TIM #1 MEETING MINUTES

SCADA COMPONENT DESIGN, INTEGRATION, AND SUPPORT AT CAMP STANLEY STORAGE ACTIVITY, TEXAS CONTRACT FA8903-04-D-8675, TASK ORDER 0027 - (PARSONS JOB 745101)

Date: Monday, 6 August 2007
Time: 10:30 P.M. – 2:00 P.M.
Place: Camp Stanley Storage Activity (CSSA)
Subject: SCADA and Maximo Integration
Attendees:

Attendee	Organization	Phone
Kent Rohlof	AFCEE	210-536-2543
Tom Tijerina	CSSA Engineering	210-295-7473
Glare Sanchez	CSSA Environmental	210-295-7453
Eli Wright	CSSA Public Works	210-336-0077
Julie Burdey	Parsons-Austin: CSSA Program Manager	512-719-6062
Brian Vanderglas	Parsons-Austin: Project Manager	512-719-6059
Kyle Caskey	Parsons-CSSA: Construction Manager	210-204-8529
Scott Pearson[1]	Parsons-Austin: Task Manager	512-719-6087

[1] Minutes prepared by Scott Pearson, Parsons-Austin.

The agenda, presentation slides, and materials are included as Attachment 1 and meeting hand-outs are included as Attachment 2.

INTRODUCTIONS AND PURPOSE

The meeting was opened with brief introductions. The purpose of the meeting was to discuss the progress, status, and outstanding issues related to the SCADA projects.

PROJECT STRUCTURE REVIEW

Scott Pearson and Brian Vanderglas provided a brief project overview of the project organization, scoped tasks, project goals, and work activities for SCADA construction completed thus far. The SCADA system consists of a data server, four workstations, and a multitude of instrumentation at nearly 40 locations throughout the facility. The primary monitoring of CSSA systems includes water distribution, wastewater treatment, natural gas and electrical distribution and usage, HVAC monitoring, and various environmental nodes (wells, weather stations, and remediation systems). The SCADA connectivity is accomplished using a combination of wired Ethernet communications via the CSSA fiber optic network and wireless VHF communications to remote locations.

The entire SCADA project is funded over three task orders (TO). The original TO 0011 is a WERC cost plus fixed fee (CPFF) contract that established the project scoping documents, design, and initial construction phase. Under TO 0190, The SCADA scope and design was expanded under a 4PAE CPFF project to extend the SCADA network to additional infrastructure, as well as provide integration and connectivity to the CSSA Maximo system. The

actual construction of the additional TO 0190 design has been implemented under the WERC TO 0027 firm fixed price (FFP) contract.

System Controls and Instrumentation (SCI) from Converse, TX is the SCADA systems integrator. Task orders TO11 and TO0027 are almost completely constructed, however, SCI is completing punch list items identified by Parsons. After SCI has completed these punch list items to Parsons' satisfaction, the SCADA system will be ready for CSSA and AFCEE review. SCI will be providing a 2-year warranty on parts and labor, and a 200-hour technical support service agreement which will be pre-paid as part of the Parsons subcontract after acceptance of the SCADA system by the government and its conveyance to CSSA.

Matrikon International will be providing the integration between the SCADA and Maximo systems (TO 0190). The draft Project Activities Work Plan (PAWP) for implementing that task is expected to be issued for review by August 10, 2007.

STATUS OF SCADA CONSTRUCTION AND IMPLEMENTATION

The objective of this meeting agenda topic was to update CSSA and AFCEE of the progress and issues associated with the various elements of the SCADA system. For purposes of this meeting, an item was footnoted as "complete" if the construction was finished and communications had been established with the SCADA server. However, outstanding punch list items are still being addressed and corrected. This review occurred by task order and location. A summary from that review is given below:

TO 0011

Two workstations and communications between the instrumentation sites (wireless radio/repeater and Ethernet) have been established. Some connectivity issues have been occurring with the workstations since the Server license key was broken at Building 2. ***Note:*** *This situation has been rectified by August 10, 2007.*

With the exception of well CS-9, the automation of the water distribution system is complete. Well CS-1 and the chlorination perform very well in "auto" mode. Well CS-10 is also automated and is interlocked with the Building 54 chlorination system. However, there is a disparity between the flow meter readings at the wellhead, RTU, and those from the SCADA server. This disparity is being addressed. The implementation of well CS-9 was delayed during the well rehabilitation project, TO 0022. In May, TCEQ gave approval to operate CS-9, and SCADA construction resumed shortly after. SCADA construction is nearly complete at CS-9. The Building 54 chlorinator is waiting for a new flow meter as well as a tap to the chlorine analyzer flow cell.

There was discussion concerning potential descoping of elements related to disinfection tablet system monitoring to help pay for additional items. Parsons indicated that any savings realized would be minimal since all of the SCADA components installed for automating and monitoring the chlorine gas disinfection will be used if the system is ever converted to tablet disinfection.

The original project was to integrate a new tablet chlorinator (provided under a different TO) at Building 54. However, to date this system has not been approved by the TCEQ. To make the distribution system automated, the existing gas chlorination system was integrated instead, per CSSA's request. The disinfection process is achieved through the SCADA system

by interlocking the operation of wells CS-9 and CS-10 with the gas injector pump. The gas volume is delivered by a manual setpoint as maintained by the well operator. Thus far, the system has performed satisfactorily with well CS-10. With the current setup, programming controls will be implemented so that both wells CS-9 and CS-10 cannot pump at the same time thereby reducing the dosing concentration of the chlorine gas.

Primary electrical metering has been completed at eight locations and all are functioning. The South Leg Distribution node has been partially dismantled to facilitate the main gate construction, in progress. Tom Tijerina asked if the system could be tested for government acceptance using a temporary power source. Mr. Pearson replied that the data from RTUs not fully connected can be tested remotely using a laptop computer for government acceptance of the equipment. Parsons indicated that location ED-4 is also installed and operational, but a bad fiber link, between Buildings 44 and 45, is preventing communication to that RTU. That damaged link will need repair by CSSA for that RTU to perform correctly prior to testing. Tom Tijerina inquired whether a note could be added to the screen to advise users of the situations. Parsons will look into what sort of notices can be added to the screen.

Equipment at the emergency generator has been installed and is communicating with the server. However, connectivity to the generator can not be achieved because of an inoperable communication board on the Stewart-Stevenson generator controller. That item will need to be replaced by CSSA for the data to be transmitted to the server.

