VOID SHEET

TO: License Fee Management Branch

FROM: Region IV

SUBJECT: VOIDED APPLICATION

Control Number: 466991

Applicant: USGS - Denver

Date Voided: 11/4/98

Reason for Void: Po-209 is already authorized under Condition 6A. Also Condition 10 authorizes USGS to approve their own permanent facilities. Amendment not necessary.

A H Campbell 11/4/98
Signature Date

Attachment:
Official Record Copy of
Voided Action

140078

1/1

FOR LFMB USE ONLY

Final Review of VOID Completed:

ML40

☐ Refund Authorized and processed

☐ No Refund Due

☐ Fee Exempt or Fee Not Required

Comments: _____

Log completed ☐

Processed by: _____

United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 974
DENVER FEDERAL CENTER
DENVER, COLORADO 80225-0046

IN REPLY REFER TO

DATE: 16 October 1998

TO: Vivian Campbell, Nuclear Regulatory Commission

FROM: Darrell Ray Liles, USGS Radiation Safety Officer Darrell Ray Liles

SUBJECT: Amendment to License 05-01399-08

The US Geological Survey requests an amendment to license 05-01399-08. A researcher in St. Petersburg Florida wishes to conduct research with Po-209. The Radiation Safety Committee (RSC) has reviewed and approved the user's application with the stipulation that the NRC approves the amendment. The RSC has proposed that the Radiation Safety Officer (RSO) travel to St. Petersburg once per year to audit the operations. There will be a person, Marci Marot, in St. Petersburg who will act as the "deputy" RSO Her work address and phone number are listed below. The user's application is attached. Any commer . ndations are welcome.

Marci Marot
Center for Coastal Geology
600 4th Street South
St. Petersburg, Florida 33701
(727)803-8747 ext 3057

11/3/98
Mr. Liles confirmed that Po-209 is reactor produced. It is being supplied by Oak Ridge However, the material is authorized under License Condition 6.B. License Condition 10 allows the NRC to approve their own permanent facility. This was discussed with Tim DeBay on 11/4/98. Void this action.

JTR

DOCKET FILE

No 466991

APPLICATION FOR RADIOISOTOPE UTILIZATION PERMIT (rev. 12/93)

1. **Name of applicant:** Marci Marot
2. **Organization:** US Geological Survey Center for Coastal Geology
   600 4th Street South St Petersburg, Florida 33701
3. **Mail Stop and phone number:** (707)-803-8747 Ext. 3057
4. **Personnel to be covered by permit:** Marci Marot, Charles Holmes, Boudewijn Remick, Peter Swarenzski
5. **Radioactive material(s) to be used under permit:**

Isotope	Max. Qty. (mCi)	Physical/Chemical Form
Po-209	2×10^{-3} mCi	liquid (8N HNO_2)
Po-209	5×10^{-6} mCi	sealed source
Above quantities plus total inventory of all other permits shall not exceed license limits		

6. **Describe the purpose for using radioisotopes and how and where the material will be used:**

Tracer Studies in Environmental sediment samples. Radioisotopes will not be released to the environment. Samples will be processed in the laboratory in room listed below.

7. **List all radiation detection instruments that will be available within your project for radiation monitoring:**

Instrument	Purpose
Ludlum Model 4 with model 43-90 detector	personnel and workspace monitoring for contamination

8. **List the method and frequency of calibration of the above instruments:**

The calibration of radiation detection instruments will follow manufacturer's recommendations and will be calibrated annually not to exceed 15 months.

9. **List personnel dosimetry and bioassay to be used by personnel working under this permit:**

No personnel dosimetry or routine bioassay required

10. List facilities, handling equipment, and storage facilities for radioactive material to be used under this permit.

The licensed material will be located in the Geochemistry Laboratory (Room 276) USGS Center for Coastal Geology, St Petersburg Florida. It will be hou.sed in shielded storage. Gloves will be worn when handling the radioactive material. The licensed material will not be moved or relocated to any other room or location with out prior approval of the Radiation Safety Committee. Unsealed licensed material will be stored in double encapsulated containers and labeled as "Radioactive Material" including the isotope and activity.

11. List facilities and arrangements for disposal of waste material and unwanted sources

The waste material will be stored in the Geochemistry Laboratory (Room 276) USGS Center for Coastal Geology. When disposal is necessary, transportation and disposal of the waste material will be arranged with a NRC/USGS approved facility.

12. List techniques to be used to keep radiation exposure as low as reasonably achievable:

Any portion of the licensed material not in immediate use will be stored in a shielded container. The radioisotope will be handled by trained personnel only for the shortest amount of time possible. The unsealed adioisotope will be used only in an approved fume hood. Individuals will use tongs or other devices to handle planchets that are plated with the licensed material.

13. List techniques to be used to prevent radioactive contamination of facilities and personnel:

The use and storage of the licensed material will be restricted to a single laboratory. The lab will be locked at all times, accessible only by personnel authorized by this permit. Warning signs will be posted where easily visible on the outside of all entrances to the space containing the licensed material (Caution Radioactive Material" and a current copy of the NRC Form 3).

Gloves and labcoats will be worn at all time while handling the licensed material. Absorbent material will be placed on the workspace. Workspaces and personnel will be monitored after each use and prior to exiting the laboratory with portable radiation detection instruments listed on this permit. Visitors may enter the lab only when escorted by an authorized user.

Contamination surveys will be performed monthly in Room 276 and sent to the RSO f or analysis

14. Provide a copy of a 24-hour emergency contact listing that will be posted in your facilities.

15. Provide a copy of training, experience, and education of each person to be working under this permit.

16. Provide a diagram of spaces that will contain radioactive materials, showing work areas and radioactive storage areas.

** All personnel on this permit will receive training before licensed material is procured

CERTIFICATION:

I hereby certify that the information in this application is complete and correct to the best of my knowledge. I agree to follow the applicable regulations of the Nuclear Regulatory Commission, the USGS license, and the Central Region radiation safety program.

Marie Hart — 9/8/98

(Signature of applicant) (Date)

Management approval: [signature] — 9/8/98

(Applicant's ~~Branch Chief~~ Supervisor) (Date)

Safety Approval: _____

(~~Radiological Advisory Committee~~ Radiation Safety Committee) (Date)

Permit review cycle is 36 months, not to exceed 42 months.

