From Brigadier J P S Donnelly CBE,

Army Personnel Service Group

APSG
Home Command
IDL 428
Ramillies Building
Marlborough Lines
Monxton Road
Andover
Hants
SP11 8HJ

Telephone:
Military:
Email:

D/APSG/SI/105mm HE Round SPTA

See Distribution

21 Sep 16

DIRECTION TO CONVENE A SERVICE INQUIRY (SI) INTO 105MM HE ARTILLERY ROUND FIRED OUTSIDE OF THE RANGE AREA ON SALISBURY PLAIN TRAINING AREA (SPTA) ON 5 MAR 14.

1. Hd APSG has directed that a Service Inquiry (SI) is to be convened to investigate the circumstances surrounding the 105mm HE Artillery round fired outside of the range area on Salisbury Plain Training Area on 5 Mar 14..

2. 3rd (United Kingdom) Division (3(UK) Div) will be the Convening Authority for the SI and are to issue the Convening Order. The Convening Order and Terms of Reference are to be approved by 3(UK) Div Legal Adviser and then passed to APSG for approval together with an indicative investigation plan and timeline. The conduct of this SI is to be in accordance with the guidance provided in JSP 832 and LFSO 3207.

3. The purpose of the SI is to:

   a. Establish the facts of the matter.
   b. Establish if Policy and Procedures were followed.
   c. Assess the relevant extant policies.
   d. Identify lessons and recommendations to prevent recurrence.
   .

4. Lt Col Permanent President Service Inquiry (PPSI) Force Troop Command (FTC) has been assigned as the President to this Inquiry.

5. SO1 SI will liaise with Lt Col to establish the criteria required for the panel members who will ill support the President during the duration of the SI and then request ADOC to trawl for the relevant individuals.

{Original Signed}

Distribution:

3(UK) Div - GOC
FTC – SO1 SIT

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APSG/SI/7RHA

CONVENING ORDER FOR A SERVICE INQUIRY

BY ORDER OF

MAJOR GENERAL PNYM SANDERS CBE DSO

GENERAL OFFICER COMMANDING 3(UK) DIVISION

1. A Service Inquiry (SI) is to be convened, in accordance with Section 343 of the Armed Forces Act 2006 (AFA 06), to investigate the circumstances leading to the firing of a 105mm HE round by F Bty 7 RHA onto farmland beyond the Salisbury Plain Training Area (SPTA) boundary on 5 Mar 14 and the actions taken subsequently by unit personnel in relation to this incident. This SI is to convene at the Tidworth Garrison Theatre between 23 – 27 Jan 17.

2. A Service Inquiry Panel is to assemble at Tidworth Garrison Theatre at 0830hrs on Mon 23 Jan 17. The Service Inquiry is the Panel's priority task and takes precedence over any other duties.

3. The Service Inquiry Panel comprises of:

   a. President: [redacted] Lt Col [redacted]

   b. Member: [redacted] Maj [redacted]

   c. Member: [redacted] Capt [redacted]

   d. Waiting Member: [redacted] Capt [redacted]

4. The legal adviser to the Inquiry is [redacted] Lt Col [redacted]

5. The Panel is to investigate and report the circumstances surrounding the incident, recording all relevant evidence and expressing opinions in accordance with the Terms of Reference at Annex A, save that the Panel is not to attribute blame, negligence[1] or recommend disciplinary action.

6. The General Officer convening the Service Inquiry directs that the evidence is to be taken on oath or by affirmation, as required, in accordance with Regulation 11 of the Armed Forces (Service Inquiries) Regulations 2008. Any document or other matter produced to the Panel by a witness, for use as evidence, shall be made an exhibit and treated in accordance with Regulation 11 of the Armed Forces (Service Inquiries) Regulations 2008. Documentary evidence is to be attached as an annex to the proceedings, having been signed by the President.

7. Any person who, in the opinion of the President, may be affected by the findings of the Panel shall be treated in accordance with Regulation 18 of the Armed Forces (Service Inquiries) Regulations 2008. They are to be given notice of the proceedings, the opportunity of being present and they may be called to give evidence. They can also question witnesses, call witnesses and be represented at the sittings of the Panel, or at such part as the President (after consulting with the Convening Authority) may specify, in accordance with Regulation 18. The following have been identified as potentially affected persons and should be treated in accordance with Regulation 18:

   a. [redacted]
   b.
   c.
   d.

[1] See para 1.4 of JSP 832 and Annex B to Chapter 5.

e. [redacted]
f. [redacted]

8. The President is to be alert to the possibility that as the Service Inquiry proceeds that other persons may be identified as 'potentially affected persons', to whom the provisions of Regulation 18 of the Armed Forces (Service Inquiries) Regulations 2008 apply. The President is to ensure that any such person is given the opportunity of being present and represented before the Panel in accordance with Regulation 18. If in any doubt, the President should seek legal advice and consult the Convening Authority in respect of any restrictions.

9. In accordance with Regulation 17 of the Armed Forces (Service Inquiries) Regulations 2008, the President must obtain the consent, and the extent of any such consent, of the Convening Authority before permitting a person to be present at the proceedings of the Panel other than as a witness.

10. The Panel is to hear evidence from the witnesses outlined below:

Ser	Number	Rank	Name	Initials	Current Unit	Remarks
1	[redacted]	Col	[redacted]	[redacted]	[redacted]	[redacted]
2	[redacted]	Lt Col	[redacted]	[redacted]	[redacted]	[redacted]
3	[redacted]	Lt Col	[redacted]	[redacted]	[redacted]	[redacted]
4	[redacted]	Lt Col	[redacted]	[redacted]	[redacted]	[redacted]
5	[redacted]	Maj	[redacted]	[redacted]	[redacted]	[redacted]
6	[redacted]	Capt	[redacted]	[redacted]	[redacted]	[redacted]
7	[redacted]	Capt	[redacted]	[redacted]	[redacted]	[redacted]
8	[redacted]	Capt	[redacted]	[redacted]	[redacted]	[redacted]
9	[redacted]	Capt	[redacted]	[redacted]	[redacted]	[redacted]
10	[redacted]	WO1	[redacted]	[redacted]	[redacted]	[redacted]
11	[redacted]	WO2(SMIG)	[redacted]	[redacted]	[redacted]	[redacted]
12	[redacted]	WO2(SMIG)	[redacted]	[redacted]	[redacted]	[redacted]
13	[redacted]	WO2	[redacted]	[redacted]	[redacted]	[redacted]
14	[redacted]	WO2/SSgt	[redacted]	[redacted]	[redacted]	[redacted]
15	[redacted]	SSgt	[redacted]	[redacted]	[redacted]	[redacted]
16	[redacted]	SSgt	[redacted]	[redacted]	[redacted]	[redacted]
17	[redacted]	SSgt	[redacted]	[redacted]	[redacted]	[redacted]
18	[redacted]	Sgt	[redacted]	[redacted]	[redacted]	[redacted]
19	[redacted]	Sgt	[redacted]	[redacted]	[redacted]	[redacted]
20	[redacted]	Sgt	[redacted]	[redacted]	[redacted]	[redacted]
21	[redacted]	Sgt	[redacted]	[redacted]	[redacted]	[redacted]
22	[redacted]	Gnr	[redacted]	[redacted]	[redacted]	[redacted]

11. The following civilian witnesses are requested to attend:

Title	Name	Organisation	Comment
SO1(A)	[redacted]	[redacted]	[redacted]
Capt (Retd)	[redacted]	[redacted]	[redacted]
Mr (was WO1)	[redacted]	[redacted]	[redacted]

12. The Panel may hear evidence from any such other witnesses or subject matter experts as it deems appropriate and may dispense with the attendance of any witness if it concludes that the witness evidence will not assist the Inquiry, but its reasons for not calling any such witnesses should be explained in its findings. The President should note that a witness statement taken by the RMP/SIB may not be admitted as evidence to the Inquiry, unless the express consent of the witness providing the statement has been obtained.

13. If it appears to the Panel at any time during the Service Inquiry that any person may have committed an offence against Service Law, including a criminal conduct offence contrary to Section 42 of the Armed Forces Act 2006, the President is to adjourn the Service Inquiry immediately and seek legal advice.

14. The President is to inform all witnesses that a transcript of the Service Inquiry, whilst primarily for internal MOD use, may subsequently be released into the public domain. All such material accessible to the public would be released in a redacted form according to current Service policy on disclosure and adhering to current legislation, including the Data Protection Act 1998 and the Freedom of Information Act 2000.

15. The Service Inquiry is to express its opinion with regard to any material conflict in the evidence, which may arise and give reasons for reaching that opinion. Any conflict in the evidence should be determined on the balance of probabilities.

16. The findings, opinions and recommendations are to be cross-referenced to the evidence presented in the report.

17. The President is required to submit monthly progress reports to the Convening Authority and APSG Service Inquiry Branch in accordance with Appendix 4 to Annex G to CH 2 of JSP 832 and paragraph 27h of LFSO 3207.

18. The President should have regard to the provisions of the following documents:

a. Section 343 of the Armed Forces Act 2006.

b. Armed Forces (Services Inquiries) Regulations 2008.

c. LANDSO 3207 (dated Mar 12).

d. JSP 832 Guide to Service Inquiries (issued 1 Oct 08).

GENERAL ADMINISTRATION

19. HQ 3(UK) Division is to provide the following:

a. A Verbatim Court Recorder to be present to record evidence as required.

b. An Orderly to assist as confirmed by the President.

c. Stationery as required by the panel.

d. Accommodation for 22-27 Jan 17 for the Service Inquiry Panel.

e. Accommodation as required by any witnesses.

f. Food and refreshment as confirmed by the President.

g. Fully amended copies of Manual of Service Law and QRs 1975.

20. Tidworth Garrison Theatre will host the Service Inquiry and is requested to provide facilities, equipment and assistance suitable for the nature and duration of the Service Inquiry, including:

a. A suitable venue including waiting rooms for:

(1) Regulation 18 Witnesses.

(2) Other Witnesses.

(3) SI Panel when not in Hearing.

b. Access to IT facilities as required.

21. The costs of the Service Inquiry are to be charged to 3(UK) Division UIN: [redacted]

PNYM Sanders CBE DSO
Major General
General Officer Commanding

Date: 2 Nov 16

Annex:

A. Terms of Reference.

ANNEX A TO
APSG/SI/7RHA
DATED 2 NOV 16

TERMS OF REFERENCE

1. The President is to investigate the circumstances leading to the firing of a 105mm HE round by F Bty 7 RHA onto farmland beyond the Salisbury Plain Training Area (SPTA) boundary on 5 Mar 14 and the actions taken subsequently by unit personnel in relation to this incident.

2. The President is to report on all relevant matters and, where the President thinks it appropriate, to comment on such matters, express opinions and make recommendations. In particular the President is to investigate and establish:

TOR 1. Establish the facts of the matter.

a. Confirm, if possible, which gun fired the unsafe round.

b. Determine the level of understanding and application of policies and procedures by the chain of command responsible for the safe conduct of the range.

c. Establish why there was no unsafe round reported on the 5th May 14.

d. Establish the events which lead to the firing of an unsafe round.

e. Confirm what actions were taken by unit personnel and others in relation to this incident, once the round fragments were reported by Mr Snook.

TOR 2. Establish if Policy and Procedures were followed.

a. Identify the policies, procedures and practice used on SPTA by 105mm guns on 5 Mar 14 to include, but not limited to:

(1) AC 61037 – Firing Tables for Gun 105mm, L118
(2) AC 71035 – Artillery Training Volume III, Field Artillery Pam No.19
(3) SPTA Range Standing Orders Pt. 2 – Live Firing.
(4) LFSO 3202 – Reporting of incidents and Matters of Public Interest During Training.

b. Confirm the RSOs used on that day conformed to the above policies.

c. Establish if F Bty 7 Para RHA adhered to the RSOs and above policies.

d. Establish if all relevant personnel from F Para Bty holding key live firing appointments, including safety personnel, were sufficiently trained and qualified to fulfil their role.

TOR 3. Assess the relevant extant policies.

a. Examine whether the policies, procedures and planning currently in place are appropriate.

b. Identify whether policies and procedures have changed and been implemented to prevent any recurrence of this incident type.

TOR 4. Identify lessons and recommendations to prevent recurrence.

a. Provide an opinion on whether the policies identified in TOR 2 adequately mitigated the risks.

b. Establish whether improvements could be made to the writing and content of RSO's in order to minimise the risk of reoccurrence.

Procedure

3. The President is to include in the record of proceedings a clear and concise précis of the case in an easy readable form, addressing each of the Terms of Reference listed above. In particular the Panel should:

a. Set out the facts that, in the opinion of the Panel, have been established by the evidence, on the balance of probabilities.

b. Set out any additional facts, relevant to the matter under inquiry, disclosed from the evidence, which have not been specifically referred to in the Terms of Reference.

c. Ensure that contained in the record are the transcripts of oral evidence, copies of witness evidence given to the Panel and any other evidence which the President decides should form part of the record.

4. The President is to forward one copy of the record of proceedings to the Convening Authority on completion of the SI.

NARRATIVE OF EVENTS

INTRODUCTION

Reference

1. On the morning of Wed 5 Mar 14, [redacted], a farmer living near the village of Patney (about 4Km north of the SPTA boundary), heard "a loud whistling noise" which was quickly followed by an explosion. [redacted] immediately conducted a search of fields in the area but found nothing untoward. On Fri 7 Mar 14, whilst working in one of the nearby fields, [redacted] found an impact crater which he believed to have been caused by a munition fired from the SPTA training area. [redacted] immediately informed HQ SPTA of what he had found and investigations commenced. **7RHA/40-41**

2. Fragments of both fuse and shell casing were found in the crater confirming that it had been formed by an artillery munition. The fragments were sent for analysis and a crater analysis was conducted. There were two Royal Artillery units conducting live fire exercises over the period 5 – 7 Mar 14, 7 RHA and 19 Regt RA. No unsafe round was reported on the 5th Mar and firing continued as per the Main Events List throughout the period 5-7th Mar until check fire was called by SPTA Range Control on 7th Mar when [redacted] reported the find to Range Control.

THE INCIDENT

3. 7 Para RHA was deployed on Exercise CYPHER RESOLVE, the Regimental CT2 Exercise prior to Exercise STEEL SABRE (Ex SS) 14, the Special to Arm (StA) CT3 exercise directed by CRA 3 (UK) Div. 7 Para RHA was firing from two Gun Positions. Analysis of the impact crater and other available evidence determined that neither G Para Bty nor 19 Regt RA (or any other range users) could have caused the incident on 5 Mar 14. **7RHA/33**

4. F Para Bty was deployed in a dispersed position at [redacted] as ordered by the 7 Para RHA Fire Direction Centre and as per the regimental firing plan. At some point during an engagement a single HE round was fired approx 4km outside of the SPTA RDA.

5. There was no report of a lost round by the OP or that an incident had occurred on the gun position until Fri 071400Z*MAR14, when SPTA Range Operations ordered 'check firing'. This was the first point the Regiment knew that an incident had occurred. It was not until sometime after 'check firing' had been imposed that the round was confirmed as a 105mm round and the investigation focused on 7 RHA. On confirmation of the calibre of the round, the LAIT was informed and conducted an investigation. By a process of elimination and using evidence gathered from the crater site, it was determined that F Para Bty had fired a single HE 105mm round outside of the RDA on 5 Mar 14.

POST INCIDENT REPORTING

6. The following investigations were conducted after the incident:

   a. **Royal Artillery Gunnery Training Team (RAGTT).** The RAGTT staff were called to investigate the incident and were the first investigators on the gun line.

   b. **SPTA.** Maj [redacted] and WO1 [redacted] conducted the initial investigation at [redacted] farm including the crater analysis and retrieval of munition fragments. This provided detail for the INCREP and the basis for the LAIT (and other) investigations.

c. **ATO.** Maj [redacted], SPTA Range Safety Officer, requested support from an Ammunition Technical Officer (ATO) to assist in the initial investigation. Sgt [redacted] on strength of 751 EOD Sqn, was on call at the time of the find and conducted the investigation and completed the Munitions Near Miss Report (MOD Form 1670), published on 18 Mar 14. **7RHA/1**

d. **BAE Systems.** BAE Systems Munitions were requested to collect and advise on fragments of shell retrieved following an incident around Tilshead. The fragments were taken to Glascoed specifically to identify if the shell was a 105mm L31 or 155mm L21 and to identify the type of fuze. The report was issued on 3 Apr 14. **7RHA/1**

e. **LAIT.** Investigation and report written by Lt Col(Retd) [redacted]. The report was published on 22 Apr 14. **7RHA/9**

f. **SIB Report –** Investigated by Sgt [redacted] and Cpl [redacted] under investigation Reference No.[redacted].

g. **7 RHA Learning Account (LA) –** Unit completed "Non-Operational Learning Account" conducted and signed off by the Commanding Officer. The LA was published on 29 Oct 14. **7RHA/39**

h. **14 Regt RA LA.** SI panel members were observing a L118 live fire exercise as part of their preparation for the SI when they observed the final safety check being omitted. The SMIGs on the position carried out the necessary immediate actions and the unit were directed to generate a Learning Account to inform context and judgements on attitude of detachment members. **7RHA/42**

7. Finding and recommendations of the above investigations are summarised at **FLAG E** and are referenced throughout the report.

Worthy of Note:

8. This is an extremely well known event across the Royal Artillery and seemingly every Gunner has a view on what occurred, "know" what happened. Evidence is, as it was in spring 2014, quite conclusive that one of two guns from F Bty 7RHA fired the unsafe round. Beyond that it remains impossible to prove which of the two guns fired the round. Probability points to one gun but, whilst every Gunner spoken to refers to the significant difference between different charges, not a single person on the position on 5 Mar 14 admits to hearing or seeing anything unusual or unexpected, in any investigation. Without eye witness testimony confirming which gun fired the unsafe round TOR 1a cannot be conclusively answered.

