

2010 ANNUAL REPORT



NATIBO

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Paul Herring
Canada Co-Chair
Acting Director General,
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Department of National Defence

A handwritten signature in black ink, appearing to read 'Nancy J. Harned', is positioned above a horizontal line.

Nancy J. Harned
United States Co-Chair
Director
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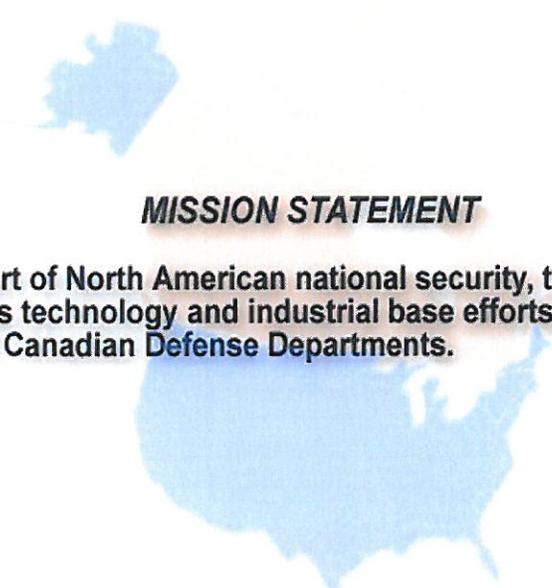


Calendar Year 2010 Annual Report

Background

At the 1985 Shamrock Summit, Ronald Reagan, President of the United States, and Brian Mulroney, Prime Minister of Canada, pledged to work to reduce barriers and to stimulate the two-way flow of defense goods, establish a free exchange of technology, knowledge, and skill involved in defense production. This led to the establishment of the NADIBO Charter signed by the two Nations' Defense Departments on March 23, 1987. At that time the NATIBO focused on the combined capacity and capability of the defense industrial bases of the U.S. and Canada to jointly support military requirements. In 1992, the Organization determined it needed to review its objectives and explore new roles and initiatives to respond to the challenges of the 1990s. This change was reflected in more focus on technology vice industrial capacity issues.

Each year presents new challenges for the national and economic security needs of the U.S and Canada. In 2009, NATIBO responded by expanding the areas it supports beyond traditional industrial base/preparedness concerns to include leveraging technology. This includes the assessing of infrastructure to develop and transition new military technology, as well as the ability to transfer technology between civilian and military applications and develop manufacturing technologies to support military transformation production strategies.



MISSION STATEMENT

In support of North American national security, the NATIBO facilitates technology and industrial base efforts between the U.S. and Canadian Defense Departments.

Focus/Objectives of NATIBO

- Promote the development, administration, communication, and execution of the U.S. Department of Defense and Canadian Department of National Defence (DND) technology and industrial base programs and policies.
- Foster cooperation between the Governments of the U. S. and Canada in development of coordinated technology and industrial base policies and programs, including policies and programs that promote the integration of the defense and commercial industrial sector and the greater use of dual use products and technologies.
- Leverage resources through cost sharing and economies of scale afforded through coordinated studies and projects involving research, development, industrial capability, and logistics programs.
- Promote the interchange of technology and industrial base data between Canada and the U.S., the military services, other government agencies, and industry.
- Promote coordination of technology and industrial base planning and insertion programs undertaken by the responsible U.S. and Canadian departments and agencies in support of their national security responsibilities.
- Facilitate enhanced joint activity through Canada/U.S. involvement in studies and implementation of resulting technology and industrial base recommendations.
- Ensure that North American technology and industrial base considerations are taken into account during U.S. or Canadian military and/or civilian emergency planning activities.
- Enhance the national security of both nations by promoting the competitiveness of the North American technology and industrial base.
- In performing the above, raise issues with relevant bi-lateral committees in those cases where interface between the NATIBO and these committees is determined to be advisable.

