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REPORT OF FOREIGN TRAVEL BY ROBERT C. RICKS, 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 Robert C. Ricks covering his travel to Austria during the period June 4-18, 1988. At the request of Dr. Fred A. Mettler, Jr., U.S. Representative to the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the traveler served as a substitute advisor and member of the U.S. delegation to the 37th Session held in Vienna.

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

ORIGINAL SIGNED BY
M. C. WALLACE

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

Attachment

cc w/atchmt:
J. F. Decker, ER-1, HQ, FORS
D. B. Waller, IE-1, HQ, FORS
J. G. Coyne, MA-28, OSTI
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COVER SHEET

FOR TRIP REPORTS SUBMITTED TO THE

OFFICE OF ENERGY RESEARCH

Destination(s) and Dates for
Which Trip Report Being Submitted: Vienna, Austria June 4-18, 1988

Name of Traveler: Dr. Robert C. Ricks

Joint Trip Report [/] Yes

[XX] No

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

_____

FOREIGN TRIP REPORT
VIENNA, AUSTRIA
JUNE 4-18, 1988

TRAVELER:

Robert C. Ricks, Ph.D.
Director, REAC/TS
Medical and Health Sciences Division
Oak Ridge Associated Universities
P. O. Box 117
Oak Ridge, Tennessee 37831-0117

DESTINATION AND DATES:
Vienna, Austria
June 4-18, 1988

PURPOSE OF TRIP:

The purpose of this trip was to attend the 37th Session of United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and to serve as an advisor (biological subgroup) to Dr. Fred A. Mettler, Jr., U.S. representative to the UNSCEAR Committee. The UNSCEAR Committee met to review nine draft documents (see Attachment I) and in subcommittee (physical and biological subgroups) redraft final documentation for publication by the U.N. Secretariat. Final documentation redrafting was to be completed by June 17, 1988. I was specifically assigned to review, comment, and otherwise participate in discussion of Document R.472, Annex G (including revised Chapter 7) and Document R.473, Annex H as a member of the biological subgroup.

INTRODUCTION:

Preparation of the draft reports listed in Attachment I took place during and between the 31st and 37th Sessions of the UNSCEAR Committee. Report materials were developed at annual committee sessions based on working papers prepared by the Secretariat and selected consultants. These working papers were amended and redrafted from session to subsequent session. These documents, as specified by the Secretariat, constitute the "latest comprehensive assessment by the committee of the sources, effects, and risks of ionizing radiation."

DAILY ACTIVITIES:

Saturday, June 4

Left Oak Ridge, Tennessee, for Vienna, Austria.

Sunday, June 5

Arrived in Vienna, Austria. I met with Dr. Mettler and other committee members (W. Sinclair, L. Anspaugh, C. Edington, J. Harley, P. Selby, E. Webster, and H. Wycoff) for a briefing.

Monday, June 6

The committee met in plenary session. Dr. Bo Lindell, chairman, introduced the program and proposed the timetable for document review/revision by the respective working groups. The working timetable and summary minutes of this opening session are shown in Attachments II and III respectively.

Tuesday-Friday, June 7-10

I participated in review and discussion of assigned Documents R.472 and R.473. Substantial discussion was directed to Document R.472, and a decision was made to redraft some materials as a result of discussions regarding cancer risk factor coefficients. With reference to Document R.473, the biological subgroup was presented a draft copy of information related to the ^{137}Cs in Goiania, Brazil. The Brazil accident summary (Attachment IV) data were accepted with only minor revision.

Monday-Tuesday, June 13-14

The general session was opened again by Dr. Bo Lindell, chairman, and quickly proceeded to segregation into the physical and biological subgroups in order to review the redrafted materials related to R.472 (Radiation carcinogenesis in man). The remainder of the day was spent reviewing Document R.472 (and annex) by the biological subgroup. Considerable discussion concerned risk factors and

a revision of the dose reduction factor. The primary question centered on a dose reduction factor of 2-5 Gy or 2-10 Gy. A subgroup decision was reached to adopt a dose reduction factor of 2-10 Gy.

On Tuesday afternoon, a general working group session was held with progress reports (Attachment V) presented by the vice-chairman of the physical and biological subgroups respectively.

Wednesday, June 15

The committee met as a working group on Wednesday morning. The primary order of business was to briefly discuss the review of the genetics document (R.471) by the respective physical and biological subgroups. Review of the document (R.471) carried over until the following day.

Thursday, June 16

The working group met first to finish review of the genetics document (R.471).

The biological subgroup met later to review redrafted paragraphs of the document (R.472) "Radiation carcinogenesis in man." These reviews were completed by noon.

On Thursday afternoon, the working group met in general session to discuss the Document R.470 "Detriment analysis comparisons." In general, the working group felt that Document R.470 did not deal with types of detriment and that the document had many problems in the area of weighting risk factors. The working group also felt that the conclusions in the document were weak. The data presented in the document are based on low-dose/low dose rate studies which the group felt constituted problems in extrapolation. Thus, the consensus was reached to table the document subject to further study.

Friday, June 17

The working group met to finalize changes in the genetics document (R.471); and after a short discussion, the document was approved with previously discussed changes. Additional business included:

(1) a formal vote to table the document (R.470) "Detriment analysis comparisons," pending revisions/redraftings to be discussed at a future meeting;

(2) discuss approval or disapproval of a proposed text for a press release (Attachment VI)--this was not approved, but Dr. Bo Lindell, chairman, advised each delegate they were free to discuss all documents as long as the discussions were in generalities;

(3) future work of the UNSCEAR Committee was discussed including:

(a) the drafting of a document related to the development, production, and use of radioisotopes
(b) doses from radon in homes
(c) additional studies on psychological problems following major radiation accidents
(d) additional studies on stochastic versus non-stochastic effects of ionizing radiation
(e) a proposal (Attachment VII) submitted by the Federal Republic of Germany

In addition, the working group discussed a date for the 1989 UNSCEAR Committee meeting, and a tentative decision was made to hold the meeting May 8-12, 1989, in Vienna.

