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PROJECT CHECO SOUTHEAST ASIA REPORT

SHORT ROUNDS

JANUARY 1972 - AUGUST 1973 (U)

1 NOVEMBER 1977

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PROJECT
Contemporary
Historical
Examination of
Current
Operations
REPORT

SHORT ROUNDS

JANUARY 1972 - AUGUST 1973 (U)

1 NOVEMBER 1977

**PROJECT CHECO
OFFICE OF HISTORY
HQ PACAF**

**Prepared by:
CAPTAIN WILLIAM R. BURDITT**

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JAMES C. NOLAN
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FOREWORD

The counterinsurgency and unconventional warfare environment of Southeast Asia (SEA) resulted in the employment of USAF airpower to meet a multitude of requirements. The varied applications of airpower involved nearly the full spectrum of USAF aerospace weapons, support equipment, and manpower. As a result, there has been an accumulation of operational data and experiences that has been collected and documented which must be analyzed for their current and future impact upon USAF policies, concepts, and doctrine.

Fortunately, the value of collecting and documenting our SEA experiences was recognized at an early date. In 1962, Hq USAF directed CINCPACAF to establish an activity that would be primarily responsive to Air Staff requirements and direction, and would provide timely, analytical studies of USAF combat operations in SEA.

Project CHECO, an acronym for Contemporary Historical Examination of Current Operations, was established to meet this Air Staff requirement. Managed by Hq PACAF, with elements formerly at Hq 7AF, 7/13AF, and 13ADVON, Project CHECO provides a scholarly, "on-going" historical examination, documentation, and reporting of USAF policies, concepts, and doctrine in PACOM. Since the drawdown in SEA, the Project CHECO functions have been centralized in the Office of PACAF History.

This CHECO report is part of the overall documentation and examination which has been accomplished. It is an authentic source for the assessment of the effectiveness of USAF airpower in PACOM when used in proper context. The reader must view the study in relation to the events and circumstances at the time of its preparation--recognizing that it was prepared on a contemporary basis which restricted perspective and that the author's research effort was limited to records available within his local headquarters area.



CHARLES C. PATTILLO, Major General, USAF
Vice Commander in Chief

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ABOUT THE AUTHOR

Captain William R. Burditt was commissioned in February 1968 upon completion of Officer Training School at Lackland AFB, Texas. He completed pilot training in March 1968, attended pilot instructor training at Tyndall AFB, Florida, and instructed in the T-38 at Laughlin AFB, Texas, for over three years. His flying duties at Laughlin included those of a check pilot and Wing Standardization/Evaluation Officer. He also served as Chief, Information Division in the Wing Information Office for one year while at Laughlin. Captain Burditt is a graduate of Southwest Texas Junior College with an AA in pre-veterinary medicine and of Texas A&M University with a Bachelor of Science in animal science. He completed Squadron Officer School by correspondence.

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The author's draft was reviewed by competent authorities; it was edited by Tony Koura, Hq PACAF/HO/CHECO.

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CONTENTS

FOREWORD	iii
ABOUT THE AUTHOR	iv
I. INTRODUCTION	1
II. SHORT ROUNDS, JANUARY 1972 - FEBRUARY 1973	5
Inaccurate Placement of Ordnance	5
Judgment Error	12
Target Identification Error	29
Unknown Friendlies in the Target Area	38
Aircraft System Malfunction	58
No Single Primary Cause	64
Miscellaneous Incidents	72
III. SHORT ROUNDS, MARCH 1973 - AUGUST 1973	79
APPENDIX: Chronology of Short Rounds, Jan 72 - Aug 73	91
NOTES	95
GLOSSARY	105
DISTRIBUTION	109

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I. INTRODUCTION

(U) The term "short round," of artillery inception, originally described a shell which fell short of its intended target. In the past, Air Force usage of this term was defined as: ¹ "The air delivery of ordnance which results in injury or death to friendly military forces or noncombatants."

~~(S)~~ In July 1972, however, an accident occurred in Laos which nearly resulted in an international incident because the definition of a short round did not cover the inadvertent delivery of ordnance on installations without injury to personnel. Because there were no casualties, this incident was not reported until the Vientiane press accused the U.S. Central Intelligence Agency (CIA) of an assassination attempt on a provincial governor. ² This incident was then classified as a short round, and an emergency change to Seventh Air Force Manual (7AFM) 55-1 was enacted on 8 September 1972 to modify the definition of a short round. Thus: ³ "A short round is . . . the unintentional or inadvertent air delivery of ordnance on friendly troops, installations, or civilians by a friendly weapon system," with or without casualties.

(U) This is the sixth and final Southeast Asia (SEA) short round report, and covers the period from January 1972 through August 1973, the last month of American air operations in SEA. The report describes

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all confirmed short round cases which resulted from ordnance expended by fixed wing aircraft under the control of the 7AF Tactical Air Control Center (TACC).

(U) The research for this report was conducted primarily from documents in the files of the 7AF Targets Management Office, and are recorded on CHECO microfilm cartridges 767 (S), 887 (S), 149 (TS), 191 (TS), and 213 (TS). Supplemental information concerning individual short round incidents was obtained with the help of personnel at the U.S. Support Activities Group (USSAG) J-3 Target Management Branch and from information contained in a 7AF/DO-2 letter, "Short Round Incidents," 11 August 1972. The individual incidents, summations, conclusions, and recommendations described in this report are based on findings of the preliminary investigations, the review and conclusions of Headquarters Seventh Air Force, and statements made by ground commanders, forward air controllers (FACs), strike aircrews, and witnesses (when available) associated with each incident.

(U) The short round incidents have been divided into two periods. The first part, Chapter II, contains all confirmed short round incidents which occurred between January 1972 and February 1973. Chapter III contains those confirmed incidents occurring from March through August 1973. This division was established because of changes in the investigating and reporting procedures for short round incidents. Prior to March 1973, the Direct Air Support Center (DASC) in the military region

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where the short round occurred investigated and reported on all suspected incidents. This procedure was changed in March 1973 because of the loss of DASCs and the transfer of personnel to USSAG headquarters at Nakhon Phanom, Thailand, concurrent with the drawdown of U.S. troops from South Vietnam. With the reduction of field personnel available for investigations, all researching was done by telephone and message. Information obtained from this type of reporting, of course, was not as complete as that which was compiled before the loss of on-scene investigating officers from the responsible DASC. It should be noted that in many cases after February 1973 the information was so sketchy that it could not be determined if a short round had actually occurred. However, this report is concerned only with confirmed short round cases.

(U) The short rounds described in Chapter II have been divided into seven categories, depending on the primary or most probable cause. These are: (1) inaccurate placement of ordnance by the pilot, (2) judgment error, (3) target identification error, (4) unknown friendlies in the target area, (5) aircraft system malfunction, (6) no single primary cause, and (7) miscellaneous. Chapter III is not broken down by primary cause, but is reported chronologically. This was done because there were only eleven confirmed short round cases reported, and six primary causes.

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II. SHORT ROUNDS, JANUARY 1972 - FEBRUARY 1973

Inaccurate Placement of Ordnance

(S) While all personnel involved need to work together to ensure that an airstrike is properly executed, it is the primary responsibility of the strike pilot to place his ordnance on the designated target. He must have the necessary ability and proper training to make sure that the ordnance he expends does not endanger the lives of friendly forces. The primary cause of the five incidents discussed in this section was the inaccurate placement of ordnance by the strike pilot. There were eight other factors which contributed to these incidents; however, they often occurred in different combinations. The only type of aircraft involved in these incidents was the F-4 (three USAF and two USN).

13 May 1972

(S) In the first of these incidents, the FAC, Rash 09, was working with the ground commander of the Army of the Republic of Vietnam (ARVN) 3d Battalion, 3d Airborne Brigade, during a troops-in-contact (TIC) situation. The target was a suspected enemy mortar position located just west of An Loc. Friendly positions were reported as being 1,500 meters west and 800 to 1,000 meters east of the target. Responding to a request for tactical air, Fistic flight, three USAF F-4Ds, checked in with the FAC and was given a target briefing and

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instructed to use a run-in heading of north to south. The FAC marked the target and after the ground commander confirmed the mark and Fistic flight visually acquired the target and mark, the strike began. Flight Lead lost the target because of clouds and made a dry pass. Number Two rolled in from the north with the target in sight, was cleared by the FAC, and dropped his ordnance which impacted approximately 950 meters southeast of the target and within 50 meters of the friendly position, resulting in a short round. Seeing Fistic 02's bombs impact, the FAC immediately told Fistic 03 to check fire; however, Fistic 03 had already released his ordnance.⁴

(C) Fistic 03 violated a basic rule of engagement (ROE) by releasing ordnance without specific clearance from the FAC. Fortunately, this did not contribute to the short round because his ordnance impacted in the desired target area. Weather and low fuel contributed to the short round incident. Although the pilots were able to acquire the target without difficulty, the intermittent cloud cover caused a delay in marking the target. This, and a delay caused by artillery firing in the area, resulted in a low fuel state by the fighters which had arrived with only ten minutes time over target (TOT) remaining. The primary cause of the incident, of course, was inaccurate bombing by the strike pilot. Fistic 02 utilized the proper run-in heading, but was offset to the east, resulting in the bombing error.⁵

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26 May 1972

(C) This next incident occurred when the pilot of the second aircraft in a flight of two F-4Ds dropped his ordnance 675 meters from the target. The bombing error occurred on the second bombing pass by Vapor 02. Both bombing passes by Vapor Lead and the previous pass by Vapor 02 had resulted in ordnance impacting on the designated target.⁶

(C) The short round occurred because the strike pilot failed to accurately place his ordnance on target; however, there were five factors that directly or indirectly contributed to the incident and, when combined, added to the difficulty of the strike: (1) The incident occurred at night. Flares were used for illumination and, combined with haze, made the marking smoke difficult to see. (2) There was a scattered cloud deck from 6,000 to 8,000 feet and, although the visibility was estimated at five miles, the combination of haze and flare lighting hampered target acquisition. (3) Several dry passes were made by the strike flight which resulted in a low fuel situation. The first pass was dry so the strike pilots could double-check the location of the target in relationship to the flare. The second pass was hot with all ordnance impacting on target. The third, fourth, and fifth passes by both aircraft were dry because clouds obscured the target, because of an inaccurate mark, and because one marking rocket landed in water. The sixth pass was hot. (4) Experience level of the Vapor 02 strike pilot was quite low. His total flying time was 342 hours, with only

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124 hours in the F-4. His total time in-country was 15 days and this was only his fourth combat mission. He was accompanied by an instructor pilot, but it is extremely difficult to detect aiming point errors from the rear seat, especially at night. (5) The ground commander misstated his position. He gave it as 1,000 meters southeast of the target, being well protected and able to take airstrikes as close as 300 meters. He was actually 675 meters from the target, which unluckily coincided with the bombing error made by Vapor 02.⁷

18 July 1972

(C) Ability of the strike pilot to place his ordnance on target is necessary when conducting any airstrike, but it is of utmost importance when supporting troops in-contact or when friendly troops are in the vicinity of the target. This incident occurred when a U.S. Navy F-4 pilot, Backlash 02, dropped his ordnance 700 meters short of target. The target was an enemy bunker complex south of Quang Tri City. Friendly positions were located 1,000 meters north, 1,000 meters northwest, and 700 meters northeast. The target was difficult to acquire because of the lack of prominent land features, hilly terrain, and heavy foliage. The target was marked during the strike by both the FAC and with white phosphorous (WP) artillery rounds, but strong winds caused the smoke to dissipate rapidly and further hindered the ability of the strike pilot to visually maintain the target. Target acquisition difficulty probably contributed to the incident, but it was not a primary factor because all

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bombs were dropped while marking smoke was visible and all bombing corrections were given relative to the smoke. All ordnance dropped by Backlash flight impacted short of target. This indicates that the pilots were not making sufficient corrections for the winds which were 20 knots on the ground, 50 knots at release altitude, and blowing 180 degrees to the run-in heading.⁸

(C) This was the fifth combat mission for both members of Backlash 02 in the F-4 aircraft. It is possible that the crew encountered conditions they had not been subjected to before and were not able to adjust their release to compensate for high wind conditions. Continuous firing of artillery during the airstrike was necessary to properly mark the target, and could have been a contributing factor in the incident. The aircraft were required to release ordnance at a higher altitude than normal and thus subjected the bomb flight path to higher wind factors. Only the strike pilot can determine if he can place his ordnance on target when faced with such marginal or unusual circumstances.⁹

26 August 1972

(C) At approximately 0820H (Vietnam local time), an F-4 expended six Mark-82 bombs near the 258th Brigade of the Vietnamese Marine Division, resulting in four troops slightly wounded. Plebe flight was working with a FAC, Covey 145, on a known enemy location in the Quang Tri area. Friendly positions were protected and located 300 meters east, 300 meters northeast, and 500 meters south of the citadel in

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Quang Tri. The strike was conducted under clear, daylight conditions with a westerly wind of 10-15 knots. Covey briefed the strike flight that the target was the northeast corner of the citadel, and to be aware of the location of friendly positions, as well as the 15-knot wind out of the northwest. The FAC requested that two bombs be dropped on each pass and all bombs were to be within the citadel. Plebe flight interpreted this part of the briefing as two passes with two triple releases on each pass (six bombs per pass). The target was marked and Plebe 01 dropped six bombs which impacted approximately 300 meters east of target. The FAC terminated the strike and the fighters returned to base. Primary cause of the incident was a 300-meter bombing error by Plebe 01.¹⁰

~~(S)~~ A contributing factor was the westerly wind, for which adequate aiming correction was computed but an insufficient correction was made.¹¹ As stated by the strike pilot:

With the briefed estimated wind I figured on a 300-foot offset into the westerly wind. The run looked good for heading, airspeed, dive angle, and initial pipper placement. I pickled [released] at 6,000 feet and pulled up to the right. As I looked back it appeared as if I'd hit about 75-100 meters east of the target so my wind correction had not been enough.

It is possible that the amount of ordnance dropped could have contributed to the incident, but it is unknown whether a short round would have occurred if only two bombs had been dropped instead of six.

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6 September 1972

(S) The target was easily definable, being a square bunker complex surrounded by a wall, with an airstrip on the northern side of the target. Friendly positions were located 400 meters north, 600 meters south, and 1,000 meters east of the target. The weather, scattered to broken clouds with a high overcast, and the terrain, flat with very little vegetation, were not limiting factors. Backwash flight, two USN F-4s, was properly briefed by the FAC and given a run-in heading of east to west, which had been agreed upon by the FAC and ground commander. The target was marked by the FAC and Backwash Lead dropped his ordnance on the target. Backwash 02 was instructed to drop his ordnance in the same place and was cleared to expend. His bombs, however, impacted 300-400 meters east (short) of target and resulted in the short round.¹²

(S) As with other incidents discussed in this section, primary cause of the short round was failure of the strike pilot to accurately hit the intended target. There were two other factors which possibly contributed to the incident. First, friendly troops were either closer to the target than briefed or else were not taking cover from the airstrikes. Secondly, the run-in heading was made over friendly positions. The run-in heading is the primary contributing factor because, although friendly positions were located north, south, and east of the target, a heading of northwest-southeast or northeast-southwest would have prevented overflying friendly troops. The staff

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summary of the incident indicated that a run-in heading of 310 degrees had been selected for the strike, but statements by the investigating officer, FAC, and strike pilot indicate that the run-in heading agreed on and used was east to west. A 310-degree heading would have been appropriate because of the location of friendlies, and it is not known why this heading was not used.

Judgment Error

(C) Judgment is defined as the power to compare and decide, as well as the ability to come to an opinion of things. In order to prevent short rounds, it is necessary for aircrew members to use good judgment during all phases of an air strike. The eleven incidents discussed in this section were attributed to poor aircrew judgment. If the aircrew had judiciously considered the necessity of mission accomplishment in view of the problems encountered, the strikes probably would not have been conducted and the short rounds would not have occurred. Four of the eleven incidents occurred because of malfunctioning equipment, outdated charts, or reliance on pilotage alone to identify and strike the target; two, because improper target coordinates were passed to the clearing authorities; two, because the FAC did not acquire or maintain visual contact with the strike aircraft; and one each, because the FAC cleared strike aircraft to expend with a known equipment malfunction, the strike pilot expended ordnance without clearance from the FAC, and

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the strike pilot failed to determine the impact point of his ordnance relative to the target area. These incidents involved four different types of aircraft: AC-119, four cases; AC-130, two cases; F-4, four cases; and either an A-7 or an F-4 in one case.

(C) After examining one of the incidents described in this section, the investigating officer gave an insight into why good judgment is paramount when conducting air strikes:

14

The stigma attached to RTB [return to base] with ordnance must be removed [emphasis added]. It is this stigma which leads to releasing ordnance under conditions which invite short round incidents, or at least to ineffective releases. The policy of "getting rid of the ordnance" as the criteria for an effective mission places an improper value on the mission. It has led to short rounds in some cases and wasted ordnance in many cases. It is an attempt to make the paper work look good and leads to a cynical attitude on the part of the pilots . . . [to disregard] procedures in order to get the bombs off the aircraft. The attitude . . . for strikes closer than minimum safe distances must be changed. Group commanders . . . tend to place an unwarranted faith in the capability of the FAC and strike pilots. The FAC and strike pilots must not ignore good judgment. Each pilot must be positive that he knows the target and his individual ability to hit it without endangering friendlies. Established procedures and good judgment must not be ignored in any case.

