TRANSCRIPT

2015 NASA MUREP Virtual MSI Symposium and Collaboration Videoconference

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Primary Audience: Minority Serving Institutions
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Announcer: This meeting is now being recorded.

Rob: Good afternoon. Welcome to the NASA MUREP Virtual Symposium. My name is Rob LaSalvia. I'm the Director of Education at the NASA Glenn Research Center in Cleveland, Ohio. We are one of 10 NASA centers across the country. Today, I am pleased to be working with NASA Headquarters and colleagues from across the NASA centers to discuss a variety of collaborations between NASA and minority-serving institutions in support of our agency's education goals. During today's event, we will have two specific goals. One is to introduce you to a number of open, competitive funding announcements all with the goal of engaging students and educators in high quality science technology, engineering and mathematics experiences. The second is to connect you with appropriate points of contact from across the NASA centers to serve as collaborators in proposals.

Each NASA center brings a unique research and engineering specialization focus or area of interest. This forum should introduce you to how unique center assets content or strength could be an aid in submitting your proposals. We have a very full agenda. Let's get started. First, a few quick ground rules. Everyone entering the conference line today has been muted as a default setting. If you're a presenter in today's session, you'll need to unmute your phone to deliver your presentation. The way to do that is by dialing star six. Otherwise, please keep all phone lines muted at all times. We'll be reviewing and fielding questions and answers at the end of today's session. To post a question, please use the chat tool within WebEx or within Adobe Connect I should say. Your questions will be answered at the conclusion of the event. Any questions we can't get to will be posted on various MUREP websites.

The transcript of this call and presentation slides will be posted on the NSPIRES website. This event is being recorded. Presenters, people remember to speak loudly and clearly for the purposes of an accurate transcript. It is now my pleasure to introduce Joeletta Patrick. Joeletta is the Agency Manager of Minority University Research and Education Project. She is joining us today from NASA Headquarters in Washington D.C.

Joeletta: Thank you Rob. I'd like to say good afternoon to everyone. I think from coast to coast we're finally in the afternoon timeframe. Just a quick reminder that this call is being recorded. If you do not want to be recorded, we advise that you disconnect at this time. However, we are recording it just to make sure that we give everyone ample opportunity to hear this information whether present or not. I definitely bring you greetings on behalf of NASA Office of Education here at Headquarters where our associate, administrator is Mr. Donald James, super glad and excited about this opportunity.

I want to give a huge thanks to The Glenn team. As I stated previously to some NASA colleagues, this was really just a conversation that became a brainchild that the personnel at Glenn, Rob and his team were able to bring into fruition in a reality. I really appreciate that, really appreciate his team and all their efforts. I definitely want to say thank you to all my activity managers that are participating. Thanks for taking this time to share your content and all the representatives that are from the various NASA centers. Just a huge thank you to all of them.

Just a quick big picture type thing is that we have EONS that is out there. EONS is Education Opportunities in NASA STEM. The focus is really to be able to give an opportunity for minority-serving institutions to make proposals to the various ones. You're going to hear those which are good. I think the unique aspect of today's not WebEx, Adobe Connect virtual meeting is that you will hear from these centers. I encourage you to ask questions, make sure that you get POC names and numbers so that you can collaborate and have conversations after this. I look at this as an initial start of conversations. Definitely not an end but a great start. With that, I will turn it back over to Rob. Just again thank you to you and your team.

Rob: Thank you Joeletta. Now, let's start today's event by introducing you to a variety of open opportunities. The activity manager for each funding call will take a few minutes to share the objectives and key features of each of the opportunities. We will start today with Torry Johnson in the MUREP American Indian and Alaskan Native STEM Partnership. Let's turn it over to Torry.

Torry: Thanks Rob. Good afternoon everybody. I hope you can all hear me. Again, Torry Johnson. I'm serving as the Activity Manager for the MUREP American Indian and Alaskan Native STEM Partnership.

Can we get the next slide please? Thank you. We're going to talk briefly about the activity, some of the award information as well as eligibility. Really important that you know this is going to be a venture that's collaborated with the Ames Research Center. You'll hear more about the center toward the end of this activity on this evening or this afternoon. We'll go into proposal submission, evaluation and some other key considerations.

Next slide please. Just for point of contact information, you have my name, the center location. Key information is that the proposal is due on June 23rd. We're a little more than a month away. You see my email and phone number below.

Next slide please. The goals of this particular activity are to increase STEM literacy and engagement of American Indian and Alaskan Native secondary and post-secondary levels through the utilization of culturally relevant response of subject matter. We want to diverse a highly skilled and motivated future workforce and specifically in

computer-related sciences. We also want to advance the understanding of how to effectively teach computer programming concepts to historically underrepresented and underserved populations and communities.

Next slide. Pardon the font. With respect to eligibility, we are looking for tribal college universities, Alaskan Native serving institutions, our Native American serving institutions or Native American serving non-tribal institutions. If you have additional questions with respect to your institutions eligibility, you can see that link on the Department of Education's website.

Next slide please. With respect to objectives for this particular solicitation, we desire to increase the number of historically underrepresented and underserved students as we've said before specifically focused in the area of computer science studies. We want to improve the rates at which these students are awarded undergraduate and graduate degrees at their respective universities in NASA related fields. We also want to increase the diversity of the NASA STEM workforce which is critically important while also strengthening two and four year minority-serving institutions in their curricular in order to attract more students to STEM based academic programs. Also retaining and preparing them for success in the next steps.

Next slide please. In terms of NASA relevance as I mentioned early on, Ames Research Center or ARC is the only center that is facilitating this opportunity. Again, they will provide some more information about the center at the end of this call. Successful proposals shall clearly and concisely describe how the activity will contribute to the development of American Indian and Alaskan Native STEM workforce, how this activity develops or demonstrates the development of new intellectual capabilities and capacities. The anticipated level of institutional investment and unique institutional contributions that will allow for success of this program.

Next slide please. This information here is additional with respect to the NASA mission directorates which are broken out into aeronautics research, human exploration in space, science and space technology. You will have the opportunity obviously to get access to these slides afterwards. There's no need of trying to cram all the writing in.

Next slide please. In terms of evaluation, we'll be looking at three key areas. Intrinsic merits, relevance to NASA and the budget. Intrinsic merits encompasses the educational merits, the management experience and capability of the overall plan to achieve the outcomes that are proposed. Relevance to NASA takes into account both the scientific and educational relevance to NASA's unique contributions and alignment with the NASA project or program. Additionally, the evaluation and sustainability activities or plans should be identified here as well. The budget should be detailed with a course plan that's fully justified with the lead minority-serving institution or MSI receiving not less than 40% of the proposed budget.

Next slide please. Some key points encapsulating the entirety of this solicitation, the total expected budget is $200,000 per year. We're anticipating three awards for a duration of two years. This will be a cooperative agreement. Again, I am the point of contact. Our selecting official is Brenda Collins the Education Director at NASA Ames Research Center.

Next slide please. With respect to reporting requirements and this will be consistent across a number of the opportunities that we have. We'll have reports for awardees due one month after award. There will be updated evaluation plans, monthly and annual progress reports and a final report within the end one to two months at the end of the project.

Next slide please. Next slide. We're going to go through the schedule really quickly. The notice of intent was April the 24th. While that day has passed, we still will accept notice of intent late. That should be submitted via email directly to Brenda Collins. As I mentioned the proposal due date is Tuesday, June the 23rd. There will be up to two months from that for the proposal selections to be made and awards after that.

Next slide please. Again, notice of intent should have the lead institution, a brief title and description and any collaborating institutions or organizations. Again, those late NOIs should be emailed at this point.

Next slide. Again, additional information can be found on the NSPIRES website. Please make sure that you have registered there. Frequently asked questions will be posted there as well as pertinent information regarding this solicitation.

Next slide. Maybe that's it. Thank you all very much. Have a great day. Look forward to answering any questions at the end of the call.

Rob: Thank you for the presentation today Torry. Next, we will be turning our attention to the MUREP Aerospace Academy and Pricilla Mobley at the NASA Glenn Research Center.

Priscilla: Good afternoon everyone. Today, I would like to provide an overview of the MUREP Aerospace Academy also known as MAA. The MAA will be managed by the NASA Glenn Research Center located in Cleveland, Ohio.

Next slide. The NASA Science, Engineering, Mathematics and Aerospace Academy also known as SEMA has been consolidated into MUREP to produce the MAA. NASA has established the MAA to increase participation and retention of historically underserved and underrepresented K through 12 youth in the areas of STEM. The goals of the MAA Awards are to improve STEM literacy by engaging students, family members and teachers through the integration of emerging technologies and also to

educate students utilizing a STEM curriculum that meets national STEM standards aligned to NASA mission directorates.

