RECORDS CODE SHEET
SND 4535 (Rev. 1-62)

NAVAL AVIATION SAFETY CENTER

GENERAL (Card No. 1)

Bureau Number	1 5 0 5 9 7	16-21
Reporting Custodian	G 1 5	22-24
Type of Duty	3 2	25-26
Major Command	3	27
Aircraft Damage	A	28
Aircraft Injury	D	29
Maneuver prior to Accident	G	30
First Accident type	F 1	31-32
First Accident phase	4 3 1	33-35
Second Accident type	G 8	36-37
Second Accident phase	4 3 1	38-40
Type of Operation	3	41-42
Contributing Cause Factors	2 5	43-47
Pilot Factor, First		48-49
Pilot Factor, Second		50-51
Pilot Factor, Third		52-53
First other Personnel Factor	C2 ~~G B~~	54-55
Second other Personnel Factor	D 2	56-57
Primary Major Material Factor	T	58
Secondard Major Material Factor		59
Design		60
Facilities		61
Special Data & Cond.	8 B 3	62-68
Type of Flight Hazard		69
Pri. Cause/~~Avoidable Inc. or Fls Hazard Gr Acd't~~	2	70
Causal Fac for Pri-Cause	C2 ~~G B~~	71-72
Carrier Hull Number		73-74
No Personnel Card ("R")		80

SUPPLEMENTARY (Card No. 2)

Weather		16-21
Kind of Flight	1 A 2	22-24
Relative Wind - Direction		25
Relative Wind - Velocity	4	26
Relative Wind (Old Code - Not in Use)		27
Clearance	1	28
Time of Day	2	29
Number of other Aircraft		30
Altitude of Occurrence	2 3 0	33-35
POSSIBLE FACTORS: Contributing Cause Factors	5	36-37
Pilot Factor		38-39
Other Personnel Factor	G B	41-42
Major Material Factor	T	43
Design		44
Facilities		45
Weather		46
Non-Navy Injury ("R")		47
Number of "A" or "L" or "M" Injury		48-49
Number of "B" Injury		50-51
Number of "C" Injury		52-53
Number of "D" Injury	0 1	54-55
Number of "E" Injury		56-57
Location	61 1 A 6 E L T R O	62-68
Facility Data		69-74

ACCIDENT DAMAGE A (9)

ACCIDENT INJURY D (10)

FISCAL YEAR 3 (75)

Don't Count	Enemy Action	Other Aircraft	
I.D. NO. 3	0 6	0 5 1	0 2
1 YR	2 3 MO	4 5 DAY	6 7 TYP 8 SEQ
		-A 4 C	
		11 12 13 14 15 Model	

~~SPECIAL ATTN: ("X")~~

Model Code 0 4 (76 77)

IBM: The above Fields are to be punched in all Coded Code

PERSONNEL STATISTICS (Card No. 3)

File Number → (b) (6) [redacted]

Name	16	17	18	19	20	21
03 (b) (6) [redacted]						
04						

Rank/Rate	Br Service	Age	Yrs Experience	Status	Position	Inj to Ind	Abandon A/C	Pilot Factor Involved	Trainer Utilization	Instr. Card	Total Time All Models	All Models 3 Months	All Series This Model	All Ser Mod 3 Months	CV Landings	Instrument Hours	Nite Hours	Total Time Jet ~~or Hole~~
2	5	N	J	A	1	D	2	2	0 5	2	4 4	0 3	0 1	0 1		0 8	0 5	5 0
32	35	37	40	42	43	47	49	51	52-53	55	56-57	58-59	62-63	65-66	68	69-70	71-72	73-74

Name	16	17	18	19	20	21
File Number →						

IBM: PERSONNEL CODED ON REVERSE SIDE ☐

CODED [illegible] REVIEWED [illegible] LOGGED OZ PUNCHED GG VERIFIED ____ REVIEWED [illegible] REPUNCHED ____

CODE SHEET REVIEWED BY CLASS DESK ANALYST [illegible] (Initials) 3/16/63 (Date)

[illegible]

A&R DEPARTMENT NARRATIVE CODE SHEET

YEAR	MONTH	DAY	TYPE	NUMBER	DAMAGE	INJURY	MODEL
3	Ø	6	N	S	1	7	2	A	D	-	A	4	C

BUREAU NUMBER: 1 5 Ø 5 9 7

75	76	77	78
3	Ø	4	6

PREPARED BY Jm R&S LOG CLERK _____ PUNCHED _____ VERIFIED _____

NARRATIVE BRIEF

FIRE IN FLT/PLT EJECT/MINOR INJ/FIRE WARN LITE ON CLBOT
FLT LVL 230 WINGMAN CNFMD EXT FIRE/LOSS PWR / FLT CONT/
WINGMAN OBS AF SEP IN FLT/TURB /1ST STAGE FAIL DUE JMPRP
TORQ/LOCR/PLT INJ DUE FAIL P/ROCRT JET FASTENER REL/PLT
TORQ/LOCR/PLT INJ DUE FAIL PORT RCRT JET FSTNR REL/PLT
DRAGGED BY CHUTE/ MAINT ERR FCTRY CONV ENG/PLT FAIL PUL
D RING

PREPARED BY Jm PUNCHED 19 JUL 1963 VERIFIED D

COMPLETION SHEET

Action on Correction to		Action Required	Completed Code/Date
3750-1			
DIR			
Misc. Items for Action or Correction			
To Code	From Code/Date		
Analysis	53/7/5	Very good Report. No close out Required per A+R	

Endorsements Reviewed and Action Completed on All Phases of this Report.

No closeout ltr

01 OCT 1963

CLOSED

3

FF4-1/3750
Ser 80/ 63467

25 JUL 1963

SPECIAL HANDLING REQUIRED IN ACCORDANCE
WITH PARAGRAPH 70, OPNAVINST 3750.6E

FIFTH ENDORSEMENT on HAMRON 15 AAR ser 1-63 concerning A-4C
BUNO 150597 accident occurring 5 June 1963 pilot (b) (6) [redacted]

From: Commander Naval Air Force, U. S. Pacific Fleet
To: Commander, U. S. Naval Aviation Safety Center

Subj: HAMRON 15 AAR ser 1-63

1. Forwarded, concurring in the comments and recommendations of the Aircraft Accident Board, and in the remarks contained in subsequent endorsements.

(b) (6) [redacted]

By direction

Copy to:
BUWEPS (F 123)
COMNAVAVNSAFECEN (2)
CMC (CODE AAP)
CG AIRFMFPAC
CG FMFLANT
CG FIRST/SECOND/THIRD MAW
CO MAG 13, 32, 31
CO NAVPARAFAC
BUWEPSREP CURTISS WRIGHT
BUWEPSREP LONG BEACH
CO MARATGRON 121, 211, 311
CO HAMRON 15
CG FMFPAC

4

ORIGINAL

SPECIAL HANDLING REQUIRED
IN ACCORDANCE WITH PARA 70
OPNAV INSTRUCTION 3750.6D

FF13-5
25/OKD/ghs
3750/1
19 JUL 1963

FOURTH ENDORSEMENT on H&MS-15 AAR serial 1-63, concerning A-4C BuNo 150597, accident occurring 5 June 1963, pilot (b) (6)

From: Commanding General, Aircraft, Fleet Marine Force, Pacific
To: Commander, U. S. Naval Aviation Safety Center
Via: Commander Naval Air Force, U. S. Pacific Fleet

Subj: H&MS-15 AAR 1-63; forwarding of

1. Forwarded, concurring with the comments and recommendations of the Aircraft Accident Board and by the subsequent endorsers, in particular the recommendation concerning the rocket jet fastener.

W. H. MILLER
Chief of Staff

Copy to:
NAVAVNSAFCEN (2)
BUWEPS (C-13)
BUNAVWEPSREP CURT WRIGHT
BUNAVWEPSREP DAC, LONG BEACH
AFPR WAD WOODRIDGE
CMC (CODE AAP)
COMNAVAIRPAC
CG, THIRD MAW
CO, MAG-15
CG, FMFPAC
CG, FMFLANT
CG, FIRST MAW
CG, SECOND MAW
CO, MAG-13
CO, MAG-32
CO, MAG-31
OIC NAVPARUNIT, NAF EL CENTRO
CO, VMA-121
CO, VMA-211
CO, VMA-311
CO, H&MS-15

SPECIAL HANDLING REQUIRED IN
ACCORDANCE WITH PARAGRAPH 70
OPNAV INSTRUCTION 3750.6D

ORIGINAL

ORIGINAL

25:MEC:kwl
3750
JUL 16 1963

SPECIAL HANDLING REQUIRED IN ACCORDANCE
WITH PARA 70 OPNAV INSTRUCTION P3750.6E

THIRD ENDORSEMENT on H&MS-15 AAR serial 1-63, concerning A-4C(A4D-2N), 150597, accident occurring 5 June 1963, pilot (b) (6)

From: Commanding General, 3rd Marine Aircraft Wing
To: Commander, U. S. Naval Aviation Safety Center
Via: (1) Commanding General, Aircraft, Fleet Marine Force, Pacific
(2) Commander, Naval Air Force, Pacific

Subj: Headquarters and Maintenance Squadron 15 AAR serial 1-63: forwarding of

1. Forwarded, concurring with the comments and recommendations of the Aircraft Accident Board and by the subsequent endorsements, with the following additional comments:

a. Recent aircraft accident reports pointed up the need for a re-evaluation of the current canopy release fittings. BuWeps message 161450Z, May 1963 directed just such an evaluation. CG AIRFMFPAC message 220010Z, June 1963 Notal, directed this command to select an evaluating unit. Marine Aircraft Group 33 was so designated. In addition all units within this command will be directed to place more emphasis on the utilization of the Aviation Physiological Training Unit.

H. Lawrence

H. LAWRENCE
CHIEF OF STAFF

COPY DISTRIBUTION:

NAVAVNSAFCEN air mail	(2)	CG, FMFLant	(1)
BUWEPS (C-13)	(1)	CG, 1st MAW	(1)
BUNAVWEPSREP CURT WRIGHT	(1)	CG, 2nd MAW	(1)
BUNAVWEPSREP DAC, LONG BEACH	(1)	CO, MAG-13	(1)
AFPR WAD WOODRIDGE	(1)	CO, MAG-32	(1)
CMC (Code AAP)	(1)	CO, MAG-31	(1)
COMNAVAIRPAC	(1)	OIC NAVPARUNIT, NAF EL CENTRO	(1)
CG, AirFMFPac	(1)	CO, VMA-121	(1)
CG, 3rd MAW	(1)	CO, VMA-211	(1)
CO, MAG-15	(1)	CO, VMA-311	(1)
CG, FMFPac	(1)		

SPECIAL HANDLING REQUIRED
IN ACCORDANCE WITH PARA 70,
OPNAV INSTRUCTION P3750.6E

ORIGINAL

6

ORIGINAL

SPECIAL HANDLING REQUIRED
IN ACCORDANCE WITH PARA 70,
OPNAV INST P3750.6D

ASO:DPC:rlk
3750
5 JUL 1963

SECOND ENDORSEMENT on H&MS-15 AAR Serial 1-63 concerning A-4C, 150597, accident occurring 5 June 1963, pilot (b) (6)

From: Commanding Officer, Marine Aircraft Group 15
To: Commander, U. S. Naval Aviation Safety Center
Via: (1) Commanding General, 3rd Marine Aircraft Wing
(2) Commanding General, Aircraft, Fleet Marine Force, Pacific
(3) Commander, Naval Air Force, Pacific

Subj: Headquarters and Maintenance Squadron 15, Aircraft Accident Report 1-63, forwarding of

1. Forwarded concurring with the comments and recommendations of the Board and the FIRST ENDORSEMENT.

2. The recommendation concerning the rocket jet fastener deserves emphasis. Had the fastener released properly, it is likely this pilot would have been uninjured. The rocket jet fastener has been subject to criticism for quite some time, so apparently the problem is a difficult one. However, this case and others that have preceeded it still serve to establish the need for improvement on this vital piece of personal safety equipment.

Michael R. Yunck
MICHAEL R. YUNCK

DISTRIBUTION:

NASC	(2)	CO, FMFLant	(1)
BUSAFE (C-13)	(1)	CO, 1st MAW	(1)
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BUNAVWEPSREP DAC, LONG BEACH	(1)	CO, MAG-13	(1)
AFFR WLD WOODRIDGE	(1)	CO, MAG-32	(1)
CNO (Code AAP)	(1)	CO, MAG-31	(1)
COMNAVAIRPAC	(1)	OIC NAVPARUNIT, MAF EL CENTRO	(1)
CO, AirFMFPac	(1)	CO, VMA-121	(1)
CO, 3rd MAW	(1)	CO, VMA-211	(1)
CO, MAG-15	(1)	CO, VMA-311	(1)
CO, FMFPac	(1)		

7

ORIGINAL

FITO:ESJ:jpd
3750
24 June 1963

FIRST ENDORSEMENT to HMMS-15 AAR Serial 1-63 concerning A-4C (A4D-2N) BuNo 150597 occurring 5 June 1963; pilot (b) (6) [redacted]

From: Commanding Officer, Headquarters and Maintenance Squadron 15
To: Commander, Naval Aviation Center
Via: (1) Commanding Officer, Marine Aircraft Group 15
(2) Commanding General, 3rd Marine Aircraft Wing
(3) Commanding General, Aircraft Fleet Marine Force, Pacific
(4) Commander, Naval Air Force, Pacific

Subj: Headquarters and Maintenance Squadron 15 Aircraft Accident Report; forwarding of

1. Forward concurring with the comments and recommendations of the board except as noted below.

A-1 The recommendation is concurred with.

A-2 Flight Safety AmpFur Serial 338 has been submitted on the canopy release assembly.

A-3 The A-4C (A4D-2N) Flight Manual (NavWeps 01-40AVB-1) dtd 1Apr63 pages 36, 69 and 72 indicate a positive requirement for the pilot to remove the D-ring from its retainer pocket during descent. This requirement is also spelled out in paragraph 17, page 5-13 of the A-4C (A4D-2N) NATOPS Manual dtd 18Jan63.

BuWeps Aviation Clothing and Survival Equipment Bulletin No. 14-62 dtd 23Jul62 and ComNavAirPac General Aircraft Bulletin 31-62 dtd 2Dec62 had been installed on the parachute used by LtCol. (b) (6) [redacted] and on all other NB-9 parachutes utilized by this squadron. Incorporation of this bulletin causes the manual ripcord housing clamp to be released by a lanyard attached to the left hand riser which is activated by the aerodynamic forces that deploy the parachute after the barometric release. This sequence of events causes the parachute canopy to be attached to the parachutist only by the canopy release fittings so that after parachute descent the parachutist can be separated from the canopy by actuation of the canopy releases. The parachute container will hang down away from the parachutist's back giving a positive indication that the canopy is ready to be released.

In view of the foregoing it is requested that a clarification of the referenced publications be issued to confirm the necessity for pulling the parachute D-ring after automatic chute opening.

