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EVALUATION OF DND/CF AMMUNITION SAFETY PROGRAM

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SYNOPSIS

This report presents the results of an evaluation of ammunition safety management and regulation in the DND/CF. Ammunition is a vital, but extremely hazardous, military commodity; its very nature requires that there be a robust regulatory framework for safety. The inherent dangers are underlined by the fact that, over the past 20 years, there have been 22 fatalities and, about 550 injuries in the DND/CF, due to accidents involving ammunition. Most of the fatalities occurred as a result of training exercises, storage and handling. The numbers do not imply a track record of negligence, and cannot readily be compared with accident data from other militaries due to availability and composition of data. The data are cited by this evaluation to underscore the importance of safety. They suggest that the organization must strive to meet high standards in terms of accident prevention. The risks of doing otherwise are unacceptable.*

Due to its unique operational mandate, the DND/CF is the only organization excluded from regulation under the Explosives Act. This places onus on the DND/CF to establish its own regulatory and safety measures for ammunition. In this respect, the Chief Review Services (CRS) has concluded that certain essential elements of a sound regulatory regime and corporate safety program are either missing or require significant improvement. In our view, regulatory oversight is not currently sufficient to assure that ammunition activities are being conducted safely. Adequate regulatory oversight and safety programs are required to minimize the risk of injury to persons or damage to property and to reduce exposure to legal liability.

Evaluation Recommendations: *The evaluation recommendations are provided to strengthen ammunition safety in the DND/CF and include:*

- *Establishment of an ammunition safety regime based on recognized regulatory principles, including the creation of an independent regulator at the corporate level (as exists for other DND specialized safety programs, such as nuclear safety);*
- *Updating, clarifying, and promulgating ammunition safety policies, standards, and procedures and related documentation; and*
- *Measures to increase the visibility of, and responsiveness to, potential ammunition safety hazards through improved information for decision-making, communications, and risk management.*

It is further recommended that action to address program gaps consider lessons learned and opportunities for synergy with other DND/CF safety programs.

Management Action: *The Vice Chief of the Defence Staff (VCDS) has established a task team to develop a corporate response to the evaluation recommendations and findings. This task team is defining the responsibilities for a regulatory body, and will provide options to the VCDS for consideration and presentation to the Defence Management Committee. It is expected that this regulatory body would then be positioned to address the other recommendations of the evaluation.*

** Figures provided by ADM(MAT) and Director Flight Safety (DFS), at January 2004. Annex B provides additional data/information.*



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RESULTS IN BRIEF

Introduction

1. The approved Chief Review Services Work Plan 2001/02 provides for an independent evaluation study of the DND/CF ammunition program. This report presents the study results for ammunition safety. The primary focus of this report is the management and regulatory framework for ammunition safety. For the purpose of this study, the term ‘ammunition safety’ encompasses all existing and potential aspects of ammunition and explosives safety management and regulation over the entire ammunition life cycle. The study was performed by evaluation staff given the magnitude of the program, its pertinence to operations, and the complexity of arrangements with suppliers.

Context

2. Ammunition includes small arms ammunition, missiles, torpedoes, sonobuoys, explosive devices, and pyrotechnics. DND/CF ammunition inventories are valued at approximately \$3.2 billion and are held in centres across Canada and in theatres of operation. Ammunition is made to cause destruction or cause some violent effect. Accordingly, there is the potential for catastrophic consequences if someone makes a mistake. Accidents involving ammunition “have an exceptionally high potential to incur serious bodily harm or damage and loss of materiel and facilities.” (*DND Explosives Safety Program Manual*) Also potentially at stake are defence capability, reputation, morale, and legal liability.

3. Due to its inherent dangers, ammunition is a controlled substance that is regulated across different levels of government. The DND/CF is the sole entity with an exclusion under the *Explosives Act*. As such, ammunition under the control of the Minister of National Defence is exempt from external regulation. This exclusion places the onus on the DND/CF to ensure that its ammunition activities are conducted safely and that measures are in place to protect the public, DND/CF personnel, allies, and property from associated hazards. It is assumed that the DND/CF, like external health and safety regulators, has a ‘duty of care’ in exercising its regulatory oversight responsibilities. Furthermore, the bar is rising in terms of what the public and the courts consider to be a reasonable duty of care. In a 2000 study of federal health and safety regulatory agencies, the Office of the Auditor General (OAG) makes the following observations.

“Since 1990 the courts have held that regulatory authorities have a ‘duty of care’ and that a high standard of care is necessary to fulfill this duty. As a result, authorities are more exposed to claims of regulatory negligence. Further, if an authority’s inspection and enforcement program is not credible, the authority may be found liable for failing to meet its enforcement responsibilities where damage arises as a result of its omissions.” (OAG, Chapter 24, Federal Health and Safety Programs, Paragraph 24.57)



4. Health and safety programs are built on the premise that accidents are preventable. Programs aim to take proactive action to identify and prevent problems before they happen or, if a problem occurs, to minimize the consequences. Within the DND/CF, ammunition safety is one of a number of specialized safety disciplines (e.g., General Safety, Nuclear Safety, Flight Safety). Roles and responsibilities for various aspects of ammunition safety are distributed throughout the DND/CF, with corporate responsibility residing in the Materiel Branch.

Overall Findings and Conclusions

5. DND/CF's regulatory exclusion under the *Explosives Act* combined with the inherent danger of ammunition, its pervasiveness across DND/CF, interoperability with allies, and rising expectations in terms of due diligence, all reinforce the need for a fully credible ammunition safety program and regulatory regime in the DND/CF.

6. This study concludes that some of the essential elements of a sound regulatory regime and corporate safety program are either missing or require significant improvement in the case of ammunition safety. There is currently insufficient regulatory oversight to provide assurance that ammunition activities under the control of the Minister of National Defence are being conducted safely. The following summarizes key areas of concern.

7. **Regulatory Framework.** An appropriate regulatory policy framework, regulatory authority, and organization are not in place for ammunition safety. These weaknesses result in insufficient regulatory oversight and are barriers to visible and proactive corporate leadership in the area of ammunition safety. The following summarizes some of the areas requiring improvement:

- There is a need to establish a clear policy and accountability framework that governs ammunition safety management and regulation. DND/CF obligations arising from its Ministerial exclusion under the *Explosives Act* and the associated delegation of authority within the Department are not sufficiently defined and documented. This contributes to ambiguity around the roles, responsibilities, and authority of various departmental entities in the area of ammunition safety. For example, there are differences of opinion as to which departmental official is or should be the corporate regulatory authority for ammunition safety. Additionally, the role of Assistant Deputy Minister (Materiel) (ADM(Mat)) as the 'executive authority' for ammunition safety is not clear. There is also insufficient clarity as to the respective roles and authority of the corporate ammunition safety group, Environmental Chief of Staff (ECSs), and other Level 1 organizations that undertake ammunition activities.
- The organization structure does not provide the independence, objectivity, and visibility expected of a corporate oversight function. Regulatory oversight activities are distributed across a directorate in the Materiel Branch and are interspersed with operational activities which are themselves subject to regulation (e.g., ammunition storage, procurement, engineering design). This places corporate ammunition safety personnel in actual and apparent conflicts of



interest. Also, relative to other DND/CF safety programs and those in allied organizations, the ammunition safety regulatory function is buried deep in the chain of command (see Annex A). The current organization structure reduces the ability and incentive of regulatory personnel to advise DND/CF senior leadership on the state of ammunition safety. Further, the organization does not distinguish between the safety activities of a corporate regulator and those required to support the Materiel Branch. As a result, the oversight of ammunition safety from a corporate perspective is not receiving sufficient attention.

- Action needs to be taken to ensure that the scope of the regulatory program is sufficiently comprehensive and commensurate with the DND/CF's broad exclusion under the *Explosives Act*.

8. **Policies & Standards.** Clear, current, comprehensive, and documented policies, standards, instructions, and technical orders are important elements to ensuring the safe conduct of ammunition activities and in demonstrating due diligence. There are examples where key publications governing ammunition safety in DND/CF are outdated, incomplete, or missing. Also, there are indications of noncompliance with those requirements that are defined. The following are examples of some of the observations in this area:

- There is a need for a comprehensive and up-to-date cornerstone document that provides an overview of the ammunition safety program, policies, program elements, and roles and responsibilities. Existing publications, such as the *Explosives Safety Program Manual*, have not been updated in a decade or more, even though ammunition safety has been subject to a succession of reorganizations and new regulatory processes have been introduced (e.g., Safety and Suitability for Service (S3), environmental protection related to ammunition). Omissions in this area contribute to the current ambiguity around roles and responsibilities and the scope of the regulatory mandate.
- DND/CF senior leadership decided that, commencing in 1995, all ammunition should be subject to formal S3 certification in order to ensure that ammunition that is brought into service is and remains safe and suitable for service. This was consistent with procedures already in place in major allied nations. Progress has been made in implementing an S3 process (e.g., establishment of Ammunition Safety and Suitability Board (ASSB), conduct of S3 reviews). However, S3 policies, procedures, responsibilities, and authorities have yet to be published and promulgated. This has contributed to insufficient clarity and visibility of S3 requirements amongst stakeholders. For example, some ammunition acquisition project teams continue to claim that they are not aware of their responsibilities under S3. As a result, there are instances where project plans did not provide for the time and resources required for S3 testing and certification. This, in turn, has led to project delays and cost overruns to subsequently undertake S3 certification or to the acquisition of ammunition that has not received DND/CF S3 certification. The absence of sufficiently detailed and documented S3 policies and procedures also contributes to ambiguity around the role and authority of the ASSB and other stakeholders.



