NRC Form 313 I (12-81) 10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

1. APPLICATION FOR (Check and/or complete as appropriate)

x	a. NEW LICENSE
	b. AMENDMENT TO LICENSE NUMBER
	c. RENEWAL OF LICENSE NUMBER

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland

2. APPLICANT'S NAME (Institution, firm, person, etc.)

David Taylor Naval Ship R&D Center

TELEPHONE NUMBER AREA CODE – NUMBER EXTENSION

(301) 267-3253 (Information)

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION Melvin Greenberg

Head, Chemical Applications Branch

TELEPHONE NUMBER AREA CODE – NUMBER EXTENSION

(301) 267-2461

4. APPLICANT'S MAILING ADDRESS (Include Zip Code) (Address to which NRC correspondence, notices, bulletins, etc., should be sent.)

Annapolis, MD 21402-5067

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED (Include Zip Code) Permanent:

David Taylor Naval Ship R&D Center
Building 91, Room 1R
Annapolis, MD 21402-5067
Field: See Attachment A

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL
(See Items 16 and 17 for required training and experience of each individual named below)

	FULL NAME	TITLE
a.	David E. Helzner	Chemist, Code 2833
b.	Richard B. Carey	Chemical Engineer, Code 2833
c.		

7. RADIATION PROTECTION OFFICER

Danute R. Ventriglio, Code 2801

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.

See Attachment B

8. LICENSED MATERIAL

LINE NO.	A ELEMENT AND MASS NUMBER	B CHEMICAL AND/OR PHYSICAL FORM	C NAME OF MANUFACTURER AND MODEL NUMBER (If Sealed Source)	D MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	Hydrogen 3	Titanium	Safety Light	Not to exceed
(2)		Tritide Foil	Corporation,	150 millicuries
(3)			Model No. 508-3	per foil
(4)				

	E DESCRIBE USE OF LICENSED MATERIAL
(1)	To be used as a sealed source in automated portable gas Chromatograph Model SCENTOR
(2)	P.N. 50319 Electron Capture Detector Cell (one foil in the cell) by Sentex Sensing
(3)	Technology Inc., Ridgefield, N.J. for vapor analysis.
(4)	

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FEE EXEMPT

8511130440 851022
NMSS LIC30
19-23556-01 PDR

Enclosure (2)

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C
(1)	Source sealed (3 separate metal	Sentex Sensing Technology	Model SCENTOR
(2)	containers) and encased in gas	Inc., 553 Broad Avenue,	w/P.N. 50319
(3)	chromatograph. Details in Attachment A	Ridgefield, N.J., 07657	Detector Cell
(4)	and Enclosure (3).	(201) 945-3694	

10. RADIATION DETECTION INSTRUMENTS *

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (millirocntgens/hour or counts/minute) F
(1)	*For routine use of the gas chromatograph, containing Hydrogen 3 source, leak					
(2)	testing, radiation survey and measuring instruments are not normally required.					
(3)	Reference (b).					
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10 *

☐ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

* Calibration of the radioactive source is not required.

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

12. PERSONNEL MONITORING DEVICES *

TYPE (Check and/or complete as appropriate) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☐ (1) FILM BADGE ☐ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify) _____	*For routine use of the gas chromatograph, personnel monitoring devices are not normally required. Reference (b).	☐ MONTHLY ☐ QUARTERLY ☐ OTHER (Specify) _____

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s))

☒ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (include filtration, if any), ETC. See Attachment A.

☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.

☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.

☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC.

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED. One-half life of source is eleven years. For disposal or replacement return to Sentex. See Enclosure (3).

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

Not applicable.

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INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

For items 15, 16 and 17, see Attachment A.

15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(If needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

16. FORMAL TRAINING IN RADIATION SAFETY. Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.

a. Principles and practices of radiation protection.

b. Radioactivity measurement standardization and monitoring techniques and instruments.

c. Mathematics and calculations basic to the use and measurement of radioactivity.

d. Biological effects of radiation.

17. EXPERIENCE. Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

Melvin Greenberg 7-26-85
MELVIN GREENBERG (Date)
Head, Chemical Applications Branch

Danute R. Ventriglio 7/23/85
DANUTE R. VENTRIGLIO (Date)
Radiation Safety Officer

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

WARNING.—18 U.S.C., Section 1001; Act of June 25, 1948, 62 Stat. 749, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)*	b. CERTIFYING OFFICIAL *(Signature)* C Calvano
Not applicable	c. NAME *(Type or print)* CHARLES N. CALVANO, CAPT, USN
(1) LICENSE FEE CATEGORY: N/A	d. TITLE Officer in Charge
(2) LICENSE FEE ENCLOSED: $ N/A	e. DATE

NRC FORM 313 I (12-81) GPO 885-428

1421 8

ATTACHMENT A to NRC Form 313I

David Taylor Naval Ship R&D Center
Application for Byproduct Material License

Licensed Material:

Hydrogen 3, Titanium Tritide Foil, Model No. 508-3, maximum amount of radioactivity 150 millicuries per foil, manufactured by Safety Light Corporation, as a sealed source in an electron capture detector cell of a gas chromatograph supplied by Sentex Sensing Technology, Inc., Model SCENTOR, P.N. 50319 Cell.

Item 5. Permanent and Field Site Utilization

The gas chromatograph will be stationed primarily in Bldg. 91, Room 1R at the David Taylor Naval Ship Research and Development Center, Annapolis Maryland 21402-5067. In terms of temporary job sites, it is anticipated that in Fiscal Year 1986, the gas chromatograph will be stationed approximately 15 percent of the time at any of the four Naval Bases: Philadelphia, Pa., Mayport, Fla., San Diego, Ca., or Newport, RI. Another 10 percent of the time, the gas chromatograph will be used at the U.S. Coast Guard Fire Test and Safety Detachment in Mobile, Alabama.

Item 7. Radiation Safety Officer. See Attachment B.

Item 9. Storage of Sealed Sources

The radioactive foil is encased in a sealed stainless steel cylinder of 1/4" thickness. This cylinder is further enclosed within an additional cylinder of copper with thickness of 1/16". The copper cylinder is contained within the oven assembly of the SCENTOR. The oven assembly is enclosed within a three-sided aluminum box which is bolted to the instrument chasis. The instrument is enclosed within chasis constructed of aluminum of 1 3/32" thickness.

The oven is not to be opened by anyone other than Sentex personnel. No part of this oven should be replaced, repaired or tampered with by unauthorized personnel. If disposal of the radioactive material is required, the Scentor must be returned to Sentex Sensing Technology, Inc. Additional information is given in Enclosure(3).

Item 13. Facilities and Equipment

The gas chromatograph will be operated under continuous usage. Storage is not anticipated. The instrument will be placed in a laboratory space in Bldg 91 accessable only to authorized personnel. The gas chromatograph will be vented via a fume hood system to the atmosphere outside the building. The controlling access door to the laboratory area where the instrument is located will be locked after work hours and when authorized personnel are not present.

For temporary field site use of the gas chromatograph, Item 5 above describes the locations where the instrument will be used. Radiation safety measures for use and transportation are summarized in Item 15.

Item 15. Radiation Protection Program

The DTNSRDC Radiation Safety Program addressing all sources of ionizing radiation, is described in the DTNSRDC INSTRUCTION 8070.1A, reference(c). The resume of the Radiation Safety Officer, containing training, duties and responsibilities is given in Attachment B. The radiation safety protection program as pertaining to the SCENTOR gas chromatograph is summarized below.

a. The controlling access door to the laboratory area where the instrument is located will be locked after work hours and when authorized personnel are not present.

b. "Caution, Radioactive Materials" signs will be posted on the door to the laboratory room containing the radioactive source. Stickers on the device will state not to tamper with the instrument.

c. The chromatograph will be properly vented via a fume hood.

d. Safety measures in transporting the instrument to temporary job sites will be followed in accordance with the requirements of 49 CFR Part 71-78 and Department of Transportation regulations. The chromatograph will be secured when not in use. Individual users will not leave an operating device unattended. Appropriate venting will be insured.

e. All operators will be required to become fully informed of the safety procedures written in the instruction manual.

f. For required maintenance, servicing or disposal of the radioactive source, the entire oven assembly will be shipped to Sentex Sensing Technology Inc,. Safe transport of the assembly include the following General Packaging and Shipment Requirements found in 49 CFR Part 71-78: (1) a sealed package which is not readily breakable; (2) an internal bracing and cushioning of radioactive material; and (3) a maximum package surface temperature of 122°F during transport. Shipping arrangements are made under the supervision and with the assistance of the DTNSRDC Safety Office and the Hazardous Materials Safety Coordinator.

Items 16 and 17. Formal Training and Experience in Radiation Safety

According to reference(b), because of the limited nature of a gas chromatography or X-ray florescence analyzer license, sufficient training may be obtained at the time of installation of the equipment and by reading the manufacturer's instruction manual.

The individuals listed in Item 16 have had a minimum of college-level physics. Their specific training and experience on radiation equipment and safety are described below:

David E. Helzner:

In 1984, David Helzner participated in two college courses that dealt with nuclear radiation. The first course "Nuclear Energy" presented in depth the hazards associated with radiation exposure. The second course outlined the various types of radiation sources, the uses of radiation, and a mathematical description of their decomposition rates.

From mid to late 1984, David Helzner, working for DTNSRDC, operated a gas chromatograph with a radioactive source (tritium foil at 200 millicuries) belonging to the US Coast Guard. At that time, David became thoroughly familiar with the instrument's operating procedures, proper ventilation techniques, and basic precautionary measures to prevent radiation exposure.

