

QC
Avro
CF105
Brochure
AD-51

SECRET

APPENDIX TAB TO
SIOP-51 (S) (S) (S) (S) (S) (S)

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COMMENTS ON AVRO STATEMENT OF WORK
(BROCHURE AD-51 - 22 MAY 58)

GENERAL COMMENT

Co will supply answers as required. Program planning not my concern some questions.

1 A general comment applicable to many parts of the Statement of Work was that too little breakdown existed for individual items covering a large expenditure of funds. As guidance it is recommended that action be taken to sub-divide these items into \$1,000,000 allotments. In effect, what we are suggesting is that items representing several million dollars in expenditures, be broken down with appropriate detail to describe each million dollar expenditure. Examples of items to which this procedure is applicable are:

2.1.1.1, 2.2.1, 2.3.1, 3.1.1, 3.2.1, 3.3.1, and 4.2.4.

Format

2 The meeting was agreed that the format of the AVRO Statement of Work was a satisfactory guide for the preparation of other associate contractor's statement of work.

Specific Comments

3 The following comments are made with respect to the indicated paragraphs or pages:

Items 1.2.1 to 1.2.4 - These items should be amended in the light of more recent information. Specifically, they should reflect the requirement for Arrow 2 Airframes & GSM Installations model specifications to describe aircraft Nos 6, 11 and ~~26~~ 37 and Arrow 2 Weapon System model specifications to describe aircraft Nos 11 and ~~26~~ 37

Item 2.1.1 - Referring to our general comment it is suggested that the breakdown might be accomplished by segregating the funding as applicable to design and/or specification of parts of structure and individual systems, for e.g., ^{main} ~~main~~ planes, fuselage, oxygen system, fire system, airconditioning system, etc.

Item 2.1.6 - Suggest the inclusion of a new item to make provision for design investigations as the results of the flight test program.

Classification cancelled/changed to
by authority of
Signature
(date)

NRC ICISTI
J. H. PARKIN
BRANCH

JUN 8 1995

ANNEXE
J. H. PARKIN
CNRC ICISTI

*cover
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Worked done

Item 2.2.1 - See remarks applicable to Item 2.1.1 above. Specifically, it is requested that large funding requirements be amplified and broken down into approximate million dollar expenditures.

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Proc 100-14 to be in contract

Item 2.3.1 - Recommended that this item include a statement of how the change between each aircraft is accomplished. For example, aircraft 25202 is unlikely to be identical with aircraft 25201. Specifically, some reference that progressive changes as modifications are accomplished in a/w PROC 100-14.

Item 2.3.3 - Include the comment that approval for manufacture of modification kits will be in a/w PROC 100-14, and Program Change Document procedure when established.

Item 3.1.3 - Request that Change Requests resulting from evaluation conferences be funded as a separate item.

Item 3.2.1 - As per our general comment and specific comments to Item 2.2.1.

as proposed by MRPD approved by DDP

Item 3.2.4 - Delete wording, "as may be deemed necessary by AVRO". Substitute, "as justified by overall program economy".

Item 3.3.1 - As per comments to item 2.3.1 except Arrow 1 now reads Arrow 2.

by ECP

Item 3.3.1.2 - The manufacture of long range fuel tanks should be a separate item. The numbers of long range drop tanks will be dependent upon the evaluation program, tests, and development program. Also adjustment required here and elsewhere match schedules of CC Reports #1 and 3.

Items 3.3.2 and 3.3.3 - Comments as per items 2.3.2 and 2.3.3

see above

Item 4.1.5 - Recommend deletion of the sentence beginning, - "Government provision ---- will be required", and that this sentence be included as an elaboration of sub-para (h).

Page 31.

DDP to review

Item 4.1.6 - Wish assurance that this item includes design and development of antennae within the scope of Spec WSC 1-2.

See program planning report. While he does include definition of escape mgr. & ops. & SW. Program planning up to entry. Mr. L. B. King

PP Rpt

Very clearly must be made work order

AAWS to discuss with AMCHQ

Item 4.2.4 - Request distinction between rig cost and operating cost. Could we not have a general listing of the rigs implied?

Item 4.2.5 - Delete this item as presently incorporated in the Statement of Work. What we would like to see is an acceptance of the concept that AVRO are the crew escape manager. Establish the funding required to do the whole job with the supporting detail in keeping with our general comment.

