FEDERAL ENERGY EFFICENCY

AWARDS PROGRAM

1987

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA

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DEPT ROUTING	INFO	ACTION	COPY	INITIAL
AC/S FAC			✓	
DAC/S FAC				
FAC MGT O				
CONST COORD				
ENVIR ENGR				
SPEC PROJ O				
FAC UTIL O				
MAINTO		✓	✓	
PWO				
CED				
ODP				
OFH				
OPLAN				
EI-E DIV				
SECRETARY				

ADMINISTRATIVE MESSAGE

ROUTINE

R 1921187 JUL 88 ZYB

FM SECNAV WASHINGTON DC

TO ALNAV

UNCLAS //N04100//

ALNAV 088/88
SUBJ: ENERGY EFFICIENCY AWARDS

1. I AM PLEASED TO ANNOUNCE THE FOLLOWING COMMANDS ARE WINNERS OF THE FY87 SECNAV ENERGY CONSERVATION AWARDS. THESE COMMANDS ARE AUTHORIZED TO FLY THE SECNAV ENERGY FLAG FOR A PERIOD OF ONE YEAR.

CATEGORY	WINNER
LARGE SHIP	USS FORRESTAL (CV 59)
SMALL SHIP	USS O'BANNON (DD 987)
AVIATION SQUADRON	PATROL SQUADRON 6 (VP 6)
LARGE SHORE	NAVAL AIR STATION, BRUNSWICK, ME
SMALL SHORE	NAVAL SUBMARINE BASE, NEW LONDON, CT
INDUSTRIAL	NAVAL WEAPONS CENTER, CHINA LAKE, CA
MARINE CORPS	MARINE CORPS AIR STATION, YUMA, AZ

2. I'M ALSO PLEASED TO ANNOUNCE THAT THE FOLLOWING INDIVIDUALS WERE SELECTED BY THE DEPARTMENT OF ENERGY (DOE) AS WINNERS OF THE FEDERAL ENERGY EFFICIENCY AWARDS. PRESENTATION CEREMONIES WILL BE HELD IN WASHINGTON DC ON 27 OCT 88.

CDR JON DUKE	NAVAL FACILITIES ENGINEERING COMMAND
MR DAN QUAGLIARELLO	NAVAL AIR SYSTEMS COMMAND

DLVR:FLDMEDSERVSCOL CAMP LEJEUNE NC(2)...ACT
DLVR:CG SIXTH MEB(7)...ACT
DLVR:TWO TWO MEU(4)...ACT
DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT
DLVR:NAVTNVSERVRA NEW RIVER NC(1)...ACT
DLVR:PERSUPP DET CAMP LEJEUNE NC(4)...ACT

BADJ(1)...ACT FOR CG MCB CAMP LEJEUNE(90) 17037/ 2/0411
BCOS(1) GSTF(12) OCOR(8) SSTF(68)

GMEC(1)...ACT FOR MTCC CAMP LEJEUNE NC(1) 17037/ 2/0002

SVC/ RTD:000-000/COPIES:0117

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CSN:AUIB00220 SECNAV WASHING

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MR RICHARD IWAMOTO PACIFIC MISSILE RANGE FACILITY
MR DAWUD MUHAMMAD MARINE CORPS BASE, CAMP LEJEUNE
MR DONALD OGLESBY MARINE CORPS BASE, CAMP LEJEUNE
MR THOMAS BROWNLEY MARINE CORPS BASE, CAMP LEJEUNE

3. DETAILS REGARDING FORMAL PRESENTATION GEREMONIES FOR BOTH AWARDS WILL BE THE SUBJECT OF SEPARATE CORRESPONDENCE. OPNAV POC IS LCDR J.A. MEHULA, AV 225-4775

4. IN TODAY'S FISCAL CLIMATE IT IS CRITICAL THAT WE DO EVERYTHING POSSIBLE TO STRETCH OUR SCARCE RESOURCES AS FAR AS THEY CAN GO. THESE AWARD WINNERS HAVE CLEARLY DEMONSTRATED THAT FOCUSING COMMAND ATTENTION TO EFFICIENT ENERGY UTILIZATION CAN PRODUCE REAL SAVINGS WHICH CAN BE USED TO FULFILL OTHER REQUIREMENTS. I ENCOURAGE EACH OF YOU TO FOLLOW THEIR OUTSTANDING EXAMPLE.

