1345R

718420

DEC 22 1988

ER-122:Wallace

REPORT OF FOREIGN TRAVEL BY PETER G. GROER, ORAU

Robert W. Wood, Director of Physical and Technological Research, ER-74, Headquarters, Germantown, Maryland

Attached is a copy of a trip report prepared by Peter G. Groer covering his travel to the United Kingdom and Austria during the period September 11-21, 1988. The traveler co-chaired a session of the 14th L.H. Gray Conference in Oxford, United Kingdom, September 11-15, 1988, and presented a paper entitled, "Weight of Evidence Analysis of Lung Cancer in Colorado Plateau Uranium Miners." Dr. Groer gave a seminar talk on ^{222}Rn-daughter Detection and discussed the IAEA's Radiation Risk Assessment Program with staff members of the Division of Nuclear Safety in Seibersdorf, Austria, September 19-21, 1988.

The report has been reviewed and does not contain any classified information.

Roanne O. Alexander

Larry L. Radcliffe, Acting Director
Research and Waste Management Division

Attachment

cc w/atchmt:
P. O. Hunter, Jr., ER-1, HQ, FORS
D. B. Waller, IE-1, HQ, FORS
J. G. Coyne, MA-28, OSTI
J. A. Lenhard, ER-10, ORO
D. J. Cook, DP-82, ORO

ER-122:MWallace:cb:6-1714:12-13-88
Processed by ac:12/15/88

CONCURRENC
ER-122
WALLACE
INITIALS/SIG.
MCW
DATE
12/15/88
ATCHLEY
INITIALS/SIG.
SSW
DATE
12/20/88
BROWN
INITIALS/SIG.
DATE
12-21-88
ER-122
WALLACE
INITIALS/SIG
12/21/88
DATE
RTG. SYMBO
INITIALS/SIG
DATE
RTG. SYMB
INITIALS/SI
DATE
RTG. SYMB
INITIALS/SI
DATE
RTG. SYME
INITIALS/S
DATE
RTG. SYMI
INITIALS/S
DATE

REPOSITORY Oak Ridge Operations Records Holding area
COLLECTION Doc. 1944-94
BOX No. A-58-7 91-64 Bldg. 2714-H 768
FOLDER 1515-ORAU

I-2676

OFFICIAL FILE COPY

DOE F 1325.10
(8-87)

*U.S. GOVERNMENT PRINTING OFFICE: 1987-7

COVER SHEET

FOR TRIP REPORTS SUBMITTED TO THE

OFFICE OF ENERGY RESEARCH

Destination(s) and Dates for
Which Trip Report Being Submitted: United Kingdom and Austria, Sept. 11-21, 1988

Name of Traveler: Peter G. Groer

Joint Trip Report /_/ Yes

/X/ No

If so, Name of Other Traveler(s): _____

_____

1128179

FOREIGN TRIP REPORT

Dr. Peter G. Groër

Medical and Health Sciences Division
Oak Ridge Associated Universities
Center for Epidemiologic Research
P. O. Box 117
Oak Ridge, TN 37831-0117

I. 14th L. H. Gray Conference on "Low Dose Radiation-Biological Bases of Risk Assessment," Oxford, England, September 11-15, 1988.

II. Visit at the International Atomic Energy Agency (IAEA) and at the Austrian Research Center in Seibersdorf. Vienna, Austria, September 19-21, 1988.

ABSTRACT

The purpose of this trip was to co-chair a session and present a paper entitled "Weight of Evidence Analysis of Lung Cancer in Colorado Plateau Uranium Miners" at the 14th L. H. Gray Conference, to give a seminar talk on ^{222}Rn-daughter detection at Seibersdorf, and to discuss the IAEA's radiation risk assessment program with staff members of the Division of Nuclear Safety.