22 April 1972

(C) On the night of 22 April, Stinger 45, an AC-119 gunship from the 18th Special Operations Squadron (SOS), was working with Sawdust Hotel, the ground commander, and Rash 03, an airborne FAC, on a target 2 kilometers (km) southwest of An Loc. At the direction of the FAC,

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Stinger 45 ceased firing on the target and, to clear the area for a tactical air strike, moved five to six nautical miles (nm) southwest. ¹⁵

(C) While orbiting this new position, the crew noted a bridge spanning a river, with a truck parked next to the road. The navigator also observed an airfield runway and what appeared to be a fire support base. The pilot went into a left orbit to get a better view of the potential target truck and to get the aircraft sensors aligned on the road while the navigator attempted, unsuccessfully, to locate these features on his charts. The navigator had determined the aircraft position by dead reckoning, but his charts did not contain any of the above-described features near this position. The aircraft's Doppler ASN-35 computer was inoperative since before takeoff, and tactical air navigation (TACAN) information was intermittent. Both the pilot and navigator gave a visual description of the proposed target to the controlling ground commander, Honor 72-A, and requested target validation. At this time another airborne FAC stated that the area described by Stinger 45 was west of where Stinger thought he was. However, Honor 72-A said the aircraft was over enemy territory and cleared him to fire. ¹⁶

(C) While waiting for the sensors to lock on to the target, the crew noted that they were being fired upon by antiaircraft artillery (AAA) from the northeast corner of the fire support base. The night observation sight (NOS) operator and the pilot located the gun position. The pilot informed Honor 72-A that he was being fired upon and requested

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[REDACTED]

permission to return fire. After receiving clearance, Stinger 45 fired two bursts at the area considered to be the gunsite location. One burst hit outside the perimeter of the fire support base and the other on target. Simultaneously, the navigator heard a call from Tunnel 74 (another ground commander) stating he thought Stinger 45 was over friendly territory. The navigator immediately called for a cease-fire over the intercom and alerted the crew to Tunnel 74's transmission. The pilot stopped firing, rolled out of orbit and reported the information to Honor 72-A. After redescribing the target, Honor 72-A again cleared Stinger to fire, but Tunnel 74 overheard the conversation and said not to fire. At this time a FAC, Chico 11, stated that the area in contention was friendly. Stinger 45 then departed the area and resumed work with Sawdust Hotel. Blame for this incident can be shared by both aircrew and ground personnel. The controlling factor, however, was the fact that the crew of Stinger 45 attempted to strike a target before positively identifying their own position.¹⁷ The investigating officer stated in his recommendation:¹⁸

All craft should have the necessary equipment in proper working condition to safely and expeditiously conduct the task they are assigned. Chart coverage should be complete and of the necessary scale to adequately provide any information required in the conduct of the mission.

[REDACTED] As a result of this and other incidents, General John W. Vogt, Jr., 7AF commander, reminded his commanders:¹⁹

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Since the beginning of the NVN offensive in late March several short round and near short round incidents have occurred within RVN. While it is evident that the increase in the number of missions flown in close air support of US and allied ground forces also increases the risk, the occurrence of any short round is a cause for concern. The problem is compounded by the fluid ground situation in some areas of RVN which has apparently made it difficult for clearance authorities to account for all friendly forces at all times. Additionally, friendly troops who may have little experience with close air support are in the field. Therefore, some requests for close air support delivery techniques may not be realistic according to troop disposition or strike aircraft/weapon delivery safety criteria.

You are referred to the instructions for close air support contained in 7AF OPORD 71-17 which state in part: FACs and strike pilots must positively identify the position of friendly forces prior to initiating an air attack; if the aircraft's geographical position cannot be positively fixed, the mission will be aborted. . . .

30 May 1972

() The crew of Stinger 45, an AC-119 performing night armed reconnaissance northwest of Kontum, reported to II Direct Air Support Center (II DASC) that they had spotted "muzzle flashes" in what they thought was enemy-held territory. They then asked for and received clearance to fire at a specific UTM (Universal Transverse Mercator) coordinate, which the gunship identified as the source of the muzzle flashes. II DASC subsequently received word via land line that the aircraft had fired on a friendly Ranger camp, 15 kilometers from the cleared coordinates.

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~~(S)~~ An investigation showed that the NOS operator had sighted what appeared to be an old fire support base with an east-west runway. When abeam the camp, apparent muzzle flashes were observed and the NOS operator advised his pilot of a potential target. Actually, a U.S. Army Ranger advisor saw Stinger 45 pass over his position and flashed a "V" in morse code to the aircraft with his flashlight. This, or the fact that sentries on the perimeter were firing their M-16 rifles in the dark (a practice common to the ARVN) could account for the "muzzle flashes" observed by the crew. Stinger 45 was navigating mainly by pilotage. The aircraft doppler was intermittent and the TACAN distance measuring equipment (DME) was unusable at times. The airstrip located at the Ranger camp was not depicted on the pilot's maps, and the aircrew confused it with an airstrip located at their cleared area. Other terrain features and prominent landmarks, however, were completely different in the two areas. Primary cause of the short round incident was poor aircrew judgment in that they struck a target without positively identifying their own position. Malfunctioning navigational equipment and obsolete maps were responsible for the error in navigation that led to Stinger 45 expending ordnance into the friendly position. "Fortunately," said USSAG operations officials, "only minor damage was done during the attack, but the consequences of expending approximately 450 rounds of 20mm into a friendly position 15 kilometers from the cleared area could have been disastrous."²¹

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6 June 1972

(S) At approximately 0800H, IV DASC requested and received permission to put U.S. air strikes into a specified strike zone (SSZ) ^{*} in Kien Hoa Province, if bad weather prevented placing strikes in direct support of ground operations. The SSZ authorization was based on military clearance received from the Kien Hoa Province Tactical Operations (TOC) on 4 June for the period 4 through 15 June 1972. Between 1000H and 1035H on 6 June, Detachment 3, 619th Tactical Control Squadron (Paddy Control) at Binh Thuy airfield monitored by radar and radio two separate flights of U.S. jet aircraft as they dropped their bombs over the SSZ. The first flight, Hellborn 5, two F-4s, made a visual reconnaissance over the SSZ in an easterly direction. After turning approximately 180 degrees, Hellborn 5 reentered the SSZ on a northwesterly heading and dropped its ordnance. A short time later, Kien Hoa Province TOC notified the Delta Regional Assistance Command (DRAC) that a short round had occurred 10 km northeast of Bo Tri (approximately 6 km west of the SSZ).²²

(S) The investigation revealed that the bombs impacted in a line running 290/110 degrees (line of Hellborne 5 flight), 6 km outside the western edge of the SSZ. The primary cause was pilot error in that the pilot failed to calculate the impact point of his ordnance in relation

^{*}(U) A designated area, free of friendly troops or noncombatants, used to expend ordnance when other targets are not available.

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to the boundary of the SSZ. Contributing to the incident was lack of supervisory control and inadequate procedures contained in the existing rules of engagement concerning the SSZ (there was no requirement for pilots to be briefed on direction, altitude, or release point when expending ordnance over a SSZ). The investigating officer recommended that the ROE be revised to ensure that pilots are thoroughly briefed on these parameters.

23

13 June 1972

(C) Stinger 04, an AC-119, arrived in its work area and contacted Trophy Whiskey (Senior Liaison Officer, 5th Regiment, 2d Division) for assistance in procuring a target. They were assigned a free-fire box and advised of an enemy sapper team at the edge of the area. Stinger 04 departed the known location of a road intersection and entered the area using pilotage for navigation. They further refined their position by identifying several stream patterns, using the NOS, and orbited the area by using the forward looking infrared (FLIR) and visual contact to maintain their position. After circling, Stinger 04 began dropping flares to allow Trophy Whiskey to vector the aircraft to the target. The first flare was dropped on target but burned out before the aircrew could acquire the target. The second flare was too close to friendly positions, and the third flare was quite a distance northwest of the target. Ground personnel gave Stinger 04 a 500- to 1,000-meter south-southeast correction from the last flare. Stinger 04 moved south,

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reentered a left-hand orbit, and observed a fire on a ridge. The pilot informed Trophy Whiskey that he was over the ridge and would fire marking rounds. One burst was fired utilizing the NOS for guidance. The NOS operator gave corrections and the pilot manually fired two more bursts which hit very close to the fire. At this time Trophy Whiskey called for a cease-fire.²⁴

(S) The initial bursts had impacted directly on the command post of the 3/5th Battalion. The primary cause was poor crew judgment in that the aircrew depended entirely on pilotage to determine aircraft position and made an error in navigation. An aircrew check of TACAN position after the short round revealed the aircraft to be out of the assigned area and over the friendly location. It is not clear whether the aircrew moved east from the last point of clearance or whether they had never been in the proper area. If the latter was true, then the ground personnel contributed to the incident by giving clearance to fire south-southeast of the last flare.²⁵

1 July 1972

(S) Responsibility for the following incident can be placed directly on the FAC and aircrew. The FAC violated a basic ROE procedure by clearing the strike pilot to expend, without visual contact with the strike aircraft. The strike pilot failed to accurately place his ordnance on the target. Weather, low fuel, darkness, target identification, and confusion all contributed to the incident and showed poor

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judgment on the part of both FAC and aircrew in attempting the strike. Jazz flight, two F-4s, contacted the FAC, Sundog 10, after diverting from a planned strike because of weather and an equipment malfunction. Sundog 10 identified the target as a tree line 1 km north of the center of Song Be airfield and parallel to it. The runway was an excellent visual reference and was described as running east-west (actually, WSW-ENE). The friendly position was at the west end of the runway, 1,300 meters from the target. The briefed run-in heading was from west to east, with a left break.* Weather was bad to the west and north, good to the south, fair to the east, and clear over the target. Jazz Lead reported that weather prevented a strike from the west and was advised by Sundog 10 to come in from the south over the center of the runway. ²⁶

~~(S)~~ Sundog 10 dropped a flare and placed a smoke rocket 150 meters north of the tree line and advised the flight that the target and smoke were 1 km north of the middle of the runway. Jazz Lead reported the smoke in sight and was cleared by the FAC, but went through dry because he lost visual contact with the target on account of clouds. Jazz 02 previously reported that he had not acquired the smoke mark but would drop on Lead's bombs. After the dry pass by Jazz Lead, Jazz 02 called in from the east. Sundog 10 reconfirmed the target as 1 km north of the runway and cleared Jazz 02 to expend even though he did not have

**(U) Direction of the break (pull-off from the target after a bombing pass) is given in most instances to avoid weather, terrain, or to prevent overflying friendly positions.*

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visual contact with the strike aircraft. Ordnance dropped by Jazz 02 hit at the west end of the airfield, approximately 1,300 meters southwest of the target, and in the vicinity of the friendly position.²⁷

(C) From the evidence on hand, it is doubtful that Jazz 02 had ever acquired the proper target. Because of weather and low fuel situation, ordnance had to be expended on the first pass or not at all. Both the FAC and strike pilot failed to exercise good judgment in attempting to put in an airstrike under extremely marginal conditions.²⁸

4 July 1972

(C) While flying a day mission, Blade flight, two F-4s, working with an O-2 FAC, struck a target 4 nm east of Quang Tri in support of TIC. Weather was scattered to broken clouds, winds light from the northwest, and although visibility was good, the target was obscured by clouds from the east, south, and west. The ground commander initially requested a 030 to 045 degree run-in heading, but approved a north-south run-in at the FAC's request because of the obstruction to visibility from other quadrants. The target was an enemy troop concentration reported to be occupying a villa, with the friendly positions 600 meters southwest and 1,000 meters east.²⁹

(C) The FAC marked the target and the ground commander gave a correction in reference to the smoke. The FAC cleared Blade 02 and he delivered all of his bombs on one pass because of low fuel. As the second aircraft was making his pass, the ground commander gave the FAC

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another correction on the target, but ordnance was released before the FAC could pass this information to the strike pilot. The lead aircraft had followed his wingman in and dropped his ordnance even though he was not cleared by the FAC. The ground commander called off the strikes because they were hitting friendly positions. However, both aircraft had already expended all of their bombs. The ordnance struck 200-300 meters
30
southeast of the approved target.

(C) The ground commander said he had stated the friendly position was 700 meters southeast, but the FAC claimed this friendly position was not reported. The surface wind was blowing the marking smoke to the southeast, and corrections were not made in sufficient time to prevent the drop of ordnance on the smoke, which had drifted toward friendly positions. Weather and a low fuel state contributed to the incident. Because of weather, the run-in heading was changed from that requested by the ground commander. Low fuel prompted the strike flight to expedite its delivery and resulted in a violation of the ROE. Primary cause of the short round was the flight leader releasing his ordnance off heading
31
and without clearance.

(C) In his conclusion, the investigator not only summarized this particular incident, but also described the majority of situations that
32
led to short rounds during 1972:

Failure of ground commanders to clearly define and mark all friendly positions in the area, failure of ground commanders to be aware of all friendly positions in the area, or failure of ground commanders to accurately

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pinpoint the friendly positions by grid has been the primary cause of nearly all short round incidents involving friendly troops. Contributing to these incidents, there is in nearly all cases a failure by FAC and strike pilots to adhere strictly to established procedures. The mental attitude of ground commanders and pilots underlies the tendency to take shortcuts. Ground commanders tend to place an unwarranted faith in their ability to place the positions of friendlies by grid coordinates, in their knowledge of the locations of nearby friendly positions, in their ability to positively identify the target through grid coordinates, in the ability of the FAC to positively identify friendly and target areas through directions given from a ground-eye view, and in the ability of the strike pilot to place his ordnance exactly on target. Compounding this is the overconfidence of the FAC and strike pilot in their ability to identify positions and targets under adverse weather conditions, to identify inadequately marked friendly positions, in the assumption that the ground commander knows the position of all friendlies and that he has the ability to pinpoint the various areas by grid coordinates. In addition, the pilots tend to take shortcuts in procedures when time is of the essence due to low fuel or when weather conditions are adverse.

8 July 1972

(C) At 2130G (Cambodia local time), Stinger 52, an AC-119, struck a target approximately 6 km southeast of Kampong Cham that resulted in friendly casualties. Stinger 52 was "self-FAC'd," flying an armed reconnaissance mission along Route 7 in Cambodia, when the FLIR equipment picked up two trucks parked on the road. The aircrew plotted the target and requested validation from the 7AF TACC. After making this request, the navigator refined the target position by using a larger scale chart and found that the coordinates he had requested to be validated were not correct. However, validation was not requested for the

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corrected coordinates because the two locations were "only" 1,500 meters apart and it was "assumed" that clearance on the requested target would also include the position of any friendlies in the area. Upon receipt of target validation, and without information on friendlies, Stinger 52 expended 277 rounds on the two trucks. The target turned out to be 1,000 meters southeast of the navigator's refined coordinates and 2.5 km southeast of the originally validated coordinates.³³

21 July 1972

(e) The following incident parallels some other gunship short round cases in that the crew identified and struck a target while using marginal navigational equipment. The coordinates of the target which were passed to the airborne battlefield command and control center (ABCCC) aircraft by Spector 02, an AC-130 gunship, were on the outskirts of Kompong Sralao in the Khmer Republic. Spectre 02 was actually 7 miles to the northeast, over Khong Island, Laos. The gunship acquired the target, but because of a known malfunction in the inertial navigation system, used TACAN and LORAN to verify its position and establish the target coordinates. However, the aircraft was beyond the reliable range of TACAN, and LORAN broke lock when the gunship went into firing orbit.³⁴

(e) Terrain of the validated target area and short round area was similar and easily confused in the dark. After receiving clearance to fire on the Cambodian target, Spectre 02 began expending. Shortly

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thereafter, a Laotian Air Force AC-47 informed ABCCC that an unidentified gunship was firing on Khong Island. Spectre 02 heard the call to ABCCC, ceased firing immediately and departed the area. Results of the airstrike were extensive damage to the house of the Laotian province's Information Services Chief, who lived next door to the governor. Because of a similar previous experience, the people who were attacked and the Vientiane press thought it was an assassination attempt on the governor himself. Primary cause of the incident was crew error, and the use of malfunctioning and unreliable equipment to validate aircraft position. ³⁵

28 September 1972

(C) The next incident resulted in General Vogt issuing a warning message to the units involved: ³⁶

. . . if a known or suspected bomb release equipment malfunction is evident, ordnance will not be dropped. Good judgment must be exercised in reducing short rounds to an absolute minimum. It will be reemphasized to all crew members that if any doubt exists about where ordnance will impact, both FAC and strike pilots have a clearly defined responsibility to abort the pass.

