RESEARCH REPORT NO. 2
June 1, 1961

A Summary of Reference Gas Analyses with Applied Physics Corporation Infrared Gas Analysers Nos. 46 and 55 July 24, 1958 to September 1, 1959

I. Introduction

This report presents a summary of measurements of the concentration of carbon dioxide in specially prepared mixtures in nitrogen gas. The measurements were obtained at the Scripps Institution of Oceanography with the aid of continuous-flow infrared gas analysers manufactured by the Applied Physics Corporation of Pasadena, California.

Index values proportional to concentration have been calculated from observed differences in scale readings of the analysers. The method of measurement and the calculation of index values are as described in Research Report No. 1, October 15, 1958 (referred to as "Report I" hereafter).

In Tables 1 and 2 data are assembled in chronological order for all reference gases compared during the period of the report. Entries in columns 1, 2, 3, 4 are taken directly from original data sheets listed by number on the right side of column 8. Entries in columns 5, 6, 7 have been calculated with the aid of Tables 3, 4 and 5.

A summary of index values is given in Table 12 of all gases used to determine the concentration of carbon dioxide in samples of air.

All tables are extensions of similar tables in Report I except that former Tables 3, 6, 7, 8, 9, 10 and 11 have been discontinued and Table 4 has been divided into separate sections for each analyser. The separate sections are designated Table 3 and Table 4.

The manometric calibration to convert index values to true concentrations has not taken place. Therefore all index values reported here are again values projected from the original arbitrary assignments in Report I of Tank C-7 equal to 320.00 p.p.m. (parts of carbon dioxide per million parts of nitrogen) and Tank C-5 equal to 338.00 p.p.m. The index values for primary standards in Tanks 4283 and 4296 are as listed in Report I, Table 13.

II. Tables 1. and 2.

A. Tank Rank

The tank numbers listed in column 1 under "(sub)standard" refer to tanks whose index values, taken from Table 5, have been used to determine the index value of tanks listed in column 2 under "compared tank". If two tanks listed on the same line were used solely to compute the recorder scale factor, the following order of rank determines which tank appears in the left column: C-5, 4283, 4296, followed interchangeably by C-8, 3753, 3754. The tank of higher rank appears in column 1.

Tank C-7 was discontinued as a standard gas at the outset of this report and always appears in column 2. This tank was compared only to check its stability relative to newer primary standards, and is listed as a "retired standard" in Table 12-G. Tank 4283 was lost on October 10, 1958; Tank C-5 was lost on June 18, 1959. At this latter date Tank 3760, formerly a secondary tank, was assigned as a primary standard with highest rank, and thereafter appears in column 1.

B. Third-Year Antarctic New Fillings

The index values for Antarctic tanks, analysed from September 8 to 13, 1958, which are shown in Table 2, are not reproduced in Table 12-C bacause of

poor performance of Analyser 55. The Antarctic program failed to give data that year and the values are therefore not required except as follows; Tank A-18 was used in the laboratory from August 26 to 28, 1958. Index values for this tank have been listed in Table 12-B separating values based on Analyser No. 46 from those of No. 55. Only the average of the former set should be used. Tanks A-20 and 3758 were used as secondary tanks. The comparisons for both are reasonably satisfactory and are, therefore, admitted to Table 5.

III. Recorder Scale Factor-Tables 3. and 4.

A. Definition

The recorder scale factor is still reported equivalent to the scale difference between Tanks C-5 and C-7, as in Report I.

B. Calculation for Three Mutually Compared Tanks ("Tank Triangle")

The following format has been adopted in order to present data uniformly when two gases with final assigned index values, A and B, ("primary standards") are each compared to a gas, X, without such assignment:

Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons
A	X	X - A	a
B	X	X - B	b
A	B	Y*	(a or b)*

where Y - (X - A) - (X - B) = (B - A)

The symbol * indicates a calculated value. The number of comparisons assigned to Y is a or b, whichever is smaller, except as follows; if X - B is a large index value compared to X - A and, if X versus B was run near the beginning of the day and then repeated again at the end of the day as a final check on the recorder scale factor, Y is taken as the sum of the number of comparisons

of X versus B on both occasions, irrespective of the number of comparisons of X versus A. This has been done in order to give adequate weight to the final comparisons for the day. For an example of this, see Table 3 for July 6, 1959.

As an aid to reading, the comparisons and calculated values of any given group of three tanks are set off in the tables by boxes.

C. Determination of Index Differences

Index differences in column 5 were obtained from the index values of the separate tanks as follows:

From Report I, Table 13:

(164)	C-5	vs.	C-7	338.00 - 320.00 = 18.00
	C-5	vs.	4283	338.00 - 311.48 = 26.52
	C-5	vs.	4296	338.00 - 292.68 = 45.32
	4283	vs.	4296	311.48 - 292.68 = 18.80

From Report II, Table 5:

	3760	vs.	4296	314.60 - 292.68 = 21.92
	C-5*	vs.	3754	338.00 - 302.23 = 35.77
(1004)	C-8*	vs.	3754	369.19 - 302.23 = 66.96
	3753	vs.	3754	343.23 - 302.23 = 41.57
	3753	vs.	C-8**	343.80 - 311.86 = 31.94

*From Report I, Table 13
**New filling of C-8 (from this report, Table 5)

IV. Reference Gas Substandards - Table 5

It has been necessary in some cases to make use of the index value of reference gases which are not primary standards in order to determine the recorder scale factor for a particular day or to determine the index value of another substandard gas, but no attempt has been made to show by the Tables how this was done. All substandard gases used to determine recorder scale factors are included in Table 5 together with substandard gases used to compute index values of working gases. Thus the computation for some gases in Table 5 depends on prior computations for other gases in the same table. The following

gases were determined solely from primary standards: 3760, 3758, C-8* A-17 (1st and 2nd fillings) 2425, 164, 3759. The following gases depend, in part, on contemporary comparisons of other substandards: 3754 and A-20 (these depend on 3758), 3753 (depends on C-8 and 3754).

The gas of Tank 3758 listed in Report I, Table 13 has been redetermined solely from comparisons listed in this report. The index value given in Report I is not used. The determination for Tank 2425 is not complete but is used as reported here to compute the index value for Tank 4283 on August 31, 1959 (see Table 12-C).

Comparisons of Tank 3759 for three dates are reported at the end of Table 5. Original records indicate that a tank with the same number but a different index value was used as a Mauna Loa Working Tank from September 1959 to January 1960 (see Table 12-D of Research Report III). No evidence has been found to indicate what happened to the filling reported here, which last showed a pressure of 2020 p.s.i. and was, therefore, still nearly a full tank. The index value reported here is very close to that reported after March, 1960 when Tank 3759 was used as a secondary tank (see Table 5 of Research Report III). It is possibly the same filling as reported here, in which case the Mauna Loa tank was improperly numbered.

The gas pressures at the time of comparison of both the standard and compared tanks are listed in column 9 in the same order (from left to right) as the tanks in columns 1 and 2.

*New filling

V. Index Values of Working Gases - Table 12

This table has been separated into lettered subsections according to the use of the gas. Subsections are listed by letter in column 8 of Tables 1 and 2 as a means of cross-referencing.

Gas pressures of the working tanks at the time of comparison are listed in column 9.

Key to Early Tank Numbering System

A-1	2406
A-2	2419
A-3	2407
A-4	2400
A-5	2427
A-6	193
A-7	2401
A-8	136
A-9	1008
A-10	2403
A-11	2399
A-12	148
A-13	2408
A-14	2420
A-15	2404
A-16	2405
A-17	181
A-18	2402
A-19	132, 2424
A-20	2421
A-22	3751
A-23	3754
A-24	4271
A-25	4273
A-26	4276
A-27	4278
A-28	4283
A-29	4289
A-30	4290
A-31	6052
A-32	6060
A-33	6073
A-34	6078
C-5	164
C-7	221
C-8	1004

Table 1. Reference Gas Comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8	9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.	Date of Analysis 1958
Span 310								
C-5	A-18 (2402)	2.75	4	21.99	2.25	340.25	12B 1-b	Aug. 20
3754	A-18	46.44	11		38.01	340.24	12B 1-b	
C-8	3754	-81.96	10	22.03	-	-	3 1-c	Aug. 21
C-8	A-18	-35.87	12		-29.31	339.88	12B 1-c	
C-8	A-18	-36.00	12		-29.41	339.78	12B 1-c	
C-5	3754	-43.39	10		-	-	3 1-d	Aug. 22
3754	A-18	45.87	12	22.00	37.53	339.76	12B 1-e	Aug. 29
3753	3754	-50.80	10		-	-	3 1-e	
C-5	4283	-33.88	10	22.95	-	-	3 18	Oct. 10
C-5	3753	7.75	10		6.08	344.08	5 18	
3754	3753	53.26	10		41.77	344.00	5 18	
4283	3754	-11.69	10		-9.17	302.31	5 18	
4283	4296	-23.98	10		-	-	3 18	
4283	3753	41.49	10		32.54	344.02	5 19	
C-5	4296	-54.05	10	21.47	-	-	3 20	Oct. 16
C-5	3753	7.14	10		5.99	343.99	5 20	
4296	3753	61.19	7		51.30	343.98	5 20	
4296	3754	11.60	5		9.73	302.41	5 20	
3754	3753	49.59	6		41.57	343.80	5 20	
C-5	4296	-48.16	10	19.15	-	-	3 21	Nov. 10
C-5	3753	6.41	7		6.03	344.03	5 21	
4296	3753	54.46	5		51.19	343.87	5 21	

