

y4
Sci 2
95/66

1025-A

GOVERNMENT
Storage

[COMMITTEE PRINT]

DOCUMENTS

JUN 28 1978

FARRELL LIBRARY
KANSAS STATE UNIVERSITY

OVERSIGHT OF EUROPEAN NUCLEAR
ENERGY DEVELOPMENT

TO THE
COMMITTEE ON
SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
NINETY-FIFTH CONGRESS
SECOND SESSION

Serial GG



MAY 1978

Printed for the use of the Committee on Science and Technology

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1978

25-751

DOCUMENTS
COMMITTEE PRINTS
JUN 28 1978
FARRALL LIBRARY
KANSAS STATE UNIVERSITY

Y:7
2012
92/66

COMMITTEE ON SCIENCE AND TECHNOLOGY

OLIN E. TEAGUE, Texas, *Chairman*

DON FUQUA, Florida	JOHN W. WYDLER, New York
WALTER FLOWERS, Alabama	LARRY WINN, JR., Kansas
ROBERT A. ROE, New Jersey	LOUIS FREY, JR., Florida
MIKE McCORMACK, Washington	BARRY M. GOLDWATER, JR., California
GEORGE E. BROWN, JR., California	GARY A. MYERS, Pennsylvania
DALE MILFORD, Texas	HAMILTON FISH, JR., New York
RAY THORNTON, Arkansas	MANUEL LUJAN, JR., New Mexico
JAMES H. SCHEUER, New York	CARL D. PURSELL, Michigan
RICHARD L. OTTINGER, New York	HAROLD C. HOLLENBECK, New Jersey
TOM HARKIN, Iowa	ELDON RUDD, Arizona
JIM LLOYD, California	ROBERT K. DORNAN, California
JEROME A. AMBRO, New York	ROBERT S. WALKER, Pennsylvania
ROBERT (BOB) KRUEGER, Texas	EDWIN R. FORSYTHE, New Jersey
MARILYN LLOYD, Tennessee	
JAMES J. BLANCHARD, Michigan	
TIMOTHY E. WIRTH, Colorado	
STEPHEN L. NEAL, North Carolina	
THOMAS J. DOWNEY, New York	
DOUG WALGREN, Pennsylvania	
RONNIE G. FLIPPO, Alabama	
DAN GLICKMAN, Kansas	
BOB GAMMAGE, Texas	
ANTHONY C. BEILENSON, California	
ALBERT GORE, JR., Tennessee	
WES WATKINS, Oklahoma	
ROBERT A. YOUNG, Missouri	

CHARLES A. MOSHER, *Executive Director*
HAROLD A. GOULD, *Deputy Director*
PHILIP B. YEAGER, *Counsel*
JAMES E. WILSON, *Technical Consultant*
WILLIAM G. WELLS, JR., *Technical Consultant*
RALPH N. READ, *Technical Consultant*
ROBERT C. KETCHAM, *Counsel*
JOHN P. ANDELIN, JR., *Science Consultant*
JAMES W. SPENSLEY, *Counsel*
SHERMAN E. ROODZANT, *Technical Consultant*
REGINA A. DAVIS, *Chief Clerk*
PAUL A. VANDER MYDE, *Minority Staff Director*

LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
Washington, D.C., May 1978.

HON. OLIN E. TEAGUE,
*Chairman, Committee on Science and Technology, House of Representatives,
Washington, D.C.*

DEAR MR. CHAIRMAN: I am forwarding herewith a report on my recent trip entitled "Oversight of European Nuclear Energy Development." The report includes a summary of general findings from my analysis with narratives of each visit containing background material and impressions.

I hope it will be useful for you to have this international perspective on U.S. nuclear energy policy as the committee and the Congress are once again considering the ramifications of the administration's policy. Several European nations have embarked on ambitious programs to deploy light water reactors to meet much of their electrical demand. These nations are also concerned about stretching world uranium reserves by breeder reactor development and nuclear reprocessing. The questions of breeder reactor development, nuclear fuel reprocessing and nuclear waste management still lie before the Congress.

I believe you will find that some of the major findings of the committee's European oversight trip were confirmed in these discussions.

Sincerely,

JOHN W. WYDLER,
Ranking Minority Member.

