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Survey and Analysis of Operations Research and Analysis Scientists Recruitment and Retention

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6123-01-01

PSPC Contract Number: W7714-15-6105
Technical Authority: John T. Weaver, Chief Scientist
Contractor's date of publication: May 2018

Defence Research and Development Canada

Contract Report

DRDC-RDDC-2018-C140

July 2018

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IMPORTANT INFORMATIVE STATEMENTS

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CORA Task 48 Contractor Report

ISR Report 6123-01-01
Version 2.0
29 May 2018

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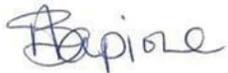
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QUALITY ASSURANCE AND VERSION TRACKING

Authorization

Title	Contractor Report (Final)	
Report number	6123-01-01	
Version	2.0	Signature
Prepared by	Andrea Scipione	
Reviewed by	Malika Bongue Boma	
Approved by	Ian Becking	
Approved for Corporate Release by	Mike McCall	

Version Tracking

Ver.	Action	By	Date
1-0	Release to client	McCall	20-April-2018
2-0	Add executive summary, update conclusion, release to client	McCall	29-May-2018

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Executive Summary

This document presents the Final Report for Task 48 “Task Survey and Analysis of Operations Research and Analysis Scientists Recruitment and Retention” for Defence Research and Development Canada’s (DRDC) Centre for Operational Research and Analysis (CORA). It was developed by ISR and C3 Human Factors Consulting Inc. (C3HF) as part of the larger CORA Task Authorization Contract (Contract #: W7714-156105/001/SV).

Within the Public Service of Canada, a demographic transition is occurring as many current Public Servants of the ‘Baby Boomer’ generation are starting to retire from Government service. This has placed a significant priority on the hiring of younger employees. DRDC CORA is developing a program for the Professional Development of new Defence Scientists (DS) in order to expedite their effectiveness as Operational Research and Analysis (OR&A) scientists early in their careers. Therefore, the primary objective of this Task was to review Professional Development programs from similar organizations to identify best practices and lessons learned that should be considered during development of the DRDC CORA Professional Development plan. This information was captured through a survey, one-to-one interviews and a review of formal Professional Development Program documentation.

The organizations that participated in this project were identified as having a formal intake process for new recruits with similar educational requirements to those accepting positions at DRDC CORA. The organizations included: NATO Communications and Information Agency (NCIA), United States (US) Center for Army Analysis (CAA), United Kingdom (UK) Defence Science and Technology Laboratory (DSTL), US Department of Defense – North American Aerospace Defense Command (NORAD)/United States Northern Command (NORTHCOM), Department of National Defence (DND)/ADM (Mat) – Engineer in Training (EIT) Program, and DND/Canadian Forces Intelligence Command (CFINTCOM).

It was identified that only four organizations have implemented formal professional development programs (CAA, DSTL, DND/ADM (Mat) and CFINTCOM). The NCIA does not have a formal program, but has implemented informal activities to facilitate professional development amongst personnel. NORAD/NORTHCOM conducts minimal professional development activities, as a result of the type and number of personnel within the organization.

Although CAA, DND/ADM (Mat), CFINTCOM and DSTL all have program features that can provide guidance and input to DRDC CORA’s PD program, DND/ADM (Mat) and CFINTCOM have been identified as the most relevant and comparable programs for DRDC CORA.

DND/ADM (Mat) and CFINTCOM are Canadian programs that target new hires with similar educational requirements to that of DRDC CORA. The PD programs for these two organizations have aimed to develop knowledge, skills, abilities and competencies that are required of DRDC CORA personnel. The ENG and EG programs (DND/ADM (Mat)) have been established since 2002/2007 respectively, and CFINTCOM’s program, although newly implemented, replicates the PORP which has been implemented for over 25 years. The PD programs within DND/ADM (Mat) and the PORP program have proven success in developing quality personnel.

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LIST OF ACRONYMS

ACDI	Assistant Chief Defence Intelligence
ASSP	Accelerated Systems Skills Programme
C3HF	C3 Human Factors
CAA	Center for Army Analysis
CAF	Canadian Armed Forces
CFINTCOM	Canadian Forces Intelligence Command
CI	Counter Intelligence
CORA	Centre for Operational Research and Analysis
CSPS	Canada School of Public Service
DIPM	Director, Intelligence Product Management
DMGMC	Materiel Group Management Committee
DND	Department of National Defence
DoD	Department of Defense
DRDC	Defence Research and Development Canada
DRP	Defence Intelligence Officer Recruitment Program
DS	Defence Scientists
DSTL	Defence Science and Technology Laboratory
EG	Engineering and Scientific Support
EIT	Engineer in Training
ENG	Engineering
FTE	Full time equivalent
GDS	Graduate Development Scheme
HUMINT	Human Intelligence
IDP	Individual Development Plan
LCC	Learning and Career Center
MGMC	Materiel Group Management Committee
MGTC	Materiel Group Training Center
MS	Microsoft
MORS	Military Operations Research Society
NATO	North Atlantic Treaty Organization
NCIA	NATO Communications and Information Agency
NORAD	North American Aerospace Defense Command
NORTHCOM	United States Northern Command
OA	Operations Analysis
ODP	Officer Development Program
OGD	Other Government Department
OR	Operations Research

OR&A	Operational Research and Analysis
ORSA	Operations Research/Systems Analysis
PD	Professional Development
POC	Point of Contact
PORP	Policy Officer Recruitment Program
PSPA	Public Service Performance Agreement
S&T	Science and Technology
STEM	Science Technology, Engineering and Mathematics
TA	Task Authority
TSS	Technical Specialist Scheme
UK	United Kingdom
US	United States

1. INTRODUCTION

This document presents the Interim Report for Task 48 “Task Survey and Analysis of Operations Research and Analysis Scientists Recruitment and Retention” for Defence Research and Development Canada’s (DRDC) Centre for Operational Research and Analysis (CORA). It was developed by ISR and C3 Human Factors Consulting Inc. (C3HF) as part of the larger CORA Task Authorization Contract (Contract #: W7714-156105/001/SV).

1.1 Background

Within the Public Service of Canada, a demographic transition is occurring as many current Public Servants of the ‘Baby Boomer’ generation are starting to retire from Government service. In order to retain an effective Public Service, a significant priority is being placed on the hiring of younger employees. This trend is also present within ADM (S&T) and currently, a concerted effort to staff the available positions within the DRDC Research Centres is underway. In response to this trend, DRDC CORA is developing a program for the Professional Development of new Defence Scientists (DS) in order to expedite their effectiveness as Operational Research and Analysis (OR&A) scientists early in their careers. This is also anticipated to also benefit the new hires’ job satisfaction and long-term retention within the Centre.

1.2 Objective

The primary objective of this Task was to review Professional Development programs from similar organizations to identify best practices and lessons learned that should be considered during development of the DRDC CORA Professional Development plan. This information was captured through a survey, one-to-one interviews and a review of formal Professional Development Program documentation.

2. APPROACH

This section highlights the project approach including an outline of the methodology followed by the project team.

2.1 Participants

The organizations that were approached for participation in this project were selected by DRDC CORA. These organizations were identified as having a formal intake process for new recruits, who have similar educational requirements to those accepting positions at DRDC CORA. These organizations have also initiated early career Professional Development programs which are intended to:

- Familiarize the new personnel with the organization;
- Provide a variety of on the-job experiences within different segments of the larger organization;
- Provide formal training (applicable to some organizations); and
- Provide a means to evaluate the recruits to assist the organizational management team in their decision to offer long term employment.

2.1.1 Organizations and Point of Contacts (POC)

The organizations that were selected for participation include:

- NATO Communications and Information Agency (NCIA);
 - POC: Ms. Sylvie Martel
- United States (US) Center for Army Analysis (CAA);
 - POCs: Mr. Jack Zeto
- United Kingdom (UK) Defence Science and Technology Laboratory (DSTL);
 - POC: Mr. Robert Prescott
- US Department of Defense – North American Aerospace Defense Command (NORAD)/United States Northern Command (NORTHCOM);
 - POC: Mr. Tom Denisia
- Department of National Defence (DND)/ADM (Mat) – Engineer in Training (EIT) Program;
 - Ms. Christyne Parent and Ms. Cecilia Desousa
- DND/Canadian Forces Intelligence Command (CFINTCOM);
 - Mr. Warren Lawrence

2.2 Method

Each organization completed a survey and a one-on-one interview.

2.2.1 Survey

The purpose of the survey was to gather preliminary information regarding each organization's Professional Development Plan. The survey was developed in Microsoft (MS) Word, and consists of 16 questions; these questions targeted the following components of their plans:

- Demographics of individuals in the program;
- Program implementation and measures of success;
- Program goals and objectives and targeted knowledge, skills, and abilities;
- Program activities;
- Program topics;
- Program effectiveness;
- Program changes; and
- Program lessons learned.

The survey was distributed to the POCs via e-mail on March 16th, 2018. Completed surveys were received by April 2nd, 2018. If applicable, the participants also submitted their formal Professional Development Plans.

The survey is provided in Annex A.

2.2.2 Interviews

A one-on-one interview session was conducted with each organization. The interview sessions were approximately 20-30 minutes in length. The context of each interview varied, as the interview questions were developed based on each organization's survey results and Professional Development Plan.

The interview sessions were conducted on March 28th, 29th, and April 4th via WebEx or Skype.

3. FINDINGS

This section provides a summary of the documentation obtained from the surveys, interviews and program documentation.

The professional development programs from the six organizations were reviewed. Based on the information obtained, it was identified that only four of these organizations have implemented formal professional development (PD) programs (CAA, DSTL, DND/ADM (Mat) and CFINTCOM). The NCIA does not have a formal program, but has implemented informal activities to facilitate professional development amongst personnel. NORAD/NORTHCOM conducts minimal professional development activities, as a result of the type and number of personnel within the organization.

The surveys completed by each organization are provided in Annex B. Annex C provides the summary notes from each interview conducted.

3.1 Informal Professional Development Activities

3.1.1 NCIA

Although there is a push from the agency level to develop a formal PD program, NCIA does not have a formal PD program at this time.

NCIA's new hires range in age from the late 20's to mid-40's, with a background in Operations Research and Analysis (ORA), mathematics, statistics, or other natural or applied science field, including engineering. These individuals have a minimum of two years' experience, and are already competent in the baseline technical Operations Analysis (OA) skills such as problem structuring, statistical analysis, and survey tools, simulation, and optimisation, as well as military domain knowledge (aerospace, land, maritime, etc.). New hires begin their careers as junior analysts, working under the supervision of senior staff/analysts with over eight years' experience as team leaders and project managers.

NCIA aims to hire individuals who are self-sufficient, pro-active, and self-motivated. Military domain knowledge is an asset, as this facilitates rapid integration within a project team. These types of skills are viewed as more important than possessing specific technical skills.

New hire orientation consists of an initial brief from the human resources department, as well as short introductory briefs (approximately 15 minutes) from multiple departments within the organization to obtain a general awareness of the North Atlantic Treaty Organization (NATO). Previously, NATO provided a full day orientation; this orientation is projected to begin again in the near future.

Informal professional development activities are implemented to facilitate new hires functioning as efficient team members with limited supervision, within a short timeframe. NCIA finds 'on the job' training the most relevant training for new hires. Although new hires have sufficient analytical/technical skills, they lack specific project knowledge; this is best acquired by task assignments on specific project teams while supported and

mentored by senior analysts. New hires are initially assigned to one major project, to gain overall knowledge of the type of work conducted at NCIA.

New hires also engage in some formal training offered through the NATO schools (Oberammergau and Latina; e.g., joint targeting, Command and Control [C2]) as well as general skills training through commercial companies (e.g. project management, risk management, leadership management). Personnel also engage in conferences when applicable.

Personnel are formally assessed on a yearly basis, but are informally mentored and assessed throughout the year.

Although NCIA does not have a formal program, this organization has identified lessons learned based on their current activities, including:

- On the job training is essential in personnel development, in terms of increasing project knowledge within a short timeframe;
- Personnel should work across various projects and under multiple senior staff (if possible) to increase knowledge and skill set;
- Project managers play an essential role in supporting new hires, in terms of assigning relevant tasks to increase project knowledge;
- Formal training is useful, but must be relevant and carefully selected; and
- Increased project workload and lack of funding reduces opportunities for training, which can be detrimental to professional development.

3.1.2 NORAD/NORTHCOM

NORAD/NORTHCOM does not have a requirement to develop and implement a formal PD program for their Operations Research/Systems Analysis (ORSA) personnel. NORAD/NORTHCOM employs eight to ten Operations Research (OR) personnel; turnover is insignificant, and new hires in this domain contain mid to high level experience. New hires generally have a Master's degree in OR, or a strong math/science background. The experience level of personnel only warrants informal mentoring activities (i.e., internal feedback).

Each service in the Department of Defense (DoD) has a major analytic group including Army (CAA), Navy (OPNAV N81) and Air Force (AF A9). The Military Operations Research Society (MORS) is an organization that fosters collaboration between these organizations. MORS has institutionalized a number of courses within the last three years. There are also three certificate programs that are offered (war gaming, risk analysis, operations research). MORS also facilitates a symposium that includes 33 working groups. Personnel at NORAD/NORTHCOM are encouraged to participate in continuing education offered through MORS.

3.2 Formal Professional Development Programs

CAA, DSTL, DND/ADM (Mat) and CFINTCOM have implemented formal professional development programs. These programs provide the most relevant information to assist DRDC CORA in establishing a professional development program. Section 3.2.1 includes a table which provides a comparison of data across these organizations (Table 1). Section 3.2.2 provides a high-level summary of the PD program documentation for CFINTCOM, DND/ADM (Mat) ENG and EG, and CAA.

3.2.1 Comparison of Professional Development Programs

Table 1 provides a comparison of PD programs across DND/ADM (Mat), CFINTCOM, CAA and DSTL.

