ENERGY BALANCES IN INDONESIA CA 1974

	1 TOTAL OF COAL C01-C05 TBK	2 COKING COAL TBK	3 STEAM COAL TBK	4 ANTHRA-CITE TBK	5 LIGNITE TBK	6 TOTAL OF CRUDE OIL C06-C08 MBBL	7 ORIGINAL CRUDE OIL MBBL	8 REDUCED CRUDE OIL MBBL	9 PETROLE-UM PRODUCTS C09-C28	10 DOMESTIC FUEL OIL C10-C20 MBL	11 GASOLINE C11-C11 MBL	12 AVIATION MBL	13 SUPER MBL	14 PREMIUM MBL	15 JET FUEL MBL	16 KEROSENE MBL	17 DIESEL C12-C19 MBL	18 AUTOMOT. MBL	19 INDUSTR. MBL	20 HEAVY FUEL OIL MBL	21 NAPHTHA MBBL	22 LOW SUL. WAXY RESIDUE MBBL	23 LUBRI-CANTS MBBL	24 SOLVENTS MBBL
1 DOMESTIC PRODUCTION	156149		148725	7424	NA	548837	548837			2151	0	0	0	0	166	895	339	339	0	666			75	23
2 IMPORT	983	983				856	0	866		-434	-436	0		-436	0		0	0	0	0	0	-41303		0
3 EXPORT	0		0	0		-378995	-378995			-3123	-23	-23			-861		-283	-83	-283	-2153				
4 CONVERSATIONAL DIFFERS																								
5 STOCK CHANGE	-7825	0	-7871	-354	NA	-7757	-7923	166		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 PRIMARY ENERGY SUPPLY	149307	983	141254	7070	0	111039	115049	1030		1827	-436	0	0	-436	761	895	339	339	0	666	0	-41303	75	23
7 REFINERY						-120067	-119037	-1030		9777	2652	24	73	1955	216	3357	2848	2148	720	1784	4420	43822	29	155
8 RECEIVE, LPG)																					0			
9 CHEMICAL ENERGY																								
10 PETROCHEMICAL LPG																								
11 PUBLIC UTILITY	0		NA							-319							-272	-220	-53	-67				
12 PUMP-UP USE																								
13 AUTO GENERATION	-69249		-69249							-243							-248	-137	-103	0				
14 TOWN GAS	-983	-983	NA							-17						0	-17	-1	-16	0				
15 COKE	0	0																						
16 BRIQUET	0		0																					
17 TRANSFORMATION(TOTAL)	-61232	-983	-69249			-120067	-119037	-1030		9150	2652	24	73	1955	216	3357	2339	1790	549	1237	4420	43822	29	155
18 CRUDE OIL FIELD						-2518	-2518			0							0	0	0	0				
19 NATURAL GAS FIELD																								
20 REFINERY						0	0			0							0	0	0	0	0	0	0	0
21 NGL PLANT																					0			
22 CHEMICAL ENERGY PLANT										0							0	0	0	0				
23 PUBLIC UTILITY										0							0	0	0					
24 TOWN GAS																								
25 COKE PLANT																								
26 COAL MINE	-18820		-18820	NA																				
27 FLARE AND LOSSES	0	0	NA	NA	NA	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 ENERGY SECTOR USE LOSSES	-18820	0	-18820	0	0	-2518	-2518	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 STATIS TICAL DIFFERENCE	6548	0	9548	-1188	0	6546	6546	0		-882	585	-2	6	581	-35	6	-436	-290	-146	-923	-4420	-2519	0	0
30 FINAL CONSUMPTION	65819		75853	5766	0					10858	2203	22	79	2102	342	4258	2242	1839	403	959	0		104	178
31 FINAL ENERGY USE	75853		75853	0	0					10058	2203	22	79	2102	342	4258	2242	1839	403	959	0			
32 INDUSTRY	45330		45330	0	0					1207							693	299	304	664	0			
33 AGRICULTURE FORESTRY										110							85	67	18	25				
34 FISHERY										0							0	0						
35 MINING(EX.ENERGY SEC.)	0		0	0						169							127	69	68	42				
36 CONSTRUCTION										4							4	0	1	0				
37 MANUFACTURING	45330		45330	0	0					925							387	172	215	538	0			
38 FOODS										184							61	35	26	184				
39 TEXTILE										198							149	63	84	41				
40 RUBBER										69							54	33	20	15				
41 PAPER,PULP										43							16	9	7	27				
42 CHEMISTRY(FUEL USE)										124							14	12	2	110	BA			
43 CERAMICS,CEMENTS	39839		39839		NA					302							70	11	55	233				
44 IRON,STEEL										27							20	5	15	8				
45 NON-FERROUS METALS	0			0						0							0	BA		0				
46 METAL FABRI.,MACHINERY										2							2	0	2	0				
47 SMALL WARES,OTHERS	5431		5431							2							2	0	2	0				
48 RESIDENT.,COMMER.(TOTAL)										4258						4258								
50 RESIDENTIAL																								
51 COMMERCIAL																								
52 TRANSPORTATION(TOTAL)	34523		34523							4586	3946	16	79	1871	317		1484	1391	90	316				
53 AIR TRANSPORTATION										245	14	16			231		0	0						
54 ROAD TRANSPORTATION										3615	3769		79	1870			1148	1131	14	0				
55 RAILWAYS	34523		34523							133							41	41	1	92				
56 INTERNAL NAVIGATION										279	1			1			249	223	47	9				
57 INTERNATIONAL AVIATION										312	2	2			84		28	9	28	215				
58 OTHERS(GOVERN.,FORCES A)										156	237	6	0	231	24		155	141	9	39				
59 RAW MATERI. USE IN CHEM.																					BA			
60 OTHER NON-ENERGY USE	5766			5766																			104	178
61 TOTAL USE IN CHEMISTRY										124							14	12	2	110	0			