CONTENTS

	Page
Letter of transmittal.....	III
Summary of Findings.....	1
Recommendations.....	3
International Atomic Energy Agency, Vienna, Austria.....	4
Background.....	4
Impressions and specific findings.....	4
Yugoslavia.....	6
Background.....	6
Key Yugoslavia Officials.....	7
Nuclear Power.....	7
Uranium Resources.....	8
Research Centers.....	8
Bilateral and International Cooperation.....	9
(a) United States.....	9
(b) Agreements with other countries.....	9
(c) Membership in international organizations.....	9
Yugoslav Union of Electric Utilities, Belgrade.....	10
Impressions and Specific Findings.....	10
Junta de Energia Nuclear, Madrid, Spain.....	11
Background.....	11
Energy Projects In And Around Madrid.....	11
Impressions and Findings.....	12

CONTENTS

12	Introduction
13	Chapter I. The Problem
14	Chapter II. The Method
15	Chapter III. The Results
16	Chapter IV. The Discussion
17	Chapter V. The Conclusion
18	Appendix A
19	Appendix B
20	Appendix C
21	Appendix D
22	Appendix E
23	Appendix F
24	Appendix G
25	Appendix H
26	Appendix I
27	Appendix J
28	Appendix K
29	Appendix L
30	Appendix M
31	Appendix N
32	Appendix O
33	Appendix P
34	Appendix Q
35	Appendix R
36	Appendix S
37	Appendix T
38	Appendix U
39	Appendix V
40	Appendix W
41	Appendix X
42	Appendix Y
43	Appendix Z
44	Index
45	Table of Contents

SUMMARY OF FINDINGS

To the rest of the world the United States policy of deemphasizing atomic power is a no-growth policy of "pull back." Other nations look in amazement at a policy designed to keep us on an oil binge and destined to let the world leave us behind in nuclear technology. Our shifting position on nuclear safeguards has given our Nation a reputation as being an unreliable nuclear partner.

This country's radical change in policy toward the development of nuclear energy and peaceful export of nuclear technology has raised grave doubts among our friends. We are losing credibility with these nations and losing business in the export of peaceful applications of nuclear energy as well.

Our renegeing on past nuclear commitments not only means that this country's technological capability will be wasted but also leaves open the market to nations who may not share our concerns about the peaceful uses of the atom.

The fact that the United States is requiring foreign countries to renegotiate the terms of nuclear agreements has literally put these countries in a mood of "quiet rage." We are destroying our image as good neighbors and raising serious questions in the international community about whether we honor the traditional American view of the "sanctity of contracts." In the case of Eastern bloc countries such as Yugoslavia we are undercutting them as they attempt to "walk the tightrope" in relations with the United States and the Soviet Union.

The limitations of our unilateral policy are becoming clear. Developed countries in Western Europe have no intention of slowing their breeder development programs. Our present policy on the breeder and reprocessing ignores the advances which have been made in safeguards technology as well as the chief mechanism for implementing these safeguards, namely the International Atomic Energy Agency.

The tragic reversal of our nuclear policy is catalyzing the opposition to antinuclear groups in nations all around the world. We have done a major disservice to reasonable growth and orderly progress in the developing world by allowing these zealots to seize on this well-intended but naive nonproliferation policy as evidence that nuclear power is a chancy technology.

The recent announcement of the U.S. spent fuel policy has created the impression that we will solve waste management problems for the European nations. In view of the fact this Nation has not yet resolved the problems of ultimate nuclear-waste disposal and the reprocessing waste at West Valley, N.Y., undermines the credibility of such a policy.

RECOMMENDATIONS

U.S. breeder reactor development should be accelerated to maintain our preeminence in international breeder technology so that we can be a real partner in such development. The technology demonstration of breeder reactor planned for Clinch River should be kept on track and the LMFBR base program should be strengthened, particularly in component development.

The United States should reinstitute the plan to reprocess light water reactor fuel at the Barnwell Nuclear Fuel Plant under modern safeguards. Such a decision would require completion of waste solidification facilities at Barnwell. The reprocessing of this fuel should be done in such a way as to provide fuel for fast breeder reactors once they are deployed in the 1990's.

This country should reexamine its entire nuclear export policy, including unilateral negotiations, so as to restore our credibility with other nations and demonstrate that we are strong nuclear partners. Our commitment to the diversion-proof CIVEX process should be a major component of this policy and strong evidence that we are concerned about proliferation as well as nuclear technology development. In addition, the IAEA should serve as a mechanism for delineating our concerns about international exchange of nuclear technology.

Acceleration of the expansion of U.S. uranium enrichment capacity with centrifuge plants is also necessary to convince our international customers that we intend to remain a reliable supplier.