Table 1: Comparison of Professional Development Programs across DND/ADM (Mat), CFINTCOM, CAA and DSTL

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
Overall program description	<p>The Materiel Group Materiel and Acquisition Support (MA&S) Officer Development Program (ODP) is designed to recruit highly qualified civilians into occupational groups essential to the business objectives. Supports hiring of individuals who have participated in the Federal Student Work Experience Program (FSWEP), or were previous Co-op students. New hires are required to successfully complete all objectives of the Training Program phases specific to their stream.</p> <p>Streams of interest include: ENG – Engineering EG – Engineering and Scientific Support</p>	<p>Designed for new hires entering as Junior Intelligence Officers. The Defence Intelligence Officer Recruitment Program (DRP) is a competency-based program for intelligence officers from the Economics and Social Science Services Group. Over a three-year period, participants will undertake a minimum of three work assignments to build the requisite competency profile to assume a position as a civilian defence intelligence officer.</p> <p>The development of the DRP replicates the Policy</p>	<p>Program views professional development as a life-long activity. The program supports new hires and provides opportunities for all CAA employees, including tenured professionals, military and civilian.</p> <p>Program targets developmental needs of personnel, along with current and projected organizational requirements through both formal and informal activities.</p>	<p>Does not have a single PD program for OR&A; relevant schemes include:</p> <p>Accelerated Systems Skills Programme (ASSP): Mid-career; mentoring and support scheme for systems thinkers.</p> <p>Technical Specialist Scheme (TSS): Mid-career; mentoring and support scheme for technical specialists.</p> <p>Graduate Development Scheme (GDS): New hires.</p> <p>Professionalization: Support for personnel seeking higher memberships of professional bodies and/or government analytical professions.</p>

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
<p>PD program goals and objectives</p>	<p>Recruit high potential internal and external candidates, and then assist these individuals in developing the skills and knowledge necessary to provide engineering, procurement and technologist services within ADM (Mat).</p>	<p>Officer Recruitment Program (PORP). The PORP has been in service for 25 years and has shown to be successful in producing quality Policy Officers.</p> <p>Recruit, train and develop personnel as civilian defence intelligence officers for employment across the defence intelligence enterprise. Program aims to educate personnel with DND and the Canadian Armed Forces (CAF), and assist growth through experience, knowledge and competencies.</p>	<p>Provide an environment that supports the developmental needs of the CAA, supervisors, analysts and support personnel. Provide a program that enhances an individual's participation in accomplishing CAA's mission. Encourage professional development through multi-faceted education, training and experiential opportunities.</p>	<p>Apprenticeship: Entry at graduate level and upskilling to Masters level.</p> <p>ASSP/TSS: Upskill supervised practitioner to practitioner/expert level.</p> <p>GDS: Facilitate broad upskilling and baselining, complementing individual-led technical training.</p> <p>Professionalization: Enhance external reputation, peer linkages and staff credibility.</p>

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
Program implementation	ENG: 2002 EG: 2007	Officially designated as a PD program in October 2017. First official participants will be hired in September 2018. Nine individuals were hired under the PORP in 2016/2017 that are being managed under DRP guidelines (hired from PORP candidate pool for employment as Intelligence Analysts).	Several decades in existence, though continually refined based on projected needs for forthcoming year(s).	Unknown.
Program length	ENG and EG are three year, three phase programs.	Three year program.	New hire 'Greening Program' is two years.	Eighteen months to three years depending on individual requirements.
Program leader	Materiel Group Management Committee (MGMC) is the authority for program development and implementation. Advisory committees for each stream provide advice, analysis and input to the MGMC. Director Materiel Group Management Committee (DMGMC) provides day-to-day management.	Director, Intelligence Product Management (DIPM) leads the program. Manager, DRP, provides day-to-day management.	CAA Director is responsible for professional development of all CAA employees.	ASSP/TSS: DSTL-wide schemes led by a directed steering group. All other streams are division led.

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
Required educational background of new hires	<p>ENG: Post-secondary degree in Engineering, including Mechanical, Aeronautical, Aerospace, Naval Architecture, Software, Electrical/ Electronic, Civil, Industrial, Materials, and Chemical.</p> <p>EG: 3 year Technologist Diploma in Marine Engineering Technology Chemical or Chemical Engineering Technology, Naval Architecture Technology, Marine Engineering Systems Design Technology, Textiles, Clothing, Heavy Equipment, Aerospace Engineering Technology or Mechanical Engineering Technology.</p>	Master's Degree with specialization in Social Science.	Preferred degrees – OR, OA, Industrial Engineering, Mathematics, Probability and Statistics, and other Science, Technology, Engineering, Mathematics (STEM) degrees.	N/A

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
<p>Role of new hires' direct reports</p>	<p>Reporting relationship includes: Trainee ↓ Trainer(s) ↓ Co-Divisional Program Manager (Co-DPM) (if present) ↓ Divisional Program Manager (DPM) and/or Co-DPM ↓ ODP Program Manager, DMGMC ↓ Talent Management Section (TMgt) Section Head, DMGMC ↓ Director, DMGMC (Hiring Manager)</p>	<p>Direct reports ensure that their sub-ordinates are afforded the ability to develop in accordance with the development plan. They are responsible for ensuring that sub-ordinates are gainfully employed, mentored, and have the ability to attend training courses, events, etc. Direct reports provide feedback to the DRP manager regarding progress and program success.</p>	<p>All supervisors are involved in the professional development of their subordinates, including both new hires and tenured professionals.</p>	<p>Mentored schemes typically involve a mentor external from the line-management chain, as well and involvement from the direct line manager.</p>
<p>Typical length of time between study completion and work commencement</p>	<p>No specific length of time identified.</p>	<p>Generally individuals apply within the year of completing a Master's degree. Very few applicants held a Master's degree for more than five years.</p>	<p>A short time span has been identified for Junior civilian employees (within a few years of graduation). Time can vary substantially for military or senior civilian individuals. However, if there has been extensive absence of engagement in analytical activities since study completion, this will be considered during the recruitment process.</p>	<p>No specific length of time identified. Time generally depends on time required to acquire proper security clearance.</p>

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
<p>Knowledge, skills and abilities trained by program</p>	<p>Knowledge, skills and abilities are specific to each competency-based development stream. Skills have been identified to ensure trainees advance from entry level positions to working levels. Refer to Section 3.2.2.2.2 for ENG and Section 3.2.2.3.4 for EG competencies.</p>	<p>Participants are selected based on their current knowledge/skills of the following. Program is designed to further develop these. Knowledge of current transnational and geo-political issues. Knowledge of Canadian Security and Intelligence Community. Knowledge of DND and CAF. Knowledge of Canada's Defence Policy. Ability to conduct research and analyze information. Ability to effectively communicate in writing. Ability to effectively communicate orally. Ability to prepare and deliver presentations.</p>	<p>Contextual knowledge of US Army (e.g., operations, culture, terminology, units, etc.). Innovative analytical techniques. Analytical skills and capabilities, including software applications applicable across CAA divisions and within specific divisions. Contextual knowledge of socio-economic-political-military factors.</p>	<p>ASSP/TSS: Directed upskilling from Systems Thinking Level 2 to Level 3/4. GDS: Broad upskilling. Contextual knowledge of key issues. Analytical approaches and techniques.</p>

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
<p>Program activities</p>	<p>On the job training within various organizations with ADM (Mat). Written assignments. Development of presentations. Mandatory classroom training. Site visits. Networking events. Mentoring.</p>	<p>Orientation briefing sessions. CFINTCOM and Other Government Department (OGD) Academic courses (continuing education). Active mentoring. Professional development sessions (monthly). Conferences, workshops and expert briefings. Three rotations into a different position.</p>	<p>On the job training. Job shadowing. Mentoring. Site visits (military bases). Interest groups/peer reviews. Courses</p>	<p>Inter-agency greening programs for new hires. Local academic institutions' baccalaureate and graduate level course offerings. Agency wide ORSA Continuing Education classes and programs. Division specific Continuing Education classes and programs. Military and civilian education systems (coursework). Broadening assignments. Professional speaker program. Supervisor development courses. Human dignity council programs and speakers. Professional conferences. Mandatory Army training requirements. Mentoring discussions.</p>
<p>Program Instructors/ Trainers</p>	<p>Schools such as Canada School of Public Service (CSPS), Learning and Career Centre (LCC) and the Materiel Group Training Center (MMTC).</p>	<p>In-house instructors, contractors, OGD trainers/ instructors.</p>	<p>Subject matter experts (internal and external to CAA), Defense/Federal organizations, academia, think tanks, contractors.</p>	<p>Subject matter experts internal and external to DSTL.</p>

Program Features	DND/ADM (Mat)	CFINTCOM	CAA (US)	DSTL (UK)
Program changes since implementation	No significant changes. Training courses and assignments are updated. ENG training manual will be updated in the upcoming year.	N/A	Programs are updated annually, if required.	Program schemes are updated, when required, based on feedback.
Effective program features	Competency-based training manuals for each stream provide clear program direction. Identification of the feeder group for new hires into the Engineering stream has been effective. Quality performance assessments have facilitated identification of strengths and areas of improvement. Networking sessions amongst trainees.	Screening requirements have been effective in personnel selection for the program.	All aspects of the program have been effective, as long as the activity is matched properly to the requirement.	Mentoring via one-to-one or a mentoring circle.
Non-effective program features	N/A	Volume of candidates applying for the program has been challenging (define HR requirements).	Professional military reading program. Program placed additional reading requirements on staff (increased workload).	N/A

3.2.2 Professional Development Program – Documentation Summaries

This section provides a high-level summary of the PD program documentation for the following organizations: CFINTCOM, DND/ADM (Mat) ENG and EG, and CAA. Program documentation was not received for DSTL.

3.2.2.1 Defence Intelligence Officer Recruitment Program (CFINTCOM)

The Defence Intelligence Officer Recruitment Program (DRP) is a three-year competency-based training and development program for intelligence officers [1]. The DRP is designed to familiarize participants with the DND and the CAF and to provide them with the experience, knowledge and competencies to emerge as well-rounded and effective civilian defence intelligence officers. Participants are trained to satisfy the many roles required across the intelligence enterprise, including intelligence analysis, intelligence policy, defence related science and technology, support to CAF units and operations, employment in intelligence disciplines such as targeting, cyber, human intelligence (HUMINT) and counter intelligence (CI).

3.2.2.1.1 Objectives

The DRP has the following core objectives:

- To recruit, develop and train talented individuals as Defence Intelligence Officers from entry to working-level;
- To create a cadre of knowledgeable defence intelligence officers who are collaborative, adaptable, diverse, possess a broad set of experiences, and who are able to deliver on the departmental mandate with excellence;
- To develop security and defence professionals and expand Canadian defence intelligence and security expertise;
- To reinforce the organization's mission, philosophy and methods; and
- To invest in the development of defence intelligence officers with a view to supporting a whole-of-government intelligence capability.

3.2.2.1.2 Assessment

All participants are required to have a Public Service Performance Agreement (PSPA), in accordance with the Treasury Board Directive on Performance Management, as well as a formal developmental Assessment review using a Developmental Assessment Form (see Annex A of the DRP program documentation). The development assessment review consists of a performance report and a performance interview.

3.2.2.1.3 Roles and Responsibilities

- Commander(Comd), Canadian Forces Intelligence Command: Comd CFINTCOM is the authority for the establishment and implementation of the DRP. CFINTCOM ensures support for the program from senior management within his organization, provides the annual budget and Full Time Equivalent (FTE) for the program, sponsors the participants and provides an environment in which participants can learn and develop;

- Assistant Chief Defence Intelligence (ACDI): ACDI is responsible for providing strategic direction and oversight to the program through DIPM and the DRP Manager. ACDI is also responsible for ensuring the program aligns with the Business and Human Resources plans of CFINTCOM;
- Director Intelligence Production Management (DIPM): DIPM is responsible for oversight of the program, ensuring it meets its performance indicators and for leading on the design and implementation of promotional activities. As part of the annual recruitment campaign, DIPM is the Chair of the Hiring Board and has functional authority to sign Letters of Offers for successful candidates. DIPM is also a member of the Program Assessment Review Board for promotion and graduation. In addition, DIPM is responsible for ensuring that the operating principles of the program are implemented consistently;
- DRP Program Manager: The Program Manager plays a key role in the recruitment and development of participants. The Program Manager oversees the development of the participants, provides ongoing support and feedback and counsels them through any difficulties;
- Supervising/Host Managers: The supervising / host managers oversee participants' work responsibilities and experiences, provide ongoing feedback, coaching and guidance, complete performance evaluations, facilitate formal and informal training opportunities, and advise the DRP Manager of participant progress;
- Adm(HR-Civ): Adm(HR-Civ) provides advice and guidance on recruitment, selection and appointment of participants, as well as ensuring operating principles and values of the DRP program are consistent with Public Service Acts, regulations, policies, directives, standards, guidelines, code of values and ethics for the Public Sector and departmental direction.

3.2.2.1.4 Competencies

DRP competencies are aligned with the values as outlined in the Values and Ethics Code for the Public Sector and with the DND and CF Code of Values and Ethics.

Values and Ethics: The ability to foster and support the principles and values of the Public Service and of the organization to conserve and enhance public confidence in the honesty, fairness and impartiality of the federal public sector and to build respectful, bilingual, diverse and inclusive workplaces where decisions and transactions are transparent and fair.

- *Commitment to Excellence:* The ability to consistently deliver timely and high quality products and services. It implies engagement, collaboration, effective teamwork and professional development;
- *Judgment:* The ability to perceive a situation correctly, to make appropriate, logical and practical decisions in accordance with circumstances and context;
- *Critical Thinking:* The ability to conduct cause and effect analysis on information in a systematic, step-by-step manner. Includes identifying key issues, testing hypothesis, diagnosing problems and opportunities, making sound inferences from available information and drawing logical conclusions. It includes applying deductive reasoning skills to problems often in a linear fashion (i.e., the process by which an individual makes conclusions based on previously known facts);
- *Analytical Thinking:* The ability to effectively research, synthesize and analyze a broad range of complex information and identify the fundamental issues. It

- implies the conduct of cause and effect analysis in a systematic matter, the identification of strategic issues, the diagnosis of problems and opportunities, the questioning of assumption and the sound inferences from available information in order to propose sound options and make appropriate recommendations;
- *Organizational Awareness*: The ability to understand the workings, structure and culture of the organization as well as the political, social and economic climate in which the organization operates. It includes an understanding of others' roles, perspectives and agendas, as well as the relationship dynamics that play out and impact the broader objectives. It involves managing the environmental context in which one operates (e.g. clients, partners, geographical location and culture). It requires the ability to predict how new opportunities, events or situations may affect individuals and groups within the organization;
 - *Networking and Relationship Building*: The ability to cultivate and maintain a network of contacts, alliances and working relationships within and outside the department to communicate, and share information and resources in order to deliver results and foster knowledge and innovation;
 - *Teamwork*: The ability to work collaboratively with others to build supportive and working relationships where people actively share information, rely on each other's expertise and deliver on commitments;
 - *Leadership*: The capacity to effectively engage and guide others towards the achievement of organizational goals and objectives. It includes providing clarity of purpose and fostering a collaborative and respectful approach towards a shared objective;
 - *Communication Skills*: The ability to clearly present complex issues, in writing and orally, in a manner that is compelling, honest, concise, accurate, complete, persuasive and understood;
 - *Time Management*: The ability to achieve results while managing large amounts of information, competing demands and/or changing priorities under tight timelines;
 - *Adaptability*: The capacity to adjust own behaviours in order to work efficiently and effectively in light of new information, changing situations and/or different environments;
 - *Initiative*: The capacity to conceive and originate new activities, to proceed with creativity to influence events and outcomes and to be accountable for personal professional development.

3.2.2.1.5 Training Framework

Year One: Indoctrination And Acquisition Of Basic Skills

- Orientation Week;
- Orientation to the Public Service³ (CSPS E131);
- Introduction to Defence Ethics (Defence Learning Network / on-line);
- Harassment Prevention and Resolution for Employees (Defence Learning Network / Learning and Career Centre);
- Performance Management Workshop for Employees (Defence Learning Network / Learning and Career Centre);
- Access to Information Training (DND, 1 Day);
- Canadian Forces 101 for Civilians (Defence Learning Network / on-line);
- Entry-Level Course for Intelligence Analyst (IALP, 10 Days);

- Open Source Intelligence (DIPM, 2 Days);
- Analytic and Critical Thinking for Intelligence Analysts (IALP, 2 Days);
- Effective Writing Course (IALP, 2 Days);
- Terrorism 101 for Intelligence Analysts (IALP, 2 Days);
- Information Security & Ethics (IALP, 2 Days, formerly Handling Classified Materials);
- Effective Briefing Course (IALP, 2 Days);
- SDIAQ: Security, Policy and Oversight (DIPM, 3 Days);
- Base Tour.

