



Environmental Consulting & Technology, Inc.

May 22, 1995
ECT No. 94273-0200

RECEIVED

MAY 23 1995

Bureau of
Air Regulation

Mr. Cleve Holiday
Bureau of Air Regulation
Florida Department of Environmental Protection
Mail Stop 5500
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Metal Container Corporation, Gainesville Lid Plant

Dear Cleve:

Per our telephone conversation of May 18, 1995, Environmental Consulting & Technology, Inc. (ECT), is providing modeled ambient impacts for specific pollutant emissions from Metal Container Corporation's Gainesville Lid Plant. As shown on page 2-10 of the February 1995 permit application, emissions of n-hexane, toluene, and benzene will decrease as a result of the change in compounds. However, we did not submit any modeling studies to document the extent to which ambient impacts would correspondingly decrease. This letter provides that information.

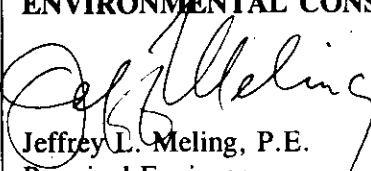
To provide the estimates of ambient impacts, results of past modeling studies were used. One pollutant, n-heptane, was modeled previously at the proposed emission rate of 33.8 lb/hr. Using these results, impacts for toluene and benzene were calculated based on the emission rates given in the permit application.

Table 1 summarizes the predicted impacts for the three pollutants and also compares the results to the Florida No-Threat Levels. As you can see, the predicted impacts are all well below the No-Threat Levels.

If you have any questions regarding this analysis, please call me at 904/332-6230, ext. 352.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.



Jeffrey L. Meling, P.E.
Principal Engineer

JLM/edd

Attachment

cc: D. Pusch, ABC, w/att.

G-PRJ95.3/JLM0522.1

3701 Northwest
98th Street
Gainesville, FL
32606

(904)
332-0444

FAX (904)
332-6722

Table 1. Comparison of Modeled Ambient Impacts Versus Current Florida No-Threat Levels

Pollutant	Emission Rate (lb/hr)	Modeled Ambient Impacts ($\mu\text{g}/\text{m}^3$)			Florida No-Threat Levels ($\mu\text{g}/\text{m}^3$)		
		8-Hour	24-Hour	Annual	8-Hour	24-Hour	Annual
n-Hexane	0.2	4.01	2.54	0.40	1,760	422.4	200
Toluene	0.1	2.00	1.27	0.20	3,770	898	300
Benzene	0.001	0.02	0.01	0.002	30	7.2	0.12

Source: ECT, 1995.



ANHEUSER-BUSCH COMPANIES

3755

2223

0102978

May 12, 1995

Via Federal Express - 367-045-1304

**Ms. Teresa Heron
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400**

**Re: Metal Container Corporation - Gainesville Lid Center
Modification to Air Permit No. AO 01-220792**

Dear Ms. Heron:

In response to your requests of Mr. Jeffrey Meling of Environmental Consulting and Technology, Inc., regarding the referenced permit submittal, I'm submitting a check for \$5,500 to cover the additional processing fee associated with review of a PSD source. This amount is in addition to the \$2,000 sent with the original application submittal of February 10, 1995.

You had also requested usage limits which are to be used as permit limits in lieu of production limits. These are presented below, and are consistent with the emissions estimates presented in the original submittal, which total 319.1 tons per year (over 160 tons per year less than the currently permitted level).

	Annual Usage (Gallons)
end sealant compound	145,220
tab lube	15,071
cleanup solvent	
heptane	7,033
mineral spirits	703

If additional information is required please contact me at 314/577-4162.

Sincerely,

**Dean E. Pusch
Manager, Regulatory Issues
Corporate Environmental Affairs**

DEP:lb

Attachment

Anheuser-Busch Companies, Inc.
Executive Offices
One Busch Place
St. Louis, MO U.S.A. 63118-1852
Telex 447 117 ANBUSCH STL

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ANHEUSER-BUSCH
COMPANIES, INC.

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DATE 05/10/95

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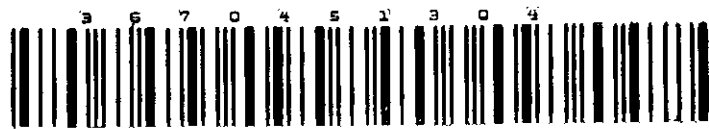
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From (Your Name) Please Print Dean Pusch		Your Phone Number (Very Important)	
Company ANHEUSER-BUSCH CO INC		Department/Floor No	
Street Address 1 BUSCH PLACE		To (Recipient's Name) Please Print Teresa Heron	
City ST LOUIS		Recipient's Phone Number (Very Important)	
State MO		Company Fl. Dept. of Env. Protection	
ZIP Required 63118		Department/Floor No.	
YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice) 164-1907-162		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) Twin Towers, 2600 Blair Stone Rd	
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State		State FL	
ZIP Required		ZIP Required 32399	
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Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

May 9, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr Dean E. Pusch
Manager, Regulatory Issues
Environmental Affairs Department
Anheuser-Busch Companies, Inc
One Busch Place
St Louis, MO 63118-1852

Dear Mr. Busch:

RE: Application Fee for Metal Container Corporation - Lid Center
AC01-265409 & PSD-FL-153
Gainesville, Florida

This letter is to confirm the April 13, 1995, telephone conversation between Jeff Meling of Environmental Consulting & Technology, Inc. (ECT) and Teresa Heron of our staff. As discussed, this project is going to be reviewed under the Prevention of Significant Deterioration regulations (PSD). Before we can continue processing your application, you need to submit a check for \$5500 to the Department of Environmental Protection (DEP) to cover the application fee.

If you have any questions, please call Teresa Heron at (904) 488-1344 or write to me at the above address.

Sincerely,

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/th/t

cc: Robert Leech, NED
Jeff Meling, ECT

no green card
 as of 12-18-95
 KLLD
 per Patty Adams

Z 311 902 931



**Receipt for
 Certified Mail**

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PS Form 3800, March 1993

To Dean Busch	
Street and No. Ottowen Busch	
P.O., State and ZIP Code St. Louis, MO	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date 5-9-95 AC01-265409 P5D-F1-153	



ANHEUSER-BUSCH COMPANIES

March 20, 1995

**Mr. A. A. Linero, P.E., Administrator
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
Mail Stop 5500
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400**

RECEIVED
MAR 21 1995
Bureau of
Air Regulation

**Re: Metal Container Corporation - Gainesville, FL Lid Center
Modification to Air Permit No. AO01-220792**

Dear Mr. Linero:

Metal Container Corporation has received your letter dated March 10, 1995, to Robert Lanham. This letter presents responses to the specific comments or information requests contained in the letter.

