

ROUTING				P.A. AND B.F. ENTRIES				REGISTRY ONLY	
REFERRED	REMARKS	Date of Pass	Initials	Date of P.A.	Initials	Date of B.F.	Cancel B.F.	Date Received	Inspected by
DNDC	WITH PAPERS CR	JUN 25 1964	DL	26 Jun 64				JUN 26 1964	
DNDC	WITH PAPERS CR	JUN 30 1964	DL	30 Jun 64				JUL - 2 1964	
WADT	PER REQUEST CR	FEB 17 1965	DL	18 Feb 65				FEB 18 1965	

CLOSED

**"B.F."— DO NOT HOLD THIS FILE WHEN LAPSES
IN ACTION MAY EXCEED 48 WORKING HOURS**

10

58-65

PA 969-7

RECEIVED

APR 13 1965



25/13

DASTO 4

NNNNVV PCB290 PWB257WPA057 UU

PP RCCPFZ

DE RCWPC 39 13/16*3Z

P R 131642Z

FM CANAIRTRAIN

TO RCCSLW/NNRHQ NORTH BAY

INFO RCCPFZ/CANFORCEHED ✓

RCCPSQ/STN CENTRALIA

BT

UNCLAS A0841 13 APR

ATTN NR OND PD FURTHER TO OUR A0837 122017Z APR PD ADD FOLLOWING

NDEFIS TO THOSE AVAILABLE FOR PARTICIPATION IN OPS EVALUATION OF

25NR PD 12158 SGT K STEVENSON CLEARED TOP SECRET CMM 238529 CPL JL

RIDDEL CLEARED SECRET PD BOTH NCOS ON STRENGTH COS CMM STN CENTRALIA

PD REGRET DELAY (YOUR NROND34 12 APR) HOWEVER UNIT SUBMISSION JUST

RECEIVED PD SUGGEST DIRECT LIAISON CMM INFO THIS CHQ CMM REGARDING

EMPLOYMENT LOCATION DUTIES ETC AS FOR PERSONNEL FROM STN WINNIPEG

PD FOR CFHQ ATTN ADTO4 YOUR XOPA 663 061400Z APR REFERS PD FOR STN

CENTRALIA YOUR M100 P131431Z APR REFERS

BT

VV PCA407 MRA460 UU

PP RCCPFZ

DE RCCPMR 702 13/2138Z

P R 132115Z

FM CANAIRMAT

TO RCCSLW/NNRHQ NORTH BAY

INFO RCCPFZ/CANFORCEHED

BT

UNCLAS ND03 13 APR

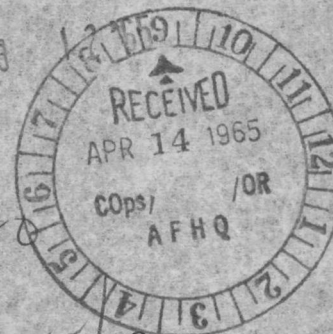
REF CFHQ XOPA663 061400Z PD FOR NNRHQ ATTN NROND CMM FOR CFHQ

ATTN ADTO 4 PD CONFIRM 41644 FL AC CATON TOP SECRET WILL BE

AVAILABLE PD ADVISE OF AIRLIFT ARRANGEMENTS

BT

APR 13 23



MNK



969-7 AS S/L

49/12

VV PCA254 PWB108WPA112 UU

PP RCCPFZ

DE RCWPC 104 12/2017Z

P R 122017Z

FM CANAIRTRAIN

TO RCCSLOW/NNRHQ NORTH BAY

INFO RCCPFZ/CANFORCEDHED

RCWPWM/STN WINNIPEG

BT

UNCLAS A0837 12 APR

ATTN NR SND PD OUR A0829 081640Z APR YOUR NRND 34 121633Z APR PD
FOLLOWING TC NUCLEAR DEFENCE PERSONNEL AVAILABLE FOR PARTICIPATION
IN OPS EVALUATION OF 25NR CLN 218057 FS E WINTERBURN CMM
212797 CPL A HADDON PD BOTH NCOS ON STRENGTH STN WINNIPEG AND
CLEARED SECRET PD SUGGEST YOUR HQ LIASE DIRECT STN WINNIPEG CMM INFO
THIS CHQ ON FURTHER DETAILS CONCERNING EMPLOYMENT LOCATION CMM DUTY
CMM ETC PD ALSO ADVISE THIS CHQ AS TO FE THIS TD TO BE CHARGED PD
FOR CFHQ ATTN ADTO4 YOUR XOPA663 061400Z APR REFERS

BT

3
St. Michael's
Note: 10/1/65
St. Michael's

NNNNVV 523 RCA328

PP RCCPTZ

DE RCCRC 212 07/2026Z

P R 072030Z

FM CANAIRLIFT

TO RCCSLV/NNRHQ

INFO RCCPTZ/CANFORCEHEH

BT

UNCLAS ND41 07 APR

ATTENTION NNRHQ NROND PD YOUR NNRHQ NROND33 2APR PD 44635 FL A
LE FEVRE ATCHQ TOP SECRET AND 212079 FL CW CLARK STN NAMAQ TOP
SECRET CMM 200900 FL RD DABKERS STN UPLANDS TOP SECRET CMM NBCU
QUALIFIED AND AVAILABLE TO ATTEND PD FOR CANFORCEHEH PD ATTENTION
ADTO4 REQUEST TD AND OTHER INSTRUCTIONS YOUR XOPA663 061400Z REFERS
BT



969-7

ADTO 4-23

PCB319 SCB344 LWA070

UU

RR RCCPFZ

DE RCCSLW 35 02/1934Z

R 021930Z

FM NNRHQ NORTH BAY

TO CANFORCEHD

BT

UNCLAS NROND33 2 APR

REF TELECON WC WINGERT DASH FL UNGER PD NORAD WILL CONDUCT AN OPERATIONAL EVALUATION OF 25NR DURING THE 72 HOUR LIABILITY PERIOD COMMENCING 1700Z 29 APR 1965 PD DYNAMIC ATTRITION OF AIR DEFENCE FORCES AS A RESULT OF NUCLEAR CONTAMINATION AND SLANT OR RADIATION WILL BE EMPLOYED DURING THIS EVALUATION EXERCISE PD THE USE OF RADIATION SURVEY TRAINING SETS PAREN RSTS PAREN FOR DETERMINING FALLOUT INTENSITY IN EXERCISED AREAS CREATES A REQUIREMENT FOR ADDITIONAL NBCW QUALIFIED PERSONNEL TO ASSIST IN EVALUATING THE REGIONS CAPABILITY TO OPERATE UNDER FALLOUT CONDITIONS PD TO MEET THIS ~~C-WA CONDUCT AN OPERATIONAL~~

PA 969-7
NR S/C
ADN 4-2-3
54/2
what's the difference?
simulating?
DAD TO 4

PAGE 2 RCCSLW 35 UNCLAS

PROBLEM NNR HAS BEEN REQUESTED TO ASSIST AND PROVIDE A NUMBER OF NBCW QUALIFIED PERSONNEL FOR THIS EVALUATION PD WE ARE ABLE TO PROVIDE 50 PERCENT OF OUR STAFF AND WOULD APPRECIATE AN ADDITIONAL FIVE NUCLEAR DEFENCE OFFICERS AND SLANT OR NCOS TO ASSIST NORAD FOR THIS PURPOSE PD ADCHQ WAS REQUESTED IN THE FIRST INSTANCE BUT OTHER HEAVY COMMITMENTS AT THE TIME THEY ARE REQUIRED HAS PRECLUDED THEIR PARTICIPATION PD WE THEREFORE SOLICIT YOUR ASSISTANCE FOR NUCLEAR DEFENCE PERSONNEL FROM OTHER COMMANDS PD THE PERSONNEL WILL BE REQUIRED TO BE IN POSITION ON 25 APR TO BE CHECKED OUT ON THE EQUIPMENT AND EVALUATION INSTRUCTIONS PD TOTAL TIME FOR TD INCLUDING TRAVELLING WILL BE 7 TO 10 DAYS PD IF THIS REQUEST CAN BE MET PLEASE SUBMIT NAME CMM RANK CMM SERIAL NUMBER AND SECURITY CLEARANCE OF SELECTED INDIVIDUALS TO NNRHQ CMM ATTN NROND SOONEST PD LOCATION ASSIGNMENTS WILL BE MADE AFTER RECEIPT OF TEAM MEMBER NOMINATIONS PD HQ USAF ADC WILL MOVE PERSONNEL BY AIR TO LOCATION FROM VANCOUVER PD CDN PERSONNEL ATTENDING SHOULD BE ABLE TO ARRIVE VANCOUVER VIA RCAF SKED

BT

(2)
ADN 4-2-3

Please send msg to AMCHQ, ATCHQ, and TCHQ to determine if they would be interested in releasing their NDef personnel for this purpose. If they are interested, they should refer their nominations directly to NNRHQ, into us, and refer to this msg. Copy our msg into NROND NNRHQ

5 April

Shingler
ADN 4
23239

000008

969-7(DNDO)

Ottawa 4 Ont
13 Jul 64

Air Member
Canadian Joint Staff
2450 Massachusetts Ave NW
Washington DC USA 20008

NBCW - Survival in an NBCW Environment -
Operation Helping Hand

1 It is understood that as a result of the recent Alaskan earthquake, a report has been put out by USAF ADC on the effects of this disaster on the USAF base at Elmendorf, Alaska.

2 As some of the effects closely resemble those which it is anticipated might occur during a nuclear attack, AFHQ would be most interested to study the report. The document is entitled "Operation Helping Hand" and was written by the ADC Disaster Control Staff.

3 Your assistance in obtaining a copy would be greatly appreciated.

for AA Jagoe SL
(FA Wingert)W/C
for CAS

S/L AA Jagoe/ds
NDO2 2-5349

cc: Chron
Orig
Circ
File ✓

000009

RESTRICTED

Our file ref. S969-102(SASO)....



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

Referred to DND
JUN 30 1964
File No. 969-7
Chg'd to St. Hubert, Que.
29 Jun 1964

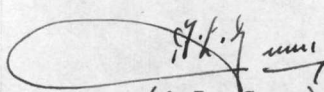
Ref: Your 969-7(DNDO) 2 Jun 64.

Chief of the Air Staff
Air Force Headquarters
Department of National Defence
Ottawa 4 Ont

NBCW - Air Operations and Survival Under Fallout

1 Although your paper has been studied by specialist staff at this headquarters firm replies to the problems posed cannot be provided at this time. Operational decisions on the wartime employment, dispersal, and diversion of aircraft will normally be issued by NORAD HQ.

2 It is understood that NNRHQ have now been asked to make a similar assessment. When a copy of the assessment is made available to this headquarters it will be studied in conjunction with current information and a reply forwarded to AFHQ at the earliest possible time.


(A.L. Gunn) F/L
for AOC, ADC.

~~RESTRICTED~~

Our file ref. 963-2 (SOND)



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

Metz Moselle France
19 Jun 64

Referred to	D.N.D.
JUN 25 1964	
File No.	969-7
Chg'd to	

Ref your 969-7 (DNDO) 2 Jun 64

Chief of the Air Staff
Air Force Headquarters
Department of National Defence
Ottawa 4 Ontario

NBCW - Air Operations and Survival Under Fallout

- 1 The problem of attempting to delineate the levels of radioactive fallout at which air operations will be limited or curtailed is a difficult one. As a general rule it could be stated that operations essential to the wartime role would be continued despite the hazard to personnel engaged in the operations, the only limiting factor being the physical incapability of personnel to perform the tasks assigned to them. Where operational tasks are of lesser priority and delays can be countenanced, it becomes feasible to regulate and control personnel exposure and radiation dose levels to minimize the casualty rate.
- 2 Reference para 2 (a) of your Appendix "A", it is likely that all of the tasks listed will have to be carried out under fallout conditions, assuming that the fallout hazard will exist for lengthy periods as a result of numerous upwind detonations which will produce fallout on the base at successive intervals of time. The tasks which will require outside exposure or enable limited protection for various periods are obvious. These include flying, air traffic control, servicing, maintenance, transportation and emergency services (fire crash crews, rescue, medical teams). The time of such exposure cannot be predicted accurately but will depend on circumstances.
- 3 Reference para 2 (b) of Appendix "A", for the CF104 aircraft the approximate time for turnaround is 45 minutes. From engine start to take-off the average time is 20 minutes. Crew debriefing, etc, on return would take approximately 10 minutes before the pilot could return to shelter.
- 4 Reference para 2 (c) of Appendix "A", turnaround procedures cannot be carried out under cover in 1 Air Div.
- 5 Reference para 2 (d), aircrew and servicing crews can be provided fully effective shelter against fallout between times of essential exposure. This is assuming that two flight line bunkers will be built at 3 Wing under the infrastructure agreement. Servicing crews cannot be given shelter while carrying out servicing tasks. Other operational support personnel must remain exposed if their activities pertain to the launching, servicing or security protection of the aircraft. Security personnel in particular must remain on guard duty despite the fallout situation and rotate at various intervals, the frequency depending on the radiation level.

6 Reference para 2 (e), it is difficult to set a realistic precise radiation level for any of the four cases listed. Decisions as to the operational commitment of personnel to tasks requiring outside exposure will necessarily depend, as stated above, on the degree of urgency of the operation. In arriving at a logical decision cognizance must be taken of the latest data on the acute effects of whole body penetrating ionizing radiation on human beings. The preliminary draft of STANAG 2119, Annex B, Appendices 1 and 2 outlines the latest United Kingdom and United States information on this subject. It will be noted that the American view is that at a radiation dosage of from 200-500 roentgens initial onset of symptoms would occur in from 4 to 6 hours. For dosages of from 500-1000 roentgens initial symptoms occur in from 1 to 4 hours. For any dosage over 1000 roentgens, initial symptoms will occur in less than 1 hour after exposure. This would tend to indicate that at any aircrew dosage over 500 roentgens it would be questionable whether a successful flying mission could be completed without the aircrew suffering symptoms before return to base. Consequently, the maximum intensity level at the base at which aircraft could continue to launch may be calculated by considering the time of outside exposure of the crew from emergence from shelter to actual take-off. This could be compared to the average intensity during that period to enable the dosage they would receive to be determined.

7 It is suggested that rather than attempting to determine precise intensity levels at which a base can or cannot function it would be preferable to draw up a realistic Commanders guide. This would outline the dosage levels at which various stages of incapacitation could be expected, time before first symptoms and the approximate times of outside exposure for various essential tasks. Based on this information and an up-to-date dose-rate time graph the Commander could make logical decisions on exposure for essential operational tasks. As stated previously, the prerogative as to radiation dosages his personnel receive must be left to him. The overriding factor should not be the existing radiation intensity levels at the time.


(RR Lunn) S/L
for AOC 1 Air Division

969-7(DIDO)

Ottawa 4 Ont
18 Jun 64

Ref: Attachment to 969-7(DIDO)
dated 2 Jun 64

Commander
NMRHQ
RCAF Stn North Bay Ont

NBCW - Air Operations and Survival Under Fallout

- 1 The attached letter and questionnaire has been circulated to CHQ where air operations are carried out. In the case of Air Defence Command, many of the answers can only be provided after knowing the type of decisions which the Commander NMR is likely to make in carrying out his air defence responsibilities.
- 2 It would be appreciated therefore, if you could assist ADC in arriving at the conclusions posed in para 2(e) of the reference, based on the probable operational requirements of NMR.
- 3 It is appreciated that a great number of variables enter into this problem, and that a precise answer cannot be given, but your views and guidance to a possible solution for planning purposes would be appreciated.

ORIGINAL SIGNED BY
F. A. WINGERT W/C

(FA Wingert)W/C
for GAS

Attach.

cc: AOC ADC

S/L AA Jappe/ds
ND02 2-5949

cc: Chron Orig Circ File



DEPARTMENT OF NATIONAL DEFENCE

RESTRICTED
969-7(DND0)

Ottawa 4 Ont
2 Jun 64

Ref Our 969-2(DND0) 23 Sep 64

Air Officer Commanding
Air Defence Command
RCAF Stn St Hubert PQ

Air Officer Commanding
Air Transport Command
RCAF Stn Trenton Ont

Air Officer Commanding
Maritime Air Command
5217 South Street
Halifax NS

Air Officer Commanding
1 Air Div RCAF
CAPO 5052
Canadian Armed Forces Overseas

NBCW - Air Operations and Survival Under Fallout

1 In reviewing the answers received from CHQ on the requirement for radiac instruments, it is evident that each operational command, because of location, role or type of aircraft, visualize operational limitations being reached at different levels of radioactive fallout.

2 Accordingly, and in consonance with para 3 of reference, AFHQ would like to receive the views of CHQ on their opinions as to the levels of fallout under which it is anticipated operations can be maintained under various degrees of operational urgency.

3 Guidelines as to the type of problems involved are contained in app A.

Attach.1

*for A Wingert/W/C
for CAS*

APPENDIX A
TO 969-7(DND0)
DATED 2 Jun 64

Air Operations and Survival Under Fallout Conditions

1 To assess the radiation intensities at which it is necessary to cease operations, and to determine conditions under which it is considered operations can be maintained, answers to the questions following will be required.

2 It is realized that precise answers to many of the questions posed on this subject cannot be expected, as circumstances and situations vary considerably. However, to enable planning to be carried out, every attempt should be made to assess each situation as accurately as possible.

- (a) what operational requirements have to be met under fallout conditions:
 - (i) flying,
 - (ii) air traffic control,
 - (iii) servicing,
 - (iv) communications,
 - (v) transportation
 - (vi) emergency services,
 - (vii) administrative, and
 - (viii) other.
- (b) what periods of time are involved in the following procedures:
 - (i) turn around (refuelling, re-arming, maintenance),
 - (ii) taxiing (take-off and landing),
 - (iii) crew debriefing, monitoring, etc.
- (c) can any of the turnaround procedures be carried out under cover.
- (d) what degree of shelter can be afforded the following personnel at present:
 - (i) aircrew awaiting sorties,
 - (ii) servicing crews in shelter,
 - (iii) servicing crews carrying out servicing,
 - (iv) other operational support personnel.
- (e) as a result of the answers obtained in (a) to (d) above, what levels of radiation intensities do you consider will:
 - (i) not affect the operational capability of the units,
 - (ii) restrict, but permit vital operations to continue,

- 2 -

- (iii) permit take-off to accomplish a mission but with the possibility of having to land elsewhere,
- (iv) totally stop operations.

3 Any other circumstances which can be visualized, and which will assist in arriving at a practical conclusion, should be included.

NNNNEFB301RMA283

PP RFEMWH RFEPFZ

DE RFEPMR 593/22

P M 222000Z

FM CANAIRMAT

TO RFEMWH/STN NORTH BAY

INFO RFEPFZ/CANAIRHED

BT

UNCLAS LOG6654-2 22 FEB

AMC LOG6654 8 FEB PD CONTRACTOR SNELGROVE CONFIRMS MATERIEL SHIPPED
YOUR UNIT 21 FEB VIA CNX PD DEPARTURE TORONTO 2315 HRS ARRIVAL NORTH
BAY 0700 HRS 22 FEB PD UNDERSTAND SHIPMENT CLEARLY MARKED PROJECT
61C95 PD CONFIRM RECEIPT PD FOR AFHQ PD YOUR DMP383 7 FEB REFERS

BT

22/2123Z

AFHQ
COMM CENTRE

FEB 22 22 06 '62



[Handwritten signature/initials]

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② ATOC/PC3-2

for your info
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mcp & com
23 Feb

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Info. & PA

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INFO RFEPFZ/CANAIRHED

RFEMC/CANAIRDEF

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UNCLAS CES13 22 FEB

CTEL PROJECT 61C95 CMM ATTN MR SELLAR AMC PD VHF/FM INSTALLATION

REQUIRED IN TRAFFIC CLERK HOUSE OF 446 SAM SQN COMPLETED 212000Z

BT

22/1450Z

AFHQ
COMM CENTRE

FEB 22 19 03



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D CO M 3-52

949-7 TD 1025

(1)

② CR - PMA

Noted + copy made.

John H. Lange etc

Com 3-5-0

2-8704

27 Feb 62

Attachment classified as: _____

OFFICE OF CHIEF OF THE AIR STAFF

NATO/NORAD REGISTRY

Date: OCT 5 1960

TO:

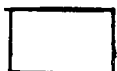
C. Flanigan
Cops (Info)
COB



For your information



For amendment



For retention



Take appropriate action

Copies passed for info/action to:

Referenced correspondence _____

File _____

JA Stephens
(JA Stephens) W/C,
CAS/EA
6-6175

000019

Address Reply:

The Chairman,
Chiefs of Staff,
Ottawa

FILE: CSC 5-11-4-4 (JPS/N)
DOCUMENT Attach
CLASSIFICATION: UNCLASS
DATE: 4 Oct 60

JOINT STAFF MEMORANDUM

Subject: Planning for the Continuity of Economic Activity Under
Thermonuclear Attack

Referred to *C. PLANS I*
OCT 6 1960
File No. *969-7*
Chg'd to.....

Description: An Address by R.J. Loosmore, Resource Planning Officer of
the Emergency Measures Organization

1. The attached document is referred to: CAS ✓
CGS
CNS
DM
DRB
2. It is requested that action be taken by: for info
3. Copies distributed by:

RAMcP/2-2871/pm

[Signature]
(R.C. Weston) CDIC
for Air Commodore,
for Chairman, Chiefs of Staff

PLANNING FOR THE CONTINUITY OF ECONOMIC ACTIVITY UNDER THERMONUCLEAR ATTACK

An address given to the Ontario Regional Orientation Course at Toronto on Monday, 12 September, 1960, and Thursday, 15 September, 1960 by R. J. Loosmore, Resource Planning Officer of the Emergency Measures Organization, Privy Council Office.

