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Field Trial Safety Audit Phase III Summary & Recommendations

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Field Trials Safety Audit
Phase Three

Summary and Recommendations

for

Defense Research
Establishment Suffield

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Field Trials Safety Audit Phase Three

Summary and Recommendations

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OVERVIEW

Recommendations developed through the Field Trials Safety Audit required further involvement of Semeniuk & Semeniuk Inc. This included development of documentation and provision of further recommendations in the form of models.

This report provides a summary of the documents developed as an outcome of recommendations 4.1 and 4.2 of the Phase II report. Discussion of these documents is included in Section 1. The new and revised documents are being provided along with this report.

The information dealing with recommendations 4.3 and 4.4 has been organized into sections 2 and 3. Section 2 provides models and options both for the restructuring of Field Trials Support and for establishing a Health, Safety, And Environment function.

Section 3 provides an outline of training required in order to implement the changes described in sections 2.

This organization of material was selected because it best illustrates the close relationship between Field Trials Safety and the overall DRES safety effort.

1. DOCUMENTS

1.1 Documents Written/Revised by Contractor

The Phase II report of this project recommended that a risk assessment process be introduced into the trials process and that a number of documents related to EPG safety be developed or revised. To satisfy these recommendations the following tasks have been completed.

1.1.1 Revisions

Five documents (SSP 146, SOP's -033, -038, -048 and -050) have been revised as follows:

SSP 146/97 Guidelines for Preparation of Field Trial Plans (FTP's) -an extensive revision that includes primarily Hazard Identification and Risk Assessment process, criteria and forms.

SOP 033/97 Preparation of DRES Standing Operating Procedure (SOP) -minor revision to introduce the need in SOP for providing Hazard Identification and level of associated Risk and to identify all Hazard Control measures and procedures required to maintain the risk at an acceptable level.

SOP 038//97 DRES FIELD TRIALS - General Explosive/Hazardous Materiel Handling Procedures for Hazardous Materiel Technician - revision of Part I- General Instructions to introduce trials risk assessment based personnel limits, as far as the FTO, Hazardous Material Technicians and Emergency Personnel and Equipment support are concerned.

SOP 048/97 Procedures for a DRES Field Trials Officer in Setting Up and Conducting an Explosive Field Trial - revision to include criteria and procedures for an FTO in providing adequate (based on risk assessment) support for trials in areas of Hazardous Material handling (ESEG) and Emergency Personnel and Equipment.

SOP 050/97 Procedures for a DRES FTO in Setting Up and Conducting a Chemical Field trial - revision to include criteria and procedures for an FTO in providing adequate (based on risk assessment) support for trials in areas of Hazardous Material handling (ESEG) and Emergency Personnel and Equipment.

1.1.2 New Document

An entirely new document that consolidated information specific to the EPG has been developed. This new document, titled DRES Experimental Proving Ground (EPG) Safe Operations Manual, is provided to DRES as a draft in both hard copy and electronic copy.

1.2 Documents Requiring Revision By DRES

The revisions in section 1.1 above imply the need for updating and/or creating other documents that are beyond the scope of this Project - as discussed in Recommendation 4.2 of the Phase II Report. They belong to two groups:

1.2.1 DRES Safety Manuals SSP 133, Volumes 1, 2, 3 and 4.

All four volumes of the Manual need to be revised to reflect current criteria for and procedures in providing specialist and emergency personnel and equipment support to trials

(introduced in the above mentioned revised documents as the result of Phase II Recommendation 4.1)

1.2.2 Standing Operating Procedures (SOP's) for Established Trial Sites

The DRES policies and procedures require every established EPG Trial Site to have and operate under a specific SOP.

The review during Phase II of the Project indicated that only very few established sites have SOP's that are current and meet all the format and content requirements.

It is essential that all active sites, and those intended for use by private industry in particular, have current SOP's.