The incident involved Phil flight, two F-4s, controlled by a USAF FAC, Covey 14. The target was a 23mm gun, a recoilless rifle, and enemy troop trenches south of Quang Tri Citadel. Enemy positions were on the west side of the Tac Han River and friendlies were located 1,000 meters east and southeast of the target on the east side of the river. ³⁷

(C) Covey briefed the strike flight on the target, friendly positions, AAA, and the run-in heading of 360 degrees. Phil flight

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made three passes, with all of Phil Lead's ordnance impacting on target. After number two's first pass, Covey 14 informed him that his drop was long. Phil 02 stated that his bomb release had not worked right. The FAC was reluctant to clear him for further releases and requested that Phil 02 be allowed to return to base. However, both the Vietnamese ground commander and the U.S. Marine Corps (USMC) advisor believed the river provided a sufficient safety factor and that Phil 02 should be allowed to continue as long as his ordnance impacted west of the river. Phil 02 was cleared for a second pass and his ordnance impacted approximately 100 meters west of target. His third release caused the short round, impacting approximately 1,000 meters southeast of the target. During this pass, Phil 02 was taking moderate AAA fire. After actuating the bomb release, Phil 02 jinked to the right and then back to the left. It was during the jinking maneuver that he felt his bombs release. Primary cause of the incident was authorizing Phil 02 to continue after it became apparent that he had an equipment malfunction.³⁸

23 January 1973

(U) At approximately 0850H, Rockriver 114, a flight of three USN F-4s, dropped ordnance in the vicinity of Fire Base Henry, resulting in friendly casualties. Weather was clear, visibility unlimited, winds calm, and terrain relatively flat with very little vegetation. The FAC gave the rendezvous point as 49 nm on the 300-degree radial from channel

**(U) The rendezvous point is expressed as a distance and direction from a TACAN station. In this instance, the FAC and strike flight were using different TACAN stations.*

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69. The strike flight interpreted this information as 49 nm on the 300-degree radial from channel 77. The FAC, as a result, never made visual contact with Rockriver 114. However, he cleared the flight to expend after Rockriver 114 claimed it had sighted the FAC, clearly observed the marking rocket, and identified the target area described by the FAC. The FAC stopped the strike after the lead aircraft dropped his ordnance³⁹ because the FAC had not seen the bomb impact.

() Shortly thereafter, I DASC received reports from the commander of the 1st ARVN Division that a short round had occurred at Fire Base Henry (approximately 49 nm on the 300-degree radial from channel 77). Ground troops at the fire base denied seeing any FAC aircraft or smoke rocket. In addition, there was no artillery fire or other activity in the area which could have been responsible for smoke. The primary cause of the incident was that the FAC did not establish visual contact⁴⁰ with the strike aircraft before clearing them to expend ordnance. This⁴¹ was in direct violation of 7AF OPORD 71-17, ROE, which states: "Insure that positive radio and visual contact is maintained with the strike aircraft before departing the rendezvous for the target area and at all times during the strike." Contributing to the incident was Rockriver misinterpreting the FAC's directions, and rendezvousing at a radial and distance fix from the wrong TACAN channel.

2 February 1973

() The next incident caused by judgment error occurred when Spectre 12, an AC-130, expended ordnance on several vehicles some 40 nm

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south of its cleared target. The gunship was orbiting over an escort rendezvous point when the aircraft sensors detected standing vehicles. The student navigator (on his third combat mission), plotted the target coordinates, but erroneously converted the UTM letter prefix. The instructor navigator had shown the student how to display target coordinates through use of the fire control panel and the navigator control panel, but failed to detect the prefix conversion error, resulting in the 40-nm offset. The erroneous target coordinates were passed to the ABCCC, which validated the target. While firing on the vehicles, the instructor noticed the error in the coordinates and the crew immediately stopped firing. Validation for the correct coordinates was then requested from the ABCCC, but it was denied because the position of friendlies in the area was unknown. Fortunately, there were no casualties resulting from the strike, but four vehicles were destroyed. ⁴²

Target Identification Error

(C) There are many factors which can lead to improper target identification: darkness, poor weather or visibility, similarity in terrain features, inadequate aircrew coordination or communication, and improper use or failure to use all available navigation aids. Six incidents are portrayed in this section which define some of the problems associated with target identification. Three of the six cases involved F-4s; strike pilots were at fault in two of these cases and a FAC error was the cause of the other. The other three incidents

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involved an A-37, an A-4, and an AC-119. The FAC was at fault in the A-4 incident, while the strike pilot or aircrew caused the other two. Similarity of terrain features at the incident location and at the authorized target area was the prevailing factor in these incidents. This points out the importance of target description and target marking to ensure proper identification of the target by the strike aircrew.

25 February 1972

(C) At approximately 1240H, Hawk flight, two A-37s from the 8th Special Operations Squadron (SOS), struck a target that resulted in minor blast injuries to seven members of the 1st Company, 36th ARVN Ranger Battalion. Weather in the target area was 2,500 to 3,000 feet broken with visibility of five miles, and appeared somewhat marginal to both FAC and strike pilots. In addition to poor weather conditions, there were numerous smoke emissions in the area which made it difficult for the strike pilots to visually acquire and maintain the target during the airstrike. A communication problem existed between FAC and strike pilots in that they disagreed as to whether the location of the friendly position was briefed and whether Hawk 02 was cleared to expend on the bomb run which resulted in the short round. Each strike aircraft expended all of its ordnance on one pass because of weather. ⁴³

(C) The FAC marked the target with three WP smoke rockets and Hawk Lead placed his ordnance within 10-20 meters of the target. Hawk 02 was above the cloud deck when Lead dropped his bombs and reported

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that he had lost sight of the target. The FAC placed three more WP rockets on the target and briefed Hawk 02 that white smoke was the target and was 20 meters south of smoke from Lead's strike, which was black in color. Hawk 02 initiated his bomb run and stated that he had the target in sight. Hawk Lead was orbiting over the target and cautioned 02 on his run-in heading since neither he nor the FAC had visual contact. At this time, Hawk 02 reported that he had dropped his ordnance. The bombs impacted within 200 meters of the friendly position, which was 3 km from the desired target grid. Hawk 02's bombing accuracy was excellent; however, he had acquired and expended his ordnance on the wrong smoke.⁴⁴

17 April 1972

(C) The following incident shows the necessity of using all available navigational aids to pinpoint a target prior to executing an airstrike. Ground references were almost nonexistent. The terrain was hilly, with triple-canopy jungle, and the FAC was using terrain features to determine his position. The only other identifying feature was an old base camp. The FAC requested clearance for an airstrike on a grid coordinate and described the position as being 1 1/2 km north of the base camp. The ground advisor cleared the strike, informing the FAC that the base camp had been deserted 30 days before, and the area was clear. The strike flight was three USN F-4s, call sign Old Nick. The FAC directed two of the three aircraft on the first target and the third

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aircraft on the base camp. The third strike resulted in the short round. The next day, 18 April 1972, the 7AF Senior Representative at Pleiku flew a profile mission over the target area with the FAC. It was determined that the strike had actually occurred 4 km south of the intended target. Terrain in the two areas was similar and the lack of identifying features contributed to the incident. The primary cause was improper target identification in that the FAC wrongly identified the intended target and directed the strike.

45

4 June 1972

(C) The target was a company-sized Viet Cong (VC) force in contact with the ARVN 2d Battalion, 48th Regiment, southwest of Dak To. The ground commander, Birthday 59, was airborne in a command and control helicopter and was working through Rash 01, a USAF FAC. Birthday 59 briefed the FAC on the enemy location and stated that the nearest friendlylies were 500 meters northeast of the target area. Hellborn 12, a flight of two USMC A-4s, checked in with Rash 01 and was given the usual mission briefing which included the friendly location and a run-in heading of northwest to southeast. Rash 01 marked the target and after both aircraft made a dry pass because of clouds, the ground commander stated that the mark was too close to the friendly position. The FAC remarked the target further south and the number two aircraft dropped one bomb which impacted approximately 200 meters northwest of the smoke mark. The ground commander advised that the bomb dropped too close to

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friendlies and requested the FAC to move the airstrike 500 meters south. Rash 01 estimated his next mark to be 300 meters south of the previous mark, but was declared by Birthday 59 as still being too close to friendlies and to move 500 meters farther south. Rash 01 put down another mark which Birthday 59 said was a good mark. The last marking rocket was actually only 300 meters south of the original mark put down by Rash 01. The remaining ordnance dropped by Hellborn flight impacted⁴⁶ within 50 meters of the last mark.

(C) It seems evident from the above that both FAC and ground commander were having difficulty judging distances. After the first bomb drop, the ground commander requested a total correction of 1,000 meters, but after two marks declared a 300-meter correction to be sufficient. Target identification was the primary problem throughout the strike. It is also possible that the ground commander initially called the strike in too close to his friendly positions or was not aware of the friendly position. Weather contributed to the incident in that strike aircraft could not observe the FAC's mark until late in the run and the southerly wind drifted the marking smoke toward friendly⁴⁷ positions.

17 July 1972

(C) It is extremely important that the aircrew visually acquire and maintain the proper target while conducting an airstrike in support of troops in contact with the enemy. Two factors, weather and terrain

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similarity, contributed to the problems of target identification in the following incident. This occurred approximately 2 km north of Quang Tri. The FAC, Nail 25, was controlling a strike on the target when Oxteam flight, two F-4s, checked in. After completing the strike in progress, Nail 25 briefed Oxteam on the target and friendly positions (1 km east and southeast and 2 km east of the target), and advised that a run-in heading of southwest to northeast (parallel to friendly positions) would be used. Weather was marginal, 4,000-foot ceiling west and northwest of the target, but declared acceptable by the strike pilots. The friendly position, which was located 2 km east, was situated at a river-road pattern similar to the target area.

48

(C) Nail 25 marked the target and Oxteam Lead made his first pass, with his ordnance impacting short and 500 meters east of target. The FAC again marked the target and Lead again hit 500 meters east. Nail 25 then cleared Oxteam 02 to strike and gave him a 500-meter correction to the west. The FAC observed Oxteam 02's ordnance impact 500 meters east of Lead's previous drop, or 1,000 meters east of target and in the friendly area. The ground commander requested that the strike continue even though he had several wounded by the airstrike, but the FAC terminated the mission owing to deteriorating weather and the ordnance impacting too close to friendly positions. Haze and smoke from a previous strike, as well as marginal weather, could have caused the strike pilot to become disoriented and to correct 500 meters east instead of west as directed by the FAC.

49

CONFIDENTIAL

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4 August 1972

(S) As in the previous incident, terrain similarity again played a role in this short round. Stinger 07, an AC-119, was on an armed reconnaissance mission southwest of Da Nang, working a 10,000-meter area in search of enemy vehicles. Stinger had positively identified its position around an island on the Song Thu Bon River and determined this to be the target area. At this time, crew coordination broke down. The navigator was verifying coordinates with the clearing authority and was under the impression that the aircraft was orbiting over this known location. In actuality the pilot had continued to search north along the river. Five to seven miles were flown during this period, at which time new landmarks were picked up by the crew which were similar to those at the known point to the south. The navigator did not take a new TACAN fix prior to expending ordnance since he thought he was still at the known point.⁵⁰

(S) The aircraft sensors identified trucks parked along a road and after receiving clearance, Stinger fired six bursts on these vehicles. The strike was terminated when flares were popped in and around the target area. Stinger reported the flares to the clearing authorities, and upon being informed that he was firing in the wrong area, the navigator checked the TACAN and found that the aircraft was indeed 5 miles north of the desired target. Primary cause of the incident was erroneous target identification caused by similar terrain features, a breakdown in crew coordination/communication, and failure of the aircrew to

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positively identify their position by cross-checking all navigational
51
aids prior to striking the target.

21 August 1972

(C) Popper flight, two F-4s, was working with Covey 24 on a known enemy troop concentration and storage area 2 km north of Quang Tri. The strike was conducted at night using flare illumination and white phosphorus rockets to mark the target. There was a nearly full moon (approximately 80 percent), visibility was good, and weather was not a limiting factor. Target briefing was complete and included the friendly position which was described by the ground commander as being 2 1/2 km southeast of the target. Popper Lead made two passes with all ordnance impacting in the immediate target area. Popper 02 made three passes, with the short round occurring on his last pass (according to the investigating officer), at a distance
52
of approximately 1,700 meters east-southeast of the briefed target.

(C) The incident can be attributed to four possible causes: (1) Target identification. Identifying features in the target area and 2 1/2 km east at the friendly position were similar. The lead pilot stated that the target was difficult to see because of glare from flares, and target identification was easier after the flares burned out. (2) Inaccurate placement of ordnance by the pilot. The strike pilot stated that all bombing parameters were met. However, while on the first two passes by Popper 02, the ordnance impacted in the target area, ordnance from the third pass impacted 1,700 meters from the target, indicating a bombing

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error by the pilot. (3) Location of friendly troops. If the friendly troops were struck by ordnance impacting 1,700 meters from the target, it is doubtful that they were a full 2 1/2 km southeast, as briefed by the ground commander. (4) Artillery. The strike flight observed bright flashes throughout the mission which were thought to be artillery rounds. Because of statements made by ground personnel, the incident could have been caused by artillery.

53

~~(C)~~ Statements made by ground troops and strike pilots bring one other possibility to light. The ground forces said that the short round ordnance was a Mark-82 general purpose bomb (MK-82 GP). The ordnance dropped by Popper 02 on his last pass was CBU-24. A post-strike armament check revealed that one MK-82 bomb had temporarily hung on the number two aircraft. It is possible that the incident occurred because of an ordnance release malfunction which allowed the hung MK-82 bomb to drop from the aircraft during the subsequent CBU pass. The most likely point for a hung bomb to release would have been while the CBUs were being released. If this was the case, however, characteristics of the MK-82 would have made it fall long (north of the target), and would not have been a factor. The possibility that the hung bomb inadvertently released at some other point in the pattern cannot be ruled out, but is improbable. From the information available, it was impossible to positively determine the single primary cause, although improper target identification was stated as most probable.

54

CONFIDENTIAL

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Unknown Friendlies in the Target Area

~~(S)~~ The short rounds in this section include those incidents in which friendly troops or noncombatants were at a location unknown to personnel conducting the airstrike. In most cases, the ground commander was at fault for not knowing or failing to accurately report the position of all his personnel. Other reasons which resulted in unknown friendlies being in the target area were: lack of coordination/communication between ground units; improper action by the clearance authority; faulty target-ing; advisory personnel failing to accurately post friendly troop posi-tions; civilians being in an unauthorized area; and friendlies exposing themselves to bomb fragments.

~~(S)~~ The majority of cases involving unknown friendlies in the target area occurred when friendly troops were in contact with enemy forces. In this situation, unimpeded coordination and communication between ground forces, forward air controller, and strike pilot were paramount in the prevention of short rounds. In only one case did the friendlies visually mark their position during an airstrike. This was recommended procedure and should have been requested by the FAC. In 11 of the 21 incidents, marking friendly positions could possibly have prevented the short round. It should be noted that FACs and strike pilots did not request friendlies to mark their position, and did not request the ground commander to accept responsibility in the event of a short round, as directed by 7AF OPORD 71-17.

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~~(S)~~ Some officers investigating short rounds recommended in their reports that the ground commander be required to accept responsibility for short rounds when he would not mark his position. Although this should have been done, it was, in essence, a "buck-passing" measure, and would not have reduced or prevented the short rounds. This was substantiated by subsequent short round incidents in 1973 where the ground commander accepted this responsibility. A more logical solution would have been to recommend a way to indoctrinate ground commanders on the importance of all personnel involved in an airstrike to be aware of the relative location of both target and friendly positions. In addition, it was important that ground personnel know the lethal effects and minimum safe distance of airdropped ordnance.

~~(S)~~ After investigating an incident in which three ARVN soldiers were killed and ten were wounded because the ground commander was not aware of his troop movements relative to the target, the Deputy Director, 55
III DASC stated:

The procedures in use for conducting an air strike are tried and proven entirely adequate. It is not possible to write or implement procedures that will substantially cover every conceivable situation that may occur. Certainly, better communications between the ground commander and his troops may have prevented this incident and loss of life. As this is, for the most part, an unpredictable situation, I recommend that corrective action be limited to maximum exposure of the incident to the personnel who are involved in this type of an operation. Ground commanders, in particular, should be made aware of this incident for it is they who have the most to lose.

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3 April 1972

(S) The first incident involving unknown friendlies in the target area occurred when a flight of two A-7s struck a suspected enemy position 10 nm south of the Demilitarized Zone (DMZ). Numerous enemy vehicles were sighted in the area, but because of poor flying conditions, had been engaged by naval gunfire. When the weather cleared a USAF FAC moved into the area and observed tank tracks adjacent to a Vietnamese Navy shore observation station. Strike clearance was requested and received from the 3d ARVN Division, G-3, who stated that the nearest friendlies were 3 km to the south. There was some doubt as to the validity of the clearance, since a USN gunfire support ship said the compound was friendly. However, the 3d Division TOC confirmed the clearance and stated the friendlies had been evacuated. Based on this clearance authority, and the belief that the USN information was obsolete, the FAC put in the strike, resulting in the short round. The FAC received proper clearance from the agency responsible for the area, but the ARVN clearance was based on incorrect information concerning current friendly positions during a major battle. ⁵⁶

10 April 1972

(S) In another incident, the target was a small VC-controlled village adjacent to a rubber processing plant. The strike by Calcite flight, three F-4s, was controlled by a USAF FAC and had been requested by the ground commander through his American advisor. The FAC thoroughly briefed the strike flight on the target, position of friendly troops, recovery

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base, and emergency bailout, and restricted the run-in to an easterly or westerly heading. All passes by Calcite flight were then made on an easterly heading, parallel to the friendly position located 1,000 meters north of the target. The FAC bracketed the target with two smoke rockets and instructed the flight to hit between his marks. Calcite Lead and 02 expended their ordnance on the target, while Calcite 03 went through dry. Calcite Lead was cleared for a second pass, with instructions to string the bombs out for better target coverage. On this pass, Lead's ordnance began impacting near the center of the first drop, with the remaining bombs stringing out in an easterly direction and the last one impacting at the edge of the rubber plantation (approximately 200 meters away). During the subsequent investigation the ground commander submitted two sets of coordinates, one for the target and one for the short round. The distance between these coordinates was only about 100 meters. It was concluded that the friendlies hit were not in contact with the ground commander who requested the airstrike, and were therefore not identified to the aircrews.⁵⁷

18 April 1972

(S) Information gathered during the investigation of the next incident placed primary blame for the short round on inadequate knowledge of friendly troop disposition as provided by the ground commander. The incident involved an O-2 FAC (Bilk 34), an A-6 (Bingle 512), a flight of two A-7s (Beefeater 203), and the ARVN 32d Ranger Battalion.