1. The economic problems which would follow a thermonuclear attack on Canada are formidable ones. You are already aware of the effects of thermonuclear weapons and of the physical havoc which they would cause, so there is no need to go into details at this point. The economic effects would extend beyond the range of the physical weapons effects to cover the country as a whole, because the entire economy is interdependent.

2. Any planning to meet the economic consequences of a thermonuclear attack is conditioned by the fact that the initial economic changes would be both radical and fast. When a radical change for the worse occurs slowly, the economy can be adjusted to it. For instance, a country can adjust gradually to the steady exhaustion of one of its natural resources. If a change for the worse is rapid but limited in its effects, it can be absorbed by the rest of the economy. For instance, the community can fairly easily adjust to the economic effects of the destruction of an individual factory by fire. However, when radical changes for the worse occur very fast, a problem arises for which there is no peacetime precedent.

3. The economic problem presented by a thermonuclear attack would be a radical one, because of the great amount of destruction. This destruction would have immediate effects in the shape of casualties to the population, destruction of resources such as factories and utilities, and destruction of key parts of the services necessary for running economic affairs, such as banking. In addition to the immediate effects directly caused by weapons, there would be spreading effects through economic interdependencies. For instance, the destruction of key facilities for transportation, communications and power supply could have far-reaching effects through the systems concerned. The destruction of industrial plants in one place would affect the operation of plants elsewhere which depended on them for components. Destruction of the large cities could result in the loss of concentrations of skills needed by the economy throughout the country.

.....

2.

- 2 -

4. Weapons which landed outside major centres, perhaps as random strikes, might produce economic effects which were purely local, but they might disrupt a system and thus have spreading economic effects. In any case, they would probably create fallout.

5. Apart from physical destruction, the spread of fallout would have immediate effects on the economy. If fallout should immobilize an area, production would cease in it for the time, thus involving a direct loss of potential resources. There might be some direct loss of stocks of materials or of agricultural products through contamination, and other stocks might be rendered inaccessible until fallout decayed. Any population loss which occurred would, of course, lower productive capacity. There would also be a local supply problem in contaminated areas.

6. The economic effects of fallout would spread beyond the contaminated areas. Areas dependent on one which was contaminated would feel the lack of supplies from it. Transportation, communications and power supply networks passing through a contaminated area might be dislocated, insofar as they depended on people whose place of work was in the area.

7. Where fallout was heavy, there would be a long-run economic problem through the denial of ground for lengthy periods. In any area where fallout was heavy enough to make remedial evacuation necessary, even though only for a short time, there would be an economic problem involved in housing the evacuated in new areas and bringing them back into economic activity.

8. The type of effect noted above would change drastically the composition of the labour force in respect of its size, age distribution, location and available skills. It is impossible to estimate such changes accurately beforehand, but clearly the changes would be of fundamental significance for all types of economic activity.

9. So far, the analysis has dealt with the critical nature of the changes. It is clear that they would present a severe problem under any circumstances. The situation is aggravated by the fact that they would occur in a brief period, a matter of days. Adjustment to these changes would therefore have to be immediate. There would be no possibility for ad hoc adjustments as things altered, and the consequences of wrong decisions could be serious. If the capacity for surviving such change is to be built up, it is necessary to have plans prepared beforehand.

10. Such plans must be comprehensive enough to cover all eventualities and at the same time, sufficiently flexible to allow for the fact that the precise details of the situation to be met cannot possibly be foreseen. They must be worked out in peacetime, together with the machinery for implementing them.

.... 3.

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11. The necessity for combining comprehensiveness with flexibility does impose on planners the need for developing general policies, which can be applied locally under widely varying conditions. It also imposes the need for planning an administrative structure which could be used for implementing such policies and for developing and training in peacetime the staff necessary for manning the administrative system at short notice in an emergency.

12. One example of a general policy is that it has been decided that if an attack occurred, a War Supplies Agency would immediately come into being to carry out all necessary measures in the field of supply. In addition to policy decisions of this type, which lay down wartime responsibilities, it will be necessary to prepare in peacetime the orders-in-council, administrative directives and other material needed for running the wartime system of government.

13. However much planning may be done in peacetime, it would be necessary to leave the wartime agencies with considerable power to deal with local situations as they occur. A great deal would therefore depend on the people staffing them, and their capability for effective action under unprecedented conditions. If the general policies for controlling the economy are to work, it will be necessary to arrange in peacetime for the availability of people to carry them out.

14. Considerations such as the above are likely to arise in all fields connected with economic planning, not only those of supply. In addition to general policies, backed up by the earmarking of people to implement them, it may be necessary in peacetime to draw up plans for specific types of situations. For instance, it might prove useful in the case of an individual area to draw up a detailed plan for utilizing local sources of electric power, should supplies from outside be cut off. Such detailed planning would be effective only if it was worked out within a broad general framework. The circumstances to which it can be applied are probably limited, because there are not many potential situations of such a nature that the probability of their occurrence in a specific form can be rated high.

15. The type of action needed in the economic field after a thermonuclear attack would vary according to the time after the attack at which it was taken, and according to the severity of damage in the locality concerned. For the purposes of economic planning, the consequences of attack can be considered in two main time-phases. The shock phase is the period immediately after the attack. During this, it is assumed that normal economic activity will cease in damaged or heavily contaminated areas. This will be followed by a recovery phase, during which economic activity will be restored. There might be an intermediate phase after the main attack was over in which sporadic attacks occurred, or were considered likely.

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- 4 -

16. During the shock phase, the main problem is to ensure Canada's survival as an economic entity by using the resources still available. However, survival by itself is not enough; the capacity for rehabilitation and recovery is essential. During the shock phase, a significant amount of economic activity would probably continue in undamaged areas which were either uncontaminated or lightly contaminated. Such areas would, of course, very rapidly feel the economic repercussions of destruction or immobilization elsewhere. Because they could form the backbone for national recovery, every effort should be made to keep their economies going, insofar as they were critical to survival or recovery.

17. In the damaged or heavily contaminated areas, where economic activity would cease during the shock phase, survival operations and welfare programmes would be the predominant activities. Local resources would need to be used in a way most appropriate for immediate survival and additional resources would need to be moved in, if practicable.

18. So far, this paper has dealt with the general nature of the problems likely to be found. Some of the main fields in which these problems would arise will now be discussed in more detail. These are:

- supply
- transportation
- communications
- accommodation
- finance
- manpower.

19. The problem of supply under the conditions of a thermonuclear attack on this country would be complex and critical. Vitally needed commodities could become unobtainable or scarce immediately because of the destruction of existing stocks and the inability to replace them from new production or from imports. Any destruction of industrial and commercial areas would destroy large quantities of goods, and further quantities would be rendered temporarily inaccessible by fallout. Imports would probably cease, and would at least be seriously curtailed.

20. The capacity of the surviving manufacturing plants to produce new goods would probably be severely limited, especially during the shock phase. Destruction might be heavy, especially since manufacturing plants tend to be concentrated in the larger cities. Plants outside the areas subject to blast or fire might be forced to close for a time by fallout. The productive capacity in areas not directly subject to weapons effects would feel the economic effects of decreased activity elsewhere, as already explained.

.... 5.

- 5 -

21. In winter, the general situation could be aggravated by adverse weather conditions, which would hamper communications still further, make it more difficult to repair damaged systems, such as those for communications or the movement of electric power, and increase the consumption of scarce fuel.

22. During the shock phase, the things most needed immediately for civilian purposes would be basic items such as food, fuel, clothing, blankets and medical supplies. In winter, the need for fuel, clothing and blankets would be especially urgent. Such items might well be provided on a welfare basis rather than through the market system in many areas, but even so the government supply authorities would have to get the commodities into welfare channels. Whether the goods passed through welfare or modified commercial channels, they would, in the main, have to be supplied from the surviving stocks of ready-to-use items rather than from current production.

23. At the same time, there would be an urgent need for the materials and equipment necessary for repairing essential installations such as railways, public utilities, and roads. Simple building materials and tools would be needed for making immediate repairs to dwellings. Heating and electrical supplies, furniture, household appliances, and similar items would soon be needed to begin the task of rehousing the homeless. This task would be especially urgent in winter.

24. Redistribution of the available supplies to the areas which needed them most would be made difficult by the disruption of transportation and communications. The problem would be accentuated by movements of the population. Areas with a small population might receive more evacuees than could be handled by the normal peacetime distribution system and emergency action might be hampered by inadequate knowledge even of the number of people to be cared for. In the areas where goods were available, it would be necessary to prevent individuals from buying up all available supplies and hoarding them.

25. In the areas not directly affected by the attack, in which production could be continued, it would be necessary to curtail the output of non-essential goods, since there would be no point in using stocks of scarce materials or fuel for any but the most urgently needed end-products. However, in the case of some continuous-process plants, such as blast furnaces, it might be necessary to keep production going even if the product was not immediately required, in order to make sure that the plant would be maintained in working order for the recovery phase.

26. The main production problem would arise during the recovery phase, but its exact nature is difficult to predict. In the manufacturing industries, one major problem would be the identification of surviving facilities and of the uses to which they might be put. The prospects of getting this done within a useful period of time would be greatly

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- 6 -

increased by the preparation beforehand of information on the location of important production facilities, their capacities, and the purposes to which they could most readily be converted in an emergency.

27. The assessment of surviving resources would have to be followed by the necessary administrative action. Priorities would have to be established for production, which would itself be no simple task. Reconstruction and rehabilitation alone would place heavy demands on production capacity during this phase, and if the war continued, military demands on the limited production capacity would have to be balanced against those of the civilian population. Once these priorities were established, raw and semi-finished materials would have to be allocated to industry in accordance with them. Where practicable, the conversion of existing production facilities to new purposes would need to be organized.

28. Restoration of the power supply would be a matter of urgency. Without electricity a wide range of activities which we tend to take for granted would become impossible, including such simple operations as working gasoline pumps or keeping an oil furnace going. Where a supply of electricity was available, it would be necessary to restrict its use to essential purposes. Arrangements would therefore be necessary beforehand, to ensure that power networks could make the most effective use of undamaged generating plants and transmission systems.

29. Agriculture is likely to suffer less destruction than the manufacturing industries, but fallout could cause serious damage to land, crops and livestock. Farmers would need expert advice and assistance in dealing with the fallout problem, and measures might have to be taken to expand agricultural production rapidly in areas free from contamination. Whatever the weapon effects, the continuation of agricultural production on an adequate scale would depend on the supply of key items such as seed, fertilizer, gasoline and spare parts for machines. For some of these essentials, particularly gasoline and spare parts, the farmer would be in competition with other claimants.

30. Success in meeting the problems of supply would depend on the availability of transportation, which would present especially difficult problems during the shock phase. At the same time, the ability of trucks, railways, ships and aircraft to maintain service would depend on the continued supply of fuel and other key items.

31. The extent to which transportation services might be disrupted cannot be predicted with any certainty. Within the area covered by a single nuclear explosion, the effects on transportation could range from temporary disruption because of fallout to the total destruction of key facilities. The cumulative effect of a number of weapons might be the fragmentation of the transportation services on which the country normally depends, with some areas isolated from outside contact.

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- 7 -

32. The road transport industry has considerable flexibility and its facilities are widely dispersed. Because of this, it would in any case have a major role to play during the shock phase. Since road transport carried only 11.1% of intercity traffic in the latest period for which figures are available, 1958, it is clear that the additional burden imposed on it by any breakdown of other major carrier systems would be considerable.

33. The effects of attack could be much more severe on railways, which carried 52.3% of intercity traffic in 1958. The main lines pass through the areas most likely to be attacked, and it is also in these areas that rolling stock, major repair facilities and marshalling yards tend to be concentrated. Although alternative routes exist to some extent, they are probably not adequate to provide quickly an assured means of bypassing damaged areas. Fall-out might not stop the operations of trains, which might be able to run rapidly through some contaminated areas. However, heavy fallout could seriously impair operations as well as delaying any necessary repairs. An attack could well bring long-haul operations to a halt either temporarily or for some period of time, and even short-haul operations might be seriously impaired in many parts of the country.

34. Pipelines for the movement of petroleum and its products might also prove highly vulnerable to attack. If so, a heavy burden would be thrown on other means of transportation, since these pipelines were carrying 13.4% of the intercity traffic in 1958.

35. Inland and coastal water transport, which carried 23.2% of the traffic in 1958, might be of considerable value for the movement of bulk supplies after an attack which occurred during the inland navigation season. Any damage which might occur to locks, canals and other narrow waterways would reduce the usefulness of the system, and the availability of harbour facilities would be a critical factor. One advantage of inland shipping would be that the waterways would be less likely to remain contaminated by fallout than adjacent stretches of ground, because radioactive dust which fell into the water would sink.

36. In winter, only coastal shipping would be a potential source of domestic water transportation. Some areas normally depend on coastal shipping for their supplies, notably the coast of Newfoundland, the north shore of the St. Lawrence, and parts of the coast of British Columbia.

37. Aircraft would appear to have a limited value in relieving the transport situation after a nuclear attack, although they might be used for the movement of key personnel and the delivery of urgently needed items.

38. Communications of all types play an essential part in the working of the economy. Telecommunications provide immediate contact between widely separated areas, thus permitting the rapid spread of information and instructions. The usefulness of the telephone and telegraph for the conduct of business does not need any emphasis. The radio and television networks, by spreading information, help to provide

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- 8 -

the background of knowledge against which economic activity goes on. After a thermonuclear attack, maintenance of the telecommunications network would be essential to the effective rehabilitation of the economy. The telephone, for instance, would be essential for administrative purposes and the radio network would be a useful means of giving information to the general public about the economic situation, and the controls in effect.

39. Other communications are also essential to the economy. Postal services, for instance, play a very significant part in keeping the nation's economy going. Newspapers too have a useful part to play. The extent to which written information, either public or private, could be kept flowing with reasonable speed would be an important factor in determining the extent to which economic activity could be effectively restored.

40. The scope of the accommodation problem would depend largely on the extent to which the population of damaged areas survived. If it was necessary to carry out remedial evacuation of heavily contaminated areas, there would be an additional strain on the remaining uncontaminated accommodation. The initial problem would be to ensure that every person had a minimum of shelter and, in winter, of warmth, by making the best available use of existing dwellings and readily convertible substitutes. A long-term programme for construction of dwellings would form a basic part of any recovery programme.

41. The financial results from a nuclear attack would present governments, commercial institutions and private citizens with great difficulties. Inflationary pressures might develop rapidly owing to a real or expected shortage of commodities, but these pressures might be offset or even reversed by a reduction in the supply of money and credit through the destruction of currency, financial records and banking facilities. The payment of salaries, social security benefits, debts and other contractual obligations might be physically impossible for a time in some parts of the country and the effects of this would spread to those areas not directly affected by attack. Losses of life and property could create serious problems of financial compensation. Governments at all levels could be faced with unusual financial liabilities at a time when the collection of taxes might be impracticable in the country as a whole, or in large parts of it.

42. Despite all the obvious difficulties involved, it would appear desirable to keep the economy on a monetary basis as far as possible even during the shock phase, thus making the maximum use of familiar procedures. It would, of course, probably be necessary to use the welfare services to support a large number of people rendered temporarily insolvent. Such welfare measures might well involve the free issue of essential commodities and the free provision of accommodation and essential services. Apart from welfare cases, however, it would probably be desirable to have as many people as possible paid in money, and have them meet their requirements through the expenditure of it. To keep

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- 9 -

a monetary economy going under the circumstances envisaged, some unusual procedures might be needed, such as a general or partial moratorium on debt payments. Among other measures, strict control of prices, rents, wages and salaries would probably have to be introduced as soon as possible.

43. Manpower to carry out the work in the fields of activity discussed above would be provided by the people of Canada, who would be the determining factor in our ability to survive a nuclear attack. The speed and efficiency with which they could be organized for the jobs which needed to be done after an attack would have a decisive effect on the outcome.

44. There would be urgent new jobs to be done in the shock phase, and people would have to be found to do them immediately, not days or weeks later as in past wars. At the same time, many civil occupations would become so important that those engaged in them could leave only at the risk of jeopardizing the whole economy. A major effort would be required after an attack to locate and identify people with specific skills, match these skills with the jobs to be done and get the persons to work on those jobs.

45. In all fields of activity following a nuclear attack, the problem confronting government would be that of fast action in a drastically changed situation, the precise details of which could not be foreseen and probably would be imperfectly known at the time action had to be taken. The success of this rapid action, which would take place simultaneously at many different levels of the administrative structure, would depend to a large extent on the accuracy of the information on which it was based.

46. The first requirement would be for information on weapon effects, but before the necessary economic measures could be taken, these weapon effects would have to be analyzed in terms of their significance to the nation's resources. For instance, the physical destruction and the denial of ground by fallout would have to be interpreted in terms of the location and nature of those key resources which would be essential to survival and recovery. It is clear that basic information on key resources must be compiled and processed in peacetime, to be stored and maintained on a continuing basis at the places where it would be used in an emergency.

47. Standard techniques for using this material are being developed, and it will be necessary to maintain the basic information in such a way that it can be applied within the framework of an integrated system. The resource analysis programme will very likely involve a wide variety of emergency planners.

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- 10 -

48. Canada undoubtedly has the capacity for surviving a thermonuclear attack, provided that the measures necessary for readjustment are planned beforehand. It is to be hoped that these measures will never be needed, but if they ever should be, they would be needed immediately and in a form ready for application. Should we ever undergo an attack with nuclear weapons, it would be on the work of those such as you, who are engaged during peacetime in emergency planning, that the survival of Canada as a nation might well depend.

969-7 (DArmEng)

Ottawa, Ont
28 Jul 60

Ref: Your 963-2 (SOND-2)
d/23 May 60

Air Officer Commanding
1 Air Div RCAF
CAPO 5052
Canadian Armed Forces Europe.

Attn: SOArm

NBCW Defence -
Nerve Agents

1 Enclosed are two copies of a report received
from the Defence Research Board in answer to the request
outlined in your referenced letter.

BDH
(BD Murchie) S/L
for CAS

Encl. 2 *BDH*
F/L DP Gaudin/tb
24598

ORIG
CIRC
LOCAL
FILE

(3)
note by
DND staff
- P/A

Lebanon
on 17/2/64
(25349)

2 Aug 60

(2) DND
For your info PA
DP Gaudin R
and for by
2-4598

2/8/60

000031



OUR FILE REF. DRBS 2000-20-1
DAR(B&C)

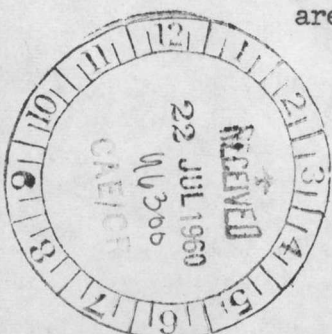
DEPARTMENT OF NATIONAL DEFENCE
DEFENCE RESEARCH BOARD

Ottawa, Ontario,
21 July, 1960.

D Arm Eng. 3-2
"B" Building.

NBCW Defence-Nerve Agent

1. Reference your letter 969-7 (D Arm Eng) dated 14 June 1960 with attached request for information from No. 1 Air Division, 963-2 (SOND-2) dated 23 May 1960.
2. The penetrating action of nerve agents through fabrics, skin or other materials is very complicated but some comments may be of help.
3. Nerve gases are not highly reactive chemically and so there is little chemical reaction, such as corrosion, with most clothing materials. Toxicological suits, such as the M3, have an outer surface of butyl rubber, which can be decontaminated by a number of methods.
4. It must be emphasized that the whole question of personal and clothing decontamination is at present under review. However, the following statement on the protective equipment used in field trials with nerve gas at Suffield Experimental Station and the decontamination of these articles may be of interest.
5. The protection equipment used at SES consists of the following items:
 - (a) Complete rubber suit cover as supplied by the American Chemical Warfare Service-suit, protective impermeable, one piece M3. This is fitted with the M9A1 mask and attached hood.
 - (b) Heavy weight rubber gloves.
 - (c) Heavy weight commercial or issue type rubber boots.
6. Decontamination of the M3 suit originally included boiling but it was found that this caused damage to some of the seams. At present the suit to be decontaminated is thoroughly rinsed in cold water containing standard bleach powder (about 10 lbs. in 20 gallons of water). It is then rinsed, transferred to a washing machine and washed thoroughly in hot water (approximately 160°F) before being rinsed twice in clean water. It is then hung out to dry and air for a period of at least one week. The rubber gloves and boots are boiled, rinsed and dried.



- 2 -

DRBS 2000-20-1 DAR(B&C)

7. The aim at Suffield Experimental Station is to keep personnel out of heavy concentrations of nerve gas, because of safety aspects. But at times personnel have had to operate for short periods in areas which have been contaminated to a density of a few grams/sq metre.

HR Richards.

for Chairman, Defence Research Board.

969-7 (DarnEng)

MEMORANDUM

14 Jun 60

Directorate of Atomic Research

MCW Defence -
Nerve Agent

1 Enclosed is a copy of a letter received from No. 1 Air Division raising certain questions on the properties and action of nerve agents.

