

APPLICATION FOR LICENSE TO EXPORT NUCLEAR
MATERIAL AND EQUIPMENT (See Instructions on Reverse)

1. APPLICANT'S USE		a. DATE OF APPLICATION 11-7-79		d. APPLICANT'S REFERENCE V-8374		2. NRC USE		a. LICENSE NO. XSNM01622		b. DOCKET NO. 11000922	
3. APPLICANT'S NAME AND ADDRESS						4. SUPPLIER'S NAME AND ADDRESS					
a. NAME Reuter-Stokes, Inc.						a. NAME (Complete if applicant is not supplier of material)					
b. STREET ADDRESS 18530 South Miles Parkway						b. STREET ADDRESS					
c. CITY Cleveland				STATE OHIO		ZIP CODE 44128		c. CITY			
d. TELEPHONE NUMBER (Area Code - Number - Extension) 216-485-3434						STATE		ZIP CODE			
5. FIRST SHIPMENT SCHEDULED		6. FINAL SHIPMENT SCHEDULED		7. APPLICANT'S CONTRACTUAL DELIVERY DATE		8. PROPOSED LICENSE EXPIRATION DATE		9. U.S. DEPARTMENT OF ENERGY CONTRACT NO. (If Known)			
3-10-80		3-10-80		120 DAYS ARL		1 YEAR FROM DATE OF ISSUANCE					
10. ULTIMATE CONSIGNEE						11. ULTIMATE END USE					
a. NAME Framatome						(Include plant or facility name) Framatome					
b. STREET ADDRESS 19 Rue Des Minimes						19 Rue Des Minemes					
c. CITY - STATE - COUNTRY 92400 Courbevoie FRANCE						92400 Courbevoie FRANCE					
12. INTERMEDIATE CONSIGNEE						13. INTERMEDIATE END USE					
a. NAME Prana Recherches et Developpement						Prana Recherches et Developpement					
b. STREET ADDRESS Chemin de Rochefort						Chemin de Rochefort					
c. CITY - STATE - COUNTRY 91680 Bruyeres le Chatel FRANCE						91680 Bruyeres le Chatel FRANCE					
14. INTERMEDIATE CONSIGNEE						15. INTERMEDIATE END USE					
a. NAME						15a. EST. DATE OF FIRST USE					
b. STREET ADDRESS						4-10-80					
c. CITY - STATE - COUNTRY						15a. EST. DATE OF FIRST USE					
16. NRC USE						17. DESCRIPTION					
						(Include chemical and physical form of nuclear material; give dollar value of nuclear equipment and components)					
URANIUM 235 DEPOSITED AS UO ₂ ON INTERNAL SURFACE OF REUTER-STOKES MODEL RS-C6-0201-231 RADIATION DETECTOR. EACH DETECTOR CONTAINS .0004 GRAMS URANIUM. FIGURES AT RIGHT ARE FOR THE TOTAL OF 1 DETECTOR TO BE SUPPLIED. VALUE OF EACH DETECTOR IS \$4,500.00 (U.S.).						18. MAX. ELEMENT WEIGHT 0.0004 GRAMS		19. MAX. WT. % 93%		20. MAX ISOTOPE WT. 0004 GRAMS	
						21. UNIT GRMS					
22. COUNTRY OF ORIGIN-SOURCE MATERIAL						23. COUNTRY OF ORIGIN-SNM WHERE ENRICHED OR PRODUCED		24. COUNTRIES WHICH ATTACH SAFEGUARDS (If Known)			
25. ADDITIONAL INFORMATION (Use separate sheet if necessary)											
SEE ATTACHED FOR END-USE INFORMATION											
26. The applicant certifies that this application is prepared in conformity with Title 10, Code of Federal Regulations, and that all information in this application is correct to the best of his/her knowledge.											
27. AUTHORIZED OFFICIAL				a. SIGNATURE				b. TITLE			
				Joseph D. Skarupa				Joseph D. Skarupa, Sls Manager			

POOR ORIGINAL

7912170 371

1593 007

PCA NOV 27 2642*

REUTERSTOK CLV

ITSER C 202023F

*Kathy. info for P/A C
Licence*

TELEX 5515

ATT. GERAGHTY

FOLLOWING YR REQUEST TELEX 1548 - 10/19 HERE ARE INFO FOR EXP.
LICENCE.

FRAMATOME 19 RUE DES MINIMES 92400 COURBEVOIE.

THE REACTOR IS A REDUCED MAQUETTE WORKING AT THE SAME ADDRESS IN A
PREPARED LAB. THIS DETECTOR WILL BE USED FOR VARIOUS TESTS :
ELECTRICAL, MECHANICAL, FUNCTIONAL AND LENGTH OF LIFE.

PRANA R.D.

