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Department of the Air Force: Justification for Other Than Full and Open Competition

Dollar Value of this Acquisition: [redacted]

CERTIFICATIONS: CO certification serves as J&A approval ≤ $10M, *See* **J&A Template Guidance** *at https://usaf.dps.mil/sites/AFCC/AQCP/KnowledgeCenter/SitePages/DAF-Contracting-Compass/Part-6---Competition-Requirements.aspx#exceptions-to-full-and-open-competition-mandatory* J&A Template Guidance tab

Date	Contracting Officer (RFO 6.104-1(12))	Signature
[redacted]		

Date	Technical and Requirements Personnel (RFO 6.104(b))	Signature
[redacted]		

COORDINATION

APPROVALS (RFO 6.104-2(a) Table 6-1 & R-DFARS 206.104-72 Table 206.1)

See J&A Template Guidance (https://usaf.dps.mil/sites/AFCC/AQCP/KnowledgeCenter/SitePages/DAF-Contracting-Compass/Part-6---Competition-Requirements.aspx#exceptions-to-full-and-open-competition-mandatory) - Justification Approvals tab

NOTE 1: A signature block will appear here (replacing these notes) based on the "Dollar Value of this Acquisition" selected above. Since most digital signatures that include date/time-stamps are redacted before they are made publicly available, always insert the date in the "Date" cell when affixing a digital signature to this document.

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I. Agency and Contracting Activity (RFO 6.104-1(a)(1)):

Agency: AFLCMC/ROM
Contracting Activity: Air Force Metrology and Calibration (AFMETCAL) Division

II. Nature and/or description of the action being approved (RFO 6.104-1(a)(2)):

This document approves the award of a contract on a sole source basis to Jung Research and Development Corp (JRAD) for the continued operation and specialized support of the Low Background Infrared (LBIR) calibration facility in support of the Missile Defense Agency's Kill Vehicle (KV) sensor-seekers used in major missile defense systems, such as Aegis Standard Missile-3 (SM-3) interceptors. This justification is made on an Individual basis.

III. Description of supplies/services required to meet agency needs (RFO 6.104-1(a)(3)):

Description of Supplies and Services
This contract is to acquire comprehensive services for the operation, maintenance, research, and engineering support of the Low Background Infrared (LBIR) facility. The contractor will utilize Government-furnished laboratory equipment and facilities at the National Institute of Standards and Technology (NIST).

Required Contractor Capabilities
The contractor must provide personnel with a minimum of 10 years of direct experience in building, maintaining, and operating high-vacuum cryogenic systems for infrared instrumentation. This deep expertise is non-negotiable due to the irreplaceable nature of critical assets like the MDXR and UXR Transfer Radiometers, which have a development cycle of approximately 10 years.

Key Technical Expertise Areas:
• Large cryogenic refrigerator systems and handling of cryogenic liquids
• Design, maintenance, and use of thermal infrared optical equipment
• Maintenance and use of visible and infrared laser systems
• Maintenance and use of cryogenic (20 Kelvin) vacuum Fourier transform infrared radiometers, cryogenic filter radiometers, cryogenic blackbodies, and cryogenic electrical substitution radiometers
• Hardware and software design for data acquisition and automation
• Data reduction, error analysis, and technical reporting
• Design, assembly, and operation of cryogenic imaging, spectroscopic, and radiometric instrumentation
• Mechanical skills for routine maintenance of vacuum pumps and clean room facilities
• Computer operating systems, hardware, security, and networking skills compliant with NIST IT security requirements

This extensive experience requirement is critical given the unique nature of supporting irreplaceable Transfer Radiometers such as the MDXR and UXR. The typical development cycle for these specialized standards spans approximately 10 years. Given their critical importance to MDA mission-critical calibrations, any errors in use, development, or maintenance would result in substantial costs and program delays.

Scope of Work:
The contractor's primary responsibilities include:
• Comprehensive Support: Provide full calibration, operation, and maintenance services for the LBIR facility.
• Capability Enhancement: Conduct research, development, design, and testing of new hardware, software, and metrology infrastructure to improve LBIR's radiometric capabilities.
• On-Site Calibration: Operate LBIR chambers and standards to support the calibration of customer test chambers.
• NIST Assistance: Assist NIST with the calibration of test chamber blackbody sources and other related standards.