Memorandum of Understanding (MOU)

On May 30, 2001, the Department of Defense of the USA and the Department of National Defence for Canada entered into an agreement whereby the Defense Departments can more efficiently continue their efforts to improve the defense posture of the North American technology and industrial base. The MOU (short title NATIBO) is an umbrella document that covers research, development, technical demonstration and technology insertion activity in the two Defense Departments and “grandfathers” activity performed by NATIBO under the charter. The MOU allows three basic activities: Information Exchange, the creation of Working Groups, and formal Project Arrangements (PAs). The MOU also provides a recognized framework for

which funds can be transferred between the participants in support of NATIBO studies and projects.

The objectives of the MOU are to:

- Effectively leverage dollars/resources and reduce redundant efforts through bilateral cooperation on studies and projects relating to the defense technology and industrial base of the USA and Canada.
- Achieve rapid technology insertion and commercialization of emerging technologies that can be used in the manufacture and repair of military weapon systems.
- Permit a wide variety of work to be accomplished on a single project from paper studies and initial research to technology insertion efforts.

Organization

The NATIBO is co-chaired by the Director, Advanced Components and Prototyping for the U.S. and the Director General, International & Industry Programs (DGIIP) for Canada. U.S. members represent the Office of Secretary of Defense (OSD), Army, Navy, Air Force, Missile Defense Agency (MDA), Defense Logistics Agency (DLA), and the Defense Contract Management Agency (DCMA). Canadian representation is from the Department of National Defence (DND). These representatives form the Steering Committee and provide strategic direction, make recommendations on proposed projects, review the progress of the organization, and act as a conduit for addressing recommendations to U.S. and Canadian authorities. Under the provisions of the MOU, Terms of Reference (TOR) for the Steering Committee were prepared, staffed and implemented July 11, 2001. There are four observing organizations that provide assistance to the Steering Committee as appropriate. These observers are the U.S. Department of Commerce (DoC), Public Works and Government Services Canada (PWGSC), Industry Canada (IC), and Canadian Commercial Corporation (CCC).

Steering Committee Members

Ms. Nancy Harned, OUSD, U.S. Co-Chair	Mr. John Neri, DGIIP/DND Canadian Co-Chair
Ms. Cynthia Gonsalves, OSD	Mr. Michael Slack, DCMC/DGIIP/DND
Mr. Roger Harold, U.S. Army	
Mr. John Williams, U.S. Navy	
Ms. Persis Elwood, U.S. Air Force	
Mr. Steven Linder, MDA	
Ms. Donna Davis, DLA	
Ms. Mary Grace Dondiego, DCMA	
Ms. Jo Ann Carmichael, U.S. Army	

Secretariat

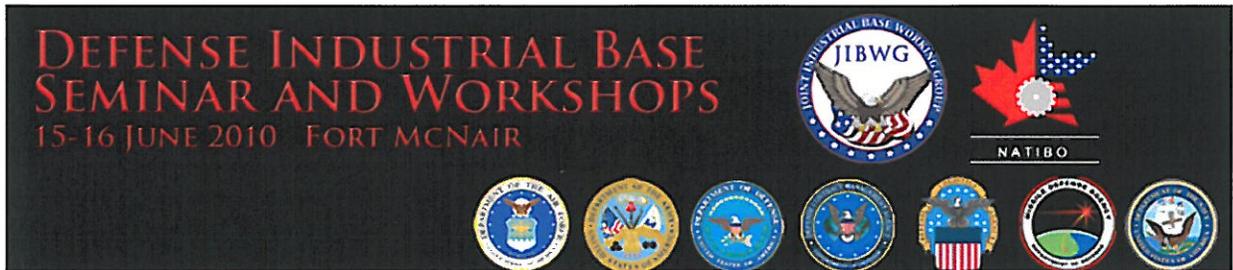
The U.S. Army Edgewood Chemical Biological Center in Rock Island, Illinois, is the NATIBO Secretariat. The Secretariat is responsible for all business management functions in support of the NATIBO, including the planning and recording of meetings, the correspondence with and

between sub-committees, the maintenance of a central repository of data/files on NATIBO activities, and other business management duties as assigned by the Steering Committee. The Secretariat is also responsible for selected functions in support of the MOU.

