STATEMENT OF WORK
FOR
SCOUT PROGRAM
Phase VI and VII Systems Management
Phase VII Hardware Procurement
September 29, 1969
LANGLEY RESEARCH CENTER
LANGLEY STATION HAMPTON, VA.
TABLE OF CONTENTS

I. SCOPE

II. DETAILED REQUIREMENTS*

   TASK A. PROGRAM MANAGEMENT
   TASK B. PAYLOAD COORDINATION
   TASK C. PREFLIGHT PLANNING
   TASK D. DATA REDUCTION AND ANALYSIS
   TASK E. SYSTEMS ENGINEERING
   TASK F. RELIABILITY
   TASK G. STANDARDIZATION AND CONFIGURATION CONTROL
   TASK H. VEHICLE PROCESSING
   TASK J. SAN MARCO LAUNCH SITE SUPPORT
   TASK K. CERTIFICATION TRAINING
   TASK L. LOGISTICS SUPPORT MANAGEMENT
   TASK M. LOGISTICS SUPPORT MATERIALS
   TASK N. FIELD SERVICES SUPPORT
   TASK P. LANGLEY PROGRAM
   TASK R. STUDIES AND DESIGN REVIEWS
   TASK S. EMERGENCY SUPPORT
   TASK T. VEHICLE PROCESSING AND DEVELOPMENT HARDWARE
   TASK V. TOOLING AND GSE MAINTENANCE
   TASK W. FAILURE INVESTIGATION
   TASK X. VEHICLE PROCUREMENT

III. DOCUMENTATION

   A. Distribution Requirements
   B. Review and Approval

*The task letter designations set forth shall be utilized for task code reporting under the Scout Analysis and Control Reporting System. Since the SPAC resources utilization report is in the form of an EDP run, certain letter (I, O, Q, and U) have not been used due to their similarity to numbers. The foregoing accounts for what otherwise appears to be a non-sequential or incomplete document.
I. **SCOPE**

The Contractor shall furnish the services and materials (except such as noted herein) necessary to provide system management for Phase VI and VII, and procurement of hardware for Phase VII of the Scout Program. The Scout Program consists of the launch vehicle (including rocket motors), field services, electronic ground support equipment, mechanical ground support equipment, Wallops Island, WTR/Vandenberg Air Force Base, and San Marco launch complexes. The Scout Program encompasses the following tasks:

A. Program Management
B. Payload Coordination
C. Preflight Planning
D. Data Reduction and Analysis
E. Systems Engineering
F. Reliability Program
G. Standardization and Configuration Control
H. Vehicle Processing
J. San Marco Launch Site Support
K. Certification Training
L. Logistics Support Management
M. Logistics Support Materials
N. Field Services Support
P. Langley Program
R. Studies and Design Reviews
S. Emergency Support
T. Vehicle Processing and Development Hardware
V. Tooling and GSE Maintenance
W. Failure Investigation
X. Vehicle Procurement

II. DETAILED REQUIREMENTS

The detailed requirements for the various program tasks are as follows:

A. TASK A. PROGRAM MANAGEMENT

1. The Contractor shall furnish, on a sustaining basis, program management for directing, coordinating, and maintaining cognizance of all Scout Program activities, within the following areas, for the period set forth in the contract schedule: Reliability and Quality Assurance; Factory Operations; Systems Integrations; Mechanical Systems; Electrical and Electronic Systems; Guidance System; Control System; Propulsion Systems; Launch, Logistics, and Offsite Operations: Launch Complex and GSE; Payload Coordination; Mission Analysis; Standardization and Configuration Control; Study, R & D and Product Improvement; Administration and Program Control; Vehicle Fabrication; and, Motor Procurement.

2. At the inception of this contract, the Contractor shall furnish to the NASA a chart showing the functional assignments of Scout Program Management. The NASA shall be notified of changes in the management staff, as they occur, and a current chart shall be submitted on calendar quarter basis.

B. TASK B. PAYLOAD COORDINATION

1. The Contractor shall provide continuous liaison and mission working group representation on all matters pertaining to payload integration programs, for both domestic and international payloads.
2. The Contractor shall also provide the effort necessary to conduct the following:

   a. For twenty-four (24) payloads, calculation of the thermal environment seen by the payload in a particular ascent trajectory, including all surfaces adjacent to, surrounding, or touching the payload; and definition of the vehicle environment including, when necessary, dynamic and vibrational analysis to the spacecraft/vehicle combination to determine their compatibility as seen at the payload interface. Major studies for international payloads shall be the subject of separate contractual action.

   b. For eighteen (18) payloads, calculation of preliminary trajectories to determine payload mission feasibility, with respect to the following (as applicable):

      (1) Performance Capability
      (2) Range Safety
      (3) Tracking

   c. For twenty-four (24) payloads, making design layouts of payload interfaces, and verifying compatibility with the vehicle, including (as applicable):

      (1) Heat Shield
      (2) Separation system, and associated wiring
      (3) Transition sections and separation systems.
      (4) Fourth-stage rocket motors
      (5) Fifth-stage rocket motor (BE-3 only)
      (6) Umbilical Systems
(7) Payload pertinent launch complex and/or associated Ground Support Equipment (GSE)

