~~SECRET~~
~~NOFORN~~

Nº 60

Distributed: 2 OCT 1956

SCIENTIFIC INTELLIGENCE RESEARCH AID

NUCLEAR ACTIVITIES OF FOREIGN NATIONS

Volume IV

Asia and Africa

(b)(1)
(b)(3)
(S)

CIA/SI 88-56
30 September 1956

CENTRAL INTELLIGENCE AGENCY

OFFICE OF SCIENTIFIC INTELLIGENCE

~~SECRET~~
~~NOFORN~~

~~SECRET~~
~~NOFORN~~

Scientific Intelligence Research Aid

NUCLEAR ACTIVITIES OF FOREIGN NATIONS

Volume IV

Asia and Africa

CIA/SI 88-56

30 September 1956

CENTRAL INTELLIGENCE AGENCY

Office of Scientific Intelligence

~~SECRET~~
~~NOFORN~~

PREFACE

The nuclear energy activities of certain selected foreign nations in four major geographic areas of the world have been surveyed, and the results are presented in a series of four publications. This volume contains material on the countries of Asia and Africa; volume I covers North and South America, volume II covers Western Europe, and volume III covers the Satellites and Communist China.

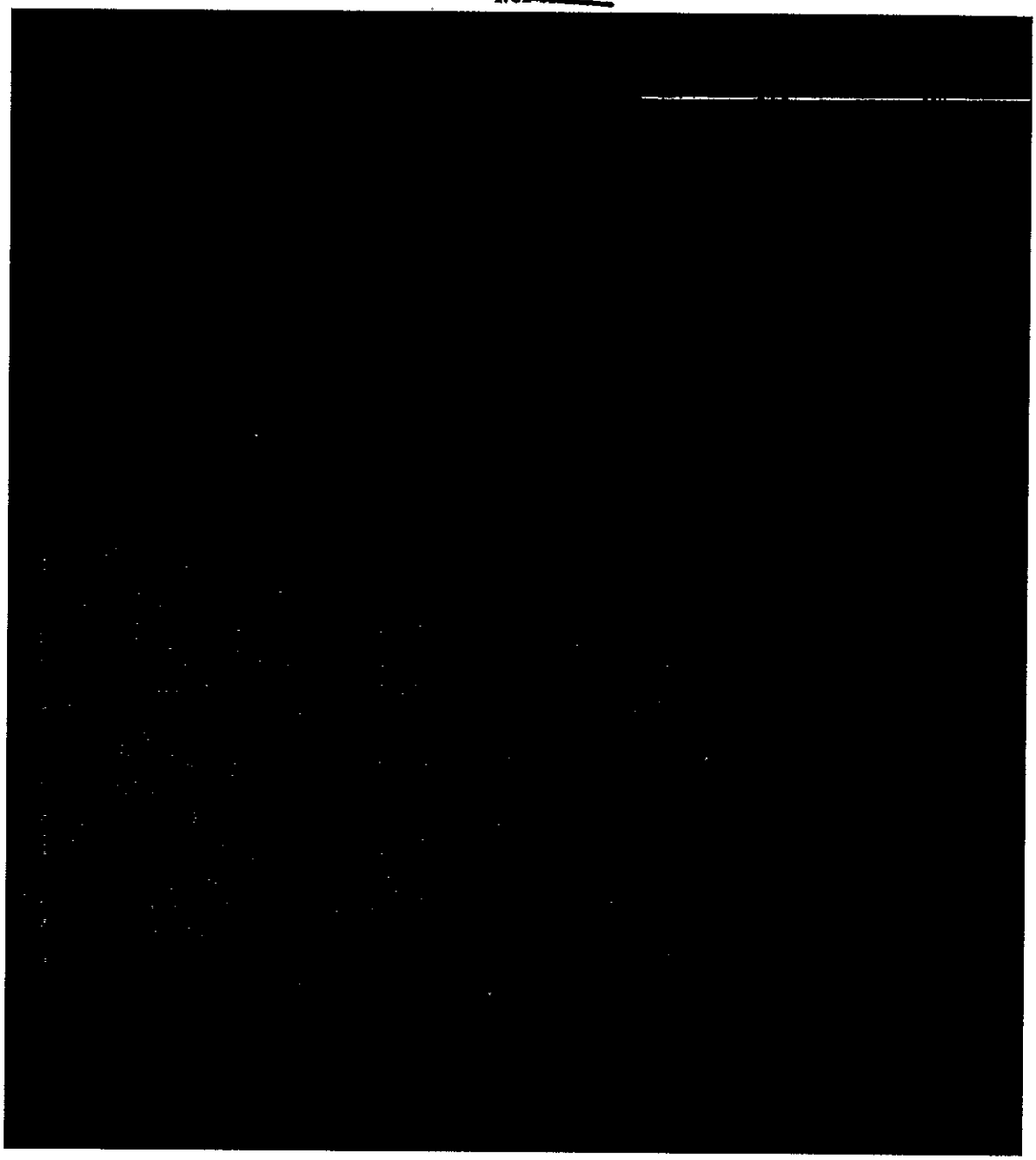
The main topics considered for each country are the nuclear objectives, the organization and personnel by which a country will attempt to gain these objectives, the facilities and materials available and/or needed to do the job, and the intelligence evaluation of each nation's immediate potential in nuclear energy.

