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ARMY AVIATION CONFERENCE

1-2 MARCH 1961

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MARCH 1961

HEADQUARTERS

UNITED STATES CONTINENTAL ARMY COMMAND

FORT MONROE, VIRGINIA

FOR OFFICIAL USE ONLY

USCONARC PAMPHLET
NO 92-1

PREFACE

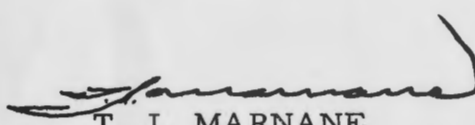
This pamphlet contains portions of the material presented at the Army Aviation Conference held at HQ USCONARC, Fort Monroe, Virginia, on 1 and 2 March 1961.

(ATAVN)

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DISTRIBUTION:

B

DCSPER, DA

DCSOPS, DA

DCSLOG, DA

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4th Inf Div

XVIII Abn Corps

82d Abn Div

101st Abn Div

CO, Trans Rsch Comd

Comdt

USACGSC

AFSC

USAARMS

USAAMS

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USCONARC PAMPHLET }
No 95-1 }

HEADQUARTERS
UNITED STATES CONTINENTAL ARMY COMMAND
FORT MONROE, VIRGINIA, 31 March 1961

AVIATION

ARMY AVIATION CONFERENCE
1-2 March 1961

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ARMY AVIATION CONFERENCE1-2 March 1961AGENDA1 MARCHSUBJECT

0800 - 0810	Welcome - Colonel Norton - Army Aviation
0810 - 0900	Rogers Committee Report - Colonel Blacker - Army Aviation
0900 - 0930	Training (Part I), Lieutenant Colonel Joost - Army Aviation
0930 - 0945	Coffee Break
0945 - 1040	Training (Part II), Lieutenant Colonel Joost - Army Aviation
1040 - 1100	Facilities and Airspace - Colonel Byrd - Army Aviation
1100 - 1200	Organizations - Colonel Wood - Army Aviation
1200 - 1330	Lunch
1330 - 1400	Aircraft Armament - Major Prescott - Army Aviation
1400 - 1430	FY 62 Operating Program - Lieutenant Colonel McCartney - Army Aviation
1430 - 1500	Materiel Programs - Colonel Byrd - Army Aviation
1500 - 1515	Aviation Safety - Mr Buck - Office of the Deputy Chief of Staff for Personnel and Administration
1515 - 1530	Coffee Break
1530 - 1600	Maintenance - Lieutenant Colonel Bowen - Lieutenant Colonel Kilmer - Transportation
1600 - 1620	Training Visit USAREUR - Colonel Schulz
1620 - 1645	Training Questionnaire - Lieutenant Colonel Joost - Army Aviation
1900	Cocktails/Dinner (Civilian Clothes w/name tags)

2 MARCH

0800 - 0815	Fuels and Refueling - Major Richards - Quartermaster
0815 - 0830	Avionics - Mr Baker - Signal
0830 - 0920	RD Activities - Colonel Cassidy - Office of the Deputy Chief of Staff for Materiel Developments
0920 - 0940	Coffee Break
0940 - 1100	TRECOM Activities - Lieutenant Colonel Strok - USA Trans Rsch Comd
1100 - 1115	Chemical Aspects - Lieutenant Colonel Dick - Chemical

2 MARCH (Cont)

1115 - 1200	Army Aviation Officers meet w/Colonel Norton
1200 - 1330	Lunch
1330 - 1630	Discussion of Problem Areas and/or Questions - All

ROSTER OF CONFEREES

ARMY AVIATION CONFERENCE, 1-2 MARCH 1961

HQ USCONARC, FT MONROE, VIRGINIA

Col Delbert L. Bristol	-	HQ Third US Army
Col Curtis L. Hankins	-	HQ Sixth US Army
Col Lester F. Schockner	-	HQ Fourth US Army
Col Robert H. Schulz	-	USAAVNS
Lt Col John L. Briggs	-	HQ First US Army
Lt Col Robert L. Cody	-	USAAVNS
Lt Col Robert R. Corey	-	XVIII Abn Corps
Lt Col Elmer M. Fox	-	HQ Second US Army
Lt Col Raymond G. Jones	-	XVIII Abn Corps
Lt Col Michael J. Strok	-	USA Trans Rsch Comd
Lt Col William S. Contole	-	USA Trans Rsch Comd
Maj Francis E. Cathey	-	HQ Third US Army
Maj William D. C. Jones	-	HQ Fourth US Army
Maj Paul R. Kaster	-	HQ Second US Army
Maj Howard T. Kilman	-	HQ Fifth US Army
Maj Thorevald R. Torgersen	-	HQ Fifth US Army
Maj Bernard M. Zeppenfeld	-	MDW
Capt Eugene R. Walton	-	Camp Wolters, Texas
Mr. Mitchell	-	USA Trans Rsch Comd

USCONARC

Lt Col L. J. Harness	-	ODCS for Pers & Admin
Maj H. C. Kirk	-	ODCS for Pers & Admin
Mr. Don G. Fendrick	-	ODCS for Pers & Admin
Mr. D. S. Buck	-	ODCS for Pers & Admin
Lt Col P. A. Doherty	-	ODCS for Intel
Lt Col B. A. Tarnell	-	ODCS for Intel
Lt Col T. W. Lane, USAF	-	Wea
Lt Col E. V. Baccus	-	ODCS for Op, Plans, & Tng
Maj L. E. Shumway	-	ODCS for Op, Plans, & Tng
Maj C. C. Walts, Jr.	-	ODCS for Op, Plans, & Tng
Col D. G. Schepp	-	ODCS for Log
Col H. D. Thomte	-	ODCS for Log
Lt Col C. A. McLeod	-	ODCS for Log
Col R. J. Bennett	-	ODCS for Cmbt Dev
Lt Col M. Waller	-	ODCS for Cmbt Dev
Lt Col R. Winkler	-	ODCS for Cmbt Dev

Roster of Conferees -- USCONARC - (Cont)

Col R. F. Cassidy	-	ODCS for Mat Dev
Lt Col L. Bowlby	-	ODCS for Mat Dev
Maj R. H. Hurst	-	ODCS for Mat Dev
Lt Col D. W. Dick	-	Cml
Lt Col D. P. Tenney	-	Engr
Maj C. R. Russell	-	QM
Maj W. G. Richards	-	QM
Col Wm H. Pople	-	Ord
Col Brenton O. Buswell	-	Ord
Capt J. B. Shively	-	Sig
Lt Col W. C. Bowen	-	Trans
Lt Col W. G. Kilmer	-	Trans
Maj R. D. Kisling	-	Trans
Maj R. A. Filby	-	Trans
Capt A. J. Wolfe	-	Trans
Col J. Norton	-	Army Avn
Col K. K. Blacker	-	Army Avn
Col E. C. Wood	-	Army Avn
Col W. H. Byrd, Jr.	-	Army Avn
Lt Col H. J. Joost	-	Army Avn
Lt Col D. A. McCartney	-	Army Avn
Maj D. C. Prescott	-	Army Avn

TRAINING DIVISION
by
Lt Col H. J. Joost
Army Aviation Section, HQ USCONARC

I. FY 62 Flight Training (Fig. 1).

This chart shows the flight training courses for FY 62, the proposed allocation of quotas and FY 62 total input and FY 61 total input as a comparison:

I will briefly discuss each course:

A. Fixed wing initial entry. - Note a reduction in 62 from 61 input. This will be the trend in the future.

B. Rotary wing initial entry is increased over 61. - The combined warrant officer and officer initial entry exceeds the total fixed wing initial entry. There may be a requirement to reduce this input by almost 100 if 20 additional utility helicopters are not made available to the school.

C. Warrant officer candidates. - Open to active Army in FY 62. Almost triple input over 61. The graduates of 1-R-F10 will be about 173 and go into 1981C - flight course.

D. Cross training to fixed wing - for rotary wing qualified pilots. - CofT has largest share of inputs for warrant officer aviators.

E. Rotary wing qualification. - Increased by 95 over 61. The limit of this input is based on the H-23D aircraft available for the Wolters fleet. We have scraped the bottom for H-23D aircraft and in fact are taking 13 away from TD units for Wolters and are replacing them with H-13G models. We have a total of 170 H-23D aircraft scheduled for the Wolters fleet for FY 62 and the input for FY 62 is based on that fleet size. Approximately this number of H-23D's will be required to carry us over until FY 66 when we will receive some LOH's as replacements. You can easily see that unless we take away aircraft from units for the school fleet our school input capability is at its maximum in FY 62 until newly produced aircraft becomes available in sufficient quantities or additional buys of presently standard aircraft are made.

F. Fixed wing examiners. - Input the same. More examiners are required than this total yearly output but we have found that with the high prerequisites the field can not produce more personnel that would be eligible. This may be an appropriate discussion subject tomorrow afternoon.

G. Rotary wing examiners. - We have increased the input by 20 over 61.

H. H-37 transition training. - We have reduced the input in half due to the capability of units conducting their own training by having gained experience with the aircraft.

I. It will be noted that the H-21 and H-34 transition course has been eliminated altogether from the school and has been given to units completely. The major reason for this is lack of availability of aircraft for the school.

J. Rotary wing instrument course. - We would like to be able to double the input to this course but lack of available aircraft prevents us from doing this. The HU-1A is the primary aircraft used in this course.

K. HU-1 IP course. - Until sufficient experience has been gained with this aircraft we will continue to conduct an IP course for the purpose of standardizing instruction in units. When HU-1B's become available this course will receive two HU-1B's and thereafter graduates will be qualified IP's in the HU-1A and B models.

L. AC-1 (CARIBOU) transition training.

1. School training plan.

a. The US Army Aviation School trained 16 1st Aviation Company pilots during FY 61 and organizational and field maintenance personnel were provided factory training at DeHavilland to support the troop test (15 Apr - 15 Jun).

b. The FY 62 program consists of 72 pilots and 128 organizational mechanics to be trained at the US Army Aviation School. This program will provide a school trained organizational crew for each unit assigned production aircraft through first quarter FY 63 delivery, plus spaces for company commanders and platoon leaders.

c. The pilot course will consist of 34 transition and tactical flight hours (5 weeks), plus 1 week of airborne personnel and equipment drop training. Prerequisites include a current standard instrument certificate.

d. The mechanic course (3 weeks) prerequisites require a qualified 671.1.

e. Deployment plans for CARIBOU units are under study by DA at this time. This headquarters has recommended a plan which envisions crew and unit training in CONUS prior to overseas deployment versus piecemeal aircraft and crew deployment.

f. To support our concept the following tentative allocation of pilot spaces is scheduled (FY 62 Input Chart):

(1) Third US Army (1st Avn Co): 30 to fill out the entire company following troop test and provide for loss of personnel being extended for troop test.

(2) Fifth US Army: 30 proposed activation.

(3) Sixth US Army: 12 proposed activation (fill out in FY 63).

g. Request for TDY spaces to Course 1-R-672.3 should be forwarded direct to TAG. This headquarters should be kept informed of these requests to insure that TAG either allocates the requested TDY spaces or fills them with RSI (replacement stream input) personnel.

h. AC-1 airframe and engine repair instruction will be included in Course 55-R-672.4 and 55-R-681.1, respectively, at Fort Eustis.

2. AC-1 troop test.

a. During the last quarter FY 61 a troop test employing the AC-1 CARIBOU aircraft will be conducted at Fort Benning, Georgia. Major test objectives are as follows:

(1) Determine the adequacy and suitability of TOE 1-107T (modified) for support of a division and other units of the field army in tactical operations.

(2) Determine the adequacy and validity of doctrine, tactics, procedures, and techniques for employment of a Fixed Wing Light Transport Company (CARIBOU) in tactical operations in support of infantry, armor, and artillery units as prescribed by FM 1-5, "Army Aviation; Organization and Employment," and applicable draft technical manuals.

(3) Recommend necessary changes to the TOE, doctrine, and technical literature based on the results of test and evaluation.

(4) Determine the suitability and feasibility of employing the AC-1 CARIBOU in support of airmobile operations utilizing paratroops of personnel and equipment.

(5) Test and evaluate a fixed wing light transport company equipped with AC-1 aircraft in logistical support operations and determine the adequacy and validity of doctrine, tactics, procedures, and techniques for such employment under typical conditions throughout the area of the field army.

b. The test will consist of 46 planned tactical and logistical support exercises. Eighteen of these exercises pertain to airborne and aerial resupply and are designed to determine the suitability and feasibility of employing the AC-1 CARIBOU aircraft in support of airmobile operations utilizing paratroops of personnel and equipment.

c. The 1st Aviation Company, Fixed Wing Transport, has reorganized under the test TOE which integrates one platoon of four AC-1 CARIBOU aircraft and two platoons of U-1A Otters into the test company. Pretest training of the company is presently underway and is scheduled to be completed in time for the start of the troop test on 15 April 1961.

M. HC-1 (CHINOOK) school training plan.

1. The US Army Aviation School is developing an 8-week pilot course and a 3-week organizational mechanic course to support the activation of companies starting fourth quarter FY 62.

2. The FY 62 program consists of 8 pilots and 16 mechanics to be trained at the US Army Aviation School. The tentative allocation of spaces is to Fifth US Army.

3. Tentative pilot prerequisites include a current standard instrument card, 500 rotary wing hours of which 250 have been in transport helicopters.

4. Tentative mechanic prerequisites require 1 year's experience as: 675.2 (HU-1), 675.3 (H-19, H-34), 676.1 (H-21), or 677.1 (H-37).

5. The FY 63 program will consist of 80 pilots and approximately 110 mechanics to be trained at the US Army Aviation School in consonance with the Rogers Committee Report.

N. AO-1 (MOHAWK) system training plan (Fig. 2).

1. Training plan.

a. As a result of the 1 February Systems Management Meeting and recent DA formal approval, pilot and organizational mechanic classes will report 12 and 5 April, respectively.

b. This is the pilot schedule and quota allocation being published at the present time. The organizational mechanic schedule is similar. We will furnish each of you a copy of both for planning purposes.

c. The US Army Aviation School will train two pilots and four mechanics per aircraft. This exceeds TOE authorization; however, it provides a sufficient trained backup for initial production.

d. Pilot prerequisites include physiological training, a current instrument ticket, 3 years as Army aviator (one of which was in a tactical unit flying tactical missions). The latter requirement was introduced to insure experience and will be waived as necessary.

e. The AO-1A course is 8 weeks long; 50 transition and 11 tactical flying hours. The AO-1B or C course is 10 weeks long; 50 transition and 24 tactical flying hours. As you can see, distribution on the C-models has not been determined.

f. Mechanic prerequisites include qualified 671.1, 1 year fixed wing maintenance experience in the field, aptitude area MM score of 100 or above. The 1 year of field experience will be waived as necessary. The 672.2 course (fig. 3) will be 4 weeks long with an input of 16 per class. Twelve spaces have been programed for TDY personnel from CONUS units; however, TAG should be notified of the exact number of TDY spaces you desire, by class.

(Fig. 4.-AO-1 (MOHAWK) System Army Service School Training Plan.)

g. The Transportation School is programing two FY 61 and four FY 62 functional classes on AO-1 airframe repair. Students attending this course should be experienced 672.4 mechanics. AO-1 and T-53-L-3 repair instruction will also be integrated into the regular 55-R-672.4 and 55-R-681.1 courses. The above training, combined with the factory training that has and is being provided field maintenance personnel, is expected to provide sufficient airframe and engine experience to CONUS and overseas field maintenance units and depots.

h. We feel that organization avionics mechanics are required in the aviation unit. This requirement has been realized in the past as aircraft avionics have become more sophisticated - with the advent of the MOHAWK these personnel become indispensable to the aviation units.

i. The SE Signal School at Camp Gordon, Georgia, has a plan under study to train 12 organizational avionics teams to support division aviation companies receiving AO-1 aircraft. The proposed three-man team would undergo a TDY course of approximately 20 weeks to qualify as communications mechanic, and stabilization mechanic. Representatives of the SE Signal School have estimated that approximately 50 weeks would be required to train a 284 avionics repairman whether he be an organizational troubleshooter or a field maintenance repairman in support of the AO-1 program; therefore, the team concept is certainly worth strong consideration. The input of the teams could be met by present 311 personnel in CONUS aviation companies or selected 284.1 (field maintenance) graduates or students.

j. The SE Signal School has programed for 165 students in the regular 11-R-284.1 field maintenance course which will integrate AO-1 equipment and have to be increased in length in order to accommodate the AO-1 instruction. Equipment shortages are presently being made up to implement this added instruction.

k. The Signal School at Monmouth is programing one FY 61 and one FY 62 class of 15 students each for Course 11-R-401.3, Combat Surveillance Photographic Equipment (KA-30 - KS-61) Repair. Course length - 23 weeks.

1. The CS&TA Training Command is programing one FY 61 and two FY 62 classes of eight students each of the Airborne Radar Operation and Repair (MOS 207) course which will include instruction on these items. Any slippage in B-models will delay the classes accordingly. The course length is 16 weeks. It has been recommended that graduates of this course attend the latter 4 weeks of the pilot's course (tactics phase) at the US Army Aviation School.

2. Deployment plan (fig. 5).

a. Purpose: To develop a plan for the orderly integration of AO-1 aircraft, personnel, and support to CONUS and overseas units.

b. Plan objective: Any plan developed for the deployment of the MOHAWK system must accomplish the following objectives:

(1) Identification of personnel prior to beginning of training with a specific CONUS unit or overseas theater.

(2) Assembly of trained personnel and aircraft at an assembly and embarkation site. Functions at site as follows:

- (a) Receive aircraft and test systems.
- (b) Training as required.
- (c) Prepare aircraft for delivery to CONUS units.
- (d) Preparation of aircraft for flight ferry.
- (e) Training and indoctrination of personnel for flight ferry.
- (f) POR qualification.
- (g) Assembly and shipment of personnel packets.
- (h) Aircraft depart for USARAL and USAREUR.
- (i) Flight delivery of aircraft to USARPAC port of embarkation.

(3) Personnel packets assembled to meet CONUS and overseas theater requirements.

3. Current requirements.

- a. Decision to flight-deliver aircraft to USAREUR.
- b. Positioning of adequate aircraft support in CONUS and overseas stations.
- c. Obtain plan of overseas theaters for stationing of aircraft in order to design and assemble package of aircraft and personnel to conform to overseas stationing plan.
- d. Designate an assembly site in CONUS.
- e. Designate port of embarkation for USARPAC, and USAREUR if aircraft will not be flight delivered.
- f. Coordination of plan for deployment of aircraft personnel and support between USCONARC and DA agencies, i. e., DCSOPS, DCSLOG, CofT, DCSPER, TAG.

Figure 1

FY 62 FLIGHT TRAINING INPUTS

COURSE	DCSPER	COFT	CSIGO	TSG	ARADCOM	FOREIGN	CNGB	ARMIES						MDW	USAR	FY 62 TOTAL	FY 61 TOTAL
								1	2	3	4	5	6				
I-A-1980A (OFF FW AVIATOR)	500					51	125								40	716	780
I-B-1981B (OFF RW AVIATOR)	480			20		14	50								25	589	500
I-R-F10 (WO PREFLIGHT)		117					45	3	3	3	12	3	9			195	66
I-R-1981C (WO RW AVIATOR)	GRADUATES OF I-R-F10															173	60
I-B-1980B (FW QUAL)	20	100		10			30									160	150
I-A-1981A (RW QUAL)	200	50	5		2	18	200	3+6	8+6	48+8	25+8	25+5	19+7	2	(40)	645	550
I-B-1984 (FW EXAMINER)	15	3	3		3	1	8	1	3	5	3	4	4	1		54	54
I-B-1985 (RW EXAMINER)	10	2	3		2	2		3	6	11	8	4	7	2		60	40
I-B-F11 (H-37)		5							4	8	7					24	48
I-B-F18 (RW INST)		10	5		8	10	3	5	9	20	10	6	9	5		100	100
I-B-F22 (HU-1)*	20			3				1	1	12	2	1	4			44	44
I-B-F29 (AC-1)*										30		30	12			72	16
I-A-T (AO-1)*	90									4			2			96	24
I-B-T (HC-1)*												8				8	0
*TENTATIVE																	

Figure 2

COURSE 1-A-T, AO-1 (MOHAWK) PILOT (8 WKS)

SCHEDULE AND QUOTA ALLOCATION

<u>CLASS</u>	<u>REPORT</u>	<u>START</u>	<u>CLOSE</u>	<u>AGENCY, INPUT, AND AIRCRAFT MODEL TO BE TRAINED IN</u>
61-1	12 APR 61	17 APR	9 JUN	101ST ABN DIV(2-A), 3D MISSILE COMD (2-A), 4TH INFANTRY DIV (2-A)
2	3 MAY 61	8 MAY	30 JUN	101ST ABN DIV(2-A), DCSPER FOR USAREUR (4-A)
3	24 MAY 61	29 MAY	21 JUL	3D MISSILE COMD(2-A), DCSPER FOR USAREUR (4-A)
4	14 JUN 61	19 JUN	11 AUG	DCSPER FOR USARAL (2-A) DCSPER FOR USAREUR (4-A)
62-1	5 JUL 61	10 JUL	1 SEP, 15 SEP	101ST ABN DIV (2-B), DCSPER FOR USAREUR(2-B), DCSPER FOR USARPAC(2-A)
2	26 JUL 61	31 JUL	22 SEP, 6 OCT	DCSPER FOR USAREUR (4-B), DCSPER FOR USARPAC (2-A)
3	16 AUG 61	21 AUG	13 OCT, 27 OCT	4TH INFANTRY DIV (2-B), DCSPER FOR USAREUR (2-B, 2-A)
4	6 SEP 61	11 SEP	3 NOV, 17 NOV	DCSPER FOR USAREUR (4-B), DCSPER FOR USARPAC (2-A)
5	27 SEP 61	2 OCT	24 NOV, 8 DEC	DCSPER FOR USARPAC (2-A, 2-B), DCSPER FOR USAREUR (2-B)
6	18 OCT 61	23 OCT	15 DEC, 12 JAN	DCSPER FOR USARPAC (4-B), DCSPER FOR USAREUR (2-A)
7	8 NOV 61	13 NOV	26 JAN, 9 FEB 62	DCSPER FOR USAREUR (2-A) ? (4-C)
8	29 NOV 61	4 DEC	16 FEB, 2 MAR	? (4-C), DCSPER FOR USAREUR (2-A)
9	10 JAN 62	15 JAN	9 MAR, 23 MAR	? (4-C), DCSPER FOR USAREUR (2-A)
10	31 JAN 62	5 FEB	30 MAR, 13 APR	DCSPER FOR USAREUR (2-A) ?(4C)
11	21 FEB 62	26 FEB	20 APR, 4 MAY	? (4-C), DCSPER FOR USARAL (2-A)
12	14 MAR 62	19 MAR	11 MAY, 25 MAY	? (4-C), 3D MISSILE COMD (2-B)
13	25 APR 62	30 APR	22 JUN	NOT DETERMINED
14	16 MAY 62	21 MAY	13 JUL	NOT DETERMINED
15	6 JUN 62	11 JUN	3 AUG	NOT DETERMINED
16	27 JUN 62	2 JUL	24 AUG	NOT DETERMINED

Figure 3. - SCHEDULE AND QUOTA ALLOCATION - COURSE 1-R-672.2
MULTI-ENGINE OBSN APL MAINT (4 wks)

<u>CLASS</u>	<u>REPORT</u>	<u>START</u>	<u>CLOSE</u>	<u>AGENCY, INPUT, AND AIRCRAFT MODEL TO BE TRAINED IN</u>		
61-1	5 Apr 61	10 Apr	5 May	TAG for: 101st Abn Div(4-A)	3d Msl Comd(4-A)	4th Inf Div(4-A)
2	3 May	8 May	2 Jun	TAG for: 101st Abn Div(4-A)	USAREUR(8-A)	
3	31 May	5 Jun	30 Jun	TAG for: 3d Msl Comd(4-A)	USAREUR(8-A)	
62-1	5 Jul	10 Jul	4 Aug	TAG for: USARAL(4-A)	USAREUR(8-A)	
2	2 Aug	7 Aug	1 Sep	TAG for: 101st Abn Div(4-B)	USAREUR(4-B)	USARPAC(4-A)
3	30 Aug	5 Sep	29 Sep	TAG for:	USAREUR(8-B)	USARPAC(4-A)
4	27 Sep	2 Oct	27 Oct	TAG for: 4th Inf Div(4-B)	USAREUR(4-B, 4-A)	
5	25 Oct	30 Oct	24 Nov	TAG for:	USAREUR(8-B)	USARPAC(4-A)
6	22 Nov	27 Nov	20 Dec	TAG for: USAREUR(4-A)	USAREUR(4-B)	USARPAC(4-A, 4-B)
7	10 Jan 62	15 Jan	9 Feb	TAG for: USARPAC(8-B)	USAREUR(8-A)	
8	7 Feb	12 Feb	9 Mar	TAG for: ?(16-C)		
9	7 Mar	12 Mar	6 Apr	TAG for: ?(8-C)	USAREUR(8-A)	
10	4 Apr	9 Apr	4 May	TAG for: ?(16-C)		
11	2 May	7 May	1 Jun	TAG for: USARAL(4-A)	3d Msl Comd(4-B)	?(8-C)
12	31 May	4 Jun	29 Jun	TAG for: Not determined		

Figure 4

AO-1 (MOHAWK) SYSTEM ARMY SERVICE SCHOOL TRAINING PLAN

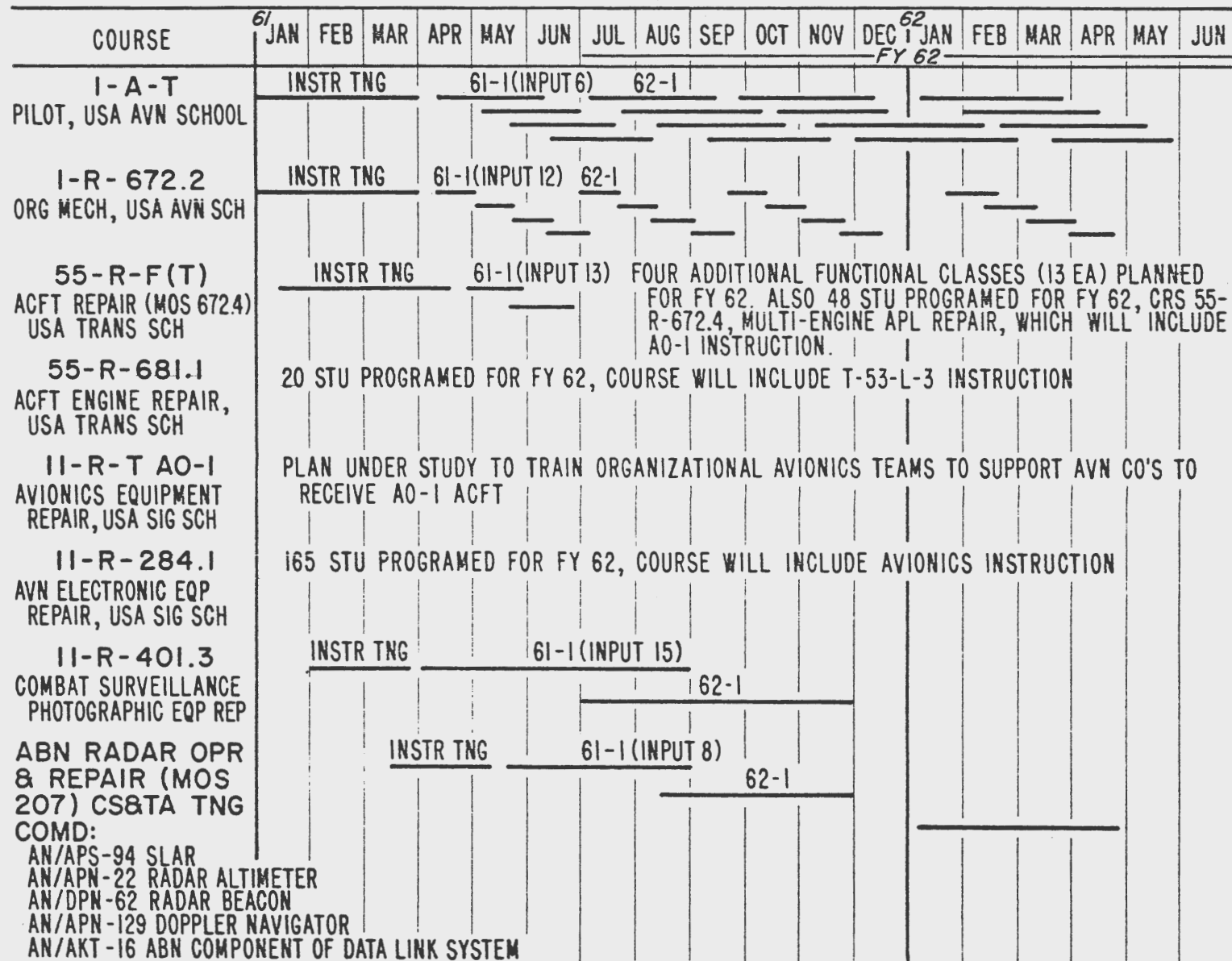
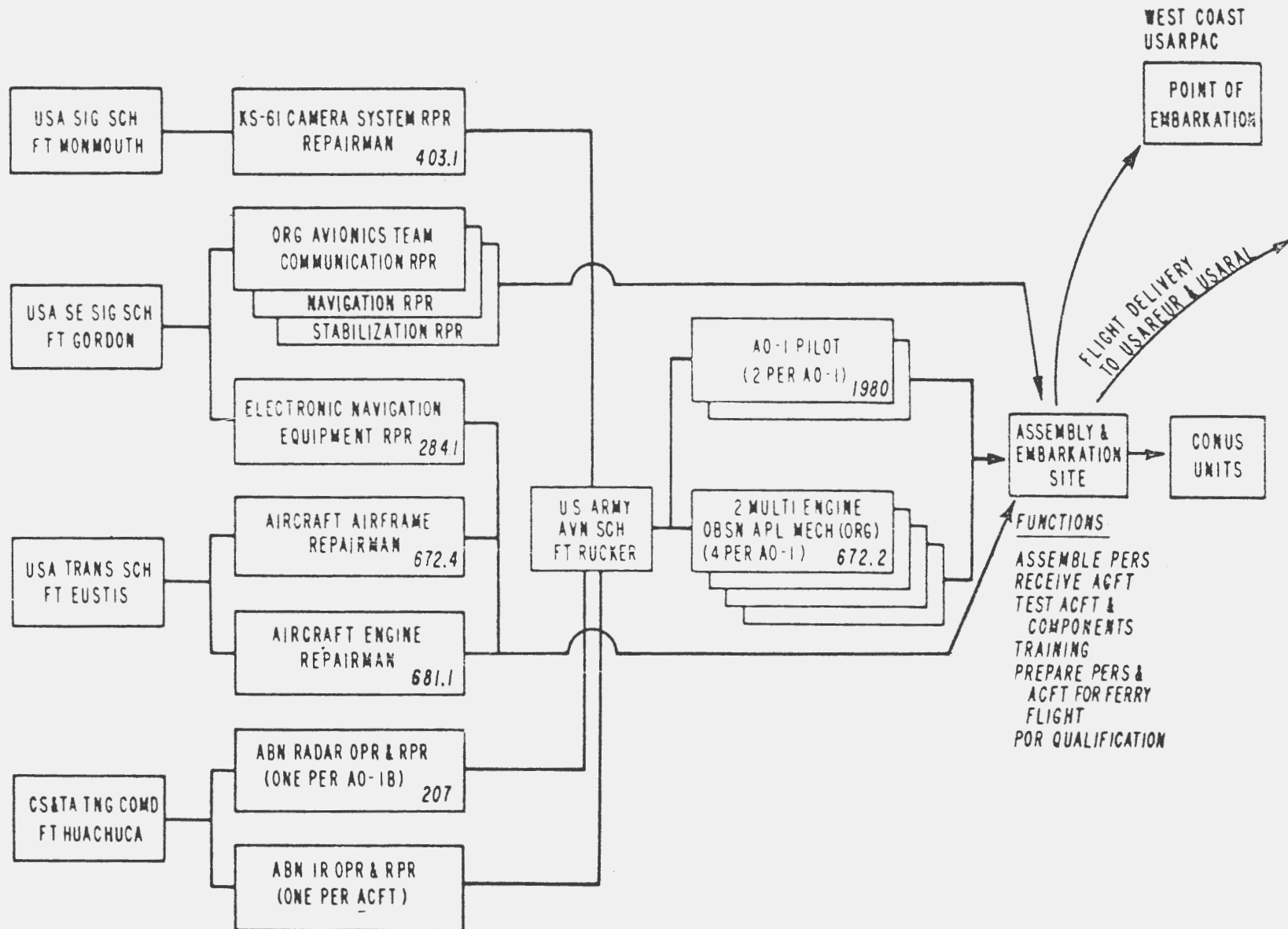


Figure 5

A0-1 (MOHAWK) SYSTEM OVERSEA PACKAGE PLAN



II. Flight Training Plan - Present to 1970.

A. 1. Figure 6 depicts all flight training courses which are being conducted currently and through the FY 62 period and those courses which will be conducted for the FY 63 through 70 period. The column on the left shows the courses. The next column shows the type of pilot that is produced and the last two columns show whether the school or the unit will be responsible for the conduct of the training.

2. The training concept depicted (fig. 7) is in consonance with the Rogers Committee training proposals.

B. Unit transition training.

1. By deletion of transition training courses for the H-19, H-21, and H-34 from the US Army Aviation School, this training requirement has been placed on operational units.

2. Future annual requirements will be provided this headquarters by DA during December of each year for the following FY. These requirements will be divided among the CONUS armies for programming purposes. The magnitude of the DA requirement is not expected to exceed that which is being accomplished in FY 61 by the CONUS armies or reflected in the FY 62 estimate above. The only impact of any consequence in this field will stem from foreign national personnel requirements and initial aviators who were erroneously qualified in the wrong model helicopter through faulty orders.

Figure 6

USCONARC FLIGHT TRAINING GUIDELINES FY 61-70

COURSE	PILOT	FY 61-62	FY 63-70
<u>FW Primary Ph A, 1 - A - 1980 A</u>			
L - 19, TL - 19 D		Sch	Sch
<u>Advanced and Tactics</u>			
L - 19 Ph B	VFR OBS	Sch	Sch
AC - 1 Ph D	IFR Multi - Eng Trans		Sch
AO - 1 Ph D	IFR Multi - Eng OBS		Sch
<u>Instruments</u>			
L - 20 Ph C	IFR OBS Util	Sch - Unit	Sch - Unit
L - 23 Ph C	IFR Multi - Eng	Unit	Sch - Unit
<u>Qualification 1 - A - 1980 B</u>			
L - 19, TL - 19 D		Sch	Sch
<u>Transition</u>			
L - 20		Unit	Unit
U - 1		Unit	Unit
L - 23		Unit	Unit
AC - 1 1 - B - F 29		Sch	Sch - Unit
AO - 1 1 - A - T		Sch	Sch - Unit
<u>Instrument Examiner</u>			
L - 20 1 - B - 1984		Sch	Sch
L - 23		Sch	

Figure 7

USCONARC FLIGHT TRAINING GUIDELINES FY 61-70

COURSE	PILOT	FY 61-62	FY 63-70
<u>Primary Ph I, 1-A 1981 B</u>			
HO			Sch
H - 13		Sch	Sch
<u>Advanced and Tactics</u>			
HO - Ph II			Sch
H - 13 Ph II	VFR OBS Gunnery	Sch (Test)	Sch (Wolters-Sill)
HU - 1 Ph II	IFR UTIL Gunnery		Sch(Rucker-Stewart)
H - 19 Ph II	IFR UTIL	Sch	Sch
H - 21 Ph II	IFR TRANS	Sch	Sch
H - 34 Ph II	IFR TRANS	Sch	Sch
<u>Instruments</u>			
RW Trainer Ph III			Sch
HU - 1 1 - B - F18	IFR UTIL TRANS	Sch - Unit	Sch - Unit
<u>Qualification 1-A-1981 A</u>			
H-23		Sch	Sch
<u>Transition</u>			
HO - IP Tng			Sch - Unit
H - 13		Unit	Unit
HU - 1 1 - B - F22		Sch - Unit	Sch - Unit
H - 19		Unit	Unit
H - 21		Unit	Unit
H - 34		Unit	Unit
H - 37 1 - B - F11		Sch Unit	Unit
HC - 1 1 - B - T		Sch	Sch - Unit
<u>Instrument Examiner</u>			
HU - 1 1 - B - 1985			Sch
H - 21		Sch	Sch
H - 34		Sch	Sch

III. Reserve Training.

A. Status of USAR aviator training. - Here are a few highlights of the First Half FY 1961 - Status of USAR Aviator Training (fig. 8).

