14

UNCLASSIFIED

ROYAL CANADIAN AIR FORCE

DIVISION OF

AIR MEMBER FOR TECHNICAL SERVICES

DEVELOPMENT STUDY

REPORT DAEng-45

CF105 MOCK-UP EVALUATION

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CONFIDENTIAL

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CF105 MOCK-UP EVALUATION

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Chairman Mock-Up
Board

Approved by: A/C C. C. Truscott
Chairman Mock-Up
Review Board

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Date: 27 Mar 56

PREFACE

1 This Development Study Report is issued on the authority of the Chief of Aeronautical Engineering. It contains details of the assessment by the RCAF of the Mock-Up of the CF105 All Weather Interceptor Aircraft being developed and produced for the RCAF by AVRO Aircraft Limited.

2 The contents of this report are not to be disclosed to any one outside the RCAF without the prior approval of the Chief of Aeronautical Engineering.

SUMMARY

1 A Royal Canadian Air Force Mock-Up Board met at AVRO Aircraft Limited on 23 and 24 February to assess the change requests submitted by the RCAF Mock-Up Inspection Teams. A total of 212 requests were made and action on these requests was agreed on by the Board.

2 A Mock-Up Review Board met on 5 March to review the assessment of the Mock-Up Board. The Review Board approved the findings of the Mock-Up Board.

3 The Mock-Up Board categorized (categories defined on page 6) the 212 change requests. The breakdown by categories is as follows:

Cat 1 - 91 change requests
Cat 2 - 2 change requests } 93
Cat 3 - 4 change requests
Cat 4 - 13 change requests
Cat 5 - 5 change requests
Cat 6 - 66 change requests
Cat 7 - 31 change requests

TABLE OF CONTENTS

CF105 AIRCRAFT MOCK-UP BOARDS

I INTRODUCTION

1 The CF105 All Weather Interceptor is being developed and produced by Avro Aircraft Limited to meet RCAF AIR 7-4 specification requirements. The Mock-Up of the CF105 is representative of the first aircraft that will be delivered to the RCAF. At the date of review the armament pack had not been approved and the integrated electronic system had yet to be specified in detail. The early CF105's will be powered by the Pratt & Whitney J-75 turbo jet engine. It is planned that aircraft for Service use will be powered by the PS-13 turbo jet engine.

2 The change requests submitted by the inspection teams are generally intended to ensure that the first aircraft will comply as closely as possible to the aircraft to be delivered to the RCAF. It is appreciated that the requirements of the Company on the early aircraft for the Flight Test Program will vary in minor detail to production models, but it must be stressed that any deviation not approved by the Design Authority (CAE) on any aircraft will not be tolerated.

3 The Mock-Up Board and Mock-Up Review Board assessed the mock-up in accordance with Report DAEng 32. The Mock-Up Board met on 23 and 24 Feb 56 and the Mock-Up Review Board met on 5 Mar 56.

4 This report records the changes requested by the RCAF and the action decided on by the Board.

II COMPOSITION OF MOCK-UP BOARD

5 Board Members

G/C H.R. Foottit	(Chairman)	AFHQ/DAEng
G/C F.R. West		AFHQ/DADR
G/C C.F. Maclure		AFHQ/DArmEng

G/C R.C. Hawtrey		AFHQ/DMEng
G/C R.M. Aldwinckle		AFHQ/DIEEng
G/C D.M. Holman		AMCHQ
Col J.P. Hurley (USAF)		AFHQ/DFO
W/C J.N. Brough		OC TSD AVRO
W/C R.E. Mooney		AFHQ/DATel
W/C W.A.G. McLeish		AFHQ/DAEEng
W/C H.J. Massiah		ADCHQ
S/L R.D. Schultz		ADCHQ
S/L R.J. Landry	(Secretary)	AFHQ/DAEng

6 Technical Advisors

W/C J.R.D. Braham	AFHQ/DADR
W/C N. Thorp	AFHQ/DATel
W/C J.C. Wickett	IAM
W/C D.A. MacLulich	AFHQ/DIEEng
W/C K.R. Grimley	AMCHQ
S/L H.D. Thomas	AFHQ/DADR
S/L J.H. Cooper	AFHQ/DADR
S/L D.C. Laubman	AFHQ/DADR
S/L B.A. Cameron	AFHQ/DFO
S/L S.H. Yearron	AFHQ/DATel
S/L V.H. Schroeder	AFHQ/DIEEng
S/L E.G.D. Maynard	AFHQ/DIEEng
S/L P. deL. Markham	AFHQ/DMEng
S/L A.W. Armstrong	AFHQ/DAEng
S/L I.S. McLeish	AFHQ/DAEng
S/L H.J. Londeau	AFHQ/DAEng
S/L O.B. Philip	CEPE
S/L R.A. Stubbs	IAM
S/L D.T. Bain	AMCHQ
S/L R.M. Sutherland	AMCHQ
S/L R.S. Crosby	TSD AVRO
S/L A.S. Middleton	TSD AVRO
S/L W. McCuaig	TSD AVRO
Maj A.V. Eastabrook (USAF)	AMCHQ
Maj O.R. Keys (USAF)	ADCHQ
F/L R.S. Coburn	AFHQ/DATel
F/L A.J.S. Wright	AFHQ/DIEEng
F/L W. Bell	AFHQ/DAEng
F/L B.D. Darling	AMCHQ

F/L J.E. Reeves	AMCHQ
F/L P.G. Barber	AMCHQ
F/L D.A. Duston	AMCHQ
F/L D.E. Keller	ADCHQ
F/L T.W. Hunter	ADCHQ
F/L D. Nelson	ADCHQ
F/L K.P. Larush	ADCHQ
F/L R.J. Clark	ADCHQ
F/L S.R. Kersey	CEPE
F/L R. Hall	TSD AVRO
Capt D.E. Kipfer (USAF)	AFHQ/DArmE
F/O L.F. Bateman	AMCHQ
F/O W.G. Gooding	AMCHQ
F/O R.H. Talbot	AMCHQ
F/O F.D. Gibbs	AMCHQ
F/O F.N. Murphy	AMCHQ
F/O E.L. Greenwood	AMCHQ
F/O N. Schroeder	IAM
F/O G.J. Waite	CEPE
F/S J.W. Brown	AMCHQ
F/S Dixon	AMCHQ
W/O H. Rossell	1202 TSD
F/S J.T. Higgs	1202 TSD
Sgt P.A. Bell	1202 TSD
F/S Dravey	1202 TSD
Mr. J.L. Bush	DDP
Mr. J.L. MacArthur	DDP
Mr. S.S. Payne	DDP
Mr. B.V. Williams	DRB
Mr. F.P. Pratten	DATel
Mr. D.R. Allan	DRML

III COMPOSITION OF THE MOCK-UP REVIEW BOARD

7	A/C G.G. Truscott	(Chairman)	AFHQ/CAE
	A/C J.A. Easton		AFHQ/COR
	A/C A.A.G. Corbet		DMS/Air
	G/C H.R. Foottit		AFHQ/DAEng
	G/C F.R. West		AFHQ/DADR
	G/C R.M. Cox		AFHQ/DFO
	G/C W.P. Gouin		AMCHQ
	G/C A.A. Buchanan		ADCHQ
	W/C J.R.D. Braham		AFHQ/DADR
	S/L A.W. Armstrong		AFHQ/DAEng

IV CONCLUSIONS AND RECOMMENDATIONS

8 The Inspection Teams submitted 212 change requests for categorization by the Mock-Up Board. The change requests are attached to this report as Appendices "A" to "M" inclusive. Table I is a breakdown of the change requests by item and category.

9 The Mock-Up Review Board accepted the change requests as categorized by the Mock-Up Board.

10 It is recommended that the changes as categorized be carried out.

V DEFINITION OF CATEGORIES

11 Cat. 1 - To be evaluated on the existing Mock-Up and incorporated on the first aircraft. Some items may not require evaluation on the aircraft mock-up but are to be incorporated in the first aircraft.

Cat. 2 - To be incorporated in time for the RCAF Engineering Evaluation to be carried out on the aircraft (not necessarily the first aircraft).

Cat. 3 - To be incorporated in the mock-up of the PS-13 powered aircraft.

Cat. 4 - To be incorporated in the mock-up for evaluation at the same time the mock-up of the Armament system is evaluated.

Cat. 5 - To be incorporated in the mock-up for evaluation at the same time the mock-up of the Integrated Electronic system is evaluated.

Cat. 6 - Changes of a nature requiring a study by the contractor or the RCAF.

Cat. 7 - Changes not acceptable.