Following is the list of identified needs for revising/writing trial site SOP's:

Trial Site	Existing SOP	Need for Revision
General, on EPG:		
-Vehicle Preparation for Use as Targets	SOP 046 - 94	Current (to be reviewed)
- Disposal by Detonation, Remote Explosive Fuze Removal, Explosive Penetration using Shaped Charge Technology	SOP 018 - Rev. 1, 1997	Current (to be reviewed)

Trial Site	Existing SOP	Need for Revision
Site specific:		
-Blast Tube	SSP 116/SOP 413/SOP 035	- revise as SOP 035-97 - incorporate Detonation Tube facility; - to follow SOP 033-97; -include Hazard Identification and Risk Assessment.
-Undex Pond	SOP 049-95	Minor, including Hazard Identification and Risk Assessment.
-2m Undex Tank	SOP 034-92	Minor, as above.
-Flash X-Ray	RN 430/FPP 136/SOP 019-84	-re-write as SOP 019-97; -follow SOP 033-97; -include Hazard Identification and Risk Assessment.
-Fuel-Air Explosive	None	write SOP.
-H.O.B./Multiburst	None	ditto
-Range & Accuracy	None	ditto
-Weapon Test Centre	None	ditto

-Hickey Storage Mine Site	None	ditto
-Cameron Centre	None	ditto
-Building 15 Complex	None	ditto

The above list is by no means all-inclusive. (the list of sites provided to the Project Team during Phase II includes 39 EPG sites and according to DRES Safety Manual, old SOP's for some of them can be found in Volume 3 and Volume 4)

A thorough review of all available pertinent DRES documents is recommended in order to identify a complete list of needs for revised/re-written/new SOP's, followed by an actual revising/developing process. The priority in this process should be the sites that are most active and/or intended for private industry use.

Finally, the review of current FTP's and SOP's has shown the use of the term "Standard Operating Procedure" for step-by-step operating procedures involved in carrying out a trial at the trial site.

To avoid confusion caused by the same name (Standard Operating Procedure-SOP, as part of Standing Operating Procedure-SOP) it is recommended that the use of the name Standard Operating Procedure be discontinued in FTP's and SOP's and the term Trial Operating Procedure-TOP, be used instead (as required by the SSP 146-97 Guidelines for Preparation of Field Trial Plans (FTP's).

2. ORGANIZATIONAL STRUCTURE AND ROLES

The Phase II report of this project recommended changes to the roles and organizational structure within DRES. Two areas were addressed in the recommendations. The first dealt with changes in the Field Trials Support functions and is discussed in 2.1 following. The second area of changes deals with the establishment of a Health, Safety, and Environment function within DRES and is discussed in 2.2. Training recommendations for both areas are covered in section 3.

2.1 Field Trials

The intent of these changes is to allow for increased efficiency while maintaining safety standards. The basis for these changes is the introduction of a hazard assessment process into the planning and execution of field trials. This process requires persons planning field trials to determine the level of risk posed by a specific trial based on both the likelihood of an incident and the potential severity of an incident if one should occur (see revised SSP 146). The level of risk is the basis for the support provided to the trial (see revisions to SOP 048 & SOP 050).

2.1.1 Roles

Field Trials Officer - The role of the FTO as the individual responsible for field trials safety is vital and should remain essentially unchanged. However, the utilization of acting/FTO's can be expanded, particularly in Level 1 (low risk) trials. However, the FTO's will remain accountable for ensuring the competency and performance of acting FTO's. Where the acting/FTO is supplied by a contractor, the FTO must ensure that the designated acting/FTO has an "arms length" relationship to the trial so that there is no possibility of compromising safety for the sake of expediency.

The FTO's can take on additional roles, particularly in Level 1 (low risk) trials and to some extent in Level 2 (medium risk) trials. When appropriately qualified, they can assume the role of First Aider or the role of designated ambulance (emergency vehicle) driver.

Field Support Group - Subject to availability and qualification, these individuals may be utilized in the role of first aider or designated ambulance driver. Subject to the anticipated volume of trials, consideration could be given to having them take on the role of acting/FTO in low risk trials during high trial activity periods.