BACT ANALYSIS

There is a discrepancy in the cost-effectiveness values given for the water-based technology; \$5700/ton removed (page 2 - Appendix E) and \$7013/ton removed (page 3-1). Which one is correct?

Response

The figure of \$7,013 per ton of VOC removed presented in Section 3.1, is, as the title of this section indicates, a summary of the previous best available control technology (BACT) analysis (i.e., the analysis conducted in 1990 and 1991). As discussed in Section 3.2, "BACT Review of the Proposed Modification," water-based technology was reevaluated to reflect the reduction in some of the inefficiencies previously identified. This new analysis resulted in a cost-effectiveness of \$5,714 (p. 3-3, and Appendix E) for this project.

The cost analysis for the thermal incineration technology is missing. Please submit this analysis.

Response

For lid manufacturing facilities like the Gainesville plant, thermal incineration is not technically or economically feasible. This was conclusively demonstrated in the April 25, 1991 submittal to the Department (copy attached). The Department subsequently concurred with this position. All the information detailing the technical unfeasibility of such a system is still valid. The costs associated with this type of system have increased, based on MCC's experience with the installation of thermal oxidizers at can plants (not lid plants) in Jacksonville, FL, Rome, GA, and Mira Loma, CA. Therefore,

Mr. A. A. Linero
March 20, 1995
Page 2

the current costs would be even more prohibitive than the original estimates, given MCC experience, inflation, and the needs for additional enclosures and a significantly larger thermal oxidizer. These facts and the conclusions derived from them strongly support the validity of the previous analysis and make it unnecessary to redo this analysis.

PSD APPLICABILITY

Actual emission shall be calculated as indicated in Rule 52-212(d)4, F.A.C. Please submit emission estimates for the years 1993 and 1994 for the Department evaluation.

Response

It is assumed that the intended regulatory reference was 62-212.400(1)(d)4, F.A.C. With that assumption, please refer to Section 2.3 of the supplemental report that was part of the application package, beginning at Page 2-6. The second and third paragraphs cite the definitions of "net emissions increase" and "actual emissions" [62-212.200(2)(a), F.A.C.], including the regulatory language that allows the use of the most representative time period to determine actual emissions. As stated, 1994 emissions would not be representative of normal operations prior to this proposed modification. Production was limited by problems which are driving the need to change end sealant. A significant portion of 1994 production was smaller, 204 lids, resulting in lower emissions. The use of prelubricated tab stock was also beginning at the plant. Thus, 1993 was the most representative time period to determine actual emissions. In addition, at the time the application was prepared, the 1994 emissions report was not yet available. This report was recently completed, and a copy is attached. As shown, VOC emissions in 1994 were 215 tons per year (tpy). However, as we have stated, emissions in 1994 were not "representative" for the cited reasons. Therefore, 1993 emissions of 282.7 tpy are the most representative of normal operation prior to the changes requested in the application.

If any further information or clarification is required, please contact me at your earliest convenience. Thank you in advance for your attention to this matter.

Sincerely,

ANHEUSER-BUSCH COMPANIES, INC.



Dean E. Pusch
Manager, Regulatory Issues
Environmental Affairs Department

DEP:lb

Attachment

cc: R. Lanham - MCC
J. Meling - ECT

cc:
NE District
Jereca Heron

**METAL CONTAINER CORPORATION
GAINESVILLE LID MANUFACTURING FACILITY
1994 FLORIDA DER ANNUAL OPERATION REPORT
ACTUAL VOLATILE ORGANIC COMPOUND EMISSIONS**

TOTAL PLANT FOR TOTAL YEAR

COATING/SOLVENT	TYPICAL MANUFACTURERS IDENTIFICATION	USAGE (GALLONS)	DENSITY (LBS/GAL)	VOC CONTENT (WT FRACTION)	VOC EMISSIONS (TONS/YEAR)
END SEALANT COMPOUND	DAREX S9357	24,738	8.60	0.377	40.10
	DAREX S9384	76,189	7.80	0.392	116.48
TAB LUBE	JENKIN-GUERIN #3810	11,189	6.35	0.945	33.57
CLEAN-UP SOLVENTS	HEPTANE, VWR *	6,802	5.90	1.000	19.48
	MINERAL SPIRITS*	354	6.31	1.000	1.12
	ISOPAR H	1,100	6.30	1.000	3.47
	ETHYLENE GLYCOL	110	7.50	1.000	0.41
TOTAL ANNUAL EMISSIONS					214.62
HOURLY EMISSION RATE	HOURS OF OPERATION, 1994	8688	AVERAGE LBS VOC EMITTED/HOU		49.41
DAILY EMISSION RATE	DAYS OF OPERATION, 1994	382	AVERAGE LBS VOC EMITTED/DA		1185.75
MONTHLY EMISSION RATE	AVERAGE OF 30.42 DAYS/MONTH	11.9	AVERAGE LBS VOC EMITTED/MONT		36070.39



Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

March 10, 1995

AIRS ID: 0010046

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Robert M. Lanham
Anheuser-Busch Company, Inc.
Executive Office
St. Louis, Missouri 63118-1852

Dear Mr. Landham:

Re: Permit No. AC 01-185835 & PSD-FL-153

The Department has reviewed your application for a permit to modify the metal container lid facility in Gainesville, Alachua County, Florida. We need more information to process this application. Please complete the application by supplying the information requested below:

BACT ANALYSIS

There is a discrepancy in the cost effectiveness values given for the water-based technology; \$5700/ton removed (page 2 - Appendix E) and \$7013/ton removed (page 3-1). Which one is correct?

The cost analysis for the thermal incineration technology is missing. Please submit this analysis.

PSD APPLICABILITY

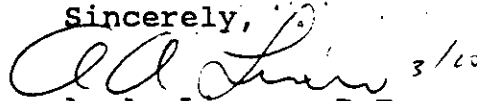
Actual emission shall be calculated as indicated in Rule 62-212(d)4, F.A.C. Please submit emission estimates for the years 1993 and 1994 for the Department evaluation.

We will resume processing your application as soon as this information is received.

Mr. Robert M. Lanham
March 10, 1995
Page Two

If you have any questions, please call Teresa Heron, Review Engineer, at (904) 488-1344 or Cleve Holladay, meteorologist, or write to me at the above address.

Sincerely,

Handwritten signature of A. A. Linero in cursive, with the date 3/10 written to the right.