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The ground force was receiving incoming mortar rounds and had requested air support. Upon arriving in the area, Bilk 34 was briefed by another FAC on friendly positions and approximate location of the mortar fire. Radio contact was made with the ground forces who, according to the FAC, marked their position with red and green flares. However, friendly troops⁵⁸ later denied using flares, which suggested possible enemy deception.

~~(C)~~ Five sets of fighters checked in. Only one had enough fuel for more than 10 minutes' time over target (TOT). Although two sets of fighters diverted prior to the strike, this large number of aircraft in such a small airspace could have contributed to the overall confusion. The FAC had only one marking rocket, which was used to mark the target on the first pass by Bingle 512. The target was marked by flare light and terrain description for the remaining passes by the strike aircraft. Confusion during a fluid battle situation, darkness, failure to positively identify all friendly positions, and possible enemy deception all contributed to the short round incident. The lack of information later from the ground commander and strike pilots, continuing heavy battles in the area, redeployment of ground forces, and the high degree of air activity made it difficult to⁵⁹ gather timely and complete information on the incident.

27 April 1972

~~(C)~~ Stinger 44, an AC-119 of the 18th SOS, was flying airborne alert in the Da Nang area when requested by a U.S. Army ground advisor to investigate a suspected enemy location. The gunship reported vehicles

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in the area and was cleared to expend by the proper U.S. and Vietnamese authorities. Initial clearance to fire included the statement that no friendlies were in the area. After two or three bursts were fired, the ground contact advised that there were friendlies 500 meters from the target. Subsequent to identifying the friendly position, the aircraft commander (AC) again opened fire, shooting until directed to stop by the ground contact who stated that the ordnance was impacting too close to friendlies. Weather was not a factor. Winds were light and variable. The incident took place in darkness and air-dropped flares were used for illumination. The AC exercised extreme caution, delaying the attack nearly one hour from the time of initial observation of the target until proper firing clearances were obtained. The short round was caused by incorrect information passed by the ground commander as to the disposition of friendly forces, who obviously were closer than the reported 500 meters from the target.⁶⁰

1 June 1972

(c) The stage is set for a possible short round when friendly troops fail to positively identify their position or when they fail to adequately protect themselves during an airstrike. In the following incident both factors contributed to the short round. The strike was controlled by Sundog 37, a 21st Tactical Air Support Squadron (TASS) 0-2 FAC, in contact with a U.S. ground advisor. The strike was properly cleared and the friendly position, determined by a distinguishable

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landmark, was well dug in and protected, 800 meters south of the target. Hellborn 14, a flight of two A-4s, checked in and was briefed by the FAC on the target and friendly positions, and was given a run-in heading of east to west with a south break. Sundog 37 marked the target and Hellborn flight expended its ordnance. Two bombs fell 50-75 meters from the target. All other ordnance was on target. The investigation revealed that the friendly troops who were struck were actually only 250-300 meters from the bomb impact point, instead of over 700 meters, as their reported position would indicate. Even at this closer distance, if they had been dug in and well protected, they should not have sustained injuries. ⁶¹

22 June 1972

(S) While searching for enemy locations, Stinger 43, and AC-119 of the 18th SOS, expended ordnance on a civilian convoy near Tay Ninh, Vietnam. The gunship had located several moving vehicles on Highway 4, and after dropping flares, the vehicles were visually confirmed with the NOS. Strike clearance was requested and received from the ARVN Deputy Sector Commander who also advised Stinger that friendlies were supposed to be south of UTM grid line 56, and anything north of it should be considered the enemy. The vehicles were 2 1/2 km north of the UTM 56 line, so Stinger 43 initiated the attack, but stopped when directed to look for five reported armored personnel carriers. Approximately 50 minutes later, an ARVN ground commander notified the American advisor that the vehicles fired upon were civilian. All procedures followed in this incident were

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in accordance with current ROE. Stinger 43 struck a target cleared by proper authority, located on a road closed to travel at night, and in known enemy territory. The fault lay with the civilians for traveling on an unauthorized route at night, and with the army for not making sure⁶² that everyone knew travel at night along the road was prohibited.

7 July 1972

(C) While bombing under Combat Skyspot (CSS)^{*} control, a flight of two F-4s dropped ordnance on a friendly position. The strike aircraft were not responsible for the incident, as their entire bomb drop sequence was controlled from the ground. The targets for the CSS run had been cleared by both U.S. Army and ARVN authorities attached to the 23d Division. The targets were passed to BONGO, the MSQ-77 site at Pleiku, which vectored Kilt flight for its release. The incident occurred because the 23d Division failed to accurately post all friendly positions⁶³ on the Division's map.

12 July 1972

(C) This incident is typical of other short rounds caused by unknown friendlies in the target area. The FAC had good voice communications with the ground commander. The known friendly position was located 400 meters north of the target. The target was marked by both artillery and FAC. Weather and visibility were good and all ordnance

**(U) Bombing missions controlled by MSQ-77 radar sites.*

CONFIDENTIAL

impacted in the designated target area. The friendly position which received the short round was not reported to the FAC and was not known by the ground commander or the Airborne Division TOC.⁶⁴

12 July 1972

(c) The following short round is a graphic example of what can happen when a ground commander fails to exercise proper control over his troops during an air strike. The incident occurred during a troops-in-contact situation. The strike was controlled by Covey 54, 20th TASS, working with Snap flight, two F-4s, southeast of Quang Tri. Covey 54 briefed the flight on the target and friendly positions (200 meters north and 200 meters south of the target and in protected bunkers). A restricted delivery heading of 270 degrees was utilized to parallel friendly troop positions. The FAC marked the target and the strike flight acknowledged both target and friendly locations. Each aircraft made one pass, with the second aircraft, Snap Lead, correcting slightly to the west at the direction of the FAC. All bombs were within 50 meters of the target and parallel to friendly positions.⁶⁵

(c) The investigating officer found that the distance between target location and casualty location was approximately 600 meters. For the ordnance used, minimum safe distance recommended for unprotected troops is 887 meters and for protected troops, 198 meters. The casualties were well outside the 198-meter limit, but within the lethal fragmentation pattern if they were unprotected (casualties were reported in the open when Snap

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Lead dropped his ordnance). The only conclusion that could be made was that friendly troops were protected on the first pass but unprotected when they decided to "watch the fireworks" on the next pass.⁶⁶

28 July 1972

(C) Covey 39, an O-2 FAC of the 20th TASS and Covey 31, acting as instructor FAC, were directing close air support for elements of the ARVN 1st Division. The FACs were coordinating with Quebec (U.S. advisor) and Kilo (ARVN ground commander) and had put in three airstrikes when requested to move the next strike approximately 200 meters southwest. Quebec placed the closest friendlies as 500 meters east, 500 meters southeast, and 450 meters south-southeast and told the FAC he would mark the target with artillery smoke. Flying Eagle flight, two A-4s, were orbiting above the target and were briefed by Covey 39 on the target, friendly positions, and run-in heading (northeast to southwest).⁶⁷

(C) After firing two artillery rounds the ground commander gave a target correction of 300 meters west of the smoke. Covey 39 placed a marking round approximately 300 meters west, with the ground commander giving another correction of 100 meters west. With the marking smoke between the friendlies and the target, Covey 39 directed the strike. All ordnance dropped by Flying Eagle were within 100 meters of the designated target. After the second pass a "check fire" was transmitted (source unknown) and yellow and purple smoke was observed in the vicinity of the bomb impact point. Quebec determined the yellow smoke to be

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friendly and the purple was unknown, but was probably a VC ruse. At the same time, an unknown source was requesting more bombs 100 meters south of the last impact point. Although Quebec did not declare a short round at this time, Covey 39 terminated the strike owing to confusion on the ground.⁶⁸

(S) The investigating officer determined that the ground commander did not know the location of all friendly forces and was possibly confused as to the exact target location. The initial target designated by the ground commander was 850 meters east-southeast of the ultimately agreed-upon target. Large corrections to the west for the final target indicate either confusion by the ground commander or possible enemy transmissions to the U.S. advisor. Possible enemy communications intrusion was also suggested by the purple smoke and undetermined radio transmissions. The important factor, however, was that friendly forces were at a location which was specifically cleared by the ground commander.⁶⁹

24 August 1972

(S) At approximately noon on 24 August, Hellborn 14 flight, two A-4s controlled by a USAF FAC, struck a target 30 km east of Tay Ninh which resulted in another short round. The strike was conducted well within a grid area that had been cleared by the ARVN 5th Division the previous day. The area clearance remained valid until 25 August.⁷⁰

(S) The FAC, Rash 55, was requested by the 5th Division to visually check several bridges in the area for possible air strikes. One bridge

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was located and while awaiting strike clearance, Rash 55 continued to check the area. After moving north along the river, Rash located another bridge with three trucks crossing it. Although the area had previously been cleared Rash 55 again requested strike clearance on the bridge and the trucks. Both bridges were cleared by the 5th Division. At an intersection the trucks went in different directions. While Rash 55 was briefing Hellborn flight the target truck stopped on the road under a canopy of trees. Hellborn flight then made three passes, with all ordnance impacting in the immediate target area. The strike was terminated when visual contact with the truck was lost. Approximately an hour later a district advisor reported that some civilians had been wounded in the strike. The area in question had been cleared by the 5th Division without obtaining the required clearance of the province or district authorities. Because the proper government agencies had not been contacted by the ARVN, neither the grid area nor the target area were properly cleared for the strike.

71

5 September 1972

(C) The target was a known enemy location 3 km northwest of Cau Ke, Vinh Binh Province. The FAC, Covey 96, was briefed by the ground advisor. Two A-4s, Hellborn 01 and 02, checked in and were briefed by Covey on the target, friendly locations, and the fact that a restricted run-in heading of approximately 230 degrees was to be used to avoid overflying friendly positions and provide a cleared area northeast of the target in

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the event of short bombs. The target was easily identifiable, south and west of a bend in the river, with the friendly position protected by a bunker, located north and east of the river. Covey 96 marked the target and Hellborn 02 expended his ordnance. All ordnance was on target except for two pods of rockets which impacted northeast of the target in the cleared area, with no apparent damage.

72

(S) Hellborn 01 orbited above the area during the first strike and was familiar with the target, friendly locations, and the restricted run-in heading. On the first pass Hellborn 01 dropped two bombs, one impacting in the river and one on the eastern bank. Covey 96 checked the impact area which was in some trees, but could not observe any damage from the bomb, and the strike was continued. After termination of the strike, the ground advisor was approached by civilians claiming they had been hit by a bomb. The investigation revealed that the bomb which impacted on the east bank of the river was the short round. The bomb impacted approximately 100 meters from the designated target, and the district senior advisor and his counterparts were not aware that non-combatants had moved into the area. In the conclusion of his report, the investigating officer stated:

73

Eight noncombatants were killed and four were wounded as a result of a MK-82 bomb falling short of its target by approximately 100 meters. The U.S. personnel involved, based on their knowledge at the time and tactical situation, are not guilty of any improper action. Proper precautions were taken prior to this incident to preclude loss of life by non-combatants.

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9 September 1972

~~(S)~~ The next incident occurred when members of the 2d Battalion, 43d Infantry Regiment, were hit during an airstrike requested by the 3d Battalion commander who was unaware of the 2d Battalion's exact position. The strike aircraft was a flight of A-37s controlled by an O-2 FAC. The target was marked with WP smoke rockets. The ground commander gave four corrections, and after the fifth rocket he stated that the target was still 100 meters south of this mark. The FAC said that this fifth mark was nearly 1,000 meters west of the original target grid. Although the FAC reconfirmed the friendly position after the last mark, he should have been more concerned about the large correction from the original mark and questioned the ground commander as to the validity of the target. Possibly, the ground commander would have then reconsidered the target prior to the strike and prevented the incident. ⁷⁴

~~(S)~~ The number two aircraft was cleared to strike and his ordnance impacted precisely on the target described by the FAC and cleared by the ground commander. The strike was then halted because of the proximity of friendlies and a short round was declared by the ground commander. The investigation report stated that because of the battle conditions and poor visibility the ground commander failed to properly identify the last marking round. ⁷⁵

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14 September 1972

(C) The mission was a preplanned strike on a suspected enemy camp-site and bunkers. It was a priority target and had been cleared through proper U.S. and ARVN authorities as an Instrument Meteorological Conditions (IMC) target with a visual strike, weather permitting, the preferred method of delivery. Target information passed to the FAC included the strike clearance and location of friendlies (3.2 km west of the target). When the FAC arrived in the area, the target was obscured by low clouds and fog, but the weather cleared prior to the strike and was not a factor. The strike flight, two A-4s, placed all ordnance in the immediate target area. After the last bomb pass, yellow smoke was observed just south of the target and a cease-fire was received on the guard channel. The friendly location was only 200 meters from the target. Lack of proper coordination between all affected ground elements was considered the primary cause. The ground commander was unaware of the preplanned strike and clearing authorities were not completely aware of the operating area for the ground unit.⁷⁶

11 October 1972

(C) At 0142H, Spectre 10, an AC-130 gunship, contacted Saigon Artillery for target information. The target passed to Spectre was a suspected enemy position. Spectre 10 was given a 200-meter clearance around the target grid and friendlies were reported at 1,000 meters south and 1,000 meters west. After firing 150 rounds of 40mm ordnance

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into the target area, Spectre was told to cease-fire because friendlies had moved into the area. Upon landing, the crew was advised that friendlies were wounded by the gunship. They were struck while setting up an ambush 30 meters away from the cleared target grid coordinates. Saigon Artillery's ignorance of the exact position of the friendly unit resulted in Spectre 10 receiving a 200-meter clearance around the target, but which encompassed the friendly unit's position.⁷⁷

19 October 1972

~~(C)~~ The FAC, Covey 117, was working in support of the ARVN 2d Division in a TIC situation and had placed three airstrikes on targets in the area. The target for the fourth strike was 300 meters southeast of the known friendly position which was clearly marked with an orange and gold panel. The strike flight, two VNAF A-37s, was properly briefed, and expended ordnance within 150 meters of the target. All ordnance impacted on or southeast of the target, which was away from the known friendly position. After the last pass, the ground commander called off the fighters because friendlies were reported 200-300 meters from the target in an area other than previously briefed. This was the first indication to both ground commander and FAC of friendlies at this location.⁷⁸

21 October 1972

~~(C)~~ The FAC, Rash 15, was working in support of the 43d ARVN Regiment near Quan Loi Airfield, RVN. Rash 15, following directions

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given by the ground commander, Climax 07, had put in three flights of fighters in support of the TIC situation. Due to the proximity of friendly troops and heavy ground action, Rash 15 requested and received both U.S. and ARVN initials in case of a short round. Hellborn 18, a flight of two A-4s, was the next flight to check in and was briefed by Rash 15 on the target and friendly positions (400 meters south and 400 meters west), and a run-in heading of northwest to southeast. Rash 15 marked the target and received corrections from the ground. After another smoke mark and more corrections, a revetment just southeast of the runway was determined to be the target. The revetment was the northernmost of four, clearly visible and easily identified. Since the revetment was quite a distance from the original target coordinates, Rash 15 questioned Climax 07 and received confirmation that the north revetment was indeed the target.

79

() Hellborn 18 Lead rolled in from the northwest, was cleared by the FAC, and dropped two bombs which impacted 100 and 200 meters long. Almost immediately, Charlie 41, another ground commander, called for a cease-fire. Primary cause of the short round was that Climax 07 was unaware of Charlie 41's position. A contributing cause was a bombing error of 200 meters by the strike pilot. The bombing error would have been irrelevant, however, if Charlie 41's position had been known, because the run-in heading would have been changed to parallel friendly positions and the short round would not have occurred.

80

CONFIDENTIAL

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2 November 1972

(S) The target was approximately 150 VC in contact with friendly troops, 800 meters southwest of the VC position. The target was marked by the FAC and the ground commander requested a correction of 300 meters southeast. The second marking smoke impacted within 100 meters of this corrected location and the ground commander cleared the strike on this smoke. Crafty flight, two F-4s, dropped six bombs which impacted within 20 meters of the designated target. The ground commander requested a check-fire and advised the FAC that he had friendly troops with minor wounds from the bombs. Although the nearest friendlies were reported to be 800 meters southwest of the original target, they were obviously closer. The short round could have been caused by the friendly troops being within the lethal fragmentation pattern of the ordnance being used, but most probably was caused by the troops being at a location other than as briefed by the ground commander.⁸¹

25 December 1972

(S) At approximately 2200H, an AC-119, Stinger 10, conducted a strike against a prebriefed enemy location 10 km southwest of Da Nang. The target was cleared by the ARVN 3d Division prior to takeoff and reconfirmed before the strike. The target was located by using the FLIR and NOS and cross-checked by TACAN bearing and range information. With the aid of flares, the pilot visually confirmed the target using the FLIR's chart. The crew all acknowledged it as the proper target

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prior to attack. While firing on the target, the on-board Vietnamese liaison officer became suspicious of the number of structures in the target area. After conferring with ARVN ground personnel, he was told to cease-fire while the target coordinates were checked. Approximately 50 minutes later, the aircrew was notified that a short round had⁸² occurred.

