THE EFFECT OF IMPORTS OF URANIUM ON THE NATIONAL SECURITY

An Investigation under Section 232
of the Trade Expansion Act of 1962, as amended
(19 U.S.C. 1862)

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Bureau of Export Administration
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I. INTRODUCTION

On December 30, 1988 the Secretary of Energy requested the Secretary of Commerce to conduct an investigation under Section 232 of the Trade Expansion Act of 1962, as amended, to determine the effect of imports of uranium on the national security. The Act states that:

> If the Secretary finds that an article is being imported into the United States in such quantities and under such circumstances as to threaten to impair the national security ... If the President concurs ... (he will then) determine the nature and duration of the action that ... must be taken to adjust the imports of the article ... so that such imports will not threaten to impair the national security ...

The Secretary of Energy's request was required by Section 23(b) of Public Law Number 97-415 which amended the Atomic Energy Act of 1954 by adding a new section 170B (42 U.S.C. 2210b). This section requires the Secretary of Energy to monitor and, for the years 1983 through 1992, to make an annual determination of the viability of the domestic uranium mining and milling industry. Specifically, for the Secretary of Energy to determine that the industry is viable, it must meet all of the following four criteria:

(1) resource capability - the extent to which domestic economic uranium reserves can supply domestic nuclear power needs for a future 10-year period;

(2) supply response capability - a measure of the level of domestic uranium production capacity sufficient to meet projected uranium supply security requirements;

(3) financial capability - the ability of the domestic industry to obtain sufficient funds to remain financially solvent to the point of a hypothetical disruption;

(4) import commitment dependency - a measure of whether executed firm and optional contracts for source material will result or have resulted in greater than 37.5 percent of domestic requirements for any two-consecutive year period being supplied by foreign uranium.[1]

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[1]Energy Information Administration, Domestic Uranium Mining and Milling Industry, 1987, (Washington, DC, December 1988), p. ix-x.

In December 1988, the Department of Energy (DOE) concluded that, for the calendar year 1987, the uranium industry was not viable because it was unable to meet both the financial and import commitment criteria. The following table presents the results of DOE's Viability Study since its inception.

Table I-1
DOE VIABILITY STUDY RESULTS

V = Viable
N = Nonviable

	1983	1984	1985	1986	1987
Resource Capability	V	V	V	V	V
Supply Response Capability	V	N	N	N	V
Financial Capability	V	N	N	N	N
Import Commitment Dependency	V	V	V	V	N

Note: 1987 was the first time the Import Commitment Dependency qualified for nonviability. This is because the 37.5 percent rule was exceeded in two consecutive years -- 1986 (43.8) percent and 1987 (51.1 percent).

In addition, under Section 170 (B) the Secretary of Energy must make another determination. Specifically, if he:

> determines that executed contracts or options for source material or special nuclear material from foreign sources for use in utilization facilities within or under the jurisdiction of the U.S represent greater than 37.5 percent of actual or projected domestic uranium requirements for any two consecutive year periods or if the Secretary of Energy determines the level of contracts or options involving source material and special nuclear material from foreign sources may threaten to impair the national security, the Secretary of Energy shall request the Secretary of Commerce to initiate, under Section 232 of the Trade Expansion Act of 1962, (19 U.S.C. 1862) an investigation to determine the effects on national security of imports of source material and special nuclear material.

Since U.S. utilities imported 43.8% of their uranium requirements in 1986 and 51.1% in 1987, the Secretary of Energy made the above determination and requested this study be initiated on December 30, 1988. A copy of this request is attached at TAB A. The

Department of Commerce accepted the request and announced its initiation of this investigation in the Federal Register on February 27, 1989 (copy attached at TAB B). By law, the Secretary of Commerce had 270 days to conduct the investigation and present his findings and recommendations to the President.

The Department conducted this investigation with assistance from the interagency community including the Departments of Energy, Defense and State. Additional information regarding the industry was gathered from public comments received in response to our Federal Register notice (summary attached at TAB C), from previous government and private studies of the industry, and from additional independent research.

The articles to be investigated include: uranium ores and concentrates, metals, oxides, hexafluorides and other uranium materials. These items are currently described by Standard Industrial Classification (SIC) Code 1094. They are currently classifiable in the Harmonized Tariff Schedule at items: 2612.10.00.00 for uranium ores and concentrates which includes the material extracted from the ground and the yellowcake (U_3O_8) that results from milling; 2844.10.10.00 for uranium metals - pure uranium in the metal form; 2844.10.20.10 for uranium oxides; 2844.10.20.20 for uranium fluorides; and 2844.10.50.00 for other uranium materials.

INVESTIGATION METHODOLOGY

A Section 232 investigation is conducted to determine the effect of imported articles on the national security. An investigation includes examination of the effects of imports on all phases of U.S. productive capacity necessary to meet requirements for the article derived from a selected emergency scenario.

The Department's Section 232 regulations (15 CFR 705) provide the following factors for consideration in determining the effect of imports on the national security:

a) domestic production needed for projected national defense requirements;

b) the capacity of domestic industries to meet projected national defense requirements;

c) the existing and anticipated availabilities of human resources, products, raw material, production equipment and facilities, and other supplies and services essential to the national defense;

d) the growth requirements of domestic industries to meet national defense requirements and the supplies and services including the investment, exploration and development necessary to assure such growth; and

e) any other relevant factors.

After determining the criticality of the uranium mining and milling industry to national security, the methodology for this investigation was based on a two-step process.

Step 1

Compare total available supply of each product with anticipated demand during a specified national security emergency - a one year mobilization period followed by the first three years of a major conventional conflict of indeterminate length. Supply is the sum of maximum domestic production capacity, product inventories and reliable imports. Demand for each product is provided by mobilization planning guidelines in the 1984 NSC Stockpile Study.

Step 2

If a supply shortfall is found, determine whether imports have been a significant cause of the industry's inability to meet national security requirements.

In this study, an industry survey was not necessary since due to the extensive amount of industry data available the Department of Energy.

SUPPLEMENTARY ANALYSIS

In addition to the quantitative supply/demand assessment described above, the Department also analyzed a number of other factors pertaining to the industry's ability to meet national security requirements. Specifically, industrial organization and existing government initiatives that affect the industry's production capabilities were assessed.

REPORT OUTLINE

This report begins with a description of the uranium industry, including information on the product under investigation and on

the industry that mines and processes uranium. This is followed by an analysis of the impact of existing government programs on the industry's ability to meet emergency requirements.

A national security assessment follows. The investigation concludes with a determination of whether imports of uranium threaten to impair national security.

IMPORTANCE OF THE INDUSTRY TO NATIONAL SECURITY

Uranium is essential to the operation of the Navy's nuclear-powered fleet, for nuclear weapon capability and for civilian nuclear energy generation. As the essential fuel for the Navy's nuclear powered vessels, including 150 nuclear submarines and surface ships, a guaranteed supply of uranium is vital for the activities of the Navy. In addition, enriched uranium is a key component of the nation's nuclear weapons arsenal.

In the essential civilian sector, nuclear power plants currently supply almost 20 percent of U.S. electricity requirements. The uranium used each day for electricity generation replaces 2.2 million barrels of imported oil. In this respect, uranium plays a critical role in the energy independence and security of the United States. As attitudes toward nuclear power change, and costs of substitute fuels increase in coming years, this form of energy generation may become even more important to our energy security.

II. PRODUCT DESCRIPTION

URANIUM METAL

Uranium is a dense, radioactive white metal with the heaviest atomic weight of any naturally occurring element. It was discovered in 1789 but it was not until 150 years later that a practical application (i.e. its ability to fission and release energy) was found. Following its development for military use during World War II, research into the exploitation of uranium for peaceful purposes (i.e. nuclear power) was initiated.

Uranium ore is a unique mineral because it has, for the most part, an exclusive end use - fueling nuclear reactors. Uranium^{235} is the only naturally occurring, readily fissionable material, and is thus the primary nuclear fuel used in the United States. Heat produced by the fissioning of U^{235} is used to generate steam, which is then used to generate electricity in a nuclear reactor. One pound of uranium (which is about one cubic inch in volume) can produce as much energy as 14,000 pounds of coal. In addition, uranium has minor applications for scientific and medical research.

Uranium is concentrated in the earth at an average ratio of approximately 2 parts per million. As found in nature, uranium contains three isotopes: U^{238} (99.27%) with a half life of 4.5×10^9 years, U^{235} (0.72%) with a half life of 7.1×10^8 years and U^{234} (0.006%) with a half life of 2.48×10^5 years. Within a deposit many rocks contain minor quantities of uranium, but it most frequently is found in minerals such as uranite (45-85% uranium); pitchblende and coffinite (60% uranium); brannerite (30-40% uranium); and davidite (7-10% uranium).

THE NUCLEAR FUEL CYCLE

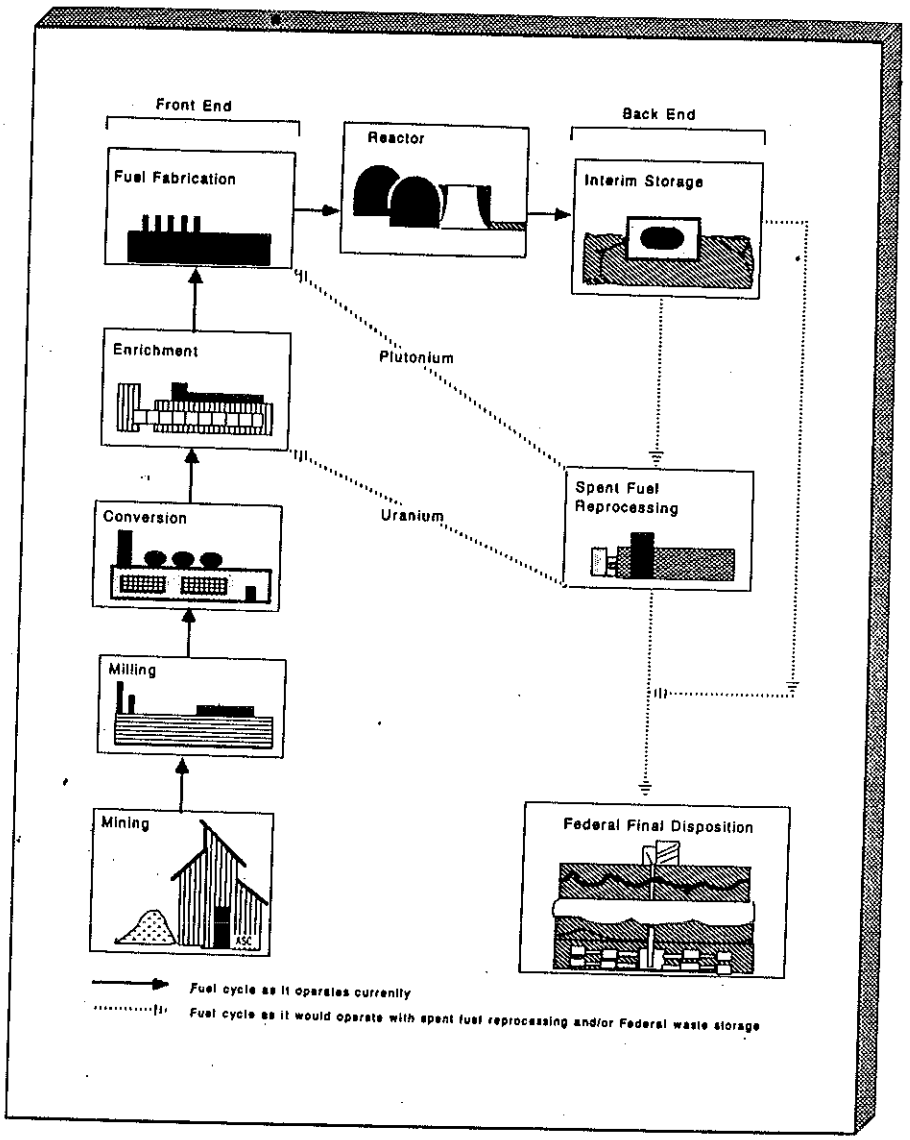
--- Exploration

Uranium exploration is organized in a variety of ways, depending on national laws. Some governments control the exploration of uranium, but in most countries it is a commercial effort carried out by private commercial interests. In the United States, uranium exploration and mining is handled mainly by privately-owned mining companies. Exploration for uranium deposits has expanded from near surface surveys to targets at depths in excess of 3,000 feet.

