

MINUTES OF THE WP4 SPRING MEETING HELD IN THE UNIVERSITY OF MANCHESTER, MANCHESTER (UK) FRIDAY, MARCH 7TH, 2008



Diffusion:

Present and apologized participants

WP4 Members

P. MacIntyre (EFC Scientific Secretary)

Ph. Berge (EFC General Secretary in France)

G. Kreysa (General Secretary in Germany)

EFC WP4 "NUCLEAR CORROSION"

Chairman Damien Féron Secretary Mylène Belgome Scientific Secretary Odile de Bouvier Scientific Scie



Attendance:

Mylène Belgome CEA/Saclay (France)

Robert Cottis University of Manchester (UK)

Damien Féron CEA/Saclay (France)

Bruno Kursten SCK-CEN (Belgium)

Andraž Legat Slovenian National Building and Civil Engineering Institute (Slovenia)

Stefan Ritter Paul Scherrer Institute (Switzerland)

David Tice Serco (UK)

Peter Wood Nuclear Decommissioning Authority (UK)

Apologies for absence received from:

Rik-Wouter Bosch SCK-CEN (Belgium)

Franck Druyts SCK-CEN (Belgium)

Catherine Guerre CEA/Saclay (France)

Harald Hoffmann VGB PowerTech e.V. (Germany)

Renate Kilian AREVA-NP GmbH (Germany)

Valérie L'Hostis CEA/Saclay (France)

Marc Le Calvar IRSN (France)

Virginia Madina INASMET (Spain)

Anders Molander Studsvik Nuclear AB (Sweden)

Radek Novotny JRC (The Netherlands)

Juha Piippo Cormet (Finland)

Antoine Pourbaix CEBELCOR (Belgium)

Bo Rosborg KTH (Sweden)

Peter Scott (France)

Hans-Peter Seifert Paul Scherrer Institute (Switzerland)

François Vaillant EDF (France)

Marc Vankeerberghen SCK-CEN (Belgium)

Börje Wegemar Westinghouse Electric Sweden AB (Sweden)



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Enclosures:

- √ Slides presented by D. Féron: Manchester Spring meeting 2008 (DF)
- ✓ Slides presented by St. Ritter: Manchester Future Green Book (SR)
- ✓ Slides presented by B. Kursten: Manchester SACNUC 2008 (BK)
- ✓ Slides presented by B. Kursten: Manchester Summer School NC (BK)



1. OPENING AND WELCOME

D. Féron opened the meeting at 09.30. He thanked the audience for coming, hoping that the quite reduced audience will make the meeting constructive, and he thanked B. Cottis for hosting this WP4 Spring Meeting.

Before presenting the agenda, he presented the numerous apologies for absence received, some of them containing comments about the Summer School to be discussed during the meeting.

2. APPROVAL OF THE AGENDA

D. Féron presented the agenda, underlining that the main point will be the proposal of the creation of a Nuclear Corrosion "Summer School" even if some other points about the WP4 would be evoked.

No comment is made; the agenda is approved by the participants.

3. APPROVAL OF THE MINUTES OF THE FREIBURG MEETING

D. Féron made a review of the minutes of the previous WP4 Fall Meeting held in Freiburg on September 10^{th} - 11^{th} , 2007. He recalled that the main point was the presentation of the new 3-years plan proposed for the WP4.

The objectives of this 3-year plan are:

- ✓ To provide links between European teams and EU funded programs in nuclear corrosion field, with an opening on to the world.
- ✓ To initiate and stimulate opportunities of exchanges on scientific and technical subjects related to nuclear corrosion, particularly on today main nuclear research areas.
- √ To promote corrosion science and technical developments by events such as seminars, workshops, publications, ...

