DEPARTMENT OF THE AIR FORCE
HEADQUARTERS SPACE AND MISSILE SYSTEMS CENTER (AFSPC)
LOS ANGELES AIR FORCE BASE, CALIFORNIA

19 Mar 2004

MEMORANDUM FOR SPACEPORT 2 WEST COAST OFFERORS

FROM: SMC Det 12/ PKS
3548 Aberdeen Ave SE
Kirtland AFB, NM 87117-5778

SUBJECT: Request for task order proposal for COSMIC Spaceport

1. The Government is contemplating the issuance of an East and West Coast Spaceports (Spaceport 2) task order for a Spaceport supporting the Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC) mission. This RFP is being issued in accordance with the procedures, terms and conditions set forth in Request for Proposal (RFP) FA8818-04-R-0002, Rocket Systems Launch Program (RSLP) East and West Coast Spaceports (Spaceports 2) Acquisition. The COSMIC Spaceport Task Order will not be evaluated as part of the award of the basic Spaceports 2 contract. Due to the required launch azimuth, the COSMIC task order is reserved for west coast Spaceports only.

2. The objectives of this Task Order are to provide the facilities, range support, and services required to support the launch of the Minotaur launch vehicle and COSMIC spacecraft. Offerors on the west coast are invited to provide firm-fixed-priced proposals to accomplish the work set forth in the "Technical Requirements Document (TRD) for Minotaur COSMIC Space Launch Spaceport" and the sample delivery order. Refer to Special Contract Requirement H-024 of the Spaceports 2 solicitation for additional information regarding submission of proposals.

3. Evaluation of proposals for this task will be accomplished in accordance with H-024, Ordering Procedures, and this cover letter. For the purpose of this task, the Lowest Price Technically Acceptable evaluation method will be used. Additionally, the offers will be evaluated on the overall cost to the Government to include, but not limited to, range support (if outside the proposal costs), equipment transport, logistics, site specific launch vehicle or support equipment modifications, site specific testing requirements per diem for the launch campaign, etc. These costs will be determined for each potential launch site and added to each offeror's proposed price in order to determine the overall cost to the Government. The overall calculated price will be used for evaluation purposes only and considered as part of the overall best value determination.

4. Proposals are due 26 April 04, and should remain valid for 90 days thereafter. The following page limits and proposal contents are required.

a. Technical Volume, 7 copies:
   (1) Maximum of 20 pages
   (2) Master Schedule
   (3) Tailored Statement of Work

b. Additional information (can be bound separately or attached in the same volume):
   (1) Large Businesses must submit a Subcontracting Plan addendum (include only specific dollars and percentage goals for Small Business participation and items to be subcontracted); the addendum will be evaluated to determine the extent to which the offeror identifies and commits to the participation of small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns as subcontractors in accordance with FAR 19.704. Goals that fail to meet the goals established by the DoD must be explained in detail.
   (2) GFE List—Items proposed in addition to that specified by the government
   (3) Organizational Chart outlining Contractor and Government Interface where applicable—name, title, and contact information of mission essential personnel.

c. In accordance with Spaceport 2 Section H provision H024 subparagraph 4.c, past performance is considered only on tasks previously awarded under the Spaceport 2 contract. Because this is the first task to be awarded under Spaceport 2, past performance will not be evaluated.

d. The contractor must provide letters indicating that proposed GFE (with the exception of that set forth in the RFP, Attachment 3) is available for use on the program. Authorization letters for non-rental, non-interference use of GFE shall be included in the proposal and do not fall within the 20 page maximum.

5. Please note that the Government intends to use contractor support during proposal evaluations for this effort. We request that all proposals submitted in response to this Request for Task Order Proposal contain written authorization to allow Northrop Grumman to have access to their proposals for evaluation purposes only. Non-government evaluators will be required to execute non-disclosure agreements to protect proprietary information from unauthorized use of disclosure and to refrain from using the information for any purpose other than that for which it was furnished.

6. Offerors may choose, at their discretion, not to submit a proposal for this effort without penalty or adverse consequence.

7. You are not authorized to begin performance of any work until you receive a duly authorized task order signed by the Contracting Officer. Also, this letter is not construed to mean that the award of a task order is assured. The availability of funds and timely and successful agreement on terms and conditions are among the prerequisites to a task order. In addition, award of a basic Spaceports 2 contract a task must precede issuance of a COSMIC launch task order.

8. If you have any questions, please contact Larry Melancon at (505) 846-5062 or the undersigned at (505) 846-7381.

Kenneth G West

KENNETH G. WEST
Contracting Officer

Attachment:
Sample Delivery Order
Technical Requirements Document
GFE List

Memorandum for Spaceport 2 Offerors

29 March 2004

The attachment entitled "Sample Delivery Order" referenced in the "MEMORANDUM FOR SPACEPORT 2 WEST COAST OFFERORS," dated 19 March 2004, Subject: "Request for task order proposal for COSMIC Spaceport" is not yet available and will be posted as soon as possible. Please check back on this site from time to time to see if the document is available.