2 May the information requested be forwarded to AFHQ/DarnEng.

h. Henderson
fr (EN Henderson) W/C
Act for C/S

Encl. 1

[Signature]
F/L DP Gaudin/tb
24598

AMTS
ORIG
CIRC
LOCAL
FILE

000034

Our file ref. 963-2 (SOND-2)



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

Metz Moselle France
23 May 60

Chief of Air Staff
Air Force Headquarters
Department of National Defence
Ottawa 4, Ontario

Attn: DNDO

① NBCW Defence - Nerve Agent

Referred to.....	DNDO
MAY 31 1960	
File No.....	969-7
Chg'd to.....	

1 A study of current literature on nerve agents reveals no indication of the penetrating action i.e., whether it corrodes or burns a way into material, skin, etc, or whether it simply seeps through.

2 The question arises with regard to decontamination of toxicological clothing. After protective clothing has been exposed to nerve agent and decontamination of the outside surface has been completed will the nerve agent, which is still secreted within the rubber, continue to penetrate the material to the inside surface and thereby still constitute a hazard. Should the nerve agent have a corrosive effect then presumably decontaminating materials will follow in its path and neutralise the agent. However, should penetrating action be by other means what guarantee is there of the nerve agent being destroyed?

3 The foregoing is forwarded for your comments in order that the efficacy of present decontamination procedures may be determined, and, to resolve whether toxicological suits are suitable for use more than once.

② Arm Eng 3-2-2
1. Can you provide this info.
please. I think DCRM will
be able to do so. I.e. suggest
experiments.

RD Bakers
(RD Bakers) F/L
for AOC 1 Air Division RCAF

9697

PRECEDENCE - ACTION DEFERRED		PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 08 2145Z	MESSAGE INSTRUCTIONS
FROM	CAVAIRHED			PREFIX GR
TO	CAVAIRMAT MATLIST BCHO			SECURITY CLASSIFICATION UNCLAS
INFO				ORIGINATOR'S NUMBER DAE 5039 8 APR

IT IS DESIRED TO KNOW THE AIR FLOW DISTRIBUTIONS AROUND A CF100 AT TAXI SPEEDS ON A CALM DAY IN ALL PLANES OF OBSERVATIONS PD VORTICES AND AIR STREAM DISTRIBUTIONS COULD BE OBSERVED BY DUST CHM SMOKE CHM OR SNOW SWIRLS ABOUT THE AIRCRAFT PD IT IS REQUESTED THAT UNITS SEARCH THEIR FILES FOR SUCH PHOTOS PD OPERATIONS OVER GROUND WHICH HAS BEEN LIGHTLY COVERED WITH FRESH SNOW OR DURING SNOW FALLS SHOULD BE ESPECIALLY PRODUCTIVE PD PHOTOS FROM ABOVE SHOULD NOT BE FORGOTTEN PD FORWARD PHOTOS OR ANY PERTINENT REPORTS TO AFHQ DAENG

PAGE OF PAGES		REFERS TO MESSAGE		DRAFTER'S NAME WK BELL PL		OFFICE B3063		TEL. 6-6457			
		CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>									
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DEPARTMENT OF NATIONAL DEFENCE

MINUTE SHEET


Referred To

REMARKS

To be signed in full showing Appointment, Telephone Number & Date

CPS.

Re para ①. This is subject which
was under discussion when LTC
Maurice for Air Div. was here
last week. He is making definite
recommendations from Air Div.

MSL
PAs Guly

S963-104 TD9154P (DGDO)
S963-107

MEMORANDUM

3 Jun 59

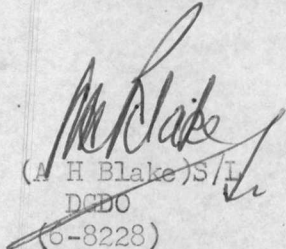
DPA

Food Stock Piles - Policy

1 I am sure that every action is being taken, that can be taken, to ensure adequate stock-piling of food in case of emergency. However, it is very obvious that all is not well in this regard, especially in No 1 Air Division, where stocks of C ration are due for a turnover and should be replaced in the near future. There is also need for some kind of approved policy in the Air Division for food stock-piling for dependents.

2 There is also a need for food stock-piling for RCAF units in Canada which are located near to target areas and for units which may be deployed and many other categories. The type of ration, the quantity, the replacement of rations are, I realize, all problems and I can only hope that we are aware of the implications we may be faced with in this regard during a future war.

3 If a staff study is felt necessary to bring this matter to a head, this Directorate will provide an officer to sit-in with your staff, supply staffs and possibly the medical staff to arrive at some conclusions which may provide some assistance to those vested with the responsibility for providing policy on this matter.


(A. H. Blake) S/L
DGDO
(6-8228)

Our file ref. 969-107(IN DO)



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

Ottawa Ont
1 Sep 59

Ref Your HQS 2426-4(DWDS) dated 28 Aug 59

969-7

Chief of the General Staff

(Attention DWD)

Fallout Reporting System

1 Providing the data shown on the appendices can be accepted as being reasonably accurate, it is considered that a grid not less than 15 x 15 is required around target areas and that a grid 30 x 30 would satisfy the remaining area of concern.

2 If this is acceptable and presuming we use an area of 90 miles radius around all target areas, this alone would require some 2880 posts for target cities. The total number of posts required, which is of course completely dependent on how much of the remaining area we need to cover, would bring the figure up to the 3300 - 3500 level.

(A H Blake) S/L
for CAS

Enc

Original to CAORE
8 Sep 59

MESSAGE FORM

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PRECEDENCE - ACTION DEFERRED	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 201500Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED			PREFIX GR
TO CANAIRDIV			SECURITY CLASSIFICATION UNCLAS
INFO			ORIGINATOR'S NUMBER NDO 143 23 AUG

YOUR 963 3 1 SOND 11 AUG 59 PD ANSWER TO BOTH QUESTIONS IS NO

PAGE	OF	PAGES	REFERS TO MESSAGE		DRAFTER'S NAME <i>J E Fasolas</i> (J E FASOLAS) MAJ		OFFICE INDO	TEL. 6-8228
			CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>					
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RELEASING OFFICER'S SIGNATURE <i>(AM BLAKE) SL</i>								

Our file ref. 963-3-1 (SOND)



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

Metz Moselle France
11 Aug 59

Chief of Air Staff
Air Force Headquarters
Ottawa, Ontario

Nuclear Defence
Fallout Implications

Referred to <i>D.N. Defence</i>
AUG 24 1959
File No. <i>963-1-7</i>
Chg'd to.....

1 It is requested that this HQ be provided with information on the following two points:

- (a) Will heavy nuclear fallout cause disruption or interference to micro-wave transmissions, ground to air communications, and radar reception?.
- (b) During one or two trips through a radioactive cloud the cockpit of an aircraft will probably not become significantly contaminated by radioactive particles entering the cockpit via an unfiltered ventilation system. However, is there a possibility that, during sustained flying operations in a radioactive atmosphere, the radioactive particles may accumulate in the cockpit and hence cause a significant external hazard?.

F.A. Wiegert
(F.A. Wiegert) S/L
for AOC 1 Air Division, RCAF

S248
cm

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Sch. PP 7 969-7

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FROM CANAI RHED			PREFIX GR
TO CANAI RDEF			SECURITY CLASSIFICATION UNCLAS
INFO			ORIGINATOR'S NUMBER CPIN 48 6 AUG

REF TELECON LEWIS DASH GREENWAY PD

REQUEST ADC REPRESENTATIVES REPORT TO DAIRPLANS AT 0900 HRS

FRIDAY 7 AUG

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME		OFFICE		TEL.	
						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		(J. WOOLFENDEN) W/C		DAIRP		6-7633	
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CR 11

RECLASSIFICATION SHEET

FILE No. 969-7

LETTER ☐ MEMO ☒ SIGNAL ☐ EXTRACT ☐

ORIGINATOR King Hqs.

REF. No. Hqs 2426-1 DATE 6/7/59 REFERRED TO CAS

GENERAL CORRESPONDENCE ☐

SYNOPSIS: Role of the Militia in National
Security

HAS BEEN REMOVED AND PLACED ON 9210

DIRECTOR OF CENTRAL REGISTRIES

(per) Lt. W. Golding

DATE 23/7/59

NOTED IN RECORDING

SECTION 11

000044

File Note

- (1) Army letter HQS 2426-1
Vol 2 (DGSO SO), 6 Jul 59
removed from this file and
placed on 5921-100.
- (2) Subject: "Role of the
Militia in National Survival".

Steve Arnold
Records

20 July 59.

Selouch
DND/ND 2-2
(2-5349)

S963-107(DGDO)

S921-100(DGDO)

Ottawa Ont

11 Jun 59

Ref Your S096-103(CStaffO)

Air Officer Commanding
Air Transport Command RCAF
RCAF Station Lachine
Lachine MPO 201 PQ

National Survival - RCAF Goose Bay

1 It is agreed that the protection of civilians located at Goose Bay is unique in that whilst similar conditions may prevail in other parts of Canada, where the responsibility is easily defined, Goose Bay is in Newfoundland and is still considered to be a remote area.

2 As you are aware the Department of National Defence and more specifically the Canadian Army has been given increased responsibilities in National Survival, the exact extent of IND responsibilities are still being defined. The problems affecting Goose Bay will be placed before the Canadian Army in the near future so as to arrive at an agreement on responsibility insofar as the civilian personnel located at Goose Bay are concerned. You will be advised.

B
(A H Blake) S/L
for CAS

S/L AHBlake/dmp

DGDO

6-8228

Copies to

File

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Circ

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RESTRICTED

S096-103(CStaff0)

Our file ref.....



CANADA

DEPARTMENT OF NATIONAL DEFENCE

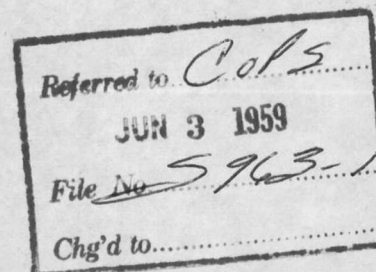
ROYAL CANADIAN AIR FORCE

Lachine, Que
1 Jun 59

Ref your S963-107(COps) 6 Apr 59

①

Chief of the Air Staff
Air Force Headquarters
Department of National Defence
Ottawa 4 Ont



Ground Defence - Generally
Nuclear Defence - RCAF Station Goose Bay

1 It is observed that the provisions of para 3 (a) of your referenced letter appear unrealistic when applied to civilians and dependents in residence at RCAF Stn Goose Bay.

2 These civilians are residents on RCAF Station Goose Bay and Goose Bay Airport is entirely a Federal enclave. These residents therefore are considered to be in no way under Provincial jurisdiction for Civil Defence. Consequently, the protection of civilians and their dependents including personnel of the Depts of Transport, Customs and Immigration, and RCMP together with the employees of numerous civilian firms and agencies rests entirely with the Federal authorities and not with Provincial.

3 The situation at Goose Bay Airport is unique in that similar conditions do not appear to exist in other parts of Canada. It is requested, therefore, that the policy for protection, education, and provision of equipment and material for Civil Defence in the Federal enclave of Goose Bay Airport be brought to the attention of the appropriate Federal authorities in order that the necessary funds may be allotted for the Civil Defence of civilians in residence at Goose Bay Airport, at the instigation of the Federal authorities.

②

600 3-2

Adm. Phe.

T 1245

(H.A. Morrison) G/C
for AOC RCAF ATC

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FROM CANAIRHED			PREFIX GR
TO CANAIRDEF			SECURITY CLASSIFICATION UNCLAS
INFO			ORIGINATOR'S NUMBER GDO 106 04 JUN

YOUR GD 155 3 JUN PD THIS IS PRECISELY THE THINKING WE HAD HOPED TO
 PROVOKE WITH OUR LETTER PD OUR EXPERIENCE HAS BEEN THAT UNITS WERE
 PLANNING TO DECONTAMINATE AIRCRAFT UNDER ANY OR ALL CONDITIONS WITHOUT
 REGARD TO LEVELS OF INTENSITY OF CONTAMINATION PD YOUR POINTS ARE WELL
 TAKEN AND SHOULD CONTINUE TO FORM THE BASIS FOR YOUR DECISION TO DECONTAMINATE
 AIRCRAFT

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~~JLR~~

P/A please
on file

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~~DGDO~~

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RCAF
SIGNALS OFFICE

JUN 3 21 00 '59

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M0 RFEPTZ

DE RFEMVB 54/03

M 031545Z

FM CANAIRDEF

TO CANAIRHED

BT

GD155 3 JUN

①
YOUR S963-107 DGDO 26 MAY PD REFERENCE IS MADE TO PARA 4 PD
IT IS SUGGESTED THAT THE QUESTION OF WHETHER AIRCRAFT CONTAMINATED
WITH RADIOLOGICAL FALLOUT CAN BE REFUELLED COM REARMED AND SCAMLED
REPEATEDLY WITHOUT EXPOSING AIRCREW AND GROUND CREW TO UNACCEPTABLE
LEVELS OF RADIATION IS ENTIRELY DEPENDENT ON THE RADIATION INTENSITY
LEVELS EXISTING IN THE TURNAROUND AREA AND ON THE AIRCRAFT
CONCERNED PD IT IS UNDER CONDITIONS WHERE SUCH PROCEDURES WOULD BE
HAZARDOUS THAT DECONTAMINATION OF BOTH THE TURNAROUND AREA AND THE
AIRCRAFT BECOMES NECESSARY IF ESSENTIAL OPERATIONS ARE TO CONTINUE
C WA AIRCRAFT CONTAMINATED

② Noted by DGDO Staff - P/A.
4 Jun 59
Jelkovich
GD 2-2
(25349)

TWO REFIVE 54/03

PARA IF INTENSITIES ARE IN THE RANGE OF 500R/HR TO 1000R/HR
THE ONLY WAY IN WHICH ESSENTIAL SCRAMBLES CAN CONTINUE IS TO MINIMIZE
NOT ONLY THE EXPOSURE TIMES OF GROUND CREWS BUT ALSO THE HAZARDS TO
WHICH CREWS ARE SUBJECTED DURING THE 15 TO 18 MINUTE TURNAROUND
PERIOD PD SURELY IF A SIMPLE CMM SEMI-AUTOMATIC WASHDOWN PRO EDURE CAN
BE DEVELOPED CMM MANPOWER CONSUMPTION WILL NOT BE GREAT AND THE
RADIATION DOSAGE EXPERIENCED BY AIRCREWS FROM THE TIME OF LEAVING
SHELTERS UNTIL AIRBORNE WILL BE CONSIDERABLY REDUCED PD FOR OPERATIONS
AT SUCH UNITS AS ST HUBERT WHERE HIGH INTENSITIES ARE EXPECTED A
DOSAGE REDUCTION OF EVEN 15 TO 20 PERCENT MAY MAKE THE DIFFERENCE
BETWEEN A SUCCESSFUL AND AN ABORTIVE INTERCEPT PARA THE RELATIVELY
SMALL COST OF A SMIPLE FLUSHING DEVICE AS COMPARED TO THE POTENTIAL
IMPORTANCE OF ONE SUCCESSFUL INTERCEPT IS THE ESSENTIAL CRITERION
PD HENCE IF REMOVAL OF LOOSE CONTIMINATION CAN BE SIMPLY ACCOMPLISHED
IT APPEARS SHORTSIGHTED TO ENHANCE PERSONNEL EXPOSURES UNNECESSARILY
PARA REFERENCE PARAS 2 AND 3 THE CONCEPTS AS OUTLINED ARE PART OF
THE CURRENT TEACHING IN THIS COMMAND

BT

03/1557Z

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FROM CANAIRHED			PREFIX GR
TO CANAIEDIV			SECURITY CLASSIFICATION RESTRICTED
INFO			ORIGINATOR'S NUMBER QDO 95 29 MAY

YOUR QD 64 28 MAY PD OUR S963 107 DQDO 26 MAY REFERS PD THIS IS NOT POLICY BUT ONLY GUIDANCE PD UNIT COMMANDERS CAN DECIDE RE MASKS AND AIRCRAFT DECONTAMINATION PD FLASH BLINDNESS PREVENTATIVE MEASURES WITH PARTICULAR EMPHASIS ON 1 AIR DIV NOW IN HANDS OF MEDICAL STAFF PD ANTICIPATE SOME TYPE OF PREVENTATIVE MEASURE WILL BE RECOMMENDED

PAGE	OF	PAGES	REFERS TO MESSAGE		DRAFTER'S NAME <i>J E FASCIAS</i> J E FASCIAS)MAJOR		OFFICE DQDO	TEL. 6-8228
			CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>					
FOR OPR'S USE R	DATE	TIME	SYSTEM	OPERATOR D	DATE	TIME	SYSTEM	OPERATOR <i>(A H BLAKE)S/L Major USAF</i>

MESSAGE FORM

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5965-107

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TO CANAIRDIV			SECURITY CLASSIFICATION RESTRICTED
INFO			ORIGINATOR'S NUMBER GDO 96 29 MAY

YOUR GD 65 28 MAY PD OUR 5963 107 DGDO 26 MAY REFERS PD NO SUITABLE METHOD EXISTS FOR ESTIMATING TIME OF PEAK INTENSITY PD METHODS HAVE BEEN PROPOSED BUT INHERENT INACCURIES MAKE THEM USELESS PD COMPLETE APPRECIATION AND ANALYSIS OF METEOROLOGICAL CONDITIONS DURING CLOUD TRAVEL TIME MUST BE MADE TO EVEN PREDICT WHERE FALLOUT WILL OCCUR PD THIS FACT IS BROUGHT OUT IN NEW PAPER ON FALLOUT PREDICTION BY DOT MET STAFF AT AFHQ SOON TO BE PUBLISHED.

PAGE	OF	PAGES	REFERS TO MESSAGE		DRAFTER'S NAME <i>James E Fasolas</i> (J E FASOLAS) MAJ		OFFICE DGDO	TEL. (6-8228)
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SCR

P/A please on

S 963-108

000056

GDO 2

GDO 2-2

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Comments:

000057

MAY 29 01 42 '59

CLASSIFIED MESSAGE

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342/28

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PRECEDENCE - INFO

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DATE - TIME GROUP

281300Z

MESSAGE INSTRUCTIONS

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SECURITY CLASSIFICATION

RESTRICTED

ORIGINATOR'S NUMBER

GD65 28 MAY

FROM CANAIRDIV
TO CANAIRHED

RESTRICTED

INFO

(1)

FOR DGDO PD REFERENCE DISCUSSION SL BLAKE AND KINCHEN RE
DETERMINING ESTIMATED TIME PEAK INTENSITY OCCURS PD MAY
REVELANT DATA BE FORWARDED SOONEST

(2) Reply sent P/A
29 May 59.
Telsonik
DGDO/600 2-2
(2-5349)

am 29/5 →
PAGE 1 OF 1 PAGES

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PERMITTED IF THE DATE-TIME GROUP IS QUOTED

SCA
P/A Please on
S 963-107

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Ref:.....

Date circulation commenced:..... 29/5

Seen by:

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DGDO

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335/28

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DEFERREDDATE - TIME GROUP
281300ZMESSAGE INSTRUCTIONS
DGDOFROM CANAIRDIV
TO CANAIRHED

ROUTINE

SECURITY CLASSIFICATION

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ORIGINATOR'S NUMBER

GD64 28 MAY

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INFO

(1)

FOR DGDO PD RE DISCUSSIONS DURING DGDO VISIT ON AIRCRAFT DECONTAM AND WEARING RESPIRATORS PD APPRECIATE CONFIRMATION BY POLICY LETTER THAT AIRCRAFT DECONTAMINATION WILL BE REQUESTED IN CLEAN UP PHASE BUT DURING OPERATING PHASE WILL ONLY AMOUNT TO HOSING DOWN PRIOR TO UNDER COVER SERVICING AND ALSO THAT SOME FORM OF MASK SHOULD BE WORN DURING ACTUAL FALLOUT TO PREVENT UNNECESSARY INHALATION AND INGESTION PD THIS COULD BE IN FORM OF DUST MASK RATHER THAN GAS MASK WHICH COULD THEN BE USED ONLY FOR BC PROTECTION PD POLICY GUIDANCE RE-BLINDNESS AND ADOPTING OF SOME PREVENTATIVE MEASURE CONSIDERED URGENT

can 29/5

(2) Noted - Reply Sent
19 May 59
Jelison E/L
DGDO/600 2-2
(253-49)

AC

PARAPHRASE NOT REQUIRED

NO UNCLASSIFIED REPLY OR REFERENCE
PERMITTED IF THE DATE-TIME GROUP IS QUOTED

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CR
3963-107 (DG20)

Out
26 May 59

TO ALL COMMANDS

Operations under Fallout

1 It has become evident as the result of conversations with unit personnel during exercises and through staff visits to various stations that some misunderstanding exists about several points of operations under fallout conditions. Fortunately these misunderstandings or misconceptions are towards the safe side and would not in any way endanger the lives of unit personnel. They can however place a burden on a unit, utilize extra manpower, expose additional personnel to radiological hazards and in general reduce the efficiency of the unit. Reference is made to:

- (a) Inhalation hazard from radiological fallout.
- (b) Protective clothing used in fallout operations.
- (c) Decontamination of aircraft.

2 Inhalation Hazard The particle size distribution of fallout material ranges from 25 microns to 300 microns, with the average around 200 microns. In order for a particle to pass the normal body protective mechanisms such as the hair of the nose and the cilia in the throat it must be in the size range of 3 to 5 microns. Particles larger than 5 microns are trapped in the upper part of the respiratory system i.e. nose, and those smaller than 3 microns pass in and out of the body with out being deposited in the lungs. As can be seen the fallout particles are relatively large and would not pass the nostrils area. Additionally, being so large, they have a high enough kinetic energy while falling that it would be difficult to change their direction and breath them into the lungs. The experience with the Marshallese as a result of the fallout in March 1954 bears this out in that only insignificant internal contamination of the natives was detected despite the most unfavourable conditions under which they lived during the event. It can be stated categorically that unless the external dose of radiation is overwhelming the internal hazard is nil. Therefore, the use of respirators or even gauze masks during fallout operations is not necessary and in most cases only reduces the efficiency of the individuals who must wear them.