This administration should make a strong commitment to deploying nuclear power in the face of our pressing energy demand. This effort should include specific legislation to expedite licensing of domestic light water reactor plants. We cannot be tied solely to the fossil energy option as the last two winters have so dramatically proven. We must make a particular effort to have the public understand that nuclear is the safest, cleanest route to electrical power generation.

International safeguards to reduce proliferation risks are incorporating an increasing level of advanced technology, particularly in the U.S. nuclear program. This country should encourage export of safeguards technology if we are to maintain sufficient stature in the nuclear community to influence our partners.

This country should develop a comprehensive plan for nuclear waste management, civilian and military, which recognizes the fact that nuclear reprocessing cannot be indefinitely deferred. Such a plan should include disposition of the legacy of reprocessing waste at the Nuclear Fuel Services Plant, West Valley, N.Y.

(3)

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

The U.S. Embassy for overall briefing on United States-Austrian relations by Ambassador Milton Wolf.

The U.S. Mission to the International Atomic Energy Agency for briefing on U.S. participation in IAEA by the Deputy U.S. Representative Galen Stone.

The International Atomic Energy Agency for discussions of international aspects of nuclear energy development programs and nuclear safeguards with the Director General (Dr. Sigvard Ecklund) and senior IAEA officials.

Background

The International Atomic Energy Agency is an autonomous international organization occupying its own position in the United Nations. Under the relationship agreement between the United States and the IAEA, the IAEA is recognized as being "responsible for international activities concerned with the peaceful uses of atomic energy." One of the statutory objectives of the IAEA is to insure that none of the assistance it gives to member states is "used in such a way as to further any military purpose," and the IAEA maintains an inspection staff to report violations of this rule. In case of noncompliance the agency's Board of Governors shall report to the Security Council and the General Assembly of the U.N.

The IAEA officially came into existence on July 29, 1957. The first General Conference was held in Vienna in October 1957 at which time it was decided to make Vienna the permanent headquarters site of the agency.

The IAEA is 20 years old and contains 110 members, 102 of whom have signed the nonproliferation treaty. The organization has an annual budget of \$43 million. The staff contains 65 nationalities, with approximately 20-percent Americans. A general conference of all members is held annually in September, and a Board of Governors (34 members) meets and approves the budget every year. The Board of Governors has been steadily expanded since the beginning of the IAEA, and a move is now being made by several members of the agency to expand it further. A new Chairman is selected for the Board every year. The chairmanship is rotated among the different regions of the world, with the exception that none of the big powers are allowed to hold the chair.

Impressions and specific findings

My first and major contact was with the International Atomic Energy Agency in Vienna, Austria. This was a long and detailed meeting in which the discussion was extremely frank.

Although the entire program of the agency was discussed, I concentrated on the breeder reactor issue. During the course of the day we spoke to Andre Polliart, Director of the Division of Nuclear Power

Reactors, and many members of his staff. We then had a working lunch with the Director General Eklund, and a discussion with the Safeguards Deputy Director, General Rometsch.

It was made clear they felt the United States was losing the atomic monopoly it had 20 years ago. At the same time, the world is developing a mistrust of American reliability because of our shifts in atomic policy. Ironically, this policy causes more countries to get into the reprocessing and enrichment field, leading to more, not less nuclear proliferation.

It became apparent at these meetings that no major developed country in the world agrees with our national policy on restricting the development of the fast breeder reactor. This disagreement remains in spite of the statements of the Administration in the last 6 months that it supports a strong R. & D. program. The international community would not be upset with our spending additional billions of dollars on thorium research but they do not think it is a sound policy and none of the developed nations intend to pursue it.

The President's statement on the need to reduce reliance on nuclear energy has caused confusion among the members of the International Atomic Energy Agency. No one knows precisely what this policy means, but the President's negative attitude toward atomic energy is encouraging the opponents of nuclear energy around the world to intense opposition.

People at the IAEA are convinced they can solve the nuclear waste management problem through the development of currently available methods and that they can safeguard a nuclear reprocessing plant. The international community is convinced that atomic energy is necessary. A striking example of the role that nuclear power is to play is the fact that Iran with enormous oil supplies is going to develop atomic plants within its own borders.

