

Outlook

Naval Medical Research and Development Command



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NMRDC: A Strong Player In Desert Storm

As reported previously, NMRDC personnel are involved at many levels of Desert Storm. The Navy Forward Lab (NFL) and its satellites continue to provide unique laboratory services to complement the medical capabilities within theater. In addition, the NFL has been extremely valuable as a platform to introduce high level biotech and recombinant DNA-based diagnostic technologies, including Polymerase chain reaction (PCR) amplification, into the theater as well as being able to provide quality control for new and existing technologies introduced by other services. A source of pride to this Command, the NFL personnel's outstanding contributions have repeatedly been acknowledged by the local area commanders.

Two NMRDC laboratories, the Naval Health Research Center, San Diego, CA, and the Naval Aerospace Medical Research Laboratory, Pensacola, FL, initiated studies to assess workload capabilities under stress in extreme heat environments by troops wearing MOPP gear. The labs are also assessing new hydration techniques to ascertain whether work efforts can be enhanced and sustained for long periods of time.

LCDR Barry Meisenberg of Naval Hospital, San Diego, and LCDR Rod Monroy of the Naval Medical Research Institute, Bethesda, MD, performed a study to assess the efficacy of hematopoietic growth factors to reverse the bone marrow depression

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CONSOLIDATION OF DOD RESEARCH ACTIVITIES

Efforts to consolidate DoD research activities continue, although at a slower pace due to preoccupation of higher authorities with Desert Shield/Storm. Budget reductions constitute the primary pressure for consolidation and the probability of these reductions occurring has not changed at all. The budget for FY 92 shows some cuts, with continued reductions in FY 93 and beyond.

One of the major topics of the upcoming NMRDC COs' Strategic Planning Conference, scheduled for mid-April, will be how the medical research community will deal with the impact of these reductions and consolidation efforts.

Several groups within the Navy have been trying to identify meaningful, but sensible and possible, changes that can be made in the Navy laboratory structure since serious consolidation efforts began in December 1989. The current effort, Project Reliance begun in October, 1990, is managed by the Office of the Chief of Naval Research. RADM W.C. Miller, Chief of Naval Research, heads the project, with CAPT Tom Contreras of the Office of Naval Technology and CAPT Ray Chapat of BUMED serving as the medical representatives. As a result of the medical research community's long experience with tri-service

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STATUS REPORT: DEVELOPING NMRDC'S STRATEGIC PLAN

Just over a year ago, NMRDC began the process of developing a Command Strategic Plan to define its long-range corporate goals and the conditions required to attain them. The December, 1989, Commanding Officers' meeting initiated the planning process with a discussion of the purpose and goals of strategic planning and the approaches that would help us design our future in a thoughtful and systematic way.

A Strategic Plan is essential for the Command to position itself as a highly regarded, top-notch medical R&D organization and a critical Navy asset for answering Fleet and Fleet Marine Corps biomedical needs. To facilitate the planning process, the Command secured the assistance of Dr. Bill Ewald (Macro Systems, Inc., Institute for Resource Development), who has significant experience in organizational effectiveness and strategic plan development (notably, Dr. Ewald also is actively involved with strategic planning at the Naval Surface Warfare Center). During 1990, Dr. Ewald and his staff conducted an exhaustive series of interviews with individuals at NMRDC headquarters, Navy biomedical and

hardware laboratories, BUMED, DoD, and other organizations, to define the present environment and the challenges facing the Command. A report assessing our corporate status and providing a strategic planning framework was delivered to CAPT Woody, CO, NMRDC, late in 1990.

In order to focus on the great number of issues identified in the report, a Strategic Planning Advisory Group was established in January, 1991, to further define the issues and actions to be considered by the Command's senior leadership to improve the long-term corporate posture. Advisory group members, selected to represent a cross-section of Command perspectives, include CAPT R. Walter (chairman), CAPT A. Melaragno, CAPT R. Gaugler, CAPT L. Dean, CAPT E. Flynn, Dr. A. Harabin, Dr. G. Lotz, Dr. J. Silva, and Ms. C. Eisemann.

In the near future, our laboratories Commanding Officers and Scientific Directors will meet in an off-site retreat to deliberate on the recommendations of the Advisory Group and establish firm objectives on

which the Command can take concrete action. One such action already in progress is the hiring of a full-time Associate Director of Strategic Planning (this headquarters position currently is being advertised DoD-wide).

Developing a strategic plan is not a trivial exercise. It demands significant in-depth reflection and answers to such questions as: Where are we now? Where do we need to be? How are we going to get there? How will we know when we have succeeded? At the end of this disciplined thought process, NMRDC will be better positioned to serve Navy operational customers effectively and responsively. We will enhance our connectivity to the Fleet, Navy warfare planners, platform and technical laboratories, and scientists and researchers within and outside the Navy. We will be able to prioritize our research and developments better and make more effective use of limited resources. We will build a stronger relationship with our sponsors, identify new research areas, technologies and markets, and enhance our functioning as a corporate team.