OTHER ACTIVITIES

On Wednesday, June 15, I was asked to attend a working lunch session to discuss the International Atomic Energy Agency report of the Goiania, Brazil ^{137}Cs Accident (I had previously worked on the first draft of the report in Rio de Janeiro, May 1988). The purpose of the working lunch session was to discuss the meeting date in Rio de Janeiro and to inform me that the Rio meeting would be chaired by Dr. Dan Beninson and take place on July 19-22, 1988. The working lunch session was attended by Drs. Gonzalez (IAEA representative in charge of the official report), Al Kinneke, Ron Utting, Roger Clark (from the United Kingdom), and Dan Beninson.

On Friday, June 17, I met with Dr. Maurice J. Katz, Counselor for Nuclear Technology, United States Mission to U.N. Systems Organizations. Dr. Katz was formerly with Defense Programs, DOE Headquarters. Dr. Katz asked that I brief him regarding the Brazilian ^{137}Cs accident, REAC/TS involvement, and the current status of follow-up of the accident survivors. I informed Dr. Katz that REAC/TS had previously submitted a suggested follow-up protocol to the Brazilian government and that we were prepared to assist the government of Brazil in a medical surveillance follow-up of these accident survivors. I also took the opportunity to discuss with Dr. Katz the impending fall from orbit of the Russian Soyuz 1900 satellite. This satellite has a nuclear reactor package and thus may present a radiologic hazard following reentry. Dr. Katz is a member of the U.N. Emergency Response Team for such potential radiation problems. I assured him that REAC/TS was prepared to assist in any way possible. Dr. Katz informed me that he would also notify WHO-Geneva that REAC/TS was prepared to assist in the event that the Soyuz satellite reentry resulted in any radioactive contamination or radiation injury to man.

Saturday, June 18

Leave Vienna, Austria for Oak Ridge, Tennessee.

Sunday, June 19

Arrived in Oak Ridge, Tennessee.

ATTACHMENT I

Thirty-seventh session of UNSCEAR
Vienna, 6 to 17 June 1988

UNSCEAR/XXXVII/4
6 June 1988

LIST OF DOCUMENTS

Document number		Title
R.465	MAIN TEXT	Report to the General Assembly (Main text)
R.466	Annex A	Exposures from natural sources of radiation
R.467	Annex B	Exposures from nuclear power production
R.468	Annex C	Exposures from medical uses of radiation
R.469	Annex D	Exposures from the Chernobyl accident
R.470	Annex E	Detriment analysis comparisons
R.471	Annex F	Genetic hazards
R.472	Annex G	Radiation carcinogenesis in man and R.472/Add.1: Chapter VII
R.473	Annex H	Early effects in man of high doses of radiation

TIME TABLE

Date	Time	Meeting	Subject	Document
Monday				
6 June	10.00-10.30	Plenary	Opening session	
	10.40-13.00	Working Group	Organization of work	
	14.30-17.30	Working Group	and general discussion	
Tuesday				
7 June	09.30-12.30	Biological Subgroup	Radiation carcinogenesis	R.472
	14.00-17.00	Physical Subgroup	Chernobyl accident	R.469
		Biological Subgroup	Radiation carcinogenesis	R.472
Wednesday				
8 June	09.30-12.30	Physical Subgroup	Chernobyl accident	R.469
		Biological Subgroup	Radiation carcinogenesis	R.472
	14.00-17.00	Physical Subgroup	Chernobyl accident	R.469
		Biological Subgroup	Radiation carcinogenesis	R.472
Thursday				
9 June	09.30-12.30	Working Group	Progress reports	
			Detriment analysis	R.470
	14.00-17.00	Physical Subgroup	Medical irradiation	R.468
		Biological Subgroup	Early effects of high doses	R.473
Friday				
10 June	09.30-12.30	Physical Subgroup	Medical irradiation	R.468
		Biological Subgroup	Early effects of high doses	R.473
	14.00-17.00	Physical Subgroup	Medical irradiation	R.468
		Biological Subgroup	Early effects of high doses	R.473
Monday				
13 June	09.30-12.30	Physical Subgroup	Natural sources	R.466
		Biological Subgroup	Early effects of high doses	R.473
	14.00-17.00	Physical Subgroup	Natural sources	R.466
		Biological Subgroup	Early effects of high doses	R.473
Tuesday				
14 June	09.30-10.30	Working Group	Progress reports	
	11.00-12.30	Physical Subgroup	Nuclear power production	R.467
		Biological Subgroup	Radiation carcinogenesis	R.472
	14.00-17.00	Physical Subgroup	Nuclear power production	R.467
		Biological Subgroup	Radiation carcinogenesis	R.472
Wednesday				
15 June	09.30-12.30	Physical Subgroup	Chernobyl accident	R.469
		Biological Subgroup	Radiation carcinogenesis	R.472
	14.00-17.00	Physical Subgroup	Chernobyl accident	R.469
		Biological Subgroup	Genetic hazards	R.471
Thursday				
16 June	09.30-12.30	Working Group	Report to General Assembly	R.465
	14.00-17.00	Working Group	Report to General Assembly	R.465
Friday				
17 June	09.30-12.30	Working Group	Report to General Assembly	R.465
	14.00-16.30	Working Group	Report to General Assembly	R.465
	16.35-17.00	Plenary	Closing session	

The Genetic Sub Subgroup will meet during the week 13-17 June.

