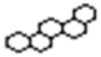
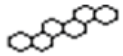
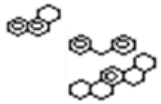
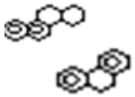
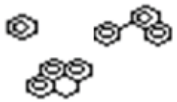
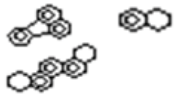
FIG. 1

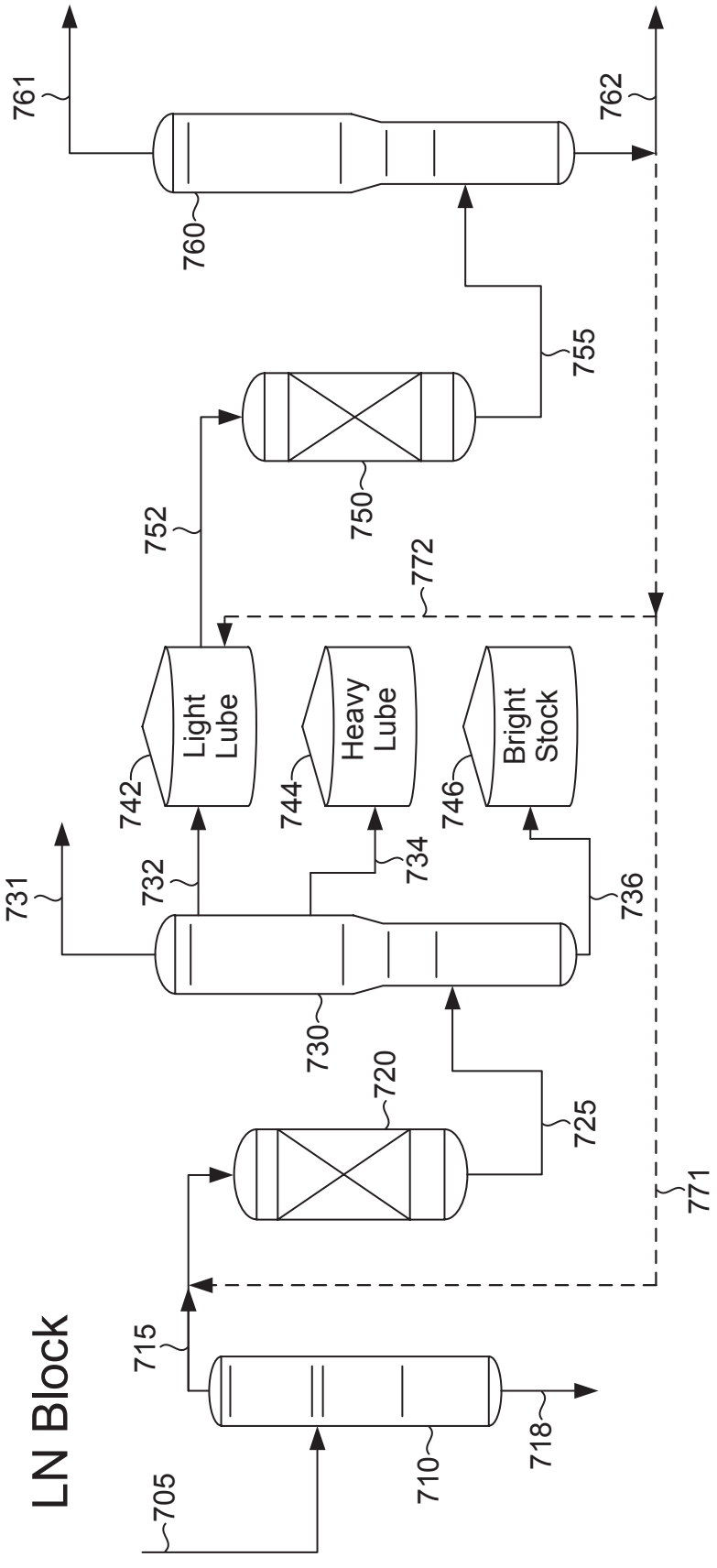
X-Class	2	0	-2	-4	-6	-8	-10
Predominant species	Iso-Paraffins of formula C_nH_{2n+2}	1 ring cycloparaffins of formula C_nH_{2n}	2 ring cycloparaffins of formula C_nH_{2n-2}	3 ring cycloparaffins of formula C_nH_{2n-4}	4 ring cycloparaffins of formula C_nH_{2n-6}	5 ring cycloparaffins of formula C_nH_{2n-8}	6 ring cycloparaffins of formula C_nH_{2n-10}
Example Ring structures	N/A						
Minor species (may or may not be present)	Species with Naphthenoaromatic ring structures of formula C_nH_{2n+z}; where Z= -2(Number of rings+ number of double bonds - 1)						
Example Ring structures							

		Inv 1	Inv 2	Inv 3	Inv 4	Inv 5	Inv 6	Ref 1	Ref 2	Ref 3	Ref 4	Ref 5	Ref 6	Ref 7
1	KV100 (cSt)	11.99	11.70	12.19	11.75	11.92	11.6	10.59	10.29	11.61	12.12	12.23	10.46	11.98
2	KV40 (cSt)	103.4	99.7	119.0	105.6	102.1	97.8	91.7	89.8	97.3	102.1	104.9	89.2	107.8