In the critical area of waste disposal, we do have the technology developed but the problem is a social one; no one wants the materials stored in his backyard. I spoke with representatives of the atomic program in Austria on this topic. They seized upon the President's statement relating to the possible disposal of atomic waste by the United States and believe that the United States would seriously consider taking their waste. Unfortunately, I could not encourage them in this regard because I feel we have no real program. As I explained to the Austrians, there were waste problems within the United States that remain unsolved. Specifically, the West Valley Nuclear Reprocessing Waste project in New York State. The disposal of those wastes is only under study in our country and I pointed out that it was unreasonable to expect we would accept foreign waste when we did not have a national program to dispose of our own.

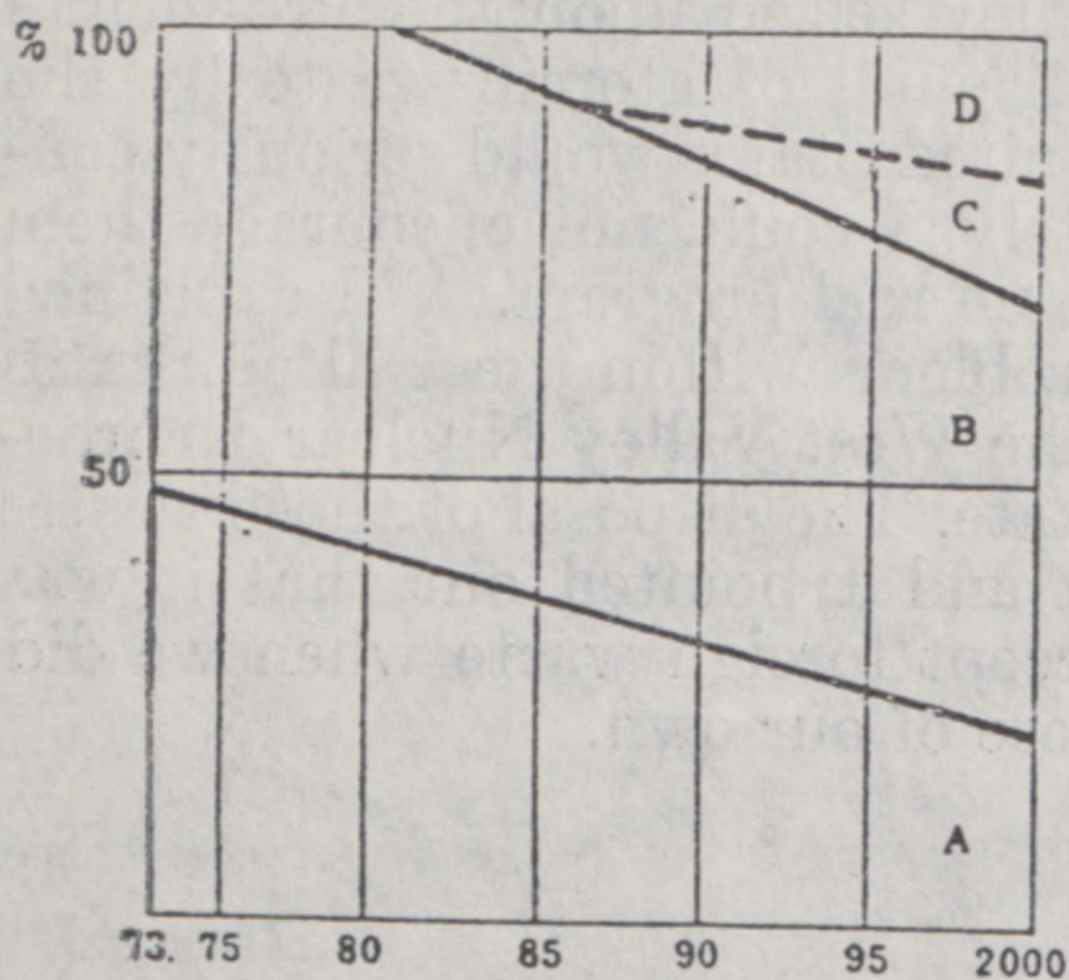
YUGOSLAVIA

Meeting with officials of Yugoslav Union of Electric Utilities; briefed by Ambassador and Team at Embassy; visited Rudarski Institute, Coal and Shale Mining, Coal Gasification; and meeting with Federal Committee for Energy and Industries.