Since uranium has a unique radioactive property, exploration and geologic studies are aided by geiger and scintillation counters.

Aerial surveying is carried out with highly sensitive multi-channel gamma ray spectrometers mounted on aircraft. Exploration and development drilling is then performed to further outline the size of the deposit and measure the quality of the ore. The amount of time necessary to complete the project (from the start of exploration and discovery to production) can be quite significant. Although the lead times have been shorter in past years (i.e. less than ten years at the beginning of the commercial industry), deposits being mined today are less accessible, and thus the average time necessary to attain full production can be as long as fifteen years.

Figure II-1
NUCLEAR FUEL CYCLE



--- Mining

Uranium deposits are smaller and more irregular than many other ore deposits. In addition, since deposits are often quickly depleted, the operations must be highly mobile. Deposits of uranium may be deep or shallow, and are often found with other minerals and produced as a by-product (e.g. with gold in South Africa and with potash in the United States).

The two most commonly used methods of extraction are open-pit and underground mining. The method utilized depends on the nature of the ore body. Once extracted, the mined ore is then crushed, ground and leached with acid or alkaline to extract the uranium. In addition, uranium concentrate is also produced by non-conventional methods, such as solution mining (termed "in situ"), which accounts for only 2% of the mining. In this process, uranium is leached from the ore without removing it from the ground. In situ mining is used when deposits are of a low grade, irregularly placed and when conventional methods are too expensive. Uranium can also be obtained as a by-product of other minerals such as copper ores. Production of domestic uranium peaked at 43.7 million pounds in 1980, and has averaged about 13 million pounds annually over the past four years.

--- Milling

Since transportation of the raw ore is very expensive, mills are often located close to the mines. The conventional milling method involves the following steps: (1) ore handling and preparation, including ore blending, crushing and grinding; (2) uranium concentration which consists of hydrometallurgical extraction or leaching techniques followed by further concentration by ion exchange or solvent extraction; and (3) product recovery - where the concentrate (referred to as "yellowcake") is recovered from solution by chemical precipitation followed by drying and packaging for shipment.[1]

--- Conversion to UF_6 and Enrichment

In the United States, yellowcake or U_3O_8 is chemically converted to uranium hexafluoride (UF_6) by private industry. UF_6, which is a gas at relatively low temperatures, is the feed material for the gaseous diffusion enrichment plants.

The uranium cannot yet be used as fuel in a reactor because its content of U^{235} is too low to sustain a nuclear chain reaction. To be capable of fission, uranium must undergo a series of

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[1]Energy Information Administration, Uranium Industry Annual, (Washington, DC, September, 1988), p. 47.

changes from raw ore to convert it into the fuel which is used in a nuclear reactor. In the enrichment process for commercial nuclear fuel, the concentration of U^{235} is increased from the naturally occurring 0.7% to about 3.5%, the level needed for nuclear reactor fuel. By contrast, uranium used in nuclear weapons is enriched to greater than 90 percent.

In the gaseous diffusion process, gaseous UF_6 passes through a series of membranes to separate out U^{235}, which is the fissionable isotope. The diffusion process eventually results in two product streams: one enriched or containing a greater U^{235} content and the other "depleted", or containing less than 0.7 percent of U^{235}.

Enrichment is necessary for uranium used as fuel in light-water reactors, because the amount of fissile U^{235} in natural uranium is too low to sustain a nuclear chain reaction in those reactors.[2] Naturally-found uranium can be used as a fuel for some heavy-water reactors.

--- Fabrication

At the fuel fabrication plant, the enriched UF_6 is converted to uranium dioxide (UO_2). The uranium dioxide is formed into solid, cylinder-shaped pellets that are placed in hollow rods made of a zirconium alloy or stainless steel. These rods are bundled to form fuel assemblies, which are then shipped to nuclear power plants for use as nuclear reactor fuel.

--- Interim Storage

After the fuel elements are used and discharged from the reactor, (in approximately twelve to eighteen months) they are stored either at the reactor site or an outside facility. The used or spent fuel may be dry or wet stored for cooling and subsequent reprocessing or disposal.

-- Reprocessing

The spent fuel still contains appreciable quantities of fissionable material, fertile uranium (U-238) and other radioactive materials. These elements can be separated, recovered, and recycled for use as nuclear fuel (if economic and institutional conditions permit). Currently, no recycling of spent fuel is done in the United States.

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[2]Energy Information Administration, Uranium Industry Annual, (Washington, DC, September, 1988), p.3.

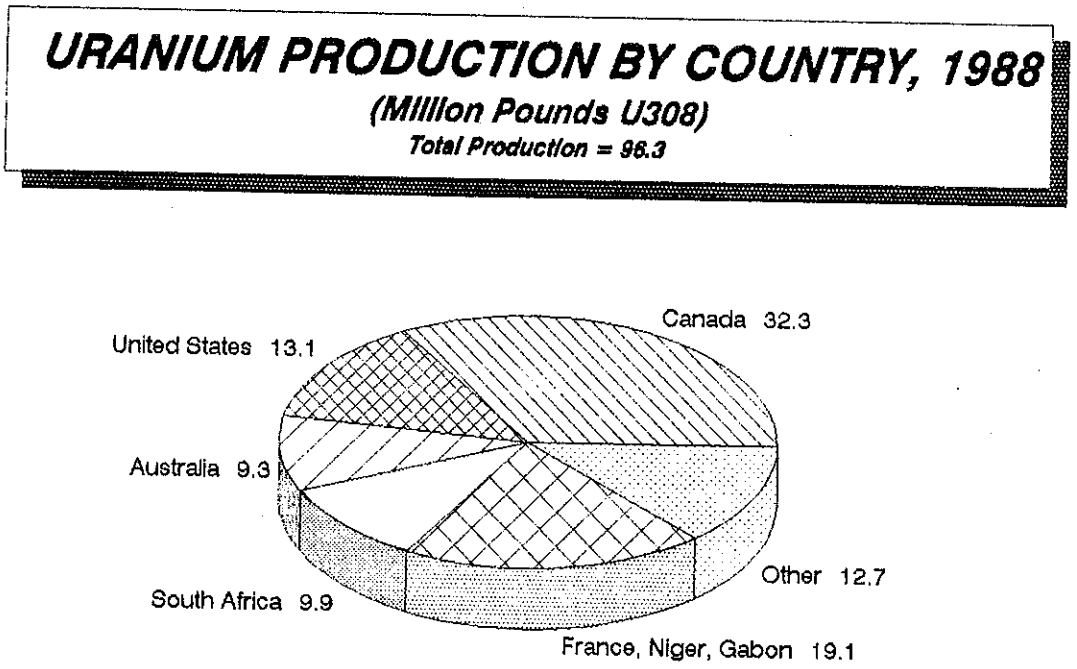
--- Waste Disposal

The spent fuel or waste from reprocessing must then be safely disposed and isolated. The material must be isolated from the biosphere until the radioactivity has diminished to a safe level. The Department of Energy (under the Nuclear Waste Policy Act of 1982) has responsibility for the development of a disposal system. The site chosen for disposal must be a deep, geological repository. The 1982 Act was amended in 1987 and the Department of Energy was directed to determine the suitability of a site located at Yucca Mountain, Nevada. DOE's assessment of the acceptability of this location as a disposal site is still pending.

WORLD URANIUM PRODUCTION

In most uranium producing countries there is strong government involvement in the uranium industry, either through ownership or in a regulatory capacity. Known world uranium resources in the non-communist world are concentrated in the United States, Australia, Canada, Gabon, France, Niger and South Africa, and make up over 80% of the known non-communist resources, which amounted to 96 million pounds of U_3O_8 in 1988. Recently, the Soviet Union and China have made inroads into the export market, but as yet, their exports account for a small part of the total market.

Figure II-2



Uranium is a unique industry in that is continually influenced by national and international political concerns. Decisions on withdrawal from nuclear power production, or limits on nuclear energy use have had a significant impact on long term development of the market. In addition, when formulating an export policy, uranium producing countries often take nuclear non-proliferation policies and national views on uranium and nuclear energy into consideration.

Attitudes in the United States concerning nuclear power have changed dramatically over the years, especially following the incidents at Three Mile Island and Chernobyl. No new plants have been ordered in the United States since 1979 and, in addition, plans for the construction of 65 plants have been cancelled.

With the cancelled orders and reduced demand, excess inventories and falling prices have impacted the uranium market. Domestic and foreign utilities which have cancelled or deferred reactor programs have sold their excess uranium, spawning a secondary market for uranium. The prices at which these inventories are sold on the spot market are often below production costs. Some producers have purchased uranium on the spot market to meet their contractual requirements.

III. INDUSTRY DESCRIPTION

UNITED STATES INDUSTRY OVERVIEW

The main uranium deposits in the United States are found in Arizona, Colorado, New Mexico, Texas, Utah, Washington, and Wyoming. In the U.S. uranium market, exploration has been ongoing since the 1940's. At the close of World War Two, uranium supply depended on foreign sources with a few domestic deposits. In 1948 the Atomic Energy Commission created a program with incentives for research, exploration and mining. Initially, the demand for the ore was centered on military uses and thus, the U.S. Government held a monopsony on uranium. However, during the mid 1960's, with the enactment of the 1964 Private Ownership of Special Nuclear Materials Act, a commercial market for uranium began to develop which then increased the private sector demand.