(8) Other interfaces involved with secondary payloads and/or special separation systems furnished by Scout users

d. For eighteen (18) payloads (four (4) of which shall be Navy payloads), preparing and issuing a vehicle Payload Interface Drawing. This drawing shall be approved by all members of the Mission Working Group; and, when issued in its final form, shall establish formal identification of all payload/vehicle interface technical requirements. This drawing shall be issued in its final form no later than T-60 days. This drawing shall appear on the program schedule as a milestone. The Contractor shall also prepare for release of all engineering tasks required to meet the payload needs, as defined and agreed upon under the conditions of the Payload Interface Drawing. Major modifications, e.g., change in basic vehicle configuration (Scout A, B, C, or D), complete additional systems, or changes in operational principle, shall not be included herein.

e. For eighteen (18) payloads (four (4) of which shall be Navy payloads), preparing and issuing a Ground Support Equipment Payload Interface Drawing. This drawing shall be approved by all members of the Mission Working Group; and, when issued in its final form, shall establish formal identification of all payload Ground Support Equipment Interface technical requirements. This drawing shall be issued in its final form at T-60 days. This drawing shall appear on the program schedule as a
milestone. The Contractor shall also prepare for release all engineering tasks required to meet the payload needs, as defined and agreed upon under the conditions of the Ground Support Equipment Payload Interface Drawings. Major modifications, e.g., change in launcher basic structure, completely new additional systems, or changes in operational principle shall not be included herein.

3. For eighteen (18) missions, the Contractor shall assure internal Contractor intergroup technical compatibility with regard to a particular mission, and maintain cognizance and schedules of all inputs into a final trajectory calculation, including:
   a. Flight motors
   b. Flight weights
   c. Pitch program
   d. Aerodynamics
   e. Spin motor utilization

4. In support of vehicle processing, the Contractor shall provide internal coordination to assure schedule compatibility of payload peculiar production items. These items include:
   a. Heat shield production and modifications
   b. Heat shield ejection tests
   c. Heat shield fit check
   d. Separation system tests
   e. Transition sections and separation systems
f. Umbilical plugs and cables

g. Special payload procured items pertinent to Scout vehicle

h. Special payload procured studies pertinent to Scout vehicle

i. Radio Frequency Interference Tests

5. The Contractor shall provide all production engineering relative to the preparation for manufacturing release of modifications for eighteen (18) heat shield blanks (four (4) of which shall be configured for Navy payloads) and fourteen (14) payload umbilical cables, including the release of drawings necessary to reflect section separation system assignments.

6. The Contractor shall provide cognizance of the Scout User's Manual revision and distribution control program. The Contractor shall perform all work necessary to maintain in a current and accurate status, all material contained in this manual. The Contractor shall provide and distribute revised pages for all copies of the manual, in existence as of the date of this contract, and up to fifty (50) additional new pages. The Contractor shall distribute, as directed, additional copies of this manual (up to a maximum of seventy-five (75) copies) in the same format as previously established.

7. The Contractor shall provide three (3) copies of the Scout E-Section Manual with each test E-section provided to the Scout user, and shall perform all work necessary to maintain this manual in a current and accurate status.
C. TASK C. PREFLIGHT PLANNING

All efforts related to preparation of a preflight planning report are considered to be preflight planning. The Contractor's effort shall be limited to providing eighteen (18) preflight planning reports. The descriptions and/or data resulting from these tasks will be submitted in a technical report titled "Preflight Planning Report." The Preflight Planning Report shall be submitted thirty (30) days prior to each launch, or within twenty (20) days of receipt of specific rocket motor data, whichever is later, and shall confine itself to the particular launching of interest. Data shall be obtained through calculations and analyses based on Scout design information, nominal and specific motor characteristics, specific spin motor assignment, estimated and actual vehicle/payload weights, and payload mission requirements. Historical, background, or incidental descriptive material shall not be included. The Preflight Planning Report shall also avoid repetitive data and as a minimum shall contain the information in LTV Report 3-32000/8R-19, Scout Vehicle S-160C Preflight Planning Report (as appropriate for the configuration launched, i.e., three-, four-, and/or five-stage vehicles).

1. The Contractor shall perform the following tasks necessary to determine a flight trajectory designed to deliver a payload to a designated flight condition at, or after, last stage burnout (this trajectory shall be revised, when necessary, to reflect final stage and payload weights and motor assignments):

   a. Define the vehicle configuration
b. Predict the actual motor performance data for each
mission based on NASA CR336 or SPO-approved procedures. These predicted
motor performance data shall be obtained from re-evaluation, review, and
quarterly updating of actual motor performance based on post-flight
analyses. The required motor characteristics for performance prediction
shall be supplied by the Government for Government-supplied motors and
by the Contractor for Contractor-procured motors. The results of these
reviews shall be submitted to NASA/SPO in a semi-annual report similar
to Contract report 23.3. This report shall include the effect of
new motor data and other systems changes on Scout performance and
mass characteristics.

c. Determine the actual vehicle weight breakdown and
weight-time histories and the three major moments of inertia of the
vehicle as a function of the weight remaining.

d. Define the actual mission flight profile based on the
motor performance and vehicle weights determined above.

e. Define a vehicle pitch program for each payload mission.

f. Prepare a Final Flight Trajectory for each mission, and
revise, as necessary, to reflect the final vehicle configuration. This
final trajectory shall be submitted in the format of LTV routine
thirty (30) days prior to launch, or within twenty (20) days of receipt
of specific rocket motor data, whichever is later, and shall include the
following:
(1) Vehicle trajectory for all stages

(2) Two (2) pass orbital ephemeris for orbital missions

(3) For Wallops Station launches only, look angles from stations defined in NASA letter "Tracking Station Locations" dated August 18, 1964, NASL-3657

(4) Look angles from additional stations as requested by NASA

(5) An EDP input listing for the final trajectory which will reflect all weight and motor changes

(6) A list of all symbols, and explanation for each symbol used in the trajectory print-out.