Technologists - These individuals can take on two additional roles, particularly on low and medium risk trials. These are the roles of assistant to the ESEG (blaster) and that of First Aider. This would reduce the number of individuals required to support the trials. As the actual time required for both roles is minor, this is more a matter of having qualified personnel available than a matter of increased workload. By having the technologists act as blaster's assistants, ESEG's would have more time to devote to duties other than attendance at trials.

ESEG's - The roles of these individuals will remain largely unchanged. The one change will be that only one ESEG will be required to attend low and medium risk trials when an assistant (appropriately qualified technologist) is available to assist.

Where ESEG's are present at a trial site, they may be in a position to provide general assistance to the trial preparation outside the strict scope of their "explosives" role.

Medical Assistant - With the Medical Assistant being provided by the base, as is currently the case, the role will remain basically unchanged. However, the Medical assistant will not be required at level 1 trials when a designated first aider is provided.

In the event that the current driver position is eliminated, and that a Medical Assistant is taken on strength by DRES, the role will be somewhat altered. The Medical assistant will be

responsible for first aid training, maintenance of appropriate equipment and vehicles. He will have the responsibility of ensuring that qualified first aiders are present at trials and that designated vehicles and drivers are in place.

2.1.2 Structure

The current structure of having the full range of safety and support services provided to field trials by Technical Services is viable. The key safety function provided by this arrangement is that the FTO's are independent parties to the trials and can provide an uncompromised focus of safety.

The major area of disharmony appears to be between ESEG and the technologists. A structural change may be required to achieve harmony and cooperation between these two groups. There are three options to be considered here. One is to designate the technologists as "technical support" and have them become part of Technical Services. They could be combined with ESEG and form a pool of support resource personnel to be assigned to trails as circumstances require. The second option is to transfer ESEG to the Military Engineering Section. Here, as in option one, a pool of resources would be available to support trials.

The third option is to leave the organization as is and to resolve issues by other means. This option would recognize that both the technologists and the ESEG's have unique and specialized skills, roles and duties. It would also recognize that the two functions overlap at the point of explosives field trails. A process of cross training, team building and multi-tasking should be focused on this area of job overlap. In this way a pool of resource personnel could be developed for the purpose of providing "explosives" support to field trials. As discussed previously, teams of one ESEG and one technologist could handle support for low and medium risk trials. When not in attendance at trials, the team members could attend to their respective other duties.

Option three is preferred by the authors of this report.

2.2 Health, Safety, and Environmental (HSE) Function

An observation made during this project was that the general health and safety program at DRES was less than vibrant. This section provides some suggestions for improvement to the overall program. It is essential that the general health and safety program be given attention, as weaknesses here will eventually cause problems in the hazard specific components of the safety effort such as explosive safety, etc.

2.2.1 Roles

DRES currently rotates the position of Establishment General Safety Officer (EGSO) biennially. This tends to result in loss of momentum and changes in direction and emphasis. The first step in developing a sound overall approach to safety would be to appoint a permanent EGSO. Ideally, this would be a full-time, senior position. However, in the current reality of downsizing, it may be more appropriate to have someone at a "management" level take on this role on perhaps a half-time basis.

The role of this permanent EGSO would be to manage all aspects of health, safety and environment programs at DRES. The EGSO would head up a group of staff with full or part time health, safety and environmental responsibilities. This group would include the following:

FTO's - they would take on some general safety duties and responsibilities in addition to their field trials duties.

Medical Assistant - as a full-time member of the HSE group, this person would have health and hygiene responsibilities in addition to field trials support and training duties.

Explosives Safety Officer, Chemical Safety Officer, etc. - these individuals would have a dual reporting role, reporting to the EGSO on safety matters and to their respective areas for other duties.

Administrative assistant - this would be a clerical function that would track, document and report on all aspects of the HSE program.

2.2.2 Structure

The ideal structure for the HSE function would be to have a distinct "department," with the EGSO reporting directly to the DDG as Head/HSE. In a relatively large organization, this would be appropriate.

