

INDUSTRY AND DEMOGRAPHICS BASELINE SURVEY OF THE NOVA SCOTIA AEROSPACE SECTOR

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HUMAN RESOURCES PARTNERSHIP

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DECEMBER, 2004

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EXECUTIVE SUMMARY

The Aerospace Sector - The baseline study focused on the Nova Scotia aerospace sector. The sector was defined as follows:

“Canada's aerospace industry is comprised of firms that design, manufacture and assemble, and provide aftermarket services for aerospace and auxiliary products to commercial and government customers worldwide. Its outputs include regional and business aircraft, civil helicopter, engines and power supply, full flight simulation, avionics, command & control and air navigation systems.”

Members of the Aerospace Sector - Members of the aerospace sector were identified via interviews, searches of manufacturers and service provider databases, trade journals, previous studies, and the ADIANS membership list, among others. Each of the aerospace establishments identified was provided with the list and representatives of those establishments were asked to review the list and recommend other establishments.

The list of the 53 establishments in the NS aerospace sector as of September 2004 is in Appendix 3.

The Research Plan - The research included:

- an environmental scan to gain perspective on key issues;
- research from secondary sources;
- an intensive survey and interview with representatives of every Nova Scotia establishment in the aerospace sector (not all establishments completed the survey and interview);
- case studies on issues of special interest that were raised by the findings of the environmental scan and survey/interviews;
- research on issue specific questions posed by the terms of reference.

Environmental Scan Findings - The environmental scan concluded that:

- growth in NS will, in the next two to three years, be strong because of the Maritime Helicopter Program (MHP) opportunity;
- industry believes labour supplies can meet demand;
- the sector has not acknowledged the potential impact of the passing “boomer” bubble; and
- the sector does not appear to be ready to leverage the longer term growth prospects made possible by the MHP.

The findings and conclusions of the environmental scan caused the baseline survey to improve its focus on:

- estimates of employment growth;
- management education and training;
- cooperation between firms;
- cooperation between the aerospace sector and education and training institutions; and
- emerging human resource issues that will affect sector growth in NS.

Baseline Survey Becomes a Census - Given the final estimate of the aerospace population of 53 establishments a decision was made to:

- rework the draft version of the survey guide to make it more comprehensive and in-depth; and
- attempt a census, instead of a sample survey, of the NS aerospace sector.

Baseline Survey Findings – Twenty-three establishments completed the survey. The findings highlights are as follows.

Employment – The 23 aerospace establishments surveyed employed 1,950, accounting for about 78% of aerospace sector employment in NS. The breakdown by major occupation groups and sex is as follows:

	Management	Professional / Scientific	Technical	Admin.	Trades
Female	13%	27%	17%	59%	4%
Male	87%	73%	83%	41%	65%
Total	10%	21%	34%	12%	24%

Equity group employment, by occupation group was as follows:

- Management, 0.9%;
- Professional/Scientific, 2.2%;
- Technical, 1.6%;
- Administrative, 10.0%; and
- Trades, 3.9%.

Remuneration - Median salaries for the occupation groups were:

- Management, about \$65,300;
- Professional/Scientific, about \$63,700;
- Technical, about \$46,700;
- Administrative, about \$29,100; and
- Trades, about 26,300 (based on very few cases).

About 60% of respondents said that salaries in NS were lower than in the aerospace sector in the rest of Canada.

Median hourly rates for each occupation group were:

- Management, about \$19.30/hour (based on a very small number of cases);
- Professional/Scientific, about \$17.50/hour;
- Technical, about \$18.30/hour;
- Administrative, about \$17.70/hour; and
- Trades, about \$15.60/hour

About 70% of respondents said that hourly rates were lower than in the aerospace sector in the rest of Canada.

Employment Growth - The NS aerospace sector expects to hire the following numbers over the next five years:

- 0 – 24 months, 346 persons; and
- 25 – 60 months, 242 persons.

The breakdown in expected hires by occupation group is about as follows:

- Management, 7%;
- Professional/Scientific, 28%;
- Technical, 26%;
- Administrative, 4%;
- Trades, 34%; and
- Other Occupations, 1%.

The reasons for expected hiring were given as follows:

- growth, 38%;
- normal turnover (not retirement), 33%;
- retirement, 20%; and
- new skills / technology being used, 10%.

Therefore, about 48% will be net new hires, representing about 282 new jobs.

Importance of Aerospace Sector Experience in Hiring Decisions – The importance of experience in the aerospace sector varied significantly between occupation and seniority. The following shows the

ranking of aerospace sector experience for new hires (based on the percent saying relatively or very important), by occupation and seniority level:

- 66%, intermediate/senior management hires;
- 63%, junior/intermediate management hires;
- 59%, intermediate/senior technical hires; and
- 52%, junior/intermediate technical hires.

For new hires in all other occupations experience in the aerospace sector was rated relatively or very important by less than 50% of respondents.

Supply of Labour - Occupations expected to be relatively or very difficult to find and hire were:

- | | |
|--|--|
| <ul style="list-style-type: none"> • aircraft mechanics non-licensed (sheet metal/composites), 100% said would be relatively or very difficult to hire; • assemblers and fabricators, 100%; • composite material engineers, 100%; • design engineers, 100%; • healthcare practitioners & technicians (intermed./sr.), 100%; • numerical control machinists, 100%; • non-destructive inspection technicians (intermed./sr.), 100%; • pneumatics/hydraulics professionals, 100%; • safety systems professionals, 100%; • supervisors of installers, maint. & repair workers, 100%; | <ul style="list-style-type: none"> • supervisors of production workers, 100%; • textile, apparel and furnishings workers, 100%; • welders (intermed./sr.), 100%; • electrical and electronics assemblers (intermed./sr.), 84%; • machinists (conventional machines), 76%;; • mechanical engineers (intermed./sr.), 75%; • executive and senior managers (intermed./sr.), 72% • aircraft mechanics non-licensed (mechanical/trim), 67%; • avionics/electrical (intermed./sr.), 66%; and • executive and senior managers (jr./intermed.), 60%. |
|--|--|

Less than 60% of respondents thought other occupations would be relatively or very difficult to find and hire.

Human Resource Development - Investment in HRD is low but not atypical from other sectors in Canada. The current rates, as a percent of payroll, for each occupation group are approximately as follows:

- | | |
|---|--|
| <ul style="list-style-type: none"> • Management, 3.1%; • Professional/Scientific, 2.7%; • Technical, 2.9%; | <ul style="list-style-type: none"> • Administrative, 1.8%; and • Trades, 2.8%. |
|---|--|

Most Needed Skills in the Next Ten Years – Respondents believe that the following skills, by occupation, will be most needed by workers in the sector:

- Management:
 - leadership, human resource and communications
 - technology and computer related
 - general and project management
 - planning - strategic and operational
- Professional Scientific:
 - maintaining and updating knowledge and skills coaching and project and company management
 - IT and computer skills
- Technical
 - maintaining, updating and broadening knowledge and skills
 - computer related skills
- Administrative:

- computer and software related skills
- teamwork and communications
- ability to assume more responsibility
- Trades:
 - maintaining, updating and broadening skills
 - team work and coaching skills

Most Pressing Issues with Respect to Education and Training in NS - The respondents judged that changes in the education and training system would be needed if the following skills were to be maintained and improved (only “most mentioned” are listed):

- Management:
 - leadership, human resource and communications skills
- Professional/Scientific:
 - ability to apply knowledge and training
- Technical:
 - up to date computer and software skills
 - skills would become out-of-date
- Trades:
 - training would not be sufficiently thorough
 - numbers would fall short

When asked what the nature of the changes needed in the education and training system the respondents reported as follows (only most mentioned are listed):

- broader range of courses, e.g., support trades, electronic assembly, composites, acoustics, risk management, leadership roles
- improved marketing of and guidance into trades
- more effective involvement of the universities and community college with the private sector
- more thorough training

Most Pressing Human Resource Issues - Finally the interviewees were asked their opinion on the most important HR issues in the next five years. They reported as follows (only “most mentioned are listed):

- shortage of skilled trades and training options
- motivation, attitude and flexibility of the work force
- access to skilled, trained younger managers
- communication between management and the shop floor
- performance management

Improving Cooperation and Coordination Between Industry and the Education/Training Systems: Case Studies - The success rates of the Manitoba Aerospace Human Resources Coordinating Committee, improved quality of consultation between industry and education and training institutions and the fact that it was successfully implemented in a regional economy that is similar to NS recommend this approach for Nova Scotia. The sector should expect to contribute significant resources of its own to make a Manitoba-like program a reality in NS.

The Society of British Aerospace Companies has developed a model that enables it to work with the Department of Trade and Industry to identify potential futures of the aerospace sector and the interventions that need to take place. The arrangement is new but showing some success and could be adapted to NS.

Improving Management Skills in Regional Economies to Increase the Size and Scope of Their Aerospace Sectors: Case Studies - The Ontario Aerospace Council (OAC) created an MBA track

program designed for aerospace executives and senior managers. The program was evaluated and found successful in terms of advancing the careers of aerospace executives. The OAC anticipates:

- moving away from an MBA track to place more emphasis on the modular learning aspects of the program and
- modifying the program so that it is more accessible to mid-level managers in larger firms or the senior-level managers in small firms.

The AEMP program could be adapted to NS to improve the ability of managers of SMEs to growth their firms.

The participation of the Swiss aerospace sector with the SWISSMEM executive training school as an example of different industry sectors working together in management training. The Swiss Aerospace Industry is too small to deal with the need for leadership and management training by itself. The aerospace sector out-sources training to private training companies via the executive training school SWISSMEM, the leading representative body of the Swiss Mechanical Electrical Industries. The aerospace sector purchases “off the shelf” training courses from SWISSMEM and pays the SWISSMEM staff to create special courses for the aerospace sector. This case provides an example of small sectors cooperating with larger ones to purchase training of high quality at reasonable cost. In principle this model could be adapted to NS but in practice there is not now a training school supported by a larger sector in NS with which the aerospace sector could ally itself.

Impact of Demographic Changes on Labour Supply for the Sector - Despite modest expectations for population growth the passing of the baby-boom generation will see the core labour force age group decrease in size beginning at about 2010.

At 1.37 Nova Scotia has the second lowest total fertility rate (total births per woman aged 15 – 49) among the provinces and territories.

Net inter-provincial migration stands at about -733/year.

Net immigration stands at about 444/year. NS has set targets to raise immigration to 3,600/year (from 1,400/year) and to raise the retention rate above the current 40%. Immigration will not likely help address the labour supply needs of the next five years.

Net migration stands at about +290/year but the net movement is negative for younger persons and positive for older people.

Ability of NS Training and Education System to Provide Skilled Labour – Less than a half-dozen graduates of the Nova Scotia Community College (NSCC) enter the aerospace sector each year. There does not seem to be sufficient awareness amongst students of the opportunities coming in the aerospace sector.

The NSCC is adept at providing customised training to industry and provides a range of customised training the firms in the aerospace sector.

The NSCC would align its programs more specifically with the aerospace industry if the demand is there.

Dalhousie University graduates 25-40 students from their Industrial Engineering program each year. These students are trained in a broad range of programs that include technical and management training. They take part in three work terms that provide experience in industry. Although they are not

specifically prepared for the aerospace and defence industry, several graduates per year do find employment in that industry sector.

Equivalency Certification of foreign Credentials - Equivalency certification process remains a constraint on immigrant labour supply for the following reasons:

- credential assessment is just becoming a priority topic federally;
- credential assessment cuts across three jurisdictions – federal, provincial and professional organizations; and
- credentials are not necessarily recognized beyond the province I which they were initially accepted.

Employing Members of Equity Groups - There is no reason the aerospace sector cannot make breakthroughs in hiring from equity groups that have been made in medicine, business services and law. The aerospace sector will have the support of the NS Skills Strategy, which has identified equity group participation in the labour force as a priority.

Sufficiency of Information About the NS Aerospace Sector – Guidance counsellors report few requests for information on aerospace. But, counsellors also say that no other sector is necessarily doing a better job providing information than aerospace.

Few people in the general public know much about the sector in Nova Scotia. New contracts and job creation announcements get more attention than information about technology advancements.

The Role of Human Resource Planning in the NS Aerospace Sector – There is little evidence that HR planning or needs forecasting plays a significant role in corporate planning and management in NS. The HR function focuses on compliance with labour related laws and hiring when “orders” for extra labour are passed down from the production managers.

Conclusions and Recommendations: Regarding the Growth and Development of the Aerospace Sector

1. The relatively large amount of hiring in a labour supply situation that is tightening could make it more difficult for SMEs to compete with large firms for labour. The ADIANS HRP could take the role of a labour recruitment service to help smaller firms adapt to the growing competition for skilled labour.
2. It would be unwise to count on immigration to meet significant portions of the need for skilled labour over the next five years because numbers will likely be low and improvements in the process of certifying the equivalence of foreign credentials is still off in the distance.
3. There are signs that market demand combined with a limited supply of skilled labour is closing the gap between NS and rest of Canada wages. Other things equal this is a positive trend. However, many of the interviewees noted that wages were now lower because, among other reasons, it was important to keep NS’s competitive edge compared to lower cost producers in emerging economies. Competition based on costs can go on only so long before a “race to the bottom” starts. If NS is to retain its competitiveness in the long term it needs to produce more value than its competitors, not simply work more cheaply. The question is, does NS have the skills and the economic structure in its aerospace sector needed to break into high value-high skill activities related to design and engineering. Or, will it remain oriented more towards manufacturing products that could soon be produced more cheaply in emerging economies?

4. The case studies found at least two good models that could be adapted to Nova Scotia that would help improve the strategic business development skills of NS management. However, these efforts may need to be directed to SMEs that are locally owned or at least have their “head office” operations in Nova Scotia. These enterprises likely have a greater need for assistance and have the greater control over their strategic business growth decisions. We recommend that ADIANS make special efforts to bring locally owned businesses and businesses with their centre of operations in NS into its efforts to develop the NS aerospace sector.
5. There is very little evidence that the HR function played a significant role in corporate strategic planning in NS. This absence could hinder efforts to improve the skills of management in NS and limit the growth potential of the sector in NS.

Conclusions and Recommendations: Regarding Improvement in the Supply and Quality of Labour

1. The ADIANS HRP needs to increase career awareness in the high schools and in the NSCC.
2. The ADIANS HRP needs to present the findings of this report to the Dean of the NSCC Trades and Technology School and ask for a sector specific meeting to discuss anticipated industry needs. The aerospace sector needs to become prepared to review and comment on curriculum additions and changes to specific programs related to aerospace.
3. ADIANS should seek membership in the Association of Industry Sector Councils (AISC) and participate in cross-sector initiatives. The Department of Education has recently made it clear that while AISC input is important, AISC does not represent all the sectors that need to offer input.
4. The weakest area may be management level employees. The aerospace sector should consider the establishment of a Management Institute, similar to the Dexter Institute through the NSCC. The work of the institute should be accessible in terms of curricula and price to SMEs because history shows that these firms, which tend to be locally owned or have locally based head offices are the most likely sources of growth and development in a regional economy that is “at distance” from a nation’s economic centre of gravity.

1.0 PURPOSE OF THE SURVEY AND DIRECTED RESEARCH

The Aerospace and Defence Industries Association of Nova Scotia (ADIANS) Human Resources Partnership (HRP) sponsored this baseline survey of the aerospace sector, whose findings will be used by the HRP to help develop a workforce strategy for the province's aerospace sector. The study:

- identifies the companies engaged in aerospace work;
- measures employment by occupation and skill level;
- provides an estimate of the number of people, by occupation and skill level, the sector expects to hire from 2004-09;
- provides information on the participation of equity groups in the aerospace sector's labour force;
- provides a demographic assessment of future size of the labour force age group in Nova Scotia;
- identifies the key labour force and human resource development issues facing the NS aerospace sector;
- addresses special topics with respect to human resource development for the aerospace sector;
- uses case studies to assess if the manner in which other jurisdictions have dealt with selected key issues has application in Nova Scotia; and
- makes recommendations for next steps in developing the "Workforce Strategy."

1.1 BACKGROUND

The ADIANS- HRP is an incorporated non-profit private sector association created by the Aerospace and Defence Industries Association of Nova Scotia and the Province of Nova Scotia through its agency, Skills Nova Scotia, and the Office of Economic Development. The mission of HRP is to:

- address and help satisfy the human resource needs of the Nova Scotia's aerospace and defence sector; and
- enable the present and potential workforce including under-represented groups to better participate in the sector.

It intends to achieve its mission by:

- developing, implementing and monitoring a "Workforce Strategy" for the sector;
- advising the province on matters relevant to the industry and human resources matters;
- facilitating better networking among education and training providers involved in aerospace and defence related training; and
- liaising with other organizations to share experiences, resources, training and human resources related programs, and to achieve economies of scale.

Three key imperatives drive the Government of Canada's skills and learning agenda:

- First, the knowledge-based economy means an ever-increasing demand for a well-educated, skilled workforce throughout the economy and the country.
- Second, the retirement of the baby-boom generation is reducing the size of the core labour force age group.
- Third, our learning system must be strengthened if we are to meet the skills and labour force demands of the next decades.

Nova Scotia faces the same imperatives as the rest of Canada, which in the case of NS are compounded by net migration near zero and rapidly maturing community college and training system.

2.0 THE AEROSPACE SECTOR

The manufacture of aircraft and of aircraft and aerospace parts is controlled by a small number of primary, global manufacturers supported by an international network of suppliers. The U.S, the U.K., France, Canada, and Germany account for over 85% of global exports of aircraft, and aircraft engines and parts.¹

Aircraft and aircraft and aerospace parts manufacturers are divided into tiers:

- Tier 1 manufacturers are the ‘prime’ manufacturers (e.g. Bombardier Aerospace, Boeing Aerospace Ltd., Bell Helicopter). They produce the completed aircraft, and will frequently produce the main components, such as airframes.
- Tier 2 manufacturers produce major subsystems, such as the avionics systems or power train.
- Tier 3 suppliers manufacture components and sub-assemblies.
- Tier 4 suppliers produce a smaller number of precision parts which are then integrated at a higher tier level.