These reports are based on a detailed study of information available as of October 1955. It is planned to update the volumes on an annual basis.

CONTENTS

	Page
PREFACE	iii
SUMMARY	1
DISCUSSION	3
UNION OF SOUTH AFRICA	3
Program Organization and Objectives	3
Research Facilities	4
Supporting Personnel	4
Supporting Funds	5
Availability of Source Materials	5
Uranium	5
Thorium	5
Beryl	5
General Estimate of Growth in Next Five Years	6

[redacted]



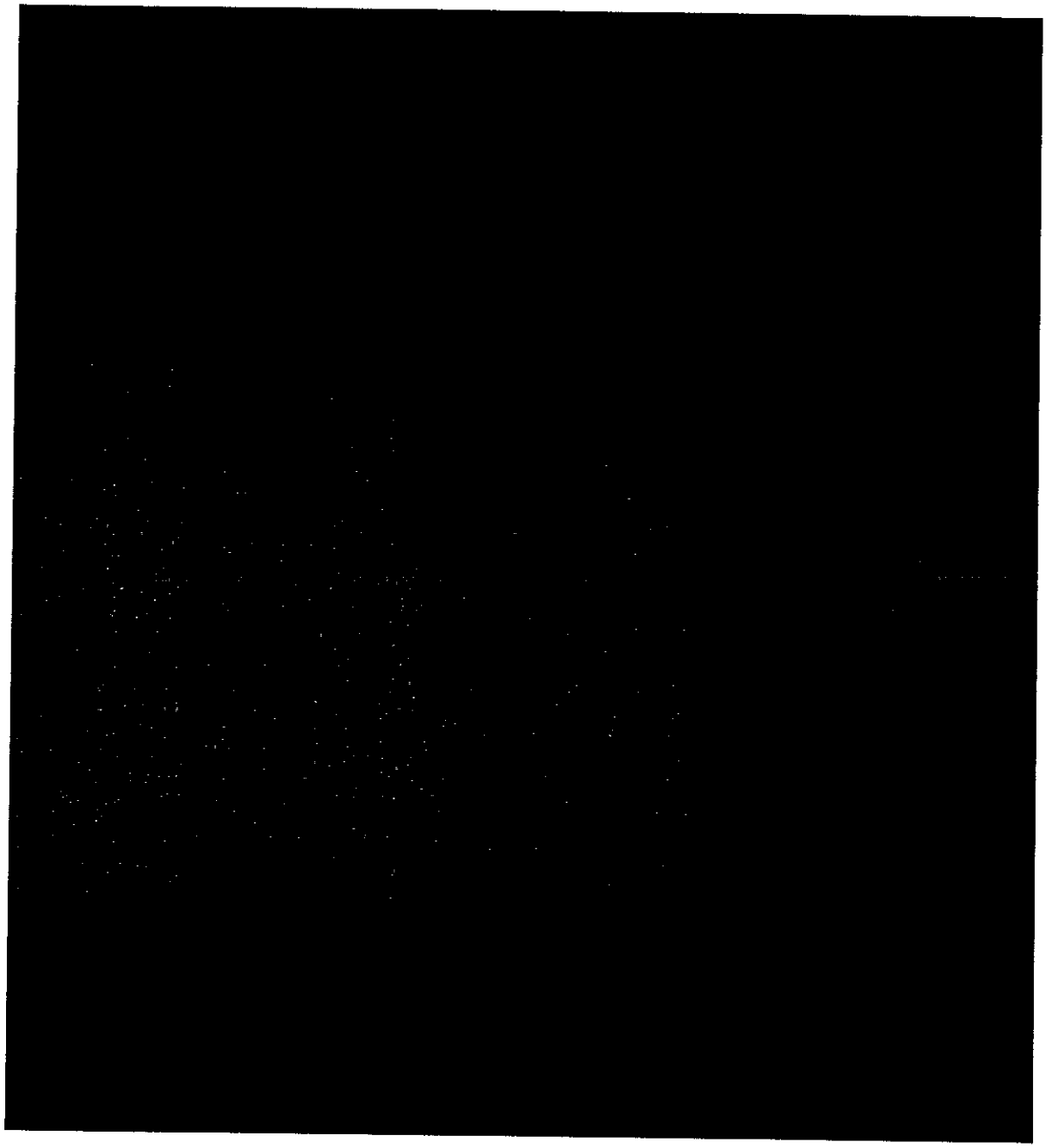
CONTENTS - Continued

	Page
JAPAN	38
Program Organization	38
Program Control	39

[redacted]

