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TAB 81

81A

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1 Launcher Loader Module (LLM) Cage

Hazard Description: Personnel death or injury, system loss or damage, mission loss due to the uncommanded movement of the M270A1 LLM.

References:

a. Safety Confirmation of the Multiple Launch Rocket System (M LRS) M270A1 Launcher, the M68A2 MLRS Launch Pod Assembly Trainer, and the M270A1 Launcher Fire Control Panel Trainer, in Support of Conditional Materiel Release, CSTE-DTC-TT-A, 14 Feb 02.

b. Memorandum, AMSAM-SF, M270A1 Safety Assessment/Safety and Health Data Sheet (S&HDS) in Support of a Milestone III Decision, 31 Jan 02.

c. M270A1 Safety Risk Reduction Effort (SRRE) Final Executive Summary, Jan 02.

d. M270A1 LRIP III Final Safety Assessment Report (SAR), Lockheed Martin Report No. 3-53420/2001R-5003, 20 Dec 01.

System Description. The M270A1 Launcher is an upgrade to the standard version M270 Launcher. The improvements consist of a new Improved Fire Control System (IFCS) and new Improved Launcher Mechanical Drive System (ILMS). The IFCS functions with all the Launcher Drive System (LDS) sub-systems to provide overall control of the M270A1 Launcher. The IFCS is equipped with a Global Positioning System (GPS) that provides the launcher with precise location information and fully supports munitions with embedded GPS receivers. The IFCS features Built-in-Test (BIT) and Built-in-Test-Equipment (BITE), for isolating malfunctions to the Circuit Card Assemblies (CCA). The M270A1 hydraulic system is an upgrade to the hydraulic system of the current version M270 Launcher. The launcher cage moves simultaneously in azimuth and elevation for firing and reload operations. The speed in azimuth has been increased 5 times that of the current system and elevation speed has been increased 4 times. The aim to fire time has decreased from 93 seconds with the current system to 16 seconds and the reload has been decreased from 260 seconds to 160 seconds; significantly enhancing the crew survivability. From a System Safety perspective, it is this launcher cage speed increase and change in the hardware and software which controls the cage movement, that are considered to be the primary safety critical areas of concern.

To address this issue, an agreement between the AMCOM Safety Office and the Precision Fires Rocket & Missile Systems PMO was secured to establish an independent Government Team. This Team, called the Safety Risk Reduction Effort (SRRE), was formed to make a safety assessment of the M270A1 Launcher, specifically to evaluate the level of safety, identify risks,

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and make recommendations to the PFRMS PMO in support of a Materiel Release Decision. The focus of the SRRE was on Munitions Firing/Circuits and Launcher Movement concerns related to Personnel Safety issues only. An extensive assessment and testing effort consisting of insertion of events/faults/interruptions in the Launcher software control loop and firing circuits during the operational mode was accomplished to capture the Launcher's reaction. No safety issues were discovered in the safety critical Firing Circuits, Short No-Voltage Test (SNVT), and Position Navigation Unit (PNU) areas, but normal design operational characteristics and software control loop single-point failures that could present hazards to operating personnel were identified. Two software changes and six specific design related fixes were recommended by the SRRE for incorporation into the design of the M270A1 Launcher to enhance safety or correct the identified deficiencies. Risk mitigation efforts have resulted in changes to the M270A1 software (currently Version Golf) that have implemented five of the recommended changes. Crew operating instructions were also identified to lessen the impact of the stated deficiencies.The operating restrictions define a 3-meter rule for personnel safety while the Launcher Drive System is on, and also restrict the M270A1 LLM from moving or unloading rocket pods from a HEMTT/HEMAT/PLS. The remaining open issues are described as follows:

a. Boom Control Kill Switch – The current M270A1 boom controller has a kill switch that is only active in boom control mode. It was recommended that this switch be changed to be active full time and inhibit the Power Take Off (PTO) function. This active full time function will add an increased level of safety for Launcher personnel when not in boom control mode, and add increased reliability and safety by wiring this switch directly to the PTO clutch, instead of shorting a low voltage power supply as currently configured. **Status: Risk mitigation efforts have resulted in a new Kill Switch design that stops LLM motion in all modes and is not software dependent. The switch is being changed to be active full time and inhibit the Hydraulic Pump, that provides pressurized hydraulic fluid to the azimuth and elevation motors, and without which, the LLM cannot move. This active full time function will add an increased level of safety for Launcher personnel when not in boom control mode. Engineering Change documentation is being developed and coordinated so AMCOM can implement this change. Upon ECP approval, modification kits will be produced to retrofit the entire M270A1 fleet. (Projected implementation/completion date: 3rd Qtr, FY05)**

b. Stale Message and Hanging/Latent Commands – An issue was discovered during the SRRE whereby it was possible to fire a rocket outside of the 3 mil safety window. Although this has a very low probability of occurrence and is not likely an in-the-field event in and of itself, it uncovered a characteristic of the type of message traffic delay issues and system bus used which may have ramifications in other undetermined areas. It was recommended that to prevent stale messages or hanging/latent commands from causing potential safety issues, that a form of time/event tagging be implemented on each message to prevent this issue from creating a problem in areas not currently identified. **Status: Stale message/Latency correction and Timeout of last command are currently being worked and will be implemented in the Tactical Software; and will continue to be implemented in all future versions of tactical software. (Projected implementation date: 3rd Qtr, FY05)**

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1
Launcher Loader Module (LLM) Cage

c. Additional Kill Switches – As a result of the dismounted crew not having a capability to kill the Launcher cage movement in an emergency situation, it was recommended to add an additional kill switch to each side of the base of the Launcher LLM in the event uncontrolled motion of the cage was experienced. **Status: The PFRMS PM and User have made the decision to not pursue incorporation of these kill switches since this was not considered practical in a tactical military rocket Launcher, citing possible mission performance related issues.**

Hazard Classification.

Hazard Severity: Critical, '1'

Catastrophic – Death, System Failure, or Mission Loss. Un-commanded movement of the LLM could impact personnel within the slew zone of the LLM, causing death or injury, or result in system loss or damage to the M270A1.

Hazard Probability: Improbable, 'E'

Specific Individual Item:

So unlikely, it can be assumed occurrence may not be experienced

Fleet or Inventory:

Unlikely to occur, but possible

The Precision Fires Rocket & Missile Systems Program Management Office recommends the assignment of the Risk Acceptance Code (RAC) **'1E' – 'Medium', for the continued operation of the system at the current state of implementation of the proposed M270A1 launcher control and safety related design changes**.

Alternatives.

a. Accept remaining open hazards for the life of the system and retain all existing operating restrictions.

b. Stop acceptance of new launchers and suspend use of fielded M270A1 launchers until all open hazards are resolved.

c. Continue get-well efforts to: 1) incorporate the boom control kill switch, and 2) correct stale message and hanging/latency correction and timeout of last command hazards. Accept the hazard associated with the lack of additional kill switches.

Authority. This System Safety Risk Assessment and Risk Acceptance has been performed per AR 385-16 (*System Safety Management and Engineering*) and MIL STD 882D (*Standard Practice for System Safety*).

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1 Launcher Loader Module (LLM) Cage

PART I –M270A1 System PM Recommendation: (Alternative C) That the risk involved with the operation of the Launcher prior to the addition of the Boom Control Kill Switch and the software update to correct the hazard involving Stale Message and Hanging/Latent Commands be accepted until the proposed fixes are implemented. In addition, the risk associated with the decision not to implement additional kill switches, be permanently accepted.

[redacted]

19 May 03
DATE

COL, FA
Project Manager, Precision Fires Rocket and Missile Systems

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1 Launcher Loader Module (LLM) Cage

PART II – AMCOM Safety Recommendation:

The Safety Office recommends that option "C" be implemented. This office further recommends that the risk acceptance for the Boom Control Kill Switch and the software update to correct the hazards involving Stale Message and Hanging/Latent Commands be limited to 30 June 2005 to allow reassessment of the implementation plan at that time.

[redacted]

19 May 03
DATE

Chief
U.S. Army AMCOM Safety Office

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1
Launcher Loader Module (LLM) Cage

PART III – M270A1 User Representative Recommendation: Satisfactory progress continues on the M270A1 with respect to the recommendations and associated path forward outlined in the Jan 02 Safety Risk Reduction Effort (SRRE) Executive Summary. The M270A1 launcher has incorporated a number of hardware and software improvements that address the core concerns associated with the "un-commanded cage movement." When the hardware and software improvements are combined with established tactics, techniques, and procedures, the risks associated with operating the M270A1 are acceptable. Thousands of operating hours (both peacetime and in war) have been logged on the M270A1 launchers of the four, fielded battalions. That there has not been a single report of an "un-commanded cage movement event" in a fielded M270A1-equipped battalion is especially noteworthy.

Recommend Option C--incorporation of continued improvements in the Boom Control Kill Switch and the Stale message/Latency correction software. Further efforts must also focus on elimination of the loading restriction (moving or unloading rocket pods from a HEMTT/HEMAT/PLS) imposed upon the M270A1 system. The numerous hardware and software improvements incorporated into the M270A1 along with its operating history warrant removal of the unloading/moving pods restriction as outline in the SRRE.

[redacted]

30 May 03
DATE

COL, FA
TRADOC System Manager
Rocket and Missile Systems

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1
Launcher Loader Module (LLM) Cage

PART IV – AMCOM Commander Recommendation:
Recommend that option "C" be implemented and that the corrective actions to eliminate the Boom Control Kill Switch and Stale Message and Hanging/Latent Commands hazards be implemented as soon as possible but no later than 30 June 2005.

Larry J. Dodgen

LARRY J. DODGEN
Major General, USA
Commanding General

20 June 03
DATE

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1
Launcher Loader Module (LLM) Cage

PART V – Decision Authority, PEO Acceptance:

Proceed with Option C. Incorporate Boom Control Kill Switch. Continue software update effort to correct the hazard involving Stale Message and Hanging/Latent Commands. These corrective actions are to be implemented No Later Than 30 June 2005. The risk involved with the operation of the M270A1 Launcher prior to the implementation of stated corrective actions is accepted. In addition, the risk associated with the decision not to implement additional kill switches is permanently accepted. Determine if the loading restriction (moving or unloading rocket pods from a HEMTT/HEMAT/PLS) imposed upon the M270A1 system can be eliminated.