Funding sources: DOE

I. 14th L. H. Gray Conference on "Low Dose Radiation - Biological Bases of Risk Assessment
Oxford, England, September 11-15, 1988

This conference was sponsored by the National Radiological Protection Board (NRPB) and the Radiobiology Unit of the Medical Research Council (MRC). The conference organizers were Drs. Keith F. Baverstock (MRC) and John W. Stather (NRPB). Financial support was provided by several government agencies, utilities, and private companies in the U.K. and U.S. (e.g. U.S. NRC, U.S. DOE, BNFL, Rolls Royce). Some highlights of the conference follow.

George D. Kerr (Oak Ridge National Laboratory, USA) gave a clear review of the work on the new "DS86" dosimetry during the past several years. He pointed out that the yield of the two A-bombs, the transport of neutrons and gammas through air, the neutron induced radioactivity, thermoluminescence, shielding, and organ dose calculations for individual A-bomb survivors were reviewed in a cooperative effort by U.S. and Japanese scientists. Experimental data on neutron activation and thermoluminescence were compared with theoretical calculations done with massive computer codes. At present DS86 organ doses for fifteen different organs are available for 94,784 survivors from both cities exposed in different shielding configurations. Age dependence of organ doses is considered by using age at exposure classifications of less than 3, 3 to 12, and greater than 12 years. Work on some survivors in Nagasaki who were shielded by terrain or factory buildings is still in progress. It was interesting to see how through a fortuitous concatenation of circumstances different factors cancelled each other in the process of DS86 estimation. This resulted in a close agreement of the DS86 and T65D organ dose estimates. With hindsight, it appears that in many instances the new dose estimates were well within the range of uncertainty of the T65D estimates which were used for risk assessment up to about 1980. The current status of cancer risk estimation using DS86 doses was reviewed by

Hiro Kato (Radiation Effects Research Foundation (RERF), Hiroshima, Japan). He pointed out that some city specific differences which existed under the T65D and T65DR dosimetry systems are no longer significant if the new doses are used for risk estimation. An example is the well known difference in leukemia incidence and mortality which under T65D was attributed to the greater neutron contribution to the total dose in Hiroshima. He described the effect of different RBEs on the difference in risk estimates under the two dose systems. I do not think that RBE values should be assumed for the analysis of the A-bomb survivor data. Estimation of risk coefficients for neutrons should be attempted using the A-bomb survivor data, and if they are too vague, animal data should be used to "fortify" the estimates. This last comment about RBEs applies also to the next paper by

Don A. Pierce (RERF, Hiroshima, Japan), who discussed some of the models used at RERF to estimate cancer risks under DS86 and who studied the effect of different RBEs on the fit of models to RERF cancer mortality data.

Jack H. Schull (University of Texas Health Science Center, Houston) reported on the increased frequency of mental retardation and small head size caused by prenatal irradiation in A-bomb survivors. He stated that most of the effect is seen in survivors exposed between the eighth and fifteenth week after fertilization. Impairment of school performance and lower scores on intelligence tests have also been noticed mostly in survivors exposed during this critical period. A linear dose response model seems to provide an adequate description of the dose-dependence of these health effects for the critical period of brain development.

J. F. Bithell (University of Oxford, U.K.) talked about the Oxford survey of childhood cancers and leukemia in children exposed in utero. He reported and characterized as convincing the relationship between relative cancer risk and number of x-ray films exposed. Past critics of this study have argued that use of obstetric x-rays indicates already that some among the group of children studied were more susceptible to cancer than "normal" children of mothers not exposed to x-rays in utero.

Michael Fry (Biology Division, Oak Ridge National Laboratory, USA) reviewed the age dependence of tumor induction in experimental animals. He demonstrated that susceptibility for the induction of cancers by ionizing radiation decreases with age and challenged modellers to explain this in terms of a multistage model. He also discussed sex dependence of cancer induction and questioned the assumption of independent development for different tumor types used in almost all statistical analyses.

Shirley Fry (Oak Ridge Associated Universities, USA) gave a review of studies of cohorts occupationally exposed to ionizing radiation. No consistent pattern of elevated cancer risks has been noticed in these cohorts. In general, risk estimates from occupationally exposed cohorts agree with those derived from the A-bomb survivor data if risk reduction factors for the prolonged exposures are applied. She mentioned the recent international effort to pool studies to achieve larger sample sizes and thus increased precision of risk estimates.