Thirty-seventh session of UNSCEAR
Vienna, 6 to 17 June 1988

UNSCEAR/XXXVII/11
7 June 1988

WORKING GROUP

Chairman: Prof. Bo Lindell (Sweden)
Rapporteur: Mr. J. Dunster (United Kingdom)

Monday, 6 June 1988

1. Programme of discussions

In introducing the programme of the Committee, the Chairman drew attention to the timetable produced by the Secretariat. He identified the documents R.472 and its Add.1 "Radiation carcinogenesis in man" and R.469 "Exposures from the Chernobyl accident" as the most important topics. He suggested delaying the start of the work of the Physical Subgroup on Chernobyl until the afternoon of Tuesday, 7 June, so that the members of the Physical Subgroup could attend the early discussion of the Biological Subgroup on radiation carcinogenesis. He also reminded the Subgroups that they must consider the relevant parts of the text of the Report to the General Assembly so that the Annex material would be consistent with and justify the Main Text. He agreed that this would mean that there should be some discussion of the Main Text early in the two-week programme. In the event, no such discussion took place in the first session of the Working Group. The Working Group accepted the proposed timetable as amended by the Chairman and is now reflected in conference room paper UNSCEAR/XXXVII/7.

2. Officers for Subgroups

The Working Group elected the following Chairmen:

Physical Subgroup	Chairman	Dr. D. Beninson
	Vice Chairman	Dr. K.H. Lokan
Biological Subgroup	Chairman	Dr. H. Jammet
	Vice Chairman	Dr. W. Sinclair
Genetic Subsubgroup	decisions postponed.	

3. Statement of results

The Chairman drew attention to the pressure that would be put on Committee members to release information to the press during the period from the end of the meeting to the publication of the Report. He suggested several options. He did not think that complete secrecy was likely to be a realistic choice and proposed that a summary statement of the outcome of the Committee's work should be prepared. This could be issued by the Secretariat to the press or used as a brief by members in dealing with press enquiries. After some discussion, the Committee agreed that a text would be needed and that the decision on how it should be used should await the text itself. The Chairman offered the the Secretariat would produce a first draft of such a text. This offer was enthusiastically accepted by the Working Group.

4. Working procedures

The Chairman re-emphasized the importance of the work on radiation carcinogenesis and Chernobyl, including the material in the Main Text (the Report to the General Assembly). He dealt first with the task of the Biological Subgroup and identified several key issues:

- Do the data support the risk estimates at high doses and dose rates?
- Can we explain and take account of the differences between the Japanese data and that from other exposed groups, the latter apparently showing a lower risk by a factor of about 3?
- Is it possible to arrive at combined risk estimates?
- The observed data relate to high doses, usually at high dose rates, and the exposed populations are not yet extinct. What models should be used to interpolate to low doses and dose rates and to project the eventual levels of risk?

The Chairman added that he foresaw the need for considerable attention to editorial and presentational points. The Biological Subgroup would need to address all these points.

In the following discussion on the procedures and on the draft report several major issues were raised. They included

- The report should not be confined to material leading to quantified estimates of risk. The descriptive material on the biology of carcinogenesis was also of great value. However, explanations were needed when quantitative data were not subsequently used in risk assessment.

- The increases in risk estimates resulted partly from changes in dosimetry and partly from the adoption of a multiplicative model for projection to the future incidence of cancer. There was a need to explain the justification of these changes, especially where these resulted from changes of judgement. It would also be important to identify the upper limit to the range of risk estimates. Presentationally, it would be important to avoid dogmatic statements about the new estimates of risk.

Turning to the work of the Physical Subgroup, the Chairman asked for news on the report on the Chernobyl accident. The following points emerged from a general discussion:

- The introduction should make it clear that the models used to relate observed data to collective dose were those appropriate to a broad approach to the problem. Where comparisons could be made with local or national situations, these comparisons could be used to validate the general models. The agreement had been generally satisfactory, usually with discrepancies of no more than a factor of about 3.

- The suggestion was made that the Subgroup might broaden the presentation and reduce the amount of data on small regions.

- The data on releases could be supplemented by more recent information.

- The suggestion was made that the Annex should deal with all accidents, not only with Chernobyl. There was no discussion of this suggestion, and it is thus left open for consideration by the Subgroup.

Finally, the Chairman asked if there were any major issues to be raised at this time in the other documents. There being no such issues, the meeting of the Working Group was closed. The next meeting, to review progress, would be in the morning of Thursday, 9 June.

Thirty-seventh session of UNSCEAR
Vienna, 6 to 17 June 1988

UNSCEAR/XXXVII/B/7
9 June 1988

BIOLOGICAL SUBGROUP

Document A/AC.82/R.473
(Annex H)
"Early effects in man of high doses of radiation"

ACCIDENT IN GOIANIA, BRAZIL

Addenda suggested by Dr. Ricks and Dr. Sinclair

General

An accident occurred in Goiania, Brazil in 1987 which resulted in initial acute whole-body external exposures followed by low dose rate chronic whole-body exposure from internally deposited ^{137}Cs chloride (from a damaged teletherapy source). In addition, many persons received acute localized radiation injuries (beta/gamma) to the skin and deeper tissues. Twenty-one persons required intensive medical care. Ten persons were critical with dose estimates (cytogenetic dosimetry) ranging from 3-7 Gy. Four persons died as a result of their exposures. In addition to good nursing care, antibiotics and platelet transfusions the experimental drug granulocyte macrophage colony stimulating factor (GM-CSF) was administered to eight patients suffering from the acute radiation syndrome. Four of the patients who received GM-CSF subsequently died as a result of their radiation insult. The efficacy of using GM-CSF was not demonstrated (in the four survivors) for future radiation accident due to inconclusive evidence obtained in the Goiania accident. GM-CSF may have shortened the recovery phase in one surviving patient, but no data are available to rule out a natural spontaneous recovery.