E. S. John
E. S. JOHN

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

AIRCRAFT ACCIDENT REPORT

SPECIAL INSTRUCTIONS: SEE OPNAVINST 3750.6C

GENERAL

SECTION A - IDENTIFICATION

1. A/C ACCIDENT BOARD APPOINTED BY: Marine Aircraft Group 15, 3d MAW, MCAS, El Toro, California
2. DATE OF ACCIDENT: 5 June 1963
3. TIME (LT): 1055T
4. Commander, Naval Aviation Safety Center
5. ENCLOSURES: (1) Medical Officer's Report; (2) Pilot's Statement; (3) Wingman's Statement; (4) Maintenance Officer's Statement; (5) Wreckage Diagram; (6) Copy of Flight Schedule; (7) Location of Missing Bolts/Tab, Washers; (8) Photographs (A-I)

TO: ~~[illegible]~~

6. VIA: (1) CO, HMMS-15; (2) CO, MAG-15; (3) CO, 3d MAW; (4) CO, AIRPHEPAC; (5) COMNAVAIRPAC; (6); (7) ~~[illegible]~~

ORIGINAL

7. ACTIVITY OPERATING A/C (If different than item 2): Headquarters and Maintenance Squadron 15 (MAS-15), 3d MAW, MCAS, El Toro, California
8. ACTIVITY OPERATING AT: (If different than item 2)
9. KIND OF FLIGHT: IAP
10. TIME OF DAY: [ ] DAWN [X] DAY [ ] DUSK [ ] NIGHT
11. LOCATION OF ACCIDENT: 0650/7NM of JULIAN VOR
12. ELEVATION ABOVE SEA LEVEL: Approx. 3400'
13. PLACE OF LAST TAKE-OFF: MCAS, El Toro, California
14. CLEARED: FROM MCAS, El Toro TO MCAS, El Toro
15. TYPE CLEARANCE: [X] IFR [ ] VFR [ ] OVER [ ] LOCAL [X] OPERATIONAL [ ] AIRWAYS [ ] DIRECT [X] OTHER (Specify) APC
16. TIME IN FLIGHT: 00 + 17
17. TYPE ACCIDENT: F1.; 08
18. PHASE OF FLIGHT: In flight

A/C

19. MODEL: A-4C (A4D-2N)
20. SERIAL NO.: 150597
21. DAMAGE TO A/C: [X] A [ ] B [ ] C [ ] D [ ] E [ ] F
22. DOLLAR COST: $587,000.
23. AIRSPEED (Kts.): 220
24. A/C WEIGHT: 16,400 lbs.
25. LIST MODEL, SERIAL, REPORTING CUSTODIAN AND DAMAGE CLASSIFICATION OF ANY OTHER A/C INVOLVED (Complete an OPNAV FORM 3750-1 for each A/C involved): None

SECTION B - PERSONNEL DATA

1. NAME (Last, first and middle initials)	2. RANK RATE	3. FILE SER. NO	4. DATE BIRTH	5. ENTERED ON DUTY	6. AGE	7. NO. OF YEARS DNA	8. BILLET	9. POSITION	10. DUTY CODE
PILOT (at controls at time of accident)									
(b) (6)			7333	USMC	42	20	Pilot	Cockpit	D
CO-PILOT									
N/A									

PERSONNEL		8. OPT - OPERATIONAL FLIGHT TRAINER AVAILABLE	8. OPT - OPERATIONAL FLIGHT TRAINER USED	9. CPT - COCKPIT PROC. TRAINER AVAILABLE	9. CPT - COCKPIT PROC. TRAINER USED	10. UNIT TO WHICH PERSONNEL ARE ATTACHED	11. TYPE INSTRUMENT CARD
PILOT	YES	X	X			MABS-15, MAG-15	[X] STANDARD [ ] SPECIAL
	NO			X	X		
CO-PILOT	YES						[ ] STANDARD [ ] SPECIAL
	NO						

12. PILOT UPTIME IN HOURS

ITEM		PILOT	CO-PILOT	ITEM	PILOT	CO-PILOT
ALL MODELS		4451.5		CV LANDINGS DAY/NIGHT	0	
ALL MODELS IN LAST 12 MONTHS		117.9		FCLP LANDINGS DAY/NIGHT	0	
ALL MODELS IN LAST 3 MONTHS		35.0		INSTRUMENT HOURS LAST 3 MONTHS	8.3	
ALL SERIES THIS MODEL (Item 19)	A/C	10.3		NIGHT HOURS LAST 3 MONTHS	4.8	
	OPT / CPT	5.0/0				
ALL SERIES THIS MODEL LAST 12 MONTHS	A/C	10.3		TOTAL HELO. HRS. (Hels. A&R Only)		
	OPT / CPT	5.0/0		TOTAL JET HOURS (Jet A/R Only)	503.1	
ALL SERIES THIS MODEL LAST 3 MONTHS	A/C	10.3		LAST FLIGHT, ALL SERIES THIS MODEL — DATE	29 May 63	
	OPT / CPT	1.0/0		DURATION	2.2	

13. OTHER PERSONNEL

NAME (Last, first and middle initials)	DNA	RANK RATE	FILE/SERVICE NO	ORG. TO WHICH ATTACHED	DUTY CODE	BILLET	POSITION
1.							
2.							
3.							
4.							
5.							

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

ORIGINAL

15

C. CONDITIONS (winds aloft, ceiling level, vis. etc. if, evident as accident)

Surface winds estimated from 240° at 15 to 25 kts

ORIGINAL

D. CONTRIBUTING FACTORS

✓	FACTOR	✓	FACTOR	✓	FACTOR
	PILOT		LANDING SIGNAL OFFICER		MATERIAL FAILURE OR MALFUNCTION See Part VIII, Para C
	CREW	X	OTHER PERSONNEL (Specify) See Analysis		DESIGN
	SUPERVISORY PERSONNEL		ADMINISTRATIVE		ROLLING AND PITCHING DECK/ ROUGH SEAS
	MAINTENANCE PERSONNEL		AIRPORT OR CARRIER FACILITIES		UNDETERMINED
	SERVICING PERSONNEL		WEATHER		OTHER (Specify)

E. DEPLOYMENT

FOR ACCIDENTS ABOARD DEPLOYED CARRIER (Complete following Section on Pilot)

1. DATE DEPLOYED	2. DAY HOURS/LANDINGS LOGGED SINCE DEPLOYED	3. DAY HOURS/LANDINGS LOGGED LAST 30 DAYS
4. INSTRUMENT HRS. LOGGED SINCE DEPLOYMENT	5. NIGHT HOURS/LANDINGS LOGGED SINCE DEPLOYED	6. NIGHT HOURS/LANDINGS LOGGED LAST 30 DAYS

PART II - MAINTENANCE, MATERIAL AND FACILITIES DATA

1. A/C HISTORY

DATE OF MANUFACTURE	SERVICE TOUR	MONTHS IN THIS TOUR	TOTAL NO OF OVERHAULS	FLIGHT HRS SINCE LAST OVERHAUL	FLIGHT HRS. SINCE ACCEPTANCE	TYPE CHECK LAST PERFORMED	FLIGHT HOURS SINCE LAST CHECK	NO. OF DAYS SINCE LAST CHECK
26 Dec 62	1	5	0		109.2	Major	20.8	28

2. ENGINE HISTORY

	DATE OF MANUFACTURE	ENGINE MODEL	ENGINE SERIAL NO.	TOTAL NO OF OVERHAULS	FLIGHT HRS SINCE LAST OVERHAUL	FLIGHT HRS. SINCE ACCEPTANCE	TYPE CHECK LAST PERFORMED	FLIGHT HOURS SINCE LAST CHECK	NO. OF DAYS SINCE LAST CHECK
1	29 Aug 62	J65-W16A	4617173	0		113.5	Major	20.8	39
2									
3									
4									

3. GENERAL

a. DID FIRE OCCUR? [X] BEFORE ACCIDENT [X] AFTER ACCIDENT [ ] DID NOT OCCUR

b. DID EXPLOSION OCCUR IN FLIGHT? [X] YES [ ] NO

c. CHECK IF APPLICABLE: [X] Safety [illegible] 338(ReleaseAssy) [X] YES [ ] NO

d. FAILED COMPONENTS INVOLVED: Engine (DIR) Release Assy, Parachute Strap(AMPFUR)

SECTION A - AIRCRAFT AND ENGINE DATA

4. MAINT. AND ENG. FACTORS

CHECK ITEMS PRESENT IN THIS ACCIDENT

a. [ ] A/C DESIGN
b. [X] A/C EQUIPMENT
c. [ ] MAINTENANCE
d. [ ] UNDETERMINED
e. [ ] TECHNICAL INSTRUCTION
f. [X] OTHER (Specify) Improper engine assembly by contractor.....
g. [ ] SURFACE FACILITIES
h. [ ] HUMAN ENGINEERING (e.g., Cockpit configurations, etc.)

5. AIR DATA

a. ALTITUDE AT MALFUNCTION	b. AIR SPEED	c. OPERATING TEMP	d. WEIGHT OF A/C	e. C.G. (% MAC)	f. KIND OF FUEL	g. FUEL PRESSURE
23,000	310 Kts	UNK (High)	16,400 lbs	26%	JP-5	UNK

h. EVIDENCE OF FUEL CONTAMINATION: Sample not recovered

i. CAUSE OF ENGINE FAILURE OR FLAMEOUT: Improper installation of 1st Stage Turbine Stator Blade Support Assy.

j. CONTROL REGULATOR/CARBURETOR (Use stock and ser. no., give time since new or overhauled): FSN RQ 2915-861-4708 NBPD; S/N H 508662; 115.9 Hrs

k. EXTERNAL STORES ABOARD A/C: 2-300 gal. Wing Tanks

(If additional space is necessary, attach additional sheets)

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

ORIGINAL

ORIGINAL

a. CLEARANCE AUTHORITY		i. WATER LANDING AREA		q. CRASH AND RESCUE	
b. FLIGHT PLANNING INFORMATION SOURCE		j. APPROACH ZONE		r. SEARCH AND RESCUE	
c. LANDING AIDS (GCA, CCA, ILS, etc.)		k. END ZONE (Over run)		s. CATAPULT	
d. TRAFFIC CONTROL TOWER (Field or Ship)		l. SHOULDERS		t. ARRESTING GEAR (Center)	
e. APPROACH AND ENROUTE AIDS TO NAVIGATION		m. TAXIWAY		u. BARRIER OR BARRICADE (Field or Ship)	
f. RUNWAY WATCH		n. PARKING AREA		v. FLIGHT DECK	
g. LANDING SIGNAL OFFICER		o. EMERGENCY ARRESTING GEAR (Runway)		w. MIRROR	
h. RUNWAY		p. A/C SERVICING, HANDLING AND DIRECTING (Ashore or Ship)		x. OTHER (Specify)	

SECTION B - FACILITIES

a. EQUIPMENT INVOLVED: ☐ CATAPULT ☐ ARRESTING GEAR	b. PRESSURE SETTINGS	c. WIND OVER DECK	d. RELATIVE HEADWIND	e. APPROACH SPEED (SPN - 17 READING)

f. MARK NUMBER	g. MODEL NUMBER	h. LOCATION ON SHIP	i. LAUNCHING BRIDLE AND CONFIGURATION USED

j. CATAPULT / ARRESTING GEAR BULLETINS OR NOMOGRAMS USED

k. THIS PORTION SHALL BE COMPLETED WHENEVER (1) A MAJOR AIRCRAFT ACCIDENT INVOLVES ARRESTING GEAR, BARRIER AND/OR BARRICADE EQUIPMENT, OR (2) AN AIRCRAFT ACCIDENT INVOLVES MALFUNCTIONING OF ARRESTING GEAR, BARRIER AND/OR BARRICADE EQUIPMENT. MINOR ACCIDENTS OR ROUTINE DAMAGE TO CABLES, WELDINGS AND OTHER EXPENDABLE COMPONENTS NEED NOT BE REPORTED.

ENGAGED	DECK RUNOUT (FT)	RAM TRAVEL (IN)	CONTROL VALVE SETTINGS: CONSTANT PRESSURE DOME (P.S.I.)	CONSTANT PRESSURE RATIO	CONSTANT RUNOUT (WT LBS.)	ACCUMULATOR PRESSURE (PSI)	COMMENTS (for cable failure specify number of landings and months in service)
DECK PENDANT							
DECK PENDANT							
BARRIER							
BARRIER							
BARRICADE							

PART	SECTION	ITEM	PART III REMARKS (Continue on reverse if space)
			DISTRIBUTION(Cont'd) DISTRIBUTION (Cont'd) CO VMA-121 (1) CO MAG-15 (1) CO VMA-211 (1) CO FMFPAC (1) CO VMA-311 (1) CO FMFLANT (1) FILE (3) CO 1st MAW (1) (CO AESAS-15 (1) CO 2nd MAW (1) Special Handling Required in CO MAG-13 (1) Accordance with Paragraph 70, CO MAG-32 (1) OPNAVINST 3750.6D CO MAG-31 (1) OIC NAVFAKUNIT NAF EL CENTRO (1)

COPY DISTRIBUTION
BCC NAVFAKACEN (1)
ISO BUWEPS DIRECT (0-13)
BUNAVTEPSREP GULF UNIT (1)
BUNAVTEPSREP DAC LONG BEACH (1)
APPR WAD WOODRIDGE (1)
CMC (CODE AAP) (1)
COMNAVAIRPAC (1)
CO AIRFMFPAC (1)
CO 3rd MAW (1)

COST DAMAGE TO: GOVERNMENT PROPERTY: a. None | PRIVATE PROPERTY | DATE SUBMITTED TO C. O.

(b) (6)

[redacted]

ORIGINAL

PART V THE ACCIDENT

A-4C (A4D-2N), BuNo 150597, flown by LtCol. (b) (6) [redacted] USMC, departed MCAS, El Toro at 1042T on an authorized instrument training flight (Enclosure 6). The mission was to be flown in the local operating area under Area Positive Control (APC) rules. Assigned calls were Park 2-0 and 2-2.

Mission and meteorological briefings were accomplished by the pilot and his wingman 1stLt. (b) (6) [redacted] USMC, (Park 2-2).

Aircraft preflight checks were normal. Two 300 gal. auxiliary tanks filled to 150 gals. each were aboard each aircraft. The pre-briefed ten (10) second take-off interval was observed and a standard Rita Two instrument departure procedure was used (outbound 105° radial). The flight broke out on top at approximately 6,000 feet whereupon the leader throttled to 94% to facilitate the join-up (Enclosure 2). Power was further reduced to 90% when the wingman failed to rendezvous. At 23,000 feet LtCol. (b) (6) established visual contact at three o'clock up, and resumed 100% as the wingman commenced to join. About 40 seconds later, while preparing to change to a new ATC frequency, he heard a sound, best described as a "thunk", followed immediately by marked deceleration, and the loss of radio and oxygen. He noted that the EGT was rising and the RPM falling off. At this the wingman observed fuel streaming from the right side of the aircraft (Enclosure 3). The pilot did not reduce throttle at this time hoping to stave off engine seizure should there be an engine bearing problem. The fire warning light was not on. Observation of the direct reading oil pressure gage was not accomplished because of scan interruption upon regarding the awesome activity of the EPI. Within approximately three (3) seconds of the start of fuel vapor trailing, the entire aft portion of the fuselage was streaming fuel vapor with flame observed in the streaming vapor.

Conscious deployment of the drop out generator is not definite. The pilot reached for the release handle, but feels certain that his radio was regained prior to actually grasping it, and the effort was abandoned. The fire warning light came on at this time, and the decision to eject was made. After ascertaining that Lt. (b) [redacted] had him in sight, LtCol. (b) (6) eased the nose up and grasped the face curtain. With the nose 10°/15° above the horizon a pronounced pitch-up occurred, followed by loss of control, a starboard roll, and a pitch down. The pilot ejected from the aircraft at approximately 1055T in about a 30° nose down and a 60°/90° right bank attitude. Prior to ejection the pilot noted that the Manual Flight Control Release handle was flopping in its socket at the time of pitch-up and he estimated the airspeed to be approximately 220/240 knots and altitude 24,000 feet. This entire sequence from "thunk" to ejection took an estimated fifteen (15) seconds. At the time of ejection the entire aft portion of the aircraft forward to a point approximately mid-wing was engulfed in flames.

The ejection and descent were smooth. During the free fall LtCol. (b) (6) observed the tailless, burning aircraft spinning beneath him, and was concerned about hitting it. About this time the parachute (barometric release set to 10/13,000 feet) deployed, and prevented further closing with the aircraft.

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

PART V THE ACCIDENT (CONT'D)

Upon touching down in a fairly level, but rock and cactus infested area, in an estimated 25 knot wind, the pilot was dragged for about 200 feet through the rocks and cactus. While being dragged he lost his helmet, mask, gloves, kneeboard and watch, and sustained numerous cuts, abrasions, contusions, and was pierced by countless cactus spines (Enclosure 1). The long drag resulted from the pilots difficulty in releasing the rocket jet fasteners. He was able to disengage the right fastener while being dragged but was not able to release the left fastener until forward motion was stopped when the parachute tangled in some cactus plants.

The wingman immediately reported the crash and a Coast Guard helicopter arrived on the scene at 1145T to pickup the pilot. He was delivered to NAS Miramar at 1230T.

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

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PART VI DAMAGE TO AIRCRAFT

The tail section of the aircraft (Enclosure 8B) separated from the aircraft at approximately the time the pilot ejected. It impacted about 200 to 300 yards on a bearing of 090 degrees from the center of the main wreckage. The severe damage from in flight fire is easily noted. The ejection seat landed about 100 feet from the tail section and was in excellent condition except for relatively minor impact damage. The remainder of the aircraft struck the side of a mountain on a heading of 130 degrees magnetic in approximately a 60 degree left wing down and slightly nose low attitude. The left wing and cockpit areas were demolished on impact. The wreckage was distributed as indicated in Enclosure (5). The engine turbine section separated from the remainder of the engine at impact. Both pieces received severe impact damage. The right and center wing sections were the only large portions of the aircraft which remained relatively intact. The right wing section was punctured by engine turbine blades. Only small parts of the portion of the fuselage surrounding the engine were located. Except for the engine and tail section, virtually all evidence of inflight fire was obscured by the intense fire which engulfed the impact area. In numerous instances cooled molten metal was found on the ground surrounding burned wreckage. All the engine parts accessories that were found were removed from the scene by helicopter and shipped to O&R, NAS Alameda for priority DIR. Salvage operations for the remainder of the aircraft have not yet begun.

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PART VII THE INVESTIGATION

A. The accident board arrived at the impact area about four hours after the crash and found Park Service personnel in attendance to prevent the spread of fire. At this time the fire was well under control and only sporadic flare-ups were encountered.

1. The area is a mountain side draw 3,400 feet above MSL and is liberally strewn with boulders of all sizes. Vegetation is sparse, and typical of the high desert (Enclosure 8A). The main part of the wreckage (less tail section, seat and canopy) was located in an area about 200 feet by 300 feet, and quite thoroughly demolished by impact and fire (Enclosure 8A).