Item 4.3.2 - Requires clarification, what development installations, how many CF100 A/C involved?

Item 4.3.4 - Requires clarification, what is AVRO doing distinct from Government support that requires funding?

Item 4.4.1 - Request amplification, estimated number of flying hours to be accomplished, what are the objectives?

Item 4.4.3 - Recommend inclusion of all 15 aircraft allotted to Contractors development program. In view of proposals regarding an Integrated Flight Test Program, no distinction should be made for Phase 2.

Item 5.2 - Inclusion of a qualifying phase, and "as it now exists". It is implied that no further expenditure is applicable.

Item 6.1 - This item should be deleted in its entirety and the following substituted - Provide the RCAF with the following services and engineering drawings.

Item 6.1.1 - Supply to the RCAF one complete set of aircraft production drawings reflecting aircraft 25212² 25217² in compliance with RCAF specification PROC 100-11, Issue 3, Parts 1-6, as amended by Part 7. The Part 7 amendments to be negotiated with DDP and the RCAF/AMCHQ.

Item 6.1.2 - In accordance with PROC 100-11 ensure that all vendors of proprietary equipment provide engineering drawings, as prepared by the design manufacturers, to the RCAF for maintenance, cataloguing and identification purposes.

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Item 6.1.3 - Assist the RCAF in establishing the requirements to be specified in Supplement (Part 7) to RCAF specification PROC 100-11 as negotiated with Associate Contractors for the Arrow Weapon System.

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Item 6.1.4 - Provide the original drawings of all contractor furnished ground support equipment and ASTs in compliance with RCAF Specification PROC 100-2. The drawings to be delivered to a schedule specified by the RCAF/AMCHQ.

Item 6.4.2 - Appears to duplicate items 2.1.5 and 3.1.5 - clarify?

Item 6.7 - Amend as follows:

Item 6.7.1 - Substitute, preparation of a reporting specification.

Item 6.7.2 - A monthly progress report on the progress of items included in the Statement of Work.

Item 6.7.3 - A quarterly financial and managerial report.

Item 6.7.4 - Quarterly technical report.

Item 6.7.5 - Provision of a coordinating contractor's weapons systems summary progress report as per 6.11 (a).

Item 6.8 - Appendix 11, item 12, define what will be provided.

Also, item 2 of this appendix should call up the appropriate MIL Spec.

Item 6.9.3 - To include the remark, "as negotiated with the RCAF". Delete the last three publications.

(Included with new item 6.10.2.4).

Item 6.10.1 - Delete existing item and substitute the following.

Item 6.10.1 - Preparation of the basic aircraft set of engineering orders to RCAF Specification PROC 100-8, to a schedule specified by the RCAF ^{AMCHQ} and revisions to such engineering order ^{assigned by RCAF/AMCHQ AMCHQ} when directed by the RCAF/AMCHQ. The following EOs comprise the basic aircraft set.

Aircraft Operating Instructions

Aircraft Operating Instructions (Confidential)

Description and Maintenance Instructions

Structural Repair Manual

Illustrated Parts List

- Maintenance Schedule - Primary
- Maintenance Schedule - Periodical
- Weight and Balance Data
- Storage, Preservation and Shipping Instructions

Item 6.10.2 - Delete existing item and substitute the following.

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AVRO to review with AMCHQ

Item 6.10.2.1 - Preparation for RCAF approval, a procedure for the selection, evaluation and approval of the requirement for engineering orders to support proprietary equipment (vendor items) and Company furnished Ground Support Equipment. The procedure shall establish for each EO:

- Technical Requirements
- Complexity and Size
- Frequency of Revision
- Cost estimate.

Item 6.10.2.2 - Evaluation and recommendation to the RCAF the procurement requirement for all EOs in accordance with the procedure established in 6.10.2.1.

Item 6.10.2.3 - Preparation or procurement of Engineering Orders to support the Arrow Weapon System in accordance with RCAF specifications or contractors format as directed by RCAF/AMCHQ, conforming to the procedure in para 6.1012.1.

Item 6.10.2.4 - Provision of the following technical bulletins:

- Aircraft Service Bulletins
- Aircraft Modification Bulletins
- ~~Proprietary Equipment Manufacturers Bulletins.~~

NOTE: For funding purposes - use AVRO's revision schedules. However recognition implied that subject to approval of RCAF/AMCHQ.

