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SECY-90-124

For: The Commissioners

From: Harold Denton, Director
Office of Governmental and Public Affairs

Subject: NRC EXPORT LICENSING ACTIVITIES IN 1989

Purpose: To inform the Commission of export licensing activities during 1989.

Discussion: Under the Atomic Energy Act, the NRC has the responsibility to license exports of nuclear material and equipment as specified in 10 CFR Part 110. In 1989, the NRC issued a total of 181 export licenses or amendments (up substantially from the 146 licenses issued in 1988). In addition, 39 long-standing pending applications were withdrawn after discussion with the applicants because it was clear no action would be taken in the near future. Most of these withdrawals involved reactor or component cases from the early 1980's, but ten applications for tritium exports to smaller countries were also withdrawn because of increasing concern about the use of tritium for airfield light sources in remote areas. The bulk of the workload continues to be special nuclear material (SNM) licenses. There were 121 applications to export low enriched uranium (LEU) for nuclear power reactor fuel. There were 18 applications for high enriched uranium (HEU), Pu or U-233. Three of these cases were withdrawn, and one, an application to export U-233 to Israel for biological experiments, was denied. Enclosure 1 lists export license cases completed in 1989 by Commodity; Enclosure 2 lists completed cases by country. Neither list includes minor amendments, such as expiration date extensions or other amendments not involving increases in quantity.

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Discussion:
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TRITIUM

NRC licensed export of 1.85 million curies of tritium in 1989 in three cases, down from 3.4 million in 1988, again mostly in the form of tritium gas for the manufacture of light sources. The 1.85 million curies is close to the average of curies exported per year since 1977 (See Chart One). Safety Light applied for licenses to export tritium airfield runway light sources to Brazil, Saudi Arabia, South Korea, Mexico, Uruguay, Singapore, Taiwan, Argentina, Thailand, and China in amounts ranging from 450,000 to 1.5 million curies, but withdrew its applications when it became apparent that the Executive Branch was taking a much closer look at such exports of large sources (over 100 curies per source).

HIGH ENRICHED URANIUM

NRC licensed the export of slightly over 400 kgs. of high enriched uranium (HEU) as fuel for research reactors in Japan, West Germany, France, Canada, Belgium and The Netherlands, all countries with excellent non-proliferation credentials. Of this total, 290 kgs. was enriched to 93.3 percent. In comparison, just under 230 kgs. of 93.3 percent was licensed in 1988, and just over 298 kgs. in 1987 (See Chart Two).

LOW ENRICHED URANIUM

Licenses for the export of 1,090 metric tons of low enriched uranium (LEU) power reactor fuel were issued in 1989. Japan remains the largest importer, obtaining licenses for just under 785 metric tons of LEU (almost double their 1988 quantity), and dwarfing the next largest customer, West Germany. A portion of West Germany's total of 228 tons will be fabricated into fuel for reactors in other EURATOM countries. Other LWR fuel customers were Spain (89 tons), France (26 tons), and South Korea (13 tons). Japan also accounted for 70 percent of the total of 53 LEU fuel licenses processed.

NATURAL URANIUM

Unlike last year, when the U.S. licensed export of 4,500 metric tons of uranium for purposes of enrichment and/or conversion abroad, this year only 993 tons were licensed: 304 tons to Japan; 300 tons to EURATOM for enrichment; and 385 tons to Canada for conversion by CAMECO. The reason for this drop in issuance of licenses to export uranium for foreign processing is not clear. The U.S. also licensed for

Discussion:
(continued)

export 612 tons of depleted uranium, down from almost 4,000 tons in 1988.

Administratively, we have been successful in reducing the backlog of license applications pending for over six months, as the final chart shows. The goal is to continue this trend in the coming year.



Harold R. Denton, Director
Office of Governmental and Public Affairs

Enclosures:

1. Export license cases completed
in 1989 by commodity
2. Export license cases completed
in 1989 by country
3. Chart 1
4. Chart 2
5. Chart 3

DISTRIBUTION:
Commissioners

OGC
OIG
GPA
EDO
ASLBP
ASLAP
SECY

EXPORT CASES COMPLETED IN 1989--LISTED BY COMMODITY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CL/S	COMMODITY DESCRIPTION	COUNTRY	END-USE
TRITIUM						
XB1257	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Brazil	Light Sources
XB1258	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Saudi Arabia	Light Sources
XB1259	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	South Korea	Light Sources
XB1260	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Mexico	Light Sources
XB1261	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Uruguay	Light Sources
XB1262	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Singapore	Light Sources
XB1263	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Taiwan	Light Sources
XB1264	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Argentina	Light Sources
XB1265	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Thailand	Light Sources
XB1266	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	China	Light Sources
XB1272	01/12/89	SRB Technologies	1,000,000	Tritium (Gas)	U. Kingdom	Light Source Mfg.
XB1274	06/20/89	Edlow	250,000	Tritium (Gas)	U. Kingdom	Mfg. of Various Products
XB1276	12/22/89	Safety Light	600,000	Tritium (Disp.)	Various	Light Sources

1,850,000 Curies TOTAL

RESEARCH REACTOR FUEL, HIGH-ENRICHED URANIUM

XSNM1778/06	04/20/89	Nissho-Iwai	85.56	HEU,45.4%	Japan	JMTR
XSNM1779/04	04/20/89	Nissho-Iwai	24.63	HEU,45.4%	Japan	JRR-2
XSNM1821	04/03/89	Transnuclear	Withdrawn	HEU,93.3%	W. Germany	FRM Garching
XSNM2315/02	04/20/89	Transnuclear	76.00	HEU,93.3%	France	HFR Grenoble
XSNM2359	07/03/89	Transnuclear	Withdrawn	HEU,93.3%	W. Germany	THTR
XSNM2360	04/20/89	Transnuclear	32.60	HEU,93.2%	France	ORPHEE
XSNM2400	02/27/89	Transnuclear	4.05	HEU,93.3%	Canada	McMaster
XSNM2444	08/02/89	Transnuclear	51.05	HEU,93.45%	Belgium	BR-2, Mol
XSNM2445	08/02/89	Transnuclear	38.29	HEU,93.45%	Netherlands	Petten, HFR
XSNM2448	10/17/89	Transnuclear	58.69	HEU,93.35%	Canada	NRU
XSNM2454	09/21/89	Transnuclear	32.08	HEU,93.3%	France	HFR Grenoble

