



**EUROPEAN FEDERATION OF CORROSION  
EUROPÄISCHE FÖDERATION KORROSION  
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

**MINUTES OF THE WP4 SPRING MEETING  
HELD IN THE MAISON DE LA CHIMIE – FFC, PARIS, FRANCE  
WEDNESDAY, MARCH 18<sup>TH</sup>, 2009**



**Diffusion:**

Present and apologized participants

WP4 Members

P. MacIntyre (EFC Scientific Secretary)

Ph. Berge (EFC General Secretary in France)

G. Kreysa (EFC General Secretary in Germany)

**EFC WP4 "NUCLEAR CORROSION"**

Chairman	Damien Féron	CEA/Saclay	DEN/SAC/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Thierry Couvant	EDF	DMMC - Les Renardières	BP46	F-77818 MORET SUR LOING Cedex
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**Attendance:**

Mylène Belgome	CEA/Saclay (France)
Thierry Couvant	EDF/R&D (France)
Damien Féron	CEA/Saclay (France)
Bruno Kursten	SCK-CEN (Belgium)
Anders Molander	Studsvik Nuclear AB (Sweden)
Stefan Ritter	Paul Scherrer Institute (Switzerland)
Guy Turluer	(France)

**Apologies for absence received from:**

Thomas Andersson	Sandvik (Sweden)
Benedetto Bozzini	UNILE (Italy)
Bob Cottis	U. of Manchester (UK)
Catherine Guerre	CEA/Saclay (France)
Marc Le Calvar	IRSN (France)
Andraz Legat	ZAG (Slovenia)
Valérie L'Hostis	CEA/Saclay (France)
Christina Lilja	Svensk Kärnbränslehantering AB (Sweden)
Virginia Madina	INASMET (Spain)
Juha Piippo	Cormet (Finland)
Bo Rosborg	RIT (Sweden)
Peter Scott	(France)
Hans-Peter Seifert	PSI (Switzerland)
David Tice	Serco (UK)
Marc Vankeerberghen	SCK-CEN (Belgique)
Börje Wegemar	Westinghouse Electric (Sweden)

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**Enclosures** (only for WP4 Members and EFC addressees):

- ✓ Slides presented by D. Féron
- ✓ Slides presented by B. Kursten: 4<sup>th</sup> International Workshop on "Prediction of Long Term Corrosion Behaviour in Nuclear Waste Systems"
- ✓ Slides presented by Th. Couvant: Modelling and multiphysical approaches workshop
- ✓ Slides presented by St. Ritter: EFC Series Green Book #56
- ✓ Slides presented by B. Kursten: EFC Series Green Book #59
- ✓ Slides presented by St. Ritter: EFC/WP4 website (+ information about next ECG-COMON meeting)

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## 1. OPENING AND APPROVAL OF THE AGENDA

D. Féron opened the meeting at 09.45. He thanked the audience for coming and, as we are not so numerous, he proposed a quick "tour de table" so that each participant can introduce himself and his field of interests.

D. Féron reminded that two meetings per year are organized, a Fall Meeting during EUROCORR and a Spring Meeting in conjunction with another event; this year the Spring Meeting is occurring in conjunction with the PERFORM 60 program meeting. Unfortunately, another meeting is being held by NEA in the same time, which causes a lot of apologies for absence received.

Presenting the apologies received, D. Féron underlined that, some members never come to the WP4 meetings but regularly send apologies expressing their interest in reading the minutes. That shows that there is a certain number of "passive" members, which can be a problem with the new rules approved by the EFC (see item 7).

Then, D. Féron presented the agenda and engaged the participants not to hesitate to express themselves if they see a missing item.

As no comment is made; the agenda is approved.

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**2. APPROVAL OF THE MINUTES OF THE EDINBURGH MEETING**

D. Féron made a review of the minutes of the previous WP4 Fall Meeting held in Edinburgh last September. Mentioning that the minutes were shorter than usual due the absence of M. Belgome at the meeting, he wanted to make a quick return on the point of the Summer School "Nuclear Corrosion", as he thinks the discussion on this point during Edinburgh was a bit confused. He reminded that there were some discussions about the name and the program of the Summer School, then there were some exchanges between the task force members.