Richard B. Carey:

Richard Carey attended a U.S. Army Chemical, Biological, and Radiological Officers' Course in Ft. McCellan, Alabama in 1962. As Commanding Officer of 419th Chemical Detachment (1964-69), he conducted field training in the use of nuclear fallout prediction, radiological surveys, transit prediction, soil/debris decay and other aspects of CBR warfare and nuclear demolitions.

19213

ATTACHMENT B to NRC Form 313I

DTNSRDC Radiation Safety Officer
Dr. Danute R. Ventriglio
Code 2801
Telephone (301) 267-2357, AV 281-2357

(for the purpose of Application for Byproduct Material License for Gas Chromatograph Model SCENTOR by Sentex Sensing Technology Inc., Ridgefield, N.J.)

Danute R. Ventriglio, Ph.D, Chemical Engineer, is employed at DTNSRDC, on the technical staff of the Head of Ship Materials Engineering Department, Office for Research and Operations. She has been designated Radiation Safety Officer (RSO) by the DTNSRDC Commander, and has carried out the RSO duties since January 1983.

Dr. Ventriglio successfully completed the "X-Ray Radiation Safety Officer Training", Course No. A-491-0016, offered by the Navy Energy and Environmental Support Activity, Radiological Affairs Support Office (NEESA/RASO), Port Hueneme, California, on 23-29 January 1983. This course covered the nature and hazards of radiation, radiation protection, procedures and regulations, radiation measurement and monitoring, and other aspects pertaining to an effective radiation safety program and the duties of RSO. She also attended the "X-Ray Radiation Safety Course" offered at DTNSRDC by NEESA/RASO on 27-28 June 1983. In addition, a three-hour briefing, emphasizing the biological effects of ionizing radiation, was given to DTNSRDC employees by NEESA/RASO representative during a courtesy inspection visit on 3-5 November 1982. This training, as well as Dr. Ventriglio's academic background and professional experience qualified her for the duties of Radiation Safety Officer for the Center.

The primary duties of RSO include:

(1) Provide the DTNSRDC Commander and radiation equipment users with advice and assistance on all matters pertaining to radiation safety requirements, policy and procedures.

(2) Prepare, amend, and interpret rules and regulations pertaining to safe use and control of all sources of ionizing radiation.

(3) Maintain an up-to-date file of NRC, NAVFAC, BUMED, and other applicable directives; be informed of and ready to interpret pertinent instructions and regulations. Insure that the DTNSRDC radiation safety regulations are in accordance with current directives.

(4) Insure that proper radiation safety procedures have been prescribed and are being carried out.

(5) Insure periodic area monitoring and other required surveys by qualified personnel.

(6) Review and approve all requisitions for procurement of ionizing radiation equipment.

(7) Arrange for training and orientation courses for radiation workers and their supervisors.

(8) Provide coordination and liaison with the Radiation Health Program, administered by the Naval Medical Clinic (NHCl) of Annapolis, MD.

The Radiation Safety Officer will be the custodian of this Byproduct Material License.

DEPARTMENT OF THE NAVY
DAVID W. TAYLOR NAVAL SHIP RESEARCH
AND DEVELOPMENT CENTER
HEADQUARTERS
BETHESDA, MARYLAND 20084

ANNAPOLIS LABORATORY
ANNAPOLIS, MD 21402
CARDEROCK LABORATORY
BETHESDA, MD 20084

IN REPLY REFER TO:

9510
Code 2833DH/547
28 AUG 1985

From: Commander, David Taylor Naval Ship R&D Center
To: Commander, Naval Sea Systems Command Detachment, Radiological Affairs Support Office (Mr. W. Morris)

Subj: FORWARDING OF DTNSRDC INSTRUCTION ON SAFE USE OF RADIOACTIVE MATERIALS

Encl: (1) DTNSRDC INSTRUCTION 8070.1A, "Safe Use of Radioactive Materials and Other Sources of Ionizing Radiation," of 9 Nov 1978

1. The David Taylor Naval Ship Research and Development Center (DTNSRDC) is currently applying for an NRC By-Product Material License in order to purchase and use a gas chromatograph with a radioactive source. In order to further complete the application as requested by the NAVSEA/RASO Detachment, three copies of DTNSRDC Instruction 8070.1a are attached, enclosure (1). This Instruction is in the process of being revised. The revised version will be forwarded to NAVSEA/RASO Detachment upon its completion.

George A. Wacker

G. A. WACKER
By direction

ENCL(2)

DAVID W. TAYLOR NAVAL SHIP RESEARCH
AND DEVELOPMENT CENTER

HEADQUARTERS
BETHESDA, MARYLAND 20084

ANNAPOLIS LABORATORY
ANNAPOLIS, MD 21402

CARDEROCK LABORATORY
BETHESDA, MD 20084

IN REPLY REFER TO:

DTNSRDCINST 8070.1A
277:ML:drb
9 November 1978

DTNSRDC INSTRUCTION 8070.1A

From: Commander

Subj: Safe Use of Radioactive Materials and Other Sources of Ionizing Radiation

Ref: (a) Title 10, Code of Fed Regs, Parts 20, 30, 34, as amended (D)
(b) Title 49, Code of Fed Regs, Parts 171-178 (Department of Transportation), as amended
(c) Navy Department Radiation Health Protection Manual (NAVMED P-5055) 1973, as amended

Encl: (1) Form NDW-DTNSRDC 8070/1, Radioactive Materials Inventory
(2) Form NDW-DTNSRDC 8070/2, Radioactive Surveys
(3) Form NDW-DTNSRDC 8070/3, Transfer or Shipment of Radioactive Materials

1. Purpose. To outline procedures and responsibilities for safe measures regarding sources of ionizing radiation.

2. Coverage. This Instruction applies to all sources of ionizing radiation used in the work of DTNSRDC including natural and man-made radioactive materials and x-ray sources.

3. Restrictions. The following restrictions apply to the use of radioisotopes:

a. The permitted uses of radioisotopes are specifically defined in the current Nuclear Regulatory Commission License. No uses other than those so defined shall be made. Specifically prohibited are:

(1) the use of radioisotopes in human beings;
(2) the use of additives to human ingesta or cosmetics;
(3) the use for the treatment of human beings or animals.

b. No person under 18 years of age shall be permitted to participate in the use of radioisotopes, or to incur exposure to radiation from these materials through any assigned duty.

4. General Responsibilities. The overall responsibility for the safety of personnel dealing with sources of ionizing radiation rests with the Commander, who acts on the advice of the Radiological Safety Officer. The Radioisotopes Committee bears the responsibility for establishing and implementing controls over the use of radioisotopes. The Civilian Personnel

Encl(1)

Department and the Radiological Safety Officer have the responsibilities described below. The responsibility for enforcing safety regulations pertaining to sources of ionizing radiation rests with the line supervisors of those using the source of radiation.

5. Detailed Responsibilites

a. Individual Employees. The basic responsibility for safe actions in dealing with sources of ionizing radiation rests with the individual. Persons working with radioisotopes shall stay informed on the specific locations and physical state of all radioactive materials within their care. Before any person moves radioactive material from one working space to another or from one building to another, he shall notify the DTNSRDC Radiochemist, who shall provide whatever assistance or monitoring he considers necessary. Orders for radioactive materials, or instruments or devices containing radioactive materials, shall be routed through the Radiological Safety Officer for approval.

b Supervisors. It shall be the responsibility of supervisors of work programs involving sources of ionizing radiation to:

(1) Familiarize themselves and comply with the provisions of this Instruction and pertinent referenced directives.

(2) Be alert to bring to the attention of the Radiological Safety Officer any circumstances that threaten actual or apparent failure to achieve full radiological safety in DTNSRDC.

(3) Insure that personnel assigned to tasks involving sources of ionizing radiation have completed appropriate radiological safety training courses.

(4) Include any special provisions for radioactive materials in disaster bills they prepare.

(5) Have all areas used for operation with or storage of sources of ionizing radiation suitably enclosed to prevent unauthorized access.

(6) Insure proper posting and labeling of all buildings, areas, and containers in accordance with paragraphs 20.203, 20.204, and 20.206(c) of reference (a).

(7) Insure that all orders for radioactive materials are routed via the Radiological Safety Officer for approval prior to submission to the Supply Department.

(8) Notify the Radiochemist when transfers or shipments of radioactive materials are planned.

c. Project Engineers. Project Engineers assigned to investigations that involve handling of radioactive materials shall insure that preliminary planning takes into account the hazards involved, and that approval of the Radioisotopes Committee is obtained prior to procurement of radioisotopes and the initiation of actual project work. Detailed and written operating procedures and safety instructions shall be prepared for each proposed use of radioactive materials. These procedures and instructions must conform to the policies of and be approved by the Radioisotopes Committee. They should also be a part of the detailed training provided to all workers in the proprosed program. Prior to initiation of work, detailed plans must be approved by the Radiological Safety Officer. When it is necessary that a contractor be employed to conduct on-site radiography of materials with radioactive sources, project engineers must insure that the following actions are taken:

(1) A copy of the contractor's license to perform the radiography must be sent to the Radiological Safety Officer prior to bringing the source onto the grounds.

(2) The Radiological Safety Officer should be consulted as to the site for the radiographic work, and the area must be posted properly and roped off by the contractor to prevent overexposure of DTNSRDC employees.

(3) The Radiological Safety Officer should be notified of the schedule of radiographic operations so that the perimeter of the site may be monitored.

