March 15, 2019

BRUCE APPLEGATE
Associate Director, Nimitz Marine Facility
0210

Subject: ***Marine Science Development Shop Recharge Review***
Report 2019-02

The final report for Marine Science Development Shop Recharge Review, Report 2019-02, is attached. We thank all members of the department for their cooperation and assistance during the review.

Because we were able to reach agreement regarding management action plans in response to the audit recommendations, a formal response to the report is not requested. The findings included in this report will be added to our follow-up system. We will contact you at the appropriate time to evaluate the status of the management action plans.

UC wide policy requires that all draft reports be destroyed after the final report is issued. We also request that draft reports not be photocopied or otherwise redistributed.

David Meier
Director
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AUDIT & MANAGEMENT ADVISORY SERVICES

Recharge Centers—Marine Sciences Development Center
Report No. 2019-02
March 2019
FINAL REPORT

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ATTACHMENT A – MSDC Pro Forma Profit/Loss Statement

ATTACHMENT B – MSDC Statement of Operations

I. EXECUTIVE SUMMARY

Audit & Management Advisory Services (AMAS) has completed a review of the Marine Sciences Development Center (MSDC) recharge process as part of the approved audit plan for Fiscal Year (FY) 2018-19. The objective of our review was to evaluate whether the recharge mechanism for the MSDC provides for appropriate cost recovery, mitigating risks associated with financial deficits or potential overcharges to federal customers.

We concluded that the recharge mechanism for the MSDC did not adequately provide for complete cost recovery of expenses related to the recharge activity. Most controls such as physical and electronic access over the recharge process appear to be effective and adequate to provide safeguards over assets, sales, recharges, billings and collections. However, we noted that some duties were not adequately separated. We also noted inconsistencies in how the recharge rates were applied to billings, recording of recharge income and some instances of financial transactions that were not in compliance with UC policy. Management Action Plans to address these areas are listed below:

A. Recharge Rate Proposal

Management has initiated a process to reduce payroll and non-payroll expenses. Management will reevaluate and revise the recharge rate: Consider actual historical data and other factors when proposing for revised rates and plan; Reassess the rates and plan periodically for viability to reduce deficit per plan while sustaining the ability to provide critical services.

B. **Recharge Rate Billing**

Management will develop a process for quality assurance in billing processes.

C. **Recording Recharge Income**

Transactions such as those recorded for debt assistance will be processed as a financial journal entry funds transfer, not a recharge journal entry.

D. Internal Controls--Separation of Duties

- Management will ensure that duties are assigned such that no single person has complete control over a transaction.
- Management will ensure that the job numbers in the database are auto-generated.
- Management will separate transactions or designate a different numbering structure so that jobs from two recharge units are not comingled.

E. Financial Transactions

Management will ensure that staff understand and apply policy consistently.

Observations and related management corrective actions are described in greater detail in section V. of this report.

II. BACKGROUND

Audit & Management Advisory Services (AMAS) has completed a review of the Marine Sciences Development Center (MSDC) recharge process as part of the approved audit plan for Fiscal Year (FY) 2018-19. This report summarizes the results of our review.

The MSDC recharge unit specializes in the design, development, fabrication, and assembly of oceanographic, space, and general scientific hardware. The MSDC meets the fabrication and customization needs of the fleet of research vessels operated and serves Scripps Institution of Oceanography (SIO). The MSDC also provides services to other UC San Diego departments, various other academic institutions, and the private sector. Their staff of 18 consists of both technicians and machinists, overseen by the Superintendent and supported by two office administrative personnel.

Table 1 shows the hourly rates for services provided:

Table 1: Hourly Rates for Services

	SHOP	WELDING	WATERJET	Materials Markup	Clients
UC Users	$85	$95	$150	23%	70%
Non-UC Users	$130	$140	$195	23%	30%

Source: MSDC Rate Calculation Worksheet (See **Attachment A**)

The facility required all internal customers to provide recharge index numbers and billing information for external customers in addition to project information. The Superintendent received all requests for jobs and provided estimates, which, if accepted, were added to the jobs database by one of the two administrative personnel. If the client was a non-UC entity, a UC-compliant contract was signed by all parties followed up by a purchase order from the client based on the quoted estimate for the job. When a job code was assigned in the jobs database, an additional entry of the job code was added to the internal online timekeeping database. Employees logged their time for Shop, Welding or Waterjet in the internal online timekeeping system by the job code, which linked the employee time data to the jobs database. Finished jobs were marked complete in the database.

