RESPONSES TO FALCON
DRAFT SOLICITATION QUESTIONS

PROGRAMMATIC & CONTRACTUAL ISSUES

General Clarification

1. The Offeror may submit only one proposal per task. This appears to restrict divisions or operating locations of the same company from each responding. Will you please define the Governments interpretation of the term " Offeror"? ***The government desires that any corporate entity propose its preferred concept only. A Contractor (corporate entity) may participate on multiple teams as a subcontractor, but may only proposal on a single team as the prime or as a co-equal teammate.***

2. Can a company submit proposals both a prime and a sub to another small company? ***Yes, but they may only submit one proposal as a prime.***

3. Will DARPA consider delivery of a streamlined Phase 2 Proposal format consisting of an oral proposal presentation (describing technical and management approach, TDD, IMS, past performance, key personnel and required FAR clauses and cost volumes in order to maximize the value expended on remaining Phase 1 deliverables? ***DARPA will consider all suggestions presented related to this project. We do not at this time anticipate using a streamlined Phase II proposal format.***

4. Once we receive the RFP evaluation criteria (i.e., Section 5), will we be allowed to provide comments regarding the contents prior to release of the final RFP? ***Draft evaluation criteria were briefed at Industry Day and contractors were permitted to provide feedback on the criteria in the one on one meetings at that time.***

5. Do you anticipate transitioning the program management position from DARPA to the Air Force at any point in the Task 1 program? ***No.*** If so, when do you anticipate the transition will take place? ***N/A***

6. Please more clearly define "complementary IRAD" ***Complementary IRAD refers to technical work underwritten exclusively by contractor funds that is being performed specifically in support of Government contracted effort. In this case, that would be in performance of either Phase 1 -Task 1 or Task 2 for FALCON.***

7. You have asked in the Cost Volumes for % of efforts subcontracted. Is there a limitation or a recommended % that the government is trying to achieve? ***FAR contracts awarded to Large Businesses will require an acceptable subcontracting plan if the value of the contract is $500,000 or more. The Government does not have any limitations or recommended percentages for amounts to be subcontracted.***

8. Is there a minimum or maximum number of past performance references required? ***None has been established. The Government is mindful of the page limitations of the proposal. At the same time, it reserves the right to request additional information if it is not satisfied the Offeror has demonstrated its capability to perform the proposed work.***

9. The draft RFP asks for a "flexible program management structure and acquisition approach..."For the SLV task, the deliverables are well-known from the outset -- a very low cost and responsive launch system of specific capabilities, and thus the work to be done can be fairly well defined in advance. What kinds of flexibility in management and acquisition would you want to see for the relatively straightforward SLV task? ***The Government is encouraging the use of lean management and engineering practices that focus on effective and efficient product development. Much of the aerospace community is steeped in a traditional approach to conducting R&D that too often emphasizes formality over productivity. The Government seeks to break that paradigm by urging Offerors to be daring and innovative. Both the SLV and HWS Tasks provide ample opportunity to pursue such approaches.***

10. It was not clear to us if the government was requiring a two-volume submittal for Phase I, Task One (the conceptual design study). Please clarify.

11. Page 24 states the proposal outline is: Task 1 Technical Proposal; Task 2 Technical Proposal; Volume 2 FAR Based Cost Proposal; Volume 3 OTA Based Cost Proposal. Can the contractor submit two completely stand alone proposals? That is,

    Task 1 Proposal
    Volume 1 Task 1 Technical Proposal
    Volume 2 Task 1 FAR Based Cost Proposal
    Volume 3 Task 1 OTA Based Cost Proposal

    Task 2 Proposal
    Volume 1 Task 2 Technical Proposal
    Volume 2 Task 2 FAR Based Cost Proposal
    Volume 3 Task 3 OTA Based Cost Proposal

Three volumes are required for each task. Vol 1 - Technical Proposal, Vol 2 - FAR Cost Proposal, Vol 3 - OTA Proposal. Vol 3, which will be a delta proposal will identify changes to the FAR based technical and cost proposals resulting from the use of the other transaction approach. The final BAA will set forth the final requirements for proposal submission.

12. How should we interpret “Best Value” mentioned in paragraph 2.4.1 as it relates to technology readiness and meeting the mission requirements and objectives

defined for each phase of the program schedule? Will a weighting system be used in determining "Best Value" as it relates to cost, schedule risk and ability to meet the technical requirements?

13. How will best value be measured? Deliverables will require the mission model requested earlier if an adequate ROM life cycle cost is to be determined.

Best Value has been deleted from the BAA because that approach is not appropriate for a BAA evaluation.

14. Section 4.4.1, p. 31, refers to "streamlined/innovative business practices." Is this meant to address only business relationships/contracts with the Government and partners/subcontractors, or can this include innovative approaches to concurrent engineering, design-to-cost, reducing overhead, etc.? ***This is meant to encompass both areas as well as any others the Offerors may wish to propose.*** Will the Government provide examples of such practices at the Industry Day? ***None are planned.***

15. Section 4.4.2, p. 32, states that "it is *particularly important* that the Offeror's proposal emphasize Phase I *conceptual designs* of the operational and demonstration systems and their associated CONOPS..." Other sections emphasize defining system concepts as a part of the proposal, such as Section 4.4.2.2, p. 32, which asks for a "conceptual design, associated attributes and CONOPS and how it meets or exceeds the overall program performance objectives..." and to "discuss its experimental and/or analytical basis that substantiates its assertions that its concept will achieve program objectives related to performance and responsiveness." These would seem to be *products* of the Phase I analysis rather than proposal content -- given that many of the requirements will not be provided until Phase I ATP, and little definition has been provided concerning specific payloads. Is the intent of these passages that we should have baseline system design(s) products as a part of the proposal activity, or rather that we should describe our overall process and approach, including specific tasks, to developing those products? Are we not supposed to examine a wide range of potential concept designs and CONOPS as a part of Phase I and select a preferred approach at Milestone 3, rather than have a preferred approach going into the Phase I effort? ***The Government anticipates that each selected proposals will feature a well thought out description of the Offeror's preferred approach. This includes a description of the notional concept design, expected performance potential, and a notional concept of operation (CONOP). The CONOP is particularly relevant if it plays a significant role in the Offerors approach to achieving the desired responsiveness and cost objectives (the latter for SLV only). The extent that the Offeror can support its claims with analytical and/or experimental information will elevate chances of obtaining an award. It is important that the Offeror propose a specific, preferred approach as opposed to a general promise to conduct the work require to meet Phase I objectives.***

16. Section 4.4.3.1, p. 34, states that "the management tools should consist of the following: TDD, IMS, and PMP." Is it appropriate to discuss other management tools in this section, such as: ERP system tools, risk management tools, cost control tools, etc.? Can you provide an example of a TDD? Can we use our own format for a WBS Dictionary as a TDD? ***The Offeror may choose to use whatever management tools it deems necessary to execute it proposed effort. However, the Government is only requiring use of those tools specifically defined.***

17. How will the Government evaluate the use of GFE? ***Use of GFE will be assessed in terms of meeting program objectives. Associated costs will be added to contractor proposed costs in obtaining the total costs associated with a potential contract award. The use of GFE is intended to provide the Performer with access to government-owned facilities that are 1) not possessed by the Performer, 2) not available in the private sector or other non-government institution, or 3) provide a better over-all value to the Government. It is not acceptable practice for Offerors to propose use of GFE in order to off-load contractor-related cost.***