Table 1. Reference Gas Comparisons with Analyser No. 46

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis
Span 310									1958
C-5	4296	-52.05	10	20.64	-		3	22	Nov. 19
4296	3754	10.91	7		9.51	302.19	5	22	
4296	3753	58.98	5		51.44	344.12	5	22	
3754	3753	47.29	10		41.24	343.47	5	22	
4296	2418	-2.24	12		-1.95	290.73	12A	23	
C-5	4296	-51.90	10		-	-	3	23	
C-5	4296	-51.83	12	20.58	-	-	3	24	Nov. 20
C-5	3760	-26.85	10		-23.48	314.52	5	24	
4296	3760	24.97	10		21.84	314.52	5	24	
3760	C-8	2.95	12		2.58	312.02	5	24	
C-8	3753	36.06	11		31.54	343.39	5	24	
3760	3753	33.24	10		29.07	343.67	5	25	
C-5	4296	-51.77	10		-	-	3	25	
C-5	4296	-52.08	10	20.64	-	-	3	26	Nov. 21
4296	A-17 (181)	-11.62	10		-10.13	282.55	5	26	
C-5	A-17	-63.51	10		-55.39	282.61	5	26	
4296	4283	18.56	10		16.19	308.87	12A	27	
4296	3751	19.05	10		16.61	309.29	12A	27	
C-5	4296	-51.88	5		-	-	3	27	
									1959
C-8	3753	35.27	10		*omit	-		35	Feb. 5
C-8	3753	35.09	11	19.80	31.90	343.75	5	35	Feb. 6
C-5	4296	-49.82	11		-	-	3	35	
C-5	3760	-25.75	10		-23.41	314.59	5	35	
4296	3760	24.12	12		21.93	314.61	5	35	
3760	C-8	-2.97	11		-2.70	311.90	5	36	
3760	4277	34.13	10		31.03	345.63	12D	36	
3760	2420	-7.70	12		-7.00	307.60	12D	36	

*only comparison for that day.

Table 1. Reference Gas Comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and sheet No.		Date of Analysis 1959
Span 310									
C-5	4296	-49.56	10	19.75	-	-	3	37	Feb. 9
3760	2418	-2.67	10		-2.43	312.17	12D	37	
3760	3753	32.25	2		29.39	343.99	5	37	
3760	A-17	-4.98	11		-4.54	310.06	5	37	
3760	3754	6.75	11		6.15	320.75	12A	37	
3760	3758	8.23	11		7.50	322.10	12A	38	
3760	4283	4.38	14		3.99	318.59	12D	38	
3760	4277	34.40	11		31.35	345.95	12D	38	
A-17	4277	39.38	10		35.89	345.98	12D	38	
C-5	4296	-49.89	10		-	-	3	38	
C-5	4296	-49.87	12	19.82	-	-	3	39	Feb. 11
4296	4277	58.58	11		53.20	345.88	12D	39	
C-5	4277	8.67	11		7.87	345.87	12D	39	
3760	A-17	-4.92	10		-4.47	310.13	5	39	
3760	2420	-7.76	13		-7.05	307.55	12D	39	
3760	3751	-5.79	9		-5.26	309.34	12A	40	
C-5	4296	-49.91	10		-	-	3	40	
C-8	3753	34.92	10	19.74	31.84	343.69	5	43	Mar. 13
C-5	4296	-49.69	10		-	-	3	43	
C-5	3760	-25.70	10		-23.43	314.57	5	43	
4296	3760	24.03	10		21.91	314.59	5	43	
3760	2423	-8.41	11		-7.67	306.93	12D	43	
3760	2425	-8.37	10		-7.63	306.97	12D	44	
3760	2426	-8.82	10		-8.04	306.56	12D	44	
3760	4285	-5.60	10		-5.11	309.49	12D	44	
3760	4286	-4.54	10		-4.14	310.46	12D	44	
3760	4295	-17.86	10		-16.29	298.31	12D	44	
C-5	4296	-49.68	9		-	-	3	45	

Table 1. Reference Gas Comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8	9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and sheet No.	Date of Analysis 1959
Span 310								
3753	C-8	-34.60	4	19.55	-	-	3 49	April 16
C-8	LGO 8	13.15	4		12.11	323.96	12F 49	
C-8	LGO 10	-40.05	2		-36.87	274.98	12F 49	
C-8	LGO 16	47.20	2		43.46	355.31	12F 49	
3753	C-8	-34.83	4		-	-	3 49	
C-8	3753	34.40	5	19.33	32.03	343.88	5 50	April 17
C-5	4296	-49.05	11		-	-	3 50	
C-5	3760	-25.06	11		-23.34	314.66	5 50	
4296	3760	23.55	10		21.93	314.61	5 50	
3760	LGO 8	9.66	10		9.00	323.60	12F 50	
3760	LGO 10	-43.21	10		-40.24	274.36	12F 51	
3760	LGO 16	43.81	10		40.80	355.40	12F 51	
3760	C-8	-2.95	10		-2.75	311.85	5 51	
3760	C-7	5.79	11		5.39	319.99	12G 52	
C-5	C-7	-19.13	11		-17.81	320.19	12G 52	
C-5	3760	-25.13	10		-23.40	314.60	5 51	
C-5	4296	-48.87	9		-	-	3 51	
C-8	3753	34.63	7	19.57	31.85	343.70	5 54	April 29
C-5	4296	-49.38	10		-	-	3 54	
C-5	3760	-25.44	10		-23.40	314.60	5 54	
4296	3760	23.77	11		21.86	314.54	5 54	
3760	2425	11.59	10		10.66	325.26	12A 54	
3760	2426	11.72	10		10.78	325.38	12A 55	
3760	4289	-13.45	10		-12.37	302.23	12C 55	
3760	4273	-9.13	11		-8.40	306.20	12C 55	
3760	4271	3.09	10	19.57	2.84	317.44	12C 55	
3760	4288	23.47	10		21.59	336.16	12C 55	
C-5	4296	-49.28	9		-	-	3 56	

Table 1. Reference Gas Comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis
Span 310									1959
C-5	4296	-48.76	10	19.40	-	-	3	57	April 30
C-5	3760	-25.27	11		-23.45	314.55	5	57	
4296	3760	23.65	10		21.94	314.62	5	57	
3760	4275	1.84	10		1.71	316.31	12C	57	
3760	A-7 (2401)	0.93	10		-0.86	313.74	12C	57	
3760	4272	2.30	10		2.13	316.73	12C	58	
3760	4293	-18.09	10		-16.78	297.82	12C	58	
3760	4269	7.48	10		6.94	321.54	12C	58	
3760	4274	0.37	10		0.34	314.94	12C	58	
3760	4276	-14.65	10		-13.59	301.01	12C	58	
3760	4278	-22.22	10		-20.62	293.98	12C	59	
3760	C-7	5.90	10		5.47	320.07	12G	59	
3760	C-8	-3.20	10		-2.97	311.63	5	59	
C-5	4296	-48.87	10		-	-	3	59	
C-8	3753	34.67	11	19.55	-	-	3	61	May 11
C-8	2423	6.14	11		5.65	317.50	12D	61	
3753	2423	-28.59	10		-26.32	317.48	12D	61	
C-8	4286	5.84	10		5.38	317.23	12D	61	
C-5	4296	-48.65	10	19.32	-	-	3	64	May 15
C-5	4293	-43.06	11		-40.12	297.88	12C	64	
4296	4293	5.69	10		5.30	297.98	12C	64	
3760	4293	-17.79	11		-16.57	298.03	12C	64	
3760	4269	7.49	10		6.98	321.58	12C	64	
3760	LGO 16	43.38	10		40.42	355.02	12F	65	
3760	LGO 10	-42.92	10		-39.99	274.61	12F	65	
3760	LGO 8	9.75	10		9.08	323.68	12F	65	
3760	4272	2.26	10		2.11	316.71	12C	65	
3760	4275	1.78	10		1.66	316.26	12C	65	
3760	4276	-14.62	10		-13.62	300.98	12C	66	
C-5	4296	-48.53	6		-	-	3	66	