Installation of end-point monitoring for electrical, water, and gas utilities are completed at Buildings 1, 38, 98, A100, and 201. Secondary power at Building 1 has not been transferred to the new transformer bank; hence no telemetry is available through SCADA until that transfer is complete. At Building 4, AST monitoring cannot be completed until the tanks have been relocated and commissioned (TO 0006).

For environmental applications, only one weather station is currently communicating with the SCADA system. Working with the manufacturer, Parsons has been troubleshooting the older station, at Well 16, and has been replacing older parts with new equipment. The weather station is now functioning properly, but SCI needs to finish the connectivity to the RTU. The two SVE remediation systems at Building 90, and the GAC Shack near Well 16, are reporting to the SCADA system. Many of the legacy In-Situ miniTroll transducers are having difficulty communicating with the SCADA system. Four of these legacy transducers have been sent to the manufacturer for replacement of malfunctioning electronics. The newer LevelTroll transducers installed specifically as part of the SCADA work are operating correctly and communicating with the server.

TO 0027

The SCADA server installed at Building 2 is operational, as is the workstation at Building 73 (Water Lab). A workstation has been installed at Building 1 (Herman Stinson's office), but firewall/network issues are still being resolved. Installation of the Building 36 (Security) workstation is pending building construction completion.

Installation of electrical, water, HVAC, and temperature monitoring instrumentation at Buildings 1, 1A, 36, 44, 45, 73, 90, 91, 92, 93, 94, and 96 is complete and all are operational.

At the wastewater treatment plant (WWTP), construction and equipment installation are complete and communicating with the server. However, problems with calibration of the pH

probe to correlate with the total chlorine analyzer meters are still being resolved as part of SCI's punch list. SCI is troubleshooting this instrumentation with the manufacturer, and will be replacing components if necessary. Parsons/SCI will review the dissolved oxygen sensor calibration with Eli Wright.

TO 0190

The updated scoping and design documents (IWP, CQAP, and HSP) for the TO 0027 construction were completed in Fall 2006. The content of the draft PAWP was discussed. ***Note:*** *The PAWP outlines the integration of SCADA and Maximo and was submitted on August 10, 2007, shortly after this TIM #1.* The draft PAWP includes all the requirements requested for SCADA asset management in Maximo, and provides initial alarm set points for the SCADA system and the Win-911 dial-out notifications. The PAWP also provides a baseline for Maximo work orders and the threshold limits that will trigger those work orders.

At the request of the CSSA IT department, the actual integration of Maximo and SCADA will begin in October 2007. The integration by Matrikon is expected to take about two weeks, and will be followed by a training program for CSSA and designated contractors that will last several days.

ESTIMATE TO COMPLETE

Brian Vanderglas provided hand-outs that summarized the financial and physical percent complete for each TO (Attachment 2). For TO 0011, 96 percent of the funds are expended, with approximately $20,000 remaining to complete 3 months of project management, final delivery of the O&M manual, and complete the minor outstanding issues with SCADA installation and programming, and inspections of TO-0011 SCADA assets.

For TO 0027, approximately 11 percent of the project remains, which includes one more progress meeting, 3 months of project management, and completion of the programming and inspecting of the TO 00027 SCADA assets.

TO 0190 is 49 percent complete through July 2007. Outstanding items include 3 months of project management, one progress meeting, O&M updates, and the integration and training on the CBM-Max software. Since the CBM-Max integration will not begin until early October 2007, the tasks of integrating and training will be completed very close to the end of the period of performance (POP) of all three projects (October 31, 2007). Brian Vanderglas and Kent Rohlof suggested that the POPs for TO-0027 and TO-0190 be extended to provide time to complete all tasks to the satisfaction of the government, and allow sufficient time for project close-out. Mr. Vanderglas indicated that a POP extension for TO-11 might be problematic since additional months of activity would require more management than the project can currently afford. Parsons will initiate the no-cost POP extension requests for TO-0027 and TO-0190.

Parsons estimates the remaining construction and punch list items will be complete by the end of August. Prior to performing the Pre-Final inspections, Tom Tijerina indicated that CSSA would like the opportunity to "kick the tires" on the system for a couple weeks. To this end, Mr. Tijerina asked if a high priority could be assigned to setting up user IDs and passwords. The SCADA users and security levels have been previously defined, and the CSSA IT department is working on providing the ID names to Parsons/SCI. Once that process is complete, SCI will program the software with the appropriate users and security measures. One additional idea discussed was whether one, "read only," user ID could be generated that everyone could use.

Kyle Caskey was tasked to provide simple tutorials to assist CSSA with understanding how to log onto the machine and access the system. CSSA indicated they would like all of their public works staff and environmental staff to be given the opportunity to work with the system prior to conducting inspections.

The pre- and post-final inspections to achieve government acceptance are expected to occur during September 2007.

OTHER ISSUES

Natural Gas Measurement

CSSA indicated that the primary objective of the gas meters is to confirm metered readings from the purveyor and a secondary objective is to identify leaks. Under TOs 0011 and 0027, Parsons has installed 10 natural gas flow meters to report the consumption. Three of these meters are installed at the incoming gas service and the two major trunk lines (near Gate 9), while the remaining meters are installed at end-use locations (Buildings 1, 1A, 4, 38, 90, 98, and A100). Due to the very low gas flow at CSSA, these meters can not register gas flow accurately. The type of natural gas meter specified was a vortex-shedding flow meter, which requires a minimum pipe velocity of about 10 feet per second (ft/sec) to register an accurate flow rate. The zero readings of the flow meters suggested that the gas velocities were likely too small to be measured by the vortex-shedding flow meters installed.

In January 2007, CSSA provided Parsons with copies of the gas utility bills (see Attachment 2). Assuming the September 2005 through August 2006 time period is typical of four-season usage, a summary of the flow rates and estimates of velocities were made. Approximately 99 percent of the gas consumption occurred during the colder months between November 2005 and April 2006. The balance of the gas use (about 1 percent) occurred during the summer months, when it is probably consumed by pilot flows and other small uses such as building water heaters.