Next slide. The specific objective for the MAA recipients are to increase the number of historically underserved and underrepresented students interested in NASA specific STEM careers. To provide skills to parents, caregivers and to work with and encourage their children in STEM activities and programs. Also the objective is to involve community groups, business, industries, museums and educational and professional organizations through mentoring, field trips, guest speakers and other MAA activities. Also to engage these students in participatory activities such as hands-on learning, research, use of advanced technology, peer support groups and mentoring relationships with professionals working in the STEM fields.

Next slide. The MAA addresses NASA educational long-term strategic goals and objectives as outlined in our 2014 NASA Strategic Plan specifically strategic goal number 2 which is to advance understanding of earth and develop technologies to improve the quality of life on our home planet and objective 2.4 which is to advance the NASA STEM education and workforce pipeline by working collaboratively with other agencies to engage students, teachers and faculties in NASA mission and unique assets. On the slide is a website that you can refer to for additional information. As far as our national priorities, the MAA addresses the priority where we're trying to increase and sustain youth and public engagement of STEM by expanding the number of U.S. youth especially those from those targeted groups who have an effective authentic STEM experience each year prior to them completing high school.

Next slide. With regards to NASA relevance, through the MAA solicitation, NASA is seeking proposals to implement the NASA MAA to engage youth particularly in those targeted groups and to develop in youth a key interest of STEM. Each proposal shall fully address section J.5.1 propose the evaluation of selection criteria. This is a comprehensive list of the requirements necessary for a successful completion and a successful proposal. Each proposal shall identify the primary NASA area with which the proposed curriculum will align NASA things, space exploration, aeronautics, space science, earth science and microgravity or a combination of these things. These are samples. They are samples of but they are not limited to the eligible technical content area. Also any existing SEMA curriculum may be used to implement the MAA. The SEMA curriculum enhancement activities also known as CEAs by [great 00:18:50]. They may be found on the NSPIRES website.

As I mentioned earlier, the MAA framework, it is based on the SEMA model. The MAA advances students development through activity components that are fully integrated to form a comprehensive support system. Through its components, we're looking for the MAA. It shall deliver hands-on inquiry-based curriculum enhancement activities. Also it shall be relevant to the NASA missions. The third component is that aerospace

education lab which is a computerized classroom. We're also expecting it to have an innovative family café which is an interactive forum that provides STEM education and parenting information to any supportive adult role model.

Next slide. There's a couple of slides here. These are options that talked about how SEMA implemented the CEAs, the Aerospace Academy and the Innovative Family Café. We have this listed as options. You can develop your own curriculum. The curriculum must and I want to stress that the curriculum must be in accordance with all guidance in the MAA and must be aligned with a NASA mission directorate. [Clare 00:20:26], you want to go through the next couple of slides. As I said, it is [patterned 00:20:29] after SEMA and you can look at the next couple of slides and see how SEMA was implemented under those components.

Next slide. Next slide. There are some key positions that the MAA must have in place. We're looking for you to consider having an MAA site director, an AEL coordinator, a family café coordinator. It is very important that you do have a site director who will be responsible for the overall leadership and administration of the MAA.

Next slide. The MAA models of operation. We have the Saturday models, in-school model or an after-school model. The selective sites may elect to use whatever models of operation they would like. You can read that at your leisure to see some of the examples.

Next slide. In order to meet the eligibility requirements, the lead institution must be designated as an MSI as defined by the U.S. Department of Education as Torry mentioned. You can visit the website listed to see if you are eligible. You can also team up if you are interested in doing that.

Next slide. This slide talks about the funding guidance and restrictions subject to congressional appropriation of sufficient funds, NASA expects to select anywhere between 10 or 16 proposals for the award. The amounts listed are per award year one, 100K through 160. Year two, 100 through 160. Year three, 80 through 100K.

Next slide. Here is our evaluation requirement 40% based on relevance, 30% intrinsic merits, 20% budget and 10% evaluation plan.

Next slide. The total expected budget for the MAA activity is 1.9 million per year total for all awards. As I mentioned anywhere between 10 or 16 awards, the duration is three years. It will be also a cooperative agreement. The NASA point of contact is Miss Darlene Walker. I am the co-manager and the selecting official is Miss Joeletta Patrick from NASA Headquarters.

Next slide. Please reference these listed documents for additional guidance prior to you submitting your proposal.

Next slide. Here is our schedule. As you see, the notice of intent was due on April 14th. However, late NOIs will be accepted. They are accepted at any time.

Next slide. As far as the registration criteria, in order to submit, all team members and their organization must be registered in the NSPIRES systems and proposals may submit through Grants.gov. You must also be registered into the NSPIRES.

Next slide. For additional information, please visit the website as we mentioned earlier. The frequently asked questions will also be in the NSPIRES website.

Next slide. Miss Darlene Walker is the point of contact for the MAA. Thank you for your interest. I believe my time is up.

Rob: Thank you Priscilla. For those of you just joining us, this is the NASA MUREP Virtual MSI Symposium. We're currently introducing everyone to open solicitations. Next, we are going to discuss the MUREP community college curriculum improvement opportunity. Roslyn Soto is the point of contact.

Roslyn: Thank you. Good afternoon. My name is Roslyn Soto from the Jet Propulsion Laboratory. I'm the activity manager for MUREP Community College Curriculum Improvement or the MC3I opportunity.

Next slide please. I want to take a few minutes discussing key information about MC3I. I want to start with some background information. A little bit of information for your knowledge. Scope of activity, MC3I was previously known as the NASA Curriculum Improvement Partnership Award for the Integration of Research or CIPAIR. CIPAIR was recently consolidated under MUREP in NASA education as an activity. Through these transitions, we're no longer titling this opportunity as CIPAIR but now it's titled as MC3I. MC3I has been designed to do a couple of things. One, [raising 00:25:36] curriculum and curricular tabloids and attract, retain and support the success of students at minority-serving institutions in areas of strategic, importance and value to NASA's mission and national priorities. Two, increase the number of minority undergraduates in STEM areas that are relevant to NASA.

Next slide please. The goals of MC3I are to increase the number of STEM courses and curriculum pathways that are available at minority-serving community colleges. In particular attract, retain and support the success of students in STEM degree programs and NASA-related careers and increase the number of students who are completing STEM certificates and degrees from backgrounds that are historically [in the records 00:26:24] than it is in STEM.

Next please. The MC3I objectives include the development of curriculum improvement in vocational STEM programs, certificate programs, associate degree programs or transfer programs, expansion of the STEM pipeline through the development of new or existing high school partnerships or [inaudible 00:26:51] developing curricular options in engineering. Those are the three focus areas that your proposal can cover.

Next please. We're expecting to make three to four awards of up to $300,000 per year each for up to three years [depending on 00:27:13] adequate proposals and availability of funds.

Next. For this particular MUREP solicitation only two-year or community college minority-serving institutions are designated by the U.S. Department of Education are eligible to propose. Eligible institutions can submit more than one lead proposal for any type of [downs 00:27:39] number. Eligible institutions may submit a proposal as the lead in accordance with restriction as stated in Appendix L. You can see the on the NSPIRES website and/or be included as an unfunded partner or sub-awardee in any number of proposals for which you are not the lead. PIs must meet all the following criteria of the proposal as submitted. You must see either a tenure or tenured track faculty member of the lead institutions. For those institutions that do not have a tenure system, please see amendment 12.2 for instructions on how to apply. PIs must have a PhD or equivalent in engineering, computer science technology, math or a science discipline relevant to NASA's research team.

Next please. As was mentioned by the other presenters, proposals must apply with all of our formatting requirements identified in the solicitation and in the guidebooks for proposers. We recommend that proposers assemble their proposal into a single, unlocked and searchable PDF document prior to uploading into NSPIRES. A couple of points for the budget. Detailed budgets and justifications are required for all sub-awards regardless of the dollar amount. Dollar amounts with no explanations may reduce your acceptability or cause delays in funding should your proposal be selected.

Next. All proposals must be submitted electronically via NSPIRES or Grants.gov by an authorized organization representative or AOR. There are some instructions there for those who are acting as both PI and AOR. Hard copies are not accepted. Every institution or organization that intends to submit a proposal must be registered in NSPIRES as was previously stated. Every individual named on the proposal cover page form including the [core Is 00:29:45] and collaborators must also be registered in NSPIRES. You can see there is the email for the NSPIRES help desk.

Next please. Evaluation selections. Proposals will be evaluated by a merit review process composed of the proposals professional peers, government and non-government who've been screened for conflict of interest. You can see detailed information about the different evaluation criteria for MC3I on our NSPIRES page. The

award will be made based on an availability of funds. NASA reserves the right to make judgments through the final selection based on programmatic factors including the overall balance of the viable proposal. After the selection each proposal will be notified regarding the disposition of his or her proposal.