3 Toxicological Suits A similar situation exists with respect to the use of the toxicological suits by radiation monitors and decontamination crews. This again is placing an unnecessary restriction on the ability of the individuals to carry out their tasks. All that is necessary is to reduce the amount of fallout getting on the skin so that decontamination will be easier. Any type of garment would suffice. This could be removed when entering the decontamination area and the personnel processed through the showers for clean-up. Some simple type of head cover is recommended since the hair will become contaminated and could be difficult to wash out. In the near future all units will be issued several rolls of transparent plastic material which can be fashioned into simple disposable capes, hoods etc. It is not recommended that the toxicological suits be worn against fallout unless commanders are willing to accept the decrease in efficiency


.....2

- 2 -

of the individuals who must wear them.

4 Aircraft Decontamination Probably the largest consumer of manpower, and an operation which would expose individuals to hazardous radiation, is the decontamination of aircraft at operational units. Experience has shown that aircraft contaminated with radiological fallout or which have flown through nuclear weapon clouds can be refueled, armed and flown repeatedly without exposing the pilot or the ground crew to unacceptable levels of radiation. However, under conditions where it would be hazardous to refuel, rearm or fly a contaminated aircraft, the radiation field outside would be so high that the operations could not be carried out without the personnel becoming casualties in a very short time. Under combat conditions it is entirely unnecessary to decontaminate or even wash-down contaminated aircraft. If aircraft are to be refueled and rearmed in hangars or other uncontaminated areas then a simple wash down with water may be necessary to prevent contamination of the work areas. No radiation monitoring of the aircraft would be necessary since the contamination which did not wash off would, in all probability, not come off in the hangar and the fact that it was there would be of academic interest only. When aircraft are scheduled for detailed maintenance or overhaul it may become necessary to carry out extensive internal and external decontamination. Again this is only necessary to prevent the spread of contamination to other areas and reduce the hazard to the individuals who must perform the maintenance or overhaul.

5 The above information is passed on for guidance and in no way restricts unit commanders from the use of respirators, toxicological suits or decontamination operations under fallout. However, it is pointed out that these are not necessary for the successful conduct of the mission under fallout conditions.


(A H Blake) S/L
for CAS

Major JEFasolas/SB
DGDO/GDO3
(6-8228)

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File
Chro
Circ
✓ CR

Our file ref. S963-102(SOGD)



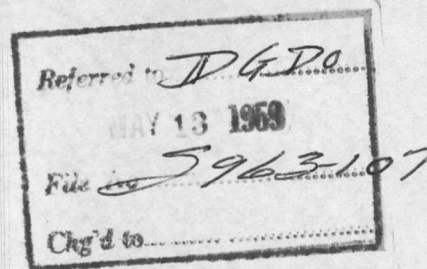
DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

St Hubert Que
12 May 59

Ref S963-107(DGDO) 1 May 59

Chief of the Air Staff
Air Force Headquarters
Ottawa 4 Ont



Nuclear Defence Planning (1)
Provision of Radiac Equipment for Unmanned Vital Points

1 Attached as Appendix "A" is a list of sites within 200 miles of recognized target areas.

2 In each case the number of personnel designated is six per site.

R. Lunn
(R. Lunn) F/L
for AOC ADC

App "A" - List of Sites 200 Mile Radii
of Target Area

2 Noted by DDDO
Staff - being actioned -
P/A.
13 May 59

Johnson/C
G20 2-2
(2-5349)

am 12/5

Appendix "A" to
AOC Intr S963-102(SUGD)
Dated 12 May 59

LIST OF SITES 200 MILE RADIUS

OF TARGET AREA

3405 - Lac Dorey
3406 - Ferguson
3407 - Weymount
3408 - Hibbard
0126 - Greening
20 - Mount Bruno
16 - Oka
14 - Vankleek
27 - St Agapit
29 - Stoncham
31 - Lac Des Roches
33 - L'Etape
35 -
3402 - Summit
3404 - La Croche
12 - Cumberland
11 - Stittsville
10 - Franktown
09 - Meberly
08 - Mountain Grove
07 - Kaladar
06 - Eldorado
05 - Norwood
04 - Onemee
03 - Manilla
01 - Crillia
0102 - Gracebridge
0103 - Novar
0105 - Powassan
0107 - North Bay
010702 - Sturgeon Falls
010703 - Markstay
0124 - Coquart
26 - Plessisville
24 - Notre Dame du Bon Conseil
22 - St Eugene De Grantham

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3963-107 (DGDO)

NUMBER

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TO CANAIRTRAIN				SECURITY CLASSIFICATION UNCLAS
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FOR SOAT 2 DASH 4 PD ADVISE IF TAPE RECORDING OF AFHQ BRIEFING TEAM PRESENTATION
ON OPERATIONS UNDER NUCLEAR FALLOUT STILL AVAILABLE PD APPRECIATE LOAN FOR USE
BY DGMS STAFF

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME (T D NELSON)F/L		OFFICE DGDO		TEL. 2-5349	
						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>							
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SCR

S963-107(DGDO)

Ont
6 Apr 59

Ref Your 963-2(DGDO) dated 16 Mar 59

Air Officer Commanding
1 Air Division RCAF
CAPO 5052
Canadian Armed Forces Europe

Nuclear Radiation Monitoring
and Decontamination

1 Regardless of the fact that doubtless there will be varying intensities of radiation on some airfields which may have been subject to direct attack or near miss from nuclear weapons, this HQ is convinced that the old laborious, time consuming, personnel wasting method of monitoring is not required to ensure the continuance of operations on any RCAF unit.

2 Since drawing up the paper designed to replace GDD 31, the JABC School and HQ ADC have given full support to the proposals and consider the paper to be a more practical and realistic approach to the problem than papers previously produced on this subject.

3 If we examine closely the radiation intelligence required to enable us to carry out our function under conditions of fallout, we will discover that the only areas we are concerned with are these areas where personnel are located and from which operations will emanate. Therefore, even though the alarm-over-radiation devices are as yet unprovided, and when they are provided, they are subject to the effects of heat and blast, spot checks only are necessary in and around hangars, shelters and other buildings where personnel are housed.

4 The only "hot spots" likely to occur on airfields are in the close vicinity of buildings. This might be caused by swirling winds which could tend to cause drifts of radiation similar to that caused by shifting dust and snow. It is therefore sufficient for a monitor located within the hangar or shelter to poke his head out of the door and take a few readings. If personnel are to be evacuated then route checks to cleaner areas would be necessary, this also can be achieved by the spot check method.

5 The only foreseeable occasions when grid monitoring might be advantageous is at some considerable time after the successful conclusion of a nuclear war when it is necessary to assess the peacetime hazard from a strictly medical viewpoint, when any substantial increase in radiation above normal background count is not acceptable. The size of the grid and the method of performing monitoring for this purpose would then be determined by the tasks to be undertaken in any area and the degree of accuracy required.

6 You are therefore advised that based on the best scientific and operational advice available, Ground Defence Directive 31 is considered to be impractical for wartime operational monitoring procedures.

(A H Blake) S/L
for CAS

AHBlake/dmp

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MAIN FILE No. 963-107 T.D. No. 9093

DEPARTMENT OF NATIONAL DEFENCE

TEMPORARY DOCKET
AIR FORCE

1 April

[illegible]

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S963-107(DGDO)

ONT

10 Apr 59

Ref Your C481-104(SOGD) dated 1 Apr 59

Air Officer Commanding
Air Transport Command RCAF
RCAF Station Lachine
Lachine MPO 201 PQ

Nuclear Defence Planning - Transport Command
Evacuation and RCAF And To Civil Defence


- 1 Your comments on the two AFHQ papers "Radiation Monitoring and Decontamination" and "RCAF Assistance to Civil Defence" require further clarification.
- 2 Your letter indicates that all ATC units have been advised to achieve a high state of mobility to enable immediate evacuation or dispersal to areas considered likely to be subject to low radiation intensities. In view of this may AFHQ be advised as to the following:
 - (a) Command Planning - Are these views included in ATC EDP/59?
 - (b) Co-ordination with Civil Defence - Have unit plans been co-ordinated with Civil Defence as per instructions contained in RCAF EDP/59 Annex II Appendix "J".?
 - (c) Shelter Evaluation - Has a shelter evaluation of existing buildings at units been carried out to determine the protection to be afforded personnel remaining on the units?
- 3 Dispersal of aircraft to predetermined, logistically supported bases, if feasible, would appear realistic. However any attempt to evacuate other personnel on units will require very sound planning and of course co-ordination with Civil Defence. It is pointed out that in a locality where a Civil Defence Evacuation plan is not in existence, the confusion resulting from say, the mass exodus from the city of Montreal, may result in the RCAF evacuation column being held up for considerable periods of time and the possibility of subjecting the personnel to over exposure from radiation. It is therefore recommended that present sheltering capabilities be thoroughly explored, before embarking upon an evacuation policy.
- 4 Insofar as your comments on the paper "RCAF Assistance to Civil Defence" is concerned the following observations are made: -
 - (a) Organization - Para 7 of your referenced letter contains a recommendation for all units located close to target cities, to train personnel in all aspects of Civil Defence so that they may be capable, if called upon, to reinforce or relieve personnel of an Army Support Column. It is pointed out that the organization of "Composite Flights" outlined in the AFHQ paper enables the RCAF to carry out assigned tasks either working with, or independently of, the Canadian Army mobile support column.

.....2

- 2 -

- (b) Function - Your Para 8 indicates that the main function of the RCAF would be one of "Reception" and therefore the organization of the "Composite Flight" should reflect this by placing on emphasis on the welfare services. You are referred to Annex II, Appendix "K" "Concept of RCAF Aid to the Civil Authority in War" of the RCAF EDP/59. The RCAF will not perform any tasks in Phase "A" and "B" evacuation this is, at the date of this letter, the responsibility of Civil Defence and neither the Canadian Army nor the RCAF will be providing assistance to CD in this phase of operations.

5 May an early reply to this letter please be forwarded.


(AH Blake) S/L
for CAS

RECrawford/SB
DGDO/GDO 3-2
(6-8228)

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✓CR

No. C481-104 (SOGD)



Department of National Defence

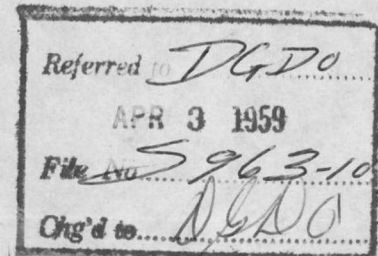
Royal Canadian Air Force

LACHINE Que
1 Apr 59

9093

Ref Your S963-107 (DGDO) 23 Feb 59
Your S921-100 (DGDO) 12 Mar 59

Chief of the Air Staff
Air Force Headquarters
Department of National Defence
Ottawa 4 Ont



26-3-59

Nuclear Defence Planning
Radiation Monitoring and Decontamination
Mobile Support Columns - Aid to Civil Authority

1 The following comments are forwarded as requested by your above referenced letters.

2 The facts presented in the "Introduction" section of your paper on Radiation Monitoring, cannot be disagreed with. The probability of units having to work in areas of intense radiation is appreciated and the tasks which would have to be performed under such circumstances, it is realized, are vital to the continuance of operations under such conditions.

3 Your referenced paper is based on the assumption that sufficient equipment is held by units and is operationally ready for immediate activation. This of course is not so. It is true that the necessary equipment has been planned for, but it will be some months hence before units in Canada hold this equipment.

4 It would seem advisable therefore that present planning be based on immediate deployment or evacuation to areas which are considered would be subjected to low radiation intensities. There is no guarantee, that such course of action would relieve a unit from all problems associated with nuclear warfare, but in the case of Station Lachine, for instance, any delay to evacuate would result in the unit being "pinned down" in an area of intense radiation without suitable cover.

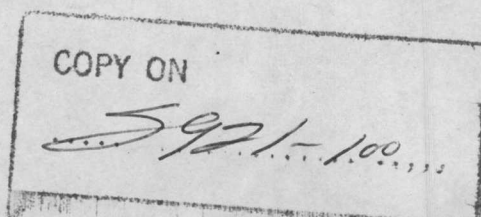
5 This CHQ has therefore attempted to achieve a high state of mobility on all units in order to be capable of such action. There are no further comments concerning this paper.

6 With reference to your paper "RCAF Assistance to the Civil Authority", on which comments were requested, it is felt that two different circumstances must be dealt with:

(a) RCAF units located in close proximity to a target area;

(b) units located well outside a target area.

7 In the first instance, The capability of the RCAF to deal with tasks as outlined in your above referenced paper would be affected by the amount of equipment a unit could remove to the Assembly Area after the attack had taken place. Therefore in this case, the proposed organization chart shown for a Mobile Support Column would



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RESTRICTED

- 2 -

appear to be unnecessary, as personnel and equipment may never reach the Assembly Area. It is strongly felt that the role of the RCAF in this instance, should be one of supplying reinforcements to the Army Support Columns rather than committing themselves as a definite task force. Army Support Columns will only be able to probe the target area for a limited time before the relief of personnel would become necessary. Therefore a strong reserve of man power appears as vital to a successful Civil Defence operation as the original force. The recommendation is then, for units located close to target cities, to train personnel in all phases of Civil Defence so that they may be capable if called upon to reinforce or relieve personnel of the regular Army Support Columns.

8 For units located well outside a proposed target area, the organization as detailed in your above referenced letter, would appear to be the answer. In this case the "Composite Flights" would have time to gather the necessary equipment, form up and proceed to the Assembly Area as an organized body if necessary; the main function however of the RCAF in this situation would be one of "Reception" and therefore the organization of the Composite Flights should reflect this by placing an emphasis on the welfare services.

9 In view of the above, this CHQ has attempted to keep free from definite commitments, but conducts training conducive to the Civil Defence Organization.

B. O. Mayne
(BO Mayne) F/L
for AOC RCAF ATC

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5921-100

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IN REPLY PLEASE QUOTE

No. 963-2(SOGD)



Department of National Defence

Royal Canadian Air Force

Metz Moselle France
16 Mar 59

Your S963-107(DGDO) 23 Feb 59

Chief of the Air Staff
Air Force Headquarters
Ottawa Ontario

(1)

Referred to **DGDO**
MAR 26 1959
File No. **S963-107**
Chg'd to.....

Radiation Monitoring and Decontamination

1 It is felt that the a/n paper can only partly replace GDD 31 in that while this recent paper may cover a fallout situation, it does not adequately cover situations of varying radiation in closer proximity to an atomic or thermonuclear explosion. Certain Canadian and all overseas RCAF stations could possibly be so involved.

2 Monitoring procedures may require some modification; it may not prove necessary to conduct a survey in the detail previously considered standard procedure, however it appears that the a/n paper is premature and incomplete. We do not yet have automatic alarm systems. Even when they are provided it is quite conceivable that they may be rendered unservicable under certain conditions which will necessitate a monitoring system of some kind. Any directive of this nature should surely cover, in greater detail, the logical possibilities rather than assume one standard hazard.

3 It is therefore recommended that before GD 31 is cancelled, a comprehensive combination of it and the referenced paper, be forwarded. Part II, "Decontamination" is considered adequate.

W. Kinchen
(AA Kinchen) S/L
for AOC 1 Air Division RCAF

2
answered on
6 Apr 59
Reference our letter
signed by S/L Blake
file S963-107(DGDO)
modified by S/L Blake
2-5349



IN REPLY PLEASE QUOTE

No. C 963-100(SOG Def.)

Department of National Defence

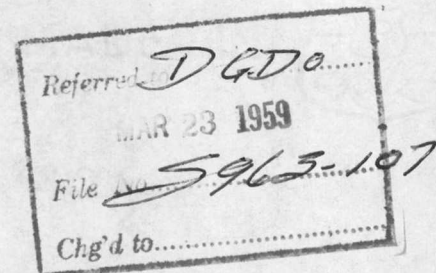
Royal Canadian Air Force

Halifax NS
18 Mar 59

Re your S 963-107 (DGDO) 23 Feb 58 and GDO 42 Mar

Chief of the Air Staff
Air Force Headquarters
Department of National Defence
Ottawa 4 Ontario

Nuclear Defence Planning
Radiation Monitoring and Decontamination



1 The subject paper has been discussed at length by all Ground Defence personnel and it is agreed that the contents conform with Maritime Air Command, Ground Defence staff thinking on this subject, particularly in the matter of even distribution of radioactive fallout contamination.

(CKR Rintoul)F/L
for AOC MAC

② Noted by DGDO
Staff - PIA.
24 Mar 59.

Jelsovk
GDO 2-2
(2-5349)

~~RESTRICTED~~

Our file ref. 470-100-2 (SOAT)



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

Trenton Ont
17 Mar 59

Ref Your GDO42 13 Mar 59

Chief of the Air Staff
Air Force Headquarters
Department of National Defence
Ottawa 4 Ontario

Referred to	DGDO
MAR 17 1959	
File No.	S963-107
Chg'd to	

Ground Defence - Paper

Attached is the paper requested in your S963-107
(DGDO) of 23 Feb.

Att

detached &
returned by
DGM staff - P/A
19 mar 59

6202-2 (AE Gee) F/L
(2-534) for AOC TC

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YOUR 963 DASH 100 DASH 4 PAREN SOAT PAREN 6 MAR PD
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CAP 485 IS 1 JUN

PAGE OF PAGES

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TEL.

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(RE CRAWFORD) EL

DGDO

6-8228

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(AH BLAKE) SL

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P/A Please on file S963-107

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S963-107.

FM CANAIRDEF

TO CANAIRHED

BT

should have been S963-107

//C O N F I D E N T I A L// GD94 10 MAR

YOUR S963(106) DGDO 25 FEB PD PROVISIONING REQUIREMENTS FOR
PROTECTION AGAINST RADIOACTIVE FALLOUT AT UNMANNED VITAL POINTS
UNDER INVESTIGATION THIS HQ PD PRESENT PLAN IS TO CONSIDER SITES
IN THREE CATEGORIES CMM THOSE WITHIN 100 MILES OR RECOGNIZED
TARGETS CMM THOSE WITHIN 200 MILES CMM AND THOSE AT GREATER
DISTANCES

T.D. No.

AIR FORCE

[illegible]

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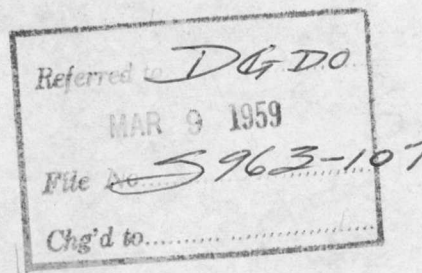
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Our file ref. 963-100-4(SOAT).....



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

Trenton Ont
6 Mar 59Ref Your S963-107(DGDO) 23 Feb 59 and
Your GDO31 dated 3 Mar 59Chief of the Air Staff
Air Force Headquarters
Department of National Defence
Ottawa OntarioRadiation - Monitoring Paper

1 It was not evident from your letter of 23 Feb that the paper attached to it was not to be issued. It appeared reasonable to assume the contrary, in view of the fact GDef Directive 31 has been issued to all TC units, and in view of your para 2 stating that the new paper replaced the Directive and was to "serve as an interim measure pending publication of CAP 485".

2 Comments on the paper, asked for in your para 3, are attached.

3 This CHQ would appreciate information as to the estimated publication date of CAP 485. If this is not likely to be available at units for some months to come, it is suggested that at least a synopsis of the paper be sent to units for guidance in planning.

Encl

②

Reply sent by
Signal GDO 40,
12 March 59
GDO 3-2
(68228)

(AE Gee) F/L
for AOC TC

10/3
Copy made

P/A.

APPENDIX "A"
TO 963-100-4(SOAT)
DATED 6 Mar 59

COMMENTS ON AFHQ PAPER

(S963-107(DGDO) of 23 Feb 59)

Part I

- Para 1 line 5 - for "is" read "are"
- Para 3 line 3 - for "range" read "ranges"
- Para 6 line 2 - suggest delete "by specialists." The majority of units have no specialist personnel; this task can be (and has been) performed by non-specialists with the aid of GDef Manual No 1 and information on distances and thicknesses provided by the CEO.

Part II

- Para 4 line 4 - for "appendices" read "appendix"
- Para 12 - It is felt that "protective clothing" should be more clearly defined. Is this ordinary protective clothing such as parkas, rubber boots and coveralls, or is this "radiological" protective clothing such as butyl-coated fabric coveralls and the like? Are gauze masks to be scaled or should they be improvised locally? To prevent confusion, these details should be spelled out more clearly.

