



REMEMBERING WIL RAMSEY

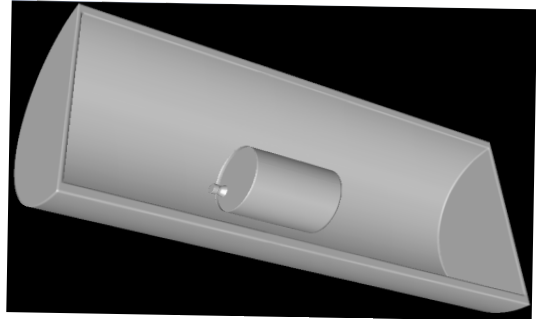
Mr. Wilfred Gerald Ramsey was working with Continental Research and Engineering (CR&E) when he died in an unfortunate plane crash in Rochester, Indiana on February 2, 2005. Wil was originally from Saginaw, TX. He started his demilitarization career at the Johnston Atoll Chemical Agent Demilitarization Facility (JACADS) as a Startup and Test Engineer. He had over 15 years experience in chemical demilitarization when he started working with CR&E in March 2002. Wil participated in numerous projects with CR&E including: systemization and HVAC support at the Umatilla Chemical Agent Disposal Facility (UMCDF) and the Pine Bluff Chemical Agent Disposal Facility (PBCDF); and HVAC support at the Newport Chemical Demilitarization Facility (NECDF).

CR&E remembers Wil as a soft-spoken, man-of-faith who supported the Albanian people. In his spare time, he enjoyed working on his plane which he flew often. Wil was an essential part of CR&E and one of the best men we have had the pleasure of calling our friend.

We all grieve Wil's death but we know that he is in a better place. Knowing Wil, he will be there to assist all of us as we transition to the next world.



Wil at the CR&E Company picnic in 2004.



VX HYDROLYSATE UPDATE

CR&E assisted EG&G Defense Inc. (EG&G) with development of a method for processing VX hydrolysate. CR&E scientists utilized Computational Fluid Dynamics (CFD) software to identify VX hydrolysate vaporization rate and container residence time. CR&E also developed a test plan and assisted EG&G engineers with test plan performance. CR&E and EG&G engineers and scientists successfully completed the thermal support testing on June 15, 2005 to June 16, 2005. The testing also verified proper operation of the newly installed water spray system in zone one and zone two. Additional water spray testing will be completed late this summer. The camera installed in zone one of the Metal Parts Furnace (MPF) for monitoring wet eye bombs was utilized to assist in verification of the process method.

SECONDARY WASTE TREATMENT INVESTIGATION

The Tooele Chemical Disposal Facility (TOCDF) has two general categories of secondary waste which are in need of treatment and/or disposal. The first category consists of various agent-related secondary wastes generated during storage activities at the stockpile sites. The second category consists of secondary wastes produced during normal disposal facility operations.

Processing of secondary wastes poses a significant risk to the TOCDF closure schedule. Disposal of these materials exclusively through the TOCDF MPF could create an unbudgeted extension to the duration of activities at the site.

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CR&E completed a comprehensive report detailing the investigation results and CR&E recommendations on which technologies to utilize to accelerate the TOCDF waste process schedule. After reviewing the information, EG&G requested additional details on the technologies investigated and added a number of items not covered under the scope of work for the original project.

The follow-on project investigated additional technologies for secondary waste treatment and expanded information on previously studied technologies. Additional technologies investigated were:

- High Temperature Incineration
- Autoclaves

Other tasks included:

- Facility issues and operating costs for each technology
- Evaluate environmental testing requirements
- Information on the Eco Logic, Inc. Hydrogen Reduction System non-stockpile testing
- Information on the Clean Environmental Technologies, Inc. Chemical Reduction Waste Treatment Process {molten aluminum process} from Department of Energy (DOE) Savannah River testing
- TOCDF/Deseret Chemical Depot (DCD) waste processing strategy

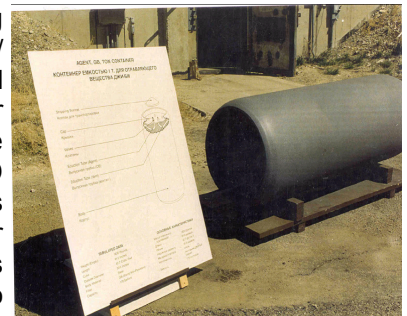
All of the tasks have been successfully completed. CR&E is compiling this information into a final report that will detail results of the investigation and make recommendations for processing the secondary waste streams that will enable TOCDF to meet their closure schedule.



Tooele Chemical Disposal Facility

TOCDF MUSTARD CAMPAIGN STRATEGY

The TOCDF is currently destroying nerve agents/munitions and planning for destruction of the blister agents H, HD and HT. TOCDF has a significant number of ton containers filled with HD to destroy during this campaign.



CR&E assisted General Physics in the review of the proposed design/process changes to the TOCDF facility based on the mustard campaign strategy developed during the demilitarization operations at JACADS. CR&E personnel completed a comprehensive report detailing the JACADS HD Ton Container campaign.

CR&E successfully completed the JACADS HD Ton Container Processing report and provided General Physics with a realistic assessment of the time required to process the ton containers during the JACADS mustard campaign.

This information can be used to accurately assess the TOCDF ton container processing time.