Effects on skin

Radiation-induced skin injury was evident in 19 patients involved in the Goiania accident (1987). Lesions were present on hands, feet, legs, armpits and as numerous small areas on chest, abdomen, face, arms and the anterior medical aspects of the legs. Skin injury was due to beta radiation from contamination (external) and to deeper underlying tissues from penetrating gamma radiation. Beta injuries healed within 3 months post-irradiation followed by expression of gamma injuries to deeper tissues. None of the local injuries among Goiania victims were as extensive as in the victims of Chernobyl. The clinical interpretation of this difference was that the Russian victims suffered from combined injury disease including thermal and beta burns while the Brazilian ones were from radiation only.

Internal emitters

Extensive internal contamination with $^{137}CsCl$ occurred in 22 persons in the Goiania accident (1987). Internal contamination in these 22 individuals exceeded 85 μCi (3145 kBq). One child in the Goiania accident had internal ^{137}Cs levels exceeding 30 mCi (1110 MBq). Extensive ^{137}Cs internal contamination prompted the use of Prussian Blue for the first time in radiation accident history. Prussian Blue was effective in enhancing the fecal elimination of ^{137}Cs although high levels of internal contamination remain in many of these so contaminated.

References

1. American Nuclear Society. Proceedings of Conference, Charleston, S.C., September 1988.

2. Report on the Brazilian Accident. IAEA, Vienna, 1988.

ATTACHMENT V

Thirty-seventh session of UNSCEAR
Vienna, 6 to 17 June 1988

UNSCEAR/XXXVII/18
15 June 1988

WORKING GROUP

Chairman: Prof. B. Lindell (Sweden)
Rapporteur: Dr. K.H. Notani (Canada)

Tuesday, 14 June 1988

PROGRESS REPORTS BY CHAIRMEN OF SUBGROUPS

A. Report from the Vice Chairman of Physical Subgroup (Dr. K.H.Lokan)

1. Exposures from natural sources of radiation (A/AC.82/R.466)
Some relatively minor changes were proposed:
(a) decided not to adopt a quality factor of 20 for fast neutrons but to retain the value of 10 at least until new formal ICRP recommendations are made.
(b) For radon dose assessments decided to continue with the value of 7 nGy/h/Bq/m^3 for the bronchial dose rate per unit Equilibrium Equivalent Concentration consistent with ICRP.
(c) The values for estimated per caput annual effective dose equivalent for natural sources (Table 1) are little affected, with increase in radon contribution arising from an increase in the assessed average radon concentration.

2. Exposures from nuclear power production (A/AC.82/R.467)
Reminded that this Annex is an amalgamation of two documents; one on current exposures fom nuclear power production and the other a more generalized modelling of the predicted impact of nuclear power over 100 years (1950-2050).
(a) The Subgroup decided to incorporate data covering the five-year period (1980-1984) because data beyond this time are far from complete.
(b) The Subgroup found the document in good shape and therefore made few changes. Additional data provided by a number of countries will be incorporated by the Secretariat into the document. The current estimate for the normalized per caput doses from existing nuclear power stations will be only slightly changed in this Annex.

B. Report from the Chairman of Biological Subgroup (Dr. H. Jammet)

Radiation carcinogenesis in man (A/AC.82/R.472 and Add.1)
The Biological Sub-Subgroup, a group of four assigned the task of resolving several points with regard to chapter VII (the Add.1), did a good job. There were several difficult problems but these are now solved. They have come to a consensus and will complete the job in time. The Annex itself will be reviewed by the Biological Subgroup tomorrow.

C. Report from the Chairman of the Genetics Subgroup (Dr. A. Searle)
Concentrated on the relavant Tables in the Report to the General Assembly which are somewhat complicated. They were slightly modified. The footnotes will be removed. A paragraph will be added but on quantifiable risk only. Unquantifiable risk may be large, though. Dr. Dutrillaux had expressed concern for the figure of 40% of the lifetime dose as genetically significant; which may be valid for the West but may not be for the world as a whole.
Dr. Searly reported also that the Subsubgroup has half way through the document "Genetic hazards".

ATTACHMENT VI

Thirty-seventh session of UNSCEAR
Vienna, 6 to 17 June 1988

UNSCEAR/XXXVII/20
16 June 1988

WORKING GROUP

PROPOSED TEXT FOR A PRESS RELEASE

(Prepared by the Chairman and the Secretariat)

[Note: This is merely a draft suggestion
and the text must not be quoted as yet]

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), meeting in Vienna, today ended its thirty-seventh session which began on 6 June 1988.

During this session, the Committee finalized a comprehensive report on radiation levels and radiation effects. This UNSCEAR 1988 Report will be submitted to the United Nations General Assembly in autumn and will then be available as a United Nations sales publication.

The Committee has presented similar reports since 1958, the latest ones appearing in 1977, 1982 and 1986.

