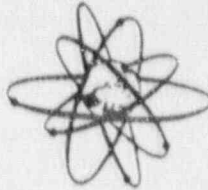


To: King Stablain

OCDE

ORGANISATION DE COOPÉRATION ET
DE DÉVELOPPEMENT ÉCONOMIQUES



OECD

ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

AGENCE POUR L'ÉNERGIE NUCLÉAIRE/NUCLEAR ENERGY AGENCY

RÉFÉRENCE

38, boulevard Suchet
75016 PARIS
Tél. 45 24 82 00

EN/S/2434

Paris, 17th December 1990

TO: NEA CO-ORDINATING GROUP ON SITE EVALUATION AND DESIGN
OF EXPERIMENTS FOR RADIOACTIVE WASTE DISPOSAL (SEDE)

Re: Draft Announcement for Second SEDE Workshop "Long-Term Observation of
the Geological Environment: Needs and Techniques"

Dear Colleague,

At the First Meeting of the SEDE Co-ordinating Group (Paris, 25th-26th October 1990), it was agreed that a Workshop on "monitoring" of the geological environment should be organised by the NEA in conjunction with the Second Meeting of the Group in 1991. Enclosed is a draft announcement for this Workshop, prepared subsequent to a meeting of the Core Group held on 3rd-4th December 1990. Before finalising this draft announcement, I should like to solicit input from members of the SEDE Co-ordinating Group on three points in particular.

First, it is the intent of the Core Group that there should be a number of joint papers with authors from different national programmes, particularly in Session I of the Workshop. At its meeting, the Core Group prepared a preliminary (and only partial) list of invited speakers for the Workshop (note that all oral presentations are supposed to be invited). The Core Group considered it more appropriate for the Co-ordinating Group to flesh out this list by identifying appropriate invited speakers to cover the various topics. I have enclosed the list of open slots with whatever preliminary suggestions were made by the Core Group. Could you please consider if there are any individuals within your national programmes that would be appropriate to have as invited speakers at the Workshop, and confirm the preliminary suggestions made by the Core Group.

Second, there was discussion within the Core Group - in connection with the first question - on whether Sessions II and III should be further structured according to discipline, or according to geological environment under consideration. There are arguments that could be made in favour of both approaches, and the views of the Co-ordinating Group are requested on this point. In both the draft announcement and the preliminary list of invited speakers, structuring has been done according to discipline. While the way these Sessions are structured would probably not greatly affect the preliminary indications for speakers, it would affect to some extent the topics we would ask the invited speakers to address, and the extent to which joint papers would need to be requested.

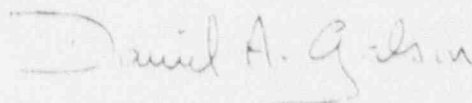
Third, the Workshop announcement has been revised to exclude consideration of the postclosure period. The Core Group noted, however, that although perhaps not strictly necessary from a technical point-of-view, postclosure observation programmes are being discussed within some countries. Realising the sensitivity of this issue at the political level, the Core Group suggested that some discussion of issues associated with postclosure observation needs might be appropriate in the context of the meeting of the SEDE Co-ordinating Group to follow the Workshop, or at the level of the RWMC. Within the Secretariat, however, we have some doubts as to the value of such a discussion at the SEDE meeting, and we would recommend to have it at a higher level (if at all), for example within the RWMC itself. Could you please provide your views on this matter.

I should like to hear from you (preferably by telefax) by 15th January 1991 at the latest; you may use the enclosed response form if you find it convenient. It is particularly important to keep to this date with regard to organising a good set of invited review papers for the Workshop.

It is my intention to revise the draft announcement (if required) as soon as possible after mid-January, and issue it as a formal announcement to SEDE, as well as to some of the other NEA committees.

I therefore look forward to hearing from you and thank you for your assistance with organisation of the Workshop.

Sincerely,



Daniel A. Galson
Radiation Protection and
Waste Management Division

Encls. As stated

cc: National Delegations to the OECD

NEA WORKSHOP ON
LONG-TERM OBSERVATION OF THE GEOLOGICAL ENVIRONMENT:
NEEDS AND TECHNIQUES

Session I: Context and Programmatic Implications of Long-Term Observation Needs

fractured hard rock: G. Gustafson (Sweden) - lead author
M. Thury (NAGRA, Switzerland) - coauthor
C. Davison (AECL, Canada) - coauthor

clay: someone? from Belgian programme

salt: W. Brewitz (GSF/Ift, Germany) - lead author
someone? from SNL/WIPP (United States) - coauthor

unsaturated tuff: M. Vogeles (SAIC, United States)

* * *

Session II: Hydrogeology, Hydrochemistry, and Rock-Fluid Interactions

hydrogeology: C. Davison (AECL, Canada) - lead author or
coauthor?
T. Küpfer (NAGRA, Switzerland) - lead author or
coauthor?

hydrochemistry
and rock fluid
interactions M. Gascoyne (AECL, Canada) - lead author or
coauthor?
A. Bath (PJS, United Kingdom) - lead author or
coauthor?

environmental impacts ? (someone? from Swiss programme)?

* * *

Session III: Geomechanics and Tectonics

regional seismicity
and microseismicity C. Browitt (BGS, United Kingdom) - lead author

geomechanics
(two papers?) C. Fairhurst (U. Minnesota, United States) -
lead author?
O. Stephanson (U. Lulea, Sweden) - coauthor?
someone? from SNL/WIPP - lead author?

* * *

Session IV: Regulatory Perspective

To provide informal comments on what they have heard presented and discussed in Sessions I, II and III:

N.K. Stablein (NRC, United States)
J. Andersson (SKI, Sweden)
Others?

NEA WORKSHOP ON
LONG-TERM OBSERVATION OF THE GEOLOGICAL ENVIRONMENT:
NEEDS AND TECHNIQUES

Please return this form by 15th January 1991 to Daniel A. Galson at the NEA.

Please reply by telefax on 33 (1) 45 24 96 24.

* * *

Name of SEDE Delegate:

* * *

Suggestions for invited speaker(s):

.....

.....

Lead author or coauthor

Tel Tlx Fax

Session Number

Topics to be covered

* * *

Confirmation of ability to support, prepare or contribute to invited paper as indicated in enclosure (es/No)

Comments on structuring of Sessions II and III?

.....

.....

* * *

Should the discussion at Second Meeting of SEDE on long-term observation needs the postclosure period

Should this topic be discussed by SEDE or by RWMC?

If SEDE, willing to make short presentation? (Yes/No)

Any comments?

