.C.
Sept. 10, 1958

T.D. Driller: 465'
T.D. Log: 465'

Observer: Bob Gant

Calibration
Standard No. 2 9500 C.P.S.
Scale: 2000 CPS/inch

Log-Master Services, Inc.
ENID, OKLAHOMA

Well	2700-4950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Date	Aug. 30, 1958

Gamma Ray – Resistance
TYPE OF SURVEY

Well 2700 – 4950
Field Ambrosia:
Company F. M. C.
Location Sec. 21, T 13N, R9w
County McKinley
State New Mexico

Depth Datum Ground Level **Elev.** 919.4'
Bottom Depth: Log 439' **Driller** 442'
Size Hole 4½" 0 - 442'
Mud: Kind Natural **Weight**
Viscosity **Resistivity** °F.
Casing Data · None

Remarks: Scinlillation Probe Model XMS-200 Serial NO. 101
Crystal Size ¾" X 1½"
Calibration Standard NO. 2
Truck NO. 101

Date Aug. 30, 1958 **Observer** V. B. Carter

Log-Master Services Inc.

Well 3600-4950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept. 25, 1958

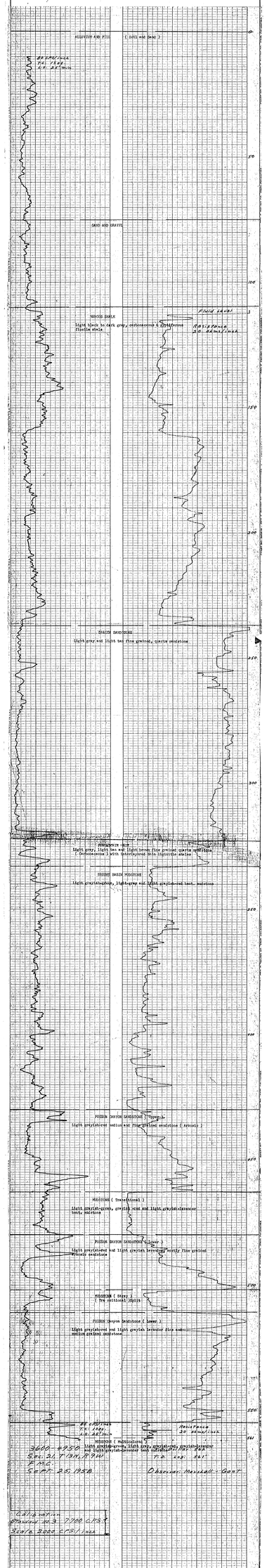
Type: Gamma Ray - Resistance

Well	3600-4950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	930.2'
Bottom Depth: Log	561'	Driller	562'
Size Hole	4 3/4" - 562'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillometer Perco model XMS-208 Serial no. 103
Capital Size 3/4" x 1 1/2"
Calibration Standard No. 3
Truck No. 103

Date Sept. 25, 1958 Observer Gant - Marshall



Log-Master Services, Inc.
ENID, OKLAHOMA

Well: 2400-4950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec 21, T13N-R9W
Date: August 29, 1958

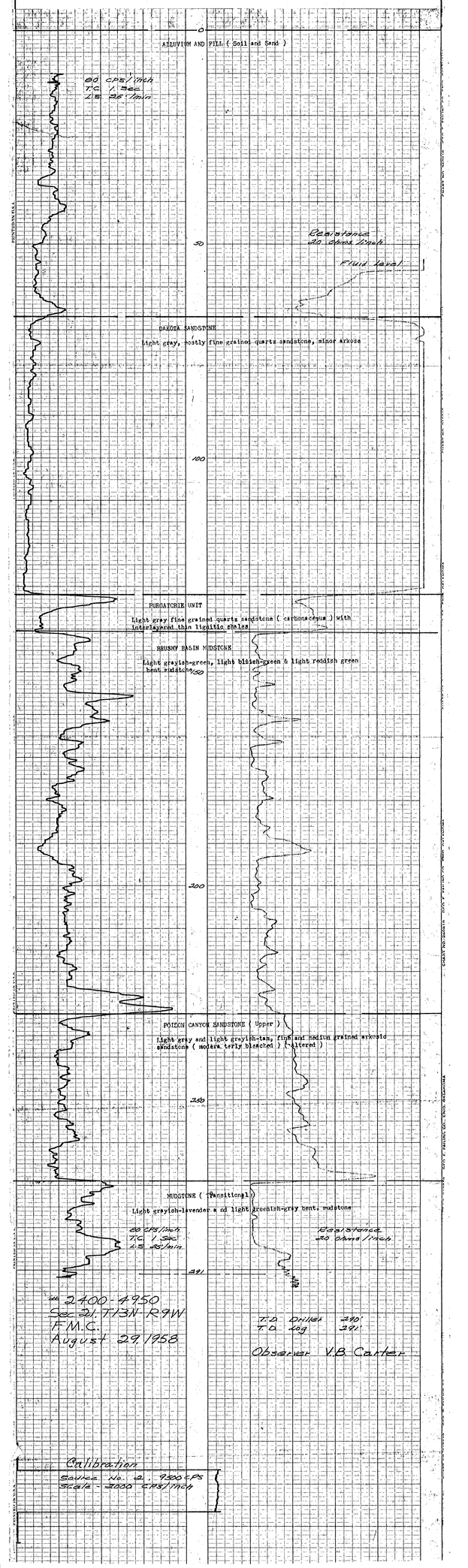
TYPE OF SURVEY: GAMMA RAY · RESISTANCE

Well	2400-4950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21, T13N-R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	927.9'
Bottom Depth: Log	291'	Driller	290
Size Hole	4 1/2"		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200, Set 101
Crystal Size 3/4" - 1 1/2"
Calibration Source No 2
Track No. 101

Date: August 29 1958 Observer: V.B. Carter



Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

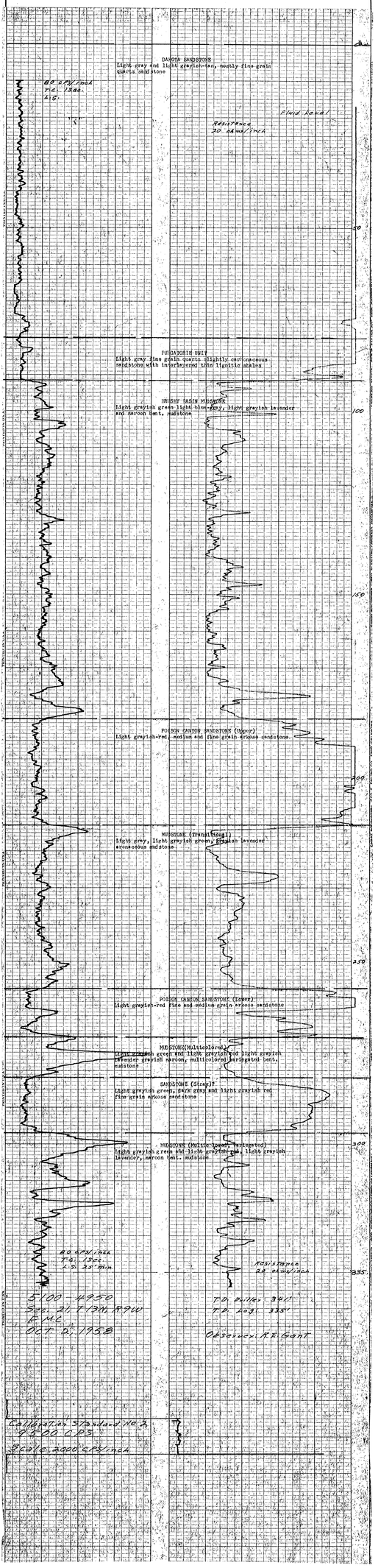
Well: 5100 - 4950
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21, T13N, R9W
County: McKinley
State: New Mexico

Well: 5100 - 4950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Oct 2, 1958

Depth Datum: Ground Level — Elev. 1000.4'
Bottom Depth: Log 335' — Driller 341'
Size Hole: 4 1/2" 0' - 341'
Mud: Kind: Natural — Weight
Viscosity — Resistivity — °F.
Casing Data: None

Remarks: Scintillation Probe Model XMS-200 Ser. No. 101
Crystal - Size 4" x 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date: Oct. 2, 1958 — Observer: R.E. Gant



Master Services, Inc.
ENID, OKLAHOMA

Well 4200 - 4950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 24, T13N, R9W
Date Sept 30, 1958

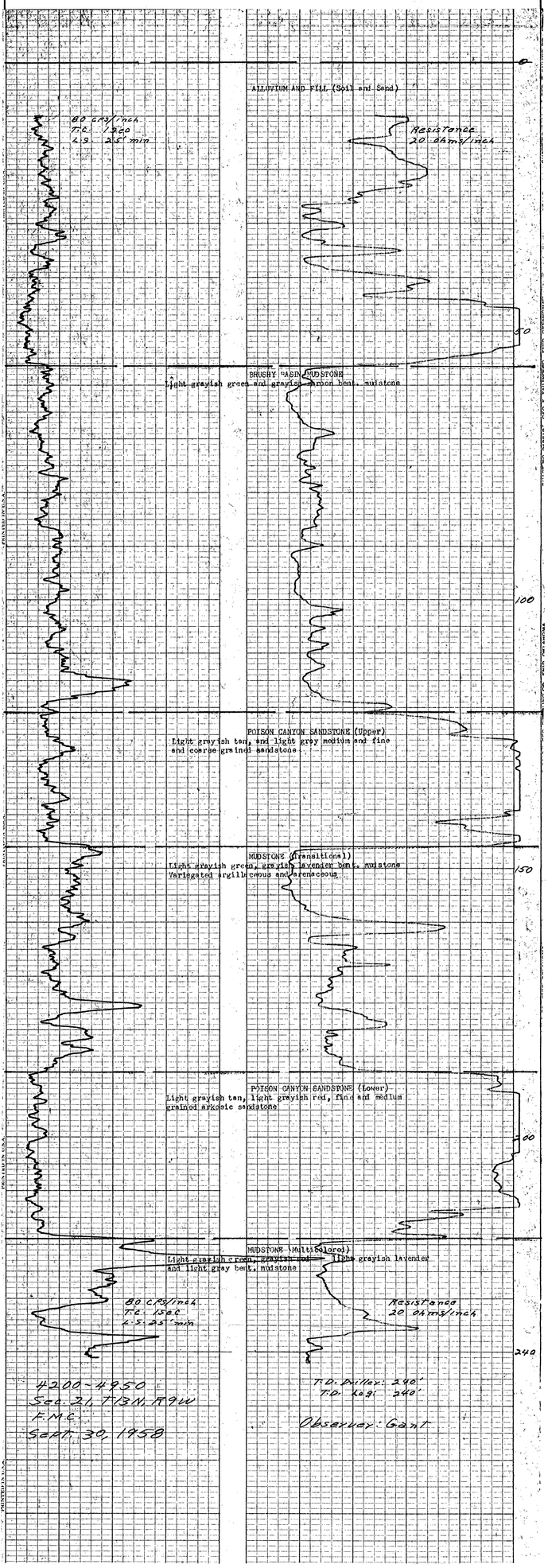
Gamma Ray - Resistance

Well	4200 - 4950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 24, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	937.1'
Bottom Depth: Log	240'	Driller	240'
Size Hole	4 1/2" 0' - 240'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial NO. 101
Crystal Size 3/4" X 1 1/2"
Calibration Standard NO. 2
Truck NO. 101

Date Sept. 30, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance

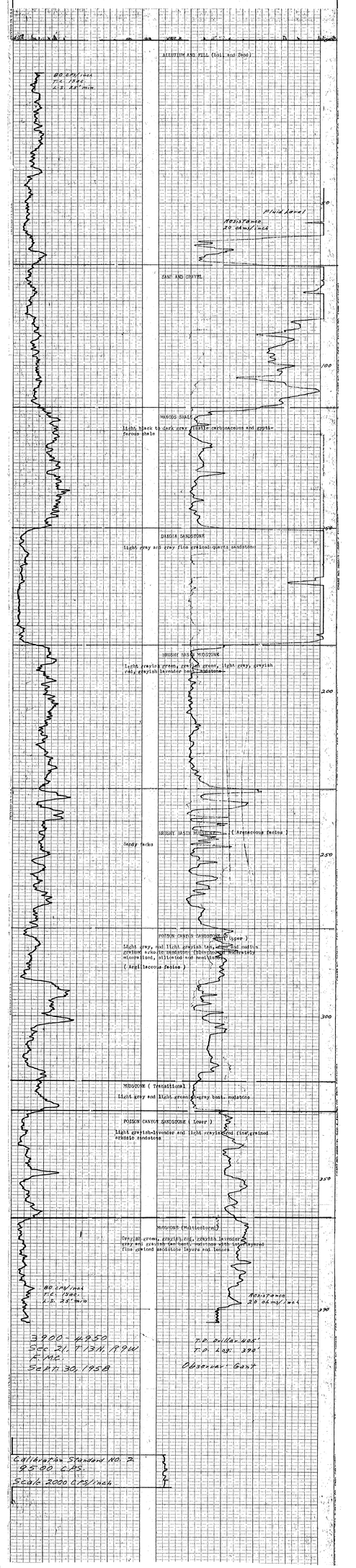
Well	3900 - 4950
Field	Ambrosia
Company	E.M.C.
Location	Sec. 21, T13N, R9W
County	Mc Kinley
State	New Mexico

Date	Sept 30, 1958
Location	Sec. 21, T13N, R9W
State	New Mexico
County	Mc Kinley
Company	E.M.C.
Well	3900 - 4950

Depth Datum	Ground Level	Elev.	933.5'
Bottom Depth: Log	390'	Driller	405'
Size Hole	4½" 0' - 405'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model IMS-200 Serial No. 101
Crystal Size 3" - 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 30, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF LOGGING: Gamma Ray - Resistance

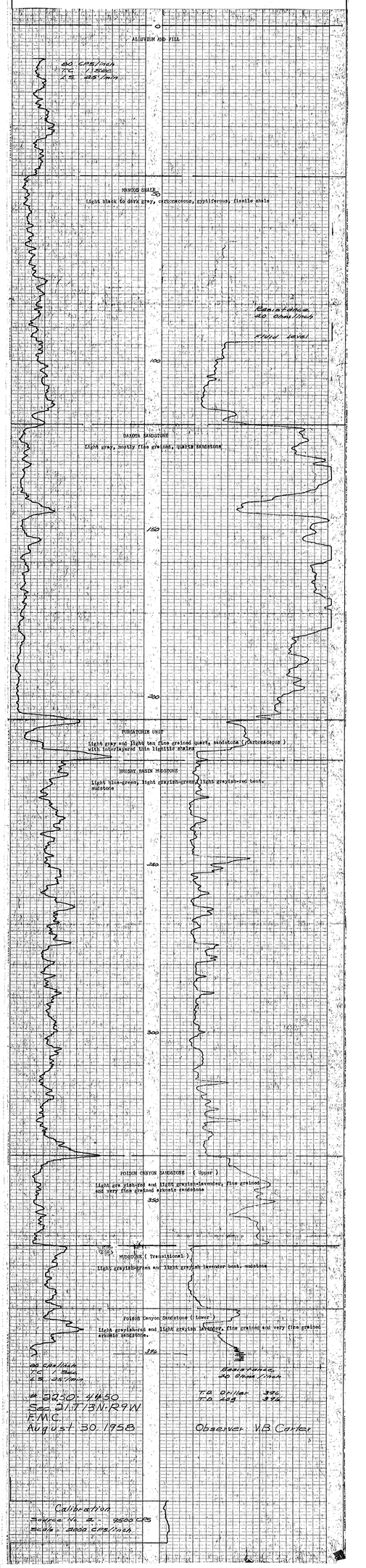
Well	2250-4450
Field	Embrosia
Company	F.M.C.
Location	Sec 21, T13N, R9W
County	Mc Kinley
State	New Mexico

Depth Datum	Ground Level
Elev.	912.5'
Bottom Depth: Log	396'
Driller	396'
Size Hole	4 1/2" 0-396
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	None

Remarks: Scintillation Probe Model XMS 200 Serial No. 101
Crystal Size 3/4" x 1 1/2"
Calibration Standard No. 2
Truck No. 16

Date Aug. 30, 1958 Observer V. B. Carter

Well 2250-4450
Company F.M.C.
County McKinley
State New Mexico
Location Sec 21, T13N, R9W
Date Aug 30, 1958



Log-Master Services, Inc.
ENID, OKLAHOMA

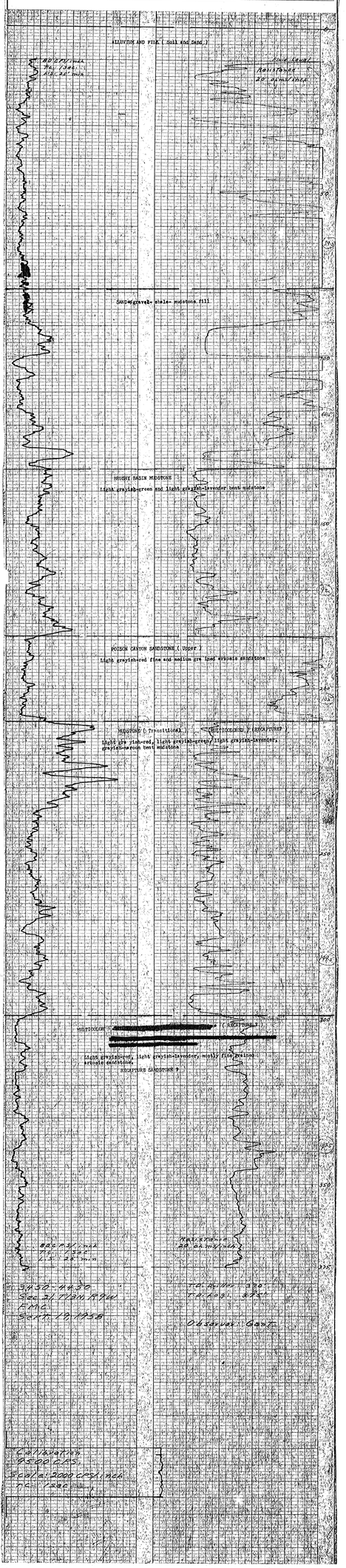
Gamma Ray - Resistance

Well	3450 - 4450	Company	F.M.C.
Field	Wimbezia	County	McKinley
Company	F.M.C.	State	New Mexico
Location	Sec 21, T13N, R9W		
County	McKinley		
State	New Mexico		
Date	Sept. 19, 1958		

Depth Datum	Ground Level	Elev.	911.4'
Bottom Depth: Log	375'	Driller	390'
Size Hole	4½" 0' - 390		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model IMS-200 Serial No. 101
Crystal Size 2x1 1/2"
Calibration Standard No. 2
Tube R No. 101

Date Sept. 19, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

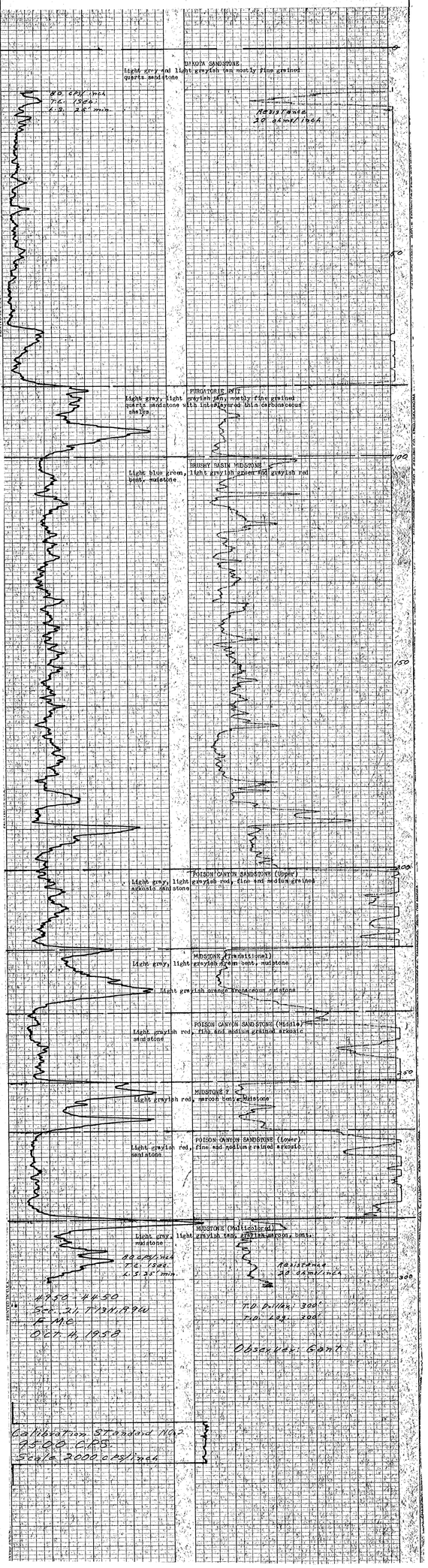
Well 4950-4450
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Oct 4, 1958

TYPE OF SURVEY: Gamma Ray - Resistance

Well	4950-4450		
Field	Ambrosia		
Company	F.M.C.		
Location	Sec. 21, T13N, R9W		
County	McKinley		
State	New Mexico		
Depth Datum	Ground Level	Elev.	999.8'
Bottom Depth: Log	300'	Driller	300'
Size Hole	4 1/2" 0' - 300'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 - Serial No. 101
Crystal Size 1 1/4" x 1 1/2"
Calibration Std. Model No. 2
Truck No. 101