TABLE I

SUMMARY OF CHANGES AS CATEGORIZED

Item	Cat. 1	2	3	4	5	6	7	Total
A - Crew Accommodation	18	1	0	2	1	12	4	38
B - Structures	9	0	1	10	1	9	9	39
C - Engine Installation	14	1	3	0	0	0	6	24
D - Electrical	17	0	0	0	1	19	2	39
E - Air Conditioning	7	0	0	0	1	6	1	15
F - Low Press Pneumatics	2	0	0	0	0	0	0	2
G - Fire Detection & Protection	0	0	0	0	0	3	0	3
H - Icing Protection	4	0	0	0	0	0	1	5
I - Fuel System	3	0	0	0	0	2	4	9
J - Telecom & Navigation	3	0	0	0	1	1	0	5
K - Hydraulics	10	0	0	1	0	11	1	23
M - Oxygen	2	0	0	0	0	1	1	4
N - Instruments	2	0	0	0	0	2	2	6
T O T A L S	91	2	4	13	5	66	31	212

DISTRIBUTION LIST	Copy Number
	1
CAE	2
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DFO	12
DMEng	13
DIEEng	14
DAEEng	15
DFS	16
AMC	17-22 inclusive
ADC	23, 24, 25
CJS (L)	26, 27, 28
CJS (W)	29, 30, 31
USAF (through CJS)	32, 33, 34
RAF (through CJS)	35, 36, 37
RAF 10	38, 39
USAF 10	40, 41
IAM	42
OC TSD (AVRO)	43-58 inclusive
DDP	59, 60
DRB	61, 62

CREW ACCOMMODATION ITEMS

SUMMARY

Category	Change Request Numbers
1	A-1, A-4, A-6, A-10, A-11, A-13, A-15, A-17, A-18, A-32, A-25, A-28, A-31, A-33, A-35, A-36, A-37, A-38
2	A-20
3	Nil
4	A-21, A-23
5	A-5
6	A-7, A-12, A-14, A-16, A-19, A-24, A-26, A-27, A-29, A-30, A-32, A-34
7	A-2, A-3, A-8, A-9

No. A - 1

Initiator: DIEEng

Change Desired:

Put wedge behind altimeter to tilt upwards

Reason: To obtain full view of top area of scale. As mounted the new 10,000 ft index could be out of sight along with most of the graduations.

Action:

Cat. 1

No. A - 2

Initiator: DFS

Change Desired:

Reason:

Action:

Withdrawn on request of initiator.

No. A - 3

Initiator: DFS

Change Desired:

Provide fail safe regulator or a by-pass to oxygen regulator from emergency bottle.

Reason: One regulator is common to normal and emergency oxygen; failure of regulator will preclude use of emergency oxygen.

Action:

Cat. 7

No. A - 4

Initiator: AMC - CEPE

Change Desired:

To manufacture canopy latch access door between cockpit bulkhead in a transparent material.

Reason: To enable the navigator to see the pilot's seat and top of pilot's head.
Important re: - determining if pilot anoxic or incapacitated, determining if pilot ejected. Psychological effect of being closed in helped.

Action:

Cat. 1 Mirror arrangement mocked-up - door to be openable in flight. Refer: A - 8.

No. A - 5

Initiator: AMC - CEPE

Change Desired:

Insure that the two upper rear cockpit floodlights are removed from operational version.

Reason: In present position, light would reflect directly on proposed operators indicator.

Action:

Cat. 5

No. A - 6

Initiator: AFHQ/DIEEng June 56 Cockpit Sub Committee to urge

Change Desired:

Dec 57 No action on MK1 will be considered for MK2

The proposed wording on the dials of certain instruments is considered excessive. DIEEng is commenting on oxygen. Turbine outlet thermometer drawing submitted by AVRO.

Reason: S 1038 - 105 - 4 (ACE) 11 Feb 57
3482/08/1 2 Nov 56 } refer

Action:

Cat. 1 - Cockpit sub-committee to present proposal to AVRO. Refer A - 8.

No. A - 7

Initiator: Cockpit Sub-Committee

Change Desired:

Instrument panel - re-arranged as detailed by Cockpit Sub-Committee.

Reason: To accommodate space provision for an attack scope.

Action:

Cat. 6 - AVRO to study and present proposal to meet the change request, i.e., leading to Cat. 1 - Changes to left hand console to be Cat. 1.

No. A - 8

Initiator: Cockpit Sub-Committee

Change Desired:

Clear view panel separating front and rear cockpit with an access door which can be opened in flight.

Reason: To permit navigator to see into front cockpit and to be able to pass small articles into front cockpit.

Action:

Cat. 7 - Partially covered by A - 4.

No. A - 9

Initiator: Cockpit Sub-Committee

Change Desired:

Red and amber master warning lights to be flashing and if the flashing feature fails, it must not prevent the functioning of the warning lights in a steady condition.

Reason: More eye catching when flashing.

Action:

Cat. 7

No. A - 10

Initiator: Cockpit Sub-Committee

Change Desired:

Rudder, elevator and aileron trim position indicators, and a control surfaces movement indicator are required on port console.

Reason: Safety of flight.

Action:

Cat. 1

No. A - 11

Initiator: Cockpit Sub-Committee

Change Desired:

"Damping System Disconnect" on control column to be renamed "Auto Flight Control System Disconnect" and to be connected to the tit in the "spare" position.

Reason: (a) Control now mis-named,
(b) Should be connected to "spare" tit as less likelihood of it being inadvertently actuated in that position.

Action:

Cat. 1 - For putting switch on control column. The actual definition of the switch is to be determined as per A - 6.

No. A - 12

Initiator: Cockpit Sub-Committee

Change Desired:

Circuit breakers in circuits essential to flight should be in front cockpit.

Reason: Safety factor.

Action:

Cat. 6 - refer to D - 1, D - 29, D - 35

No. A - 13

Initiator: Cockpit Sub-Committee

Change Desired:

Angle of rudder pedals makes full depression of brakes difficult. Shaft should be rotated to correct this defect.

Reason: Safety factor and easier operation.

Action:

Cat. 1

No. A - 14

Initiator: Cockpit Sub-Committee

Change Desired:

Method of permitting crew members to lean forward without loosening harness straps.

Reason: To provide similar facility to that now in CF-100 or T33.

Action:

Cat. 6 leading to Cat. 1 - harness details not available.

No. A - 15

Initiator: Cockpit Sub-Committee

Change Desired:

Method of preventing inadvertent release of harness by accidental operation of quick release on right side of seat.

Reason: Quick release could very easily be inadvertently operated in flight particularly since it is in a similar position to the seat raising lever but on the opposite side of the seat.

Action:

Cat. 1

No. A - 16

Initiator: Cockpit Sub-Committee

Change Desired:

Rear seat should be raised by two or three inches.

Reason: Only when seat is adjusted to its maximum height is vision out of the windows made facile, and then seat is too high to permit proper actuation of the "D" ring for ejection.

Action:

Cat. 6 leading to Cat. 1

No. A - 17

Initiator: Cockpit Sub-Committee

Change Desired:

Map stowage required in rear cockpit.

Reason: Company request. No space in front cockpit.

Action:

Cat. 1

No. A - 18

Initiator: Cockpit Sub-Committee

Change Desired:

RMI in front and rear cockpits to be replaced by IDI.

Reason: IDI has been selected as the direction indicator for this aircraft.

Action:

Cat. 1 - subject to availability.

No. A - 19

Initiator: Cockpit Sub-Committee

Change Desired:

Prevention of console and panel light reflections in convex face of R-Θ.

Reason: Convex face of R-Θ causes spots of light on face of instrument.

Action:

Cat. 6 - to be studied by RCAF

Cat. 7 - with respect to aircraft.

No. A - 20

Initiator: Cockpit Sub-Committee

Change Desired:

Largest possible windows to be installed in rear cockpit.

Reason: The small windows seriously restrict visibility and further will create a morale problem.

Action:

Cat. 2 - Not available on first aircraft but to be available on first aircraft accepted by RCAF for test flying. Company to determine weight penalty of larger window plus de-misting covered in A - 29, D - 13.

No. A - 21

Initiator: AFHQ/DArmE

Change Desired:

The adequacy of space and weight provisions for the indicators, scopes, and panels required by the armament installation and the electronic system cannot be determined.

Reason: A design for the armament installation has not been established and the electronic system has not been selected.

Action:

Cat. 4

No. A - 22

Initiator: AFHQ/DArmE

Change Desired:

Positive interlock must be provided in the crew ejection system to prevent the ejection seat from attempting to eject through the canopy.

Reason: Present system mock-up provides only a one second dealy between canopy opening and seat ejection.

Action:

Cat. 1

No. A - 23

Initiator: AFHQ/DArmE

Change Desired:

Adequacy of provision for an optical sighting device cannot be determined.

Reason: A specific optical sighting device has not been selected.

Action:

Cat. 4

No. A - 24

Initiator: AFHQ/DArmE

Change Desired:

Provision should be made for thermal radiation protection.

Reason: Protection is a requirement for the CF-105.

Action:

Cat. 6 - Study by RCAF and AVRO.

No. A - 25

Initiator: Cockpit Sub-Committee

Change Desired:

The indication in the navigator's cockpit of which UHF antenna is in use is not required.

Reason: No useful purpose is served by this indicator.

Action:

Cat. 1

No. A - 26

Initiator: Cockpit Sub-Committee

Change Desired:

In the event that the IDI is not fitted in the first aircraft and TACAN is fitted, an indication of TACAN range must be made available to the pilot.

Reason: Distance indication to selected TACAN station is required for pilots.

Action:

Cat. 6 - Study by AVRO if IDI is not available.

No. A - 27

Initiator: Cockpit Sub-Committee

Change Desired:

It has not been proven by tests that this configuration of canopy will open under conditions specified. Such tests should be carried out. Simultaneously, work should be done on design of a conventional type canopy which would be available should the clamshell type prove unsuitable.

Reason: To ensure suitability of this type of canopy.

Action:

Cat. 6 (AVRO) Aerodynamics Sub-Committee to monitor - Delete last sentence. Sub-Committee to check with IAM on their requirements.

No. A - 28

Initiator: Cockpit Sub-Committee

Change Desired:

Installation of an interlock to prevent the seat from firing unless the clamshells are open.

Reason: To prevent seat being fired into the canopy in event clamshells do not open.

Action:

Cat. 1 refer to A - 22.

No. A - 29

Initiator: Cockpit Sub-Committee

Change Desired:

Installation of de-misting and de-icing facility in windows in navigator's cockpit similar to that in pilot's cockpit.

Reason: Flight safety.

