

70-90

# BAKER & CO., INC.

REFINERS & WORKERS OF

GOLD

PLATINUM

SILVER

30 CHURCH STREET  
NEW YORK 7

113 ASTOR STREET

760 MARKET ST.  
SAN FRANCISCO 2

55 EAST WASHINGTON ST.  
CHICAGO 2

NEWARK 5, N. J.

1111 WILSHIRE BLVD.  
LOS ANGELES

CABLE ADDRESS "BAKER" NEWARK

February 18, 1957

U. S. Atomic Energy Commission  
Washington 25, D. C.

Att: Mr. Lyall Johnson  
Division of Civilian Application

Gentlemen:

Subject: Application for License - Cold  
Enriched Uranium Scrap Processing

Baker & Co., Inc. holds Source Material License No. C-3387, revised October 12, 1956, in order to provide for "developing chemical purification procedures". Our endeavor in this field has reached the point where technology and development facilities are sufficiently advanced so that an additional step toward commercial status is in order. We, therefore, make application herein for permission to receive special nuclear material, enriched uranium, from the Atomic Energy Commission, and from licensees of the Commission, for purification and eventual return to the Commission and its licensees in usable form.

It is our wish to establish our pilot plant as a small commercial scrap refining facility. An operation of this type, limited to less than 10 kilos daily while handling normal and low enrichment uranium, and (b)(4)

(b)(4) will provide important experience in the pretreatment, solution, weighing, sampling, and assaying of commercial types of scrap such as we would expect to receive in a larger venture. Of equal importance, would be establishing accountability procedures with relation to Commission scrap and licensed scrap being handled for others. E-4

1. INFORMATION CONCERNING BAKER & CO., INC.:

Baker & Co., Inc. is a New Jersey corporation with principal offices and plants located in Newark, New Jersey. Our business is the refining and fabrication of the precious metals, especially metals of the platinum group. The refining processes which we perform are largely wet chemical in nature. With regard to fabrication, we melt a great variety of precious metal alloys which are rolled, drawn into fine wire, prepared as

Information in this record was deleted

- 1 - in accordance with the Freedom of Information Act, exemptions 4 and 6

FOIA 2008-0214

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FOREIGN BRANCHES : LONDON  
TOKYO JOHANNESBURG

TORONTO  
MILAN

MONTREAL  
COPENHAGEN

PARIS  
MELBOURNE  
RIO DE JANEIRO

BOGOTA  
ZURICH

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welded and seamless tubing, or otherwise fabricated into special shapes according to the needs of the chemical industry. In addition, we weave gauze, roll clad sheet and strip, prepare dental and jewelry alloys, manufacture electrical contacts, make a wide variety of precious metal catalysts and also construct gas treatment equipment and gas analyzers.

We look upon the similarities between the refining of platinum scrap and the refining of uranium scrap as being of great advantage to Baker & Co., Inc. in venturing into this field. Of special importance is our experience in receiving platinum scrap in an endless variety of forms ranging from spent catalyst pastes, rags, and floor sweepings, to complex alloys which resist acid attack. Platinum scrap is often conditioned for accurate weighing and sampling to be followed by assaying and, at times, the exchange of assays with our customers.

Baker & Co., Inc. does not make public an annual profit and loss balance sheet. However, for the purpose of assisting you in appraising the financial responsibility of the Company, we would like to point out that it is accorded the highest Dun & Bradstreet rating, namely AAAL. Sales for 1956 of Baker & Co., Inc., unconsolidated, were in excess of \$50,000,000. Should you feel you need additional financial information, we will be pleased to have one of our New York banking connections give you their opinion as to our responsibility.

The following is a listing of the officers and directors of Baker & Co., Inc.:

Charles W. Engelhard - Chairman of the Board  
Gordon V. Richdale - President  
DeWitt L. Alexandre - Vice President & Director  
Ross Bayes - Vice President and Director  
Charles R. Bergherm - Vice President and Director  
Edgar F. Rosenblatt - Vice President and Director  
William N. Mansfield - Director  
Peter W. Marshall - Director  
Lawrence Hoguet - Treasurer, Assistant Secretary,  
and Director  
Elmer E. Thomas - Secretary

Each of the above is a citizen of the United States except (b)(6)

(b)(6)

(b)(6)

There is no other control or ownership exercised over Baker & Co., Inc. by any alien, foreign corporation, or foreign government.

## 2. LICENSING INFORMATION:

A license is requested under Part 70 authorizing Baker & Co., Inc. to

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receive, process, use, and transfer special nuclear material (uranium) in the form of scrap for the purpose of treating, refining, and recovering the contained special nuclear material and returning it to the Commission or the licensee with whom we have contracted to perform this service. We ask that the license be effective beginning April 1, 1957, and that it be for a term of ten years.

Baker & Co., Inc. proposes to operate the cold enriched uranium scrap refining pilot plant in Newark, New Jersey, in a portion of a manufacturing building now utilized as a development laboratory. The pilot plant will be used to prove techniques for receiving miscellaneous types of scrap, performing initial treatment to place the special nuclear material into solution, methods of establishing special nuclear material quantities in solution for accountability purposes and to prove chemical processes as they relate to the varieties of scrap which the future commercial venture will be called upon to handle.