William Ellett (National Research Council, USA) reviewed the epidemiologic studies of miners exposed to ^{222}Rn-daughter products. He elaborated on the limitation of some of the data, e.g. lack of individual smoking information and pointed out that case-control studies nested in cohort studies can sometimes be used to circumvent the lack of exposure information for all members of a cohort. In summary he claimed overall consistency of the lung cancer risk derived from the different studies.

Duncan Thomas (University of Southern California, USA) discussed the different models (absolute, relative risk) used by the BEIR V Committee to

estimate and project radiation risks after exposure to external radiation. The BEIR V report will contain analyses of the A-bomb survivor data with the new DS86 dose estimates and reanalyses of the British ankylosing spondylitis patients and other cohorts with elevated risks of leukemia, breast, and thyroid cancer. Risk estimates based on these populations were applied to U.S. background rates for risk projections. Adjustments for dose rate effects and mortality to incidence conversion were made. It was not clear up to which point in time after exposure doses would be accumulated in the situations involving continuous irradiation.

Jack Fabrikant (University of California, Berkeley, USA) reviewed the work of the BEIR IV Committee which he chaired.

Colin Muirhead (National Radiological Protection Board, U.K.) talked about the analysis of ankylosing spondylitis patients. Full dosimetric information was not available for this cohort.

Charles Mays (National Cancer Institute, USA) gave a review paper on cancer risks from internally deposited radium and thorotrast. He discussed his risk estimates derived from German ^{224}Ra, U.S. ^{226}Ra and German thorotrast patients.

I presented a paper entitled "Weight of Evidence Analysis of Lung Cancer in Colorado Plateau Uranium Miners." This concept has a long history in statistics and was first introduced by Harold Jeffreys around 1927. Despite its respectable age, it has seen little use. We presented a new mathematical procedure to estimate weight of evidence and applied it to deceased U.S. uranium miners. Weight of evidence (ω) is the logarithm of the ratio: final odds over initial odds. In our situation it is $\ln[p(w,y|L)/p(w,y|D)]$. Where $p(w,y|L)$ is the probability of a miner who died with lung cancer (L) to belong in a cell of a contingency table defined by an exposure rate w (WLM/year) and y years underground. The denominator gives the analogous probability for a miner who died from another cause (D). We showed that ω is positive for large w and y's. This means, simply put, that for large w and y $p(w,y|L) > p(w,y|D)$. In words, the relative frequency of lung cancer deaths falling in cells with large w and y becomes greater than the relative frequency of deaths from other causes.

II. Visit at the International Atomic Energy Agency (IAEA), Vienna, Austria, September 19, 1988.

I met with Dr. Ahmed (Division of Nuclear Safety, IAEA) to discuss the IAEA "Consultative Document" on "The Application of the Principles of Radiation Protection to Sources of Potential Exposure." I had sent written comments on the document prior to my visit. I agree totally with the basic ideas to use subjective probability to describe uncertainty about radiation risk estimates, but I suggested additional references and

clarifications of some sections. Dr. Ahmed introduced me to Dr. Niehaus, who heads the Reliability and Risk Assessment Section within the Division of Nuclear Safety. We had an extended conversation about the interaction between probabilistic risk assessment (PRA) and radiation risk assessment. He pointed out that PRA techniques and the description of uncertainty in terms of probability for failure rates of reactors do not match the methods used for cancer risk assessment. I agreed with him and expressed the hope that the new effort by Dr. Ahmed would bridge this gap.

