

FINAL REPORT

for

Site/Systems Operations Maintenance and Facilities
Management of the Department of Energy (DOE)
Atmospheric Radiation Measurement (ARM) Southern Great
Plains (SGP) Cloud and Radiation Testbed (CART) Site

DOE Contract No. DE-AC02-98CH10914

for the Period

May 1, 1998 through April 30, 1999

Submitted to

U.S. Department of Energy
Chicago Operations Office
9800 South Cass Avenue
Argonne, IL 60439

DOE Patent Clearance Granted

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Office of Intellectual Property Law
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8/31/05
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INCORPORATED

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TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1
2.0 DESCRIPTION.....	2
3.0 TECHNICAL REPORT SUMMARY.....	4
4.0 MILESTONE SCHEDULE SUMMARY	5
5.0 TOTAL LABOR SUMMARY	6
6.0 TOTAL COST SUMMARY	7
7.0 CONTRACT LABOR AND COST SUMMARY.....	8

ARM Program, Southern Great Plains, Clouds and Radiation Testbed
Site/Systems Operations and Maintenance and Facility Management
Support.

DOE Contract No. DE-AC02-98CH10914

Final Report

Period: May 1, 1998 through April 30, 1999

1.0 INTRODUCTION

This report is the Final Report submitted by ERC, Incorporated under DOE Contract No. DE-AC02-98CH10914. It is submitted to the US Department of Energy, in fulfillment of the reporting deliverable obligations as defined in the contract.

This report provides a summary of activities at the ARMS CART Site in its Systems Operation, Maintenance and Facility Management for the entire contract period of May 1, 1998 through April 30, 1999.

A Monthly Status Reports was submitted including the following contract deliverables:

- Technical Progress Report
- Milestone Schedule/Status
- Contract Labor and Cost Summaries

Each of these elements was contained in independent report sections.

2.0 DESCRIPTION

The Atmospheric Radiation Measurement (ARM) Program was initiated to provide scientific information and meteorological data needed to improve General Circulation Models capable of predicting the timing and magnitude of greenhouse gas-induced global warming, and the regional effects of such warming. The ARM Program will contribute to this endeavor by improving the treatment of cloud radiative forcing and feedback in General Circulation Models.

The Department of Energy's (DOE)/ARM Program has established the first of three field sites to provide atmospheric and related data for the ARM Science Team. This site, the Southern Great Plains (SGP) Cloud and Radiation Testbed (CART), is operational under Argonne National Laboratory technical management and it is operated, maintained by ERC under this contract.

The ARM SPG CART is expected to continue operations for a ten year period. Currently, the CART site is fully operational, with on-going meteorological observations being made daily and with continuing upgrading of facilities and capabilities development being implemented.

The SGP CART site covers an area of approximately 50,000 square miles of mostly flat land that stretching across eastern to mid-Oklahoma and into eastern and mid-Kansas. The site has a Central Facility that is located near Lamont, Oklahoma. The Central Facility consists of approximately 160 acres located on undisturbed farmland. It houses ten trailers, 2 instrument shelters, 2 storage sheds, 3 locations for instrument development, an instrumented 60m tower, locations for the 915 and 50 MHz radar wind profilers with Radio Acoustic Sounding Systems (RASS), cloud radar, Raman Lidar Eddy correlation, and central and optical trailer clusters of instruments deployed in site open areas. The Central Facility site also includes storm shelters for use by personnel during severe weather conditions.

The manned sites consists of trailers to shelter instruments and site activities. These trailers facilitate connection to site computers and provide communication lines to the Central Facility. The trailers are positioned to facilitate connection to computers and communication lines. Fiber optic links and power lines are routed to each trailer with lines being buried in independent conduit leading to each of the trailers. Special connection points to fiber optic lines for the Central Facility field data ingestors have been housed in the trailers. A phone/intercom system is also used to provide trailer-to-trailer communications.