Business Development Working Group (BDWG)

The BDWG provides a permanent forum for the exchange of views on the means of utilizing the technology and industrial base to meet defense program objectives, and through this forum identify mutually beneficial cooperative technology and industrial base activities between DoD and DND. The BDWG will also facilitate exploratory discussions and review documentation prepared by proponents for the purpose of establishing a Working Group or PA under the provisions of the MOU. The BDWG will also advocate and increase awareness of all NATIBO sponsored activities.

Calendar Year 2010 Activity



2010 Defense Industrial Base Seminar and Workshop. In June, NATIBO co-hosted a first time event with the Joint Industrial Base Working Group (sponsored by the Office of the Director, Industrial Policy) at the National Defense University, Fort McNair, Washington, DC. This Seminar and Workshop brought together over 200 industrial analysts and acquisition professionals from government, industry, and academia to hear selected speakers and discuss topics revolving around current trends and strategies impacting the defense industrial base. The event focused on how the military customer can continue to leverage a capable and viable defense industrial base. The event kicked off with a plenary session consisting of senior leaders from across government and industry that provided insight into trends, issues, opportunities and expectations with regard to the defense industrial base. Breakout sessions on the second day focused on organizations promoting solutions including tools, services, and investment programs meant to mitigate barriers and risks that exist as military customers leverage the industrial base in support of the Warfighter. The Defense Industrial Base Seminar and Workshop was informative and well-received. Copies of the Seminar and Workshop Proceedings and/or copies of the presentations may be obtained by contacting ROCK-NATIBO@conus.army.mil.

2010 NATIBO Annual Steering Committee Meeting. The NATIBO Steering Committee (SC) met on 17 June at Fort McNair. This meeting was held in conjunction with the 2010 Defense IB Seminar and Workshops. The purpose of the SC meeting was to update the group on the ongoing initiatives of the U.S. and Canadian Defense Departments under the auspices of NATIBO and to make decisions with regard to future activities.

Discussion topics included the current environment within the U.S. and Canada, selected work plans within the NATIBO Business Plan, the Alternative Fuels IB Assessment, activities of the Defense IB/Critical Infrastructure Working Group, and the proposed NATIBO Munitions Working Group. A guest speaker from the Space and Naval Warfare Systems Command Systems Center, San Diego, provided a report on technology “clusters” that have been formed to bring industry, government and academia together, in concert with the Small Business Administration (SBA), to develop advanced technologies. The idea evolved from the OSD robotics initiative. These regional clusters are focused on robotics technology initiatives and offer an excellent opportunity to support economic recovery and develop sustainable regional economies; to increase collaboration across agencies among strategic partners such as the DoD and SBA; and to support the growth of technology-based small businesses vital in the reset of the American economy.

Attendees included representatives from the Joint Services, as well as from the Office of the Secretary of Defense (AT&L (Industrial Policy)), U.S. Department of Homeland Defense, DCMA, DLA, MDA, the Canadian DND and CCC.

Electronic copies of the presentations given by the individual speakers are available upon request by contacting ROCK-NATIBO@conus.army.mil.

Operations and 3 Year Business Plan (BP). This plan was developed to provide direction for the NATIBO and covers the period from January 1, 2009 through December 31, 2011. The BP allows the NATIBO Co-Chairs, Steering Committee, Secretariat and BDWG to focus resources to obtain identified goals and generate specific products. As part of an annual review process, the plan is updated by the BDWG. Several Work Plans are identified in the BP. During 2010, the BDWG continued their efforts with the Advocacy, Critical Infrastructure Protection, and Alternative Fuels Work Plans. The BDWG continually works to identify new areas of opportunity and will revise a new draft 3-year BP prior to the 2011 NATIBO Steering Committee Meeting.