The average velocity of gas through the 3-inch service entrance near Gate 9 was also calculated based on the monthly use indicated by the gas bills. The annualized average velocity in the existing 3-inch pipe was calculated at 0.556 ft/sec, with a summer average of 0.012 ft/sec and winter average of 1.119 ft/sec. Peak demands could easily deviate from these averages, but instantaneous flow rates cannot be ascertained from the monthly totals. Nevertheless, the natural gas flows in the CSSA distribution system are well below the minimum threshold of 10 ft/sec required by the 3-inch vortex shedding flow meters at all but the highest flow rates. Similarly, the smaller diameter buildings flow meters have the same limitation.

Solutions to the problem include finding alternative gas measurement techniques, or re-evaluating the objectives based upon the actual consumption used by the facility. Parsons proposed augmenting the vortex shedding meters with either temperature-compensated diaphragm type meters with pulsed meter outputs or electronic thermal mass meters.

In contrast to the electronic vortex shedding flow meters, diaphragm flow meters are positive displacement mechanical meters having a diaphragm with readout similar to a household gas meter. Instead of a continuous, real-time output provided by the electronic flow meter, the diaphragm meter sends an electronic "pulse" to a remote telemetry unit (RTU) each time 0.2 cubic feet of gas is dispensed to the regulator, resulting in a "quasi real-time" output. The advantage of the diaphragm meter is its ability to measure very low flow rates, even down to

the pilot level. These meters will accurately measure the natural gas usage no matter the season (summer or winter) or the flow rate, and they are relatively easy to install. One drawback is that these meters are not designed for subgrade installations that would be required at the gas service main near Gate 9.

The second alternative discussed was electronic thermal mass flow meters to measure the very low flows/velocities typical in the CSSA natural gas distribution network. Although sensitive, a thermal mass flow meter cannot turn down to measure extremely low flow rates such as pilot flows, but they are sensitive enough to monitor most all of the natural gas flow anticipated at service entrance, but not the individual buildings. Below are the pro's and con's of each meter type:

Mechanical Diaphragm Meters

- Pro's
  - Accurate for very low flows (even pilot light)
  - Low-tech approach that can be easily integrated into existing system
- Con's
  - Above grade completions only
  - Pulse output....not true "real time" data

Electronic Thermal Mass Meters

- Pro's
  - True real time data if flow velocity criteria is satisfied
  - Below grade completion available
- Con's
  - Reduce line size to ½ inch with slight pressure drop
  - Wont register flows during warmer months with low gas use

Considering the very lows flows, it is unlikely that a leak can be reliably detected at most of the monitoring locations.

If building meters would be replaced, Tom Tijerina indicated that he would favor using the mechanical diaphragm meters. However, he is not sure that all locations need to be monitored except for some of the larger consumers (Building 89 boiler, Building 4 Car Wash and Motor Pool). At the service entrance, Tom requested that Parsons revisit with Grey Forest Utilities to explore the possibility of connecting to their proposed new regulator/meter. This alternative would replace the current gas main and two trunk line meters. Tom indicated that he needs to consult Joe Ovalle (CSSA Public Works) before making any final decisions on which types of meters and which locations need to be monitored.

Inspections and Government Acceptance

Government acceptance of the SCADA system will be a two-tiered approach consisting of a pre- and post-final inspection. Parsons distributed an example form for the inspection criteria for government comment (Attachment 2). It is anticipated that the government acceptance will

be based upon several criteria including construction and operational aspects, server/workstation functionality, and data report format and content. Parsons anticipates being ready for the inspections in September 2007.

Several items were noted that will not be ready for inspection due to circumstances beyond Parsons' control. These include the following:

- Various CSSA well transducers that require manufacturer maintenance;
- South Leg Electrical Distribution until Gate Project is complete;
- Building 45 – CSSA Fiber Optic connection is sporadic;
- Emergency Generator – CSSA has not replaced communication module;
- Building 36 Workstation cannot be installed until construction is complete; and
- Building 1 Secondary Power has not been transferred to new service.

ACTION ITEMS

Parsons

- *Look into a (temporary) single user-ID and password (read-only) that would allow CSSA personnel to test-drive the system.*
- *Consult with SCI to replace the outdoor view screens at the Well CS-10 and Reservoir and make engineering improvements to protect for sun.*
- *Ensure that well CS-10 flow meter discrepancies are addressed on the punch list.*
- *Parsons will request a POP extension for SCADA TO-0027 and TO-0190 through at least January 2008 to complete all tasks and provide ample time for transitional support and maintenance after the system is accepted by the government.*
- *Contact Grey Forest Utilities to get specifications on possibility connecting SCADA to their utility meter. Also find out when they are planning to replace the meter/regulator as discussed in October 2006.*
- *Meet with Joe Ovalle and Tom Tijerina to evaluate gas metering locations and determine objectives and final course of action for CSSA's gas monitoring program.*
- *Work with CSSA IT and SCI to establish user IDs, passwords, and security levels for access to SCADA system as soon as possible.*
- *Repair, replace, and recalibrate malfunctioning sensors at WWTP as soon as possible.*

CSSA

- *Replace the Stewart-Stevenson Communication board on the Emergency Generator.*
- *Complete Switchover at Building 1 from old transformer bank to new pole-mounted transformers.*

- *Re-establish fiber optic connectivity to Building 45 from Building 44, or other location where a SCADA RTU on the fiber optic network already exists.*
- *CSSA IT to provide user IDs to Parsons/SCI so that security access can be programmed into the server and workstations.*
- *Notify Parsons when Building 36 construction and networking is complete so that the remaining workstation can be installed and configured.*
- *Review and provide comments/input on the alarm parameters given in the draft PAWP on SCADA/Maximo integration.*
- *Replace solar panel (contract direct with SCI) at the South Leg Electrical Distribution node when front gate project is complete.*
- *Authorize CSSA transducer repairs for legacy miniTrolls that are in need of maintenance. Costs will either be incurred under a separate TO (groundwater monitoring/O&M), or directly billed to CSSA.*
- *Provide input into Pre- and Post-Final inspection criteria for government acceptance of SCADA system.*

ATTACHMENT 1

MEETING AGENGA AND PRESENTATION SLIDES

CSSA SCADA PROJECTS

SUBJECT: TO 27 TIM #1 Status Meeting

SIGN-IN SHEET

NAME	ORGANIZATION	LOCATION	PHONE	E-MAIL
Brain Vanderglas	Parsons	Austin	5127196o	brian.vanderglas@parsons.com
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Kyle CASKey	PARSONS		210-204-8570	KERRY.K.CASKey@PARSONS.C
Glow Sanchez	CSSA	CSSA	210-295-74[illegible]3	sanchezg@enviro.dept.net
TOM T. jerins	CSSA	CSSA	210-336-2372	
Kent Rohlof	AFCEE	Brooks CB	210 536-2543	kent.rohlof@brooks.af.mil