Functionally coupled to the central site are boundary and extended facility sites. These sites are at remote, strategic locations over the SGP CART area. Extended sites consist of deployed instruments and instrument clusters and some will be designated launch sites for radiosonde soundings— the boundary sites are located along the four sides of the area perimeter. These are daily manned as needed and are designated as launch sites for daily balloon radiosonde soundings.

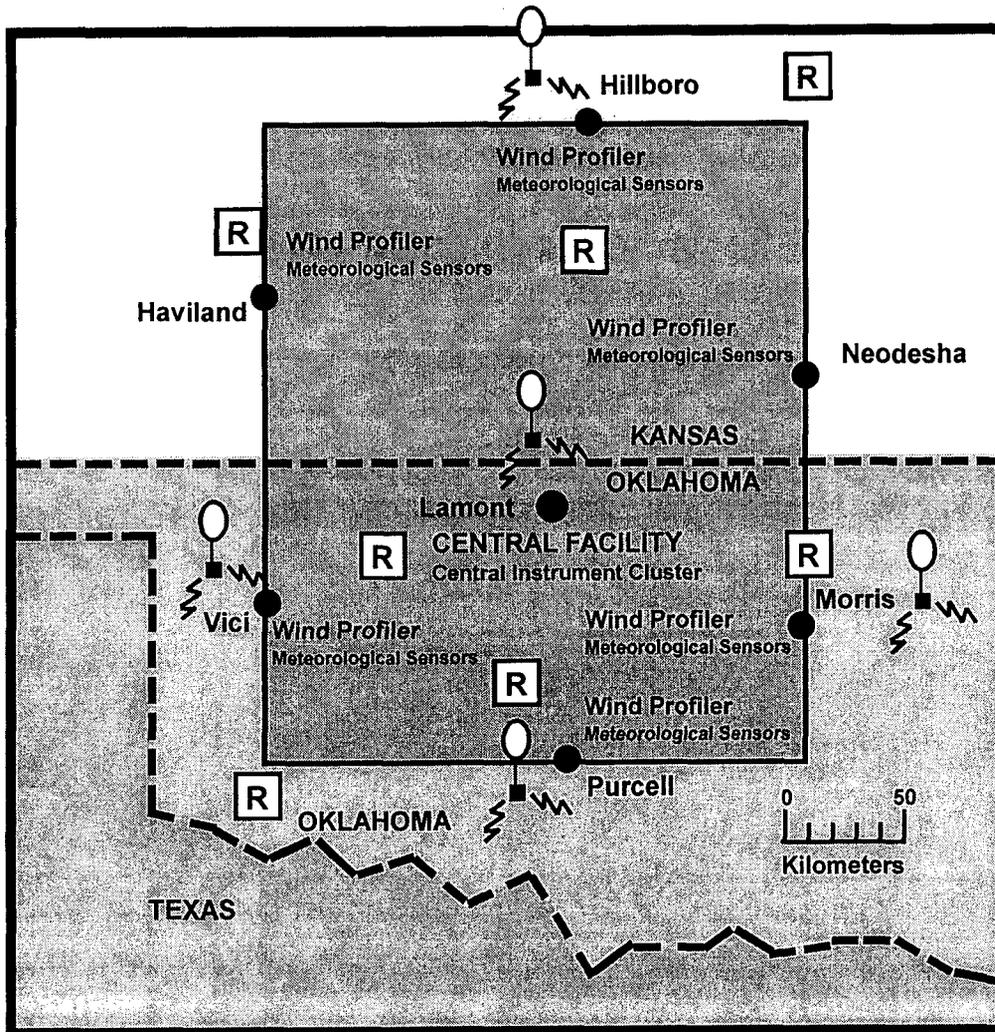


Figure 1. Map Detail of the DOE SGP CART

Under the scope of work, all ERC personnel that are assigned to perform under the terms of this contract were physically located within a 180 mile radius of the ARM Southern Great Plains CART Central Facility located near Lamont, Oklahoma.

