

MAIN/FEC/rn  
4330  
8 Sep 1983

From: Director, Utilities Branch  
To: Director, Operations Branch  
Subj: BMAR/Contract Requirements

Encl: (1) M-2 Project, Replace Boiler No. 65, Bldg BA-106  
(2) Projects Plan FY 87, Replace Coal Conveying Equipment,  
Bldg 1700  
(3) M-1 Project, Replace Boiler No. 6, Bldg AS-702  
(4) M-1 Project, Replace Boiler No. 5, Bldg AS-704  
(5) M-1 Project, Replace Boiler No. 3, Bldg AS-710  
(6) M-1 Project, Repair/Replace Gate Valve in Central Steam  
Distribution System, MCAS(H)

1. Enclosure (1) is provided for inclusion in this year's BMAR as an M-2 deficiency.
2. Enclosure (2) is provided for inclusion in the FY 87 Projects Plan.
3. Enclosures (3), (4), (5), and (6) are provided as additional contract work to be accomplished as soon as possible.

F. E. CONE

0330  
2 SEP 1953

From: Director, Utilities Branch  
Director, Operations Branch

Subject: Raw Material Requirements

- Enc: (1) 1-2 Project, Replace boiler No. 2, Bldg AS-100  
(2) Project Plan BY 6X, Replace Coal conveying equipment, Bldg 1009  
(3) 1-1 Project, Replace boiler No. 6, Bldg AS-702  
(4) 1-1 Project, Replace boiler No. 8, Bldg AS-701  
(5) 1-1 Project, Replace boiler No. 3, Bldg AS-710  
(6) 1-1 Project, Replace boiler No. 4, Bldg AS-710  
(7) Production System, 10/2/53

Enclosure (1) is provided for information in this year's work as of this date.

Enclosure (2) is provided for inclusion in the BY 6X Project Plan.

Enclosures (3), (4), (5) and (6) are provided as additional contracts work to be accomplished as soon as possible.

LOCATION(S): Building BA=106 \_\_\_\_\_ DATE: 7 Sep 1983

PROJECT TITLE Replace Boiler No. 65

ESTIMATED COST: \$125,000

PROJECT PURPOSE: To replace deteriorated boiler.

PROJECT DESCRIPTION: Replace one steam boiler (firetube) to include the following auxiliaries: feedwater pump, oil pump, nonreturn valve, header stop valve and sample cooler. Boiler to be designed for burning No. 2 oil. Boiler capacity 9,000 lbs/hr.

REMARKS: Boiler and auxiliaries have been in service for 32 years. Rear tube sheet has been cracked and welded. Tubes show signs of pitting on the water side. This boiler was originally designed to burn No. 6 oil and was converted over to burn No. 2 oil.

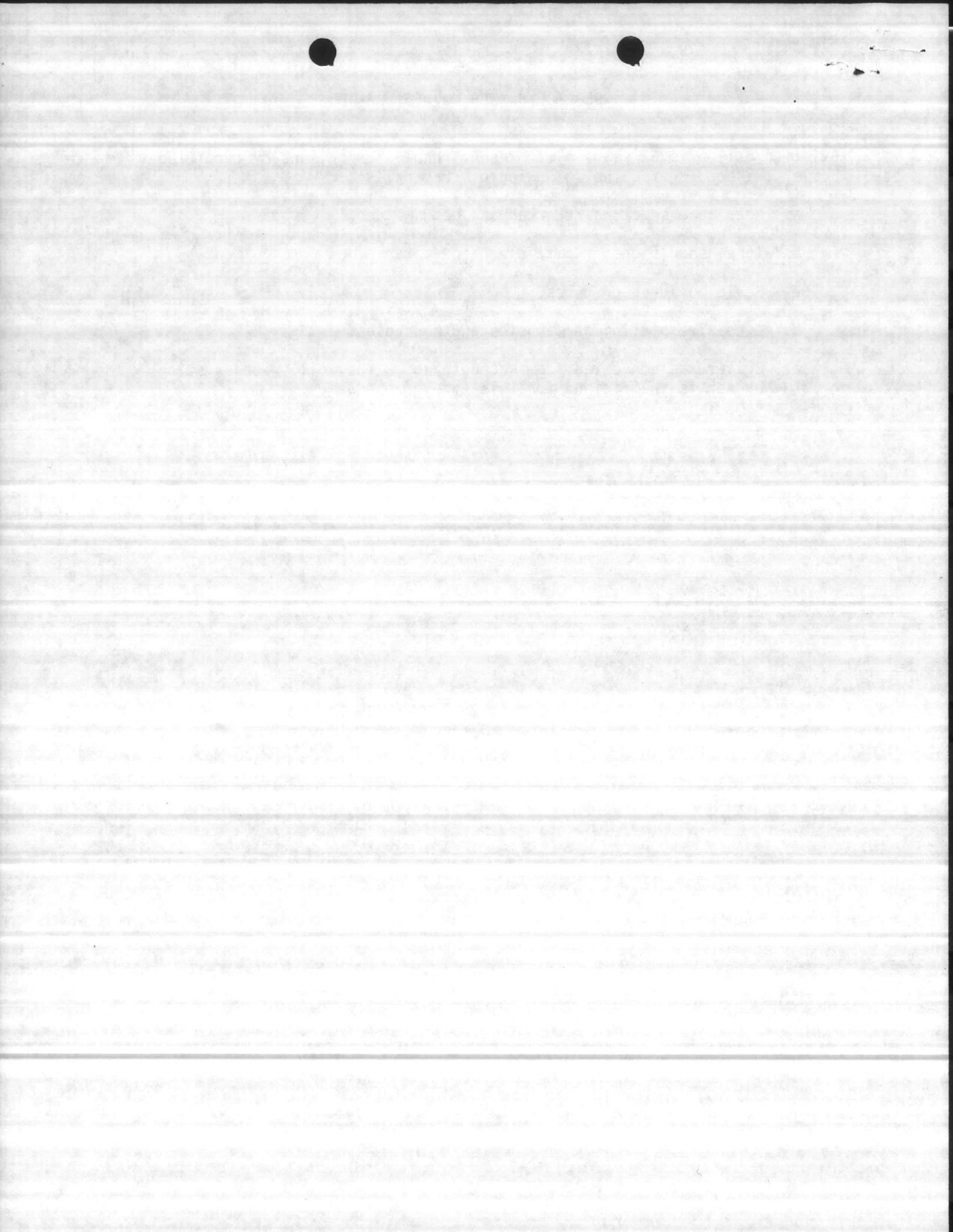
CONTACT: F. E. CONE PHONE: 451-5161 ATTACHMENT(S): \_\_\_\_\_



REPLACE BOILER NO. 65, BA-106

Existing boiler is 32 years old. Recent annual inspections by certified Boiler Inspector noted the following discrepancies:

- a. Rear tube sheet has cracked and been welded.
- b. Tubes show signs of pitting on the water side.
- c. Scale build-up on tubes.
- d. Excessive pitting on manholes and handholes.
- e. Boiler was converted from No. 6 to No. 2 fuel oil. The existing burner is inefficient for this type of operation.



FY-87

PROJECT

7 Sep 1983

m-2

LOCATION(S): Building 1700

DATE: m-2

PROJECT TITLE Replace Coal Conveying Equipment

ESTIMATED COST: \$700,000

PROJECT PURPOSE: To replace worn and deteriorated equipment.

PROJECT DESCRIPTION: Replace coal conveying equipment to storage yard and to plant bunker. This includes elevators, aprons, flights, ecentric feeders, hoppers, flow gates and chutes. Replace with belt conveyers in lieu of the steel elevator type.

REMARKS: Coal conveying equipment is worn and deteriorated to the extent that it is becoming a high maintenance item and is not reliable for burning coal at the maximum capacity. Parts of this conveyor are not a manufactured item; causing lengthy down time when these parts have to be machined or fabricated.