Because of this new private ownership and optimistic forecasts for uranium demand in the late 1960's, exploration and drilling increased dramatically. Measured in total drilling footage, exploration in 1966 was almost double that of 1965 and in 1967 and 1968, almost triple that of 1966. The expansion of drilling continued an upward trend until about 1979 when drilling and exploration began a steady decline.

During the 1970's, contracts for uranium were based on expectations of continued high future demand. High oil prices increased the attractiveness of nuclear energy as a cheaper energy alternative, and requirements for the nuclear program increased along with the price of uranium. During the peak period of the 1970's, the industry was financially attractive to new entrants which prompted investment in exploration and production. In particular, multinational oil companies, electric utilities and mining companies invested in the growing industry. The oil companies, however, were the ones who took the lead in exploration and development and by 1979 they were responsible for over 40 percent of domestic uranium production and held between 56 and 67 percent of the estimated recoverable reserves. Following reduced demand, the oil companies joined the move away from uranium and by 1987, they accounted for only 17.4 percent of the domestic production and held 22.3 percent of the estimated recoverable reserves.

Expectations of high demand for nuclear power did not materialize, leading to cancellations and deferrals of nuclear power plants. This, in turn, resulted in an overall excess of supply and capacity in the uranium industry. The decline in domestic uranium production and the move away from atomic energy

has made the industry less profitable and less attractive. In 1977, 146 firms were involved in domestic uranium exploration, 135 in mining and 26 in milling. However, by 1987, only 23 firms were engaged in exploration, 11 in mining and 5 in milling. In addition, the amount of land dedicated to the uranium industry has fallen steadily since 1978, when 19 million acres were held to 1987 when only 1.9 million acres were held.

As a result of these retrenchments and consolidations, the level of industry concentration has risen. The number of facilities in operation has also declined with only 6 of 17 uranium processing mills operable at the end of 1987. These economic conditions are likely to persist or become even more concentrated if industry demand remains soft.

Another characteristic of the uranium mining industry is that few companies are exclusively dependent on the production and sale of the ore. Uranium production is usually a relatively small part or byproduct of other major activities of the firm. Of the nine uranium firms with assets in excess of $50 million at the end of 1987, two were subsidiaries of major oil companies, two were affiliated with or owned by electric utilities, one was a large conglomerate, two were associates of companies having significant domestic mining operations, one was controlled by a privately-owned mining company, and one was controlled by a foreign-based international mining company.

Market for Uranium

Uranium has only a few applications, but has both military and civilian use in the United States. Defense programs use uranium in the nuclear fleet and for nuclear weapons, while the major uranium consumers are utilities who use uranium for fueling civilian nuclear power plants.

Presently there are 107 nuclear power plants operated by 54 utilities in the United States, generating about 20 percent of the nation's electrical power. Six states in the United States get over 40 percent of their power from nuclear plants and 18 obtain over 25 percent of the electricity from nuclear power. Despite a heavy capital investment, nuclear power plants can be competitive with other energy sources once they become operative.

Other countries are far more dependent on nuclear generated electricity. Seventy-one percent of France's energy is nuclear while the figures for Belgium and Taiwan are 64 percent and 52 percent respectively. Worldwide there were 370 nuclear power plants operating in 1987 with an additional 100 ordered since 1978. While the United States utilizes less nuclear power (on a

percentage basis) than most other countries, its nuclear capacity exceeds all other countries.

The United States has an installed capacity of 90.5 net gigawatts (GW) followed next by France with 37.5 net GW, the USSR with 27.8 net GW, and Japan with 23.7 net GW. Eight new U.S. nuclear power plants began operations in 1987 while one was retired.

The United States represents the largest single market for worldwide uranium sales. In fact, about two-thirds of the U.S. requirements through the end of the century are still without contract, compared with 20 percent for Europe and one-third for the Far East. Most of the U.S. market, however, will not be filled by domestic uranium as was the case in past years, but by lower cost imported uranium.

U.S. Ore Resources

Uranium resources are categorized as either Reasonably Assured Resources (RAR); Estimated Additional Resources (EAR) or Speculative Resources (SR). RAR are uranium deposits whose size, configuration and production costs have already been determined. EAR and SR are undiscovered geological resources whose presence has been calculated with some degree of confidence and are usually expected to occur as extensions of known and well defined deposits.

The following table show the Reasonably Assured Resources of uranium at the end of 1987.

Table III-1
U.S. REASONABLY ASSURED RESOURCES BY STATE AS OF DECEMBER 31, 1987
(Mean values in million pounds U_3O_8)

Origin	Forward Cost Category: $30 per pound	$30-$50 per pound	Total
State			
New Mexico	178	272	450
Wyoming	70	280	350
Texas	13	23	36
Arizona, Colorado, and Utah	21	84	105
Other[a]	73	42	115
Total	355	701	1056

[a]Includes phosphate byproduct and RAR from California, Florida, Idaho, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, and Washington.

Source: U.S. Department of Energy, Energy Information Administration, Domestic Uranium Mining and Milling Industry, 1987.

In addition to the Reasonably Assured Resources, EAR and SR were estimated, according to cost category, at the end of 1987 as follows, substantially unchanged since 1983.

Table III-2
ESTIMATED ADDITIONAL RESOURCE (EAR) AND SPECULATIVE RESOURCES (SR) AT END OF THE YEAR 1975-1987
(million pounds U_3O_8)

Year	Forward Cost Category in Nominal Dollars					
	$10 per pound		$30 per pound		$100 per pound	
	EAR	SR	EAR	SR	EAR	SR
1975	900	1000	2100	3700	(b)	(b)
1977	(b)	(b)	2000	3100	(b)	(b)
1979	(b)	(b)	2000	2000	(b)	(b)
1981	(b)	(b)	1200	900	3500	2900
1983	(b)	(b)	1300	1000	3800	3200
1985	(b)	(b)	1300	1000	3800	3200
1987	(b)	(b)	1300	1000	3700	3200

[a]Values shown are the mean values for the distributions of estimates for each forward-cost category, rounded to the nearest 100 million pounds U_3O_8.
[b]Not estimated for the indicated forward-cost category.
Source: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual, 1987.

U.S. Distribution of Uranium Deposits

Uranium deposits in the United States are generally characterized by their relatively small size and low grade. The number of mines in operation has been declining in recent years. In 1987 ore was processed by 21 underground and open pit mines, compared with the 362 operating in 1979.

Uranium endowment is the total quantity of estimated resources, irrespective of economic considerations, above 0.01 percent U_3O_8. The distribution of these resources across the United States is represented by the following map and chart.

FIGURE III-1

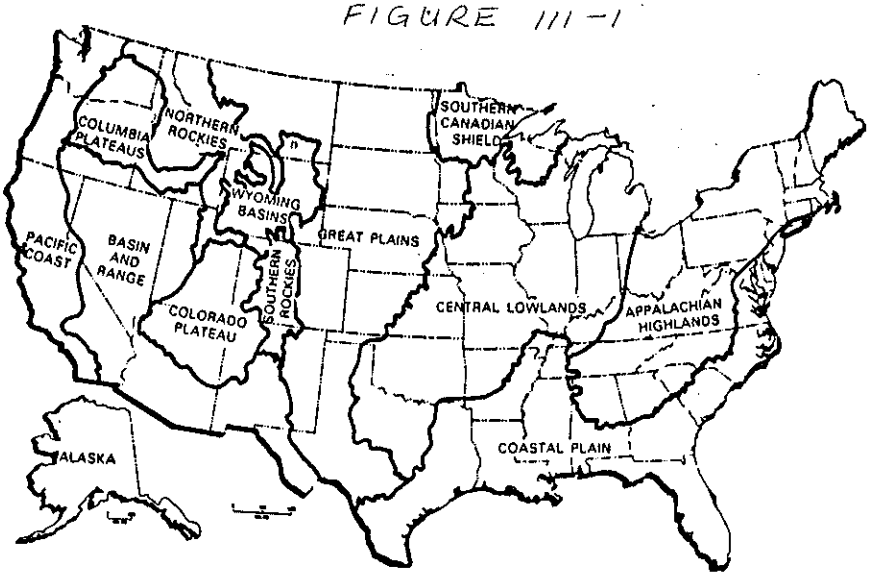


Table III-3
URANIUM ENDOWMENT BY RESOURCE REGION AT END OF 1987
(million pounds U_3O_8)

Resource Region	Endowment Associated with Estimated Additional Resources[a]	Endowment Associated with Estimated Speculative Resources[a]
Colorado Plateau	2320	1910
Wyoming Basins	1990	450
Costal Plain	910	410
Northern Rockies	670	3860
Colorado & Southern Rockies	320	360
Great Plains	310	950
Basin and Range	1420	1080
Central Lowlands	(b)	280
Appalachian Highlands	120	1140
Other Regions	50	120
Total	8110	10560

[a]Values shown are the mean values for the distribution of estimates of EAR and SR, rounded to the nearest 10 million pounds U_3O_8.

[b]No uranium endowment in the Estimated Additional Resources category is estimated for this resource region.

[c]Includes endowment associated with Estimated Additional Resources for Pacific Coast region and Alaska and endowment associated with Speculative Resources for Columbia Plateaus, Pacific Coast, and other Canadian Shield regions and Alaska.

Note: Totals may not equal sum of components because of independent rounding.

Source: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual, 1987.

U.S. Production Capacity

The second stage of uranium processing - where uranium concentrate is produced - has also experienced a slow-down in recent years. United States conventional milling facilities at the end of 1987 consisted of 17 active and inactive mills with a combined capacity of 34,650 tons per day. Of those 17 mills, only six were operating at the end of 1987, with a combined capacity of 13,250 tons per day. Most of the mills that ceased operations from 1983-1987 could be brought back into production and are considered "available" mill capacity.[1]

Table III-4
STATUS OF CONVENTIONAL URANIUM MILLS AT YEARS END 1981-1987

Item	1981	1983	1985	1987
Number of Mills				
Operating	20	12	4	6
Not Operating	3	11	17	11
Total	23	23	21	17
Milling Capacity (tons of ore per day)				
Operating	49800	29250	6550	13250
Not Operating	4250	22400	40700	21400
Total	54050	51650	47250	34650
Average Daily Mill Feed (tons of ore per day)[a]	41560	16930	5130	4120
Operating Level as Percent of Total Milling Capacity	77	33	11	12

[a]Rounded value. Based on 350 workdays per year.
Source: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual, 1987.

[1]Energy Information Administration, Domestic Mining and Milling Industry, (Washington, DC, December 1988), p.18.

As shown, the average daily mill feed (tons of ore per day) in 1987 was 4,120 tons or 12 percent of the total milling capacity. Compared with the 1981 level of 77 percent capacity utilization, on a substantially higher base capacity, this is a marked decline. The annual operating level of domestic uranium mills - defined as the average daily mill feed divided by the total daily milling capacity has also declined steadily since 1981.[2]

In addition, the United States also produced uranium concentrate utilizing nonconventional production facilities. Fourteen such facilities were in operation in 1987, including eight in situ leaching; five byproduct recovery and one mine water plant. These non-conventional facilities produced 4.46 million pounds of U_3O_8 concentrate in 1987.