.....

.....

D R A F T

ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

NUCLEAR ENERGY AGENCY

RESTRICTED

Paris, drafted: 17th Dec. 1990

distr.:

NEA/SEDE/DOC(90)5

English text only

RADIOACTIVE WASTE MANAGEMENT COMMITTEE (RWMC)

Co-ordinating Group on Site Evaluation and Design
of Experiments for Radioactive Waste Disposal (SEDE)

NEA WORKSHOP ON
LONG-TERM OBSERVATION OF THE GEOLOGICAL ENVIRONMENT:
NEEDS AND TECHNIQUES
SEDE - 91

Helsinki, Finland
9th-11th September 1991

Call for Papers

and

Participation Form

Hosted by
TEOLLISUUDEN VOIMA OY (TVO)

Organised by the

OECD NUCLEAR ENERGY AGENCY (OECD/NEA)

WORKSHOP ON LONG-TERM OBSERVATION OF THE GEOLOGICAL ENVIRONMENT:
NEEDS AND TECHNIQUES

BACKGROUND

The Co-ordinating Group on Site Evaluation and Design of Experiments for Radioactive Waste Disposal (SEDE) was established in 1990 by the NEA's Radioactive Waste Management Committee. The principal aims of the Co-ordinating Group are to improve information exchange between different site evaluation programmes in NEA Member countries, to discuss problems of mutual concern among the different programmes, and to recommend initiatives for international co-operation (e.g., workshops) that will address these problems. The First Meeting of the SEDE Co-ordinating Group was held on 25th-26th October 1990 in Paris. In connection with this Meeting, a First Workshop was organised by the NEA on the topic of flow heterogeneity and site evaluation, on 22nd-24th October 1990.

At its First Meeting, the Co-ordinating Group reviewed the results of its First Workshop, and discussed a proposed programme of activities for the period 1991/92. It was agreed that a suitable topic for the Second Workshop would be long-term observation of the geological environment: needs and techniques. By kind offer of the Finnish Industrial Power Company Ltd., Teollisuuden Voima Oy (TVO), it was further agreed that this Workshop should be held in Helsinki, Finland. The dates for the Workshop are 9th-11th September 1991, to include two full days of technical discussion and one full day for a field trip to the island of Olkiluoto, location of (i) the Finnish repository for low- and intermediate-level waste (L/ILW), under construction, and (ii) a potential disposal site for high-level waste (HLW), under preliminary investigation. The Workshop will be followed by the Second Meeting of the SEDE Co-ordinating Group on 12th-13th September 1991.

In the process of implementing deep geological disposal systems for radioactive wastes, long-term observations of the geological environment will be required for at least three reasons:

- to support prelicensing performance assessment and model validation studies,
- to support engineering design for repository development, and
- to confirm that repository construction and operation have not caused actual site conditions to deviate from the limits assumed in the licensing review.

For geological disposal systems, the process of excavating access shafts to a repository, and the tunnels and silos themselves, provides an excellent opportunity to test groundwater flow models and verify conceptual models of other aspects of the site (such as seismicity and rock stress distributions) by means of long-term observation programmes. These programmes need to be thought out and designed well in advance of any construction work, as boreholes need to be drilled and instrumented, and a background database established, possibly over a number of years. In addition, implementation of observation networks within the excavations has a potentially significant impact on the pace of construction work, and this needs to be planned in advance. Thus, this is a topic of crucial importance in repository development programmes, but a topic which has been largely ignored to date at international level.

OBJECTIVES AND SCOPE

The Workshop will have several objectives:

- to review in detail the needs for long-term observations of the geological environment in the context of national programmes for the development of deep geological repositories for radioactive waste,
- to exchange information on the design of long-term observation networks, and
- to assess the techniques and instrumentation available for conducting such long-term observation programmes, with a view to providing recommendations on instrument development needs.

The Workshop will consider those measurement programmes undertaken as part of site characterisation in the preconstruction phase of deep repositories, where the intent is to proceed with these measurements into the construction and operational period for the purpose of long-term observation of the geological environment or performance confirmation. Such long-term observation programmes are expected to be continued at least until permanent closure of the repository and will be designed to measure both man-made perturbations (e.g., site characterisation tests) as well as natural processes and events (e.g., seismic activity).

In particular, the Workshop will consider which parameters might be appropriate to measure over long periods, how the data could be used in model or concept verification, the design of such long-term observation programmes (e.g., location and number of observation points, frequency of observations) and the design of instruments for long-term observation programmes. The needs and techniques for long-term observation of the geological environment will be considered for deep repositories for all types of radioactive wastes. Long-term observation programmes may be specific to the host geological environment and, therefore, it is the intent of the Workshop to review needs and techniques for the major host environments under consideration in NEA Member countries: fractured hard rock, salt, clay, and unsaturated tuff.

The Workshop will provide a forum for discussion between scientific experts concerned with development of long-term observation programmes for different host environments. The results of the Workshop will also be of interest to those responsible for overall implementation of site characterisation programmes, and for setting priorities in research programmes.

FORMAT AND PROGRAMME

The Workshop will be composed entirely of invited review papers and discussion. In addition, up to 15 poster presentations on related or supporting work will be accepted as "contributed" papers. Up to 40 minutes will be allotted for oral presentation of each invited paper, with a further 20 minutes provided for discussion of the invited paper and related poster papers. The number of oral presentations is being restricted (to approximately 10) in order to provide ample time for discussion in an informal workshop atmosphere over a two-day period. However, it is intended to publish both the invited oral papers and the contributed poster papers in the Workshop proceedings.

The provisional programme of the Workshop has been structured as follows for Monday, 9th September, and Tuesday, 10th September:

Session I: Context and Programmatic Implications of Long-Term Observation Needs

Four invited papers will be given, one each on fractured hard rock, salt, clay, and unsaturated tuff. These papers should show how long-term observation programmes fit into the general framework of repository development programmes for the different potential host geological environments. The papers should address a number of related questions:

- How will data from long-term observation programmes be used?
- How do these programmes link to regulatory requirements?
- Which parameters need to be observed and why?
- When should long-term observation programmes be initiated in order to establish baseline conditions?
- Over what periods should such programmes run, and with what frequency should various types of measurements be made?

