

DISTILLED
SPIRITS
COUNCIL
OF THE
UNITED
STATES

Rec'd 2/7
90
AP-42 Section 9.12.3
Reference 7
Report Sect. _____
Reference _____

February 6, 1997

Note: This is a reference cited in AP 42, *Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources*. AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

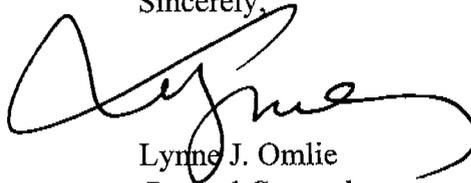
Thomas W. Lapp, Ph.D.
Midwest Research Institute
Suite 305
401 Harrison Oaks Boulevard
Carey, North Carolina 27513-2412

Dear Tom:

As requested, please find enclosed the data submitted by Joseph E. Seagram & Sons, Inc. and Jim Beam Brands Co. in the Kentucky proceeding regarding an emission factor for aging warehouses. As discussed, Mr. McClain's 1992 submission to Kentucky could be misinterpreted regarding the relationship between emissions and soakage. As you know, soakage is a one time product loss and is not an "emissions" loss. Mr. McClain is in the process of clarifying that point regarding his 1992 report; however, this point clearly is set forth in the AP-42 Chapter for Distilled Spirits.

If you have any questions concerning the enclosed materials, please do not hesitate to contact me.

Sincerely,



Lynne J. Omlie
General Counsel

LJO:bca

Enclosures

PHILLIP J. SHEPHERD
SECRETARY



BRERETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION FOR AIR QUALITY
316 St. Clair Mall
Frankfort, Kentucky 40601

September 23, 1992

Mr. Rafael J. Garcia
THE HOUSE OF SEAGRAM
12700 Shelbyville Road
Barkley Building, Suite 200
Louisville, Kentucky 40243-1599

Dear Mr. Garcia:

Enclosed for your information is a copy of the Statement of Consideration which the Division for Air Quality submitted following the public hearing of 401 KAR 50:037, Emissions fee, held on August 28, 1992.

The regulation was not amended after hearing. The Statement of Consideration was submitted to the LRC on September 11, 1992, and the regulation is on the agenda for the Administrative Regulation Review Subcommittee meeting to be held October 5, 1992 at 2:00 PM in Room 131 of the Capital Annex.

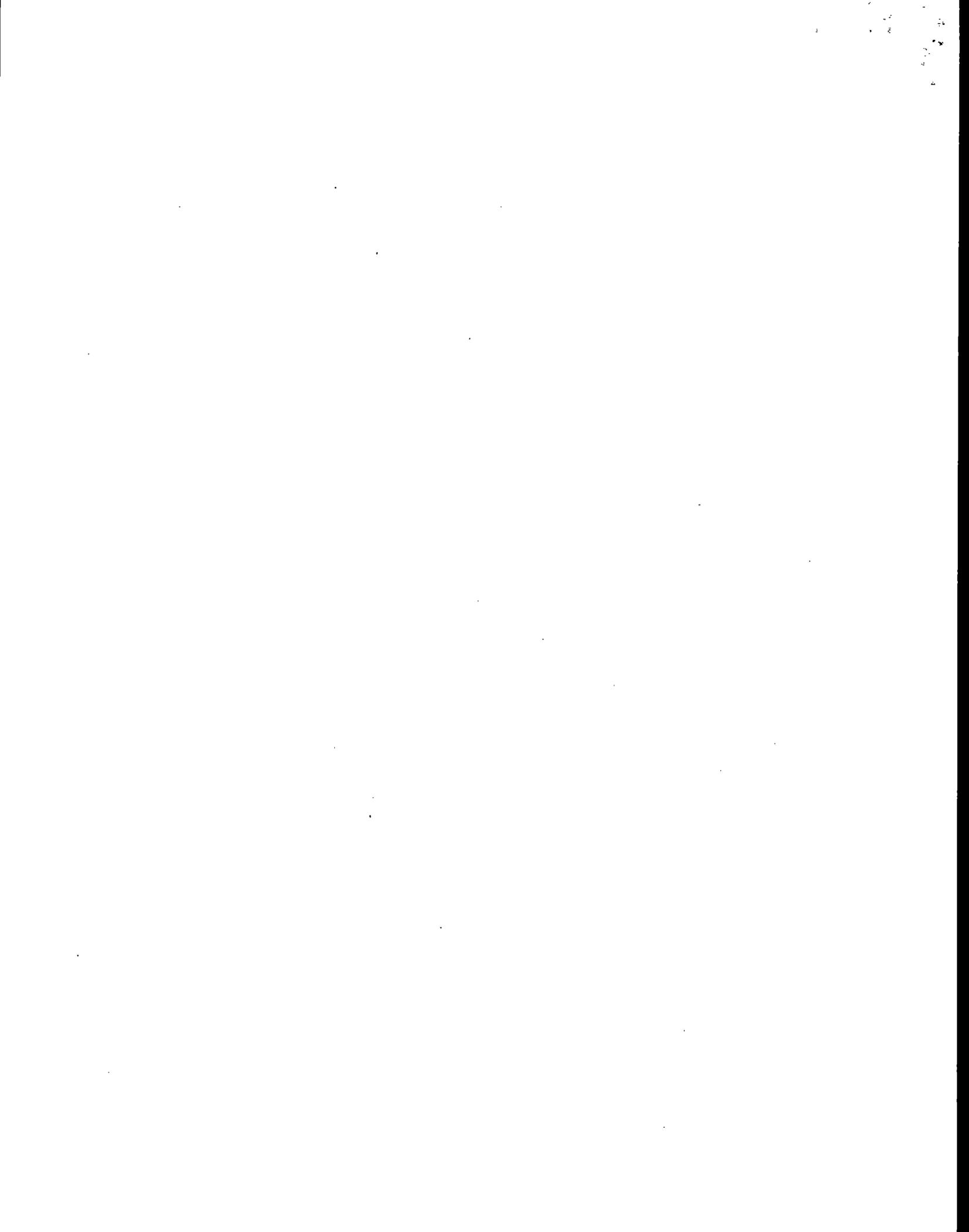
Thank you for your participation in the review process for this regulation. Please call me if you have any questions.