B. Notwithstanding a few minor inaccuracies in reporting 2620 funds, I believe you will note the indicated savings through the use of USAR and active Army aircraft. We all know that this savings is nullified by 2000 fund expenditures on our organic aircraft; however, DOD has been sniping at civil aircraft rental funds for some time. Therefore, it behooves us to arrange for the use of organic aircraft wherever possible in the future. In this regard it appears that the Reserves are too far removed from the active Army. Every effort should be made to get the Reserves closer to the activities of the active Army. For example, if it is possible to use Reserves as copilot by active Army units a great amount of experience and flight time can be gained by reservists.

Figure 8

STATUS OF USAR AVIATOR TRAINING

1ST HALF FY 1961

ARMY	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	TOTAL
RATED PERS PARTICIPATING	81	101	183	189	114	96	764
FLYING HOURS							
ORG ACFT	882	563	2,280	1,250	1,180	1,722	7,877
ACTV AACFT	376	732	1,434	1,395	1,623	887	6,447
NG ACFT	444	10	42	6	0	203	705
CIVIL ACFT	502	1,466	2,261	4,812	1,608	455	11,104
TOTAL	2,204	2,771	6,017	7,463	4,411	3,267	26,133
COST	\$ 15,713	\$ 31,513	\$ 50,472	\$ 103,151	\$ 28,538	\$ 12,501	\$ 241,888

C. USAR aircraft.

<u>ARMY</u>	<u>L-19</u>	<u>TL-19</u>	<u>L-20</u>	<u>H-13</u>	<u>Total</u>
First	5	1	1	7	14
Second	6	2	1	1	10
Third	17(8)	4	1	15(4)	37
Fourth	18(6)	7(1)	1	9(4)2*	35
Fifth	7(1)	6	2	2(2)	17
Sixth	9	4	2(1)	4(1)	19

* H-23

() = Maint trainers

D. USAR organizational and maintenance training.

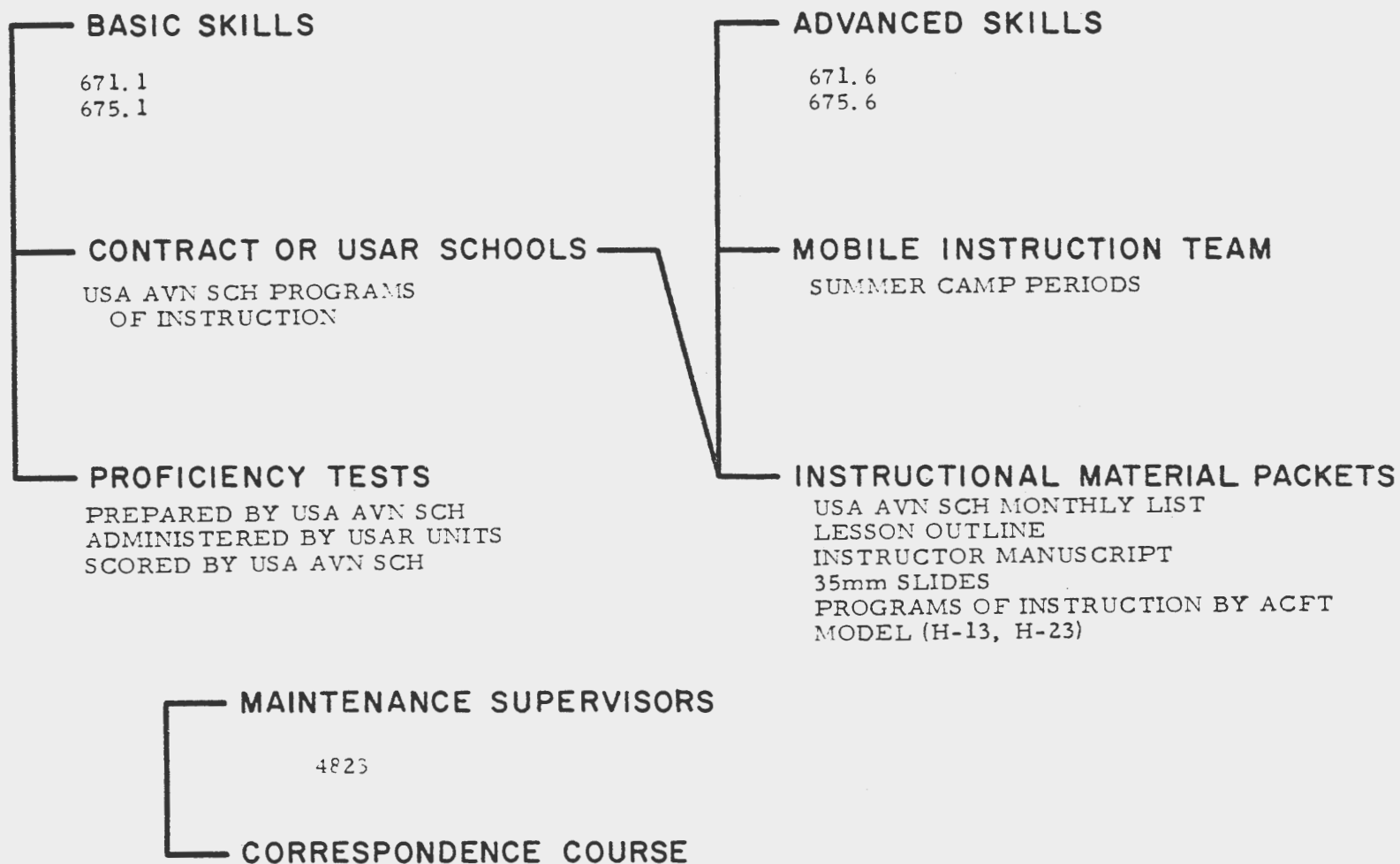
1. In May 1960, the US Army Aviation School submitted a study of this training which centered on a survey of civilian contract training provided the 497th Trans Co (Lt Hel), Tulsa, Oklahoma.

2. The purpose of the study was to recommend methods by which USAR units could provide basic and advanced training and award appropriate MOS by utilizing contract or unit training facilities.

3. As a result of this study, it was determined that the following procedures should be followed to effect training which would approach service school training and satisfy USAR needs (fig. 9).

Figure 9

USAR ORGANIZATIONAL MAINTENANCE TRAINING



E. US Army Aviation Center personnel requirements for mobilization.

1. The US Army Aviation Center, in conjunction with Third United States Army, has made an extensive survey of the Reserve commitments of US Army Aviation Center personnel (fig. 10).

2. As you can see, the impact of this loss is not insignificant. For example, if this loss were experienced now, the flight training requirements would be unable to train 22 percent of the FY 61 student load.

3. To cope with this problem, the US Army Aviation Center and Third US Army have recommended a USAR TD unit, US Army Aviation Training Command (fig. 11). The grade structure extends from colonel to E-3, with an aggregate strength of 452 (234 off and 218 EM).. Each of you will receive a copy of the slides on this subject.

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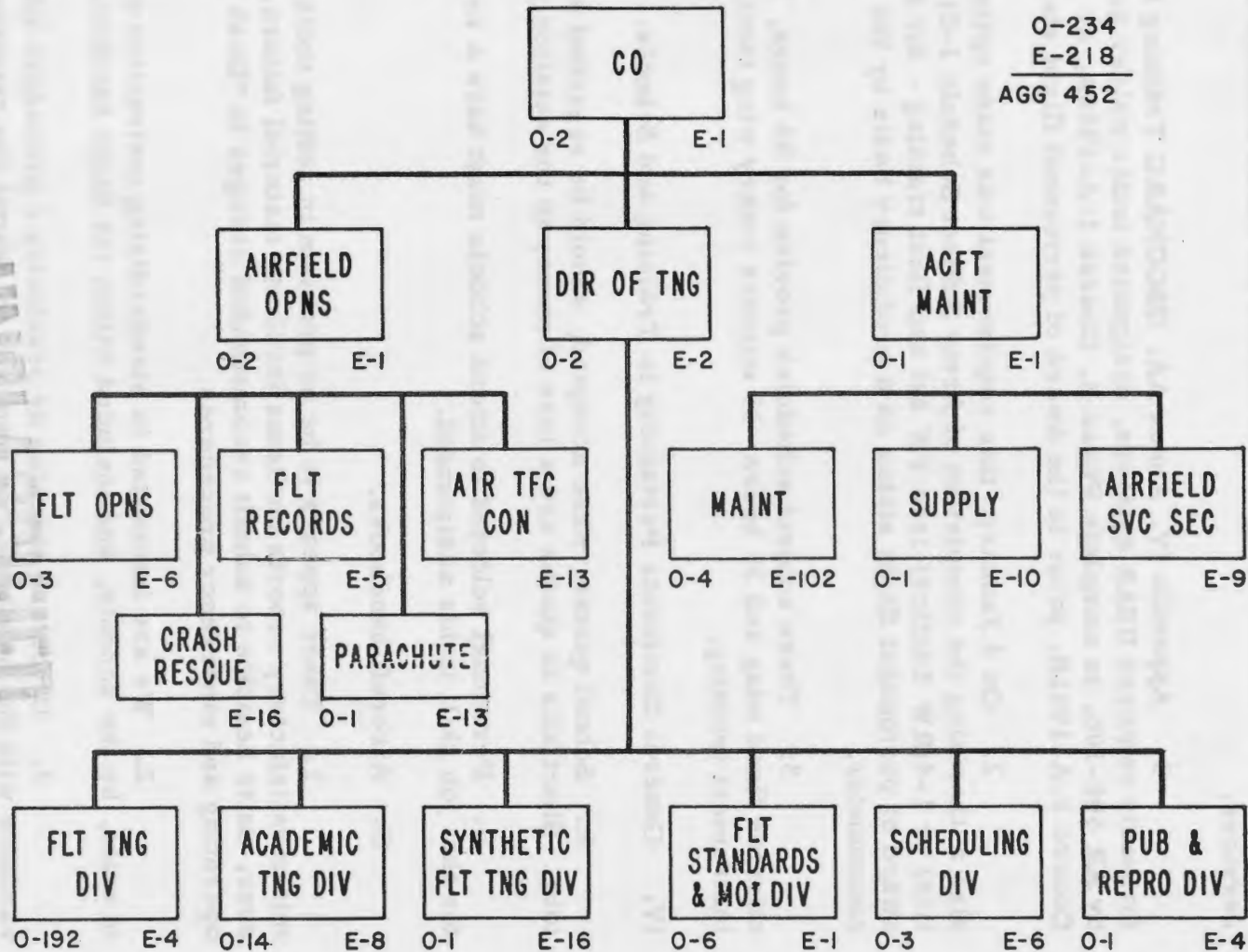
Figure 10

USA AVN CENTER CIVILIAN PERSONNEL RESERVE STATUS (1 DEC 1960)

CENTER AGENCY	USAR	ANG	AFNG	USAFR	USNR USMR USCGR	TOTAL	% OF STR
SCHOOL	12	13	1	11	23	60	15
PRIMARY FLIGHT (HAWTHORNE)	6	2	0	23	10	42	20
POL SVC (PARKER)	0	2	1	1	0	4	19
MAINTENANCE HAYES	63	96	14	29	25	227	
GARRISON	17	37	4	2	8	68	8
HOSPITAL	1	3	0	0	0	4	
POST EXCHANGE	3	0	0	0	0	3	
TOTAL	102	153	20	68	66	409	15

Figure 11

USA AVIATION TRAINING COMMAND (PROPOSED USAR TD)



O-234
E-218
AGG 452

F. Permanent flying status orders for USAR aviators from other services.

1. Appendix IV, Annex AA, USCONARC Training Directive, formerly required USAR aviators, designated under waiver prescribed by AR 600-106, to complete Phase B, Course 1-A-1980A, or Phase II, Course 1-A-1981B, prior to the award of permanent flight status.

2. On 4 January, this requirement was made optional by also authorizing the completion of Army Subject Schedule 1-5(FW Tactics) or 1-4(RW Tactics)-less FW ski and float training - for the award of permanent flight status on a proficiency basis by the army commander.

3. These subject schedules provide for 54 hours, 10 minutes fixed wing and 38 hours, 35 minutes rotary wing tactics and instrument training.

IV. General Comments Pertaining to Training and Schools.

A. School quotas, when accepted, should be regarded as mandatory. Shortfalls in quotas are a loss of money to the aviation program.

B. Personnel selected to attend schools must have a requirement for that job skill in his assignment.

C. Aircraft handbooks.

1. There appears to be no problem in getting units to submit unsatisfactory reports on items involving materiel failure. However, units hesitate to submit recommended changes to "Dash One" operating and emergency procedures.

2. We are interested in standardizing instruction provided in units, by the schools, and included within the flight handbooks.

3. If you are teaching or practicing a procedure which is at variance with the handbook, we want you to submit the recommended revision to this headquarters for appropriate staffing with the US Army Aviation School and DA.

4. We want aviators to use the flight handbook procedures and we want those procedures to be correct.

D. Use of the TL-19D type aircraft for instrument training. - The shortage of Army aircraft necessitates the continued use of the TL-19D type aircraft to maintain instrument proficiency and, in some cases, for basic instrument training. All aviators should be aware of the limitations in the TL-19D, should appraise commanders of these limitations, should establish a control system for instrument flights in the TL-19D, and maximize utilization of an aircraft which is not only available but adequate for maintenance of instrument proficiency.

E. Revision of AR 350-1 "Army Training Policies and Programs."

1. AR 350-1 "Army Training Policies and Programs," has been submitted to DA for revision by this headquarters. The essential changes in the recommended revisions are:

a. Eliminates the requirement for a unit to be tested annually. The requirement for testing will be determined by the commander for units who have completed a formalized phase of training.

b. Post-cycle training will be designated as combat readiness training and during this phase commanders will enjoy a great latitude as to what type of training will be conducted. ATP's and ATT's during this period will only be used as a guide and what we now know as mandatory subjects directed by higher headquarters will be published by DA as guidance to major commanders.

c. Specific areas in training will be emphasized periodically during the various phases of training to meet special requirements or to stress new concepts for both individual and units. This emphasis will be based on objectives to be achieved rather than hours to be devoted to specific areas.

2. From the aviation training standpoint this revision will be of great benefit in that it will permit inclusion into the combat readiness training phase more airmobile training which in the past had been difficult due to the mandatory subject crowding of the schedule. We should all be aware of emphasizing the need for inclusion of airmobile training into the combat readiness phase.

F. FM 57-35, "Airmobile Operations."

1. This manual was revised November 1960 and supersedes FM 57-35, 10 June 1958, and TC 20-1, "Airmobile Operations."

2. I would like to emphasize paragraphs 7 and 8 of the revised manual. ". . .the aircraft organic to the division are adequate for small-scale operations. Army aviation units at corps and field army must be used to support operations that are beyond the capability of division aircraft. . . .

". . .during the period of attachment or support, the transport aviation unit supports the airmobile force in the manner specified by the directing headquarters which has operational control over both the airmobile force and the transport aviation unit. . . .",

3. We must strive to conduct airmobile operations on a routine basis for all units and in every situation where the opportunity presents itself. We encourage requesting for aircraft to support these operations beyond your capabilities. If we continually show that insufficient aircraft are available for the conduct of these operations we are in a good position to justify more aircraft.

G. AN/USD-2 drone training plan.

1. We are concerned about the ability of aviation units to train locally with the USD-2 drone when they become available. This concern at present is due to the availability of suitable training areas for drone flights at speeds of 360 mph.

2. Advance information indicates the following airspace requirements:

a. Minimum airspace 36,000 yards in width and 57,000 yards in length.

b. Flights of 3 minutes cross range by 5 minutes down range are considered minimum necessary to train operating personnel. At 360 mph the drone travels 633,600 yards per hour, or 10,560 yards per minute.

3. We will closely monitor the service tests of the drone, which will be conducted at YUMA, ARIZONA, to determine the training implications. If control and airspace will prohibit flying in any but extremely remote areas, the establishment of a training center may be required where units are scheduled through the center periodically for training flights.

H. Aerial observer training.

1. Emphasis must be placed on aerial observer training in all units with the advent of the AO-1.

2. AR 95-51, although recently published, is being revised to incorporate subject matter pertaining to observation pertinent to higher performance aircraft and rotary wing aircraft.

3. The US Army Aviation School is in the process of completing a field manual on aerial observation which will include recent findings of the HUMRRO project OBSERVE and will serve as the basis for aerial observer training.

I. Allocation 2B-3 trainers (Fig. 12).

1. This is the proposed distribution of helicopter instrument trainers.

2. This headquarters will publish the approved distribution and continue to have TAG order operator (902.1) graduates into appropriate installation assignments.

3. FY 62 graduates of Course 1-R-902.1, Flight Simulator Operations and Maintenance, will be dual qualified in the fixed wing and rotary wing trainers.

Figure 12. - 2B3 HELICOPTER FLIGHT INSTRUMENT TRAINER

<u>PRIORITY</u>	<u>NUMBER</u>	<u>INSTALLATION</u>	<u>BASIS</u>	<u>DELIVERY</u>	<u>OPR GRAD</u>
1	1	Ft Bragg	8th Trans	May 61	Nov 60
2	1	Ft Campbell	101st Abn	"	"
3	1	Ft Benning	31st Trans	"	"
4	1	Ft Lewis	57th Trans	June 61	"
5	1	Ft Huachuca	416th Sig	"	"
6	1	Ft Devens	93d Trans	"	"
7	1	Ft Knox	64th Trans	Jul 61	"
8	1	Ft Bragg	82d Abn & 3d Msl	"	"
9	1	Ft Belvoir	3d Trans & Exec	"	Mar 61
10	1	Ft Ord	33d Trans	Aug 61	"
11	1	Ft Eustis	Trans Units & Stu	"	"
12	1	Ft Sill	54th Trans	"	"
13	1	Ft Riley	81st Trans-HC-1	Sep 61	"
14	1	Ft Benning	94th Trans	"	"
15	1	Ft Knox	90th Trans	"	"
16	1	Ft Benning	19th Trans	"	"
17	8	Europe	Trans Cos	Nov 61	Jun 61
18	5	Pacific	Trans Cos	Jan 62	Nov 61
19	2	Alaska	Trans Cos	"	"
20	1	CARIB	Avn Units	"	"
21	1	Ft Meade	57th Med	Feb 62	"
			69th Sig		
			3d Cav		
22	1	Ft Carson	2d Msl & 16th Cav	"	"
23	1	Ft Campbell	101st Abn	"	"
24	1	Ft Bragg	45th Med	Feb 62	Nov 61
			50th Sig		
			82d Abn		
25	1	Ft Belvoir	3d Trans & Exec	Mar 62	"

J. US Army Aviation School initial aviator test courses (Fig. 13).

1. The US Army Aviation School has developed a series of test programs of instruction to evaluate the 200-flying-hour public law requirement for aviator graduates and to evaluate recommended courses cited in the Rogers Committee Report.

2. This is the current 1980 course which awards the MOS after Phase B or 203 hours. Under the current aviator ceiling, Phase C (Instruments) is mandatory for active Army personnel.

3. Fixed wing #1 was designed to evaluate a 150-hour course, to include a much shorter primary phase and a slightly shorter advanced and tactical phase. Phase C has also been included to comply with current directives. Class 61-9 has been designated as the test class.

4. Fixed wing #2 was designed to evaluate a decelerated primary phase of 102 flying hours in the normal time span of 18 weeks. Phase B remains as currently run and Phase C is the same as in fixed wing #1 (61 hours). This test was included by the school to reduce attrition in the primary phase. Class 61-8 has been designated as the test class.

5. Fixed wing #3 will test the AC-1 (CARIBOU) initial aviator concept prior to full implementation of the Rogers Committee recommendations. The school is also developing a similar course for AO-1 (MOHAWK) initial aviators.

6. Rotary wing #1 will evaluate a utility or light transport qualified aviator after 153 hours; whereas, rotary wing #2, under development, will train the initial aviator in observation aircraft only, to include gunnery. Class 61-10 has been designated as the rotary wing #1 test class.

**Figure 13. - US ARMY AVIATION SCHOOL
INITIAL AVIATOR TEST COURSES**

1-A-1980A Off FW Aviator (Current)

Ph A Primary	Ph B Tactics	Ph C Inst
--------------	--------------	-----------

120 + 83 + 54 = 257 Hours

FW #1(C1 61-9, Rept 12 May 61, Close 20 Dec 61)

Ph A	Ph B	Ph C
------	------	------

72 + 78 + 61 = 211 Hours

FW #2 (C1 61-8, Rept 24 Apr 61, Close 16 Feb 62)

Ph A	Ph B	Ph C
------	------	------

102 + 83 + 61 = 246 Hours

FW #3 AC-1 (CARIBOU) (Not scheduled to date)

Ph A	Ph B	AC-Trans, Inst	← Tactics
------	------	----------------	-----------

102 + 70 + 81 + 16 = 268 Hours

1-B-1981B Off RW Aviator (Current)

Ph I Primary	Ph II Tactics
--------------	---------------

111 + 89 = 200 Hours

RW #1 (C1 61-10, Rept 29 May 61, Close 20 Dec 61)

Ph I	Ph II
------	-------

80 + 75 = 155 Hours

RW #2 (Obs Hel - Under preparation)

Ph I	Ph II
------	-------

80 + 50 = 130 Hours

V. Proposals.

A. Avionics familiarization training.

1. There is general lack of knowledge on the part of Army aviators in the area of avionics equipment operation and user maintenance. This situation is understandable since there is no school training which presents this subject to officer aviators to any degree.

2. The following measures must be taken to correct this situation:

a. Every aviation unit or detachment appoint an officer who will be designated as the unit avionics officer. (A list of his responsibilities is at 4 below.)

b. Chief Signal Office will be asked to prepare a package of lesson plans on avionics equipment for the purpose of aviation units' use to conduct local instruction.

c. Incorporation of a more extensive coverage of this subject in the US Army Aviation School curriculum.

3. Ten jeep-mounted avionics test sets are being procured. They will have all necessary test equipment for navigation and communication equipment, to include AO-1, and will be available in 6 months for test purposes.

4. Responsibilities of the Unit Avionics Officer:

- a. Supervise maintenance of avionics and signal equipment in the unit.
- b. Provide avionics information and assistance to the commander and the unit.
- c. Train aviators and mechanics on the proper care and use of the avionics equipment.
- d. Supervise unit personnel engaged in supply and maintenance of avionics equipment.
- e. Establish unit SOP for avionics flight testing.
- f. Conduct avionics test flights.
- g. Supervise installation of ground based avionics equipment.
- h. Supervise maintenance of ground based avionics equipment.
- i. Supervise maintenance of airborne avionics equipment.
- j. Establish and maintain a complete file of publications covering all types of avionics equipment present or to be present in the unit.
- k. Coordinate supply and maintenance support of the avionics equipment within the unit and between the unit and the supporting signal units.
- l. Establish and maintain an accurate and up-to-date inventory of all avionics equipment.
- m. Insure that higher headquarters are informed of changes in the avionics inventory.
- n. Establish and maintain stock record cards on all maintenance float, repair parts and spare parts used with the avionics equipment.
- o. Insure that the integrity of the avionics maintenance float is maintained.

B. Combat air traffic control training - FM homing training.

1. Air traffic controllers graduated from the Air Force school at Biloxi are trained with Air Force equipment and are taught FAA procedures. A requirement exists to train these controllers in the use of Army equipment and in combat-type control procedures.
2. This training must be conducted by the aviation unit. Emphasis must be placed on keeping controllers proficient by having pilots request GCA approaches. Controllers must be included in field exercises to gain experience in air traffic controlling under tactical conditions.
3. Allied to this subject is the FM homing training, which should be emphasized. This training is often neglected for an easier method and consequently proficiency in use of this equipment suffers. FM homing should be made a part of each field exercise.

C. Pathfinder training.

1. The current pathfinder concept is to have pathfinder detachments in a field army on a basis of one per Army aviation battalion. The pathfinder detachment provides pathfinder guidance for air landing or air delivery operations on or over enemy-dominated or enemy-threatened areas or areas not previously reconnoitered.
2. In addition to the pathfinder detachments, all combat, combat support, and certain service personnel of the division require training in basic pathfinder techniques. These personnel are named unit pathfinders. Unit pathfinders provide guidance within the limits of their capabilities to Army aircraft engaged in air landing or air delivery operations.
3. Emphasis must be placed on divisional units training personnel as unit pathfinders to provide ground assistance to division organic Army aircraft.
4. TC 57-() is being published, which will be the guidance for the conduct of this training. A program of instruction is included as an appendix for the training of unit pathfinders.

D. Maintenance training and responsibilities.

1. Experience has shown that Army aviators are not sufficiently aware of and concerned with their responsibilities for maintenance of aircraft. A solution to this problem can be accomplished by the following:

a. Insure that aviators, section and platoon leaders, and unit commanders are made an integral part of the system for performing organizational aircraft maintenance.

b. Conduct an intensive troop school program, both during and outside of normal duty hours, covering all aspects of the aircraft maintenance and supply system, using the best qualified locally available officers, warrant officers, civilians, and enlisted instructors.

2. Fix direct responsibility for each aircraft upon one aviator and one mechanic and establish clearly the aircraft maintenance allocation chart that these personnel are responsible for. In organizations where the number of aviators or mechanics is less than the number required, assign the same aviator-mechanic team more than one aircraft as their direct responsibility. In other organizations where there are two or more aviators and mechanics per aircraft, form a team of aviators and mechanics with clear-cut instructions of who is the aircraft commander, copilot, senior mechanic (or crew chief), and assistant mechanic.

3. Make the aviator mechanic team solely responsible for preflight and post-flight inspection. Have second-echelon supervisor or inspector actually inspect the work of mechanics upon completion of a repair or replacement of a part or assembly.

4. Teach each aviator how to perform test flights; stress the purpose of the test flight as being to determine whether the aircraft conforms to the operating standards specified in technical publications.

C O P Y

ARMY AVIATION SECTION
HEADQUARTERS THIRD UNITED STATES ARMY
Fort McPherson, Georgia

6 January 1961

The Army Commander on several occasions has expressed his concern that Army aviators are not sufficiently aware of and concerned with their responsibilities for the maintenance of aircraft. For most aviators, the maintenance training they receive in their Category I aviation assignments sets the pattern for their aviation career since their subsequent assignments usually do not afford them an opportunity to be directly responsible for a particular aircraft.

The Army Commander has also stated that the Army's system for the maintenance and supply support of Army aircraft is in need of improvement and that he considers the level of knowledge and experience of the individual aviator to be a vital factor in bringing about improvements in the maintenance of Army aircraft.

For the above reasons, the Third Army training directive on Army aviation is being amended to require greater emphasis on maintenance training of Army aviators.

We have contacted the Department of Non-Resident Instruction of the Army Aviation School to determine the availability of appropriate organizational maintenance instruction material and found that they are currently developing a course which should be available sometime late next summer. Such a course will be valuable to the individual aviators to assist them in improving their knowledge of organizational aircraft maintenance. However, this will represent only a partial solution to our problem. In my opinion, the fertile field for improvement lies in greater emphasis in two areas. First, an intensive examination and orientation of each unit's organization for maintenance to insure that aviators, section and platoon leaders and unit commanders are made an integral part of the system for performing organizational aircraft maintenance. Secondly, an intensive troop school program conducted both during and outside of normal duty hours covering all aspects of the aircraft maintenance and supply system using the best qualified locally available officers, warrant officers, civilians and enlisted men as instructors.

C O P Y

C O P Y

With reference to how to organize for the proper maintenance of aircraft, I believe the following to be key factors:

a. Fix direct responsibility for each aircraft upon one aviator and one mechanic and establish clearly the portions of the aircraft maintenance allocation chart that these personnel are responsible for. In organizations where the number of aviators or mechanics is less than the number required, assign the same aviator-mechanic team more than one aircraft as their direct responsibility. In other organizations where there are two or more aviators and mechanics per aircraft, form a team of aviators and mechanics with clear-cut instructions of who is the aircraft commander, co-pilot, senior mechanic (or crew chief) and assistant mechanic.

b. Afford airplane commanders ample time to supervise the maintenance of their aircraft.

c. Appoint a unit aircraft maintenance officer who supervises the 2d echelon maintenance of aircraft and advises the platoon, section leaders and aircraft commanders as necessary in the performance of 1st echelon maintenance.

d. Use enlisted aircraft maintenance supervisors and inspectors as such, do not require them or permit them to assume direct responsibility for an aircraft. Also minimize their use of tools and emphasize their supervisory and inspection responsibilities.

e. Distinguish between inspection and repair. Make the aviator-mechanic team solely responsible for pre-flight and post-flight inspection. Have a 2d echelon supervisor or inspector actually inspect the work of mechanics upon completion of a repair or replacement of a part or assembly.

f. Fix responsibility upon one individual for the maintenance of the Technical Library. Locate these technical publications where they are readily accessible in the work area of the mechanics. Procure and distribute to each aviator a copy of the Flight Handbook for aircraft he is expected to operate.

g. Have section, platoon and unit commanders perform spot inspections of aircraft maintenance in the presence of those individuals directly responsible for the aircraft.

C O P Y

C O P Y

h. Impress the aviators that maintenance starts with them; make them conscious of the value of recording all discrepancies on an aircraft and supervising their correction. Impress on them the value of preventative maintenance wherein a minor adjustment, tightening or lubrication may prevent subsequent excessive wear or damage.

i. Stress cleanliness and neatness of aircraft and personnel working on them. Make common hardware and cleaning materials convenient to the mechanics. Locate refuse barrels so that they are readily available.

j. Teach each aviator how to perform test flights; stress the purpose of a test flight as being to determine whether the aircraft conforms to the operating standards specified in technical publications. Impress on them that a test flight does not involve acrobatics, high stress maneuvers, violent control motions or operation of the engine beyond normal operating limitations.

k. Fight the tendency to defer maintenance or inspections. For example, the common tendency to carry remarks in the dash three for extended periods of time such as "Compass swing overdue TO etc".

l. Insist that each echelon of maintenance fulfill its function and responsibilities.

m. Be sure that a close working relationship exists between the maintenance officer and the operations officer, and that adequate time is allotted for aircraft maintenance.

With reference to troop schools, each aviator should receive instruction on the contents of TM 55-404, Fundamentals of Army Airplane Maintenance and FM 1-10, Army Aviation Organization Aircraft Maintenance and Supplies. In addition, the following are suggested:

a. Review the fundamentals. Insure that each aviator understands fully the purpose and procedures for keeping aircraft records and the procedure for requisitioning, storing, and issue of aircraft parts and supplies. Have training sessions where each aviator is thoroughly instructed in the pre-flight, post-flight and periodic inspection of aircraft.

b. Arrange to have Transportation, Signal and Quartermaster personnel give instruction on the maintenance and supply systems for the aircraft components for which they are responsible. Also get the QM to

C O P Y

give instruction on the characteristics, handling and inspections involved in using aircraft fuels and lubricants.

c. Teach the why of flying hour limitations and the importance of accuracy of the 1352 (Aircraft Flying Time and Status) report.

d. Teach the maintenance allocation chart and stress the importance of each echelon of maintenance doing their own work,

e. Cover the procedures for modifying aircraft, the pitfalls of unauthorized modifications and the importance of prompt compliance with directed modifications.

I am confident that with our present knowledge and resources, we can make a substantial improvement in our aircraft maintenance system and procedures as well as better prepare our aviation personnel for their important role in the Army. The Third Army Aviation Section is prepared to assist you in any way possible in achieving these objectives. Likewise, we will welcome any suggestions you may have to offer for the betterment of Army aircraft maintenance.

With kindest personal regards,

Sincerely,

Copy furn:

Army Aviation
Section USCONARC
Ft Monroe, Virginia

/s/ Delbert L. Bristol
/t/ DELBERT L. BRISTOL
Colonel, Artillery
Army Aviation Officer

C O P Y

E. Revision of annex F.

1. Consideration is being given to providing additional guidance in ANNEX F for subjects listed below.

2. Your attention is invited to those items identified by an asterisk. Comments and recommendations pertaining to these items are desired at the earliest practicable time.

Weather training.

*Autorotation.

FM homing training (AN/ARA-31).

Transition training.

Qualification of airspace copilot.

*Minimum flying requirements for aviators..

Enlisted personnel training.

*Parachutes.

Priorities for aircraft utilization.

*Helmets.

*Maximum flying hours for pilots.

Instructor pilot prerequisites.

Air observer training.

*Tactical rotary wing instrument training.

Synthetic instrument trainers.

*Request comments and recommendations from conference attendees.

SPECIAL USE AIRSPACE
PUBLIC INFORMATION PROGRAM IDEAS

by

Col W. H. Byrd, Jr
Army Aviation Section, HQ USCONARC

Positive actions should be initiated by Army Airspace officers to assure adequate distribution of information concerning military restricted areas to airfields in the vicinity and to state aeronautical agencies. Even though restricted areas are listed on charts and other FAA publications this additional cautionary effort may prevent an accident which could place the Army in an unfavorable public relations position.

This information, to be of genuine value, should do more than just state that a restricted area is located within certain coordinates. The information should strive to identify the area by identifiable terrain features and, what is of equal value, attempt to gain goodwill by briefly explaining the use of the restricted area so that the civilian pilot can understand the value of the restricted area as well as the danger in violating it.

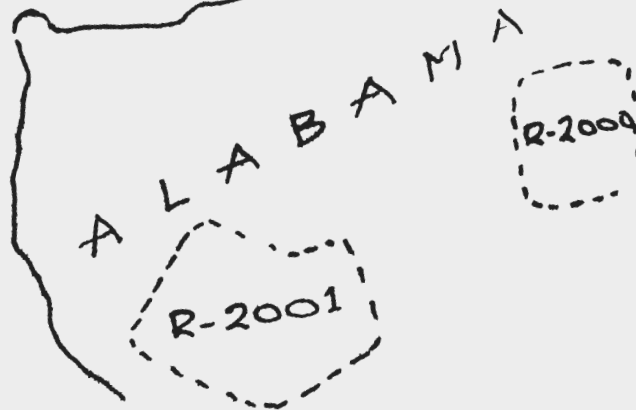
To accomplish this will require imagination and additional effort by the airspace officer. It is suggested that he utilize the facilities of the Army printing plant and talented poster personnel from training aids and/or Special Services.

Listed below are several ideas to help get this program launched:

POSTERS
LETTERS
TALKS
Visits to Civ Fields
NEWS STORIES
TV + Radio

- I. Prepare a poster suitable for civilian airfields to place in their operations.

DO YOU KNOW YOUR RESTRICTED FLYING AREAS?