9. The Service Inquiry hearings took place almost 3yrs after the event. The SI was prevented from taking place earlier pending the Service Prosecuting Authority (SPA) decision whether they were going to press charges. It was only when the SPA formally confirmed they would not press charges that the SI could be initiated. This delay significantly reduced the confidence with which witnesses gave testimony and the level of confidence in the evidence given. The 5th Mar 14 was for the majority a non-descript day on a live fire exercise which they will have since had perhaps a hundred similar such days. It is unrealistic to expect witnesses to remember the specific details of the routine and mundane after such a long period of time.

10. The two members of the Panel who are not L118 specialists visited RSA twice in Dec 16 to observe the practices and procedures relevant to the SI and to see the difference between different charges being fired. During the second visit the gun detachment being

observed failed to carry out the drills correctly mirroring exactly what is believed to have occurred on 5 Mar 14. The probability of this occurring suggests that this is not an uncommon failure in protocols. The failure was captured on film and the detachment personnel brought in to give testimony during the SI. **7RHA/42 7RHA/31 H1T/3-31**

Summary of Gun Position Activity

11. The following section briefly outlines the activity and roles expected on a L118 battery gun position. The various Findings and Opinion sections delve into further detail but this section is aimed at those who do have not any experience of a Light Gun position.

a. **A Light Gun (L118) Battery.** A Light Gun battery comprises of six L118 guns each manned by a detachment of between four and six gunners. These may be deployed as a single "tight" position where all six guns are deployed within 150m of the single grid reference used to generate the firing data. Alternatively they may be deployed as independent troops or as a "dispersed position" where one or more guns are sited beyond 150m the "safety map grid reference". Chapter 4 of PAM 19 outlines the specific procedures required for a "dispersed gun position". Guns are controlled by a Command Post which takes the target data and calculates the data required by the guns. **7RHA/8, p4-1**

b. **Operational Appointments.** The following appointments are grouped together as they are roles/appointments a battery use in an operational environment with the safety staff being listed at 11b below.

1) **Gun Position Officer.** The GPO is responsible for ensuring that practice is conducted from the gun position in accordance with the weapon system ACOPs/drill books/AESPs. This includes making sure all position personnel are qualified and any equipment/resources used are serviceable and in date. Ch 3 section 6 of PAM 19 refers. **7RHA/8 p3-13**

2) **The Gun Area Commander** (GAC) is the senior officer in the battery area, usually the BK but, in their absence, may be the GPO or CPO. The GAC is responsible for all tactical aspects of firing and the efficient functioning of the battery. **7RHA/48 para 144**

3) **Battery Sergeant Major.** The BSM is responsible, as relevant to this case, for the Ammunition Control Point and the breakdown and delivery of ammunition to the guns. In this case the BSM was also covering the Battery Captain role which was gapped. PAM 21 articulates the non-safety related tasks and are principally echelon focused. **7RHA/48 para 164**

4) **Command Post Officer.** The CPO is the officer or NCO in command of the CP and is responsible for the provision of safe data required to direct the guns onto the Safe Target Area (STA) and for the computation of safety data for the GPSO). Ch 3 Section 7 of PAM 19 refers. **7RHA/8 p3-16**

5) **Detachment Commander.** The DC (also known as the Gun No. 1 and is either a bombardier or sergeant) is responsible for the drills on the equipment (Light Gun) and is to ensure that they are carried out correctly. **7RHA/8 p3-29**

6) **Gun Line Section Commander.** A SNCO whose responsibilities are outlined in full in PAM 21, identifying recce, deployment (of the guns) and employment (firing) roles which includes taking "*all responsible steps to* **7RHA/48 para 160**

ensure that gun(s) fire at the correct data ordered by the CP".

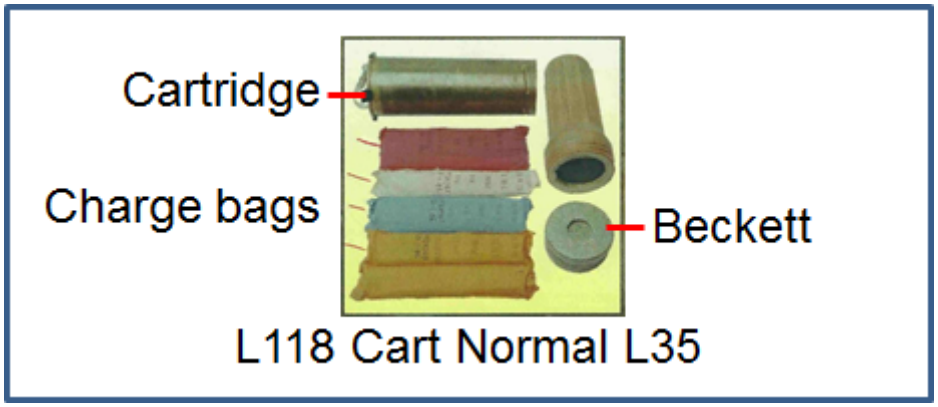
c. **Safety Appointments.** The following key safety duties are generated on exercises to ensure range safety. PAM 19 Chapter 3 outlines in detail all safety related duties, including for those listed above in para. 11b.

1) **Gun Position Safety Officer.** The GPSO is the principle safety appointment which must be on the position at all times. They are to have no other duties other than safety. PAM 19 Ch 3 Section 8 refers. **7RHA/8 p3-17**

2) **OiC Position.** The senior officer managing the practice. In practice this is generally the Battery Commander and they are situated off the position with the Fire Support Team acting as Forward Safety (as he was in this case). PAM 19 Ch 3, Section 3 refers. **7RHA/8 p3-6**

3) **Gun Line Safety Officer.** The GLSO, like the GPSO is to have no other duty than safety. The appointment is utilised where the type of position requires the GPSO to have a supporting safety officer such as when deployed in a dispersed position. PAM 19 Ch 3 Section 9 refers. **7RHA/8 p3-24**

d. **105MM Ammunition.** The HE ammunition used by the 105mm Light Gun (L118) in this case was the 105mm HE L31 projectile, paired with the "L118 Cart Normal L35". The cartridge is issued with the ability to be used at six different charges based on the five component charge bags provided. The photo below shows the cartridge, charges and the "beckett", a threaded bung which retains the charge bags inside the cartridge once loaded.



e. The following table shows how the various charge bags (or charge increments) are combined to create Charges 1 to 5:

Charge	Charge Increment
1	Red
2	Red plus white
3	Red, white and blue
4	Red, white, blue and orange
4.5	Red, white, orange and green (in the brown case shown above the beckett)
5	Red, white, blue, orange and green

FINDINGS AND OPINION

Overview.

1. The Findings and Opinion section explores each Terms of Reference (TOR) question outlined in the Convening Order. It outlines the key findings against each question and offers a discussion based on the evidence found throughout the Inquiry which aims to support the various recommendations made. Recommendations are listed at the end of each TOR section and collated at **FLAG F**. The following section summarises the other reports available to the Inquiry and which provided the starting point for the hearings. It also offers an outline of key events and briefly introduces the four thematic areas of lessons / recommendations identified by the Panel.

Summary of Other Relevant Investigation Reports.

2. The following section outlines the key findings of the four investigations carried out previously regarding this case which the SI had access to and have been produced as exhibits:

a. MOD Form 1670 ref 721/AXC/14/005. SSgt [redacted] the on duty AT SNCO from 721 EOD Sqn, concluded that:

1) An incorrect charge was fired from either Gun 5 or Gun 6, F Bty 7 RHA.

2) This was due to one cartridge being incorrectly prepared / checked resulting in only the green, increment 5 charge bag being removed. As a consequence a round was fired at Charge 4 rather than Charge 1.

3) Safety checks were in place prior to firing the weapon system however there was a serious lapse in these checks on behalf of the GPSO and DC.

4) Once firing had ceased the Surplus Charge Increments (SCI) could not have been reconciled against the number of rounds fired.

5) Anecdotal evidence suggests that the recoil and audible report of the gun firing at Charge 4 rather than a Charge 1 would have been noticed by the gun crew.

6) Forward safety should have been aware of an anomaly but no report was made.

b. BAE Systems Examination of Retrieved Fragments – Ref [redacted] dated 3 Apr 14. Fragments of both shell casing and fuse components were sent to BAE Systems for identification. The report confirms that the shell casing fragment was from a Shell 105mm FD HE L31 and the fuze was [redacted] electronic fuse made by [redacted]

c. LAIT Report DB1713. The report was published on 24 Apr 14 on conclusion of the investigation carried out by Lt Col (Retd) [redacted]. The report can be found in Folder Two in full at reference 7RHA/9 however the key findings are as follows:

1) The report was informed by and concurred with the conclusions made by SSgt [redacted] in the Munitions Near Miss Report (as noted at 6a above).

2) Additionally the LAIT report identified that all persons on the position were deemed “Safe Persons” (as defined by the MOD’s Safe System of Training) except the Gun position Officer. It also confirmed that the weapon system (02TG10) and the ammunition batch used were “Safe Equipment” and had in date Safety Cases.

3) In relation to “Safe Practice” the LAIT Report commented on the delivery of ammunition to the gun platform, management of SCI, the lack of a Battery Captain, presence (lack of) of a SMIG on the position and changes to safety appointments during the practice.

d. 7 RHA Learning Account – 7Para RHA 01.05.03 dated 29 Oct 14. The Commanding Officer, in accordance with LFSO1118, completed a Non-Operational Learning Account which concluded:

1) A number of well-established safety procedures were not properly conducted by F Bty personnel.

2) An extraordinary series of technical and procedural failings were made by a number of current, competent and experienced personnel. Key signs that an incident had occurred were not detected.

3) Such failings can only have occurred through complacency of those involved, or the conspiring of a series of unusual events to overcome in place safety procedures.

4) A number of procedural and doctrinal changes had already (at the time of issuing the LA) been put in place with longer term cultural and training changes in hand.

Outline of Inquiry Events

3. The Panel, consisting of Lt Col [redacted] Maj [redacted] and Capt [redacted], assembled at Tidworth Garrison Theatre on 23 Jan 17 and at Newcombe Hall, Larkhill on 15 Mar 17 by order of the General Officer Commanding (GOC) 3(UK) Division. The purpose of the hearings was to invest the circumstances surrounding an unsafe round during Ex CYPHER RESOLVE on 5 March 2014. The legal advisor was Lt Col [redacted] who was in attendance at both hearings.

4. The following personnel were called as witnesses to hearing one at Tidworth. One witness ([redacted]) was interviewed during this hearing session via VTC in accordance with Regulation 11(3). Their testimony is captured in Folder Two, Transcript 1: (Current rank/status shown)

[redacted]

[redacted]

5. A second hearing assembled at Newcombe Hall, Larkhill on 15 Mar 17. One witness ([redacted]) was interviewed during this hearing session via VTC in accordance with Regulation 11(3). The following personnel were interviewed as part of this hearing (current rank/status shown):

[redacted]

Their testimony is detailed in Folder Two, Transcript 2.

Overall Summary in Brief.

6. The firing of an unsafe round was as a result of not one failing but of several that, when combined, resulted in a round being fired almost 12km rather than the intended 6km. As other investigations have concluded it is the opinion of the Panel that this was due to an incorrect charge being fired. Considering all evidence reviewed the panel agree that, in the main, the policies in place at the time of Ex SS 14 were 'fit for purpose' if correctly interpreted and abided by. The errors that occurred were not as a result of a lack of available regulations, training or guidance, but rather a culture of "first is best" and the resulting cutting of corners.

7. The Panel also found many examples of where the appropriate authorities (HoC CS, DIO, RSA) implemented changes rapidly to prevent reoccurrence. Change did not wait for this or other investigations to report but based on the balance of information available implemented measures to make the training safer. The Panel found that some of these changes, whilst adding layers of safety on top of existing measures, may actually reduce perceived accountability and so increase complacency. It also forces a larger gap between operational and training practice, weakening our ability to "train as you fight". Whilst not evidenced in this report[1] the President of the Inquiry has had sight of recent (December 2017) intent to address some of these observations and so some recommendations may well have been addressed by the time this report reaches the SSIC(A)[2].

8. The resulting recommendations can be found listed at **FLAG F** and can be broadly broken down into those that relate to policy and procedures, quality assurance, technical and the lessons process. The following sections, **SIDE FLAG E1** through to **SIDE FLAG E11**, outline the facts, opinion and recommendations arising from the Inquiry in detail broken down by TOR question. However the following outlines the main themes identified:

a. **Lessons**. The fact the unsafe round was not reported immediately and only investigated once [redacted] reported the shell crater significantly impaired the investigative process. Principally this denied access to several critical pieces of evidence such as the 'talcs', guns (immediately after firing) and access to the DTE SP Ops Room held data. The current PAM 19 gives clear direction as to what to do in such circumstances and is broadly fit for purpose though the Panel has made some minor recommendations to ensure all evidence is captured. Units must also ensure active and early engagement in the lessons process to ensure all necessary evidence is captured.

[1] The new information came to light as the report was being prepared for legal review. As the intentions mirrored the recommendations already made the decision to complete the report rather than delay pending further formal inquiry was made.
[2] Single Service Inquiry Coordinator (Army) – Hd APSG.

b. **GPSO Accountability**. Whilst the role of the GPSO is clearly articulated as being singularly focused on safety there were and remain points where ambiguity may occur. Issues relating to the relationship between the GPSO and GLSO and auditable signing on and off a safety duty are highlighted.

c. **Safety Silting / Training v's Tactical.** The report highlights several issues relating to training as we fight including removing layers of "Safety Silting", the use of maximum charge positions over fixed charge positions and use of external safety staff.

d. **Speed v's Safety**. There was evidence identified throughout, both in the hearings and during the wider investigation that there is a culture within the Gunners that the fastest team (whatever level) is the best. Typical examples include the first detachment to be ready to fire or complete a fire mission where the level of competition is palpable. Whilst the Panel recognises the value of intra and inter troop competition the balance between safety and speed must always be tipped in favour of safety.

9. On 6 Sep 17 DG DSA, Lt Gen Felton, presented at the FTC Duty Holding & Safety Study Day. He explained that "*avoidable accidents tend to be characterised by a failure of leadership, often at more than one level*". That safety is not an additional task, responsibility or "J4 sport". He went on to explain that "*Safety and especially Duty of Care is a mainstream leadership responsibility – applicable to all leaders and irrespective of rank. Safety must be regarded as integrated with and integral to all activity*". Whilst on gunnery live fire practices safety is a discrete activity. Personnel are given safety related roles which are not operational roles and against which units have no manpower however the requirement remains for all to understand safety as "*integral to all activity*". In this case there is evidence of errors at several levels, as articulated by the CO in his Learning Account where he references the Swiss Cheese Model.

10. The following sections present and discuss findings which demonstrate that no single individual or missed safety element can be found wholly accountable for the unsafe round being fired. It is not possible to conclusively identify which gun fired the unsafe round though two guns are unable to prove they did not fire it. The sections also highlight failings in the lessons processes implemented which have significantly hindered the facts of the matter being established which in turn have delayed the appropriate lessons being identified and implemented.

FINDINGS AND OPINION

Terms of Reference | **Reference**

TOR 1. The panel is to identify the facts of the matter.

1. **TOR 1.a**. Confirm, if possible, which gun fired the unsafe round.

Findings

Exclusion of 19 Regt RA.

2. All previous investigations have demonstrated that the unsafe round was a 105mm FD HE L31. As such the only guns firing on the 5 Mar 14 using that round were 7 RHA. The evidence is incontrovertible and negated any need to either explore the identification of the type of round or investigate 19 Regt RA who were also firing on the 5 Mar 14. The date the unsafe round was fired, whilst questioned by some of those interviewed, has also been confirmed beyond doubt (discussed at **FLAG E3**, para 9-10). The relevant reports are include in full within the SI evidence pack however extracts are provided below to evidence the focus falling on 7 RHA.

3. The two reports (issue 2 and issue 3) written by BAE systems confirm that "*the fragments provided for examination are diagnostic and have allowed the shell and fuze to be identified as:* — **7RHA/1**

> *Shell 105mm FD, HE, L31A3 or A4*
> *Fuze L166A1*"
>
> BAE Sys report issue 2 dated 3 Apr 14 para.5.

4. The LAIT report also confirms that the range from the firing point to the crater exceeded the range of the guns. "*Confirmation that no AS90 had fired any charge above G5 was sought. The maximum range of AS90 using G5 is 9900m. The crater was over 13000m from any AS90 Gun Area." LAIT Report para 13b dated 22 Apr 14.* It also notes that 19 Regt RA were not using the L166A1 fuze on the 5th Mar 14 and that the crater size was too small for a 155mm HE round. Indeed at interview Lt Col (Retd) [redacted] author of the LAIT report, strengthened what he had written in his report stating that "*I am 100% confident in my own mind that Gun 5 fired that round*". — **7RHA/9**, **H1T/102f**

Focus on 7 RHA.

5. Confirmation that the round was a 105mm HE round, as established by the BAE Systems report resulted in all investigations looking at 7 RHA as the source of the unsafe round. The Regt had two batteries firing on Ex STEEL SABRE, F Bty and G Bty. As articulated in the LAIT report (7RHA/9), the unit's Learning Account (7RHA/39) and the evidence provided by Maj [redacted] the crater analysis showed that F Bty were the only guns on a bearing that could possibly have resulted in the unsafe round. Accordingly the inquiry focused on this battery. The previous investigations have clearly articulated the evidence which suggests that the unsafe round came from either Gun 5 or Gun 6 from F Bty. They have based this conclusion on a number of factors including range, bearing and elevation readings when extrapolated from the published firing tables (full tables are captured in the ATO report at 7RHA/1). — **7RHA/1**, **7RHA/9**, **7RHA/39**, **7RHA/1**

6. The SI attempted to corroborate the various pieces of evidence provided in the above referenced reports, 105mm L118 publications and the interviews of members of F Bty and 105mm SMEs. Significant importance was placed, in all investigations to date, on the Measured Muzzle Velocity Reading (MMVR) of Gun 5 which showed a "zero" reading against a particular round. The SI explored this reading and its possible causes in order to assess the weight the reading gave to identifying Gun 5 as the source of the unsafe round. The final aspect (relating to TOR 1a) of the SI process was the questioning of possible eye witnesses to assess if anything unexpected occurred on the morning of the 5th Mar 14.