KENNETH G. WEST
Contracting Officer

EAST AND WEST COAST SPACEPORTS
(SPACEPORT 2)
TASK ORDER 2

TECHNICAL REQUIREMENTS DOCUMENT (TRD)

FOR

MINOTAUR COSMIC SPACE LAUNCH

23 February 2004

TABLE OF CONTENTS

TITLE PAGE

LIST OF ACRONYMS

A/D	Arm/Disarm
ARSS	Airborne Range Safety System
EPDS	Electrical Power Distribution System
FTS	Flight Termination System
GFE	Government Furnished Equipment
GNCS	Guidance, Navigation and Control System
ICD	Interface Control Document
JAWSAT	Joint Air Force Academy Weber State Satellite
LCC	Launch Control Center
LEB	Launch Equipment Building
LEV	Launch Equipment Vault
LSC	Linear Shaped Charge
LV	Launch Vehicle
MAB	Missile Assembly Building
MBAR	Missile Base Adapter Ring
NCU	Nozzle Control Unit
OSP	Orbital Sub-orbital Program
PSS	Premature Stage Separation
S&A	Safe and Arm
SE	Support Equipment
TE	Transporter Erector
TMIS	Telemetry (TM) and Instrumentation System

1.0 SCOPE

1.1 Overview

The Rocket Systems Launch Program (RSLP) is an Air Force program managed by SMC/Det12 to provide orbital and sub orbital launch services to DoD and other government customers utilizing surplus de-militarized ICBM assets and commercial motors. RSLP uses a combination of government launch sites, air launch platforms and commercial launch sites to provide launch services. This TRD contains the Spaceport requirements for the Constellation Observing System for Meteorology, Ionosphere and Climate (COSMIC).

COSMIC is a collaborative space science mission of the National Space Program Office (NSPO) of Taiwan and several US agencies including NASA, NOAA, the National Science Foundation (NSF), Air Force Weather, and the Office of Naval Research (ONR). The mission is scheduled for September 2005. The program will use a Minotaur launch vehicle to insert a suite of six micro satellites into a 72° inclination 500 km orbit. The Minotaur launch vehicle is a four-stage space launch vehicle with MM II stage 1 and stage 2 motors and commercial Orion 50XL and Orion 38 third and fourth stages. The individual satellites have on-board propulsion to perform orbit-raising maneuvers to achieve the desired constellation.

1.2 Objectives

The objectives of this Task Order are to provide the required facilities, range resources, and services required to support the launch of the Minotaur launch vehicle and COSMIC spacecraft.

2.0 APPLICABLE DOCUMENTS

2.1 Compliance Documents

The Contractor shall comply with the following documents of the issue shown.

Document #	Document Title
EWR 127-1 (T) (Latest)	Range Safety Requirements as Tailored for Commercial Launch Facility
501-89, Vol. 1 (Aug 1989)	Universal Documentation Handbook
40 CFR (Latest)	Code of Federal Regulations
IRIG Spec 106-96	Telemetry Standards
MDD-02-RSLP-083 October 2002	Spaceport Transportation Planning Guide and Facility Description

2.0 Guidance Documents

The following documents are provided to the Contractor to be used as guidance for interface control, facility design, and booster logistics/processing.

Document #	Document Title
30 SW PLAN 32-7043-A (Latest)	Vandenberg AFB Hazardous Waste Management Plan
30 SW PLAN 32-40002 (Latest)	VAFB Hazardous Materials Emergency Response Plan

3 REQUIREMENTS

3.1 COSMIC Program Descriptions

The COSMIC Mission will be the first mission task order award on the Spaceport 2 contract. The COSMIC program is a Minotaur launch scheduled for September 2005. The COSMIC mission will be launched into a 500 km by 72° inclination orbit and therefore will be a west coast launch. Additional details on the Minotaur launch vehicle, the COSMIC payload and the concept of operations are provided in this section.

3.1.1 Launch Vehicle Configuration

The OSP Minotaur space launch vehicle is a four-stage missile consisting of a M55 first stage, SR-19 second stage, Orion 50 XL third stage, and Orion 38 fourth stage. The front section consists of an inertial guidance system; a tracking and range safety system; a telemetry system for primary booster system and payload status; attitude control system for post boost maneuvering, flight termination and premature separation system; six satellite payloads; and a separating shroud. The OSP vehicle will be launched from a launch support structure over a launch duct. The launch vehicle with payloads is approximately 63 feet long and weighs approximately 80,000 lbs.

3.1.1.1 Minuteman II Stage 1 Rocket Motor M55A1

The first stage is a Minuteman M55A1 solid propellant rocket motor with a D6AC steel case manufactured by Thiokol Chemical Corporation. The motor contains over 45,000 pounds of class 1.3 solid propellant with an action time of about 60 sec. The average sea level thrust is approximately 170,000 lbf. Thrust Vector Control is accomplished by four hydraulically actuated gimbaled nozzles. The Missile Base Adapter /Ring (MBAR) interfaces to the motor aft skirt to provide support for ground handling and emplacement of the boosters. After emplacement on the launch stand, the MBAR is unclamped from the Stage 1 aft skirt and clamped to the launch stand adapter. The lower NCU umbilical is attached to the MBAR.