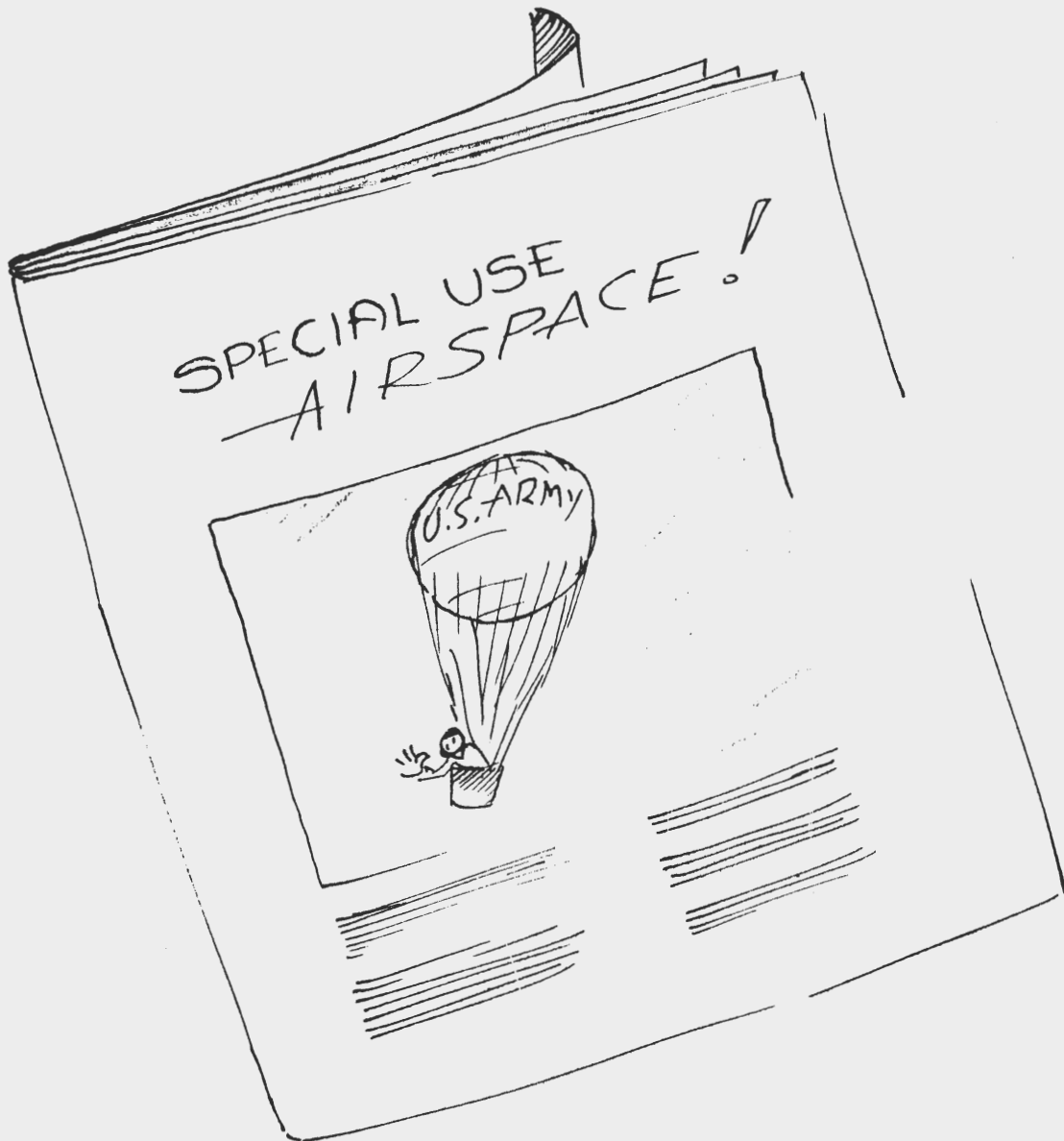


- | | |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | _____ |
| 3. _____ | 5. _____ |
| _____ | _____ |



Get a colorful poster, with a little humor added, and a brief description of the restricted areas.

- II. The pamphlet or brochure type handout is more costly to produce but can be very effective. In this type handout the opportunity exists for more explanatory copy which can be used advantageously for selling the Army story.



A descriptive pamphlet, describing your restricted areas, tying them into the development of our Armed Forces, the Reserves, National Guard, etc. BRING THE CIVILIAN PILOT INTO THE PICTURE!

- III. The information for state aeronautical agency personnel should consist of a letter explaining the importance of restricted areas and where possible tie in the use by National Guard. With this letter inclose posters, pamphlets, and what other type information you may have. In this approach you might gain their assistance in distribution and certainly will gain their goodwill and support in restricted area problems.

*Sell the Army Commander
on your plan! Get him to sign
the Letter!*

**FOLLOW UP THE
LETTER with a VISIT**

*Make friends with your
Info Officer — He will help
you with news stories, radio,
and TV*



**THINK LIKE A
PUBLIC RELATIONS
EXPERT!**

LIST OF ALL RESTRICTED AREAS, USERS, AIRSPACE
OFFICERS ARMY AREAS

1. Restricted Area: _____
2. User: _____
3. Airspace Officer: _____
Telephone Number: _____
Mailing Address: _____

ARMY AVIATION ORGANIZATIONS

by

Col E. C. Wood
Army Aviation Section, HQ USCONARC

Gentlemen:

My subject this morning is Army aviation organizations. I propose to cover only those TOE's that are new, being staffed or are planned for the immediate future. In addition, I will cover programed activations and deployments of Army aviation units for FY 62.

However, before we discuss these two areas, I feel I should give you some background information on an allied subject which is causing some discontent among the commandants of the service schools. School responsibility for aviation doctrine is the focal point of the disagreement. The controversial areas tie into the directive which assigns the responsibility for development of Army aviation doctrine, organization, tactics and techniques to the certain schools. The disagreement began last spring when the results of a G2 study were introduced into CON Reg 10-1. This study, which concluded that the Armor School should have overall doctrinal responsibility for combat surveillance and aerial reconnaissance, was coordinated with the combat arms schools and technical services and was approved by General Clarke over the non-concurrence of the USAAVNS and the USCONARC Aviation Section.

In October 1960, General Easterbrook forwarded a proposal for altering the current regulation to remove the responsibility for aerial surveillance and reconnaissance from the Armored School. Under General Easterbrook's letter, USCONARC would assign the responsibility for developing doctrine, organization, procedures, tactics and techniques for aviation units which have not become an organic part of a branch type unit to the Aviation School. After running into strong staff opposition at CONARC, the proposal was forwarded to the interested schools for comment.

The Infantry, Artillery and Missile and Air Defense Schools generally concurred in the Aviation School proposal. The Armor

School, of course, nonconcurred and insisted that surveillance, no matter how transported, is a function of reconnaissance and as such is properly a responsibility of the Armor School. C&GSC at Fort Leavenworth visualized two levels of doctrinal responsibility; (1) a user or employment level and (2) a technical or procedural level. The user level is represented by the colleges and the combat arms schools, and the technical level by the Aviation School. The user level provides concept guidance which would confine the Aviation School level of responsibility to the technical aspects of organization, maintenance, procedures, flying techniques and control of air traffic.

G3, USCONARC, was pleased with the Leavenworth report; however, it was felt that since there was a wide variance of positions among the schools, C&GSC should have an opportunity to consider the other schools' comments. Accordingly, the report was returned to Leavenworth for reevaluation; final results of the new study will be forwarded to USCONARC nlt 1 April 1961. Another problem area closely related to doctrine is the determination of prefix numbers for aviation units. Recently, DA directed this headquarters to conduct a study in this area and recommend a solution to the problem. Requirement for this study has been forwarded to C&GSC to be completed nlt 1 April 1961. In this regard, the current position of the CG, USCONARC, pertaining to aviation elements which are part of the divisional structure is that the combat arms will retain control of all aviation elements which have a combat or combat support role. During the next part of this presentation as pertains to TOE's, I will mention organizational and operational concepts, advance plan concept and technical review. I feel that if I trace the steps that must be accomplished before a TOE is published, it will be helpful to you in the discussion that follows. When a new type organization is conceived, the organizational and operational concept must be approved by DA before any further action can take place. Upon DA approval, the plan is forwarded to the appropriate service school to develop an advance plan. The advance plan contains a detailed breakout of the unit organization; the number of personnel, by MOS and grade required and equipment that is needed to make the unit function. After the advance plan TOE has been staffed at USCONARC, it is forwarded to DA for concept approval. DA normally makes numerous changes and returns the approved plan to this headquarters. At this time the advance plan TOE is corrected and restaffed here at USCONARC and then it is returned to DA for review

by the technical services. This is called "tech review." Normally, numerous changes are made during this review and the plan is returned again to USCONARC for correction. After further restaffing, the TOE is forwarded to DA for final approval and publication. The time required to process the TOE through the steps I have just enumerated requires about 18 months.

Now lets take a look at some of the new aviation organizations that are being approved and those that we can expect to see in the future. In order to stay within the time allotted I will discuss these organizations in broad terms.

On this chart (fig. 1) is shown the organization of the army aviation company. This unit has received advance plan approval at DA, been concurred in by the USCONARC staff and is presently back at DA for technical review. It is anticipated that the army aviation company TOE will be published late this spring. The company has 38 officers, 127 enlisted men, for a total of 165. This unit is primarily designed to support an army headquarters and attached army units. A comparison of this company with the present army flight detachment shows an increase of 17 aircraft and 144 officers and men.

On this next chart (fig. 2) is shown the organization of the corps aviation company. This TOE has been processed along with the TOE of the army aviation company and should be published late this spring. The strength of this company is 39 officers, 124 enlisted men, for a total of 163. A close look at this organization will reveal that it is almost identical to the army aviation company.

The biggest difference being a reduction in L-23's from three to one and increases in observation airplanes from four to six and in observation helicopters from six to ten. The corps organization represents an overall increase of four aircraft over the army aviation company. It should be noted that the flight operations centers of both the army and corps aviation companies will be deleted when a suitable air traffic control organization is approved for the field army.

On this next chart (fig. 3) is shown the organization of the corps artillery aviation company. The processing of this unit TOE has been held up at DA to determine if aircraft to support subordinate artillery groups should be included in the corps artillery company. The latest information is that the group artillery flights will not be part of the company. This chart shows the corps artillery aviation company without the group flights. Advance plan approval of this unit is expected shortly

from DA. After USCONARC staffing and DA technical review, this organization should be published in the fall. It should be noted that the visual and airborne target location section includes four Mohawks. This company has the strength of 26 officers, 98 enlisted men, for a total of 124. An aircraft strength of 16 is shown at the lower left of the chart.

Recently, DA stated that the total number of light transport helicopters within the Army force structure would decrease during the 1960-1970 time frame. Simultaneously with the decrease of the light transport companies, a requirement will exist to organize numerous utility/tactical transport helicopter companies utilizing the HU-1. In order to meet this requirement, the US Army Aviation School, in coordination with other service schools, developed the organization shown on this chart.

The TOE for this company (fig. 4) was forwarded from Fort Rucker as A1-unit; however, due to objections of several USCONARC staff sections, the advance plan of this unit will be forwarded to DA without a prefix number, but will be recommended to be a tactical aviation unit. The strength of this organization is 57 officers, 88 enlisted men, for a total of 147. This company has 25 aircraft and when organized with HU-ID's, will be capable of airlifting one rifle company together with its crew-served weapons in a single lift. Action is being taken to redesignate this unit's title as an "Air Mobile Company (Light)". This unit is suitable for assignment to aviation battalions at division or corps level.

Next I would like to discuss the air cavalry troop that we have all heard so much about. This type unit was troop tested by the 2d Infantry Division at Fort Stewart, Georgia, last summer. The purpose of the test was to determine the feasibility of this unit to perform the traditional missions of the cavalry at a greatly accelerated rate. The final major conclusions of the test were:

- (1) The concept of the air cavalry type unit which was tested was a valid concept.
- (2) Further test of the concept is not required.
- (3) The organization as tested is basically sound.

(4) The unit should be incorporated in the infantry and armored division structure as part of the armored cavalry squadron.

(5) The unit should be included in the armored cavalry regiments as a separate troop, with no increase in regimental strength.

As a result it is now planned to have one air cavalry troop for each divisional cavalry squadron and three in each armored cavalry regiment (one per squadron). Although DA authorized the retention of the troop tested unit in the 2d Infantry Division, it has now been reduced to an aerial scout platoon due to space limitations.

On this chart (fig. 5) is shown the current organization of the air cavalry troop. The troop is broken down into an aerial scout platoon utilizing 13 observation helicopters, an aerial rifle platoon with five utility helicopters and an aerial weapons platoon using four utility helicopters. Each of the observation helicopters in the aerial scout platoon is armed with dual .30 caliber machineguns and the utility helicopters in the weapons platoon are armed with SS-11 AT guided missiles and MG's. The service platoon performs the normal maintenance and supply functions. The strength of the unit is 32 officers, 108 enlisted men, for a total of 140. This unit TOE is at DA for advance plan approval.

The next unit which should be new to most of you is the Army Air Traffic Regulation and Identification Company, commonly called AATRI. This organization is the result of a joint US Army Aviation School and US Army Air Defense School study. Its purpose is to provide a suitable organization for regulation and identification of Army aircraft in the field army. This has been a controversial unit from the standpoint of size, organization and branch proponency. It started out as a group size organization and was subsequently scaled down to a company size unit. In addition, there were some that felt that this company should be a Signal Corps unit. It is expected that the advance plan concept for this company will be forwarded to DA shortly for approval. Now let's take a look at the unit (fig. 6).

Its strength is 32 officers, 207 enlisted men, for a total of 239. It has a flight information section which is responsible for disseminating flight information to appropriate commands much the same as Jeppesen does for us under peacetime conditions. The flight regulation platoon is

composed of four FOC's for army and corps; four alternate FOC's organized at reduced strength; and four flight coordination centers or FCC's. The alternate FOC's are included to insure continuous uninterrupted operation of the air control system during displacement. In the event the main FOC is knocked out, the alternate will take over. Since the FCC's extend into the division area, they are considered an extension of the corps FOC's. The navigational platoon is composed of one airfield control team, one GCA team and six nondirectional beacon teams. The purpose of this platoon is to add flexibility to the organization and provide checkpoints for en route navigation. It is planned to troop test this unit during FY 63. It is believed that this organization can efficiently and effectively regulate and identify the air traffic over the field army area from the army rear boundary to the division main airfields. Control of traffic in the forward areas is required but must be flexible in order to meet the needs of the combat commanders. It is anticipated that the FCC's will regulate and monitor flights in the division area in such a manner as to not reduce the combat effort.

On this next chart (fig. 7) is shown the organization of an aviation company for a medium missile command. Approval for this organization has not yet been received from DA. This company represents one of two identical aviation organizations recommended for this type command. The second company was justified on the basis of distance between operating elements of the command and the problems connected with supervision, administration and control. Each company is authorized 40 officers, 117 enlisted men, for a total of 157. It should be noted that aerial acquisition platoon has four Mohawk aircraft. Total aircraft authorized the company is 19. Primary mission of this unit is to support the missile command headquarters and the two assigned groups.

This headquarters has received organizational concept approval from DA for two surveillance drone companies. The company shown here (fig. 8) is planned for assignment at army level. It will have three platoons, each with a SD-5 drone system employing eight birds. The strength of this company will be 9 officers, 1 warrant officer, 255 enlisted men, for a total of 265. The purpose of this company will be to augment the aerial surveillance systems assigned at division and corps levels. In addition this unit will accomplish special missions that originate at army level. Since the SD-5 drone system will not be available until about FY 64, it is not expected that the TOE for this unit will be published before that time.

On this next chart (fig. 9) is shown the surveillance drone company planned for assignment to corps. It consists of two platoons, each with a SD-5 drone system employing five birds. This company, somewhat smaller than the unit planned for army, has a total strength of 179. Its mission will be to augment the division surveillance capability and complete missions that originate at corps.

The last company-size unit that I will discuss this morning is a manned surveillance company planned for corps. The organization shown here (fig. 10) has two platoons, each composed of a visual and photo section, radar flight section and infrared section. Each platoon will have six Mohawks to accomplish the function implied by the platoon organization. The total strength of the unit is 137 personnel and will be authorized 12 Mohawk aircraft (4 AO-1A, 4 AO-1B and 4 AO-1C). The mission of this company will be to augment and supplement the division surveillance capability and to conduct special missions as required by the corps G2 and artillery commander. Since this organization is only in the planning stage and no comments have been obtained from the USCONARC staff, no forecast can be made as to when the TOE will be published. However, if no major resistance is met, the TOE could be approved in FY 63.

Before I leave company-size organizations, I would like to urge you to continue to forward in changes to TOE's of current aviation organizations as they become apparent. In regard to the current company organizations, changes are being processed to bring the unit aerial surveillance platoons up to date. This involves addition and deletion in personnel and changes in MOS's and equipment. The TOE of the airborne division aviation company is being revised to authorize 32 HU-1 helicopters, four AO-1 airplanes plus allied equipment to make the company function.

Now, I would like to generate some real smoke to cloud your crystal ball and talk about some of the aviation battalions that are being considered for division and corps. The three units I will discuss are in the planning stage only. Action to finalize these organizations has not been taken at this level. As most of you know, a series of conferences have been held here at HQ USCONARC to plan new divisional organizations. These discussions included appropriate aviation organizations to support the divisions. For the first time since 1950 a trend toward decentralization of aircraft has been established. The aviation organizational concept during and since Korea has been to centralize the divisional aircraft in order to improve control, administration and maintenance. In those cases where we had outstanding division aviation officers, the commanders approved centralization of aircraft for they still received the same fine

support without any of the responsibility. On the other hand, where we did not have our best aviation officers, and we have quite a few in this category, commanders continued to "sound off" about being robbed of their aircraft. The pendulum of time has now swung back and these same commanders are demanding a degree of decentralization of aircraft. To satisfy this group, we have proposed a centralized organization for those elements of the division who need aircraft on a part-time basis and we have decentralized aircraft to those commanders who have a full-time requirement. Another factor that has had an influence on the "new-look" for division aviation is presence of the air cav troop in the cavalry squadron. Now let's take a look at the aviation elements of the new type divisions.(fig. 11).

As you can see, each brigade has 6 aircraft and there is some talk about increasing this number to 12 in order that a small brigade air cav capability can be included. The division artillery has a requirement for 12 aircraft to perform normal artillery missions.

The aviation battalion has 45 aircraft, 20 in the general support company and 25 in the air mobile company. The general support company, as its name implies, provides support for elements of the division as required. The air mobile company is the same organization as proposed for the utility/tactical transport helicopter company and is capable, when equipped with HU-1D's of airlifting a rifle company with supporting weapons in one move.

The air cav troop is the same as the one I discussed previously. This organization shows 14 observation and 13 utility helicopters. DA has informed us that they plan to ask for USCONARC concurrence in equipping the air cav company with 27 HU-1 helicopters. It is not expected that the DA proposal will meet with any opposition at this headquarters. Total aircraft for the division will be 102.

As an extension of the planning for divisional aviation units, representatives from this headquarters, USAAVNS and XVIII Airborne Corps met at Fort Monroe on 16 February to discuss suitable aviation organizations for corps. Several combinations of units were proposed but the one generally acceptable to all looked something like this (fig. 12).

The aviation company would be identical to the one now planned as the corps aviation company. The drone, manned surveillance and

air mobile companies would be the same as the ones discussed earlier in the hour and their missions remain the same. The air weapons company will be armed with only SS-11 type missiles and will normally be employed on a single mission as a fighting company. Attacks against tank formations, convoy of vehicles or concentrations of troops are examples of missions that could be given this company. It is anticipated that supporting maintenance will be attached as indicated by the dotted line.

The findings of the first Roger's Board indicated that an air mobile group should be authorized at corps to provide essential airlift. The development and establishment of a battalion size unit is considered the first step in the direction of the group organization. A type battalion could look something like this (fig. 13).

The mix of airmobile (lt) and air mobile (med) companies will undoubtedly change numerous times before this organization is finalized. The organization as shown on this chart is capable of airlifting an infantry battlegroup in a single lift. Any increase in the number of Chinook companies in the battalion will result in an increased lift capability. In any event, if a battalion similar to the one shown here is authorized at corps, the air mobile company in the corps tactical aviation battalion as shown on the preceding chart will probably be deleted.

For the last part of my period, I would like to talk about deployment and activation of army aviation units. This part of the discussion is classified SECRET.

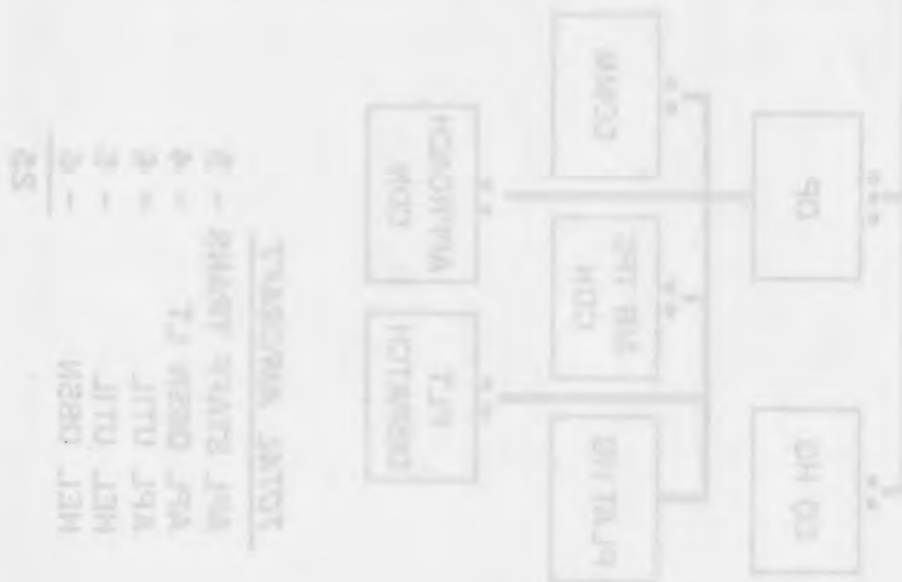
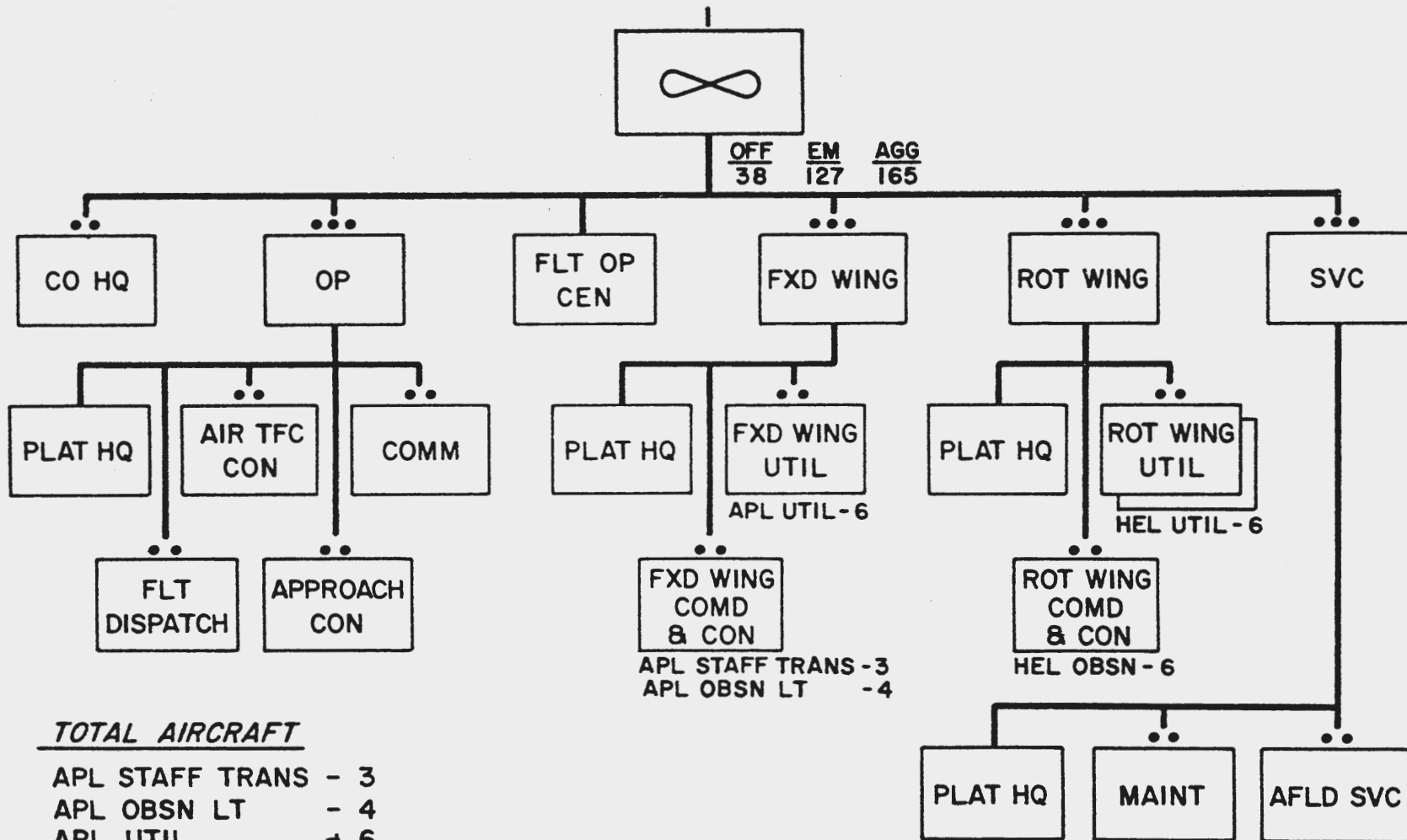


Figure 1

ARMY AVIATION COMPANY

TOE I-137D



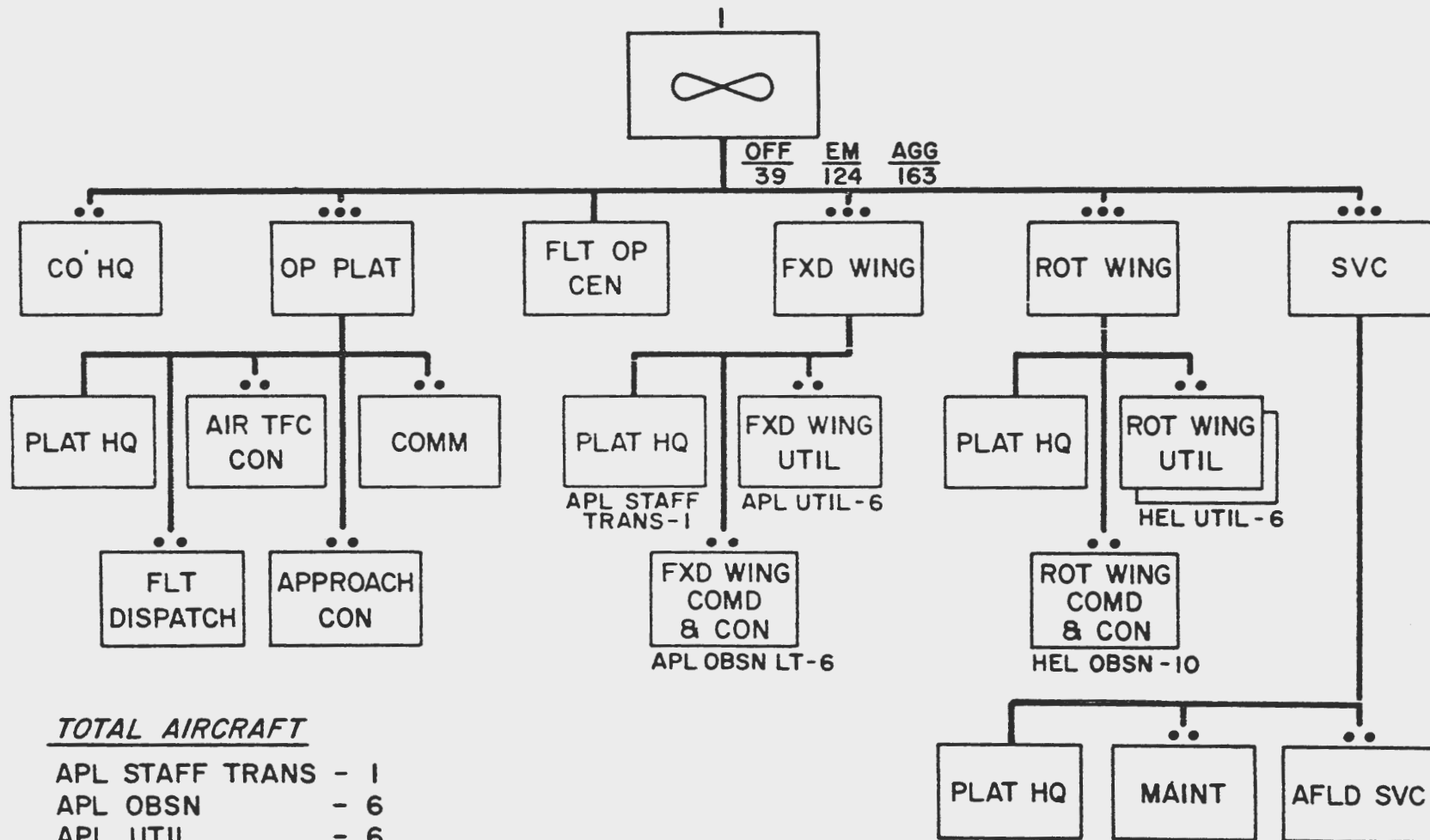
TOTAL AIRCRAFT

APL STAFF TRANS	- 3
APL OBSN LT	- 4
APL UTIL	- 6
HEL UTIL	- 6
HEL OBSN	- 6
	<u>25</u>

Figure 2

CORPS AVIATION COMPANY

TOE I-127D



59

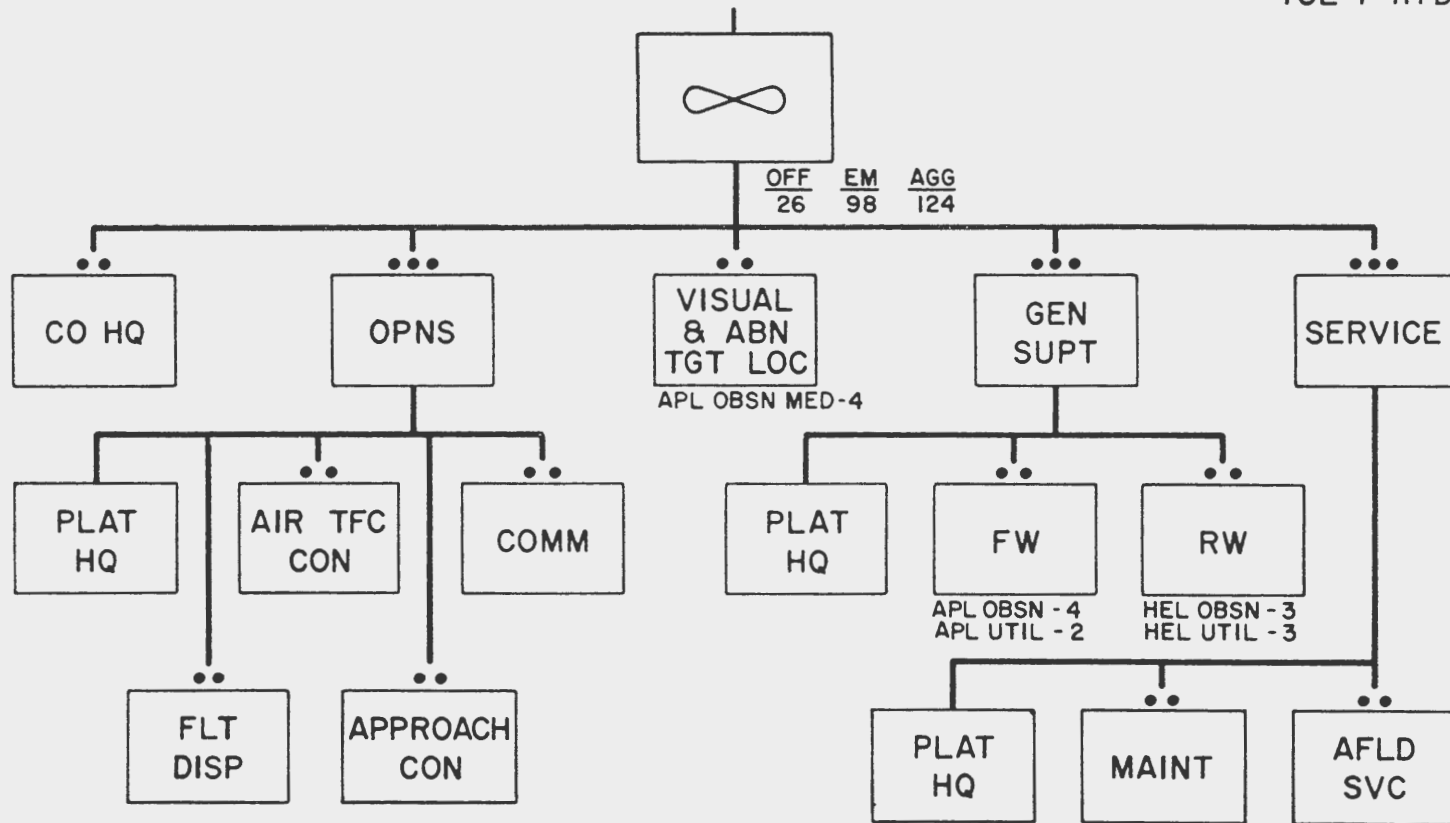
TOTAL AIRCRAFT

APL STAFF TRANS	- 1
APL OBSN	- 6
APL UTIL	- 6
HEL OBSN	- 10
HEL UTIL	- 6
	<u>29</u>

Figure 3

CORPS ARTILLERY AVIATION COMPANY

TOE I-117D



TOTAL AIRCRAFT

APL OBSN MED	- 4
APL OBSN LT	- 4
APL UTIL	- 2
HEL OBSN	- 3
HEL UTIL	- 3
	<u>16</u>

Figure 4

UTILITY/TACTICAL TRANSPORT HELICOPTER COMPANY

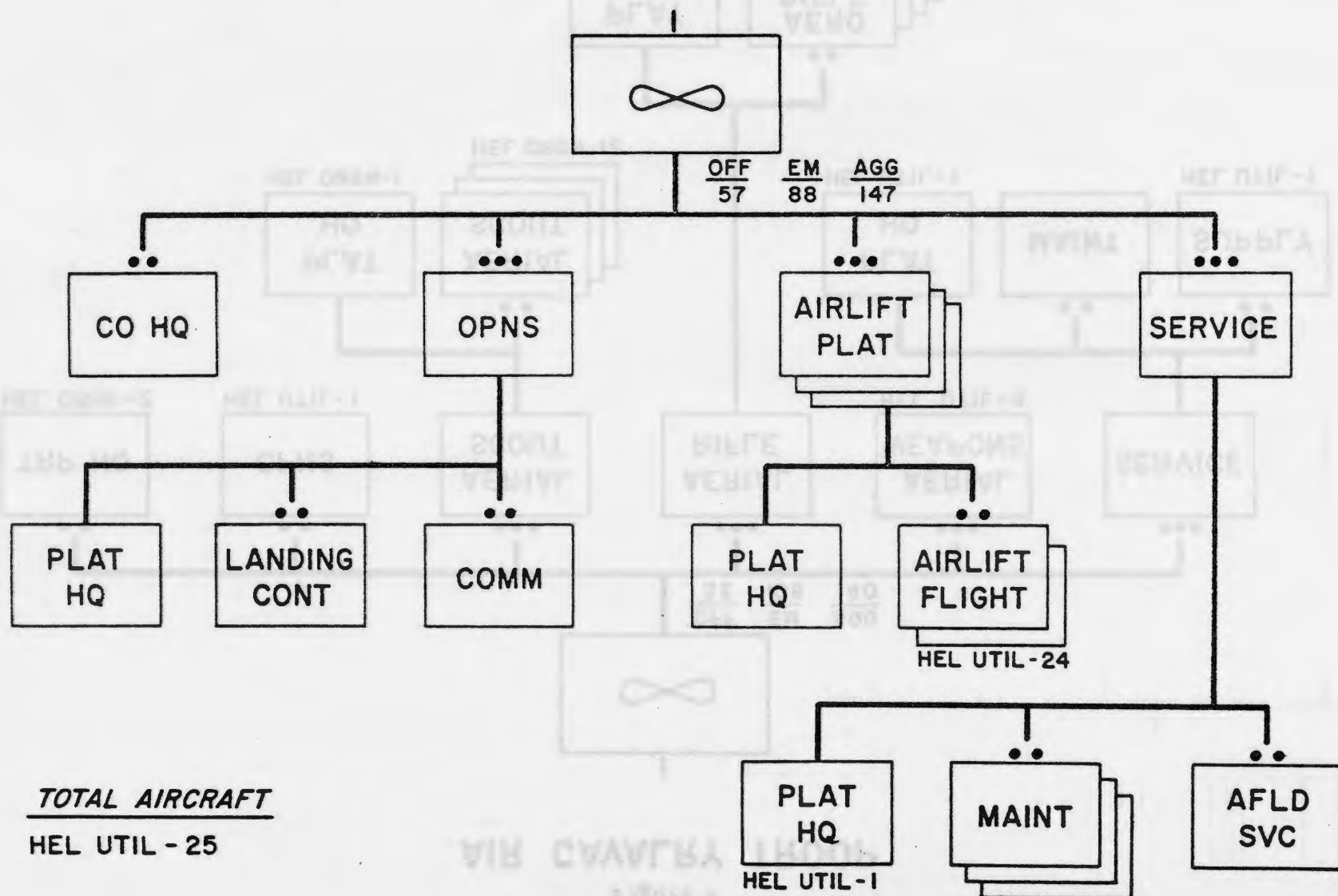


Figure 5
AIR CAVALRY TROOP

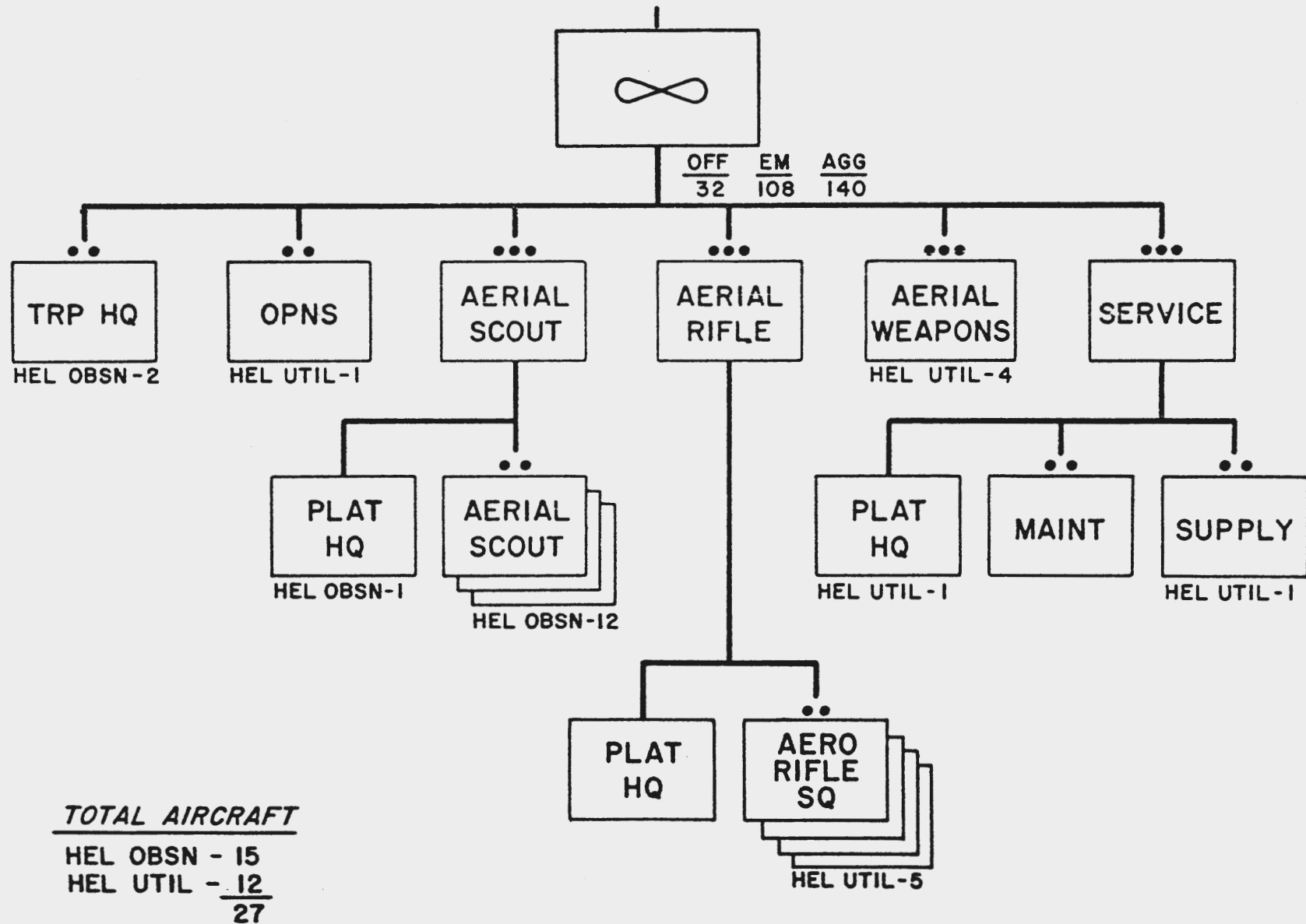


Figure 6

ARMY AIR TRAFFIC REGULATION AND IDENTIFICATION COMPANY

TOE 1-()