MMVR

7. The Measured Muzzle Velocity Reading (MMVR) is taken from a muzzle mounted device linked into the guns Layer's Display and Control Unit (LDCU). Due to the high degree of accuracy of the MMVR (each round is measured by four radar 'hits' on leaving the muzzle) the range assessed is calibrated against the charge used. For a Charge One fire mission the MMV only looks for and records MMVRs within certain a velocity range. If the round exits the muzzle at a greater or lesser velocity than this range, a "0" is recorded on the LDCU. The measured zone or range of velocity assessed increases as the Charge increases. A Charge Four round exits the muzzle at a speed greater than the pre-set Charge One range set. **H1T/264F-265F**

8. Several of the witnesses were asked if there were any other reasons for the MMVR to be "0" on the LDCU. Several commented that if the gun is "hand spiked" into a new position a "0" reading sometimes occurs but there is no evidence to suggest the gun trails were moved and the timings between the 1st three shots preclude this rationale for Gun 5. The other reason given was a technical failure of the MMVR radar. However it is the opinion on the panel that as there was only a single "0" reading and the readings either side of this entry were as expected it is highly unlikely that the radar failed for a single round.

9. Equally there was testimony that "0" readings are not uncommon with other readings being present on the same exercise. Whilst offered as testimony no physical evidence survives to corroborate these claims.

10. With regard to the reading on Gun 5's LDCU the table below lists the data captured by the SMIGs as detailed in 7RHA/1, 9, 39. (It should be noted that the date setting on Gun 5's LDCU was incorrect.) **7RHA/1, 9 & 39**

Shot	Time	Charge	Proj	Tgt Brg	Tgt Elev	MMV
2545	10:49:51	1	HE	72	652	259.0
2546	10:50:03	1	HE	72	652	260.5
2547	10:50:17	1	HE	72	652	0.0
2548	10:50:51	1	HE	72	652	245.6
2549	10:51:22	1	HE	72	652	258.7
2550	10:52:00	1	HE	72	652	259.2

11. The table shows the 1st round fired at 10:49:51hrs followed 12 seconds later by round two and 14 seconds after that round three, the "0" entry. The MMV for the 1st two rounds is relatively constant at 259m/s and 260.5m/s. After the "0" round the MMV drops significantly to 245.6 before returning to the more constant 258.7m/s and 259.2m/s. This pattern of MMV can be explained if the third round was fired at a much higher velocity, such as at Charge 4. The barrel would have been heated more than normal (relative to a Charge 1 round) causing the metal to expand slightly reducing the pressure behind the rotating band which in turn

leads to a reduced MMVR. This interpretation of the MMV is coherent with the SME witness statements and those noted in the ATO and LAIT reports. **7RHA/1 & 9**

12. Gun 6 LDCU was also captured which notes the elevation and bearing to fall within the parameters of the crater analysis back bearing. However the MMVR is not given throughout the exercise and ATO Report explains this as being caused by a technical fault on the radar unit. There was no means for the SI to independently corroborate this but it was taken as fact by the SI Panel. **7RHA/1**

Eye Witness Perspectives.

13. In total the Service Inquiry interviewed 14 individuals which were on the gun position during the morning of 5 Mar 14. Each were asked to draw a plan of the gun position and confirm who was the GPSO that morning alongside other basic facts about the day. The resulting plans can be found in the evidence folder but which demonstrate a very mixed picture. The prevailing picture was of a split gun position with guns 1 and 2 to the East and guns 4, 5 and 6 about 200m to the West (gun 3 was not firing). The Control Post (CP) was to the front of the guns meaning the rounds were fired over the heads of anyone at the CP. The diagram below offers the Panel's understanding of what the position layout was on the morning of the 5 Mar 14. There appears to have been two CPs operating, one managing guns 1-2 and one managing guns 4-6. **7RHA/14-26**

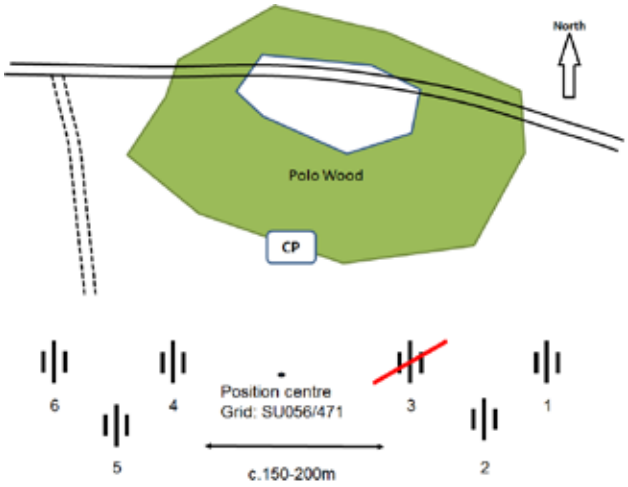


Fig 1. (Not to scale).

14. There were significant differences in the recollections of the F Bty personnel interviewed with many simply answering "I can't remember" to various questions. The hearing were almost 3yrs since the event took place and all witnesses interviewed categorically stated they did not notice anything unusual on the morning of the 5 Mar 14. None recollected hearing an unusually loud bang and as far as any recall the day passed without any significant event. All interviewed were asked who the GPSO was on that morning, who gave the safety brief before the range was opened and it was clear no-one could with any certainty. **H1T-74d/98b/ 111a/115b/124g 128c/**

15. Due to the slope of the ground of the gun position guns is the two split positions would not necessarily see each other and several witnesses testified to this effect. Consequently the eastern groups of guns (guns 1 and 2) could not see guns 4-6 and so could not be expected to have noticed any excessive recoil. All of those interviewed from guns 4 – 6 stated that they did not see any excessive recoil. **H1T-125g/156e/ 150g/187g** **H1T-159d/202d/ 188g**

Additional Observations

16. On 5 Mar 14 policy directed firing logs to be kept for 48hrs. As the unsafe round was not identified until after this period there was no mandate for the Bty to still have the firing logs when the RA GTT, SMIGs, RAU Trg Safety Offr or LAIT began their investigations. That Maj [redacted] was able to secure some radio logs (7RHA/10) was fortuitous however despite asking several of the witnesses to explain the logs or link the logs with the LDCU readings this proved impossible. The quality of the logs as a record was too poor to be of any use. Capt [redacted] attempted to link the various elements together but was unable to do so, stating that Form 545 (missing) would have been able to offer the detail required. **7RHA/10** **H1T232b/233c**

17. Since this event policy has changed and it is now mandatory to keep such documentary evidence for 72hrs. The Panel believe this is an appropriate amendment to protocols and make no further comment. Policy aspects are, however, covered separately under TORs 2 and 3.

18. The Service Inquiry was significantly restricted in the quantity and quality of primary evidence collated at the time of the incident and in the immediate aftermath. Para 14 above notes there were significant differences in the recollection of witnesses with many stating they could not remember the day in question. Had the unit completed an initial investigation and produced a Learning Account (LA) and captured the information this difficulty would have been significantly reduced. None of the witnesses who were on the position recall being interviewed beyond a cursory "*Was it you?*" on the 1st weekend after the event. [redacted] (CO at the time) explains that the delay and absence of questions was "*I did not want to do is to start running a parallel investigation to the SIB investigation that was on-going….to muddy the waters."* He also noted he waited until the RMP investigation had "*run its course*" before putting pen to paper. **H2T/96e**

19. Lt Co[redacted] (BC at the time) was clearly involved though by the time the LA was being written he had moved on to a new appointment in London and was essentially commented on the draft. They had "*lengthy discussions over the phone to kind of put our heads together to work out how it had gone wrong…."*, but without speaking to those who were present on the position. Col [redacted] notes it was hard to extract any information from the RMP, "*like trying to pull hens teeth*", suggesting the LA was not based on any information gained through RMP interviews. **H1T/288c** **H2T/97c**

20. The final aspect of this section was the paucity of primary evidence gathered. The lack of evidence such as the signals logs, AB545s, "talcs" from the CP, confirmation of who was the GPSO, the "Blood Chit" noting who was the responsible GPSO, etc remains largely unanswered. Accepting that policy at the time only required some documents to be kept for 48hrs (discussed further at **FLAG E3** and **FLAG E10**) the absence of any evidence confirming who was signed onto the range caused confusion and inaccuracies in the LAIT report.

Opinion

21. The Panel saw no conclusive evidence identifying which gun fired the unsafe round, nor was the SI able to identify any new evidence which strengthened previous deductions. Indeed it heard testimony that a zero reading on the MVR may be caused by reasons other than an excessive charge. At this late stage the only way to confirm beyond doubt which gun actually fired the unsafe round is for new witness testimony to be presented either admitting **7RHA/39** **7RHA/9**

ownership or providing sufficient evidence to identify said gun.

22. Based on the testimony given it is view of the panel that if multiple guns are fire simultaneously then it is conceivable that the excessive noise be hidden, or at least not noticed, by the majority of sldrs focused on their own tasks. However the panel concluded that is impossible that on a Charge 1 gun position, extended or otherwise, that no one would notice the noise or recoil of a gun which fired on Charge 4. This is the overwhelming view of all those involved in L118 gunnery the Panel interviewed or discussed this matter with.

23. Due to the numerous delays involved in this case (the delayed confirmation an unsafe round had been fired, the lack of detailed investigation by the unit and the three year delay in holding the Service Inquiry) the witnesses from the gun position have an understandably poor recollection of the day. Those interviewed by the Service Inquiry may have been on over 60 other L118 live fire positions since the 5 May 14. As firing on the 5th May 17 continued without interruption (no "*Check Fire. Det's Rear*" called) it is quite likely for many there was nothing significant to make the day / fire mission stand out from the other missions carried out before or since. It is the opinion of the SI Panel that this is an understandable reason for why the evidence collated through witness testimony was at times vague and contradictory.

24. The quality of radio logs available was poor and did not allow the Inquiry to triangulate the various different data sources available (principally radio logs and LDCU readings). There was insufficient evidence to draw any conclusions over the quality of radio logs however if the standard evidenced in this inquiry is standard then more effective assurance measures would be required.

25. Evidence indicates that details of what is actually fired is best captured through the AB545 document. To the best of the Panel's knowledge it is not mandated that this document is retained as per the radio logs. Whilst the LDCU's capture details of what each gun has fired, when working, it is the opinion of the Panel that the AB545 should be retained as per other documents as directed by CD CS. If the quality of radio logs was sufficiently robust/ detailed then this may be nugatory as details of the fire plan are communicated over the radio by the FST.

26. Having examined all evidence provided, including the unit's own Learning Account and the LAIT Report that, on the balance of probability, Gun 5 fired the unsafe round.

Recommendations.

27. Service Inquiries are to be conducted as soon as possible after the event, including where other investigations (such as those by the RMP) are on-going.

28. The Panel recommend that LAs are completed as soon as possible (within 5-10 day of the event) and work alongside any concurrent RMP investigations.

29. LDCU date and time setting should be set accurately before any fire mission takes place. The incorrect date confuses any audit or investigation conducted.

30. RA CoC to assess the quality of radio logs and establish if further training or quality assurance is required. Iot ensure post event analysis, whether for inquest, administrative or training purposes is possible.

30. It is recommended that AB545 is retained for a minimum of 78hrs after the conclusion of the exercise in line with other evidence already captured.

FINDINGS AND OPINION

Terms of Reference	Reference
TOR 1. The panel is to identify the facts of the matter.	
1. **TOR 1.b. Determine the level of understanding and application of policies and procedures by the chain of command responsible for the safe conduct of the range.**	
Findings	
2. As identified in the LAIT Report (FLAG X) all members of F Bty were suitably qualified and experienced (SQE) with the exception of the Gun Position Officer (GPO). This exception was, at that time, a pan-Army issue as the Royal School of Artillery (RSA) had stopped in delivering the GPO cse in 2012. This cancellation was a conscious decision by CD CS after a review of outputs across the RSA after acknowledging the implications.	**H1T/221B** **7RHA/9** **7RHA/37**
3. However the GPO plays no part in the safety aspects of the exercise. The duties of the GPO are focused on reconnaissance of gun positions, locating the CP, defending the position and ensuring the guns are firing (ie have sufficient ammunition).	
4. The BC had observed the subalterns on a preparatory course and was confident that they were "*meticulous*" in their attention to detail. His intent for the exercise was (regarding the subalterns) for "*the two CPOs to rotate through the safety duties, that one would be the overall GPSO and then you have two GLSOs who would be probably with the gun troops*".	**H1T/285F**
5. PAM 19 states "*The GPSO is not to be changed over during a practice unless ordered by the OiC Practice. In this case a proper handover/takeover is to be carried out and the appropriate reports are made to Range Control*". There is no evidence that range control were notified.	**7RHA/6 Chapter 3 – Section 9 GLSO**
6. The LAIT Report listed three GPSOs, (then) Lts [redacted], [redacted] and [redacted] Whilst all three were qualified to conduct this role through completion of their Young Officer's course at RSA, there should only be one GPSO responsible at any one time. PAM 19 notes that a GPSO should be supported by Gun Line Safety Officers (GLSO) where "*more than four guns are firing*" or "*from a dispersed position*" which were both the case on 5 Mar 14. Accordingly evidence from the hearings indicate that Capt [redacted] was the named GPSO for that day with Capt [redacted] acting as the GLSO. Capt [redacted] was the Command Post Officer.	**7RHA/6 para 307** **H1T/124, 239, H2T/24**
7. During the hearing Capt [redacted] stated that he was the GPSO responsible for guns 1, 2 and 3 on that morning and he probably would have been the one who signed off the paperwork. He also gave an insight as to the fluidity of the ownership of the various safety responsibilities: "*Oh they just need a signature on it*", "*It was literally a case of me going to Capt [redacted], 'mate, I will take these guns, you take them'*.", "*I don't think we told them 'this person is in charge', I think it was quite fluid in the way it was done".*	**H1T/239G** **H1T/243C - H1T243G**
8. In his testimony Capt [redacted] confirmed that he was the GLSO throughout the	

morning of 5 Mar 14 having been the CPO throughout the preceding day. PAM 19 lists the responsibilities of a GLSO at Ch 3 and notes the GLSO "*is not responsible for checking that the correct charge is loaded*". **H2T/24G 7RHA/6Ch3 para 363**

9. PAM 19 also states that a GLSO may only supervise two guns in a dispersed position and all evidence from the hearing suggests that the GPSO was supervising two guns (1 and 2) whilst the GLSO was supervising three (4, 5 & 6). **7RHA/6Ch3 para 360b**

10. As articulated in the LAIT report the Panel could find no evidence that the Surplus Charge Increments (SCI) were counted or records kept in accordance with PAM 19(2014). The current version of PAM 19 directs units to complete and retain (for >7 days) Safety Form 5 – Artillery Charge and Increment Record Card (2014). **7RHA/6Ch10 para 1015** **7RHA/8p3F-1**

11. The investigation of this incident has been significantly hampered by a lack of evidence however the policy in place in March 2014 stated that firing records, 'talcs', radio logs, etc only required keeping for 48hrs. Accordingly as this time had elapsed by the time "Safety Check Fire" was called by Range Control when Mr Snook reported finding the crater there was no policy requirement for the evidence to be held.

Opinion

12. The Panel agreed that the lack of a qualification for the GPO was not a contributory factor in this case. That CD CS and RSA reviewed the requirement and reinstated the course and that there was a remedial package provided by RA GTT was appropriate.

13. The panel agreed that as far as it was possible to deduce all individuals deployed on the battery position were fully trained and sufficiently experienced for their role. The approach employed by the Battery Commander to roll the various subalterns through the GPSO, GPO and CPO appointments was to consolidate, through further experience, the skills and knowledge already attained. This intent was appropriate for the level of training and was endorsed by the Commanding Officer. **H2T/91D**

14. However as far as the Panel can determine the degree to which there was a known and clearly identified GPSO in overall control of the safety aspects was lacking. Evidence gathered for this Inquiry suggests that the LAIT Report confused the matter of qualification with responsibility. Had the LAIT report clearly identified Capt [redacted] as the GPSO rather than listing the three qualified GPSOs it is thought likely that a more accurate investigation at the time may have resulted. The CO confirms that his Learning Account was heavily based on the LAIT findings and was delayed whilst the RMP investigation was underway. Had the initial investigation confirmed who was holding which appointment and what responsibilities each appointment had it more likely that the facts of the event would have been identified. **H2T/96D, 97G**

15. In the Panel's opinion that the ammunition was broken down at the rear of the guns (rather than at a centralised Ammunition Control Point as is current practice) in accordance with the policy and practice at the time of the incident. This is also much more closely aligned to operational practice than the current system employed on UK ranges. The issue of whether this policy is appropriate is discussed at **SIDE FLAGS E10 and E11.**

16. The fact there was no policy requirement for the Bty to still have 'talcs',

signals logs or other records of firing available the Panel heard evidence that the normal practice was for such material to be “stuffed into the bottom of a battle box and only thrown away at the end of an exercise”. The quality of the radio logs which are available have been criticised elsewhere in this report (Findings and Opinion 1a) and form one of the recommendations. The changes in policy issued by CD CS which extend the time which such documents must be retained is in the Panel’s opinion appropriate and sufficient to mitigate this risk.