Next. Some information on the administration of the award. Notices of intent were due April 14th. However, we are accepting late NOIs. They can be accepted at any time. Proposals are due Thursday June 11th 2015. A little less than a month. A review of proposals that are accepted are scheduled for tentatively July 7th through Friday August 14th. Selections will be made three months from the due date. Awards made three to six months from the due date. The project start date will be three to six months from the due date.

Next. Requirements and key considerations. As I previously mentioned the lead for the MC3I proposal must be a two-year or community college MSI as defined by the U.S. Department of Education. At minimum, your proposal must include at least one minority-serving college to be the lead and one NASA center or facility. You will hear about the different NASA centers and facilities and their specialties and capabilities later in this call. A proposal shall clearly and concisely describe how the activity will contribute to the development of the STEM workforce and disciplines needed to achieve NASA's strategic goals. The relevance of the proposed work to NASA's currently funded research priorities, best technology roadmap and programs of the proposed NASA mission directorates.

Next. Finally, some of basic POC information. Again, our due date for MC3I is June 11th. The activity manager is myself out of the Jet Propulsion Laboratory. There is my contact information. Our selecting official is Miss Joeletta Patrick at NASA Headquarters. Do we have one more? I believe that's it.

Rob: Thank you. Next on the agenda we have MUREP Other Opportunities and Misti Moore.

Misti: Greetings everyone. My name is Misti Moore. I am coming to you from Johnson Space Center to talk about MUREP Other Opportunities solicitation.

Next slide. Just to give you a little bit of an overview, the scope of the activity, the NASA MUREP Office of Education Program solicits proposals from U.S. organizations and institutions including NASA centers that align with the four White House executive orders for minority institutions to strengthen curriculum and curriculum pathways in STEM and attract and retain and support the success of underrepresented students in STEM degree programs. The award information is as follows: Funding for each MOO cooperative agreement shall not exceed $500,000 total of two, three years as funds are available.

Next slide please. Just an overview of the eligibility for lead institutions. We just put out an amendment 14.2 this week. The eligibility for MOO is as follows: Eligible institutions including NASA centers are allowed to submit a proposal as lead for this announcement except majority institutions. As you can see with the chart on the side, all of these institutions, organizations and NASA centers except majority institutions are allowed to submit a proposal as lead.

The next bullet says eligible institutions are required to collaborate with a NASA center. The last one also says that organizations, institutions and NASA centers are also eligible to submit more than one proposal but the max would be three. You are able to submit up to three proposals.

Next slide please. MOO seeks proposals which of course align to NASA's mission as well as we want proposals that address one or more of NASA education annual performance indicators. The annual performance indicators are as follows: Number one, we want to provide significant direct student awards in higher education. That would mean students across all institutional levels and types as defined by the U.S. Department of Education. Number two, racially or ethically underserved and underrepresented students. Three, women. Four, persons with disabilities and five, veterans are percentages that meet or exceed the national percentages for these populations as determined by the most recently publically available data from the U.S. Department of Education.

Number two, the second API, 250,000 educators participate in NASA Supportive Professional Development, research and internships that use NASA unique STEM content. The third API is provide funding to institutions of higher education across all institutional categories and types as defined by the U.S. Department of Education that meet or exceed national percentages for these institution types and category levels.

The fourth API is maintain the NASA Museum Alliance and/or other STEM education strategic partnerships in no fewer than 30 states, U.S. Territories and/or the District of Columbia. Excuse the slide, the fifth API is 600,000 elementary and secondary students participate in NASA STEM engagement activities. Right below it is actually the link to those APIs.

Next slide please. Now, in addition to those APIs, we are also looking for proposals which of course address one or more of the following priorities as quoted from the Federal Education STEM five year strategic plan. This comes from that core STEM report and those four priorities are as follows: [Effective 00:37:48] K through 12 STEM teach education increase the number and proportion of individuals particularly from groups that are traditionally underrepresented in STEM who complete the teacher pre-service and in-service programs with the ability to increase students' understanding of STEM.

The second is engagement in STEM. Expand the availability and coherence of investments that increase interest, involvement in or value placed on STEM by pre-K through 12 aged individuals especially those from traditionally underrepresented groups. Undergraduate STEM education, improve retention rate including among groups traditionally underrepresented in STEM majors during the first two years of undergraduate education. Lastly, serving groups traditionally underrepresented in STEM fields. We are looking for proposals that increase the number of individuals from underrepresented groups that graduate with STEM degrees.

Next slide please. A little about the proposal evaluation and selection process. Proposals will be evaluated by a merit review process composed of the proposers, professional peers. That will be government and non-government personnel who have been screened for conflicts of interest. The awards of course will be made based on availability of funds. NASA reserves the right to make judgments during the final selection based on programmatic factors including overall balance of the viable proposal. Let's back up. Let's back up that slide please. After each selection, each proposer will be notified regarding disposition of his or her proposal. The selection official is Joeletta Patrick at Headquarters.

Next slide please. Proposal submission and information. Now, this information that I'm giving you is not complete information. It's just some highlight. Please make sure you refer to NSPIRES and look at the pre-proposal teleconference slides. Make sure you do review the actual appendix and read through it and the frequently asked questions as well. The proposal must comply with all format requirements identified in the solicitation and the guidebook for a proposer. The detailed budget and justification is required for all sub-awards regardless of dollar amount. The dollar amounts with no explanation could cause delays in your funding. Every institution or organization that intends to submit a proposal must be registered in NSPIRES. Everyone's name, every individual that is named in the proposal must be on the cover page. All proposals must be submitted electronically via NSPIRES or on Grants.gov by the AOR. If you need any assistance with this, the NSPIRES link is placed below.

Next slide. Lastly, this is the POC information. Please note that proposals are due Friday June 26, 2015. Again, my name is Misti Moore. I am located at Johnson Space Center and at NASA Headquarters. The best way to contact me is via email at Misti.M.Moore@NASA.gov. Again, please read the frequently asked questions. Please read the appendix. Please review the slides as well. Thank you. Bye-bye.

Rob: Our next presenter is going to discuss MUREP Educator Institutes. It's Chris Copelan from the Stennis Space Center.

Chris: Thanks Rob. Good afternoon everybody. As Rob said, I am Chris Copelan from Stennis Space Center in South Mississippi. I am the Activity Manager for MUREP Educator Institutes.

Next slide please. The MUREP Educator Institutes is a consolidated effort by the NASA Office of Education. In the past, we had some activities that were done multiple ways at multiple centers but none of them were done exactly the same. MUREP took this activity under its umbrella. To streamline this process, we're going to do basically the same thing at all 10 centers. The goal is to engage with minority-serving institutions to bring in high performing undergraduate students who plan to teach STEM to NASA centers for one week, to interact with NASA missions and subject matter experts. As you've already heard, there are 10 NASA centers. We all have our own unique expertise. You will hear more about that a little later in this as we'll have presentations from each one of the NASA centers.

The second goal is engaging participating future educators with NASA experts to collaborate and provide the most advanced and innovative pre-service alternate route experience possible. We also want to inspire future educators to help communicate NASA with students for years to come. We also want to reach underserved and underrepresented populations and institutions.

Next slide please. The award information. It is one award for a performance period of three years at about one million per year. Of course this is depending on budget and congressionally mandated stuff. The eligibility, the lead institution must be designated minority-serving institution as defined by the U.S. Department of Education. The proposal and submission information is a lot like the other people have already presented to you. There is the NSPIRES website along with the grants and cooperative agreement handbook along with a guidebook for proposers' link there.

Next slide please. A lot like one of the former activities, this is the evaluation and selection. Intrinsic merit is 35%, relevant to NASA is 40%. Just to go back and refresh everyone, relevance to NASA is based upon the different mission directorates that we have, site mission directorates which encompasses a lot of different things along with human exploration and operations mission directorate. Aeronautic mission directorate and space technology mission directorate. Evaluation plan is one of the criteria along with the budget. As it's been said, make sure you can provide us with the most detailed budget as possible. If you have sub-awards, we need all the information along with everyone that will be involved in there.

Next slide please. There is a solicitation number, the proposal due date is June 30th. Notice of intents were actually due on April 24. As it was said before, we will accept NOIs late or after that due date. Please be reminded that an NOI is not required to submit a proposal. Also please be reminded that submitting an NOI doesn't mean that

you have to submit a proposal. If you think you're going to be interested, we encourage you to submit an NOI. I am the Activity Manager, Chris Copelan. I'm located at Stennis Space Center. There is my contact number and email.