14. Provide a copy of a 24-hour emergency contact listing that will be posted in your facilities.

15. Provide a copy of training, experience, and education of each person to be working under this permit.

16. Provide a diagram of spaces that will contain radioactive materials, showing work areas and radioactive storage areas.

** All personnel on this permit will receive training before licensed material is procured

CERTIFICATION:

I hereby certify that the information in this application is complete and correct to the best of my knowledge. I agree to follow the applicable regulations of the Nuclear Regulatory Commission, the USGS license, and the Central Region radiation safety program.

Marci Hart — 9/8/98

(Signature of applicant) (Date)

Management approval: [signature] — 9/8/98

(Applicant's Branch Chief) (Date)

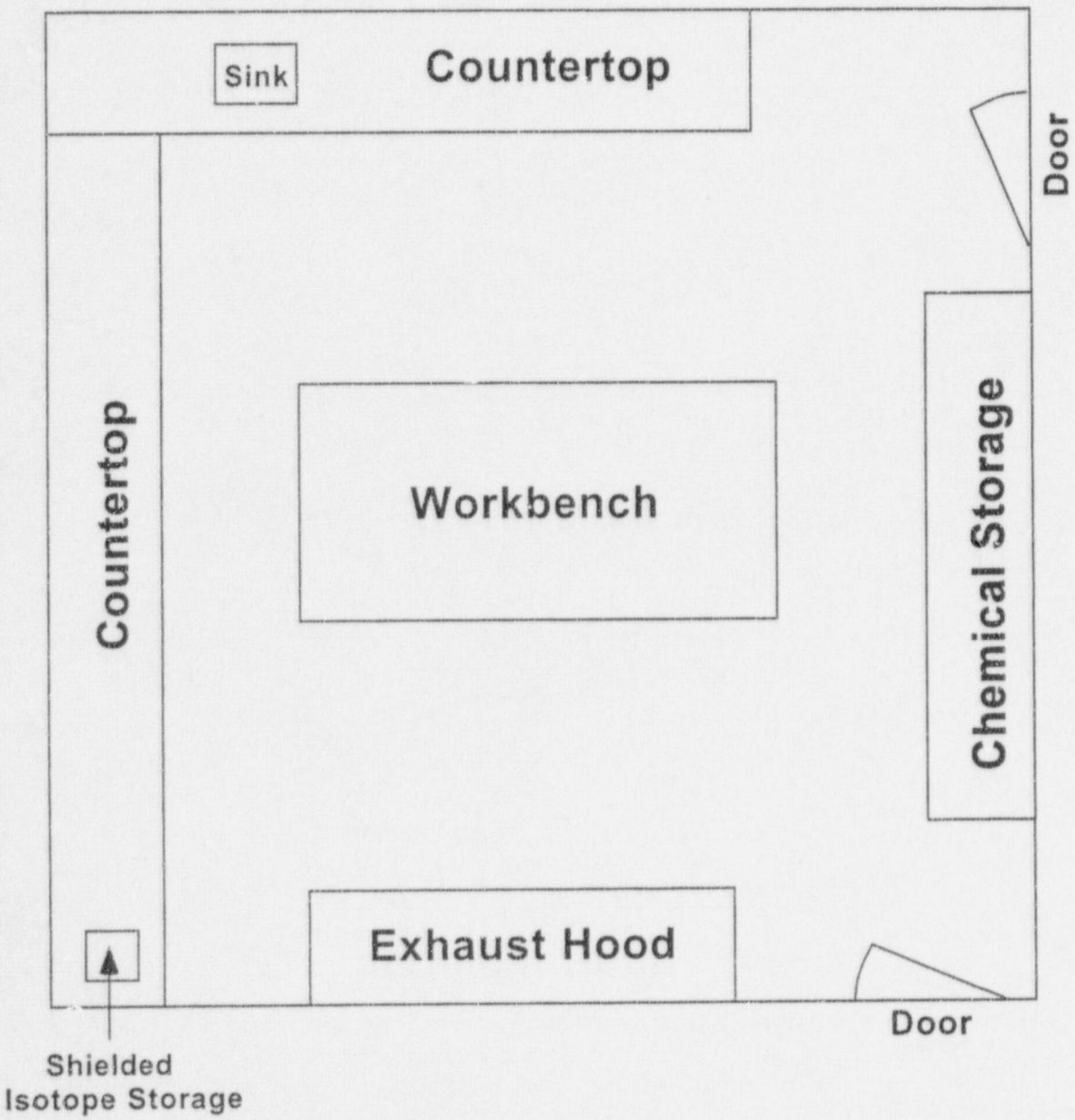
Safety Approval: _____ _____

(Radiological Advisory Committee) (Date)

Permit review cycle is 36 months, not to exceed 42 months.

Geochemistry Laboratory

Room 276 USGS Center for Coastal Geology



RADIOLOGICAL EMERGENCY CALL LIST

TITLE	NAME	WORK PH.	HOME PH.
Deputy Radiation Safety Officer/ Laboratory Supervisor	**Marci Marot**	**Ext. 3057**	**(727)577-2857**
Radiation Safety Officer (Central Region)	Darrell Liles	(303)236-4726	(303)716-3204
Radiation Committee Chair (Central Region)	Tim DeBey	(303)236-4726	(303)986-2073

AREA OCCUPANTS CONTACTS

TITLE	NAME	WORK PH.	HOME PH.
Permit Holder	Marci Marot	Ext. 3057	(727)577-2857
Lab User	Chuck Holmes	Ext. 3056	(941)753-0050
Lab User	Peter Swarzenski	Ext. 3072	(727)906-9047
Lab User	Boudewijn Remick	Ext. 3091	(727)894-3082

USGS OCCUPATIONAL SAFETY PERSONNEL

TITLE	NAME	WORK PH.
CFCG Building Manager	Terry Kelley	Ext. 3050
Eastern Region Safety Manager	Steve Eck	(703)648-7556
GD Safety Manager	Wayne Martin	(703)648-5289

US NUCLEAR REGULATORY COMMISSION

Region II Office (404)562-4400
National Operations Center (301)816-5100

In Case of Emergency Dial 911.