17. The introduction of the Safety Form 5 – Artillery Charge and Increment Record Card and the mandated holding period of seven days is believed to be an appropriate introduction which should significantly reduce the possibility that an unsafe round is not missed in the future.

18. That the SCI was not managed in accordance with PAM 19 resulted in a 52hr delay in establishing that an unsafe round had been fired. Had the error been identified at the conclusion of that fire mission the Panel believe that it would have been easy to evidence exactly what happened. There would have been significantly more evidence to use, such as the recoil indicators on the guns, the depth of the spade, “talcs”, radio logs, etc. The delayed identification of the unsafe round has significantly hindered the investigative process and resulted in a drawn out process where Regulation 18 Witnesses have been unable to put the issue behind them.

19. In summary the unit personnel were aware of the policies and safety procedures at the time of the incident. Less the GPO, all personnel were suitably qualified, experienced and current. The Panel believe that the ad hoc, shared nature of the GPSO appointment was a contributory factor resulting in uncertainty about who had overall accountability for the safe practice. It is also believed that overconfidence in safety checks (formal and informal) before the final “Check Charge” and the overarching culture of “first is best” resulted in the failure to carry out the final safety check correctly.

Recommendation

19. It is recommended that there is a clearly auditable “blood chit” signed and retained capturing who holds which safety appointment. This is to be updated whenever the GPSO appt is changed.

20. It is recommended that the Safety Form 5 is retained with no changes.

21. The RA CoC acknowledge the overarching culture of the best detachment is the fastest and seek to affect cultural change ensuring accuracy of correct (safe) practice comes before speed.

22. The Panel recommend that LAs are completed as soon as possible (within 5-10 day of the event) and work alongside any concurrent RMP investigations.

FINDINGS AND OPINION

Terms of Reference	Reference
TOR 1. The panel is to identify the facts of the matter.	
1. **TOR 1.c.** Establish why there was no unsafe round reported on the 5th May 14.	
Findings	
2. Despite the generally accepted fact that a L118 gun firing on charge 4 on a charge 1 position would be noticed by at least the detachment firing the gun no one has admitted to knowing a "Swinger" had been fired on the 5 Mar 14. TOR 1a reviewed this aspect and concluded that whilst unlikely it is possible that the sound of the charge 4 firing might be masked for the majority of personnel on the position. It also confirmed that in the Panel's view the detachment responsible for the "swinger" would certainly know something different had occurred.	
3. Focusing initially on the majority, it is the view of the Panel that the F Bty personnel on the position were suitably trained and knew the correct "actions on" in the event of an unsafe round such as this. All Detachment Commanders were suitably qualified and experienced (as established by the LAIT Report) and there were sufficient SNCOs and officers on the position to act in accordance with the extant policies.	**7RHA/9**
4. The only exception to this was the named Gun Position Officer, (then) Lt [redacted], who had not completed his GPO course as the Royal School of Artillery was not running courses at that time. Capt [redacted] testified that this was known about and Lt Col [redacted], who was the OiC Practice on 5 Mar 14, confirmed this. However the duties of the GPO are not linked to the safety aspects and all actions required by PAM 19 in response to an unsafe round fall to the GPSO, GLSO, CPO, GLSCs and the Det Comds (Number 1s).	**H1T/221F & 287C** **7RHA/6**
5. Ch 3 PAM 19 outlines all safety duties relevant to F Bty on 5 Mar 14 and Annex A to Ch 1 directs the actions on an unsafe round. TOR 2 reviews the policies in place at the time of the unsafe round and no further discussion on polices will be noted here.	**7RHA/6**
6. Witness statements from several of the F Bty personnel note that the first the unit knew of the unsafe round was after [redacted] reported the crater to West Down Camp range staff. At this point, over 48hrs after the most likely time of firing, retrospective safety measures were put in place and investigations initiated. However many of the actions directed by PAM 19 Annex A to Ch 1 were not carried out as the guns had moved locations and had fired several other fire missions. This prevents key forensic checks to be completed preventing an accurate picture of likely events to be confirmed.	**H1T/130f, 199e, 246g, 283f**
7. As outlined in TOR 1a and para 2 above it is the view of the Panel that a detachment which fired a charge 4 round by mistake during a charge 1 fire mission would certainly know something had gone wrong. In such a case the Detachment commander would be expected to call "Safety Check Firing" and explain to the GPSO / GLSO what had happened. The GPSO and OiC Practice would then carry out the necessary actions required by PAM 19 in the event of an	**H1T/8g, 24g, 49b, 118a, H2T/33c**

unsafe round.

8. Several of the witnesses questioned if the 5 Mar 14 was the correct date of the unsafe round being fired. Had the date been different then F Bty might not have been in a position to fire the unsafe round.

9. The RMP Statement given by [redacted] was very clear about the date and time of the round fired. His son was with him and corroborates the details and [redacted], a friend of [redacted], independently commented on the proximity of the round on Wed afternoon. **7RHA/40 & 41**

10. Considering the date and approximate timings of the unsafe round are, to the satisfaction of the Panel, confirmed this leaves it likely that the unsafe round was fired by a detachment from F Bty 7 RHA. It also suggests that at least a detachment and possibly others on the gun position were aware of the unsafe round and did not report it in accordance with PAM 19 and Range Standing Orders. **7RHA/9**

11. The LAIT Report noted that the forward observers did not report a round missing. This aspect was reviewed by the Panel and several of the witnesses, both from 7 RHA and invited SMEs, were questioned about the practicality of the Forward Observation Officers spotting all rounds. As noted in the unit's NOLAAR and in testimony given in Hearing 1, it is unrealistic that every round fired will be spotted. Folds in the ground, multiple and simultaneous rounds landing are several factors which prevent the observer seeing all impacts. **7RHA/39** **H1T/ 228a**

12. In this case the poor quality of records remaining makes it impossible to confirm if the fire mission was a "Converging Sheath" or a "Standard Sheath". The former has all rounds landing within 50m and the latter 300m. Equally the records cannot confirm if the unsafe round was fired during "Fire for Effect"(FFE). Were the unit to check fire every time the observers missed a round landing in the Safe Target Area (STA) many fire missions would not be completed. Capt [redacted] statement takes the Panel through what little radio log evidence was secured by the LAIT investigation. Throughout the log there are aspects which do not make sense such as no "*rounds complete*" noted after a fire mission. **H1T/89c** **H1T/229e**

Opinion

13. It is the view of the Panel that employing an officer as GPO who had not completed a GPO course did not contribute to this incident. The course had been stopped across the Royal Artillery for cost reasons and the unit had no realistic alternative to manning the appointments. In this instance there is no evidence to suggest that Capt [redacted] did not carry out any of the duties as outlined in PAM 19 Ch.3 appropriately.

14. It is the opinion of the Panel that elements of the Battery must have been aware of the unsafe round and made a conscious decision not to carry out the required safety activity.

15. The Panel found that it was unrealistic to expect the forward observation personnel to have realised there was an unsafe round fired and ordered "Safety Check Fire".

16. In light of the poor quality radio logs and the absence of other evidence (such as talcs or the AB545) the Panel was unable to confidently identify how busy the guns were around the time of the unsafe round. Whilst the poor quality of the logs

may not affect the safe practice of the fire mission it significantly affects the ability to conduct After Action Reviews or investigations.

Recommendation.

17. The RA CoC to assess the quality of radio logs and establish if further training or quality assurance is required. Iot ensure post event analysis, whether for inquest, administrative or training purposes is possible.

18. It is recommended that AB545 is retained for a minimum of 78hrs after the conclusion of the exercise in line with other evidence already captured.

FINDINGS AND OPINION

Terms of Reference	**Reference**
TOR 1. The panel is to identify the facts of the matter.	
1. TOR 1.d. Establish the events which lead to the firing of an unsafe round.	
Findings	
2. On the 5 Mar 17 a 105mm FD HE L31 round landed beyond the boundary of SPTA landing c.600m from [redacted] house at grid [redacted] Evidence confirming the type of round can be found in the BAE Systems Report at 7RHA/1. The Panel also found that the evidence suggests that F Bty 7RHA fired the unsafe round as articulated in the LAIT and ATO reports and the unit's own NOLAAR.	**7RHA/40** **7RHA/9** **7RHA/1** **7RHA/39**
3. The aspects noted in para two above are discussed in detail elsewhere in this report. The following section outlines the findings of the Panel regarding why the unsafe round may have been fired.	
4. The NOLAAR outlines in detail the events which led up to the unsafe round being fired. In summary though F Bty 7RHA were conducting a Fire Planning exercise as part of their CT2 build up in preparation for Ex STEEL SABRE (Ex SS). The Battery had moved into position just before midnight on 4 Mar 17 with reveille at 0600hrs. Ammunition was distributed from c.0645hrs with each gun detachment receiving c.50 rounds each. The ammunition was placed to the rear of the gun position and broken down with the surplus charge bags removed.	**7RHA/39**
5. The position was a Charge 1 position so the cartridges should have only had one red charge bag in it with all Surplus Charge Increments (SCI) being removed from the position. Before the cartridges are placed under the "ammo tarp" the GPSO is responsible for ensuring the correct charge is prepared and all SCI are accounted for. GPSO responsibilities are explained in full in PAM 19 Ch.3	**7RHA/6-8**
6. Once the ammunition is on the gun position the Det Comd (DC) is responsible ensuring all safety practices are conducted in accordance with the policy. The Gun Drill Book outlines the Loading Drill in three stages: Ammunition preparation and fuze setting; Passing the ammunition; and the loading drill. When the cartridge is passed, by the "No.5" to the "Loader" (or No.4) the Loader removes the "Beckett", a polystyrene threaded bung, and shows the DC the contents of the cartridge. This "Check charge" element is the final assurance check that the cartridge has the correct charge in and is the responsibility of the DC to confirm "Correct" or "Wrong, charge…".	**7RHA/4**
7. The previous investigations into this case have all concluded that this final check could not have occurred correctly, that this was the final point of failure of a layered safety process. However neither the NOLAAR or the LAIT Report offer any rationale for this apparent omission.	**7RHA/39** **7RHA/9**
8. In preparing to conduct this Service Inquiry the President arranged with the Royal School of Artillery to visit a live fire exercise and observe the relevant drills and safety processes for Maj [redacted] and himself. As current Range Standing Orders prevent mixed charge positions on SPTA the panel members observed a Charge One fire mission on one day and a Charge Three fire mission on 1 Dec. During these two visits current processes were demonstrated including breaking	

the ammunition down in a centralised position, the new two man check charges, movement of ammunition on to the gun positions and the three loading drill elements noted in para 6 above. The purpose of these visits was to improve understanding of the processes and to experience at first hand the differences between a 105mm L118 Light Gun firing on the two different charges.

9. Whilst observing one particular gun detachment complete a "hasty fire mission" the President, with Maj [redacted] and an additional RA GTT SMIG also present, filmed the complete loading drills. The fire mission was of three rounds and the Detachment was briefed why the Panel members were observing and knew they were filming. All three rounds were fired without the "Beckett" being removed, despite the words of command being used and the cartridge being "shown" to the DC. Only the President noticed this but on reviewing the video footage (Evidence item 7RHA/31) it was clear this final safety check had not been conducted. The RA GTT SMIG present removed the Detachment from the exercise and their qualification / currency in accordance with policy. Remedial training subsequently took place and the unit wrote a Learning Account. **7RHA/31** **7RHA/41**

10. Further the President called both the "Loader" and DC as witnesses to Hearing 1 of this Service Inquiry to give evidence as to why a detachment might not complete the necessary safety checks. The interviews resulted in two main explanations being given, complacency and speed. The former could be better explained as over confidence in the numerous checks already carried out before the loading drill starts. The DC stated:

> "*…the only reason it couldn't, or I have seen it not be done [the removal of the beckett] is basically because it has previously been checked outside the trails, your coverer has shown it to you, the DC, then he has put the beckett on and then the DC is happy…….it has not even moved a metre….there is no way it could change…"* **H1T/14F**

He also went on to say that it has also been checked by several officers or Warrant Officers and the GLSC before being checked again at the gun position by the DC and "Coverer". **H1T/16D**

"I think more people are checking nowadays than actually need to be" **H1/T16F**

11. This acceptance of earlier checks was confirmed by the loader who was also interviewed. He stated:

> *"As long as they have been checked on platform I can see why sometimes, like literally five seconds before you have just checked it, you check it again, 2m from there to there, obviously it is not going to change within a five second space when you have just checked it"* **H1T/ 23G**

He went on to say some DCs will say that they've checked the cartridges and they can just load, no need for the final check.

12. Regarding speed as a driver, almost all gunners interviewed highlighted the need for speed, the desire to be the first detachment to finish the fire mission. The majority specifically mentioned the safety checks slowing them down, getting in the way of rounds going down range. Selected quotes include:

> *"…sometimes the carts won't get checked before just to aid speed…"* **H1T/23G**

> *"…Checking inside the trails is, in the bigger picture, slowing down the*

firing…… we are just delaying rounds getting put down on the ground at the other end, which is obviously we want to be as fast as possible, as it states" **H1T/15C**

"It works [the new safety checks] but it is slow in terms of the blokes, I don't see us doing this on operations because it will slow everything down…" **H1T/190D**

13. One aspect which the hearings failed to confirm beyond doubt was who was acting (and responsible) as the GPSO on the morning of 5 Mar 14. The EX CYPHER RESOLVE 14 Safety Instruction dated 10 Jan 14 stated only that there would be three named GPSOs, "names TBC". Dated 30 Jan 14 an Orbat was published showing Lt [redacted] as the named GPSO however other investigations and evidence given at the hearings contradict the Orbat. The LAIT Report lists Lts [redacted] and [redacted] as the GPSOs (for the whole exercise) but does not identify who was accountable on the morning of 5 Mar 14. **7RHA/33** **7RHA/9**

14. Interviews with the above named GPSOs and the other F Bty personnel were inconclusive and the lack of any formal "Blood Chit" or signature at Range Control means it is not possible to confirm who was the GPSO at the time of the incident. When asked about this (now) Lt Col [redacted], then Battery Commander (BC) F Bty, explained that he "*wanted the two CPOs to rotate through safety duties, that one would be the overall GPSO and then you have two Gun Line Safety Officers who would be, probably, with the gun troops."* The intention was for them to gain in experience and, having been on the same safety course as the junior officers he (the BC) rated them as meticulous and able to carry out the duties. **H1T/285f**

15. Capt [redacted] stated:

"Well that day it was literally a case of me going to Capt [redacted], 'Mate, I'll take these guns, you take them, we will check charges' …..you normally just take it in turns and come back to the board and it is ling of equally spread out. Paperwork, paper wise, I guess it is whoever has been on safety for longest and whoever is there, so it would have been me who signed off everything…" **H1T/243f**

16. Whilst the accuracy of who signed is not conclusive, considering other testimony, the culture the above exemplifies suggests that there is insufficient understanding of responsibility and accountability.

17. As noted in para 14 above the Panel were unable to identify any formal record, held either by the unit, range staff or that was captured in any other investigation regarding who was the accountable, safety authority on the gun position.

18. Evidence gathered also highlighted the additional layer of manning required when exercising over operational commitments. As noted by the RSA Master Gunner, "*We do not have GPSOs, GLSO, GPSAs carrying out checks when they are doing their job operationally*". Within units which are stretched for manning (established posts rather than gapping) against the range of tasks set finding the additional manpower to man the required safety specific appointments puts yet further pressure on troops to task. **H2T79b**

19. The RSA Master Gunner commented that RA Regts often try to do too much with too little; maximum guns deployed, but with minimum gun crews, gapping appointments, double and triple hatting. The danger here is, some of the appointments are critical and must not be shared or completed as a second role. The Master Gunner's observations were generic and not aimed at this particular incident though as noted below the Commanding Officer made a similar **H2T/84g – 85e**

observation. In this particular case though there was a Battery Captain missing who, whilst not directly involved in safe practice, is typically the experienced LE officer who can oversee the whole position and how it is being run. The roles of this gapped appointment were being covered by the BSM.

20. Lt Col [redacted] unknowingly supported the RSA Master Gunner's points in regard to trying to do too much with too little, (7TH RHA went from 442 personnel to 357 personnel) noting that "*7RHA's resilience was Comd 16X's biggest concern*". Whilst not necessarily the same they are linked and whilst Lt Col [redacted] managed resilience through inter-battery backfilling, the need to do so is linked to doing too much with too little. Lt Col [redacted] said he had spoken to the BC of F Bty and looked at the risks. He was satisfied that the risks where acceptable. They had SNCO's who were very capable, WO's who were GCC qualified and Young Officers who had experienced. In addition, the Bty had recently performed very well in BATUK providing further evidence that the risk was appropriate and reasonable. **H2T/89c** **H2T89g** **H2T/89h – 90f**

Opinion

21. It is clear that the range brief took place before the day's firing took place though it is not clear who gave the brief or who was the GPSO at the time of the incident. Testimony from the Bty personnel interviewed provided a confused picture as to who was the GPSO with several officers swapping roles throughout the exercise. This must be mitigated by the fact that three years have elapsed and the Bty personnel will have experienced many safety briefs since. For the majority nothing of particular note necessarily happened on that day so there is no distinctive marker to act as a prompt for that specific day.

22. The Panel were not surprised that units or SPTA do not keep an auditable trail of all signatures of who signed on and off a given range over a three years. However the Panel find that it is extraordinary that none of the investigations carried out in early 2014 secured them. This single omission has allowed almost four years of uncertainty regarding who was the responsible officer, the GPSO, with the LAIT report seemingly identifying the wrong individual.