2.1 THE WORLD’S AEROSPACE SECTOR²

The nature and scope of the worldwide aerospace sector is well summed up in the following points:

- It is among the most cyclical of industrial sectors, strongly influenced by factors such as fuel prices, political events and national and international economic performance. Year-over-year revenues can vary by 20% and employment levels subsequently can, in the short-term, be volatile.
- Beginning in the mid 1990s, business activity and employment levels in the industry were on an upward trend, peaking in 2001. These levels have subsequently decreased.
- The slowdown is expected to continue into 2004.
- Growth in global air passenger traffic is forecast at 4-5% per year for the next 20 years. The world’s aircraft fleet is expected to more than double, to 32,000+ aircraft over the next 20 years. Regional aircraft – an area of specialization for Canada – will capture a disproportionately higher share of the fleet coming on-line.
- Cargo traffic is expected to grow 6-7% per year.
- Military aviation markets will enjoy modest growth over the next 20 years.
- Employment growth in aerospace manufacturing will be modest (0-2% growth per annum) over the next 4-5 years. More robust growth (2-4 % per annum) is expected beyond 2007.
- In maintenance, employment growth will be stronger, averaging 3-4% per annum, with strong potential for sustained growth as high as 5% per annum possibly achieved by 2005-06.
- Worldwide investment by government and industry in research and development is declining.

¹ Sector Competitiveness Frameworks: Aircraft And Aircraft Parts, Industry Canada, 1999.

² The substance of Sections 2.1 and 2.2 was drawn from:

- “2002 Human Resources Strategic Sector Study of the Canadian Aviation Manufacturing and Maintenance Industry”, Chapter 2. The Canadian Aviation Maintenance Council, Ottawa, Canada, 2002.
- “Pathway to Flight: A Profile of Career Opportunities in Niagara’s Aerospace Sector”, Chapter 2: Sector Profile, Niagara Training and Adjustment Board and the Niagara Aerospace Partnership for Learning, St. Catharines, Ontario, 2002.

- To achieve these growth projections Canadian firms will need to take aggressive action to:
 - respond to changing market and supply chain dynamics;
 - continue to invest in new products and processes; and
 - sustain their global competitiveness.

2.2 THE CANADIAN CONTEXT

Canada's position in the global aerospace industry is larger than one would expect considering its mid-size economy and relatively small military interests. After struggling through the recession of the early 1990s, Canadian sales have risen rapidly since 1996. By 2000 Canada had achieved the fourth largest aerospace industry in the world, with annual sales reaching \$20 billion (6.3%/year growth, 1993-2000) and employment at 90,000 (8.2%/year growth, 1993-2000). Canada's situation and prospects can be summarised as follows:

- Market share of the aerospace sector is about 6% of global revenues in the civilian aircraft manufacturing and maintenance marketplace, roughly double its contribution to the world GDP.
- Quebec and Ontario account for close to 90% of Canada's aerospace revenues and employment. The sector is also an important contributor to the economies of Manitoba, Nova Scotia, and British Columbia.
- Exports account for 75-80% of the sector's annual output. About two-thirds go to the United States with the balance going to Europe, South America and the Pacific Rim.
- The Canadian aerospace sector runs a trade surplus of about \$2.5 billion per year.
- Its market niches (e.g. regional aircraft manufacture and maintenance) will likely be less affected by the current slowdown than the overall industry. Canadian aviation manufacturing will likely not return to 2001 levels until 2004-05 after which time growth prospects look strong.
- Canadian aviation maintenance activity will grow more significantly and more steadily throughout the next 20 years, in the 3-5% per annum range, to deal with an expanding, more complex fleet, aging aircraft and mounting regulations.
- Canadian investment in human resources by government and industry in training and skills updating is credited with developing a highly skilled, mobile workforce.
- The attraction of lower labour costs in Asia and South America is a challenge facing Canadian suppliers.
- The skills shortage problem of the latter 1990s was temporarily mitigated by the present economic slowdown.
- The skills shortage issue will resurface as an even greater competitive factor given the:
 - orientation to hire-and-fire as workloads fluctuate;
 - aging and reduction in size of the core labour force age group;
 - growth projections for the next twenty years, and
 - pivotal role of human talent in innovation.

2.3 FOCUS OF THE BASELINE SURVEY

The baseline survey focused on the aerospace sector, as described in the two definitions that follow:

“Canada's aerospace industry is comprised of firms that design, manufacture and assemble, and provide aftermarket services for aerospace and auxiliary products to commercial and government customers worldwide. Its outputs include regional and business aircraft, civil helicopter, engines and power supply, full flight simulation, avionics, command & control and air navigation systems.”

“Canadian-based aerospace firms are involved primarily in: a) the development and production of regional and business aircraft, helicopters, small turbine engines and simulation systems; b) the global supply chain of original equipment manufacturers; or, c) the provision of after-market parts and overhaul/maintenance/repair services to extend the life of in-service aircraft.”

Based on these definitions we find that the NS aerospace sector is composed of the following establishments:

Advanced Precision Machining and Fabrication	C-Vision Limited	Orenda Recip. Inc.
Aerotec Engines Ltd.	Fabco Industries Limited	Pivotal Power Inc
AIRMAC Flight Centre	Focal Technologies	Pratt & Whitney Canada
Allendale Electronics	Greenwood Flight Centre	Pylon Atlantic
Composites Atlantic Machining	Halifax International Airport Authority	R.P. Hawboldt Machining
AMIRIX Systems Inc.	HSRS Aviation Services	Romac
Anixter International	IMP Aerospace Avionics Division	Russel Metals
Apex Industrial Supplies	IMP Aerospace Components	Seimac Limited
Atlantic Aero Marine Supply and Manufacturing	IMP Aerospace Machining Division	Sgitheach Air Service
Atlantic Avionics	IMP Aerospace - Airport	SNC-Lavalin Inc
Atlantic CNC	Internav	Survival Systems Industrial Ltd
Atlantic Hardchrome Limited	MacDonald, Dettwiler & Associates Ltd	Tecsalt Eduplus Inc
Bartlett Plastics and Precision Machining	Mariner Forge	Turbo Wing Development Canada Ltd.
Bradeans Tool & Die Ltd	Mil-Aero Electronics Atlantic Inc.	Ultra Electronics Maritime Systems
Bridgeport Wire Rope and Chain	Nautel	Xwave Solutions Inc
Coastal Aviation	Navitrac Engineering Inc.	Yarmouth Airport Commission Association
Coluza Technical Services	Northrop Grumman Canada Corporation	
Composites Atlantic Group EADS		
Cougar Helicopters Inc	Ocean Case Company Limited	

The establishments that responded to the baseline survey employed 1,950 in October 2004.³ Their employed labour force grew about 10% from 2001 to October 2004⁴. Extrapolating from the respondents' data, and adjusting for the products and services and size of establishments that did not respond we estimate that employment in Nova Scotia's aerospace sector was about 2,500 in October 2004.

³ Appendix 4 provides a list of the establishments that completed the survey.

⁴ Some respondents, even though they were in business in 2000, were not able to provide employment data for that year.

The products and services produced by the survey respondents include:

- Products:
 - Aircraft Parts (various)
 - Cables/Cable Harnessing
 - Circuit Boards (assembled)
 - Communication Products
 - Composite Aircraft Parts
 - Electrical Displays and Boxes
 - Machining (custom
 - Moulds, Tooling and Composites Tooling
 - Printed Circuit Boards
 - Rescue Baskets (Empira)
 - Sensor Systems (advanced)
 - Survival and Airborne Rescue Kits
 - Training Programs
- Services:
 - Aircraft Maintenance
 - Automation Programming
 - Electronics Design and Calibration
 - Facility Maintenance and Operation
 - Life raft, life vest, survival kit servicing
 - Manufacturing Process Design
 - Metal Fabrication and Manufacturing
 - Plating
 - Program Management
 - Tooling Design
 - Training and Education
 - Warranty, Maintenance and Repair Support

3.0 ENVIRONMENTAL SCAN

Interviews were conducted with representatives of a cross-section of the NS aerospace sector. The interviews provided one means to assess the overall state of the province's aerospace sector and in particular issues associated with hiring and human resource development.

3.1 FINDINGS

The interviewees believed that the growth in the sector in Nova Scotia would follow a similar path to that of Canada (as described in Chapter 2) but with a product mix more oriented to manufacturing and a market more oriented to defence. They noted the go-ahead of the Maritime Helicopter Program would have about a \$1.0 billion impact for Atlantic Canada.

They believed that growth over the next 10 years would be "challenging to steady. Major federal programs (Joint Strike Fighter, Maritime Helicopter Program, fixed wing search and rescue procurement, frigate upgrades) will help steady the growth rate. However, NS is not yet sufficiently involved in national programs to derive major benefits from federal procurement.

With respect to labour and skills the interviewees believed that over the last five years:

- The supply of labour was sufficient, competitively priced and highly productive.
- The supply was bolstered by people returning to the civilian labour force from DND.
- There were challenges finding higher skills (e.g., software engineers) and maintenance skills with technical certifications.
- Industry overcame the challenges of finding higher skilled people by:
 - working with universities and Nova Scotia Community College;
 - hiring returning Maritimers;
 - improving job training and career path development plans; and
 - some movement of labour from small to large firms

The interviewees did not believe that remuneration levels were critical issues when recruiting locally. The sector does not have to pay "international rates" as is the case with the oil and gas sector. They did say that entry level remuneration is lower than the rest of Canada but the gap narrows with seniority. However, NS will have to improve wage levels to compete for the best personnel, maintain/improve quality and leverage emerging technologies and manufacturing techniques in the future.

With respect to the labour supply in the next 5 to 10 years the interviewees saw:

- a special need for seasoned managers, sales/marketing staff, young engineers;
- labour shortages in trades and technical occupations at growth of 15%+/year; and
- the negative impact of passing of the "baby boom" bubble being underestimated by industry.

The participants in the environment scan believed that labour will:

- return to Nova Scotia after moving away;
 - but will need to be convinced that there are sustainable opportunities with dynamic companies and a growing job market in NS;
- take advantage of education and career pathways if management is willing to set them up
- move between firms for improved pay, benefits, career advancement opportunities and job security

Some of the respondents suggested that competition for labour should be welcomed as it creates a better business environment for firms and labour.

Before the sector takes action on potential labour supply and skills issues it will need to see a demand forecast that engenders some confidence. Notwithstanding, over the next 10 years the interviewees:

- do not foresee large change in the type of skills needed
- believe the aging labour force age group will introduce problems in finding labour with experience and skill;
- believe the sector will need to work pro-actively with NSCC to expand numbers with technician level skills; and
- believe the sector will need to use immigration as a source of skilled labour.

In terms of the NS aerospace sector's capacity to participate in Canada's aerospace sector the interviewees believed that:

- the capacity and capabilities of firms' has improved in the last five years;
- the sector is building a bit of a critical mass;
- growth in NS will depend on quality of NS management and sales teams; and
- firms need to focus on development of partnerships and alliances to bid on work together.

The threats to NS' aerospace sector include:

- industry consolidation;
- the end of national programs;
- re-direction of work to other regions and countries for political reasons; and
- movement of work to lower cost areas

Threats related to labour and skills shortages were not considered large, in relative terms, and were mentioned less frequently by the interviewees.

When asked to consider how ready and willing the aerospace sector was to change so it could grow the consensus was that:

- ADIANS beginning to have impact on view that change was needed;
- NS firms are beginning to experience the value of partnerships and alliances to their own growth and that of the sector in the province;
- there is a growing realisation of the need to work, and cost-share projects and programs, with universities and NSCC;
- more development of co-op education and apprenticeship paths is needed
 - But there is still a tendency in industry to follow "just-in-time" as the appropriate staffing model, which constrains proper training and human resource development practices; and
- the sector needs to buy-into a cooperative approach (between firms as well as between industry and education and training institutions) to labour force development issues.

The environmental scan concluded that:

- growth in NS will see strong numbers because of the MHP opportunity;
- industry believes that current labour supplies can meet demand – but has not yet acknowledged the potential impact of the passing "boomer" bubble and aging workforce;
- the sector has a culture of "wait and see" because it is not convinced that increased opportunity will lead to labour shortfalls; and
- the sector does not appear to be ready to leverage the short and long term growth prospects made possible by the MHP.

3.2 EFFECT OF THE SCAN ON THE CONTENT OF THE BASELINE SURVEY

The findings and conclusions of the environmental scan caused the baseline survey to improve its focus on estimates of employment growth, management education and training, cooperation between firms, cooperation between the aerospace sector and education and training institutions and emerging human resource issues that will affect sector growth in NS.

4.0 BASELINE SURVEY

Appendix 4 contains the survey guide used for the collection of baseline data.

4.1 METHOD

At the outset of the study it was anticipated that the population of establishments participating in the aerospace sector would be too large to conduct a census of participants. A stratified random sample would be drawn to provide a profile of the population of establishments.

With the acceptance of the definition of the aerospace sector and described in Section 2.3 the potential population was substantially reduced. Members of the population were identified via interviews, searches of manufacturers and service providers databases, previous studies, the ADIANS membership list, among others.

Finally, each of the aerospace establishments identified by this procedure was provided with the list of establishments compiled. Representatives of those establishments were asked to review the list and recommend other establishments.

The final list was reviewed with the Steering Committee. The list of establishments in the NS aerospace sector as of October 2004 is shown in Appendix 4.

Given the final estimate of the population size a decision was made to:

- rework the draft version of the survey guide to make it more comprehensive and in-depth; and
- attempt a census survey, instead of a sample survey, of the NS aerospace sector.

The interviews were completed according to the following protocol:

- appropriate contacts were identified at each establishment;
- the contact person was telephoned, the purpose of the survey was explained and their cooperation was encouraged;
- the contact person was “warned” that the survey was many pages long but that it would take 30 to 45 minutes to complete;
- the contact person was assured that all information would remain confidential, only group totals would be published and no total would be shown in cases where the dominant firm could be deduced;
- the consultant offered to conduct the survey in person with the contact or via telephone;
- the contact person was given the option of completing as much of the survey on their own as possible and then receive follow-up assistance from the consultants;
- the survey guide was e-mailed to the contact person;
- follow-up phone calls were made to the contact person and appointments were made to meet the contact person and fill out the survey;
- follow-up phone calls were made by members of the Steering Committee to selected contact persons to encourage their participation; and
- completed survey forms were received by the consultants, checked for completeness and entered into a database.

At the time of writing 23 establishments from a population of 53 completed the survey. The 23 establishments account for about 78% of employment in NS’s aerospace sector.

4.2 FINDINGS OF THE BASELINE SURVEY

The following tables summarize the results of the baseline survey.

4.2.1 NUMBER EMPLOYED IN THE NS AEROSPACE SECTOR

The *following table, Number Employed in the NS Aerospace Sector*, provides the employment information for 23 aerospace establishments in Nova Scotia. These establishments employed 1,950, accounting for about 78% of aerospace sector employment in NS.

Several establishments were not able to provide employment numbers for 2000, resulting in an overstatement of growth from 2000 to 2001. What is apparent is that the sector has not followed a smooth growth trend. Employment was stable from 2001 - 2003, followed by significant growth in the first three quarters of 2004.

The breakdown by occupation, in October 2004, was as follows:

- Management, 10%;
- Professional/Scientific, 21%;
- Technical, 34%;
- Administration, 12%; and
- Trades, 24%.

Number Employed in the NS Aerospace Sector (in Oct. 2004)					
Occupation Group	Sept. 2004	2003	2002	2001	2000
Management	188	174	165	163	138
Professional/Scientific	405	350	369	373	324
Technical	661	660	669	686	526
Administration	231	202	192	219	187
Trades	465	299	298	331	222
Total	1,950	1,685	1,693	1,772	1,397
Note: From 2000 - 2003 not all establishments had information available.					

The *following table, Employed in NS Aerospace Sector, by Occupation (in Oct. 2004)*, shows an occupation breakdown dominated by technical occupations at 34% of employment followed by trades at about 24% and professional/scientific occupations at 21% of the employed labour force, respectively.

Employed in NS Aerospace Sector, by Occupation (in Oct. 2004)				
Occupation	Junior / Intermediate (#)	Intermediate / Senior (#)	Total (#)	Total (%)
<u>Management:</u>	<u>77</u>	<u>138</u>	<u>215</u>	<u>11.0%</u>
Executives/Senior Managers	77	123	200	10.3%
Financial and Business Operations	0	1	1	0.1%
Management - Other	0	5	5	0.3%
Supervisors (First Line)	0	6	6	0.3%
Supervisors of Installation, Maintenance & Repair	0	0	0	0.0%
Supervisors of Production Workers	0	3	3	0.2%
<u>Administrative:</u>	<u>83</u>	<u>139</u>	<u>222</u>	<u>11.4%</u>
Administrative	83	139	222	11.4%
<u>Professional/Scientific:</u>	<u>179</u>	<u>251</u>	<u>430</u>	<u>22.1%</u>
Aerodynamics	0	1	1	0.1%
Avionics / Electrical	40	33	73	3.7%
Computer & Math.	0	11	11	0.6%
Computer Science	5	1	6	0.3%
Design	13	41	54	2.8%
Engineers	0	22	22	1.1%
Engineers, Mechanical	76	47	123	6.3%
Engineers, Metallurgical/Chemical	3	0	3	0.2%
Engineers, Production	4	27	31	1.6%
Pneumatics - Hydraulics	0	2	2	0.1%
Quality Assurance	33	60	93	4.8%
Safety Systems	0	5	5	0.3%
Testing	5	1	6	0.3%
<u>Technical:</u>	<u>154</u>	<u>367</u>	<u>521</u>	<u>26.7%</u>
Aircraft Maintenance Engineers - E Licensed	3	5	8	0.4%
Aircraft Maintenance Engineers - M Licensed	0	3	3	0.2%
Aircraft Maintenance Support	0	33	33	1.7%
Aircraft Mechanic Non-licensed (Mech. / Trim / Finish)	63	227	290	14.9%
Aircraft Mech. Non-licensed (Sheet Metal / Composite)	0	40	40	2.1%
Component/Accessory Technician	2	1	3	0.2%
Composite Manu. Tech.	77	50	127	6.5%
Drafters, Engineering & Mapping Tech.	9	5	14	0.7%
Non-Destructive Inspection Technician	0	3	3	0.2%
<u>Trades:</u>	<u>173</u>	<u>331</u>	<u>504</u>	<u>25.9%</u>
Assemblers - Composite	21	0	21	1.1%
Assemblers - Electrical and Electronic	37	80	117	6.0%
Assemblers and Fabricators	0	0	0	0.0%
Assemblers - Mechanical	0	16	16	0.8%
Assemblers - Others	5	96	101	5.2%
Assemblers - Structural	5	50	55	2.8%
Installation/Maint./Repair, Other	14	11	25	1.3%
Machinists - Conventional Machines	12	31	43	2.2%
Machinists - Numerical Control	22	15	37	1.9%
Millwrights	7	3	10	0.5%
Operators, Others	50	4	54	2.8%
Production, Other	0	0	0	0.0%
Textile, Apparel & Furnishings Workers	0	0	0	0.0%
Tool & Die Makers	0	7	7	0.4%
Welders	0	18	18	0.9%
<u>Other Occupations:</u>	<u>25</u>	<u>32</u>	<u>57</u>	<u>2.9%</u>
Building & Grounds Cleaning & Maint.	1	10	11	0.6%
Education, Training & Library	0	7	7	0.4%
Fire Fighting & Prevention Workers	24	0	24	1.2%
Food Preparation	0	3	3	0.2%
Healthcare Practitioners and Technical	0	1	1	0.1%
Sales and related	0	11	11	0.6%

4.2.2 AGE OF AEROSPACE EMPLOYED LABOUR FORCE

The age breakdown of aerospace workers (*Age of Aerospace Employed Labour Force (%) (Oct. 2004), table following*) is not skewed to the older age groups. One might expect this in an industry that itself technology intense and relatively new to Nova Scotia.

