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DEPARTMENT OF  
GENERAL SERVICES

CITY OF SACRAMENTO  
CALIFORNIA

5730 - 24TH STREET  
BUILDING FOUR  
SACRAMENTO, CA  
95822-3699

OFFICE OF THE DIRECTOR

May 9, 1989

Budget and Finance Committee  
Sacramento, California

916-449-5548

Honorable Members in Session:

DIVISIONS:

**SUBJECT: FLEET MANAGEMENT DIVISION COMPUTER UPGRADE**

COMMUNICATIONS  
FACILITY MANAGEMENT  
FLEET MANAGEMENT  
PROCUREMENT SERVICES

SUMMARY

The attached report requests approval for the City Manager to negotiate a contract with Diagonal Data Corporation for the purchase of computer hardware and software upgrades to the Fleet Management General Equipment Management System (GEMS) and a new Automated Fuel Dispensing/Management System.

RECOMMENDATION

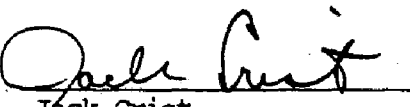
It is recommended that the Budget and Finance Committee review and recommend adoption by the full Council the attached report which: (1) authorizes the City Manager to negotiate and execute contracts with Diagonal Data Corporation for computer upgrades in an amount not to exceed \$750,000; (2) defunds CIP projects DA11 and DA16 for a total of \$185,000 and transfers this sum to the Fleet Management's 1988-89 Operating Budget for the project; and (3) transfers the sum of \$150,000 from the Fleet Management Contingency Reserve to the Fleet Management 1988-89 Operating Budget to provide the balance needed for the project.

Questions regarding this report should be referred to Gene Moore, Fleet Manager, Fleet Management Division, 449-5241.

Respectfully submitted,

  
Frank Mugartegui  
Director of General Services

Recommendation Approved:

  
Jack Crist  
Deputy City Manager

May 9, 1989

FM:89066:RM/vh  
Attachments



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GENERAL SERVICES

CITY OF SACRAMENTO  
CALIFORNIA

5730 - 24TH STREET  
BUILDING FOUR  
SACRAMENTO, CA  
95822-3699

OFFICE OF THE DIRECTOR

April 28, 1989

916-449-5548

City Council  
Sacramento, California

DIVISIONS:

Honorable Members in Session:

COMMUNICATIONS  
FACILITY MANAGEMENT  
FLEET MANAGEMENT  
PROCUREMENT SERVICES

**SUBJECT: FLEET MANAGEMENT DIVISION COMPUTER UPGRADE**

SUMMARY

Fleet Management has included funds in its F.Y. 1988-89 approved budget to upgrade the existing GEMS System, Automated Fuel System and associated hardware. This report requests approval for the City Manager to negotiate a contract with Diagonal Data Corporation for the purchase of computer hardware and software upgrades to the General Equipment Management System (GEMS) and a new Automated Fuel Dispensing/Management System.

BACKGROUND

The Fleet Management Division is proposing both software and hardware upgrades to its General Equipment Management System (GEMS) which was installed in 1982 on a Digital Equipment Corporation PDP 11/44 central processing unit (CPU). This system not only provides on-line, interactive fleet information, but also maintains control and accountability of parts inventories for the Central Stores, Sewer, Water and Fleet Management Divisions. Over the years, the GEMS system has been cost effectively expanded to accommodate additional data files and users, but after seven years, the CPU has finally reached its capacity to support additional General Services applications. This fact, plus its escalating maintenance cost (due to age) make replacement of the CPU a necessity. In addition, the IBM Series I computer, originally installed in 1978, and interfaced with the GEMS system in 1982 to capture all automated fueling transactions within the City, has become obsolete and is experiencing increased downtime. The existing system also lacks the ability to interface with the automated fuel inventory control system required for underground storage tank reconciliation.

