ATTACHMENT #3
PDF #3

ATTACHMENTS FOR ISSUES #14 - #23 AND ATTACHMENT #87
FOR THE JULY 19, 2011, LETTER FROM
DR. WALTER L. TAMOSAITIS TO ANDREW THIBADEAU TITLED:

COMMENTS ON THE WTP CULTURAL ISSUES, RESPONSES, AND RECOMMENDATIONS

ISSUES #14 - #23 and ATTACHMENT #87

The attachments are separated by the referenced issue in the letter and have the same number as designated in the letter. Note that some attachments are multi-paged.

The number shown on some attachments such as BNI0000XXXX or URS0000ZZZZ is the Bates number assigned to the document during the legal discovery process.

Due to duplication of information and/or the file size, not all emails in a string or follow on sheets are attached. These can be obtained by contacting the Sheridan Law Firm, Seattle, WA.

ISSUE #13

"INTIMIDATION?"

Attachments-

- 45: Three Chung emails asking Russo has gotten PNNL buy-in on M3 white paper.
- 46: Olinger wants to know what Russo has done to get "assurance".
- 47: Russo states that PNNL better "damn well be on board" after the money that was spent there.
- 48: Russo states that they have to calibrate Wadsworth on standing behind their (PNNL's) work.
- 49: Wadsworth gets calibrated by Bechtel.
- 50: Olinger asks that support from Chuck Spencer and Paul Rutland be ensured.
- 51: Russo says Spencer and Rutland support confirmed. Olinger says Sain and Fonteberry can help sell the Board.
- 52: Olinger wants SRNL concurrence. Russo says that SRNL will agree with their position since Deason was on his team at LLNL.
- 53: Russo tells Ashley to send people to SRNL to help get them in alignment.
- 54: DOE supports M3 closure despite concerns by Dr. Alexander and Gilbert.
- 55: Sain and Russo agree that regarding a technical issue they "need to kill this BS now".
- 56: Russo describes a technical question as "fishing for issues".
- 57: Retaliation concerns expressed by PNNL personnel.

#45

From: Chung, Dae
Sent: Sat May 29 16:17:36 2010
To: Russo, Frank M (WTP)
Subject: WTP
Importance: Normal

Frank,
How was your mtg with the dnfsb?
Are we going forward with M-3 - were you able to get PNNL buy-in? Thanks.

#45

From: Chung, Dae [mailto:Dae.Chung@em.doe.gov]
Sent: Tuesday, June 08, 2010 5:53 AM
To: Russo, Frank M (WTP)
Cc: Ogilvie, J
Subject: M3
Frank,
Have you made the case for M3 with sufficient endorsement from PNNL?
Thx,
Dae

#45

-----Original Message-----
From: Chung, Dae [mailto:Dae.Chung@em.doe.gov]
Sent: Monday, June 21, 20105:25 AM
To: Russo, Frank M (WTP)
Cc: Ogilvie, J
Subject: Re: M3
Frank,
Any update to this... What is the 6/10 outlook for M3 closure? Thanks.
Dae
----- Original Message -----
From: Russo, Frank M (WTP) <fmsso@Bechtel.com>
To: Chung, Dae
Cc: Ogilvie, J <sogilvie@Bechtel.com>
Sent: Tue Jun 08 10:44:522010
Subject: RE: M3
Dae,
We have made our case within BNI and URS and have Bechtel Fellow Craig Mylar (Bechtel corporate Fellow) and Tom Patterson endorsement. This week an independent review team is at WTP to also endorse the position. This is the visit that has the DNFSB staff so interested. We have already worked this visit through Paul Denson who is SRNL lab director.
This team is led by SRNL and has representatives from ORNL, LANS, Dupont and INL. PNNL is not on the team. have met with Knutson on this obvious absence and I have a meeting scheduled with Mike Kluse today to ensure that PNNL understands that we now need to benefit of the 10 years of study and $200 million of intellectual investment that we have made with this local national lab. Dale (while needing to recluse himself) understood the need.
Also, now that we have Dale's knowledge and right after my Kluse meeting, Scott is standing by to discuss this with Wadsworth, CEO of
Battelle. We decided to wait until I worked the subject with Dale and
Kluse. As I mentioned in the past, when Kluse wrote his letter to the other lab directors, he seemed not to be fully aware of just how much WFO his lab has completed for WTP. Before Scott has to take the issue to Wadsworth, we want PNNL local leadership to have already concluded that PNNL endorsement is the appropriate outcome of 10 years of effort.
Frank
-----Original Message-----
From: Chung, Dae [mailto:Dae.Chung@em.doe.gov]
Sent: Tuesday, June 08, 2010 5:53 AM
To: Russo, Frank M (WTP)
Cc: Ogilvie, J
Subject: M3
Frank,
Have you made the case for M3 with sufficient endorsement from PNNL?
Thx.
Dae
BNI00000741
From: Knutson, Dale E
Sent: Mon Jun 21 16:01:472010
To: Russo, Frank M (WTP); Chung, Dae
Cc: Ogilvie, J; Ashley, Gregory; Walker, David; Triay, Ines
Subject: RE: M3
Importance: Normal
Hi Dae,
I appreciate the proactive questions and response from Frank. There have been a significant series of conversations and technical interchanges taking place regarding this topic. To date, these interchanges have been singular meetings that address discrete technical topics. When we see the fully integrated package from BNI/URS and have a chance to agree with the conclusions and the integrated thoughts regarding this approach we will be in a position to agree or disagree with the finished product. While I personally think Frank is dead on, we have yet to see the integrated solution set. Until we do, decisions and discussions by email need to remain focused on status and information exchange to prevent misperceptions and misunderstandings.
Thanks for your help in keeping all the pieces moving in one direction.
Dale
-----Original Message-----
From: Russo, Frank M (WTP) [mailto:fmsso@Bechtel.com]

From: Olinger, Shirley J
Sent: Wed May 26 01:01:56 2010
To: Russo, Frank M (WTP)
Subject: FW: WTP 5/24/10 EM-1 Briefing Slides
Importance: Normal

fyi

Shirley J. Olinger
Ph: 509-372-3062
Cell: 509-539-3229
From: Olinger, Shirley J
Sent: Tuesday, May 25, 2010 5:46 PM
To: Knutson, Dale E
Cc: Girard, Guy A
Subject: RE: WTP 5/24/10 EM-1 Briefing Slides

I support this position based on discussions with TF contractor and good idea to get SRNL's take since they have years of experience supporting DWPF. Will let Inos know we will wait until SRNL indep validation is completed.
Txs, sjo

Shirley J. Olinger
Ph: 509-372-3062
Cell: 509-539-3229
From: Knutson, Dale E [mailto:dale.knutson@pnl.gov]
Sent: Tuesday, May 25, 2010 5:37 PM
To: Olinger, Shirley J
Cc: Girard, Guy A
Subject: Re: WTP 5/24/10 EM-1 Briefing Slides

I reviewed this today and asked Frank Russo what he has done to address "assurance" on these conclusions. His response was to conduct a chief engineers review independent of the project team and have a secondary independent validation check performed by Savannah River (not complete yet). I believe that upon receiving the Savannah River results we would have sufficient basis to make the call and move on. I do not believe we need more research on this topic - just clarity on operational constraints the solution may introduce.

Two cents

Dale

From: Olinger, Shirley J

#47

From: Russo, Frank M (WTP)
Sent: Sat May 29 21:50:01 2010
To: 'dae.chung@em.doe.gov'
Subject: Re: WTP
Importance: Normal

Meeting was good. I came by your office Wednesday afternoon but you were out. We have a path forward on M3. We will get SRNL on board and Ogilvie will tell Wadsworth (CEO of Battelle) that after over 200 mill to PNNL and Battelle they damn well better be on board. Before that card is played, I will talk with Dale. That would be easier. We also told DNFSB that our M3 plan is defense in depth with heal dilute/extract as depth and cold commissioning as assurance. We will go see them before 6/30 to get Peter, Jack and Jessie. Will try for Brown and Joe as well. I think we can get enough acceptance, that we can close M3 and let TOC do some additional work to help plan cold commissioning.

Enjoy your weekend

Frank

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

From: Chung, Dae <Dae.Chung@em.doe.gov>

To: Russo, Frank M (WTP)

Sent: Sat May 29 14:17:36 2010

Subject: WTP

Frank,

How was your mtg with the dnfsb?

Are we going forward with M-3 - were you able to get PNNL buy-in? Thanks.

From: Russo, Frank M (WTP)
Sent: Mon May 24 02:29:20 2010
To: Ogilvie, J
Subject: Re: M3 Testing and Heel Dilution Strategy Update WhitePaper
Importance: Normal

I will send you a short brief tomorrow. Basic point. PNNL did all non Newtonian testing in 2005 and 2006. 147 mil for this work alone. Now they are not sure they got it right. Maybe, but more tests would be a good thing. I don't thing so and neither does URS or Ashley.

From: Ogilvie, J
To: Russo, Frank M (WTP); Walker, David
Cc: Ashley, Gregory
Sent: Sun May 23 21:55:13 2010
Subject: Re: M3 Testing and Heel Dilution Strategy Update WhitePaper

Frank, I have the general gist of the subject but it would be helpful if you could give a couple of specifics /talking points for when I see Wadsworth in about two weeks or so.

From: Russo, Frank M (WTP)
To: Ogilvie, J; Walker, David
Cc: Ashley, Gregory
Sent: Sun May 23 21:02:41 2010
Subject: Fw: M3 Testing and Heel Dilution Strategy Update WhitePaper

Fyi. I advised Leo today that he needs to sign off on this. He will. SRNL will also sign off in a week or so. PNNL is running to the hills after over 200 million to Battelle and PNNL for research. May be time to calibrate Wadsworth on the concept of standing behind their work.

Frank

From: French, Robert (WGI)
To: French, Robert (WGI); 'leo.sain@wginl.com' <leo.sain@wginl.com>; 'kent.fortenberry@wginl.com' <kent.fortenberry@wginl.com>
Cc: Gay, William (URS); Russo, Frank M (WTP); Hayes, Dennis; Wells, Kenneth R (WTP); Matis, George (WTP)
Sent: Sun May 23 13:55:40 2010
Subject: RE: M3 Testing and Heel Dilution Strategy Update WhitePaper

All
Here is what we just provided to Shirley Olinger for sending along to Ines...due to our short fuse in putting it together it has not been through ANY ORP collaboration during development...so there is some chance they may decide to not actually forward it or desire further distribution.
<<INES TRIAY Brief 5_24_10 v005.pdf>>
Thx
Bob French
WTP Deputy Plant Operations Manager
(509) 420-6267

#49

From: Ogilvie, J
Sent: Fri Jun 11 17:28:38 2010
To: Russo, Frank M (WTP)
Subject: Re: Checking in
Importance: Normal

Wadsworth appreciated the feedback.....and definitely got it.

From: Russo, Frank M (WTP)
To: Ogilvie, J
Sent: Fri Jun 11 13:27:26 2010
Subject: Re: Checking in

Thanks.

From: Ogilvie, J
To: Russo, Frank M (WTP); Walker, David
Cc: Weaver, Craig
Sent: Fri Jun 11 13:23:29 2010
Subject: Re: Checking in

Good!
BTW, I spoke to Jeff Wadsworth (Isatelle) on monday. Gave him the background and told him we need push support not individual backtracking.

From: Russo, Frank M (WTP)
To: Ogilvie, J; Walker, David
Cc: Weaver, Craig
Sent: Fri Jun 11 13:17:43 2010
Subject: Re: Checking in

Myler was just on VTC with project and SRNL non newtonian review team. He is doing WTP work. I have a meeting with Ashely Monday (after Ponemon visit) to discuss his and Craigs travel.

From: Ogilvie, J
To: Russo, Frank M (WTP); Walker, David
Cc: Weaver, Craig
Sent: Fri Jun 11 13:04:30 2010
Subject: Re: Checking in

I just saw Craig Myler walk by my window so you need to really make sure he's working WTP.

Thanks for the update. I agree with your last point.
If you have time I'll give u a call when I'm heading home.
Scott

#50

From: Olinger, Shirley J
Sent: Sun May 23 18:28:03 2010
To: Russo, Frank M (WTP)
Cc: Ashley, Gregory
Subject: Re: M3 Briefing Paper
Importance: Normal

Pls ensure Chuck and Rutland support this position too. You know I do
Tx! Sjo

From: Russo, Frank M (WTP) <frusso@Bechtel.com>
To: Olinger, Shirley J
Cc: Ashley, Gregory <grashley@Bechtel.com>
Sent: Sun May 23 09:25:50 2010
Subject: Re: M3 Briefing Paper

PNNL has been running for the hills I have asked Scott to call Jeff Wadsworth CEO of Battelle to push him. Also, we have SRNL (EM lab) working on a position of support for our position.

We also did an illustrative run in 4 ft tank Dirt does not support the ZOI theory some of your folks believe Rob witnessed it

Our position is threefold ..
1) Condition will not exist
2) Even if it did, heat removal and Rheology control would manage it within parameters of mission
3) As design authority, we are done with M3. Design will meet objectives with reasonable risk. If DOE wants, we would support TEC doing some additional work to understand protocols for Rheology control and operational techniques for heat control.

Greg, please issue paper It will go better with SJO input

Frank

Frank

From: Olinger, Shirley J <Shirley_J_Olinger@RL.gov>
To: Russo, Frank M (WTP)
Sent: Sun May 23 12:13:00 2010
Subject: Re: M3 Briefing Paper

I'll look it over @ 9am. Have you been able to get PNNL mgmt to support a position?
Tx! Sjo

From: Russo, Frank M (WTP) <frusso@Bechtel.com>
To: Olinger, Shirley J
Sent: Sun May 23 09:09:56 2010
Subject: Fw: M3 Briefing Paper

EXHIBIT

BNI00003574

#51

From: Olinger, Shirley J
Sent: Sun May 23 10:43:00 2010
To: Russo, Frank M (WTP)
Subject: Re: M3 Briefing Paper
Importance: Normal

Good idea on contract strategy. Perhaps Leo can have Kent help w/sell to Board on M3 when time is right. Tks, sjo

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From: Russo, Frank M (WTP) <frusso@Bechtel.com>
To: Olinger, Shirley J
Sent: Sun May 23 09:38:22 2010
Subject: Re: M3 Briefing Paper

We will have Chuck, Paul and URS support. Leo will also sign off on BNI recommendations. I also have Bechtel corporate approval to work with URS on a integrated contractual strategy for WTP and TF. I mentioned this idea to you last month.

From: Olinger, Shirley J <Shirley_J_Olinger@RL.gov>
To: Russo, Frank M (WTP)
Cc: Ashley, Gregory
Sent: Sun May 23 12:28:03 2010
Subject: Re: M3 Briefing Paper

Pls ensure Chuck and Rutland support this position too. You know I do.
Tks! Sjo

From: Russo, Frank M (WTP) <frusso@Bechtel.com>
To: Olinger, Shirley J
Cc: Ashley, Gregory <grashley@Bechtel.com>
Sent: Sun May 23 09:25:50 2010
Subject: Re: M3 Briefing Paper

PNNL has been running for the hills. I have asked Scott to call Jeff Wadsworth CEO of Battelle to push him. Also, we have SRNL (EM lab) working on a position of support for our position.

We also did an illustrative run in 4 ft tank that does not support the ZOI theory some of your folks believe. Rob witnessed it.

Our position is threefold...
1) Condition will not exist
2) Even if it did, heel removal and Rheology control would manage it within parameters of mission
3) As design authority, we are done with M3. Design will meet objectives with reasonable risk. If DOE wants, we would support TOC doing some additional work to understand protocols for Rheology control and operational techniques for heel control.

Greg, please issue paper. It will get better with SIO input.

#52

From: Olinger, Shirley J
Sent: Wed May 26 14:20:11 2010
To: Russo, Frank M (WTP)
Subject: Re: VTC
Importance: Normal

Great! Sjo

From: Russo, Frank M (WTP) <frusso@Bechtel.com>
To: Olinger, Shirley J
Sent: Wed May 26 07:18:17 2010
Subject: Re: VTC

That will happen. Just hung up from call with Paul Deason. Lab director. He was on my team at LLNL. He and his scientist seem comfortable with our position.

From: Olinger, Shirley J <Shirley_J_Olinger@RL.gov>
To: Russo, Frank M (WTP)
Cc: Tornow, Betty
Sent: Wed May 26 10:09:57 2010
Subject: Re: VTC

Yes I agree and once SRNL agrees w/your technical position that we can move on.
Txs! Sjo

From: Russo, Frank M (WTP) <frusso@Bechtel.com>
To: Olinger, Shirley J
Cc: Tornow, Betty <BTORNOW@Bechtel.com>
Sent: Wed May 26 07:02:35 2010
Subject: VTC

I understand that HQ wants to delay M3 VTC. I think we should delay. I think Dale's preference is to put ours on BNI (would if factual) and I will know more after today's meetings with DNFSB and Ines.