Also, as expected, those in management tend to be older than the rest of the sector's workforce.

Compared to other occupation groups there is a small gap in the number of trades persons aged 25-34. This reflects observations by a number of sources that the trades are being looked upon less favourable by new labour force entrants.

Age	Management	Professional/Scientific	Technical	Administrative	Trades
15-24	1	0	6	6	9
25-34	7	24	29	18	17
35-44	21	38	29	37	25
45-54	48	27	29	29	33
55-64	23	9	7	9	14
65+	1	0	0	0	0
Totals may not add due to rounding.					

4.2.3 SEX BREAKDOWN OF AEROSPACE EMPLOYED LABOUR FORCE

Typical with most industries the aerospace sector shows a preponderance of males in all occupation groups except the administrative group (*Sex Breakdown of Aerospace Employed Labour Force (%) (Oct. 2004), table following*). What is interesting in the case of the aerospace sector that outside of administrative occupations it the trades occupation group that shows a reasonable, in statistical terms, gender balance.

It would be useful to determine if this specific to the aerospace sector in NS and why the near balance occurs.

	Management	Professional/Scientific	Technical	Administrative	Trades
Female	13	27	17	59	34
Male	87	73	83	41	65

4.2.4 EQUITY GROUP MEMBERS EMPLOYED

Equity group members, for the purpose of the following table, *Equity Employees (% of Employed)*, are persons from a range of minority groups including persons of colour and persons with disabilities. The resources of the study did not permit a detailed breakdown of equity group members.

It is of note that the management occupation group shows the lowest inclusion rate of equity group persons. We do not suspect that this situation is unique to the aerospace sector but it does offer the opportunity for the sector to take a leadership role in the inclusion of equity group person in management occupations.

What is distinctive is that for every occupation group with the exception of trades, females of the group are five to fifteen times more likely to be members of an equity group than males. With respect to trades males are about 3.5 times more likely than females to be members of an equity group. This

distinctive pattern deserves more extensive study to determine if it simply a anomaly or is created by hiring policies that treat females and males differently. If the pattern is due to different policies then the question needs to asked if the policies represent a form of discrimination.

Equity Employees (% of Employed)					
	Management	Professional/ Scientific	Technical	Administrative	Trades
Female	6.5	6.8	4.9	15.6	1.5
Male	0.0	0.5	1.0	2.1	5.2
Total	0.9	2.2	1.6	10.0	3.9

4.2.5 REMUNERATION

As expected, virtually all of management and about 40% of administrative staff are paid on a salary basis (*Remuneration Type (%) (Oct. 2004), table following*).

Virtually all trades persons are paid on an hourly basis. In addition, many trades personnel are paid a performance bonus based on their production.

Remuneration Type (%)					
	Management	Professional/ Scientific	Technical	Administrative	Trades
Salary	97.9	26.5	8.5	39.4	1.1
Hourly	2.1	73.0	91.5	60.2	98.1

The *table below, Pay Range of Salaried Employees (%)*, shows that the median salaries for the occupation groups are:

- Management, about \$65,300;
- Professional/Scientific, about \$63,700;
- Technical, about \$46,700;
- Administrative, about \$29,100; and
- Trades, about 26,300 (based on very few cases).

Pay Range of Salaried Employees (%)					
Salary (000s)	Management	Professional / Scientific	Technical	Administrative	Trades
< \$20	0.0%	0.0%	0.0%	1.9%	0.0%
\$21 - \$40	3.8%	7.9%	1.9%	59.2%	94.4%
\$41 - \$50	12.1%	9.4%	84.1%	39.0%	5.6%
\$51 - \$60	22.9%	26.4%	5.2%	0.0%	0.0%
\$61 - \$70	26.3%	23.3%	7.3%	0.0%	0.0%
\$71 - \$80	9.9%	31.6%	0.8%	0.0%	0.0%
\$81 - \$100	13.1%	1.5%	0.8%	0.0%	0.0%
> \$100K	11.8%	0.0%	0.0%	0.0%	0.0%

The survey respondents noted that salaries tend to be lower than in the aerospace sector in the rest of Canada (*Are Salaries Higher, Lower or About the Same as Those in Other Provinces? (% reporting), table following*). They gave the following reasons:

- The cost of living is lower in NS compared to other aerospace centres in Canada. However, some respondents did point out that the gap was narrowing and that the gap in salaries would likely need to narrow as a result.

- The recent closure of an aerospace establishment in Amherst added supply to labour market, which helped keep salaries in check.
- Salaries remain lower than the rest of Canada because the NS sector is more to manufacturing than design or engineering. Therefore, lower salaries were important factors in staying competitive with lower cost producers in Asia and the Asian sub-continent.

The third point noted above shows a potential weakness in the structure of the NS aerospace sector. If the sector becomes dominated by manufacturing activities, rather than the higher skilled value-added activities of design and engineering, it might become more vulnerable to lower wage producing areas. This is especially the case because it is typical of low wage producers to be able to make greater productivity gains in manufacturing than manufacturers in high wage areas.

Are Salaries Higher, Lower or About the Same as Those in Other Provinces? (% reporting)					
Relative Level	Management	Professional / Scientific	Technical	Administrative	Trades
Higher	0.0	0.0	0.0	0.0	0.0
Same	37.5	33.3	50.0	38.5	40.0
Lower	62.5	66.7	50.0	61.5	60.0

The *following table, Pay Range of Employees Paid by the Hour (%)*, shows rates of pay for hourly workers. The rates do not include production bonuses. Not all respondents offered production bonuses but where there are offered only trades occupations were involved. Hence, hourly rates for trades occupation may somewhat understate their actual earning capacity.

The data in the *next table, Pay Range of Employees Paid by the Hour (%)*, indicate that the median hourly rate for each occupation group is:

- Management, about \$19.30/hour (based on a very small number of cases);
- Professional/Scientific, about \$17.50/hour;
- Technical, about \$18.30/hour;
- Administrative, about \$17.70/hour; and
- Trades, about \$15.60/hour

Pay Range of Employees Paid by the Hour (%)					
\$/Hour	Management	Professional / Scientific	Technical	Administrative	Trades
less than \$10	0.0%	7.4%	0.0%	2.4%	15.6%
\$11 - \$15	0.0%	21.4%	17.9%	25.7%	37.3%
\$16 - \$20	75.0%	71.2%	70.7%	64.6%	23.6%
\$21 - \$25	25.0%	0.0%	11.4%	6.4%	20.2%
\$26 - \$30	0.0%	0.0%	0.0%	1.0%	3.4%
\$31 - \$35	0.0%	0.0%	0.0%	0.0%	0.0%
\$36 - \$40	0.0%	0.0%	0.0%	0.0%	0.0%
more than \$40	0.0%	0.0%	0.0%	0.0%	0.0%

About 2/3 of the respondents said that hourly rates in for most occupation in the NS aerospace sector tended to be lower than those in the rest of Canada (*Are Hourly Rates Higher, Lower or About the Same as Those in Other Provinces? (% reporting)*, table following).

However, with respect to the professional/scientific occupation group, all of the respondents said they believed those paid hourly were paid less than those in the rest of Canada. This differs from the

situation with salaried professional/scientific workers where about 2/3 of respondents said they were paid less than their compatriots in the rest of Canada. The scope of the project did not allow the consultants to delve more deeply into the reasons for the differences. The question will need to be answered as part of the forthcoming “workforce Strategy” of the HRP.

Are Hourly Rates Higher, Lower or About the Same as Those in Other Provinces? (% reporting)					
Relative Level	Management	Professional/Scientific	Technical	Administrative	Trades
Higher	0.0	0.0	16.7	0.0	16.7
Same	33.3	0.0	16.7	33.3	25.0
Lower	66.7	100.0	66.7	66.7	58.3

The reasons given for lower than rest of Canada hourly rates were as follows:

- The cost of living is lower in NS compared to other aerospace centres in Canada. However, some respondents did point out that the gap was narrowing and that the gap in salaries would likely need to narrow as a result.
- The recent closure of an aerospace establishment in Amherst added supply to labour market, which helped keep salaries in check.
- Salaries remain lower than the rest of Canada because the NS sector is more to manufacturing than design or engineering. Therefore, lower salaries were important factors in staying competitive with lower cost producers in Asia and the Asian sub-continent.

With respect to management some respondents said that the hourly rates of the more experienced managers were more in line with rates in the rest of Canada.

Some respondents did note that some trades have hourly rates that are higher than rest of Canada because they have special skill sets needed to serve the market niche of the NS aerospace establishment. Because the demand existed they are able to pay more:

- for the special skill sets;
- to get better people; and
- to keep turnover low.

4.2.6 HIRING EXPECTED, 0 – 24 MONTHS & NEXT 25 – 60 MONTHS

The survey (*How Many People do You Expect to Hire in the Next 0 - 24 Months & Next 25 - 60 Months?, table following*) showed that the NS aerospace sector expects to hire aggressively in the next five years. The time frame and number of hires expected is as follows:

- 0 – 24 months, 346; and
- 25 – 60 months, 242.

The breakdown in expected hires by occupation group is about as follows:

- Management, 7%;
- Professional/Scientific, 28%;
- Technical, 26%;
- Administrative, 4%;
- Trades, 34%; and
- Other Occupations, 1%.

How Many People do You Expect to Hire in the Next 0 - 24 Months & Next 25 - 60 Months?				
Occupation	Junior / Intermediate 0-24 months	Junior / Intermediate 25-60 months	Intermediate / Senior 0-24 months	Intermediate / Senior 25-60 months
Management:	6	12	10	12
Executives/Sr. Managers	2	10	7	10
Management	2	0	1	0
Supervisors, Install, Main. & Repair	1	1	1	1
Supervisors, Production Workers	1	1	1	1
Professional/Scientific:	<u>50</u>	<u>29</u>	<u>53</u>	<u>35</u>
Avionics/Electrical	10	10	13	10
Computer and Mathematical	0	0	1	0
Computer Science	4	1	1	1
Design	5	6	5	5
Engineers, Mechanical	10	10	17	10
Engineers, Other	0	0	5	4
Engineers, Production	3	1	2	0
Quality Assurance	15	1	5	5
Pneumatics - Hydraulics	0	0	2	0
Safety Systems	1	0	1	0
Testing	2	0	1	0
Technical:	<u>28</u>	<u>43</u>	<u>42</u>	<u>40</u>
AC Main. Engineers - E Licensed	1	0	0	0
Aircraft Main. Non-licensed (Mech./Trim)	2	30	30	30
Aircraft Main. Support	1	0	1	0
AC Mech. Non-licensed (Sheet metal/comp)	0	10	10	10
Component/Accessory Technician	3	3	0	0
Composite Manu. Tech.	20	0	0	0
Drafters, Engineering and Mapping Tech.	1	0	0	0
Non-Destructive Inspection Technician	0	0	1	0
Administrative:	<u>17</u>	<u>5</u>	<u>2</u>	<u>0</u>
Administrative Personnel	16	5	2	0
Office and Admin. Support	1	0	0	0
Trades:	<u>104</u>	<u>52</u>	<u>30</u>	<u>12</u>
Assemblers and Fabricators	1	1	1	1
Assemblers - Electrical and Electronic	55	40	0	0
Assemblers - Composite	19	0	0	0
Assemblers - Mechanical	1	2	1	2
Assemblers - Others	1	0	1	0
Installation, Maint. & Repair, Other	1	1	1	1
Machinist - Numerical Control	18	4	8	2
Machinist - Conventional Machines	3	2	13	6
Millwrights	2	0	3	0
Operators - Others	3	0	0	0
Structural Repair Tech.	0	2	2	0
Other Occupations:	<u>1</u>	<u>1</u>	<u>3</u>	<u>1</u>
Fire Fighting and Prevention Workers	0	0	2	0
Sales and Related	1	1	1	1
Total:	J / I in 0 - 24 Mo.	J / I in 25 - 60 Mo.	I / S in 0 - 24 Mo.	I / S in 25 - 60 Mo.
	206	142	140	100

Not all hires will be incremental to the current complement of 1,950 reported by the respondents. The reasons for expected hiring are as follows (*What Are the Reasons for Your Hiring Expectations over the Next 0 - 60 Months? (%)*, table following):

- growth, 38%;
- normal turnover (not retirement), 33%;

- retirement, 20%; and
- new skills / technology being used, 10%.

Therefore, about 48% will be net new hires, representing about 282 new jobs.

What Are the Reasons for Your Hiring Expectations over the Next 0 - 60 Months? (%)					
Occupation	Growth	Normal Turnover (not retirement)	Retirement	New Skills / Technology Being Used	Other
Management:					
Junior/Intermediate	0%	67%	33%	0%	0%
Intermediate/Senior	0%	57%	43%	0%	0%
Professional Scientific:					
Junior/Intermediate	0%	63%	25%	13%	0%
Intermediate/Senior	0%	57%	29%	14%	0%
Technical:					
Junior/Intermediate	47%	27%	13%	13%	0%
Intermediate/Senior	38%	31%	15%	15%	0%
Administrative:					
Junior/Intermediate	50%	38%	13%	0%	0%
Intermediate/Senior	50%	25%	25%	0%	0%
Trades:					
Junior/Intermediate	63%	13%	13%	13%	0%
Intermediate/Senior	62%	8%	15%	15%	0%
All Occupations:	38%	33%	20%	10%	0%

The *following table, How Important are the Following Traits in Deciding on a New Hire?*, shows that for management hires formal education was cited by almost 90% of respondents as being relatively important or very important in the decision to hire followed by training at about 80%. For more senior positions about 65% said experience in the aerospace sector was relatively or very important.

The respondents valued formal education less highly when it came to professional/scientific hires. About 80% thought formal education was relatively or very important in the decision to hire and about 40% thought training was relatively or very important. About 50% said that experience in the aerospace sector was not important or relatively unimportant.

There is relatively even attention paid to the importance of formal education, training and experience in the aerospace sector for technical hires. About 65% said that formal education was relatively or very important and 50% percent said that training was relatively or very important. Experience in the sector was considered somewhat more important than training as about 55% said that experience in the aerospace sector was relatively or very important for technical occupation hires.

For administrative occupations almost 50% said that formal education was relatively important or very important. When hiring more senior administrative staff just over 60% of respondents said that training was relatively or very important. For more junior hires training was somewhat less important because about 43% said that training was relatively or very important in the hiring decision. However, experience in the aerospace sector was considered not important or relatively unimportant by about 52% of respondents.

As one might expect 76% of respondents said that training was relatively or very important in the decision to hire a more senior trades person, however for more junior trades people 60% said that their training was relatively or very important to the hiring decision. This suggests that employers expect to conduct additional training with more junior hires but expect more senior hires to bring skills from

training with them. About 50% said that formal education was relatively or very important. Experience in the sector was rated somewhat lower as factor in hiring as about 46% said that experience in aerospace was relatively or very important in the hiring decision. More senior trades hires were expected to have more sector experience than more junior hires.