Background

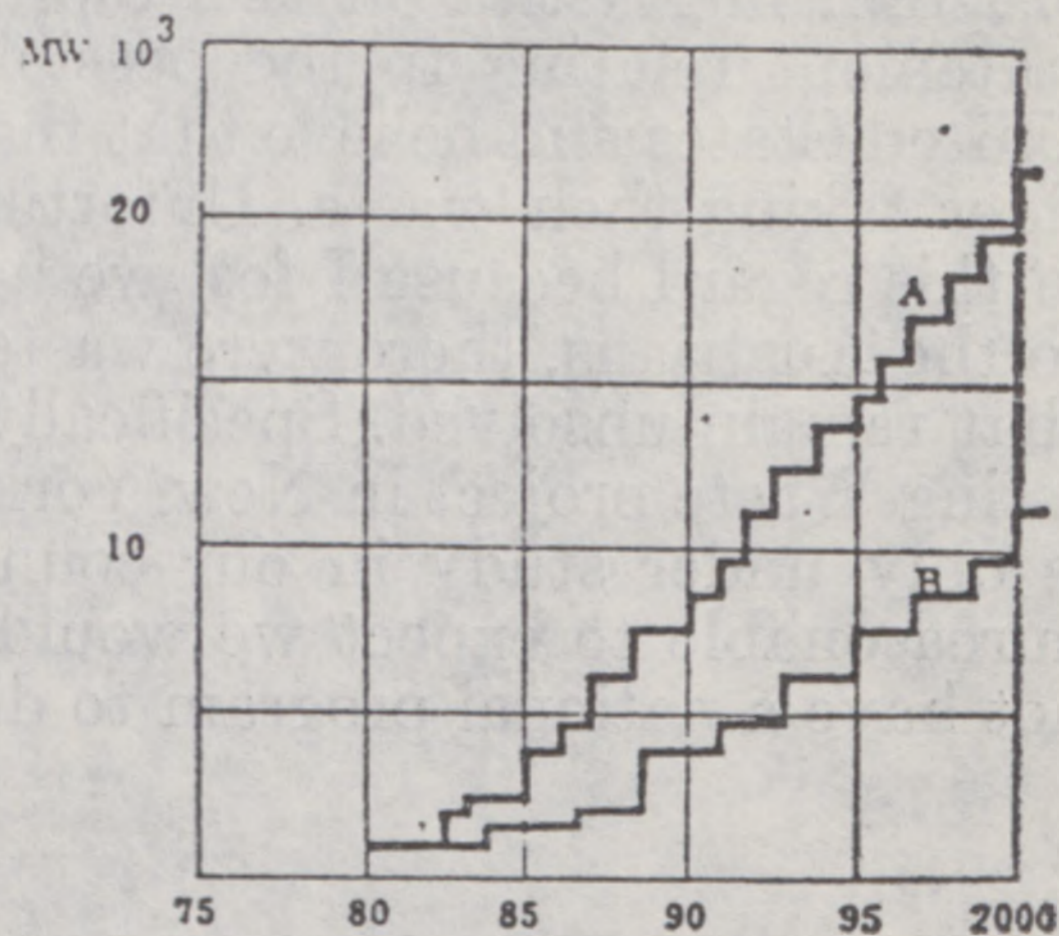
Estimates of reserves of coal, liquid and gaseous fuel, and uranium in Yugoslavia, show that the problem of availability of power sources for electric power production in the country does not appear in the prospective development of the electric power system till the year 2000. In the prospective development it is essential to determine the optimal structure of utilization of primary energy for electric power production, that is, optimal structure of powerplant construction. Study analyses show that it is necessary in Yugoslavia to rely on the construction of nuclear powerplants, for the future electric power supply. What real ratio of installed capacities of conventional to nuclear powerplants should have to be chosen as optimal will depend on a number of factors. The possible trend of nuclear powerplant construction and the possible structure of electric power production are given.

- A — hydro power
- B — termoelectrical power
- C — nuclear power maximum
- D — nuclear power minimum



THE POSSIBLE DEVELOPMENT OF ELECTRICAL ENERGY IN YUGOSLAVIA

- A — energetical possibility
- B — using domestic uranium



THE POSSIBLE TREND OF THE NUCLEAR POWER IN THE ELECTRICITY GRID IN YUGOSLAVIA

The first nuclear powerplant is being built on the left bank of the Sava River about 2 km down the river from Krško.

The powerplant delivers 632 MW, and will be connected to the 400 kV Yugoslav transmission system with 4 exit lines, 2 in the direction of Zagreb, 1 in the direction of Ljubljana and 1 in the direction of Maribor. The reserve supply and initial operation of the powerplant are provided by connection with one 110 kV line to the switching station of the Brestanica powerplant.