A. A. Linero, P.E.
Administrator
New Source Review Section

AL/th/t

cc: John Cole, NE District
Tom Davis, P.E., ECT

no green card
as of 12-18-95
KAW
per Patty Adams

Z 311 902 949



**Receipt for
Certified Mail**

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PS Form 3800, March 1993

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Recipient's No.		Orheuser Busch
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AC01-185835		
PSD-F1-153		



ANHEUSER-BUSCH COMPANIES

April 25, 1991

Mr. Barry Andrews, P.E. - Administrator
Permitting and Standards Section
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: **Metal Container Corporation -
Gainesville Lid Plant
DER File No. AC 01-185835, PSD-FL-153**

Dear Mr. Andrews:

Attached please find supplemental information on the referenced project for your review. This information presents technical data and a revised project scope that affect the Technical Determination and Preliminary Determination and the proposed permit to construct/modify the Gainesville facility.

Please don't hesitate to call me at (314) 577-4162 with any questions.

Sincerely,

ANHEUSER-BUSCH COMPANIES, INC.

Dean E. Pusch
Sr. Environmental Scientist
Attachment

DEP:cd

**METAL CONTAINER CORPORATION -
GAINESVILLE LID PLANT
MODERNIZATION PROJECT
DER FILE NO. AC 01-185835, PSD-FL-153**

FACILITY PRODUCTION CAPACITY

Metal Container Corporation (MCC) has reevaluated the projected production requirements for the Gainesville Lid Plant with respect to the proposed modernization project. This reevaluation concluded that the production capacity of the plant, after the modernization project, can be reduced from the capacity of 11.445 billion lids originally requested in the August 1990 permit application.

The revised annual capacity of the plant will be 10.047 billion lids. This volume is based on conversion press capacity, which is consistent with previous permit applications for the plant.

FACILITY EMISSIONS

Reduction in the lid capacity and incorporation of revised VOC material usage rates result in a significant reduction of the facility's potential emissions from the emissions projected in the original August, 1990 application.

Since the original August 1990 and subsequent supporting submittals, end sealant and tab lube usage rates for 1990 became available. These usage rates reflect further reduction in usage consistent with reductions that the plant has achieved in past years.

Revised emissions were calculated, based on the average of 1989 and 1990 end sealant and tab lube usage, as well as the reduced lid capacity. Table 1 presents the revised emissions. These emissions are virtually all fugitive emissions.

The facility's potential annual emissions have dropped to 484 tons from 567 tons with the original submittals. This change will remove a potential 83 tons per year from the emission burden of the region.

The reduction in the plant's potential to emit will also reduce potential toxics emissions and their subsequent

TABLE 1

METAL CONTAINER CORPORATION
 GAINESVILLE LID PLANT
 MODERNIZATION PROJECT

VOC Emissions Basis

estimates based on conversion press capacity
 press operating efficiency 95 %
 annual operation 360 days
 usage rates 1989 & 1990 actual

Specifications

<u>module</u>	<u>conversion presses</u>	<u>speed</u>	<u>lbs/min</u>	<u>annual production</u>
7	3	1800	5400	2.659 billion
6	2	1800	3600	1.773 billion
5	3	1800	5400	2.659 billion
4	2	1200	2400	1.182 billion
off-line	2	1800	3600	1.773 billion
	total		20400	10.047 billion

Compound/Solvent Specifications

<u>compound</u>	<u>typical mfg ident</u>	<u>density [lb/gal]</u>	<u>VOC content [wt frax]</u>	<u>usage rate [gal/1000lids]</u>
end sealant	DM 2140	7.82	0.405	0.0169
tab lube	J-G 3810	6.35	0.945	0.0047
solvents	Texsolve C	5.84	1.000	0.0023
	Amsco 1241	6.32	1.000	0.0002

VOC Emissions

	<u>pounds/hr</u>	<u>tons/yr</u>
Module 7		
end sealant	18.7	76.8
tab lube	9.1	37.5
Texsolve C	4.7	19.3
Amsco 1241	0.4	1.6
total	32.9	135.2

	pounds/hr	tons/yr
Module 6		
end sealant	18.7	76.8
tab lube	6.1	25.0
Texsolve C	4.7	19.3
Amsco 1241	0.3	1.1
total	29.8	122.1
Module 5		
end sealant	18.7	76.8
tab lube	9.1	37.5
Texsolve C	4.7	19.3
Amsco 1241	0.4	1.6
total	32.9	135.2
Module 4		
end sealant	9.4	38.4
tab lube	4.1	16.7
Texsolve C	2.3	9.6
Amsco 1241	0.2	0.7
total	15.9	65.4
Off-line Conversion Presses		
end sealant	0.0	0.0
tab lube	6.1	25.0
Texsolve C	0.0	0.0
Amsco 1241	0.3	1.1
total	6.4	26.1
Entire Facility		
end sealant	65.5	268.7
tab lube	34.5	141.7
Texsolve C	16.4	67.5
Amsco 1241	1.5	6.0
total	117.9	483.9

17-Apr-91
10:32 AM

ambient impacts. These reductions are in addition to the reductions MCC obtained by changing to heptane based clean-up solvent (see December 10, 1990 submittal). Table 2 presents the facility's potential toxic emissions. Facility-wide n-hexane emissions will be reduced to a maximum of 89 tons per year compared to 104 tons in the original submittals. Thirty-eight tons will be emitted from end sealant usage on the two new modules. The maximum 24-hour ambient n-hexane impact from facility wide emissions will be $287 \text{ ug}/\text{m}^3$, well below the Florida Air Toxic Working Group's No-Threat Level for n-hexane of $430 \text{ ug}/\text{m}^3$.

CONTROL TECHNOLOGY ASSESSMENT

Subsequent to the August 1990 application submittal, Metal Container Corporation has obtained additional technical information that invalidates assumptions made in the conceptual design of the thermal oxidation system control alternative. The original proposal assumed that the major portion of emissions occurred at the point of application, i.e., at the liners for end sealant and at the conversion presses for tab lube. As such, it was believed that an estimated 65 percent of the emissions could be captured with hoods over the liners and balancers. These streams, and the exhaust of one of the scrap cyclones, were to be ducted to a thermal oxidizer. Given the fact that there are no thermal oxidizer systems at any lid plants that could be cited to either concur with, or disprove these assumptions, the conceptual system was believed to be adequate.