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
OTHERS (GREASE, ASPH.,ET) BBBL	PETROLEUM COKE MBBL	REFINERY GAS BCF	LPG MBBL	NATURAL GAS BNCF	NGL (CONDENSATES) MBBL	LNG MM3	METHANOL TOE	TOWN GAS MM3	COKE TOE	COKE OVEN GAS MM3	BLAST FURNACE GAS MM3	BRIQUET TOE	WOOD MM3	CHARCOAL TON	FUEL ETHANOL FROM BIOMASS TOE	AGRI-CULTURAL WASTES MM3	HYDRO GENERATION PUBLIC UTILITY GWH	HYDRO GENERATION AUTO GENERAT. GWH	NUCLEAR GENERAT-ION GWH	GEOTHERM. PUBLIC UTILITY GWH	GEOTHERM. AUTO GENERAT. GWH	OTHER GENERATION PUBLIC UTILITY GWH	OTHER GENERATION AUTO GENERAT. GWH	TOTAL OF ELEC-TRICITY GWH	PUBLIC UTILITY GWH	AUTO GENERAT-ING GWH	GRAND TOTAL
				191979									44659	NA	0	94758	1829	0	0	0	0	0	0				
257			0		0	0	0		0						0												
-723																											
0	NA		0						0			0	NA	NA	0												( )
-466	-0		-33	191979	0	0	0		0			0	44659	0	0	94758	1829	0	0	0	0	0	0				
1602	157	2481	222		0	0																					
			31	-2108	0		0																				
				0	0																						
				NA													-1829		0	0		0		3283	3283		
				0				38825	0	0								0			0		0	867	0	867	
				0					0	0																	
												0															
1602	157	2481	253	-2108	0	0	0	38825	0	0		0					-1829	0	0	0	0	0	0	4150	3283	867	
				-49299																				0	0	0	
				-5850																				0	0	0	
				0																				0	0	0	
0	0	-2481	0	0				0																0	0	0	
				0						0														-94	-94	0	
				0																				0	NA	0	
																								0	NA		
																								-129		-129	
0	0	0	0	-119838				-11562																-812	-812	0	
0	0	-2481	0	-125428				-11562	0															-1035	-907	-129	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
974	157		220	9443			0	27263	0			0	44659	0	0	94758								3114	2376	738	
	0		220	5034			0	27263	0			0	44659	0	0	94758								3114	2376	738	
	0		0	5015				0	0			0	31790			48409								1453	715	738	
			NA										26206			38422								113	NA	113	
																								155	NA	155	
																								4	NA	4	
	0		0	5015				0	0			0	5584			8187								655	0	655	
																								76	NA	76	
																								129	NA	129	
																								68	NA	68	
																								20	NA	20	
				4469																				19	NA	19	
				686				0		0		0	5584			8187								78	NA	78	
										0														22	NA	22	
	NA																							0	NA	0	
			NA	0						0														2	NA	2	
																								2	0	2	
			220	19				27263				0	32818	NA		48149								1829	1829	NA	
			0				0						29		0									0	0		
			0				0						29		0									0	0		
																								232	232	NA	
			0	4469			0								0												
974	157																										
			0	4818			0								0									19	0	19	