The task of the nuclear powerplant is to cover the huge baseload of electric energy. The anticipated factor of annual utilization of the installed power is 80 percent, which corresponds to an electrical energy production of 4.45 TWh year. The powerplant is located in the center of consumption of Northwest Croatia and Slovenia. This area is characterized by an intensive consumption of electric energy as well as by a lack of energy resources. This fact was the main reason for the selection of the macrolocation for the nuclear powerplant.

The main supplier of the equipment for the Krško powerplant is the American Westinghouse Corp. This corporation is responsible for the realization of all operations until the final testing is made.

The Yugoslav Federal Nuclear Energy Commission was established in 1955. The Commission is a Federal administrative body which assists, coordinates, and directs the activities in the nuclear field.

Key Officials in the Commission: President, Mr. Vojin Guzina; Vice President, Prof. Salom Suica; Assistant Secretary, Mr. Vojin Dmitric; and Senior Scientific Staff, Prof. Ljubomir Barbaric.

KEY YUGOSLAVIA OFFICIALS

Federal Nuclear Energy Commission: President, Mr. Vojin Guzina; Vice President, Prof. Salom Suica; Assistant Secretary, Mr. Vojin Dmitric; and Senior Scientific Staff, Prof. Ljubomir Barbaric.

Boris Kidric Institute: Director, Prof. Milorad Ristic; and Research Director, Zdenko Dizdar.

Joseph Stefan Nuclear Energy Institute, Ljubljana: Director, Prof. Milan Osredkar; also Chairman of Federal Commission on Nuclear Safety Standards. Senior Scientific Staff, Prof. Anton Moljk and Dr. Milan Copic.

Krsko Polje Nuclear Power Consortium: Consortium Council: President, Marko Krzisnik (General Director of "Litostroj"); Vice President, Ratko Svilar (General Manager of "Djuro Djakovic"). Managing Board: President, Lojze Erste (Commercial Director of "Hidromontaza"); Vice President, Pavel Kunc ("Elektroprojekt").

NUCLEAR POWER

"KRSKO" Nuclear Power Project.—Yugoslavia's first nuclear power project will be a Westinghouse 632 MWe PWR, to be built in Slovenia as a joint project of the Federated Republics of Slovenia and Croatia. The plant is scheduled for commercial operation in late 1978. The United States will supply enriched uranium fuel under a firm commitment enrichment services contract signed by Yugoslavia in June 1974 and by the U.S. Atomic Energy Commission on August 14, 1974.* The framework for the reactor and fuel supply is through the IAEA pursuant to a regular project agreement between the IAEA and

*This is now subject to renegotiation as a result of the Administration's announced policy on non-proliferation.

Yugoslavia and a related trilateral supply agreement among the United States, IAEA, and Yugoslavia.

URANIUM RESOURCES

Yugoslavia has pursued an active exploration program over the entire country which has revealed that there are some possibilities of reasonably interesting but small reserves, especially in Slovenia and Macedonia. A renewed exploration program with new and improved techniques is currently underway which has identified new areas which may have promising reserves. A processing plant was built at Kalna, in Serbia, but subsequently was closed down due to the poor ores located nearby.

The 1973 information indicates Yugoslavia has reasonably assured reserves of 2,800 short tons U_3O_8 in the price range below \$10 per pound and reasonably assured resources of about 600 short tons U_3O_8 in the range \$10 to \$15 per pound.

The Yugoslav Institute for Geographic-Mining Research and Study of Nuclear and Other Mineral Raw Materials has overall responsibility for exploration and development of all mineral resources in Yugoslavia. In order to continue and expand its uranium exploration program, the Institute is planning to expand the production and sale of lead and zinc to obtain the necessary financing for its uranium program.

RESEARCH CENTERS

A. *Boris Kidric Institute*.—Established in 1947, it is located at Vinca, near Belgrade. Its research facilities include a 1.5 MeV Cockcroft Walton accelerator, a 200 KeV neutron generator, an electromagnetic isotope separator, a 2000 curie cobalt source, computers, a zero power research reactor, and other ancillary equipment. In 1959, the institute acquired from the U.S.S.R. a 6.5 to 10 MW research reactor.

The Institute is engaged in fundamental research in the fields of low energy nuclear physics, solid state physics, the physics of ionizing media and direct conversion, radiochemistry, radiation chemistry and physical chemistry, radiobiology including problems of nucleic acid metabolism and radiogenetics, and research on nuclear power problems. Topics under study in the latter field are: reactor physics, heat transfer, reactor engineering, reactor electronics, and fuel element development and design.