MESSAGE FORM

FILE

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FOR COMMCEN/SIGNALS USE

NUMBER

PRECEDENCE - ACTION ROUTINE	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 031800Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED			PREFIX GR
TO CANAIRTRAIN			SECURITY CLASSIFICATION RESTRICTED
INFO			ORIGINATOR'S NUMBER GDO31 03 MAR

YOUR AT702 2 MAR PD IT WAS NOT INTENDED THAT THE PAPER WITH OUR

S963-107 DGDO 27 FEB BE DISTRIBUTED TO THE FIELD AS A DIRECTIVE OR

OTHERWISE PD THIS PAPER CONSTITUTES APHQ THINKING IN THE AREA OF RADIATION
MONITORING AND DECONTAMINATION PD IT IS FOR YOUR COMMENTS ONLY PD FINAL
POLICY WILL BE PUBLISHED IN CAP 465

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME <i>James E. Fasolas</i> (JE FASOLAS) MAJ/USAF		OFFICE DGDO		TEL. 68228	
						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>							
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE <i>James E. Fasolas</i> (AN BLAKE) SL MAJ/USAF			

CR

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P/A please on S 963-107

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CLASSIFIED MESSAGE

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①

PAPER WITH YOUR S963-107 DGDO 23 FEB PD QUERY PARA 6 QUOTE BY
SPECIALISTS UNQUOTE AS MAJORITY TC UNITS HAVE NONE BUT STATION
PERSONNEL CONDUCT TASK WITH AID OF GDEF MANUAL 1 PD PARAGRAPHS
11 AND 12 UNDERSTOOD NONE SCALED FOR TC UNITS SO HESITATE DISTRIBUTING
PRECIS TO FIELD IN PRESENT FORMAT

② Reply sent 3 mar 59 - P/A
Jackson/C
DGDO (600) 2-2
(6-8228)

AC PARAPHRASE NOT REQUIRED
NO UNCLASSIFIED REPLY OR REFERENCE
PERMITTED IF THE DATE-TIME GROUP IS QUOTED

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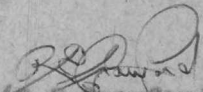
Ottawa Ont
23 Feb 59

TO ALL COMMANDS

(Attention SOGD)

Nuclear Defence Planning
Radiation Monitoring and Decontamination

- 1 Recent evaluation has indicated that, for all practical purposes, radioactive contamination will be distributed evenly over areas the size of RCAF installations. In view of this it would appear that the grid system of monitoring outlined in Ground Defence Directive #31 does not meet the RCAF monitoring requirement.
- 2 Attached herewith is a paper "Radiation Monitoring and Decontamination at RCAF Installations", outlining AFHQ views on the subject. This paper is to replace GDD #31 and serve as an interim measure pending publication of CAP 465 "Nuclear Defence Planning" now being prepared at this headquarters.
- 3 Comments on the contents of the attached paper are invited.


(R E Crawford) P/L
for CAS

Enc

C.C. JADC School
RECrawford/dp
DGDO/GDO 3-2
6-8228
Copies to
File Chro Circ SCR

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PAPER ON
RADIATION MONITORING AND DECONTAMINATION
AT
RCAF INSTALLATIONS

INTRODUCTION

1 Extensive studies have indicated that, for all practical purposes, it can be assumed the radioactive contamination resulting from fallout will be evenly distributed over an area the size of an RCAF Installation. In view of this assumption the requirement to conduct radiation surveys along army lines as outlined in Ground Defence Directive #31 is no longer necessary. Therefore this directive is hereby cancelled.

2 It must be fully appreciated, it is not possible to lay down standard operational procedures for all units. The mission or role of particular units is of paramount importance in determining the degree of action to be taken insofar as monitoring and decontamination is concerned. Air Defence operations units may have to carry out emergency operations under high intensities and therefore their procedures will undoubtedly vary from those of units with only a training or administrative role. Each unit must evaluate the particular problem and adjust suggested procedures accordingly.

3 Basically, the air force problem is one of ensuring continued operations and/or survival under conditions of radioactive fallout. To achieve this aim a well planned unit organization to deal with monitoring and decontamination is absolutely essential. Procedures must be properly worked out and practiced to ensure a minimum disruption to operations in the event of an emergency.

PART I
RADIATION MONITORING

TASKS

1 It is anticipated that all units will, in the very near future, be equipped with an alarm over radiation device capable of measuring intensities up to 1000 r/hr. In view of the fact that radiation intensity should be uniform throughout the air installation, detailed radiation surveys by monitoring teams using the grid system is not considered necessary. Radiation monitoring tasks, in general, can therefore be confined to:

- (a) Point Monitoring - At localities where it is essential to keep an accurate check on intensity levels. For example, operations areas such as hangars and hangar aprons where turn-about and maintenance is being performed. Portable gamma survey instruments to indicate the intensity and tactical dosimeters to give the dosage will be necessary.
- (b) Decontamination Control - Intensity levels and dosages of decontamination crews carrying out assigned tasks will necessitate a control monitor being included among the personnel selected to perform this task. Equipment as for (a) is necessary.
- (c) Personnel Monitoring - Cleansing Centres will require monitoring personnel to ensure cleanliness of personnel. Contamination Control Meters will be used.

2 Adequate numbers of trained personnel to perform the a/m monitoring tasks must be provided.

TOLERANCE DOSES

3 A suggested tolerance dose of 200 R total dose has been accepted in the RCAF. The Joint Services Medical Panel is now in the process of issuing instructions covering intensity range at which restricted, emergency and nil operations can be conducted. In addition, more guidance on tolerance doses, body recuperative powers, etc., will be forthcoming to assist unit commanders.

4 Control of radiation exposure, recording of dosages and proper rotation of key personnel to avoid over exposure is absolutely essential. Turn-around crews, maintenance crews, and decontamination personnel must be constantly checked to avoid over-exposure. Each unit plan should make provision for this safety procedure.

5 Tactical Dosimeters to record dosages of operational personnel will be supplied and each member of the RCAF will have a Radiac Detector (DT60) to record the total dose.

SHELTERING

6 A shelter evaluation of existing buildings to determine sheltering capabilities is to be carried out by specialists. Operational personnel should be sheltered as near to their operational place of duty as possible. Non-operational people will not present a problem of rotation, etc. so therefore will not require the same supervision.

7 Although monitors will not be required in each shelter, it will be necessary to have a shelter officer appointed and made conversant with the radiological problem to interpret doses received by personnel under his jurisdiction. The possibility exists that some of the non-operational personnel in shelters may be called out for short periods to assist in decontamination etc., and then return to shelter. Therefore, the sheltering officer must be familiar with the problems involved.

PART II

DECONTAMINATION

(To be read in conjunction with Appendix III - G.D. Manual #1)

GENERAL

1 Due to the particular mission of a unit, it is not always possible to wait for the natural decay of radiation to reduce the radioactive intensity to acceptable levels. Certain decontamination procedures will, along with the decay of radiation, reduce intensity levels quickly and therefore enable a return to operational status with a minimum delay.

2 Generally decontamination measures cover the following:

- (a) Areas and buildings essential to the conduct of air operations, e.g. hangars, hangar apron, GCA and control towers, shelters for Ops personnel.
- (b) Routes of Travel - Designated routes of travel between the points as in (a). Also included could be access routes to hospitals, warehouses and selected shelters housing non-operations personnel.
- (c) Personnel - Measures to ensure the cleanliness of personnel, particularly those caught in the fallout, or monitoring of decontam crews. A cleansing centre should be established for this purpose.

- (d) Food and Water - To ensure that exposed food and water supplies are safe for consumption.
- (e) Equipment - Decontamination of essential equipment, to include aircraft, refuelling vehicles, etc.

TASKS

3 Any decontamination measures should be carried out on a priority basis. The main consideration is to deal with those areas, bldgs, equipment etc. where contamination might hamper the accomplishment of the mission. Emergency measures can be taken to reduce the levels to acceptable levels and then can be followed up at a later stage to create a further reduction. Unit planning should reflect these priorities.

METHODS

4 The various methods of carrying out decontamination are adequately covered in Appendix III of Ground Defence Manual #1 "Operations & Survival under Nuclear Fallout". Fire Hosing, brushing, scraping, bulldozing have been outlined in this appendices, are summarized on the attached table, and therefore no necessity exists to elaborate further. Studies are being undertaken to determine the feasibility of installing sprinkler systems in essential operations buildings. However, pending the results of these studies, units must effect decontamination measures with the equipment now on the unit.

5 Use of CE snow removal capabilities, fire trucks, hydrant and hose reel units, and mobile water tenders should be exploited to the fullest.

ORGANIZATION OF DECONTAM TEAMS

6 Decontamination teams should be organized from within the affected organization and supplemented by non-operational personnel. Any measures affecting equipment, aircraft etc. are best carried out under the supervision of those technical personnel who normally deal with maintenance of this equipment. Food and water decontamination measures also fall in this category.

7 Area decontamination i.e. hangar aprons, can be carried out by team/s consisting of non-operational personnel. This also applies to access routes of travel. Any outside working area should be surrounded by a decontaminated BUFFER ZONE not less than 250 feet wide. Within this working area dose rates of 10% or less of that in the prevailing outside area will result.

8 Cleansing Centre personnel can also be selected from those whose duties are of a non-operational nature.

9 The composition of teams will be dependent on the assigned task and therefore no specific rules are considered necessary. Sufficient non-operational personnel should be readily available at all times. The attached chart also includes a suggested minimum manning requirement for hosing and scrubbing teams.

10 One essential is that wherever decontamination is necessary, constant check should be kept on the radiation intensity and dosages received. Therefore, it is mandatory that a monitoring control system be set up and one man be designated for this task with each decontamination team.

PROTECTION OF PERSONNEL

11 In addition to the monitor requirement to provide for the safety of personnel engaged in decontamination, adequate protective equipment should be provided.

12 Protective clothing should be worn at all times. The mask protective or gauze masks should be worn by personnel engaged in brushing or sweeping activities. Proper inspection and other safety precautions should be strictly adhered to at Cleansing Centres.

SUMMARY

13 Decontamination measures can be of great value in reducing intensities to acceptable levels. The danger to personnel engaged in decontamination can be kept to a minimum if proper precautions re intensity levels, permissible doses, rotation of personnel, protective equipment, are adhered to. If this is accomplished, the return to operational status can be done quickly with a minimum of casualties.

EFFECTIVENESS OF VARIOUS DECONTAMINATION METHODS

Method	Operation	Effectiveness	Rate of operation	Equipment	Personnel
1. Firehosing	Water under pressure washes and pushes contaminant into drainage channel.	Residual numbers asphaltic concrete or cement concrete 0.1	6,000 sq ft per hose....	Fire hose 2.5-in. dia 10,000 gal/hr at 60 psi min.	4 men per 2.5-in. hose.
2. Firehosing plus scrubbing.	Adds loosening action of brushes and detergent to the washing action of the water.	Residual numbers asphaltic concrete or cement concrete 0.05	2,500 sq ft/hr per team	Fire hose, 2.5-in. dia 10,000 gal/hr at 60 psi; 4 long-handled brushes & detergents.	4 men per 2.5-in. hose; 4 men per team for scrubbing.
3. Bulldozing or grading.	Top layer on contaminated soil removed and pushed away.	Residual number of 0.25 with one pass of a 4-in. cut.	70-hp tractor, 2,000-8,000 sq ft/hr; 80-hp tractor, 4,000-12,000 sq ft/hr; 125-hp tractor, 4,000-13,000 sq ft/hr.	Tractor with bulldozer blade	1 operator.
4. Plowing (military type plow)	Turns soil over, covering contaminated soil with several inches of clean soil.	Plow to 8-in depth residual number is 0.3	35,000 sq ft per equip/hr	3 share military type plow, 125-hp tractor.	1 operator.
5. Scraping with towed or motorized scraper.	Same as bulldozer but more effective.	Residual number is 0.1 for a 4 in. cut	5,000 sq ft per equip/hr for 8 cu yd scraper; 5,000-14,000 sq ft per equip/hr for 12 cu yd sc.	Towed scraper - 1 scraper, 1 tractor. Motorized scraper - 1 scraper.	1 operator.
6. Scraping and filling	Earth fill over previously scraped areas gives further reduction	Residual number is 0.05 for 4-in. cut plus 6-in. fill.	Scraping - 4,400 sq ft/ equip hr; filling - 3,000-10,000 sq ft/ equip hr.	1 towed scraper with tractor for scraping and filling.	1 operator.

NOTE

RESIDUAL NUMBERS INDICATE THE FRACTION OF THE INITIAL INTENSITY REMAINING AFTER APPLICATION OF THE PARTICULAR DECONTAMINATION METHOD.

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8963-106(DGDO)

Ottawa Ont
25 Feb 59

Air Officer Commanding
Air Defence Command RCAF
RCAF Station St Hubert PQ

(Attention: SOGD)

Nuclear Defence Planning
Site Evaluation - Unmanned Vital Points

1 Emergency Security Force personnel will be carrying out guard duty at unmanned vital points as per instructions contained in AFHQ Operation Order 119/59 - Emergency Security Force - Vital Points.

2 Site evaluations to date have been carried out mainly from an administrative point of view, e.g. accommodation available, routes of travel, etc. It is felt however, that consideration must be given to the safety of these personnel under conditions of radioactive fallout. It would appear that some provision must be made for instrumentation and sheltering such as supplying each unmanned vital point with a tactical dosimeter, gamma survey meter, and improvising some form of shelter, to allow personnel to keep within radiation dose tolerance limits.

3 In view of the a/m it is recommended that ADC specialist ground defence staffs carry out site evaluations of unmanned vital points and advise this headquarters as to instrument and shelter requirements.

(Signed) (R.E. Crawford) F/L
for CAS

c.c. DAFS/AFS 2

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S963-106(DGDO)

DAFS/AFS 2

1 The discussion between F/L Bridgeman and DGDO staff, 20 Feb 59, proved very beneficial. It would now appear that DAFS will be taking definite steps to establish a policy with ADC re supplying of initial guards pending the arrival of ESF personnel. DGDO will be contacting ADC re site evaluations from the radiation fallout aspect, to determine the requirement for radiation instruments and improvised shelters.

2 It is further understood, as a result of the discussion, that the guard responsibility for communication sites has not as yet been finalized.

3 May this directorate be informed of final policy on initial guard concept and communication unit responsibility to enable us to complete the necessary scaling of, and responsibility for, the radiac instruments at the unmanned vital points.

(Signed) (RE Crawford) F/L
DGDO/GDO 3
(6-8228)

25 Feb 59

No. S963-102(SOGD)



Department of National Defence

Royal Canadian Air Force

9070

St Hubert Que
10 Mar 59

Ref S963-107(DGDO) 23 Feb 59

Chief of the Air Staff
Air Force Headquarters
Ottawa 4 Ont

Referred to	DGDO
MAR 11 1959	
File No	S963-107
Chg'd to	DGDO 9/3/59

Radiation Monitoring and Decontamination
at RCAF Installations

(1)

1 The proposed replacement for GDD #31 has been reviewed by specialist officers at this HQ and is considered to represent a more practical and realistic approach than previous papers on the subject. Comments submitted for consideration are as follows:

- (a) Part 1 para 3. Although 200r total dosage has been accepted as a recommended tolerance dose; there is no indication as to the period of time for which this dose would be acceptable. Although it is understood that later data will clarify, the interim time period should be specified.
- (b) Part 1 para 6. It is not made clear whether shelter evaluation of existing buildings is to be carried out by specialists appointed for the purpose by AFHQ or whether the term specialist refers to the Ground Defence officer at the unit. It is pointed out that Ground Defence personnel are not established at many ADC units.
- (c) Part 2 Decontamination. There is little consideration given in material received to date on the special problems of decontamination during severe winter conditions. Whether decontamination is by flushing, snow ploughing, bulldozing etc problems are greatly increased during the winter.
- (d) Part 2 para 13. It is suggested that the last sentence of this para be reworded as follows... "If these measures are observed, the return to operational status can be accomplished quickly and with a minimum of casualties".

2 Units have been informed that for practical purposes radioactive contamination will be distributed evenly over RCAF bases and that the grid system of radiological survey is unnecessary except as a final check after the operational emergency has passed. The paper "Radiation Monitoring and Decontamination at RCAF Installations" has not been forwarded to the field pending consolidation of comments from commands as requested in your referenced letter.

② Noted by
DGDO Staff - PLA
Jelison PL
GDO 2-2
(2534a)
12 Mar 59

RR Lunn F/L
for AOC ADC

T.D. No.

DEPARTMENT OF NATIONAL DEFENCE

AIR FORCE

TEMPORARY DOCKET

T.D. No. 9042

2 Feb

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963-4-1(8020-2)

Metz France
02 Feb 59

9042

CO 1 (F) Wing RCAF CAPO 5052
CO 2 (F) Wing RCAF CAPO 5052
CO 3 (F) Wing RCAF CAPO 5055
CO 4 (F) Wing RCAF CAPO 5056
CO 30 AMB RCAF CAPO 5051
CO RCAF Support Unit CAPO 5052
CO 61 ACAN Sqn RCAF CAPO 5052

Referred *DGDO*
FEB 11 1959
File No. *963-107*
Chg'd to *DGDO*
5-2-59

Passive Defence - Radiation Sickness

- 1 Attached are copies of an extract taken from a French periodical "Paris Match" during the latter part of 1953.
- 2 This information is not official but has been passed on for general interest. Only a general reference should be made with regard to training indicating that some progress is being made in effecting a cure for radiation sickness.

R. Dakers

(RD Dakers) P/L
for AOC 1 Air Division RCAF

Attach:

enc. AMIQ (DGDO)

Seen - P/A
Advised 14
DGDO 17
18 Feb

EXTRACT FROM "PARIS MATCH" 1958

The scene is the conference room in the radium institute, a few yards from a small building containing thousands of experimental mice. Four men enter hurriedly and sit down in front of a blackboard. One of them, dressed in a close-fitting white smock, bow tie, thinning at the temples, takes firm grasp of two sheets of paper and begins to read to a dozen or so journalists who had been called in at short notice. This man is Doctor Jammet, in charge of the hygiene and radiation department at the Atomic Energy Commission.

On the other side of the street, in his department on a floor of the Curie foundation, 5 Yougoslavs, four men and a woman, have been fighting for their lives night and day for thirty seven days. Three days ago, there were six. But the other morning a sealed coffin left Paris, almost secretly, shrouded in mist.

Concluding his brief announcement, he stated - and this may be one of the greatest triumphs of French medicine - that a new method of treatment had been used against the relentless disease caused by radiation from which the five Yougoslav scientists were suffering + the bone marrow graft which involves replacing the decayed marrow with healthy marrow cells provided by a donor. It was the first time that a graft of this kind on the human body had been successful.

Never, indeed, had science accomplished a like experiment.

The story begins on Wednesday, 15th October at Vinca, in the suburbs of Belgrade. Five men and a woman were working around an experimental reactor. Suddenly, all the Geiger counters in the room rang out wildly; the awful accident had happened - the reactor was racing, sending out, once the danger point was passed, powerful gamma rays and neutrons which splayed over the six people in the vicinity.

The six scientists were immediately taken to hospital where a young doctor from the Nuclear Centre, Dr Pendic, examined them. Pendic had just returned from a year in Paris spent at Saclay and the Curie foundation and was aware of the capabilities of the French doctors there. His decision was immediate - the patients must be taken at once to the Curie foundation. A DC 3 was chartered immediately and on Friday 19th October, the six scientists landed at Orly where a car from the Yougoslav embassy was waiting to take them to 12 Rue Lhomond.

Professor Mahte, Dr. Courtial, Dr Maupin, Dr Latarjet and Dr Duplan were called in by Dr Jammet. Three days after the accident, analysis showed that the number of white corpuscles in the scientists' blood was beginning to decrease in an alarming manner. The patients were given small double rooms, the young woman remaining in a single room.

They were not in pain and the Yougoslav Embassy sent them radios. Some of them even asked for grammars in order to learn French. All of them were around 25 years of age.

During this time, the French Doctors began a dramatic struggle. In every case, vital organs and functions were affected. The troubles involved are partly due to the destruction of the tissues which produce blood, whence the progressive disappearance of corpuscles, partly to the impairment of the internal mucous membranes which in turn leads to digestive and respiratory lesions. When the system is thus severely taxed, complications set in all the more readily - general infection and haemorrhage.

The primary purpose of the various treatments which the doctors proceeded to apply was to support the body in its fight against the direct effects of radiation and the accompanying complications. Jammet and his colleagues prescribed special vitamin - rich diets, complete blood transfusions and antibiotic injections against infection.

The distressing problem for the doctors was to know how heavy a dose of radiation the Yougoslavs received and consequently to limit the use of various therapeutics to the greatest extent possible since their use, while of advantage in specific cases, may be dangerous in others.

- 2 -

The first ten days were a waiting period. The effects of radiation had not yet fully manifested themselves: cells which have received radiation die when they divide which is the opposite of cancer, fatal when the cells divide and multiply too rapidly.

After ten days, the action of the disease quickened. The patients began to vomit and to lose their hair. Their temperature rose and their blood count showed disturbing signs.

It now appeared certain that the dose of radiation received by the Yugoslavs must have been considerable. The human body is slightly radioactive and experts have ascertained the maximum amount of radiation which the system can safely stand. But, contrary to the rumours which were circulating, the Yugoslav atom scientists were not radioactive.

On the 15th day, a consultation of capital importance was held. It was decided to play the last trump card - a card which has been used with mice and guinea pigs but never with humans. The famous marrow experiment. To be successful, the body must have received sufficient radiation to exclude the play of immunity processes in the formation of antibodies which as a rule prevent a foreign body from grafting on another. It has of course been impossible to carry out a similar experiment successfully on the human body since the quantity of radiation which it would have been necessary to administer in order to destroy the immunity processes without doing irreparable harm was not known.