~~S-E-C-R-E-T~~
~~NOFORN~~

CONTENTS - Continued



~~S-E-C-R-E-T~~
~~NOFORN~~

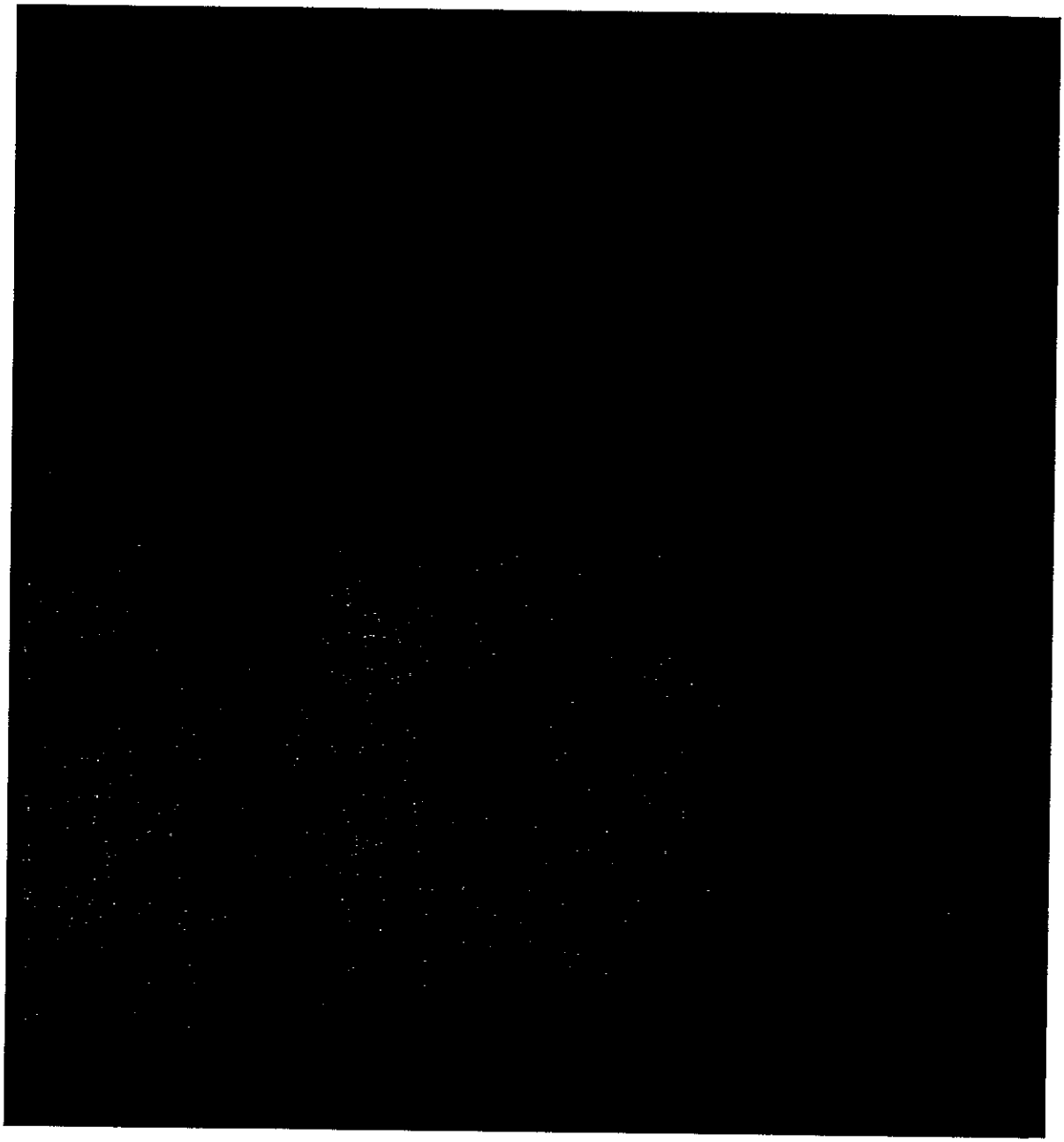
ASIA AND AFRICA

SUMMARY

[redacted] South Africa, [redacted] have not entered into large-scale atomic research projects; instead, they await the findings of the United Kingdom in this regard. South Africa is one of the world's leading sources of uranium with some deposits of beryl and thorium. [redacted]

~~S-E-C-R-E-T~~
~~NOFORN~~

~~S-E-C-R-E-T~~
~~NOFORN~~



~~S-E-C-R-E-T~~
~~NOFORN~~

DISCUSSION

UNION OF SOUTH AFRICA

A. Program Organization and Objectives

The Government of South Africa established an Atomic Energy Board in 1949. The Board's functions and responsibilities are:

1. To undertake prospecting and mining of radioactive and prescribed minerals,

2. To process these materials,

3. To acquire hold or dispose of the materials,

4. To control the import or export of radioisotopes,

5. To make grants-in-aid of research (in consultation with the Council of Scientific and Industrial Research - the C.S.I.R.)

6. To advise the Minister of Mines on atomic energy matters, and

7. To undertake production of atomic energy.

The Board is composed of the following:

Chairman - The Minister of Mines

Deputy Chairman - The Secretary of Mines
The Secretary for External Affairs
The Secretary for Finance
The Government Mining Engineer
A representative of the C.S.I.R.

Three persons appointed by the minister of mines, two of whom represent persons engaged in mining operations in areas where radioactive or prescribed materials (e.g. beryl) occur.

The Atomic Energy Board to date has been chiefly concerned with mining matters; nevertheless, research of a fundamental nature is sponsored and directed by the C.S.I.R.