- Technical orders, which support the safe in-service use of ammunition, should be published for every item of ammunition that is in service. Technical information has not always been developed and available when ammunition was introduced. Also, users of technical information commented that the publications vary widely in terms of quality and completeness.
- The recent release of a revised *Explosives Safety Manual Volume 3 – Ships* was considered by users to be long overdue, however, this is a positive step.

9. **Program Management.** Ammunition safety is not defined or managed as a cohesive program. For example, program objectives, business plans, and resources have not been established for the ammunition safety program. This is inhibiting a strategic and results-oriented approach to ammunition safety. It also makes it difficult to justify and manage resources and to measure program effectiveness.

10. **Information for Decision-making.** Good data and analysis are needed to identify safety problems, understand risk exposure, and make informed program decisions to minimize risks. The information needed to manage and regulate ammunition safety in the DND/CF is not being developed and provided to those who need to know. For example, ammunition incidents and accidents and other indicators of safety are not being sufficiently tracked and analyzed. Therefore, information on ammunition safety trends, root causes, and lessons learned are not available. Management reports pertaining to ammunition safety have not been prepared and issued since 1995. When reports were prepared, they were limited in scope and did not include trends and analysis. Therefore, DND/CF leadership and other stakeholders have not been kept informed on the state of ammunition safety. Also, this is contrary to DND Explosives Safety Program policies which call for the collection and review of safety data and regular reporting to senior management "...with meaningful information to identify the need for and priorities of safety efforts..." Furthermore, stakeholders at all levels of DND/CF have identified a need and desire for ammunition safety information.

"Throughout my career I have always understood my legal and moral responsibilities for the health and safety of other people under my command. However, the further I have become from the tactical level of command the less our safety programs have figured in the decisions I have had to make. This is a function of the lack of useful, relevant information they provided to higher commanders, not a lack of interest on my part." (DND/CF Executive)

"I used to look forward to getting the annual ammunition accident and incident report. I would read it from beginning to end and use it to develop my explosives safety courses, but I haven't seen a report in years." (DND/CF ammunition safety trainer)

"We do not really understand where problems are and therefore cannot gear our efforts accordingly." (DND/CF Ammunition Technical Officer)

There is a need to take action to improve ammunition safety information collection, analysis, and dissemination.



11. **Risk Management.** Trends in regulatory management suggest a risk-based approach to safety regulation and management. A risk-based approach aims to improve program results by better directing safety efforts and resources and clarifying accountability for risk decisions. It involves a systematic approach for identifying, assessing, prioritizing, monitoring, and responding to safety issues. Weaknesses in DND/CF ammunition safety information collection and analysis are barriers to risk-based safety management. There is also a need to strengthen the capability and procedures for performing risk assessments. Furthermore, a governance framework is required for prioritizing ammunition safety issues, assigning responsibility for identified risks, and ensuring that risk decisions are made by the appropriate departmental authority.
12. **Program Instruments and Alternatives.** There appears to be over reliance on a limited range of program instruments (i.e., licensing, compliance inspections) at the expense of other program alternatives (e.g., advocacy, mentoring, incentive and recognition programs). While inspections should remain a core activity of any regulatory program, improved ammunition safety program effectiveness and efficiency may be realized through consideration and use of a wider range of program instruments. Also, opportunities should be explored to increase use of *e*-solutions in program delivery.
13. **Communications.** There is no overarching communications strategy or plan for ammunition safety and communication was identified by program stakeholders as an area requiring improvement. A good communications program is considered by safety experts to be a key element in realizing a strong safety culture. Also, best practices and government regulatory policies call for on-going consultation between regulators and their constituents. A process has not been established to facilitate dialogue and information exchange between the corporate ammunition safety group and program stakeholders. The absence of such a forum was consistently identified by interviewees to be an important program gap and source of dissatisfaction among ammunition safety staff.
14. **People.** The safe procurement, handling, maintenance, use, and regulation of ammunition are dependent on the skills and attitudes of a large number of personnel in DND/CF. Interviewees identified human resource issues that have potential implications for ammunition safety and which require further investigation. Issues include the:
- Adequacy of skills of individuals performing, managing, and regulating ammunition activities;
 - Sufficiency of training, including on-going refresher training;
 - Appropriateness of competency profiles and terms of reference for key ammunition related positions and mechanisms for ensuring that incumbents meet these profiles; and
 - Erosion of ammunition safety skills due to factors such as downsizing, trade amalgamation, and demographics.
15. DND/CF ammunition safety program weaknesses, if left unattended, have the potential to lead to reduced safety and increased exposure to legal liability.



Suggested Way Ahead

16. Key study recommendations include:

— **Establishment of a DND/CF ammunition safety regime founded on regulatory principles.** This should include:

- Creation of an independent corporate regulatory organization with a clear program mandate, business plan, and control of resources;
- Development of policies which clarify DND/CF ammunition safety regulatory requirements and objectives; and
- Determination of the respective roles and authority of the corporate regulator, ECSs, and other Level 1 organizations with ammunition activities.

These measures aim to improve program performance and due diligence through a more strategic, coherent, and focused approach to ammunition safety management and regulation.

— **Development and dissemination of information for decision-making.** This should include:

- Measures to encourage complete and timely reporting of ammunition incidents and accidents from the field;
- Improvements in data collection and analysis; and
- Establishment of a system of management reporting to senior leadership and other stakeholders on ammunition safety performance.

These measures should improve the detection, understanding, and awareness of ammunition safety hazards and the responsiveness to identified risks. This should also increase transparency in ammunition safety regulation.

— **Establishment of a risk-management framework for ammunition safety.** The intent is to establish procedures and capability to ensure that ammunition safety risks are understood and the consequences of decisions are apparent. This should also ensure that risk decisions are made by the appropriate departmental authority and that the ‘right’ level of effort is directed to the ‘right’ safety issues.

— **Conduct of a comprehensive review of ammunition safety policies and standards and associated publications and establishment of a process to ensure their on-going appropriateness.** This should include identifying deficiencies in ammunition policies and standards and associated publications and taking action to develop, improve, update, or rescind publications where appropriate. There is also a need to establish a clear hierarchy of publications for ammunition safety so that it is apparent whether the publication is mandatory or guidance. Improvements in this area should contribute to increased ammunition safety awareness and compliance.



- **Development and implementation of an ammunition safety communications strategy and action plan.** This should include:
 - Increased communications leadership from the corporate regulator;
 - Clarification of corporate and Level 1 responsibilities for communications; and
 - Establishment of a consultation process to promote dialogue and information sharing across the DND/CF ammunition community.

17. It is suggested that action to address program weaknesses consider lessons learned from other DND/CF safety programs and from external ammunition safety programs. Also, opportunities should be explored to realize synergy with other DND/CF safety programs.

18. Establishment of a sound regulatory and management framework for ammunition safety is an important first step in addressing the study recommendations. This issue is largely corporate in nature and crosses multiple Level 1 organizations. It is therefore recommended that the Vice Chief of the Defence Staff (VCDS) be the Office of Primary Interest (OPI) to develop a management action plan for the regulatory framework. A possible approach for initiating the development work in response to this recommendation is the establishment of a task team, under the strategic guidance of the VCDS, and comprised of representatives from DND/CF stakeholder organizations. The team would consider and report on alternative regulatory models for DND/CF ammunition safety and recommend a proposed course of action for Defence Management Committee (DMC) approval. As part of its work, the task team would also identify the appropriate OPI, within the proposed ammunition safety regulatory and management framework, to address the remaining study recommendations.

Management Action Plan

19. The VCDS has taken the lead to establish a task team to develop a corporate response to the findings and recommendations of the CRS review. The team includes representatives from all stakeholder organizations. As its first task, the team is working to clearly define the responsibilities for a regulatory body. Once the responsibilities have been identified, the team will develop options for the body itself to include resources required and reporting within the department. The responsibilities and options will be provided to the VCDS for consideration. Given the impact of ammunition safety within DND DMC will be consulted. The preliminary assessment of the team is that the regulatory body would be empowered to implement other CRS study recommendations.