Fleet Management staff, in conjunction with Data Management, Finance and the Budget Office, evaluated the different approaches available to upgrade or replace these systems in order to insure user departments a current level of service that is both acceptable and cost effective, to meet the present requirements mandated by new programs, and to adequately plan for future operational demands. A "System Overview" is attached for the purposes of providing an in-depth analysis of the Fleet Management system, and secondly as support for staff's recommendation to acquire from Diagonal Data Corporation:

(1) the DEC 6310 VAX hardware and system software; (2) the expanded GEMS software; and (3) the Consumables Tracking System (Confrac), an extension of the GEMS system, which will provide City-wide fuel consumption and timely mileage data. The general benefits of this approach are as follows:

1. The VAX hardware will support both GEMS and Confrac, provide a single integrated system and eliminate the need for hardware interface.
2. The City will deal with one vendor for both fleet management and fuel management needs and requirements.
3. As a current GEMS user, and under an ongoing software maintenance contract, no additional license fees will be charged for the VAX version of the GEMS product. This would result in an \$80,000 savings for the City based on current license fees.
4. All new software programs and upgrades developed for all users of the GEMS system by Diagonal Data since 1982 will be available to the City at no additional cost. This can equate to several thousands of dollars in programming and higher efficiency for Fleet Management personnel.
5. The ability of the Division to become the centralized host for all users at the 24th Street Corporate Center by directly interfacing with the City's IBM mainframe and L.G.F.S. accounting system.
6. Retention of accumulated historical information.
7. Current specialized City programs will be converted, eliminating the need for costly redevelopment of these programs by another vendor.
8. Training effort is minimized as current personnel are familiar with the package and its general operating approach.
9. Continued use of many current hardware devices already in place, i.e. disc drives, printer, terminals, wiring, etc., resulting in considerable savings for the City.
10. Greatly enhanced speed of data retrieval, accommodation of a heterogeneous computer network and additional users.
11. Elimination of costly maintenance repairs to obsolete equipment.
12. A hardware design that provides an open-ended building block for future expansion.

FINANCIAL INFORMATION

The following funds have been identified in the Fleet Management current operating and CIP budgets as sources of revenue for this project. (A detailed analysis of all funding requirements for the project is contained in the attached "System Overview".)

Fleet Management Division Computer Upgrade  
Page 3

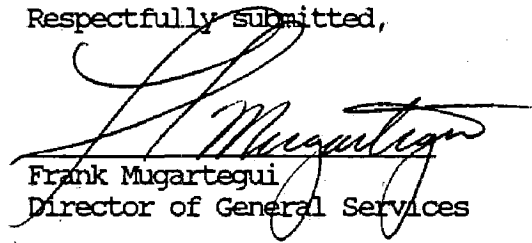
- Capital Improvement Project DA16 - "Upgrade Automated Fuel Management System"	(420-500-DA16-XXXX)	\$135,000
- Capital Improvement Project DA11- "Underground Storage Leak Detection System"	(420-500-DA11-XXXX)	50,000
- Annual Computer/Lease Payment (Rental of Equipment)	(420-190-1949-4233)	90,000
- Multiplexors	(420-190-1949-4630)	12,000
- Fuel Savings	(420-190-1949-4482)	<u>313,000</u>
		\$600,000

The total cost of the proposed project is for an amount not to exceed \$750,000. The recommended action involves using the funds currently budgeted in Capital Improvement Projects DA11 and DA16, in addition to the budgeted funds in line items 4233, 4630, and 4482 as identified above. The balance of approximately \$150,000 is requested from the Fleet Management Contingency Reserve which has a current balance of \$978,767.

RECOMMENDATION

Staff recommends that the City Council adopt the attached resolution which: (1) authorizes the City Manager to negotiate and execute contracts with Diagonal Data Corporation in an amount not to exceed \$750,000; (2) defunds the Capital Improvement Projects DA11 and DA16 for a total of \$185,000; and (3) transfers the sum of \$150,000 from the Fleet Management Contingency Reserve to the Fleet Management 1988-89 Operating Budget.

Respectfully submitted,



Frank Mugartegui  
Director of General Services

Recommendation Approved:

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Walter J. Slipe  
City Manager

May 9, 1989  
All Districts

FM:89066:RM/vh  
Attachment

Note: Questions regarding this report should be referred to Gene Moore, Fleet Manager, Fleet Management Division, 449-5241.