Sincerely,

John E. Hornback
for John E. Hornback
Director

JEH/htw

Enclosures



STATEMENT OF CONSIDERATION RELATING TO:

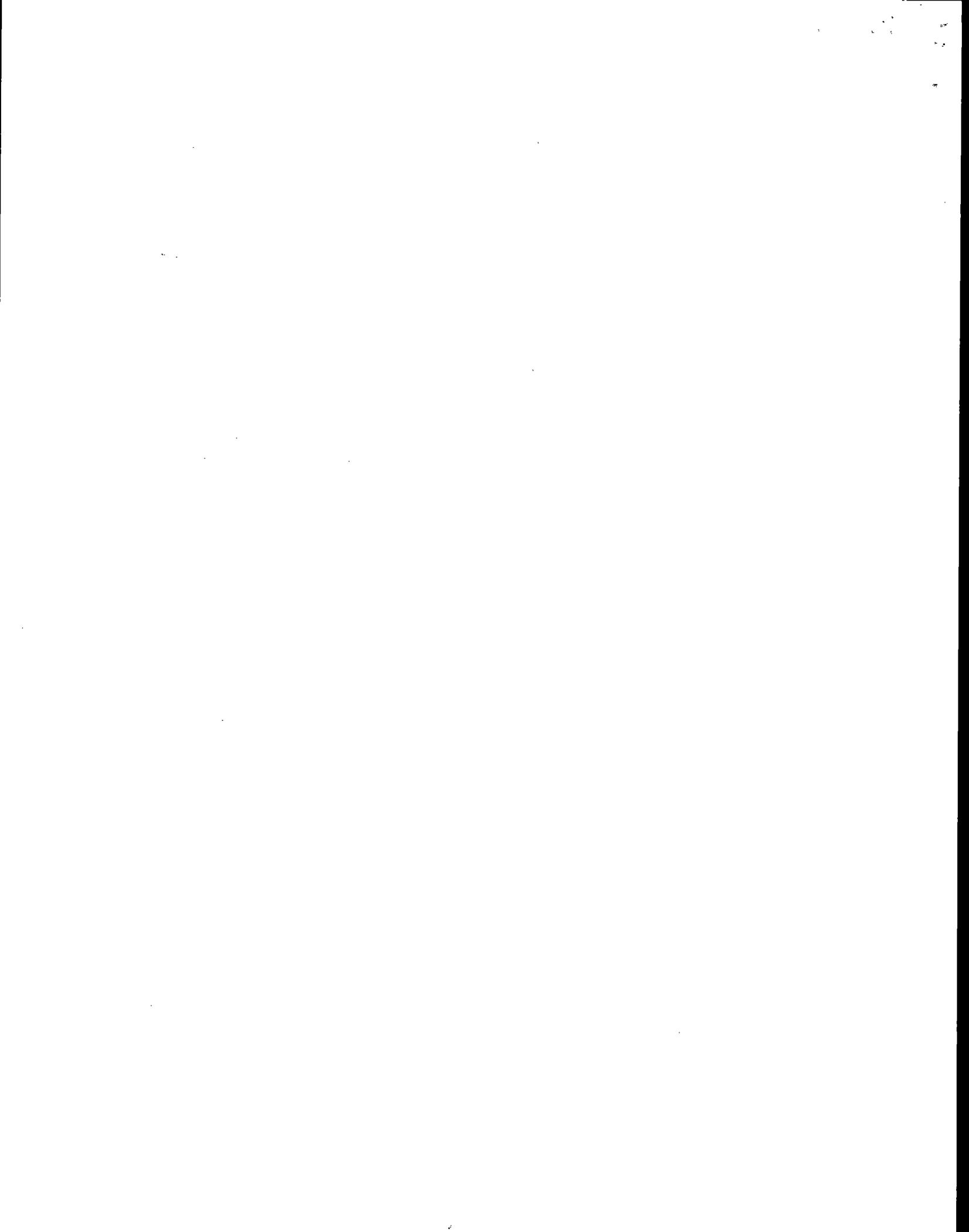
401 KAR 50:037. Emissions fee.

(Not Amended After Hearing)

**KENTUCKY NATURAL RESOURCES
AND ENVIRONMENTAL PROTECTION CABINET**
Department for Environmental Protection
Division for Air Quality

**Public Hearing Conducted
August 28, 1992 - 10:00 AM (ET)
Capitol Plaza Tower Auditorium
Frankfort, Kentucky**

Submitted to the
LEGISLATIVE RESEARCH COMMISSION
Pursuant to KRS Chapter 13A



PREFACE

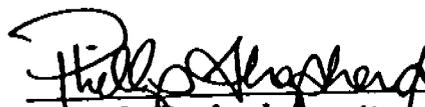
The Kentucky Natural Resources and Environmental Protection Cabinet, Division for Air Quality submits this Statement of Consideration to the Legislative Research Commission as required by KRS 13A.280. The proposed regulation which is the subject of this document was published in the August 1992 issue of the *Administrative Register of Kentucky*. A public hearing to receive oral and written comments was conducted August 28, 1992, in the Capitol Plaza Tower Auditorium, Frankfort, Kentucky. The Cabinet is making no amendments in response to comments presented during the public comment period.

It is the intent of the cabinet for this regulation, 401 KAR 50:037, Emissions fee, to replace the emergency regulation, 401 KAR 50:037E, Emissions fee, which was filed with the Regulations Compiler and became effective July 31, 1992.

This document presents a summary of all relevant comments submitted and the cabinet's responses.

