

**EFC WP 13 Working party business meeting
Eurocorr 2014 – September 10th, Pisa (Italy)**

Items arising from Estoril

Status of Cefracor document on corrosion monitoring.

M. Bonis indicated that it is still under review in Cefracor. English translation has not yet started.

Items arising from EFC meetings

- STAC meeting discussed request from IRAN corrosion society to join EFC. This is a difficult issue for some members because of sanctions. Decided in STAC not to accept at present.
- Discussion in the STAC meeting about changing the task force on CCS corrosion into a WP. No change proposed at present.
- Questions were raised about revision of the EFC 55 (CUI document).
- Proposal to have joint sessions during the next Eurocorr in Graz (Austria):
 - WP9 (marine) & WP5 (environment sensitive fracture)
 - WP13 (O&G) & Task Force on CO₂ corrosion in industrial applications : « CO₂ corrosion for sustainable energy development ».
- There will be keynote presentation by Prof. S. Netic on CO₂ corrosion at the Graz conference
- WP13 secretary change from J. Kittel to M. Wilms

Question about the best day to have the WP business meeting: is it better to have on the second day, or at the end of the conference? Remark by C. Fowler that previously it was at the beginning of the conference and gave the opportunity to be close to the ISO meetings so that people could combine these meetings. Agreed to have it early in the conference. Pisa experience: much larger audience in WP13 on the first day (> 150 on the first day, compared to 90 the second day).

EFC63 document : Corrosion performance of metals for the marine environment : a basic guide (C. Powell)

Published a couple of years ago. Relatively thin document and the publisher agreed to cut the price by half. If you are interested do not hesitate to buy it.

TG494 status (S. Bond)

Status update provided. There is no actual standard for the 4 PB test method. Developments initially conducted under WG TG085 (TM0177), then moved to a separate group for simplicity (TG494). TG494 will soon ballot the proposed TM.

Acid materials compatibility documents (L. Smith)

Wish to issue a EFC document « guidance on methods for testing the compatibility of materials », focussed on downhole applications. Proposed to have the first meeting with volunteers in Q1 2015 to exchange information and define the content of the document.

➔ Volunteers were requested to contact Lee Smith.

Oxygen contamination on SSC / HIC testing environments (J. Kittel)

Presentation on JIP proposal to study this topic.

P. Dent: Some differences have been observed between different oxygen probes for measuring O₂ content in environments containing H₂S.

C. Fowler: Paper about 3 years ago at NACE by IonScience covering some of the aspects (O₂ reactions with H₂S, hydrogen permeation measurements).

Effects of weld heat tint corrosion / SCC duplex stainless steel (G. Hinds)

Presentation on this subject. Heat tinted materials are much more susceptible to pitting and cracking. There is a clear correlation between stress concentration and pit initiation (the higher the stress, the more pitting). Away from the weld there is a great influence of grinding on pit initiation and cracking.

Hydrogen charged PH nickel alloys (S. McCoy)

Presentation on 2 alloys tested: 718 and 945X.

Hydrogen charging before mechanical tests (up to 160 ppm H₂ in the metal). Cracking evaluated through SSRT experiments.

R. Bäßler: joint session proposed for Eurocorr 2015. Corrosion prevention in new sustainable and green technologies

Ideas for contributions :

- CO₂ corrosion mechanisms (dense phase, supercritical)
- application fields (CCUS, biogas, geothermal, energy storage, EOR)

R. Nyborg: from recent work at IFE on dense phase CO₂ corrosion there is a clear link between this new environment and the traditional O&G environment containing CO₂.

SSC testing super 13Cr (E. Caldwell)

Presentation on collection of data on 13Cr from the literature. pH found to be the most limiting parameter, followed by chlorides, then H₂S. Model may be used to predict test results, not material selection. May explain differences in SSC / SCC behaviour between high and low temperature.

Ripple strain rate test for assessing cracking resistance of CRAs (M. Wilms)

Also known as cyclic slow strain rate test, simulating worst case operating conditions that the material will experience over service life. Especially relevant for installation by reeling, or strain based designs. It is a severe test but good confidence if PASS but in case of FAIL, more representative tests may be necessary. It is proposed to include this test in the next revision of TM0198 (SSRT test method). Support from other companies required !

Comment Shell is starting a program to compare 4PB test and CRSRT. is required to simulate reeling. Question on the applicability of this method for welds.

Comment: interpretation of minor cracks (not complete cracking) is sometimes difficult especially for materials with large grains. Reply: interpretation may also be difficult for other methods (e.g. 4PB). WP13 participants who support the idea to include this method into TM0198 are requested to contact Marc Wilms.

Exova test methods presentation (Karsten Wiegers)

Presentation on JIP proposal for SOHIC test method to demonstrate the capability of the method and to gain better understanding of SOHIC mechanism. Startup meeting in 6-8 weeks.

Activity plans for WP 13

1. Management of corrosion monitoring. Translation of French document (Cefracor)
2. Proposal to write practical guidelines on corrosion mechanisms or on corrosion control. To date, no sufficient interest or volunteers to handle this work. S. Paterson requested any suggestions from the audience.
3. Update of EFC 16 and 17 documents. It was agreed that these documents need an update on testing methods and evaluation criteria. Recent update on EFC17 by Chris Fowler who will provide information. Comment by S. Olsen that care must be taken with respect to revisions of ISO/NACE documents. Monitoring should also be a subject for inclusion.
4. L. Smith: Materials compatibility guideline.

Any other business :

Copies of presentations should be requested via the presenter. As the business meeting is a less formal forum where members are encouraged to be open about issues some presentations may not be made available.