Date Oct. 4, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

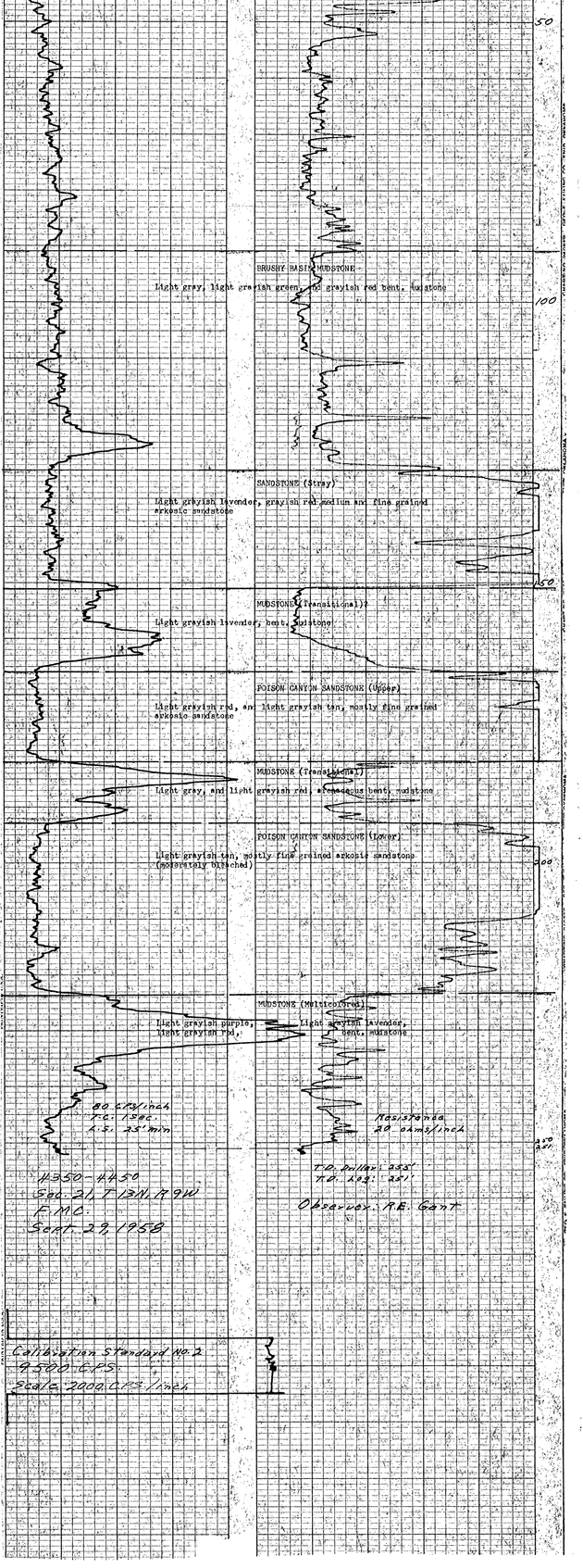
TYPE OF SURVEY: Gamma Ray - Resistance

Well	4350 - 4450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico
Date	Sept 29, 1958

Depth Datum	Ground Level	Elev.	922.9'
Bottom Depth: Log	251'	Driller	255'
Size Hole	4 1/2" 0'-255'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model KMS-200 Serial No. 101
Crystal Size 2 3/4" x 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Sept. 29, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ROSWELL, NEW MEXICO

TYPE OF LOG: Gamma Ray - Resistance

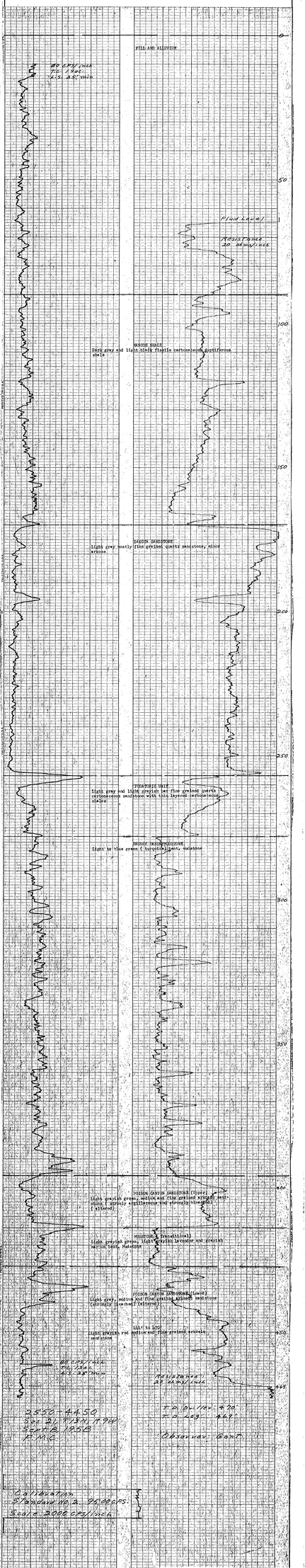
Well	2550-4450
Field	Ambrosia
Company	F.M.C.
Location	Sec 21 T13N R9W
County	McKinley
State	New Mexico

Date	Sept 8, 1958
Location	Sec 21 T13N R9W
State	New Mexico
County	McKinley
Company	F.M.C.
Well	2550-4450

Depth Datum	Ground Level	Elev.	9114'
Bottom Depth: Log	469'	Driller	470'
Size Hole	4 1/2" 0'-470'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model 1MS-200 Serial No. 101
Crystal 5120-3/4" x 1/2"
Calibration Standard No. 2
Truck No. 101

Date Sept. 8, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

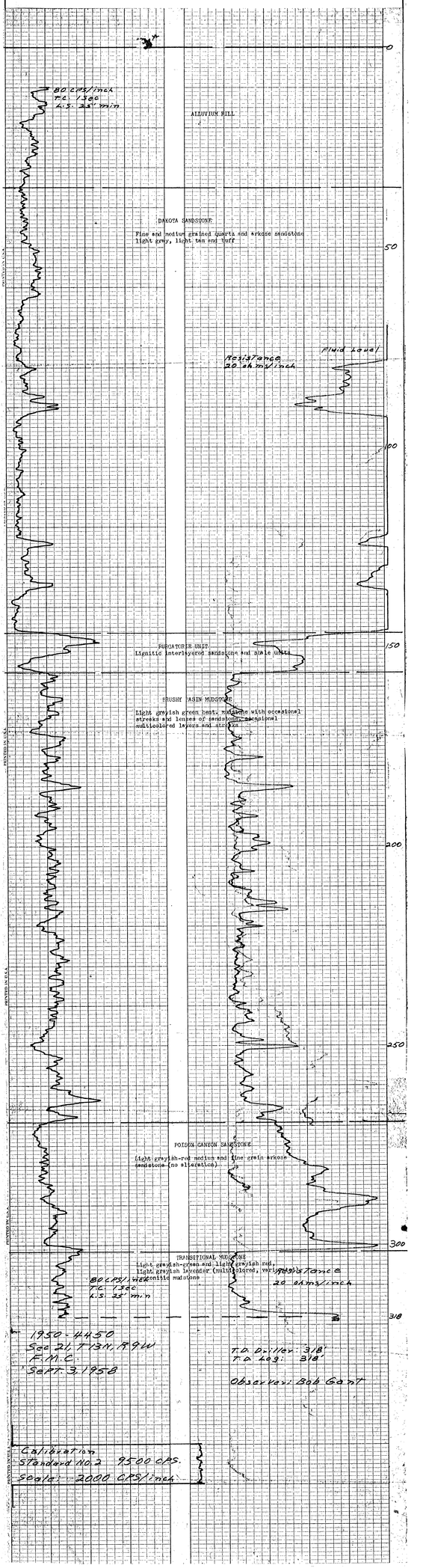
Gamma Ray - Resistance

Well	1950-4450
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Date	Sept 3, 1958

Well	1950-4450	Field	Ambrosia
Company	F.M.C.		
Location	Sec. 21, T13N, R9W		
County	McKinley		
State	New Mexico		
Depth Datum	Ground Level	Elev.	9112'
Bottom Depth: Log	318'	Driller	318'
Size Hole	4 1/2" 0'-318'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial No. 101
Crystal Size 3/4" X 1 1/2"
Calibration Standard No 2
Truck No. 101

Date Sept. 3, 1958 Observer Bob Gant



Log-Master Services Inc.
ROSWELL, NEW MEXICO

Gamma Ray - Resistance
Type of Survey

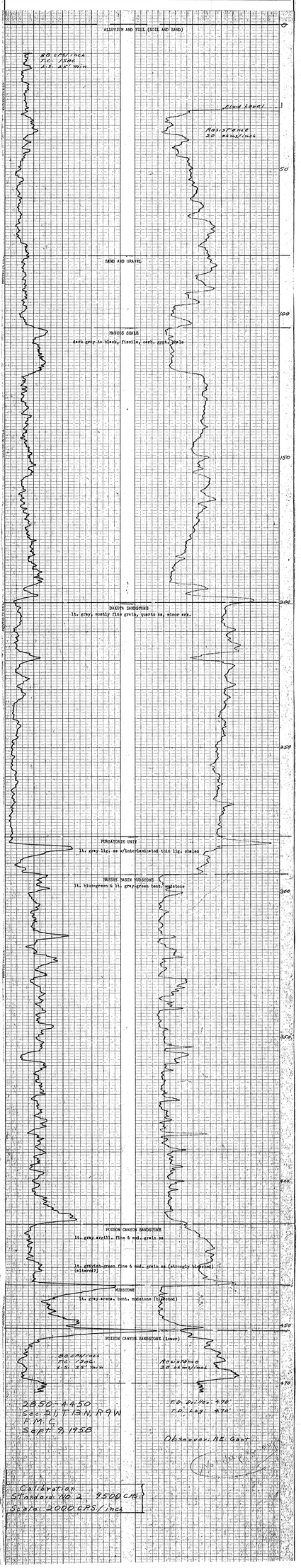
Well	2850-4450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level
Elev.	911.6'
Bottom Depth: Log	470'
Driller	470'
Size Hole	4½" 0' - 470'
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3x3½"
Calibration Standard No. 2
Truck No. 101

Date Sept 9, 1958 Observer R.E. Gant

Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept 9, 1958
Well 2850-4450



Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
TYPE OF SURVEY

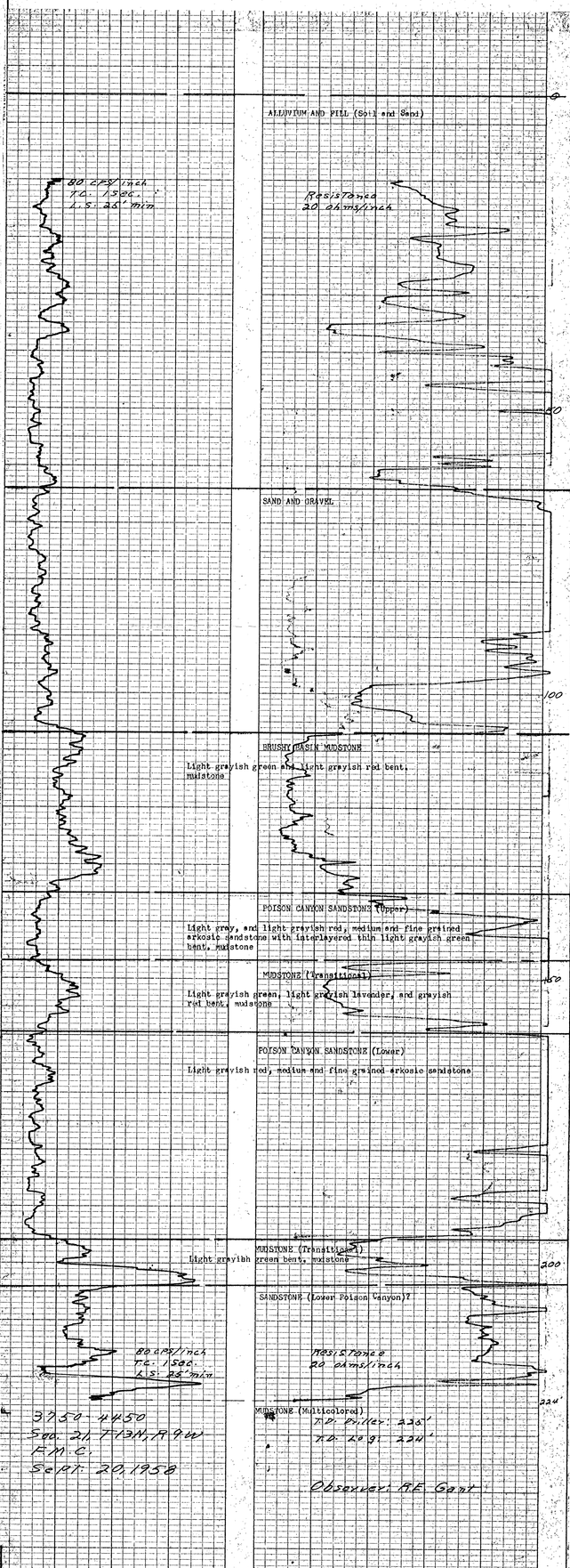
Well	3750-4450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Date	Sept 20, 1958
Location	Sec. 21, T13N, R9W
State	New Mexico
County	McKinley
Company	F.M.C.
Well	3750-4450

Depth Datum	Ground Level	Elev.	920.8'
Bottom Depth: Log	224'	Driller	225'
Size Hole	4½" 0' - 225'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Calibration Standard No. 2
Crystal Size ¾" X 1½"
Truck No. 101

Date Sept. 21, 1958 Observer R.E. Gant



3750-4450
Sec. 21, T13N, R9W
F.M.C.
Sept. 20, 1958

Observer: R.E. Gant

Calibration
Standard No. 2 9500 CPS.
Scale: 2000 CPS/inch

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray- Resistance

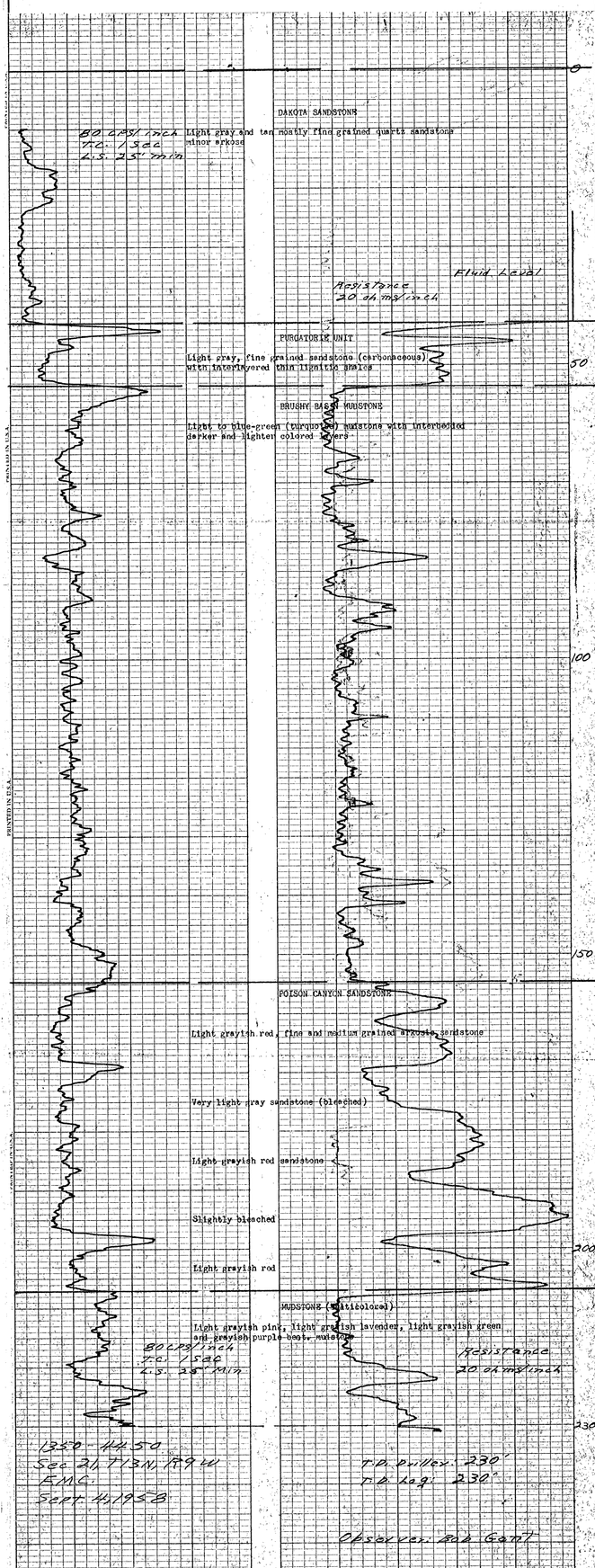
Well	1350 - 4450
Field	Ambrosia
Company	F.M.C.
Location	Sec 21, T13N, R9W
County	McKinley
State	New Mexico

Well	1350 - 4450
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Date	Sept. 4, 1958

Depth Datum	Ground Level	Elev.	922.0'
Bottom Depth: Log	230'	Driller	230'
Size Hole	4 1/2" 0' - 230'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	No ne		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" X 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Sept. 4, 1958 Observer Gant



1350 - 4450
Sec. 21, T13N, R9W
F.M.C.
Sept. 4, 1958

T.D. Driller 230'
T.D. Log 230'

Observer Bob Gant

Calibration
Standard No. 2 9500 C.P.S.
Scale 2000 C.P.S./inch

Log-Master Services, Inc.
ENID, OKLAHOMA

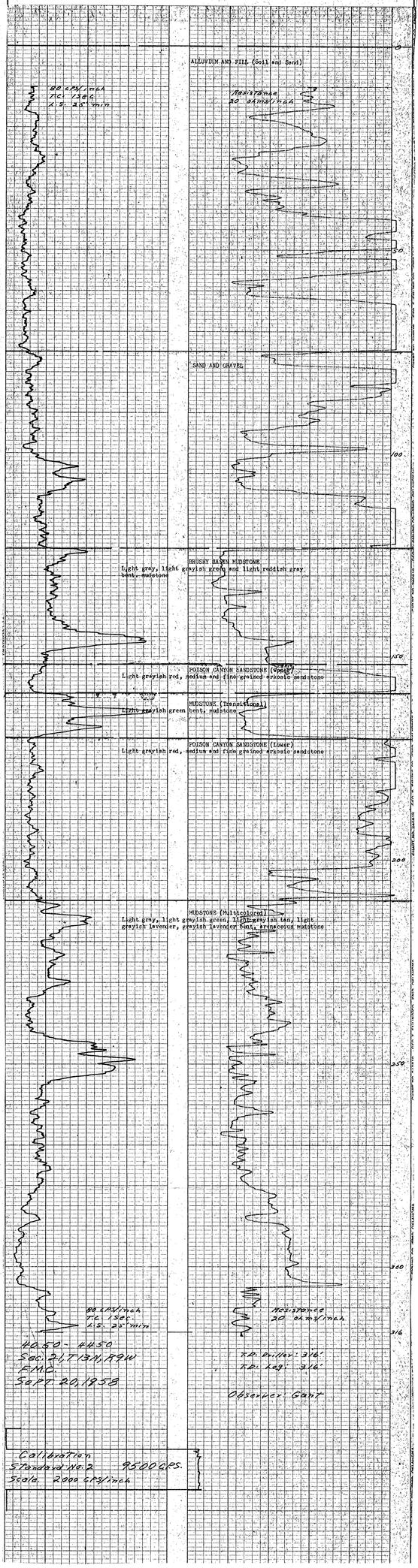
Gamma Ray - Resistance

Well	4050 - 4450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	Mc Kinley
State	New Mexico
Date	Sept. 20, 1958

Depth Datum	Ground Level	Elev.	920.8'
Bottom Depth: Log	316'	Driller	316'
Size Hole	4 1/2" 0'-316'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200-Ser. No. 101
Crystal size 3x1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Sept. 20, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

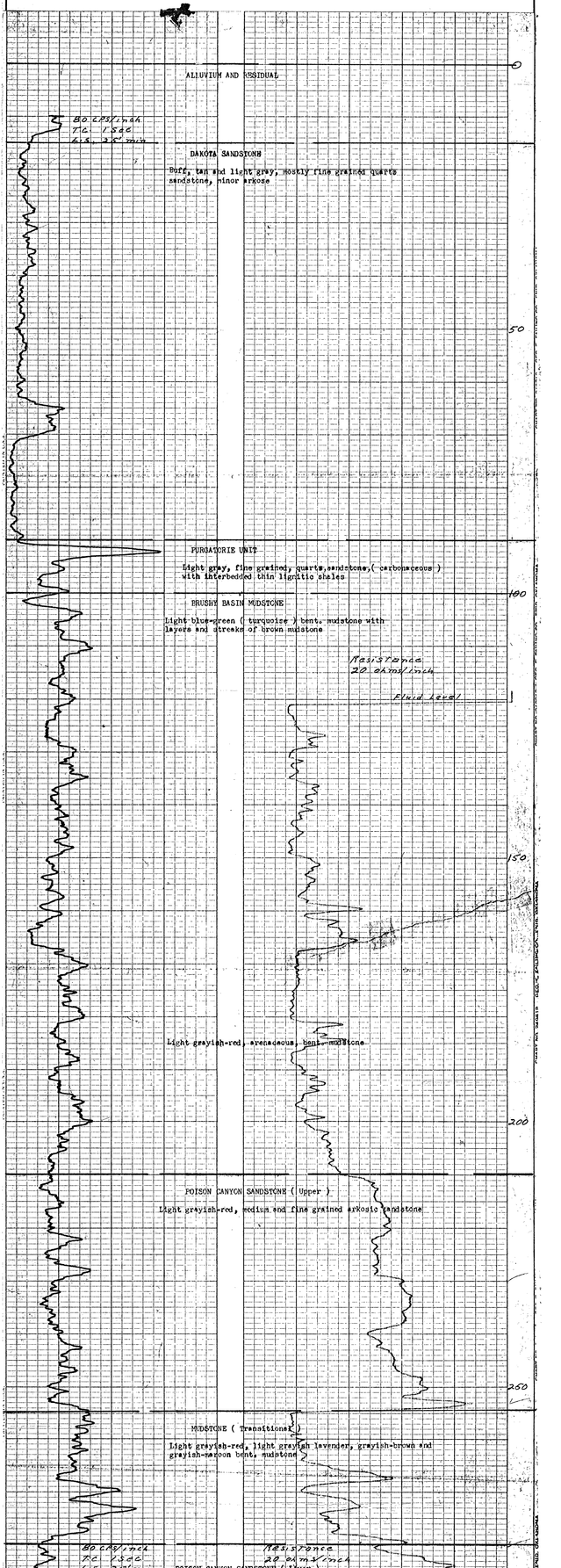
Well	1650-4450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Date	Sept. 3, 1958
Location	Sec. 21, T13N, R9W
State	New Mexico
County	McKinley
Company	F.M.C.
Well	1650-4450