2. An Instrumentation Calibration Summary Report shall be prepared for eighteen (18) vehicles, for incorporation in the Vehicle Logbook to be whipped with the vehicle, and shall provide a measurement channel status for all telemetered parameters. In addition, it shall provide graphical and digital presentations of selected F/M channel calibration data, reaction control motor matrix tabulations, and commutator deck A and B calibration data. An adequate number of points shall be selected to digitally represent the calibration curve. Calibration shall be prepared from applicable data recorded in Scout Standard Procedures, and utilize the information recorded in the LTV Missiles and Space Division component installation data sheet for other pertinent data, as required. The summary shall be similar in format and content to that included in the Vehicle Logbook for Scout vehicle S-143C, except that selected parameters may be presented in digitized form, rather than graphical,
if it is subsequently determined to be more compatible with the needs of the using agencies.

3. The Contractor shall provide eighteen (18) Preflight Review Presentations at NASA/LRC, as scheduled by NASA.

D. TASK D. DATA REDUCTION AND ANALYSIS

The Contractor shall perform all effort necessary to reduce, analyze, and report all of the booster vehicle flight results including two five-stage vehicles (Scout-C). The results will be based on all radar, telemetry, and meteorological data provided by the Government, as stated in each Preflight Planning Report. Flight results for each vehicle will be submitted in a report titled "Final Flight Report" within sixty (60) days of receipt of data from the Government. The Contractor's effort will be limited to providing eighteen (18) "Final Flight Reports" which shall be similar in format and content to LTV Report No. 3-32000/AR-123 (as appropriate for the configuration launched, e.g., 3, 4, or 5-stage vehicle, etc.). The reports will include reduced data and the analysis utilized to determine the actual flight performance of the vehicle. When unusual flight characteristics occur, they shall be specifically and separately enumerated, and the analysis will be directed toward determining their cause. The Contractor shall update the Scout Flight Data Historical Summary Report annually.
E. TASK E. SYSTEMS ENGINEERING

1. The Contractor shall provide the systems engineering effort necessary to technically support all aspects of the activity associated with the following systems:
   a. Mechanical
   b. Control
   c. Guidance
   d. Electrical and Electronic
   e. Propulsion (including pyrotechnics and spin motors)
   f. Launch Complex and GSE

2. In support of R&D/product improvements, vehicle production, and the processing and launch of eighteen (18) vehicles the Contractor shall:
   a. Provide quality control, manufacturing, and materials liaison to insure compatibility of all Scout systems.
   b. Initiate, review, and disposition changes to the Scout Standard Procedures and standard Scout vehicle and GSE configurations, in support of Task G of this Statement of Work.
   c. Review and/or disposition all component and system deviations and waivers both at MSD-T and field sites, and make appropriate recommendations.
   d. Review all malfunction reports, disposition corrective actions, and make appropriate recommendations.
   e. Review the vehicle and GSE environment, design, manufacturing and performance (including vendor component and subsystems) to
find, analyze, resolve problems, and implement changes resulting from the following items:

(1) Safety-of-flight items.

(2) Capability of LTV/MSD-T to process vehicles consistent with Scout Standard Procedures and the Scout Standardization and Configuration Control System.

(3) Engineering resolution of field problems (inclusive of drawing correction when necessary).

(4) Producibility changes.

(5) Government-approved Contractor requested changes.

f. Review all Scout discrepancy reports, MRA's, TIR's, and changes to Scout Standard Procedures and make appropriate recommendations.

g. Insure compliance with Scout technical standards by subvendors, storage agencies, and field processing agencies.

h. Report significant technical difficulties, as promptly as possible, to the NASA/SPO.

i. For each launch operation, notify the Technical Representative of the Contracting Officer, in writing that the disposition of all discrepancies and deviations has been reviewed. This notification shall state specific details of any disposition that could jeopardize flight performance. Notification shall be made by such means necessary to insure receipt prior to start of launch countdown.

j. Revise and republish the Propulsion Field Disposition Criteria (FDC) at six-month intervals, if necessary, incorporating changes resulting from processing experience. All TIR dispositions and RMRB decisions shall be incorporated into the FDC where appropriate.
k. Review preflight planning and final flight reports, and implement field operations requirements described therein.

l. Provide liaison between the Contractor's in-plant activities and both field sites and between Scout users and field, vehicle, and range operation to insure followup on all field support requirements and to prevent occurrence of similar problems at both sites.

F. TASK F. RELIABILITY PROGRAM

The Contractor shall provide a reliability program, covering the tasks necessary to support vehicle production, in-plant and field processing of vehicles, and Scout system R&D/product improvement for the period of this contract -- excluding any such effort associated with complete additional systems not currently part of the Scout system or a change in operational principle -- in accordance with LTV Report No. 23.203F, P-47B, QC6B-PP-012R8, and QC6B-PP-005-R5.