Marci E. Marot

Experience with the use of radioisotopes:

1993-1995 U.S.G.S. - Denver, CO.
Handled and used ^{209}Po as a spike for ^{210}Pb analyses of environment sample for dating puposes.

1995-1998 U.S.G.S. - St. Petersburg, FL.
Supervise the handling and use of ^{209}Po as a spike for ^{210}Pb analyses of environment sample for dating puposes. Routinely determine the activity of natural and artifical isotopes (U-series, Cs, Be) in marsh and coastal sediments. Routinely use low-level radiation standards in the calibration of alpha and gamma spectroscopy intruments.

Marci E. Marot

U. S. Geological Survey
Center for Coastal Geology
600 4th Street South
St. Petersburg, Florida 33701
(727) 803-8747 ext. 3057
Fax: (727) 803-2032
email: mmarot@usgs.gov

Home:
190 12th Avenue North
St. Petersburg, Florida 33716
(727) 577-8257

Education:

B.S., in Geological Sciences; Michigan State University, 1992
M.S., in Chemical Oceanography; University of South Florida, 1998

Employment:

1995-Present	Research Assistant, U.S. Geological Survey, Center for Coastal Geology, St. Petersburg, FL.
1993-1995	Research Assistant, U.S. Geological Survey, Branch of Coal Geology, Denver, CO.

Publications:

Marot, M., and Holmes, C. W., 1997, Short-Lived Radioisotopic Chronology of Lake Pontchartrain sediments: AAPG Bulletin, 81, (9), p.1583.

Holmes, C. W., Cathcart, J. D., and Marot M., 1994, Geochronology of the Laguna Madre Tidal Flats: U. S. Geological Survey Open File Report 94-XXX, 60p.

Church, S. E., Holmes, C. W., Briggs, P. H., Vaughn, R. B., Cathcart, J. D., and Marot, M. E., 1993, Geochemical and Lead-Isotope Data for Sream and Lake Sediments, and Cres for the Upper Arkansas River Drainage: Effects of Mining at Leadville, Colorado on Heavy-Metal Concentrations in the Arkansas River: U. S. Geological Survey Open File Report 93-534, 61p.

Holmes, C. W., Marot, M. E., Willard, D., Weimer, L., and Brewster-Wingard, L., 1997, Methods to Establish the Timing of Ecological Changes in South Florida-Good, Better, Best: U.S. Geological Survey Open File Report 97-385, 100p.

Holmes, C. W., Robbins, J. A., Halley, R. B., Bothner, M., Ten Brink, M., and Marot, M. E., 1998, Sedimentary Dynamics of Florida Bay on a Decadal Time Scale: in press.

Charles W. Holmes, Ph.D (Florida State University 1963)

Experience with the Use of Radioisotopes:

1959-1963 Florida State University

Ran a uranium/thorium disequilibrium project in which the measurements of the natural distribution of the Uranium Isotopes of uranium and thorium were determined in marine sediments. This require the handling of ^{232}U and ^{228}Th as spike and the chemical separation of these isotopes. Participated in the require safety courses. Reports as present in the attached Resume'

1970-1980 U.S.G.S.- Corpus Christi Texas

Set and ran a short lived Isotopic lab using special material ^{232}U as a spike for the determination of uranium isotopes in the environment. Also use ^{209}Po for a spike in the determination of ^{210}Pb in natural materials. These were used in "dating" marine sediment. A Special Material License was held by this laboratory.

1990 - 1996 USGS-Denver

Set and ran a short lived Isotopic lab using special material ^{209}Po for a spike in the determination of ^{210}Pb in natural materials. These were used in "dating" marine sediment.

The procedures used in all of these laboratories were the same and similar to those proposed in the facilities in St. Petersburg.

July 24, 1998
Charles W. Holmes
9103 Wood Dove
Bradenton, Florida
(941) 753-0050

Area of Expertise:

Sedimentary geochemistry and hydrology, distribution of short lived radioisotopes in the natural environment, low temperature isotopic geochemistry, and marine geology

Professional Career

June 1961-Jan. 1962--**Geophysicists**, U.S. Coast and Geodetic Survey, Washington, D.C. Office correction of data sent from field parties, preparation of magnetograms from observatories for publication, N.O.A.A. on magnetic activity of the United States.

Feb. 1962-June 1962--**Research assistant**, Florida State University, Tallahassee, Florida. A one-half time assistantship. Work as a laboratory assistant measuring properties of marine sediments; drafting of maps and plates for publication.

June 1962-Aug. 1962--**Research Associate**, Florida State University, Tallahassee, Florida. A research grant from U.S. Navy Mine Defense Laboratory - co-investigator with H. G. Goodell. Supervisor (2 persons). Research on the geotechnical and physical properties of sediments from St. Andrew Bay, Florida. Study of textural and chemical composition of cores from Bay which was used as a basis for further investigations in the submarine slope stability. (Publication #4).

Aug. 1962-Apr. 1963--**Research Assistant**, Florida State University, Tallahassee, Florida. One-half time assistantship responsible for describing and photographing of cores received from USNS ELTANIN; the work included sampling of cores and general sedimentological investigations. Special work was done in providing material for my dissertation on the establishment of rates of sedimentation of sediments in Drake Passage.

May 1963-June 1963--**Marine Geologist**, Florida State University, Tallahassee, Florida. Responsible for marine geological investigation of the ELTANIN Cruise #8 to South Sandwich Trench. The planning oceanographic station operations for the marine geology program; directed the over-the-side activity for coring, dredging, and some of the biological sampling. Charted, in detail, the bathymetry of South Sandwich Trench for further geological work. (Publications #5, 6)..

July 1963-Aug. 1965--**Research Assistant**, Florida State University, Tallahassee, Florida. Same as from 6/62 to 8/62.

Aug. 1965-July 1966--**Research Associate**, Florida State University, Tallahassee, Florida. Supervisor (3 persons). Principal investigator (NSF grant GA-246) for Research Project on Geochronology of sediments of the Southern Ocean. Directed research for purpose of obtaining age of deep sea deposits, including development of techniques for separating elements for isotopic analysis, construction and maintaining low-level nuclear counting instruments and reporting results to NSF. (Publications #7, 8, 10, 13, 14, 15).