How Important are the Following Traits in Deciding on a New Hire? (% responding)					
Occupation	Not Important	Relatively Important	Neither Unimportant or Important	Relatively Important	Very Important
Management:					
Formal Education - J/I	0%	0%	13%	60%	27%
Formal Education - I/S	0%	0%	13%	69%	19%
Training - J/I	0%	13%	13%	60%	13%
Training - I/S	0%	0%	14%	64%	21%
Aero. Experience - 1-3 yrs - J/I	27%	7%	0%	33%	33%
Aero. Experience - 4+ yrs - J/I	27%	0%	13%	47%	13%
Aero. Experience - 1-3 yrs - I/S	25%	6%	6%	19%	44%
Aero. Experience - 4+ yrs - I/S	25%	6%	0%	31%	38%
Professional / Scientific:					
Formal Education - J/I	0%	0%	30%	20%	50%
Formal Education - I/S	0%	0%	10%	40%	50%
Training - J/I	0%	20%	50%	30%	0%
Training - I/S	0%	20%	20%	40%	20%
Aero. Experience - 1-3 yrs - J/I	40%	20%	10%	20%	10%
Aero. Experience - 4+ yrs - J/I	44%	11%	0%	33%	11%
Aero. Experience - 1-3 yrs - I/S	40%	10%	0%	30%	20%
Aero. Experience - 4+ yrs - I/S	44%	0%	11%	33%	11%
Technical:					
Formal Education - J/I	14%	7%	14%	29%	36%
Formal Education - I/S	7%	14%	14%	29%	36%
Training - J/I	7%	7%	36%	36%	14%
Training - I/S	0%	14%	36%	36%	14%
Aero. Experience - 1-3 yrs - J/I	31%	8%	8%	15%	38%
Aero. Experience - 4+ yrs - J/I	36%	0%	14%	36%	14%
Aero. Experience - 1-3 yrs - I/S	31%	8%	8%	15%	38%
Aero. Experience - 4+ yrs - I/S	21%	7%	7%	36%	29%
Administrative:					
Formal Education - J/I	7%	7%	43%	29%	14%
Formal Education - I/S	8%	8%	31%	38%	15%
Training - J/I	0%	0%	57%	36%	7%
Training - I/S	0%	0%	38%	54%	8%
Aero. Experience - 1-3 yrs - J/I	50%	0%	14%	14%	21%
Aero. Experience - 4+ yrs - J/I	50%	7%	7%	14%	21%
Aero. Experience - 1-3 yrs - I/S	54%	0%	8%	15%	23%
Aero. Experience - 4+ yrs - I/S	46%	0%	15%	23%	15%
Trades:					
Formal Education - J/I	20%	13%	20%	33%	13%
Formal Education - I/S	21%	7%	14%	36%	21%
Training - J/I	20%	0%	20%	27%	33%
Training - I/S	23%	0%	0%	38%	38%
Aero. Experience - 1-3 yrs - J/I	20%	7%	27%	27%	20%
Aero. Experience - 4+ yrs - J/I	27%	7%	33%	13%	20%
Aero. Experience - 1-3 yrs - I/S	29%	7%	21%	14%	29%
Aero. Experience - 4+ yrs - I/S	21%	0%	29%	21%	29%

The Relative Value of Aerospace Sector Experience Between Occupations – The importance of experience in the aerospace sector varied significantly between occupation and seniority. The following list shows the occupations for which more than 50% of respondents said aerospace sector experience was relatively or very important in hiring decisions:

- 66%, intermediate/senior management hires;
- 63%, junior/intermediate management hires;
- 59%, intermediate/senior technical hires; and
- 52%, junior/intermediate technical hires.

4.2.7 EXPECTATIONS FOR ABILITY TO HIRE NUMBERS AND SKILLS NEEDED

The following table, *If You Anticipate Hiring in the Next 0 - 24 Months and / or Next 25 - 60 Months How Difficult Do You Expect It Will Be to Hire the Occupation and Experience Levels You Need?*, describes how difficult respondents believed it would be to hire the occupations and skills levels they need over the next five years. The occupations expected to be relatively or very difficult to hire were:

- aircraft mechanics non-licensed (sheet metal/composites), 100% say relatively or very difficult;
- assemblers and fabricators, 100%;
- composite material engineers, 100%;
- design engineers, 100%;
- healthcare practitioners & technicians (intermed./sr.), 100%;
- numerical control machinists, 100%;
- non-destructive inspection technicians (intermed./sr.), 100%;
- pneumatics/hydraulics professionals, 100%;
- safety systems professionals, 100%;
- supervisors of installers, maint. & repair workers, 100%;
- supervisors of production workers, 100%;
- textile, apparel and furnishings workers, 100%;
- welders (intermed./sr.), 100%;
- electrical and electronics assemblers (intermed./sr.), 84%;
- machinists (conventional machines), 76%;;
- mechanical engineers (intermed./sr.), 75%;
- executive and senior managers (intermed./sr.), 72%
- aircraft mechanics non-licensed (mechanical/trim), 67%;
- avionics/electrical (intermed./sr.), 66%; and
- executive and senior managers (jr./intermed.), 60%.

Some specialist occupations for which only very small numbers will be required were regarded as being very difficult to hire. These specialist occupations included safety systems personnel, design engineers and non destructive testing technicians.

If You Anticipate Hiring in the Next 0 - 24 Months and / or Next 25 - 60 Months How Difficult Do You Expect It Will Be to Hire the Occupation and Experience Levels You Need? (% of responses by level of difficulty)						
Occupation		Easy	Relatively Easy	Neither Easy or Difficult	Relatively Difficult	Very Difficult
Management:						
Executives/Sr. Managers						
Junior/Intermediate	0-24	0%	7%	29%	50%	14%
	25-60	0%	0%	43%	43%	14%
Intermediate/Senior	0-24	0%	0%	31%	44%	25%
	25-60	0%	0%	25%	50%	25%
Supervisors of Install., Maint. & Repair						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Supervisors, Production Workers						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Professional/Scientific:						
Avionics/Electrical						
Junior/Intermediate	0-24	0%	33%	33%	0%	33%

If You Anticipate Hiring in the Next 0 - 24 Months and / or Next 25 - 60 Months How Difficult Do You Expect It Will Be to Hire the Occupation and Experience Levels You Need? (% of responses by level of difficulty)						
Occupation		Easy	Relatively Easy	Neither Easy or Difficult	Relatively Difficult	Very Difficult
	25-60	0%	33%	33%	0%	33%
Intermediate/Senior	0-24	0%	33%	0%	33%	33%
	25-60	0%	33%	0%	33%	33%
Computer and Mathematical						
Junior/Intermediate	0-24	0%	50%	50%	0%	0%
	25-60	0%	50%	0%	50%	0%
Intermediate/Senior	0-24	0%	50%	0%	50%	0%
	25-60	0%	50%	0%	50%	0%
Computer Science						
Junior/Intermediate	0-24	33%	0%	33%	33%	0%
	25-60	33%	0%	33%	33%	0%
Intermediate/Senior	0-24	33%	0%	33%	33%	0%
	25-60	33%	0%	33%	33%	0%
Composite Material						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Design						
Junior/Intermediate	0-24	0%	0%	0%	50%	50%
	25-60	0%	0%	0%	50%	50%
Intermediate/Senior	0-24	0%	0%	0%	50%	50%
	25-60	0%	0%	0%	50%	50%
Engineers, Mechanical						
Junior/Intermediate	0-24	0%	25%	25%	50%	0%
	25-60	0%	25%	25%	50%	0%
Intermediate/Senior	0-24	0%	25%	0%	75%	0%
	25-60	0%	25%	0%	75%	0%
Engineers, Other						
Junior/Intermediate	0-24	0%	0%	33%	33%	33%
	25-60	0%	0%	50%	0%	50%
Intermediate/Senior	0-24	0%	0%	33%	33%	33%
	25-60	0%	0%	50%	0%	50%
Engineers, Production						
Junior/Intermediate	0-24	0%	20%	40%	40%	0%
	25-60	0%	20%	40%	40%	0%
Intermediate/Senior	0-24	0%	20%	40%	40%	0%
	25-60	0%	20%	40%	40%	0%
Quality Assurance						
Junior/Intermediate	0-24	0%	9%	55%	27%	9%
	25-60	0%	9%	55%	27%	9%
Intermediate/Senior	0-24	0%	9%	45%	36%	9%
	25-60	0%	9%	45%	36%	9%
Safety Systems						
Junior/Intermediate	0-24	0%	0%	0%	0%	100%
	25-60	0%	0%	0%	0%	100%
Intermediate/Senior	0-24	0%	0%	0%	0%	100%
	25-60	0%	0%	0%	0%	100%
Testing						
Junior/Intermediate	0-24	50%	0%	50%	0%	0%
	25-60	50%	0%	50%	0%	0%
Intermediate/Senior	0-24	50%	0%	50%	0%	0%
	25-60	50%	0%	50%	0%	0%
Pneumatics - Hydraulics						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%

If You Anticipate Hiring in the Next 0 - 24 Months and / or Next 25 - 60 Months How Difficult Do You Expect It Will Be to Hire the Occupation and Experience Levels You Need? (% of responses by level of difficulty)						
Occupation		Easy	Relatively Easy	Neither Easy or Difficult	Relatively Difficult	Very Difficult
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Technical:						
AC Main. Engineers - E Licensed						
Junior/Intermediate	0-24	0%	0%	50%	50%	0%
	25-60	0%	0%	50%	50%	0%
Intermediate/Senior	0-24	0%	0%	50%	50%	0%
	25-60	0%	0%	50%	50%	0%
AC Main. Engineers - M Licensed						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
AC Main. Engineers - S Licensed						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Aircraft Main. Support						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Aircraft Mech. Non-licensed (Mech/Trim)						
Junior/Intermediate	0-24	0%	33%	67%	0%	0%
	25-60	0%	33%	33%	33%	0%
Intermediate/Senior	0-24	0%	33%	0%	67%	0%
	25-60	0%	33%	0%	67%	0%
AC Mecn. Non-licensed (Sheet metal/comp)						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	0%	100%	0%
Component/Accessory Technician						
Junior/Intermediate	0-24	0%	50%	0%	50%	0%
	25-60	0%	50%	0%	50%	0%
Intermediate/Senior	0-24	0%	50%	0%	50%	0%
	25-60	0%	50%	0%	50%	0%
Composite Manu. Tech.						
Junior/Intermediate	0-24	50%	0%	0%	50%	0%
	25-60	50%	0%	0%	50%	0%
Intermediate/Senior	0-24	50%	0%	0%	50%	0%
	25-60	50%	0%	0%	50%	0%
Drafters, Engineering and Mapping Tech.						
Junior/Intermediate	0-24	0%	0%	50%	50%	0%
	25-60	0%	0%	50%	50%	0%
Intermediate/Senior	0-24	0%	0%	50%	50%	0%
	25-60	0%	0%	50%	50%	0%
Non-Destructive Inspection Technician						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	0%	100%
Administrative:						
Administrative Personnel						
Junior/Intermediate	0-24	20%	33%	40%	7%	0%

If You Anticipate Hiring in the Next 0 - 24 Months and / or Next 25 - 60 Months How Difficult Do You Expect It Will Be to Hire the Occupation and Experience Levels You Need? (% of responses by level of difficulty)						
Occupation		Easy	Relatively Easy	Neither Easy or Difficult	Relatively Difficult	Very Difficult
	25-60	19%	31%	50%	0%	0%
Intermediate/Senior	0-24	13%	25%	56%	6%	0%
	25-60	13%	27%	53%	7%	0%
Business and Financial Ops.						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Office and Admin. Support						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	NA	NA	NA	NA	NA
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	NA	NA	NA	NA	NA
Trades:						
Assemblers and Fabricators						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Assemblers - Composite						
Junior/Intermediate	0-24	100%	0%	0%	0%	0%
	25-60	100%	0%	0%	0%	0%
Intermediate/Senior	0-24	100%	0%	0%	0%	0%
	25-60	100%	0%	0%	0%	0%
Assemblers - Electrical and Electronic						
Junior/Intermediate	0-24	33%	33%	33%	0%	0%
	25-60	33%	33%	0%	33%	0%
Intermediate/Senior	0-24	0%	0%	33%	33%	33%
	25-60	0%	0%	0%	67%	33%
Assemblers - Mechanical						
Junior/Intermediate	0-24	0%	0%	50%	0%	50%
	25-60	0%	0%	50%	0%	50%
Intermediate/Senior	0-24	0%	0%	50%	0%	50%
	25-60	0%	0%	50%	0%	50%
Assemblers - Others						
Junior/Intermediate	0-24	0%	100%	0%	0%	0%
	25-60	0%	100%	0%	0%	0%
Intermediate/Senior	0-24	0%	100%	0%	0%	0%
	25-60	0%	100%	0%	0%	0%
Installation, Maint. & Repair, Other						
Junior/Intermediate	0-24	0%	50%	0%	50%	0%
	25-60	0%	50%	0%	50%	0%
Intermediate/Senior	0-24	0%	50%	0%	50%	0%
	25-60	0%	50%	0%	50%	0%
Machinist - Conventional Machines						
Junior/Intermediate	0-24	0%	0%	25%	25%	50%
	25-60	0%	0%	25%	25%	50%
Intermediate/Senior	0-24	0%	0%	25%	13%	63%
	25-60	0%	0%	25%	13%	63%
Machinist - Numerical Control						
Junior/Intermediate	0-24	0%	0%	0%	67%	33%
	25-60	0%	0%	0%	67%	33%
Intermediate/Senior	0-24	0%	0%	0%	33%	67%
	25-60	0%	0%	0%	33%	67%
Millwrights						
Junior/Intermediate	0-24	0%	25%	50%	25%	0%

If You Anticipate Hiring in the Next 0 - 24 Months and / or Next 25 - 60 Months How Difficult Do You Expect It Will Be to Hire the Occupation and Experience Levels You Need? (% of responses by level of difficulty)						
Occupation		Easy	Relatively Easy	Neither Easy or Difficult	Relatively Difficult	Very Difficult
	25-60	0%	25%	50%	25%	0%
Intermediate/Senior	0-24	0%	25%	50%	25%	0%
	25-60	0%	25%	50%	25%	0%
Operators - Others						
Junior/Intermediate	0-24	0%	33%	67%	0%	0%
	25-60	0%	33%	67%	0%	0%
Intermediate/Senior	0-24	0%	33%	67%	0%	0%
	25-60	0%	33%	67%	0%	0%
Structural Repair Tech.						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	0%	100%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	0%	100%	0%
Textile, Apparel & Furnishings						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Tool and Die Makers						
Junior/Intermediate	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	0%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	0%	0%
Welders						
Junior/Intermediate	0-24	0%	0%	33%	67%	0%
	25-60	0%	0%	50%	50%	0%
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Other Occupations:						
Building and Grounds Clearing and Main.						
Junior/Intermediate	0-24	50%	0%	50%	0%	0%
	25-60	50%	0%	50%	0%	0%
Intermediate/Senior	0-24	50%	0%	50%	0%	0%
	25-60	50%	0%	50%	0%	0%
Education, Training and Library						
Junior/Intermediate	0-24	NA	NA	NA	NA	NA
	25-60	NA	NA	NA	NA	NA
Intermediate/Senior	0-24	0%	0%	50%	50%	0%
	25-60	0%	0%	50%	50%	0%
Fire Fighting and Prevention Workers						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%
Food Preparation and Serving Related						
Junior/Intermediate	0-24	0%	100%	0%	0%	0%
	25-60	0%	100%	0%	0%	0%
Intermediate/Senior	0-24	0%	100%	0%	0%	0%
	25-60	0%	100%	0%	0%	0%
Healthcare Practitioners and Techn.						
Junior/Intermediate	0-24	NA	NA	NA	NA	NA
	25-60	NA	NA	NA	NA	NA
Intermediate/Senior	0-24	0%	0%	0%	100%	0%
	25-60	0%	0%	0%	100%	0%
Sales and Related						
Junior/Intermediate	0-24	0%	0%	100%	0%	0%

If You Anticipate Hiring in the Next 0 - 24 Months and / or Next 25 - 60 Months How Difficult Do You Expect It Will Be to Hire the Occupation and Experience Levels You Need? (% of responses by level of difficulty)						
Occupation		Easy	Relatively Easy	Neither Easy or Difficult	Relatively Difficult	Very Difficult
	25-60	0%	0%	100%	0%	0%
Intermediate/Senior	0-24	0%	0%	100%	0%	0%
	25-60	0%	0%	100%	0%	0%

The respondents gave the following reasons for expecting difficulty in hiring (*Why Do You Expect Difficulties in Hiring the Occupations at Levels of Experience You Need?, following table*):

- cannot offer high enough wage, 31%;
- none available in Nova Scotia, 25%;
- none available in Atlantic Canada, 28%;
- will not move to NS (reasons other than wage), 3%; and
- other, 13%.