Working Groups Established. Working Groups provide the framework for identifying mutually beneficial technology and industrial base cooperative activities between the Participants. Two Working Groups were established this calendar year:

- **Autonomous Underwater Vehicle (AUV) Working Group (WG).** The AUV WG was established to develop a collaborative project within the DoD and DND that will integrate software for automated object recognition into an existing autonomous framework. Defense Research and Development (DRDC) Canada and the U.S. Naval Undersea Warfare Centre conducted a joint trial in the Summer of 2010 which demonstrated collaborative AUV behaviors that can be used and applied towards missions of mutual interest to both countries’ Navies. The trial went well and as a result DRDC purchased several AUVs and began work on installing high level autonomous intelligent control systems into the AUVs.
- **The North American Munitions Industrial Base WG.** This WG was established to study and explore potential collaborative activities with particular attention directed to

the viability of developing a joint approach to managing resources which are shared between the U.S. and Canada; and identifying common ammunition requirements and assets, optimizing the use of common resources, and examining the feasibility and risks/benefits of joint production where it would lead to cost and plant efficiencies for both Nations.

Ongoing Efforts From 2009. The NATIBO MOU was signed in May 2001 and 15 working groups have been established since July 2001 through December 2010. These working groups continue to work under and support NATIBO MOU objectives.

- **BDWG.** The BDWG had a variety of inquiries from potential users regarding the use of the NATIBO MOU on a broad spectrum of topics. Several projects were not within the scope of the MOU and the BDWG suggested other international agreements or referred proponents to their International Programs Office for guidance.
- **Alternative Fuels Working Group (WG).** NATIBO published the Alternative Fuels Industrial Base Assessment (IBA) in June 2010. This study evaluated the industrial base capability to support DoD and DND alternative aviation fuel initiatives. The study focused on the industrial capability for alternative fuel technology worldwide with an emphasis on military needs, and more specifically on military aircraft requirements. Analysis revealed that currently there is not an existing domestic industrial base or favorable business climate to support a rapid migration to use of alternative fuels sources for military aviation systems.

Recommendations were made as to actions that DoD and DND should take to actively engage with the industrial base and enable industry to meet the defined objective for jet fuel (both traditional and synthetic) in terms of source and quantities. The recommendations are concentrated in the following areas which hold the greatest potential for benefit: planning, technology investment/sharing, collaboration, and fuels certification. The Navy, DARPA and OSD are currently engaged in research to develop a bio-alternative fuels capacity for DoD.

The Alternative Fuels IBA is available on the NATIBO website at:
http://www.acq.osd.mil/ott/natibo/reports_studies.html

- **US/CA Infantry Soldier Modernization Working Group (ISMWG).** During 2010, the ISMWG members continued sharing information on an ongoing basis. The Novel Helmet Concepts and Materials Action Team was stood up. The Program Executive Office Soldier submitted an Equipment and Materiel Transfer Arrangement under the Future Force Interoperability MOU to Deputy Assistant Secretary of the Army for Defense Exports and Cooperation (foreign military sales) in 2010 and anticipates having the Agreement signed in Spring 2011.
- **US/CA Critical Infrastructure Protection/Defense Industrial Base Working Group (CIP/DIB WG).** The US/CA CIP/DIB WG met briefly during the annual NATIBO Steering Committee Meeting held in June 2010. The cost of the proposed Project

Arrangement under the CIP/DIB WG exceeded available funding based on current budget allocations. Revisions to the scope of project tasks are under consideration. Members of the WG plan to meet in June 2011 to discuss next steps.

Both nations discussed the pending expiration of the Terms of Reference (TOR) for the US/CA CIP/DIB WG (January 17, 2011). Members of the NATIBO Steering Committee and the US/CA CIP/DIB WG reviewed the successes of the working group and the potential future of the US/CA CIP/DIB program. The NATIBO Steering Committee executives and the US/CA CIP/DIB WG members agreed to amend the working group's TOR to extend it an additional five years. An amendment signed by both nations' principals extended the CIP/DIBWG TOR to February 9, 2016.