JEFFREY A. SORENSON
Brigadier General, USA
Program Executive Officer, Tactical Missiles

26 June 2003
DATE

rcvd 2 June 2008

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TAB 82

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
ATTN: AMSAM-SF/SAFETY OFFICE
REDSTONE ARSENAL, ALABAMA 35898-5130

AMSAM-SF (385-16a) 27 August 03

SUBJECT: M270A1 Safety Assessment/Safety and Health Data Sheet (S&HDS)

1.0 References:

a. Safety Confirmation of the Multiple Launch Rocket System (MLRS) M270A1 Launcher, the M68A2 MLRS Launch Pod Assembly Trainer, and the M270A1 Launcher Fire Control Panel Trainer, in Support of Conditional Materiel Release, CSTE-DTC-TT-A, 14 Feb 02.

b. Memorandum, AMSAM-SF, M270A1 Safety Assessment/Safety and Health Data Sheet (S&HDS) in Support of a Milestone III Decision, 31 Jan 02.

c. M270A1 Safety Risk Reduction Effort (SRRE) Final Executive Summary, Jan 02.

d. M270A1 LRIP III Final Safety Assessment Report (SAR), Lockheed Martin Report No. 3-53420/2001R-5003, 20 Dec 01

e. M270A1 Launcher System Safety Risk Assessment Un-Commanded Movement of the M270A1 Launcher Loader Module (LLM) Cage

2.0 System Description/Concept:

The M270A1 Launcher is an upgrade to the standard version M270 Launcher. The improvements consist of a new Fire Control System (FCS) and new Launcher Drive System (LDS). The FCS functions with all the sub-systems to provide overall control of the M270A1 Launcher. The FCS is equipped with a Global Positioning System (GPS) that provides the launcher with precise location information and fully supports munitions with embedded GPS receivers. The FCS features Built-In-Test (BIT) and Built-In-Test-Equipment (BITE), and is capable of isolating malfunctions to the Circuit Card Assemblies (CCA). All detected faults are logged in the programmable memory of the CCAs, Line Replaceable Unit (LRU), and the system memory for review at a later date. The M270A1 hydraulic system is an upgrade to the hydraulic system of the current version M270 Launcher. The launcher cage moves simultaneously in azimuth and elevation for firing and reloads operations. The speed in azimuth has been increased 5 times that of the current system and elevation has been increased 8 times. The aim to fire time has decreased from 93 seconds with the current system to 16 seconds and the reload has been decreased from 260 seconds to 160 seconds. Safety switches have been added to prevent injury or damage to personnel or equipment. One set of switches prevents the operation of the system with jury struts installed. Additional switches have been added to confirm that the rocket pods are in a locked or unlocked position.

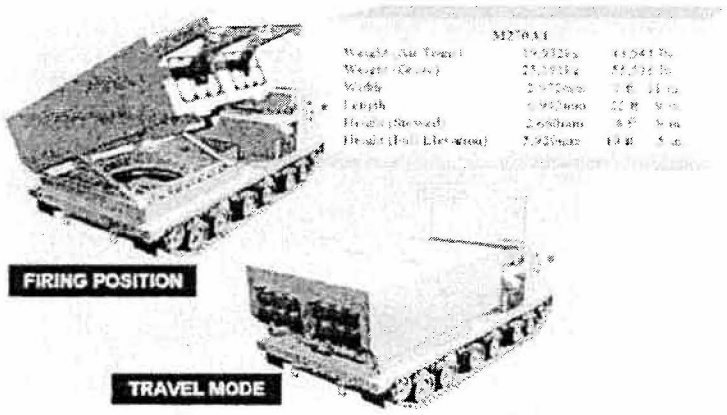


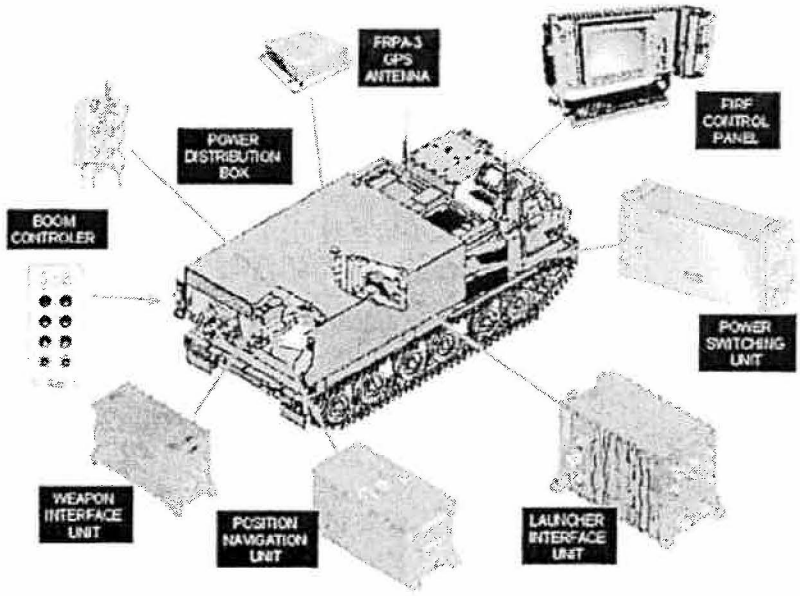
Figure 2-1 M270A1 Launcher Weights and Measurements

2.1 System Upgrade Overview

2.1.1 M270A1 Fire Control System Components

The LRUs that comprise the FCS are the GPS antenna, Fire Control Panel (FCP), Power Switching Unit (PSU), Launcher Interface Unit (LIU), Position Navigation Unit (PNU), the Weapons Interface Unit (WIU), the Boom Controller (BC), and the Power Distribution Box (PDB).

Figure 3-2 M270A1 Fire Control System Components



2.1.2 Jury Strut Switches

Two jury strut safety switches have been installed in the base assembly to confirm the installation of one or two jury struts. The LDS does not function with either of the jury struts installed. This prevents injury or damage to personnel or the LM during repair or maintenance procedures. With a jury strut installed and a safety switch activated, movement of the LM in inhibited. The LDS ON command from the PDB to the LDS is interrupted thus preventing LM movement. The operator receives a visual display warning on the FCP, "JURY STRUTS INSTALLED". The operator has three options (PF-KEYS) to choose from, ABORT, CONTINUE, or OVERRIDE. If the operator chooses ABORT the display screen reverts back to the original screen. If CONTINUE is chosen the system again tests to see if jury struts are installed (a continuous loop if the struts aren't removed). If OVERRIDE is chosen the system operates as normal in both azimuth and elevation without any further warning given. Care must be observed when operating the LM in the OVERRIDE mode. Damage to the elevation drive system can occur if LM UP or LM DOWN is pressed on the boom controller.

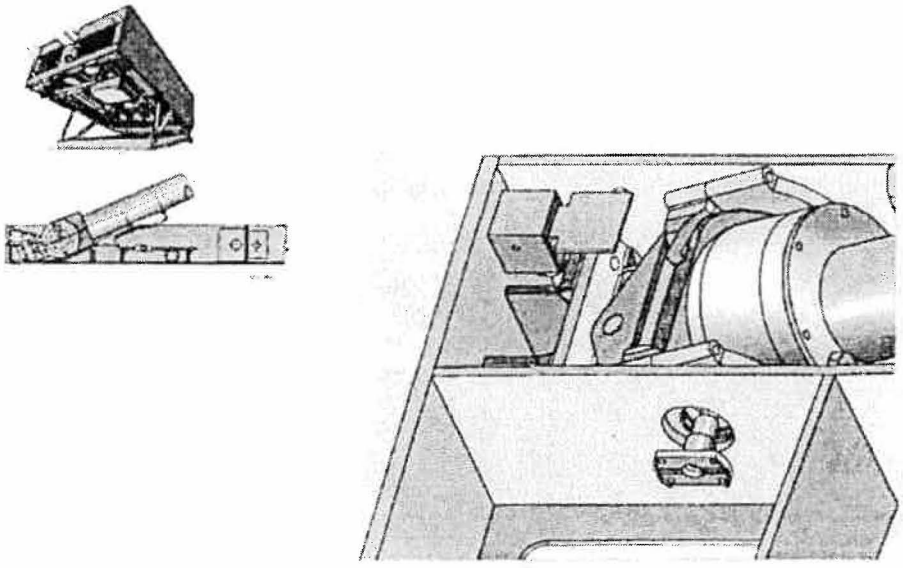


Figure 3-21 Jury Strut Safety Switch

2.1.3 Rocket Pod Hold-Down Switches

Two Rocket Pod Hold-Down (RPHD) switches have been added to the boom and hoist circuitry. Located on the side of the right and left bays within the LM, they are self-adjusting. Either of the rocket pod hold-down switch inhibits certain operations depending on the condition of the switch (i e boom and hoist operation is inhibited when rocket pod handles are in the locked position or fire missions are aborted if unlocked). If During reload operations the Rocket Pod (RP) handles are left in the open position, an Advisory prompt appears on the FCP display. The operator has three options (PF-KEYS) to choose from, ABORT, CONTINUE, or OVERRIDE. If the operator chooses ABORT the display screen reverts back to the original screen. The prompt and keys are displayed one time per reload operation. If CONTINUE is chosen the system again tests see if the RP's are locked or unlocked. If OVERRIDE is chosen, the system operates as normal without any further warnings displayed and, care must be taken in subsequent boom operations to prevent damage to the booms and hoists. When the rocket pod handles are in the locked position, the hoist up command is inhibited, to prevent an attempt to hoist rocket pods with the Rocket Pod (RP) latch handles in the locked position and cause damage to the Launch Pods and Hoist Assembly. At STOW the "override" is reset

During a fire mission, a RP HOLDDOWN UNLOCKED prompt is displayed along with an OVERRIDE PF-key. If the operator does not press the OVERRIDE PF-key within ten seconds, the fire mission is aborted and the mission is not saved. If the operator chooses the OVERRIDE prompt, the mission can continue normally.

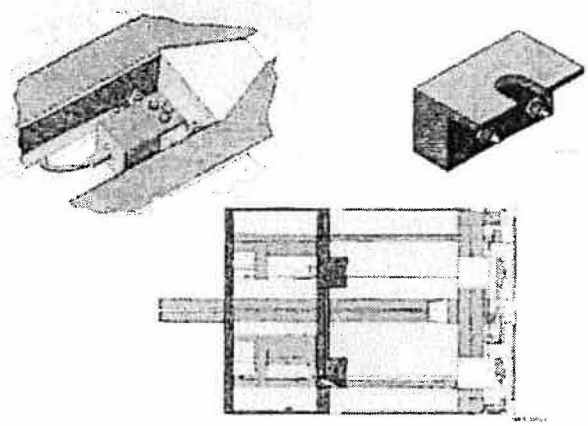


Figure 3-22 Rocket Pod Holddown Switch

3.0 System Evaluation:

a. Radioactive Materials. The M270A1 Rocket Launcher does not contain radioactive materials, therefore, the system does not require licensing by the Nuclear Regulatory Commission (NRC) and/or need a DA authorization/ certification number.

b. Explosive Materials. The M270A1 Rocket Launcher itself does not contain explosive materials. However it does control the arming and firing of the MLRS Family of Munitions. Based on the system evaluation no safety issues or unacceptable risks have been identified in the safety critical areas of the M270A1 Firing Circuits/SNVT/PNU.

c. Explosive Ordnance Disposal. The M270A1 Rocket Launcher itself does not contain explosive materials. However the MLRS Family of Munitions will be fired from this launcher. EOD procedures have been identified for each set of munitions.

d. Demilitarization and Disposal The M270A1 Rocket Launcher does not require any special demilitarization procedures.

e. Manrating Evaluation The M270A1 Rocket Launcher has been qualified to fire all fielded MLRS Family of Munitions. However manrating evaluations will have to be performed prior to firing any new munitions.

f. Health Hazard Assessment A Health Hazard Assessment has been completed on the M270A1, to include a revised Noise Hazard survey as a result of the changes and upgrades in hardware from the basic M270 Launcher. No additional Health related hazards were identified over that already known for the basic M270 Launcher.