Table 1. Reference Gas comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis
Span 310									1959
C-5	4296	-48.50	10	19.40	-	-	3	67	May 18
C-5	4269	-17.64	10		-16.37	321.63	12C	67	
4296	4269	31.04	11		28.80	321.48	12C	67	
4296	4293	5.68	10		5.27	297.95	12C	67	
C-5	4296	-49.21	10		-	-	3	67	
3760	4278	-22.32	10		-20.71	293.89	12C	68	
3760	4271	3.13	10		2.90	317.50	12C	68	
3760	4274	0.48	10		0.45	315.05	12C	68	
C-5	4296	-49.03	10		-	-	3	68	
C-5	4296	-48.71	10	19.34	-	-	3	69	May 19
C-5	3760	-25.20	9		-23.45	314.55	5	69	
4296	3760	23.60	11		21.96	314.64	5	69	
3760	4289	-13.32	10		-12.40	302.20	12C	69	
3760	4288	23.18	10		21.57	336.17	12C	69	
3760	4273	-9.18	10		-8.54	306.06	12C	70	
3760	A-7	-0.56	10		-0.52	314.08	12C	70	
3760	4295	-16.12	10		-15.00	299.60	12C	70	
3760	4285	-12.31	10		-11.46	303.14	12D	70	
3760	3751	9.18	10		8.54	323.14	12C	70	
C-5	4296	-48.56	10		-	-	3	71	
C-5	4296	-57.48	11	22.84	-	-	3	74	June 6
C-5	3760	-29.80	10		-23.49	314.51	5	74	
4296	3760	27.77	10		21.89	314.57	5	74	
3760	3759	-0.77	10		-0.61	313.99	5	74	
3760	4288	-3.97	10		-3.13	311.47	12D	74	
3760	4278	-1.39	10		-1.10	313.50	12C	75	
3760	4272	15.55	10		12.25	326.85	12A	75	
3760	4273	0.53	10		0.42	315.02	12C	75	
3760	4271	4.68	10		3.69	318.29	12C	75	
3760	4274	15.31	10		12.07	326.67	12A	75	
C-5	4296	-57.45	10		-	-	3	76	

Table 1. Reference Gas Comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis
Span 310									1959
C-5	4296	-53.33	11	21.08	-	-	3	77	June 18
C-5	3760	-27.42	11		-23.41	314.59	5	77	
4296	3760	25.65	10		21.90	314.58	5	77	
3760	3759	-0.78	9		-0.67	313.93	5	77	
3760	3758	-28.71	10		-24.51	290.09	12B	77	
3760	4275	-23.34	10		-19.93	294.67	12A	78	
3760	4289	2.14	10		1.83	316.43	12C	78	
3760	4276	-19.11	10		-16.32	298.28	12C	78	
3760	2401	-18.91	10		-16.15	298.45	12C	78	
3760	3754	-19.56	10		-16.70	297.90	12C	78	
3760	2420	-8.20	10		-7.00	307.60	12D	79	
3760	4283	4.76	10		4.06	318.66	12D	79	
3760	4292	-21.13	10		-18.04	296.56	12D	79	
C-5	4296	-52.79	10		-	-	3	79	
4296	C-7	34.82	11	22.91	27.36	320.04	12G	80	July 6
3760	C-7	7.08	11		5.56	320.16	12G	80	
3760	4296	-27.92	10		-	-	3	80	
3760	3759	-0.60	10		-0.47	314.13	5	80	
3760	6081	-13.18	10		-10.36	304.24	12D	80	
3760	6078	-14.88	10		-11.69	302.91	12C	81	
3760	6074	-10.57	10		-8.30	306.30	12D	81	
3760	6057	-12.99	10		-10.21	304.39	12D	81	
3760	6052	-18.64	10		-14.65	299.95	12C	81	
3760	6071	-4.41	10		-3.46	311.14	12B	81	
3760	6073	-3.35	10		-2.63	311.97	12C	82	
3760	6060	-19.98	10		-15.70	298.90	12C	82	
3760	6051	-31.32	10		-24.61	289.99	12F	82	
3760	6067	-8.82	10		-6.93	307.67	12D	82	
3796	C-7	35.14	10		27.61	320.29	12G	82	

Table 1. Reference Gas Comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis 1959
Span 500									
3760	4296	-32.43	9	26.62	-	-	3	83	Aug. 25
3760	C-7	8.10	11		5.48	320.08	12G	83	
4296	C-7	40.46	11		27.36	320.04	12G	83	
3760	164	-35.43	10		-23.96	290.64	5	83	
3760	2420	-39.16	10		-26.48	288.12	12C	83	
3760	2426	42.08	10		28.45	343.05	12B	84	
3760	4292	42.48	10		28.72	343.32	12B	84	
3760	4283	42.50	10		28.74	343.34	12C	84	
3760	2425	42.26	10		28.58	343.18	5	84	
4296	C-7	40.57	10		27.43	320.11	12G	84	
3760	4296	-32.20	11	26.49	-	-	3	85	Aug. 28A
3760	C-7	7.93	11		5.39	319.99	12G	85	
4296	C-7	40.25	10		27.35	320.03	12G	85	
3760	6071	-5.08	10		-3.45	311.15	12B	85	
3760	3758	-36.25	10		-24.63	289.97	12B	85	
6071	3758	-31.05	10		-21.10	-		86	
3760	3753	42.70	10		29.01	343.61	5	86	
3760	C-8	-4.85	11		-3.30	311.30	5	86	
C-8	3753	47.22	10		32.09	343.94	5	86	
3760	4296	-32.27	10		-	-	3	86	
3760	4296	-31.11	9	26.47	-	-	3	87	Aug. 28B
4296	2425	74.50	10		50.66	343.34	5	87	
3760	2425	42.03	11		28.58	343.18	5	87	
3760	6073	-3.94	10		-2.68	311.92	12C	87	
3760	2420	-38.90	10		-26.45	288.15	12C	87	
3760	4283	42.02	10		28.57	343.17	12C	88	
3760	4296	-32.10	10		-	-	3	88	

Table 1. Reference Gas Comparisons with Analyser No. 46.

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis
Span 500									1959
3760	4296	-32.07	11	26.56	-	-	3	89	Aug. 31
3760	2425	42.24	11		28.63	343.23	5	89	
4296	2425	74.87	10		50.74	343.42	5	89	
3760	6073	-3.86	10		-2.62	311.98	12C	89	
3760	4283	42.36	11		28.71	343.31	12C	89	
2425	4283	0.02	10		0.02	343.27*	12C	90	
4296	2420	-6.70	10		-4.54	288.14	12C	90	
3760	4293	-24.88	10		-16.86	297.74	12C	90	
3760	4269	10.41	10		7.05	321.65	12C	90	
3760	6073	-3.92	10		-2.66	311.94	12C	90	
3760	4296	-32.38	10		-	-	3	91	
Span 310									
3760	4296	-27.53	11	22.66	-	-	3	92	Sept. 1
3760	2425	35.97	11		28.57	343.17	5	92	
4296	2425	63.68	10		50.58	343.26	5	92	
3760	C-8	-4.08	10		-3.24	311.36	5	92	
3760	3753	36.31	8		28.84	343.44	5	92	
4296	2420	-5.78	10		-4.59	288.09	12C	93	
3760	4272	15.72	10		12.49	327.09	12A	93	
3760	4274	15.40	10		12.23	326.83	12A	93	
3760	4275	-25.20	10		-20.02	294.58	12A	93	
3760	4296	-27.57	10		-	-	3	93	

*Based on 2425 as 343.25 (see Table 5)

Table 2. Reference Gas Comparisons with Analyser No. 55.

Col: 1	2	3	4	5	6	7	8	9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.	Date of Analysis
Span 340								1958
4283	4296	-19.27	10	18.45	-	-	4 1-a	July 24
4296	3760	5.30	10		5.17	297.85	12A 1-a	
3758	3751	8.53	11		8.32	322.16	12A 1-a	Aug. 27
4283	4296	-18.58	8	17.76	-	-	4 1	Sept. 3
4283	3758	2.35	8		2.38	313.83	5 1	
4296	3758	20.88	10		21.16	313.84	5 1	
3758	3760	-15.79	9		-16.00	297.84	12A 1	
3758	3751	8.19	10		8.30	322.14	12A 1	
4283	4296	-19.51	10	18.68	-	-	4 2	Sept. 8
3758	A-8 (136)	11.07	10		10.67	324.51	# 2	
3758	A-9 (1008)	-8.96	10		-8.63	305.21	# 2	
3758	A-10 (2403)	7.93	10	18.58*	7.68	321.52	# 2	Sept. 9
3758	A-11 (2399)	6.52	10		6.32	320.16	# 2	
3758	A-12 (148)	-9.11	7		-8.83	305.01	# 3	
3758	A-12	-8.82	8	18.58*	-8.54	305.30	# 3	Sept. 10
3758	A-13 (2408)	-34.16	10		-33.09	280.75	# 3	
3758	A-14 (2420)	-36.13	10		-35.00	278.84	# 3	
3758	A-15 (2404)	5.71	11		5.53	319.37	# 3	
3758	A-16 (2405)	-13.36	11		-12.94	300.90	# 4	
3758	A-19 (2434, 132)	7.52	10		7.29	321.13	# 4	
3758	A-20 (2421)	-2.88	10		-2.79	311.05	5 4	
3758	3752	7.66	10		7.42	321.26	# 4	
3758	3755	-9.87	10		-9.56	304.28	# 5	
3758	3756	-13.26	10		-12.85	300.99	# 5	

*No span check on this day. Factor is mean of Sept. 8 & 11.