I would like to remind everyone, it was on a previous slide before, as activity managers, we really can't answer questions directly to try to help you with proposals. There are email addresses that you can actually send emails to. We will then field those questions, answer those questions. We will post them to the FAQs. Communicating directly with an activity manager puts us in a bad situation. We really don't want to give one institution an advantage over another one. If you would please email. Each one of these activities has its own EONS website and NSPIRES. The email addresses are there as well to where you can email any questions that you may have. The next slide. I think that's the last one [there 00:46:49].

Rob: I would like to thank Torry for sharing information on the MUREP American Indian and Alaskan Native STEM Partnership. Priscilla for information on the MUREP Aerospace Academy. Roslyn for information on the MUREP Community College Curriculum Improvement. Misti for information on the MUREP Other Opportunities and Chris for the MUREP Educator Institutes. Those represent open opportunities within the NASA NSPIRES System. Now that you've been introduced to each opportunity. Let's take some time to go around the country and discuss the strengths, capabilities and interests of various NASA field centers. Each NASA Center will present information on their key research and engineering focus and education interest. We will begin in California with David [Morris 00:47:46] at the Ames Research Center.

David: Good afternoon, thank you. It's my pleasure to speak with you today briefly about Ames Research Center. I'll give you a quick overview of our core competencies. We have great interest in students in all of our areas. As you can see from the map, we're one of two centers in California. Jet Propulsion Lab is now an FFRDC. It's not considered a NASA center per se. It still does great work.

Let's go to the next slide please. As you can see this is an aerial view of the center. You can see we have a beautiful campus. We are right on the San Francisco Bay on a 500 acre site. We're 40 miles south of San Francisco, 12 miles north of San Jose. We're right in the heart of Silicon Valley which is very valuable to us. We're 45 minutes from the Pacific Ocean with surfing, boating and whale watching. We're 45 minutes from San Francisco with unparalleled food, shopping, sports and artistic options. We have a fabulous location. We also have terrific research. We're not a mission center. Mission centers are great. We're not one of them. We do the research and development pushing the innovation envelop and developing the technologies that make NASA missions possible. We've been doing this for 45 years. We do it in the area, we do it in aeronautics, exploration technology and science aligned with our center's core competency.

Next chart please. You see the core competencies there. I'll give you a little bit of a briefing on what they are. Entry systems, going into space, you need a great proportion system. It turns out it's a bigger challenge coming back into the environment of earth or to any planetary system. The way we do it is we turn a blunt edge to the atmosphere. You use the heat and the friction to slow you down. You need a very powerful and lightweight thermal protection material. Ames is the home of thermal protection material development and thermal protection systems. We test them in our super high heating [arc jet 00:49:42] facilities.

Supercomputing, in the 1970s, the ILLIAC IV computer was moved to Ames. Since then Ames has become the preeminent NASA center for high-end computing or supercomputing. We now have a computer called Pleiades. It's one of the world's most powerful, supercomputers. The latest development is we're working with Google to push the envelope in Quantum computing. Normal computing is binary zeros and ones. With Quantum computing, you have a richness of data not just the zeros and ones. You can solve complex problems in a fraction of the time. We're on the cutting edge of pushing that technology.

The next generation air transportation, if you think about it the air space that you fly through is like a series of highways in the sky. What we're trying to do is to create a comprehensive change or transformation into the National Airspace Systems so that we have a safer, more reliable, more efficient, less costly and environmentally friendly way of getting aircraft from place to place under all weather conditions. To do this, we do modeling, we use simulation tools and we're looking at evaluating new concepts in airspace design, traffic flow management and optimization.

In the area of Airborne Science, we're using aircraft platforms to look back at the earth, to get a richness of science and to advance the use of satellite data that supports the development of new senses which we work on. One of the key objectives of the program which is of all of our programs is to develop that next generation of scientists and engineers. Low cost missions, Ames is the leader in low cost missions. What we're doing is we're developing new methods to get a high value science data at low cost using smaller and smaller spacecraft. We started with very small spacecraft, the size of a shoe box. We've gone to PhoneSats and a variety of small satellites including just to name a few LCROSS, Ladi, PhoneSat, GSAT and we have 11 more still in development.

In the area of biology and astrobiology, in biology like other centers, we're looking at the effects of long duration space missions on humans and animals using ground based research and platforms and space. We're seeking in particular to understand and combat the effects of high radiation and low gravity. In the field of astrobiology which we created the name to Ames, it's an interdisciplinary field. Basically we're looking at the origin, the evolution, the distribution and the destiny of life in the universe. Could

life exist elsewhere? Has it existed elsewhere? Could we transform a planet, terraform a planet to look like earth? Those are the questions that we're interested there in astrobiology.

Exoplanets. In 1995, we discovered, we, being the science community discovered the first world beyond our own solar system. Since then 1,000 or more exoplanets or [exo solo 00:52:41] planets have been discovered. Ames has a mission, the Kepler Mission is small spacecraft looking at a tiny portion of the sky which we believe to be very productive. We're looking to see if we can see planets that might be like our earth orbiting around stars like our sun in the habitable zone. Kepler has already discovered more than 1,000 planetary candidates not too much in the earth sized yet. We found rocky planets. We really believe that this is fundamental to the search of the life in the universe or the search for places where life could exist. Kepler is changing the way we look at the universe. It is rewriting the textbooks.

In autonomy and robotics, we're using, in the future for space exploration missions, we love human missions but we need to do more robotic missions because they are much less demanding in terms of bringing supplies along and in terms of keeping humans alive. They require complex vehicles, habitats etcetera. What I insist on doing is developing robotic technology to handle this. In Lunar Science and with Lunar Prospector, we looked at the southern poles of the moon and the northern poles and discovered a significant amount of water ice in those Polar Regions that suggested the moon may not be as dead as it has previously been thought to be.

Human systems interaction, we're looking at the interactions between humans and machines because we [live 00:54:09] in a very fast paced world in which humans are required to make critical decisions in increasingly dynamic and complex environments. We're looking at human/machine interaction. Wind tunnels, we have the world's largest wind tunnel. We have one of the world's busiest wind tunnels. We test aircraft and spacecraft alike. We have three major simulators which can work individually or together to simulate almost anything you want to simulate. We're looking at airports, we're looking at aircraft and we're looking at space craft.

In closing, what I want to leave you with is we have great technology at Ames. We are really pushing the envelope. There's lots of opportunities for students to get in on the ground floor of this and to take perhaps more responsibility than you might think. We have a great location. We have an incredible climate. We have great access to anything you could want or do. We really have excellent diversity here at the center. There's one other thing that we have. I don't know that other centers do. We have a dean of students. The role of the dean of students is to work with students, to advice students and to address any issues they have. I want to leave you with that thought. We have greatness in a lot of areas. We really welcome students. We commend it to them. In the past summers we've had as many as 1,000 students here. We really want to

continue that trend. We're totally interested in bringing the most diverse population possible. Thank you very much.

Rob: Thank you David. Now, we're going to turn the Armstrong Flight Research Center also in California and Oscar.

Oscar: Good afternoon. My name is Oscar Murillo. I'm the MUREP Activity Manager for the MUREP Project. I'm going to give a brief overview of research topics that have interest here at NASA Armstrong Flight Research Center.

Go to the next slide please. Armstrong Flight Research Center is the NASA primary center for atmospheric flight research and operations. In the interest of time I'm just going to go ahead and I have several slides. Let's go ahead and go to the next slide. You can see the vocation of NASA Armstrong Flight Research Center is in Southern California.

To give you even a better understanding of the location, can you go to the next slide? Edwards Air Force Space NASA Armstrong is located approximately 100 miles north of Los Angeles. The location allows us to take advantage of year round flying whether, remote area and visibility to flight test of aircraft and also the conduction of flight operations of our Airborne Science Mission. The next set of slides that I'll be going over just talks a little bit about the research topics that we're interested in. At the end of the presentation, I'm going to give more details on these topics. Also additional research areas that I was going to go to address in this short time.

Next slide please. Supersonic Flight Research is an interest of ours because the FAA regulations that prevent sonic booms over unrestricted areas. NASA is currently researching ways to model the shock waves and help determine a loudness [inaudible 00:57:18] is acceptable to both the FAA and to the general public. Additionally, NASA is exploring low boom aircraft designs for reducing sonic boom levels.

Next slide please. Hypersonic research at Armstrong includes the investigation of advanced control and guidance message for hypersonic vehicles. We're also exploring low costs access to space. We're doing that through the Air-Launch from a Towed Glider Program.

Next slide please. Armstrong is investigating new designs and modeling techniques of aircrafts. The research being conducted by the X-56, ACTE and [FOSS 00:58:03] Programs who allow for improved aircraft, air dynamic efficiency, suppress flutter, reduction of aircraft noise associated with takeoffs and landings and also gas load alleviation.