4.0 Risk Assessment:

4.1 To verify safety of M270A1, PMO conducted a Safety Risk Reduction Evaluation (SRRE). The following safety issues were identified in the SRRE:

a. Implement Launcher Movement/Control – Implemented per STR 103272, STR 102647, STR 103296
b. Boom Control Kill Switch – Implemented per ECP MI-C1974FR0A0
c. Stale Message and Hang/Latent Commands – Completion Date 08/31/03
d. Timeout of Last Command in Buffer – Implemented per STR 102706, 103003
e. Launcher Cage Oscillation – Implemented per STR 102775

4.2 System Safety Risk Assessment was prepared to address the hazards that remained open.

a. Boom Control Kill Switch – The current M270A1 boom controller has a kill switch that is only active in boom control mode. It was recommended that this switch be changed to be active full time and inhibit the Power Take Off (PTO) function. This active full time function will add an increased level of safety for Launcher personnel when not in boom control mode, and add increased reliability and safety by wiring this switch directly to the PTO clutch, instead of shorting a low voltage power supply as currently configured

Status: Risk mitigation efforts have resulted in a new Kill Switch design that stops LLM motion in all modes and is not software dependent. The switch is being changed to be active full time and inhibit the Hydraulic Pump that provides pressurized hydraulic fluid to the azimuth and elevation motors. Without this hydraulic pressure, the LLM cannot move. This active full time function will add an increased level of safety for Launcher personnel when not in boom control mode. AMCOM is implementing this change. Modification kits are being produced to retrofit the entire M270A1 fleet.

b. Stale Message and Hanging/Latent Commands – An issue was discovered during the SRRE whereby it was possible to fire a rocket outside of the 3 mil safety window. Although this is a very low probability and not likely in-the-field event in and of itself, it uncovered a characteristic of the type of message traffic delay issues and system bus used which may have ramifications in other undetermined areas. It was recommended that to prevent stale messages or hanging/latent commands from causing potential safety issues, essentially due to a Launcher event using an old or late message check, that a form of time/event tagging be implemented on each message to prevent this issue from creating a problem in areas not currently identified.

Status: Stale message/Latency correction and Timeout of last command has been worked and is being implemented in the Tactical Software; and will continue to be implemented in all future versions of tactical software.

c. Additional Kill Switches – As a result of the dismounted crew not having a capability to kill the Launcher cage movement in an emergency situation, it was recommended to add an additional kill switch to each side of the base of the Launcher LLM in the event uncontrolled motion of the cage was experienced

Status: The PFRMS PM and User have made the decision to not pursue incorporation of these kill switches since this was not considered practical in a tactical military rocket Launcher, citing possible mission performance related issues

5.0 Conclusion:

All identified hazards associated with the operation of the M270A1 have been resolved through design, training, procedures and the Safety Risk Management Process. Based upon this information, the M270A1 is considered acceptable for material release.

PREPARED BY: [redacted] DATE: 27 Aug 03

Safety Engineer
U.S Army Aviation and Missile Command

REVIEWED BY: [redacted] DATE: 27 Aug 03

Chief, Missile Systems Safety Division
U.S Army Aviation and Missile Command

CONCURRED IN BY: [redacted] DATE 27 Aug 03

SAFETY LEAD
PFRMS Program Office

APPROVED BY: [redacted] DATE: 27 Aug 03

Chief, Safety Office
U.S. Army Aviation and Missile Command

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TAB 83

M270A1-MLRS PROGRAM ACTION ITEM

ACTION TO BE COMPLETED BY: LMMFC-D

AI CONTROL NO.: 573

MEETING: M270A1 System FCA DATE: March 5, 2002

ACTION ITEM TITLE: General Requirements - Safety

REQUESTER: [redacted] DATE: March 5, 2002

RESPONDENT: [redacted] DATE DUE: September 20, 2002

ACKNOWLEDGEMENT (SIGN): DATE:

LMMFC-D/CM:

ACTION ITEM DESCRIPTION: MIS-PRF-35500 Rev B - Para 3.2.10.1 & 3.2.10.2
Determine if the requirements are to be met by procedural steps or design mitigations.

'SPONSE:

ached is a matrix of the hazards, their assessed risk, and if the hazard is controlled by hardware, oftware, and/or procedural control(s). The only identified hazard controlled solely by procedures is the 'FCP Elevated Temperature" which is denoted with orange highlight in the attachment. The IFCS SAR that was drafted stated that "Since this document was last published it has been determined by the MLRS Project Office that this hazard is not significant and no precautions, such as labels, are warranted. Therefore, this hazard (H-13) is closed."

In addition, hazard ID H21 is controlled both by software and procedures. This hazard deals with equipment damage and does not address personnel injury. Personnel injury is covered under hazard IDs H27 and H32 that included procedural controls associated with boom controller, exclusion zone, jury struts, turning off the engine, etc. The procedural controls associated with the boom controller and exclusion zone should be listed with hazard ID H21.

RESPONDENT SIGNATURE: DATE:

REQUESTER SIGNATURE: DATE:

LMMFC-D/CM:

The matrix used to prioritize hazards for corrective action and determine which hazards are acceptable is shown in Table 1-1.

Table 1-1 Risk Acceptance Criteria

Severity / **Probability**	Catastrophic **I**	Critical **II**	Marginal **III**	Negligible **IV**
A Frequent				
B Probable				
C Occasional				
D Remote				
E Improbable				

Hazard Risk Index	Criteria
IA, IB, IC, IIA, IIB, IIIA	Unacceptable
ID, IIC, IID, IIIB, IIIC	Undesired (MA decision required)
IE, IIE, IIID, IIIE	Acceptable with review of MA
IVA-E	Acceptable without review

Table 1-2 list the hazards along with a denotation of whether the hazard risk is reduced to an acceptable level by hardware control(s), software control(s), and/or procedural control(s).

Table 1-2 Hazard Risks and Control Types

Log No.	Hazard Title	Pre-Mitigation	After Mitigation	Hardware Control(s)	Software Control(s)	Procedural Control(s)
H01 (see para. 7.1.1)	Inadvertent/Premature Rocket Motor Ignition	IC	IE	Yes	Yes	Yes
H02 (see para. 7.1.2)	Rocket Motor Ignition Signal Issued When Launcher Loader is Incorrectly Positioned in No-Fire Zone	IB	IE	Yes	Yes	-
H03 (see para. 7.1.3)	Meteorological Sensor Hazards	NA	NA	-	-	-
H04 (see para. 7.1.4)	Uncommanded Hoist of Boom Movement	IIB	IID	Yes	Yes	Yes
H05 (see para. 7.1.5)	LLM Unlock Fault Hazard	IIIC	IIIE	-	Yes	-
H06 (see para. 7.1.6)	LLM Lock Fault Hazard	IIIB	IIID	-	Yes	-
H07 (see para. 7.1.7)	FCP Elevated Temperature	IIB	IID	-	-	Yes
H08 (see para. 7.1.8)	Electrical Shock	IIC	ID	Yes	-	Yes
H09 (see para. 7.1.9)	FCP Cooling Fins	IIC	IID	Yes	-	-
H10 (see para. 7.1.10)	Damage to LRUs due to Environmental Exposure	IIIC	IIIE	Yes	-	-
H11 (see para. 7.1.11)	Material Compatibility	IIC	IIE	Yes	-	-
H12 (see para. 7.1.12)	Failure of Components Due to Vibration	IIIC	IIIE	Yes	-	-
H13 (see para. 7.1.13)	Software hazards	IIC	IIE	-	Yes	-
H14 (see para. 7.1.14)	Inadvertent Rocket/Missile Firing from One LPA When Commanding a Firing from the Opposite LPA	IC	IE	Yes	Yes	Yes
H15 (see para. 7.1.15)	Uncommanded Enable Output May Result in Inadvertent Missile Launch	IC	IE	Yes	Yes	-
H16 (see para. 7.1.16)	Software Emergency Shutdown	IE	IE	-	Yes	-
H17 (see para. 7.1.17)	Personnel Exposure to Toxic Materials	IID	IIE	Yes	-	Yes
H18 (see para. 7.1.18)	Electrical Fires	IID	IIE	Yes	Yes	Yes
H19 (see para. 7.1.19)	Electric Shock Imparted to Personnel	IID	IIE	Yes	Yes	Yes
H20 (see para. 7.1.20)	LDS Speed Default to Tactical Speed	IE	IE	-	Yes	-
H21	Uncommanded Cage Movement and/or Overspeed Condition at	IID	IIE	-	Yes	-

Log No	Hazard Title	Pre-Mitigation	After Mitigation	Hardware Control(s)	Software Control(s)	Procedural Control(s)
(see para. 7.1.21)	Tactical Speed (Azimuth and/or Elevation)					
H22 (see para. 7.1.22)	Mechanical Failure of the ADU	IE	IE	Yes	Yes	Yes
H23 (see para. 7.1.23)	Azimuth Brake Failure	IE	IE	Yes	Yes	-
H24 (see para. 7.1.24)	Mechanical Failure of the Output Shaft of the Elevation Transmission	IE	IE	Yes	-	-
H25 (see para. 7.1.25)	Mechanical Failure of the Angle Drive at the Input Interface	IE	IE	Yes	-	-
H26 (see para. 7.1.26)	Failure of the LIU to Control the Azimuth Motor	IE	IE	-	Yes	-
H27 (see para. 7.1.27)	Operator Entanglement in the LDS System	IC	IE	-	Yes	Yes
H28 (see para. 7.1.28)	Leakage or Spraying of Hot Hydraulic Fluid	IIC	IIE	Yes	-	Yes
H29 (see para. 7.1.29)	Shaft Resolver Position Data Corrupted	IIC	IIE	-	Yes	-
H30 (see para. 7.1.30)	Turns Count Problems	IC	IE	Yes	Yes	-
H31 (see para. 7.1.31)	Movement into Damage Zone	IIC	IIE	Yes	Yes	-
H32 (see para. 7.1.32)	Uncommanded Cage Motion	IB	ID	Yes	Yes	Yes

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TAB 84

[redacted] Mr CIV USA AMC

From: [redacted] CIV USA AMC
nt: Friday, May 16, 2008 10:20 AM
[redacted] CIV USA AMC
Subject: FW: SRRE (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

FYI - [redacted]

-----Original Message-----
From: [redacted] army.mil]
Sent: Friday, November 22, 2002 9:49 AM
To: [redacted] army.mil
Cc: [redacted]
Subject: SRRE

It is the position of the PFRMS PMO that the M270A1 launcher does meet the performance specification (MIS-PRF-35500) set forth in the contract but does not met the terms of the contract (safety program) and that consideration from LMMFC is warranted.

[redacted]
PFRMS Proj Ofc
[redacted]

assification: UNCLASSIFIED
Caveats: NONE

85

TAB 85

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
5300 MARTIN ROAD
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

February 12, 2003 CR
~~January 21, 2003~~

Acquisition Center
MLRS Contracting Office

[redacted]
Lockheed Martin Corporation
Missiles and Fire Control Dallas
P.O. Box 650003
Dallas, TX 75265-0003

Dear [redacted]

Reference Contract DAAH01-00-C-0109, System Level Function Configuration Audit (FCA) Action Item Number 573. This action item is to determine if the critical safety performance requirements in accordance with paragraphs 3.2.20-1 and 3.2.10.2 of MIS-PRF-35500B are to be met by procedural steps or design mitigations.

You are hereby informed that, to date, the SAR required by the contract has not been approved (PFRMS disapproval letter dated 24 January 2002) and that sufficient data has not been provided to allow closure of action item 573 to the satisfaction of the government. A review of all data submitted by LMMFC-D and discussions between LMMFC-D and the AMCOM Safety Office have failed to provide assurance that an adequate safety assessment was done and that the appropriate contract requirements, as regarding safety, have been met. There is currently insufficient data to determine whether procedural steps alone will adequately safeguard the government. LMMFC-D needs to provide sufficient safety data to allow the government to determine the best path forward. Until sufficient data is provided to adequately insure that the launcher meets critical safety performance requirements, the action item is disapproved.