Depth Datum	Ground Level	Elev.	914.9'
Bottom Depth: Log	287'	Driller	290'
Size Hole	4½" 0'-290		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	No ne		

Remarks: Scintillation Probe Model XMS-200 Serial NO.101
Crystal S. 2c 3/4" X 1½"
Calibration Standard NO. 2
Truck NO. 101

Date Sept. 3, 1958 Observer Bob Gant



1650-4450
Sec 21, T13N, R9W
F.M.C.
Sept. 3, 1958

T.D. Driller: 290'
T.D. Log: 287'

Observer: Bob Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Well 3150-3450
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept. 26, 1958

TYPE OF SURVEY: Gamma Ray - Resistance

Well	3150 - 4450 [redacted]
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	909.7'
Bottom Depth: Log	475'	Driller	475'
Size Hole	4½" 0' - 475'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe model XMS-200 Ser. No. 103
Crystal Size 3/4" X 1½"
Calibration Standard No. 3
Truck No. 103

Date Sept. 26, 1958 Observer Marshall - Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

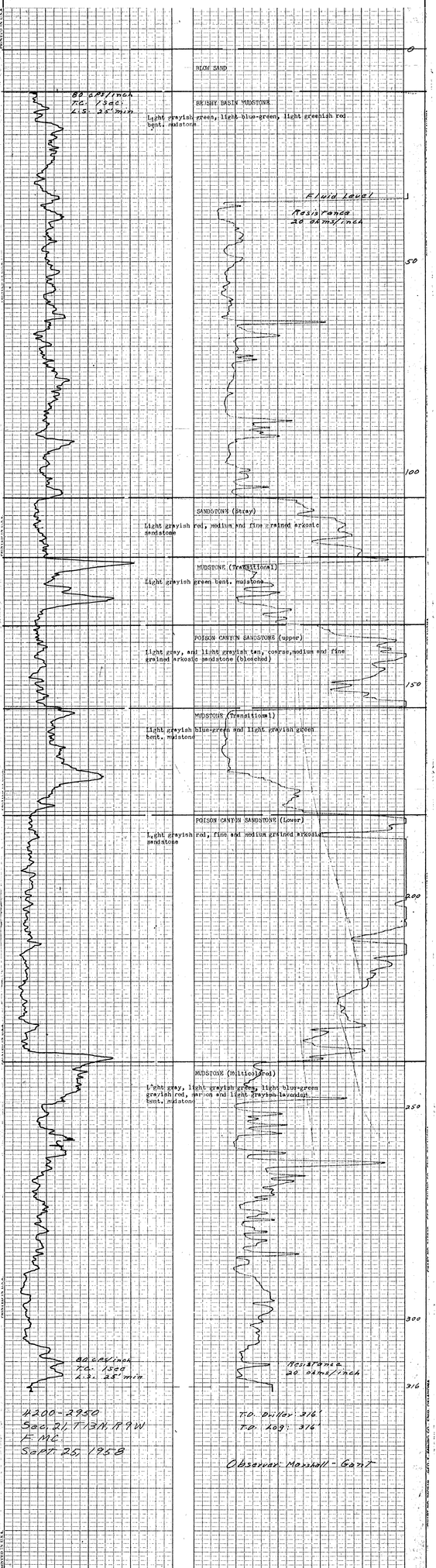
Well: 4200 - 2950
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21, T13N, R9W
County: Mc Kinley
State: New Mexico

Well: 4200 - 2950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept 25, 1958

Depth Datum: Ground Level — Elev. 947.7'
Bottom Depth: Log 316' — Driller 316'
Size Hole: 4½" - 316'
Mud: Kind: Natural — Weight
Viscosity — Resistivity — °F.
Casing Data: None

Remarks: Scintillation Probe Model XMS-200 Serial No. 103
Crystal Size ¾" x 1½"
Calibration Standard No. 3
Truck No. 103

Date: Sept. 25, 1958 — Observer: Marshall - Gant



4200-2950
Sec. 21, T13N, R9W
F.M.C.
Sept. 25, 1958

T.D. Driller 316'
T.D. Log: 316'

Observer: Marshall - Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF LOG: Gamma Ray - Resistance

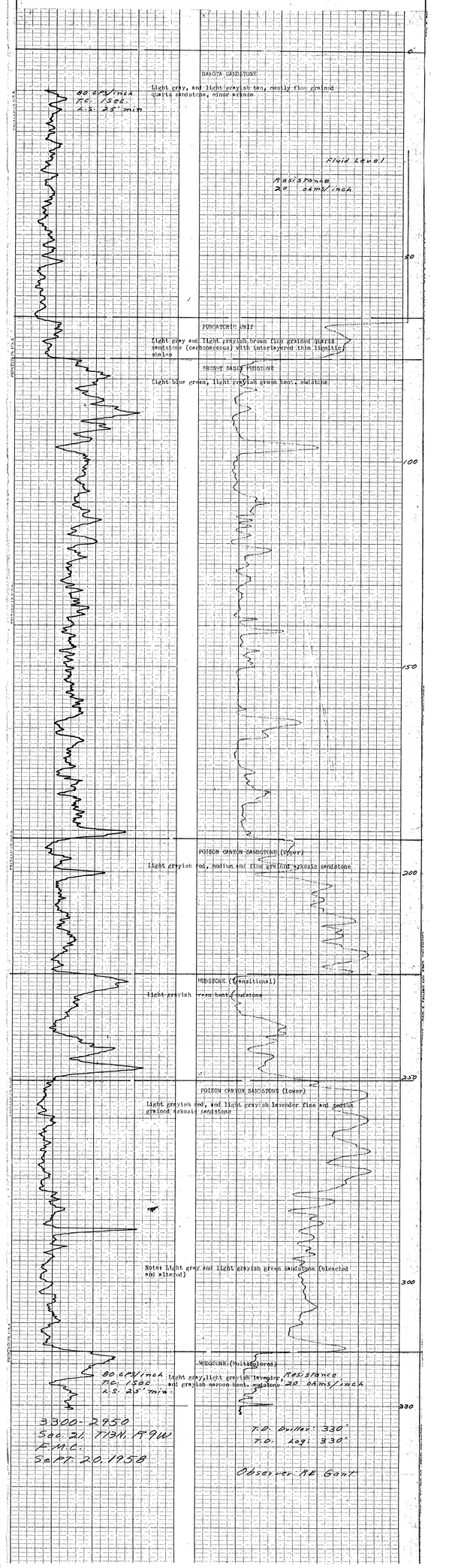
Well	3300 - 2950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21, T13N, R9W
County	Mc Kinley
State	New Mexico

Company	F.M.C.
County	Mc Kinley
State	New Mexico
Location	Sec 21, T13N, R9W
Date	Sept 20, 1958
Well	3300 - 2950

Depth Datum	Ground Level	Elev.	1045.0'
Bottom Depth: Log	330'	Driller	330'
Size Hole	4 1/2" 0' - 330'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe model AMS-200 Serial No. 101
Crystal Size 2" X 1 1/2"
Calibration Standard No. 2
Check No. 101

Date Sept. 20, 1958 Observer R.E. Gant



3300-2950
Sec. 21, T13N, R9W
F.M.C.
Sept. 20, 1958

T.D. Driller: 330'
T.D. Log: 330'

Observer: RE Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

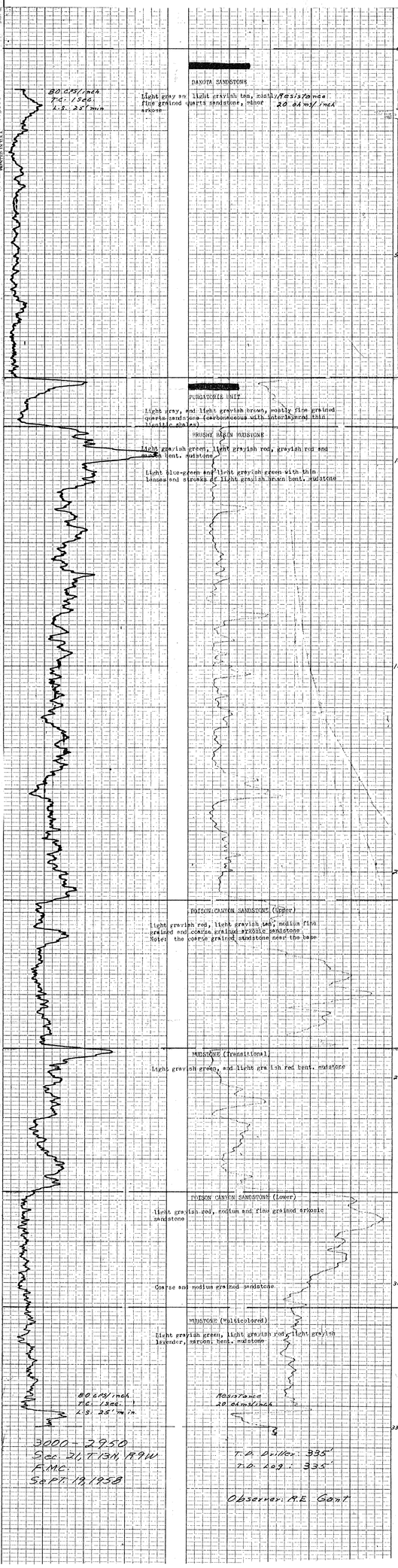
TYPE OF SURVEY: Gamma Ray - Resistance

Well	3000 - 2950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico
Depth Datum	Ground Level
Elev.	10.66.7
Bottom Depth: Log	335'
Driller	335'
Size Hole	4½" 0'-335'
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" X 1½"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 19, 1958 Observer: R.E. Gant

Well: 3000 - 2950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept. 19, 1958



Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
TYPE OF SURVEY

Well	300-2950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21, T13N, R9W
County	McKinley
State	New Mexico

Well	300-2950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec 21, T13N, R9W
Date	Aug. 25, 1958

Depth Datum	Ground Level	Elev.	919.7'
Bottom Depth: Log	446'	Driller	449'
Size Hole	4½" 0' - 449'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial No. 101
Crystal Size ¾x1½"
Calibration Standard No. 2
Truck No. 101

Date Aug. 25, 1958 Observer Bob Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

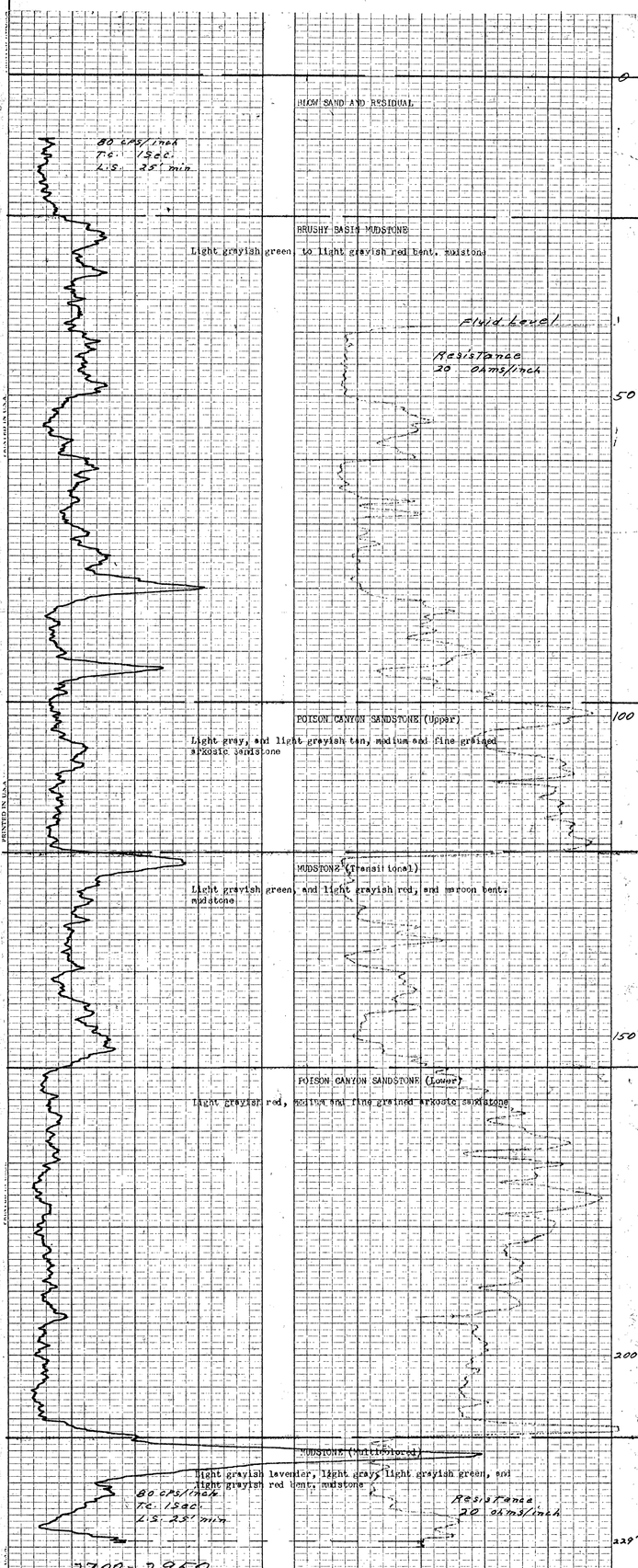
TYPE OF SURVEY: Gamma Ray - Resistance

Well	2700 - 2950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico
Depth Datum	Ground Level
Elev.	9490'
Bottom Depth: Log	229'
Driller	229'
Size Hole	4 1/2" 0' - 229'
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" x 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 30, 1958 Observer: R.E. Gant

Well: 2700-2950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept 30, 1958



2700-2950
Sec. 21, T13N, R9W
F.M.C.
Sept. 30, 1958

T.D. Driller: 229'
T.D. Log: 229'
Observer: Gant

Log-Master Services, Inc.
GEOL. COLLATORS

Well	600-2950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec 21, T13N, R9W
Date	Aug 27, 1958

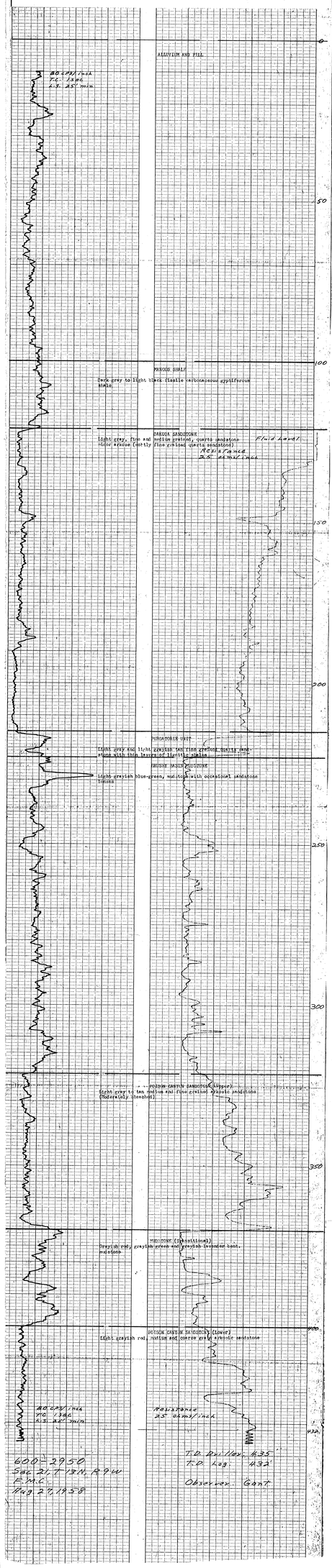
Gamma Ray - Resistance
TYPE OF SURVEY

Well 600-2950
Field Ambrosia
Company F.M.C.
Location Sec 21, T13N, R9W
County McKinley
State New Mexico

Depth Datum Ground Level — Elev. 9210'
Bottom Depth: Log 1132' — Driller 1135'
Size Hole 4½" 0'-435'
Mud: Kind Natural — Weight
Viscosity — Resistivity °F.
Casing Data None

Remarks: Scintillation Probe - Model SMS 200 Serial No. 101
Crystal Size ¾ x 1½"
Calibration Standard No. 2
Truck No. 101

Date Aug. 27, 1958 Observer Gant



600-2950
Sec 21, T-13N, R-9W
F.M.C.
Aug 27, 1958

T.D. Driller 435'
T.D. Log 1132'
Observer Gant

Log-Master Services, Inc.

FIELD OPERATIONS

Type of Log: Gamma Ray - Resistance

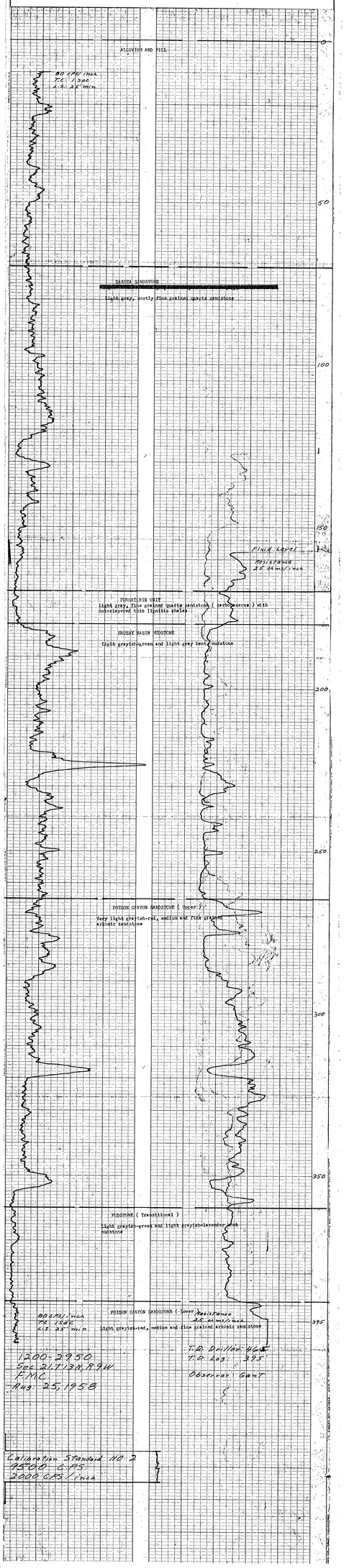
Well: 1200-2950
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21, T13N, R9W
County: McKinley
State: New Mexico

Depth Datum: Ground Level — Elev.: 922.2'
Bottom Depth: Log: 395' — Driller: 464'
Size Hole: 4 1/2" 0' - 464'
Mud: Kind: Natural — Weight
Viscosity — Resistivity — °F.
Casing Data: None

Remarks: Scintillation Probe Model XMS 200 Serial No 101
Crystal Size 2x2 1/2"
Calibration Standard No. 2
Truck No. 101

Date: Aug. 25, 1958 — Observer: Bob Gant

Well: 1200-2950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Aug. 25, 1958



Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

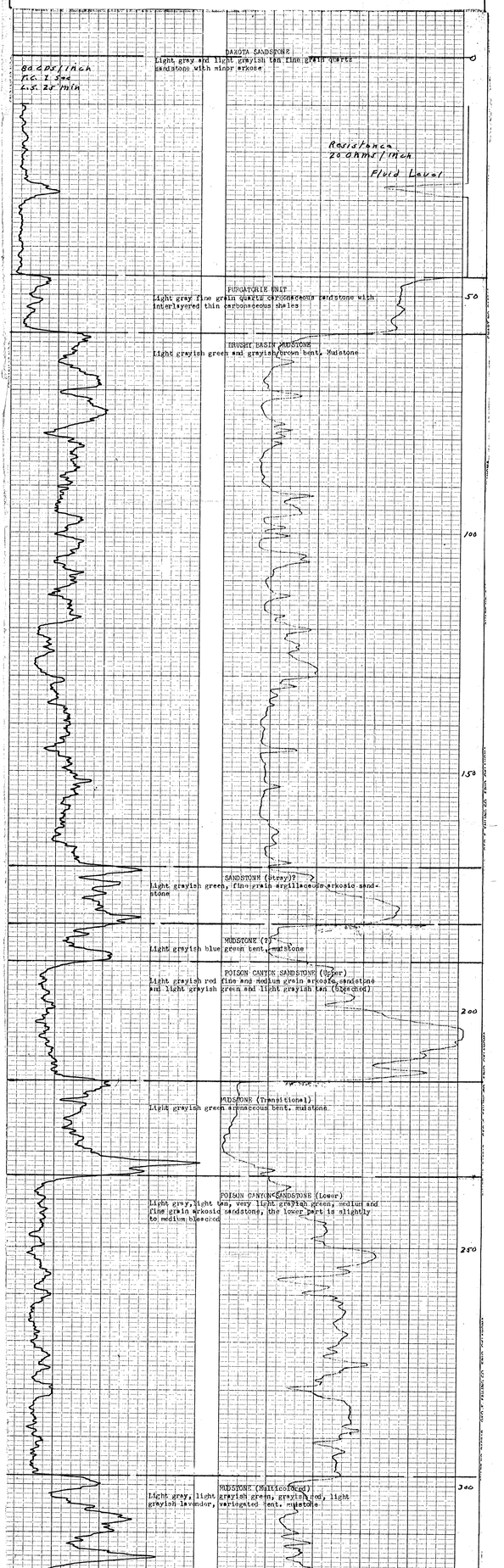
Well # 3900-2950
Field Ambrosia
Company F.M.C.
Location Sec. 21-T13N-R9W
County McKinley
State New Mexico