SERV 667

POOR ORIGINAL

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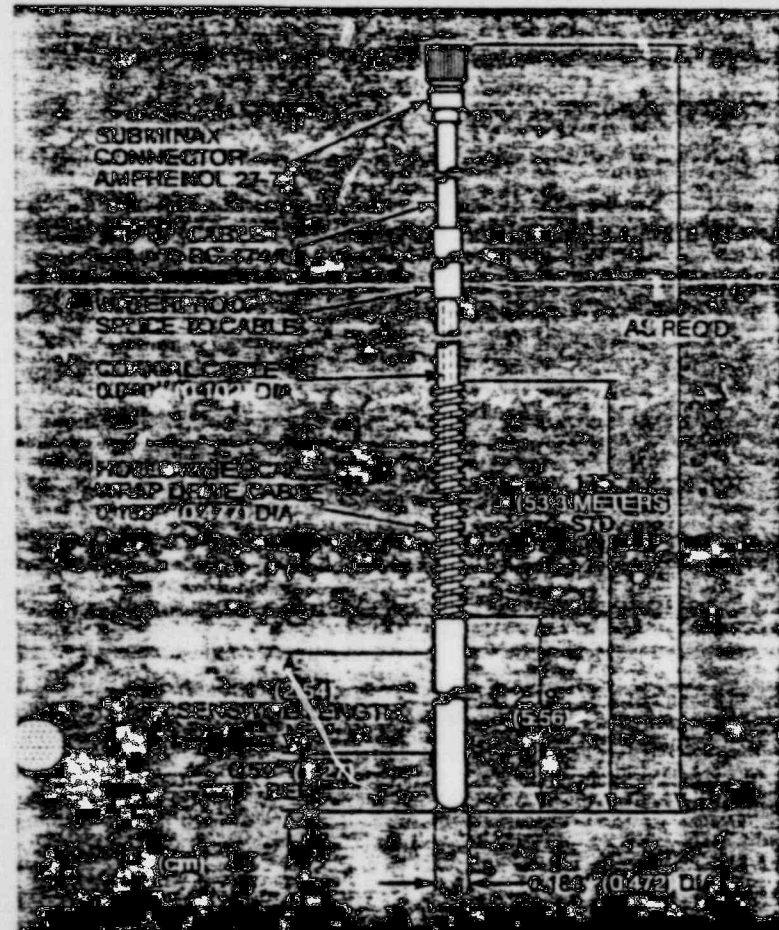
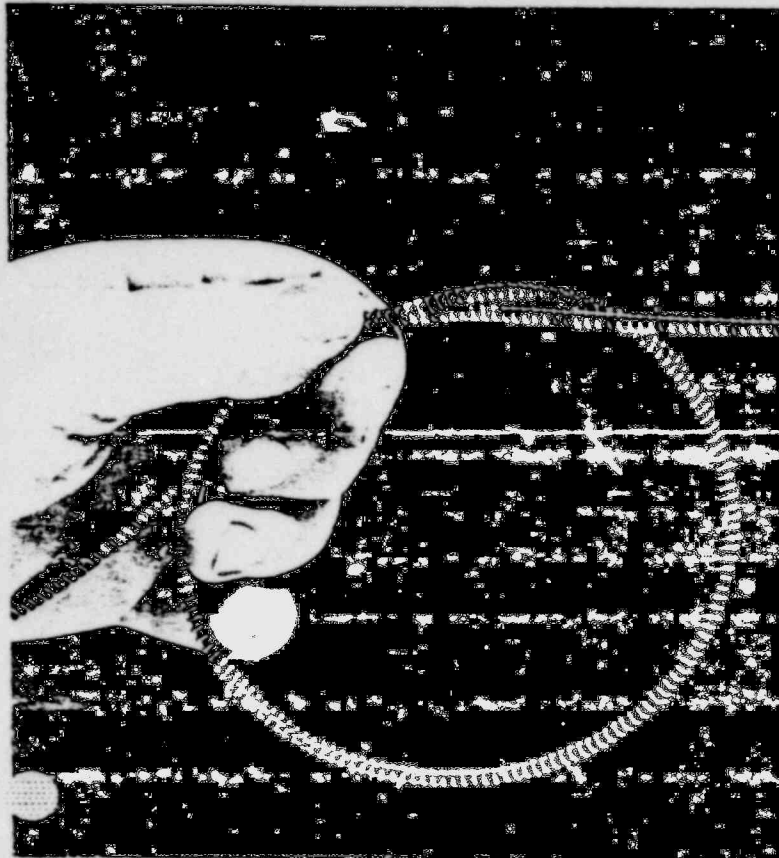
7.11.79 MT

REUTERSTOK CLV

ITSER C 202023F

RS-C6-0201-231 In Core Flux Probe

POOR ORIGINAL
for use in your
WESTINGHOUSE PWR



Complete with Right Hand or Left Hand Drive Cable

Combining the detector with the helical drive cable which exactly mates with your specific movable drive system, Reuter-Stokes offers the complete assembly ready for use.