Year Two: Building, Refining and Expanding Core Skills

- Intermediate-Level Course (ILC) for Intelligence Analysts (IALP, 5 Days);
- Visual Communication for Intelligence Officers (IALP, 1 Day);
- Root Cause Analysis for Intelligence (IALP, 2 Days);
- Cyber 101 for Intelligence Analysts (IALP, 3 Days);
- SDIAQ: Analytic Tradecraft, Analysis (DIPM, 10 Days);
- SDIAQ: Analytic Tradecraft, Written Communications (DIPM, 3 Days);
- SDIAQ: Preparation for Analysis – Research (DIPM, 3 Days);
- SDIAQ: Intelligence Community (DIPM, 2 Days).

Year Three: Analysis and Leadership

- Statistics 101 for Analysts (IALP, 1 Day);
- Quality Assurance for Intelligence (IALP, 2 Days);
- SDIAQ: Preparation for Analysis – The Strategic Client (DIPM, 2 Days);
- SDIAQ: Analytic Tradecraft, Verbal Communications (DIPM, 3 Days);
- SDIAQ: Elicitation for Collaborative Analysis (DIPM, 5 Days);
- SDIAQ: Management of Analysis (DIPM, 4 Days).

Position Specific Training:

- Policy 1: Reviewing the Fundamentals (Institute on Governance);
- Policy 2: Policy Making in a Changing Environment (Institute on Governance);
- Policy 3: New Directions in Policy Making (Institute on Governance);
- CAF Elements training;
- Imagery training;
- Targeting training;
- Introduction to HUMINT;
- Introduction to CI.

Personal Professional Development:

- Effective Oral Briefings (Performance Management Consultants);
- Developing your Negotiation Skills (University of Ottawa, Continuing Education);
- Writing Well I (University of Ottawa, Continuing Education);
- Writing Well II (University of Ottawa, Continuing Education);
- Strategic Thinking (University of Ottawa, Continuing Education);
- Analytical Thinking (University of Ottawa, Continuing Education);

- Influencing and Leadership Skills (University of Ottawa, Continuing Education);
- Exploring the Leader in You (Defence Learning Network / Learning and Career Centre).

3.2.2.1.6 Tools

The tools listed below can be found in Annex A of the program documentation [1].

- Developmental Assessment Form;
- Statement Of Merit Criteria And Conditions Of Employment for EC02, EC04, and EC05; and
- DRP Competency Guide.

3.2.2.2 *Matériel Acquisition and Support Officer Development Program – Engineer Group (MA&S ODP, EN ENG)*

3.2.2.2.1 Assessment

Performance objectives are discussed with the trainee at the beginning of each phase and attached to a Phase Evaluation form. A mentor monitors the performance objectives and their realization throughout the developmental phases.

3.2.2.2.2 Competencies

The following list of competencies are used in assessing trainee performance. A more detailed description of the competencies can be found in Annex A of the program documentation [3]:

- *General Knowledge*: knowledge applicable to a broad range of activities;
- *Job specific knowledge*: detailed knowledge required to perform in a particular job;
- *Level specific knowledge*: knowledge which is determined by the authority and responsibility within the organization;
- *Organizational knowledge*: knowledge of legislation, policies, mission, mandate, and values, which are needed to understand the context in which the work is undertaken;
- *Action management*: planning, organizing, directing, and controlling human, financial, and materiel resources to achieve the business objectives of the Division;
- *Behavioural flexibility*: adjusting behavior as necessary to accomplish Group and Divisional objectives in a dynamic work environment through periods of transition, ambiguity, or uncertainty;
- *Communication*: providing information and exchanging ideas in ways that promote co-operation, trust, candid discussion, and complete understanding.
- *Initiative*: conceiving and originating action;
- *Integrity*: adhering to a code of principles and values that are compatible with those of the Public Service and the Materiel Group;
- *Judgment*: perceiving a situation, weighing the issues, and arriving at the proper conclusion;

- *Management of self and development of others*: optimizing self-potential and assisting others in a way which maximizes organizational outputs and ensures personal growth;
- *Stakeholder/client orientation*: developing and maintaining effective relationships with stakeholders/clients;
- *Stress/stamina resistance*: performing duties well and with energy and enthusiasm under demanding and stressful circumstances;
- *Teamwork*: working collaboratively with others to achieve common objectives.
- *Thinking*: identifying, defining, and analyzing problems and using rational and intuitive processes to generate viable solutions.

3.2.2.2.3 Training Framework

Completion of formal training courses is a requirement for all trainees in the MA&S ODP ENG Program. Courses are offered either through the ADM(HR Civ) Learning and Career Center, the Materiel Management Training Center or individual Divisions.

- Orientation to the Public Service (New employees to the Public Service ONLY);
- Defense Ethics;
- Harassment Prevention Training – Employees;
- Orientation Program for new Civilian Employees;
- WHMIS;
- Life Cycle Materiel Management;
- Project Management (Basic);
- Financial Awareness;
- Risk Management;
- Procurement Support for Technical Authorities;
- Systems Engineering Management;
- Project Approval Course;
- Integrated Logistics Support;
- Configuration Management;
- Bid Evaluation and Contractor Selection Methodologies.

3.2.2.2.4 Tools

The tools listed below can be found in the program documentation [3].

- Statement of Merits Criteria: Statement of Merits Criteria are provided for EN ENG 02, EN ENG 03, and EN ENG 04;
- Trainee Learning Plan;
- Mentor Phase Evaluation;
- Trainer Performance Review;
- Trainee Learning Plan;
- Officer Development Program Promotion Package;
- Divisional Promotion Review Board Process – Checklist; and
- Sample training assignments and learning plans.

3.2.2.3 ***Materiel Acquisition and Support Engineering and Scientific Support Officer Development Program (MA&S EGODP)***

The MA&S ODP EG program [4] is structured to define and provide a focus for training activities and includes program phases, training plans, on-the-job training rotations, performance objectives, program competencies and performance assessments. The program takes approximately forty-eight months from the point that the requirement is identified, funding obtained and the development completed. The development stage is divided into three phases of twelve months each. The complexity of each phase becomes incrementally more difficult with a complex set of knowledge, skills and competencies.

3.2.2.3.1 **Objectives**

The EGODP Program Objectives are to:

- Select highly qualified and motivated individuals as program trainees from a three-year community college program in aerospace, mechanical engineering or any other specialized training, as well as other individuals with a secondary school diploma combined with experience and training relevant to engineering and scientific support (Technology);
- Assist trainees to develop the necessary job-related and behavioral competencies by completing a series of on the job training assignments and formal training requirements as they progress in the Program;
- Provide trainees with practical work experience; and
- Prepare trainees for a successful career in the Department of National Defence and the Materiel Group.

3.2.2.3.2 **Assessment**

A number of evaluation instruments and tools are used during the assessment process. The list below identifies all the forms and tools used in the program. All tools can be found in the program documentation.

- Standard of Competence
 - Statements of Merit Criteria: Establishes the requirements for the position and classification (all program participants);
 - Program Competency Indicators: Sets the standard for performance at the entry, Phase I, Phase II, Phase III levels (all program participants).
- Rating Instruments
 - Rating Guide: Establishes the rating scale (trainers when evaluating; divisional program manager when assessing for promotion).
- Evaluation Forms
 - Assignment Performance Agreement Form (FORM 1): Record of established trainee and trainer Performance Objectives (developed by the divisional program manager with assistance of the trainer; discussed with the trainee);
 - Trainee Learning Plan (FORM 2): Record of trainee learning needs and

- material (developed by the divisional program manager with assistance of the trainer; discussed with the trainee);
- Assignment Performance Review Form (FORM 3): Record of Performance Review for each on-the-job training assignment (developed by the trainer; discussed with the trainee);
 - Training Requirements Checklist (FORM 4): Record of the completion of self-study, mandatory training and optional training requirements; record of rating in all of the competencies in each on-the-job training assignment (prepared by the DMGHR Training Coordinator);
 - Divisional Program Manager Phase Evaluation form (FORM 5): Forms the overall evaluation of all assignment undertaken during one phase and is the basis for recommendation of promotion (developed by the Divisional Program Manager and discussed with trainee);
 - Promotion Recommendation and endorsement form (FORM 6): Record of completion for all activities for a phase necessary for the trainee to be promotion to the next level (prepared and signed by the divisional program manager);
 - Promotion Package Cover Page (FORM 7): Clearly identifies who the promotion package documents below refer to (prepared by the divisional program manager).

3.2.2.3.3 Roles and Responsibilities

The roles and responsibilities of individuals directly involved in the EG ODP program are outlined below. A more detailed description of roles and responsibilities can be found in Chapter 2 of the program documentation.

- Divisional Program Manager: Divisional Program Managers oversee the development of assigned trainees during the three-year duration of the training program, providing on-going support and guidance, feedback and assessment of performance and recommendations for promotion;
- Trainer: The Trainer develops and assigns tasks and responsibilities to the Trainee who ensures that the training requirements are met, and provides the day-to-day supervision of the Trainee;
- Trainee: Trainees are expected to perform to the best of their ability, progressing in their development under the direction of their divisional program managers and trainers and cooperating fully with Divisional staff and managers;
- Human Resource Officers: The HROs provide advice and guidance to DMGHR staff, divisional HRBMs, divisional Program Managers, Trainers and trainees on all HR related issues.

3.2.2.3.4 Competencies

The following list of competencies are used in assessing trainee performance. A more detailed description of the competencies can be found in Chapter 3 of the program documentation:

- *General Knowledge*: knowledge applicable to a broad range of activities;
- *Job specific knowledge*: detailed knowledge required to perform in a particular job;

- *Level specific knowledge*: knowledge which is determined by the authority and responsibility within the organization;
- *Organizational knowledge*: knowledge of legislation, policies, mission, mandate, and values, which are needed to understand the context in which the work is undertaken;
- *Action management*: planning, organizing, directing, and controlling human, financial, and materiel resources to achieve the business objectives of the Division;
- *Behavioural flexibility*: adjusting behavior as necessary to accomplish Group and Divisional objectives in a dynamic work environment through periods of transition, ambiguity, or uncertainty;
- *Communication*: providing information and exchanging ideas in ways that promote co-operation, trust, candid discussion, and complete understanding.
- *Initiative*: conceiving and originating action;
- *Integrity*: adhering to a code of principles and values that are compatible with those of the Public Service and the Materiel Group;
- *Judgment*: perceiving a situation, weighing the issues, and arriving at the proper conclusion;
- *Management of self and development of others*: optimizing self-potential and assisting others in a way which maximizes organizational outputs and ensures personal growth;
- *Stakeholder/client orientation*: developing and maintaining effective relationships with stakeholders/clients;
- *Stress/stamina resistance*: performing duties well and with energy and enthusiasm under demanding and stressful circumstances;
- *Teamwork*: working collaboratively with others to achieve common objectives;
- *Thinking*: identifying, defining, and analyzing problems and using rational and intuitive processes to generate viable solutions.

3.2.2.3.5 Training Framework

Completion of formal training is a requirement for all trainees in the MA&S ODP EG program. Courses are offered either through the ADM(HR-Civ) Learning and Career Center, the Materiel Management Training Center or by divisions.

Mandatory training. Mandatory courses for trainees in all divisions consists of:

- Defense Ethics;
- Orientation for new PS and/or ADM(Mat) Orientation course;
- Harassment Prevention Training – Employees;
- Information System Security Briefing/Seminar ADM(Mat);
- WHMIS;
- Life Cycle Materiel Management or CFSS for LCMM Refresher;
- Project Management (Basic);
- Procurement and Financial Awareness;
- Risk Management;
- Procurement Support for Technical Authorities;
- Project Approval (formerly DMS);
- Integrated Logistics Support;

- Configuration Management;
- Introduction to Intellectual Property;
- MASIS – Omega;
- Project Management (intermediate);
- MASIS – LCMM MASIS; and
- CTAT Self-Study e-learning training program.

Optional Training. Divisions may choose to designate additional courses in their Training Plan for trainees. Example of optional courses are The Essentials of Supervising in the Public Service, Theories, Techniques and Tools of Supervision, Balancing Work and Personal Life, and Writing for Results.

3.2.2.3.6 Tools

The tools listed below can be found in program documentation annexes.

- Statements of Merit Criteria for EG-03, EG-04, EG-05, and EG-06;
- Program Competency Indicators;
- Rating Guide;
- Assignment Performance Agreement Form (FORM 1);
- Trainee Learning Plan (FORM 2);
- Assignment Performance Review Form (FORM 3);
- Training Requirements Checklist (FORM 4);
- Divisional Program Manager Phase Evaluation Form (FORM 5);
- Promotion Recommendation and Endorsement Form (FORM 6);
- Promotion Package Cover Page (FORM 7); and
- Sample training assignments and learning plans.

3.2.2.4 *US Army Center for Army Analysis Training and Education Program*

3.2.2.4.1 Objectives

The objectives of the CAA training and education program [2] are to:

- Provide a training program that meets the needs of CAA, supervisors, analysts and support personnel;
- Provide training that enhances the individual's participation in accomplishing the mission of CAA;
- Encourage professional development; and
- Provide a cost effective education and training program.

3.2.2.4.2 Responsibilities

Responsibilities within the CAA training and education program are identified below.

- Military Deputy Director
 - Delegated authority to approve government and non-government training which meets regulatory requirements. Approve all training requests for military and civilian personnel; and
 - Approve the annual training program/budget and any reprogramming

- actions during the year.
- Chief, Resources Division
 - Charged with program responsibility for training and development within CAA and assists management in accomplishing training objectives;
 - Monitor the education and training program for the Director, CAA;
 - Appoint the Training Coordinator for CAA;
 - Prepare Center training budget at the beginning of each fiscal year that considers training needs, past expenditures, and available resources; submit the budget to the Military Deputy for approval; and
 - Monitor the program execution and recommend reprogramming of funds to the Military Deputy as deemed necessary during the year.
 - CAA Training Coordinator
 - Ensure Center compliance with Army training regulations, HQDA policy statements, and civilian personnel training guidance;
 - Coordinate with divisions and develop an annual training program with detailed requirements for submission to the annual CAA spend plan;
 - Provide suspense date to Division chiefs when plans are to be submitted;
 - Track all training requests throughout the process and maintain an accurate historical record. Collect and record all training information and provide quarterly training briefings during the RD review;
 - Maintain a point of contact directory for all training and college offices pertaining to both program information, registration and billing;
 - Maintain all documentation for audit trail. Ensure timely receipt of invoices and provide to Billing Official;
 - Forward continued service agreements to the appropriate Human Resources office for annotation of personnel records;
 - Prepare special reports on the training program and training trends for the Director, CAA;
 - Provide guidance and assistance to employees in completing training requests and their Individual Development Plan;
 - Collect and maintain all training information required for the training awards program;
 - Maintain adequate internal controls to assure that courses undertaken through tuition assistance are successfully completed or the employee makes reimbursement;
 - Maintain training database to track training for all employees. Send out guidance to ensure Individual Development Plans (IDP) are completed by all employees, maintained, and updated annually; and
 - Maintain current catalogs and sources of available training. Disseminate training information, policies, and procedures within the organization.
 - Division Chiefs
 - Identify education and training needs of individuals and develop short-term (one year) and long-term (up to three years) training plans to satisfy those needs;
 - Ensure annual division training plans are prioritized and submitted to RD for coordination and approval by leadership;
 - Encourage advanced education in operations research related fields and keep subordinates informed of current training opportunities;
 - Review training requests and recommend approval or disapproval of requests;
 - Ensure training has been completed and proof of grade has been turned

- into Training coordinator; and
- Evaluate the cost effectiveness of training at government agencies, private institutions, and in-house. Recommend the more cost effective training approach.

