SCHOOL OF
ENGINEERING
& APPLIED SCIENCE

DEPARTMENT OF NUCLEAR ENGINEERING
& ENGINEERING PHYSICS

University of Virginia
Reactor Facility
Charlottesville, VA 22903-2442
804-924-7136 FAX 804-982-2634

December 2, 1991

Mr. Craig Bassett
U.S.N.R.C. Region II
101 Marietta Street, N.W.
Atlanta, GA 30323

Subject: Update on UVAR gaseous monitoring system purchase plans.

Dear Mr. Basset:

Please find in attachment copies of the memorandum detailing the results of our contacts with the reactor staffs at Texas A&M and N.C. State regarding vent stack monitoring, and the bid request that has been issued by U.Va. for a gaseous monitoring system that we would like to purchase and install. The system would monitor noble gases in the reactor confinement and would be of more value than a vent stack monitor. Under severe accident scenarios, the vent stack fan would not be kept operating, the vent cover would close and potential releases from confinement would not be limited to the stack exit. Therefore, remote monitoring of the confinement would be of greater value in gauging condition severity and evolution. Also, we anticipate that the cost of this system would fall within the amount of the DOE equipment grant.

If you have any questions, please feel free to contact me or our engineer Mr. Bouvard Hosticka at (804) 982-5440.

Sincerely,

Robert U. Mulder, Director
U.Va. Reactor Facility

cc: Mr. Al Adams, NRC, Washington D.C.

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MEMORANDUM
Department of Nuclear Engineering and
Engineering Physics
School of Engineering and Applied Science
University of Virginia

TO: R.U. Mulder
From: B. Hosticka BH

November 21, 1991

Subj: Samplers at Texas A&M and N.C. State

I Called Texas A&M about their "Stack Monitor". What they call a stack monitor is a sampler to draw air from their central exhaust system across a 3X3 sodium iodide calibrated for argon-41. They do this to monitor normal operational releases to ensure compliance with a technical specification limit on annual release of argon-41. The person I spoke to also indicated that they have a particulate monitor on the main vent system that draws air through a filter for counting. Isokinetics and ANSI N13.1 were foreign terms to her. When I explained what they meant, she indicated that no such considerations were taken in to the design of their system.

From N.C. State I got the following information. Their stack monitoring system was installed as part of the original construction of the facility. It has isokinetic sampling heads although probably not in accordance with ANSI N13.1 (the person I spoke to has never reviewed ANSI N13.1 but believes that there is only one sampling port per flow condition). The system was not bought as a package and therefore has several vendors' components within it. They sample for only particulate and noble gasses in the stack, not for iodine. As part of the DOE upgrade program they are spending $40,000 to $50,000 to replace the electronics of the stack monitor. The current mechanical components (sampling head, piping, moving paper particulate collector, gas chamber, pump, and flow control) are not being replaced. This cost is consistent with what we have found in working with the vendors. I suspect that if the cost of the mechanical systems were added to the upgrade, it too would come out to be around $100,000.

N.C. State (919) 737-2322
Texas A&M (409) 845-7551

PURCHASE ORDER

DO NOT WRITE IN SHADED AREAS UNLESS CONFIRMING AN ORDER

TO #

- ☐ CONFIRMING
- ☐ TELEPHONE QUOTES
- ☐ REQUEST FOR QUOTATION
- ☐ UNSEALED BIDS
- ☐ SEALED BIDS
- ☐ PPD

University of Virginia
PURCHASE REQUISITION

REFERENCE UVA FINANCIAL & ADMINISTRATIVE PROCEDURE 7-11

SEND WHITE AND YELLOW COPIES TO MATERIEL MANAGEMENT. RETAIN THE PINK COPY. ATTACH ALL CORRESPONDENCE, QUOTATIONS, ETC., RELATIVE TO THIS ORDER. IF CONFIRMING AN ORDER INDICATE THE CONTACT PERSON, TELEPHONE NUMBER, SHIPPING ADVICE, PAYMENT TERMS, AND DELIVERY DATE.