STUDY APPROACH

Purpose of Study

- To assess the adequacy of ammunition safety efforts in DND/CF
- To provide information and recommendations to support management decisions on the program

Study Scope

- For the purpose of this study, the term ‘ammunition safety’ encompasses all existing and potential aspects of ammunition and explosives safety management and regulation over the entire ammunition life cycle
- Primary focus is the management and regulatory framework for ammunition safety
- Ammunition security and environmental protection issues are considered only to a limited extent due to recent OAG and CRS studies in these areas

Related Studies

- CRS Review of DND Ammunition Program (1994) examined ammunition safety only to a limited extent
- CRS Evaluation of the DND General Safety Program (2003)
- CRS Audit of the Security of Sensitive Inventories (2003)
- The OAG makes observations regarding federal health and safety programs (*Chapters 24-28, December 2000*) and for ammunition safety in particular in the following reports:
 - *National Defence – Hazardous Materials: Managing Risks to Employees and the Environment, Chapter 13, September 1999*
 - *National Defence – Environmental Stewardship of Training and Test Areas, Chapter 7, April 2003*



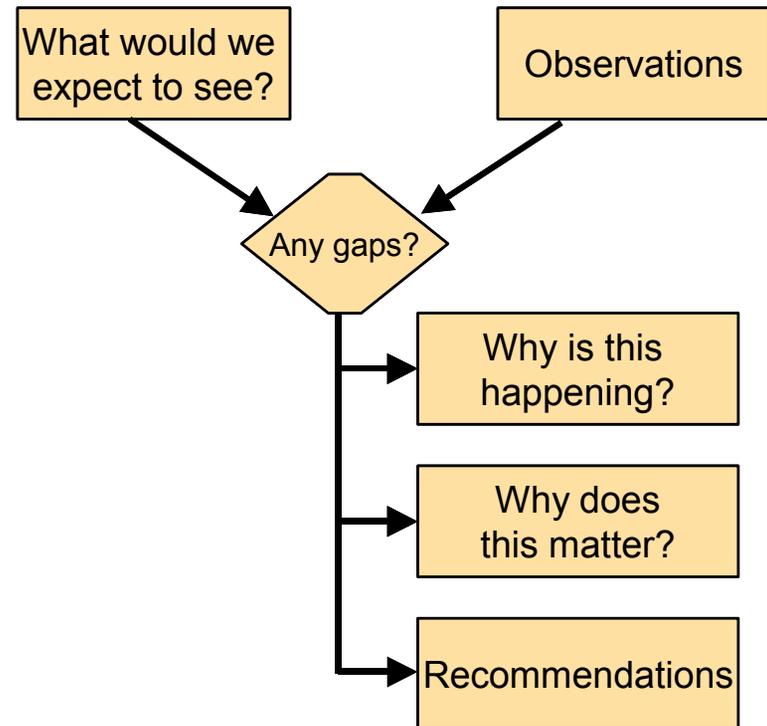
STUDY APPROACH (cont'd)

Study Design and Data Collection

Study Methodology

- Directed interviews
 - Internal & external to DND/CF
- Literature and document reviews
 - Policies
 - Reports
 - Web sites
- Benchmarking / comparative analysis
 - Other DND/CF safety programs
 - External regulatory programs
 - Ammunition safety programs in other defence organizations
 - Consultants / academia

Analytical Framework



PROGRAM PROFILE

GOVERNMENT REGULATION OF AMMUNITION

- Due to its inherent dangers, ammunition is a controlled substance that is regulated across different levels of government
 - Natural Resources Canada (NRCan) administers the *Explosives Act* and is the regulatory authority overseeing the safety of the public and individuals working with explosives
 - Transport Canada administers the *Transportation of Dangerous Goods Act* and is the regulatory authority for promoting the safe movement of hazardous goods
 - Provinces and municipalities have regulations governing the use of explosives
- Explosives under the control of the Minister of National Defence are excluded from prevailing legislation and regulation
 - DND/CF is the only entity with an exclusion under the *Explosives Act* and its exclusion is broadly based
 - Regulatory exclusions allow DND/CF to fulfill its unique operational mandate
- The onus is on DND/CF to regulate its own ammunition activities in order to protect the public, DND/CF personnel, allies, and property from the hazards of ammunition
- The purpose of health and safety programs is to proactively protect people and property by reducing or eliminating the risks of accidents
 - Identify and prevent problems before they happen
 - If a problem occurs, minimize the consequence



PROGRAM PROFILE (cont'd)

AMMUNITION SAFETY IN DND/CF

- Ammunition safety is one of a number of specialized safety disciplines in DND/CF
 - DND/CF safety programs include General Safety, Nuclear Safety, Flight Safety, Diving Safety, and Fire Safety, amongst others
 - Each program has its own terms of reference, organization, constituents, and responsibility authority
- A distinct explosives safety program was introduced in DND/CF in the late 1970's
 - The intent was to take positive steps to ensure the effectiveness of explosives safety in DND/CF
 - This included:
 - Increasing program visibility and attention to ammunition safety
 - Ensuring that the program receives the necessary emphasis and resource allocation
 - Promoting explosives safety consciousness
 - The program was not intended to distract from the various safety activities that were already an inherent part of DND/CF activities involving explosives (e.g., safety checks established in ammunition user drills, measures to promote the safe use, handling, maintenance, transportation, and storage of ammunition)
- Benefits of increased program effectiveness were seen to include:
 - Operational effectiveness
 - Reduced losses (personnel, materiel, property)
 - Lower overall operating costs
 - Confidence in the safety and reliability of military explosives
 - Public credibility



PROGRAM PROFILE (cont'd)

AMMUNITION SAFETY IN DND/CF (cont'd)

- Responsibilities for ammunition safety are and always have been widely distributed across the DND/CF
 - Various Level 1 organizations have responsibilities for aspects of ammunition safety by virtue of their responsibility for designing, acquiring, storing, maintaining, transporting, disposing, and using ammunition
 - Responsibilities include establishing policies, procedures, and controls to ensure the safe conduct of ammunition activities within their respective organizations
 - Similarly, in the regions, commands, formations, units, bases, and individuals all have responsibilities for ensuring that ammunition activities are conducted safely within their domain
 - Elements of ammunition safety also fall under other DND/CF safety programs (e.g., Flight Safety/Air Weapons Program, Range Safety)
- Corporate responsibility for ammunition safety resides within the Materiel Branch
 - The ADM(Mat), is responsible for the overall logistical management of ammunition
 - This includes procurement, engineering, inventory management, storage, as well as safety
 - ADM(Mat) is identified as the ‘executive authority’ and is responsible for development and implementation of the ‘DND Explosives Safety Program’
 - Under ADM(Mat), the Director Ammunition Program Management (DAPM) organization is a focal point for ammunition safety and serves as the Department’s de facto regulator for ammunition safety
- Ammunition safety activities include:
 - Development of standards and policies
 - Licensing
 - Monitoring of safety training programs
 - Compliance inspection
 - Promotion
 - Technical assistance
 - Safety and suitability for service (S3) assessments through the Ammunition Safety and Suitability Board (ASSB)
 - Data collection and analysis
 - Recommending action to address safety issues



PROGRAM PROFILE (cont'd)

AMMUNITION SAFETY IN DND/CF (cont'd)

- Ammunition safety is organized based on a ‘functional model’ (similar to the DND General Safety program)
 - A mixture of line and functional responsibilities for ammunition safety are distributed across DND/CF at the corporate, Level 1, command, formation, base, and unit levels
 - The program is based on the principle that ammunition safety is everyone’s responsibility
 - At the same time, early ammunition safety program documentation acknowledged that “...the assignment of responsibility must be clear for all activities that directly or indirectly impact explosives safety” (*Canadian Forces Explosives Safety*)
 - Ammunition safety expertise is found at each organization level
 - Corporate, ECS/Level 1, formation, base, unit level, etc.
 - Corporate ammunition safety activities are distributed across a directorate in the Materiel Branch that has largely operational activities (e.g., ammunition acquisition, storage, life cycle management)
 - This is in contrast with other DND/CF safety programs, such as Nuclear Safety, Flight Safety, and General Safety, which have standalone organizations

- The corporate ammunition safety function has been subject to a number of organizational transformations since its inception
 - Reorganizations, for the most part, have been part of larger downsizing and re-engineering initiatives
 - In recent years, other DND/CF safety programs have undergone change in response to internal and external pressures to improve program performance and to meet current standards of due diligence, e.g.,
 - DND Nuclear Safety Program underwent major changes in order to improve the program and retain DND/CF regulatory exclusion with the introduction of the *Nuclear Safety and Control Act* in 2000
 - DND General Safety Program was strengthened in response to changes in the *Canada Labour Code* in 2000
 - Flight Safety in DND/CF has implemented a number of improvements over the years in response to revisions to the *Aeronautics Act* and to internal pressure to improve safety performance



PROGRAM PROFILE (cont'd)

PROGRAM RELEVANCE

- Ammunition mishaps have the potential for disastrous consequences
 - Even small amounts of ammunition can result in serious injuries and fatalities
 - Major ammunition accidents in other parts of the world are a reminder of the destruction that can be caused by improper handling of ammunition (e.g., Iraq, Afghanistan, Peru, Nigeria)
 - Accidents causing injuries and loss of or damage to property continue to occur in DND/CF
 - Also, incidents continue to occur – incidents which potentially could have been accidents
 - DND/CF has experienced 22 accidental fatalities and 548 injuries due to ammunition accidents in the last 20 years
 - Annex B summarizes reported incidents and accidents in DND/CF in recent years

- The bar is rising in terms of expectations for due diligence by the public and courts
 - There is greater public scrutiny and reduced tolerance of avoidable accidents
 - Recent events have heightened public awareness of government regulatory responsibilities
 - (e.g., SARS, Walkerton, tainted blood)
 - Governments also face an increasingly litigious society



PROGRAM PROFILE (cont'd)

PROGRAM RELEVANCE (cont'd)

- Regulators have a ‘duty of care’ in exercising their regulatory responsibilities
 - It is assumed that DND/CF, like other organizations with regulatory responsibilities, must also exercise, and be seen to be exercising, a reasonable duty of care in safeguarding the public, personnel, allies, and property from the hazards of ammunition
 - In a 2000 study of Federal health and safety regulatory agencies the OAG makes observations regarding the need for regulators to exercise a reasonable duty of care

“Since 1990 the courts have held that regulatory authorities have a ‘duty of care’ and that a high standard of care is necessary to fulfill this duty. As a result, authorities are more exposed to claims for regulatory negligence. Further, if an authority’s inspection and enforcement program is not credible, the authority may be found liable for failing to meet its enforcement responsibilities where damage arises as a result of its omissions.” (OAG, Chapter 24, Federal Health and Safety Programs, Paragraph 24.57)

Conclusion

The potential for significant harm, combined with increasing expectations for due diligence on the part of the public and courts, underscore the continued need and relevance of a credible and robust ammunition safety program and regulatory regime in DND/CF.