Next slide please. Here are several other topics that I didn't want to go into details with but wanted to include them. Also the point of contact can be reached by just contacting our center. I will provide contact information for us at the end of the presentation.

Next slide please. Here are several different websites where we can find some more details on the projects I mentioned. The first website describes all the current projects that are being housed here at Armstrong. The second link is to our chief technologist report. That goes into some great detail on our recent research successes and also our paths looking forward. Also in that document is an appendix that lists all of the point of contacts that were talked about in that report. It's a great resource. The next two links are to our YouTube channel where the last link provides some details or some highlights to our center that [starts 00:59:26] to, highlights that we worked on in 2014.

Next slide please. Our center point of contact is for all university collaboration is Dave Berger who is our University Affairs Officer. His information is provided there.

Next slide. I just want to say thank you to everybody for the opportunity to share our research interest.

Rob: Thank you. Now, we move to the Midwest and Ohio and the Glenn Research Center. We have Vanessa Webbs.

Vanessa: From higher education. Good afternoon, I'm Vanessa Webbs, Project Manager for Higher Education at the Glenn Research Center in Cleveland, Ohio, home of the rock and roll hall of fame and of course LeBron James. The Glenn Research Center has 24 major facilities.

Next slide please. Over 500 specialized research and test facilities at our Louisville Campus and world class facilities for space technologies and capability testing at the Plum Brook Station Campus. Glenn is a NASA lead center for airbreathing propulsion and a center of excellence and turbo machinery.

Next slide please. Glenn has six core competencies. One, airbreathing propulsion. We are improving safety by modeling and studying the growth of ice on aircraft, reducing the amount of nitrogen oxide that aircraft engines emit and developing technology that will allow full size passenger and cargo planes to fly from city to city without pilots.

Next. Two, communications, technology and development, Glenn is developing components, systems and networking architectures for satellites, aircrafts, space craft, astronauts, robots and ground systems communications enabling tiny spacecraft to send home never seen before data and alerting aircraft to hazardous flying conditions.

Next. Three, in space propulsion and cryogenic fluids management. Glenn is developing chemical, ion and nuclear propulsion and fluid handling technologies for far-reaching space exploration and human outpost on other planets.

Next. Four, power energy storage and conversion. We are developing solar cells, solar arrays, fuel cells, radioisotope and [vision 01:02:15] power systems as well as mission-enabling batteries, fuel cells, flywheels and power management and distribution.

Next. Materials for extreme environments. Glenn is developing materials and systems that can withstand the harsh environments in space, proportion and power.

Six, physical sciences and biomedical technologies in space. Glenn is developing physical and biomedical systems that protect astronauts from fire hazards, monitor health, counteract the harmful effects of low gravity and extend space missions.

Next. In the NASA Glenn Research Center Office of Education, we address several education audiences in higher education. We have high school undergraduate and graduate student interns. We support MUREP scholarships and internships for students attending MSIs. Out faculty fellows support Glenn's research.

Next. NASA Glenn's K through 12 and out of school time opportunities include model curriculum through SEMA or MAA. Engineering design challenges in collaboration with the U.S. Department of Education for 21 CCLC in [10 01:03:48] states. The MacArthur Foundation and Digital Youth Network as well as our [MOOK 01:03:53] pilot. We provide teacher professional development and virtual visits and online connection through our digital learning network. Again, my name is Vanessa Webbs. My phone number and email are listed. Thank you very much.

Rob: Thank you Vanessa. Next, we're going to turn to the Goddard Space Flight Center in Maryland and Janie Nall. Janie, if you're with us you may be on mute. You may need to unmute your phone, star six.

Janie: Is that a little better?

Rob: That's better, thank you.

Janie: Okay. I lost a couple of seconds there. Let me see if I can make it up. Good afternoon everyone. I'm at Goddard Space Flight Center in the Office of Education. You can see the red dot we're over on the Eastern Seaboard.

Could you go to the next slide please? Let me tell you just a little bit about our center. Our main campus here is in Greenbelt, Maryland which is about 20 miles or so outside of Washington D.C. In addition to our main center here which houses almost 9,000

employees at any given time, the center manages several other facilities on behalf of NASA which includes GISS or the Goddard Institute for Space Studies in New York City. The Wallops Flight Facility on the Eastern Shore of Virginia. The IV&V in Fairmount West Virginia and the White Sands Test Facility in Las Cruces New Mexico.

Next slide please. Goddard is home to the nation's largest organizations of sciences, engineers and technologists whose mission is to build spacecraft instruments and new technology which study the earth, sun, solar system and the universe. We are also home to the Hubble Space Telescope Operation and the James Webb Space Telescope which is scheduled currently for an October 2018 launch.

Next slide please. Goddard is what we call an end-to-end center, from design to launch to analysis. It's really [inaudible 01:06:21] that we address the full lifecycle of science mission, spacecraft, institute and remote sensing instruments and payloads from advanced concepts through implementation. In addition, Goddard designs, builds, launches and operates scientific instruments, spacecraft and information systems. We are a science center. As such we maintain a very robust program of scientific research in earth science, astrophysics, heliophysics and planetary science.

On the engineering side of the house, Goddard manages the formulation, design, integration and testing and operations of spacecraft instruments and ground control and data processing systems. Our Goddard Flight Projects is really responsible for overall management and implementation of white projects on the center. This includes the in-house instrument projects and the infrastructure to support those projects which includes mission design, fabrication, integration, environmental test, design and readiness review management, launch operations and orbital operations.

The last one is called NASA Communications or NASCOM. This is handled through Goddard's exploration and space communications division who manages communications between mission control and orbiting astronauts [aboard 01:07:51] the International Space Station along with a host of other communication services between satellites and ground control as well as developing the next generation of space network communication satellites.

Next slide please. Here's my contact information and the Goddard website address. Please feel free to email me and I'll be more than happy to facilitate an introduction to our technical staff here to help you think through your proposal. Thanks very much. That's it.

Rob: Thank you. A reminder to those of you online, if you have any questions as a result of any of these presentations, feel free to type them into the chat box. We'll answer them at the end of the session. For presenters, when you're finished presenting please

[inaudible 01:08:43] your phone. Next, we turn our attention to the Jet Propulsion Laboratory in California and Jenny Tieu.

Jenny: Great, thank you. Hi everyone. My name is Jenny Tieu. I'm with the Jet Propulsion Laboratory also known as JPL. I'll be providing a brief overview of JPL's core competencies and research topics. As you can see from the map, we are located in Southern California specifically in the city of Pasadena. We are lined with beautiful beaches and to the north of us are mountains. All within 30 minutes driving range.

Next slide please. JPL is a federally funded researching development center founded by California Institute of Technology in 1938. 20 years after we were founded by Caltech we became a NASA center. We are currently managed by Caltech for NASA. Our business space is roughly $1.5 billion. We are on 177 acres of land with about 5,000 employees.

Next slide please. It looks like the images did not come through on the slide. My apologies. Today, JPL is the nation's premier center for robotic exploration of the solar system and beyond. In addition to conducting robotic space missions for NASA our charter is to explore our own and neighboring planetary systems. To understand the origin and evolution of the universe and make critical measurements to understand our home planet and help protect it. Our robotics endeavor includes developing autonomy software that drives rovers on Mars, implementing operation software to monitor and control rovers from earth, developing new systems with limbs for walking and climbing, creating prototypes with airships which would fly through the atmospheres of [planet 01:10:45] Venus, creating drills and probes for underground exploration on Mars and Europa, building cameras and sensor tools for observational purposes.

Next slide. JPL planetary exploration. Our planetary scientists' works to improve our understanding of the planets, satellites and smaller bodies in the solar system by setting the atmospheres [inaudible 01:11:14] of the planets researchers can get clues to understand the origins and mechanics of our own home planet. This also includes using radar to determine the physical characteristics of asteroids and searching for asteroids that may pose a hazard to us.

Next. Earth science JPL's earth scientists conduct research to characterize and understand the atmosphere, land and oceans on our home planet to make better predictions of future changes. This includes studying hurricanes and other aspects of weather from orbiting spacecraft, measuring cloud properties and aerosol particles in the atmosphere and mapping the [inaudible 01:11:59] and icy areas, observing stratospheric ozone, mapping the global distribution of water vapor to understand its effect on climate change and mapping global carbon dioxide.

Next slide. JPL's astrophysics and space science research efforts primarily study the physics and origins of our galaxy and the universe. Research here focuses on developing new techniques to observe gravitational waves, observing magnetic fields and plasmas. Theoretical modeling of stars and planet formation and the measuring of atomic collisions in laboratory setting.