Items 6.10.3, 6.10.4, 6.10.5 - Include the phrase in each item, "as negotiated with the RCAF".

Item 6.11 - Change wording, "every two months" to read "every three months". (a) Delete - is now a quarterly under new 6.7.5.

Item 6.12 - Omit revision requirement. (This omission is considered justifiable in view of Quarterly Technical Report).

Item 6.13 - Add "Prepare item identification in a/w RCAF Spec 100-5, issue 2, for items delivered to the RCAF. The specific items requiring item identification as per PROC 100-5, issue 2 will be defined by AMCHQ. Two copies of each completed identification will be delivered to the RCAF."

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Item 6.14 - Include intent that AVRO will be responsible to review the complete range of Arrow Weapon System EOs to ensure complete coverage (Not inclusive of technical content).

Item 6.15 - To include the provision of technical data as outlined in USAF Bulletin No. 124 and as modified by the study under item 7.20.

already done

Item 7.1 - It is not considered that the construction of a model is necessary.

Item 7.14.2 - It is considered that this item duplicates items 7.1 and 7.2 ← *airframe 7.14.2 is Weapon System*

Item 7.20 - The term data requires amplification. In general the data required from AVRO is in connection with the flight portion of the flight and tactical trainer. (The Astra data will be obtained from RCA).

not pack for 90-9. mod 4 & 5

Item 8.1.1 - After instrument packs, add "inclusive of standard instrument pack and ~~inclusive of recording instrumentation~~" *supplied by RCAF*

Item 8.2.1 - Appendix 15, sub-item 4, insert word "that", after installation of. Sub-item 5, after "Arrow 2 Instrument Pack", insert "complete with standard instruments". Would like to get the idea across that there will be standardization of instrument packs and instrumentation associated with these packs. Sub-item 7(c), Appendix 15, clarify extent of training for Orenda Personnel.

no

Item 8.2.1 and 8.2.2 - These items should reflect a requirement for one of the standard instrument packs. (Our point is that some standardization of the various packs to be used for the flight test programme can be achieved).

not as much as possible

Item 8.2.6 - Incompatible with item 8.2.5 (a) which says "operation". It is our interpretation that operation implies flying the aircraft.

*Being
re-written*

Item 8.3.1 - Appendix 9 - It should be noted that the firings cannot be carried out from Malton as was previously anticipated as the Pt. Petrie facilities would have to be re-opened. Additionally, the range limits cannot be extended to satisfy the trials requirements.

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✓ Item 8.3.2 - See items 8.2.1 and 8.2.2 regarding our general comment on instrument packs.

*Need
numbers for
contractual work*

Item 8.3.2, 8.3.3, 8.3.4, and 8.3.6 - Delete reference to aircraft numbers and substitute wording, "aircraft assigned to this part of the program".

✓ Item 8.3.8 - Clarify please. Item 8.3.6(a) calls up operation whereas this item calls up training of flight crews.

✓ Item 8.4.1 and 8.4.3 - Refer to our proceeding comments regarding the standard pack concept.

*to include
in 7.18*

✓ Item 8.5.1 - Include analysis directed to the formulation of the mathematical model.

*AVRO word
numbers
retained*

Item 8.5.2 - Delete reference to specific aircraft numbers and refer only to the aircraft allotted to this portion of the integrated flight test demonstration. Since it seems likely that an integrated flight plan is going to evolve why should these aircraft be segregated?

✓ Item 8.5.3 - Our prior reference to standard instrument pack.

check in

Item 8.5.4 - Sub para (c) a basic criterion should be established and that is that each Associate Contractor will maintain his own equipment, generally, regardless of location. This purpose is adopted to avoid unnecessary duplication in training.

✓ Item 9.2 - Delete wording, "and other agencies".

✓ Item 10.2 - Recognition that RCAF schemes approval required for GSE prior to design and/or specification.

✓ Item 10.3 - Insert word, "approved" after "provision of" in first line. In line 6, delete word "required" and insert "authorized by the RCAF".

✓ Item 10.4 - Line 3, delete wording, ~~it and/or~~ "Make up".

Item 10.5 - After "modification as" in line 3, add "approved by the RCAF".