**RESOLUTION No.**

**Adopted by The Sacramento City Council on date of**

May 9, 1989

**RESOLUTION SUSPENDING FORMAL COMPETITIVE BIDDING FOR THE PURCHASE OF SOFTWARE AND HARDWARE UPGRADES TO THE GEMS AND AUTOMATED FUEL SYSTEMS, DEFUNDING CAPITAL IMPROVEMENT PROJECTS DA11 AND DA16, AND AMENDING THE FLEET MANAGEMENT OPERATING BUDGET BY TRANSFERRING \$150,000 FROM THE FLEET MANAGEMENT CONTINGENCY RESERVE**

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SACRAMENTO THAT:

1. That pursuant to section 57.401(c) of the Sacramento City Code, it is hereby determined to be in the best interests of the City, to suspend formal competitive bidding for the purchase of software and hardware upgrades to the General Equipment Management System (GEMS) and Automated Fuel System, and to authorize the City Manager to execute the necessary contract with Diagonal Data Corporation, GEMS Division, 9700 Newton Avenue South, Bloomington, Minnesota 55431 in an amount not to exceed \$750,000.

2. That Capital Improvement Projects "Upgrade Automated Fuel Management System" (420-500 DA16-XXXX) and "Underground Storage Leak Detection System" (420-500-DA11-XXXX) be defunded and total funds be transferred to the Fleet Management 1988-89 Operating Budget (420-190-1949-4630) for the purchase of software and hardware upgrades to the GEMS and Automated Fuel Systems.

3. That the amount of \$150,000 be transferred from the Fleet Management Contingency Reserve (420-710-7012-4999) to the 1988-89 Fleet Management Operating Budget (420-190-1949-4630) to cover the remaining balance of the project.

\_\_\_\_\_  
MAYOR

ATTEST:

\_\_\_\_\_  
CITY CLERK

## SYSTEM OVERVIEW

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### 1. The General Equipment Management System:

The General Equipment Management System (GEMS) was purchased in 1982 to replace the MIS Batch System and to provide up-to-date, on-line, interactive fleet information. The system consists of three components: 1) the hardware - a Digital Equipment Corporation P.D.P. 11/44 central processing unit (CPU) and related hardware devices; 2) the operating system software; and 3) the application system software. GEMS is an integration of computer hardware and software technologies specifically designed for use by fleet managers. It maintains Fleet Management's current and historical automated files of motorized equipment inventories; depreciation and replacement statistics; fuel inventories and consumption; contractual services; work in-progress; preventive maintenance schedules; equipment availability; employee and labor information; various billing, accounting and budget reports; as well as providing control and accountability of the parts inventories for the Central Stores, Water, Sewer, and Fleet Management Divisions. Additionally, the GEMS system can accommodate the Parks and Community Services and Communications Divisions' need to track small pieces of equipment and radio hardware.

As part of the original contract, the City purchased a license for the General Equipment Management System and has maintained both hardware and software maintenance contracts: with Digital Equipment Corporation (DEC) for the hardware and operating system software, and with Diagonal Data Corporation for the application system software. This has guaranteed the City of Sacramento all software upgrades developed since 1982 at no additional cost. In addition, the original contract specified that all new programs developed for any GEMS user during the five year lease period were to be made available to the City of Sacramento at no additional cost.

In the past few years, upgrades and new programs to GEMS software have evolved to accommodate the needs of cities with larger fleets, such as Dallas and New York City, and at the request of the GEMS Product User Group, of which the City of Sacramento is a member. However, technological advancements and cost competitiveness in computer hardware have prompted Diagonal Data to only produce software upgrades for Digital Equipment Corporation's current line of computers, the VAX. This hardware design not only supports current user needs, but through its unique architectural structure provides for future expansion in a variety of cost effective ways. The VAX allows the user to accommodate all or some of his future needs now, or expand the configuration at some later date.

### 2. The Automated Fuel System:

Since 1978, Fleet Management has had an automated fuel dispensing/management system. This system allows for controlled fueling of City equipment without service attendants. In addition to this labor saving aspect, it provides accurate and timely fueling information. In 1982, the fueling system was interfaced with GEMS to provide fuel costs, consumption, and timely mileage data for fleet management.

