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The Tank Cleaning Technical Exchange 2006: Summary

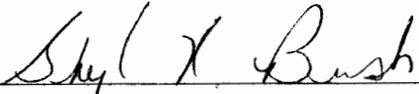
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SIGNATURES

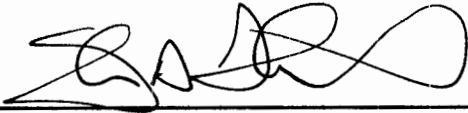
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INTRODUCTION

The WSRC Planning, Integration and Technology Department hosted the DOE-sponsored Tank Cleaning Technical Exchange at the Atlanta Marriott Hotel in Atlanta, Georgia, on March 27 and 28, 2006. The purpose was to provide a setting to facilitate the exchange and generation of innovative ideas on cleaning out waste tanks and preparing waste tanks for closure.

BACKGROUND

The production of nuclear materials during the Cold War left millions of gallons of radioactive liquid waste stored in large waste tanks at several sites around the country. Technologies have been demonstrated effective in removing the bulk of some waste from the aging tanks in which the waste has been stored for decades. However, cleaning the tanks of residual waste to desired levels *following* bulk waste removal has hitherto exceeded technology boundaries. Further complicating the challenge is that every waste tank has a unique history and configuration and thus unique obstacles to cleaning. A method successful in one tank is likely not to be effective in another.

It was recognized that the collective expertise within the Department of Energy, contractors who operate DOE facilities, technology and equipment vendors from both nuclear and non-nuclear industries, and regulatory and other consultants was needed to create a “toolbox” of tank-cleaning knowledge to meet the challenges of cleaning DOE waste tanks so they could be closed.

The March 2006 Tank Cleaning Technical Exchange was designed to educate participants on tank-cleaning problems unique within the DOE complex and to spark creative solutions.

EXECUTION

Technical Lead Tom Caldwell defined the topics, agenda, and format of the event and invited the right prospective participants to achieve those ends. Participants included DOE, contractor, regulatory, and vendor representatives from across the country. Attachment 1 is a list of the participants and their affiliations. Attachment 2 is a description of the participating vendors. The five sessions addressed these topics: 1) Statement of Challenge and Site Introductions; 2) Hydraulic Techniques; 3) Chemical Cleaning Techniques; 4) Mechanical Cleaning Techniques; 5) Robotics. A copy of the program is enclosed. Site representatives and vendors made formal presentations, describing specific problems and potential solutions. The informal panel-led discussions involving all participants that followed each topical set of presentations were especially effective.

Logistics of the conference included the conference web site, online and other means of registration, attendee database, posters, handbook/program, participant credentials, amenities (portfolios/pens/lanyards), presentation equipment, video arrangements, audio arrangements, site visit, hotel block reservations, troubleshooting during the event, etc., etc. The presentations and discussions were captured on audio/video and provided on CDs to participants for evaluation of applicability to their needs. Copies of the two compact discs are enclosed. Both the oral and written comments from the participants regarding logistical matters were overwhelmingly complimentary and indicated that the logistics facilitated the success of the conference. In fact, the Logistics Coordinator, Rosalind Blocker, was subsequently approached to help with SRNL’s “grout workshop” in October 2006.

RESULTS

The conference promoted a vigorous and constructive exchange. The conference may also have produced a tangible answer to a long-standing SRS need.

Vendors had attended the conference to learn about the DOE needs and constraints and to promote their ideas regarding radioactive waste tank cleaning. Following the technology exchange in Atlanta, SRS received unsolicited proposals from several vendors. One vendor proposed a particularly noteworthy device.

SRS representatives observed demonstrations of the device in operation at the vendor's facility during May 2006. The device employs a simple yet effective crawler system. The platform of the device is the same as a mechanism used in the Hanford S-112 tank. The vendor has modified the platform to incorporate a suction device designed to remove fast-settling particles (such as zeolite) as well as dense and cohesive material (such as sludge). The suction device itself is a high-pressure eductor driven by 35,000 psi of water. The eductor can effectively aspirate air, solids, and liquid and transport the mixture at distances far enough to reach other receipt vessels. Also, the vendor has overcome the tether management issues plaguing other crawler systems.

The device could potentially clean the Type IV tanks to levels not previously achievable for relatively low exposure and cost, in a relatively short period of time, and with minimal impact on available storage space.