3.2.2.4.3 Training Framework

Various types of training are available, including:

- Microcomputer courses;
- Computer language and software courses;
- Operations research systems analyst-related courses;
- Management and supervisory courses;
- Clerical skills courses;
- Long-term training for professional development;
- Professional reading;
- CAA History;
- Sexual harassments assault/response prevention training;
- Suicide prevention;
- Threat awareness and reporting program;
- Supervisor training for all supervisors;
- Anti-terrorism Level 1 Awareness; and
- Ethics

3.2.2.4.4 Tools

- Individual Development Plan: the Individual Development Plan is a tool to help CAA civilian employees reach career goals within the context of organizational objectives. It provides the systematic steps to build on strengths and overcome weaknesses as employees improve job performance and pursue career goals. This document can be found in Appendix B of the program documentation.

4. CONCLUSIONS

4.1 Task overview

The professional development programs from NCIA, NORAD/NORTHCOM, CAA, DSTL, DND/ADM (Mat) and CFINTCOM were reviewed through a written survey, POC interview and program documentation review. The NCIA and NORAD/NORTHCOM conduct informal professional development activities. CAA, DND/ADM (Mat) and CFINTCOM have developed and implemented formal PD programs for new hires. DSTL's PD program is relevant to all their personnel; however, there is a specific 'greening program' designed specifically for new hires.

The review identified that there is much overlap in the formal PD programs for DND/ADM (Mat), CFINTCOM, and CAA. For instance, CAA implements a "greening" program for new civilian hires that focuses on the introduction of Army operations, culture, and lexicon. The first year of the DND/ADM(Mat) and CFINTCOM PD programs also include an introduction to the CAF and provides a base tour as well as an introduction to the Canadian Public Service. These PD programs also include activities such as mentorship, continuing education, and conference attendance.

Four topic areas outlined in the program documentation for DND/ADM (Mat), CFINTCOM and CAA are relevant to the development of a PD program for DRDC CORA, as described below:

- Assessment procedures: All PD programs involve a collaborative relationship between supervisors and trainees in terms of creating trainee performance objectives. These performance objectives are then incorporated into an assessment review.
- Program Competencies: DND/ADM(Mat) and CFINTCOM outline the competencies they use for hiring and assessments, which have been aligned with the values and ethics outlined for the Public Sector, DND and CAF. The majority of these competencies overlap and include:
 - Teamwork;
 - Judgment;
 - Communication Skills;
 - Critical Thinking;
 - Analytical Thinking;
 - Initiative;
 - Organizational Awareness;
 - Leadership;
 - Adaptability; and
 - Networking and Relationship Building.
- Training Frameworks: CFINTCOM is quite structured. The CFINTCOM DRP document lists mandatory courses for each training year, as well as position-specific training and personal professional development training. DND/ADM (Mat) lists a number of mandatory courses (e.g., ethics, orientation, anti-harassment), but notes that each division may choose additional courses for

trainees as appropriate. CAA lists various courses that could be included in the training plan, but the program has no mandatory courses.

Tools: All programs include tools used for creating the performance objectives. Tools used for assessment reviews are only provided by DND/ADM(Mat) and CFINTCOM.

Although CAA, DND/ADM (Mat), CFINTCOM and DSTL all have program features that can provide guidance and input to DRDC CORA's PD program, DND/ADM (Mat) and CFINTCOM have been identified as the most relevant and comparable programs for DRDC CORA.

DND/ADM (Mat) and CFINTCOM are Canadian programs that target new hires with similar educational requirements to that of DRDC CORA. The PD programs for these two organizations have aimed to develop knowledge, skills, abilities and competencies that are required of DRDC CORA personnel. The ENG and EG programs (DND/ADM (Mat)) have been established since 2002/2007 respectively, and CFINTCOM's program, although newly implemented, replicates the PORP which has been implemented for over 25 years. The PD programs within DND/ADM (Mat) and the PORP program have proven success in developing quality personnel.

4.2 Guidance for DRDC CORA Professional Development Program

This section provides guidance for the development of DRDC CORA's professional development program. This guidance is based on the PD programs reviewed as part of this project.

- Program Development
 - Leverage existing DND PD programs to provide the foundation and structure for CORA's program (ADM (Mat), CFINTCOM, ADM (Pol));
 - All staff levels involved in the programs (Managers, Supervisors, etc.) should have the opportunity to provide input into the program's development to ensure continual support from these staff levels;
 - Managing expectations during program development is essential.
 - Establish key objectives for the CORA PD program and define the knowledge, skills, abilities and competencies required of the participants;
 - Senior management input to program objectives is essential;
 - The length of the program needs to consider manageable timelines and schedules by the new trainees;
 - The HR requirements for the program need to be defined;
 - Identify candidate screening requirements to reduce the volume of candidates applying to the program.
 - Include both hard- (analysis techniques/tools) and soft-skill requirements (leadership skills, self-motivation, interpersonal skills, teamwork).
 - Conduct a pilot trial of the program to allow for future refinement and restructuring as required (e.g., scheduling, applicable courses and training).

- New Trainees
 - If applicable, new trainees should rotate through different groups to gain experience and knowledge of the entire DRDC CORA organization;
 - New trainees will require clear direction within the first six months of joining the program;
 - New trainees should receive mentoring throughout the entire program, mentoring should begin immediately upon entering the program;
 - Trainees should rotate through mentors.
 - Research the applicability of the program for student involvement (generalized training/courses), especially if there is increased opportunity for previous students to return post-graduation.

- Training
 - Training should include a combination of informal and formal activities, including:
 - On the job training;
 - Job shadowing;
 - Courses (in-house or Academia);
 - Classroom training sessions;
 - Site visits;
 - Conferences, workshops, interest groups;
 - Networking events;
 - Speaker sessions;
 - Roundtables; and
 - Written/oral assignments, including presentations.
 - Leverage existing training and courses already identified in existing DND PD programs; these courses will provide a high level overview of Canadian military culture;
 - Consult CAA to leverage courses and training relevant to OA;;
 - Align competencies with the values as outlined in the Values and Ethics Code for the Public Sector and with the DND and CF Code of Values and Ethics;
 - Create a training framework that clearly identifies the goals for new hires during each year of the DRDC CORA PD program;
 - Second language training is invaluable;
 - Course timelines need to coincide with security requirements.
 - Initial training (e.g., within first six months) should be generalized, to increase new hires' overall familiarization with DRDC CORA, DND, etc. Specialized training should follow;
 - Trainers need to be identified:
 - Schools, including universities, training centers;
 - In-house instructors, OGD trainers/instructors;
 - Defense and Federal organizations;
 - Contractors;
 - Internal and external subject matter experts.

- Assessment
 - Create assessment tools and other tools (e.g., Individual Development Plan) that clearly define the evaluation criteria for new trainees;
 - A designated timeline for formal assessments should be identified;
 - Trainees should receive both informal and formal feedback throughout

the entire program.

5. REFERENCES

- [1] CFINTCOM (2017). Defence Intelligence Officer Recruitment Program.
- [2] Department of the Army Center for Army Analysis (n.d.). Training and Professional Development: CAA Education, Training and Tuition Assistance Policy and Procedures.
- [3] DND/ADM (Mat) (2007). Materiel Acquisition and Support: Engineering and Scientific Support (EG) Officer Development Program Training Manual.
- [4] DND/ADM (Mat) (2007). Materiel Acquisition and Support: Officer Development Program Engineering Training Manual.

ANNEX A. SURVEY INTRODUCTORY E-MAIL

Dear [NAME],

Further to your discussion with John Weaver of the Centre for Operational Research and Analysis (CORA), we are contacting you to find out more about your organization's professional development (PD) program.

As you may recall, CORA is creating a PD program for ADM(S&T) for new operational research and strategic analysis hires. Before developing this PD program, CORA is interested in understanding [NAME OF ORGANIZATION]'s PD program in terms of its structure and content, any lessons learned, and best practices in this area.

To this end, we have been contracted by CORA to understand [NAME OF ORGANIZATION]'s PD program. To begin this process, we are attaching a list of questions about your PD program. These questions are designed to give us an understanding of the structure and content of the program, as well as lessons learned.

Would you please complete the attached survey and return it, together with any documentation you have for your PD program, by **March 23, 2018**. Please return the completed survey to andrea.scipione@c3hf.com.

After you have returned the attached form, we would like to interview you to gain more detail about [NAME OF ORGANIZATION]'s program. The interview will be by WebEx or Skype (whichever you prefer), and will take approximately 20-30 minutes on March 28, March 29 or April 4. Please click on the Doodle Poll link to schedule a time that works best for you. Note that times are set for Eastern Standard Time.

[Doodle Poll Link]

Once this project has completed, we will provide you with a copy of our report on PD programs being used in allied governments.

Thank you very much for agreeing to take part in this project. We look forward to learning more about your PD program.

Sincerely

Professional Development Program Survey

The Centre for Operational Research and Analysis (CORA) is creating a Professional Development (PD) program for ADM(S&T) for new operational research and strategic analysis hires. Before developing this program, CORA is interested in understanding your organization's PD program.

Kindly please complete the questions below and return the completed form to andrea.scipione@c3hf.com by March 23, 2018.

1. **Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?**

2. **For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?**

3. **Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?**

4. **What are the goals and objectives of your PD program?**

5. **What are the knowledge, skills and abilities your PD program aims to train?**

6. **What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?**

7. Are there any specific topics included in the PD program?

8. What is the length of time required to complete the PD program? Is it staged (e.g. On-job training, formal instruction) and what is the length of each stage?

9. Who leads your PD program?

10. If formal instruction is provided during the PD program, from where are the instructors obtained (e.g. from organization, academia, contractor)?

11. Are the new hires' direct reports involved in the PD program? How are they involved?

12. What is the typical length of time between completion of undergraduate/graduate studies and commencing work in the organization, and is there a period of validity for the educational qualifications after which hiring will not be considered?

13. What aspects of the program have been effective?

14. What aspects of the program have not been effective?

15. Have you made or identified any changes to the PD program since it was implemented? Why?

16. Are there any lessons learned from your PD program?

ANNEX B. COMPLETED SURVEYS

B.1 NCIA

1. Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?

- Age: Ranging from late 20s to mid-40s
- Professions: Operational Analysis (OA) i.e. people with scientific or engineering background
- Skill sets: technical OA skills such as problem structuring, statistical analysis and survey tools, simulation, optimisation, as well as military domain knowledge (aerospace, land, maritime, etc.)
- Roles & responsibilities: ranging from junior analysts with about 2 years' experience (A2) working under the supervision of senior staff to senior analysts with over 8 years' experience (A4) and responsibilities of leading teams and managing projects.

2. For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?

Operations Research / Analysis, Mathematics, Statistics or any other natural or applied science (incl. engineering)

3. Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?

I do not have a formal PD programme. I have used the same approach of embedding new hires in the team since I took over the team 4 years ago.

I do not have any specific measures for success other than observing that new hires typically become useful members of the team within reasonable amount of time. So I would say that the approach currently in place is successful.

4. What are the goals and objectives of your PD program?

Get the new hires to function as efficient members of the team and with relatively limited amount of supervision (depending on the seniority of the post) as promptly as possible.

5. What are the knowledge, skills and abilities your PD program aims to train?

Knowledge is focused on the specific domains/areas that new hires are requested to work in i.e. very specific to the projects the team is working on.

Technical skills are typical up-to-speed although in some cases we focus on new tools/software used to supporting our modelling work.

General abilities such as developing good presentations, writing clear emails, communicating in clear and efficient manner with military sponsors are also part of the training (mainly through mentoring).

6. What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?

I use a combination of activities. The most relevant training for my new hires is on-the-job training. Most hires come in with already strong analytical/technical skills but lack specific knowledge on the projects my team is involved in (e.g. defence planning) – best way to gain that knowledge is to be assigned tasks right away within the project team, supported/mentored by senior analysts or analysts who have been in the team for a long time.

This is combined with some formal training (e.g. at NATO schools for NATO-related knowledge) or commercial companies (e.g. project management, leadership management). Management training is offered to staff as they gain seniority – this goes from a couple of days in duration to a series of 3 or 5 week-long, off-site modules spread over a 6 to 9-month period.

Sending new hires to relevant conferences is also part of their induction in the team, when available.

Informal mentoring takes place. At the moment we do not make great use of on-line tutorials but something I am looking at increasing further.

7. Are there any specific topics included in the PD program?

Main topics addressed are those related to specific projects new hires are selected to work on i.e. more from a functional perspective (e.g. specific aspects of land capabilities and operations) than a technical (OA techniques) perspective – hence the use of on-the-job training as predominant approach/activity.

Management (people and projects) is also a topic covered as staff gain seniority or are hired in more senior roles.

8. What is the length of time required to complete the PD program? Is it staged (e.g. On-job training, formal instruction) and what is the length of each stage?

No formal PD programme so no specific duration. Staff get training/development opportunities throughout their career with the Agency.

9. Who leads your PD program?

I am responsible for the training of my staff.

10. If formal instruction is provided during the PD program, from where are the instructors obtained (e.g. from organization, academia, contractor)?

Some formal training/education is provided through the NATO Schools (Oberammergau and Latina)
i.e. within NATO organisations manned by a combination of national staff and NATO staff.

Other training is delivered by commercial companies (contractors) e.g. project management, leadership management, risk management, etc.

11. Are the new hires' direct reports involved in the PD program? How are they involved?

Supervisors are involved through discussing with staff their yearly development goals, including proposal for opportunities for on-the-job training (e.g. through contribution to various projects),
formal training, attendance to conferences, etc.

12. What is the typical length of time between completion of undergraduate/graduate studies and commencing work in the organization, and is there a period of validity for the educational qualifications after which hiring will not be considered?

The length varies based on the level of the post and the requirements are not based on time since graduation but rather on time spent gaining experience in the relevant skills area. In my entity, the lowest grade (A2) hire requires 2 years of relevant (OA) experience and the highest grade (A4) requires min. 8 years of relevant experience.

There is no strict constraint on how long it has been since a candidate graduated; the key requirement for our hires is to have recent relevant experience. There is an age limit for applying to a post.

13. What aspects of the program have been effective?

In my environment where knowledge of the NATO context and specific problems being addressed is essential to be efficient in your job, on the job training is definitely the most effective means to get our new hires to function and be productive – get them working on actual projects right away and get them in contact with our sponsors so they can gradually absorb key principles, knowledge and expertise they need to become efficient members of the team.

Attending conferences related to specific domains that new hires are working on has also been useful in getting them up to speed with recent developments in their work areas.

14. What aspects of the program have not been effective?

Some of the formal training has been disappointing – promising to be very relevant but turning out with large portion of it not quite so relevant.