The related actions to reach these objectives are:

- √ Two WP meetings per year: a Spring Meeting more focussed on one or few items, and an annual
 general Meeting during the EUROCORR Congress. This point has been accomplished during the
 previous 3-years plan (2003-2006) but not in 2007 with the cancellation of the Spring Meeting.
- ✓ Specific seminars/workshops, either during EUROCORR, or at any time since they are in connection with EU programs or on specific subjects related to the WP4 fields of interest; at least one workshop should be held each year.
- ✓ Promote active task forces (groups) on specific subjects. D. Féron reminded to feel free to propose new groups.
- ✓ Publish proceedings, in EFC Series (one book per year) and selected papers in others publications for a larger visibility. This year, one Green Book is already planned for the proceedings of the ECG-COMON workshop (probably published in 2008), and maybe another one in 2009 after the SACNUC symposium, but other members' proposals are welcome.
- ✓ Develop links between EFC WP4 and other nuclear organisations (EURATOM, OECD/NEA, IAEA, ...).

As no comment is made; the minutes of the Freiburg Meeting are approved.

EFC WP4 "NUCLEAR CORROSION"

Chairman Damien Féron Secretary Mylène Belgome Scientific Secretary Odile de Bouvier Scientific Secretary Damien Féron Secretary Scientific Secretary Scientific Secretary Scientific Secretary Odile de Bouvier Scientific Secretary Odile de Bouvier Scientific Secretary Scientific Scientific



4. Nuclear Corrosion "Summer School/Formation/Courses"

- D. Féron first recalled the origin and his "personal views" about this proposal and underlined that, as nothing had been done in 2007, it is now time to make a decision whether this action has to be carried out or not, and if the WP4 goes through organizing this manifestation, this Spring Meeting has to progress on some important points:
 - ✓ Who: organizes? would be the expected audience?
 - ✓ What do we organize: focus? duration?
 - √ Where?
 - √ When?

The idea of a Summer School (or European School/training course/international students' workshop/...) was proposed during the Maastricht Fall Meeting. The proposals and main points were:

- ✓ Objective: provide, during a week, a state-of-the-art overview of nuclear corrosion matters to
 everyone involved in some aspect of materials behaviour and mostly to young researchers who
 are often specialized in a field, to give them a larger overview;
- ✓ Due to the work for the organization of such a manifestation, the Summer School should occur during one week each year or every two years, in different countries, maybe with a different "focus point" every time;
- ✓ The WP4 should not organize the event by itself, but in the framework of EU programme or an OECD/NEA event (what could permit to get support and maybe funds), or in relation with a congress (as a training course before EUROCORR), or in relation with ENEN (European Nuclear Education Network) to be recognized as course that would allow the students to get an accreditation for attending, ...
- D. Féron presented the comments received regarding the Summer School proposal:
 - ✓ M. Le Calvar (IRSN, France) advised that some financial support should be provided by IRSN
 (depending on the French or international level of the Summer School) and proposed a lecture
 on safety and corrosion in NPP;
 - \checkmark A. Molander approved the idea, encouraged to go on and proposed a lecture on electrochemistry at high temperature;
 - ✓ St. Ritter mentioned a specific call in the EU FP7 that the Summer School could be related to, but the deadline for submissions is quite over;
 - ✓ B. Rosborg mentioned a possible involvement in the organization and recommended to cover the
 whole fuel cycle not focussing on the problem encountered;
 - ✓ B. Kursten has shown interest in organizing the first Summer School; D. Féron invited him to inform the audience about his proposal.
- B. Kursten then showed a few slides. SCK-CEN would be interested in organizing the Summer School, represented by himself and R.W. Bosch. The first Summer School could occur in 2009, in one of two possible locations selected in Belgium, depending on the attendance. Some possible topics and social events are also presented (see slides attached).