18. Are flight test launch site support activities GFE in Phase II and Phase III? ***Yes, unless the Offeror proposes to use a non-government launch facility.***

19. Are mid-range and down-range flight test off-board data gathering activities GFE in Phase II and Phase III? ***Yes***

20. Our company is currently a purely commercial company with no DCAA certifications on our pricing. How can we respond to the FAR-Based requirements with no certifications? ***Ensure that you can "reasonably" demonstrate how the proposed price supports the proposed effort. FAR part 35.016 requires that realism and reasonableness of offeror's proposed costs under a BAA shall be considered to the extent appropriate. Most commonly, the proposed price is supported either through price analysis (comparison to what you have charged in the past for similar efforts) or cost analysis ("bottoms-up" identification of the cost elements summing to total proposed cost). We anticipate awarding fixed price contracts under this BAA. The lack of Government approved labor or indirect rates will not in and of itself preclude award. The method of determining price or cost reasonableness will be accomplished through Vendor/Government negotiations after award selection but prior to award.***

21. What are the rules for the use of Non-US subcontractors and components? ***Any Offeror responding to the FALCON BAA as a prime contractor must be a U.S. company or other entity legally authorized to operate within the United States. If a prime contractor chooses to use a non-US subcontractor, it will be***

responsible for ensuring compliance with ITAR and any other applicable Export Control restrictions.

22. Will you be imposing a blackout phase? If so, when will that begin and end? ***Persons involved with the FALCON program have been or will be instructed not to communicate with potential Offerors on any matters regarding the upcoming FALCON acquisition. All questions should be forwarded through the Contracting Officer. Rules of Engagement were posted on July 16, 2003 on DARPA's website and may be reviewed by visiting the following site:*** **http://www.darpa.mil/tto/falcon/rulesOfEngagement.htm**

23. The FALCON Government team was certainly well prepared and provided a great deal of information to the various offerors. It was apparent to us from the briefing charts presented, that the government would like to fast track this program for an SLV launch ASAP. May we suggest (after you receive the responses) that you consider issuing a letter contract based on your existing milestones and a performance based SOW for the SLV concept study and flight DEMO. We believe this acquisition strategy would shorten your "time to SLV flight demo" considerably. Please reply. ***An award selection must first be made before considering issuance of a letter contract. The Government intends to issue a performance based SOW.***

24. We have a list of all the attendees from the private sector but none from the government sector except the briefers. Would it be possible to obtain a list of the government people present in the room during our one-on-one, their relationship to the program, their email addresses and phone numbers? Please advise at your convenience. ***The FALCON management team has decided not to make the requested information available to the public.***

Phase I Schedule and Cost Realism

25. Near the end of Section 1.3 (Program Philosophy) the Draft RFP states: "The Government seeks to open up the design space and provide a catalyst for exploring "clean sheet of paper" system design philosophies..."However, for HWS, Phase 1 requires no less than 11 specific product items to be delivered in 6 months for only $1.2 - 1.5 million. To accomplish this, the contractor would practically have to already have most of the concepts/technologies defined. Does the Government favor using as much existing concepts/technologies in order to meet the funding and schedule requirements for Phase 1? ***The Government anticipates that those Offerors having the most chance of obtaining a Phase I award will have developed notional concepts and approaches that address either Task 1 or Task 2 objectives as a result of other contracted programs and/or internally funded studies. The Government expects the Offeror to propose a Phase I effort that it believes it can execute within the time and money available.***

Phase I Milestones

26. Per the Phase 1, System Definition Figure 3.1, is Milestone 1 assumed to be completed within the first week or two from contract award? ***Yes, notionally speaking.***

27. Is there any restriction on the relative size of these milestone payments (e.g. all equal)? ***No, but the Government will negotiate the value of each milestone and the Offeror will need to justify its position concerning the value of each.***

28. If other than the Contractor's site is selected for Milestones 2, 3 and 4, how does the Government desire to handle the cost of travel in the proposal**?** ***Additional guidance has been provided in the final draft of the Proposer Information Pamphlet (PIP) of the BAA solicitation.***

29. Will the contract type be CPFF? Section 2.4 (Potential Award Instruments) mentions either a FAR based contract or an OTA Agreement, but does not specify CPFF or other contract types. Both tables in Section 4.5.1 (FAR based cost response) and Section 4.6.2 (OTA based cost response) contain a line for Fee; is CPFF implied? Also, the Draft RFP refers to "Payable Milestones" (see, e.g., Section 3.1.5 Milestones and accomplishment criteria). Does this mean that payment decisions will be based on the Milestone reviews? Does this imply an award fee type of contract?

30. Section 3.2.8, p. 22, states that "as part of the negotiated agreement/contract, payment will occur at four payable milestones." Does this imply that the Phase 1 contract type is FFP with performance-based milestones?

The Government will award fixed price contracts or, if desirable by both parties, other transaction agreements. Payment will be based on accomplishment of established milestone criteria.

31. With the proposal due to DARPA at the end of the 5th month of Phase I, what is the estimate of the down-select time estimate between completion of the Phase I, and Award of Phase II? ***The Phase II proposal is no longer a deliverable product for Phase I. No estimated award date for Phase II is available at this time.***

Interaction with Government Laboratories and Facilities

32. Near the end of Section 1.1 (vision), the DRFP states: "The Government intends to execute the FALCON program in partnership with private industry collaborating with university and government laboratory researchers." What will be the roll of the government laboratories? Will they compete against industry for awards? ***Agencies and organizations of the United States Government are discouraged from participating as members, subcontractors or otherwise as part of a contractor team responding to this FALCON BAA solicitation. The Government will participate in the FALCON program as staff on the***

Government's senior program management team and Integrated Product Teams and potentially by providing use of Government test facilities as part of Government Furnished Equipment (GFE).

Proposal Evaluation Criteria

33. What are the relative weights expected to be applied to the various portions of the RFP response? What are the award criteria? ***Evaluation criteria were discussed at Industry Day and provided in the final Solicitation.***

34. The draft RFP asks for an order of magnitude in performance range. Will weighting factors for the SLV predicted performance be provided in section 5 when it is available? The draft RFP seems to weight the $/kg metric more heavily than the mission cost (generally favoring the largest vehicle). ***Evaluation criteria and weighting factors are provided in Section 5 of the PIP.***

Data Rights

35. Section 4.4.3.2.1, p. 35, the Offeror to "describe the extent to which the subcontractors/teammates have agreed to the Government's requirement for data rights throughout the life of the program," but no other mention is made of data rights. What are the Governments requirements for data rights? ***These were clarified at Industry Day and in the final Solicitation.***

36. Do the program goals for the early SLV demonstration described in the draft solicitation allow for a more complex demonstration of our early SLV design (which is a major step toward the HCV mission capable vehicle) to be flight tested in 4 to 5 years, if the novel vehicle concept (utilizing existing propulsion technology) reaches the HCV mission capable vehicle significantly earlier than the current planning dates or would this be considered non-responsive to the solicitation requirements? ***The FALCON program plan as currently envisioned does not link development of the SLV with the HCV. It does however, link development of CAV, Enhanced CAV, and HCV. The Offeror is free to propose a program in which SLV and HCV are linked.***

OTA Requirements and Associated Issues

37. The draft proposal currently requires a mandatory 1/3 cost share from traditional contractors or carry a non-traditional supplier with a significant program role for Other Transaction Agreements (OTA). The requested effort involves technical expertise and resources primarily found in companies that are defined as "traditional contractor" and has limited significant commercial application and/or benefits. Additionally, in keeping with Aldridge's directive on Contractor Cost Sharing dated 16 May 2001 and the OTA Guide for Prototype Projects, Section C 2.16.1 that states that cost share should only be used "where there is a reasonable probability of a potential commercial application", Will DARPA waive the cost share and non-traditional requirement? ***Cost share is one OTA qualification possibility, the others being participation of a non-traditional government contractor or a waiver for both of those requirements. Government waiver of either of these requirements will be considered on a case by case basis after***

review of the OTA offer. Offerors are reminded that the OTA agreement will not be considered during the competitive award selection.