- **Future Fire Control Systems Working Group (FFCSWG).** The FFCSWG continued to share information on an ongoing basis during 2010. Areas of mutual interest include developments in small arms sights, new warhead technologies and a scoping study activity through which Canada is considering the merits and tradeoffs of a variety of firepower activities.
- **Multi-Service Regenerative Fuel Cell (MREF) Working Group (WG).** This WG had been on hold for some time. During the second half of 2010, a proposal was made to restructure the WG due to a change in focus from vehicle fuel cell applications to more general usage. Representatives from the U.S. Army Research, Development and Engineering Command (RDECOM), Tank Automotive Research, Development and Engineering Center (TARDEC) and the Communications-Electronics Research, Development, and Engineering Center (CERDEC) engaged in dialog to move the MREFWG Army co-chair position from TARDEC to CERDEC. The CERDEC has several fuel cell related projects which are soldier/unit level rather than vehicular and agreed to take the U.S. lead on the MREF WG.

The NATIBO Steering Committee members and the MREF WG reviewed the activities of the working group and the potential future of the MREF program. The NATIBO Steering Committee executives and the MREF members agreed to revise the working group's TOR to extend it an additional 10 years. A revision signed by both nation's principals extended the MREF WG TOR to February 9, 2020. In the revision, all references to regenerative vehicle fuel cells, which were made in the original MREF WG TOR, were removed and replaced with generic terminology referencing the use of portable and vehicle fuel cells in a tactical environment. Additionally, the WG name was formally modified to the Multi-Service Fuel Cell (FCWG) to reflect the change in scope.

- **Soldier System Technology Working Group (SSTWG).** Although the SSTWG had little activity in 2010 that produced any significant results; the group did engage in discussions focusing on energy harvesting technology.
- **Homeland Defense Working Group (HDWG).** The WG had no activity in the past year, but remains as the umbrella WG for future collaborative efforts for different types of the latest HD technologies.

Exhibit. The NATIBO exhibit was not displayed during 2010 due to the cost of updating and setting up the display for major conferences. The BDWG has decided to keep the NATIBO exhibit in storage unless a specific event is identified that presents a compelling reason to display the exhibit.

Presentations. Members are frequently invited to make presentations on NATIBO projects to their senior staff or other departments and/or agencies. In response to calls for papers, submissions are frequently selected for presentation at conferences and symposiums.

Planned Activities for Calendar Year 2011

- **Autonomous Underwater Vehicle (AUV) Working Group (WG).** The DRDC Atlantic will work with Canadian industry in 2011 to insert high level autonomous intelligent control system capabilities in their vehicles. The AUV WG will hold their next meeting in September on the margins of the 2011 International Conference on Intelligent Robots and Systems in San Francisco, CA.
- **The North American Munitions Industrial Base WG.** The WG plans to meet in 2011 to discuss potential collaborative activities.
- **Alternative Fuels Working Group (WG).** The Alternative Fuels IBA study was completed and distributed in 2010. The BDWG will discuss the following IBA recommendations and determine suitable actions from a NATIBO perspective:
 - Recommendation #1- Planning: Identify agencies that may be interested in this report and request their feedback to determine whether they have suggestions for follow-on studies.
 - Recommendation #2- Tech Investment/Sharing: NATIBO opportunities may be limited by the large dollar values required to support F-T plants and oil recovery from tar sands or shale. The BDWG will pulse industry for possible test and evaluation type activities.
 - Recommendation #3 - Collaboration: the BDWG will look at opportunities beyond U.S. Air Force certification and the F-T process with a focus on the U.S. Navy and the U.S. Army programs and areas such as biofuels.
 - Recommendation #4 - Fuel Certification: Most of the work in this area is done or has been well defined and is moving ahead. Possible areas for NATIBO: field capability to assess potential sources of alternative fuel to determine compatibility and questions about fuel quality that need to be answered at the unit level, particularly in a deployed situation.
- **US/CA Infantry Soldier Modernization Working Group (ISMWG).** On-going exploratory discussions will continue between the subject matter experts in 2011 in the

areas of novel helmet concepts and materials, future small arms technologies and Soldier portable power with a view to forming Action Teams if appropriate. One of the main goals of the group is to lighten the clothing and equipment combat loads for the Warfighter.