3.1.1.2 Minuteman II Stage 2 Rocket Motor SR19-AJ-1

The second stage is a Minuteman SR19-AJ –1 solid propellant motor with a titanium alloy motor case and a single fixed submerged nozzle, which was manufactured by Aerojet Solid Propulsion Company. The motor contains almost 14,000 pounds of class 1.3 solid propellant and has an action time of about 65 sec. The average vacuum thrust is approximately 60,000 lbf. Stage 2 uses a Liquid Injection Thrust Vector Control (LITVC) system for pitch and yaw and a separate solid fuel gas generator roll control system.

3.1.1.3 Orion 50 XL Rocket Motor

The Orion 50 XL motor is a commercial motor manufactured by Alliant specifically for small space launch applications. The case is an IM7/55A graphite fiber epoxy and contains 8,640 pounds of HTPB propellant. The burn time is approximately 68 seconds. Thrust vector control in pitch and yaw is accomplished with flexseal nozzle and electro mechanical actuators. The 2-3 staging separation is accomplished with a 25 gr/ft aluminum Linear Shaped Charge (LSC) which cuts the aft aluminum ring of the Orion 50 XL motor skirt.

3.1.1.4 Orion 38 Rocket Motor

The Orion 38 motor is a commercial rocket motor manufactured by Alliant and is used for orbit insertion. The case is IM7/55A graphite fiber epoxy and contains 1,699 pounds of HTPB propellant. The burn time is approximately 68 seconds and average thrust is 7170 lb_f. Thrust vector control is accomplished with a flexseal and electro mechanical actuators.

3.1.1.5 Interstages

The Minuteman first and second stage motors are connected by the MM II interstage assemblies. They are aluminum alloy structures with an external cork ablative material and coating. The interstages are separated from the booster in flight by stage separation ordnance.

The second and third stages are connected by a new OSP 2-3 interstage. The structure is fabricated from aluminum alloy rings and skin and contains the Minuteman downstage interface components including the ordnance S&A, the SE13G battery and the P92A1 amplifier. The interstage also contains four springs providing separation velocity between the second and third stage.

3.1.1.6 OSP Avionics Assembly and Clamshell Fairing

The OSP avionics wafer and clamshell fairing are equivalent to the design currently flying on the Pegasus launch program.

The clamshell fairing consists of two composite shell halves, a nose cap and a separation system. The base of the fairing attaches at the forward skirt of stage three and encloses the stage four and avionics wafer as well as the payloads. The shell halves are held together with two titanium straps along the cylinder and a retention bolt in the nose. During separation, the titanium strap bolts are severed with pyrotechnic bolt cutters and the retention nut in the nose is released with a pyrotechnic separation nut. A hot gas generator pressurizes two piston driven pushoff thrusters to force the fairing halves to rotate and fall away from the payload and launch vehicle. Thermal

protection during ascent is provided by RTV on the nosecap and ablative cork on the cylindrical and ogive sections of the shells.

The Avionics structure is a 38 inch diameter structure that attaches to the forward end of the Orion 38 motor and provides a payload attach interface at its forward end. The avionics wafer contains the Guidance, Navigation and Control System (GNCS), the Telemetry and Instrumentation System (TMIS), and portions of the Electrical Power and Distribution System (EPDS). The Airborne Range Safety System (ARSS) components are mounted in the third stage.

3.1.1.7 Flight Termination System (FTS)

A flight termination system compliant with EWR 127-1 will be part of the OSP launch vehicle. The systems will include range safety tracking, a Command Destruct Receiver, and an ordnance destruct system. Ordnance components have been approved for use on Minuteman and Pegasus/Taurus programs. Avionics components have Pegasus and Taurus flight heritage and have been used on previous OSP TLV and Minotaur launches.

3.1.2 Spacecraft Payload

The payload for the COSMIC mission is a Spacecraft suite consisting of six individual Orb Com style spacecraft. The spacecraft, designed by Orbital Space System Group, are provided by the NSPO. The spacecraft contain hydrazine fuel and will be fueled and integrated at the range. The spacecraft are individually released by the launch vehicle into the insertion orbit. The individual spacecraft then perform orbit-raising maneuvers to achieve the desired COSMIC constellation. An isolation system will be flown to reduce launch environments to the payloads.

3.1.3 Support Equipment

The Support Equipment (SE) provides all the functions required for field prelaunch and launch processing. It supports the integration of Minuteman boosters and mission unique payloads to OSP front end. The SE provides command and control of the booster during ground operations including the following:

- Control and monitoring of booster S&A devices and A/D switches
- Control and monitoring of Command Destruct S&A device
- Ground hydraulic power for the boosters through the skirt umbilical
- Ground electronics power for the boosters through the Front Section umbilical
- Activate SE13G battery in Stage 1 through the Nozzle Control Unit (NCU) umbilical
- Activate SE13G battery in the 2-3 interstage through the Front Section umbilical
- Stage 1 ignition upon command from the GNCS
- Missile Lift-Off monitor through the NCU umbilical

The SE will be at three locations for launch operations. NCU battery carts to power up the stage one NCUs must be located near the launch vehicle and will require a launch equipment vault (or equivalent) at the launch pad. On-site equipment racks, power and communication is needed within 200 feet of the launch pad and could be co-located in the LEV or in a separate launch equipment building. Launch control consoles are located in a launch support center within five miles of the launch pad. Fiber optic and copper lines are required between sites. Connections from the launch vault to the vehicle will be made with OSP furnished umbilicals.