(4) Project engineers responsible for the procurement of equipment emitting ionizing radiation, such as x-ray diffraction units, x-ray radiographic equipment, electron microscopes, electron probe microanalyzers, etc., should obtain information from the manufacturer as to the x-ray hazards. Such information should be conveyed to the Radiological Safety Officer for review before procurement. After the equipment has been installed and operating, the Radiological Safety Officer shall be notified of the location of the equipment. The equipment will then be monitored while operating to determine if any hazards due to ionizing radiation exist. Any hazardous situation will be brought to the attention of the Project Engineer so that the manufacturer may be enjoined to correct the condition.

d. Supply Department. Review procurement requests designated radioactive materials to insure that the order has been approved by the Radiological Safety Officer and that the DTNSRDC Nuclear Regulatory Commission License number has been affixed. Notify, promptly, DTNSRDC Radiochemist when radioactive shipments are received. After monitoring of the shipment, deliver it to the use or storage area designated by the Radiochemist. Prepare and ship radioactive equipment and material in accordance with specifications supplied by the Radiochemist and after approval by the Radiological Safety Officer.

e. Radiochemist. The Radiochemist shall be a suitably qualified individual appointed by the Chairman of the Radioisotopes Committee. He shall:

(1) Review all requests and orders for radioactive material prior to approval by Radiological Safety Officer.

(2) Make semiannual inventories of radioactive material on form NDW-DTNSRDC 8070/1, enclosure (1), as directed by the Radiological Safety Officer. Send copies to the Security Officer, USNA Fire Department, or Carderock Fire Branch and the Radiological Safety Officer; conduct monthly sight-checks of radioactive materials. (R

(3) Have responsibility for safe storage of radioactive materials in storage areas designated as suitable for radioactive materials and as approved by the Radioisotopes Committee. (R

(4) Insure that all shipments of radioactive material meet the regulations of reference (b).

(5) Report any area where a radioactive accident has occurred to the Radiological Safety Officer and assist in action to limit the spread of contamination, monitoring of personnel, and decontamination.

(6) Provide monitoring services as directed by the Radiological Safety Officer; provide copy of results on NDW-DTNSRDC 8070/2, enclosure (2), to the Safety Manager. (R

(7) When notified of the move of inventoried radioisotopes from one area to another, or off-Laboratory shipment, insure that the information is recorded on Form NDW-DTNSRDC 8070/3, enclosure (3), and that copies are forwarded to both the Radiological Safety Officer and the Security Officer.

f. Civilian Personnel Department. The Employee Development Office will conduct a Radiological Safety Indoctrination Program for those personnel designated by the Radioisotopes Committee as being involved with radiological work or safety, and record successful completion of such training. This program shall incorporate the referenced materials and related sources, dealing with Radiation Safety and Principles of Radiation and Contamination Control.

g. Safety and Health Office. The Safety Manager will issue and receive film badges and have them evaluated by a qualified laboratory; file monthly, quarterly and annual reports of cumulative dose on form NAVMED 6470/1 (5-70), Exposure to Ionizing Radiation, with BUMED Code 74; and perform the following additional functions: (A

(1) Establish and maintain a schedule for periodic medical and physical examinations for all employees subject to exposure.

(2) Secure any area in which personnel may be exposed due to accidents or during the transportation of radioactive materials from one location to another.

h. Security Officer

(1) Close off areas determined by Radiological Safety Officer as constituting a hazard, and prevent access to such areas by other than authorized personnel until decontamination has been effected and the area declared safe.

(2) Maintain a wall map in the Fire Branch showing specifically all areas of DTNSRDC, at Annapolis or Carderock, where radioactive material is being used or stored, and inform any outside assistance of the presence and location of radiation hazards.

(3) Arrange with the Civilian Personnel Department for training of personnel in the use of firefighting equipment in radiation areas and the radiological hazards which may be anticipated.

i. Radioisotopes Committee

(1) The Radioisotopes Committee is a stipulation for licensees of the Nuclear Reguatory Commission and required by reference (c). (R

(2) Membership. The Radioisotopes Committee shall be composed of seven or more members appointed by the Commander, which will include the following personnel:

(a) The Radiological Safety Officer.

(b) The Radiochemist.

(c) The Safety Managers (Annapolis and/or Carderock).

(d) The Radiation Health Officer (M.D. or Radiologist).

(e) Three or more Technical Department or Division Heads. (While there are no prerequisites for qualification for this committee membership, the appointed technical personnel would be more efficient in carrying out their duties if their technical background included training or experience in radiological health, radiation chemistry, or nuclear engineering.)

(f) Chairman, to be selected by the Commander from one of the above members.

(3) Function. The Radioisotopes Committee reviews and approves, in advance of procurement of radioisotopes, proposals for use of the material to assure that facilities and qualified personnel are available for safe handling of isotopes, and that the proposed use is safe.

(4) Specific Duties of the Radioisotopes Committee are:

(a) From the standpoint of radiological safety, to review and approve, in writing, new programs requiring use of radioisotopes.

(b) To advise the Commander of potential radiation hazards.

(c) To approve locations of radiation areas from the standpoint of radiation hazards.

(d) To serve as a reviewing committee for accidents involving sources of ionizing radiation.

(e) To supply the Civilian Personnel Department with names of the personnel requiring Radiological Safety Indoctrination and to review periodically the quality of the training program.

j. The Radiological Safety Officer (appointed by the Commander) shall carry out, on a continuing basis, the duties outlined below, and such other duties as may be prescribed in applicable directives.

(1) Advise and assist Center personnel on radiological safety problems. Maintain an up-to-date file of NRC, NAVFAC, BUMED, and other applicable directives; be informed of and ready to interpret pertinent directives. Insure that DTNSRDC Radiological Safety Regulations are in accordance with current directives. (R

(2) Review, from the standpoint of radiological safety, the detail of each proposed use of radioisotopes at DTNSRDC and make recommendations concerning the safety requirements of such proposed use to the Technical Department involved and to the Radioisotopes Committee.

(3) Insure that proper radiological safety procedures have been prescribed and are being carried out; report infractions immediately to the supervisor of the person(s) involved; insure periodic area monitoring and other required testing.

(4) Review and approve all requisitions for procurement of radioactive material; and all job orders and requisitions for the disposal of radioactive materials.

(5) Maintain records of receipt, disposal and inventory of all radioactive materials at DTNSRDC and of unusual incidents such as an overexposure, spill or loss of radioactive material. (R

(6) Prepare, amend, and interpret rules and regulations pertaining to the safe use and control of all sources of ionizing radiation.

(7) From the standpoint of radiological safety, review and approve, in writing, new procurements and uses of equipment which may be the sources of ionizing radiation, other than radioisotopes. See paragraph 5.c. (4) for details.

k. Medical Officer. In accordance with Chapter 1, reference (c), (A a Radiation Health Officer qualified in radiological protective measures is assigned by the Naval Hospital, Annapolis, Maryland as advisor to the Radiological Safety Officer and Radioisotopes Committee.

6. Initial Action in Case of Emergency. In case of a spill, explosion, or other uncontrolled spread of radioactive material, the first person discovering the accident shall announce audibly and clearly the presence of the radiological hazard to all persons in the immediate area. He shall secure the immediate assistance of the first person or persons available to help in isolating the scene of the accident; he shall detain those personnel possibly contaminated; he shall keep others away, and shall immediately contact one or more of the following: Radiological Safety Officer, DTNSRDC Radiochemist, or DTNSRDC Annapolis or Carderock Safety Manager. Outside of normal working hours, the Duty Officer shall be notified.

7. Subsequent Action in Case of Emergency. The Radiological Safety Officer, the Safety Manager, DTNSRDC Radiochemist, or the Duty Officer (whoever is first on the scene of the accident) shall arrange for immediate decontamination of personnel involved. In case of injury or massive overexposure to radiation, he shall call the Radiation Health Officer at the USNA Naval Hospital, or the designated Radiation Health Officer at Carderock. After provision has been made for care of the injured, he shall notify the supervisor having cognizance over the area where the accident occurred. In addition, he shall see to it that the contaminated area is roped off as soon as possible and plainly marked. The extent of the restricted area shall be determined from available monitor data or from knowledge of the circumstances of the accident. The supervisor having cognizance over the area shall be responsible for clean-up operations under the general direction of the Radiological Safety Officer.

8. Reporting Circumstances of an Accident. The Radiological Safety Officer, after thorough investigation of the circumstances of an accident involving radioactive material, shall make a prompt report on the matter directly to the Commander with a copy to the Radioisotopes Committee Chairman. No information on such accidents shall be released to the press or other public or private official without first obtaining the approval of the Commander.

9. Medical Examination. Employees being considered for assignment to work involving sources of ionizing radiation shall be required to meet minimum physical requirements and submit to medical pre-examinations. Persons working with sources of ionizing radiation shall be required to submit to periodic follow-up examinations or such special examinations as shall be prescribed. All procedures and examinations shall be in accordance with Chapter 2, reference (c), as may be modified by the Radiation Health Officer.

10. Permissible Exposure. The safety instruction for specific uses of sources of ionizing radiation shall be based on the maximum permissible

exposure given in Chapter 4 of reference (c). Operating procedures and safety instruction shall give special attention to preventing an individual's intake of radioisotopes through wounds, inhalation, or ingestion. (R

11. Personal Monitoring Devices

a. Film badges shall be worn at all times in those areas where ionizing radiation is present, even by those who have no obvious contact with the sources of radiation. Special film badges or self-reading pocket dosimeters may be worn in addition to the regular film badge, if advisable.

b. Film badges and other personnel monitoring devices will be issued and processed in accordance with instructions of the Safety Manager. The film badge must be WORN by the individual to whom it was issued during the period that he is working in a radioactive area or an area which is considered to be radioactive. The film badge must be placed in a rack outside the radioactive area during nonworking hours. Since film badges are used to provide a permanent record of the exposure of personnel to ionizing radiation, penalties will be applied to any individual who knowingly subjects his film badge to greater radiation than that to which it would be exposed by wearing it on his person. If an excessive exposure is reported, action shall be taken to remove the individual concerned from further exposure, and the supervisor in charge shall explain the circumstances in a written statement to the Radiological Safety Officer via the Safety Manager.