5. MY PERSONAL THANKS AND CONGRATULATIONS TO ALL FY 87 WINNERS. KEEP UP THE GOOD WORK. WILLIAM L. BALL, III, SECRETARY OF THE NAVY.

BT

FEDERAL ENERGY EFFICIENCY AWARD

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

TITLE: CONDENSATE SYSTEM IMPROVEMENTS

AWARD CATEGORY: Small Informal Group #1

NOMINEE INFORMATION:

Mr. Donald Oglesby - Planner/Estimator
Mr. Dawud Muhammad - Planner/Estimator
Bldg. 1202 Base Maintenance Division
Operations Branch, Marine Corps Base
Camp Lejeune, North Carolina 28542
(919) 451-5794 comm. 484-5794 Autovon

Mr. Thomas Brownley - Boiler Plant Operator Leader
Bldg. 1700 Base Maintenance Division
Utilities Branch, Marine Corps Base
Camp Lejeune, North Carolina 28542
(919) 451-3627 comm. 484-3627 Autovon

NOMINATOR INFORMATION:

Mrs. Karen Foskey
EMCS - General Engineer
Bldg. 1202 Base Maintenance Division
Utilities Branch, UMACS Office, Marine Corps Base
Camp Lejeune, North Carolina 28542
(919) 451-5642 comm. 484-5642 Autovon

FEDERAL AGENCY CONTACT POINT:

Same as Nominator

Summary of Nomination
Small Informal Group No. 1
Condensate System Improvements

A small informal group at Marine Corps Base, Camp Lejeune was instrumental in ensuring that the Camp Geiger area condensate return system operates at maximum efficiency. These individuals, Donald Oglesby, Dawud Muhammad, and Thomas Brownley, recommended that since Camp Geiger had a closed loop steam system, steam trap replacement was necessary. For further enhancement of energy efficiency, condensate pumps and receivers were also installed. These improvements resulted in a 30,702 MBTU/year savings. This equates to 465,180 BTU's saved per dollar spent. Installation of condensate pumps and receivers alone gave a 6.44% increase in energy savings for FY 87 over FY 86.

INTRODUCTION

The Camp Geiger area of Marine Corps Base, Camp Lejeune, consists of 168 buildings serviced by overhead and underground steam and condensate lines All of these buildings and structures that are heated utilize steam, and 39 buildings depend upon steam for domestic hot water. Of the 168 buildings, only 20, or approximately 12 percent, have a condensate receiver, pump, and functional steam traps.

This situation was studied by three Base Maintenance personnel. It was concluded that since Camp Geiger had a closed loop steam system, it was necessary to replace steam traps and provide condensate pumps and receivers for proper system operation. Without implementation of these applications, this system would continue to be a waterlogged, waterhammered, inefficient steam system.

SECTION I. TOTAL ENERGY SAVED

The installation of a condensate collection system, condensate pumps and receivers in selected buildings, resulted in a 3,651 MBTU/year savings in energy consumption. (Fig. 1-2)

In addition, major conservation was accomplished as a result of steam trap replacement. Since this project, energy savings have increased to 27,051 MBTU/year. These efforts brought a total of 30,702 MBTU/year savings. (Fig. 3)

SECTION II. ACTIONS TAKEN

1. Installation of a condensate collection receiver and pump on the steam and condensate distribution system. This application:

   (a) Prevents waterlogging and flooding of condensate return mains on steam distribution system and building heating systems.

   (b) Relieves the back pressure and extends the working cycle of steam traps.

   (c) Helps to alleviate waterhammer by venting condensate main return.

2. Replacement of defective and misapplied steam traps. This application:

   (a) Prevents waterhammer in the building heating systems and the steam and condensate return distribution system.

   (b) Prevents fractures of fittings and leaking piping due to excessive waterhammer.

   (c) Returns building heating system and steam coils to low pressure systems.

   (d) Recovers condensate return loss due to fractures and leaks in condensate return lines caused by excessive waterhammer, greatly reducing the use of boiler feed (make-up) water.