3	VI	105.5	105.8	91.3	99.0	106.2	106.7	97.7	95.1	107.6	109.5	107.5	99.0	99.9
4	Saybolt Color (D6405)	24	23	12		>30	>30	24	>30	>30		>30	>30	14
5	CCR (D4530) (wt%)	0.01	0.02			0	0.01	0.01		0.01			<0.01	
6	Pour Point (D5950) (°C)	-16	-13	-42	-42	-21	-8	-17	-21	-39	-24	-15	-21-	-21
7	Pour Point (D97) (°C)	-12	-12	-45		-15	-5	-13	-18		-21		-18	-18
8	Cloud Point (D2500) (°C)	-4	-7	<-60		-12	-6	-12	-15	-12	-11	-14	-14	-23
9	Cloud-Pour Spread	-8	-6			-3	-1	-1	-2		-10		-4	5
10														
11	Total Saturates (D7419) (wt%)	All measured or estimated at 99.8 or more						99.5	99.5		>99.8	>99.8	99.6	99.7
12	SimDis, IBP (°C)	397	382	379	393	433	429	322	303	362	443	386	369	393
13	SimDis, 5 wt% (°C)	439	432	434	448	461	459	366	369	396	469	438	404	437
14	SimDis, 10 wt% (°C)	456	451	451	463	473	471	391	396	412	480	458	421	453
15	SimDis, 30 wt% (°C)	489	487	483	492	498	495	452	453	457	503	494	466	488
16	SimDis, 50 wt% (°C)	512	510	505	511	513	511	494	491	501	519	517	495	508
17	SimDis, 70 wt% (°C)	534	533	525	529	529	527	529	522	546	534	539	517	526
18	SimDis, 90 wt% (°C)	565	563	552	555	552	551	567	558	609	556	571	547	551
19	SimDis, 95 wt% (°C)	578	575	564	567	563	562	582	572	638	565	585	561	563