J. R. WALKER
By direction

Distribution List
Technical Director
Officer in Charge, Annapolis
Officer in Charge, Carderock
Staff and Support Directors
Assistant Technical Director
Department Heads
Office Heads
Division Heads
Branch Heads
Detachments
MTC (Code 4223.3)
PMA (Code 4222.6)
IAM&AW (Code 4232.2)

RADIOACTIVE MATERIALS INVENTORY

DTNSRDCINST 8070.1A

NDW-DTNSRDC 8070/1 (Rev. 5-78)

9 November 1978

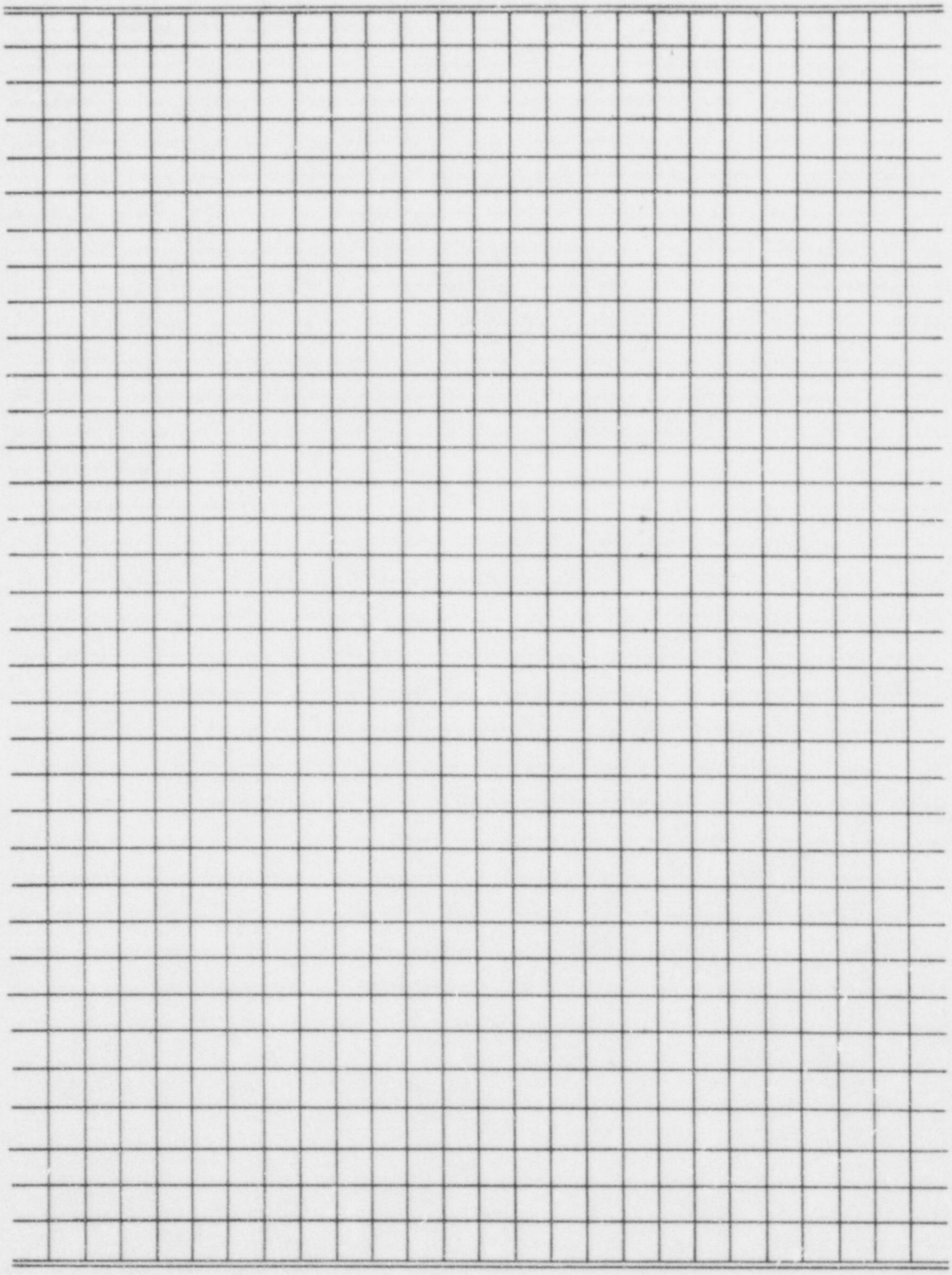
ITEM NO.	ISOTOPE	LOCATION	WEIGHT OR ACTIVITY	DATE OF ACTIVITY DETERMINATION	USE	DISPOSAL ACTION	DISPOSAL DATE

Enclosure (1)

RADIOACTIVE SURVEYS

NDW-DTNSRDC 8070/2 (Rev. 5-78)

AREA _____ DATE _____



Enclosure (2)

TRANSFER OR SHIPMENT OF RADIOACTIVE MATERIALS

NDW-DTNSRDC 8070/3 (Rev. 5-78)

TYPE OF ACTIVITY _____ AMOUNT _____

PREVIOUS LOCATION _____

NEW LOCATION _____

PRESENT CUSTODIAN _____

DESCRIPTION OF SOURCE _____

SIGNED: _____

DEPARTMENT OF THE NAVY
DAVID W. TAYLOR NAVAL SHIP RESEARCH
AND DEVELOPMENT CENTER
HEADQUARTERS
BETHESDA, MARYLAND 20084

ANNAPOLIS LABORATORY
ANNAPOLIS, MD 21402
CARDEROCK LABORATORY
BETHESDA, MD 20084

IN REPLY REFER TO:

9510
Code 2833DH/547
28 AUG 1985

From: Commander, David Taylor Naval Ship R&D Center
To: Commander, Naval Sea Systems Command Detachment, Radiological Affairs Support Office (Mr. W. Morris)

Subj: FORWARDING OF DTNSRDC INSTRUCTION ON SAFE USE OF RADIOACTIVE MATERIALS

Encl: (1) DTNSRDC INSTRUCTION 8070.1A, "Safe Use of Radioactive Materials and Other Sources of Ionizing Radiation," of 9 Nov 1978

1. The David Taylor Naval Ship Research and Development Center (DTNSRDC) is currently applying for an NRC By-Product Material License in order to purchase and use a gas chromatograph with a radioactive source. In order to further complete the application as requested by the NAVSEA/RASO Detachment, three copies of DTNSRDC Instruction 8070.1a are attached, enclosure (1). This Instruction is in the process of being revised. The revised version will be forwarded to NAVSEA/RASO Detachment upon its completion.

George A. Wacker

G. A. WACKER
By direction

DAVID W. TAYLOR NAVAL SHIP RESEARCH
AND DEVELOPMENT CENTER

HEADQUARTERS
BETHESDA, MARYLAND 20084

ANNAPOLIS LABORATORY
ANNAPOLIS, MD 21402

CARDEROCK LABORATORY
BETHESDA, MD 20084

IN REPLY REFER TO:

DTNSRDCINST 8070.1A
277:ML:drb
9 November 1978

DTNSRDC INSTRUCTION 8070.1A

From: Commander

Subj: Safe Use of Radioactive Materials and Other Sources of Ionizing Radiation

Ref: (a) Title 10, Code of Fed Regs, Parts 20, 30, 34, as amended (D)
(b) Title 49, Code of Fed Regs, Parts 171-178 (Department of Transportation), as amended
(c) Navy Department Radiation Health Protection Manual (NAVMED P-5055) 1973, as amended

Encl: (1) Form NDW-DTNSRDC 8070/1, Radioactive Materials Inventory
(2) Form NDW-DTNSRDC 8070/2, Radioactive Surveys
(3) Form NDW-DTNSRDC 8070/3, Transfer or Shipment of Radioactive Materials

1. Purpose. To outline procedures and responsibilities for safe measures regarding sources of ionizing radiation.

2. Coverage. This Instruction applies to all sources of ionizing radiation used in the work of DTNSRDC including natural and man-made radioactive materials and x-ray sources.

3. Restrictions. The following restrictions apply to the use of radioisotopes:

a. The permitted uses of radioisotopes are specifically defined in the current Nuclear Regulatory Commission License. No uses other than those so defined shall be made. Specifically prohibited are:

(1) the use of radioisotopes in human beings;
(2) the use of additives to human ingesta or cosmetics;
(3) the use for the treatment of human beings or animals.

b. No person under 18 years of age shall be permitted to participate in the use of radioisotopes, or to incur exposure to radiation from these materials through any assigned duty.

4. General Responsibilities. The overall responsibility for the safety of personnel dealing with sources of ionizing radiation rests with the Commander, who acts on the advice of the Radiological Safety Officer. The Radioisotopes Committee bears the responsibility for establishing and implementing controls over the use of radioisotopes. The Civilian Personnel

Encl (1)

Department and the Radiological Safety Officer have the responsibilities described below. The responsibility for enforcing safety regulations pertaining to sources of ionizing radiation rests with the line supervisors of those using the source of radiation.

5. Detailed Responsibilites

a. Individual Employees. The basic responsibility for safe actions in dealing with sources of ionizing radiation rests with the individual. Persons working with radioisotopes shall stay informed on the specific locations and physical state of all radioactive materials within their care. Before any person moves radioactive material from one working space to another or from one building to another, he shall notify the DTNSRDC Radiochemist, who shall provide whatever assistance or monitoring he considers necessary. Orders for radioactive materials, or instruments or devices containing radioactive materials, shall be routed through the Radiological Safety Officer for approval.

b Supervisors. It shall be the responsibility of supervisors of work programs involving sources of ionizing radiation to:

(1) Familiarize themselves and comply with the provisions of this Instruction and pertinent referenced directives.