Exploration Expenditures

Expenditures for uranium exploration in the United States have fluctuated in recent years but continue on a downward trend. The following chart illustrates the changes in domestic uranium exploration. As can be seen in the chart below, the main indicator of exploration expenditures - drilling - has also been experiencing a decline in activity.

[2]Energy Information Administration, Uranium Industry Annual, (Washington, DC, September 1988), p.45-46.

Table III-5
DOMESTIC URANIUM EXPLORATION ACTIVITIES, 1983-1987

Exploration Activity	1983	1985	1987
Land Acquired			
Million Acres	0.50	0.13	0.09
Million Dollars[a]	3.44	0.94	0.79
Surface Exploration and Development Drilling			
Million Feet	3.17	1.76	1.96
Million Dollars[a]	16.37	5.84	6.96
Other Exploration Expenditures (million dollars)[a]	22.02	14.42	11.89
Total Expenditure (million dollars)[a]	41.83	21.20	19.64

[a]Constant 1987 dollars.
Source: U.S. Department of Energy, Energy Information Administration, Domestic Uranium Mining and Milling Industry, 1987.

Enrichment Facilities

The Department of Energy had a monopoly on provision of enrichment services to U.S. end users until the mid-1970's when restrictions were dropped and European facilities took up some of the U.S. demand for enrichment services. The following chart shows the projected capacity of OECD enrichment facilities.

Table III-6
ENRICHMENT PRODUCTION CAPACITY IN OECD COUNTRIES
(Thousands of SWU per year)

Facility	1990	1995	2000
USDOE	19200	19200	19200
EURODIF[a]	10800	10800	10800
URENCO[b]	2500	4000	5500
JAPAN	200	1100	2600
TOTAL	32700	35100	38100

Note: a SWU is separative work unit
Source: Electricity, Nuclear Power and Fuel Cycle in OECD Countries, 1988, by NEA/OECD.
[a] A French company
[b] A German, Belgian and Dutch company

While DOE and EURODIF capacity have remained constant, URENCO and Japanese capacity have increased and will probably continue to increase in years to come. The United States may be faced with increased competition from these growing facilities as well as from an expanding and aggressive Soviet enrichment enterprise.

Currently two DOE-owned enrichment facilities supply most of the enrichment services for the United States. They are located in Paducah, KY and Portsmouth, OH and generate $1.2 to $1.5 billion in annual revenues. Of the material enriched at these facilities one-third is foreign-sourced. In addition, of the 15.9 million pounds of foreign-sourced uranium used by U.S. utilities in 1987, 13.1 million pounds was enriched at DOE enrichment sites.

Employment

Employment in the domestic uranium industry has experienced a steady decline since the late 1970's. A peak of 21,951 person-years was reached in 1979 for workers in exploration, mining, milling and processing. The 1987 employment figures for the uranium industry are 91% lower than the 1979 peak, standing at 2,002 person-years, of which less than half were actual miners. All facets of the industry including exploration, mining, milling and processing have suffered a drop in employment since the late 1970's.

Domestic Procurement Arrangements

There is no centralized futures or spot market for uranium. Contracting can be between a producer and utility or via a middleman or broker. The principal broker for uranium is Colorado-based NUEXCO, founded in 1968. NUEXCO's published exchange value is typically referred to as the "spot price" for uranium. Properly speaking, however, the exchange value is only a rough index of what the spot price would be if there were a centralized market. The exchange value, as it is defined, is NUEXCO's estimate of the price at which transactions for immediate delivery could have been concluded as of the last day of the month.[3] In one such method of procurement - contract price procurement - the prices and any associated escalation factors are specified when the contract is signed. However, when a market price contract is utilized, prices are usually determined before delivery and are based on prevailing market prices. Some market contracts include a floor price which would be specified when the contract is signed. In addition, there are various other contracts, including procurement by utilities from uranium properties which they directly control.

As seen in the table below, 54% of domestic uranium deliveries in 1987 were contract priced, 37% market priced and 9% "other". In 1987 48 new uranium contracts were signed by utilities with domestic suppliers; 36 were spot market purchases - 33 of which were contract priced and 3 market priced. Of the 12 long-term purchases, 8 were market priced.[4]

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[3]Energy Information Administration, World Uranium Supply and Demand, (Washington, DC, March 1983) p. 106.

[4]Energy Information Administration, Uranium Industry Annual, (Washington, DC, September 1988), p. 57.

Table III-7
PROCUREMENT ARRANGEMENTS FOR DOMESTIC URANIUM DELIVERY COMMITMENTS TO UTILITIES, 1987-2000 AND LATER
(as of December 31, 1987)

Year of Delivery	Contract Price (percent of annual total)	Market Price (percent of annual total)	Other (percent of annual total)	Total (million pounds U_3O_8)
1987	54.3%	37.0%	8.7%	20.8
1989	32.7	48.9	18.4	12.5
1991	38.0	44.4	17.6	12.0
1993	21.4	58.7	19.9	11.1
1995	8.8	64.9	26.4	9.1
1997	0	66.8	33.2	5.4
1999	0	59.4	40.6	2.7
2000 & later	0	34.8	65.2	2.3
Total	28.5	52.1	19.4	137.2

Note: Totals may not equal sum of components because of independent rounding. Percentages were calculated using unrounded data.
Source: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual, 1987.

U.S. Uranium Prices[5]

The price of uranium has fluctuated greatly since the beginning of the commercial uranium market. In 1988, the spot market price for uranium was about $11 per pound U_3O_8. The following table represents the average contract prices for actual deliveries made from 1982 to 1987. Market price settlements are included with contract prices because of their similarity. Also shown is an adjusted price which is a weighted average for reported prices and price estimates for contracts held by respondents not supplying price information to the EIA.

As illustrated, the reported average price per pound in 1987 was $27.37, a decrease from 1986 and part of a continued annual price decline. In recent years this has largely been due to the

[5]All prices presented in this section are quantity weighted averages.

increased use of less expensive spot-market contracts. In 1987 4.3 million pounds of U3O8 were delivered on spot contracts at an average cost of $18.11.[6]

Table III-8
AVERAGE CONTRACT PRICE AND MARKET PRICE SETTLEMENTS FOR ACTUAL DELIVERIES 1982-1987

	U_3O_8 for Which Price Was Reported	
Year of Delivery	Reported Price (dollars per pound)	Quantity (million pounds)
1982	38.37	16.7
1983	38.21	17.4
1984	32.65	16.1
1985	31.43	15.8
1986	30.01	12.1
1987	27.37	14.1

Note: Price excludes uranium delivered under litigation settlements. Price is given in year-of-delivery dollars.
Sources: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual 1987.

Contract Specific Price Contracts

The average reported price for actual deliveries from 1982-1987 and expected deliveries from 1988 to 1993 for contracts with a contract-specified pricing mechanism are shown in the following table. The 1987 average price was $29.16 per pound of U3O8, while the price for 1987 deliveries ranged from a low of $10 per pound to over $110.[7]

[6]Energy Information Agency, Uranium Industry Annual, (Washington, DC, September 1988), p. 59.

[7]Ibid, p. 60

Table III-9
AVERAGE CONTRACT-SPECIFIED PRICE, 1982-1993, AS OF DECEMBER 31, 1987

	U_3O_8 for Which Price Was Reported	
Year of Delivery	Reported Price (dollars per pound)	Quantity (million pounds)
1982	[a]35.36	8.2
1983	[a]39.90	9.5
1984	[a]33.60	7.2
1985	[a]34.74	8.9
1986	[a]32.58	6.1
1987	[a]29.16	10.1
1988	35.49	5.4
1989	44.68	3.7
1990	45.91	4.0
1991	46.19	4.2
1992	40.81	2.6
1993	32.46	1.3

[a]Prices of actual deliveries.

Note: Price excludes uranium delivered under litigation settlements. Price is given in year-of-delivery dollars.

Sources: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual, 1987.

U.S. EXPORT POLICIES

A Nuclear Regulatory Commission (NRC) license is required for the export of natural uranium from the United States except for small quantities. A special NRC license is also required to export enriched uranium. Criteria applied to the licensing include: that the export not be harmful to the U.S common defense and security and that the export (when intended for eventual nuclear use) be pursuant to the terms and conditions of an agreement for cooperation. Such conditions include guarantees that safeguards be applied, that there will be no use for nuclear explosives or

for research on any nuclear explosive device, and that adequate physical security be maintained.[8]

Exports from the U.S. include shipments to foreign buyers from both domestic suppliers and domestic utilities. During the twenty year period from 1967-1987, U.S. uranium companies exported 62 million pounds of U3O8. At the end of 1987, contracts committed a further 12.2 million pounds to be exported by 1996.[9] At the end of 1987, there were no commitments for exports beyond 1996.

COMMERCIAL INVENTORIES

Utilities often hold uranium inventories in order to account for possible changes in requirements. These may include delivery shortfalls or disruptions in supply. The following table illustrates U.S. commercial inventories of uranium for the years 1986 and 1987, indicating the domestic and foreign component of the stocks. The table includes uranium in storage, as well as material in the processing stream.

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[8]OECD, Uranium: Resources, Production and Demand, (Paris, France, March 1988), p. 66.

[9]Energy Information Administration, Uranium Industry Annual, (Washington, DC, September 1988), p. 68.

Table III-10
COMMERCIAL URANIUM INVENTORIES AT YEARS END, 1986-1987
(million pounds U_3O_8)

Type of Uranium Inventory	Utilities	
	1986	1987
Natural U_3O_8		
Domestic	30.2	28.8
Foreign	6.6	5.8
Total	36.8	34.6
Natural UF_6		
Domestic	19.1	16.1
Foreign	7.2	2.5
Total	26.3	18.6
UF_6 at Enrichment Suppliers		
Domestic	12.0	8.2
Foreign	6.3	10.3
Total	18.3	18.5
Enriched UF_6		
Domestic	11.0	8.3
Foreign	6.4	4.0
Total	17.4	12.3
Fabricated Fuel		
Domestic	19.3	14.2
Foreign	5.1	7.5
Total	24.3	21.7
Total Inventories		
Domestic	190.6	105.9
Foreign	34.5	31.6
Total	144.1	137.4

Note: Totals may not equal sum of components because of independent rounding.
Sources: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual 1987.

STOCKPILE

In addition to the uranium held by companies, there is approximately 91,000 metric tons of contained uranium (an MTU is equivalent to 2600 pounds of U308) at Department of Energy

enrichment plants. Of that total, approximately 46,000 MTU belongs to commercial customers with the remainder belonging to the Government. The Government stock of 44,997 MTU includes 20,464 MTU for defense needs with the remainder - 24,533 MTU - earmarked for working inventory and operational needs. According to DOE, uranium which is designated for defense purposes is adequate to meet defense needs well after the year 2000.