38. Given the requirement to meet the criteria for an OTA Proposal, if the proposer does not have such a contribution or arrangement, then is it safe to assume there is no need for a Volume 3 Cost Proposal? ***Offerors will be required to submit a third proposal volume which supports the solicited program under an Other Transaction Agreement. The third proposal (a delta proposal) will identify changes to the FAR based cost and technical proposal and should include a completed Agreement. This third proposal shall identify changes, if any, to the FAR based proposal that results from performing under an Other Transaction Agreement. This third proposal will not be opened until after award selection and only from those selected for award.***

39. Section 3.2.8, p. 23, states that "Milestone Reviews (2), (3) and (4) will occur at a site or sites to be designated by the government." What specific travel requirements should Offerors assume for estimating costs for these reviews? Will the government require any other travel? ***Offerors should refer to the BAA and PIP for clarification.***

40. If the OTA approach is selected, will the winning contractors be required to contribute at lease 1/3 of the total agreement? Is this in addition to the $300-600K currently defined? ***Cost share is one OTA qualification possibility, the others being participation of a non-traditional government contractor or a waiver for both of those requirements. Government waiver of either of these requirements will be considered on a case by case basis after review of the OTA offer. Offerors are reminded that the OTA agreement will not be considered during the competitive award selection.***

41. Section 2.4, p. 11, mentions that "one of the conditions for an OTA is cost share..." but does not mention the use of non-traditional suppliers. Is cost sharing a preferred approach for this procurement? The same section also states "in this approach, proposals are evaluated based upon their technical merits and *ability to competitively price* their proposed technical scope". Does this imply that proposals that cost share will be given any preferred treatment over those that use non-traditional suppliers? ***Cost Sharing is not a "preferred approach" and will not be given preference during the evaluation leading to award selections. Award selection will be based solely on the evaluation criteria stated within the solicitation and cost reasonableness of the effort proposed will be part of that evaluation. Volume 3 of the proposal will contain all the OTA proposal information and will not be considered or reviewed by the evaluators until after award selections have been made.***

42. Given that the Government intends to make award based solely on an evaluation of the FAR proposals how does an offeror make the Government aware that under the OTA he believes they have a superior deal for the Government in terms of

work to be accomplished and/or risk reduced? ***Proposals will be selected for award negotiation based on their FAR-Based Technical and Cost volumes. Once this occurs, the OTA-Based Delta Proposal volume for each selected proposal will be reviewed. The Offeror should makes its case that its OTA bid offers additional benefit to the Government in its OTA-Based Delta Proposal volume. This case can be further supported during negotiations between the Offeror and the Government's contracts representative.***

Phase II and III Competition

43. How many Task 1 competitors do you anticipate carrying into Phase 2 and what type of funding profile should we assume? ***Up to two. However, there could be a further down-select during Phase II depending upon funding requirements for the two performers.***

44. Are you going to allow any of the contractors that do not get a Phase I award to use Company resources to offer proposals for Phase II or Phase III? ***The current plan is to conduct an open competition for Phase II but not for Phase III***.

45. Total funding for Phase 1 tasks is given as $7.0M. Can you provide estimated funding profiles for Phases II and III? ***Not at this time.***

CROSSCUTTING TECHNICAL ISSUES

CONUS Definition and Associated Launch Range Options

46. FTS is often range dependent and often the transponders for the FTS are GFE from the range (pre-certified). Is there a specific range we should assume or should we select one and document our assumptions?

47. Is the CONUS launch site mandatory for the DS and OS system? Paragraph 1.2 and 2.1 imply that an equivalent or alternate US basing will be considered?

48. How is SMC Detachment 12 going to be involved with the contractor for operations - will they be GFE/GFI and will government task agreements be required?

49. Where do you intend to conduct the Task 1 developmental missions; Kodiak, Vandenburg, CCAFS or other? Is there an inherent preference for one launch site over another during the development/operational phases of this program?

50. Does the offeror have the discretion to propose the launch site for the "demonstration of launch capabilities" (3.1.3 (1)) based upon best value to the government in satisfying program performance metrics or is the demonstration going to specified to take place at one of the two locations mentioned in Section 3.1.3 (2)?

51. The solicitation states that, “the SLV must be at least an order of magnitude more responsive than existing satellite launch systems” and “the program will also seek to develop a unique CONOPS that will support and enable both the responsiveness and low-cost system objectives.” What assumptions regarding the number and location of launch sites are allowed in programming to meet response objectives?

52. Use of the term "CONUS" throughout the draft solicitation implies launch from within the 48 contiguous states. Is it truly the intent of the program to exclude demonstration and/or operational launches from Alaska or U.S.-owned Pacific territories? Is air-launching from above international waters excluded?

53. Does an operational base out of Hawaii or other off shore US territory violate the CONUS requirement for either the SLV OS or the SLV DS?

For purposes of the FALCON program, the Government defines CONUS as meaning within the 48 contiguous states. While the Government seeks operational capability for the Enhanced CAV/SLV from CONUS, it is also interested in launching it from OCONUS U.S bases. The Government, in development of its Notional Reference Program, assumed that existing launch vehicle assets would be used for the initial CAV flight demonstrations. It further assumed that these initial launches would originate from Air Force launch facilities at either Vandenberg or Kodiak (outside CONUS). Minimization of program cost and risk comprised the primary rationale for this approach. The Offeror is free to propose an alternative launch scenario for these initial CAV launches if it feels its alternative approach would result in a substantial benefit to the Government. This includes proposing to launch flight demonstrations from sites outside CONUS (OCONUS). Likewise, a Task 1 Offeror is free to propose any approach it believes provides the greatest benefit in flight demonstration of its SLV concept.

Interface Control

54. What level of interaction/integration do you believe is required/expected between the Task 1 and Task 2 contractors during the various phases of the program? Are the Task 2 contractors going to be required to work with all of the Task 1 awardees?

55. Per section 3.1 the Government will not have given final launch requirement until the end of month two following ATP. Are the initial launch requirements from the CAV/SLV Demonstration Study to be used for Milestone 2 deliverables? (Are the study results currently available?)

56. The Offeror may respond to one or both tasks. What will the government do to ensure that Offerors for task 1 only are given adequate requirements in a timely manner to enable adequate system level definition?

57. How will the coordination and information exchange between SLV and HWS contractors be accomplished if contractors developing the HWS are competitors with the SLV contractors?