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Further Analysis:

Since the installation of both the GEMS and Automated Fuel Systems there has been a continuing growth in the Division: in the number of vehicles purchased and maintained; in the number of projects and programs requiring ongoing review and support; and in the area of Federal, State and County regulations regarding underground storage tanks, smog inspections and fuel tax recovery. These changes have caused staff to reassess computer needs to insure user departments a current level of service that is both acceptable and cost effective, to meet the present requirements mandated by new programs, and to adequately plan for future operational demands.

With these goals in mind, Fleet Management staff, in conjunction with Data Management, Finance and the Budget Office, researched the different approaches available for computer hardware and software upgrades. It was determined that going to another software package would necessitate a costly conversion of data, and would also cause the Division to lose virtually all of its prior fleet history acquired to date. Fleet Management's current hardware has reached its memory limits; and with the anticipated addition of the Parks and Community Services and Communications Divisions, the system will be degraded even further, causing considerable slowdowns in data retrieval.

Upgrading the Division's hardware to the VAX computer will allow for compatibility with the present data files and programs, accommodate the growing network of using departments, greatly enhance the speed of data retrieval, accommodate a heterogeneous computer network, and provide an open-ended building block for future expansion. These upgrades will also allow the Division to accomplish the following specific goals:

1. The ability to directly interface with the City's IBM mainframe and L.G.F.S. accounting system. This would allow Fleet Management to use the same field lengths and file structure as L.G.F.S. for accounting, billing, purchasing and vendor files. Digital's SNA Gateway will allow for the direct exchange of information between the two systems, thereby eliminating the necessity of updating and maintaining two separate data bases. Networked users at the 24th Street Corporate Center will be able to utilize one personal computer at their workstations to access both systems.
2. The ability to use available software programs and enhancements developed by Diagonal Data Corporation during the past seven years, to include: expanded specification files; expanded work order notes; enhanced preventive maintenance reporting; enhanced parts inventory controls such as: automated identifications, non-stocked parts analysis, bin label printing, bar code receipt of parts, fiscal inventory and labeling, parts interchange and cross referencing, background report generation capabilities, and greater report format flexibility. These enhancements, as well as other available Diagonal user programs, will provide the Fleet Management staff with increased flexibility in its day-to-day operation.
3. The ability to interface all the City's fueling sites with the host computer (VAX) automatically, eliminating manual inputting of data on a daily basis.

System Overview

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The current fueling system is automated at only three sites: the 24th Street Corporate Center, the 28th Street Corporation Yard, and the Public Safety Garage. At all other remote sites, such as fire stations, golf courses and the Colfax Yard, manual fueling sheets are maintained by City employees to record transactions. These fueling sheets are delivered to Fleet Management on a weekly basis and inputted into the computer by clerical staff. As part of the upgrading process, Fleet Management is proposing the purchase of Diagonal Data's Consumables Tracking System (ConTrac) to provide authorization, accountability and billing for all fuel dispensing sites, as well as to provide an interface to tank level sensing devices necessitated by underground storage tanks regulations.

ConTrac is composed of three (3) functional components: system maintenance, consumables control, and reporting. In each of its components, the ConTrac system contains many superior features of particular interest and application to Fleet Management's fueling operations.

- A. ConTrac is designed for maximum up time with minimum dependency on the central site computer (VAX) or telephone lines. At the larger fueling sites, 24th Street, 28th Street, Public Safety Garage, and the new Rooney Substation, each fueling island will have its own controller which is a microcomputer capable of functioning on a totally "stand alone" basis for a minimum of 1,000 dispensing transactions. Additionally, by cross-wiring two islands together, each controller is able to "back up" another island in the event of controller failure. That is, if Controller 1 goes down, Controller 2 can handle the dispensers previously handled by Controller 1, thereby guaranteeing full fueling capabilities at the site. Currently, when there is an island failure, fueling capabilities at that island are suspended until the problem is remedied.
- B. Specific parameters can be predetermined to control a variety of fueling capabilities. For example: identifying the employee who is accessing the system; whether fuel can be dispensed without a valid meter entry; controlling the amount and type of fuel for a particular vehicle; limiting or cutting off fuel dispensing to a vehicle severely overdue for preventive maintenance; and limiting the time of day during which an employee may pump fuel.
- C. The system can be manually overridden in the event of malfunction or emergency situations. Additionally, whenever this activity occurs it is journalized, providing an audit trail of such overrides.
- D. ConTrac can utilize a variety of personnel and vehicle identification methods: no card (keyboard entry); magnetic strip cards (one or two card system); bar code identifications and/or radio frequency identification. Radio frequency vehicle tags which will automatically identify a vehicle at an island control unit or trigger security access (gate control) may be used in the future for site access at substations or remote fueling sites.
- E. Another component of the system is DecTalk, a voice emulator and related software option that uses a touch-tone phone to record fueling data. This cost effective module eliminates the need for an island