Session II: Hydrogeology, Hydrochemistry, and Rock-Fluid Interactions

Three invited papers will be given reviewing which parameters need to be measured, the design of field programmes to obtain the necessary data, and instrumentation availability and development needs, particularly with respect to longevity and durability requirements. The invited papers should highlight differences between fractured hard rock, unsaturated tuff, and sedimentary formations. Papers should address needs, methods, instrumentation, and data interpretation for the following types of potential long-term observation:

- hydrogeology (one invited paper), including:
 - . groundwater pressures, heads, and fluxes
 - . effects of repository excavation on heads, pressures, and fluxes in the repository near-field
 - . near-field desaturation
- hydrochemistry and rock-fluid interactions (one invited paper), including:
 - . salinity
 - . gases (e.g., H₂ and Rn)
 - . changes in the chemical and isotopic composition of fluids flowing to the repository
 - . breakthrough times of environmental tracers (e.g., H³ and C¹⁴) to the repository
- environmental impact baseline data (one invited paper), including:
 - . natural radioactivity
 - . spring surveys

Session III: Geomechanics and Tectonics

Three invited papers will be given reviewing what parameters need to be measured, the design of field programmes, and instrumentation availability and development needs for long-term observations. The invited papers should illustrate differences between fractured hard rock, unsaturated tuff and sedimentary formations. Papers should address needs, methods, instrumentation, and data interpretation for the following types of potential long-term observation:

- geomechanics (one-two invited papers), including:
 - . deformation
 - . in situ stress
 - . temperature
- tectonics (one invited paper), including:
 - . regional seismicity
 - . microseismicity

Issues for Sessions II and III

For the observation needs to be discussed in Sessions II and III, a set of questions can be posed that the papers should attempt to address:

- What would a long-term observation system look like (e.g., areal extent of system, distribution of measuring points)? Note, however, that it is not the intent of this Workshop to discuss the statistical framework (e.g., kriging) for development of such systems.
- What type of access is required for long-term observation programmes (e.g., boreholes, shafts; permanent, discontinuous; etc.)?
- What type of borehole "completions" are required for long-term observation programmes? Are additional boreholes needed throughout the observation period?
- What types of data acquisition, processing, and interpretation are required?
- How can flexibility be built into the design of observation programmes to cope with evolution of measuring techniques?
- Are instruments and methods sufficiently accurate, precise, long-lived, and durable? If no, what type of developments are needed? Is long-term durability really an issue?
- Does relevant experience of long-term observations of the geological environment exist in other disciplines (e.g., dam construction, geothermal programmes)?

Session IV: Regulatory Perspective

No formal papers will be requested for oral presentation during this Session. Rather, several representatives of regulatory agencies will be asked to provide their perspective on what they have heard presented and discussed in

the previous three Sessions. These relatively brief and informal introductory presentations will be followed by a general discussion, in which conclusions and recommendations from the Workshop should be emphasized.

TECHNICAL VISIT

In addition to the formal part of the Workshop, an opportunity is being offered as an integral part of the Workshop for participants to visit the Finnish repository for L/ILW under construction at Olkiluoto. During this visit, participants will learn about the programme of long-term observations underway at the site. In addition, elsewhere on the island of Olkiluoto, preliminary investigations (e.g., deep drilling) are underway at a potential repository site for HLW. This site will also be visited. Finally, it may also be possible to arrange a visit to the interim store for spent fuel at the Olkiluoto nuclear power plant, should participants indicate an interest in making such a visit.

These technical visits will take place on Wednesday, 11th September. Bus transportation will be provided by TVO to and from Olkiluoto.

This visit is limited to about 45 persons. Further details on the visit will be provided to those individuals who express an interest in participating using the attached form.

ORGANISATION

The Workshop is being organised by the Secretariat of the OECD Nuclear Energy Agency. The Workshop will be held at ..., Helsinki, Finland. English will be the only working language.

All correspondence and questions concerning the programme, submission of papers, or participation should be addressed to the Workshop Secretariat:

Dr. Daniel A. GALSON
Division of Radiation Protection and Waste Management
OECD Nuclear Energy Agency
38, boulevard Suchet
F-75016 Paris
France

Tel: 33 (1) 45 24 96 27
Tlx: 630668
Fax: 33 (1) 45 24 96 24

The Programme Committee for the Workshop includes T. Äikäs (Finland), N. Chapman (United Kingdom), P. Hufschmied (Switzerland), B. Vignal (France) and L. Eriksson/C. Voss (United States).

All questions concerning local arrangements in Helsinki should be addressed to the local organisers:

c/o Mr. Timo ÄIKÄS
Teollisuuden Voima Oy (TVO)
Fredrikinkatu 51-53 B
SF-00100 Helsinki
Finland

Tel: 358 (0) 605 022
Tlx: 122065
Fax: 358 (0) 605 133

PAPERS

Abstracts of contributed poster papers must reach the NEA by 1st May 1991 at the latest, in order for these papers to be considered for inclusion in the Workshop. Authors should indicate which Session is most relevant to their proposed contribution. Abstracts should be submitted to the NEA via the appropriate national delegate to the SEDE Co-ordinating Group. Information on preparation of posters will be sent to those individuals whose papers are selected for inclusion in the Workshop. Certain contributed papers may be selected to be presented orally should there appear to be value in this in the course of final organisation of the Workshop.

Proceedings of the Workshop will be published by the NEA. All authors will be sent a package of information by the NEA Secretariat on preparing papers, including details on format, length, etc. Authors will be required to send to the NEA in advance of the Workshop a camera-ready copy of their paper, plus bring 60 copies of their paper to the Workshop for distribution to participants.

PARTICIPANTS

Participants should be specialists in the subject areas defined by the scope of the Workshop, should be actively involved in relevant research, operational, or regulatory activities, and should be qualified to contribute actively to the discussions. Nominations of participants should be submitted - using the attached form - by national representatives to the SEDE Co-ordinating Group, so as to be received by the NEA Secretariat by 1st July 1991. Participation at the Workshop will be restricted to ensure a total participation of about 50 scientists. Thus, participation is limited to invited speakers, those contributing poster papers accepted for inclusion in the Workshop, and members of the SEDE Co-ordinating Group or their representatives. In addition, SEDE members who are authors of papers are invited to send one additional national representative. Exceptions to these restrictions will only be possible through prior arrangement with the NEA Secretariat.

Participants should note that they will be responsible for making their own travel and accommodation arrangements. Details on accommodation possibilities will be sent to participants by the local organisers.