58. Initial SLV launch requirements for the CAV mission family will be formally defined by the Government by the ATP for Phase I. These launch requirements will be finalized by the Government by the end of month two following the ATP. If significant changes are experienced the contractors risk significant schedule delays and cost overruns. What will the Government do to correct these issues if they occur as a result of requirements changes?

59. Page 19 states that CAV-DS interfaces should be communicated and coordinated with the launch operations organization. Will integrating CAV-DS into a launch vehicle be a government or contractor responsibility and task?

60. Section 3.2.1, p. 18, says that in Phase I, "physical and functional interfaces between the CAV-OS and its launch vehicle should be defined." Which SLV are the HWS primes supposed to use? Are the SLV primes supposed to provide data on their concept status to the HWS primes (and vice versa) at Milestones during Phase I?

61. Please verify that technology and system trade studies and the subsequent down-select to an optimal configuration shall be completed in the first two months of the contract (i.e., before a final estimate of the physical and aerodynamic properties of the CAV are likely to be completed.

62. Please verify that Contractors are to propose a SLV with no information on the CAV other than mass and range?

63. Will DARPA and USAF provide additional requirements data pertaining to internal volume and weapons packages? For example, will DARPA provide an interface definition (geometry, mass properties, structural properties, electrical/data transfer, loads constraints, impact conditions, etc.) for the unitary penetrator (or simulated unitary earth penetrator) to be carried by CAV? If so, when will the contractor receive preliminary information?

The Government's objectives of developing an SLV capable of boosting a full scale (~2000 pound) CAV to its requisite penetration point conditions and conducting an integrated CAV/SLV flight demonstration in Phase III will require a mechanism for managing the CAV/SLV interface. Since multiple performers are expected to participate in both Task 1 and Task 2 during Phase I, it would be impractical to attempt to develop specific interface controls between each CAV and SLV design team. Moreover, since only conceptual designs will be developed in Phase I, this level of interface control is deemed premature. Instead, the Government will create a single set of generic interface requirements that will satisfy the needs of both the CAV and SLV designers in Phase I. Preliminary interface information was presented at the FALCON Industry Day and will be provided to Task 1 and Task 2

Offerors for this BAA upon request. This information will be refined and provided to Performers by the ATP. A final update for Phase I will be provided by the end of the second month of Phase I. The Government anticipates that management of CAV/SLV interfaces will involve the direct participation of Performers beginning in Phase II and will develop and coordinate processes and mechanisms to ensure that adequate interface controls are developed and maintained.

Use of SLVs versus Existing Assets in CAV Flight Demos

64. Are the SLV's to be utilized in the Enhanced CAV flight demonstrations assumed to be of the SLV-OS or of the SLV-DS? **SLV-DS**

65. Since the CAV missions are by definition sub-orbital flights, are the sub-orbital demonstrations for the SLV-DS to be used for the initial CAV flight test?

66. Section 3.2.6, p. 21, refers separately to flight demonstrations of the "Enhanced CAV-DS" and the "integrated Enhanced CAV-DS/SLV."

67. Does this imply there are plans to launch the Enhanced CAV on vehicles other than the SLV-DS?

68. What booster does the Government intend to use for the CAV flight demo in Phase II? Or is it something to be determined by the contractor during Phase I?

69. Is the use of strategic or other missile assets allowed?

70. Section 3.2.4, p. 20, states that "it is intended that the HCV-DS utilize launch platforms, facilities and logistics used to perform CAV demonstration flights." Does this limit the HCV-DS only to launching on the SLV-DS or can other existing vehicles be utilized?

71. Section 3.2.2, p.19, says that in Phase I, "the contractor should define all physical and functional interfaces between the CAV-DS [800-sec TPS] and its launch vehicle...these interfaces should be communicated and coordinated with the launch operations organization." On what vehicle will this 800-sec TPS CAV be launched, and what is the "launch operations organization"?

72. Figure 2.1, p. 7, shows a "CAV Flight Demo" in FY06, prior to the first flight of the first "SLV Flight Demo" in FY07. In addition, Section 2.2, p. 9, states that a "flight demonstration of a CAV using "800-second TPS...is envisioned from VAFB or Kodiak to Kwajalein." How will this "800-sec TPS" CAV be launched? Are only one or multiple launches planned? Will this use existing assets? How will they be procured? Will they be procured as a part of the FALCON program? If so, should this not be highlighted as a product in the SLV Task 1? Can additional details be provided on this planned launch system for use in the initial conceptual CAV-DS design for the proposal?

The Government envisions using existing excess launch vehicle assets for the initial CAV flight demonstrations. These existing assets would be provided as GFE. However, if a Task 1 (SLV) Offeror can propose a sufficiently aggressive schedule to flight demonstrate the SLV, it is conceivable that SLV could be used for early CAV flight testing assuming the SLV has been successfully flight tested first.

73. A 2,000 lb. CAV does not translate into a 3,800 lb. small payload to orbit as CAV delivery does not require the same amount of energy as the equivalent mass to orbit. Is this 2,000 lb. CAV mission based on a retrograde delivery? ***No, numerous potential launch inclinations exist.***

Advanced Technologies Solicitation

74. Near the end of Phase I the Government intends to release a separate solicitation for Advanced Technologies to address specific technical risk areas associated with the HWS. This is to enable those interested sources that may not have found a suitable means to participate in Phase 1 of this specific solicitation. Will an on ramp be available for perspective SLV offerors as well? ***Currently, the scope of the Advanced Technologies Solicitation is not envisioned to encompass SLV concepts. However, the scope of the solicitation is not completely defined and may be broadened.***

75. Section 1.3, p.4, refers to a planned "separate solicitation for Advanced Technologies...associated with the HWS defined in Phase I." How will these technologies be integrated with the development plans proposed by the Phase I primes? ***Results from technology maturation efforts will be made available to Task 1 and Task 2 performers as appropriate.***

76. Are the Phase I primes required to disclose their concepts, CONOPS, development plans, and technology requirements to potential technology offerors as a part of Phase I? ***Phase I primes are required to develop Technology Maturation Plans. These will be used as the basis for soliciting specific technology maturation efforts. The Government anticipates that business relationships between primes and technology developers will develop and non-disclosure agreements between parties may be required at some point.***

77. Can the Phase I primes bid on this solicitation? ***Phase I primes will be permitted to bid on technology maturation tasks.***

78. Will potential technology Offerors be required to bid through the Phase I primes to ensure relevance? ***As it is currently conceived, the technology Offerors will not be required to bid through the primes or to develop any formal relationship with the primes as a condition for responding to the Advanced Technology solicitation.***

79. Can the Phase I primes bid ground-based technology demonstrations in support of or in parallel to planned Enhanced CAV flight demonstrations as a part of the planned Phase II solicitation, or do these activities have to be bid as a part of the

Advanced Technologies solicitation? ***Plans for the Phase II solicitation and related scope of effort have not been fully formulated. The current view is that the ground testing, particularly of major components, subsystems and systems would fall within the purview of the prime Contractor and its subcontractors. However, testing associated with development of requisite technologies, especially those that are applicable to multiple concepts, will likely be the responsibility of the technology developer.***

