

Aerospace Testing and Facilities Operations and Maintenance (ATOM-4)  
NNA14443194R (SLS)  
QUESTIONS and ANSWERS SET 1

**Industry Day Conference**

1. During the pre-solicitation conference there was not much information presented on the specific SOW sections and requirements. How do the SOW sections map to the requirements that will be supported by the Wind Tunnel Division, including Code AO, Code AOO, Code AOI, and Code AOX, and the Thermophysics Facilities Branch, including Arc Jet Operations, Range Operations, EAST Operations, and Facility Support?

Reference: Industry Day/Pre –Proposal Conference

*Section 3.0 SOW elements are requirements of the Wind Tunnel Division and Thermophysics Facilities Branch.*

2. Will the items listed on slides 35, 36, and 39 be supported by contractor staff or civil servants? If supported by contract staff, what is the corresponding SOW section(s)?

Reference: Industry Day/Pre –Proposal Conference

*Slides 35, 36, and 39 of the Industry day Conference presentation describe the overall Mission of the Wind tunnel Division not specific contractor or civil servant requirements.*

3. What is the difference in the use of skill categories for Code AOO and job classifications for AOI (see slides 37 and 40)?

Reference: Industry Day/Pre –Proposal Conference

*The posted Draft RFP identifies the labor categories that are required to support the requirements of AOO and AOI. The posted draft RFP takes precedent over the industry day slide presentation.*

4. Are the skill categories and job classifications for contractor and/or civil servant staff? If the categories and classifications are for contractors, the categories and classifications do not match the information provided in the solicitation. Are there similar categories and classifications for the Thermophysics Facilities Branch that are different than those in the solicitation?

Reference: Industry Day/Pre –Proposal Conference

*The posted Draft RFP identifies the labor categories that are required to support the requirements of AOO and AOI. The posted draft RFP takes precedent over the industry day slide presentation.*

5. Frank Kmak mentioned customer cost of \$5,000.00 an hour for customer costs. How is it calculated? Does this cost include power? Is it actual test hours, or flat calendar hours?

Reference: Industry Day/Pre-Proposal Conference

*The overall \$5,000.00 an hour customer cost is based on the overall hourly cost to operate the facility. This excludes power costs. The rate is based on actual test hours.*

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6. What type of outreach have you accomplished or do you want to accomplish with commercial entities?

Reference: Industry Day/Pre-Proposal Conference

*Outreach with commercial customers is not a requirement of the ATOM-4 statement of work.*

7. How many people are currently on the contract?

Reference: Industry Day/Pre-Proposal Conference

*There are slightly over 100 contractor employees supporting the current ATOM contract.*

8. Does the Arc Jet crew rotate through all three facilities at 100% utilization? Is this a 24 hour operation?

Reference: Industry Day/Pre-Proposal Conference

*The Arc Jet operates in one shift only. The crew does rotate between the facilities when required.*

9. How many shifts for the Arc Jet facilities?

Reference: Industry Day/Pre-Proposal Conference

*There is only one shift for the Arc Jet facilities.*

10. How many persons/man hours for each Arc Jet crew?

Reference: Industry Day/Pre-Proposal Conference

*For one Arc Jet operation a minimum crew of 10-12 employees is needed. A single shift is 9 hours.*

11. Are all expected to have classified clearances for the Arc Jet facilities? If so, to which level?

Reference: Industry Day/Pre-Proposal Conference

*There are no classified clearances needed for the Arc Jet facilities.*

### Vertical Gun Range

1. When you fire the gun, are the people in the room?

Reference: Industry Day/Pre-Proposal Conference

*No personnel are allowed in the room when the gun is fired.*

2. Do you machine your own barrels?

Reference: Industry Day/Pre-Proposal Conference

*No, the barrels are sent off-site to be refurbished.*

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3. With respect to the atmospheric changes, can we change the temperature?

Reference: Industry Day/Pre-Proposal Conference

*In general no, the impact chamber temperature is ambient. We can, however, control the target material temperature using such things as liquid nitrogen or an electric or radiant heating device.*

4. Are the cartridges made of wax?

Reference: Industry Day/Pre-Proposal Conference

*None of the gun components are made of wax. Sabots are made of plastic/nylon.*

5. How often do you shoot/conduct tests?

Reference: Industry Day/Pre-Proposal Conference

*For light-gas gun (3 – 6 km/s) testing we can test up to 4 times a day. For powder gun testing (0.5 to 2.5 km/s) we can test up to 10 times a day. The actual rate depends upon the complexity of the test set up (i.e. target preparation, pump down rate, projectile preparation, etc.).*

6. How many shots before doing maintenance?

Reference: Industry Day/Pre-Proposal Conference

*It depends upon the nature of the shots. We monitor the wear of the components and perform maintenance when levels dictate.*