DETAILED FINDINGS & RECOMMENDATIONS

- This study concludes that DND/CF needs to establish an appropriate regulatory framework for ammunition safety and to address weaknesses across the spectrum of ammunition safety activities
- Study findings and recommendations are grouped under the following themes:
 1. Regulatory framework
 2. Policies and standards
 3. Program management
 4. Information for decision-making
 5. Risk management
 6. Program instruments & alternatives
 7. Communications
 8. People
- Details of study recommendations are provided on pages 29-32



THEME 1. REGULATORY FRAMEWORK

Evaluation Issues

- Has DND/CF established a credible and coherent regulatory framework for ammunition safety?
 - Is the regulatory framework based on sound regulatory principles, including independence, objectivity, and visibility?
 - Are roles and responsibilities clear, understood, and accepted by all stakeholders?
 - Does the regulator have sufficient authority and resources to exercise its mandate?

Conclusion

Changes are needed to the DND/CF ammunition regulatory framework in order to improve program delivery and to demonstrate regulatory due diligence. This includes changes that will increase regulatory independence and objectivity – regulatory principles which were observed in other DND/CF safety programs and in ammunition safety regulatory organizations in our allies.



THEME 1. REGULATORY FRAMEWORK (cont'd)

Key Finding: DND/CF regulatory framework for ammunition safety is not adequate and compares unfavorably with other DND/CF and external safety programs

What would we expect to see?

- A credible and coherent ammunition safety regulatory regime
- Organization based on regulatory principles including independence and objectivity (Listed on page 28)
- Ammunition safety roles and responsibilities for all positions at all levels are clear, understood, and accepted
- Regulation covers entire spectrum of ammunition activities, since accidents can result from deficiencies at any stage of ammunition life cycle

Observations

- The regulator and its mandate and authority are not sufficiently clear or documented
- Uncertainty as to which position in chain of command is vested as regulatory authority
- Corporate regulatory responsibilities are organizationally dispersed and buried deep in chain of command resulting in insufficient regulatory independence, objectivity, visibility and access to DND/CF leadership (See organization chart in Annex A)
- Insufficient delineation between the corporate regulatory role and Level 1 line responsibility for ammunition safety within the Materiel Branch contributes to role confusion and insufficient corporate oversight of ammunition activities across DND/CF
- A comprehensive regulatory mandate is not being delivered (e.g., key regulatory functions such as information analysis, management reporting, advocacy are insufficient)
- Regulator is not overseeing all pertinent ammunition safety areas and issues

Why is this happening?

- Regulatory function diluted over years of downsizing and restructuring
- Publications do not clearly define roles and authorities and they have not kept pace with organizational change
- Insufficient management attention and regulatory experience
- Regulatory mandate and available resources do not appear to be aligned

Why does this matter?

- Exclusion under *Explosives Act* obliges DND/CF to regulate its own ammunition activities
- Potential hazards make a strong prevention effort paramount
- Regulatory organization principles are indicators of the credibility and effectiveness of regulator
- An independent and cohesive regulatory organization and mandate should provide for a more strategic, focused, and effective ammunition safety effort
- Legal liability may be an issue if DND/CF is not seen to be exercising regulatory due diligence

Recommendations

- Develop a coherent regulatory framework for ammunition safety founded on regulatory principles
- Includes creation of an independent corporate regulator
 - Clarifies and documents roles and responsibilities
 - Establishes regulator as a direct report to L1



THEME 2. POLICIES & STANDARDS

Evaluation Issues

- Are means in place to ensure ammunition safety policies and standards are appropriate and that there is compliance?
 - Are mechanisms in place to ensure that ammunition safety policies and standards are and remain current (e.g., appropriateness compared to domestic and international standards and in view of DND/CF operating environment)?
 - Are program policies, standards, and procedures clearly documented, communicated, and understood by stakeholders?
 - Is there a forum for consultation with stakeholders impacted by policies and regulations?

Conclusion

Incomplete and out-dated policy and guidance documentation has the potential to reduce ammunition safety, delay defence acquisition projects, and increase the risk of legal liability.



THEME 2. POLICIES & STANDARDS (cont'd)

Key Finding: Key policy and guidance publications defining ammunition safety responsibilities, policies, standards, and procedures are outdated, incomplete, or do not exist and there are indications of non-compliance

What would we expect to see?

- Policies and regulations that are clearly articulated, current, documented, communicated, and understood by stakeholders
- Mechanisms to ensure that policies and standards are and remain appropriate (e.g., in view of equivalent civilian standards and, where appropriate, international standards)
- Standards reflect DND/CF operating environment
- Procedures to facilitate consultation with stakeholders impacted by policies and regulations
- Procedures to ensure compliance with policies

Observations

- Policy and legal framework for ammunition safety, including obligations arising from DND/CF exclusion under the *Explosives Act* and the delegation of authority, are not sufficiently defined
- Not clear as to which publications constitute directives (are mandatory) and which are guidance
- Key publications have not been updated despite changes in internal and external environments
- While some sections are outdated, basic principles in DND Explosives Safety Program Manual are generally sound, but are not all being observed
- A process for the review of existing and proposed safety policies, including a process for consultation with internal stakeholders, was not observed
- Policies and documentation are geared to ammunition storage safety and are not sufficiently developed and documented for other ammunition activities (e.g., safety and suitability for service (S3))
- There are challenges complying with ammunition safety standards during deployed operations
- DAOD for DND/CF Nuclear Safety provides a good working example of a regulatory policy document

Why is this happening?

- Availability of resources
- Not a sufficiently high priority

Why does this matter?

- Difficult to realize desired behaviour and state of safety if policies and procedures are not clear, documented, and up-to-date
- Liability may be an issue where up-to-date and well articulated compliance policies are not maintained and followed
- Insufficient understanding or failure to comply with policies (e.g., S3) may delay acquisition projects or result in acquisition of ammunition that is not (or is not deemed to be) safe by DND/CF standards

Recommendations

- Conduct a comprehensive review of existing ammunition safety policies and standards and associated documentation and take corrective action
- Establish a process for the development and on-going review of ammunition safety policies and standards, including a consultation process with stakeholders



THEME 3. PROGRAM MANAGEMENT

Evaluation Issues

- Does the program have clear and identifiable objectives?
- Is business planning undertaken as a basis for determining program direction, plans, and priorities and for justifying resources?
- Does the program have an identifiable resource allocation?