CONTACT: F. E. CONE

PHONE: 451-5161

ATTACHMENT(S):

Enclosure (2)

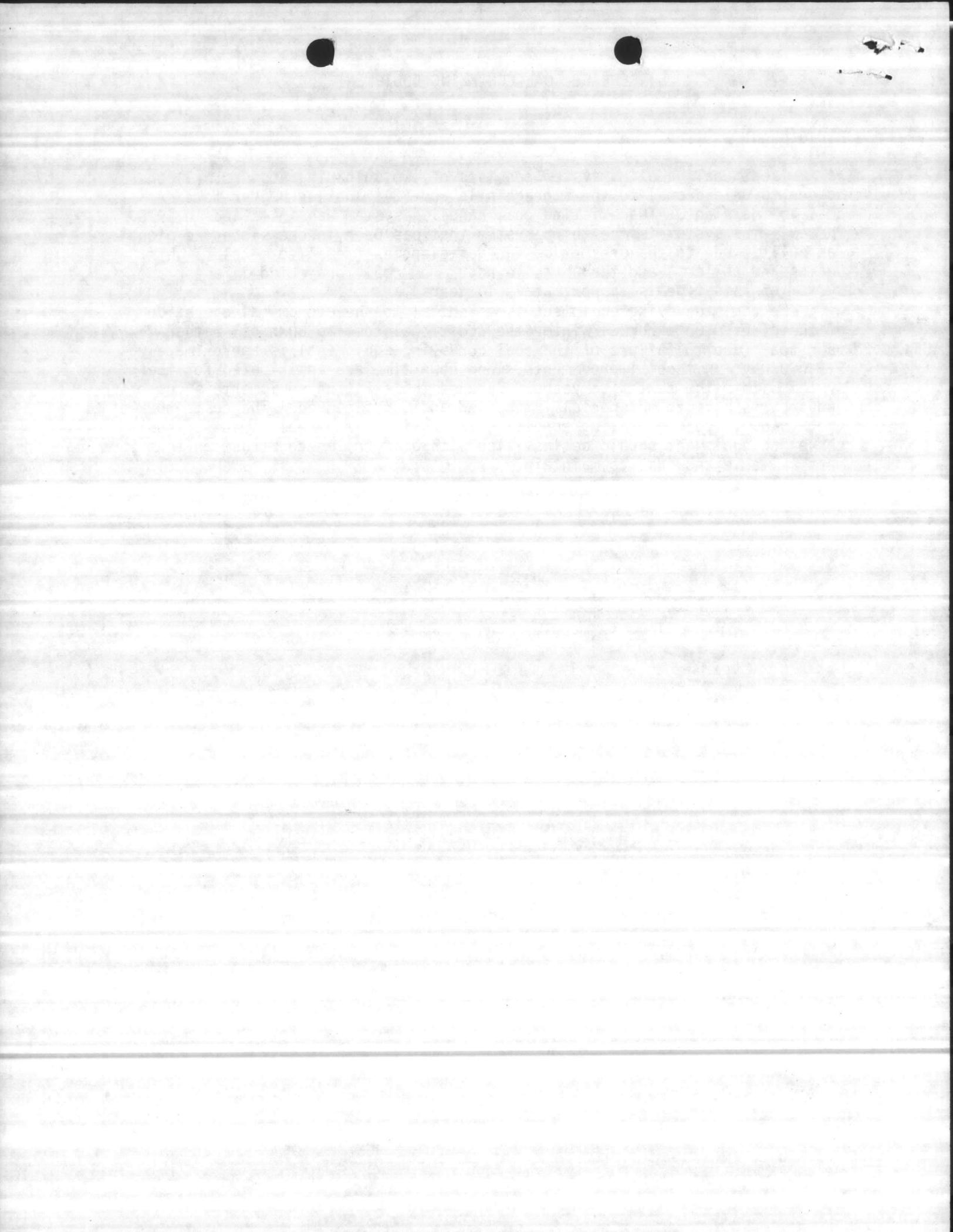


## REPLACE COAL CONVEYING EQUIPMENT

### Background:

Present coal handling system consists of two unloading hoppers: (1) one hopper to unload coal to the storage pile and (2) another hopper to carry coal to the plant. The existing coal handling system was installed in 1976. The existing system is the third system that has been in use since the plant was built. Due to the present design deficiencies (metal to metal flights, chains and rollers) and the abrasive nature of coal, projected life for a system of this type is approximately 10 years.

The coal conveying equipment is essential to the economical operation of the plant. On a normal winter the additional cost to burn oil rather than coal (due to failure of the coal conveying equipment) is approximately \$18,000/day. Without improvements, long down time are anticipated for the system within the next five years. Because the existing equipment is custom made, parts have to be specially machined and manufactured. The costs to keep the system in good operating condition is significant. Replacement of coal conveying equipment should be installed with belt-roller construction that is more reliable and easy to maintain.



LOCATION(S): Building AS-70 DATE: 7 Sep 1983

PROJECT TITLE Replace Boiler No. 6

ESTIMATED COST: \$20,000

PROJECT PURPOSE: To replace deteriorated boiler.

PROJECT DESCRIPTION: Replace one hot water boiler (firetube) to include expansion tank and header stop valve. Boiler capacity 1,030,000 BTU/hr.

REMARKS: Boiler foundation (brick) has deteriorated to the point of replacement. Water side show signs of pitting on the tubes. This boiler has been in service for 30 years.

CONTACT: F. E. CONE PHONE: 451-5161 ATTACHMENT(S): \_\_\_\_\_



LOCATION(S): Building AS-704

FY-84

DATE: 7 Sep 1983

PROJECT TITLE Replace Boiler No. 5 (MCAS)

ESTIMATED COST: \$20,000

PROJECT PURPOSE: To replace deteriorated boiler.

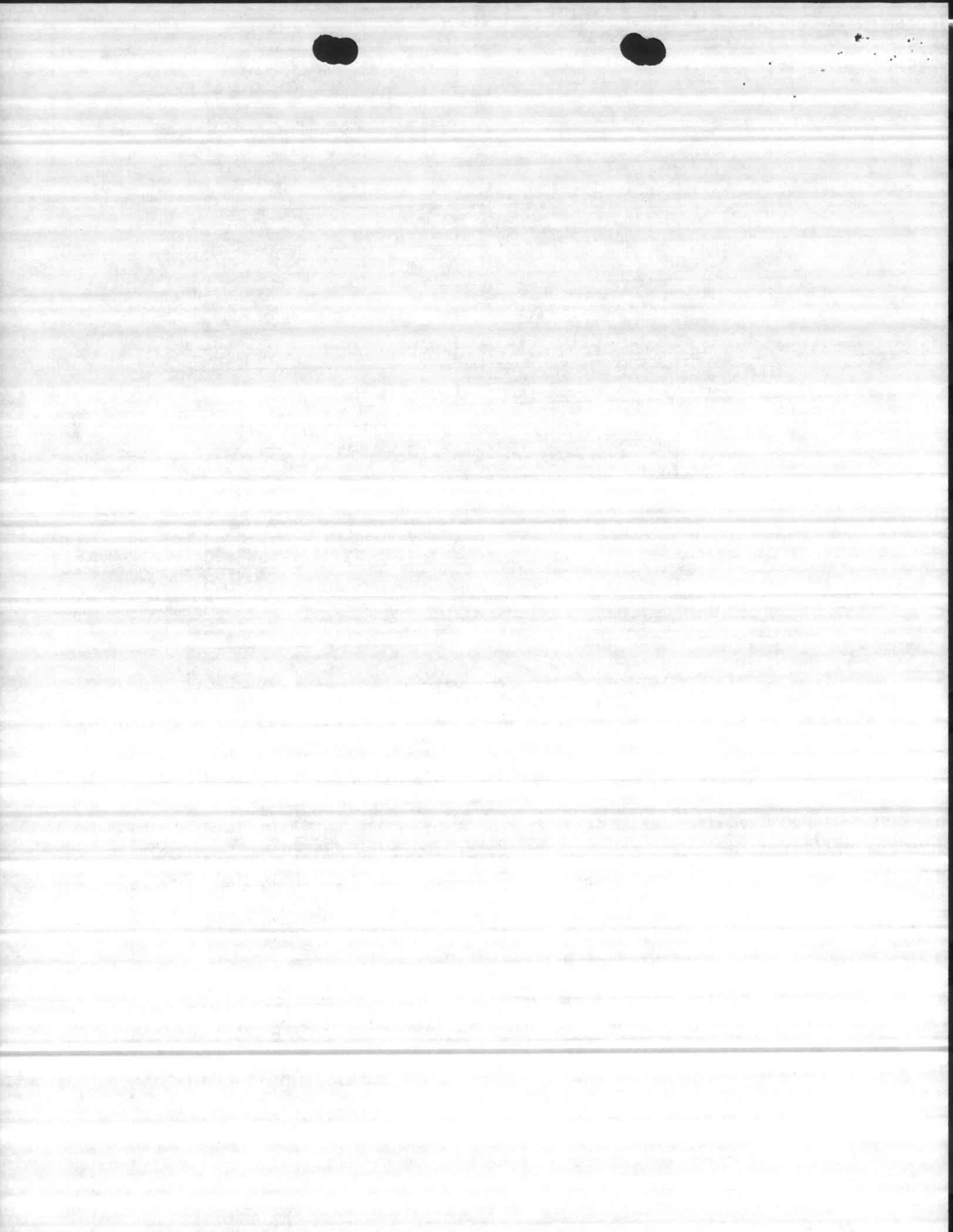
PROJECT DESCRIPTION: Replace one hot water boiler (firetube) to include expansion tank and header stop valve. Boiler capacity 1,610,000 BTU/hr.