Why Do You Expect Difficulties in Hiring the Occupations at Levels of Experience You Need (% of responses by reason, answered by those who expect hiring to be relatively or very difficult)					
Occupation	Cannot Offer High Enough Wage	None Available in Nova Scotia	None Available in Atlantic Canada	Will Not Move to NS (reasons other than wage)	Other
Management:					
Executives/Sr. Managers					
Junior/Intermediate	11%	33%	33%	11%	11%
Intermediate/Senior	20%	30%	30%	10%	10%
Management, Other					
Junior/Intermediate	0%	50%	50%	0%	0%
Intermediate/Senior	0%	50%	50%	0%	0%
Supervisors of Install, Main. And Repair					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Supervisors, Production Workers					
Junior/Intermediate	50%	0%	50%	0%	0%
Intermediate/Senior	50%	0%	50%	0%	0%
Professional/Scientific					
Avionics/Electrical					
Junior/Intermediate	33%	33%	33%	0%	0%
Intermediate/Senior	33%	33%	33%	0%	0%
Computer and Mathematical					
Junior/Intermediate	50%	0%	0%	0%	50%
Intermediate/Senior	33%	33%	0%	0%	33%
Computer Science					
Junior/Intermediate	0%	0%	0%	0%	100%
Intermediate/Senior	0%	0%	0%	0%	100%
Design					
Junior/Intermediate	25%	25%	25%	0%	25%
Intermediate/Senior	25%	25%	25%	0%	25%
Mechanical Engineers					
Junior/Intermediate	25%	25%	50%	0%	0%
Intermediate/Senior	25%	25%	50%	0%	0%
Pneumatics - Hydraulics					
Junior/Intermediate	0%	0%	100%	0%	0%
Intermediate/Senior	0%	0%	100%	0%	0%
Production Engineers					
Junior/Intermediate	0%	50%	0%	0%	50%
Intermediate/Senior	0%	50%	0%	0%	50%
Quality Assurance					

Why Do You Expect Difficulties in Hiring the Occupations at Levels of Experience You Need (% of responses by reason, answered by those who expect hiring to be relatively or very difficult)					
Occupation	Cannot Offer High Enough Wage	None Available in Nova Scotia	None Available in Atlantic Canada	Will Not Move to NS (reasons other than wage)	Other
Junior/Intermediate	33%	0%	33%	0%	33%
Intermediate/Senior	25%	0%	50%	0%	25%
Safety Systems					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Testing					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Technical:					
AC Main. Engineers - E Licensed					
Junior/Intermediate	0%	0%	0%	0%	100%
Intermediate/Senior	0%	0%	0%	0%	100%
Aircraft Main. Non-licensed (Mech/Trim)					
Junior/Intermediate	50%	50%	0%	0%	0%
Intermediate/Senior	50%	50%	0%	0%	0%
Aircraft Main. Support					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
AC Mech. Non-licensed (Sheet metal/comp)					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
Component/Accessory Technician					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
Drafters, Engineering and Mapping Tech.					
Junior/Intermediate	0%	0%	100%	0%	0%
Intermediate/Senior	0%	0%	100%	0%	0%
Non-destructive Inspection Technician					
Junior/Intermediate	33%	67%	0%	0%	0%
Intermediate/Senior	33%	67%	0%	0%	0%
Administration:					
Administrative Personnel					
Junior/Intermediate	50%	0%	25%	0%	25%
Intermediate/Senior	60%	0%	20%	0%	20%
Business and Financial Ops.					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
Trades:					
Assemblers and Fabricators					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Assemblers - Composite					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
Assemblers - Electrical and Electronic					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
Assemblers - Mechanical					
Junior/Intermediate	33%	0%	67%	0%	0%
Intermediate/Senior	33%	0%	67%	0%	0%
Installation Maint. & Repair, Other					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Machinist - Conventional Machines					
Junior/Intermediate	0%	0%	83%	17%	0%

Why Do You Expect Difficulties in Hiring the Occupations at Levels of Experience You Need (% of responses by reason, answered by those who expect hiring to be relatively or very difficult)					
Occupation	Cannot Offer High Enough Wage	None Available in Nova Scotia	None Available in Atlantic Canada	Will Not Move to NS (reasons other than wage)	Other
Intermediate/Senior	14%	0%	57%	14%	14%
Machinist - Numerical Control					
Junior/Intermediate	5%	0%	19%	5%	5%
Intermediate/Senior	25%	0%	25%	25%	25%
Millwrights					
Junior/Intermediate	0%	0%	100%	0%	0%
Intermediate/Senior	0%	0%	100%	0%	0%
Production, Other					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Structural Repair Tech.					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
Textile, Apparel, and Furnishings					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Tool and Die Makers					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
Welders					
Junior/Intermediate	0%	100%	0%	0%	0%
Intermediate/Senior	0%	100%	0%	0%	0%
<u>Other Occupations:</u>					
Education, Training and Library					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Healthcare Practitioners and Techn.					
Junior/Intermediate	NA	NA	NA	NA	NA
Intermediate/Senior	100%	0%	0%	0%	0%
Other Protective Service Workers					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%
Sales and Related					
Junior/Intermediate	100%	0%	0%	0%	0%
Intermediate/Senior	100%	0%	0%	0%	0%

4.2.8 HUMAN RESOURCE DEVELOPMENT

According to the *following table, What % of Job Openings Have Been Filled Through Internal Promotion?*, about one-fifth of job opening in the management, technical and trades occupation groups are being filled via internal promotion. Administrative openings are the least likely to be filled by internal promotion. This is likely due to the fact that most administrative hires involve expansions of the administrative workforce, not the creation of higher level positions.

What % of Job Openings Have Been Filled Through Internal Promotion?				
Management	Professional / Scientific	Technical	Administrative	Trades
17.7	12.3	20.1	9.7	16.9

The *table below, Employed Labour Force: Development, Advancement, Movement*, describes the pattern of labour force development in the NS aerospace sector. Management was the group most likely

to move to higher levels of responsibility within their organisations. Management was also the group most likely to stay in their current position and to have more duties added to their job that required new skills.

Trades occupations showed the lowest rate of the addition of new duties that required new skills.

Administrative occupations were the least likely to advance in their organisations. This likely reflects the relative lack of room for advancement in this occupation group.

Employed Labour Force: Development, Advancement, Movement (% of employed labour force)					
In Previous 24 Months:	Management	Professional / Scientific	Technical	Administrative	Trades
moved to a higher level of responsibility within the organization	8.5	4.0	10.4	0.7	3.1
remained in their current occupation, but have additional duties requiring new skills	37.8	29.6	33.6	32.5	23.6
moved to other employment opportunities within the industry in NS	11.7	0.4	3.0	0.5	3.5
moved to other employment opportunities within the industry outside NS	6.1	0.8	0.4	0.0	0.1
came from other aerospace organizations in NS	7.4	0.0	1.4	0.0	3.9
came from other aerospace organizations outside NS?	6.1	0.8	1.8	0.0	0.5

The importance of various methods of human resource development among the employed staff differed by occupation group (*How Important are the Following Forms of Education and Training in Your HRD Plans?, table following*).

About 78% said that in house training was relatively or very important for management. This form of training was closely followed by on the job training at 76%. About 65% considered formal education and management training to be relatively or very important for management.

The dominance of on the job training for HRD among professional/scientific occupations was even higher than for management as 100% said that on the job training for this group was relatively or very important compared to 70% who said that formal education was relatively or very important. About 95% said that in house training was relatively or very important for the professional/scientific occupations.

For technical occupations the most important methods for HRD were on the job training (93% said it was relatively or very important) and in house training (86% said it was relatively or very important). About 50% said formal education and training, technical training at a community college and training via apprenticeships were relatively or very important to the development of this occupation group.

The findings with respect to administrative occupations were that 88% said on the job training was relatively or very important, 75% said in house training was relatively or very important, followed by 52% who said formal education was relatively or very important in the HRD plans for this group.

As one might expect with respect to the development of trades employees 100% said on the job training was relatively or very important and 85% said in house training was relatively or very important. A comparatively high percentage, 63%, said that formal education was relatively or very important to the HRD of trades personnel. It is somewhat surprising that only about 52% considered trades training at community college to be relatively or very important to the development of their trades staff. This

might be the case because HRD among trades requires learning skills that are beyond the basic skills that are required to be taught at the community college level.

How Important are the Following Forms of Education and Training in Your HRD Plans? (% responding)					
Occupation:	Not Important	Relatively Important	Neither Unimportant or Important	Relatively Important	Very Important
Management:					
Formal Education - J/I	7%	13%	20%	33%	27%
Formal Education - I/S	6%	6%	24%	35%	29%
Mgmt. Training - J/I	0%	6%	31%	25%	38%
Mgmt. Training - I/S	6%	6%	18%	29%	41%
Tech. Training - Comm. College - J/I	13%	20%	20%	33%	13%
Tech. Training - Comm. College - I/S	19%	19%	25%	31%	6%
Tech. Training - Apprenticeship - J/I	44%	0%	25%	25%	6%
Tech. Training - Apprenticeship - I/S	50%	0%	19%	25%	6%
Trades Training - Comm. College - J/I	53%	7%	13%	13%	13%
Trades Training - Comm. College - I/S	53%	12%	12%	12%	12%
Trades Training - Apprenticeship - J/I	56%	6%	19%	13%	6%
Trades Training - Apprenticeship - I/S	65%	6%	12%	12%	6%
In-house Training - J/I	0%	0%	20%	33%	47%
In-house Training - I/S	6%	0%	18%	29%	47%
On the Job Training - J/I	6%	19%	0%	19%	56%
On the Job Training - I/S	6%	18%	0%	18%	59%
Professional/Scientific:					
Formal Education - J/I	20%	0%	10%	30%	40%
Formal Education - I/S	20%	0%	10%	30%	40%
Mgmt. Training - J/I	0%	40%	30%	30%	0%
Mgmt. Training - I/S	0%	40%	20%	40%	0%
Tech. Training - Comm. College - J/I	11%	22%	22%	33%	11%
Tech. Training - Comm. College - I/S	11%	22%	22%	33%	11%
Tech. Training - Apprenticeship - J/I	44%	11%	22%	22%	0%
Tech. Training - Apprenticeship - I/S	44%	11%	22%	22%	0%
Trades Training - Comm. College - J/I	44%	22%	22%	11%	0%
Trades Training - Comm. College - I/S	44%	22%	22%	11%	0%
Trades Training - Apprenticeship - J/I	56%	22%	11%	11%	0%
Trades Training - Apprenticeship - I/S	56%	22%	11%	11%	0%
In-house Training - J/I	0%	0%	11%	67%	22%
In-house Training - I/S	0%	0%	0%	78%	22%
On the Job Training - J/I	0%	0%	0%	44%	56%
On the Job Training - I/S	0%	0%	0%	44%	56%
Technical:					
Formal Education - J/I	21%	14%	14%	21%	29%
Formal Education - I/S	20%	13%	13%	20%	33%
Mgmt. Training - J/I	36%	7%	29%	21%	7%
Mgmt. Training - I/S	29%	7%	36%	21%	7%
Tech. Training - Comm. College - J/I	14%	7%	29%	29%	21%
Tech. Training - Comm. College - I/S	14%	7%	29%	29%	21%
Tech. Training - Apprenticeship - J/I	29%	7%	14%	29%	21%
Tech. Training - Apprenticeship - I/S	29%	7%	14%	29%	21%
Trades Training - Comm. College - J/I	36%	7%	21%	29%	7%
Trades Training - Comm. College - I/S	36%	7%	21%	29%	7%
Trades Training - Apprenticeship - J/I	36%	14%	21%	21%	7%
Trades Training - Apprenticeship - I/S	36%	14%	21%	21%	7%
In-house Training - J/I	0%	0%	14%	43%	43%
In-house Training - I/S	0%	0%	14%	43%	43%
On the Job Training - J/I	0%	7%	0%	36%	57%
On the Job Training - I/S	0%	7%	0%	36%	57%
Administrative:					
Formal Education - J/I	19%	13%	19%	31%	19%
Formal Education - I/S	20%	7%	20%	40%	13%

How Important are the Following Forms of Education and Training in Your HRD Plans? (% responding)					
Occupation:	Not Important	Relatively Important	Neither Unimportant or Important	Relatively Important	Very Important
Mgmt. Training - J/I	44%	6%	25%	25%	0%
Mgmt. Training - I/S	38%	6%	25%	31%	0%
Tech. Training - Comm. College - J/I	27%	13%	27%	13%	20%
Tech. Training - Comm. College - I/S	27%	13%	27%	13%	20%
Tech. Training - Apprenticeship - J/I	56%	6%	13%	19%	6%
Tech. Training - Apprenticeship - I/S	56%	6%	13%	19%	6%
Trades Training - Comm. College - J/I	56%	6%	19%	13%	6%
Trades Training - Comm. College - I/S	56%	6%	19%	13%	6%
Trades Training - Apprenticeship - J/I	50%	13%	19%	13%	6%
Trades Training - Apprenticeship - I/S	50%	13%	19%	13%	6%
In-house Training - J/I	6%	6%	13%	44%	31%
In-house Training - I/S	6%	6%	13%	44%	31%
On the Job Training - J/I	0%	6%	6%	31%	56%
On the Job Training - I/S	0%	6%	6%	38%	50%
Trades:					
Formal Education - J/I	21%	7%	14%	14%	43%
Formal Education - I/S	15%	0%	15%	23%	46%
Mgmt. Training - J/I	21%	29%	21%	14%	14%
Mgmt. Training - I/S	23%	31%	15%	15%	15%
Tech. Training - Comm. College - J/I	15%	8%	46%	23%	8%
Tech. Training - Comm. College - I/S	8%	8%	42%	25%	17%
Tech. Training - Apprenticeship - J/I	14%	7%	29%	21%	29%
Tech. Training - Apprenticeship - I/S	8%	15%	31%	15%	31%
Trades Training - Comm. College - J/I	14%	14%	21%	29%	21%
Trades Training - Comm. College - I/S	23%	15%	8%	31%	23%
Trades Training - Apprenticeship - J/I	14%	7%	7%	29%	43%
Trades Training - Apprenticeship - I/S	15%	8%	0%	31%	46%
In-house Training - J/I	0%	0%	14%	29%	57%
In-house Training - I/S	0%	0%	15%	23%	62%
On the Job Training - J/I	0%	0%	0%	21%	79%
On the Job Training - I/S	0%	0%	0%	31%	69%

The rate of investment in HRD, as *shown below, Rate of Investment in HRD*, is relatively low. However, this is not atypical of other sectors in the Canadian economy. The current rates, as a percent of payroll in each occupation group, are approximately as follows:

- management, 3.1%;
- professional/scientific, 2.7%;
- technical, 2.9%;
- administrative, 1.8%; and
- trades, 2.8%.

The respondents expect to invest more in HRD for all occupation groups in the next two years except for the jr./intermed. technical occupations. Clearly, the reason for this difference needs to be uncovered during the creation of the “Workforce Strategy.”

Rate of Investment in HRD (for firms responding)		
Occupation:	% of Payroll, Last 12 months	% of Payroll, Next 24 months
<u>Management:</u>		
Junior/Intermediate	2.5	3.7
Intermediate/Senior	3.7	5.8
<u>Professional/Scientific:</u>		
Junior/Intermediate	2.5	3.4
Intermediate/Senior	2.9	3.7
<u>Technical:</u>		
Junior/Intermediate	3.5	3.3
Intermediate/Senior	2.2	6.4
<u>Administrative:</u>		
Junior/Intermediate	1.8	2.6
Intermediate/Senior	1.8	5.4
<u>Trades:</u>		
Junior/Intermediate	3.0	3.9
Intermediate/Senior	2.6	6.5

4.2.9 MOST NEEDED SKILLS IN THE NEXT TEN YEARS

The respondents were asked what they believed the most important skills and traits would be in the next ten years for each occupation group. They reported as follows:

- Management:
 - leadership, human resource and communications skills (14 mentions)
 - technology and computer related skills (6 mentions)
 - general and project management (5 mentions)
 - planning - strategic and operational (3 mentions)
 - 1 mention each
 - experience
 - planning to keep trades people up to date
 - versatility
 - business skills (i.e. accounting)
 - broad technical knowledge
 - understanding of the rules and regulations facing the industry

- Professional Scientific:
 - maintaining and updating knowledge and skills (5 mentions)
 - coaching and project and company management (4 mentions)
 - IT and computer skills (2 mentions)
 - 1 mention each
 - integrity
 - attention to detail
 - reporting skills

- Technical
 - maintaining, updating and broadening knowledge and skills (10 mentions)
 - computer related skills (4 mentions)
 - 1 mention each
 - ergonomics

- project management
- common sense, but cannot be taught
- coaching
- work ethic

- Administrative:
 - computer and software related skills (6 mentions)
 - teamwork and communications (4 mentions)
 - ability to assume more responsibility (2 mentions)
 - 1 mention each
 - math
 - attention to detail
 - work ethic
 - presentation development skills

- Trades:
 - maintaining, updating and broadening skills (7 mentions)
 - team work and coaching skills (4 mentions)
 - attention to detail (1 mention)

When asked why these skills and traits would be important the interviewees replied as follows for each occupation group:

- Management:
 - changing nature and size of the sector (4 mentions)
 - to do more with less (4 mentions)
 - meet the clients demands and competition (4 mentions)
 - increasing role of IT and computer based technologies in the sector (3 mentions)
 - help grow the company (3 mentions)

- Professional:
 - must stay current to be competitive (6 mentions)
 - 1 mention each
 - be able to do more with less
 - industry trend to more computer based processes

- Technical:
 - must stay current to be competitive (7 mentions)
 - 1 mention each
 - be able to do more with less
 - to be able to grow the sector
 - improve ability to work cooperatives with other organisations/companies
 - work shifting from mechanical to avionics

- Administrative
 - increasing reliance on IT and computer based technologies (3 mentions)
 - stay competitive (3 mentions)
 - to do more with less (2 mentions)
 - deal more directly and effectively with clients (2 mentions)
 - expand assistance to managers (1 mention)

- Trades
 - to stay competitive (5 mentions)
 - do more with less (2 mentions)
 - accommodate growth (1 mention)

4.2.10 MOST PRESSING ISSUES WITH RESPECT TO EDUCATION AND TRAINING IN NS

The respondents were asked to judge what skills or traits would remain weak, weaken or be missing unless there were changes made to the education and training system in NS. They replied as follows, for each occupation group:

- Management:
 - leadership, human resource and communications skills (5 mentions)
 - 1 mention each
 - general business skills
 - general literacy
 - risk management skills
- Professional/Scientific:
 - ability to apply knowledge and training (2 mentions)
 - 1 mention each
 - quality assurance
 - systems engineering
 - acoustics
- Technical:
 - up to date computer and software skills (3 mentions)
 - currency (2 mentions)
 - 1 mention each
 - aerospace manufacturing skills - particularly composites
 - calibration technology knowledge
 - aircraft maintenance technicians
- Trades:
 - Training that is not thorough and overall would be substandard (6 mentions)
 - numbers needed (3 mentions)
 - 1 mention each
 - mathematical skills
 - efficient trades-people
 - general literacy skills
 - exposure at the junior and high school level to trades as a career option

When asked what the nature of the changes to the education and training system the respondents reported as follows:

- Broader range of courses, e.g., support trades, electronic assembly, composites, acoustics, risk management, leadership roles (9 mentions)
- Improved marketing of and guidance into trades (5 mentions)
- more effective involvement of the universities and community college with the private sector (5 mentions)
- More thorough training (3 mentions)
- 1 mention each
 - license for life support technicians

- new emphasis on existing workforce
- new emphasis on people skills
- some form of structured education for managers, industry related

4.2.11 MOST PRESSING HUMAN RESOURCE ISSUES

Finally the interviewees were asked their opinion on the most important HR issues in the next five years. They reported as follows:

- Shortage of skilled trades and training options (15 mentions)
- Motivation, attitude and flexibility of the work force (6 mentions)
- Access to skilled, trained younger managers (5 mentions)
- Communication between management and the shop floor (3 mentions)
- performance management (2 mentions)
- 1 mention each
 - availability of skilled instructional systems designers
 - chronic absenteeism
 - compensation equity
 - computer and technical skills
 - controlling benefits costs
 - succession planning
 - winning more work in very competitive market

5.0 CASE STUDIES

Four case studies were completed to study the experience of other jurisdictions with two key issues facing the expansion and improvement of the aerospace labour force supply and the growth of the sector in NS.

The rationale for each set of two case studies is outlined below as well as their findings of interest to the NS situation. The cases are presented in their entirety in Appendix 5. Case studies are topic driven and based on most pressing human resource and education/training issues.