As no comment is made, the minutes of the Edinburgh Meeting are approved.

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### 3. PUBLICATION IN THE "ENGINEERING MATERIALS AND PROCESSES SERIES" (Springer publishing)

Following the publication of an article entitled "Corrosion issues in nuclear industry today" (co-authors: F. Cattant and D. Crusset) in "Materials Today", D. Féron received an e-mail from A. Doyle, Senior Editor of Springer Publishing proposing to publish a book in the "Engineering Materials and Processes Series".

D. Féron asked the co-authors about this project but F. Cattant will soon be retired and D. Crusset has no time; as D. Féron cannot write this book alone, he thought about proposing this publication to the WP4, since the edition of books is one of the objectives of the WP.

D. Féron showed the article, divided in two parts: NPP (PWRs) and Nuclear waste management/storage, which can be the articulation of the book. D. Féron precised that the article mainly presents the French view. Th. Couvant proposed to add the BWRs, with a contribution of the Japanese for instance, which is approved.

D. Féron presented the outline of the book and then informed that Woodhead Publishing is starting a new nuclear energy reference books series in which he is in charge of a book named "Nuclear corrosion science and engineering". But, even if it is good to publish several books related to corrosion in nuclear industry, he has not enough time to do it himself and alone. That is why he proposed Th. Couvant to be in charge of the project and create a specific task force.

Th. Couvant agreed but wonders which kind of writers should be contacted; D. Féron answered that we should first think about what should be the content of the book, moreover he does not know how large will be the book, that is why he will contact the Editor to ask him or make a proposal.

Th. Couvant approved and concluded that, after the answer of the Editor, we should decide about the content of the book and then find the contributions and the contributors.

That initiated a large discussion between all the participants, mostly regarding the fact that there are several books in progress in the same time (IAEA, Elsevier, Woodhead, ...). These books have different contents, have different numbers of page, ... but are soliciting mostly the same authors for a quite long time since the different books are not going to be edited at the same moment.

Th. Couvant then exposed his planning:

- ✓ decide the goal of the book,
- ✓ find what's in progress to propose the draft of the table of content of our book,
- ✓ find the appropriate authors and sollicite them.

D. Féron approved but reminded that the book has been requested following the edition of his article, so the content should be close to the idea of the article.

Then a new discussion was engaged regarding the possible content of the book and some ideas are evoked: interest to talk about the evolution of the reactors, interest to talk about the safety point of view, interest to focus on specific points (new plants, material ageing, role of the corrosion in ageing management, ...) or to be more general, etc.

In conclusion, D. Féron proposed to inform the Editor that the WP4 will take in charge the book and it is decided that Th. Couvant is in charge of a new specific task force for the edition of the book. Th. Couvant will propose a draft of the table of content that will be submitted to St. Ritter and B. Kursten for approval. They both agreed underlining that they will only be able to comment the proposal.

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**4. PUBLICATION OF THE EUROCORRS PAPERS** (Journal and/or open literature)

D. Féron recalled that there was, since January 2005 an oral agreement between WP4 and JNM to publish:

- ✓ the "best" papers presented during EUROCORRS WP4 sessions:
  - \* 3 papers from EUROCORR'2005 and 6 papers from EUROCORR'2006 were published;
- ✓ 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 :
  - \* 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) were published in November 2008.

Our oral agreement with the Journal is no longer valid, at least for the moment. Anyway, it is still very important and valuable to publish the papers from EUROCORR sessions and from the workshop organized/sponsored by the WP4. As D. Féron has not really time to discuss with the different other publishers, he would like someone to be in charge of this task and proposed Th. Couvant.

D. Féron also apologized for the papers from EUROCORR'2008 since the problem appeared when he contacted JNM in October 2008.