Contract and Resource Details:
Anticipated Contract Type: Cost-Type
Appropriations: 0100 Operations & Maintenance, Defense-Wide (O&M, DW), 3600 Research, Development, Test & Evaluation (RDT&E), and 0300 Procurement, Defense-Wide
Estimated Value: [redacted]

[redacted]

Period of Performance: August 1, 2026 through February 28, 2027 (includes six one-month option (FAR52.217-9)

Major Items and Quantities: Personnel (Estimated Annual Full-Time Equivalents - FTEs): 1.5 - 2 FTEs for routine operations, maintenance, and calibration support; 0.1 - 0.2 FTEs for research, development, design, and assembly supporting measurement improvements and development projects

Government Rights in Data and Software:
This section summarizes the Government's expectations regarding the ownership, use, and protection of IP generated under this contract.

• The Government shall have unlimited rights in all data, reports, specifications, technical drawings, software, and other deliverables first produced or delivered under this contract, in accordance with Federal Acquisition Regulation (FAR) 52.227-14, Rights in Data - General, and other applicable FAR and DFARS clauses pertaining to Intellectual Property. This includes the right to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display such data and software.

• The Government requires access to and unrestricted use of any software developed or modified under this contract to ensure long-term support and maintenance of the LBIR facility and its associated systems, including the MDXR and UXR Transfer Radiometers. This is critical for maintaining the accuracy and reliability of MDA mission-critical calibrations over the extended life-cycle of these specialized standards.

IV. Statutory Authority Permitting Other Than Full and Open Competition (RFO 6.104-1(a)(4)):

10 U.S.C. 3204(a)(1), Only one responsible source and no other supplies or services will satisfy agency requirements.

V. Rationale for Use of Authority (RFO 6.104-1(a)(5)):

Jung Research and Development Corp. (JRAD) possesses unique qualifications and expertise essential for the continued support and operation of the LBIR Facility. This acquisition is justified as a follow-on contract due to the highly specialized nature of the required services, equipment development, and the critical institutional knowledge held by JRAD. Allowing another vendor to perform the services would result in unacceptable delays, substantial duplication of effort, and increased mission risk.

A. Unparalleled Institutional Knowledge and Specialized Expertise:

JRAD's continuous involvement with the LBIR Facility, initially as a NIST contractor and subsequently as a key subcontractor, has resulted in unparalleled institutional knowledge. They were instrumental in the design, development, and construction of major LBIR components, including the BXR and MDXR radiometers, which are critical for providing SI traceability for Missile Defense Agency (MDA) interceptor system testing. JRAD personnel currently operate and maintain the LBIR facility and are actively involved in ongoing critical upgrade projects, notably the next-generation User Transfer Radiometer (UXR). This expertise is currently being leveraged under contract number FA226322C0003, awarded on January 25, 2022, on a sole-source basis for operational and maintenance support of the LBIR facility, expiring on July 31, 2026.

The work performed at the LBIR facility extends beyond standard metrology practices, pushing the boundaries of radiometric measurement to achieve exceptional accuracy and precision. JRAD's expertise encompasses not only equipment operation, but also a deep understanding of the underlying physics, the subtle interactions of cryogenic systems, and the identification and mitigation of intricate error sources that can significantly impact measurements at these extreme levels. This profound understanding, acquired through years of hands-on design, fabrication, and operational experience, is crucial for maintaining the reliability and integrity of this unique facility.

B. Critical Ongoing Development Projects and Integration:

The UXR development, initiated in 2016 with nearly [redacted] in Government investment, is in active design and fabrication phases. Given the highly interconnected nature of the components, continuous, in-depth knowledge of the evolving designs and specifications is paramount.

The UXR is not a standalone instrument; it is deeply integrated into the LBIR facility's overall calibration architecture. JRAD's involvement in both the design and development of the UXR, as well as the existing calibration infrastructure, is essential to ensure seamless integration and prevent measurement errors.