ENERGY BALANCES IN INDONESIA CA 1975

	1 TOTAL OF COAL C01-C05 TOE	2 COKING COAL TOE	3 STEAM COAL TOE	4 ANTHRA-CITE TOE	5 LIGNITE TOE	6 TOTAL OF CRUDE OIL C06-C08 M3BL	7 ORIGINAL CRUDE OIL M3BL	8 REDUCED CRUDE OIL M3BL	9 PETROLE-UM PRODUCTS C09-C28	10 DOMESTIC FUEL OIL C10-C20 KBL	11 GASOLINE C11-C14 KBL	12 AVIATION KBL	13 SUPER KBL	14 PREMIEN KBL	15 JET FUEL KBL	16 KEROSINE KBL	17 DIESEL C17-C19 KBL	18 AUTOMOT. KBL	19 INDUSTR. KBL	20 HEAVY FUEL OIL KBL	21 NAPHTHA M3BL	22 LOW SUL. WAXY RESIDUE M3BL	23 LUBRI-CANTS M3BL	24 SOLVENTS M3BL
1 DOMESTIC PRODUCTION	206390		198863	7427	NA	476855	476855			2869	0	0	0	0	353	990	701	701	0	25			67	38
2 IMPORT	5731	5731				548	0	549		-698	-698	0		-698	0		0	0	0	0	-3806	-32614		0
3 EXPORT	0		0	0		-363869	-363869		( ) (	-3041	(-21	(-29			(-1933	(	-339	(-53	(-283	(-1651				
4 INTERNATIONAL UPLIFT						0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 STOCK CHANGE	-3443	0	-3102	-341	NA	-1774	-1758	-23																
6 PRIMARY ENERGY SUPPLY	208878	5731	195861	7086	0	112552	112035	502		1465	-688	0	0	-688	353	990	701	701	0	25	-3801	-32614	67	38
7 REFINERY						-109282	-107765	-517		9950	2329	29	101	2200	76	3368	2993	2231	762	1133	4265	32769	31	148
8 BOILERS, LPGS																					0			
9 CHEMICAL ENERGY																								
10 PETROCHEMICAL LPG										-587							-343	-298	-49	-241				
11 PUBLIC UTILITY	0		NA																					
12 PUMP-UP USE										-297							-297	-169	-129	0				
13 AUTO GENERATION	-83963		-83963							-15						0	-15	-1	-14	0				
14 EDGE GAS	-5731	-5731	NA																					
15 COKE	0	0																						
16 BRIQUET	0		0																					
17 TRANSFORMATION(TOTAL)	-89694	-5731	-83963			-109282	-107765	-517		9060	2329	29	101	2200	76	3368	2338	1760	620	887	4265	32769	31	148
18 CRUDE OIL FIELD						-2522	-2522			0							0	0	0	0				
19 NATURAL GAS FIELD						0	0			0							0	0	0	0	0	0	0	0
20 REFINERY																					0			
21 NGL PLANT																								
22 CHEMICAL ENERGY PLANT										0							0	0	0	0				
23 PUBLIC UTILITY										0							0	0	0					
24 EDGE GAS																								
25 COKE PLANT																								
26 BRIQUET																								
27 COAL DIRE	-2816		-2816	NA						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 FLARE AND LOSSES	0	0	NA	NA	NA	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 ENERGY SECTOR USE LOSSES	-2816	0	-2816	0	0	-2522	-2522	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 STATIS TICAL DIFFERENCE	-5284	0	-4969	-315	0	-1748	-1748	0		891	697	-5	4	701	-19	668	-219	-143	-66	-39	-184	-148	0	0
31 FINAL CONSUMPTION	105934		100813	5831	0					11355	2423	22	105	2296	410	4818	2029	2325	501	875	0		50	186
32 FINAL ENERGY USE	100843		100843	0	0					11355	2423	22	105	2296	410	4818	2029	2325	501	875	0			
33 INDUSTRY	49123		49123	0	0					1329							247	366	381	581	0			
34 AGRICULTURE FORESTRY										516							91	75	16	23				
35 FISHERY										0							0	0						
36 MINING(EX.ENERGY SEC.)	0		0	0						120							119	63	56	1				
37 CONSTRUCTION										4							4	0	4	0				
38 MANUFACTURING	49123		49123	0	0					1059							533	228	365	557	0			
39 FOODS										195							92	42	59	102				
40 TEXTILE										257							266	92	114	52				
41 RUBBER										48							60	36	24	8				
42 PAPER,PULP										47							18	8	9	29				
43 CHEMISTRY(NEL USE)										126							22	17	0	188	NA			
44 CERAMICS,CEMENTS	43840		43840		NA					319							101	20	81	248				
45 IRON,STEEL										43							30	12	17	13				
46 NON-FERROUS METALS	0			0						0							0	NA		0				
47 METAL FABRI.,MACHINERY										8							1	0	1	0				
48 SMALL MINES,OTHERS	5283		5283							3							3	0	3	0				
49 RESIDENT.,COMMER.(TOTAL)										4818						4818								
50 RESIDENTIAL																								
51 COMMERCIAL																								
52 TRANSPORTATION(TOTAL)	56920		56920							4193	2082	15	105	2042	319		1888	1727	555	243				
53 AIR TRANSPORTATION										349	13	13			287		0	0						
54 ROAD TRANSPORTATION										3499	2148		105	2042			1534	1517	17	0				
55 RAILWAYS	56920		56920							117							41	40	1	76				
56 INTERNAL NAVIGATION										281	0			0			280	215	61	2				
57 INTERNATIONAL UPLIFT										309	2	2			103		33	5	28	165				
58 DISCRETIONARY,(FORCES D)										525	261	7	0	255	20		193	102	12	59				
59 RAW MATERL USE IN CHEM.																						RA		
60 OTHER NON-ENERGY USE	5891			5831																			98	186
61 TOTAL USE IN CHEMISTRY										126							22	17	4	184	0			

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
OTHERS (GREASE, ASPH.,S) MBBL	PETROLE-UM COKE MBBL	REFINERY GAS BCF	LPG MBBL	NATURAL GAS BSCF	NSL (CONDEN-SATES) MBBL	LNG MMM3	METHANOL TOM	TOWN GAS MM3	COKE TOM	COKE OVEN GAS MM3	BLAST FURNACE GAS MM3	BRIQUET TOM	WOOD MM3	CHARCOAL TOM	FUEL ETHANOL FROM BIOMASS TOM	AGRI-CULTURAL WASTES MM3	NUCLEAR GENERATION: PUBLIC UTILITY GWH	NUCLEAR GENERATION: AUTO GENERAT. GWH	NUCLEAR GENERAT-ION GWH	GEOTHERM. GENERAT.: PUBLIC UTILITY GWH	GEOTHERM. GENERAT.: AUTO GENERAT. GWH	OTHER GENERATION: PUBLIC UTILITY GWH	OTHER GENERATION: AUTO GENERAT. GWH	TOTAL OF ELEC-TRICITY GWH	PUBLIC UTILITY GWH	AUTO GENERAT -ION GWH	GRAND TOTAL
				211531									47891	XA	0	91720	1985	0	0	0	0	0	0				
246			0		0	0	0		0						0												
-186																											
0	XA		0						0			0	XA	XA	0												( )
46	0		-42	211551	0	0	0		0			0	47691	0	0	91720	1985	0	0	0	0	0	0				
609	201	4691	349		0	0																					
			24	-5108	0		0																				
				0	0																						
				XA													-1985		0	0		0		3782	3782		
				0														0			0		0	1659	0	1659	
				0				35832	0	0																	
									0	0																	
												0															
609	201	4691	374	-5108	0	0	0	35832	0	0		0					-1985	0	0	0	0	0	0	4872	3782	1090	
																								0	0	0	
																								0	0	0	
																								0	0	0	
																								0	0	0	
0	0	-4691	0	-56878																				-106	-106	0	
				-4389																				0	XA	0	
				0																							
				0																				0	XA		
				0																							
				0																				-176		-176	
0	0	0	0	-128815				-11546																-873	-873	0	
0	0	-4691	0	-192682				-11546		0														-1154	-979	-176	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
675	201		332	14381			0	23686	0			0	49681	0	0	91799								3717	2854	914	
	0		332	7787			0	23826	0			0	49681	0	0	91799								3717	2854	914	
	0		0	7749				0	0			0	18275			33897								1788	889	914	
													13730			25167								123	XA	123	
			XA																								
																								148	XA	148	
																								5	XA	5	
	0		0	7749				0	0			0	4535			8131								639	0	639	
																								112	XA	112	
																								248	XA	248	
																								76	XA	76	
																								22	XA	22	
				6554																				29	XA	29	
				1195				0				0	4545			8431								113	XA	113	
																								35	XA	35	
	XA											0												0	XA	0	
												0												2	XA	2	
			XA	0																				3	0	3	
			332	38				23886				0	31212	XA		57893								1644	1644	XA	
			0					0					113		0									0	0		
			0					0					113		0									0	0		
																								259	259	XA	
			0	6554				0							0												
675	201																										
			0	13148				0							0									29	0	29	

