(A1)

Huge conflict of interest!

Learning from F/F while taking all other info simultaneously!

FY91 WORK UNIT PROPOSAL

1. PROJECT: AH-98 LEAD DIRECTORATE: IPD OTHER DIRECTORATES: SSD

2. WORK UNIT #: NEW WORK UNIT: YES SPPT'G WORK UNITS:

3. TITLE: MASK HYDRATION CONCEPTS TBIS: NG/FS

4. POC: DON DAVIO, JR. EXT: 5434 FY STARTED: FY91

5. NPARS AGG CODE: FUNDING THRU FY90: N/A

6. RESOURCE REQUIREMENTS

	FY91 $K	FY91 MY	FY92 $K	FY92 MY
IN-HOUSE CONTRACT EQUIPMENT OGA	SEE ENCL 1		N/A	
TOTAL:	$135.5		N/A	

All funding from F/F tests

7. TECHNICAL OBJECTIVE: Evaluate several different design concepts involved with through-the-mask hydration. Physiological/heat stress studies have shown that soldiers using the current system/procedures will voluntarily refrain from drinking after being in a chemical protective suit for an extended period of time. It is believed the cumbersome equipment and time-consuming procedures associated with the current hydration system are the cause for the soldier's inability to keep adequately hydrated. Therefore, a evaluation of alternative hydration equipment/procedures will be undertaken. This effort will commence with the development of a front-end analysis of the hydration process/equipment. Due to the expanding sports market, there are a number of commercially available hydration systems which may hold promise for adaptation to meet Army requirements. In addition to these systems, a concurrent effort to fabricate an in-house design will be undertaken. Once the most promising hydration systems have been identified they will be procured in sufficient numbers to conduct a comparison evaluation. The program will conclude with the submission of a formal report evaluating the different hydration systems and how they compare with the current system.

8. TECHNICAL APPROACH:

a. In Mar 89, during a Mask Drinking System (MDS) program review, PM-CIE, TRADOC, TECOM, CMLS, CRDEC and Natick representatives restructured the program into a two-phased effort. The MDS-Interim (MDS-I) and MDS efforts were both originally categorized as 6.4 programs. The MDS-I effort was directed toward procuring and testing a non-developmental item (NDI) prototype for immediate fielding with the 2 quart collapsible canteen only (primarily due to design constraints). The MDS effort was directed toward research and development of a full solution system (use with all canteens, all situations).

b. It had been originally envisioned that both hydration systems would utilize a "constant connection" design (as opposed to an intermittent connection). However, MDS-I technical test results have illustrated

potentially far-reaching problems associated with development and integration of such a system into the current inventory of individual equipment. At the recommendation of the Deputy Commander, U.S. Army Troop Support Command, the MDS, 6.4 program was re-categorized as a 6.2 program, and re-structured to include evaluation of several different hydration system designs and concepts. There are a number of commercially available systems which could be developed further in an effort to meet the Army's requirements. These include several versions of constant connection hydrations systems, as well as pressurized systems and improved versions of the intermittent connection systems.

c. Each one of the hydration system designs described above provides varying benefits for the user. The constant connection systems provide hydration without requiring the use of both hands. The pressurized, constant connection systems allow hydration without any hand manipulation. Intermittent connection systems usually require the use of both hands during operation, however, they do not create the risks that are inherent with constant connection, specifically the breaking of the protective mask/face seal due to snagging. Obviously the type of terrain being traversed, the type/amount of equipment being worn and the nature of the mission being conducted would determine the most appropriate hydration system to utilize. It is conceiveable that all three types of hydration systems could be useful, although it is neither logistically nor economically feasible to acquire them all. Therefore, it is necessary to determine which type is the most compatible and adaptable to the collective scenarios of use.

d. In addition to evaluating hydration systems, the methods and procedures involved in the hydration process will also be analyzed. It is quite possible that the existing equipment is adequate to perform the desired function. However, the procedures governing its operation could be the cause for the displeasure expressed by the users during certain situations. This ideology will be pursued in the initial stages of the program through the development of a front end analysis performed by the Concept Development & Systems Analysis Branch, IPD. The scope of the analysis will also include individual perceptions of the deficiencies of the current hydration system/procedures. This research could ultimately reveal the need to modify the Mask Drink Tube and/or the M1 NBC Canteen Cap currently used in the hydration procedure. All test results and conclusions will be presented in a final report to appropriate Army agencies whose mission may be better served by its findings.

e. The program will begin with an advertisement placed in Natick's Broad Agency Announcement, informing the private sector of the U.S. Army's intent to evaluate hydration systems. Proposals will be evaluated and those concepts which look promising will be pursued. The U.S. Army Chemical Research, Development and Engineering Center (CRDEC), Physical Protection Directorate will be asked to participate in this program. As previously mentioned, the possibility exists that modifications to the Mask Drink Tube, as well as the protective mask itself, may be required within the scope of this program, therefore CRDEC representation is necessary. Also, within Natick, the Food Equipment & Systems Division, FED, the Biohazards Assessment & Control Branch, SSD and the Life Support Clothing Systems and Equipment Branch, IPD will be asked to provide assistance within the areas of their expertise/equipment responsibilities. Collectively these agencies will determine the methods to be used to evaluate the many different hydration design concepts.