SECTION III. PROJECT LIFE

Since Camp Geiger consists of Buildings served by steam and condensate utilities for the main purpose of heat and domestic hot water, it is estimated that the energy conservation actions will stay in effect as long as the maintenance and repair of steam distribution systems aboard Camp Geiger is maintained. The continual annual savings are estimated to be 30,702 MBTU.

SECTION IV. TRANSFERABILITY

This project's potential transferability has already been realized. This project's effort is the second successful steam and condensate return system project aboard the Camp Lejeune complex. This project may be adopted at any government agency that utilizes steam.

SECTION V. INNOVATION

There are no innovative features that make this system unique. However, a condensate meter at the collection point has allowed daily and hourly documentation of actual condensate returned to the steam plant on boiler operational log sheets. This application has made the system more effective. Any noticeable fluctuation in condensate return would tend to indicate a possible return leak and warrant checking steam and condensate return lines.

SECTION VI. ENERGY SAVED COMPARED TO DOLLARS SPENT

FY	TOTAL NUMBER MBTU'S SAVED	CURRENT AND FUTURE DOLLAR EXPENDITURES	BTU'S PER DOLLAR SPENT
87	30,702	$66,000.00	465,180

SECTION VII. OUTREACH AND EDUCATION

This effort has a significant educational value to management personnel. Through this project management has realized that effective training seminars are necessary to indoctrinate our maintenance personnel in energy conservation and the mechanics of a steam distribution system. Specific training seminars in such areas as, steam trap applications, when to trap, where to trap, what type trap to use, the operation of different traps, sizing traps.

As an example, let us consider the difference in the trapping requirements of a steam radiator and a unit heater. While the steam space of the radiator is great compared with its heat output, the steam capacity of the unit heater is small compared with its heat output. The radiator can make good use of the sensible heat in condensate before it is discharged but the unit heater cannot. The radiator should be fitted with a thermostatic type trap that will hold back condensate until its temperature has dropped a predetermined amount below that of the steam. On the other hand, the unit heater should be fitted with a trap that will discharge condensate immediately as it forms. The slightest waterlogging in this case would reduce heat output and cause the heater to blow cool air.

SECTION VIII. USER BEHAVIOR

These techniques can be implemented Department of Defense wide in areas with like situations. Education of proper system operation in conjunction with estimated dollars saved both contribute to energy conservation awareness and future implementation.

SUPPLEMENTS

STEAM PRODUCTION

FY	A = AVERAGE STEAM PRODUCED DAILY LBS	B = AVERAGE BOILER MAKE UP WATER USED DAILY LBS	C = CONDENSATE RETURN TO BOILER PLANT DAILY AVERAGE LBS
86	663,544	372,559	290,985
87	677,543	247,609	429,934

FY	D = HEAT NECESSARY TO RAISE BOILER MAKE UP WATER TEMP TO 337.9° F 337.9 F - 60° F = 277.9° F	E = HEAT NECESSARY TO RAISE CONDENSATE RETURN TEMP TO 337.9° F 337.9 - 160 F = 177.9° F	F = TOTAL SENSIBLE BTU'S PRODUCED DAILY F = D + E
86	103,534,146 BTU	51,766,231 BTU	155,300,378
87	68,810,541 BTU	76,485,259 BTU	145,295,800

FY	G = SAVINGS IN SENSIBLE BTU'S DAILY G = F (FY 86) - F (FY 87)	H = SAVINGS IN SENSIBLE BTU'S PROJECTED YEARLY H = G X 365 DAYS/YR
86		
87	10,004,578	3,651,670,970