Next slide. JPL's success in part is attributed to our advanced systems and technologies. JPL designed, built and operated NASA's [inaudible 01:12:54] network of [inaudible 01:12:55] stations to provide tracking and communications for planetary spacecraft. Additionally, the detector and instrument system development at JPL is an ongoing effort to reduce power, volume, mass, noise while increasing sensitivity and generate capabilities.

Next slide. Last but not least JPL has dedicated to meeting best practice standards.

Next one please. We are constantly developing and researching new tools to analyze science data to support the creation of artificial intelligence and simulate unique mission concepts.

Next slide. I hope this brief overview provides a glimpse into what we do at JPL. We welcome your collaborations and look forward to providing research opportunities to students. If you have any questions feel free to contact me at the information listed here. Thank you very much for your time.

Rob: Thank you. Next step we have the Johnson Space Center in Texas and Dana Altmon-Cary.

Dana: Good afternoon. My name is Dana Altmon-Cary. I bring you greetings from the Lyndon B. Johnson Space Center located in the beautiful sub-tropical. Some people say hot city of Houston, Texas. There is an aerial view of our college [life 01:14:26] campus in the corner.

Next slide please. At the core of JSC core competencies is human space exploration. We're home to the Orion Multipurpose Crew Vehicle which is designed to take astronauts beyond [lower 01:14:44] earth orbit, home to mission of control center which operates 24/7, 365 supporting activities aboard the International Space Station and of course JSC is home to use astronauts [school 01:14:57], which is responsible for not only training U.S. astronauts but our partners aboard the international space stations.

Next slide please. It is not our intent at JSC to be a symbol of what Human Space Flight used to be but to continue to lead Human Space Flight into the future. As NASA we're doing business differently. This is primarily driven by the fact that our budget is the

smallest it's been in 50 years. This is called a restructuring of not only Johnson Space Center but offices within. JSC educational personnel serve as agency experts and coordinators in providing intellectual leadership in NASA's four key lines of business which is internship, fellowships and scholarships, educator professional development, STEM engagement and institutional engagement. The beauty of MUREP funding is that one proposal depending upon the scope of the solicitation may contain all elements in all lines of business.

Next slide please. For internships, JSC leads the implementation of intern activities for the agency. We have fellowships sponsored by the space technology mission directorate and of course MUREP.

Next slide. We conduct education, professional development institute. In other words, we teach middle school teachers how to infuse NASA content in their curriculum. Additionally, we support our JSC visitor's center, space center Houston with their Space Exploration Educators Conference.

Female: It's like a lecture.

Dana: Next slide please. Our STEM engagement component conducts [down links 01:16:58] where students communicate with astronauts aboard the international space station. [Microgenics 01:17:05] which utilizes a very unique NASA facility, the Neutral Buoyancy Lab which is a 6.2 million gallon pool. Undergraduate students will be arriving June 1st from all over the nation to design and test their space walking tools. If the tool is successful it might be picked up to be used as a prototype for training purposes in the NBL. Today, community college students across the country are arriving to participate in a fourth session this year of the NASA Community College Aerospace Scholars Program where students will be teaming up for a three-day high in tech program in which they will form a company, design, build and test a Mars rover. Four teams will enter and one will emerge as the victor.

Next slide. Institutional engagement enables formal institutions such as colleges and universities and informal institutions such as museums to strengthen their capacity to support STEM research. I.e. institutional engagement at JSC is also where MUREP programs are housed such as the programs that will be awarded and the ones that are currently awarded.

Next slide. Quick customizable collaborations. We like to refer to those as QCCs at Johnson Space Center. These are projects that we have in three of our four lines of business that are scalable and for which we have pricing available either on a per student or a per educator basis. These projects can be easily inserted into your proposal.

Next slide. Picture me and my sales person's jacket in [flight jacket 01:18:53]. If you're interested in partnering with JSC to incorporate one, two or all the projects into your EONS proposal submission, please contact me. Email is probably best as our voicemail capacity isn't that large or if you're interested in partnering with opportunities outside the current EONS solicitation, please contact me as well. Thank you for your attention.

Rob: Thank you. Next on the list, we have the Kennedy Space Center in Florida and Theresa Martinez. Theresa if you're with us, I believe you need to unmute your phone using star six.

Theresa: Okay sorry, I've tried using the regular mute and I guess a couple of others have tried that as well. Can you hear me now Rob?

Rob: Yes. You sound great. Thank you.

Theresa: This is Theresa Martinez, representing KSC. KSC of course is in Sunny Florida, home of the best beaches and of course Mickey Mouse. I have to give a shout out to Mickey Mouse.

Next slide. My pictures didn't come through either. We should say this is a PDF. I'm not sure what happened there. KSC is, of course we've always been responsible for launches. Now we're going to become the preeminent launch complex for government and commercial space access.

Next slide. What I wanted to focus on here was our technology areas. NASA's research is what we're focusing on is divided into these 15 technology areas.

Next slide. What this slide shows you is the areas that KSC is focused on. We've got robotics, telerobotics, autonomous systems, Human Health Life Support Habitation Systems, Human Exploration Destination Systems and Ground and Launch Systems processing. Then some of the supporting areas below it.

Next slide. Then this next few slides give you a little bit more details. It's of course hard to cover this in five minutes. When these slides are made available, this way you'll have them with some detail built into it as far as the specific technology areas that KSC is focusing on.

Next slide. This is with regard to technology areas. Six.

Next slide. I know I'm covering these very quickly. The reason I'm trying to do that is I wanted to have this information in there for you as a package. I'm trying to cover it quickly here in this presentation. I'm going to have a few more slides with pictures, with regards to In Situ Resource Utilization. One of the things that we have going on

today this week actually is our robotic mining competition. At the end I'm going to say that I'm going to drop off. Please email me if you have any questions because I've got to get back to the robotic mining competition. In Situ Resource Utilization is something that's highly researched here at KSC.

Next slide. Environmental and reliability and maintainability.

Next slide. Again, I know I'm going through these quickly. I just wanted the information there. Here, in these next few slides, what I've done is highlight some very specific examples of the work that's done at KSC. Again, if there's an area that interests you, you can refer to these slides. It will give you some very specific areas of exactly the type of work that's being done within that area. For example storage distribution and contribution of fluids with some very specific examples of that work here.

Next slide. Lifecycle optimization. I've got the red light already. Let's go, [step through 01:23:31] these next slides fairly quickly. Remediation and ecosystem sciences.

Next slide. Life science and habitation systems.

Next slide. In Situ Resource Utilization. One of the other things coming up with this, another competition that's going to be coming up next year is [swamathon 01:23:54] with our [swamis 01:23:54] that are from our swamp works facility out here. In Situ Resource Utilization is extremely important. Being able to get your resources from where you're at.

Next slide. This is an example of some specific work In Situ wire damage detection, rerouting system

Next slide. Ammonia Recovery System for Wastewater.

Next slide. Another very specific example, High-Performance Polyimide Powder Coatings.

Next slide. Life Cycle Optimization of Products, Projects, and Programs. Again, some very specific items listed there.

Next slide. Space Launch, Suborbital Technologies. This is for our future launch capabilities and launch vehicles.

Next slide. Tracking timing communications.

Next slide. Again, these next few slides are the ones I'm going to focus on a little bit more. Ways to be able to partner with NASA and ways to be able to partner with KSC.

You'll see some very specific examples on this page of ways that you can partner with us in addition to some of the solicitations that are out.

Next slide. Everybody is I'm sure aware of nspires.nasaprs.com. That's where those solicitations are posted. You want to register there and be able to get notice of new funding opportunities that come up.

Next slide. Technology Transfer Program. There's a website on the bottom of this page where you can find out some more information about our technology transfer program.

Next slide. Here, I wanted to list all that, all of those links on one page. On that first slide, even though that solicitation is closed, that gives you some very, very specific and detailed information on all of those technology areas that I touched on on those slides. There's a lot of detailed information in there. Even though that solicitation is closed, if you want to find out some really good information on the technology areas that KSC is focusing on, go to that solicitation and read that information. I'll give you some links here again focusing on this technology research areas. Again so that you can do a deeper dive into things I've highlighted in this presentation, partnerships links and then of course a link to Kennedy Space Center to get some more generic information about KSC.

Next slide. Here's my POC info, I need to drop off of this. My information is here. These slides will get posted. Please feel free to reach out to me, ask me questions. I won't be able to answer them today. I am the main contact here at KSC for linking you up to our technical people. Please feel free to contact me later. I'm sorry this was in a rush. It's really hard to cover a lot of material in five minutes. Thank you.

Rob: Thank you. Next on the list, we have the Langley Research Center and Monica Barnes.