402.95 KILOGRAMS TOTAL

MISCELLANEOUS HIGH-ENRICHED URANIUM

XSNM2434	02/01/89	Gamma-Metrics	3.83E-03	HEU,93.0%	Canada	Detector, Pinawa
XSNM2476	12/01/89	Gamma-Metrics	0.04	HEU,93.3%	Spain	Flux Monitoring, ASCO

0.04 KILOGRAMS TOTAL

EXPORT CASES COMPLETED IN 1989--LISTED BY COMMODITY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CI/\$	COMMODITY DESCRIPTION	COUNTRY	END-USE
REACTOR COMPONENTS						
XCOM0350	06/04/89	Westinghouse-H	Withdrawn	Incore Detectors	China	Beijing Res. Reactor
XCOM0385	02/07/89	Teledyne	Withdrawn	Zircaloy Tubes	Argentina	Embalse & Atucha 1
XCOM0455	07/17/89	Byron Jackson	Withdrawn	Pump Seal Cartridge	India	Tarapur
XCOM0460	06/07/89	General Electric	Withdrawn	Replacement Parts	India	Tarapur
XCOM0475	06/13/89	Pacific Pumps	Withdrawn	Coolant Pumps	India	Tarapur
XCOM0503	08/11/89	General Atomics	Withdrawn	Misc. Components	Romania	Pitesti TRIGA
XCOM0817	07/17/89	Byron Jackson	Withdrawn	Pump Parts	India	Tarapur
XCOM1001	03/24/89	Reuter-Stokes	Withdrawn	Incore Detectors	Brazil	Argonaut Res. Reactor
XCOM1006	06/04/89	Westinghouse-H	Withdrawn	Fission Chambers	Brazil	Brazilian Navy
XCOM1008	08/11/89	Babcock & Wilcox	Withdrawn	Detector System	Brazil	Sao Paulo Res. Reactor
XCOM1021	01/06/89	General Atomics	\$50,000	Flux monitor	Columbia	IAN-R1 Reactor
XCOM1024	07/31/89	General Electric	\$1,984	Zircaloy Tubes	Norway	Halden
XCOM1025	07/21/89	Imaging & Sensing	\$5,230	Incore Detector	Thailand	Bangkok TRIGA Mk-III
XCOM1026	08/25/89	General Electric	\$142,000	Monitoring System	Norway	Halden
XCOM1028	11/22/89	General Atomics	Withdrawn	Specimen Assemblies	Malaysia	Malaysia TRIGA Mk-II

\$199,214 TOTAL**HEAVY WATER**

XMAT337	12/01/89	Isotec	Withdrawn	D2 & D2O	Various	Research
XMAT338	03/08/89	Cambridge Isotope	5,000	Heavy Water	Canada	Upgrading & return
XMAT339	04/11/89	Cleveland Crystal	1,500	Heavy Water	Canada	Upgrading & return

8,500 KILOGRAMS TOTAL**REACTORS OR MAJOR REACTOR COMPONENTS**

XR138	01/27/89	Westinghouse	Withdrawn	PWRs, 950 MWE	South Korea	KNU 11 & 12
XR141	03/15/89	Byron Jackson	Withdrawn	Primary Coolant Pump	China	Qinshan
XR143	08/11/89	General Atomics	Withdrawn	TRIGA Mk I, 1.5 MWt	Algeria	Algiers TRIGA Mk I
XR145	05/30/89	Comb. Engineer.	Withdrawn	PWR, 950 MWE	Egypt	EL DaBaa
XR151	11/20/89	WPPSS	Withdrawn	PWR, 1300 MWE	China	Qinshan 2
XR152	11/09/89	General Atomics	\$40,000	Two Control Rods	Taiwan	THOR Research Reactor

\$40,000 TOTAL**URANIUM-233**

XSNM2479	10/31/89	Ann Russell	Denied	U-233	Israel	Biological Experiments
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EXPORT CASES COMPLETED IN 1989--LISTED BY COMMODITY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CI/S	COMMODITY DESCRIPTION	COUNTRY	END-USE
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POWER REACTOR FUEL, LOW-ENRICHED URANIUM

