



COORDINATING RESEARCH COUNCIL, INC.

5755 NORTH POINT PARKWAY, SUITE 265

ALPHARETTA, GA 30022

TEL: 678/795-0506 FAX: 678/795-0509

www.crcao.org

March 13, 2015

In reply, refer to: CRC Project No. AV-20-14

Dear Prospective Bidder:

The Coordinating Research Council, Inc. (CRC) invites you to submit a written proposal on “Determination of Heat of Vaporization for, and Creating an Enthalpy Diagram for, Jet A and Jet A-1 Fuels,” as described in the attached Statement of Work, Exhibit A.

Please indicate via letter, fax, or email by **April 3, 2015** whether or not you or your organization intends to submit a written proposal for the project. CRC will answer technical questions regarding the Request for Proposal if they are submitted in writing. CRC will then return written answers to all of the bidders, along with a copy of the original questions.

The CRC technical group composed of equipment, petroleum, and government representatives will evaluate your proposal. CRC reserves the right to accept or reject any or all proposals.

The reporting requirement will be text, data and charts to CRC in accordance with Exhibit A Statement of Work. A Final Report documenting the results of the study will be published by CRC. The reporting requirement is described in more detail in the attachment entitled, “Reports” (Exhibit B).

The “Intellectual Property Rights Clause” (Exhibit C) and “Liability Clause” (Exhibit D) will be a part of the agreement, which may be executed as a result of this Request for Proposal solicitation.

The proposal must be submitted as two separate documents. The technical approach to the problem will be described in Part One and a cost breakdown that is priced by task will be described in Part Two. The cost proposal document should include all costs associated with conducting the proposed program.

CRC expects to negotiate either a cost reimbursable or a fixed price contract. Important selection factors to be taken into account are listed in Exhibit E. CRC evaluation procedures require the technical group to complete a thorough technical evaluation before considering costs. After developing a recommendation based on technical considerations, the costs are revealed and the recommendation is modified as needed.

Electronic copies of the technical and cost proposals should be submitted to:

Mrs. Jan Tucker
Coordinating Research Council, Inc.
5755 North Point Parkway, Ste. 265
Alpharetta, GA 30022

Phone: 678-795-0506, Ext. 100
Fax: 678-795-0509
E-mail: jantucker@crcao.org

The deadline for receipt of your proposal is **April 24, 2015**.

Sincerely,

Jan Tucker
Committee Coordinator

EXHIBIT A

STATEMENT OF WORK

Title: Determination of Heat of Vaporization for, and Creating an Enthalpy Diagram for, Jet A and Jet A-1 Fuels.

Category: Scientific Research. Enthalpy charts are used for determining the state of the fuel in the design of fuel systems for, and performance of, gas turbine augmentor or afterburner designs and their operability calculations, and in design and performance considerations of fuel systems where fuel will be used as a heat transfer medium. Different types of fuel injectors in engine main combustors and auxiliary power sources generate many different spray droplet sizes and in several different environments, and these design curves help to determine vapor generation for ignition analysis. These curves provide a source of information when trying to understand what has happened in an aircraft accident and aftermath or a fuel spill and fire investigation. Heat of Vaporization is also use in the study of events where fuel vapor production is an important part of an analysis preceding fire initiation such as in an observed tailpipe fire in a recently shutdown engine.

Relevant Strategic Objectives: To provide data for the CRC Aviation Fuel Properties Handbook where none currently exists.