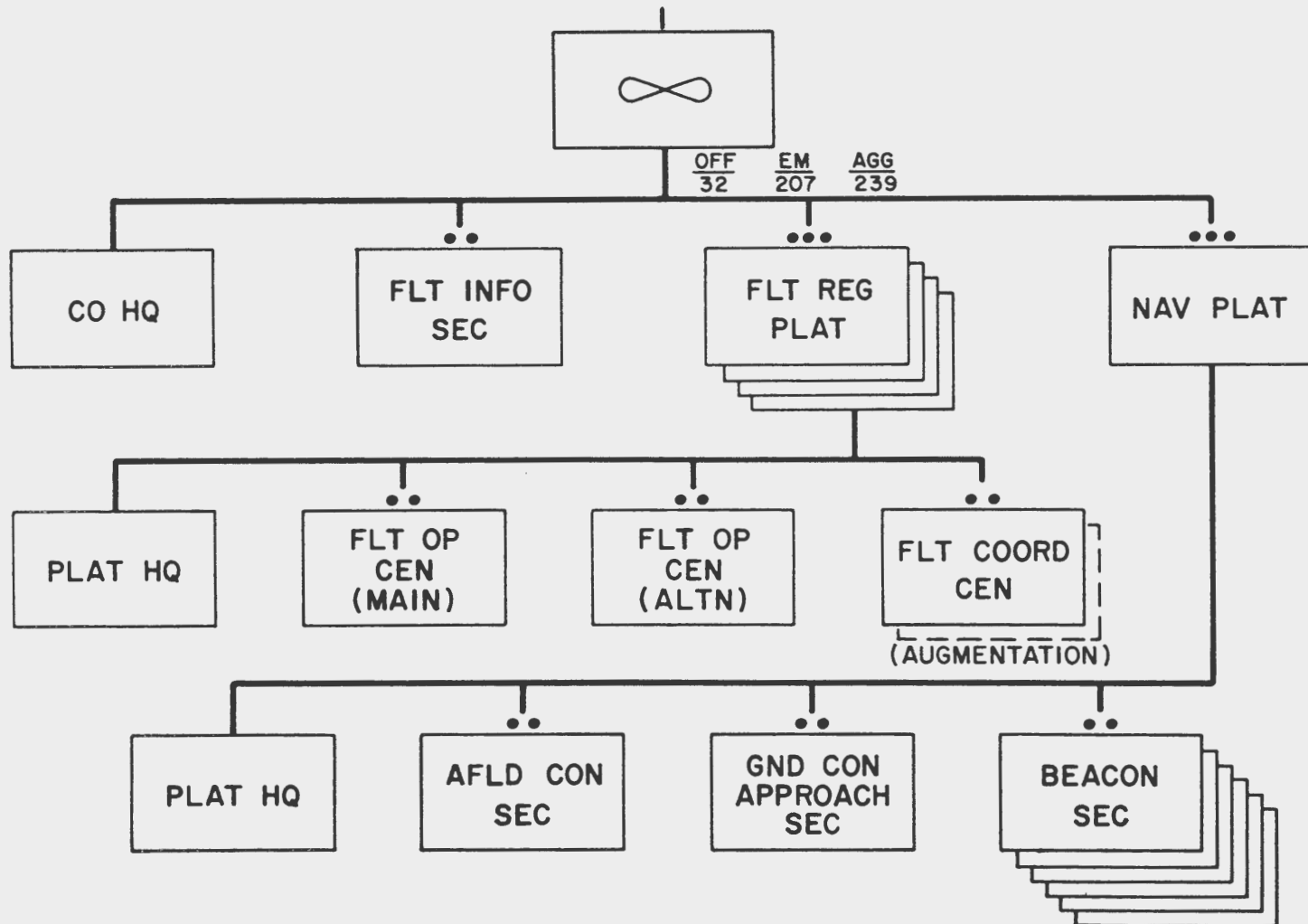


Figure 7
AVIATION COMPANY USA MISSILE COMMAND MEDIUM

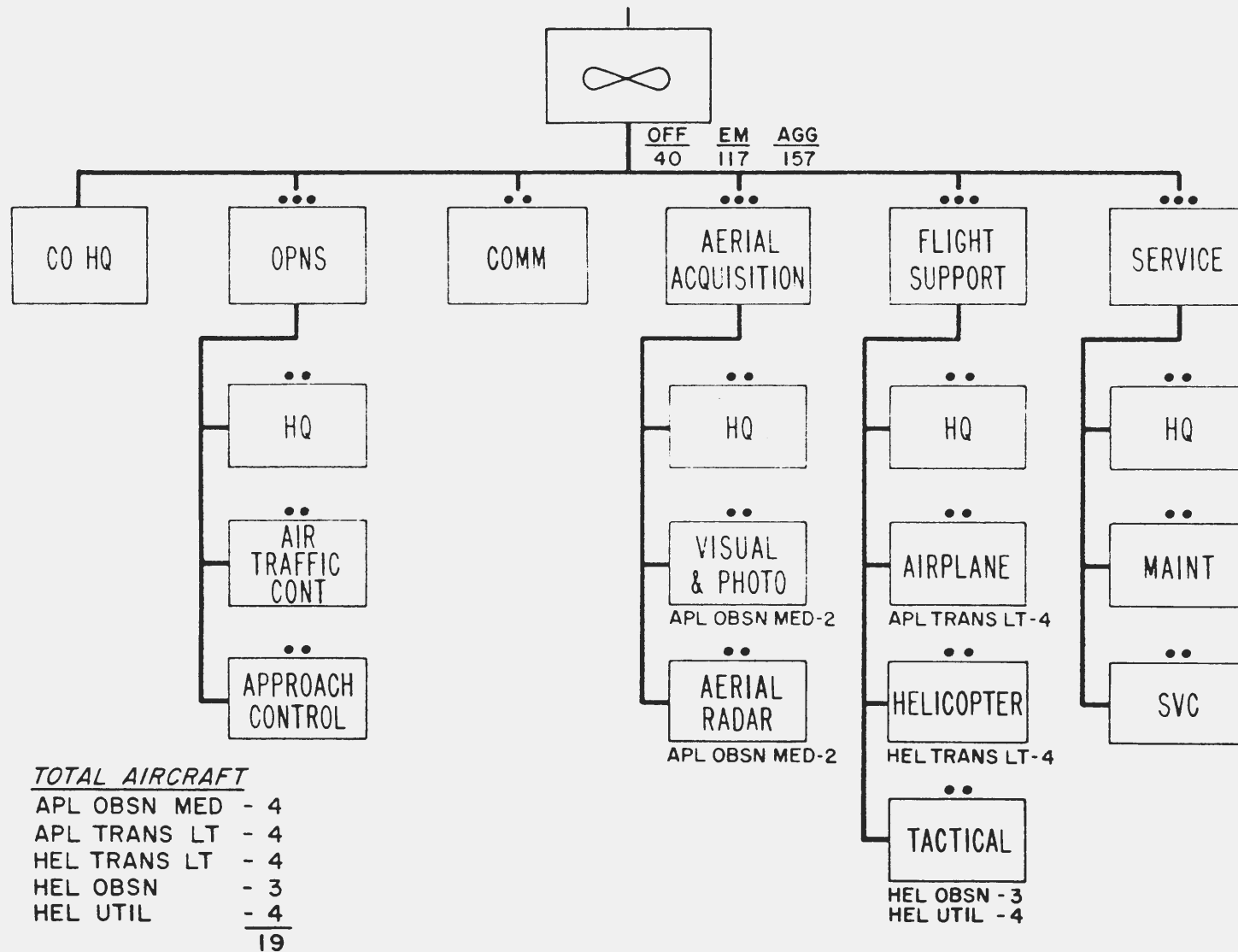
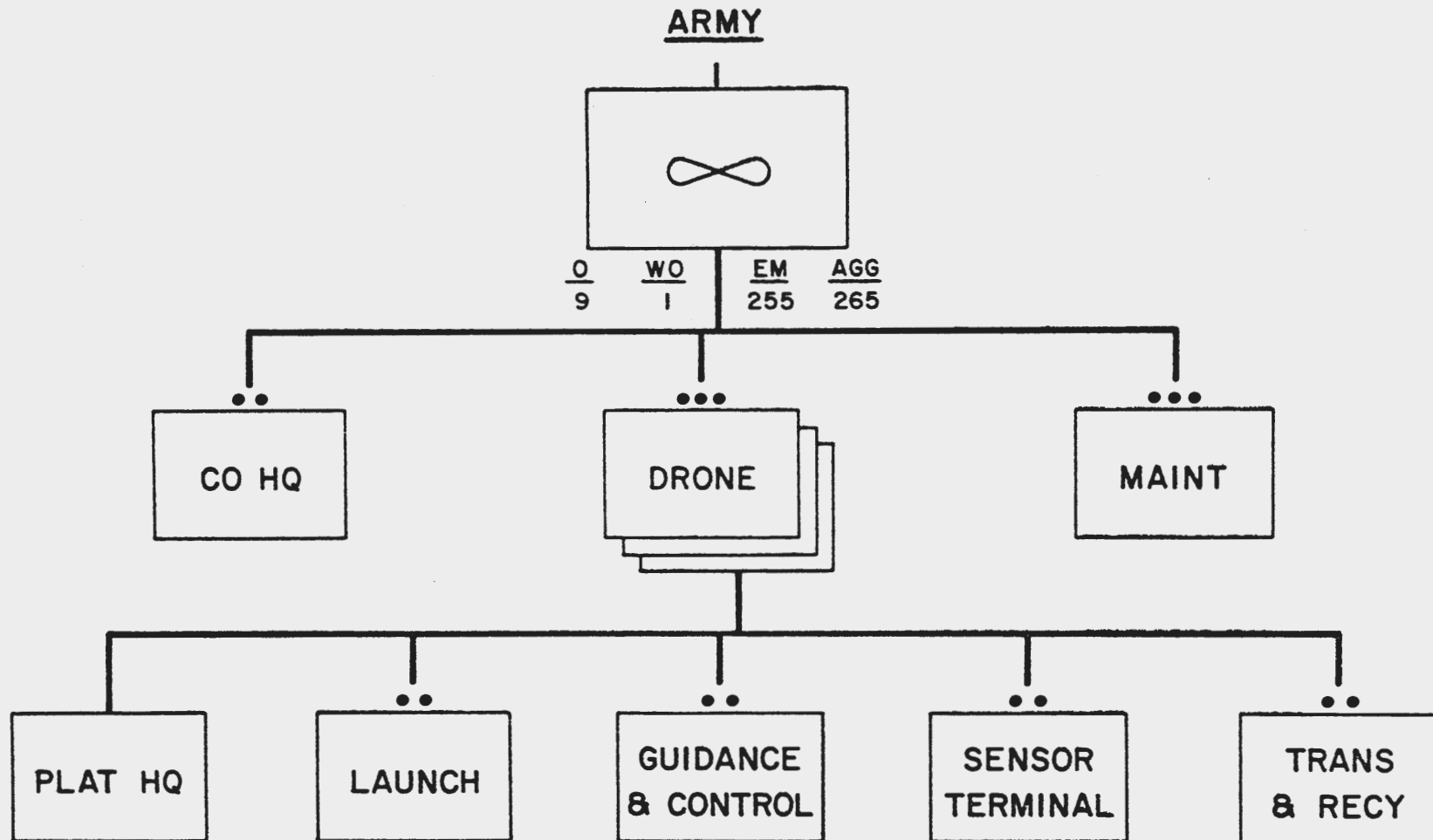


Figure 8

SURVEILLANCE DRONE COMPANY (MED)

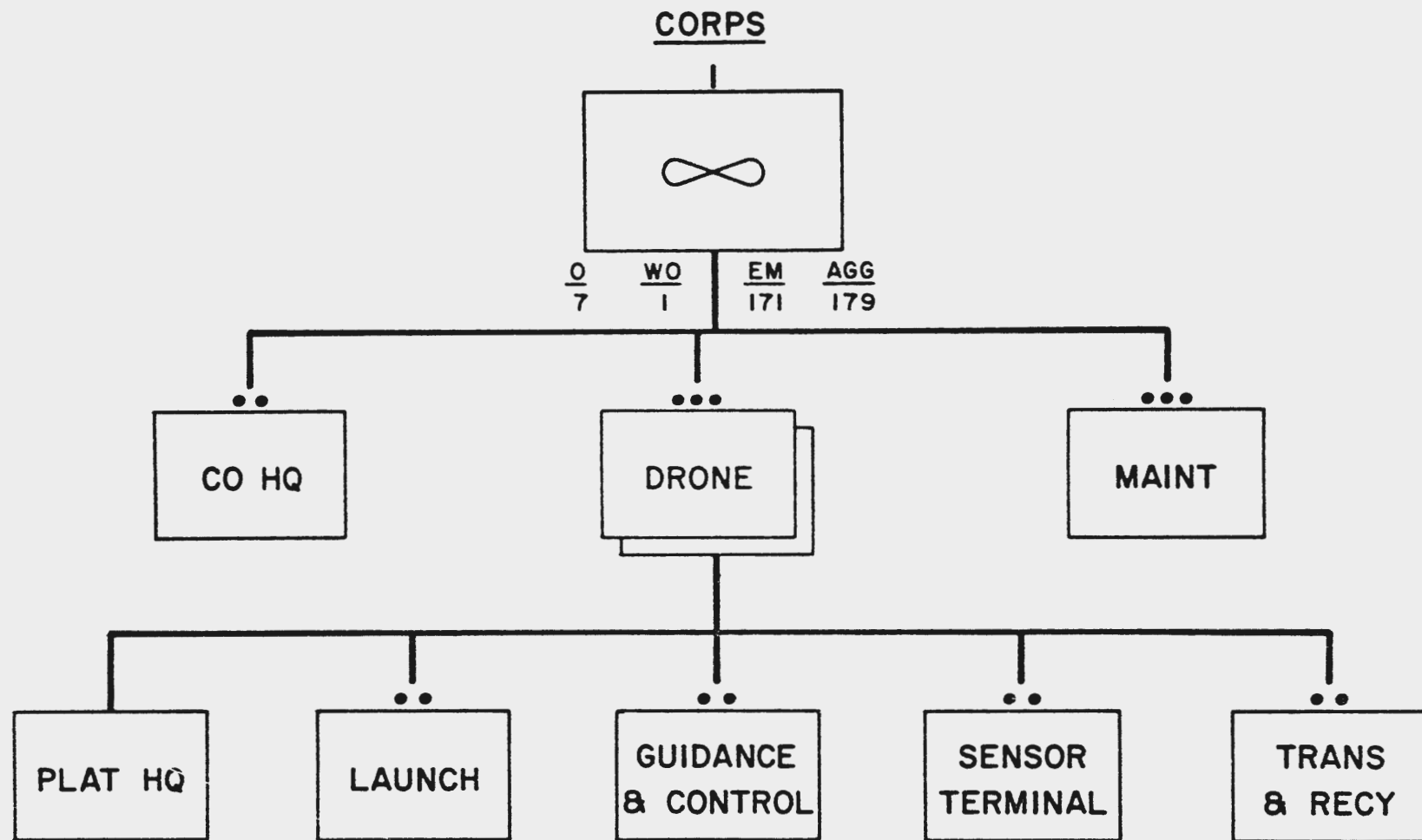


65

1 SD-5 DRONE SYSTEM / PLAT
8 BIRDS

Figure 9

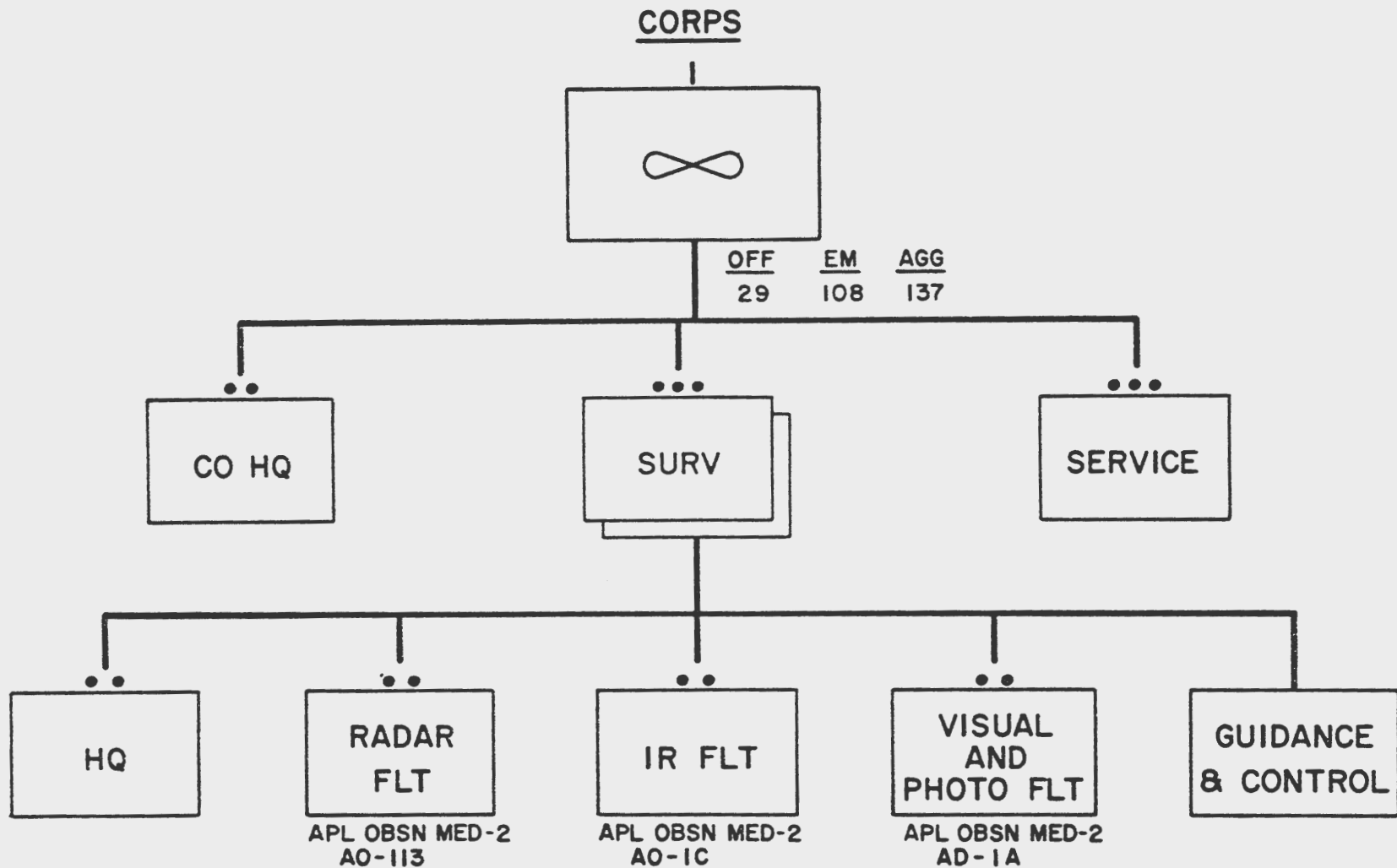
SURVEILLANCE DRONE COMPANY (MED)



1 SD-5 DRONE SYSTEM/PLAT
5 BIRDS

Figure 10

SURVEILLANCE AIRPLANE COMPANY



67

TOTAL AIRCRAFT
 APL OBSN MED - 12

Figure 11

NEW ORGANIZATIONAL CONCEPT ARMY AVIATION ELEMENTS

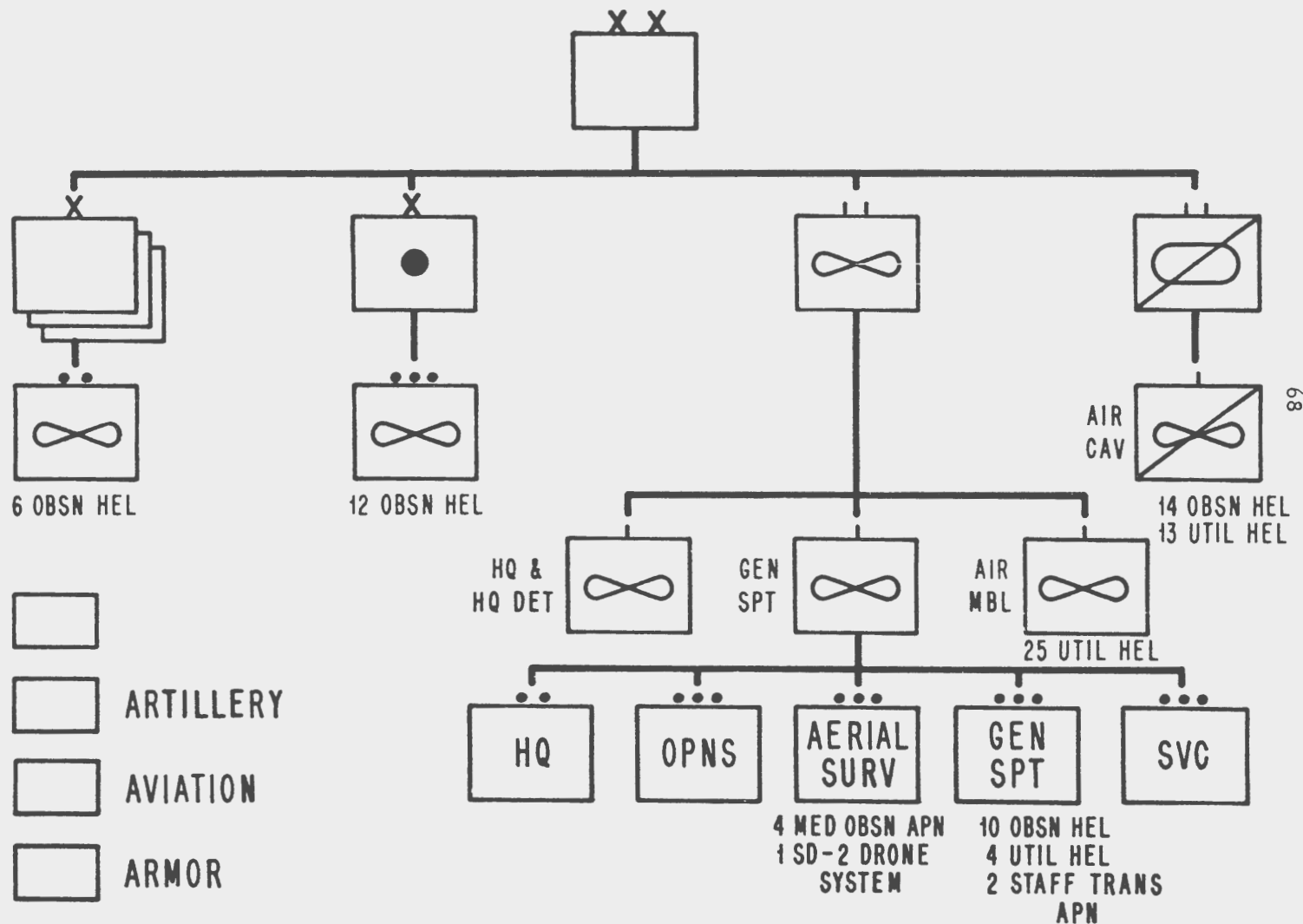


Figure 12

CORPS TACTICAL AVIATION BATTALION

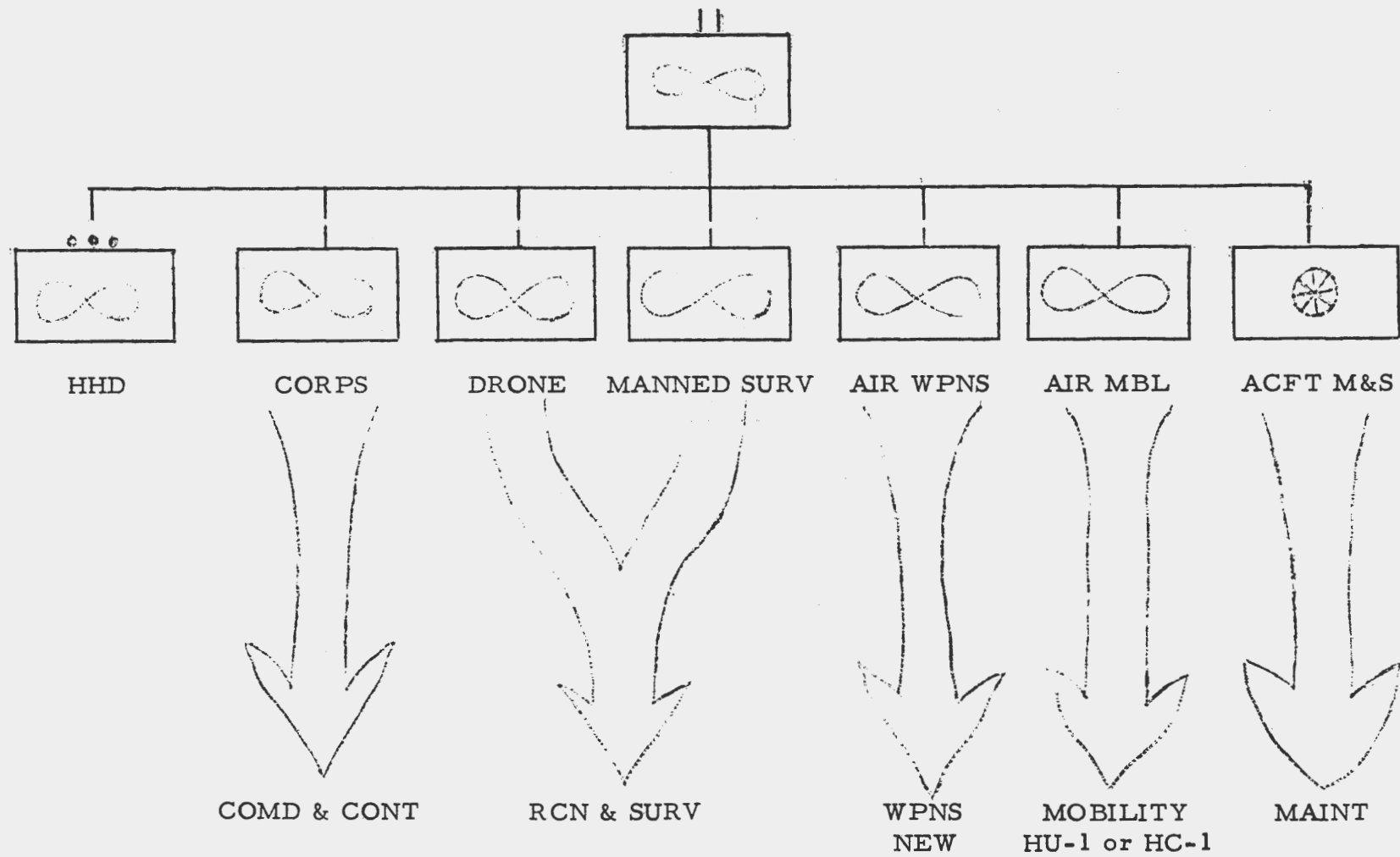
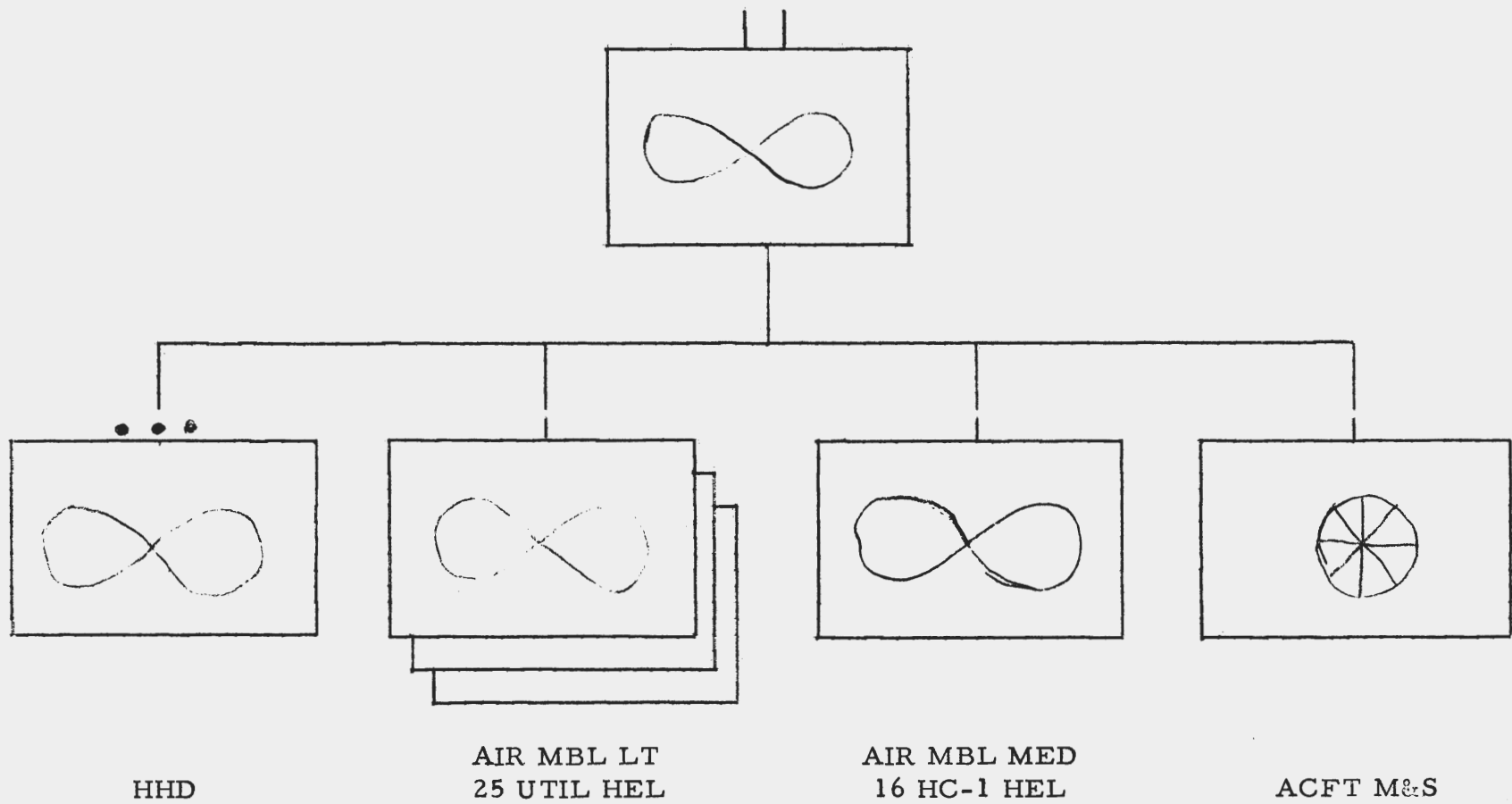


Figure 13

AIR MOBILE BATTALION



PRESENTATION OF THE USCONARC OPERATING PROGRAM

by

Lt Col Dan A. McCartney
Army Aviation Section, HQ USCONARC

The presentation on the USCONARC Operating Program will cover significant items which highlight the increasing importance of program and budget actions pertaining to Army aviation.

As background information, I will briefly describe how the USCONARC Operating Program is developed and the related Army aviation activities associated with its development.

This will be followed by a brief summary of problem areas associated with the forecast expansion through 1970, and its impact on resource requirements in terms of program and budget requirements.