NEA WORKSHOP ON
LONG-TERM OBSERVATION OF THE GEOLOGICAL ENVIRONMENT:
NEEDS AND TECHNIQUES
SEDE-91

Helsinki, Finland
9th-11th September 1991

For transmission to:

Dr. D.A. GALSON
Radiation Protection and Waste Management Division
OECD Nuclear Energy Agency
38 boulevard Suchet
F-75016 Paris, France

Tel: 33 (1) 45 24 96 27
Tlx: 630668
Fax: 33 (1) 45 24 96 24

before 1st July 1991

PARTICIPATION FORM

Family Name:
First Name:
Nationality:
Title:
Institution/Organisation:
.....
.....
Address:
.....
.....
.....
Telephone: Telex: Telefax:

Do you want to participate in the field trip to Olkiluoto on Wednesday,
11th September (Yes/No)?

ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

NUCLEAR ENERGY AGENCY

RESTRICTED

Paris, drafted: 29th November 1990
distr: 18th December 1990

NEA/SEN/RWM(90)9

Or. Engl.

STEERING COMMITTEE FOR NUCLEAR ENERGY

RADIOACTIVE WASTE MANAGEMENT COMMITTEE (RWMC)

NEA Co-ordinating Group on Site Evaluation and Design of Experiments
for Radioactive Waste Disposal (SEDE)

Summary Record of the First Meeting
Paris, 25th-26th October 1990

Item 1: Opening of the Meeting

1. The meeting was opened by D.A. Galson (NEA Secretariat), who welcomed the participants to the First Meeting of the Group. He reminded the participants of the background that had led the RWMC, at its meeting of January 1990, to disband the Advisory Group on In Situ Research and Investigations for Geological Disposal (ISAG) and to create, in its stead, the SEDE Co-ordinating Group. He then invited the participants to introduce themselves. The names and addresses of all those present at the meeting are provided in Annex I.

Item 2: Election of the Chairman

2. T. Äikäs (TVO, Finland) was elected the Group's first Chairman by unanimous vote.

Item 3: Adoption of the Agenda [SEN/RWM(90)3]

3. The Chairman reviewed the proposed agenda for the meeting, which was subsequently adopted without change.

Item 4: Recent Developments within the NEA Waste Management Programme (RWMC, PAAG, PSAC, Stripa)

4. J-P. Olivier (NEA Secretariat) informed the Group about the general programme of the RWMC, drawing particular attention to three activities discussed in some detail at the last RWMC meeting (Paris, 3rd-4th September 1990):

- the planned Workshop "Radiation Protection and Safety Criteria for the Disposal of High-Level Radioactive Waste" (Paris, 5th-7th November 1990),
- the planned ad hoc meeting on environmental restoration and waste minimisation activities (Paris, 12th-13th March 1991), and
- the scheduled 1990 publication of the RWMC Collective Opinion on safety assessment methods.

5. C. Thegerström (NEA Secretariat) discussed the role and aims of SEDE's sister group at NEA - the Performance Assessment Advisory Group (PAAG), noting the current focus on methods for postclosure safety assessment. He briefly reviewed the PAAG's past programmes, drawing particular attention to the joint CEC/IAEA/NEA Symposium on Safety Assessment of Radioactive Waste Repositories held in September 1989 (proceedings published) and the PAAG's follow-up report reviewing safety assessment methods (to be published in early 1991), work on methodologies for scenario development (Working Group report to be completed by early 1991), and a Workshop on human intrusion held in June 1989 (proceedings published). He stressed that the past work provided the basis for a set of activities that were discussed at the Sixth Meeting of the PAAG (Paris, 12th-14th September 1990):

- a Workshop on gas generation and transport in 1991,
- a Workshop on sorption data and modelling, (tentatively 14th-18th September 1991, in Switzerland),
- a Working Group on the rationale and framework for consideration of human intrusion in safety assessments (to start work in 1991),
- possible development of a data base of features, events, and processes used in the formulation of scenarios for safety assessment, and
- possible development at international level of one or more "standard" biospheres for use in safety assessments.

6. D.A. Galson reviewed activities of the PAAG's main subgroup, the Probabilistic System Assessment Code (PSAC) User Group. He described in particular the publication timetable and work underway on PSA code intercomparison (PSAC/IN) exercises, and several of the topical discussions that are held regularly by the Group (and for which informal proceedings are available). He noted that the Group was scheduled to meet next in Paris the following week.

7. D.A. Galson provided a brief overview of the international Stripa Project. He noted that the Project is being conducted under OECD auspices, and falls within the purview of the SEDE Co-ordinating Group. The Swedish Nuclear Fuel and Waste Management Company (SKB) is the managing participant, and a total of seven Member countries are contributing in the Phase 3 (1986-1991) programme. This programme is focused in three areas: (i) site characterisation and model validation, (ii) improvement of site assessment methods and concepts, and (iii) groundwater flow-path sealing.

8. SEDE took note of the activities initiated by the RWMC, the PAAG, and the PSAC User Group, and of the status of the Stripa Project.

Item 5: Discussion of the Terms-of-Reference for SEDE [RWM/DOC(89)2]

9. D.A. Galson reviewed the contents of the document [RWM/DOC(89)2] prepared for the RWMC meeting at which the SEDE Group had been established. He drew particular attention to the three terms-of-reference and the basis behind them:

- (i) to improve information exchange between different site evaluation projects, in particular concerning methodologies for data collection, design of experiments, and site evaluation;
- (ii) to discuss problems of mutual concern among the different site evaluation projects and to recommend initiatives for international co-operation (e.g., workshops) that will address these problems; and
- (iii) to keep the RWMC informed of matters of interest or concern.

10. D.A. Galson also noted that the role of the SEDE Core Group was to assist the Secretariat in ensuring the success of the programme of work agreed by the Co-ordinating Group. The membership of the Core Group needed to be flexible, as members would act in an individual expert capacity, advising the Secretariat on an ad hoc basis, depending on the agenda of future Co-ordinating Group meetings. Financial support of national organisations would be required, although the members should not be construed as either national or organisational representatives.

11. SEDE took note of these terms-of-reference, and decided to review how successful the Group had been in fulfilling them at the end of the meeting.

Item 6: Proposed Programme of Work for SEDE [SEDE/DOC(90)2]

12. D.A. Galson introduced SEDE/DOC(90)2, in which were outlined the mandate of SEDE, the possible mechanisms for information exchange and international co-operation, and a set of proposed activities for SEDE. The Chairman emphasized the distinctions between and purposes of topical discussions, working groups, and workshops.