Technical Interchange Meeting (TIM) #1

SCADA Component Design, Integration, and Support at Camp Stanley Storage Activity – Boerne, Texas

August 6, 2007

Camp Stanley Storage Activity

AFCEE WERC FA8903-04-D-8675

Task Order 0027

PARSONS

Meeting Agenda

10:30 am – 10:45 am ***Subcontractor Structure & Management by TO***

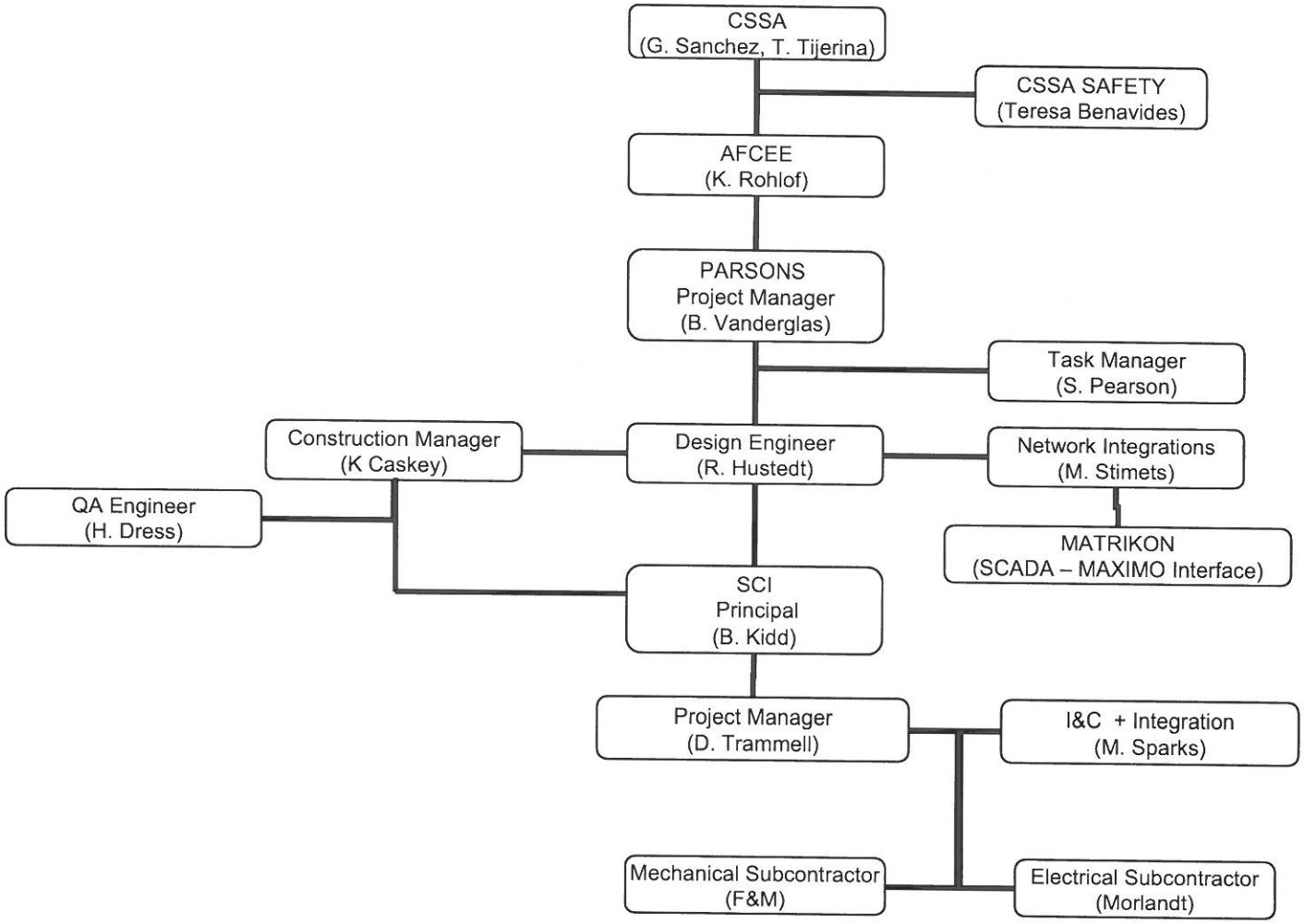
10:45 am – 11:15 am ***Status of SCADA Construction & Implementation***

11:15 am – 11:30 am ***Estimate to Complete***

11:30 am – 12:00 pm ***Outstanding Issues***

Organization and Project Task Orders

Project Organization Chart



Project Structure Overview

- TO 11 (AFCEE WERC CPFF)
  - Initial SCADA Effort (planning & construction)
    - Includes:, 2 work stations, establishing wired and wireless networks, water distribution system, primary electrical distribution, primary gas distribution, and environmental nodes (monitoring wells, GACs, and weather stations)
- TO 27 (AFCEE WERC FFP)
  - Infrastructure SCADA Effort (construction)
    - Includes: SCADA server, 3 work stations, WWTP, warehouses, office buildings, East Pasture
- TO 190 (AFCEE 4PAE CPFF)
  - Additional Design and Planning Efforts
  - SCADA / Maximo Integration
  - O&M Training and As-Builts

Status of SCADA Construction

System Design Overview

- TO 11
  - Servers/Work Stations
    - Buildings 98 and 38 *(complete)*
  - Communication
    - Wired Ethernet on CSSA Network *(complete)*
    - Wireless using VHF and Repeaters *(complete)*
  - Potable Water Supply (CS-1, CS-9, CS-10)
    - CS-1 & CS-10 Automation *(complete)*
    - Reservoir Automation *(complete)*
    - Residential Booster Pump Station *(complete)*
    - CS-9 Automation (delayed by rehab) *(95% complete)*
    - Building 54 Chlorination (delayed by Disinfection Determination) *(85% complete)*
  - Electrical Distribution
    - Emergency Generator needs new S-S Comm. Board *(90% complete)*
    - 8 Locations for Primary Electrical Metering
      - Building 45 Location has bad fiber optic service
      - South Leg Master dismantled due to front gate project