III. Visit at the Austrian Nuclear Research Center, Seibersdorf, Austria, September 20-21, 1988.

I gave a seminar talk on ^{222}Rn-daughter detection based on α-spectroscopy and total β-counting at the Department for Radiation Protection ("Institut für Strahlenschutz") in Seibersdorf. The seminar was organized by Dr. Steger of the "Institut für Strahlenschutz" and was attended by Dr. Donhoffer, Chairman, Department for the Use of Radioisotopes, Dr. Attwenger, Chairman, Department for Electronics, and about 15 staff members and visitors. ^{222}Rn-daughter products are being measured in Austrian homes mostly by passive track-etch techniques. Despite the concern about elevated lung cancer risks many Austrians and tourists from neighboring countries are still visiting spas to inhale Rn and Rn-daughter products for therapeutic purposes. Mr. Oppolzer gave me a guided tour of the Seibersdorf Research Center. The center has its own swimming-pool type research reactor. The fuel consists of 33 kg uranium (20 percent ^{235}U) in 22 fuel elements. The maximum neutron flux in the reactor core is 1 x 10^{14} n/cm^2. sec. It is used to produce ^{192}Ir, ^{60}Co and other radionuclides, to irradiate biological and other samples, for neutron activation analysis and for research in solid state physics and material science.

The whole body counter of the institute was used to monitor a group of Austrian steel workers who worked about 100 km north of Chernobyl at the time of the reactor accident.

Appendix

Itinerary

September 10-11	Knoxville - Oxford (U.K.)
September 12-15	Oxford (U.K.)
September 16	Oxford (U.K.) - Vienna (Austria)
September 17-21	Vienna (Austria)
September 22	Vienna (Austria) - Knoxville

Literature acquired:

1. "Astra-Reactor" - A brochure describing the Austrian research reactor.

2. "Basic Safety Principles of Nuclear Power Plants," IAEA - Int. Nucl. Safety Advisory Group Report No. 75.

3. B. Ed Monson, F. Niehaus, "Probabilistic Safety Criteria for Nuclear Power Plants" in Nuclear Power - Performance and Safety, Vol. 4: Safety Technology, IAEA, 1988.

Contacts:

I. Oxford (U.K.): Many radiation risk analysts, biologists from around the world.

II. Vienna (Austria): Drs. Steger, Oppolzer, Donhoffer, Attwenger (Seibersdorf), Drs. Ahmed, Niehaus (IAEA)

Oak Ridge
Associated Universities
Post Office Box 117
Oak Ridge, Tennessee 37831-0117

December 13, 1988

Mr. Larry L. Radcliffe, Acting Director
Research and Waste Management Division
Department of Energy
Oak Ridge, Tennessee 37830

Subject: TRANSMITTAL OF FOREIGN TRIP REPORT
PETER G. GROER - UNITED KINGDOM AND AUSTRIA

Dear Mr. Radcliffe:

Seven copies of the subject report are enclosed. We apologize for any inconveniences caused to your staff as a result of this late submission.

This report has been reviewed and does not contain any proprietary data.

Sincerely,

Jon M. Veigel
President

BAKER

Enclosures

155 pp

~~X-7331~~

1128187

Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831 – 8622

December 5, 1988

Dr. Jon M. Veigel
Executive Director
Oak Ridge Associated Universities
Post Office Box 117
Oak Ridge, Tennessee 37831-0117

Dear Dr. Veigel:

DELINQUENT TRIP REPORTS BY ORAU REPRESENTATIVES

Trip reports are required on all foreign travel within 25 days after the traveler's return to duty station. A review of our records reveals that trip reports are outstanding covering foreign travel by ORAU representatives as follows:

Traveler	Destination	Period of Travel
James E. Crook	Taiwan	October 28-November 6, 1988
Diane S. Flack	United Kingdom	September 9-21, 1988
Shirley A. Fry	United Kingdom	September 9-18, 1988
[redacted]	United Kingdom and Austria	September 10-22, 1988

Enclosed is a copy of the guidelines which should be followed in the preparation of the trip reports.

In the event any of the trips were cancelled, please advise. Otherwise, your assistance in assuring that the required trip reports are submitted as soon as possible will be appreciated.