G. TASK G. STANDARDIZATION AND CONFIGURATION CONTROL

1. The Contractor shall maintain a standardization and configuration control system to provide for the receipt, evaluation, and disposition of proposed changes to the Scout Standard Procedures, vehicle, and GSE. It shall be an objective of this standardization and configuration control system to provide for the interchange and evaluation of technical data, experience, and knowledge existing at the various Scout operating sites (Wallops Island, WTR/VAFB, and Dallas). All proposed changes evaluated by the Contractor under this control system shall be reviewed from the standpoint of overall Scout system impact, and all changes recommended or approved shall reflect this total system evaluation.
2. The Contractor shall operate the standardization and configuration control system in accordance with LTV Report No. 3-15000/5R-240 (Revision ) "Configuration Control Operating Procedures for the Scout System" and the following:

a. A closed-loop communication system shall be maintained to insure that technical data, experience and knowledge from Wallops Station, WTR/VAFB, and in-plant processing are obtained and included in revisions to the Standard Procedures. Control by the Contractor's program office shall be maintained over the Standard Procedures, in accordance with the Standard Procedures Editorial Plan (LTV Report No. 3-30000/4R-81, Revision ). The Contractor shall maintain storage and issuance control for all Standard Procedures manuals. Additional data accumulation and quality assurance packages at the Contractor's Dallas facility, WTR/VAFB, and Wallops Island shall be reproduced locally by the user consistent with usage rates. The Contractor shall also provide revised pages to the Standard Procedures Manuals, as they are required due to changes as authorized under Standardization and Configuration Control.

b. The following defines items that are considered as "changes" within the scope of standard procedure maintenance effort under this contract:

(1) Day-to-day single item Scout vehicle and GSE changes that are authorized under Standardization and Configuration Control.

(2) Changes to the Scout standard vehicle and GSE that are the result of effort under paragraph E.2.e.

(3) Maintenance of Scout Standard Procedures that are the result of changes to the procedures produced under task orders to NAS1-6935 awarded through October 31, 1970.
c. The Contractor shall maintain control of the Standard vehicle and GSE configuration. The closed-loop communication system, mentioned in the previous paragraph, shall be used to insure that Wallops Station and WTR/VAFB experiences are reflected in recommendations to modify the standard configuration. Configuration modifications shall be made only in accordance with the latest revision of Configuration Control Operating Procedures for the Scout system as contained in LTV Report No. 3-15000/5R-240 (Revision ).

d. The Contractor shall maintain and correct the system of drawings and specifications which defines the current standard vehicle and standard GSE configurations. Within thirty (30) days of their effectivity date, two microfilm and one print of each Contractor and subcontractor drawing, each Contractor and subcontractor Engineering Order (E.O.), and each Contractor specification shall be furnished to NASA/SPO. Drawings, E.O.'s, and specifications furnished under any other Scout contracts shall not be submitted hereunder. However, the identification numbers thereof shall be included in all listings. All active drawings shall be revised to incorporate existing E.O.'s so that within six (6) months after contract award, and subsequent thereto, there shall not be more than four (4) E.O.'s outstanding against any given Contractor drawing. A production drawing shall be made for each vehicle modification drawing (Standard Configuration only) within thirty (30) days of effectivity date of each modification drawing. The standard GSE configuration shall be identified by family tree drawing lists of Scout Standard System Test equipment, Scout Launch Complex equipment, and transporters. The documentation shall be maintained or provided as follows:
(1) Scout Standard System Test Equipment (S\textsuperscript{3}T) drawings shall be maintained for all sites.

(2) Scout Launch Complex (SLC) drawings for the launcher equipment shall be maintained. Drawings of the Scout Launch Complex (SLC) equipment shall be maintained on site; but, reproducible drawings of this equipment shall be forwarded to the Contractor and an index of available drawings maintained.

(3) Dynamic Spin Balance (Gisholt) facility procedures and drawings shall be maintained at WTR/VAFB.

(4) The portable and mobile GSE drawings shall be maintained and corrected. Reproducibles of these drawings, when available, shall be integrated into the Contractor's drawing system.

(5) The Contractor shall assume responsibility for all NASA drawings applicable to Scout as of October 31, 1970. This shall include WTR/VAFB Spin Balance Facility, battery handling console, ignition/destruct battery simulator, etc. These drawings shall be in the LTV format and controlled by LTV similar to vendor drawings. Microfilm shall be furnished to NASA/SPO.

(6) The Contractor shall provide and maintain a family-tree drawing for the Standard Scout Vehicle incorporating all drawings down to the detail level.

(7) The Contractor shall provide the following additional Indexes to NASA/SPO every ninety (90) days:

(a) Alphabetical Drawing Index.

(b) Numerical Drawing Index.

(c) Numerical Specification Index.
e. The Contractor shall provide a Standard Procedure Configuration Index by EDP printout for each vehicle prior to processing each vehicle through checkout. This index shall identify the Standard Procedures to be used by page and revision date, and shall be used as the means of procedure planning documentation. This printout shall be attached to the applicable vehicle logbook. A similar index for the field portion of the Standard Procedure shall be mailed to NASA/SPO prior to shipment of each vehicle.
H. TASK H. VEHICLE PROCESSING (PHASE VI & VII VEHICLES)

1. To accomplish this task, the Contractor shall remove from storage, inspect, and configure for flight the following vehicles:

   a. First Vehicle. Process this vehicle from simulated flight through delivery.

   b. Second Vehicle. Perform mechanical fit check and process this vehicle through delivery.

   c. Third Vehicle. Process this vehicle from removal from storage through delivery.

   d. Vehicles 4 through 18. Remove from storage, depreserve and examine all vehicle sections for completeness, condition and compliance to logbook entries; inspect all electrical connectors; inspect and/or test major items and components to determine age effects and contamination due to storage, as per QCEB-PP-005R4; and, correct any deficiencies revealed during such inspections and/or tests. The Contractor shall in accordance with Scout drawings, specifications, and Standard Procedures; remove necessary components prior to H₂O₂ firings; conduct H₂O₂ firings; make necessary Base-A and D-section installations, including battery cells; conduct mechanical fit-check, bench systems test, and final checkout and prepare for delivery and deliver.

   e. Nineteenth Vehicle. Process this vehicle up through simulated flight.

   f. Twentieth (20) Vehicle. Process this vehicle up to mechanical fit check.

   g. Twenty-first (21) Vehicle. Remove from storage and depreserve this vehicle.
2. The Contractor shall provide the effort necessary to implement changes resulting from (1) safety-of-flight items, (2) revisions necessary to provide capability of the Contractor to process vehicles consistent with Standard Operating Procedures and Standardization and Configuration Control.