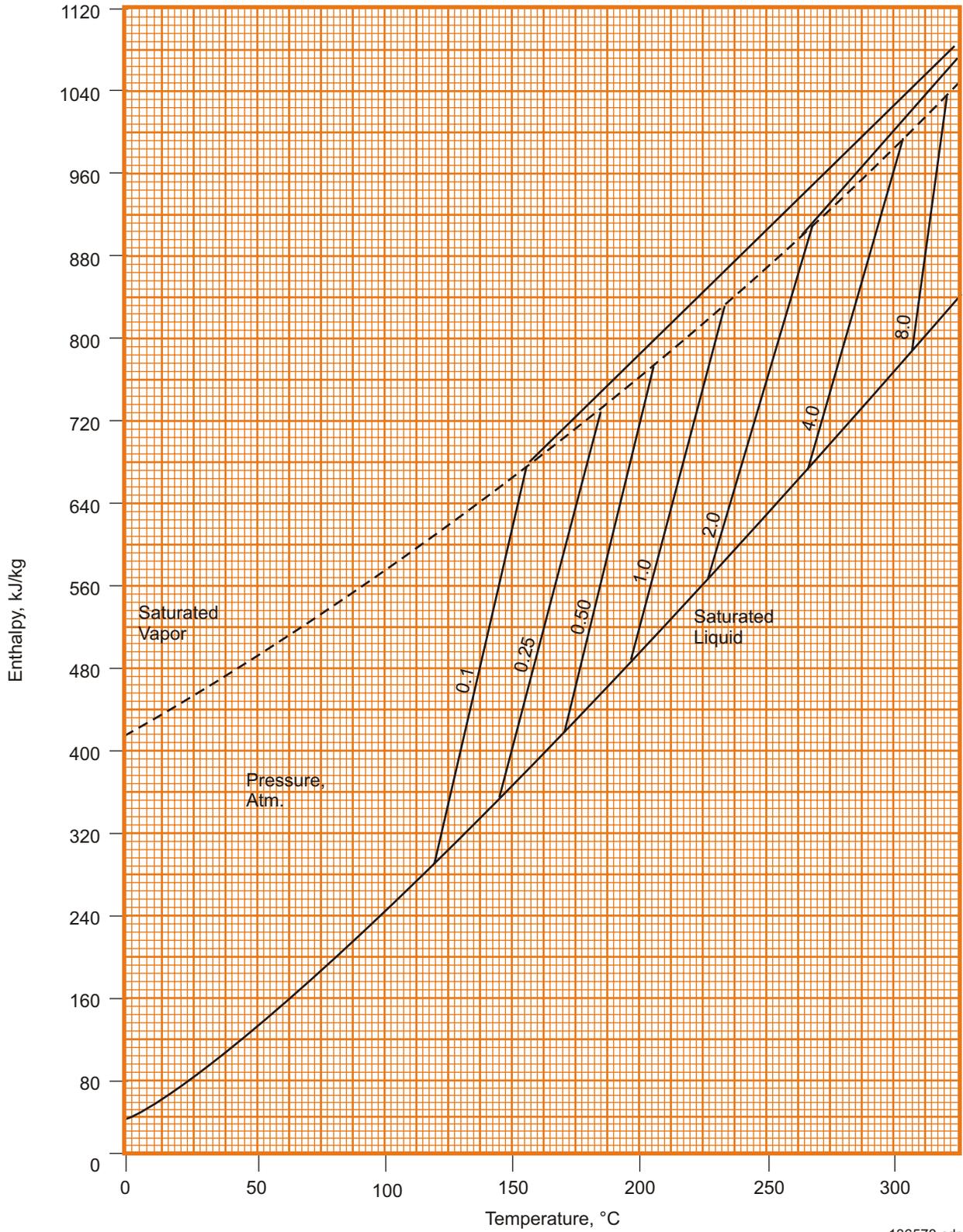
Background: There is no heat of vaporization for Jet A or Jet A-1 in Figure 2-19 in the CRC Aviation Fuel Properties Handbook (the Handbook). There is no Enthalpy Diagram for these two commercial fuels which are the main stay of the Civil Aviation, Figure 2-18 is an example of this type curve, for JP-5. This is because the original data was generated in an era when there was strong Defense Department presence and funding in CRC, and the military fuels were the focus of the group.

