

Crossland, Ronnie

From: Coleman, Sam
Sent: Tuesday, March 10, 2015 3:31 PM
To: Edlund, Carl; Crossland, Ronnie; Maddox, Doug; Fruitwala, Kishor
Subject: FW: Camp Minden Dialogue Meeting

Samuel Coleman, P.E.
Deputy Regional Administrator
Region 6
coleman.sam@epa.gov
214.665.2100 Ofc
214.665.3110 Direct
214.789.2016 Cell
Sent from my Windows Phone

From: [Frances Kelley](#)
Sent: 3/10/2015 3:12 PM
To: [Coleman, Sam](#)
Cc: [Kristi Celico](#); [rebecca.shelley](#); [sheilaherren49](#); (b) (6); [nettag](#); [hagaron](#); [Dolores Blalock](#); [marylee](#); [reynoldsg@legis.la.gov](#); [greynolds@legis.la.gov](#); [Tommy Davis](#); [wpittman](#); [Rick Broussard](#); [gary carter](#); [steven.jackson](#); [bonsallim](#); [gsexton](#); [websterohsep](#); [isnellgrove](#); [gbarattini](#); [jwhittington](#); [David Faulk](#); [Salvatore, Brian](#); [flournoyphd](#); (b) (6); [Mickey Walsh](#); [slawolom](#); [Ruiz, Thomas](#); [Kristina.s.curley2.civ@mail.mil](#); [Karen Geesey Price \(DEQ\)](#); [June.Sutherland@la.gov](#); [Stuckey, Ronnie D NFG NG LAARNG \(US\)](#); [lawhite@tulane.edu](#); [dianne.dugas@la.gov](#); [jennifer.reynolds](#); [McKinney, Jason](#); [Gray, David](#); [R6 Camp Minden](#); [doug@forumfg.com](#); [Wang, Jonathan](#)
Subject: Re: Camp Minden Dialogue Meeting

Additional information from General Atomics. We sent 3 rounds of additional questions (besides the ones from Thursday) to GA over the weekend; I've compiled all the questions and answers we got back below:

How much of that water could be reused?

We have determined that water recycling can be implemented using filtering (if required) and reverse osmosis (RO). This will allow for 90% to 95% recycling of the water (considerable water savings). An effluent storage tank would be used along with instruments to show that the liquid water is cleared to be recycled back into the iSCWO systems. These systems would be supplied as part of the systems and would utilized if required.

Once filtered, the water can be used as a supply for the M6 slurry system.

1. We need the byproducts data for destroying the M6 in the SCWO. I know you have tested propellants in the SCWO but have you actually done M6 and what are the byproducts?

The iSCWO process will generate liquid and gaseous effluent. The liquid effluent will contain water with a small amount of metal oxides (if any) and salts. The metal oxide species will be determined by the metal contaminants contained in the M6 propellant and also in the water supply at Camp Minden and the salts will be mostly potassium sulfate but will also depend on the salts present in the water supply at Camp Minden. The gaseous effluent will consist of CO₂, N₂, O₂, water (steam) and very low levels of NO_x (less than 10ppm).

We have done M6 and other propellants - 1000 hours of testing. The SCWO demonstrated greater than 6

9's of destruction (SCWO is great for organic destruction).

2. If you have not done M6 would it be possible to run some through your test unit?

We are not allowed to bring any type of energetics at our facility located in San Diego. We could, however, find a simulant and run it through - but it might take some time to find something and actually run the test.

3. Dr. Hong said today that a Reverse Osmosis unit could be used to filter the SCWO water before reusing it. Do you already have a unit for that or would one have to be purchased?

We have been looking into various systems from GE and other companies - we can use an off-the-shelf unit to operate iSCWO for recycling the water.

4. Will NOX be produced as part of the steam stream and if so, will it have to be scrubbed?

NOx emissions are typically encountered during startup (30 mins) and shutdown (10 mins). During steady state, NOx is usually below the detection limit so no need for a scrubber. Our past iSCWO systems have never encountered any NOx problems and have never required a scrubber.

How is the grinding of the M6 done underwater? Is it an automated process and how far away are the workers? There are concerns about the safety of this; can you speak to how you would do the grinding process safely.

The grinder is full of water and is continuously flushed with water to reduce the potential for ignition during the grinding process. This technology has been used in plants in the US and in Germany for the processing of propellants. Makeup water is supplied with a recirculation pump at a rate sufficient to maintain continuous overflow from the grinder to the slurry tank.

Yes, the boxes of propellant would be loaded on a roller conveyor. The roller conveyor will pass through a large metallic door in which the operations are inside protected room with shields. Once loaded, the system is in automatic mode - the box is moved through the doors to inside the protected room with shields. The system will lift the box, slowly discharge the contents into a water filled vibratory conveyor and feed the water and the M6 into the grinding system which will be pumped into the iSCWO system.

GA has HAZOP reports that has analyzed propellant slurry feed systems. The system has been designed with the data from aqueous propellant slurry systems by the US Government. GA studies include the safety hazard classification of water-wet explosives and SMS-0695 R2 simulation test report.

GA has designs for the slurry feed system - once the applied integrated approach has been selected, GA would perform a M6 Camp Minden HAZOP to identify the hazards and methods to minimize the risk and/or consequences.