The principle work location for the CART on-site staff was:

DOE/ARM SGP Central Facility
 Rural Route 1,
 Box 70
 Billings, Oklahoma 74630

As included in full operations of the CART, other work locations encompass the following un-staffed or part-time staffed facilities: six (6) auxiliary and twenty-two (22) extended facilities located in north central Oklahoma and south central Kansas.

3.0 TECHNICAL REPORT SUMMARY

ERC successfully completed all technical requirements of the contract as listed below:

1. Provide site implementation support
2. Develop and provide operations and maintenance training
3. Develop, validate, and implement site/system operations, maintenance, and repair schedules and procedures
4. Develop, validate, and implement site/system certification, acceptance, and hands-off procedures
5. Develop, validate, and implement site/system documentation and document maintenance
6. Provide integrated logistics support, including staffing, budget, and property management
7. Provide oversight of the site safety program including implementation of the Argonne National Laboratory Environmental Safety and Health (ES&H) requirements

In addition to these seven cited work efforts, ERC assisted (as requested by the DOE functional teams) in the following implementation activities:

- Site/System installation and checkout
- Site/System integration, testing and review, including development schedules
- Documenting and maintaining the physical plant configuration
- Developing and documenting the operator interface with the site data system
- Establishing and operating the site infrastructure
- Defining requirements and procedures for site/system inventory and configuration management

With relation to the site technical requirements, the existing and planned SGP CART Site instrument systems were covered under ERC technical management and operations. These instruments are designed for acquiring scientific mission data and require contractor operation and maintenance.

4.0 MILESTONE SCHEDULE SUMMARY

The schedule for the ARMS SGP CART Site Operations is provided below. This schedule covers the entire contract period from May 1, 1998 to April 30, 1999.