5.1 IMPROVING COOPERATION AND COORDINATION BETWEEN INDUSTRY AND THE EDUCATION/TRAINING SYSTEMS

Nova Scotia employers in the aerospace sector expect it to be relatively difficult or very difficult to hire the following occupations in the next 5 years:

- Machinists (conventional machines), 85% of employers hiring to be relatively or very difficult;
- Welders, 80%;
- Executive and senior managers, 70%;
- Mechanical and production engineers, 56%; and
- Quality assurance personnel, 45%.

Some occupations, for which the expected hiring over the next 5 years amounted to only one or a few persons, were also expected to be very difficult to hire. These included safety systems personnel, design engineers and non destructive testing technicians.

Further questioning suggested that the cause for these supply questions was rooted in employers' concerns for the future efficacy of the education and training institutions and processes. When asked what changes would be needed in the education and training systems to help alleviate their concerns the respondents said that what was needed was:

- a broader range of courses, e.g., support trades, electronic assembly, composites, acoustics, risk management, leadership roles (9 mentions);
- improved marketing of and guidance into trades (5 mentions);
- more effective involvement of the universities and community college with the private sector (5 mentions);
- more thorough training (3 mentions); and
- 1 mention each,
 - license for life support technicians
 - new emphasis on existing workforce
 - new emphasis on people skills
 - some form of structured education for managers, industry related

One of the main solutions to the skills and numbers shortage lies in the comments regarding more effective cooperation between the private and education/training sectors. Improvements in this area should lead to more interest in aerospace professions and trades and more suitable education and training programs, if resources are made available.

Hence, this case study examines the way two other jurisdictions have organised themselves to improve the cooperation and coordination between industry and the education/training systems. The case study measures the extent to which attempts to better cooperate:

- were successful; and
- increased the quality of education and training;

- increased the number of education and training candidates;
- increased the number of graduates;
- increased the supply of skilled labour; and
- helped reduce hiring difficulties.

5.1.1 THE MANITOBA AEROSPACE HUMAN RESOURCES COORDINATING COMMITTEE (MAHRCC)

The MAHRCC is an NGO funded by the federal and provincial governments and industry.

A board of directors with industry and education representation provides policy direction

There are four areas of focus for the MAHRCC and its program delivery:

- Subsidized training – groups or individuals would have training subsidized by the MAHRCC
- New hires – the MAHRCC would train people for jobs that were available in the industry already, but had not been filled
- Creating permanent educational pathways from education institutions into industry
- Talking with youth and parents about the aerospace industry, as a promotional tool

Each of these programs is implemented by the MAHRCC, working through the whole process with education and industry. Success rates in terms of skill upgrading and successful hires are reported to be high.

The main results seen by the industry all relate to the close relationship now experienced by industry and education and to the effect of industry speaking in “one voice” with the education and training institutions.

Training is still seen as a cost by most companies and therefore new money for industry to access industry participation would likely be lower. However, to gain access to federal and provincial government funding industry had to coordinate its efforts so that it could speak with one voice with the education and training institutions. In a sense companies had to give up a little of their independence to get some government funding. The “carrot approach” encouraged industry to coordinate its efforts and work with the education sector to see its needs met.

The success rates of the MAHRCC, improved quality of consultation between industry and education and training institutions and the fact that it was successfully implemented in a regional economy that is more similar to NS than it is different recommend this approach for Nova Scotia.

The Nova Scotia aerospace sector needs to be mindful that dedicated resources are going to be required for successful implementation of workforce strategy programs. The sector should expect to be asked to contribute significant resources of its own to make a Manitoba-like program a reality in NS.

5.1.2 THE SOCIETY OF BRITISH AEROSPACE COMPANIES (SBAC)

The SBAC works closely with the Department of Trade and Industry to identify potential futures of the aerospace sector and the interventions that need to take place. It does this via three main methods:

- It participates in a sector skills council, with representation from government, education and training organisations and industry, that will in 2005 issue a report that will deal with the following issue areas:
 - the aging workforce
 - how to “up skill” the existing workforce
 - shortages in labour
 - loss of business to emerging countries

- identification of the core the technical expertise of the UK
- the nature of the future workforce
- attracting the right talent
- movement of trained personnel away to occupations outside their core areas of expertise
- having the correct institutional frameworks in place
- coping with regional differences
- It participates in a skills and people management board (www.aeigt.co.uk/workinggroup3.shtml) that has been put into place to look at training provisions in colleges relative to the needs of the industry.
- It is working to design models of best practices with a view to developing high performance work organizations.

5.2 IMPROVING MANAGEMENT SKILLS IN REGIONAL ECONOMIES TO INCREASE THE SIZE AND SCOPE OF THEIR AEROSPACE SECTORS

The environmental scan indicated a strong belief that the growth of the Nova Scotia aerospace sector depended in large part on the skill of Nova Scotia management. The survey data show a strong emphasis on the need to train managers that are leaders, communicators and computer literate.

The skills said to be most needed by management in the next 10 years had a broader scope but still focused on the task of growing companies. Among the skills most needed by management in the future the respondents said:

- leadership, human resource and communications skills (14 mentions);
- technology and computer related skills (6 mentions);
- general and project management (4 mentions);
- planning - strategic and operational (3 mentions); and
- 1 mention each,
 - experience
 - planning to keep trades people up to date
 - versatility
 - business skills (i.e. accounting)
 - broad technical knowledge
 - understanding of the rules and regulations facing the industry.

The NS economy is to some extent a “branch plant” economy. That is, it is more common for large firms to have their production establishments located in the province rather than their head office or main operations. Given this situation it would seem that placing a large reliance on local management for the growth of their branches establishments is a tall order because most business strategy decisions are made outside of the province.

This case examines how examples of economies that “branch plant” oriented went about improving the strategic business development skills of local management and if the improvement helped grow their businesses and / or establish new aerospace businesses in the local economies.

5.2.1 THE ONTARIO AEROSPACE COUNCIL’S (OAC) AEMP PROGRAM

The AEMP program is an MBA track program designed for aerospace executives and senior managers. It is one of three programs offered by the OAC to address skills needs of the aerospace sector in Ontario.

The AEMP was designed to address the core competencies as identified by the OAC, which included:

- effective communications
- providing a vision
- influencing
- thinking “outside the box”
- modeling change
- analytical thinking
- global perspective
- training
- teamwork

To training program is delivered by the Rotman School of Management at the University of Toronto.

It was believed that by companies putting managers through this program it would improve management skills and have long-term benefits for the organizations and industry as a whole.

The Government of Ontario and the Strategic Skills Investment Program, delivered by the Ministry of Economic Development and Trade, funded the initial development of the three phased program but its ongoing costs are paid for by tuition fees, without government subsidies.

The OAC used anecdotal evidence of career advancement by participants as one method to determine program success. It was not able to measure the extent the overall aerospace sector benefited from the advanced management training.

The OAC anticipates:

- moving away from an MBA track to place more emphasis on the modular learning aspects of the program and
- modifying the design and price of the program so that it is more accessible to mid-level managers in larger firms or the senior-level managers in small firms.

This type of program, which addresses skills shortfalls with respect to strategic business planning, could be of significant benefit to bring the skill level of managers up to the position necessary for the continued development and growth of the aerospace sector in Nova Scotia.

However, there are some differences, which should be noted prior to implementing this program or similar program in Nova Scotia. Ontario has an aerospace sector with many more large companies, and head offices, than Nova Scotia. The success of the participants in terms of career advancement may have much to do with being near the location where strategic business development decisions are made.

Secondly, recruiting participants from small organizations, where staff levels are lean and funds for human resources development are at a premium could be an obstacle in Nova Scotia. Organizers may want to consider alternative delivery formats and the cost of participation to meet the needs of companies in this province. However, it is just these firms, the SMEs that are more likely to be locally owned or to have their head office in NS. Locally owned firms and firms with head offices in NS have the latitude to make strategic business development decisions that branch production divisions of out-of-province firms do not.

5.2.2 THE SWISS AERONAUTICAL INDUSTRIES GROUP AS A MEMBER OF SWISSMEM

The SWISSMEM executive training school as an example of industry working together in management training. The Swiss Aerospace Industry is too small to deal with the need of leadership and management training by itself. One solution to address this problem is to outsource the training to private training companies. This method has been adopted in the Swiss Aerospace Industry, through the executive training school SWISSMEM Kaderschule, Winterthur, which is run by SWISSMEM. SWISSMEM is the leading representative body of the Swiss Mechanical Electrical Industries and as such, does most of the leadership and management training.

There is no specific education program for the Aerospace Industry in Switzerland. As members of SWISSMEM, most of the managers in the Swiss Aerospace Industry obtain their management training through the Executive Training School SWISSMEM Kaderschule, Winterthur, run by SWISSMEM.

The Executive Training School SWISSMEM is part of SWISSMEM and functions as a profit center with no governmental funding. It is customary for the participating manager's company to pay for the training costs, as well as for all related costs such as travel. During the training the managers get their full pay.

There seems to be a consensus in the aerospace industry that the Executive Training School SWISSMEM covers the management training needs very well.

The Swiss aerospace industry, with its 2,500 employees, is profiting from the benefits of its relationships with the Executive Training School SWISSMEM, with its much more significant base of 350,000 employees. Alone, the Aerospace industry would never be able to offer such a great training opportunity to its members. SWISSMEM tells us, that more than 80% of the training topics for the management from the aerospace industry do not differ from the needs from the other members from those of mechanical electrical industries. If they do differ, the school, through its 8 permanent employees and external trainers have the ability to create an innovative training program to address those needs.

The participation of the Swiss Aeronautical Industries Group in SWISSMEM management training provides a workable example of how a relatively small and specialised sector can cooperate with a more broadly based organisation and still receive the specific type of training it needs. As a result of this case study and considering the NS context, three recommendations can be made:

- The NS aerospace sector should not assume that it must have a stand-alone education and training program. With consultation and a clear understanding of its needs it can benefit by cooperation with other sectors.
- Identify partners, like the Mechanical Electrical Industries or the automotive industry, to work with.
- Build a tradition of training and work to ensure that training is a fundamental part of business operations.

6.0 DIRECTED RESEARCH – FINDINGS AND CONCLUSIONS

The terms of reference required research into eight specific area that have direct bearing on the amount and skill level of labour available to the aerospace sector. The follow sections provide the findings.

6.1 IMPACT OF DEMOGRAPHIC TRENDS ON LABOUR AVAILABILITY

The current projection by Statistics Canada for Nova Scotia shows the following expectations:

- Nova Scotia population projected to increase:
 - 1.7%, 2001 – 2010;
 - 1.3%, 2010 – 2018; and
 - 0.3%, 2018 – 2026
- core labour force age groups projected to:
 - increase 6.2%, 2001 – 2010;
 - decrease 1.7%, 2010 – 2018; and
 - decrease 6.7%, 2018 – 2026.

Despite modest expectations for population growth the passing of the baby-boom generation will see the core labour force age group decrease in size beginning at about 2010. This alone will limit the size of the resident labour force. Birth rates in NS as low as they are in the rest of Canada. However, even an increase in fertility rates will not have an impact on the labour force age group for about 20 years, well beyond the time needed for action on a workforce strategy.

Other things being equal the economy will need to draw labour into the province.

However, Nova Scotia has a poor record of attracting and retaining immigrants, so much so that it is now developing an immigration strategy and is about to appoint an assistant deputy minister level civil servant to head up the immigration strategy. The recent history of migration to and from NS suggests the difficulties that must be overcome to increase net in-migration:

- Migration:
 - Net inter-provincial migration 2001 – 2003, -733/year
 - NS tends to be a magnet for younger people – movement from rural areas of the Atlantic Region
 - Net international migration 2001 – 2003, +444/year
 - Net movement is negative for young to middle aged people and positive for middle to older people.

The NS immigration strategy has set a target of 3,600 immigrants /year, well above the current 1,400/year. NS also has the lowest immigrant retention rate of any province in Canada with the exception of Newfoundland and Labrador so for the strategy to work retention rates must increase significantly. To improve the retention rate NS is working to:

- make the Provincial Nominee Program more responsive to potential immigrants and has added a “skilled worker” category; and
- allow trade certifications to be more broadly recognized in Atlantic Canada

6.2 POTENTIAL TO FILL FUTURE LABOUR REQUIREMENTS VIA IMMIGRATION

If NS is to fill a good portion of its labour requirement via immigration it will, as noted above, need to reach the objectives of its forthcoming immigration strategy.

There are also other constraints to using immigration as a source of labour. These additional constraints are summarised below:

- due to current federal immigration policies – not a lot of people coming into NS on the technical, engineering, IT side
 - applicants are awarded points based on education and points are difficult to get in the “technical” disciplines
- language can be a larger barrier than in Central Canada due to fewer people of similar cultural group and less well supported ESL programs
- Employment related language is challenging – programs are in development to address this, e.g., IMP used MISA’s “English in the Workplace” program
- Foreign credential recognition:
 - No Credential Assessment Services available in NS, are available in other provinces
 - reluctance to accept credentials if most experience is outside of Canada
 - MISA has a “New Beginnings” program in place to try out employees – 6 week work program
- Many jobs do not have formal postings – can be challenging for immigrants without networks
 - However, MISA does have a mentoring program that deserves expanding
- In general, numbers of immigrants are down from the early 1990s
- general reluctance of Nova Scotians to accept immigrants

There are policies and programs in place, or could be relatively easily put in place, to reduce the difficulties faced by potential immigrants to NS. These include:

- Provincial Employee Nominee Program – not working effectively, but has potential
- Credential Assessment Services
- New Beginnings program – MISA
- MISA Mentoring Program
- Immigrant Internships – like youth internships would be a good idea
- English in the Workplace programs
- Prior learning assessment processes for job entry programs that have apprenticeship requirements
- Canadian Council for Professional Engineers program “From Consideration to Integration”
<http://www.ccpe.ca/fc2i/e/index.cfm>

NS could “go the extra distance” to have immigrants consider NS by:

- marketing itself more deliberately
- providing services and programs to assist skilled workers to get into the workforce
- developing a process that works well for immigrants – orientation, skills assessment
- consistent funding for immigration related NGOs

6.3 ABILITY OF NS AND REGIONAL TRAINING AND EDUCATION INSTITUTIONS TO MEET TRAINING AND EDUCATION NEEDS

The survey of aerospace firms found opinions that:

- courses offered to not match the skills required on the job
- a great deal of on-the-job training is required to bring students up to speed with the new changing technologies and equipment
- there were not enough students coming out of the existing programs
 - many survey respondents believe that students do not see aerospace as a career path because they do not know enough about the potential of the sector
 - “marketing” of the industry is required to attract new students

One interviewee suggested that an institution, focused on aerospace and high technology machining would help fill training and education gaps.

6.3.1 NOVA SCOTIA COMMUNITY COLLEGE

The consultants find that while it is true that the core program of the Nova Scotia Community College (NSCC) Trades and Technology School hasn't focused specifically on the HR requirements of the aerospace industry the School does recognize and train students in most of what the industry needs, particularly the generic skills in manufacturing and engineering technician programs. Students graduate as machinists, mechanical engineering technicians, millwrights, etc., and there is a program in composites training (primarily for boat builders). The School is also introducing courses in non-destructive testing that would be of value in aerospace. The Dean believes the wide range of programs should meet aerospace industry skill needs, but remains open to discussion with industry sector representatives.

The 2003 graduates of the core programs in Trades and Technology went into the following occupations:

- Machinists and Machining and Tooling Inspectors, 4;
- Welders and Related Machine Operators, 14; and
- Aircraft Mechanics and Aircraft Inspectors, 1.

There is no clear record of 2003 core program graduates in other aerospace related occupations, but this does not take into account graduates of customised training programs.

Nineteen graduates in the desired fields is clearly below the anticipated numbers required, even if multiplied by several years. This points out the need for more career awareness in the high schools and input into NSCC Trades and Technology programming.

The NSCC graduates approximately 1,100 students per year, 82% find work in the field of their choice and 95% stay in Nova Scotia. It would seem there is room for more graduates to choose aerospace and defence as their field of choice.

The NSCC is adept at providing customised training to industry. For example:

- An aircraft mechanics technician program with IMP has been expanded to a two year aircraft mechanical engineer program.
- NSCC will work with the Millbrook First Nations Reserve and General Dynamic on the training needs for the Maritime Helicopter program.
- It delivers a customised manufacturing professional program, borrowed from Ontario Aerospace Council, with 50-60 people in it. The program is going extremely well and the NSCC is talking to Composite Atlantic about their future needs.
- Composites Atlantic and the NSCC are setting up a training institute in Mill Cove and the firm is meeting with the Lunenburg campus staff to discuss its anticipated needs.

The NSCC would align their programs more specifically with the aerospace industry if the demand is there in general, although they are currently focusing on input from Composites Atlantic. The model from those discussions may be useful more broadly across the aerospace industry. NSCC would welcome input from others including input from Pratt & Whitney and IMP. Pratt and Whitney do take a good number of students. Whatever develops with respect to customised training will also give the Trades and Technology School guidance as to how make the NSCC core program serve the aerospace industry better.

With respect to management level training, NSCC hasn't been involved in any comprehensive way to date. However several initiatives relate to this area:

- Several years ago the NSCC entered into an agreement with Achieve Global (formerly Zenger-Miller) to deliver training and development products designed around organization-specific desired results. Courses focus on business situations, and on maintaining personal self-confidence and self-esteem. They are designed to maintain constructive business relationships, and encourage all learners to take initiative and lead by example. However, these programs are admittedly generic.
- There is a manufacturing leadership certificate program from Ontario delivered to Michelin, but it could be applicable to aerospace.
- NSCC Customized Training is talking with Atlantic Composites about customised project management training.

6.3.2 DALHOUSIE UNIVERSITY

Dalhousie University graduates 25-40 students from their Industrial Engineering program each year. These students are trained in a broad range of programs that include technical and management training. They take part in three work terms that provide experience in industry. Although they are not specifically prepared for the aerospace and defence industry, several graduates per year do find employment in that industry sector.

6.3.3 ARE SUFFICIENT NUMBERS OF STUDENTS GRADUATED?

There 2,300 students enrolled in NSCC School of Trades and Technology two year program, with approximately 1,100 grads per year in total. Programs are full, over capacity in many areas, and there is no shortage of students. About 95% of graduates stay in Nova Scotia. However, as noted above, there does not seem to be sufficient awareness amongst students of the opportunities coming in the aerospace sector.

