RARE Parts Teleconference 2/24/15

# Attendees

Chris Root; David Price; Doug Greenwood; Steve Rocca; Mike Nikodinovski; Brian Anderson; Kyle Morris; Dana Ellis; Carl Dekker; Stacey Kerwien; Matt Clemente

Withdrawing from these discussions: Matt Donovan, UTC Aerospace

# Matters Discussed

## Review of America Makes (NCDMM) RFP

### Approach – First examined the America Makes RFP to ascertain appropriate Team approach. RFP elements examined closely are listed below. The team discussion and consensus is captured in italics following the elements on this list.

### The objective: fabricating compact and conformal gas-gas-type heat exchangers (HEXs) for propulsion applications to include design, inspection and evaluation of performance.

*Our discussions covered the nature of this “Directed Project Call” meaning it is NOT funded by NAMMII dollars to NCDMM as America Makes, but is being contracted by NCDMM on behalf of AFRL. The specificity of the application type appears to indicate a specific application/need within the AF. The specificity also might indicate a specific application sector, UAV propulsion system OEMs. NAVAIR is our aviation team member to whom we look for HEX applications for propulsion or related MO applications. One major obstacle emerged – in the maintenance and repair of NAVAIR aircraft systems by the FRCs, the engine systems are returned to the OEM or their authorized prime for repair, maintenance or replacement.*

***The Team was interested in proposing an unsolicited proposal to America Makes that addresses a broader perspective for additive manufacturing of heat exchangers for DoD.***

***If we were in a position to re-orient the objective to address MO needs, or able to propose to America Makes for NAMII funding as an unsolicited proposal demonstrating the RARE team approach to an MO identified need****, involving both NAVAIR (Chris R., David P., Doug G., Yogi and respective staff) and Army (Stacey K., Matt C., Mike N., Brian A. and respective staff) the team agreed to examine heat exchanger/LRU/heat sink needs/opportunities arising from their respective MOs, Laboratory and Engineering sections. Preliminary findings are due to ConnieP by Friday 27Feb. Subject to identification of potential applications, these would next be evaluated by their owning MOs for Business Case suitability for repair or replacement via AM before being proposed as an application for inclusion in such a proposal.*

### RFP Scope requirements and Tasks/Technical Requirements, paying particular attention to the following:

### Novel designs

*RARE Parts team MO identified needs will drive the needed designs and performance requirements. In the case of NAVAIR this project would also have to be vetted through the NAVAIR AM IPT lead, Liz McMichael. This type of application has not yet been identified within their organization thus far.*

*The biggest takeaway is that currently the team does not have the following product related capabilities: “Fabricate HEXs according to the novel designs proposed and incorporate in-situ process sensing during the build. Intentionally incorporate well characterized defects in select designs and demonstrate that they can be successfully inspected reliably as well as provide a baseline for inspectability.”*

### Fabricating designs via the incorporation of *in-situ* process sensing during the build.

*The requirement to utilize in-situ process sensing during the build further limits the participants able to engage in this specific proposal owing to the unavailability of commercial AM powder bed systems equipped with such sensing capabilities. Much research is underway within DARPA at Penn State, ORNL with AM system OEMs, at research institutes abroad working with AM system OEMs, etc. on this type of capability. Thus far no single sensing or monitoring approach has risen to the fore as the Holy Grail affording materials-to-process, layer-by-layer, position coordinate parameter data leading to qualified product properties. The RARE team members will enlist the assistance of their respective labs and engineers in assessing the state of this research and access to its use for MO purposes. At the present time, no-one on the RARE team possesses such in-situ process sensing on their MO available DMLS or other metal powder bed systems.*

### Design and fabricate additional conformal HEXs on interest to the Air Force to be tested by the Air Force Research Laboratory, Propulsion Directorate, Turbine Engine Division.

1. Proposer Eligibility, particularly sub-recipient membership in America Makes

*Requisite membership requirements in America Makes as stipulated in this RFP make industrial members, who are not wanting that membership, nervous in view of yet to be settled negotiations between CTMA, NCMS and NCDMM as America Makes. Members also voiced concern that this would be cause for rejection of a proposal submission to this RFP.*

1. Inkind Cost Share

*Discussions included the eligibility of Gov’t efforts as inkind (does not qualify under DoD Cost Rules); the need to have large companies involved in the performance of the proposed work to generate the necessary inkind cost share to sustain the participation of small company members who cannot afford the matching requirement. Further discussion involved the need for large inkind contributors to additionally donate in excess of the matching requirement to cover the monies that may be paid to Gov’t entities performing technical work as part of the proposed project. Until we know if LMMFC is committed and not submitting a separate response, we don’t know if $675K cost share is obtainable.*

In summary

*During today’s teleconference the RFP and preliminary team scope of work process charts were examined, the members concluded that they could not comply with the requirements as outlined in this RFP. However, they believe proceeding with the investigations as stated above are worthwhile and further discussions to determine how this might go forward as a joint NCMS-CTMA and NCDMM America Makes project is also indicated. They are in support of the submission of an unsolicited proposal if there is good reason to believe it would be seriously considered. Thus their investigations into heat exchanger/LRU/heat sink needs/opportunities within their respective MOs may yield the needed information needed to support a proposal. It was asked if we pursue this alternative submission route, can the time frame be changed to accommodate their needs, both for MO approvals (NAVAIR, Army, and possibly Navy) and industry member legal reviews.*

Respectfully submitted,

Connie

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