2. Distribution of the major components, after ricocheting among the rocks, was as depicted in enclosure (5). Late the following day, the tail and seat were found within 100 feet of each other, two draws (200 to 300 yards) downwind, with the seat slightly outboard, untouched by fire, and showing surprisingly little impact damage. The tail section was badly burned throughout. However, a major portion of the skin on the starboard side was burned away. The port side was intact. No ground fire evidence in the vicinity of the tail section was discovered (Enclosure 8B). The canopy was not found.

B. The investigation conducted in the impact area established the following salient data.

1. All heavy components would require recovery by helicopter.
2. Virtually the entire fuselage had been consumed by fire.
3. The aircraft had been burning fiercely prior to impact.
4. The tail section separated from the aircraft in-flight at about the time the pilot ejected.
5. The port wing, except for the tip and some slat track parts, had been destroyed by impact and the ensuing fire.
6. The low and high pressure fuel system components, less the main cell, were all present and identifiable even though badly burned.
7. The compressor rotor was stationary, or nearly so, at impact. (Enclosure 8C)
8. The engine separated just forward of the first stage nozzle diaphram upon impact. (Enclosure 8D)
9. The turbine section had been subjected to extreme temperatures. (Enclosure 8E)
10. The turbine case had been penetrated by blade material concentrated at about the three (3) o'clock position. (Enclosure 8F)
11. The starboard wing was nearly intact, though burned, and had been extensively punctured along its upper surface by turbine blade parts, some of which passed completely through the wing. (Enclosure 8G)
12. The tail pipe Nucco clamps were in place, and secure. (Enclosure 8H)
13. Oil was present in the #3 bearing oil line where it had been severed just prior to entering the engine case.
14. Number two bearing air seal showed no evidence of rub damage.
15. The flap actuating cylinder, was split at about the ten (10) o'clock position. (Enclosure 8I)

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

C. The subsequent detailed investigation, including the DIR produced the following information.

1. The aircraft was received from NAS Lemoore on 22Jan63 and had flown a total of 109.2 hours since Navy acceptance. (Enclosure 4).

2. The engine was installed by the Douglas Aircraft Corporation (DAC), Long Beach, on 27Sep62. It had accumulated at the time of the accident a total of 114.8 hours since new and 20.8 hours since major inspection, completed on 27Apr63. The engine was considered new at the time of its acceptance by the Navy. In fact since it's serial number is in the 617 series it is known to be an old U.S. Air Force engine converted to Navy specifications by the Wright Aeronautical Division (WAD) of Curtiss-Wright Corporation. This conversion was completed on 29Aug62. The fact that this was a converted, vice new, engine is not considered significant in regard to this accident.

3. The engine rundown time was normal and consistent, starting initially in the high 80's (seconds) and increasing to the low 90's as operating time increased.

4. The engine ran well throughout its career, and had in fact attained a reputation for smooth operation.

5. Starting temperatures had been normal, averaging 650° with one high of 700° recorded at MCAS, Yuma, Arizona.

6. Oil consumption had been normal, averaging three tenths (.3) gallons per hour.

7. The periodic inspection records revealed that the condition of the engine was generally excellent.

8. The engine log book indicates that J-65 Engine Bulletin 381 had been incorporated by DAC, Long Beach on 4Dec62. No major components were replaced.

9. The final O&R Alameda DIR message report is quoted in its entirety:

N 182300Z
FM NAS ALAMEDA
TO BUWEPSFLTREADREP PAC
INFO MARHEDMAINTRON FIFTEEN
BUWEPS
COMNAVAIRPAC
CGAIRFMFPAC
CGTHIRDMAW
RIC WOODRIDGE
NAVAVNSAFECEN NORVA
FIRSTMARBRIG

BT
UNCLAS
J65-W16A ENGINE SER 617173 FROM A-4C (A4D-2N) BUNO 150597
INVESTIGATION OF

PART VII THE INVESTIGATION (CONT'D)

A. YOUR 101901Z NOTAL
B. NARHEDMAINTRON ONE FIVE 072010Z NOTAL
C. YOUR CONTROL NO. 3120-63
1. HISTORY: ENGINE TIME SINCE WAS CONVERSION 114.8 HRS. COMPLETED WAD CONVERSION 29 AUG 62. COMPLETED FIRST MAJOR INSPECTION. TIME SINCE MAJOR INSPECTION 20.8 HOURS.
2. ENGINE CONDITION:

A. FRONT MAIN BEARING SUPPORT ASSEMBLY DEMOLISHED BY CRASH. FRONT MAIN BEARING SATISFACTORY.

B. COMPRESSOR SECTION: COMPRESSOR HOUSING BROKEN AND DAMAGED BY CRASH. COMPRESSOR ROTOR INTACT BUT FIRST STAGE BLADES TORN OUT BY CRASH. CONDITION INDICATES LITTLE OR ZERO RPM AT IMPACT.

C. CENTER MAIN BEARING SUPPORT HOUSING ASSEMBLY DAMAGED BY CRASH. CENTER MAIN BEARING SATISFACTORY.

D. COMBUSTION CHAMBER SECTION OF ENGINE DAMAGED BY CRASH.

E. REAR MAIN BEARING SATISFACTORY. TURBINE ROTOR FIRST STAGE BLADES BURNED OFF AT POINT APRX 1 5/8 INCH TO 1 3/4 INCH ABOVE BLADE PLATFORM.

F. TURBINE ROTOR SECOND STAGE BLADES BURNED OFF AT TIP ENDS.

G. TURBINE STATOR FIRST STAGE BLADES SHOW EVIDENCE OF CRASH DAMAGE.

H. NO BURNING OF TURBINE FIRST STAGE STATOR BUT THREE BLADES BROKEN OFF.

I. TURBINE STATOR SECOND STAGE BLADES DAMAGED AND NUMEROUS BLADES BURNED AWAY.

J. SECOND STAGE SHROUD AND TAIL CONE HAD EVIDENCE OF METALIZATION.

K. TURBINE ROTOR FIRST STAGE SHROUD HAD EVIDENCE OF ROTOR BLADE TIP RUB AND WAS PUNCTURED AND TORN AT THE 12 O'CLOCK TO 3 O'CLOCK AREA.

L. TURBINE ROTOR SECOND STAGE SHROUD HAD EVIDENCE OF ROTOR BLADE TIP RUB AND PIECE OF SHROUD MISSING BETWEEN 2 O'CLOCK AND 3 O'CLOCK POSITION.

M. TURBINE ROTOR REAR SHAFT SHEARED FROM TURBINE ROTOR ASSEMBLY AT SHAFT TO FIRST STAGE DISC LOCATION.

N. TURBINE ROTOR REAR SHAFT SEALS SHOW EVIDENCE OF EXCESSIVE SEAL TO VAPOR DUCT ID RUB.

O. FRONT FACE OF TURBINE ROTOR FIRST STAGE DISC SHOWS EVIDENCE OF RUB FROM REAR FLANGE OF VAPOR DUCT.

P. REAR MAIN BEARING HEAT SHIELD OUTER RING SHOWS EVIDENCE OF EXCESSIVE RUB WITH FRONT FACE OF TURBINE ROTOR FIRST STAGE DISC.

Q. FIRST STAGE TURBINE STATOR BLADE SUPPORT REAR MAIN BEARING SUPPORT TO REAR MAIN BEARING SUPPORT CONE BOLTS, P/N AN 104810 (FIGURE 8 ITEM 14 PAGES 69 AND 70 IPB) AND TABLOCK WASHERS, P/N 2067D526 (FIGURE 8ITEM 15, PAGES 69 AND 70 IPB) WERE ALL (15) MISSING COMPLETELY. THREADED BOLT HOLES IN REAR MAIN BEARING SUPPORT CONE ASSEMBLY, P/N 610639 (FIGURE 8 ITEM 60, PAGES 70 AND 73 IPB) CONTAINED NO BROKEN BOLT ENDS AND HAD NO EVIDENCE OF THREAD DAMAGE. CHAFE MARKS ON REAR FACE OF BOLT CIRCLE ON FIRST STAGE TURBINE STATOR BLADE SUPPORT ASSEMBLY, P/N 605526 (FIGURE 8, ITEM 13, PAGES 69 AND 70 IPB) INDICATED BOLTS HAD BEEN INSTALLED IN ENGINE. NICK INDICATIONS ON BOTTOM INSIDE OF SUPPORT ASSEMBLY

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

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IS EVIDENCE OF BOLTS RATTLING AROUND IN FREE STATE. HEAVY FRETTING AND CHAFING ON MATING SURFACES OF BEARING SUPPORT, STATOR SUPPORT, AND BEARING SUPPORT CONE ASSEMBLY INDICATE LONG TERM APPARENT LOOSENESS OF BOLTS P/N AN 104810.

R. NO DISCREPANCIES FOUND ON FUEL CONTROL SER 508662.

S. FUEL PUMP SER 5088: SHEAR SHAFT P/N 02-722, SHEARED AT LARGE DIAMETER BUT NOT AT SMALL SHEAR NECK. SHEAR CAUSED BY IMPACT BECAUSE THERE WERE NO MARKS INDICATING RELATIVE MOVEMENT. THE TWO PARTS ARE SPRING LOADED TOGETHER, ALL OTHER DRIVE SPLINES WERE INTACT.

3. SEQUENCE OF EVENTS LEADING TO FAILURE: FIRST STAGE TURBINE STATOR BLADE SUPPORT REAR MAIN BEARING SUPPORT TO REAR MAIN BEARING SUPPORT CONE BOLTS P/N AN 104810 BACKED OUT OF SUPPORT. FIRST STAGE TURBINE STATOR BLADE SUPPORT P/N 605526 MOVED REARWARD ALLOWING REAR MAIN BEARING HEAT SHIELD RETAINING OUTER RING P/N 220324 TO CONTACT FRONT FACE OF FIRST STAGE TURBINE ROTOR DISC WHERE HEAVY RUB AND FRICTION DRAG OCCURRED. ADDITIONAL CONTACT WAS MADE ON THE TURBINE ROTOR AND REAR TURBINE ROTOR SHAFT SEAL BY THE REAR MAIN BEARING VAPOR DUCT. THE DRAG ON THE TURBINE ROTOR CAUSED OVERFUELING AND OVERTEMPERATURE WITH RESULTANT NECKING, STRETCHING, AND BURNING OF TURBINE ROTOR BLADES AND SHROUD RUB TO THE POINT OF SHROUD BREAK-THROUGH AND EXPULSION OF TURBINE BLADE TIPS.

4. IT IS CONCLUDED THAT BOLTS P/N AN 104810 WERE INSTALLED DURING LAST ASSEMBLY OF HOT SECTION. SINCE NONE OF THE 15 BOLTS AND LOCKS WERE RECOVERED FOR EVALUATION IT CAN ONLY BE CONCLUDED THAT ONE OF THE FOLLOWING CONDITIONS EXISTED.

A. BOLTS TORQUED AND NOT LOCKED.

B. BOLTS LOCKED BUT NOT TORQUED.

C. BOLTS NOT TORQUED AND NOT LOCKED.

D. DIR BEING PREPARED.

BT

(See Enclosure 7)

10. Loss of the pilots flow of oxygen, as well as the zero guage indication, is considered the result of fire damage to line and wire components.

11. The initial loss of the radio is readily explained by the drop off in engine RPM.

12. Drop out generator deployment might well have occurred during the rapid general spread forward of fire damage, thus reinstating radio operation.

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PART VIII THE ANALYSIS

A. Personnel Factors. An emergency situation did exist and was recognized by the pilot. His analysis of the situation appeared to be thorough and orderly. Considering that there was no fire warning indication until just prior to ejection, the elapse of fifteen (15) seconds between the original "thunk" (probably loss of turbine blades) and the ejection does not appear excessive. In this accident the delay of a few more seconds would certainly have resulted in a marginal ejection situation. However, the encouragement of ejections based on lesser evidence and in shorter time periods than that experienced by this pilot would most certainly result in unnecessary loss of aircraft/personnel in the future. Subsequent to the parachute opening the pilot did not pull his ripcord D-ring. This is recognized as a violation of NATOPS and Flight Manual procedure. It is not considered significant however, in that the difficulty the pilot encountered in separating from his parachute canopy was in unfastening his rocket jet fasteners, not with separating from the canopy after releasing the rocket jet fasteners.

B. Supervisory Factors.

1. Supervisory factors are considered to be present in this accident in that NAD (during engine conversion) did not have adequate quality control procedures to insure proper installation of the bolts (P/N AN 104810) and Washers (P/N 206TD526).

2. All available engine records indicate that J-65 Engine Bulletin 381 was incorporated by DAC, Long Beach, on 4Dec62. During the incorporation of this Engine Bulletin it is not considered normal to disassemble the engine to the point where the improperly installed bolts could be observed. Since the Board did not have available any evidence as to how this engine bulletin installation was performed it is considered possible that DAC could have improperly installed the subject bolts and washers. However, this possibility is not considered likely.

3. H&MS-15 local records and intense questioning of personnel indicate that the bolts and washers were not visually or materially inspected on the Major Inspection, nor were they required to be inspected on this inspection.

C. Material Failure or Malfunction.

1. Material failure or malfunction is not considered a contributing factor to this accident since the observed material failure came as a direct result of improper installation of the bolts and tablock washers as described in Part VIII, paragraph B.1.

2. Early in the investigation the split flap actuating cylinder was thought to be the source of an original fire which resulted in the turbine failure. This failure would then be similar to that suspected in VMA-121 AAR 2-62. However, no heat damage to the engine could be found in that area of the engine near the location of the actuating cylinder. The later engine DIR resulted in the discovery of the missing bolts and tablock washers and established the cause of the engine failure. Therefore, it is considered that the rupture in the flap actuating cylinder occurred after the turbine failure and as a result of the ensuing fire.

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A fire of this nature could cause expansion of the hydraulic fluid within the cylinder and a lowering of the cylinder material yield point. The combination of these factors could easily result in the cylinder rupture. In the light of the established cause of engine failure, the flap actuating cylinder failure is not considered significant.

3. While not considered to be a contributing factor according to the definition of Paragraph 19 of OPNAVINST 3750.6D, the following malfunction of the pilot's rocket jet fasteners is significant. The difficulty experienced by the pilot in releasing the rocket jet fasteners, particularly the left fastener, resulted in his being dragged for approximately 200 feet along a relatively level rock and cactus covered mountain ridge top. He received numerous cuts and bruises as a result of this dragging. Had he landed almost anywhere else within a one mile radius, serious injury or death most probably would have occurred. Subsequent functional testing of the subject fasteners as set forth in BACSEB 50-61 gave apparent normal operation. Release of the fasteners under tension and asymmetrical loading on the fasteners appears to cause the release difficulty. This compromise to flight safety is obvious. This fastener malfunction has been submitted as HAMS-A5 Flight Safety Ampfur serial No. 338.

D. Facilities

1. Facilities are not involved in this accident.

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PART IX COMMENTS.

A. The cause of this accident was engine failure, and the sequence of events leading thereto were:

1. The fifteen (15) bolts (P/N AN 104810) and tablock washers (P/N 2067D526) were improperly installed.

2. The fifteen (15) bolts backed out.

3. The support Assembly, First Stage Turbine Stator, and its attached parts moved aft.

4. The binding induced by parts displacement resulting in RPM loss led to fuel control reaction, rapidly rising EGT, and turbine blade disintegration.

5. Turbine case failure allowed turbine blade escape. The blades then puctured the wing fuel cell and caused a severe fuel leak which produced and sustained the violent fire witnessed by the wingman.

B. Failure of the flap actuating cylinder is considered to have no bearing on this accident.

C. The difficulty encountered by the pilot in releasing his rocket jet fasteners is considered a serious compromise to flight safety.

D. NATOPS

1. NATOPS emergency procedures were a factor in this accident (in-flight fire and ejection).

2. NATOPS was not complied with in that the parachute D-ring was not pulled after parachute opening. This, however, is not considered to have had any effect on the events that followed.

3. Need for a change to NATOPS is not indicated.

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PART X RECOMMENDATIONS.

A. It is recommended that:

1. Contractor quality control procedures be improved to preclude any recurrance of this type of "isolated case" of improper engine assembly.

2. The rocket jet fastener method of attaching parachute risers to the torso harness be modified so as to eliminate any difficulty in releasing these fasteners after landing.

3. During pilot training greater emphasis be placed upon the necessity for pulling the parachute D-ring after automatic chute opening.