Action:

Cat. 6 - This request to be cross referred to D - 13, A - 20

No. A - 30

Initiator: Cockpit Sub-Commitee

Change Desired:

Better visibility forward and down. Mock-up required to be placed on truck to re-assess visibility in approach and landing altitudes.

Reason: Flight safety.

Action:

Cat. 6 - Cockpit Sub-Committee to monitor.

No. A - 31

Initiator: Cockpit Sub-Committee

Change Desired:

The left side of the ledge in the front cockpit immediately in front of the access door into the rear cockpit should be converted into a step.

Reason: To facilitate entry into the front cockpit.

Action:

Cat. 1

No. A - 32

Initiator: Cockpit Sub-Committee

Change Desired:

Area and adequacy of ground coverage by the landing and taxi lights not known. Mock-up when tried again on the truck should include the lighting system.

Reason: To ensure adequate coverage by landing and taxi lights.

Action:

Cat. 6 - Cockpit Sub-Committee to monitor. Refer to A - 30.

No. A - 33

Initiator: Cockpit Sub-Committee

Change Desired:

Cockpits and components should be coloured in accordance with ARSCM 80-1, Para 23, 28.

Reason: Eye comfort.

Action:

Cat. 1 - Cockpit Sub-Committee to specify colour.

No. A - 34

Initiator: Cockpit Sub-Committee

Change Desired:

Inclusion of amber warning light in the warning light system to indicate if undercarriage is not locked down when approaching to land.

Reason: Safety factor.

Action:

Cat. 6 - RCAF to study.

No. A - 35

Initiator: DAEEng

Change Desired:

Ensure sufficient space at back of seat to accommodate parachute pack containing canopy at least 28 feet in diameter.

Reason: Present pack appears to hold 24 foot diameter canopy. Larger canopy required to provide reduced rate of descent.

Action:

Cat. 1

No. A - 36

Initiator: DAEEng

Change Desired:

Alternate firing system in addition to blind is required.

Reason: In event the man cannot reach the blind firing handle.

Action:

Cat. 1

No. A - 37

Initiator: Cockpit Sub-Committee

Change Desired:

Check list to be removed from instrument panel and repositioned in less important area.

Reason:

Action:

Cat. 1

No. A - 38

Initiator: DFO

Change Desired:

Install guard on Master Electric Switch to prohibit accidental movement of switch to off position.

Reason: Flight safety.

Action:

Cat. 1

STRUCTURES ITEMS

SUMMARY

Category	Change Request Numbers
1	B-1, B-3, B-9, B-19, B-16 B-21, B-34, B-35, B-38
2	Nil
3	B-6
4	B-8, B-11, B-12, B-13, B-14, B-18, B-19, B-25, B-29, B-31
5	B-27
6	B-2, B-4, B-5, B-7, B-20, B-22, B-28, B-32, B-39
7	B-15, B-17, B-23, B-24, B-26, B-30, B-33, B-37

No. B - 1

Initiator: AMC - ADC

Change Desired:

Installation of a spring detent to hold the engine access doors in the fully open position.

Reason: To prevent the doors swinging at random and the possibility of injury to maintenance personnel.

Action:

Cat. 1

No. B - 2

Initiator: AMC - ADC

Change Desired:

Replace attachment screws of removable duct wall panels with Camloc type fasteners.

Reason: Increased fastener life, increased removability, increased fastener replacement, no damage to screw holes in duct wall by screws and thus increased duct integrity.

Action:

Cat. 6 leading to Cat. 1

No. B - 3

Initiator: ADC - AMC

Change Desired:

That it be clearly established that all six upper tie bars in each fuel tank can be removed without prejudice to re-installation and if such prejudice exists, that a tool to adjust the structure so as to make installation possible be designed.

Reason: To obviate any possible re-installation problems.

Action:

Cat. 1 - Company to investigate method and Maintenance Sub-Committee to monitor. Refer to B - 37.

No. B - 4

Initiator: AMCHQ - ADC - DMEng

Change Desired:

That all screwed panels requiring reasonably frequent access be completely changed to a reliable quick release fastener.

Reason: Screws wear in service, panel holes are damaged and structural integrity is jeopardized.

Action:

Cat. 6 - Test program to determine reliability of quick release fastener to be monitored by the Maintenance Sub-Committee.

No. B - 5

Initiator: AMC - ADC

Change Desired:

That approval of quick access facility to equipment located behind Electronic Power Bay Panel be deferred until such time as the equipment to be located behind this panel in future aircraft be defined.

Reason: To ensure that quick access facility to equipment located behind this panel in future is not overlooked.

Action:

Cat. 6

No. B - 6

Initiator: AMC - ADC

2 - 019

Change Desired:

That the structure of the rear equipment area be re-designed so as to remove the single vertical tie bars in this area.

Reason: To increase the accessibility of equipment located in this vicinity.

Action:

Cat. 3

No. B - 7

Initiator: AMCHQ - ADCHQ

Change Desired:

Control boxes and surfaces - Approval in these areas be deferred until these components are available and interchangeability and/inspection facility be confirmed.

Reason: Impossible to observe on these features at this time.

Action:

Cat. 6 - Maintenance Sub-Committee to follow up.

No. B - 8

Initiator: AMCHQ - ADC

Change Desired:

Approval of missile pack extends only to the principle.

Reason: Detail is not sufficiently representative.

Action:

Cat. 4

No. B - 9

Initiator: AMC - ADC

Change Desired:

That drain holes be provided at all points of the structure at which condensate or spilled fluids are liable to collect.

Reason: To prevent the collection of condensate or spilled fluids in the structure.

Action:

Cat. 1 Refer K - 12

No. B - 10

Initiator: AMC - ADC

Change Desired:

Front Inward Engine Attachment - Actuating lever for hinged half of socket to be made more robust and more firmly attached to hinged half of socket.

Reason: Cumulative effects of heat on hinge may make hinge stiff to operate.

Action:

Cat. 1

No. B - 11

Initiator: AMC - ADC

Change Desired:

Armament Package - Front Attachments Linkage to engagement "hook" should incorporate an "over-centre" arrangement.

Reason: To improve safety of attachment.

Action:

Cat. 4 - Maintenance Sub-Committee to monitor first aircraft installation.

No. B - 12

Initiator: AMC - ADC

Change Desired:

Armament Package - Front Attachment, Final securing should not be a bolt and anchor nut. Quick Connector required (hi-shear Camloc).

Reason: Bolt and nut are slow in use and wear out too rapdily.

Action:

Cat. 4 - Delete (hi-shear Camloc) Maintenance Sub-Committee to monitor.

No. B - 16

Initiator: ADC - AMC - DMEng

Change Desired:

All small (30 sq./ins) side wall panels should be secured to the aircraft.

Reason: Prevent loss of panels

Action:

Cat. 1

No. B - 17

Initiator: TSDs - AMC

Change Desired:

Full investigation of feasibility of semi-submerged launch of Sparrow missile for anticipated installation in PS-13 powered aircraft - eliminates missile pack.

Reason: (a) Weight decrease results in increase of performance.
(b) Production problems as experienced with CF-100 gun pack greatly reduced - no interchangeability.
(c) Tooling required for missile pack not required.
(d) GHE for Sparrow missile not as extensive as for the pack.

Action:

Cat. 7 - RCAF re-affirm pack concept for operations.

No. B - 18

Initiator: DMEng

Change Desired:

Missile Pack - Front Latch Mechanism - Either eliminate linkage or provide visual evidence of latch engagement.

Reason: Mechanism liable to distortion.

Action:

Cat. 4

No. B - 19

Initiator: DMEng

Change Desired:

Missile Pack - Electrical and Hydraulic Disconnects, Guides to ensure accurate mating required.

Reason: Probability of damage if connection made with mating portions misaligned.

Action:

Cat. 4

No. B - 20

Initiator: AMC - ADC - DMEng

Change Desired:

Scavenging Rear Equipment Area - Positive ducted air flow of suitable volume to change the air in this area and minimize its temperature.

Reason: Reduce explosive concentrations and limit temperatures.

Action:

Cat. 6 - Refer G - 1, 2, and 3

No. B - 21

Initiator: DMEng - ADC - AMC

Change Desired:

Main Undercarriage Door - Quick disconnect and strap or stay required for door jack.

Reason: To facilitate access to Air Conditioning/Hydraulic Access Door on fuselage, when undercarriage lowered.

Action:

Cat. 1

No. B - 22

Initiator: DMEng

Change Desired:

Mudguard for nose wheels or covers for equipment in well or make door cycle from closed position during retraction.

Reason: To keep dirt and water out.

Action:

Cat. 6 - The RCAF has experienced considerable trouble with open wells - Company to fully investigate and determine portions to be covered. It is noted that cycling makes retraction time marginal. See K - 7.

No. B - 23

Initiator: AFHQ/DArmE

Change Desired:

Armament Pack - Method of fastening access doors unacceptable.

Action:

Cat. 7 - Refer to B - 4 and B - 16.

No. B - 24

Initiator: AFHQ/DArmE

Change Desired:

The radome cannot be approved.

Reason: The radome is of solid construction with no specified electrical characteristics.

Action:

Cat. 7

No. B - 25

Initiator: AFHQ/DArmE

Change Desired:

Armament Pack Dolly - A single, variable speed dolly panel control should be provided.

Reason: For efficient removal and replacement of the Armament Pack.

Action:

Cat. 4 - This is not an aircraft item, but it is to be considered for the Armament Pack Dolly,

Cat. 7 - with respect to aircraft.

No. B - 26

Initiator: AFHQ/DArmE

Change Desired:

Armament Pack Dolly - Study use of pneumatic tires and possible reduction in size of dolly structural members.

