

Dated: August 26, 2003

Subject: Addendum No. 4 to Request for Proposal (RFP) No. JSL-71703 dated August 15, 2003
for Technology Development of Mars Landing Radar Antenna Array

The following inquiries have been submitted to JPL for clarification.

Below Questions and Answers are numbered sequentially from Addendum 1.

Question 4

Can JPL provide a schematic block diagram of the planned antenna subsystem (with JPL vs. contractor responsibilities identified)?

Answer 4

JPL has revised Exhibit I to the Specimen Contract. A schematic block diagram has been included in Exhibit 1, Mars Landing Radar Antenna Array Functional Requirements Document, Version 1.1, dated August 21, 2003. See Figure 2, MSL PATR Profile, of Exhibit I, Version 1.1.

Question 5

Ref. JPL Cover Letter: We assume that the contractor has responsibility for the array elements and the necessary ground plane/support structure. Does the contractor also supply transmission line from the elements to the TR modules.

Answer 5

Yes, your assumption is correct. The contractor does not supply the transmission line from the elements to the TR modules. The contractor is responsible for the antenna feed. The transmission line type required for the feed is specified in Exhibit I, Version 1.1. See block diagram from Question 4 above.

Question 6

Ref. JPL Cover Letter: The letter refers to "flight qualified arrays." How many flight units are anticipated?

Answer 6

Two flight units are anticipated, but there is no guarantee.

Question 7

Ref. JPL Cover Letter: Can there be any relaxation of proposal due dates while requirements are clarified?

Answer 7

The RFP due date is extended from September 12, 2003 to September 26, 2003 at 3:00 p.m. local time.

Question 8

Ref. Exhibit 1, Table 1: The table refers to a “single element”. The allotted loss (30% efficiency) seems very large. What other losses are included in the efficiency requirement?

Answer 8

A large loss is allowed for the efficiency so as to provide the opportunity for a wide range of element designs. Understandably, higher efficiency is desired, yet care should be taken to limit the vertical dimension of the elements to fall within the constraints set in Table 1.

Efficiency is defined as follows and is included in the updated Table 1 of Exhibit 1, Version 1.1:

Efficiency = (Power radiated in main beam / Power on microstrip or stripline immediately before feed interface to element)

Question 9

Ref. Exhibit 1, Table 1: Please define the “Integrated Sidelobe Level Requirement” in Table 1. A high efficiency (uniformly illuminated) element would have a much higher integrated sidelobe power ratio.

Answer 9

A uniformly illuminated aperture producing -13 dB sidelobes will still meet system specifications. “Sidelobe performance” parameter specification is changed to “PSLR < -13 dB required” and is reflected in the updated Table 1 of Exhibit 1, Version 1.1. There is no longer an ISLR requirement.

Question 10

Ref. Exhibit 1, Table 1: Please confirm that the radar has a single, non-switchable polarization state, which can be either linear or circular (chosen by the contractor).

Answer 10

The radar shall have a single, non-switchable polarization state as stated in Exhibit I, Version 1.1.

Question 11

Ref. Exhibit 1, Table 1: The required bandwidth seems larger than would be necessary for the terrain mapping function. Can the contractor propose a reduced bandwidth element or a segmented band solution?

Answer 11

The “Bandwidth” parameter specification is changed to “30-34 GHz required, 30-35 GHz goal” and is reflected in the updated Table 1 of Exhibit 1, Version 1.1.

Bandwidth will be used by the system for both resolution and increasing the number of samples. This is why the wide bandwidth is being requested.

Question 12

Ref. Exhibit 1, Table 1: The return loss requirement is very restrictive for such a large bandwidth element. Can the contractor propose increased return loss, while maintaining the required overall element efficiency?

Answer 12

The “Return Loss” parameter specification is changed to “> 20dB goal” and is reflected in the updated Table 1 of Exhibit 1, Version 1.1.

Question 13

Ref. Exhibit 1, Section 2.2: Please clarify the positional requirement of 0.86 mm versus the Table 2 requirement of 0.25 mm.

Answer 13

Paragraph 2.2 and Table 2 of Exhibit 1, Version 1.1 reflects the updated position accuracy requirement of 0.4mm.

Question 14

Ref. Exhibit 1, Table 2: More information about element locations is required for determining element-to-element coupling. Should the contractor assume adjacent elements in the worst-case coupling orientation?

Answer 14

Table 2 of Exhibit 1, Version 1.1 includes the following comments under the “Minimum isolation between any two elements” parameter:

“Measured at minimum 3 cm center to center element spacing”

Additional information is included as a separate “Note” under Table 2 in Exhibit I, Version 1.1.

Question 15

How is the array supported and what components are attached to the back plane?

Answer 15

The description is now included in Exhibit 1, Version 1.1 under the heading of “Document Scope.” In addition, Figure 1 of Exhibit 1, Version 1.1 also represents this description.

Question 16

Is the JPL Mars Landing Radar Antenna Array fully funded through flight units?

Answer 16

No, only the development of a demonstration unit for the Mars Landing Radar Antenna Array is presently funded.

Question 17

What is the current funding status?

Answer 17

See Answer 16

Question 18

Has the supplier (or candidate suppliers) for the T/R module and processing system been selected? When will that occur? What is the expectation for the business relationship of the antenna supplier required with the suppliers of these other system elements (ACA, Support Contract, Subcontract, Other)?

Answer 18

For the Focused Technology Program (which this RFP is a part of), the design and assembly of the T/R modules will be done at JPL. A vendor for the fabrication of the modules has not yet been selected.

The method by which the flight T/R modules will be developed will be determined during the latter stages of the Technology Program (mid to late fiscal year 2005).

A candidate supplier has not yet been identified for the array feed.

The processing system is similar to the T/R modules: JPL will design this system for the Technology Program, but the component suppliers are to be determined in the next several months. The development method of the flight unit has not been determined.

JPL is responsible for the overall system design of the instrument. All hardware suppliers shall deliver to JPL, and JPL will develop appropriate interface requirements as necessary. Integration of the hardware into a functioning radar will be done at JPL for both the Technology Program and the flight units.