FIGURE 1

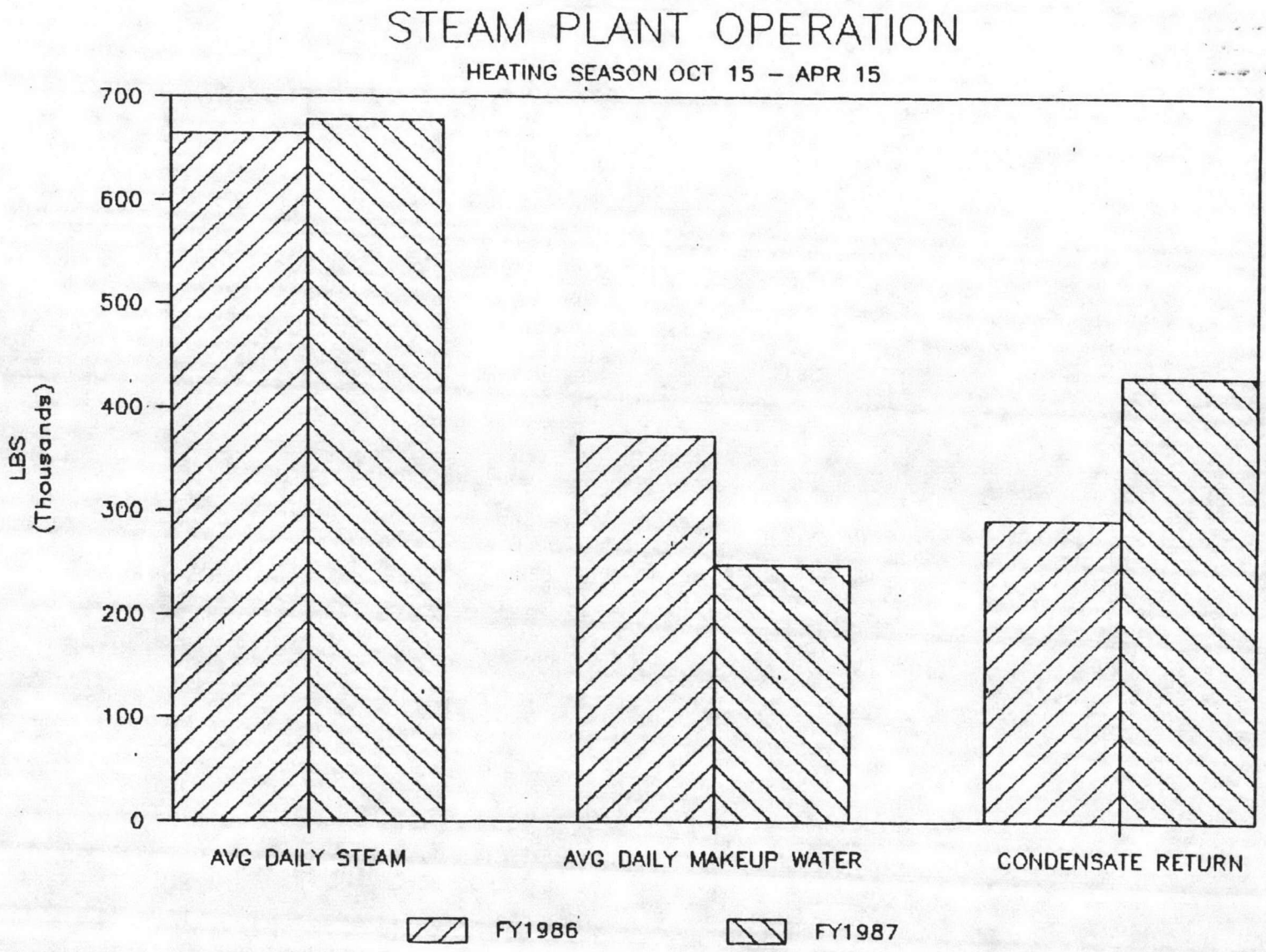
STEAM PLANT OPERATION
HEATING SEASON OCT 15 – APR 15
LBS (Thousands)
700
600
500
400
300
200
100
0
AVG DAILY STEAM
AVG DAILY MAKEUP WATER
CONDENSATE RETURN
FY1986
FY1987

FIG. 2

STEAM TRAPS SUMMARY

INSTALLATION	FAILED NO. OF TRAPS	TOTAL TRAPS	FAILURE PERCENTAGE	ENERGY SAVINGS MBTU/YR	ENERGY SAVINGS $/YR	TOTAL REPLACEMENT COST/YR
CAMP GEIGER	135	882	15	27,051	71,960	13,500

TOTAL SAVINGS

$71,960.00 ENERGY SAVINGS COST/YR

- $13,500.00 TOTAL REPLACEMENT COST

$58,460.00 TOTAL SAVINGS/YR

FIGURE 3