June 1966-Aug.1966--**Assistant Professor**, Colgate University, Hamilton, N.Y., taught "Introduction to Geology"; advised 12 high school teachers in research programs under the CCSS program under sponsorship of NSF.
Sept. 1966-Jan.1968--**Assistant Professor**, Colgate University, Hamilton, N.Y.; taught Geochemistry; Introduction to Oceanography; Historical Geology; and Core 10 (an introduction to the Philosophy of Science). Directed independent research in geochemistry and marine geology and directed two M.S. special projects. Conducted a

special project in field problems in oceanography in the Ten Thousand Island, Florida, area.

June 1967-Sept. 1967--**Director, CCSS,** Colgate University, Hamilton, N.Y. Directed summer research institute for 35 high school teachers and students. Selected high school teachers and students. Appointed college professors and advisors to individual research projects; administered grant under which institute was funded; acted as liaison officer between Colgate University and National Science Foundation. $2400 per month.

Jan. 1968 -- Sept 1982 **Geologist -U.S.Geological Survey**

1. **Co-project chief** with H. L. Berryhill, Jr.; supervisor - 3 people; **Sedimentology/geochemistry of Laguna Madre, Texas**, an investigation of the geologic interrelationships within a barrier island-lagoonal complex. Principle duties were to investigate the geochemical processes active within the lagoon and to delineate features which may be preserved in the geologic record. The results of this project are presented in a report "Criteria for recognizing ancient barrier coast lines" Dickinson, Berryhill, and Holmes. SEPM Special Publication #16.

2. **Project Chief - Gulf of Mexico Geochemistry** Supervisor - 2 people. A topical investigation on the distribution, origin and transportation of trace metals in the Gulf of Mexico basin. Although the major emphasis of this project was the geochemistry of the shelf and deep Gulf sediment, a significant portion of this project involved itself with the geochemistry of elements within the transition zone between riverine and oceanic environs. The results of this project are presented in USGS Professional Paper 814 and USGS Professional Paper 912, plus other outside publications.

3. **Scientific Coordinator, USGS/Navoceano Gulf of Mexico Program-** Assisted in planning and assigned as senior scientist aboard USNS KANE during the sediment-collecting phase of this program in the Gulf of Mexico. Supervisor - 7 people. The program included two phases of study: collection of 15,000 miles of deep penetration seismic reflection profiles; and piston coring and hydrography. The program lasted 7 months and included seven 21-day cruises. Acted as coordinator for the USGS coordinating the participation of five Gulf Coast Universities: Texas A&M, University of Texas, LSU, Florida State University, and Rice University. Edited the preliminary report for the three sedimentology cruises. (Publications #24, 31). 1969.

4. **Project Chief-Virgin Island Coop**. This project involved both geophysical and sedimentological mapping of the insular shelf south of St. Thomas and St. John, U.S.V.I., in an attempt to locate potential sand resources. This was a reconnaissance study in connection with the Tektite II program. The results of this investigation are presented in an open-file report. (1970). (Publications #20, 26).

5. **Project Chief - Gulf Coast Estuaries**. A geochemical, geophysical, and sedimentological investigation of the estuarine environments. During first 3 years (1973-1976) emphasis was placed on the geochemistry of metals and their interaction within the physicochemical environment. Established Geochemistry lab and supervised 12 people plus was responsible for quality control, budget, and personnel problems. The second part of this program was carried out in cooperation with the Bureau of Economic Geology, University of Texas. (1973-1978). (Publications #17, 18, 19, 21, 23, 24, 25, 27, 28, 30, 39, 40).

6. **Project Chief -Hydrology/Oil Migration in Cap Rock**. This project investigated the digenetic effect of salt intruding into pelitic sediments. The results of this study showed that salt intrusive have a significant effect in accelerating the transformation of expandable clays to illitic material; and such transformations play a significant role in the maturation and migration of hydrocarbons. The results have been presented at national conferences (Best of Session, A.A.P.G. 1984) and published (USGS Bull. 1573).

7. **Assistant Program Manager** - Environmental Studies of the South Texas Outer Continental Shelf. A BLM-sponsored study of the continental shelf of Texas. Assisted the program manager in the planning, administration, and

coordination of the program which included, in addition to USGS, Texas A&M University, University of Texas, Rice University, and NOAA. Supervisor - 12 people. This program brought in over $10 million OFA 1975-1978. Specific duties included arranging for the procurement of the oceanographic vessels used in the initial year's study; assisting the program manager in the interpretation and mapping of the seismic stratigraphy of the shelf; and directing geochemical investigations which included:

a. Geochemical relationships between trace metals concentrations and gas seeps.
b. Rates of sedimentation by ^{210}Pb disequilibrium methods.
c. The mineralogy of the clay size bottom sediment and the suspended sediments.
d. Trace metal content of benthic sediments and seasonal variations.
e. Investigated the use of ^{226}radium disequilibrium as a potential age determining procedure.

The results of this project are in three annual reports to the BLM and in subsequent outside publications. (1974-1978). (Publications #32, 34, 35, 37, 38, 41, 43, 54, 72, 76).

8. **Project Chief - Coastal Environments**. Supervise 8 people 1. A comprehensive and extensive geological investigation in cooperation with the Bureau of Economic Geology, University of Texas, based on the analysis of 6,600 bottom sediment samples and 8,500 km of high resolution profiling. The samples were used to establish sedimentological and geochemical patterns in order to outline regions of high metal content, bottom strata of different engineering properties, and establish an environmental foundation for the estuaries and inner continental shelf. The high resolution data is being used to map faults and shallow diapiric structures. 2. Directed a research program on the hydrology of a silica-based Sabakha near Baffin Bay, Texas. (1978). (Publications #36, 39, 40).

9. **Project Chief, Virgin Island Sand Resource Program.** Supervisor 10 people. Program brought in $90,000 OFA for 2 years. A detailed investigation of the origin and sediment budget of sand on the insular shelf of St. Thomas and St. John, U.S.V.I. This was a resource study to define potential sand deposits for economic development in terms of the environmental conditions and renewability. Publications #44, 46, 47, 49, 51, 62, 75).