REMARKS: Boiler foundation (brick) has deteriorated to the point of replacement. Water side show signs of pitting on the tubes. This boiler has been in service for 30 years.

CONTACT: F. E. CONE

PHONE: 451-5161

ATTACHMENT(S): \_\_\_\_\_



FY-84

m-1

LOCATION(S): Building AS-710

DATE: 7 Sep 1983

PROJECT TITLE Replace Boiler No. 3.

ESTIMATED COST: \$25,000

PROJECT PURPOSE: Replace one steam boiler to include condensate makeup tank, boiler feed pump, header stop valve, chemical feed system, sample cooler and water softener.

Boiler capacity 1,790 lbs/hr.

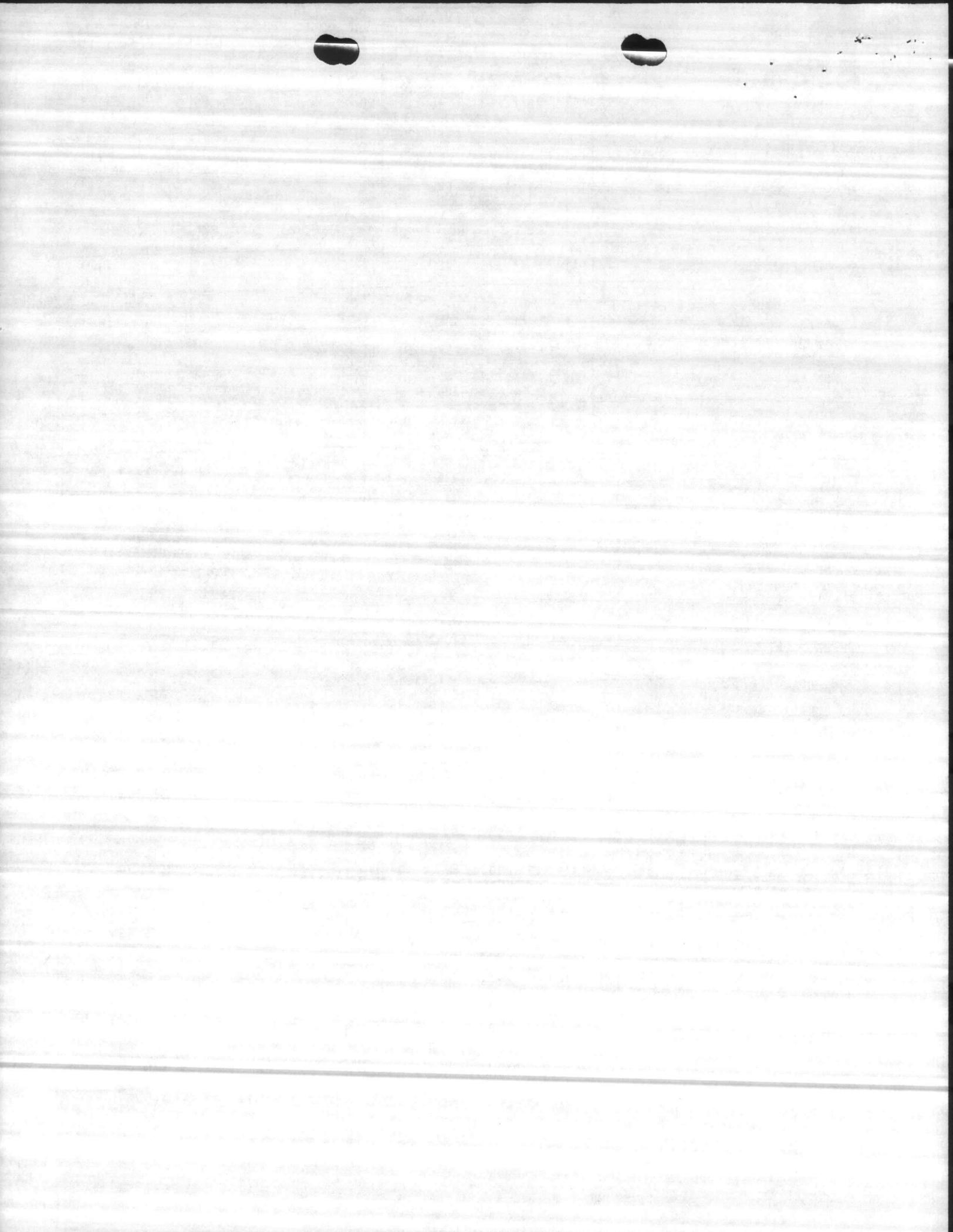
PROJECT DESCRIPTION:

REMARKS: Boiler and auxiliaries have been in service for 30 years. Boiler has a build up of 1/4" scale and show signs of pitting. Outside insulation has deteriorated to the point that it needs to be completely reinsulated.

CONTACT: F. E. CONE

PHONE: 451-5161

ATTACHMENT(S):



LOCATION(S): MCAS(H)

FY-84

DATE: 8 Sep 1983

PROJECT TITLE \_\_\_\_\_

ESTIMATED COST: \$3508

PROJECT PURPOSE: Repair/replace gate valves in the central steam distribution system.

PROJECT DESCRIPTION: Repair/replace 16 steam valves at MCAS(H), New River. See Attachment for description.