SCHEDULE / MILESTONES

ARM SGP SITE OPERATIONS, MAINTENANCE AND FACILITY MANAGEMENT DE-AC02-98CH10914

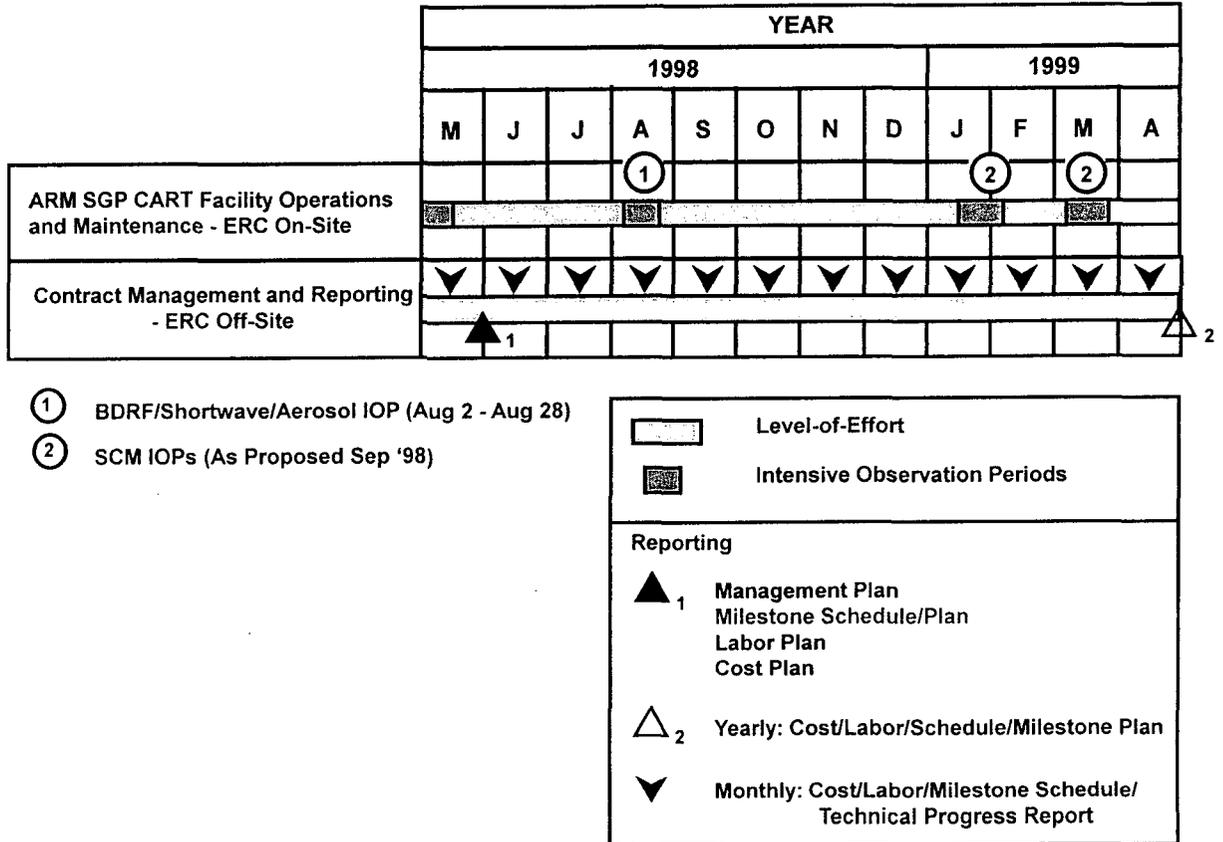


Figure 2. Schedule / Milestones

DOE Contract No. DE-AC02-98CH10914 has been completed on schedule with all milestones met.

5.0 CONTRACT LABOR SUMMARY

Labor utilization for the period May 1, 1998 through April 30, 1999 is summarized in Figure 3 as actual billed labor against the budgeted labor. The budgeted labor is per the Management Plan / Labor Plan (ERC-R-98-014). The labor variance is also illustrated. Cumulative labor utilization was 51,853.2 man-hours for the entire contract period.