Reason: To optimize winter and summer condition operation and to cut cost and weight.

Action:

Cat. 7 - with respect to aircraft. This is not an aircraft item, but it is to be considered for the Armament Pack Dolly.

No. B - 27

Initiator: AFHQ/DArmE

Change Desired:

Adequacy of the space and weight provisions for the electronic system cannot be determined.

Reason: The space and weight requirements of a system to meet the requirements if Air 7-5 and/or Air 7-6 are not known.

Action:

Cat. 5 - Consideration should be given when equipment is specified in Air 7-5 and Air 7-6 to the space available.

No. B - 28

Initiator: AFHQ/DArmE

Change Desired:

Armament Pack Dolly - Study to determine feasibility of using the Dolly as a reloading rack.

Reason: Possible saving in ground handling equipment and spare Armament Packs.

Action:

Cat. 6 - Maintenance Sub-Committee and Readiness Sub-Committee to continue discussion with AVRO and give guidance to the Company.

No. B - 29

Initiator: AFHQ/DArmE

Change Desired:

Armament Pack Dolly - Forward up-locks should eliminate linkage, if possible, and provide visual indication of positive up-lock.

Reason: To ensure positive up-lock of the Armament Pack.

Action:

Cat. 4 - similar to B - 12

No. B - 30

Initiator: AFHQ/DArmE

Change Desired:

Armament Pack - Hydraulic and electric connections require guides.

Reason: To prevent damage and wear in service use.

Action:

Cat. 7 - Refer to B - 19.

No. B - 31

Initiator: AFHQ/DArmE

Change Desired:

Armament installation cannot be approved at this time.

Reason: AVRO design for an armament installation has not been established.

Action:

Cat. 4

No. B - 32

Initiator: AMCHQ

Change Desired:

Engine duct walls to be installed with quick release fasteners on one side between stations 697 and 591 in 1 or 3 segments, depending on cost and the details of the removal of the floating duct and gill box be made available to allow consideration of its removal to be given.

Reason: Access to equipment area, generally and in detail.

Action:

Cat. 6 leading to Cat. 1

No. B - 33

Initiator: DMEng

Change Desired:

Diffused lighting to be placed in equipment compartments where access is difficult. The power can be supplied from a bettery cart.

Reason: Self evident. Best locations to be determined by experiment.

Action:

Cat. 7

No. B - 34

Initiator: TSD - AMC

Change Desired:

Make use of as many sealed-for-life bearings as possible, and use one speck of grease only for complete lubrication of aircraft.

Reason: Efficiency, saving of manhours.

Action:

Cat. 1 - Agree in principle to be followed up by Maintenance Sub-Committee.

No. B - 35

Initiator: TSDs, AVRO

Change Desired:

Reference external emergency canopy release on right side of fuselage - Notation "Emergency canopy release" changed to larger red letters - notation added to left side of fuselage "Emergency canopy release - other side".

Reason: Safety aspect should "rescuer" approach aircraft from left side and unfamiliar with CF-105 (ref. CF-100)

Action:

Cat. 1 RCAF to specify

No. B - 36

Initiator: AMC

Change Desired:

That the fuselage fuel tank tie rod attachment bolts be either tapered or utilize a waisted thread on a screw-on tapered nose.

Reason: To facilitate the insertion of bolts when mis-alignment has occurred.

Action:

Cat. 7 - Refer to B - 3

No. B - 37

Initiator: DMEng

Change Desired:

Structure must be designed to allow simultaneous removal of all struts in either fuel tank.

Reason: To permit ready access for bladder and equipment maintenance.

Action:

Cat. 7 - Refer to B - 3

No. B - 38

Initiator: TSU

Change Desired:

Small inspection doors to have gang release buttons.

Present

Future

Reason: Cold weather operation with mitts.

Action:

Cat. 1

No. B - 39

Initiator: AMC - ADC

Change Desired:

Paint interior of equipment area to provide illumination.

Reason:

Action:

Cat. 6 - leading to 1 -
Type of paint and area to be painted to be determined by Maintenance Sub-Committee and AVRO. Weight penalty to be considered and Coordinating Committee advised.

ENGINE INSTALLATION ITEMS

SUMMARY

Category	Change Request Numbers
1	C-1, C-3, C-5, C-9, C-10 C-11, C-13, C-14. C-15, C-16, C-17, C-19, C-23, C-24
2	C-20
3	C-2, C-4, C-21
4	Nil
5	Nil
6	Nil
7	C-6, C-7, C-8, C-12, C-18, C-22

NOTE: The mock-up of the engine installation was incomplete and a further evaluation of this part of the mock-up will be necessary.

No. C - 1

Initiator: ADC

Change Desired:

Engine Mount Torque Valves - Stencil torque values for mounting bolts on structure.

Reason: To have information readily available. To provide a reminder.

Action:

Cat. 1

No. C - 2

Initiator: AMCHQ - ADCHQ

Change Desired:

Forward Engine Mount - Approval of this mount is granted only on the grounds that it was necessary in the J75 installation.

Reason: It seriously prejudices accessibility in this area.

Action:

Cat. 3

No. C - 3

Initiator: AMCHQ - ADC

Change Desired:

Guide rail - Either continuous or 'entry' guides at each former to allow smooth entry of the engine guide bars.

Reason: Difficult to man-handle the 20' bar into place because of the successive formers.

Action:

Cat. 1

No. C - 4

Initiator: ADC - AMC

Change Desired:

Approval for future engines can only be considered after demonstration.

Reason:

Action:

Cat. 3

No. C - 5

Initiator: DMEng

Change Desired:

Further demonstration of installation when it is complete, i.e., with piping, wiring, etc.

Reason: Principle of engine installation and change only can be accepted at present. Detail is unknown to any extent.

Action:

Cat. 1

No. C - 6

Initiator: AMC - ADC

Change Desired:

Engine Change Stand - Positive mechanical lock be provided to confirm elevation of forward rails.

Reason: Hydraulically achieved elevation may not be sufficiently reliable for transporting engines.

Action:

Cat. 7 - With regard to aircraft

Cat. 6 - With regard to GHE

No. C - 7

Initiator: DMEng

Change Desired:

Engine Change Stand should be provided with steadying jack to raise it off wheels and fix its position during operation.

Reason: A small movement of the stand can strain the stand to rail joints.

Action:

Cat. 7 - With reference to aircraft

Cat. 6 - With reference to GHE

No. C - 8

Initiator: AMCHQ - ADC

Change Desired:

That the engine stand be capable of being towed with engine in place and positive braking be provided.

Reason: To allow engines to be transported on the stand and to minimize loads on the airframe.

Cat. 7 - With reference to aircraft

Cat. 6 - With reference to GHE

No. C - 9

Initiator: AMC - ADC

Change Desired:

Outer Rear Engine Mount - The design of the adjustable feature of this mount be considered for high temperature effects, i.e. lubrication etc.

Reason: This unit, if cooked, would conceivably not function.

Action:

Cat. 1

No. C - 10

Initiator: ADC - AMCHQ

Change Desired:

Re-routing of two lines port of utility hydraulic compensator -- 3/8" line to be bent nearer to the area floor, then run aft to rise to its junction block -- 7/8" line T'd off the compensator charging line be brought off 6" lower than at present.

Reason: To improve access to forward engine mount.

Action:

Cat. 1 - Re-route lines to give desired accessibility.

No. C - 11

Initiator: AMC - ADC

Change Desired:

Engine pad elbow be redesigned to allow aft in line coupling at aft end of this line with maximum accessibility.

Reason: Present installation impossible.

Action:

Cat. 1 - With further demonstration

No. C - 12

Initiator: ADC - AMC

Change Desired:

Engine Change Stand - A cable and winch are required to effect the actual engagement of the trolley to the side rails.

Reason: To ease and hasten the attachment.

Action:

Cat. 7 - With reference to aircraft

Cat. 6 - With reference to GHE

No. C - 13

Initiator: AMC - ADC

Change Desired:

Rear Engine Mount - Outboard Engine Mount Bolt to have locking wire.

Reason: To ensure satisfactory engagement at all times.

Action:

Cat. 1

No. C - 14

Initiator: ADC - AMC - DMEng

Change Desired:

Outboard Front and Rear Engine Mounts - Outboard Engine Mount Bolts to be attached to chain.

Reason: To prevent dropping of bolts inside Engine Bay.

Action:

Cat. 1

No. C - 15

Initiator: AMC

Change Desired:

That some means of checking and replenishing the oil in the fuel pump and right angle gear boxes be provided in the vicinity of the lower access doors.

Reason: It is impossible to check the oil level or replenish the oil in these gear boxes without extensive removal of components.

Action:

Cat. 1

No. C - 16

Initiator: AFHQ/AMTS

Change Desired:

Inboard Forward Engine Mounts - Particular attention should be paid to re-routing of lines between stations 571 to 591 to facilitate access to engine mounts.

Reason: Present working space is rather restricted.

Action:

Cat. 1 - See C - 10

No. C - 17

Initiator: AFHQ/AMTS

Change Desired:

Outside Engine Mounts should be labelled to indicate that it must be loosened prior to inboard mount for engine removal and tightened after inboard mount for engine installation.

Reason:

Action:

Cat. 1 - AVRO to determine proper label.

No. C - 18

Initiator: AFHQ/AMTS

Change Desired:

Inboard Forward Engine Mounting - Lever required to open up mounting clamp - must be such as to permit easy rotation of clamp prior to engine removal.

Reason: Present lever is very difficult to rotate.

Action:

Cat. 7 - Refer to B - 10

No. C - 19

Initiator: AFHQ/AMTS

Change Desired:

Control Tabs adjusting the open and closed position of the lower seal aft of the accessory zone must be clearly marked and positioned such that the access hatch cannot be closed inadvertently with the lower segment not sealed.