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**5. SUMMER SCHOOL "NUCLEAR CORROSION"**

D. Féron recalled that the idea of the Summer School was proposed in Maastricht in 2006 and reminded the decisions made in Manchester:

- ✓ Target: young engineers, scientists and PhD;
- ✓ Topics: a 3-days general session and a 2-days focus on a specific point;
- ✓ Occurrence: event to be renewed each year or two years, in relation with others (D. Féron informed that the ENEN talked about this event during its last meeting but he has no return for the moment);
- ✓ Task force: B. Kursten (Chair), B. Cottis, D. Féron, A. Legat, St. Ritter, D. Tice, P. Wood and M. Le Calvar who informed D. Féron that the safety authorities are interested in the idea and could even get funds for it;
- ✓ First occurrence: Belgium in 2009.

B. Kursten explained that the first Summer School "Nuclear Corrosion" planned in 2009 was postponed to 2010, co-organized with another group in SCK-CEN. Due to internal reorganization and a change in the priorities of SCK-CEN, added to the fact that SCK-CEN has not renewed its financial support in case of deficit of the event in 2010, B. Kursten apologized to announce that he cannot go on with the organisation of the first Summer School.

D. Féron thanked B. Kursten for the information and the work already done. He asked him to advise as soon as possible the other members of the task force so that maybe someone would like to go on.

St. Ritter reminded that A. Legat offered to organize the 2<sup>nd</sup> Summer School, maybe he could want to organize the 1<sup>st</sup> edition, since a lot of work has already been accomplished and can be used. B. Kursten said that he will send the existing program together with his apologies.

D. Féron agreed and proposed to hold a specific meeting of the task force "Summer School", maybe in conjunction with EUROCORR' 2009.

St. Ritter asked about the objective date of the 1<sup>st</sup> Summer School regarding this new information.

D. Féron answered that, as there are already several events sponsored by EFC WP4 planned for 2010, the objective date could be 2011. He also recalled that, if the event is supported by ENEN, it should not occur during the holidays, but the decision has to be made by the organizer.

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## 6. EFC WP4 FUTUR EVENTS

### 6.1.4<sup>th</sup> International Workshop on Prediction of long term corrosion behaviour in nuclear waste systems (B. Kursten)

B. Kursten first recalled the 3 previous events occurred every 3 years in Cadarache (2001), Nice (2004) and PennState (2007), and reminded the objectives of the workshops.

Then he presented the specific topics of the 4<sup>th</sup> workshop:

- ✓ Overview of different (national) programmes (Similarities, common challenges, different approaches; legal issues; retrievability);
- ✓ Experiments (laboratory, in situ);
- ✓ Modelling (fundamentals of prediction; long-term prediction);
- ✓ Archaeological artefacts;
- ✓ Regulatory issues.

B. Kursten proposed two dates but, as the ANS Annual Meeting is planned on 13-17 June 2010, it is decided that the workshop will occur on 28 June-2<sup>nd</sup> July 2010.

The workshop will be held in Conference center "Oud Sint-Jan" in Bruges (Belgium) and B. Kursten made a presentation of the city and the conference place.

Then he informed the audience about the keydates:

- ✓ June 2009: first announcement + announcements during EUROCORR 2009, in international journals, mailing list
- ✓ November 2009: deadline for abstracts
- ✓ January 2010: notification of acceptance of abstracts
- ✓ June/July 2010: workshop

and presented the Organizing Committee: D. Féron (CEA/Saclay, France), D.D. Macdonald (PennState University, USA), F. Druyts (SCK-CEN, Belgium), B. Kursten (SCK-CEN, Belgium), M. Van Geel (SCK-CEN, Belgium).

D. Féron thanked B. Kursten and ask for candidates for the organization of the 5<sup>th</sup> workshop. He also asked B. Kursten about what is planned for the proceedings. As B. Kursten answered that nothing is decided for the moment, D. Féron said that the proceedings edited by ANDRA were great, but a new Green Book would also be great after 10 years after the first one. B. Kursten said that he will check with ONDRAF if an edition like ANDRA is possible.