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(b) (5), (b) (6)

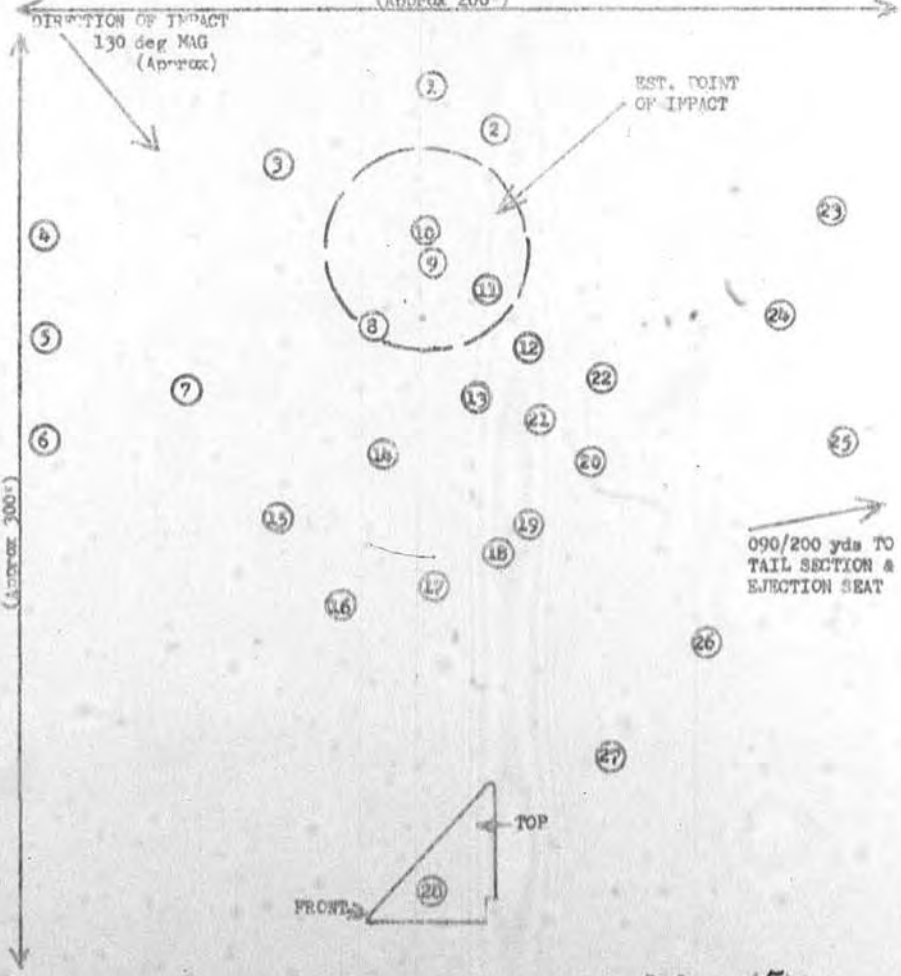
(b) (5), (b) (6)

(b) (5), (b) (6)

(b) (5), (b) (6)

(b) (5), (b) (6)

WRECKAGE DIAGRAM
TOP OF HILL
(Approx 200')



Enclosure (5) to
H&MS-13 AAR 1-63

Special Handling Required in Accordance with Paragraph 70, OPNAV INST 3750.6C

Key to Wreckage Diagram

1. UHF Antenna
2. Left Wing Slat
3. Angle of Attack Probe
4. Pieces of Drop Tank
5. Pieces of Drop Tank
6. Pieces of Drop Tank
7. Left Pylon
8. Wiring/Fuse Panel 22 and Cockpit Area
9. Aileron Power Boost Cylinder
10. Submerged Fuel Boost Pump
11. Ashes of Main Fuselage Fuel Cell
12. Aileron Trim Tab
13. Lower Left Fuselage Section
14. Nose Strut
15. Left Main Landing Gear Strut
16. Right Main Landing Gear Strut
17. Fuel Control
18. Right Forward Fuselage - Vicinity of Station 126
19. Right Slat and ASW-17 Communication Package
20. Tail Pipe
21. Engine Turbine and Exhaust Cone with Nucco Clamps
22. Right Fuselage Structure (Station 262)
23. Cockpit Windscreen
24. Cockpit Insulation
25. Pieces of Instruments
26. Right Engine Air Inlet
27. Engine Compressor and Combustion Chamber
28. Right and Center Wing

Enclosure (5) to
H&MS-15 AAR 1-63

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

HEADQUARTERS AND MAINTENANCE SQUADRON 15
Marine Aircraft Group 15
3rd Marine Aircraft Wing
Aircraft, Fleet Marine Force, Pacific
Marine Corps Air Station
El Toro (Santa Ana), California

CORRECTED FLIGHT SCHEDULE

5 JUNE 1963

SDO: 1STLT (b) (6)

TACTICAL CALL: PARK

FLIGHT NO.	APC MISSION NO.	FLIGHT LEVEL	BRIEF	T/O	LAND	TYPE A/C	CREW	REMARKS
1-0	18G	290	0900	1000	1115	T-1A	(b) (6)	
2-0	18B	360	0930	1030	1200	A-4C		TAS 360
2-2	18B	360	0930	1030	1200	A-4C		TAS 450
ADDITIONS TO FLIGHT SCHEDULE								TAS 450
NON APC			1200	1244	1643	C-47H		MIRAMAR & RETURN
NON APC			1400	1457	1540	T-1A		CHINA LAKE
NON APC				1550	1637	T-1A		EL TORO

Certified true copy.

/s/ (b) (6)
(b) (6)
FLIGHT OFFICER

(b) (6)

Enclosure (6) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

of AAR 6-5-63

NAS ALAMEDA, (O&R)	555	1 Jul 63		X
J65-W16A	617173	66640	5 Jun 63	
Unknown	114.5	29 Aug 62	WAD	Unknown A-4C(A4D-2N) 150597
H&MS-15	AAR Unknown	Aircraft crash 4B		

O NO DISCREPANCY	B BASIC (MFG/DESIGN) DISCREPANCY	N NON-BASIC (MAINT/OPER) DISCREPANCY	F FOREIGN OBJECT DAMAGE	104810 81

Encl: (1) NAS Alameda photo MAA-00381
(2) NAS Alameda photo MAA-00392
(3) NAS Alameda photo MAA-00389
(4) NAS Alameda photo MAA-00394
(5) NAS Alameda photo MAA-00393
(6) NAS Alameda photo MAA-00388
(7) NAS Alameda photo MAA-00387
(8) NAS Alameda photo MAA-00390
(9) NAS Alameda photo MAA-00384
(10) NAS Alameda photo MAA-00383
(11) NAS Alameda photo MAA-00395
(12) NAS Alameda photo MAA-00386
(13) NAS Alameda photo MAA-00382
(14) NAS Alameda photo MAA-00391
(15) NAS Alameda photo MAA-00385

AAR
060030Z Jun 63

Page 1 of 3

X PRIORITY DIR	BWFRR PAC message 101901Z	Jun 1963 Control No. 3120-63	X
CDR (b) (6) [redacted]		AERO ENGINEERING OFFICER	5 July 1963

DISASSEMBLY AND INSPECTION REPORT NAVWEPS FORM 4730/2 (11-61)

REPORT SYMBOL BUWEPS 4730-2

NAS ALAMEDA, (O&R)
DIR NO: 555
J65-W16A - 617173

DESCRIPTION OF FINDINGS:

1. Front main bearing support assembly demolished by crash. Front main bearing satisfactory.

2. Compressor section: Compressor housing broken and damaged by crash. Compressor rotor intact but first stage blades torn out by crash. Condition indicates little or zero rpm at impact. See enclosures (1) and (2).

3. Center main bearing support housing assembly damaged by crash. Center main bearing satisfactory.

4. Combustion chamber section of engine damaged by crash.

5. Rear main bearing satisfactory. Turbine rotor first stage blades burned off at a point approximately 1 5/8 inches to 1 3/4 inches above blade platform. See enclosure (8).

6. Turbine rotor second stage blades burned off at tip ends. See enclosure (3).

7. Turbine stator first stage blades show evidence of crash damage. No burning of turbine first stage stator blades but three blades broken off. See enclosure (4).

8. Turbine stator second stage blades damaged and numerous blades burned away. See enclosure (5).

9. Second stage shroud and tail cone had evidence of metalization.

10. Turbine rotor first stage shroud had evidence of rotor blade tip rub and was punctured and torn at the 12 o'clock to 3 o'clock area. See enclosure (6) outside view and enclosure (7) inside view after disassembly and separation of first and second stage turbine stator assembly.

11. Turbine rotor second stage shroud had evidence of rotor blade tip rub and piece of shroud missing between 2 o'clock and 3 o'clock position. See enclosure (5).

12. Turbine rotor rear shaft sheared from turbine rotor assembly at shaft to first stage disc location. See enclosures (8) and (9).

13. Turbine rotor rear shaft seals show evidence of excessive seal to vapor duct ID rub. See enclosure (8).

3461512

14. Front face of turbine rotor first stage disc shows evidence of rub from rear flange of vapor duct.

15. Rear main bearing heat shield outer ring, enclosure (1), shows evidence of excessive rub with front face of turbine rotor first stage disc, enclosure (8).

16. First stage turbine stator blade support rear main bearing support to rear main bearing support cone bolts P/N 104810 (Figure 8 item 14 page 70 IPB) and tablock washers P/N 2067D526 (Figure 8 item 15 page 70 IPB) were all (15) missing completely. See enclosure (11). Threaded bolt holes in rear main bearing support cone assembly P/N 610639 (Figure 8 item 60 page 70) contained no broken bolt ends and had no evidence of thread damage. See enclosure (12). Chafe marks on rear face of bolt circle on first stage turbine stator blade support assembly P/N 605526 (Figure 8 item 13 page 70 IPB) indicated bolts had been installed in engine. See enclosure (11). Nick indications on bottom inside of support assembly is evidence of bolts rattling around in free state. See enclosure (13). Heavy fretting and chafing on mating surfaces of bearing support, stator support, and bearing support cone assembly indicate long term apparent looseness of bolts P/N AN 104810. See enclosure (12), (14), and (15).

17. No discrepancies found on fuel control serial No. 508662.

18. Fuel pump serial No. 5088: Shear shaft P/N 02-722, sheared at large diameter but not at small shear neck. Shear caused by impact because there were no marks indicating relative movement. The two parts are spring loaded together, all other drive splines were intact.

19. Sequence of events leading to failure: First stage turbine stator blade support rear main bearing support to rear main bearing support cone bolts P/N 104810 backed out of support. First stage turbine stator blade support P/N 605526 moved rearward allowing rear main bearing heat shield retaining outer ring P/N 220324 to contact front face of first stage turbine rotor disc where heavy rub and friction drag occurred. Additional contact was made on the turbine rotor and rear turbine rotor shaft seal by the rear main bearing vapor duct. The drag on the turbine rotor caused overfueling and overtemperature with resultant necking, stretching, and burning of turbine rotor blades and shroud rub to the point of shroud breakthrough and expulsion of turbine blade tips.

CONCLUSIONS: It is concluded that bolts P/N AN 104810 were installed during last assembly of hot section. Since none of the 15 bolts and locks were recovered for evaluation it can only be concluded that one of the following conditions existed.

a. Bolts torqued and not locked.
b. Bolts locked but not torqued.
c. Bolts not torqued and not locked.

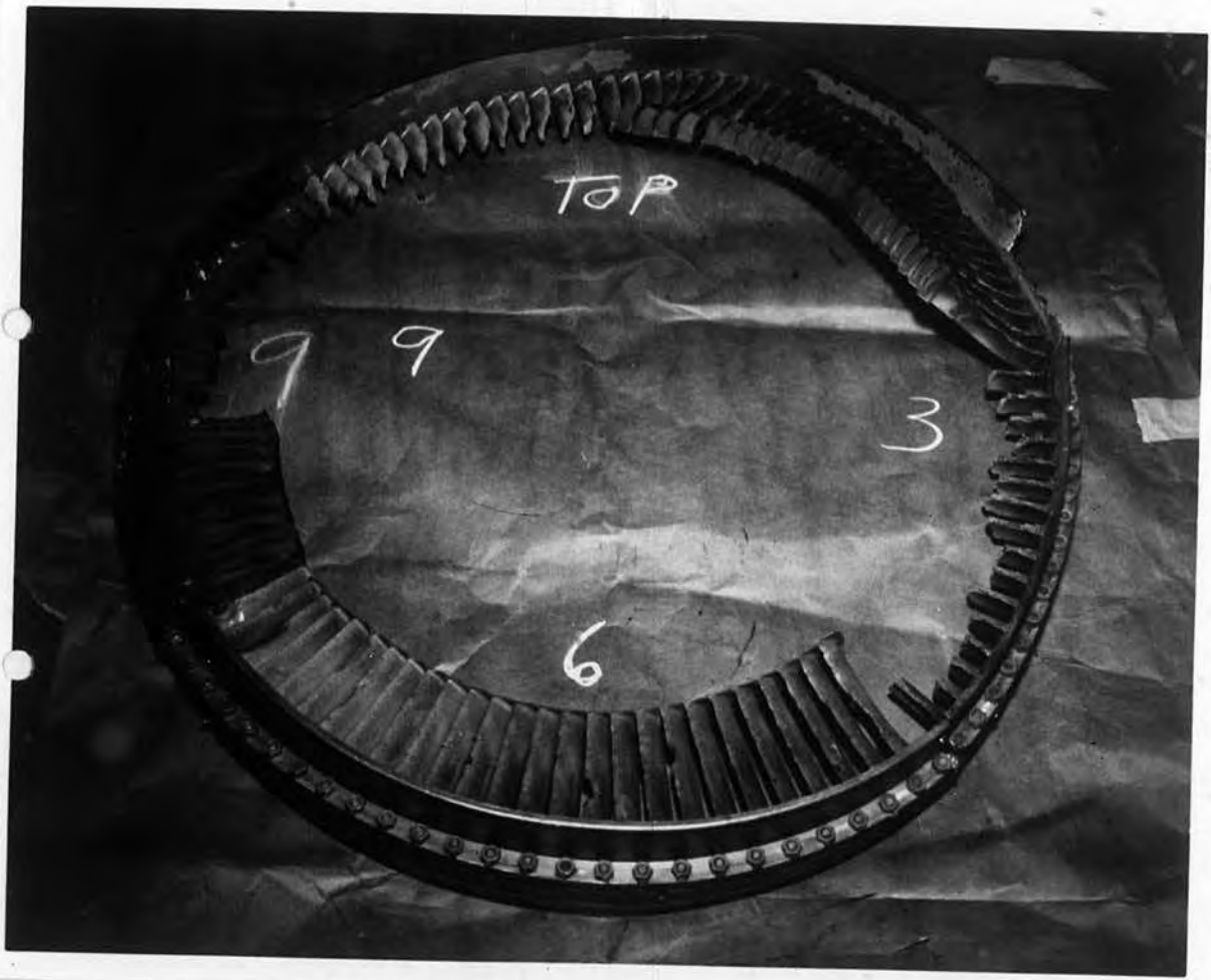
RECOMMENDATIONS: Quality control during assembly of hot section. 3/6/65 162

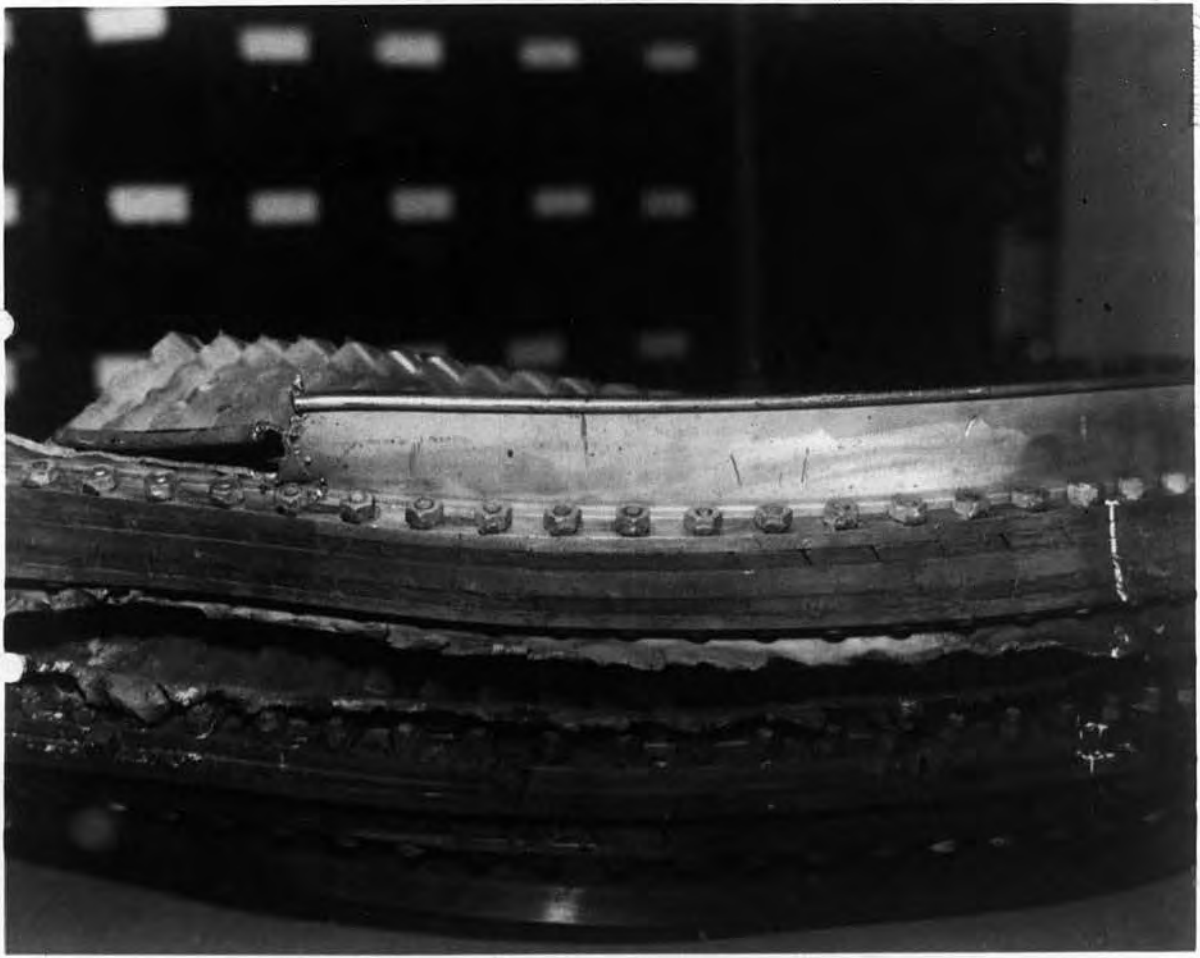
ENCLOSURE (7-1)