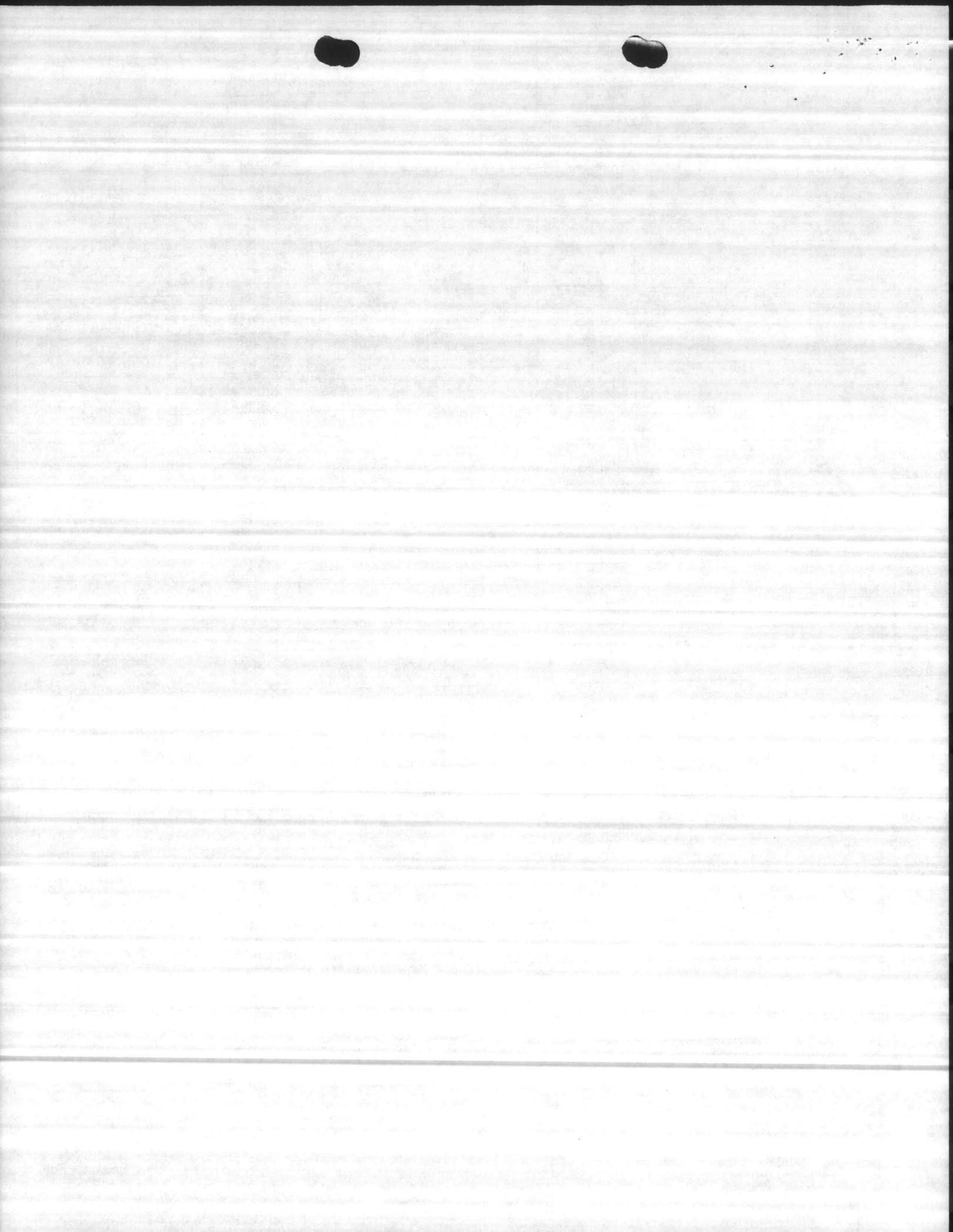
REMARKS: Reduce steam loss and thereby conserve energy.

CONTACT: F. E. CONE

PHONE: 451-5161

ATTACHMENT(S): X

Enclosure (6)



#### IV.2. DESCRIPTION OF AND RECOMMENDATIONS FOR REPAIR OR REPLACEMENT OF LEAKING VALVES

Gate valves throughout the steam distribution system leak steam at various rates. Since no direct or indirect measurement of steam leaks is possible, a visual inspection was used for steam loss estimates. The length of the steam plume was used to estimate an equivalent pinhole size, and the steam losses (lb/min) were calculated using Napier's formula:

$$m \text{ (lb/sec)} = A \text{ (sq in)} \times P \text{ (psia)} / 70$$

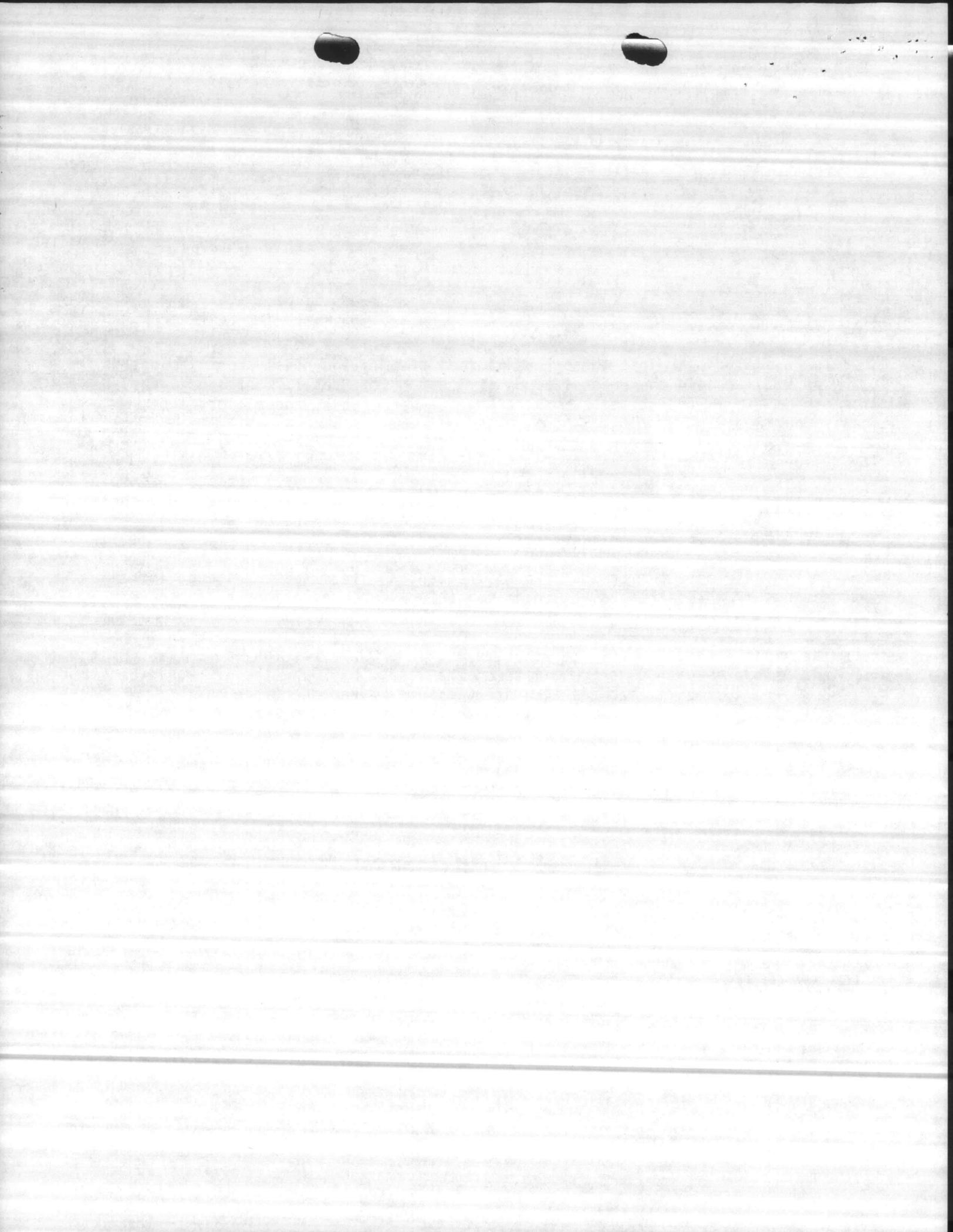
The total losses were based on 8,760 hours of operation per year and 1,122 BTU/lb of steam.

The overall steam loss through valve stem packing and steam pipe fittings was estimated in the Phase I study at 3,950 MBTU/yr or 1.7% of annual fuel consumption. The Phase II inspection, however, showed annual losses of 9,760 MBTU.

