MEMORANDUM REPORT ON

SUBJECT: Menasco XJ37 Turbo-Jet Engine Development

DATE: 25 September 1947

OFFICE: TSEP

SERIAL No. TSEP-506-226

A. PURPOSE:

1. To outline the position of the Government with respect to the XJ37 turbo-jet engine development.

B. FACTUAL DATA:

1. Memorandum Report TSEP-506-220 dated 10 September 1947 reports on a conference with Menasco personnel wherein the financial position of the Menasco Manufacturing Company and its ability to continue the XJ37 was discussed.

2. Memorandum Report TSEP-506-226 dated 21 September 1947 reports on a conference with representatives of Lockheed Aircraft Corporation wherein the attitude of Lockheed with regard to disposition of the XJ37 is set forth.

3. Memorandum Report TSEP-506-223 dated 18 September 1947 reports on a conference with representatives of Menasco Manufacturing Company on the disposition of the XJ37 engines resulting in a recommendation that action be taken to investigate an established engine company with proper facilities taking over the XJ37 engine project.

4. Memorandum Report TSEP-506-221 dated 22 September 1947 reports on a conference held at Wright Field with representatives of Lockheed, Menasco, and of major engine manufacturers wherein the engine companies were presented opportunity to consider assuming the development and production of the Menasco XJ37 turbo-jet engine, the turbo-prop version of the XJ37, and possibly the ram jet development under way at Menasco.

C. CONCLUSIONS:

1. As a result of the above-listed conferences it is concluded that:

   a. The Army Air Forces is definitely interested in continuing the development of the XJ37 turbo-jet and turbo-prop versions of this engine. (N.R. TSEP-506-223 dated 18 September 1947)
b. Menasco Manufacturing Company does not have facilities or necessary financing to continue the XJ37 engine project. (N.R. TSEP-506-220 dated 10 September 1947)

c. Lockheed Aircraft Corporation does not have necessary facilities for development of the XJ37 engine since they were to assume the project obligation. Financing of necessary facilities would be difficult for Lockheed to attempt and Lockheed is not interested in carrying on the XJ37 project. (N.R. TSEP-506-226 dated 24 September 1947)

d. The engine development can best be furthered by transferring the project and Menasco's key personnel to an established engine company possessing the necessary facilities. (N.R. TSEP-506-223 dated 18 September 1947)

e. In the event no established engine manufacturer is interested, the development shall be cancelled since the present West Coast facilities would not permit further development of the engine.

B. RECOMMENDATIONS:

1. It is recommended that every effort be made to permit an established engine manufacturer to take over the XJ37 turbo-jet and turbo-prop development.

2. It is recommended that in the event no established engine manufacturer having the proper facilities can be interested in carrying on the XJ37 engine development that the engine project be cancelled; present contracts closed out with delivery of currently due reports and equipment, and that these reports and equipment be made available to all established engine manufacturers on an equal basis in order that the Army Air Forces would benefit to the fullest extent from the knowledge and designs already paid for.

Prepared by
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Approved by
E. A. Wolfe
Chief, Rotating Engine Br.

Distribution:
TSEP
TSEP - Col. Minky
TSEP - Maj. Gen. Childs
TSEP - Brig. Gen. Brentwell
TSEP - Brig. Gen. Crawford
TSEP - Lt. Col. J. B. Martin
Lockheed Airc. Corp
Menasco Mfg. Co.
RESTRICTED

APPENDIX III

SUMMARY OF MAJOR TEST FACILITIES AVAILABLE FOR J57 ENGINE DEVELOPMENT

PACKARD

See Packard Report PB 2513 7/2/47

Compressor Drive - 1,600 HP + 1,100 HP

Air-Cooled Engine -
Total 2,500 HP
Speed Increasing Gear Required
Limited to Altitude Tests Only
12/2 sec air at -70°F Refrigeration Capacity
15/2 sec air at 4°F Refrigeration Capacity

Turbine - 8000 HP Absorption Dynamometer 1 ea.
2,700 HP = 1 ea.
600 HP = 2 ea.
Cold Test and Simulated Hot Test at Altitude. 12 sec Durtn. Max.
Air Flow 50-110/2 sec at 60°F

Combustion Chamber - 38-1/2 in. long
Spool Test Pit - Handle 36 sq ft.
10 ft long up to 1000° and 25,000 RPM
Cells - 2 - 24 x 24 x 100
4 - 20 x 20 x 100

Schlieren Photographic Equipment

DARWIN

Compressor Drive - 1 ea. - 1500 HP
Engine
Additional 1500 HP Marine Engine in February 1946
Test only four stages of front compressor.