SRS is actively investigating deployment of this new technology, which may allow removal of waste from Tanks 18 and 19 to a greater extent practical than the technologies available when waste removal was stopped by diminishing returns in 2001 and 2003, respectively.

ATTACHMENT 1 - ATTENDEE LIST

Tank Cleaning Technical Exchange: Registration Form				
Attendee Type	Name	Company	Email	Phone
1 Vendor	Troy Anderson	HydroChem Tank Cleaning Services	troy.anderson@hydrochem.com	713-393-5737
2 Vendor	Bob Aumer	Bartlett Services, Inc.	bob_aumer@yahoo.com	724-331-6312
3 Vendor	Ralston Barnard	MCC Technologies, LLC	rwbarna@swcp.com	505 771-4620
4 Attendee	Blaine Barton	CH2M HILL - Hanford Group	W_B_Blaine_Barton@rl.gov	509-376-5118
5 Vendor	David Beckum	Augusta Industrial Services, Inc	d.beckum@augustaindustrial.co	706-798-8437
6 Logistics	Rosalind Blocker	Washington Savannah River Co.	rosalind.blocker@srs.gov	803.208.0664
7 Vendor	Greg Bogen	CEES	gbogen@columbia-energy.com	509-946-7111
8 Attendee	Anna Bradford	U. S. Nuclear Regulatory Commission	ahb1@nrc.gov	301-415-5228
9 Logistics	Sheryl Bush	Washington Savannah River Co.	sheryl.bush@srs.gov	803-208-0797
10 Attendee	Tom Caldwell	Washington Savannah River Co.	thomas.caldwell@srs.gov	803-208-8430
11 Attendee	Harry Calley	U. S. Department of Energy	harry.calley@em.doe.gov	301-903-7417
12 Vendor	Jan Carlin	PaR Systems	jancarlin@verizon.net	651-528-5218
13 Attendee	Joel Case	U. S. Department of Energy	casejt@id.doe.gov	208-520-4181
14 Attendee	Noel Chapman	Washington Savannah River Co.	noel.chapman@srs.gov	803-208-1434
15 Vendor	Matthew D. Cole	S. A. Robotics	matt@sarobotics.com	970-663-1431
16 Vendor	Rory Collins	Extech, LLC	rorycollins@extechllc.com	704-543-7940
17 Logistics	Rick Daggett	Washington Savannah River Co.	ricardo.daggett@srs.gov	803-725-0785
18 Panel	Neil Davis	Washington Savannah River Co.	neil.davis@srs.gov	803-208-2980
19 Vendor	Robert Delaney	GAMAJet		610-408-9940
20 Panel	Virginia Dickert	Washington Savannah River Co.	virginia.dickert@srs.gov	
21 Attendee	Ricky Doniphan	Washington Savannah River Co.	Richard.Doniphan@srs.gov	803 208-3568
22 Attendee	David Esh	U. S. Nuclear Regulatory Commission	dwe@nrc.gov	301-415-6705
23 Vendor	Frank Fisher	TMR Associates, LLC	ffisher@tmrassociates.org	303.202.1533
24 Vendor	Pat Fisher	TMR Associates, LLC	pfisher@tmrassociates.org	303.202.1533