15. Have you made or identified any changes to the PD program since it was implemented? Why?

I adapt the combination of activities based on the new hires, their aptitude, knowledge, etc. but in general it has been relatively unchanged, although looking now at making greater use of online resources.

16. Are there any lessons learned from your PD program?

- On-the-job training is an essential aspect of getting new hires in my team up-to-speed.
- Strong project manager who will carefully assign relevant tasks to new hires, getting them familiarised with the work rapidly but also with the necessary support so it is a positive/constructive experience both for the new hire and the project manager.
- Some formal training is good to have, especially as it provides a record/trace for staff of successfully completing some training, but it needs to be carefully selected – it can be more or less useful or relevant.
- Staff being overloaded with project work (supporting customers in customer funded environment) limits the opportunities for staff to attend training – this leads to the danger of the team losing its sharp edge.
- Lack of funding (particularly in customer funded environment) also limits training opportunities – alternative means can be used such as providing staff with opportunities to work across various projects hence further developing and expanding their knowledge and expertise, making greater use of free online resources (where relevant), and mentoring with senior staff.

B.2 NORAD/NORTHCOM**1. Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?**

At NORAD & USNORTHCOM (N&NC), there is not a specific program for professional development of Operations Research/Systems Analysis (ORSA) professionals. Positions are typically filled with mid-career ORSA professionals. Civilian employees at N&NC are Air Force civilians, and while the Air Force does have an intern program for entry-level ORSAs, we have been unable to secure an ORSA intern position in the past 10 years. However, I have personally set up several “continuing education” courses for our current employees.

2. For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?

When we hire, we look for people with a masters in OR, and do not limit the pool of candidates to a specific graduate school. Since this career field is under-manned, we also consider individuals with a strong math and/or science background.

3. Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?

As mentioned above, N&NC does not have a specific/formal PD program for ORSAs. Individuals are encouraged to pursue continuing education, as well as advanced degree programs.

4. What are the goals and objectives of your PD program?

Since there is no formal program, we do not have goals and objectives.

5. What are the knowledge, skills and abilities your PD program aims to train?

Again, since there is no formal program, there are no formal knowledge, skills, and abilities (KSAs), but when an ORSA position is being filled, there are specific KSAs defined for the job announcement.

6. What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?

N/A.

7. Are there any specific topics included in the PD program?

As the technical advisor to the N&NC J8, I continue to advocate continuing education for all of the ORSAs in our organization.

** Questions 8 -16 were not completed by the organization since there is no formal professional development program in place.

B.3 US ARMY CENTER FOR ARMY ANALYSIS

1. Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?

The Center for Army Analysis's (CAA's) Professional Development (PD) Program while inclusive of, is not exclusively oriented on, new hires. Instead, CAA's PD provides opportunities for all CAA employees, new hires and tenured professionals, military and civilian, based on the conviction that professional development is a life-long activity. The focus of CAA's PD program is based both on the developmental needs of our employees, as well as current and projected organizational requirements. CAA's professional development program is both a formal program in that there are specifically identified components of the program, as well as an informal program in that there is no specific sequence of activities for participation therein; supervisors, in concert with employees, are allowed to latitude to tailor the participation of CAA personnel in the various components of our professional development program for

each forthcoming year. In essence it constitutes a menu of education, training, and developmental activities tailored to specific developmental needs for each CAA employee.

Components of CAA's Professional Development Program:

1. A "greening" program for new civilian hires – CAA takes advantage of inter-agency Army greening programs specifically focused on new junior civilian hires lacking experience in US Army operations, culture, lexicon. Focus is for these employees to gain greater familiarity with military terminology, tactical Army operations, designs and capabilities of Army units, and appreciation for Army culture to then increase their situational awareness, contextual knowledge, and credibility with external sponsors when conducting studies.
2. Leveraging of local academic institutions' baccalaureate and graduate level course offerings to increase the education of CAA employees in new innovative analytical techniques developed in academic settings. Additionally, CAA provides some tuition assistance for CAA employees to obtain a graduate degree in operations research or a related field if lacking an advance degree.
3. Agency wide ORSA Continuing Education Classes and Programs scheduled specifically to increase the analytical skills and capabilities of analysts regarding operations research topics/techniques and specific software applications that have utility across CAA divisions (e.g., JMP statistics, "R" coding, Promodel, GAMS, etc.).
4. Division Specific Continuing Education Classes and Programs identified specifically to increase the analytical skills and capabilities of analysts regarding operations research topics/techniques and specific software applications that have utility within a specific division (e.g., Unix coding, Joint Integrated Contingency Model (JICM) Training, Force Generation Model (FORGE) Training, etc.).
5. Military and Civilian Education Systems – CAA tracks and manages the participation of CAA employees in military and civilian education coursework commensurate with the employee's military / civilian grades (i.e., basic/intermediate/advance civilian education, ILE military education, etc.)
6. Broadening Assignments – CAA rotates employees through developmental assignments across CAA divisions, and as "strategic partners" (similar to liaison officers) with those sponsors and activities which require the greatest investment of CAA resources to provide their requisite analytical support.
7. A professional speaker program to increase the contextual knowledge of all analysts in the socio-economic-political-military factors affecting the mobilization, deployment, and employment of military, primarily ground-centric, forces in current / projected areas of interest to the US Army.

8. Supervisor Development Courses – Army, US Government, and other Federal courses that CAA leverages to increase the supervisory capacity of CAA employees being considered for current and / or future supervisory positions with CAA.
9. Human dignity council programs and speakers – during months celebrating the cultural heritage of various groups within American society (e.g., African-American History Month, Women’s History Month, etc.) CAA invites guest speakers on these topics to increase CAA’s employees’ awareness and appreciation for the social and ethnic diversity within our workforce and the contributions, both historical and current, made by these groups to National Security issues and topics.
10. Professional Conferences - CAA promotes employee participation in a variety of professional conferences and activities, most notably the Military Operations Research Society, the Army Operations Research Symposium, and the Institute for Operations Research and the Management Sciences.
11. Mandatory Army Training Requirements – CAA enforces Army annual training requirements mandatory for all Army military and civilian personnel.
12. Mentoring discussions – CAA encourages the establishment of mentoring relationships between junior personnel and mid-level managers, whether they be their supervisors to not, to promote one-on-one career counseling and developmental discussions.

2. For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?

Preferred degrees include: Operations Research, Operational Analysis, Industrial Engineering, Mathematics, Probability and Statistics, and other Science, Technology, Engineering, Mathematics (STEM) Degrees

3. Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?

PD program has been in existence for several decades, though is continually refined annually based on projected needs for forthcoming year(s). Measures of success include: participants’ feedback during course completions; participants’ feedback during exit interviews with leadership upon organizational departure; use of knowledge, skills, attributes acquired during PD program in subsequent studies and activities. Additionally, the speakers specifically identified for CAA’s professional speaker program are gleaned from a survey of CAA employees pursuant to topics of interest for the forthcoming year.

4. What are the goals and objectives of your PD program?

The overall objectives of CAA's PD program are:

- 1) To provide a program that meets the developmental needs of CAA, supervisors, analysts, and support personnel.
- 2) To provide a program that enhances the individual's participation in accomplishing the mission of CAA.
- 3) To encourage professional development through multi-faceted, personally rewarding, education, training, and experiential opportunities.
- 4) To provide a cost effective education, training, and development program.

5. What are the knowledge, skills and abilities your PD program aims to train?

See details of each facet of CAA's program detailed in question 1.

6. What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?

All of the aforementioned activities have their place in the program; see details of each facet in question 1.

7. Are there any specific topics included in the PD program?

See details of each facet of CAA's program detailed in question 1.

8. What is the length of time required to complete the PD program? Is it staged (e.g. On-job training, formal instruction) and what is the length of each stage?

With the exception of the greening program that is generally completed within 2 years of assignment to CAA (for those new hires for which a greening program is warranted), there is no specific time length for completion of CAA's PD program; in reality it is never completed since it is a continually ongoing activity for each and every employee.

9. Who leads your PD program?

While the Director, CAA is overall responsible for the professional development of CAA employees.

10. If formal instruction is provided during the PD program, from where are the instructors obtained (e.g. from organization, academia, contractor)?

Depending on the facet of the program in question, when formal instruction is provided it is coordinated with applicable and appropriate subject matter experts; sometimes from within CAA, sometimes external to CAA from other Defense or Federal organizations, academia, think tanks, FFRDCs, or other contractors.

11. Are the new hires' direct reports involved in the PD program? How are they involved?

All supervisors are involved in the professional development of their subordinates, both new hires and tenured professionals.

12. What is the typical length of time between completion of undergraduate/graduate studies and commencing work in the organization, and is there a period of validity for the educational qualifications after which hiring will not be considered?

Intervening length of time from degree completion to hiring can vary substantially. For new junior civilian employees it is typically short – within a few years. For military and more senior civilian personnel the intervening time may be lengthy and could be a decade or more. There is no ceiling for a period of validity, however if there has been an extensive absence of engagement in analytical activities since degree completion, or conversely continual involvement with them, that factor will be considered as part of the hiring process and could be one of many discriminators in terms of who actually is hired.

13. What aspects of the program have been effective?

Given the multi-faceted, individually tailored, nature of CAA's program, all components detailed in question 1 have been effective for different reasons, albeit differentially effective with different employees.

14. What aspects of the program have not been effective?

One component of the program that has lapsed and is no longer included is a professional military reading program that was mandatory for military personnel and encouraged for civilians. While reading of professional materials (books, journal articles, scholarly reports, etc.) is still promoted and encouraged, we found CAA's employees were engaged with significant reading specifically focused on the conduct of the studies for which they were responsible (literature reviews, consideration of various methodological approaches, contextual information, etc.), that adding additional reading requirements was met with varied, sometimes minimal, success. Thus CAA continues to promote the Chief of Staff of the Army's recommended reading list for its military, and by extension civilian, employees, but CAA has discontinued an internal professional military reading program apart from that.

15. Have you made or identified any changes to the PD program since it was implemented? Why?

CAA continues to refine the program annually to determine what, in each facet of the program, to specifically offer in the forthcoming year.

16. Are there any lessons learned from your PD program?

The most important lesson learned from execution and continued refinement of the program is the necessity for continual commitment to professional development at all levels within CAA: employees, supervisors, mid-level managers, and senior executives.

B.4 DSTL

Operational Research and Analysis

1. Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?

Dstl does not have a single PD program. There are a number of relevant schemes, in particular:
ASSP – Accelerated Systems Skills Programme – mentoring and support programme for systems thinkers. Typically mid-career.
TSS – Technical Specialist Scheme – mentoring and support scheme for technical specialists. Typically mid-career.
GDS – Graduate Development Scheme – mainly taught scheme for new entrants
“Professionalization” – encouragement and support for those seeking higher memberships of Professional Bodies and/or Government analytical professions.
Apprenticeship schemes – operating primarily at graduate entry level to upskill to Masters level (Level 7 apprenticeship in UK terminology).

2. For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?

No -

3. Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?

ASSP – long-standing scheme – has agreed “graduation” criteria around upskilling from Systems thinking Level 2 to 3/4 (effectively supervise practitioner to practitioner/expert)
 TSS – similar, but more recent
 GDS – exact format has varied, but enduring intent is to make sure each new cohort has early understanding of key issues, approaches/techniques etc
 “Professionalisation” – strategic intent is to do more of this and to progress from current largely informal approaches to something more structured.
 Apprenticeships – a data science scheme/apprenticeship is in place (started in 2017); one for OR&Analytics is in planning.

4. What are the goals and objectives of your PD program?

ASSP, TSS – upskilling from supervised practitioner to practitioner/expert level
 GDS – broad upskilling and baselining (as a complement to individual-led technical training)
 Professionalisation – enhancing external reputation, peer linkages and credibility of staff

5. What are the knowledge, skills and abilities your PD program aims to train?

Covered above

6. What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?

Mixture of the above as required

7. Are there any specific topics included in the PD program?

Scheme dependent

8. What is the length of time required to complete the PD program? Is it staged (e.g. On-job training, formal instruction) and what is the length of each stage?

Mentored schemes typically take 18 months – 3 years depending on individual needs.
GDS

9. Who leads your PD program?

ASSP and TSS are Dstl-wide schemes run by a single steering group
The others are Division-led

10. If formal instruction is provided during the PD program, from where are the instructors obtained (e.g. from organization, academia, contractor)?

Varies – most schemes are taught by internal experts, but external expertise also engaged where appropriate.

11. Are the new hires' direct reports involved in the PD program? How are they involved?

The mentored schemes typically have a mentor from outside the line-management chain as well as involvement from the direct line manager.

12. What is the typical length of time between completion of undergraduate/graduate studies and commencing work in the organization, and is there a period of validity for the educational qualifications after which hiring will not be considered?

Main delay factor tends to be down to need for security clearances; no

13. What aspects of the program have been effective?

Effective mentoring – either one-to-one or via mentoring circle.

14. What aspects of the program have not been effective?

15. Have you made or identified any changes to the PD program since it was implemented? Why?

Schemes are progressively tweaked in light of feedback

16. Are there any lessons learned from your PD program?

Project Manager

- 1. Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?**

Project Managers – All PMs at all levels. This includes Projects Managers and their PM assistants / subordinates.

- 2. For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?**

Project Managers – A numerate qualification, PM specific training (e.g. PRINCE 2, PMQ) depending on entry level alongside existing evidence of professional development. (e.g. Membership of APM)

- 3. Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?**

Project Managers – All assessments have been completed in Division and a cross division (there are five divisions each with PMs) consistency check has been carried out. The value of the scheme is not the individual “score” but the quality of development conversation against a defined set of competencies. At an organisational level, the metric is the aggregated PM scores which contribute to our P3M3 (Portfolio, Programme and Project Management Maturity Model) assessment and success is deemed progress to achieve our desired goal. At an individual level it is about having a tailored development package for the individual and providing the opportunities to progress through that.

- 4. What are the goals and objectives of your PD program?**

Project Managers – To improve the competence of our PM cadre and to encourage staff to engage in their own development to achieve this. Outcomes will be improved forecasting of Time, Quality and Cost for our projects.

- 5. What are the knowledge, skills and abilities your PD program aims to train?**

Project Managers – The professional body we align to is the Association of Project Managers and they have a comprehensive competence framework, details at www.apm.org.uk

- 6. What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?**

Project Managers – Regular (bi-monthly) PM fora to gather the community to be briefed on a variety of topics and engage in discussion / activities related to their area

of expertise. Two fora per year to deep dive on specific topics. This is process focussed so in parallel there is a PM Leadership development programme developing the leadership skills. A cohort of twelve form two Action Learning Sets, along with an experienced mentor, to grow and hone these skills. Additionally there is shadowing, mentoring and formal training courses dependant on the outcome of the development conversation against the CPD framework.

7. Are there any specific topics included in the PD program?

Project Managers – The programme is wide ranging, see competence framework from Q5, but there is a focus on Forecasting and scheduling.

8. What is the length of time required to complete the PD program? Is it staged (e.g. On-job training, formal instruction) and what is the length of each stage?

Project Managers – There is no fixed timeline, not all staff will progress through the scheme either because they do not desire to or there is no business need. The organisation does have a timescales to achieve P3M3 Level 3

9. Who leads your PD program?

Project Managers – Overall scheme is managed centrally from a P3 Office but delivered through Group Leader and Team Leaders in each division.