Finally I will present a review and analysis of performance data developed from the quarterly cost and performance report and the Aviation Report "Analysis of Operations, Army Aviation Activities RCS ATAVN-04."

The USCONARC Operating Program announces the CG USCONARC's programmed course of action for accomplishing the USCONARC missions. The program assigns objectives, indicates planned allocation of resources, and prescribes changes in policies, priorities, objectives, standards and areas of emphasis.

The operating program and budget is developed in four steps. The first step is the commander's statement and budget summary which is developed approximately 12 months prior to the start of the target fiscal year. It is based on preliminary P&B guidance provided by DA and generally states objectives and costs in broad terms. This statement is developed by the CONARC staff without formal reference to subordinate commands. Major aviation changes in the FY 62 program were increased costs associated with the Aviation School training program. The second step is the USCONARC Operating Program provided to ZI armies in December or January and is the basis for preparation of installation and ZI army operating programs. It contains detailed workload data, program objectives, ceilings and budget guidance for each segment of the various programs. The major aviation

change for FY 62 was our omission of the tables projecting the aircraft inventory and the related flying hours by type of aircraft. These tables were omitted from this document because it had been determined that each army could more accurately forecast the aircraft inventory than we can here at CONARC. Further, in consonance with the management principles upon which the operating program is based, the development of the flying hour program should be initiated at the installation or activity level, based on mission and operational requirements instead of an arbitrary factor established in a supply bulletin. Our guidance for FY 62 utilizes SB 1-1 factors as a departure point, provides the armies latitude in adjustment within their overall requirements by type of aircraft and provides for justification of deviations exceeding plus or minus 25 percent of SB 1-1. This provision was included so that this headquarters could identify problem areas which should be resolved with DCSLOG to insure adequate supply to meet your Army aviation operational requirements.

This leads us into the third step in the development of the Operating Program, which is the consolidation of the Army Operating Programs and their submission to DA in March or April. In this consolidation we review the Army aviation portions to determine that costs are in line with programmed flying hours, the flying hours are adequate to support training objectives and determine that unfinanced items are in accordance with established priorities. Quite often, as a result of USCONARC or DA PBAC actions, it is determined that unfinanced aviation requirements submitted by the armies are of sufficient priority that they should be deleted from the unfinanced section and the army is directed to support the requirement at the expense of a lower priority mission.

The last step is the publication of Change Order Number 1 to the Operating Program in July. This change order contains the adjusted program data for the fiscal year and budget ceilings for each program based on DA final program and budget guidance. As an example, the FY 61 change order reflected a pro-ratio cut in funds to support the flying hour program based on a directed congressional reduction resulting from the ceiling placed on numbers of pilots on flying status. A current action which may be in our FY 62 program is the elimination of funds to support contract rental of civilian aircraft in the Reserve program.

The action on rental aircraft is still under study and results from a Department of Defense review wherein they did not consider the training proficiency resulting from the use of rental aircraft justified the cost.

Significant items which highlight the increasing importance of establishing sound program and budget procedures for the Army Aviation Program is the forecast expansion and budget implications outlined in the Rogers Committee Report. Requirements in broad general terms for additional funds, personnel and facilities have been identified in the report. However, the success in obtaining the necessary resources will be dependent upon their detailed identification and justification in the appropriate program documents. Every penny of the forecast increase of 43 million dollars for a year's operation by 1970 will probably have to be achieved at the expense of lower priority missions which are currently being conducted.

The MCA projects of approximately 33 million required for the increased aircraft inventory will have to be justified and supported at the expense of other high priority projects.

Our procedures for establishing flying hour objectives and identification of the objectives with training prerequisites to justify over a million flying hours per year will be under constant surveillance, review and criticism. With the advent of consumer funding of aircraft spare parts in FY 63, our system for programing flying hours by type of aircraft at the installation level must be sufficiently accurate to insure adequacy of funds to maintain our supply of aircraft spare parts in competition with spare parts for vehicles, weapons and other high priority systems.

Another major programing and funding problem area, for which there is very little background information, is the costs associated with the activation reorganization and deployments of aviation units. During the period through 1970, there will be somewhere in the neighborhood of approximately 50 activations or major reorganizations of Army aviation units. The costs for these actions again cannot be associated with any particular reduction in other areas and will probably have to be accomplished within available resources at the expense of lesser priority missions.

So far in this presentation I have addressed my remarks to the reams of documents which include the initial CONARC Operating Program, which is a statement of what you have to do and how much you will have to do it with. The armies Operating Programs due here about the 15th of the month in which you say, what you can do within the limited resources we provided, and how many additional millions will be required if you are expected to do all the jobs directed. The Change Order Nr 1 which says we didn't get as much money as we expected,

however, we still have to do the job and DA says here are some more jobs which have to be accomplished within available resources. This leads us up to the final step in the cycle which is the review and analysis. This is the ultimate tool in the Army management system where-in everybody reports on everything and the statisticians and comptroller types compile the reports into graphic charts which portray factors of performance in terms of established standards.

The primary performance factor for Army aviation activities is the flying hour. The current reports provided by AR 1-11, "Army Management Structure," CON Cir 11-3, "Cost and Performance Summary Reporting Procedures," and the USCONARC Aviation Report, "Analysis of Operation, Army Aviation Activities," all primarily utilize the flying hour as the basic performance factor. In review and analysis, the cost data, achievement of objectives, maintenance standards and accident reporting can all be related to the flying hour in terms of performance, which in turn can be utilized to compare one activity to another.

The following charts graphically present information extracted from available reports. The wide variance between armies and within armies from one year to the next, should be noted as problem areas which must be resolved if we are going to face up to our responsibilities for establishing realistic program and budget procedures for support of Army aviation activities.

This first chart (fig. 1) presents the total programed flying hours for FY 59, 60 and 61 in red. The blue bars represent the actual number of hours flown for FY 59 and 60 and the blue bar in the 61 column represents the projected number of hours that will be flown if we continue for the rest of the year at the same rate as reported for the first two quarters. It is noted that although the USCONARC overall performance for FY 60 was 96 percent of programed hours, our favorable posture only resulted from the underprograming in Third Army balancing out the overprograming in the other five armies.

This next chart (fig. 2) presents the programed flying hours for FY 60 in terms of percentage of performance and more graphically accentuates the overprograming and underprograming which was mentioned in connection with the previous chart. The arrows represent the average percentage for the fiscal year. This brings the chart up to date through the first and second quarters of the current fiscal year.

A more detailed analysis of the flying hour program is presented in the next two charts which show the percentage of performance by F/W and R/W. This chart (fig. 3) shows the FY 60 F/W data. Again the tick marks reflect the average for the four quarters. This brings the chart up to date through December 60.

Here (fig. 4) is the same information for R/W. Again you will note the large fluctuations between quarters within armies and also between armies. The reasons for these large fluctuations are many and varied. However, inasmuch as the flying hour is the basic factor for developing the majority of the program and budget data, it is clearly evident that we will not have a sound budget program until these fluctuations in performance are eliminated.

In our review and analysis a further breakout of the flying hour is presented in the following charts in terms of cost data. The first three charts present costs extracted from the cost and performance reports submitted by the armies for FY 60. The first chart (fig. 5) of these three, shows the combined F/W, R/W total by quarter for FY 60. Within armies the large difference in costs between quarters can probably be attributed to bulk procurement of POL and other supplies for the entire period being accomplished during a particular quarter. Also, there is little significant relationship between the high cost for a quarter in comparison to the flying hours accomplished. This is further substantiated when the fixed wing costs (fig. 6) are compared to actual flying hours accomplished. The R/W cost reflect similar discrepancies (fig. 7).

In review of the cost and performance costs for the Army Aviation Program for FY 59 and 60 it became evident that, if valid cost data was to be developed for programing and budget purpose, a requirement existed for more detailed and definitive information than is currently prescribed in the Army management structure. Subsequently the analysis of operations, Army aviation activities report was developed and initiated for FY 61. The next five charts summarize information submitted under the provisions of this report. The first chart (fig. 8) portrays the cost per flying hour for POL, organizational maintenance, airfield operation and TDY of crews as reported in Program 2000 (Tactical Forces). It will be noted that it apparently doesn't cost anything to operate an airfield in Sixth Army and that we all should have our organizational maintenance done out in Fifth and Sixth Armies. Again I would like to stress the fact that the primary purpose of these charts and the reports is to identify problem areas so that they can be resolved and information and statistics can be developed so that proper

management principles can be applied. The POL costs on this chart are further analyzed on this next chart (fig. 9). Each bar represents the average cost per flying hour by type of aircraft and the number in each block is the average number of aircraft reported. The fluctuations in costs between armies can be partially attributed to specific types of aircraft in the inventory such as, approximately half of the rotary wing aircraft in Second Army are H-37's. However, again it would appear that they are getting better mileage on fixed wing aircraft in Third Army and we should fly all our R/W aircraft out in Kansas. The next two charts (fig. 10) show POL costs for ARADCOM (fig. 11) and again indicate a significant deviation in costs. Some of this difference can probably be attributed to the availability of government contract gas in certain areas as compared to other areas where local purchase from retail sources is required.

The next chart (fig. 12) shows where you should go if you want to rent a civilian aircraft.

My last three charts present the accident rate by quarter for FY 60 and the first two quarters of FY 61. This chart (fig. 13) is for rotary wing aircraft; FY 61 is represented by the shaded area. The next chart (fig. 14) presents the F/W rate. The last chart (fig. 15) is a summary of F/W and R/W experience. I am sure that you are all familiar with your own rates; however, this chart gives you a chance to compare the rates between armies.

In summary, I would like to stress the fact that we are in competition with many other high priority activities for personnel spaces, funds and facilities to support our Army aviation operations.

(a) That the primary means for obtaining the necessary support is by timely and accurate programing of our requirements.

(b) That the primary performance factor for programing purposes is the aircraft flying hour.

(c) That the information and statistics developed from our reports is the only source for justification and review of our program sections.

(d) That the procedures for developing and reporting the information contained in the reports must be constantly reviewed, analysed and utilized in the management of the aviation program.

(e) And last, USCONARC is taking action to implement the additional management code currently reflected in our special report and solicits any recommendations you may have which will facilitate resolution of the many discrepancies which were highlighted on the Vu-Graphs presented.

A copy of this presentation with charts will be made available prior to your departure. Quarterly revisions of the charts will be forwarded as reports are received.



Figure 1

Figure 1

FLYING HOUR PROGRAM

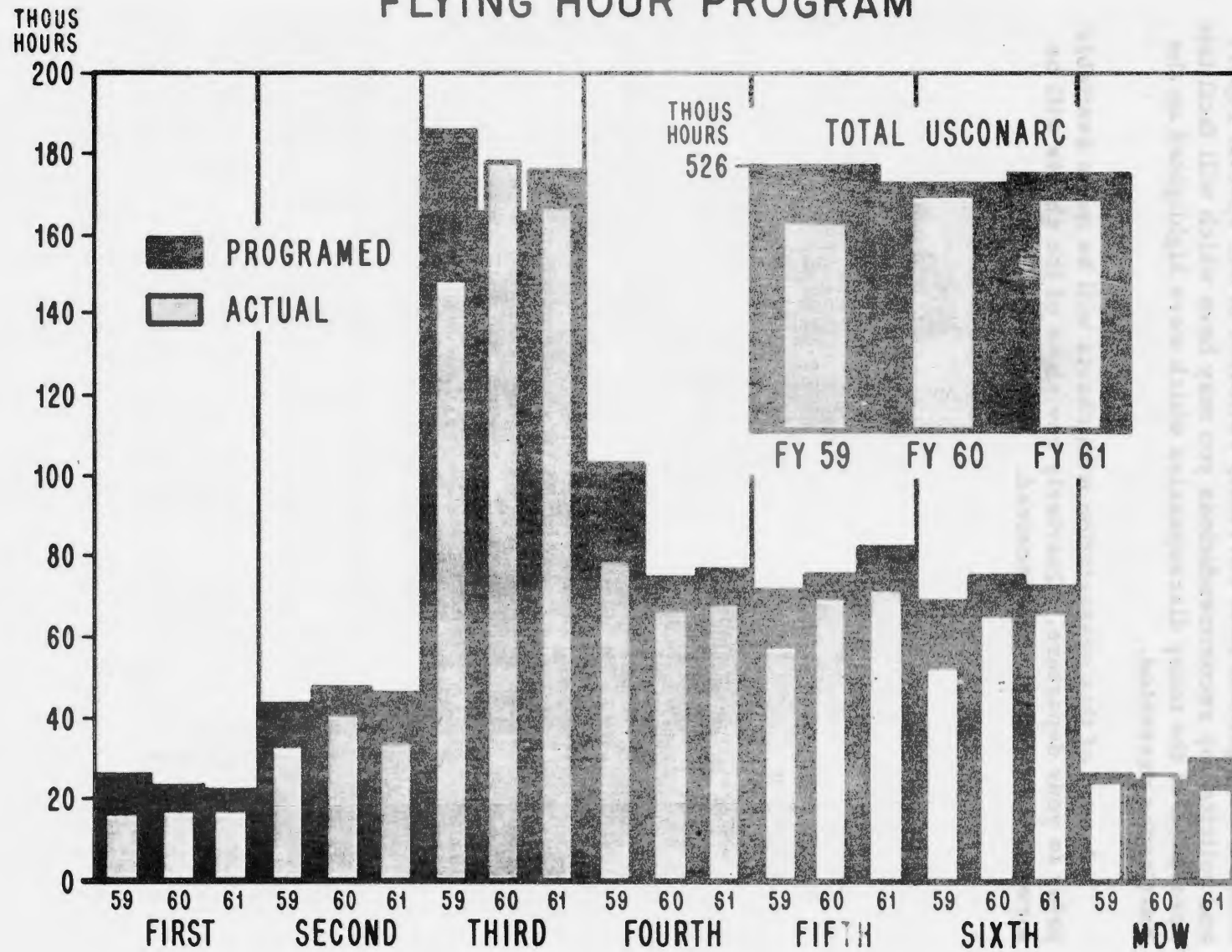
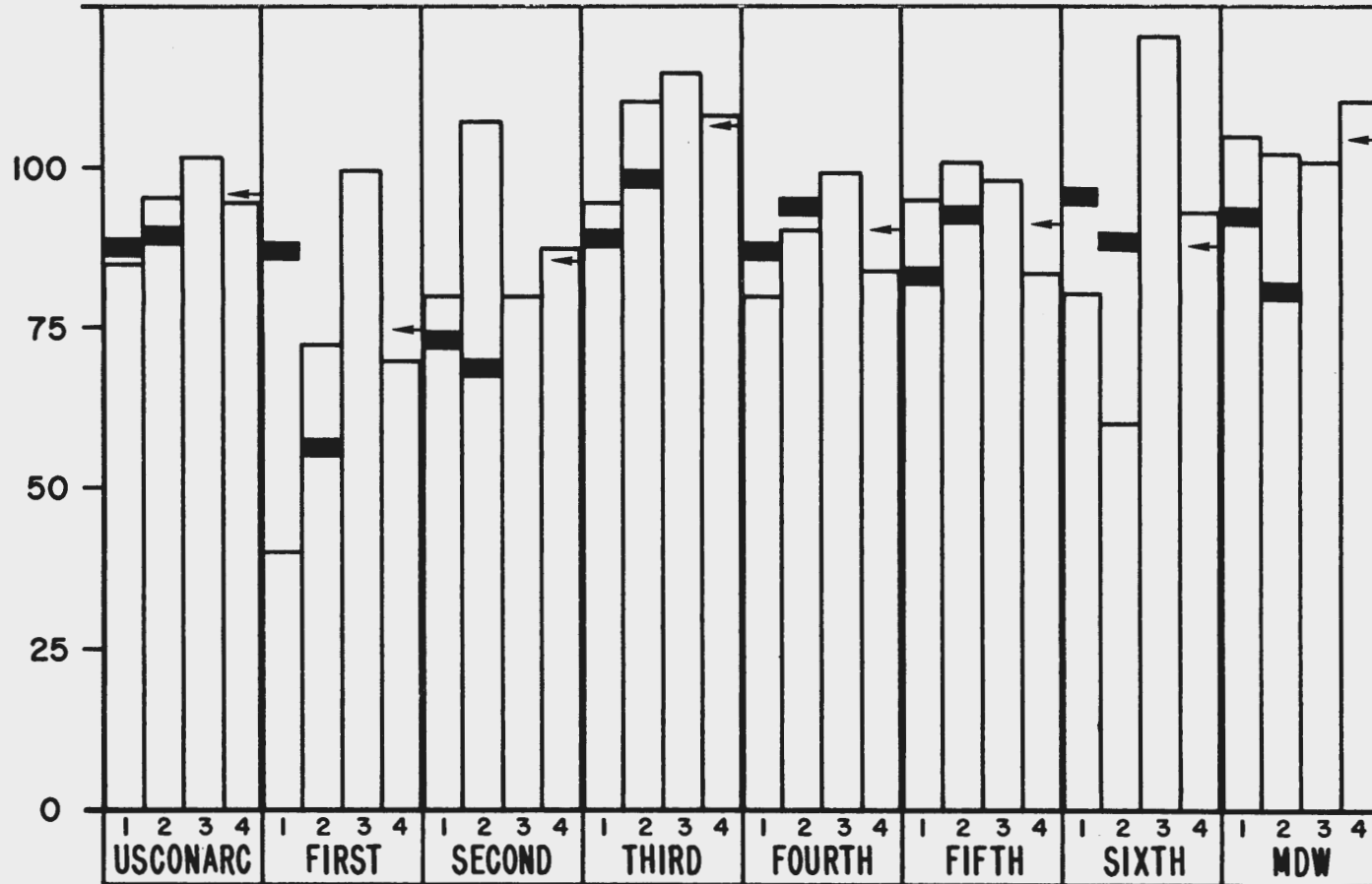


Figure 2

FY 60 FIXED AND ROTARY WING FLYING HOUR OBJECTIVES (% ACCOMPLISHED)

PERCENT



← FY AVG

■ FY 61

Figure 3

FY 60 FIXED WING FLYING HOUR OBJECTIVES (% ACCOMPLISHED)

PERCENT

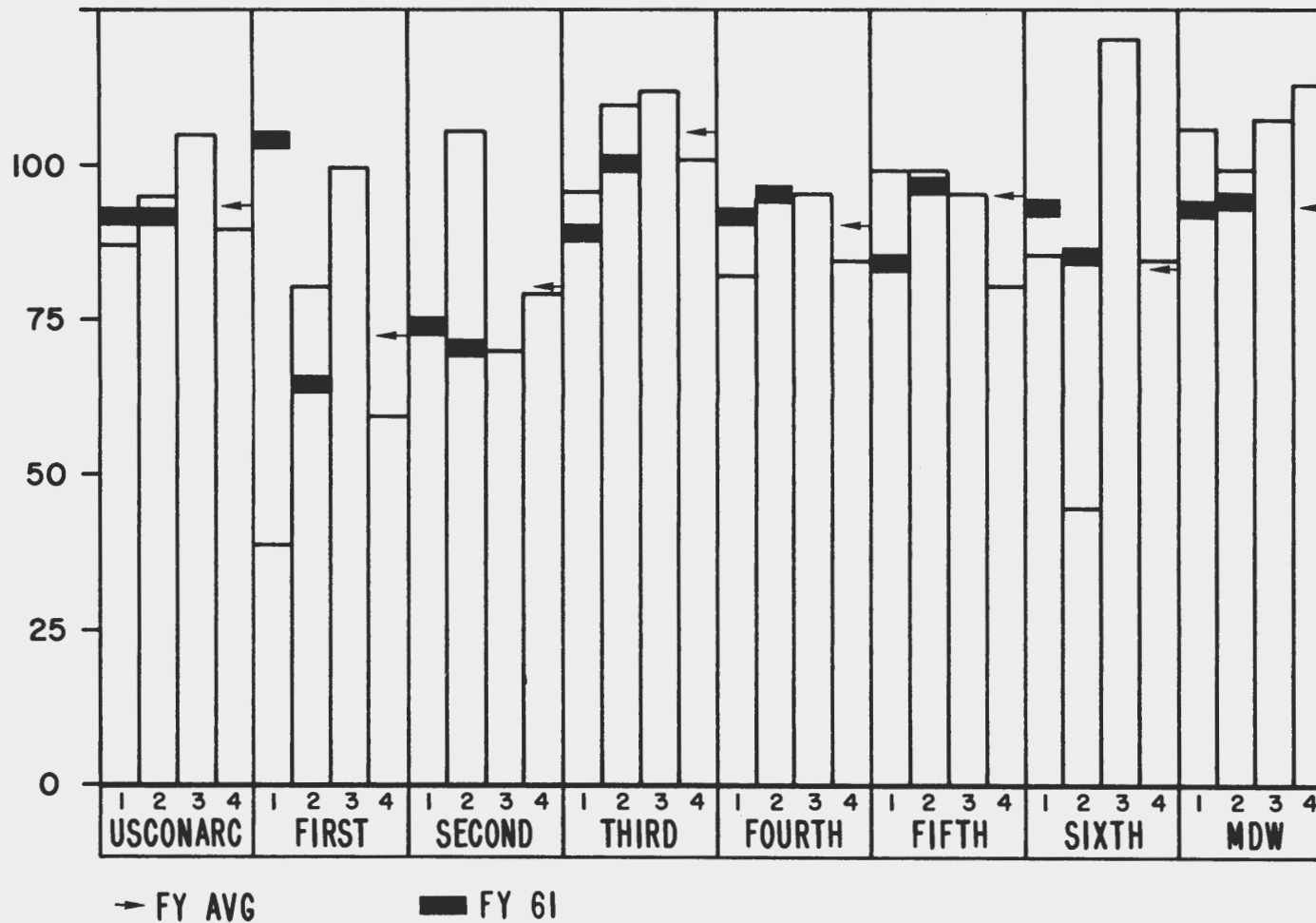


Figure 4

FY 60 ROTARY WING FLYING HOUR OBJECTIVES (% ACCOMPLISHED)

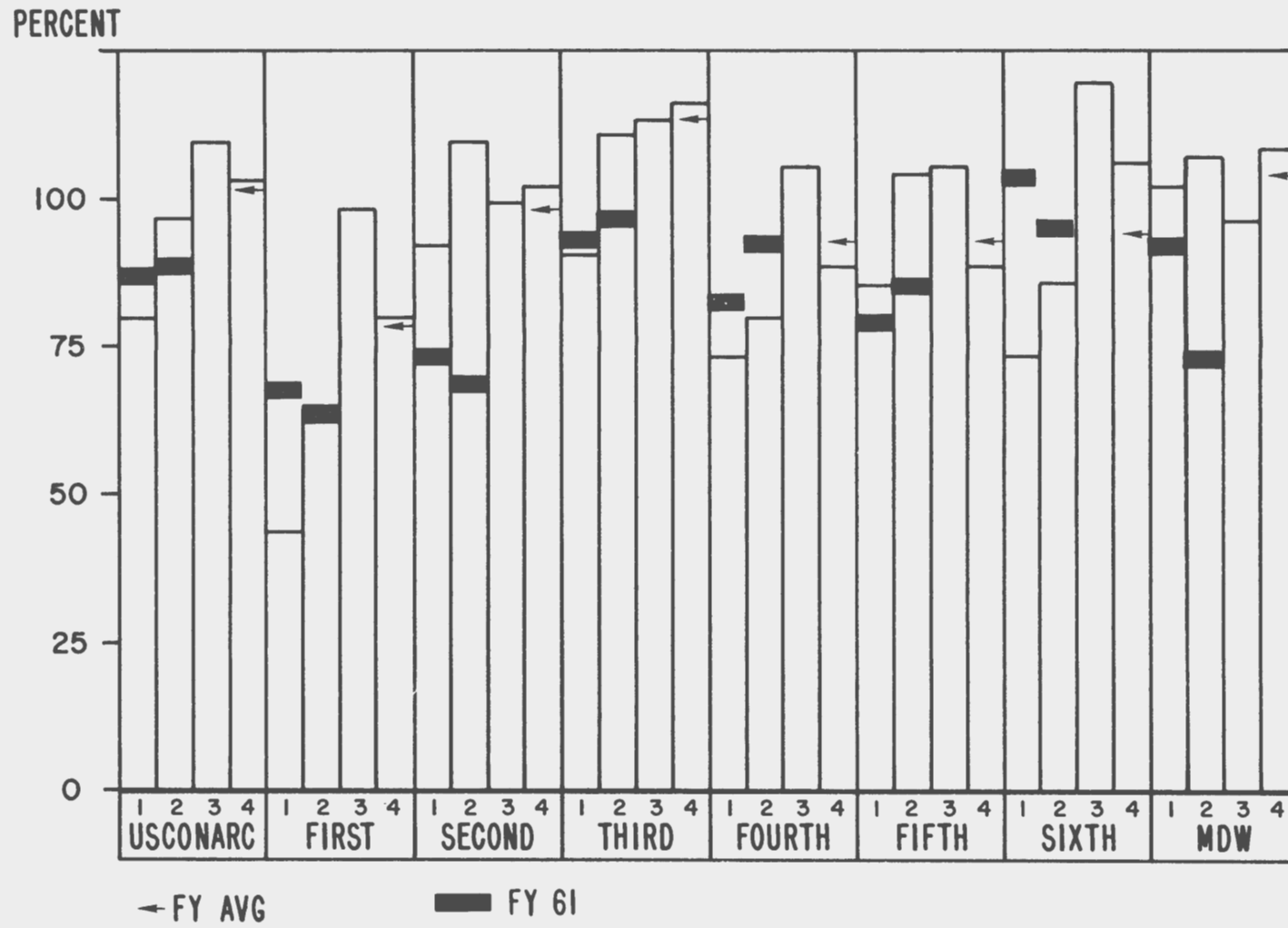


Figure 5

FY 60 FIXED AND ROTARY WING COST PER FLYING HOUR (BY QUARTERS)

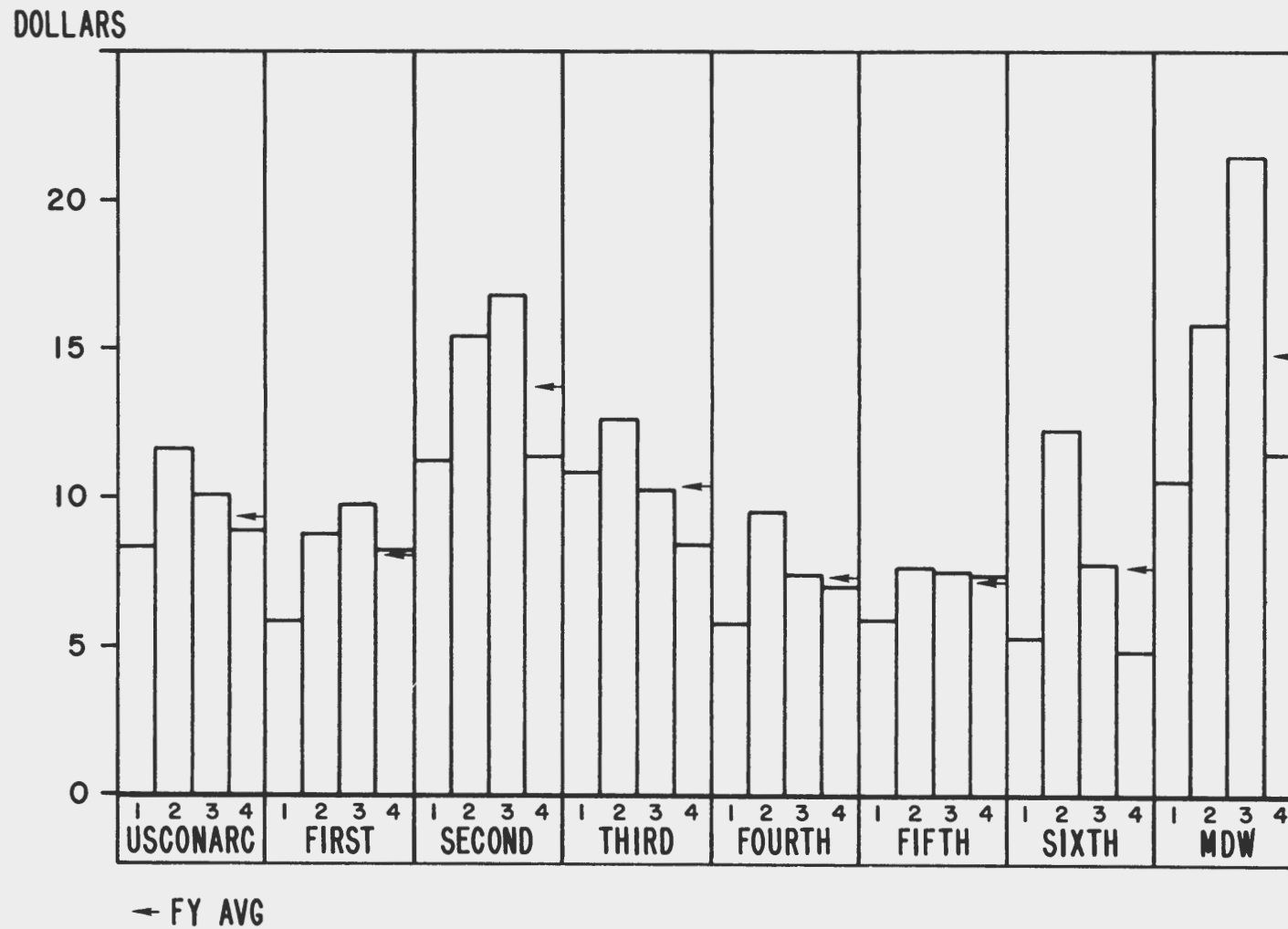


Figure 6

FY 60 FIXED WING COST PER FLYING HOUR (BY QUARTERS)

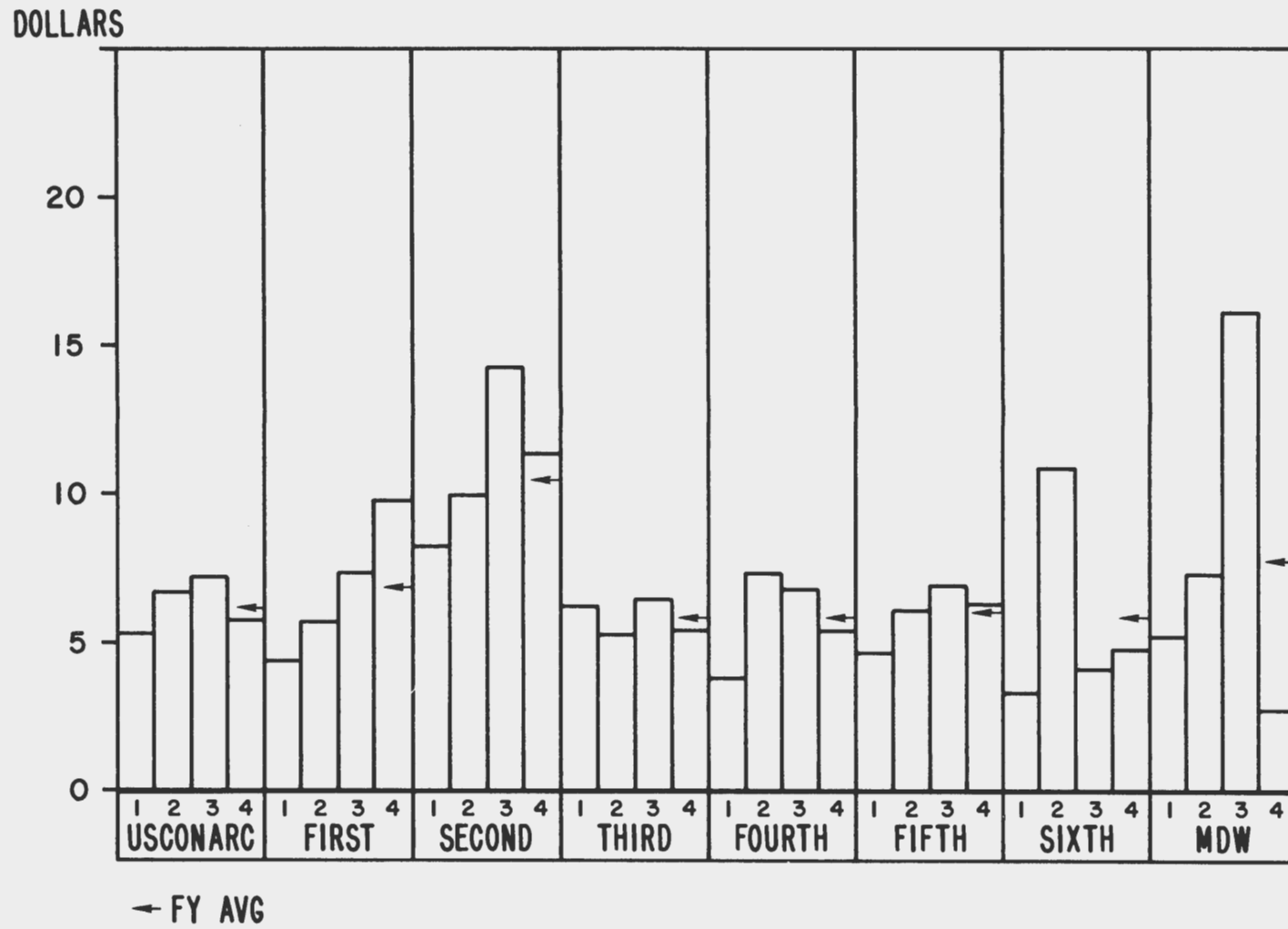


Figure 7

FY 60 ROTARY WING COST PER FLYING HOUR (BY QUARTERS)

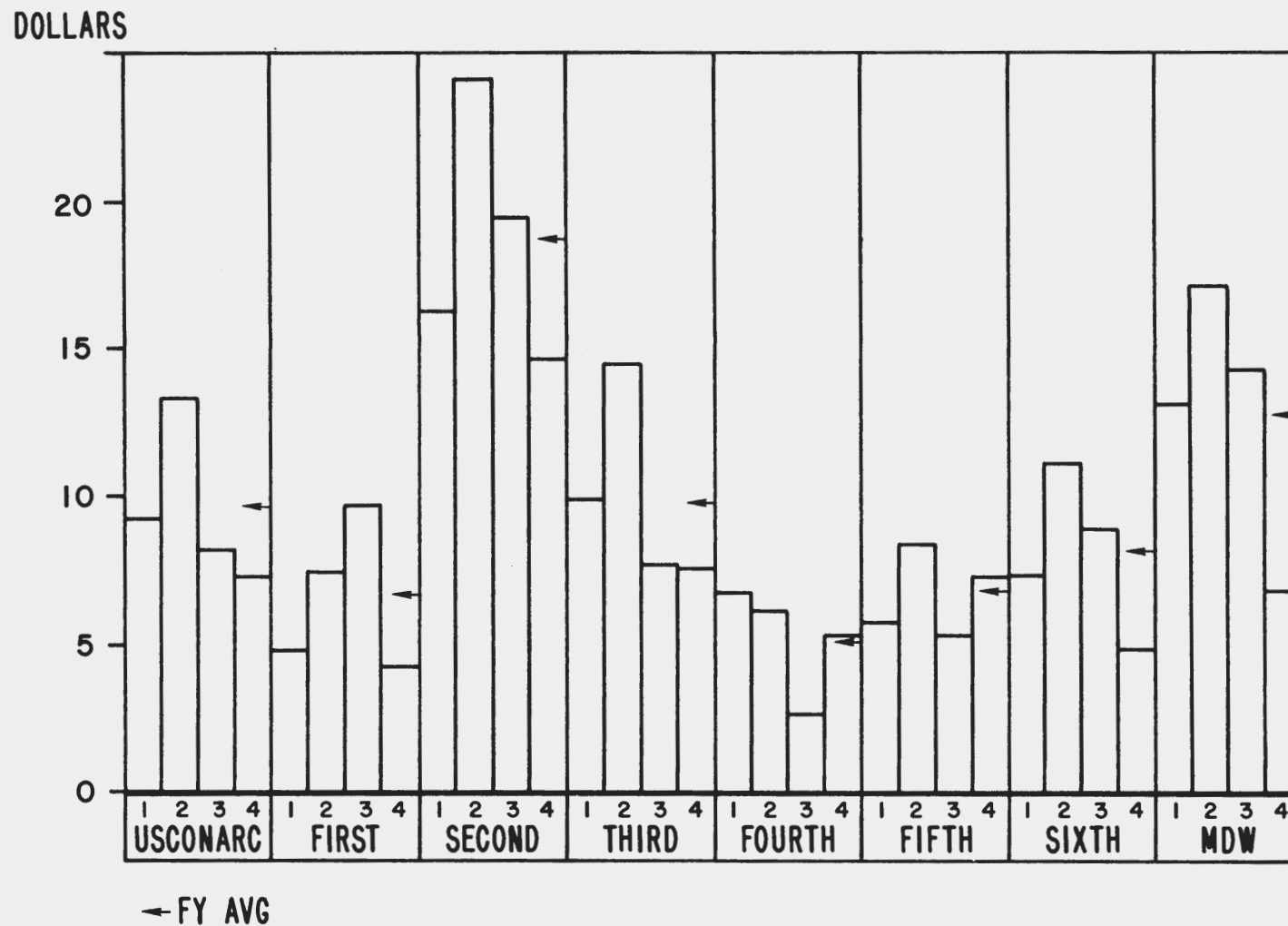


Figure 8

TOTAL AIRCRAFT ACTIVITIES COST PER HOUR (1ST HALF FY 61)