Prominent advertisements of the hearing were published thirty days prior to the hearing in accordance with KRS Chapter 13A and federal regulation 40 CFR 51.102. Public hearing notices and announcement of availability of informational copies of the proposed regulation were distributed to over 1,000 individuals and copies were kept on file for public inspection in the division's regional offices, the Frankfort office, and appropriate county clerks' offices for at least thirty days prior to the hearing.

The services of a court stenographer were secured and the written comments are kept on file at the division's offices in Frankfort, Kentucky. No oral comments were received at the public hearing. Six written statements were received by the close of business on August 28, 1992, and were entered into the public record. A list of those persons attending the public hearing and those giving written comments and their affiliation is included in this document.



Phillip J. Shepherd, Secretary
Natural Resources and Environmental
Protection Cabinet

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(8) (a) COMMENT

The commentors point out that the inventory reporting requirements of this regulation do not fully satisfy the State Implementation Plan requirements in Section 182(a)(3)(B) of the 1990 Clean Air Act Amendments. (T. FitzGerald, D. Neeley)

(b) RESPONSE

The Cabinet concurs. The Division for Air Quality had considered submitting this regulation to EPA as a revision to Kentucky's SIP in order to meet the inventory reporting requirement established in the CAAA. However, the division has determined that there are other more appropriate measures for revising the SIP and will no longer be submitting this regulation as a SIP revision.

SUMMARY

Seventeen individuals from the general public and ten division staff members attended the public hearing for 401 KAR 50:037. No oral comments were received at the hearing. The Division for Air Quality received comments from six individuals during the public comment period. These individuals represented two whiskey aging facilities, one environmental advocacy agency, one association for Kentucky coal producers, one electrical utility company, and the U.S. EPA.

The division has determined that no amendments to the regulation are necessary based on the comments which were received.



Seagram Americas

ENGINEERING SERVICES

BARKLEY BUILDING • SUITE 200 • 12700 SHELBYVILLE ROAD • LOUISVILLE, KY 40243-1599

February 3, 1997

Ms. Lynne J. Omlie
General Counsel
DISCUS
Suite 900
1250 Eye Street, N.W.
Washington, D.C. 20005-3998

Re: Whiskey Ageing Barrels Emission Factor

Dear Lynne:

As per our telephone conversation of Friday, January 31, attached are the following:

1. Seagram calculations for the emission factor for whiskey ageing barrels.
2. The Statement of Consideration from the Division of Air Quality, Kentucky Department for Environmental Protection.

You may use these documents for whatever purpose you deem necessary.

Very truly yours,

SEAGRAM AMERICAS


Rafael Jorge Garcia
Chief Environmental Engineer

RJG/mab

Attachment



8/25/92

①

Seagram Data

New barrels - whiskey barreled at 105°P.

For 2 year:

$$55.886 - 49.605 = 6.28 \text{ p.g. evaporated and soaked}$$

For 1 yr = 3.14 p.g.

At 200°P = 1.57 gal absolute alcohol

$$1.57 \times 6.6097 = 10.37 \text{ lbs/661/yr - but includes SOAKAGE.}$$

For 6 year

$$55.886 - 42.409 = 13.477 \text{ p.g. evaporated + soaked}$$

For 1 yr = 2.246 p.g.

At 200°P = 1.12 gal absolute alcohol

$$\textcircled{1} 1.12 \times 6.6097 = 7.42 \text{ lbs/661/yr - includes SOAKAGE}$$

For 12 year

$$55.886 - 31.615 = 24.27 \text{ p.g. total}$$

For 1 yr = 2.022 p.g.