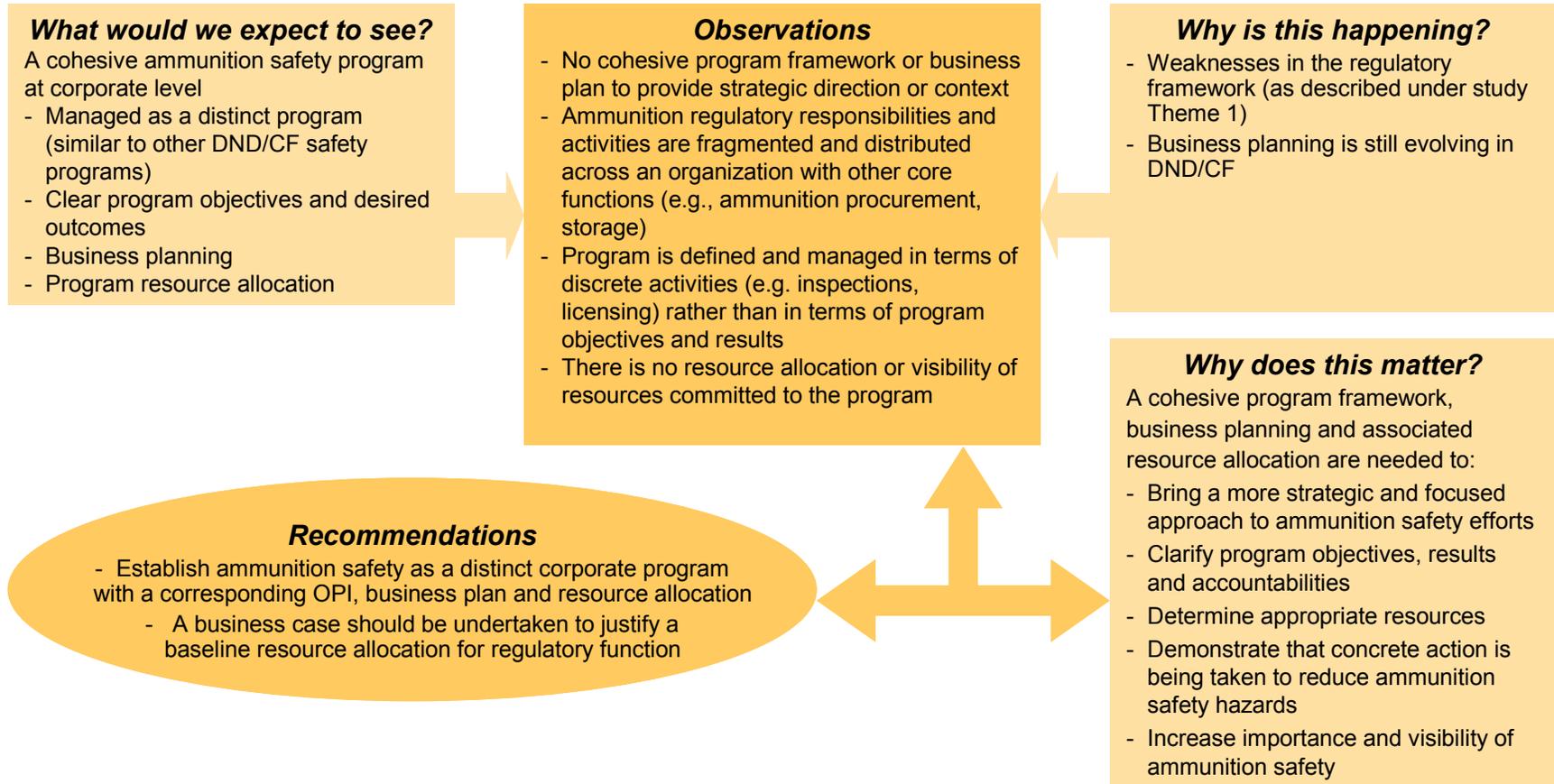
Conclusion

Establishing ammunition safety as a cohesive program with accompanying program strategies, business plans, and resource allocation would improve program direction and delivery and ensure that ammunition safety receives sufficient attention and priority.



THEME 3. PROGRAM MANAGEMENT (cont'd)

Key Finding: Ammunition safety is not defined or managed as a cohesive program with associated business planning and resource allocation



THEME 4. INFORMATION FOR DECISION-MAKING

Evaluation Issues

- Is there a comprehensive system for identifying ammunition safety risks and disseminating relevant information to those who need to know?
 - Is there complete and timely reporting of ammunition safety occurrences from the field?
 - Are processes and procedures in place to facilitate data collection, analysis and dissemination?
 - Do the right people have the right information to effectively manage and regulate ammunition safety?
 - Is information being used to support program decisions and monitor achievement of results?

Conclusion

In order to make informed program decisions (i.e., to ensure that the 'right' safety issues are addressed with the 'right' action) improvements are needed in the collection, analysis, and dissemination of ammunition safety information. Good information and analysis are needed in order to identify and mitigate safety problems and therefore are essential for proactive safety management and regulation.



THEME 4. INFORMATION FOR DECISION-MAKING (cont'd)

Key Finding: *The Information needed to manage and regulate ammunition safety is not being developed and provided to those who need to know*

What would we expect to see?

A comprehensive system for identifying ammunition safety risks and disseminating relevant information to those who need to know including:

- A safety culture that fosters complete and timely reporting of occurrences
- Streamlined processes for reporting and collecting safety information
- Tools and skills to facilitate analysis and problem identification
- Performance reporting to management and other stakeholders on state of ammunition safety
- Use of information for decision making

Observations

- There are concerns in some areas regarding the completeness and timeliness of incident, accident, and malfunction reporting by the field
- Processes for collecting information from field are slow and cumbersome (e.g., CF410 malfunction reporting process)
- Safety information is not being consolidated and analyzed at corporate or L1 levels
- Policies that call for the collection and review of safety data and for advising management are not being observed
- Management reports on ammunition safety have not been developed and issued since 1995. Therefore, senior leadership and other stakeholders are not sufficiently aware of the state of ammunition safety
- Past reports were limited in scope, voluminous, and included little or no analysis, trends, or strategic insights
- There is interest in ammunition safety information at all levels of DND/CF
- DND/CF Flight Safety provides a good example of an integrated approach for the collection and analysis of safety information

Why is this happening?

- Not a pervasive culture that encourages reporting of incidents and accidents from field
- Limited use of automated processes and tools for data collection and analysis reflects a broader need to leverage e-solutions
- Some NDHQ safety positions have been vacant for long periods of time
- Senior management not requesting ammunition safety information
- Compartmentalization of responsibilities and absence of a cohesive program framework inhibit a comprehensive approach to information collection, analysis, and reporting

Why does this matter?

Quality information in the hands of appropriate decision-makers is the backbone of safety management and is needed to

- Promptly detect and respond to risks before an accident occurs
- Prioritize safety risks
- Determine appropriate action
- Assess effectiveness of action taken
- Provide a picture of reliability of ammunition and adequacy of training
- Ensure transparency and accountability

Recommendations

- Establish and maintain a departmental system for the collection, analysis, and dissemination of ammunition safety information
- Institute measures to improve completeness and timeliness of occurrence reporting
- Streamline processes and develop automated tools for data collection and analysis
 - Implement management reporting



THEME 5. RISK MANAGEMENT

Evaluation Issues

- Is a risk-based approach to ammunition safety management and regulation in place?
 - Is there a process for assessing and prioritizing identified safety risks?
 - Is accountability for identified risks clear?
 - Are risk decisions made at the appropriate level in the chain of command?
 - Are the right resources and effort being directed to the right safety problems?
 - Are risk tolerance objectives understood?

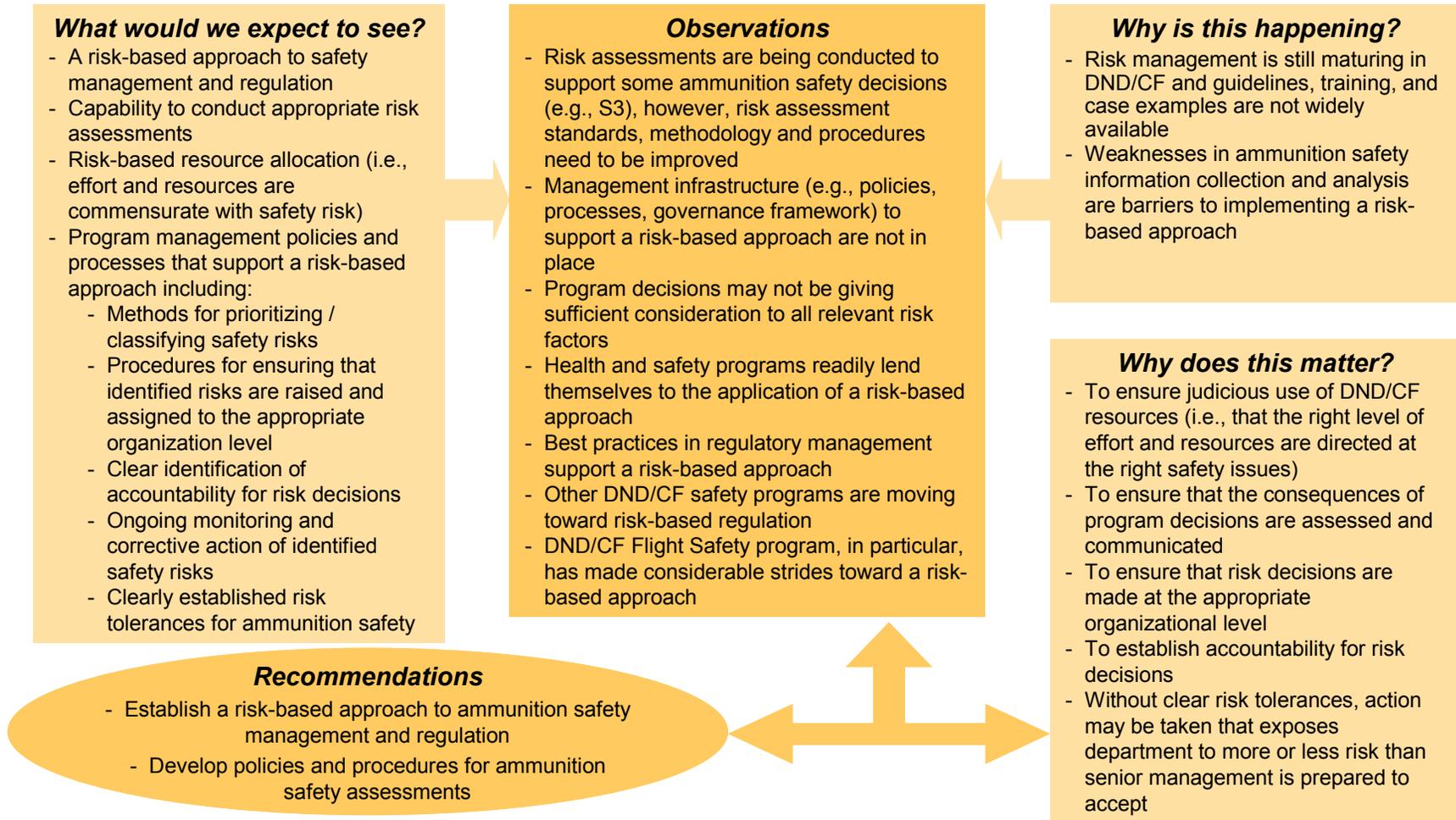
Conclusion

Adoption of a risk-based framework for ammunition safety program management and regulation would facilitate improved program governance and better focus limited resources on the most important safety issues.