Project Objectives: Provide heat of vaporization for Jet A and Jet A-1 for the requisite curve, and replicate Figure 2-18 of the Handbook for Jet A and Jet A-1 fuel (see below).

Project Approach: Obtain fuel heat of vaporization values either generated via manual calculation integrating values of fuel components or measured with Vacuum Thermo-gravimetric Analysis Method, then apply necessary engineering (elbow grease) to manufacture desired curves.

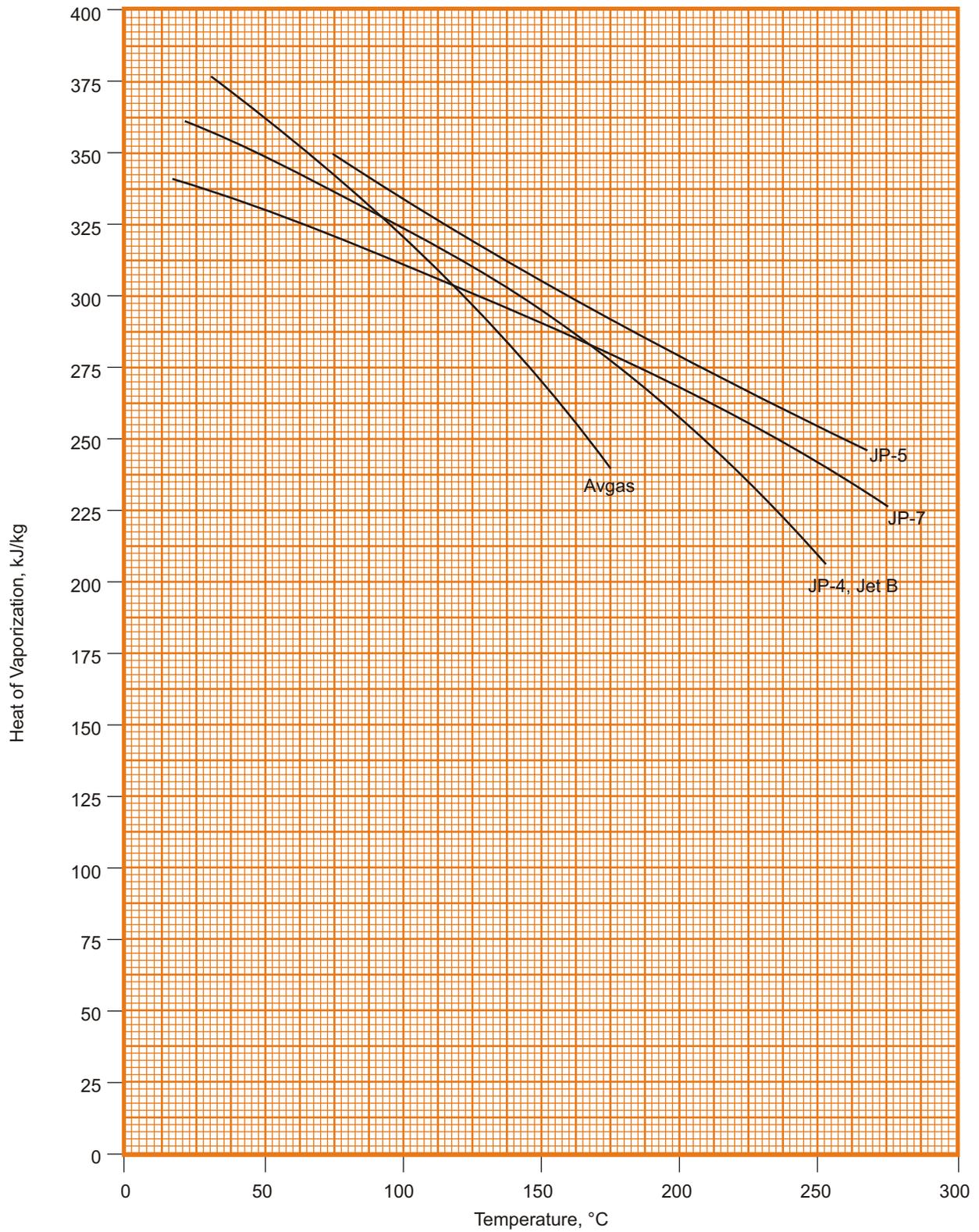
Project Deliverables: Data electronically delivered and also documented in a Final Report to be used to supplement Figure 2-19 of the Handbook (see below) and to create a new Enthalpy map for the commercial fuels.