Rational for Disapproval: The AMCOM Safety Representative has stated that it is his belief that the M270A1 Launcher does not meet the critical safety performance requirements, particularly in the area of Launcher control and single-point failures, unless associated personnel strictly rely on procedures. Therefore, after thoroughly reviewing all the contract requirements, as well as MIL-STD-822, it is my determination that Lockheed Martin Corporation is in non-compliance with the terms of this contract. You are further notified that effective ~~01 February 2003~~ M270A1 Launchers will no longer be accepted until this issue is resolved. 19 March 2003 CR

CR and January 21, 2003 letter)

If you have further questions or comments you may contact the undersigned at (256) 876-8840.

Sincerely,

[redacted]

Contracting Officer

CF: SFAE-MSL-PF-BM-AP/M[redacted]
DCMA/Lockheed Martin/M[redacted]

86

TAB 86

AMSAM-SF-M 13 March 2003

MEMORANDUM FOR MLRS Division, PEO Tactical Missile Directorate (AMSAM-AC-TM-C, [redacted]

SUBJECT: M270A1 Delivery Issues

1. References:

a. Performance Specification, MIL-PRF-35500, System Specification for the Multiple Launch Rocket System (MLRS) M270A1.

b. Report, Lockheed Martin Vought Systems, 21 Sep 98, subject: ILMS Safety Assessment Report, Rev A.

c. Report, 31 Jan 02, subject: MLRS M270A1 Safety Risk Reduction Effort

d. Memorandum, AMSAM-SF, 31 Jan 02, subject: M270A1 Safety Assessment/Safety and Health Data Sheet (S&HDS) in Support of a Milestone III Decision.

e. Foncon between Mr. Snyder, Acquisition Center, and Mr. Potratz, Safety Office, 13 Mar 03, SAB.

2. The Acquisition Center requested a Safety Office position on whether the Government should continue to accept delivery of M270A1 launchers (ref 1.e) due to an issue concerning hardware compliance to the safety portion of the system performance specification (ref 1.a). The Safety Office believes that the acceptance of launchers and the compliance with the specification are separate issues, and our positions on each are detailed below.

3. The first issue is whether there are any safety issues that would preclude the Government from accepting M270A1 launchers. As part of the Materiel Release process for the M270A1, the Precision Fires Rocket and Missile Systems (PFRMS) PMO used the Army Safety Risk Management process to gain acceptance of residual hazards identified during the program, and also agreed to a Get-Well plan to correct the identified safety deficiencies. The Safety Office concurred with this approach and with the conditional release of the M270A1 launcher (ref 1.d). This office has no safety objections to the continued acceptance of M270A1 launchers.

4. The second issue concerns whether the M270A1 complies with the safety requirements in the specification. The Safety Risk Reduction Effort report (ref 1.c) identified several single point failures that could result in critical hazards that were not addressed in the ILMS Safety Assessment Report (ref 1.b). It is the position of the Safety Office that the M270A1 launcher does not comply with the requirements of Paragraph 3.2.10.2 of MIL-PRF-35500, and that this issue needs to be corrected through the proper contractual avenues.

ENCLOSURE 7

AMSAM-SF-M 13 March 2003
SUBJECT: M270A1 Delivery Issues

5. Point of contact for this action is the undersigned, [redacted], email [redacted] army.mil.

[redacted]

[redacted]
Chief, Missile Systems Safety Div

CF:
SFAE-MSL-PF

87

TAB 87

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
5300 MARTIN ROAD
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

March 20, 2003

Acquisition Center
MLRS Contracting Office

[redacted]
Lockheed Martin Corporation
Missiles and Fire Control Dallas
P.O. Box 650003
Dallas, TX 75265-0003

Dear [redacted]

It is hereby requested that you certify and validate that LMMFC-D has met all the terms and conditions of Contract DAAH01-00-C-0109, M270A1 LRIP III Upgrades.

In addition to the above you are specifically requested to address the following:

Statement of Work

- Paragraph 7.1 entitled Safety Assessment Report (SAR).

The SAR required IAW Paragraph 7.1 had a required delivery date of 270 days after date of contract, i.e. 26 March 2001. The SAR was actually submitted December 2001 and disapproved by PFRMS on 24 January 2002 and has never been resubmitted nor accepted.

- Paragraph 12.3 Test Stand Validation Procedures – Provide copy of validation procedures IAW DI-NDTI-80603 for the ADU and LRUs cited in Attachment 017.

- Paragraph 12.4 Calibration Requirements – Provide copy of calibration procedures IAW DI-QCIC-81007 for the ADU Test Stand and HTS set.

Performance Specification

The performance specifications MIL-PRF-35500 Revision A was replaced by MIS-PRF-35500 Revision B, System Specification for the Multiple Launch Rocket System (MLRS) M270A1. Provide completion dates for the following outstanding System Level FCAS:

EXHIBIT 9

- Launcher System Level FCA 572 - Explain verification process for paragraph 3.2.6.2.10.

- Launcher System Level FCA 573 – Safety Paragraphs 3.2.10.1 and 3.2.10.2. A memorandum from the AMCOM Safety Office dated 13 March 2003 states in part "It is the position of the Safety Office that the M270A1 launcher does not comply with the requirements of paragraph 3.2.10.2 of MIL-PRF-35500..."

- Paragraph 4.2 Verification of product conformance. Provide copies of the inspection/test and analysis of each component identified in Table V.

DOD Standard Practice for System Safety - MIL-STD-882D

- Address how LMMFC-D is complying with Section 4 entitled General Requirements, paying particular attention to subparagraph 4.4d.

Please provide a detailed assessment of the war-fighting capabilities of the six LRIP IV launchers recently shipped to Korea.

It is requested that the certification and requested documentation be provided to this office by no later than 10 April 2003.

Also, if LMMFC-D has any information or data which substantiates compliance with the contract terms and conditions in the areas mentioned above, or if you have further questions or comments your point of contact on this matter is Colleen Rodriguez, telephone number (256) 876-8840.

Sincerely,

[redacted]

Contracting Officer

CF: SFAE-MSL-PF-BM-AP[redacted]
DCMA/Lockheed Martin/M[redacted]

88

TAB 88

Lockheed Martin Missiles and Fire Control - Dallas
PO Box 650003 Dallas, TX 75265-0003

LOCKHEED MARTIN

3-19210/2003L-5170

4 April 2003

To: Commander
U.S Army Aviation and Missile Command
Redstone Arsenal, Alabama 35898-5000

Attn: AMSAM-AC-TM-C[redacted], PCO

Subj: Contract DAAH01-00-C-0109, M270A1 LRIP III; Compliance with Contract Terms and Conditions

Ref: (a) AMCOM Letter dated 20 March 2003

Encl: (1) SAR 1st CDRL Submittal dated 3 April 2001
(2) SAR 2nd CDRL Submittal dated 5 December 2001
(3) SAR 3rd CDRL Submittal dated 20 December 2001
(4) SAR (Rev A) Submittal dated 5 March 2002
(5) PFRMS PM approval of SAR (Rev A) dated 06 April 2002
(6) PFRMS PM additional review of SAR (Rev A) dated 25 February 2003
(7) PFRMS Activity Schedule dated 31 March 2003
(8) IWIU M270A1 E3 Test Plan dated 10 January 2003
(9) Action Item 573 Response dated 3 October 2002
(10) PCO Letter disapproving FCA Action Item 573 dated 21 January 2003
(11) FCA Part I Minutes dated 6 March 2002
(12) FCA Part II Minutes dated 23 May 2002
(13) FCA Supporting Data

Summary:

Lockheed Martin reports that we are satisfied that we have met all the terms and conditions of Contract DAAH01-00-C-0109, M270A1 LRIP III Upgrades.

Each of our responses below identifies documents that have either been (1) officially provided by LM to the government under Contract DAAH01-00-C-0109, or (2) provided by the government to LM; in either case, the official document is referenced and attached for additional government review.

Finally we are able to report that we have identified no reason for concern or problems in the reference (a) request. Accordingly, we respectfully request that a letter be issued by the PCO closing the issues addressed in the reference (a) letter, the enclosure (10) letter, and all other government correspondence related to production stoppage.

Details:

1. Lockheed Martin Missiles and Fire Control – Dallas hereby provides this response to your reference (a) request. Lockheed Martin submits that by

presenting a DD Form 250 to the government for acceptance of a launcher we are stating, to the best of our knowledge, the item presented meets the contract requirements. If there are any contract deficiencies an equitable arrangement is made with the government, identifying the deficiency and solution, prior to presentation of the DD Form 250.

2. Lockheed Martin (LM) also hereby responds to the items the PCO specifically requested to be addressed. We want to emphasize that careful attention to contract requirements and official documentation submitted or received in the performance of DAAH01-00-C-0109, is the basis of our response to each PCO item.

Statement of Work

PCO Letter Item

- ***Paragraph 7.1 entitled Safety Assessment Report (SAR).***
  The SAR required IAW Paragraph 7.1 had a required delivery date of 270 days after contract, i.e. 26 March 2001. The SAR was actually submitted December 2001 and disapproved by PFRMS on 24 January 2002 and has never been resubmitted nor accepted.

LM Response

- The PCO's implication that LM did not deliver a CDRL for the SAR until December 2001 is a misunderstanding of the facts.
  - The first CDRL, a "Zero" submittal, was submitted, with telephonic government concurrence as noted in the remarks section of the TOD, on 3 April 2001 (LM Doc. No. 3-53420/2001ENG-5000 dated 3 April 2001 is provided as Enclosure (1); NOA 3-53420/2001NOA-5001)
  - The second CDRL, a "Zero" submittal, was submitted with telephonic government concurrence as noted in the remarks section of the TOD, on 5 December 2001 (LM Doc. No. 3-53420/2001L-5000 dated 5 December 2001 is provided as Enclosure (2); NOA 3-53420/2001NOA-5005)
  - The third CDRL, the Safety Assessment Report, was submitted on 20 December 2001 (LM Doc. No. 3-53420/2001R-5003, dated 20 December 2001 is provided as Enclosure (3))

- The PCO's assertion that the SAR "has never been resubmitted nor accepted" after the PFRMS disapproval on 24 January 2002 is not correct.
  - The SAR was re-submitted on 6 March 2002 (LM Doc. No. 3-53420/2001R-5003 Rev A. dated 05 March 2002 is provided as Enclosure (4); NOA 3-53420/2002NOA-5000)
  - The PFRMS PM approved this CDRL on 06 April 2002 (Enclosure (5))
  - The PCO participated in a meeting on 19 February 2003 in Huntsville where PFRMS representatives agreed that Revision A to the SAR (Enclosure (4)) was submitted and a PFRMS approval of the CDRL (Enclosure (5)) existed.
  - The PFRMS PM, on 25 February 2003, retracted their earlier approval, and "Disapproved" this CDRL by superseding the 6 April 2002 Approval letter and

stated that "The current submission of this document, Rev A, as stated above, is still under review by PFRMS and AMCOM Safety and shall not be considered approved or accepted by the US Government until further notified." (Enclosure (6))

PCO Letter Item

- ***Paragraph 12.3 Test Stand Validation Procedures – Provide copy of validation procedures IAW DI-NDTI-80603 for the ADU and LRUs cited in Attachment 017.***

LM Response

- The PCO's implied assertion that this is an LRIP III requirement is not correct. This activity was not exercised in conjunction with the LRIP III award.
- This activity was awarded with, and will be executed under, LRIP V.
- The Plan is currently being coordinated with the PFRMS PMO (PFRMS Activity Schedule, Enclosure (7)) and will be submitted in accordance with (IAW) DI-NDTI-80603.