XSNM1458/07	04/06/89	Westinghouse	150	LEU,4.15%	South Korea	KNU 5&6
XSNM1758/06	03/03/89	Transnuclear	7,700	LEU,4.05%	W. Germany	Unterweser
XSNM2083	05/30/89	Comb. Engineer.	Withdrawn	LEU,3.30%	Egypt	EL DaBaa PWR, 1st Co
XSNM2084	05/30/89	Comb. Engineer.	Withdrawn	LEU,4.10%	Egypt	EL DaBaa PWR, Reloac
XSNM2404	03/08/89	Mitsubishi	37,758	LEU,3.45%	Japan	Tomari 2 (1st Core)
XSNM2405	02/24/89	Edlow	8,998.00	LEU,3.45%	Japan	Sendai 2
XSNM2407	03/03/89	Transnuclear	Withdrawn	LEU,3.55%	South Korea	Kori,Ulchin,Yonggwang
XSNM2408	01/27/89	Transnuclear	Withdrawn	LEU,3.60%	South Korea	Working Stock
XSNM2409	02/24/89	Mitsubishi	15,853	LEU,3.45%	Japan	Takahama 2
XSNM2410	03/22/89	Mitsubishi	22,617	LEU,3.45%	Japan	Sendai 2
XSNM2411	02/24/89	Edlow	13,262.00	LEU,4.15%	Japan	Ohi 1
XSNM2412	03/08/89	Mitsui	28,201	LEU,3.85%	Japan	Fukushima I,5
XSNM2413	02/27/89	Mitsubishi	9,320	LEU,3.25%	Japan	Mihama 1
XSNM2414	05/10/89	Mitsubishi	20,893	LEU,4.15%	Japan	Oni 1
XSNM2415	02/24/89	Mitsubishi	62,164	LEU,3.55%	Japan	Ohi 3 (1st Core)
XSNM2417	02/24/89	Mitsui	18,907	LEU,2.95%	Japan	Kashiwazakikariwa 1
XSNM2418	03/08/89	Mitsui	27,481	LEU,3.95%	Japan	Kashiwazakikariwa 1
XSNM2420	03/22/89	Mitsui	9,061	LEU,4.35%	Japan	Hamaoka 2
XSNM2421	03/22/89	Mitsui	22,397	LEU,4.35%	Japan	Hamaoka 2
XSNM2422	01/06/89	Edlow	31,240	LEU,4.30%	Spain	Almaraz 1
XSNM2423	02/24/89	Marubeni	29,125	LEU,3.95%	Japan	Fukushima I,4
XSNM2424	02/24/89	Marubeni	7,565	LEU,3.95%	Japan	Fukushima I,4
XSNM2425	06/16/89	Mitsubishi	38,122	LEU,3.45%	Japan	Tsuruga 2
XSNM2426	05/01/89	Mitsubishi	1,508	LEU,4.95%	Japan	Working Stock
XSNM2427	02/24/89	Edlow	7,210.00	LEU,3.45%	Japan	Genkai 1
XSNM2431	06/16/89	Edlow	7,928	LEU,3.45%	Japan	Tsuruga 2
XSNM2432	06/05/89	Mitsubishi	8,100	LEU,3.45%	Japan	Genkai 1
XSNM2435	12/01/89	WPPSS	Withdrawn	LEU,3.90%	China	Qinshan 2 (Initial Core)
XSNM2437	04/18/89	Transnuclear	12,985	LEU,3.30%	France	Fessenheim 2
XSNM2438	04/18/89	Transnuclear	12,985	LEU,3.30%	France	Bugey 3
XSNM2439	04/21/89	Braunkohle	26,280	LEU,3.30%	Spain	Trillo 1 (Initial Core)
XSNM2441	06/16/89	Mitsubishi	14,290	LEU,3.45%	Japan	Tomari 1
XSNM2442	09/18/89	General Electric	21,456	LEU,3.95%	Japan	Fukushima I,1
XSNM2443	04/19/89	Edlow	20,834	LEU,3.35%	Spain	ASCO 1
XSNM2446	09/18/89	Mitsui	31,241	LEU,3.95%	Japan	Fukushima II,1
XSNM2447	07/21/89	Mitsubishi	33,187	LEU,4.15%	Japan	Ohi 3
XSNM2449	09/01/89	Mitsubishi	22,905	LEU,3.45%	Japan	Genkai 2
XSNM2451	09/18/89	Marubeni	2,448	LEU,3.95%	Japan	Shimane 1
XSNM2452	07/21/89	Mitsubishi	15,559	LEU,3.45%	Japan	Ikata 1
XSNM2453	06/23/89	Transnuclear	724	LEU,2.69%	Sweden	Fab for WNP-1

EXPORT CASES COMPLETED IN 1989--LISTED BY COMMODITY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CI/S	COMMODITY DESCRIPTION	COUNTRY	END-USE
POWER REACTOR FUEL (CONT.)						
XSNM2455	10/13/89	Edlow	4,779	LEU,3.45%	Japan	Ikata 1
XSNM2456	07/31/89	ANF	20,000	LEU,5.00%	W. Germany	Return To Siemens
XSNM2457	08/18/89	ANF	200,000	LEU,5.00%	W. Germany	Fab, EURATOM LWRs
XSNM2459	10/13/89	Marubeni	14,919	LEU,3.95%	Japan	Shimane 1
XSNM2460	10/13/89	Marubeni	8,014	LEU,3.95%	Japan	Kashiwazakikariwa 5
XSNM2461	10/13/89	Marubeni	31,194	LEU,3.95%	Japan	Kashiwazakikariwa 5
XSNM2462	10/13/89	Marubeni	30,935	LEU,3.95%	Japan	Fukushima II,4
XSNM2463	10/13/89	Marubeni	9,185	LEU,3.95%	Japan	Fukushima II,4 & II,1
XSNM2466	12/22/89	Mitsubishi	29,789	LEU,4.05%, as UF6	Japan	Mihama 3
XSNM2469	12/14/89	Edlow	24,068	LEU,3.45%, as UF6	Japan	Takahama 1
XSNM2470	11/09/89	Mitsui	5,986	LEU,3.95%	Japan	Tokai 2
XSNM2471	08/30/89	Braunkohle	10,800	LEU,3.60%	Spain	Almaraz 2
XSNM2472	12/14/89	General Electric	45,725	LEU,3.95%, as UO2	Japan	Fukushima I,6
XSNM2473	12/14/89	General Electric	37,610	LEU,3.95%, as UO2	Japan	Tokai 2
XSNM2475	12/14/89	Edlow	15,011	LEU,4.15%, as UF6	Japan	Takahama 3
XSNM2482	11/30/89	Mitsui	Withdrawn	LEU,3.95%, as UF6	Japan	Tokai 2
XSNM2489	12/22/89	Transnuclear	12,957	LEU,3.55%, as UF6	South Korea	Kori 2

