

V. DATA USED

A. Beacon Data: (H_2/CO in FF = 2.0)

At the time this report was written there were available thirty-two runs or periods (complete with mass spectrometer analyses) made on the Beacon fluid units #7 and #8. These runs were all made with 2/1 H_2/CO ratio in Fresh Feed at 650°F. and 200# except one which was made at 600°F. They may be grouped as follows:

- A. CM&S Reduced Catalyst
 - 1. Once through @ 650°F., Runs 7007, 23, 35A & 35B
 - 2. Recycling @ 0.5 R/FF & 600°F., Run 7005
 - 3. Recycling @ 1.0 R/FF & 650°F., Runs 7024, 27 & 8001
- B. CM&S Reduced Catalyst with CO_2 added to FF.
Series 14, 15, 18 & 22 (All once through)
- C. CM&S Unreduced Catalyst
Series 31 (R/FF = 1.0)
- D. Other Catalysts:
 - Cl. Powder (once through) Series 17
 - Limonite K_2O (1.0 R/FF) Run 28
 - Limonite KF (1.2 R/FF) Series 32
 - Beacon Synthetic Ammonia Type Catalysts
(1.2 R/FF) Runs 8002, 3 & 4

B. HRI Data (H_2/CO in FF = 1.8 to 2.7)

There were also available to us from the HRI Olean Pilot Unit the following runs complete with mass specs. on the streams:

- 15 Periods obtained on the H unit.
- 5 Periods of the 14 series.
- 5 Periods of the 15 series.

These data were all recalculated for the purpose of this report.

In addition, there were available from HRI summaries, data from the following periods on which mass spec. data were not reported to us and which were therefore plotted direct from the summaries.

- 6 H Series periods.
- 27 14 Series periods.

To plot these latter data it was necessary to calculate the % H_2 in FF converted. This was done as follows:

$$\frac{100 \times \%CO \text{ Converted} \times H_2/CO \text{ Consumed}}{100 \times H_2/CO \text{ in FF}} = \% H_2 \text{ in FF Converted}$$

C. Stanolind Data (H_2/CO in FF = 2.3 to 5.0)

The data on the Synthol Process developed on the Tulsa pilot unit and included in the Stanolind Oil & Gas Co. reports P46-1A (7-19-46) and

F46-13 (6-20-46) were used in an effort to establish the effect of high H_2/CO ratios and high CO_2 contents in the Fresh Feed.

These data were recalculated and were not too reliable. They are subject also to misinterpretation on our part.

D. Data From Other Laboratories (H_2/CO in FF = 1.0 to 2.0)

In order to permit a study of the effect of low H_2/CO in the Fresh Feed, Hydrocarbon Research Inc. provided us with data from two other laboratories.

From the first laboratory (Lab. A) there were 7 runs which were recalculated into 32 periods and from the second laboratory (Lab. B) there were 4 runs which were recalculated into 20 periods.

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The following tables are summaries of the recalculated data (Table I) and the HRI summary of their data (Table IA).