Table III-11
EQUIVALENT NATURAL URANIUM INVENTORY
(at the DOE enrichment plants as of 9/30/88)

Description	MTU[a]	Comment
Total	90,678	Total amount of equivalent natural uranium contained in the natural, enriched and in process inventories at the DOE enrichment sites.[b]
Commercial liabilities	45,681	Portion of inventory representing advanced feed deliveries by commercial customers for future enrichment.
Set aside for Defense	20,464	Will meet defense needs until well after 2000.
Available for enrichment	24,533	For working inventory and other operational requirements.

[a]Metric ton of contained uranium. A MTU is equivalent to about 2600 pounds of uranium oxide - U_3O_8.
[b]Excludes 1949 MTU of supplemental feed that is included in DOE's financial accounting system. The 1949 MTU is DOE uranium use in lieu of separative work in past operations to produce some of the enriched stockpile and for which costs must be recovered.
Source: Department of Energy, Enrichment Services Program

If additional uranium material is required, the Department of Energy can access their tail (depleted uranium) inventory. These tails can be further depleted to produce natural uranium, extending the time when DOE would need to purchase uranium for defense needs.

AVAILABLE DOMESTIC SUPPLY

The following table shows the amount of uncommitted uranium available for sale (at various prices) from 1988-97. At the end of 1987, when the projections were made, domestic suppliers had 225.0 million pounds of U3O8 available through 1997.

Table III-12
UNCOMMITTED URANIUM AVAILABLE FOR SALE FROM 1988 TO 1997
(million pounds U_3O_8)

Year of Sale	Price Category			
	$20/lb or less	$40/lb or less	$60/lb or less	Unlimited Price
1988	5.0	15.9	20.4	20.7
1989	2.6	12.5	16.9	16.9
1990	3.0	16.6	21.2	21.2
1991	3.6	14.7	18.3	19.3
1992	3.8	16.2	22.1	24.4
1993	1.8	14.5	21.7	25.3
1994	1.1	13.6	20.0	23.5
1995	1.0	13.7	20.7	24.1
1996	1.0	14.3	21.2	24.6
1997	0.5	14.4	21.6	25.0
Total	23.5	146.3	204.0	225.0

[a]Prices are in constant January 1988 dollars.

Note: These data are based on estimates made by domestic suppliers as of December 31, 1987. Totals may not equal sum of components because of independent rounding.

Source: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual 1987.

FOREIGN URANIUM INDUSTRY

The price of foreign origin uranium is generally lower than U.S. prices with richer deposits and easier extraction generally accounting for the lower cost per pound. The lowest cost per pound in operating costs is Canada at approximately $8 while the

average U.S. production cost is $20 per pound. The prices for imported uranium from 1983-1987 are displayed in the table below.

Table III-13
PRICES FOR IMPORTED URANIUM, 1983-1987

	1983	1984	1985	1986	1987
Average Price (dollars per pound U_3O_8)	26.16	21.86	20.08	20.07	19.14
Amount of U_3O_8 for Which Price Data Were Reported (million pounds U_3O_8)	8.2	11.1	10.7	12.8	12.9
Amount of U_3O_8 Delivered (million pounds U_3O_8)	8.2	12.5	11.7	13.5	14.8
Percentage of Total Import Deliveries with Reported Prices	100	89	91	95	87

Note: Prices shown are quantity-weighted averages in year-of-delivery dollars.
Sources: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual, 1987.

From the years 1967-1974 there were no uranium imports into the United States due to Federal restrictions on the enrichment of imported uranium for domestic end use. From 1975-1977, imports amounted to a small percentage of domestic requirements and uranium exports from the U.S. continued to exceeded imports during 1978-1980.[10]

However, over the past few years, uranium imports into the United States have risen and are playing an increasingly significant role in the industry. Currently, there are generally no

[10]Energy Information Administration, Domestic Uranium Mining and Milling Industry, (Washington, DC, December 1988) p. 63.

restrictions on the import of natural uranium, from sources other than South Africa and Namibia. Section 309 of the "Comprehensive Anti-Apartheid Act of 1986" forbids the import into the United States (after January 1, 1987) of uranium ore and uranium oxide (U3O8) that is produced or manufactured in South Africa. On March 10, 1987, however, the U.S. Treasury issued a final rule that South African uranium ore or uranium oxide substantially transformed outside the United States into UF_6 or enriched uranium is not covered by the import sanctions and can be brought into the United States.[11]

United States uranium imports from South Africa were valued at $246 million in 1986, the last year that such imports were allowed. This was a substantial increase from the 1985 figure of $135 million indicating a rush to export before the sanctions began. The South African uranium mining industry has been sharply effected by such measures. Several mines have closed as a result of the Act, and only eight plants are left in operation. However, South African uranium output is primarily a byproduct of gold mining and idle plants could be quickly and easily restarted if circumstances dictate. Current South African production is approximately 8,000 tons of U_3O_8, with capacity to expand.

The following table shows the current and projected status of the U.S. uranium industry's import commitment dependency through the year 2000. As can be seen from the following table, DOE projects an increasing dependence on foreign-source uranium to fulfill domestic requirements.

[11] OECD, Uranium: Resources, Production and Demand, (Paris, France, March 1988), p. 166.

Table III-14
URANIUM IMPORT COMMITMENT DEPENDENCY, 1980-2000

Year	Projected Domestic Uranium Demand (million pounds U_3O_8)	Projected Imports[ab] (million pounds U_3O_8)	Imports as Percent of Projected Domestic Uranium Requirements - Projected Imports[b]
[c]1980	24.7	-	-
[c]1982	33.1	-	-
[c]1984	28.3	-	-
[c]1986	30.8	-	-
1988	36.9	19.3	52.2
1990	34.9	22.6	64.7
1992	32.6	23.1	70.8
1994	33.2	22.9	68.9
1996	35.2	21.1	60.0
1998	33.4	17.6	52.7
2000	36.6	17.7	48.4

[a]Gross imports
[b]Comprises both natural and enriched uranium imports, which are indistinguishable in the EIA modeling system.
[c]Actual
Source: U.S. Department of Energy, Energy Information Administration, Domestic Uranium Mining and Milling Industry 1987.

The following table shows the imports and exports of uranium by utilities and domestic suppliers during the years 1967-2000. (The figures do not include purchases of foreign-origin uranium by U.S. companies to be delivered to foreign customers or purchase transactions between domestic utilities and domestic suppliers in which foreign uranium may be delivered at the supplier's option).[12]

[12]Energy Information Administration, Uranium Industry Annual, (Washington, DC, September 1988), p. 65.

Table III-15
IMPORTS AND EXPORTS BY UTILITIES AND DOMESTIC SUPPLIERS 1967-2000 AND LATER AS OF DECEMBER 31, 1987
(million pounds U_3O_8)

Year of Delivery	Imports	Exports[a]	Net Imports (Net Exports)
Actual Deliveries			
1967	0	1.4	(1.4)
1969	0	1.0	(1.6)
1971	0	0.4	(0.4)
1973	0	1.2	(1.2)
1975	1.4	1.0	(0.4)
1977	5.6	4.0	1.6
1979	3.0	6.2	(3.2)
1981	6.6	4.4	2.2
1983	8.2	3.3	4.9
1985	11.7	5.3	6.3
1987	14.8	1.0	13.8
Commitments			
1988	10.0	1.6	8.4
1990	9.4	1.7	9.9
1992	10.7	1.5	9.2
1994	7.5	1.5	6.0
1996	7.5	0.7	6.8
1998	5.3	0	5.3
2000 and later	10.0	0	10.0
Subtotal	109.5	12.2	97.3

[a]Figures for 1967-1981 represent exports by uranium producers only.
- = not applicable
Note: Totals may not equal sum of components because of independent rounding
Sources: U.S. Department of Energy, Energy Information Administration, Uranium Industry Annual, 1987.

From 1975 to 1987, U.S. companies imported 106.8 million pounds of U_3O_8 for domestic end-use, with most of the uranium being sourced from South Africa and Canada. According to a DOE/EIA survey, of the 14.8 million pounds of U3O8 imported in 1987, 8.7 million pounds were directly imported by two utilities, and the remainder by uranium suppliers. Of the amount imported in 1987, almost all came from Canada. Future deliveries of foreign sourced uranium will come mainly from Canada (approximately two-thirds of the supply) and Australia (approximately one-third of the supply).

Canadian Industry

Canada is the world's largest producer and exporter of uranium. The fifty or so active exploration projects in Canada are concentrated mainly in Saskatchewan (where one-sixth of the world's uranium is found) and Ontario. Of the 56 participants active in uranium exports in 1986, 22 were private, domestic companies; three were government-owned and 31 were foreign companies. U.S. participation in Canadian uranium mining activities is on the decline and in 1986, accounted for less than two percent of total investment. In Canada, both private and government uranium concerns operate on equal footing. Cameco, created in October, 1988 by a merger of SMDC and Eldorado created the world's largest uranium producer (controlling 16% of the world market). The company is 65% owned by the provincial government and 35% owned by the federal government, but is scheduled for privatization by 1995.

The world's largest and richest discovered ore body is located at Cigar Lake in Northern Saskatchewan. There are sections of the deposit that contain up to 60% ore, almost 350 times the world's average for uranium deposits. By contrast, some commercially-feasible mines operate at less than one percent content. The richness of the deposit, however, may create problems for mining the ore and may have to be done by robot.

Canadian government policy states that Canadians must own at least 51% of an individual uranium property when it comes into production. From 1945 to 1965 Canada exported uranium to the United States and the United Kingdom for their nuclear weapons programs, but Canada now requires that uranium exports only be used for peaceful, non-explosive purposes. When an export goes to a nuclear state, the receiving country must provide Canada with assurances that the material, equipment and technology supplied by Canada will not be used for explosive purposes.

Federal jurisdiction over the uranium industry in Canada is governed by the Atomic Energy Control Act (AEC Act) and the Export and Import Permits Act. The Atomic Energy Control Board, which grants licenses required for export of uranium, administers the AEC Act. In addition, the Department of External Affairs issues an export permit which is also required for export.

The Canadian export policy is supplemented by Ministerial letters to the industry and through press releases. Uranium export contracts must comply with guidelines in these statements. Uranium producers can negotiate the terms of an export contract but the contract must be approved by the federal government to ensure that it is consistent with current policy.

Canadian law also requires that uranium be upgraded to the highest level possible before export. The United States, however, is exempt from this law under Annex 902.5 of the United States-Canada Free Trade Agreement (FTA) which states that "Canada shall exempt the United States of America from the Canadian Uranium Upgrading Policy ..." However, the restriction is still in place against third countries which places the two U.S. companies involved in processing at a competitive disadvantage against cheaper Canadian material.