ENERGY BALANCES IN INDONESIA CA 1976

	1 TOTAL OF COAL C01-C05 TBH	2 COKING COAL TBH	3 STEAM COAL TBH	4 ANTHRA-CITE TBH	5 LIGNITE TBH	6 TOTAL OF CRUDE OIL C06-C08 KBBL	7 ORIGINAL CRUDE OIL KBBL	8 REDUCED CRUDE OIL KBBL	9 FEEDLE-BK PRODUCTS C09-C28	10 DOMESTIC FUEL OIL C10-C20 KKL	11 GASOLINE C11-C14 KKL	12 AVIATION KKL	13 SUPER KKL	14 PREMIUM KKL	15 JET FUEL KKL	16 KEROSINE KKL	17 DIESEL C17-C19 KKL	18 ADTEROT. KKL	19 INDUSTR. KKL	20 HEAVY FUEL OIL KBL	21 NAPHTHA KBBL	22 LOW SUL. WAXY RESIDUE KBBL	23 LUBRI-CANTS KBBL	24 SOLVENTS KBBL
1 DOMESTIC PRODUCTION	182910		164582	18328	NA	550318	550318	260		5846	359	0	0	300	416	2327	2003	1654	147	0			40	15
2 IMPORT	1137	1137				7997	7737			-56	0	0		0	0		0	0	0	-51	-442	-35223		0
3 EXPORT	-7893		0	-7893		-449478	-447471			-3193	-93	-13			-1073		-68	-10	-583	-1433				
4 INTERNATIONAL UPLIFT										-101	62	5	1	36	-5	23	-64	-48	2	-55	-1107	-686	2	-68
5 STOCK CHANGE	-3020	0	-2849	-189	NA	-3458	-1545	107																
6 PRIMARY ENERGY SUPPLY	173224	1137	161742	10345	0	107386	107819	367		8889	342	5	1	336	481	2350	1937	1788	149	-151	-1629	-35908	42	4
7 REFINERY						-109837	-109470	-367		18976	2271	21	112	2139	55	3174	2806	2923	783	1870	1500	35615	14	161
8 GAS(LNG, LPG)																					0			
9 CHEMICAL ENERGY																								
10 PETROCHEMICAL LPG										-833							-547	-500	-49	-306				
11 PUBLIC UTILITY	0		NA																					
12 PUMP-SP USE										-485							-465	-337	-148	0				
13 AUTO GENERATION	-27867		-27867							-15						0	-15	-1	-14	0				
14 TOWN GAS	-1137	-1137	NA																					
15 COKE	0	0																						
16 BRIQUET	0		0																					
17 TRANSFORMATION(TOTAL)	-28204	-1137	-27867			-109837	-109470	-367		8322	2271	21	112	2139	55	3174	1758	1185	573	1564	1500	35615	14	161
18 CRUDE OIL FIELD						-3212	-3212			0							0	0	0	0				
19 NATURAL GAS FIELD						0	0			0							0	0	0	0	0	0	0	0
20 REFINERY																					0			
21 NGL PLANT																								
22 CHEMICAL ENERGY PLANT										0							0	0	0	0				
23 PUBLIC UTILITY										0							0	0	0					
24 TOWN GAS																								
25 COKE PLANT																								
26 BRIQUET																								
27 COAL MINE	-2849	0	-2849	NA						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 FLARE AND LOSSES	0	0	NA	NA	NA	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 ENERGY SECTOR USE LOSSES	-2849	0	-2849	0	0	-3212	-3212	0		-984	1	-1	1	4	-37	-238	-217	-88	-129	-413	129	214	0	0
30 STATIS TICAL DIFFERENCE	-1514	0	-1224	-290	0	5683	5683	0		12897	2614	21	113	2429	429	5286	3478	2885	593	1869	0		56	165
31 FINAL CONSUMPTION	88888		88833	10655	0					12897	2614	21	113	2429	429	5286	3478	2885	593	1869	0			
32 FINAL ENERGY USE	88833		83833	0	0					1884							1172	233	439	713	0			
33 INDUSTRY	37356		37356	0	0					249							227	207	20	22				
34 AGRICULTURE FORESTRY										0							0	0						
35 FISHERY										117							79	69	9	37				
36 MINERALS,ENERGY SEC.)	0		0	0						52							51	46	5	2				
37 CONSTRUCTION										1166							815	411	405	650	0			
38 MANUFACTURING	37356		37356	0	0					268							149	96	53	132				
39 FOODS										368							254	132	122	57				
40 TEXTILE										75							66	45	20	9				
41 RUBBER										50							22	10	12	28				
42 PAPER,PULP										131							33	24	9	98	NA			
43 CHEMISTRY(FUEL USE)					NA					483							292	46	156	281				
44 CERAMICS,CEMENTS	32859		32859							78							54	26	26	24				
45 IRON,STEEL										27							9	9		18				
46 NON-FERROUS METALS	0			0						12							12	11	2	0				
47 METAL FABRI.,MACHINERY										18							15	12	3	3				
48 SMALL MAKES,OTHERS	5265		5265																					
49 RESIDENT.,COMMER.(TOTAL)										5284						5284								
50 RESIDENTIAL																								
51 COMMERCIAL																								
52 TRANSPORTATION(TOTAL)	43257		43257							4912	2341	13	112	2235	118		1804	1741	149	219				
53 AIR TRANSPORTATION										316	12	12			291		3	3						
54 ROAD TRANSPORTATION										3865	2328		112	2235			1458	1438	19	0				
55 RAILWAYS	43257		43257							123							45	43	3	78				
56 INTERNAL NAVIGATION										343	0			0			329	270	59	13				
57 INTERNATIONAL UPLIFT										319	1	1			107		68	10	58	143				
58 OTHERS(SERVER.,FORCES 8)										726	253	8	1	244	21		103	318	15	48				
59 NAP NATERI. USE IN CHEM.																						XX		
60 OTHER NON-ENERGY USE	10655			10655																			56	165
61 TOTAL USE IN CHEMISTRY										131							33	24	9	18	0			