Reason: Accessory Section must be "sealed off" from the hot end.

Action:

Cat. 1

No. C - 20

Initiator: DMEng

Change Desired:

Maintenance instructions are required for almost all operations in the engine and equipment areas.

Reason: Because of density of equipment a sequence of removing equipment to get at other equipment is necessary if time is to be saved.

Action:

Cat. 2

No. C - 21

Initiator: TSDs - AMC

Change Desired:

Accessibility of equipment in rear centre section should be of prime interest in design of PS-13 installations - Request full scale mock-up of PS-13 installation together with equipment arrangement for RCAF evaluation prior to first installation.

Reason: Improve accessibility based on knowledge gained to mock-up stage together with knowledge gained from operating J-75 aircraft prior to PS-13 powered aircraft.

Action:

Cat. 3

No. C - 22

Initiator: DNEng

Change Desired:

Engine Stand should be made to fold in order to reduce overall height after removal or before installation.

Reason: To facilitate movement in hangar.

Action:

Cat. 7 - With reference to aircraft

Cat. 6 - With reference to GHE

No. C - 23

Initiator: TSU

Change Desired:

A change in the piping run of the low pressure fuel supply to the engine, at the engine disconnect point. Changes requested to fuel piping run.

(a) That the $2\frac{1}{2}$ line from the heat exchanger be continued aft to bring the forward disconnect point over the access door area.

(b) That the engine connection line be brought down and forwarded by a gooseneck elbow which would bring that disconnect point nearer the access door area and provide a more "in-line" connection; these changes will facilitate engine removal and will make these joints more reliable in service.

Reason: In its present location, access to the wig-o-flex coupling is difficult.

Action:

Cat. 1 - With further demonstration

No. C - 24

Initiator:

Change Desired:

Engine Oil - Fill connections should be made accessible - small door 1 or 2 Camloc only.

Reason: At present 36 screws or Camlocs used on access door.

Action:

Cat. 1 - Not necessarily Camloc. Maintenance Sub-Committee to monitor.

ELECTRICAL SYSTEM ITEMS

SUMMARY

Category	Change Request Numbers
1	D-2, D-4, D-5, D-7, D-8, D-9, D-10, D-12, D-14, D-15, D-16, D-17, D-19, D-21, D-23 D-38, D-39
2	Nil
3	Nil
4	Nil
5	D-30
6	D-1, D-3, D-6, D-11, D-13, D-18, D-22, D-24, D-25, D-27 D-28, D-29, D-31, D-32, D-34, D-35, D-36, D-37
7	D-20, D-33

No. D - 1

Initiator: AMC - ADC

Change Desired:

A limited number of the circuit breakers should be located accessible to crew in flight -- those vital to safety of aircraft and crew.

Reason: To improve safety factor.

Action:

Cat. 6 - RCAF to determine requirement of circuit breakers in cockpit.

No. D - 2

Initiator: DMEng - ADC - AMC

Change Desired:

Electrical - Cover required for Refueling Indicator Panel - Main Wheel Well.

Reason: Vulnerable to dirt and water from wheels.

Action:

Cat. 1

No. D - 3

Initiator: DMEng - ADC - AMC

Change Desired:

Electrical - Cover required for Circuit Breaker Panel - Nose Wheel Well.

Reason: To exclude dust, water, mud, snow, slush.

Action:

Cat. 6 - Refer to D - 1

No. D - 4

Initiator: AMCHQ - AFHQ - ADC

Change Desired:

Hi Energy Ignition Exciter Boxes to be individually fused.

Reason: In present system overload on one half of circuit will result in failure of complete circuit.

Action:

Cat. 1

No. D - 5

Initiator: AMCHQ - AFHQ - ADC

Change Desired:

Protective covering required on all undercarriage.

Reason: Prevents damage from moisture and dirt.

Action:

Cat. 1

No. D - 6

Initiator: AMCHQ - AFHQ

Change Desired:

Navigation Lights Flasher Motor to be hermetically sealed.

Reason:

Action:

Cat. 6 - Subject to availability.

No. D - 7

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Qualification of Alternators

Reason: Alternators have been uprated from 20 to 30 KVA and are not as yet qualified to meet specifications.

Action:

Cat. 1 - Sufficient qualification testing to be carried out for Flight Clearance.

No. D - 8

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Separate Main Power Cables from present cable bundles.

Reason: To meet specification requirements. Main Power Cables are to be kept separate from branch circuits.

Action:

Cat. 1 - Subject to DIEEng approval.

No. D - 9

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Install parallel feeder lines between alternators and main distribution centres.

Reason: Present installation does not meet specification. To ensure power to systems in event of damage to a power cable.

Action:

Cat. 1 - Subject to DIEEng approval of AVRO's deviation.

No. D - 10

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Increase distance between calbes and fluid lines to meet specification requirements.

Reason: Cables are dangerously close and in some cases touching fluid lines.

Action:

Cat. 1 - Subject to DIEEng approval of AVRO's deviation.

No. D - 11

Initiator: AFHQ/DIEEng - AMC

Change Desired:

2-019

Study of present system for adequate capacity and growth factor.

Reason: Present system is overloaded on single alternator operation with missiles. Insufficient or no growth factor for future requirements.

Action:

Cat. 6 - Refer D - 13

No. D - 12

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Study of ram air cooling for alternators uprated from 20 to 30 KVA.

Reason: To ensure sufficient cooling air for uprated alternators under all operating conditions.

Action:

Cat. 1

No. D - 13

Initiator: AMTS/DIEEng

Change Desired:

To consider the installation of two 40 KVA oil cooled, brushless type alternators and a parallel A-C system.

Reason: To provide adequate power, growth factor, provision for missile and possible operation of integrated electronic system from main electrical system. Dispense with brush troubles, provide adequate cooling for increased altitude. Ram air cooled alternators are at approximately their limits when operated at 250° F.

Action:

Cat. 6 - RCAF to specify requirement for power supply

No. D - 14

Initiator: ADC

Change Desired:

Position of Fuel Differential Pressure Switches located at approximately Station 520.

Reason: Would be impossible to get at except through the shroud.

Action:

Cat. 1

No. D - 15

Initiator: ADC - AMC

Change Desired:

Shield AC wiring to prevent interference with compass.

Reason:

Action:

Cat. 1

No. D - 16

Initiator: DMEng - ADC

Change Desired:

Main Gear - Micro Switches must be repositioned or protected.

Reason: They are located about one foot from tire peripheries and ideally located to collect mud, slush, etc.

Action:

Cat. 1

No. D - 17

Initiator: DMEng

Change Desired:

Nose Gear Door - Micro Switches Tube positioned on stbd side of opening.

Reason: For protection against slush, water, etc.

Action:

Cat. 1 - Delete position on stbd side. AVRO to advise Maintenance Sub-Committee on proposal.

No. D - 18

Initiator: ADC

Change Desired:

Provision made for quick removal of E.6 panel and a means of suspension while withdrawn.

Reason: Not readily accessible for maintenance.

Action:

Cat. 6 - Maintenance Sub-Committee to monitor.

No. D - 19

Initiator: ADC

Change Desired:

Engraved panel showing connections to TRU put on the front of TRU.

Reason:

Action:

Cat. 1

No. D - 20

Initiator: ADC

Change Desired:

Battery Disconnect - A slotted type lug be used with a wing tip or knurled type nut on the battery lugs.

Reason: This would allow for quick disconnect in case of an emergency.

Action:

Cat. 7 - Refer to D - 25.

No. D - 21

Initiator: ADC - AMC

Change Desired:

The battery lugs should be positively identified.

Reason: So that leads cannot be interchanged.

Action:

Cat. 1

No. D - 22

Initiator: ADC

Change Desired:

Delete circuit breaker from battery to battery bus.

Reason: Superfluous.

Action:

Cat. 6 - RCAF to determine requirement.

No. D - 23

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Open TRU terminals provided with covers.

Reason: Cable terminals on exterior of TRU are not protected.

Action:

Cat. 1

No. D - 24

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Covers provided over exposed terminals.

Reason: Protection against foreign objects.

Action:

Cat. 6 - Refer to D - 13.

No. D - 25

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Install standard battery with Elkson type quick disconnect.

Reason: Non standard design using terminals and nuts in place of quick disconnect.

Action:

Cat. 6 - Inst and Electrical Sub-Committee to determine adequacy and requirements.

No. D - 26

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Install larger capacity AN3150, 34 ampere hour battery.

Reason: Battery capacity of 15 ampere hour too low for emergency requirements.

Action:

Cat. 6 - Refer to D - 25

No. D - 27

Initiator: AFHQ/DIEEng - AMC

Change Desired:

Increased capacity of Direct Current output for growth factor.

Reason: TRU rated 100 amperes each, available supply 200 amperes. Present load is 175 amperes. Insufficient growth factor.

Action:

Cat. 6 - Refer to D - 13

No. D - 28

Initiator: AFHQ/DIEEng

Change Desired:

Battery compartment and installation facilities provided so that either a standard lead acid or nickel cadmium battery can be installed.

Reason: BuAer have advised that a built-in thermostat acid relay in nickel cadmium batteries is mandatory for aircraft use, in addition, cooling air to battery was supplied. AVRO batteries do not have these units, and the battery installation is not acceptable until thoroughly evaluated to ensure the batteries will never be subject to "vicious cycling" under aircraft battery charging conditions.

Action:

Cat. 6 - Refer to D - 25.