THEME 5. RISK MANAGEMENT (cont'd)

Key Finding: A risk-based approach to the strategic management of ammunition safety is not evident, although elements of risk management are applied at the operational level



THEME 6. PROGRAM INSTRUMENTS & ALTERNATIVES

Evaluation Issues

- Are there more effective and efficient means for achieving ammunition safety objectives?
 - Are there program alternatives?
 - Are there more effective program instruments (means) for achieving program objectives?
 - Are activities delivered in the most efficient manner?

Conclusion

While alternative service delivery is not considered feasible, there are possible opportunities for improved program performance and efficiency through the use of a wider range of program instruments and increased application of e-solutions in program delivery.



THEME 6. PROGRAM INSTRUMENTS & ALTERNATIVES (cont'd)

Key Finding: Ammunition safety draws on a relatively narrow range of program instruments and there are likely opportunities for improved program delivery and performance through greater use of e-solutions

What would we expect to see?

- A regulatory 'tool box' with a sufficient range of program instruments, e.g., inspection, advocacy, training (see list of examples on page 28) so that program interventions can be tailored to safety needs and to keep program dynamic and energized
- Selection of program instruments based on an understanding of the safety problem (e.g., level of risk, audience, root cause)
- Efficient delivery of ammunition safety activities (e.g., elimination of paper-intensive activities and manual processes where e-solutions are an alternative)

Observations

- Current practices in regulatory management recognize the value of a range of program instruments for achieving program objectives
- DND/CF ammunition regulation draws on a relatively narrow range of program instruments (e.g., licensing and inspection)
- Inspections are an important and necessary element of compliance management for any safety or regulatory program
- A reduction in DND/CF ammunition safety inspections is not foreseen since time spent in field by inspectors is already low; however, over-reliance on inspection, to the exclusion of other program instruments, may not be an effective means for creating the desired safety culture
- Findings from NRCan explosives regulatory group indicate that compliance levels improve with frequency of inspections, but that inspection alone is of limited effectiveness in encouraging desired behaviour
- Opportunities for improved program effectiveness and delivery may be realized through greater use of e-solutions (e.g., CF 410 Process, analytical tools)
- Alternative delivery of DND/CF ammunition regulation (e.g., outsource to civilian regulator) is not likely feasible or economical

Why is this happening?

- Tendency to define ammunition safety program in terms of activities (e.g., licensing, inspections) rather than program results may inhibit consideration of a broader range of program instruments
- Insufficient skill diversity in the composition of regulatory staff (e.g., PR/communications in addition to engineering, investigation, and inspection skills) may also inhibit the range of program instruments being considered
- Resource availability

Why does this matter?

- To improve program performance
- To ensure judicious use of DND/CF resources (i.e., most cost-effective program instruments are applied to address safety issues, program delivery efficiencies are realized where possible)

Recommendations

- Consider a broader regulatory 'tool kit' to address safety issues
- Monitor and assess effectiveness of action taken (program interventions)
- Explore opportunities to leverage e-solutions across all ammunition safety activities



THEME 7. COMMUNICATIONS

Evaluation Issues

- Is there a sufficiently dynamic and proactive communications program that fosters ammunition safety awareness and a strong safety culture?

Conclusion

Strong communications and advocacy are key elements to fostering a strong safety culture. Communications direction and leadership is an important role of the regulator or corporate safety group. There is room for improvement in the area of communications for ammunition safety.



THEME 7. COMMUNICATIONS (cont'd)

Key Finding: *There is no apparent communications strategy or plan and communications are generally viewed to be in need of improvement*

What would we expect to see?

- A formal ammunition safety communications strategy and plan
- Dynamic, proactive, relevant, and audience-appropriate communications
- Strong communications links among internal ammunition safety stakeholders and with key external organizations to facilitate dialogue and knowledge sharing

Observations

- Communications and advocacy are core functions of safety regulators and corporate safety programs
- A communications plan and strategy has not been developed to provide context and direction
- Division of corporate and line responsibilities for communications is not clear
- Corporate advocacy efforts are viewed to be one-dimensional (e.g., limited to posters)
- While HQ staff are viewed to be helpful if asked, communications are seen as reactive rather than proactive
- No visible process to facilitate dialogue and information sharing across DND/CF ammunition safety community
- A challenge faced in regional communications efforts included access by ammunition safety personnel to field units
- Networking with external organizations is occurring to some extent through NATO involvement, however dialogue with other key players (e.g., NRCan) has waned in recent years
- DND/CF Nuclear Safety program, as a condition of its regulatory exclusion in 2000, was required to develop a communications strategy and plan aimed at fostering a strong nuclear safety culture

Why is this happening?

- Corporate staff attributed weak communications effort to insufficient resources
- Lack of clarity regarding respective roles of corporate and line organizations for ammunition safety communications
- Absence of information in terms of ammunition safety trends and root causes limits ability to develop effective communications strategies and plans

Recommendations

- Develop and implement an ammunition safety communications strategy and plan
- Establish mechanisms to promote dialogue and information sharing across DND/CF ammunition safety community and with key external organizations

Why does this matter?

- Relationship between effective communications and a strong safety culture is widely recognized by safety experts
- Securing effective communications with ammunition safety expertise in external organizations is needed to ensure appropriate safety standards



THEME 8. PEOPLE

Evaluation Issues

- Are human resources sufficient to ensure the safe conduct, management, and regulation of ammunition activities?
 - Are competency profiles and terms of reference (TOR) adequate for positions (at all levels) with responsibilities for conducting or managing ammunition activities?
 - Is training adequate?
 - Is there sufficient ammunition safety expertise (today/future)?

Conclusion

Identified HR issues present both immediate and longer term risks to ammunition safety and should be addressed by appropriate management authorities.

Note: This study module addresses only those HR issues which have specifically been raised in the context of ammunition safety.



THEME 8. PEOPLE (cont'd)

Key Finding: *There are a number of HR issues which have implications for ammunition safety*

What would we expect to see?

- Conduct and management of ammunition activities by appropriately trained and qualified personnel at all organization levels
- Competency profiles for key positions
- Appropriate training and qualification programs, including certification procedures where appropriate
- Ammunition expertise available when and where needed (e.g., planning for deployed operations)
- Sufficient numbers of qualified ammunition safety personnel
- Appropriate mix of military and civilian HR skills in ammunition functional areas (e.g., to provide sufficient skill diversity, continuity, and military operations experience)

Observations

- Some ammunition safety personnel indicated that competency profiles and terms of reference (TOR) for their positions did not exist or were outdated
- Concerns were expressed in some areas that there is insufficient access to training and that the content of some training courses is not current
- Ammunition safety management have significant differences of opinion regarding the competency profiles for some ammunition positions
- Trade amalgamation and 'multi-skilling' have contributed to erosion of core ammunition expertise (noted particularly as an issue in the Air Force)
- Downsizing has seen the number of ammunition safety personnel significantly reduced in some locations (e.g., depots)
- Aging workforce combined with challenges attracting and retaining ammunition expertise raises concerns as to the adequacy of the future pool of ammunition safety personnel
- Ammunition safety officers are taking on more non-safety tasks, leaving less time for safety
- Unfilled positions in corporate safety group
- Ammunition safety expertise is not being included early enough in the planning stages for deployed operations

Why is this happening?

- Need to clarify who is responsible for providing resources to train/retrain DAPM personnel for new and existing ammunition
- Perceived limitations in ammunition technical officer career path
- Sufficiency of HR planning

Why does this matter?

- Skills, knowledge, and attitudes, are key factors in the safe conduct of ammunition activities
- If skills or knowledge are not sufficient, individual may undertake activities or make decisions without understanding the risks involved

Recommendations

- Establish competency profiles and TOR for ammunition positions
- Assess adequacy of training programs and skills for positions performing or managing ammunition activities and take action as required
- Establish ammunition support for planning of deployed operations



ADDITIONAL OBSERVATIONS

STUDY THEME INTERDEPENDENCIES

- While the various study themes are presented individually for reporting purposes, there are interdependencies among the different study themes. For example:
 - Complete and timely information and analysis on safety trends and issues (Theme 4) are a key inputs to risk management (Theme 5)
 - Good safety information and analysis (Theme 4) and risk assessments and considerations (Theme 5) should guide decisions on program interventions (Theme 6)
- Greatest opportunities for program improvement are likely to be realized through the various thematic areas working in concert as a system
- Figure 1 (page 28) illustrates the relationship among key study themes



ADDITIONAL OBSERVATIONS (cont'd)

