

STATEMENT OF WORK

9 Ampere-Hour Prismatic Mercuric Oxide/Zinc Cell

1. INTRODUCTION

This document describes the U. S. Government's need for the development and engineering of a capability to fabricate moderate numbers of highly reliable, sealed, high energy density mercuric oxide/zinc cells. One hundred ten (110) sample cells will be delivered for evaluation 9 months after contract start. Later phases of this program may involve the construction of 550 cells for qualification in FY-79 and 1 -- 2,000 cells for operational use in FY-80. This contract action involves the first phase only (Task 1).

2. PROJECT GOALS

The contractor will review existing electrochemical and mechanical performance parameters and process techniques for mercuric oxide/zinc cell construction. The contractor will then duplicate the design of this cell which could reasonably be expected to meet the target specifications. Sample cells will then be tested against those specifications. Additional design work will be conducted to overcome any shortcomings in performance. A statistically significant number of cells will be constructed and tested to confirm design performance against the electrical, mechanical, and environmental requirements. One hundred ten (110) engineering samples will be delivered to the government for test and evaluation. All engineering test data, design drawings, and process specifications will be included in a final report.

3. TARGET SPECIFICATIONS

- a. Voltage 1.34 nominal 1.0V cutoff
- b. Capacity 9Ahr @ 2 ma @ 75°F
- c. Rate 15mA max at 75°F
- d. Shelf Life 90% rated capacity after 3 years at 75°F
- e. Leakage 10^{-8} cc/sec Helium @ STP
- f. Deflection 0.050" at center of case under any rated condition of temperature, rate or discharge
- g. Temperature 55°F to 140°F
- h. System Mercuric oxide/NaOH:H₂O/Zinc
- i. Environmental Type I equipment
- j. Life 3 years combined storage and use
- k. Size 1.4" X 1.6" X 0.6" max

4. PROGRAM PLAN

Attached (Figure 1)

5. DELIVERABLES

- a. One hundred ten (110) each hermetically-sealed, corrosion resistant cells meeting the target specifications.
- b. Five (5) copies of monthly letter reports on technical and financial status.
- c. Five (5) copies of a final report including test data, design drawings, and process specifications.

6. TECHNICAL PROPOSAL REQUIREMENTS

The technical proposal should contain:

- a. The background and test data base necessary to design the required cells.
- b. Envisioned design alternatives including, if possible, a preferred design concept.

- c. Design calculations to indicate theoretical feasibility of meeting each of the target specifications.
- d. A detailed project plan.
- e. A list of applicable references and supporting documents.
- f. A detailed cost proposal for 10 and 100 deliverable units.

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