23. What was clear was that the Bty was split and the safety checks were conducted by several officers. Whilst this is routine practice, allocating the safety checks to a second officer to cover three of the guns, there must always be a single, known GPSO with overall responsibility for the position. It is the opinion of the Panel that the degree to which three officers appeared to interchange roles may have contributed to the unsafe round. **7RHA/39**

24. It is the opinion of the Panel that as per the extant policies and procedures at the time the ammunition was broken down behind the guns and checks were made by either the GPSO or the GLSC before moving onto the gun positions. However as the SCI had been removed from the vicinity of the guns and there was no other means of introducing additional charge bags after this check a cartridge must have been missed.

25. The probability of the Panel observing and videoing the only other case of incorrect "Check Charge" processes since 5 Mar 14 is exceptionally low. Despite the F Bty testimonies that this final check is carried out every time the Panel believe this check is routinely missed out. The principal reason for this is the overarching drive for detachments to be the fastest, the need to complete the fire mission as quickly as possible. This was evidenced not only by formal testimony **7RHA/31b**

but in conversations when observing 34 Bty in preparation for the hearings. The final "Check Charge" is seen by some DCs as a nugatory delay in the load process as they have checked the rounds on the position themselves as has their Coverer.

26. All evidence suggests, however, that on 5 Mar 17 a full (charge 4) cartridge not only missed the GPSO check but was also missed by a DC. The NOLAAR written by CO 7 RHA refers to the Haddon-Cave Report and the "Swiss Cheese Model" which captures this situation well.

27. From a wider perspective there is a generally held belief that the two battery construct, based on current manning levels, does not provide the resilience required. The additional level of manpower required to man the safety specific appointments stretches the batteries yet further resulting in SNCOs and junior officers either conducting two roles or switching from a tactical role to a safety role during an exercise. **7RHA/8p3-18**

28. Evidence gained suggests that as long as PAM 19 direction (such as "*The GPSO is to have no responsibility other than safety*") is adhered to neither are inherently unsafe and are routine events which do not result in incidents. However several witnesses suggested that allocating external safety personnel to the non-tactical roles would ease manning pressures, ensure the junior officers/SNCOs practice/train in their operational role and remove any undue pressure from the practicing CoC. Accepting this would require coordination with external units it is the view of the Panel that wherever possible the GPSO and GPSA should be external to the unit firing. Less critically the GLSO should also if possible be external. The rationale for the lesser requirement is that the GPSO has sole responsibility for safety on the position and the requirement for a GLSO is dependent on the time of day and type of position used. Committing an external GLSO for only a partial requirement, whilst ideal for the firing unit, may be an unrealistic requirement.

Recommendations

29. The RA CoC acknowledge the pervasive culture of the best detachment is the fastest and seek to affect cultural change ensuring accuracy of correct (safe?) practice comes before speed.

30. The RA CoC consider implementing an auditable transfer of GPSO duties ensuring all on a position understand who has overarching responsibility for safety.

31. The RA CoC consider implementing a structured process which would allow the key safety appointments to be sourced from outside of the practising unit / sub-unit.

FINDINGS AND OPINION

Terms of Reference | **Reference**

TOR 1. The panel is to identify the facts of the matter.

1. **TOR 1.e.** Confirm what actions were taken by unit personnel and others in relation to this incident, once the round fragments were reported by [redacted]

Findings

2. [redacted] reported that he had found a crater approximately 600m from his house on Fri 7 Mar 14 at approximately 1515hrs. At first he reported this to the civilian police who directed him to inform SPTA Range Control. Within an hour WO1 [redacted] who was then the Safety Marshal of SPTA arrived at the property to inspect the crater ([redacted] reports 15mins, WO1 [redacted] notes an hour). WO1 [redacted] took a back bearing of the crater and collected fragments of the shell and fuse before handing them to Maj [redacted] of the Training Safety Officer at Westdown Camp. **7RHA/40 & 41**

3. Maj [redacted] the Training Safety Officer Live Firing for SPTA, was informed between 16-1700hrs on 7 Mar 14 by the Salisbury Plain Duty Officer, (then) WO2 [redacted] As live firing was still underway a Check Fire was issued whilst WO2 [redacted] contacted [redacted] and Maj [redacted] contacted the exercising units and began compiling a folder of evidence. **H1T/255e**

4. SSgt [redacted] (duty AT on 5 Mar 17) was informed of the incident late on 7 Mar 14 by which time it was too late to assess the crater. By agreement with Maj [redacted], SSgt [redacted] arrived at Mr [redacted] farm at 0900hrs 8 Mar 14 where Maj [redacted] and WO1 [redacted] were waiting. [redacted] took them to the crater where crater analysis was carried out and fragments of fuze and shell casing were taken for analysis by BAE Systems. **H1T/67g**

5. Lt Col(Retd) [redacted] was the LAIT investigator allocated to this incident and was informed of the unsafe round on 8 Mar 14. Access by the units to personnel for the LAIT investigation were as expected with interviews being conducted from 9 Mar 14 onwards. He does note though that they (7 RHA) were in complete denial and that they were no volunteering any information beyond the questions being asked. This is contradicted in one area regarding the management of the Surplus Charge Increments (SCI) where one of the Bty staff talked openly about how they disposed of the SCI. The LAIT report captured the specific failures evidenced, with regard to management of SCI, as "Matters not Germane". Those specific observations are not revisited in this report as they have no direct relevance to the unsafe round though they are thought to offer an insight into the culture and attitude of the Bty personnel. **H1T/98c** **7RHA/9**

6. The RMP investigations were instigated on 8 Mar 14 with recorded interviews taking place between 17 Mar 14 and Jan 15. The witness statements of those interviewed were made available to the Panel including those given by the members of the Gun 5 detachment and are on file in the evidence pack. The resulting investigation led to the case of two members of the Bty being referred to the Service Prosecuting Authority (SPA). After due deliberation the SPA concluded that charges would not be brought against the two individuals and wrote to them on 4 May 16 to inform them of this fact. **7RHA/45**

7. The Unit published a Non-Operational Learning Account (LA) on 24 Oct 14 which can be found in full at 7RHA/39. The Panel asked all members of the Bty about the actions taken by the unit in the aftermath of the safety check fire being called on 7 Mar 14. The following summarises the evidence collated. **7RHA/39**

8. Key personnel from the Bty were centralised in Westdown Camp on 8 Mar 14 in anticipation of being interviewed by LAIT or other investigation authorities though no formal interviews took place that day. On the 8th the RA GTT SMIGs were on the position gathering evidence in the form of LDCU read outs (photos were taken) on the 8th which have played a significant part in the subsequent investigations. Some of the witnesses also remember initial discussions / interviews with the RMP though others state that this was carried out back in Colchester after the exercise. **H1T/131, 184g**

9. The number of Bty personnel we interviewed commented that they had only been asked about the detailed events of the day once before. Most remember being asked by the 7RHA chain of command if they had fired the unsafe round (to which all answered "it wasn't us") but none of the detachment personnel remember a more detailed investigation by the unit. Capt [redacted] noted "…*in terms of lessons learned, no, I don't even think there was much of a knee jerk reaction, it was kind of a bit of denial*." **H1T/184h, 203f, 204e, H1T/253e**

10. Col [redacted], CO 7 RHA at the time of the incident, compiled the LA. He explained that he delayed the investigation in order to avoid complicating the RMP investigation. "*it was quite difficult because what I did not want to do is to start running a parallel investigation to the SIB investigation that was ongoing. Given the gravity of the incident I instructed the Adjutant very quickly, as soon as I sort of said, "Right, it is F Battery," and that was my call, on the balance of probabilities, to get the SIB involved.* **H2T/96f**

11. Col [redacted] also outlined the approach he took in terms of process and the culture he was trying to generate thus:

> *"I had a lot of discussions with [redacted] about the whys and wherefores. Obviously, you know, I did not want to usurp his authority as a Battery Commander whilst he was in post. He had a lot of discussions with his team about the whys and wherefores and the bottom line is we just wanted to get to the truth of the matter and that is the culture -- the sort of environment I was trying to foster which was, "Look, I am going to protect your guys because I see this as a training issue. Nobody has been deliberately negligent here. Nobody has just sort of thought today I am not going to count charges and just wang one up the breach." That was not my impression at all."* **H2T/97b**

12. Lt Col [redacted] (was F Bty BC at the time of the incident) confirmed that he and the CO had numerous discussions about the LA though these were held after Lt Col [redacted] had left the unit and was in a busy staff appointment. What was not evidenced was a systematic investigation by the unit of the F Bty personnel who were on the gun position on 5 Mar 14. The officers and Det Comds were centralised in Westdown Camp on what is believed to have been 8 Mar 14 though this was for interviews by LAIT (which did not happen at that time). Several individuals recalled having discussions either confirming what was believed to have happened (ie that it F Bty was thought to have fired an unsafe round) or that they had nothing to fear. However there is no evidence of routine evidence collation by the unit. Indeed Col [redacted] notes that he had the evidence gathered by LAIT, the ATO and some of the RMP material and this appears to have been **HT1/288f** **HT1/131a** **H2T/96g**

the basis for the LA rather than 1st hand evidence collation. Col [redacted] notes his frustration with having to wait for the RMP investigation to conclude before feeling able to generate the LA and trying to "walk a difficult line" between the LA and not prejudicing the RMP investigation. **H2T/97g**

13. In addition to the actions noted above the RA GTT were also involved once the unsafe round was identified. Initially deployed to review evidence at G Bty, 7 RHA they were then directed to gather evidence from F Bty's position from 5 Mar 14 and then move to the Bty's actual location. Nothing of note was identified at either G Bty's position or the F Bty position from 5 Mar 14, the later due to significant vehicle marks across the whole area. Once the SMIGs linked up with F Bty they took pictures of the LDCUs capturing a zero reading on Gun 5 followed by two significantly slower rounds. On questioning WO2 [redacted] also indicated that further back in Gun 5's LDCU history there were other zeros though the one from 5 Mar 14 was the only one which was followed by unusually slower rounds. There are no photo's of these earlier zero readings **H1T/33g-34e** **H1T/53d** **Enclosure 12 to 7RHA/1**

Opinion

14. It is the opinion of the Panel that the actions taken by the Range Control, the ATO, RA GTT and LAIT once the unsafe round was identified were appropriate and carried out in a timely fashion. Hindsight identifies several aspects which could have been conducted in a more effective manner such as correctly identifying the GPSO in the LAIT Report. This particular point which, at the point of enquiry, should have been easy to confirm has resulted in significant ambiguity several years down the line.

15. The RMP investigation whilst initiated quickly took a long time to report which, with the limited passage of information to the CO, was partially to blame for the delay in the unit producing a LA. Whilst primacy of the RMP/SPA investigation is appropriate as the recent Brecon SI and NSI has shown it is possible for both the LA and possible prosecution investigations to be conducted simultaneously. The purpose of a LA is to "*identify the facts of the matter quickly; to highlight immediate actions taken to prevent recurrence; to provide a mechanism by which the incident can be reviewed and the immediate actions taken endorsed; and to identify gaps or produce further recommendations to minuses a recurrence*." LFSO 1118v6, pC-5.

16. It is the opinion of the Panel that the 7 RHA CoC was best placed to *identify the facts of the matter quickly*. Had the CoC conducted a LA in the 5-10 days immediately after the unsafe round was identified, as directed by LFSO 1118, the errors made in the LAIT report are less likely to have been made and the facts of the matter almost certainly would be clearer. As none of the personnel on the position were interviewed as part of a timely LA ensured that information has been lost and the personnel feel the process has been done to them.

17. The LA was extensive and drew on all other available sources however the delay and reliance on other, non-Gunner, investigation prevented it from delivering the effect a LA should have. However it is not clear what, if any, advice and guidance the CO received on the LA process. There is still today a significant difference in the quality and degree of support a unit receives when generating a LA. ACSO 1118 is currently being written and will be issued in early 2018. This has ensured the various stakeholders in the Army Lessons processes work more closely together and offer the CoC a more consistent level of information, advice and guidance.

Recommendations

18. The Panel recommend CESO, Fd Army Trg Br and APSG as the main stakeholders of LAs are proactive in ensuring the CoC understand the requirement and purpose for LAs.

19. The Panel recommend that LAs are completed as soon as possible (within 5-10 day of the event) and work alongside and with any concurrent RMP investigations.

FINDINGS AND OPINION

Terms of Reference	**Reference**
TOR 2. The Panel is to establish if Policy and Procedures were followed.	
1. **TOR 2.a.** Identify the policies, procedures and practice used on SPTA by 105mm guns on 5 Mar 14.	
Findings	
2. As evidenced through witness testimony and SME evidence the following gunnery policies were in place on 5 Mar 14:	
a. PAM 19, AC 71035 Edition 2012	**7RHA/6**
b. PAM 29 Edition 2010	**7RHA/2**
c. Gun Drill Book, AC 71687 Edition 1 2010	**7RHA/4**
d. SPTA Range Standing Orders Pt 2 – Live Firing	
3. In addition the following relevant policies were extant on 5 Mar 14:	
a. LFSO 3202 – Reporting of Incidents and Matters of Public Interest during Training.	**7RHA/9**
b. LFSO 1118 v5 – Learning Lessons in the Land Environment.	**7RHA/32**
4. Safety appointments required for Ex SS by extant policy included (in accordance with 2a above):	
a. OiC Practice b. Gun Position Officer (GPO) c. Control Post Officer (CPO) d. Detachment Commanders (DC) e. Gun Position Safety Officers (GPSO) f. Gun Line Safety Officers (GLSO)	
5. Of those appointments all personnel were qualified and in date with the exception of the GPO as the Royal School of Artillery (RSA) had stopped delivering them in the year proceeding this event. The only other notable anomaly found by the panel was that there was no Battery Captain (BK) deployed on the exercise. The BK is the senior, most experienced officer on the position and whilst responsible for the defence of the position and the echelon elements is able to advise and assist the GPO as necessary. The BK role was covered by the BSM who was qualified to do so having completed the Gunnery Career Course. The BSM had also previously been a SMIG and as such was deemed SQE.	**7RHA/9** **H1T/126F,** **H1T/221B**
6. On 5 Mar 14 F Bty deployed the guns in a split gun position with guns 1 and 2 to the East and guns 4, 5 and 6 about 200m to the West (gun 3 was not firing). The Control Post (CP) was to the front of the guns meaning the rounds were fired	

over the heads of anyone at the CP. The diagram below offers the Panel's understanding of what the position layout was on the morning of the 5 Mar 14.

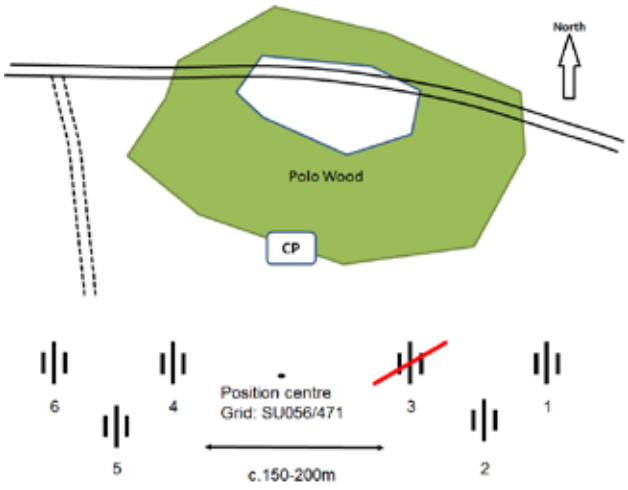


Fig 1. (Not to scale).

H1T/218G

7. With the split gun position the Bty informally allocated a second subaltern as GLSO to oversee safety for the second set of guns. This is accepted practice and makes best use of available, qualified personnel to assure safety on the position. There is also some evidence to suggest there were two Command Post tables established and the split gun position was firing two separate missions answering to two different FOO/FSTs. This was only mentioned by one witness, Capt [redacted] though the limited radio logs on file support this observation.

8. Ammunition was delivered to the rear of the guns, in accordance with the extant procedures for SPTA at the time, broken down to Charge 1 before being moved onto the individual gun position. Surplus Charge Increments (SCI) were collected and later burned once the fire mission was complete.

9. However at some point between the guns receiving the ammunition and the unsafe round being fired there is evidence that not all requirements were carried out to the required standard. The principle error is that the checking of the charge could not have been done with the required level of diligence. All evidence demonstrates that a Charge 4 round must have been fired on the morning of 5 Mar 14 by F Bty 7 RHA. The Range Detail specified a Ch. 1 position so on receipt of the ammunition the detachment personnel should have taken out and bagged up the white, blue and orange excess charge increments leaving only the red (charge 1) bag in the cartridge. In 2014 this had to have been checked by the Number 6 (also known as the Coverer), responsible for breaking down the charges, the GPSO (or GLSO if employed) and at the point of loading the Number 1 (also known as the Det Comd). In addition the GLSC may also have checked though this was not mandatory.

10. In addition in 2014 there was a requirement for the GLSC to count the Excess Charge Increments (ECI) before burning them. Had this been done before the fire mission and the missing white, blue and orange charge bags been noticed the unsafe round could have been prevented. If the ECI had been checked after the event it should have been obvious there was a discrepancy and the unsafe round would have been identified by the unit on the day rather than 48hrs later once the crater was found.

7RHA/6

11. Finally all interviewed acknowledge the difference between a Charge 1 and Charge 4 round being fired is significant and would be impossible for those involved not to realise something wrong had occurred. Consequently the requirement for the GPSO, GLSO, Det Comd or anyone else on the position to call “Safety Check Fire” was also not carried out in accordance with PAM 19. **7RHA/39**

12. After the event had been reported the unit did, 7mths after the event, complete a Non-Operational Learning Account (LA). However there is very little evidence of investigation by the unit CoC, specifically the involvement/ questioning of those F Bty personnel on the position on 5 Mar 14. The CO talked at length about walking a fine line between impeding the RMP investigation and completing his own LA. He also stated that when he did complete it the majority of the evidence came from the reports written by LAIT and the ATO. Conversations between the BC and his F Bty personnel appear to have been limited to reassurance that this would be treated as a training accident rather than establishing the facts of the event. **H2T/96F – 99B**

Opinion

13. The panel agreed that 7 RHA / F Bty had access to and made reference to all necessary extant policy at the time of the incident. It is the opinion of the panel that whilst safety procedures were followed an adequate level of diligence of some of those checks was lacking.