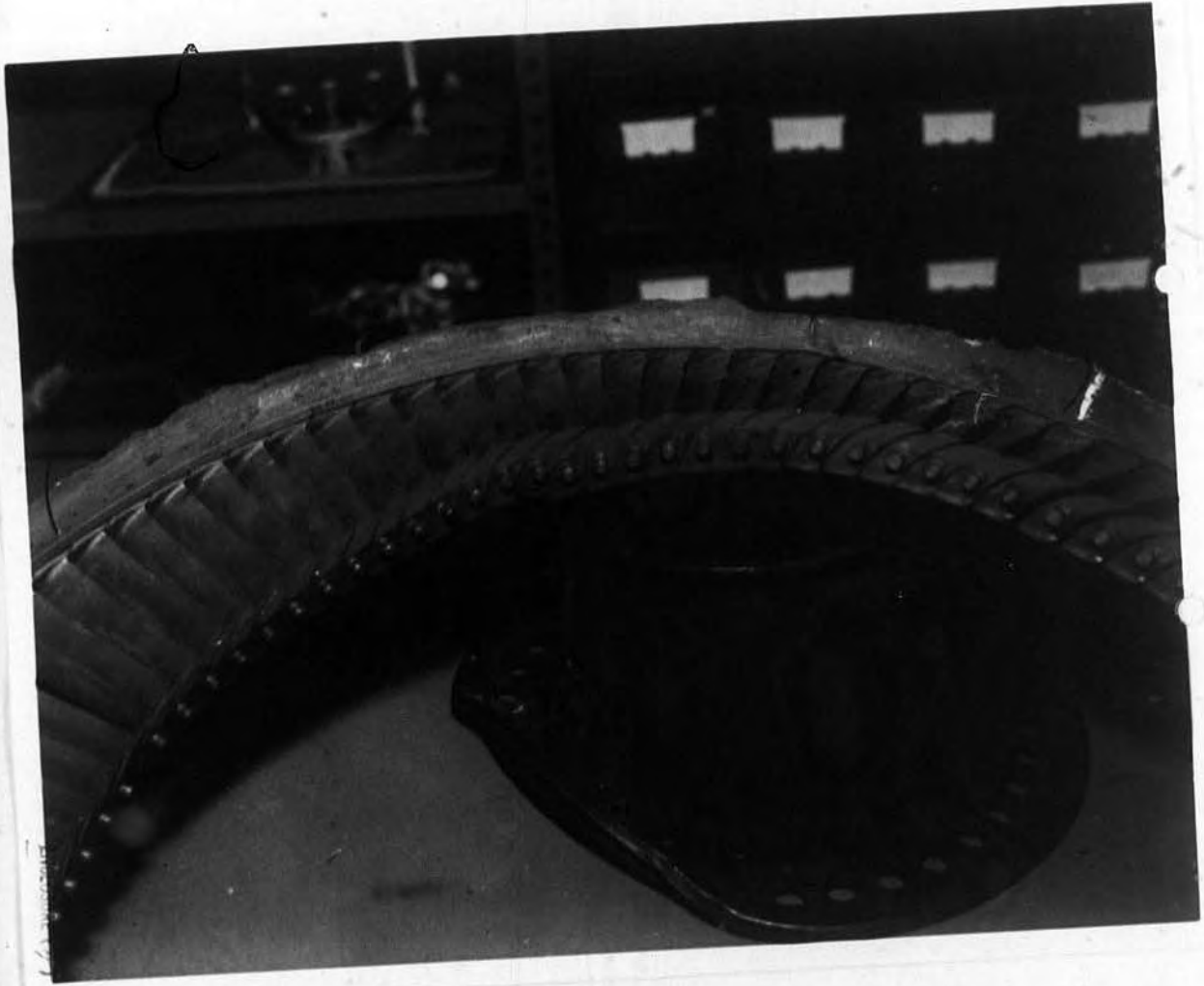
ENCLOSURE (2)

ENCLOSURE (3)

TOP
9
3
6

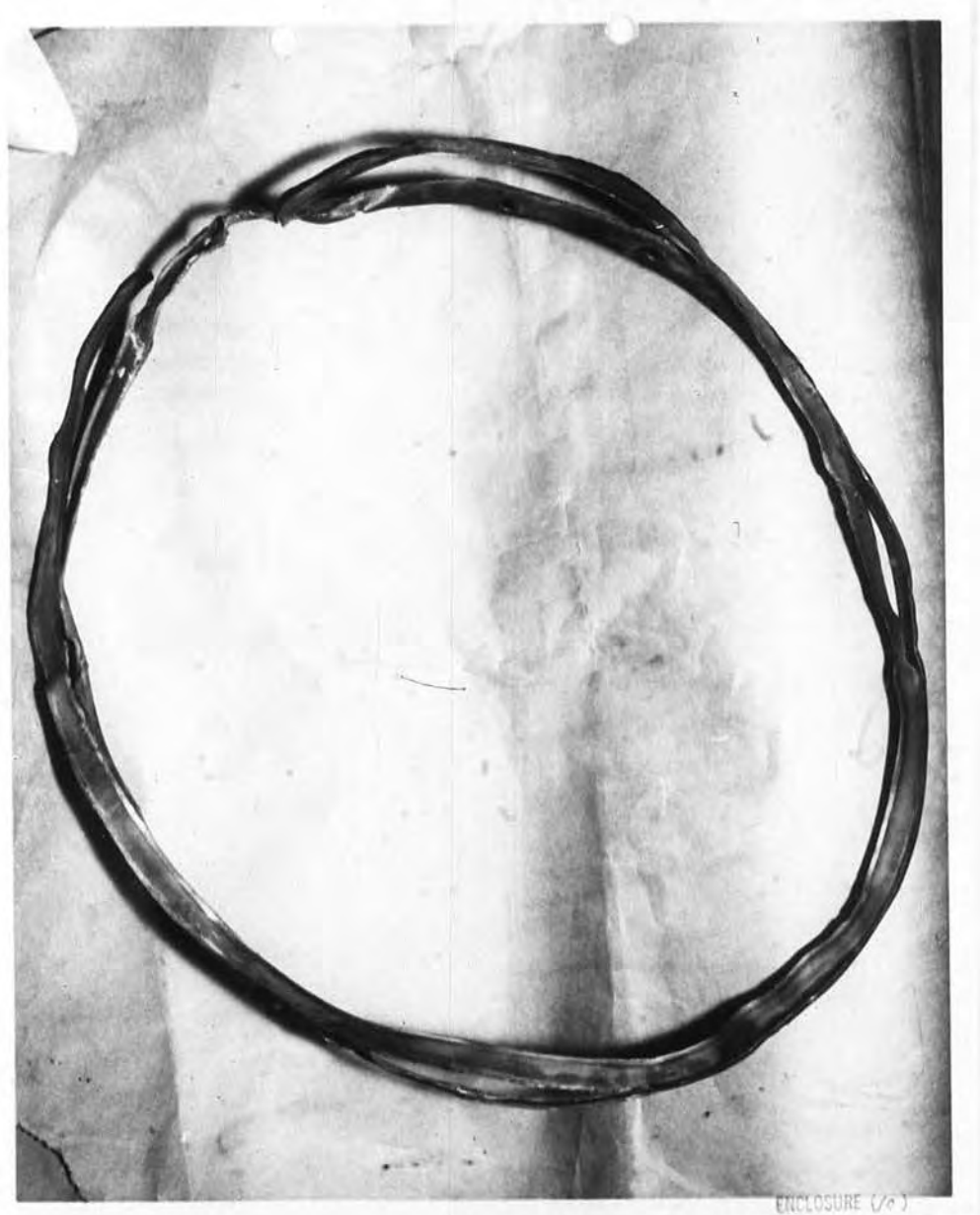

TOP
9
9
3
6





ENCLOSURE (8)

ENCLOSURE (9)



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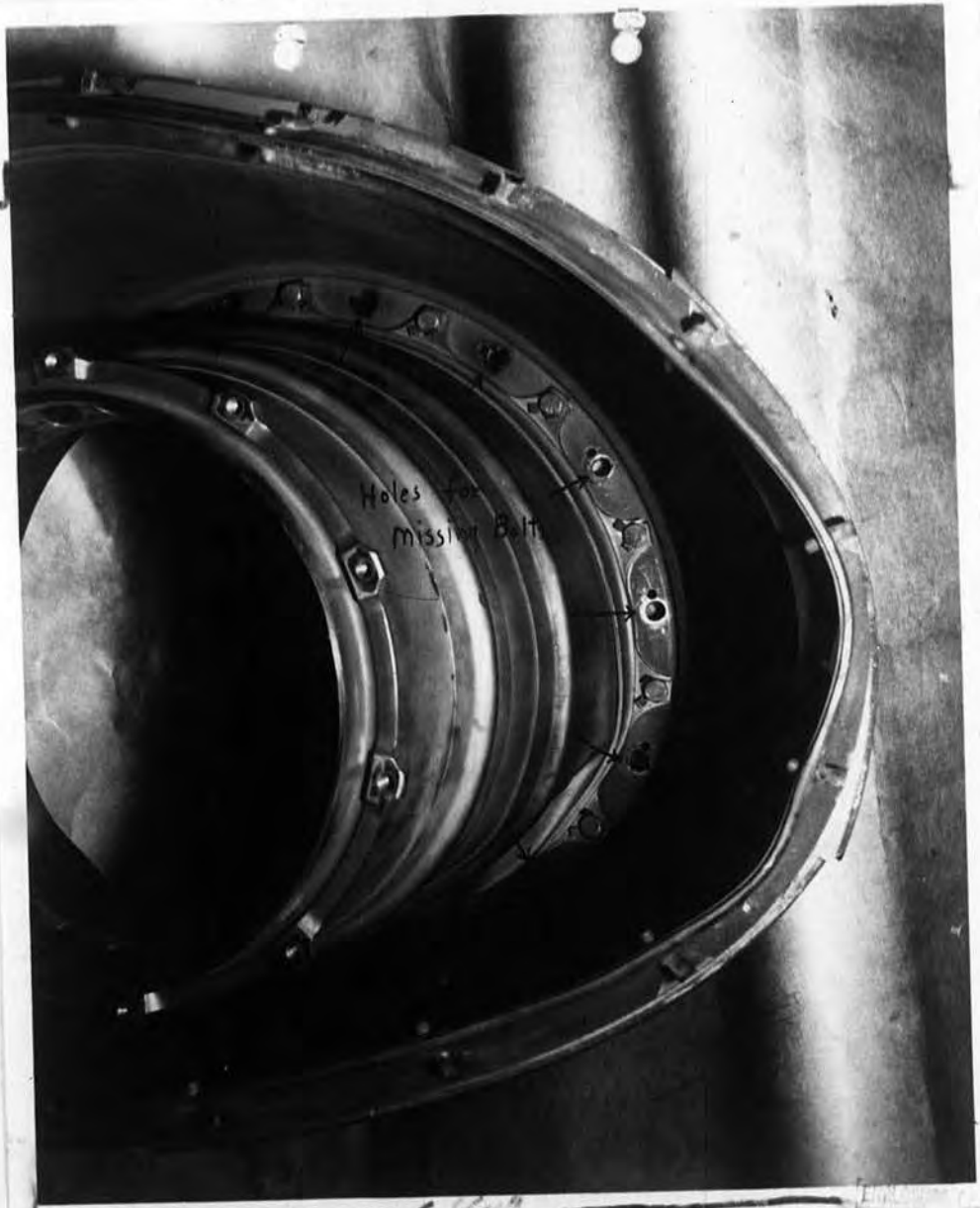
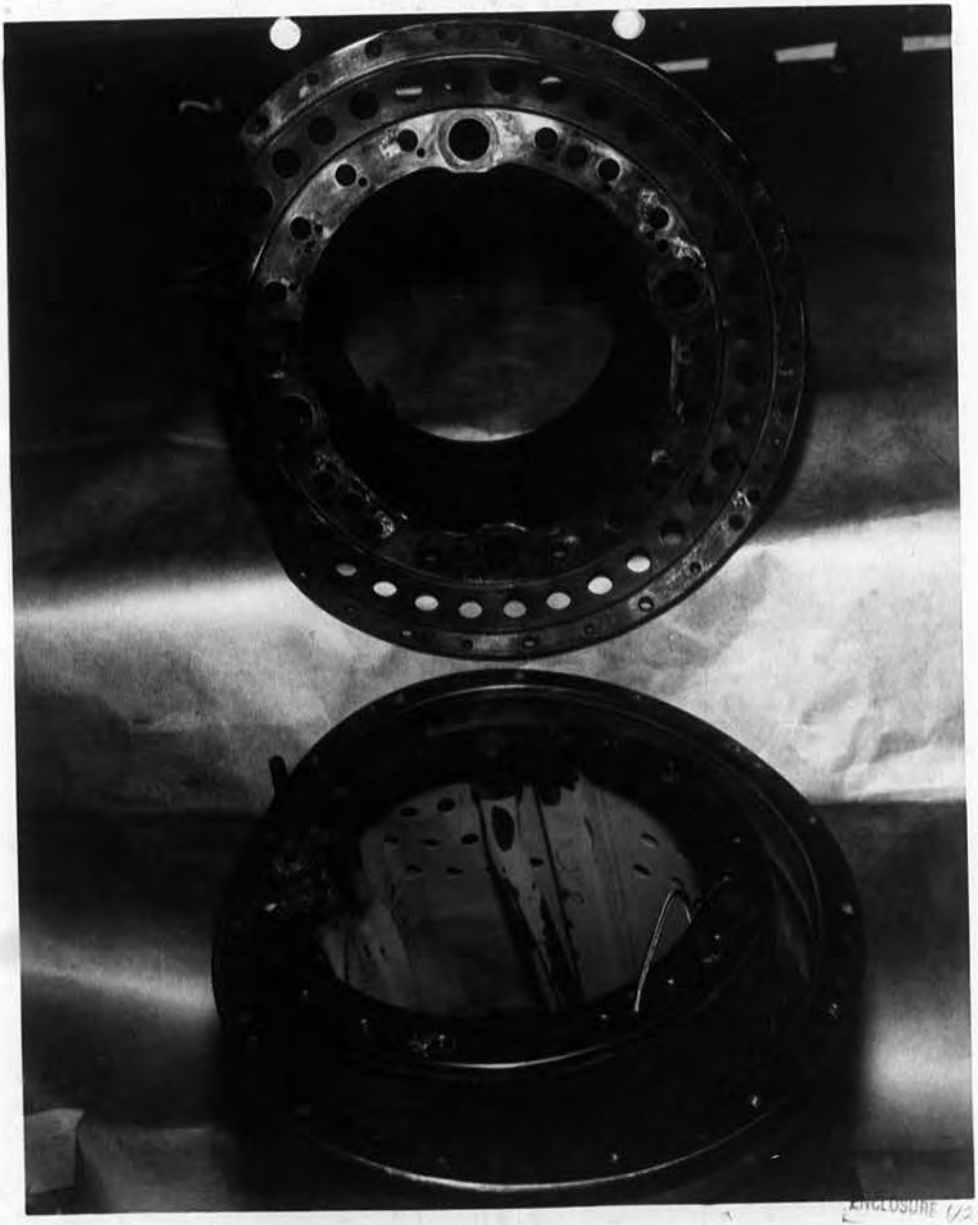
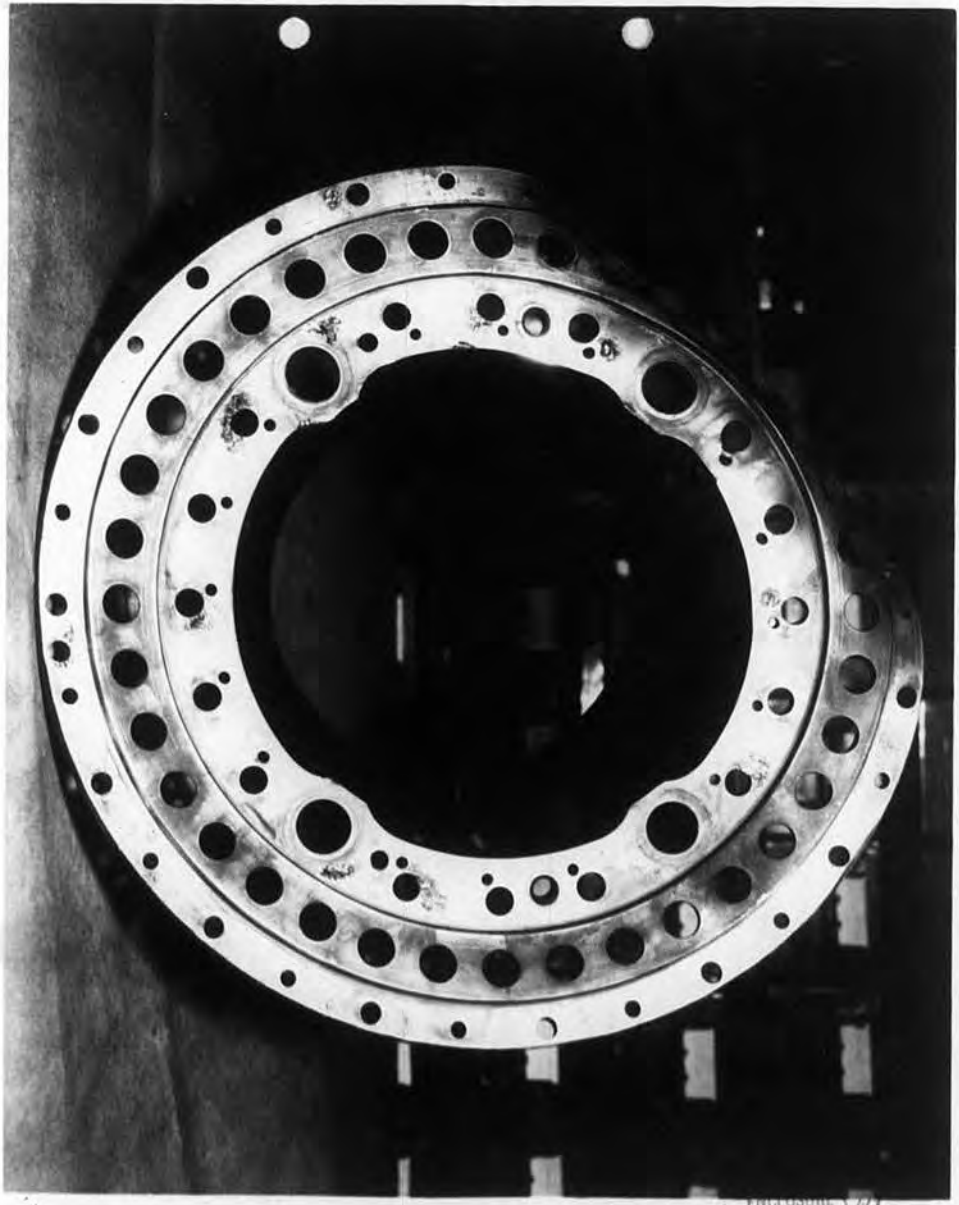