DATE 11/26/91

PURCHASING LOCATION CODE GIR

REQUISITION 29522

PO CLASS ___ BUYER CODE ___

DELIVERY LOCATION CODE GGREA

CONTRACT #

ID #, NAME, ADDRESS, ZIP CODE, TELEPHONE # OF VENDORS

A ID#: Eberline P.O. Box 2108 Santa Fe, NM 87504-2108 PHONE#	C ID#: General Atomics P.O. Box 85608 San Diego, CA 92138-5608 PHONE#	E ID#: Sorrento Electronics P.O. Box 5189 Cary, NC 27511 PHONE#
B ID#: EG&G Berthold 100 Midland Road Oak Ridge, TN 37831-0895 PHONE#	D ID#: NRC Industries 125 Titus Avenue Warrington, PA 18976 PHONE#	F ID#: Victoreen 10101 Woodland Ave. Cleveland, OH 44104 PHONE#

REQUISITIONING DEPARTMENT: Nuclear Engineering — ROOM/BOX #:

END USER/TECHNICAL CONTACT: B. Hosticka — TELEPHONE: 2-5440

ADMINISTRATIVE/FISCAL CONTACT: Faye Cline — TELEPHONE: 4-3931

DEPARTMENT REFERENCE NUMBER (9 CHARS MAX) — NEED DATE

SOURCE OF FUNDS: ☐ HOSPITAL ☐ LOCAL ☒ UNIVERSITY

ACCOUNT/OBJECT CODES: 5-27418 — PERCENTAGE: 100%

IF ASSIGNING ACCOUNT NUMBERS TO INDIVIDUAL LINE ITEMS, USE DESCRIPTION AREA BELOW

INSPECTION: ☐ REQUEST INSPECTION PRIOR TO PAYMENT (see note on reverse)

SOLE SOURCE: ☐ REQUEST SOLE SOURCE VENDOR. A COMPLETED SOLE SOURCE JUSTIFICATION FORM IS ATTACHED (see note on reverse)

OWNERSHIP TRANSFERS AT: ☐ (D) DESTINATION ☐ (S) SHIPPING POINT

FREIGHT: ☐ (P) INCLUDED IN PRICE QUOTED ☐ (A) PREPAID BY VENDOR AND ADDED TO INVOICE

PAYMENT TERMS: ☐ NET 30 (30) ☐ OTHER ___ — DELIVERY DATE

PLEASE: TYPE OR PRINT LEGIBLY. USE A PURCHASE REQUISITION LISTING SHEET (STOCK #1183) FOR ALL ITEMS IF THE ORDER CANNOT BE LISTED HERE.

DPS LINE #	LINE CODE	ITEM #	DESCRIPTION (PLEASE BE SPECIFIC)	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		1	Noble Gas Monitor				
			XXXX SEE ATTACHED SPECIFICATIONS				
			All Bids Must be Reviewed by Department				

BGA/DATE	DEPT/ADMINISTRATOR AUTHORIZATION	NAME (PRINT/TYPE) Faye Cline	ORIGINAL SIGNATURE	DATE 11/26/91	TELEPHONE 4-3931
BUYER/DATE	ADDITIONAL DEPT/ADMINISTRATOR AUTHORIZATION (AS REQUIRED)	NAME (PRINT/TYPE)	ORIGINAL SIGNATURE	DATE	TELEPHONE

STOCK #1184 REVISED FEBRUARY 1990

MATERIAL MANAGEMENT COPY 1

Specifications For an Area Noble Gas Monitor
for the
University of Virginia
Reactor Facility

Instruments requirements

The reactor facility will need a commercial grade Noble Gas monitoring system taking local continuous samples with the characteristics as listed below.

It will normally monitor operationally produced Ar-41 in the reactor room where ambient radiation levels in the room are less than 0.5 mr/hr but may be called upon during accident conditions to monitor fission product gasses in much higher ambient radiation fields. Therefore, some means must be provided to monitor the ambient radiation level near the detector and compensating for it such that the actual nobel gas activity can be determined.

Noble Gas Monitor Characteristics

1. Continuous flow, non pressurized chamber
2. Means for subtracting signal from ambient radiation
3. Sensitive enough to detect 2 E-7 uC/ml of Ar-41 in the sampled air
4. Allow remote reading via serial computer interface
5. Have analog output for driving strip chart recorder
6. Read out in Engineering units such as uCi/ml
7. Have Outputs for remote alarms

Possible Vendors

Below is a list of possible vendors for a noble gas monitoring system. This list may not be exhaustive but represents the vendors known to me at this time.

Eberline
P.O. Box 2108
Santa Fe, NM 87504-2108
(505) 471-3232

EG&G Berthold
100 Midland Rd.
Oak Ridge, TN 37831-0895
(615) 483-0396

General Atomics
P.O. Box 85608
San Diego, CA 92138-5608
(619) 455-4255

NRC Industries
125 Titus Ave.
Warrington, PA 18976
(215) 343-5900

Sorrento Electronics
P.O. Box 5189
Cary, NC 27511
(919) 481-4425

Victoreen Inc.
10101 Woodland Ave.
Cleveland, OH 44104
(216) 795-8200