Sincerely,

M.C. Wallace
for Larry L. Radcliffe, Acting Director
Research and Waste Management Division

Enclosure

DOE F 1325.8
(12-84)

United States Government **Department of Energy**

memorandum

DATE: SEP 2 1988

REPLY TO ATTN OF: ER-622

SUBJECT: Approved 1512.1's

TO: Margie Wallace, ER-122
Agreement Administrative Specialist
Oak Ridge Operations Office

Please find attached approved 1512.1's for the foreign travel of the following individuals:

Flack, Diane S. - ORAU
Fry, Shirley A. - ORAU
Groer, Peter G. - ORAU
Mougy, Jean - CEBAF

A trip report is required from each traveler upon completion of his/her travel. If the travel was cancelled or revised in any way, please advise us.

Robert L. Main
Office of Management
Office of Energy Research

Attachment(s)

9/8/88 ltr + approved 1512.1 to Carol Rokus, ORAU/oa

1128189

1515 ORAU
Same as
X-5071

DOE F 1512.1
(8-86)

U.S. DEPARTMENT OF ENERGY

OMB Control No.
1910-2100

REQUEST FOR APPROVAL OFFICIAL FOREIGN TRAVEL

(Previous Editions are Obsolete)

PART B—To be completed by traveler's administrative officer

Budget and Reporting Classification to be charged: HA 020 1010
(see Chapter II, Accounting Practices and Procedures Handbook) I

PART C—To be completed by traveler

1a. NAME OF TRAVELER Groer, Peter G. b. CITIZENSHIP U.S.A.	c. DATE AND PLACE OF BIRTH [redacted] Austria d. PASSPORT NUMBER *(if available)* [redacted]
2a. HOME ADDRESS [redacted]	b. BUSINESS ADDRESS Oak Ridge Associated Universities P.O. Box 117, Oak Ridge, TN 37831-0117 c. TELEPHONE NUMBER 615/576-3532
3a. EMPLOYER Oak Ridge Associated Universities	c. CONTRACT NUMBER DE-AC05-760R00033
b. ORGANIZATIONAL UNIT Medical and Health Sciences Division	d. POSITION TITLE *(including profession)* Senior Scientist (Physicist)

4. PURPOSE OF TRAVEL—Include all pertinent background information leading to travel and attach copies of invitations and correspondence regarding travel to present papers, give speeches, or to attend conference or symposia. Justification for travel must be provided including benefit to be derived by the government if trip is taken. Also identify by name and organization other DOE and contractor personnel who, to the traveler's knowledge, are going to the same destination at the same time as the traveler. In addition, specify nature and classification of information to be disclosed including titles of papers to be presented; nature of information to be obtained at each of the places to be visited and conferences to be attended and its relation to traveler's work. Travelers are responsible for obtaining clearances for papers or speeches when necessary. If more space is required, attach a separate sheet. NOTE: IF THIS INFORMATION IS CLASSIFIED BE SURE TO CLASSIFY THIS FORM APPROPRIATELY.

The purpose of this travel is to co-chair a session on low-dose extrapolation at the 14th L. H. Gray Conference on "Low Dose Radiation - Biological Bases of Risk Assessment" (Oxford, U.K. 11-15 September, 1988), to present a paper describing a reanalysis of the Colorado Plateau uranium miner data at the same conference, to give a talk at the Institute for Radiation Protection in Seibersdorf, Austria on ^{222}Rn-daughter detection instrumentation (19-20 September, 1988) and to visit Dr. Ahmed at the International Atomic Energy Agency in Vienna, Austria, for discussions of the agency's program on radiation risk assessment (21 September 1988).

At the L. H. Gray Conference, I will have the opportunity to become familiar with statistical techniques for radiation risk assessment and radioepidemiology used by other investigators involved in studies similar to the DOE-sponsored studies conducted at ORAU/CER. Benefits to the ORAU studies will result from techniques developed by other investigators which are applicable to the CER studies. Other DOE personnel who will attend the L. H. Gray Conference are Shirley A. Fry (ORAU/CER), Michael Fry (MMES/ORNL), and Diane S. Flack (ORAU/CIRRPC).