South Africa is one of the world's principal producers of uranium. A contract exists between the South African Atomic Energy Board and appropriate agencies of the Government of the United Kingdom and of the United States for the purchase of uranium oxide over an extended period.

In addition to the cooperation in regard to uranium involving the United Kingdom and the United States, South Africa recently accepted an invitation from the United Kingdom to collaborate with its scientists in the peaceful applications of atomic energy. A mission of three South African experts was sent to the United Kingdom in early 1955 to investigate the possibilities.

B. Research Facilities

South Africa has no nuclear reactors, and none are contemplated in the near future.

The C.S.I.R. at its National Physical Laboratory at Pretoria has a Nier Mass Spectrograph, an electron microscope, and other equipment for X-ray and optical spectrographic work.

A Nuclear Physics Institute, where nuclear spectroscopy will be undertaken, has recently been completed by the C.S.I.R. at Pretoria. The Institute will also have a 15 Mev cyclotron, the first in South Africa. The cyclotron is scheduled to be operating in 1956.

Considerable quantities of radioisotopes are imported into South Africa each year for use in agricultural research, biology, medicine, and industry. South Africa has had no means of producing radioisotopes domestically. However, the cyclotron, now under construction, will be capable of producing certain shortlived radioisotopes.

C. Supporting Personnel

The South African Government, because of its Commonwealth ties, has tended to orient itself to the United Kingdom for the training of personnel. The first two South African scientists went to the United Kingdom for training with the British atomic energy program in 1948.

The number of South Africans going to the United Kingdom for training with the U.K. Atomic Energy Authority will probably be increased under the British "Atoms for Peace" Plan.

The Deputy Director of the Research Group of the U.K. Atomic Energy Authority, Dr. Basil Schonland, is from South Africa. Dr. Schonland had been the director of the C.S.I.R.

The Nuclear Physics Institute of the C.S.I.R. and the cyclotron will serve as a training center for nuclear physicists in South Africa. The C.S.I.R. will make funds available so that post-graduate students may participate in research at the Institute.

D. Supporting Funds

No information is available on allocation of funds to the Atomic Energy Board. In 1950, the Board inaugurated a £* 50 million plan for installing the necessary plants to produce uranium concentrates as a byproduct from gold mines. However, the construction of the plants is being financed on a loan basis through the Combined Development Agency of the United Kingdom and the United States.

The current budget of the C.S.I.R. is about £ 500,000 per year. However, the specific amounts allocated from this budget for nuclear research and training of personnel are not known.

E. Availability of Source Materials

1. Uranium.--The Union of South Africa is one of the three major sources of uranium in the world. As mentioned previously, there is a contract between the South African Atomic Energy Board and the appropriate agencies of the Governments of the United Kingdom and the United States for the purchase of uranium oxide from South Africa. The Board has made arrangements with a number of South African mines under which plants are erected for the extraction of uranium from the residue slimes of the gold production plants. Up to the present time, twenty-four mines have agreed to undertake this production and seven are already in active production. The rest should be producing by the end of 1955.

The construction of the uranium and certain other related plants is being financed on a loan basis through the Combined Development Agency of the United Kingdom and the United States. These countries also assisted in developing satisfactory methods for extracting the uranium from the residues. Research on extraction processes is being continued at the South African Government Metallurgical Laboratory at the University of Witwatersrand.

2. Thorium.-- At least one important deposit of thorium is known.

3. Beryl.-- Moderate amounts of beryl are known to be present in South Africa.

*South African pound = US $2.80

F. General Estimate of Growth in Next Five Years

The participation of South Africans in various training programs and research projects of the U.K. Atomic Energy Authority probably will be increased.

Although various South African officials have stated that the future of South Africa lies in the development of atomic power, official aution in the direction will probably await the findings of the United Kingdom in the operation of its atomic power plants.