1,151,426 KILOGRAMS TOTAL

MISCELLANEOUS LOW-ENRICHED URANIUM

XSNM2416	01/12/89	Transnuclear	11	LEU,3.5063%	W. Germany	Return to Siemens
XSNM2429	07/27/89	ANF	270	LEU,0.74%	Japan	R&D, Fuel Fab.
XSNM2430	04/28/89	Westinghouse-Har	136	LEU,2.95%(irr.)	Canada	PIE, Chalk River
XSNM2433	04/19/89	Westinghouse	120	LEU,4.60%	Sweden	Return to ABB
XSNM2436	04/27/89	Comb. Engineering	33	LEU,3.48% (irr.)	Canada	PIE at Chalk River
XSNM2464	09/22/89	Mitsui	2	LEU,19.75%	Japan	LIS Research
XSNM2478	09/21/89	Westinghouse	475	LEU,0.80%	Canada	Tests and Return to US
XSNM2478/01	12/22/89	Westinghouse	75	LEU,0.80%	Canada	Tests and Return to US
XSNM2486	12/09/89	Transnuclear	5,000	LEU,5.00%, as UF6	EURATOM	Heels

8,122 KILOGRAMS TOTAL

RESEARCH REACTOR FUEL LOW-ENRICHED URANIUM

XSNM2059	08/11/89	General Atomics	Withdrawn	LEU,19.90%	Algeria	Algiers TRIGA Mk I
XSNM2428	02/08/89	Transnuclear	260.00	LEU,19.95%	Canada	Fab for MAPLE (KO)
XSNM2440	04/28/89	Transnuclear	343.50	LEU,19.95%	Canada	NRU
XSNM2440	04/28/89	Transnuclear	34.50	LEU,19.95%	Canada	Maple X 10
XSNM2450	07/17/89	General Atomics	0.05	LEU,19.9%	France	Irr. Tests at Siloe
XSNM2458	08/18/89	General Atomics	1.06	LEU,19.86%	Japan	Tokai TRIGA
XSNM2474	10/13/89	General Atomics	28.14	LEU,19.9%	Taiwan	THOR

667.25 KILOGRAMS TOTAL

EXPORT CASES COMPLETED IN 1989--LISTED BY COMMODITY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CI/S	COMMODITY DESCRIPTION	COUNTRY	END-USE
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PLUTONIUM

XSNM2389	05/23/89	Hitachi	Withdrawn	Pu-239	Japan	JAERI Experiments
XSNM2419	11/17/89	DOE	0.24	Pu (Irr.FFTF MOX)	Japan	PIE, PNC

THORIUM

XT08685	11/22/89	M&T Chemicals	100	Th (In Cerium Fluoric	Various	Contaminant
XU08687	11/08/89	CERAC	1,758	Th (As ThO2)	Japan	Welding, Electrodes

1,858 KILOGRAMS TOTAL**NATURAL URANIUM**

XU08668	02/15/89	Mitsubishi	85,000	U (as UF6)	Japan	Enrich. (Takahama 3)
XU08673	05/10/89	Mitsui	126,795	U (As UF6)	Japan	Enrich. TEPCO PWR's
XU08674	07/21/89	Mitsubishi	68,000	U (as UF6)	Japan	Enrich. (Takahama 3)
XU08675	06/06/89	Transnuclear	4,394	U (as UF6)	South Korea	Conv. R&D by KNFC
XU08677	09/20/89	Mitsubishi	24,000	U (As UF6)	Japan	Enrichment (Tsuruga 2)
XU08679	09/22/89	Mitsui	22	U (As Metal)	Japan	LIS Research
XU08681	11/16/89	Energy Fuels Nuc.	300,000	U (As U3O8)	EURATOM	Conv in CA, Enrich in EU
XU08686	11/22/89	Rio Algom	384,992	U (As U3O8)	Canada	Conv, Rtn to US

993,203 KILOGRAMS TOTAL**DEPLETED URANIUM**

XU08638/02	02/24/89	Nuclear Metals	460,000	DU (As Metal)	U. Kingdom	Increase Quantity
XU08676	05/10/89	Argonne	150,000	DU (As Metal)	W. Germany	ZEUS Project
XU08682	07/01/89	Mfg. Sciences	2,229	DU (As Metal)	U. Kingdom	Penetrator mfg.
XU08689	12/19/89	Aerojet Ordnance	65	DU (In Titanium Alloy	France	R&D at CERCA

612,294 KILOGRAMS TOTAL**URANIUM & THORIUM CONTAMINANTS IN ORE**

XM08678	05/30/89	Cabot Corp.	400	U & Th (In Ore)	W. Germany	Contaminants
XM08680	06/16/89	Cabot Corp.	127	U & Th (In Ore)	Japan	Contaminants
XM08683	10/13/89	Fansteel	18,000	U & Th (In Ore)	W. Germany	Contaminants

18,527 KILOGRAMS TOTAL**GRAPHITE**

XMAT323	06/06/89	POCO Graphite	Withdrawn	Graphite	Brazil	EDM Electrodes
XMAT340	05/30/89	General Atomics	4.00	Graphite	France	Irr. Tests at Siloe

EXPORT CASES COMPLETED IN 1989--LISTED BY COUNTRY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CL/S	COMMODITY DESCRIPTION	DD-USE
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ALGERIA

XR143	08/11/89	General Atomics	Withdrawn	TRIGA Mk I, 1.5 MWt	Algiers TRIGA Mk I
XSNM2059	08/11/89	General Atomics	Withdrawn	LEU, 19.90%	Algiers TRIGA Mk I

ARGENTINA

XB1264	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
XCOM0385	02/07/89	Teledyne	Withdrawn	Zircaloy Tubes	Embalse & Atucha 1

BELGIUM

XSNM2444	08/02/89	Transnuclear	51.05	HEU, 93.45%	BR-2, Mol
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BRAZIL