(2) Be alert to bring to the attention of the Radiological Safety Officer any circumstances that threaten actual or apparent failure to achieve full radiological safety in DTNSRDC.

(3) Insure that personnel assigned to tasks involving sources of ionizing radiation have completed appropriate radiological safety training courses.

(4) Include any special provisions for radioactive materials in disaster bills they prepare.

(5) Have all areas used for operation with or storage of sources of ionizing radiation suitably enclosed to prevent unauthorized access.

(6) Insure proper posting and labeling of all buildings, areas, and containers in accordance with paragraphs 20.203, 20.204, and 20.206(c) of reference (a).

(7) Insure that all orders for radioactive materials are routed via the Radiological Safety Officer for approval prior to submission to the Supply Department.

(8) Notify the Radiochemist when transfers or shipments of radioactive materials are planned.

c. Project Engineers. Project Engineers assigned to investigations that involve handling of radioactive materials shall insure that preliminary planning takes into account the hazards involved, and that approval of the Radioisotopes Committee is obtained prior to procurement of radioisotopes and the initiation of actual project work. Detailed and written operating procedures and safety instructions shall be prepared for each proposed use of radioactive materials. These procedures and instructions must conform to the policies of and be approved by the Radioisotopes Committee. They should also be a part of the detailed training provided to all workers in the proprosed program. Prior to initiation of work, detailed plans must be approved by the Radiological Safety Officer. When it is necessary that a contractor be employed to conduct on-site radiography of materials with radioactive sources, project engineers must insure that the following actions are taken:

(1) A copy of the contractor's license to perform the radiography must be sent to the Radiological Safety Officer prior to bringing the source onto the grounds.

(2) The Radiological Safety Officer should be consulted as to the site for the radiographic work, and the area must be posted properly and roped off by the contractor to prevent overexposure of DTNSRDC employees.

(3) The Radiological Safety Officer should be notified of the schedule of radiographic operations so that the perimeter of the site may be monitored.

(4) Project engineers responsible for the procurement of equipment emitting ionizing radiation, such as x-ray diffraction units, x-ray radiographic equipment, electron microscopes, electron probe microanalyzers, etc., should obtain information from the manufacturer as to the x-ray hazards. Such information should be conveyed to the Radiological Safety Officer for review before procurement. After the equipment has been installed and operating, the Radiological Safety Officer shall be notified of the location of the equipment. The equipment will then be monitored while operating to determine if any hazards due to ionizing radiation exist. Any hazardous situation will be brought to the attention of the Project Engineer so that the manufacturer may be enjoined to correct the condition.

d. Supply Department. Review procurement requests designated radioactive materials to insure that the order has been approved by the Radiological Safety Officer and that the DTNSRDC Nuclear Regulatory Commission License number has been affixed. Notify, promptly, DTNSRDC Radiochemist when radioactive shipments are received. After monitoring of the shipment, deliver it to the use or storage area designated by the Radiochemist. Prepare and ship radioactive equipment and material in accordance with specifications supplied by the Radiochemist and after approval by the Radiological Safety Officer.

e. Radiochemist. The Radiochemist shall be a suitably qualified individual appointed by the Chairman of the Radioisotopes Committee. He shall:

(1) Review all requests and orders for radioactive material prior to approval by Radiological Safety Officer.

(2) Make semiannual inventories of radioactive material on form NDW-DTNSRDC 8070/1, enclosure (1), as directed by the Radiological Safety Officer. Send copies to the Security Officer, USNA Fire Department, or Carderock Fire Branch and the Radiological Safety Officer; conduct monthly sight-checks of radioactive materials. (R

(3) Have responsibility for safe storage of radioactive materials in storage areas designated as suitable for radioactive materials and as approved by the Radioisotopes Committee. (R

(4) Insure that all shipments of radioactive material meet the regulations of reference (b).

(5) Report any area where a radioactive accident has occurred to the Radiological Safety Officer and assist in action to limit the spread of contamination, monitoring of personnel, and decontamination.

(6) Provide monitoring services as directed by the Radiological Safety Officer; provide copy of results on NDW-DTNSRDC 8070/2, enclosure (2), to the Safety Manager. (R

(7) When notified of the move of inventoried radioisotopes from one area to another, or off-Laboratory shipment, insure that the information is recorded on Form NDW-DTNSRDC 8070/3, enclosure (3), and that copies are forwarded to both the Radiological Safety Officer and the Security Officer.

f. Civilian Personnel Department. The Employee Development Office will conduct a Radiological Safety Indoctrination Program for those personnel designated by the Radioisotopes Committee as being involved with radiological work or safety, and record successful completion of such training. This program shall incorporate the referenced materials and related sources, dealing with Radiation Safety and Principles of Radiation and Contamination Control.

g. Safety and Health Office. The Safety Manager will issue and receive film badges and have them evaluated by a qualified laboratory; file monthly, quarterly and annual reports of cumulative dose on form NAVMED 6470/1 (5-70), Exposure to Ionizing Radiation, with BUMED Code 74; and perform the following additional functions: (A

(1) Establish and maintain a schedule for periodic medical and physical examinations for all employees subject to exposure.

(2) Secure any area in which personnel may be exposed due to accidents or during the transportation of radioactive materials from one location to another.

h. Security Officer

(1) Close off areas determined by Radiological Safety Officer as constituting a hazard, and prevent access to such areas by other than authorized personnel until decontamination has been effected and the area declared safe.

(2) Maintain a wall map in the Fire Branch showing specifically all areas of DTNSRDC, at Annapolis or Carderock, where radioactive material is being used or stored, and inform any outside assistance of the presence and location of radiation hazards.

(3) Arrange with the Civilian Personnel Department for training of personnel in the use of firefighting equipment in radiation areas and the radiological hazards which may be anticipated.

i. Radioisotopes Committee

(1) The Radioisotopes Committee is a stipulation for licensees of the Nuclear Reguatory Commission and required by reference (c). (R

(2) Membership. The Radioisotopes Committee shall be composed of seven or more members appointed by the Commander, which will include the following personnel:

(a) The Radiological Safety Officer.

(b) The Radiochemist.

(c) The Safety Managers (Annapolis and/or Carderock).

(d) The Radiation Health Officer (M.D. or Radiologist).

(e) Three or more Technical Department or Division Heads. (While there are no prerequisites for qualification for this committee membership, the appointed technical personnel would be more efficient in carrying out their duties if their technical background included training or experience in radiological health, radiation chemistry, or nuclear engineering.)

(f) Chairman, to be selected by the Commander from one of the above members.

(3) Function. The Radioisotopes Committee reviews and approves, in advance of procurement of radioisotopes, proposals for use of the material to assure that facilities and qualified personnel are available for safe handling of isotopes, and that the proposed use is safe.

(4) Specific Duties of the Radioisotopes Committee are:

(a) From the standpoint of radiological safety, to review and approve, in writing, new programs requiring use of radioisotopes.

(b) To advise the Commander of potential radiation hazards.

(c) To approve locations of radiation areas from the standpoint of radiation hazards.

(d) To serve as a reviewing committee for accidents involving sources of ionizing radiation.

(e) To supply the Civilian Personnel Department with names of the personnel requiring Radiological Safety Indoctrination and to review periodically the quality of the training program.

j. The Radiological Safety Officer (appointed by the Commander) shall carry out, on a continuing basis, the duties outlined below, and such other duties as may be prescribed in applicable directives.

(1) Advise and assist Center personnel on radiological safety problems. Maintain an up-to-date file of NRC, NAVFAC, BUMED, and other applicable directives; be informed of and ready to interpret pertinent directives. Insure that DTNSRDC Radiological Safety Regulations are in accordance with current directives. (R

(2) Review, from the standpoint of radiological safety, the detail of each proposed use of radioisotopes at DTNSRDC and make recommendations concerning the safety requirements of such proposed use to the Technical Department involved and to the Radioisotopes Committee.

(3) Insure that proper radiological safety procedures have been prescribed and are being carried out; report infractions immediately to the supervisor of the person(s) involved; insure periodic area monitoring and other required testing.

(4) Review and approve all requisitions for procurement of radioactive material; and all job orders and requisitions for the disposal of radioactive materials.

(5) Maintain records of receipt, disposal and inventory of all radioactive materials at DTNSRDC and of unusual incidents such as an overexposure, spill or loss of radioactive material. (R

(6) Prepare, amend, and interpret rules and regulations pertaining to the safe use and control of all sources of ionizing radiation.

(7) From the standpoint of radiological safety, review and approve, in writing, new procurements and uses of equipment which may be the sources of ionizing radiation, other than radioisotopes. See paragraph 5.c. (4) for details.

k. Medical Officer. In accordance with Chapter 1, reference (c), a Radiation Health Officer qualified in radiological protective measures is assigned by the Naval Hospital, Annapolis, Maryland as advisor to the Radiological Safety Officer and Radioisotopes Committee. (A

6. Initial Action in Case of Emergency. In case of a spill, explosion, or other uncontrolled spread of radioactive material, the first person discovering the accident shall announce audibly and clearly the presence of the radiological hazard to all persons in the immediate area. He shall secure the immediate assistance of the first person or persons available to help in isolating the scene of the accident; he shall detain those personnel possibly contaminated; he shall keep others away, and shall immediately contact one or more of the following: Radiological Safety Officer, DTNSRDC Radiochemist, or DTNSRDC Annapolis or Carderock Safety Manager. Outside of normal working hours, the Duty Officer shall be notified.