At 200°P = 1.011 gal absolute alcohol

$$1.011 \times 6.6097 = 6.68 \text{ lbs/661/yr - includes SOAKAGE}$$

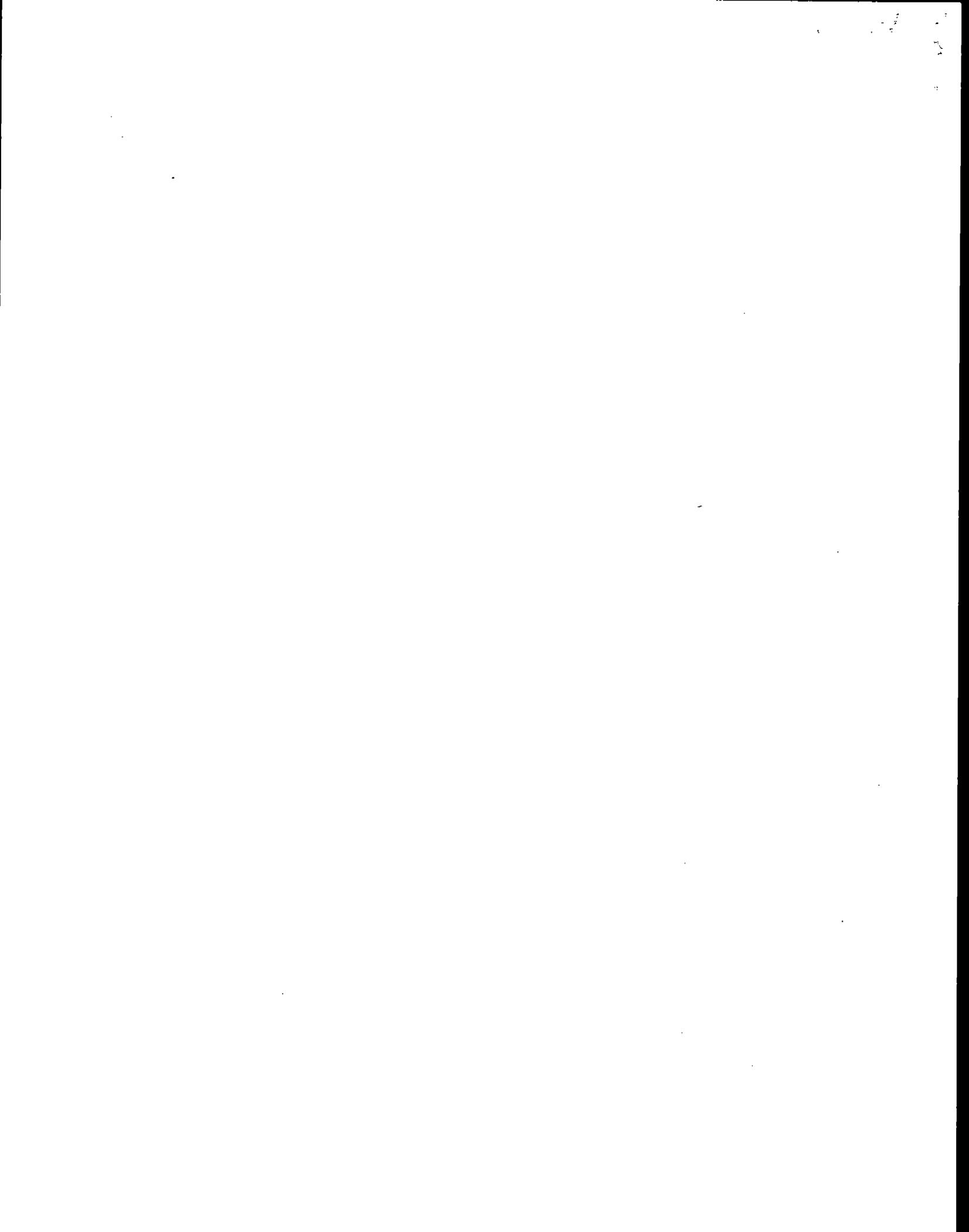
For 4 year

$$55.886 - 46.007 = 9.879$$

For 1 yr = 2.47

At 200°P = 1.24

$$1.24 \times 6.6097 = 8.16 \text{ lbs/661/yr - includes SOAKAGE}$$



8/25/92

②

Soakage

For new barrels

① 2.683 Original proof gallon - From data sheet
at $200^{\circ}P = 1.34$

$1.34 \times 6.6097 = 8.85$ lbs / 66l for the life of the barrel
This occurs in the first 6 months

From the data for new char barrel:

At start: 55.886 p.g.

After 1.5 year = 50.505

Lost first 1.5 year = 5.381 p.g.

At $200^{\circ}P = 2.69$ gal absolute alcohol $2.69 \times 6.6097 = 17.78$ lbs

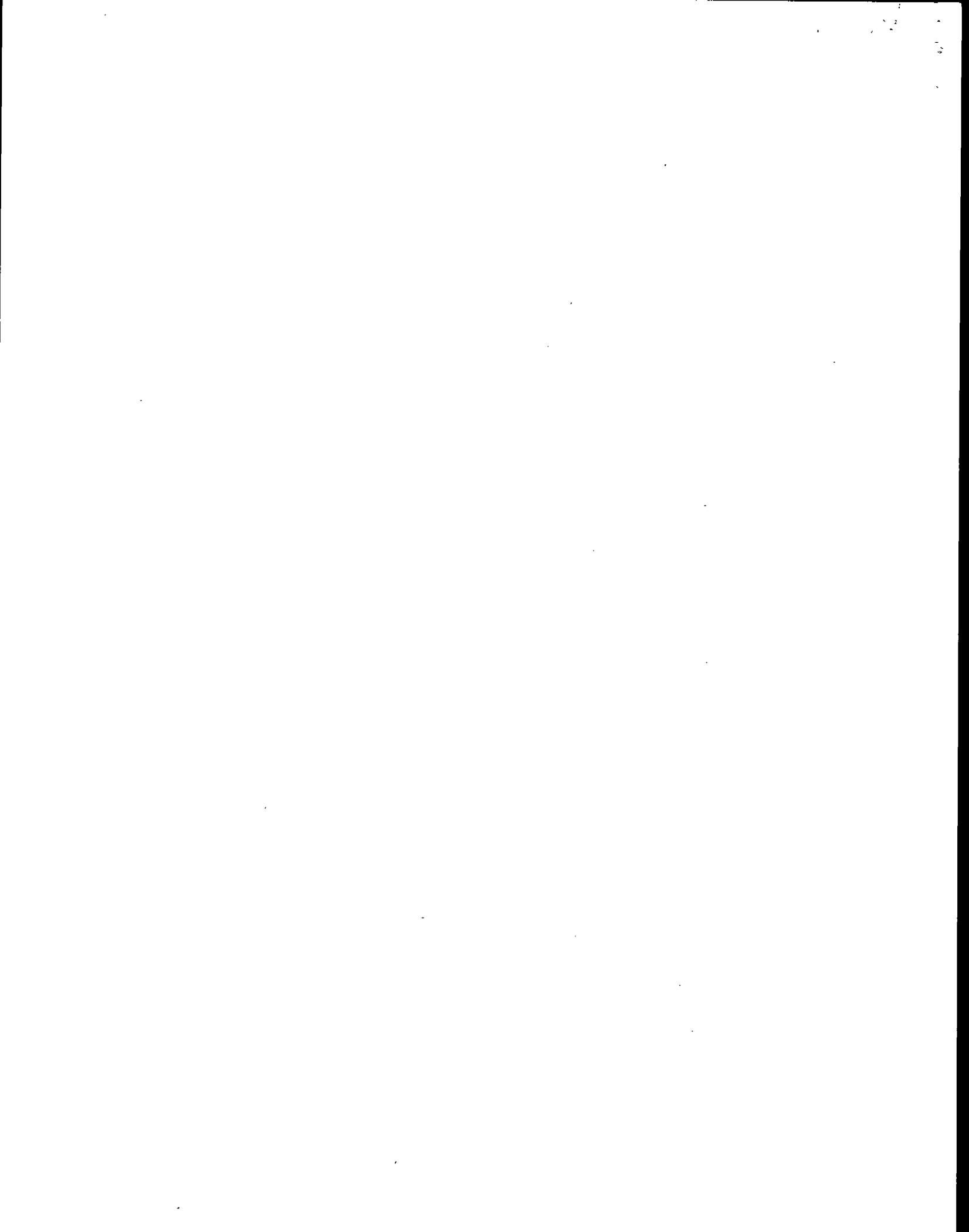
From 1.5 year to 3.0 year

 $50.505 - 47.806 = 2.699$ p.g.At $200^{\circ}P = 1.35$ gal absolute alcohol $1.35 \times 6.6097 = 8.92$ lbs for 1.5 year.