If you agree, let's delay.

Frank

#53

From: Russo, Frank M (WTP)
Sent: Wed May 26 14:29:00 2010
To: Ashley, Gregory
Subject: Fw: VTC
Importance: Normal

Spoke to Paul Deason. They are keen on supporting our position. If need be, pat Rich or Russ on a plane to SRNL to help them get in alignment.

From: Olinger, Shirley J <Shirley_J_Olinger@RL.gov>
To: Russo, Frank M (WTP)
Cc: Tomow, Betty
Sent: Wed May 26 10:09:57 2010
Subject: Re: VTC

Yes I agree and once SRNL agrees w/your technical position that we can move on.
Tks! Sjo

From: Russo, Frank M (WTP) <frusso@Bechtel.com>
To: Olinger, Shirley J
Cc: Tomow, Betty <BTORNOW@Bechtel.com>
Sent: Wed May 26 07:02:35 2010
Subject: VTC

I understand that HQ wants to delay M3 VTC. I think we should delay. I think Dale's preference is to put onus on BNI (good if factual) and I will know more after today's meetings with DNFSB and Ines.

If you agree, let's delay.

Frank

#54

From: Ashley, Gregory
Sent: Wed May 19 13:27:27 2010
To: Russo, Frank M (WTP)
Subject: Re: Shirley is trying to reach u
Importance: Normal

Frank, I talked to Shirley last night. She and Guy want us to work with TF to see what can be done to help close M3 (particularly) with new NN issues. Clearly they are concerned that Alexander and Gilbert are not going to back off of their issues. Told her we would engage with them this PM. Good news, they're with us. I'll talk to you when I get in this PM.

Sent from my BlackBerry Wireless Device

----- Original Message -----
From: Russo, Frank M (WTP)
To: Ashley, Gregory
Sent: Tue May 18 20:28:39 2010
Subject: Shirley is trying to reach u
Says its important. 8 30 pm your time.

#55

From: Sain, Leo
Sent: Mon Apr 26 10:40:46 2010
To: Russo, Frank M (WTP)
Subject: RE: Non-Newtonian Vessel testing (ORP)
Importance: Normal

Frank

I agree what can I do to help.

From: Russo, Frank M (WTP) [mailto:frusso@Bechtel.com]
Sent: Sun 4/25/2010 7:24 PM
To: Gay, William (IRS); Sain, Leo
Cc: Ashley, Gregory
Subject: Re: Non-Newtonian Vessel testing (ORP)

We need to kill this BS now. Guy and I discussed a plan to stop it in its tracks. See you tomorrow to discuss.

From: Guy, William (IRS)
To: 'Sain, Leo' <Leo.Sain@wsms.com>
Cc: Russo, Frank M (WTP); Ashley, Gregory
Sent: Sun Apr 25 18:26:33 2010
Subject: FW: Non-Newtonian Vessel testing (ORP)

Today, Sunday, I was provided a DOE-ORP document that the DOE-ORP technical experts (?) drafted on Friday following the meeting held by the Technical Steering Group(WTP & DOE-ORP membership) following a presentation to them on our vision and methodology in closing the non-newtonian tank issue. BNI believes testing is not required to close M3 but rather used for confirmation. This DOE-ORP document recommends a testing program that involves 3 separate simulants, each simulant requiring 3 separate tests including, test array modifications before closure of M3. It also requires demonstration of a heel removal system. The purpose of this test program is to demonstrate blending, gas release and no solids accumulation. In the 2004 timeframe, WTP spent about $140M on testing these tanks. We are essentially being told that we start over from scratch. What also concerns me is that Guy Girard forwarded this without comment.
This issue is breaking at the same time the CPR is in the final stages of preparation.
There is no way we will complete this test program in time to close M3 in June 2010 if it is required to be performed. The outcome of that fact will be significant as you know. My guess to fully execute this test sequence is 6 additional months and am not sure the dollars.
I am sorry I have to inform you of this development especially after all the months of hard work by numerous WTP individuals and I am not sure that we can afford this type of hit on MR. We will stay the course and try our best to provide a quality product to the customer but this in my mind is an unfiltered document that demonstrates a lack of responsibility. Just my opinion.
Thank you,

William W. Guy III
Assistant Project Director
Quality, Safety & Operations

PH: 509.371.2389

#56

From: Russo, Frank M (WTP)
Sent: Wed Jul 14 21:15:22 2010
To: 'Dale_E_Knutson@orp.doe.gov'
Cc: Ashley, Gregory
Subject: Fw: Heads Up
Importance: Normal

With all due respect, fishing for issues (and Donna helping create one) will not help anyone. Ashley is the voice of the entire Technical organization and if a critical question isn't asked or vetted by him, then it just doesn't count. Greg, from our side, you need to get this type of churn under control.
Frank
-----Original Message -----
From: Russo, Frank
To: Russo, Frank M (WTP)
Sent: Wed Jul 14 16:23:38 2010
Subject: FW: Heads Up

-----Original Message-----
From: Buschle, Donna (URS)
Sent: Wednesday, July 14, 2010 1:56 PM
To: Ashley, Gregory
Cc: Russo, Frank; Gay, William (URS); Patterson, Thomas
Subject: Heads Up
G
Quick heads up on a conversation in 2440 a few minutes ago related to mixing.
We had a meeting first thing this am to discuss WTPs recent response plan to the CSSO report sent to ORP. During that mtg I communicated our plan to systematically conduct a high level hazop to address the changes from mixing. My input was consistent with the plan and input provided to Jeff Monahan in the trend. Meeting went well and the ORP attendees agreed with our path forward to align the license (PDSA) and update the CSER.
Subsequent to that mtg, I received a call from Gary Brunson and Rob Gilbert. They had received feedback from the morning mtg and had questions and concerns. I circled back by Gary's office to conduct the discussion in person. They asked very direct questions related to the ENS involvement and buyin to the vessel summary reports, heel cleanout studies, impact assessments to PSA and PVP etc..... My response seemed to differ from discussions they have had with you and others from engineering. Specifically, I communicated that ENS had been involved at a cursory level, and reiterated our trend input that realigns the PDSA starting with a hazop. They were under the impression that we had a more active involvement had concurred/approved of the path forward.
Gary indicated his frustration and indicated he would call. I tried to soften after his reaction and confirmed our commitment to deliver a compliant 3009 DSA that is implementable in the field. I also reminded him that this is an iterative process. With that said, it is clear that I inadvertently stirred up the customer.
I will be back after a quick lunch. I just pulled off the road to type quickly (hopefully) before the phones started ringing.
D

I need you to be aware of the threats (against non-PNNL staff) that WTP has been making (that PNNL staff have heard). Perry has documented them below.

Michael Minette
Project Manager
Energy and the Environment/Radiochemical Engineering
Pacific Northwest National Laboratory
902 Battelle Boulevard
P.O. Box 999, MSIN P7-25
Richland, WA 99352 USA
Cell: 509-521-6613
Tel: 509-376-1433
Fax: 509-376-9781
michael.minette@pnl.gov
www.pnl.gov

From: Meyer, Perry A
Sent: Wednesday, June 16, 2010 2:03 PM
To: Beeman, Gordon H; Peurung, Loni M; Michener, Thomas E
Cc: Minette, Michael J
Subject: Documentation of potential threats towards individuals from WTP management

I am taking this opportunity to document three potential threats I have heard from WTP management towards individuals. Hopefully these threats are untrue and/or will not come to pass, but they appear serious enough that I thought it prudent to document them.

1. 4/7/10. While in the office of Walt Tamosaitis, Bill Gay (Tamosaitis's boss) directly relayed a threat from Frank Russo concerning Dupont mixing consultant Art Etchells; "I (Russo) will destroy him so he never works again". This was in response to errors discovered in a letter report from Art to WTP that consequently implied mixing vessel HLP-27 may have an inadequate design and require more testing. I addressed this afterwards with Walt. I expressed my concerns that threats of that nature are unacceptable and that I was very uncomfortable with what I heard. He replied that it was "just sabre rattling".

2. 6/15/10. Walt Tamosaitis informed me that the WTP management was trying to have DNFSB staff removed because "they knew too much." On 6/16/10 he made the same statement but clarified it was staff member Steven Stokes. Dean Kurath and Mike Minette where present and heard the comment.

3. 6/16/10. Walt Tamosaitis stated he would be fired if he accepted our letter. He clarified that this threat came from his boss, Richard Edwards. This relates specifically to a letter we are preparing that contains technical information which suggests potential issues with M3 test results. Dean Kurath and Mike Minette where present and heard the comment. He would like us to send the letter anyway, as he agrees with our concerns stated in the letter.

Perry

Perry A. Meyer, Ph.D.
Staff Scientist

ISSUE #14

"EXTERNAL FLOWSHEET REVIEW TEAM (EFRT) UNCLOSURE?"

Attachments-

- 58: HSS Report page 38 and 39

in focusing BNI and ORP management attention and oversight on significant open technical issues, and in developing and tracking implementation of effective plans for closure of research, design, and engineering technical issues. Further, the team's review identified no violations of the Engineering Technical Issues Identification Management process and verified that its implementation for the above technical issues selected for review was robust and that issue closures were defensible. However, the HSS team further evaluated the closure of M3 and noted that closure of M3 is inconsistent among the different issues management processes in terms of the nature of follow-on actions. Closure of the of the *Pulse Jet Mixing Design* issue Cut Sheet (EFRT issue M3) is discussed further below.

Analysis of Closure of Technical Issue M3. BNI's Engineering Technical Issues Identification Management guide indicates that technical issues may be closed *once all actions are complete or sufficiently resolved that technical uncertainty is removed, and tracking via this mechanism is no longer needed.* The guide also indicates that: *Although implementation actions may still be in progress, if the technical issue is essentially resolved and remaining actions are considered routine and are being tracked by other WTP tracking tools* (schedules, ATS items, PIERs, etc.), then, with agreement from the MOE (all TIEFs) and DOE (for issues that are jointly tracked by the Technical Issue Summary Sheets), the technical issue may be closed.

In the case of an EFRT issue, which is also identified as a Cut Sheet, the issue is normally closed when its resolution satisfies both the closure criteria specified in its IRP and the closure criteria specified in the Engineering Technical Issues Identification Management process. The guidance on closure of technical issues requires that the TIEF/Cut Sheet be updated with a statement summarizing what was done to close the technical issue or why the issue is considered closed. The HSS review of the closure of EFRT issue M12 and selected TIEF/Cut-Sheet issues (discussed above) indicates that the process for closure of issues and definition of required follow-on actions as described by the guide was appropriately implemented.

For some complex, multi-faceted technical issues, the resolution effort may require breaking the parent technical issue into its component technical issues. These resultant technical issues may be Cut Sheets, TIEFs, or Technical Issue Watch List issues, which would be tracked within the Engineering Technical Issues Identification Management process, and/or follow-on actions that would be tracked in ATS, PIERs, schedules, etc. In some cases, the follow-on actions required to resolve resultant technical issues involve consideration of several technical questions and performance of further activities that may not be routine and/or for which the outcome is uncertain; further actions in this category could include additional research and testing efforts where the outcome is uncertain, or may be based on plant processes that are still under design and involve uncertain aspects. In such cases, declaring the complex, multi-faceted parent technical issue "closed" could be confusing, since the original issue has not yet been resolved but is only superseded by multiple progeny technical issues or follow-on actions, each to be tracked and resolved with its own set of required actions and uncertainty of success.

The adequacy of required follow-on actions to finally bring a technical issue to full closure may also be open to question. For example, the recent technical issue "closure" of the *Pulse Jet Mixing Design* issue (EFRT Issue M3) clearly recognizes a remaining BNI/DOE concern about mixing in certain specific non-Newtonian vessels. BNI and ORP also acknowledge that small-scale testing may not fully mitigate the remaining project cost, schedule and scope risks. The questions underlying these issues are complex; they relate to whether the complex physical phenomena are adequately modeled, appropriately scaled, and sufficiently benchmarked and tested. Currently available assessment information and planned testing may still not be adequate to resolve the concerns. The directed action addressing these concerns is to clearly define any information gaps, complete a risk assessment, and establish a path forward. The resolution may entail platform and laboratory testing to support gap closure, validation of input assumptions, and prototypic performance demonstrations. A new Cut Sheet, Technical Issue 2010-0004 on the Implementation of Non-Newtonian Vessel Closure Package Recommendations, has been established. Further, the "closure" process

#58

for the *Pulse Jet Mixing Design* issue and the 2009 and 2010 clean-out-your-drawers exercises (discussed below), resulted in definition of two additional technical issue Cut Sheets relating to final resolution of the *Pulse Jet Mixing Design* issue.

Thus, although the required follow-on actions and project cost, schedule, and scope risks are being tracked, reviewed, and well managed, the remaining actions related to final closure of the *Pulse Jet Mixing Design* issue are not of a routine nature, and technical uncertainty still remains. In this case, ORP and BNI made a project risk-based management decision to "close" the *Pulse Jet Mixing Design* issue with defined follow-on actions, without actually resolving all technical aspects of the issue and the remaining uncertainties of success. The updated Cut Sheet for the *Pulse Jet Mixing Design* includes a summary statement of how the issue was closed and includes references to multiple closure packages, as required. However, calling the issue "closed" appears inconsistent with the documented expectations of the Engineering Technical Issues Identification Management guide.

A key aspect of the residual concerns among some individuals surrounding closure of the *Pulse Jet Mixing Design* issue is that the definition of "closure" varies significantly between that represented by the closure of the *Pulse Jet Mixing Design* issue and the customary understanding of the term, which is closely approximated by the closure of ATS items and PHRs. This varying use of the term "closure" makes it difficult to understand the true status of the closure of technical issues by external stakeholders and others, thereby challenging project status transparency. "Closure" of the *Pulse Jet Mixing Design* issue removed the original broad technical issue from Cut Sheet status and redefined the status of some of the open technical issues underlying the original issue. Further, some of the follow-on actions to resolve the underlying technical issues have become redefined as Cut Sheet issues themselves, which are not routine tasks as expected in implementing the Engineering Technical Issues Identification Management guide process. Other engineering technical issues are declared closed when the technical issue is sufficiently resolved that technical uncertainty is removed, and the remaining actions are routine and tracked. PHRs or ATS issues are closed upon completion of all required corrective actions or required actions, respectively.

Clean-Out-Your-Drawers Exercise. The May 2010 Construction Project Review (CPR) report noted that "During 2009, there was a clean out your drawers initiative wherein BNI leadership instructed the engineering staff to surface any lingering issues that they have identified but not yet resolved. The objective is to quantify open technical issues to ensure they are appropriately assessed, quantified, and captured in the engineering work plan." The May 2010 CPR recommendation 3.2 stated that "Prior to July 30, 2010, the project team should repeat the targeted drive to force the formal identification of any known technical issues."

The MOE directed her staff by e-mail to review the technical issues list posted on the WTP intranet for completeness; to identify needed additions; to engage all engineers in their discipline to bring hidden issues to light; to start the process immediately; and to screen new technical issues to determine which will be tracked as Technical Issue Watch List issues, TIIFs, or Cut Sheets. A subsequent WTP Project Technical Director e-mail indicated that there would be a joint review of any new issues to assure integration between the engineering disciplines. The clean-out-your-drawers exercise was not otherwise formally defined. Through this effort, 89 potential new WTP technical issues were identified and categorized during a joint BNI research, design, and engineering disciplines meeting. ORP also independently identified 29 potential new technical issues. A subsequent joint BNI and ORP meeting pared the joint list to nine new Technical Issue Watch List items; some adjustment of that number is possible upon completion of additional planned reviews. Many of the remaining proposed new technical issues were reported as being worked on or being followed in other processes.

BNI also solicited PNNL's identification of new technical issues, and PNNL responded as requested. By the time the HSS team completed onsite data collection activities, BNI had not completed their review of

ISSUE #15 HAS NO SEPARATE ATTACHMENTS

ISSUE #16

"WTP COST AND SCHEDULE"

Attachments-

- 59: The $12.3 Billion dollar cost is in jeopardy.
- 60: April 17, 2011, article in TriCity Herald about extra needed WTP facilities.
- 61: Need for another waste tank to do a double decant is questioned.
- 62: Email on blending facility addition is discussed.
- 63: Russo says that moving scope to the tankfarm can save WTP money. Does money go along with the scope that is moved? How much more will it cost if it is in the tankfarm?