On the 25th day, the victims had reached the stage where there was so little hope that it was decided to attempt the experiment. Donors were called in; they were first subjected to scrupulous analyses before being given a general anaesthetic. The doctors then removed 200-300 cm³ containing approx 12.000 m cells from their sternum and the ridges of the hip bone. As soon as the syringe was withdrawn from the sternum, the doctor plunged it into a vein in the patient's arm. One of the men who gave their marrow had an enormous tattoo-mark on his chest which read "Bad head but good heart", while the young woman who pluckily gave her marrow for the Yugoslav girl is the mother of four children.

Today, ten days later, the condition of the four young men and the girl is improving; the other unfortunately is dead. The healthy marrow injected into their bodies has replaced the diseased. The graft has taken. The latest analyses reveal a rapid increase in the number of corpuscles, an appreciable improvement in their marrow and in one case, the appearance of fresh antibodies gives an additional cause for hope.

What will be the long-term results of this prodigious success? The men who for night and day for thirty seven days have been fighting for the life of the five young scientists do not know.

But in those who came from Belgrade to ask a service of French medicine, a small ray of hope has been kindled. And thanks to those martyres of science, to-morrow may see a new technique which by allowing the regeneration of the bone marrow, will cure leucemia.

NOTE: A report (unverified and not official) in UK newspaper "Daily Mail" said that the dosage was either 700-1000 R, or that the patients were exposed to an intensity of 700-1000 R/hr for an unspecified length of time.

EXTRACT FROM "PARIS MATCH" 1958

The scene is the conference room in the radium institute, a few yards from a small building containing thousands of experimental mice. Four men enter hurriedly and sit down in front of a blackboard. One of them, dressed in a close-fitting white smock, bow tie, thinning at the temples, takes firm grasp of two sheets of paper and begins to read to a dozen or so journalists who had been called in at short notice. This man is Doctor Jammet, in charge of the hygiene and radiation department at the Atomic Energy Commission.

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The story begins on Wednesday, 15th October at Vinca, in the suburbs of Belgrade. Five men and a woman were working around an experimental reactor. Suddenly, all the Geiger counters in the room rang out wildly; the awful accident had happened - the reactor was racing, sending out, once the danger point was passed, powerful gamma rays and neutrons which splayed over the six people in the vicinity.

The six scientists were immediately taken to hospital where a young doctor from the Nuclear Centre, Dr Pendic, examined them. Pendic had just returned from a year in Paris spent at Saclay and the Curie foundation and was aware of the capabilities of the French doctors there. His decision was immediate - the patients must be taken at once to the Curie foundation. A DC 3 was chartered immediately and on Friday 19th October, the six scientists landed at Orly where a car from the Yougoslav embassy was waiting to take them to 12 Rue Lhomond.

Professor Mahte, Dr. Courtial, Dr Maupin, Dr Latarjet and Dr Duplan were called in by Dr Jammet. Three days after the accident, analysis showed that the number of white corpuscles in the scientists' blood was beginning to decrease in an alarming manner. The patients were given small double rooms, the young woman remaining in a single room.

They were not in pain and the Yougoslav Embassy sent them radios. Some of them even asked for grammars in order to learn French. All of them were around 25 years of age.

During this time, the French Doctors began a dramatic struggle. In every case, vital organs and functions were affected. The troubles involved are partly due to the destruction of the tissues which produce blood, whence the progressive disappearance of corpuscles, partly to the impairment of the internal mucous membranes which in turn leads to digestive and respiratory lesions. When the system is thus severely taxed, complications set in all the more readily - general infection and haemorrhage.

The primary purpose of the various treatments which the doctors proceeded to apply was to support the body in its fight against the direct effects of radiation and the accompanying complications. Jammet and his colleagues prescribed special vitamin - rich diets, complete blood transfusions and antibiotic injections against infection.

The distressing problem for the doctors was to know how heavy a dose of radiation the Yougoslavs received and consequently to limit the use of various therapeutics to the greatest extent possible since their use, while of advantage in specific cases, may be dangerous in others.

- 2 -

The first ten days were a waiting period. The effects of radiation had not yet fully manifested themselves: cells which have received radiation die when they divide which is the opposite of cancer, fatal when the cells divide and multiply too rapidly.

After ten days, the action of the disease quickened. The patients began to vomit and to lose their hair. Their temperature rose and their blood count showed disturbing signs.

It now appeared certain that the dose of radiation received by the Yugoslavs must have been considerable. The human body is slightly radioactive and experts have ascertained the maximum amount of radiation which the system can safely stand. But, contrary to the rumours which were circulating, the Yugoslav atom scientists were not radioactive.

On the 15th day, a consultation of capital importance was held. It was decided to play the last trump card - a card which has been used with mice and guinea pigs but never with humans. The famous marrow experiment. To be successful, the body must have received sufficient radiation to exclude the play of immunity processes in the formation of antibodies which as a rule prevent a foreign body from grafting on another. It has of course been impossible to carry out a similar experiment successfully on the human body since the quantity of radiation which it would have been necessary to administer in order to destroy the immunity processes without doing irreparable harm was not known.

On the 25th day, the victims had reached the stage where there was so little hope that it was decided to attempt the experiment. Donors were called in; they were first subjected to scrupulous analyses before being given a general anaesthetic. The doctors then removed 200-300 cm³ containing approx 12.000 m cells from their sternum and the ridges of the hip bone. As soon as the syringe was withdrawn from the sternum, the doctor plunged it into a vein in the patient's arm. One of the men who gave their marrow had an enormous tattoo-mark on his chest which read "Bad head but good heart", while the young woman who pluckily gave her marrow for the Yugoslav girl is the mother of four children.

Today, ten days later, the condition of the four young men and the girl is improving; the other unfortunately is dead. The healthy marrow injected into their bodies has replaced the diseased. The graft has taken. The latest analyses reveal a rapid increase in the number of corpuscles, an appreciable improvement in their marrow and in one case, the appearance of fresh antibodies gives an additional cause for hope.

What will be the long-term results of this prodigious success? The men who for night and day for thirty seven days have been fighting for the life of the five young scientists do not know.

But in those who came from Belgrade to ask a service of French medicine, a small ray of hope has been kindled. And thanks to those martyres of science, to-morrow may see a new technique which by allowing the regeneration of the bone marrow, will cure leucemia.

NOTE: A report (unverified and not official) in UK newspaper "Daily Mail" said that the dosage was either 700-1000 R, or that the patients were exposed to an intensity of 700-1000 R/hr for an unspecified length of time.

EXTRACT FROM "PARIS MATCH" 1958

The scene is the conference room in the radium institute, a few yards from a small building containing thousands of experimental mice. Four men enter hurriedly and sit down in front of a blackboard. One of them, dressed in a close-fitting white smock, bow tie, thinning at the temples, takes firm grasp of two sheets of paper and begins to read to a dozen or so journalists who had been called in at short notice. This man is Doctor Jammet, in charge of the hygiene and radiation department at the Atomic Energy Commission.

On the other side of the street, in his department on a floor of the Curie foundation, 5 Yougoslavs, four men and a woman, have been fighting for their lives night and day for thirty seven days. Three days ago, there were six. But the other morning a sealed coffin left Paris, almost secretly, shrouded in mist.

Concluding his brief announcement, he stated - and this may be one of the greatest triumphs of French medicine - that a new method of treatment had been used against the relentless disease caused by radiation from which the five Yougoslav scientists were suffering + the bone marrow graft which involves replacing the decayed marrow with healthy marrow cells provided by a donor. It was the first time that a graft of this kind on the human body had been successful.

Never, indeed, had science accomplished a like experiment.

The story begins on Wednesday, 15th October at Vinca, in the suburbs of Belgrade. Five men and a woman were working around an experimental reactor. Suddenly, all the Geiger counters in the room rang out wildly; the awful accident had happened - the reactor was racing, sending out, once the danger point was passed, powerful gamma rays and neutrons which splayed over the six people in the vicinity.

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**Pages 108 to / à 136
are withheld pursuant to sections
sont retenues en vertu des articles**

13(1)(a), 13(1)(b)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

MESSAGE FORM

FILE

Document disclosed under the Access to Information Act
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FOR COM/IN/SIGNALS USE

NUMBER

327 (DOD)
5863-107

PRECEDENCE - ACTION DEFERRED	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 271500Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED			PREFIX GR
TO CANAIRLIFT			SECURITY CLASSIFICATION UNCLAS
INFO			ORIGINATOR'S NUMBER GDO 11 27 JAN

YOUR GD 163 23 JAN PD CONFIRM DATES ACCEPTABLE TO THIS HQ

PLEASE MAKE THE NECESSARY TRANSPORTATION ARRANGEMENTS

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME		OFFICE		TEL.	
						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		(A H BLAKE)SL		DGDO		68228	
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE (A H BLAKE)SL		

963-107

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MM RFEPFZ

DE RFEPNV 104/23

M 231924Z

FM CANAIRLIFT

TO CANAIRHED

BT

JAN 23 21 40 '55

~~DGD~~

DEFERRED

GD163 23 JAN GOOSE BAY HAVE SELECTED WED 4 MAR AS NEW DATE FOR
GROUND DEFENCE EXERCISE PD NOTIFY THIS CHQ IF DATE SATISFACTORY
CMM IF SO ARRANGEMENTS FOR SPACE TO YR FOR TWO PERSONNEL YOUR HQ
ON 3 MAR RETURN UL 6 MAR WILL BE MADE

BT

23/1925Z

C R to PA

CR

DEFERRED

JAN 20 22 10 33

Handwritten notes:
B7C
S963-107
1470113
~~DC DO~~

NNNNFA333VN192

MM RFEPFZ

DE RFEPNV 93/20

M 201920Z

FM CANAIRLIFT

TO CANAIRHED

BT

①

GD160 20 JAN YOUR GD06 15 JAN PD REPLY FORWARDED 16 JAN

BT

② *noted*

20/1924Z

NNNNFB296VN191

MM RFEPFZ

DE RFEPNV 92/20

M 201922Z

FM CANAIRLIFT

TO CANAIRHED

BT

GD162 20 JAN YOUR ^{GDO}~~COD~~488 24 OCT 58 PD GOOSE BAY ADVISED FEB 6
EXERCISE IS DELAYED IN ORDER TO ARRANGE SUITABLE TRANSPORTATION
FOR OBSERVERS PD NO DEFINITE DATE AS YET PD DETAILS TO BE FORWARDED
PD NIL EXERCISES PLANNED FOR REMAINDER OF ATC

BT

C WA YOUR GDO488 ✓

20/1924Z

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SIGNAL OFFICE

JAN 20 22 16 '59

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INFO						ORIGINATOR'S NUMBER GDO 7 15 JAN	

YOUR 470 12 PAREN SOAT PAREN 28 JUL 58 PD REQUEST
ANY FURTHER PROGRESS EITHER AT ADCHQ OR UPLANDS

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME <i>(N A POLLARD)</i>		OFFICE DGDO/GDO 2		TEL. 2-5349	
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CR to PA

DGDO3

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Document divulgué en vertu de la *Loi sur l'accès à l'information*

DGDO/c [redacted] PA the attached correspondence to u/n

CR file 8963-107

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JAN 13 02 02 '59

MM RFEPFZ

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FM CANAIRDIV

TO CANAIRHED

BT

(Ref our 5963-107 27 Nov 58)

GD5 12 JAN YOUR GDO3 & JAN DATA BEING PREPARED

BT

12/1032Z

DEFERRED

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② Noted by OGD Staff - PIA

13 Jan 59

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(2-5349)

MESSAGE FORM

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S963-107 (Rev. 1-1-61)
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MESSAGE INSTRUCTIONS

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ORIGINATOR'S NUMBER

GDO 8 JAN

FROM

CANAIRHED

TO

CANAIRDIV

INFO

OUR S963 DASH 107 DGDO 27 NOV PD

ADVISE YOUR ACTION

REFERS TO MESSAGE

DRAFTER'S NAME

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CRA PA

S963-107(DGDO)

Ottawa, Ont
23 Dec 58

Ref Your S963-102(SOGD) 27 Nov 58

Air Officer Commanding
Air Defence Command RCAF
RCAF Station St Hubert PQRadiation Intensity from Fallout
Shelter Evaluation Method - ADC Submission

1 This Headquarters is in receipt of the chart drawn up by ADC HQ staff to simplify the method as shown in the ground defence manual for the calculation of relative radiation intensities to be expected inside a building. It is apparent that a considerable effort has been made to produce this chart and you are to be congratulated on this achievement.

2 Although distance attenuation is simplified by the chart, no provision is made for mass attenuation. Therefore, reference to the method outlined in the manual is still necessary. To obviate this necessity, consideration is being given to including on your chart a table showing the attenuation factors for the various building materials. Acetate overlays would be produced to ensure ease of operation by user personnel when doing a complete evaluation of all unit buildings.

3 A study is now in progress on the comparison of a number of methods of shelter evaluation, including the ADC submission. Your headquarters will be informed accordingly when the study has been finalized.

for (AH Blake) S/L
for CAS

RECrawford/dp
DGDO/GDO 3-2
6-8228Copies to

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MESSAGE FORM

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Document divulgué en vertu de la Loi sur l'accès à l'information

FOR COMMEN/SIGNALS USE

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8963-107

PRECEDENCE - ACTION ROUTINE		PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 242000Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED				PREFIX GR
TO CANAIRDEF				SECURITY CLASSIFICATION UNCLASS
INFO				ORIGINATOR'S NUMBER GDO 504 24 NOV

REQUEST ATTENDANCE AT THIS HQ AM 25 NOV OF FL AB STIRLING
PAREN AS GDEF PAREN PARENT UNIT HQ NO 5 AIR DIV TO DISCUSS
OPERATIONAL PLANNING UNDER NUCLEAR FALLOUT

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME		OFFICE		TEL.	
						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		(A H BLAKE) S/L		DGDO		6-8228	
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											(A H BLAKE) S/L		

CR to PA

IN REPLY PLEASE QUOTE

S963-102 (SOGD)

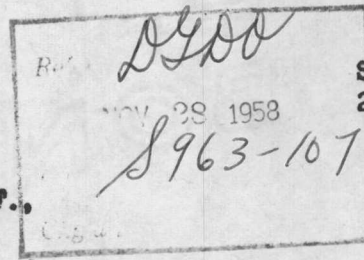
No.



CANADA

Department of National Defence

Royal Canadian Air Force



St. Hubert Que.,
27 Nov 58

Chief of Air Staff
Airforce Headquarters, RCAF.,
Ottawa Ontario.

Computing Relative Intensity of Radiation from Fallout

1 Attached is a chart which can be used to make simple calculations on the relative radiation intensity to be expected inside a building. It is considered more simple to use than the procedure outlined in Ground Defence Manual #1 and just as accurate. It is forwarded for comment and possible issue to all RCAF Commands and Units if considered to be of value.

2 The chart was drawn up by the SORO staff at ADC. Attached is a paper showing the application of the procedure in determining the protective factor in the basement and on the first floor of a typical PMQ unit. Not taken into consideration is the possibility of the building being flattened by the blast effects of a 5 megaton weapon which is likely at Stn St Hubert and Stn Uplands. If this occurred and presuming the basement remained intact, personnel occupying the basement would recieve up to 30% of the radiation intensity level existing outside.

R. R. Lunn F/L
(RR Lunn) F/L
for AOC ADC

am

RM

MEMORANDUM

Protection Offered by Air Force Housing Against Fallout Radiation

1 Attached is a summary of calculations made by Mr. Paterson of the relative intensity due to fallout radiation in the basement and first floor of a typical unit. It is estimated that the relative intensity in the basement is about .2 of that in the open, and on the first floor about 0.8. It should be noted that the intensities would be even higher in one storey bungalows.

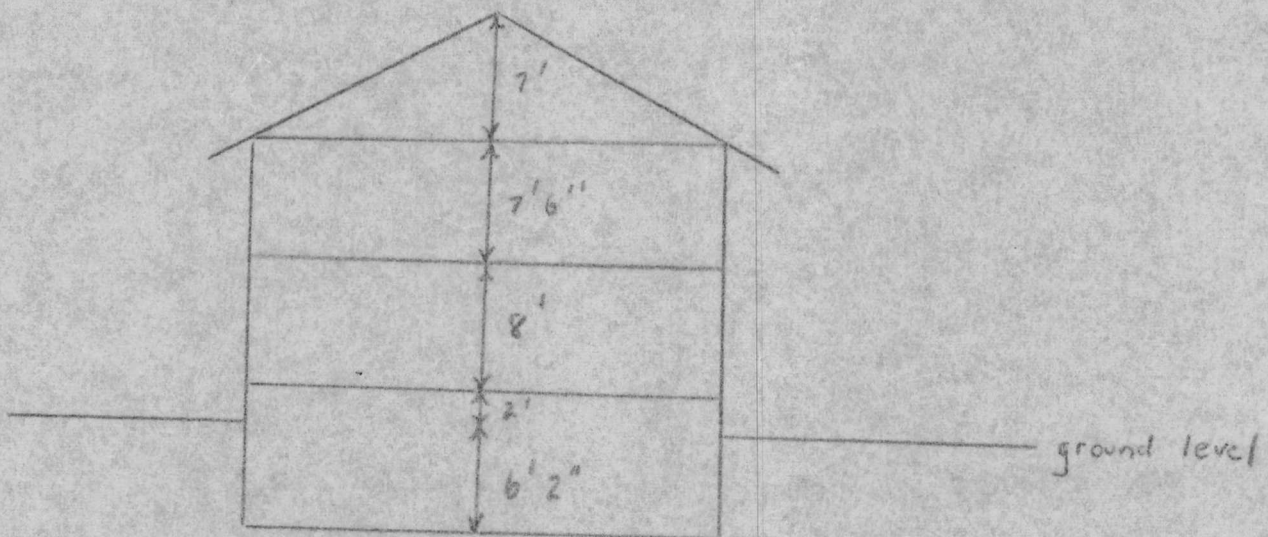
2 We also attach a short description of the use of the chart for calculating the relative intensity of radiation from fallout.

Protection from Fallout

Afforded by

PMQs

The home considered was the 6 room type with basement.
Dimensions are as shown.



Floor plan is a rectangle 30' x 26'.

Basement walls are 8" concrete. This will transmit about 20% of incident radiation.

House walls are 4" brick. This will transmit about 90% of incident radiation.

Roof consists of shingles about $\frac{1}{2}$ " thick and wood $\frac{3}{4}$ " thick. Floors are $\frac{3}{4}$ " thick wood. The attenuation of these is negligible.

The intensity of radiation at a point 5' above floor level at the centre of the basement will be calculated. It is assumed that any windows in the basement are sand bagged. The point is below ground level, so effect of fallout on the ground is negligible; only fallout on the roof need be considered. For the

- 2 -

calculations, the roof will be replaced by a horizontal plane first at a height of $23\frac{1}{2}'$ above basement floor, second at a height of $30\frac{1}{2}'$. The radiation intensity will lie somewhere between that obtained for these two cases.

From diagram, fraction of total intensity received at point 5' above centre of contaminated plane $30' \times 26' = .31$.

This must be multiplied in turn by distance factors for $18\frac{1}{2}'$ and $25\frac{1}{2}'$. These are .20 and .17.

Hence intensity at point 5' above floor level in centre of basement lies between .20 and .17 of that outside. Take .19 as mean value.

From the diagram, intensity at point 5' above floor level near one corner of basement is .26 times that outside. Multiplying this by the distance factors and taking a mean value gives .16. Other points will give values between .16 and .19.

So at a point 5 feet above floor level in the basement, intensity of radiation is roughly 20% of that outside.

Considering a point 5 feet above level of first floor, in centre of house, as before, contribution of roof lies between $.31 \times .80$ and $.31 \times .66$, say .24. Contribution of contamination on ground outside house = $(1 - .31) \times .89 \times .90 = .55$. (.89 is a distance factor for 7 feet because 5 feet above floor level is 7 feet above ground; and .90 is an attenuation factor for the walls.)

So total intensity received at point 5 feet above first floor level in centre of home is about 80% of that outside.

It is concluded that any part of a PMQ house other than the basement provides negligible protection against fallout.