7. Subsequent Action in Case of Emergency. The Radiological Safety Officer, the Safety Manager, DTNSRDC Radiochemist, or the Duty Officer (whoever is first on the scene of the accident) shall arrange for immediate decontamination of personnel involved. In case of injury or massive overexposure to radiation, he shall call the Radiation Health Officer at the USNA Naval Hospital, or the designated Radiation Health Officer at Carderock. After provision has been made for care of the injured, he shall notify the supervisor having cognizance over the area where the accident occurred. In addition, he shall see to it that the contaminated area is roped off as soon as possible and plainly marked. The extent of the restricted area shall be determined from available monitor data or from knowledge of the circumstances of the accident. The supervisor having cognizance over the area shall be responsible for clean-up operations under the general direction of the Radiological Safety Officer.

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J. R. WALKER
By direction

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IAM&AW (Code 4232.2)

RADIOACTIVE MATERIALS INVENTORY

DTNSRDCINST 8070.1A

NDW-DTNSRDC 8070/1 (Rev. 5-78)

9 November 1978

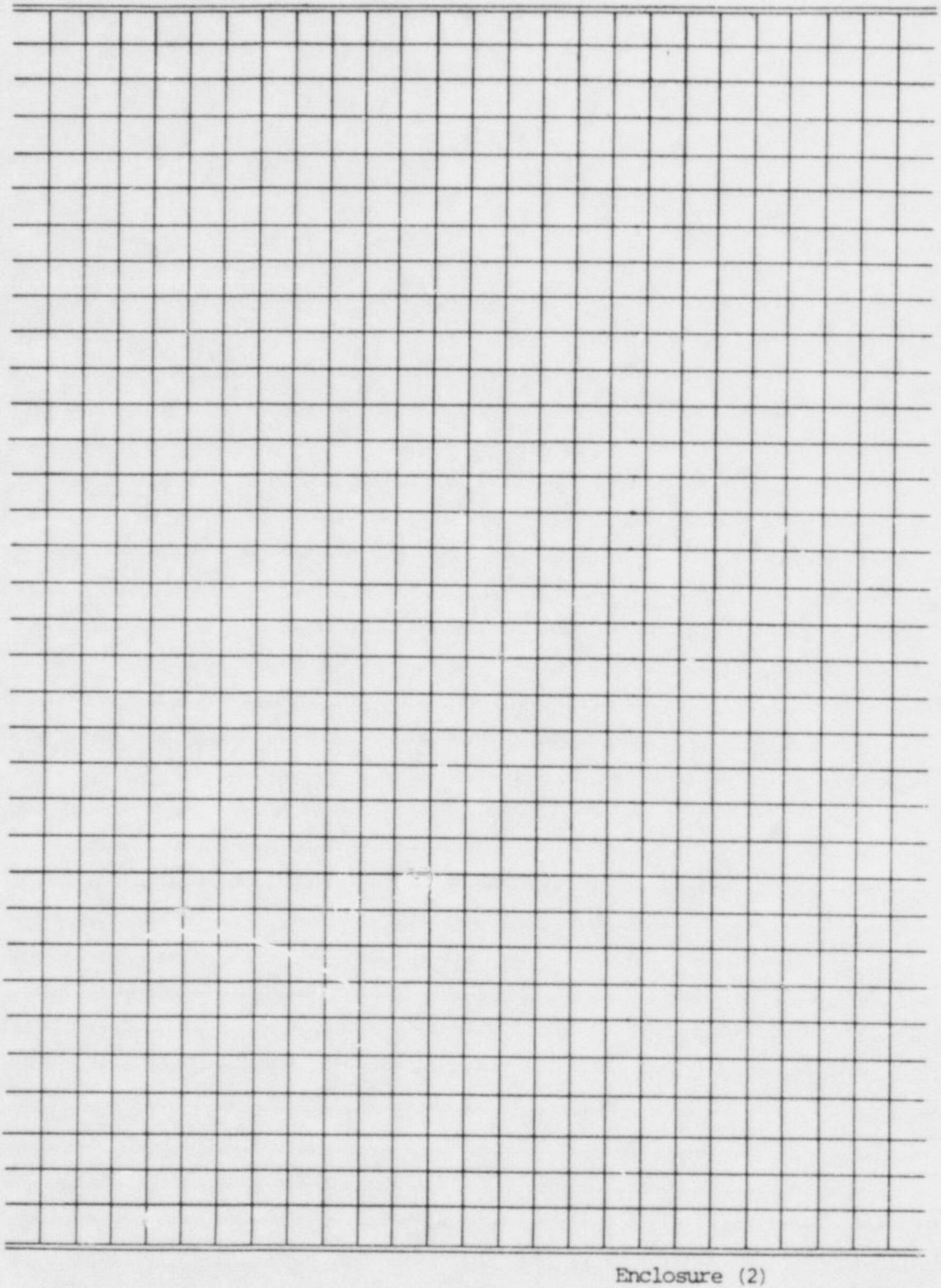
ITEM NO.	ISOTOPE	LOCATION	WEIGHT OR ACTIVITY	DATE OF ACTIVITY DETERMINATION	USE	DISPOSAL ACTION	DISPOSAL DATE

Enclosure (1)

RADIOACTIVE SURVEYS

NDW-DTNSRDC 8070/2 (Rev. 5-78)

AREA _____ DATE _____



Enclosure (2)

TRANSFER OR SHIPMENT OF RADIOACTIVE MATERIALS

NDW-DTNSRDC 8070/3 (Rev. 5-78)

TYPE OF ACTIVITY _____ AMOUNT _____

PREVIOUS LOCATION _____

NEW LOCATION _____

PRESENT CUSTODIAN _____

DESCRIPTION OF SOURCE _____

SIGNED: _____

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 | 1

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
P00001	4/22/85		

6. ISSUED BY Supply Officer CODE N61533
David W. Taylor, Naval Ship R&D Center
Attention: Code 5326.2, BRUCE CUNNINGHAM
Annapolis Laboratory
Annapolis, MD 21402

7. ADMINISTERED BY (If other than Item 6) CODE N61533
David W. Taylor, Naval Ship R&D Center
Receipt Control, Code 5333
Annapolis Laboratory
Annapolis, MD 21402
Phone: Area Code 301-267-3753

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)
SENTEX SENSING TECHNOLGY , INC.
DONNA IANUZZI
553 BROAD AVENUE
RIDGEFIELD , NJ 07657

9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO.
X N61533-85-M-2280

10B. DATED (SEE ITEM 13)
2 APRIL 85

CODE FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
AA 17X4912.3722 000 77777 0 00167 2E 00167 45000 N/A

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

☑	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
X	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: BY MUTUAL AGREEMENT
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not X is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

THE ABOVE NUMBERED PURCHASE ORDER IS HEREBY MODIFED AS FOLLOWS:

PAGE 2 OF 4 , ITEM #3, DELETE BUILT IN CHARGER
PAGE 2 OF 4 , ITEM #6, DELETE ITEM #6
PAGE 2 OF 4 , ITEM #7, DELETE ITEM #7
PAGE 2 OF 4 , ITEM #8, DELETE THE WORDS BYE USE OF A SWITCHING DEVICE.
ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

"The additional general provisions, clauses 17-20 of DD1155r are hereby incorporated by reference herein. All other terms and conditions remain unchanged. The contractor is requested to acknowledge receipt by execution of Block 15A-15C below and return to address shown in block 6

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
Louis A. Passante V.P. Marketing & Sales	FAY C. CLAGGETT

15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
Sentex Sensing Tech., Inc. (Signature of person authorized to sign)	4/25/85	BY Fay C. Claggett (Signature of Contracting Officer)	4-29-85

NSN 7540-01-152-8070
PREVIOUS EDITION UNUSABLE

30-105

ORIGINAL

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

Enclosure (1)

CHECKED BOX APPLIES | [X] ORDER FOR SUPPLIES OR SERVICES | [ ] REQUEST FOR QUOTATIONS NO. | PAGE 1 OF 01 / 4

RETURN ____ COPY(IES) OF THIS QUOTE BY
(THIS IS NOT AN ORDER. See DD Form 1155r)

5. CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REG 1: DO C9

1. CONTRACT/PURCHASE ORDER NO.	2. DELIVERY ORDER NO.	3. DATE OF ORDER	4. REQUISITION/PURCH REQUEST NO.
N6153385N2280		2-APR-1985	See blk 17

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than 6)	CODE	8. DELIVERY FOB
David Taylor Naval Ship R&D Center Annapolis, MD 21402-1198	N61533	David Taylor Naval Ship R&D Center Receipt Control, Code 5333 Annapolis, MD 21402 (301)267-2661	N61533	[ ] DESTINATION [X] OTHER (See Schedule if other)

9. CONTRACTOR/QUOTER	CODE	FACILITY CODE	10. DELIVERY TO FOB POINT BY	11. CHECK IF
NAME AND ADDRESS SENTEX SENSING TECHNOLOGY, INC. LOU PASSANTE 553 BROAD AVE. RIDGEFIELD, NJ 07657			See blk 17	[ ] SMALL BUSINESS [ ] MINORITY BUSINESS

12. DISCOUNT TERMS: NET30

13. MAIL INVOICES TO: Mail orig & 3 to blk 15

14. SHIP TO	CODE	15. PAYMENT WILL BE MADE BY	CODE	MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER
David Taylor Naval Ship R&D Center Receiving, Code 5342 Annapolis, MD 21402-1198	5342	David Taylor Naval Ship R&D Center Disbursing, Code 6041 Bethesda, MD 20084-5000	N00167	

16. TYPE OF ORDER

DELIVERY [ ] — This delivery order is subject to instructions contained on this side of form only and is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.

PURCHASE [X] — Reference your TELECON 4/2/85 furnish the following on terms specified herein, including, for U.S. purchases.