DOLLARS

LEGEND:

POL
O & M
AFLD
TDY

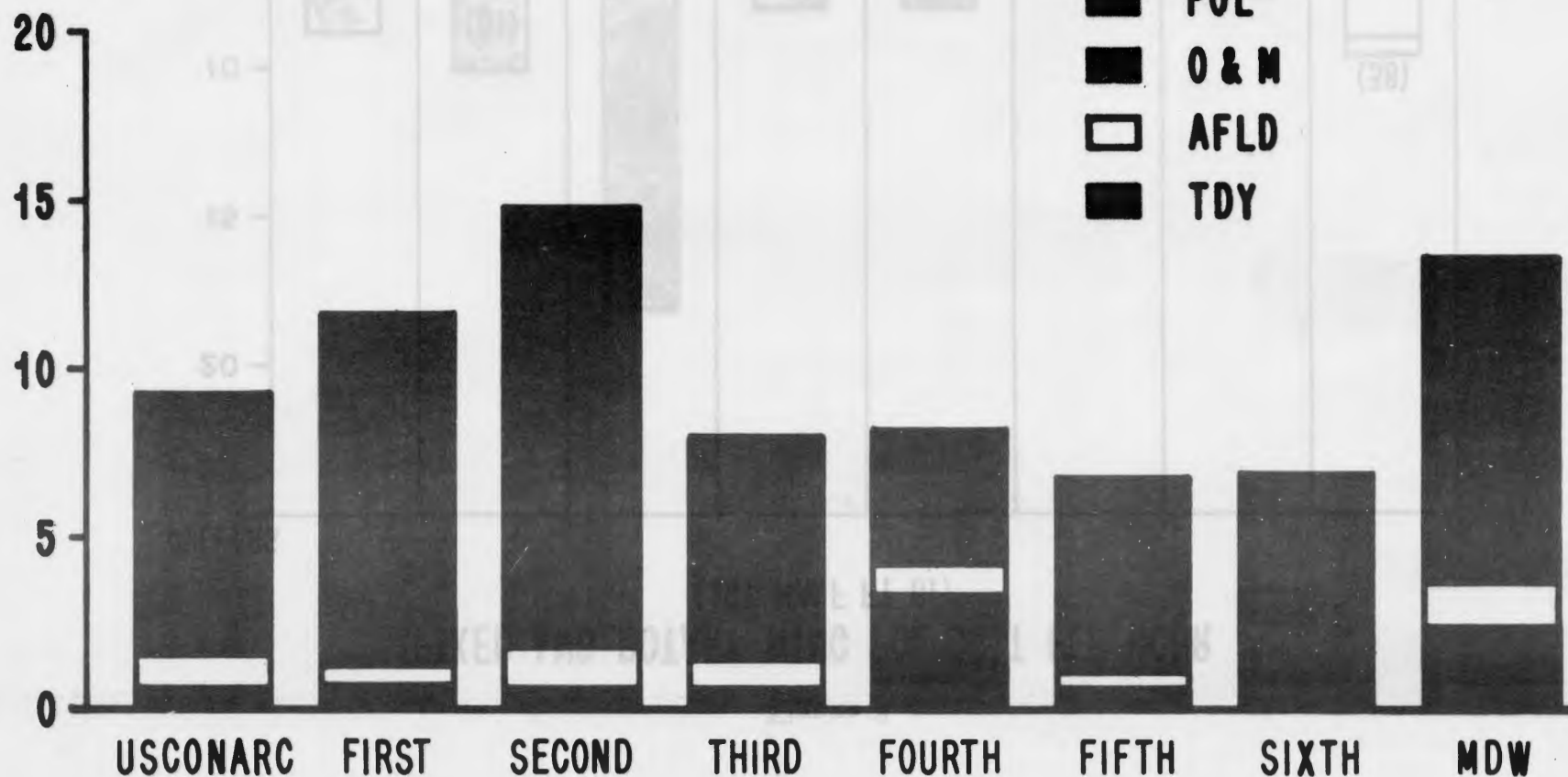


Figure 9

FIXED AND ROTARY WING POL COST PER HOUR (1ST HALF FY 61)

DOLLARS

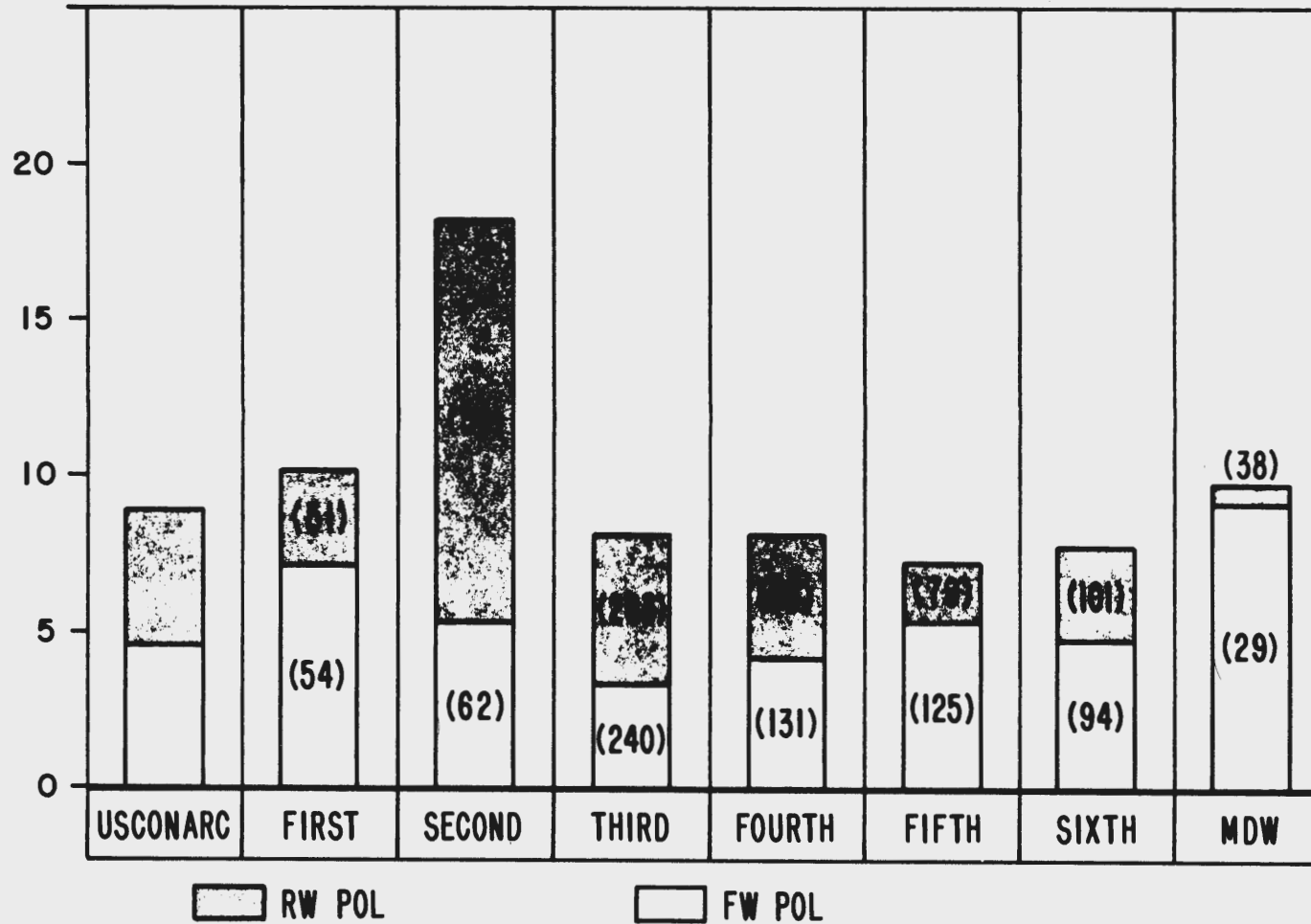


Figure 10

**USARADCOM
F/W POL COST PER FLYING HOUR
(FIRST HALF FY 61)**

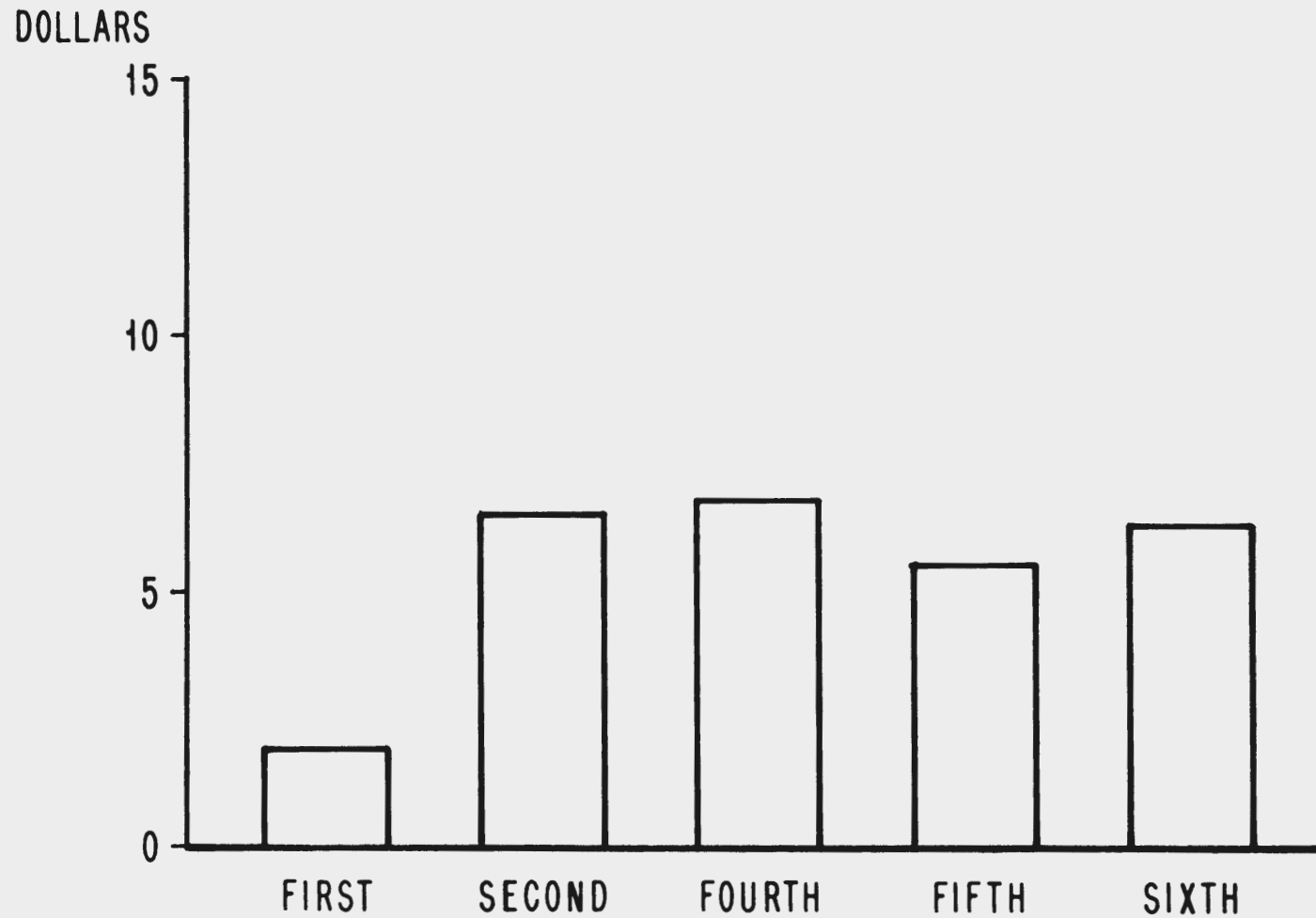


Figure 11

**USARADCOM
F/W POL COST PER FLYING HOUR
(FIRST HALF FY 61)**

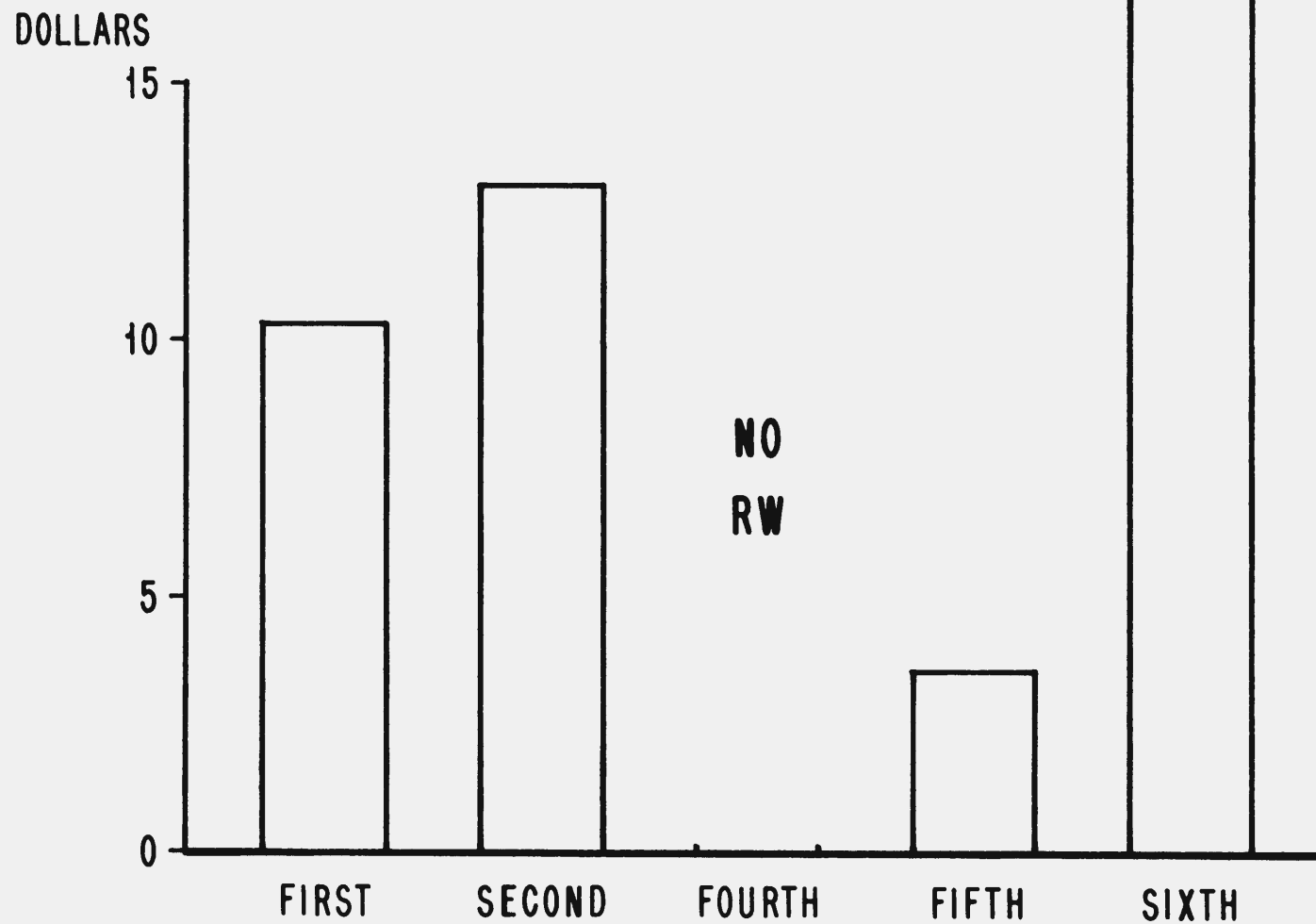


Figure 12

COST PER HOUR USAR RENTAL AIRCRAFT (FIRST HALF FY 61)

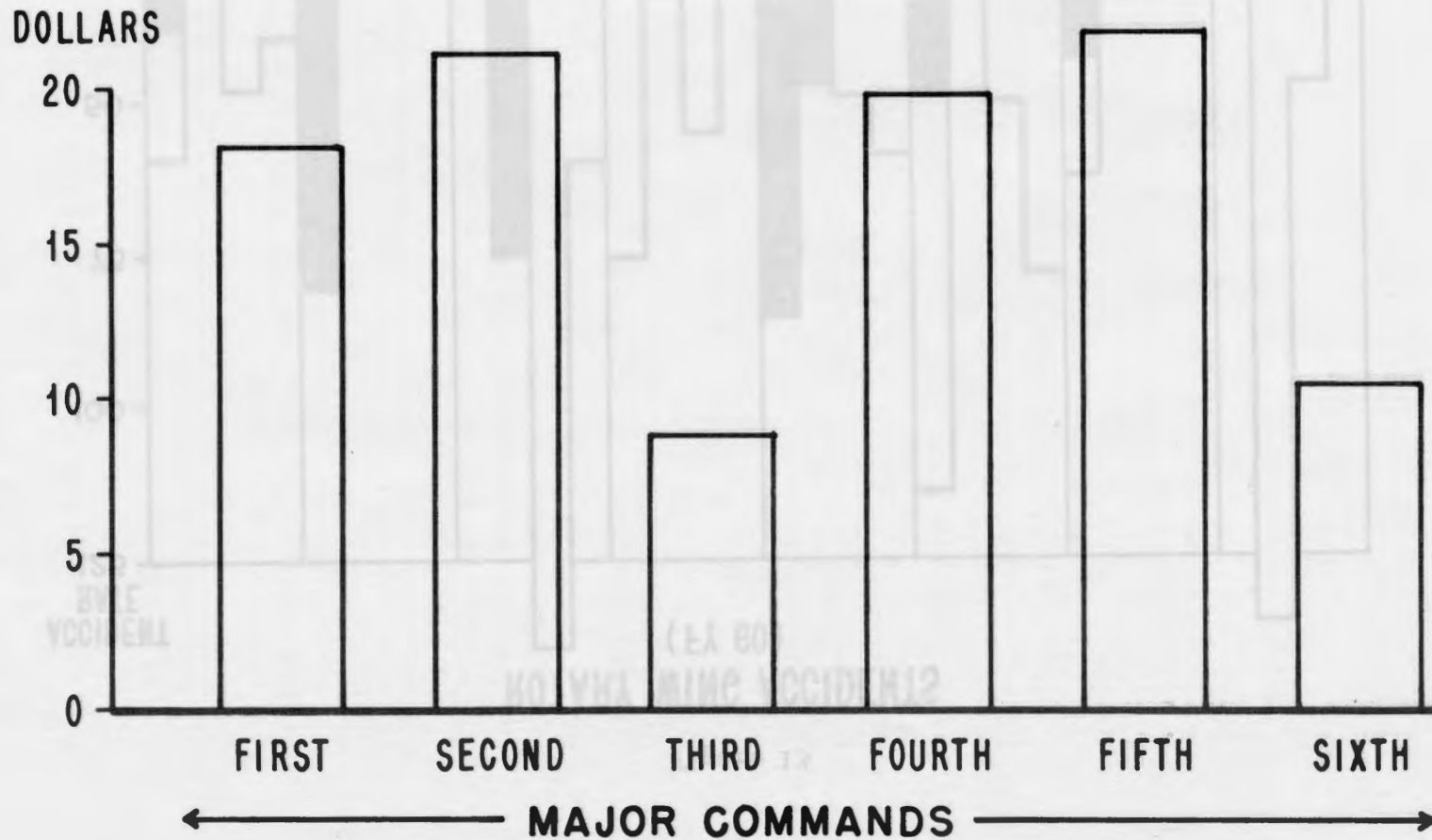


Figure 13

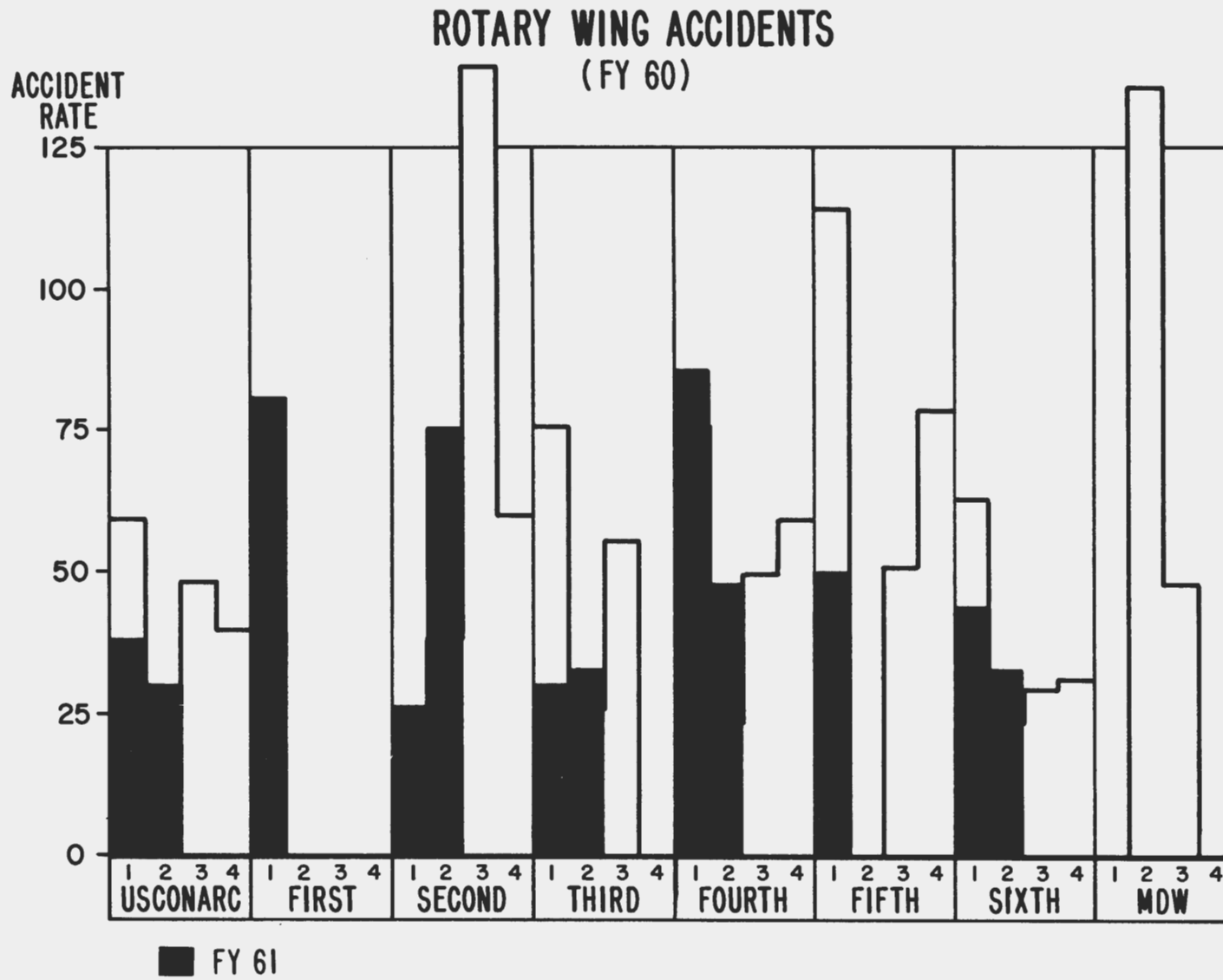


Figure 14

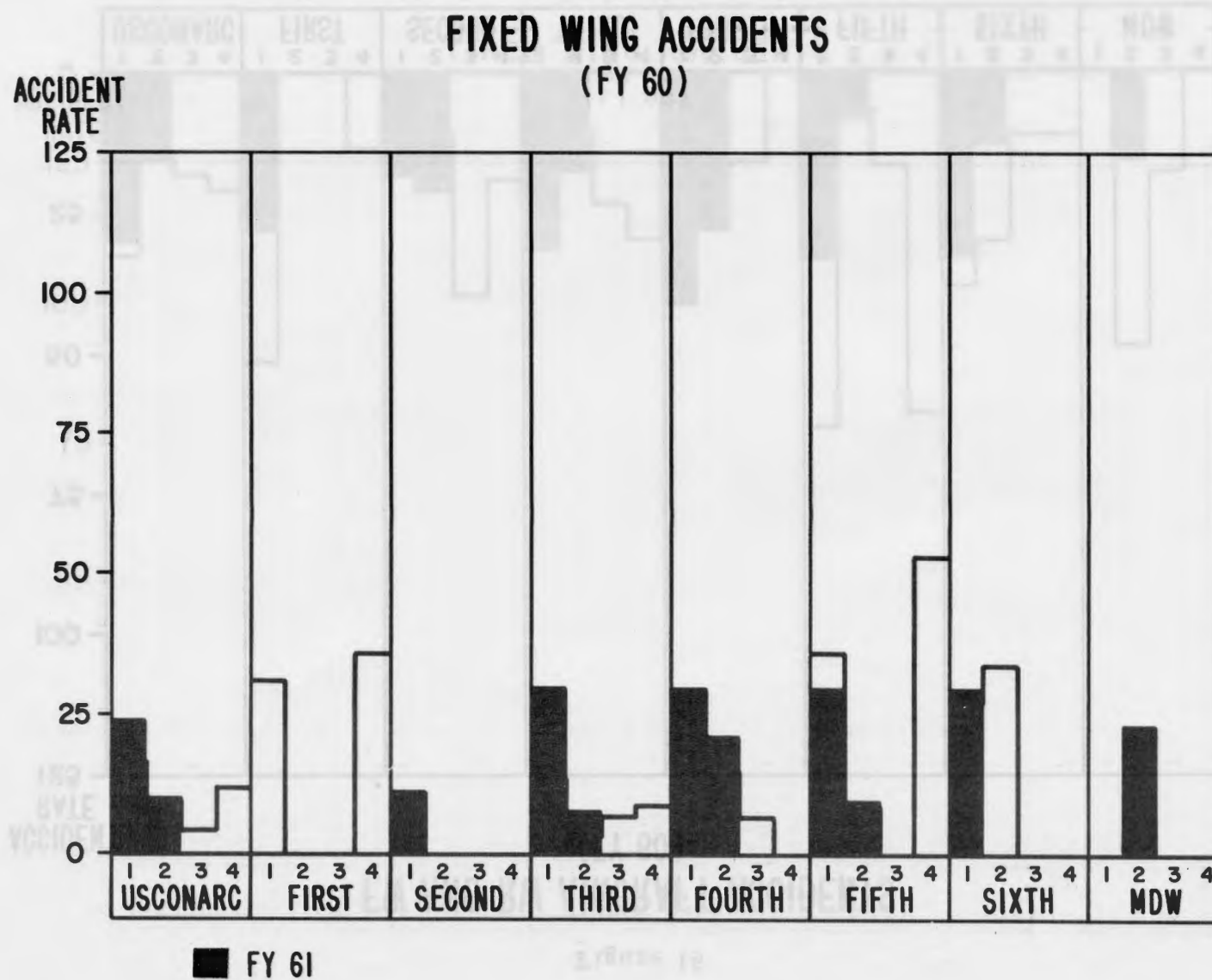
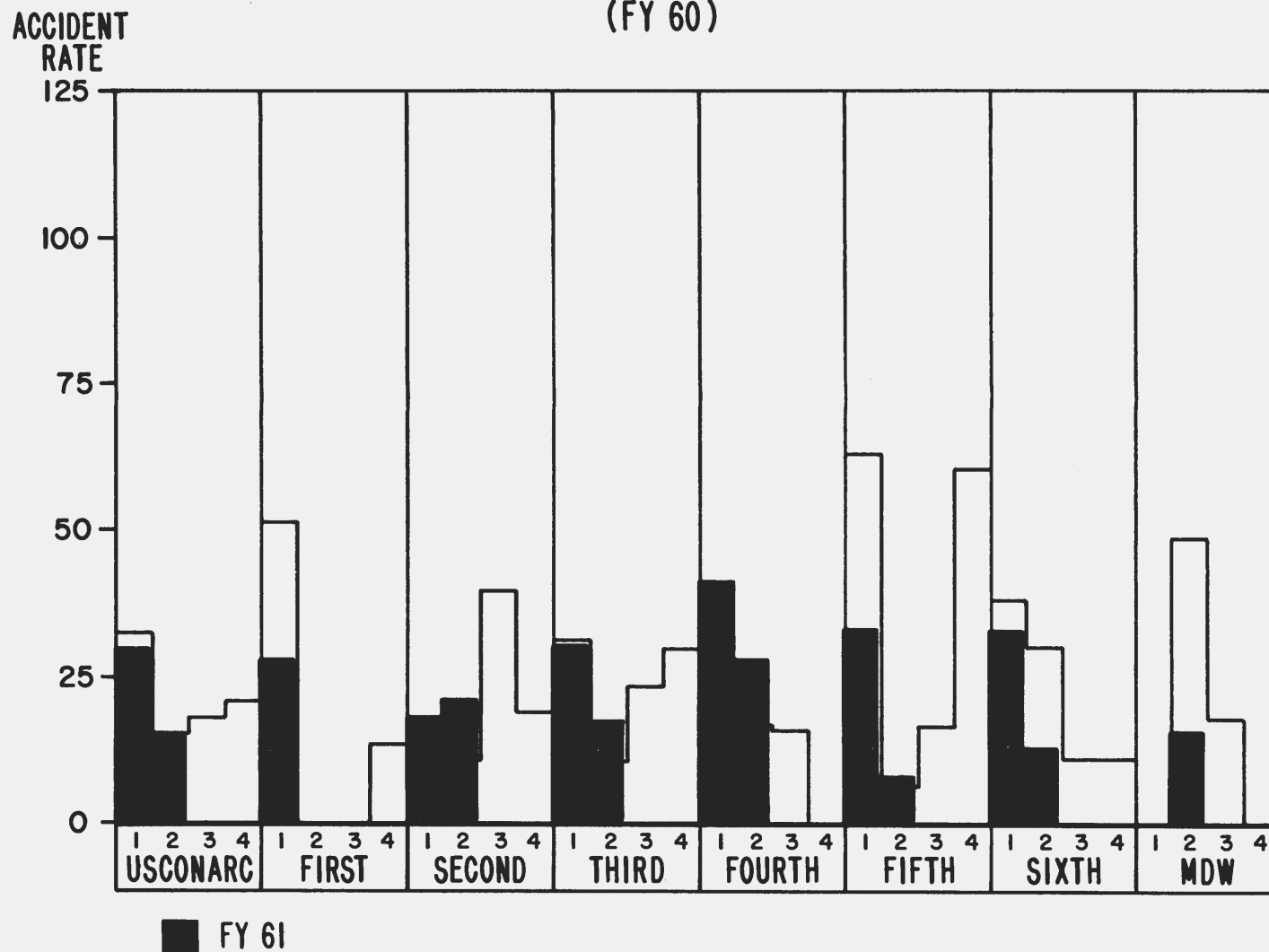


Figure 15

FW AND RW AIRCRAFT ACCIDENTS (FY 60)



MATERIEL PROGRAMS

by

Lt Col W. H. Byrd, Jr
 Army Aviation Section, HQ USCONARC

CONARC MCA LISTINGFY 62

<u>PRIORITY</u>	<u>DA ASSIGNED LINE ITEM</u>	<u>STATION</u>	<u>ITEM DESCRIPTION</u>
1	274	Ft Hood	Acft Parking, FW & RW
2	272	Ft Hood	Taxiways (FW & RW)
3	276	Ft Hood	Taxiway Lighting, FW & FW
4	180	Ft Ord	Hangar w/Shops, Fld Maint
8	104	Ft Rucker	2 ea Post Flt Maint Hangar, Aux #3
9	92	Ft Meade	Acft Hangar w/Shops
15	258	Davison AAF	Removal, lighting & marking
21	6	Ft Rucker	2 Bn HQ & Classroom Bldg
43	264	Davison AAF	Addn to Comm Bldg #246
67	129	Ft Rucker	Stagefield, Rotary Wing #4
72	181	Ft Ord	Consolidated Acft Parts Stge Bldg
76	218	Ft Benning	Aircraft Fuel Storage Facs
-	-	Ft Devens	Flight Control Tower
-	-	Ft Devens	Night Lighting-Runway
-	-	Ft Devens	Admin & Oper Bldg-Airfield
-	-	Ft Devens	Resurface Runway

FY 63

81	-	Ft Lewis	AF Control Tower
84	-	Ft Knox	Airfield Lighting
85	-	Ft Ritchie	Underground Avn Gas Storage Fac, 3 ea 25,000-gal tanks
88	-	Ft Knox	Hardstand & tie down for helicopter, Godman Field
108	-	Ft Bragg	Access Apron & Facilities for Hangar
109	-	Ft Bragg	Hangar RW
110	-	Ft Bragg	Addition Base Operations Simmons AAF
120	-	Ft Lewis	AC Parking Apron RW
121	-	Ft Lewis	Hangar w/Shops F M
125	-	Ft Lewis	Access Aprons F M Hangar
127	-	Ft Ord	Flight Controls GCA
128	-	Ft Lewis	A/C Hangar w/Shops Lt R/W Co
145	-	Ft Bragg	Runway Expansion RW
188	-	Ft Benning	Hangar w/Shop RW
189	-	Ft Benning	Access Apron & Facilities
190	-	Ft Benning	2 Aircraft Parts Storage Bldgs
233	-	DUSAA	Operations Building
234	-	DUSAA	Access Road

<u>PRIORITY</u>	<u>DA ASSIGNED</u> <u>LINE ITEM</u>	<u>STATION</u>	<u>ITEM DESCRIPTION</u>
238	-	Ft Rucker	Paving (Hanche AAF)
239	-	Ft Rucker	Airfield Pavement Lighting (Hanche AAF)
240	-	Ft Rucker	Paving & Facilities (RW 3 Stagefield)
241	-	Ft Stewart	Resurface Runway
242	-	Ft Stewart	Resurface & Construct Taxiway
243	-	Ft Stewart	Resurface Parking Apron
244	-	Ft Stewart	Runup Pads & Helicopter Landing Pad
245	-	Ft Stewart	Airfield Pavement Lighting
246	-	Ft Benning	Taxiway RW w/Eng Runup & Facilities
259	-	Ft Rucker	Parking Apron (Cairns AAF)
260	-	Ft Rucker	2 Academic Classroom Bldgs
261	-	Ft Rucker	Main PX & Facilities

*CCNARC
estimates cut off
here for FY 63
the following may
or may not make
FY 64.*