3.1.4 Operations Concept

The two Minuteman stages will be processed as a two stage booster at Hill Air Force Base (HAFB). The Minuteman destruct ordnance will be installed at the range or at HAFB depending on the launch site used. The two stage booster will be placed in a Missile Transporter (MT) or Minuteman shipping container for transport to the range. The booster will be roll transferred from the MT to a temporary storage location, if required, or directly to a Missile Processing Facility for prelaunch processing and checkout. Storage temperature of 60° to 100° F is required. Temperature control between 60° and 80° F is required during processing and launch operations. Allowable humidity is shown in Appendix A, figure 1.

The two Orion motors will be shipped in contractor handling fixtures to an assembly area for processing and mating with the OSP avionics module. The OSP avionics module and shroud will be checked out at the OSP contractor facility, shipped to the assembly area for mating with the Orion motors. The Spaceport Missile Assembly Building (MAB) is the baseline facility for the purpose of this SOW.

Payloads will be transported to the range and delivered to a payload assembly area or building for fueling, integration and checkout.

In the MAB, the two Orion motors will be assembled with the OSP front section. Following checkout of the assembled front section, the spacecraft will be electrically mated to the front section and additional testing performed prior to physically mating the spacecraft. Following mating, the clamshell fairing will be installed to encapsulate the spacecraft.

The Minuteman two stage booster will be roll transferred back into the modified TE for transport and emplacement on the launch stand. The TE will attach to Spaceport installed GFE pylons at the launch pad and the booster is erected to vertical by the TE hydraulic actuator system. The forward roof of the TE is removed and the booster will be lifted out with a spaceport provided facility (or mobile) crane. The booster will be placed on the OSP launch stand connected to the spaceport provided launch mount interface.

The TE will return to the MAB where the assembled OSP Orion motors, front section and spacecraft will be roll transferred into the TE. The same process as the booster will be used to transport, erect and place the front section on the booster. Work platforms will be required at various elevations up to a height of 80 feet for assembly

and processing of the launch vehicle at the launch pad. Elevations will be defined in the ICD.

The OSP contractor will connect umbilicals, checkout the vehicle and conduct launch operations.

3.3.2 Explosive Safety

Appendix A, Table 2 identifies the weight of the propellant, class and division of the explosive and total weight for Minotaur Minuteman II and OSP Orion systems. The table also identifies the Quantity Distances for the Inhabited Building (IB) distances and Interline (IL) distances and the Net Explosive Weight (NEW) for Minuteman and Orion systems.

3.2 Spaceport Requirements

This section covers the requirements for Spaceport launch services for the Minotaur COSMIC Mission including launch support, range support, logistics support, support services, facilities engineering and utilization.

3.2.1 Launch Facilities

All facilities shall have a certified ground and grounding points throughout each as required by ground safety. Each facility shall have lavatories with sewage systems or have one within a reasonable distance. Each processing facility shall have air conditioning systems capable of maintaining the OSP vehicle within 60° to 80° F and from 30% to 80% relative humidity during processing and prelaunch operations.

3.2.1.1 Launch Pad

The Contractor shall provide a launch structure that shall include a launch stand that interfaces with the LV-contractor-provided Launch Duct Adapter Ring and shall support the OSP launch vehicle. The stand shall have an interface ring with a bolt pattern determined by the LV contractor and identified in the ICD (CDRL A005).

The Contractor shall provide road access to the pad. The Contractor shall provide an access area at the launch pad with sufficient support capability and pylon attachments for the loaded Transporter-Erector (TE). The Contractor shall provide 120/208 VAC, 3 phase, 60 Hz, 30 Amp power for the TE generator at the launch pad. The connector details shall be in accordance with the TE ICD 25-65097, sheet 9.

The Contractor shall provide site power capable of handling all equipment at the launch pad. The Contractor shall provide standby generator power for pre-launch processing support at the launch pad and manually activated standby power for an LV contractor provided air conditioning unit and other miscellaneous pre-launch processing equipment. The Contractor shall provide communications for operations at the launch pad. The Contractor shall provide certified ground and lighting to allow for work at night for this facility.

The Contractor shall provide a Launch Equipment Vault (LEV) to house and protect NCU battery carts. The LEV shall be located such that the LV contractor provided umbilical, which is 65 ft long (max), reaches the vehicle interface point, as identified in the ICD (CDRL A005).

The Contractor shall provide umbilical guy-wire tie-down mountings for a LV contractor provided umbilical mast or other provisions as defined in the facility ICD (CDRL A005) and routing for LV contractor provided umbilical cable(s) that will run from the LEV to the launch vehicle.

3.2.1.2 Missile Assembly Building (MAB)

The Contractor shall provide a booster processing facility capable of handling the two stage Minuteman booster and the government provided transporter erector.