7. Do you have to clean the machinery after every test?

Reference: Industry Day/Pre-Proposal Conference

*Yes, machinery is cleaned after every test.*

8. How often do you change parts/components?

Reference: Industry Day/Pre-Proposal Conference

*Some components are expendable and are changed every time. These include pistons, burst disks, seals, spacers, sabots, and projectiles. Other components, such as gun barrels and high pressure couplings, are changed once they have worn to the point of no longer providing consistent and successful results. Instrumentation is calibrated annually.*

9. Are the explosive charges onsite?

Reference: Industry Day/Pre-Proposal Conference

*Yes, charges are built inside the explosives storage room. In general, the desired projectile velocity determines the explosive charge.*

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**Ballistic Range HFFF**

1. Is there a need to customize for each test?

Reference: Industry Day/ Pre-Proposal Conference

*Yes. Although many of the operational steps are the same from test program to test program, each has its own unique requirements.*

2. Do you use the CCD or solid-state detectors?

Reference: Industry Day/Pre-Proposal Conference

*We detect model passage with either photo-multiplier tube-based detectors (the heritage system) or solid-state, IR, light screen detectors (modern equipment that is being evaluated as a replacement candidate).*

3. How difficult is it for you to find the film? Does Kodak still produce the film?

Reference: Industry Day/Pre-Proposal Conference

*Film for our testing needs is still available but not as plentiful as it used to be. Kodak changed their product line and still makes a type of film that works. We currently use Ilford film; it gives comparable results. It's only a matter of time before the film we use (8x10 B&W sheet) becomes obsolete.*

4. What is the speed (Gun)?

Reference: Industry Day/Pre-Proposal Conference

*Our arsenal of guns (powder and light gas) can achieve velocities ranging from 0.2km/s (700ft/s) to 8km/s (26,000ft/s).*

5. How long does it take to set up for the test?

Reference: Industry Day/Pre-Proposal Conference

*For light-gas gun testing, it typically takes ½ day to set up and ½ day to clean up. The test itself lasts only milliseconds.*

6. Do you have more cameras?

Reference: Industry Day/Pre-Proposal Conference

*We capture up to 32 images per test. Currently, 7 of these are digital and we are in the process of digitizing 14 more. Eventually (as funding becomes available), we intend to digitize all of the stations. This will increase operational efficiency dramatically.*

7. How accurate is the analysis from the findings?

Reference: Industry Day/Pre-Proposal Conferences

*Very accurate, unlike wind tunnel testing, there are no sting (model support) effects to account for and the chemistry is precisely what the vehicle will experience.*

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**Blade Shop**

1. Do you perform radiographic or visual inspection?

Reference: Industry Day/Pre-Proposal Conference

*The 3-stage compressor blades associated with the 11 x 11-Foot Transonic Wind Tunnel are inspected in-place visually every 50 hours of compressor operation. If substantial impacts are found, then in place dressing and repair is performed. In addition, each blade set is removed after 2400 compressor hours for a thorough inspection and sanding process. The removed blades are then subject to onsite modal testing and a complete dye penetrant test performed by an offsite contractor.*

2. What is the life of the blade?

Reference: Industry Day/Pre-Proposal Conference

*The life of each 3-stage compressor blade is dependent on the accumulated damage to each blade due to particle hits during compressor operation. Each blade is inspected and sanded to restore the surface conditions of the blade. Some 3-stage aluminum compressor blades have been "retired" for the following reasons: 1) thin trailing edges due to excessive sanding to remove surface damage, 2) loss of weight due to sanding, and 3) serious structural damage during operations. There are 52 blades per stage and therefore 156 blades in a compressor blade "set." There are approximately 2.5 active sets of blades used in the operation of the 3-stage compressor.*

3. Do you recycle the blades?

Reference: Industry Day/Pre-Proposal Conference

*The 3-stage compressor aluminum blades are refurbished after use and then retired if they do not meet minimum standards for operation.*

4. How sensitive are the blades to balance?

Reference: Industry Day/Pre-Proposal Conference

*The compressor with the installed blades is sensitive to weight balance. For this reason, all 3-stage compressor blades are weighed and moment balanced before being placed in an optimal location to minimize rotor imbalance.*

5. Is it a water cooled sander?

Reference: Industry Day/Pre-Proposal Conference

*The blade sander in the shop is not water cooled.*

6. Do they use their hands on the customized sander?

Reference: Industry Day/Pre-Proposal Conference

*Use of the customized blade sander is a "hands on" process where the operator utilizes a specialized sanding block and the appropriate personal protective equipment (PPE) to perform the sanding safely and efficiently.*

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7. Are you planning to continue with the customized sander?

