EXTERNAL REVIEW PANEL
ON SAF SAFETY

COMMENTS ON THE
COMMITTEE OF INQUIRY'S
PRELIMINARY FINDINGS ON
THE DEATH OF
CFC(NS) PANG WEI CHONG ALOYSIUS

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INTRODUCTION

1. A Committee of Inquiry (COI) was convened by the Armed Forces Council on 25 Jan 2019 to investigate the circumstances leading to the death of Corporal First Class (NS) Pang Wei Chong Aloysius [CFC(NS) Pang]. The External Review Panel on SAF Safety (ERPSS) was invited to participate in the COI by, firstly, having one of its members serve on the committee and, secondly, examining and commenting on the COI's findings.

2. As requested by the Ministry of Defence, the ERPSS has provided, in this statement, our comments on the COI's findings.

OUTLINE OF THE COI'S FINDINGS

Summary of the Incident

3. On 19 Jan 19 at around 1900 hours[1], CFC(NS) Pang, an armament technician, sustained an injury while carrying out maintenance work on a Singapore Self-Propelled Howitzer (SSPH). The incident occurred in New Zealand during Exercise THUNDER WARRIOR 2019.

4. CFC(NS) Pang was assisting in maintenance work in the SSPH when the gun barrel was lowered, catching him between the barrel and the slew ring of the SSPH turret. There were two other servicemen in the cabin of the SSPH when the incident occurred – a Regular Military Expert (ME) Technician of ME2 rank and the Gun Commander, an NSman of 3SG rank. The sequence of events was as follows:

S/NO	SEQUENCE OF EVENTS LEADING TO CFC(NS) PANG'S INJURY
1	The Gun Commander of the affected SSPH called for assistance to rectify a fault in the firing angle calibration of his gun.
2	CFC(NS) Pang from the unit's Forward Maintenance Platoon was sent to assess the fault. He could not resolve the issue so he waited for help from the Forward Support Group (FSG), which is the next echelon of maintenance support. An ME Technician from the FSG Maintenance Team was then despatched to troubleshoot the fault.
3	After the repair plan was decided upon, the ME Technician briefed the Gun Commander and then started loosening screws on the control box of the ammunition handling system. While the ME Technician was removing the screws on the left side of the box, he saw CFC(NS) Pang joining in to remove the screws on the right of the box. CFC(NS) Pang's back was facing the gun barrel.

[1] The timings stated in this report are in New Zealand time.

S/NO	SEQUENCE OF EVENTS LEADING TO CFC(NS) PANG'S INJURY
4	The ME Technician informed CFC(NS) Pang that the gun barrel was about to be moved and told CFC(NS) Pang to move closer to him or to a safe position. CFC(NS) Pang replied that it was fine and the gun barrel would not hit him.
5	The Gun Commander turned around to check if the path of the gun barrel was clear and saw CFC(NS) Pang standing near the gun barrel. He could not be sure if CFC(NS) Pang was in the path of the gun. The Gun Commander shouted "standby, clear away". This was clearly heard by the ME Technician and personnel standing outside the gun. He then proceeded to lower the gun.
6	As the gun started moving, CFC(NS) Pang was still working on the screws and looking back at the barrel at the same time. He initially made no attempt to move away. As the barrel moved closer to him, the Gun Commander noticed that CFC(NS) Pang was making some evasive movements.
7	As the gun barrel made contact with CFC(NS) Pang, the ME Technician tried to push the gun barrel with his hands, while the Gun Commander went to the main screen of the display control unit to try to stop the barrel movement.
8	The gun barrel came to a stop at the standby position with CFC(NS) Pang caught between the gun barrel and the slew ring of the SSPH turret.

5. CFC(NS) Pang was treated on site by a Battery Medic and then evacuated to the Battalion Casualty Station (BCS) at 1910 hours. He was assessed and stabilised at the BCS before being evacuated to the Waiouru Base Medical Centre at 1950 hours. He was heli-evacuated, that same evening, to Waikato Hospital in Hamilton, where he underwent three surgeries. CFC(NS) Pang succumbed to his injuries and was pronounced dead on 24 Jan 19. The cause of death was severe sepsis arising from his severe chest and abdominal injuries.

Cause of the Incident

6. The COI established that the three servicemen involved in the incident were sufficiently trained and qualified to perform their roles. They had also received adequate training to be aware that they had to be in their safe positions[2] whenever the gun barrel was to be moved. Fig 1 shows the three safe positions in the SSPH turret.

[2] The three safe positions are: (1) The gun commander's seat situated to the left of the SSPH barrel; (2) The charge loader's position – situated behind the gun commander's seat; (3) The ammo loader's position – situated to the right of the SSPH barrel.

Figure 1. Safe Positions in the SSPH

7. The COI also determined that the incident SSPH was certified "Fit for Firing" in Singapore and again in New Zealand before the live firing. The COI established that the incident was not due to the serviceability of the SSPH.

8. The COI found no evidence indicating that CFC(NS) Pang's death involved foul play or was caused by deliberate acts. However, the COI found that the incident was due to lapses on the part of all three servicemen who were in the gun at the time of the incident.