Introducing a new contractor at this stage, with design choices and assumptions already established, would lead to significant inefficiencies and potential integration problems. JRAD's intimate knowledge of the design parameters is critical for the success of this project, as the UXR is a custom piece of equipment requiring continuous development and is not a Commercial Off-The-Shelf (COTS) item.

C. JRAD's Deep Involvement and the Need for Continued Expertise (Design Authority, Unique Skillset, System Integration Experts, Consistent Expertise and Institutional Memory):

JRAD's involvement extends far beyond simple operational support. The following details highlight the depth and breadth of their contributions:

• Design Authority: As the original designers and builders of the BXR and MDXR radiometers, JRAD possesses irreplaceable knowledge of these critical transfer standards. This includes a thorough understanding of the materials used, the tolerances achieved, the potential failure modes, and the optimal operating conditions. This knowledge is crucial for diagnosing and resolving any performance issues that may arise.

• Unique Skillset: The development, maintenance, and operation of the LBIR facility and its specialized equipment, such as the UXR transfer radiometer, demands a unique blend of skills, including advanced cryogenics, thermal engineering, radiometry, optical design, and advanced data acquisition and analysis. This skillset is not readily available in the commercial marketplace and requires years of dedicated experience and training.

System Integration Experts: The LBIR facility is a complex integrated system, and JRAD possesses a comprehensive understanding of how each component interacts with the others. This system-level understanding is essential for optimizing performance, troubleshooting problems, and implementing upgrades.

• Consistent Expertise and Institutional Memory: The LBIR facility has evolved over decades, and much of this evolution is embodied in the tacit knowledge held within JRAD's experienced personnel. This institutional memory is critical for maintaining the facility's performance and avoiding costly mistakes. The facility operates at the forefront of measurement science, requiring not only the skills to operate the instruments but also the experience to anticipate errors and determine solutions in cases where those errors are not obvious. JRAD's continuous presence, from development through operation, ensures consistency in the system, which contributes to its reliability.

The unique nature of the LBIR facility and the complexity of the measurement processes mean that a new contractor would effectively have to "start over." While the data generated from the current contract is valuable, it represents only a small fraction of the overall knowledge required. The real value lies in the proficiency and aptitude of data interpretation, the understanding of error sources, and the ability to troubleshoot system problems. This requires the deep institutional knowledge and specialized expertise that JRAD possesses. A new contractor would need to spend years re-learning what JRAD already knows, leading to unacceptable delays and increased costs.

D. Avoidance of Substantial Duplication and Unacceptable Delays; Continuity Requirements:

The work performed at the LBIR facility involves making extremely accurate measurements of infrared radiation at near absolute zero in vacuum chambers where visual inspection is impossible and re-entry causes days of delay. It would take days to warm back up and open the chamber if a contractor needed to do something as simple as tweak a screw setting within the chamber. This is why it is critical to the requirement the same contractor be used throughout the development cycle; they have the ability to recall small, potentially unrecorded details throughout the development cycle that a new contractor may not be able to determine if it were to take over the project midway through its development cycle. This demands the consistent expertise and institutional memory that JRAD possesses from the entire development cycle.

Continuity of support is paramount to maintaining the integrity of the measurements and the operational readiness of the LBIR facility.

Awarding this acquisition to another source would result in the following unacceptable consequences:

• Approximately [redacted]n duplicated development costs (30% of total contract value): This figure is based on a detailed assessment of the work remaining on the UXR development project. If another contractor were to take over, they would need to re-familiarize themselves with the existing designs, re-validate previous test results, and potentially re-design certain components to align with their own expertise and preferences. This includes estimated costs for re-engineering efforts, rework of existing hardware, and additional testing to ensure compatibility. This also encompasses the price to disassemble all of the custom hardware, including the BXR, MDXR, and UXR, to fully document the builds, take measurements, and run tests of all the components.

• Estimated [redacted]n additional total costs: This figure includes the duplicated development costs, inefficiencies due to the learning curve of a new contractor, and the increased risk of errors and measurement uncertainties. This [redacted]cost also includes the costs of schedule delays, which have very real financial implications for the programs the LBIR facility supports.