The difference between 0-1.5 years and
1.5 years-3.0 year losses is the soakage

$$17.72 (0-1.5 \text{ year loss}) - 8.92 (1.5-3.0 \text{ yr}) \\ = 8.8 \text{ lbs / 66l soakage}$$

Although the soakage was calculated in ① above from the soakage figure provided in the data sheet, the loss calculation shows the barrels lose 17.8 lbs the first 18 months, but only 8.9 lbs the second 18 months. Therefore, this shows that soakage exists and occurs in the first 6



8/25/92

(3)

Seagram Data

Evaporation loss - Light whiskey barreled at 140°P

For 2 years:

$$69.543 - 63.911 = 5.632 \text{ p.g. evaporated}$$

$$\text{For 1 year} = 2.816 \text{ p.g.}$$

$$\text{At } 200^{\circ}\text{P} = 1.408 \text{ gal of absolute alcohol}$$

$$1.408 \times 6.6097 = 9.31 \text{ lbs/bbl/year}$$

For 6 year

$$69.543 - 54.036 = 15.507 \text{ p.g. evaporated.}$$

$$\text{Per year} = \frac{15.507}{6} = 2.584 \text{ p.g.}$$

$$\text{At } 200^{\circ}\text{P} = 1.29 \text{ gal of absolute alcohol}$$

$$\textcircled{3} \quad 1.29 \times 6.6097 = 8.54 \text{ lbs/bbl/year}$$

For 12 year