#Not entered.

Table 2. Reference Gas Comparisons with Analyser No. 55.

Col: 1	2	3	4	5	6	7	8	9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.	Date of Analysis 1958
Span 340								
3758	3757	-1.71	10	18.47	-1.67	312.17	# 5	Sept. 11
3758	A-18 (2402)	26.62	10		25.94	339.78	12C 6	
4283	4296	-19.30	10		-	-	4 6	
4296	3758	21.77	10		21.22	313.90	5 6	
4283	3758	2.49	10		2.43	313.91	5 6	
4283	A-13 (2408)	-32.21	10		-31.39	280.09	# 6	
4283	A-18	28.38	10		27.66	339.14	12C 7	
4283	A-20 (2421)	-0.46	10	18.67	-0.44	311.04	5 7	Sept. 12
A-20	A-18	29.58	10		28.52	339.56	12B 7	
A-20	A-13	-31.73	10		-30.59	280.45	# 7	
4283	4296	-19.43	11		-	-	4 7	
4283	A-18	28.36	10		27.34	338.82	12B 8	
3758	A-18	25.93	10		25.00	338.84	12B 8	
A-20	A-18	28.59	10		27.56	338.60	12B 8	
3758	A-13	-33.81	10		-32.60	281.24	# 8	
4283	A-13	-32.14	10		-30.99	280.49	# 8	
A-20	A-13	-32.27	10		-31.11	279.93	# 9	
3758	A-13	-35.16	8		-33.90	279.94	# 9	
4283	4296	-19.66	5		-	-	# 9	
4283	4296	-18.88	8	17.95	-	-	4 9	Sept. 13
3758	A-13	-34.12	5		-34.21	279.63	# 9	
4283	A-20	-0.46	10		-0.46	311.02	5 10	
4283	A-18	28.99	7		29.07	340.55	12B 10	
A-20	A-18	29.33	6		29.41	340.45	12B 10	
A-20	A-13	-31.26	5		31.35	279.69	# 10	
4283	4296	-18.60	8		-	-	4 10	

Not entered.

Table 2. Reference Gas Comparisons with Analyser No. 55

Col: 1	2	3	4	5	6	7	8	9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.	Date of Analysis
Span 340								1958
4283	4296	-18.81	10	17.95	-	-	4 12	Sept. 16
C-5	4283	-25.09	7		-	-	4 12	
C-5	4283	-26.18	5		-	-	4 12	
C-5	4283	-26.90	5		-	-	4 12	
C-5	4283	-26.94	5		-	-	4 12	
4283	4296	-18.93	10		-	-	4 13	Sept. 17
C-5	4283	-25.68	10		-	-	4 13	
C-5	C-7	-18.10	10		-	-	4 13	
C-7	4283	-8.49	10		-	-	4 13	
4283	4296	-18.40	5		-	-	4 13	
4283	4296	-17.78	5		-	-	4 14	
C-5	4283	-26.20	5		-	-	4 14	
C-5	4283	-26.64	5		-	-	4 14	
4283	4296	-17.80	10		-	-	4 15	Sept. 26
4283	4296	-17.78	10		-	-	4 15-a	
4283	4296	-18.08	6		-	-	4 15-a	
4283	4296	-18.54	7		-	-	4 15-a	
4283	4296	-18.44	4		-	-	4 15-a	
4283	4296	-19.11	11	18.21	-	-	4 16	Sept. 30
4283	3758	2.35	12		2.32	313.80	5 16	
4296	3758	21.28	10		21.08	313.76	5 16	
3758	3751	7.99	10		7.90	321.74	12A 16	
3758	2418	-23.13	10		-22.86	290.98	12A 16	
4283	4296	-19.11	10	18.30	-	-	4 17	Oct. 1
4283	3753	32.26	10		31.73	343.21	5 17	
4283	3754	-9.20	10		-9.05	302.43	5 17	
3754	3753	41.46	10		40.78	343.01	5 17	
4283	3751	10.40	10		10.23	321.71	12A 17	

Table 2. Reference Gas Comparisons with Analyser No. 55

Col: 1	2	3	4	5	6	7	8	9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.	Date of Analysis
Span 340								1958
Special Long Runs Before Cleaning:								
A-17 (181)	A-14	-4.85	52				Long-term	Sept. 29
A-17	A-14	-4.76	56				Runs	
A-17	A-14	-4.87	52					Sept. 30
A-17	A-14	-4.83	69					Oct. 1
A-17	A-14	-4.76	67					
wtd. av. A-17	A-14	-4.81	296	18.30	4.73	277.89	12A	
Runs After Flow System Cleaned:								
A-17	A-14	-4.81	71				Long-term	Oct. 15
A-17	A-14	-4.65	104				Runs	Oct. 16
A-17	A-14	-4.70	66					Oct. 18
A-17	A-14	-4.77	49					Oct. 19
A-17	A-14	-4.73	70					
A-17	A-14	-4.71	73					Oct. 20
wtd. av. A-17	A-14	-4.72	433	18.30	4.64	277.98	12A	
A-17	A-14	-4.63	56				Long-term	Nov. 4
A-17	A-14	-4.55	19				Runs	Nov. 5
wtd. av. A-17	A-14	-4.61	75	18.30	4.53	278.09	12A	
C-5	4296	-44.43	10	17.64	-	-	4 28	Nov. 25
4296	3758	20.74	7		21.16	313.84	5 28	
C-5	3758	-23.73	7		-24.21	313.79	5 28	
4296	A-17	-9.78	10		-9.98	282.70	5 28	
4296	2418	-1.93	10		1.97	290.71	12A 29	
C-5	4296	-44.45	10		-	-	4	
4296	3758	20.72	5		21.14	313.82	5 29	
C-5	3758	-23.58	5		-24.06	313.94	5	

Table 2. Reference Gas Comparisons with Analyser No. 55.

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis
Span 340									1958
C-5	4296	-44.08	10	17.48	-	-	4	30	Dec. 18
4296	3760	21.19	11		21.82	314.50	5	30	
C-5	3760	-22.78	10		23.46	314.54	5	30	
4296	4283	15.69	12		16.16	308.84	12A	30	
4296	3751	15.93	10		16.40	309.08	12A	30	
C-5	4296	-44.33	10	17.56	-	-	4	31	Dec. 19
4296	3760	21.37	11		21.91	314.59	5	31	
C-5	3760	-22.74	10		-23.31	314.69	5	31	
									1959
4296	3751	16.30	10	17.35	16.91	309.59	12A	33	Jan. 13
C-5	4296	-43.80	10		-	-	4	33	
4296	3760	21.23	10		22.03	314.71	5	33	
C-5	3760	-22.33	9		-23.17	314.83	5	33	
4296	3751	16.04	5		16.64	309.32	12A	34	
C-5	4296	-43.69	7		-	-	4	33	
C-5	4277	7.45	10		7.73	345.73	12D	34	
4296	3751	15.78	5		16.37	309.05	12A	34	
3751	3754	10.85	10	17.31	11.28			41	Feb. 26
C-5	4296	-43.77	11		-	-	4	41	
C-5	3754	-16.57	10		-17.23	320.77	12A	41	
4296	3754	27.02	10		28.10	320.78	12A	41	
C-5	4296	-43.40	10		-	-	4	41	
3751	3754	10.49	10		10.91			42	

Table 2. Reference Gas Comparisons with Analyser No. 55

Col: 1	2	3	4	5	6	7	8		9
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Compari-sons	Recorder Scale Factor	Computed Index Difference	Computed Index	Table and Sheet No.		Date of Analysis
Span 340									1959
3754	3758	1.36	8	17.63	1.39			46	Mar. 26
C-5	4296	-44.05	11		-	-	4	46	
C-5	3758	-15.77	10		-16.10	321.90	12A	46	
4296	3758	28.79	10		29.39	322.07	12A	46	
3754	3758	1.31	14		1.34			46	
C-5	4296	-44.45	11		-	-	4	47	
C-5	3758	-15.72	5		-16.05	321.95	12A	47	
4296	3758	28.86	5		29.47	322.15	12A	47	
C-5	4296	-42.77	11	16.93	-	-	4	62	May 13
C-5	3760	-21.90	10		-23.28	314.72	5	62	
4296	3760	20.50	10		21.80	314.48	5	62	
3760	2426	10.11	10		10.75	325.35	12A	62	
3760	2425	10.26	8		10.91	325.51	12A	62	
3760	3758	7.58	10		8.06	322.66	12A	63	
C-5	4296	-42.70	5		-	-	4	63	
C-5	4296	-42.66	11	16.83	-	-	4	72	June 5
C-5	3760	-21.76	11		-23.27	314.73	5	72	
4296	3760	20.43	10		21.85	314.53	5	72	
3760	2426	10.41	9		11.13	325.73	12A	72	
3760	2425	10.02	10		10.72	325.32	12A	72	
C-5	4296	-42.27	10		-	-	4	73	
4274	4275	-30.63	9	17.07	-32.30			94	Sept. 9
3760	4296	-20.83	11		-	-	4	95	
3760	2425	27.19	8		28.67	343.27	5	95	
4296	2425	48.00	10		50.62	343.30		95	
3760	4274	11.55	12		12.18	326.78		95	
3760	4275	-18.90	10		-19.93	294.67		95	
3760	4296	-20.74	10		-	-	4	94	