(S) Returning to base, the aircraft was impounded and equipment was checked. All aircraft systems and fire control equipment were found to be operating within allowable tolerances. The ARVN clearing authority and liaison officer refused to make statements about the incident. The investigating office said that without these statements and with the limited information available, it was impossible to accurately determine the cause of the short round. No breakdowns in procedures or techniques were discovered that would indicate an error on the part of the crew. It was strongly suspected this incident was caused by faulty targeting on the part of ARVN requesting and clearance authorities, and⁸³ that they were not aware of the exact location of friendly troops.

31 January 1972

(S) While awaiting target clearance and validation of TIC targets, Spectre 03, an AC-130 gunship, was boresighting and working some targets along a prevalidated section of Route 16 in Laos. The road had been prevalidated for armed reconnaissance for several weeks and the crew checked this at wing intelligence prior to takeoff. While expending on

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the last target, the crew was informed by a forward air guide (FAG) that they were firing on friendlies and to cease fire. The investigation concluded that Spectre 03 did expend ordnance on the friendly position; friendlies were using the road, unknown to the aircrew; there was no evidence of aircrew error, because the road was prevalidated for air strikes, according to the latest information available. Seventh Air Force then checked with the American Embassy at Vientiane and found that this particular road segment was no longer cleared for air strikes. This was the first indication the unit received word of this change.

84

17 February 1973

(C) At approximately 1843G, Igloo 42, an F-111, launched from Takhli for a level beacon bombing mission. The targets were prevalidated and approved by proper clearing authorities. Igloo 42 orbited east of the Mekong River until completing computations for both targets and then struck the first target. All procedures were in accordance with current directives and no delivery abnormalities were noted by either crewmember. The pilot observed the bomb detonations and noted one bomb falling about 1,000 meters short of the others and exploding one second late. While inbound for the second target, Igloo 42 was advised that there were friendlies in the area and not to drop his bombs. With the information available, it was not possible to positively determine the exact cause of the incident. The most

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probable cause was the presence of friendlies in a prevalidated target area. A contributing cause was an unknown malfunction that resulted in one bomb falling 1,000 meters short.

85

Aircraft System Malfunction

(C) In 1972, five short round incidents occurred which were directly attributed to aircraft or weapon delivery system malfunctions. Two of the incidents occurred while bombing in an IMC environment using LORAN bombing techniques. Strike aircraft in both of these incidents were F-4s. Two involved A-6 aircraft and occurred during daylight strikes, utilizing visual bombing techniques under the control of a FAC. The other incident occurred at night when an AC-119 was supporting a TIC situation. Contributing to these incidents were the run-in headings in two cases, inaccurate reporting of the friendly position in one case, and the failure of friendly troops to adequately protect themselves, in another.

17 May 1972

(C) The first short round which occurred because of an equipment malfunction took place at 0345H on 17 May. Two F-4s struck a target 1 nm southwest of An Loc using LORAN techniques. The controlling agency was III DASC, call sign Pawnee Target, which passed all target and clearance information to Arabic flight. The attack was initiated maintaining element integrity with the lead aircraft making an automatic

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LORAN release and the wingman dropping Lead's command at the release point. All checklist items were accomplished and all LORAN indications were normal up to the point of weapons release. The wingman released manually on Lead's command at the proper time; however, owing to safety factors built into the LORAN system when a malfunction occurs, Arabic⁸⁶ Lead's bombs would not release.

~~(C)~~ Upon landing, the lead aircraft was impounded and an investigation of the system showed a malfunction in the central air data computer (CADC). This instrument provides altitude information to the LORAN ballistic computer which uses the data to compute a release distance from the target. In this instance, the CADC computed the aircraft altitude to be at sea level instead of the actual height of 19,000 feet. The ballistic computer used this information and came up with a much shorter release range than was necessary. As a result of Lead's computer error the wingman's bombs overshot the target by a wide margin and struck the friendly position. Target information placed the friendly position 1.5 km south of the target. The run-in heading was a contributing factor since any other, except the 180-degree heading used by Arabic flight, would have allowed the bombs to fall in a cleared⁸⁷ area.

9 June 1972

~~(C)~~ Hoofer flight, two F-4s, contacted III DASC, call sign Pawnee Target, and was given a LORAN target in Military Region (MR) III. Pawnee

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Target requested a north-south or south-north run-in heading. Hooper 01 was LORAN equipped, and inserted the target information and run-in heading into the system. Hooper 02 was not LORAN equipped, and was to release his ordnance on Lead's command. He inserted the target coordinates in the inertial navigation system (INS) of his aircraft and used this information to cross-check his position before release. Hooper 01 completed all items in the LORAN weapons delivery checklist and the operation appeared to be normal throughout the run-in to the target. Hooper 02 released all 12 bombs manually on Lead's command. Hooper 01 noted that his own bombs were releasing too slowly and switched off the bomb release button to terminate the sequence. Nine of the 13 bombs carried by Hooper 01 were released before the pilot terminated the strike.⁸⁸

~~(C)~~ The LORAN release data, frozen at the instant of release, were recorded by the crew and two discrepancies were noted by the investigating officer: (1) There was an unexplained disparity between true airspeed, groundspeed, and wind. True airspeed was 494 knots, groundspeed was 449 knots, but the wind velocity was only 7 knots. (2) The position of the aircraft, also frozen at release, placed the two aircraft 530 meters south of the target. The indications at release point, noted by Hooper 02 on the INS, placed the two aircraft four to five miles north of the target. After entering weapons delivery mode, normal system operation precluded further checks, and a malfunction could not have been detected.⁸⁹

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(S) A COIN (counterinsurgency) intervalometer was discovered in the lead aircraft after landing. This installation was not noted in the aircraft forms and had not been detected by the aircrew. This type of intervalometer was normally used for sensor delivery, and installation of this device resulted in a large spacing between bombs and the slow release detected by the crew of Hoofer 01. However, the undetected COIN intervalometer itself did not contribute to the short round. With a normal LORAN drop, even with this device installed, the last bomb dropped by Hoofer 01 should have impacted 450 meters short of the northernmost end of the impact pattern which caused the casualties. The incident was directly caused by a 1,700-meter LORAN system ranging error which resulted from an unknown malfunction that was not detectable by the aircrew. Even though a ranging error of this magnitude is rare, the north-south run-in heading which ignored possible system malfunctions was a contributing factor, since this heading required the aircraft to overfly the friendly position.⁹⁰

17 July 1972

(S) Upon arriving in the target area the FAC, Nail 29, was briefed by the ground commander that his position was under attack from enemy troops approximately 800 meters to the southwest. Strike aircraft were requested and Tiny 1 flight, two A-6s, arrived carrying MK-82 GP bombs. Because of the battlefield situation, the ground commander refused to mark his position. The proximity of ground forces to the target and the

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type of ordnance to be used led Nail 29 to inform the ground commander that he would have to take responsibility in case of a short round. The ground commander acknowledged and gave his approval. The target was marked by white phosphorus artillery. Tiny Lead made the first drop on a 090-degree heading. His ordnance impacted 500 meters long and resulted in the short round. The strike pilot later stated:

91

On my first pass I had stations 1 and 5 selected, multiple select on, intervalometer of .21. I intended to lay down a close stick to cover the entire target area. . . . On hearing I was too long, I banked hard left to observe my hits. I noticed an unusually long stick length. . . . On my succeeding flight [pass], I discovered a malfunction in my release system, and had suspected such from my first pass. . . .*

(C) The possibility that friendly troops did not state their position correctly, as well as their refusal to mark, probably contributed to the short round. The primary cause, however, was a malfunctioning bomb release mechanism that was beyond the control of the pilot involved.

92

20 July 1972

(C) Although the bomb release mechanism of the aircraft in the next incident checked out properly on the ground after the flight, the most probable cause of the short round was determined to be a malfunctioning bomb release. Of six bombs dropped, four hit the target and two fell 600 to 1,200 meters from the target. The aircraft involved was a USMC A-6A,

*(U) Ordnance impact pattern when stringing bombs out in a line.

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call sign Tiny 2, working with Covey 16 southeast of Quang Tri. The target was an enemy troop concentration with friendly positions located 700 meters east, 800 meters west, and 700 meters south-southwest. The run-in heading was from northwest to southeast. There was some obstruction to visibility because of smoke, but this was not a factor. The target was marked by the FAC and all ordnance dropped by Tiny flight was within 40 meters of the target, with the exception of two stray bombs dropped by Tiny 2 on his last pass. There was disagreement on the impact point of the stray bombs. The FAC and strike pilots stated that the impact point was in line with the target and previous ordnance impact locations and parallel to the run-in heading, which places the impact point southeast of the target. The ground commander reported the impact point due east of the target and some 500 to 600 meters from the position stated by the aircrews. If the impact location reported by the aircrews was correct, it would substantiate the bomb release malfunction theory. If the ground commander's statement was correct, there would be no logical explanation for the stray bomb dispersal pattern.

93

9 October 1972

(C) At approximately 2020H, Stinger 57, an AC-119, wounded four friendly troops while expending ordnance in support of TIC 25 km west of Bien Hoa. The ground commander was under attack and cleared Stinger 57 to fire in an area from 100 to 300 meters around the perimeter of his fire base. After firing a marking round and confirming that the correct

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area was being hit, Stinger 57 commenced firing both its 7.62mm and 20mm guns, using the automatic mode. The NOS operator detected some ordnance hitting inside the compound and directed a cease-fire. The ground commander confirmed this and said he had two troops wounded. However, because of the intensity of the attack, he requested the gunship to remain in the area and only to move farther out to preclude further injuries to friendlies. Stinger complied, switched to the FLIR to monitor its firing and resumed the attack. Again, ordnance impacted inside the compound, resulting in the wounding of two more friendly troops. The ground commander moved Stinger to another TIC area and no further incidents occurred on the mission. The crew stated that the 20mm gun was firing correctly, but that ordnance from the 7.62mm gun was not impacting on target. The friendly troops contributed to the incident by standing around the compound watching the gunship at work and not adequately protecting themselves.

94

No Single Primary Cause

() In most short round cases, there will be some conflicting statements made by the personnel involved. Normally, this is because of the different roles and perspectives of the various participants in an airstrike. The differences between a ground and an air view may cause the ground commander to determine the friendly position or the ordnance impact point differently from the FAC or strike pilot. The same thing could also happen between FAC and strike aircrew owing to

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dissimilar aircraft speed, altitude, and distance from the target. In some cases, the conflicting statements were so numerous and varied or the information was so sketchy that it was impossible to determine the actual cause of the incident. The incidents described in this section fall in this category. In three of the five cases discussed, there was insufficient evidence to accurately determine the primary cause. In the other two cases, statements of the personnel involved were so diverse that it was impossible to determine the events that actually led to the short round. F-4 aircraft were involved in three incidents, an A-6 in one, and an AC-130 in the other.

6 May 1972

(C) At 0011H, three F-4s, Rancho flight, under the control of the CSS facility at Pleiku, call sign Bongo, struck a target 13 nm west of Kontum. The bombs fell 3,500 meters short of the target and hit the perimeter of the Polei Kleng base camp. Rancho flight had expended on a level radar drop, single pass, heading 261 degrees, from an altitude of 20,800 feet and an airspeed of 400 knots true, as directed by the radar controller. Three days later, on 9 May, a FAC-observed CSS-directed flight was completed on a known target in the same area to establish the quality of calibration of the radar facility. This strike was on target, which rules out miscalibration of the ground radar as a possible factor. Although the reason the bombs fell short could not be determined, a contributing factor was the use of a run-in heading which

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placed the fighters closer to the friendly camp than permitted by the ROE and CSS operating procedures. A low fuel situation was another possible factor. Rancho flight arrived at the rendezvous point with 15 minutes' loiter time, but had to hold while the controlling agency decided what to do with them. After determining that the flight was not LORAN equipped, the radar strike was selected. An additional delay occurred while the radar facility set up the strike. As stated by Rancho⁹⁵ 02 and 03 strike pilots:

Bongo was not ready for us and we were told to hold. . . . They seemed to be doing everything possible to accommodate the mission within the time available. . . . We went to the rendezvous and Bongo said that they were not quite ready yet and instructed us to hold while they got the drop set up.

When the lead pilot informed Bongo they were almost out of loiter time, the strike was finally initiated. However, it is not known if the low fuel situation of Rancho flight was the cause of an improperly directed drop by the radar facility.⁹⁶

16 August 1972

(C) The target was a suspected troop concentration north of Highway 1, 1-2 km west of Kampong Trabek in the Khmer Republic. The ground commander was Hotel White Eagle (HWE), who stated that he did not have contact with all of his troops, but that they were all south of the highway and everyone north were "bad guys." Spectre 02, an AC-130, fired a marking round which was confirmed by HWE as being right on target.

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At the direction of HWE, Spectre continued to fire to the north and west with its 40mm gun and the ground commander confirmed several times that the ordnance was on target and that they should continue firing. The gunship was approaching bingo fuel (which would force the aircraft to return to base), and decided to expend 20mm ordnance. The friendly position was again confirmed to be 500 meters from the first firing location; however, after several bursts were fired, HWE requested a cease-fire because the ordnance had impacted on friendly troops. HWE gave the short round location to Spector 02 as 700 meters south and 1,500 meters east of the target which plotted out as a point north of Highway 1. However, the following morning, the ground commander reported the short round location was 800 meters south and 1,200 meters east of the target, which placed it 100 meters south of the highway. ⁹⁷

(S) All aircraft sensors were operating normally and no ordnance was detected by the aircrew as hitting south of the highway. The ground commander did not have contact with all of his troops, but confirmed that the ordnance impacted on the proper target. The 20mm ordnance was fired on the same target as the 40mm. There was no confirmed cause associated with this incident. It is possible that some of the 20mm ordnance could have gone astray. At some point beyond 10,000 feet slant range, the 20mm projectile begins to tumble and trajectory and impact point are unpredictable. The firing altitude of the gunship was 11,500 feet above ground level (AGL), which gave a slant range of approximately 13,500 feet. This is not a confirmed cause because

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Spectre 02 had fired 20mm ordnance from the same altitude in the same area the previous night with excellent results. However, the 16th SOS later published a directive which prohibited the use of 20mm ordnance⁹⁸ above 7,500 feet AGL in a TIC situation.

28 August 1972

(C) After the following incident, General John W. Vogt, Jr.,⁹⁹ Commander of 7th Air Force, told the units involved:

Although the investigation does not definitely establish the cause of the incident, the use of random attack headings could well have contributed to the short round. Even though the ground commander authorized such headings, both the FAC and strike pilots have definite responsibilities under the ROE for attack headings when friendly troops are in close proximity to the target. The FAC must determine if a restricted attack heading must be used to avoid friendly forces. . . . Similarly the strike pilot, whenever possible, will avoid over-flight of friendly troops with armament aboard.

(C) The case involved two F-4s, Kitty flight, and an O-2A FAC, Covey 21. Kitty flight was accurately expending ordnance on a target to the west of Quang Tri Citadel when it began taking 23mm AAA fire from two points north of the target. Clearance was requested and received to expend ordnance on these gun emplacements, and random run-in headings were authorized by the ground commander. Kitty Lead expended ordnance on one gun site while his wingman hit the other. Kitty 02's ordnance was not a factor in the short round. The diverse statements made by the FAC, Kitty Lead, and the ground commander rendered it impossible to determine the single primary cause of the short round,

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but the random attack heading which allowed the strike aircraft to¹⁰⁰
overfly friendly positions could have contributed to the incident.

(S) Kitty Lead stated that he expended 420 rounds of 20mm ordnance and dropped five MK-82 GP bombs on the gun site. The bomb impact location stated by Kitty Lead was in the vicinity of friendlies; however, the ground commander stated that he could account for all bombs, implying that none dropped near friendlies. Covey 21 stated he was amazed that Kitty Lead was strafing as he was expending bombs, but the 20mm ordnance was no more than 50 meters on either side of the target. After termination of the strike, several small explosions (less than one-half the size of a MK-82 bomb explosion) were noted in the vicinity of the incident. It is possible that these were caused by artillery or VNAF aircraft which had been seen in the area. The short round was initially reported by the ground commander to have occurred 30-45 minutes after termination of Kitty flight's strike but I DASC placed the time of the incident at 1600H which coincides with the time F-4s were in the area.¹⁰¹

13 January 1973

(S) Using inertial navigation IMC bombing procedures, a flight of two USN A-6A aircraft struck a target 13 nm southwest of Da Nang. Target data were received from I DASC and plotted and inserted in the lead aircraft's computer. The bomb run was made on a 90-degree heading with the Distance Measuring Equipment (DME) of both aircraft indicating the proper distance of 15 nm off Channel 77 and with the lead aircraft

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indicating the briefed radial of 207 degrees (number two aircraft's TACAN azimuth was unreliable). Lead identified the target on radar just prior to release. No weapon system discrepancies were noted and the release appeared normal in all respects from the cockpit. ¹⁰²

(C) The target request stated that the position of known friendlies was 3.5 km south, but information received by the flight indicated the friendly position to be 3.5 km southeast. In this case, it was immaterial because the friendlies reported struck were located 4 km northeast. By their instrumentation, the strike aircraft were in the prescribed spot for ordnance release. Evidence showed that ordnance exploded at approximately the same time as the strike aircraft released their bombs in an area considerably removed from the prescribed target. Owing to the position of the intended target, there was no verification of ordnance expenditure in that area. From the evidence available, it was not possible to determine a single primary cause for the short round. ¹⁰³

17 January 1973

(C) Because of conflicting reports of the personnel concerned, cause of the next short round could not be absolutely determined; however, the most probable was incoming artillery. Only one pass was made by the lead aircraft in the flight of three F-4s. Blue Jay 03, a Victor FAC (Vietnamese), was in contact with the ground commander and had briefed the strike flight on run-in heading (south to north) and the friendly position (300 meters east of the target). Blue Jay 03 marked the target,

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and Tint Lead made one pass, dropping ordnance. The strike was immediately terminated because of a suspected short round. 104

(C) The first disagreement was on location of the target. An eyewitness stated the target was marked at a point 1,100 meters west of that stated by the FAC. The strike pilots agreed with the FAC, but they had received their coordinates from him and did not carry detailed maps of their work areas. The pilot said he dropped only three bombs, which impacted on the smoke mark. The fact that only three bombs were dropped was visually confirmed by a wingman in flight. The FAC, however, stated that four bombs were dropped, three on target and one 850 meters north at the short round location. The eyewitness stated that four bombs impacted in the vicinity of FAC's mark and one 850 meters north. Since it was later confirmed that only three bombs were released, cause of the explosion 850 meters north of the target was undetermined; however, it was probably an artillery shell, and therefore not a true air-dropped short round. In addition, the FAC had directed a run-in heading of south to north. In doing so, he was either not aware of, or chose to ignore, the friendly position 1,000 meters north of the target. It was evident that the FAC and ground commander were not sufficiently coordinated in their efforts to conduct the airstrike. 105

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Miscellaneous Incidents

(C) These five incidents are labeled as miscellaneous because the primary causes do not fit into any of the categories previously mentioned. Two were caused by malfunctioning ordnance, one because the target coordinates were improperly decoded (resulting in a 30-km bombing error), one due to an aircrew procedural error, and in the other case it was not determined if a short round had actually occurred. F-4 aircraft were involved in four of the cases while A-7s were involved in two (one incident involved both an A-7 and an F-4). Of these five incidents, two could be attributed directly to human error.