Monica: Hello everyone. This is Monica Barnes. I'm very excited to be here presenting to you from NASA Langley Research Center which is located in Hampton, Virginia, in the beautiful Hampton Road Area. It's about three hours south of Washington D.C., about two hours north of the beautiful [inaudible 01:27:56] of North Carolina and about one hour north of Virginia Beach, Virginia. That gives you a little bit of background of where we are.

Next slide please. We are actually situated, next slide. We're actually situated on a beautiful campus. This is an aerial view of NASA Langley Research Center. We are actually really rich with our heritage of innovation. NASA Langley was the original NASA center. It is, we are celebrating 100 years [flights 01:28:35] with the National Advisory Committee for Aeronautics. This is, we actually back then were charged with solving the challenges of flight. We've learned the aviation industry. America's first

astronauts were trained here. Today, we also had the original wind tunnel facilities. We have many unique [inaudible 01:29:00] of world class research facilities that have enabled us to explore space exploration, aeronautics and science to perform experimentation, testing and validation from concept to flight. We're also advancing our next generation aerospace technology.

Today, we are actually you can have the next slide as well. We're actually developing our advanced technologies to be able to demonstrate breakthrough systems that support our three main strategic thrusts of developing concepts, climate and technology. One of those is on demand air transportation in the aeronautics area. We're developing excellent technologies for the next generation of environmentally responsible aircraft and additional flight technologies. We are also understanding, adapting and mitigating our earth climate system through our science and developing instruments that take precise measurements of climate change. Also are providing an excellent data for everyone to be able to understand better about climate change.

Also we are developing space technologies that will enable robotics exploration of distant bodies in the Mars, humans on Mars in 2030. We really are excited about being able to have an environment that centers on one time aeronautics exploration and science visions. We believe that those flow from NASA's missions and goals. That our product lines that we have are provided to be able to develop, integrate innovative solutions to our challenges of reaching our long-term vision. We actually have been focusing on business development as well as our strategic thrust to be able to invest in our workforce as well as optimizing our performance and sustaining NASA's mission through developing the right skillset for our future workforce and for our emerging leaders.

We're also providing revitalization of NASA Langley by upgrading in our 20 year revitalization plan, we are repairing, replacing facilities, the older facilities [inaudible 01:31:47] infrastructure with state of art facilities. We're [boasting 01:31:52] actually the headquarters of the NASA Langley is the lead certified platform, one of the first in the agency.

Also we are providing a comprehensive digital transformation where our science and technology capabilities are being advanced with modeling and simulation, emerging computer science, information technology and transformative future digital environment. We're looking at being able to be able to provide all these as we are developing these three major areas for NASA Langley.

Next slide. I am actually the agency manager for NASA ESTEEM which is Earth Systems, Technology, and Energy Education for MUREP. I wanted to provide a little bit of information about this because as part of our institutional engagement line of business, we are actually promoting earth systems, science literacy with the goal of

increasing our underrepresented minority group in education, increasing opportunities. We actually leveraged NASA's unique contributions in climate science and earth observation data as well as system modeling to be able to provide this type of research in all of the areas and expand across aeronautic science space technology, human exploration as well as education.

We're also the lead for the educator professional development, the agency lead for that at NASA Langley as well. Then also we are transforming our digital learning network into educational technologies integration lab. We also have the NASA internships, scholarships and scholarships line of business and STEM engagement as well with our numerous comprehensive counseling workshops and some state of the art Rockets to Racecars with technology of rockets is compared to the technology of automobiles. Lots of different opportunities have come about through these various projects.

Next slide. I just wanted to also let you know I thought it particularly interesting for this particular call because we are going to be having an opportunity that will come up under NASA ESTEEM later in the summer. I wanted to let you guys know about the fact that this project is a collaborative and unique partnership with not only NOAA and NSF but also between the science mission directorate and headquarters office of Education. These 75 projects that were originally awarded back in, since 2008 have actually grown to touch 377 unique institutions. Some of the byproducts that have come out of this also have been the social network analysis that was actually adapted, actually done under NASA Innovations in Climate Education which was formerly that [inaudible 01:35:12] for NASA ESTEEM now. This was actually adapted by NASA Headquarters to be conducted on all of the MUREP portfolio. That is one of the main things that have come out.

We also helped to develop a tri-agency logic model that has been used by NSF and NOAA and adapted to other organizations like Department of Energy and USGCRP. This project was exemplary and actually featured on the White House fact sheet to be included as one of the projects that was leading in the area of climate change education. What the minority-serving institutions are going to be interested is, we're going to be having more of a tribal focus in the future through our former NASA Innovations in Climate Education-Tribal Award which was awarded last year. We're actually going to continue of similar solicitation this summer.

Also through NASA ESTEEM, we have established group with NSF and NOAA. Their principal investigators all have contributed to tri-agency climate education catalog which has over 200 education resources that are available to the community as well as we're presenting a unique digital expansion through the [inaudible 01:36:41] of useful science theories that have been expanded, lots of adaptation in digital expansion of the project. Then also we have been building a community of practice through our

climate change principal investigators as well as supporting the institutional engagement and the president's core STEM initiatives. I thought it will be useful to you to actually talk about NASA ESTEEM because those opportunities will be coming out as well.

Next slide. This is our contact information. For me, for the NASA ESTEEM project as well as the Langley website, if you would like to find out more information, please go ahead and visit those websites. I appreciate you all listening in today.

Rob: Thank you. Next we have Jennifer Simmons from Marshall Space Flight Center. Jennifer if you're with us star six to unmute your phone.

Frank: Hi, this is Frank Six at the Marshall Space Flight Center. Jennifer is here with me. I'm the University Affairs Officer at Marshall. Welcome to Rocket City USA. That's the nickname that Marshall has because this is where the Saturn V moon rocket was built. What most people don't know is two of the four great observatories were managed by Marshall, The Hubble Space Telescope and the Visible and the Chandra X-ray Observatory. The third grade observatory managed by Goddard the Compton Gamma Ray Observatory then instruments to get all the fame and all was the Marshall instrument, the Gamma-ray burst detector.

What are the projects going on at Marshall now? The biggest Marshall project is the project that probably all the centers are working on. It's managed out of Marshall which is the space launched system. It's the biggest rocket to ever be built on planet earth. Other things going on here at Marshall are the payloads for the international space station. The life control systems on space station that purifies air and water built here at Marshall. The James Webb Space Telescope mirrors tested here at Marshall.

Female: Dr. Six they're not advancing your slides.

Frank: That's all right. I don't want them to advance them yet. The Chandra X-ray Observatory managed here at Marshall and the James Webb Space Telescope mirrors were tested here. Marshall is known mainly as a large engineering center. There is a significant science component mostly in high energy astrophysics here at Marshall.

Next slide please. Next slide please. Next slide please. There are four slides which I don't expect you to pour over now but to take home with you. This tells, what are the areas of strength or capability here at the Marshall Space Flight Center? Why should you care what we do? The reason is there are projects that you can participate in. The largest one is called EPSCoR. An experimental program that stimulates competitive research, run out of the Space Grant [Consortium 01:40:35] in each state. You are asked when you propose against EPSCoR to list a collaboration with a NASA center. It's

important that you have some list of strengths that you can go to for each of the 10 NASA centers. That's what the next four slides I have here show you.

Also you should know that there are opportunities for at least two of the centers where summer faculty members are employed in fellowship programs. Glenn has had the program going the longest since the large summer faculty program was canceled. Glenn has had one with internal fund support. Marshall is just starting one this summer using internal funds. We look at the first one of these areas, propulsion systems are listed here on the first slide. That's what Marshall does most of the time. It's working on propulsion systems.

Next slide please. Spacecraft systems are also a significant area of work at Marshall. All of the systems that you would imagine are necessary like thermal control, communications, guidance and navigation, all of those things work here at Marshall.

Next slide. The vehicles that carry those systems we've referred to as aerospace transportation. You'll see all kinds of studies that go on here, the materials that are used in propulsion systems and on spacecraft. The next slide shows some of those areas in science that are [inaudible 01:42:21] here at the Marshall Space Flight Center. One of the strengths is radiation protection and litigation or longer term missions.

The next one shows you other areas of science like remote control, satellites and remote observatories and/or science. We don't just do things for faculty members. We do things for students also. We have competitions like the Great Moonbuggy Race, rename the Robot Challenge which is looking at technologies for mobility systems on other bodies. That's been going 22 years. The Student Launch Program has been going for 10 years. The National Community College Aerospace Scholars Program started at the Johnson Space Center and Marshall got on their [coattails 01:43:19] four years ago. We have a component of that program. Great program for students at community colleges.

We had a new venture, started last year which was a balloons adventure taking payloads to the top of the earth's atmosphere. 11 community colleges came and participated in that program. We've developed a booklet of minority-serving institution capabilities. If you're not in that booklet, you need to get in touch with us, Jennifer Simmons, to be sure your capabilities are listed in that book. I'd be glad to answer any questions you might have at the end of this survey of capabilities.