MCC has since acquired information indicating that the system, as conceptually designed, will not capture an appreciable amount of the VOC emissions from end sealant due to their fugitive nature. Figure 1 presents an emission rate curve for end sealant taken from "VOC Emission Controls for Can End Sealing Compounds - A Case History" (San Diego County Air Pollution Control District, March 1986). This figure shows that 80 percent of the emissions would occur after the lining operation. This information is supported by an ERM North Central study, "Conceptual Cost Estimates for Can End Sealing Compound VOC Emission Control" (September 1984), that cites a Can Manufacturing Institute estimate that 70 percent of solvent loss occurs during the curing cycle as fugitive emissions. Curing of the lids occurs after they are palletized.

Therefore, a maximum of 30 percent of the volatiles flash-off in the immediate vicinity of the liner. Given this

TABLE 2

METAL CONTAINER CORPORATION - GAINESVILLE LID PLANT
MODERNIZATION PROJECT

POTENTIAL TOXIC EMISSIONS (ENTIRE FACILITY)

Basis of Estimates

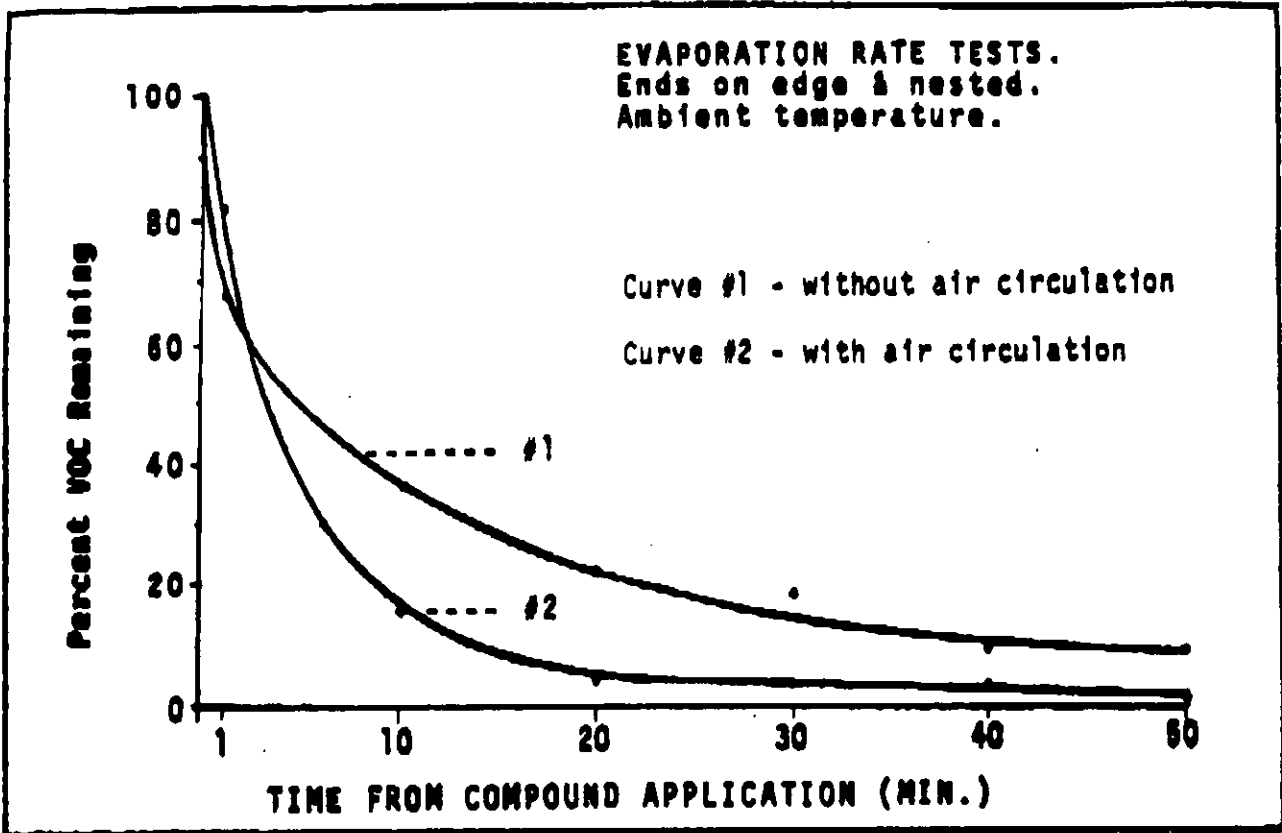
production	20400 lids/min;	10.047 billion lids/yr		
	<u>density</u> [lb/gal]	<u>usage rate</u> [gal/1000 lids]	<u>chemical</u>	weight percent
end sealant	7.82	0.0169	n-hexane	13
			n-heptane	3
			cyclohexane	2
			cyclohexylmethane	1
Texsolve C	5.84	0.0023	benzene	0.001
			n-hexane	4
			n-heptane	90
			cyclohexane	4
			toluene	4
Amsco 1241	6.32	0.0002	benzene	0.01
			stoddard solvent	100

Emissions

	pounds/hr	tons/yr
n-hexane	21.7	89.0
n-heptane	19.6	80.6
cyclohexane	3.9	16.0
cyclohexylmethane	1.6	6.6
toluene	0.7	2.7
benzene	0.003	0.01
stoddard solvent	1.5	6.0

17-Apr-91
10:30 AM

FIGURE 1



SOURCE: "VOC EMISSION CONTROLS FOR CAN END SEALING COMPOUNDS - A CASE HISTORY," MARCH 1986

information, and a vapor density for end sealant that is heavier than air, it is likely that the system would capture very little of the emissions from end sealant.

Based on the San Diego study, the only method to ensure capture of significant quantities of emissions for incineration would be to fully enclose each of the 14 liners and associated conveyors and balancers.

The enclosures would need to be constructed of Lexan to ensure complete operator visibility to allow them to monitor and manage the high speed production lines. The lower portions of the walls of the liner enclosures would need to be constructed of stainless steel to allow removal of spattered end sealant using cleanup solvents.

The enclosures would require doors to allow fork truck access to the balancers for removal of full pallets of lids. Pallets are removed from the balancers approximately every 35 minutes.

Capture efficiency and operation of the thermal oxidizer would be significantly affected by repeated access into the enclosure. Employees would enter the balancer area at least every fifteen minutes to clear jams and would enter the liner area a minimum of every two hours for cleaning. Access needs would be much higher when production problems would be encountered.

The enclosures would severely restrict access to the machines, making it very difficult to perform required maintenance. The liner nozzles and exit rails must be cleaned every two hours. The liners undergo major maintenance every six months that requires open access to the entire liner unit.

The extreme flammability of hexane, the principal solvent component of end sealant, presents significant safety problems with full enclosures. Air flow must be sufficient to maintain concentrations in the enclosures well below the lower explosive limit. The production lines would need to be shut down immediately whenever the flow through the enclosure was not adequate.