FY 64

296	-	Ft Ord	Add Shops to F/Wtt Hangar
301	-	Camp Irwin	Runway Lighting
347	-	Ft Bragg	Shop Add'n to Hangar
348	-	Ft Bragg	Shop Add'n to Hangar
356	-	Ft Benning	Rehab AC Apron LAAF
368	-	Ft Stewart	Hangar & Facilities
369	-	Ft Stewart	Access Apron Hangar
383	-	Ft Carson	Hangar (For Missile Command Medium)
390	-	Ft Ord	AC Hangar FW Op
391	-	Ft Ord	Apron Access FW Op
392	-	Ft Ord	AC Runway RW
393	-	Ft Ord	AC Taxiway RW
415	-	Ft Benning	Rehab AC Apron #1
416	-	Ft Benning	Rehab AC Taxiways
417	-	Ft Benning	Rehab Runway, NW-SE
419	-	Ft Bragg	Hangar & Facilities
420	-	Ft Bragg	Access Apron, Hangar
430	-	Ft Benning	TC Aircraft Maint Facility
469	-	DUSAA	Runway Extension FW
470	-	DUSAA	Approach Lighting System
471	-	DUSAA	Widen Taxiway FW
472	-	DUSAA	Aircraft Fuel Storage
492	-	Ft Stewart	Flight Control Tower & Operations
522	-	Ft Lawton	Heliport

Figure 1

AO-1 Distribution (U.S. Conarc)

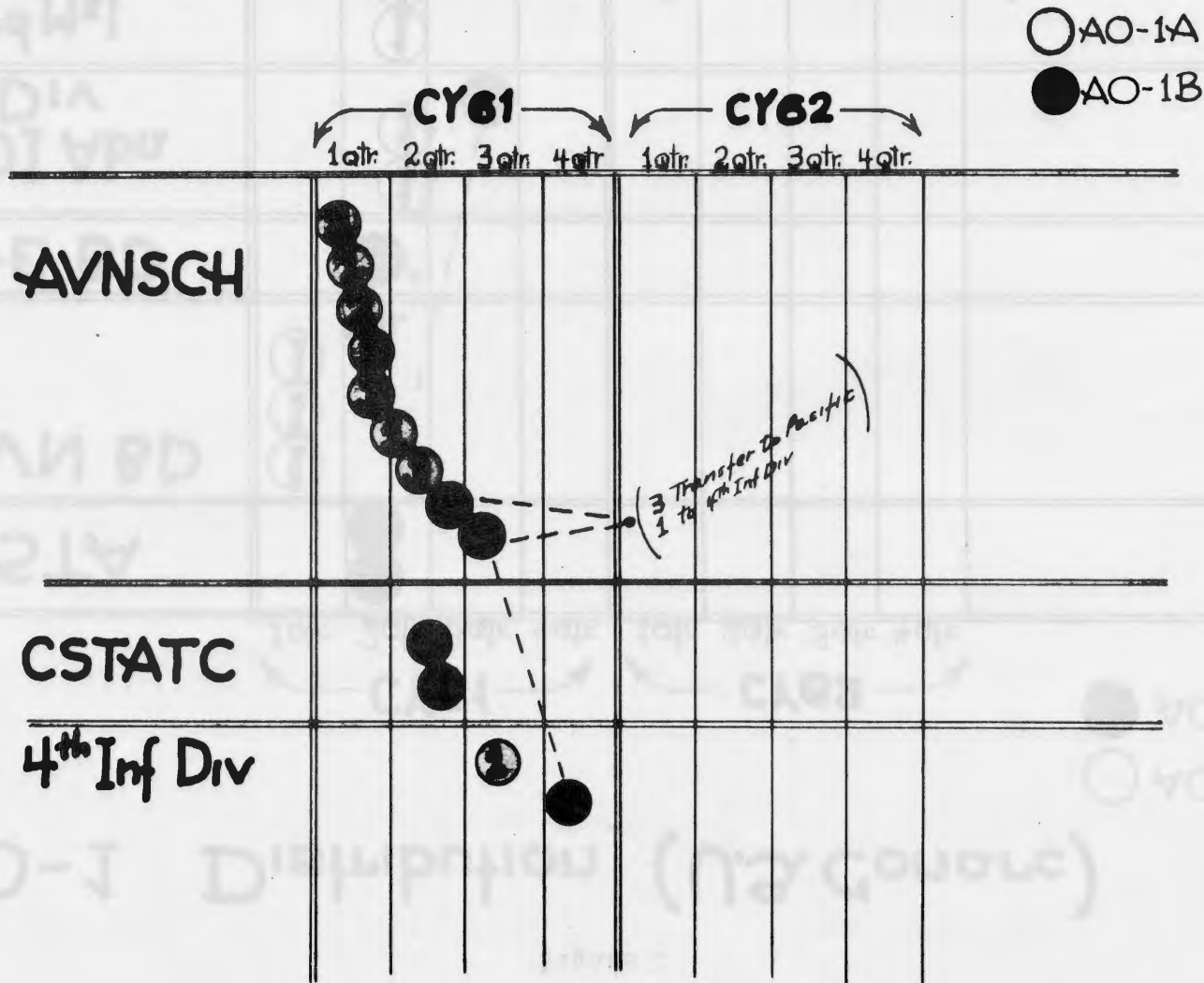


Figure 2

AO-1 Distribution (U.S. Conarc)

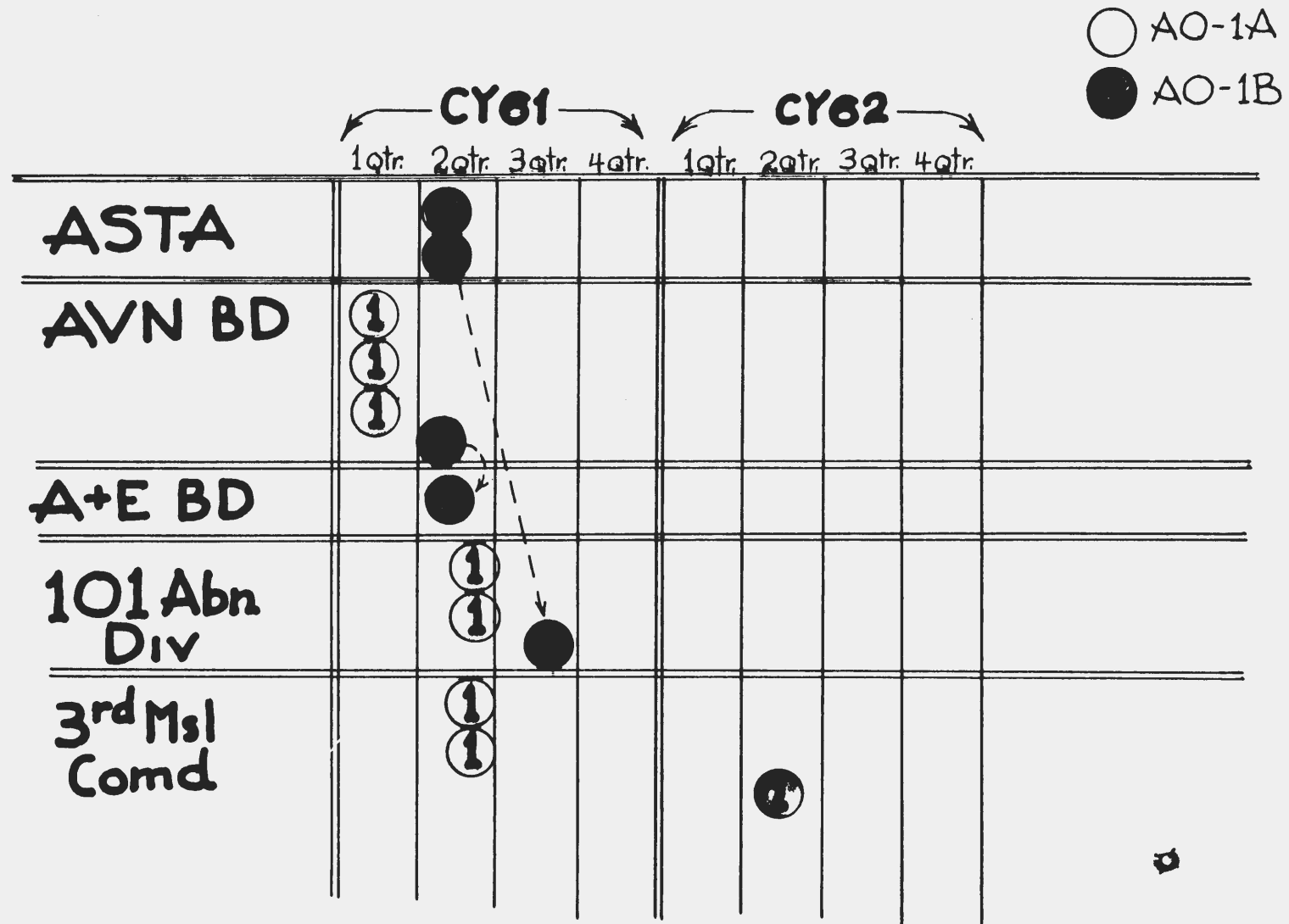


Figure 3

Caribou Distribution CY1961

- **5 YAC-1 PROCURED**
 - 4 TROOP TEST, FT. BENNING**
 - 1 ARCTIC TEST BOARD**
- **22 AC-1 ON CONTRACT**
 - MAR. #1 AVN BD**
 - MAR.+APR. #2+3 1 AVN CO. FT. BENNING**
for Maintenance Float then to Avn Sch
 - MAY. #4 TRANS SCH FT. EUSTIS**
 - MAY.+JUN. #5+6 TO AVNSCH**
 - JUN. #7 AVNSCH (Maintenance Trainer)**
 - JUL.+DEC. #8 thru 22 1 AVN CO.**
- **JAN-DEC '62 CONTRACT for 34**

Assignment HU-1B_s and Reassignment HU-1A_s U.S. CONARC

← MAR-OCT 1961 27 HU-1B_s → APR-AUG 1962 45 HU-1B_s →

UNIT	PRIORITY	HU-1 AUTH	HU-1 O/H	+ HU-1B	- HU-1A	+ HU-1A	HU-1B O/H	HU-1A O/H	+ HU-1B	- HU-1A	+ HU-1A	HU-1B O/H	HU-1A O/H	HU-1s SHORT
101st Airborne Division	3.1	32	26	+20	-14		20	12	+12	-12		32		
2d Missile Command	3.2	8	6					6	+ 2			2	6	
Air Cav Troop		27	0			+ 3		3	+ 9		+15	9	18	
4th Infantry Division	4.1	4	4					4					4	
501st Aviation Company	4.1	6	0			+ 6		6					6	
45th Med Company	4.1	7	5			+ 2		7					7	
15th Med Detachment	4.1	5	0			+ 5		5					5	
82d Airborne Division	4.2	32	14	3*			3	14	+11	- 3		14	11	7
21st Med Platoon	4.2	6	0											6
8305th ACR Company	5.5	4	0						+ 4			4		
21st Aviation Company	5.5	6	0											6
Aviation School		62	22	+ 2	- 2		2	20	+ 4			2	20	40
Armored Center			0	+ 2			2		+ 2			4		
Artillery Center			0						+ 2			2		
Infantry Center			0						+ 2			2		
Aviation Board			0	1*	(Reassigned to 82d Abn Div after test)				+ 1	(to Arctic Test Bd in Sep)		1		
Other TOE		32	15					15					15	17
TOTAL		232	92				27	92				72	92	77
TATSA				2*	(Reassigned to 82d Abn Div after test)									

AIRCRAFT SAFETY

by

Mr. Donald S. Buck
Director of Safety, HQ USCONARC

INTRODUCTION.

I have two compelling interests in Army aircraft safety: First, as a safety engineer I am professionally interested in prevention of all accidents, including aircraft accidents. As evidence of this interest, 3 years ago I attended the Army Aircraft Safety Course at University of Southern California. It is recognized that successful completion of this course does not qualify one as an expert on flying safety; it did heighten my appreciation for some of your problems and gave me a better understanding of the language you use to describe flying hazards.

My second interest in aircraft safety perhaps overrides the first. It is this: I am interested in my personal safety while flying in Army aircraft. Frequently, when I am on TDY, I am used to ballast Army aircraft. Now, this personal interest in aircraft safety may appear a somewhat selfish motive - however, most real progress in accident prevention is derived from this elementary concern for personal safety, translated into action.

PURPOSE.

The purpose of this discussion is to:

1. Review the policy, scope and direction of the Army Safety Program.
2. Outline the CONARC Safety Program.
3. Identify the organization and functions of Safety Division, G1 Section, this headquarters.
4. Relate the CONARC Safety Program to the Army aircraft activity.
5. Discuss progress attained in Army aircraft safety.

ARMY SAFETY PROGRAM.

The safety policy of the Army (AR 385-10) is: to reduce and keep to a minimum accidental manpower and monetary losses, thus providing more effective utilization of resources and advancing the combat effectiveness of the Army.

The scope of safety embraces all operations and activities of the Army. Accident prevention is a concerted effort by all levels of command to prevent all types of accidents -- vehicle, fires, explosions, building collapse, marine disasters, harmful exposures to chemicals or radiological elements and aircraft accidents. (AR 385-10)

Evaluation of the safety effort against objectives established by DA for USCONARC and major field commands is made in at least five accident categories:

1. Injuries to military personnel.
2. Injuries to civilian employees.
3. Injuries to other personnel such as contractor employees.
4. Accidents involving Army motor vehicles.
5. Accidents involving Army aircraft.

Additionally, annual evaluation of the overall accident prevention effort of each ZI army and MDW for Safety Awards purposes is made by this headquarters and DA against three factors:

1. Accidents per capita.
2. Injuries per capita.
3. Per capital cost of death, injuries and damages.

Thus, Army aircraft accidents are taking on increasing significance. They tend to be the primary key to success or failure in the attainment of a DA award for safety.

Aircraft are becoming larger and capable of transporting a greater number of passengers. A given number of aircraft accidents in the current situation is likely to involve and injure more persons than would the same number of aircraft accidents a decade ago. This development tends to produce an increase in the number of injuries per capita.

Additionally, the rising costs of the more complex equipment used today (and planned for tomorrow) makes the given accident far more costly in the aggregate. For example, an incident which damages today's landing gear or rotor blade may result in a greater dollar loss than would have the total destruction of the entire aircraft, just a few years ago! This development profoundly influences the per capita cost of accidents.

All other things being equal, the depreciated value of the dollar because of inflation tends to produce a rise in dollar cost for the same relative damage.

To illustrate the impact of the cost of aircraft accident damages on per capita dollar losses, in FY 60, MDW reported an 29.2 percent increase in total per capita costs during FY 60 over FY 59. One helicopter accident contributed 60 percent of that total loss (or \$314,000). That one accident really marred an otherwise overall improved record. Accordingly, we are becoming increasingly sensitive to the mounting importance of aircraft accident losses.

As a matter of information, I understand that DA (and the other military agencies) is considering need for establishing a higher cutoff point for including property damages in the accident experience. To evaluate progress against comparable data, there is an indicated need for cutoff points commensurate with the extent of relative damage which was required to be included in accident rates in previous years. This would offer a more realistic criteria for evaluating progress. Relatively minor damages now recordable against the accident rate would not have been reported in the accident experience a few years ago. Hence, our measurement of progress against yesterday's accidents experience lacks validity. (Even so, significant progress has been attained.)

The Army Safety Program is directed toward preventing accidents before they happen. This is compatible with efficient aircraft operations.

Our concern with accidents (which have already occurred) is more than a purely historical interest: ours is an academic effort to learn from each accident how best to prevent another one. Our business then, in safety, is not "accident reporting" - rather, it is "accident prevention." So long as accident reporting advances the accident prevention effort, it is justifiable requirement.

Some feel safety to be a new area of concern to the military. This is not so! When Hannibal went over the Alps (before Christ was born), accidents seriously depleted his ranks long before he engaged the enemy. Of some 46,000 men who started over the Alps on that epic campaign, 20,000 were accidental casualties of the perilous mountain trails and foul weather. (Those same mountains and weather have contributed to more recent accidents of our forces.) Despite these losses, Hannibal was able to inflict a series of stunning defeats upon the numerically superior Romans; however, we must remember, he failed to obtain the final victory. While doing aerial reconnaissance from the lofty back of his last war elephant, near Rome, Hannibal was seriously injured by the overhanging limb of a tree, and lost the sight of one eye. It is a historical fact that never again did he win against

the Romans. Invading his homeland, the Romans finally defeated him in the decisive battle. I like to think that the accidents which depleted his ranks and impaired his sight prevented his successful accomplishment of this mission.

Accidents are not a new problem to the military. Hannibal sustained the bulk of his accidental losses above 5,000 feet. "But," some say, "his accidents occurred on the ground!" I regret to report that too many of our flying accidents also seem to occur (or at least terminate) on old terra firma. The problem is old; the agent is new.

The basic problem has changed little. We pilot aircraft instead of elephants. The accident record for aircraft has steadily improved; however, we still pay a dear price for the advantages offered by military aircraft. Officers and men, essential to our combat effectiveness, fall victim to aircraft accidents. For example, last year, we lost two general officers in an aircraft accident. Hannibal lost 20,000 troops; we lost two general officers - all in accidents occurring in mountainous areas.

An old safety noncom once responded to an inquiry as to "how are things going, safetywise?" by stating: "Perfect - except for accidents." Our vastly improved aircraft accident record is fine - except for the accidents which continue to occur.

CONARC SAFETY PROGRAM. (CON Reg 385-2)

Two years ago the Commanding General, USCONARC, initiated action to effect assumption of command responsibility for safety throughout USCONARC. Prior to this, the overall responsibility for safety in CONARC was discharged in part by the Office of the Army Director of Safety, ODCSPER, DA. This system had worked because all elements concerned cooperated to make sure it would. However, it failed to fully and properly discharge the accident prevention responsibility as a functioning command.

In July 1959 the command assumption of responsibility for accident prevention in CONARC became effective. A Safety Division was established in G1 Section. It was assigned functions similar to those of Safety Division, HQ DA. The Safety Division is a small staff element. It consists of four authorized spaces:

1. The Director of Safety. (This is a GS-15 position, which position I am privileged to fill. As such, I also serve as Chief of Safety Division.)

2. The Assistant Director of Safety. (This is also a civilian space, filled by Mr. J. K. Daughtrey.)

3. Military Assistant. (A field grade officer space, currently vacant. Until recently this was filled by Major Linsley.)

4. Administrative Assistant. (A civilian space for a combination secretary - division clerk - statistician - and administrative assistant.)

With the current action officer posture of Safety Division being only two persons, Safety Division finds itself fully preoccupied with the many problems and projects that arise in the various staff elements of this headquarters.

The USCONARC safety policy is: "To maintain an active accident prevention program in all USCONARC commands and activities and to support the DA safety policy, scope, and direction as delineated in AR 385-10." (CON Reg 385-2)

The USCONARC safety program encompass all operations and activities of the command (CON Reg 385-2) and is concerned with:

1. Prevention of accidents to personnel.
2. Prevention of accidents involving privately owned and military vehicles.
3. Nuclear weapons safety.
4. Prevention of accidents involving Army aircraft.
5. Handling of hazardous material.
6. Integrating practical safety guidance in publications and directives pertaining to maintenance, training and operations.

Responsibility for safety (a vital point) -- is that of commanders at every echelon. Safety personnel provide staff guidance to commanders and staffs, in safety management and safety engineering. We try to identify and evaluate the problem, find the staff elements who can initiate the appropriate "fix," and support the effort to find a solution compatible with the mission and resources.

The CONARC safety policy on aircraft safety is (CON Reg 385-2):

(1) "The nature of aircraft operations generates a demand for critical supervisory control to insure maximum safety. Close coordination between safety personnel and persons responsible for flying or maintaining aircraft, investigating aircraft accidents, and training aviation personnel is essential."

(2) Thus, safety personnel are the staff monitors, the generalists, the collectors of data, the responsibility of statistics, the evaluators of progress, the specialists in accident prevention who seek to have aircraft operations subject to the same effective controls that prevent accidents in any other operation.

(3) Further delineation of this staff responsibility for safety is found in Staff Memorandum Nr 29 (12 Oct 60). This provides that all USCONARC staff sections "will support the Army Safety Program within prescribed areas of functions, responsibilities, and missions." This specifies that the G1 is responsible for overall staff supervision of USCONARC safety activities, and for coordination with other staff sections, DA, and subordinate commands on safety matters. It further states that "The Chief of the Aviation Section will insure, within his area of responsibility, that basic safe practices and physical standards are incorporated into the Army aviation program." Hence, we are all in the accident prevention effort. So far as specific operational safety is concerned, Aviation Section has the staff responsibility for getting the safety job done. The Safety Division, G1 section, discharges the more general functions of evaluating the overall safety effort, identifying problem areas, coordinating problems and requirements, receiving reports of accidents and fatalities, and keeping those concerned with accident prevention informed concerning progress, problems, and needs.

PROGRESS. Has the CONARC Safety Program been effective? Yes.

All accident categories show a gradual improvement of rates during the past 3 years.

Army aircraft accidents, in particular, show marked improvement. Starting with first quarter, FY 59, with a rate of 54.8 (accidents per 100,000 hours flown) it has steadily improved to 16.3 (last quarter). When adjustment is made to compensate for changes in definition of aircraft accidents during this period, the improvement remains highly significant. During second quarter, FY 61, the USCONARC aircraft accident rate reached an all-time low, 38 percent better than the DA goal for FY 61 and 35.9 better than the same period last year. Your efforts are obtaining results.

These general reductions of accidents (in which Army aircraft accident improvement set the pace) reduced the total number of accidents for CONARC from more than 4,000 per quarter (1st quarter, FY 59) to 2,900 (last quarter).

Dollar savings realized because of these improvements are also significant. Starting in first quarter, FY 59, accident losses excluded \$11 million for the first quarter. Last quarter, these had dropped to less than \$8 million - a quarterly difference of some \$3 million. This suggests (despite rising costs and more complex equipment) real values and savings.

However, the \$8 million is a sobering figure. It should make us realize the accident problem is far from solved - it has merely improved. That \$8 million lost to accidents each quarter is the target for which each of us, as staff officers and as taxpayers, must take dead aim. This is the challenge - and concerted effort by each of us will further reduce these losses, additionally save lives and prevent injuries in the process.

The daily flow across my desk of message reports of accidents constitutes the bulk of my mail. Among those messages are frequent reports of aircraft accidents. Until we, collectively, can reduce this number to the lowest practical aggregate, we cannot call ourselves safe in flying Army aircraft.

MAINTENANCE CONCEPTS AND ORGANIZATION

by

Lt Col W. G. Kilmer

Transportation Section, HQ USCONARC

The Vu-Graph chart before you schematically portrays the Transportation Corps aircraft maintenance and supply organization for a four-division force. Some of the TOE represented have already been published; some are in early stages of processing and others are very near publication. You will note that the support organization is pretty well divided into three definite groups:

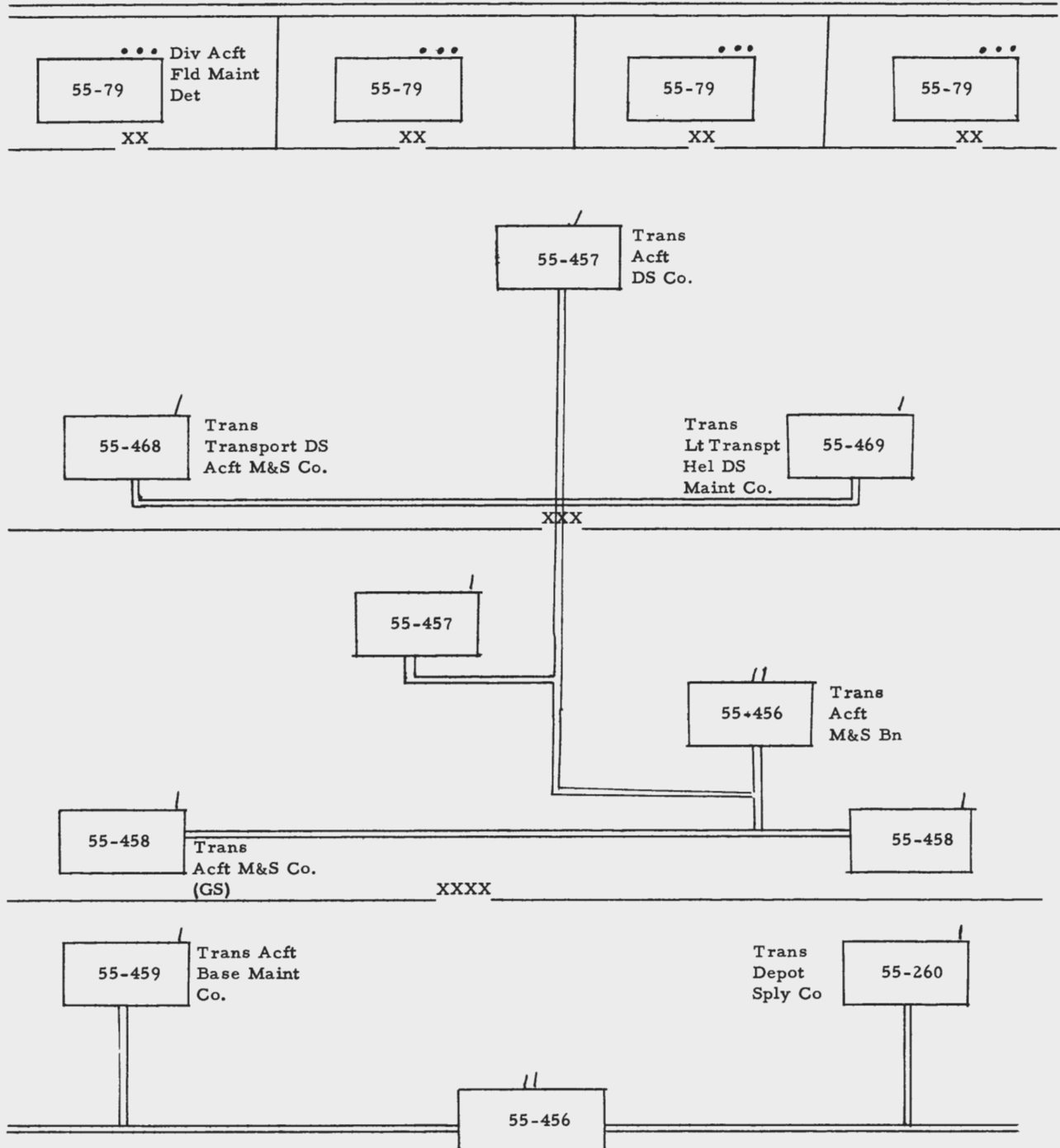
- (1) Direct support.
- (2) General support.
- (3) Base maintenance or depot support.

You will see at the top of the chart the four-division force represented. In each division is an aircraft field maintenance detachment, 55-79. This TOE has been published for some time and units are operational in the field. Behind the division you will find a 55-457 company, Transportation Aircraft Direct Support Company, whose basic mission is to provide backup maintenance for the divisional field maintenance detachments on the line. It will also provide all third echelon support for nondivisional aviation units in corps, except for transport aviation units. Along with this direct support organization in the corps area is one transport aircraft direct support maintenance and supply company, 55-468. This company provides third echelon support for the medium helicopters and for the fixed wing transport in the corps area. Its sister company is 55-469, Light Transport Helicopter Direct Support Maintenance and Supply Company. Its sole mission is to provide third echelon support for the light helicopters in the Corps. Behind the Corps rear boundary you will see another 55-457 company, Aircraft Direct Support Company, whose mission is to provide third echelon support for all nondivisional aviation units in the army area, except for transport helicopter or transport aircraft units. And then for our general support of aviation in the four-division force, we have two units, 55-458, whose designation is transportation aircraft maintenance and supply company, general support. They provide all the fourth echelon support for the four-division force, including transport helicopter and transport aircraft units. This is solely a general support unit, assigned on the basis of two to each four-division force.

For command and control of the two -457 units, one -468, one -469 and two -458 units we have a transportation aircraft maintenance and supply type battalion, 55-456. Previously we had two such battalions to command and administer to these companies; however, because we felt that the battalion could just as well administer to six companies as three, we cut down the number of battalion headquarters to one. This now takes care of both direct support and general support for the four-division force. In COMZ, ADLOG or EALOG, whichever is more appropriate, we have a new organization to the aircraft field maintenance family; a 55-459 company. This is the aircraft base maintenance company whose job is to perform depot maintenance on all aircraft in the four-division force. You will note that it is a maintenance company and not a supply company. Here you see our supply company, 55-260. This unit handles TC depot supply items for all elements in the four-division force, not just aircraft peculiar items. This 55-260 is a unit already in being. We might find that we will have to increase the size, personnel-wise, to take care of the technical supply addition. Now, let's take a look at some of the capabilities of these units. The divisional field maintenance detachment provides on-site third echelon maintenance for aviation units in the division. It is acknowledged, of course, that the divisional field maintenance detachments cannot possibly do all the third echelon work to be performed in the division. Therefore, the transportation aircraft DS company provides the backup third echelon maintenance necessary. This unit also has an onsite emergency repair capability. Teams will go to divisions to perform third echelon work that the divisional field maintenance detachments are not capable of doing. It is not intended that the forward support platoons of the DS company will remain on site with the division. They will go to the divisions on an "on-call" basis to take care of the work that normally falls within their jurisdiction. This unit also has an aerial supply delivery capability to deliver emergency supplies to the divisional field maintenance detachments on an "as needed" basis. The two transport direct support maintenance and supply companies provide all third echelon support for the transport aircraft battalions in each four-division force. They, too, have an on-site maintenance capability. Each has its shop platoon which remains in company headquarters area and each has forward support platoons which more or less habitually work with the companies in the transport aviation battalion. The 55-456 aircraft maintenance and supply battalion does not have an organic aerial delivery capability; however, the new revision to this TOE includes the provision for an augmentation of two aircraft. Our general support units, the two -458s you see here, we visualize as being pretty much stabilized. There is no necessity for an on-site or emergency repair capability and we feel there is no need either for an aerial delivery capability for delivery of aircraft parts. We are frequently asked,

what do we do if an army has 12 divisions or 8 divisions or perhaps, in some cases, 16 divisions? Because of the flexibility that we have of this support organization, we can simply provide for a larger family of units on an appropriate ratio. If the particular army had eight divisions, we simply would double the amount of support seen here. Another interesting item is that all units beginning with the direct support company behind the divisions will have automatic data processing equipment. This system, utilizing punchcards, will expedite parts requisitioning to all elements of the force. May I suggest in closing that we realize that this organization has been slow in coming but for those of you who have ever been in the TOE business, you certainly must be aware of the large amount of staffing that goes into each TOE regardless of whether it's an artillery, battery, infantry, company, etc. What has made our job here more difficult is that between the time a TOE begins its initial processing and the time it is ready for approval and publication, staff personnel at CONARC and DA change hands. We have found by experience that what one action officer will approve at DCSOPS, DA, and what another action officer will approve are two different things. One officer during technical review will approve, for example, an aerial delivery capability in a unit, but when it goes up for final approval and publication, the desk has changed hands and the new officer will not approve it. But we all have our problems! This is the picture! And now do you have any questions?

24 Feb 61



AIRCRAFT MAINTENANCE AND SUPPLY

by

Lt Col W. C. Bowen
Transportation Section, HQ USCONARC

Gentlemen:

The purpose of my presentation today is twofold. First, to furnish available information on the current status of aircraft shortages within USCONARC. Although you are no doubt quite familiar with the authorizations vs the on hand picture in your own army area, I felt the overall picture throughout USCONARC would be of interest. Second, to review the aircraft maintenance and availability picture as it has progressed during the first half of FY 61.

At present, every type aircraft within the Army inventory is in national short supply. Additional requirements generated by reorganization of CONUS airborne, armored and infantry divisions, plus armored cavalry regiments, during the past year has drained available resources. In addition overseas requirements have also been increased. Based on current priorities USCONARC has been levied to meet other requirements, not available from Department of the Army assets.

The first chart (fig. 1) provides the fixed wing status. You will note that the L-19 and the TL-19D situation at present is satisfactory, the assignment of 16 Cessna 180's to the Aviation School has released a like number of L-19's to fill existing shortages. TL-19D's have been assigned to TA activities in lieu of L-19's in some cases. The problem areas in fixed wing are primarily in the AO-1 and L-23 areas. There are currently 49 AO-1's required within USCONARC to fill approved TOE authorizations. Since this is a new aircraft to the Army inventory, supply is dependent on production receipts. Initial distribution has been made to test activities and the Aviation School. A limited number of AO-1's will be issued to CONUS and overseas priority units starting in April 1961. Where possible L-20's have been issued or retained in lieu of the AO-1's. This in part explains the overage of L-20's indicated on the slide.

Contracts for procurement of L-19's, TL-19D's, L-20's, and U-1A's have been completed. No further procurement is planned for these aircraft; consequently, we must manage with assets now assigned.

Department of the Army has planned purchase of a limited number of L-23's over the period of the next 5 years. However, the requirements for staff transport aircraft are increasing at the same time.

There are currently 19 outstanding shortages, of which 8 are for US Army corps. The corps authorizations were approved in July 1958; however, assets have not been available to fill these requirements. This headquarters has provided 6 of the 14 corps' L-23's, by repositioning of assets within USCONARC. Information from Department of the Army indicates that a quantity of five L-23 aircraft are currently programed for procurement in FY 1961, 14 in FY 1962 and 27 in FY 1963. The later procurement is expected to meet all unfilled requirements.

Commencing in first quarter, FY 62, U-1A aircraft will be replaced with the new AC-1 (Caribou) in the first aviation company. As AC-1's are issued, U-1A's are being reassigned to fill TA shortages.

This chart (fig. 2) provides the rotary wing aircraft status.

Current contracts for procurement of H-13's, H-23's, H-19's, H-21's, H-34's and H-37's have been completed. No further purchase of these aircraft is contemplated.

There are 13 H-13G's and 30 H-13E's in depot storage that may be applied to the shortages indicated. However, additional requirements (which I will explain later) will deplete these assets.

Approximately 157 HU-1A's have been delivered to the Army to date. Of these, 85 are currently on hand within USCONARC, a few have been lost in crashes, and the balance are earmarked for overseas.

Follow on contracts for HU-1B's have been finalized and this headquarters is currently formulating their distribution. Column 3 of this chart indicates the utility helicopter authorizations, the "On Hand" column shows the actual H-19's and HU-1A's assigned. H-19's will remain in TA and low priority TOE activities for some time.

H-21 and H-34 shortages indicated on the chart reflect shortages of light transport helicopters authorized the infantry and armored divisions and the armored cavalry regiments, for which assets are not available. Shortages have been indicated in the H-21 and H-34 columns based on type light transport helicopters currently assigned to station where the units are located. Where no other light transports are assigned, shortages are reflected based on the deployment assignment of the unit.

Figure 1. - USCONARC AIRCRAFT STATUS

<u>Fixed Wing</u>												
<u>COMMAND</u>	<u>L-19</u>		<u>TL-19D</u>		<u>AO-1</u>		<u>L-20</u>		<u>U-1A</u>		<u>L-23</u>	
	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>
First Army	9	9	3	3	0	0	6	6	1	1	4	2
Second Army	30	30	10	10	7	0	15	15	1	1	13	13
Third Army	131	124	46	48	17	3	47	54	21	17	18	13
Fourth Army	50	50	16	16	4	0	27	27	19	19	15	13
Fifth Army	35	35	10	10	8	0	24	25	26	25	12	9
Sixth Army	35	37	13	13	6	0	18	18	19	18	10	9
MDW	7	4	0	4	0	0	4	6	1	1	16	12***
<u>TOTALS</u>	297	289	98	104	42	3	141	151	89	82	88	71
Avn School, Rucker	212	203	44	44	14	4	50	50	1	0	2	1
Pri Hel Sch, Wolters	2	2	1	1	0	0	2	3	0	0	1	0
<u>GRAND TOTAL</u>	511	494	143	149	56	7	193	204**	90	82	91	72
<u>SHORTAGES</u>	<u>17*</u>		-		<u>49</u>		-		<u>8</u>		<u>19</u>	

* 16 CESSNA 180's assigned Aviation School ILO L-19's reduces shortage to 1.