A very large and very interesting discussion went on during and after the presentations made by D. Féron and B. Kursten. Only the main points of decision are mentioned here after:

- ✓ Targeted audience: young engineers, scientists and PhD, already having a basic knowledge about corrosion but maybe not aware of corrosion problems in the nuclear industry. To give nuclear corrosion courses to people knowing nothing about corrosion would take too much time. A general course on corrosion could be provided on line, e.g., by WP7 (B. Cottis), on the Summer School website, but the course would (probably) not be free of charge.
- √ Topics: a 3-days general session about corrosion in nuclear systems and a 2-days focus on a specific point, for instance waste and disposal aspect, NPP, P & BWR, certain corrosion phenomena (e.g., environmentally-assisted cracking, flow-accelerated corrosion, etc.), corrosion monitoring etc.
- ✓ Occurrence: the Summer School should be organized yearly, at a date fixed to avoid conflict with other well-known manifestations of the field (EUROCORR, ...) and the summer holidays. The beginning of July or the end of August were evoked, as well as an holiday destination, to attract both audience and speakers.
- ✓ Funds and support: D. Féron proposed to contact the ENEN (French Chairman at the moment) and to help for asking financial support from the EU. The interest is that, if the audience is at least 50% young scientists, EU would help both attendees and lecturers for coming, but it was mentioned that since 2000 there is a new rule for being an official European Summer School saying that there cannot be more than 10 students by speaker; the organizer has to pay attention to this point (nota: for the first edition, an attendance of 20 persons is expected). D. Féron also mentioned to ask for the OECD/NEA support.
 - The support of IAEA would also be of interest, but can be more difficult to get since the request should be made by the Government (the organizer should ask his government to make the proposal to IAEA).

Some practical decisions have also been made:

- ✓ Creation of a dedicated task-force which Chairman would be the organizer of the Summer School.
 - The draft of the minutes of this Spring Meeting will be sent to the WP4 members who sent apologies for absence to ask them if they want to participate to this new task-force.
 - As SCK-CEN already worked on the preparation of the first Summer School that is envisaged to occur in 2009 in Belgium, the Chairman should be B. Kursten.
 - It is also decided that the Chairman of the task-force, as organizer, would propose the 2-days focus subject of the Summer School.
- ✓ The task-force should know about the content of the Summer School and about funding by EUROCORR'2008. Progresses on these points should be discussed after the next ECG-COMON meeting (next June). B. Kursten will prepare a summary of content that could be discussed then and sent to D. Féron so that he could present a proposal to the ENEN and ask for support.



5. STATUS OF EFC WP4 PUBLICATIONS

5.1. EFC Series Green Books published in 2007

- D. Féron informed the audience that 10 Green Books have been edited in 2007, which is a very good point for EFC funding (10% of the price of the books are given to EFC) and gives a good visibility of the EFC activities.
- D. Féron asked the editor (Woodhead Publishing) for a flyer recalling the books recently edited that could be given during EFC Events.

Then, he recalled that 3 Green Books have been published in 2007 "on behalf" of the WP4 and reminded their content while showing the layout and some information about each book in his slides:

- ✓ EFC Series #48: "Corrosion of metallic heritage artefacts: investigation, conservation and prediction for long term behaviour"
 - Editors: Ph. Dillmann, H. Mathiessen, P. Piccardo, G. Béranger.
 - This book, which is the first Green Book on the subject, gathers 20 papers. It was sent to P. MacIntyre by mid-June 2005 and published in March 2007.
- ✓ EFC Series #49: "Electrochemistry in Light Water Reactors: Reference Electrodes, Measurements, Corrosion and Tribocorrosion Issues"
 - Editors: R.W. Bosh, J.P. Celis and D. Féron.
 - This book gathers 11 papers. It was sent to P. MacIntyre by mid-October 2005 and published in May 2007.
- ✓ EFC Series #51: "Corrosion Issues in Light Water Reactors: Stress Corrosion Cracking" Editors: D. Féron and J.M. Olive.
 - This book gathers 26 papers. It was sent to P. MacINtyre by the end of November 2005 and published in June 2007.

5.2. Other publications

- D. Féron recalled that there is no obligation to publish in EFC Series. Even if Green Books are valuable for EFC, publishing proceedings in other editions can allow to reach a different and larger public and to disseminate widely our presentations and works achieved. For example, he presented:
 - √ Proceedings of NUCPERF'2006 conference
 - These proceedings were published in November 2006, after reviewing, as a special edition of the "Journal de Physique IV" (Vol. 136): 349 pages for 32 contributions.
 - ✓ Publications in the Journal of Nuclear Materials Since the agreement concluded with the board of editors of JNM (January 2006) to publish the "best" papers presented during EUROCORRS WP4 sessions:
 - *3 papers presented during EUROCORR'2005 have been published;
 - *6 papers presented during EUROCORR'2006 have been published.



