

Från: **Johan Swahn** johan.swahn@mkg.se
 Ämne: Re: FEBEX experiments
 Datum: 17 januari 2017 10:48
 Till: Kober Florian Florian.Kober@nagra.ch

JS

Dear Mr. Kober,

I am very grateful to you for supplying this information. We will include it in a brief that we will sent to Swedish regulator in mid-February together with the contact information to you for the FEBEX-DP project.

NACKA TINGSRÄTT
 Avdelning 4

INÅGÅ: 2017-02-14
 MÅLNÖ: M 1333-11
 AKTBIL: 489

If you want to contact the regulator you can send information to Ms. Ansi Gerhardsson <ansi.gerhardsson@ssm.se> who is head of the Unit for Spent Fuel and Waste Disposal. You should also copy her colleague Michael Egan <Michael.Egan@ssm.se> and the regulators corrosion expert Jan Linder <jan.linder@ssm.se>.

Regarding the analysis carried out on the coupons it is important that a good analysis is made of any tendency for pitting corrosion. This requires a cross-section examination of cut coupons with both an optical metal microscope an a sweeping electron microscope (SEM). Historically there are very few such examinations of similar objects and in reports it is insufficiently written that there are "no evident signs" of pitting corrosion when looking at them.

Best regards,

Dr. Johan Swahn

13 jan. 2017 kl. 07:42 skrev Kober Florian <Florian.Kober@nagra.ch>:

Dear Mr. Swahn,

I am referring to your request below:

'... But I do want to know the plan for examining the copper coupons to be able to report this to the Swedish regulator, the Swedish Radiation Safety Authority.'

The company we entrusted with the laboratory analysis of the various coupons from FEBEX-DP is Tecnalía, in Spain. The activities according to the contract include optical and metallographic study, and chemical characterization of corrosion products and deposits. The interpretation of the results is being performed by the University of Berne, Switzerland and we expect their draft working report to be available in the second half of this year. These two working reports will a) contribute to the synthesis reports of the FEBEX-DP project (the ones I mentioned in my previous e-mails) and b) the basis for the publications in conferences and referred journals by the organisations involved, which – as is standard academic practice - have the right for the first publication of their results.

We would be very glad to communicate this plan also to the Swedish regulator, if you will be so kind as to give us the information for your contact.

Best regards

Florian Kober

-----Original Message-----

From: Johan Swahn [mailto:johan.swahn@mkg.se]
 Sent: Dienstag, 10. Januar 2017 12:09
 To: Kober Florian
 Cc: Magdalena Romanov

Subject: Re: FEBEX experiments

Dear Mr. Kober,

As the experimental results regarding the copper coupons as you say might be of great interest for the Swedish program it is vital that the scientific quality control of the examination of the coupons is ensured. I have searched the Grimsel and Nagra web sites and can find no documentation on how the analysis of the coupons will be done and by whom.

There is a popular article about the FEBEX-DP project on the SKB web site but there is only mention of clay and microbiology studies. No word about the copper coupons.

<http://www.skb.se/nyheter/skb-lar-om-lera-i-schweiz/>

To me this is disconcerting as our experience is that the scientific integrity of SKB and their consultant company Clay Technology has been lacking when the results they should be obliged to report to the regulator and general public go against their interests.

SKB is a private company and they are not obliged to provide information according to the Swedish freedom of information act.

I understand that the project has its rules regarding publication of information and I surely appreciate your offer to alert me when the results of the coupon studies are released. But I do want to know the plan for examining the copper coupons to be able to report this to the Swedish regulator, the Swedish Radiation Safety Authority. If you can not provide this information to our organisation, could you provide it to the Swedish regulator directly if you got the request from them?

Best regards,

Johan

23 dec. 2016 kl. 14:25 skrev Kober Florian <Florian.Kober@nagra.ch>:

Dear Mr Swahn

While I believe that the copper coupons might be of great interest for the Swedish program, the analysis and the reporting of the FEBEX-DP is still ongoing as mentioned earlier. I am happy to alert you as soon as the documentation is available.

Best regards and Season Greetings

Florian Kober

-----Original Message-----

From: Johan Swahn [mailto:johan.swahn@mkg.se]

Sent: Mittwoch, 21. Dezember 2016 11:16

To: Kober Florian

Subject: Re: FEBEX experiments

Dear Mr. Kober,

Thank you very much for the information. I found the diagram on oxygen consumption in the Garitte et al. presentation on the FE experiment. Perfect!

The information from the FEBEX-DP copper coupons is likely of relevance for the on-

going Swedish court and regulator review of the SKB application to construct a final repository for spent fuel in Forsmark. I would therefore very much like to know, and be able to inform the regulator about, which organisation(s) is/are responsible for the analysis of the coupons and the surrounding clay. If you have a contact person that would be very useful.

Happy Holidays!

Best regards,

Dr. Johan Swahn

20 dec. 2016 kl. 11:27 skrev Kober Florian <Florian.Kober@nagra.ch>:

Dear Mr Swahn

With respect to your FEBEX-DP coupons questions: indeed the coupons have been investigated. The analysis of the samples however is in many parts still ongoing and a report is therefore expected for late summer next year only. I will make a note to alert you when it will be ready.

With respect to your other question of oxygen consumption: I presume you are, respectively the colleague you spoke to, is referring to the so called FE experiment. Again, the report here is not out yet but planned for June 2017. You can find some conference documents on the experiment on http://www.posiva.fi/en/dopas/dopas_2016_seminar by searching for presentations from Garitte et al.

I hope those information were helpful.

Best regards

Florian Kober

-----Original Message-----

From: Johan Swahn [mailto:johan.swahn@mkg.se]

Sent: Montag, 19. Dezember 2016 11:27

To: Kober Florian

Subject: Re: FEBEX experiments

Dear Florian,

Your answer is indeed helpful. I assume that the copper coupons were retrieved in the FEBEX-DP project dismantlement in 2015 and that they have been examined. Where can the results from the evaluation of the coupons and the clay surrounding them be found?

Best regards,

Johan

15 dec. 2016 kl. 13:18 skrev Kober Florian <Florian.Kober@nagra.ch>:

Dear Mr Swahn

Indeed, the liner and heater were made not of copper but of steel or carbon steel,

respectively. Aside from this, a few small copper coupons were emplaced in the bentonite.

I hope this answer is helpful.

Best regards

Florian Kober

-----Original Message-----

From: Johan Swahn [mailto:johan.swahn@mkg.se]

Sent: Mittwoch, 14. Dezember 2016 16:25

To: Kober Florian

Subject: FEBEX experiments

Dear Dr. Kober,

Am I correct to understand that there were no copper involved as material in contact with clay in the FEBEX experiments?

Best regards,

Johan

--

Johan Swahn

Kanslichef, tekn dr
Miljöorganisationernas
kärnavfallsgranskning, MKG
Första Långgatan 18
413 28 Göteborg

Director, Ph.D.
MKG - Swedish NGO Office for Nuclear
Waste Review
Första Långgatan 18
SE-413 28 Göteborg, SWEDEN

E-post: johan.swahn@mkg.se

Telefon: 031-711 00 92

Fax: 031-313 03 72

Mobil: 070-467 37 31

Skype: jswahn

Hemsida: <http://www.mkg.se>

E-mail: johan.swahn@mkg.se

Phone: +46 31 7110092

Fax: +46 31 3130372

Mobile: +46 70 4673731

Skype: jswahn

Web: <http://www.mkg.se>