The operational and maintenance inefficiencies associated with the enclosures and equipment required for a thermal oxidation system would result in loss of production. This production loss would be required to be made up through lid

purchase on the spot market in order to meet contractual obligations.

MCC has also acquired information indicating that the system, as conceptually designed, could not capture VOC emissions from tab lube due to their fugitive nature and very low volatility. There are no tab lube emission capture systems in existence, even at facilities in the VOC non-attainment area in the South Coast Air Quality Management District of California. Therefore, without any real systems for a basis, MCC's conceptual capture system incorrectly assumed that 65 percent of tab lube emissions could be captured by ducting one of the scrap cyclone's exhaust to a thermal oxidizer.

The operational and maintenance inefficiencies would also increase manning requirements. An additional one-half man per shift would be required.

MCC has performed evaporation tests on the tab lube. This material has a vapor pressure of 0.27 mm Hg. Attachment A presents the study methodology and the resulting evaporation curve for tab lube on aluminum scrap suspended in a vacuum and tab lube in an aluminum pan incubated in a vacuum. The data show an extremely slow evaporation rate. Additional testing done for MCC in April 1991 indicates that tab lube remaining on the scrap has not completely volatilized after several days.

This slow evaporation rate is supported by operational information which shows pooling of the tab lube after it is knocked off the scrap in the turbulent environment of the scrap system duct work. Tab lube is also collected at the conversion presses for proper disposal. These facts, and the physical characteristics of the tab lube, indicate that there is little volatilization at the presses and in the scrap system; all of which invalidate the conceptual design assumptions for the tab lube emissions capture system.

The data on evaporation rate, the extremely low vapor pressure, and the fact that the scrap has a 30 second residence time in the cyclone system do not allow for capture of the tab lube emissions. Thus, capture and incineration of tab lube emissions is not a technically feasible means of control, as evidenced by the lack of any systems, even in areas where Lowest Achievable Emission Rate is required. Tab lube emissions will be minimized by automated controls on the presses that will limit tab lube usage and not allow operators to arbitrarily increase usage.

CONTROL SYSTEM COSTS

Based on the information presented above, capital costs for a system to capture and incinerate emissions due to end sealant compound use on the two new modules are estimated at \$2,680,000. This cost includes:

- o complete enclosure of the 14 liners, conveying equipment and balancers with Lexan and stainless steel;
- o automatic access doors;
- o fire protection equipment on the thermal oxidizer;
- o gas line installation;
- o ductwork; and
- o regenerative thermal oxidizer.

These costs are detailed in Attachment B.

The annualized costs, presented in Table 3, will be \$1,570,000. The capital recovery factor is based on an interest rate of 12 percent. This rate represents the return that MCC could get on its capital were it not invested in the thermal oxidizer system. The twelve percent rate is consistent with the current cost of capital, and is slightly lower than the required return on investment hurdle rate used for capital projects.

The system is assumed to capture 65 percent of the emissions from end sealant, based upon available data from experimental capture systems. A destruction efficiency of 95 percent is assumed for the regenerative thermal oxidizer. The system will control 95 tons per year of emissions from end sealant usage, representing a cost effectiveness of \$16,500 per ton of VOC removed. Therefore, capture and incineration is not best available control technology (BACT) due to these extremely excessive costs.

BEST AVAILABLE CONTROL TECHNOLOGY

The most recent BACT determinations presented by the USEPA in its BACT/LAER Clearinghouse document are:

- 1) use of low-solvent end sealant having a VOC content of 4.2 lb/gal, less water (1986); and

TABLE 3

GAINESVILLE LID PLANT MODERNIZATION
THERMAL OXIDIZER COST ANALYSIS

(1991 \$)

TOTAL CAPITAL INVESTMENT (TCI) \$ 2,680,000

ANNUAL COSTS

COST DATA

ELECTRIC CHARGE (\$/KW-HR)	0.066
GAS CHARGE (\$/MMBTU)	4.2
INTEREST	0.12
USEFUL LIFE (YEARS)	10
CAPITAL RECOVERY FACTOR (CRF)	0.1770

DIRECT ANNUAL COSTS

ANNUAL ELECTRICAL USAGE	106,317
ANNUAL GAS USAGE	100,699
OPERATING & MAINTENANCE LABOR (0.5 MAN/SHIFT)	120,000
MAINTENANCE MATERIALS (100% OF LABOR)	120,000
LID PURCHASE (COMPENSATE PRODUCTION LOSS)	397,500

DIRECT ANNUAL COST (DAC) 844,516

INDIRECT ANNUAL COSTS

CAPITAL RECOVERY (CRF x TCI)	474,318
OVERHEAD (60% OF OPERATING & MAINTENANCE)	144,000
ADMINISTRATIVE CHARGES (0.02TCI)	53,600
PROPERTY TAX (0.01TCI)	26,800
INSURANCE (0.01TCI)	26,800

INDIRECT ANNUAL COST (IAC) 725,518

TOTAL ANNUALIZED COST (DAC+IAC) \$ 1,570,034

EMISSION REDUCTION

EMISSIONS WITH BACT (TONS/YEAR)	484
EMISSIONS USING THERMAL OXIDIZER (TONS/YEAR)	389
NET REDUCTION (TONS/YEAR)	95

COST EFFECTIVENESS (\$/TON OF VOC REMOVED) \$ 16,527

Data Sources

OAQPS Control Cost Manual, USEPA, January, 1990
Anheuser-Busch Companies, Inc., April, 1991

- 2) use of low-solvent end sealant having a VOC content of 3.7 lb/gal, less water (1988).

Metal Container Corporation will use end sealant having a VOC content of 3.2 lb/gal, less water. This will ensure that the objective of any BACT evaluation -- to promote the use/development of more efficient emission control techniques -- is maintained. Thus, considering technical feasibility and economic reasonableness, the use of low solvent, high solids end sealant compound, and the use of automated equipment to regulate tab lube usage, is BACT for the modernization project.

ATTACHMENT A

TABE ~~X~~ LUBE EVAPORATION CURVES



ANHEUSER-BUSCH COMPANIES

Interoffice Correspondence

April 15, 1991

To: Marlene Accardo

From: Lou Slapshak *LS*

Subject: TAB LUBE - % NON-VOLATILES RECOVERY

Confirming your request of 4/8/91, we have completed the study to measure the % Non-Volatiles in Tab Lube using two different methods.

