Topic Area 9 Office Hours Q&A

Q: Is there any interest in increased sensitivity and precision of passive thermometry in test reactor in-core capsules, and the potential also for retrospective dosimetry to measure the flux and flux gradients within those capsules?

A: That is research that the Department of Energy's Office of Nuclear Energy has invested in in the past, and we definitely see the potential of that technology to continue to be developed to support our efforts. Both temperature monitoring and dosimetry, so neutron flux dosimetry for reactors, that is something that we have supported in the past and that is something that would definitely fall under this category of measuring, monitoring, and controlling reactors.

Q: Is robotic inspection in general part of the scope of this particular area of research? Is it something that is categorized here or it can be categorized in maybe two programs at the same time?

A: That does seem very similar to some work that we've done in the past. That would support this specific topic area, being that it's very similar to work that we've funded in the past. The important thing for this topic area is making a connection to how to support the nuclear energy industry. How it supports that and then how it leverages measuring, monitoring, and controls systems is what we're looking for, but based on your general description, it sounds like it does fall on this category. It may support other categories and you're encouraged to review the other topic areas to make sure that it's the right selection.

Q: Does robust sensor include semiconductor radiation detectors? Is Silicon Carbide a material of interest to NE mission?

A: Yes, in the past, the Department of Energy, Office of Nuclear Energy has funded semiconductor radiation detector development. The caveat is that we are again looking for supporting the NE mission and focusing on the existing reactor fleet and future reactor development. There have been proposals in the past that have been very focused on nonproliferation purposes. Of course, if that technology is cross cutting where it does support nuclear commercial power production, then it sounds like it would fit in this category, but I would make sure that you review some of the past work that's been done. You can find some of that material on the asi.inl.gov website.

Q: Are diamond detectors of interest for radiation detection?

A: Semiconductors across the board would be of benefit. Just tying it to the any mission is the most important aspect when responding to these topic areas.

Q: Is structural health monitoring, structural integrity within the scope?

A: Yes, provided it's tied in with the nuclear energy mission.

Q: Is there an opportunity before the pre-proposals go in to get any more detailed feedback from the program managers or anyone like that?

A: The intention of the pre application phase is to get that feedback, so the answer is no on getting feedback before the Preapplication stage. The invitation from a pre application stage standpoint gives an indication that from a due mission perspective and from a technical merit perspective this was one of the one of the most excellent proposals in the group and is invited to move forward. That doesn't mean

that you cannot submit a not invited application. You can rework that not invited application into a full application based on the feedback that you received from reviewers and then resubmit it as a not invited full application. It just has to meet the NE mission from a relevancy standpoint and then it goes forward into the consideration pool for a potential award at the full application stage.

Q: Do safety-related trip sensors fall within CINR Topic Area 9?

A: That supports the NE mission through either upgrading or updating the existing reactor fleet or supporting the advanced reactor development. It would fall in this category because it's essentially, among the measuring, monitoring, and controls mentioned that would fall under monitoring and controls areas.

Q: Is reactor kinetic related research like transient analysis considered of interest for this topic both experimental and computational?

A: That concept may speak to multiple topic areas, I would encourage you to look at the modeling and simulation topic area, topic Area 8. If part of that work would be simulating what's occurring in the reactor using some sort of model of the reactor system and then you did validation using sensors and you were developing sensors for the purposes of increasing the accuracy of the sensors using that simulation and experimentation, then it would potentially speak to two topic areas. That is up to your discretion of which one you believe it fits best under and we may make recommendations to change that in the future.

Q: For Topic Area 9, do we need to integrate measuring, monitoring and controls, together in one proposal? Would it be acceptable to design a new sensor, and only focus on designing new materials and test the material's behavior under the irradiated environment, without putting much emphasis on the control system?

A: In the past, and I believe that's still the case, that developing just the sensor would also fall under this topic area. In the grand scope of things, we're looking for a technology that will support the industry and having just a sensor developed by itself may not be as advantageous to roll out to the existing reactive fleet or advanced reactive concepts.

Q: Could I submit a pre application to topic Area 9, and then tweak that preapplication a little bit and sending it to the used fuel topic area, to see which one brings more excitement.

A: If the focus of your proposal is on developing a sensor that is used for used full fuel monitoring reasons, it would potentially be focused or relating to this topic area rather than another one. So topic Area 9 should cover across the board since measuring, monitoring, and controls technologies that support the various other programs. If the bulk of the research activity is the development of a sensor, it would fall in Topic Area 9, even if there is some material or modeling work.

If there is a proposal that is very cross cutting, it would be beneficial to have somebody from the used fuel area look at the application of how this sensor may work in there in their space. Then we have those conversations internally to make sure that as we develop our review groups, we're inclusive of different types of reviewers for different types of applications.

Q: If a proposal were submitted on the control systems for advanced reactors, to support flexible and long-term operation, but doesn't involve any sensor development, is that relevant to topic area 9?

A: This is something we've invested in the past and this is something that we're continuing to have interest in. This category does speak to applicants who are interested in control methods, so controls naturally require an input to process and to make a decision. If you were taking off the shelf sensors or instruments, and then you were to apply a new method of using those inputs to determine outputs or methods of control, that would speak to this category, that would be applicable. For this topic area, you don't have to be investing in developing a sensor for it to be relevant. Developing a control method would be equally as beneficial or as applicable to this category.

Q: Is the area of sensor development to monitor oxygen in liquid sodium a better fit for Topic Area 9 or the Strategic Needs Blue Sky topic area?
A. This topic would fit in Topic Area 9.