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Item 10.6 - Third line, after 10.3 add "as authorized by the RCAF".

Check AMC.

Item 10.8 - As for para 6.1.4, delete existing item and substitute "Supply to the RCAF the original drawing of all drawings to PROC 100-2 of aircraft system trainer and GSE. The drawings are to be delivered to a schedule specified by the RCAF/AMCHQ". *+ agreed by AMC*

Item 10.9 - Delete existing item and substitute, "maintenance, repair and overhaul of the Ground Support Equipment as specified by the RCAF".

✓ Item 10.12 - Add new item "Provide identification of GSE spares for Federal Cataloguing Index as directed by the RCAF".

Item 11.2 - Delete item and substitute, "repair and overhaul for the 37 Arrow program and related spares, after acceptance by the RCAF".

Item 11.3 - Delete existing item and substitute, "acquisition and/or manufacture of repair and overhaul spares for Arrow airframes within the financial limitation as established by the RCAF".

Item 12.9 - Reliabilities statistics to be integrated with RCAF procedures. Also include statistical and technical analysis of those defects on associate contractors equipment which affect other associate contractors equipment in the Weapon System, and recommendation of remedial action to the RCAF.

*7-17
12-9
constr -
to discuss
with AMC.*

Item 12.10 - Substitute "Assessment of the data control systems of all the associate contractors in a/v provisions of PROC 100-11 ~~as amended by negotiation with RCAF/AMC~~ as amended by negotiation with RCAF/AMC". This brings this item into line with the intent of Appendix 20.

✓ Item 12.12 - This item "deleted" in financial summary. Not understood. *(AMC error)*

See 12-13 also

Item 12.13 - Based on the assumption that Technical Representatives are implied we should like to see a breakdown of the number of men involved and their allocation.

Page 21 - Sub-para (d) it should be clarified that RCAF mandatory modifications are implied. Sub-para (e), Replace existing Appendix 17 with a new appendix to reflect crew escape manager concept. (cross refer our comments to item 4.3.2). Sub-para (k) this should be fitted in with integrated flight test program.

Pages 32 to 35 - Under AVRO's terms of reference, item 12.5, we would expect AVRO to inform the RCAF if Orenda's and RCAF's Statements of Work did not reflect this support.

Appendix 20 - Why have AVRO substitute the 3rd January 1958 Statement of Requirements contained in their earlier draft issue of the Statement of Work for the 27th November 1957 Statement of Requirements as now contained in this issue of the Statement of Work?

Exclusions P36 - Sub para (a). All Test Vehicles and Airborne telemetry to AVRO will be GSM. *(Support to AVRO from Canadair)*

Appendix 16 - AVRO must liaise with Canadair on the new umbilical plug for the Sparrow 2 missile.

Page 46 - Sub-para ref 10.1 - Completion of the one AST being procured must be prior to 1 Dec 59.

- Sub-para refs 1.2.1, 1.2.3 and 1.2.4 must reflect our comments to these paragraphs in the body of the report.

Appendix 19 - Aircraft Systems Trainer (Airframe Section for Arrow 2 Airframe Systems

This appendix summarizes the work entailed in the design and manufacture of one Aircraft Systems Trainer (Airframe Section) in accordance with the RCAF requirement specification.

This work will include:

Design of one AST (Airframe Section) in accordance with the RCAF Requirement specification to aircraft configuration 25216.

not defined

Manufacture of one AST (Airframe Section) in accordance with the design as approved by the Design Authority.

Provision of one set of Proposal and Engineering drawings in accordance with para 4 of the requirements specification.

Provision of phasing schedules on the design and manufacture of each unit of the AST and the submission of monthly progress reports to the Design Authority.

? payments

Provision to the Design Authority of ~~payments~~ payments chargeable to the Airframe Section.

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Review and action of aircraft EOP's in accordance with EO CO-50-8.

Provision to the RCAF of an AST Model Specification and progressive amendments thereto.

Provision of a recommended list of sectioned equipment to the Design Authority for approval.

Preparation of a list of GSM required for each trainer and submission to the Design Authority for approval.

Liaison with associate contractors to ensure compatibility of their systems trainers with the airframe trainers.

Preparation and provision of transparencies and/or projection slides in support of the airframe and GSE portions of the AST.

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