Director, Dr. Veljko Brajović; Research Director, Mr. Zdenko Dizdar.

B. *Jozef Stefan Institute*.—Established in 1947, it is located at Ljubljana. Among its research facilities, it has a 30 MeV betatron, a 2.5 MeV Van de Graaff accelerator, and a 200 KeV neutron generator. The institute has a 100 KW Triga Mark II research reactor. The United States contributed \$200,000 toward the cost of this reactor which was made available through the IAEA.

The institute is engaged in research on nuclear physics, solid state physics and quantum electronics, radiation chemistry, fluorochemistry and radiobiology, and nuclear engineering, including fuel and shielding problems, reactor physics and reactor electronics.

Director, Prof. Milan Osredkar; Senior Scientific Staff: Prof. Anton Moljk and Dr. Milan Copic.

C. Rudjer Boskovic Institute.—This Institute was established in 1950 at Zagreb. In use are a 16 MeV cyclotron and a 220 KeV neutron generator.

Although the institute began as a nuclear institute, it has evolved into an interdisciplinary institute. Research work is still conducted on theoretical and experimental aspects of low energy nuclear physics. Theoretical work is performed in the following fields: high energy physics, solid state physics, plasma physics and quantum electronics, chemistry, radiation chemistry, physical chemistry, radiochemistry, and radiobiology including immunology, genetics and metabolism. The institute also conducts much work in marine chemistry. This includes studies on pollution and primary producers of pollution in the North Adriatic Sea.

BILATERAL AND INTERNATIONAL COOPERATION

A. United States

Agreement for cooperation: The United States does not have a bilateral agreement with Yugoslavia. Cooperation between the countries is carried out through the IAEA.

Reactor equipment grants: Through the IAEA, the AEC made a grant of \$200,000 for the Triga Mark II reactor at the Josef Stefan Institute and a grant of \$150,000 for related equipment.

AEC equipment loans: In 1973 the AEC concluded two, 5-year (renewable) contracts with Yugoslav research institutions covering loan of certain equipment no longer in use or needed by AEC laboratories. In each case, the AEC is to receive results of research in exchange for the loans, and there is no cost to the AEC.

(a) HERMES film reader and auxiliary equipment: This was provided from the Brookhaven National Laboratory to the Institute of Physics, University of Belgrade. The equipment is for use by the High Energy Group to measure high energy processes by the bubble-chamber-film technique instead of the nuclear-emulsions technique.

(b) LINAC: The linear accelerator had been a prototype for the Los Alamos Meson Facility. It was provided to the Josef Stefan Institute, which agreed to undertake certain research of interest to the AEC (LASL). The LINAC was dismantled for shipping in 1973; installation and startup in Yugoslavia is expected to take a few years.

Atoms-for-Peace Exhibit: Belgrade, 1963.

Depository Library: Belgrade, Federal Nuclear Energy Commission.

B. Agreements with other countries

Bulgaria, East Germany, France, Poland, Italy, United Arab Republic, India, Indonesia, Norway, and Union of Soviet Socialist Republics.

C. Membership in international organizations

International Atomic Energy Agency and CERN.

YUGOSLAV UNION OF ELECTRIC UTILITIES, BELGRADE, YUGOSLAVIA

IMPRESSIONS AND SPECIFIC FINDINGS

In Yugoslavia we met with officials of the national power group who are in charge of building the atomic plants. They indicated that our Nation's insistence on new conditions for obtaining nuclear plant technology put them in a most delicate position since they seem to affect the sovereignty of Yugoslavia. They pointed out specifically the delicate balance they must maintain between the East and the West. I believe under these circumstances that it is very doubtful that Yugoslavia will agree to any significant changes or additions at our present agreements on atomic cooperation.

JUNTA DE ENERGIA NUCLEAR, MADRID, SPAIN

The group met with Director General and Vice President of Junta de Energia Nuclear, Francisco Pascual.

Background

Spain has developed an energy plan for the next 10 years which includes nuclear energy. The plan is being developed by the Ministry of Industry and Energy and is ready for presentation to Parliament.

Currently there are three nuclear plants in operation producing 1 million electrical kilowatts and seven additional units either under construction or in planning. By 1987, the Spanish hope to have 40 million electrical kilowatts in operation. All of the plants are of the light water reactor type.

Presently there is no breeder construction program and there is no plan for one within the next ten years. However, the Spanish will be conducting some research and Director General Pascual said that Spain plans to enter the field at some time in the future.