Figure IV-1 shows a schematic of the distribution system with the approximate location of leaky valves. Table IV-1 lists all detected leaks in the steam distribution system. The fuel oil savings are higher than the steam losses, namely by  $1/0.78$ , where 0.78 represents the boiler plant efficiency. The fuel oil savings is 4.9% of the annual consumption.

In the case of a summer shutdown of the central steam system, the potential savings from repaired valves and fittings would be reduced by half, to 5630 MBTU/yr.

The steam loss estimates are accurate within  $\pm 100\%$ . For the economic analysis, even with an overestimate of the losses by 100%, the SIR would be 39. The cost estimates are accurate within  $\pm 25\%$  and therefore any inaccuracy would not void positive outcome of the economic analysis. At this point, no preliminary design is required. Final design would be the next step for implementation of this improvement.





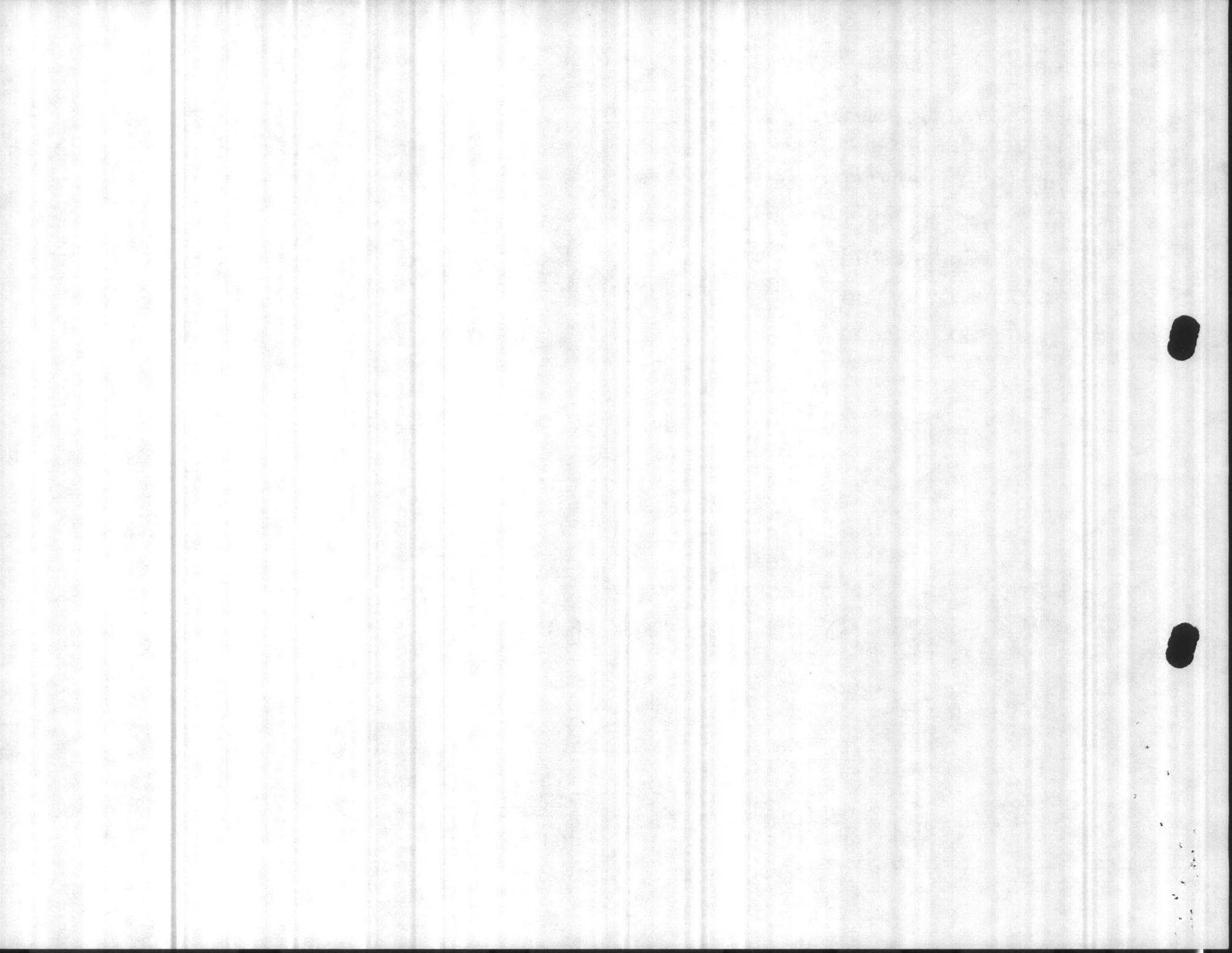
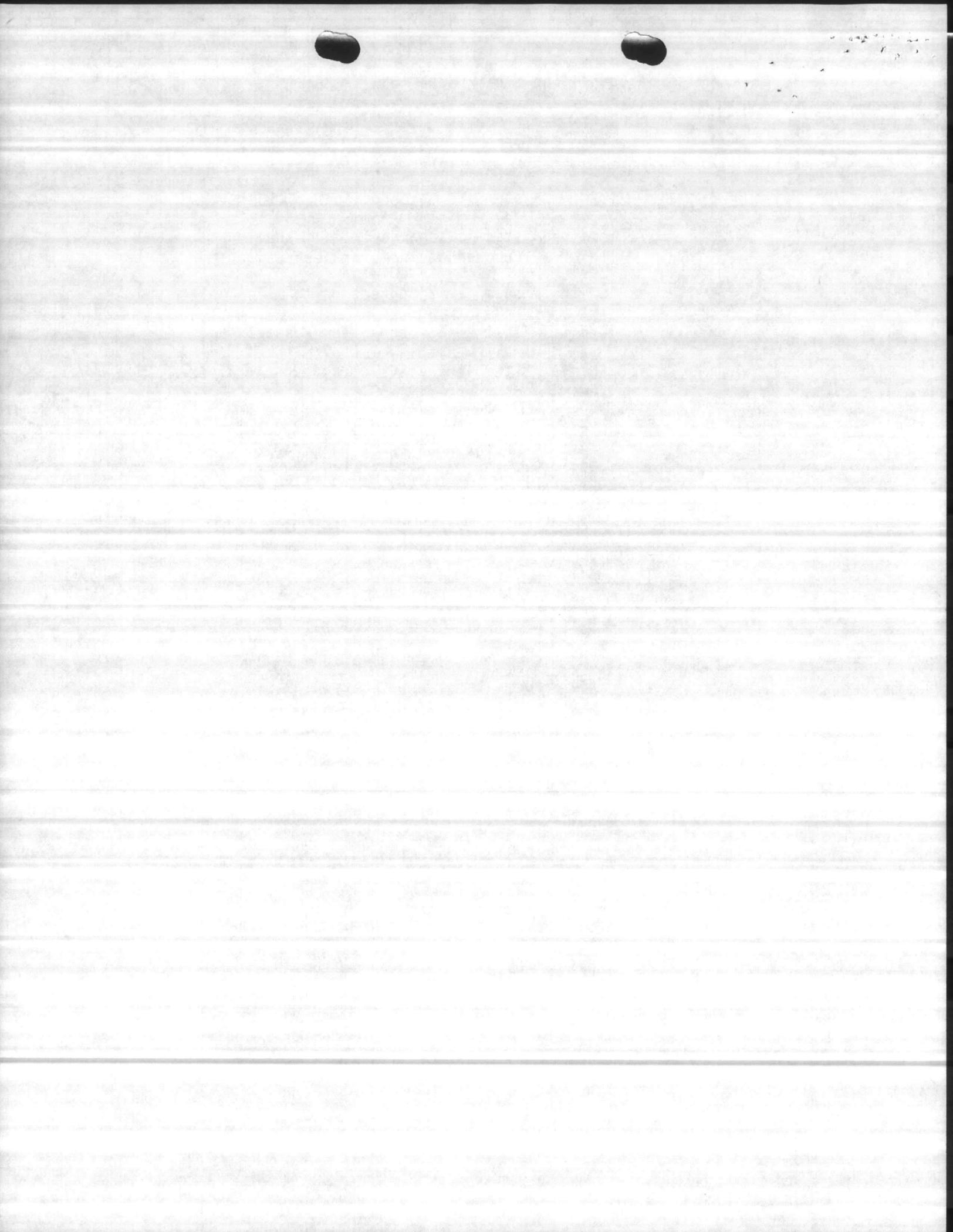