• Devastating 4-5 year delay in fulfilling MDA mission requirements: Based on our knowledge of the industry, the complexity of the technology, and historical timeline for the program's arrival at the current level of proficiency, a new contractor would require significant time to learn the intricacies of the LBIR facility, the nuances of the measurement processes, and the specific requirements of MDA's mission-critical calibrations. This learning curve would inevitably lead to delays in the delivery of calibration services and the support of MDA's testing programs, jeopardizing critical national defense objectives.

E. Conclusion:

Therefore, JRAD is the only vendor capable of providing the required services without substantial cost duplication, unacceptable delays, and unacceptable mission risk to critical national defense objectives. Consequently, this acquisition is justified as a follow-on contract for the continued provision of highly specialized services.

VI. Integrated Market Analysis and Efforts to Solicit Competition (RFO 6.104-1(a)(6), (8), and (10)):

The Government has made extensive efforts to identify potential sources capable of fulfilling the LBIR Service Contract requirements and to encourage competition. These efforts, detailed below, have consistently yielded limited responses, ultimately pointing to a lack of qualified vendors other than Jung Research and Development Corp. (JRAD) with the specialized expertise and experience necessary for this contract.

A. Historical Market Research (2015)

In 2015, AFMETCAL conducted a Sources Sought Synopsis (SSS) for LBIR Service Contracting. While two potential sources responded, and one additional source was identified through market research but did not respond, the effort was ultimately canceled due to other priorities and the Air Force Primary Standards Laboratory was tasked with providing interim services.

B. Continuous Market Monitoring (2015-Present)

Since the initial SSS in 2015, the Government has continuously monitored the marketplace for potential sources. This ongoing effort included:

• Regular Internet Searches and Trade Journal Reviews: Consistently monitoring industry publications and online resources for new entrants and advancements in relevant fields.

• Participation in LBIR Related Forums: Engaging in weekly teleconferences and quarterly reviews specific to LBIR, as well as participation in Calibration Coordination Group (CCG) meetings (comprising subject matter experts from the Army, Navy, and NIST) and CALCON meetings on Characterization and Radiometric Calibration for Remote Sensing.

• Engagement with Industry Experts: Attending advisory group meetings and National Conference of Standards Laboratories International (NCSLI) seminars.

Despite these continuous monitoring efforts, no companies, other than JRAD, demonstrating the comprehensive expertise and capabilities required for this contract were identified.

C. Previous Contract Sources Sought (2020)

A second SSS with a draft Statement of Work (SOW) was posted on SAM.gov on June 12, 2020 (Solicitation #FA2263-20-R-0004). This solicitation resulted in only one initial response from JRAD. Following this limited response, targeted emails were sent to all previously identified companies. This targeted outreach resulted in one additional response from L-1 Standards and Technology, Inc (L-1). Further investigation revealed the following regarding L-1's response: Dr. Steven Lorentz, President of L-1, indicated they were not interested in pursuing the contract at that time, despite acknowledging L-1's applicable expertise in LBIR and awareness of the solicitation. Dr. Lorentz further stated that AFMETCAL's "current contractor" (referring to JRAD) was likely the best option, assuming they submitted a proposal. He also indicated that L-1 might reconsider if a suitable candidate were not found. This highlights the limited pool of qualified sources and L-1's acknowledgement of JRAD's superior qualifications.

D. Current Sources Sought (2026)

A Sources Sought Notice (Notice ID: FA2263-2-C-0003_SSN) was published on SAM.gov to identify potential sources capable of providing continuity of critical calibration, operation, and maintenance services at the Low Background Infrared (LBIR) facility located at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD.

The primary objective of this market research was to determine if there were capable sources that could meet the Government's requirement for a short-term bridge contract. Critical capabilities evaluated included the ability to begin performance immediately without a break in service, possession of niche technical expertise in high-vacuum systems and specific cryogenic radiometers (BXR, MDXR, UXR), and the ability to provide personnel meeting stringent educational, experience, and NIST security requirements.