The lack of knowledge about job opportunities amongst students as well as career counsellors is the primary factor limiting student interest in the aerospace sector.

6.4 SKILLS CERTIFICATION AND ACCREDITATION PROGRAMS AND PROCESSES

As mentioned above the ease with which foreign certifications and accreditations can be judged equivalent to their Canadian counterparts has a large impact on immigration as a source of labour. The equivalency certification process remains a constraint on immigrant labour supply for the following reasons:

- credential assessment is just becoming a priority topic federally
- credential assessment cuts across 3 jurisdictions – federal, provincial and professional organizations
- credentials are not necessarily recognized beyond the province there were initially accepts in

The following would help improve the certification of credentials process:

- a clear documented process is required;
- companies must be willing to hire people with foreign credentials (is not universally the case);
- the NS immigration strategy needs to be implemented;
- education and training programs are needed to bridge gaps;
- mentoring programs must be available for immigrants;
- language training needs to be expanded; and
- means should be developed to give immigrants the opportunity to gain some Canadian work experience.

6.5 CURRENT AND POTENTIAL PARTICIPATION OF EQUITY GROUPS IN THE AEROSPACE SECTOR

In terms of employing traditionally underrepresented groups there is no reason the aerospace sector cannot make breakthroughs in hiring equity groups that have been made in medicine, business and law. To do this the aerospace sector will have the support of the NS Skills strategy which has identified equity group participation in the labour force as a priority

The factors limiting the entry of under-represented groups into the labour force are not unique to the aerospace sector and are as follows:

- lack of skills – education and training
- some physical disabilities that prevent participation
- connection of business to the “equity” labour pool is poor – outreach is required
- transportation – plants are not always accessible
- sensitivity to the issues – they can vs. they cannot
- with respect to women in the labour force trades occupations not generally viewed a women or family friendly
- aerospace not widely recognised as a career opportunity by many equity groups

There is already a wide range of programs and initiatives to help equity individuals enter the labour force and the aerospace sector simply needs to commit itself to take advantage of them. The sector should also look to other professions that have successfully expanded the hiring of representatives of equity groups for models to apply to the aerospace sector.

6.6 STATE AND EFFECTIVENESS OF CAREER INFORMATION AVAILABLE TO POTENTIAL AEROSPACE WORKERS

The terms of asked that the consultants assess the effectiveness of career information available to potential aerospace workers and career guidance professionals. The consultants found that:

- Guidance counsellors report few requests for information on Aerospace. Those that are interested usually follow-up through militias/military information channels.
- No other sector is necessarily doing a better job than aerospace.
- In general, counsellors do not want every sector to send information. They report that a good website with great links would be much more beneficial.
- More information about salary potential is needed to assist career decision making.
- The aerospace sector would do well to take direction from the protocols of the Canadian Career Information Partnership with respect to communicating with potential entrants to the sector.
- Career guidance contact with aerospace sector needed earlier than Grade 12, which is the norm now. Students in Grades 9-11 could make good use of carer information.
- The sector could consider an employee shadowing program to help generate interest by students in the sector.

6.7 STATE AND EFFECTIVENESS OF INFORMATION AVAILABLE TO THE PUBLIC REGARDING THE IMPORTANCE OF THE AEROSPACE SECTOR

The HRP also requested that the consultants assess the information available to the public about the aerospace sector in NS. The consultants found that:

- Few people outside the sector know much about the sector.
- The ADIANS website provides a good source of information to the public but needs expansion and a more interactive feel.

- New contracts and job creation get more public attention than information about technology advancements. Information about new technologies being used and the like is less effective in attracting the interest of the general public.

6.8 EXTENT OF HUMAN RESOURCE PLANNING AMONG ESTABLISHMENTS IN THE NOVA SCOTIA AEROSPACE SECTOR

There is little evidence that HR planning or needs forecasting play a large role in corporate strategy and planning. The HR function, in general, is not considered an important part of company management in the NS aerospace sector. In some cases HR issues are dealt with out of the establishments' head offices. However, in general the HR function focuses on compliance with labour related laws and hiring when "orders" for extra labour are passed down from the production managers.

Virtually no NS establishments have an accredited HR professional heading up their HR function.

The consultants found little evidence of comprehensive HR plans, career development programs, etc. among NS aerospace establishments.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The baseline survey and the supporting environmental scan and case studies provided evidence of some more general but no less important issues associated with the potential workforce that could have large impacts on growth and development of Nova Scotia's aerospace sector.

7.1 REGARDING THE GROWTH AND DEVELOPMENT OF THE AEROSPACE SECTOR

1. The survey respondents expect to hire about 280 people in the next two years and 250 in the next three to five years. These numbers represent about 30% of the current workforce of the respondents. This relatively large amount of hiring in a labour supply situation that is tightening could make it more difficult for SMEs to compete with large firms for labour. The ADIANS HRP could take the role of a labour recruitment service to help smaller firms adapt to the growing competition for skilled labour.
2. It would be unwise to count on immigration to meet significant portions of the need for skilled labour. Even major improvements in Nova Scotia's immigrant attraction record will not make a large contribution the sector's need for labour. Moreover, the need for labour is already here and growing. The flows of immigrants, with credentials approved by Canadian organisations are still, in relative terms, off in the distance.
3. Although wage rates tend to be lower in the NS aerospace sector compared to the sector in the rest of Canada there are signs that market demand combined with a limited supply of skilled labour is closing the gap between NS and rest of Canada wages. Other things being equal this would be considered a beneficial trend. However, many of the interviewees noted that wages were lower than the rest of Canada because, among other reasons, it was important to keep NS's competitive edge compared to lower cost producers in emerging economies. However, competition based on costs can go on only so long before an all out "race to the bottom" starts. If NS is to retain its competitiveness in the long term it needs to produce more value than its competitors, not simply work more cheaply. The question is, does NS have the skills and the economic structure in its aerospace sector needed to break into high value-high skill activities related to design and engineering. Or, will it remain oriented more towards manufacturing products that could soon be produced more cheaply in emerging economies?
4. The case studies found at least two good models that could be adapted to Nova Scotia that would help improve the strategic business development skills of NS management. However, these efforts may need to be directed to SMEs that are locally owned or at least have their "head office" operations in Nova Scotia. It is the management at these types of establishments that will have the greater scope for strategic business growth decisions. We recommend that ADIANS make special efforts to bring locally owned businesses and businesses with their centre of operations in NS into the efforts to grow the existing establishments in NS and to create new lines of aerospace business in NS.
5. The research found very little evidence that the HR function played a significant role in corporate strategic planning in NS. This absence could hinder any efforts to improve the skills of management in NS. If this is the case the potential to expand the sector in NS by improving the business expansion skills of NS management could be stunted.

7.2 REGARDING IMPROVEMENT IN THE SUPPLY AND QUALITY OF LABOUR

1. The ADIANS HRP needs to increase career awareness in the high schools and in the NSCC. This is probably best done in the short run through the Skills and Learning Branch of the Department of Education, HRSDC and the Association of Industry Sector Councils (AISC).
2. The ADIANS HRP needs to present the findings of this report to the Dean of the NSCC Trades and Technology School and ask for a sector specific meeting to discuss anticipated industry needs. The aerospace sector needs to become prepared to review and comment on curriculum additions and changes to specific programs related to aerospace.
3. ADIANS should seek membership in the AISC and participate in cross-sectoral initiatives. The time is now more appropriate than it was a year ago. The Department of Education has recently made it clear that while AISC input is important, AISC does not represent all the sectors that need to offer input.
4. The weakest area may be management level employees. The aerospace sector should consider the establishment of a Management Institute, similar to the Dexter Institute through the NSCC. The work of the institute should be accessible in terms of curricula and price to SMEs because history shows that these firms, which tend to be locally owned or have their head offices in NS, are the most likely sources of growth and development in a regional economy that is “at distance” from a nation’s economic centre of gravity.

Appendix 1: Interview Guide for the Environmental Scan

STRATEGIC INTERVIEW GUIDE 1 – EMPLOYERS OR ORGANISATIONS REPRESENTING EMPLOYERS

Tombstone Information

Date:

Person Interviewed:

Position:

Representing (company or organisation):

NAICS codes for company or companies represented by the organisation:

(Get as much detail as practical. If you cannot get the code get a list of the products and / or services produced and / or sold.)

Contact points:

Street Address

Phone:

Fax:

E-mail:

Interviewer:

Questions for the Strategic Interviewees:

1. What products and / or services does your firm (or the firms you represent) produce?

1a Which of these are:

- produced and sold in Nova Scotia?
- Produced in NS and sold,
 - Sold elsewhere in Canada
 - Sold outside of Canada
- Not produced in NS but sold in NS
- Not produced in NS but,
 - Sold elsewhere in Canada
 - Sold outside of Canada

2. What has been the:

- National trend;
- International trend in your industry sector in the last 5 years, in terms of:
 - Sales of products and / or services
 - Prices (i.e., lagged, kept up with or exceeded inflation)
 - Changes in product and / or service lines
 - Location of market (NS, rest of Canada, international)?

([Note 1: sector = NAICS code or NAICS codes if interviewing representative of an organisation that represents business]. [Note 2: We don't want to know about the specific company that the interviewee may be part of]. [Note 3: If the interviewee does not know the NAICS code help them by showing them the NAICS code list and go down to as much detail as is practical.])

2a Was this also the situation for the sector in Nova Scotia? If not, how so?

- Steady growth, but all domestically

(Review each of sales, prices, changes in line and location of market with the interviewee.)

2b. What are the factors that account for the differences between the NS situation and that in the rest of Canada and / or internationally in terms of:

- Sales of products and / or services
- Prices (i.e., lagged, kept up with or exceeded inflation)
- Changes in product and / or service lines
- Location of market (NS, rest of Canada, international)?

(Let interviewees explain their answers in their own terms. Look for comments with respect to competition, technology, new demand [from old customers, new customers], resource availability [material, financial], labour [labour peace, numbers, skills, wage demands,], political change... If their answer does not touch on some of these areas, prompt them. Perhaps they forgot or spoke about them in other terms, or they didn't have an impact.)

3. From a:

- Canada wide;
- International perspective
 - What do you see, in terms of sales, prices, product and / or service lines and market locations for your industry sector for the next:
 - B year
 - B 3 years
 - B 5 to 10 years?

3a. Will this also be the situation for the sector in NS? If not, how so?

(Review each of sales, prices, changes in line and location of market with the interviewee.)

3b. What are the factors that will account for the differences between the NS situation and that in the rest of Canada and / or internationally in terms of:

- Sales of products and / or services
- Prices (i.e., lagged, kept up with or exceeded inflation)
- Changes in product and / or service lines
- Location of market (NS, rest of Canada, international)?

(Let interviewees explain their answers in their own terms. Look for comments with respect to competition, technology, new demand [from old customers, new customers], resource availability [material, financial], labour [labour peace, numbers, skills, wage demands,], political change... If their answer does not touch on some of these areas, prompt them. Perhaps they forgot or spoke about them in other terms, or they didn't have an impact.)

(From this point on all questions refer to the operation of the sector in Nova Scotia, unless otherwise noted.)

4. For the sector in NS, where are its main markets?

4a. How have they changed in the last five years?

4b. How do you expect them to change in the next five years?

5. Please describe the most recent event that caused or forced major change in the way your sector produces or sells its products/services.
 - 5a. What conditions, factors or forces caused the change?
 - 5b. How did your industry respond?
(Look for comments on the location of markets, changes in the way the product was sold, changes in products produced, changes in the method of production, changes in labour agreement/manner of work, labour supply, labour skills, and so on.)
6. In the last 5 years was labour readily available in the numbers and with the skills needed?
 - 6a. If there were challenges, what were they?
 - 6b. How were the challenges overcome?
 - 6c. Was this the situation throughout your industry or was it specific to NS?
 - 6d. What changes in terms of human resource requirements do you anticipate over the next:
 - 3,
 - 5 and
 - 10 years?*(Look for comments with respect to:*
 - *how much labour*
 - *full time, part time, contract out*
 - *changes in the mix of occupations/skills required*
 - *gender mix*
 - *wage rates*)
 - 6e. Why? What will be driving these changes?
 - 6f. Do you expect that there will be an adequate supply of labour?
 - 6g. What about the supply of the right types of skills?
7. If there are to be challenges in finding the right labour supply what do you think the sector's response will be? How will it cope?
8. I'd like you to consider some scenarios for your sector in NS:
 - 8a. What conditions could make your industry leave NS for another location (or shift production to another facility that is already in place)?
 - 8a-1 Why wouldn't the new location have the same conditions as NS?
(Look for comments with respect to labour legislation, education, training, labour supply [but enquire why the person believes the labour supply would be better], and so on.)
 - 8a-2 Which of these conditions are out of your control or the control of NS?

- 8a-3 What NS conditions could your sector, or in partnership with some other organization, hope to remediate?
- 8b. What if the future is one of slow or limited growth? Do you see the supply of labour and skills as an issue? Can you tell me why?
(Get a definition of “slow” and “limited.”)
- 8c. Now consider a situation with strong sales growth. What would your sector consider strong growth?
(Get a definition of “strong.”)
- 8c-1 Does the supply of labour become an issue? Can you explain how? Is it a matter of numbers or skills?
- 8c.2 Will labour move to NS? If not, why?
9. Is there anything else you would like to tell me about the performance of your sector in NS or the ability of the area to provide the amount and type of labour skills your sector will need?

**Appendix 2: Persons Interviewed for Environmental Scan Report
Environmental Scan**

Persons Contacted and Interviewed

Mr. Mike Hollihan, President, ADIANS
Mr. Carl Kumpic, VP International Marketing, IMP Aerospace
Mr. Derek Kinsman, COO, Composites Atlantic
Mr. Tony Goode, Sr. Marketing Manager, Maritime Region, Northrop Grumman
Mr. Ron Kane, VP Policy and Research, AIAC
Mr. Lloyd Noseworthy, Regional Director, International Business, Sikorsky Canada
Mr. Steve Dick, Executive Director and CEO, CAMC
Mr. Peter Giffin, Senior Trade Officer, NSBI
Mr. Tony Purchase, Director, Industrial Development, NS Dept. of Economic Development
Mr. Gordon Gale, Trade Commissioner, International Trade Canada
Mr. Bill Ricketts, President and COO, Satlantic
Mr. Lee Carson, Director of Major Programs, MacDonald Detwiler
Mr. Hal Davies, President, Perform Plus Management

APPENDIX 3: TELEPHONE SURVEY INSTRUMENT

Provided under separate cover.

APPENDIX 4: ESTABLISHMENTS INCLUDED IN THE POPULATION OF BUSINESSES DIRECTLY ENGAGED IN AEROSPACE WORK IN NOVA SCOTIA

**Companies Active and Included in the Aerospace Sector in Nova Scotia
as of September, 2004**

Advanced Precision Machining and Fabrication	C-Vision Limited	Orenda Recip. Inc.
Aerotec Engines Ltd.	Fabco Industries Limited	Pivotal Power Inc
AIRMAC Flight Centre	Focal Technologies	Pratt & Whitney Canada
Allendale Electronics	Greenwood Flight Centre	Pylon Atlantic
Composites Atlantic Machining	Halifax International Airport Authority	R.P. Hawboldt Machining
AMIRIX Systems Inc.	HSRS Aviation Services	Romac
Anixter International	IMP Aerospace Avionics Division	Russel Metals
Apex Industrial Supplies	IMP Aerospace Components	Seimac Limited
Atlantic Aero Marine Supply and Manufacturing	IMP Aerospace Machining Division	Sgitheach Air Service
Atlantic Avionics	IMP Aerospace - Airport Internav	SNC-Lavalin Inc
Atlantic CNC	MacDonald, Dettwiler & Associates Ltd	Survival Systems Industrial Ltd
Atlantic Hardchrome Limited	Mariner Forge	Tecult Eduplus Inc
Bartlett Plastics and Precision Machining	Mil-Aero Electronics Atlantic Inc.	Turbo Wing Development Canada Ltd.
Bradeans Tool & Die Ltd	Nautel	Ultra Electronics Maritime Systems
Bridgeport Wire Rope and Chain	Navitrac Engineering Inc.	Xwave Solutions Inc
Coastal Aviation	Northrop Grumman Canada Corporation	Yarmouth Airport Commission Association
Coluza Technical Services	Ocean Case Company Limited	
Composites Atlantic Group EADS		
Cougar Helicopters Inc		

**Status of Surveys with Active Aerospace Companies In Nova Scotia
as Of November 22, 2004**

COMPLETED:	Ocean Case Company Limited	Atlantic Aero Marine Supply and Manufacturing
Advanced Precision Machining and Fabrication	Pylon Atlantic	Bartlett Plastics and Precision Machining
AIRMAC Flight Centre	Tecult Eduplus Inc	Coastal Aviation
Allendale Electronics	Ultra Electronics Maritime Systems	Cougar Helicopters Inc
Composites Atlantic Machining		Focal Technologies
Composites Atlantic Group EADS	PENDING:	Greenwood Flight Centre
AMIRIX Systems Inc.	Bridgeport Wire Rope and Chain	IMP Aerospace Machining Division
Anixter International	MacDonald, Dettwiler & Associates Ltd	Internav
Atlantic Avionics	Mil-Aero Electronics Atlantic Inc.	Mariner Forge
Atlantic CNC	Northrop Grumman Canada Corporation	Nautel
Atlantic Hardchrome Limited	Seimac Limited	Navitrac Engineering Inc.
Bradeans Tool & Die Ltd	Turbo Wing Development Canada Ltd.	Orenda Recip. Inc.
Coluza Technical Services		Pivotal Power Inc
C-Vision Limited		Pratt & Whitney Canada
Fabco Industries Limited		R.P. Hawboldt Machining
Halifax International Airport Authority	NON-RESPONSIVE/NOT COMPLETED:	Romac
HSRS Aviation Services	Aerotec Engines Ltd.	Russel Metals
IMP Aerospace Avionics Division	Apex Industrial Supplies	Sgitheach Air Service
IMP Aerospace Components		SNC-Lavalin Inc
IMP Aerospace		

Survival Systems Industrial Ltd Yarmouth Airport Commission
Xwave Solutions Inc Association

**Range Of Products/Services Produced By Surveyed Companies
As Of November 22, 2004**

Products:

- Custom Machining
- Electrical Displays and Boxes
- Assembled Circuit Boards
- Cables/Cable Harnessing
- Survival and Airborne Rescue Kits
- Empra Rescue Baskets
- Molds, Tooling and Composites Tooling
- Communication Products
- Training Programs
- Advances Sensor Systems
- Various Aircraft Parts
- Metal Fabrication and Manufacturing

Services:

- Electronic Design and Calibration
- Training and Education
- Life raft, life vest, survival kit servicing
- Plating
- Printed Circuit Boards
- Manufacturing Process Design
- Tooling Design
- Automation Programming
- Facility Maintenance and Operation
- Warranty, Maintenance and Repair Support
- Program Management
- Aircraft Maintenance

Appendix 5: Case Studies

IMPROVING COOPERATION AND COORDINATION BETWEEN INDUSTRY AND THE EDUCATION/TRAINING SYSTEMS: MANITOBA, CANADA

1.0 CONTEXT FOR THE DECISION TO IMPROVE COOPERATION AND COORDINATION BETWEEN INDUSTRY AND THE EDUCATION TRAINING SYSTEMS

In 1992 the government of Manitoba provided funding to set up a coordinating committee for human resources in Aerospace. The result was an initiative, which included participation by industry, government and education, essentially a joint venture. The project was funded by the government (federal and provincial) and matching funding was provided by industry. The federal and provincial governments each provided \$400,000 of start-up funding while the industry matched the \$400,000 with in-kind contributions. The project was initiated to address the requirements of the sector to hire and train employees as necessary to grow the sector in Manitoba.