System Design Overview

- TO 11
  - Natural Gas Distribution
    - Incoming gas service near well CS-MW10 *(complete but not meeting design objectives- see later discussion)*
  - Buildings (various end-point electrical, gas, and water monitoring)
    - Building 1 Secondary power has not been transferred to new pole *(95% complete)*
    - Building 4 (ASTs) *(incomplete until AST relocation)*
    - Buildings 38, 98, A100, 201 *(complete)*
  - Environmental Nodes
    - 2 weather stations *(Well 16 WS not responding)*
    - 16 monitoring wells *(4 wells not responding)*
    - 2 SVE remediation systems and GAC Shack *(complete)*
  - SCADA O&M Training
    - Conduct training for SCADA components installed under TO11 *(95% complete)*

System Design Overview

- TO 27
  - Server/Work Stations
    - Buildings 2 and 73 *(complete)*
    - Building 1 *(incomplete – network issues)*
    - Building 36 *(awaiting construction completion)*
  - WWTP
    - Flow, DO & electrical monitoring (complete)
    - Drifting calibration problem with chlorine analyzer *(incomplete)*
    - Non-responsive pH monitor (incomplete)
  - Buildings (various end-point electrical, gas, water monitoring, temperature, and HVAC)
    - 1, 1A, 36, 44, 45, 73, 90, 91, 92, 93, 94, 96
    - *Complete except for natural gas measurement issue*

System Design Overview

- TO 190
  - Design Work Plans
    - IWP, CQAP, and HSP *(complete)*
    - PAWP for SCADA/Maximo Integration *(draft delivered by August 10th)*
  - SCADA and Maximo Integration
    - Define operational parameters, alarm threshold limits, and notifications for instrumentation *(90% complete)*
    - Matrikon will customize and program CBM-MAX software to link SCADA and Maximo *(October 2007)*
    - Provide training for O&M of CBM-MAX software to CSSA and its designated contractors *(October 2007)*

Estimate to Complete

- Budget Discussions
  - See Handouts
  - Sufficient funds remain to complete post-wide SCADA project (all 3 task orders).
- Targeted Schedule to Complete
  - Construction through August 17
  - Pre- & Post-Final Inspections with Government (August 20-31)
  - CBM-Max Integration (October 1-12)

Outstanding Issues

Natural Gas Measurement

- Problem
  - Currently installed Vortex Flowmeters cannot reliably detect low consumption flow at CSSA
  - Meters require a minimum velocity to obtain accurate results
- Solution
  - Re-evaluate objectives and design constraints
  - Consider differing measurement approaches to obtain goals

Natural Gas Measurement

- Design
  - Gas monitoring at 10 locations
  - Meter selection based upon gas line size to eliminate pressure drops
- Reality
  - 99% of annual consumption occurs during 6 cooler months (November – April)
  - Distribution gas line size is very large relative to the actual flow and operational pressure, resulting in very low velocities
  - Electronic measurement techniques are dependent upon sufficient velocity for accuracy

Natural Gas Consumption based on Utility Billing (Sep 05 – Aug 06)

		% of Annual Consumption	% of Annual Consumption	hundred cubic feet	cubic feet	cubic feet per day	Average cubic feet per hour	Average cubic feet per minute	Average Velocity in 3" pipe
Month End	*Cost*			*(ccf)*	*(cf)*	*(cf/day)*	*(cf/hr)*	*(cf/min)*	*(ft/sec)*
8/31/2006	$ 13.48	0.08%	0.19%	5	500	16.1	0.67	0.01	0.004
7/31/2006	$ 4.64	0.02%		2	200	6.3	0.26	0.004	0.001
6/29/2006	$ 4.69	0.02%		2	200	6.9	0.29	0.005	0.002
5/31/2006	$ 19.79	0.08%		7	700	23.3	0.97	0.02	0.006
5/1/2006	$ 838.37	3.38%	98.90%	291	29,100	938.7	39.11	0.65	0.221
3/31/2006	$ 3,348.99	13.26%		1,143	114,300	3,687.1	153.63	2.56	0.869
2/28/2006	$ 6,561.56	25.47%		2,195	219,500	7,839.3	326.64	5.44	1.848
1/31/2006	$ 5,660.45	16.82%		1,450	145,000	4,531.3	188.80	3.15	1.068
12/30/2005	$ 8,145.57	29.47%		2,540	254,000	8,466.7	352.78	5.88	1.996
11/30/2005	$ 3,843.68	10.50%		905	90,500	3,016.7	125.69	2.09	0.711
10/31/2005	$ 296.46	0.86%	0.92%	74	7,400	231.3	9.64	0.16	0.055
9/29/2005	$ 19.23	0.06%		5	500	17.2	0.72	0.01	0.004
$ 28,737.09			Minimum:	2	200	6.3	0.26	0.00	0.001
			Maximum:	2,540	254,000	8,466.7	352.78	5.88	1.996
			Annual Average:	718.3	71,825.0	2,398.4	99.93	1.67	0.566
			Summer Average:	15.8	1583.3	50.2	2.09	0.03	0.012
			Winter Average:	1,420.7	142,066.7	4,746.6	197.78	3.30	1.119