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
OTHERS (GREASE, ASPH.,ET	PETROLE-UM COKE	REFINERY GAS	LPG	NATURAL GAS	NGL (CONDEN-SATES)	LNG	METHANOL	TOWN GAS	COKE	COKE OVEN GAS	BLAST FURNACE GAS	BRIQUET	WOOD	CHARCOAL	FUEL ETHANOL FROM BIOMASS	AGRI-CULTURAL WASTES	HYDRO GENERATION		NUCLEAR GENERAT-ION	GEOTHERM. GENERAT.		OTHER GENERATION		TOTAL OF ELEC-TRICITY	PUBLIC UTILITY	AUTO GENERAT-ION	GRAND TOTAL
																	PUBLIC UTILITY	AUTO GENERAT.		PUBLIC UTILITY	AUTO GENERAT.	PUBLIC UTILITY	AUTO GENERAT.				
1000 BBL	1000 BBL	BCF	1000 BBL	BNCF	1000 BBL	MM3	TON	MM3	TON	MM3	MM3	TON	MM3	TON	TON	MM3	GWH	GWH	GWH	GWH	GWH	GWH	GWH	GWH	GWH	GWH	
				304336									53741	NA	0	88323	1825	0	0	0	0	0	0				
207			0		0	0	0		0						0												( )
-255																											
56	NA		-10						0			0	NA	NA	0												
9	0		-10	304336	0	0	0		0			0	53741	0	0	88323	1825	0	0	0	0	0	0				
569	157	2918	286	-35287	0	0																		4169	4169		
			132	0	0		0												0								
				NA													-1825			0	0	0		0				
				0				35557	0	0											0		0	1653	0	1653	
				0					0	0		0															
569	157	2918	417	-35287	0	0	0	35557	0	0		0					-1825	0	0	0	0	0	0	5813	4160	1653	
																								0	0	0	
																								0	0	0	
																								0	0	0	
																								0	0	0	
0	0	-2918	0	-69232																				-114	-114	0	
				-8279																				0	NA	0	
				0																				0	NA		
				0																				-161		-161	
				0				0																-965	-965	0	
				-122810				-13647																			
0	0	-2918	0	-253411				-13647		0														-1239	-1078	-161	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
558	157		488	85438				0	21910	0		0	53741	0	0	88323								4574	3482	1492	
	0		488	8518				0	21910	0		0	53741	0	0	89323								4574	3082	1492	
	0		0	8458				0	0			0	86237			26731								2470	978	1492	
													11847			11174								318	NA	318	
			NA																					108	NA	108	
																								70	NA	70	
	0		0	8458				0	0			0	4519			7557								1491	0	1491	
																								191	NA	191	
																								313	NA	313	
																								85	NA	85	
																								26	NA	26	
																								48	NA	48	
				7132																				227	NA	227	
				1332				0				0	4519			7557								66	NA	66	
												0												13	NA	13	
	NA											0												17	NA	17	
			NA	0																				20	0	20	
			488	42				21910				0	37411	NA		61592								1822	1822	NA	
			0					0					93		0									0	0		
			0					0					93		0									0	0		
																								261	261	NA	
			0	7132				0							0												
558	157																										
			0	84268				0							0									44	0	44	