#59

From: Russo, Frank M (WTP)
Sent: Thu Jul 01 16:14:04 2010
To: Ogilvie, J; Walker, David
Subject: RE: M3 Status
Importance: Normal

Yes...I already made the argument to Dale and Shirley that they would be absolutely crazy to not accept that we are finished with M-3. Congress is just looking for a reason to put Hanford money in other States....our $50 million is still in play. Declare failure and high probability that the $50 mil goes away. $50 mil goes away.....12.283 and 2019 are in major peril.....major peril and S1 is again running day to day management of WTP. Why would they want to do this???? Especially since we did in fact finish M3 as defined by EFRT. Shirley agrees. I believe that Dale does as well but rightfully wants to proceed with caution since he needs S2 agreement and we all need to keep DNFSB from overreacting.

This all said, I repeat , they are DOE,....and they often do things that make no basic sense.

From: Ogilvie, J
Sent: Thursday, July 01, 2010 9:04 AM
To: Russo, Frank M (WTP); Walker, David
Subject: Re: M3 Status

Thanks.....so at least we have a decent fee argument.

From: Russo, Frank M (WTP)
To: Ogilvie, J; Walker, David
Sent: Thu Jul 01 11:52:54 2010
Subject: Re: M3 Status

I don't think so. But this is DOE and several months ago they wanted us to defer fee so I am not comfortable on how they will react in fee space. Factually M3 was for both non newtonian and newtonian vessels. Non newtonion was completed by in 2008. Since last year all we were working on was Newtonian vessels. When Girard and HQ pushed for the 80/20 fee pool this half of 2010 it was for Newtonian. All Newtonian is complete and DOE has signed off on all Newtonian vessels. No argument that we are done on Newtonian. However, in April 2010 one of DOE's consultants reopened non Newtonian. He had theories about non Newtonian sheering and solids dropping out when the fluid sheared. We used PNNL, SRNL and our own folks to take this theory off the table. We have accomplished this. Non Newtonian will not sheer if we keep its rheology above 6 pascal and 6 centipoid. We can do this and SRNL is doing it. We submitted our Non Newtonian package yesterday. Dale indicated that he will eventually approve it (even though some of his folks will resist). Full approval yesterday would have only put the DNFSB in high gear. So, we are proceeding with design without holds and DOE issued a press release (I sent it to you yesterday) saying we submitted everything we had to submit and that they were reviewing it.

Even with M3 finished, there will be follow up actions over the next several years. None will change vessel internal design nor heel removal design. The actions should be primarily funded by TOC (tank farm)

#60

Sunday, Apr. 17, 2011
1 Comment

DOE plans support projects for Hanford vit plant

By Annette Cary, Herald staff writer

Major construction projects are being planned in central Hanford as the Department of Energy prepares to treat 53 million gallons of radioactive waste for disposal.

Construction has been under way on the $12.2 billion vitrification plant, or Waste Treatment Plant, since 2002. But now planning is starting for the facilities needed to support the plant, including a complex to store its product of containers of glassified high-level radioactive waste until the nation has a repository for it.

Hanford officials also are making plans for how to get waste to the vitrification plant and how to treat the secondary waste that it creates for disposal.

"These are projects that need to be available for the WTP full operations," said Chris Burrows, the vit plant support project manager for Washington River Protection Solutions.

The Hanford tank farm contractor, now Washington River Protection Solutions, traditionally has been focused on safe operations and retrieving waste from aging and leak-prone older underground tanks. But now, the contractor, in addition, is starting to focus on construction and its role in waste treatment.

"We have got to be totally integrated with the WTP," said Chuck Spencer, president of Washington River Protection Solutions.

Much of the work will need to be done before 2019, when the vitrification plant is scheduled to start treating high-level radioactive waste.

"We need to start now," said Tom Fletcher, DOE acting assistant manager of the tank farms.

That includes looking at the pros and cons and long-term costs of four possible options for storing treated high-level radioactive waste. The vitrification plant will produce glass-filled stainless steel canisters that weigh about four tons each and measure almost 15 feet long and 2 feet in diameter.

The treated waste was expected to go to the Yucca Mountain, Nev., repository for radioactive waste, but DOE shut down that project and the Obama administration is considering other options for storing or disposing of the waste.

In the meantime, the waste will be stored at Hanford. Planning is being done to accommodate the first 4,000 canisters of high-level waste, which would support 10 years of vitrification plant operations. Low-activity waste also will be treated at the plant, but is planned to be disposed of at a Hanford landfill.

Options for the high-level waste include outdoor storage on a pad. Although construction costs would be low, casks would have to be continually manufactured to hold the treated waste.

If the waste is stored inside, the Canister Storage Building may be retrofitted. But an earlier look at options suggested that constructing a new building may be less expensive.

If new construction is picked as the best option, a building with underground vaults could be constructed or a building with a limited system of open rack storage.

Preliminary planning puts possible construction costs in the range of $80 million to $240 million.

Washington River Protection Solutions also is preparing to treat the secondary solid and liquid waste produced at the vit plant as it glassifies tank waste, which will require two more construction projects.

Now contaminated liquid waste at Hanford -- such as the liquid collected at the bottom of the site's low-level radioactive waste landfill -- is taken to the Effluent Treatment Facility. But the amount of liquid waste at the site will double when the vit plant begins operating, and the plant's liquid waste will have corrosive chemicals the liquid treatment facility is not designed to handle now.

Upgrades and expansion of the plant could cost $100 million to $200 million, although those figures are preliminary.

No cost estimate has been made for the solid waste treatment center that will be needed to prepare contaminated waste from the vit plant for disposal. Secondary solid waste produced by the plant could range from melter equipment with a six-week life to the melters themselves, which have a five-year life.

The fourth construction project planned by Washington River Protection Solutions would improve infrastructure at the tank farm to mix waste, blend it, sample it and deliver it to the vitrification plant, also in central Hanford. Costs could range from $400 million to $500 million, according to preliminary information.

While those four construction projects are needed to support operations of the vitrification plant in 2019, DOE also is looking at two more. If DOE decides to start treating low-activity waste before it is ready to treat high-level waste in 2019, it will need a system to prepare the waste for treatment in the tank farms. Once the vit plant is operating, that will be done at its Pretreatment Facility.

In addition, the vitrification plant was not planned to be large enough to treat all tank waste by the legal deadline of 2047. DOE is looking at options, which could include building a second Low Activity Waste Facility at the vitrification plant.

All the construction projects are "things we support them doing and are all high priority," said Suzanne Dahl, the Washington State Department of Ecology's tank treatment section manager. The state is the regulator for Hanford's tank waste treatment.

"Ecology, quite frankly, is very encouraged they are looking at these things now," said Dan McDonald, the state's project manager of tank waste disposal.

#61

From: Quirk, Bob
Sent: Thursday, May 27, 2010 8:50 PM
To: Trenchard, Glyn D
Cc: Rutledge, Allye; Gamache, Lori M; Sherry Lewis; Charbonneau, Stacy L; Linzau, William M; Steven Stokes
Subject: Double decant of LAW feed

Glyn,
The May 17 letter from Dr. Triay to the Board noted that the tank farms would do a double decant of supernate before sending it to the WTP LAW feed receipt (FRP) tanks. The concept is to minimize sending solids to the four WTP FRP tanks, where they could settle and create problems over time. Additionally, there is supposed to be a dedicate transfer line for the LAW feed.

How does ORP envision doing this, as it seems that you will need a new tank to do this? Has this been included in your direction for the next system plan revision? If not, why not?

Bob

#62

From: Gay, William (URS)
Sent: Sat Mar 20 16:28:37 2010
To: Duncan, Garth M; Ashley, Gregory
Cc: Robinson, Michael K (WTP); Tamosaitis, Walter; Rusinko, Barbara; Herling, Daniel (WRPS); Cook, John (WGI); French, Robert (WGI); Edwards, Richard E (WGI); 'Leo.Sain@wginl.com'
Subject: Potential Tank Farm Blend Facility
Importance: Normal

Garth-Very senior DOE/Bechtel management has added a potential Tank Farm blend facility to the mix in the overall strategy of dealing with the multiarm feedstock. By COB Tuesday a Team of WTP/WRPS key technical people need to map the positive and any negative ramifications of this proposal to the flowsheet,impact on the proposed alternatives from the rapid development team , impact from a positive standpoint to resolve CNP/CXP,ect. This weekend,I request you send a note to the Key WTP technical people by name and also to Paul Rutland at WRPS to meet in your conference room at 8AM Monday morning to kick this activity off. In your e-mail, please make it clear that this is an urgent request and the designated individuals need to clear their calendars for at least Monday/Tuesday. Include people that can write a preliminary document with graphics,Ivan Papp and John Cook, Walt T, Bob Voke, John Olson,Donna Busslick. This weekend try to get a core group together to map out a strawman for purpose,technical considerations , deliverables and timetable meaning two days so we have organization and logistics sorted out before Monday. I will try to have Frank Russo talk to the group Monday shortly after kickoff.Greg Ashley is well aware of the initiative and may provide you further guidance.I have included Greg's e-mail. I have Greg's concurrence to get the ball rolling due to his travel. I am available all weekend to help with this important effort.Just call 5547366.
Greg has asked that I get this effort moving due to him being in DC.Please send me an acknowledgement that you have read this note. Overtime is authorized for this initial evaluation as you deem appropriate.For now charge to the M3 charge account number.
Please emphasize in your e-mails that this initiative is in the consideration stage . Your help and leadership is appreciated.
Regards
Bill Gay
---- Original Message ----
From: Ashley, Gregory
To: Olson, John W; Duncan, Garth M; Edwards, Richard E (WGI)
Cc: Russo, Frank M (WTP); Gay, William (URS); Rusinko, Barbara
Sent: Fri Mar 19 21:21:25 2010
Subject: Pt discussions today, DO NOT FORWARD
Rich, need to set up session with paul rutland rsvp on monday. The mission is to identify the benefits to the pt flowsheet of a tf blend facility. Example is if tf were to wash the sludges before transfer, the phosphate /oxalate issue would be eliminated/greatly reduced. This would allow us to reduce scope of cnp/cxp mod. Better sampling/characterization could benefit mixing including reduction in solids concentrations in each transfer. Filter in facility would eliminate frp issues. This is a big deal and if decisions can be made quickly would clear/ease numerous wtp technical hurdles. We need to make a list of all +/- and the concept for the benefits of the "combined" flowsheet. Call if any questions.

Sent from my BlackBerry Wireless Device

#63

From: Russo, Frank M (WTP)
Sent: Fri Jun 11 15:40:00 2010
To: Walker, David
Cc: Ogilvie, J; Weaver, Craig
Subject: Checking in
Importance: Normal

WTP status:
1) Poneman is here Monday but we only see him for about an hour and a half on the job. Site tour, lunch meeting with Dale, me and a couple of public affairs folks. There is a dinner Monday night that includes all ORP and Hanford contractors (Guy and I at that one). Integrated flow sheet with Tank Farm is a topic as is revised cash flow (Jacs has discussed the 77% confidence funding model with congressionals and has some key support). Poneman wants to see how tank farm can bound our feedstock (good) and wants to assess WTP field progress to gain funding confidence.
2) BMAB subcommittee also here Monday through Wednesday. There are several members who should have an understanding of EPC and this does help keep their lines of inquiry manageable. We have our briefings ready for the subcommittee to demonstrate the thoroughness of actions to close EFRT 1 issues. We do a final turn page today for briefings that start Tuesday morning.
3) M-3 should be the only issue that has potential to be a concern for the subcommittee. Newtonian is finished and even local DOE is accepting the results. Our Non Newtonian position paper (backed by our 2005/2006 tests, SRS experience and test data and some bottoms clearing tests that we ran here last week) supports our position that we currently have the non Newtonian question sufficiently resolved to proceed with design. Heel dilution and removal are the defense in depth and Rheology control is the operational mechanism to avoid theoretical fluid shearing. An independent review team from LANS, SRNL, INL and Oak Ridge is here and has agreed with our assumptions. I meet with Kluse of PNNL Thursday to solicit his labs support.
4) HPAV is purely political at this point. The HIRT is finishing it's work and they support the new design with some legitimate recommendations. We will bring their work to DNFSB and use it to negotiate a path forward. HIRT does give us some leverage because DNFSB does not want people like Roger Mateson inferring that the Board delayed the project for over a year without solid technical basis. I am cautiously optimistic that we can reach a compromise that keeps the project cost/schedule neutral.....but I don't anticipate any savings even after we eliminate controls and bulges.
5) VPP audit for Star status is also next week.....only DOE can have Poneman, BMAB and VPP all starting on Monday. However, Leath is ready and we have orchestrated the 3 separate visits and have them all covered.
6) SJO will be leaving within the month. She is supposedly going to be EM 3 in HQ with Guy Girard working in a group under her purview (?). Brockman (who heads RL and retires 12/31/10) will be acting for ORP until a decision is made on overall DOE Hanford management structure.
7) Tom Patterson is having early positive impact. He is already a strong addition to the team that we need to highlight for RPB's response to Sen Cliu Since most of Cliu's comments are engineering related , I suggest that we show RPB commitment by pointing out that both Tom and Greg Mylar are here with Tom transferred on a permanent assignment basis.
8) Although call the pockets have been low, the team continues to pull rabbits out of hat. We were 1.04 SPI and .98 CPI for May. Still at 1.0 SPI and CPI for overall project.

Opinion:
I still think we need to do something between BNI and URS. All the pressure is to move scope after sequential facility start up's to the Tank Farm. This will begin as early as 2013 with BOF facilities and late 2015 for lab and then LAW....Doing so will save the WTP both risk and could save money. But, there is the probability for mischief unless we control this process and benefit from it on both sides of the integrated flow sheet.

Frank

ISSUE #17 HAS NO SEPARATE ATTACHMENTS

ISSUE #18

"M3 CLOSURE (monetary)"

Attachments-

- 64: Russo makes public comments in March that M3 will close by June 30th, 2010.
- 65: Email stating that 80% of fee (about $5M) is directly tied to M3 closure by June 30th.
- 66: Russo says he would rather win the fee by changing the rules than testing.
- 67: Russo says fee is in play in a big way in M3 closure.
- 68: Russo says the $50M is in play with M3 closure.
- 69: Russo tells DOE that not closing M3 will kill momentum and the ($50M) extra funding and he will personally raise "bloody hell".
- 70: Bechtel management is expresses concern about winning the fee.
- 71: Bechtel management is concerned about who the cost increase is associated with and pushes for REA (request for equitable adjustments) so that responsibility for the work is associated with DOE.
- 72: Bechtel management wants to ensure the extra $50M is protected.

#64

From: Mayson, Elizabeth
Sent: Tuesday, March 16, 2010 9:01 AM
To: WTP RDC
Subject: CCN 210564 -- FW: Proposed 2010-A PEMP Change
Importance: High
Attachments: 2010-A PEMP PropR1,12Mar10.pdf

Thank you,

Liz Mayson
Contract Specialist
Bechtel National, Inc.
P.O. 2106; MS14-2B
509-371-2276

From: Champlain, George F [mailto:George_F_Champlain@RL.gov]
Sent: Monday, March 15, 2010 9:10 AM
To: Velrup, Anton
Cc: Williams, Thomas - DOE; Barrett, Michael K
Subject: Proposed 2010-A PEMP Change
Importance: High

Tony,

As discussed, please review the proposed change to the 2010-A PEMP. DOE ORP senior management has a strong desire to make the change, but they also want agreement from BNI. Please run this by your management and let me know by COB March 18 if BNI will agree to the change.

Sincerely,
George Champlain
Contracting Officer
Acquisition Management Division
DOE Office of River Protection
(509)376-6678

needed changes to the PEMP for consideration by the PEB and FDO; and 4) maintain a performance dialogue with BNI Performance Measure owners throughout the evaluation period.