There is also an agreement with JNM to publish the proceedings of workshops sponsored by the WP4 as extra editions of JNM, the WP4 being "guest editor" and the edition rules of JNM applied to the papers. For instance:

* A special issue will be published, gathering papers presented during the 3rd International Workshop on Prediction of long term corrosion behaviour in nuclear waste systems (PennState University, USA, May 14th-18th, 2007). All papers have been reviewed except one which is expected by May 2008.

Whatever the publication mean chosen, D. Féron underlined again the problem of the delays almost always encountered: the delay in papers selection, in the return from authors and reviewers... He said that this "editor's" job is a hard work but the sooner the books are edited, the more valuable it is both for EFC and for WP4. Thanking the reviewers regularly solicited and the temporary editors, he asked for an involvement of the organisers in the publication/edition process.

He regretted that he had no time for selecting/reviewing the papers presented during EUROCORR'2007, so that no Green Book or JNM edition will gather them. Nevertheless, St. Ritter recalled that most of the papers of the "Corrosion monitoring" workshop (WP4 workshop during EUROCORR'2007), as well as some additional papers, are going to be published as a Green Book.

5.3. Future publications

The future publications planned are:

- ✓ A selection of papers that will be presented during EUROCORR'2008 WP4 sessions, in JNM.
- \checkmark A special issue of JNM for the proceedings of the 3^{rd} International Workshop on Prediction of long term corrosion behaviour in nuclear waste systems.
- ✓ The papers of the ECG-COMON workshop (plus additional ones), as a Green Book.
- St. Ritter then presented few slides on the status of this last EFC Series publication.
 - ✓ Papers from the Corrosion Monitoring workshop of EUROCORR'2007 have been selected and additional ones for a total of 17 papers.
 - ✓ For the moment, 06 of the 17 papers have been received (deadline: March 2008, a recall will be sent soon).
 - ✓ All the papers, reviewed, are expected to be sent to the publisher by next EUROCORR.
- D. Féron asked for the title of chapters, authors and number of pages as soon as possible, to get in contact with the publisher as this is necessary to get an idea of the date of publication of the book. St. Ritter answered that, when all the papers will be received, he will give the information requested.
- D. Féron underlined again that the publication of the proceedings of workshops concluding European programmes (like it was done by the end of the LIRES programme) as EFC Series Green Books is very valuable to disseminate the knowledge acquired and for our visibility to EU Officers. He encouraged the audience to think and speak about this opportunity in European meetings. Moreover, other publications can be proposed, for instance on critical subjects in the field of the WP4 activities, subjects on which a kind of overview can be needed or useful.



6. EFC WP4 WEBSITE

- D. Féron recalled what is now on the WP4 page, on the EFC website (www.efcweb.org):
 - ✓ Reports on WP4 activities and presentation of the WP4 at OCDE/NEA (made in Cadarache, in 2006)
 - ✓ WP4 groups: ECG-COMON
 - ✓ Minutes of the WP4 meetings (without overheads).
 - ✓ Announcements of future events/workshops of the WP4
 - ✓ WP4 publications in EFC series and others, not up-to-date for the moment.

He informed that the EFC website is under renovation at the moment, for new layout, easier to use. This point has been agreed by the BoA last March, 6th and should be effective next month.

Moreover, he said that some changes have been requested by mid-February, to update the information displayed on the WP4 page.

As O. de Bouvier (EDF, France), has no time to keep in charge of the updating of this page, St. Ritter is proposed to replace her. This proposal is accepted.