14. Since the event the policy and procedures have changed and TOR 3 considers this aspect in detail. However it should be noted here that by the end of 2014 PAM 19 and Range Standing Orders were amended to address the failings noted above.

15. The panel agreed that in the main, the policies in place at the time of Ex SS 14 were ‘fit for purpose’ if correctly interpreted and abided by.

Recommendations

16. Nil.

FINDINGS AND OPINION

Terms of Reference | **Reference**

TOR 2. The Panel is to establish if Policy and Procedures were followed.

1. **TOR 2.b.** Confirm the RSOs used on that day conformed to the above policies.

Findings

2. The following section is based on the SPTA Range Standing Orders (RSOs) dated Jul 13 and reference is made to the RSOs issued in Oct 14 evidencing changes made as a result of the unsafe round. Extracts for the two RSO versions can be found in Folder Three. In the main the RSOs correlated well with PAM 19 | **7RHA/46, 47**

though with hindsight of the Patney Unsafe Round event there are several areas which are highlighted below which have resulted in ambiguity.

3. Section 2 of SPTA RSOs outlines the relevant Ammunition rules and limitations and in particular the safety management aspects thereof. The section includes (Inquiry relevant elements): **7RHA/12**

a. Range Detail
b. Ammunition issues to Guns
c. CP Limitations **7RHA/3**
e. Safety Staff Limitations
f. Charge Briefing before the Practice
g. Preparation of Charges to that Specified on the Range Detail
h. Safe Keeping of Surplus Increments
i. End of Practice

4. Section 11 of SPTA RSOs outlines the required Range Safety Documentation and offers a clear explanation of each. The following elements are detailed and have relevance to this inquiry:

a. The Daily Range Summary (DRS)
b. Range Detail (RD)
c. Standing Range Detail (SRD)
d. Authorised Traces
e. Activity Report
f. FST Log
g. Clearance Report

5. Section 12 of SPTA RSOs outlines the Safety Orders and Reports required by Range Operations. These include: **7RHA/46**

a. Range Clear
b. End of Practice / Moving Location
c. Safety Check Firing

6. Section 13 focuses on the following ammunition aspects:

a. Ammunition Incidents
b. Ammunition Technician Assistance **7RHA/47**
c. Disposal of Surplus Charge Increments **7RHA/48**

7. Section 14 focuses on Unsafe Rounds and Airspace Infringements

Opinion **7RHA/6**

8. The panel agreed that in the main, the RSOs in place at the time of Ex SS 14 were broadly 'fit for purpose' if correctly interpreted and abided by. Equally they were in the main broadly coherent with the relevant PAMs. However there were several areas which could have been improved, some of which were captured in the Oct 14 update. The following section outlines the view of the Panel against the various sections of the RSOs which were most relevant on 5 Mar 14.

9. Para 2.1.11.03 of SPTA RSOs v Jul 13 clearly outlines what the RD is, the licence to fire, and that units must comply with the published RD. There is ample evidence to confirm that the RD was prepared and signed off in accordance with both PAM 19 and the extant RSOs in Mar 14. All evidence demonstrates that the

unit complied with the RD planning processes and were adhering to the RD when the unsafe round was fired.

10. The traces drawn from the RD were correct for the type of fire mission planned and authorised by Range Operations. A marked map inc STA trace can be found at 7RHA/3.

11. The relevant Activity Report, FST Log and Clearance Reports were not traceable and there is no record of them in any of the preceding investigations (discussed / explored elsewhere in the Report). However this TOR focuses on mapping the RSOs to the relevant PAMs and, as written, the requirement for these three documents maps to or enhances the policy as written in PAM 19.

12. Equally there is no evidence from this incident demonstrating that the elements of Section 12, Safety Orders and Reports were carried out yet the requirement for "Range Clear", End of Practice" and "Safety Check Firing" as articulated in the then extant RSOs were in line with the policy.

13. Section 14 separates unsafe rounds from other ammunition related errors or incidents such as blinds, misfires, prematures, etc. Whilst the rationale for this is not explained as with all the sections noted above the section is in keeping with the policy.

14. There are however two areas where the RSOs may have generated a degree of ambiguity when compared to PAM 19. Whilst Section Two (paras 2.2.3 to 2.2.3.12) is in the main coherent with PAM 19 the Panel believe that the following sections were not:

a. Para 2.2.3.04 states that the OiC Gun Position is to formally brief on the charge used. The PAM does not refer to this appointment though there are two appointments which could be confused with this term: OiC Practice and Gun Position Officer. Whilst in practice this may not cause confusion it seems illogical to use a different term / appointment to that articulated in the PAM. The Oct 14 version of RSOs continued to refer to the OiC Gun Position though the current version refers to the Gun Area Commander (GAC), which is another name for the GPO, though one not used in PAM 19.

b. Para 2.2.3.05 states that the GLSO must independently check the charges are correct however PAM 19 states that the GLSO "…*is not responsible for checking the correct charge is loaded*" (para 363a). In so doing the RSOs have increased the responsibility of the GLSO beyond that of the PAM. Whilst all GLSO's (or other commanders and safety staff) should be fully conversant with both PAM 19 and RSOs and ensure they adhere to the direction within this particular discrepancy could generate confusion.

15. The Panel suggest that the use of "Maximum Charge" positions be encouraged in order to reduce the gap between training safety and operational fire missions. This would, is intended to, ensure the detachments are required to change charges on the gun position (removing charge increments to enable the use of a smaller charge). In such a situation the role of the GLSO and GPSO requires clear and unambiguous direction to ensure all understand what they are accountable for. This is all the more important having had many years where there has been dependence on single charge positions where the ammunition breakdown has been done away from the gun position. Such a practice is thought to have generated a degree of complacency and is at odds with the "Train as you Fight" concept.

Recommendations

16. The Panel recommend the RSOs be amended to ensure only appointment names as articulated in the PAM are used.

17. The Panel recommend that the roles and responsibilities of the safety staff, as written in the RSOs and PAM 19, are the same.

18. The Panel recommend that the wording of the GLSO responsibilities be reviewed to remove any ambiguity regarding the breakdown and checking of charges.

19. The Panel recommend that the use of “Maximum Charge” positions be encouraged in order to reduce the gap between training safety and operational fire missions.

FINDINGS AND OPINION

Terms of Reference	**Reference**
TOR 2. The Panel is to establish if Policy and Procedures were followed.	
1. **TOR 2.c.** Establish if F Bty 7 Para RHA adhered to the RSOs and above policies.	
Findings	
2. As evidenced through witness testimony and SME evidence the following gunnery policies were in place on 5 Mar 14:	
a. PAM 19, AC 71035 Edition 2012	
b. PAM 29 Edition 2010	**7RHA/6**
c. Gun Drill Book, AC 71687 Edition 1 2010	**7RHA/2**
d. SPTA Range Standing Orders Pt 2 – Live Firing	**7RHA/4**
3. In addition the following relevant policies were extant on 5 Mar 14:	
a. LFSO 3202 – Reporting of Incidents and Matters of Public Interest during Training.	**7RHA/9**
b. LFSO 1118 v5 – Learning Lessons in the Land Environment.	**7RHA/32**
4. 7 RHA conducted a Regimental Firing Exercise on SPTA (Ex CYPHER RESOLVE) (Ex CR) over the period 1 -7 Mar 14). Due to the exercise being run at regimental level, the planning and coordination was considerable. The RTO 7 RHA captured the necessary paperwork in the Ex CR Instruction dated 20 Jan 14. There was no need for F Bty to complete their own relevant paperwork for the exercise; this was covered at regimental level and flowed down to all sub units within 7 RHA.	**7RHA/33**
5. There is no evidence to suggest that the RSOs and policies laid down were not adhered to until preparation and checking of ammunition prior to the firing of an unsafe round on 5 Mar 14. At the point of preparation and checking RSOs and policies could not have been followed to the required, safe standard.	
6. When questioning witnesses it was stated that the GPSO gave a safety briefing at the CP location to all F Bty personnel on the gun position before commencement of live firing. At this point, it appears that F Bty was adhering to the RSOs. The testimony from all the witnesses who were on the gun position on 5 Mar 14 said they carried out all the drills laid down correctly. However, the presence of a cartridge prepared as charge 4 was not noticed and subsequently fired. The witnesses stated that they didn't hear or see any of the guns fire a Charge 4. None of the gun crews noticed any abnormality on their guns from firing a charge 4 as opposed to a charge 1, despite the differences being significant.	**H1T/107G** **H1T/124D** **H1T/139D** **H1T/149F** **H1T/166B** **H1T/177B**
7. With the split gun position the Bty informally allocated a subaltern as GLSO to oversee safety for the second set of guns. This is accepted practice and makes best use of available, qualified personnel to assure safety on the position. There is also some evidence to suggest there were two Command Post tables established and the split gun position was firing two separate missions answering to two different FOO/FSTs. This was only mentioned by one witness, Capt	**H1T/218G**

[redacted], though the limited radio logs on file support this observation. It appears the Bty might have been working to two different FSTs on two separate missions in which case having two tables would have been in accordance with policy at the time. However poor quality signals logs, the lack of other evidence such as the AB545s or 'talcs' and the memory fade over 3yrs mean this cannot be confirmed.

8. Ammunition was delivered to the rear of the guns, in accordance with the extant procedures for SPTA at the time, broken down to Charge 1 before being moved onto the individual gun position. Surplus Charge Increments (SCI) were collected and later burned once the fire mission was complete.

9. However at some point between the guns receiving the ammunition and the unsafe round being fired there is evidence confirming that not all requirements were carried out to the required standard. The principle error is that the checking of the charge could not have been done with the required level of diligence. All evidence demonstrates that a Charge 4 round must have been fired on the morning of 5 Mar 14 by F Bty 7 RHA. The Range Detail specified a Ch. 1 position so on receipt of the ammunition the detachment personnel should have taken out and bagged up the white, blue and orange excess charge increments leaving only the red (charge 1) bag in the cartridge. In 2014 this had to have been checked by the Number 6 (also known as the Coverer), responsible for breaking down the charges, the GPSO (or GLSO if employed) and at the point of loading the Number 1 (also known as the Det Comd). In addition the GLSC may also have checked though this was not mandatory.

10. In addition in 2014 there was a requirement for the BK, GPO or TRO to count the Surplus Charge Increments (SCI) before burning them. Had this been done before the fire mission and the missing white, blue and orange charge bags been noticed the unsafe round could have been prevented. The extant PAM 19 in Mar 2014 did not require the SCI to be counted before the fire mission. If the SCI had been checked after the event it should have been obvious there was a discrepancy and the unsafe round would have been identified by the unit on the day rather than 48hrs later once the crater was found. **7RHA/6 para 1015.**

11. All interviewed acknowledged the difference between a Charge 1 and Charge 4 round being fired is significant and would be impossible for those involved not to realise something wrong had occurred. Consequently the requirement for the GPSO, GLSO, Det Comd or anyone else on the position to call "Safety Check Fire" was also not carried out in accordance with PAM 19. **7RHA/6 para 357m**

12. After the event had been reported the unit did, 7mths after the event, complete a Non-Operational Learning Account (LA). However there is very little evidence of investigation by the unit CoC, specifically the involvement/ questioning of those F Bty personnel on the position on 5 Mar 14. The CO talked at length about walking a fine line between impeding the RMP investigation and completing his own LA. It appears that when he did complete it the majority of the evidence came from the reports written by LAIT and the ATO and discussions with the BC. Conversations between the BC and his F Bty personnel appear to have been limited to reassurance that this would be treated as a training accident rather than establishing the facts of the event. **7RHA/39** **H2T/96F – 99B**

Opinion

13. As noted elsewhere in this report and in both the LAIT and unit Learning Account it is the opinion of the Panel that there were several lapses in adherence to policy on the morning of 5 Mar 14. **7RHA/6**

a. The final "Check Charge" cannot have been conducted adequately and, as seen on 1 Dec 16, the failure to remove the becket when showing the No.1 the charge is the most likely cause of this failing.

b. There is no evidence that the Surplus Charge Increments (SCI) were counted and compared to rounds fired after the fire mission was complete. Had this been conducted to the required standard it would have been clear there were several SCI bags missing and a Safety Check Fire should have been called.

c. No Safety Check Fire was called when the unsafe round was fired as directed in PAM 19. This observation is caveated by acknowledging that if no-one noticed the unsafe round (noise, visible recoil or recoil marker on the gun) then they would not know to issue a Check Fire. However the Panel and all witnesses interviewed agree that personnel on a position which fires a Charge 4 round rather than a Charge 1 would notice the difference.

14. Safety Form 5, as per PAM 19, now provides an auditable record of the management of SCI for any particular practice. This requires "*the offr commanding the gun position and the GPSO/GLSO when full charges are broken down to a charge specified on a range detail for a UK DIO range. Charges are not to be issued until this form is fully completed. No live firing is to begin until this form is fully completed.*" PAM 19 Annex F to Ch 3. It is the opinion of the Panel that this new form, brought in as a consequence of the 5 Mar 14 unsafe round, is appropriate and minimises the risk of reoccurrence and provides the audit trail missing for future inquiries. When used in conjunction with the Field Artillery Live Firing Safety Assurance Checklist (2014), also introduced as a consequence of this event, the risk of future unsafe rounds of this nature is significantly reduced.

17. In the panel's opinion it is clear that whilst policy and procedures were known and followed there were several lapses in due diligence.

18. A possible contributory factor was raised by both the Master Gunner RSA and CO 7 RHA suggesting that RA units were, at the time of the incident, being asked to do too much with too little. 7 RHA went from 442 personnel to 357 as a result of A2020 and were still expected to provide two six gun batteries, four FSTs and the associated support elements for 16 Air Assault Brigade. **H2T/89c**

19. Combined with the requirement to provide internal safety staff for exercises such as Ex STEEL SABRE, training and routine G1 friction there are insufficient troops available to man the required guns. The MG indicated that a battery could expect to "*average 20, 25 people in a battery on a day to day basis because people are just away, trawled here, there and everywhere*". **H2T/84g**

H2T/89g

20. Within 7RHA at the time though the CO and both BCs discussed manning and were content with minimum manning of the guns the two batteries could deploy on Ex STEEL SABRE with sufficient current and competent people.

Recommendations

21. It is recommended that the Safety Form 5 is retained with no changes.

22. The Panel recommend that LAs are completed as soon as possible (within 5-10 day of the event) and work alongside any concurrent RMP investigations..

23. The Panel recommend CESO, Fd Army Trg Br and APSG as the main stakeholders of LAs are proactive in ensuring the CoC understand the requirement and purpose for LAs.

FINDINGS AND OPINION

Terms of Reference	**Reference**
TOR 2. The Panel is to establish if Policy and Procedures were followed.	
1. **TOR 2.d.** Establish if all relevant personnel from F Para Bty holding key live firing appointments, including safety personnel, were sufficiently trained and qualified to fulfil their role.	
Findings	
2. Lt Col (Retd) [redacted] the LAIT investigator, was provided with evidence confirming that as far as was possible, all F Bty personnel holding key live firing appointments were sufficiently trained and qualified to fulfil their roles.	**7RHA/9, p.5**
3. The only exception to this was Capt [redacted] who was the Gun Position Officer (GPO) on 5 Mar 14. The JSpec for this appt requires the GPO to attend a course which Capt [redacted] had not completed. However the course had stopped running in Mar 2012 "*following direction from OS CD CS*" and neither the unit nor the offr could be held accountable for his lack of this formal qualification. Whilst technically not qualified for the role this was a RA wide issue which was rectified later in 2014 when the resources for the cse were released and courses started again (partly in response to this unsafe round incident).	**7RHA/9, p.6 & Annex E** **7RHA/37**
4. There was also no Battery Captain (BK) deployed on the exercise which was due to the appointment being gapped. The BSM was a Qualified Gunnery Instructor and was, as such, qualified to cover the responsibilities of the BK which is what the Regt chose to do. This does mean that the BSM is pulled away from this routine "Echelon" tasks but this is something the CoC were content to manage and is a routine solution to this problem.	**H1T/114b-g**
Opinion	
5. It is the opinion of the Panel that the fact Capt [redacted] was not technically GPO qualified did not directly contribute to the firing of an unsafe round. He was qualified as a GPSO and had the required level of knowledge to implement the safety requirements of the GPO role. In addition he had a very experienced BSM acting as BK who could offer advice and guidance as required. Equally the lack of a BK was not a *causal* factor of the firing of an unsafe round but the joint effect of having an unqualified GPO and a BSM covering two roles will have provided a lesser degree of overall supervision and guidance on the position and may have been a *contributory* factor in the safety failings evidenced in this SI.	
6. It is the view of the Panel that the introduction of Safety Form 5 (SCI management) and the Safety Assurance Checklist since Mar 14 mitigates the risks noted above. Further Cap CS (then CD CS) directed that RA GTT SMIGs were to assure units at the start of a practice/exercise in order to further mitigate such risks.	**7RHA/8 Ch 3** **7RHA/2 para 319c(3)**
7. As was evidenced by the Panel observing 34Bty where two SMIGs were on the position it is impossible for a single member of the Gunnery Staff to prevent failures in safety drills. In practice they are often advising the CPO on plotting issues / solutions rather than observing the detachments. As such it is recommended later in this report that the mandatory attendance for Type A and B	

practices by Gunnery Staff reviewed.

Recommendations

8. In light of the fact the course was re-instated in 2014 and the implementation of new auditable processes there are no recommendations arising from this TOR question.