Rob: Thank you Frank. Next on the list is at Stennis Space Center. Nathan Sovik.

Nathan: Good afternoon, it's a pleasure to talk to you this afternoon. I'm Nathan Sovik. I am the University Affairs Officer here at Stennis Space Center which means I run quite a few of the higher education programs here. Stennis as Chris Copelan mentioned earlier

is located on the Mississippi Gulf Coast just off the shoreline. We're a very large land area. We actually straddle the Louisiana, Mississippi state line. We're located about an hour's drive from New Orleans. We're all about jazz, jambalaya, crawfish pie, all that good stuff.

Next slide please. What we do, we're small in numbers. That is our staff is maybe the smallest among all these NASA centers. We make up for it. We compensate by being very loud. We are the largest rocket engine test complex. It's the place where all the rocket engines since Apollo have been tested, all the NASA engines at least.

On top of that we have a relatively small but active applied science and technology project office. We run the Gulf of Mexico part of the focus with EPA on managing the resources of the Gulf. We're located right here. There's also unusually for most NASA centers, we're hosting 30 other agencies, in particular the Navy and several of their affiliates. We have universities located here. We have various other federal agencies, EPA, USGS, I could go on and on. There's quite a lot of activity and the staff is probably half NASA-related and a half all the other resident agencies.

Next slide please. I'm just going to step through this, since our focus is mainly on rocket engine propulsion technologies, I'm just going to quickly step through these areas of research. We are an operational center. That is we do research that does lead to the development of rocket engines. We also do the operational part which is the certification, the flight certification of the engines. Active and passive non-intrusive remote sensing. Those of who with a background in remote sensing will think of that term usually in the context of thermal, infrared, ultraviolet, multispectral imagery and sensors. What we also are interested in though is the remote sensing and measurement of parameters such as temperature and pressure, stress, strain, position, vibration, all these things that have to do with the engine test.

Secondly on the list there ISHM, Integrated System Health Management is really a trust that's come up in the last I'd say 10 or a dozen years. What we're trying to do there is make our machines more intelligent. Basically what we're trying to do is detect anomalies, diagnose causes and prognosis of future anomalies and make available all the data information and knowledge that our sensor systems pick up to achieve optimum operation. In that context, we're interested in the methodologies to embed intelligence into the elements of a rocket engine and its [test stand 01:47:53]. Things like sensors, valves, pumps, tanks etcetera. Then develop models that are self-calibrating, self-configuring, self-diagnosing, self-evolving. Then developing the intelligent components, the valves etcetera that can be fused together to predict future events.

On top of that there's the whole visualization aspect to it. It's basically 21st Century systems engineering and technology of sensing [have been 01:48:30] controlled.

Advance non-destructive technology is an interesting. It's a narrow area. We have a lot of high pressure vessels here with walls, they're up to 10 inches thick. One of the things that's difficult to do is to determine flaws in the walls of those vessels and since they're expensive items, doing it non-destructively is really important.

Going on to advanced propulsion systems testing. We do a lot of chemical rocket testing especially the liquid rockets for the agency. We are also interested in advance chemical engines, single staged orbit rocket planes, nuclear thermals, nuclear electric, hybrid rockets and so forth. We're just looking to develop cost effective approaches to develop through testers of future propulsion systems.

Cryogenics, we use thousands of tons of liquefied gases here in a year. The instrumentation needed to measure those gases and those liquids precisely both at low and high flows and at pressures up to 15,000 PSI. This is a very extreme environment sensing. The next thing here is the ground test facility technology. That's a more of a broad category so that we're looking for new innovative ground test techniques, systems for stages, vehicles, sub-systems, components and so forth. That's a grab bag for a lot of needed technologies. We constantly upgrade and modernize our facility, including modeling tools for uncertainty analysis and so forth.

Propulsion System Exhaust Plume Flow Field Definition and Associated Plume Induced Acoustic and Thermal Environments is a mouthful. Basically what that is is looking at plume induced environments. If you look at a rocket that's firing the plume affects its environment. What we're interested in is evaluating that and doing simulations for rocket firings at sea level up to altitude. Even simulating what might happen on the, how it might happen on the surface of the moon or Mars as well as staging firings.

This goal helps management and rocket exhaust plume diagnosis. This refers really to the more traditional piece of remote sensing that is ultraviolet and visible emission spectrometry. What we've done for probably 20 years now is gotten better and better at determining from a rocket plume what's going on. There's wear happening in the engines. There's failure modes. There's combustion stability that we want to look at, evaluate mixture fuel, oxidizer mixture ratios and so forth. We've done this with emission absorption spectroscopy, resonance spectroscopy, laser-induced fluorescence and so forth. If you're interested in any of those things, come pay us a visit. You can even schedule it during Jazz Fest or Essence Fest or some of the other festivals here that we have in this area.

I'm going to go on to the next slide which I think is just my contact information. I probably shouldn't speak for all of the UAOs, University Affairs Officers here. I won't presume. I think they'd probably agree that we as a group facilitate, we're facilitators and guides. If you contact us, we might not have the answer. We'll know who to contact to get the answer and to make the connections between you as a researcher

and the folks that are, the technical folks, the engineers and scientists that are working out at our centers and actually have the need for the research that you can provide.

Please do not hesitate to contact me or any others. If you contact me and we do not have the particular interest that you have a research interest in, I can probably find somebody at another center that I can give you the name of, contact information, pass you on. Think of us as to help you, a help or as a roadmap reader to all the complex and important things that NASA does. With that, I know I'm run out of time here. Let me pass it back to you Rob. Thank you very much.

Rob: I'd like to thank David at Ames, Oscar at Armstrong, Vanessa at Glenn, Jenny at Goddard, Jenny at the Jet Propulsion Laboratory, Dana at Johnson Space Center, Theresa at the Kennedy Space Center, Monica at Langley, Frank at Marshall and Nathan at Stennis for the presentations on center capabilities and interests. The next, we've now completed the formal presentations in today's symposium. We have a few minutes to answer any questions that you may have around center capabilities and interests or around the solicitation opportunities that we shared in the first hour of the session.

While you think about typing questions into the chat box, the chat box available on your screen, let me say this, through today's session, you have been introduced to open mirror expanding opportunities designed to engage educators and students in NASA content. You've also been introduced to the research and engineering strengths in education interest of 10 NASA centers. NASA centers are available to serve as collaborators in the development of your funding proposals. Many of which are due in the coming two months.

As MUREP funding managers Joeletta Patrick shared to start this call today, please consider this to be the beginning of a conversation on how to connect universities and students with NASA opportunities and NASA content. You're definitely encouraged to reach out to all points of contact from today's call. These slides will be posted online, a transcript will be posted online. You're free to contact these individuals after today. I'll now pause and see if any questions have come in via the chat tool. It looks like we have no open questions. We will hang out on the line for two minutes just in case any questions come in. If they don't, thank you for the time today and feel free to follow up with points of contact who have been identified today.

Joeletta: Hey, this is Joeletta. Can I make a couple of comments?

Rob: Please do.

Joeletta: Just a couple of things for those that are considering proposals. I want to encourage you to really reach out to these persons that have given these presentations and

thinking about why most of these solicitations really do need, you need to have a connection to a NASA center. Just how the various unique NASA assets that are available to you through the various centers and how you can implement or utilize those things in implementing the required goals and objectives of the solicitation. That's one thing they really want to have people keep in mind or get in their minds as they're processing how they're propose, what they're going to propose.

The thing is it was mentioned earlier that we definitely do accept proposals through Grants.gov. However I just want to put out that public highly encourage that proposals are submitted through inspired. It is not required that we do accept proposals through Grants.gov. However, when we receive proposals through grants.gov, on our side, we have to transcribe those back into NSPIRES hence the reason why even though if you submit them in Grants.gov, you're still required to have registration in NSPIRES. I just want to put that statement out there as far as to encourage everyone or just to have that in mind.

The other thing that I wanted to make a note of is really make sure that you're paying close attention to your budgets. That's another area that we see sometimes hang up. If there are limits. I know all the proposals don't have limits. If there's limits on how much funding can stay with the MSI, be sure to adhere to those and make sure that you're really doing the calculations. If there's any other restrictions on funding to a center, etcetera that you're making sure you adhere to that according to the proposal guidebook as well as the grants and handbook manual. I think those are some of the things that come to my mind. Rob, I'll turn it back over to you.

Rob: We will give you the last word. Joeletta thanks for today. We have no questions that have come in. Thanks again to the centers. We are all available to assist you in this proposal phase. We're signing off. Have a great afternoon.

Joeletta: Thank you. Have a great one.