TABLE I
SUMMARY OF DATA
IN ALL CASES YIELDS ARE EXPRESSED AS % COMPONENT IN FF

Lab.	Run No.	R FF	H ₂ CO (FF)	CO ₂ (FF)	CH ₄ (FF)	% Contr.*	H ₂ Conv.	CO Conv.	CO to CO ₂	CO to CH ₄	CO to C ₂ S	CO to C ₃ S	CO to C ₃ /	CO to Alc.	% Unsat. in C ₂	% Unsat. in C ₃	% Unsat. in C ₄	Tot. CH ₄ % CO in FF	Tot. CO ₂ % CO in FF	H ₂ to H ₂ O Meas.	Lgt. of Period Hrs.	Catalyst	Temp. oF.	Press.	V/HR/W	V/HR/V	(H ₂)(CO ₂) (H ₂ O)(CO) Reactor Effluent
Beacon Stirred Reactor Unit #7	7005 A-H	0.5	1.86	None	None	49.5	53.3	94.6	29.2	12.1	7.9	10.00	45.41		52.63	81.25		12.08	29.17	24.1	96	Fr. CM & S Red.	600	200	35	-	-
	7007 A-B	0	1.87	None	None	59.4	63.9	98.5	28.0	11.1	6.8	7.38	52.73		62.73	87.50	88.89	11.1	28.0	21.5	34	"	650	200	42	-	31.4
	7023	0	1.86	None	None	59.26	63.1	96.8	27.8	8.6	5.8	7.67	54.63		77.78	87.50	83.33	8.6	27.8	21.61	60	"	650	200	40	-	14.8
	7024	1.0	1.86	None	None	76.62	87.24	98.95	16.19	13.87	9.42	12.57	59.47		60.00	88.89	80.00	13.87	16.19	35.0	16	"	650	200	50	-	27.2
	7027 A-F	1.0	1.86	None	None	79.1	87.7	99.3	13.9	11.4	7.7	11.16	66.26		38.33	79.31	77.14	11.42	13.92	42.8	74	"	650	200	20	-	35.8
	7014	0	1.86	29.02	None	(55.3)	57.27	94.83	27.30	7.22	6.26	7.49	54.05		75.14	87.68	94.23	7.22	56.32	20.51	18	CM&S Trail Red.	650	200	40	-	22.6
	7015 A	0	1.87	69.03	None	(50.29)	64.94	93.91	14.39	6.09	5.42	8.13	68.01		81.05	81.05	83.22	6.09	33.42	27.77	24	"	650	200	38.1	-	17.3
	7015 B	0	1.87	64.20	None	(52.44)	63.17	93.84	17.03	6.33	6.16	7.70	64.32		83.33	86.67	91.67	6.33	81.23	26.22	24	"	650	200	38.1	-	18.5
	7018 A	0	1.86	125.09	None	(62.7)	60.54	91.29	17.51	7.96	6.76	7.94	59.06		71.43	91.27	100.00	7.96	142.60	27.99	15 1/2	"	650	200	40	-	23.0
	7018 B	0	1.86	125.11	None	(59.3)	64.26	95.87	10.69	10.07	9.58	11.65	65.53		66.67	94.30	100.00	10.07	135.80	32.00	13 1/4	"	650	200	40	-	36.8
	7022 A	0	1.86	78.81	None	(63.6)	66.65	93.86	22.55	7.45	5.98	9.44	57.88		75.44	88.33	89.74	7.45	101.36	33.04	12	"	650	200	20.7	-	16.7
	7022 B	0	1.86	79.85	None	(44.36)	65.79	93.97	20.67	5.82	5.35	15.27	62.13		78.43	92.78	89.23	5.82	100.52	22.30	12	"	650	200	20.7	-	26.8
	7022 C		1.86	80.24	None	(62.0)	61.79	94.08	19.18	6.29	5.77	6.92	62.84		80.00	100.00	83.27	6.29	99.42	32.75	12	"	650	200	20.7	-	19.6
	7022 D		1.86	81.24	None	(48.50)	59.00	93.35	16.67	5.47	5.47	8.84	65.74		78.43	72.73	90.00	5.47	97.91	29.10	11 3/4	"	650	200	20.7	-	20.8