Australian Industry

Australia may have the largest uranium resources in the world. Australia's Bureau of Mineral Resources estimates the country's undiscovered potential at 2,600,000 tons. Presently, the continent contains 17 percent of the world's RAR at $30 per pound and 11 percent of the world's EAR. The current Australian Labor Government policy, however, precludes the development of new production centers. Production is limited to the existing Ranger, Nabarlek, and Olympic Dam mines. As a result, there are a small number of firms involved in the Australian uranium industry. The Government of Australia, however, is not involved in this purely private uranium enterprise.

There are proposals to relax this three-mine policy and allow other facilities to open. In an October 1988 speech, the Minister for Primary Industries and Energy, John Kerin acknowledged that "there are likely to be, on strict economic criteria, opportunities for new uranium operations selling into a tighter market in the medium term." Until then, Kerin had been opposed to changes in the three mine policy.

The export of uranium from Australia is controlled by the Ninth Schedule of the Customs Regulations under the Customs Act of 1901. Regulation 11 of the Customs Regulation provides that "exportation of items of nuclear proliferation significance is prohibited unless an approval has been granted in writing by the Minister for Primary Industries and Energy. This is based on Australia's nuclear safeguards, its signing of the Non-Proliferation Treaty and various other bilateral and international agreements.

African Industry

The continent of Africa has deposits amounting to 765,000 tons of uranium available at $30 per pound. South Africa, Namibia, Niger and Gabon are the main producers in Africa. Namibia has 155,000 tons of U308, which is 7 percent of the world's RAR recoverable

at $30 per pound with an annual production of 5,200 tons of U308. Niger and Gabon together hold 11 percent of the world's RAR and 4 percent of the world's EAR.

Soviet and Chinese Industry

The Soviet Union has increased its efforts to sell uranium ore and enrichment services in recent years. The Soviet sales agency - Techsnabexport - was quite active in the late 1960's and early 1970's as a supplier to Western European utilities and was known for low price, quality and dependability. In the late 1970's and early 1980's, as European enrichment suppliers came on line and the nuclear power industry slowed, excess Soviet capacity resulted.

In recent years, the USSR has looked to the relatively open United States as an outlet for its production as a method of obtaining hard currency. Most sales to the United States have not been made directly to utilities, but via a long chain of transactions, including third countries and brokers. There have also been allegations that Soviet uranium is first passed through Europe, then swapped with European uranium and sold in the United States as European material at below market prices.. It is difficult to trace the route of such transactions as uranium is a fungible material and it is difficult to identify the country of origin.

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Soviet uranium enrichment capacity has been estimated by the Department of Energy to be ten million SWU per year with three million SWU available for commercial sales. Soviet enrichment service have been offered on the U.S. market at prices about half of DOE's base price of $117/SWU. It has been estimated that losses over the past three years due to Soviet indirect uranium exports amounted to $140 million in sales losses and $170 million in enrichment losses.

The CNEIC - Chinese Nuclear Energy Industry Corporation - has also been active in pursuing Western markets for its product. The quality and quantity of available Chinese uranium is still unpredictable, however, and no substantial impact from their exports are expected in the near future.

COMPETITIVE ANALYSIS

Overall U.S. Mining Industry

The overall U.S. mining industry has experienced fluctuations in its health over the past decade. The industry reached its peak in the late 1970's. Over the next six years, however, prices fell, some mines closed and the industry entered a slump and underwent massive restructuring. By 1987-88, prosperity returned to the mining sector while restructuring continued. The U.S. mining industry today is more internationally competitive than in the past.

Uranium Industry Competitive Trends

In contrast, the U.S. uranium industry has not followed this pattern and is still experiencing difficulties. In the mid-1970's imported uranium accounted for a small part of the uranium consumed in the United States. In fact, from 1978-80 the United States had a trade surplus in uranium. But, over recent years imports are playing an increasingly significant part in the total domestic uranium requirements. One of the main problems beyond the U.S. industry's control is that the richest and most accessible uranium deposits are not found in the United States. The resources of Canada and Australia have higher uranium content and a lower production cost per unit. By happenstance, these countries have a comparative price advantage over the United States.

Price is a main component of competitiveness. Large inventories in the United States over recent years have developed due to reactor cancellations causing a decrease in demand and an excess supply. As long term, high price-contracts expire they are being replaced by purchases on the spot market.

In addition, other trends in the economy also impact the price of U.S. uranium in the world market. The movement of the U.S. dollar against other currencies affects the prices of goods traded with those countries. Even though the U.S. dollar has weakened against most of its major trading partners, it has been stable or actually strengthened against the currencies of its uranium competitors - Australia, Canada and South Africa - since the mid-1970's expansion of the market. The decline in the price of U.S. uranium and resulting loss in competitiveness can partially be attributed to the movement of the dollar and fluctuations in exchange rates vis-a-vis its uranium competitors. This issue will continue to be an important factor in the competitiveness of U.S. uranium in the world market.

The low price obtained by U.S. producers for their product have had far-reaching effects. The revenues received by U.S. producers has declined in past years, decreasing the amount of money available for investment in the industry. The return on investment hardly allows for covering marginal costs of operation, adding to the depressed state of the U.S. industry. As a result of all these contributing factors, imports of cheaper uranium have been on the rise in recent years, replacing the higher cost U.S. product.

IV. GOVERNMENT ROLE

More than in almost any other case, the U.S. government has played a substantial role in determining the demand and supply of uranium ore and enrichment services, and in influencing the prices at which these products are sold. Government's role began with the urgent need to develop sufficient supply for military use during World War II, evolved through the development of nuclear power as an alternative to fossil fuels, and continues today through safety and other concerns.

From a national security perspective, the emphasis of U.S. uranium policy continues to be on ensuring that an ample supply of uranium will be available to meet direct military (i.e. naval reactors and nuclear weapons) and essential civilian (i.e. anticipated electrical power generation) requirements. Government policy must pursue the sometimes conflicting goals of supporting the viability of uranium mining and milling companies which consume a depletable resource, while ensuring continued availability of secure sources for the years to come.

Historic Perspective

From World War II until 1964, the government held a monopsony in uranium, and virtually all production was for military purposes. As military demand decreased and the potential for nuclear power became clearer, Congress in 1964 passed legislation to permit private ownership of nuclear fuels. At the same time, Congress amended the Atomic Energy Act of 1954 by adding Section 161(v) which allowed the Atomic Energy Commission (AEC) to limit the enrichment of imported uranium to be used in U.S. power plants to the extent needed to assure the maintenance of a viable domestic uranium mining and milling industry. As the only Free World supplier of enrichment services at the time, the AEC invoked this authority and announced that as of 1966, it would no longer enrich foreign-source uranium for U.S. consumption.

This prohibition remained in place through 1974, and was phased out gradually over the next nine years. Thus, even as the government suspended the purchase of uranium for military use by 1970, the future for nuclear power and the domestic mining and milling industry seemed particularly bright. Actual nuclear power plant construction, however, fell substantially below mid-70's estimates. The U.S. industry which grew rapidly during the 60's and 70's had further to fall in the 80's as demand for uranium failed to develop in accordance with projections for nuclear powerplants.

Recent Calls for Import Restrictions

On December 7, 1984, three leading domestic uranium producers filed suit challenging the Department of Energy's (DOE) failure to invoke Section 161(v). Both the U.S. District Court for Colorado and the U.S. Court of Appeals for the Tenth Circuit ruled in favor of the miners, and against DOE's view that 161(v) restrictions need only be imposed if they would ensure the maintenance of a viable domestic industry. Implementation of the ruling was stayed pending a hearing before the Supreme Court.

On June 15, 1988, the Supreme Court reversed the earlier rulings, and remanded the case to the District Court for clearer determination of the meaning of viability and of whether enrichment restrictions by themselves would ensure the domestic industry's viability. Before the District Court could act, however, enabling legislation for the U.S.-Canada Free Trade Agreement (FTA) exempted Canadian-source uranium from any potential 161(v) import restrictions. Soon thereafter, the miners requested that the Court dismiss their suit without prejudice.

Projected future demand and restrictions on U.S. enrichment of foreign uranium encouraged the development of the domestic uranium mining and milling industry throughout the 60's and 70's. These same factors hastened the development of non-U.S. sources of enrichment services. The commercial availability of such alternatives today would not only limit the potential beneficial impact to U.S. miners and millers of the imposition of 161(v) restrictions, but would also substantially raise the cost of U.S. enrichment services provided to remaining military and other users.

Current Legislation

On July 20, 1989, by a vote of 73 to 26, the U.S. Senate passed an Administration-backed initiative to transfer DOE's enrichment operation to a government-owned private market-financed corporation. This bill is designed to increase U.S. enrichment facilities' flexibility and ability to compete in the overbuilt international enrichment market. Should this legislation be enacted into law, the U.S. share of the world enrichment service market is expected to increase, and the U.S. uranium mining and milling industry should also benefit. The Senate had passed similar legislation twice before, which both times had been rejected by the House of Representatives.

The current version excludes import restrictions which had been in the earlier Senate bills and a multi-year $750 million inventory purchase program, but includes other provisions of benefit to domestic miners and millers. The legislation includes a $300 million government funded program to clean up radioactive uranium mill tailings, and a provision for overfeeding during the enrichment process that will further increase demand for uranium. The current bill has the government take responsibility for tailings generated by uranium sold to the government for military and other purposes.

U.S.-Canada Free Trade Agreement (FTA)

The U.S.-Canada FTA enabling legislation exempts Canadian uranium from any potential import restrictions under Section 161(v). The FTA ensures U.S. access for nuclear power generation purposes to Canada's substantial uranium resources. With non-proliferation and other limited exceptions, Article 907 of the FTA states that "Neither party shall maintain or introduce a measure restricting imports of an energy good from, or exports of an energy good to, the other Party under Article XXI of the GATT (Note: authorizing article for Section 232 investigations). Subject to the provisions of Article 907, Article 2003 of the FTA allows either country to take action "which it considers necessary for the protection of its essential security interests ... relating to the traffic in ... goods ... directly or indirectly for the purpose of supplying a military establishment." Therefore, in view of Canadian law which prohibits the export of uranium for military use, the FTA prohibits the use of Section 232 authority to limit Canadian uranium exported for any other purpose. The FTA was initialed in October 1987, and became effective as of January 1, 1989 after ratification by both countries' legislatures.

South African Sanctions

Section 309 of the Comprehensive Anti-Apartheid Act of 1986 (CAAA) bars the import of uranium from South Africa and Namibia. This specific ban precluded the possible inclusion of uranium on the CAAA Section 303 list of materials exempt from the sanctions because of their importance to the economy or defense of the United States. Implementing regulations published by the Department of Treasury on March 10, 1987, state, however, that the Section 309 prohibition does not apply to South African-sourced material which has been substantially transformed in a third country. While there was a rush to export South African uranium before the CAAA took effect on January 1, 1987, South African uranium may continue to reach the United States through transshipment or through the 'substantial transformation' into UF6 in third countries. Japan and Taiwan, for example, depend on U.S. enrichment facilities for the processing of South African-origin uranium transformed to UF6 in Europe. The General Accounting Office has cited a DOE estimate that in 1987, UF6 of South African or Namibian origin accounted for about 28 percent of the uranium enriched in the United States for foreign utilities.