The Government received and evaluated three (3) responses to the Sources Sought Notice. The respondents and the Government's capability determinations are summarized below:

Jung Research and Development Corp. (JRAD)
JRAD submitted a comprehensive response demonstrating exceptional, highly specialized capabilities directly aligned with the SOW. As the apparent incumbent, JRAD possesses over 23 years of direct experience operating within the specific NIST LBIR facility. Their personnel were instrumental in the original design, construction, and ongoing operation of the government-furnished equipment (BXR, MDXR, UXR) critical to this requirement. Furthermore, JRAD confirmed that its personnel are fully compliant with the SOW's stringent educational and experience requirements, currently hold the necessary NIST site access, and are actively engaged in the required tasks.

• Determination: JRAD is uniquely qualified and is the only identified source capable of meeting the Government's requirement without an unacceptable break in service or an extensive, high-risk ramp-up period.

Kingdom Wealth Enterprises
Kingdom Wealth Enterprises submitted a response demonstrating a general understanding of infrared test and measurement services, including LBIR chambers and cryogenic systems. However, the submission functioned more as a general capabilities statement rather than a direct response to the immediate, specialized needs of the SOW. The vendor failed to provide evidence of experience with the unique government-furnished equipment at the NIST LBIR facility, did not confirm their personnel met the stringent educational requirements, and did not demonstrate an ability to begin performance immediately. Furthermore, it is highly unlikely the vendor could obtain the required NIST site access and security clearances in the time frame required to prevent a break in service.

• Determination: Kingdom Wealth Enterprises is not considered a capable source for this immediate bridge requirement, as utilizing this vendor would result in an unacceptable disruption to critical services.

BHPE LLC
BHPE LLC submitted a brief letter of interest noting their status as a Service-Disabled Veteran-Owned Small Business (SDVOSB). The response referred the Government to their website but completely omitted any specific details regarding technical capabilities, relevant past performance, or personnel qualifications related to LBIR systems.

• Determination: BHPE LLC is not considered a capable source, as they provided no substantive evidence to evaluate against the requirements of the SOW.

F. Synopsis Requirements

Consistent with FAR 5.2, this proposed contract action will be synopsized on SAM.gov prior to award, providing a final opportunity for any other qualified vendors to come forward.

G. Conclusion of Market Research

The Government has conducted thorough and ongoing market research, including multiple Sources Sought Synopses, targeted outreach, and continuous market monitoring. Despite these efforts, the responses received, and the lack of identification of other qualified sources, indicate a highly limited pool of vendors capable of meeting the specialized requirements of this contract. Based on the evaluation of the recent Sources Sought responses, the Government has determined that only one responsible source, Jung Research and Development Corp. (JRAD), possesses the requisite facility-specific knowledge, specialized technical expertise, and properly vetted personnel to successfully perform this short-term bridge contract.

JRAD has consistently demonstrated a unique combination of expertise, experience, and familiarity with the LBIR facility. While the Government is committed to maximizing competition, the available evidence suggests that JRAD is the only source capable of providing the required services at a reasonable cost and within the required time frame. Awarding to any other source would require an extensive, high-risk ramp-up period, resulting in an unacceptable break in critical calibration services and ultimately leading to mission failure.

VII. Determination of Fair and Reasonable Cost (RFO 6.104-1(a)(7)):

The Contracting Officer is responsible for evaluating, determining, and documenting the anticipated contract cost/price is fair and reasonable in accordance with RFO Subpart 15.4, Contract Pricing.

VIII. Any Other Facts Supporting the Justification (RFO 6.104-1(a)(9)):

The National Institute of Standards and Technology (NIST) plays a critical role in advancing measurement science and maintaining national calibration standards, operating under the statutory authority granted by 15 U.S.C. § 272. The Low Background Infrared (LBIR) facility at NIST is essential to this mission, serving as the nation's primary reference standard for infrared radiometric measurements.

A. Strategic Importance to National Defense:

The LBIR facility is of paramount strategic importance to national defense, directly supporting the Missile Defense Agency's (MDA) mission. Accurate and reliable infrared radiometric measurements are crucial for the development, testing, and deployment of effective missile defense systems. The LBIR facility provides the traceability and accuracy necessary to ensure the performance and reliability of these systems. Any disruption in LBIR services would significantly impact national defense capabilities.