13. Before entering into detailed discussion of the document, several members of the Group noted the high importance they placed on the topic of measurement and understanding of gas generation and the movement of gases through host rock. This topic had been highlighted as a possibility for a topical discussion in SEDE/DOC (90)2, but several members of the Group considered that it was of sufficient importance and interest that it deserved an entire Workshop. Four Delegates expressed an interest in assisting with the detailed organisation of such a Workshop: W. Brewitz and H. Schneider (Germany), E. Vomvoris (Switzerland), and E. Regan (United States). In view of the PAAG's intention to organise a Workshop in 1991 on performance assessment aspects of gas generation, SEDE

- agreed that this Workshop should be jointly organised by the two groups, and that it should cover both the modelling and the measurement aspects of gas generation within radioactive waste repositories, and
- requested that the group of individuals mentioned above report back at the next meeting of SEDE - by which time the Workshop should have been held - on the need and possibilities for follow-up actions (e.g., initiation of a working group) by SEDE.

(a) Possible Follow-up from Workshop on Flow Heterogeneity and Site Evaluation (Paris, 22nd-24th October 1990)

14. D.A. Galson reviewed the objectives of the Workshop, and noted that the programme had been structured to encourage interaction and discussion between those involved in modelling work and those involved in designing and conducting both regional- and small-scale field investigations. Some 23 technical presentations had been given and the Workshop had been attended by about 60 scientists. Although difficult to draw clear conclusions from the discussions, a concluding panel had brought six issues forward for presentation and further consideration by the participants:

- (i) improvement in methods to investigate spatial variability and heterogeneity of groundwater flow systems over the past decade,
- (ii) use of different methods for quantifying uncertainty arising from spatial variability of hydrological data,
- (iii) problems associated with deriving simplified models for performance assessment from more detailed research models,
- (iv) the problem that hydrological testing provided data on a relatively small scale compared to the larger-scale requirements of regional groundwater flow modelling,
- (v) the thorny issue of dealing with uncertainty in conceptual models, and
- (vi) uncertainties in groundwater transport (as opposed to flow) models.

15. He offered three general criticisms on areas that he considered could be improved at future SEDE Workshops. First, an effort had been made to generate a mix of modellers and experimentalists at the same Workshop, yet more often than not in the discussions, it was a question of the modellers present speaking mainly to each other and the experimentalists present speaking mainly to each other. Second, a few of the presentations had not been of immediate relevance to the main themes of the Workshop, and the presentational quality had not been of a uniformly high standard. Third, there were too many papers presented in the time available, making discussion periods too brief to achieve a completely satisfactory Workshop environment.

16. Finally, he noted that no clear initiatives for immediate follow-up at international level had arisen from the Workshop, and he asked SEDE to consider the need for follow-up actions. He also noted that the NEA would publish full proceedings of the Workshop in early 1991.

17. There was a wide-ranging roundtable discussion of the Workshop, at which all but a few of the SEDE Delegates had participated. A large majority of the Group expressed satisfaction with the Workshop, yet numerous comments were made with the intent to give direction to improve future Workshops, or to raise issues for possible further discussion within SEDE:

- more time for discussion should be made available at future Workshops
 - perhaps by the use of poster sessions,
- the Workshop showed well which type of investigations can help to increase confidence in groundwater flow modelling, and what techniques are currently available,
- on the other hand, the view was expressed that more effort should be made to reflect progress at future Workshops, and perhaps the progress made could be reflected in the Executive Summary of the current Workshop,
- the involvement of modellers and experimentalists in the same Workshop had been valuable; more such involvement should be encouraged,
- on the other hand, one Delegation considered that too much emphasis had been given to modelling aspects at this Workshop, and stressed that modelling was not a central point of site characterisation,
- several Delegates considered that the Workshop showed that relatively homogeneous (and hence more easily modellable) sites should be sought for development of waste repositories,
- yet other Delegates remarked, however, that the Workshop highlighted the need to build robust conceptual models that are not in contradiction with the observed heterogeneities in nature, and the need to bound uncertainties owing to spatial variability in measured data,
- a simplified presentation of the major issues arising in the Workshop for decision-makers would be valuable,

- SEDE should discuss further issues associated with
 - o the use of environmental tracers to understand flow regimes
 - o recognition of how many data are enough for the purpose of licensing
 - o the various scales on which natural systems were heterogeneous
 - o the use of palaeo-information to understand heterogeneities because flow systems are not necessarily in steady-state
- SEDE should follow-up some of the outstanding issues from the Workshop in future Topical Discussions.

18. Following these discussions, it was agreed that the use of environmental tracers to understand site hydrology should be discussed at the next SEDE meeting in the context of the Topical Discussion to be held. No other immediate follow-up was considered necessary.

(b) Workshop on Monitoring of the Geological Environment: Needs and Techniques [SEDE/DOC(90)2 and SEDE/DOC(90)3]

19. The Chairman summarised the purpose of the four Workshops put forward by the Core Group [in SEDE/DOC(90)2] for consideration of the Co-ordinating Group:

- (i) monitoring of the geological environment: needs and techniques,
- (ii) calibrating and testing predictive migration models using palaeohydrogeological evidence,
- (iii) conceptual model development and display, and
- (iv) geological investigations in support of long-term scenarios and time-dependent parameters.

He stressed that all four Workshops focused on data collection issues, although modelling issues would also be considered. He noted that the Core Group had considered that the Workshop on monitoring would be the most appropriate to organise next, that is, in 1991 in connection with the Second Meeting of SEDE. In the ensuing discussion, it was agreed that the monitoring workshop should be organised. In addition, clear interest was expressed in workshops (ii) on palaeohydrology (first priority) and (iv) on investigations for time-dependency (second priority), although it was noted that further more detailed presentation and discussion of these possible workshops would be required at future SEDE meetings prior to agreeing on their organisation.

20. The Chairman requested the Group's advice concerning the detailed content of the monitoring workshop, to assist the Secretariat in drafting an announcement. He also clarified the Core Group's intent that the Workshop focus on long-term observation needs, methods, and instrumentation within repository

development programmes. After much discussion, the Co-ordinating Group agreed that the Core Group should rework the proposal [SEDE/DOC(90)3] and the Secretariat should circulate a draft announcement for approval by the end of the year, with the following modifications:

- the workshop title should be changed to omit the word "monitoring", as this word may be misinterpreted within some circles,
- the workshop should consider "monitoring" needs for deep geological disposal systems, and for both HLW and L/ILW repositories (i.e., near-surface disposal will not be considered),
- the workshop should consider the preclosure period only, as "monitoring" was not seen as necessary from a technical point-of-view for the postclosure period of deep disposal systems, and
- the workshop should have as one strong focus hydrogeological "monitoring" and instrumental life-times, because contributions could be expected from SEDE members on these topics.