Reference: Industry Day/Pre-Proposal Conference

*Yes, as long as the aluminum blades are used in the 3-stage compressor.*

8. Do the workers need to be highly specialized to perform the task?

Reference: Industry Day/Pre-Proposal Conference

*The blade sanding operation is a specialized and detailed process. Dedicated craftsman can develop the skill necessary to be successful at this sanding procedure after training.*

### Balance Calibration Lab

1. Have you thought about sending out every weight to be balanced and calibrated by other companies?

Reference: Industry Day/Pre-Proposal Conference

*All calibration weights used in the Balance Calibration Laboratory are certified and sent out to a metrology calibration laboratory for periodic calibration. In addition, strain gage balances are calibrated both at the Ames calibration laboratory and at external calibration vendors.*

2. What is the technology used?

Reference: Industry Day/Pre-Proposal Conference

*Balances are used to measure wind tunnel model forces by strain gage technology.*

### 12 Ft. Wind Tunnel prep room

1. Is the model different in every test you conduct?

Reference: Industry Day/Pre-Proposal Conference

*Generally each model is different for each test; however, some models come back to the Unitary Plan Wind Tunnel (UPWT) for repeat test entries.*

2. Does it require different types of instrumentation for the multitude of projects?

Reference: Industry Day/Pre-Proposal Conference

*Different types of pressure, force, angle, and temperature instrumentation are used for each wind tunnel test entry.*

### Wind Tunnels

1. Is there maintenance of the 8x7 tunnel?

Reference: Industry Day/Pre-Proposal Conference

*There is no active electrical or mechanical maintenance performed at the 8x7-Foot Supersonic Wind Tunnel. However, environmental tank inspections of empty oil lubrication*

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*tanks are performed weekly. The 8x7-Foot SWT is primarily now used for storage of spare parts, document storage, and as a light machine shop area.*

2. How long will it take to restore the 8 x 7 tunnel to operational condition?

Reference: Industry Day/Pre-Proposal Conference

*It is estimated that a project to restore the 8x7-Foot Supersonic Wind Tunnel to full operation would take approximately 18-36 months.*

3. Is it common for customers to bring their own equipment, including computers?

Reference: Industry Day/Pre-Proposal Conference

*Customers typically bring a laptop for communications with their home office and sometimes bring analysis computers, laptop or desktop machines, for data analysis during a test. Customers occasionally bring a server class machine to store and distribute data among the customer staff.*

4. When viewing unitary as a complex, what would you say is your top three technical challenges?

Reference: Industry Day/Pre-Proposal Conference

*1) The top challenge is keeping the flow quality in our wind tunnels at a world class level. We perform calibrations and measure the flow quality in order to meet the stringent flow quality requirements of our customers. 2) A second challenge is to retain operational capability in an environment where many of the staff with skills critical to the operation of the UPWT are "one deep." 3) A third challenge is to maintain the flexibility to adapt to the continually changing requirements, schedules, and priorities of our test customers.*

5. Do you have people go through the tunnel to clean?

Reference: Industry Day/Pre-Proposal Conference

*Operations technicians perform daily and weekly inspections of critical areas and components throughout the tunnel circuit. Tunnel cleaning is performed as necessary after inspections.*

6. Is it difficult to recruit talents in the Silicon Valley?

Reference: Industry Day/Pre-Proposal Conference

*For civil service, NASA recruits talented individuals in many disciplines and has not encountered difficulty in hiring in a variety of disciplines.*

### Arc Jet Facility

1. Can you run multiple legs simultaneously?

Reference: Industry Day/Pre-Proposal Conference

*No, multiple Arc Jets cannot be run simultaneously.*

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2. How many customers do you have?

Reference: Industry Day/Pre-Proposal Conference

*That depends on how "customer" is defined. We operate between 300 and 400 times per year for a variety of test customers. At the project level, we typically have on the order of 20 different organizations that request testing services.*

3. Is it the same customer over and over?

Reference: Industry Day/Pre-Proposal Conference

*No. The vast majority of our customer base is NASA, on the order of 80 percent. DoD customers comprise the bulk of the remainder. We occasionally serve non-government commercial customers.*

4. Do you have any International customers?

Reference: Industry Day/Pre-Proposal Conference

*Yes, though this is very infrequent-typically one every few years.*

5. Are you worried about the sidewall heating since the test articles are so small?

Reference: Industry Day/Pre-Proposal Conference

*It is a concern. Test articles and instrumentation are usually designed and fabricated with regard to the potential sidewall heating. The test articles are generally designed so that the material response due to sidewall heating can be isolated from that attributable to front surface heating. Some test articles are collared in order to reduce sidewall-heating effects.*

6. What is the diameter of the ARC Jet, what are their sizes?

Reference: Industry Day/Pre-Proposal Conference

*The information is provided in the posted Technical Reference Documents titled, Test Planning Guide for TSF Facilities A029-9701-XM3.*

7. Are there electrodes copper or copper-alloy, how are they fabricated?

Reference: Industry Day/Pre-Proposal Conference

*Electrodes are complex components fabricated from, among other things, oxygen free high purity (OFHP) copper. They are fabricated by commercial suppliers who use a variety of techniques.*