Industry Canada Presentation to the National Defense Industrial Association (NDIA)

Washington - May 13, 2009

David Thomson
Defence & Marine Directorate, Aerospace, Defence & Marine Branch
Industry Canada
Agenda

Overview of Canadian Defence and Aerospace Industry

A Supportive Environment for Innovation in Defence and Aerospace
Canada’s Defence and Aerospace Sector: an Overview
Canada is a key player in the Defence and Aerospace (D&A) Sector…

- Canadian industrial and scientific expertise competes in and serves:
  - Civil/Commercial Markets (e.g., Airline sector; communications)
  - Defence & Security Markets (e.g., Armoured land vehicles, weapons, munitions, electronics, components and systems for military aircraft)

- With many crossovers spanning sector activities
...where technology and rapid innovation is critical to commercial success and to a strong defence.

- Canada possesses a wide and diverse range of capabilities. For example,
  - Defence & Aerospace Electronics
  - Training & Simulation (military and civil)
  - Communications, Command & Control
  - Armoured Land Vehicles
  - Security & Detection Products
  - Firearms and Munitions
  - Personnel Protection
  - Electro-optics
  - Aircraft (military and civil; Regional Aircraft; Business Jets; Helicopters)
  - Space (military and civilian)
  - Landing Gear Systems
  - Maintenance, Repair & Overhaul
  - Parts and Components
  - Small Gas Turbines
Canada’s Aerospace (Civil and Defence) Industry is an Important Economic Driver

- Over 400 firms with more than 82,000 employees
  - Roughly 12,000 engineers & scientific staff, and 20,000 technicians & technologists.
- Ranks 5th in world aerospace sales and employment after US, UK, France and Germany.
- Ranks 3rd in world civil aircraft production after US and France.
- Small domestic market—over 80% of aerospace output exported in 2007, with U.S. a key market.
- Aerospace very oriented to commercial markets
  - 78% of industry output for civil use, as compared with 44% in the US.
- Several major foreign firms established in Canada.

Canada’s Aerospace Products (2007)

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Engines &amp; Parts</td>
<td>15%</td>
</tr>
<tr>
<td>Avionics</td>
<td>6%</td>
</tr>
<tr>
<td>Space</td>
<td>2%</td>
</tr>
<tr>
<td>Training &amp; Simulation</td>
<td>4%</td>
</tr>
<tr>
<td>Other Industry Related Products &amp; Services</td>
<td>2%</td>
</tr>
<tr>
<td>MRO</td>
<td>16%</td>
</tr>
<tr>
<td>Aircraft, Parts &amp; Components</td>
<td>55%</td>
</tr>
</tbody>
</table>

Global Leadership (% of Global Market Share)

- Regional Aircraft: 47%
- Small gas turbine engines: 34%
- Visual simulation equipment: 70%
- Aircraft environmental control systems: 60%
- New large aircraft landing gear: 60%
- Civil helicopters: 14%

Source: Aerospace Industries Association of Canada, Teal Group, 2006
The Canadian Space Industry is Also a World Leader

- 200+ organizations in 2007
- Over 6,400 highly skilled workers
- $2.5B in sales (40% Exported)
- Growing Global Market Opportunities

- Six key categories:
  - Satellite Communications (73% of Revenues)
  - Navigation
  - Robotics
  - Earth Observation
  - Space Science
  - Other
Defence and Security Firms in Canada Benefiting from Opportunities to Serve Domestic and Global Markets

- World class capabilities in areas such as:
  - Land vehicles
  - Marine equipment
  - Soldier systems
  - Air and security
  - Communications
  - Command and control

- ~$10B in annual defence & security sales / 50% exported

- 1,500+ firms / 70,000 highly skilled workers

- Canadian defence spending increasing and providing new opportunities for industry

- Integrated into global value chains with success in serving international markets
  - Exports vital given larger foreign markets
  - Canada a market for, and trusted partner and supplier of, defence tech and products
  - Foreign investment is significant with subsidiaries of foreign firms playing a key role

Planned Canadian Defence Spending

Canadian Defence and Security—A Trusted Partner

- Close CD-U.S. economic and military ties, and efforts to foster strong defence industrial base and cooperation
  - Defence Production Sharing Agreement (DPSA) – 1956
  - Defence Development Sharing Agreement (DDSA) – 1963
  - North American Technology Industrial Base Organization (NATIBO) - 1987
  - A U.S. ITAR waiver for Canada - 2001

- Canada an important tech partner and source for several U.S. defence imports
  - Significant increases in armored vehicle & parts related imports from Canada since 2001, helping U.S. respond to pressures
  - Canada a lead recipient of U.S. DoD contracts to foreign entities for defense items & components—FY07 32% by value
  - Canada an early JSF partner