For recharge billings, the materials cost and the labor cost were combined and added to the monthly recharge billing report and journalized. However, for external billings, an invoice was issued based on the quote or approved revision on the purchase order. No cash was involved in the recharge process; however, some external customers mailed the checks to MSDC with checks payable to the UC Regents and some customers paid via credit cards.

Income and expenses were recorded in Fund 62058A for this recharge activity. Per the Statement of Operations report for the FY ending June 30, 2018, the MSDC reported income of $3,518,851 comprised of recharges and revenues of $ 2,369,924 and $1,148,927, respectively, and offset by $3,152,505 in expenses, resulting in net income of $366,346. This income was insufficient to eliminate the prior year deficit balance of $2,345,868. (See ***Attachment B***)

III. AUDIT OBJECTIVE, SCOPE, AND PROCEDURES

The objective of our review was to evaluate whether the recharge mechanism for the Marine Sciences Development Center provides for appropriate cost recovery, mitigating risks associated with financial deficits or potential overcharges to federal customers. To achieve our objective, we performed the following:

- Reviewed Business and Finance Bulletin (BFB)-A-47—University Direct Costing Procedures;
- Reviewed BFB-A-56—Academic Support Unit Costing and Billing Guidelines;
- Reviewed the Office of Management and Budget's (OMB) Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards and OMB Circular A-21;
- Interviewed the following:
    - Personnel in the SIO Director's office;
    - Recharge Facility personnel;
    - Financial Analysis Office (FAO) Costing Policy Manager; and
    - Business and Financial Services personnel;
- Completed the internal control questionnaire for cash and recharges;
- Evaluated the separation of duties and internal controls;
- Reviewed Billing and recharge documents, including journal vouchers for corrections to recharge billings;
- Re-computed the recharge amount on a sample of scheduled events and compared to billed amounts;
- Reviewed the recharge reports and operating statements and financial information for differential income and accumulated reserve accounts;
- Evaluated the reasonableness of assumptions in the most recent recharge rate change requests;
- Evaluated the effect of providing a preferred recharge billing to customer;
- Compared recharge billing data per the recharge center to the recharge recorded in the operating ledger;
- Reviewed job start dates to ensure that numerical sequence of jobs was in chronological order;
- Reviewed jobs list to ensure that each job was included in the recharge or was billed externally;
- Analyzed account receivable ledgers; and
- Completed a detailed analysis of recharge billings on a sample basis for the period July 1, 2017 through September 30, 2018:
    - Reviewed orders/invoices for materials to ensure that there is a job number associated with the order;
    - Evaluated transactions and supporting documents for the jobs in the sample for compliance with UC policy; and
    - Re-computed markup on materials.

IV. CONCLUSION

Based on our review, we concluded that the recharge mechanism for the MSDC did not adequately provide for complete cost recovery of expenses related to the recharge activity. Most controls such as physical and electronic access over the recharge process appear to be effective and adequate to provide safeguards over assets, sales, recharges, billings and collections. However, we noted that some duties were not adequately separated. We also noted inconsistencies in how the recharge rates were applied to billings, recording of recharge income and some instances of financial transactions that were not in compliance with UC policy.

V. OBSERVATIONS REQUIRING MANAGEMENT ACTION

A.	Recharge Rate Proposal
The recharge rate proposed did not adequately address the deficit in the recharge fund.	
Risk Statement/Effect	
Operating a recharge center at less than breakeven results in the University inappropriately subsidizing other activities.	
Management Action Plans	
A.1	Management has initiated a process to reduce payroll and non-payroll expenses.
A.2	Management will reevaluate and revise the recharge rate: Consider actual historical data and other factors when proposing for revised rates and plan; Reassess the rates and plan periodically for viability to reduce deficit per plan while sustaining the ability to provide critical services.