3. Provide engineering, manufacturing, and quality liaison representation in the checkout of vehicles.

4. The Government shall notify the Contractor of each vehicle's launch site and expected payload assignment at least five (5) months in advance of each vehicle's expected shipping date. The Government shall also furnish to the Contractor the payload mission data for each vehicle at least fifty-five (55) calendar days prior to the expected launch date.

5. Maintain surveillance of the vehicles in storage, during the life of this contract, in accordance with QCEB-PP-005R4.

6. Conduct four (4) heat shield ejection tests as designated by the Technical Representative of the Contracting Officer. These tests shall be made using the free-fall method. Prototype or mockup payloads, if required, shall be furnished as GFE on a time scale consistent with ejection test schedule. Upon completion of the ejection tests, five (5) copies, and one (1) reproducible, of individual summary reports similar to LTV Report No. 23.317 shall be submitted to the NASA Scout Project Office.

7. Submit an End Item Narrative Report in five (5) copies to NASA/SPO within twenty (20) working days after completion of checkout of each vehicle.

8. Conduct and report on eighteen (18) heat shield-to-payload vehicle fit checks prior to completion of assembled vehicle checkout in accordance with Standard Operating Procedures.
J. TASK J. SAN MARCO SUPPORT

1. The Contractor shall provide technical assistance to the NASA and CRA in the review of program documentation, including launch complex maintenance and personnel proficiency maintenance, concepts and plans, payload coordination and launch complex modifications necessary to remain current to the Scout vehicle configuration.

2. The Contractor shall provide engineering support to assist and monitor the incorporation of GSE modifications and maintenance of complex at Kenya, Africa, and assist in the maintenance of personnel proficiency at Kenya, Africa, and Wallops Island, Virginia.

3. The Contractor shall provide operation support during periods of launch operations.

4. Detail Requirements. At the technical direction of the NASA, the Contractor shall provide the services necessary to accomplish specific tasks assigned by the NASA within the limitations set forth in the areas described below.

   a. Program Documentation

      (1) Operation concepts, including plans, schedules, and flow plans will be reviewed in line with established NASA/DOD Scout experience. This will include review of all plans for complex maintenance and personnel proficiency including configuration control to assure Scout compatibility.

      (2) The payload coordination effort hereunder shall be limited to that required as a result of unique payload handling and design requirements. Normal payload coordination activities shall not be part of this effort.
b. **Off-Site Effort**

(1) **Rome, Italy.** Support San Marco CRA Working Group meetings.

(2) **Kenya, Africa.** Support of the CRA in the following:
   
   (a) Modification of the complex to be compatible with current Scout configurations.
   
   (b) Maintenance of the complex including assistance in determining spares requirements.
   
   (c) Establishment of spares drawing control system so that configuration may be readily determined.
   
   (d) Establish operating procedures and perform tasks to maintain personnel proficiency for future Scout vehicle operations.
   
   (e) Provide technical support in conducting San Marco launch operations to the areas of:

   1. Program coordination
   2. Propulsion
   3. Guidance
   4. Scout Vehicle - Mechanical
   5. Quality Control
   6. Ground Support Equipment (GSE)

(3) **Dallas, Texas.** Furnish support to off-site personnel in the areas of project, engineering, and manufacturing. The support to be provided shall consist of supplying vehicle and GSE technical information, and existing documentation as required to the NASA and to off-site personnel, and performing specific manufacturing tasks assigned by the NASA.
5. Assigned task progress will be reported in the weekly SPAC narrative report and the hours expended will be summarized by task. Final reports on each task will be provided as directed, however, the costs for the reports will be included in the task limitations.

K. TASK K. CERTIFICATION TRAINING

1. The Contractor shall provide the following training, i.e., certification, courses for the launch agency personnel:

   Course
   - Coaxial Cable
   - Electrical Cable
   - Electrical Connectors
   - Potting and Sealing
   - Soldering
   - Pneumatics
   - Peroxide
   - Optical Equipment
   - Dynamic Balance Certification (GFE)

2. Training cycles of the above personnel shall be accomplished during one continuous period. Personnel certification in the above skills shall be accomplished on an annual basis with recertification on a semi-annual schedule thereafter.

L. TASK L. LOGISTICS SUPPORT MANAGEMENT

1. The Contractor shall operate the established Logistics Support program which provides the necessary procedures, controls and services to insure that adequate, serviceable and technically acceptable materials are available for assembly, checkout and launch of Scout vehicles at WTR/Vandenberg Air Force Base and Wallops Station, Virginia.

2. The Contractor shall maintain the established and authorized spare replacement system, complete with procedures for receipt, storage and issue from initial receipt of a hardware item through issue for use.
A compatible system of records, to provide a current perpetual inventory balance and condition status of all items from receipt to consumption, shall be maintained. Data shall be accumulated and processed on a recurring basis, to provide means of ascertaining requirements for replenishment, addition and deletion in the spares inventory. The Contractor shall be responsible for directing the spares support system, in accordance with the Scout Logistics Support System Standard Operating Procedures, Report No. 3-30000/4R-87 (Revision C).