$$69.543 - 39.223 = 30.32 \text{ p.g. evaporated}$$

$$\text{Per year} = \frac{30.32}{12} = 2.526 \text{ p.g.}$$

$$\text{At } 100^{\circ}\text{P} = 1.263 \text{ gal of absolute alcohol}$$

$$\textcircled{\times} \quad 1.263 \times 6.6097 = 8.35 \text{ lbs/bbl/yr.}$$

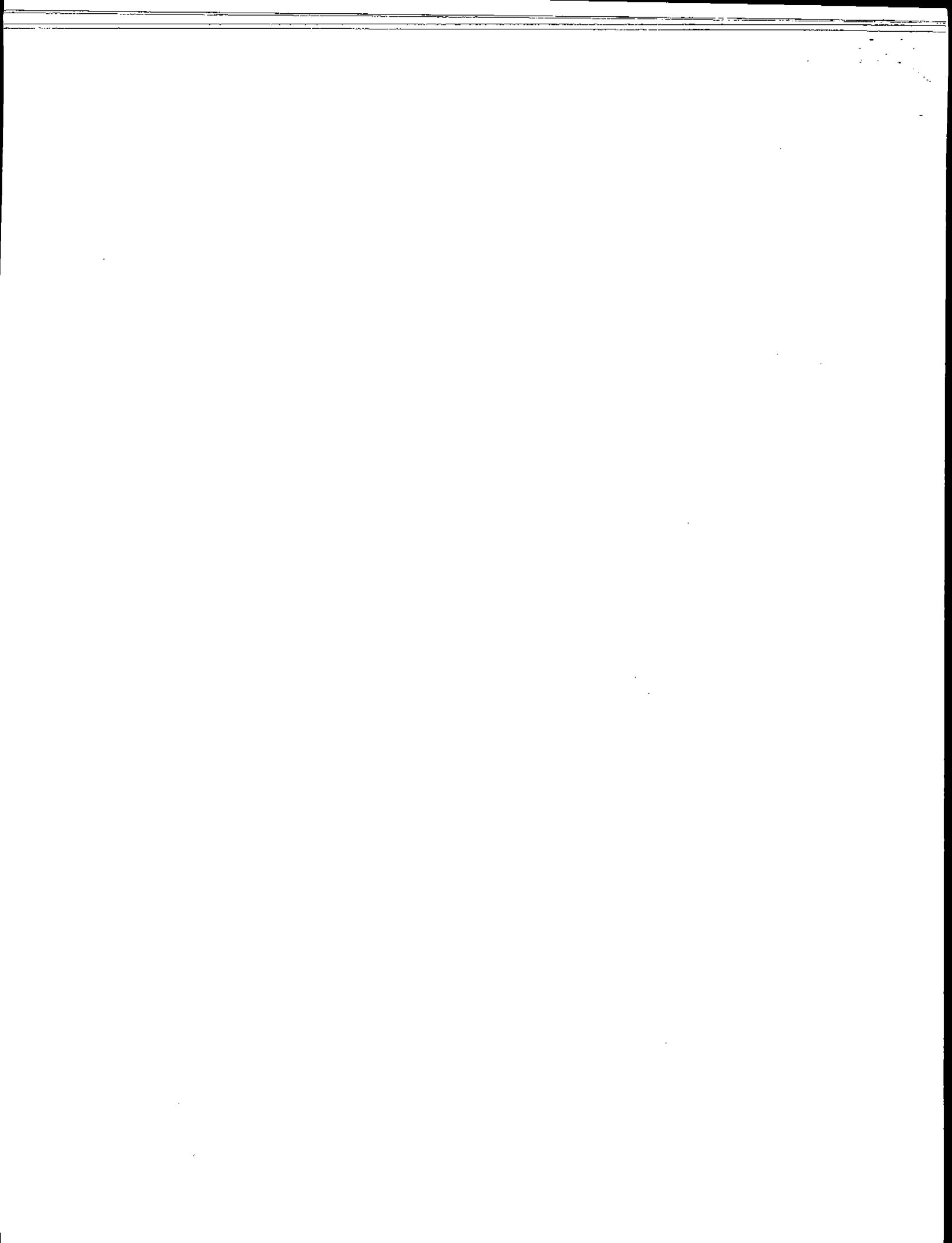
For 4 year

$$69.543 - 58.973 = 10.57 \text{ p.g.}$$

$$\text{Per year} = \frac{10.57}{4} = 2.64 \text{ p.g.}$$

$$\text{At } 200^{\circ}\text{P} = 1.32 \text{ gal of absolute alcohol}$$

$$1.32 \times 6.6097 = 8.72 \text{ lbs/bbl/yr.}$$



EMPIRICAL DATA
AND
CALCULATIONS
OF
LOSSES AND EMISSION RATES
DURING WHISKEY AGING PROCESS

Jim Beam Brands Co.
Clermont, Kentucky

Prepared by:

Devon E. McClain
Director Technical Services

August 24, 1992

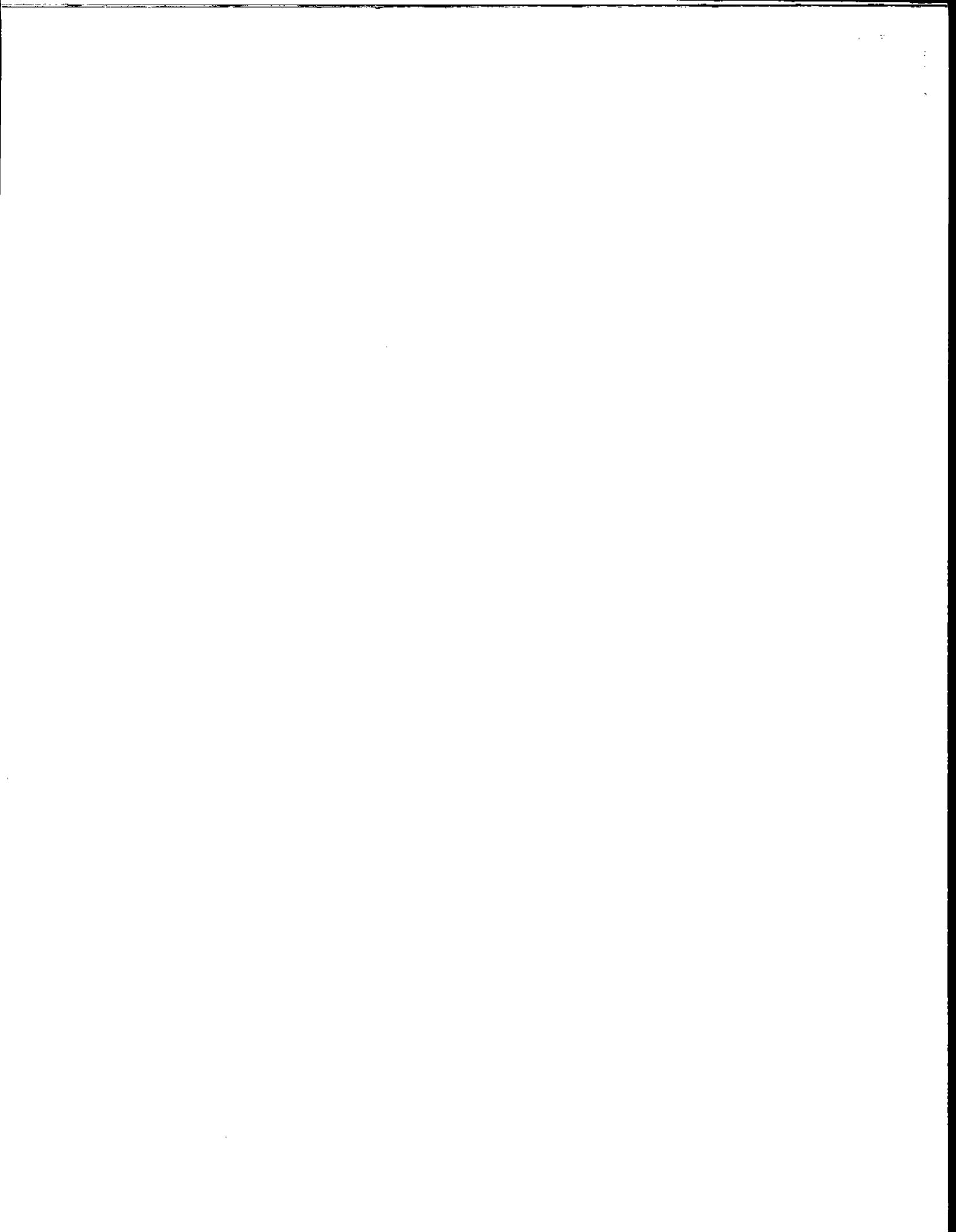


Table III

EMISSION LOSSES DURING WHISKEY AGING PROCESS

125 whiskey

09/03/1992 -- Summary Oppty
 BOURBON WHISKEY
 58 months
 63 months
 68 months
 73 months
 78 months
 83 months
 88 months
 93 months
 98 months
 103 months
 108 months
 113 months
 118 months
 123 months
 123 months
 126 months