General Provisions of Purchase Order on DD Form 1155r (Except CLAUSE NO. 13 APPLIES ONLY IF THIS BOX [ ] IS CHECKED, and NO. 15 IF THIS BOX [ ] IS CHECKED), special provisions See attached spec/addt'l provisions, and delivery as indicated. ~~This purchase is negotiated under authority of 10 USC 2304(a)(13) or as specified in the schedule if within the U.S., its possessions or Puerto Rico; if otherwise, under 2304(a)(16).~~

[ ] If checked. Additional General Provisions apply; Supplier shall sign "Acceptance" on DD Form 1155r and return ____ copies.

17 ACCOUNTING AND APPROPRIATION DATA--ACCOUNTING CLASSIFICATION (REV. 7-65)

Item No.	Appropriation Symbol and Subhead	Obj. Class	Bureau Cont. No.	Sub allot.	Auth'n Acct'g Act'y	Trans. Type	Property Acct'g Act'y	Country	Cost Code	Amount
AA	17X4912372 2	000	77777	0	00167	2E	00167		45000	$12950.00

18 ITEM NO.	19 SCHEDULE OF SUPPLIES/SERVICES	20 QUANTITY ORDERED/ ACCEPTED*	21 UNIT	22 UNIT PRICE	23 AMOUNT
001	RECONFIRMING ORDER-DO NOT DUPLICATE!! (X050XRR01) Delivery Date 24-MAY-1985 PORTABLE GAS CHROMATOGRAPH, SELF CONTAINED-BATTERY OPERATED, SEE SPECIFICATION (*) FOR INTERNAL USE ONLY	1.0	EA	$12950.00	$12950.00

*If quantity accepted by the Government is same as quantity ordered, indicate by ✓ mark. If different, enter actual quantity accepted below quantity ordered and encircle.

24. UNITED STATES OF AMERICA
BY: Fay Taggett
CONTRACTING/ORDERING OFFICER BC

25. TOTAL $12950.00
29. DIFFERENCES

26. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED
(Date) (Signature of Authorized Government Representative)

27. SHIP NO. [ ] PARTIAL [ ] FINAL

28. D.O. VOUCHER NO.

30. INITIALS

31. PAYMENT [ ] COMPLETE [ ] PARTIAL [ ] FINAL

32. PAID BY

33. AMOUNT VERIFIED CORRECT FOR

34. CHECK NUMBER

35. BILL OF LADING NO.

36. I CERTIFY that this account is correct and proper for payment.
(Date) (Signature and Title of Certifying Officer)

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED	40. TOTAL CONTAINERS	41. S/R ACCOUNT NUMBER	42. S/R VOUCHER NO.

DD FORM 1 FEB 77 1155(8C) PREVIOUS EDITION IS OBSOLETE

Form Approved by Comptroller General, U.S., 27 May 66
Exception to SF 18 under $2500 Approved by Budget Bureau Oct. '66

S/N 0102-LF-011-3102

INTERNAL USE- 2-APR-1985 16:31:42.76 1 755 ********** 1

Enclosure (1)

Exception to SF 36
Approved by NARS 9/76

STANDARD FORM 36 JULY 1966 GENERAL SERVICES ADMINISTRATION FED PROC REG (41 CFR) 1-16.101	CONTINUATION SHEET	REF NO OF DOC BEING CONT'D N61533-85-V-2280	PAGE 2 / 4

NAME OF OFFEROR OR CONTRACTOR

SENTEX SENSING TECHNOLGY , INC.

ITEM NO	SUPPLIES / SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	5				

Specification for Gas Chromatograph Unit:

1. Must be portable and weigh not more than 55 lbs.
2. Must be self-contained and powered by rechargeable battery and incorporate carrier gas supply.
3. To have a built-in battery and charger.
4. To be capable of utilizing external carrier gas sources.
5. To contain an electron capture detector.
6. Nuclear Regulatory Commission license to be furnished for electron capture detector under manufacturer's license.
7. To contain supporting equipment necessary for operation and maintenance of gas chromatograph unit; supporting kit to include lecture bottles, calibration equipment, needles and syringes, septa and "O" rings, soap film flow meter, recharging gas regulator, wrenches, screwdriver, etc.
8. To be capable of operation on either 115 VAC or self-contained battery pack by use of a switching device.
9. To be capable of detection of sulfur hexafluoride (SF_6) in air concentrations of 1 to 1,000 parts per billion.

CLAUSES INCORPORATED BY REFERENCE (APR 1984)

This contract incorporates the following clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES:

A. Required Clauses

1. Orders over $2,500 (Supplies or Services)

52.222-04 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION - GENERAL (APR 1984)
52.222-36 AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS (APR 1984)

2. Orders over $10,000 (Supplies or Services)

52.215-01 EXAMINATION OF RECORDS BY COMPTROLLER GENERAL (APR 1984)
52.219-08 UTILIZATION OF SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS CONCERNS (APR 1984)
52.222-20 WALSH-HEALEY PUBLIC CONTRACTS ACT (APR 1984)
52.222-21 CERTIFICATION OF NONSEGREGATED FACILITIES (APR 1984)
52.222-35 AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS (APR 1984)

5. The following clause is applicable unless exempted by FAR 22.807(a) or (b)(2).

52.222-26 EQUAL OPPORTUNITY (APR 1984)

B. Required When Applicable

( ) 52.204-02 SECURITY REQUIREMENTS (APR 1984)
(XX) 52.210-05 NEW MATERIAL (APR 1984)
( ) 52.210-06 LISTING OF USED OR RECONDITIONED MATERIAL, RESIDUAL INVENTORY AND FORMER GOVERNMENT SURPLUS PROPERTY (APR 1984)
( ) 52.210-07 USED OR RECONDITIONED MATERIAL, RESIDUAL INVENTORY, AND FORMER GOVERNMENT SURPLUS PROPERTY (APR 1984)
( ) 52.212-04 LIQUIDATED DAMAGES - SUPPLIES, SERVICES, OR RESEARCH AND DEVELOPMENT (APR 1984)
( ) 52.212-07 RATED OR AUTHORIZED CONTROLLED MATERIAL ORDERS (APR 1984)
( ) 52.212-10 DELIVERY OF EXCESS QUANTITIES OF $100 OR LESS (APR 1984)
( ) 52.212-15 GOVERNMENT DELAY OF WORK (APR 1984)
( ) 52.219-06 NOTICE OF TOTAL SMALL BUSINESS SET-ASIDE (APR 1984)
( ) 52.223-03 HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (APR 1984)
( ) 52.224-01 PRIVACY ACT NOTIFICATION (APR 1984)
( ) 52.224-02 PRIVACY ACT (APR 1984)
( ) 52.225-03 BUY AMERICAN ACT—SUPPLIES (APR 1984)
( ) 52.225-10 DUTY-FREE ENTRY (APR 1984)
( ) 52.232-18 AVAILABILITY OF FUNDS (APR 1984)
( ) 52.237-02 PROTECTION OF GOVERNMENT BUILDINGS, EQUIPMENT, AND VEGETATION (APR 1984)
( ) 52.242-10 F.O.B. ORIGIN—GOVERNMENT BILLS OF LADING OR PREPAID POSTAGE (APR 1984)
( ) 52.242-11 F.O.B. ORIGIN—GOVERNMENT BILLS OF LADING OR INDICIA MAIL (APR 1984)
( ) 52.245-01 PROPERTY RECORDS (APR 1984)
( ) 52.245-02 GOVERNMENT PROPERTY (FIXED-PRICE CONTRACTS) (APR 1984)
( ) 52.245-04 GOVERNMENT-FURNISHED PROPERTY (SHORT FORM) (APR 1984)
( ) 52.245-19 GOVERNMENT PROPERTY FURNISHED "AS IS" (APR 1984)
( ) 52.246-01 CONTRACTOR INSPECTION REQUIREMENTS (APR 1984)
( ) 52.246-15 CERTIFICATE OF CONFORMANCE (APR 1984)
( ) 52.246-16 RESPONSIBILITY FOR SUPPLIES (APR 1984)
( ) 52.246-23 LIMITATION OF LIABILITY (APR 1984)
( ) 52.246-25 LIMITATION OF LIABILITY—SERVICES (APR 1984)
( ) 52.247-01 COMMERCIAL BILL OF LADING NOTATIONS (APR 1984)
( ) 52.247-29 F.O.B. ORIGIN (APR 1984)
( ) 52.247-30 F.O.B. ORIGIN, CONTRACTOR'S FACILITY (APR 1984)
( ) 52.247-31 F.O.B. ORIGIN, FREIGHT ALLOWED (APR 1984)
( ) 52.247-32 F.O.B. ORIGIN, FREIGHT PREPAID (APR 1984)
( ) 52.247-34 F.O.B. DESTINATION (APR 1984)
( ) 52.247-35 F.O.B. DESTINATION, WITHIN CONSIGNEE'S PREMISES (APR 1984)
( ) 52.247-48 F.O.B. DESTINATION—EVIDENCE OF SHIPMENT (APR 1984)
( ) 52.247-55 F.O.B. POINT FOR DELIVERY OF GOVERNMENT-FURNISHED PROPERTY (APR 1984)
( ) 52.247-60 GUARANTEED MAXIMUM SHIPPING WEIGHTS AND DIMENSIONS (APR 1984)
( ) 52.250-01 INDEMNIFICATION UNDER PUBLIC LAW 85-804 (APR 1984)
( ) 52.251-01 GOVERNMENT SUPPLY SOURCES (APR 1984)