controller, and will be used at remote fueling sites in the City that have low volumes of transactions, such as golf courses and fire houses. DecTalk will eliminate the manual recording and inputting of fueling information from these sites, greatly reduce errors, and provide direct and immediate fuel recording and updates to the VAX.

- F. As coordinator of the City's Underground Storage Tank Program, Fleet Management is particularly interested in the system's interface capability to tank level sensing devices (Veeder Root TLS-250). This interface allows the collection of information from the TLS-250 to include tank levels, fuel deliveries, and leak detection test results from any terminal connected to the host computer (VAX). This information will greatly streamline the Division's daily tank reconciliation process mandated by the County, and automatically audit tank levels for fuel reordering. At remote sites that have island controllers, information can be accessed directly from the controller unit, eliminating the need for additional modems and telephone lines.

Since ConTrac will be fully integrated with GEMS, it will eliminate the need to maintain duplicate equipment files in two systems, which is currently the case. The central site can poll each fueling location at specified intervals to receive fuel transactions and to update the information resident at the site. In this manner, fueling information is redistributed among sites to insure a system-wide knowledge of all vehicles/employees.

ConTrac's Reporting Module not only provides standard fuel reports developed for the system, but also includes a query and report writer feature which will allow Fleet Management to develop its own on-line queries or reports specific to the Division's needs. The ability to define data parameters or "massage" the system for specific information is considered by staff to be a superior feature of the system.

Financial Information

In anticipation of replacing its Automated Fuel Management System, and also to comply with Federal, State and County mandates regarding underground storage tanks, the Fleet Management Division requested two Capital Improvement Projects, (DA-11 - "Underground Storage Leak Detection System" and DA-16 - "Upgrade Automated Fuel Management System"). Funding in these two projects total \$185,000. Additionally, the Division requested and received funding for two multiplexors to: (1) eliminate the use of four dedicated data lines from the Division's two satellite shops, 28th Street Corporation Yard and the Public Safety Garage, and (2) to enhance the transmission speed of data from these locations to the host computer at the 24th Street Corporate Yard. Funds for the multiplexors total \$12,000. For the past five years, the Division has also included in its operating budget funding for contracted computer lease payments under line item 4233.

As the Diagonal Data Corporations' integrated software and DEC hardware will allow the Division to interface both the GEMS and the automated Fuel Management Systems, support the mandated underground leak detection devices, and provide a communications network utilizing a single phone line per site, it is recommended that funds from both Capital Improvement Projects, as well as those earmarked for

the modems and computer lease payments be used for the proposed computer upgrade project.

A significant portion of the project's remaining balance can be paid for by anticipated savings in the 1988-89 fuel budget. An analysis of current year-to-date and anticipated year-end purchases of fuel was prepared by staff. Even with the recent increases in fuel prices caused by the oil spill in Alaska, it is staff's opinion that there still should be a fuel savings of approximately \$325,000 in this fiscal year. The remaining required funds are requested to come from the Fleet Management Contingency Reserve. This method would eliminate approximately \$85,000 in lease interest payments over a five year period.

To accommodate future computer upgrades, enhancements and management information requirements, Fleet Management and the Budget Office will be developing a yearly depreciation/replacement funding program.

# FLEET MANAGEMENT COMPUTER PROJECT DESCRIPTIONS & FUND DISTRIBUTION

TOTAL PROJECT \$750,000