PCO Letter Item

- ***Paragraph 12.4 Calibration Requirements – Provide copy of calibration procedures IAW DI-QCIC-81007 for the ADU Test Stand and HTS set.***

LM Response

- The PCO's implied assertion that this is an LRIP III requirement is not correct. This activity was not exercised in conjunction with the LRIP III award.
- This activity was awarded with, and will be executed under, LRIP V.
- The Plan is currently being coordinated with the PFRMS PMO (PFRMS Activity Schedule, Enclosure (7)) and will be submitted IAW DI-NDTI-80603.

Performance Specification

PCO Letter Item

Provide completion dates for the following outstanding System Level FCAS:

- ***Launcher System Level FCA 572 – Explain verification process for paragraph 3.2.6.2.10.***

LM Response

- Verification process for Direct Strike Lightning requirement:
  - This PFRMS coordinated test is combined with the IWIU development program E3 test; the verification process is outlined in the E3 Test Plan and Acceptance Test Procedures for the IWIU M270A1 (LM Doc. No. 3-52250/2003R-5001 is provided as Enclosure (8); NOA No. 3-52250/2003NOA-5002, dated 14 January 2003)
  - Completion date: Scheduled 31 May 2003 (Test Report submittal)

PCO Letter Item

Provide completion dates for the following outstanding System Level FCAS:

- ***Launcher System Level FCA 573 – Safety Paragraphs 3.2.10.1 and 3.2.10.2.***

LM Response

- The Action Item is: "Determine if the requirements are to be met by procedural steps or design mitigations."
  - LM has done everything practical that we can do to eliminate hazards through design (example: the Uncommanded Cage Movement Red Team identified hazards and implemented the software modifications necessary to mitigate them). As a final solution to any remaining hazards, procedures and training as authorized by MIL-STD-882D have been implemented (MIL-STD-882D Paragraph 4.4d states "Develop procedures and training. Where it is impractical to eliminate hazards through design selection or to reduce the associated risk to an acceptable level with safety and warning devices, incorporate special procedures and training...").
  - The action item 573 response dated 3 October 2002 (Enclosure (9)) was a summary of the SAR (Rev A) procedures and design assessment. (Enclosures (3 and 4))
  - The PCO disapproved this Action Item response (PCO Letter - Enclosure (10)) on 21 January 2003. This disapproval is based upon the AMCOM Safety Representative's "...belief that the M270A1 Launcher does not meet the critical safety performance requirements, particularly in the area of Launcher control and single-point failures, unless associated personnel strictly rely on procedures."
  - Considering that the government has stated that the SAR (Rev A) is "...still under review.. until further notified." (per Enclosure (6)), this Action Item response (Enclosure (9)) is resubmitted with original content).

PCO Letter Item

- ***Paragraph 4.2 Verification of product conformance. Provide copies of the inspection/test and analysis of each component identified in Table V.***

LM Response

- Verification of product conformance was conducted in the Functional Configuration Audit (FCA). Inspection/test and analysis of each component identified in Table V are provided in the following attachments:
  - FCA Part I Minutes (LM Doc. No. 3-53530/2002R-5011, provided to the government on 6 March 2002; Enclosure (11))
  - FCA Part II Minutes (LM Doc. No. 3-53530/2002R-5027, provided to the government on 23 May 2002; Enclosure (12))
  - FCA Supporting Data (Enclosure (13)); Reference data available to the FCA Team during the audit

DOD Standard Practice for System Safety – MIL-STD-882D

PCO Letter Item

- ***Address how LMMFC-D is complying with Section 4 entitled General Requirements, paying particular attention to subparagraph 4.4d.***

LM Response

- The PCO's implication that MIL-STD-882D is a requirement under Contract DAAH01-00-C-0109 is not correct.
- The only specific reference to MIL-STD-882 in Contract DAAH01-00-C-0109 is found in MIS-PRF-35520 (Note: MIS-PRF-35520 reference is to MIL-STD-882B)
  - LM conformance to MIS-PRF-35520 (paragraphs 3.11.1a and 3.11.1b) is provided as part of the FCA (Enclosures (11-13)) and SAR (Enclosures (3-4))
- General contract system safety requirements compliance is verified as part of the FCA (Enclosure (11-13)); System safety conformance is demonstrated in the SAR (Enclosures (3-4)) and response to the FCA Action Item 573 (Enclosure (9)). The table shows how every possible single-point failure is mitigated by using one or more of the 4 approved methods identified in sub-paragraph 4.4d.

3. Additional information requested:

PCO Letter Item

- ***Please provide a detailed assessment of the war-fighting capabilities of the six LRIP IV launchers recently shipped to Korea.***

LM Response

- The U.S. Army Combat Developer identifies the specific "war-fighting" requirements for a weapon system and the U.S. Army Materiel Developer translates those requirements into Performance Specifications and contract requirements.
- LM's LRIP IV launcher production, including the six referenced launchers, has met all of the contract requirements necessary to deliver these launchers to the government as documented via DD-250.
- LM also has concerns for the war-fighter regarding the complete system because of the way the government chose to contract for different aspects of the system (software is an IES contract product and the hardware is a separate contract product), so there is no single contract for the total system. Lockheed Martin, in the subject production contract, does not deliver the complete system. Despite this split, LM does have a government approved launcher hardware delivery process in Camden documented in the Production Unit Test (PUT).
- Lockheed Martin has performed tasks that are outside the scope of this contract in order to provide the finest war-fighting system we possibly can. LM personnel have traveled to Red River Army Depot (RRAD) to load and test software to make sure the launcher meets complete system requirements. Providing software to RRAD or traveling to RRAD to load and test software is not within the scope of the LRIP IV production contract.

- Lockheed Martin has gone to great lengths to meet not only our contractual commitments, but also the full expectations of our end user. We believe, through extensive testing and feedback from our soldiers as well as integration and operational level testing, the system has performed well. But would ask the question be directed to our user, as he has been called into operations that will likely stress the system to the full extent of its limits.

4. The data provided above does not constitute all of the data officially submitted to the government in the performance of Contract DAAH01-00-C-0109 (LRIP III); however, it does adequately substantiate compliance with the contract terms and conditions in the areas mentioned.

5. Lockheed Martin respectfully requests that this matter now be considered closed and that the planned shutdown of M270A1 launcher production on 23 April 2003 be rescinded. Should you have any further questions regarding this matter, please contact the undersigned at (972) 603-9091.

Sincerely,

[redacted]

Financial Manager
Fire Support Programs

cc: AMSAM-AC-TM-C[redacted](w/o enclosures)
SFAE-MSL-PF[redacted](w/o enclosures)
SFAE-MSL-PF[redacted](w/o enclosures)
SFAE-MSL-PF-[redacted](w/o enclosures)
SFAE-MSL-PF-PR/M[redacted](w/o enclosures)
SFAE-MSL-PF-BM-AP[redacted](w/o enclosures)
DCMA/Lockheed Martin[redacted]ACO (w/o enclosures)

Note: "CC's" have not received enclosures due to the volume of paper: >5,000 pages

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TAB 89

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
5300 MARTIN ROAD
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

June 26, 2003

AMSAM-AC-TM-C

TO: [redacted] Administrative Contracting Officer, (ACO) Defense Contract Management Agency Lockheed Martin – Missile and Fire Control – Dallas M.S. PT-03 P.O. Box 650003 Dallas, Texas 75265-0003

SUBJECT: Contract DAAH01-00-C-0109, M270A1 – Resumption of Delivery of M270A1 Launchers

REFERENCE A: AMCOM Letter dated 12 February 2003 to LM ([redacted]) Safety Issues
REFERENCE B: LM Letter 3-19210/2003L-5301 Revision A dated 3 June 2003 for Field Repair Plan
REFERENCE C: LM Letter 3-19210/2003L-5309 Revision B dated 23 June 2003 for GDU Ship Short

This letter is written to inform you of the Procurement Contracting Officer (PCO) decision to resume acceptance of M270A1 launchers that were stopped in April 2003 as a result of the Reference A AMCOM letter.

Lockheed Martin complied with the submittal of the Safety Assessment Report (SAR) on 13 June 2003, the PFRMS, Safety Office approved the SAR on 19 June 2003 which led to the closure of the functional configuration audit (FCA) on 23 June 2003. In addition, the System Safety Risk Assessment (SSRA) was staffed and signed by all interested parties along with final signature and approval by the PEO, BG Sorenson on 24 June 2003.

In reference B letter, the government was informed that a repair plan for the Low Cost Fire Control Panel (LCFCP) was underway. Since then, all the failed units have been repaired and testing and source validation measures are being developed to qualify a new configuration Gunner Display Unit (GDU), the part that failed. On site testing at the vendor's manufacturing facility will also be performed. The contractor has stated that if any changes to the GDU result from these tests; these changes will be incorporated into all GDU's at no additional cost to the government. Lockheed Martin has submitted a new Delta Production Unit Test and Return to Schedule Plan which supports returning to

normal deliveries NLT 1 September 2003. The Project Office has concurred with both these plans as being in the best interest of the Army.

It should be noted that final language for DD250 will be marked with the item for the Gunner Display Unit (GDU) "shipped short" for the above items at a dollar value of $25,506 each (value of a GDU). A subsequent DD 250 will be required for payment of the withheld amount when the GDU's are delivered, installed and passes acceptance tests. The contractor will provide for this at no additional cost to the government.

Point of contact for this action is [redacted]

[redacted]
Contracting Officer

M270A1 Launcher
System Safety Risk Assessment
Un-Commanded Movement of the M270A1
Launcher Loader Module (LLM) Cage

PART V – Decision Authority, PEO Acceptance:

Proceed with Option C. Incorporate Boom Control Kill Switch. Continue software update effort to correct the hazard involving Stale Message and Hanging/Latent Commands. These corrective actions are to be implemented No Later Than 30 June 2005. The risk involved with the operation of the M270A1 Launcher prior to the implementation of stated corrective actions is accepted. In addition, the risk associated with the decision not to implement additional kill switches is permanently accepted. Determine if the loading restriction (moving or unloading rocket pods from a HEMTT/HEMAT/PLS) imposed upon the M270A1 system can be eliminated.

JEFFREY A. SORENSON
Brigadier General, USA
Program Executive Officer, Tactical Missiles

26 June 2003
DATE

rcid 2 June 2008

90

TAB 90

DEPARTMENT OF THE ARMY
PROGRAM EXECUTIVE OFFICE, TACTICAL MISSILES
REDSTONE ARSENAL, ALABAMA 35898-8000

REPLY TO
ATTENTION OF

March 2, 2004

Precision Fires Rocket and Missile
Systems Project Office
Letter No. 5224

[redacted]
Lockheed Martin Missiles and Fire Control - Dallas
Mail Stop: MM-25
P.O. Box 650003
Dallas, TX 75265

Dear [redacted]:

The following contract data item, submitted for approval via 3-53530/2004NOA-5009 on February 5, 2004, is approved:

Document Title: M270A1 Final Safety Assessment Report
Document Date: January 26, 2004
Government Document Number: none
Government Document Revision: C
Contractor Document Number: 3-53420/2001R-5003-C
Contract: DAAH01-00-C-0109 - M270A1 LRIP 3,4,5/FRP-1
Data item: A001 - SAFETY ASSESSMENT REPORT (SAR)

A copy of this letter will be forwarded to [redacted], SFAE-MSL-PF-BM-AP; [redacted], AMSAM-AC-TM-C; [redacted], LMMFC-D; [redacted], SFAE-MSL-PF-PR; [redacted], SFAE-MSL-PF-PDT-DM and [redacted], DCMA.