23 March 1972

(C) On 23 March, Carson Lead, an F-4, made four LORAN strikes. On the first strike, Carson was a flight of two aircraft which expended CBU-24 and CBU-49 munitions against a target northeast of "Skyline Ridge" in northern Laos. On subsequent strikes, Carson Lead acted as LORAN pathfinder for other strike aircraft. After completing the second strike and while waiting for rendezvous with the third and fourth strike flights, Carson was informed by ABCCC that the first delivery of CBU munitions had resulted in a short round. Carson then queried ABCCC on the target for the next strikes and, specifically, on friendlies located in the target area. Carson was concerned with the possibility of a LORAN system malfunction and did not want to take the chance of dropping any more short rounds. ABCCC assured Carson that there were no friendlies

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in the area. With no indication of a LORAN system malfunction, the remaining two strikes were completed and no problems were encountered. 106

~~(S)~~ After landing, the aircraft was impounded and all systems were checked. Maintenance analysis revealed all LORAN systems to have functioned within prescribed limits. No discrepancies were found in any related system which could have caused a premature release signal. The aircraft was then test flown in a flight with another LORAN equipped aircraft. Three simulated LORAN deliveries were accomplished, and each resulted in simultaneous releases. Post-release LORAN computer data from both aircraft were almost identical. Investigation of aircrew procedures showed that they fully complied with all LORAN weapon delivery procedures. Their pre-release computations were found to be accurate and post release data obtained from the LORAN computer were all within the parameters of the selected weapons delivery. The investigating officer concluded that probable cause of the incident was malfunctioning of one or more CBU canisters. This was substantiated by the fact that two short rounds involving CBU had been reported approximately five minutes apart. Since there had been only one strike using CBU munitions, only one short round occurred and the second incident was actually a continued detonation from the first expenditure of CBU. 107

1 May 1972

~~(S)~~ The next short round was caused by a malfunction in the fusing of a CBU-24 canister. As a consequence, the canister opened prematurely

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and created a wider dispersal of CBU munitions that caused them to drop short of the intended target. The target was described as a troop concentration and mortar position 2 km southwest of An Loc. Friendly positions were established at 1,000 meters northeast. Iceman flight, two F-4s, had been orbiting the area awaiting clearance for the strike from the ground commander. Iceman then reached bingo fuel and was preparing to depart when Chico 35, the airborne FAC, informed them that clearance was received. Since the flight had already been briefed on the strike, the FAC was able to put them quickly on the target. 108

(C) Each F-4 carried six MK-82 bombs and four CBU-24 canisters; they were set up to drop all ordnance on one pass. Run-in heading was from north to south as directed by the ground commander. Flares and smoke rockets were used to mark the target. Iceman 02 was cleared and instructed to drop 100 meters west of his leader's bomb impact point. After Iceman 02 expended, his bombs were observed impacting in the target area along with some of the CBU-24s. CBU munitions were also observed exploding approximately 2,500 meters north in the northwest corner of the city. The run-in heading insisted on by the ground commander was a contributing cause since this resulted in the strike aircraft overflying the western perimeter of the An Loc city area. No mention was made in any report for the necessity of this north-south run-in approach. Ground commanders, FACs, and strike pilots must remain aware of the undesirable characteristics of CBU ordnance when used in

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[REDACTED]

proximity to ground troops and take every precaution to ensure that attacks are made in a manner that will not endanger friendly forces. Premature opening of CBU canisters could result in impacts up to 4 km short of target, depending on mode of delivery, because of malfunction-
109
ing fuses or by collision of weapons at release.

15 September 1972

(C) Although the following incident was not a confirmed short round, it shows some of the problems associated with an airstrike during a TIC situation. The strike aircraft was a USN A-7, call sign Barn Owl 414, controlled by Covey 100, an airborne FAC. The target was a known enemy location inside the citadel at Quang Tri. Friendly positions were located on three sides of the target, 400 meters northeast, 400 meters east, 300 meters south, and 400 meters south-southeast, which required the run-in heading to overfly a friendly position. Because of this, Covey 100 informed the ground commander that he would have to accept responsibility for short rounds, which he did. Run-in heading was established as 250 degrees, and although there was a discrepancy in the FAC's and strike pilot's statements as to the briefed heading, all personnel agreed that a 250-degree heading was actually
110
used.

(C) The target was marked with a smoke rocket by the FAC and acknowledged by both ground commander and strike pilot. By the time the A-7 rolled in for the strike the marking smoke had dissipated, but

[REDACTED]

the target was confirmed by the pilot as being the northwest quadrant of the citadel. The FAC stated that the bomb hit the southwest wall while Barn Owl 414 claimed it struck the northwest wall. There is the possibility that there was a problem with orientation between FAC and strike pilot. The FAC said his marking smoke hit the west wall, while the strike pilot said it hit the north wall. Both statements concerning the marking smoke and bomb impact location indicate that the strike pilot was misaligned 90 degrees as to the layout of the citadel, as seen by the FAC. There had been artillery firing in the area and it is possible that a 130mm shell impacted at the same time that Lead's bomb should have detonated, causing the apparent short round. Although this fact could not be confirmed, it is a likely cause since the remaining five bombs carried by Barn Owl 414 were dropped on another target, and they were all duds. It is possible that the first bomb may also have been a dud. From the information available, it could not be determined if a short round did in fact occur.

28 November 1972

[REDACTED] The target was a VC concentration and was requested by the Quang Tin province headquarters. The target request indicated that friendlies were located 3 km southeast of the target, and valid time of the target was from 250800H to 282400H November 1972. The target request was called in by radio and telephone in code but was incorrectly decoded at G-3 Air, I Corps, ARVN headquarters. Target coordinates were checked,

[REDACTED]

approved, and forwarded through channels. I DASC reviewed the target request for run-in heading and friendly distances to assure that proper criteria were met for these factors. In this case, however, run-in heading and location of friendlies were immaterial because incorrect target coordinates were being used.

(C) The target, friendlies, and run-in heading were passed to Cash, an F-4 LORAN pathfinder. Cash, with a flight of two USN F-4s and another flight of four USN A-7s, struck the target which had been passed to him. The bombs fell 500 meters east and 200 meters north of the target coordinates, which is within the allowable LORAN system error; however, this impact point was 500 meters east and 30 kilometers north of the target originally requested by the Quang Tin province headquarters, resulting in 21 killed and 29 wounded. The strike aircraft followed all proper procedures and struck the target that was passed to them. The incident occurred because an error was made by the ARVN in decoding the original target request and the error was not discovered by methods used to recheck and validate the target. Additional methods of rechecking and validating target requests were immediately implemented after this gross error.

8 January 1973

(C) Because of a procedural error on the part of the aircrew, a flight of F-4s, call sign Junior, inadvertently released 34 Mark-82 five-hundred-pound bombs directly on Da Nang Air Base. Fortunately,

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the damage was relatively light, considering the number of bombs dropped. The first bomb struck a fuel storage area, destroying three 10,000-barrel-capacity fuel storage tanks. The remainder fell in an open field, and the only damage incurred was from flying debris which lightly damaged eleven parked aircraft and injured 16 persons, with only one requiring hospitalization. Junior flight was scheduled for a LORAN strike and the Da Nang coordinates had been set in the target number two position, to be used for the rendezvous. The actual target coordinates were set in the number three position. The aircrew failed to select the number three position prior to making the bomb run, which resulted in the computer identifying Da Nang as the actual target. The LORAN checklist specifically requires rechecking the selected target prior to making the bomb run; therefore,¹¹⁴ primary cause of the incident was aircrew procedural error.

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III. SHORT ROUNDS, MARCH 1973 - AUGUST 1973

(S) Between March and August 1973, eleven confirmed short rounds occurred. There were six primary causes associated with this group of incidents, with the most prevalent being unknown friendlies in the target area and poor judgment by the aircrews (FAC and/or strike pilots) or the ground commander. Both of these factors resulted in three short rounds each. Enemy communications intrusion was the primary cause in two incidents. Although this factor had been suspected in previous incidents, it was never positively identified as the primary cause of a short round. In one of the cases, the enemy simply broke into the frequency being used by the FAC and ground commander, and with the use of a captured authentication device directed an airstrike against the friendly position. In the other case, the ground commander allowed enemy interference to induce him into passing a 300-meter bombing correction to the FAC--which happened to be toward his own position.

(S) One other primary cause, which had not appeared before, was a simple administrative error. A person transferring precoded target coordinates read "V" and wrote down "W." This resulted in bombs dropped miles away from the intended target. Six of the incidents involved an F-4, two each involved an A-7 and a F-111, and one was the result of a B-52 strike, in which there were over 300 casualties.

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30 April 1973

() The primary cause of this incident was a judgment error on the part of the FAC and strike pilot. Two A-7s, Jell flight, were under the control of Nail 66 while supporting friendly forces in contact with the enemy. Weather in the target area was scattered to broken, with the cloud deck extending from 6,000 to 12,000 feet and declared by the FAC to be marginal for conducting an airstrike. Nail 66 marked the target and directed Jell Lead to hit his mark. One pass was made by Jell Lead, with his bomb impacting 300 meters south of the intended target. The ground commander stopped the strike after the first pass and informed Nail 66 of a possible short round. Nail 66 then informed Jell flight that the target was unworkable because of weather and the A-7s expended their remaining ordnance on another target. 115

() Jell flight was not informed of the short round until it returned to base. Investigation revealed that after the initial target briefing, a new target had been marked but the distance from this target to the friendly position was not mentioned. Jell Lead acquired the mark, lost sight of it because of clouds, and rolled in on his bomb run before he reacquired the target. His run-in heading was approximately 30 degrees off from the briefed strike heading, and he overflew the friendly position. Both the FAC and lead strike pilot exercised questionable judgment by deciding to conduct the airstrike in weather conditions which made it difficult to acquire friendly and target positions, maintain

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orientation with respect to the target, and accomplish the briefed run-in heading. There was a lack of emphasis by both parties in determining the friendly position relative to the intended target.¹¹⁶

1 June 1973

(c) At 2355G, 7AF TACC received word that friendly troops on Route 5, 10 km south of Kampong Chhnang, Khmer Republic, were struck by a fighter aircraft at 2245 hours. TACC determined that no fighters were in the area at that time; however, an F-111, call sign Cane, struck a target in the area with a time over target of 2234 hours. Cane flight had been issued a 7AF fragged target, executed its mission as directed, and hit within 30 meters of the aim point. All equipment on the F-111 was in good working order, with the target being identified by both beacon and radar.¹¹⁷

(c) Investigation of the target coordinates revealed the error which led to the short round. The fragged target was in an area cleared for F-111 and B-52 radar bombing, and had been validated by approved procedures. The requested coordinates had been forwarded by USSAG/7AF Intelligence Targets Division (INTS) to B-52 Operations Division (DOB), where they were transposed into a new format for transmission to the U.S. Defense Attache Office (USDAO) at the American Embassy in Phnom Penh. When the coordinates were transposed at DOB, the UTM sector designator letters, VU (VICTOR UNIFORM), were incorrectly copied as WU (WHISKEY UNIFORM). These targets were also identified by a master

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target number assigned to INTS. This target, KILO HOTEL 60869, was presented to FANK (Forces Armees Nationales Khmeres) for validation with WU instead of VU coordinates and was approved for the strike. When INTS received the approval message from USDAO, they noted KILO HOTEL 60869 had been approved, and forwarded the coordinates VU65864188 from their original target card to the Frag Order Branch. This resulted in the strike at the VU coordinates instead of the validated WU coordinates. 118

(c) The faulty transfer of target coordinates from the INTS data card to the DOB data card for relay to USDAO was the primary cause. Contributing were inadequate procedures for cross-checking the accuracy of transferred data in DOB and failure of INTS personnel to confirm approved target coordinates with coordinates on the original request. Both agencies subsequently modified their request procedures and information formats to require less transcription of data and more stringent controls and checking procedures when data transfers were required. Moreover, coordinate letter designators would appear as complete phonetic words (e.g., VICTOR UNIFORM instead of VU) on all future target documents, 119 to lessen chances of error.

2 June 1973

(c) Nail 66 (OV-10 FAC) relayed a request from a FANK ground commander for an air strike in support of a troops-in-contact/attack-by-fire (TIC/ABF) situation. ABCCC approved the request with the stipulation that the ground commander would assume responsibility for short

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rounds because the distance between the target and friendly position was less than the minimum safe distance for the ordnance to be expended. The ground commander concurred. Nail 66 marked the target and Rustic 16 was cleared to strike the target with a west to east run-in specified by the FAC. Rustic Lead dropped CBUs which impacted south and west of the target. The wingman dropped hard bombs which impacted on the target. The strike was completed before the report of a possible short round was received.¹²⁰

(✓) The casualties resulted from CBU munitions and was caused by expending ordnance within the minimum safe distance of friendlies. Although the FAC was primarily responsible for directing the air strike, the ground commander had accepted responsibility for short rounds. According to the ROE, however, the FAC still had the option of refusing the air strike if he felt the risks were too great or the ordnance was inappropriate. Since CBU are not normally used in a TIC situation, the FAC's decision to expend contributed to the incident.¹²¹

14 June 1973

(✓) Nail 06 was working in support of TIC with Hotel Takeo, a ground commander. The latter assumed responsibility for short rounds and Nail 06 expended one flight on the target without incident. Duffel flight, two F-4s, then arrived on station and after a normal target briefing, Nail 06 directed another strike. Duffel flight made one pass. Hotel Takeo requested an ordnance displacement of 100 meters north and

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the FAC complied. After some communications confusion, another ordnance displacement toward friendly positions was requested. Before complying, however, Nail 06 requested authentication of the request on an AKAC 855 decoding device, and it was received. The FAC marked the new target, but farther from friendly positions than requested and completed the strike. At this time, Nail 06 learned that a short round had occurred. Hotel Takeo was unable to reach Nail 06 by radio and contacted the DASC, requesting that they relay through ABCCC to Nail 06 that he was talking to the enemy, and to stop bombing. The short round occurred because of enemy communications intrusion, compounded by his use of a captured AKAC 855 to provide authentication.

15 July 1973

17 The ground commander, Hotel Emino, was using air strikes being put in by Nail 75 to soften up the enemy before launching a ground attack. He was receiving ABF, and because of the proximity of the enemy to friendly positions, had assumed responsibility for short rounds to get air support. Nail 75 sent in four separate strikes and informed Hotel Emino that another strike flight was inbound, and he could attack at the completion of the next strike. Snap flight arrived on station and was briefed on the target, friendly positions (closest was 400 meters south),
123
and an attack heading of 280 degrees.