Congressional opponents of apartheid have considered amending the CAAA to prohibit such shipments. Additionally, forthcoming Namibian independence may lead to efforts to exempt that country from CAAA sanctions, which could again provide the United States with unfettered access to Namibian uranium.

Nuclear Powerplant Licensing

Critics have maintained that the unpredictable U.S. environment for licensing nuclear plants has been an important factor limiting the growth of nuclear power in this country. The average time to complete nuclear powerplants increased from about seven years for plants coming on-line in the 70's to more than 14 years for some later plants. In addition, the cost of recent plants has increased as much as sevenfold with detrimental effects on the cost competitiveness of nuclear energy. The NRC nuclear plant licensing review process is now being restructured to affect a one-step approval for plant construction and operation.

Further, decisions are being made on the possible extension or re-licensing of the longest-operating nuclear plants whose licenses are scheduled to expire beginning in 2001. With a ten-year planning time frame, utilities will soon need to determine whether they will continue to operate these oldest of licensed facilities, or whether they will be replaced with nuclear or fossil-fuel powered generation facilities.

The Secretary of Energy
Washington, DC 20585

December 30, 1988

TAB
A

Dear Mr. Secretary:

I am required, as the Secretary of Energy, to make an annual determination regarding the viability of the domestic uranium mining and milling industry. We have conducted analyses required by the provisions of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2210b. Those analyses have led to the conclusion that the domestic uranium mining and milling industry was not viable for Calendar Year 1987. I support this conclusion. A copy of my determination is enclosed.

In addition to the required annual determination of viability of the domestic uranium mining and milling industry, Section 170(B) of the Atomic Energy Act, as amended, requires the Secretary of Energy to make an additional determination. Specifically, if the Secretary of Energy determines that executed contracts or options for source material or special nuclear material from foreign sources for use in utilization facilities within or under the jurisdiction of the United States represent greater than 37.5 percent of actual or projected domestic uranium requirements for any 2-consecutive-year period, then the Secretary of Energy shall request the Secretary of Commerce to initiate under Section 232 of the Trade Expansion Act of 1962 an investigation to determine the effects on national security of imports of source material and special nuclear material.

Since U.S. utilities imported 43.8 percent of their uranium requirements in 1986 and 51.1 percent of their requirements in 1987, I have made the above mentioned determination, and pursuant to Section 170(B) of the Atomic Energy Act, as amended, I request you to initiate such an investigation.

The Department of Energy stands ready to assist you in any way you may require in making this investigation.

Yours truly,

John S. Herrington

John S. Herrington

Enclosure

Honorable C. William Verity
Secretary of Commerce
Washington, DC 20230

Determination of Viability of the Domestic Uranium Mining and Milling Industry

Determination

The Secretary of Energy has determined, pursuant to Section 170(B) of the Atomic Energy Act of 1954, 42 U.S.C. 2210(b), that for Calendar Year 1987, the domestic uranium mining and milling industry was not viable. His reasons for this determination are set forth below.

Background

Section 23(b) of Public Law No. 97-415 amended the Atomic Energy Act of 1954 by adding a new Section 170(B), 42 U.S.C. 2210b, which requires the Secretary to monitor, and for the years 1983 through 1992, to make an annual determination of, the viability of the domestic uranium mining and milling industry. The Secretary directed that the Energy Information Administration (EIA) carry out his responsibilities under Section 170(B) to develop criteria and prepare reports to enable him to assess the viability of the industry. In October 1983, the Secretary issued the final regulation establishing the criteria (10 C.F.R. 761.1-8, 1984). EIA has provided information in the report entitled, "Domestic Uranium Mining and Milling Industry 1987: Viability Assessment," which accompanies this determination. The information in this report addresses each of the primary criteria set forth in the regulation and is based upon 1987 data and projections from that data.

Section 170(B) also provides that the Secretary may determine (i) that source material for special nuclear material is being imported in such increased quantities as to be a substantial cause of serious injury to the domestic uranium mining and milling industry, or (ii) that the level of contracts or options involving imported source material and special nuclear material may threaten to impair the national security. The Secretary has concluded that it is not appropriate to make either determination at this time.

Rationale

The Secretary has evaluated the capability of the industry with respect to the four primary criteria established by the regulation. Those criteria are: resource capability, supply response capability, financial capability, and import commitment dependency.

Resource capability is defined as the extent to which domestic economic uranium reserves can supply domestic nuclear power needs for a future 10-year period. The EIA analysis, based on estimates supplied by U.S. producers of the amounts of uranium available for sale over the next 10 years, indicates that the reserves are sufficient to supply domestic nuclear power needs under plausible assumptions of a wide range of potential future conditions.

Supply response capability involves a measure of the level of domestic uranium production capability sufficient to meet projected nuclear power needs for a future 10-year period. The EIA analysis shows that, if a supply disruption were to occur in early 1989, the industry has the technical capability to fulfill cumulative uranium security requirements over the next 10 years. If a disruption were to occur in 1996, the projected capability would nearly satisfy requirements in the year following the disruption; and, the projected shortfalls might be met by increased inventory drawdowns. In subsequent years, the production capacity is projected to increase to the levels needed to meet the requirements. The technical capability of the industry is dependent upon the ability of the industry to generate funds. Thus, the supply response capability must be reviewed in conjunction with the financial capability of the industry.

Financial capability is the ability of the domestic uranium mining and milling industry to obtain sufficient funds to finance an adequate supply response capability. To maintain an adequate supply response capability in the future, capital expenditures higher than those projected without an import disruption would be necessary. The potential to raise the required investment funds would be dependent upon higher revenues and expectations of profitability. Neither higher revenues nor improved profitability are expected for the uranium industry in the next several years.

Import commitment dependency measures whether executed contracts or options for imported source material or special nuclear material will result in more than 37.5 percent of actual or projected domestic uranium requirements for any 2-consecutive-calendar-years. In 1986, U.S. utilities imported 43.8 of their uranium requirements; and in 1987, U.S. utilities imported 51.1 percent of their uranium requirements. Thus, utilities imported more than 37.5 percent of their uranium requirements for the 2-consecutive-year period 1986-1987.

Since imports of uranium have exceeded the 37.5 percent criterion, the Secretary of Energy has requested, as required by Section 170(B) of the Atomic Energy Act of 1954, as amended, the Secretary of Commerce to initiate an investigation under Section 232 of the Trade Expansion Act of 1962 to determine the effects on national security of these imports.

Subsequent Actions

Recognizing the importance of a healthy nuclear fuel cycle industry to the United States, the Department of Energy (DOE) worked in a cooperative fashion with Congress and the domestic uranium industry to address difficulties experienced in the domestic uranium industry. DOE supported comprehensive legislation in 1988 that was intended to strengthen the domestic uranium industry and though legislation was not enacted, Secretary Herrington is prepared to recommend to the incoming Administration actions to revitalize the domestic uranium mining and milling industry. The Department also encouraged the domestic uranium industry in their foreign sales efforts and their success in obtaining more than $320 million in future contract commitments from Japan was a positive indication of a stronger future. In fact, this success highlights the fact that despite the nonviability of the industry as a whole, there are a number of producers who are capable of reliably producing competitively priced uranium over the long term.

3. Report of the Public Information and Education Subcommittee and a logo presentation.

6. Report of the Planning Subcommittee.

It is anticipated that about twenty people will be able to attend the session in addition to the Commission members.

Interested persons may make oral or written presentations to the Commission or file written statements. Such requests should be made prior to the meeting to: Lawrence D. Gall, Interim Executive Director, Blackstone River Valley National Heritage Corridor Commission, P.O. Box 34, Uxbridge, MA 01569, Telephone (508) 278-9400.

Further information concerning this meeting may be obtained from Lawrence Gall, Interim Executive Director of the Commission at the address above.

Lawrence D. Gall,

Interim Executive Director, Blackstone River Valley National Heritage Corridor Commission.

[FR Doc. 89-4457 Filed 2-24-89; 8:45 am]

BILLING CODE 4310-70-M

DEPARTMENT OF COMMERCE

Bureau of Export Administration

Initiation of National Security Investigation of Imports of Uranium

AGENCY: Bureau of Export Administration, Commerce.

ACTION: Notice of an investigation under section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. 1862), and request for comments.

SUMMARY: This notice is to advise the public that an investigation is being initiated under section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. 1862) to determine the effects on the national security of imports of uranium. Interested parties are invited to submit written comments, opinions, data, information or advice relative to the investigation to the Strategic Analysis Division, Office of Industrial Resource Administration, Department of Commerce.

DATE: Comments must be received not later than March 29, 1989. Written comments should be addressed to: Brad L. Botwin, Director, Strategic Analysis Division, Office of Industrial Resource Administration, Bureau of Export Administration, U.S. Department of Commerce, Room H3878, Washington, DC 20230.

FOR FURTHER INFORMATION CONTACT: Brad L. Botwin, Director, Strategic Analysis Division (202) 377-4060, or Edward Levy, Section 232 Program Manager (202) 377-3795; Office of Industrial Resource Administration, Bureau of Export Administration, U.S. Department of Commerce, Room H3878, Washington, DC 20230.

SUPPLEMENTARY INFORMATION: On December 30, 1988, former Secretary of Energy John Herrington wrote to the Secretary of Commerce to request that he initiate an investigation under section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. 1862), to determine the effects on the national security of imports of uranium. The findings and recommendations of the investigation will be reported by the Secretary of Commerce to the President no later than September 26, 1989.

The articles to be investigated include: uranium ores and concentrates, metals, oxides, hexafluorides, and other uranium materials. These items are currently described by Standard Industrial Classification Code 355935. They are currently classifiable in the Harmonized Tariff Schedule at items: 2612.10.00.00 for uranium ores and concentrates; 2844.10.10.00 for uranium metals; 2844.10.20.10 for uranium oxides; 2844.10.20.20 for uranium florides; and 2844.10.50.00 for other uranium materials.

This investigation is being undertaken in accordance with Part 705 of Title 15 of the Code of Federal Regulations (15 CFR Part 705) ("regulations"). Interested parties are invited to submit written comments, opinions, data, information or advice relevant to this investigation to the Office of Industrial Resource Administration, U.S. Department of Commerce, no later than March 29, 1989.

The Department is particularly interested in comments and information directed to the criteria listed in § 705.4 of the regulations (15 CFR 705.4) as they affect national security, including the following:

(a) Quantity of and circumstances related to the importation of the articles subject to the investigation;

(b) Domestic production and productive capacity needed for these articles to meet anticipated national security requirements;

(c) Existing and potential availability of skilled labor, raw materials, production equipment, and facilities to produce these items;

(d) Growth requirements of domestic industries to meet national security requirements and/or requirements to assure such growth;

The impact of foreign competition on the economic welfare and on the capacity of the domestic industry to meet national security needs; and

(f) The impact of imports on domestic competition, productivity, and the strength of the domestic industry to meet national security requirements.