YES

	(A) Total P.G. Loss	(B) P.G. Entry	(C) Total Barrels	(D) Barrel Months	(E) Total Barrel Yrs.	(F) P.G. Loss/ Bar. Yr.	(G) %Loss/ Bar. Yr	Total for Period
4,71 53 ≤ # ≤ 58 months	2807.20	12998.70	193	18.83	908.26	3.0907	4.5890%	Total for Period
5,15 58 ≤ # ≤ 63 months	538799.40	2288654.90	34179	514.92	176077.81	3.0600	4.5698%	Total for Period
5,38 63 ≤ # ≤ 68 months	812916.00	3296827.50	48926	792.70	263200.57	3.0886	4.5836%	Total for Period
5,92 68 ≤ # ≤ 73 months	12831.50	52603.90	789	11.43	4509.28	2.8456	4.2680%	Total for Period
6,43 73 ≤ # ≤ 78 months	130806.40	444919.60	6565	96.30	42205.19	3.0993	4.5732%	Total for Period
6,77 78 ≤ # ≤ 83 months	602239.00	2100996.10	32013	466.52	216525.36	2.7814	4.2380%	Total for Period
6,98 83 ≤ # ≤ 88 months	114216.20	370911.60	5417	97.73	37792.48	3.0222	4.4138%	Total for Period
7,94 93 ≤ # ≤ 98 months	63.20	260.00	4	15.88	31.75	1.9903	3.0621%	Total for Period
8,52 98 ≤ # ≤ 103 months	16531.20	43485.40	625	50.55	5312.62	2.7352	3.9312%	Total for Period
9,22 103 ≤ # ≤ 108 months	4708.50	13320.00	200	8.82	1763.34	2.6702	4.0093%	Total for Period
9,45 113 ≤ # ≤ 118 months	41145.80	108486.00	1722	58.04	16615.38	2.4764	3.9307%	Total for Period
10,07 118 ≤ # ≤ 123 months	46886.30	119252.00	1894	110.70	19063.43	2.4595	3.9062%	Total for Period
10,52 123 months	61691.30	154397.20	2471	299.74	25977.67	2.3748	3.8006%	Total for Period
	2,383,642.00	9,007,112.90	134,998	2,542.15	809,983.14	2.9428	4.4107%	Summary Total

Do NOT USE

Incorrect

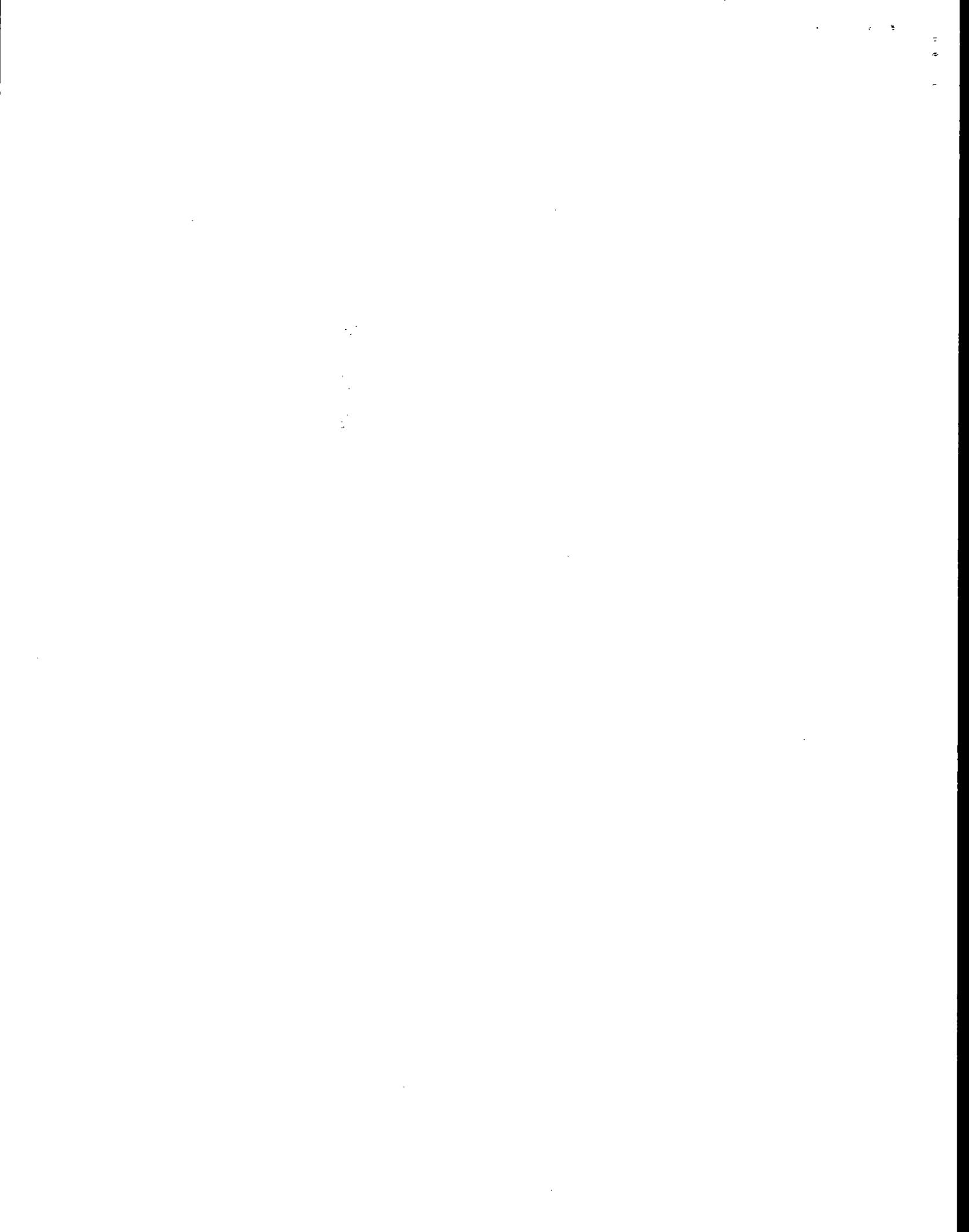


Table IV

EMISSION LOSSES DURING WHISKEY AGING PROCESS

09/03/1992 -- Summary Only

CORN

(A)
Total
P.G.Loss

(B)
P.G.
Entry

(C)
Total
Barrels

(D)
Barrel
Months

(E)
Total
Barrel Yrs.