	7017 A	0	1.87	None	None	(61.1)	12.45	28.51	11.54	3.02	4.02	7.46	9.93		50.00	90.43	100.00	3.02	11.54	1.36	24	C.I. Powder	650	200	49	-	10.1
	7017 B	0	1.87	None	None	(47.82)	16.87	36.87	13.58	5.25	4.28	3.53	13.76		32.97	40.00	75.00	5.25	13.58	3.12	27	"	650	200	49	-	5.6
	7028	1.0	1.99	None	None	(60.1)	54.64	94.64	34.28	25.34	16.19	8.52	18.83		27.27	29.63	50.00	25.34	34.28	14.19	6 1/2	Limonite	650	200	18.9	-	56.6
	7031 B	1.0	2.0	None	None	46.83	59.2	85.9	28.7	4.7	5.1	4.13	47.42		72.73	100.00	80.00	4.71	28.70	19.51	6	K ₂ O	650	200	20	-	13.7
	7031 C	1.0	2.0	None	None	55.0	69.3	89.1	14.5	1.3	0.9	1.38	72.44		50.00	75.00	100.00	1.26	14.47	31.82	6	CM&S UNRED. ↑ UNCOND. ↓	650	200	20	-	5.6
	7031 E	1.0	2.0	None	None	70.3	68.8	93.6	13.9	6.2	6.7	7.58	61.19		65.52	81.82	90.91	6.20	19.52	32.22	6	"	650	200	20	-	11.6
	7031 F	1.0	2.0	None	None	66.0	66.3	93.6	18.7	7.4	6.9	8.27	58.43		63.33	79.17	84.62	7.35	20.90	27.79	6	"	650	200	20	-	14.8
	7031 G	1.0	2.0	None	None	63.2	63.1	90.9	21.9	7.4	3.9	4.13	57.75		58.82	83.33	83.33	7.35	21.93	25.43	6	"	650	200	20	-	12.5
	7031 H	1.0	1.99	None	None	60.8	65.0	93.5	21.3	7.6	7.6	7.57	57.03		63.64	86.36	89.47	7.57	21.29	25.42	12	"	650	200	20	-	16.1
	7031 I	1.0	1.99	None	None	61.6	62.1	90.3	22.9	7.7	8.3	9.12	51.46		63.89	86.79	88.57	7.69	22.89	22.52	12	"	650	200	20	-	13.4
	7032 A	1.2	1.99	None	None	58.0	72.9	89.2	23.1	30.3	11.5	7.28	24.32		4.90	16.28	22.22	30.25	23.14	20.41		Limonite	650	200	20.1	-	10.9
	7032 B	1.2	1.99	None	None	57.6	-	-	23.3	-	-							23.25	19.48		12	"	650	200	20.1	-	
	7035 A	0	1.99	None	None	59.3	60.5	98.2	28.1	8.6	6.5	8.23	55.09		73.68	91.67	88.57	8.57	28.06	22.12	12	CM&S Red.	650	200	19.8	-	27.8
	7035 B	0	1.99	None	None	57.8	61.2	98.6	28.9	9.9	8.0	10.11	51.72		71.43	88.14	82.00	9.94	28.91	21.69	12	"	650	200	18.5	-	36.9
Beacon Unit #8	8001	1	1.99	None	None	56.9	89.01	98.98	12.99	12.28	10.36	12.79	63.35		29.41	78.57	81.82	12.28	12.99	39.8	82	CM&S Beacon Fe	650	200	59	-	20.8
	8002	1.2	1.99	None	None	64.51	82.49	96.55	23.96	32.59	12.59	9.44	27.41		4.84	19.35	46.15	32.59	23.96	24.4	29	Al ₂ O ₃ & K ₂ O	650	200	59	-	22.1
	8003	1.2	1.99	None	None	79.76	87.84	99.39	10.36	9.24	9.54	11.27	70.25		65.96	83.78	93.75	9.24	10.36	43.4	59	"	650	200	59	-	35.8
	8004	1.1	1.99	None	None	64.51	88.85	98.78	15.63	23.15	12.99	13.71	47.01		7.81	35.56	68.18	23.15	15.63	35.3	64.5	"	650	200	59	-	21.5