JSF—Illustrating Canadian Capabilities and a Model For Joint Success

- Electrical Controller: Honeywell
- 3D Software: NGRAIN
- Electro-Optics: CMC Electronics
- CV Wing Extension: Avcorp
- Engine Parts: Pratt & Whitney Canada
- Composites, CTOL Horizontal Tails: Magellan
- Landing Gear Maintenance: Goodrich
- Door Up-Locks: Héroux-Devtek
Collectively, D&A Spans Canada…

- Magellan-Bristol Aerospace Ltd. – airframe & engine components, space systems
- Standard Aero – engine repair and overhaul
- Messier Dowty, Goodrich Canada – landing gears
- COM DEV – satellite payload subsystems
- SED – Satellite Systems
- IMP – aircraft maintenance support
- Atlantic Turbines – gas turbine R&O
- Rolls-Royce Canada – Repair & Overhaul gas Turbine engines
- Pratt & Whitney Canada – gas turbine engines
- Boeing Canada – parts and technologies
- Boeing Canada – parts and technologies
- MDA – earth observation systems and services
- Avcorp, Asco – metal, composite and plastic components
- Cascade Aerospace – maintenance, repair and overhaul
- Vector – repair and overhaul
- Norsat International – satellite communications
- General Dynamics Canada – defence electronics
- Magellan – engine R&O and parts manufacture
- Northstar Aerospace – supplier of components and assemblies
- COM DEV – satellite payload subsystems
- General Dynamics – Land Systems Canada
- Honeywell Canada – environmental control systems, electrical power management
- Bombardier – regional and business aircraft
- Slemon Park - MDS-PRAD - Honeywell
- EADS Composites Atlantic – advanced materials
- CHC – helicopter service provider
- IMP – aircraft maintenance support
- L-3 Mas – MRO, In-service support
- Héroux-Devtek – landing gears
- CAE - training and simulation
- Bell – commercial helicopters
- Turbomeca Canada – Gas Turbine R&O
- Thales – turnkey systems, engineering and integration
- GDC – system integration
...with Canada Chosen by Industry Leaders as an Attractive Location to Manufacture and Conduct R&D
Canada Recognised as a Competitive Business Platform from Which To Serve Domestic and Global Markets

- An open trading economy well positioned to serve the U.S. and the world
  - Facilitating trade and defence policies, and agreements (e.g., FTA, NAFTA, DDSA, DPSA, Canada’s ITAR waiver)
  - High regulatory standards
  - Competitive tax regime
  - Strong infrastructure and proximity to U.S. market
  - Strong technical education and skilled workforce
  - Solid labour productivity
  - Solid R&D supporting infrastructure and government policies

Canada also recognizes ongoing need to adapt and support innovation to ensure competitiveness, and attainment of defence and security objectives
A Supportive Environment for Innovation in Defence and Aerospace
Canada has a strong competitive R&D infrastructure

- Tax treatments for R&D among the most favourable in the G-7
- Federal and provincial tax-based incentives permit firms to significantly lower R&D costs through direct investment or sub-contracting in Canada
  - Tax credits and accelerated tax deductions for a wide-variety of R&D expenditures.
  - Eligible costs include: salaries, overhead, capital equipment, and materials
- Large Canadian pool of scientific and engineering personnel
- Strong technology collaboration between universities and industry
- Wide range of research facilities
- Strong capability in advanced technologies

Relative Generosity of R&D Tax Incentives*
(Index: Canada = 100.0)

<table>
<thead>
<tr>
<th>Country</th>
<th>Relative Generosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>102.0</td>
</tr>
<tr>
<td>Canada</td>
<td>100.0</td>
</tr>
<tr>
<td>Japan</td>
<td>97.3</td>
</tr>
<tr>
<td>U.K.</td>
<td>91.5</td>
</tr>
<tr>
<td>U.S.</td>
<td>88.5</td>
</tr>
<tr>
<td>Italy</td>
<td>80.8</td>
</tr>
<tr>
<td>Germany</td>
<td>80.3</td>
</tr>
</tbody>
</table>

Note: Relative generosity is determined by dividing the after tax cost of performing $1.00 of R&D by 1 less the corporate tax rate.
Results are indexed to the relative generosity of Canada’s system of tax-based support for R&D. The higher the ratio the more competitive the tax system.
* Calculations based on large firms
The Industry Portfolio – R&D Support Organizations

- Industry Canada
- National Research Council Canada (NRC)
- Natural Sciences and Engineering Research Council of Canada (NSERC)
The Strategic Aerospace and Defence Initiative (SADI) is delivered by Industrial Technologies Office (ITO), a Special Operating Agency of Industry Canada.