Spain gets their uranium from Canada and South Africa. They recently entered into an enrichment contract with the U.S.S.R. Since Spain has no reprocessing plants, they have contracts with Britain and France for reprocessing.

ENERGY PROJECTS IN AND AROUND MADRID

I. Inta Project at Torrejon: About 15 to 20 K from Madrid. The National Institute of Aerospace Technology is doing work at this site in solar thermal energy conversion and wind power. There is also a solar test facility nearby at Arganda which is involved with R. & D. and testing of solar panels for heating and cooling of buildings.

II. Three solar power towers to be built at Almaria: Nothing to be seen there yet.

III. A Sodium Loop for Reactors and of the kind to be used in the power tower at Almaria is located at Madrid at the Center for Energy Studies. Contact: Manuel Lopez Rodriguez, Under-Director General (Technical) of Junta de Energia. Phone: 244-1200 (Madrid).

IV. Geothermal Energy: Nothing in Madrid but major drilling effort under way by a U.S. company in the Azores (San Miguel Island). Funded by the Portuguese Government. DOD is considering expanding that drilling effort, which has already hit hot water, to the main island near the U.S. Air Force Base.

For information: The Department of Energy is negotiating a \$25 million treaty with the Spanish Government for R. & D. on various energy technologies, under part of the agreement for the use of Spanish facilities for U.S. military purposes. Nothing has been built yet under this arrangement.

IMPRESSIONS AND FINDINGS

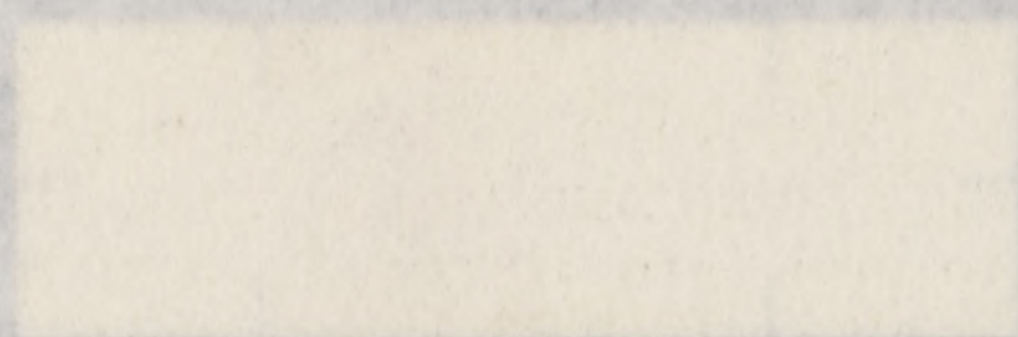
The last stop was at Madrid and again the discussion was very frank and open. Essentially, the head of the atomic program in Spain stated that his country found the administration's proposal to amend prior nuclear agreements to be a form of penalty which it was attempting to enforce upon its friends. They did not believe the United States should make its friends pay a penalty for that friendship. Significantly, they mentioned that their new atomic plants were going to be given out in competition and the latest had been awarded to West Germany. They also stated they would see the U.S. Representatives on changes in the agreements, but felt most of the new terms were unacceptable, and could not be agreed to. They also pointed out that they could not agree to changes in their agreements when the U.S. Representatives would then be discussing similar changes with other nations. One nation could not likely accept conditions that would not be accepted by others. It appears to me the only way these agreements can be modified is through the International Atomic Agency and I think new negotiations should be undertaken in that fashion.

Spanish officials also made it clear that since President Carter's cool statements toward atomic energy, opposition to atomic power has grown in Spain. Again, they stressed although they are willing to accept reasonable safeguards, they needed the breeder reactor and intend to proceed to get one. They also pointed out they were entering into contracts with the Soviet Union for the supply of uranium and that it is important to note that the Soviet Union is backing the breeder reactor.

Again, it was pointed out that the thorium option was a very expensive one with little likelihood of significant nonproliferation improvements over the uranium-plutonium cycle. They do not consider the thorium breeder a serious option in Spain. They were hopeful to be able to be ready to enter into a breeder program in 10 years. In addition, they pointed out that if the United States accepted the terms of Premier Desai of India, no other country could accept anything less.

In the final meeting in Spain, I asked the Prime Minister what the policy of his country was in regard to atomic energy. He reiterated their interest in developing nuclear energy and stated that they were talking to France as an alternative to the U.S. participation because of their uncertainty as to what the U.S. atomic policy really meant.

○





A11600 770113

