

THIS PROJECT IS FURTHER SUBDIVIDED INTO :-

TASK

|                                                    |                   |
|----------------------------------------------------|-------------------|
| a. THE PRELIMINARY DESIGN AND LAYOUT OF SIMULATOR, | \$ 12,050         |
| b. DESIGN AND EVALUATION OF MODEL,                 |                   |
| c. DESIGN OF PROTOTYPE                             |                   |
|                                                    | \$505,550         |
| <u>TOTAL COST</u>                                  | <u>\$ 517,600</u> |

ENGINEERING MAN-POWER REQUIREMENTS:

|             | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec |
|-------------|-----|------|------|------|-------|------|------|-----|
| FOR TASK a. | 2   | 2    | 2    |      |       |      |      |     |
| b.          |     |      |      |      |       |      |      |     |
| c.          |     |      |      | 14   | 12    | 12   | 11   | 11  |

TASK :- TO DESIGN AN INSTALLATION THAT WILL SIMULATE MOVEMENTS, CORRECTIVE MOVEMENTS AND REACTIONS ENCOUNTERED DURING CONTROL OF SPACE VEHICLES IN THE GRAVITY FREE STATE.

BY WAKU  
CHKD. BY  
DATE 6-6-58

SUBJECT

REACTION CONTROL  
SIMULATOR

SHEET NO. 20.1 OF  
JOB NO.



ENGINEERING MAN POWER  
REQUIREMENTS

FOR TASK C.

| No. | DESCRIPTION         | AUG. | SEPT. | OCT. | NOV. | DEC. |
|-----|---------------------|------|-------|------|------|------|
| 1   | PROJECT ENGINEER    | X    | X     | X    | X    | X    |
| 2   | SENIOR ENGINEER     | X    | X     | X    | X    | X    |
| 3   | STRUCTURES ENG.     | X    | X     | X    | X    | X    |
| 4   | AERODYNAMICIST      | X    |       |      |      |      |
| 5   | PROPULSION ENGINEER | X    |       |      |      |      |
| 6   | WEIGHT ENGINEER     | X    | X     | X    | X    | X    |
| 7   | ELECTRONICS ENG.    | X    | X     | X    |      |      |
| 8   | LAYOUT MAN          | X    | X     | X    | X    | X    |
| 9   | SEAT                | X    | X     | X    | X    | X    |
| 10  | CHECKER             | X    | X     | X    | X    | X    |
|     |                     |      |       |      |      |      |
|     |                     |      |       |      |      |      |
|     | DRFTSMAN SHELL      | X    | X     | X    | X    | X    |
|     | ELECTRICAL          | X    | X     | X    | X    | X    |
|     | SEAT                | X    | X     | X    | X    | X    |
|     | STRUCTURAL          | X    | X     | X    | X    | X    |
|     |                     |      |       |      |      |      |
|     |                     |      |       |      |      |      |

ILLUSTRATOR

| MAN HOURS            |        |       |       |       |       |       |
|----------------------|--------|-------|-------|-------|-------|-------|
| DRAFTSM. ASSOC. ENG. | 3,520  | 704   | 704   | 704   | 704   | 704   |
| ENGINEERS            | 7,040  | 1,760 | 1,408 | 1,408 | 1,232 | 1,232 |
| TOTAL                | 10,560 | 2,464 | 2,112 | 2,112 | 1,936 | 1,936 |

USE 12,000 TO COVER ENGINEERING FOLLOW-UP AND CHANGES



COST ESTIMATE ANALYSIS

THE FOLLOWING ESTIMATE WILL BE APPROXIMATE AND WILL CONSIDER TASK a, b AND TASK C SEPERATELY.

AS ADVISED BY FORD HARRIS OF COSTING ON JUNE 16th, THE FOLLOWING COMMON BASIS IS TO BE USED FOR THE ESTIMATE:-

1- ENGINEERING MAN-HOUR = 3.61 \* x 2.25 (FOR OVERHD) = \$8.12  
1- MANUFACT. MAN-HOUR = 2.50 \* x 4.10 (FOR OVERHD.) = \$10.25

\* PRESENT LABOR RATE UNTIL END OF 1958

170 MAN HOURS PER MONTH

\$300 PER BUSINESS TRIP

BY WAKU DATE 6-16-58

SUBJECT

SHEET NO. 20.5 OF

CHKD. BY DATE

REACTION CONTROL  
SIMULATOR

JOB NO.

COST ESTIMATE ANALYSIS CONT'D.TASK "a" AND "b." (REF. PG. 20.1)

|                                                  |           |
|--------------------------------------------------|-----------|
| 1) ENGINEERING MAN-HOURS - $1,056 \times 8.12 =$ | \$ 8,570  |
| 2) LIAISON MAN-HOURS = $40 \times 8.12 =$        | \$ 325    |
| 3) MODEL COST (INCLUDING MATERIAL AND LABOR)     | \$ 2,300  |
| 4) CASE AND DEMONSTRATION EQUIPMENT              | \$ 190    |
| 5) TEST HELP MAN-HOURS - $60 \times 10.25 =$     | \$ 615    |
| 6) PLUMBING                                      | \$ 50     |
| TOTAL                                            | \$ 12,050 |



COST ESTIMATE ANALYSIS CONT'D.

TASK "C" (REF. PG. 20.1)

|                                                  |                        |                   |
|--------------------------------------------------|------------------------|-------------------|
| 1) ENGINEERING MAN-HOURS =                       | $12,000 \times 8.12 =$ | \$ 97,400         |
| 2) LIAISON MAN-HOURS =                           | $240 \times 8.12 =$    | \$ 1,950          |
| 3) PROTOTYPE (INCL. MATERIAL, TOOLING AND LABOR) |                        | \$ 200,000        |
| 4) ELECTRONIC EQUIPMENT AND OTHER INPUT          |                        | \$ 204,000*       |
| 5) STATIC TEST AND FIXTURES                      |                        | \$ 1,800          |
| 6) ELECTRONIC TEST AND EQUIPMENT (SEE 4)         |                        | \$ —              |
| 7) MAINTENANCE EFFORT                            |                        | \$ 400            |
| <u>TOTAL</u>                                     |                        | <u>\$ 505,550</u> |

\* THIS INCLUDES a) COMPLETE TELEMETERING SYSTEM,  
b) CLOSE CIRCUIT TV.,  
c) THREE DIMENSIONAL DISPLAY ETC.,

THE VALUE COULD BE REDUCED CONSIDERABLY BY  
ELIMINATING SOME OF THE CIRCUITS.