XB1257	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
XCOM1001	03/24/89	Reuter-Stokes	Withdrawn	Detectors	Argonaut Res. Reactor
XCOM1006	06/04/89	Westinghouse-H	Withdrawn	Fission Chambers	Brazilian Navy
XCOM1008	08/11/89	Babcock & Wilcox	Withdrawn	Detector System	Sao Paulo Res. Reactor
XMAT323	06/06/89	POCO Graphite	Withdrawn	Graphite	EDM Electrodes

CANADA

XMAT338	03/08/89	Cambridge Isotope	5,000	Heavy Water	Upgrading & return
XMAT339	04/11/89	Cleveland Crystal	1,500	Heavy Water	Upgrading & return
XSNM2400	02/27/89	Transnuclear	4.05	HEU, 93.3%	McMaster
XSNM2428	02/08/89	Transnuclear	260	LEU, 19.95%	Fab for MAPLE (KO)
XSNM2430	04/28/89	Westinghouse-Hanf	136	LEU, 2.95% (irr.)	PIE, Chalk River
XSNM2434	02/01/89	Gamma-Metrics	0.0038	HEU, 93.0%	Detector, Pinawa
XSNM2436	04/27/89	Comb. Engineering	32.81	LEU, 3.48% (irr.)	PIE at Chalk River
XSNM2440	04/28/89	Transnuclear	343.50	LEU, 19.95%	NRU
XSNM2440/	04/28/89	Transnuclear	34.50	LEU, 19.95%	Maple X 10
XSNM2448	10/17/89	Transnuclear	58.69	HEU, 93.35%	NRU
XSNM2478	09/21/89	Westinghouse	475.00	LEU, 0.80%	Tests and Return to US
XSNM2478/01	12/22/89	Westinghouse	75.00	LEU, 0.80%	Tests and Return to US
XU08686	11/22/89	Rio Algom	384,992	U (As U308)	Conv by CAMECO, Rtn to US

CHINA

XB1266	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
XCOM0350	06/04/89	Westinghouse-H	Withdrawn	U (As U308 or UF6)	Beijing Res. Reactor
XR141	03/15/89	Byron Jackson	Withdrawn	Primary Coolant Pumps	Qinshan
XR151	11/20/89	WPPSS	Withdrawn	PWR, 1300 MWE	Qinshan 2
XSNM2435	12/01/89	WPPSS	Withdrawn	LEU, 3.90%, as UO2	Qinshan 2 (Initial Core)

EXPORT CASES COMPLETED IN 1989---LISTED BY COUNTRY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CL/S	COMMODITY DESCRIPTION	END-USE
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COLUMBIA

XCOM1021	01/06/89	General Atomics	\$50,000	Flux monitor	IAN-R1 Reactor
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EGYPT

XR145	05/30/89	Comb. Engineering	Withdrawn	PWR, 950 MWE	EL DaBaa
XSNM2083	05/30/89	Comb. Engineering	Withdrawn	LEU,3.30%	EL DaBaa PWR, 1st Core
XSNM2084	05/30/89	Comb. Engineering	Withdrawn	LEU,4.10%	EL DaBaa PWR, Reloads

EURATOM

XSNM2486	12/09/89	Transnuclear	5,000	LEU,5.00%, as UF6	Heels
XU08581	11/16/89	Energy Fuels Nuc.	300,000	U (As U308)	Conv in CA, Enrich in EU

FRANCE

XMAT340	05/30/89	General Atomics	4.00	Graphite	Irr. Tests at Siloe
XSNM2315/02	04/20/89	Transnuclear	76.00	HEU,93.3%	HFR Grenoble
XSNM2360	04/20/89	Transnuclear	32.60	HEU,93.2%	ORPHEE
XSNM2437	04/18/89	Transnuclear	12,985	LEU,3.30%	Fessenheim 2
XSNM2438	04/18/89	Transnuclear	12,985	LEU,3.30%	Bugey 3
XSNM2450	07/17/89	General Atomics	0.05	LEU,19.9%	Irr. Tests at Siloe
XSNM2454	09/21/89	Transnuclear	32.08	HEU,93.3%	HFR Grenoble
XU08589	12/19/89	Aerojet Ordnance	65.00	DU (In Titanium Alloy)	R&D at CERCA

INDIA

XCOM0455	07/17/89	Byron Jackson	Withdrawn	Pump Seal Cart.	Tarapur
XCOM0460	06/07/89	General Electric	Withdrawn	Replacement Parts	Tarapur
XCOM0475	06/13/89	Pacific Pumps	Withdrawn	Coolant Pumps	Tarapur
XCOM0817	07/17/89	Byron Jackson	Withdrawn	Pump Parts	Tarapur

ISRAEL

XSNM2479	10/31/89	Ann Russell	Denied	U-233	Biological Experiments
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JAPAN

XSNM1778/06	04/20/89	Nissho-Iwai	85.56	HEU,45.4%	JMTR
XSNM1779/04	04/20/89	Nissho-Iwai	24.63	HEU,45.4%	JRR-2
XSNM2389	05/23/89	Hitachi	Withdrawn	Pu-239	JAERI Experiments
XSNM2404	03/08/89	Mitsubishi	37,758	LEU,3.45%	Tomari 2 (1st Core)
XSNM2405	02/24/89	Edlow	8,998.00	LEU,3.45%	Sendai 2
XSNM2409	02/24/89	Mitsubishi	15,853	LEU,3.45%	Takahama 2
XSNM2410	03/22/89	Mitsubishi	22,617	LEU,3.45%	Sendai 2

EXPORT CASES COMPLETED IN 1989--LISTED BY COUNTRY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CI/B	COMMODITY DESCRIPTION	END-USE
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JAPAN (CONT.)