DUE DILIGENCE & LIABILITY

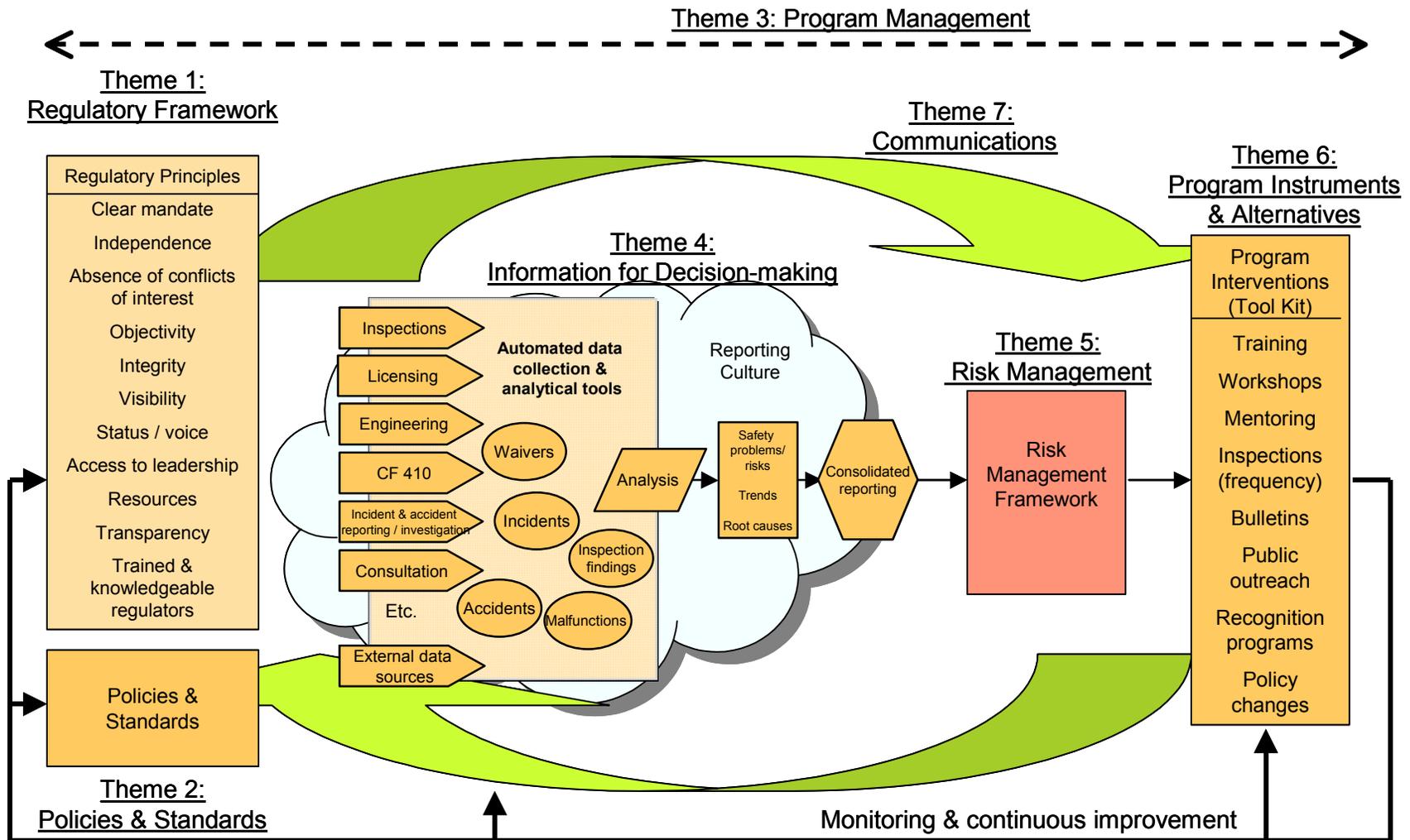
- Government must exercise, and be seen to be exercising, due diligence
- Failure to exercise due diligence leads to liability
- Program weaknesses have been identified that could increase DND/CF exposure to liability
- In particular, practices likely to contribute to liability include:
 - Failure to adopt and update well articulated compliance policies
 - Failure to meet standards set out by compliance policies
 - Failure to document compliance actions
 - Unqualified managers and employees, including insufficient training
 - Maintaining regulatory programs without having the resources to sustain them

OTHER AMMUNITION SAFETY ISSUES

- During the course of this study, examples of operational issues were identified that have implications for ammunition safety. These include:
 - ‘Rust-out’ of some ammunition storage facilities
 - Large quantities of surplus ammunition
 - Ammunition amnesty boxes
- Addressing issues in the areas of ammunition storage, handling, and inventory management should contribute to mitigating safety risks in the above noted areas



Figure 1. Study Theme Interdependences



SUMMARY OF RECOMMENDATIONS

SUGGESTED WAY AHEAD

- Study recommendations are provided to close identified gaps and improve program performance, ultimately contributing to an improved state of safety in DND/CF. Study recommendations suggest measures to
 - Strengthen the regulatory regime
 - Bring a more strategic and focused approach to ammunition safety management and regulation
 - Increase understanding and visibility of ammunition safety risks, with a view to improving program results
 - Improve program delivery and performance
- It is recommended that management action to address study recommendations consider lessons learned from other DND/CF safety programs and from external ammunition safety programs. Also, opportunities should be explored to realize synergy with other DND/CF safety programs.
- The OPI is assigned the lead role in implementing the study recommendations. ADM(Mat), ECSs, and other Level 1 organizations have an important role to play in providing input and support to implement study recommendations.
- Establishment of a sound regulatory and management framework for ammunition safety is an important first step in addressing the study recommendations. This issue is largely corporate in nature and crosses multiple Level 1 organizations. It is therefore recommended that the VCDS serve as the OPI to develop a management action plan for the regulatory framework. A possible approach for initiating the development work in response to this recommendation is the establishment of a task team, under the strategic guidance of the VCDS, and comprised of representatives from DND/CF stakeholder organizations. The team would consider and report on alternative regulatory models for DND/CF ammunition safety and recommend a proposed course of action for DMC approval. As part of its work, the task team could also identify the appropriate OPI, within the proposed ammunition safety regulatory and management framework, to address the remaining study recommendations.



SUMMARY OF RECOMMENDATIONS (cont'd)

Study Theme	Recommendation
<p><i>1. Regulatory Framework</i></p>	<p><i>Develop and implement a coherent regulatory framework for ammunition safety founded on sound regulatory principles</i></p> <p>This should include:</p> <ul style="list-style-type: none"> – Creating an independent corporate regulatory organization for ammunition safety that oversees the entire spectrum of ammunition activities over its life cycle. At a minimum, functions should include: <ul style="list-style-type: none"> • Developing and promulgating policies and standards • Assuring compliance with DND/CF safety policies • Convening boards to assess ammunition safety and suitability for service (S3) • Serving as an impartial advisor to DM, CDS, L1s, and other stakeholders on ammunition safety matters – Ensuring that the scope of the corporate regulator is sufficiently comprehensive, including clarifying its role in overseeing <ul style="list-style-type: none"> • Level 1 ammunition/explosives safety programs and delegated authorities including those of ECSs, ADM(Mat), and DND/CF R&D establishments • Environmental protection matters related to ammunition • Ammunition activities of foreign militaries on Canadian soil • Ammunition security matters arising from the evolving international security environment • Ammunition activities contracted to third parties (e.g., testing) – Developing a clear and coherent organizational framework and detailed responsibility matrix that clarifies the division of ammunition safety responsibilities between the corporate regulator and Level 1 organizations – Instituting measures to ensure that safety processes (e.g., accident and incident investigation, testing) have sufficient independence and objectivity – Providing the corporate regulator with an allocation and control of required resources – Providing the corporate ammunition safety regulatory authority with direct access to DM, CDS, and Levels 1s, as required, on matters of ammunition safety and establishing position as a direct report to a Level 1 for purposes of administrative control – Ensuring that Level 1s with responsibility for ammunition activities (e.g., ECSs, ADM(Mat), DCDS) have (or have access to) sufficient ammunition safety advisory capability and that Level 1 ammunition safety advisors have sufficient independence and access to their respective Level 1



SUMMARY OF RECOMMENDATIONS (cont'd)

Study Theme	Recommendation
2. Policies & Standards	<p><i>Conduct a comprehensive review of existing ammunition safety policies, standards, and procedures and related publications with a view to updating, clarifying, introducing, or retracting documents as required</i></p> <p>This should include establishing a clear hierarchy of publications for ammunition safety that clarifies what is a mandatory (i.e., order/directive) and what is guidance.</p> <p><i>Establish a process for the development and on-going review of ammunition safety policies and standards, including a consultation process with stakeholders</i></p>
3. Program Management	<p><i>Establish ammunition safety as a distinct corporate program with a corresponding OPI, business plan, and resource allocation.</i></p>
4. Information for Decision-making	<p><i>Establish a comprehensive departmental system for the collection, analysis, and dissemination of ammunition safety information</i></p> <p>This should include:</p> <ul style="list-style-type: none"> – Instituting measures to improve the completeness and timeliness of incident and accident reporting by field – Streamlining processes (e.g., CF410 malfunction reporting system) and developing automated tools to facilitate information collection and analysis – Implementing processes for information dissemination and management reporting on ammunition safety performance. This should include reports that provide senior leadership and other stakeholders with a concise and comprehensive picture of the state of ammunition safety (e.g., incidents, accidents, malfunctions, inspection findings, waiver status, compliance issues, risk exposures, action taken)
5. Risk Management	<p><i>Establish a risk-based approach to ammunition safety management and regulation</i></p> <p>This should include:</p> <ul style="list-style-type: none"> – Policies and processes for identifying, categorizing, and assigning risk decision-making authority and accountability – Development of procedures and tools for performing risk assessments



SUMMARY OF RECOMMENDATIONS (cont'd)

Study Theme	Recommendation
6. Program Instruments & Alternatives	<i>Ammunition safety managers should be aware of and consider a broader regulatory ‘tool kit’ (program instruments) to address safety risks and to foster a strong safety culture</i>
	<i>Develop procedures for monitoring and evaluating performance of program interventions</i>
	<i>Assess opportunities to improve program delivery through greater use of e-solutions across all ammunition safety activities</i>
7. Communications	<i>Develop and implement an ammunition safety communications strategy and plan</i>
	<i>Establish mechanisms to promote dialogue and information sharing across the ammunition safety community and with key external stakeholders</i>
8. People	<i>Establish competency profiles, technical qualifications, authorities, and up-to-date terms of reference for key ammunition safety program positions including those for the departmental regulatory authority, technical personnel, regulatory staff, depot personnel, and command explosives safety officers</i>
	<i>Assess adequacy of ammunition safety skills and training for all positions that perform, manage, or regulate ammunition activities, and take action as required</i>
	<i>Establish ammunition support for planning of deployed operations</i>
	<i>Address staffing issues and vacant positions in corporate safety group</i>