Table 3. Recorder Scale Factors of Analyser No. 46

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 310							1958
C-5	A-18	2.75	4				Aug. 20
3754	A-18	46.44	11				
C-5	3754	43.69*	4*	35.77	21.99		
			4			21.99	
C-8	3754	-81.96	10	66.96	22.03		Aug. 21
			10			22.03	
C-5	3754	-43.39	10	35.77	21.83		Aug. 22
			10			21.83**	
3753	3754	-50.80	10	41.57	22.00		Aug. 29
			10			22.00	
C-5	4283	-33.88	10	26.52	23.00		Oct. 10
C-5	3753	7.75	10				
4283	3753	41.49	10				
C-5	4283	-33.74*	10 *	26.52	22.90		
4283	4296	-23.98	10	18.80	22.96		
			30			22.95	
C-5	4296	-54.05	10	45.32	21.47		Oct. 16
C-5	3753	7.14	10				
4296	3753	61.19	7				
C-5	4296	-54.05*	7*	45.32	21.47		
			17			21.47	
C-5	4296	-48.16	10	45.32	19.13		Nov. 10
C-5	3753	6.14	7				
4296	3753	54.46	5				
C-5	4296	-48.32*	5*	45.32	19.19		
						19.15	

** Only run for that day. Not used.

Table 3. Recorder Scale Factors of Analyser No. 46

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 310							1958
C-5	4296	-52.05	10	45.32	20.67		Nov. 19
C-5	4296	-51.90	10	45.32	20.61		
			20			20.64	
C-5	4296	-51.83	12	45.32	20.59		Nov. 20
C-5	3760	-26.85	10				
4296	3760	24.97	10				
C-5	4296	-51.82*	10*	45.32	20.58		
C-5	4296	-51.77	10	45.32	20.56		
			32			20.58	
C-5	4296	-52.08	10	45.32	20.68		Nov. 21
C-5	A-17	-63.51	10				
4296	A-17	-11.62	10				
C-5	4296	-51.89*	10*	45.32	20.61		
C-5	4296	-51.88	5	45.32	20.61		
			25			20.64	
							1959
C-5	4296	-49.82	11	45.32	19.79		Feb. 6
C-5	3760	-25.75	10				
96	3760	24.12	12				
C-5	4296	-49.87*	10*	45.32	19.81		
			21			19.80	
C-5	4296	-49.56	10	45.32	19.68		Feb. 9
C-5	4296	-49.89	10	45.32	19.81		
			20			19.75	

Table 3. Recorder Scale Factors of Analyser No. 46

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 310							1959
C-5	4296	-49.87	12	45.32	19.81		Feb. 11
C-5	4277	8.67	11				
4296	4277	58.58	11				
C-5	4296	-49.91*	11*	45.32	19.82		
C-5	4296	-49.91	10	45.32	19.82		
			33			19.82	
C-5	4296	-49.69	10	45.32	19.74		Mar. 13
C-5	3760	-25.70	10				
4296	3760	24.03	10				
C-5	4296	-49.73*	10*	45.32	19.75		
C-5	4296	-49.68	9	45.32	19.73		
			29			19.74	
C-8	3753	34.60	5	31.94	19.50		Apr. 16
C-8	3753	34.83	4		19.63		
			9			19.55	
C-5	4296	-49.05	11	45.32	19.48		Apr. 17
C-5	3760	-25.06	11				
4296	3760	23.55	10				
C-5	4296	-48.61*	10*	45.32	19.31		
C-5	4296	-48.87	9	45.32	19.41		
C-5	C-7	-19.13	11	18.00	19.13		
C-5	3760	-25.13	10				
C-7	3760	-5.79	11				
C-5	C-7	-19.34*	10*	18.00	19.34		
			51			19.33	

Table 3. Recorder Scale Factors of Analyser No. 46

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor Single Set	Recorder Scale Factor Wt'd Average	Date of Analysis
Span 310							1959
C-5	4296	-49.38	10	45.32	19.61		Apr. 29
C-5	3760	-25.44	10				
4296	3760	23.77	11				
C-5	4296	-49.21*	10*	45.32	19.54		
C-5	4296	-49.28	9	45.32	19.57		
			29			19.57	
C-5	4296	-48.76	10	45.32	19.37		Apr. 30
C-5	3760	-25.27	11	45.32			
4296	3760	23.65	10				
C-5	4296	-48.92*	10*	45.32	19.43		
C-5	4296	-48.87	10		19.41		
			30			19.40	
C-8	3753	34.67	11	31.94	19.54		May 11
C-8	2423	6.41	11				
3753	2423	-28.59	10				
C-8	3753	34.73*	10*	31.94	19.57		
			21			19.55	
C-5	4296	-48.65	10	45.32	19.32		May 15
C-5	4293	-43.06	11				
4296	4293	5.69	10				
C-5	4296	-48.75*	10*	45.32	19.36		
C-5	4296	-48.53	6	45.32	19.27		
			26			19.32	

Table 2. Recorder Scale Factors of Analyser No. 46

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 310							1959
C-5	4296	-48.50	10	45.32	19.26		May 18
C-5	4269	-17.64	10				
4296	4269	31.04	11				
C-5	4296	-48.68*	10*	45.32	19.33		
C-5	4296	-49.21	10	45.32	19.54		
C-5	4296	-49.03	10		19.47		
			40			19.40	
C-5	4296	-48.71	10	45.32	19.35		May 19
C-5	3760	-25.20	9				
4296	3760	23.60	11				
C-5	4296	-48.80*	9*	45.32	19.38		
C-5	4296	-48.56	10	45.32	19.29		
			29			19.34	
C-5	4296	-57.48	11	45.32	22.83		June 6
C-5	3760	-29.80	10				
4296	3760	27.77	10				
C-5	4296	-57.57*	10*	45.32	22.87		
C-5	4296	-57.45	10	45.32	22.82		
			31			22.84	
C-5	4296	-53.33	11	45.32	21.18		June 18
C-5	3760	-27.42	11				
4296	3760	25.65	10				
C-5	4296	-53.07*	10*	45.32	21.08		
C-5	4296	-52.79	10	45.32	20.97		
			31			21.08	

Table 3. Recorder Scale Factors of Analyser No. 46

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 310							1959
3760	C-7	7.08	11				July 6
4296	C-7	34.82	11				
4296	C-7	35.14	10				
Wt.Av.		34.97*	21*				
3760	4296	-27.89*	21*	21.92	22.90		
3760	4296	-27.92	10	21.92	22.93		
			31			22.91	
Span 500							
3760	4296	-32.43	9	21.92	26.63		Aug. 25
3760	C-7	8.10	11				
4296	C-7	40.46	11				
4296	C-7	40.57	10				
Wt.Av.		40.51*	21*				
3760	4296	32.41	21*	21.92	26.61		
			30			26.62	
Span 500							
3760	4296	-32.20	11	21.92	26.44		Aug. 28, day
3760	C-7	7.93	11				
4296	C-7	40.25	10				
3760	4296	-32.32*	10*	21.92	26.54		
3760	4296	-32.27	10	21.92	26.50		
			31			26.49	
3760	4296	-32.11	9	21.92	26.37		Aug. 28, night
3760	2425	42.03	11				
4296	2425	74.50	10				
3760	4296	32.47*	10*	21.92	26.66		
3760	4296	-32.10	10	21.92	26.36		
			29			26.47	

Table 3. Recorder Scale Factors of Analyser No. 46

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 500							1959
3760	4296	-32.07	11	21.92	26.33		Aug. 31
3760	2425	42.24	11				
4296	2425	74.87	10				
3760	4296	-32.63*	10*	21.92	26.79		
3760	4296	-32.38	10	21.92	26.59		
			31			26.56	
Span 310							
3760	4296	-27.53	11	21.92	22.61		Sept. 1
3760	2425	35.97	11				
4296	2425	63.68	10				
3760	4296	-27.71*	10*	21.92	22.75		
3760	4296	-27.57	10	21.92	22.64		
			31			22.66	