C. Process & Schedule

Activity No.	Activity	Footnote	# of Days From	Activity Number	Days from Beginning of Evaluation Period From	To	Dates - Evaluation Period 2010-A Start	Finish
1	Performance Evaluation Board (PEB) Appointed		0		-90	-90	10/03/09	10/03/09
2	DOE Generates Draft PEMP	1	75	1	-90	-45	10/03/09	11/02/09
3	Contractor Review Comments on Draft PEMP		75	2	-45	-45	11/02/09	11/17/09
4	HQ Approval - Business Clearance		90	3	-30	-30	11/17/09	12/02/09
5	Final PEMP Execution	2	90	4	-30	-15	12/02/09	12/17/09
6	FDO, PEB, and PEM Evaluate Performance		181	5	0	180	01/01/10	06/30/10
7	Contractor Self-Assessment (S/A)		10	6	180	190	06/30/10	07/10/10
8	PEM Submit Final Reports to PEB		10	7	180	190	06/30/10	07/10/10
9	PEB Completes Report		37	8	190	235	07/10/10	08/24/10
10	PEB Briefs FDO			9	235	242	08/24/10	08/31/10
11	FDO Determines Award Fee Amount	4		10	242	250	08/31/10	09/08/10
	Performance Period Begins	5						01/01/10

Footnotes:

1 Contractor is provided opportunity to review and comment
2 PEMP is executed unilaterally if parties cannot agree prior to beginning of evaluation period
3 PEM Reports are updated (if necessary) based on the results of the Contractor Self-Assessment
4 Fee payment made within seven days after receipt of an invoice for approved FDO Award Fee Determination

The Contract will receive two separate Award Fee evaluation ratings – one rating for Incentive B.1 *Project Management Incentive* and one rating for Incentive B.2 *Cost Incentive*. Each rating is independently applied to the available Award Fee pool for that Incentive's attainment. The total available award fee for this Evaluation Period 2010-A is:

Incentive B.1 Award Fee – Project Management Incentive	$ 2,000,000
Incentive B.2 Award Fee - Cost Incentive	$ 4,300,000

DOE's expectation is that the Contractor will solve the External Flowsheet Review Item M3 Inadequate Mixing issue no later than June 30, 2010. M3 is the most critical technical issue remaining on the project, and its resolution is vital to the WTP project schedule. Therefore, in the event the Contractor fails to achieve formal closure of M3 by June 30, 2010, DOE reserves the right to make an award fee determination of $0 for the PEMP 2010-A performance period, notwithstanding the Contractor's performance in other Performance Objectives, Elements, or Measures.

D. Contractor Self-Assessment

See Section B Clause B.7 *Award Fee Administration*, which states:

Tamosaitis, Walter

From: Edwards, Richard E (WGI)
Sent: Tuesday, March 30, 2010 7:08 AM
To: Tamosaitis, Walter; Duncan, Garth M; Rusinko, Barbara
Subject: FW: M3 in WCM article

fyi

From: Heaston, Suzanne
Sent: Monday, March 29, 2010 9:21 PM
To: Russo, Frank M (WTP); Bradford, Richard; Ashley, Gregory; Robinson, Michael K (WTP); Kennedy, Daniel E; Bohne, Jason; Gay, William (URS); Edwards, Richard E (WGI); Daniel, Russell; Truax, John; Kaclch, Richard
Subject: FYI: M3 in WCM article

Today's Weapons Complex Monitor includes an article on M3 that appears as a result of an interview Guy Girard conducted last week with WCM reporter Mike Nartker. Mike learned of a "back-up" plan while at Waste Managemnt and requested a status of the issue. He's been following the issue for quite sometime. The article is fair. Frank Russo is also quoted--taken from a statement made at last week's Nuclear Waste Cleanup Caucus briefing--that the issue will be closed in June.

Thank you.
Suzanne
Article follows:

From: Kaanapu, Faith
To: Heaston, Suzanne
Sent: Mon Mar 29 17:57:10 2010
Subject: RE: WCM article

'PLAN B' IN THE WORKS TO SETTLE HANFORD WTP WASTE MIXING ISSUE

DOE Looking to Install Capability in Some Vessels to Remove Solids

The Department of Energy is considering installing the capability to remove solids in some vessels at the Hanford Waste Treatment Plant's Pretreatment Facility, officials said last week. The move is intended as a 'Plan B' to resolve the last lingering technical issue at the plant—ensuring adequate waste mixing, which is necessary to prevent criticality and hydrogen buildup concerns as the material moves through the vitrification plant. DOE and project contractor Bechtel National are wrapping up tests of the pulse jet mixers to be used in the plant, with the final stage of testing focusing on five vessels in the Pretreatment Facility considered to be the "most difficult," according to federal Project Director Guy Girard. Those include the facility's high-level waste receipt tank, which will have the "maximum weight percent of solids that will be coming from the tank farms;" as well as two leaching vessels and two feed evaporator tanks, he said.

By the end of April, DOE expects to know "the degree of changes we want to make in the vessels, or have to make," Girard told *WC Monitor* last week. "It really comes down to the degree of uncertainty and us wanting to feeling certain, ultimately, that everything is going to work safely in the plant."

Mixing Issue Dates Back to 2006

The pulse jet mixers to be used at the WTP's work similar to a turkey baster, with the waste pumped up and then

#65

From: Velrup, Anton
Sent: Mon Apr 19 19:39:25 2010
To: Russo, Frank M (WTP)
Cc: Bradford, Richard; Futrell, Guy; Grover, Nicoline; Mayson, Elizabeth
Subject: FW: WTP 2010-A Performance Evaluation and Measurement Plan (PEMP), Revision 1, Ready for BNI Signature
Importance: High
Attachments: WTP PEMP - Eval Period 2010-A - Rev 1, 19Apr2010.pdf; WTP PEMP - Eval Period 2010-A - Rev1.19Apr2010 (Markup).docx; WTP PEMP - Eval Period 2010-A - Rev 1, 19Apr2010.docx

Frank - Here is the latest PEMP "proposal" from ORP. If we don't make M3 by June 30, 80% of the fee pool for the period goes away.

Please let me know how you want me to respond.

thx,
tv

From: Champlain, George F [mailto:George_F_Champlain@RL.gov]
Sent: Monday, April 19, 2010 12:25 PM
To: Velrup, Anton
Cc: Dawson, Ronnie L; Girard, Guy A; Barrett, Michael K
Subject: WTP 2010-A Performance Evaluation and Measurement Plan (PEMP), Revision 1, Ready for BNI Signature
Importance: High

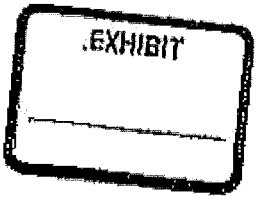
Tony,

Attached is the final version of the 2010-A PEMP, Revision 1, resulting from recent discussions between DOE and BNI, and other direction from DOE HQ. I've included a marked up copy with the changes (in yellow), a clean MS-Word document, and a .pdf copy.

There are several changes resulting from Revision 1

1. The WTP FPD has been appointed as FDO.
2. A new Performance Evaluation Board Chair has been appointed
3. Page 5, paragraph C, Process & Schedule: A paragraph has been added putting fee at risk if M3 is not formally closed by June 30, 2010.
4. The document has been updated to include the latest Performance Evaluation Monitor changes
5. Attachment D has been updated to reflect actual fee earned in period 2009-B.

Please have Mr. Russo sign the cover page, and return the original to ORP AMD by Thursday April 23, 2010. Subsequent to the FDO signing the document, I will return one fully executed copy for your files



#66

From: Russo, Frank M (WTP)
Sent: Wed Jun 23 23:37:23 2010
To: Rusinko, Barbara; Ashley, Gregory
Subject: Re: No Weekend TSGs for M3
Importance: Normal

I would rather win the fee discussion on TSO changing the rules pka multiple comment cyclesthan win it on weekend work. Just my preference.
Frank
----- Original Message -----
From: Rusinko, Barbara
To: Russo, Frank M (WTP); Ashley, Gregory
Sent: Wed Jun 23 19:28:04 2010
Subject: No Weekend TSGs for M3
Brunson said the he was directed to not work outside regular work hours (no work this Friday, Sat, or Sun) to support M3 closure by Dale. Maybe that is firing for effect, but our guys have busted their butts to get us close to meeting the milestone and to not have this support does not support the one team mission I though he was going for.

#67

From: Robinson, Michael K (WTP)
Sent: Thu Jun 17 16:35:24 2010
To: French, Robert (WGI); Dardel, Russell; Barnes, Stevon M (WGI); Kaubien, Phillip; Duncan, Garth M; Tamosaitis, Walter
Cc: Edwards, Richard E (WGI); Ashley, Gregory; Russo, Frank M (WTP); Gay, William (URS)
Subject: FW: Friday meeting re: M3
Importance: Normal

As you can see from the email below we are going to have to make a presentation to ORP/Contractor Senior Management on our status of M-3 and why we should be able to close it. Everyone should start thinking of the key points we want to make and discuss. We'll schedule a meeting later to start developing. thanks, Mike....send this to anyone I missed.

From: Russo, Frank M (WTP)
Sent: Thursday, June 17, 2010 9:15 AM
To: Ashley, Gregory; Robinson, Michael K (WTP)
Cc: Tomow, Betty
Subject: FW: Friday meeting re: M3

We need to meet on this.....We will have to present our position on M3 next week. Fee is in play in a big way. We can recommend scale test. It is outside of M3. Lets meet tomorrow or Monday the latest.

From: Knutson, Dale E [mailto:Dale_E_Knutson@RL.gov]
Sent: Thursday, June 17, 2010 9:06 AM
To: Olinger, Shirley J
Cc: Noyes, Dalmar L; Brown, Thomas M; Klein, Keith A; Russo, Frank M (WTP)
Subject: Friday meeting re: M3

Hi Shirley,

Finally had a chance to close with Frank this morning regarding your question to me on BNI's readiness to discuss an M3 technical recommendation tomorrow. Frank and I both agree that we are not ready for tomorrow but that early next week would be appropriate (Tues/wed). If we can reschedule accordingly that would be helpful

Sorry for the delay

Dale

From: Ogilvie, J
Sent: Thu Jul 01 16:20:08 2010
To: Russo, Frank M (WTP); Walker, David
Subject: Re: M3 Status
Importance: Normal

I like your logic!

From: Russo, Frank M (WTP)
To: Ogilvie, J; Walker, David
Sent: Thu Jul 01 12:14:04 2010
Subject: RE: M3 Status

Yes...I already made the argument to Dale and Shirley that they would be absolutely crazy to not accept that we are finished with M-3. Congress is just looking for a reason to put Hanford money in other States....our $50 million is still in play. Declare failure and high probability that the $50 mil goes away. $50 mil goes away.....12,263 and 2019 are in major peril.....major peril and S1 is again running day to day management of WTP. Why would they want to do this??? Especially since we did in fact finish M3 as defined by EFRT. Shirley agrees. I believe that Dale does as well but rightfully wants to proceed with caution since he needs 62 agreement and we all need to keep DNFSB from overreacting.

This all said, I repeat, they are DOE.....and they often do things that make no basic sense.

From: Ogilvie, J
Sent: Thursday, July 01, 2010 9:04 AM
To: Russo, Frank M (WTP); Walker, David
Subject: Re: M3 Status

Thanks.....so at least we have a decent fee argument.

From: Russo, Frank M (WTP)
To: Ogilvie, J; Walker, David
Sent: Thu Jul 01 11:52:54 2010
Subject: Re: M3 Status

I don't think so. But this is DOE and several months ago they wanted us to defer too so I am not comfortable on how they will react in fee space. Factually M3 was for both non newtonian and newtonian vessels. Non newtonian was completed by in 2008. Since last year all we were working on was Newtonian vessels. When Girard and HQ pushed for the 80/20 fee pool this half of 2010 it was for Newtonian. All Newtonian is complete and DOE has signed off on all Newtonian vessels. No argument that we are done on Newtonian. However, in April 2010 one of DOE's consultants reopened non Newtonian. He had theories about non Newtonian shearing and solids dropping out when the fluid sheared. We used PNNL, SRNL and our own folks to take this theory off the table. We have accomplished this. Non Newtonian will not shear it

we keep its rheology above 6 pascal and 6 centipoid. We can do this and SRNL is doing it. We submitted our Non Newtonian package yesterday. Dale indicated that he will eventually approve it (even though some of his folks will resist). Full approval yesterday would have only put the DNFSB in high gear. So, we are proceeding with design without holds and DOE issued a press release (I sent it to you yesterday) saying we submitted everything we had to submit and that they were reviewing it.

Even with M3 finished, there will be follow up actions over the next several years. None will change vessel internal design nor heat removal design. The actions should be primarily funded by TOC (tank farm) because they will help better understanding of long term operating protocols.

Frank

From: Ogilvie, J
To: Walker, David
Cc: Russo, Frank M (WTP)
Sent: Thu Jul 01 11:29:31 2010
Subject: Re: M3 Status

Doesn't this mean we missed the date?

From: Walker, David
To: Ogilvie, J
Sent: Wed Jun 30 18:14:53 2010
Subject: FW: M3 Status

M3 Update. Good progress but not quite done?
DW

From: Ashley, Gregory
Sent: Wednesday, June 30, 2010 5:02 PM
To: Russo, Frank M (WTP)
Cc: Walker, David; Myler, Craig; French, Robert (WSI)
Subject: M3 Status

Frank,
The TSG has concurred with closure of all vessels except for the 6 non-Newtonian vessels. The FRP vessel package was just signed; therefore all closure criteria are satisfied for 33 of 38 vessels. We have issued the vessel assessment for the non-Newtonian vessels that demonstrates that they meet the mixing requirements. This assessment addresses the concerns raised by DOE in the April time frame. The closure package for these vessels will not be fully executed by TSG until DOE has completed their review (a draft of this package was the subject of independent reviews by SRNL and CRESP). DOE communicated at the TSG meeting just concluded that they have accelerated their delivery of comments on this vessel assessment to 7/9. This is consistent with Dale Knutson's statement in our earlier meeting (that he is pushing his guys to finish). If we receive DOE's comments by 7/9 we are targeting TSG concurrence on the final M3 closure record by 7/16.

#69

From: Russo, Frank M (WTP)
Sent: Wed Jun 30 22:31:14 2010
To: Walker, David
Subject: RE: M3 Status
Importance: Normal

Short answer.....we made the newtonian milestone that was the basis of the 80/20. All signed off and blessed by DOE. Non newtonian was not part of the fee agreement and Dale and Shirley are well aware of this. I also told them that a clear way to kill momentum within the project and with congress re funding would be to declare M3 as not complete.....they get that as well Dale's words to me today were...BNI has met it's M3 obligation, we (DOE) need some time to review and fully understand the non newtonian status.
My guess is we get a favorable disposition on the 80/20 fee because we actually earned it. If not, I will personally raise bloody hell.
Frank

From: Walker, David
Sent: Wednesday, June 30, 2010 3:15 PM
To: Russo, Frank M (WTP)
Subject: RE: M3 Status

How will the "Award Fee" be evaluated relative to this progress?
DW

From: Ashley, Gregory
Sent: Wednesday, June 30, 2010 1:02 PM
To: Russo, Frank M (WTP)
Cc: Walker, David; Alger, Craig; Franek, Robert (WGI)
Subject: M3 Status

Frank,
The TSG has concurred with closure of all vessels except for the 5 non-Newtonian vessels. The FRP vessel package was just signed; therefore all closure criteria are satisfied for 33 of 38 vessels. We have issued the vessel assessment for the non-Newtonian vessels that demonstrates that they meet the mixing requirements. This assessment addresses the concerns raised by DOE in the April time frame. The closure package for these vessels will not be fully executed by TSG until DOE has completed their review (a draft of this package was the subject of independent reviews by SRNL and CRESP). DOE communicated at the TSG meeting just concluded that they have accelerated their delivery of comments on this vessel assessment to 7/9. This is consistent with Dale Knutson's statement in our earlier meeting (that he is pushing his guys to finish). If we receive DOE's comments by 7/9 we are targeting TSG concurrence on the final M3 closure record by 7/16.

Greg Ashley, P.E.
WTP Technical Director
(509) 371-3418
(509) 420-3394 cell
(509) 371-3506 fax
grashley@bechtel.com

#70

From: Ogilvie, J
Sent: Thu Jul 01 16:04:16 2010
To: Russo, Frank M (WTP); Walker, David
Subject: Re: M3 Status
Importance: Normal

Thanks.....so at least we have a decent fee argument.

From: Russo, Frank M (WTP)
To: Ogilvie, J; Walker, David
Sent: Thu Jul 01 11:52:54 2010
Subject: Re: M3 Status

I don't think so. But this is DOE and several months ago they wanted us to defer fee so I am not comfortable on how they will react in fee space. Factually M3 was for both non newtonian and newtonian vessels. Non newtonian was completed by in 2006. Since last year all we were working on was Newtonian vessels. When Girrid and HQ pushed for the 80/20 fee pool this half of 2010 it was for Newtonian. All Newtonian is complete and DOE has signed off on all Newtonian vessels. No argument that we are done on Newtonian. However, in April 2010 one of DOE's consultants reopened non Newtonian. He had theories about non Newtonian shearing and solids dropping out when the fluid sheared. We used PNNL, SRNL and our own folks to take this theory off the table. We have accomplished this. Non Newtonian will not shear if we keep its rheology above 6 pascal and 6 centipoid. We can do this and SRNL is doing it. We submitted our Non Newtonian package yesterday. Dale indicated that he will eventually approve it (even though some of his folks will resist). Full approval yesterday would have only put the DNFSB in high gear. So, we are proceeding with design without holds and DOE issued a press release (I sent it to you yesterday) saying we submitted everything we had to submit and that they were reviewing it.

Even with M3 finished, there will be follow up actions over the next several years. None will change vessel internal design nor heel removal design. The actions should be primarily funded by TOC (tank farm) because they will help better understanding of long term operating protocols.