20	SimDis, FBP (°F)	618	602	589	603	600	594	615	606	706	594	624	594	598
21	Epsilon (13C-NMR) (%)	14.58	13.81	6.07	8.01	13.72	13.97		12.00	11.42	12.49	13.60	11.80	12.95
22	Alpha (13C-NMR) (%)	2.90	2.67	2.39	2.58	2.83	2.79		2.84	2.60	2.77	2.63	2.74	2.74
23	T/P Pr (13C-NMR) (%)	0.73	0.81	1.19	1.13	0.80	0.80		0.78	0.98	0.99	0.80	1.25	0.76
24	Total Paraffins (GC-MS) (wt%)	17.9	16.4	20.5	25.3	25.2	25.3	22.4	20.2	26.8	24.0	19.4	18.9	17.3
25	Naphthenes (GC-MS) (wt%)	82.1	83.6	79.5	74.7	74.8	74.7	77.6	79.8	73.2	76.0	80.6	81.1	82.7
26	1-Ring (GC-MS) (wt%)	45.3	42.7	39.2	40.6	41.3	40.9	42.2	38.6	39.2	37.0	38.7	35.4	37.1
27	2-Ring (GC-MS) (wt%)	27.1	30.2	30.3	25.2	24.8	24.9	22.2	26.5	24.4	28.3	30.5	30.1	31.2
28	3-Ring (GC-MS) (wt%)	7.3	8.1	7.7	6.6	6.5	6.7	8.2	10.1	6.5	7.9	8.5	10.8	10.2
29	4-Ring (GC-MS) (wt%)	1.1	1.8	1.6	1.2	1.2	1.3	3.1	2.6	2.0	2.0	2.0	3.1	2.8
30	5-Ring (GC-MS) (wt%)	0.9	0.6	0.5	0.8	0.8	0.8	1.4	1.4	0.8	0.6	0.6	1.3	1.0
31	6-Ring (GC-MS) (wt%)	0.4	0.2	0.1	0.3	0.2	0.3	0.6	0.5	0.3	0.3	0.3	0.5	0.5
32	2+Naphthenes (GC-MS) (wt%)	36.8	40.9	40.3	34.1	33.5	33.9	35.5	41.2	34.0	39.1	42.0	45.7	45.7
33	3+Naphthenes (GC-MS) (wt%)	9.7	10.7	9.9	8.9	8.7	9.0	13.3	14.6	9.6	10.8	11.4	15.6	14.4