10. **Program manager, West Florida Shelf Program** Objectives of this program included both geologic mapping and topical studies as follows:

a. Holocene sediments - distribution of surface sediments by texture and composition; regional thickness patterns; determination of internal structures; erosional/deposition patterns; and general Holocene depositional history of the shelf.

b. Pleistocene deposits - determine the paleotopography of the upper Pleistocene surface; delineate the various types and characteristics of uppermost Pleistocene deposits and their facies relations across the shelf; determine history of late Pleistocene-Holocene sea level fluctuations to the extent possible.

c. Geologic hazards - identify and map those geologic features that might present problems of a hazardous nature to offshore engineering development such as: faults that intersect the sea floor; areas underlain by sediments that have slumped or may be subject to slumping in the future; and areas subject to excessive erosional scour; areas underlain by karst development.

d. Mineralization - investigate the origin and occurrence of three commodities that occur on the shelf and shore: phosphate, sand/gravel, and manganese. (Publications #63, 65, 66, 67, 68, 71, 77, 82).

Oct 1982-Oct 1984--**Geologist Minerals Management Service**. Study of the South Florida Shelf for the development and potential environmental impact of sand mining and/or oil drilling. Oil/gas resource potential of Florida based on initial estimates..

Oct 1984 -- Present **Geologist -U.S.Geological Survey**

1. Oct 1984-Aug. 1985--**Geologist-in-Charge** Supervise 14 people. Corpus Christi Office of Marine Geology 1.Develop budget and resources for the Gulf of Mexico studies for the Branch of Atlantic-Gulf of Mexico Program. Oversaw office operations. 2. Supervision of geochemical and sedimentological laboratories; assisted in Oil/Gas Resource of Gulf (F.L.A.P.) program under direction of R. Q. Foote. 3. Supervise a. a topical geological investigation of the sedimentological episodes that formed the South Florida Shelf, b. Supervisor of the Slope-Basin development of the northwestern Gulf of Mexico.

2. Aug. 1985-Oct. 1987 Branch of Coal Resources, Branch Chief, R. Rioux, **Geologist - Geochemical program leader** the Powder River Basin Evolutionary Study. Supervisor - 4 people. Initiate study on the regional diagenesis of the sediments of the Powder River Basin and the effect of such on the quality of coal with emphasis on the hydrologic factors controlling sodium and sulfur in coal.

3. Oct. 1987-Oct 1993, Branch of Coal Geology, Branch Chief, H. Gluskoter **Geologist/Project Chief**, Supervisor - 5 people. Mineral Matter in Western Coal and Isotopic Composition of Coals as Environmental Indicators. Initiated studies on the origin of mineral matter in coals using hydraulic and geochemical methods. 1) to investigate the relationship between the high sodium content of some western coals and the hydrologic regime in which they are found. 2) to investigate the origin of sulfur in coal with emphasis on the controlling factors which has produced low sulfur coals in many western states. 3) to investigate the distribution of carbon isotopes as they define the floral relationships with swamp types.
(Publications #83,85,86,87,88,89,92,94,95,98,99,100,102,103,104)

4. Oct 1993 to Oct. 1996, Branch of Coal Geology, Robert Milici Chief - (temp to Marine Geology) 1. **Project Chief** Developed a geochemical data base for the coastal waters of the Gulf of Mexico. Initiated an chronlogic program based on ^{210}Pb and ^{137}Cs for the "dating" of Florida Bay Muds and South Florida Peats. Participated in a diagenesis study of the carbonate sediments surrounding the southern Florida Keys as part of NRL Coastal Benthic Boundary Layer Program -a study to develop a model for mine defense.(Publications # 106,107)

5. Oct. 1996 to Present: Center for Coastal and Marine Geology (WRD-Florida District, John Vecchioli Chief) Initiated an chronlogic program based on ^{210}Pb and ^{137}Cs for the "dating" of Florida Bay Muds and South Florida Peats. Initiated as study in the developing of short lived radionuclide in the environment as trace of sediment and water movement.

Awards and Honors:

Graduate Cum Laude - St. Joseph's College
Elected Member of the Society of Sigma Xi-Florida State U.
NSF Post Doctoral Grant - Florida State University
U.S.Navy grant - Florida State University
Superior performance award,USGS 1969
Best of Session - AAPG-SEPM Poster Session,San Antonio,1984
Best Paper - Branch of Coal Geology, 1986
U.S.Navy Grant - Coast Benthic Boundary Layer Study-Southern Florida

Professional Consultations:

Member - Site review team - Mississippi-Alabama Sea Grant, 1984
Peer review - NSF Antarctic Proposal (Sept. 1981)
Review Committee member - Texas A&M Sea Grant (May 1981)
Peer review - 27 papers - Journal of Sedimentary Petrology, 1968-1994
Peer review - 15 papers - Environmental Science & Technology, 1978-1992
Peer review - 45 papers - U.S. Geological Survey, 1969-1994
Peer review - 10 papers - Geo-Marine Letters, 1982-1993
Book review - 1 paper - Sedimentology, 1984
Peer review - 2 Deep Sea Drilling Reports, 1985
review - 7 NSF proposals/American Chemical Society-1980-1995
Expert Witness for Defense (Corps of Engineers/EPA), 1984
Member - Marine Advisor - Del Mar Tech,Corpus Christi,Texas, 1978-80
Environmental Committee, Navigation D' Nueces County,Tx 1979-80
Project Chief - Jamaica Environmental Study. Study requested by Government of Jamaica, 1981
Co-chief Scientist, University of Miami Belize Expedition, 1983

Consultant - Shoreline Stability - Kennedy Foundation, Corpus Christi, Texas
Scientific Adviser - U.S.G.S. Mercury study of Lavaca Bay -1992

Education:

High School:	University of Detroit High School-Grad. 1955	
College:	St. Joseph's College	BS. - 1959
University:	Florida State University	MS. - 1962
	Florida State University	PhD.- 1965

Professional Academic Experience:

Teaching Experience:

Assistant Professor of Geology - Colgate University 1966-1968 Courses - Historical Geology, Marine Geology, Oceanography, Geochemistry, Philosophy of science

Adjunct Professor of Geology - Corpus Christi State University, 1974 to 1983 Courses - Marine Geology, Geochemistry, Environmental/Hydrogeology, and Sedimentation

Adjunct Professor of Geology - University of South Florida

Graduate Committees:

Member-(ex officio Chairman), MS-Geology, C. Pyle, Texas A&M-1977
Member - PhD-Geology - James Byrnes, U. of Texas-1976
Chairman-MS-Geology - Ronald Miller, Corpus Christi State U.-1978
Member - MS-Geology - John Suter, Univ. of Texas-1980
Member - PhD-Geology - Gregory Brooks, Univ.of South Florida-1984
Member - MS-Geology - Stephen Walker, Univ.ofSouth Florida -1984
Member - MS-Geology - Jean Hebert, Univ. of South Florida-1985

Invited Presentations:

Invited lecture - Univ. of Texas, Arlington - Geology of the Antarctic - 1972
Invited lecture - Rice Univ. - Trace metal deposition and migration in Gulf of Mexico - 1980
Invited lecture - N.O.A.A. - Sand resource workshop - Sand in Virgin Islands - 1981
USGS workshop on diagenesis, Denver, CO, March 1982, presented paper
Invited lecture - Univ. of South Florida - Origin of caprock - 1982
Invited paper - Carbonate and siliciclastic deposits on the slope and abyssal floor adjacent to the Southwestern Florida Platform - AAPG Symposium, Dallas, TX, 1983
Invited paper - Post-Miocene development of the South Florida Platform, Miami Geological Society Symposium, 1983
Invited paper - 1984 SEPM Research Conference on Origin, characteristics, transportation, and deposition of fine-grained sediments. Presentation of paper "Origin of fine grained sediments as determined by naturally occurring radioelement."
Invited: A.C.S. - 1984 - Symposium on Estuarine and Marine Chemistry. Presented paper "Seasonal Trace Element Behavior in Sedimentary Environments."
Invited paper - SEPM Research Symposium - Recent carbonate slope development on the southwest Florida continental margin, 1987.
Invited paper - ACS Estuarine Research Symposium - Trace metal seasonal variations in Texas marine sediments - Marine Chemistry, 1986.
Invited paper - Carbon isotopes in the Tertiary coals of the eastern Powder River Basin - G.S.A. Guidebook, 1988.
Invited paper - Controls on carbon and sulfur isotopes of Cretaceous coal, northwestern Colorado. G.S.A. Coal Symposium, 1988.
Invited Lecture - Carbon/Sulfur Isotopes in coal: Key to past environments - Univ. of South Florida- 1990
Invited paper - $\delta^{13}C$ terrestrial record of the past 300 MY - AGU Monograph Continental Isotopic Indicators of Climate- 1992

Invited paper - Is increasing atmospheric CO_2 really a harbinger of global warming: a perspective through time

Professional Membership:

Society of Economic Paleontologist and Mineralogist
Geochemical Society
American Association for the Advancement of Science
American Geophysical Union
A.S.T.M. Committee D-19 (Trace metals is sediments)
Sigma Xi
Geological Society of America

Bibliography

1. Holmes, C. W., and Evans, R. G., 1963, Sedimentology of Gullivan Bay and vicinity, Florida: Sedimentology, v. 2, p. 189-206.

2. Tanner, W. F., Holmes, C. W., and Evans, R. G., 1963, Low-energy coast near Cape Romano, Florida: Journal of Sedimentary Petrology, v. 33, no. 1, p. 713-722.

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J., Keeler, G., ten Brink, M., Orlandini, K.A., and Rudnick, D., 1998, First order time-averaging of Cs-137 and Pb fluxes to Pb-210-dated sediment in Florida Bay, in reveiw.(submitted to Geochmica et Cosmochemica Acta)

Holmes, C.W.*, Robbins, J.A.,Halley, R.B., Bothner, M., Ten Brink, M., and Marot, M.*, 1998, Sedimentary dynamics of Florida Bay Mud Banks on a decadal time scale, in review.(To be submitted to Journal of Coastal Research)

Dr. Swarzenski has ~ 10 years experience utilizing naturally occurring and artificially produced radionuclides in marine systems. As part of the USGS CFCG geochemistry group, he routinely uses U-series isotopes as tracers for contaminant and sediment transport processes. For example, Ra, Po, Pb, Th, U and Be activities have been determined frequently in both water column and underlying sediment samples of varied coastal environments. Currently, Swarzenski is examining $^{223,224,226,228}Ra$ disequilibria at freshwater-salt water interfacies.

Swarzenski has completed a comprehensive radiation safety course at Louisiana State University (Nuclear Science) in 1991.

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Nationality: U.S.A. and Switzerland
Language Proficiency: English and German

EDUCATION:

B.S., in Environmental Sciences; University of Colorado, 1986
M.S., in Marine Geochemistry; Louisiana State University, 1992
Thesis: "Uranium Geochemistry on the Amazon Shelf: Evidence for Removal via Colloidal Aggregation".
Ph.D., in Marine Geochemistry; Louisiana State University, 1997
Dissertation: "Non-conservative Behavior of Select Naturally-occurring Radionuclides and Metals in Coastal Waters".

EMPLOYMENT:

1998-PRESENT POST-DOCTORAL SCIENTIST, US GEOLOGICAL SURVEY - GEOLOGIC DIVISION, ST. PETERSBURG, FL.
1988-1998 RESEARCH ASSOCIATE/STUDENT, LOUISIANA UNIVERSITIES MARINE CONSORTIUM, LUMCON, COCODRIE, LA.
1983-1987 UNDERGRADUATE RESEARCH/STUDENT, UNIVERSITY OF COLORADO, BOULDER, CO.

PENDING RESEARCH GRANTS (1998-PRESENT)

SWARZENSKI, PW, BASKARAN, M., DE MORA, S., AND SHILLER, AM . *Anthropogenic Contaminant Cycling in Coastal Waters: A Comparison between Terrigenous Clastic and Carbonate Systems* $370K for 3 years, Office of Naval Research-Harbor Processes.

SWARZENSKI, PW, COHEN, AS, MCKEE, BA, AND NKOTAGO, H. *Exploring Links between Increased Population Pressure and Biodiversity in Lake Tanganyika: What controls the Export and Availability of Nutrients/Trace Metals?* $28K/yr, National Geographic Society.

SWARZENSKI, PW, BASKARAN, M., BRATTON, J. AND RABALAIS, N. *A new radio-isotopic tool to assess hypoxia in the Gulf of Mexico: Examining subsurface groundwater discharge as a nutrient source using radioum isotopes* $160K/YR FOR 2 YEARS, Environmental Protection Agency -- Gulf of Mexico Program.