Table IV-1. List of Identified Steam Leaks (continued)

BRANCH NUMBER	PIPE DIAM	APPROX. LOSS	REMARKS
2	4"	2 lb/min	stem leak, connection to 4106
2	4"	1/4 lb/min	steam discharge from mechanical room (condensate pump or leak) at 4108
2	2"	1/2 lb/min	stem leak, connection to 4120
2	2"	1/8 lb/min	stem leak, connection to 4122
21	1"	1/10 lb/min	stem leak valve of condensate line, in front of 4157
3	6"	1/2 lb/min	steam relief valve seems open, man-hole beside road in front of 4020
TOTAL		16.63 LB/MIN	



Life Cycle Cost Analysis Summary  
 Energy Conservation Investment Program (ECIP)

Location: MCAS(H), New River Region # 4 Project Number

Project Title: Utility Energy Conservation Study, Phase II Fiscal Year - 1987

Discrete Portion Name: Repair & Replacement of Leaking Steam Valves  
 Prepared By:  
 Analysis Date: June, 1983 Economic Life 25 Years Integrated Energy Systems

Investment		
A. Construction Cost	\$	3170
B. SIOH	\$	507
C. Design Cost	\$	221
D. Energy Credit Calc(1a+1b+1c)x.9	\$	3508
E. Salvage Value of Existing Equipment	-\$	0
F. Total Investment (1D-1E)	\$	3508

Energy Savings (+) / Cost (-)  
 Analysis Date Annual Savings, Unit Cost & Discounted Savings

Fuel	Cost \$/MBTU (1)	Savings MBTU/yr (2)	Annual Savings (3)	Discount Factor (4)	Disc'ted Savings (5)
A. Elec	2.52	0	0	15.23	0
B. Dist	7.30	0	0	17.63	0
C. Resid	4.42	2820	12464	22.19	276585
D. LP	6.11	0	0	21.20	0
E. TOTAL		2820	12464		\$ 276585

Non Energy Savings (+) / Cost (-)

A. Annual Recurring (+/-)	\$	0
(1) Discount Factor (Table A)		11.65
(2) Discounted Saving/Cost (3Ax3A1)	\$	0

B. Non Recurring Savings (+)/ Cost (-)

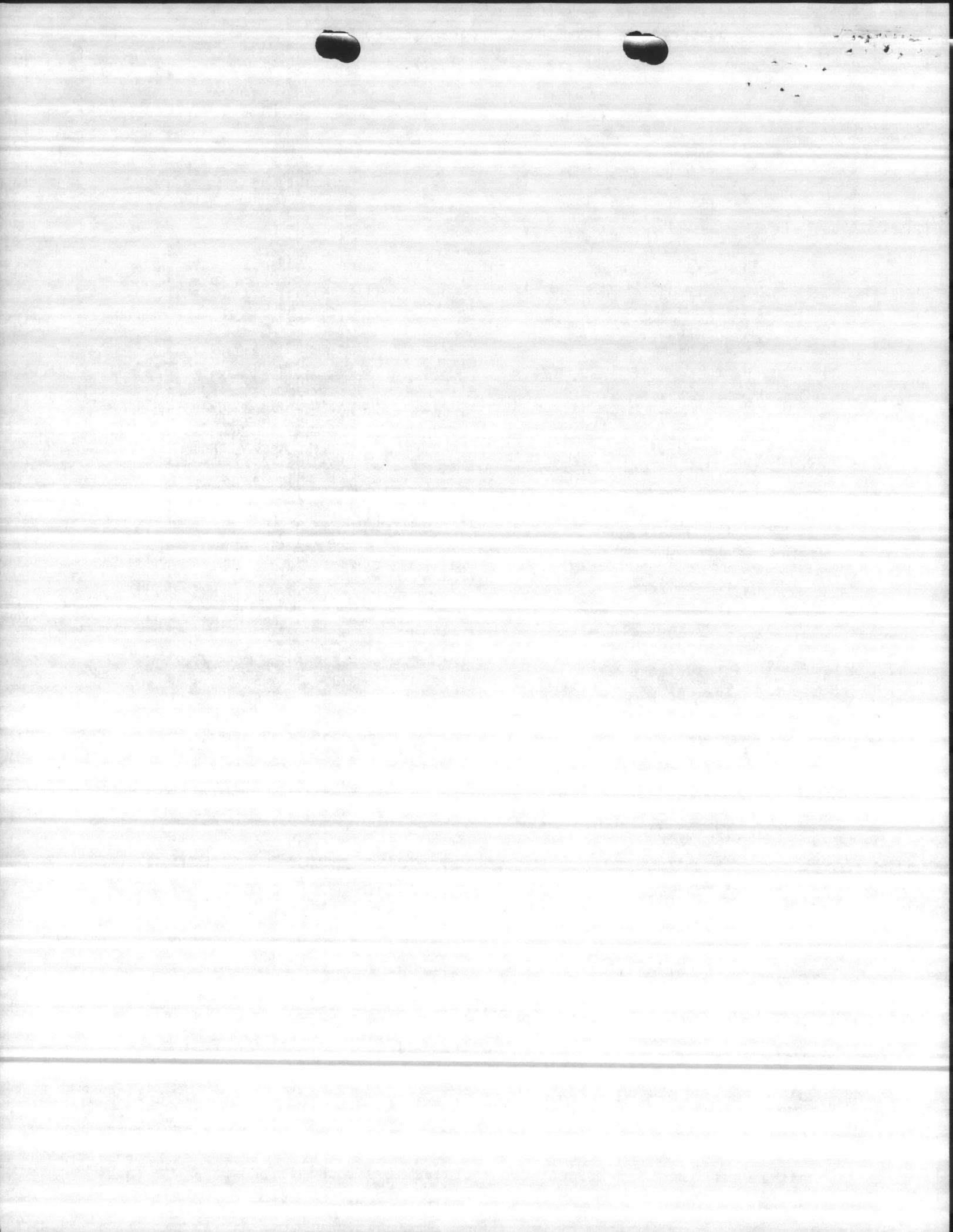
Item	Savings(+) Cost (-) (1)	Yr. of Occ'r (2)	Disc't Factor (3)	Discounted Savings (+) Cost (-) (4)
a				\$ 0
b				\$
c				\$
d. Total	\$ 0			\$ 0

C. Total Non Energy Discounted Savings (+)/(-) (3A2+3Bd4) \$ 0

D. Project Non Energy Qualification Test

- (1) 25% Max Non Energy Calc (2E5 x.33) \$ 91273
- a IF 3D1 is = or > 3C go to Item 4
- b IF 3D1 is < 3C Cal SIR = (2E5+3D1)/1F=
- c IF 3D1b is = > go to Item 4
- d IF 3D1b is < 1 Project does not qualify

First Year Dollar Savings 2E3 +3A+ (3b1d/Years Ec. Life)	\$	12464
Total Net Discounted Savings (2E5 +3C)	\$	276585
Discounted Savings Ratio (If < 1 Project does not qualify) (SIR)=(5/1F)=		78.84



MAIN/FEC/rn  
11300  
1 Jul 1983

From: Director, Utilities Branch  
To: Director, Operations Branch

Subj: M-1 Contract Requirements, FY-84

Encl: (1) Paint Interior, Building 1700  
(2) Replace Condensate Line, Building 1700  
(3) Replace Water Softeners, Building BB-9  
(4) Paint Interior, Building G-650  
(5) Replace Condensate Return System, Onslow Beach  
(6) Painting, Water Treatment Plants  
(7) Replace Rotary Distributors (Filter Arms)