34	4+Naphthenes (GC-MS) (wt%)	2.4	2.6	2.2	2.3	2.2	2.3	5.1	4.6	3.1	2.9	2.9	4.8	4.3
35	1R/2R+ (GC-MS) (wt%)	1.23	1.04	0.97	1.19	1.23	1.21	1.19	0.94	1.15	0.95	0.92	0.77	0.81
36	Cycloparaffin Perform Ratio	1.31	0.88	0.82	1.25	1.31	1.29	1.00	1.00	1.15	1.18	1.15	0.97	1.01

FIG. 2

		Ref 1	Ref 2	Inv 1	Inv 2	Inv 3	Inv 4	Ref 3	Ref 4	Ref 5
1	KV100 (cSt)	5.5	5.4	5.3	5.6	5.3	5.6	5.3	5.3	5.3
2	KV40 (cSt)	31.2	30.2	29.6	32.7	32.4	32.7	30.6	30.1	30.7
3	VI	112	113	110	110	93	106	104	109	107
4	Pour Point (D97) (°C)	-19	-18	-21	-18	< -60	-24	-9	-21	-15
5	Cloud Point (D2500) (°C)	-15	-15	-19	-19		-24	-10	-23	-11
6	Cloud-Pour Spread	-4	-3	-2	-1		0	1	2	-4
7										
8	Total Cycloparaffins (SFC) (wt%)	75.8	73.7	84.4	86.4	83.9	87.0	79.0	77.1	80.9
9	Sats X O (1 Ring CP) (SFC + GCMS) (wt%)	40.6	38.9	50.5	49.3	44.1	46.0	38.0	37.1	40.2
10	Sats X -2 (1 Ring CP) (SFC + GCMS) (wt%)	23.9	24.5	24.9	26.9	29.7	29.4	26.9	27.4	27.7
11	Sats X -4 (1 Ring CP) (SFC + GCMS) (wt%)	8.1	7.7	6.5	7.4	8.2	8.7	10.0	9.2	9.4
12	Sats X -6 (1 Ring CP) (SFC + GCMS) (wt%)	2.2	1.9	1.5	1.7	1.4	2.1	2.8	2.2	2.4
13	Sats X -8 (1 Ring CP) (SFC + GCMS) (wt%)	0.8	0.6	0.8	0.9	0.5	0.9	1.1	0.9	1.0