3.2.1.3 Support Equipment Building (SEB)

The Contractor shall provide an enclosed and covered building approximately 12 ft by 12 ft by 8 ft high within 200 ft of the launch pad. If a structure is not available, the minimum requirement is to provide a covered and protected site for an OSP contractor furnished equipment trailer. Provide copper wire land lines and fiber optic cable to the launch control facility. Preliminary requirement is for six fibers, single mode (9/125) and 50 pair copper wire, 19 AWG telephone. Provide underground cable conduit from inside LEB to the LEV, to be identified in the ICD. Provide 120/208 Volts AC, 3 phase, 60 Hz, 30 amps power source. If located at the launch pad, LEB and LEV (2.3.6.1) may be combined into one hardened structure.

3.2.1.4 Front Section Processing Facility

The Contractor shall provide a front section processing and test facility and all associated handling equipment to support processing and testing of the OSP front section including the two Orion motors. The booster processing facility may be used if it can accommodate both processing simultaneously.

3.2.1.5 Payload Processing Facility

The Contractor shall provide a facility for processing of the satellite payloads prior to integration with the front section. A 100,000 class clean room is required for general processing operations and a 10,000 class clean room capability is required for specific operations. The facility shall provide capability for fuelling spacecraft.

3.2.1.6 Administration Facility.

The Contractor shall provide an administration facility and all associated office equipment, communications and security to support processing, testing and launch of the OSP vehicle.

3.2.1.7 Launch Control Facility (LCF)

The Contractor shall provide a launch control facility to support processing, testing and launch of the OSP vehicle. The LCF must be within 5 miles of the LEB. The facility shall provide space and communication equipment for a launch crew of at least 14 people and 12 launch support equipment consoles. The facility shall provide backup

power capable of handling all equipment in the launch control facility. Provide 120/208 Volts AC, 3 phase, 60 Hz, 30 amps power source.

3.2.1.8 Launch Control Center

The Contractor shall provide a Launch Control Center for Range Operations personnel and for the program management team with access to launch information, communication nets and telephone lines.

3.2.1.9 Magazine for Storing Ordnance.

The Contractor shall provide a 400 cu ft Magazine for storing 1.1, 1.3 and 1.4 classified ordnance. Provide a certified ground for ordnance storage at this facility.

3.2.2 Launch Support

Provide an on site range support manager to schedule and provide access to facilities, equipment and range support. Provide on-call maintenance and repair support for facilities and equipment.

3.2.2.1 Up Range Support and Down Range Interface

The Contractor shall interface with the government provided range to facilitate range radar tracking, telemetry receiving, optical coverage and range safety support for launch operations. The government will separately provide the range support as the basic approach for the mission. (Spaceports may propose an option for a Spaceport range if available)

3.2.2.2 Booster Stacking and Erecting Support

The Contractor shall coordinate and schedule launch pad preparations and support. The Contractor shall coordinate and schedule Spaceport equipment support, including a crane for two days of lifting operations with a minimum hook height of 120 ft and capable of lifting up to 75,000 lb booster from a modified Transporter/Erector (T/E) and placing it on the launch stand. The Contractor shall provide a certified crane operator. The Contractor shall also provide a man lift for 30-consecutive days capable of lifting two men and equipment with a lift height of no less than 85 feet.

3.2.2.3 Front Section onto the Booster Installation Support

The Contractor shall coordinate and schedule Spaceport equipment and facilities including a crane with 120 foot hook height and work platforms to a height of 80 ft. The Contractor shall also provide a certified crane operator.

3.2.2.4 Launch Vehicle Testing Support

The contractor shall ensure that sufficient power and communications are continuously available to support range testing. The Contractor shall coordinate with the Government and LV Contractor to ensure testing power and communication requirements are clearly understood and provided to permit testing.

3.2.2.5 Launch Vehicle Launch Support

The Contractor shall provide communications, power and range/site safety for launch operations per a Spaceport Interface Control Document (ICD) CDRL A005. The Contractor shall support AF and the Launch Vehicle (LV) contractor personnel during launch day operations and assure Spaceport communications, power, facilities and range interfaces are operational and able to support launch.

3.2.2.6 Communications

The Contractor shall provide Spaceport communications for on and off site usage including local and long distance telephone services, dedicated data communication line, and a dedicated on-site fax line. Launch nets for communications during launch operations, pre-launch checkouts and vehicle buildup, integration and checkouts shall be available to support launch operations. Although only five nets are identified, each communications panel shall be capable of supporting up to a combination of 20 nets and voice direct lines at no extra cost to the government. These will include the following five nets with other nets to be defined:

a. Countdown Net: Used for launch operations to allow all personnel at launch stations to communicate with each other, between the Launch Control Facility (LCF), range safety consoles, launch vehicle contractor ground support consoles, payload contractor ground support consoles, the launch equipment building, and the launch pad. The Contractor shall provide monitor access to the countdown net for the program management team at a Launch Control Center (LCC) and off-Spaceport support, as required.

b. Program Net: Used for Program Management team communication.

c. Safety Net: Used for communication between the ground and flight safety, and range safety organizations.

d. Vehicle Net: Used for communication between the launch pad, LV contractor ground support consoles, technical support team, the LCC and the Program Manager.

e. Payload Net: Used for communication between the launch pad, payload vehicle contractor, ground support consoles, the LCC and the Program Manager.