1. Enclosures (1) through (7) are provided for contract accomplishment in FY-84.

F. E. CONE

PAINTS  
11-00  
1-00-1983

from Director, Utilities Branch  
to Director, Operations Branch

Subject: (A) contract requirements, 11-24

- enc. (1) Paint Inspector, Building 1400  
(2) Replace Condensate Return Building 1400  
(3) Replace Water Solenoid, Building 8A-9  
(4) Paint Inspector, Building 8-50  
(5) Replace Condensate Return System, Union Basin  
(6) Paint Inspector, Building 1400  
(7) Replace Solenoid Valves (11-24)

Enclosures (1) through (7) are provided for contract accomplishment.  
THP:sa

1 Jul 1983

BUILDING 1700 - CENTRAL HEATING PLANT

Project

Paint the interior of Central Heating Plant to include five boilers, auxiliary equipment and piping. Cracks in brick work should be pointed up brick, metal and insulation to be cleaned of soot, rust and other foreign material. Boiler auxiliary piping to be painted according to Navy standards.

Justification:

Brick work has cracks and the paint has peeled off. Steel beams and other metal structures are deteriorating from the environment of ash, moisture and heat.

Estimated Cost: \$125,000.00

Encl (1)



[Faint, illegible text throughout the page]

1 Jul 1983

BUILDING 1700 - CENTRAL HEATING PLANT

Project

Replace condensate line from hot well pumps to surge tanks.

Justification:

Piping has deteriorated to the extent that repairs are temporary at best.

Estimated Cost: \$4,000.00

Encl (2)



1 Jul 1983

BUILDING BB-9

Project

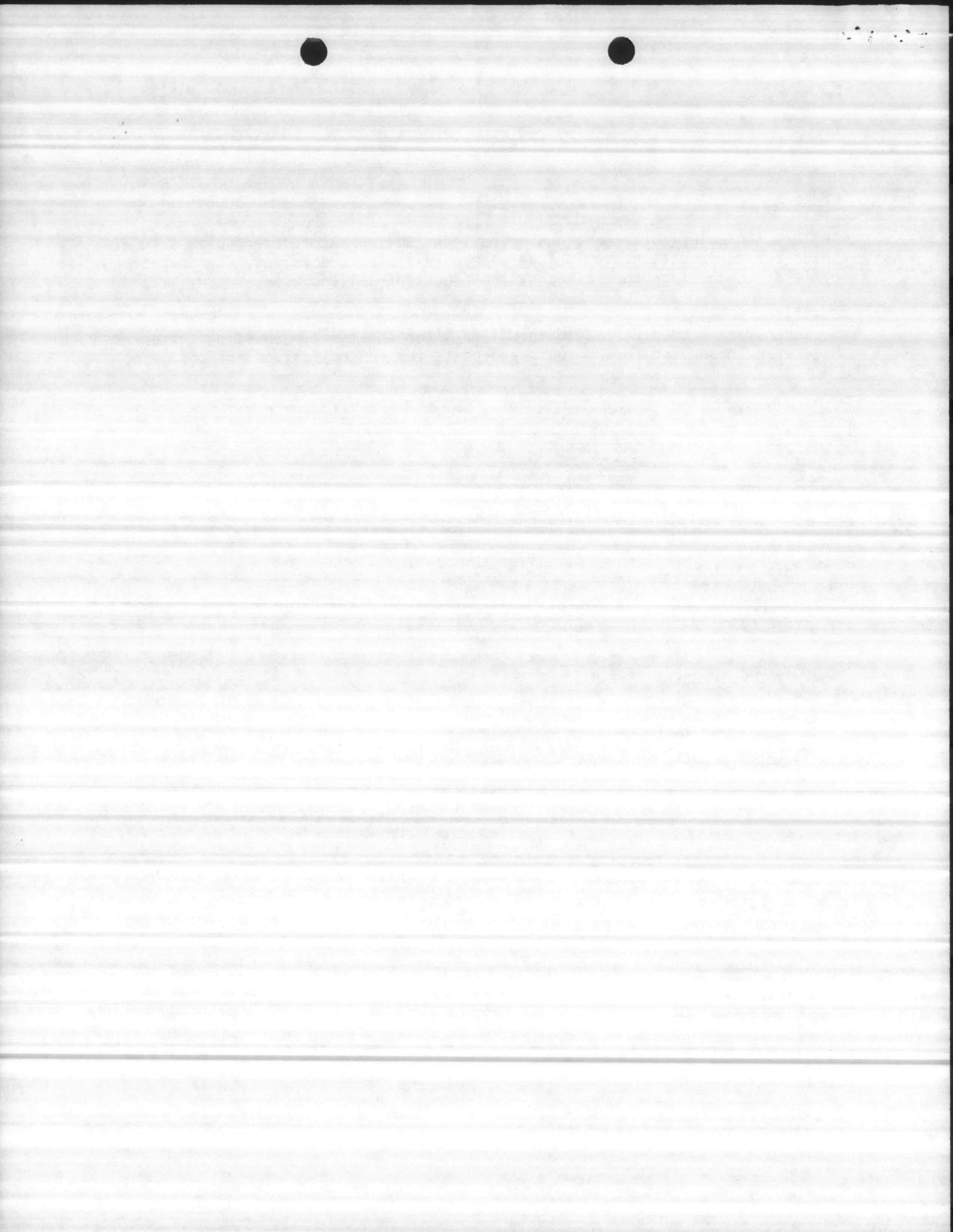
Replace two water softeners, one brine tank and two water meters with automatic heads for regeneration, to include necessary piping and valves. Regeneration cycle to be the type controlled by the amount of gallons used.

Justification:

Softeners are needed for adequate boiler water treatment. Existing softeners have been in service for 20 years and parts for control valves are obsolete.

Estimated Cost: \$20,000.00

ENC1 (3)



1 Jul 1983

BUILDING G-650

Project

Paint the interior of Geiger Heating Plant to include three boilers, auxiliary equipment and piping. The building is constructed of steel and metal siding and should be cleaned of rust, soot and other foreign material before painting. Boiler auxiliary piping to be painted according to Navy standards and contents identified.

Justification

This heating plant has been in service for 14 years. The steel beams and other metal structures have started deteriorating from the environment of ash, moisture and heat.

Estimated Cost: \$20,000.00

ENCL (4)