XSNM2411	02/24/89	Edlow	13,262.00	LEU,4.15%	Ohi 1
XSNM2412	03/08/89	Mitsui	28,201	LEU,3.85%	Fukushima I,5
XSNM2413	02/27/89	Mitsubishi	9,320	LEU,3.25%	Mihama 1
XSNM2414	05/10/89	Mitsubishi	20,893	LEU,4.15%	Ohi 1
XSNM2415	02/24/89	Mitsubishi	62,164	LEU,3.55%	Ohi 3 (1st Core)
XSNM2417	02/24/89	Mitsui	18,907	LEU,2.95%	Kashiwazakikariwa 1
XSNM2418	03/08/89	Mitsui	27,481	LEU,3.95%	Kashiwazakikariwa 1
XSNM2419	11/17/89	DOE	0.24	Pu (irr.FFTF MOX)	PIE, PNC
XSNM2420	03/22/89	Mitsui	9,061	LEU,4.35%	Hamaoka 2
XSNM2421	03/22/89	Mitsui	22,397	LEU,4.35%	Hamaoka 2
XSNM2423	02/24/89	Marubeni	29,125	LEU,3.95%	Fukushima I,4
XSNM2424	02/24/89	Marubeni	7,565	LEU,3.95%	Fukushima I,4
XSNM2425	06/16/89	Mitsubishi	38,122	LEU,3.45%	Tsuruga 2
XSNM2426	05/01/89	Mitsubishi	1,508	LEU,4.95%	Working Stock
XSNM2427	02/24/89	Edlow	7,210.00	LEU,3.45%	Genkai 1
XSNM2429	07/27/89	ANF	270	LEU,0.74%	R&D, Fuel Fab.
XSNM2431	06/16/89	Edlow	7,928	LEU,3.45%	Tsuruga 2
XSNM2432	06/05/89	Mitsubishi	8,100	LEU,3.45%	Genkai 1
XSNM2441	06/16/89	Mitsubishi	14,290	LEU,3.45%	Tomari 1
XSNM2442	09/18/89	General Electric	21,456	LEU,3.95%	Fukushima I,1
XSNM2446	09/18/89	Mitsui	31,241	LEU,3.95%	Fukushima II,1
XSNM2447	07/21/89	Mitsubishi	33,187	LEU,4.15%	Ohi 3
XSNM2449	09/01/89	Mitsubishi	22,905	LEU,3.45%	Genkai 2
XSNM2451	09/18/89	Marubeni	2,448	LEU,3.95%	Shimane 1
XSNM2452	07/21/89	Mitsubishi	15,559	LEU,3.45%	Ikata 1
XSNM2455	10/13/89	Edlow	4,779	LEU,3.45%	Ikata 1
XSNM2458	08/18/89	General Atomics	1.06	LEU,19.86%	Tokai TRIGA
XSNM2459	10/13/89	Marubeni	14,919	LEU,3.95%	Shimane 1
XSNM2460	10/13/89	Marubeni	8,014	LEU,3.95%	Kashiwazakikariwa 5
XSNM2461	10/13/89	Marubeni	31,194	LEU,3.95%	Kashiwazakikariwa 5
XSNM2462	10/13/89	Marubeni	30,935	LEU,3.95%	Fukushima II,4
XSNM2463	10/13/89	Marubeni	9,185	LEU,3.95%	Fukushima II,4 & II,1
XSNM2464	09/22/89	Mitsui	2.00	LEU,19.75%	LIS Research
XSNM2466	12/22/89	Mitsubishi	29,789	LEU,4.05%, as UF6	Mihama 3
XSNM2469	12/14/89	Edlow	24,068	LEU,3.45%, as UF6	Takahama 1
XSNM2470	11/09/89	Mitsui	5,986	LEU,3.95%	Tokai 2
XSNM2472	12/14/89	General Electric	45,725	LEU,3.95%, as UO2	Fukushima I,6
XSNM2473	12/14/89	General Electric	37,610	LEU,3.95%, as UO2	Tokai 2
XSNM2475	12/14/89	Edlow	15,011	LEU,4.15%, as UF6	Takahama 3
XSNM2482	11/30/89	Mitsui	Withdrawn	LEU,3.95%, as UF6	Tokai 2
XU08668	02/15/89	Mitsubishi	85,000	U (as UF6)	Enrichment (Takahama 3)
XU08673	05/10/89	Mitsui	126,795	U (As UF6)	Enrich, TEPCO PWR's
XU08674	07/21/89	Mitsubishi	68,000	U (as UF6)	Enrichment (Takahama 3)
XU08677	09/20/89	Mitsubishi	24,000	U (As UF6)	Enrichment (Tsuruga 2)
XU08679	09/22/89	Mitsui	22.20	U (As Metal)	LIS Research
XM08680	06/16/89	Cabot Corp.	127	U & Th (In Ore)	Contaminants,Rare Earths
XU08687	11/08/89	CERAC	1,758	Th (As ThO2)	Welding, Electrodes

EXPORT GASES COMPLETED IN 1989--LISTED BY COUNTRY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CL%	COMMODITY DESCRIPTION	END-USE
MALAYSIA					
XCOM1028	11/22/89	General Atomics	Withdrawn	Specimen Assemblies	Malaysia TRIGA Mk-II
MEXICO					
XB1260	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
NETHERLANDS					
XSNM2445	08/02/89	Transnuclear	38.29	HEU,93.45%	Petten, HFR
NORWAY					
XCOM1024	07/31/89	General Electric	\$1,984	Zircaloy Tubes	Halden
XCOM1026	08/25/89	General Electric	\$142,000	Monitoring System	Halden
ROMANIA					
XCOM0503	08/11/89	General Atomics	Withdrawn	Misc. Components	Pitești TRIGA
SAUDI ARABIA					
XB1258	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
SINGAPORE					
XB1262	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
SOUTH KOREA					
XB1259	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
XR138	01/27/89	Westinghouse	Withdrawn	PWR's, 950 MWE	KNU 11 & 12
XSNM1458/07	04/06/89	Westinghouse	150	LEU,4.15%,Fuel Assemb.	KNU 5&6
XSNM2407	03/03/89	Transnuclear	Withdrawn	LEU,3.55%	
XSNM2408	01/27/89	Transnuclear	Withdrawn	LEU,3.60%	Working Stock
XSNM2489	12/22/89	Transnuclear	12,957	LEU,3.55%, as UF6	Kori 2
XU08675	06/06/89	Transnuclear	4,394	U (as UF6)	Conversion R&D by KNFC
SPAIN					
XSNM2422	01/06/89	Edlow	31,240	LEU,4.30%	Almaraz 1
XSNM2439	04/21/89	Braunkohle	26,280	LEU,3.30%	Trillo 1 (Initial Core)
XSNM2443	04/19/89	Edlow	20,834	LEU,3.35%	ASCO 1
XSNM2471	08/30/89	Braunkohle	10,800	LEU,3.60%	Almaraz 2
XSNM2476	12/01/89	Gamma-Metrics	0.04	HEU,93.3%	Flux Monitoring, ASCO