ENERGY BALANCES IN INDONESIA CA 1977

	1 TOTAL OF COAL C01-C05 TOE	2 COKING COAL TOE	3 STEAM COAL TOE	4 ANTHRA-CITE TOE	5 LIGNITE TOE	6 TOTAL OF CRUDE OIL C06-C08 KBBL	7 ORIGINAL CRUDE OIL KBBL	8 REDUCED CRUDE OIL KBBL	9 PETROLE-UM PRODUCTS C09-C28	10 DOMESTIC FUEL OIL C10-C20 KKL	11 GASOLENE C11-C18 KKL	12 AVIATION KKL	13 SUPER KKL	14 PREMIUM KKL	15 JET FUEL KKL	16 KEROSINE KKL	17 DIESEL C17-C19 KKL	18 AUTOMOT. KKL	19 INDUSTR. KKL	20 HEAVY FUEL OIL KKL	21 NAPHTHA KBBL	22 LOW SUL. WAXY RESIDUE KBBL	23 LUBRI-CANTS KBBL	24 SOLVENTS KBBL
1 DOMESTIC PRODUCTION	230827		198089	32538	NA	615921	615921			2925	66	4	0	82	477	290	1592	1410	102	0			35	11
2 IMPORT	0	0				29755	29622	133		-659	0	0		0	0		0	0	0	-659	-4863	-42023		0
3 EXPORT	-2858		-2858	0		-485288	-485288		( )	(-1193	(-29	(-23			(-1172		(-623	(-333	(-50	(-239				
4 (INTERNATIONAL BUNKERS)										-94	-46	-2	0	-39	-22	-156	17	-34	51	193	713	6289	2	-69
5 STOCK CHANGE	-12172	0	-2882	-9270	NA	10041	9935	106																
6 PRIMARY ENERGY SUPPLY	218799	0	187529	23268	0	169631	169392	239		2172	25	2	0	24	455	839	1609	1376	233	-555	-4150	-35734	37	-58
7 REFINERY						-151602	-151363	-239		14436	2910	18	814	2778	9	4828	4034	3161	872	2855	5279	42057	26	269
8 DOL(LNG, LPG)																					0			
9 CHEMICAL ENERGY																								
10 PETROCHEMICAL LPG										-1835							-705	-861	-44	-331				
11 PUBLIC UTILITY	0		NA							-597							-597	-399	-158	0				
12 PUMP-HP USE										-17						0	-15	-4	-12	-2				
13 AUTO GENERATION	-83336		-83336																					
14 TOWN GAS	0	0	NA																					
15 COKE	0	0																						
16 BRIQUET	0		0																					
17 TRANSFORMATION(TOTAL)	-83336	0	-83336			-151602	-151363	-239		12785	2910	18	814	2778	9	4828	2737	2659	619	2322	5279	42057	26	269
18 CRUDE OIL FIELD						-2114	-2114			0							0	0	0	0				
19 NATURAL GAS FIELD						0	0			0							0	0	0	0	0	0	0	0
20 REFINERY																								
21 NGL PLANT																					0			
22 CHEMICAL ENERGY PLANT										0							0	0	0	0				
23 PUBLIC UTILITY										0							0	0	0					
24 TOWN GAS																								
25 COKE PLANT																								
26 BRIQUET																								
27 COAL MINE	-5261	0	-5261	NA						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 FLARE AND LOSSES	0	0	NA	NA	NA	0	0	0																
29 ENERGY SECTOR USE LOSSES	-5261	0	-5261	0	0	-2114	-2114	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 STATIS TICAL DIFFERENCE	-6927	0	-131	-6656	0	-15915	-15915	0		-542	-20	1	0	-22	-9	400	-335	-233	-102	-586	-1129	-1323	0	0
31 FINAL CONSUMPTION	135207		98795	16612	0					16416	2916	20	814	2729	484	5867	3591	3241	750	3181	0		63	159
32 FINAL ENERGY USE	98795		98795	0	0					16416	2916	20	814	2729	484	5867	3591	3241	750	3181	0			
33 INDUSTRY	55742		55742	0	0					2257							1452	866	586	805	0			
34 AGRICULTURE FORESTRY										256							238	218	19	18				
35 FISHERY										0							0	0						
36 DIBURSEM.ENERGY SEC.)	0		0	0						191							142	78	64	48				
37 CONSTRUCTION										49							65	58	8	3				
38 MANUFACTURING	55742		55742	0	0					1742							1047	512	435	735	0			
39 FOODS										329							179	102	67	150				
40 TEXTILE										365							308	171	137	57				
41 RUBBER										29							20	11	10	9				
42 PAPER,PULP										66							30	15	15	36				
43 CHEMISTRY(FUEL USE)										140							47	37	10	113	NA			
44 CERAMICS,CEMENTS	50261		50261		NA					595							242	54	207	338				
45 IRON,STEEL										93							67	35	32	26				
46 NON-FERROUS METALS	0			0						14							8	8		6				
47 METAL FABRI.,MACHINERY										14							14	12	2	0				
48 SMALL WARES,OTHERS	5481		5481							26							20	14	6	6				
49 RESIDENT.,COMMER.(TOTAL)										5867						5867								
50 RESIDENTIAL																								
51 COMMERCIAL																								
52 TRANSPORTATION(TOTAL)	43853		43853							5558	2457	13	113	2531	431		2038	1995	134	341				
53 AIR TRANSPORTATION										327	11	11			314		2	2						
54 ROAD TRANSPORTATION										4351	2443		113	2531			1788	1683	25	0				
55 RAILWAYS	43853		43853							105							48	45	2	58				
56 INTERNAL NAVIGATION										355	1			1			310	254	54	44				
57 INTERNATIONAL BUNKER										419	2	2			117		62	11	50	239				
58 OTHERS(GOVERN.,FORCES E)										714	257	0	1	218	33		419	379	30	35				
59 RAW MATERI. USE IN CHEM.																					NA			
60 OTHER NON-ENERGY USE	16612			16612																			63	159
61 TOTAL USE IN CHEMISTRY										189							47	37	10	113	0			

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
OTHERS (GREASE, ASPH., ET) MBBL	PETROLEUM COKE MBBL	REFINERY GAS BCF	LPG MBBL	NATURAL GAS BNCF	NGL (CONDENSATES) MBBL	LNG BM3	METHANOL TBK	TOWN GAS BM3	COKE TCB	COKE OVEN GAS BM3	BLAST FURNACE GAS BM3	BRIQUET TBK	WOOD BM3	CHARCOAL TCB	FUEL ETHANOL FROM BIOMASS TCB	AGRICULTURAL WASTES BM3	HYDRO GENERATION PUBLIC UTILITY GWH	HYDRO GENERATION AUTO GENERAT. GWH	NUCLEAR GENERAT -TION GWH	GEOTHERM. GENERAT. PUBLIC UTILITY GWH	GEOTHERM. GENERAT. AUTO GENERAT. GWH	OTHER GENERATION PUBLIC UTILITY GWH	OTHER GENERATION AUTO GENERAT. GWH	TOTAL OF ELECTRICITY GWH	PUBLIC UTILITY GWH	AUTO GENERAT -TION GWH	GRAND TOTAL
162			78	517459					0				56398	NA	0	84986	1861	0	0	0	0	0	0				
-269					-1150	-1340	0								0												
-33	NA		2						0			0	NA	NA	0												( )
-90	0		-3243	517459	-1150	-1340	0		0			0	56398	0	0	84986	1861	0	0	0	0	0	0				
827	190	2122	372	-132322	1150	1727																					
			3315	0	0		0																				
				NA													-1861		0	0		0		4807	4807		
				0				35156	0	0								0			0		0	2009	0	2009	
				0					0	0																	
												0															
827	190	2122	3687	-132322	1150	1727	0	35156	0	0		0					-1861	0	0	0	0	0	0	4816	4807	2009	
				-107182																				0	0	0	
0	0	-2122	0	-6169																				0	0	0	
				0																				0	0	0	
				0																				0	0	0	
				0				0		0														-137	-137	0	
0	0	0	0	-234584				-12937																0	NA	0	
										0														-175		-175	
0	0	-2122	0	-347815				-12937																-6169	-6169	0	
0	0	0	0	0	0	-387	0	0	0	0	0	0	0	0	0	0								-1481	-1356	-175	
737	190		445	37253			0	22219	0			0	56398	0	0	84806								5335	3501	1834	
	0		445	19379			0	22219	0			0	56398	0	0	84806								5335	3501	1834	
	0		0	19333				0	0			0	13149			19837								2975	1142	1834	
			NA										8307			12532								329	NA	329	
																								177	NA	177	
	0		0	19333				0	0			0	4842			7305								98	NA	98	
																								1238	0	1238	
																								229	NA	229	
																								384	NA	384	
																								92	NA	92	
																								37	NA	37	
				12874																				63	NA	63	
				1459					0															293	NA	293	
										0														83	NA	83	
	NA									0														12	NA	12	
																								19	NA	19	
			NA	0																				26	0	26	
			445	43				22219				0	63866	NA		84769								2048	2048	NA	
			0				0						93		0									0	0		
			0				0						93		0									0	0		
																								318	318	NA	
			0	12874			0								0												
737	190																										
			0	35748			0								0									63	0	63	