- **US/CA Critical Infrastructure Protection/Defense Industrial Base Working Group (DIB/CIP WG).** As funding availability increases, the working group will evaluate the following activities for action or postponement:
 - U. S. participation in the initial Canada Defense Industrial Base Critical Infrastructure Council Meeting.
 - Resume discussions on possible cooperative project to exchange personnel between the DND Canada and the DCMA's Industrial Analysis Center.
 - Providing training to Canadian associates in conducting a Mission Assurance Assessment at the Joint Interagency Training and Education Center, Camp Dawson, WV.
 - Providing Joint briefings to U.S. and Canadian stakeholders (USNORTHCOM, CANCOM, and Canadian Associations).
 - Resume discussions on cooperative All Hazard/ Preparedness venture between the two nations, with a focus on the Defense Industrial Base, to include:
 - a. The development of processes and procedures for command and control of cross border preparedness with a focus on a resilient North American Defense Industrial Base and;
 - b. The development of processes and procedures for potential joint venture regarding an All Hazard/Preparedness Exercise between the two nations.
 - Review draft Summary Statement of Intent (SSOI) to enable Canada and the U.S. to share information. Funding issues caused it to be on hold and a possible de-scoping of the project arrangement (PA)/SSOI still may be necessary. Agreement by both principals of both nations is required prior to undertaking.
 - A meeting, currently scheduled for mid-June 2011, will consider a way forward on these proposed activities.
- **Multi-Service Fuel Cell Working Group (FCWG).** The U.S and Canadian Project Officers will discuss the potential for collaborative efforts in the area of manportable and vehicle fuel cell power sources.
- **Soldier System Technology Working Group (SSTWG).** The WG Project Officers will continue to dialog as appropriate in the mission related areas of Soldier Systems Technologies (i.e. multi-functional materials, Soldier modeling, heat stress mitigation,

power harvesting, exoskeleton, microclimate conditioning technologies, Soldier enhancement and load carriage technologies, and more).

- **Proposed Collaborative Project - Undersea Technology Initiative.** The U.S. Naval Undersea Warfare Center (NUWC) Newport has initiated discussion with Canada on potential collaborative opportunities with the Defence Research and Development Canada (DRDC) Atlantic. This could result in a new TOR involving hydrophones, communications, and Arctic operations studies that could potentially supersede the existing Autonomous Underwater Vehicle WG TOR signed in July 2010.

Funding

The NATIBO has no direct funding line in the U.S. or Canadian defense budget systems. Projects are funded from the operating budget of member organizations. The U.S. Army, U.S. Navy, U.S. Air Force and Canada's DND equitably support the NATIBO Secretariat.

The NATIBO functions with 'payment in kind' contributions from its members. The U.S. Army prints and publishes studies and brochures. The U.S. Air Force pays expenses associated with the exhibit. OSD sponsors the website and Canada has provided materiel for the exhibit. The Services and Canada have had employees staff the exhibit at events.

Conclusion

Over the years, U.S.-Canada defense cooperation has been close. Both nations have tremendously benefited from a highly integrated North American technology and industrial base. We are facing complex challenges of declining defense budgets, with changing threats to national security, and increasing "equipment geriatrics." The North American technology and industrial base faces the challenges of advancing and maintaining technological superiority with reduced government research and development funding. Meeting these challenges requires the leveraging and promoting of commercial use and investment in technologies which will have both defense and industrial applications. The commitment to a robust defense industrial base remains high for both governments. Broadening the technology industrial base to include both U.S. and Canadian resources so that investment costs may be shared across a broader base will improve the affordability of defense systems. The key to the future is rational use of industrial, economic, and technological resources in the U.S. and Canada to achieve the greatest attainable military capability at the lowest cost. NATIBO is a key forum in facilitating the achievement of these goals.