NUMBER	REFERENCE	QUESTION	ANSWER
1	Section II, Paragraph 2.1.5	Please elaborate on the definitions and details of the method used in the determination of the peak moment statistics: variance, skewness and excess? Must it meet these specifications with all detectors offered? Some detectors may offer dramatic increases in speed and accuracy while performing applications such as texture and residual stress but may not meet the same peak position accuracy of a powder detector.	Please see the following reference for the statistics calculations: Milton Abramowitz and Irene A. Stegun, Eds. Handbook of Mathematical Functions with Formulas, Graphs, and Mathematical Tables. New York: Dover Publications, Inc. 1972. Chapter 26, pp. 927-928. The detector proposed for the powder diffraction work must meet these requirements. Additional detector(s) offfered in a single proposal that do not meet these specifications but increase speed for applications such as texture may be included; however, the detector proposed for powder diffraction must meet the specifications.
2	Section II, Paragraph 2.1.5	It would be helpful if you could define these parameters with respect to XRD peak profile so we can better understand the statistic values with respect to XRD peak profile. If possible, please send an example peak profile from your current system with labels for these parameters.	Please see answer above. Our current x-ray diffractometer is not operational, so we cannot provide an example pattern. The intention of this test and these statistics is to show uniform, clearly defined peaks on a NIST standard specific for demonstrating peak quality.
3	Section II, Paragraph 2.1.8	Can you please confirm that in the specifications sections 2.1.8 and Option 1.0 that the sample sizes of 20 cm x 10 cm x 5 cm and weight of at least 0.5 kg and 20 cm x 10 cm x 5 cm and weigh of at least 1kg are correct, and it is not mm but cm?	A smaller sample for section 2.1.8 than the one identified in the original SOW is acceptable. The first sentence in paragraph 2.1.8 of the SOW is changed to read, "The x-ray diffraction system shall be capable of measuring textures on specimens with dimensions of at least 2.5 cm x 2.5 cm x 0.5 cm and weight of at least 0.5 kg, without compromising tilting, rotational, and sample positioning capabilities". For the residual stress (option 1.0), the stated numbers are correct: 20 cm x 10 cm x 5 cm and weight of at least 1 kg.
4	Section II, Paragraph 2.1.8	In determining a stage, which is more important: Accommodating a sample size of at least 20cm x 10cm x 5cm with 10cm or achieving 0.01 degrees positioning accuracy in Chi and Phi and large enough x and y translation to map the entire 10cm x 20cm surface vs 10cm x 10cm?	Sample size requirement for powder diffraction and texture has been changed to 2.5 cm x 2.5 cm x 0.5 cm with a mass of 0.5 kg as indicated above.
5	Section II, Paragraph 2.1.8	Are you requiring a full pole figure/ODF measurement to be made on any specific defined location on this sample size. For example, a localized pole figure / ODF measurement on the far edge of a 20cm x 10cm x 5cm sample. Or, are you only requiring a bulk measurement on non-specific are of the bulk sample when mounted?	The pole figure shall be a bulk measurement acquired over a 1.5 cm x 1.5 cm area located in the center of the 2.5 cm x 2.5 cm sample that will be provided.
6	Section II, Paragraph 2.1.9	Are you requiring continuous spinning of the sample in addition to 360 deg phi step rotation capability for sample positioning?	Yes. The SOW is updated to reflect this change.
7	Section II, Paragraph 4.1	Please elaborate on the definitions and details of the method used in the determination of the peak moment statistics: variance, skewness and excess? Must it meet these specifications with all detectors offered? Some detectors may offer dramatic increases in speed and accuracy while performing applications such as texture and residual stress but may not meet the same peak position accuracy of a powder detector.	This acceptance test is for assessing the quality of the optics for performing powder diffraction. The hardware configuration to be tested shall be whatever configuration is proposed for conducting powder diffraction experiments described in section 1.2 of the Statement of Work. The acceptance test for powder diffraction must meet the specifications listed in Section II, Paragraph 4.1.

NUMBER	REFERENCE	QUESTION	ANSWER
8	Section II, Paragraph 4.2	We need elaboration and details on this testing method and will accept conditionally on receiving the sample in advance and testing at our application lab to agree on criteria for acceptance.	The sample size requirements were changed to 2.5 cm x 2.5 cm x 0.5 cm. This acceptance test shall demonstrate the ability to obtain x-ray diffraction data from any x-y point on a sample with dimensions of 2.5 cm x 2.5 cm x 0.5 cm. The sample will be a section from standard commercially-available 316 stainless steel rolled sheet. The hardware configuration to be tested shall be whatever configuration is proposed for conducting powder diffraction experiments described in section 1.2 of the Statement of Work. Acceptance criteria is <2% 2θ variation on all peaks for measurements taken at each corner and in the center of the sample provided. See update SOW (attachment to this amendment). Acceptance testing will be performed at NASA LaRC and will be under the criteria outlined in the revised SOW included with this amendment. The samples for the acceptance testing will be provided by the Government but will not be provided in advance.
9	Section II, Paragraph 4.3	Can you be more specific about what sample averaging devices are desired?	Sample averaging may be achieved by moving the sample below the x-ray spot to expose a larger sample area without losing peak resolution by widening out the incident x-ray beam. There are several ways this could be done – continuous sample spinning is commonly used, as is oscillating the sample in the X or Y direction (in the plane of the sample surface).
10	Section II, Paragraph 4.3	We need elaboration and details on this testing method and will accept conditionally on receiving the sample in advance and testing at our application lab to agree on criteria for acceptance.	The sample will be a 2.5 cm x 2.5 cm section from a large-grained piece of annealed titanium (the grain structure is readily visible with the unaided eye, with a columnar grain structure with grains 2-4 mm in width and length that runs the complete length of the 2.5 cm dimension on the specimen). The hardware configuration to be tested shall be whatever configuration is proposed for conducting powder diffraction experiments described in section 1.2 of the Statement of Work. The test will involve taking one powder diffraction scan (10-140° 2θ) measurement with a finely collimated x-ray beam and the sample stationary, and a second powder diffraction scan over the same range and with the same collimation but with the sample average device activated. Acceptance criteria is demonstrating all peaks match the anticipate 2θ location and relative intensity (as identified in the International Centre for Diffraction Data (ICDD) standard database for titanium) in the 2θ scan taken with the sample averaging device activated. This should show an improvement over the 2θ scan taken while the sample is held stationary (i.e. in the stationary sample, peaks will be missing and relative intensities of different peaks may be incorrect due to the large grain structure and texture in the sample). See updated SOW (attachment to this amendment). Acceptance testing will be performed at NASA LaRC and will be under the criteria outlined in this SOW. The samples for the acceptance testing will be provided by the Government but will not be provided in advance.