Table 4. Recorder Scale Factors of Analyser No. 55

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 340							1958
4283	4296	-19.27	10	18.80		18.45	July 24
4283	4296	-18.58	8	18.80	17.79		Sept. 3
4283	3758	2.35	8				
4296	3758	20.88	10				
4283	4296	18.53*	8*	18.80	17.74		
			16			17.76	
4283	4296	-19.51	10	18.80		18.68	Sept. 8
4283	4296	-19.30	10	18.80	18.48		Sept. 11
4283	3758	2.49	10				
4296	3758	21.77	10				
4283	4296	-19.28*	10*	18.80	18.46		
			20			18.47	
4283	4296	-19.43	11	18.80	18.60		Sept. 12
4283	4296	-19.66	5	18.80	18.82		
			16			18.67	
4283	4296	-18.88	8	18.80	18.08		Sept. 13
4283	4296	-18.60	8	18.80	17.81		
			16			17.95	

Table 4. Recorder Scale Factors of Analyser No. 55

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor Single Set	Wt'd Average	Date of Analysis
Span 340							1958
4283	4296	-18.81	10	18.80	18.01		Sept. 16
C-5	4283	-25.09	7	26.52	(17.03	omit)	
C-5	4283	-26.18	5	26.52	17.77		
C-5	4283	-26.90	5	26.52	18.26		
C-5	4283	-26.94	5	26.52	18.28		
			25			18.07	
4283	4296	-18.93	10	18.80	18.12		Sept. 17
4283	4296	-18.40	5	18.80	17.62		
4283	4296	-17.78	5	18.80	(17.02	omit)	
C-5	C-7	-18.10	10	18.00	18.10		
C-5	4283	-25.68	10	26.52	(17.43	omit)	
C-5	4283	-26.20	5	26.52	17.78		
C-5	4283	-26.64	5	26.52	18.08		
			35			17.99	
4283	4296	-17.80	10	18.80	17.04		Sept. 26
4283	4296	-17.78	10	18.80	17.02		
4283	4296	-18.08	6	18.80	17.31		
4283	4296	-18.54	7	18.80	17.75		
4283	4296	-18.44	37			17.28	
4283	4296	-19.11	11	18.80	18.30		Sept. 30
4283	3758	2.35	12				
4296	3758	21.28	10				
4283	4296	-18.93*	10*	18.80	18.12		
			21			18.12	

Table 4. Recorder Scale Factors of Analyser No. 55

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 340							1958
4283	4296	-19.11	11	18.80		18.30	Oct. 1
C-5	4296	-44.43	10	45.32	17.65		Nov. 25
C-5	3758	-23.73	7				
4296	3758	20.74	7				
C-5	4296	-44.47*	7*	45.32	17.66		
C-5	4296	-44.45	10	45.32	17.65		Nov. 25
C-5	3758	-23.58	5				
4296	3758	20.72	5				
C-5	4296	-44.30*	5*	45.32	17.59		
			34			17.64	
C-5	4296	-44.08	10	45.32	17.51		Dec. 18
C-5	3760	-22.78	10				
4296	3760	21.19	11				
C-5	4296	-43.97*	10*	45.32	17.46		
			20			17.48	
C-5	4296	-44.33	10	45.32	17.61		Dec. 19
C-5	3760	-22.74	10				
4296	3760	21.37	11				
C-5	4296	-44.11*	10*	45.32	17.52		
			20			17.56	

Table 4. Recorder Scale Factors of Analyser No. 55

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 340							1959
C-5	4296	-43.80	10	45.32	17.40		Jan. 13
C-5	3760	-22.33	9				
4296	3760	21.23	10				
C-5	4296	-43.56*	9*	45.32	17.30		
C-5	4296	-43.69	7	45.32	17.35		
			26			17.35	
C-5	4296	-43.77	11	45.32	17.38		Feb. 26
C-5	3754	-16.57	10				
4296	3754	27.02	10				
C-5	4296	-43.59*	10*	45.32	17.31		
C-5	4296	-43.40	10	45.32	17.24		
			31			17.31	
C-5	4296	-44.05	11	45.32	17.50		Mar. 26
C-5	3758	-15.77	10				
4296	3758	28.79	10				
C-5	4296	-44.56*	10*	45.32	17.70		
C-5	4296	-44.45	11	45.32	17.65		
C-5	3758	-15.72	5				
4296	3758	28.86	5				
C-5	4296	-44.58*	5*	45.32	17.71		
			37			17.63	

Table 4. Recorder Scale Factors of Analyser No. 55

Col: 1	2	3	4	5	6	7	8
(Sub) Standard Tank No.	Compared Tank No.	Observed Scale Difference	No. of Comparisons	Index Difference	Recorder Scale Factor: Single Set	Recorder Scale Factor: Wt'd Average	Date of Analysis
Span 340							1959
C-5	4296	-42.77	11	45.32	16.99		May 13
C-5	3760	-21.90	10				
4296	3760	20.50	10				
C-5	4296	-42.40*	10*	45.32	16.84		
C-5	4296	-42.70	5	45.32	16.96		
			26			16.93	
C-5	4296	-42.66	11	45.32	16.94		June 5
C-5	3760	-21.76	11				
4296	3760	20.43	10				
C-5	4296	-42.19*	10*	45.32	16.76		
C-5	4296	-42.27	10	45.32	16.79		
			31			16.83	

Table 5. Index Values of Standards and Substandards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
									1958	
46	C-5	3760	10	314.52			1190	2170	Nov. 20	
46	4296	3760	10	314.52			1470	2160	Nov. 20	
55	4296	3760	11	314.50			1350	2000	Dec. 18	(refill)
55	C-5	3760	10	314.54			1095	2000	Dec. 18	
55	4296	3760	11	314.59			1305	2000	Dec. 19	
55	C-5	3760	10	314.69			1090	2005	Dec. 19	
									1959	
55	C-5	3760	10	314.71			1070	1260	Jan. 13	
55	C-5	3760	9	314.83			1070	2030	Jan. 13	
46	C-5	3760	10	314.59			1020	2030	Feb. 6	
46	4296	3760	12	314.61			1240	2030	Feb. 6	
46	C-5	3760	10	314.57			920	1910	Mar. 13	
46	4296	3760	10	314.59			1120	1900	Mar. 13	
46	C-5	3760	11	314.66			870	1760	Apr. 17	
46	4296	3760	10	314.61			1060	1760	Apr. 17	
46	C-5	3760	10	314.60			820	1700	Apr. 17	
46	C-5	3760	10	314.60			820	1690	Apr. 29	
46	4296	3760	11	314.54			1030	1690		
46	C-5	3760	11	314.55			800	1650	Apr. 30	
46	4296	3760	10	314.62			1020	1640	Apr. 30	
55	C-5	3760	10	314.72			770	1570	May 13	
55	4296	3760	10	314.48			986	1560	May 13	
46	C-5	3760	9	314.55			690	1980	May 19	
46	4296	3760	11	314.64			900	1460	May 19	
55	C-5	3760	11	314.73			670	1400	June 5	
55	4296	3760	10	314.53			880	1400	June 5	
46	C-5	3760	10	314.51			630	1390	June 6	
46	4296	3760	10	314.57			840	1380	June 6	
46	C-5	3760	11	314.59			610	1350	June 18	
46	4296	3760	10	314.58			840	1340	June 18	
					298	314.60 Final Value *				

* Tank converted to primary standard on July 6, 1959

Table 5. Index Values of Standards and Substandards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Compari-sons	Index	No. of Compari-sons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
									1958	
55	4283	3758	8	313.83			1500	1170	Sept. 3	
55	4296	3758	10	313.84			1970	1160	Sept. 3	
55	4296	3758	10	313.90			1910	850	Sept. 11	
55	4283	3758	10	313.91			1430	850	Sept. 11	
55	4283	3758	12	313.80			1160	850	Sept. 30	
55	4296	3758	10	313.76			1685	790	Sept. 30	
55	4296	3758	7	313.84			1420	750	Nov. 25	
55	C-5	3758	7	313.79			1120	750	Nov. 25	
55	4296	3758	5	313.82			1420	750	Nov. 25	
55	C-5	3758	5	313.94			1120	750	Nov. 25	
					84	313.84 3758				
46	3758	3754	10	299.83			1500	1800	April 7*	
	(This analysis does not fit with later ones. Different filling?)									
46	3758	3754	11	301.99			1320	2200	June 17*	
46	3758	3754	10	302.15			1275	2190	July 2*	
55	4283	3754	10	302.43			1095	415	Oct. 1	
46	4283	3754	10	302.31			1080	260	Oct. 10	
46	4296	3754	5	302.41			1650	230	Oct. 16	
46	4296	3754	7	302.19	53	302.23 3754	1500	120	Nov. 19	