05-18-21-11

1515-CER

Privacy Act Information Statement. Collection of the information is authorized by the Department of Energy Organization Act of 1977, P.L. 95-91. Disclosure of the personal information requested is mandatory to support authorization for official travel to foreign countries, and to obtain a passport.

The information furnished will be used by DOE to authorize travel and payment of travel expenses; by the Department of State to issue a passport; and by the General Accounting Office to audit and verify the accuracy and legality of disbursements.

DOE F 1325.8
8-89

United States Government | Department of Energy

Oak Ridge Operations

memorandum

DATE: July 27, 1988

REPLY TO
ATTN OF: ER-122:Wallace

SUBJECT: PROPOSED FOREIGN TRAVEL BY ORAU REPRESENTATIVES

TO: Robert W. Wood, Director of Physical and Technological Research, ER-74, Headquarters, Germantown, Maryland

Attached for DOE Headquarters approval are three copies each of DOE F 1512.1 covering the proposed travel by ORAU representatives as follows:

Traveler	Destination	Period of Travel	Cost to DOE Budget Activity HA 02 01 01
Shirley A. Fry	United Kingdom	9/9-18/88	$1,788
Peter G. Groer	United Kingdom and Austria	9/10-22/88	$3,119

The travelers will attend and present papers at the 14th L. H. Gray Conference on Low Dose Radiation - Biological Basis of Risk Assessment to be held in the United Kingdom. Dr. Groer will also co-chair a session on low-dose extrapolation. Following the conference, Dr. Groer will travel to Austria to visit (1) the Institute of Radiation Protection and make a presentation on ^{222}Rn-daughter protection instrumentation and (2) the International Atomic Energy Agency (IAEA) for discussions on the Agency's program on radiation risk assessment.

As noted in Part 8b., DOE F 1512.1, the organizers of the Conference will pay a portion of Dr. Fry's airfare as well as the registration fees and cost of accommodations for each of the travelers. Therefore, the cost to DOE Budget Activity HA 02 01 01 will be reduced accordingly.

Other known contractor personnel proposed to attend this meeting are as follows: Diane A. Flack, ORAU/CIRRPC; R. J. M. Fry and G. D. Kerr, ORNL; and T. E. Fritz, Argonne.

8/26/88 Recd verbal approval
fm. Bob Main, ER-HQ.
Notified Carol Baker, ORAU.
MW

1128191

Please have Margie Wallace (FTS 626-0714) notified as soon as a determination is made regarding the travel and return the signed originals of DOE F 1512.1 to this office.

M. C. Wallace
for W. D. Adams, Director
Research and Waste Management Division

Attachment

cc w/atchmt:
J. A. Lenhard, ER-10, ORO
M. M. Dare, AD-43, ORO
D. J. Cook, DP-82, ORO

DOE F 1512.1
(8/88)

All Other Editions Are Obsolete

U.S. DEPARTMENT OF ENERGY

OMB Control No.
1910-2100

REQUEST FOR APPROVAL OFFICIAL FOREIGN TRAVEL

PART A—SUMMARY TRAVEL INFORMATION

ORGANIZATION: ORAU

COST TO DOE: $3,119.00

FUND SOURCE: HA 02 01 01 (The organizers will cover accommodation costs at New College together with the registration fee. Dollar amounts are not known this time.)

NAME OF TRAVELER: Groer, P. G.

DOE/CONTRACTOR/UNIVERSITY: C

DESTINATION: New College, Oxford, UK

DATES: 09/11/88 TO 09/15/88

PURPOSE: To attend the 14th L. H. Gray Conference. Traveler will co-chair a session on low-dose extrapolation and present a paper describing reanalysis of the Colorado Plateau uranium miner data.

AGREEMENT: N/A

DESTINATION: Seibersdorf, Austria

DATES: 09/19/88 TO 09/20/88

PURPOSE: To give a presentation at the Institute for Radiation Protection on ^{222}Rn-daughter protection instrumentation and to meet with Dr. Duftschmid.