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	Attendee Type	Name	Company	Email	Phone
25	Vendor	Robert Fritz	ARES Corporation	dweinacht@arescorporation.co	509-946-3300
26	Vendor	Dan Gelb	Restoration Services, Inc.	dgelb@rsienv.com	865-241-1295
27	Attendee	Kurt Gerdes	U. S. Department of Energy	Kurt.Gerdes@EM.DOE.Gov	301-903-7289
28	Attendee	Pete Gibbons	Columbia Basin Consulting Group	pwgibbons@cbcglc.com	509-539-3184
29	Attendee	Jeff Griffin	Savannah River National Laboratory	jeff.griffin@srnl.gov	803-725-1343
30	Attendee	Latif Hamdan	U. S. Nuclear Regulatory Commission	lsh@nrc.gov	301-415-6639
31	Attendee	Carl Hanson	AREVA NC Inc	CEHanson@cogema-eng.com	509.376.4810
32	Attendee	Frank Heckendorn	Savannah River National Laboratory	frank.heckendorn@srnl.doe.gov	803-725-9497
33	Attendee	Jim Herbert	Washington Savannah River Co.	James.Herbert@srs.gov	
34	Attendee	Thomas Huff	Washington Savannah River Co.	thomas.huff@srs.gov	803-208-8492
35	Vendor	Alex Innes	AGI Engineering	agi_engineering@sbcglobal.net	209-430-6163
36	Attendee	Anil Jain	Bechtel Savannah River Co.	anil.jain@srs.gov	803-208-3421
37	Attendee	Susan Jenkins	S. C. Department of Health &	jenkinse@dhec.sc.gov	803-896-4271
38	Vendor	Jay Jones	GAMAJet Cleaning Systems	jj1@gamajet.com	610-662-9729
39	Attendee	Gary Josephson	Pacific Northwest National Laboratory	gary.josephson@pnl.gov	509 375 6613
40	Attendee	Randall Kaltreider	U. S. Department of Energy	randall.kaltreider@em.doe.gov	301-903-4259
41	Vendor	Erich Keszler	AEA Technology	ekeszler@aeatech.com	704-799-2707
42	Vendor	Kasia Komorowska	ICM	drkasiadc@yahoo.com	607-288-4001
43	Vendor	Don Kooser	Bartlett Services, Inc.	don.kooser@bartlettinc.com	509-521-0598
44	Vendor	Robert Kozma	River Technologies, LLC	robert@rivertechnologies.biz	434-525-4734
45	Vendor	Bruce Larison	NLB Corp.	larisobr@nlbusa.com	856-423-2211
46	Attendee	Ivan Lewis	Washington Savannah River Co.	ivan.lewis@srs.gov	803-208-1662
47	Attendee	David Little	Washington Savannah River Co.	david.little@srs.gov	803-208-8562
48	Vendor	Ted Lund	Extech, LLC	tedlund@extechllc.com	860-526-2610

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Attendee Type	Name	Company	Email	Phone
49 Vendor	Sam Maggio	ICM	sam@icmachines.com	607-288-4001
50 Panel	John Marra	Savannah River National Laboratory	john.marra@srnl.doe.gov	803-725-3701
51 Attendee	Sharon Marra	Savannah River National Laboratory	sharon.marra@srnl.doe.gov	803-725-5891
52 Attendee	Bruce Martin	Washington Savannah River Co.	bruce.martin@srs.gov	803-208-2902
53 Attendee	Herb Massie	Defense Nuclear Facilities Safety Board	herbertm@dnfsb.gov	202-694-7133
54 Attendee	Billie Mauss	U. S. Department of Energy	billie_m_mauss@orp.doe.gov	509-373-5113
55 Logistics	Kaye McKinney	Washington Savannah River Co.	katherine.mckinney@srs.gov	803-725-1553
56 Panel	Dan Meess	West Valley Nuclear Services Co	Dan.Meess@wvnsc.com	716-942-4950
57 Vendor	Tim Montgomery	River Technologies, LLC	tim@rivertechnologies.biz	434-525-4734
58 Vendor	Mark Morgan	AEA Technology	morgan@aeatech.com	704-799-2707
59 Attendee	Barry Mullinax	S. C. Department of Health &		803-898-4012
60 Vendor	Paul Murray	AEA Technology	murray@aeatech.com	704 701 3604
61 Vendor	Dave Nichols	CRES	dnichols@columbia-energy.com	509-946-7111
62 Attendee	Jacquie Noble-Dial	U. S. Department of Energy	nobledialjr@oro.doe.gov	865.241.6184
63 Attendee	Michael Poirier	Savannah River National Laboratory	michael.poirier@srnl.doe.gov	803-725-1611
64 Panel	Tony Polk	U. S. Department of Energy	tony.polk@srs.gov	803-208-6483
65 Attendee	Keith Quigley	CWI	Keith.Quigley@icp.doe.gov	208-526-3779
66 Panel	Richard Raymond	CH2M HILL - Hanford Group	richard_e_raymond@rl.gov	509-372-8767
67 Attendee	Christianne Ridge	U. S. Nuclear Regulatory Commission	acr1@nrc.gov	301-415-5673
68 Attendee	Tom Robinson	Washington Savannah River Co.	tom.robinson@srs.gov	803-208-3443
69 Attendee	Sherri Ross	U. S. Department of Energy	sherri.ross@srs.gov	803-208-6078
70 Attendee	Michael Ryan	U. S. Nuclear Regulatory Commission		
71 Attendee	Steve Schaus	CH2M HILL - Hanford Group	paul_s_steve_schaus@rl.gov	509-372-1149
72 Vendor	Chris Schultz	Augusta Industrial Services, Inc.	ct.schultz@augustaindustrial.co	706-798-8437