ENERGY BALANCES IN INDONESIA CA 1978

	1 TOTAL OF COAL C01-C05 TOE	2 COKING COAL TOE	3 STEAM COAL TOE	4 ANTHRA-CITE TOE	5 LIGNITE TOE	6 TOTAL OF CRUDE OIL C05-C08 KBBL	7 ORIGINAL CRUDE OIL KBBL	8 REDUCED CRUDE OIL KBBL	9 PETROLE-UM PRODUCTS C09-C28	10 DOMESTIC FUEL OIL C10-C20 KBL	11 GASOLINE C11-C14 KBL	12 AVIATION KBL	13 SUPER KBL	14 PREMIUM KBL	15 JET FUEL KBL	16 KEROSINE KBL	17 DIESEL C17-C19 KBL	18 AUTOMOT. KBL	19 INDUSTR. KBL	20 HEAVY FUEL OIL KBL	21 NAPHTHA KBBL	22 LOW SUL. WAXY RESIDUE KBBL	23 LUBRI-CANTS KBBL	24 SOLVENTS KBBL
1 DOMESTIC PRODUCTION	266181		213681	50559	KA	596698	596698			2693	3	0	0	3	891	695	1501	1501	0	0			11	0
2 IMPORT	0	0				31659	31659	0		210	0	0		0	0		0	0	0	290				0
3 EXPORT	-25669		-3330	-22119		-461918	-461918			-5433	-13	-1			-1533		-513	-93	-611	-2361	-1597	-36291		
4 (INTERNATIONAL SPLIT?)																								
5 STOCK CHANGE	-41218	0	-26315	-14899	KA	-2755	-2761	6		-459	-192	9	-3	-99	12	-66	-119	-147	28	-135	210	-18	-84	28
6 PRIMARY ENERGY SUPPLY	197518	0	183556	13562	0	163084	163078	6		1993	-99	9	-3	-96	596	630	1382	1354	28	-426	-3293	-36389	-41	36
7 REFINERY						-159804	-159798	-6		16976	3111	23	112	2977	19	4752	4762	3421	1141	3433	5781	39578	168	188
8 NGL(LNG, LPG)																					0			
9 CHEMICAL ENERGY																								
10 PETROCHEMICAL LPG																								
11 PUBLIC UTILITY	0		KA							-1311							-861	-825	-36	-450				
12 PGAS-SP USE																								
13 AUTO GENERATION	-82781		-82781							-218							-218	-169	-219	0				
14 TOWN GAS	0	0	KA							-18						0	-18	-5	-13	0				
15 COKE	0	0																						
16 BRIQUET	0		0																					
17 TRANSFORMATION(TOTAL)	-82781	0	-82781			-159804	-159798	-6		14939	3111	23	112	2977	19	4752	3174	2302	872	2983	5781	39578	168	188
18 CRUDE OIL FIELD						-1257	-1257			0							0	0	0	0				
19 NATURAL GAS FIELD																								
20 REFINERY						0	0			0							0	0	0	0	0	0	0	0
21 NGL PLANT																					0			
22 CHEMICAL ENERGY PLANT																								
23 PUBLIC UTILITY										0							0	0	0	0				
24 TOWN GAS										0							0	0	0					
25 COKE PLANT																								
26 BRIQUET																								
27 COAL MINE	-8220		-8220	KA																				
28 FLARE AND LOSSES	0	0	KA	KA	KA	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 ENERGY SECTOR USE LOSSES	-8220	0	-8220	0	0	-1257	-1257	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 STATES TOTAL DIFFERENCE	787	0	-2922	8879	0	-2023	-2023	0		159	253	-2	9	245	29	1181	-53	28	-81	-1250	-4482	-3269	0	0
31 FINAL CONSUMPTION	189224		84183	22241	0					16191	3265	22	117	3126	553	6543	4503	3483	820	1307	0		127	216
32 FINAL ENERGY USE	84183		84183	0	0					16191	3265	22	117	3126	553	6543	4503	3483	820	1307	0			
33 INDUSTRY	54235		54235	0	0					2671							1711	1653	418	160	0			
34 AGRICULTURE FORESTRY										297							291	265	26	6				
35 FISHERY										0							0	0						
36 NONENERGY(ENERGY SEC.)	0		0	0						166							121	78	43	45				
37 CONSTRUCTION										75							74	69	5	1				
38 MANUFACTURING	54235		54235	0	0					2133							1225	651	373	968	0			
39 FOODS										412							227	142	85	185				
40 TEXTILE										619							365	213	153	54				
41 RUBBER										89							29	69	19	88				
42 PAPER,PULP										94							51	27	24	43				
43 CHEMISTRY(FUEL USE)										219							22	59	13	130	KA			
44 CERAMICS,CEMENTS	67219		67219		KA					288							305	76	229	319				
45 IRON,STEEL										158							82	41	41	76				
46 NON-FERROUS METALS	0			0						7							6	6		1				
47 METAL FABRY.,MACHINERY										21							20	18	2	2				
48 SMALL USERS,OTHERS	7816		7816							20							19	18	1	1				
49 RESIDENT.,COMMER.(TOTAL)										6563						6563								
50 RESIDENTIAL																								
51 COMMERCIAL																								
52 TRANSPORTATION(TOTAL)	30748		30748							6211	3028	12	116	2988	512		2363	2230	132	348				
53 AIR TRANSPORTATION										372	11	11			359		2	2						
54 ROAD TRANSPORTATION										4930	3015		116	2969			1918	1815	19	0				
55 RAILWAYS	30748		30748							110							48	58	2	50				
56 INTERNAL NAVIGATION										356	0			0			336	266	70	20				
57 INTERNATIONAL SPLIT										443	1	1			153		51	9	41	238				
58 OTHERS(GOVERN.,FORCES ET										746	237	9	1	226	41		430	398	18	31				
59 RAW MATERI. USE IN CHEM.																					KA			
60 OTHER NON-ENERGY USE	22241			22241																			127	216
61 TOTAL USE IN CHEMISTRY										219							22	59	13	130	0			