17 The target was a tree line running east to west. The FAC marked the east end of the tree line with WP rockets and directed Snap 01 to hit

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in the tree line west of the mark. Snap 01 made four passes with all bombs impacting in the target area. Snap 02 made two passes with all of his bombs being dropped on the second pass. These bombs hit 200 meters south and slightly short of target. Snap 01 then made two strafing passes. Snap 02 made one strafing pass. During Lead's second strafe pass, however, Hotel Emينو told the FAC to cease firing because the bombs had wounded friendlies.¹²⁴

~~(S)~~ The ground commander had previously stated that his troops were protected. If so, even with the 200-meter bombing error by the strike pilot, the friendlies would have been outside the lethal fragmentation pattern of the ordnance. Although the bombing error was a contributing cause, the primary factor was friendly troops at a position other than as stated by the ground commander. Apparently, when Hotel Emينو cleared the last air strike, his ground forces did not realize another flight was inbound and had moved forward. This move put them well inside the lethal pattern of MK-82 bombs.¹²⁵

17 July 1973

~~(S)~~ This incident involved two A-7s (Vapor flight), an OV-10 FAC (Nail 23), and the forward air guide (Hotel Airborne 04). The on-scene commander was relaying bomb corrections to the ground commander who in turn was shouting them across a distance of about 10 feet to Hotel Airborne 04. These corrections were then passed to the FAC. Enemy communications interference, according to the ground commander, caused

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him to mistakenly pass a bomb correction to drop the next one 300 meters east of the last. Hotel Airborne relayed this correction. The drop was accurate, and friendly troops were wounded. The ground commander accepted full responsibility for this incident. ¹²⁶

27 July 1973

(C) The next incident occurred during a strike by two F-4s under the control of Nail 01, and OV-10 FAC. Injuries were incurred when personnel attached to another ground unit got out of their vehicle to watch the airstrike and were hit by flying debris. Although there was mention of the enemy using marking smoke to confuse the FAC and strike pilots, the fact that friendlies were in an area unknown to the ground commander was the primary cause. ¹²⁷

29 July 1973

(C) Clammy flight, two F-4s, launched for a fragged strike mission in the Khmer Republic against a known enemy location. Approaching the site, they contacted Nail 73, an OV-10 FAC, and received a complete target briefing. Prior to arrival of Clammy flight, Nail 73 asked the ground commander to mark his position. Red smoke was observed approximately 200 meters west of the target, followed by a green smoke signal approximately 1,000 meters west of the target. Both smokes were observed and acknowledged. Just before the strike, the ground commander stated that friendly positions were again being marked and Nail 73

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observed purple smoke in the same position as the previous green smoke. The ground commander confirmed that this was the friendly position. Clammy flight arrived on station and Nail 73 briefed them on the location of friendlies.
128

(c) The target was marked with a WP rocket. The ground commander gave a 50- to 100-meter south correction, and Clammy lead dropped three bombs which impacted 50-100 meters north of the target. Clammy two was given a 100-meter correction to the south and slightly west, and he dropped his bombs on this location. Lead was told to hit the western edge of 02's bombs, and he dropped three bombs about 50 meters west of the designated point. At this time the ground commander called a cease-fire and Clammy flight was instructed to hold dry. Because of total confusion on the ground commander's radio frequency, Nail 73 told Clammy flight to save their bombs and return to base, and advised them of a possible short round.
129

(c) The FAC was finally able to calm the ground commander enough to determine that Clammy Lead's last bombs impacted within 20 meters of a friendly command post. Nail 73 requested clarification on the previously smoked friendly positions because the red smoke had been 150 meters west of the command post. The ground commander was confused as to the exact coordinates of the command post since the ones reported plotted east of the target, when it was actually west. He also claimed the red smoke had been popped by the enemy. The primary cause of the incident was the location of unknown friendlies in the target area.
130

Enemy deception was a contributing factor.

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30 July 1973

7 This incident occurred when a CBU-58 canister failed to open properly and impacted 1,000 meters short of the intended target. Togo flight, two F-4s, was fragged for a strike mission in the Khmer Republic with an OV-10 FAC, Nail 59. The target was a known enemy location and troop concentration and no friendlies were reported to be within 1,500 meters of the target. The strike aircraft were to make one pass on the target on a heading of southwest to northeast because of weather and a low fuel state. All ordnance except the one CBU canister dropped by Togo 02 had normal ballistic trajectories and impacted in the target area. The most probable cause of the short round was a malfunction in the fuse of the tumbling container. A contributing factor in the incident was the lack of coordination and communication between adjacent commanders. The ground commander conducting the airstrike had no knowledge of the other friendly position, resulting in the overflight during the bombing pass. ¹³¹

6 August 1973

(U) The most serious incident, in terms of casualties (20 killed and 300 injured), occurred when a B-52 accidentally bombed the town of Neak-luong in the Khmer Republic. The accident happened because the radar navigator failed to select the offset mode on the bombing navigation computer. This resulted in ordnance impacting on the beacon itself (rather than the offset point), which was approximately 7 1/2 miles away

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from the intended target. The primary cause was attributed to aircrew
132
error.

7 August 1973

(S) At 0615G, an F-111, call sign Snug, expended ordnance on a
fraggd target two kilometers west of Phumi Banam, Khmer Republic.
Pre-flight planning was accurate and in-flight execution was competent
and in accordance with checklist procedures. Nothing occurred through-
out the bomb run to raise any doubts as to the accuracy of delivery and
bomb release. However, the bombs impacted some 2,200 feet left of the
desired aim point, resulting in casualties and minor property damage.
The crew observed the impact and reported the error upon return to the
133
home base.

(S) Interpretation of post-flight reconnaissance photos confirmed
the bombing error. A local area operational system check flight re-
vealed a definite tracking error. Following the check flight, individual
bombing-navigation system components were bench-checked. A bore-sighting
error of approximately four degrees was discovered in the attack radar
antenna. This error was the result of a loose setscrew in the radar
antenna mechanism. After correcting this discrepancy, the aircraft was
given a second operational check flight. The same parameters were used
and no tracking errors could be detected. Although the primary cause
was determined to be an aircraft system malfunction caused by materiel
failure, it could also be labeled as human error. The failure of the

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five-cent setscrew resulted because it was cross-threaded upon installa-
tion by maintenance personnel.

134

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APPENDIX

Chronology of Short Rounds, Jan 72 - Aug 73

<u>Date/Time Group</u>	<u>Service</u>	<u>Strike Acft</u>	<u>Ordnance</u>	<u>Casualties KBA/WBA</u>	<u>Probable Primary Cause</u>
251240H Feb 72	USAF	A-37	MK-81/82	0/7	Target ident.
230733G Mar 72	USAF	F-4	CBU-24/49	2/3	Ordnance malfunc.
031410H Apr 72	USN	A-7	MK-82	2/19	Unknown friendlies
101410H Apr 72	USAF	F-4	MK-82	3/10	Unknown friendlies
171850H Apr 72	USN	F-4	MK-82	2/17	Target ident.
182045H Apr 72	USN	A-6/7	MK-82	0/8	Unknown friendlies
221920H Apr 72	USAF	AC-119	7.62/20mm	0/6	Aircrew judgment
270218H Apr 72	USAF	AC-119	20mm	1/0	Unknown friendlies
012200H May 72	USAF	F-4	CBU-24	0/6	Ordnance malfunc.
060011H May 72	USAF	F-4	MK-82	0/15	No single cause
130931H May 72	USAF	F-4	MK-82	7/5	Inaccurate drop
170345H May 72	USAF	F-4	MK-82	0/6	Aircraft malfunc.
262028H May 72	USAF	F-4	MK-82	5/15	Inaccurate drop
300230H May 72	USAF	AC-119	20mm	0/2	Aircrew judgment
011422H Jun 72	USMC	A-4	MK-82	0/3	Unknown friendlies
041435H Jun 72	USMC	A-4	MK-82	3/15	Target ident.
061000H Jun 72	USMC or USN	F-4 or A-7	MK-82	2/2	Aircrew judgment
090030H Jun 72	USAF	F-4	MK-82	10/19	Aircraft malfunc.
132025H Jun 72	USAF	AC-119	7.62/20mm	1/20	Aircrew judgment

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<u>Date/Time Group</u>	<u>Service</u>	<u>Strike Acft</u>	<u>Ordnance</u>	<u>Casualties KBA/WBA</u>	<u>Probable Primary Cause</u>
222055H Jun 72	USAF	AC-119	20mm	0/19	Unknown friendlies
012010H Jul 72	USAF	F-4	MK-82/84	9/0	Aircrew judgment
040740H Jul 72	USMC	F-4	MK-82	11/30	Aircrew judgment
071853H Jul 72	USAF	F-4	MK-82	6/6	Unknown friendlies
082030G Jul 72	USAF	AC-119	20mm	0/8	Aircrew judgment
120850H Jul 72	USMC	A-6	MK-82	1/2	Unknown friendlies
121235H Jul 72	USAF	F-4	MK-82	4/1	Unknown friendlies
170700H Jul 72	USAF	F-4	MK-82	0/4	Target ident.
170740H Jul 72	USMC	A-6	MK-82	0/1	Aircraft malfunc.
181500H Jul 72	USN	F-4	MK-82	2/18 5 MIA	Inaccurate drop
201745H Jul 72	USMC	A-6	MK-82	1/1	Aircraft malfunc.
212223G Jul 72	USAF	AC-130	40mm	0/0	Aircrew judgment
281520H Jul 72	USN	A-4	MK-82	8/25	Unknown friendlies
042010H Aug 72	USAF	AC-119	20mm	0/5	Target ident.
162140G Aug 72	USAF	AC-130	20mm	1/4	No single cause
212135H Aug 72	USAF	F-4	CBU-24	1/12 1 MIA	Target ident.
241220H Aug 72	USMC	A-4	MK-82	1/1	Unknown friendlies
260820H Aug 72	USAF	F-4	MK-82	0/4	Inaccurate drop
281600H Aug 72	USAF	F-4	MK-82/20mm	1/12	No single cause
050835H Sep 72	USMC	A-4	MK-82	8/4	Unknown friendlies
061805H Sep 72	USN	F-4	MK-82	0/4	Inaccurate drop

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<u>Date/Time Group</u>	<u>Service</u>	<u>Strike Acft</u>	<u>Ordnance</u>	<u>Casualties KBA/WBA</u>	<u>Probable Primary Cause</u>
090820H Sep 72	USAF	A-37	MK-82	1/1	Unknown friendlies
140650H Sep 72	USMC	A-4	MK-82	1/2	Unknown friendlies
150720H Sep 72	USN	A-7	MK-82	2/2	Unconfirmed
281900H Sep 72	USAF	F-4	MK-82	1/7	Aircrew judgment
092020H Oct 72	USAF	AC-119	7.62/20mm	0/4	Aircraft malfunc.
110243H Oct 72	USAF	AC-130	40mm	0/3	Unknown friendlies
191043H Oct 72	VNAF	A-37	MK-81/82	3/6	Unknown friendlies
211525H Oct 72	USMC	A-4	MK-82/83	3/17	Unknown friendlies
021214H Nov 72	USAF	F-4	MK-82	0/3	Unknown friendlies
281220H Nov 72	USAF USN	F-4 F-4/A-7	MK-82	21/29	Coordinate error
252200H Dec 72	USAF	AC-119	7.62/22mm	0/5	Unknown friendlies
080818H Jan 73	USAF USMC USN	F-4 F-4 A-7	MK-82	0/16	Procedural error
131130H Jan 73	USN	A-6	Bombs	1/10	No single cause
170845H Jan 73	USAF	F-4	MK-82	1/4	No single cause
230850H Jan 73	USN	F-4	MK-82	0/8	Aircrew judgment
310400H Jan 73	USAF	AC-130	20/40mm	1/6	Unknown friendlies
020343G Feb 73	USAF	AC-130	105mm	0/0	Aircrew judgment
172000G Feb 73	USAF	F-111	MK-82	Unk.	Unknown friendlies
301030G Apr 73	USAF	A-7	MK-82	0/2	Aircrew judgment
012245G Jun 73	USAF	F-111	MK-82	1/11	Coordinate error
020800G Jun 73	USMC	F-4	CBU-20	0/3	Ground judgment

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<u>Date/Time Group</u>	<u>Service</u>	<u>Strike Acft</u>	<u>Ordnance</u>	<u>Casualties KBA/WBA</u>	<u>Probable Primary Cause</u>
141430G Jun 73	USAF	F-4	MK-82/CBU	0/4	Commo. intrusion
150845G Jul 73	USAF	F-4	MK-82	0/15	Unknown friendlies
171600G Jul 73	USAF	A-7	MK-82	0/35	Commo. intrusion
271500G Jul 73	Unk.	F-4	Bombs	0/1	Unknown friendlies
291730G Jul 73	USAF	F-4	MK-82	1/19	Unknown friendlies
301045G Jul 73	USAF	F-4	CBU-58	0/16	Ordnance malfunction.
060455G Aug 73	USAF	B-52	MK-82	20/300	Procedural error
070615G Aug 73	USAF	F-111	MK-82	4/13	Aircraft malfunction.

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NOTES

1. CHECO Report (C-NOFORN-GDS-80), Short Rounds, January 1971 - December 1971 (U), 15 Jul 72, p x (material used is unclassified).
2. Msg (C-GDS-78), AmEmb Vientiane to SecState, subj: Press Queries Re USAF Incident at Khong Island (U), 140935Z Aug 72 (CHECO microfilm roll (CMR) S-767, odometer 126).
3. Msg (U), 7AF to AIG 789, subj: Emergency Change to 7AFM 55-1, 080430Z Sep 72 (CMR S-767, 127).
4. Ltr (C-GDS-80), 7AF/DOCC to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 13 May 1972 (U), N.D., with 2 atch: TacAir Spt Div/III Corps ltr 19 May 72; 7AF/DO msg 260725Z Jun 72. Ltr (C-GDS-80), Maj G.B. Nunez to 7AF/EO, subj: Inquiry Concerning Short Round Incident Which Occurred on 13 May 1972 in the An Loc Area, RVN (U), 9 Jul 72 (CMR S-767, 048).
5. Ibid.
6. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round (U), 1 Jun 72, with 2 atch: TacAir Spt Div/III Corps ltr 30 May 72; 7AF/DOC msg 311105Z May 72 (CMR S-767, 048-058).
7. Ibid.
8. Ltr (C-GDS-80), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), 16 Aug 72, with 2 atch: 505 TCG/I DASC ltr 27 Jul 72; CTG 77.6 msg 191007Z Jul 72 (CMR S-767, 118-122).
9. Ibid.
10. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 2 atch: 505 TCG/I DASC ltr 31 Aug 72; 7AF msg 071036Z Sep 72 (CMR S-767, 144-146).
11. Statement (C-GDS-78), Plebe 01 AC, 26 Aug 72 (CMR S-767, 145).
12. Staff Summary Sheet (C-GDS-80), 7AF/DO-221, subj: Short Round Investigation, 6 September 1972 (U), 3 Oct 72, with 3 atch: 7AF/CC proposed msg N.D.; 505 TCG (I DASC) ltr 19 Sep 72; CTG 77.6 msg 070131Z Sep 72 (CMR S-767, 154-157).
13. Ibid.

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14. Ltr (C-GDS-78), 505 TCG/I DASC to COMUSMACV/DOCC, subj: Short Round Preliminary Investigation (U), 10 Jul 72 (CMR S-767, 089).

15. Ltr (C-GDS-78), 7AF/DOC to Hq USAF/XOOG, CINCPACAF/DOC & COMUSMACV/COC, subj: Short Round, 22 Apr 72 (U), with 2 atch: TacAir Spt Div/III Corps ltr 25 Apr 72; 7AF msg 150030Z May 72 (CMR S-767, 025-029).

16. Ibid.

17. Ibid.

18. Ltr (C-GDS-78), TacAir Spt Div/III Corps to 7AF/DOCC, subj: Short Round Incident (22 Apr 72, Stinger 45) (U), 25 Apr 72 (CMR S-767, 027).

19. Msg (C-GDS-78), 7AF to 7/13AF, 8 TFW, et al., subj: Short Rounds (U), 150030Z May 72 (CMR S-767, 029).

20. Staff Summary Sheet (C-GDS-78), 7AF/DO-221, subj: Short Round, 30 May 72 (U), 15 Jul 72, with 2 atch: 7AF/DO ltr 29 Jun 72; 7AF msg 230701Z Jul 72 (CMR S-767, 061).

21. Ibid.

22. Ltr (C-GDS-80), MACDR-RGR to CG DRAC, subj: Report of Investigation Concerning Alleged Accidental Delivery of Ordnance on Vietnamese Civilians, 6 Jun 72 (U), 15 Jun 72. Statements (C-GDS-80), Det 3, 619 TCS/CC, 10 Jun 72; VMA-311, MAG-12, 1 MAW, 12 Jun 72. Msg (C-GDS-80), 7AF to IV DASC, et al., subj: Suspected Short Round, 6 Jun 72 (U), 010755Z Jun 72 (CMR TS-149, 098-101).

23. Ibid.

24. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 2 atch: IDASC/Hue Citadel ltr 19 Jun 72; 7AF msg 091040Z Jul 72 (CMR S-767, 074-080).

25. Ibid.

26. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 3 atch: 7AF msg 301136Z Jul 72; 497 TFS ltr 12 Jul 72; DASC/III Corps ltr 15 Jul 72 (CMR S-767, 081-088).

27. Ibid.

28. Ibid.

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29. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 2 atch: 505 TCG/I DASC ltr 10 Jul 72; 7AF msg 301137Z Jul 72 (CMR S-767, 088-092).

30. Ibid.

31. Ibid.

32. Ibid.

33. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 2 atch: 7AF/CC msg 311130Z Aug 72; 18 SOS ltr 11 Aug 72 (CMR S-767, 093-100).

34. Staff Summary Sheet (C-GDS-78), 7AF/DO-221, subj: AC-130 Gunship Incident at Khong Island (U), 28 Aug 72, with 2 atch: 7AF msg 281535Z Aug 72; CINCPACAF msg 260417Z Aug 72 (CMR S-767, 127-129).

35. Ibid.

36. Msg (C-GDS-78), 7AF to 388 TFW/CC & 20 TASS/CC, subj: Short Round Investigation, 28 Sep 72 (U), 290346Z Oct 72 (CMR S-767, 179).

37. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 28 Sep 72 (U), 1 Nov 72, with 2 atch: 505 TCG/I DASC ltr 14 Oct 72; 7AF msg 290246Z Oct 72 (CMR S-767, 182).