FINDINGS AND OPINION

Terms of Reference | **Reference**

TOR 3. Assess the relevant extant policies.

1. **TOR 3.a.** Examine whether the policies, procedures and planning currently in place are appropriate.

Findings

2. As evidenced through witness testimony and SME evidence the following gunnery policies cover the relevant policies, procedures and planning requirements for L118 live fire exercises:

a. PAM 19, AC 71035 Edition 2014
b. PAM 29 Edition 2010
c. Gun Drill Book, AC 71687 Edition 1 2010
d. SPTA Range Standing Orders Pt 2 – Live Firing

3. In addition the following relevant policies are also relevant to this inquiry:

a. LFSO 3202 – Reporting of Incidents and Matters of Public Interest during Training.
b. LFSO 1118 v6 – Learning Lessons in the Land Environment.

4. PAM 19 was revised in 2014 in response to this unsafe round event with several key changes made. There is a clear and detailed set of procedures for reporting incidents of this nature in PAM 19 Ch1, Annex A. Were these processes carried out on 5 Mar 14 by F Bty, had they acknowledged the unsafe round, then all subsequent investigations would have been able to be concluded quicker and with greater confidence. The PAM is clear that candidness from the unit in question is required and it is the duty of every individual involved to cooperate fully with any investigation teams. With hindsight based on this SI several minor recommendations to PAM 19 have been made below, principally to the Unsafe Round Report.

5. The direction for the preparation and issuing of a range detail and DRS prior to the commencement of firing is still extant. | **7RHA/8Ch 2 - Sect 9**

6. Handover of OIC Practice and Delegation of Forward Safety Duties. This paragraph continues to stress the importance of a ‘formal’ HOTO but there is no mention of what this should look like. There are several considerations:

a. What does a formal HOTO look like?

b. Should there be official certification on completion of a HOTO?

c. How does OIC Practice inform Range Control that the HOTO is complete and how is this recorded by Range Control?

7. There has been a specific amendment for the requirement for the GPO to have completed either the GCC or GPO course and be current and competent. There is also the specific amendment for the requirement for Gunnery Staff to accredit the firing unit as being collective training competent.

8. The GPSO responsibilities section in PAM 19 is largely the same from 2012-2014 but for the addition of some detail regarding general responsibilities of said role. Most significantly the responsibility of maintaining control of the type of charge being fired is now highlighted. PAM 19 [2014] highlights the failure to manage the breaking down of cartridges adequately as a key cause of unsafe rounds. This seems a direct reference to the incident in question and reiterates the importance and responsibility of the GPSO, in conjunction with the Number 1 correctly carrying out the 'check charge' drill, and the importance of ring-fencing those in safety appointments. However the duties section of PAM 19 does not stipulate that the GPSO is responsible for the checking and signing that the charge breakdown was accurate and all ECI is correctly accounted for. **7RHA/8 para 363.c**

9. Paragraph 380 in PAM 19 clearly directs the minimum manning allowed during firing. The minimum manning of the L118 Lt Gun is specified as five in PAM 19 [2014]. This is an uplift over the minimum detachment of four as was the policy at the time of the unsafe round. **7RHA8 para 380**

10. PAM 19 Section 11. Seeks to clarify the role of the Detachment Commander (DC) with respect to safety before/during firing. Regarding this Service Inquiry there are three key observations: **7RHA/8 para 380**

a. The Number 1 is responsible for the drills on the equipment and is to ensure that they are carried our correctly.

b. The DC is responsible ensuring that the charge fired is that ordered by the CPO.

c. Surplus charge increments are taken to the place ordered by the BK/GPO/TRO/BSM for checking and disposal.

Any one of these responsibilities applied correctly by F Bty would have probably prevented any incident or ensured it was identified. However the GPSO should also have checked the cartridge was prepared to the correct charge and the GLSC should have checked the ECI was correct

11. Based on current policy/RSO from the point of initial charge breakdown (a centralised position usually under the supervision of the BSM) the cartridges *could* be checked by the GAC/GPO, GPSO, GLSC, Det No. 6 and the Det Comd. Numerous witnesses testified that whilst designed to improve safety, through the addition of layers, in reality this appears to generate complacency as the Det Comd/ Bdr knows the cartridges have been checked and signed for by more senior staff. When, as was the case in 2014, RSOs and Range Details were almost entirely fixed charge positions, the detachments were not allowed to alter the charges and had no excess charge increments on the position. **Note:** PAM 19 clearly states the GLSO (if used) "*is not responsible for checking the that the correct charge is loaded*" yet there is a general assumption that they are. **7RHA/8 para 369a**

12. The latest version of SPTA RSOs states that:

"2.2.3.05. ***Preparation of Charges to that Specified on the Range Detail.*** *Full charges are to be prepared to the charge or maximum charge specified on the Range Detail on the direction of the Gun Area Commander and then independently checked by a GPSO before issue to the guns. Full charges are to be broken down in a central area,* ***(full charges are not to be broken down on the gun platform)****. This safety check in no way removes the responsibility of the DC to check, load and fire the correct charge." SPTA RSO Pt.2 dated* **7RHA/46**

Feb 17

and

*"2.2.3.06. **Charge Increment Record Card**. Once charges have been independently checked by the GPSO, the Artillery Charge and Increment Record Card must be completed by GPSO. The record is to be signed by the person supervising the breakdown of the charges to the charge or maximum charge specified on the Range Detail and is to be countersigned by the GPSO after he has checked all charges to be issued, only then can charges be issued to the guns. Charge Record Increment cards are to be kept for a minimum of 30 days from the date of the practice." SPTA RSO Pt.2 dated Feb 17*

13. PAM 19 currently states "*GLSOs are to be detailed to assist the GPSO when more than four guns are firing, during night firing, firing in poor visibility, firing from a dispersed position or when ET or proximity fuzes are in use*" (para 309) and that the GLSO is "..*responsible for no more than TWO GUNS on a dispersed position and FOUR GUNS on a tight position*" (para 367b). On 5 Mar 14F Bty were deployed in a dispersed position with two, three gun groups. Whilst each three gun grouping was positioned close together and arguably a discrete "tight position".

Opinion

14. The directions in PAM 19 for establishing the cause of an Incident are entirely appropriate but are reliant on the participating personnel being honest and engaging in a timely manner. The RAF have a generated a culture which allows pilots to openly admit when errors have been made specifically to enable organisational (and individual) learning to take place. Despite the CO noting in his interview this was something he was at pains to generate within the unit there was little evidence this culture was embedded. Time between incident and the SI hearing have hindered the investigation but had there been a culture of openness in 2014 the Panel believe more information would have been available. **7RHA/8 Ch1 Annex A**

15. Planning is critical to the nature and purpose of this Service Inquiry and PAM 19 Ch 2 offers the necessary information and direction which is appropriate and clearly articulated. What is most evident is that PAM 19 [2014] states clearly that it is '*the responsibility of the Detachment Commander (DC), no matter what charge handling controls are in place, to ensure that only the charge ordered is loaded*'. There is also mention of accounting for surplus charge increments. **7RHA/8 Ch2**

16. Current SPTA RSOs (as quoted above in para 12) are very clear regarding the preparation of charges and the management of ECI. It is the opinion of the Panel that had these requirements been in place in Mar 14 and been carried out then the unsafe round would not have been fired. It should be noted though that to fire 300 rounds of Charge 1 L118 ammunition, c.1200 charge bags will need to be counted prior to the fire mission commencing. As written the RSOs allow for Maximum Charge positions which will, if used by exercising units, ensure the ownership of the final check charge remains solely with the Det Comd. **7RHA/38**

17. Where fixed charge positions are employed the Panel believe that with the level of "safety silting" present on DIO ranges exercising troops have been lulled into a degree of complacency knowing senior ranks and officers have already check the charge several times. The current practice of having the BSM responsible for the charge breakdown, then have the GPSO and GPO (or GAC) sign to confirm the charge breakdown is correct, then have the GLSO and **H1T7b**

possibly the GLSO (though not mandated in the current PAM 19) check before the Det assume responsibility for the rounds. Over use of "fixed charge" positions exacerbates this issue as there is no reason to have additional charge increments on the position during training, resulting in complacency. **H1T10d**

18. The uplift in detachment manning seems appropriate based on the evidence provided in the SI. Considering the Gun Drill Book lists a detachment of six as the required number of personnel required to man a L1118 Light Gun, manning with only four suggests at least one of the two roles are superfluous. That the detachment can manage with one below the ideal appears both more reasonable and safer. Equally the Panel are of the view that whilst a single fire mission can be conducted by a detachment of four, to give them the necessary resilience to operate for extended periods the detachment of six should remain the default scaling.

19. The evidence presented also identifies an apparent increased dependence on Det Comds (Gun No. 1s) also having to act as driver. The Det Comd, as the final and critical safety check ensuring the correct charge is prepared and used. Where a Det Comd is able to use transit time to either rest or conduct their own admin (rather than drive) is appears logical that they will be able to focus all the better on their duties, not least the safety aspects. Whilst not believed to be a factor in this particular case it is an issue which may warrant further scrutiny to assess to what extent Det Comds are also expected to be the driver. **H1T/154c, 162e, 172g**

20. Whilst this increase, from four to five man detachments, increases the burden on units (see E8 para 18) already struggling to provide manned guns, based on what was evidenced through the inquiry the increased minimum gun manning from 4 to 5 is thought to appropriate and improve safety. **7RHA/42, 43 H2T/84g H2T/89c**

21. As seen on the 34Bty incident it is impossible for a single SMIG to accurately assess the compliance of the whole bty through observation alone. In the 34Bty case there was two SMIGs (one from 14 Regt RA the other from GTT) and several additional offrs present, the latter specifically there to observe "good practice" in relation to this inquiry. Despite two SMIGs being on the position neither noticed the failure to check charges. One was there to ensure the safety of the SI panel members rather than to supervise the loading drills / safety aspects but the Det knew they were being filmed and observed and yet the error was made for all three rounds whilst completing all other aspects of the safety drill (physical and verbal less removing the "becket"). Accordingly whilst GTT staff signing off a sub-unit/unit for Type A and B may offer a degree of oversight it is an impracticable assurance mechanism. The term Safety Silting was mentioned by several of the witnesses and this appears to be one such case. PAM 19 directs that the OiC Practice, GPSO and Det Comds must be qualified and current. As such they should be accountable for the safety and aware where those responsibilities lie. **7RHA/31** **H1T43d** **H2T/68c, 76c, 93e** **H2T/57b, 66c**

22. As has been noted in the LAIT report, at the time of the incident evidence such as signals logs and "talcs" from the CP were only required to be kept for 48hrs. This evidentially resulted in the PAM being amended to seven (7) days after the "practice". This is thought to be a significant improvement and had the wording been extant at the time of this unsafe round then the various investigations would have been able to hold the unit to account for providing necessary information.

23. Witnesses outlined the routine practice of simply storing the logs, talcs, etc in boxes until the end of the exercise at which point they were destroyed. **H1T/118g**

Considering the difficulty this inquiry and the investigations by LAIT and the RMP have had in evidencing an event, not immediately declared, it is the opinion of the Panel that a slight amendment would aid transparency and indeed protection for the unit. Amending the current wording from “after the practice” to “after the exercise” would provide greater surety that evidence was available when an investigation is most likely to start. It is also believed to be a simpler mandate to evidence as it may not always be possible at the onset of an investigation to identify which practice fired the unsafe round. Therefore keeping the whole exercise “evidence” for seven days after the unit return to barracks generates no additional workload over current practice and simplifies the direction.

24. Whilst it has been noted above that PAM 19 emphasises the need for those in safety roles to have “no other role than safety” it does not prevent units changing appointments thorough an exercise. As explained by numerous witnesses interviewed there are training advantages of rolling NCOs/offrs through operational and safety roles during an exercise. However whilst protected in a safety role, to ensure focus and prevent fatigue, it is quite possible that an offr is in an operational role (such as GPO) where they are constantly on the go and may have very little sleep and then assume GPSO duties at 0800hrs with range live at 0900hrs. Were the safety staff taken from other subunits or units the in-battery officers would be exercising with their own troops in their operational role. The safety staff would have no part to play other than safety and would provide consistency throughout the exercise. **7RHA/8** **H2T/62e** **H2T/69c**

25. Were external safety implemented the likelihood of troop, battery or regimental pride striving for speed to impinge on safety considerations would be reduced. The Panel observed both first hand and through interviews an understandable pride in their detachment, troop, battery or regiment where speed is the overarching measure of quality. The first “Det” to be ready to fire, the first to complete the fire mission, etc. Set safety drills were cited as nugatory and only serve to slow down the mission. The following is typical of the view offered: **H1T/23g, 42b-e, 198a,**

> *“…in the Gunners there is a real competition to fire your rounds off first, faster than the other one, and if it is quite a high rate fire for effect and they are firing maybe five rounds, the gun number 1s take a lot of pride in having the best salve and finishing it quicker, so it is literally, 'check fuse, check shell, yes.' Obviously I have seen it rushed through before.”* **H1T/253a**

26. The current wording of the GLSO responsibilities with regard to how many guns they can be responsible for is thought to be ambiguous. Whilst the wording is clear the ambiguity arises because a troop often deploy in a three gun dispersed position yet a GLSO may only supervise two guns in such a situation. Perhaps the ambiguity is in defining a dispersed position; should it be where two guns are dislocated from the remainder of the troop or is it where the troop has deployed in several discrete groupings? In the Patney case F Bty deployed in what all personnel described as a dispersed position with Guns 4, 5 and 6 c.200m west of the other guns, 80-100m west of the CP. In such a situation is one GLSO sufficient to supervise the three guns? With the current rules directing the main breakdown of cartridges takes place at an ACP away from the guns under the BSM and where the GPSO and BK/GPO sign to confirm the charge is in accordance with the maximum charge noted on the Range Detail, the Panel believe a single GLSO is sufficient.

Recommendations

27. An annex (to PAM 19) could be produced to allow for formal HOTO of OIC

Practice and Forward Safety. This would ideally include certification as evidence which could then be held as an official record of firing, and included in the post firing report.

28. The responsibilities of the GPSO are not stated clearly in Chapter 3 of PAM 19 and must be amended to include the auditable checks now in place (initial breakdown of charges, Safety Form 5, etc.) and needs to be enforced and reiterated prior to firing.

28. The Safety Form 5 (Safety Assurance Checklist) is fit for purpose and should be retained.

30. The Panel recommend that PAM 19 is amended to ensure all signed safety documents (the GPSO signs at the CP) are retained for minimum of 7 days after the end of the *exercise* (rather than practice).

31. Units exercising on ranges with "Maximum Charge" positions permitted should plan own fire plans and encourage use of alternate charges iot practice the gun crews in amending (and checking) charges.

32. The Panel recommend the RA CoC consider implementing a structured process which would allow the key safety appointments to be sourced from outside of the practising unit/sub unit.

33. The Panel recommend that the following minor amendments are made to the Unsafe Round Report: App1 to Annex A to Ch1 of PAM 19:

Ser 7 needs separate lines for GLSO and GPSO and details of the Det which fired the UR.

Ser 34. This needs to specify which safety forms are req'd to inc SF5 (so 34k needs clarifying) and AB545.

Ser 35. Needs to inc what actions were taken by the firing unit on realising the UR

Ser 34j. This should specify photos of LDCU screen if printout not available.

34. The Panel recommend that the following changes to PAM 19 are considered:

Ch2 sec9. RD and RDS. Para 258. Currently states "No alterations are permitted without the authority of the appropriate range officer…" This should be caveated to confirm the OiC Practice/CPO may use any safe charge within the stated "maximum charge" without the need to seek authority from the range officer.

Ch2 sect 9. RD and RDS section should be amended to encourage the use of maximum charge positions.

Ch3. 353. HOTO of GPSO needs clearer, standardised direction with auditable signature.

Ch3. 361d. This section should to specify signing on as GPSO before practice begins.

Ch3. 362g. This section should be broken into 2 sections; 1) inform BK and

CPO of the projectile… and 2) implement and conduct any additional charge management procedures…

Ch3. No mention of completing SF5 or the signature of the charge break down check is mentioned for either the GPSO or GLSO in the duties of the two roles.

Ch3. 369a “The GLSO is NOT responsible for checking that the correct charge is loaded” this statement is not mirrored in the GPSO section nor is the requirement for the charge breakdown stated.

35. The Panel recommend that PAM 19 clearly articulates who is *accountable* for the checking of initial charge breakdown on a dispersed position, the GPSO or the GLSO?

36. The Panel recommend HoC CS to assess the frequency of Det Comds being required to be the detachment driver and, if warranted, implement suitable mitigation measures.

37. The Panel recommend that Cap CS review the number of guns a GLSO is responsible for in a dispersed position and ensure PAM 19 articulates the responsibility clearly.

38. The Panel recommend that PAM 19 is amended to ensure all signed safety documents (the GPSO signs at the CP) are retained for minimum of 7 days after the end of the *exercise* (rather than practice).

39. The Panel recommend Cap CS review of the current tiered safety system in order to remove a degree of “Safety Silting” and aim to “train as you fight”. (such as removing the requirement for a SMIG to be present at the start of all live fire practices, the number of times a charge is checked or increased use of maximum charge positions (with changes used)).

FINDINGS AND OPINION

Terms of Reference | **Reference**

TOR 3. Assess the relevant extant policies.

1. **TOR 3.b.** Identify whether policies and procedures have changed and been implemented to prevent any recurrence of this incident type.