SLV TASK

Clarification of Satellite Size, Orbit, & Associated Launch Costs

80. We believe that the Solicitation contains a typographical error when it refers to a sun synchronous orbit with an inclination of 79 degrees. We believe that the number was intended to be 97 degrees. Please confirm.
81. "*The desire is to place a payload ranging in weight from 100 kilograms to 1000 kilograms into sun synchronous 450 kilometer orbit at a 79 degree inclination*". (Sun sync is defined as an inclination = 97.21 degrees at 450 km.) I assume this was just a transposition of the numbers.
82. Many responsive SLV missions call for orbits that are not sun sync. Does DARPA wish to confine the SLV to sun synchronous orbits and launch sites that are only for near-polar orbits? No. Other applications requiring other orbits and preferred launch sites are of significant interest as well.
83. Is a 79-degree inclination the desired trajectory?
84. Is the payload orbit requirement stated in paragraph's 2.2.1 and 3.1.3.1 of sun synch at 450 km at 79 degree orbit correct? Usual sun synch orbits are more likely 450 nautical miles and higher inclination (98 degrees).
85. Is the payload orbit requirement stated in paragraph's 2.2.1 and 3.1.3.1 of sun synch at 450 km at 79 degree orbit correct? Usual sun synch orbits are more likely 450 nautical miles and higher inclination (98 degrees).
86. Are the altitude and inclination of 79 degrees and 450 km sun synchronous the correct parameters for the SLV reference mission? Is the reference mission payload 100lbs - 1000 lbs or 100kg - 1000kg?
87. With respect to the model mission trajectory (Para 1.1, 2.1.3, 2.2, 3.1, 3.1.3,), the stated 79° inclination is not a "sun synchronous" orbit. Is it a typographical error?
88. Clarify specific parameters of sun synchronous orbit; 450 km circular or some other elliptical orbit? Are there additional insertion accuracy requirements?
89. Can you please confirm the reference orbit at 450 km sun synchronous (97.2 degree inclination) or 450 km at 79 degree inclination?

90. AFS for Sun synch orbit. Is this the intention? Sun synch from 28.5 inclination is incompatible or at least challenging on launch performance.

91. 1,000 kg to sun sync at 450 kg requires a very large small launch vehicle. At $10,000 per kg to a standard LEO orbit at 100 nmi easterly, means a launch mass of approximately 1,700 kg, or approximately 3,800 lbs. This seems to be pushing the definition of a small satellite. Per "Reducing Space Mission Cost", page 7, the world coverage of small or light satellites is for satellites under 200 kg.

92. $10,000 per kg at 1,000 kg represents $10 million sortie cost. Are you indicating a total launch cost of 1,000 kg to sun sync for under $5 million?

93. Which is the hard requirement – cost or payload?

94. Since most small payloads are 200 kgs. or less, and getting smaller with the newer technologies, the requirement of 1,000 kg to sun sync drives the most popular mission cost up dramatically. It would appear that two classes of vehicles need to considered if the Government desire to keep the sortie mission cost for most launches under $5 million. The 1,000 kg was meant for a 100 nautical mile , due east orbit and is only an upper limit of interest.

95. What is the payload class and/or mission driver for the 1000 kg requirement? This is a much larger requirement than was previously being considered for SLV. What is the expected nominal flight rate at this value versus the smaller payload range?

96. Will DARPA or the AF provide a reference ORS mission model so industry can use for evaluating SLV options?

The Government envisions that the SLV will have utility to place a range of small satellites and other payloads into low Earth orbits of varying altitude and inclination. For example, a significant mission requirement exists that entails placing payloads each weighing approximately 500 pounds into 460 nautical mile, sun synchronous orbits. For purposes of sizing and developing the Offeror's SLV design concept, a Reference Orbit has been defined as follows: circular, due east, 100 nautical mile altitude, launched from 28.5^{o} north latitude. The FALCON program has an objective to develop an SLV capable of placing a 1,000 pound payload into this Reference Orbit from a CONUS launch site for a total launch cost of five million dollars ($5,000,000 CY2003). The Government also desires that the SLV core design enables the placement of a range of payload sizes into the Reference Orbit. Payloads from 220 pounds to 2,200 pounds (100 to 1,000 kilograms) are of interest. Launch cost for this range of payloads should not exceed seven thousand, five hundred dollars ($7,500 CY2003) per pound of payload for any payload within the range of interest. It is left to the Offeror's innovativeness to propose a flexible SLV concept that is capable of accommodating as broad a range of payload sizes as practical.

97. Will an adequate mission model be provided to enable an adequate evaluation of the system/systems to be studied? Specific payloads weights, altitudes, inclinations and launch dates will be needed as well as velocity to assess systems that will both place satellites in orbit and deliver a CAV any where in the world within the time limit specified. ***Additional information was provided at Industry Day and is available to potential bidders upon request. The final BAA provides clarification regarding orbital requirements as well.***

98. Is there any volumetric requirement on a cubic ft/kg launch mass for the SLV? ***Not as such, however, the SLV should accommodate a minimum 24 inch x 24 inch x 30 inch payload.***

CEP Requirements for CAV Insertion

99. Is there any specific CEP type requirement on this intercept point?

100. Are there any accuracy requirements for the SLV (can an unguided missile with an analytical estimated average orbit of 450 km with significant dispersions meet the program needs)?

101. The solicitation states one of the system objectives of the combined CAV/SLV as being a weapons delivery accuracy of 3 meters circular error probable. To achieve such a requirement, munition accuracies must be assumed. What is the "weapons release state accuracy" requirement for the delivery platform? Alternatively, but less desirable, what munition guidance capabilities and release environment limits are to be assumed in meeting the 3 meters CEP?

Provide insertion accuracy of +/-13.5 nmi (25 km), +/-0.1º

Average Launch Cost Methodology

102. In preparation for the ROM, what level of flight or inventory rate should be assumed? Are these part of the rate quoted in section 3.1.2 (4)?

103. The total launch cost potentially includes an inventory cost - i.e., the interest cost on the money used to build a rocket held in inventory plus any maintenance required during this period. If this is to be included, does the government wish to define an interest rate to be used or a mean time that a vehicle will be held in inventory prior to use?

104. Are the recurring cost estimates intended to be first unit cost, last unit cost, or the average cost over the assumed 10 year period?

105. The average launch cost per kilogram goal is less than ten thousand dollars, cost per sortie of five million dollars or less is desired (CY2003 dollars). Does this goal include: mission support labor, assembly labor, flight termination systems, range costs, avionics (qualified) hardware and DDT&E amortization costs?

106. Does multiple manifesting of payloads come into play when determining overall launch cost - 2 satellite launched for $10M = $5M per satellite or is the launch cost they're looking for really a sortie cost?

107. Sortie cost of $5M and launch cost per kilogram of $10,000 seem incompatible across the range of payloads specified. Is the $/kg metric targeting the midpoint of 500kg?

108. What assumptions/ground rules/requirements should we use to estimate the cost of using the Air Force range/other ranges for operational events?

109. Is there a 'standard amount' that all the offerors should use as a baseline for the range costs for development missions?

110. What is the basis of the business case statement "assume 20 launches per year for 10 years"? What is the mix of anticipated payloads, what is the delivered location, what is the relative 'operationally responsive' requirement for each mission, etc?

111. Page 2 states a SLV cost goal of $10,000 per kilogram and a sortie cost of $5M, and a desire to place 1000 kilogram to sun synchronous orbit. Is the cost goal for launch of 1000 kg to orbit $5M or $10,000 per kilogram ($10M)?