Depth Datum Ground Level — Elev. 1016.6'
Bottom Depth: Log 320' — Driller 320'
Size Hole 4¾" 0-320'
Mud: Kind Natural — Weight
Viscosity — Resistivity — °F.
Casing Data None

Remarks: Scintillation Probe Model XMS-200 Ser. No 101
Crystal Size 3½" x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 23, 1958 — Observer Bob Grant

Well # 3900-2950'
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21-T13N-R9W
Date Sept 23, 1958



3900-2950
Sec. 21-T13N-R9W
Ambrosia Field
F.M.C.
Sept 23, 1958

T.D. Driller 320'
T.D. Log 320'

Observer: Bob Grant

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

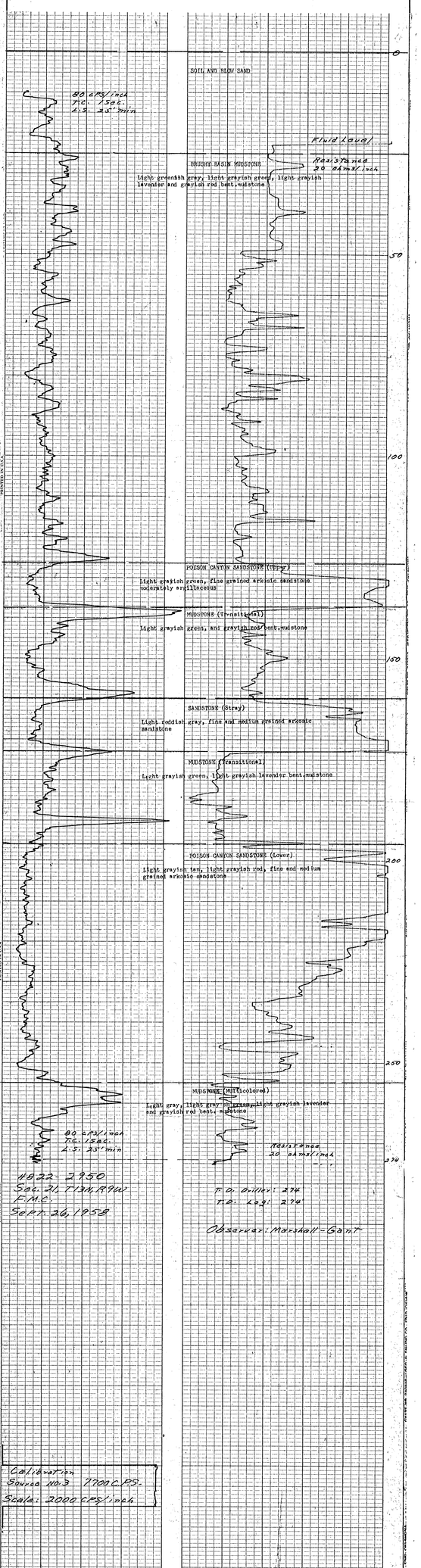
Well	4800 [redacted] - 2950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well: 4B22-2950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept. 26, 1958

Depth Datum	Ground Level	Elev.	9364'
Bottom Depth: Log	274'	Driller	274'
Size Hole	4 1/2" - 274'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No: 103
Crystal Size 3" x 3 1/2"
Calibration Standard No: 3
Truck No: 103

Date Sept. 26, 1958 Observer Marshall - Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

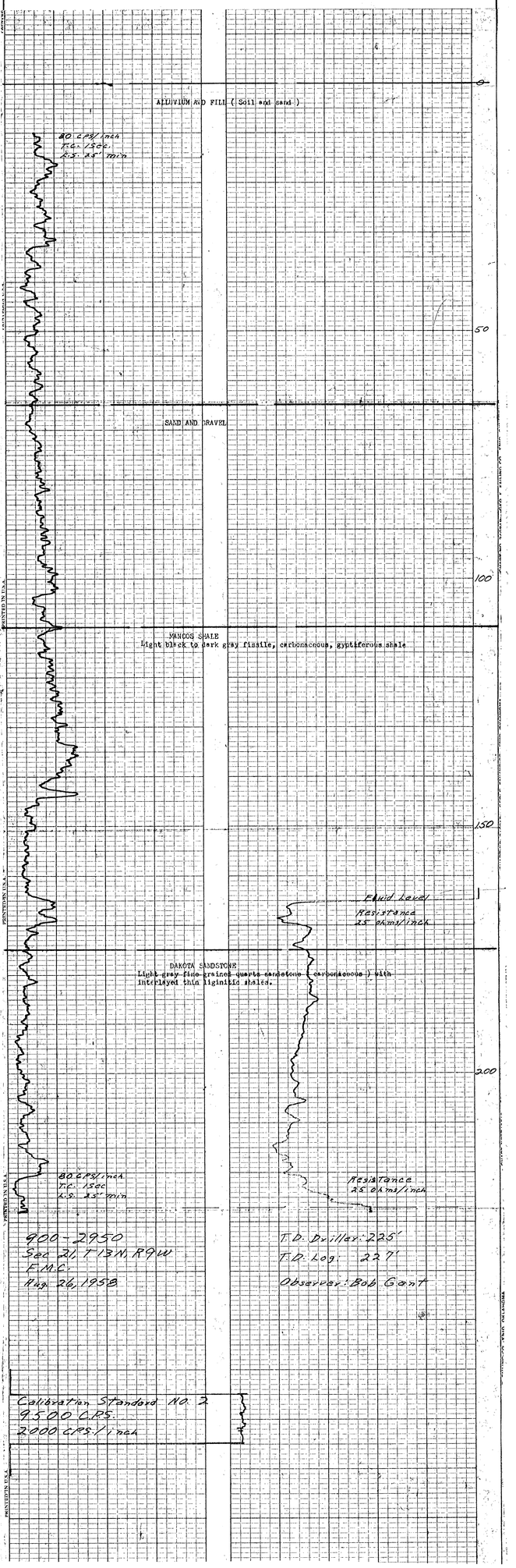
Well	900-2950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well 900-2950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Aug. 26, 1958

Depth Datum: Ground Level — Elev. 920.7'
Bottom Depth: Log 227' — Driller 225'
Size Hole: 4½" 0-225'
Mud: Kind Natural — Weight
Viscosity — Resistivity — °F.
Casing Data None

Remarks: Scintillation Probe Model XMS 200 Serial NO. 101
Crystal Size ¾" X 1½"
Calibration Standard NO. 2
Truck NO. 101

Date Aug. 26, 1958 — Observer Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

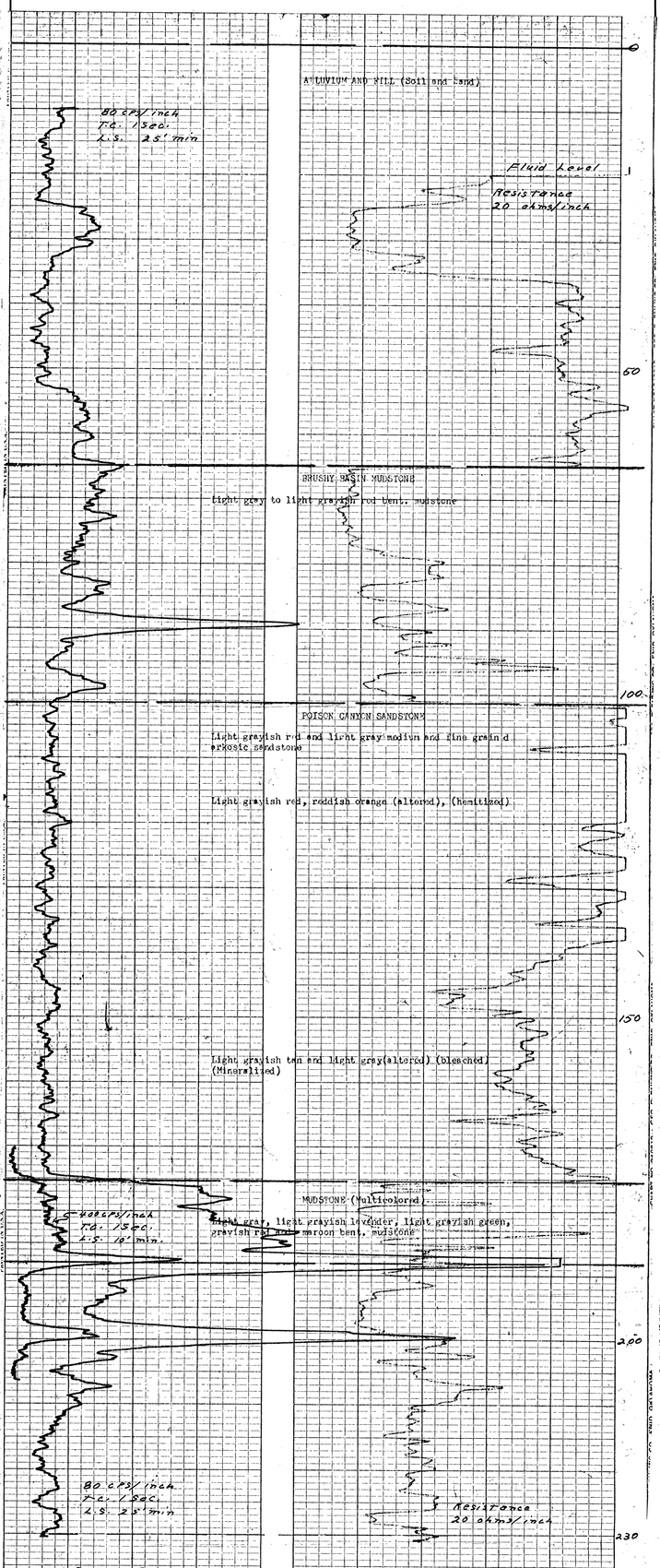
Well: 2100 - 2950
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21, T13N, R9W
County: Mc Kinley
State: New Mexico

Well: 2100 - 2950
Company: F.M.C.
County: Mc Kinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept. 29, 1958

Depth Datum: Ground Level — Elev. 920.2'
Bottom Depth: Log 230' — Driller 229'
Size Hole 4 1/2" 0' - 229'
Mud: Kind Natural — Weight
Viscosity — Resistivity — °F.
Casing Data None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" X 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Sept. 29, 1958 — Observer R.E. Gant



2100 - 2950
Sec. 21, T13N, R9W
F.M.C.
Sept. 29, 1958

T.D. Driller 229'
T.D. Log 230'

Observer: R.E. Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

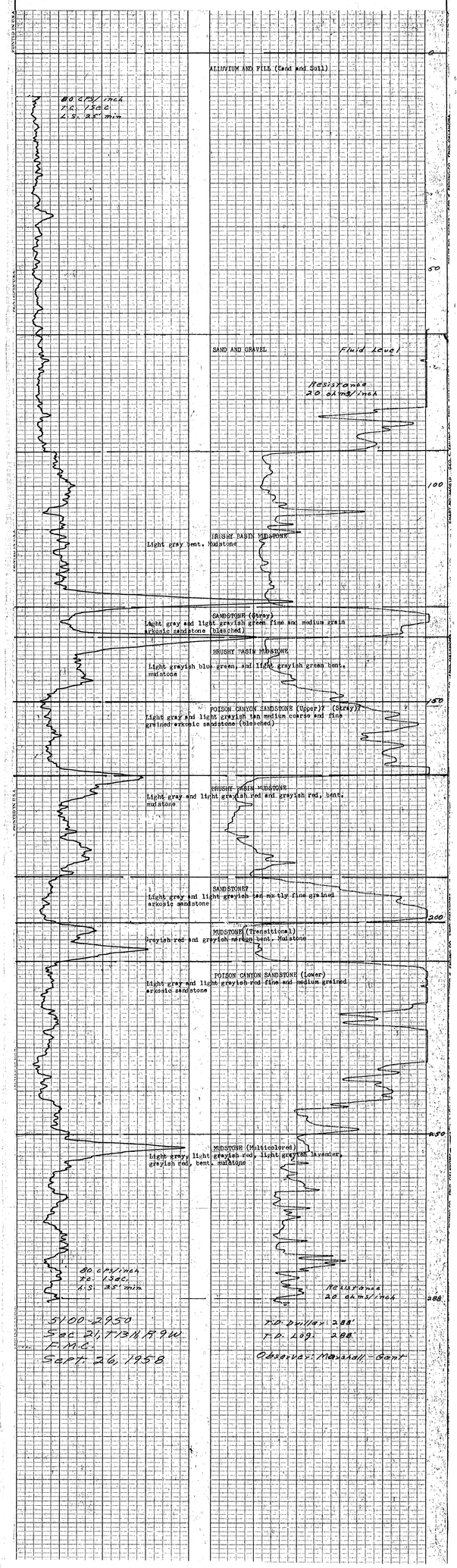
Well	5100-2950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level
Elev.	929.9'
Bottom Depth: Log	288'
Driller	288'
Size Hole	4 1/2" 0' - 288'
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	None

Remarks: Scintillation Probe Model XMS-200 Ser. No. 103
Crystal Si 20 3/4" X 1 1/2"
Calibration Standard No. 3
Truck No. 103

Date Sept. 26, 1958 Observer Marshall - Gant

Well 5100-2950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept. 26, 1958



Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

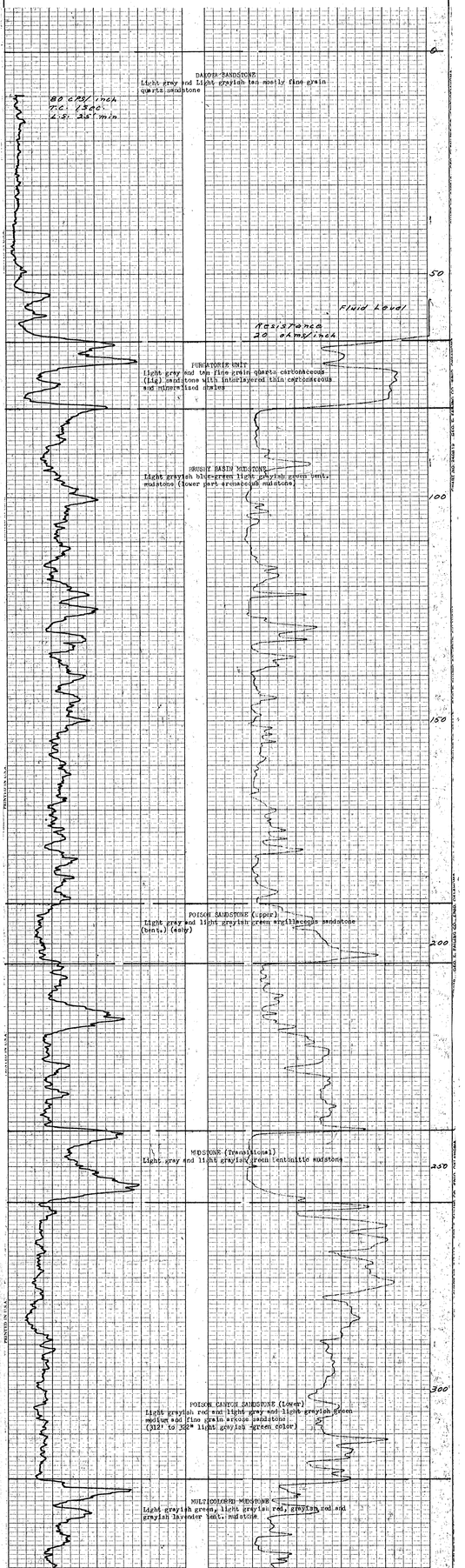
Well	4500 - 2950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico
Date	Sept 24, 1958

Well 4500-2950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21 T13N R9W
Date Sept 24, 1958

Depth Datum	Ground Level	Elev.	999.0'
Bottom Depth: Log	350'	Driller	350'
Size Hole	4 1/2" 0'-350'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Ser. No. 103
Crystal Size 3/4" x 1 1/2"
Calibration Standard No. 3
Truck No. 103

Date Sept. 24, 1958 Observer R.E. Gant



T.D. Driller 350'
T.D. Log: 350'

4500-2950
Sec 21, T13N, R9W
F.M.C.
Sept 24, 1958

Observer: R.E. Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
TYPE OF SURVEY

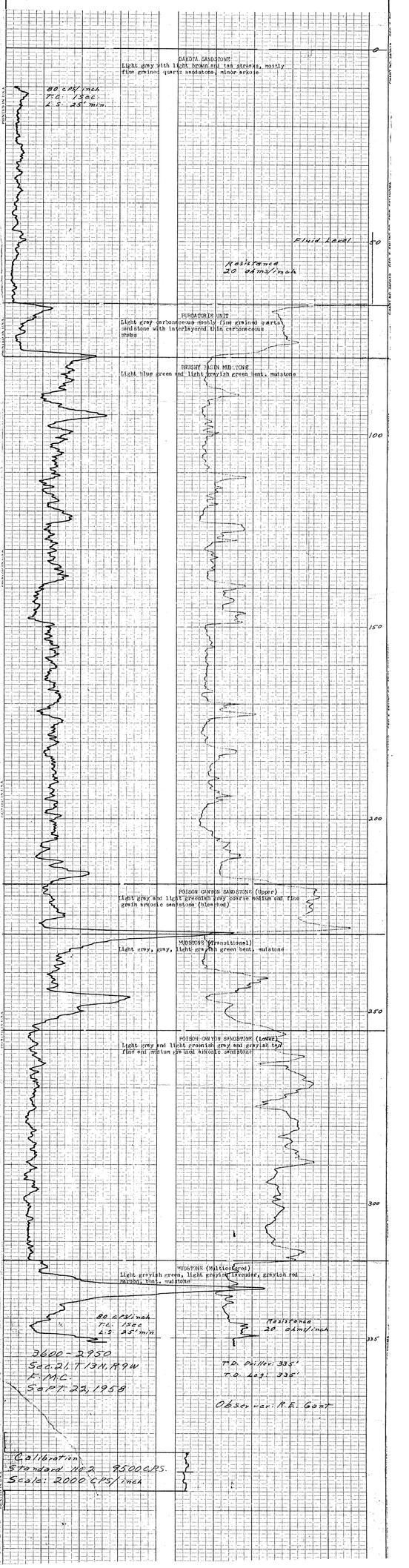
Well	3600 - 2950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level
Elev.	1037.8'
Bottom Depth: Log	335'
Driller	335'
Size Hole	4 1/2" 0'- 335'
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	
°F.	
Casing Data	None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal 2"x2 3/4" x 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Sept. 22, 1958 Observer R.E. Gant

Well 3600-2950
Company F.M.C.
County McKinley
State New Mexico
Date Sept 22, 1958
Location Sec. 21, T13N, R9W



Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray- Resistance

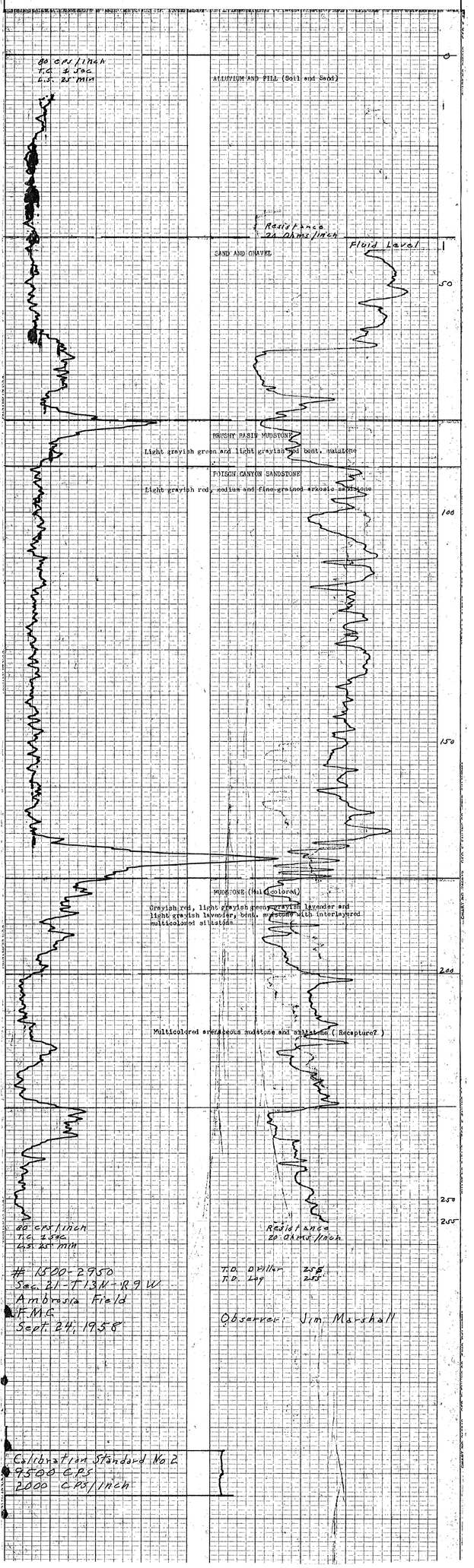
Well # 1500-2950
Field Ambrosia
Company F.M.C.
Location Sec. 21-T13N-R9W
County McKinley
State New Mexico

Date Sept 24, 1958
Location Sec. 21-T13N-R9W
State New Mexico
County McKinley
Company F.M.C.
Well # 1500-2950

Depth Datum Ground Level — Elev. 892.2'
Bottom Depth: Log 255' — Driller 255'
Size Hole 4¾" 0-255'
Mud: Kind Natural — Weight
Viscosity — Resistivity — °F.
Casing Data None

Remarks: Scintillation Probe Model XMS-200 Ser. 101
Crystal Size ¾" x 1¾"
Calibration Standard No. 2
Truck No 101

Date Sept. 24, 1958 — Observer Jim Marshall



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

Well: 5100 - 3950
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21, T 13N, R 9W
County: McKinley
State: New Mexico