(F)
P.G. Loss/
Bar. Yr.

(G)
%Loss/
Bar. Yr

	(A) Total P.G.Loss	(B) P.G. Entry	(C) Total Barrels	(D) Barrel Months	(E) Total Barrel Yrs.	(F) P.G. Loss/ Bar. Yr.	(G) %Loss/ Bar. Yr	Total for Period
① # < 48 months 47.1	1155.90	7524.00	114	3.92	447.26	2.5844	3.9158%	Total for Period
② 48 ≤ # < 53 months 50.8	2785.20	19308.20	293	8.42	1240.48	2.2453	3.4071%	Total for Period
③ 58 ≤ # < 63 months 60.2	15132.40	91731.80	1392	55.10	6987.75	2.1656	3.2862%	Total for Period
④ 63 ≤ # < 68 months 64.4	14446.00	73195.90	1111	48.28	5958.69	2.4244	3.6798%	Total for Period
⑤ 98 ≤ # < 103 months 101.3	5712.00	21771.50	339	25.33	2862.76	1.9953	3.1068%	Total for Period
	39,231.50	213,531.40	3,249	141.05	17,496.95	2.2422	3.4116%	Summary Total

*incorrect average
should be 2.283*

The following graph taken from U.S.E.P.A. publication No. EPA-450/2-78-013 entitled "COST AND ENGINEERING STUDY - CONTROL OF VOLATILE ORGANIC EMISSIONS FROM WHISKEY WAREHOUSING"

Graph shows emission rates as follows:

Kg/bbl/yr. at Max. = 3.4 Kg = 7.48 lbs.

Kg/bbl/yr. average (approx) = 2.8 Kg = 6.16 lbs.

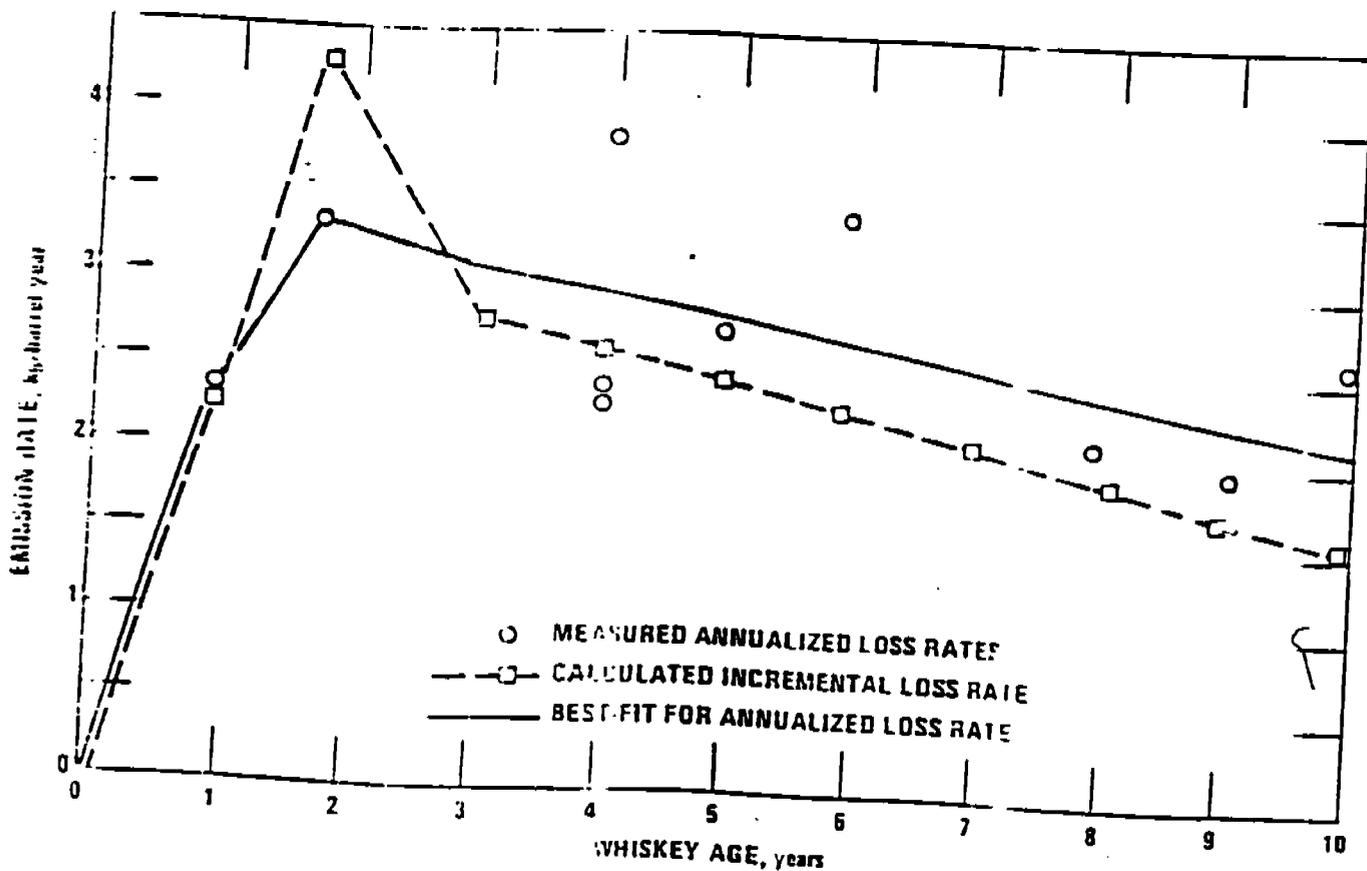


Figure 3-1. Emission rate relationships in the whiskey aging process.