The main text of the UNSCEAR reports are supplemented by comprehensive scientific annexes which contain the data and scientific discussions which form the basis for the Committee's conclusions. In general, the Committee reviews recent information on radiation exposures from various sources of ionizing radiation and the latest scientific knowledge on the biological effects of such radiation.

The UNSCEAR 1988 Report is supplemented by scientific annexes on the following subjects:

- Exposures from natural sources of radiation
- Exposures from nuclear power production
- Exposures from medical uses of radiation
- Exposures from the Chernobyl accident
- Genetic hazards
- Radiation carcinogenesis in man
- Early effects in man of high doses of radiation
- Detriment analysis comparisons.

The first three of these subjects are treated as in previous reports, which means that the Report is supplemented by Annexes which contain the latest information on radiation levels. There will this time be no Annex to deal with exposures from nuclear test explosions, since there have been no ~~text~~ test explosions in the atmosphere since the Committee reported in 1982 and the account that was then given is still valid.

annual dose from natural background radiation, which in present units, was about 1 mSv. In 1982, the contribution from radon and thoron decay products in inhaled air was also estimated in the same units which brought the total estimate up to 2 mSv, and in the present report the estimate is 2.4 mSv.

The background radiation is a useful reference when doses from other sources are assessed. Because different things have been estimated at different times it should be made clear in all comparisons with doses from natural background radiation whether the contribution from the radon and thoron decay products has been included, particularly since this contribution only relates to exposure of the lungs.

Indoor exposures to radon decay products differ substantially in magnitude depending upon building design and the efficiency of ventilation systems. Lung doses exceeding the average by a factor of 100-1000 may occur, which makes this the most significant source of human exposure to ionizing radiation.

The installed electric power capacity of nuclear power reactors in the world has more than doubled since the Committee last reported and is now about GW 300 ~~MW~~. The present annual per caput doses to the world population are less than 0.1 per cent of the 2.4 mSv from natural radiation sources. The Committee also estimated the collective doses over the next hundred years to be 35 man Sv for each GW and year of operation.

The world-wide annual per caput dose from medical exposure of patients is estimated to be between 20 and 50 per cent of the 2.4 mSv from natural radiation. However, the Committee noted that more than three-quarters of the world's population may have no chance of receiving any radiological examination.

A number of accidents involving radiation sources have occurred since 1982. The more notable Mohammedia (Morocco) and Gioana (Brazil) caused the death of 12 persons. The radiological consequences of the Chernobyl accident are assessed in a special annex. The immediate death toll from that accident was 30 individuals of the reactor operating and fire fighting crews. Radiation doses to the local population were below levels which could cause immediate harm. Local residents were evacuated from a 30 km exclusion zone surrounding the reactor. Agricultural activities were halted and a large-scale decontamination effort had to be undertaken.

Numerous measurement results had been made available to the Committee from many countries. The main radionuclides which caused radiation exposures were iodine-131 and caesium-137, primarily by external radiation from contamination of the ground and through ingestion of contaminated food.

The collective dose to the population of the northern hemisphere ($4.5\ 10^9$ persons) who are expected to receive on the average 0.13 mSv from the accident is about 600,000 man Sv, which is 6 per cent of the dose from one year's exposure to the 2.4 mSv from natural sources of radiation. However, the dose distribution is geographically quite uneven. In the more affected region, Europe and the European part of the USSR, the collective dose is equivalent to 40% of that from one year's exposure to natural radiation. The highest doses, on average, to individuals outside the immediate evacuation zone, were estimated to be 7.5 mSv in Byelosrussia, USSR, and between 2.5 and 4 mSv in Austria, north-central Sweden, northeast Romania, southern

Switzerland, western Yugoslavia and in the southeastern part of the Federal Republic of Germany. Doses in all other regions were estimated to be lower than 2.4 mSv, i.e., equal to one year's dose from natural radiation.

About 30% of these doses were received during the first year after the accident; the remainder will continue to be delivered, distributed over some tens of years into the future.

The Committee has reassessed the acute radiation dose to the whole body, expected to cause death with 50 per cent probability within 60 days, the so-called $LD_{50/60}$. From epidemiological data available on the victims of the atomic bombs and on some cancer patients, this is probably about 3 Sv. Little additional information could be derived from the detailed data on those who died from the Chernobyl accident, since they also suffered from thermal burns and severe skin injuries from beta radiation. The Committee believes that healthy individuals who are exposed to acute whole-body irradiation and then, like the cancer patients, receive conventional supportive treatment may have an $LD_{50/60}$ of about 5 gray. All these estimates are average values and cannot be used to forecast the outcome in individual cases.

UNSCEAR has earlier issued estimates of the risk of cancer for persons exposed to high radiation doses at high dose rates. These estimates have mainly been derived from observations on the Japanese survivors of the bombings of Hiroshima and Nagasaki and on some groups of patients who have received therapeutic doses of radiation. New data concerning these groups have now been reviewed by the Committee and revised risk estimates have been made. These revised estimates are higher than before; how much higher depends on the methods that have been used to calculate the number of cases of cancer deaths that are still to be expected in the studied populations.

One reason for the present estimates being higher than in 1977 is that the doses to the Japanese survivors have been reassessed and found lower than was earlier estimated, thus increasing the estimate of the risk per unit dose. This increase is somewhat reduced by the present method of assessment, which takes into account the lenght of latent periods and the age structure of the population.

The projections into the future have been made on the basis of two models, the absolute (or additive) risk model and the relative (or multiplicative) risk model. When the absolute risk model is used the estimated life-time probability per unit dose is only slightly higher than the 1977 estimate. When the relative risk model is used, the estimate becomes substantially higher.