All materials should be submitted with 10 copies. Public information will be made available at the Department of Commerce for public inspection and copying. Material that is national security classified information or business confidential information is subject to the provisions of § 705.6 of the regulations (15 CFR 705.6). Anyone submitting business confidential information should clearly identify the business confidential portion of the submission and also provide a non-confidential submission which can be placed in the public file.

TAB B

The public record concerning this investigation will be maintained in the Freedom of Information Inspection Facility, Bureau of Export Administration, Room H4886, U.S. Department of Commerce, 14th and Pennsylvania Avenue, NW., Washington DC, 20230. The records in this facility may be inspected and, for a fee, copied in accordance with regulations published in Part 4 of Title 15 of the Code of Federal Regulations.

Information about the inspection and copying of records at the facility may be obtained from the Freedom of Information Inspection Facility, Bureau of Export Administration, at (202) 377-2593.

If deemed appropriate by the Department, public hearings may be held to elicit further information as provided in § 705.8 (15 CFR 705.8) of the Regulations. Notice will be published in the Federal Register, giving the time, place, and matters to be considered at such hearing(s) so that interested parties will have an opportunity to participate.

Michael E. Zacharia,

Assistant Secretary for Export Administration.

[FR Doc. 89-4445 Filed 2-24-89; 8:45 am]

BILLING CODE 3510-DT-M

National Institute of Standards and Technology

[Docket No. 90104-9004]

Proposed Revision of Federal Information Processing Standard (FIPS PUB) 127, Database Language SQL

AGENCY: National Institute of Standards and Technology (NIST), Commerce.

ACTION: The purpose of this notice is to announce the proposed revision of Federal Information Processing

TAB C

SUMMARY OF PUBLIC COMMENTS

The Department of Commerce received communications from a total of 15 commenters in response to our notice in the Federal Register. Comments were received from both domestic and foreign sources and include a member of Congress, foreign governments, trade organizations and energy and utility companies. Their remarks are summarized on the following pages.

Comments in support of the petition came mainly from domestic producers who allege that their long term viability is threatened by increased imports from subsidized sources. They ask for various governmental measures to restrict imports and support the U.S. industry.

Those opposed to import adjustments included domestic uranium consumers (utilities) and foreign governments who export uranium to the U.S. They stress the close relationship between the exporting governments and the United States and emphasize their commitment to free trade.

COMMENTERS ON URANIUM PETITION UNDER SECTION 232 OF THE TRADE EXPANSION ACT OF 1962

Utilities

-- Bishop, Cook, Purcell and Reynolds on behalf of:
Duke Power Company
Florida Power and Light Company
Rochester Gas and Electric
Southern California Edison Company
System Energy Resources Inc.
TU Electric
Washington Public Power Supply System

-- Edison Electric Institute (a national association of privately-owned electric companies)

-- MSU System Services, Inc.

-- South Carolina Electric and Gas Company

-- Southern Company Services

-- Yankee Atomic Electric Company

Australian Government and Producers

-- Australian government

-- Energy Resources of Australia, Limited.

-- Queensland Mines Limited

-- Western Mining Corporation Ltd. on behalf of:
The Olympic Dam Project Joint Venture

Canadian Government and Producers

-- Arnold and Porter on behalf of:
Cameco, Amok Ltd., and Uranerz Exploration and Mining, Ltd.

-- Canadian government

U.S. Producers

-- Energy Fuels Nuclear, Inc.

-- Uranium Producers of America

Congressional

-- Congressman Howard C. Nielson (R-UT)

UTILITIES

Bishop, Cook, Purcell and Reynolds
on behalf of Duke Power Company; Florida Power & Light Company; Rochester Gas & Electric; Southern California Edison Company; System Energy Resources, Inc.; TU Electric; and Washington Public Power Supply System.
Washington, DC

Comments:

They state that "There is no adverse impact on the national security due to the present level of uranium imports" and that the only reason for the investigation is the DOE requirement to request such an investigation when imports exceed 37.5% threshold for two consecutive years. In addition, national defense does not require any additional uranium for the remainder of the century.

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Edison Electric Institute
Washington, DC

Comments:

EEI believes that national security is in no way threatened by the current state of the uranium market, stressing the current stockpile and the ability to reactivate domestic mines when necessary. They emphasize energy security, highlighting the fact that 66% of imported uranium from 1988 to 2000 will come from Canada, our ally and Free Trade Agreement (FTA) partner.

They conclude by stating that the condition of the overall domestic uranium industry will not prevent competitive producers from surviving and prospering.

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Middle South Electric System
New Orleans, LA

Comments:

Owning four nuclear power units, MSU believes that the "imports of uranium do not to any extent adversely affect the national security of the United States." They do not foresee any short supply problems and believe that security is preserved through the utilization of economic imported uranium. Also, MSU underscores the fact that imports come from two stable and very friendly nations (Canada and Australia) and further, note the recently signed U.S.-Canada FTA.

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South Carolina Electric and Gas Company
Jenkinsville, SC

Comments:

The company concludes that any action taken by the U.S.government to restrict the imports of uranium will only subsidize the domestic uranium industry; the cost of which will be borne by taxpayers through higher electrical costs. They believe that the commercial nuclear industry is strong and stable.

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Southern Company Services
Birmingham, AL

Comments:

SCS affirms that there are no negative impacts on national security from the import of uranium for use in nuclear power plants. They point to the availability of the stockpile into the next century and the dependability of our two main foreign sources - Australia and Canada. In addition, SCS feels that these two factors minimize the possibility of an interruption of supply.

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Yankee Atomic Electric Company
Bolton, MA

Comments:

Yankee Atomic supports the comments submitted by the Edison Electric Institute, believing that "both national and energy securities are not at issue." They emphasize the current stockpile and reliability of Canada as a source.

The Company highlights alternate uranium production processes that could be implemented if needed and also stresses that a free and open market will assure the availability of uranium.

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AUSTRALIAN GOVERNMENT AND PRODUCERS

Government of Australia

Comments:

The Government of Australia emphasized the stable, long standing trade and security relationship between the United States and Australia. They state that since Australian uranium cannot enter U.S. weapons program, a rise or fall in imports has no relevance to U.S. defense requirements and national security. They believe that restrictions on imports would not help the U.S. mining and milling industry, but rather, would adversely affect downstream uses.

The Australians point to the U.S. stockpile and make the case that imports of uranium enhance national security through energy security. They recognize the U.S. role as trend-setter in world trade and fear that any protectionist action taken by the U.S. may be adopted by other nations. In addition, they stress that import restrictions would run counter to the GATT.

Lastly, they believe that a change in uranium policy to restrict imports could be to the detriment of U.S. efforts to prevent the proliferation of nuclear weapons.

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Government of Australia

Supplemental Comments:

The Government of Australia submitted additional comments in reference to submissions made by Energy Fuels Nuclear, Inc., and the Uranium Producers of America in order to address what they consider inaccuracies in these statements.

The GOA defined their non-proliferation safeguards on all exports of uranium and stated that in no case has the GOA cancelled deliveries due to lack of compliance with safeguard requirements. They also clarified their position on exports to France (i.e. new sales are not permitted) which shows Australia's disapproval of French nuclear testing in the South Pacific. The GOA also rejects the suggestion made by Energy Fuels that one of Australia's three mines was developed for other than commercial purposes.

They further explained that Australian uranium receives no subsidies from the Government, nor does the government hold equity in the companies. The GOA reiterated the view, expressed in their first submission, that "increased imports of uranium into the United States have been incidental to, and not a cause of, United States industry difficulties".

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Energy Resources of Australia
Sydney, Australia

Comments:

They concur with their government's comments.

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Queensland Mines Ltd.
Sydney, Australia

Comments:

Queensland Mines believe that the availability of both domestic and imported uranium will be better than total reliance on domestic material. The access to U308 strengthens the supply by increasing the number of

sources and minimizing the purchase price.

Any restriction of imports, they believe, would be against fair and open trade and would work to the detriment of both.

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Olympic Dam Marketing Pty. Ltd.
on behalf of Western Mining Corp. Ltd.
Orleans, MA

Comments:

Olympic Dam believes it is difficult to see how U.S. national security could be enhanced by limiting the imports of uranium. They point out that it would undermine the free trade commitment, wreak havoc on the industry of a close ally, as well as the stability of the international uranium market.

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CANADIAN GOVERNMENT AND PRODUCERS

Government of Canada

Comments:

The Canadian Government referred to Article 907 of the United States-Canada Free Trade Agreement which states the conditions under which restrictions on the import or export of energy goods may be imposed for national security reasons and they feel that these requirements have not been met. They stress their role as a reliable supplier of uranium and point out that the U.S. stockpile will be able to meet all foreseeable needs and if necessary, can be added to from domestic production.

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Arnold and Porter
on behalf of Cameco; Amok, Ltd.; and Uranerz Exploration and Mining, Ltd.
Washington, DC

Comments:

The commenters point out that the United States produces all the uranium necessary for military purposes and that it has sufficient stockpiles until the end of the century. They add that Canada does not permit the export of uranium to foreign governments for military purposes.

The GOC also highlights the Joint Mobilization Agreements and energy area of the Free Trade Agreement (which includes the free flow of energy materials); both of which would limit any action that the U.S. could take against Canada.

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U.S. PRODUCERS

Energy Fuels Nuclear, Inc.
Denver, CO

Comments:

Energy Fuels expressed concern that the FTA allows Canadian origin uranium to be enriched by the DOE as if it were U.S. origin uranium. They also review Canada's and Australia's uranium industry as well as Eastern bloc supply. They feel that the collapse of the market, coupled with the inadequacy of U.S. Trade Laws, have adversely affected the long term market and put the uranium industry in great danger.

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Uranium Producers of America
Washington, DC

Comments:

UPA believes that the industry's problems stem not from a lack of demand, but from "damaging governmental policies, the importation of subsidized foreign uranium, and the marketing of heavily discounted Eastern bloc production." In addition, they feel that today, "the combination of

existing inventories and subsidized foreign production is the principal source of market weakness."

The UPA feels that there are alternatives available to assist the industry and asks for voluntary limits on Canadian exports; a five year $750 million U.S. Government program to purchase domestic uranium; and enforcement of legal prohibitions against Department of Energy enrichment of foreign sourced uranium.

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CONGRESSIONAL

Congressman Howard C. Nielson (R-UT)
Washington, DC

Letter to Secretary Mosbacher dated March 29, 1989:

Representative Nielson stated that Canadian uranium, while protected under the FTA, should not be treated as domestic uranium for the purposes of the investigation. He points to subsidized Canadian uranium as one of the reasons for the current market weakness. In addition, the PRC and USSR cannot be counted on as reliable uranium suppliers. His goal is to create a viable domestic uranium industry.