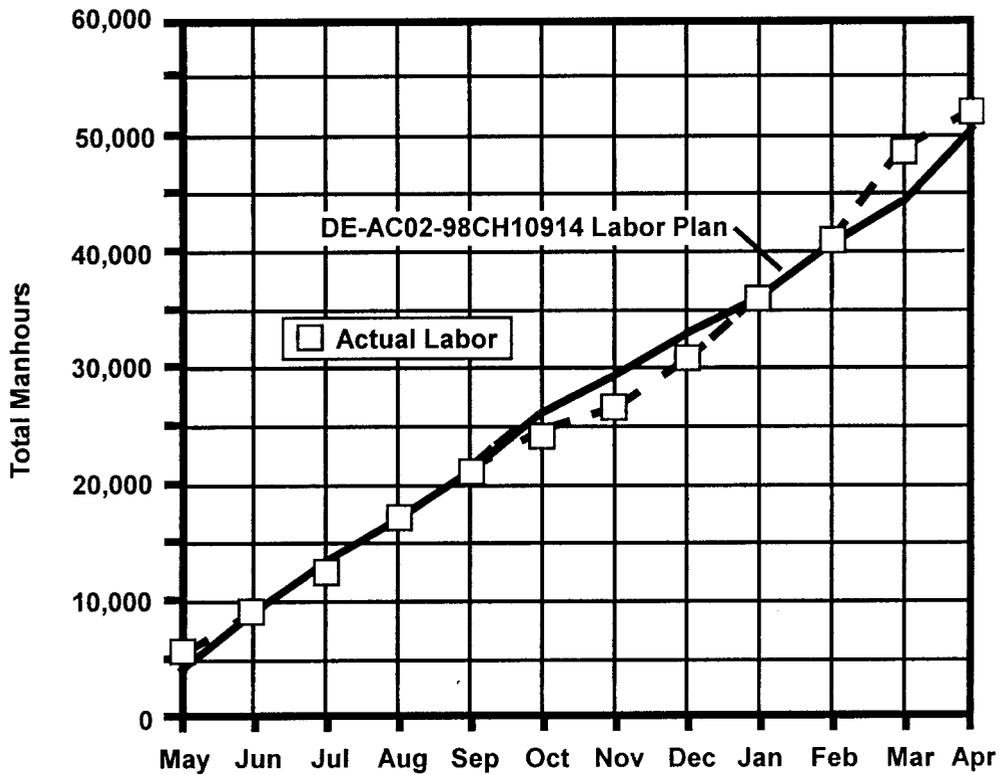


Figure 3. Contract Labor Summary

6.0 CONTRACT COST SUMMARY

Total Cost performance is summarized in Figure 4 as actual billed costs versus budgeted total costs as per the Management Plan / Cost Plan. Cumulative Total Contract Cost was \$1,558,286.00 for the entire contract period.

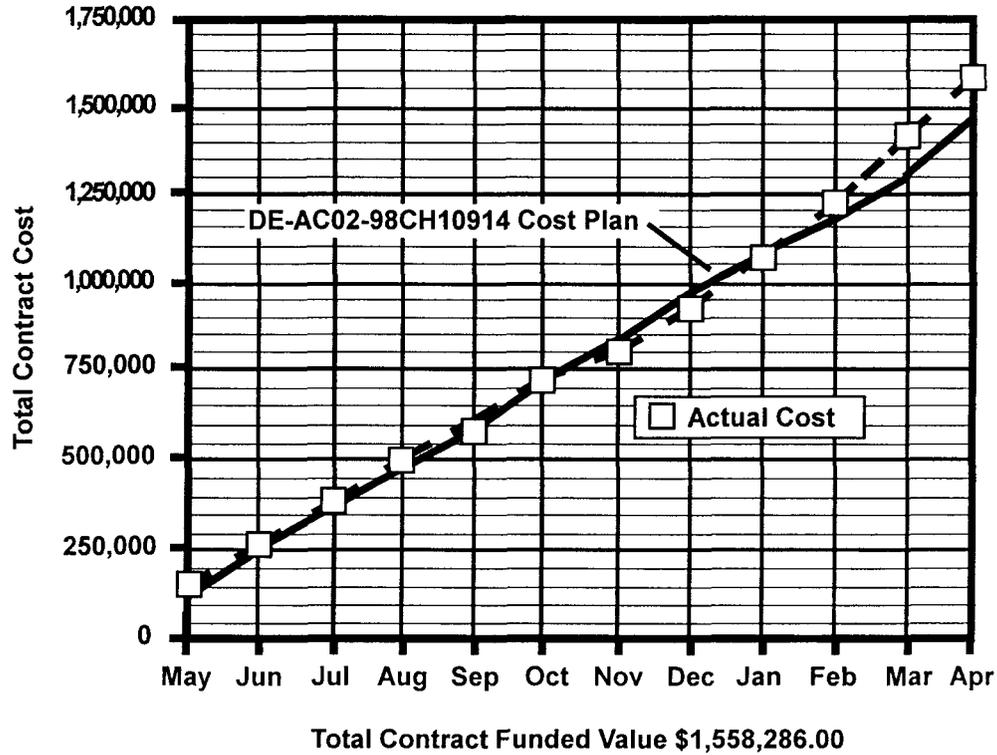


Figure 4. Contract Cost Summary

7.0 CONTRACT LABOR AND COST SUMMARY

The following table provides tabulated cost information for the contract period May 1, 1998 through April 30, 1999. Cumulative Total Contract Costs are presented.

CONTRACT DE-AC02-98CH10914 TOTAL LABOR AND COST SUMMARY May 1, 1998 THROUGH APRIL 30, 1999

ITEM	CUMULATIVE
Direct Labor Hours	51,853.2
Direct Labor Cost	\$ 840,515.00
Subtotal – Direct Labor	\$ 840,515.00
Other Direct Costs	
Travel	\$ 19,889.00
Other	\$ 57,574.00
Total Labor plus ODC	\$ 917,978.00
Total Indirect Costs	\$ 534,060.80
Fee	\$ 106,247.20
Total Cost Plus Fixed Fee	\$ 1,558,286.00

Total Contract Funding = \$1,558,286.00