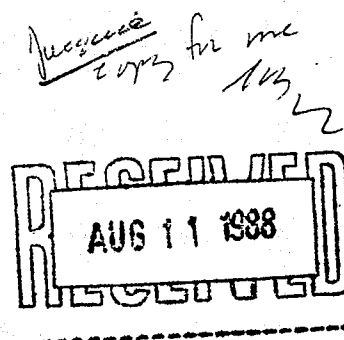


MEMORANDUM



TO: S. El-Alfy ✓

CC: S. McAlpine, K. Blower, G. Halverson

FROM: K. Morton

DATE: July 29, 1988

SUBJECT: REPLACEMENT OF ELECTROSTATIC PRECIPITATOR WITH HOT BAGHOUSE

Introduction

Operation of the hot baghouse at RPC is now being optimized and is proving to be a very effective way to clean hot gases. Arsenic trioxide recovery varies from 97.1 to 99.7% but it is expected that consistently high recoveries will soon be achieved. In fact during the most recent 5 days of pilot plant operation, recoveries averaged 99.7%. Capture of non-volatile particulates is extremely good, purity of As₂O₃ in the cold baghouse product exceeding 99.5%.

Examination of the bags after approximately 100 hours operation revealed no deterioration whatsoever, the only problem being leaking flanges on the bag retainers. After these leaks were repaired, no further problems have been detected.

These findings are very encouraging, since it is intended that high temperature fabric filters will be installed in the arsenic purification plant. Indeed there is probably no other gas cleaning system that could do the job as well. For this same reason, replacement of the Cottrell precipitator with a hot baghouse could also be considered.

Discussion

The Cottrell precipitator is capable of consistently producing an arsenic trioxide product grading about 94% purity with an arsenic recovery of about 96%. The crude product is unsaleable in its present form while arsenic in the Cottrell residue costs some \$300,000/yr to treat. Gold escaping the Cottrell is about one oz/day. and, though this will someday be recovered in the arsenic plant, the tie-up is quite expensive.

If the problems mentioned could be eliminated, ie. 99.5% recovery of arsenic at 99.5% purity and no gold losses, the positive effect on cash flows could be very significant. Reduced baghouse dust storage and retreatment costs, reduced ETP operating costs and improved gold revenues would all contribute. If high arsenic recoveries are achieved, it is possible that the residue could be treated in the main leach circuit, further reducing overall treatment costs by eliminating the

need for the carbon plant. A quick cash flow estimate based on these favourable conditions is as shown below.

| | |
|--|----------------|
| ETP costs savings - 99.5% recovery vs 96% recovery | \$262,500/yr |
| Direct sale of dust, no storage, reclaim or purification costs (not counting value of product) | \$720,000/yr |
| Recovered gold values, 1 oz/d @ 85% | \$170,637/yr |
| No carbon plant, strip circuit, etc | \$240,000/yr |
| Total | \$1,393,137/yr |

Negative aspects of the installation include costs of removal of existing Cottrell and installation of the hot baghouse. It will be necessary to shut the roaster down during the tie-in. Installation could be done in two stages, a new baghouse relacing one Cottrell unit at a time so that no time is lost during demolition or erection of equipment.

Another thing that must be considered is the value of underground dust that will not be removed due to prior sale of current dust. Gold values in the underground dust are higher and will be tied up for a longer period if current production dust is sold. It is possible that feasibility studies will show that it would be beneficial to dispose of the dust underground, at least until stopes B2 30 to B2 36 are depleted. Naturally this would reduce the annual returns by the cost required to reclaim and treat an equivalent amount of material from underground, about \$600,000/yr. for 6 years. All other savings would still apply.

Capital costs of approximately \$1,400,000 to install two parallel units, each capable of handling 10,000 ACFM of gas at 450 deg C. and at an air to cloth ratio of 3.07 to 1, could be expected. These units would each be approximately 1/4 the size of the existing baghouse and about 1/10 the size of the Cottrells. Operating and maintenance costs would likely be somewhat less than the present cost of operating and maintaining the Cottrells..



K. Morton