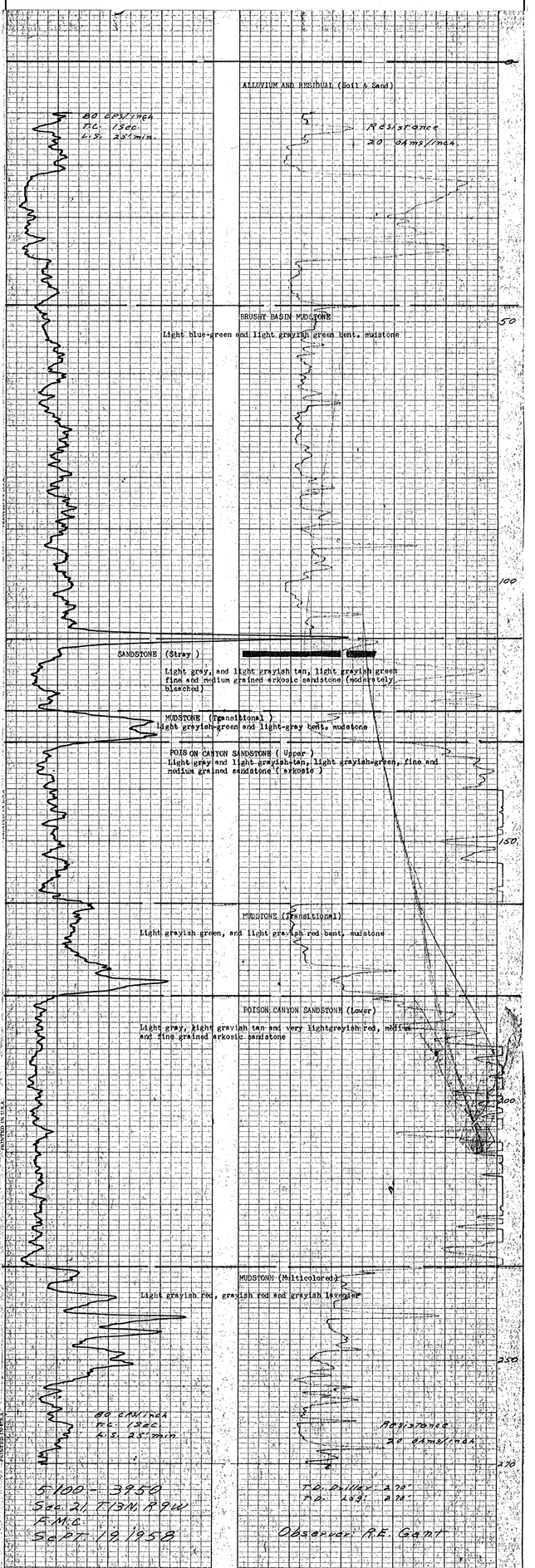
Date: Sept. 21, 1958

Well: 5100 - 3950
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept. 21, 1958

Depth Datum	Ground Level	Elev.	931.9
Bottom Depth: Log	270'	Driller	270'
Size Hole	4 1/2" 0'-270'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 2"x1 1/2"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 19, 1958 Observer: R.E. Gant



5100 - 3950
Sec. 21, T13N, R9W
F.M.C.
Sept. 19, 1958

T.D. Driller 270'
T.D. Log 270'

Observer: R.E. Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
TYPE OF SURVEY

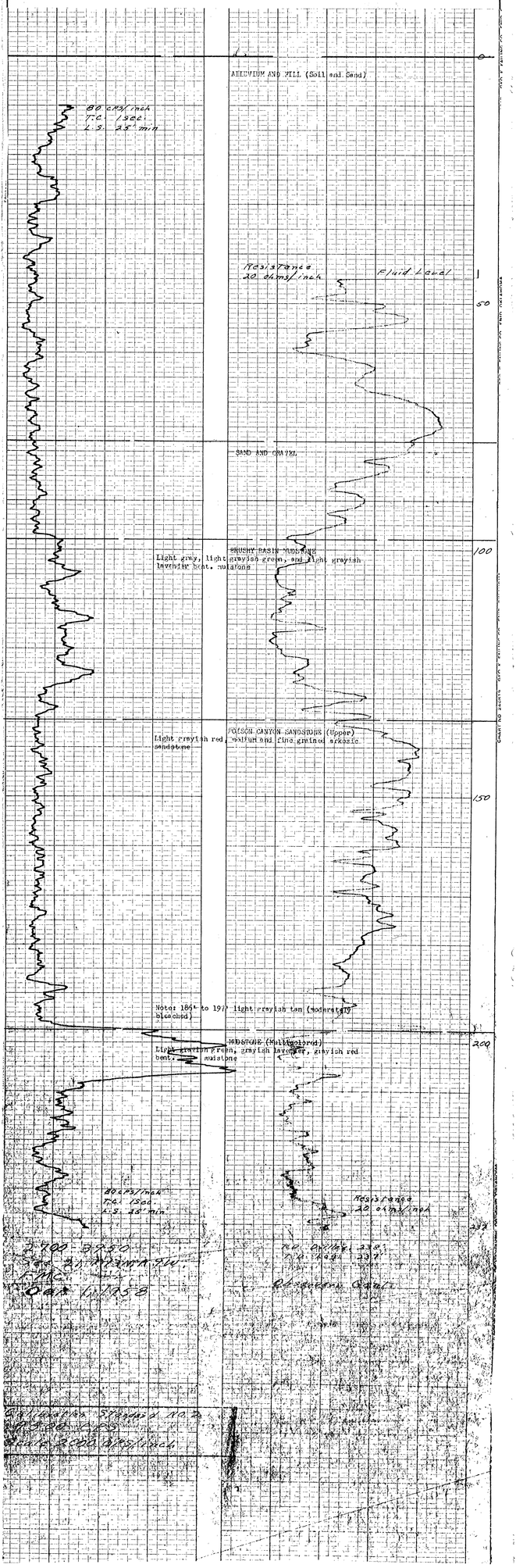
Well	2700-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well 2700-3950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Oct. 1, 1958

Depth Datum	Ground Level	Elev.	934.2'
Bottom Depth: Log	237'	Driller	238'
Size Hole	4½" 0-238'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Ser. No. 101
Crystal Size 2¼" X 1½"
Calibration Standard No. 2
Truck No. 101

Date Oct. 1, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Well	1200-3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec 21, T13N, R9W
Date	Sept. 3, 1958

TYPE OF SURVEY: Gamma Ray - Resistance

Well	1200 - 3950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	926.5'
Bottom Depth: Log	413'	Driller	416'
Size Hole	4½" 0' - 416		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size ¾"x1½"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 3, 1958 Observer: Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

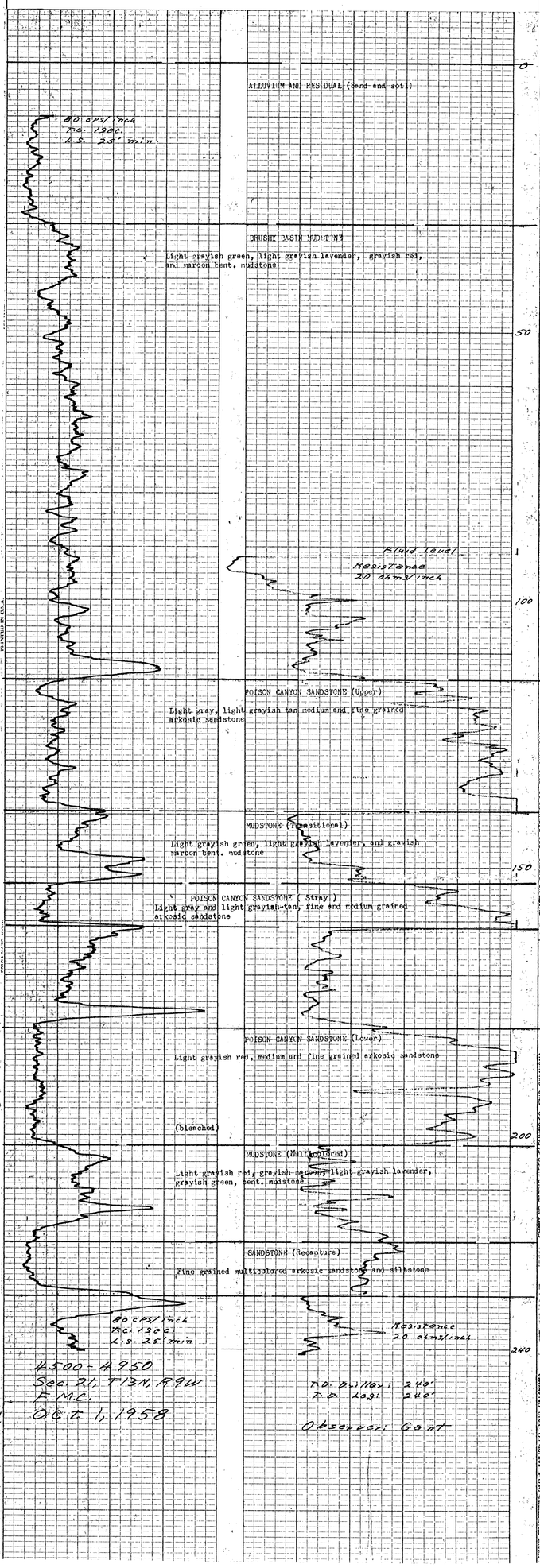
Well	4500-4950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well 4500-4950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21 T13N R9W
Date Oct. 1, 1958

Depth Datum	Ground Level	Elev.	953.6'
Bottom Depth: Log	240'	Driller	240'
Size Hole	4 1/2" 0' - 240'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model RMS-200 Serial no. 101
Crystal Size 3/4" x 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Oct. 1, 1958 Observer R.E. Gant



4500-4950
Sec. 21, T13N, R9W
F.M.C.
Oct. 1, 1958

T.D. Driller 240'
T.D. Log 240'

Observer: Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

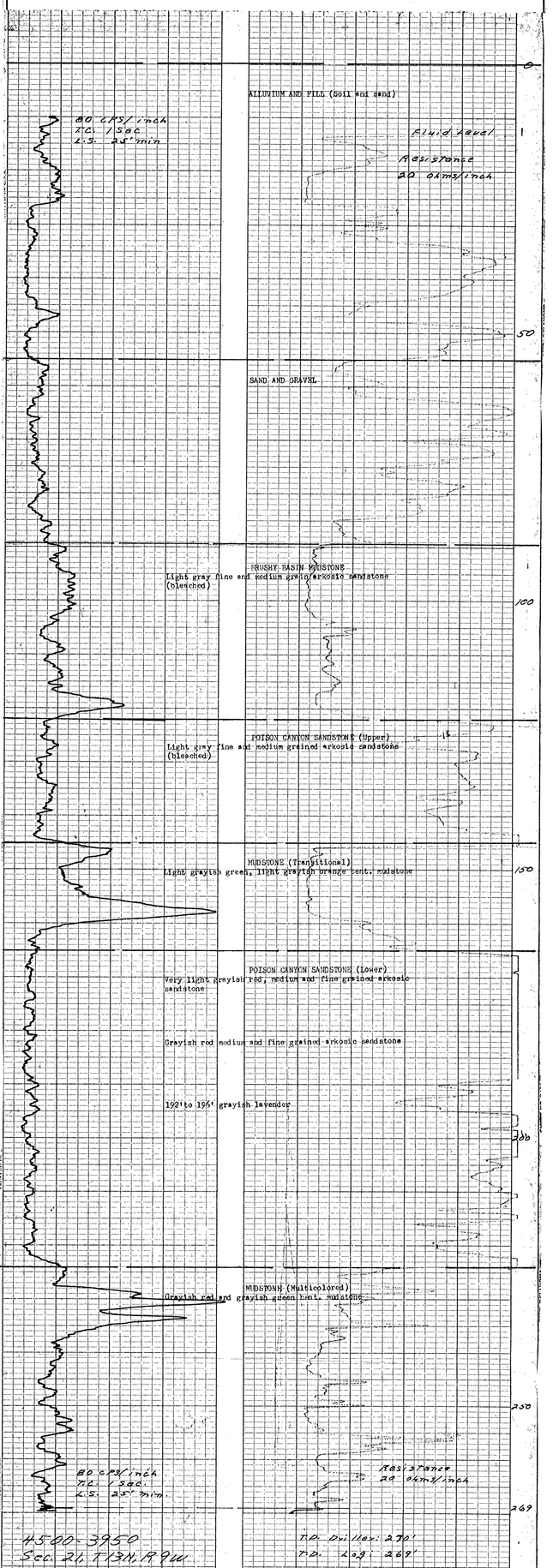
Well	4500-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well	4500 - 3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Date	Sept. 16, 1958

Depth Datum	Ground Level	Elev.	9290'
Bottom Depth: Log	269'	Driller	270'
Size Hole	4 1/2" 0' - 270'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" x 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date Sept. 16, 1958 Observer Bristow - Gant



4500-3950
Sec. 21, T13N, R9W
F.M.C.
Sept. 16, 1958

T.D. Drillers: 270'
T.D. Log: 269'

Observer: Bristow - Gant

Log-Master Services Inc.
ENID, OKLAHOMA

TYPE OF SURVEY

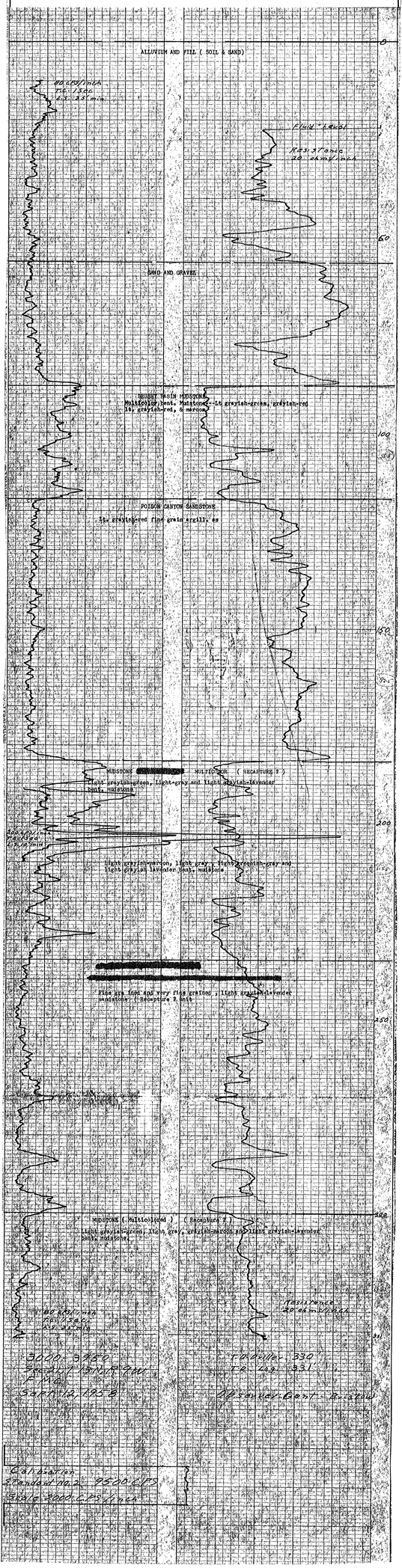
Well	3000 - 3950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21 - T13N - R9W
County	McKinley
State	New Mexico

Well 3000-3950
Company F.M.C.
County McKinley
State New Mexico
Location Sec 21-T13N-R9W
Date Sept 12, 1958

Depth Datum	Ground Level	Elev.	928.2'
Bottom Depth: Log	331'	Driller	330'
Size Hole	4 1/2" - 330'.		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" x 1/2"
Calibration Standard No. R
Truck No. 101

Date Sept 12, 1958 Observer R.E. Grant - Aubrey Bristow



Log-Master Services, Inc.

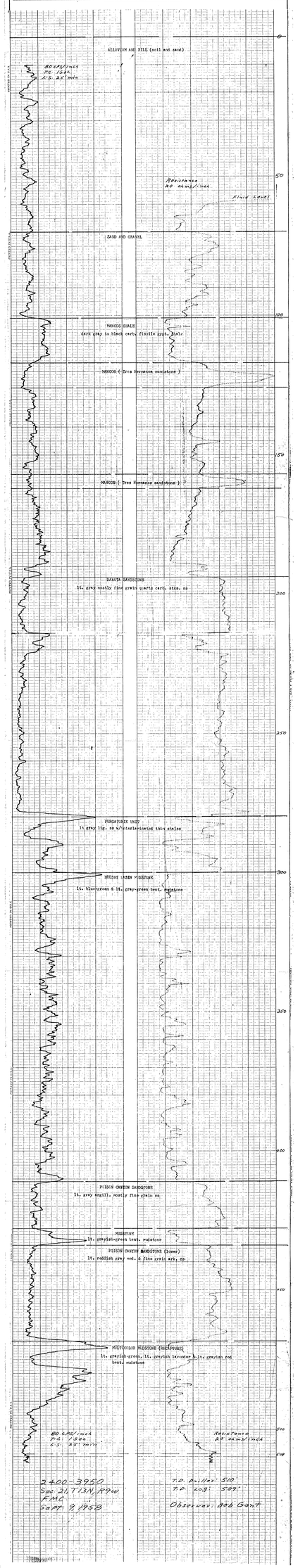
Gamma Ray - Resistance

Well	2400-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21 T13N R9W
County	McKinley
State	New Mexico
Date	Sept 9 1958

Depth Datum	Ground Level	Elev.	930.2'
Bottom Depth: Log	509'	Driller	510'
Size Hole	4½" 0'-510'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 1" x 1"
Calibration Standard No. 2
Truck No. 101

Date Sept. 9, 1958 Observer R.E. Gant



2400-3950
Sec 21 T13N R9W
FMC
Sept. 9, 1958

T.D. Driller 510'
T.D. Log 509'

Observer: Rob Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
FIELD SERVICE

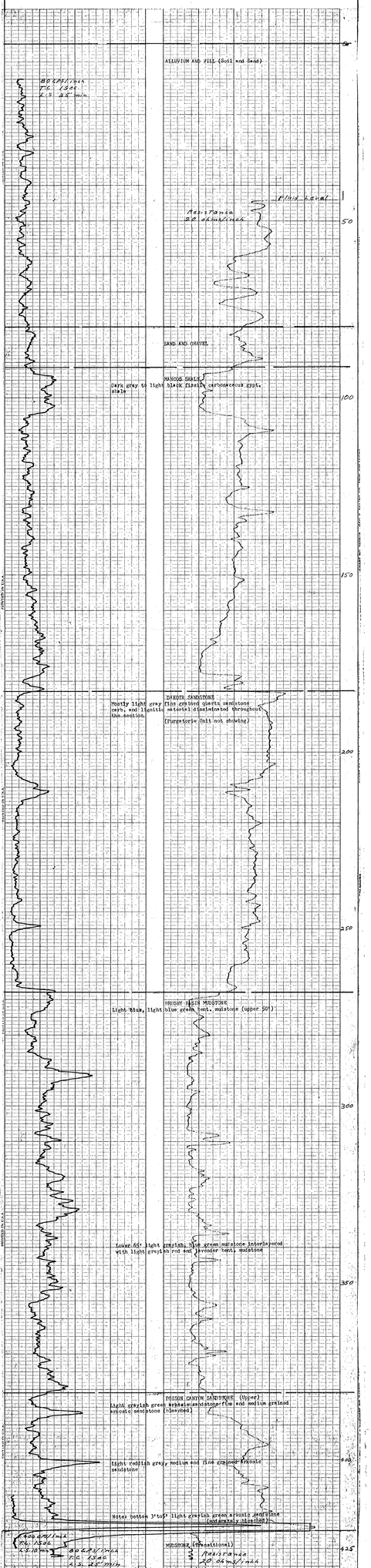
Well	2100-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well 2100-3950
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept. 10, 1958

Depth Datum	Ground Level	Elev.	912.3'
Bottom Depth: Log	425'	Driller	426'
Size Hole	4 7/8" 0'-426'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe, Model XMS-200 Serial No. 101
Scintillation Size SC-1
Collimator No. Standard No. 2
Truck No. 101

Date Sept. 10, 1958 Observer R.E. Grant



400 CPS/inch
R.S. 1 sec
L.S. 10 min.
80 CPS/inch
T.C. 1 sec
L.S. 22 min.

2100-3950
Sec. 21, T13N, R9W
F.M.C.
Sept. 10, 1958

T.D. Driller 426'
T.D. Log 425'

Observer: Bob Grant

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

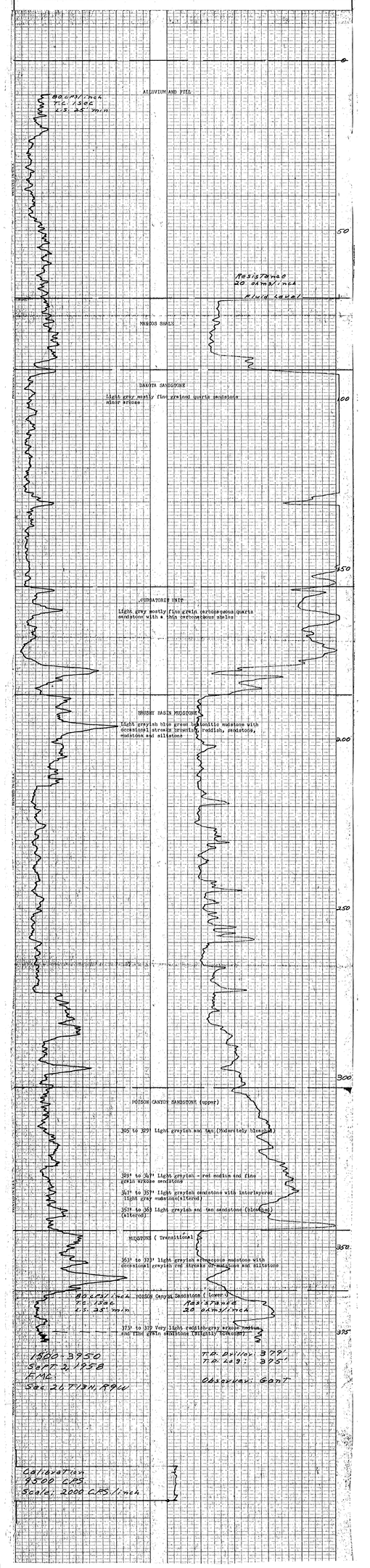
Well	1500-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec 24, T13N, R9W
County	McKinley
State	New Mexico