II. DEPARTMENT OF DEFENSE FEDERAL ACQUISITION REGULATION SUPPLEMENT (48 CFR CHAPTER 2) CLAUSES

( ) 52.227-7013 RIGHTS IN TECHNICAL DATA AND COMPUTER SOFTWARE (MAY 1981)
( ) 52.208-7000 REQUIRED SOURCES FOR MINIATURE AND INSTRUMENT BALL BEARINGS (JUL 1971)
( ) 52.225-7009 PREFERENCE FOR CERTAIN DOMESTIC COMMODITIES (OCT 1980)
( ) 52.225-7011 PREFERENCE FOR DOMESTIC SPECIALTY METALS (MAJOR PROGRAMS) (OCT 1980)
( ) 52.225-7012 PREFERENCE FOR DOMESTIC SPECIALTY METALS (OCT 1980)
( ) 52.232-7000 INVOICES
( ) 52.246-7000 MATERIAL INSPECTION AND RECEIVING REPORT (DEC 1969)

III. DEFENSE ACQUISITION REGULATION

A. Required Clauses

1. Orders under $2,500 (Services)

DAR 7-1903.41(b) SERVICE CONTRACT ACT OF 1965, AS AMENDED (1984 JAN)

2. Orders over $2,500 (Services)

DAR 7-1903.41(a) SERVICE CONTRACT ACT OF 1965, AS AMENDED (1984 JAN)

SPECIAL CLAUSES

The following special clauses which are checked to the left are applicable to this procurement:

☐ 1. PROHIBITED PACKING MATERIALS: The use of asbestos, excelsior, newspaper or shredded paper (all types including waxed paper, computer paper and similar hydroscopic or non-neutral material) is prohibited. In addition, loose fill polystyrene is prohibited for shipboard use.

☐ 2. NOTICE TO SUPPLIER (APR 1984) FAR 52.213-3
This is a firm order ONLY if your price does not exceed the maximum line item or total price in the Schedule. Submit invoices to the Contracting Officer. If you cannot perform in exact accordance with this order, WITHHOLD PERFORMANCE and notify the Contracting Officer immediately, giving your quotation.

☒ 3. REIMBURSABLE TRANSPORTATION: Material will be delivered F.O.B. supplier's plant, with shipment to be made to destination(s) specified herein at supplier's expense subject to reimbursement.
The transportation cost is to be shown on the same invoice as supplies are billed but as a separate item. The contractor agrees to retain related transportation billings paid separately for a period of three years and to furnish such bills to the Government when requested for audit purposes. For obligation purposes only the transportation cost chargeable to the funds indicated herein estimated not to exceed $ 70.00 .

☐ 4. Sales taxes imposed by states or subdivisions thereof are not applicable to sales to the Federal Government, therefore, no sales tax will be paid for the purchase of the item(s) listed herein. A tax exemption certificate will be issued only when requested by the vendor in connection with this purchase.

☐ 5. The delivery date shown herein represents the date on which the material is actually required at the David Taylor Naval Ship R&D Center. Therefore, contractor is requested to make every effort to make shipment in time to effect delivery to the David Taylor Naval Ship R&D Center on the date indicated.

☐ 6. VARIATION IN QUANTITY (APR 1984) FAR 52.212-9
(a) A variation in the quantity of any item called for by this contract will not be accepted unless the variation has been caused by conditions of loading, shipping, or packing, or allowances in manufacturing processes, and then only to the extent, if any, specified in paragraph (b) below.
(b) The permissible variation shall be limited to:

_____ Percent increase
_____ Percent decrease
This increase or decrease shall apply to
_____ *

☐ 7. GOVERNMENT FURNISHED PROPERTY:
The Government shall furnish to the Contractor for use in connection with this contract:

_____
_____
_____
_____

Only the material listed above will be furnished by the Government. All other material required in the performance of this contract shall be furnished by the Contractor. Such material shall be subject to the clause of this contract entitled "Government Property (Short Form) (APR 1984) (FAR 52.245-04 .

☐ 8. THE ASSIGNMENT OF CLAIMS ACT CLAUSE FOR SECURITY REQUIREMENTS (APR 1984) (FAR 52.204-02) are hereby incorporated and made a part of the Purchase Order.

☐ 9. ADVANCE PAYMENT IS HEREBY AUTHORIZED PURSUANT TO 31 U.S.C. 3324(d)

☐ 10. SUBSCRIPTIONS: INVOICES (APR 1984) FAR 52.212-5
The Contractor's invoices must be submitted before payment can be made. The Contractor will be paid on the basis of the invoice, which must state (a) the starting and ending dates of the subscription delivery, and (b) either that orders have been placed in effect for the addressees required, or that the orders will be placed in effect upon receipt of payment.

☐ 11. RENEWAL SUBSCRIPTION:
In the event a subscription placed under a previous contract or order does not expire prior to commencement of the period specified herein, the renewal subscription will be for a period of _____, from date of expiration of the current subscription/s.

☒ 12. SHIPPING INSTRUCTIONS:
Receiving's Business Hours
0730 - 1130
1200 - 1400

SENTEX SENSING TECHNOLOGY, INC.

July 1, 1985

Dr. Danute R. Ventriglio
David Taylor Naval Ship R&D Center
Code 2801
Annapolis, Maryland 21402

Dear Dr. Ventriglio:

Pursuant to our conversation, this letter shall confirm the following information about the radioactive source contained in Scentor, automated gas chromatograph, manufactured by our Company:

The radiactive source is Hydrogen 3 in the physical form of a titanium tritide foil. The manufacturer is Safety Light Corporation and the Model No. is 508-3. The maximum amount of radioactivity is 150 millicuries.

The radioactive foil is encased in a sealed stainless steel cylinder of 1/4" thickness. This cylinder is further enclosed within an additional cylinder of copper with thickness of 1/16". The copper cylinder is contained within the oven assembly of the Scentor. The oven assembly is enclosed within a three-sided aluminum box which is bolted to the instrument chasis. The instrument is enclosed within chasis constructed of aluminum of 1 3/32" thickness. Accordingly, it is extremely unlikely that any radioactivity will be emitted from this sealed source.

Question	Answer
1. Is it a sealed source?	Yes. (See above)
2. What is the nature and access to the source?	There is no direct access to the source. In order to enter the source, the oven assembly must be

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Enclosure (3)

unbolted from the instrument and the copper container contained therein must be broken. In addition, the sealed stainless steel cylinder which houses the radioactive foil must be cut. It is, therefore, extremely unlikely this can be done under normal circumstances.

3. Who cleans the source?

Pursuant to the instructions contained within the instruction manual, the oven is not to be opened by anyone other than Sentex personnel. If, for whatever reason, the oven must be replaced, the entire assembly must be returned to the manufacturer. Wipe testing of the source is not required pursuant to the information we have received from the Nuclear Regulatory Commission (Item 15 a contained herein).

4. What are the hazards of the source?

Under normal operating conditions, no radiation should be emitted from the source. We, therefore, know of no hazards involved in the use of the Scentor.

5. What are the procedures for maintaining the source?

Because of its sealed character and the nature of the radioactive source (Hydrogen 3) we know of no procedures which are required for the source's maintenance. Here again, pursuant to NRC's advise, a wipe test is not required.

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6. What are the temperature limitations of the source? The radioactive source is safe until the oven temperature of 210°C is achieved. The Scentor, however, is equipped with an automatic switch off device. This device will automatically disconnect the oven assembly if the heat therein exceeds 170°C.

7. Precautions to corrosives necessary? Corrosive material should not be introduced in any way to the oven assembly of the Scentor. In view of the radioactive source's enclosure within three separate metal containers, it is unlikely that corrosive material could, in any way, come in contact with the radioactive material.

8. Should there by periodic inspection of the source? Pursuant to Sentex's instruction, the oven assembly should not be in any way tampered with. To the best of our knowledge, periodic inspection is not required.

9. Calibration of source? Not required.

10. Replacement of the source? Safety Light Corporation (manufacturer of the radioactive foil) gives an estimated 1/2 life of the source as 11 years. It is, therefore, unlikely that the source should need replacement prior to that time. If, however, for

whatever reason, replacement is required, the oven assembly must be unbolted from the instrument chasis and returned to Sentex. A normal, usual shipping container (double wall thickness cardboard box) may be used. Sentex will dispose of the radioactive material and replace the source.

11. What are the venting requirements?

The instrument may be maintained under normal laboratorory conditions. Normal air circulation (windows, fan system or air conditioning) is sufficient. If the instrument is used at a field site, no problems should arise.

12. What are emergency procedures?

In case of damage to the oven assembly, Sentex should be notified immediately.

13. Can source be damaged?

Considering the nature of the sealed source and the number of enclosures in which it is contained, it is extremely unlikely that the radioactive foil will ever be damaged.

I have also enclosed a copy of the face page of the Scentor instruction manual together with a copy of the label which is attached to the oven assembly which verifies the source and strength of the radioactivity. In addition, I have enclosed a copy of our License No. 29-20512-01, together with all amendments thereto.

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SENTEX SENSING TECHNOLOGY, INC.

Let me also reiterate that Sentex is in the process of applying for a genera distribution license from the Nuclear Regulatory Commission. This would allow us to distribute our products to any customer similar to other, more established manufacturers of gas chromatgraphs. The type of license (general vs. specific) we possess in no way reflects upon the type or strength of radioactivity in the Scentor. In fact, Hydrogen 3 as opposed to Nickel 63 (which is contained in older gas chromatographs) requires less maintenance pursuant to the NRC guidelines enclosed herein.

I hope this information is sufficient for you to complete the byproduct material license as required by the NRC. I will await your notification of its receipt prior to my shipment of the Scentor. If you have any additional questions or need further information, please contact me directly.

Sincerely yours,

SENTEX SENSING TECHNOLOGY, INC.

Joanne M. Bianco

JMB:vgb
Enclosures

cc: David Helzner

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