6

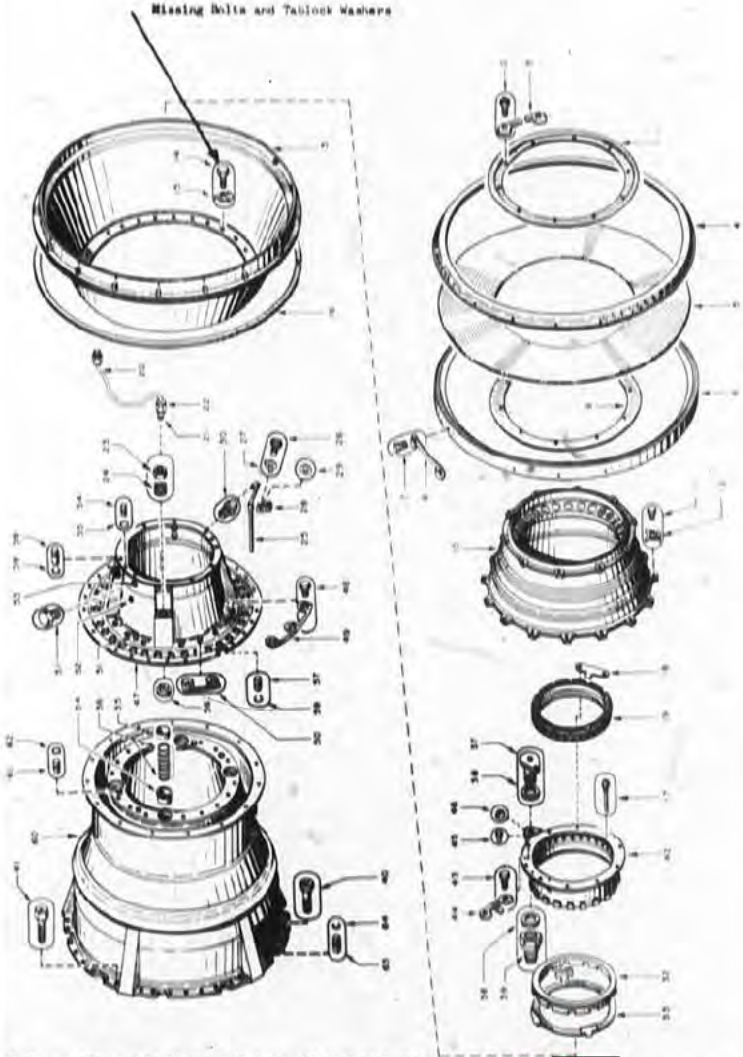


ENCLOSURE (12)

ENCLOSURE (13)

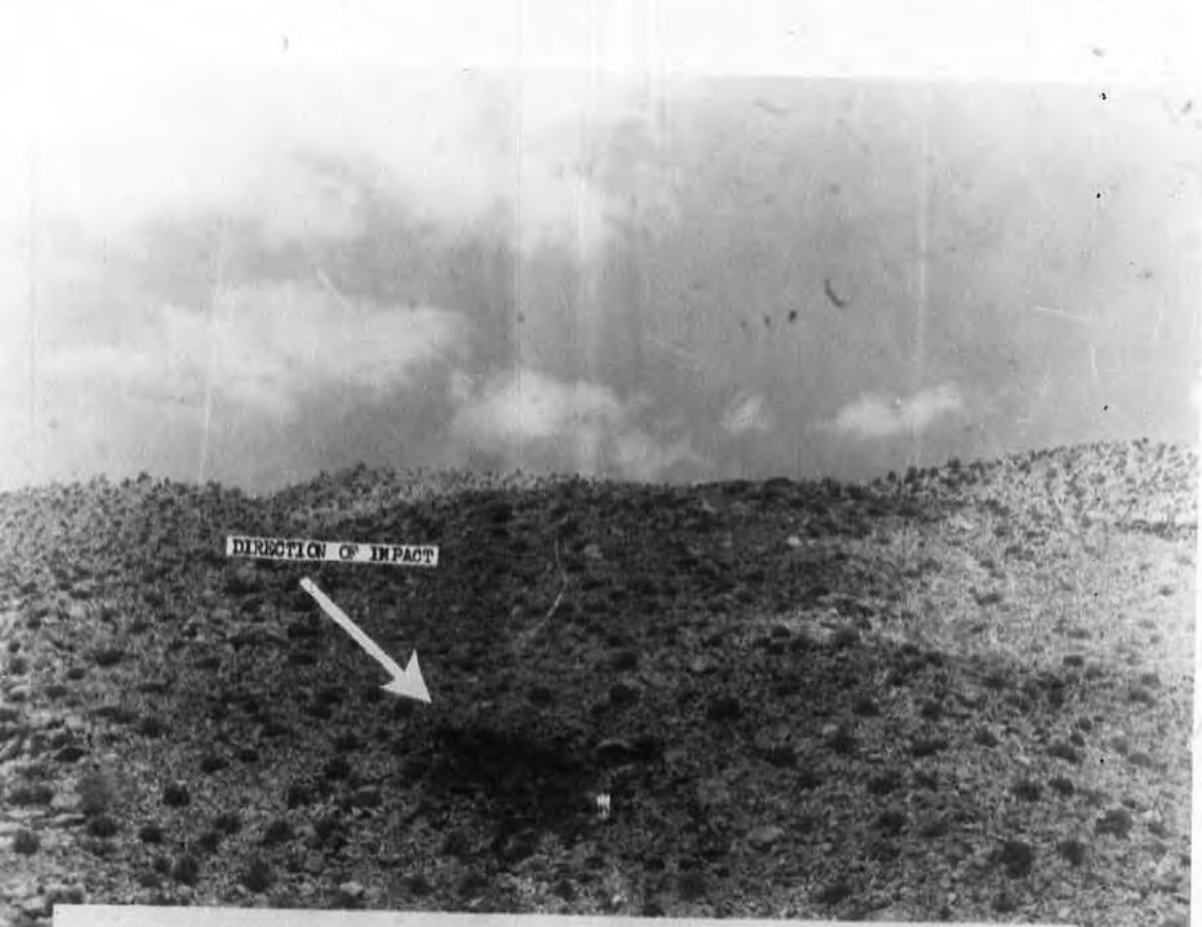


ENCLOSURE



Enclosure (7) to HMMH-15 AAH 1-63 5 June 63 A-40 (AAD-2N) BuNo 150597 Pilot [redacted] (b)
Portion of NAVWEPS 02B-35AAC-4, Illustrated Parts Bkdn J-65-W-16A Aircraft Engine of 15 Feb 63 Showing Location of Missing Bolts and Tablock Washers.

Special Handling Required In Accordance with Paragraph 70, OPNAVINST 3750.6B



Enclosure (8A) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
CRASH SITE
Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6B

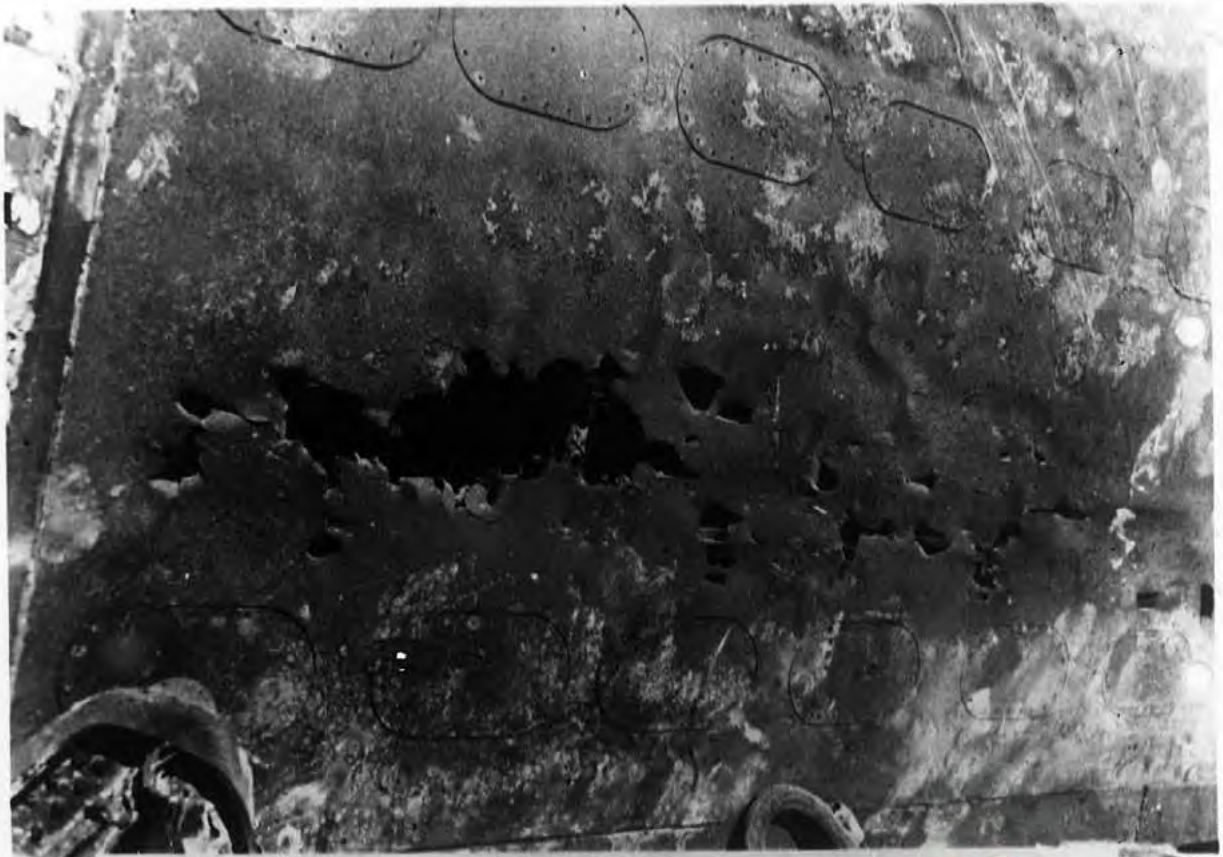
Enclosure (8B) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2n) BuNo 150597 Pilot (b) (6)
AIRCRAFT TAIL SECTION
Special Handling Required in Accordance with Paragraph 7D, OPNAVINST 3750.6D

Enclosure (8C) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
SIDE VIEW ENGINE
Special Handling Required in Accordance with Paragraph 7O, OPNAVINST 3750.6D

Enclosure (8D) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6) [redacted]
FIRST STAGE TURBINE HEAT SHIELD, AFT FACE
Special Handling Required in Accordance with Paragraph 7O, OPNAVINST 3750.6D

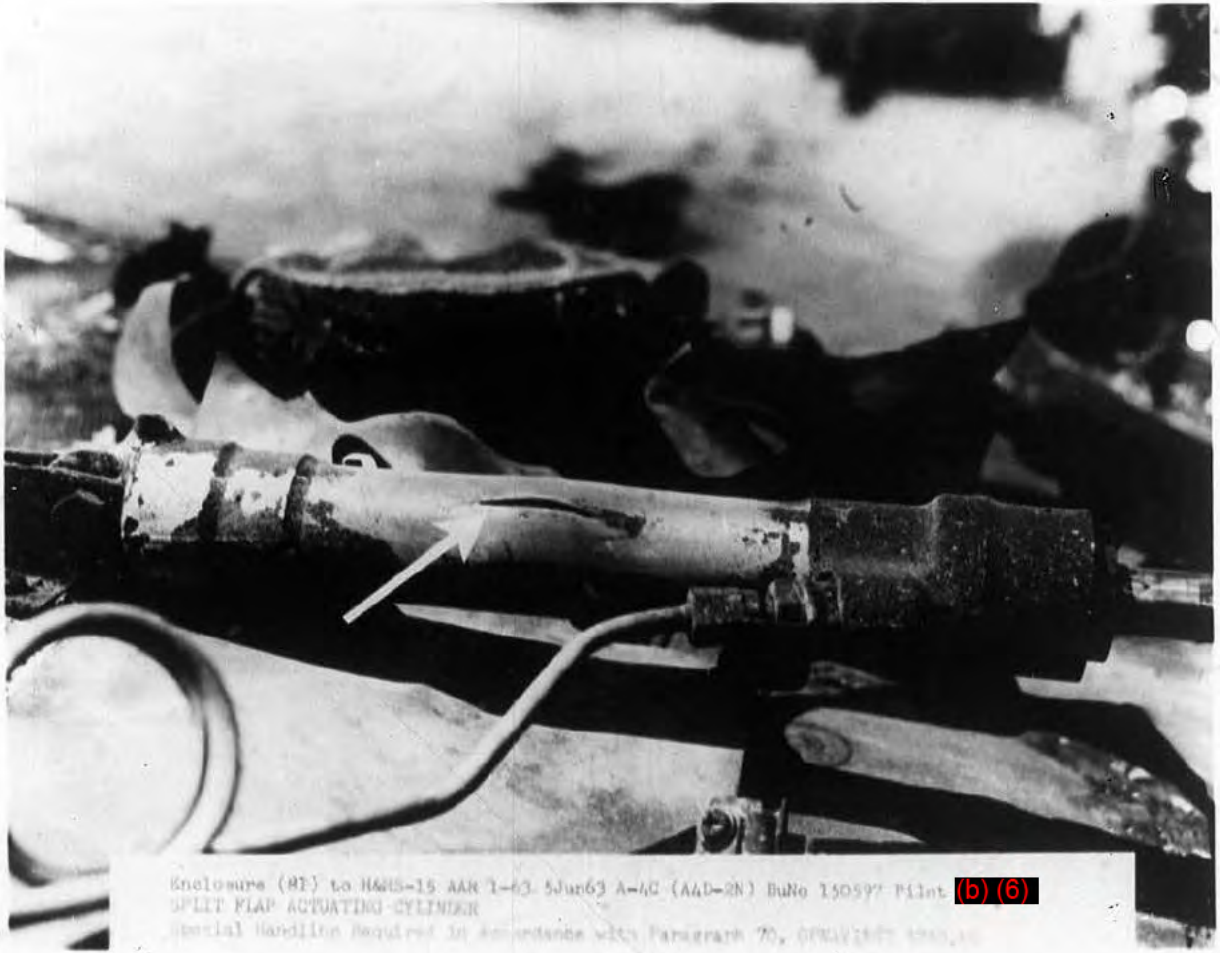
Enclosure (8E) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
TURBINE ROTOR FIRST STAGE DETAIL
Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