Well	1500-3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec 24, T13N, R9W
Date	Sept 2, 1958

Depth Datum	Ground Level	Elev.	9773'
Bottom Depth: Log	375'	Driller	379'
Size Hole	4½" 0-379'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial No. 101
Crystal Size ¾ x 1¾"
Calibration Standard No. 2.
Truck No. 101

Date Sept. 2, 1958 Observer Bob Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Well	4200-3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec 21-T13N-R9W
Date	Sept. 16, 1958

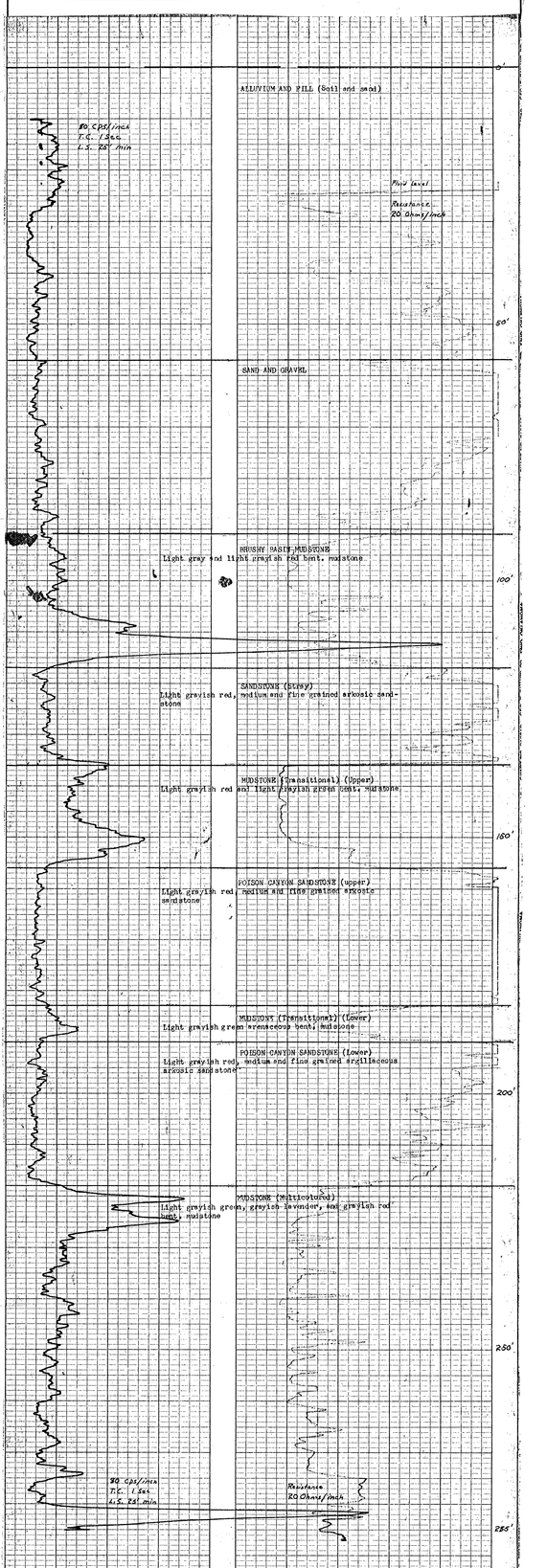
TYPE OF SURVEY: Gamma Ray - Resistance

Well	4200 - 3950
Field	Ambrosia
Company	F.M.C.
Location	Sec 21 - T13N - R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	9292
Bottom Depth: Log	285'	Driller	285'
Size Hole	1½" - 285'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size ¾" x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 16, 1958 Observer Aubrey Bristow - R.E. Gant



4200 - 3950
Sec 21 - T13N - R9W
F.M.C.
Sept 16, 1958

T.D. Driller - 285'
T.D. Log - 285'

Observer
Aubrey Bristow - R.E. Gant

Calibration Standard No 2 1500 CPS
Scale 8000 CPS/inch

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray – Resistance

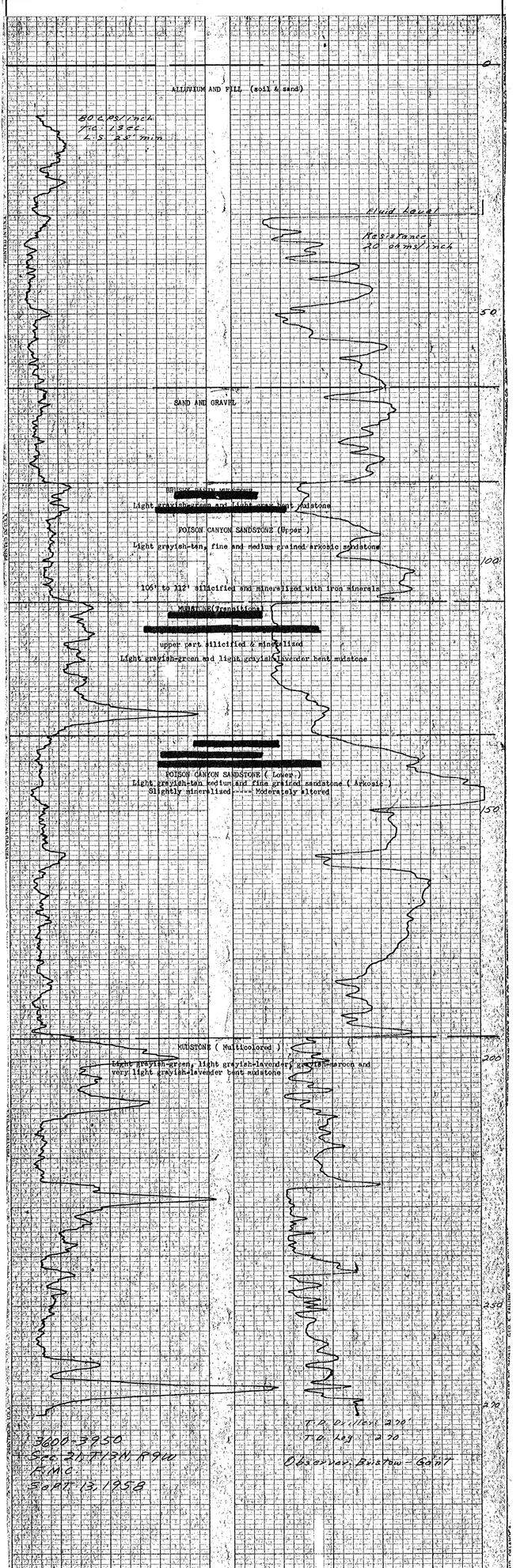
Well	3600-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well	3600-3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Date	Sept. 13, 1958

Depth Datum	Ground Level	Elev.	929.4'
Bottom Depth: Log	270'	Driller	270'
Size Hole	4½" 0'-270'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model SMS-200 Serial No. 101
Crystal Size 3/4" X 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 13, 1958 Observer Bristow – Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

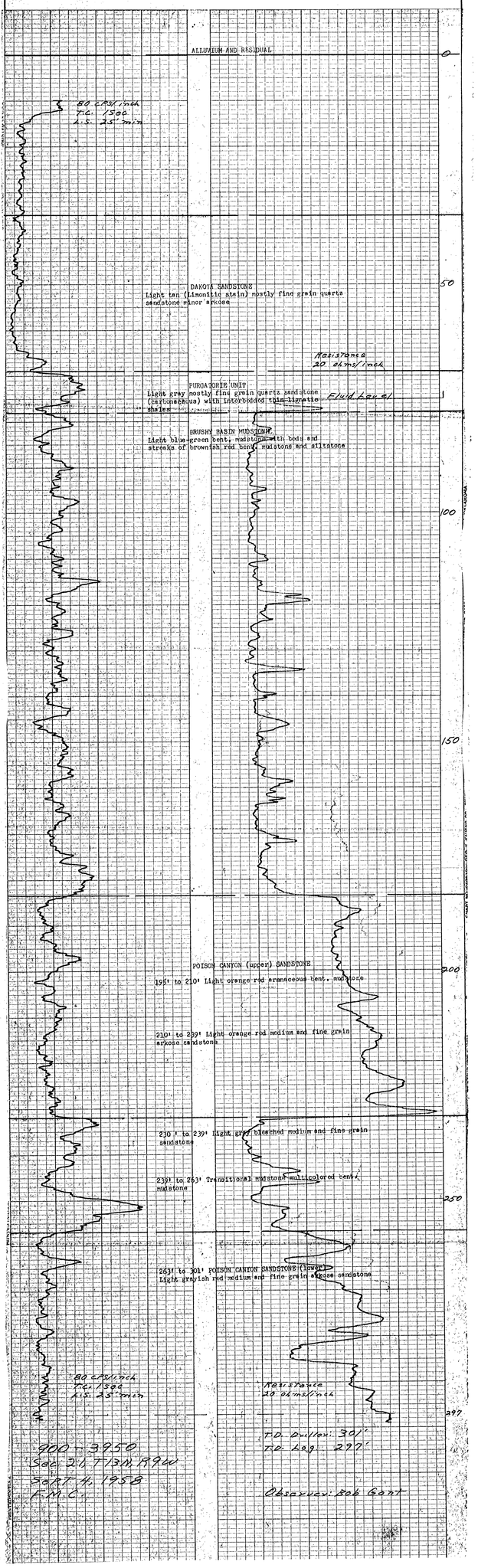
Well	900-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Date	Sept. 4, 1958
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Well	900-3950

Depth Datum	Ground Level	Elev.	931.5'
Bottom Depth: Log	297'	Driller	301'
Size Hole	4½" 0-301'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size ¾" x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 4, 1958 Observer Bob Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Well	4800 - 3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21 - T13N - R9W
Date	Sept. 17, 1958

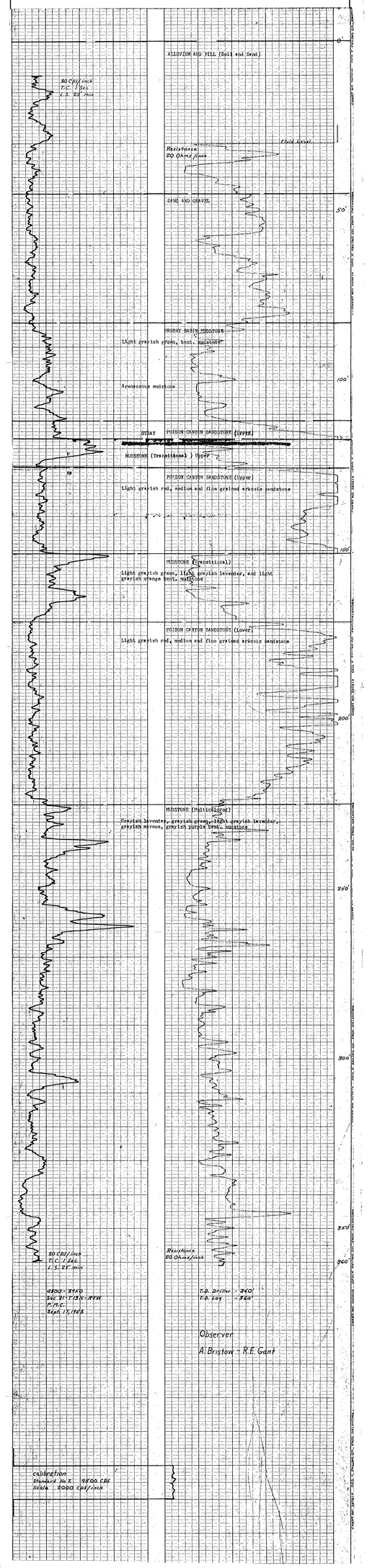
TYPE OF SURVEY: Gamma Ray - Resistance

Well: 4800 - 3950
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21 - T13N - R9W
County: McKinley
State: New Mexico

Depth Datum: Ground Level — Elev. 929.6'
Bottom Depth: Log 360' — Driller 360'
Size Hole: 4½" - 360'
Mud: Kind: Natural — Weight
Viscosity — Resistivity — °F.
Casing Data: None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size ⅞" x 1½"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 17, 1958 — Observer: Aubrey Bristow - R.E. Gant



Log-Master Services, Inc.
OIL SEARCH

Gamma Ray - Resistance

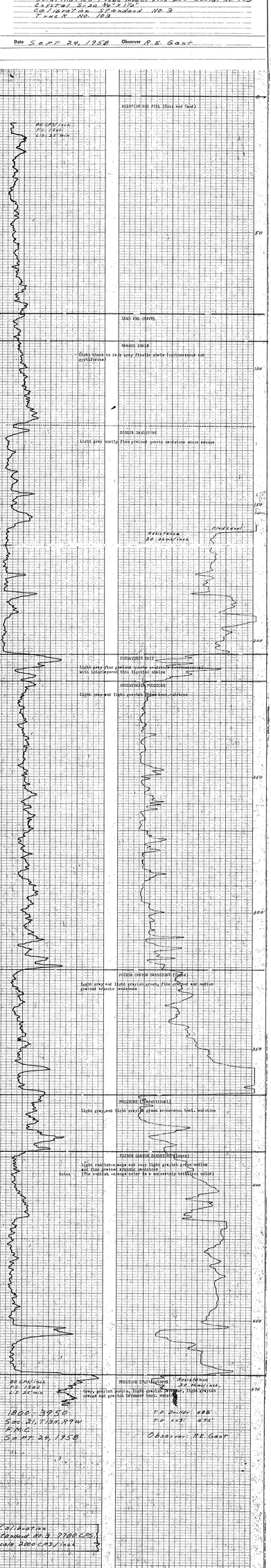
Well	1800-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level
Elev.	9040'
Bottom Depth: Log	475'
Driller	488'
Size Hole	4 1/2" 0'-488'
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	None

Remarks: Scintillation Probe Model SMS-200 Serial No. 103
Crystal Size 3x3 Type 1132
Calibration Standard No. 3
Truck No. 103

Date Sept. 24, 1958 Observer R.E. Gant

Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept. 24, 1958
Well 1800-3950



Log-Master Services, Inc.
ENID, OKLAHOMA

Well	3300-3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21-T13N-R9W
Date	Sept. 12, 1958

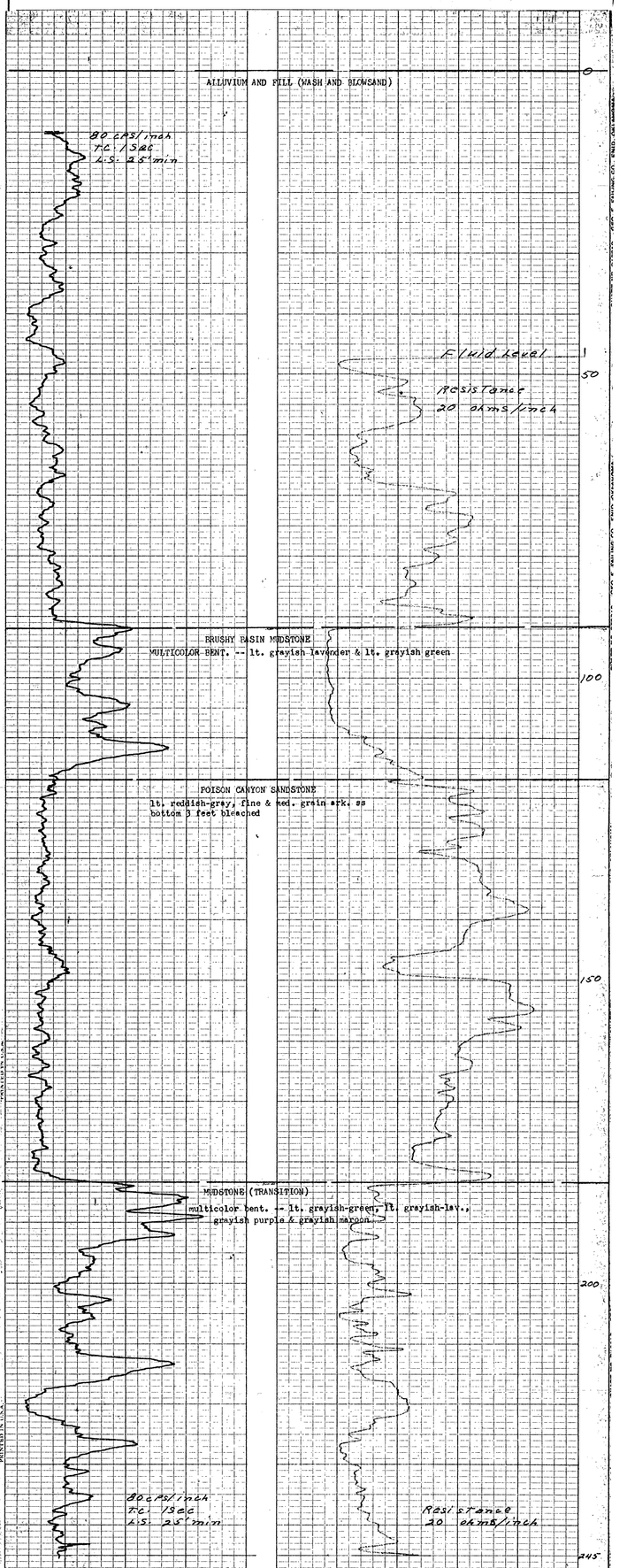
TYPE OF SURVEY: Gamma Ray - Resistance

Well	3300-3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21-T13N-R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	9754'
Bottom Depth: Log	245'	Driller	245'
Size Hole	4½" - 245'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size ¾" x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 12, 1958 Observer R.E. Gant - Aubrey Bristow



3300-3950
Sec. 21, T13N, R9W
F.M.C.
Sept. 12, 1958

T.D. Driller: 245
T.D. Log: 245'

Observers: Gant - Bristow

Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

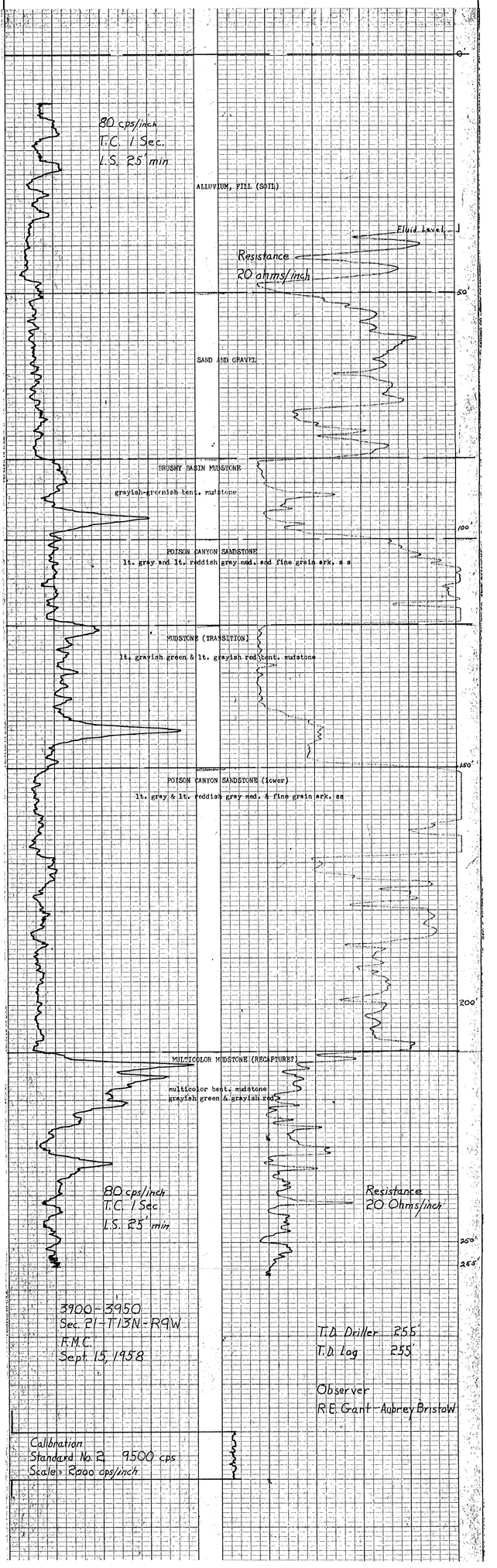
Well	3900 - 3950
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well	3900 - 3950
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Date	Sept 15, 1958

Depth Datum	Ground Level	Elev.	930.0'
Bottom Depth: Log	255'	Driller	255'
Size Hole	4½" 0' - 255'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4 x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept 15, 1958 Observer Bristow - Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

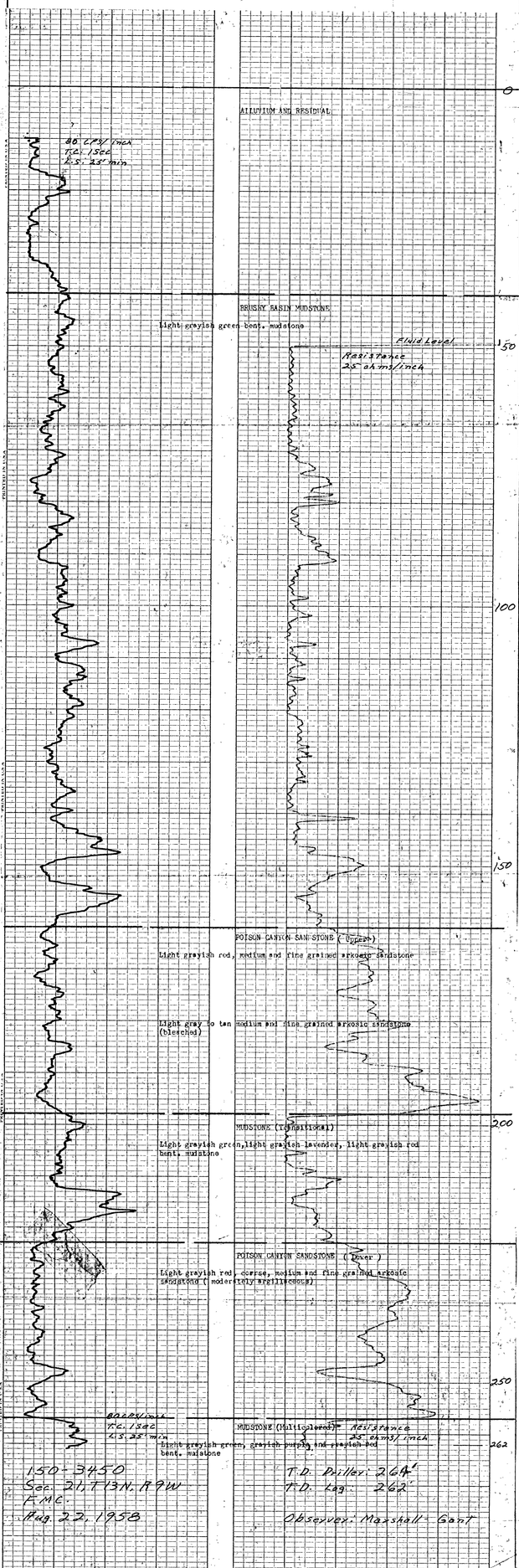
Well: 150-3450
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21, T13N, R9W
County: McKinley
State: New Mexico