NAMRU-2 RELOCATION

On February 15, 1991, NMRDC obtained Chief of Naval Operations' (CNO) approval for the relocation of U.S. Naval Medical Research Unit No. 2 (NAMRU-2) from Manila, Republic of the Philippines to Jakarta, Indonesia. This change will consolidate into one facility the major portion of NMRDC's infectious disease program in Asia.

The recent problems in assuring reasonable security for laboratory personnel in the Philippines made the continuation of a large laboratory program in Manila difficult, if not impossible. The move also places NMRDC in a stronger position to continue our excellent programs in Asia during the fiscally austere environment forecasted by

the Army for Infectious Disease funds over the next several years.

There was an official Change of Command on 13 March 1991, in which CAPT Kurt Sorensen relieved CAPT Jim Coolbaugh as Commanding Officer.

During the next year, several special projects are planned to expand the facilities in Jakarta to permit the augmentation of the present Jakarta staff by the scientific positions previously allocated to Manila. The CNO approval also included the establishment of a small detachment to remain in the Philippines to support current work with the Philippine government on HIV, and also to provide some continued presence in the country for the future.

DESSERT STORM

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previously reported in Iranian personnel exposed to mustard gas. Based on the information gained from this study, NMRDC obtained an Investigational New Drug approval from the FDA for a treatment protocol to treat possible casualties with Granulocyte-Colony Stimulating Factor (G-CSF). LCDR Barry Meisenberg has been deployed to forward areas with a supply of G-CSF donated by AMGEN Corp of Thousand Oaks, CA, and he is ready to begin initiation of therapy if necessary.

These initiatives are only a few of the efforts NMRDC laboratories have initiated in real time response to meet critical requirements.

SPAWAR CENTERS' SECOND ANNUAL INFORMATION EXCHANGE CONFERENCE

On 2-4 April, 1991, scientists from the Navy's R&D laboratories/centers and DoD's "captured" university labs will meet at the Naval Weapons Center, China Lake, CA, for the second SPAWAR Centers' R&D Information Exchange Conference, sponsored by the Director of Navy Laboratories.

The conference organizers recognize the fact that the dynamic interaction among Navy scientists, the active flow of technological information across laboratories and the coordination of resources must underpin the R&D community's support of the high tech operational Navy of the future. Conference supporters feel that such interaction can best be achieved not at the managerial level, but by the Navy bench scientists who understand the technologies that can be blended to solve the Navy's most difficult operational problems.

The 1991 conference consists of nine technical sessions, including such topics as materials, electronics, propulsion, sensors, signal image processing, aero/hydro-dynamics, and human performance. The human performance session provides a different focus from the other engineering-oriented sessions, and its inclusion in the conference underscores the Navy R&D community's appreciation of the critical role of man in the effective utilization of the Navy's future weapons systems.

NMRDC scientists will be participating in the SPAWAR conference this year, joining in discussions with other human factors scientists from Naval Ocean Systems Center, Naval Underwater Systems Center, Naval Air Development Center, Naval Training Systems Center, Naval Weapons Center and Naval Personnel Research and Development Center.

Studies in the human performance area include aural processing, tactical displays, neural nets applications and interfaces for performance measurement, team training, laser physiological effects, and the modeling of physiology and performance during combat missions.

We are tremendously proud of the enthusiastic response of our scientists to the call for papers for this conference. Twenty eight titles were submitted by five NMRDC laboratories. Unfortunately, only seven titles could be selected based on the time constraints of the conference. The selection of topics for presentation was certainly difficult but we think the selected papers well represent each participating laboratory and complement the session topics being presented by other Navy laboratories/centers.

NMRDC presenters in the conference include Dr. Saul Luria and LT Karl Van Orden (NSMRL), Dr. Scott Makeig and Mr. Steve Gomez

Dates To Remember

April 1990

2-4 - SPAWAR R&D Conference

15-18 - COs' Strategic Planning Retreat

30 - FY90 IR Annual Report published

May 1990

8 - Second Interim Reports (FY91) due to NMRDC

June 1990

1 - 1498's and IR/IED proposals due to NMRDC

8 - Second IR interim reports (FY91) due to NMRDC

18-20 - Fourth Annual IR/IED Symposium

20 - FY 92 6.2 Block Program Plan due to ONT

(NHRC), Dr. John D'Andrea (NAMRL), LCDR Doug Holcombe (NBDL), and Dr. Bob Weinberg (NMRI). Chris Eisemann (NMRDC) will act as the Human Performance Session chairperson.

CONSOLIDATION OF DoD RESEARCH ACTIVITIES

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interactions under the Armed Forces Biomedical Research Evaluation and Management (ASBREM) Committee, we are far ahead of all other research areas in knowing who our counterparts are, and in recognizing the potential and the problems associated with consolidation. The ASBREM model has been selected by Project Reliance as the structure for the interservice interactions for all of the hardware research efforts,

and each major research area is now beginning to put management committees in place.