3.2.2.7 Site Documentation

The Contractor shall provide facility documentation to the LV contractor in support of planning range operations.

a. The Contractor shall develop a Spaceport to Minotaur Interface Control Document (ICD) in accordance with CDRL A005.

b. The Contractor shall develop a Launch Base Support Plan in accordance with CDRL A006 which describes facility usage and identifies logistics and Range support for processing activities.

c. The Contractor shall prepare any Accident/Incident Reports in accordance with CDRL A001.

d. The Contractor shall prepare and submit a Certificate of Facility Readiness (COFR) in accordance with CDRL A007.

3.2.2.8 Site Scheduling

The Contractor shall prepare an integrated schedule of facility use, maintenance, outages, etc during contractor site operations. The Contractor shall provide facility access for the LV contractor 90 days prior to the launch date and launch pad access at 60 days prior to the launch date. The Contractor shall also schedule and support site surveys, as required.

3.3.2.1 Accident Investigation Support

The Contractor shall provide one month of support for the investigation of any mishaps that occur at the Spaceport facility.

3.2.2.10 Launch Window

Upon award of the contract, a launch window will be established by the Government in accordance with the following paragraphs.

3.2.2.10.1 Initial Launch Capability

An Initial Launch Capability date (ILC) shall be established upon award of the contract. ILC is defined as the first day on which the mission can be launched and shall be the first day of a 90 day Launch Window (LW) during which the Government can select the actual launch date. The Government may unilaterally modify the ILC during the course of the contract by Contracting Officer (CO) modification to the contract.

3.2.2.10.2 Launch Date

No later than 60 days before the ILC, the Government will either establish a Launch Date (LD) within the 90-day Launch Window, or change the ILC, thus establishing and

paying for a new 90-day window. Should the Government fail to establish the Launch Date by ILC-60 days, the ILC becomes the Launch Date.

3.2.2.10.3 Grace Period

Once the Launch Date is established, the following 15 days shall be considered a grace period. During this period, the Launch Date may be modified by mutual agreement between the Government and Contractor Program Managers and will not be determined by CO notification to the Contractor. No additional costs shall be charged to either party during this 15-day grace period. If the launch date is slipped beyond the 15 day grace period by the Government, a new Launch Date shall be established, and paid for by the Government, with an additional 15 day grace period.

3.2.3 Logistics Support

Provide receiving support; inventory control; transportation and handling; and storage of hardware (to include ordnance).

3.2.3.1 Receiving Support

The Contractor shall provide material handling equipment for LV contractor personnel to support receiving and off loading of hardware at the Spaceport.

3.2.3.2 Inventory Control

The Contractor shall maintain inventory control of all mission hardware in the control of the Spaceport.

3.2.3.3 Storage

The Contractor shall provide storage for initiation ordnance and small size support equipment at Spaceport facilities.

3.3.2 Facility Engineering

3.2.4.1 Analysis

The Contractor shall provide analysis to integrate the mission interfaces with the Spaceport launch pad and facilities.

3.2.4.2 Design

The Contractor shall provide facility interfaces as required for the OSP vehicle, the integrated mission payload and associated support equipment, per the ICD (CDRL A005).

3.2.4.3 Facilities Modification

The Contractor shall provide facility modifications within the established schedule, as required to ensure correct OSP vehicle, integrated Minotaur payload and associated Ground Support Equipment (GSE) interfaces at Spaceport facility, per the ICD (CDRL A005). Facility readiness will be presented in a Facilities Readiness Review to be held 30 days prior to first operations at the launch site.

3.3.3 Support Services

3.2.5.1 Meteorology

The Contractor shall support the Range as required with, meteorological services/data to support processing, testing and launch of the OSP launch vehicle, including real-time weather status.

3.2.5.2 Photography

The Contractor shall support the Range as required with photography services, including still photos, high speed film and real time video, in support of processing, testing, anomaly/failure analysis and launch of the OSP vehicle and the integrated Minotaur payload.

3.2.5.3 Pad Lighting

The Contractor shall provide on-pad lighting (a minimum of two banks, 4000 W each) to support nighttime processing operations for 30-consecutive days.

3.2.5.4 Medical and Environmental Health

The Contractor shall provide on-call access to medical and environmental health services, including urgent care and emergency transport to support all personnel involved in the processing, testing and launch of the OSP vehicle and the integrated mission payload. The Contractor shall provide required safety equipment in compliance with local and OSHA regulations.

3.2.5.5 Site Vehicles

The Contractor shall provide access to site vehicles to support processing, testing and launch of the OSP vehicle and the integrated mission payload. Specific requirements will be finalized in the integration and launch base support planning process and shall include site transportation, forklifts and a tug to move the mobile scaffold tower if necessary. The tug shall be available for 30 consecutive days.

3.2.5.6 Intrusion Detection and Security

The Contractor shall coordinate access control with the Range and provide access control to the Spaceport launch site and facilities. The contractor shall provide 24 hr security when the vehicle and payload are on site.

3.2.5.7 Hazardous Waste Containment and Disposal

The Contractor shall provide lawful hazardous waste containment, disposal and documentation services to support processing, testing and launch of the OSP vehicle and the integrated mission payload.