Frank

From: Ogilvie, J
To: Walker, David
Cc: Russo, Frank M (WTP)
Sent: Thu Jul 01 11:29:31 2010
Subject: Re: M3 Status

Doesn't this mean we missed the date?

From: Walker, David
To: Ogilvie, J
Sent: Wed Jun 30 18:14:53 2010
Subject: FW: M3 Status

M3 Update. Good progress but not quite done?
DW

From: Ogilvie, J
Sent: Thu Jul 01 15:29:31 2010
To: Walker, David
Cc: Russo, Frank M (WTP)
Subject: Re: M3 Status
Importance: Normal

Doesn't this mean we missed the date?

From: Walker, David
To: Ogilvie, J
Sent: Wed Jun 30 18:14:53 2010
Subject: FW: M3 Status

M3 Update. Good progress but not quite done!
DW

From: Ashley, Gregory
Sent: Wednesday, June 30, 2010 5:02 PM
To: Russo, Frank M (WTP)
Cc: Walker, David, Myler, Craig; French, Robert (WGI)
Subject: M3 Status

Frank,
The TSG has concurred with closure of all vessels except for the 5 non-Newtonian vessels. The FRP vessel package was just signed; therefore all closure criteria are satisfied for 33 of 38 vessels. We have issued the vessel assessment for the non-Newtonian vessels that demonstrates that they meet the mixing requirements. This assessment addresses the concerns raised by DOE in the April time frame. The closure package for these vessels will not be fully executed by TSG until DOE has completed their review (a draft of this package was the subject of independent reviews by SRNL and CRESP). DOE communicated at the TSG meeting just concluded that they have accelerated their delivery of comments on this vessel assessment to 7/9. This is consistent with Dale Knutson's statement in our earlier meeting (that he is pushing his guys to finish). If we receive DOE's comments by 7/9 we are targeting TSG concurrence on the final M3 closure record by 7/16.

Greg Ashley, P.E.
WTP Technical Director
(509) 371-2418
(509) 420-3394 cell
(509) 371-3506 fax
grashley@bechtel.com

#71

From: Walker, David
Sent: Mon Jul 19 00:31:21 2010
To: Russo, Frank M (WTP); Ashley, Gregory; Patterson, Thomas; Bradford, Richard; Futrell, Guy; Rocha, Michael
Cc: Ogilvie, J; McCullough, Margaret G; Braddy, Robert
Subject: Re: Conference Call 7/6
Importance: Normal

I would like session on this during visit next week.
What is going forward plan-sounds like much more work to do-some potentially experimental, some analytical-and then you get to the real design engineering. What will be your program to vet the judgemental parts of QRA so we do not have significant risk of redoing work. How will this work be organized who is leading it, how can we have routine visibility on schedule performance and budget?
I expect this will cost much $$$ more, how much REA's or no? If no ultimate CPI impact to engineering?
Also want to do similar on M3 work now to be done outside of M3. Plan who is in charge, schedle, budget, funding etc. We will REA right?

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

From: Russo, Frank M (WTP)

To: Walker, David

Cc: Ogilvie, J

Sent: Wed Jul 07 10:29:21 2010

Subject: FW: Conference Call 7/6

HIRT presentation material. Will be reviewed with DOE today and delivered to DNFSB by HIRT team tomorrow. Bottom line, we have some work to do but HIRT supports BNI approach. The work part is as expected....however, the HIRT also determined that the original active control design had flaws and as a result we would be modifying that design even if MAR/HPAV never came into play. HPAV cost savings are gone. We are working n plan to release HPAV design after individual QRA ring as each major section completes (some risk when QRA is iterated but minimal compared to additional delays in PA 2 3 4 that would otherwise be caused by HPAV). With M3 internal vessel design and mechanical features (heal removal) now established and ready for detailing and CNP/CXP also ready for detailing, we can not let HPAV fall behind without significant CPI/SPI impacts.
Also, Board staff gets briefed today on heal dilution and removal that resulted from M3 and Ashley and Krahn are setting up monthly board updates on Mixing design, HPAV design, large scale testing plans (with TOC) and simulant selection (with TOC) for future TOC tests.

Frank

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

From: Roger Mattson [mailto:rdmattson@comcast.net]

Sent: Tuesday, July 06, 2010 8:18 PM

To: Triay, Ines; Steve Krahn; Grazzini, Janice; Kent Portenberry; Ashley, Gregory; Shirley Olinger; Dae Chung; Knutson, Dale E; Howard, John (EM); Russo, Frank M (WTP); Agee, Pattie

Subject: Conference Call 7/6

Colleagues,
My understanding is that some or all of us will be involved in a conference call/meeting tomorrow concerning the independent review team for hydrogen in piping and ancillary vessels of the pretreatment facility at Hanford's Waste Treatment Plant, affectionately known as the HPAV IRT. As leader of that team, I will describe for the attendees on the conference call a briefing that the IRT leadership will present to the DNFSB on the day after tomorrow. If this address list leaves out possible attendees, please, someone pass the information along.
The Power Point graphics developed by the IRT leaders for the DNFSB presentation are attached. I will refer to these in our conference call.
I have also attached a file containing short biographical sketches of the HPAV IRT members for your information.

Talk to you soon,
Roger

#72

From: Walker, David
Sent: Wed Jul 28 17:05:09 2010
To: Ogilvie, J; Russo, Frank M (WTP)
Subject: RE: WTP Tomasitis Event/Update on NWAB Technical Committee
Importance: Normal

I talked with Ines. She had talked with Leo earlier this AM. We had pretty much the same message. Her fundamental question(unanswered) is why/how did we handle WT's move/departure so poorly. What was communicated by whom to whom and what were we thinking. She believes from PK feedback that we will manage through the technical issues and DNFSB investigation part satisfactorily although at cost of significant disruption/time etc. Need to be sure "Hill" get covered and protect the $50 million.

Told her I met with Barnie. He is not allowed to be fully forthcoming under his Agreement and Ines knows that. What BM told me and I relayed to Ines: Expect that team will conclude plant will function but may they have a few improvement ideas-they are chemistry and process plant people. He thinks group will advocate more that project needs more effective transition plan from EPC to O/operations; maybe operators working now or soon with more details-not new thought but group may have some ideas on how and that. The group will meet with WTP team and Ines for update next week. Tentative public meeting set for September 15th.

DW

-----Original Message-----
From: Ogilvie, J
Sent: Wednesday, July 28, 2010 12:15 PM
To: Russo, Frank M (WTP); Walker, David
Subject: Re: WTP Tomasitis Event

Thanks

----- Original Message -----
From: Russo, Frank M (WTP)
To: Ogilvie, J; Walker, David
Sent: Wed Jul 28 11:35:59 2010
Subject: Re: WTP Tomasitis Event

Yes. She, Poneman and Dale stated that they understand reason for Walt's departure and support DNFSB management. They are not happy with UNS handling.

But this could all change. DOE can't be seen as involved.

----- Original Message -----
From: Ogilvie, J
To: Walker, David; Russo, Frank M (WTP)
Sent: Tue Jul 27 14:50:32 2010
Subject: Re: WTP Tomasitis Event

Frank, have u briefed Ines?

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

ISSUE #19

"M3 CLOSURE (technical)"

Attachments-

- 73: Dr. Etchells states that "Dr. Calabrese (CRESP) does not like anything he has seen". CRESP is advisory group to DOE, not Bechtel/URS. CRESP stands for the Consortium for Risk Evaluation with Stakeholder Participation. CRESP receives ear-marked funding.
- 74: Dr. Dickey states that Dr. Calabrese agrees that the way Bechtel and DOE are using the (scaling) exponent is "just so the results look good".
- 75: Dr. Dickey states that use of a .18 exponent would be considered by him to be "criminally negligent" with respect to the design of a nuclear waste processing plant".
- 76: Dr. Dickey states "the way (Bechtel) engineering is using the .18 scale-down is a bit of "smoke mirrors".
- 77: Dr. Dickey says a .33 scaling exponent is the best factor (to use).
- 78: Per Dr. Dickey, Dr. Calabrese's scaling exponent was .9 (not .18).
- 79: Dr. Sutter, DOE Consultant, expresses concerns about M3 closure.
- 80: Conclusion of CRESP report appears to be confusing.
- 81: Bechtel/URS accept CRESP based on first 11 words of final sentence.
- 82: Dr. Dickey suggests large scale testing options in February, 2011.
- 83: Dr. Etchells offers thoughts in February, 2011, on what work needs to be done to really resolve the mixing issues and close M3.
- 84: Technical concerns raised by PNNL (Vulnerability letter).
- 85: The feasibility of adding a heel pumpout line is questioned.

From: etchells3@aol.com
To: Aw Ramo wltamosa@bechtel.com, d.dickey@mixtech.com, Perry Meyer perry.meyer@pnl.gov
Subject: Re: FAR DRAFT - CRESP Review Letter Report on PJM Vessels
Date: 6/28/2010 7:13:24 PM
Folder: Inbox

All
I just got back from British Columbia at 8 PM tonight to find a mound of Emails on the CRESP
document. I have looked at most of them.
Dave is correct on the response of Professor Calabrese. He does not like anything that he has seen.
The response of those who heard the recent presentation by Bechtel Engineering on solids suspension on the
non Newtonian tanks was similar. A number of that group were also at ther recent conference in which we talked to Calabrese.
I will try to catch up tomorrow so I can participate and read the documents rather than the comments.
Something needs to be done about the way this story is presented to outsiders so as not to offend them and set them on edge.
More lattter
ART

-----Original Message-----
From: Tamosaitis, Walter <wltamosa@bechtel.com>
To: d.dickey@mixtech.com; Perry Meyer <perry.meyer@pnl.gov>; Art Etchells <etchells3@aol.com>
Cc: Truax, John <jetruax@bechtel.com>; Damerow, Frederick (WGI) <fwdamero@bechtel.com>
Sent: Mon, Jun 28, 2010 6:29 pm
Subject: RE: FAR DRAFT - CRESP Review Letter Report on PJM Vessels

Dave-

Yes -- the higher the exponent, the lower the test velocity, ie, the more conservative it is. Poreh indicated 0.00 for the exponent which means no conservatism in the scale down from a fixed velocity.

I think where the confusion is arising with CRESP is that if you scale up using Poreh, ie, an exponent of 0.00, you get a lower full scale velocity.

From: David Dickey d.dickey@mixtech.com
To: Aw Ramo wltamosa@bechtel.com, Art Etchells etchells3@aol.com, Perry Meyer perry.meyer@pnl.gov
Subject: Re: FAR DRAFT - CRESP Review Letter Report on PJM Vessels
Date: 6/28/2010 1:09:58 PM
Folder: Inbox

Walt,
I talked with Rich Calabrese last week. His interpretation of Poreh is a 0.9 scale-up exponent. I think he agrees that the way Bechtel engineering and ORP are using the 0.18 exponent is just so the results "look good" and not a realistic scale-up method. The 0.33 still looks best.
Dave

Sent by David Dickey at MixTech
www.mixtech.com
(937) 431-1446

From: "Tamosaitis, Walter" <wltamosa@bechtel.com>
Date: Mon, 28 Jun 2010 10:07:43 -0700
To: David Dickey<d.dickey@mixtech.com>; <etchells3@aol.com>; Meyer, Perry A<perry.meyer@pnl.gov>
Cc: Truax, John<jetruax@bechtel.com>; Damerow, Frederick (WGI) <fwdamero@bechtel.com>
Subject: FW: FAR DRAFT - CRESP Review Letter Report on PJM Vessels

All-
Attached for your info. These are DRAFTS. I think you will find it interesting. I interpret the CRESP comments to be dubious at best. Looks like they are not big fans of the 0.18 scaling factor. See page B-3.
I think there is a major typo or confusion at the top of page 6 where they refer to the largest recommended scaling be a 10x factor on volume. I thought it was a 10x factor on linear dimensions. Dave/Art help!!
How could Richard C's view be different??
Perry - you and I are mentioned by name on page B-2. Looks like they are asking a question as to whether you analyzed the MCE data correctly. Did you??
Any comments??
More to come I'm sure.
WaltO

From: Barnes, Steven M (WGI)
Sent: Monday, June 28, 2010 7:30 AM
To: Tamosaitis, Walter
Subject: FW: FAR DRAFT - CRESP Review Letter Report on PJM Vessels
Importance: High

Per your request. It looks like it was delivered late last Thursday.

Tamosaitis, Walter

From: David Dickey [d.dickey@mixtech.com]
Sent: Thursday, May 20, 2010 10:47 AM
To: perry.meyer@pnl.gov; etchells3@aol.com; Tamosaitis, Walter
Cc: Calabrese Rich
Subject: Re: IMPORTANT SCALING QUESTION

Walt,

I do not have time at the moment to give anything more than a brief comment. The simple (and absolute) answer is that all scale-up evidence shows that a 0.33 scale exponent is required to achieve sufficient agitation, regardless of the mechanism, ZOI, or other mechanism argument. All that Engineering needs to explain is why about 2000 data points from the PNNL study do not match their explanation of mechanisms. Mechanisms are used to explain experimental results, not to justify results that do not exist. One or two data points from a flume test are not sufficient.

The value of 0.18 is not supported experimentally anywhere and is only a projection based on theory and wishful thinking. As explained in my report, resuspension of settled material can scale-up by a 0.2 exponent, with respect to bottom clearing, but to actually suspend the material a 0.33 exponent is required. The 0.18 value cheats on all of the experimental and documented scale-up, 0.2, 0.25, 0.33 and 0.5. Consider the possibility that suspension height scale-up requires a 0.5 exponent by the same mechanisms mentioned by Engineering.

The use of a 0.18 exponent for scale-up would be considered by me to be criminally negligent with respect to the design of a nuclear waste processing plant. Is this response worded strongly enough?

Dave

David S. Dickey, Ph.D.
MixTech, Inc.
464 Ramsgate Drive
Dayton, OH 45430-2097
Phone: 937-431-1446
Fax: 937-431-1447
d.dickey@mixtech.com
www.mixtech.com

> ---- Original Message ----
> **From:** Tamosaitis, Walter
> **To:** David Dickey ; etchells3@aol.com ; perry.meyer@pnl.gov
> **Sent:** Thursday, May 20, 2010 1:10 PM
> **Subject:** IMPORTANT SCALING QUESTION
>
> The debate on scaling continues. I would like you input on whether this story hangs together -- pls read this slowly so my thoughts are adequately digested.
>
> Here goes ------ .
>
> Engr contends that the majority of particle lift we get results from colliding wave fronts and NOT from PJM jet flow turbulence. Stated another way, if there were no colliding wave fronts and no tank walls, there would be very minimal lift and primarily only ZOI formation. Since any colliding wave fronts provide particle lift (cloud height) what is needed are PJM velocities that provide overlapping ZOIs. So, their focus is on ZOI formation and not mixing (vertical particle distribution) scaling,ie, power/vol.

#76

From: Tamosaitis, Walter
Sent: Thursday, May 20, 2010 6:00 PM
To: Damerow, Frederick (WGI) <fwdamero@bechtel.com>
Subject: FW: IMPORTANT SCALING QUESTION

From: David Dickey [mailto:d.dickey@mixtech.com]
Sent: Thursday, May 20, 2010 2:11 PM
To: Tamosaitis, Walter; elchells3@aol.com; perry.meyer@pnl.gov
Subject: Re: IMPORTANT SCALING QUESTION

Walt,

I still think that the way engineering is using the 0.18 scale-down is a bit of smoke and mirrors, but if everyone is happy and the vessels meet the no accumulation at 0.33, I think the scale-up will work. Where I get real upset is when everyone thinks that the 0.18 scale-up is the only requirement that must be met.

Dave

David S. Dickey, Ph.D.
MixTech, Inc.
454 Ramsgate Drive
Dayton, OH 45430-2097
Phone: 937-431-1446
Fax: 937-431-1447
d.dickey@mixtech.com
www.mixtech.com

—— Original Message ——
From: Tamosaitis, Walter
To: David Dickey ; elchells3@aol.com ; perry.meyer@pnl.gov
Sent: Thursday, May 20, 2010 4:55 PM
Subject: RE: IMPORTANT SCALING QUESTION

Thanks for all the comments.

We had a telecon with CRESP today. Scaling came up. Kosson asked a question about the 0.18 scaling. Since test acceptance was based on using the 0.18 scaling to demonstrate bottom clearing at full level, he said: "then what you are telling me is if the 0.18 is wrong, the tanks have a problem – correct?".

Engr responded: "Correct, but the 0.18 is not wrong. ZOIs scale at 0.18 and mixing scales at 0.33. Since we do the pumpout test using the 0.33 exponent, everything is OK".

There was a pause and Kosson said "OK". Calabrese was in the call and totally quiet as usual. My guess is that he has not really looked at it in a long time. I guess my conclusion at this point is that if Calabrese does not bring it up, then so be it. I don't like that but I don't know what to do.