Natural Gas Measurement Alternatives

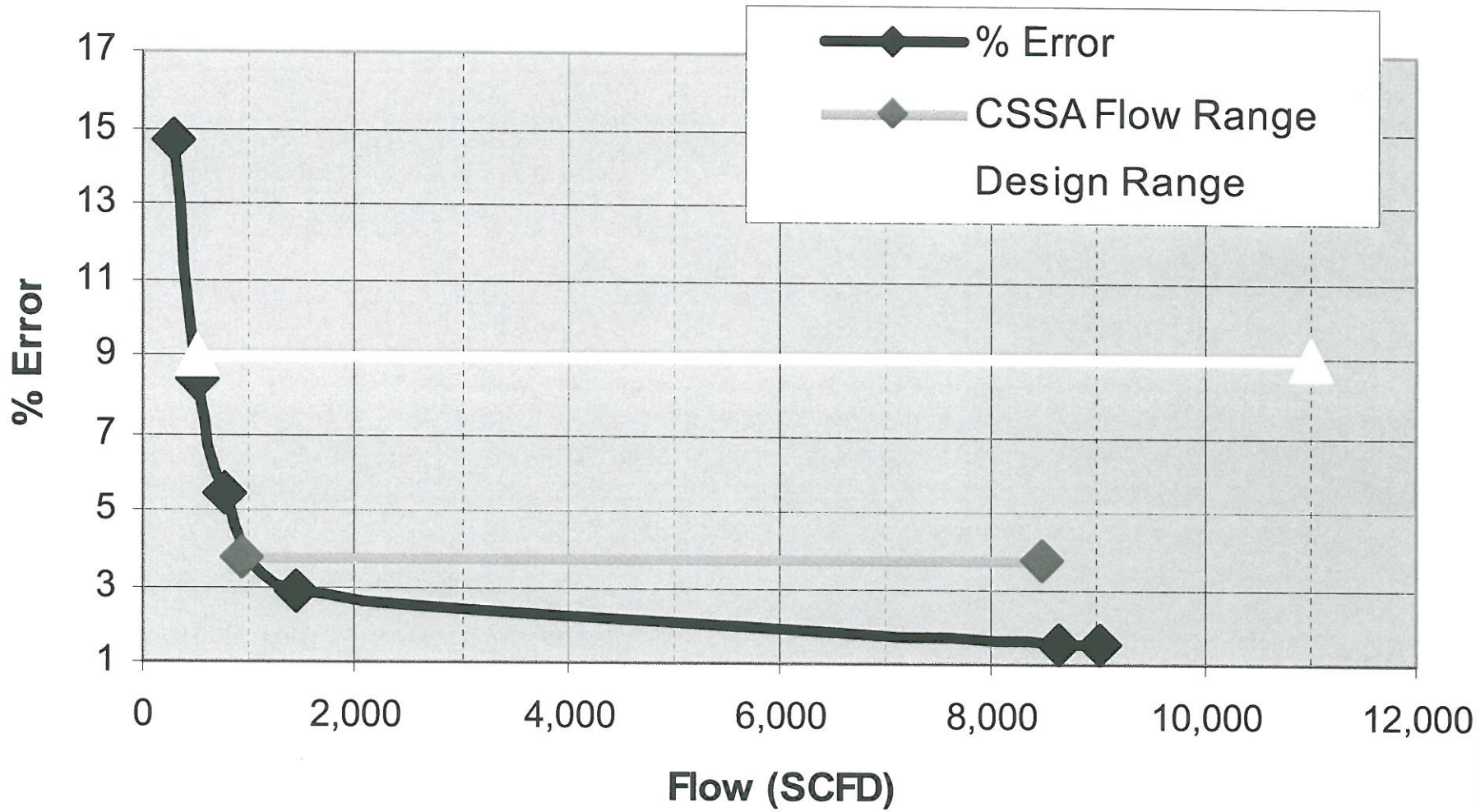
- ## Mechanical Diaphragm Meters
  - Similar to household-style meters that operate on mechanical principle
  - Odometer-style metering gives "pulse" output, only giving "*quasi real-time*" flow
  - Able to register very low flows down to pilot light level
  - Above grade installations only may be issue at gas distribution at Gate 9
- ## Electronic Thermal Mass Meters
  - Cooling effect of a heated gas stream is proportional to flow
  - To achieve measurement, will require a "turndown" to ½" diameter line size
  - Accuracies between 1.5% and 4% for the 6 months of flow (99%)
  - Most flow during Warmer months (1%) will not register

Natural Gas Measurement Alternatives

- Mechanical Diaphragm Meters
  - Pro's
    - Accurate for very low flows (even pilot light)
    - Low-tech approach that can be easily integrated into existing system
  - Con's
    - Above grade completions only
    - Pulse output....not true "real time" data
- Electronic Thermal Mass Meters
  - Pro's
    - True real time data if flow velocity criteria is satisfied
    - Below grade completion available
  - Con's
    - Reduce line size to ½ inch with slight pressure drop
    - Wont register flows during warmer months with low gas use

Diaphragm and T-Mass Meters

1/2-Inch Thermal Flowmeter Accuracy for Natural Gas



Inspections and Government Acceptance

- Pre- and Post-Final Inspections
  - Construction Inspection
    - General Construction
    - Operational Field Devices
    - Local Control were applicable (e.g. Production Wells)
  - Server/Workstation Inspections
    - Organization, Layout, and Operation
    - Confirm Field Devices annunciate at Workstations
    - Confirm Alarms and Win-911 operate
  - Reports/Trends
    - Review/Accept 10, pre-defined reports customized for CSSA

Inspections and Government Acceptance

- **Items not ready for Acceptance**
  - Various CSSA well transducers that require manufacturer maintenance
  - South Leg Electrical Distribution until Gate Project is complete
  - Building 45 – CSSA Fiber Optic connection is sporadic
  - Emergency Generator – CSSA has not replaced communication module
  - Building 36 Workstation cannot be installed until construction is complete
  - Building 1 Secondary Power has not been transferred to new service

ATTACHMENT 2

MEETING HAND-OUTS

Task Order TO0011 SCADA Installation at CSSA

AFCEE FA8903-04-D-8675
Period of Performance: September 29, 2004 - October 31, 2007
Original Contract Awarded Value: $981,188
Mod 01 (Aug 30, 2005) added: $478,021 **Revised Contract Value: $1,459,209**
Mod 02 (Apr 5, 2006) extended period of performance to January 31, 2007
Mod 03 (Feb 13, 2007) extended period of performance to October 31, 2007
Parsons PM: Brian Vanderglas **Technical Manager : Scott Pearson**

Tasks Completed to Date under TO 0011

The main objective of this project is to prepare an implementation work plan and engineering requirements for construction of a SCADA system at CSSA to provide real-time remote monitoring and control of sites that include buildings, utilities, and environmental monitoring equipment
wbs 01000 - meetings is complete
wbs 02000 - all work plans, site survey, and design work is complete.

Remaining Tasks	Percent complete	Estimate to Complete	Comments
TO 0011 SCADA Installation at CSSA	**96%**	**$ 19,900**	Remaining budget as of 7/27/07
01000 - Meetings	**100%**	**$ -**	No activities remain
02000 - Work Plans, Site Survey, and Design	**100%**	**$ -**	No activities remain
03000 - SCADA Installation & Commission	**98%**	**$ 10,000**	Final inspections & programming in process
04000 - O&M Manual and Training	**78%**	**$ 3,900**	O&M manual loaded on HMI server. One training session remains.
90000 - Project Management & Procurement	**94%**	**$ 6,000**	3 months of PjM remaining @ $2.0k/mo
	Total	$ 19,900	

Outstanding Issues

- Parsons is currently conducting final system checks & programming.
- System should be ready for Pre-final and Final Government Inspections in late August 2007.