In 1968, the RS-C6-0201-231 was developed by Reuter-Stokes for the flux mapping systems of Westinghouse-built reactors. It incorporates 14 years of in-core detector experience into an assembly specifically designed to traverse the multi path system smoothly, with accurate output signal and long detector lifetime. It is manufactured and tested to rigid QC requirements for commercial power reactors. Specific design and manufacturing features include:

1. Excellent insulation resistance at temperature providing minimal signal leakage and permitting use over a wide flux/temperature range.
2. Separate sealing of detector assembly and cable assembly to eliminate signal variation at temperature from gas expansion-migration.
3. Design details and proprietary methods of processing to insure high leakage resistance over a long detector lifetime.
4. Carefully matched, machined and bonded components to minimize the possibility of detector failure resulting from insertion and withdrawal.

Following is a partial listing of operating reactors where Reuter-Stokes in-core probes are installed or being installed:

Connecticut Yankee	Point Beach 1, 2
D. C. Cook 1	Prairie Island 1, 2
H. B. Robinson 2	Robert E. Ginna
Joseph M. Farley 1	San Onofre 1
Jose Cabrera 1	Surry 1, 2
North Anna 1, 2	Zion 1, 2

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Specifications

MECHANICAL

Maximum chamber diameter 0.478 cm
 Drive cable diameter 0.478 cm
 Chamber length 5.56 cm
 Drive cable length 53.3 meters
 Connector Amphenol #27-7

MATERIAL

Chamber
 Outer shell 304 Stainless steel
 Inner electrodes 304 Stainless steel
 Insulation Alumina ceramic

Detector Cable
 Outer sheath Inconel 600
 Center conductor Inconel 600
 Insulation Al_2O_3

Drive cable
 Helix lay wires, coil Carbon steel
 (Note 1)

Neutron sensitive material
 Description Uranium enriched
 93% in U-235
 Total quantity U-235 0.4 mg

MAXIMUM RATINGS

Voltage between electrodes 200 Volts
 Temperature 375° C
 Thermal neutron flux 2×10^{14} nv
 Burn-up life:
 for 10% decrease in sensitivity 3×10^{20} nvt

IMPEDANCE

Resistance @ 25° C $> 5 \times 10^{12}$ ohms
 375° C $> 10^8$ ohms

Capacitance
 Detector plus cable (Std. Lgth.) 16,000 pf

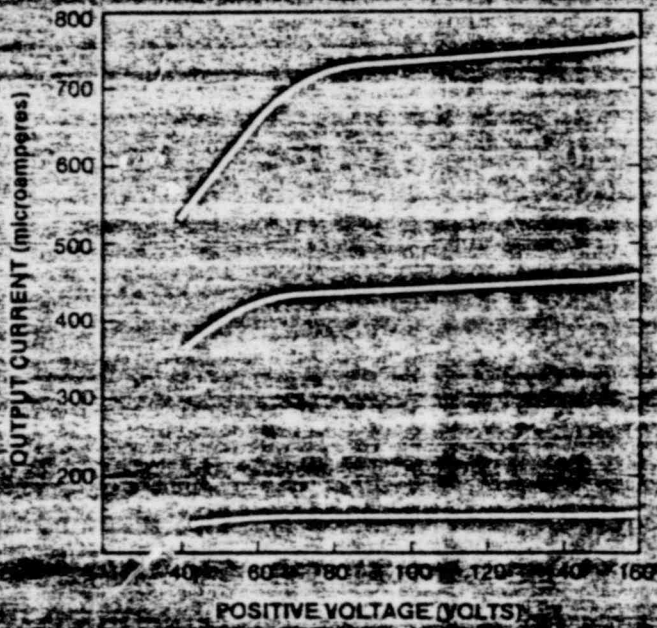
TYPICAL OPERATING CHARACTERISTICS

Voltage 100 Volts
 Thermal neutron flux range To 1×10^{14} nv
 Thermal neutron sensitivity
 (perturbed) (Note 2) 1.5×10^{-17} amp/nv \pm 20%
 Gamma sensitivity 1.2×10^{-14} amp/R/hr \pm 20%

NOTE 1: User must specify whether his system requires right or left hand drive.

NOTE 2: Before shipment sensitivity of each detector is calibrated in a pool-type test reactor with effective cross section of 500 barns and at $\sim 10^{11}$ nv.

TYPICAL SATURATION CHARACTERISTICS



reuter ^R stokes

18530 South Miles Parkway • Cleveland, Ohio 44128 U.S.A.
 Phone (216) 475-3434 • Telex 985253

POOR ORIGINAL

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