14	Sats X -10 (1 Ring CP) (SFC + GCMS) (wt%)	0.2	0.1	0.2	0.2	0.1	0.1	0.3	0.2	0.3
15	Sats X +2 (1 Ring CP) (SFC + GCMS) (wt%)	24.3	26.3	15.6	13.6	16.1	13.0	21.0	22.9	19.1
16	MM-Paraffins (SFC + GCMS) (wt%)	1.8	1.8	1.7	1.4	0.4	1.4	1.9	1.6	1.6
17	DM-Paraffins (SFC + GCMS) (wt%)	22.5	24.5	13.9	12.2	15.7	11.4	19.1	21.3	17.5
18	Cycloparaffin Perform Ratio (SFC + GCMS) (wt%)	1.0	1.0	1.3	1.2	1.1	1.1	0.9	0.9	1.0
19	2+R cycloparaffins (SFC+GCMS)(wt%)	35.2	34.8	34.0	37.1	39.8	41.2	41.0	40.0	40.7
20	3+R cycloparaffins (SFC+GCMS)(wt%)	11.3	10.3	9.1	10.2	10.1	11.9	14.2	12.5	13.0
21	4+R cycloparaffins (SFC+GCMS)(wt%)	3.2	2.4	2.6	2.8	1.9	3.2	4.1	3.3	3.6
22	5+R cycloparaffins (SFC+GCMS)(wt%)	1.1	0.7	1.1	1.1	0.6	1.1	1.4	1.1	1.3
23	Epsilon (13C-NMR) (%)	12.4	13.0	12.0	11.9	4.9	10.7	9.1	9.6	12.5

FIG. 3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Light Lube
Heavy Lube
Bright Stock

FIG. 4

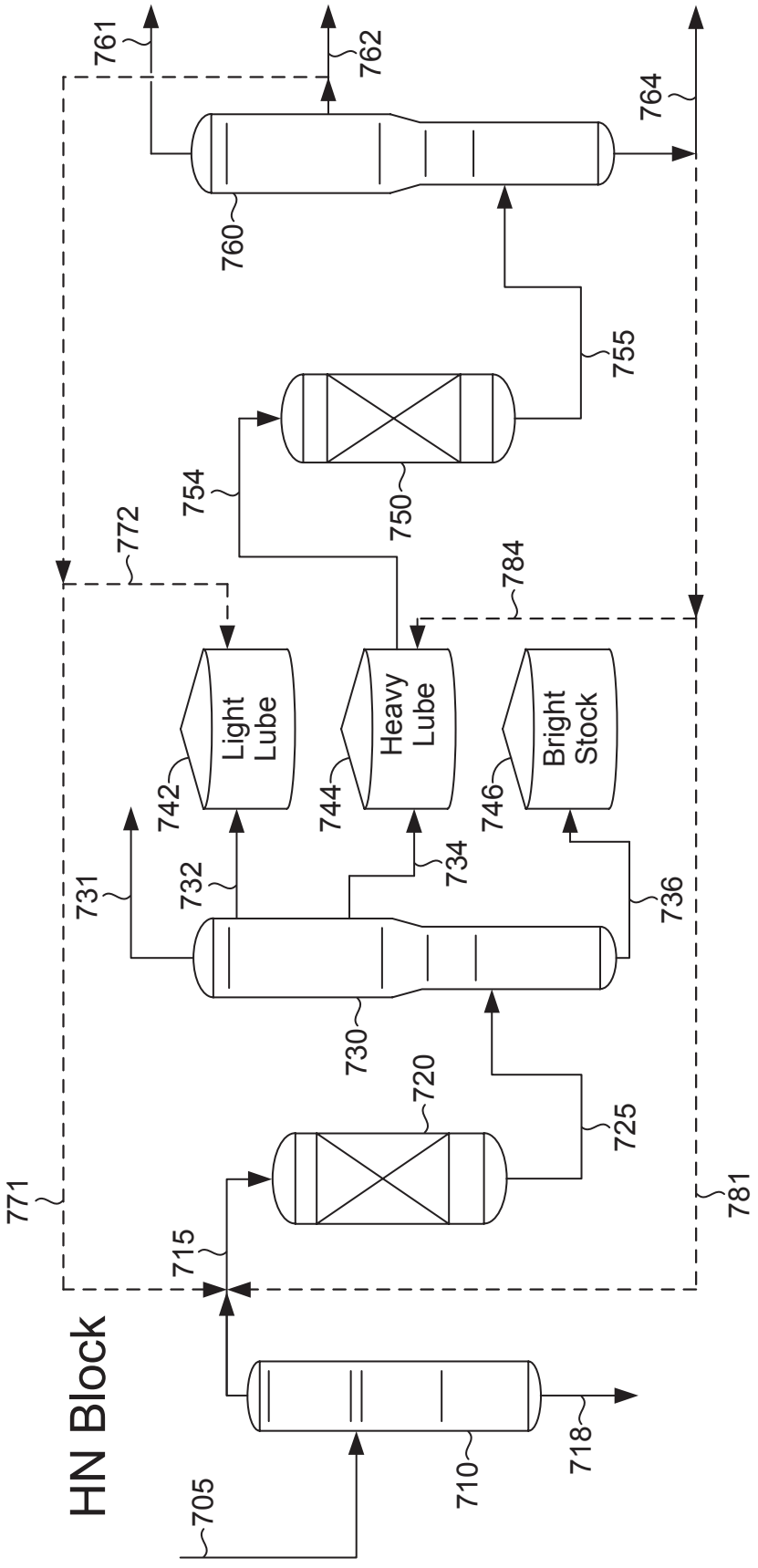
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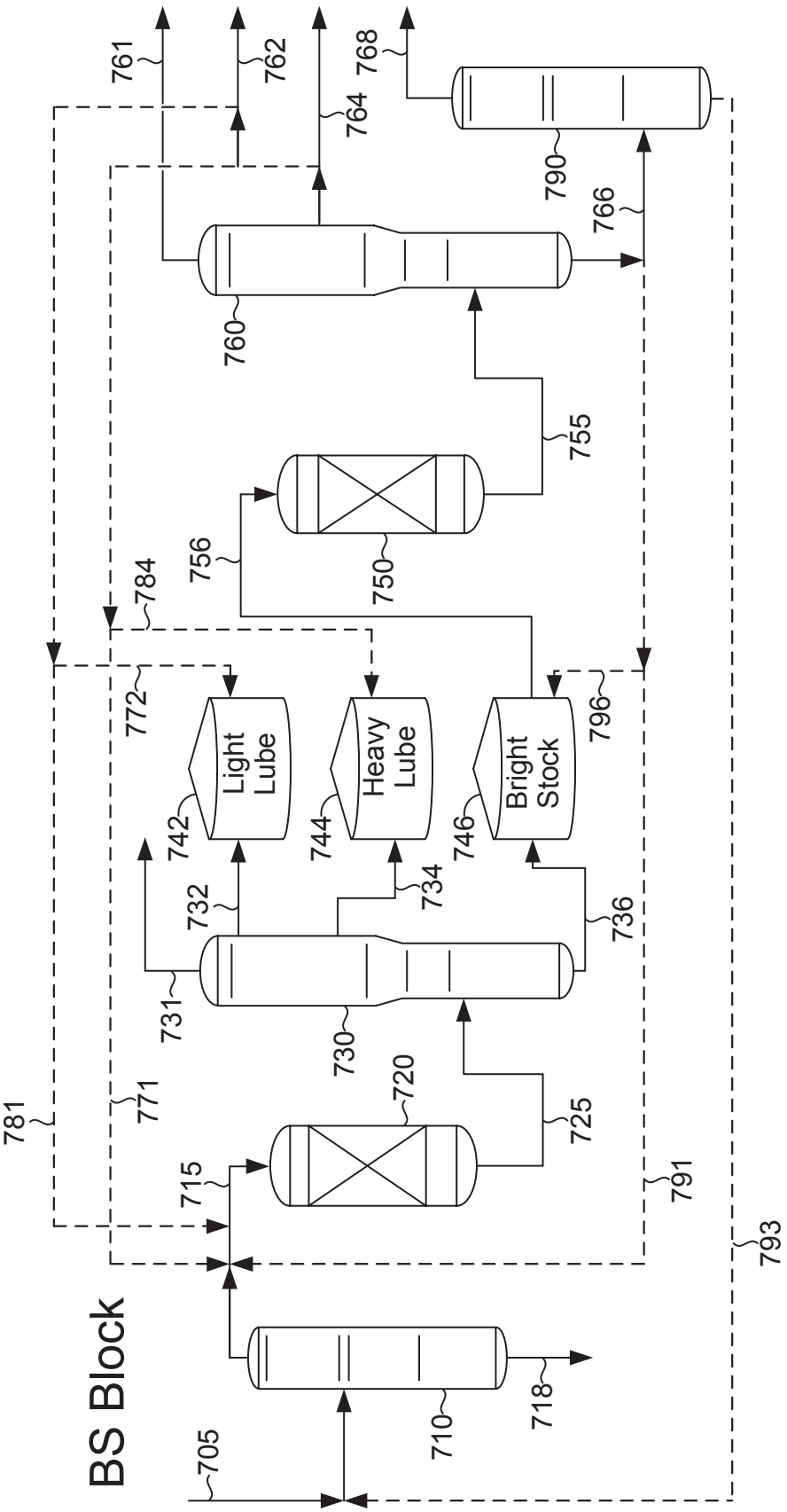
FIG. 5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Heavy Lube
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FIG. 6