The 1977 estimate of the risk per unit dose at high doses and dose rates for an average member of the general population was 2.5 per cent per sievert. The present estimates range from 3 to 10 per cent per sievert, depending on the projection model. However, the average loss of expected lifetime varies less and, in both cases, is about 1000 person years per sievert to a population of 1000 persons. The reason for this is that, with the relative risk model, the cancer deaths are assumed to predominantly occur at high ages when the life-time loss is small.

The Committee believes that the cancer risk from x rays and gamma rays at low radiation doses and dose rates is lower than the values assessed for high doses and dose rates. A correction factor would therefore be needed to calculate this risk from the numbers mentioned above. The Committee

considered that such a factor certainly varies very widely with individual tumour type and also with the range of dose rate. It assumes as in 1986, however, that an appropriate range for the ~~correction~~ reduction factor should lie between 2 and 10. This is an important question which the Committee intends to study in detail over the next few years.

The Committee has also reviewed recent information of genetic risks, but its previous risk estimates remain essentially unchanged, although the presentation of the risks has been modified. The risk of severe hereditary harm in the first two generations of offspring to an exposed individual, expressed per unit whole body dose, is lower than the cancer risk.

A summary of the Committee's dose estimates for various sources of ionizing radiation is given in Table 1.

Table 1

Summary of estimates of effective dose equivalent

Source or practice	Present annual individual doses (mSv)		Collective dose commitments	
	Per caput (World population)	Typical (exposed individuals)	Million man Sv	Equivalent years of background
ANNUAL			Per year of practice:	
Natural background	2.4	1 - 5	11	1
Medical exposures (diagnostic)	0.4-1	0.1 -10	2-5	0.2-0.5
Occupational exposure	0.002	0.5 - 5	0.01	0.001
Nuclear power production	0.0003	0.001-0.1	0.001 (0.05) a/	0.0001 (0.004) a/
SINGLE			Per total practice:	
All test explosions together	0.01	0.01	5 (26) a/	0.5 (2.4) a/
Chernobyl accident			0.6	

a/ In parentheses are additional long-term collective dose commitments from radon and carbon-14 for nuclear power production and carbon-14 for test explosions.

ATTACHMENT VII

Thirty-seventh session of UNSCEAR
Vienna, 6 to 17 June 1988

UNSCEAR/XXXVII/16
15 June 1988

WORKING GROUP

PROPOSAL FOR FUTURE WORK

submitted by the delegation of the Federal Republic of Germany

1. Effects of radiation of the human environment.

2. Risk analysis for chronic exposure to high-LET radiation (e.g., thorotrast patients, radium dial painters, miners exposed to radon; plutonium workers; indoor exposure of the population to radon).

3. Medical exposure: frequency of various treatments by ionizing radiation (percutaneous treatments, brachytherapy, radiopharmaceuticals).

4. Long-term survival of radiotherapy patients with special emphasis on children.

5. Alternative diagnostic procedures (e.g., ultrasonics, endoscopy and NMR): frequency and their impact on dose reduction.

6. Evaluation of epidemiological investigations based on a standardized procedure considering statistics and dosimetry.

7. Assessment of dose distribution considering
   - occupational exposure (radiation workers, non-radiation workers)
   - release from nuclear facilities
   - patient exposure
   - natural exposure

8. Hormesis: facts, critical analysis of published data.

9. Non-ionizing radiation: frequency of medical and cosmetic applications, cancer risk.

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

Executive
Office

July 13, 1988

Mr. William D. Adams, Director
Research and Waste Management Division
Department of Energy
Oak Ridge, Tennessee 37831

Subject: TRANSMITTAL OF FOREIGN TRIP REPORT
DR. ROBERT C. RICKS - VIENNA, AUSTRIA

Dear Mr. Adams:

Seven copies of the subject report are enclosed. This report does not contain any proprietary data.

Sincerely yours,

William E. Felling
Executive Director

BAKER

Enclosures

1128307

X-3895

DOE F 1325.8
(12-84)

United States Government | Department of Energy

memorandum

DATE: JUN 23 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:

Gibson, John K. - ORNL
Groer, Peter G. - ORAU
Mills, William A. - ORAU
Peng, Tsung-Hung - ORNL
[redacted] 04/09/88 - 04/23/88
Tuzel, Walter - SURA/CEBAF
Uckan, Nermin A. - ORNL

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)

1128308

X-345

(8-86) 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 02 01 01 0
(see Chapter II, Accounting Practices and Procedures Handbook)

PART C—To be completed by traveler

1a. NAME OF TRAVELER Robert C. Ricks, Ph.D.	c. DATE AND PLACE OF BIRTH [redacted], Texas
b. CITIZENSHIP USA	d. PASSPORT NUMBER *(if available)* [redacted]
2a. HOME ADDRESS [redacted]	b. BUSINESS ADDRESS P. O. Box 117 Oak Ridge, TN 37831-0117 c. TELEPHONE NUMBER (615) 576-3131
3a. EMPLOYER Oak Ridge Associated Universities	c. CONTRACT NUMBER DE-AC05-760R00033
b. ORGANIZATIONAL UNIT REAC/TS Oak Ridge Associated Universities	d. POSITION TITLE *(including profession)* Director, REAC/TS

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.

To serve as an advisor (substitute at the request of Dr. Fred A. Mettler, Jr., U.S. representative to UNSCEAR, for J. W. Thiessen, due to illness) and member of the United States delegation to the 37th Session of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) to be held in Vienna, June 6-17, 1988.

