May 1, 1956

PROGRESS REPORT #8

This progress report is written sixteen months from the starting date of the project - December 1, 1954. As of this date, the project has the following status:

1. Ten aircraft have been designed, built and flown in simulated operations, training, and flight test. The eleventh goes to the training base this month.

2. A total of 1264:30 flight hours have been accumulated.

3. A completely manned and equipped detachment of four of these ten aircraft has been independently operating and successfully completed a USOM on April 14, 1956.

4. This detachment is leaving the training base today.

5. A total of ten ground service crews have been trained or are in process for detachment personnel.

6. Flight test has further demonstrated the aircraft's operational capabilities as a special weapons platform; particularly with regard to the altitude and range capability. The flight characteristics and stability with the autopilot have been proven satisfactory.

7. An accelerated modification program necessitated by flight test and equipment changes has resulted in completely operational aircraft ready when required for detachment use.

8. The new facility at Bakersfield is ahead of schedule and will start its airplane deliveries in September when it rolls out aircraft 361.

9. The cost of this total program to date is still substantially below the original estimates.

FLIGHT TEST STATUS -

Airplanes 341 and 344 are currently being operated by flight test. All others are in the hands of detachment or training groups. The operational characteristics of the aircraft have been established and the flight manual has been completed. Aircraft 341 has been testing the -31 engine installation which has exhibited some vibrations. A -31 engine is now in 344 where this characteristic is being further instrumented and checked. It presently appears that vibration does not originate in the engine.

A major problem with the -37 engine, oil in the pressurization bleed air, has not appeared on the -31 to date. The use of various filters to alleviate this problem with the -37 did not eliminate enough of the oil in the air. As a result of this, flexible cones are being installed on the cameras which prevent the depositing of an oil film on either the inside surface of the hatch window or the outside surface of the first lens.

Temperative measurements during flight on the inside surface of the hatch windows indicate that they may be close to the equipment bay dew point under adverse conditions. Heaters are being made to alleviate this in case it proves necessary.

The cockpit and equipment bay have been modified as a result of flight test in order to provide temperature conditions in the bay suitable to the equipment.

The C-47 assigned to the project is currently flight testing System II on cross country junkets to check out both the Seal Beach facility and the proposed operational equipment. It is contemplated that System III will also be flight tested in this aircraft.

EQUIPMENT SUMMARY -

This concerns only aircraft 341 through 360. Since the last report there have been a few changes in the type, weight and delivery dates of the equipment being procurred for this group of airplanes. Figure 1 shows the current picture of the equipment status. The primary changes are as follows:

1. Sextants have been added to all aircraft. This is a factory installation from aircraft 349 and up. It has been and is being accomplished by a field modification to all others.

2. A weather installation has been made of units provided for detachment A aircraft.

3. An [redacted] installation is being designed for use in the equipment bay. It is to be completely integral with the lower hatch. STAT

4. Cameras B & C, Systems II & III, and APQ-56 have scheduling changes which reflect their current status.

5. System II has grown tremendously in weight since the last report wherein it was estimated to be 60 pounds. The following table indicates its present configuration, which is obviously completely contrary to our former plans.

FIGURE 1

TACTICAL COMBINATIONS

EQUIPMENT	WT. LBS	MAX. POWER REQ 28V DC AMPS	MAX. POWER REQ 400N 3φ VA	AVAIL. DATE	MATING A/C	AIRCRAFT TYPES: BASIC PHOTO	PHOTO + I & III RCVRS	SYSTEM IV	APQ 56	APQ 56 + PHOTO
DRIFT SIGHT + SEXTANT	45#15	4		9/15/55	AIRCRAFT 348 THRU 360	X	X	X		
TRACKER	49	4		9/15/55		X	X	X	X	X
A1 CAMERAS	358	48		10/17/55						(14 X) X
A2 CAMERAS	394	26		9/15/55		X	X			
B CAMERA	383	48		1/2/56						
C CAMERA	391	48		9/1/56						
S & X RCVRS I	17	4		9/15/55		X	X			
COMM. & NAVIG. II	171	21	350 (+600 PULSE)	6/1/56		X	X	X	X	X
VHF RCVR III	32		280	6/15/56			X			
RADAR RCVRS IV	400		2000	9/1/56	355-360			X		
APQ 56	520	5	2508	6/1/56	349-351				X	X
EQUIPMENT TOTAL WEIGHT, LBS.						706	738	745	700	913
MAXIMUM POWER REQ'S: 28V DC AMPS						59	59	29	30	78
MAXIMUM POWER REQ'S: 400N 3φ VA						350	630	2350	2858	2858
MAXIMUM POWER REQ'S: VA + MOM. PULSE						950	1230	2950	3458	3458