COMPUTER FLUID DYNAMICS (CFD) SUMMIT

CR&E's Dr. Yunhan Zheng attended a seminar to demonstrate using Fluent Software at the 2005 Fluent CFD Summit which was conducted in Dearborn, MI from June 7, 2005 to June 8, 2005. Dr. Zheng gave a presentation of model processing of semi-solid chemical agent titled: "A Study of Chemical Agent Vaporization Modeling for Liquid Agent Mixed with Solid". The presentation highlights are indicated as follows:

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OBJECTIVE: To determine vaporization rate profiles of liquid chemical agent mixed with solid for different kinds of munitions (4.2 inch mortars, 105 mm projectiles, and 155 mm projectiles) in a full tray by:

- Developing CFD model for heating process with vaporization code
- Calibrating CFD model with CR&E PVR model
- Using calibrated CFD model to predict the vaporization rate of liquid chemical agent mixed with solid.

Fluent CFD model coupled with melting/vaporization code has been developed.

CONCLUSION: CFD model for liquid chemical weapon agent was calibrated by the CR&E PVR model. The predicted results of CFD model and PVR model for three different kinds of munitions were in good agreement.

The current PVR model does not have the capability to simulate the overall vaporization rate for chemical agent that has been solidified. The calibrated CFD model can simulate the necessary heat and mass transfer for the solidified agent found in the munitions.

ABERDEEN CHEMICAL DISPOSAL FACILITY (ABCDF) AUTOCLAVE

The ABCDF utilizes a neutralization process to dispose of its chemical agent stockpile. Various agent-contaminated secondary wastes are generated during this process. A readily available process was needed in order to dispose of these secondary wastes in a timely manner.

Testing was completed at Dugway Proving Ground for decontamination of agents GB and VX using an autoclave. This process provides an excellent solution for ABCDF. The equipment has been proven effective, is readily available and cost effective.

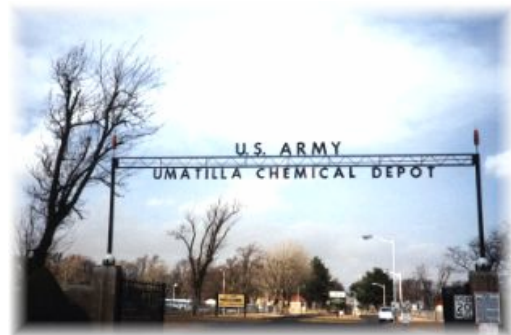
CR&E was issued a technical services subcontract from Bechtel National, Inc at ABCDF to assist them with specifications for an autoclave to decontaminate their agent contaminated secondary wastes. CR&E personnel reviewed the process and provided testing, schedule and technical recommendations to Bechtel in support of their purchase and installation of an autoclave decontamination system.

Bechtel is currently procuring the recommended equipment for installation at ABCDF.

UMATILLA AGENT SHAKEDOWN

Washington Demilitarization Company Inc. (WDC) is the operator of the UMCDF, which is located near Hermiston, Oregon. WDC is currently performing agent shakedown on the Deactivation Furnace (DFS) and the Liquid Incinerator (LIC) in preparation for agent trial burns prior to destroying the stockpile of chemical weapons stored at the Umatilla Army Depot.

CR&E is assisting WDC in tuning furnaces and optimizing integrated system operation to maximize rocket processing. On April 15, 2005, WDC processed 563 rockets, setting a new single day record of total rockets processed at CONUS demilitarization facilities.



Entrance to the Umatilla Chemical Depot.

GA/GA-UCON MODELING

The TOCDF is preparing to process two ton containers of chemical agent GA and two ton containers of GA-UCON that are currently in storage at the Desert Chemical Depot (DCD). Sampling and analysis of the material has been completed in support of its processing.

CR&E is assisting EG&G in development of a processing strategy for the GA and GA-UCON. CR&E will combine the sample analysis results with their knowledge of the TOCDF furnaces and computer modeling to identify parameters to be used for processing of GA and GA-UCON in the Metal Parts Furnace (MPF). CR&E will also identify a surrogate material to be utilized to verify the model results and demonstrate the furnace's capabilities prior to processing the chemical agent. CR&E will prepare a test plan and assist EG&G in performance of furnace testing with the surrogate material.



CONTINENTAL RESEARCH AND ENGINEERING'S BULLETIN

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R&D PLASMA

CR&E has conceptualized a technology for removing mercury from flue gas streams using non-thermal plasma. The CR&E technology employs a series of non-thermal, plasma-jet devices to provide a method for elemental mercury removal from the gas phase by employing specific chemical reactions that are known to oxidize elemental mercury.

The project involves both experimental measurements to verify the fundamental process concepts and engineering design and evaluation to determine the technology's potential for commercial applications. To investigate the viability of the technology at a bench-scale level, CR&E partnered with the Western Research Institute (WRI) in Laramie, WY. Based on CR&E designs, two different plasma-jet reactors were fabricated and tested. Results indicated the ability of the non-thermal plasma to provide the chemical reaction pathways necessary to react elemental mercury into an oxidized form which would be removable using conventional stack cleanup methods such as electrostatic precipitators or wet scrubbers.

The next step in the development of the non-thermal plasma technology will be to determine if a technically viable and economical method for delivering the plasma stream (containing the oxidizing reagent) can be developed for use in the flue of a utility boiler or hazardous waste process facility. CR&E will investigate the next phase exclusively with CR&E's personnel experienced in the development of plasma based processing technologies.

POWER ENGINEERING INTERNATIONAL



For the months of July, August and September, CR&E has placed an advertisement in the publication: *Power Engineering International*. The magazine is published monthly by PennWell Global Energy Group which is based out of the United Kingdom.

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The Bulletin is designed to keep CR&E's customers informed of developments, projects and of CR&E's involvement in the national effort to destroy chemical warfare munitions.

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