3.2.5.8 Propellants, Liquids and Gases

The Contractor shall provide the following propellants, liquids and gases as needed to support processing, testing and launch of the OSP vehicle and integrating the Contractor payload as listed below:

1. Gaseous Nitrogen: 10 portable 6 kpsig K-bottles supplying supply of 99.995% pure N_2
2. High Pressure Air: Portable, filtered, at least 100 psig for pneumatic tools.

3.2.5.9 Janitorial Services

The Contractor shall provide janitorial services for administrative and vehicle/payload areas at the Spaceport.

3.2.5.10 Fire Protection

The Contractor shall provide on-call access to fire detection/protection services to protect personnel, facilities and hardware.

3.2.5.11 Potable Water

The Contractor shall provide water at the Launch Control Center (LCC) and launch pad for personnel consumption, not to exceed 20 gal per day for the duration of mission site operations.

3.3.2 Program Support

3.2.6.1 Program Schedules

The Contractor shall prepare an integrated schedule CDRL A008 of Spaceport facility use, maintenance, outages, planned support, etc. during the Minotaur mission.

3.2.6.2 Meeting Conduct and Attendance

The Contractor shall attend Minotaur mission and Range planning meetings, as required to support processing and launch activities. Mission planning meetings will occur approximately bimonthly, with every other meeting being held at the LV contractor's facility. A Facility Readiness Review will be held at the spaceport facility, 30 days prior to LV contractor arrival on site. During on-site processing and launch support operations, meetings will occur daily. The Contractor shall provide meeting minutes for the planning meetings in accordance with CDRL B002.

3.2.6.3 Contract Fund Status Report

The Contractor shall prepare a Contract Fund Status Report (CFSR) at the end of each quarter in accordance with CDRL B001.

3.2.6.4 Program Final Report

The Contractor shall prepare a final cumulative report in accordance with CDRL A004, to include final reports of Spaceport test procedures, all identified anomalies and the associated resolutions.

3.2.7 Range or Site Support

The Spaceport shall interface with the GFE range and provide communications and facilities to meet program requirements.

3.2.7.1 Range Documentation

The Contractor shall provide Spaceport facility inputs to the LV contractor in support of the development of ground safety documentation necessary to obtain approval from the Range for ground operations/processing and the development of flight safety documentation.

3.2.7.2 Flight, Ground And Operational Safety

The Contractor shall coordinate and support flight safety reviews and the flight assessment process by the appropriate agencies, and assist in obtaining the Government Range safety approval of LV contractor procedures. The Contractor shall get Government approval and ensure implementation of the Spaceport ground operations safety program.

3.2.7.3 Flight Test Tracking, Telemetry, RF, Radar and Command Destruct

The Contractor shall support requirements to provide range support including flight test tracking, telemetry receiving, command destruct systems, and providing required support through launch, in accordance with Government Range safety requirements. The range requirements may be met by a spaceport provided range or by use of a government provided range. The Contractor shall ensure telemetry receiving from the launch vehicle at the launch pad via a re-radiation system. The Contractor shall provide fiber optics from the telemetry receiving site to the Launch Control Facility (LCF) for real time telemetry data during countdown launch operations.

3.3 Environmental Concerns

3.3.1 Environmental Compliance

The contractor (and its subcontractors) shall comply with all federal, state, and local environmental laws, regulations, and policies for all activities defined in this TRD, whether conducted at government or contractor facilities. Upon request, the contractor shall make available to the government applicable environmental permits and documentation. The contractor shall be solely responsible for the management, cleanup, protection, and disposal of any and all emissions, effluents, wastes, and hazardous materials used in, generated by, or associated with the actions required by this SOW. The contractor shall report the current status and impacts to program cost, schedule, and performance from the above mentioned at each management review.

3.3.2 Support for National Environmental Policy Act (NEPA) Compliance.

If data is needed by the government to develop applicable environmental analysis required under provisions of the NEPA, the contractor shall provide a description of proposed contractor actions along with qualitative and quantitative data describing the constituent materials, emissions, effluents, wastes, and hazardous materials used in and produced from these activities.