On the other hand, I see some merit in the Engr argument. If the ZOIs (pushing stuff around on the bottom) are sufficiently large enough that

Tamosaitis, Walter

From: David Dickey [d.dickey@mixtech.com]
Sent: Thursday, January 14, 2010 1:14 PM
To: Meyer, Perry; Damerow, Frederick (WGI)
Cc: peltierlj@aol.com; Tamosaitis, Walter; Etchells, Art
Subject: Re: IMPORTANT -- Question for the Day

Walt,
A scale-up exponent of 0.25 is an average. A scale-up exponent is an observed value associated with low concentrations. An exponent of 0.33 is our best factor, without any conservatism.
Scale-down should be from the correct desired full-scale velocity, including density and safety factors. The uncertainty should be developed from the scatter in PNNL data. All other methods will contain large uncertainties with weak justification.
Dave
Sent by David Dickey at MixTech
www.mixtech.com
(937) 431-1446

-----Original Message-----
From: "Meyer, Perry A" <perry.meyer@pnl.gov>
Date: Thu, 14 Jan 2010 11:25:24
To: Damerow, Frederick (WGI)<fwdamero@bechtel.com>
Cc: peltierlj@aol.com<peltierlj@aol.com>; Tamosaitis, Walter<wltamosa@bechtel.com>; d.dickey@mixtech.com<d.dickey@mixtech.com>; etchells3@aol.com<etchells3@aol.com>
Subject: Re: IMPORTANT -- Question for the Day

The partial list:

We have no Ucs scale-up data for simulants with broad distributions of particles (mono-disperse only) We have no scale-up data with prototypic (suction/refill) operation We have very limited scale-up data for solids vertical distribution profiles for mono-disperse, and none for broad distributions We have no actual data on the scale-up of settling cohesive materials (where both gravity and yield stress/shear strength are important)

Hence a little conservatism is in order IMHO

Perry

On 1/14/10 11:04 AM, "Damerow, Frederick (WGI)" <fwdamero@bechtel.com> wrote:

Perry, I'm intertested in your list even is it is partial.

-----Original Message-----
From: Meyer, Perry A [mailto:perry.meyer@pnl.gov]
Sent: Thursday, January 14, 2010 9:41 AM
To: Tamosaitis, Walter; d.dickey@mixtech.com; etchells3@aol.com
Cc: Damerow, Frederick (WGI); peltierlj@aol.com; Minotte, Michael J
Subject: Re: IMPORTANT -- Question for the Day
Importance: High

I like what Joel has in the report, which is essentially choice #1.
However, this choice puts great importance on the specification of the final design margin. If the margin is large and has a solid basis then I am very supportive. We all have stated many things we "think" but their remains a number of important things we do not "know". I can provide a partial list if anyone is interested.
Perry

On 1/14/10 8:15 AM, "Tamosaitis, Walter" <wltamosa@bechtel.com> wrote:

From: David Dickey d.dickey@mixtech.com
To: Aw Ramo Wltamosa@bechtel.com, Perry Meyer perry.meyer@pnl.gov, Art Etchells etchells3@aol.com
Subject: Re: FAR DRAFT - CRESP Review Letter Report on PJM Vessels
Date: 6/28/2010 2:02:12 PM
Folder: Inbox

Walt,
  Rich Calabrese's interpretation of Porel was A scale-up or scale-down exponent of 0.9 not 0.18. Big difference.
  In either case air jets with large clearances are probably not good models for PJMs.
Dave
Sent by David Dickey at MixTech
www.mixtech.com
(937) 431-1446

-----Original Message-----
From: "Tamosaitis, Walter" <wltamosa@bechtel.com>
Date: Mon, 28 Jun 2010 13:49:40
To: <d.dickey@mixtech.com>; Perry Meyer<perry.meyer@pnl.gov>; Art Etchells<etchells3@aol.com>
Cc: Truax, John<jetruax@bechtel.com>; Damerow, Frederick (WGI)<fwdamero@bechtel.com>
Subject: RE: FAR DRAFT - CRESP Review Letter Report on PJM Vessels

Dave-

OK but boy am I confused now.

I agreed with Perry just based on scaling, not Poreh.

The larger the exponent, the lower the test velocity if you limit the full scale velocity to 12 m/s (or whatever limit you want to use). I thought it was just a scale down and had nothing to do with Poreh, ie.,

Vf = Vs x (scale factor)^exp

Help!

W

-----Original Message-----
From: David Dickey [mailto:d.dickey@mixtech.com]
Sent: Monday, June 28, 2010 1:15 PM
To: Perry Meyer; Tamosaitis, Walter; Art Etchells
Cc: Truax, John; Damerow, Frederick (WGI)
Subject: Re: FAR DRAFT - CRESP Review Letter Report on PJM Vessels

Perry,
  That is the conclusion if you believe Poreh.
Dave
Sent by David Dickey at MixTech
www.mixtech.com
(937) 431-1446

-----Original Message-----
From: "Meyer, Perry A" <perry.meyer@pnl.gov>
Date:

#79

From: Ashley, Gregory
Sent: Sun May 23 21:54:13 2010
To: Daniel, Russell
Cc: French, Robert (WGI)
Subject: Fw: M-3 closure criteria
Importance: Normal
Attachments: May_18_Notes1.doc

Herbs comments

Sent from my BlackBerry Wireless Device

From: Russo, Frank M (WTP)
To: Ashley, Gregory
Sent: Fri May 21 16:42:07 2010
Subject: FW: M-3 closure criteria

Please review carefully.....then let's talk.

From: Olinger, Shirley J [mailto:Shirley_J_Olinger@RL.gov]
Sent: Friday, May 21, 2010 1:36 PM
To: Russo, Frank M (WTP); Spencer, Charles G
Subject: FW: M-3 closure criteria

Did you get these comments from HQs staff on M3 non-Newtonian issue? We should talk prior to the call with Ines and Dae on Monday.
Txs, sjo

Shirley J. Olinger
Ph: 509-372-3062
Cell: 509-539-3229
From: Girard, Guy A
Sent: Wednesday, May 19, 2010 1:35 PM
To: Olinger, Shirley J
Subject: Fw: M-3 closure criteria

From: Picha, Kenneth G. <Kenneth.Picha@em.doe.gov>
To: Chung, Dae <Dae.Chung@em.doe.gov>; Girard, Guy A
Sent: Wed May 19 13:18:17 2010
Subject: FW: M-3 closure criteria
Herb Sutter listened in on the discussion Guy's folks had with BNI on Non-Newtonian tanks (I was

engaged in Tag-up and other discussions). I asked Herb to give his frank opinion from documents BNI forwarded and the discussion whether he believed there was a case to be made that M-3 closure criteria were satisfied. Below is his response.

I also have attached the thoughts that Rob Gilbert and his group identified.

Ken

From: hsutter61@aol.com [mailto:hsutter61@aol.com]
Sent: Wednesday, May 19, 2010 11:27 AM
To: Picha, Kenneth G.
Subject: Re: M-3 closure criteria

Ken,

I think the quote below is BNI's strategy as to how they intend to meet the closure criteria for M3. The quote is not in the version of the M3 IRP (Rev 3) that I have. Note that the strategy hinges on the meaning of "confirmation ready" I think BNI's definition allows more risk than I'm comfortable with. I don't think BNI is there yet.

My reservations include:

1. The strategy for heel removal is still in the early stages and, as far as I know, has not been demonstrated.
2. The idea that simple dilution will allow the removal of a heel that has been built up over time by the deposit of hard to move particles and allowed sit for long periods of time is not demonstrated. The Hanford tank heels have proven to be rock hard and very difficult to remove. Hopefully, the tank heel material will not find its way into WTP, but we don't really know that much about heel formation and properties.
3. I would like to see some evidence that nitric acid will dissolve heel material. Dan Herting of 222-S should have a few ideas about the effectiveness of nitric acid.
4. I am uneasy with assumption that we know how to scale up multi-PJM designs. I'd like to see one large scale test that matches the present 4 ft vessel tests.
5. Neither the LOAM model nor CFD have been validated and verified. BNI presented data yesterday that supports the use of both models, but does not meet V&V standards. BNI is planning some larger scale tests to V&V CFD, but I don't think they will be completed by June. Can we close M3 on the basis of un-V&Vd models?

Reservations 1-3 can probably be dealt with by doing some literature work and some testing on the present test rig. Reservations 4-5 can be closed relatively easily by adding a little scope to the NuVision testing that BNI intends to do. It might not be a bad idea to add some additional scope to the NuVision work to cover reservations 1 and 2 as well.

See comments below in red that answer your question directly.

#79

Herb
Herbert G. Sutter, Ph.D.
910 Laurel Green Drive, NE
North Canton, OH 44720
301-802-7677

-----Original Message-----
From: Pichu, Kenneth G. <Kenneth.Pichu@em.doe.gov>
To: 'hsutter64@aol.com' <hsutter64@aol.com>
Sent: Wed, May 19, 2010 9:14 am
Subject: M-3 closure criteria
Herb,
You provided me the attached document, and although it was OBE with the 8 documents they ended up with, it has a lot of good background information in it, including the closure criteria (and your comment):

If you can go through slides from yesterday and what you heard and determine whether you think these have been met, would appreciate it. If you can't make any determination, would appreciate knowing that, as well.

M3 Closure Criteria from IRP
The current Closure criteria from the M3 IRP are:

1. Vessel mixing requirements are currently documented in 24590-WPT-ES-PET-08-002, "*Determination of Mixing requirements for Pulse Jet Mixed Vessels in the Waste Treatment Plant*". The PJM vessel mixing requirements will be updated following completion of the PJM technology testing and analysis program that is required to support closure of EFRT Issue M-3, Inadequate PJM Mixing. It's taken a while, but I think there is general agreement that the requirements are well understood.

2. An M3 PJM Vessel Mixing Assessment is completed to demonstrate that all PJM mixed vessel are confirmation ready when evaluated against their mixing requirements. This criterion may be closed incrementally by the TSG approval of closure packages for subgroups of PJM mixed vessels. A final determination for all PJM mixed vessels, and its technical basis will be documented in an M3 PJM Vessel Mixing Assessment (24590-WTP-RPT-ENG-08-021-not yet issued) that is concurred in by the WTP Design Authority and Director of the DOE/ORP WTP Engineering Division. Coincident with the completion of the PJM Vessel Mixing Assessment any residual risks will be identified and tracked in accordance with WTP risk management procedures. For the reasons given above, I don't think we are there yet. We are unlikely to get there by June.

3. PJM mixed vessel design and/or operational improvement options, where required, ensuring a confirmation ready design, are identified and evaluated in engineering studies. The engineering studies shall provide specific recommendations for design and/or operational improvement options and be

approved by the WTP Design Authority. A trend, if required, will be approved to implement the recommenced design change(s). Definitely not there yet. I don't think we can be there by June.

4. WTP Contract changes are identified, where required, to support the PJM mixed vessel assessments and basis for BFRT Issue M3 closure. Intent to implement these proposed contract changes is formally tracked by the DOE Contracting Officer, and tracked for implementation in the project action tracking system. I would think that this requires that the feed limitations and operating restrictions BNI is requesting be approved by DOE. I don't see any way this can be accomplished by June, but I'm not sure this has to happen prior to M3 closure.

5. The methods (models, correlations, hand calculations, etc.) to be used to confirm the PJM mixed vessel design, and any additional activities (benchmarking reports, testing, etc) to support design confirmation, are defined by the Design Authority. A trend is approved for work that is not currently identified in the WPT Baseline. This one is tricky. It says that the methods must be defined by BNI. Does DOE have to concur? I don't think the methods can be defined until they are V&Vd. Myler has noted that it may not be possible to V&V CFD to the required degree of reliability. If CFD and LOAM can't be V&Vd, what takes their place? If V&V completion is required, there is no way M3 is closed in June.

#80

From: Ashley, Gregory
Sent: Mon Jun 28 12:07:08 2010
To: French, Robert (WGI); Keuhlen, Phillip; Daniel, Russell; Myler, Craig; Rusinko, Barbara; Edwards, Richard E (WGI); Barnes, Steven M (WGI); Busche, Donna (URS); Duncan, Garth M
Cc: Russo, Frank M (WTP); Gay, William (URS)
Subject: Re: FAR DRAFT - CRESP Review Letter Report on PJM Vessels
Importance: Normal

Bob, agree with your instruction. This is a factual accuracy review only. I see two areas of the letter report that are problematic, but will not fall under the category of factually inaccurate. The first, the report indicates the need for PA inventory control and makes reference to a MUF type program. This is neither appropriate nor possible as described by the report. We will have to deal with this in our response, but not as part of M3 closure. Second, the report seems to treat Dan A's report as if it were a basis document. Do they understand that it is not. I assume that DOE asked for this treatment, but it is peculiar in the context of this report.

From: French, Robert (WGI)
To: Keuhlen, Phillip; Daniel, Russell; Ashley, Gregory; Myler, Craig; Rusinko, Barbara; Edwards, Richard E (WGI); Barnes, Steven M (WGI); Busche, Donna (URS); Duncan, Garth M
Cc: Russo, Frank M (WTP); Gay, William (URS)
Sent: Sat Jun 26 16:37:30 2010
Subject: RE: FAR DRAFT - CRESP Review Letter Report on PJM Vessels

All, please limit your CRESP Report comments to those that are significant AND factually wrong OR fatal (exactly as we have asked DOE for our feedback)..... as the CRESP folks, like us on M3, are stressed for time to complete Final documents.

My two thoughts for this request is also based upon:

1. The CRESP report fundamentally supports BNI closure of M3 by last sentence of their Report Summary (i.e.-conclusion) stating that *"However, none of these uncertainties fundamentally indicate WTP will not function..."* and also as Knutson immediately jumped to in begining of report (and he emphasized to Chilinger in Friday SMIT) *"...uncertainty will remain...until extensive experience is gained through actual operation of WTP."*
2. I do not want to reopen their continued review of issues the are complete so they can look at new or Final issued documents without clear benefit to M3 closure. Re-review for new or updated version of a document at this late juncture is risky..... especially when simply to correct some minor issue in THEIR REPORT ....such as the "out of date" Porch Graph they used being a previous version (especially when their point is likely unchanged or not relevant to M3 closure).

Also if you make significant/fatal issue comment please include just correct excerpt from New or Final documents to send them so they don't get into pursuing new documents as a whole at this late date.

As below, I have asked Phil Kuehlen to collect everyone's comments. Monday late AM Phil, Daniel and I will review them and submit to ORP. We will let you know if we do not submit one of yours (if it is beyond a typo/admin item but does not screen by our above litmus).

Thx

#81

From: French, Robert (WGI)
Sent: Fri Jun 25 01:12:11 2010
To: Russo, Frank M (WTP); Ashley, Gregory; Rusinko, Barbara; Gay, William (URS); Myer, Craig
Subject: CRESP Report Draft Conclusion
Importance: Normal

We just received the DRAFT CRESP Report...my quick check does not show they consider anything fatally flawed (see below Conclusion from exec summary.) It has quite a few recommendations that could be manipulated by someone who wanted to I suppose.
We will complete factually accuracy and interface with ORP/CRESP over weekend.

CRESP Summary and Overall Evaluation

Overall, the Review Team recognizes the substantial progress that DOE and BNI have made in understanding PJM vessel performance since the CRESP Letter Report 6 (December 2009). Furthermore, WTP represents a first of a kind application of PJM vessels because of the vessel size and waste characteristics. There are several important PJM vessel design uncertainties and definitions of operating requirements that remain, including revision of the criticality controls, validation of scale-up relationships for PJM zone of influence, integrated validation of vessel performance, recovery from a DBE, and viable sampling strategies that result in PJM vessel performance and programmatic risks. The greatest risk is that the actual ZOI during WTP operations is smaller than predicted by the current design basis and therefore solids accumulation may require more frequent cleanout than predicted. Experimental programs that validate scaling relationships for the ZOI and the integrated vessel performance at full-scale or near full-scale systems are needed. However, none of these uncertainties fundamentally indicate that WTP will not function provided that there is enough flexibility in PJM operation, although resolution of these issues may result in the prevealment process operating at lower waste throughput rates than currently projected.