B. Unique Technical Requirements and Lack of Commercial Solutions:

The field of infrared radiometric metrology is a highly specialized discipline characterized by unique technical requirements that cannot be met by commercial off-the-shelf (COTS) solutions. These requirements stem from the need for:

• Custom-Engineered Equipment: The precision required for infrared radiometric measurements necessitates custom-engineered equipment and specialized instrumentation designed specifically for this application.

• Cryogenic Environment Expertise: The LBIR facility operates in cryogenic environments, requiring specialized expertise in cryogenic systems, materials, and measurement techniques.

• Mission-Critical Performance: The mission-critical role of the LBIR facility demands one-of-a-kind components and systems designed for precision infrared radiometry in cryogenic environments. These components are not commercially available and require specialized design, fabrication, and calibration.

• Specialized Knowledge and Experience: Maintaining and operating the LBIR facility requires personnel with extensive specialized knowledge and practical experience in low-background infrared calibration, optical design, cryogenic systems, and data analysis.

The specialized nature of LBIR services, coupled with the lack of commercial alternatives, underscores the critical need for a contractor with the unique technical expertise and experience necessary to maintain and operate the facility effectively.

IX. Actions to Overcome Barriers to Competition (RFO 6.104-1(a)(11):

While the current market research indicates limited competition for the LBIR Service Contract, the Government remains committed to fostering future competition. The following strategies will be implemented to encourage new entrants and enhance the potential for competitive sourcing in subsequent procurements.

A. Contract Structure & Design:

• Phased Approach with Option Years: The contract will be structured with a one-year base period and three option years. These option years provide natural breakpoints for reassessing market conditions, evaluating the effectiveness of competition enhancement strategies, and introducing competitive opportunities if feasible.

• Data Rights Acquisition: All deliverables and technical data generated under this contract will be acquired with unlimited rights. This will ensure that the Government retains access to the necessary information to support future competition, including detailed specifications, processes, and technical methodologies.

B. Ongoing Market Development & Surveillance:

• Periodic Market Assessment: Prior to the exercise of each option year, a thorough market research effort will be conducted. This assessment will focus on identifying new entrants, evaluating changes in existing vendor capabilities, and exploring potential technological advancements that could impact the competitive landscape.

• Continuous Market Monitoring: The Government will maintain active surveillance of the industry through ongoing engagement in industry conferences, technical meetings, and collaborations with other government agencies involved in similar activities. This proactive approach will allow the Government to identify emerging capabilities and potential new sources of supply.

C. Barrier Reduction Initiatives:

• Comprehensive Knowledge Transfer: The Government will require the contractor to thoroughly document all processes, procedures, and technical methodologies used in the performance of the contract. This comprehensive documentation will serve as a valuable resource to enable future competition by providing potential offerors with the information to assist in understanding the requirements and develop competitive proposals.
Technology Standardization: Where feasible, the Government will promote the development of standardized measurement protocols and common technical interfaces. This standardization effort aims to reduce the complexity of the contract requirements and make it easier for new vendors to enter the market.

• Small Business Development: The Government will encourage the prime contractor to utilize small businesses through

subcontracting opportunities and mentor-protégé relationships. This will help to develop the capabilities of small businesses and increase their potential to compete for future LBIR service contracts.

D. Previous J&A:
The previous J&A for these highly specialized services provided that the Government would conduct market research to account for any significant changes in the market prior to exercising options years, and that the Government would continue to monitor the marketplace throughout the acquisition cycle. Market research was conducted and documented in the contract file prior to each option year to attempt to identify additional responsible sources for the effort. The marketplace was monitored on an ongoing basis throughout the entire timeline of the current effort through communication with industry participants and stakeholders to include discussions, meetings, conferences, inquiries, and literature. These actions were carried out as stated with no further sources being identified IAW DFARS PGI 206.304(a)(S-70)(ii), the approval authority has determined the planned actions from the previously approved J&A were completed.