Utilization of Deliverables: To provide data for design engineers where none currently exists.



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Figure 2-18. Enthalpy Diagram – JP-5



136609.cdr

Figure 2-19. Heat of Vaporization for Various Hydrocarbons

EXHIBIT B **REPORTS**

MONTHLY TECHNICAL PROGRESS REPORTS

The contractor shall submit a monthly technical progress report covering work accomplished during each calendar month of the contract performance. An electronic Microsoft Word compatible file of the monthly technical progress report shall be submitted to CRC by the contractor within ten (10) calendar days after the end of each reporting period. The report shall contain a description of overall progress, plus a separate description for each task or other logical segment of work on which effort was expended during the reporting period in accordance with Exhibit A Statement of Work.

DRAFT AND FINAL REPORT

The contractor shall submit to CRC an electronic pdf-compatible copy of a draft final report after completion of the technical effort for each phase specified in the Statement of Work. The draft final report shall document, in detail, the test program and all of the work performed under the contract. The report shall include tables, graphs, diagrams, curves, sketches, photographs and drawings in sufficient detail to comprehensively explain the test program and results achieved under the contract. The report shall be complete in itself and contain no reference, directly or indirectly, to the progress report(s).

The CRC Technical Committee and Steering Committee shall furnish comments regarding the draft report to the contractor within one (1) month after receipt the draft copy.

Within thirty (30) days after receipt of the approved draft copy of the phase reports, the contractor shall make the requested changes and deliver to CRC thirty (30) hardcopies including a reproducible master copy of the final report. The final report shall also be submitted as an electronic copy in a Microsoft WORD and a pdf or pdf-convertible file format. The electronic copy will be made available for distribution by CRC.

EXHIBIT C

INTELLECTUAL PROPERTY RIGHTS

Title to all inventions, improvements, and data, hereinafter, collectively referred to as (“Inventions”), whether or not patentable, resulting from the performance of work under this Agreement shall be assigned to CRC. Contractor X shall promptly disclose to CRC any Invention which is made or conceived by Contractor X, its employees, agents, or representatives, either alone or jointly with others, during the term of this agreement, which result from the performance of work under this agreement, or are a result of confidential information provided to Contractor X by CRC or its Participants. Contractor X agrees to assign to CRC the entire right, title, and interest in and to any and all such Inventions, and to execute and cause its employees or representatives to execute such documents as may be required to file applications and to obtain patents covering such Inventions in CRC’s name or in the name of CRC’s Participants or nominees. At CRC’s expense, Contractor X shall provide reasonable assistance to CRC or its designee in obtaining patents on such Inventions.

EXHIBIT D

LIABILITY

It is agreed and understood that _____ is acting as an independent contractor in the performance of any and all work hereunder and, as such, has control over the performance of such work. _____ agrees to indemnify and defend CRC from and against any and all liabilities, claims, and expenses incident thereto (including, for example, reasonable attorneys’ fees) which CRC may hereafter incur, become responsible for or pay out as a result of death or bodily injury to any person or destruction or damage to any property, caused, in whole or in part, by _____’s performance of, or failure to perform, the work hereunder or any other act of omission of Contractor in connection therewith.

EXHIBIT E

PROPOSAL EVALUATION CRITERIA

- 1) Merits of proposed technical approach.
- 2) Previous performance on related research studies.
- 3) Personnel available for proposed study – related experience.
- 4) Timeliness of study completion.
- 5) Cost.