A Chart for Computing
the Relative Intensity of
Radiation from Fallout

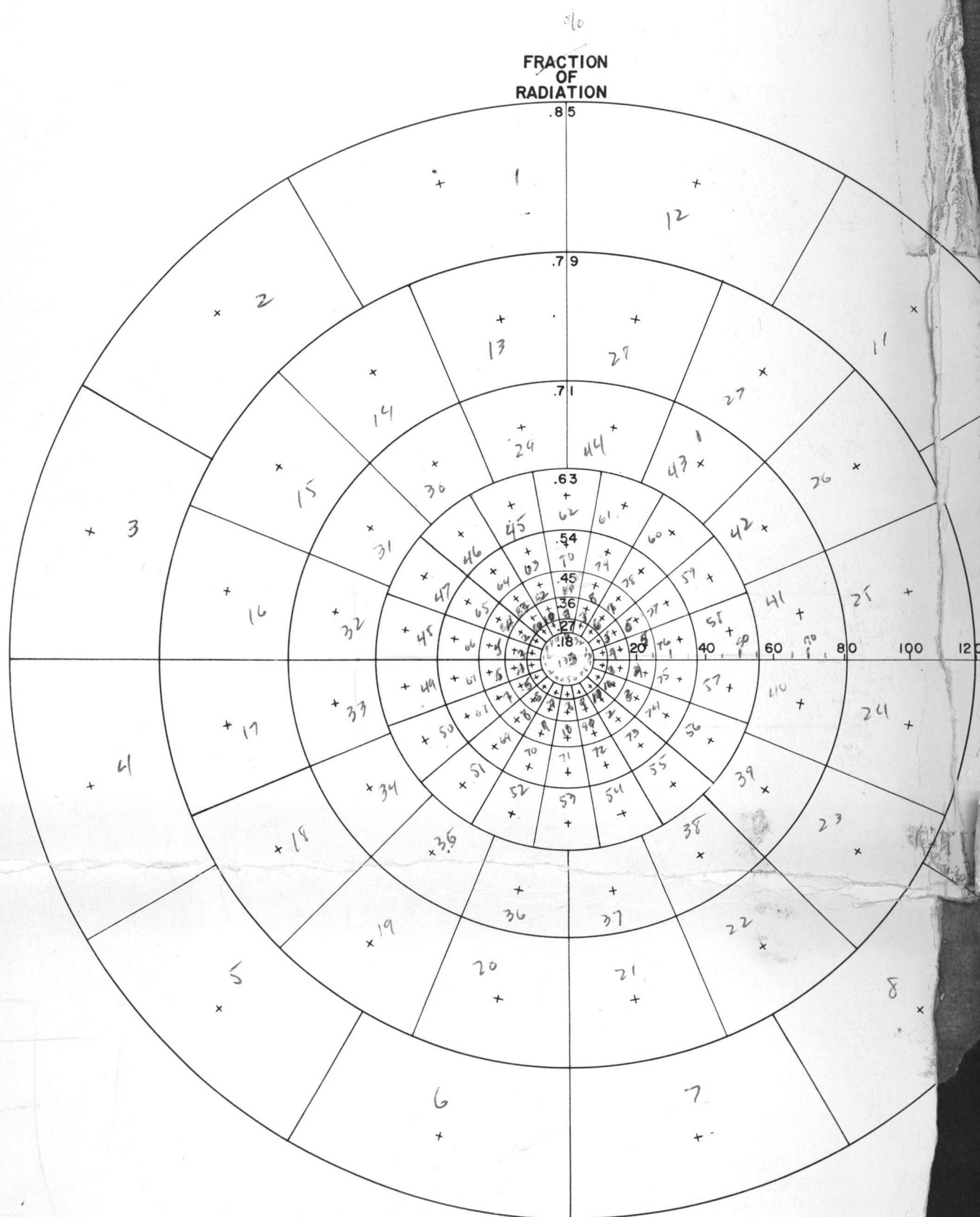
This chart allows simple calculations to be made of the intensity of radiation originating from contamination distributed evenly over a plane. The chart is divided up into approximately square sections from each of which comes .005 of the total radiation intensity received at a point 5 feet from an infinite uniformly contaminated plane. The chart is useful for two types of calculation:

- (a) estimating the relative intensity of radiation originating outside a given boundary
- (b) estimating the relative intensity of radiation originating inside a given boundary.

Suppose, for example, it is desired to estimate the protection offered by a building of any form at any point inside. The radiation originates outside the building and passes through the walls. A diagram of the building is drawn to scale on the chart. The centre of the chart is placed at the interior point in the building at which it is desired to evaluate the relative intensity of the radiation. The total intensity originating outside the building can be estimated by counting the squares which lie outside the boundary. If this number is multiplied by the fraction of the radiation transmitted through the walls of the building the result is the desired estimate of the relative intensity of radiation experienced at a point 5 feet above the level of the contaminated plane. If the relative intensity at points more than 5 feet from the plane is desired the height factors given in the table on the chart should also be applied.

Following an analogous procedure the relative intensity of the radiation from contamination on the roof of a building can be estimated by drawing a plan view of the roof and counting the squares of the chart which lie within the boundary. The resulting relative intensity should be multiplied by the transmission factor of the material of the building, and by a distance factor appropriate to the distance of the roof from the point at which it is desired to evaluate the intensity.

CONTRIBUTIONS FROM POINTS IN AN INFINITE CONTAMINATED PLANE TO THE GAMMA RADIATION INTENSITY AT A POINT 5 FEET FROM THE PLANE



MULTIPLYING FACTORS
FOR DISTANCES
GREATER THAN 5 FEET

DISTANCE feet	FACTOR
10	.79
15	.69
20	.62
25	.56
30	.52
40	.45
50	.39
75	.29
100	.22
200	.11

Each subdivision of the area contributes .005 of the total radiation experienced of
The number on each circle indicates the fraction of the radiation originating within



R.C.A.F. PHOTOGRAPH
CROWN COPYRIGHT
NEGATIVE

SH7843

S963-107 Vol. 3 (Cops)

File Ref

R C A F

MINUTE SHEET

Min (2)

CPlansI

- 1 Attached is the signal to 1 Air Division about which we spoke and for which I asked your concurrence before sending.
- 2 However, in view of the message from NATO Paris to External on 29 Oct, it may not be appropriate now to send this signal.
- 3 Since you are sending a message to the Air Division seeking information to clarify some of the statements in the NATO Paris signal, perhaps you will also include in that signal the information contained in the one which I intended to send.

M. Lipton
(M Lipton) A/C
Cops
(2-2769)

30 Oct 58

m3.

Cops

I have rewritten the signal to Air Div adding para 2 as a result of our discussion with Mr Sutherland this morning.

B. Lipton
CPlansI
3 Nov 58

Min (4)

DGDO B. 9/11

To note re-write of signal to
1 Air Division.

3/11/58

D. Murphy
Cops/Sec
2-2769

FM NATOPARIS OCT29/58 SECRET

TO EXTERNAL 2601 EMERGENCY

INFO CJS LDM -

DISPERSAL AIRFIELDS

WE HAVE JUST RECEIVED A MSG ADDRESSED TO SACEUR FROM MOD BELGIUM DATED OCT24 WHICH READS AS FOLLOWS:

"1. IN ITS MSG QL685 OCT17 THE 1ST CANADIAN AIR DIVISION REQUESTED MOD BELGIUM TO SUSPEND WORK ON THE DISPERSED AREAS FOR THE AIRFIELDS OF BERTRIX AND ST HUBERT (WHICH HAD BEEN APPROVED BY AC/4(PP)DS279 AND AC/4(PP)R/273).

2. IN ITS MSG QL687 OCT17, CANAIRDIV REQUESTED DIFFERENT CONSTRUCTION WORK AT BERTRIX AND ST HUBERT.

3. MOD BELGIUM HEREBY REQUESTS THAT A DECISION BE HANDED DOWN REGARDING THE AUTHORIZATION AND METHOD OF FINANCING WITH RESPECT TO THESE PROPOSALS."

2. FURTHER TO THE ABOVE THE CONTROLLER FOR INFRASTRUCTURE ADVISED US INFORMALLY YESTERDAY AFTERNOON THAT HE HAD LEARNED FROM THE LUXEMBOURG REP IN THE INFRASTRUCTURE COMMITTEE THAT CANADA HAS DECLINED TO COMPLETE ARRANGEMENTS FOR THE USE OF SANDWEILER AIRFIELD AS ONE OF THE DISPERSAL AIRFIELDS FOR 1 AIR DIVISION. WE UNDERSTAND THAT HE HAS SUGGESTED THAT LUXEMBOURG SHOULD RAISE THE QUESTION, IN OUR ANNUAL REVIEW EXAMINATION, OF THE USE OF SANDWEILER AS A DISPERSAL FIELD. WE FURTHER UNDERSTAND THAT THE CONTROLLER FOR INFRASTRUCTURE HAS BEEN PRESSING MEMBERS OF THE STAFF CONCERNED WITH ANNUAL REVIEW TO ENQUIRE OF ALL COUNTRIES WHETHER OR NOT THEY HAVE IN FACT ACCEPTED THE REQUIREMENTS OF MC70 FOR DISPERSAL.

3. SINCE WE WILL ALMOST CERTAINLY BE QUESTIONED ON THIS SUBJECT DURING OUR EXAMINATION WE WOULD APPRECIATE BEING ADVISED OF ANY NEW DEVELOPMENTS WHICH MAY HAVE ARISEN PERTAINING TO THE QUESTION OF DISPERSAL AIRFIELDS.

5096-112-2 (Ad AOC)
18 August 2008 LAAFCU

NATOPARIS OCT29/58 SECRET
TO EXTERNAL 2601 EMERGENCY
INFO CJS LDN

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AND AC/4(PP)R/273).

2. IN ITS MSG QL687 OCT17, CANAIRDIV REQUESTED DIFFERENT CONSTRUCTION
WORK AT BERTRIX AND ST HUBERT.

3. MOD BELGIUM HEREBY REQUESTS THAT A DECISION BE HANDED DOWN REGARD-
ING THE AUTHORIZATION AND METHOD OF FINANCING WITH RESPECT TO THESE
PROPOSALS."

2. FURTHER TO THE ABOVE THE CONTROLLER FOR INFRASTRUCTURE ADVISED US
INFORMALLY YESTERDAY AFTERNOON THAT HE HAD LEARNED FROM THE LUXEMBOURG
REP IN THE INFRASTRUCTURE COMMITTEE THAT CANADA HAS DECLINED TO
COMPLETE ARRANGEMENTS FOR THE USE OF SANDWEILER AIRFIELD AS ONE OF
THE DISPERSAL AIRFIELDS FOR 1 AIR DIVISION. WE UNDERSTAND THAT HE
HAS SUGGESTED THAT LUXEMBOURG SHOULD RAISE THE QUESTION, IN OUR ANNUAL
REVIEW EXAMINATION, OF THE USE OF SANDWEILER AS A DISPERSAL FIELD.
WE FURTHER UNDERSTAND THAT THE CONTROLLER FOR INFRASTRUCTURE HAS BEEN
PRESSING MEMBERS OF THE STAFF CONCERNED WITH ANNUAL REVIEW TO ENQUIRE
OF ALL COUNTRIES WHETHER OR NOT THEY HAVE IN FACT ACCEPTED THE REQUI-
REMENTS OF MC70 FOR DISPERSAL.

3. SINCE WE WILL ALMOST CERTAINLY BE QUESTIONED ON THIS SUBJECT DURING
OUR EXAMINATION WE WOULD APPRECIATE BEING ADVISED OF ANY NEW DEVELOP-
MENTS WHICH MAY HAVE ARISEN PERTAINING TO THE QUESTION OF DISPERSAL
AIRFIELDS.

MESSAGE FORM

FILE

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FOR COMMCEN / SIGNALS USE

NUMBER

PRECEDENCE - ACTION DEFERRED		PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 032000Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED				PREFIX GR
TO STN ROCKCLIFFE				SECURITY CLASSIFICATION UNCLASS
INFO CANAIRMAT				ORIGINATOR'S NUMBER GDO 491 3 NOV

YOUR PA 201 23 OCT PD CONFIRMED PANEL AVAILABLE

1 DEC AND LESS MEDICAL SPECIALIST ON 2 DEC

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME <i>NA Pollard</i>		OFFICE		TEL.	
						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		(N A POLLARD) F/L/RAF		DODO/GDO 2		2-5349	
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE <i>(A H BLAKE) S/L</i>		
											DGDO		

MESSAGE FORM

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Document divulgué en vertu de la Loi sur l'accès à l'information

FOR COMMEN/SIGNALS USE

NUMBER

PRECEDENCE ACTION DEFERRED	PRECEDENCE INFO DEFERRED	DATE TIME GROUP 241400Z	MESSAGE INSTRUCTIONS
FROM CANAIRED			PREFIX GR
TO CANAIREF			SECURITY CLASSIFICATION UNCLASS
INFO			ORIGINATOR'S NUMBER DGO 486 24 OCT

FOR SOGD PD EXPEDITE REPLY OUR S963 DASH 106 DGDO 24 SEP 58

PAGE 1 OF 1 PAGES		REFERS TO MESSAGE		DRAFTER'S NAME		OFFICE		TEL.	
		CLASSIFIED YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		(R.E. Crawford) F/L		DGDO/GDO3-2		6-8228	
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM
						RELEASING OFFICER'S SIGNATURE (A.H. Blake) S/L DGDO			

2011 3

CR to PA

14 ^{CR} a n 5963-107 (100)

NNNVEFB268ORMB207

MM RFEPFZ

DE RFEPMR 70/23

M 231300Z

FM STN ROCKCLIFFE

TO ZEN/CANAIRMAT

INFO RFEPFZ/CANAIRHED

BT

PA201 23 OCT YOUR GD 163 14 OCT REQUEST AFHQ PANEL BE MADE AVAILABLE
TO STN ROCKCLIFFE 1 DEC FOR SNR OFFICER FAMILIARIZATION COURSE
AND PANEL LESS MEDICAL PERSONNEL MEET WITH STATION EMERGENCY
DEFENCE PLANNING COMMITTEE AT ROCKCLIFFE 2 DEC TO DISCUSS DRAFT
STATION EDP

BT

23/1525Z

SIG/RCAP
OFFICE
OCT 23 22 50 '58

DEFERRED

~~DRA~~
DG

~~DD~~
11/32

CR
Ow Goo 491 d/d 3 Nov
refer.
3 Nov 57
Nabereand 4
Goo/2

~~SECRET~~

P/A on file

5963-107 please

DGDU

000166

P/A

000167

NNNNCLREFB168FMB13OBVB028

MM RFEMMT RFEPFZ

DE RFEMVB 14/26

M 261425Z

FM CANAIRDEF

TO RFEMMT/STN EDGAR

INFO RFEPFZ/CANAIRHED

BT

RCAF
SIGNALS OFFICE

SEP 26 16 38 '58

DEFERRED



DGDP
Elgin Annex

GT552 26 SEP RCAF FILM PRODUCTION ON NUCLEAR DEFENCE BEING
FILMED AT STN NORTH BAY COMMENCING 3 OCT FOR PERIOD APPROXIMATELY
5 WEEKS PD DURING THIS PERIOD NECESSARY TO FILM ONE SEQUENCE
AT AN ADCC PD IN VIEW OF YOUR UNIT PROXIMITY TO STN NORTH BAY
WOULD BE MOST ECONOMICAL AND ADVISABLE TO SHOOT AT STN EDGAR PD
PAST FILM COMMITMENTS HAVE BEEN UNDERTAKEN WITHOUT TOO MUCH
DUSRUPTION OF STN ROUTINE PD ACTUAL PERSONNEL REQUIREMENTS UNKNOWN
CMM HOWEVER CMM NEED FOR APP THREE CMM ONE AT EACH STAGE OF FILMING
PD IF YOU CAN ACCEPT CMM MAJ FASOLAS AFHQ WILL VISIT 30 SEP TO
DISCUSS FURTHER PD ADVISE ALL CONCERNED

BT

26/1433Z

(2) *Noted*
29 Sep 58.

Johnson
DGDO/GDO 2-
(25349)

000168

AIR FORCE
TEMPORARY DOCKET

NUMBER 963-104

000169

IN REPLY PLEASE QUOTE

No. 9 - 00 - 23



CANADA

Department of National Defence

Royal Canadian Air Force

Uplands Ont
8 Sep 58

8253

Ref S963 - 107 (DGDO) dated 3 Sep 58

Chief of the Air Staff
Air Force Headquarters
Ottawa Ontario

Operation Under Fallout
Project "Undercover"

(Attn F/L Pollard)

Referred to	DGDO
SEP	10 1958
File No.	S963-107 TD8210
Chg'd to	DGDO 2 Sept.

1 Reference is made to 470 - 12 (SOAT) ADCHQ dated 28 Jul 58.

2 It is planned at the present time to carry out this exercise in mid-November. The results will be forwarded when available.

*Noted by DGDO staff
- copy made.
10 Sep 58.*

*J. L. Smith
DGDO/GDO-2-2
(2-5349)*

E. W. Gummerson F/O
(E. W. Gummerson) F/O
for CO RCAF Station Uplands

REFERENCED LETTER PLACED ON

S963-107 TD 8210

AND PASSED TO *DGDO*

S 5963-107 (DGDG)

Ottawa Ont
3 Sep 58

Commanding Officer,
RCAF Station Uplands,
Ottawa, Ontario.

Attention F/O Gammason

Operations Under Fallout
Project "Undercover"

1. Reference is made to this headquarters letter of even reference dated 21 July 58. May this headquarters be advised on the progress of this project, or the results of it if it has already been conducted.

N.S.
(NA Pollard)F/L/RAF
for CAS

cc: ADCHG/SOCD

CR

CR to PA

MESSAGE FORM

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NUMBER

PRECEDENCE - ACTION DEFERRED	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 022000Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED			PREFIX GR
TO CANAIRDIV			SECURITY CLASSIFICATION RESTRICTED
INFO			ORIGINATOR'S NUMBER GDO 441 2 SEP

YOUR AP 53 29 AUG ACKNOWLEDGED AND YOUR EARLIER AP 45
18 AUG TRACED

PAGE 1 OF 1 PAGES		REFERS TO MESSAGE		DRAFTER'S NAME (TD Nelson) F/O DGDO/GDO2-2		OFFICE		TEL. 2-5349	
CLASSIFIED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>									
FOR OPR'S USE R	DATE	TIME	SYSTEM	OPERATOR D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE (AH BLAKE) S/L DGDO

Our file ref. 470-12(SOAT)



DEPARTMENT OF NATIONAL DEFENCE

ROYAL CANADIAN AIR FORCE

St Hubert Que
28 Jul 58

8210

Ref S963-107(DGDO) dated 22 Jul 58

Chief of the Air Staff
Air Force Headquarters,
Ottawa 4 Ont

Operations Under Fallout
Project "Undercover"

Referred to.....	DGDO
JUL 29 1958	
File No. S963-107	
Chg'd to Caps	

28-7-58

1 The referenced letter, addressed to the CO RCAF Station Uplands, attention F/O Gummesson, with a carbon copy to this CHQ requested Uplands to study the proposed exercise and forward comments to AFHQ.

2 It is pointed out that ADC units have already been instructed to conduct similar exercises. Paras 17 and 18 of S963-102 (D/AOC/O) dated 2 Jun 58 with a carbon copy to your headquarters covered exercise requirements. When information is available as to the results of these exercises and time studies your headquarters will be advised accordingly.

Notes
Adair
28 July 58
Edo r
cc: Stn Uplands

VB Carson
(VB Carson) W/C
for AOC ADC

PRIORITY

RCAF
SIGNALS OFFICE

JUL 28 16 53 '58

5963-107

NNNNEFA132CP092FF058

WFO93

PP RFEPFZ

DE RFFPPW 78/28

P 281540Z

FM CANAIRDIV

TO CANAIRHED

BT

①

A 85 24 Jul

AP39 28 JUL YOUR GDO418 24 JUL PD MY AP35 16 JUL REFERS

BT

28/1542Z

② Refers to estimate of
cost on underground
installations for 61 AC & W Sqdn.
→ 31/7

YES
Signal with
CPI B. DGD

000176

MESSAGE FORM

FILE S963-107 (TGDO)

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FOR COMMEN/SIGNALS USE

NUMBER

PA

PRECEDENCE • ACTION PRIORITY		PRECEDENCE • INFO DEFERRED		DATE - TIME GROUP 251600Z		MESSAGE INSTRUCTIONS	
FROM CANAI RHD						PREFIX GR	
TO CANAI RDLV						SECURITY CLASSIFICATION UNCLASS	
INFO						ORIGINATOR'S NUMBER GDO 419 25 JUL	

RECEIPT ACKNOWLEDGED YOUR A85 24 JULY 58

*(Refers to underground installations
for 61 AC bus system etc.)*

PAGE OF PAGES			REFERS TO MESSAGE			DRAFTER'S NAME			OFFICE			TEL.		
			CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>			(AH BLAKE) S/L			DGDO			6-8228		
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE			
											(AH BLAKE) S/L DGDO			

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NUMBER

PA 7

PRECEDENCE - ACTION PRIORITY		PRECEDENCE - INFO DEFERRED		DATE - TIME GROUP 242000Z		MESSAGE INSTRUCTIONS	
FROM CANAIRHED						PREFIX GR	
TO CANAIRDIV						SECURITY CLASSIFICATION UNCLASS	
INFO						ORIGINATOR'S NUMBER GDO 418 24 JUL	

FOR SOGD PD REQUEST EXPEDITE REPLY TO OUR
GDO 409 14 JUL

PAGE		OF		PAGES		REFERS TO MESSAGE		DRAFTER'S NAME		OFFICE		TEL.	
						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		(AH BLAKE) S/L		DGDO		6-8228	
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE (AH BLAKE) S/L DGDO		

PH S963-107 (DGDO)

S921-103 TD8105 (Cops)

MEMORANDUM

23 July 1958

Cops *PL*

Air Raid Warning Sirens

- 1 Reference is made to your letter and Appendix "A" dated 16 Apr 58 of even reference notifying Commands of the siren sounds to be used to denote an air raid warning.
- 2 The following observations have been raised concerning these siren sounds:-
 - (a) No provision is made for the "All Clear";
 - (b) Instructions under "Action to be taken" column is not specific enough;
 - (c) Siren sounds conflict with those at present in use to signify fire.
- 3 It is agreed that provision for the "All Clear" be included and the instructions under the "Action to be taken" column be stated more fully.
- 4 Concerning (c) above, much correspondence has passed between DGDO and DCEM/CEM - Fire Marshal. In short, our views are that sirens should only be used to denote an air raid warning and that alternative arrangements will now have to be devised to give warning of fire.
- 5 In the meantime, Commands are anxious to know (in view of the instructions contained in Cops letter dated 16 Apr 58) whether or not the use of the siren to denote fire is to be retained. Since confusion is bound to result if sirens are to be used for both purposes, it is recommended that instructions be issued to all Commands informing them that sirens will not in future be used to denote fire.
- 6 The attached revised appendix to the draft letter to Commands incorporates the necessary amendments in answer to the observations already raised. The siren sounds conform with those in use by the Civil Defence organization.
- 7 In view of recent World events it is recommended that action be taken to clarify this matter without delay so that no confusion or doubt will exist in anyone's mind regarding the action to be taken on hearing the alarm for an air raid warning.
- 8 May the attached memorandum and draft letter to all Commands be passed to CCE for his comments.