(c) Establishment of Working Group on Groundwater Flow through Argillaceous Rocks [SEDE/DOC(90)4]

21. P. Hufschmied (Switzerland) discussed some of the issues associated with measuring and understanding groundwater flow through argillaceous media, and presented the proposal developed by the Core Group to establish an international Working Group to deal with these issues [SEDE/DOC(90)4]. E. Vomvoris noted that NAGRA was very supportive of this proposal, and would be prepared to host a first meeting of the Working Group. Further strong interest was expressed by the Delegates from Belgium, France, Japan, and Spain. Delegates from other countries expressed support in principle for the establishment of such a Working Group, with Delegates from Canada, the United Kingdom, the United States, and the Commission of the European Communities noting that they may wish also to send national representatives to meetings of the proposed Working Group. In addition, S. Takeda (Japan) suggested that consideration be given to changing the word "argillaceous" in the title of the Working Group to "sedimentary", as Japan was currently interested in a range of sedimentary rock types, and there was no entirely argillaceous host unit under investigation*.

22. The Co-ordinating Group therefore agreed

- to establish a Working Group on groundwater flow through argillaceous media,
- that this Group should have a first exploratory meeting in Switzerland (to be hosted by NAGRA) in early 1991 to exchange information on national programmes in this area and to determine what (if any) type of further international co-operation would be beneficial, and

*Note: This suggestion was not commented upon at the meeting, but informal consultation by the NEA Secretariat subsequent to the meeting has shown no support for a widening of the scope of this Working Group.

- to send the names of national representatives to this Working Group meeting to the NEA Secretariat by 30th November 1990 [Note: if you have not already done so and still intend to send representatives, please inform the Secretariat immediately].

(d) Next Topical Discussion [SEDE/DOC(90)2]

23. Referring to discussions he'd earlier in the meeting and the list of possible topics developed by the Core Group in SEDE/DOC(90)2, the Chairman proposed that a Topical Discussion be organised at the Second Meeting of the Co-ordinating Group on brine, water, and gas sampling techniques and instrumentation. He proposed further that emphasis be given to presentations on sampling of environmental tracers, as a practical follow-up to the Workshop on Flow Heterogeneity and Site Evaluation. Interest in contributing formally to a Topical Discussion in this area was expressed by Delegates from Belgium (A. Bonne), France (R. André-Jehan), Germany (W. Brevitz), and Switzerland (M. Thury), and the Group therefore agreed to the proposals. It was also noted that depending on the outcome of the Topical Discussion, consideration could be given in future to using the Topical Discussion as a basis for development of a Workshop.

(e) Other Activities

24. The Chairman asked participants if there were any other proposals for workshops, working groups or follow-up to the First Workshop to be considered by the Group. W. Brevitz re-emphasized his interest in establishing a working group on gas measurement at the earliest possible date. This possibility will be discussed again at the next meeting of SEDE. Interest was again expressed in workshops (ii) and (iv) of SEDE/DOC(90)2, but particularly in the former. No new proposals for workshops or working groups were introduced by the participants.

25. A. Bonne asked whether an NEA document could be prepared explaining in simple terms the main differences between national waste disposal programmes (e.g., timescales for disposal). J.-P. Olivier replied that the same idea had been discussed within the RWMC a couple of years ago, but it had been seen that it was difficult for the national delegates to express the real reasons formally in writing.

26. M. Thury (Switzerland) reminded the Group that field trips to the Grimsel Test Site and the Wellenberg site in Switzerland had been arranged by NAGRA the previous week in connection with the Workshop on Flow Heterogeneity and Site Evaluation and the First Meeting of the Group. He noted that these visits had been of value to the participants and requested that consideration be given to organising future workshops and SEDE meetings outside Paris such that they could more easily be linked with field trips to investigation or repository sites of interest. NAGRA was formally thanked for their organisational efforts, and the Group supported the suggestion of M. Thury.

27. D.A. Galson then raised the question of possible follow-up to the Stripa Project, noting that the Project would be completed by the end of 1991, and that the NEA was in the process of holding informal discussions on this question. He mentioned that the question had been discussed at recent meetings of the Stripa Joint Technical Committee and of the RWMC, but no conclusions had been drawn. R. Levich (United States) added that one reason to develop a new activity would

be to keep the international teams of investigators together; the work of these teams for the Stripa Project was considered to be state-of-the-art. A. Hooper (United Kingdom) suggested that it may be appropriate for the SEDE Co-ordinating Group to review techniques developed within the Stripa Project for application to national site evaluation programmes. Finally, J.-P. Olivier advised the Group to keep an open mind on the possibilities for follow-up activities, because this type of project could serve political - as well as technical - ends. He suggested that one possibility would be to have an informal linking of work within national site investigation or underground research programmes, analogously as was done for national decommissioning work within the NEA decommissioning project. SEDE took note of these comments, but did not advise on any concrete actions that might lead to initiation of a follow-up project.

Item 7: Topical Discussion: "New Measurement Techniques for Site Evaluation"

28. Four invited presentations were given as part of this Topical Discussion:

- G. Williams (United Kingdom) spoke about in situ resistivity tomography developed and used by the British Geological Survey,
- P. Rouhiainen (Finland) spoke about the problems of making groundwater inflow measurements in boreholes, and flow meters developed for this purpose within the Finnish site evaluation programme,
- E. Vomvoris spoke about borehole fluid logging techniques developed and used by NAGRA, and
- K. Watanabe (Japan) spoke about a humidity and evaporation sensor developed for use within underground research programmes.

Each of these presentations was followed by an active discussion, and the Group expressed its appreciation to the invited speakers.

Item 8: Recent Developments in National and International Programmes

29. Discussion under this item took the form of a roundtable question and answer session focusing largely on material contained in the written reports distributed in advance of or at the meeting. Almost all participants had provided written contributions, a list of which is provided in Annex II. M. Thury suggested that consideration be given to providing participants an outline for preparation of future reports, to ensure that contributions are more consistent in the types of information presented. It was agreed to request the Core Group to prepare such an outline.

Item 9: Any Other Business

30. D.A. Galson summarised decisions that had been taken by the Group in the course of its meeting. He noted that a Core Group meeting would be organised in early December 1990 to assist the Secretariat in implementing certain decisions of the Co-ordinating Group (e.g., preparation of a draft announcement for the "monitoring" workshop, a proposal for a third workshop in 1992, and an outline for the reports on recent developments). He added that membership of the Core Group would need to be revised from that of March 1990 meeting and, in particular, that a French expert would be sought to help organise the

"monitoring" workshop. He requested that any ideas for future SEDE activities be sent to him by 30th November 1990 in order that they could be considered at the Core Group meeting.