- St. Ritter would like to have a direct access to the website. D. Féron answered that, for the moment, I. Honndorf is the person who updates the website, following the requests she receives, and does it quite soon, but the request of St. Ritter can be discussed during the next STAC Meeting.
- D. Féron insisted on the fact that, to be useful, the WP4 page has to be updated regularly, and informed that some changes could be possible:
 - ✓ Create a private page with private access to get the WP4 members' list;
 - ✓ Create a space for exchanges for the construction of Green Books and other publications (on line submission of papers, reviewing, etc.)
- D. Féron will transfer to St. Ritter the mail sent to I. Honndorf regarding the last modifications requested so that he can take in charge the maintenance of the WP4 page.



7. EFC WP4 FUTURE EVENTS

- D. Féron announced the future events sponsored by the WP4 and invited the organisers to say a few words about them.
 - 7.1. SACNUC 2008: International Workshop on Sulfur-Assisted Corrosion in Nuclear Waste Disposal Systems
- B. Kursten announced that this workshop, which is the EFC Event #311, will take place in Brussels (Belgium) on October 21st-23rd, 2008. It is organized by SCK-CEN, NIRAS and the EFC.

After presenting Belgium, Brussels and its interests in different fields (!), he reminded that, in the different disposal concepts, the corrosion behaviour of the metallic barriers is the main point, which explains the interest on the importance of sulfur in the corrosion process. But, the aim of the workshop is to gather scientists to create a state-of-the-art of the knowledge on sulfur assisted corrosion (not only corrosion by SBR effects), receiving inputs from outside the nuclear waste topic and carry on discussions based on the presentations made.

The main topics are: geochemistry, microbiology, localized corrosion, effects of γ -irradiation, modelling.

Then, he recalled some general information:

- ✓ The proceedings will be published as a Green Book.
- ✓ The Organising Committee is composed of SCK-CEN, NIRAS/ONDRAF (the waste disposal governmental authority) and sponsored by EFC WP4.
- ✓ A Scientific Committee will be composed of himself, R. Gens (NIRAS/ONDRAF), D. Féron (CEA/Saclay), D.D. Macdonald (PennState University) and N. Smart (Serco Assurance)
- ✓ The e-mail address for any information/to propose oral presentation: <u>sacnuc@sckcen.be</u>.
- ✓ The website is now available and frequently updated: http://www.sckcen.be/sacnuc.
- ✓ The venue is Métropole Hotel, in the city center.
- ✓ The key-dates are:
 - * May 31st, 2008: abstract submission deadline
 - * July 15th, 2008: notification of acceptation to the authors
 - * August 31st, 2008: deadline for early registration
 - * September 30th, 2008: deadline for full papers
- ✓ The participation fees are:
 - * Before August 31st, 2008: 350€
 - * After August 31st, 2008: 400€
- √ 7 keynote lectures are already accepted.
- D. Féron thanked the orator but mentioned that, as an EFC Event, there should be reduced participation fees for EFC members.

Chairman Damien Féron Secretary Mylène Belgome Scientific Secretary Odile de Bouvier Scientific Secretary Damien Féron Secretary Den/SAC/DPC/SCCME Bâtiment 458 F-91191 GIF SUR YVETTE Cedex DEN/SAC/DPC/SCCME Bâtiment 458 F-91191 GIF SUR YVETTE CED



7.2. Workshop on Corrosion and Long Term Performance of Concrete in Nuclear Power Plants and Waste Facilities (NUCPERF 2009)

As V. L'Hostis apologized for absence, D. Féron presented few information about the 2nd edition of the NUCPERF Workshop that is organized with the OECD/NEA and a specific Committee of the RILEM association. Moreover, V. L'Hostis is going to ask for an EFC Event number.

NUCPERF 2009 will take place in Cadarache (France), on March 30th to April 02nd, 2009.

The proceedings will be edited as a RILEM report.

A website will be operating within this month.

V. L'Hostis will make a more complete presentation during the next WP4 Meeting.

- 4th International Workshop on Prediction of long term corrosion behaviour in nuclear waste systems
- B. Kursten just confirmed that this 4th international workshop will take place in Belgium in 2010, as a continuation of the PennState one.

Other proposals

D. Féron reminded the members not to hesitate to propose ideas of workshops/seminars related to the WP4 activities, and maybe out of the nuclear waste management field, or to associate the WP4 to "private" events organised by their companies.