112. When in the lifecycle of the rocket does the projected recurring cost need to reach the $5M per launch or $10K/kg metrics? The first launch? The last launch? The total of all launches averaged over the 200 mission model?

113. What is "inherent cost of the facility infrastructure"? Is this the marginal cost per mission, or the amortized cost over a 200 mission lifespan, or something else?

114. Does the $5M per launch goal for the SLV include amortized infrastructure costs or just average recurring cost for the SLV hardware itself?

The Government has devised a simple small satellite launch model that the Offeror is instructed to use in the absence of better information. This mission model assumes twenty launches per year over a ten-year period. The Offeror should assume a CY 2003 constant dollar basis, that all launches consist of a single 1,000 pound payload placed in the Reference Orbit, that launches are spread evenly over the ten-year period, and that launches are conducted from a single launch site within CONUS. The FALCON program cost objective of five million dollars ($5,000,000 CY2003) per launch is the average cost of the 200 launches comprising the reference launch model. Cost of payload, payload integration with the launch vehicle and amortized Design, Development Test and Evaluation (DDT&E) are not to be included in the calculation of average launch cost. All other costs that would normally be passed to the purchaser of the small satellite launch should be

included in the calculation of average cost per launch. The Performer should include all costs associated with providing a launch vehicle fleet that meets the prescribed launch rate over the prescribed period of time. The Performer should also describe the concept's cost sensitivity to launch rate. The Performer should make its own assumptions with regard to underwriting the expense of this effort and document its basis for estimate. Only launches of small satellites – not CAV or Enhanced CAV are to be addressed in calculation of the average launch cost. The Government has established no formal launch cost objectives with respect to CAV missions. However, the Government desires to minimize launch costs for these missions as well and anticipates that low-cost characteristics of the Offeror's proposed SLV concept will translate to CAV launch missions.

115. The enhanced CAV as suggested here is 2,000 lbs. This translates to a considerably smaller payload than the previously 1,000 kg. to sun-sync at 450 km. Which requirement takes precedence? Neither is a requirement as such***. The Government seeks to develop a common small launch vehicle that would be suitable for launching a 2000 pound CAV yet possess flexibility to place a range of small satellites into orbit. The Government has modified and clarified its objectives with regard to insertion of small satellites into low Earth orbit. The final BAA solicitation reflects these changes.***

116. Is this sub-orbital demonstration based on a CAV delivery or a "no-payload" demonstration flight? ***Notionally, the Government anticipated that a dummy or surrogate payload having weight and dimensions roughly equivalent to a CAV would be flown on the first SLV flight.***

117. Clarification requested as to intent of 3.1.3.2 "payload weight including shroud as a function of orbital altitude and inclination...". Is this just stating that payload weight needs to include shroud in performance predictions? **Yes, the intent was to lump the shroud weight in with the payload weight for purposes of these calculations. Shroud weight isn't easily quantified in the absence of specific payload definition.**

118. In assessing the relative merit of the two (2) Task 1 reference missions (i.e., CAV Thrower and SLV), is there an inherent weighting between the two missions and/or is one mission considered to be the primary and the other the secondary? ***The need to meet responsive, low-cost small satellite launch system program objectives has somewhat greater importance. However, the government envisions a single launch system that can accomplish both missions to the extent practical so concepts that satisfy this goal will be of most interest.***

119. For the Task 1 Conceptual Design of 3.1.2 (1), are the "operational performance objective as defined in Section 2.1.3" distinct from the "Performance Predictions" required in 3.1.2 (2) such that offeror should generate predictions of representative trajectories from all CONUS launch sites and not just the ones capable of achieving the trajectory defined in Section 2.1.3? ***The Phase I SLV***

Performers are not being asked to generate performance predictions for all potential launch sites. They are being asked to generate sufficient performance predictions to quantify potential performance capability and flexibility of their conceptual design. The BAA PIP clarifies what is expected in this regard.

120. Are the CONOPS to be developed in Phase I per Section 3.1.2 (3) to be generic in terms of launch site location followed by an assessment of all CONUS launch sites in terms of capability in meeting the generic launch site requirements? ***That's left to the Performer to decide based on his preferred CONOPS approach.***

121. Should it be assumed that the satellite to be delivered to sun-synchronous orbit has it's own orbit circularization capability? ***No, for the purpose of this program, the SLV should be considered to provide the requisite capability to circularize the payload orbit.*** If so, can you supply the satellite requirement in terms of delivered mass versus perigee altitude?

122. Section 1.1, p. 1, mentions the "AF Space Command Operationally Responsive Spacelift and Prompt Global Strike Mission Needs Statements." From whom can we obtain the latest versions of these documents? Can they be provided at the Industry Day? ***The Mission Needs Statements (MNS) cited will be posted on DARPA's FALCON website.***

123. Recurring launch cost goals are provided throughout the solicitation for the SLV-OS vehicles, but none are provided for the DDT&E of the SLV-OS or SLV-DS systems. In addition, no cost goals in terms of DDT&E, production or recurring costs are provided for the CAV-DS, CAV-OS, HCV-DS or HCV-OS systems. Do such cost requirements exist, and when will they be provided in the proposal development and Phase I execution process? ***The FALCON program has no cost goals with respect to DDT&E for these systems other than funding constraints of the FALCON program itself. Likewise, the program does not have cost goals for any of the CAV or HCV systems.*** Can they be provided at the Industry Day to aid in proposal development? ***N/A***

124. Please clarify the desired readiness state of the SLV while waiting for call-up. ***The readiness state needs to be consistent with launch following authorization within two hours for a CAV mission and 24 hours for orbiting a small satellite.***

125. Section 2.1.3, discussing the SLV, indicates "Launch after authorization from an alert status within 24 hours". Section 1, in discussing the vision for this system, repeatedly refers to time critical targets that must be neutralized in less than two hours. Should the SLV be designed in accordance with a 24-hour timeline, or is there any other information that DARPA will provide on the SLV launch timeline? ***The launch within 24 hours objective is related to launch of a small satellite. The two-hour timeline is with respect to operational CAV missions.***

126. Please provide a definition for the "non-toxic" and "environmentally compliant" requirements that Mr. Hampsten mentioned. ***Non-toxic means a propellant that does not require extraordinary operational procedures or protective clothing when handling. Example, hydrazine requires a protective suit while kerosene or HTPB does not. Environmentally compliant refers to a propellant family that has a significant history of usage by commercial industry and thus has defined environmental impact implications, e.g., kerosene/HTPB, or a propellant that simply has no environmental consequences, e.g., LOX, H2O2, LH2 etc. However, environmental impact is not to be equated with inherent safety.***

HWS TASK

CAV

127. The Enhanced CAV-DS payload used in the integrated flight demonstration would likely by subscale relative to the 2000-pound full-scale design. Why wouldn't the demo be full scale? Will this be defined in the mission model?

128. Figure 2.1, p. 7, shows an "Enhanced CAV/SLV Flight Demo" and an "Enhanced CAV Flight Demo." What is the difference in these two milestones? Are they just two similar flights of the Enhanced CAV/SLV system? Are only two flights planned of this system?