Enclosure (8F) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
BLADE HOLES IN TURBINE CASE
Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D



Enclosure (8G) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
TURBINE BLADE PUNCTURES OF TOP OF RIGHT WING
Special Handling Required in Accordance with Paragraph 7C, OPNAVINST 3750.6D

Enclosure (8H) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
TAILPIPE NUGGO CLAMP INTACT
Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D



Enclosure (B1) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
SPLIT FLAP ACTUATING CYLINDER
Special Handling Required in accordance with Paragraph 7b, OPNAVINST 5510.1C

MEDICAL OFFICER'S REPORT OF A/C ACCIDENT, INCIDENT, OR GROUND ACCIDENT — PAGE 1
OPNAV FORM 3750-8 (Rev. 9-58) See OPNAVINST. 3150.6C [illegible] Instructions - SPECIAL HANDLING REQUIRED

OPNAV REPORT 3750-7

SECTION A - IDENTIFICATION

1. USCM (Name and mailing address of activity)
MARINE CORPS AIR STATION, EL TORO, SANTA ANA, CALIFORNIA

2. MOD NUMBER 7-63

(b) (6) [redacted] (b) (6) [redacted] DATE 24 June 63 DATE 24 June 63

[x] ACCIDENT [ ] GROUND ACCIDENT [ ] INCIDENT

6. TIME AND ZONE 1055 T 5 June 63 065° 7 N Miles from Julian, Calif.

9. MODEL A/C	10. BUNO	11. NO. OF OCCUPANTS	12. TYPE ACCDT	13. DAMAGE CODE	14. UNIT OPERATING A/C
A/C	150597	1	F(1)G(8)	A	H&MS-15

15. INDIVIDUALS INVOLVED - USE ADDITIONAL SHEETS IF REQUIRED

NAME (Last, first and middle initials)	16. UNIT TO WHICH ATTACHED	17. RANK, RATE	18. FILE/SERV. NO. DESIGNATOR	19. BILLET	20. BRANCH OF SERVICE	21. INJURY CODE	22. DISPOSITION
a. IN CONTROL OF A/C (b) (6) [redacted]	MABS-15	Lt Col	(b) (6) [redacted]	CO MABS-15	USMC	D	G
b.							
c.							
d.							

14. CLARIFICATION OF ITEMS 10-22 WHEN NECESSARY

18. MODEL - OTHER A/C IF INVOLVED	25. BUNO	26. NO. OF OCCUPANTS	27. UNIT OPERATING A/C	28. DAMAGE CODE	29. REPORT NO.

10. DETAILED NARRATIVE ACCOUNT OF ACCIDENT (Use additional 8 X 10½ plain sheets if required)

See attached sheet

SECTION B - MEDICAL OFFICER'S QUESTIONNAIRE

YES	NO	DID THE FLIGHT SURGEON:	(If "NO" state reason in space below.)
	x	1. VISIT THE SCENE OF THE MISHAP?	The pilot was returned from Miramar to El Toro and I remained at El Toro to examine the pilot.
	x	2. PARTICIPATE FULLY IN THE FIELD INVESTIGATION?	Most of the field investigation was concerned with recovery of the engine and my presence was not considered necessary
x		3. PARTICIPATE FULLY IN THE DELIBERATIONS OF THE A/C ACCIDENT BOARD?	

GIVE APPROXIMATE NUMBER OF HOURS SPENT BY THE FLIGHT SURGEON:	4. IN FIELD INVESTIGATION	5. IN BOARD DELIBERATIONS	6. IN PREPARATION OF THIS REPORT
	1	6	18

7. REPORT PREPARATION CHECK LIST
[x] ALL PARTS OF FORM COMPLETED [x] SURVIVORS NARRATIVES [x] PHOTOS [x] CONCLUSIONS AND RECOMMENDATIONS [x] REQUIRED COPIES FURNISHED

☆ U. S. GOVERNMENT PRINTING OFFICE : 1960-[illegible]

MOR 7-63
A4C BuNo 150597
MCAS, EL TORO
5 June 1963

SECTION A IDENTIFICATION

30 - NARRATIVE ACCOUNT OF ACCIDENT

On 5 June 63, LtCol (b) (6) was scheduled for an authorized instrument training flight in an A4C aircraft with Lt. (b) (6) flying wingman. Aircraft preflight checks were normal and take-off was accomplished at 1042 T. The flight broke out on top at 6000 ft. whereupon the leader (LtCol (b) (6) reduced power to 94% to facilitate the join up. Power was then further reduced to 90% when the wingman (Lt (b) (6) failed to rendezvous. At 23,000 ft., LtCol (b) (6) established visual contact at 4 o'clock up and resumed 100% power as his wingman began to join up. About 40 seconds later while preparing to change to a new frequency he heard a sound described as a "thunk", was immediately followed by rapid deceleration and loss of radio and oxygen with rising EGT and and decreasing RPM. At this time his wingman noted a fuel vapor trail with flame intermixed streaming from the aft end of LtCol (b) (6) s aircraft. About this time, LtCol (b) (6) regained radio contact with his wingman and saw a fire warning light come on. He told Lt. (b) he was on fire and was going to eject. The aircraft then went out of control and he ejected at about 30° nose down in a 60/70 rt. bank at 1055 T. Airspeed was estimated at 220/240 knots and altitude 24,000 ft.

The ejection and descent were smooth with parachute automatically deploying at 10-13,000 ft. Touchdown occurred on a ridge in a fairly level area. There was a 15-25 knot wind and LtCol (b) (6) was dragged across cactus and rock. He released his rt. rocket jet fastener but was unable to release his lt. rocket jet fastener until the chute spilled when it contacted a Yucca tree. He was dragged about 200 ft. in all and lost his helmet, mask, gloves, kneeboard and watch along the way. He received many abrasions and several lacerations but was not unconscious and got up and walked back picking up his lost gear.

His wingman had spotted him, passed the word, and a San Diego Coast Guard helicopter reached the scene at 1148 T. The helicopter landed, LtCol (b) (6) walked aboard and was taken to Miramar NAS arriving at 1230 T 5 June 63.

He was taken to the station dispensary where he was examined and found to have a sprained lt. ankle, lacerations (minor) of the lt. scalp and lt. elbow (requiring several stitches) and hundreds of small cactus needles imbedded in his skin throughout the trunk and extremities. The latter were removed as thoroughly as possible. He was then returned to El Toro MCAS by R4D about 1700 T 5 June 63. At this time I talked with LtCol (b) (6) briefly, ascertained that he had no serious injuries.

SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH PARA 70 OPNAVINST P3750.6D

MEDICAL OFFICER'S REPORT OF A[redacted]ACCIDENT, INCIDENT, OR GROUND ACCI[redacted]NT—Page 2

OPNAV FORM 3750-8A (Rev. 6-58) OPNAV Report 3750-7

SECTION C — PHYSIOLOGICAL, HUMAN ENGINEERING, DESIGN, SOCIO-PSYCHOLOGICAL, AND TRAINING FACTORS WHICH CONTRIBUTED IN SOME DEGREE TO THIS A/C ACCIDENT, INCIDENT, OR GROUND ACCIDENT

NAME OF INDIVIDUAL *(Last, first, middle)*: [redacted] (b) (6)

MODEL A/C: A/C

Check E-Established, S-Suspected, or P-Present for each factor selected. Additional 8X10½ plain sheets will be used for the supporting account of items checked below. Identify each statement with the factor and section identification (e.g., C1, C2, etc.). Attach all sheets pertaining to these factors to this form upon completion.

E	S	P	√ FACTORS	E	S	P	√ FACTORS
			PHYSIOLOGICAL:				SOCIO-PSYCHOLOGICAL: *(Emotional stress from duty sources)*
			1. Physically incapacitated in flight				29. Expeditings/Delays
			2. "G" forces				30. Weather
			3. Environmental stress - External				31. Mechanical Problems
			4. - Internal				32. Social and working relationships
			5. Dysbarism/explosive decompression				33. Personal comfort
			6. Diet				34. Regulations
			7. Fatigue			X	35. Facilities
			8. Hypoxia				36. Navigation
			9. Related illness				37. Duty assignment
			10. Vertigo/Disorientation/Illusions				38. Personality traits
			11. Hyperventilation				NON-STRESS FACTORS:
			12. Drugs				39. Faulty attention
		X	13. Physical state 17 lbs over std + 20				40. Poor judgement
			14. OTHER:				41. Forgetfulness
			HUMAN ENGINEERING AND DESIGN:				42. OTHER SOCIO-PSYCHOLOGICAL FACTORS
		X	15. Personal equipment				
			16. Displays and/or controls				
			17. Work arrangement				
			18. Working environment				
			19. Habit interference				TRAINING FACTORS:
			20. OTHER:				43. Physiological training
			SOCIO-PSYCHOLOGICAL: *(Emotional stress from non-duty sources)*				44. Emergency Procedures training
			21. Pregnancy				45. Survival and rescue training
			22. Illness or death				46. Refresher training
			23. Arguments				47. Transition training
			24. Elated/Depressed state			X	48. OTHER: Low hrs in type
			25. Personal habits - Drinking				
			26. - Sex				
			27. - Gambling				
			28. - Debts				

SECTION D — AIR CREW DATA *(fill in where applicable)*

1. Flight time past 30 days	13.8	7. Total time in model	10.3
2. Flight time last 24 hours	.3	8. Number of days grounded last month, give reason	0
3. Number of flights in last 24 hours	1		
4. Time at controls this flight	.3	9. Number of and dates of previous accidents	0
5. Number of hours duty last 24 hours	8-10		
6. Total flight time	4451.5		

SECTION E — CONTRIBUTING FACTORS AND THEIR ANALYSIS *(As condensed from Part I, Sect. B and Part VIII of the AAR)*

NOTE: Fill in this secton only on that set of forms prepared for FIRST individual listed in Section A, i.e. 15(a). Attach additional sheets as necessary.

See attached sheet.

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MOR 7-63
A4C PuNo150577
MCAS, EL TORO
5 June 1963

SECTION C PHYSIOLOGICAL, HUMAN ENGINEERING, SOCIO-PSYCHOLOGICAL AND TRAINING FACTORS WHICH CONTRIBUTED IN SOME DEGREE TO THIS AIRCRAFT ACCIDENT

C-25 The difficulty experienced by the pilot in releasing his left rocket jet fastener resulted in his being dragged 200 ft. through rocks and cacti. If he had landed anywhere else in a one mile radius this dragging would have probably resulted in more serious injury or death.

Subsequent functional testing of the rocket jet fasteners as set forth in BUSTP 50-60 showed these fasteners to be well within normal function expected.

SECTION E CONTRIBUTING FACTORS AND THEIR ANALYSES

The engine and all available engine accessories were recovered from the crash site by helicopter and truck. After visual inspection by the accident board they were shipped to O&R NAS Alameda for priority DIR.

At Alameda they were able to determine that 15 bolts P/N AN104810 IPB Fig 8, index 14 backed out due to improper installation. Once these bolts backed out the first stage turbine stator and its attached parts moved aft causing binding and engine failure.

MEDICAL OFFICER'S REPORT OF A/C ACCIDENT, INCIDENT, OR GROUND ACCIDENT – PAGE 3 OPNAV REPORT 3750-7

OPNAV FORM 3750-8B (5-58)

SECTION F - SAFETY, PERSONAL, AND SURVIVAL EQUIPMENT

Prepare a narrative account of damaged or failed items. Identify each item discussed (e.g., F1, F2, etc.)

NAME OF INDIVIDUAL (Last, first, middle): (b) (6) [redacted]

MODEL A/C: A/C

GENERAL DESCRIPTION OF EQUIPMENT	AVAILABLE YES	AVAILABLE NO	SPECIFIC MODEL OR TYPE	UTILIZED YES	UTILIZED NO	FAILED YES	FAILED NO	DESCRIPTION OF DAMAGE TO EQUIPMENT
1. Shoulder harness	~~x~~		NB-9	~~x~~			~~x~~	
2. Lap belt	~~x~~		NB-9	~~x~~			~~x~~	
3. Inertia reel	x		Douglas	x			x	
4. G-Suit	x		Z-3	x			x	
5. Pressure suit-full or partial		~~x~~						
6. Exposure suit		x						
7. Flight suit (Other than above)	x		Summer	x			x	
8. Helmet	x		APH-5	x			x	
9. Goggles/Eyeshield	x		APH-5	x			x	
10. Shoes	x		Flight Deck	x			x	
11. Gloves	x		Summer Flying	x			x	
12. Life vest	x		MK-3C	~~x~~	(2)		~~x~~	12. Smoke flares utilized
13. Life raft	x		PK-2		x			
14. OTHER:								
15. SIGNAL DEVICE - Flare (Night)	x		MK-13 Mod 0		x			
16. - Flare (Day)	x		MK-13 Mod 0	(1)	~~x~~		(2)	
17. - Dye marker	x		Sea		x			
18. - Radio (A)	~~x~~		PRT-3		x			
19. - Flashlight		x						
20. - Mirror	x		Signal		x			
21. OTHER:								
22. SURVIVAL GEAR - Knife	x		Survival		x			
23. - First aid kit		x						
24. - Shelter		x						
25. - Food	x		Packet		x			
26. OTHER:								
27. RESCUE - Vehicle	x		Helicopter	x			x	
28. - Sling, Net, Stretcher								
29. OTHER:								

SECTION G - DETAILED EQUIPMENT QUESTIONNAIRE

OXYGEN EQUIPMENT

1. MASK - MODEL OR TYPE: A 13 A
2. MODIFICATIONS, IF ANY: BACSEB27-54,50-54,2-56,17-58,8-60,58-61 (1)
3. REGULATOR - MODEL OR TYPE: MINT BENDIX 2921 (1)
4. MODIFICATIONS, IF ANY: 1-C1
5. PREFLIGHTED BY USER? [x] YES [ ] NO
6. IF NO, WHY NOT:
7. LIST DISCREPANCIES NOTED BY PREFLIGHT CHECK:
8. OXYGEN SUPPLY: PRIOR TO FLIGHT 10 LITERS (Liquid) ____ P.S.I. (Gas); TIME OF ACCIDENT 9 LITERS (Liquid) ____ P.S.I. (Gas)
9. WAS OXYGEN IN USE AT TIME OF ACCIDT? [x] YES [ ] NO
10. IF YES, WAS SELECTOR SETTING [x] 100% [ ] NORMAL
11. WAS ALL OXYGEN EQUIPMENT NECESSARY FOR THIS FLIGHT AVAILABLE? IF NO, LIST ITEMS AND REASON WHY: [x] YES [ ] NO
12. WAS OXYGEN MASK REMOVED AT ANY TIME IN FLIGHT? IF YES, GIVE DURATION AND REASON: [x] NO [ ] YES

RELEASE DEVICES

13. TYPE CHUTE RELEASE DEVICE: Rocket Jet (1)
14. TYPE HARNESS RELEASE DEVICE: Rocket Jet ( )
15. WHEN WERE RELEASE DEVICES ACTIVATED? on the deck (2)
16. WERE DIFFICULTIES ENCOUNTERED WITH RELEASE DEVICES? IF YES, STATE DIFFICULTIES, WHEN ENCOUNTERED AND CAUSE: [x] YES [ ] NO — Unable to release lt. fastener while being dragged because of increased tension on the fastener (5)
17. WERE DIFFICULTIES ENCOUNTERED AFTER ACTIVATING RELEASE DEVICES? IF YES, STATE DIFFICULTIES, WHEN ENCOUNTERED AND CAUSE: [ ] YES [x] NO
18. WAS LIFE VEST INFLATED PRIOR TO ACTIVATING RELEASE DEVICES? IF YES, WHAT DIFFICULTIES DID THIS PRODUCE? [ ] YES [x] NO ( )

(Continued on OPNAV FORM 3750-8C)

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MEDICAL OFFICER'S REPORT OF A/C ACCIDENT, INCIDENT, GROUND ACCIDENT — PAGE 4
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OPNAV REPORT 3750-7