Point of contact for this action is [redacted]

Sincerely,

[redacted]

Lieutenant Colonel, U.S. Army
Product Manager, Field Artillery
Launchers

TITLE

M270A1 SAFETY ASSESSMENT REPORT
CDRL A001

SUBMITTED UNDER	
DI-SAFT-80102A	
REPORT NUMBER	DATED
3-53420/2001R-5003-C	29 January 2004
MODEL	CONTRACT NUMBER
M270A1	DAAH01-00-C-0109
DATE ISSUED	SUPERSEDING
13 June 2003	3-53420/2001R-5003-B

Lockheed Martin Missiles and Fire Support-Dallas
Post Office Box 650003
Dallas, TX 75265-0003

LOCKHEED MARTIN

[redacted]

E. Stahnecker
System Safety, M270A1

T.W. Merritt Jr.
System Safety and Human Factors
Engineering Manager, LMMFC-O

J.S. Bezner
Director, After Market Enterprises & Launcher
Modernization

REVISION

REVISED BY	DATE	PAGES AFFECTED	REMARKS
E. Stahnecker	04 March 02	Cover Page, 191, 192	Agreed to changes with AMCOM to resolve previous submittal rejection
E. Stahnecker	11 June 03	Cover Page, Table of Contents, and others as denoted by change bars.	Agreed to changes with PFRMS-PO
E. Stahnecker	29 January 04	Cover Page, 2, 18, 20, 23, 170, 171, 194, 256, 259-266	Added para 7.1.18.1, MSDSs in Appendix E & approved safety documents (Appendices G though J)

TAB 91

SWORN STATEMENT

For use of this form, see AR 190-45; the proponent agency is PMG.

PRIVACY ACT STATEMENT

AUTHORITY: Title 10, USC Section 301; Title 5, USC Section 2951; E.O. 9397 Social Security Number (SSN).

INCIPAL PURPOSE: To document potential criminal activity involving the U.S. Army, and to allow Army officials to maintain discipline, law and order through investigation of complaints and incidents.

OUTINE USES: Information provided may be further disclosed to federal, state, local, and foreign government law enforcement agencies, prosecutors, courts, child protective services, victims, witnesses, the Department of Veterans Affairs, and the Office of Personnel Management. Information provided may be used for determinations regarding judicial or non-judicial punishment, other administrative disciplinary actions, security clearances, recruitment, retention, placement, and other personnel actions.

DISCLOSURE: Disclosure of your SSN and other information is voluntary.

1. LOCATION	2. DATE (YYYYMMDD)	3. TIME	4. FILE NUMBER
HQ, USAAMCOM, Redstone Arsenal, AL	2008/07/09		

5. LAST NAME, FIRST NAME, MIDDLE NAME	6. SSN	7. GRADE/STATUS
[redacted]		DB-IV

8. ORGANIZATION OR ADDRESS

NLOS-LS PMO, PEO Missiles & Space, Redstone Arsenal AL

9.

I, [redacted], WANT TO MAKE THE FOLLOWING STATEMENT UNDER OATH:

At the time of the MLRS Safety Risk Reduction Effort (SRRE) effort, I was employed in the AMCOM Safety Office providing system safety support to the MLRS Project Office. Based on knowledge of potential single point failures with the M270A1 and the lack of analysis and testing peformed by Lockheed Martin, I was the one who requested an independent safety assessment be performed, which I called the SRRE, before the AMCOM Safety Office would sign off on a Materiel Release. Further, I was one of the central figures in leading a team of experts, with approval from the MLRS Project Office management, with a goal of analyzing and testing the software in question for safety problems on the M270A1 launcher. There was some resentment on the part of Project Office and particularly Lockheed Martin management in conducting this effort. Lockheed Martin management repeatedly stated that they had complied with contract requirements and that the Government was actually responsible for safety of the system, and at first refused to acknowledge there were any safety problems or issues and even became angry and threatening in ~e meeting. MLRS Project Office management, who tended to side with Lockheed management, allowed the contractor to ome abusive towards me in an effort to get me to back down and end the SRRE. I refused to end the effort early even though it ted for about 9 months and cost over $1 million. As part of the SRRE project, after months of analyis and test equipment eparation, we were able to acquire a launcher and put it through extensive tests to assess and find single point failures with the software and other safety and performance problems as identified in the final report. Even though management seemed reluctant to take action, the problems discovered (particularly the uncommanded cage movement) were fixed by Lockheed Martin before the launchers were sent to the field. The AMCOM Safety Office ultimately provided signature approval for system safety at the Materiel Release Board for the M270A1. The Final SRRE Report provides the details of events discussed above.

The allegation that unsafe launchers were actually sent to the field is an exaggeration of facts, possibly as a result of the bad blood created between Government and Lockheed management and individuals on the SRRE team. There have been no instances noted of the failure in the field. It is our belief that Lockheed fixed the identified software problems as a direct result of the SRRE. If it had not been fixed, even with a marginal to remote possibility of it occurring (such as an estimated 1 time in 10,000 firings), with the number of rockets fired in the life of the system, an uncommanded launcher movement was likely to have occurred. The contractor was required to keep failures to less than 1 in one million, and no single point failures were allowed, but they were unable to demonstrate this. The contractor still to this day does not acknowledge there was a problem, even after it was demonstrated to them. Lockheed did finally fix the identified problems, but the MLRS Project Office spent the money and the effort for the SRRE – over $1M – and Lockheed should pay for that. Lockheed was given ample opportunities to perform the assessment themselves or at least admit there was a problem that needed to be fixed with shared cost, and management refused.

It is my experience and opinion that most managers on both the Government and Lockheed side refused to acknowledge the problem, and pushed everyone to be "team players". As a result of the pressure I felt, including from my own manager who chastised me for not supporting MLRS adequately after a visit from two MLRS managers, I left the Safety Office in 2003.

----------Nothing Follows----------

10. EXHIBIT	11. INITIALS OF PERSON MAKING STATEMENT	PAGE 1 OF 2 PAGES
	[redacted]	

ADDITIONAL PAGES MUST CONTAIN THE HEADING "STATEMENT OF _____ TAKEN AT _____ DATED _____

E BOTTOM OF EACH ADDITIONAL PAGE MUST BEAR THE INITIALS OF THE PERSON MAKING THE STATEMENT, AND PAGE NUMBER UST BE INDICATED.

STATEMENT OF [redacted] TAKEN AT Redstone Arsenal, AL DATED 2008/07/09

9. STATEMENT *(Continued)*

----------Not Used----------

AFFIDAVIT

I, [redacted], HAVE READ OR HAVE HAD READ TO ME THIS STATEMENT WHICH BEGINS ON PAGE 1, AND ENDS ON PAGE 2. I FULLY UNDERSTAND THE CONTENTS OF THE ENTIRE STATEMENT MADE BY ME. THE STATEMENT IS TRUE. I HAVE INITIALED ALL CORRECTIONS AND HAVE INITIALED THE BOTTOM OF EACH PAGE CONTAINING THE STATEMENT. I HAVE MADE THIS STATEMENT FREELY WITHOUT HOPE OF BENEFIT OR REWARD, WITHOUT THREAT OF PUNISHMENT, AND WITHOUT COERCION, UNLAWFUL INFLUENCE, OR UNLAWFUL INDUCEMENT.

[redacted]
(Signature of Person Making Statement)

WITNESSES:

Subscribed and sworn to before me, a person authorized by law to administer oaths, this 9th day of July, 2008 at Redstone Arsenal

[redacted]
(Signature of Person Administering Oath)

ORGANIZATION OR ADDRESS

(Typed Name of Person Administering Oath)

ORGANIZATION OR ADDRESS

(Authority To Administer Oaths)

INITIALS OF PERSON MAKING STATEMENT [redacted]

92

TAB 92

From: [redacted] Mr CIV USA AMC
Sent: Monday, July 14, 2008 9:14 AM
To: [redacted] Mr CIV USA AMC
Subject: FW: MLRS Safety Question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]

As I stated below no recurrence of the anomaly has ever occurred after the software upgrade during the original development process. A Tiger Team was formed initial recommendation were adopted and a special box was developed to insert failures into the launcher to try and facilitate this anomaly but were unsucessful(or successful since UCCM did not occur).

If you have anymore questions please let me know if you would like to see all the paper trail associated with this I will dig it out. Keep in mind there is a lot of documentation of the correction of this issue.

Thanks,
[redacted]

-----Original Message-----
From: [redacted] Mr CIV USA AMC
Sent: Tuesday, July 01, 2008 3:13 AM
To: [redacted] Mr CIV USA AMC
Subject: Re: MLRS Safety Question

[redacted]

Im currently in germany but when I return next week I will try to help you with this matter. To my knowledge there have been no reported cases of uncommanded cage movement since the original issue was resolved, but I will try to help you with this matter as best I can.

Thanks,
[redacted]

Sent from my BlackBerry Wireless Device

----- Original Message -----
From: [redacted] J Mr CIV USA AMC
To: [redacted] Mr CIV USA AMC
Sent: Mon Jun 30 12:08:54 2008
Subject: MLRS Safety Question

[redacted]

I talked with [redacted] this morning in LCMC Staff meeting, and she told me to contact you directly.

I have been assigned to conduct a 15-6 investigation into some old MLRS issues. One of the three allegations is related to the safety of the MLRS M270a1 launcher. In the allegation, a person alleged we were allowing unsafe launchers to be deployed to the field.

from 2003 until the present. I am most interested in anything associated with what is called an "uncommanded cage movement", but would like to see any others as well.

I will be happy to come to you office to review them, and will be glad to make copies for my investigation file.

Whatever this will work best for you is fine with me.

Any assistance/information you can provide on this will be greatly appreciated.

Thanks

[redacted]

[redacted]
Command Ombudsman
US Army Aviation & Missile Command

[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

93

TAB 93

DETAILS:

30th Field Artillery Regiment, Ft. Sill, OK:

Between 1500 and 1700, 27 Jun 06, the following individuals were interviewed by [redacted] and [redacted] this office, regarding the safety of the MLRS weapon system:

[redacted] **SSN:** [redacted]
Telephone [redacted] **DOB:** [redacted] **POB:** [redacted]

[redacted] is an instructor on the MLRS system and has been working the past 13 years on the weapon system. [redacted] has worked on three separate platforms of the MLRS to include the M270, the M270A1 and the HIMARS. [redacted] stated that there are items that tend to fail due to the complicated amount of electronics on the system (e.g. mass storage device) but that he has never thought of the program as being unsafe. [redacted] stated that around 1997 a soldier had been crushed by the MLRS but that was due to operator error. [redacted] stated that he felt that the system was safe for soldiers to use.

[redacted] **SSN:** [redacted]
Telephone [redacted] **DOB:** [redacted] **POB:** [redacted]

[redacted] is with the HHB, 30th Artillery Regiment and has been trained on the M270A1 since CY 2001. [redacted] stated that he had witnessed an involuntary cage movement at Ft. Hood, TX but that the problem stemmed from the fact that the internal limiting switches had burned out. [redacted] stated that there is a large amount of safety built-in to the system and that those items cannot be by-passed. [redacted] stated that the biggest problem that he sees with the MLRS is that it went too "high-tech" too fast for the users to understand all of the electronics thoroughly and that items tend to fail due to their complexity. [redacted] related that he felt the MLRS was a safe system.

[redacted] **SSN:** [redacted]
[redacted] **Telephone** [redacted] **DOB:** [redacted] **POB:** [redacted]

[redacted] has worked on the MLRS for the past 21 years and recently retired from the US Army and was hired as a DAC performing the same work as the Regimental Maintenance Officer. [redacted] stated that he had never seen any uncommanded cage movements nor has he seen any safety problems in performing maintenance.