38. Ibid.

39. Ltr (C-GDS-81), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 23 Jan 73 (U), 18 Feb 73, with 2 atch: 505 TCG/I DASC 28 Jan 73; 7AF/CC msg 121015Z Feb 73 (CMR TS-213, 046-047).

40. Ibid.

41. 7AF OPORD 71-17 (C-GDS-77), 7AF/DOCC, 6 Dec 71, p I-11, 5.g. (CMR S-729, 098).

42. Ltr (C-GDS-81), 16 SOS/DO to 7AF/DOCC, subj: Short Round Preliminary Investigation (U), 5 Feb 73, with 5 atch: chart; AC statement; Instructor-Navigator statement; Student-Navigator statement; ACM statement (CMR TS-213, 041-044).

43. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 4 atch: 7AF/DOCC ltr 21 Mar 72; Judge Advocate statement, N.D.; 21 TASS ltr 27 Feb 72; DASC/III Corps ltr 28 Feb 72 (CMR S-767, 001-005).

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44. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 4 atch: 7AF/DOCC ltr 21 Mar 72; Judge Advocate statement, N.D.; 21 TASS ltr 27 Feb 72; DASC/III Corps ltr 28 Feb 72 (CMR S-767, 001-005).

45. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round (U), 24 May 72, with 2 atch: II DASC ltr 19 May 72; 7AF msg 011115Z Jun 72 (CMR S-767, 020-022).

46. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 4 atch: TacAir Spt Div/III Corps ltr 9 Jun 72; 7AF msg 090845Z Jun 72; 7AF msg 111030Z Jun 72; 7AF msg 180930Z Jun 72 (CMR S-767, 063-067).

47. Ibid.

48. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 2 atch: 505 TCG/I DASC ltr 26 Jul 72; 7AF/CC msg 191145Z Aug 72 (CMR S-767, 108-113).

49. Ibid.

50. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 2 atch: Hq 7AF msg 241200Z Sep 72; 505 TCG/I DASC ltr 9 Sep 72 (CMR S-767, 132-135).

51. Ibid.

52. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 3 atch: 505 TCG/I DASC ltr 30 Aug 72; 7AF msg 071035Z Sep 72; 7AF msg 260655Z Sep 72 (CMR S-767, 138-142).

53. Ibid.

54. Ibid.

55. Ltr (C-GDS-78), DASC/III Corps to 7AF/DOCC, subj: Short Round Preliminary Investigation (U), 13 Apr 72 (CMR S-767, 014).

56. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round Incident (U), 12 Apr 72, with 6 atch: TacAir Spt Div ltr 7 Apr 72; TACC Duty Officers' Short Round Notification Checklist, 3 Apr 72; TACC Duty Officers' Daily Report extract 3 Apr 72; MACV COC Journal extract 3 Apr 72; I DASC initial rpt 031435Z Apr 72; I DASC msg 032030Z Apr 72 (CMR S-767, 011-013).

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57. Staff Summary Sheet (C-GDS-80), 7AF/DOCC, subj: Short Round (U), 19 Apr 72, with 2 atch: DASC/III Corps ltr 13 Apr 72; 7AF/SE ltr 12 Apr 72 (CMR S-767, 013-019).

58. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round Investigation (U), 5 May 72, with 2 atch: I TacAir Spt Div ltr 22 Apr 72; TacAir Spt Div ltr 29 Apr 72 (CMR S-767, 022-025).

59. Ibid.

60. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round (U), 8 May 72, with 1 atch: TacAir Spt Div ltr 30 Apr 72 (CMR S-767, 025-030).

61. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round, 1 Jun 72 (U), 8 Jun 72, with 1 atch: TacAir Spt Div/III Corps ltr 6 Jun 72 (CMR S-767, 061-063).

62. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 1 atch: III DASC ltr 8 Jul 72 (CMR S-767, 077-080).

63. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), 28 Jul 72, with 2 atch: II DASC ltr 17 Jul 72; 366 TFW msg 071430Z Jul 72 (CMR S-767, 092-095).

64. Ltr (C-GDS-78), 7AF/DO to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 1 atch: 505 TCG/I DASC ltr 26 Jul 72 (CMR S-767, 100-104).

65. Ltr (C-GDS-80), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), 25 Jul 72, with 3 atch: 7AF/DO-6 ltr 15 Jul 72; FAC statement and map; 7AF/DO-22 ltr, N.D. (CMR S-767, 104-108).

66. Ibid.

67. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 4 atch: 505 TCG/I DASC ltr 8 Sep 72; Hq 7AF msg 211309Z Sep 72; Navy strike pilots' statements 28 Aug 72; I DASC Citadel msg 282130Z Jul 72 (CMR S-767, 127-132).

68. Ibid.

69. Ibid.

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70. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 1 atch: TacAir Spt Ctr/III DASC ltr 11 Sep 72 (CMR S-767, 142-144).

71. Ibid.

72. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 5 Sep 72 (U), N.D., with 2 atch: Director/IV DASC ltr 28 Sep 72; 21 TASS ltr 10 Oct 72 (CMR S-767, 150-154).

73. Ibid.

74. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 9 Sep 72 (U), N.D., with 1 atch: TacAir Spt Div/III Corps ltr 14 Sep 72 (CMR S-767, 157-160).

75. Ibid.

76. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 13 Sep 72 (U), N.D., with 1 atch: TacAir Spt Div/III Corps ltr 27 Sep 72 (CMR S-767, 160-163).

77. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round Investigation, 11 Oct 72 (U), N.D., with 1 atch: TacAir Spt Div ltr, N.D. (CMR TS-191, 071-073).

78. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 19 Oct 72 (U), N.D., with 1 atch: 505 TCG/I DASC ltr 26 Oct 72 (CMR S-767, 180-184).

79. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round Investigation, 21 Oct 72 (U), N.D., with 1 atch: TacAir Spt Div ltr 16 Nov 72 (CMR S-767, 188-190).

80. Ibid.

81. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round Investigation, 2 Nov 72 (U), N.D., with 1 atch: TacAir Spt Div/III Corps ltr 16 Nov 72 (CMR S-767, 190-192).

82. Ltr (C-GDS-81), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 25 Dec 72 (U), 18 Jan 73, with 1 atch: I DASC ltr 4 Jan 73; 6498 ABW msg 270330Z Dec 72 (CMR TS-191, 080-082).

83. Ibid.

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84. Ltr (C-GDS-81), 16 SOS/DO to 7AF/DOCC, subj: Short Round Preliminary Investigation (U), 2 Feb 73; msg, HB/INTEL to BC/INTEL, "Short Round Incident Approximately 2100Z Involving Spectre 03," 310049Z Jan 73; msg, 16 SOS to MACV & MACDO-221, "Short Round Incident," 010405Z Feb 73 (CMR TS-312, 045-046).

85. Msg (C-GDS-79), 474 TFW to JCS, CSAF, et al., subj: Short Round (U), 171930Z Feb 73 (CMR S-887, 019).

86. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 17 May 72 (U), with 4 atch: 7AF/DO ltr 8 Jun 72; 7AF msg extract 161011Z May 72; 7AF msg 220310Z Jun 72 (CMR S-767, 048-054).

87. Ibid.

88. Ltr (C-GDS-80), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), 19 Jul 72, with 2 atch: 7AF/DOTOL ltr 30 Jun 72; 7AF msg 230500Z Jun 72 (CMR S-767, 073).

89. Ibid.

90. Ibid.

91. Statement (C-GDS-78), Tiny Flight Lead, "Possible Short Round on the Morning of 17 Jul 72," (U), N.D. (CMR S-767, 117).

92. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 1 atch: 505 TCG/I DASC ltr 28 Jul 72 (CMR S-767, 118).

93. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 1 atch: 505 TCG/I DASC ltr 28 Jul 72 (CMR S-767, 122-127).

94. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round Investigation, 9 Oct 72 (U), N.D., with 2 atch: TacAir Spt Div/III Corps ltr 4 Nov 72; 7AF/CC msg 041205Z Dec 72 (CMR S-767, 184-187).

95. Statements (C-GDS-78), Rancho Flight, 8 May 72 (CMR S-767, 037).

96. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round (U), 10 Jun 72, with 3 atch: II DASC ltr 31 May 72; Aircrew Statements 8 May 72; Det 15/CC ltr 9 Jun 72 (CMR S-767, 035-038).

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97. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 1 atch: 16 SOS ltr, N.D. (CMR S-767, 134-138).

98. Ibid.

99. Msg (C-GDS-78), Hq 7AF to 49 TFW/CC & 20 TASS/CC, subj: Short Round, 28 Aug 72 (U), 241201Z Sep 72 (CMR S-767, 148).

100. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round (U), N.D., with 2 atch: 505 TCG/I DASC ltr 7 Sep 72; 7AF msg 241201Z Sep 72 (CMR S-767, 146-150).

101. Ibid.

102. Ltr (C-GDS-79), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round Investigation, 13 Jan 73 (U), N.D., with 1 atch: 505 TCG/I DASC ltr 19 Jan 73 (CMR TS-213, 049-052).

103. Ibid.

104. Ltr (C-GDS-79), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 17 Jan 73 (U), 13 Feb 73, with 2 atch: 7AF/CC ltr, N.D.; 505 TCG/I DASC ltr 24 Jan 73 (CMR TS-213, 047-050).

105. Ibid.

106. Staff Summary Sheet (C-GDS-80), 7AF/DOCC, subj: Short Round Preliminary Investigation (U), 4 Apr 72, with 2 atch: 432 TRW/SE ltr, N.D.; msg file, aircrew statements & map (CMR S-767, 005-011).

107. Ibid.

108. Staff Summary Sheet (C-GDS-78), 7AF/DOCC, subj: Short Round (U), 11 May 72, with 2 atch: TacAir Spt Div/III Corps ltr 7 May 72; 7AF msg 102345Z May 72 (CMR S-767, 030-034).

109. Ibid.

110. Staff Summary Sheet (C-GDS-80), 7AF/DO-221, subj: Short Round Investigation (U), 12 Oct 72, with 1 atch: 505 TCG/I DASC ltr 21 Sep 72 (CMR S-767, 174-176).

111. Ibid.

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112. Ltr (C-GDS-78), 7AF/DO-221 to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 28 Nov 72 (U), 23 Dec 72, with 1 atch: 505 TCG/I DASC ltr 8 Dec 72 (CMR TS-191, 073-076).

113. Ibid.

114. Msg (C-GDS-81), 6498 ABW to JCS/NMCC, CSAF, et al., subj: Inadvertent Release (U), 080735Z Jan 73; msg, CDR FRAC to COMUSMACV, "Danang Air Base Incident," 081200Z Jan 73 (CMR TS-213, 054-056).

115. Staff Summary Sheet (C-GDS-81), USSAG/DOCM, subj: Short Round Investigation Review, 30 Apr 73 (U), 20 Jul 73, with 6 atch: 7AF/DOCM ltr 21 Jul 73; USSAG/7AF msg 210530Z Jul 73; 8 TFW msg 300545Z Apr 73; 7AF/DOCM ltr 18 Jun 73; USSAG/7AF msg 211135Z Jul 73; USSAG/7AF msg 121130Z Jul 73 (CMR S-887, 017-019).

116. Ibid.

117. Ltr (C-GDS-81), USSAG/DOCM to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round Incident, 1 Jun 73 (U), N.D., with 1 atch: 7AF/DOCB ltr 10 Jun 73 (CMR S-887, 012-014).

118. Ibid.

119. Ibid.

120. Staff Summary Sheet (C-GDS-79), USSAG/DOCM, subj: Termination of Suspected Short Round Incident, 2 Jun 73 (U), 7 Jul 73, with 3 atch: USSAG/7AF msg 090515Z Jul 73; 8 TFW msg 020240Z Jun 73; 8 TFW msg 020740Z Jun 73 (CMR TS-213, 034-036).

121. Ibid.

122. Staff Summary Sheet (C-GDS-81), USSAG/DOCM, subj: Investigation Review, Short Round Incident, 14 Jun 73 (U), 13 Jul 73, with 3 atch: USSAG/7AF msg 200340Z Jul 73; 7 ACCS msg 141705Z Jun 73; 7AF msg 160900Z Jun 73 (CMR S-887, 012-014).

123. Ltr (C-GDS-79), USSAG/DOC to Hq USAF/XOOG & CINCPACAF/DOC, subj: Short Round, 15 Jul 73 (U), N.D., with 2 atch: 7AF/DO ltr 3 Aug 73; 8 TFW msg 151940Z Jul 73 (CMR S-887, 010-011).

124. Ibid.

125. Ibid.

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126. Msg (C-GDS-79), 8 TFW to NMCC, et al., subj: Possible Short Round (U), 171520Z Jul 73; UBN msg 190205Z Jul 73; USSAG/7AF msg 191100Z Jul 73; USDAO Phnom Penh msg 190856Z Jul 73; USDAO Phnom Penh msg 210415Z Jul 73 (CMR S-887, 008-009).

127. Msg (C-GDS-79), USSAG/7AF to USDAO Phnom Penh, subj: Confirmation of Recent Short Round Incidents (U), 291100Z Jul 73; USSAG/DOCM M/R 31 Jul 73; USSAG/7AF msg 051118Z Aug 73 (CMR S-887, 004-005).

128. Msg (C-GDS-79), 8 TFW to JCS/NMCC, et al., subj: Possible Short Round (U), 300630Z Jul 73; USSAG/DOCM fact sheet, N.D.; Nail 73 map 29 Jul 73; Nail 73 ltr, N.D.; USSAG/DOCM M/R 4 Aug 73 (CMR S-887, 004).

129. Ibid.

130. Ibid.

131. Staff Summary Sheet (C-GDS-79), USSAG/DOCM, subj: Suspected Short Round Incident, 30 Jul 73 (U), 2 Aug 73, with 5 atch: USSAG/7AF msg, N.D.; 8 TFW msg 300530Z Jul 73; 8 TFW msg 300710Z Jul 73; 8 TFW msg 301255Z Jul 73; 432 TRW msg 301015Z Jul 73; 432 TRW msg 311040Z Jul 73; USSAG/7AF msg 311025Z Jul 73 (CMR S-887, 007-009).

132. Msg (C-NOFORN-GDS-81), AmEmb Phnom Penh to SecState & SecDef, subj: Solatium for Survivors of Accidental Bomb at Neak Loeung (U), 073735Z Aug 73; USSAG/DOB staff summary sheet 8 Aug 73; Pacific Stars and Stripes extract 26 Aug 73, p 1 (CMR S-887, 003) (material used is unclassified).

133. Ltr (C-GDS-79), 429 TFS to 347 TFW/CC, subj: Inquiry Concerning Short Round Incident (U), 14 Aug 73, with 3 atch: report 7065, N.D.; USSAG/DOC ltr, N.D.; 7AF ltr 9 Aug 73 (CMR TS-213, 001-002).

134. Ibid.

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GLOSSARY

AAA	antiaircraft artillery
ABCCC	airborne battlefield command and control center
ABF	attack-by-fire
AC	aircraft commander
AGL	above ground level
AIG	address indicator group
AmEmb	American Embassy
ARVN	Army of the Republic of Vietnam
CADC	central air data computer
CAS	close air support
CBU	cluster bomb unit
CC	commander
CIA	Central Intelligence Agency
CINCPACAF	Commander in Chief, Pacific Air Forces
CMR	CHECO microfilm roll
COIN	counterinsurgency
COMUSMACV	Commander, United States Military Assistance Command, Vietnam
CSAF	Chief of Staff, United States Air Force
CSS	Combat Skyspot
CTG	Commander Task Group
DASC	direct air support center
DME	distance measuring equipment
DMZ	demilitarized zone
DRAC	Delta Regional Assistance Command
FAC	forward air controller
FAG	forward air guide
FANK	<u>Forces Armees Nationales Khmeres</u> (the Cambodian Army)
FLIR	forward looking infrared
FRAC	First Regional Assistance Command
G	time zone GOLF, as in Cambodia and Laos (GMT+7 hours)
GDS	(subject to) general declassification schedule
GMT	Greenwich meridian time

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H	time zone HOTEL, as in Vietnam (GMT+8 hours)
IFR	instrument flight rules
INS	inertial navigation system
JCS	Joint Chiefs of Staff
KBA	killed by air
km	kilometer
LORAN	long-range navigation
M	manual
MAG	military advisory group; Marine Air Group
MAW	Marine Air Wing
mm	millimeter
MR	military region
M/R	memorandum for the record
N.D.	no date
nm	nautical mile
NMCC	National Military Command Center
NOFORN	not releasable to foreign nationals
NOS	night observation sight
OpOrd	operation order
ROE	rules of engagement
RVN	Republic of Vietnam
SEA	Southeast Asia
SecDef	Secretary of Defense
SecState	Secretary of State
7AF	Seventh Air Force
SOS	special operations squadron
SOW	special operations wing
SSZ	specified strike zone

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TACAN	tactical air navigation
TACC	tactical air control center
TASS	tactical air support squadron
TCG	tactical control group
TCS	tactical control squadron
TFS	tactical fighter squadron
TFW	tactical fighter wing
TIC	troops in contact
TOC	tactical operations center
TOT	time over target
USA	United States Army
USAF	United States Air Force
USDAO	United States Defense Attache Office
USMC	United States Marine Corps
USN	United States Navy
USSAG	United States Support Activities Group
UTM	Universal Transverse Mercator
VC	Viet Cong
VMA	Marine Attack Squadron
VNAF	Vietnamese Air Force
WBA	wounded by air
WP	white phosphorous
Z	time zone ZULU or Greenwich meridian time

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