Thx
Bob French
M3 Issue Closure Mngr
(509) 420-6267

Gier, Donna

From: David Dickey [d.dickey@mixtech.com]
Sent: Monday, February 21, 2011 3:10 PM
To: Kauhlen, Philip (WGI)
Cc: Etchells Art; Damerow, Frederick (WGI)
Subject: Large Scale Test Vessels
Attachments: _LSIT Vessels.pdf

Phil,

I think that I have developed some good options for large-scale testing. I begin with the assumption that the most effective vessel diameters will be either:
13 ft, which can be shop built, transported, and relatively rapid delivery or
23 ft, which can be CXP-01 modified and reused
Testing in both vessels is recommended

The attached table describes the two test vessels (the heads would be matched to WTP applications):
LSIT-01 (13.ft diameter - 30 ft tall - open top with 2:1 Elliptical bottom head)
LSIT-02 (23'ft diameter - 32 ft tall - top head removed from CXP-01 and F&D (ASME) bottom head) -

LSIT-01 could be used to test the following:
UFP-02 at 0.93 scale with 6 PJMs in the NNV configuration - with 26 sq ft per PJM
FEP-17 at 0.59 scale with 8 PJMs in the NV configuration - with 48 sq ft per PJM
(Area per PJM is a convenient comparison with same nozzle diameter and velocity)
(Smaller areas per PJM represent more mixing intensity)

LSIT-02 could be used to test the following:
HLP-22 at 0.91 scale with 16 PJMs in NV configuration - with 63 sq ft per PJM (larger nozzles - some difference)
HLP-27 at 0.92 scale with 6 PJMs in NNV configuration - with 61 sq ft per PJM

With two test vessels - some tests could be done quickly in either large-scale vessel. The tests could be conducted with the appropriate head shape for the corresponding WTP vessels. Each test vessel could be used for one "full-scale" test at greater than 90% linear scale and one "large-scale" test at about 60% of full scale. Scale-up could be checked from the MCE test vessel.

UFP-02 appears to have a large number of PJMs for the cross-sectional area, but is a tall vessel. The large liquid level needed for UFP-02 and the corresponding LSIT-01 vessel could test level detection and PJM operation at all possible WTP liquid levels. Only LSIT-01 would need to use JPPs and bubblers to control operation. FEP-17 has an intermediate area per PJM.

HLP-22 and HLP-27 appear to have equally large areas per PJM (low mixing intensity), but HLP-22 is the NV configuration and HLP-27 is the NNV configuration. Both of these HLW vessels may be on the edge for adequate solids suspension. Testing of HLP-27 should be conducted at MCE. What were the test results for the LOAM validation?

Optional extra configurations include the following:

LSIT-01 could be used to test (Area per PJM is a convenient comparison with same nozzles and velocity)
UFP-01 at 0.60 scale with 12 PJMs in the NV configuration - with 44 sq ft per PJM
PWD-44 at 0.57 scale with 8 PJMs in the NNV configuration - with 52 sq ft per PJM

LSIT-02 could be used to test
HLP-28 at 0.92 scale with 8 PJMs in NNV configuration - with 72 sq ft per PJM

Demonstration tests with all of these configurations for solids suspension, no accumulation, and successful operation effectively "Confirm" all of the WTP vessel configurations. All of the other vessels either have almost no solids or have higher mixing intensity (less area per PJM) or both.

Dave

David S. Dickey, Ph.D.
MixTech, Inc.
454 Ramsgate Drive
Dayton, OH 45430-2097
Phone: 937-431-1446
Fax: 937-431-1447
d.dickey@mixtech.com
www.mixtech.com

#83

FEB 23, 2011

CC: DAVE DICKEY MIXTECH
PHIL KEUHLEN WTP BECHTEL

TO: FRED DAMEROW – WTP - BECHTEL
FROM: ART ETCHELLS – DUPONT SUSTAINABLE SOLUTIONS – TECHNOLOGY CONSULTING

WTP - COMMENTS ON LSIT OPTIONS DRAFT FOR DISCUSSION 2/10/2011

Here are some of the ideas that came out of reviewing this document and our conference call on Thursday Feb 17. This has turned out to be a more rambling document than I expected and I welcome any further discussion or comments.

MY VIEW POINTS
The mixing systems for several tanks in WTP have been up-graded by increased PJM jet velocity and in some cases additional PJMs. It needs to be demonstrated that these can handle the assumed waste feeds.

It has been shown by extensive testing that the previous designs were quite unlikely to be able to handle such feeds necessitating the design changes. Hence large changes were made.

The question to be answered now is: what are the limits of these systems in terms of physical properties of probable wastes and what to do if an abnormal material gets through.

The non-Newtonian vessels are a special case. They can handle the mixing task at high concentration and rheology. They also have air sparging to give some top to bottom mixing. The question is what happens if they get a very thin batch where the solids can settle out. The Independent Review Team recommended keeping the yield stress of the material entering these tanks above a certain yield stress. However the possibility of going very dilute is significant. I would phrase the question here as being what size and density and concentration particle can the current design handle when the system is very dilute and then what is the mitigating strategy e.g. heel removal.

The need for larger scale operation is primarily driven by the fact that simulants have been used to develop the mixing system and that the real waste will have highly variable properties. In commercial operations a common guideline is that if you are using real materials then the scale up from small scale to large can be tricky but is commonplace. This is particularly true of systems driven by chemical changes. If simulants are used then larger scale testing is often used. This is sometimes driven by cost reasons but also based on technology considerations.

LOAM

The decision on NNV should be based on testing on not just LOAM which is an un-validated method that I have strong doubts about. Fluid mixing is often dominated by geometry effects. Experiments are required to determine the effect of the multitude of geometries possible. I question a process that neglects these geometry effects some of which can be significant while others can be neglected. Which are which can usually only be learned from testing.

LESSONS LEARNED

The company Independent Project Analysis (IPA) is used by many process companies to review projects and they have developed criteria for when projects are successful and when they are not. They presented a seminar at the Orlando Workshop several years ago. They would certainly endorse the need for integrated testing and the use of prototypic control and measuring systems particularly where raw solids are involved. Full scale testing is not common in the process industries because that would be the ultimate plant. Thus integrated pilot plants are usually much smaller. IPA comes down hard on innovative un-demonstrated processes which fail about one half the time. PJMs certainly fit their definition of an innovative process.

ADDITIONAL CONSIDERATIONS

The conclusion that "open risks" are "throughput" related does not make sense. If a vessel fails to pick up and transfer particulates, then reducing the throughput will not help. I agree with DNFSB that "functional capability" would have been the problem if the up grading had not been done.

REDUCED CONCENTRATION AS A WAY TO HANDLE PROBLEMS.

The PNNL tests and other work on solids suspension show that at a given energy level there is a trade off between concentration and particle size and density. In other words a particle that can not be suspended at 15% concentration may be suspended at 10% concentration. This suggests that if solids get into one of the vessels that can not be suspended and removed at the existing concentration may be removed at a lower concentration OR "Dilution is the Solution". Running at low levels with a dilute liquid may be the best method of heel removal and should be demonstrated at several scales. It is quite possible that the last batch from a given transfer from the tank farm will be dilute and may serve the purpose. Again testing is needed at some or several scales.

#83

TANKS AND CONFIGURATION

I support the proposal for two large test vessels made by David Dickey's email of 2/21/2011. This seems to offer lots of testing opportunities at scale ratios of 0.6 and 0.9 as he shows. In addition many of the questions of trade off between concentration and particle properties would be best answered on a smaller scale and with transparent tanks. Once the relationships are developed then they can be demonstrated in large scale testing. Tank 22 because of its critical nature as the doorway to WTP must be tested.

MEASURMENT OF PERFORMANCE

My chief concern on any demonstration is how to measure what has been done. This will be particularly difficult with a stimulant with mixed particle sizes and densities. I would propose a small task force probably with membership from PNNL to investigate new instrumental methods of analyzing solids samples. My contacts in academia suggest that many new instruments have been developed for measuring properties of solids mixtures. I would recommend they talk to Professor Fernando Muzzio of Rutgers University in New Jersey. He would need to be used as a paid consultant.

#84

Sent:
To: Russo, Frank M (WTP); French, Robert (WGI)
Cc: Heaston, Suzanne
Subject: RE: June 30 email, not report
Importance: Normal
Attachments: PNNL_Input_to_WTP_vulnerabilities.6-30-10 prb.doc

Frank, the email string shows Terry Walton sent to you July 6, but attached file is called "PNNL Input to WTP vulnerabilities 6-30-10 prb.doc" Other comments noted below.

Greg Ashley, P.E.
WTP Technical Director
(509) 371-3418
(509) 420-3394 cell
(509) 371-3506 fax
gashley@bechtel.com

From: Russo, Frank M (WTP)
Sent: Wednesday, August 18, 2010 6:00 PM
To: French, Robert (WGI); Ashley, Gregory
Cc: Heaston, Suzanne
Subject: Re: June 30 email, not report

Comment is that I got email 6/30. Need to confirm. July date is new to me. Also, I solicited PNNL re engagement in in the project. I wanted and continue to want PNNL branded input to our technical opportunities. Greg.....pile on.

From: French, Robert (WGI)
To: Ashley, Gregory; Russo, Frank M (WTP)
Cc: Heaston, Suzanne
Sent: Wed Aug 18 20:44:43 2010
Subject: RE: June 30 email, not report

Greg and Frank
Can you concur with this feedback to Suzanne for her use with WCM reporter:
The PNNL WTP Vulnerabilities Whitepaper was received by the project on July 6, 2010 as an attachment to an email sent from the PNNL Director of Energy and Environmental Programs, Energy & Environment Directorate to the BNI Project Director.
The whitepaper was generated in response to the BNI Project Director's June 17, 2010 request to PNNL for input regarding any potential technical vulnerabilities they perceived with the WTP Mixing Systems. This request was made as a normal project management overcheck and was not intended or expected to be a technical input supporting the issuance of the M3 Vessel Assessments or Closure

#84

Packages.
The PNNL email characterized the PNNL whitepaper feedback as summary information and further acknowledged that the PNNL staff was not intimately aware of all actions WTP had taken or that were in-process to address the listed vulnerability items. All the PNNL vulnerability items provided were promptly evaluated using established WTP processes. This evaluation determined that each item was either previously resolved or was duplicate of or bounded by an existing WTP action item. Several of these vulnerability items remain open with their resolutions in progress.
Thx
Bob French
M3 Issue Closure
420-6267

From: Heaston, Suzanne
Sent: Wednesday, August 18, 2010 1:54 PM
To: French, Robert (WGI)
Subject: June 30 email, not report

Bob, I left you a message regarding this on your cell phone. We just learned that the reporter has a June 30 email, not a report. Please contact me to discuss.

Suzanne Heaston
Communications Manager
Bechtel | 509.371.2829 | 509.539.7765
smheaston@bechtel.com

Technical Concerns related to the WTP Plant

At the highest level, PNNL believes the vulnerabilities to the current Waste Treatment Plant design and operating plans are as follows:

Mixing Systems: The recent Newtonian vessel phase 2 testing has resulted in modified vessel mixing designs and operating conditions for mixing that "just meets" the minimum tank performance requirements. While solids uniformity is not necessary, the current designs allow solids to remain on the bottom during normal operations and allow solids stratification resulting in high concentrations near the bottom of the vessels and the pump suction lines. This will impact the ability to obtain representative samples and increase solids concentrations in the transfer lines. Given the considerable uncertainties in the properties of the waste feeds, mixing data, and scale-up, the lack of a significant design margin is a vulnerability that could lead to inadequate mixing and line plugging.

Solids Transport and Pumping: The pumps and transfer lines are likely to experience solids deposition and could potentially plug, especially given the stratified layers of solids that are expected in some of the vessels. Suction side priming failures due to inadequate net positive suction head (NPSH) and pipe plugging are also an increased risk at higher solids concentrations given the long suction line lengths.

Plant Processes: The many recent changes to the pretreatment process based on lessons learned from PEP testing, M3, and M6 have significantly impacted the flow sheet of the WTP and are likely to negatively impact the flow rates, plant operations and the resulting product out of the WTP. The complicated control scheme to avoid precipitation in the filtrates has not been demonstrated and was not part of the PEP testing. The caustic leaching temperature has been reduced to address vessel corrosion concerns but this, combined with efforts to limit caustic additions to control precipitation, may limit the amount of Boehmite that can be leached and will lead to a significant increase in the number of HLW canisters produced.

Gas Retention and Release: The information currently available to determine the gas retention of Hanford Tank Wastes in the PJM vessels may not be sufficient. The risk is that actual rheological conditions of materials being sent to the WTP from tank farms might not mix in the receipt vessels and would build to strengths and thicknesses that could not be handled in the design basis event.

Additional details of each of these vulnerabilities or concerns are provided in the following pages.

#84

Mixing Vessel Concerns (M3)

- Phase 1 of the Newtonian vessel testing (WTP-RPT-182 *Pulse Jet Mixing Tests with Noncohesive Solids*) that examined the Newtonian vessels, provided examples showing that vessels FRP-02A/B/C/D, HLP-22, PWD-15/16, PWD-33, PWD-44, TCP-01 and UFP-01A/B were substantially under-powered and would not provide bottom clearing using the September 2007 designs. Vessels FEP-17 A/B and TLP-09 A/B were shown as marginal.

- Phase 2 testing conducted at Mid-Columbia Engineering's Facilities modified the vessel designs and operating conditions (solids concentrations, nozzle velocities, number of PJMs, bottom clearing sequence) for HLP-22, UFP-01, FEP-17 and FRP-02 with the goal of showing the minimum tank requirements for bottom material movement, post-design basis event (DBE) restart, and non-accumulation of solids during pump out could be achieved. The changes to the mixing systems in the vessels appear to "just meet" the minimum tank mixing requirements during the testing. This "Razor's Edge" approach means that any small change in a key testing element could result in a vessel that does not work at full scale in the plant. Engineering choices during the phase 2 testing that cause significant concern (due to designing on the "Razor's Edge") are:

  - The simulants used in the testing are not sufficiently bounding of the tank waste properties that are currently documented for the Hanford Waste Tanks (WTP-RPT-153 *Estimate of Hanford Waste Insoluble Solid Particle Size and Density Distribution*, WTP-RPT-154 *Estimate of Hanford Waste Rheology and Settling Behavior*, and WTP-RPT-177 *An Approach to Understanding Cohesive Slurry Settling, Mobilization, and Hydrogen Gas Retention in Pulsed Jet Mixed Vessels*).

  - The Plutonium oxide simulant particle use in phase 2 testing for HLP-22 and FEP-17 was sized to be 10 micron (using a 12 micron sieve cut) where in actual waste images, 4 of the 18 Pu particle photos (WTP-RPT-153) displayed particles that were over 10 microns (with one being a 23 micron sphere).

  - The design basis event (DBE) simulant formulation required a layer of solids at a concentration of ≈ 67% solids concentration to achieve the "reasonable minimum upper bound" of 200 Pa shear strength within 24 hours. This simulant did not exhibit cohesive properties which is different from many of the actual waste sludge materials which do exhibit cohesive behavior. The non-cohesive simulant means the post-DBE simulant is expected to behave differently in mixing and mobilization tests than highly cohesive simulant (WTP/RPP-MOA-PNNL-00494 *Recipes for Simulant Strengths*).[1]

  - The phase 2 of the Newtonian testing program established the nozzle velocities for Pulse Jet Mixers (PJM) by using scaling factors to adjust from the test vessel size to the full vessel diameter in the WTP. The scaling factor used for the zone of influence bottom movement tests was based on the Porch (1967) work that conducted testing under significantly different conditions. The use of the Porch scaling factor resulted in much higher PJM velocities in the test tank than had been recommended in the Phase 1 (WTP-RPT-182). Recent analysis by PNNL for potential non-Newtonian tank testing for WTP (WTP/RPP-MOA-PNNL-00507) have identified significant technical weaknesses in using Porch (1967) based scaling factors for the testing conditions being used at the MCE test facility.

  - The transfer/sampling system used at MCE's test facility is not geometrically scaled and functionally prototypic. The technical basis (or even the sampling bias) for using the system to

collect data (that prove that solids do not accumulate during vessel pump-outs) has not been developed. The scaling of the transfer system and the related concerns are in WTP/RPP-MOA-PNNL-00507 (*Test Considerations for the Potential Engineering Scale HLP-27 Test*).

- The mixing systems in the non-Newtonian vessels were developed with some design margin but testing was directed at what was thought at the time to be the most challenging mixing requirement: that is the mixing of non-Newtonian slurries with rheological properties at the expected upper bound. Recently some concern has been raised by others that the vessels may at times contain slurries that exhibit Newtonian rheology. Limited data was obtained in the non-Newtonian test program with glass beads in water to assess the solids suspension capabilities of the mixing systems in the non-Newtonian vessels. It is unclear at this time if this data set is sufficient to form a design basis for the non-Newtonian vessels.