[redacted] **SSN:** [redacted]
[redacted] **Telephone** [redacted] **DOB:** [redacted] **POB:** [redacted]

DETAILS:

[redacted] related that he was the chief of the school at Ft. Sill, OK and had about 16 years of experience on the MLRS system. [redacted] stated that there is currently 191 MLRS systems and that there have been no cage command problems except with one launcher. [redacted] stated that there were currently 18 launchers deployed. [redacted] stated that when a part fails, it could be due to operator error but that no one will take responsibility for the problem. [redacted] stated that the MLRS system is safe.

LAST ENTRY

TYPED AGENT'S NAME AND SEQUENCE NUMBER

[redacted]

SIGNATURE

ORGANIZATION
Huntsville Fraud Resident Agency
Major Procurement Fraud Unit, USACIDC
Redstone Arsenal, AL 35898

DATE 27 Jun 06

EXHIBIT

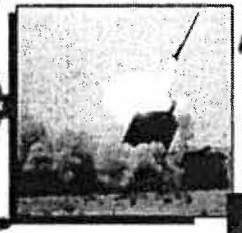
94

TAB 94

94A

SUPPORT TO THE WARFIGHTER
OIF / OEF

MLRS Rockets

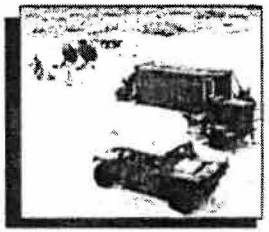


894 Rockets Expended
611 GMLRS Unitary Rockets Expended

JAVELIN

- 787 Weapons Expended

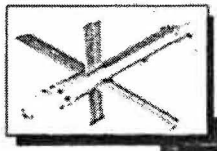
JTAGS



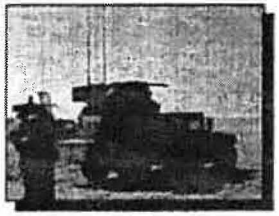
- 1st Fielding of Automated Data Processing Equipment

HELLFIRE
HYDRA 70
Viper Strike

- 9,282 Weapons Expended
- 2.75" Rockets Expended 79,946

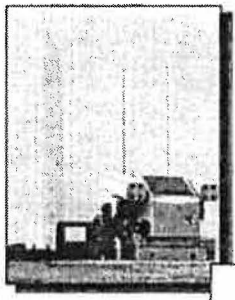


Cruise Missile Defense Systems

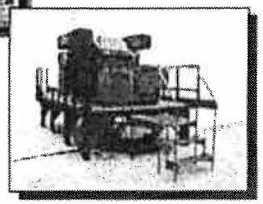


- Special Mod to Enhance Force Protection

Homeland Defense



- Short-Range Air Defense to Protect Critical Assets (Sentinel Radar, STINGER and Avenger)



PATRIOT

- PATRIOT: 22 Expended

TOW-ITAS

- 6,397 Weapons Expended

ATACMS

- 44 Unitary Weapons Expended
- ATACMS BLK 1 Expended 379
- ATACMS BLK 1A Expended 78

94B

MISSILES AND SPACE

M270A1 Field Reliability

PRECISION FIRES ROCKET & MISSILE SYSTEMS

M270A1 RELIABILITY

As of 11/30/08

OVERALL (01 APR 02 – 31 OCT 08)

	M270A1 LAUNCHER OPERATIONAL TIME (Hours)						FCS LRU FAILURES			FCS LRU MTBF (Hours)		
	TOTAL OPERATIONAL TIMES			AVG. PER LAUNCHER PER MONTH								
UNIT	OVERALL	LAST 12 MONTHS	CURR. MONTH	OVERALL	LAST 12 MONTHS	CURR. MONTH	OVERALL	LAST 12 MONTHS	CURR. MONTH	OVERALL	LAST 12 MONTHS	CURR. MONTH
FT. HOOD 2/20	53,459	458	0	35.2	2.0	0.0	52	1	0	913	458	*
KOREA 1/38	71,312	6,744	344	48.1	29.6	18.1	55	17	0	1,064	397	*
KOREA 6/37	61,562	8,157	1,221	45.0	35.8	64.3	168	31	0	353	263	*
FT. SILL 2/4	111,649	32,290	211	81.6	141.6	11.1	68	20	0	1,459	1,615	*
FT. HOOD 1/21	20,239	431	0	18.7	1.9	0.0	45	2	0	450	216	*
FT. SILL 3/13	26,132	1,403	12	26.0	6.2	0.6	45	5	0	581	281	*
1/142 FA FT.	7,144	3,048	91	7.4	13.4	4.8	9	0	0	794	*	*
FT. SILL 2/18	16,816	372	14	20.6	1.6	0.7	20	2	0	841	186	*
1/147 SD NG	6,454	3,751	23	8.9	16.5	1.2	16	4	0	403	938	*
2/131 TX NG	981	187	0	2.2	0.8	0.0	5	0	0	196	*	*
TOTAL	**375,748**	**56,841**	**1,916**	**29.4**	**24.9**	**10.1**	**483**	**82**	**0**	**691**	**693**	**Sm**
							MTBF Requirement (Hrs):			293	293	293

NOTE: * NUMBER OF FAILURES ARE TOO SMALL FOR CALCULATIONS

95

TAB 95

[redacted] Mr CIV USA AMC

Fr m: [redacted] Ms CIV USA AMC
Sent: Friday, May 16, 2008 10:19 AM
To: [redacted] Mr CIV USA AMC
Su t: FW: Safety Assessment Report (UNCLASSIFIED)

lassification: UNCLASSIFIED
Caveats: NONE

FYI - [redacted]

-----Original Message-----
From: [redacted]
Sent: Wednesday, May 30, 2001 12:04 PM
To: [redacted]
Cc: [redacted] ACQ
Subject: RE: Safety Assessment Report

Pursuant to your message, please find the following response:

A comprehensive SAR shall be prepared for the M270A1 IAW DI-SAFT-*)!)@ that incorporates the safety assessment efforts conducted under the ILMS and IFCS programs. The M270A1 SAR shall summarize the combined safety program, tasks and activities, and describe all design safety requirements, features, functions and charateristics of the hardware and applicable launcher software. All safety hazdards and risks associated with the M270A1 configuration that were identified during development and testing shall be also documented along with any procedural hazards, controls and precautions required for tactical and training launcher oration/maintenance. System, subsystem, software and operating and support hazard analysis l be performed and/or updated on the changes from the basic M270 to the M270A1 launher nfiguration, with emphasis on safety critical components and functions, and the results corporated into the SAR.

hedule of Submittal:

	Start	Complete
Prepare Draft SAR	12/01/00	7/30/01
Release Draft for Review	7/30/01	8/20/01
Incorporate Comments	8/20/01	10/30/01
Release Final SAR		10/30/01

The above schedule will permit inclusion of the IWIU and LCFCP safety analyses as an integral part of the M270A1 SAR.

This CDRL will be delivered IAW the terms and conditions of the firm fixed price contract. No additional funds will be required nor requested for the CDRL preparation under said terms.

[redacted]
Financial Manager, Fire Support

-----Original Message-----
From: [redacted] ACQ [redacted]
Sent: Tuesday, May 29, 2001 8:55 AM
To: [redacted]
[redacted] ACQ
bject: Safety Assessment Report

[redacted] in Hville some weeks ago and one of the topics that was discussed was the need for a Safety Assessment Report. I assumed that L/H would go back home and based on contracting 101, [redacted] would initiate, prepare and submit a SAR. It is a requirement of the contract and no additional direction and/or costs are needed.

Please inform as to what your plans are concerning this simple matter. Please let me know by 30 May 01. I will direct you to do the work if I do not hear from you by the aforementioned date . You must comply with the contract.

[redacted]

-----Original Message-----
From: [redacted]
Sent: Saturday, May 05, 2001 9:40 AM
Classification: UNCLASSIFIED
Caveats: NONE

96

TAB 96

DECLARATION OF [redacted]

I am the Chief of the Branch of the AMCOM Acquisition Center that is responsible for the acquisition of M270 and M270A1 launchers. I have acted in that capacity since 2001.

During the summer of 2003, I began the process of seeking reimbursement of funds paid by the US Army to; (i) perform Safety Risk Reduction Effort testing to determine potential safety hazards with the M270A1 launcher; and (ii) to design and implement changes resulting from that testing. In August 2003, I drafted a demand letter to send to Lockheed Martin and was having it reviewed by the AMCOM Legal Office when I learned of and received the referral through Army channels of Mr. Daniels' allegations to the OSC. A copy of that draft demand letter is attached as a tab to the Army's response to these allegations.

Thereafter, the Army CID chose to investigate these allegations and requested that I stop any contractual actions against Lockheed Martin until after its investigation was concluded. I complied with its request.

Dated: August 11, 2008

[redacted]

SECOND

97

TAB 97

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
REDSTONE ARSENAL, ALABAMA 35898-5280

28 January 2008

REPLY TO
ATTENTION OF
AMSAM-AC-TM-C
Acquisition Center, PFRMS Missiles Services Division

[redacted]
Lockheed Martin Missiles & Fire Control – Dallas
Post Office Box 650003
Mailstop MC-09
Dallas, Texas 75265-0003

Dear [redacted]

Reference contract DAAH01-00-C-0109, reimbursement of costs associated with the Safety Risk Reduction Effort (SRRE) required to field the M270A1 launchers.

The Government was notified in September 2000 by Lockheed Martin that they had witnessed at least five instances of un-commanded cage movement. It was these events coupled with the lack of contractually-required safety analysis by the contractor that led the Safety Office to voice concerns to the Precision Fires Project Management Office (PMO) that the safety of the launcher could not be determined in time for Material Release. These failures, along with Lockheed Martin's inability to find the root causes of the un-commanded cage movement forced the Government to establish an independent Government Team. This Team, called the Safety Risk Reduction Effort (SRRE), was formed to make a safety assessment of the M270A1 Launcher, specifically to evaluate the level of safety, identify risks, and make recommendations to the PMO in support of a Material Release Decision. The results of the Government SRRE revealed that the contractor failed to provide the Government with hardware that met the safety requirements addressed in the Performance Specification MIL-PRF-35500. Two software changes and six specific design related fixes were recommended by the SRRE for incorporation into the design of the M270A1 Launcher to enhance safety and correct the identified deficiencies. The Government proceeded to get all the safety problems resolved as the contractor Lockheed Martin had failed to perform the safety effort required by the referenced contract. In addition, the contract required the submission of a Safety Assessment Report (SAR) which was due in April 2001, but was not actually received until December 2001. Lockheed Martin in their letter number 3-19210/2003L-5170, dated 04 April 2003 stated that the assertion that the SAR was not delivered in a timely manner is a misunderstanding of the facts as they had received telephonic Government concurrence. However, this concurrence was not provided by the contracting officer and therefore, was in violation of Paragraph E-9 entitled "Technical

Liaison and Surveillance" which states in part "No change in the scope of this contract, which would effect a change in any term or provision of this contract, shall be made except by modification executed by the contracting officer. The contractor is responsible to ensure that all contractor personnel are knowledgeable and cognizant of this contract provision. Changes to the contract effort accepted and performed by contractor personnel outside of the contract scope of work, without specific authorization of the contracting officer, shall be the responsibility of the contractor."

Therefore, based upon the above I am hereby demanding reimbursement of the costs incurred by the Government for the work that Lockheed Martin failed to perform in accordance with the terms and conditions of the contract. The Government's costs incurred are $1,600,000.

If you have any further comments or questions, please contact Ms. Colleen Rodriguez at (256) 876-8849 or the undersigned at (256) 842-6110.