Notes

- $1.153 M or 95% of task 3 costs related to construction & installation of SCADA components.
- The requirements of SCADA covered by this task order should be complete by October 31, 2007. No POP extension needed.

Task Order TO 0027 SCADA Installation at CSSA

AFCEE FA8903-04-D-8675
Period of Performance: April 12, 2006 - October 31, 2007
Total Contract Awarded Value: $974,968
Mod 01 pending (no cost): mod request submitted to AFCEE on June 6, 2007
Parsons PM: Brian Vanderglas **Technical Manager : Scott Pearson**

Tasks Completed to Date under TO 0027

The main objective of this project is install additional SCADA components for the SCADA system currently being installed under TO-0011. The installations are being implemented in accordance with the Implementation Work Plan and engineering specifications prepared and approved under TO-0011.

Remaining Tasks	Percent complete	Estimate to Complete	Comments
TO 0027 SCADA Component Installation at CSSA	**89%**		
02000 - Meetings (Total $38K)	**53%**	**47%**	1 Progress Meeting remains after TIM #1 (Aug 6)
03000 - SCADA Installation & Commission (Total $806K)	**95%**	**5%**	Construction complete, Final Inspection remains
04000 - Integration & Commission (Total $65K)	**44%**	**56%**	Complete programming, inspections, and assist with customization
05000 - Construction Bonds & Sales Tax (Total $22K)	**100%**	**0%**	complete
90000 - Project Management & Procurement (Total $43K)	**75%**	**25%**	3 months of PjM @ $3k/mo
	Total	11%	

Outstanding Issues

- Parsons is currently conducting final system checks & programming for RTUs installed under this task order.
- Pre-final and Final Government Inspections need to be scheduled for late August 2007.
- Determine path forward with regard to installed gas meters and low gas flows. Find a solution that meets CSSA objective.

Notes

- Task 3 comprises ~806k of $975k task order value (83%). $756k or 94% of task 3 costs directl related to construction and installation.
- Approximately $17k (2%) of task 3 related to 12 month technical support to be purchased after government accepts system.
- The requirements of SCADA covered by this task order should be complete by October 31, 2007. No POP extension needed.

Task Order TO0190 SCADA Component Design, Integration, and Support

AFCEE 4P Contract F41624-03-D-8613
Period of Performance: March 23, 2006 - October 31, 2007
Total Contract Awarded Value: $224,855
Parsons PM: Brian Vanderglas **Technical Manager : Scott Pearson**

Tasks Completed to Date under TO0190

The main objective of this project is to integrate the SCADA system installed under AFCEE WERC TO-11 and TO-27 with Maximo Enterprise Software already and installed and administered by CSSA for tracking and managing assets used (water wells, water treatment, weather stations, electrical power, temperature, wastewater, etc.) on post.
No tasks have been completed on this task order.
Modification 01 was awarded March 30, 2007 to extend period of performance through October 31, 2007.

Remaining Tasks	Percent complete	Estimate to Complete	Comments
TO 0190 SCADA Design, Integration & Support	**49%**	**$ 123,020**	Remaining budget as of 7/27/07
01000 - Project Management	**81%**	**$ 9,000**	3 months @ $3k/mo
02000 - Meetings & Teleconferences	**66%**	**$ 7,500**	TIM #2 and 1 teleconference remains
03000 - Work Plans	**92%**	**$ 6,000**	Project Activities Work Plan (draft due w/e 8/10/07)
04000 - Maximo Integration & Programming	**50%**	**$ 70,000**	Software purchased, installation delayed pending Maximo software upgrade
05000 - SCADA/CBM-Max O&M Manual	**40%**	**$ 15,000**	Update O&M manual & as-builts for TO-27 items
06000 - CBM-Max Training	**0%**	**$ 15,000**	Training scheduled after CBM-Max is installed.
	Total	$ 122,500	

Outstanding Issues

- Parsons is waiting on SCADA programming to be completed before proceeding with CBM-Max installation.
- SCADA integration and calibration of meters is still on-going under Contract FA8903-04-D-8675 TO-11 & TO-27.

Notes

- The schedule to complete SCADA integration is tight due to delays in completing the SCADA integration and request from CSSA to delay installing software.
- An extension in the period of performance will provide additional time after installation of CBM-Max for Parsons to provide transitional support.
- 2-4 weeks anticipated to be required for installing and linking CBM-Max to SCADA, and complete training.

Table 1
Natural Gas Consumption at CSSA based on Utility Billing
September 2005 - August 2006

				Monthly Consumption					
		% of Annual Consumption	% of Annual Consumption	hundred cubic feet	cubic feet	cubic feet per day	Average cubic feet per hour	Average cubic feet per minute	Average Velocity in 3" pipe
Month End	***Cost***			***(ccf)***	***(cf)***	***(cf/day)***	***(cf/hr)***	***(cf/min)***	***(ft/sec)***
8/31/2006	$ 13.46	0.06%	0.19%	5	500	16.1	0.67	0.01	0.004
7/31/2006	$ 4.64	0.02%		2	200	6.3	0.26	0.004	0.001
6/29/2006	$ 4.69	0.02%		2	200	6.9	0.29	0.005	0.002
5/31/2006	$ 19.79	0.08%		7	700	23.3	0.97	0.02	0.006
5/1/2006	$ 838.37	3.38%	98.90%	291	29,100	938.7	39.11	0.65	0.221
3/31/2006	$ 3,348.99	13.26%		1,143	114,300	3,687.1	153.63	2.56	0.869
2/28/2006	$ 6,551.56	25.47%		2,195	219,500	7,839.3	326.64	5.44	1.848
1/31/2006	$ 5,650.45	16.82%		1,450	145,000	4,531.3	188.80	3.15	1.068
12/30/2005	$ 8,145.57	29.47%		2,540	254,000	8,466.7	352.78	5.88	1.996
11/30/2005	$ 3,843.88	10.50%		905	90,500	3,016.7	125.69	2.09	0.711
10/31/2005	$ 296.46	0.86%	0.92%	74	7,400	231.3	9.64	0.16	0.055
9/29/2005	$ 19.23	0.06%		5	500	17.2	0.72	0.01	0.004
	$ 28,737.09		**Minimum:**	**2**	**200**	**6.3**	**0.26**	**0.00**	**0.001**
			Maximum:	**2,540**	**254,000**	**8,466.7**	**352.78**	**5.88**	**1.996**
			Annual Average:	**718.3**	**71,825.0**	**2,398.4**	**99.93**	**1.67**	**0.566**
			Summer Average:	**15.8**	**1583.3**	**50.2**	**2.09**	**0.03**	**0.012**
			Winter Average:	**1,420.7**	**142,066.7**	**4,746.6**	**197.78**	**3.30**	**1.119**

Note: Billing ending 3/31/06 was not provided. Usage was obtained from subsequent bills, however, costs were interpolated.