Figures in () are adjusted for CO₂ in FF.

TABLE I
SUMMARY OF DATA
IN ALL CASES YIELDS ARE EXPRESSED AS % COMPONENTS IN FF

Lab.	Run No.	R FF	H ₂ (FF) CO	CO ₂ (FF) CO	CH ₄ (FF) CO	% Contr.	H ₂ Conv.	CO Conv.	CO to CO ₂	CO to CH ₄	CO to C ₂ S	CO to C ₃ S	CO to C ₃ / (Inc.) (alc.) (bal.)	CO to Alc. (Repor- ted)	% Unsat. in C ₂	% Unsat. in C ₃	% Unsat. in C ₄	Tot.CH ₄ % CO in FF	Tot.CO ₂ % CO in FF	H ₂ to H ₂ O (Meas- ured)	Lgt. of Per- iod (Hrs.)	Catalyst	Temp. o F.	Press.	v/hr/w	v/hr/v	% Contr. Corrected for CO ₂ and CH ₄
HRI-H'	2	4.99	2.31	0	7.1	86.0	93.8	99.8	2.2	12.1	9.3	11.3	76.2	3.5	17.2	67.5	68.4	19.6	2.2	42.1	56	Spent CM & S	625	190	44	720	89.0
	3	6.42	2.47	0	11.5	85.6	95.5	99.9	1.8	13.6	10.9	12.4	73.6	3.7	12.2	54.9	55.5	25.5	1.8	43.1	17	"	631	210	(12)	710	89.7
	5A	6.67	2.48	1.1	11.6	86.1	96.6	99.6	-0.6	11.6	13.3	15.4	75.4	4.2	4.6	26.5	42.5	23.2	0.5	39.9	125	"	610	225	(15)	630	88.9
	5B	4.59	1.97	0.6	6.1	88.5	98.3	99.8	9.0	4.5	8.6	12.3	77.6	5.7	12.4	58.2	79.9	10.6	9.6	40.8	72	"	607	235	(18)	700	90.1
	6	4.95	2.54	27.8	15.5	88.5	97.9	99.4	-13.9	-4.8	8.4	16.6	109.7	9.5	23.7	63.9	78.8	10.7	13.9	46.4		"	618	205	-	660	97.4
	10A	0.95	2.27	1.0	5.4	80.0	87.4	99.7	7.9	8.0	11.0	15.3	72.9	5.3	28.0	56.0	76.5	13.4	8.9	37.3	60	"	608	218	(44)	575	81.4
	11	0.43	2.21	0.7	8.0	67.7	73.6	99.4	19.5	5.5	9.5	13.3	64.9	5.5	36.4	78.0	75.0	13.5	20.2	23.1	74	"	598	219	(51)	690	69.9
	12	0.46	2.20	0	8.6	58.6	62.4	97.4	25.3	3.9	11.0	13.2	57.3	7.4	32.5	78.1	71.4	12.5	25.3	19.2	72	"	592	223	(51)	710	60.6
	14	0.36	1.96	0	6.1	48.6	54.0	89.7	32.6	5.2	9.1	10.8	42.8	2.9	37.9	60.9	63.6	11.3	32.6	9.8	48	"	632	222	(176)	930	50
	24A	2.45	1.94	10.3	6.9	86.5	94.5	99.1	4.6	0.9	4.6	7.4	89.0	6.3	55.6	93.1	97.1	7.8	14.9	46.7	16	"	643	232	(30)	1730	92.1
	24B	1.58	1.92	11.4	9.1	83.0	90.7	98.8	8.1	-2.5	4.5	7.1	88.6	6.3	61.9	90.9	95.2	6.6	19.5	47.6	16	"	650	230	(35)	1780	88.8
	25A	1.07	1.92	13.2	4.9	82.6	91.1	99.2	6.1	1.1	5.4	7.7	86.6	6.1	68.0	95.7	95.2	6.0	19.3	44.8	52	"	648	232	(56)	1050	88.4
	25B	0.79	1.95	12.7	7.3	77.5	85.2	99.4	11.2	-0.7	5.3	11.1	83.7	5.5	70.3	92.3	95.7	6.6	23.9	40.4	36	"	644	215	(56)	890	83.2
	25C	1.05	1.94	13.0	7.6	78.6	87.6	99.6	10.4	0.3	6.2	10.9	82.8	5.9	71.7	96.3	95.8	7.9	23.4	43.3	88	"	646	215	(53)	900	84.6
	17	1.8	2.06	0.3	7.9	85.5	90.8	98.4	7.4	-0.2	6.2	8.1	85.0	5.5	61.8	93.2	88.0	7.7	7.7	40.5		"	635	230	57.4	989	82.1
HRI-14'	1	1.61	2.08	18.3	9.1	56.3	66.3	88.5	18.9	7.7	4.7	7.1	57.1	3.5	62.5	77.5	91.7	16.8	37.2	27.0	70	Spent Sterlington	608	214	(68)	2540	61
	2	1.21	1.91	16.4	4.4	71.9	83.2	94.6	12.0	5.5	6.7	10.1	70.3	5.7	68.4	97.4	95.6	9.9	28.4	42.5	12	"	641	212		1175	
	3	0.72	1.93	15.8	4.8	61.5	72.1	95.3	21.6	7.7	7.8	12.1	58.2	2.9	59.4	97.0	94.1	12.4	37.4	27.8	40	"	660	213		1100	
	4	2.90	1.95	16.3	6.1	80.6	93.4	96.5	6.7	2.9	7.8	12.9	79.1	5.8	58.7	95.7	92.5	9.0	23.0	44.0	72	Fresh CM&S	647	215	(15)	660	87.1
	5	3.90	1.96	17.0	5.8	42.0	58.3	67.7	18.6	15.1	8.9	10.0	25.2	0.7	12.5	50.0	88.9	20.8	35.6	20.6	48	"	648	216		1120	
HRI-15'	2	2.58	2.0	19.5	12.0	80.8	94.5	96.3	3.0	0.4	7.0	12.5	86.0		47.3	91.0	91.5	12.4	22.5			Spent Trail	646	220	12		
	3	2.44	1.95	18.0	10.4	81.0	94.9	96.7	4.5	0.9	7.0	13.4	81.0		47.4	93.5	80.8	11.3	22.5			Spent Trail	660	200	40		
	4	2.48	1.95	17.8	9.4	80.0	94.2	96.8	7.0	2.4	7.6	13.7	75.9		44.8	92.9	89.7	11.8	24.7			"	658	200	48		
	5	2.59	1.97	17.7	10.8	79.5	94.0	95.6	6.8	1.6	7.8	13.8	75.0		44.8	91.9	84.8	12.3	24.4			"	658	200	12		
	7	2.58	1.96	18.5	9.4	77.5	92.8	94.9	7.4	4.0	8.2	14.5	75.3		38.7	87.8	86.5	13.4	26.0			"	658	200			