8. EUROCORRS

8.1. EUROCORR'2008

D. Féron reminded that EUROCORR'2008 will take place in Edinburgh (United Kingdom) on September 07th-11th, 2008 on the general topic "Managing corrosion for sustainability".

There are two sessions planned by the WP4:

- ✓ Nuclear Corrosion general session. This session will be held on Tuesday afternoon and Wednesday and will present a keynote lecture by A. Yamamoto (OECD/NEA), 17 papers and 3 posters.
- ✓ Workshop proposed by M. Vankeerberghen (SCK-CEN) organised in collaboration with WP7 ("Education and computer") entitled "Computer modelling in corrosion".
 This workshop will be held on Monday and Tuesday morning and will present 15 lectures and 3 posters.

Regarding the WP4 Fall Meeting, D. Féron proposed to have it on Wednesday afternoon, after the Nuclear Corrosion session ends, between 16.40 and 19.00, with maybe a discussion on Thursday morning about the Summer School.

St. Ritter also asked for O1hour (e.g., on Thursday) to have the ECG-COMON Fall Meeting in conjunction with the WP4 sessions.

8.2. EUROCORR'2009

D. Féron reminded that EUROCORR'2009 will take place in Nice (France) on September 06^{th} - 10^{th} , 2009 on the general topic "Corrosion: from nanoscale to the plant".

There are two sessions planned by the WP4:

- ✓ Nuclear Corrosion general session.
- ✓ Workshop co-organised with WP3 ("High temperature corrosion") entitled "Corrosion issues in future high temperature nuclear systems". D. Féron has already contacted HPLWR and other European Programmes to participate to this workshop.
 - He has also presented the preliminary announcement of the workshop to the BoA and, as it was accepted, it will soon be sent.
- D. Féron took the occasion to remind that co-organising workshop with other WPs and/or NACE (since the new relations between EFC and the US organisation) is welcome and encouraged.

8.3. Next EUROCORRs

D. Féron recalled that EUROCORR'2010 will take place in Moscow (Russia) on September 13th-17th, 2010 and informed that EUROCORR'2011 will take place in Stockholm (Sweden) on September 05th-08th, 2011.



9. EFC WP4 SPECIFIC MATTERS

- D. Féron informed the audience about the new directives for the establishment and operation of the WPs, approved by the BoA:
 - ✓ Creation of a Vice-Chairman position;
 - ✓ Creation of an inaugural meeting for new WPs during which two delegates per societies are appointed;
 - √ No more differences between delegates and personal members (no more "Steering Committee"
 members in the WPs);
 - ✓ Chairman proposes and approves with the consent of the WP, the nomination and re-election of members for a duration of 3 years;
 - ✓ A simple majority is sufficient to approve a resolution.
- D. Féron informed that a discussion should be carried on about members during the next WP4 Meeting.

10. NEXT MEETINGS

- D. Féron recalled the future meetings:
 - ✓ ECG-COMON annual meeting

 June 16th-17th, 2008 in Villigen (Switzerland), only for members.
 - ✓ EUROCORR'2008 September 07th-11th, 2008 in Edinburgh (United Kingdom) with the WP4 general session and workshop and the WP4 Fall Meeting.
 - ✓ SACNUC workshop (EFC event n°311).

 October 21st-23rd, 2008 in Brussels (Belgium).
- St. Ritter asked about the next WP4 Spring Meeting. D. Féron answered that he has no idea for the moment but is opened to every proposal.

Moreover, he informed that he is thinking about a kind of information meeting about the WP4 activities (and the proposal of Nuclear Corrosion Summer School) during the next ICG-EAC meeting. This will be confirmed as soon as possible.

11. CLOSURE

D. Féron thanked the audience for coming and for the very large and fruitful discussion, especially about the proposal of the Summer School.

He also thanked again B. Cottis for welcoming and hosting the meeting.

He closed the meeting at 13.30, recalling the visit of the corrosion laboratories of the University of Manchester to come just after lunch.