No. D - 29

Initiator: AFHQ/DIEEng

Change Desired:

Provide accessibility to flight crews for resetting of breakers in circuits essential to flight and aircraft operational requirements.

Reason: Breakers are inaccessible. System facilities cannot be operated if circuit breakers open during flight. Possible hazardous location for resetting by ground crew when engines operating on ground.

Action:

Cat. 6 - Refer to D - 1

No. D - 30

Initiator: AFHQ/DIEEng

Change Desired:

Space provisions for additional breakers and switches.

Reason: Future requirements

Action:

Cat. 5 - Provision of CAP 479 and MIL E7080 must be met on aircraft delivered to the RCAF.

No. D - 31

Initiator: AFHQ/DIEEng

Change Desired:

Space provisions for additional warning lights.

Reason: Future requirements

Action:

Cat. 6 - Refer to A - 7

No. D - 32

Initiator: DADR

Change Desired:

Cover should be provided for protection against slush, dirt, etc.

Reason: Protection

Action:

Cat. 6 - Refer to D - 1 and D - 3

No. D - 33

Initiator: AFHQ/DIEEng

Change Desired:

Alternators made accessible for inspection and maintenance of brushes, commutator when installed.

Reason: Provide ready inspection and meet specification MIL E7614.

Action:

Cat. 7

No. D - 34

Initiator: DADR

Change Desired:

Provision of emergency alternating current power as previously made known to the Company.

Reason: Flight Safety

Action:

Cat. 6 - Refer to D - 25

No. D - 35

Initiator: AFHQ/DArmE

Change Desired:

Study relocation of circuit breakers.

Reason: Pending selection of an electronic system, some circuit breakers essential for mission completion may be required in a position accessible to the crew.

Action:

Cat. 6 - Ref to D - 1, A - 12, D - 29

No. D - 36

Initiator: AFHQ/DArmE

Change Desired:

The main power supply cannot be approved at this time.

Reason: The power requirements of the electronic system are unknown. Neglecting possible electronic system power requirements, and the possibility of alternator failure, the reserve power planned makes inadequate provision for growth.

Action:

Cat. 6 - Refer to D - 25

No. D - 37

Initiator: DADR

Change Desired:

Capability of carrying out an attack in the event of one alternator failure.

Reason: Operational

Action:

Cat. 6 - Refer to D - 13

No. D - 38

Initiator: TSU

Change Desired:

Provide insulation between wire bundle and fuel line at Station 579.

Reason: Fuel line touching wires.

Action:

Cat. 1 - DIEEng to rule on deviations that may be requested.

No. D - 39

Initiator: TSU

Change Desired:

In the rear of navigators bulkhead attach wire bundle on the side of existing channel, instead of on the face.

Reason: To allow clearness of C/F Pressure controller tubing.

Action:

Cat. 1

AIR CONDITIONING SYSTEM ITEMS

SUMMARY

Category	Change Request Numbers
1	E-1, E-4, E-5, E-7, E-11 E-14, E-15
2	Nil
3	Nil
4	Nil
5	E-13
6	E-2, E-3, E-6, E-8, E-9, E-10, E-14
7	E-12

No. E - 1

Initiator: AMC

Change Desired:

Introduction of a tapping downstream of the pressure regulating valves.

Reason: To be used as a test point, to test the outlet pressure of the pressure regulating valves.

Action:

Cat. 1

No. E - 2

Initiator: TSDs AVRO

Change Desired:

Design study and structural testing to ascertain fatigue life of piping due to effects of hi-temperature and vibration from airframe and air sources on pipe welding (seam and end coupling).

Reason: As most of piping buried in prime structure and not capable of inspection, pipe reliability of prime importance as leak in line could go undetected and cause structural failure in immediate region.

Action:

Cat. 6

No. E - 3

Initiator: AMC - TSDs - AFHQ/DAEng

Change Desired:

Presentation of a scheme for periodic pressure testing of air conditioning ducting to determine duct leakage rate, and an indication of permissible leak rates for all ducts.

Reason: To ensure duct integrity.

Action:

Cat. 6 - AVRO Maintenance Sub-Committee to monitor.

No. E - 4

Initiator: AMC - AFHQ/DAEng - TSDs

Change Desired:

An over temperature sensing system to sense an over temperature condition in the vicinity of the main engine bleed air duct up to the heat exchanger; particularly at the joints and flexible areas. When over temperature sensed, main shut-off valve requested in CR No E5 operated automatically and indication of same in cockpit with light is given.

Reason: To indicate a duct leak.

Action:

Cat. 1 - Delete indication in cockpit but indication available during D.I., Maintenance Sub-Committee to monitor.

No. E - 5

Initiator: AMC - AFHQ/DAEng - TSDs

Change Desired:

Reference CR No. E4 - Installation of a shut valve immediately adjacent to the engine air bleed take-off.

Reason: To prevent damage to the structure in case of a leak in the main engine air bleed duct.

Action:

Cat. 1

No. E - 6

Initiator: AMC - DAEng

Change Desired:

Installation of a device to visually indicate the water level in the boiler up to the full condition during refilling operations.

Reason: To allow the boiler to be accurately and quickly filled without physically measuring the quantity to be added.

Action:

Cat. 6 - AVRO study to incorporate in aircraft as soon as possible.

No. E - 7

Initiator: AMC

Change Desired:

Provision of a plug for the engine air take-off point suitable for use during installation of the engine.

Reason: To prevent running the engine after installation without the elbow installed with subsequent damage to structure.

Action:

Cat. 1 - If valve called for in E - 5 cannot be installed in the engine.

No. E - 8

Initiator: DMEng

Change Desired:

Recommended heating filler neck and steam outlet.

Reason: In order to remove ice from these areas first, and so remove danger at present associated with overfilling. This will also make filling a very simple operation.

Action:

Cat. 6 - Refer to E - 6

No. E - 9

Initiator: AMC

Change Desired:

That provision for determining on the ground air conditioning air supply temperatures.

Reason: This would be the only check on the function of the air conditioning equipment.

Action:

Cat. 6 - AVRO to determine procedures and report to Maintenance Sub-Committee.

No. E - 10

Initiator: AMC

Change Desired:

That approval of the cockpit pressurization system be deferred until an outline of the cockpit pressure test procedure is provided.

Reason: In order that the suitability of the test procedure can be evaluated.

Action:

Cat. 6 - AVRO to submit proposal covering test procedure for Maintenance Sub-Committee approval.

No. E - 11

Initiator: TSDs AVRO

Change Desired:

2-018

The Company should obtain a better duct clamp.

Reason: Present clamp is too stiff to install in confined space.

Action:

Cat. 1 - Subject to availability of suitable clamps.

No. E - 12

Initiator: TSDs AVRO

Change Desired:

Design study to consider installation of main heat exchanger and turbine/pump in rear equipment area - move ram cooling air inlet from behind intake ramp to bottom of rear equipment area; use turbine/pump to pump all of inlet cooling air from flush intake in bottom - hence smaller heat exchanger required as less heat energy contained for heat exchanger.

Reason: (a) Reduces length of hot air piping from engine to heat exchanger thus reducing source of fatal damage to aircraft.

(b) Adds weight to rear to assist in moving C of G to rear for PS-13 installation.

Action: Cat. 7

No. E - 13

Initiator: AFHQ/DArmE

Change Desired:

Adequacy of air conditioning provision for the armament installation and the electronics system cannot be determined.

Reason: This approval pending design of the armament installation and selection of an electronics system.

Action:

Cat. 5 - Consideration to be given in the selection of equipment to the requirements of Air 7-5 and Air 7-6 to the existing system.

No. E - 14

Initiator: DADR

Change Desired:

(1) Air conditioning of the cockpit when engines are at idling R.P.M. (i.e. at rest, taxiing, and certain descent conditions) is not presently provided but is required.

(2) The system calls for temperature in the cockpits to be not below 55° F at altitudes below 20,000' to prevent fogging in the cockpits. Pilot control of cockpit temperature at all altitudes is required. The de-fogging switch now included in the system will be adequate to ensure that no fogging occurs. 2-018

(3) Under certain conditions the rate of air change in the cockpit is probably at the upper limit for crew comfort. It must be demonstrated that, in fact, the rate of change of air does not exceed acceptable limits.

(4) An amber warning light as part of the warning light system is required to alert the pilot at the earliest possible moment of a failure in the air conditioning system. 2-018

(5) In the event of a failure of the air conditioning system the pilot must be able to select ram air to the cockpits as well as the equipment bays.

Change Desired: (Cont'd)

(6) Amber warning light as part of the warning light system is required to indicate excessive cabin pressure leaks.

Action:

Para (1) Cat. 6 - For descent condition, rest, and taxiing monitored by Cockpit Sub-Committee

Para (2) Cat. 1

Para (3) Cat. 6 - Crew Accommodation Sub-Committee to monitor.

Para (4) Cat. 1 - Provision for varying supplies to crew comfort as well as aircraft equipment.

Para (5) Cat. 6 - Crew Accommodation Sub-Committee, AVRO and IAM to determine acceptable condition re crew and equipment.

Para (6) Cat. 6

No. E - 15

Initiator: AMCHQ

Change Desired:

A means of ensuring the serviceability of the main pressure reducing valves by providing tapping points that do not require removal of the undercarriage door jack to use.

Reason: Given

Action:

Cat. 1

LOW PRESSURE PNEUMATIC SYSTEM ITEMS

SUMMARY

Category	Change Request Numbers
1	F-1, F-2
2	Nil
3	Nil
4	Nil
5	Nil
6	Nil
7	Nil

No. F - 1

Initiator: AMC

Change Desired:

That a drain line be installed from the air filter to a drain point at the aircraft skin.