3. Allocation and/or distribution schedules of all inventory items shall be maintained by the Contractor for the complete spares inventory. Replenishment or supplementary requirements shall be submitted monthly to NASA Langley Research Center for review, approval and authorization as defined in Task M. The schedules and replenishment requirements shall be maintained on an EDP printout, which contains all the information previously submitted in the Monthly Replenishment Requirements Report. The Contractor shall be responsible for maintaining a requirement submission schedule that shall provide timely replenishment of all inventory items.

The Logistics Support System shall provide a means, as defined in the operational procedures, for flowing repairable items from the field sites to the Contractor's plant for appropriate action as to repairs. Determination of repairs required shall be in accordance with established Material Review Board Procedures in effect at the Contractor's plant under the cognizant administration of the NAVPRO, Dallas, Texas.

4. During the term of this contract, the Contractor shall repair, rework and/or modify Scout vehicle and GSE spare parts, consisting of spares currently in the inventory for support of the Scout Program as well as those that may be authorized during the period of this contract. This
effort shall also include the recertification of such spare parts and/or the corrective action necessitated by their shelf-life expiration. However, any such effort which the Contractor estimates will exceed $2,500 for a given item shall be the subject of separate contractual action. The foregoing effort shall also be applicable to all Material Review Actions (MRA) dated November 1, 1970, through October 31, 1973.

5. For the performance of this task, the Government shall furnish the following at Wallops and WTR/VAFB:
   a. Storage space
   b. Communications services
   c. Office supplies and equipment (Wallops Island only)
   d. Office space only

6. All spares inventory in possession of the Contractor, for which accountability is maintained under NASA Contract NAS1-7256, shall be transferred to this contract effective the date of award hereof.

M. TASK M. LOGISTICS SUPPORT MATERIALS

1. Replenishment of Authorized and/or Recommended Supplemental Spares Parts.

   The Contractor shall periodically prepare a list of recommended spare parts, including a detail estimate of the cost of such spares, to be used in the logistics support program. This list shall be forwarded to the Contracting Officer for approval via the NAVPRO. Upon direction by the Contracting Officer, the Contractor shall initiate procurement action to obtain those items and quantities of spares as authorized in writing by the Contracting Officer. In no event, however, will the Contractor be obligated
to furnish spares items whose total estimated cost exceeds that specified in Part III.A.2 of the Contract Schedule. Further, if at any time it appears to the Contractor that the total cost of the items authorized is likely to exceed the contract dollar limitation, the Contractor shall notify the Contracting Officer, through NAVPRO, of the amount of such excess and the reason therefor. Within fifteen (15) days after receipt of such notice, the Government shall notify the Contractor either that action has been taken to increase the funds allotted, or that specific items previously authorized are to be cancelled in order to remain within the dollar limitation. As part of the documentation effort of Task L, the Contractor shall maintain a listing of the items authorized and procured hereunder, as well as the estimated cost thereof.

2. Emergency Spares Requirements.

In the event that spare parts which are unavailable from spares inventory are urgently required at one of the launch sites, the Contractor may be authorized to furnish such items from production, if available. Urgent requirements may be imposed by means of a teletype, magnafax, etc., transmission from the Contracting Officer. Any items borrowed from production shall be replaced without further contractual action. However, separate contractual action under Task S shall provide for the removal, testing, reinstalation and/or retesting of such borrowed items.

N. TASK N. FIELD SERVICES SUPPORT

1. During the period of this contract, the Contractor shall perform all operations necessary to conduct fifteen (15) launches, using standard
ground support equipment. Launch operations shall consist of all Scout vehicle processing from receipt through launch. Processing for launch from the Scout complex shall follow the Standard Procedures defined in LTV Report No. 3-30000/5R-240 (Revision F). Interval between launches shall be not more than forty-five (45) working days for normal support and not less than thirty (30) days for maximum support.

2. The Contractor shall be responsible for the operation and maintenance of the Scout Launch Complex and all associated ground support equipment. All equipment shall be kept in good operating condition (per the requirements of Volume II, when applicable) and maintained current with vehicle (A, B, C, or D) and range requirements.

3. Upon assignment of the rocket motors to a vehicle, the Contractor shall conduct an inspection, and shall prepare the motors for integration into the vehicle including installation of wiring tunnels, pressure testing, and nozzle and igniter/pyrogen installation in accordance with Volume III of the Standard Procedures and the flow charts of Volume I of the Standard Procedures. When required, the Contractor shall also perform nozzle alignment checks and static unbalance determination.

4. Contractor field operations personnel shall support the payload coordination program, and shall be responsible for integration of the payload and vehicle at the launch sites. Assistance to Government personnel, in the dynamic balance and checkout of the payload, shall be provided as directed. Integration of payload requirements, in the basic vehicle countdown procedure, shall be the responsibility of the Contractor.
5. The Contractor field operations personnel shall maintain status records of all vehicles, vehicle components, and GSE assigned to field sites and shall coordinate all material and component requirements. Material procurement, inventory control, shipping and receiving and reporting of overtime shall be performed in accordance with existing LTV Field Operating Procedure, as amended.

6. The Contractor shall furnish four (4) copies of changes to the ignition and destruct wiring diagram schematics to the NASA Station Range Safety Office forty-five (45) days prior to each launch. In addition, the Contractor shall prepare an Operation Plan and Countdown Manual for each launch and submit them to NASA for approval within twenty-one (21) and fifteen (15) calendar days, respectively, prior to the scheduled launch date.