NUMBER	REFERENCE	QUESTION	ANSWER
11	Section II, Paragraph 4.4	We need elaboration and details on this testing method and will accept conditionally on receiving the sample in advance and testing at our application lab to agree on criteria for acceptance.	The sample will be a 2.5 cm x 2.5 cm section from a rolled Al-Li sheet with texture that has been verified by other means (such as microscopically with Electron Beam Backscattered Detection in a scanning electron microscope). The hardware configuration to be tested shall be whatever configuration is proposed for conducting texture experiments described in section 1.3 of the Statement of Work. Acceptance criteria is generation of pole figures and ODF analysis that are consistent (<10% variance) with the texture measured on the same sample by other means. See updated SOW (attachment to this amendment). Acceptance testing will be performed at NASA LaRC and will be under the criteria outlined in the revised SOW included with this amendment. The samples for the acceptance testing will be provided by the Government but will not be provided in advance.
12	Section IV, Paragraph 1.1	We need elaboratation and details on this testing method and will accept conditionally on receiving the sample in advance and testing at our application lab to agree on criteria for acceptance.	The sample will be a 15 cm x 5 cm x 2.5 cm 2219 aluminum sample with a welded bead down the center that has documented residual stresses (measured by neutron diffraction). The hardware configuration to be tested shall be the configuration proposed for conducting residual stress measurements described in section IV. Acceptance criteria is measuring residual stresses in the specified locations on the sample that are consistent (<10% variance) with the surface-measured residual stresses obtained by neutron diffraction. It is recognized that neutron diffraction provides deeper penetration than x-rays, so the stress values will be compensated to be representative of the depth of penetration of typical x-ray residual stress measurements. Acceptance testing will be performed at NASA LaRC and will be under the criteria outlined in the revised SOW included with this amendment. The samples for the acceptance testing will be provided by the Government but will not be provided in advance.
13	Section V, Paragraph 1.4.1	We need elaboration and details on this testing method and will accept conditionally on receiving the sample in advance and testing at our application lab to agree on criteria for acceptance.	The language in Section V, paragraph 1.4.1 adequately defines the requirement for acceptance testing of the Elevated Temperature Accuracy on Option 2. If this is not sufficient, you may submit additional specific questions further addressing the issue. Acceptance testing will be performed at NASA LaRC and will be under the criteria outlined in the revised SOW included with this amendment. The samples for the acceptance testing will be provided by the Government but will not be provided in advance.
14	Section V, Paragraph 1.4.2	We need elaboration and details on this testing method and will accept conditionally on receiving the sample in advance and testing at our application lab to agree on criteria for acceptance.	The language in Section V, paragraph 1.4.2 adequately defines the requirement for acceptance testing of the Elevated Temperature Resolution on Option 2. If this is not sufficient, you may submit additional specific questions further addressing the issue. Acceptance testing will be performed at NASA LaRC and will be under the criteria outlined in the revised SOW included with this amendment. The samples for the acceptance testing will be provided by the Government but will not be provided in advance.

NUMBER	REFERENCE	QUESTION	ANSWER
15	Section V, Paragraph 1.4.3	We need elaboration and details on this testing method and will accept conditionally on receiving the sample in advance and testing at our application lab to agree on criteria for acceptance.	The Government feels the language in Section V, paragraph 1.4.3 adequately defines the requirement for acceptance testing of the Sensitivity and Peak Resolution on Option 2. If this is not sufficient, you may submit additional specific questions further addressing the issue. Acceptance testing will be performed at NASA LaRC and will be under the criteria outlined in the revised SOW included with this amendment. The samples for the acceptance testing will be provided by the Government but will not be provided in advance.
16	General	Is it permissible for vendors to submit more than one offering for consideration?	Yes, a vendor may submit more than one offer for consideration as described in FAR 52.212-1(e). The Government will evaluate all quotes received in accordance with the evaluation criteria in the RFQ. Award will be made to the offer that meets or exceeds all specifications and is the most advantageous to the Government considering all evaluation factors and including all options.
17	General	What time is the bid due on February 4th?	In accordance with FAR 52.212-1, bids are due no later than 4:30 EST on February 15th, 2013.
18	General	How should we submit our bid, email, fax or hard copy?	As stated in the synopsis, “offerors are required to use the On-Line RFQ System to submit their quote”.
19	General	Q4. What is the physical address for the shipment?	All offers submitted shall be FOB Destination as currently indicated in the RFQ. The physical address for shipment is as follows: NASA Langley Research Center; 4 South Marvin Street, Building 1206; Hampton, Virginia 23681-2199