* Runs with MS analyses Recalculated from data in HRI summaries.

TABLE I
SUMMARY OF DATA

Lab.	Run No.	R FF	H ₂ (FF) CO	CO ₂ (FF) CO	CH ₄ (FF) CO	% Contr.	H ₂ Conv.	CO Conv.	CO to CO ₂	CO to CH ₄	CO to C ₂ S	CO to C ₃ S	CO to C ₃ / C ₃ (incl. alc.)	CO to Alc.	% Unsat. in C ₂	% Unsat. in C ₃	% Unsat. in C ₄	Tot.CH ₄ % CO in FF	Tot.CO ₂ % CO in FF	H ₂ to H ₂ O (measured)	Lgt. of Period (hrs.)	H ₂ to H ₂ O Ave.O ₂ & H ₂ Balances	Temp.oF.	Press.	% Contraction Corrected for CO ₂ & CH ₄	v/hr/v	Vel.
Lab.																											
A	17	2.88	1.06	1.2	4.1	54.3	76.44	84.67	28.77	8.39	7.90	9.49	39.61					12.49	29.97	14.67	116	24.4	622	135	57.3	457	.34
	18A	14.54	1.11	0.7	3.5	56.9	90.46	86.26	31.54	19.12	7.92	7.25	27.68					22.62	32.24	37.14	36	20.6	640	309	59.9	260	.35
	18B	7.99	1.02	0.9	4.5	71.6	90.70	92.85	21.55	9.18	5.10	5.74	57.02					13.68	22.45	56.16	8	28.8	617	309	76.6	220	.16
	19A	6.20	1.07	0.9	9.6	52.7	77.07	69.25	17.25	9.81	6.60	5.72	35.59					19.41	18.15	23.28	96	24.5	577	313	56.9	454	.35
	19B	5.61	1.01	0.4	8.8	47.8	68.52	60.67	15.33	8.02	5.50	5.77	31.82					16.82	15.73	19.43	48	21.2	546	293	51.5	492	.37
	19C	5.93	1.02	1.0	8.6	56.9	84.57	88.88	23.76	7.49	8.60	9.05	49.03					16.09	24.76	19.93	45	24.8	596	294	60.8	463	.37
	19D	2.05	1.05	0.4	8.7	28.7	37.35	34.88	9.59	-3.72	4.02	3.29	24.99					4.98	9.99	10.16	19	14.7	550	135	30.4	468	.35
	20A	4.91	1.00	1.0	5.6	56.7	72.81	81.48	23.92	4.94	6.24	6.60	46.38					10.54	24.92	24.00	60	20.2	576	139	60.4	250	.33
	20B	2.87	1.03	0.9	6.8	41.8	60.22	68.43	25.12	8.56	4.82	5.69	29.93					15.36	26.02	13.84	48	12.0	540	134	44.3	406	.35
	20C	6.32	1.02	1.3	6.8	45.6	65.72	67.03	22.49	8.26	4.84	4.96	31.44					15.06	23.79	28.20	14	16.3	495	132	48.7	209	.32
	22A	11.62	1.00	0.8	7.6	58.3	75.87	75.02	18.82	1.46	4.76	6.89	49.98					9.06	19.62	25.69	72	26.1	552	313	61.8	219	.30
	22B	13.81	1.02	0.5	7.6	58.1	72.06	75.22	18.11	1.46	4.70	5.88	50.95					9.06	18.61	22.06	48	25.0	552	313	61.6	212	.33
	22C	13.34	1.04	1.4	6.7	56.4	75.81	75.77	21.28	4.54	5.86	6.14	44.09					11.24	22.68	21.96	48	23.8	596	313	59.8	231	.37
	22D	13.64	1.03	1.5	6.1	64.7	86.44	83.00	21.84	5.69	6.16	7.28	49.31					11.79	23.34	29.66	36	28.1	609	313	69.7	222	.36