10. If formal instruction is provided during the PD program, from where are the instructors obtained (e.g. from organization, academia, contractor)?

Project Managers – Some courses are self developed (specifically related to our business and processes), or through MODs training provider (more generic). There is a variety of on-line resources, delivered and residential courses.

11. Are the new hires' direct reports involved in the PD program? How are they involved?

Project Managers – An assessment is completed against the framework and development needs identified. Higher levels are expected to possess these competencies evidenced through existing professional development / interview.

12. What is the typical length of time between completion of undergraduate/graduate studies and commencing work in the organization, and is there a period of validity for the educational qualifications after which hiring will not be considered?

Project Managers – The majority of new entrants have existing PM experience or start as Associate PMs in a supporting role under the direction of the PM. Professional development is an ongoing activity. Full Membership of the APM (which requires evidenced logbooks etc) is envisaged to allow our assessment to be “proficient” without further evidence within a two year timescale. (currently being agreed)

13. What aspects of the program have been effective?

Project Managers – We have had good engagement with all PM staff in the scheme. The benefit of “marking down”, i.e. if there are gaps (even small ones), we go for the lower assessment to identify the development needs. “Over rating” tends to mean gaps are not addressed.

14. What aspects of the program have not been effective?

Project Managers – as a large organisation consistency across divisions has been a

challenge. Also the design of the scheme did not align to the way the professional body undertakes it. i.e APM has many competencies (twenty seven), the individual picks ten (of which five must be core competencies) and focusses their evidence on these. We have grouped the 27 into 10 groups and ask for evidence across all of these, hence cover all 27 which is realistically too broad.

15. Have you made or identified any changes to the PD program since it was implemented? Why?

Project Managers – No changes yet but we only rolled out in the last year. Although better alignment to APM process is being considered.

16. Are there any lessons learned from your PD program?

Project Managers – Ensure alignment with accreditation route process with the aligned professional body.

B.5 DND/ADM (MAT)

1. Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?

The Materiel Group Materiel and Acquisition Support (MA&S) Officer Development Program (ODP) has been designed to recruit highly qualified civilians into occupational groups essential to the delivery of the Materiel Group's business objectives. The Program recruits eligible university/college graduates and students who will graduate by 31 December (of the current year) for full-time entry level positions as engineers, technologists, quality assurance and purchasing officers. The Materiel Group highly supports the hiring of individuals who have participated to the FSWEP and or have been a COOP student.

Upon acceptance into the Program, each trainee has to successfully complete all objectives of the Training Program Phases specific to each profession. They are expected to perform to the best of their ability, progressing in their development under the direction of their supervisor and cooperating fully with divisional staff and managers. The Program includes various assignments, mandatory training and the practical work experience supported by dedicated Divisional Program Managers to prepare them for a successful career within the Materiel Group.

2. For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?

Below are the degree program requirements for the five (5) competency-based development streams within the Materiel Group Materiel and Acquisition Support (MA&S) Officer Development Program (ODP):

ENG: Degree from a recognized post-secondary institution in Mechanical Engineering, Aeronautical Engineering, Aerospace Engineering, Naval Architecture Engineering, Software Engineering, Electrical/Electronic Engineering, Civil Engineering, Industrial Engineering, Materials Engineering, Chemical Engineering and another relevant Engineering specialty.

PG: Bachelor's degree from a recognized post-secondary institution.

EG: Three year Technologist Diploma from a recognized post-secondary institution in a technology program such as: Marine Engineering Technology, Chemical or Chemical Engineering Technology, Naval Architecture Technology, Marine Engineering Systems Design Technology, Textiles, Clothing, Heavy Equipment, Aerospace Engineering Technology or Mechanical Engineering Technology.

EL: Three year Electronics Technologist Diploma from a recognized post-secondary institution.

TI : Diploma from a recognized post-secondary institution in a Technology program such as: Electrical, Electronic, Aerospace, Mechanical, Maritime, Software or Industrial Engineering Technology, or a an engineering degree from a recognized post-secondary institution in a specialty field such as: electrical, electronic, aerospace, mechanical, maritime, industrial or software engineering technology.

3. Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?

The Materiel Group Materiel and Acquisition Support (MA&S) Officer Development Program (ODP) began its implementation in 2000 and includes the following competency-based development streams and specific timing:

- Purchasing and Supply (PG), launched in 2000;
- Engineering (ENG), launched in 2002;
- Engineering and Support (EG), launched in 2007;
- Electronics (EL), a three-year, launched in 2009; and
- Quality Assurance Representative (Technical Inspectors) (TI), launched in 2014.

The program has been very successful as demonstrated with the high retention level of its members as well as the promotions to higher level positions after graduating from the program. As of this year, some ODP Alumni are now candidates on the Materiel Group Executive Development Program (EDP).

4. What are the goals and objectives of your PD program?

The Materiel and Acquisition Support (MA&S) Officer Development Program (ODP) was developed by the Materiel Group to:

- recruit high potential internal and external candidates; and
- assist them in developing the skills and knowledge necessary to provide engineering, procurement and technologist services within ADM(Mat).

The Program directly supports:

- the Clerk of the Privy Council's Public Service Renewal Action Plan to recruit, retain and develop employees;
- the Department's commitment to building the defence team; and specifically,
- the Materiel Group's strategic priority of rebuilding and sustaining a professional workforce.

With HR capability and capacity enumerated as the Materiel Group's #1 risk factor, the Deputy Minister sponsored and ADM(HR-Civ) approved Program has proven to be very effective in recruiting highly qualified individuals into occupational groups key to the delivery of the Materiel Group's business objectives.

5. What are the knowledge, skills and abilities your PD program aims to train?

The knowledge, skills and abilities are specific to each competency-based development stream. Nevertheless, the necessary skills have been identified to ensure the trainee advance from an entry level position to working level. The ODP Training Manual for each stream provides the details and can be provided on demand.

6. What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?

Engineers, technologists, quality assurance and purchasing officers recruited into entry level positions are provided with training which typically involves:

- on-the-job training (OJT) in various organizations within ADM(Mat);
- written assignments;
- presentations; and
- mandatory classroom training.

They also participate to various activities such as assignments, site visits, networking event, graduation ceremony. They work under the direction of their supervisor and cooperate with divisional staff and managers.

7. Are there any specific topics included in the PD program?

See questions no 5.

8. What is the length of time required to complete the PD program? Is it staged (e.g. On-job training, formal instruction) and what is the length of each stage?

The Materiel Group Materiel and Acquisition Support (MA&S) Officer Development Program (ODP) includes the following competency-based development streams and the corresponding duration:

- Purchasing and Supply (PG), a two-year, two-phase Program;
- Engineering (ENG), a three-year, three-phase Program;
- Engineering and Support (EG), a three-year, three-phase Program;
- Electronics (EL), a three-year, three-phase Program; and
- Quality Assurance Representative (Technical Inspectors) (TI), a two –year, two phase Program.

The ODP Training Manual for each stream provides the details concerning the requirements for each phase and can be provided on demand.

9. Who leads your PD program?

The Materiel Group Management Committee (MGMC) is the authority for the establishment and implementation of the Program.

The Materiel Group PG/ENG/EG/EL/TI Advisory Committees (AC)/Champions provide advice, analysis and input to the MGMC on community management issues, activities and initiatives. This includes recommending approval of Divisional requests for Program resources (within the context of business planning).

The DIRECTOR MATERIEL GROUP MANAGEMENT COORDINATION (DMGMC) manages the day-to-day functioning of the Program. Her responsibilities include the following:

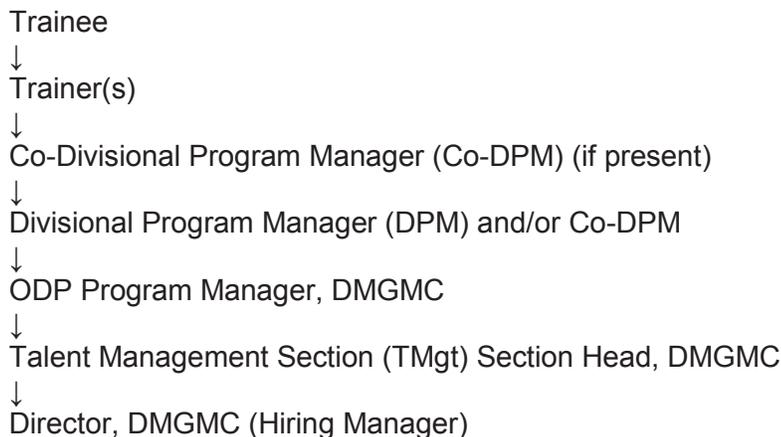
- Signs all letters of offer (except upon graduation from the Program);
- Signs and approves all promotions as Trainees make their way successfully through the Program;
- Provides advice and guidance to the Talent Management Section Head on all issues related to the Program;
- Makes final decisions with respect to hiring mechanisms and hiring numbers by occupational group based on the SWE availability;
- Secures funding to sustain the Program;
- Seek approval from MGMC on program streams (occupational groups) within the Program;
- Approves rejection on probation cases for Trainees hired externally and/or deciding on the action to be taken with unsuccessful Trainees hired internally; and
- Acts as the Level 1 Grievance Officer for the ODP Trainees.

10. If formal instruction is provided during the PD program, from where are the instructors obtained (e.g. from organization, academia, contractor)?

Various schools such as CSPS, LCC and the Materiel Group Training Center (MMTC)

11. Are the new hires’ direct reports involved in the PD program? How are they involved?

The reporting relationships of the Program is as follows:



12. What is the typical length of time between completion of undergraduate/graduate studies and commencing work in the organization, and is there a period of validity for the educational qualifications after which hiring will not be considered?

No time period.

13. What aspects of the program have been effective?

Some aspects have been effective such as:

- The ODP Framework Manual and the competency-based development streams training manuals provide clear directions about all aspects of the Program.
- The identification of the feeder group for futures hires into the ODP engineering stream has been very effective.
- The quality of Performance Assessments to determine strengths and identify areas in need of improvement has been highly valuable.
- Networking sessions to create synergy and beneficial exchanges between trainees.

14. What aspects of the program have not been effective?

None.

15. Have you made or identified any changes to the PD program since it was implemented? Why?

No significant changes. Statement of Merit Criteria (SoMC), training courses and assignments have been amended as required. The training manuals for both the ENGs and the PGs will be revamped over the next year.

16. Are there any lessons learned from your PD program?

Further look into the best practices across the streams to improve the Program as a whole.

B.6 CFINTCOM

1. Who was the PD program designed for? Specifically, what are the age, professions, skill sets, roles & responsibilities of the hires entering the program?

The Defence Intelligence Officer Recruitment Program (DRP) is a professional development program designed for newly hired civilian intelligence officers (intelligence analysts) employed in Canadian Forces Intelligence Command (CFINTCOM). The majority of the participants are recent university graduates (Master's programs) with no experience other than maybe a year or two in a coop program. The average age of the participants is about 25 year. Please refer to the attached DRP competition poster and the statement of merit criteria for details regarding the skill set of the participants. On entry, the new hire fills the position of a

Junior Intelligence Officer – work description attached.

2. For those employers who are carrying out Operational Research/Operational Analysis, are there particular degree programs that are preferred sources of new hires?

Graduation with a Master's degree (any) from a recognized university with a specialization in social science (see job poster for details) is the only education requirement.

3. Has your PD program been implemented? If so, in your opinion how successful has your PD program been since implementation? What are the measures for success?

The DRP was officially designated a PD program Oct 2017. The first official participants of the DRP will be hired in Sep 2018. However, there are currently 9 individuals that were hired under the Policy Officer Recruitment Program in 2016/2017 that are being managed under the guidelines of the DRP (they were selected from the PORP pool for employment as intelligence analysts). I will expand on this during the interview.

4. What are the goals and objectives of your PD program?

The Defence Intelligence Officer Recruitment Program (DRP) aims to recruit, train and develop Master's graduates and those who are about to complete their graduate studies as civilian defence intelligence officers for employment across the defence intelligence enterprise. The DRP is designed to familiarize participants with the Department of National Defence (DND) and the Canadian Armed Forces (CAF) and to provide them with the experience, knowledge and competencies to emerge as well-rounded and effective civilian defence intelligence officers upon graduation

5. What are the knowledge, skills and abilities your PD program aims to train?

The participants were selected on the knowledge, skills/abilities below. The program aims to further develop these to the working level (EC-05) Intelligence Analyst.

- Knowledge of current transnational and geo-political issues;
- Knowledge of the Canadian Security and Intelligence Community
- Knowledge of the Department of National Defence and the Canadian Armed Forces
- Knowledge of Canada's Defence Policy
- Ability to conduct research and analyze information
- Ability to effectively communicate in writing
- Ability to effectively communicate oral
- Ability to prepare and deliver presentations

6. What are the activities of the program? For example, does your PD program include mentoring, on-line tutorials, small group or one-on-one discussions?

The DRP Guidelines and Policy, Annex A - Training and Development Framework outlines the activities involved in the program. Over a three year period the participants are afforded at least 3 rotations into a different position, a multitude of CFINTCOM and OGD courses, active mentoring from host managers and the DRP manager. They also attend monthly professional development activities. The program also ensures the participants take all the required PS courses required of new PS hires.

7. Are there any specific topics included in the PD program?

See Annex A of the DRP Guidelines and Policy.

8. What is the length of time required to complete the PD program? Is it staged (e.g. On-job training, formal instruction) and what is the length of each stage?

The program length is 3 years. It consists of on-job-training, formal and informal training. Each year the participants are assessed against the Developmental Assessment Form (Annex D). Second language training is included in the program however time spent on language training does not count towards this three-year period.

9. Who leads your PD program?

Director, Intelligence Production Management (DIPM) leads the program. Day-to-day management resides with Manager, DRP.

10. If formal instruction is provided during the PD program, from where are the instructors obtained (e.g. from organization, academia, contractor)?

Instructors for the program are drawn from a mix of in-house instructors, contractors and individuals from other government departments.

11. Are the new hires' direct reports involved in the PD program? How are they involved?

Direct reports of the new hires are involved in the program in that they are required to ensure the individuals under their charge are afforded the ability to develop IAW the training plan. They ensure the individuals are gainfully employed, well supervised and mentored, given opportunities to gain meaningful experiences and to attend courses etc. They also provide useful feedback to the DRP manager.

12. What is the typical length of time between completion of undergraduate/graduate studies and commencing work in the organization, and is there a period of validity for the educational qualifications after which hiring will not be considered?

Most of the individuals applying to the program have just completed their Master's degree the year of application. Very few applicants have had their degrees for more than 5 years. There is no period of validity for this program. If the candidate has a Master's degree with the required specialisation they can apply at any time.

13. What aspects of the program have been effective?

Still too early to comment fully however the screening process seems to be effective in delivering the right candidate for the program.

14. What aspects of the program have not been effective?

The volume of candidates applying for the program proves challenging.

15. Have you made or identified any changes to the PD program since it was implemented? Why?

No changes yet. Sept 2018 the first batch of DRP participants will be hired.

16. Are there any lessons learned from your PD program?

The most important lesson learnt to date are:

- Research the HR requirement of a PD program;
- Engage with senior management to define the objectives of the PD program;
- Partner with an organization that has an approved PD program up and running; and
- Learn to manage expectations early in the development of the PD program ;

ANNEX C. INTERVIEW SUMMARY NOTES

C.1 NCIA

What is a “reasonable” amount of time for new hires to become useful members of the team? How long does it typically take them?