*Data in Research Report I

Table 5. Index Values of Standards and Substandards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
									1958	
46	3760	C-8	12	312.02				2140 2100	Nov. 20	
									1959	
46	3760	C-8	11	311.90				2020 1650	Feb. 6	
46	3760	C-8	10	311.85				1710 1050	Apr. 17	
46	3760	C-8	10	311.63				1600 900	Apr. 30	
46	3760	C-8	10	311.30*				1050 430	Aug. 28	
46	3760	C-8	10	311.36*	43	311.86	C-8	910 400	Sept. 1	
									1958	
46	4296	A-17	10	282.55				1440 250	Nov. 21	
46	C-5	A-17	10	282.61				1170 250	Nov. 21	
55	4296	A-17	10	282.70	30	282.62	A-17	1420 200	Nov. 25	
									1959	
46	3760	A-17	11	310.06				1970 2200	Feb. 9	
46	3760	A-17	10	310.13	21	310.09	A-17	1950 2200	Feb. 11	
									1958	
55	3758	A-20	10	311.05				935 2195	Sept. 10	
55	4283	A-20	10	311.04				1415 2150	Sept. 12	
55	4283	A-20	10	311.04	30	311.04	A-20	1330 2100	Sept. 13	

*Omitted from average

Table 5. Index Values of Standards and Substandards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Compari-sons	Index	No. of Compari-sons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
									1958	
55	4283	3753	10	343.21*			1110	1970	Oct. 1	
55	3754	3753	10	343.01*			410	1930	Oct. 1	
46	C-5	3753	10	344.08			1315	1895	Oct. 10	
46	3754	3753	10	344.00			260	1895	Oct. 10	
46	4283	3753	10	344.02			1080	1890	Oct. 10	
46	C-5	3753	10	343.99			1290	1730	Oct. 16	
46	4296	3753	7	343.98			1650	1720	Oct. 16	
46	3754	3753	6	343.80			225	1700	Oct. 16	
46	C-5	3753	7	344.03			1230	1140	Nov. 10	
46	4296	3753	5	343.87			1550	1140	Nov. 10	
46	4296	3753	5	344.12			1510	1100	Nov. 19	
46	3754	3753	10	343.47			110	1100	Nov. 19	
46	C-5	3753	10	343.67					Nov. 20	
46	C-8	3753	11	343.39			2090	1100	Nov. 20	
									1959	
46	C-8	3753	11	343.75			1610	1020	Feb. 6	
46	3760	3753	2	343.99			1970	1000	Feb. 9	
46	C-8	3753	10	343.69			1590	1020	Mar. 13	
46	C-8	3753	5	343.88			1040	960	Apr. 17	
46	C-8	3753	7	343.70			900	950	Apr. 29	
46	3760	3753	10	343.61			1050	640	Aug. 28	
46	C-8	3753	10	343.94			410	620	Aug. 28	
46	3760	3753	8	343.44			900	630	Sept. 1	
	versus primary standards :				84	343.87				
	versus 3754:				26	343.75				
	versus C-8 :				54	343.71				
	wt'd av.				164	343.80				

*Omitted from average.

Table 5. Index Values of Standards and Substandards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
									1959	
46	3760	2425	10	343.18				1140 2160	Aug. 25	
46	3760	2425	10	343.18				1020 2140	Aug. 28	
46	4296	2425	10	343.34				720 2130	Aug. 28	
46	3760	2425	11	343.23				1000 2160	Aug. 31	
46	4296	2425	10	343.42				700 2150	Aug. 31	
46	3760	2425	11	343.17				920 2110	Sept. 1	
46	4296	2425	10	343.26	73	343.25	2425	660 2100	Sept. 1	
46	3760	164	10	290.64	Incomplete			1180 2170	Aug. 25	
46	3760	3759	10	313.99				1380 2100	June 6	
46	3760	3759	9	313.93				1340 2030	June 18	
46	3760	3759	10	314.13	Not used*			1290 2020	July 6	

*See preceeding text, section IV.

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
A. Scripps Pier									1958	1958
46	3758	3760	2	297.71				2200	June 17*	July 24 - Aug. 22
46	3758	3760	10	297.92				2190	July 2*	
55	4296	3760	10	297.85				2050	July 24	
55	3758	3760	9	297.84	31	297.86	3760	120	Sept. 3	
55	3758	3751	11	322.16				1800	Aug. 27	Aug. 22 - Sept. 26
55	3758	3751	10	322.14				1360	Sept. 3	
55	3758	3751	10	321.74				250	Sept. 30	
55	4283	3751	10	321.71	41	321.94	3751	240	Oct. 1	
55	3758	2418 (~~A-18~~ ?)	10	290.98				2140	Sept. 30	Oct. 5 - Nov. 7
46	4296	2418	12	290.73				-	Nov. 19	
55	4296	2418	10	290.71	32	290.80	2418	200	Nov. 25	
55	3758	A-14	10	278.84				2180	Sept. 10	Sept. 20-22 and
55	A-17	A-14	296	277.89				-	Sept. 29-Oct. 1	Oct. 3-5
55	A-17	A-14	433	277.98				-	Oct. 15-19	
55	A-17	A-14	75	278.09	814	277.97	A-14	-	Nov. 4-5	
46	4296	4283	10	308.87				2200	Nov. 21	Nov. 21, 1958 -
55	4296	4283	12	308.84	22	308.85	4283	690	Dec. 18	Jan. 3, 1959

*Data in Research Report 1, Table 1

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
A. Scripps Pier									1958	1959
46	4296	3751	10	309.29				2175	Nov. 21	Jan. 3 - Feb. 14
55	4296	3751	10	309.08				2070	Dec. 19	
									1959	
55	4296	3751	10	309.59				1800	Jan. 13	
55	4296	3751	5	309.32				1780	Jan. 13	
55	4296	3751	5	309.05				1800	Jan. 13	
46	3760	3751	9	309.34	49	309.30	3751	200	Feb. 11	
46	3760	3754	11	320.75				2200	Feb. 9	Feb. 14 - Mar. 23
55	C-5	3754	10	320.77				1500	Feb. 26	
55	4296	3754	10	320.78	31	320.77	3754	1500	Feb. 26	
46	3760	3758	11	322.10				2200	Feb. 9	Mar. 23 - Apr. 28
55	C-5	3758	10	321.90				2080	Mar. 26	
55	4296	3758	10	322.07				2060	Mar. 26	
55	C-5	3758	5	321.95				2020	Mar. 26	
55	4296	3758	5	322.15				2010	Mar. 26	
55	3760	3758	10	322.66*	41	322.03	3758	54	May 13	
46	3760	2426	10	325.38				2120	Apr. 29	May 1 - June 2
55	3760	2426	10	325.35				1390	May 13	
55	3760	2426	9	325.73*	20	325.36	2426	42	June 5	
46	3760	2425	10	325.26				2170	Apr. 29	June 2 - July 1
55	3760	2425	8	325.51				2120	May 13	
55	3760	2425	10	325.32	28	325.35	2425	1920	June 5	

*Omitted from average because of low tank pressure.

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
A. Scripps Pier									1959	1959
46	3760	4272	10	326.85				2150	June 6	July 1 - Aug. 1
46	3760	4272	10	327.09	20	326.97	4272	92	Sept. 1	
46	3760	4274	10	326.67				2140	June 6	Aug. 2 - Sept. 9
46	3760	4274	10	326.83		Incomplete		630	Sept. 1	
46	3760	4275	10	294.67				2240	June 18	Sept. 9 - Oct. 12
46	3760	4275	10	294.58		Incomplete		2210	Sept. 1	
B. Scripps Laboratory									1958	1958
46 & 55	Various	3754			53	302.23	3754*		June 17-Nov.19	Aug. 6 - Oct. 23
55	3758	A-18	10	339.78				1800	Sept. 11	----
55	4283	A-18	10	339.14				1775	Sept. 11	
55	A-20	A-18	10	339.56				1875	Sept. 12	
55	4283	A-18	10	338.82				1750	Sept. 12	
55	3758	A-18	10	338.84				1745	Sept. 12	
55	A-20	A-18	10	338.60				1740	Sept. 12	
55	4283	A-18	7	340.55			Not	1660	Sept. 13	
55	A-20	A-18	6	340.45	73	339.37	used	1660	Sept. 13	
46	C-5	A-18	4	340.25				2150	Aug. 20	Aug. 26 - 28
46	3754	A-18	11	340.24				2150	Aug. 20	
46	C-8	A-18	12	339.88				2150	Aug. 21	
46	C-8	A-18	12	339.78				2100	Aug. 21	
46	3754	A-18	12	339.76	51	339.93	A-18**	1930	Aug. 29	

*See Table 5.