- (1) Aluminum can stock was cut into strips (4" X 2") to provide 16 sqr. inches of surface area. Each strip was cleaned and hung in a circular aluminum frame so that the surface was not in contact with the frame to minimize surface losses. The assembly was tared to constant weight and handled with clean forceps.

Four strips (A,B,C,D) were coated with the Tab Lube by dipping each into the neat Tab Lube (containing 4% dry solids). The strip was then put into the frame assembly and re-weighed to obtain the initial Tab Lube per strip (A=13.9, B=22.1, C=14.3, and D=14.8 mg/sqr. inch).

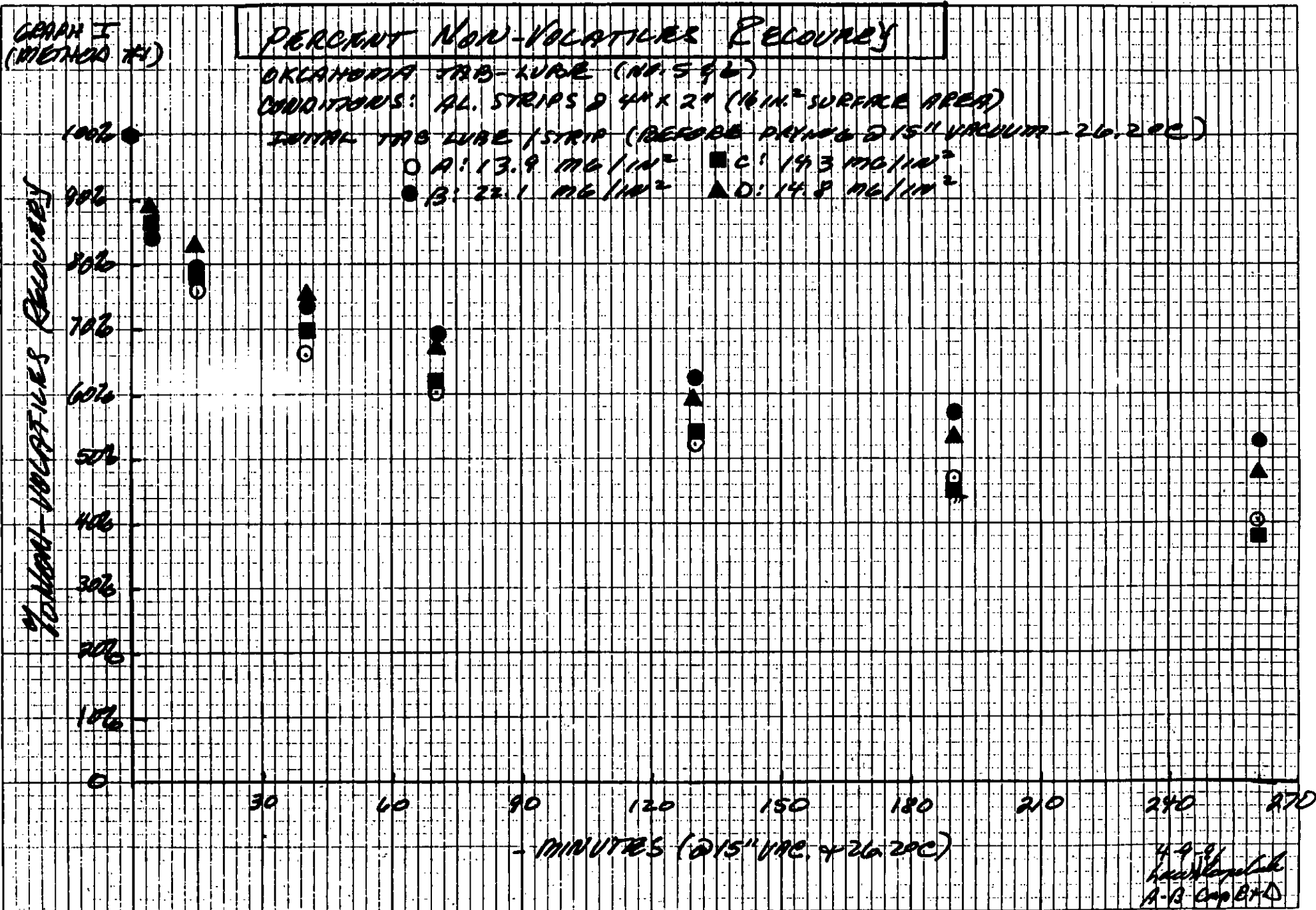
The strip-frame was then incubated under vacuum (15" Hg) at 26°C in a vacuum desiccator for various times and periodically re-weighed. The frame assembly allowed the % Non-Volatiles remaining on the strip to be measured by weighing without loss of surface residuals by touching other objects.

The % Non-Volatiles was monitored over about 4.3 hours. The results are plotted for each strip on Graph I.

- (2) A 1 gram sample of Tab Lube (containing 4% dry solids) was weighed into a tared aluminum pan (≈3.1 sqr. inches) and incubated in a vacuum desiccator maintained at 15" Hg and 72°F. Periodically, the vacuum was released, and the sample residual weight measured. The study was run for about 3.9 hours and the results are plotted on Graph II. Results are reported as "grams tab lube in aluminum pan" which is the same as non-volatile recovery vs. time (minutes).

If you need more information about the study, please call me.