A. Recharge Rate Proposal – Detailed Discussion

While reviewing the recharge rate proposal submitted in September 2017, we noted that MSDC had not requested a rate change between July 2014 and September 2017, despite have continuing deficit balances. Management stated that continuing deficits were as a result of a major external customer reducing its orders in FY 2014-15, but had expected that the customer would resume orders in subsequent years. The recharge rate in effect during the review was approved in September 2017 but has been effective as of July 1, 2017.

The approved MSDC recharge and external billing labor rates were posted on the recharge facility's website. Periodic internal reviews evaluated the adequacy of the rates to ascertain that the facility was not running in deficit. To this end, the SIO Director's office transferred $500,000 on May 18, 2018 to the recharge facility to help reduce ongoing deficits. Additional details of this transfer are discussed in Observation C. An additional $705,000 was transferred from the differential income account to reduce the deficit.

We evaluated the components of the recharge rate proposal to identify reasons that the recharge fund was underfunded:

Employee benefits:

One of the components of labor cost is the employee benefits cost. The employee benefits rate used in the proposal is 35%. We reviewed the actual employee benefits account as recorded in the fund's Statement of Operations[1] and noted that the employee benefits rate for FY 2016-17, the FY data that would have been used for the proposal, was approximately 62% of total salaries. We also observed that the rate had been averaging 62% in the prior four FYs. As a result, projected expenses were underestimated by approximately $322,000.

Total Labor Hours:

In the recharge rate proposal, the shop rate of $85 per hour is computed by dividing the total projected "shop" expenses ($1,692,326) by the total projected productive hours[2] (19,900 hours). The formula to compute the productive hours show that 300 hours were added to each of the thirteen (13) "shop" employees' hours. Thus total productive hours should be 16,080. As a result, the labor recharge rate for "shop" was understated. The Financial Manager advised that the rate was reduced such that it would not be a hardship for UCSD researchers.

We also noted that, effective November 1, 2012, the unit charged a 1% tooling fee on all labor costs. This additional fee was not included in the recharge rate proposal but is included in the total labor charge billed. The MSDC Superintendent advised that the tooling charge was a carryover from a "tool crib" charge when the shop was at a prior location.

B.	Recharge Rate Billing
We noted several billing errors in our testing. The rates at which customers were billed were not applied consistently for labor and materials. The hours billed for one job in our sample was billed incorrectly. The unit did not apply the markup on materials in a consistent manner for one project in our sample. We were unable to verify all expenses charged for another job.	
Risk Statement/Effect	
Undercharging affects the sustainability of the recharge unit and appears to impede MSDC's plan to reduce their ongoing deficit. Inconsistency in charging customers demonstrates potentially unfair disparate treatment.	
Management Action Plan	
B.1	Management will develop a process for quality assurance in billing processes.

[1] Source: Annual Statements of Operations reports for Fund 62058A for the period July 1, 2013 through June 30, 2018.

[2] Productive hours used in proposal = Total working hours –holiday/vacation/sick hours +300 hours

B. Recharge Rate Billing – Detailed Discussion

Analysis of recharge rate noted a preferential rate for one of MSDC's largest customers. Our analysis shows that shortfall in recharge fund for FY 2017-18 appears to be due to overestimating inside orders. We also noted discrepancies with recharge of labor hours for a job and inconsistencies with material markup rates. These observations are discussed below.

Labor Rate:

The approved shop recharge rate effective for FY 2017-18 was $130 per hour for external customers. During our review, we noted that the shop billing rate for one client (Client A) for jobs in the current FY 2017-18 was $100 per hour. Per the Superintendent, a differential income exception was granted to MSDC by the Directors Office for Client A to generate more outside work. Effective July 1, 2018, the shop rate for Client A was dropped to $100.00 per hour for a trial period of one year. We analyzed the impact of the reduced rate to Client A as depicted in Table 2: Client A Preferential Rate.

