Bio for Dr. J Douglas Mather:

Dr. Mather has been involved in the development of halon replacements since 1996 when he began research work at the New Mexico Engineering Research Institute (NMERI). His early research at NMERI focused on identification, synthesis and testing of low boiling point, short atmospheric lifetime, clean agent alternatives containing bromine. These unique chemicals included 2-bromo-3,3,3-trifluoropropane (BTP) which continues to be of interest as an alternative to halon fire extinguishants. Dr. Mather also performed halon alternatives research focused on the unique challenges and performance demands related to hand held fire extinguishers employed in combat vehicle crew compartment fire suppression. These efforts led to the identification of extinguisher hardware designs capable of enhancing the fire suppression performance of aqueous potassium acetate based extinguishants.

More recently Dr. Mather has provided technical project support to the U.S. Army replacement program for the 2.75 pound Halon Handheld Fire Extinguisher currently mounted in/on legacy rotary wing weapon systems. His presentation today covers the agent development effort. The U.S. Army HHFE agent development program was initiated in the summer of 2008 and continued through the fall of 2012. The agent development work included the following phases: halon 1301 agent baseline fire suppression performance testing; alternative clean agent testing, optimization and down-selection of a final clean agent for consideration; initial testing of sodium bicarbonate (SBC) additives to enhance the fire suppression performance of the selected clean agent; extensive testing of SBC processing methods for generation of nanoparticle and submicron particle sized powders of SBC, strategies for prevention/reduction of SBC caking, characterization of the SBC particle sizes, suspendability in HFC-227ea and fire suppression performance; development of SBC characterization methods (field emission scanning electron microscopy, particle size distribution, surface area characterization, SBC powder water content); and development of procurement specifications for the process specific types of SBC used in the agent blends.