**Antarctic 3rd Yr. tank used to analyze flasks prior to use at South Pole.

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
B. Scripps Laboratory										
46 & 55	Various	3753			164	343.80	3753*			Sept. 2, 1958-May 28, 1959
46	3760	C-8			43	311.86	C-8*			Nov. 26, 1958-May 28, 1959
									1959	
46	3760	6071	10	311.14				2170	July 6	
46	3760	6071	10	311.15		Incomplete		1240	Aug. 28	
46	3760	3758	10	290.09				2240	June 18	
46	3760	3758	10	289.97		Incomplete		1980	Aug. 28	
46	3760	4292	10	343.32		Incomplete		2180	Aug. 25	
46	3760	2426	10	343.05		Incomplete		2170	Aug. 25	
C. Antarctic - 2 Yr. returns										
46	3760	A-7	10	313.74				90-100	Apr. 30	
46	3760	A-7	10	314.08	20	313.91	A-7	92	May 19	
46	3760	4271	10	317.44				100	Apr. 29	
46	3760	4271	10	317.50	20	317.47	4271	92	May 18	
46	3760	4272	10	316.73				500	Apr. 30	
46	3760	4272	10	316.71	20	316.72	4272	490	May 15	
46	3760	4273	11	306.20				440	Apr. 29	
46	3760	4273	10	306.06	21	306.13	4273	440	May 19	
46	3760	4274	10	314.94				240	Apr. 30	
46	3760	4274	10	315.05	20	315.00	4274	330	May 18	
46	3760	4275	10	316.31				480	Apr. 30	
46	3760	4275	10	316.26	20	316.28	4275	370	May 15	
46	3760	4276	10	301.01				400	Apr. 30	
46	3760	4276	10	300.98	20	301.00	4276	400	May 15	
46	3760	4278	10	293.98				470	Apr. 30	
46	3760	4278	10	293.89	20	293.94	4278	430	May 18	

*See Table 5.

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
C. Antarctic - 2 Yr. returns									1959	
46	3760	4288	10	336.16				450	Apr. 29	
46	3760	4288	10	336.17	20	336.16	4288	450	May 19	
46	3760	4289	10	302.23				680	Apr. 29	
46	3760	4289	10	302.20	20	302.22	4289	680	May 19	
46	3760	4293	10	297.82				1660	Apr. 30	
46	C-5	4293	11	297.88				1680	May 15	
46	4296	4293	10	297.98				1670	May 15	
46	3760	4293	11	298.03				1640	May 15	
46	4296	4293	10	297.95				1660	May 18	
46	3760	4293	10	297.74		Incomplete		1600	Aug. 31	
46	3760	4269	10	321.54				1320	Apr. 30	
46	3760	4269	10	321.58				1300	May 15	
46	C-5	4269	10	321.63				1310	May 18	
46	4296	4269	11	321.48				1310	May 18	
46	3760	4269	10	321.65		Incomplete		1300	Aug. 31	
C. Antarctic 4th Year - New Fillings										
46	3760	6073	10	311.97				2170	July 6	
46	3760	6073	10	311.92				2150	Aug. 28	
46	3760	6073	10	311.98				2150	Aug. 31	
46	3760	6073	10	311.94	40	311.95	6073	2140	Aug. 31	
46	3760	2420	10	288.12				2160	Aug. 25	
46	3760	2420	10	288.15				2150	Aug. 28	
46	4296	2420	10	288.14				2150	Aug. 31	
46	4296	2420	10	288.09	40	288.12	2420	2140	Sept. 1	

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
C. Antarctic 4th Year - New Fillings									1959	
46	3760	4283	10	343.34				2190	Aug. 25	
46	3760	4283	10	343.17				2150	Aug. 28	
46	3760	4283	11	343.31				2150	Aug. 31	
46	2425	4283	10	343.27	41	343.27	4283	2140	Aug. 31	
46	3760	2401(A-7)			10	298.45	2401	2240	June 18	
46	3760	3751			10	323.14	3751	2190	May 19	
46	3760	3754			10	297.90	3754	1310	June 18	
46	3760	4271			10	318.29	4271	2140	June 6	
46	3760	4273			10	315.02	4273	2140	June 6	
46	3760	4276			10	298.28	4276	2240	June 18	
46	3760	4278			10	313.50	4278	2150	June 6	
46	3760	4289			10	316.43	4289	2230	June 18	
46	3760	4295			10	299.60	4295	2190	May 19	
46	3760	6052			10	299.95	6052	2190	July 6	
46	3760	6060			10	298.90	6060	2180	July 6	
46	3760	6078			10	302.91	6078	2200	July 6	
D. Mauna Loa - New Fillings										
55	C-5	4277	10	345.73				2140	Jan.13	
46	3760	4277	10	345.63				2190	Feb. 6	
46	3760	4277	11	345.95				2150	Feb. 9	
46	A-17(181)	4277	10	345.98				2140	Feb. 9	
46	4296	4277	11	345.88				2150	Feb. 11	
46	C-5	4277	11	345.87	63	345.84	4277	2150	Feb. 11	
46	3760	A-17			21	310.09	A-17*	-	Feb. 9-11	

*See Table 5

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Compari-sons	Index	No. of Compari-sons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
D. Mauna Loa - New Fillings									1959	
46	3760	2420	12	307.60				2220	Feb. 6.	
46	3760	2420	13	307.55	25	307.57	2420	2200	Feb. 11	
46	3760	2418			10	312.17	2418	2180	Feb. 9	
46	3760	4283			14	318.59	4283	2220	Feb. 9	
46	C-8	2423	11	317.50				2120	May 11	
46	3753	2423	10	317.48	21	317.49	2423	2100	May 11	
46	C-8	4286			10	317.23	4286	2030	May 11	
46	3760	4285			10	303.14	4285	2200	May 19	
46	3760	4288			10	311.47	4288	2160	June 6	
46	3760	6057			10	304.39	6057	2180	July 6	
46	3760	6067			10	307.67	6067	2180	July 6	
46	3760	6074			10	306.30	6074	2180	July 6	
46	3760	6081			10	304.24	6081	2170	July 6	
D. Mauna Loa - Returns									1959	
46	3760	2423			11	306.93	2423	360	Mar. 13	
46	3760	2425			10	306.97	2425	400	Mar. 13	
46	3760	2426			10	306.56	2426	300	Mar. 13	
46	3760	4285			10	309.49	4285	220	Mar. 13	
46	3760	4286			10	310.46	4286	240	Mar. 13	
46	3760	4295			10	298.31	4295	200	Mar. 13	
46	3760	2420			10	307.60	2420	370	June 18	
46	3760	4283			10	318.66	4283	300	June 18	
46	3760	4292			10	296.56	4292	270	June 18	

Table 12 Index Values of Working Reference Gases and Retired (Sub)standards

Col: 1	2	3	4	5	6	7	8	9	10	11
			Single Set		Wt'd.Av.		Compared Tank			
Analyser	(Sub) Standard Tank No.	Compared Tank No.	No. of Comparisons	Index	No. of Comparisons	Index	No.	Pressure (P.S.I.)	Date of Analysis	Dates of Use
F. Lamont Standards									1959	
46	C-8	LGO. 8	4	323.96				600	Apr. 16	
46	3760	LGO. 8	10	323.60				570	Apr. 17	
46	3760	LGO. 8	10	323.68	Incomplete			570	May 15	
46	C-8	LGO. 10	2	274.98				1480	Apr. 16	
46	3760	LGO. 10	10	274.36				1450	Apr. 17	
46	3760	LGO. 10	10	274.61	Incomplete			1440	May 15	
46	C-8	LGO. 16	2	355.31				600	Apr. 16	
46	3760	LGO. 16	10	355.40				200	Apr. 17	
46	3760	LGO. 16	10	355.02	Incomplete			700	May 15	
F. Special Use Tanks									1959	
46	3760	6051			10	289.99	6051	2180	July 6	
G. Retired Standards									1959	
46	3760	C-7	11	319.99*				560	Apr. 17	
46	C-5	C-7	11	320.19*				550	Apr. 17	
46	3760	C-7	10	320.07				550	Apr. 30	
46	4296	C-7	11	320.04				540	July 6	
46	3760	C-7	11	320.16				530	July 6	
46	4296	C-7	10	320.29				530	July 6	
46	3760	C-7	11	320.08				500	Aug. 25	
46	4296	C-7	11	320.04				500	Aug. 25	
46	4296	C-7	10	320.11				500	Aug. 25	
46	3760	C-7	11	319.99				490	Aug. 28	
46	4296	C-7	10	320.03	95	320.09	C-7	490	Aug. 28	

*Comparisons used (together with other comparisons) to establish recorder scale factor, omitted from average.

Table 13. Index Values of Standards and Principle Substandards

Reference To:	No. of Comparisons	Index	Tank No.
Report I, Table 3	-	338.00	C-5
Report I, Table 3	62	311.48	4283
Report I, Table 3	63	292.68	4296
Report I, Table 5	31	369.19	C-8
Report II, Table 5	164	343.80	3753
Report II, Table 5	53	302.23	3754
Report II, Table 5	84	313.84	3758
Report II, Table 5	298	314.60	3760