Tank Cleaning Technical Exchange: Registration Form

Attendee Type	Name	Company	Email	Phone
73 Logistics	Steve Sealey	Augusta Audio Visual Services		706-868-5977
74 Vendor	Carl Smith	Augusta Industrial Services, Inc.	c.smith@augustaindustrial.com	706-798-8437
75 Attendee	Stephen Smith	Washington Safety Management Solns	stephen09.smith@srs.gov	803-208-1434
76 Vendor	Albert Sturm	PaR Systems	asturm@par.com	651-528-5218
77 Attendee	Linda Suttora	U. S. Department of Energy	Linda.Suttora@em.doe.gov	301-903-7921
78 Attendee	Steven Thomas	Washington Savannah River Co.	steven.thomas@srs.gov	803-208-8064
79 Attendee	Bruce Wiersma	Savannah River National Laboratory	bruce.wiersma@srnl.doe.gov	803-725-5439
80 Attendee	Bill Wilmarth	Savannah River National Laboratory	bill.wilmarth@srnl.doe.gov	803-725-1727

ATTACHMENT 2 - VENDORS

AEA Technologies

AEA Technologies is a North Carolina-based firm originally founded in the United Kingdom under the U.K. Atomic Energy Agency. The company develops specialty-mixing equipment based on the fluidic diode principle. Website: www.aeatech.com

AGI Engineering

AGI Engineering founded by Alex G. Innes is micro-firm based in southern California. The company conceives and fabricates specialty equipment for remote tank cleaning and inspection operations. Website: www.agieng.com

Augusta Industrial

Augusta Industrial is a Georgia-based firm specializing in remote cleaning of waste tanks, pipelines, and other industrial processes. They primarily use high-pressure water or mechanical grinding to loosen and flush heel deposits in waste tanks. Website: www.augustaindustrial.com

Extech, LLC

Extech is a Connecticut-based firm with offices in North Carolina and Utah. Extech has extensive experience in de-sludging potable water storage tanks using underwater robotic crawlers. Website: www.extechllc.com

GAMAJet Cleaning Systems

GAMAJet is a Pennsylvania-based company that specializes in the design and manufacture of deployable rotating sluicing jets. The company primarily supplies jet assemblies to tank cleaning contractors in the chemical process and petroleum industries. Website: www.gamajet.com

HydroChem

HydroChem is a Texas-based tank cleaning service firm. They utilize submersible crawlers, utility arms, and high-pressure lances to remove sludge from oil and chemical tanks. Website: www.hydrochem.com

International Climbing Machines (ICM)

ICM is a New York-based operation specializing in the manufacturer of lightweight crawlers capable of affixing to and climbing vertical surfaces. Website: www.icm.cc

MCC Technologies, LLC

MCCT is a Delaware-based corporation founded by the Mining and Chemical Combine of Zheleznogorsk, Russia and is one of the principal production sites of the Ministry of Atomic Energy of the Russian Federation (MINATOM). Their primary product is a pulsating pump capable of directing jets from above and below the liquid surface. Website: www.mcc-t.com

NLB Corporation

NLB is a Michigan-based company specializing in the manufacture of high pressure sluicing equipment. Website: www.nlbcorp.com

PaR Systems

PaR Systems is a Minnesota-based company specializing in the manufacturing large-scale remote handling equipment such as manipulator arms, robotics, and precision manufacturing equipment. Website: www.par.com

River Technologies

River Technologies is a Virginia-based firm. They are the sole North American supplier for the Norclean vacuum system. Website: www.rivertechnologies.biz

S. A. Robotics

Special Application Robotics is a Colorado-based firm specializing in the design and manufacture of lightweight manipulator arms and remote tools. Website: www.sarobotics.com

TMR Associates

TMR Associates is a Colorado-based firm specializing in the design, manufacture and deployment of water-jet technologies used to break up and remove sludge deposits in radioactive waste tanks. Website: www.tmrassociates.org