0057-1

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.

X-2924

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
6/04-18/88	Oak Ridge, TN to Vienna, Austria, to Oak Ridge, TN	Unknown at this time	serve as a member and advisor of UNSCEAR		X

6. HAS TRAVELER SUBMITTED DOE F1512.2 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.)*

Not a sensitive country.

☐ 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.

R. Kuhr, Ph.D. *(Signature)* 5/27/88 *(Date)*

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

8a. ESTIMATED COST OF TRAVEL TO DOE

Transportation $ 1522.00
Per Diem and Miscellaneous $ 2295.00
Total $ 3817.00

b. IF PART OF COST OF TRAVEL IS TO BE PAID OR HAS BEEN REQUESTED FROM SOURCES OTHER THAN DOE, INDICATE SOURCE AND AMOUNT.

N/A

TRAVEL FUNDS ARE NOW AVAILABLE FOR THIS TRIP

William W. Burr for Billie Ryan 5/27/88
Division Business Officer *(Signature and Title)* (Date)

William F. Countiss 5/31/88
William F. Countiss, Asst. Dir. Finance (Date)

PART E—To be completed by Traveler's supervisor

9. REVIEW AND COMMENTS:

William W. Burr Jr. 5/27/88
Division Chairman *(Signature and Title of Supervisor)* (Date)

William F. Countiss 5/31/88
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 & Waste Management Division *(Title)* 6/1/88 *(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

X Robert W Wood *(Signature)* *(Title)* 6/15/88 *(Date)*

13. COGNIZANT SECRETARIAL OFFICER

IF DOE EMPLOYEE TRAVEL ☐ IE Determination Received

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

James Decker, Acting Director D Bledsoe *(Signature)* 6/17/88 *(Date)*

1123 0

The University of New Mexico

School of Medicine
Department of Radiology
Albuquerque, NM 87131
Telephone: (505) 843-0011

May 25, 1988

Robert C. Ricks, M.D.
Associate Director
Oak Ridge Associated Universities
P.O. Box 117
Oak Ridge, TN 37830

Dear Dr. Ricks,

I would like to formally invite you to be an advisor and member of the United States delegation to the 37th Session of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) to be held in Vienna, June 6-17, 1988. As I discussed with you earlier, Dr. J. W. Thiessen's illness has necessitated his withdrawal from the U.S. delegation. I would be very appreciative if you are able to attend UNSCEAR in Dr. Thiessen's place.

Unfortunately, financial resources of the Department of State are very limited and I must ask you to see if you could impose upon your institution for funding.

I realize this is quite short notice, but am sure you understand, due to the circumstances of Dr. Thiessen's health. I look forward to hearing from you soon. If you have any questions, please do not hesitate to write or call.

Sincerely,

Fred A. Mettler, Jr., M.D., M.P.H.
United States UNSCEAR Representative

FAM/yr:os

JUSTIFICATION FOR FOREIGN TRAVEL TO VIENNA, AUSTRIA

FOR

DR. ROBERT C. RICKS

By a letter dated May 25, 1988 (copy enclosed) Dr. Ricks has been asked to substitute for Dr. J. W. Thiessen as an advisor to Dr. Mettler, U. S. UNSCEAR Representative, at the UNSCEAR meeting in early June. Dr. Theissen is unable to attend due to a health problem. We were not able to anticipate this request and hence could not submit a request for foreign travel at an earlier date.

William W Burr, Jr.

William W. Burr, Jr., Ph.D., M.D.
Chairman, Medical & Health Sciences Division

Approved: D Beckman 4/17/88

Disapproved: _____ _____
James Decker

1128312

JUN 1 1988

ER-122:Wallace

PROPOSED FOREIGN TRAVEL BY R. C. RICKS, ORAU

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

Attached for DOE Headquarters approval are three copies of DOE F 1512.1 covering the proposed travel by R. C. Ricks to Austria during the period June 4-18, 1988. Dr. Fred A. Mettler, Jr., U.S. representative to the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), has requested that Dr. Ricks serve as a substitute advisor and member of the U.S. delegation to the 37th Session to be held in Vienna. As was previously communicated to you, Dr. J. W. Thiessen's illness has necessitated his withdrawal from the U.S. delegation, and Dr. Ricks has been asked to serve in his place.

The estimated cost to DOE for this travel is $3,817 and is to be charged to DOE Budget Activity HA 02 01 01.

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

ORIGINAL SIGNED BY
M. C. WALLACE

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

Attachment

cc w/atchmt:
D. B. Waller, IE-1, HQ, FORS
J. A. Lenhard, ER-10, ORO
M. M. Dare, AD-43, ORO
D. J. Cook, DP-82, ORO

ER-122:MWallace:CB:6-0714:05-31-88

CONCURRENCES

RTG. SYMBOL	INITIALS/SIG.	DATE
ER-122 WALLACE	M. Wallace	5/31/88
ER-122 ATCHLEY	K. Atchley	5/31/88
AD-40 MARQUESS		
ER-122 WALLACE	MCW	6/1/88

DOE F 1325.10
(8-87)

OFFICIAL FILE COPY

*U.S. GOVERNMENT PRINTING OFFICE: 1987-722-5(

T-093

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JUSTIFICATION FOR FOREIGN TRAVEL TO VIENNA, AUSTRIA

FOR

DR. ROBERT C. RICKS

By a letter dated May 25, 1988 (copy enclosed) Dr. Ricks has been asked to substitute for Dr. J. W. Thiessen as an advisor to Dr. Mettler, U. S. UNSCEAR Representative, at the UNSCEAR meeting in early June. Dr. Theissen is unable to attend due to a health problem. We were not able to anticipate this request and hence could not submit a request for foreign travel at an earlier date.