Turbine - None

Require NGA or other Government Facilities

Combustion Chamber - Require Outside Facilities

Intercooler - Require Outside Facilities

Spin Pit - No Statement

Cells - 1 cell, Size Not Stated

KINGSTON

Compressor Drive - 12,000 HP 15,000 HP

Air Flow 85/sec at 150°F

No Refrigeration

Turbine - 2 ea 8000 HP Absorption Dynamometers 5 to 10,000 RPM
2 ea 1500 HP Dynamometers 85/sec at 700°F

Combustion Chamber Test
60 psi 45-30/sec

Spin Test Pit
36 sq ft x 8 ft long 20,000 RPM
6 ft long, 11-1/2 ft dia. 30,000 RPM

Cells - 2 - 30 x 30

Schlieren Photographic Equipment

Electric Analogue Equipment for Control
Analysis
### Appendix IV

**Ranger Aircraft Engine Division**

**Cost and Time Summary Included in 257 Development Proposals**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Cost</th>
<th>Delivery Date</th>
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<tbody>
<tr>
<td>1</td>
<td>Movement and Establishment of Project at Peddar</td>
<td>$5,000,000.00</td>
<td>5-1-48</td>
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<td>2</td>
<td>Reports Covering Tests of Components as Received</td>
<td>$2,000,000.00</td>
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<td>3</td>
<td>Preparation and Fabrication of Test Equipment Covering Front Compressor, High Pressure Test of Combustion Chamber, Coated of 4 Turbine or Compressor Blades, Heat Air Test of Compressors</td>
<td>$3,000,000.00</td>
<td>10-1-48</td>
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<tr>
<td>4</td>
<td>Preparation and Fabrication of Test Equipment Covering Front Compressor, High Pressure Test of Combustion Chamber, Evaluation of Coated of 4 Turbine or Compressor Blades, Cold Air Test of Compressors</td>
<td>$3,000,000.00</td>
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<td>Tests under Item 3 (Actual Shop Test Work)</td>
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<td>6</td>
<td>Tests under Item 1 (Actual Shop Test Work)</td>
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**Total Phases I and II**

$1,023,000.00

**Phase III**

Redesign and Development Testing (Assumes 4 Completed Sets of Parts as New on Contract with Bommas) $750,000.00 1-1-48

**Phase IV**

Manufacture of 5 Complete Engines $1,050,000.00 10-1-48

**Phase V**

Final Development of Components and Development Testing of Engines $700,000.00 12-1-48

**Phase VI**

150 Hour Qualification Test $800,000.00 1-1-50

**Fiscal Year**

$4,825,000.00

**Toll - All Phases**

$3,888,750.00

**Total - All Phases**

$4,825,000.00

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**Notes:**

A. Type of Contract - Fixed Price

B. Costs do not include transfer of personnel from Bommas to Wright (estimated $5,000.00 per individual)

C. Costs do not include payment to Lockheed for patent rights.

D. Costs are not predicated upon completion or further fabrication of 257 parts by Bommas.
### APPENDIX V

**Point Grading of Proposals**

**Maximum Attainable - 1000 Points**

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<th>Maximum Value</th>
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<tr>
<td>Test Facilities</td>
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<td>Manufacturing Facilities</td>
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<tr>
<td>Effect on Government Contracts at Contractor's Plant</td>
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<tr>
<td>Method of Attacking This Problem</td>
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<tr>
<td>Menasco Personnel</td>
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<tr>
<td><strong>Total</strong></td>
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**Total** | 525 | 140