9. The COI was of the opinion that the precipitating cause of the incident was the lowering of the gun barrel without ensuring that everyone was in their safe positions:

a. CFC(NS) Pang was standing in the path of the moving barrel and not in a safe position prior to the gun barrel being moved.

b. CFC(NS) Pang did not move to a safe position, despite receiving warning that the gun barrel was going to be moved.

c. The ME Technician did not ensure that CFC(NS) Pang moved to a safe position despite knowing that the gun barrel would be moved.

d. The Gun Commander proceeded to move the gun barrel, despite noticing that CFC(NS) Pang was not in a safe position.

e. Both the Gun Commander and the ME Technician failed to press the Emergency-Stop buttons to halt the movement of the gun barrel.

10. The COI found that a combination of the following factors had also contributed to the cause of the incident:

a. Lack of co-ordinated safety control procedure between the gun crew and the maintenance crew.

b. Commencing maintenance work before the gun barrel was in a locked position.

c. Misjudgement of time and space by personnel in the SSPH.

d. The Emergency-Stop buttons in the cabin were not activated to stop the movement of the gun barrel.

11. The COI noted that there were two preventable safety breaches that contributed to the incident. The first breach was the failure to ensure that everyone must be in their safe positions during the movement of the gun barrel. The second was the failure to ensure that the gun barrel was in a locked position before commencing the maintenance work.

Safety Management and Medical Aid

12. The COI did not find any evidence to suggest that the safety preparations and safety coverage for the live-firing were inadequate. The medical personnel involved in the care of CFC(NS) Pang were found to be qualified and performed appropriately under the presenting circumstances. On the post-incident medical care, the COI is of the opinion that in view of the extenuating circumstances caused by the distance and the availability of the medevac helicopter, the medical care provided was adequate but can be improved. However, the COI is also of the opinion that this did not cause or contribute to the demise of CFC(NS) Pang.

COI's Recommendations

13. The COI proposed several safety-related recommendations for MINDEF/SAF's consideration. The recommendations included:

a. Enhancing the Army's safety culture by ensuring that all servicemen and especially NSmen take personal ownership of safety.

b. Reviewing Standard Operating Procedures (SOPs)/emergency drills to ensure that there are proper procedures for mixed-crew operations.

c. Ensuring compliance to training safety regulations, SOPs and operator manuals.

d. Enhancing existing training/safety support, especially for maintenance related work.

e. Enhancing training of medical officers for aero-medical evacuation and pre-hospital care, and improving protocols for communications with overseas hospitals caring for injured servicemen.

ERPSS' COMMENTS

14. ERPSS is satisfied that the COI has conducted a comprehensive inquiry. In the course of its investigations, the COI interviewed over 20 persons, examined relevant training, safety and medical plans, observed a demonstration of SSPH operations and received technical briefings by the relevant subject matter experts.

15. Based on the information provided in the COI's report, ERPSS agrees that the precipitating cause of the incident was the lowering of the gun barrel without ensuring that everyone was in their safe positions. ERPSS also agrees that a combination of other contributory factors, as listed in para 10, contributed to the cause of the incident.

16. ERPSS supports the recommendations raised by the COI, which we believe are appropriate responses to prevent a similar incident from recurring.

17. ERPSS is concerned about the safety lapses and weaknesses in safety culture that have been surfaced. We would like to emphasise the following corrective measures:

a. Role of Commanders. It is important for commanders to exercise leadership and influence their subordinates in order to ensure proper implementation of safety policies and procedures, build a strong safety culture and inculcate stronger safety ownership at both team and individual levels, especially amongst NSmen.

b. Improving Education, Training and Retraining. The SAF should do more to improve knowledge retention and safety awareness in their

soldiers. Beyond teaching soldiers how to execute drills and procedures, trainers should ensure the soldiers understand the rationale for these actions. Unexpected scenarios and emergency situations should also be included in the training. In addition, there must be sufficient continual and recurrent training to ensure that servicemen maintain their competencies throughout the duration of their military service.

c. Strengthening Maintenance Safety Processes. The SAF has placed a high level of emphasis on training safety. It is vital to accord the same level of emphasis on maintenance safety. This is particularly necessary as the SAF continues to invest in heavy vehicles and complex platforms to enhance its defence capabilities.

d. Strengthening Safety Procedures for Mixed-Crew Operations. SAF training and operations often require people from different units or vocations to work together. Such mixed-crew operations are potentially risky if differences in command & control, risk management and safety procedures are not properly addressed. The SAF should, therefore, scrutinise and strengthen the safety protocols for mixed-crew operations.

CONCLUSION

18. ERPSS agrees with the findings and recommendations surfaced by the Committee of Inquiry into the death of CFC(NS) Pang. We note that MINDEF has accepted the COI's recommendations and is in the process of implementing them. ERPSS opines that these measures, together with other safety initiatives that have been put in place since the accident, are important steps that need to be taken to better ensure the safety of our servicemen.

Submitted by:

Chairman and Members,
External Review Panel on SAF Safety

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1. The members of the External Review Panel on SAF Safety are:

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