FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

ELIMINATION REPORT
FOR
CF INDUSTRIES, INC.
(THE FORMER INTERNATIONAL MINERALS AND CHEMICAL CORPORATION)
BARTOW, FLORIDA

Department of Energy
Office of Nuclear Energy
Office of Remedial Action and Waste Technology
Division of Facility and Site Decommissioning Projects

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INTRODUCTION

The Department of Energy (DOE), Office of Nuclear Energy, Office of Remedial Action and Waste Technology, Division of Facility and Site Decommissioning Projects (and/or predecessor agencies, offices, and divisions), has reviewed the past activities conducted on behalf of the Atomic Energy Commission (AEC) at the former International Minerals and Chemicals Corporation (now CF Industries, Inc.). A preliminary radiological survey revealed some residual radium contamination in the soil that exceeds current DOE radiological guidelines[1]. However, on the basis of a review of available historical and radiological information, DOE has determined that the contamination is not attributable to the AEC-sponsored operations. Therefore, DOE does not have legal authority to conduct remedial actions at this site and will not include it in the Formerly Utilized Sites Remedial Action Program (FUSRAP).

This report summarizes information on the radiological status of the site and summarizes the results of DOE's authority investigation. Although the contamination exceeds guidelines, it does not pose a significant radiological hazard to site occupants or the general public under current conditions of site usage.

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1 U.S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites (Rev. 1, 1985).

This elimination report will be archived by DOE through the Assistant Secretary for Management and Administration. A copy of this package will be available for public review between 8:00 a.m. and 4:00 p.m., Monday through Friday (except Federal holidays), at the DOE Public Reading Room located in Room 1E-190 of the Forrestal Building, 1000 Independence Avenue, SW., Washington, D.C.

BACKGROUND

Site Function

The Bonnie Uranium Extraction Plant was designed to remove uranium from a monocalcium phosphate solution having a concentration of about 18 percent phosphorus pentoxide. During early plant operation, several of the facilities were modified to improve the plant's operating efficiency. The plant was constructed and operated under Atomic Energy Commission (AEC) contract AT(49-1)-630, effective July 23, 1952. During 1954 or 1955, the Bonnie plant switched from a monocalcium phosphate operation to phosphoric acid, which necessitated additional modification of the uranium extraction plant to handle the change in feed material.

This plant processed the entire acid stream from the phosphate operation, removing 75 to 90 percent of the associated uranium. The uranium was recovered as green salt (uranium tetrafluoride), containing 50 to 60 percent uranium oxide (U_3O_8). The product was shipped to the Fedd Materials Production Center in Fernald, Ohio, for further processing. Total production of (U_3O_8) was approximately 100 tons, with a peak production rate of 2 to 3 tons per month.

During tne plant's operation, it was owned by the International Minerals and Chemical Corporation. The plant was shut down in December 1959. International later demolished the plant except for the main process building, which was used for storage. Ownership of

the property was transferred to Central Farmers (now CF Industries) in early 1969. The plant is now known as the Bartow Phosphate Works of CF Chemicals, Inc. (a subsidiary of CF Industries).

Site Description

The plant was located between Mulberry and Bartow, Florida, about 2 miles south of State Highway 60 (Figure 1). CF Industries, Inc., demolished the old process building in 1976 and removed the concrete pad. All chemical plant equipment and structures had been removed in 1962 by International Minerals and Chemical Corporation and sold for salvage value. The electrical substation currently located on the plant site was not part of the extraction plant.

Radiological History and Status

According to employee recollection, AEC inspected the plant after shutdown. However, no records of the survey are available. Some records were lost in a fire, others in a 1961 hurricane.

Department of Energy (DOE) (then the Energy Research and Development Administration) Oak Ridge Operations Office and Oak Ridge National Laboratory personnel visited the site and performed a screening survey on April 6, 1977. The survey indicated radiation levels at the site to be above the average natural background in the U.S.; however, the levels were typical of levels measured at other phosphate product plants currently operating for nonuranium recovery purposes.