31. As had been discussed under Item 5 of the agenda, the Group then reviewed its terms-of-reference, and each Delegate expressed a view on how successfully they had been fulfilled. Delegates were generally positive about the results of the meeting, considering that it had been of profit to their national organisations. Finally, several Delegates remarked that the meeting had been well organised, expressing their thanks to the NEA Secretariat and the members of the Core Group for the extensive preparatory work that had been done in advance of the meeting. On the critical side, W. Brevitz considered that information exchange would be improved at future meetings by having extended presentations of recent developments in national programmes and omitting the Topical Discussions. This view was not widely shared, however.

Item 10: Date and Location of Next Meeting

32. Following a proposal by the Chairman, it was agreed - subject to the approval of the Secretary General of the OECD - that the Second Meeting of the Co-ordinating Group and the workshop on "monitoring" would be held in Helsinki, Finland, during the week of 9th-13th September 1991. The workshop and Second Meeting would be hosted by TVO. The Chairman noted that field trips to the Olkiluoto repository under construction for L/ILW, and to the HLW field investigation sites would be arranged.

33. The Chairman closed the meeting, thanking the participants for their attention and their contributions, and the Secretariat for its organisation of the meeting.

ANNEX I

FIRST MEETING OF SEDE
25th-26th October 1990

LIST OF PARTICIPANTSBELGIUM

Arnold BONNE
SCK/CEN
Boeretang 200
B-2400 Mol
Tel: 32 (14) 31 18 01
Tlx: 31922
Fax: 32 (14) 31 50 21
E-mail: EARN, BONNE
at BMLSCK11

Pierre MANFROY
ONDRAF/NIRAS
Place Madou 1
Boîtes 24/25
B-1030 Bruxelles
Tel: 32 (2) 212 10 43
Tlx: 65784 NIROND
Fax: 32 (2) 218 51 65

CANADA

Clifford C. DAVISON
Atomic Energy of Canada Ltd (AECL)
Whiteshell Nuclear Research Est.
Pinawa, Manitoba ROE 1LO
Tel: 1 (204) 753 2311
Tlx: 063671345
Fax: 1 (204) 753 2455

Peter FLAVELLE
Directorate of Fuel Cycle and
Materials Regulation
Atomic Energy Control Board (AECB)
P.O. Box 1046, Station B
270 Albert Street
Ottawa, Ontario K1P 5S9
Tel: 1 (613) 995 3816
Tlx: 053 3771
Fax: 1 (613) 995 5086

FINLAND

Timo AIKÄS (Chairman)
Teollisuuden Voima Oy
Fredrikinkatu 51-53 B
SF-00100 Helsinki
Tel: 358 (0) 605 022
Tlx: 122065
Fax: 358 (0) 605 135

Pekka ROUHIAINEN
G-Syst Oy

Pasvo VUORELA
Geological Survey of Finland
Betonimiehenkuja 4
SF-02150 Espoo
Tel: 358 (0) 46931
Tlx: 123185 geolo sf
Fax: 358 (0) 462 205

FRANCE

Raymonde ANDRE-JEHAN
Agence Nationale pour la Gestion
des Déchets Radioactifs (ANDRA)
Route du Panorama - Robert Schuman
B.P. N° 38
F-92266 Fontenay-aux-Roses Cedex
Tel: 33 (1) 46 54 97 01
Tlx: 632 824 F
Fax: 33 (1) 47 36 83 52

Pierre ESCALIER DES ORRES
Commissariat à l'Energie Atomique
Institut de Protection et de
Sûreté Nucléaire
DAS/SACICC/SAED
CEN/FAR
B.P. N° 6
F-92265 Fontenay-aux-Roses Cedex
Tel: 33 (1) 46 54 86 20
Tlx: 270049 SURIN
Fax: 33 (1) 42 53 91 27

Michel RAYNAL
Agence Nationale pour la Gestion
des Déchets Radioactifs (ANDRA)
Route du Panorama - Robert Schuman
B.P. N° 38
F-92266 Fontenay-aux-Roses Cedex
Tel: 33 (1) 46 54 98 20
Tlx: 632 824 F
Fax: 33 (1) 47 36 83 52

GERMANY

Wernt BREWITZ
Gesellschaft für Strahlen- und
Umweltforschung (GSF)
Institut für Tieflagerung
Theodor-Heuss-Strasse 4
D-3300 Braunschweig
Tel: 49 (531) 801 2239
Tlx: 2767/5318228 ift
Fax: 49 (531) 801 2200

ITALY

Horst SCHNEIDER
Federal Radiation Protection
Agency (BFS)
P.O. Box 1001 49
D-3320 Salsgitter 1
Tel: 49 (531) 592 7620
Tlx: 952822 PTB D
Fax: 49 (531) 592 7614

Tommaso MARZULLO
ENEL, DSR/VDN
Via Spontini, 22
I-00198 Roma
Tel: 39 (6) 8509 2945
Tlx:
Fax: 39 (6) 8509 3086

JAPAN

Seietsu TAKEDA
Radioactive Waste Management Project
Power Reactor and Nuclear Fuel
Development Corporation (PNC)
1-9-13, Akasaka
Minato-ku
Tokyo 107
Tel: 81 (3) 586 3311
Tlx: J-26462 PNRD
Fax: 81 (3) 586 2786

Kunio WATANABE
Saitama University
255 Shimo-Okubo
Urawa
Saitama
Tel: 81 (48) 852 2111
Tlx:
Fax: 81 (48) 855 9361

NETHERLANDS

Klaas A. DUIJVES
Energy Research Foundation (ECN)
Westerduinweg 3
P.O. Box 1
NL-1755 ZG Petten
Tel: 31 (2246) 4271
Tlx: 57211 REACP-NL
Fax: 31 (2246) 3490

SPAIN

Carlos del OLMO
ENRESA
Calle Emilio Vargas, 7
E-28043 Madrid
Tel: 34 (1) 519 5206
Tlx: 41429 ENRES E
Fax: 34 (1) 519 5268

SWEDEN

Fritz KAUTSKY
Swedish Nuclear Power
Inspectorate (SKI)
Box 27106
S-102 52 Stockholm
Tel: 46 (8) 665 44 00
Tlx: 11961 SWEATOMS
Fax: 46 (8) 661 90 86