The pilot operation will be used to establish recovery figures in order that we may make guarantees of returns to customers as well as to establish cost figures. While we will be able to do this, to a degree, with synthetic samples prepared by ourselves, there is a need for this service at the present time and the pilot plant will have sufficient capacity to handle the amounts of licensed scrap which will be ready for recovery in the next year, or more. We wish to avail ourselves of the experience we will acquire in actually performing this service for others, with all that this means in establishing workable procedures between customer and refiner.

3. PROCESS INFORMATION:

(b)(4)

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-Ex 4

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(b)(4)

Ex 4

## 6. NUCLEAR SAFETY CONSIDERATIONS:

Except for a bulk reduction furnace and some mass dissolving equipment, which will be mass controlled, all of the remaining dissolvers, storage tanks, the rotary calciner, and other chemical process equipment will be of ever-safe geometrical design. Having in mind that the facility is essentially a pilot plant handling limited amounts of material, mass control will of necessity co-exist. However, geometrically safe dissolvers, storage bottles, storage racks, etc., will nevertheless be used in order that the practicality of such equipment be proven in the pilot plant. Mass control will be applied to precipitation, calcining, reduction, and hydrofluorination processes.

## 7. HEALTH PROGRAM:

All incoming material will be monitored with alpha, beta and gamma survey equipment. There should be none present. The contents of containers will also be monitored for gamma radiation, when opened. Geometry and mass control will be used for dissolving. Once dissolved, ever-safe geometry will be used throughout the extraction cycle. Mass control will be applied to calcination, reduction, and hydrofluorination.

In the pilot plant, standard approved procedures for clean and dirty lockers and showers will be enforced. All personnel in the area will be required to wear film badges and protective glasses in work areas. Air and urine samples will be taken frequently. Protective masks and filters will be available for equipment failures and cleanups.

Transfers of dry, powder material will be performed in dry boxes wherever possible. The exhaust system will be equipped with approved filters while aqueous effluents will be stored and monitored, batchwise, before being discharged.

## 8. TECHNICAL QUALIFICATIONS:

### a. Radioactive materials:

In 1950, Baker & Co., Inc. negotiated Contract AT-30-1-887 with the New York Operations Office of the Commission calling for the construction, by Baker, of a small platinum refinery in which to decontaminate platinum belonging to the Commission. This platinum is material contaminated with alpha emitting elements such as plutonium, uranium, polonium, etc. The degree of contamination has been calculated by us to levels as high as 10,000 curies per gram. Health and safety

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features, including glove box techniques, disposal problems, area monitoring, etc., were designed by Baker and approved by the local Health and Safety officers of the Commission.

The contract was signed in April, 1950, and terminated on November 30, 1956. In this period, Baker decontaminated over 6,000 troy ounces of platinum which was returned to the Commission for re-use following AEC inspection for residual activity, in accordance with Commission standards. At all times, Baker conformed to the Health and Safety practices of the Commission. Renewal of the contract has been negotiated with New York Operations Office and we expect to continue the operation as additional contaminated platinum becomes available for processing.

In addition, we have made use of radioactive isotopes, (iridium-192, ruthenium-103, and sulfur-35), as tracers in separation process development work in our laboratory. This work is performed on extraction processes under the supervision of Dr. Edgar F. Rosenblatt, Vice President and Technical Director of the Company; and Dr. Eugene Hausmann, who will be the research advisor for the scrap processing.

b. Personnel:

The enriched uranium scrap project is under the direction of Dr. Rosenblatt who has responsibility, among other things, for the operation of Baker's precious metal refining. The chemist assigned to the project by Dr. Rosenblatt is Dr. Eugene Hausmann. Dr. Hausmann, a graduate of Brooklyn College (B.S. (b)(6)) was assigned to the Corps of Engineers, Special Engineer Detachment, at the University of Chicago Metallurgical Laboratory in the period April, 1944, to March, 1946. He spent an additional six months on the project, upon separation from the Armed Forces. Ex 6

During his stay at the Metallurgical Laboratory, Dr. Hausmann worked on pile corrosion problems and upon uranium and plutonium decontamination and purification processes (fission products). He later received his M.S. from Iowa State University (b)(6) and his Ph.D. from New York University (b)(6). He has been at Baker since 1952 spending a portion of his time on separation and refining processes. Ex 6

We trust that this information is in keeping with your requirements for applications of this type. If additional information is required, we shall be pleased to hear from you.

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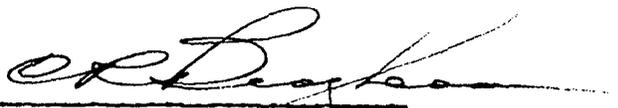
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We hereby swear (or affirm) that the foregoing information is full and true to the best of our knowledge and belief.

  
C. R. Bergherm  
Vice President

Subscribed and duly sworn to before me according to law by the above-named applicant this 18th day of February, 1957 at Newark, County of Essex, and State of New Jersey

  
NOTARY PUBLIC