129. Section 3.1.3 discusses the SLV-DS, and makes reference to a subscale Enhanced CAV. Section 3.2.2, CAV-DS, does not refer to a subscale Enhanced CAV. Should a subscale version be planned in the SLV-DS activities?

The Government has established a FALCON program objective of flight demonstration of an Enhanced CAV design using the SLV to boost it to its requisite penetration point. At the time the Government laid out its notional reference program plan, an assumption was made that the SLV developed as part of FALCON would be unable to launch a full scale, full weight, Enhanced CAV to the desired penetration point required to reach Kwajalein from Vandenberg or Kodiak. As a result, a further assumption was made that the Enhanced CAV design used in this integrated flight demonstration would be less than full scale (relative to a 2000 pound Enhanced CAV) and/or it would be less than full operational weight. Offerors are reminded that this was an assumption on the Government's part in order to establish a notional program plan and derive a funding profile and top-level schedule. The Offeror is encouraged to pursue alternative approaches that it believes provides lower risk, is more expeditious, and/or results in lower over-all cost to the Government. Moreover, while the Government envisions this integrated Enhanced CAV/SLV flight demonstration as a Phase III event, the Offeror is provided latitude to adjust the Government's notional program schedule within constraints of the funding profile.

130. Clarify the CAV flight demo noted on the program schedule in 2006. Please specify the demo scope and requirements. ***The intent of this flight test is to***

demonstrate near-term CAV capability utilizing existing technologies, most notably thermal protection system (TPS) materials. Based on past studies, we expect CAV to have a free-flight duration on the order of 800 seconds during which the CAV will fly about 3,000 nautical miles downrange.

131. Can you supply the CAV/ECAV munitions envelope and CG characteristics? Is there a set of munitions requirements (envelopes, mass properties, dispersal environments, etc.) available? ***This information was provided at Industry Day for purposes of the solicitation and will be provided to potential bidders upon request. A final iteration for purposes of conducting the Phase I, SLV Task will be provided at the end of the second month of Phase I. Beginning in Phase II, the SLV performers will develop interface control documents with the HWS performers.***

132. Consistently throughout the draft solicitation, it appears that the goal is to have an operational SLV system that launches an Enhanced CAV-OS with 9,000 nmi of downrange and 3,000 nmi of crossrange with "3,000-sec" TPS. Are there plans for the "800-sec" TPS CAV to provide operational capabilities or is it simply a "dead-end" pre-cursor system that provides early technology demonstration for the spiral Enhanced CAV/HCV demonstration program? ***The 800 second flight capable CAV design is viewed as a potential option to provide a near-term operational capability.***

133. Only one flight of this "800-sec TPS" CAV is shown in Figure 2.1, p. 7. Are additional flights planned of this "800-sec" TPS CAV by the USAF outside of this procurement? If so, can additional details be provided of the timing and requirements of additional test flights or planned operational capabilities so that they can be integrated into our overall technology development and demonstration plans? ***The Offeror may elect to propose as many flight tests as it deems necessary to demonstrate program objectives consistent with available funding. The Air Force could conceivably elect to spiral the 800-second CAV design into a System Development and Demonstration program outside of FALCON. No specific plans in this regard currently exist.***

134. Page 19 says the CAV-DS should be designed for 3,000 nautical mile, 800 second mission duration and Enhanced CAV-DS should be designed for a 9,000 nautical mile, 3,000 second flight. Are those ranges and flight times from the launch point or from release from the launch vehicle? ***The flight time and downrange are measured from release of the CAV from the launch vehicle.***

135. The solicitation requires that the Enhanced CAV have a flight time of 3000 seconds and a downrange of 9000 nautical miles. Is this measured from the launch location, or from the location where the Enhanced CAV enters the atmosphere for the first time (coming in on a ballistic trajectory)? ***The flight time and downrange are measured from release the CAV from the launch vehicle.*** If it is the latter, will DARPA/USAF provide any guidance regarding the range of

the ballistic trajectory that precedes the entry of the CAV into the atmosphere? ***The government will provide the required guidance.***

136. Section 3.2.1 defines CAV-OS as the conceptual design of an Enhanced CAV that carries 1000 lbs for 9000 nautical miles. Section 3.2.2 defines two CAV-DS conceptual designs, i.e. (1) a CAV demo vehicle that can carry 1000 lbs for 3000 nautical miles, and (2) an Enhanced CAV demo vehicle that carries an unspecified weight for 9000 nautical miles and is similar but not identical to the CAV-OS. Is CAV-DS requirement for two articles of one system with the second modified to provide the additional 9000 nm performance, or is the requirement for two different CAV-DS systems with one to demonstrate an Enhanced CAV system? ***The Government desires that two variants of the CAV be developed and flight demonstrated. Both would be capable of delivering a munition or other payload weighing approximately 1,000 pounds. The first demonstration would utilize, to the maximum extent possible, matured technologies. It would have a "flight" capability of approximately 800 seconds of flight after separation from the launch vehicle and a downrange capability of about 3,000 nautical miles. The second flight demonstration (or demonstration series) would utilize more advanced technologies that would be developed largely by the FALCON program. By utilizing these advanced technologies in an integrated "Enhanced" CAV, the Government believes that a flight demonstration of 3,000 seconds with up to 9,000 nautical miles of downrange capability is achievable.***

137. What does "currently available" or "800 second" TPS technology mean? Does it have to have been flight proven, or does it have a Technology Readiness Level associated with it? ***The intent is that TPS materials used in the CAV design would be well characterized and likely would be currently utilized in other applications. Manufacturing processes should be mature and well defined. The materials would not necessarily need to have been flown previously, but they should be deemed to be ready for flight, i.e., to have achieved a TRL level of six as defined by NASA's Technical Readiness Level process.***

138. Appendix I includes "Operate in nuclear, chemical,biological, electromagnetic environments". Who will develop/specify these requirements for the HWS? Must the CAV/HCV/HWS designs meet these requirements?
These environment requirements are to be determined. The Government will provide more specific requirements prior to Phase II RFP.

139. Appendix I includes "Operate effectively in various meteorological, oceanographic, and space weather conditions". Who will develop/specify these requirements for the HWS? Must the CAV/HCV/HWS designs meet these requirements? ***These environment requirements are to be determined. The Government will provide more specific requirements prior to Phase II RFP***.

140. Does the Government mean to exclude the "all azimuth attack" from the CAV operational objectives (Appendix I) from the SLV requirements? Is this something that should be addressed in the SLV OR or SLV DS concepts? ***The***

***Government intends the SLV contractors to address the requirement of "all azimuth attack" from the SLV operational concept perspectiv*e.**

141. Can the Government verify that there is no requirement for an air-launched theater CAV – one with 500 to 1500 nmi range? We believe that this interim capability is supported by AF/SMC. ***The FALCON program is not explicitly addressing a mission of this type.***

142. Clarification requested on the difference between hitting time critical targets within an hour from launch (2.1.1) and "launch on demand". See previous discussion re: "launch on demand" ***"Launch on Demand" describes a mission that is executed in a relatively short time frame after authorization is received. Generally this mission has not been scheduled far in advance, it may need to be executed in adverse weather conditions and with limited manpower and other resources due to competing demands. By contrast, the one hour figure of merit is simply the general frame of time from the launch event until impact of the munition.***

143. Section 3.1, p. 12, refers to "past CAV studies and the Common Aero Vehicle/Small Launch Vehicle Demonstration Study recently conducted under sponsorship by DARPA." From whom can we obtain the non-proprietary results from these studies, in particular, the DARPA-sponsored study, to aid us in our proposal preparation? Can they be provided at the Industry Day**?**

144. Section 1.1, p.1, states that "this [CAV] concept has been studied since the mid-nineties and conceptual designs utilizing existing technologies have been developed..." and that "advanced CAV designs have also been developed that offer greater downrange and improved maneuverability...". Section 1.3, p. 3, further states that " the Government expects the Offeror to utilize to the *maximum extent possible* the knowledge base gained from past programs." From whom can we obtain any non-proprietary design results for these systems and from related past programs? Can they be provided at the Industry Day?