Most of the new hires were coming into an involved project (planning), they probably need close to a year to get fully functioning and competent. Normally after 6 months they are contributing to the project. The project is cyclical and it takes time to get to know the project.

Six months on a project, hires receive a ‘good enough’ understanding (project/organizational knowledge). At one year personnel are fully functional.

Your new hires receive on-the-job training, mentoring, formal training, and attend conferences. What is used the most? Have you received any feedback on these methods from the trainees?

The best activity is on the job training. The type of work at NCIA isn’t that demanding in terms of technical skills. On the job training works best since the type of projects here requires NATO knowledge, which can’t be provided elsewhere. Mentoring means they are supported by supervisor. They appreciate the time from the “experts” on the job.

Are they working on one project generally?

She has one major project that is driving 60-70% of her portfolio, but it has many areas. Normally start them on the project and then they get experience elsewhere. Last year a trainee had six months on the project, then she started them on another project to increase breadth of work.

Do your new hires receive any orientation before they start on the job training?

Internally at the agency, new hires get an initial brief from the HR department. There is a list of departments they are supposed to contact for an introduction (15 minute summary of the department). This provides general awareness of NATO. NATO used to have a full day orientation, but it has stopped over the last 2 years. It will start again.

Internally, Sylvie takes the time to sit down with each person and explain her team, the projects, and the specific project they are assigned to. The PM assigns them the specific task.

How many new hires do you have to oversee per year?

It depends. In Sylvie’s first year there had been a reorganization, resulting in 5-6 people being hired. Normally it is two to three hired per year. Her team is 28 civilians and a few contractors. After the three are hired this year, hiring will likely be on hold unless people leave. New hires make up 10% of the capacity of the service line.

What capabilities do you think are best trained using formal training?

We use the formal training more from a management perspective. E.g., introduction to management to help people know how to manage / give guidance to junior staff. Those who are hired at a higher level might already have that experience and they will be sent to formal management training. In some cases there's formal training for stats packages; technical aspects.

Are there anything that goes on between you and the new hires to talk about their progress? Any formal assessments?

New hires have a six month probation period. After four months she gets paperwork to inquire about progress and the hire is confirmed in a post. It is an informal assessment, but is completed to make sure they are getting up to speed.

Agency formal assessment is on a yearly basis. Not attached to probation period.

Common skills among new hires?

Require individuals who are self-sufficient and don't need much guidance, aren't afraid to ask for more work (pro-active attitude). She tries to check for this when she does interviews. Military domain knowledge is an asset. When they are familiar in a domain, they can work in a team quickly.

Those types of skills are more important than someone who knows a particular technical skills. Being pro-active, self-motivating, and self-sufficient is very important.

NATO training

NATO schools offer training. Oberammergau has a breadth of courses such as joint targeting, C2, specific military domains. Latina supports projects. Staff Officer training is offered but most of Sylvie's personnel can get the orientation required by being embedded in a team

NATO CIA school is more focused on IT. Funding is a big issue.

Any push to develop a formal PD program?

Yes, at the agency level. But she hasn't seen anything concrete at this time. From a training perspective, there is a desire to do so but need to work out funding issues. Each entity is doing the best they can to get the training given these restrictions.

On the job, being embedded has worked well for them. The most useful. When Sylvie started 30 years ago, that's how she was brought in. There was only on-the job; 6 months in different units. Works to get new hires trained in different areas and it is adapted to what you want them to do. Augment with formal training if possible.

C.2 NORAD/NORTHCOM**Which "continuing education" courses have you set up for your employees?**

There was a course a few years ago on problem definition. There are a couple of organizations that teach courses for Ops research folks. These have been set up. Beyond that, not much has been done for our organization.

NORAD NORTHCOM is small enough that a well-developed career program does not exist. We are trying to meet with the Army to see what they are doing. Each of the services in DoD has a major analytic group: Army - The Centre for Army Analysis, Navy - N81, Air Force - Air Force A9.

The Military Operations Research Society has institutionalized a number of courses over the last two years. There is an educational arm in the Society. Thomas is the former president. There are a number of courses, and at least three certificate programs (war gaming, risk analysis, operations research). Each certificate has six courses.

The symposium has 33 working groups that all meet concurrently for areas such as risk analysis, analysis of alternatives, war gaming. It is intended for ops research folks. Some courses are available during that time frame.

The last year a few individuals have been working on a career group (rather than technical skills). We are using a special session (90 minute time period). Last year we did two special sessions. We felt we should have some integrated career development from a society point of view.

Will you develop a PD program?

It is not feasible. We have a small number. I could probably develop a program if it was a priority with our leadership, but at this time I am spread across a number of programs. I doubt it will happen.

The services are likely to develop the programs.

NB: I have points of contact if you would like at Air Force A9 and Navy N81.

I'm in a NORAD billet. Most people here are dual hatted NORAD and NORTHCOM. The only separate organizations are J3.

Do you hire new staff?

It is sporadic because we are so small. Occasionally it happens (retirement, career move). We probably have 8-10 OR people: 4 military / 6 civilian. I'm in an OR billet (tech advisor in J8). 2 air force, 1 navy, trying to fill the military position. There is a lot of variability year to year. We may go several years before we have an opening and a hiring action.

Are there any structured activities for new hires?

No. We hire mostly mid-level to higher level experience people. We don't really have junior level people. The services bring in young folks from college / intern programs. We have been able to have interns in the past but not recently.

Is there any mentoring program?

It is informal. Several of us do that but it is informal. Informal feedback. We are trying to organize a career management group at the Symposium. That would be a place to get information from the Services.

C.3 US ARMY CENTER FOR ARMY ANALYSIS

Approximately how many new hires does CAA have each year?

Right now we don't have a lot of new hires because of a hiring freeze. In recent years, unless you are going to be at a certain percentage below your authorized strength, you can't hire. So we are only hiring 3-4 per year. We get military turn over all of the time, but the 3 or 4 have been at the GS13 level over the past couple of years.

What is the greening program?

Greening program is for junior civilian hires without military experience. Include various components over 18 months.

When we have a few participants, we will take part in the greening program with other agencies; opportunity that is Army wide. Activities can include:

- take them to a troop post so they can what an Army unit does
- take them to range to fire weapons,
- provide briefings about Army organization structure.
- Send people as observers to the National Training Centre where a brigade combat team will go for training.

We are not the lead for the greening program.

Trainees will perform their duties as analysts in our agency. Program will allow them to go to other agencies for a week, but they will be based in our agency.

Does everyone engage in Professional Development?

Everyone has to be involved in some kind of PD every year, be it formalized or informal. It is documented in an individual development plan. They have a menu to plan from in accordance with their supervisor. They can ask for training in a certain area. We might send them to a local university to pick up a skill set (e.g., discrete event simulation).

Can you expand on IDPs?

IDPs are updated on a yearly basis. Now we have to do it on-line; previously it was a paper-form in the supervisor's office. Every year: based on their projected needs and the agency's projected needs.

E.g., had a contractor who wrote a lot of code in C++. So we got an internal guy C++ training: he sat with the contractor weekly to see how C++ was being used and we sent him to courses at a university to learn C++.

When they are taking the courses, do they also have to fill their job requirements?

Yes, it is like night school. Sometimes they will be allowed 3-6 hours during the week to

work on the course work, but mostly it is on their own time.

How are the ORSA Continuing Education classes and programs delivered?

Some of it is online. Typically ORSA skills are trained in-house. We'll get a professor from a university to come in for a week and put on a crash course at a higher baccalaureate or lower graduate level course. They will teach a third of a semester in a week.

Recently, we've identified the coding language R as a need. We have some of the best and knowledgeable people using R in house. We've put on in-house R courses once a quarter for the last year and a half.

How are the professional speaker programs delivered (e.g., in person, via electronic medium, recorded and accessed at a later time)? Who are the speakers (e.g., in-house experts, external experts)?

These sessions are more about the contextual world in which they are working than hard ORSA skills.

We will survey the workforce for topics, e.g., Russia experts or China experts to better understand the political socio-economic perspectives of those countries. We have one person who is responsible to identify SMEs to bring in speakers; may be classified or unclassified. Sessions run 1-2 hours. We do this roughly bi-monthly. This month we have a person from the Centre for Naval Analysis who is an expert on China. Typically they are a presentation and then a Q&A session.

Attendance is highly encouraged but not mandatory. We get half to $\frac{3}{4}$ of the work force attending these courses. They are held within our facilities.

Are the managers encouraged to act as mentors to junior personnel? How formal is the process? For instance, some programs have formal mentor training and have requirements for mentors.

No formal mentoring program. We consider it a relationship that must be established between subordinate and superior, but it doesn't have to be with a supervisor. A mentoring relationship is encouraged not mandated. Supervisor must assess subordinate to see what they need to hone and what they need to refine.

Are there any areas of improvement you think will be entered into the program? Any big changes?

There have not been any big changes in the macro areas of the program. Specifics are continually worked through. We are doing work to recruit and train for people who retire / skill sets that leave (e.g., Unix).

Mandatory training

There is mandatory Army training that fits under the rubric of the entire umbrella. We have added a few items to it.

Examples:

- Prevention of Sexual Harassment (annually)
- How to mark classified documents.

As it is a well-established program, have other organizations come to you to replicate the program?

Parts of the program have been replicated e.g., ORSA sets. We may put on training courses and allow other organizations to send attendees.

Many other organizations have emulated various components of our program, but not the entire model.

Is there anything that could be added to the program?

Add professional reading back into program. It is mandatory for military but not for civilians. We took it out because it wasn't as productive as other aspects of the program and took up time.

What do you think are the most beneficial aspects of the program?

It depends on where you are in your career. When I was an analyst, the ORSA skill classes were very fruitful for me. As I've moved up the ladder, the supervisory courses were helpful. Now that I am in charge, looking at how we as an agency interact with other agencies / departments has been very valuable.

C.4 DSTL

Project Managers

Can you please describe the bi-monthly fora (e.g., is it a gathering or is it virtual, what topics will they discuss, who will run it)?

We bring people together because they are distributed. Fora include corporate updates, workshops (e.g., new tools and techniques), mentorship (e.g., experts to help with questions), debate issues, raise awareness of items within lab and externally (e.g., new project managers).

The idea is to get PMs together physically so they know who their colleagues are. Physical presence allows them to meet each other face to face, network, mingle. If they have to travel to another site for the fora, they will work at the other site for the entire day.

Can you please describe the Action Learning sets?

PMs are trained in processes (e.g., forecasting, deliverables, etc.), but they are not necessarily leaders. In the past, the technical person also looked after the money. We ended up with people doing PM work that didn't want to. In most organizations, PMs are the leaders of what is happening in projects. We set up a leadership program using action learning sets. Action Learning Sets are facilitated groups of people. We explain a problem in 5 to 10 minutes, peers will ask questions and provide suggestions, 5-10

minutes to wrap up. It generates new perspectives on how to look at problems.

Group leaders have 5-6 teams with 60-90 staff per group. If they had a problem individual or a looming target, etc., Action Learning sets allow PMs to talk to their peers in a structured way.

Action Learning sets are solely focused on leadership aspects.

What are the different responsibilities of the Group Leaders and the Team Leaders in the PD program?

We have 5 divisions in the lab. They're not all set up in a unified way. We have a single group of PMs. A group leader and 4 team leaders. Each team was loosely organized based on what they are supporting (e.g., security). We set the group up 2.5 years ago. We pulled out PMs from other teams. In the other teams, if you have 10-15 technical teams and a PM the PM development was largely ignored. Brought PMs together.

What are the typical formal training courses offered to new hires?

The training courses depend on the type of staff. For example, temp staff come ready qualified and we don't invest in their developmental training. In our own staff, we have a structured internal program of different modules that focus on PM qualifications with APM. Also training on tools and MS project.

Are new hires coming in with Technical degrees who want to become PMs?

We tend to get people in the PM field who apply the skill set to very different technical areas. We don't look for a specific degree for the technical positions (see completed analyst survey).

Many of our PMs already have a technical background. In terms of new hires, we get a lot of ex-military. Often already have technical skills.

Analysts

We have various schemes we operate at DSTL. We have our summer students who come on for 8 weeks. They are assigned to a team, work with team, and go back to university. Some universities have programs that allow for a year in industry; these are used quite extensively.

We use on the job learning, mentoring, shadowing.

Apprenticeship scheme

- This scheme admits all ages, includes existing staff.
- There is no scheme for OR and Analysts. We are working with OR society to develop one. To do this, we need 10 organizations to get together to do it. This is the current state of play. The trailblazer group sat last month or the end of January. Now that we have the 10 organizations, we need to agree on standards and syllabus.
- In the UK we've got to go to the institute of apprenticeships to get it endorsed.

Alan Robinson is a senior fellow who deals with OA development and filled out the survey.

ASSP

We provide mentoring and support. It is an experiential type activity where it's more shadowing. Depends on the skill set of the individual. They apply with their system skill standards. Depends on where you put the boundaries from an OR perspective. Can be anything e.g., computer skills (code), policy analysis, humans in the loop type work.

Graduate development scheme: How is it done? KSAs? What does it consist of?

- Our division of 520 people are split into 8 groups. Graduates are assigned to a group based on the interview and their preference. A grad will be recruited into a group, but they also spend time in other groups to get a breadth of experience (about a week) shadowing people in that area. Training requirements are captured in a Prof Development Agreement, which is tailored to the individual.
- The focus is on domain awareness (visit to military units, etc.) and technical skills (interest groups that get together monthly or bi-monthly to present work and get peer review).
- There is no formal training syllabus because the groups and teams are so diverse.
- We have 4 areas we are looking to rapidly develop. Apply scrub techniques. Packages of training are defined on the hoof. We have done it enough that we have a clear idea of what to do.

How long is the development program applicable to new hires?

- Effectively it is over a couple of years. There are schemes to support the development. It takes a long time for technical work. New starters have a STEPS program to broaden network (can't remember what the acronym is for).
- Use a civil service training provider.
- Two years development scheme, series of modules, no syllabus.
- A lot is taught by in-house technical experts.
- About awareness briefs and modules.
- We don't have all of this written down succinctly.

Lessons learned: The way we assessed our staff previously wasn't aligned to the professional body, which confused people.

C.5 DND/ADM (MAT)

Is there any cross-over in the training between the different streams? Or is the training for each stream independent?

There are a lot of similarities. There are some general courses that all streams take. They get more specific in the third year.

NB: *Cecilia can send a sheet that breaks down the individual courses by stream.* In the

first year they are pretty standard (e.g., DND-related). It is all listed within training plan.

Other similarities? E.g., assessments

Promotional packages are the same. The assignments differ according to the stream. Hands on training are specific to the stream. PGs and ENG. PG is a 2 year program but they have 3 phases, each with specific things they are looking for. ENG is 3 year but they do rotations with specific assignments. Specific manuals for each stream.

Could you please expand on the written assignments, presentations and mandatory classroom training? Are these tasks pre-determined or are they assigned in response to the project each trainee is working on?

Don't know the details of the specific assignments. They all have to write reports, which is broken down in the manual. E.g., within the PG they have 3 phases. There are specific assignments for each phase. For the assignment they write a 5 page report and make a presentation.