Lars ERICSSON
Swedish Nuclear Fuel and Waste
Management Co. (SKB)
Box 5864
S-102 48 Stockholm
Tel: 46 (8) 665 28 04
Tlx: 13108 SKB
Fax: 46 (8) 661 57 19

SWITZERLAND

Peter BITTERLI
Nuclear Safety Inspectorate
Swiss Federal Office of Energy
CH-5303 Würenlinge
Tel: 41 (56) 99 38 11
Tlx: 827427
Fax: 41 (56) 99 39 07

Peter HUPFSCHMIED
Emch and Berger Bern AG
Gartenstrasse 1
Postfach 6025
CH-3001 Bern
Tel: 41 (31) 25 23 23
Tlx:
Fax: 41 (31) 25 16 85

Marc THURY
NAGRA
Parkstrasse 23
CH-5401 Baden
Tel: 41 (56) 20 52 30
Tlx: 828204 NAGR CH
Fax: 41 (56) 20 52 12

Efstratios VOMVONIS
NAGRA
Parkstrasse 23
CH-5401 Baden
Tel: 41 (56) 20 53 24
Tlx: 828204 NAGR CH
Fax: 41 (56) 20 52 12

UNITED
KINGDOM

Alan Hooper
UK Nirex Ltd.
Curie Avenue
Harwell
Oxon OX11 0RH
Tel: 44 (235) 835 153
Tlx: 837567
Fax: 44 (235) 831 239

Geoff M. WILLIAMS
British Geological Survey
Fluid Processes Research Group
Keyworth
Nottingham NG12 5GG
Tel: 44 (6077) 6111
Tlx: 378173
Fax: 44 (6077) 4841

UNITED
STATES

Elsaine GORHAM
Fluid Flow and Transport
Division 6344
Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185
Tel: 1 (505) 844 3151
Tlx: 469012
Fax: 1 (505) 844 1723

Robert A. LEVICH
Yucca Mountain Project Office
U.S. Department of Energy
Post Office Box 98608
Las Vegas, NV 89193
Tel: 1 (702) 794 7946
Tlx:
Fax: 1 (702) 794 7907

N. King STABLEIN
U.S. Nuclear Regulatory Commission
Mail Stop 4-H-3
Washington, D.C. 20555
Tel: 1 (301) 492 0446
Tel: 908142
Fax: 1 (301) 492 0259

Charles F. VOSS
Golder Associates
4115 148th Ave NE
Redmond, WA 98052
Tel: 1 (206) 883 0777
Tlx:
Fax: 1 (206) 882 5498

CEC

B. HAJTINK
Commission des Communautés
Européennes
Direction Générale XII
200, rue de la Loi
B-1049 Bruxelles
Tel: 32 (2) 235 3695
Tlx: 21877 COMEU-B
Fax: 32 (2) 236 2006

IAEA

Michael J. BELL
International Atomic Energy Agency
Division of Nuclear Fuel Cycle
and Waste Management
P.O. Box 100
A-1400 Vienna
Tel: 43 (1) 2360 2662
Tlx: 1-12645
Fax: 43 (1) 234 564

NEASECRETARIAT

Daniel A. GALSON
Division of Radiation Protection
and Waste Management
OECD Nuclear Energy Agency
36, boulevard Suchet
F-75016 Paris
Tel: 33 (1) 45 24 96 27
Tlx: 630668
Fax: 33 (1) 45 24 96 24

Jean-Pierre OLIVIER
Tel: 33 (1) 45 24 96 95

Claes THEGERSTRÖM
Tel: 33 (1) 45 24 96 78

ANNEX II

FIRST MEETING OF SEDE
25th-26th October 1990

LIST OF WRITTEN CONTRIBUTIONSBELGIUM

HADES Underground Research Facility.
SCK/CEN.

Recents developpements dans les
programmes belges d'évaluation de
sites et de conception d'expériences
en matière d'enfouissement de déchets
radioactifs. ONDRAP/NIRAS.

CANADA

Recent Canadian Developments in Site
Evaluation and Design of Experiments
for Nuclear Fuel Waste Disposal.
AECL.

Recent Developments in Site
Evaluation and Design of Experiments
at the Atomic Energy Control Board,
Canada. AECS.

FINLAND

Recent Developments in Site
Evaluation and Designing Experiments
in Finland.
T. Kikkä (TVO).

Reference Results by Publicly
Financed Nuclear Waste Management
Research in Finland.
P. Vuorela (Geol. Survey).

Flow Meter.
P. Rouhiainen (G-Syst Oy).

FRANCE

Recent Developments. ANDRA.

Développements récents. ANDRA.

GERMANY

Recent Developments in the Field of
Site Evaluation for Radioactive Waste
Disposal and Status of the Repository
Projects in Germany.
H. Schneider (BfS).

Progress Report on R&D Activities
concerning In Situ Investigations for
Radioactive Waste Disposal in the

Federal Republic of Germany.
W. Brewitt (GSF).

ITALY

Recent Developments.
T. Marsullo (ENEL)

JAPAN

Current Status of Site Evaluation
Study in Tono Area Japan.
S. Takeda (PNC).

Evaporation Measurement on a
Wall for Mapping the Spatial
Variability of Groundwater
Evaporation Sensor.
K. Watanabe (Saitama Univ.)

NETHERLANDS

Recent Developments in the
Experimental Programme for
Radioactive Waste Disposal.
K.A. Duijves and L.H. Vons (ECN).

SPAIN

Recent Developments in Spain.
C. del Olmo (ENRESA).

SWEDEN

In Situ Research, Demonstration and
Investigations for the Disposal of
Radioactive Waste in Sweden.
F. Kautsky (SKI) and B. Stillborg
(SKB).

SWITZERLAND

Recent Developments in Site
Evaluation and Design of Experiments
in Switzerland. S. Vomvoris and
M. Thury (NAGRA).

Application of Borehole Fluid
Conductivity Logging within NAGRA's
Field Investigation Program.
S. Vomvoris (NAGRA), V.A. Kelley
(INTERA) and S. Loew (COLENCO).

UNITED
KINGDOM

Recent Developments in UK Programme
for the Disposal of Low-Level and
Intermediate-Level Radioactive
Wastes. A.J. Hooper (NIREX).

CEC

Status of CEC R&D Programme on
Management and Storage of Radioactive
Waste.
B. Haijink (CEC).

IAEA

The Radioactive Waste Safety
Standards (RADWASS) Programme.
M.J. Bell (IAEA).