cc: J. Teng
D. Hutchinson
K. Christopher
S. Misra
F. Damhesel
T. Waskovich



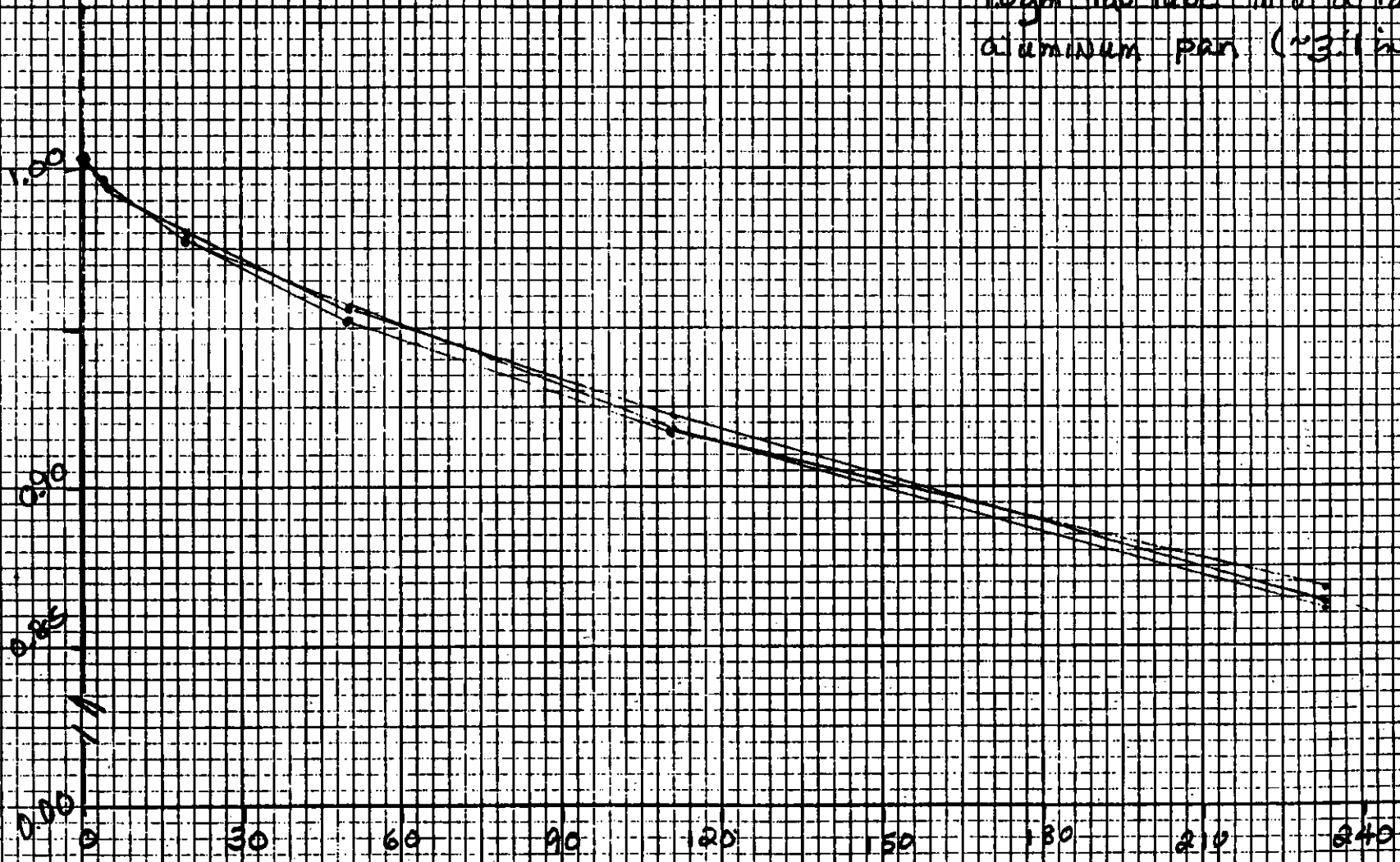
4-9-81
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 A-B Comp B+D
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GRAIN II
(METHOD #2)

TAB LUBE SOLVENT EVAPORATION RATE

SAMPLE: OKLAHOMA TAB LUBE #1
72°F / AMBIENT TEMPERATURE
10 gm tab lube into a tared
aluminum pan (~3.1 in²)

gm tab lube in aluminum pan



minutes under -15 in Hg vacuum

N&E 1434A/64-66

[Handwritten signature] 4/9/91

ATTACHMENT B

THERMAL OXIDIZER SYSTEM COST ESTIMATE

SUBSIDIARY: MCC
 LOCATION: JACKSONVILLE BREWERY
 DATE: 04/18/91

(\$000)

Prepared By: _____
 Approved By: _____

TITLE: GAINESVILLE THERMAL OXIDIZER ADDITION

ACCT CODE	DESCRIPTION	CONTR. JOB COST	--- A-B JOB COST ---			TOTAL
			EQUIP	MATERIAL	LABOR	
CAPITAL COSTS:						
004-000	Yard Utilities	266.5				266.5
007-000	Railroads	5.9				5.9
216-000	Concrete	73.9				73.9
218-000	Misc. Metals	268.5				268.5
221-000	Siding	8.0				8.0
225-000	Doors & Frames	16.3	20.6			36.9
232-000	Fire Protection	16.0				16.0
318-000	Equipment Installation	21.3	808.5			829.8
341-000	Process Misc. Metals	7.0				7.0
343-000	Process Ventilation	101.2				101.2
353-000	C.S. Piping - 2 1/2" &	16.0				16.0
400-000	Electrical	169.5	51.5			221.0
700-000	Contractors Indirects	102.3				102.3
792-000	Tools & Equipment	26.6				26.6
920-100	Sales Tax	24.9	52.8			77.7
SUBTOTAL CAPITAL COST		1123.8	933.4			2057.2
895-100	Engineering (12%)	246.9				246.9
910-100	Constr. Support (5%)	66.9				66.9
940-100	Owner's Adds & Omits:					
	(Equip - 15%)		140.0			140.0
	(Const - 15%)	169.0				169.0
	(Engr - 0%)					
TOTAL CAPITAL COST		1606.6	1073.4			2680.0
EXPENSE COSTS:						
TOTAL EXPENSE COST						
TOTAL PROJECT COST		1606.6	1073.4			2680.0

PRIME A/C NO	DESCRIPTION	LABOR HOURS	LABOR \$	MATERIAL \$	SUBCONTRACTOR \$	AB EQUIP ALLOWANCE	TOTAL \$
004	Yard Utilities	0	0	0	266,500	0	266,500
007	Railroads	0	0	0	5,863	0	5,863
216	Concrete	1,725	47,810	23,743	2,324	0	73,879
218	Misc. Metals	4,060	112,527	51,000	104,932	0	268,467
221	Siding	0	0	0	7,995	0	7,995
225	Doors & Frames	320	7,307	0	8,980	20,600	36,887
232	Fire Protection	0	0	0	15,990	0	15,990
310	Equipment Installation	600	15,395	5,863	0	808,550	829,808
341	Process Misc. Metals	26	696	1,605	4,664	0	6,965
343	Process Ventilation	0	0	0	101,246	0	101,246
353	C.S. Piping - 2 1/2" & Greater	0	0	0	15,990	0	15,990
400	Electrical	0	0	0	169,494	51,500	220,994
700	Contractors Indirects	0	0	0	102,336	0	102,336
792	Tools & Equipment	0	0	0	26,650	0	26,650
920	Sales tax	0	0	4,933	19,991	52,839	77,763
DIRECT PROJECT COST:		6,731	183,735	87,154	852,955	933,489	2,057,333
895 Engineering							246,880
910 Construction Support							66,852
940 Equipment Contingency							140,023
940 Construction Contingency							168,577
940 Engineering Contingency							0
GRAND TOTAL:							2,679,665