In the medical research area, a series of five Memoranda of Agreement were developed between the three services to set up colocated, fully integrated programs covering research on blood, dental problems, electromagnetic radiation, infectious diseases, and biodynamics. An

ASBREM meeting is planned for early March to formally approve the agreements. At the present time, specific plans for implementing the agreements have not been developed, and more importantly, no mechanisms have been identified to provide the funds necessary for implementation. Work on these questions continues, with the medical programs again leading the way through an uncharted area.

NMRDC BEGINS AN "INDEPENDENT EXPLORATORY DEVELOPMENT (IED)" PROGRAM

During the past few years, CAPT Melaragno and his program staff have actively interacted with the Office of Naval Technology (ONT), attempting to have NMRDC's laboratories included in ONT's Independent Exploratory Development (IED) program. IED is very similar to the Independent Research (IR) program, except that IED projects, like all 6.2 projects, address applied problems versus basic research issues. Efforts so far have been partially successful. Because we are structured as a Command and not as a single laboratory/center, ONT decided not to alter its IED investment strategy to include NMRDC as a new claimant. On the

positive side, ONT concurred with our creation of an internal NMRDC IED program. This program will be supported with existing NMRDC 6.2 dollars and with additional outyear funds promised by ONT.

To initiate the IED program in FY91, NMRDC internally reprogrammed 6.2 funds to support two projects, "An Evaluation of Alternative Symbolic Designs for Maritime Tactical Displays" by LT Karl Van Orden (NSMRL) and "Nanoparticle Delivery of an Endotoxin-binding Agent and an Antibacterial Quinolone in Sepsis" by Dr. John Nevola (NMRI). LT Van Orden's project was proactively submitted as an IED proposal in

response to the FY90 and FY91 Program and Fiscal Guidance letters; Dr. Nevola's project was a favorably reviewed IR proposal that was considered to be too applied for the IR program, but appropriate for IED. In the outyears, with the pledged ONT support, NMRDC hopes to support three to five IED projects each year.

The IED program will be structured and managed similar to the IR program (NAVMEDRSCHDEV-COMINST 3902.1). Investigators who are interested in submitting an IED proposal for FY92 should consult the FY92 Program and Fiscal Guidance which will be provided to the laboratories later this year.

HIGHLIGHTS OF NMRDC RESEARCH

NMRI's TOXDET Provides Health Hazard Analysis and Risk Assessment to the Navy

The Naval Medical Research Institute's (NMRI) Toxicology Detachment (TOXDET), Wright-Patterson AFB, OH, has an ongoing program providing health hazard analysis, risk assessment, and safety recommendations to Navy systems commands and Fleet commanders on the toxicology of items currently in use or proposed for use onboard ships and submarines.

Recently, TOXDET conducted a safety analysis of the shipboard use of bed linens treated with flame retardants. Flame retardant chemicals have the potential for "off-gassing", or releasing potentially harmful materials when heated and/or used in a confined area. There was concern that using this type of bed linen onboard submarines might "off-gas" potentially toxic materials (e.g. formaldehyde), which would adversely affect sailors' health and performance. After extensive review of computer databases and the toxicology research literature, and testing at NASA's White Sands Test facility, TOXDET reported that the levels of formaldehyde "off-gassing" were very low. However, because even these low levels of formaldehyde would remain in the sailors' breathing space for an extended period of time, TOXDET recommended that the bed linens be washed before use in order to remove any excess flame retardant.

Any concerns on possible toxicological Fleet hazards may be directed to the TOXDET through contact with the Navy Environmental Health Center, Norfolk, VA (BUMEDINST 6270.8 provides details on obtaining such assistance).

A New Technique Delivers High Levels of Antibiotics at the Fracture Site

Combat casualties with severe fractures where skin, muscle and blood vessels are destroyed standardly are given intravenous antibiotics to prevent infection. Treatment with intravenous antibiotics sometimes fails because damage to the blood vessels prevents adequate amounts of the drug from reaching the wound.

Navy-sponsored researchers at the University of Louisville School of Medicine, Louisville, KY, developed a technique, using antibiotic-containing beads, that shows enhanced wound healing and reduced infection following surgical procedures. Strings of 2, 4 or 6 mm beads, each containing 2 to 8 mgs of antibiotics, have been implanted directly into the wound to deliver a local concentration of antibiotic, 20 to 40 times the level achievable with intravenous therapy. The beads could prove invaluable on the battlefield. When packed into a wound and covered with a temporary adhesive plastic, the beads can help prevent infection for 3 to 7 days, enough time for injured troops to be transported to hospitals for surgery.

For more information on NMRDC research projects contact
NMRDC Code 04 (301)295-1468