In FY 2017-18, Client A jobs generated 4,812 of 7,669 (63%) shop hours and 4,952 of 8,356 (59%) of total hours. We evaluated the data for FY 2017-18 and projected FY 2018-19 revenue for the client based on a preferred rate at three levels of volume in shop hours, (1) no increase, (2) 25% increase and (3) 50% increase. Based on this analysis, MSDC would potentially lose between $144,375 and $216,561 in revenue due to the preferred rate extended to Client A.

Table 2: Client A Preferential Rate

	Current Volume	25% Increase	50% Increase
Actual labor hours (2017/2018)	4,812.5 hours		
Projected 2018/2019	4,812.5 hours	6,015 Hours	7,218.7 hours
Projected labor cost (at $100/hour)	$481,250	$601,500	$721,870
Projected labor cost (at $130/hour)	$625,625	$781,950	$938,431
Revenue lost due to preferred rate	$144,375	$180,450	$216,561

Source: AMAS Analysis of Client A projected revenue at various rates and shop hours

Overestimating Inside Orders:

Additionally, we had been advised that the shortfalls in the recharge fund in prior years were due to Client A drastically reducing its orders. However, our analysis shows that for FY 2017-18, the shortfall appears to be due to overestimating inside orders. This recharge facility missed its target volume by almost 6,000 hours or 24 %, the equivalent of three full time staff positions. The projected hours for internal customers were 18,038.87 hours whereas the actual hours logged on inside jobs were 11,273.50 hours.

Labor Hours:

We also noted that not all hours were recharged for the project associated with Job Number 19355. We computed employee time of 1,025 hours, from the time database provided by the unit, for this project in FY 2017-18. However, only 882.75 hours were billed for the year.

Materials Rate:

The approved recharge proposal included a 23% markup on materials. We judgmentally selected and tested 47 of 50 individual transactions costs charged to job #19436 and fifteen (15) transactions for other jobs, totaling $508,751.68 in tested expenses. We recomputed the actual markup rate, based on the final invoice amount and noted that the 23% markup on materials matched for eight out of 62 transactions. We did not see a consistent application of a markup rate for materials. We were advised that the unit charged materials markup on a sliding scale based on the pre-tax cost of the material, a markup methodology that was not consistent with the approved recharge proposal. The sliding scale applied is depicted in Table 3: Material Markup Sliding Scale below.

As a result of this inconsistency in markup, job (19436) appears to have been under-billed by approximately $85,000.

Table 3: Material Markup Sliding Scale

Pre-tax sale	Markup
$1 - $1,000:	25%
$1,001 - $4,999:	10%
$5,000 and above:	5%

Source: MSDC Material Markup Sliding Scale

C.	Recording Recharge Income
Recharge income was recorded incorrectly.	
Risk Statement/Effect	
Income from recharge activity was overstated. Artificially inflated recharge income reduces transparency of operations results and impedes deficit mitigation efforts.	
Management Action Plan	
C.1	BFS has indicated that the debt assistance recharge cannot be corrected after FY end. However, in the future, transactions such as this one will be processed as a financial journal entry funds transfer, not a recharge journal entry.

C. Recording Recharge Income – Detailed Discussion

Incorrect Recharge Income Transaction:

While comparing the data from the proposed and actual statement of operations, we noted that the recharge income per the MSDC records indicated billings of $2,097,544.41 whereas the reported recharge income is $2,369,924.26, a difference of $272,379.85. Upon evaluation of the recharge records, we noted that recharge income included corrections of approximately -$240,000 and a debt assistance recharge "income" of $500,000. The corrections allocated equipment expenses to the proper index and account number; however, MSDC records did not support recharge activity for this recharge income. For instance, there are no job codes assigned and no employee hours or materials expenses to support a recharge billing. We discussed the $500,000 recharge income with UCSD Costing Policy Manager, who advised that this transaction was improper as it artificially inflated the recharge income. Only income derived from the recharge activity should be included in the recharge income. The transaction to record the debt assistance should have been recorded as a funds transfer. In this case, where a net income of $366,346 is recorded for Fund 63058A, a net loss of $133,654 should be recorded.