AGREEMENT: N/A

DESTINATION: Vienna, Austria

DATES: 09/21/88 TO 09/21/88

PURPOSE: To meet with Dr. Ahmed at the International Atomic Energy Agency for discussions of the agency's program on radiation risk assessment.

AGREEMENT: N/A

DESTINATION:

DATES: __/__/__ TO __/__/__

PURPOSE:

AGREEMENT:

1128193

DOE F 1512.1
(8-86)

U.S. DEPARTMENT OF ENERGY

OMB Control No.
1910-2100

REQUEST FOR APPROVAL OFFICIAL FOREIGN TRAVEL

(Previous Editions are Obsolete)

PART B—To be completed by traveler's administrative officer

Budget and Reporting Classification to be charged: HA 020 1010
(see Chapter II, Accounting Practices and Procedures Handbook) I

PART C—To be completed by traveler

1a. NAME OF TRAVELER Groer, Peter G. b. CITIZENSHIP U.S.A.	c. DATE AND PLACE OF BIRTH [redacted], Austria d. PASSPORT NUMBER *(if available)* [redacted]
2a. HOME ADDRESS [redacted]	b. BUSINESS ADDRESS Oak Ridge Associated Universities P.O. Box 117, Oak Ridge, TN 37831-0117 c. TELEPHONE NUMBER 615/576-3532
3a. EMPLOYER Oak Ridge Associated Universities	c. CONTRACT NUMBER DE-AC05-760R00033
b. ORGANIZATIONAL UNIT Medical and Health Sciences Division	d. POSITION TITLE *(including profession)* Senior Scientist (Physicist)

4. PURPOSE OF TRAVEL—Include all pertinent background information leading to travel and attach copies of invitations and correspondence regarding travel to present papers, give speeches, or to attend conference or symposia. Justification for travel must be provided including benefit to be derived by the government if trip is taken. Also identify by name and organization other DOE and contractor personnel who, to the traveler's knowledge, are going to the same destination at the same time as the traveler. In addition, specify nature and classification of information to be disclosed including titles of papers to be presented; nature of information to be obtained at each of the places to be visited and conferences to be attended and its relation to traveler's work. Travelers are responsible for obtaining clearances for papers or speeches when necessary. If more space is required, attach a separate sheet. NOTE: IF THIS INFORMATION IS CLASSIFIED BE SURE TO CLASSIFY THIS FORM APPROPRIATELY.

The purpose of this travel is to co-chair a session on low-dose extrapolation at the 14th L. H. Gray Conference on "Low Dose Radiation - Biological Bases of Risk Assessment" (Oxford, U.K. 11-15 September, 1988), to present a paper describing a reanalysis of the Colorado Plateau uranium miner data at the same conference, to give a talk at the Institute for Radiation Protection in Seibersdorf, Austria on ^{222}Rn-daughter detection instrumentation (19-20 September, 1988) and to visit Dr. Ahmed at the International Atomic Energy Agency in Vienna, Austria, for discussions of the agency's program on radiation risk assessment (21 September 1988).

At the L. H. Gray Conference, I will have the opportunity to become familiar with statistical techniques for radiation risk assessment and radioepidemiology used by other investigators involved in studies similar to the DOE-sponsored studies conducted at ORAU/CER. Benefits to the ORAU studies will result from techniques developed by other investigators which are applicable to the CER studies. Other DOE personnel who will attend the L. H. Gray Conference are Shirley A. Fry (ORAU/CER), Michael Fry (MMES/ORNL), and Diane S. Flack (ORAU/CIRRPC).

hb18711

Privacy Act Information Statement. *Collection of the information is authorized by the Department of Energy Organization Act of 1977, P.L. 95-91.* Disclosure of the personal information requested is mandatory to support authorization for official travel to foreign countries, and to obtain a passport.