SWARZENSKI, PW, BASKARAN, M. AND COATESD, J.R. Role of Microorganisms in the Fate and Transport of Colloid-Bound Plutonium: Field and Laboratory-based Investigation. $378K, DEPT. OF ENERGY, NABIR Program.

RECENT FELLOWSHIPS/HONORS/GRANTS:

U.S. Geological Survey Post-doctoral Fellowship in Marine Geochemistry
Outstanding student presentation award at the 1992 AGU Ocean Sciences Conference (Swarzenski et al., 1992a).
Recipient of the 1994 LUMCON Graduate Research Fellowship.

PROFESSIONAL SOCIETIES:

The Geochemical Society (TGS)
American Chemical Society (ACS)
Internat. Assoc. of Geochem. & Cosmochem. (IAGC)
American Geophysical Union (AGU)
The Oceanography Society (TOS)

RESEARCH INTERESTS:

Aquatic geochemical processes in rivers and coastal environments; environmental radiochemistry, microbial geochemistry

RECENT FIELD EXPERIENCE:

Mississippi River/estuary (USA)	1989-1995	(estuarine biogeochemistry)
Atchafalaya River/estuary (USA)	1993-1995	(estuarine biogeochemistry)
Amazon River/estuary (Brazil)	1989-1996	(uranium-, estuarine geochemistry)
Framvaren Fjord (Norway)	1993,1995	(^{238}U, ^{210}Po, ^{210}Pb, Fe, Mn geochemistry)
Fly River estuary (Papua New Guinea)	1997	(estuarine geochemistry)
Lake Tanganyika (Tanzania)	1998	(sediment/isotope geochemistry)

SELECTED PUBLICATIONS:

SWARZENSKI P. W., AND MCKEE B. A. (1998) Seasonal uranium distributions in the coastal waters adjacent to the Amazon and Mississippi Rivers. *Estuaries*, Vol. *21, No. 3.* 379-390.

SWARZENSKI P. W., MCKEE B. A., SØRENSEN K. AND TODD J.F. (1998) ^{210}Pb and ^{210}Po, manganese and iron cycling across the O_2/H_2S interface of a permanently stratified Fjord: Framvaren, Norway. *Marine Chemistry, Accepted - In Press.*

SWARZENSKI P. W., MCKEE B. A., SKEI J.M., BOOTH J. G. AND TODD J.F. (1998) Uranium across the redox transition zone of a permanently stratified Fjord: Framvaren, Norway. *Marine Chemistry, Accepted - In Press.*

SWARZENSKI P. W., PORCELLI D. AND MCKEE B. A. Aqueous Uranium Geochemistry in Tropical Environs: An Estuarine Comparison of the Amazon and Fly (Papua New Guinea) Rivers. *Geochim. Cosmochim. Acta, (In Prep).*

McKee B. M., **SWARZENSKI P. W.** AND BOOTH, J. G. (1996) The flux of uranium isotopes from river-dominated shelf sediments. In: International. Symposium on the Geochemistry of the Earth's Surface., (IAGG) pp. 85-91.

MOORE W. S., DEMASTER D. D., SMOAK J. M., MCKEE B. A. AND **SWARZENSKI P. W.** (1996) Radionuclide tracers of sediment-water interactions on the Amazon Shelf. *Cont. Shelf Res.* 16: 645-665.

SWARZENSKI P. W., MCKEE B. A., AND BOOTH J. G. (1995) Uranium geochemistry on the Amazon Shelf: Chemical phase partitioning and cycling across a salinity gradient. *Geochim. et Cosmochim. Acta,* 59: 7-18.

McKee B.A., **Swarzenski P.W.** and Booth J.G. Uranium cycling in river-dominated environments: Revisting the global role of coastal margin sediments. *Geochim. et Cosmochim. Acta (in press).*

McKee B.A., Booth J.G. and **Swarzenski P.W.** Sediment deposition, redistribution and accumulation in the Mississippi River Bight. Continental Shelf Res. (in press)

Booth J.G., McKee B.A. and **Swarzenski P.W.** Factors influencing temporal and spatial variability of uranium concentrations in the Mississippi River. *Geochim. et Cosmochim. Acta (submitted).*

RECENT ABSTRACTS AND PRESENTATIONS/SEMINARS:

SWARZENSKI P.W., HOLMES, C., SHINN, G. AND MOORE, W.S. (1998) Tracing the movement and mixing of groundwater into Florida Bay utilizing a new radiochemical technique: ^{223}Ra and ^{224}Ra isotope systematics. 1998 Florida Bay Science Conference, Univ. of Miami.

SWARZENSKI P.W., PORCELLI D. AND MCKEE B.A. (1998) Aqueous uranium geochemistry in tropical environs: An estuarine comparison of the Amazon and Fly (Papua New Guinea) Rivers. *EOS, Vol. 79/No. 1.*

CONT'D: RECENT ABSTRACTS AND PRESENTATIONS/SEMINARS:

SWARZENSKI P.W. (1997) Non-conservative behavior of select U-series radionuclides in coastal waters. Department of Geochemistry, University of Utrecht, Netherlands.

SWARZENSKI P.W., MCKEE B. A., SØRENSEN K. AND TODD J.F. (1997) ^{210}Pb and ^{210}Po, manganese and iron cycling across the O_2/H_2S interface of a permanently stratified Fjord: Framvaren, Norway. 5th International Symposium on Model Estuaries, Rimouski, Canada.

SWARZENSKI P.W., MCKEE B. A., SKEI, J.M., BOOTH J. G. AND TODD J.F. (1997) Uranium across the redox transition zone of a permanently stratified Fjord: Framvaren, Norway. 5th International Symposium on Model Estuaries, Rimouski, Canada.

SWARZENSKI P.W., MCKEE B. A. AND BOOTH J. G. (1995) On the biogeochemistry of select radionuclides in a permanently anoxic fjord: Framvaren, Norway. Gulf Coast Geochemistry Group Symposium. Cocodrie, LA.

MCKEE B.A. **SWARZENSKI P.W.** AND BOOTH J.G. (1994) Sediment deposition, redistribution and accumulation on the continental shelf adjacent to the Mississippi River. Trans. Am. Geophys. Union 74, 81.