FROM: ABC CORP. PKG. SHIPPING

TO: ENVIRONMENTAL ENGR

APR 24, 1991 4:05PM #566 P.03

ESTIMATE DETAIL LISTING
FOR ESTIMATE # 90397
GAINESVILLE THERMAL OXIDIZER ADDITION

AREA	PRIME-SUB-OTL	DESCRIPTION	QUANTITY	UNIT	MATERIAL \$ /UNIT	LABOR MH /UNIT	SUBCONTR \$ /UNIT	LABOR HOURS	LABOR \$	MATERIAL \$	SUBCONTR \$	AS EQUIP ALLOWANCE	TOTAL \$
320	341-100-000	Pipe Bridge (Ext.)	35.00	LF	0.00	0.000	125.00	0	0	0	4,664	0	4,664
320	341-100-001	Fencing	170.00	LF	8.05	0.154	0.00	26	696	1,605	0	0	2,301
Process Misc. Metals TOTAL			205.00					26	696	1,605	4,664	0	6,991
<u>Process Ventilation</u>													
320	343-120-001	Ductwork	26165.00	LBS	0.00	0.000	3.50	0	0	0	97,622	0	97,622
320	343-120-002	14" x 12" Register	4.00	EA	0.00	0.000	250.00	0	0	0	1,066	0	1,066
320	343-120-003	8" x 8" Register	16.00	EA	0.00	0.000	150.00	0	0	0	2,558	0	2,558
Process Ventilation TOTAL			26185.00					0	0	0	101,246	0	101,246
<u>C.S. Pipe - 2 1/2" & Up</u>													
320	353-050-000	Gas Piping @ T.O.	1.00	LS	0.00	0.000	15000.00	0	0	0	15,990	0	15,990
C.S. Pipe - 2 1/2" & Up TOTAL			1.00					0	0	0	15,990	0	15,990
<u>Process Electrical</u>													
320	400-100-001	Exterior Lighting	4.00	EA	0.00	0.000	3000.00	0	0	0	12,792	0	12,792
320	400-100-002	Interior Lighting	14.00	EA	0.00	0.000	500.00	0	0	0	7,462	0	7,462
320	400-300-000	Process Electrical	1.00	LS	0.00	0.000	90000.00	0	0	0	95,940	20,600	116,540
320	400-300-001	PLC Control & Interlocks	1.00	LS	0.00	0.000	50000.00	0	0	0	53,300	30,900	84,200
Process Electrical TOTAL			20.00					0	0	0	169,494	51,500	221,000
<u>Indirects</u>													
320	700-100-000	Indirects	1.00	LS	0.00	0.000	96000.00	0	0	0	102,336	0	102,336
Indirects TOTAL			1.00					0	0	0	102,336	0	102,336
<u>Tools & Equipmt</u>													
320	792-102-000	Crane Rental	1.00	LS	0.00	0.000	25000.00	0	0	0	26,650	0	26,650
Tools & Equipmt TOTAL			1.00					0	0	0	26,650	0	26,650
<u>Owner Internal Acct.</u>													
320	910-110-000	Performance Testing	1.00	LS	0.00	0.000	10000.00	0	0	0	10,660	0	10,660
Owner Internal Acct. TOTAL			1.00					0	0	0	10,660	0	10,660
320	920-000-000	SALES TAX							0	4,933	20,247	52,839	78,019
DIRECT AREA COST								6,731	183,735	87,154	863,871	933,489	2,068,000

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APR 24, 1991 4:05PM #566 P.04

ANKRUSER-BUSCH COMPANIES, INC.
ESTIMATE DETAIL LISTING
FOR ESTIMATE # 90397
GAINESVILLE THERMAL OXIDIZER ADDITION

AREA	PRIME-SUB-DTL	DESCRIPTION	QUANTITY	UNIT	MATERIAL \$ /UNIT	LABOR MH /UNIT	SUBCONTR \$ /UNIT	LABOR HOURS	LABOR \$	MATERIAL \$	SUBCONTR. \$	AS EQUIP ALLOWANCE	TOT \$
<u>Yard Utilities</u>													
320	004-100-000	Gas Line	1.00	LS	0.00	0.000	250000.00	0	0	0	266,500	0	266,500
Yard Utilities TOTAL			1.00					0	0	0	266,500	0	266,500
<u>Railroads</u>													
320	007-100-000	Demo Railroads & Repair	100.00	LF	0.00	0.000	55.00	0	0	0	5,863	0	5,863
Railroads TOTAL			100.00					0	0	0	5,863	0	5,863
<u>Concrete</u>													
320	216-100-000	Concrete Curb @ Enclosures	436.00	LF	0.00	0.000	5.00	0	0	0	2,324	0	2,324
320	216-140-000	Concrete - Equipt Foundations	150.00	CY	135.00	11.500	0.00	1,725	47,810	23,745	0	0	71,555
Concrete TOTAL			586.00					1,725	47,810	23,745	2,324	0	73,879
<u>Misc. Metals</u>													
320	218-100-000	Misc Metal Framing @ Enclosure	25800.00	LBS	0.00	0.000	3.00	0	0	0	82,508	0	82,508
320	218-122-000	Lexan Enclosures	5800.00	SF	7.50	0.700	2.50	4,060	112,527	51,008	22,424	0	185,959
Misc. Metals TOTAL			31600.00					4,060	112,527	51,008	104,932	0	268,467
<u>Siding</u>													
320	221-100-000	Wall Panels @ T.O.	500.00	SF	0.00	0.000	15.00	0	0	0	7,995	0	7,995
Siding TOTAL			500.00					0	0	0	7,995	0	7,995
<u>Doors & Frames</u>													
320	225-100-000	Automatic Doors @ Enclosures	4.00	EA	0.00	80.000	2000.00	320	7,307	0	8,980	20,600	36,887
Doors & Frames TOTAL			4.00					320	7,307	0	8,980	20,600	36,887
<u>Fire Protection</u>													
320	232-100-000	Fire Protection @ T.O.	1.00	LS	0.00	0.000	15000.00	0	0	0	15,990	0	15,990
Fire Protection TOTAL			1.00					0	0	0	15,990	0	15,990
<u>Process Equipment</u>													
320	318-340-002	Thermal Oxidizer	1.00	EA	5000.00	600.000	0.00	600	15,395	5,863	0	772,500	793,758
320	318-340-003	Freight	1.00	LS	0.00	0.000	0.00	0	0	0	0	36,050	36,050
Process Equipment TOTAL			2.00					600	15,395	5,863	0	808,550	829,808
<u>Process Misc. Metals</u>													

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