## TATRC TIMES

## Dr. Gary Gilbert Leads NATO Working Group into Unmanned Territories

For several years now, TATRC has performed research, mostly via Small Business Innovative Research (SBIR) initiatives, in enabling technologies that allow combat casualties on future battlefields to be evacuated via unmanned "Robotic" ground or air systems. Recently, NATO got into the act when in 2018, Dr. Patrick Mason, U.S. representative to the NATO Science and Technology Organization (STO) Human Factors in Medicine (HFM) Panel nominated Dr. Gary Gilbert, from TATRC's Medical Intelligent Systems Lab, to chair a NATO Exploratory Team (ET) to study the Development of Autonomous Medical Systems for Tactical Evacuation.

The first meeting of that team involving five NATO nations, was held in Falls Church, VA 2 – 4 April. RADM Mary Riggs, Defense Health Agency, J9, and COL Gina Adam, Commander, U.S. Army Medical Materiel Development Activity (then Director of TATRC), welcomed a multinational team of multidisciplinary experts to look at the development of autonomous medical systems for tactical evacuation in future battlefield environments. LTC David Johnson, Deputy Director at MRDC's Combat Casualty Care Program, noted that there is ongoing research in many countries and many scientific communities to develop autonomous medical systems that can deliver care and potentially ease the workload of the field medic, while providing the ability to deliver life-saving care as far forward as point of injury. There is also considerable effort to develop autonomous transport vehicles (air, land and sea) that can perform reconnaissance, attack and logistic missions without putting military personnel at risk. According to Dr. Gilbert, "The ability to put autonomous care systems on both manned and unmanned 'platforms of opportunity' could greatly enhance evacuation capacity in future multi-domain operations and mass casualty situations, as well as enhance onboard medical



Dr. Gary Gilbert (MISL) opens up proceedings at this year's NATO Working Group.



NATO Exploratory Team Group Photo.

monitoring and enroute casualty care."

COL(Retired) Dr. David Lam, a former U.S. Medical Liaison to NATO, stated that, "It is inevitable that at some time in the future, a commander will decide to use an autonomous platform to move a casualty; it is up to us to create a safe and effective system to support casualty evacuation and assist the commander in making an informed decision."The NATO team plans to address those concerns by exploring potential operational scenarios and concepts for operation, safe ride standards, and mission planning capabilities to effectively coordinate tactical care and evacuation. The specific objectives for this ET as commissioned by the NATO HFM are to develop S&T needs for establishing common NATO: 1) concepts for evacuation on unmanned systems, 2) research and development roadmaps, 3) approaches for implementing safe ride

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standards, 4) interoperability standards, and 5) mission coordination of autonomous patient transport. The group was able to review all the subject matter presented that relate to given objectives, but there are still many unknowns. Collaborative, shared discussions helped shape future activities needed to elicit additional information and understanding of the ability to leverage emerging unmanned platforms into tactical evacuation of casualties.

In future follow-on meetings, the group will review related existing doctrine and policy from NATO, member nations military organizations, and associated centers of excellence in both the operational considerations and the enabling technologies for this capability. There will be smaller multinational working groups that will work through given scenarios to further explore potential concepts for operation which portend to leverage use of the unmanned systems for casualty evacuation. While all members feel the use of unmanned systems will be essential to accomplish medical missions in future conflicts, there is much to be learned by this community to ensure a safe, responsive and effective capability is developed and implemented.

The major outcomes of this particular

workshop included: 1) assignment of subgroups to review scenarios and potential concepts of operations for ground, littoral, marine, and rescue scenarios, 2) limiting the scope of ET to evacuation of wounded, sick, and injured personnel on robotic, autonomous, and / or other unmanned vehicles of opportunity, 3) proposed use of the term RASEVAC (Robotic & Autonomous Evacuation) to describe the panel's work, and 4) Germany offering to host the next ET meeting in Munich in the fall. Stay tuned for updates on this continued collaborative effort and the findings that come out of the follow-on workshop.