- PJM Technology: There has been a fundamental misperception about the maturity of PJM technology. This is new technology which is unproven for applications involving significant amounts of solids. This combination of new technology and solids was noted as particularly challenging at a work shop on Slurry Retrieval, Pipeline Transport & Plugging and Mixing.[2]

Solids Transport and Pumping (M1)

- Technical Issues Related to Post Pump Lines

  - To the best of our knowledge, results of the M-1 Pipe line plugging studies (WTP-RPT-175 *Deposition Velocities of Newtonian and Non-Newtonian Slurries in Pipelines*, WTP-RPT-178 *A Qualitative Investigation of Deposition Velocities of a Non-Newtonian Slurry in Complex Pipeline Geometries*, and WTP-RPT-189 *Deposition Velocities of Non-Newtonian Slurries in Pipelines: Complex Simulant Testing)* have not been incorporated into the WTP plant design guide. Given the Hanford Tank Wastes and the WTP plant processes, the design guide must be robust enough to consider both the Newtonian and Non-Newtonian material transport challenges. Also the 30% factor in the design guide is not an engineering margin but a factor to cover the data scatter related to the correlation so the inclusion on additional margins would be needed to be conservative.

  - PNNL is unaware of a design guide (as of February 2010) for pumping of Non-Newtonian materials. Use of the Newtonian design guide will under predict critical suspension velocities for slurries carrying dense particles,

  - The stability map developed inWTP-RPT-175, identified the three boundary conditions (Laminar, Transitional and Turbulent Critical) that must be evaluated for each transport pipe to assure transport of the wastes do not result in partial or total (plugging) deposition. We do not believe the three part evaluation has been added to the design guide. Depending on the planned pumping mode, pipe lines from vessels FPR-02A, FBP-17A to B, Process drains for HLP-22 and FRP systems, HLP-22 transfer pump 21, and the transfer pump 17 for HLP-27 and HLP-28 all have actual velocities of below 4 feet per second as of the February 2010 design.[3] The results documented in WTP-RPT-175 highlight the need to reevaluate these and other lines looking at all three boundary conditions. Given the nature of the materials being transported, the analyses are important to reduce the risk of pipe plugging.

  - The Bismuth Phosphate wastes have shown that they can gel (WTP-RPT-166 in the CUF Run), Crystallize (with significant temperature changes) and precipitate when exposed to high sodium levels. Wastes containing relatively high concentrations of phosphate have the potential to plug lines and disrupt the mixing process. Laboratory tests with actual waste samples show that these wastes settled rapidly (≈ 1 hr). Shear strength measurements indicate that the shear strength after 72 hours could range as high as 1500 Pa (WTP-RPT-167, Characterization and Leach Testing for PUREX Cladding Waste Sludge (group 3) and REDOX Cladding Waste Sludge (Group 4) Actual Waste Sample Composites) which is well above the 200 Pa shear strength targeted in recent Phase 2 mixing tests.

- Technical Issues Related to Suction Lines (M1)

  - High concentrations of solids in the suction lines cause much higher line losses (several times those provided in WTP-RPT-189) than are incorporated in the current design guide. This problem has increased as the need to fully mix the high concentration waste receipt vessels has been removed and much higher suction pipe input concentrations are now expected. The long suction pipe lengths make this problem critical.

  - The slow suction line velocities (resulting from the high line pressure loss) are expected to cause

Inline deposition of high concentration materials.

- The design of positive displacement or Moyno® progressing cavity pumps on long suction lines with high line loses must evaluate the pressure at key points in the suction pipe. With the receipt vessels being at atmospheric pressure (~30 inches Hg), a pressure drop in the suction pipe to 2 inches Hg (or lower including vacuum) will allow the slurry to boil at plant temperatures (~80 degrees F). The creation of vapor in the suction lines has long been identified in slurry handbooks as the point where positive displacement pumps may not prime. If vacuum conditions are developed anywhere along the pipe, piping must be designed to handle the vacuum.[4]

- Air entrainment at the pump inlet was observed at the PEP ultrafiltration loop at levels that limited pump performance (WTP-RPT-197 *Pretreatment Engineering Platform Phase I Final Test Report*). The entrained air degraded the ability of the pumps to meet the flow requirements.

Plant Processes Concerns (MG/M12)

- Post Filtration Precipitation – WTP has proposed a revised flow sheet to deal with the potential for post filtration precipitation. This new flow sheet relies upon a complicated control scheme to maintain the solutions below the solubility limit. In addition, temperature control at elevated temperatures (the objective is to increase the solubility) is a significant part of this control scheme. This control scheme has not been demonstrated and was not part of the pilot scale PEP demonstration. There is a significant risk that this control scheme won't work or will be too complicated to allow a reasonable production rate.

- Ion Exchange operating Temperature – As part of the above temperature control, the WTP has increased the cesium ion exchange temperature from 25 C to 45 C. Testing at ORNL has suggested that the resin may not have sufficient stability at 45 C. Testing is currently planned at PNNL to assess this impact, however there is a significant chance that these test results will challenge the design basis for the ion exchange system.

- Leaching Performance – Due to vessel corrosion concerns, the leaching temperature is limited to 85 C for the caustic leaching process. At this temperature, the leaching of the Al in the mineral phase of boehmite will be significantly limited. Boehmite leaching has a relatively large activation energy (~ 120 kJ/mole) and as such is very temperature sensitive. Limiting the temperature to 85 C will significantly limit the quantity of boehmite that can be leached. This is compounded by the recent changes for post filtration control which aim to limit the quantity of caustic used. This limitation in caustic will also significantly impact the quantity of boehmite that can be leached. Taken together, these two changes may severely limit the leaching of boehmite – which represents up to 50% of the leachable aluminum in the tank farms. This will result in a significant increase in the number of HLW canisters produced with the resulting increase in plant operating time.

- Precipitation in Permeate (i.e. filtrate) Streams from Ultrafilters - Many permeates have been found to precipitate solids following the ultrafiltration process (WTP-RPT-197 and WTP-RPT-200 Rev 1, *PEP Support: Laboratory Scale Leaching and Permeate Stability Tests*). The solids are mainly (but not limited to) sodium oxalate and sodium phosphate. These precipitates cannot be sent forward in the process to ion exchange since the ion exchange columns will plug. The precipitates are either recycled back to the head end of the pretreatment process or dissolved with additional water. In either case the efficiency of the pretreatment process is impacted.

- Process Control – The WTP will also rely upon a process control scheme that includes very limited sampling after waste has left the feed tanks. This lack of process control input will lead to a very conservative approach to process operations. In particular, the control of process rheology will be a significant challenge. Small variation in process performance can produce significant swings in process stream rheology. The proposed rheology control strategy has not been demonstrated and was not part of the PEP demonstration.

- Process Stream Recycle - The WTP process involves a significant number of recycle streams that have the potential to recycle problem components. Known problem components include: Technetium (Tc), oxalate and glass forming chemicals. These components may buildup in the recycle streams causing various process difficulties.

  - Some of the Tc is volatilized in the melters (both LAW and HLW) into the melter off-gas systems. The off-gas streams are scrubbed to remove the Tc (and other components) which is recycled back to the pretreatment facility. Since both melters volatilize the Tc, the Tc will buildup in the process system. Glass forming chemicals that are recycled may form insoluble sodium alumino silicates in the evaporators in the pretreatment facility. This is an issue that has occurred at SRS as part of the DWPF processing. Sodium oxalate is sparingly soluble and precipitates in the filtrates from the ultrafiltration process. If the precipitates are not dissolved with excess water they are recycled back to the head end of the pretreatment process.

- Systems Engineering Update needed - Potential system impacts of changing processes and equipment indicate that a complete systems engineering review is needed to ensure integrated performance and to compare projected performance to processing requirements.

  - For example, in response to the identification of a caustic corrosion issue, the leaching temperature has been dropped from 100 °C to 85 °C. This impacts the rate at which Boehmite is leached. To offset the lower leach temperature, the processing time can be extended, more caustic can be added or a lower extent of leaching can be accepted (potentially increasing the amount of HLW produced). Another example is the proposed lower rheological operating limit of 6 Pa for yield stress (raised from 1 Pa) in the UFP-2 vessels. This increased limit is being considered to address an uncertainty associated with mixing of settling solids in the "Non Newtonian" vessels and may be achieved by operating at a higher solids concentration limit. This will impact the leaching, washing and filtration operations in the UFP-2 vessel.

Gas Retention Concerns (M3)

- There are significant uncertainties associated with a lack of quantitative results for PJM mobilization of settling cohesive slurries, and other uncertainties are associated with a lack of information for waste properties needed for quantifying PJM performance and gas retention. (See WTP-RPT-177 *An Approach to Understanding Cohesive Slurry Settling, Mobilization, and Hydrogen Gas Retention in Pulsed Jet Mixed Vessels.*) The vulnerability that results from these uncertainties is that the PJMs have not been shown to have adequate performance with cohesive solids which could lead to buildup of cohesive solids in the bottom of the vessels that could retain up to 20-30% flammable retained gas.

  - The first category is Technical Uncertainties for PJM Behavior with Settling Slurries

- There is a scarcity of testing data for PJM performance on settled or stratified cohesive layers, and it is unclear if the existing correlations developed for vessels without layers can be used for settling waste. While the previous studies on PJM mixing of uniform non-Newtonian materials quantified many aspects of the PJM performance, data to quantify the roles of important operational parameters (jet velocity, pulse size, and duty cycle) and geometry (number of PJM tubes, nozzle size, bottom shape) are absent.

  - The second category is Technical Uncertainties for Waste Characterization.

- The most significant uncertainty is that the existing models and data on settling dynamics and the strength of settled layers have not included experimental testing to confirm the scaling behavior or to determine the increasing strength with depth into a settled layer. It is expected that a sound understanding of settling dynamics will be needed to design, or to determine the operating limits of, a mixing system capable of managing the strength and thickness of settled layers.

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[1] It was noted by the DNFSB (J Mansfield to I Triay, January 6, 2010, attachment 1) that simulants with bounding cohesive properties are likely to be more difficult to suspend than noncohesive simulants.

[2] Presentation by Dr. David A. Gottschlich, Independent Project Analysis, Inc., Titled *New Technology and Solids: A difficult Combination*, January 17, 2008 in Appendix A.4 of Smith et al, July 2009, Slurry Retrieval, Pipeline Transport & Plugging and Mixing Workshop, PNNL-18751.

[3] A key message from a work shop sponsored by the US Department of Energy's Office of Engineering and Technology Office of Environmental Management was that laminar-flow regimes should be avoided in the design of slurry pipelines (Smith et al, Slurry Retrieval, Pipeline Transport & Plugging and Mixing Workshop, Vol 1, July 2009, PNNL-18751)

[4] A concern with the available net positive suction head (NPSH) was also noted by the DNFSB (J Mansfield to I Triay, January 6, 2010, attachment 4).

#85

From: Monahan, Jeffrey
Sent: Thu Jul 01 13:21:17 2010
To: Daniel, Russell
Cc: Ashley, Gregory
Subject: Report from independent review team.
Importance: Normal

Russell,
Do you have a copy of the outbrief from the SRNL evaluation of non newtonian mixing? Heel removal for non-newtonian vessels was one of the LOIs.
From the feedback I got, they indicated it was not a good idea to add the secondary line.
Jeff Monahan
PTF APEM
Phone: (509) 371-3133
Cell: (509) 539-3488
MPF C103

ISSUES #20, 21, AND 22 HAVE NO SEPARATE ATTACHMENTS

ISSUE # 23

"DOE'S RESPONSE TO 2011-1"

Attachment-

- 86: B.K. Rao's June 9, 2011, letter titled "Ethics, Compliance with Regulatory Agencies, Technical Competence, and Coercion" to many WTP project personnel and others including Dr. Chu. First page only.

From: Bhamidipaty, Kameswara (Bk Rao)
Sent: Thursday, June 09, 2011 3:46 PM
To: Isern, Eric B; Hoffmann, Mark W (WTP); Erlandson, Bradley; Cirn, Barry (URS); Stevens, Robert; Voke, Robert; Patterson, Thomas; Mildon, Dan; Kretzschmar, Stuart; Moretta, Angelo A; Hanson, Robert L; Stanley, Patrick (WTP)(URS); Holgado, Paquito (Frank); Vanhall, Brian; Rajagopalan, Prabhu; Pinto, Pat; Peters, Richard D (WTP); Carl, Daniel (URS); Papp, Ivan; Sweeney, Sean M; Reinemann, David; Dubiel, Barbara (URS); Griswold, Lincoln

Cc: 'The.Secretary@hq.doe.gov'; 'gary_e_brunson@orp.doe.gov'; 'ighotline@hq.doe.gov'; 'ted.sturdevant@ecy.wa.gov'; 'jhed461@ecy.wa.gov'; 'emailago@atg.wa.gov'; 'engineers@dol.wa.gov'; 'RICKS@DNFSB.GOV'; Russo, Frank M (WTP); 'bk_rao@hotmail.com'

Subject: ETHICS, COMPLIANCE WITH REGULATORY AGENCIES, TECHNICAL COMPETENCE and COERCION

Request: If any of the names in the body of this e-mail are not spelled correctly, it is NOT intentional. Just that I am not familiar with many proper names.

SECTION 1. begis here

Attention: Y. Nurdogan, P. E. Stanley, P. S. Holgado, R. Hanson, B. P. VanHall, P. Rajagopalan, A. Moretta, P. Pinto, R. L. Hanson, L. Han, S. Kretzschmar, R. Stevens, D. Mildon, S. M. Sweeney

ATTACHMENT #87

Webpage: www.allgov.com/Official/Triay_Ines

#87

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Official

Name: Triay, Inés
Current position: Assistant Secretary

Office of Environmental Management

When Barack Obama selected Inés R. Triay for the position of Assistant Secretary for Environmental Management (OEM), he decided that her qualifications as a 24-year veteran of the Energy Department, including her oversight of a key nuclear waste disposal plant, trumped any concerns about her political contributions to former President George W. Bush. She took over the leadership of the Office of Environmental Management (OEM) in May 2009 after leading it in an acting capacity since November 2008. Triay is in charge of the US government's primary cleanup operation of nuclear waste, which involves more than 100 sites located across the United States.

Born in Cuba and raised in Puerto Rico, Triay, 51, came to the United States when she was three years old. She received her bachelor's degree in chemistry, magna cum laude, and her PhD in physical chemistry from the University of Miami in Florida. Beginning in 1985, she conducted her post-doctoral studies in the Isotope and Nuclear Chemistry Division at Los Alamos National Laboratory, one of the nation's leading scientific research centers for weapons development and other technologies.

She stayed on at Los Alamos for the next 14 years, holding several key positions, including Los Alamos' environmental representative to the Air Force at the Pentagon, as a recruiter for the laboratory, and as leader of the Isotope and Environmental Geochemistry Group. In 1994, she was put in charge of Los Alamos' Environmental Science and Waste Technology Group, and from October 1997 to January 1998, she served as acting deputy director of the Chemical Science and Technology Division.

In April 1999, Energy Secretary Bill Richardson named Triay manager of the Energy Department's Carlsbad Field Office in New Mexico. Her duties included overseeing the Waste Isolation Pilot Plant (WIPP), the nation's only deep geologic repository for the disposal of transuranic waste. (Transuranic elements, most notably plutonium, have atomic numbers higher than uranium, and they are radioactive. Transuranic waste is generally contaminated during the production of nuclear weapons.) During her tenure, the number of transuranic waste shipments to the plant increased from one or two per week to 25 per week.

However, in October 2003, it was revealed that 98 drums of nuclear waste arriving at the WIPP had not been properly inspected. Later that month Triay announced her resignation from the department and said that she would start her own company "in the area of homeland security." In fact, she did not actually leave until January 2004, by which time no company had been started and instead she was in Washington, DC, working for OEM as deputy chief operations officer. She was later promoted to chief operations officer in 2005. During her tenure in those positions, OEM completed the cleanup of the Rocky Flats nuclear weapons site in Colorado and the Fernald uranium processing plant in Ohio. She also played an instrumental role in the commencement of remote-handled transuranic waste disposal operations at the WIPP in New Mexico.

In October 2007, Triay was named Principal Deputy Assistant Secretary for OEM, the top civil service position for the office. She became acting Assistant Secretary for Environmental Management in November 2008.

Triay is a member of numerous professional organizations and has produced more than 150 articles, papers, reports, and presentations for professional conferences and workshops, as well as major trade publications.

Since 2001, she has made $3,500 in political contributions, all to two Republicans- George W. Bush ($2,000) and New Mexico Senator Pete Domenici ($1,500), according to OpenSecrets.org.

Department of Energy Biography
Energy Secretary Announces Intent to Name Inés Triay as Carlsbad Area Office Manager (Los Alamos National Laboratory press release)

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Record Obama Fundraising Hides Its Grassroots Support

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Created by David Wallechinsky
Developed by Cultura Interactive

THIS IS THE FINAL PAGE OF THE PDF WITH THE ATTACHMENTS TO DR. WALTER L. TAMOSAITIS' JUNE 19,2011, LETTER TO ANDREW THIBADEAU TITLED: ***COMMENTS ON THE WTP CULTURAL ISSUES, RESPONSES, AND RECOMMENDATION.***