D.	Internal Controls--Separation of Duties
We found instances where the duties were not adequately segregated. Also, the database used to record activity for MSDC recharge unit is also used for activity in another recharge unit.	
Risk Statement/Effect	
Inadequately segregated duties provide opportunities for defalcation of assets. Sharing of a database between MSDC and Hydraulics Lab at SIO without adequate access control to transactions enables comingling of transactions activities, therefore, obscuring some recharge activities.	
Management Action Plans	
D.1	Management will ensure that duties are assigned such that no single person has complete control over a transaction.
D.2	Management will ensure that the job numbers in the database are auto-generated.
D.3	Management will separate transactions or designate a different numbering structure so that jobs from two recharge units are not comingled.

D. Internal Controls--Separation of Duties – Detailed Discussion

Duties should be assigned such that no single person has complete control over a transaction and one person's work is a complementary check on another's work.

An Administrative Assistant (Clerk A) was an administrator over the database and the primary biller for external customers, which, in FY 2017-18, accounted for approximately one third of all income for the recharge facility. However, information technology general control standards dictate that the administrator of a database should not also be a user of the same database without adequate compensating controls.

Clerk A billed clients electronically monthly, usually in the third week of the month. Wording on the invoices advised clients to submit payments directly to the Central Cashier. The Central Cashier updated the ledgers to record the income. However, some external customers issued checks payable to the UC Regents but mailed the checks to MSDC and some customer pay via credit cards to MSDC. Clerk A processed the check payments received by MSDC, using the online Cash Deposit System (CDS) and used the UCSD mail service to transmit the checks and the printed copy of the CDS to cashiering. Clerk A stated that this happened about once or twice a month. Thus, the person who prepared the billings could also have been the person who received and processed payments for the billings. These duties should be segregated.

Employees logged their time in the SIO internal online timekeeping system based on the job code, linking employee time to the jobs database via the job code. The billing clerks, Clerk A and Clerk B, and the Superintendent had the ability to change employees time allocations. Thus, the billing clerks had the ability to alter the source documents that they used for billings.

Additionally, during our review, we noted that some job numbers in the database had not been billed. Upon further examination, we determined that, while some of the unbilled jobs were for canceled jobs, the majority of the unbilled jobs appeared to have been billed under another recharge activity because the database used for MSDC recharge activity was also used for another recharge activity. The job numbers for the two recharge centers were assigned by Clerk A or Clerk B, in the same series, and recharge billings were approved by the same individual. Sharing of a database between MSDC and Hydraulics Lab at SIO without adequate access control to transactions enables comingling of transactions activities, therefore, obscuring some recharge activities as described above.

E.	**Financial Transactions**
Some financial transactions were not processed in compliance with UC policy.	
Risk Statement/Effect	
Non-compliant transactions indicate poor knowledge and/or application of policy.	
Management Action Plan	
E.1	Management will ensure that staff understand and apply policy consistently.

E. Financial Transactions – Detailed Discussion

During our detailed testing of expenses, we noted the following activities that were not in compliance with UC policy for financial transactions:

1. Two expenses where a tax was applied to the shipping cost;
2. One expense where the use tax was applied to the total cost of the invoice which already included sales tax; and
3. One expense that was paid by credit card that exceeded the UC limit of $4,999.99 for credit card purchases.

MARINE SCIENCES DEV CENTER
Profit/Loss Statement *
FORM 27B

Proposed Pricing

	Services				
	SHOP	**WELDING**	**WATERJET /EDM**	**MATERIAL**	**Total**
Estimated No. Billable Units- UC User	**13,986**	**3,454**	**599**	**$1,255,000**	**18,039**
Estimated No. Billable Units- Non UC User	**5,994**	**384**	**257**	**-**	**6,634**
Proposed Rate (UC Users)	**$85**	**$95**	**$150**	**23%**	
Proposed Rate (Non-UC Users)	**$130**	**$140**	**$195**	**23%**	