ELIMINATION ANALYSIS

The determination of authority for DOE to include a site in FUSRAP and perform any required remedial action is based upon an evaluation of the specific terms of the contract or contracts between AEC and the site owner or operator; confirmation that the residual radioactive

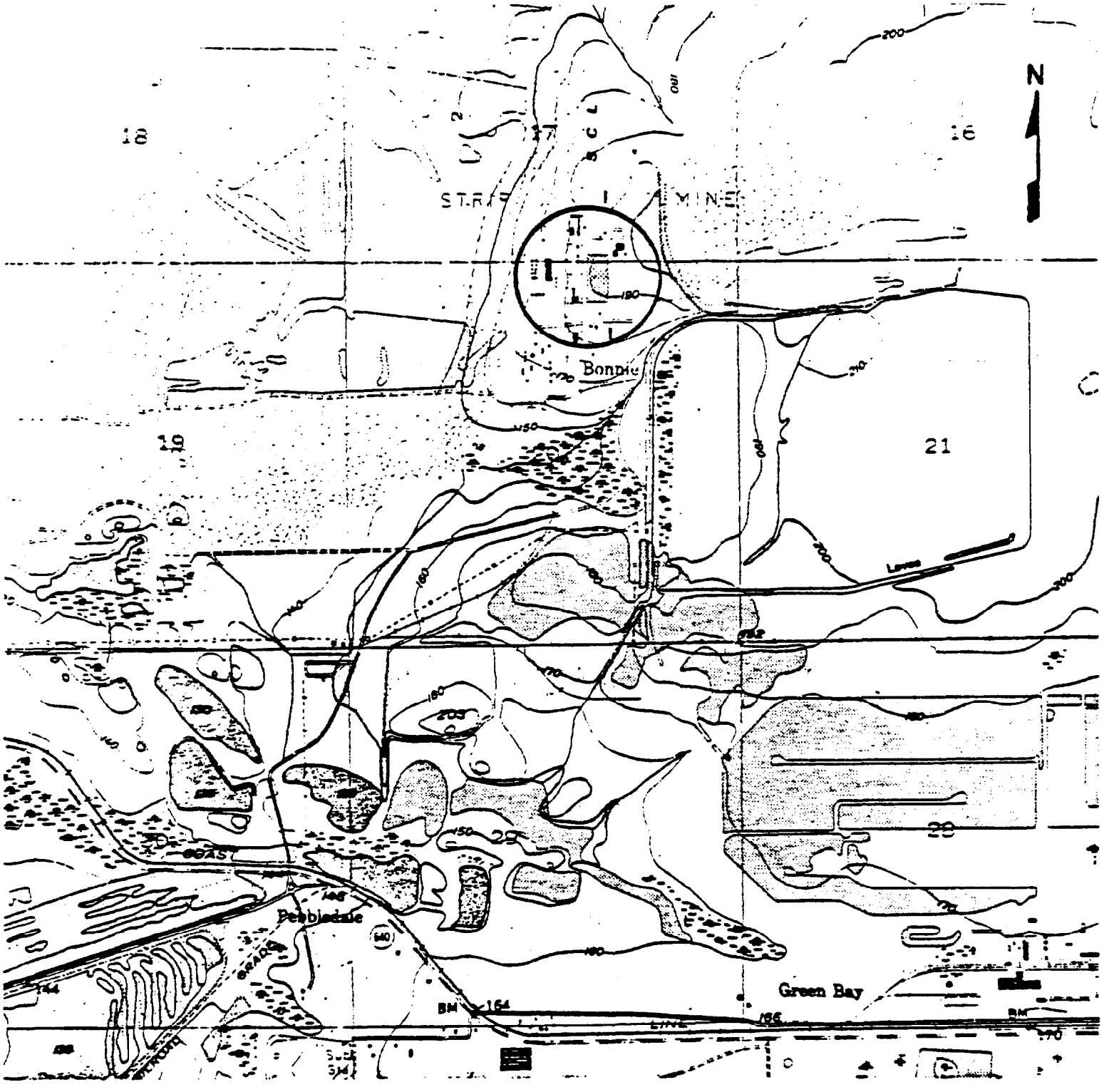

Figure 1. Location of the Former Texas City Chemical, Inc., in Texas City, Texas

contamination at the site did occur during the performance of work sponsored by AEC; and the nature of the working relationship between AEC and the site owner or operator. The latter considerations specifically address ownership of facilities and equipment, control of contractor operations, and AEC involvement in matters pertaining to health and safety at the facilities. Historical records and radiological data are analyzed to provide answers to five specific questions. These questions and the answers resulting from the CF Industries authority review are shown below. Some of the answers are less than definitive because only portions of the contracts are available. The complete contracts have apparently been destroyed in accordance with standard records management procedures. Cursory review of records of the AEC Feed Materials Division stored in Oak Ridge, Tennessee, and in Suitland, Maryland, indicate that future discovery of duplicates or any other supportive materials is unlikely.