** 11 L-20's assigned ILO AO-1's, L-23's and U-1A's short.

*** 4 L-26's ILO L-23's.

Figure 2. - USCONARC AIRCRAFT STATUS

<u>COMMAND</u>	<u>Rotary Wing</u>									
	<u>H-13/H-23</u>		<u>H-19/HU-1</u>		<u>H-21</u>		<u>H-34</u>		<u>H-37</u>	
	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>	<u>AUTH</u>	<u>O/H</u>
			H-19 HU-1							
First Army	13	13	6	3/3	20	20	0	0	0	0
Second Army	26	21	7	1/5	6	0	26	20	16	16
Third Army	125	120	90	17/47	22	22	54	48	16	16
Fourth Army	36	32	18	18/0	0	0	8	6	16	16
Fifth Army	33	33	13	8/6	26	19	4	4	0	0
Sixth Army	46	46	9	6/4	46	43	0	0	0	0
MDW	7	7	0	0/0	27	27	8	8	0	0
TOTALS	286	272	143	53/65	147	131	100	86	48	48
Avn School, Rucker	21	21	62	35/20	28	26	34	34	6	6
Pri Hel Sch, Wolters	147	147	0	0	0	0	0	0	0	0
GRAND TOTAL	454	440	205	88/85	175	157	134	120	54	54
SHORTAGES	<u>14</u>		<u>32</u>		<u>18</u>		<u>14</u>		--	

REQUIREMENTS	14		35		18		14		--	
CHAND TOTAL	424	440	502	88\82	132	121	124	150	24	24
WOLTERS	141	141	0	0	0	0	0	0	0	0
Aviation School, Rucker	51	51	82	32\50	52	50	34	34	8	8
TOTALS	586	581	142	22\82	141	131	100	88	48	40
MDA										
First Army	40	40	0	0\0	40	42	0	0	0	0
Second Army	33	33	12	8\0	30	10	4	4	0	0
Third Army	30	35	10	10\0	0	0	0	0	10	10
Fourth Army	150	150	30	12\12	33	33	24	48	10	10
Second Army	50	51	1	1\2	0	0	50	50	10	10
First Army	12	12	0	2\2	30	30	0	0	0	0
CONVIND										
	VOLH O/H	VOLH O/H	VOLH O/H	VOLH O/H	VOLH O/H	VOLH O/H	VOLH O/H	VOLH O/H	VOLH O/H	VOLH O/H
	H-13\H-52	H-13\H-52	H-13\H-52	H-13\H-52	H-51	H-51	H-51	H-51	H-51	H-51

Figure 3. - PROJECTED ADDITIONAL REQUIREMENTS

Aviation School, Rucker - 12 HU-1's required Oct 61.

Primary Helicopter School, Wolters - 13 H-23's required July 61.

Fort Sill - 38 H-13's required Jan 62 (Armed Hel Training).

H-37 units are currently at full strength; however, a remanufacture program is currently underway and as inputs are made into the factory some units will be short until June 1962.

The additional requirements that were mentioned previously are illustrated on figure 3.

The requirement for utility helicopters at the Aviation School will increase in October 1961 from 62 currently authorized to 74. The school has requested 12 additional HU-1's for this requirement. Availability cannot be determined at this time.

The Primary Helicopter School at Camp Wolters has an increased student input, starting in July 1961. Wolters will require 170 H-23D's by that date; 147 are on hand at the present, with 10 due in from the contractor, leaving a balance of 13 required. Action has been initiated with DA to exchange 13 H-13G's in depot for 13 H-23D's now assigned to TA activities. This will satisfy Wolters' requirement.

Current plans now being staffed in this headquarters and Department of the Army provide for a program of armed helicopter training at Fort Sill, starting January 1962; 38 H-13's will be required. USCONARC has requested the 30 H-13E's in depot to partially support this requirement. The balance of eight must come from USCONARC assets.

Now for my second topic - maintenance and availability rates - FY 61.

The statistics to be presented are USCONARC averages for each type aircraft and therefore will probably vary above or below that which you have experienced in your individual army areas.

The first chart (fig. 4) shows the availability rates for fixed wing aircraft during this fiscal year. As you know, the availability target rates are 75 percent for the L-19 and 70 percent on the remaining categories. These so-called targets are only a guide point to see whether we are above or below this criteria, and not necessarily a standard of performance. However, we use these in evaluating field maintenance performance by the armies since this gives everyone a base figure from which to measure his progress. The tick marks to the left side of each aircraft block indicate the FY 60 average availability for the particular aircraft. The target availability rates were exceeded during the second quarter on all fixed wing aircraft except the U-1A. Primary factors in the below target availability of this aircraft were 12 percent out of commission (AOC) time for third echelon and 14 percent for organizational

maintenance. Low availability recorded during this period was 60 percent in November, with a subsequent rise to 65 percent in December. No single cause for excessive AOC time was outstanding and it is considered that this fluctuation was the result of performing deferred maintenance generated during the summer and fall period of extensive training and good flying weather. The flying hour performance for all USCONARC FW aircraft during the same period is shown on this flip chart.

These bars represent the percent of total USCONARC programed flying hours for FW aircraft which were actually accomplished. The first quarter bar is at 89 percent and the second quarter at 92 percent.

Due to the fairly low inventory, the AO-1 Mohawk and the AC-1 Caribou were not shown on this chart. However, we have experienced satisfactory progress at Fort Rucker and Fort Benning where these aircraft have been engaged primarily in testing programs. Second quarter availability rates were AC-1, 65 percent, and the AO-1, 76 percent.

The next chart (fig. 5) depicts the availability rates for rotary wing aircraft.

You will note that in the last quarter all aircraft met or exceeded the established target availability rates except H-34 and H-37 aircraft. These two aircraft show only minor deflections from the desired availability rates and are considered to be satisfactory. Significant on this chart is the HU-1A Iroquois aircraft. You can see that the present availability is considerably less than the FY 1960 average availability as shown by the tick mark at 68 percent. For the past 6 months, the EDP rate has averaged approximately 24 percent. This rate was not generated by excessive flying hours as a restriction has been placed on the flying hours of these aircraft. HU-1A's at class I installations are limited to 20 hours per month, and those at Fort Rucker to 40 hours. We have required the armies and stations to review prescribed loads and stockage lists to insure that they have provided proper provisioning for the HU-1A aircraft. We have also requested USA TMC to give additional emphasis to processing and distributing required support. With the increased density of this aircraft and the importance it is assuming with regard to STRAC readiness, every effort is being made to increase the support for the HU-1A.

It can be noted that the H-23 has enjoyed an excellent availability during the first two quarters. The picture is not so bright for the third quarter since these aircraft were all grounded on 1 February due to an internal failure in the transmission of two aircraft, which resulted in fatal accidents. No permanent fix has been determined at the present

time for this condition. However, an interim fix is being tested at Camp Wolters under a carefully supervised flight program. If this fix proves satisfactory, it will be implemented to the field for all H-23D aircraft as an interim measure pending development of a permanent fix.

As on the preceding chart, these bars represent the percent of programed flying hours actually accomplished. Value depicted by the first quarter bar is 88 percent and the second quarter is 89 percent.

In summary of this topic it can be said that availability rates for USCONARC aircraft at the end of the second quarter are in the best position that they have been for the past 2 years. Granted an early fix for the H-23's and continued improvement in the HU-1A aircraft availability, this high level of performance should continue throughout the remainder of FY 1961.

Perhaps it is too early to assess the full impact of the change from SCAMP to the IROAN concept of maintenance; however, it is considered that the improved availability is a positive indication of progress. A trend has been noted for a general rise in aircraft downtime at first through third echelons of maintenance since implementation of this new concept. Such a trend was anticipated and thus far has been more than compensated by the reduction in downtime at higher echelons of maintenance. Our experience during staff assistance visits to CONUS installations has been a very favorable acceptance of this program by organizational and field maintenance personnel. It is the general consensus, as indicated by the trend just mentioned, that more attention is being given to the aircraft at organizational and field maintenance level, with an improved overall availability as a result. It is felt that IROAN is still in a trial period, and it is imperative that both operators and maintenance personnel continuously evaluate the program and aircraft condition to denote areas requiring improved procedures or corrective action. Any failures in this program will have a parallel effect on your capability to fulfill your particular requirements.

AIRCRAFT AVAILABILITY RATES - FY 1961

STATISTICAL DATA CONTAINED ON FIGURES 4 AND 5:

1. Aircraft Availability Statistical Data:

A	B	C	D	E	F
		FY 60	1st Qtr	2d Qtr	Total
Acft	Tgt Aval	Avg Aval	FY 61 Aval	FY 61 Aval	A/C By Types
L-19	75	73	79	81	465
L-20	70	69	71	74	220
L-23	70	74	70	74	72
U-1A	70	63	71	65	76
H-13	60	62	58	63	244
H-23	60	69	67	62	183
H-19	55	51	54	55	82
HU-1	55	68	44	55	64
H-21	55	53	52	60	160
H-34	55	52	55	53	161
H-37	55	50	56	54	55

2. Flying Hour Performance Statistical Data:

Fixed Wing	Rotary Wing
1st Qtr 89	1st Qtr 88
2d Qtr 92	2d Qtr 89

AVIATION FUELS

by

Maj W. G. Richards
Quartermaster Section, HQ USCONARC

It will be my purpose in the next few minutes to discuss with you the general characteristics of aviation fuels, the prescribed method for handling aviation fuels, and the prescribed program for quality surveillance of aviation fuels.

The military services have adopted five basic fuels for use in aircraft. These are av 80, 91/96, 100/130, 115/145 and JP-4. (The Navy uses a JP-5 which they blend with 115/145 just prior to refueling aircraft on board carriers.)

Av 80 and 91/96 are for use in low-performance, prop-driven, light aircraft and helicopter engines.

Av 100/130 and 115/145 are for use in high-performance, prop-driven aircraft and helicopter engines.

These avgases are a highly refined version of motor gasoline that possesses certain characteristics to develop maximum power with high compression.

The other aviation fuel is JP-4, a blend of kerosene and raw gasoline, used in turbojet and turboprop engines. Please note that I have classified jet fuel as a grade of aviation fuel, which it is. There is a widespread belief that jet fuel is a special breed of cat and that the introduction of jet aircraft into the Army inventory has created a host of fuel handling problems for the Army. If I accomplish nothing else today, I hope to dispel this idea and leave you with the knowledge that the hazards involved in handling JP-4 are the same as the hazards in handling other fuels, and that the fuel handling techniques for jet fuel are the same as those for handling other aviation fuels.

Before I discuss fuel handling techniques, let me state that both the procedures and equipment prescribed for use by the Army have been

developed over years of experience by industry and all branches of the military service. That is to say, that the fuel handling techniques used by the Army are similar to those used by industry, the Air Force and the Navy. As a matter of fact, the Army at the Quartermaster School at Fort Lee, trains Air Force, Navy, Marine and Army personnel in fuel handling operations.

The bible on fuel handling is TM 10-1107, "Petroleum Handling Operations for Aviation Fuel," dated February 1960. It is concise and easy to read and I commend this publication as one which should be read by all interested in aircraft refueling operations.

The subject of handling aviation fuels requires an understanding of the hazards involved, then designing equipment and a system to control these hazards and finally establishing a quality control program to measure the effectiveness of the system and equipment.

The hazards involved in handling aviation fuels are those related to fire and explosion and the hazards encountered when aircraft are refueled with contaminated fuel.

Gasoline fire and explosive dangers are too well known to bear repeating. The remedy is simple--control sparks, open fires and static electricity around fuel storage and fuel handling operations. Here let me inject one peculiarity of jet fuel not shared by other fuels. As you all know, an explosion will only occur when there is a proper mixture of air and gas vapors. At normal atmospheric temperatures the atmosphere in a gasoline tank is too rich to burn while the atmosphere in a tank of JP-4 is in the flammable range. Consequently, the one ingredient of a fire--the proper mixture of air and gas vapors--is always present around jet fuel. Add the third ingredient, a spark, and you'll have a hell on earth.

Since I will next discuss contamination I will mention the only other distinguishing characteristic of jet fuel insofar as fuel handling operations are concerned, and that is the tendency of jet fuel to hold on to entrained water.

The specific gravity of jet fuel is such that it takes a longer time for water to settle out than it does in other aviation fuels. This and the more limited tolerances of jet fuel injection systems prescribe that water and other contaminants, serious in any fuel, is more of a hazard in jet fuel. The tendency of jet fuel to hold water, and the explosive atmosphere around a jet storage tank, are the only characteristics which distinguish jet fuel from other petroleum fuels.

Fuel contamination results from the mixing of different grades of fuel or by contamination from water, rust or other particles. The problem then is to keep contaminants out of fuel. Since this is not always possible because of condensation, bacteria growth, or use of improperly maintained equipment, the next best thing is to remove contaminants prior to refueling the aircraft. Here let me insert an interesting discovery. The Air Force noted that when they defueled some jet aircraft they found a lot of water present and, like Army aviators, they continually harped about ground refueling operations. Then, to their amazement, they discovered that as much as 7 gallons of water condense in aircraft fuel tanks due to changes in temperature.

The type fuel handling equipment we have and the fuel handling operations prescribed in TM 10-1107 are designed to keep contaminants out of fuels or to remove water and solids which may be present. Proper fuel handling procedures are simple in nature, but they demand constant attention to detail to avoid serious consequences from contaminated fuel.

The fundamentals of fuel handling procedures are:

- a. Keep water out of tanks. Check for water daily.
- b. Provide a separate handling system for each grade of fuel handled.
- c. Insure that any tank vehicle used for refueling aircraft is equipped with a filter separator. Another filter separator should be installed between storage tanks and truck loading racks. Change filter elements annually for fixed systems or in tank shells which have been rust proofed. Filter elements in uncoated tanks should be changed every 3 months.
- d. Install a 100-mesh, corrosion-resistant wire screen in each fuel line. Inspect and clean screens daily.
- e. Enforce fire safety rules.
- f. Enforce a strict quality surveillance program.

If any one aspect of aviation fuel handling operations can be classed as the most important, I would cast my vote for the quality surveillance program.

Webster defines surveillance as the act of watching, especially so as to control or keep under guard. Quality surveillance, then, is the act of controlling or keeping under guard the quality of the fuel.

TM 10-1107 spells out a program for quality control of aviation fuels. This program is chiefly comprised of a series of checks or tests to insure that fuels meet rigid specifications and standards. As outlined in TM 10-1107, a sound quality surveillance program includes the following controls:

a. Preflight fuel testing - a sample should be drawn by the pilot or crew member from each fuel tank of the aircraft before the first flight of the day and after each refueling, as part of the preflight procedures. A visual type test should be made for water and sediment.

b. Weekly fuel testing - fuel samples should be taken on a weekly basis as follows:

- (1) From aircraft, on a spot-check basis.
- (2) Through filter separators of aviation fuel systems.

These fuel samples should be given a field type test by a Quartermaster Petroleum Technician. Field tests are those tests made at the operational level to insure that the principal properties of fuel are acceptable. These tests include distillation, gravity, sulphur or corrosive compounds present, and water or sediment content.

(3) Field type tests should also be run on each installation receipt of bulk fuel delivery, regardless of the quantity of delivery, to insure that the product meets procurement specifications.

c. Detailed laboratory tests by specified petroleum labs serving CONUS installations on an area basis should be made as follows:

- (1) When filter elements have been replaced, and every 3 months thereafter.
- (2) In cases of aircraft crashes involving engine failure or suspected engine failure.

(3) When the quality of fuel is suspect.

(4) And, when aviation fuels have been in inactive storage for 30 days.

Written records should be maintained on all field and laboratory tests. In fact, I would offer the suggestion that all aircraft accident investigations should include a qualified petroleum technician as a member of the accident investigation board, and that the investigation report should include findings on the compliance or noncompliance with the prescribed quality surveillance program. Written records of laboratory tests should be included in the investigation report.

I have two final items of interest in regard to aviation fuels. The first is in regard to a recent educational program which the Quartermaster Corps conducted at Fort Lee. We recently ran three 1-week courses on handling aviation fuels. These courses were designed to orient field supervisors on the proper methods of handling aviation fuels. These courses were highly successful and I would hope that they can be continued on a permanent programed basis and that field installations could spare their top supervisors for 1 week to attend such courses.

My other item of interest is that The Quartermaster General has just had established a QMR-- a qualitative materiel requirement-- for what we call a go-no-go fuel tester. This gadget will be installed in a fuel line and will automatically cut off the flow of fuel whenever water or other contaminants are present. If we are successful in developing such an item it will be a major step forward in fuel handling operations.

Well, I've been given 15 minutes to discuss aviation fuels with you. Fifteen minutes should be enough time to do this, for as one petroleum man said, if you haven't struck oil in 15 minutes, stop boring. Before I sit down, I do want to leave you with this thought:

The military services procure aviation fuels under strict standards and specifications. Procurement inspectors have a chemical analysis made of samples of procured fuels to insure that they meet the rigid specifications. The fuel handling equipment we have and the fuel handling procedures we prescribe are in keeping with the high commercial standards. Yet you and I are concerned about fuel contamination.

And, I hope we always will be concerned enough to take an active interest in enforcing practices that will enable us to control the problem. For no matter how pure the product we procure, no matter how many times we filter the product, bacteria will grow, and water will condense-- even in aircraft fuel tanks. But we can control the hazard by strong command supervision, for it is through strict adherence to the quality surveillance program in TM 10-1107, which prescribes specific tests and inspections to determine whether fuel handling equipment is operating and is being operated properly, that the greatest possible protection will be insured.

AVIONICS

by

Mr. T. M. Eaker

Signal Section, HQ USCONARC

The Army has acquired several new aircraft recently; e. g., AO-1 "MOHAWK" and AC-1 "CARIEOU." Of these, the AO-1 has presented the biggest problems since it is a new type aircraft containing several new and complex systems. Fort Rucker now has AO-1 aircraft and are training crews. Fort Huachuca has been designated for training the SLAR operator/mechanics. The technician will also be trained to operate the SLAR. Presently we have a target date of 15 May for starting the first class of SLAR technicians. This school is all set to go, but the starting date is contingent upon the timely receipt of the AO-1 aircraft that are to be assigned to the school for training purposes. Motorola has completed the factory training of the instructors for the SLAR course. There has been some delay in getting some of the new test equipment in the field, and of course this has created some problems in supporting some of the new systems. As an interim measure the OCSigO is purchasing MR's to perform maintenance and train, OJT type, the technicians in the units on all the new complex systems, with Lexington Signal Depot being designated as the point of main support for the "MOHAWK." The MR's and spares will be furnished by Lexington, and with this in mind a meeting was held in January at Lexington, with personnel from Third Army and a joint support agreement was drawn up. Hayes Aircraft is presently doing all the maintenance on the AO-1's at Fort Rucker and is jointly using the test equipment belonging to the aviation test board.

Troop Test "CARIEOU" is now in progress at Fort Benning and seems to be progressing smoothly, with no major problems encountered to date. Some trouble was encountered in the beginning with getting an ATC and GCA facility for the test; however, a TSW-1 was secured from Fort Rucker and an AN/FPN-33 was borrowed from Sacramento, and this has put the test in business.

The TOE's are in the process of being adjusted to fit the requirements of a surveillance unit. The changes proposed do not increase personnel, change mission, capabilities, or designation of the unit involved.

ITEMS INCLUDED IN TRECOM PRESENTATION

by

Lt Col M. J. Strok
US Army Transportation Research Command

Status of Hot Cycle Pressure Jet
Rotor System, March '61

What is the hot cycle pressure jet rotor and what technical advantages does it offer:

The hot cycle pressure jet rotor system utilizes a turbojet engine as a hot gas generator-the hot gases are ducted from the engine exhaust through the rotor hub and blades to be discharged through nozzles at the rotor blade tips, thus the thrust is supplied at the maximum radius to drive the rotor.

The major advantage of the hot cycle concept is the weight savings of the pressure jet type rotor system. The hot cycle design is enhanced by its simplicity; no transmissions and no tip burners. Simplicity results in lower maintenance costs. These features make the hot cycle rotor attractive for a medium transport (4 ton), a heavy transport (10-12 ton) and a flying crane.

History:

The contract was initiated in June 1955 with Aircraft Division of the Hughes Tool Company, through the Air Force, who initially funded this program. Chart 2 shows a summary of the history. Originally the design of this rotor was based on a flight research helicopter of 9,650 pounds gross weight and powered by two British Napier gas turbine engines used as the hot gas generators. However, as the GE T-64 2450 HP gas turbine engine became available, the design was revised, in 1958, to reflect the use of two T-64 gas generators providing power to a 15,000-pound gross weight rotor system of 55-foot diameter operating at 700 ft/sec.

Considerable progress was made in 1960 - the design was completed, fatigue machine completed, whirl test tower installation approximately 85 percent complete, all blade components fabricated, hub components fabricated and partially assembled. The Navy supplied sufficient funds to provide a material change which increases the allowable operating temperature to 1150°F. The temperature increase will permit the hot cycle rotor to operate with any current gas turbine exhaust gas temperature at maximum power.

Technical Progress & Current Status:

Chart #3 shows a detailed sketch of the hub and one blade - all of the parts except those in red have been assembled into the largest sub-assembly possible before assembling the complete rotor for whirl test. The parts shown in red are the flexible couplings which are used to join the duct sections in the blade to provide a continuous flow path for the hot gases. These couplings were designed to be formed by an electroplating process and were subcontracted for initial delivery in July 1960. Slow delivery of parts due to manufacturing difficulties has caused Hughes to reevaluate the design and manufacturing process. During the past month a coupling has been drop-hammer formed from Inconel X; this appears to be a very satisfactory solution.

The fatigue test blade will incorporate drop-hammer formed parts and electroformed parts to evaluate their strength properties. The overall delay due to these difficulties appears to be approximately 2 months. The delay is costing the contractor money; since this is a fixed-price contract, the incentive exists to minimize program delays. Estimated fatigue test completion date is 15 April 61; the whirl test is scheduled to begin 15 April 61 and the first 25 hours of whirl testing is planned for completion by 1 June 1961.

Potential Applications:

The primary purpose of this contract is to design, fabricate, and test a hub and blade system which can utilize hot gases to power a pressure jet rotor, thereby proving feasibility of the concept. The design is applicable to medium transports, heavy transports, compound A/C, and aerial cranes. The characteristics of a twin engine T-64 hot cycle transport helicopter are shown in chart #4.

$$\frac{\text{Pay}}{\text{Emp}} = 1.7$$

A twin engined J-52 crane design concept is shown in chart #5. The design depicted can carry 32 tons of cargo 50 miles - the payload is more than twice the empty weight.

The potential of the hot cycle in payload carrying ability is clearly indicated by the payload to empty weight ratios, e. g., 1.7.

Hughes has proposed a compound helicopter based on the hot cycle rotor system; a phantom schematic of the propulsion system is shown in chart #6. The hot cycle rotor is easily adaptable to the compound unloaded-rotor vehicle concept due to the simplicity of the gas coupled power train. The diverter valves provide a simple means of shifting

from vertical flight operation to unloaded rotor cruise conditions. The compound hot cycle helicopter based on two T-64 engines has the following characteristics:

Gross Weight	29,500 lbs
Hover	SLS STD OGE
Empty Weight	12,930 lbs
Payload)200 n mi. range	10,000 lbs
Payload)500 n mi. range	7,600 lbs

The significant advantage of the compound helicopter is its increased range and productivity due to its higher cruise speed, which approaches twice that of present helicopters.

Conclusions:

1. The hot cycle rotor hardware is in final assembly; all parts and components have been fabricated except the flex-couplings, which are in work. The rotor is scheduled to be completed by 31 March 61.

2. Whirl test is scheduled to be underway in April 1961, with the first 25 hours planned for completion in June 1961.

3. A flight vehicle is required to subject rotor to realistic airloads; feasibility will be demonstrated by proving structural integrity, performance, and control system in a flight environment.

The FY 62 R&D program does not include any follow-in funding for this heavy lift propulsive rotor system. After completion of the 50-hour whirl testing, this system will remain "on the shelf" until such time as the Army states a firm requirement for a heavy lift crane which was recognized by the Rogers Board.

Chart #8 shows the funding breakdown as of FY 61. You will note that this is a triservice program.

Chart #9 reflects the time and dollar costs for a research flight vehicle program.

Successful completion of this program will demonstrate structural, functional, operational, and performance feasibility of the hot cycle

rotor system, for application to future helicopter, transport, compound, and possible aerial crane type rotary wing aircraft.

Triservice VTOL Transport Program

In the past decade the technical feasibility of vertical takeoff and landing (hence VTOL) flight has been proven by a series of test bed aircraft of various configurations. Although successful in demonstrating the vertical flight regime (the sole design goal as a basic research vehicle), these aircraft lack the utility necessary for qualification as a useful military aircraft. While the greater speed and range potential of the VTOL aircraft present many attractive military applications, the operational practicability of the concept has yet to be substantiated. The now famous "Perkins Committee" and "Rogers' Board," DOD and DA study panels respectively, recognized the requirements for validation of proposed military applications and recommended that a series of VTOL aircraft be built for operational evaluation research.

Because of mutual Army, Navy, and Air Force requirements in this area, OSD has directed the services to combine their efforts into a Tri-Service VTOL Transport Program. This program calls for the construction, under Navy cognizance, of 5 VTOL preproduction transport aircraft with the following specifications:

You will notice that no configuration is specified. No one type to date has indicated sufficiently superior merit to the exclusion of the others, and, therefore, the design completion is wide open.

In addition note that there are speed ranges and weight-space limitations, the former dictated by the disparity between AF and Navy desires, and the latter incurred in meeting assault aircraft carrier compatibility restrictions imposed in order to meet Marine Corps operational needs.

Industry will submit proposals on 3 April 1961 and it is expected that a contract will be signed before 1 July. Current informal agreement with Navy, as of last week, will provide for unilateral evaluation of some 15 industry design proposals by Army, Navy and USAF. A plan for Army evaluation, to include composition of evaluation team, scoring system and time phasing is being prepared by Office, Chief of Transportation, for staffing with appropriate Department of the Army agencies.

This program is oriented to ASR 60-3 of the Rogers Board Report. At least seven research projects, such as VTOL Control System work with MIT, are underway in support of this program.

High Performance Helicopter Research

This discussion is to briefly review the objectives of the Department of the Army approved high performance helicopter research program and to present our plans for implementation. As a first point, let's just briefly review the objectives of this program which are shown in the second slide as: 50-percent increase in range, 30-percent increase in speed, 20-percent increase in productivity. A byproduct of their approach is a 10-percent decrease in maintenance in hours per ton mile. The participating companies in the current design study phase are Bell (as a company-sponsored effort, however, they are submitting reports, as are the other contractors), Vertol and Sikorsky. Slide 3 shows a view of an improved HU-1B or Iroquois that the Bell Helicopter Corporation plans to submit. The results of these studies have indicated that moderate design changes could achieve about 50 to 75 percent of the objectives by fuselage drag cleanup, including fairing the pylons between the rotor and fuselage, the addition of variable rotor tilt and optimizing the rotor blade system for the higher speed cruise conditions. In this program, we would use existing blades and transmissions, and most of the other dynamic components would remain virtually unchanged. If we went to major design changes, such as extensive fuselage design changes and the development of a new rotor system for higher cruise speeds, we could exceed all of the objectives by about 10 to 20 percent, as indicated in slide 4.

The slide 3 shows some of the detailed components that would be used in such a ship. The basic HU-1B fuselage is used except to clean it up by elimination of protruding lights, door handles, rain gutters, and such items. It would include a new pylon fairing and engine. It includes a system to provide variable tilt of the rotor shaft. The rotor blades themselves are the HU-1B blades, and three of them are employed in a three-bladed hub which is currently under flight test at Bell. We would use the existing HU-1B transmission and the existing HU-1B tail rotor. These changes are moderate and could be accomplished quite quickly.

Slide 5 summarizes the increases in performance that could be obtained with the Iroquois. The blank bar graph represents the existing HU-1B, the hashed bar graph represents what could be accomplished

with moderate design changes, and the solid bar graph represents major design changes. With moderate changes, about 33-percent increase in ferry range could be obtained increasing from 900 to 1,200 nautical miles; with major design productivity is increased by about 30 percent for moderate design changes, and about 60 to 70 percent with the major changes.

Slide 6 depicts the maintenance aspects of the existing ship and that including the moderate and major design changes. The maintenance of the ship in hours per ton mile would decrease as we make the design changes; however, the maintenance per flight hour will go up somewhat due primarily to covering up many of the dynamic components by fairings. With regard to speed, with moderate design changes we should come up with 162 knots Vmax and with major changes in the order of 180 knots which is equivalent to about 208 miles per hour, a very respectable speed for helicopters.

Slide 7 shows the cost summary for modifying the HU-1, Iroquois helicopter. To accomplish the moderate design changes would cost about 540M plus, of course, the helicopter to be modified, the HU-1B. To accomplish the major design changes and come up with a really high performance helicopter would require 1500M plus an HU-1B. This includes the cost of the detailed design, fabrication and the flight test to demonstrate the gains. Department of the Army has decided against this approach.

How much time would it take to complete? Moderate design changes as shown in the next slide (8) indicate about 18 months. Major design changes indicate about 22 months, including a 4-month flight test program. We think that the moderate design changes could be accomplished in time to provide results directly to the HU-1D production helicopter. The production phasing is shown in the next slide (9). On the top, we have the phasing of the high performance HU-1B and starting from the bottom we have the HU-1D. It can be seen that if we proceeded immediately with the program, the flight test information could feed directly into the development of the HU-1D design and these changes incorporated in the production ship. Preliminary contract negotiation with Bell is now underway to initiate this program in March. Program cost is shown in slide 10.

Fan-In-Wing Research Aircraft Program

Background:

In 1957, the Army contracted for a study to determine the Army's propulsion system requirements in the period 1960 - to 1970. Guidance given to the Flight Propulsion Laboratory Department, General Electric Company, the contractor, stated that future Army aircraft must have two qualities: (1) VTOL capability; and (2) high subsonic speed capability. This latter is reflected in ASR 60-2 of the Rogers' Board Report.

Let's digress for a minute from this narrative on the background history to examine the characteristics that a propulsion system must have to provide both VTOL and high subsonic speed capabilities. Obviously, to rise vertically, a force in excess of the aircraft weight is needed. For forward flight, the force requirements are not quite so clear cut since they are dependent upon many factors, among which are the speed needed and on the type of aircraft, whether it's a bulky cargo or slender observation type.

In general, as shown in chart 1, the static thrust in terms of the aircraft weight would look something like this when plotted against maximum airspeed. You can see that in the fairly high subsonic Mach number range, around $M = .7$ to $.8$, the thrust required is about equal to one-third the weight of the aircraft. Putting it another way, a thrust three times that needed for forward flight is required to hover the aircraft. The propulsion system, then, must be capable of efficiently providing two greatly different thrust levels.

This study considered various propulsion systems which could give aircraft the two aforementioned capabilities. A system in which a single jet engine would provide power to lifting fans located in the aircraft wing or fuselage for the hovering flight condition and would also provide jet thrust for high speed flight was indicated to be the most attractive. Detailed studies of this concept indicated that, of several possible means for powering the lifting fan, such as mechanical, pneumatic or hydraulic drive systems, a lift fan driven by impingement of gases on turbine buckets attached to the fan blade tips would provide the most efficient and flexible system. This system is shown in chart 2.

The Army, in 1959, decided to fund a program to build one of these systems, conduct test stand runs of the fan unit, and test the system installed in the fuselage of an aircraft model located in

the NASA-Ames Full Scale Wind Tunnel. The test stand runs and two series of wind tunnel tests have been completed to date, with highly satisfactory results. Certain problems have been defined and solutions determined. Additional tests are scheduled for this summer. A fan-in-wing configuration will be used in these tests. Incidentally, it may be appropriate here to mention that, in addition to furnishing the model with a fuselage arrangement of the propulsion system, the NASA is furnishing a fan-in-wing model complete except for the propulsion system.

Chart 3 shows the fan-in-fuselage model as tested in the wind tunnel.

Chart 4 shows the configuration of the fan-in-wing model being built by the NASA-Ames Laboratory.

Let us now review the cost of the program to this date. The next slide (chart 5) probably best summarizes the cost picture. You can see the approximate contributions by the Government agencies and by the General Electric Company.

One of the components required for this propulsion system is the diverter valve. This valve governs whether the gases from the jet engine are directed aft for the pure jet operation or are diverted to the fan for VTOL operation. Most of the diverter valve work has been funded by the Air Force and represents about a third of this slice. The remainder of this slice represents, primarily, study funds and Air Force contributing engineering funds.

Not indicated are the costs incurred by the NASA for model design and construction, wind tunnel tests and data reduction, etc, but they are considerable. Several aircraft companies have expended considerable funds for various studies and experimental research on this concept. It appears, then, that both industry and various government agencies see considerable potential for the lift-fan concept, although maybe for different reasons. .

The next slide (chart 6) presents a summary of the lift fan program to date and also indicates a recommended flight research program as a logical next step.

We have recommended a fan-in-wing flight research program composed of several major parts: fabrication of several lift fan propulsion systems, design and fabrication of two airframes or modification to two suitable existing aircraft, appropriate wind tunnel

tests, simulator studies of the research aircraft, and ground and flight tests. This program is the logical next step and although this is a propulsion system research program, it has precedent in the research programs of the existing test bed VTOL aircraft.

The General Electric Company has estimated, after consultation with airframe manufacturers, a program costing something over 7 million dollars, as shown in the next slide (chart 7). This estimate is predicated on modifying existing aircraft and the Government furnishing the two aircraft, necessary jet engines and diverter valves. For example, North American Aviation has proposed modifying the Navy T2J. Such a modification would look about like this. Next slide (chart 8). Informal discussions with both Air Force and Navy personnel have determined their interest in the flight program and an indication that they would furnish the above items for Army use. NASA has informally indicated their support of proposed program.

The recommended program covers 27 months and the rate of expenditure is shown in the next slide (chart 9). As of this date USATRECOM has requested and received approval for reprogramming \$500M of FY 61 funds to begin the flight research vehicle phase. Also a T2-J aircraft and diverter valves have been requested, from the Navy and Air Force as the test vehicle. The last slide shows a concept of a Mach .95 combat surveillance aircraft. (Chart 10).

THE ROLE OF ARMY AIRCRAFT IN CBR WARFARE

by

Lt Col D. W. Dick

Chemical Section, HQ USCONARC

1. At present, Army helicopters are used to disperse the riot control and training agent CS. The recently standardized Irritant Gas Dispenser, Helicopter and Vehicle Mounted, M4, designed for this purpose, is suitable for use in all Army utility and cargo helicopters. The use of this item of equipment to disperse CS from helicopters greatly enhances CBR training and provides for an additional capability in the conduct of riot control activities.

a. Training. The combination of helicopter and disperser was used successfully in Exercise MESQUITE DUNE, conducted at Camp Irwin, California, in March 1960. The final report of this exercise recommended that CS be used in all large scale maneuvers and training exercises. This combination is being used again in Exercise DENNING SPRING, which is being conducted at Camp Irwin, California, during this week. For fixed-winged aircraft we have today a procedure that uses the M10 Spray Tank for dispersing the agent CMB. These are available and are used throughout the world.

b. Riot Control. An article in the February 18, 1961, issue of Army-Navy-Air Force Journal entitled, "'Surprise' Riot Control Test Slated for Berlin Next Month," emphasizes the stress which Army commanders are placing on riot control activities all over the world. Riot control missions have been included in many of the contingency plans for STRAC forces. To assist these units in carrying out their missions, the Irritant Gas Dispenser, Helicopter or Vehicle Mounted, M4, and agent CS are being made available to them. A tentative basis of issue of five dispersers per division aviation company has been proposed and is awaiting DA approval.

2. The CD Study USARMAV 60-3, "The Role of Army Aircraft in CBR Warfare," prepared by the US Army Aviation School, is presently being staffed at this headquarters. This study concludes that Army aircraft can support certain tactical operations concerned with CBR warfare. However, no USCONARC position has been established, or is there any indication at this time what such a position will include.



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3. There are currently under development several dispersing systems for CB agents for use by Air Force and Navy high performance aircraft. Much of this data would be applicable for any future Army aircraft requirements.

4. The points I would like to leave with you this morning are that there are techniques for the dispersal of certain agents now being used today by Army aircraft - riot control and training. Also, that there are indications that there might be more requirements for Army aircraft in this role. The CD study that I previously cited is being staffed with a view in determining these requirements. Finally, when and if these requirements are established, the Chemical Corps is ready to undertake such development projects with a fair degree of assurance for early completion.