Th. Couvant asked about the expected audience: B. Kursten answered that 30 to 50 participants (without SCK-CEN participants) are expected. D. Féron added that in 2001 there were about 60 participants, there were more participants to the 2<sup>nd</sup> workshop since it was held during EUROCORR, and there were about 40 participants in 2007. Anyway, D. Féron reminded that the idea is not to have a "big" meeting but to gather only people in long time prediction to know how they face the related problems in their different countries.

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**6.2. Modelling and multiphysical approaches (Th. Couvant)**

Th. Couvant presented his proposal for the organization of a workshop on multi-physical modelling and corrosion issues that would take place in EDF/MAI, Moret-sur-Loing (France) probably in March 2010 during 2 days, but he has to check if there is not conflict with another event.

St. Ritter mentioned that there is usually the NACE congress in March. Th. Couvant said that the date can be moved easily since there is no problem to have conference rooms in EDF.

Th. Couvant then presented the topics of the workshop:

- ✓ Service life prediction;
- ✓ Simulation of mechanisms.

Regarding the proceedings, the papers will be published and reviewed, maybe in "Corrosion Engineering and Science Technology".

Th. Couvant added that the aim is to have about 12 oral communications a day, so that discussions would be larger, which is more interesting.

He said that he could get support from MECAMAT (association promoting this kind of event), that is why he will present this project to this association for feedback.

Th. Couvant presented the schedule:

- ✓ May 2009: designation of International Scientific Committee (10 persons)
  - \* already 6 agreements;
  - \* EPRI has already been contacted;
  - \* open to other proposals;
- ✓ September 2009: call for papers;
- ✓ October 2009: papers acceptance;
- ✓ January 2010: deadline for submission of papers
- ✓ March 2010: workshop (after papers review for publication)

Th. Couvant insisted on the point that the idea is to invite people active in the field, the a call for papers in September 2009 (during EUROCORR) with acceptance in October 2009 is possible, since not so many people are awaited.

D. Féron asked about the field of the workshop: is it modelling in NPP? Th. Couvant answered that the field is modelling "everywhere", not only in NPP.

D. Féron thanked the orator and said that the next WP4 Spring Meeting could be held in conjunction with the workshop.

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**7. APPLICATION OF THE EFC WPs NEW DIRECTIVES**

D. Féron presented the new directives for the establishment and operation of the EFC WPs:

- ✓ Position of Vice-Chairman who is allowed to represent the Chairman;
- ✓ New WP must have an inaugural meeting;
- ✓ No more "Scientific Committee" members;
- ✓ "Election" and duration of WP membership: the Chairman propose and approve with the consent of the WP members each new member, "elected" for a duration of 3 years;
- ✓ Vote: the simple majority (of the participants to the meeting) is sufficient to make a decision.

D. Féron presented the new directives for members and most of all the duties of the members. Regarding these duties, D. Féron proposed to ask all the actual WP4 members if they still want to be members, joining a recall of their duties. This will be done by sending each member an e-mail with a deadline for return and, without return, the person will be cancelled from the members' list.

D. Féron finally presented the role and duties of the Vice-Chairman and proposed the appointment of Th. Couvant. As the audience agreed, Th. Couvant is now the WP4 Vice-Chairman.

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## 8. WORKS IN PROGRESS

### 8.1. EFC Series Green Book #56:

#### "Corrosion monitoring in nuclear systems: research and applications" (St. Ritter)

St. Ritter presented the outline and status of the publication of the EFC Series #56:

- ✓ Title: "Corrosion monitoring in nuclear systems - Research and applications";
- ✓ Content: 15 chapters from the Corrosion Monitoring workshop held during EUROCORR'2007 + additional contributions;
- ✓ Outline:
  - \* Preface
  - \* Introduction (1 article)
  - \* Research on corrosion monitoring for nuclear systems (8 articles)
  - \* Corrosion monitoring applications in nuclear power plants (6 articles)
- ✓ Current status: all the papers have been reviewed and corrected before being sent to the EFC in January 2009 (last paper sent in March 2009), the publication is now expected in October 2009, but St. Ritter would appreciate this publication to be effective before EUROCORR'2009 and D. Féron will try to ask for it.