1. Was the site owned by a DOE predecessor or did a DOE predecessor have significant control over the operations or site?

   No. International constructed both the main phosphate fertilizer production plant and the uranium recovery unit at its own expense. AEC's obligations identified in the available portions of the contract were limited to purchasing all of the separated uranium. The contract gave AEC the right to inspect the plant, but AEC did not maintain any on-site presence.

2. Was a DOE predecessor responsible for maintaining or ensuring the environmental integrity of the site (i.e., was it responsible for cleanup)?

   Article VIII, Section 2 of contract AT(49-1)-630, requires the contractor to conform to all minimum AEC health and safety regulations and requirements and to take "all reasonable steps and

precautions to protect health and minimize danger from all hazards to life and property." AEC apparently had an overview role, because the contractor is required to "make all reports and permit

all inspections as required by the Commission." Nothing in the available portions of the contract requires AEC to perform or pay for cleanup of the plant upon contract termination.

3. Is the waste, residue, or radioactive material on the site the result of DOE predecessor-related operations?

There is no evidence that the observed contamination resulted from the uranium recovery operations. Two soil samples were analyzed, only one of which exceeded guidelines. The ^{238}U and ^{226}Ra concentrations were nearly equal; indicating a secular equilbrium situation. Because radium is separated out of the phosphoric acid stream prior to the uranium recovery step, any residue from the AEC-sponsored operations would be largely normal uranium. Thus, the radium contamination is probably due to the fertilizer production operations that International conducted independent of AEC involvement. Furthermore, the observed concentrations of both radionuclides are typical of concentrations found in unprocessed phosphate ore from Central Florida (Roessler et al., 1979).

4. Is the site in need of further cleanup and was the site left in an unacceptable condition as a result of DOE predecessor-related activities?

Radium contamination in one of two soil samples taken at the site exceeded DOE remedial action guidelines; however, the material is apparently not the result of AEC-related activities.

5. When accepting responsibility for the site, did the present owner know that it was contaminated and that additional remedial measures would be necessary before the site could be judged acceptable for unrestricted use?

   Responsibility for the site during the period of contract performance apparently rested primarily with International Minerals and Chemical Corporation. No documentation is available to show the extent of CF Industries' knowledge about the site's radiological condition or remedial action needs when the property transfer occurred. However, because residue contaminated with radium is inherent in phosphate ore processing operations (regardless of whether attempts are made to recover uranium), CF Industries would be expected to have been aware of the presence of contaminated material on the site.

Summary of Findings

Although the site is contaminated above guidelines, there is currently no evidence that the residual radioactive materials resulted from operations conducted under contract to AEC. The contamination appears to be the result of commercial phosphate fertilizer production operations conducted concurrently with the AEC-related uranium recovery activities. Therefore, based on available information, DOE has no authority under the Atomic Energy Act of 1954, as amended, to conduct remedial actions at this site and it is eliminated from further consideration under FUSRAP. Accordingly, the property owner, the U.S. Environmental Protection Agency, and the State of Florida will be informed of this decision, so that they may take whatever action they deem appropriate.

REFERENCES

- Atomic Energy Commission Letter Contract No. AT(49-1)-630, dated July 23, 1952 (excerpt).

- Atomic Energy Commission Contract No. AT(49-1)-630, dated June 19, 1955 (excerpts).

- McKereghan, G.F., (International Minerals and Chemical Corporation) to C.A. Campbell (International Minerals and Chemical Corporation), "ERDA (AEC) Inspection," memorandum of April 11, 1977.

- Roessler, C.E., Z.A. Smith, W.E. Bolch, and R.J. Prince. 1979. "Uranium and Radium-226 in Florida Phosphate Materials." Health Physics 37:269-277.

- Oak Ridge National Laboratory. March 1980. Preliminary Survey of C.F. Industries (sic) (Former International Minerals and Chemical Company (sic)--Bonnie Chemical Plant), Mulberry (sic), Florida.

- Mott, W.E., (DOE) to Malcolm S. Scott (CF Industries), letter of June 20, 1980.