	23A	5.32	1.01	1.2	5.5	64.5	91.67	92.03	31.00	7.77	8.00	9.92	45.26					13.27	32.2	22.60	69	24.3	552	294	68.5	435	.30
	23B	5.12	1.98	6.1	2.6	74.1	93.19	97.70	9.77	19.61	16.02	17.99	52.30					22.21	15.87	34.48	36	26.7	553	294	77.8	449	.30
	23C	5.30	0.99	1.0	3.4	63.4	91.43	92.40	31.48	7.41	7.12	11.67	46.39					10.81	32.48	21.19	45	23.6	553	294	65.6	437	.30
	23D	3.32	1.01	1.3	4.0	62.4	87.38	90.07	31.74	6.39	6.86	8.21	45.08					10.39	33.04	22.63	48	22.7	552	294	65.3	636	.30
	23E	2.84	1.01	1.9	3.4	62.5	88.79	92.94	32.90	9.07	7.72	9.39	43.25					12.47	34.8	19.55	48	21.5	550	294	65.9	702	.30
	23F	1.77	1.01	1.6	5.6	59.7	86.20	93.15	35.28	8.44	7.72	9.63	41.71					14.04	36.88	17.60	72	19.2	551	294	63.0	991	.30
	23G	5.51	1.01	1.0	6.9	64.4	94.10	95.38	34.23	8.28	7.64	10.15	45.23					15.18	35.23	23.29	44	23.7	550	294	67.9	690	.30
	23H	3.56	1.03	0.4	6.1	59.7	90.37	93.80	35.20	11.29	8.96	11.34	38.35					17.39	35.6	17.87	41	19.9	551	221	63.2	438	.30
	23I	1.72	1.01	1.1	6.0	62.4	88.69	95.83	35.64	10.04	7.92	9.96	42.23					16.04	36.74	17.57	36	19.5	552	294	66.7	1014	.30
	23J	2.50	0.99	1.5	6.6	67.0	92.77	97.02	33.66	6.16	7.02	9.76	50.18					12.76	35.16	21.11	52	24.0	550	368	71.5	1002	.30
	23K	2.22	1.01	0.3	4.5	65.2	95.19	97.29	36.00	12.55	9.46	10.71	39.28					17.05	36.30	19.43	60	21.0	600	368	69.2	1004	.30
	23L	6.77	1.01	1.7	7.2	69.6	93.95	92.13	28.27	4.25	5.94	7.55	53.67					11.45	29.97	27.35	65	29.1	501	368	75.5	451	.30
	23M	5.20	1.01	0.1	5.2	66.1	95.17	96.10	34.23	9.91	8.60	11.14	43.36					15.11	34.33	27.18	48	23.3	551	294	69.6	444	.30
	24A	5.20	1.03	0.9	5.6	71.3	91.79	92.69	28.12	3.37	3.78	4.58	57.42					8.97	29.02	27.50	72	29.6	551	275	75.9	443	.30
	24B	1.89	1.49	13.5	3.6	74.7	92.78	98.24	18.09	7.10	7.54	10.78	65.51					10.70	31.59	36.74	72	36.4	600	275	82.8	996	.30
	24C	1.00	1.48	2.9	2.0	72.0	89.19	98.46	24.30	11.04	8.78	11.06	54.34					13.04	27.20	29.99	60	31.0	600	200	74.2	995	.30
	24D	6.80	1.49	1.4	2.8	81.7	97.23	98.29	18.88	8.03	7.36	7.60	64.02					9.43	21.60	37.66	60	38.4	550	350	85.8	451	.30
	24E	2.30	1.50	1.0	3.4	75.5	93.40	97.59	22.34	11.63	9.04	11.28	54.58					12.63	25.74	34.64	48	33.7	551	390	79.2	1135	.30