Encl:

MacBlake
(AH Blake) S/L
DGDO
(2-5349)

8965-104(DCEO)

Cal. PA

Ottawa, Ont.,
24 Jul 58.

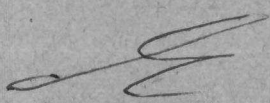
Director General of Air Services,
Department of Transport,
No 3 Temporary Bldg.,
Ottawa, Ontario.

Dear Sir:

Reference is made to our letter on this file dated
7 January, 1958, covering cross-border AMIS communications
requirements.

In addition to the circuits listed in Appendix "B"
of the referenced letter, USAF ADC have stated a requirement for
an air movement information circuit from the Winnipeg AMIS Section
to the Air Force Station at Minot, ND. If possible, this circuit
should terminate on the key equipment at the AMIS position.

It is requested that you review this proposal and advise
this Headquarters if this line and associated function can be
accommodated. If you agree to this request, would you also forward
the necessary information with respect to the termination of the
circuit.


(HF Marcou)
Wing Commander
for Chief of the Air Staff

S/L DH Evans/dm
24706

Copies to:
orig
circ
DCom
DCEO/Sec
DCEO
file ✓

4502

000180

S963-107 (DGDO)

PA →

OTTAWA, Ontario,
21 July 1958

Commanding Officer,
RCAF Station Uplands,
OTTAWA, Ontario.

Attention: F/O Gummesson

Operations Under Fallout
Project "Undercover"

1 Attached is a suggested exercise in draft form entitled "Project Undercover". The purpose of this exercise is to determine the measures that could be taken to reduce personnel exposure under fallout while carrying an emergency combat operations. It is considered that Uplands would be a suitable location to carry out this project.

2 It is thought that a simple exercise of this nature might bring to light a number of problems which could result in useful information being gained on which to base future policy and plans in this regard.

3 May this project please be given study by you and your comments forwarded to this headquarters.

NAPollard/mb

Nas
f. (AH Blake) S/L
for CAS

CC: File
Cire
Chro
✓CR

MESSAGE FORM

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NUMBER

See p. 10

PRECEDENCE - ACTION DEFERRED	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 211500Z	MESSAGE INSTRUCTIONS
FROM CANAIHED			PREFIX GR
TO CANAI RTRAIN			SECURITY CLASSIFICATION RESTRICTED
INFO			ORIGINATOR'S NUMBER GDO 414 21 JUL

YOUR GT356 17 JULY PD AGREED YOU PROCEED UNTIL MATTER

RESOLVED AS SUGGESTED IN YOUR 963-100-1 PAREN SASO PAREN 2 JUN

PAGE	OF	PAGES	REFERS TO MESSAGE		DRAFTER'S NAME <i>NA Pollard</i>		OFFICE	TEL.
			CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		(NA POLLARD) P/L/RAF		GDO 2	2-5349
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME
				SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE <i>NA Blake</i> (AH BLAKE) S/L		

DGDO

INCOMING
CLASSIFIED MESSAGE

FILE

CRYPTOCENTRE USE ONLY

DGDO

See p151 PA 21

343/17 JUL

PRECEDENCE - ACTION ROUTINE	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 171330Z	MESSAGE INSTRUCTIONS
FROM CANAIRTRAIN			SECURITY CLASSIFICATION RESTRICTED
TO CANAIRHED			ORIGINATOR'S NUMBER GT356 17 JUL

INFO

RESTRICTED

①
YOUR S963,107 DGDO 9 JUN PD IF NO DECISION YET REACHED SUGGEST
WARNINGS LISTED MY 963,100,1 SASO 2 JUN BE ISSUED AS INTERIM
MEASURE PD TO DATE NO GUIDANCE GIVEN TO UNITS ON AIR RAID WARNING
SIRENS

②
*Notes. Our Cdo 415 21 Jul
in reply. PIA on file 8963-107
Nadceland
Cdo 2
21 Jul 58*

JUL 10 02 50 '58
RCAP
SIGNATURE OFFICE

AC PARAPHRASE NOT REQUIRED
NO UNCLASSIFIED REPLY OR REFERENCE
PERMITTED IF THE DATE-TIME GROUP IS QUOTED

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S963-107(DRDP)

Ontario
11 Jul 58

Air Officer Commanding
Air Defence Command RCAF
RCAF Station
St Hubert PQ

Nuclear Ground Defence Planning
Detection of Atomic Explosion.

1 Reference is made to our previous letter S963-107(DRDP)
30 Apr 58 on the radar reflectivity of Atomic Clouds.

2 The attached copies of US newspaper extracts are forwarded
for your information.

Enc

JC Howard F/L
for (HC Freedman) W/C
for CAS

F/L JC Howard/DR
2-3880

Copy for: Orig
DRDP circ
CTel circ

CAAF
SIGNALS OFFICE

JUL 2 19 30 '58

NNNNO

BV024

RR RFEPFZ

DE RFEMVB 23/02

R 021400Z

FM CANAIRDEF

TO CANAIRHED

BT

/ R E S T R I C T E D / GD20 2 JULY

YOUR S963-104 (DGDO) 12 JUNE PD REQUEST SECURITY CLASSIFICATION
BE DOWNGRADED TO CONFIDENTIAL TO ALLOW INFO TO BE FORWARDED TO
UNITS AND IN KEEPING WITH CLASSIFICATION OF SUBJECT GROUND
DEFENCE MANUAL NUMBER 1

BT

02/1515Z

DGDO
Elgin Annex

RESTRICTED

A PARAPHRASE NOT REQUIRED

MESSAGE FORM

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NUMBER

PRECEDENCE - ACTION DEFERRED		PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 031600Z	MESSAGE INSTRUCTIONS
FROM CANA IRHED				PREFIX GR
TO CANA IRDEF				SECURITY CLASSIFICATION RESTRICTED
INFO				ORIGINATOR'S NUMBER GDO 396 3 JUL

YOUR GD 20 2 JULY PD OUR S963-104 PAREN DGDO PAREN 12 JUNE
DOWNGRADED TO CONFIDENTIAL AS REQUESTED

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						CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		(N A POLLARD) F/L/RAF		DGDO/GDO 2		2-5349	
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	RELEASING OFFICER'S SIGNATURE <i>McDonald</i> (A-H BLAKE) S/L		
											DGDO		

S963-107 (DCDO)

OTTAWA, Ontario,

9 June 1958

Air Officer Commanding,
Training Command,
RCAF Station,
TRENTON, Ontario.

Air Raid Warning Sirens

1 Your remarks in your headquarters' letter
963-100-1 (SASO) dated 2 June 58 have been noted and a
reply will be forthcoming as soon as this matter has been
resolved.

NAPollard/mb

CC: File
Circ
Chro
CR ✓

AK Blake
(AK Blake) S/L
for CAS

C R To PA

S963-107 (DGDO)

OTTAWA, Ontario,
27 May 1958.

Air Officer Commanding,
Tactical Air Command,
Edmonton, Alberta.

Air Raid Warning Sirens

- 1 Reference is made to your 921-100 (SASO) dated 8 May 58, and this headquarters letter S921-103 TD8105 (COPs) dated 16 Apr 58.
- 2 The similarity of sirens to denote a Passive Defence Alert and that used to indicate fire, is receiving attention at this headquarters and a reply will be forwarded as soon as the matter has been resolved.

(A H Blake) S/L
for CAS

WAPollard/dr
DGDO/GDO 3-2
2-5349

CC: Circ
File
Chro
SCR

000190

S963-107 TDR147 (DGDO)

Ottawa, Ontario,
26 June 1958.

Ref 933-100-1 (SOGT) 23 May 58

Air Officer Commanding,
Training Command,
RCAF Station Trenton,
Trenton, Ontario.

Attention: F/L A. E. Gee

Operations and Survival
During Nuclear Fallout

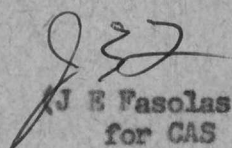
1 An examination of the calculations used to determine the various shelter residual numbers for the hangar reveals the following errors:

- (a) Did not assume a flat roof. This would make the distance to the roof of point "A" 22' instead of 54' and change the dimension factor from 0.68 to 0.5 in both cases;
- (b) Did not use the attenuation factor of the 12" concrete wall for calculating point "C" although it was used for point "A".

3 These corrections will probably not change your conclusion that the tunnel is the best area. Along that line it is suggested that the residual number for a point in the tunnel directly below point "A" be calculated. Thus you will have a more complete evaluation of the tunnel as a protective shelter.

4 The seepage of radiation fallout particles into a building through cracks etc. is not considered a major problem.

JEFasolas/dr
DGDO/GDO 3
6-8228


(J E Fasolas) Maj/USAF
for CAS

CC: Circ File Chro SCR

000191

RESTRICTED
IN REPLY PLEASE QUOTE

No. 963-100-1(SOGT).....



CANADA

Department of National Defence

Royal Canadian Air Force

TRENTON, Ontario,
23 May 58.

8147

Chief of the Air Staff,
Air Force Headquarters,
Ottawa, Ontario.

Operations and Survival
during Nuclear Fallout

Referred to... *A.G.D.*
MAY 27 1958
File No. *963-107*
Orig d to... *S.G.D.*

1 The question has been raised whether the standard stage I steel-arch hangar with a unit "C" development would be suitable for use as a Command Post and shelter for essential personnel against nuclear fallout. *22/5/58*

2 Attached are appendices giving this CHQ's evaluation of the hangar at Stn Saskatoon. This study indicates that only the tunnel beneath the hangar would provide any protection, and that the shelter-capabilities of the rest of the structure range from fair to none at all.

3 In this evaluation, no attempt was made to estimate the number of people who could remain in the tunnel for any appreciable period, nor of their probable need for a supply of fresh air. Similarly, our calculations ignore the fact that the hangar is not air-tight (especially around the doors).

4 Determination of the protective properties of such hangars might be of interest, and assistance, to other stations. The opinion of specialist personnel at your HQ is, therefore, requested as to the validity of this CHQ's evaluation and assumptions.

Encl:

*Notes annexed
by letter of 26 Jun 58
under same file & Ref 963-107 (26 Jun 58)*
AE
(AE Gee) F/L
for AOC, TC

R E S T R I C T E D
APPENDIX "B"
TO 963-100-1(SOGT)
DATED 23 MAY 58

FINAL SHELTER RESIDUAL NUMBERS
for various positions in a
160-ft steel arch hangar

NB: As not all attenuation figures are available, and interpolations were necessary, these results must be assumed to be approximate only.

1. POINT "A" (see App. "A") - 3 feet above the floor, in
the center of the hangar

(a) Measurements taken in cross-section of hangar

Ground Radiation:

Distance maximum factor = 1.0
D minimum factor (100 ft) = 0.8
Grnd radn resid. factor = 0.2
Material attenuation factor: 0.053
Grnd radn residual number (0.053 x 0.2) = 0.0106

Roof radiation:

D max factor (84 ft) = 0.76
D min factor (54 ft) = 0.68
D attenuation factor = 0.08
Material atten. factor: 0.98 (estimated)
Roof radn residual number (0.08 x 0.98) = 0.0784

Final shelter residual number
(0.0106 + 0.0784) = 0.089

- (b) Measurements taken at right angles to cross-section, and
assuming a door steel thickness of 1/8 inch.

Ground radiation:

D max factor = 1.0
D minimum factor (110 ft) = 0.81
Grnd radn resid. factor = 0.19
Material attenuation factor: 0.993 (estimated)
Grnd radn residual number (0.993 x 0.19) = 0.189

Roof radiation:

D max factor (122 ft) = 0.83
D min factor (54 ft) = 0.68
D attenuation factor = 0.15
Material atten. factor : 0.98
Roof radn residual number (0.98 x 0.15) = 0.147

Final shelter residual number
(0.189 + 0.147) = 0.336

2. POINT "B" - measurement "C" to cross-section

Ground radiation:

D max factor = 1.0
D min factor (12 ft) = 0.323
Grnd radn resid. factor: 0.677
Material atten. factor: 0.05
Grnd radn resid. number (0.05 x 0.677) = 0.034

Roof radiation:

D max factor (32 ft) = 0.554
D min factor (30 ft) = 0.539
D atten factor = 0.015
Material atten. factor
(20-in. concrete) : 0.02
Roof radn resid. number (0.016 x 0.02) = 0.0003

2. POINT "B" (Cont'd)

$$\begin{array}{l} \text{Final shelter residual number} \\ (0.034 - 0.0003) = \underline{\underline{0.034}} \end{array}$$

3. POINT "C" - ground floor of the lean-to

Ground radiation:

$$\begin{array}{l} \text{D max factor} = 1.0 \\ \text{D min factor (11 ft)} = \underline{0.31} \\ \text{Grnd radn resid factor} = \underline{0.69} \\ \text{Material atten factor:} = 0.99 \\ \text{Grnd radn resid number} (0.69 \times 0.99) = \underline{\underline{0.68}} \end{array}$$

Roof radiation:

$$\begin{array}{l} \text{D max factor (24 ft)} = 0.5 \\ \text{D min factor (22 ft)} = \underline{0.48} \\ \text{D attenuation factor} = \underline{0.02} \\ \text{Material atten factor:} = 0.17 \\ \text{Roof radn resid number} (0.02 \times 0.17) = \underline{\underline{0.0034}} \end{array}$$

$$\begin{array}{l} \text{Final shelter residual number} \\ (0.68 + 0.0034) = \underline{\underline{0.6834}} \end{array}$$

963-100-1 (DGDO)

8963-107

OTTAWA, Ontario,
20 May 1958.

Air Officer Commanding,
Training Command, RCAF,
RCAF Station Trenton,
Trenton, Ontario.

Flight Hazards to Aircrew
from Nuclear Weapons

1 Reference is made to your 963-100-1 (SOGT)
dated 11 Apr 1958.

2 For lecture purposes, it is suggested that
"significant radiation exposures" be defined as an
exposure to nuclear radiation that is over the normal
background count. Thus, all exposures to radiation
sources, whether they are from training exercises or
flying through a nuclear cloud are "significant radiation
exposures" in that they have a certain recognisable
meaning. By this definition, then 50r would most certainly
be a significant exposure.

JCB
(J C Bentley) Maj/USAF
for CAS

JCBentley/dr
DGDO/GDO 3
6-8228

CC: Circ
File
Chro
CR ✓

CR to PA

MESSAGE FORM

FILE

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FOR COMMEN/SIGNALS USE

NUMBER

CRS

PRECEDENCE - ACTION DEFERRED	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 161630Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED			PREFIX GR
TO CANAIRTRAIN			SECURITY CLASSIFICATION UNCLASS
INFO			ORIGINATOR'S NUMBER GDO 362 16 MAY

YOUR GT 387 13 MAY PD REPLY TO YOUR GT 376 24 APRIL
WILL BE SENT AS SOON AS MATTER HAS BEEN RESOLVED

PAGE OF PAGES		REFERS TO MESSAGE		DRAFTER'S NAME		OFFICE		TEL.	
		CLASSIFIED YES <input type="checkbox"/> NO <input type="checkbox"/>		<i>NA POLLARD</i> (NA POLLARD) F/L		GDO 3-2		2-5349	
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM
						<i>NA POLLARD</i> (AH BLAKE) S/L		RELEASING OFFICER'S SIGNATURE	
								DGDO	

RCAP S-43

COPY 3

000198

CRTA PA

SIGNAL SERVICE

MAY 14 01 19'58

NNNNFB053XT046

DEPFTZ

DE RFEPTX 39/14

M 131405Z

FM CANAIRTRAIN

TO CANAIRHED

BT

GT387 13 MAY REQUEST REPLY MY GT376 24 APR CONCERNING AIRRAID
WARNINGS

BT

13/1504Z

DEFERRED

T132

DGDO

Elgin Amner

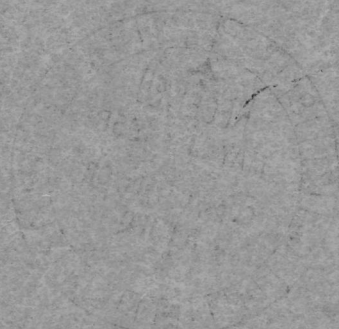
[Handwritten signature]
C/ops

(2)
Notes
our GDO 362 d/d 16 May
refer Nat



F.

DEFERRED



CR to PA

MESSAGE FORM

FILE 8963-107
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FOR COMMCEN/SIGNALS USE

NUMBER

8963-107

PRECEDENCE - ACTION DEFERRED	PRECEDENCE - INFO DEFERRED	DATE - TIME GROUP 021530Z	MESSAGE INSTRUCTIONS
FROM CANAIRHED			PREFIX GR
TO CANAIRTRAIN			SECURITY CLASSIFICATION RESTRICTED
INFO			ORIGINATOR'S NUMBER GDO 344 02 MAY

YOUR GT 381 30 APR PD PASSAGE CONCERNED SHOULD READ QUOTE WHILST THE
BETA AND GAMMA WERE OFF SCALE UNQUOTE PD MUTILATION OF GREEK SYMBOLS
TEXT
IN ORIGINAL, TEXT CAUSED ACCIDENTAL OMISSION PD UNABLE TO ELABORATE
FURTHER ON THIS POINT FROM INFORMATION IN REMAINDER OF REPORT PD
DETAILS OF EQUIPMENT REFERRED TO IN PARA 11 AS QUOTE 1295 UNQUOTE
ALSO UNKNOWN

PAGE	OF	PAGES	REFERS TO MESSAGE <i>THIS GT 381 30 APR</i>		DRAFTER'S NAME <i>Nelson</i>		OFFICE	TEL.
			CLASSIFIED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		(TD NELSON) F/O		DGDO 2-2	2-5349
FOR OPR'S USE	R	DATE	TIME	SYSTEM	OPERATOR	DATE	TIME	SYSTEM
					D			
						RELEASING OFFICER'S SIGNATURE <i>Nelson</i> (AH BLAKE) S/L		

H.Q. FILE NO.

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ROYAL CANADIAN AIR FORCE

NUCLEAR, BIOLOGICAL & CHEMICAL WARFARE AIR OPERATIONS & SURVIVAL UNDER NUCLEAR FALLOUT

FOR CROSS REFERENCES SEE INSIDE COVER

ROUTING				P.A. & B.F. ENTRIES				REGISTRY ONLY	
REFERRED	REMARKS	DATE OF PASS	INITIALS	DATE OF P. A.	INITIALS	DATE OF B. F.	CANCEL B. F.	DATE RECEIVED	INSPECTED
DGDC	With Papers	23/6	EF					2/320	
CAS	WITH PAPERS CR JUL 15 1959		EF						
Cops									
DGDC (2000)		16 Jul	EF	20 July	S			2/20/1959	
DGDC Eng	WITH PAPERS CR JUL 24 1959		EF					AUG 17 1959	
DGDC	WITH PAPERS CR AUG 24 1959		CL	24 Aug	IN			AUG 27 1959	
DGDC	WITH PAPERS CR SEP 15 1959		CL	17 Sep	IN			SEP 18 1959	5 (u)
CAS	WITH PAPERS CR OCT 14 1959		CL						24
Cops									
DTRC	1599	16/10	Don						
TRO3									
DTRC	for approval	20 Oct	P						
Cops	for sig	20 Oct	DE						
VERA		21/10	Don						
Cops	(5)	21 Oct	DE						
DTRC	1692	23/10	Don						
Cops	for approval	20 Oct	DE						
VCAS		27/10	Don						
Cops		23/10	upm	23 Oct	256			OCT 28 1959	
Cops DTRC	WITH PAPERS CR NOV 19 1959								
TRO3	(2)	23 Nov	DE						
Cops		25 Nov	DE	25 Nov	est			NOV 26 1959	

CROSS REFERENCES

FILE No.	SUBJECT

FILE
NUMBER

969 - 7

VOL. 2

DEPARTMENT OF NATIONAL DEFENCE

NUCLEAR, BIOLOGICAL & CHEMICAL WARFARE
AIR OPERATIONS & SURVIVAL UNDER NUCLEAR
FALLOUT

FOR CROSS REFERENCES SEE INSIDE COVER

ROUTING				P.A. AND B.F. ENTRIES				REGISTRY ONLY	
REFERRED	REMARKS	Date of Pass	Initials	Date of P.A.	Initials	Date of B.F.	Cancel B.F.	Date Received	Inspected by
	NEW COVER CR	NOV 26 1959							
	WITH PAPERS CR	DEC 9 1959							
DTRO	1323	9/12 AM							
TR03		19/12/59		10 Feb 60				FEB 10 1960	
DNDO	WITH PAPERS CR	MAY 31 1960							
Arm Eng 2-2		1 June 60		14 June 60				JUN 15 1960	
Darm Eng	FOR REQUEST CR	JUL 27 1960							
DND		28 Jul 60		2 Aug 60				AUG - 2 1960	
CL/CLASST	WITH PAPERS CR	OCT 6 1960							
Cops		6 Oct 60							
DNDO		20 Oct 60		OCT 12 1960					
COPS	WITH PAPERS CR	NOV 8 1960							
VTRO		8 Nov 60							
CD/CD	Sig	10 Nov 60							
VCA5		14/11							
Cops		16/11							
DNDO		21/11							
6 Ops		23/11		25/11				NOV 25 1960	

000205

CROSS REFERENCES