SYSTEM II WEIGHT STATUS

Cockpit	-54 Printer	3.00
	-65 Input	2.06
Equipment Bay	-68A Tuner	21.22
	J Box	2.00
Reefer Comp't.	-24 Navig. Comp.	16.95
	-69 Power Supply	22.75
	-63 Computer	19.07
	-67 Exciter	68.81
	-68B Transmitter	
	-51 Receiver	7.94
	-29 Programmer	2.00
	Compressor	5.55
System II Hardware Total		171.35 lbs.
Antenna		1.50
Wiring, Plugs		19.03
Structure Provisions		6.43
Total System II as Installed		198.31 lbs.

LOWER HATCHES -

As a result of operational practices at the training base and the desire for more flexible use of the airplane, the types and numbers of lower hatches to be fabricated has been revised.

LOWER HATCH ASSEMBLIES

	Basic	A1	A2	B	C	IV	AFOAT
Operational	20	20		5	5	5	4
Spares	5		4	14	1		

The basic hatches are modified to include mounting provisions for the tracker. This has proven to be an extremely useful camera for use with equipment other than that requiring camera hatches. This will be a factory installation for airplanes 351 and up. Hatches for airplanes 345 through 349 have been modified to carry the weather provisions and the tracker. Other aircraft will be modified as required.

The use of two separate hatches for the A1 and A2 camera equipment has been shown to be an unnecessary complication. The A1 hatches will be used with both A1 and A2 equipment. The four A2 hatches already built are to be relegated to spares.

Only two B hatches have been fabricated. This production is linked to the B camera availability. No C hatches have been built as the C schedule has slipped as noted.

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AIRCRAFT WEIGHT -

The basic aircraft weight situation is outlined on page 5. The weight of this aircraft is still going up, primarily due to added or overweight equipment. This growth must be stopped or the basic mission of the aircraft will be degraded. Note that the aircraft gross weight for the zero fuel condition has increased as much as 249 pounds since the last report.

WEIGHT EMPTY STATUS

Weight Empty as per Progress Report #7	9968.1
Less the following:	
Paint - Not a requirement	(-85.0)
Actual Weight of -31 Engine	(-59.0)
Added:	
Sun Shade	1.8
Clock	0.8
Landing Lights	4.2
20V035 Battery in lieu of (2) 20V0 4's	62.2
Fuselage Nose redesign for Package III Antenna	10.9
Provisions for Package II & Cockpit Wiring	8.2
Cockpit Fan	1.5
Rear View Mirror	0.9
Misc. Changes	2.9
WEIGHT EMPTY TOTAL (-31 Engine)	9917.5
AFOAT Nose (6 airplanes only)	+27.0
WEIGHT EMPTY, [redacted] AIRCRAFT	9944.5

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GROSS WEIGHT STATUS

USEFUL LOAD	-37 ENGINE	-31 ENGINE
Crew	285	285
Unusable Fuel	71	71
Oil - Trapped	26	26
- Engine	120	65
Oxygen (3) 514 cu. in.	61	61
Tactical Load	691	691
TOTAL USEFUL LOAD	1,254	1,199
WEIGHT EMPTY	10,276	9,918
Zero Fuel Gross Weight	11,530	11,117
Progress Report #7		
Zero Fuel Gross Weight	11,281	10,906
Weight Growth	249	211

COSTS - 69.5% cw

The overall expenditures on contract SP 1913 to March 25, 1956 are $11,039,745. This is ~~73.6%~~ of the estimate to this point. See attached figure of projected and actual costs.

Kelly J