Well: 150-3450
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Aug. 22, 1958

Depth Datum: Ground Level — Elev. 934.5'
Bottom Depth: Log 262' — Driller 265'
Size Hole: 4½" 0' — 265'
Mud: Kind: Natural — Weight
Viscosity — Resistivity — °F.
Casing Data: None

Remarks: Scintillation Probe Model X MS 200 Serial No. 101
Crystal Size ¾" X 1½"
Calibration Standard No. 2
Truck No. 101

Date: Aug. 22, 1958 — Observer: Marshall - Gant



150-3450
Sec. 21, T13N, R9W
F.M.C.
Aug. 22, 1958

T.D. Driller: 264'
T.D. Log: 262'

Observer: Marshall - Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

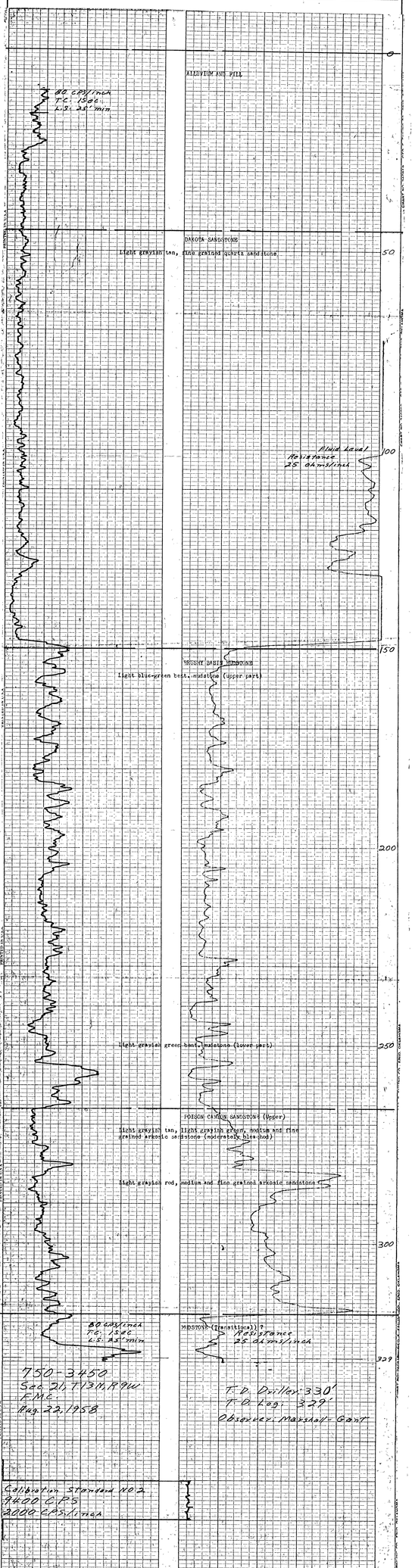
Well	750-3450
Field	Ambrosia
Company	EMC
Location	Sec 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level	Elev.	977.1'
Bottom Depth: Log	329'	Driller	330'
Size Hole	4 1/2" 0' - 330		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial No. 101
Crystal Size 3x3 in
Calibration Standard No. 2
Truck No. 101

Date Aug. 22, 1958 Observer Marshall - Gant

Well 750-3450
Company EMC
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Aug. 22, 1958



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

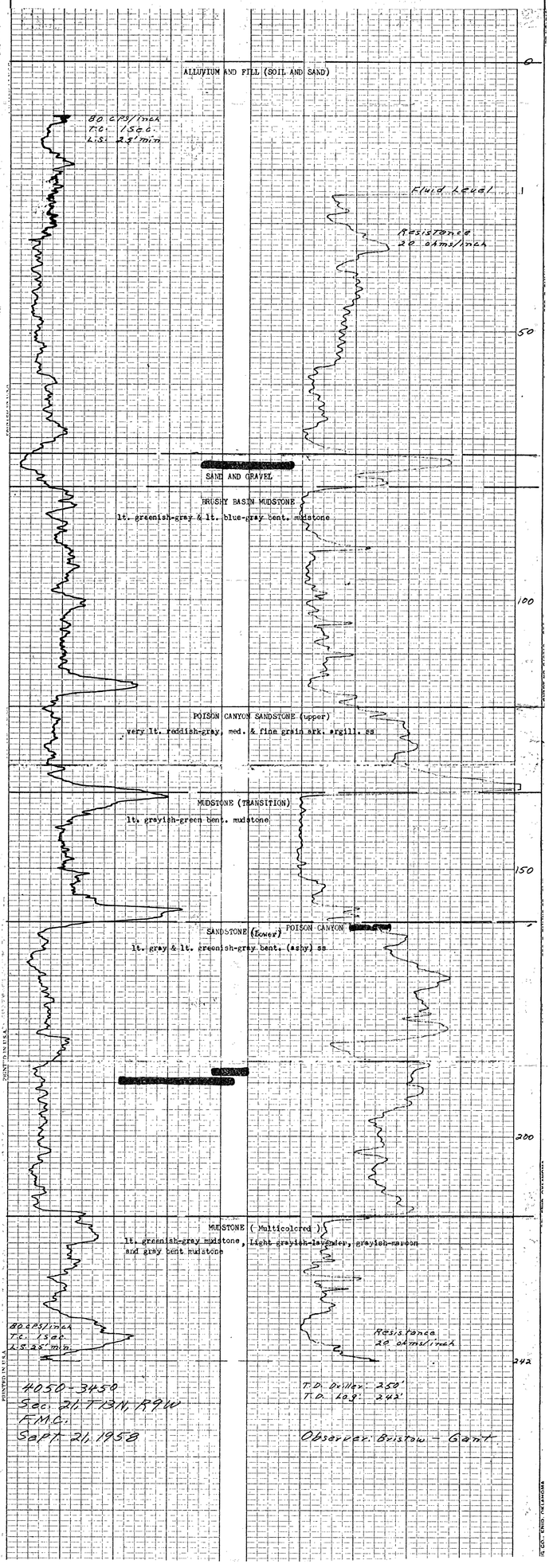
Well	4050-3450
Field	Ambrosia
Company	E.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well 4050-3450
Company E.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept. 15, 1958

Depth Datum	Ground Level	Elev.	928.9'
Bottom Depth: Log	242'	Driller	250'
Size Hole	4½" 0' - 250'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 15, 1958 Observer Bristow - Gant



4050-3450
Sec. 21, T13N, R9W
E.M.C.
Sept. 21, 1958

T.D. Driller: 250'
T.D. Log: 242'

Observer: Bristow - Gant

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Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

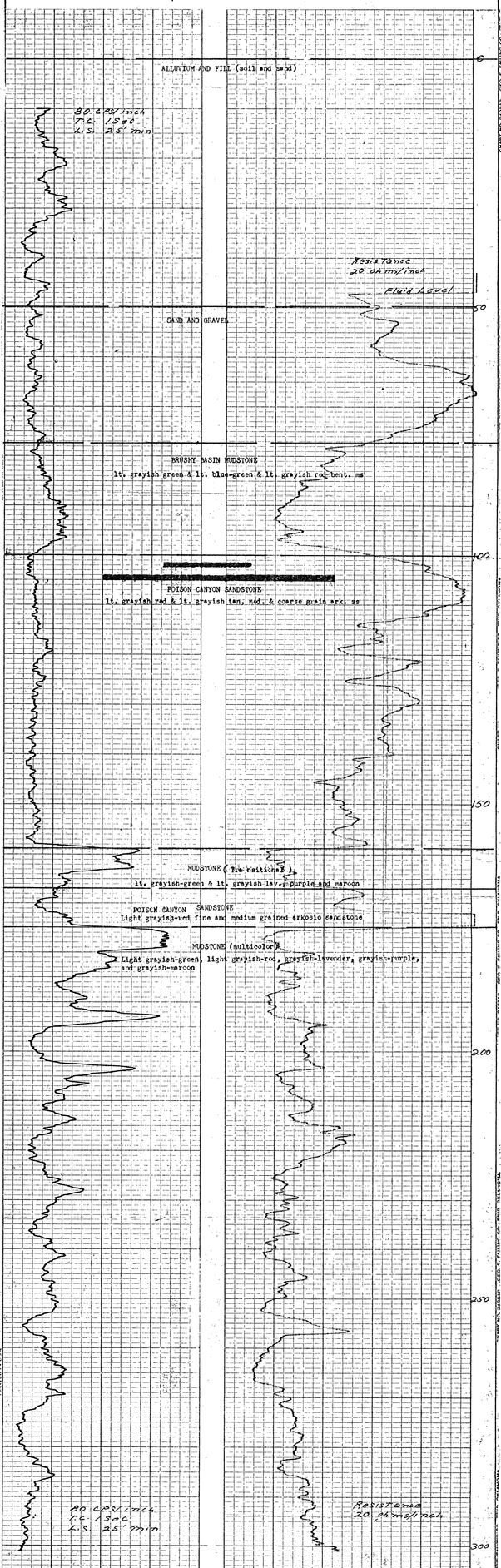
Well: [redacted] - 3450
Field: Ambrosia
Company: F.M.C.
Location: Sec. 21, T 13N, R 9W
County: McKinley
State: New Mexico

Depth Datum: Ground Level — Elev. 924.1'
Bottom Depth: Log 300' — Driller 300'
Size Hole: 4 1/2" 0'-300'
Mud: Kind: Natural — Weight
Viscosity — Resistivity — °F.
Casing Data: None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4 x 1 1/2"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 6, 1958 — Observer: R.E. Gant

Well 2250-3450
Company F.M.C.
County McKinley
State New Mexico
Location Sec 21, T13N, R9W
Date Sept 6, 1958



2250-3450
Sec 21, T13N, R9W
F.M.C.
Sept. 6, 1958

T.D. Driller: 300'
T.D. Log 300'

Observer: Bob Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

TYPE OF SURVEY: Gamma Ray - Resistance

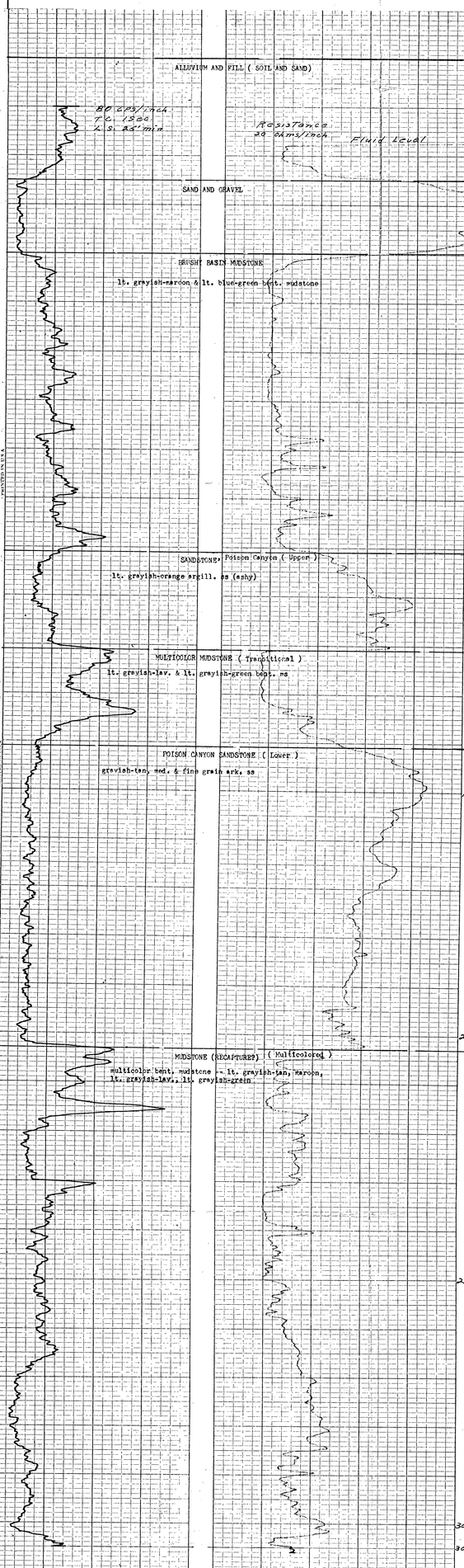
Well	3750-3450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level
Elev.	9259
Bottom Depth: Log	305'
Driller	305'
Size Hole	4½" 0'-305
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size ¾" x 1½"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 13, 1958 Observer: Bristow - Gant

Well: 3750-3450
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept. 13, 1958



3750 - 3450
Sec. 21, T13N, R9W
F.M.C.
Sept. 13, 1958

T.D. Driller: 305'
T.D. Log: 305'
Observer: Bristow - Gant

Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

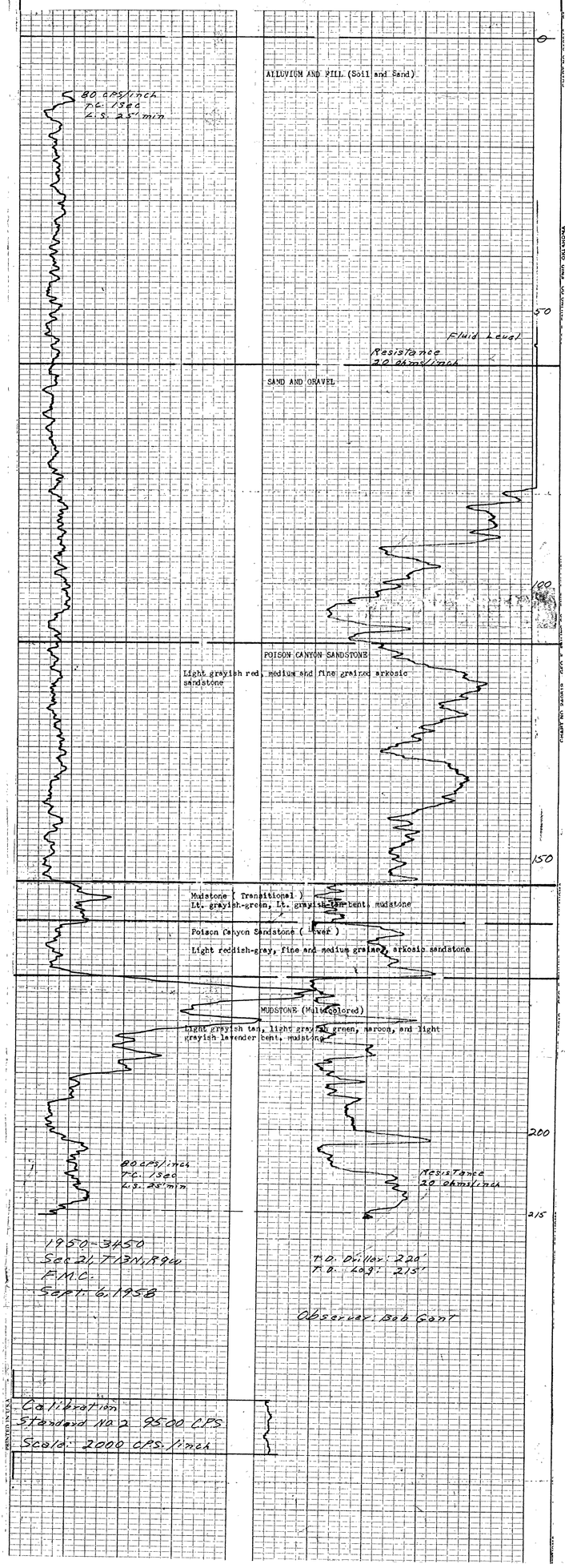
Well	1950-3450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well: 1950-3450
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec. 21, T13N, R9W
Date: Sept. 6, 1958

Depth Datum	Ground Level	Elev.	927.6'
Bottom Depth: Log	215'	Driller	220'
Size Hole	4½" 0' - 220'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size ¾ x 1½"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 6, 1958 Observer: Bob Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

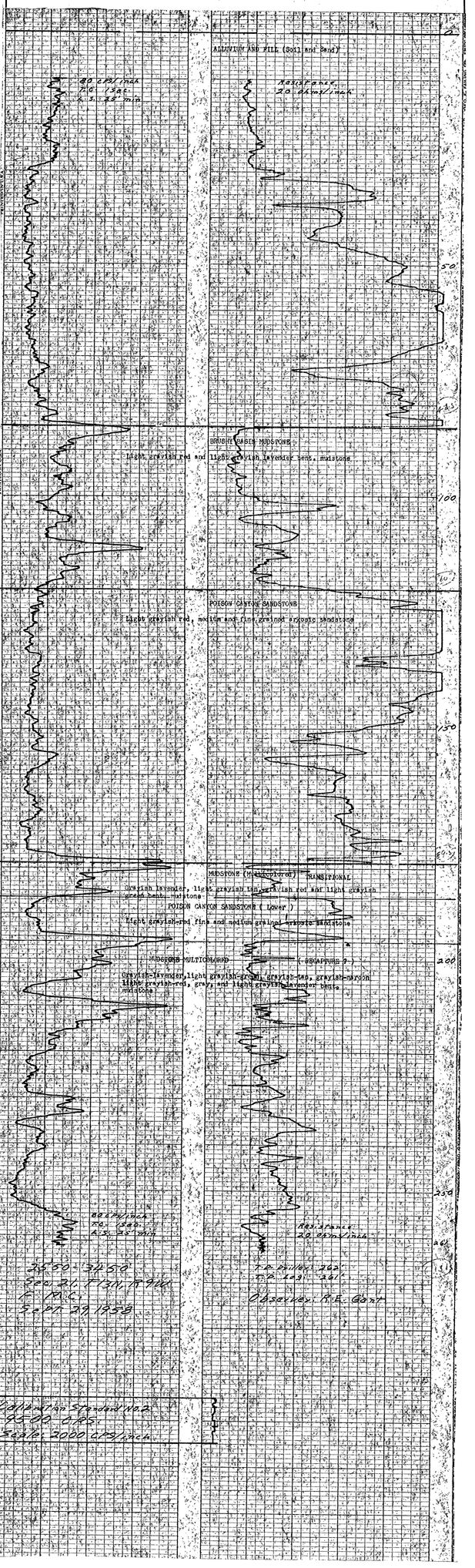
Well	2550-3450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well 2550-3450
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21 T13N R9W
Date Sept. 29, 1958

Depth Datum	Ground Level	Elev.	922.4'
Bottom Depth: Log	261'	Driller	262'
Size Hole	4½" 0'-262'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe, Model RMS-200 Serial No. 101
Crystal 3.22 ¾" x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 29, 1958 Observer R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Type of Survey: Gamma Ray - Resistance

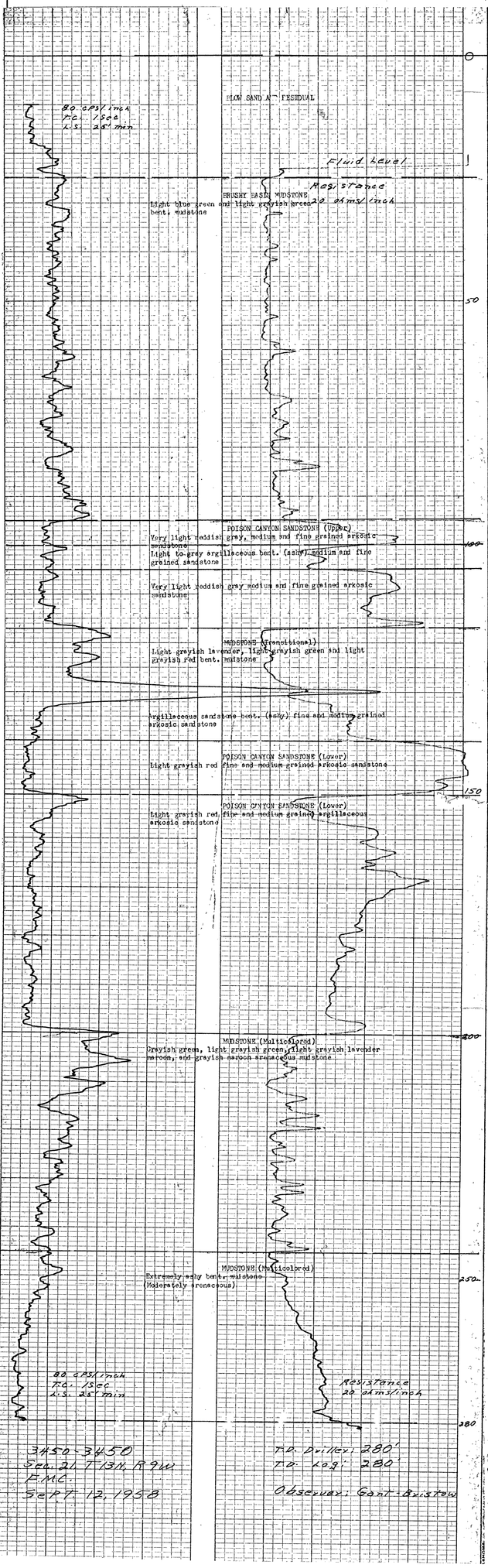
Well	3450 - 3450
Field	Ambrosia
Company	F.M.C.
Location	Sec 21 - T13N - R9W
County	McKinley
State	New Mexico