St. Ritter added that a special issue of the Energy Materials Journal (vol. 3, issue 2) with some selected papers from the book will be published in March 2009, as a kind of "appetiser" for the book.

D. Féron thanked the orator for the work done and recalled that it is important for the WP and for the EFC to publish these Green Books since there are several hundreds of copies edited and diffused by IOM3 to many libraries, universities, etc. It is a pity that they are not so well diffused in the scientific community.

### 8.2. EFC Series Green Book #59:

#### Sulphur-Assisted Corrosion in nuclear waste disposal systems (B. Kursten)

B. Kursten reminded that this Green Book is coming from the international workshop SACNUC held in Brussels (Belgium) on October 21<sup>st</sup>-23<sup>rd</sup>, 2008 and co-organised by SCK-CEN, NIRAS and EFC. This workshop gathered 28 participants around "only" 15 communications (4 keynote lectures) which allowed large discussions after large presenting time.

D. Féron agreed and underlined that the presentations were the starting-points to great discussions. He also mentioned that there were not only people from the waste disposal field, which helped to open the discussions.

B. Kursten explained that the papers expected for the Green Book are coming both from the presentation made and from the panel discussions. Then, he presented the current status and deadlines of the publication:

- ✓ December 31, 2008: deadline for submission full paper;  
Up to December 31, 2008: only 4 full papers received and 2 cancellations
- ✓ April 30, 2009: extended deadline for submission full paper;  
Up to now: only 4 full papers received but 6 participants have formally agreed to write a full paper, 1 additional cancellation has been received and there is still no answer from 2 participants

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- ✓ June 30, 2009: end of the review process;
- ✓ August 31, 2009: deadline for submission of final full papers.

D. Féron thanked the orator and reminded him that when an event sponsored by the EFC (i.e. with an EFC event number) occurs, a report of what happened has to be sent to P. MacIntyre. B. Kursten took note and will do so.

### 8.3. Future publication in EFC Series

D. Féron recalled that a Green Book gathering the papers presented during the workshop "Computer modelling of corrosion" at EUROCORR'2008 but it has been decided to add the papers from the workshop that will take place during EUROCORR'2009.

This point will be discussed during next meeting.

### 8.4. Other publications

D. Féron recalled that it is important and valuable to publish the proceedings as a Green Book, especially when European programs come to an end, as well as after particular events/workshops or on critical subjects.

St. Ritter suggested that it could be done after the Summer School, at least for the general corrosion part.

D. Féron approved and said that he is opened to other ideas.

He also recalled that the WP4 has no exclusive link with EFC Series, so there is no obligation to publish with this publisher and it is always possible to work with other Journals/publishers. He also reminded that papers presented to EUROCORRs have no copyright, so they can be published in Journal without problem.

### 8.5. EFC WP4 website (St. Ritter)

D. Féron recalled the content of the WP4 page, on the EFC website ([www.efcweb.org](http://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.

Then, St. Ritter presented the evolution of the WP4 page that has been renewed and up-dated, and an "archive" section has been created.

He asked for news and information to be added, but mentioned that it can take 2 or 3 weeks to appear on the website, since the webmaster is at Dechema.

Th. Couvant asked if the page is in free access. D. Féron answered that it is and informed that the creation of a "private part" with password only for members is still under discussion (this private part could be used for exchanges during the Green Books edition process for instance).

D. Féron recalled that the EFC website has been renewed (new layout, easier to use) and encouraged the participants to have a look on the other WPs pages, that are not up-dated to see that a good work has been done on the WP4 page.