Pre- and Post-Final SCADA System Acceptance Testing - Camp Stanley Storage Activity - Boerne, Texas

RTU 001

Building 1

	Pre-Final Inspection				Post-Final Inspection			
	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action
RTU INSPECTION								
Workmanship:								
Component & Wiring Identification:								
Accessibility/Open Cover Interferences?								
Name Tag Present:								
Operability/Functionality:								
Powers up								
Communicates w/ Master station								
Local Automatic Control								
Local Manual Control								
Remote Automatic Control								
Communicates w/ Master station								
Touch Screen Operability								
Analog output correct with simulated input								
Discretes annunciate at Master Station								
GAS FLOWMETER								
Name Tag Present:								
Operability/Functionality:								
Local Display								
Communicates w/ Master station								
Calibration / Reasonable Output								
POWER MONITOR								
Operability/Functionality:								
Local Display								
Communicates w/ Master station								
Calibration / Reasonable Output								

Pre- and Post-Final SCADA System Acceptance Testing - Camp Stanley Storage Activity - Boerne, Texas

RTU 001

Building 1

	Pre-Final Inspection				Post-Final Inspection			
	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action
ROOM TEMPERATURE								
Operability/Functionality:								
Local Display								
Communicates w/ Master station								
Calibration / Reasonable Output								
ROOM TEMPERATURE								
Operability/Functionality:								
Local Display								
Communicates w/ Master station								
Calibration / Reasonable Output								
ROOM TEMPERATURE								
Operability/Functionality:								
Local Display								
Communicates w/ Master station								
Calibration / Reasonable Output								

	Name	Signature	Date	Name	Signature	Date
SCI Representative:						
Parsons Representative:						
Owner/Owners' Representative:						

Notes:

Pre- and Post-Final SCADA System Acceptance Testing - Camp Stanley Storage Activity - Boerne, Texas

HMI SCREEN - RTU 001

Building 1

	Pre-Final Inspection				Post-Final Inspection			
	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action
APPEARANCE AND FUNCTION								
Overall Appearance/Legibility								
Organization								
Communicates with RTU								
Links Function Correctly								
Remote Operation Functions								
Automatic Operation Functions								
GAS FLOWMETER								
Communicates w/ Master station								
Analog output correct with simulated input								
Alarms Annunciate								
Win-911 Call-out								
POWER MONITOR								
Communicates w/ Master station								
Analog output correct with simulated input								
Alarms Annunciate								
Win-911 Call-out								
ROOM TEMPERATURE								
Communicates w/ Master station								
Analog output correct with simulated input								
Alarms Annunciate								
Win-911 Call-out								

Pre- and Post-Final SCADA System Acceptance Testing - Camp Stanley Storage Activity - Boerne, Texas

HMI SCREEN - RTU 001

Building 1

	Pre-Final Inspection				Post-Final Inspection			
	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action	Satisfactory	Unsatisfactory	N/A	Comments or Corrective Action
ROOM TEMPERATURE								
Communicates w/ Master station								
Analog output correct with simulated input								
Alarms Annunciate								
Win-911 Call-out								
ROOM TEMPERATURE								
Communicates w/ Master station								
Analog output correct with simulated input								
Alarms Annunciate								
Win-911 Call-out								

	Name	Signature	Date	Name	Signature	Date
SCI Representative:						
Parsons Representative:						
Owner/Owners' Representative:						

Notes:

DEPARTMENT OF THE ARMY
CAMP STANLEY STORAGE ACTIVITY, RRAD
25800 RALPH FAIR ROAD, BOERNE, TX 78015-4800

Agenda for TO 0027 Technical Interchange Meeting (TIM) #1
SCADA Component Design, Integration, and Support
at
Camp Stanley Storage Activity – Boerne, Texas
AFCEE WERC, Task Order 0011 and 0027
AFCEE 4PAE, Task Order 0190

Time: Monday, August 6, 2007; 10:30 am to 12:00 pm

Place: Camp Stanley Storage Activity, Boerne, Texas, Conference Room

Proposed Order of Discussion

Date & Time	Topic
10:30 am – 10:45 am	***Project Organization Structure & Management by TO*** • *General Description of Project Structure under multiple TOs* • *Project Organization* • *Tasks under TO-0011* • *Tasks under TO-0027* • *Tasks under TO-0190*
10:45 am – 11:15 am	***Status of SCADA Construction and Implementation*** • *TO 0011* • *TO 0027* • *TO 0190*
11:15 am – 11:30 am	***Estimate to Complete*** • *Budget* • *Schedule*
11:30 am – 12:00 pm	***Outstanding Issues*** • *Natural Gas* • *WWTP Completion* • *Water Distribution Automation* • *Other*

CSSA SCADA PROJECTS

SUBJECT: TO 27 TIM #1 Status Meeting

SIGN-IN SHEET

NAME	ORGANIZATION	LOCATION	PHONE	E-MAIL
Brain Vanderglas	Parsons	Austin	5127196o	brian.vanderglas@parsons.com
Scott Pearson	PARSONS	Austin	5127196087	william.scott.pearson@parsons.com
Julie Burdey	Parsons	Austin	512-719-6062	julie.burdey@parsons.com
Kyle CASKey	PARSONS		210-204-85[illegible]	KERRY.K.CASKey@PARSONS.C
Olga Sanchez	CSSA	CSSA	210-335-74[illegible]3	sanchezg@enviro.dept.net
TOM Tierney	CSSA	CSSA	210-336-2372	
Kent Rohlof	AFCEE	Brooks CE	210 536-2543	karl-rohlof@brooks.af.mil