William W Burr

William W. Burr, Jr., Ph.D., M.D.
Chairman, Medical & Health Sciences Division

1128314

DOE F 1512.1
(1-87)

All Other Editions Are Obsolete

U.S. DEPARTMENT OF ENERGY

REQUEST FOR APPROVAL OFFICIAL FOREIGN TRAVEL

OMB Control No.
1910-2100

PART A—SUMMARY TRAVEL INFORMATION

ORGANIZATION: Oak Ridge Associated Universities

COST TO DOE: $3817.00

FUND SOURCE: HA 02 01 01 0

NAME OF TRAVELER: R. C. Ricks, Ph.D.

DOE/CONTRACTOR/UNIVERSITY: [x] contractor

DESTINATION: Vienna, Austria

DATES: 06 (MM) / 04 (DD) / 88 (YY) TO 06 (MM) / 18 (DD) / 88 (YY)

PURPOSE: To serve as an advisor and member of the United States delegation to the 37th Session of the United Nations Scientific Committee on the Effects of Atomic Radiation.

AGREEMENT: None

DESTINATION: _____

DATES: ___/___/___ (MM/DD/YY) TO ___/___/___ (MM/DD/YY)

PURPOSE: _____

AGREEMENT: _____

DESTINATION: _____

DATES: ___/___/___ (MM/DD/YY) TO ___/___/___ (MM/DD/YY)

PURPOSE: _____

AGREEMENT: _____

DESTINATION: _____

DATES: ___/___/___ (MM/DD/YY) TO ___/___/___ (MM/DD/YY)

PURPOSE: _____

AGREEMENT: _____

1128315

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 02 01 01 0
(see Chapter II, Accounting Practices and Procedures Handbook)

PART C—To be completed by traveler

1a. NAME OF TRAVELER Robert C. Ricks, Ph.D.	c. DATE AND PLACE OF BIRTH [redacted], Texas
b. CITIZENSHIP USA	d. PASSPORT NUMBER *(if available)* [redacted]
2a. HOME ADDRESS [redacted]	b. BUSINESS ADDRESS P. O. Box 117 Oak Ridge, TN 37831-0117 c. TELEPHONE NUMBER (615) 576-3131
3a. EMPLOYER Oak Ridge Associated Universities	c. CONTRACT NUMBER DE-AC05-760R00033
b. ORGANIZATIONAL UNIT REAC/TS Oak Ridge Associated Universities	d. POSITION TITLE *(including profession)* Director, REAC/TS

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.

To serve as an advisor (substitute at the request of Dr. Fred A. Mettler, Jr., U.S. representative to UNSCEAR, for J. W. Thiessen, due to illness) and member of the United States delegation to the 37th Session of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) to be held in Vienna, June 6-17, 1988.

1126316

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.

X-20

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
6/04-18/88	Oak Ridge, TN to Vienna, Austria, to Oak Ridge, TN	Unknown at this time	serve as a member and advisor of UNSCEAR		X

6. HAS TRAVELER SUBMITTED DOE F1512.2 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.)*

Not a sensitive country.

☐ 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.

R. Kuhn, Ph.D. *(Signature)* 5/27/88 *(Date)*

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

8a. ESTIMATED COST OF TRAVEL TO DOE

Transportation $ 1522.00
Per Diem and Miscellaneous $ 2295.00
Total $ 3817.00

b. IF PART OF COST OF TRAVEL IS TO BE PAID OR HAS BEEN REQUESTED FROM SOURCES OTHER THAN DOE, INDICATE SOURCE AND AMOUNT.

N/A

TRAVEL FUNDS ARE NOW AVAILABLE FOR THIS TRIP

William W. Burr for Billie Ryan 5/27/88
Division Business Officer *(Signature and Title)* (Date)

William F. Countiss 5/31/88
William F. Countiss, Asst. Dir. Finance (Date)

PART E—To be completed by Traveler's supervisor

9. REVIEW AND COMMENTS:

William W. Burr Jr. 5/27/88
Division Chairman *(Signature and Title of Supervisor)* (Date)

William F. Countiss 5/31/88
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 & Waste Management Division *(Title)* 6/1/88 *(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

(Signature) *(Date)*

1283-11

The University of New Mexico

School of Medicine
Department of Radiology
Albuquerque, NM 87131
Telephone: (505) 843-0011

May 25, 1988

Robert C. Ricks, M.D.
Associate Director
Oak Ridge Associated Universities
P.O. Box 117
Oak Ridge, TN 37830

Dear Dr. Ricks,

I would like to formally invite you to be an advisor and member of the United States delegation to the 37th Session of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) to be held in Vienna, June 6-17, 1988. As I discussed with you earlier, Dr. J. W. Thiessen's illness has necessitated his withdrawal from the U.S. delegation. I would be very appreciative if you are able to attend UNSCEAR in Dr. Thiessen's place.

Unfortunately, financial resources of the Department of State are very limited and I must ask you to see if you could impose upon your institution for funding.

I realize this is quite short notice, but am sure you understand, due to the circumstances of Dr. Thiessen's health. I look forward to hearing from you soon. If you have any questions, please do not hesitate to write or call.

Sincerely,

Fred A. Mettler, Jr., M.D., M.P.H.
United States UNSCEAR Representative

FAM/yr:os