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DEPARTMENT OF DEFENSE SBIR PHASE I

Proposal Evaluation Report

Solicitation:	DoD SBIR 25.1
Topic Number:	N251-001 (Fictional)
Topic Title:	Advanced Corrosion Detection for Naval Structures
Service Branch:	Navy (NAVAIR)
Proposal Number:	N251-001-####
Company:	[redacted]
PI:	[redacted]
Phase I Amount:	$140,000
Evaluation Date:	March 2026
Recommendation:	SELECT FOR AWARD

PROPOSAL TITLE

Machine Learning-Enhanced Terahertz Imaging for Non-Destructive Evaluation of Sub-Surface Corrosion in Naval Aircraft Structures

EVALUATION CRITERIA AND SCORING

DoD SBIR Phase I proposals are evaluated by panels of subject matter experts against the criteria published in the solicitation. Proposals are rated on each criterion using a descriptive scale. The following criteria and weights apply to this solicitation:

Evaluation Criterion	Rating	Score
Technical Merit and Innovation (30%)	Outstanding	9.2 / 10
Military Relevance and Transition (25%)	Excellent	8.5 / 10
Team Qualifications (20%)	Outstanding	9.0 / 10
Cost Realism and Reasonableness (15%)	Good	7.5 / 10
Commercialization Potential (10%)	Good	7.0 / 10
WEIGHTED COMPOSITE		8.5 / 10

EVALUATOR 1 COMMENTS

Technical Merit and Innovation

- **Strength:** The combination of terahertz imaging with convolutional neural network classification represents a genuine advance over current eddy current and ultrasonic inspection methods for detecting sub-surface corrosion.
- **Strength:** Preliminary data from laboratory specimens demonstrate detection of corrosion damage at depths up to 6mm beneath composite skin panels, which exceeds the 4mm capability of current field-deployable systems.
- **Strength:** The ML classification approach addresses the key limitation of THz imaging - the need for expert interpretation - by automating defect identification with a reported 96% accuracy.
- **Weakness:** Testing has been limited to laboratory-prepared specimens. The proposal should more clearly address how the system will handle variability in real aircraft structures including paint, sealants, and multi-layer composites.

Military Relevance and Transition Potential

- **Strength:** The proposal identifies a specific and validated need: corrosion detection in F/A-18 composite structures during depot-level maintenance at Fleet Readiness Centers.
- **Strength:** A letter of support from NAVAIR PMA-265 confirms interest in the technology and willingness to provide access to representative test structures.
- **Weakness:** The Phase III transition pathway beyond NAVAIR is described at a high level. The proposal would benefit from identifying specific acquisition program insertion points and timelines.

Team Qualifications

- **Strength:** The PI has 12 years of experience in THz systems development with multiple peer-reviewed publications in the specific application area.
- **Strength:** The company has successfully completed two prior Navy SBIR Phase II awards in related NDE technologies.

Cost Realism

- **Weakness:** The budget allocates 45% to labor for the PI and one research engineer, which is appropriate, but the equipment line item for THz source components appears underestimated based on current market pricing.
- **Weakness:** Travel budget does not include visits to Fleet Readiness Centers for on-site testing, which is described in the work plan.

Commercialization Potential

- **Strength:** Dual-use applications in aerospace MRO and infrastructure inspection are credible.
- **Weakness:** The commercial market analysis relies on broad market sizing without identifying specific commercial customers or partnerships.

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EVALUATOR 2 COMMENTS

Concur with Evaluator 1 assessment. This is a strong proposal addressing a real fleet maintenance need. The technology is at an appropriate readiness level for Phase I, and the proposed work will generate the data needed to determine whether a Phase II is warranted. The PI is well-qualified and the prior SBIR track record demonstrates execution capability. Recommend for award with the budget concerns noted.

EVALUATOR 3 COMMENTS

Strong technical proposal with clear naval relevance. The THz-ML combination is innovative and the preliminary data support feasibility. Two concerns: (1) the proposal should address the operational environment more explicitly, as depot-level inspection occurs in hangars with varying temperature and humidity that can affect THz measurements, and (2) the training data for the ML classifier needs to include a wider range of corrosion morphologies than the four types demonstrated in preliminary work. These are addressable within the proposed Phase I scope. Recommend for award.

PANEL CONSENSUS RECOMMENDATION

Recommend for Selection. The panel unanimously recommends this proposal for Phase I award. The technology addresses a validated fleet maintenance need with an innovative approach supported by credible preliminary data. The budget should be adjusted to correct the equipment cost underestimate and include travel to Fleet Readiness Centers as described in the work plan. Estimated adjusted budget: $147,500.

Note on DoD SBIR evaluations: The level of feedback provided to applicants varies by agency and service branch. Most DoD SBIR applicants receive only a selection or non-selection notification with minimal written feedback. Some branches provide a brief paragraph summarizing the evaluation. This expanded format is provided for educational purposes to illustrate what evaluators consider.