The information furnished will be used by DOE to authorize travel and payment of travel expenses; by the Department of State to issue a passport; and by the General Accounting Office to audit and verify the accuracy and legality of disbursements.

5. PROPOSED ITINERARY *(Account for all time from beginning and ending dates of travel. Vacation dates taken in conjunction with this travel shall be indicated. NOTE: IF INFORMATION IS CLASSIFIED, CLASSIFY THIS FORM APPROPRIATELY.)*

DATES	LOCATION *(Installation, City, Country)*	INDIVIDUALS TO BE CONTACTED	SUBJECTS OF DISCUSSION	*(Check One)* Classified	Unclassified
9/10/88	Depart Knoxville, USA				
9/11-15/88	New College, Oxford, UK	K. Baverstock, J. W. Stather, and conference participants	Radiation risk analysis at L. H. Gray Conference		X
9/16-20/88	Weekend and visit Institute for Radiation Protection Seibersdorf, Austria	Dr. Duftschmid (near Vienna, Austria)	^{222}Rn-daughter detection		X
9/21/88	International Atomic Energy Commission, Vienna, Austria	Dr. Ahmed	Radiation risk analysis		X
9/22/88	Leave Vienna, Austria and return Knoxville, TN, USA				

6. HAS TRAVELER SUBMITTED DOE FORM 1512.2 TO COGNIZANT DOE SECURITY OFFICE? *(Required for travel to a sensitive country by an individual who currently holds or has ever held, within the last 5 years, a DOE Access Authorization.)*

☐ YES ☒ NO: Have not held a DOE Access Authorization within last 5 years.

7. SIGNATURE OF TRAVELER—By signing, the traveler acknowledges the obligation to file a trip report within 30 days of return to duty station.

Peter J. Jones *(Signature)* 6/29/88 *(Date)*

PART D—To be completed by official responsible for travel funds

8a. ESTIMATED COST OF TRAVEL TO DOE ($1,500 airfare +train & misc.)

Transportation	$ 1,755.00
Per Diem and Miscellaneous	$ 1,364.00
Total	$ 3,119.00

b. IF PART OF COST OF TRAVEL IS TO BE PAID OR HAS BEEN REQUESTED FROM SOURCES OTHER THAN DOE, INDICATE SOURCE AND AMOUNT. (Accommodations & reg. fee) Portions of the costs will be paid by the organizers of the conference. Amount unknown at this time. (L. H. Gray)

TRAVEL FUNDS ARE NOW AVAILABLE FOR THIS TRIP

Billie P. Ryan 7/6/88
Division Business Office *(Signature and Title)* (Date)

William F. Countiss 7/19/88
William F. Countiss, Manager of Finance (Date)

PART E—To be completed by Traveler's supervisor

9. REVIEW AND COMMENTS:

William W. Dunn 7/12/88
Division Chairman *(Signature and Title of Supervisor)* (Date)

William F. Countiss 7/19/88
William E. Felling, Executive Director (Date)

PART F—To be completed at DOE Field Organization

10. NON SENSITIVE TRAVEL: Review/approval by Head of DOE Field Organization. *(Approval may be given if such authority has been delegated by the Cognizant Secretarial Officer.)*

Approval recommended.

M. C. Wallace *(Signature)* for W. D. Adams, Director Research and Waste Management Div. *(Title)* 7/27/88 *(Date)*

11. SENSITIVE TRAVEL: Review by Head of DOE Field Organization. Has Field Security reviewed DOE F 1512.2 and completed DOE F 1512.3?

☐ YES ☐ NO

PART G—To be completed at Headquarters

12. REVIEW/COMMENTS BY DIRECTOR OF DIVISION OR OFFICE

(Signature) *(Title)* *(Date)*

13. COGNIZANT SECRETARIAL OFFICER

IF DOE EMPLOYEE TRAVEL ☐ IE Determination Received

IF SENSITIVE TRAVEL ☐ IE Determination Received ☐ ISA Determination Received ☐ OSS Determination Received

1 1 2 8 1 9 5

(Signature) *(Date)*