Reason: This alternation to be carried out if test shows that frequent draining of the moisture trap is necessary - to obviate the necessity for removing a large access panel.

Action:

Cat. 1

No. F - 2

Initiator:

Change Desired:

Provide ground test fittings so that seals can be tested independently

Action:

Cat. 1 - AVRO to develop procedures

Cat. 7 - For test fittings

FIRE DETECTION AND PREVENTION SYSTEM ITEMS

SUMMARY

Category	Change Request Numbers
1	Nil
2	Nil
3	Nil
4	Nil
5	Nil
6	G-1, G-2, G-3
7	Nil

No. G - 1

Initiator: AMC

Change Desired:

That the Company investigate the possibility of installing an explosion suppression system in the rear equipment area.

Reason: To counter the possibility of explosion in the rear equipment area.

Action:

Cat. 6 - Refer to G - 2

No. G - 2

Initiator: DMEng - AMC - ADC

Change Desired:

RCAF requests Company assurance that scavenging of this area will positively prevent build-up of explosive mixtures (fuel or hydraulic fluid).

Reason:

Action:

Cat. 6 - Further investigation to be carried out by AVRO. Refer to G - 1, G - 3, B - 20.

No. G - 3

Initiator: AMC - TSDs AVRO

Change Desired:

Redesign of arrangement of components in rear equipment area to reduce possible fire sources. Suggest isolation of possible "trigger" agents, e.g. electrics and gear box.

Reason: As rear equipment area does not meet requirements of fire zone for practical or other reasons, redesign of position of components will reduce fire hazard. Present fire protection considered acceptable if above measures taken to reduce potential fires.

Action:

Cat. 6 - Refer G - 2

ICING PROTECTION SYSTEM ITEMS

SUMMARY

Category	Change Request Numbers
1	H-1, H-2, H-4, H-5
2	Nil
3	Nil
4	Nil
5	Nil
6	Nil
7	H-3

No. H - 1

Initiator: DMEng

Change Desired:

Visual indicator in convenient location to indicate whether Radome De-icing System has been used.

Reason: Since system is automatic, between flight check is now a question of checking contents of tank. (Access on top of nose).

Action:

Cat. 1

No. H - 2

Initiator: AMC

Change Desired:

Provision made to prevent leaks of de-icing fluid reaching compartment equipment in the radome.

Reason: Given

Action:

Cat. 1

No. H - 3

Initiator: AFHQ/DIEEng

Change Desired:

De- icing of both intake ducts in event of single alternator failure instead of one only at present time.

Reason: De-icing of one duct only in event of alternator failure is apparently a restriction imposed by lack of electrical power. Another reason why increased power supplies are considered necessary.

Action:

Cat. 7

No. H - 4

Initiator: AHFC/DArmE

Change Desired:

The correlation between radome de-icing and radome sensor de-icing should be demonstrated before approval.

Reason: It has not been shown that the disimilar means of de-icing will be effective to the same degree. The sensor could thus provide inaccurate control.

Action:

Cat. 1 - Sensor to be calibrated to be compatible with radome de-icing.

No. H - 5

Initiator: AFHQ/DArmE

Change Desired:

Position of the radome ice sensor should be tentatively approved pending demonstration of its performance.

Reason: Radome ice accretion may occur without icing the sensor.

Action:

Cat. 1

FUEL SYSTEM ITEMS

SUMMARY

Category	Change Request Numbers
1	I-3, I-4, I-8
2	Nil
3	Nil
4	Nil
5	Nil
6	I-2, I-9
7	I-1, I-5, I-6, I-7

No. B - 13

Initiator: AMC - ADC

Change Desired:

Armament Package - "Bayonet" or "Push-Pull" type connector to be used.

Reason: "Cannon" plug with screw-type lock ring is clumsy to use and wears out rapidly in frequent use.

Action:

Cat. 4

No. B - 14

Initiator: AMC - ADC

Change Desired:

Armament Package - Hydraulic Connectors - must be more durable, more reliable, and more easily handled than AN642 type.

Reason: AN642 couplings are subject to rapid wear when used frequently and are difficult to operate rapidly.

Action:

Cat. 4

No. B - 15

Initiator: DMEng

Change Desired:

Access Doors - That the company be advised of the danger of assuming the integrity of screws as a fastening medium.

Reason: In service, or even in production, screws are seldom laboratory perfect, and are certainly spots at which damage can occur.

Action:

Cat. 7 - Refer to B - 4

No. I - 1

Initiator: AMC

Change Desired:

Investigate the possibility of installing fuel system components on the tie bars.

Reason: To obviate the bracketry attached to the tank walls.

Action:

Cat. 7

No. I - 2

Initiator: AMC

Change Desired:

The non use of locking wires or other locking devices on fuel couplings be justified.

Reason: To ensure fuel leaks do not occur at couplings.

Action:

Cat. 6 - Maintenance Sub-Committee to monitor.

No. I - 3

Initiator: ADC

Change Desired:

Move Refuel Control Switch Panel to the vicinity of refueling adaptor and rotate lights to make them more visible.

Reason: Speed and convenience

Action:

Cat. 1

No. I - 4

Initiator: AMC

Change Desired:

Fuel Quantity Capacitor Units require a more secure method of mounting than is used at present.

Reason:

Action:

Cat. 1 - Maintenance Sub-Committee to monitor.

No. I - 5

Initiator: TSDs AVRO

Change Desired:

Pip Pins installed in right hand connections and hinge pins in left connections of two cross-members adjacent to air filter of fuel tank pressurization line - right hand side of missile pack bay roof.

Reason: To facilitate removal of air filter for inspection and maintenance.

Action:

Cat. 7

No. I - 6

Initiator: TSDs AVRO

Change Desired:

Re-position of access panels to booster pumps and other "valvery" on top surface of wing to eliminate necessity of first removing portion of dorsal cowling.

Reason: Facilitate maintenance of fuel system components in area without removing unnecessary cowling.

Action:

Cat. 7

No. 1 - 7

Initiator: TSD

Change Desired:

Design life of engine driven fuel pumps should exceed 2000 hours and no maintenance should be required during life of aircraft.

Reason: Simple pump, with modern metalurgy -- this should be no problem.

Action:

Cat. 7 - This recognized as desirable if available.

No. 1 - 8

Initiator: DMEng

Change Desired:

Defueling switch to be moved to position in which it is accessible with aircraft on its belly.

Reason: Otherwise aircraft in this position cannot be defuelled.

Action:

Cat. 1 - In principle it is a requirement that the aircraft can be defuelled when on its belly.

No. 1 - 9

Initiator: TSDs AVRO

Change Desired:

Request design study to find method of ascertaining an error in reading of fuel tank contents along with method of isolating unserviceable capacitance unit.

Reason: To facilitate trouble shooting and maintenance of fuel tank capacitance contents system.

Action:

Cat. 6 - AVRO study

TELECOMMUNICATIONS ITEMS

SUMMARY

Category	Change Request Numbers
1	J-2, J-3, J-4
2	Nil
3	Nil
4	Nil
5	J-5
6	J-1
7	Nil

No. J - 1

Initiator: AMC - ADC - AFHQ

Change Desired:

Request inclusion of a test system, terminating on a multi-purpose plug, so that the performance of the telecommunications systems may be determined by measuring RF, AF, and DC energies which are available without modification to the equipments. The test plug is to be immediately accessible through its own access door on a D.I. basis.

Reason: To permit economical D.I. of telecommunication equipment.

Action:

Cat. 6 - RCAF requirement to be incorporated in Air 7-6. Equipment to be included on RCAF aircraft.

No. J - 2

Initiator: AFHQ/DATel - ADCHQ - AMCHQ

Change Desired:

Stays are required to hold the side access doors of the electronic bay open. 2-018

Reason: To facilitate removal of equipment from mounts.

Action:

Cat. 1 - Maintenance Sub-Committee to approve installation.

No. J - 3

Initiator: AMCHQ - ADCHQ - AFHQ

Change Desired:

A device such as a secondary latch, chain, or automatic down load sensing device on centre electronic door.

Reason: To preclude the door suddenly releasing after cable motor has unwound endangering equipment and personnel.

Action:

Cat. 1

No. J - 4

Initiator: AFHQ - ADCHQ - AMCHQ

Change Desired:

A device to ensure that UHF transmitter is shut down while switching between antennae.

Reason: To preclude damage to equipment due to reflected RF.

Action:

Cat. 1

No. J - 5

Initiator: AFHQ/DATel

Change Desired:

The present mock-up is not sufficiently advanced to enable a quantitative appraisal to be made on the telecommunication configuration. The equipment location and accessibility as presently installed is acceptable for this mock-up. However, no engineering approval can be given to any installed equipment.

Reason: It is inappropriate to approve this mock-up since there is no assurance that this configuration will guarantee that space, cooling, pressurization, etc., will be adequate for the electronic systems called up under Spec. AIR 7-5 as amended by AIR 7-6 which is an integral part of the overall AIR Spec. 7-4.

Action:

Cat. 5 - Consideration to be given to requirement of AIR 7-6 in the light of existing equipment.

HYDRAULIC SYSTEMS ITEMS

SUMMARY

Category	Change Request Numbers
1	K-4, K-5, K-10, K-12 K-13, K-14, K-17, K-18 K-21, K-22
2	Nil
3	Nil
4	K-1
5	Nil
6	K-2, K-3, K-6, K-7, K-8, K-9, K-11, K-15, K-16, K-19, K-20
7	K-23

No. K - 1

Initiator: AFHQ/DArmE

Change Desired:

Adequacy of the utility hydraulic system cannot be determined.

Reason: The armament installation design has not been completed.