7. In addition to those tasks set forth above, the Technical Representative of the Contracting Officer, acting through the Scout Program Management Office at Dallas, may assign other tasks which may utilize the services of field personnel. Such services of launch team personnel shall be on a non-interference basis with basic responsibilities and shall be limited to services within the skill areas of assigned personnel. All materials and/or special tools (other than hand tools) which may be required, shall be furnished by the Government.

8. For the performance of this task, the Government shall furnish the following:

   a. **Capital Equipment (Wallops)**

      (1) The Government shall furnish all capital equipment above normal hand tools (defined as: "Those items normally identified with a skill or profession:"). This includes special test equipment, office equipment, and shop tools, for vehicle and GSE processing.
(2) Calibration of test equipment shall be performed by NASA, in accordance with the Contractor's established calibration schedule.

b. Capital Equipment (WTR/VAFB)

(1) The Government shall furnish all capital equipment above normal hand tools (defined as: "Those items normally identified with a skill or profession."). This includes special test equipment, office equipment and shop tools, for vehicle processing.

(2) Dynamic Balance Facility (Gisholt). The NASA shall furnish as GFE/GSE to the Contractor (VAFB) the Dynamic Balance Facility. This facility will be operated and maintained by the Contractor (VAFB), using responsible and qualified personnel. The qualifications/certification of the personnel will be accomplished by the Environmental Test Group, at NASA Wallops Island. (Ref. Task K).

(3) T/M Van. The Contractor shall be responsible for the operating of, maintenance and the required modifications to adequately support the checkout and launch of Scout vehicles.

(4) Major Transporters - All tractors, fork lifts, tugs, etc., will be assigned to the Contractor for maintenance and responsibility.

(5) Calibration of test equipment shall be performed by the Contractor, in accordance with the Contractor's established calibration schedule.

c. Support Equipment (Wallops) - All equipment shall be assigned to the Contractor for maintenance and responsibility. Maintenance of the building facilities, i.e., H₂O₂ storage building, heater/AC building, etc., shall be the responsibility of the Government.

d. Support Equipment (WTR/VAFB) - All equipment shall be assigned to the Contractor for maintenance and responsibility. Maintenance of all the building facilities shall be the responsibility of the Government.
e. **Materials.** All materials in support of GSE fabrication and changes shall be furnished by NASA, upon Contractor request with supporting documentation. Equipment maintenance materials shall be provided by NASA. Material for special tests or additional tasks, as may be requested by NASA, shall be furnished by NASA.

f. **Office and Shop Space (Wallops).** Work areas shall be assigned to the Contractor to support personnel, materials, tools, equipment, and launch vehicles.

  g. **Office and Shop Space (WTR/VAFB).** Office space shall be assigned to the Contractor in the Missile Assembly Building. Work areas shall be assigned to the Contractor to support personnel, material, tools, equipment, and launch vehicles specifically the

  (1) Missile Assembly Building

  (2) Ordnance Assembly Building

  (3) Logistic Spares Support Building

  (4) 51st Munition Storage Area

  (5) Dynamic Balance Facility

  (6) Scout Launch Pad

      (a) Terminal Building

      (b) Scout Pad and Range Support Building

      (c) Shop Services Support Building

  h. **Direct Field Support Services (Wallops).** The following services shall be supplied to the Contractor on an "as needed" basis, in conjunction with field operations:

  (1) Services of the machine, carpenter, and paint shops.

  (2) Heater and air-conditioning watchmen, when the vehicle is in the shelter on a twenty-four (24) hour per day basis, except during the Contractor's regular work shift.
(3) Guard services at the launch pads, when vehicles are erected.

(4) Necessary reproduction services for accomplishing Contractor's mission.

(5) Packing, packaging, shipping and receiving of all Scout and Scout-related equipment.

(6) Major transporters (forklift, crane, etc.) and other unique handling services and equipment.

1. Other-(Wallops). Special facilities, e.g., dynamic balance room pyrotechnic storage, etc., and associated equipment.

j. Direct support Services (WTR/VAFB). The following services shall be supplied to the Contractor on an "as needed" basis, in conjunction with field operations, by the Government.

(1) Services of machine, carpenter, and paint shops.

(2) Guard services at the launch pad, OAB, and spin facility.

(3) Necessary reproduction services for accomplishing the Contractor's mission.

(4) Unique handling services and equipment, such as cranes, cherry pickers, etc.
P. TASK P. LANGLEY SUPPORT

1. The Contractor shall maintain a support office, to be located in the vicinity of Langley Research Center, Hampton, Virginia, to perform the tasks enumerated in the areas of responsibility listed below. In no event shall the Contractor be obligated to furnish more than fifteen (15) man-years of effort, including paid absences, in the performance of this task.

   a. Mechanical and Control Systems. Services, not to exceed three (3) man-years, shall be provided to: maintain liaison between the NASA/SPO, Wallops, WTR/VAFB, and LTV/Dallas facilities; perform design and layout for integration of secondary payloads, and clarification of problem areas with vehicle and GSE; and perform other related assigned duties.

   b. Electronics Systems. Services, not to exceed three (3) man-years, shall be provided to: maintain liaison between the NASA/SPO, Wallops, WTR/VAFB, and the LTV Dallas facility; perform design studies for improvement of future hardware and circuitry of electronic systems on vehicle and associated GSE; investigate problems involving RF transmissions at each range; and perform other related assigned duties.

   c. Propulsion Systems. Services, not to exceed three (3) man-years, shall be provided to: maintain liaison between the NASA/SPO, Wallops, WTR/VAFB, and the LTV Dallas facility; observe rocket motor tests; review rocket motor flight performance; perform those preliminary studies and evaluations as assigned by NASA/SPO; and perform other related assigned duties.
d. **Reliability and Quality.** Services, not to exceed three (3) man-years, shall be provided to maintain liaison between the NASA/SPO, Wallops, WTR/VAFB, and the LTV Dallas facility, to integrate the quality control procedures for the vehicle and the rocket motors, and perform other related assigned duties.

e. **Operations.** Services, not to exceed three (3) man-years, shall be provided to: maintain liaison between the NASA/SPO, Wallops, WTR/VAFB, and LTV Dallas facilities; provide coordination of standardization and configuration control change traffic; investigate technical problems associated with field operations; and perform other related assigned duties.