The slurry feed system would use pumps specially designed to continuously pump slurry mixtures. These pumps are off-the-shelf units that we have used in past projects. We would install mixing

tanks with recirculation loops and tank mixers to ensure that the propellant stays well mixed in a homogenous solution. This is not technology that has to be discovered or invented; this is technology that is readily available.

What is the percentage of m6 in the slurry that you can do? (what percentage did you base the timeline in your presentation on and is it possible that it could be higher and the throughput could be quicker?)

Most likely it is 20% by weight. timeline was based on 20% by weight - it is possible that the system could go a littler higher - this would have to be explored during operations.

How many 3 gpm units do you have already built and how quickly can they be brought to Camp Minden.

One at Camp Minden.

One at GA - would have to be shipped from San Diego to Camp Minden.

One in Utah - would have to be shipped from Utah to Camp Minden.

The 10gpm is located at MCAAP.

Shipping the units would take about 15 days - packaging, prep, shipping, unload, and install.

Would the Reverse Osmosis unit slow down the process?

No, it would not slow down the process- we have determined that the water can be recycled - 90% to 95% - considerable water savings.

The iSCWO units will run independently of the filtration system. The recycled water will be used by the slurry feed system (water supply).

Dr. Hong said that up to 90% of the water could be re-used through the SCWO system if we used reverse osmosis; do you think that is true?

Yes, we do - maybe even more than 90%.

How quickly do the gases come out when the water is depressurized? Can you monitor for VOCs in the gases?

How often have you had to use a NOX scrubber on the gases?

The residence time of gases existing the chemical reactor to the GLS stack is approximate 2 minutes. Additional analyzers can easily be added to the system to monitor gas emissions. Commercial gas analyzers are available that can analyze for approximately 20 different species of volatile organic compounds.

We have not had to add scrubber to previous iSCWO tests or applications in order to meet NOx discharge limits.

On Tue, Mar 10, 2015 at 3:08 PM, Coleman, Sam <Coleman.Sam@epa.gov> wrote:
Concerning the SCWO in KY.

I spoke to Scott Gordon in the EPA Reg 4 Office about this facility. A link to the Army site is
<http://www.peoacwa.army.mil/>

Scott also told me that the pilot tests went well. He said that the full scale is under construction with a completion date of next year. The facility is designed for demilitarization of Chemical Weapons.

Samuel Coleman, P.E.
Deputy Regional Administrator
Region 6
coleman.sam@epa.gov
[214.665.2100](tel:214.665.2100) Ofc
[214.665.3110](tel:214.665.3110) Direct
[214.789.2016](tel:214.789.2016) Cell
Sent from my Windows Phone

From: [Kristi Celico](#)
Sent: 3/10/2015 11:44 AM
To: [rebecca.shelley](#); [sheilaherren49](#) (b) (6); [hetttag](#); [hagaron](#); [Dolores Blalock](#); [Frances Kelley](#); [marylee](#); [reynoldsg@legis.la.gov](#); [greynolds@legis.la.gov](#); [Tommy Davis](#); [wpittman](#); [Rick Broussard](#); [gary carter](#); [steven.jackson](#); [bonsalljm](#); [gsexton](#); [websterohsep](#); [isnellgrove](#); [gbarattini](#); [jwhittington](#); [David Faulk](#); [Salvatore, Brian](#); [flournoyphd](#); (b) (6); [Mickey Walsh](#); [slawolom](#); [Coleman, Sam](#); [Ruiz, Thomas](#); [Kristina.s.curley2.civ@mail.mil](#); [Karen Geesey Price \(DEQ\)](#); [June.Sutherland@la.gov](#); [Stuckey, Ronnie D NFG NG LAARNG \(US\)](#); [lawwhite@tulane.edu](#); [dianne.dugas@la.gov](#); [jennifer.reynolds](#); [McKinney, Jason](#); [Gray, David](#); [R6 Camp Minden](#); [Kristi Celico](#); [doug@forumfg.com](#); [Wang, Jonathan](#)
Subject: Camp Minden Dialogue Meeting

Dear Dialogue Participants:

As a reminder, we have an in-person meeting tomorrow:

Date: Wednesday, March 11

Location: Community House, 711 Gladney, Minden, LA

Time:

9:30 a.m. Media Availability Session

Dialogue participants who wished to be interviewed by the media can come at this time. When speaking, please remember that this is a collaborative process.

10:00 a.m. to 2:30 p.m. Dialogue Meeting

The Dialogue meeting will begin at 10. Please see attached agenda. Lunch will be donated by the Concerned Citizens Campaign, The Farm, and Louisiana Environmental Action Network (LEAN). To the extent Dialogue participants are able, please plan to donate \$10 to help cover expenses.

In addition to the agenda, we anticipate sending out a few more documents today and tomorrow morning, so please watch your email. Attachments A and B of the Agenda are not included here at this time.

If you have not been participating actively in the Dialogue in the past week, we strongly encourage you to reach out to other Dialogue participants to get an overview of activities or call one of the facilitators.

We looking forward to seeing you all tomorrow.

Kristi and Doug

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Kristi Parker Celico

Public Policy Mediator/Facilitator

(b) (6)

A large black rectangular redaction box covers the contact information of Kristi Parker Celico.

Teaming with:

Kearns & West . Meridian Institute . RESOLVE . SRA International