SECTION G - DETAILED EQUIPMENT QUESTIONNAIRE (Continued)

NAME OF INDIVIDUAL (Last, first, middle): (b) (6) [redacted]

MODEL A/C: A4C

RESTRAINT HARNESS

19. INTEGRATED HARNESS SYSTEM, MODEL/TYPE: MIL-S-19089 (1)
20. INTEGRATED? [X] FULL [ ] PARTIAL
21. MODIFICATIONS, IF ANY STATE REASON: BACSEB 12-62
22. DID INTEGRATED HARNESS FIT PROPERLY? IF NO, LIST DISCREPANCIES IN FIT AND GIVE REASONS THEREFOR: [ ] NO [X] YES
23. INTEGRATED HARNESS FITTING WAS CONDUCTED BY: [ ] WEARER [ ] FLIGHT SURGEON [X] PARACHUTE RIGGER [ ] AVIATION EQUIPMENT OFFICER [ ] OTHER
24. IF SHOULDER HARNESS WAS USED, WAS IT: [X] LOCKED [ ] UNLOCKED [ ] TIGHT [ ] SLACK [ ] OTHER CONDITION

HELMET

25. TYPE HELMET: APH5
26. LIST PRESCRIBED MODIFICATIONS: BACSEB3-57A,17-58A,19-59A,35-60A,25-62, GAB18-16, 562 (4)
27. OTHER MODIFICATIONS AND REASON FOR THEM: (9.)
28. DID HELMET FIT PROPERLY? IF NO, GIVE REASON: [X] YES [ ] NO
29. HELMET FITTING WAS CONDUCTED BY: [ ] WEARER [ ] FLIGHT SURGEON [X] PARACHUTE RIGGER [ ] AVIATION EQUIPMENT OFFICER [ ] OTHER

PARACHUTE

30. TYPE CHUTE: NB-9
31. LAST PACKING DATE: 5-24-63
32. MODEL/TYPE BAILOUT OXYGEN: F17300-11 (2)
33. AUTOMATIC RIPCORD, IF INSTALLED (Model and type): [ ] NONE Master Specialties 1000D (1)
34. DID AUTOMATIC RIPCORD FAIL? IF YES, WHY? [X] NO
35. WAS RIPCORD ACTIVATION: [ ] MANUAL [X] AUTOMATIC?
36. IF MANUALLY ACTIVATED STATE REASON AND ANY DIFFICULTIES ENCOUNTERED:
37. DID CHUTE OPEN IMMEDIATELY? IF NO, GIVE REASON: [X] YES [ ] NO
38. ALTITUDE THAT CHUTE OPENED: Approx. 10,000 FEET
39. OPENING SHOCK WAS: [ ] SLIGHT [X] MODERATE [ ] SEVERE
40. BODY ATTITUDE AT OPENING: prone
41. CONDITION OF CHUTE AFTER OPENING:
42. CHUTE OSCILLATION PRESENT: [ ] NONE [X] SLIGHT [ ] MODERATE [ ] SEVERE
43. IF OSCILLATION WAS PRESENT, HOW WAS IT STOPPED?
44. WEATHER CONDITIONS DURING DESCENT (List in sequence): Calm, slightly cloudy, warm
45. TOPOGRAPHY OF LANDING SITE: rough cactus and rocks (4)
46. WAS BAILOUT OXYGEN CONNECTED? [X] BEFORE EXIT (1) [ ] AFTER EXIT [ ] NO [ ] N.A.
47. WAS BAILOUT OXYGEN USED? IF NOT, WHY: [X] YES [ ] NO
48. WHEN WAS IT ACTIVATED? [ ] BEFORE EXIT [X] AFTER EXIT (3)
49. GIVE DIFFICULTIES ENCOUNTERED WITH BAILOUT OXYGEN AND THEIR CAUSE, IF ANY:
50. WAS CHUTE HARNESS: [X] TIGHT [ ] SNUG [ ] LOOSE
51. WAS A SITTING POSITION IN SLING OBTAINED DURING DESCENT? IF NOT, WHY? [ ] NO [ ] YES [X] NOT ATTEMPTED ( )
52. SEAT CUSHION IF PROVIDED (Model/Type): [ ] NONE RAPEC (4)
53. WAS PARADAPT LANYARD CONNECTED TO LIFE VEST O RING? IF NOT, WHY? [ ] NO [ ] YES
54. LIST TYPE OF PARACHUTE TRAINING COMPLETED BY THIS INDIVIDUAL: [ ] NONE Lectures, Movies
55. IF ATTEMPT WAS MADE TO RELEASE PARADAPT DURING DESCENT, WAS RELEASE ACTIVATED SUCCESSFULLY? [ ] YES [ ] NO
56. IF NO, GIVE REASON:

OTHER

57. IF G-SUIT, EXPOSURE SUIT, FULL OR PARTIAL PRESSURE SUIT WAS WORN, DID IT FIT PROPERLY? IF NOT, LIST DISCREPANCIES IN FIT AND GIVE REASONS THEREFOR: [X] YES [ ] NO
58. WAS G-SUIT EQUIPPED WITH A SPRING-LOADED DISCONNECT ADAPTER? IF NO, GIVE REASON: [X] YES [ ] NO
59. LIST ALL ITEMS OF NON-STANDARD CLOTHING OR SURVIVAL EQUIPMENT UTILIZED:
60. WAS ANY ITEM OF EQUIPMENT LOST? IF YES STATE ITEM, WHEN LOST, AND REASON FOR LOSS: [X] NO [ ] YES (1)
61. WAS ANY ITEM OF EQUIPMENT DISCARDED? IF YES, STATE ITEM, WHEN DISCARDED, AND REASON FOR DISCARD: [X] NO [ ] YES

MEDICAL OFFICER'S REPORT OF A/C ACCIDENT, INCIDENT, OR GROUND ACCIDENT - PAGE 8
OPNAV FORM 3750-85 (Rev. 5-58)

OPNAV REPORT 3750-1

SECTION H - EMERGENCY EXIT FROM A/C AND SURVIVAL FACTORS

NAME OF INDIVIDUAL (last, first, middle)

(b) (6) [redacacted]

MODEL A/C: A4C

YES	NO	EJECTION ATTEMPTED	REMARKS
		1. EJECTION - Attempted	Aircraft on fire, ejected 24,000 without difficulty, repac seat functioned perfectly.
	X	2. - Accomplished	
		3. - Through canopy	
YES	NO	EJECTION DIFICULTIES ENCOUNTERED	IF YES, EXPLAIN DIFFICULTIES
	X	4. - Prior to	
	X	5. - During	
	X	6. - Subsequent to	
		7. Give type and model of seat used	RAPEC Seat No 1 (8)
		8. BAILOUT - Attempted	
		- Accomplished	

9. ALTITUDE AT TIME OF EXIT (feet): ABOVE SEA LEVEL 24,000 ABOVE TOPOGRAPHY 23,000

10. ATTITUDE OR MANEUVER OF A/C AT EXIT OR IMPACT: 60-90° Right Bank (5)-(8)-(3)

11. AIRSPEED (6): 220-240 Knts

12. COLLISION OF A/C WITH: [ ] GROUND [ ] WATER

13. CONTROLLED: [ ] YES [ ] NO [ ] UNKNOWN

14. POWER: [ ] ON [ ] OFF

15. WHEELS: [ ] UP [ ] DOWN

16. FLAPS: [ ] FULL [ ] UP [ ] PARTIAL

17. CANOPY POSITION AT EXIT OR IMPACT: [ ] OPEN [ ] CLOSED [X] JETTISONED

18. SEA STATE

19. AIR TEMP. 68 °F

20. WATER TEMP. °F

21. A/C FLOATED SEC.

22. TIME IN WATER

23. TIME IN RAFT

BAIL OUT OR COLLISION WITH WATER OR GROUND

24. EXIT USED

25. IS THIS THE RECOMMENDED EXIT? IF NO STATE REASON FOR CHOICE. [ ] YES [ ] NO

26. DIFFICULTIES WITH THIS EXIT WERE: [ ] IN REACHING [ ] IN OPENING [ ] IN EXITING

27. STATE NATURE OF DIFFICULTY

28. BODY POSITION DURING EXIT

29. LIST OTHER FACTORS NOT INDICATED ABOVE WHICH AFFECTED EXIT FROM A/C

SURVIVAL FACTORS: Check factors below which are appropriate for this accident. Prepare a detailed narrative account of the factors checked below and attach to this form. Identify each item discussed by item number (e.g., N30, N31, etc.)

	COMMUNICATIONS:		MAINTAINING BODY TEMPERATURE:
X	30. Communicated position prior to mishap		50. Items used as shelter
X	31. Witnesses at scene		51. Items used as clothing
	32. Electronic signal devices		52. Fire
	33. Visual signal devices		53. OTHER:
	34. Auditory signal devices		ENVIRONMENTAL HAZARDS:
	35. OTHER:		54. Exposure to natural forces
	TRAVEL:		55. Exposure to dangerous animals and plants
	36. LAND		56. Unfriendly native population
	37. WATER		57. OTHER:
	SHELTER:		MORALE:
	38. Life raft		58. Isolation
	39. Parachute		59. Psychological shock
	40. A/C structure		60. Lack of motivation to survive
	41. Natural shelter		61. Boredom
	42. Man-made shelter		62. Patienting, activities, and group coordination
	43. OTHER:		63. OTHER:
	WATER SOURCE:		FOOD SOURCE:
	44. Desalter kit, separator or solar still		64. Prepared survival rations
	45. Rain, dew, snow, ice, etc.		65. Animals/plants
	46. Processed beverages		66. OTHER:
	47. Canteen, thermos, water breaker, etc.		SURVIVAL TRAINING RECEIVED PRIOR TO MISHAP
	48. Streams, ponds, wells, etc.		67. Physiological training unit El Toro MCAS Aug 1962 - good
	49. OTHER:		

VMCR 7-63
A/C BuNo 150597
MCAS, EL TORO
5 June 1963

SECTION H EMERGENCY EXIT FROM AIRCRAFT AND SURVIVAL FACTORS

H-30, 31 LtCol (b) (6) was able to ascertain that his wingman (Lt. Smith) had him in visual contact just prior to his ejection. Lt. (b) (6) was then able to pass the word by radio to Sea Air Rescue Units in the area. Lt. (b) then orbited at the crash site making location easy for approaching aircraft. A Coast Guard helicopter was able to pick up the downed pilot in less than one hour from the time of ejection.

H-67 The pilot LtCol (b) (6) is a well trained Naval Aviator whose log book reveals he had a refresher course in ejection and survival at the Physiological Training Unit El Toro MCAS in August of 1962.

SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH PARA 20 OPNAVINST P3750.6D

(b) (6)

(b) (6)

MOR 7-63
A4C BuNo 150597
MCAS, EL TORO
5 June 1963

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS.

A. The cause of this accident was engine failure and the sequence of events leading to it were:

1. The 15 bolts P/N 104810, LPB Fig. 8, index 14 backed out because they were improperly installed.

2. The support assembly first stage turbine stator and its attached parts moved aft.

3. The binding induced by parts displacement led to fuel control reaction, rapidly rising EGT, and turbine section disintergration.

4. Turbine case failure allowed turbine blade escape. These blades punctured the wing fuel cell causing fuel leakage which produced and sustained the fire.

B. The pilot clearly determined the nature of his difficulty before ejecting from his aircraft. The ejection, descent, landing, and rescure were well executed with the RIPSC seat working perfectly. Only two discrepancies were noted.

1. The pilot failed to pull his D-ring after his parachute had deployed automatically. This is a violation of NATOPS procedures and might have led to further difficulties although in this case it did not.

2. The pilot was unable to release his left rocket jet fastener upon landing and this resulted in a 200 ft. drag through rocks and cacti plants. Subsequent testing showed these fasteners to be within normal limits. It is apparent however that increased tension and/or asymmetrical loading on the fasteners makes their release difficult to impossible.

RECOMMENDATIONS:

A. Quality control procedure be improved to preclude any recurrence of this type of improper engine assembly.

B. The rocket jet fastener method of attaching parachute risers to the torso harness be modified to eliminate any difficulty in their release after landing.

C. Re-emphasize the necessity of pulling the parachute D-ring after automatic chute deployment in pilot training.

SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH PARA 70 OPNAVINST P3750.6D

(b) (5), (b) (6)

(b) (5), (b) (6)

[redacted]

(b) (5), (b) (6)

(b) (5), (b) (6)

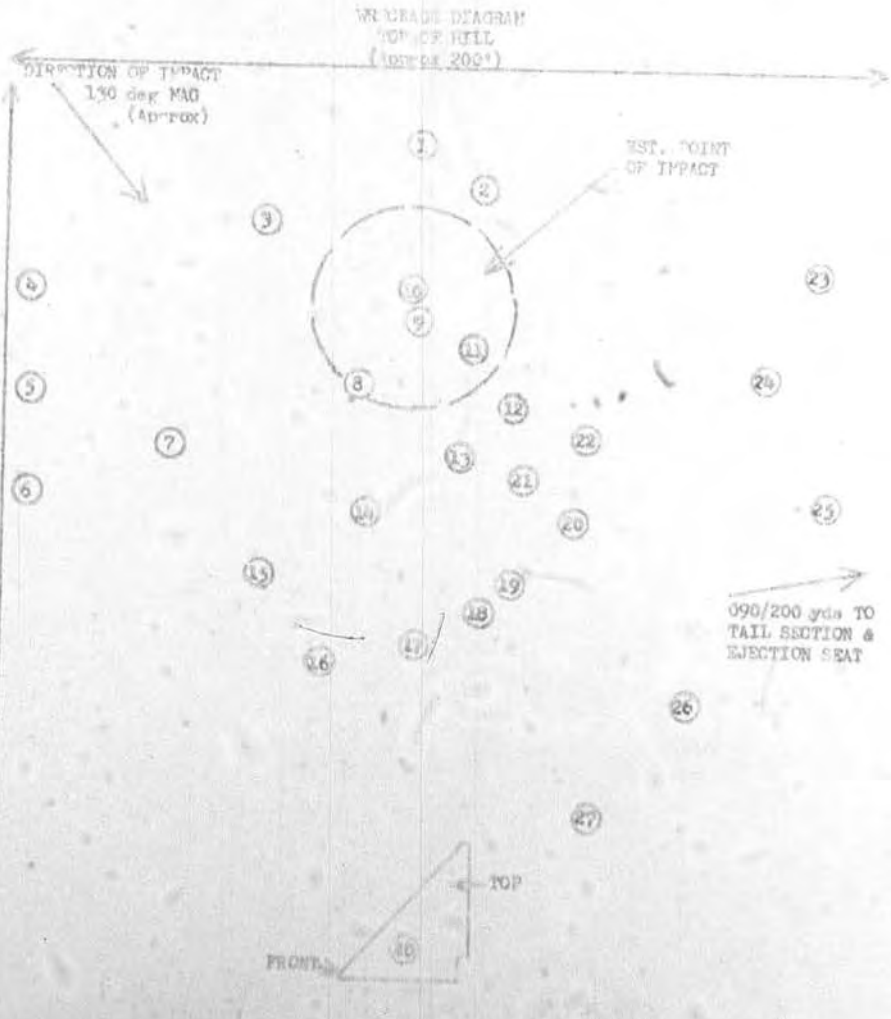
Key to Wreckage Diagram

1. UHF Antenna
2. Left Wing Slat
3. Angle of Attack Probe
4. Pieces of Drop Tank
5. Pieces of Drop Tank
6. Pieces of Drop Tank
7. Left Pylon
8. Wiring/Fuse Panel 22 and Cockpit Area
9. Aileron Power Boost Cylinder
10. Submerged Fuel Boost Pump
11. Ashes of Main Fuselage Fuel Cell
12. Aileron Trim Tab
13. Lower Left Fuselage Section
14. Nose Strut
15. Left Main Landing Gear Strut
16. Right Main Landing Gear Strut
17. Fuel Control
18. Right Forward Fuselage - Vicinity of Station 126
19. Right Slat and ASW-17 Communication Package
20. Tail Pipe
21. Engine Turbine and Exhaust Cone with Nuces Clamps
22. Right Fuselage Structure (Station 262)
23. Cockpit Windscreen
24. Cockpit Insulation
25. Pieces of Instruments
26. Right Engine Air Inlet
27. Engine Compressor and Combustion Chamber
28. Right and Center Wing

Enclosure (5) to
H&MS-15 AAR 1-63

Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D

ENCLOSURE (3) MOR (7)



ENCLOSURE (3) MOR (7)

Enclosure ( ) to
HMMG-15 AAR 1-63

Special handling required in accordance with Paragraph 7b, OPNAV INST 3750.6B

ENCLOSURE ( ) MOR ( )

Enclosure (8A) to H&MS-15 AAR 1-63 5Jun63 A-4C (A4D-2N) BuNo 150597 Pilot (b) (6)
CRASH SITE
Special Handling Required in Accordance with Paragraph 70, OPNAVINST 3750.6D