2. The Contractor shall also provide office space, equipment, clerical services, and other required services for the support of this office.

**R. TASK R. STUDY PROGRAMS**

1. The Contractor shall provide the services and materials necessary to perform study programs covering all phases of Scout system improvements, Scout-related studies and analyses, vehicle production and areas of program support considered necessary by the Technical Representative of the Contracting Officer.

2. These programs shall be accomplished at the direction of the NASA and shall be specific tasks within the limitation set forth by NASA for each direction. Assigned task progress will be reported in the weekly SPAC narrative report and the hours expended will be summarized by task. Final reports on each task will be provided as directed, however, the costs for the reports will be included in the task limitations.
S. TASK S. EMERGENCY SUPPORT

The Contractor shall furnish services and materials to provide emergency support for all Scout systems. Assignments shall be accomplished by separate contractual action which follows essentially the same procedure as that described under Task W. However, the Contractor shall submit a firm fixed price proposal for the work required. Further, the Contracting Officer may direct the Contractor, in writing, to perform such work. Whenever work is so directed, the Contractor may make a claim for an equitable adjustment within sixty (60) days from the date of such direction. Failure to agree to the amount of such adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled 'Disputes.' However, nothing contained in the foregoing provisions shall excuse the Contractor from proceeding with the effort as directed. This support shall include, but not be limited to effort for investigation, removal, testing, repair, fabrication, rework or modification, and reinstallation of Scout parts requiring expeditious action. Test components and/or hardware that are available from stock shall be furnished by the Government if appropriate. Expended motor cases, if provided, are to be returned to NASA/LRC after completion of tests. Emergency support effort directed pursuant to this task shall be incorporated in an Appendix B (Emergency Support Actions) to this Statement of Work. All contractual actions issued hereunder shall be effected on a firm fixed-price basis.
T. TASK T. VEHICLE PROCESSING AND DEVELOPMENT HARDWARE

In support of vehicle processing, under Task H above, the Contractor shall:

1. Procure and fabricate fourteen (14) three-foot payload umbilicals similar to 331-36070-16.

2. Complete the fabrication of eighteen (18) Government-furnished payload heat shields in accordance with the requirements developed under Task B. This effort shall include but not be limited to:
   a. Removal from storage
   b. Addition of access and umbilical doors
   c. Addition of bumpers
   d. Installation of latch mechanism springs
   e. Installation of bracketry
   f. Installation of handles
   g. Performance of a hydraulic draw-pull test and instrumented single squib separation test on each heat shield.

3. The Contractor shall furnish the services and materials for any additional vehicle and GSE hardware on a Contract Call Notification basis. Assignments shall be accomplished by separate contractual action following the procedure outlined in task R.

V. TASK V. TOOLING AND GSE MAINTENANCE

1. The Contractor shall maintain all Scout assembly, machine, and detail tooling required in the performance of all Scout Program efforts and contracts. The term "maintenance" as used herein is defined as all effort necessary to insure that the above-mentioned tooling is kept in a
condition suitable for the fabrication, assembly, and installation of all Scout hardware in accordance with applicable specifications and/or drawings. In the event the Contractor considers an item of tooling in need of replacement, immediately upon such determination the item shall be appropriately tagged, the basis for the determination adequately documented, and the NASA notified. Hence, at the expiration of this contract, all tooling shall either be in acceptable condition or tagged and controlled by the Contractor as in need of replacement. In the event the Government determines that the Contractor should effect replacement of any such items, such replacement shall be accomplished by separate contractual action, on a fixed-price basis, and incorporated in an Appendix C (Tool Replacement Actions) to this Statement of Work.

2. The Contractor shall also maintain and keep in calibration the Government-furnished Ground Support Equipment (GSE) located at the Contractor's Dallas, Texas, facility in accordance with QCEB-PP-005R5.

3. All motor shipping containers and handling dollies shall be maintained in a usable condition. Should containers or dollies become unusable, replacement shall be accomplished as defined in paragraph above.
Support for failure investigations required by the NASA shall be accomplished by separate contractual action in the form of a "Contract Call Notification." Such call actions shall be serially numbered, setting forth the supplies and/or services which the Government desires, the estimated dollar amount thereof, and the allotment to be charged. The Contractor shall be obligated, subject to the fund limitation set forth in the call, to furnish the services and/or supplies specified therein, and to submit a cost proposal therefor within the time specified in the call. These separate contractual actions shall include all effort for investigation, removal of parts, and testing. However, correction and reinstallation effort shall be accomplished by contractual action pursuant to the appropriate task thereof. Test components, subsystems, systems, and/or hardware that are available from spares or production inventory shall be made available as GFE, if appropriate. Effort directed pursuant to this task shall be incorporated in an Appendix A (Investigative Support Actions) to this Statement of Work by means of a contract modification, on a cost-reimbursement basis, which definitizes said call action.