The Manitoba Aerospace Human Resources Coordinating Committee (MAHRCC) enabled industry to speak with education/training institutions with one voice. It allowed employers to find the right people and to ensure that the training they required was available. It facilitated a partnership between industry and education where they could work together to deliver appropriate programs.

2.0 IMPLEMENTATION

The MAHRCC has 5 employees running day-to-day operations. A board of directors with industry and education representation guides the process. A coordinating committee manages the funds that are provided for the project, but industry actually decides how the money is spent. Government is not involved in this process.

There are four areas of focus for the MAHRCC and its program delivery:

- Subsidized training – groups or individuals would have training subsidized by the MAHRCC
- New hires – the MAHRCC would train people for jobs that were available in the industry already, but had not been filled
- Creating permanent educational pathways from education institutions into industry
- Talking with youth and parents about the aerospace industry, as a promotional tool

Each of these programs was implemented by the MAHRCC, working through the whole process with education and industry.

Ongoing operations are funded differently than in the start-up. Ongoing financial requirements are shared on a 1/3, 1/3 and 1/3 breakdown between the federal government, provincial government and industry. The MAHRCC requests funding each year for its operations.

To measure success, the MAHRCC made efforts to count the number of people trained each year. They also evaluated the impact of their actions by speaking directly with the participants and their companies. Each of the “new hires” that graduated from the program all had jobs and were tracked for 5 years by the MAHRCC.

3.0 RESULTS

The main results seen by the industry all relate to the close relationship now experienced by industry and education. There are a number of ongoing working initiatives and the industry now speaks as one voice to the education sector.

There have been clear results as employees have benefited from the training received and companies have benefited from the filling of previously open positions. The success rate for the new hires program is about 90%, reflected in positive reports on the ability to hire appropriate people, with the required skill sets.

Based on the improvement of skill levels of existing employees, the subsidized training was also judged successful. The success rate for this program is estimate at 75-80%, i.e., the percentage of participants that were able to build the skills they wanted and then use them in the workplace.

These programs did have some implementation difficulty, as it was not always easy to find a training format that would work for all persons at all companies.

4.0 ONGOING EFFECTS

Should this program disappear tomorrow, the effects will be mixed. There are several programs implemented with particular educational institutions that will continue as they are now self-supporting. Those that require outside funding might not be able to continue.

There will be an ongoing positive impact on the workforce as these newly trained employees will remain and companies will benefit from their improved skill set. However, without a group like MAHRCC, it is likely that less training would occur.

5.0 CONCLUSIONS

The MAHRCC suggests that the programs they have undertaken have been successful. With a 90% success rate for their “new hires” program and 75-80% success for their subsidized training program, the results are quite positive.

Training is still seen as a cost by most companies because the general sense is that companies are not in the training business but are business to produce services and products for their customers. Without money on the table, companies will not participate. The MAHRCC saw that with money available, industry was quite innovative, strategic and progressive when it came to training employees. The key was to have the money made available by government and matched by industry and to allow industry to decide how it is spent.

6.0 RECOMMENDATIONS

From an industry training perspective in the aerospace sector, there are a number of different approaches undertaken across Canada. British Columbia put together an extensive plan of action items, but continues to need to find the money and resources to put everything into action. Ontario took a more entrepreneurial approach by spending large sums of money to formulate training programs and then had industry “buy” the training from the Ontario Aerospace Council. Finally, Manitoba had large sums of money provided, then they developed programs to use the money provided. The lesson learned through this process was that money and resources were key drivers of action. Without them, building collaborative relationships with industry and education to deliver the required training becomes challenging.

One key message from this case study is that communication between industry and education/training institutions is essential to have the “right” types of training provided

The second clear message is that money “on the table” is required to get industry and education to participate.

The Nova Scotia aerospace sector needs to be mindful that dedicated resources are going to be required for successful implementation of workforce strategy programs. The sector should expect to be asked to contribute significant resources of its own to make a Manitoba-like program a reality in NS.

IMPROVING COOPERATION AND COORDINATION BETWEEN INDUSTRY AND THE EDUCATION/TRAINING SYSTEMS: THE SOCIETY OF BRITISH AEROSPACE COMPANIES LTD., ENGLAND

1.0 THE UK AEROSPACE SECTOR'S PROGRAM TO IMPROVE COOPERATION AND COORDINATION BETWEEN INDUSTRY, GOVERNMENT AND ACADEMIA

The Society of British Aerospace Companies (SBAC) has several training and development initiatives that promote aerospace careers, assess skills and training needs, lobby government, conduct research, conduct benchmarking and encourage good practice for innovation and growth. The SBAC works closely with the Department of Trade and Industry to identify potential futures of the aerospace sector and the interventions that need to take place.

There are four main areas focus of the SBAC.

1. Communication Between Industry, Government and Academia

A need for much more effective dialogue was recognized between the communications of these three groups. A sector skills council deals with issues relating to workforce, government and industry issues across a number of industry sectors, including aerospace. This council will also deal with the training needs of each sector and produce a full report on their findings during the first quarter of 2005. The report will deal with the following issue areas:

- the aging workforce
- how to “up skill” the existing workforce
- shortages in labour
- loss of business to emerging countries
- identification of the core the technical expertise of the UK
- the nature of the future workforce
- attracting the right talent
- movement of trained personnel away to occupations outside their core areas of expertise
- having the correct institutional frameworks in place
- coping with regional differences

All SBAC stakeholders have come together in the UK for these projects in terms of funding. Government and private industry are working together to insure these issues are addressed and properly funded.

2. Looking at Current and Future Structures for Training

A skills and people management board (www.aeigt.co.uk/workinggroup3.shtml) has been put into place to look at training provisions in colleges relative to the needs of the industry.

This group works closely with the Association of Aerospace Universities (www.aau.ac.uk) and its members and also sets up a sub-group in the sector skills council.

3. Encourage Best Practices

The group is working to design models of best practices with a view to developing high performance work organizations. They encourage small and mid size companies to look at internal HR issues such as team-based models that lead to performance and lean practices. They look to the federal and regional governments as well as industry to fund this HR and R&D initiative. The total budget for this project in the UK is £574,000, which the government pays 40 percent. The rest comes from industry.

4. Promote the Industry

Paramount to the health of the sector is the promotion of the sector. Therefore the SBAC continues to focus on the global positioning of the UK aerospace sector.

IMPROVING MANAGEMENT SKILLS IN “BRANCH PLANT” ECONOMIES TO INCREASE THE SIZE AND SCOPE OF THEIR AEROSPACE SECTORS: ONTARIO, CANADA

1.0 CONTEXT FOR THE DECISION TO FOCUS ON IMPROVING MANAGEMENT SKILLS

During meetings of the Ontario Aerospace Council (OAC) Board of Directors, there was an identified need for some upgrade and training in certain areas of the industry. There was a team of human resources people dealing with the board and they were given the task of identifying the needs/requirements of these groups. The Board of the OAC is made up mainly of aerospace companies in Ontario, including large aerospace firms, aircraft and space systems and equipment firms, manufacturing services and components firms and government bodies (provincial and federal).

The HR team of the OAC then went out and consulted with industry people to determine needs/requirements and which needed to be addressed most urgently. The team studied the competencies of the participants in the sector and communicated with operations people through a workshop to consider the topic. A list of core competency areas was identified which formed the basis for the move forward steps.

Three programs were initiated to address skill shortages:

- AiTP – For people who work in and around aerospace manufacturing / production areas
- PM/A – For people who work in and around aerospace product / process development programs
- AEMP – For aerospace executives and senior managers

For the purpose of this case study, we are mainly interested in the AEMP, for upgrading skills for management in aerospace firms.

The AEMP was designed to meet the core competencies as identified by the OAC, which included:

- effective communications
- providing a vision
- influencing
- thinking “outside the box”
- modeling change
- analytical thinking
- global perspective
- training
- teamwork

To implement the AEMP, the OAC sent out a Request for Proposals to 10 universities to put together a program that could address the requirements of the OAC. The Rotman School of Management was selected. The process of defining the program came as a result of completing case studies with aerospace firms, addressing the core competencies, setting up delivery times, curricula, etc. The result was a progressive, stepped program, managed by the Rotman School of Management.

The program had three phases. Each participant could complete one and then continue with the following phase. The first phase leads to a Certificate, followed by a Diploma and finally an Executive MBA in Aerospace. For more information visit - www.mgmt.utoronto.ca/aerospace.

The success of the program was determined by participant evaluation as they completed each phase and by career progress of the participants.

2.0 IMPLEMENTATION

This program was led by the OAC, with program management contained within the University of Toronto. There was a contractual arrangement between the OAC and University, but there was no formal reporting arrangement. The University completed the day-to-day implementation. The OAC was in an active contractual arrangement with both the participant's company and the university. At the time, the program would require between 20-25 participants to make it worthwhile for the university. Currently the program is dormant as applications are low – a result of the changing business conditions in the industry in the last 2-3 years. However, the AiTP and the PM/A programs continue to be offered.

It was believed that by companies putting managers through this program it would improve management skills and have long-term benefits for the organizations and industry as a whole.

The Government of Ontario and the Strategic Skills Investment Program, delivered by the Ministry of Economic Development and Trade, funded all initial development of the three phased program. This ministry was focused on supporting initiatives driven by the industry for the industry. Approximately \$2.25 million was used in the development of these three programs and an additional \$300,000 was used for program management.

Each participant's company paid for their tuition in the program. It was decided that training should not be subsidized, as it would be hard to revert back to a non-subsidized version of the training. The cost to the employer was \$12,500 for the first phase, \$12,500 for the second and \$25,000 for the final portion of the program. There is no government funding in place for the deliver portion of the program.

The main forms of progress measurement for the programs were the number of participants going through the programs, speaking with participants during the program and communicating with Board Members about the results that each saw within their own firms. The OAC held regular review meetings with the university and related program staff.

3.0 RESULTS

The OAC used anecdotal evidence to determine that the project was successful. It met the needs of organizations based on the information collected. It was said, by one company, that the participation in this program actually led to the securing of contracts, which would not have been closed without the training.

The OAC had difficulty measuring particular results and impacts on the sector as a result of the training program.

The OAC anticipates moving away from an MBA track to place more emphasis on the modular learning aspects of the program. One option being discussed is a core program, followed by specialized modules that could be taken as were appropriate to each participant. When this program has been completed, the participant would then be eligible to enter an MBA program in the final year.

The OAC would like to design and price the program so that it is more accessible to mid-level managers in larger firms or the senior-level managers in small firms.

4.0 ONGOING EFFECTS

The ongoing effects of this program are difficult to measure. It clearly made a difference in the calibre of managers who participated.

5.0 CONCLUSIONS

There were several “revelations in hindsight” that should be noted:

- It was challenging to keep up the numbers of participants to be able to continue the delivery of this program.
- Extensive and ongoing consultation between the training provider and the industry buyers is essential. High level training of managers is not a common service or process. Moreover, the training must be targeted at the needs of the participants and their sponsoring companies. This balance can only be achieved via constant communication between the educational institution and industry.

6.0 RECOMMENDATIONS

In Nova Scotia and Ontario there were management skills issues identified by companies in the Aerospace sector. This type of program, to address the skills shortfalls with respect to strategic business planning, could be of significant benefit to bring the skill level of managers up to the position necessary for the continued development and growth of the aerospace sector in Nova Scotia.

However, there are some differences, which should be noted prior to implementing this program or similar program in Nova Scotia. Ontario has an aerospace sector with many more large companies, and head offices, than Nova Scotia. The success of the participants in terms of career advancement may have much to do with being near the location where strategic business development decisions are made.

Secondly, recruiting participants from small organizations, where staff levels are lean and funds for human resources development are at a premium could be an obstacle in Nova Scotia. Organizers may want to consider alternative delivery formats and the cost of participation to meet the needs of companies in this province. However, it is just these firms, the SMEs that are more likely to be locally owned or to have their head office in NS. Locally owned firms and firms with head offices in NS have the latitude to make strategic business development decisions that branch production divisions of out-of-province firms do not.

IMPROVING MANAGEMENT SKILLS IN “BRANCH PLANT” ECONOMIES TO INCREASE THE SIZE AND SCOPE OF THEIR AEROSPACE SECTORS: THE SWISS AEROSPACE INDUSTRY

1.0 CONTEXT FOR THE DECISION TO FOCUS ON IMPROVING MANAGEMENT SKILLS

The SWISSMEM executive training school as an example of industry working together in management training. The Swiss Aerospace Industry is too small to deal with the need of leadership and management training by itself. One solution to address this problem is to outsource the training to private training companies. This method has been adopted in the Swiss Aerospace Industry, through the executive training school SWISSMEM Kaderschule, Winterthur, which is run by SWISSMEM. SWISSMEM is the leading representative body of the Swiss Mechanical Electrical Industries and as such, does most of the leadership and management training. This case study looks at this program as an example how an entire industry sector created its own executive training school to address identified training issues.

2.0 THE SWISS AERONAUTICAL INDUSTRIES GROUP AS A MEMBER OF SWISSMEM

The Swiss Aeronautical Industries Group (SAIG) was founded in 1939 by a group of Swiss Companies producing parts and components for the aeronautical industry. Today the 23 member companies have a workforce of some 2,500 people.

Since 1996, the SAIG has been a part of SWISSMEM, the leading representative body of the Swiss Mechanical Electrical Industries. Today the member companies have a workforce of some 300,000 people.

3.0 BASIC ACADEMIC BACKGROUND OF A MANAGER IN THE SWISS AEROSPACE INDUSTRY

Most of the managers in the Industry have a bachelor or masters degree from the technical University ETH and an additional post-secondary education in business. There is no specific education program for the Aerospace Industry in Switzerland. Both programs are offered for professionals and students covering the whole mechanical and electrical engineering industry.

3.1 HOW DO MANAGERS IN THE SWISS AEROSPACE INDUSTRY IMPROVE THEIR MANAGEMENT SKILLS?

As members of SWISSMEM, most of the managers in the Swiss Aerospace Industry obtain their management training through the Executive Training School SWISSMEM Kaderschule, Winterthur, and run by SWISSMEM.

3.2 ABOUT THE SWISSMEM EXECUTIVE TRAINING SCHOOL

Founded in 1946, the Executive Training School SWISSMEM trains approximately 1,700 managers in leadership and management skills, generating revenue of four Million Swiss Francs per year. The school employs 8 people full time and has 90 external trainers under contract. Seventy (70) percent of the customers are members of SWISSMEM with the remaining thirty (30) percent of participants being non-members. The training program encompasses a variety of options, including tailor-made in-house training to standard training in the fields of leadership and management. Next year, the school will start an e-learning program in the field of management and leadership training.

3.3 WHO BEARS WHAT COST?

The Executive Training School SWISSMEM is part of SWISSMEM and functions as a profit center with no governmental funding. Members of SWISSMEM (as most of the Swiss Aero industry is) have a cost reduction of 30% from the market price of the training offered by the school.

It is customary for the participating manager's company to pay for the training costs, as well as for all related costs such as travel. During the training the managers get their full pay.

4.0 RESULTS

There seems to be a consensus in the aerospace industry that the Executive Training School SWISSMEM covers the management training needs very well. The industry does not think that there is a requirement to make changes in the management training area. They feel confident that the Executive Training School SWISSMEM is, and will continue to be able to provide the training necessary. A survey conducted for all SWISSMEM members ten years ago provided similar results. For the Aerospace Industry in particular, there was no study done. There might be some work done in the near future as a student plans to write his thesis work on that topic.

5.0 CONCLUSIONS

The Aerospace Industry, with its 2,500 employees, is profiting from the benefits of its relationships with the Executive Training School SWISSMEM, with its much more significant base of 350,000 employees. Alone, the Aerospace industry would never be able to offer such a great training opportunity to its members. SWISSMEM tells us, that more than 80% of the training topics for the management from the aerospace industry do not differ from the needs from the other members from those of mechanical electrical industries. If they do differ, the school, through its 8 permanent employees and external trainers have the ability to create an innovative training program to address those needs.

6.0 RECOMMENDATIONS

As a result of this case study and considering the NS context, three recommendations can be made:

- Do not try to go through this process alone
- Identify partners, like the Mechanical Electrical Industries or the automotive industry, to work with
- Build a tradition of training and work to ensure that training is a fundamental part of business operations