EXPORT CASES COMPLETED IN 1989--LISTED BY COUNTRY

LICENSE NUMBER	DATE COMPLETE	APPLICANT/ LICENSEE	QUANTITY KG/CL/S	COMMODITY DESCRIPTION	END-USE
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SWEDEN

XSNM2433	04/19/89	Westinghouse	120	LEU,4.60%	Return to ABB
XSNM2453	06/23/89	Transnuclear	724	LEU,2.69%	Fab by ABB-Atom, WNP-1

TAIWAN

XB1263	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
XR152	11/09/89	General Atomics	\$40,000	Two Control Rods	THOR Research Reactor
XSNM2474	10/13/89	General Atomics	28.14	LEU,19.9%	THOR

THAILAND

XB1265	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
XCOM1025	07/21/89	Imaging & Sampling	\$5,230	Detector	Bangkok TRIGA Mk-III

UNITED KINGDOM

XB1272	01/12/89	SRB Technologies	1,000,000	Tritium (Gas)	Light Source Mfg.
XB1274	06/20/89	Edlow	250,000	Tritium (Gas)	Mfg. of Various Products
XU08638/02	02/24/89	Nuclear Metals	460,000	DU (As Metal)	Increase Quantity
XU08682	07/01/89	Mfg. Sciences	2,229	DU (As Metal)	Penetrator mfg.

URUGUAY

XB1261	10/16/89	Safety Light	Withdrawn	Tritium (Disp.)	Light Sources
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VARIOUS

XB1276	12/22/89	Safety Light	600,000	Tritium (Disp.)	Light Sources
XMAT337	12/01/89	Isotec	Withdrawn	D2 & D2O	Research
XT08685	11/22/89	M&T Chemicals	100	Th (In Cerium Fluoride)	Contaminant