MANAGEMENT ACTION PLAN

RECOMMENDATION 1

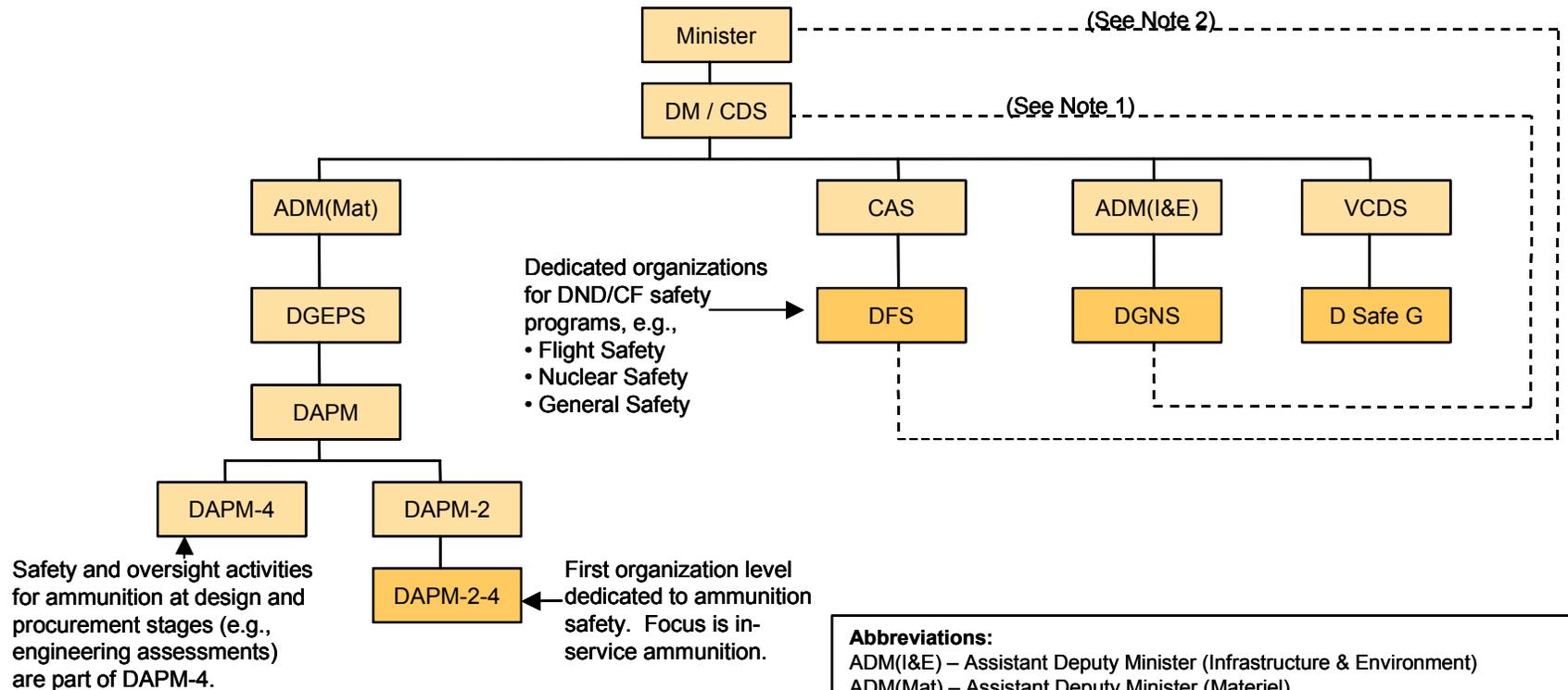
- Develop and implement a coherent regulatory framework for ammunition safety founded on sound regulatory principles
 - The study states that establishment of a sound regulatory and management framework for ammunition safety is an important first step in addressing the study recommendations. Since this issue is largely corporate in nature and crosses multiple Level 1 organizations, the study suggests that the VCDS establish a task team to develop alternative regulatory framework options for consideration and approval by DMC. As part of its efforts, the task team would also identify the appropriate OPI, within the proposed ammunition safety regulatory framework, to address the remaining study recommendations.
- Management Response
 - The VCDS has taken the lead to establish a task team to develop a corporate response to the findings and recommendations of the CRS review. The team includes representatives from all stakeholder organizations and has met several times and determined that the primary function to be completed before all others is to draft terms of reference/responsibilities for a regulatory body to govern the ammunition safety program. The preliminary assessment of the team is that the regulatory body would be empowered to implement CRS recommendations 2 through 8.
 - The Team is working to clearly define the responsibilities for a regulatory body. Once the responsibilities have been identified, the task team will develop options for the body itself to include resources required and reporting within the department. The responsibilities and options will be provided to the VCDS for consideration. Given the impact of ammunition safety within DND DMC will be consulted.

RECOMMENDATIONS 2-8

- Responsibility for management action to be determined with approval of regulatory framework.



ANNEX A – COMPARISON OF DND/CF SAFETY ORGANIZATIONS



Notes:

1. DGNS reports to ADM(I&E) for administrative control and direction but is directly responsible to DM and CDS for the regulatory oversight of all matters related to nuclear safety within DND/ CF.
2. DFS has directly delegated authorities for flight safety from the Minister and is responsible for informing the Minister of any significant airworthiness matters. In addition, a number of measures are in place to protect the independence and integrity of the office.

Abbreviations:

- ADM(I&E) – Assistant Deputy Minister (Infrastructure & Environment)
- ADM(Mat) – Assistant Deputy Minister (Materiel)
- CAS – Chief of the Air Staff
- CDS – Chief of the Defence Staff
- DAPM – Director Ammunition Program Management
- DFS – Director Flight Safety
- DGEPS – Director General Equipment Program Services
- DGNS – Director General Nuclear Safety
- DM – Deputy Minister
- D Safe G – Director General Safety
- VCDS – Vice Chief of the Defence Staff

ANNEX B – DND/CF REPORTED AMMUNITION ACCIDENTS & INCIDENTS*

Year	Accidents (Total DND/CF)	Incidents Air Force	Incidents (DND/CF excluding AF)	Total Incidents
1996	45	286	33	319
1997	46	333	28	361
1998	42	172	24	196
1999	36	252	35	287
2000	49	182	39	221
2001	31	184	40	224
2002	29	170	37	207
2003	33	143	65	208

Ammunition Accident Fatalities by Year 1983 – 2003	
1983	2
1986	2
1988	6
1989	1
1990	2
1991	3
1993	1
1994	1
1995	1
1997	1
2000	1
2001	1
Total	22

Notes:

- Accidents involve injury to personnel or damage to property.
- Incidents are undesirable events that do not result in injury, loss or damage to property.
- In the past 20 years, 22 fatalities have occurred.
- Approximately 70% of fatalities occurred during training exercises and involved various types of ammunition, with most of the causes attributable to error in drill or carelessness. Other fatalities relate primarily to the storage and handling of ammunition.
- Accidents and incidents involving air weapons and which occur during air operations are governed by the Flight Safety (Air Weapons) Program.
- Interviewees were of the opinion that the Air Force has had the greatest success in creating a culture that fosters reporting of incidents.
- Comparisons with foreign militaries were not undertaken due to issues related to the availability and composition of data.
- Direct conclusions cannot be drawn between the accident data and the effectiveness of the DND/CF ammunition safety program.

* Figures provided by ADM(MAT) and DFS at January 2004.



ANNEX C – AMMUNITION SAFETY ABBREVIATIONS

ADM(IE)	Assistant Deputy Minister (Infrastructure and Environment)
ADM(Mat)	Assistant Deputy Minister (Materiel)
AF	Air Force
ASSB	Ammunition Safety and Suitability Board
CAS	Chief of the Air Staff
CDS	Chief of the Defence Staff
CF	Canadian Forces
CF410	Canadian Forces (form) 410 – Ammunition Accident/Incident Reporting
CRS	Chief Review Services
DAOD	Departmental Administrative Orders and Directives
DAPM	Director Ammunition Program Management
DCDS	Deputy Chief of the Defence Staff
DFS	Director Flight Safety
DGEPS	Director General Equipment Program Services
DGNS	Director General Nuclear Safety
DM	Deputy Minister
DMC	Defence Management Committee
DND	Department of National Defence
D Safe G	Director General Safety
ECS	Environmental Chief of Staff
HE	High Explosives
HR	Human Resources
HQ	Headquarters
IT	Information Technology
Level 1	Level One (usually at ADM level)
METC	Munitions Experimental Test Centre
NATO	North Atlantic Treaty Organization
NDHQ	National Defence Headquarters
NRCan	Natural Resources Canada
OAG	Office of the Auditor General
OPI	Office of Primary Interest
R&D	Research and Development
S3	Safety and Suitability for Service
SARS	Severe Acute Respiratory Syndrome
TOR	Terms of Reference
VCDS	Vice Chief of the Defence Staff