Action:

Cat. 4

No. K - 2

Initiator: TSDs

Change Desired:

Nose leg - "Telescopic Air Strut" Design change required to eliminate between flight inspection.

Reason: A pressure check is required to ensure closing of under-carriage door.

Action:

Cat. 6 - Maintenance Sub-Committee to monitor.

No. K - 3

Initiator:

Change Desired:

Hydraulic pump mounting (6 x 3/8 UWF) nuts replace 4 studs with H.T. dowels, using through bolts and 2 nuts only.

Reason: Saving of manhours.

Action:

Cat. 6 - Reliability of pumps and ease of maintenance to be established. To be monitored by Maintenance Sub-Committee.

No. K - 4

Initiator: ADC

Change Desired:

Protective covering for main undercarriate shortening and rotating chains and linkage at upper end of main leg to prevent entrance of foreign material particularly sand, water, and ice.

Reason: Experience shows that this can readily happen especially during winter break-up.

Action:

Cat. 1

No. K - 5

Initiator: ADC

Change Desired:

Ensure that the swivel joints in plumbing will resist damage from cumulative effects of water, sand, and freezing.

Reason: Experience shows clearly that all exposed under-surfaces are subjected to coating with water, sand, and slush, particularly in winter thaw periods.

Action:

Cat. 1

No. K - 6

Initiator: TSDs AVRO

Change Desired:

Deletion of anti-skid device on brakes.

Reason: Anti-skid on brakes considered not worth penalty of approximately 50 lbs. in weight, and complexity for maintenance. Present drag chute and normal brakes sufficient to give good braking without additional "luxury" - (F-102 not equipped with anti-skid).

Action:

Cat. 6 - AVRO study and investigate.

No. K - 7

Initiator: TSDs AVRO

Change Desired:

Reconsideration of time interval between undercarriage up and point when aircraft has accelerated to undercarriage design limit speed of 250 K. Present interval is of order of 5 secs in which pilot must assess undercarriage light indication and take action to prevent aircraft accelerating past 250 K - time interval considered too short. Redesign of gear up operation required or pilot drill changed to hold speed down to below 250 K until gear up and locked.

Reason: Prevent damage to undercarriage when down beyond 250 K. Possibility of aircraft accelerating beyond limit much greater than present day aircraft.

Action:

Cat. 6 - RCAF and AVRO to study.

No. K - 8

Initiator: TSDs AVRO

Change Desired:

Replace present pipe-knuckle system of carrying hydraulic fluid to nose undercarriage drag strut lock over drag strut structure joint by flexible line.

Reason: Reduce possibility of leakage - flex line eliminates three movable metal joints. Seems to be sufficient room in nose gear bay to accommodate hose.

Action:

Cat. 6 - AVRO and Maintenance Sub-Committee to investigate.

No. K - 9

Initiator: AMC

Change Desired:

Arrange hydraulic pump installation studs so as to allow installation of securing nuts in all instances.

Reason:

Action:

Cat. 6 - Refer to K - 3

No. K - 10

Initiator: TSDs AVRO

Change Desired:

Ground testing of undercarriage and associated wing attachment structure under simulated airborne undercarriage extension with gravity, air loads, and/or "g" loads accelerating gear down at maximum allowable lowering speed.

Reason: Kinetic energy accumulated by gear going down under influence of above forces (especially air loads acting on door or leg) being transformed into hydraulic pressure energy by "buffer" in main jack will produce large loads on undercarriage main pivot - hence danger of fatigue and bearing failures thought to be large. (Ref CF-100 main gear problem)

Action:

Cat. 1

No. K - 11

Initiator: TSDs AVRO

Change Desired:

Replacement of pipe-knuckle arrangement of hydraulic inlet to main undercarriage drag strut lock with flex hose.

Reason: Present arrangement has 3 moving joints - flex hose decreases leakage possibility - appears to be room for hose stowage on undercarriage retraction.

Action:

Cat. 6 - Refer to K - 8

No. K - 12

Initiator: AMC

Change Desired:

That drain points be installed at suitable low points in the hydraulic systems to cater for system draining prior to component removal.

Reason: To prevent spillage of fluid during component removal.

Action:

Cat. 1 - Refer to B - 9

No. K - 13

Initiator: AMC

Change Desired:

That the Company cater to the requirement for using a torque wrench on high pressure hydraulic fitting connection by design of tools or positioning of components.

Reason: To ensure that torque can be read.

Action:

Cat. 1 - In principle RCAF to be assured that all fittings are accessible and method of suitable torquing developed - lubrication of threads to be considered when torque valves are given.

No. K - 14

Initiator: AMCHQ

Change Desired:

That the Company initiate design of "open sleeve" wrench for all difficult connections incorporating ratchet operation and torque indication.

Reason:

Action:

Cat. 1 - Refer to K - 13.

No. K - 15

Initiator: AMC

Change Desired:

That a study be made of the possibility of using flexible lines for the main leg brakes lines.

Reason: To eliminate the 24 flexible couplings now used.

Action:

Cat. 6 - AVRO and Maintenance Sub-Committee to investigate.

No. K - 16

Initiator: AMCHQ

Change Desired:

The "change over" from utility support of the flying control/ compensator to internal support be utilized to connect the pressure side of the flying control system into the brake system to provide braking when the utility accumulator is spent.

Reason:

Action:

Cat. 6 - RCAF DAEng to study.

No. K - 17

Initiator: AMCHQ

Change Desired:

Approval of piping run into aileron and elevator control boxes be delayed pending further mock-up.

Reason:

Action:

Cat. 1 - Maintenance Sub-Committee to follow up.

No. K - 18

Initiator: AMCHQ

Change Desired:

That approval of the flareless tube fittings for installation be deferred until qualification testing has demonstrated the adequacy of this fitting to meet the temperature, pressure and fatigue conditions encountered.

Reason: To ensure adequacy of fittings.

Action:

Cat. 1

No. K - 19

Initiator: DMEng

Change Desired:

Study required for self contained brake system with components located on bogie beam. Actuation electrically. Power derived from wheels. (Similar to turrent systems)

Reason: Present system very complex.

Action:

Cat. 6 - AVRO to investigate.

No. K - 20

Initiator: AMCHQ - ADC

Change Desired:

Provide for powering the parallel and differential servo from each hydraulic system such that should one system fail automatic flight features and damping be retained even under the reduced rate.

Reason:

Action:

Cat. 6 - DAEng to study.

No. K - 21

Initiator: AMCHQ

Change Desired:

That drainage facilities be incorporated in bottom of tanks.

Reason: To drain off collected fluid.

Action:

Cat. 1

No. K - 22

Initiator: AMCHQ

Change Desired:

That it be definite that the hydraulic components do not leak at the low range of temperature operation requirements.

Reason: To prevent leakage at low temperature.

Action:

Cat. 1

No. K - 23

Initiator: AMCHQ

Change Desired:

That the size of the sump be reconsidered.

Reason: It appears that it might be possible to reduce the size of this tank.

Action:

Cat. 7 - Installation to be checked on actual aircraft.

OXYGEN SYSTEM ITEMS

SUMMARY

Category	Change Request Numbers
1	L-2, L-4
2	Nil
3	Nil
4	Nil
5	Nil
6	L-3
7	L-1

No. L - 1

Initiator: TSDs AVRO

Change Desired:

Consideration of installation of smaller oxygen convertor for normal combat missions with interchangeable 5 litre convertor for ferry mission.

Reason: Weight saving approximately 8 lbs for 2 1/2 litre convertor over 5 litre.

Action:

Cat. 7

No. L - 2

Initiator: DMEng

Change Desired:

Position "pinch-off" so that it does not face person making installation.

Reason: Safety

Action:

Cat. 1

No. L - 3

Initiator: ADC

2-014

Change Desired:

A smaller access panel to remove oxygen convertor on Between Flight Servicing.

Reason: At present entire panel must be removed to change convertor. This is very awkward for one man to do.

Action:

Cat. 6 - Leading to a Cat. 2

No. L - 4

Initiator: IAM/DRML

Change Desired:

Remove oxygen pressure gauge completely.

Reason: Reads steady 300 psi at all times down to empty tank indication. Failure of oxygen pressure always evident to pilot on 100% demand system - contents gauge at empty indicates ± 15 minutes before switch to emergency.

Action:

Cat. 1 - System will be checked on initial test flying.

INSTRUMENT ITEMS

SUMMARY

Category	Change Request Numbers
1	M-2, M-3
2	Nil
3	Nil
4	Nil
5	Nil
6	M-1, M-5
7	M-4, M-6

No. M - 1

Initiator: DIEEng

Change Desired:

Relocate accelerometer from shock mounted panel to a non-shock mounted location.

Reason: Shock mounting of the accelerometer induces inaccurate indication.

Action:

Cat. 6 - Refer to A - 7 - Requirement for additional accelerometer to be determined.

No. M - 2

Initiator: DIEEng S 1638-105-4 (ACE) 1 Dec 1955 ?

Change Desired: Not on MK1 still undecided for MK II Ref 3027/0214/1 15 Oct 57

Minor markings of instrument dials to be finished in matt white major markings and pointer to continue self luminous.

Reason: No ultra violet lighting fitted in aircraft and fluorescent marking is redundant and uneconomical.

Action:

Cat. 1 - RCAF to specify requirement.

No. M - 3

Initiatro: DIEEng

Change Desired:

Altimeter presentation to provide extended 10,000 foot pointer with inverted triangular tip and warning flag. Mod Kits for 6A1850 altimeters being designed by Sperry Canada.

Reason: To improve accuracy of reading altimeter.

Action:

Cat. 1 - Subject to availability.