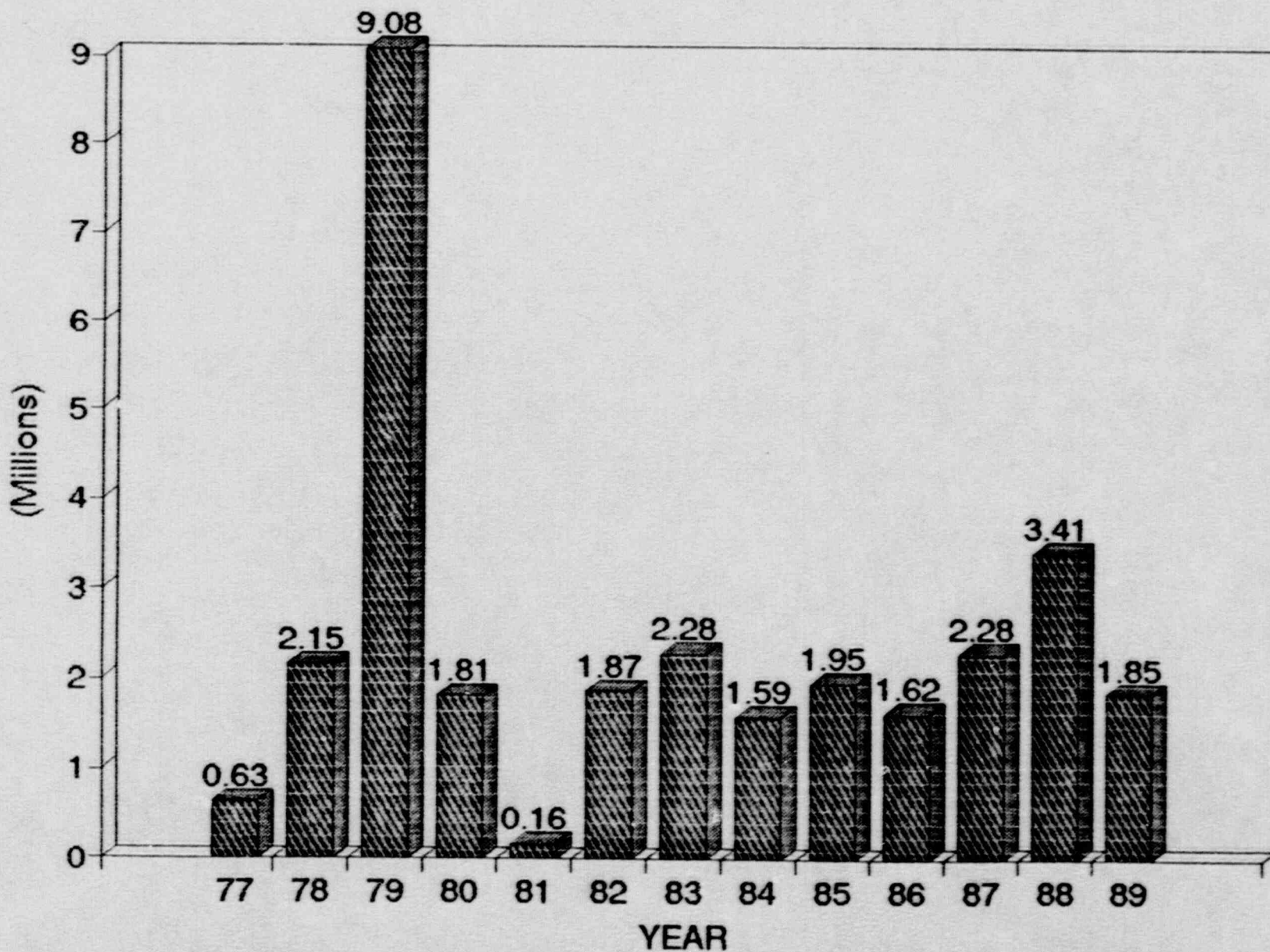
WEST GERMANY

XM08678	05/30/89	Cabot Corp.	400	U & Th (In Ore)	Contaminants,Rare Earths
XM08683	10/13/89	Fonsteel	18,000	U & Th (In Ore)	Contaminants,Rare Earths
XSNM1758/06	03/03/89	Transnuclear	7,700	LEU,4.05%	Unterweser
XSNM1821	04/03/89	Transnuclear	Withdrawn	HEU,93.3%	FRM Garching
XSNM2359	07/03/89	Transnuclear	Withdrawn	HEU,93.3%	THTR
XSNM2416	01/12/89	Transnuclear	11.50	LEU,3.5063%	Return to Siemens
XSNM2456	07/31/89	ANF	20,000	LEU,5.00%	Return To Siemens
XSNM2457	08/18/89	ANF	200,000	LEU,5.00%	Fab for EURATOM LWRs
XU08676	05/10/89	Argonne	150,000	DU (As Metal)	ZEUS Project

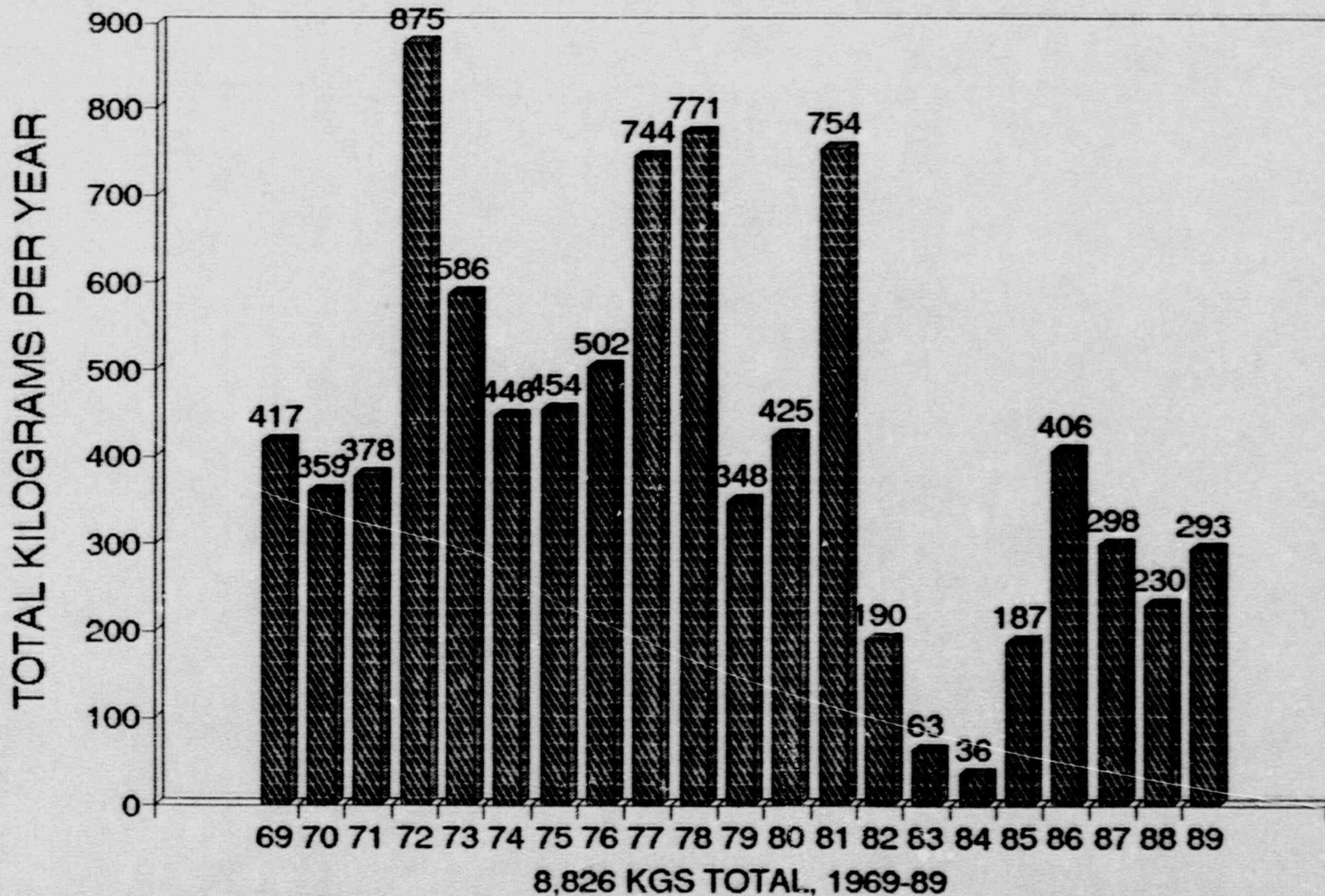
NUCLEAR REGULATORY COMMISSION

TRITIUM EXPORT LICENSES--1977-1989

TOTAL CURIES LICENSED PER YEAR



NUCLEAR REGULATORY COMMISSION EXPORT LICENSES, OVER 80% ENRICHED HEU



NUCLEAR REGULATORY COMMISSION--1989

PENDING EXPORT APPLICATION TRENDS