The division program manager takes over that part of the training. We get a message from the division saying that a member has completed the assignment, but they don't see the completed assignment.

Essentially each trainee gets the same package, they have to go to work with each division to get the experience. Per stream, they all have the same package.

Do you obtain feedback from trainees or mentors to identify changes for the program?

We do get feedback. For the overall program, we do get some requests. This is a responsibility of the DMs to provide feedback. The ENG and PGs are revising their manuals. So the PG will be significantly revamped. Want to include some functional competencies into their manual. Right now it is stock competencies. As a result of what is going on in procurement, they will change the competencies.

Some manuals have not be updated for many years. They have done some tweaking. They have a working group look at it. Want to use ENG as a feeder group for the materiel group.

Have you identified any areas of improvement for the program other than specific competencies?

Maybe the ODP manager could say more. Overall we haven't had any issues at least in the last 8 years. Less than handful of people have left the program. Overall very positive feedback. Some of the assignments have changed or may not be as effective, but minor changes.

Each year we have to face resourcing. But it isn't a problem with effectiveness, but a challenge.

Terry Graham, the ODP manager, has been approached about the officer development

program. Our framework has been sent to other organizations. It is effective because everyone is asked to play their role: trainer, trainee, DPMS, etc. It makes a big difference.

Trainees develop close relationships with trainers. We've had individuals with challenges that needed to be addressed.

Was your program based on another PD program or developed from scratch?

The first program (PG) was based on something, but not sure what.

Can you please describe the networking sessions? Are they held regularly? Who attends?

Originally we liked to have them annually. As the program dropped in numbers (hiring freeze) we didn't have them as often.

Once a year they are held with all of the streams together. This allows them to get to know all of the ODP streams.

One event was based on leadership and activities centred on leadership. We've added more questions in the guide on leadership. Just re-wrote the rating guide to This is the first year of trainees in EX-1 level.

Get feedback from trainees to understand what they want to know more about. ADM attended one and was quite happy with the feedback and discussion.

How many people are in the program?

Varies. Was over 100 people, at 40 during the freeze. At 75 now. Target for next year is 58. ENG might want ODP as feeder group, so this might increase.

34 new hires and 75 in the program.

If we start 58 next year, we'll have a lot of people.

What is FSWEPP?

Students that have done a co-op term in a government department (not just DND).

Federal Student Work Experience Program.

We have objectives to hire people who were part of the FSWEPP program. E.g., we had student who worked co-op with ADM and then we hired them after graduate. We already know them, so it is good.

Do these co-op students go through the generalized training from the ODP first year?

There is some very basic training that sometimes they have completed already. But the more specific training they will not have taken.

C.6 CFINTCOM

How many new hires does CFINTCOM have each year?

The numbers will vary. Right now it is focused on bringing in new hires. This year we are picking up 6. As we partner with other partners (e.g., CJOC) they might have requirements that get satisfied out of our pool.

As you expand to the other organization, will the PD program stay the same?

Yes it will stay the same. We are talking about developing individuals from EC02 to EC05. This will stay consistent across the organization. There will be some changes based lessons learned. The DRP PD program replicates the ADM POL's (policy group within DND) well-established PD program that has been running for 25 years (PORP). At the end of PORP they have a policy officer, we'll have an intelligence offer. PORP had a few years that they didn't run the program because they had enough staff.

You state that a lesson learnt is to “partner with an organization that has an approved PD program up and running”. Can you explain how you did this?

PORP. We had a requirement to train and develop individuals but our program wasn't blessed as a PD program yet. Can't train and develop without the PD designation. We partnered with PORP to select individuals from their pool. To date we've hired 9 individuals from the PORP pool. The entry requirements for PORP and DRP are the same. We treated this as a pilot for DRP.

Your program will go live in September? Are any lessons learned from these 9 individuals going to change DRP?

Already I've recognized a few things. For example, one of the rotational jobs is the work in CFINTCOM and one of the take aways is that I need to give better direction for hosting the individual within the first 3 months. Based on feedback from individuals in the first rotation, I've captured some lessons learned. I've put it in the form of a directive and given it to the host supervisor.

E.g., One person had an opportunity to work in the editorial shop. Based on his experience, I've moved around the schedule so that all new people do a tour in the editorial shop earlier than anticipated.

There have been no big changes, but a lot of refining and rescheduling.

How has the feedback been from the 9 individuals?

Very positive. For most of them this is their first real full-time job. They are happy to have gotten a job. Now they are working with experienced individuals. Positives about DRP: not many public servants got training and development when they started (mostly had sink or swim), trainees have a manager to work with, they get second language training, they automatically move from level to level without having to compete for the next level job.

Are assessments done annually?

Yes. Measures the development of the individual.

Based on this assessment, using this tool, do you see the program working?

Yes. I'm pretty biased in the sense that I developed it. PORP – I've seen the individuals produced under that program and I think we're proceeding along the same lines. All else being equal, it is working. I was an intelligence officer for 35 years and now we have the ability to train and develop civilian intelligence officers.

Any negative feedback/areas for improvement?

The first year we deployed trainees to ADM POL (9-12 months) because in CFINTCOM we can't employ them at the unclassified level (they require Top Secret SA). One of the improvements that will make it better is finding some means to bring them into CFINTCOM notwithstanding the security clearance so that we can have them there for 3 years.

At ADM POL they have full-time jobs and I can't pull them to give them basic foundation courses that will be required for later on. I am hopeful to change things to let them have meaningful employment at the unclassified level to get that training. Working at ADM POL isn't a waste of their time because they get exposure to DND/CAF. But they aren't in the CFINTCOM world.

No negative feedback so far. The candidates are on a high for being selected (it is a competitive process).

Are all of the 9 individuals still going through the program?

Yes. It is interesting to note that they are a public service employee on entrance and are at liberty to leave at any time for another job.

Any feedback from their mentors?

The only feedback is positive because some shops are under staffed and having any one in is a bonus. The trainees were selected from 800 applicants (12 selected) and they are getting the cream of the crop. Supervisors have been very positive in the feedback. They all want to keep them even though they are mandated to rotate.

Can you tell us about the professional development sessions?

He arranges the professional development sessions. They talk about stuff that isn't in formal courses or training but is required. He solicits ideas before the sessions, goes in to the sessions with a main topic, and they capture issues trainees might have. These sessions are not roundtables.

Topics have included:

- DND / CAF environment. The community that they are coming into.
- Military knowledge that they must have, based on military courses. E.g., requirement to know map symbols.
- Opportunities and different jobs in the command.

Ethics, specifically within intelligence community. What happens if you discover you carried home a secret document.

DOCUMENT CONTROL DATA

*Security markings for the title, authors, abstract and keywords must be entered when the document is sensitive

1. ORIGINATOR (Name and address of the organization preparing the document. A DRDC Centre sponsoring a contractor's report, or tasking agency, is entered in Section 8.) International Safety Research 38 Colonnade Road North Ottawa, Ontario Canada K2E 7J6		2a. SECURITY MARKING (Overall security marking of the document including special supplemental markings if applicable.) CAN UNCLASSIFIED
		2b. CONTROLLED GOODS NON-CONTROLLED GOODS DMC A
3. TITLE (The document title and sub-title as indicated on the title page.) Survey and Analysis of Operations Research and Analysis Scientists Recruitment and Retention		
4. AUTHORS (Last name, followed by initials – ranks, titles, etc., not to be used) Scipione, A.		
5. DATE OF PUBLICATION (Month and year of publication of document.) May 2018	6a. NO. OF PAGES (Total pages, including Annexes, excluding DCD, covering and verso pages.) 75	6b. NO. OF REFS (Total references cited.) 4
7. DOCUMENT CATEGORY (e.g., Scientific Report, Contract Report, Scientific Letter.) Contract Report		
8. SPONSORING CENTRE (The name and address of the department project office or laboratory sponsoring the research and development.) DRDC - Centre for Operational Research and Analysis Defence Research and Development Canada Carling Campus 60 Moodie Drive, building 7 Kanata ON K2H 8E9 Canada		
9a. PROJECT OR GRANT NO. (If appropriate, the applicable research and development project or grant number under which the document was written. Please specify whether project or grant.)	9b. CONTRACT NO. (If appropriate, the applicable number under which the document was written.) W7714-15-6105	
10a. DRDC PUBLICATION NUMBER (The official document number by which the document is identified by the originating activity. This number must be unique to this document.) DRDC-RDDC-2018-C140	10b. OTHER DOCUMENT NO(s). (Any other numbers which may be assigned this document either by the originator or by the sponsor.)	
11a. FUTURE DISTRIBUTION WITHIN CANADA (Approval for further dissemination of the document. Security classification must also be considered.) Public release		
11b. FUTURE DISTRIBUTION OUTSIDE CANADA (Approval for further dissemination of the document. Security classification must also be considered.)		

12. KEYWORDS, DESCRIPTORS or IDENTIFIERS (Use semi-colon as a delimiter.)

survey; DRDC CORA; recruitment; professional development; retention

13. ABSTRACT/RÉSUMÉ (When available in the document, the French version of the abstract must be included here.)

This document presents the Final Report for Task 48 “Task Survey and Analysis of Operations Research and Analysis Scientists Recruitment and Retention” for Defence Research and Development Canada’s (DRDC) Centre for Operational Research and Analysis (CORA). It was developed by ISR and C3 Human Factors Consulting Inc. (C3HF) as part of the larger CORA Task Authorization Contract (Contract #: W7714- 156105/001/SV).

Within the Public Service of Canada, a demographic transition is occurring as many current Public Servants of the ‘Baby Boomer’ generation are starting to retire from Government service. This has placed a significant priority on the hiring of younger employees. DRDC CORA is developing a program for the Professional Development of new Defence Scientists (DS) in order to expedite their effectiveness as Operational Research and Analysis (OR&A) scientists early in their careers. Therefore, the primary objective of this Task was to review Professional Development programs from similar organizations to identify best practices and lessons learned that should be considered during development of the DRDC CORA Professional Development plan. This information was captured through a survey, one-to-one interviews and a review of formal Professional Development Program documentation.

The organizations that participated in this project were identified as having a formal intake process for new recruits with similar educational requirements to those accepting positions at DRDC CORA. The organizations included: NATO Communications and Information Agency (NCIA), United States (US) Center for Army Analysis (CAA), United Kingdom (UK) Defence Science and Technology Laboratory (DSTL), US Department of Defense – North American Aerospace Defense Command (NORAD)/United States Northern Command (NORTHCOM), Department of National Defence (DND)/ADM (Mat) – Engineer in Training (EIT) Program, and DND/Canadian Forces Intelligence Command (CFINTCOM).

It was identified that only four organizations have implemented formal professional development programs (CAA, DSTL, DND/ADM (Mat) and CFINTCOM). The NCIA does not have a formal program, but has implemented informal activities to facilitate professional development amongst personnel. NORAD/NORTHCOM conducts minimal professional development activities, as a result of the type and number of personnel within the organization.

Although CAA, DND/ADM (Mat), CFINTCOM and DSTL all have program features that can provide guidance and input to DRDC CORA’s PD program, DND/ADM (Mat) and CFINTCOM have been identified as the most relevant and comparable programs for DRDC CORA.

DND/ADM (Mat) and CFINTCOM are Canadian programs that target new hires with similar educational requirements to that of DRDC CORA. The PD programs for these two organizations have aimed to develop knowledge, skills, abilities and competencies that are required of DRDC CORA personnel. The ENG and EG programs (DND/ADM (Mat)) have been established since 2002/2007 respectively, and CFINTCOM’s program, although newly implemented, replicates the PORP which has been implemented for over 25 years. The PD programs within DND/ADM

Le présent document présente le rapport final pour la tâche 48 « Sondage et analyse concernant le recrutement et le maintien en poste des scientifiques spécialisés en analyse et en recherche opérationnelle » pour le Centre d’analyse et de recherche opérationnelle (CARO) de Recherche et développement pour la défense Canada (RDDC). Il a été élaboré par ISR et C3 Human Factors Consulting Inc. C3HF dans le cadre du contrat plus vaste avec autorisations de tâches du CARO (Numéro de contrat : W7714- 156105/001/SV).

Nous connaissons à l’heure actuelle une transition sur le plan démographique au sein de la fonction publique du Canada puisque de nombreux fonctionnaires de la génération des baby-boomers commencent à prendre leur retraite. Cette situation a fait en sorte que l’embauche d’employés plus jeunes est devenue prioritaire. Le RDDC CARO a élaboré un programme

visant à favoriser le perfectionnement professionnel des nouveaux scientifiques de la Défense (DS) afin d'accélérer leur efficacité à titre de scientifiques spécialisés en analyse et en recherche opérationnelle tôt dans leur carrière. Le principal objectif de cette tâche était donc d'examiner les programmes de perfectionnement professionnels d'organisations semblables afin de connaître les pratiques exemplaires et les leçons retenues dont on devrait tenir compte dans le cadre de l'élaboration du plan de perfectionnement professionnel de RDDC CARO. Les informations ont été recueillies au moyen d'un sondage, d'entrevues individuelles et d'un examen des documents officiels liés au Programme de perfectionnement professionnel.

Les organisations qui ont pris part au projet ont été identifiées comme ayant un processus formel d'accueil pour les nouvelles recrues devant répondre à des exigences semblables en matière d'études que celles qui occupent un poste au sein du RDDC CARO. Parmi ces organisations figurant l'Agence OTAN d'information et de communication (NCIA), le Center for Army Analysis (CAA) des États-Unis, le Defence Science and Technology Laboratory (DSTL) du Royaume-Uni, le département de la Défense des États-Unis – Commandement de la défense aérospatiale de l'Amérique du Nord (NORAD)/Commandement de l'Amérique du Nord (USNORTHCOM), le ministère de la Défense nationale/SMA(Mat) – Programme d'ingénieur stagiaire, et le Commandement du renseignement des Forces canadiennes (COMRENSFC) du ministère de la Défense nationale.

Il a été déterminé que parmi ces organisations, seulement quatre d'entre elles avaient mis en œuvre un programme de perfectionnement professionnel officiel, soit le CAA, le DSTL, le SMA(Mat) et le COMRENSFC. Bien que le NCIA n'ait pas de programme officiel, il a mis en place des activités informelles pour faciliter le perfectionnement professionnel au sein de son personnel. Le NORAD et le NORTHCOM ont, quant à eux, très peu d'activités de perfectionnement professionnel en raison du type et du nombre d'employés au sein de leur organisation.

Bien que le CAA, le SMA(Mat) du MDN, le COMRENSFC et le DSTL aient tous des éléments dans leur programme qui peuvent orienter le programme de perfectionnement professionnel du RDDC CARO, on a déterminé que le SMA(Mat) et le COMRENSFC avaient des programmes plus pertinents et plus comparables pour le RDDC CARO.

Les programmes du SMA(Mat) pour les groupes ENG et EG sont en place depuis 2002 et 2007 respectivement. Le programme du COMRENSFC, qui vient tout juste d'être mis en place, reproduit quant à lui le PRAP qui existe depuis plus de 25 ans. Les programmes de perfectionnement professionnel au sein du SMA(Mat) du MDN et le PRAP ont démontré leur efficacité dans le perfectionnement du personnel de qualité.