APPENDIX A: MOTOR DATA

TABLE 1. MINOTAUR MOTOR SPECIFICATIONS

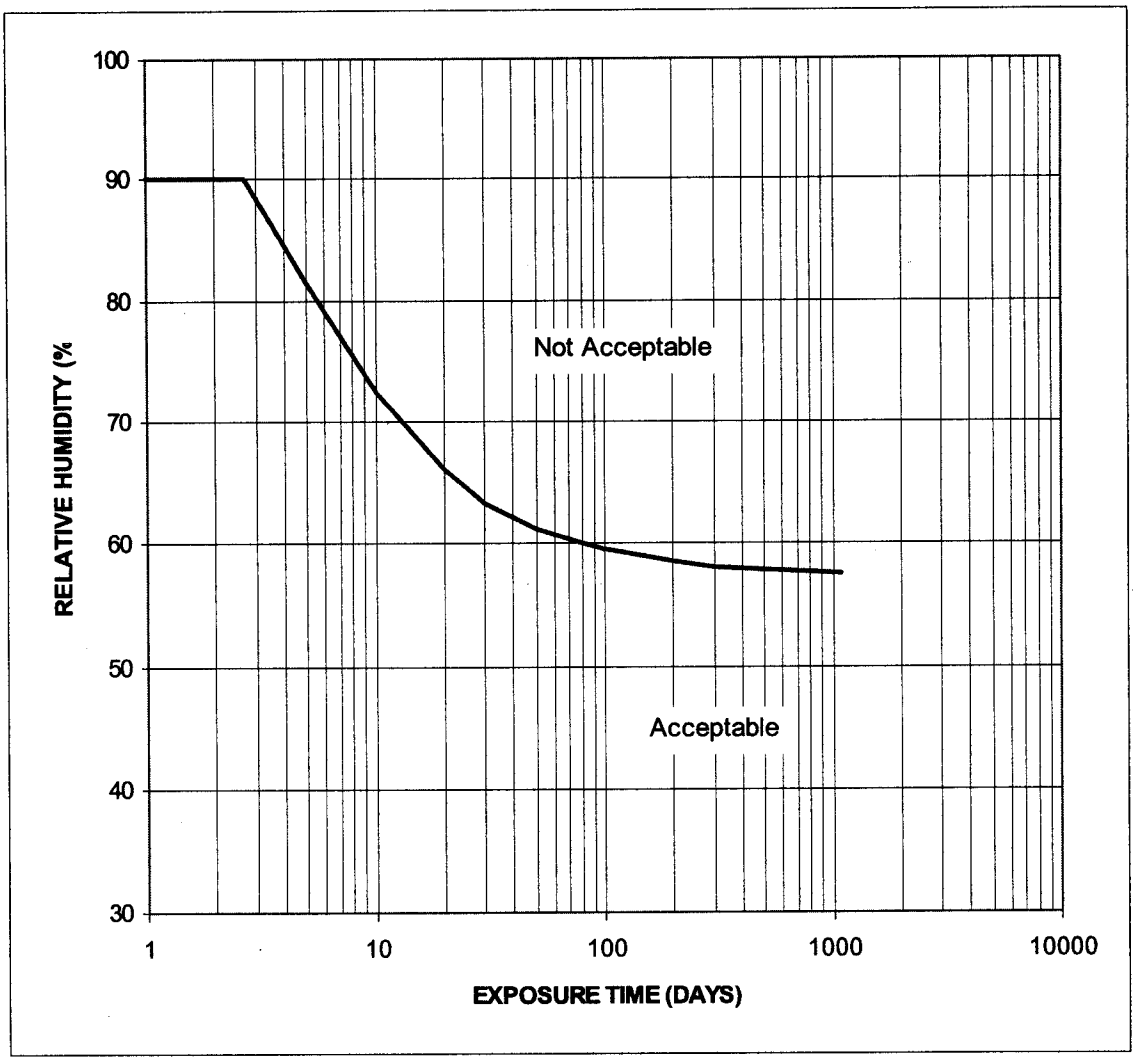
CATEGORY	MINUTEMAN II		ORION	
	STAGES		STAGES	
	1	2	3	4
TOTAL WEIGHT (lbs)	51,230	16,050	9,510	1,977
PROPELLANT WEIGHT (lbs)	45,670	13,680	8,640	1,699
LENGTH (ft)	18.6	9.1	10.1	4.4
DIAMETER (ft)	5.5	4.3	4.2	3.2
THRUST (lbs)	200,400	60,700	36,787	7,170
MOTOR CASE MATERIAL	D6AC STEEL	6A1-4V TITANIUM	IM7/55A GRAPHITE/EPOXY	IM7/55A GRAPHITE/EPOXY
PROPELLANT MATERIAL	TP-H1011 TP-H1043	ANB-3066	HTPB	HTPB
MANUFACTURERS	THIOKOL	AEROJET	ALLIANT	ALLIANT

TABLE 2. MISSILE STAGE WEIGHTS/ASSOCIATED QUANTITY DISTANCE (QDs)

MISSILE STAGE	CLASS/DIV	PROPELLANT WEIGHT (lbs)	Inhabited Building Distances (IB) (ft)	InterLine Distances (IL) (ft)
MINUTEMAN II				
STAGE I M55	1.3	45,670	250	165
STAGE II SR-19	1.3	13,680	170	115
AODS	1.1	< 2 oz.		
ASSEMBLED BOOSTER w/AODS	1.3*	59,575	260	175
ORION				
ORION 50 XL	1.3	8,640	145	100
ORION 38	1.3	1.699	90	60
OSP LAUNCH VEHICLE	1.3*	69,689	270	185

* Minuteman MMODS contains Class 1.1 ordnance components. Typically the entire assembly assumes the classification of the most hazardous component. The MMODS is designed to cut the case only and specifically to NOT cause the stages to go high order. The Inhabited building distance for an OSP booster rated at 1.1 would be 1685 ft.

FIGURE 1. ROCKET MOTOR ALLOWABLE HUMIDITY VS TIME



Cosmic GFE List

Name	Part Number	Control Number
Pylon, Transporter Erector, #1	11647-1	H4787
Pylon, Transporter Erector, #2	11647-2	H4788