A substantial portion of this information is deemed competition sensitive and therefore is not available to all potential Offerors. However, information not considered competition sensitive was presented at Industry Day and is available to potential bidders upon request.

145. Section 2.1.1, p. 5, refers to "operational objectives *derived from* related JROC validated Mission Need Statements for a future CAV/ORS system...". Are these non-derivative documents the same as those described in the last paragraph of page 1? From whom can we obtain the latest versions of these documents? Can they be provided at the Industry Day? ***The Mission Need Statements (MNS) cited will be posted on DARPA's FALCON website.***

146. Clarify 9000 n.mi. range: Can you supply a launch location & azimuth, or a start point and target? ***Assuming this question is in reference to the Enhanced CAV rather than the Hypersonic Cruise Vehicle, the 9,000 nautical mile range is a due-east downrange assuming no azimuthal maneuvering.***

147. Deficiencies in engaging and defeating time-critical and high value, hard and deeply buried targets have been revealed. Can the government elaborate on these deficiencies? ***Not at this time or in this format.***

148. Will a requirement be generated to define the minimum cycle time between subsequent launches and surge capability needed? ***No requirement as such will be defined. However the Government has defined a notional surge capability of 16 launches within a 24 hour period.***

149. Please provide a definition of "launch on demand"? ***This term is meant to reflect a potential need to launch a mission (CAV or small satellite, for example) on short notice in response to a global event or activity having military and/or geo-political significance. This is in contrast to a mission that might be conducted "at convenience" such as a scientific mission or technology demonstration mission.***

150. Will the Government provide us with any policy/arms control issues associated with CAV (i.e., any impacts to where, when and how the contractor can launch the Falcon vehicle)? ***The Government has assessed this issue as part of another study. Relevant information will be provided as required.***

HCV Clarification

151. Does the HCV demonstration flight have an in-vehicle propulsion system requirement? ***Use of high speed propulsion is not a requirement, but it is highly desirable. Each Phase I HWS Task performer will be expected to weigh the benefits of integrating a propulsion system with the flight demo vehicle within the constraints of funding and schedule versus emphasis on more extensive demonstration of other technologies.***

152. Clarify the 12,000 lb payload quoted for the HCV. Is that total payload (carrier, systems, munitions, etc) or 12,000 lbs of munitions? ***The 12,000 pounds addresses munitions or other payload such as surveillance platforms that could conceivably be dispensed as part of an operational mission.***

153. Section 1.1, p. 1, discusses potential payloads for the HCV that include "cruise missiles, small diameter bombs, and other munitions." In addition, Section 2.2, p. 8, refers to munitions weight, volume, and high speed dispense requirements." Where can we get additional information (e.g., weights, volumes, dispersal requirements, environmental requirements, support required, etc.) concerning these specific potential payloads to use in our initial conceptual HCV design and CONOPS development for the proposal? Can these be provided at the Industry

Day? ***Some relevant information will be provided during Industry Day as part of the CAV briefing. The Government does not plan to compile an exhaustive list of future munitions systems potentially compatible with the HCV for the solicitation.***

154. Does the HCV two-hour time limit start with the alert signal or at vehicle takeoff? ***The HCV related two-hour time is flight time from take-off to target.***

155. Section 2.2, p. 10, mentions "powered as well as unpowered versions of the HCV demonstrator. " Is there a preference or assumption of fuel types for the demonstrator or operational system? ***The Government envisions that the fuel utilized by an HCV will be readily available, logistically suitable, and enable the requisite propulsion system performance to meet program objectives.***

156. What propulsion system is envisioned for potential use on this demonstrator? ***Powered flights should have relevance to a future operational HCV.***

157. Can it (the propulsion system) be developed as a part of the FALCON Phase II solicitation or the separate "Advanced Technologies" solicitation, or would it have to come from another program (e.g. HyFly, ISTAR)? ***Propulsion system development is considered outside the scope of the HWS task. The Government may elect to fund some propulsion related technologies as part of the separate Advanced Technologies Solicitation. However, the Government believes it is most likely the propulsion system will be derived from another program or source.***

158. The HCV notional trajectory shown in the Industry Day briefing illustrated periodic “dips” into lower atmosphere, with propulsion during the “dips”. Is propulsion during the dips a necessary part of the mission profile, or may alternate means of achieving delivery system performance objectives be considered? ***The Government is interested in an evaluation of the utility of periodic or skipping-type flight trajectories for powered hypersonic vehicles. It is left to the Performer to ascertain how the propulsion system would be optimally employed for such trajectories. The Performer is also encouraged to assess other trajectories that could potentially reduce heat load and/or extend range.***

Penetrator and Other Potential CAV Payloads

159. Section 2.1.1, p. 5, refers to a "1,000-pound fuzed penetrator payload (CAV) munition." Where can we get additional information (e.g., weights, volume, dispersal requirements, environmental requirements, support required, etc.) concerning this specific potential payload to use in our initial conceptual CAV design and CONOPS development for the proposal? Can this information be provided at the Industry Day?

160. Section 2.1.1, p. 6, discusses mission requirements for the CAV that include "high-speed munitions/payload release (Small Smart Bomb, Wide Area Autonomous Search Munitions, etc.)." Where can we get additional information

(e.g., weights, volumes, dispersal requirements, environmental requirements, support required, etc.) concerning these specific potential payloads to use in our initial conceptual CAV design and CONOPS development for the proposal? Can these be provided at the Industry Day?

General information on the 1,000 penetrator and other candidate munitions were provided at Industry Day. This information will also be provided to potential bidders upon request.

161. Figure 2.1, p. 7, shows a "Unitary Penetrator Demo" that is a "related activity - not a part of the solicitation." Is this the same as the "fuzed penetrator payload" discussed on page 5? ***Yes, it is the same.***

162. Will this be a payload for the CAV Flight Demo shown at the end of FY06? Where can we get additional information (e.g., weights, volume, dispersal requirements, environmental requirements, support required, etc.) concerning this specific potential payload and program to use in our initial conceptual CAV design and CONOPS development for the proposal? Can this information be provided at the Industry Day? ***It is unlikely that this munition will be available in time to support the FY06 flight test. A surrogate payload will likely be used in its place.***

163. Is the CAV demonstrator to be flown in Phase 2 required to be capable of interfaces with any other munitions than the simulated unitary penetrator? ***The basic design should demonstrate a capability of accommodating a range of payloads. All potential interfaces will not need to be addressed in Phase II.***

164. Will DARPA provide interface information on any munitions, other than the unitary penetrator, to be carried by CAV or Enhanced CAV? ***The Government will ensure that required interface information is provided to the Performers.***