SWARZENSKI P.W., MCKEE B. A. AND BOOTH J. G. (1994) Uranium in estuaries: Non-conservative behavior in some large river/ocean mixing zones. *EOS* 75: 154.

SWARZENSKI P.W., MCKEE B. A. AND BOOTH J. G. (1992b) Uranium geochemistry on the Amazon River/ocean mixing zone: Evidence for removal and colloidal aggregation. *EOS* 73: 277.

SWARZENSKI P.W., MCKEE B. A. AND BOOTH J. G. (1992a) Uranium geochemistry on the Amazon shelf: Seasonal differences in source functions and dissolved/colloidal partitioning of ^{234}U/^{238}U. *EOS* 72: 64.

MCKEE B. A, **SWARZENSKI P.W.** AND BOOTH J. G. (1990) Trace metal scavenging on the Amazon Shelf using thorium isotopes: An evaluation of the Brownian-pumping model. *EOS.*

MCKEE B. A, BOOTH J. G. AND **SWARZENSKI P.W.** (1990) The fate of particulates and particle-reactive constituents in the Mississippi River/ocean mixing zone. *EOS.*

TECHNICAL REPORTS:

SWARZENSKI P. W., MCKEE B. A., AND BOOTH J. G. (1993) CTD observations in Framvaren Fjord, Norway. LUMCON Tech. Report. pp. 121.

RECENT COLLABORATORS:

MEAD ALLISON (TEXAS A&M), ANDREW COHEN (UNIV. OF ARIZONA), ROBERT ALLER (SUNY), FREDERIC BALZER (UNIV. OF PARIS), M. BASKARAN (TEXAS A&M); GREG BRUNSKILL (AUSTRALIAN INSTIT. FOR MAR. SCI.), GAIL KINEKE, (BOSTON COLLEGE), BILLY MOORE (UNIV. OF SOUTH CAROLINA), CHUCK NITTROUER (SUNY), SAMBA PATCHINELAAM (UNIV. OF NITERIO, BRAZIL), DON PORCELLI (CALTECH), KAI SØRENSEN (NIVA), JENS SKEI, (NIVA), JIM TODD (NOAA)

GRADUATE ADVISORS:

B. MCKEE (LUMCON; COMMITTEE CHAIR), L.-H. CHAN, (LSU), S. FAULKNER (LSU), B. GAMBRELL (LSU), R. TWILLEY (USL), P. LAROCK (LSU)

RECENT RESEARCH CRUISE EXPERIENCE (1990-PRESENT):

1990: (3 week) **R/V Iselin (University of Miami)** trace the Amazon River plume using radiochemical tracers. (Chief Scientist - B. A. McKee; LUMCON).

1990: (3 weeks) **R/V Iselin (University of Miami)** uranium geochemistry on the Amazon shelf, Amazon River and Atlantic up to Caribbean Sea during high river stage (Chief Scientist - W. R. Geyer; WHOI, **P. Swarzenski**; LUMCON representative).

1990: (1 week) **R/V Pelican (LUMCON)** coordinated with NASA-Stennis Space Center quantify primary production and suspended sediment flux associated with the Mississippi River using remote sensing techniques (Chief Scientists - R. L. Miller; NASA and B. A. McKee; LUMCON).

CONT'D: RECENT RESEARCH CRUISE EXPERIENCE (1990-PRESENT):

1991: (3 weeks) **R/V Iselin (University of Miami)** uranium geochemistry on the Amazon shelf and in the Amazon River during rising river stage (Chief Scientist - W. R. Geyer; WHOI; **P. Swarzenski**, LUMCON representative).

1992: (2 weeks) **R/V Pelican (LUMCON)** biogeochemical investigations of the Mississippi Bight/Delta shelf area as part of the NOAA Coastal Ocean Program. (Chief Scientist - B. McKee; LUMCON).

1993: (2 weeks) **R/V Braarud (University of Oslo)** biogeochemical investigations of metal behavior in a permanently anoxic fjord. (Chief Scientist - B. McKee; LUMCON and J. Skei; NIVA).

1993: (2 weeks) **R/V Pelican (LUMCON)** uranium biogeochemical investigations on the shelf adjacent to the Mississippi River as part of NSF-funded special response to the flood of 1993. (Chief Scientist - S. Kuehl; VIMS; **P. Swarzenski**; LUMCON representative).

1993: (2 weeks) **R/V Pelican (LUMCON)** biogeochemical investigations of trace element behavior on the shelf adjacent to the Mississippi River as part of NSF-funded COMUS project. (Chief Scientist - B. McKee; LUMCON).

1994: (1 week) **R/V Pelican (LUMCON)** biogeochemical investigations of trace element behavior on the shelf adjacent to the Mississippi River as part of NSF-funded COMUS project. (Chief Scientist - B. McKee; LUMCON).

1994: (2 weeks) **R/V Pelican (LUMCON)** biogeochemical investigations of trace element behavior on the shelf adjacent to the Mississippi River as part of NSF-funded COMUS project. (Chief Scientist - B. McKee; LUMCON).

1995 (2 weeks) **R/V Braarud (University of Oslo)** biogeochemical investigations of metal behavior in a permanently anoxic fjord. (Chief Scientist - B. McKee/**P. Swarzenski**; LUMCON).

1996 (4 weeks) **R/V Seward Johnson (Harbor Branch, FL)** uranium geochemistry on the Amazon shelf, Amazon River and the Atlantic up to Barbados during falling river stage (Chief Scientist - W. R. Aller; SUNY; **P. Swarzenski**, LUMCON representative).

1997 (4 weeks) **R/V Harry Messel** (Australian Institute for Marine Sci., Townsville AU) long-lived U/Th and Os isotopes in the Fly River estuary (Chief Scientist - B. Parker, AIMS; **P. Swarzenski**. LUMCON representative)

1998 (3 weeks) **R/V Explorer** (Kigoma, Tanzania) Geochronologies of Lake Tanganyika (Chief Scientist: Andy Cohen, Univ. of Arizona; **P. Swarzenski**, LUMCON representative)

1998 (1 week) Florida Bay, Investigating the role of groundwater discharges into upper Florida Bay.

1988 (2 weeks) **R/V Polarstar** (USCG) Isotopic investigation of the Arctic Ocean; Nd, Ra, Pu, Th and U. In collaboration with USGS, CALTECH and TAMU.