Sincerely,

[redacted]
Chief, PFRMS Missiles
Services Division

CF:
SFAE-MSL-PF-BM[redacted]
SFAE-MSL-PF-BM-A/M[redacted]
DCMA Lockheed Martin Dallas[redacted]

98

TAB 98

14 November 2008

MEMORANDUM FOR RECORD

SUBJECT: Discussion with [redacted]

On Friday, 14 November 2008, I had a discussion with [redacted], who was the Deputy Project Manager in MLRS at the time the independent Safety Assessment Report (SAR) was performed by the Safety Risk Reduction Effort (SRRE) team. He has retired from the Army and currently works for COLSA in Huntsville. [redacted] gave the following details regarding the SAR and the allegations that he pressured [redacted] during this period:

1. [redacted] stated that he had provided extensive testimony to [redacted] in the CID Office on this matter and it was all available as part of her investigation file.

2. [redacted] stated that the issue was that Lockheed Martin had a requirement to do a SAR but they were doing the assessment slowly and to a weak scope of work. Because he wanted to make sure the SAR was done correctly, he and the PM decided to conduct their own SAR to a stronger requirement. He said the allegations that the Project Office spent over a million dollars were incorrect. He said he was told at the start it would cost around $500,000, and he believed the final cost was around $700,000. He also said he believed Lockheed Martin did give the Government some consideration for not performing the report on time.

3. [redacted] said he consulted before the effort with [redacted] and picked him to be part of the SRRE team. He said [redacted] was the Government employee with the most detailed knowledge about the launcher. He also said [redacted] and the team did an excellent job on the SRRE.

4. [redacted] said he didn't believe he pressured [redacted] and he said certainly didn't pressure him to not find problems or do anything other than a correct report.

5. [redacted] said [redacted] got angry with him ([redacted]) during the SRRE project for reasons he ([redacted]) would not discuss with me. [redacted] said after the SRRE project was completed, he recommended tha[redacted] go back to the Aviation and Missile Research and Development Center (AMRDEC). [redacted] was on a matrix assignment from AMRDEC to the MLRS Project Office at the time. [redacted] moved to the Non Line of Sight Project office, and then went back to the AMRDEC later.

6. [redacted] said he didn't feel like the recommendation to go back to AMRDEC was pressure on [redacted]

[redacted]
Investigative Officer

99

TAB 99

-----Original Message-----
From: [redacted] AMRDEC [redacted]
Sent: Monday, October 20, 2008 5:38 AM
To: [redacted] Mr CIV USA AMC
Subject: RE: Follow Up To Investigation (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]

Enjoyed catching up yesterday.....made a few changes, but not much. Good job on taking our conversation and putting it into words. Please see below.

Pls call if I can be of any further help

[redacted]

There was pressure exerted on you and others. The primary source of the pressure was [redacted] (at the time, Deputy PM). The pressure from [redacted] appeared to be an effort to minimize the impacts of the safety problems on the prime contractor (Lockheed Martin), apparently an attempt on [redacted] part to gain the contractor's favorable recommendation for the Deputy PEO position [redacted] coveted. In addition, it seemed that [redacted] also pressured [redacted] (Chief Engineer, PFRMS) to try to get him to force you off of the program and to reconsider your promotion. You refused to leave the program under this pressure and ended up being promoted to DB IV (GS 14/15) in mid 2002.

After the SRRE's findings were made public, You were removed from the SRRE team and replaced. You were not part of the material release process for the M270A1 launcher and any impact the SRRE report had on it.

You were offered an opportunity to go to the NLOS LS Task Force and left the PFRMS PMO in Sep 2002.

-----Original Message-----
From: [redacted] Mr CIV USA AMC [redacted]
Sent: Friday, October 17, 2008 4:44 PM
To: [redacted] AMRDEC
Subject: RE: Follow Up To Investigation

[redacted]

Thanks again for coming over to the office yesterday. Based on our discussions, the following is a summary of what I took from the session:

There was pressure exerted on you and others. The primary source of the pressure was [redacted] (at the time, Deputy PM). The pressure from [redacted] appeared to be an effort to minimize the impacts of the safety problems on the prime contractor (Lockheed Martin), apparently an attempt on [redacted] part to gain the contractor's favorable recommendation for the Deputy PEO position [redacted] coveted. In addition, it seemed that Mr. Burke also pressured Jim Franklin to try to get him to force you off of the program.

Because of this, once the Safety Risk Reduction Effort report was completed and ready to be staffed in the PM/PEO, you chose to take another assignment to keep from having [redacted] and/or [redacted] damage your career or prevent you from getting promoted.

If you want to add anything, or if there are corrections, please let me know.

Thanks again for your assistance.

[redacted]

-----Original Message-----
From: [redacted] Mr CIV USA AMC
Sent: Friday, October 03, 2008 11:41 AM
To: [redacted] AMRDEC
Subject: Follow Up To Investigation

[redacted]

Thanks again for all of your help on the investigation. I finally got everything compiled and signed off by MG Myles.

After review of the AR 15-6 investigation by AMC legal, they have asked me to follow up on a couple of questions. I can handle this by email or by getting a new statement (or addendum) - however you prefer.

The question that has arisen deals with comments about being under pressure. In your case, the question related to part of the statement that said you felt pressured by the MLRS PMO and Lockheed Martin. I think what AMC Counsel is looking for is where or who did the pressure come from; what did you feel pressured to do; and was there any action to relieve or stop the pressure to try and keep you from leaving the PMO?

Any thoughts you wish to provide on this would be greatly appreciated.

I will be out of the office Monday-Wednesday next week, but will watch email, and will return on Thursday if you want to meet or discuss.

Thanks again for your help.

Best regards,

[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

100

TAB 100

-----Original Message-----
From: [redacted]
Sent: Tuesday, October 07, 2008 10:34 AM
To: [redacted] Mr CIV USA AMC
Subject: RE: Follow Up To Investigation

[redacted],

In response to your questions:

1) What AMC Counsel is looking for is where or who did the pressure come from?

Answer: During the entire time of the safety evaluation of the M270A1 Launcher sofware, it was obvious that the MLRS project office program management and Lockheed management was not very supportive of this effort. At the end of the effort, [redacted] who was the Tech Management Chief at the time and has since retired, visited my Chief, [redacted], and discussed his dissatisfaction with my support, and attempted to separate the project office from me by stating that they assigned a safety POC internally in the project office and wanted me to go through him from now on instead of coordinating with program and product managers and tech leads. This was after about 19 years of exceptional support to the MLRS project office, and it was normal for me to talk with anyone in the project office, managers and technical personnel, anytime I wanted and needed to. My Chief, [redacted], who has since retired, told [redacted] that I was a problem anyway and he would take care of it. [redacted] reprimanded me verbally for the insufficient support to MLRS and that I was to go through this new interal MLRS safety POC! First off, I believe that [redacted] did not want to look bad to the project office, and I believe he felt it was easier to control me than stand up to the project office. This was totally against what the safety office was supposed to represent as independent support and oversight. Secondly, I did nothing wrong to deserve a reprimand for exceptional support to the project office, regardless of the software safety effort we just completed. I believe that pressure from [redacted] (representing the project office program management) and [redacted] the safety chief (overly willing to please the project offce so he did not look bad), sold me out and stabbed me in the back.

2) What did you feel pressured to do?

Answer: Immediately after the reprimand from [redacted], I returned to my desk beat down and had a message on my phone machine from a former Supervisor [redacted] in the AMCOM Safety Office several years earlier and he wanted me to come over and work for the SMDC Safety Office since they had an open position, to which he was the lead Safety Engineer. [redacted] had no knowledge of this incident or of the software safety effort that I was involved with. The next day I interviewed with [redacted] and the Chief, [redacted] and accepted the position within a couple of days. Although a weird coincidence, I was planning on looking for a new job anyway after the undeserved reprimand. In addition, the pressure, hard feelings and all around bad blood between me, the MLRS project office program management and now my Chief led me to believing I needed to leave the safety

office or situations could have gotten much worse. Further, after [redacted] retired several years later, I (supporting the GMD project office) and three others from the AMCOM Safety Office applied for his Chief's position. During my interview with the AMCOM Chief of Staff at the time, I got several questions about my relationship with [redacted]. I learned later that [redacted] was queried by the Chief of Staff on the four candidates, and he put a bad word in for me to the Chief of Staff that prevented me from ever even getting a fair shot at the job. I was certainly one of the most experienced and at least as qualified as the top candidate who eventually got the job.

3) Was there any action to relieve or stop the pressure to try and keep you from leaving Safety?

Answer: No, everyone pretty much stayed clear of me like a wounded animal. [redacted] did not say goodbye or wish me well in my new job, and on the day I was to leave, he made comments like he just learned I was leaving. He seemed generally happy about it. I was the senior safety engineer with 22 years of experience in that office and you would think losing that kind of experience would be viewed as bad for an office, especially when lateraling over to a rival Safety Office. I did well at SMDC Safety, as matrixed support to the GMD project office, and ultimately was promoted twice in three years, and for about a year and a half became the Safety Advisor to the GMD Program Director, a two star general, and his Deputy. They moved me over to AMRDEC as matrixed support to GMD during that time, and although I have been here at the NLOS-LS project office for the last two years, I have remained AMRDEC matrixed support.

If you need anything else, just let me know. I will be out the rest of the week, but you can reach me on my cell phone.

[redacted]
W: [redacted]
C: [redacted]

-----Original Message-----
From: [redacted] Mr CIV USA AMC [redacted]
Sent: Friday, October 03, 2008 11:42 AM
To: [redacted]
Subject: Follow Up To Investigation

[redacted]

Thanks again for all of your help on the investigation. I finally got everything compiled and signed off by MG Myles.

After review of the AR 15-6 investigation by AMC legal, they have asked me to follow up on a couple of questions. I can handle this by email or by getting a new statement (or addendum) - however you prefer.

The question that has arisen deals with comments about being under pressure. In your case, the question related to part of the statement that said you left the Safety Office because of the pressure. I think what AMC Counsel is looking

for is where or who did the pressure come from; what did you feel pressured to do; and was there any action to relieve or stop the pressure to try and keep you from leaving Safety?

Any thoughts you wish to provide on this would be greatly appreciated.

I will be out of the office Monday-Wednesday next week, but will watch email, and will return on Thursday if you want to meet or discuss.

Thanks again for your help.

Best regards,

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TAB 101

3 November 2008

MEMORANDUM FOR RECORD

SUBJECT: Discussion with [redacted]

On Monday, 3 November 2008, I had a meeting and discussion with retired [redacted] who was AMCOM Chief of Staff who made the selection of the new Chief of the safety office mentioned by [redacted] in his 7 October 2008 email. In the email, [redacted] stated that [redacted], the former Chief of the AMCOM Safety Office, "... was queried by the Chief of Staff on the four candidates, and he put a bad word in for me to the Chief of Staff that prevented me from ever even getting a fair shot at the job."

He has retired from the Army and currently works for CSC in Huntsville. [redacted] stated he did not remember the exact t details of the discussion with [redacted] but did remember he asked for [redacted] assessment of each of the candidates who worked in the safety office under him. M[redacted] stated that he did not recall any negative feedback on [redacted] but whatever the feedback was did not impact the selection of the new Safety Office Chief. The selectee was [redacted] who was the Acting Chief of the Space and Missile Defense Command Safety Office at the time. [redacted] that her experience and her performance in the interview were clearly better than any of the other candidates, and that she was far and away the best candidate for the position.

Based on my conversation with [redacted] I do not believe any comments or feedback by [redacted] had an impact on the selection of the new Chief of the AMCOM Safety Office.

[redacted]
Investigative Officer