Findings

2. There is abundant evidence that changes to policy and procedures were changed as a result of this event. Changes were implemented by both HoC CS and SPTA specifically to add further layers of safety to the procedures. In Jul 14 CD CS issued a formal response to the LAIT Report in order to ensure "*the rapid implementation of the recommendations in order that deficiencies in the current standard of field artillery, largely arising from adaption required by Op HERRICK, which has been at the expense of more generic gunnery, are addressed*" — **7RHA/36 para 2**; **7RHA/9**

3. This document directed the following to happen: — **7RHA/36 para 6a**

   a. RSA to deliver *ab initio* training wef Oct 14.

   b. RAGTT to address the ind trg deficiency for GPOs in post at that time.

   c. CD CD to ensure the GPO cse reflects all lessons from this (unsafe round) event.

   d. "*Amend Gun Drill so that the No 4, on presenting the charge to be checked by the No 1, states the actual charge. As a result, for a Charge 1 cartridge the following orders applies: the No 4 says "check Charge 1" and No 1 responds "Charge 1 correct*".

   e. CD CS and RA GTT to develop a formal system of assurance by the Gunnery staff to ensure adherence to the correct safe procedures which is the first task at the start of all live firing exercises.

4. It is clear that PAM 19 [2014] has been amended to feature more emphasis on the roles and responsibilities for Reporting an Incident or Accident. OIC Practise is responsible for the collation of all evidence and reports post incident/accident. — **7RHA/8Annex A to Chapter 1**

5. A significant amendment has been applied at Ch 3.1.304 in PAM 19 [2014] regarding the production of a written exercise instruction. This enables another responsible person to assume control of the Range if necessary and the document provides a start point for subsequent training. This detail was likely required but not included in Pam 19 (2012). It is now appropriate that the PAM has been amended.

6. A significant amendment has been applied at Ch 3.1.305 in PAM 19 [2014] with the production of a checklist allowing the officer commanding the gun position (BK/GPO) to ensure safe firing practise.

7. The addition of Gunnery Staff Personnel being required to attend the first live firing practise for two fire missions is also new and was intended to ensure

whether a unit is of a sufficient standard of training to carry out live firing practise without further Gunnery Staff assistance. This issue is discussed further below.

8. There is a significant shift in PAM 19 [2014] to a more formalised checklist of responsibilities for Artillery Commanders:

a. Types A and B Practices: A serving member of the gunnery staff not below the rank of WO2 must be present.

b. Types C, D and E Practices: A serving member of the gunnery staff not below the rank of captain must be present to advise on all fires missions.

c. Checklist Sign-off. The gun position SMIG will as a minimum, attend the first two missions of the exercise and assess whether gun position personnel are carrying out safe practice.

On completion of the checklist, gunnery staff personnel will continue to support the Regiment's firing exercise and monitor safety procedures with regard to the Post-Firing sign off.

9. PAM 19 [2014] amended to include:

a. The live firing safety checklist is completed (see Annex G).

Annex G refers to the Field Artillery Live Firing Safety Assurance Checklist (2014).

b. All personnel detailed for safety duties have no duties other than safety.

The Amendment to 322.f ensures that all local instructions for safe conduct and movement are now submitted to Range Control along with risk assessments.

10. On Arriving at the Gun Position. This appears the most significant amendment to PAM 19 [2012]. The breaking down of ammunition is specified as a task controlled by the following: **7RHA/8 para 337m**

a. Breaking down of ammunition to be carried out in a central area and NOT on the gun platform.

b. Charges are broken down by the ammunition party.

c. GPSO is to check that all charges have been broken down to the maximum charge detailed.

It is unclear whether this procedure would differ on a maximum charge position, and whether the gun crew would be permitted to conduct the breaking down of ammunition themselves. It is also unclear whether this would be different on operations. The opinion from all witnesses interviewed was that the breaking down of ammunition would be conducted by individual gun positions.

Opinion

11. Actions of SPTA and CD CS as a result of the incident / LAIT report were immediate and, in the main, effective however 7 RHA did not conduct an adequate, timely investigation at unit level. This has increased uncertainty and

arguably lengthened the whole process. Equally the changes implemented by CD CS by autumn 2014 were formally embedded into PAM 19 rather than through the issue of a temporary safety notice (or similar). Several witnesses interviewed suggested that this would be a more logical approach considering the evidence and rationale behind the changes were, at the time of writing, unknown. It is the opinion of the Panel that until the cause of an unsafe round is known mitigation measures implemented should be of a temporary nature rather than written into the/a PAM. **H2T/66b**

12. A degree of ambiguity has been created through DIO implementing differing policies on Range Standing Orders depending on where the live-firing takes place (SPTA vs Otterburn). There is a discussion to be had as to who controls the RSO – DIO or RSA? Control should be centralised to prevent confusion. **H2T/94e**

13. The regulations for safety when live-firing need to be constant across the training estates to prevent confusion. BATUK could be considered the exception because of differing national regulations on safety, but Otterburn and SPTA (for example) should be the same. BATUK could then be used as the confirmation for training prior to operations creating a three tier system for firing that already exists in principle. Tier 1: SPTA/Otterburn = Technical/Tactical. Tier 2: BATUK = Tactical/Joint FX. Tier 3: Operations. **H2T/40e-g, 41b**

14. It is the opinion of this Service Inquiry that PAM 19 with respect to ammunition management procedures should be investigated in order to assess the degree of "Safety Silting". The consensus from the Royal Artillery community was that a conflict exists between 'Tactical' and 'Technical' safety whilst conducting live-firing. It is the opinion of the Panel that there is sufficient evidence to suggest that firing could become too clinical ('safe') in training whilst reducing safety during operational firing. Removing all ammunition breakdown to the ACP and the use of single charge positions does not prepare the detachments for operational deployments. **H2T/62c, 76b, 79a, 94b**

15. Counter-intuitively it appears that adding another level of safety doesn't necessarily make processes safer. Adding another responsible individual to conduct ammunition safety checks directs responsibility away from the actual gun commander. It also makes the issue of accountability more ambiguous.

16. There is an argument that safety could be reverted back to the lowest level allowing Gun Commanders to take responsibility of firing (as they would on operations). Those that argue against this would have to question whether the qualification gained at RSA is sufficient or not. Clearly each qualified individual is classified as safe, otherwise they wouldn't have passed the course.

Recommendations.

17. Cap CS to review the balance of tactical verses technical safety iot ensure false lessons from training do not create safety issues once deployed on operations or ranges where UK/DIO type safety procedures are not used.

18. Units should be held to account for delivery of an investigation within a timely period. ACSO 1118 (currently in draft) will outline the new Army Lessons Process and the relevant sections in PAM 19 should be reviewed to ensure compliance.

19. Cap CS to consider issuing temporary safety measures rather than revising PAMs until a full and thorough investigation has identified the cause(s).

20. The Panel recommend that LAs are completed as soon as possible (within 5-10 day of the event) and work alongside any concurrent RMP investigations.

FINDINGS AND OPINION

Terms of Reference

Reference

TOR 4. Identify lessons and recommendations to prevent recurrence.

1. **TOR 4.a.** Provide an opinion on whether the policies identified in TOR 2 adequately mitigated the risks.

2. **TOR 4.b.** Establish whether improvements could be made to the writing and content of RSO's in order to minimise the risk of reoccurrence.

Findings

3. The preceding sections have identified and commented on both policy at the time of the incident and those in place at the time of writing. In particular the findings and opinion sections at **SIDE FLAGS E6** to **E11** articulate the Panel's thoughts. There were no other recommendations identified by the Panel which have not been captured in the preceding sections of this report. As such there is nothing further to report in this section.

7 RHA SI Recommendations

Ser	Recommendation	Findings & Opinion Section
1	Service Inquiries are to be conducted as soon as possible after the event, including where other investigations (such as those by the RMP) are on-going.	1a
2	LDCU date and time setting should be set accurately before any fire mission takes place. The incorrect date confuses any audit or investigation conducted.	1a
3	The RA CoC to assess the quality of radio logs and establish if further training or quality assurance is required. Iot ensure post event analysis, whether for inquest, administrative or training purposes is possible.	1a and 1c
4	The RA CoC acknowledge the pervasive culture of the best detachment is the fastest and seek to affect cultural change ensuring accuracy of correct (safe) practice comes before speed.	1b and 1d
5	It is recommended that the Safety Form 5 (Safety Assurance Checklist) is retained with no changes.	1b, 2c, 3a
6	The RA CoC consider an auditable transfer of GPSO duties ensuring all on a position understand who has overarching responsibility for safety at any given time.	1b and 1d
7	The RA CoC consider implementing a structured process which would allow the key safety appointments to be sourced from outside of the practising unit / sub-unit.	1d, 3a
8	It is recommended that AB545 is retained for a minimum of 7 days after the conclusion of the exercise in line with other evidence already required by PAM 19 (safety forms 1, 2, 3, Ops Shooting Log, etc).	1a, 2c
9	The Panel recommend that the use of “Maximum Charge” positions be encouraged in order to reduce the gap between training safety and operational fire missions	2b
10	The Panel recommend a review of the current tiered safety system in order to remove a layer of “Safety Silting” and aim to “train as you fight”. (such as removing the requirement for a SMIG to be present at the start of all live fire practices, the number of times a charge is checked or increased use of maximum charge positions (with changes used)).	3a
11	Cap CS to consider issuing temporary safety measures rather than revising PAMs until a full and thorough investigation has identified the cause(s).	3b
12	The Panel recommend CESO, Fd Army Trg Br and APSG as the main stakeholders of LAs are proactive in ensuring the CoC understand the requirement and purpose for LAs.	1e, 2c
13	The Panel recommend that LAs are completed as soon as possible (within 5-10 day of the event) and work alongside any concurrent RMP investigations.	1a, 1b, 1e, 2c, 3b
14	The Panel recommend that an annex (to PAM 19) be produced to allow for formal HOTO of OIC Practice and Forward Safety. This would ideally include certification as evidence which could then be held as an official record of firing, and included in the post firing report	3a
15	The Panel recommend that the responsibilities of the GPSO are not stated clearly in Chapter 3 of PAM 19 and must be amended to include	3a

	the auditable checks now in place (initial breakdown of charges, Safety Form 5, etc.) and needs to be enforced and reiterated prior to firing.	
16	The Panel recommend that PAM 19 is amended to ensure all signed safety documents (the GPSO signs at the CP) are retained for minimum of 7 days after the end of the *exercise* (rather than practice).	3a
17	The Panel recommend that units exercising on ranges with Maximum Charge positions permitted should plan their own fire plans and encourage use of alternate charges iot practice the gun crews in amending (and checking) charges.	3a
18	The Panel recommend that the following minor amendments are made to the Unsafe Round Report: App1 to Annex A to Ch1 of PAM 19: Ser 7 needs separate lines for GLSO and GPSO and details of the Det which fired the UR. Ser 34. This needs to specify which safety forms are req'd to inc SF5 (so 34k needs clarifying) and AB545. Ser 35. Needs to inc what actions were taken by the firing unit on realising the UR Ser 34j. this should specify photos of LDCU screen if printout not available.	3a
19	The Panel recommend that PAM 19 clearly articulates who is *accountable* for the checking of initial charge breakdown on a dispersed position, the GPSO or the GLSO?	3a
20	The Panel recommend that the following changes to PAM 19 are considered: Ch2 sec9. RD and RDS. Para 258. Currently states "*No alterations are permitted without the authority of the appropriate range officer*…" This should be caveated to confirm the OiC Practice/CPO may use any safe charge within the stated "maximum charge" without the need to seek authority from the range officer. Ch2 sect 9. RD and RDS section should be amended to encourage the use of maximum charge positions (see ser. 10 above). Ch3. 353. HOTO of GPSO needs clearer, standardised direction with auditable signature. Ch3. 361d. This section should to specify signing on as GPSO before practice begins. Ch3. 362g. This section should be broken into 2 sections; 1) inform BK and CPO of the projectile… and 2) implement and conduct any additional charge management procedures… Ch3. No mention of completing SF5 or the signature of the charge break down check is mentioned for either the GPSO or GLSO in the duties of the two roles.	3a

	Ch3. 369a “The GLSO is NOT responsible for checking that the correct charge is loaded” this statement is not mirrored in the GPSO section nor is the requirement for the charge breakdown stated.	
21	The Panel recommend Cap CS to assess the frequency of Det Comds being required to be the detachment driver and, if warranted, implement suitable mitigation measures.	3a
22	The Panel recommend Cap CS to review the balance of tactical verses technical safety iot ensure false lessons from training do not create safety issues once deployed on operations or ranges where UK/DIO type safety procedures are not used.	3b
23	The Panel recommend units should be held to account for delivery of an investigation within a timely period. ACSO 1118 (currently in draft) will outline the new Army Lessons Process and the relevant sections in PAM 19 should be reviewed to ensure compliance.	3b
24	The Panel recommend Cap CS to consider issuing temporary safety measures rather than revising PAMs until a full and thorough investigation has identified the cause(s).	3b
25	The Panel recommend the RSOs be amended to ensure only appointment names as articulated in the PAM are used.	2b
26	The Panel recommend that the roles and responsibilities of the safety staff, as written in the RSOs and PAM 19, are the same.	2b
27	The Panel recommend that the wording of the GLSO responsibilities be reviewed to remove any ambiguity regarding the breakdown and checking of charges.	2b

Glossary.

1. The following glossary is based on one found in PAM 19 with additional abbreviations added to ensure all used in this Service Inquiry Report are captured.

AC	Army Code (Publications)
ACOP	Approved Code of Practice
ACS	Artillery Command System
ACSO	Army Command Standing Order
AD	Assistant Director
AFT	Abridged Firing Tables
AFV	Armoured Fighting Vehicle
Alt	Altitude (normally of target)
AMV	Adopted Muzzle Velocity
Arty	Artillery
AS90	Artillery System 90
AT	Ammunition Technician/Artillery Training/Antitank
ATO	Ammunition Technical Officer
BC	Battery Commander
BCP	Battery Command Post
Bdr	Bombardier
BK	Battery Captain
BSD	Burst Safe(ty) Distance
BSM	Battery Sergeant Major
BTO	Battery Training Officer
Capt	Captain
CASEVAC	Casualty Evacuation
CD	Capability Directorate
Cbt	Combat
CH	Charge
CMT	Combat Medical Technician
CO	Commanding Officer
Comd	Commander
CP	Command Post
CPO	Command Post Officer
CS	Close Support
Cse	Course
DAIB	Defence Accident Investigation Branch
DC	Detachment Commander
DIO	Defence Infrastructure Organisation
Dist	Distance
Dn	Direction
DRS	Daily Range Summary
DTE	Defence Training Estates
DTG	Date Time Group
Edn	Edition
EOD	Explosive Ordnance Disposal
FC	Fire Control
FCA	Fire Control Application
FCBISA	FC Battlefield Information System Application
FCS	Fire Control System
FD/Fd	Field
FFE	Fire for Effect/Free From Explosives
FOS	Fall of Shot
FP	Fire Plan/Firing Point

FSO	Forward Safety Officer
FST	Fire Support Team
FT	Firing Table
FTMV	Firing Table Muzzle Velocity
GAC	Gun Area Commander (could be the BK or GPO)
GCC	Gunnery Career Course
GIC	Gunnery Instructors Course
GLSC	Gun Line Section Commander
GLSO	Gun Line Safety Officer
GPO	Gun Position Officer
GPSO	Gun Position Safety Officer
GSC	Gunnery Staff Course
GSD	Ground Safety Distance
GT	Gun Target
GTT	Gunnery Training Team
HE	High Explosive
HOTO	Hand Over/ Take Over
HQ	Headquarters
IG	Instructor in Gunnery
IGC	Instructor in Gunnery Course
Illum	Illumination/Illuminating
INCREP	Incident Report
JSP	Joint Service Publication
LAIT	Land Accident Investigation Team
LDCU	Layers Display Control Unit
LDU	Layers Display Unit
LFSO	Land Forces Standing Order
LUMAT	Limitations in the Use of Missiles and Ammunition for Training
MG	Master Gunner
MOD	Ministry of Defence
MOU	Memorandum of Understanding
MPI	Mean Point of Impact
MRF	Multi-role Fuze
MSFS	Minimum Safe Fuze Setting
MST	Mission Specific Training
MV	Muzzle Velocity
MVMD	Muzzle Velocity Measuring Device
NBSD	Normal Burst Safety Distance
NCO	Non-Commissioned Officer
NSI	Non-Statutory Inquiry
Offr	Officer
OIC	Officer in Charge
OP	Observation Post/Observation Party
OPA	Observation Post Assistant
OS	Offensive Support
PAM	Pamphlet
PAP	Potentially Affected Person (aka R18W)
QGI	Qualified Gunnery Instructor
R18W	Regulation 18 Witness (aka PAP)
RA	Royal Artillery/Right Angle
RAGTT	Royal Artillery Gunnery Training Team
RATDT	Royal Artillery Training Development Team
RAU	Range Administrative Unit
RCO	Range Conducting Officer

RD	Range Detail
RDA	Range Danger Area
REME	Royal Electrical and Mechanical Engineers
RIA	Restricted Impact Area
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RMV	Reduced Muzzle Velocity
RO	Restriction Order
RSA	Royal School of Artillery
RSO	Range Standing Orders
RSI	Range Safety Instructor
RTO	Regimental Training Officer
SCI	Surplus Charge Increment
SD	Safety Distance
SEFIT	Serious Equipment Failure Investigation Team
SF	Safety Form
Sgt	Sergeant
SI	Service Inquiry
SIB	Special Investigation Branch
SMIG	Sergeant Major Instructor in Gunnery
Smk	Smoke (Ammunition)
SNCO	Senior Non-Commissioned Officer
SO	Staff Officer
SPTA	Salisbury Plain Training Area
SQ	Safety Qualified
SRCO	Senior Range Conducting Officer
SSD	Safe Splinter Distance/Special Safety Distance
SSgt	Staff Sergeant
SSIG	Staff Sergeant Instructor in Gunnery
STA	Safe Target Area
STAMET	Safe Target Area Meteor
TQCC	Trained, Qualified, Competent and Current
Trg	Training