However, in a relatively small organization such as DRES, this model may not be appropriate. The alternative is to have HSE set up within Business Development and Site Services. With some redistribution of responsibilities, one of the managers within this group could take on the role of permanent EGSO in addition to other duties. The FTO's and Medical Assistant could report within the HSE function. The other Safety officers could report in a matrix structure.

This centralized HSE function would allow for modification of the current safety committee structure. A system of safety representatives could be established, utilizing safety officers already in place to the maximum extent possible. The only safety committee would then be the General Health and Safety Committee (GHSC). This would free up personnel from numerous safety meetings and would allow for more expedient resolution of issues. The GHSC would have to meet more frequently, perhaps monthly.

3. TRAINING

For the revised documents developed in this project to be useful, and for the changes in roles and structure to be successful, some training will be required. Following are some recommendations for such training.

3.1 Risk Assessment

All the documents developed and recommendations made in this project center on the concept of Field Trials Hazard Identification and Risk Assessment. Although the concepts are not complex, they may be new to some of the people who will be involved in conducting such assessment, or in planning and carrying out tasks based on such assessments.

Therefore, consideration should be given to developing and delivering workshops on the concepts and techniques. A well designed and professionally led one-day workshop would likely meet the need. A series of one-day workshops with 10 - 15 participants per group could be scheduled to allow for all affected staff to attend. Design and delivery could be taken on by the EGSO, or acquired through outside resources.

3.2 Field Trials

The suggested modification of roles and duties of personnel involved in field trials will require some specific training.

A pool of staff will have to be identified as "designated" First Aiders and provided with appropriate First Aid and CPR training. Reluctance to take on the role of First Aider at a trial

would have to be overcome through some system of motivation. This could involve special recognition, financial incentive, or other benefit that would ensure that sufficient numbers of personnel would take the required training and would serve as First Aiders when required.

In addition to first aiders, a pool of ambulance (emergency vehicle) drivers would have to be established. Ideally, the staff with First Aid/CPR training would also obtain the certification required to be ambulance drives. In this way, anyone from the pool could fill either role as needed.

Staff who should be considered for this training/certification should include FTO's, ESEG's, technologists, and the field support group.

The second training requirement for program success is explosives training. Specifically, any technologists who could be cast in the role of "blasting assistant" would be required to obtain their Alberta Blaster's Certificate. The ESEG group could help the technologist to obtain their certificates. Also, they could provide supplemental training on the specific systems and safety requirements related to explosives at DRES.

The restructuring and the technical training recommended will require an additional training effort in order to ensure success of the entire process. This is in the area of team building. Observations during the audit indicated a considerable amount of disharmony. This has evident within Technical Services as well as between Technical Services and the scientists/ technologists. The training suggested here should be sourced from outside of DRES. A consultant with strong human resources skills should be retained to conduct a assessment of the current situation and to deliver a customized program.

3.3 HSE

A principle objective of the centralized Health, Safety, and Environment function is to build a comprehensive, establishment-wide health, safety, and environmental program. This will involve both the upgrading of the "general" program and the coordination of specialized program components. To achieve this, the permanent EGSO will need a sound understanding of the concepts of total loss management and of program building/development. Ideally, the incumbent will already posses the requisite knowledge and skills.

However, in the event that the EGSO's background in these areas requires enhancement, a training/education plan should be set out. Appropriate education/training for this role is available from a number of sources. The Department of Defense provides several levels of training for safety officers. Some of these courses may be suitable. Public institutions such as U of A Extension, the B. C. Institute of Technology, Simon Fraser University, University of Toronto, and McGill University offer programs that may meet the need. Also, private sector organizations such as DNV (formerly the International Loss Control Institute) provide both self study and classroom programs.

In establishing a centralized HSE function, some training for other members of the team may also be appropriate. Consideration should be given to providing the FTO's and the Medical Assistant with courses in program development and management. These would be available from some of the sources listed previously.

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