Summary

	Services				
	SHOP	**WELDING**	**WATERJET /EDM**	**MATERIAL**	**Total**
Income					
Recharge Income-UC User	$1,184,628	$329,480	$89,675	$291,401.48	$1,895,184
Revenue- Non-UC User	$781,855	$53,815	$49,962	$0	$885,631
Total Income	**$1,966,483**	**$383,295**	**$139,636**	**$291,401**	**$2,780,816**
Expenses					
Total Salaries & Benefits	$965,521	$268,001	$77,130	$287,554	$1,598,205
NGN & General Liability	$17,563	$4,218	$1,477	$3,848	$27,106
Shop Supplies/Services	$144,180		$49,500	$0	$193,680
Temporary Help	$0		$0		$0
Equipment Depreciation	$71,639		$0		$71,639
Equipment Purchases	$0		$0		$0
MRO (Maintenance, Repair, Operations)		$67,900			$67,900
Travel	$0				$0
Adj for Prior Yr Deficit or (Surplus)	$493,424	$25,970	$0	$0	$519,394
Total Expenses	**$1,692,326**	**$366,089**	**$128,107**	**$291,401**	**$2,477,923**
Differential Income Transfer	**$274,157**	**$17,206**	**$11,530**	**$0**	**$302,893**
Net Profit (Loss)	**($0)**	**$0**	**$0**	**$0**	**($0)**

* Source: Recharge Rate Proposal Approved September, 2017; Employee data redacted

STATEMENT OF OPERATIONS
AND ANALYSIS OF ACCUMULATED EARNINGS
FOR SELF SUPPORTING UNITS
Fund: 62058A - MAR SCI DEVEL & OUTFIT SHOP INC

	July 1, 2013 - June 30, 2014	July 1, 2014 - June 30, 2015	July 1, 2015 - June 30, 2016	July 1, 2016 - June 30, 2017	July 1, 2017 - June 30, 2018	July 1, 2018 - December 31, 2018
STATEMENT OF OPERATIONS						
Income						
Revenue (Account 500000)	2,234,860.11	2,098,781.03	707,288.92	1,106,738.23	1,148,926.71	334,170.82
Recharges (Account 690000)	1,188,254.11	-56,753.97	102,949.72	-22,964.17	2,369,924.26	800,407.13
Other Allocations	1,258,647.00	1,448,993.00	1,428,732.00	1,435,024.00		
Total Income	4,681,761.22	3,491,020.06	2,238,970.64	2,518,798.06	3,518,850.97	1,134,577.95
Expenses						
Academic Salaries (Account 600000)	0	0	0	0	0	0
Staff Salaries (Account 610000)	1,093,730.47	1,106,425.90	1,121,213.69	1,163,488.33	1,100,033.06	522,400.52
General Assistance (Account 620000)	66,804.54	58,806.63	58,866.33	44,119.08	14,996.46	374.14
Employee Benefits (Account 660000)	685,729.15	747,145.36	753,668.41	750,133.92	709,020.17	339,763.38
Supplies and Expenses (Account 630000)	1,319,363.58	1,102,641.32	567,074.98	1,132,390.19	1,335,496.82	415,120.85
Equipment (Account 640000)	0	-1,172.67	0	27,390.44	-13,285.71	0
Travel (Account 650000)	10,126.53	6,398.24	9,253.09	11,491.39	6,243.99	3,304.51
Total Expenses	3,175,754.27	3,020,244.78	2,510,076.50	3,129,013.35	3,152,504.79	1,280,963.40
Net Income	1,506,006.95	470,775.28	-271,105.86	-610,215.29	366,346.18	-146,385.45
ANALYSIS OF ACCUMULATED EARNINGS						
Beginning Balance at July 1, 201x-1	-1,489,604.37	-628,120.30	-698,583.70	-1,327,271.56	-2,345,868.06	-1,717,803.76
Plus: Net Income	1,506,006.95	470,775.28	-271,105.86	-610,215.29	366,346.18	-146,385.45
Less: Transfers	644,522.88	541,238.68	357,582.00	408,381.21	-261,718.12	0
Ending Balance at June 30, 201x	-628,120.30	-698,583.70	-1,327,271.56	-2,345,868.06	-1,717,803.76	-1,864,189.21

Source: Financial Link