1 Jul 1983

REPLACE CONDENSATE RETURN SYSTEM  
ONSLow BEACH AREA

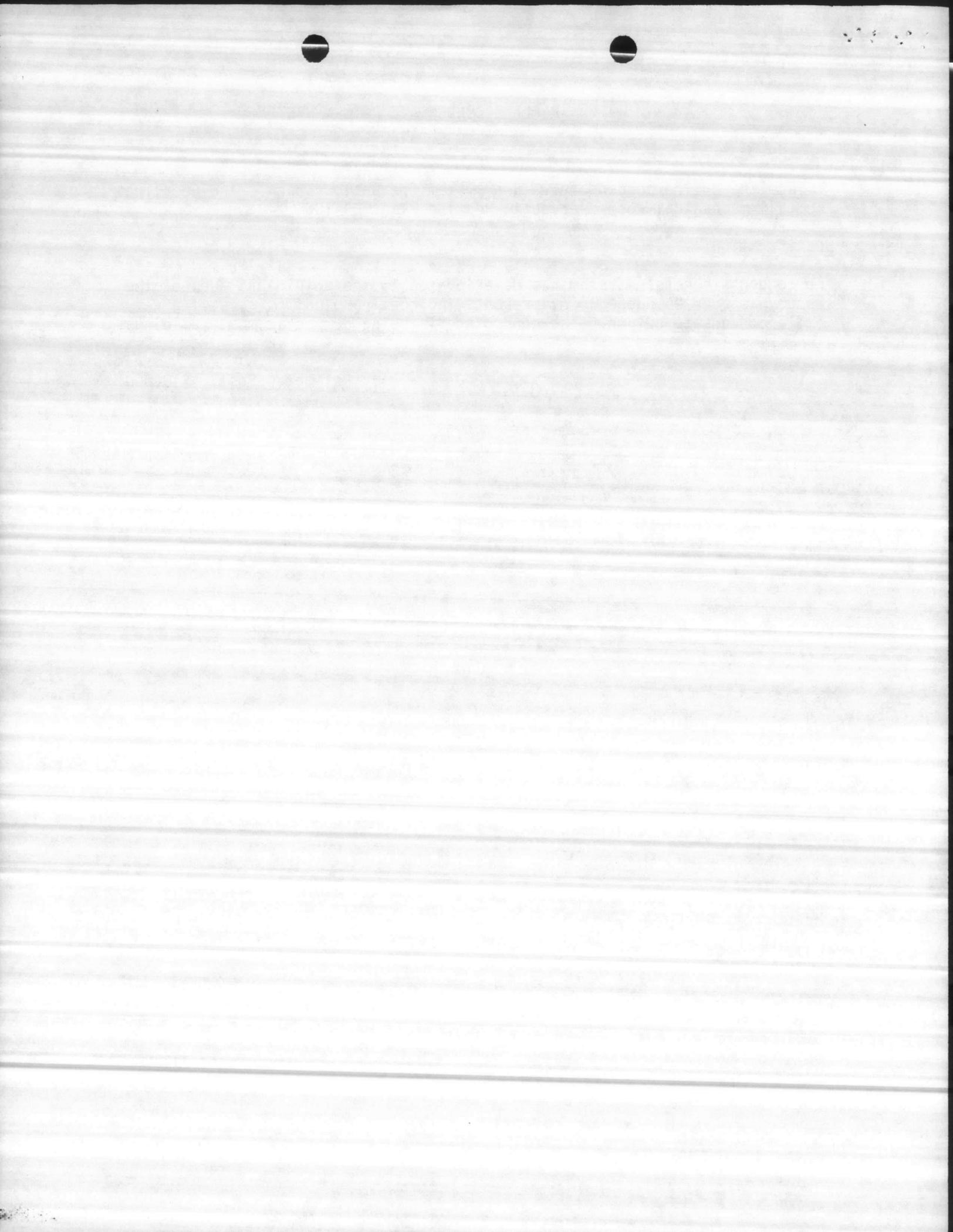
Replace the entire condensate return system for Onslow Beach. Include lines from all mechanical rooms served to Heating Plant BA-106

Justification:

The condensate return system has deteriorated to the point that much of the system has been abandoned. At present, the heating plant is receiving very little condensate return. The condensate is being dumped at most buildings.

Estimated Cost: \$10,000

ENCL (5)



PAINT WATER TREATMENT PLANTS AND EQUIPMENT

6-29-83

Shop 83

The paint has deteriorated and is peeling off in places on the plants and equipment listed below. Paint should be water and mildew resistant.

Building AS-110 - Prime and paint interior walls, post, hand rail and piping in filter room, spiractor room, pipe galley and lime mixing room.

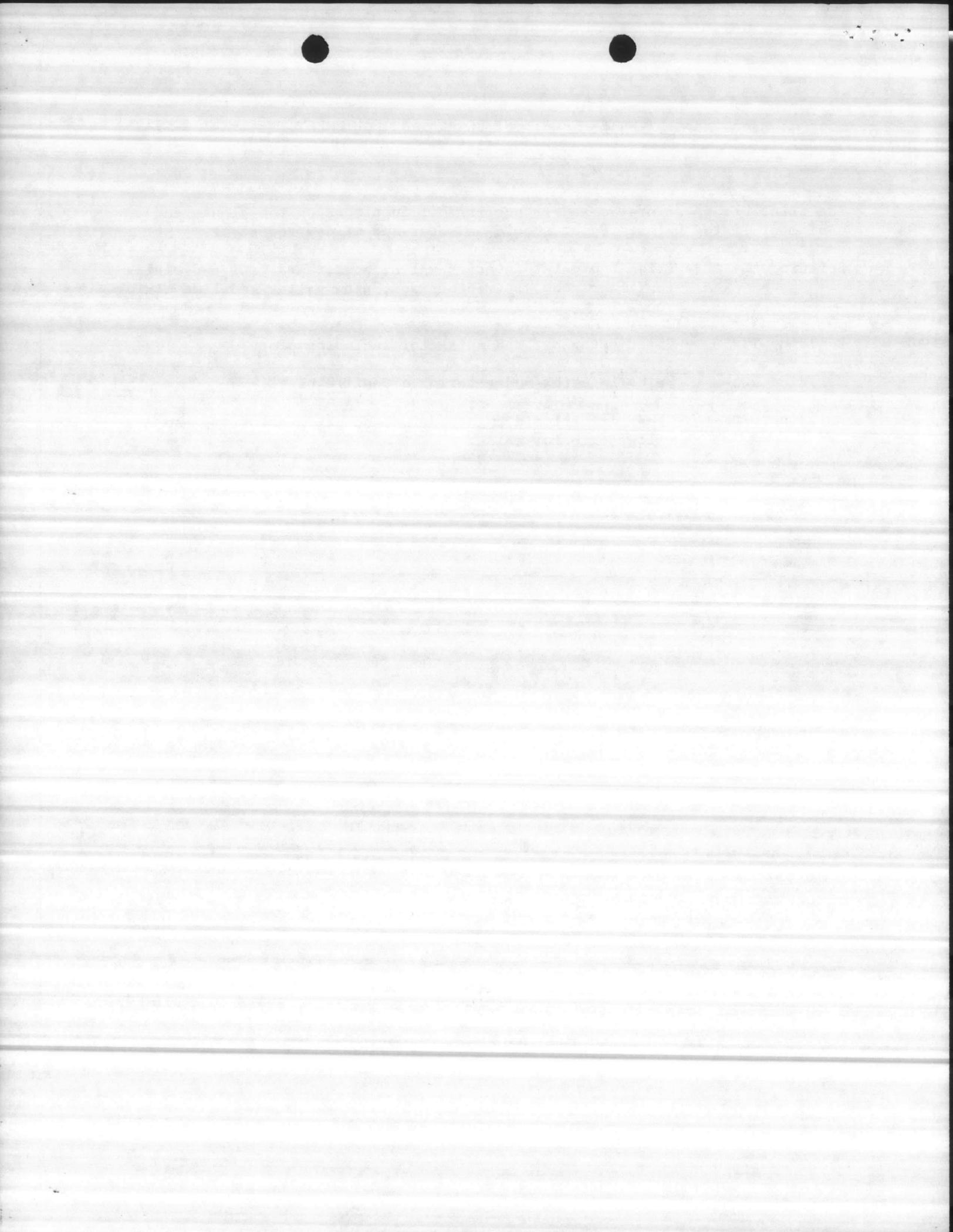
Building TT-38 - Paint exterior, and spiractor including pipe.

Building 20 - Paint interior and exterior of entire plant.

Building 670 - Clean off all old paint, prime and paint all flume and filter exterior walls.

Total Estimated Cost - \$30,000.00

ENCL. (6)



REPLACE ROTARY DISTRIBUTORS

6-29-83

Shop 84

The rotary distributors on trickling filters, buildings STC-636, STC-637, SM-331, SBB-205, and SRR-93 have worn out in service over a sixteen year period of operation and should be replaced with a new hot dipped galvanized type, complete with adjustable nozzles.

Estimated Cost

STC-636 & STC-637	\$80,000.00
SM-331	40,000.00
SBB-205	30,000.00
SRR-93	25,000.00
	<u>\$175,000.00</u>

M-1 Funds

Encl (7)