SADI Program Objectives:

- Encourage strategic R&D that will result in innovation and excellence in new products and services
- Enhance the competitiveness of Canadian Defence and Aerospace companies; and
- Foster collaboration between research institutes, universities, colleges, and the private sector

SADI was launched April 2, 2007 with a budget of $900 million over the next 5 years.
Industrial and Regional Benefits Program (IRB)

- Approved by Cabinet in 1986, the IRB Policy provides the framework for using federal government procurement to lever long-term industrial and regional development.

- An IRB is a contractual commitment by prime contractor to place work in Canada as a result of successfully bidding a Canadian defence program. (100% of contract value)
  - Work can either be directly related to procurements, or indirectly related to them.

- IRBs are mandatory for projects over $100 million (usually Major Crown Projects), and discretionary in the $2-100 million range.

- The IRB Policy is administered by Industry Canada

- Currently $14.5 billion under contract.
IRB Objectives

- Objective: focused strategy for long-term industrial and regional development
  - High quality technology as identified through a key technology list developed by industry stakeholders
  - Lasting economic value for Canadian industrial base
  - Provide opportunities and access to export markets for Canadian industry
  - Enables Canadian company participation in global value chains
National Research Council Canada (NRC)

- Key NRC responsibilities include:
  - Undertaking, assisting or promoting scientific and industrial research in different fields of importance to Canada
  - Providing vital S&T services to the research and industrial communities.

- D&A relevant operations and initiatives include:
  - Military Material Engineering—The Centre for Surface Transportation Technology (CSTT) serves Canada’s Department of National Defence and commercial defence clients as a vehicle and component test centre.
  - NRC Institute for Aerospace Research—Canada’s national aerospace laboratory, conducts R&D in the full range of issues related to the design, manufacture, performance, use, and safety of air and space vehicles.
NSERC is a separate employer of the Government of Canada, reporting to Parliament through the Minister of Industry.

NSERC promotes and assists research in the natural sciences and engineering.

Funds almost 11,800 university professors every year and encourage more than 1,400 Canadian companies to invest in university research and training.

Several programs, including University and Industrial Research chairs.

2008/09 budget $1.034 billion.

Over the last ten years, NSERC has invested over $7 billion in basic research, university-industry projects, and the training of Canada’s next generation of scientists and engineers.
Beyond the Industry Portfolio

• Defence Research and Development Canada (DRDC)

• Scientific Research and Experimental Development (SR&ED) Program
Defence Research and Development Canada (DRDC)

- An agency of the Canadian Department of National Defence that responds to scientific and technological (S&T) needs of the Canadian Forces so that they remain scientifically and operationally relevant

- FY 07-08 S&T Program Total Value: $357.9 million

- Multiple DRDC centres across the country with over 1,700 employees

- Works with Canadian industry (firms as R&D suppliers and partners)—including support for some eligible industry initiated research

- Industry relationships facilitated through programs such as:
  - The Defence Industrial Research Program
  - The Technology Demonstration Program
Scientific Research and Experimental Development (SR&ED) Program

- Federal tax incentive program to support and foster science and technology, particularly R&D conducted by Canadian companies

- Eligible project areas:
  - Experimental Development; Basic Research; Applied Research; Support Work

- Complementary Provincial Programs in most provinces.

- Investment tax credits vary from 20 to 35% of eligible R&D expenditures depending upon the amount of those expenditures and size of company.
### Key Websites

- **Industry Canada**

- **NRC Institute for Aerospace Research**
  - [http://iar-ira.nrc-cnrc.gc.ca/main_e.html](http://iar-ira.nrc-cnrc.gc.ca/main_e.html)

- **NRC/IRAP**

- **Industrial Technologies Office**

- **NSERC**

- **Sustainable Development Technology Canada**
  - [http://www.sdtc.ca/](http://www.sdtc.ca/)

- **DRDC**

- **Scientific Research and Experimental Development**

- **Cdn Company Capabilities**
The Way Forward

- Canada has achieved solid collaboration success on both a national and international scale but much more can be accomplished.

- Canada welcomes the opportunity for ongoing dialogue with international stakeholders to foster increased international collaboration.

- **Contact points:**
  - David Thomson—Defence and Marine Directorate, Aerospace, Defence and Marine Branch (ADMB), Industry Canada
    [David.Thomson@ic.gc.ca](mailto:David.Thomson@ic.gc.ca)
    1-613-954-2908