St. Ritter took the occasion to present some information about the next ECG-COMON meeting that will take place in Cadiz (Spain) on June 15-16, 2009.

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Vice-Chairman	Thierry Couvant	EDF	DMMC - Les Renardières	BP46	F-77818 MORET SUR LOING Cedex
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### 8.6. EUROCORR'2009

D. Féron recalled the information about the WP4 activities during EUROCORR'2009 that will take place in Nice on September 6-10, 2009 around the thematic "Corrosion: from nanoscale to the plant". These activities are:

- ✓ Nuclear Corrosion general session: selection of 27 orals including 2 keynotes and 11 posters + 5 proposals transmitted to another session;
- ✓ Workshop "Corrosion issues in future high temperature nuclear systems", co-organised with WP3 (High Temperature Corrosion) and NACE (TEG 224X - Ron Miza/INL): 11 orals, 1 keynote and 4 posters;
- ✓ Workshop "Simulation, modelling and life prediction" (L. Oltra, B. Cottis, M. Vankeerberghen, Ph. Marcus): 23 orals and 4 posters proposed.

D. Féron informed that the decision for the final program of EUROCORR'2009 will be made during a meeting planned in April 2009. St. Ritter then asked for planning time on the schedule before/after the WP4 Fall Meeting for the ECG-COMON Fall Meeting (45 minutes to 1hour).

### 8.7. NUCPERF'2009

V. L'Hostis apologized for absence but gave some flyers for the NUCPERF'2009 workshop.

### 8.8. Future EUROCORRs

D. Féron reminded the information about the next EUROCORRs:

- ✓ EUROCORR'2009: "Corrosion: from nanoscale to the plant", September 6-10, 2009, Nice (France)
- ✓ EUROCORR'2010: September 13-17, 2010, Moscow (Russia)
- ✓ EUROCORR'2011: September 5-8 September, Stockholm (Sweden)

He informed that EFC is waiting for proposals for the organization of EUROCORR'2012.

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**9. MISSING ITEMS**

**9.1. How to make the WP4 Spring Meeting more attractive?**

St. Ritter approved the idea to hold the Spring Meeting in connection with another meeting.

D. Féron informed that few WPs are having a Spring Meeting, and the WPs that are doing so include visits of Laboratories or specific scientific/technical presentations.

He proposed that, next year, the WP4 Spring Meeting occurs in conjunction with one of the workshops planned and proposed that, for instance, the next Spring Meetings could be organized in the Labs of the WP4 members.

Th. Couvant proposed the visit of the EDF site of Chinon.

St. Ritter suggested that the Spring Meeting not always take place in France.

D. Féron agreed for the idea of holding the Spring Meeting in conjunction with another event, not always in France and including visits. He asked for the possibility to go to Studsvik. A. Molander answered that it could be organized and propose to have the meeting one year in France and next year abroad.

D. Féron engaged the participants not to hesitate to make adds during other meetings and asked for proposals at the next WP4 Fall Meeting. At least, a provisional date (and location) for the next Spring Meeting should be fixed at or right after the Fall Meeting. He suggested that the Spring Meeting 2010 could occur in conjunction with NULIFE and/or in Finland with a visit of the EPR.

**9.2. WP4 Fall Meeting 2009**

D. Féron will ask for having the Meeting on Tuesday, September 8, 2009 following a suggestion of St. Ritter.

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**10. CLOSURE**

D. Féron recalled the future meetings:

- ✓ NUCPERF 2009 (EFC event 317): March 30-April 2, 2009, Cadarache (France)
- ✓ ECG-COMON meeting (coupled with NULIFE): June 15-16, 2009, Cadiz (Spain) [NULIFE, June 16-17, 2009]
- ✓ EFC WP4 Fall Meeting: in Nice (France), during EUROCORR'2009
- ✓ EUROCORR 2009 (EFC event 310): September 6-10, 2009, Nice (France)

As no other point is evoked, D. Féron thanked the audience for coming and closed the meeting at 14.30.

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