Well: 3450 - 3450
Company: F.M.C.
County: McKinley
State: New Mexico
Location: Sec 21 - T13N - R9W
Date: Sept 12, 1958

Depth Datum	Ground Level	Elev.	928.8'
Bottom Depth: Log	280'	Driller	280'
Size Hole	4½" - 280'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" X 1½"
Calibration Standard No. 2
Truck No. 101

Date: Sept. 12, 1958 Observer: R.E. Gant - Aubrey Bristow



3450-3450
Sec. 21 T13N R9W
F.M.C.
Sept. 12, 1958

T.D. Driller 280'
T.D. Log 280'

Observer: Gant-Bristow

Log-Master Services, Inc.
ENID, OKLAHOMA

Well	4950 - 3450
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21-T13N-R9W
Date	Sept. 17, 1958

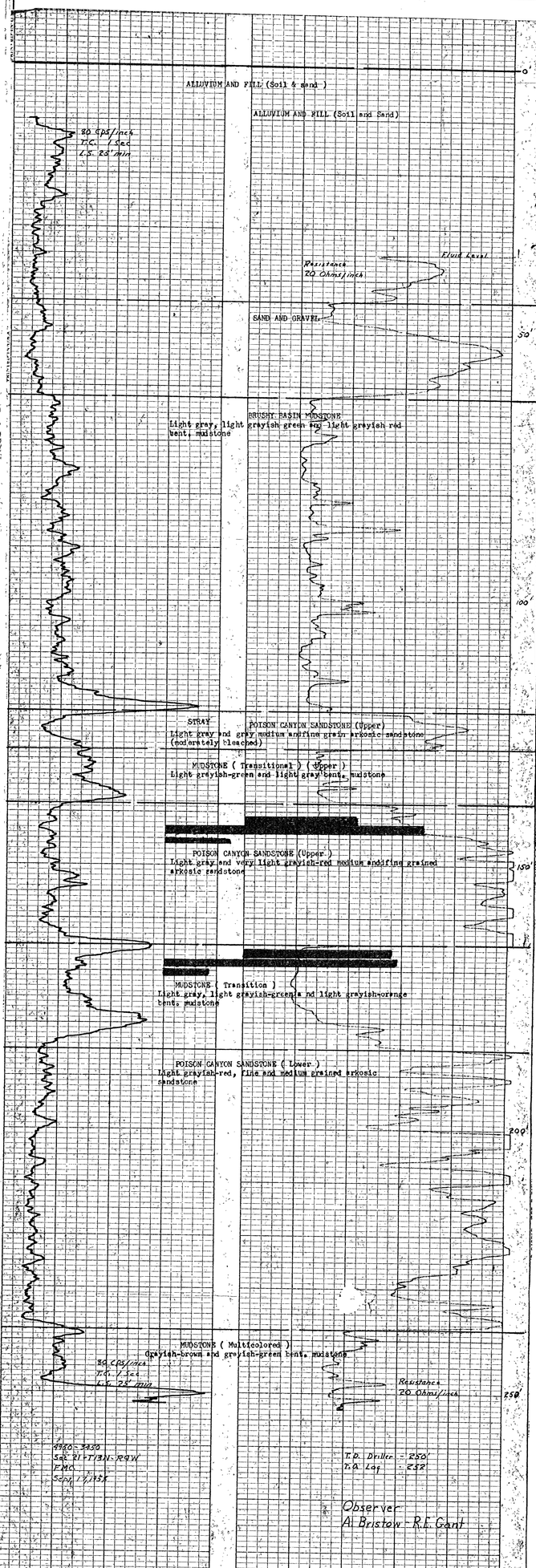
TYPE OF SURVEY: Gamma Ray - Resistance

Well	4950 - 3450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21-T13N-R9W
County	McKinley
State	New Mexico

Depth Datum: Ground Level — Elev. 932.6'
Bottom Depth: Log 252' — Driller 250'
Size Hole 4½" - 250'
Mud: Kind Natural — Weight
Viscosity — Resistivity — °F.
Casing Data None

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal size ¾" x 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 17, 1958 — Observer Aubrey Bristow - R.E. Gant



Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
TYPE OF LOG(S)

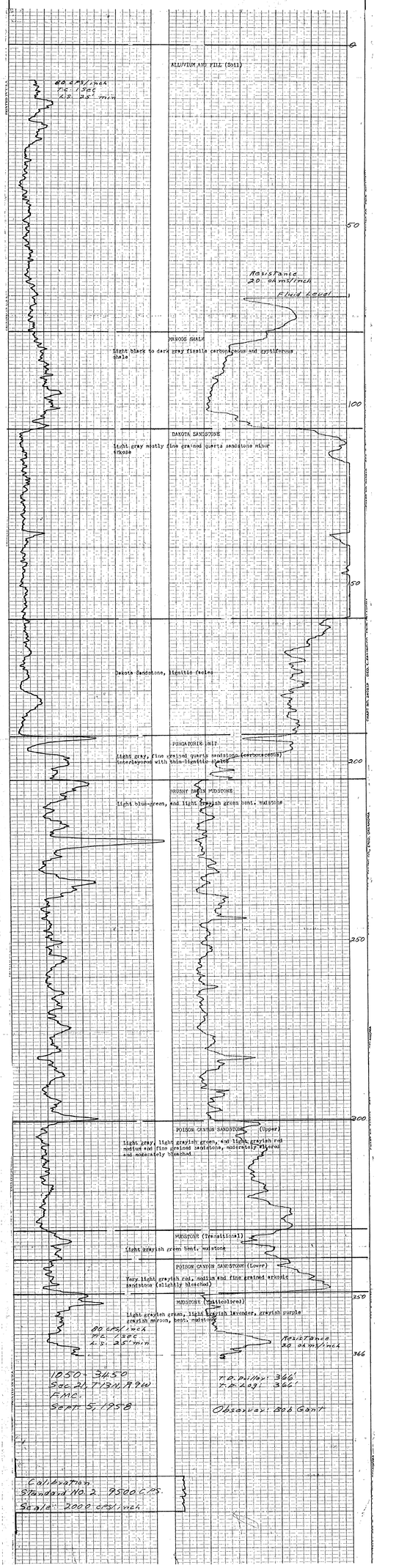
Well	1050 - 3450
Field	Ambrosia
Company	FMC
Location	Sec. 21, T13N, R9W
County	Mc Kinley
State	New Mexico

Depth Datum	Ground Level	Elev.	923.9'
Bottom Depth: Log	366'	Driller	366'
Size Hole	4 1/2" 0' - 366		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" x 1 1/2"
Calibration Standard No. 2
Tube No. 101

Date Sept. 5, 1958 Observer Bob Gant

Well 1050-3450
Company FMC
County Mc Kinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept 5, 1958



Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
TYPE OF SURVEY

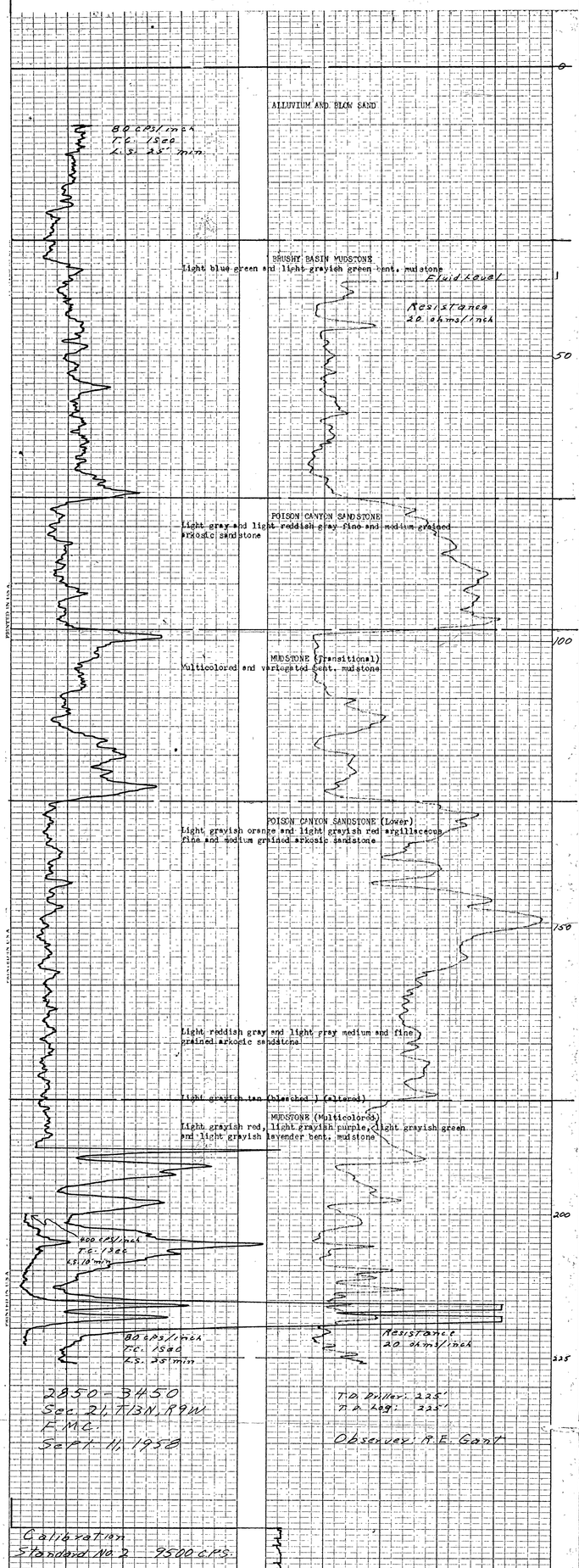
Well	2850-3450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well 2850-3450
Company F.M.C.
County McKinley
State New Mexico
Location Sec. 21, T13N, R9W
Date Sept. 11, 1958

Depth Datum	Ground Level	Elev.	924.5'
Bottom Depth: Log	225'	Driller	225'
Size Hole	4½" 0'-225'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS-200 Serial No. 101
Crystal Size 3/4" X 1½"
Calibration Standard No. 2
Truck No. 101

Date Sept. 11, 1958 Observer R.E. Gant



2850-3450
Sec. 21, T13N, R9W
F.M.C.
Sept. 11, 1958

T.D. Driller 225'
T.D. Log 225'

Observer: R.E. Gant

Calibration
Standard No. 2 9500 CPS.
Scale 2000 CPS/inch

Log-Master Services, Inc.
ENID, OKLAHOMA

Well	4650-3450
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec 21-T13N-R9W
Date	Sept. 18, 1958

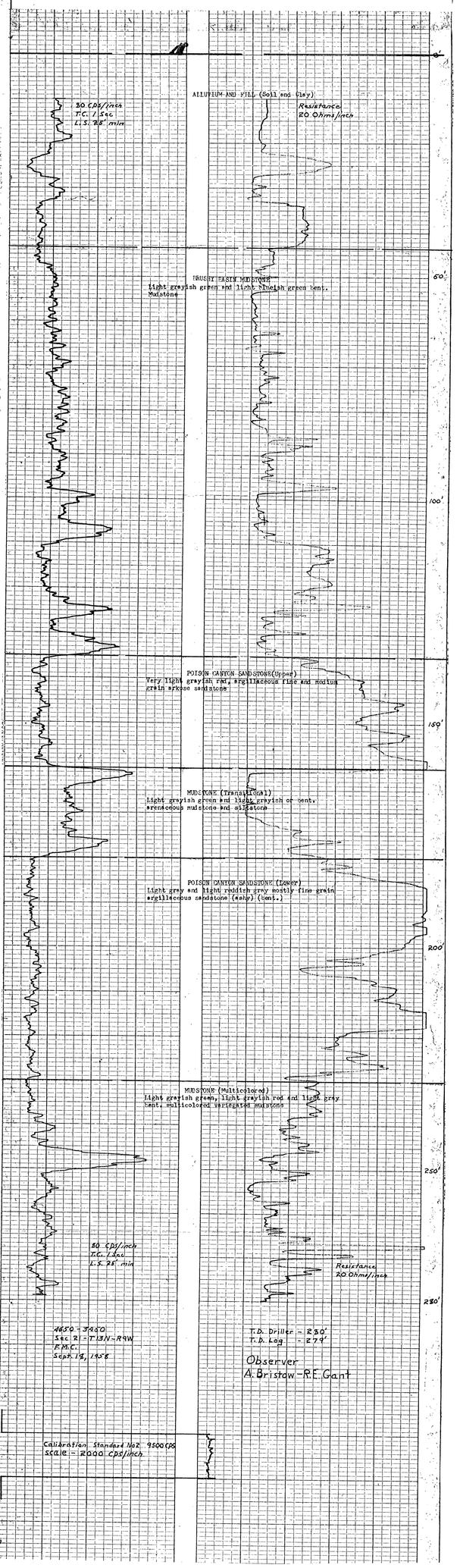
TYPE OF SURVEY: Gamma Ray - Resistance

Well	4650-3450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21-T13N-R9W
County	McKinley
State	New Mexico

Depth Datum: Ground Level — Elev. 9313'
Bottom Depth: Log 279' — Driller 280'
Size Hole 4½" - 0'-280'
Mud: Kind Natural — Weight
Viscosity — Resistivity — °F.
Casing Data None

Remarks: Scintillation Probe Model XMS-200 Serial No 101
Crystal Size 3/4" x 1 1/2
Calibration Standard No. 2
Truck No. 101

Date Sept. 18, 1958 — Observer A. Bristow - R.E. Gant



Log-Master Services, Inc.
LOG SCALE

Gamma Ray - Resistance

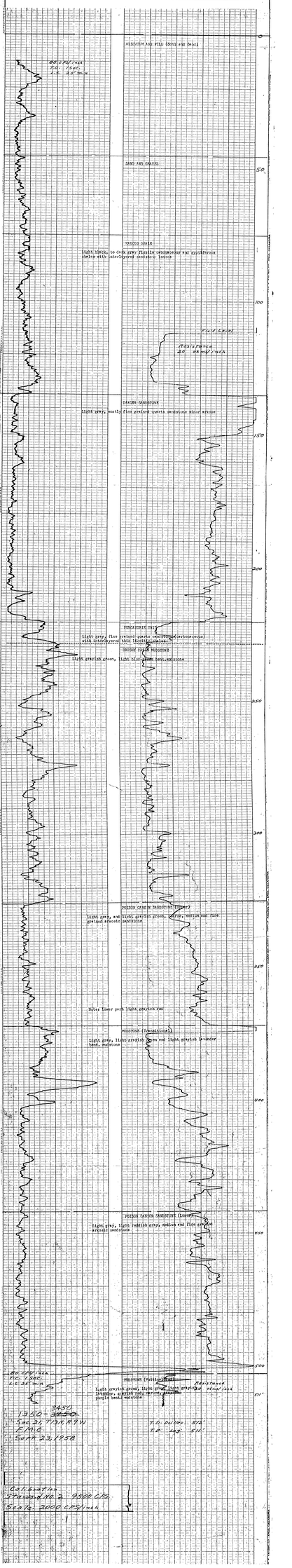
Well	1350 - 3450
Field	Pendasco
Company	F.M.C.
Location	Sec 21, T13N, R 9W
County	McKinley
State	New Mexico

Depth Datum	Ground Level
Elev.	905.5'
Bottom Depth: Log	511'
Driller	512'
Size Hole	4 1/2" 0' - 512'
Mud: Kind	Natural
Weight	
Viscosity	
Resistivity	°F.
Casing Data	No ne

Remarks: Saint-Gobain Probe Model XMS-200 Serial No 101
Central Size 4½"x10"
Calibration Standard No 2

Date Sept 23, 1958 Observer R.E. Gant

Well 1350 - 3450
Company F.M.C.
County McKinley
State New Mexico
Location Sec 21, T13N, R9W
Date Sept 23, 1958



Log-Master Services, Inc.
LAND, OKLAHOMA

Gamma Ray - Resistance

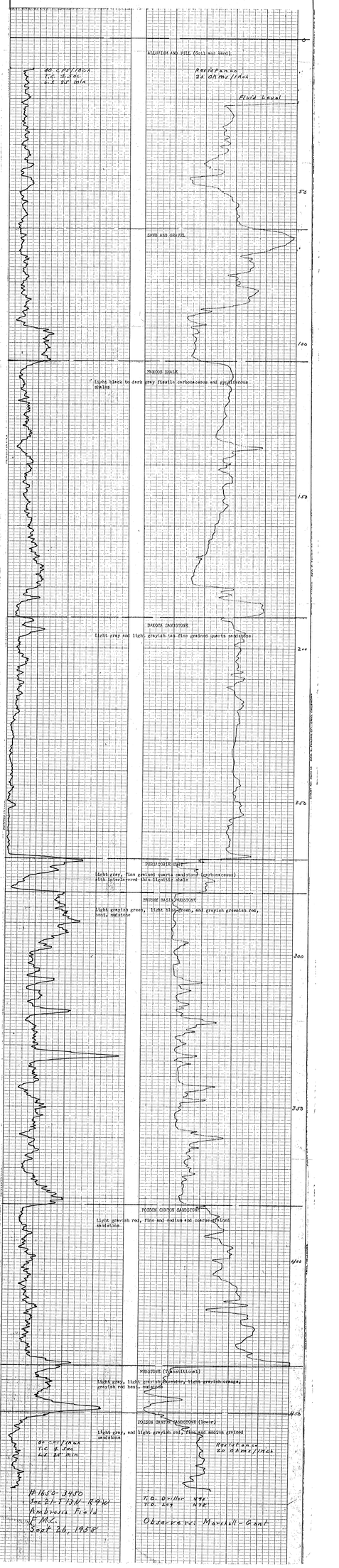
Well # 1650 - 3450
Field Ambrosia
Company F.M.C.
Location Sec 21 - T13N - R9W
County McKinley
State New Mexico

Depth Datum Ground Level — Elev. 915.5'
Bottom Depth: Log 475' — Driller 475'
Size Hole 4¾" - 0 - 475'
Mud: Kind Natural — Weight
Viscosity — Resistivity — °F.
Casing Data None

Remarks: Saint Marlin Probe Model XMS-200 Second Crystal Size 3x3x 18"
Calibration Standards No. 3
Truck No. 103

Date Sept. 26, 1958 — Observer Marshall - Grant

Well # 1650 - 3450
Company F.M.C.
County McKinley
State New Mexico
Location Sec 21 - T13N - R9W
Date Sept. 26, 1958



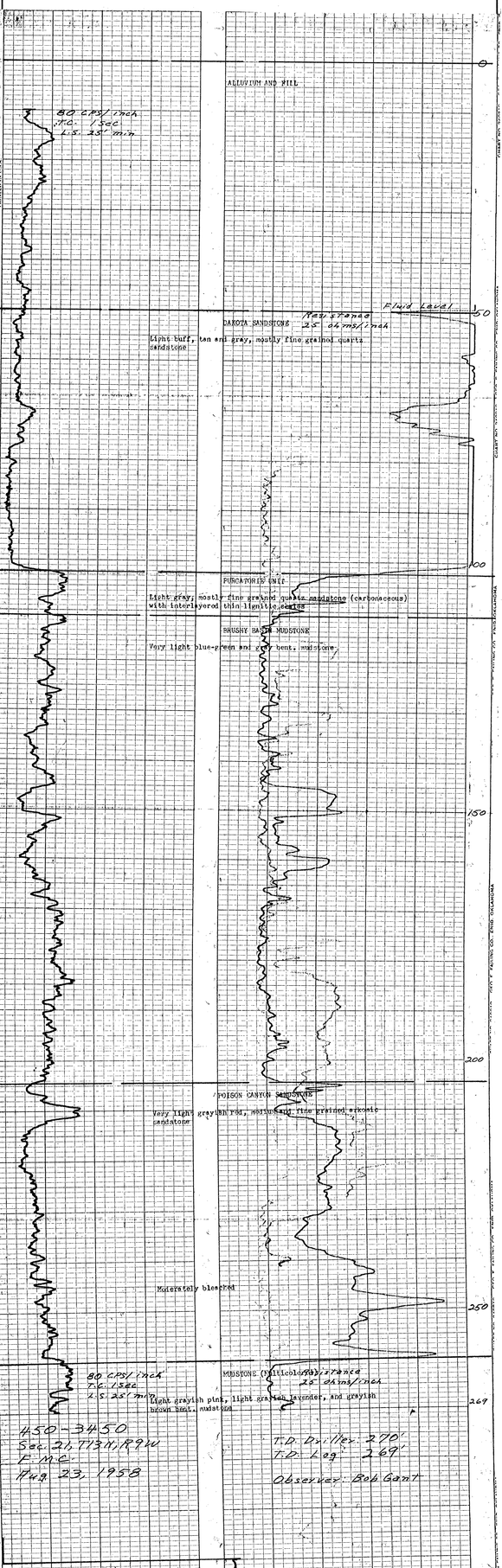
Log-Master Services, Inc.
ENID, OKLAHOMA

Gamma Ray - Resistance
TYPE OF SURVEY

Well	450-3450
Field	Ambrosia
Company	F.M.C.
Location	Sec. 21, T13N, R9W
County	McKinley
State	New Mexico

Well	450-3450
Company	F.M.C.
County	McKinley
State	New Mexico
Location	Sec. 21, T13N, R9W
Date	Aug. 23, 1958

Depth Datum	Ground Level	Elev.	931.3
Bottom Depth: Log	269'	Driller	270'
Size Hole	4½" 0' - 270'		
Mud: Kind	Natural	Weight	
Viscosity		Resistivity	°F.
Casing Data	None		

Remarks: Scintillation Probe Model XMS 200 Serial No. 101
Crystal Size 3/4" X 1½"
Calibration Standard No. 2
Truck No. 101

Date Aug. 23, 1958 Observer Bob Gant