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
OTHERS (GREASE, ASPH.,E) MBBL	PETROLE-UM COKE MBBL	REFINERY GAS MCF	LPG MBBL	NATURAL GAS BNCF	NSL (CONSUM-SALES) MBBL	LNG BM3	METHANOL TBTU	TOWN GAS BM3	COKE TBTU	COKE OVEN GAS BM3	BLAST FURNACE GAS BM3	BRIQUET TBTU	WOOD BM3	CHARCOAL TBTU	FUEL ETHANOL FROM BIOMASS TBTU	AGRI-CULTURAL WASTES BM3	MIPRO GENERATION		NUCLEAR GENERAT-ION GWH	GEOTHERM. GENERAT.		OTHER GENERATION		TOTAL OF ELEC-TRICITY GWH	PUBLIC UTILITY GWH	AUTO GENERAT-ION GWH	GRAND TOTAL
																	PUBLIC UTILITY GWH	AUTO GENERAT. GWH		PUBLIC UTILITY GWH	AUTO GENERAT. GWH	PUBLIC UTILITY GWH	AUTO GENERAT. GWH				
339			38	695174						0			58874	NA	0	81290	2417	412	0	0	0	0	0				
-217					-10128	-8170	0								0												
52	NA		2						0			0	NA	NA	0												
174	0		-6546	800174	-10128	-8170	0		0			0	58874	0	0	81290	2417	412	0	0	0	0	0				
1486	211	8820	155	-313689	10128	8207																		5567	5567		
			4659	0	0		0										-2417		0	0		0					
				NA														-412			0		0	2762	0	2762	
				0				34252	0	0																	
				0					0	0		0															
1486	211	8820	5184	-313689	10128	8207	0	34252	0	0		0					-2417	-412	0	0	0	0	0	8329	5567	2762	
				-217833																				0	0	0	
0	0	-8820	0	-8453																				0	0	0	
				0																				0	0	0	
				0																				-154	-154	0	
				0				0																0	NA	0	
										0																	
																								0	NA		
																								-174		-174	
																								-1257	-1257	0	
0	0	0	0	-203545				-11702																			
0	0	-8820	0	-422797				-11702		0														-1585	-1411	-174	
0	0	0	0	0	0	-37	0	0	0	0			0	0	0	0	0										
1568	211		558	58897			0	24550	0				0	58874	0	0	81290							6744	4156	2588	
	0		558	30186			0	24550	0				0	58874	0	0	81290							6744	4156	2588	
	0		0	36869				0	0				0	9360			12955							3997	1319	2588	
														4270			5956							402	NA	402	
			NA																					567	NA	567	
																								103	NA	103	
	0		0	30488				0	0				0	5017			7849							1516	0	1516	
																								289	NA	289	
																								459	NA	459	
																								104	NA	104	
																								83	NA	83	
				26511																				97	NA	97	
				1469				0					0	5017			7849							345	NA	345	
										0														104	NA	104	
	NA																							8	NA	8	
										0														27	NA	27	
			NA	0																				23	0	23	
			558	45				24550					0	49413	NA		68335							2458	2458	NA	
			0				0						93		0									0	0		
			0				0						93		0									0	0		
																								379	379	NA	
			0	28591			0								0												
1568	211																							97	0	97	
			0	57182			0								0												

ENERGY BALANCES IN INDONESIA CA 1979

	1 TOTAL OF COAL C01-C05 TGH	2 COKING COAL TGH	3 STEAM COAL TGH	4 ANTHRA-CITE TGH	5 LIGNITE TGH	6 TOTAL OF CRUDE OIL C06-C08 KBBL	7 ORIGINAL CRUDE OIL KBBL	8 REDUCED CRUDE OIL KBBL	9 PETROLE-UM PRODUCTS C09-C23	10 DOMESTIC FUEL OIL C10-C20 KKL	11 GASOLINE C11-C14 KKL	12 AVIATION KKL	13 SUPER KKL	14 FEEDING KKL	15 JET FUEL KKL	16 KEROSENE KKL	17 DIESEL C17-C19 KKL	18 ANTIKNOCK KKL	19 INDUSTR. KKL	20 HEAVY FUEL OIL KKL	21 NAPHTHA KBBL	22 LOW SUL. WAXY RESIDUE KBBL	23 RUBBE-CANS KBBL	24 SOLVENTS KBBL
1 DOMESTIC PRODUCTION	270589		214908	63681	NA	559274	559274			2198	0	0	0	0	270	903	8218	9927	41	0			0	0
2 IMPORT	0	0=				31388	30479	909		-476	-7	-7		0	-145		-111	-72	-39	-233	-11644	-48855		0
3 EXPORT	-53988		-45828	-8152		-394388	-394388		( )	(-3583	(-13	(-13			(-1443		(-473	(-8	(-393	(-1693				
4 INTERNATIONAL BUNKERS									( )	204	93	1	9	83	-16	-188	234	243	-9	81	229	1089	28	22
5 STOCK CHANGE	-73877	0	5265	-78382	NA	12658	12658	0																
6 PRIMARY ENERGY SUPPLY	151532	0	174365	-22833	0	208388	207481	909		2198	87	-6	9	83	169	715	1349	1348	-7	-133	-11365	-47766	28	22
7 REFINERY						-182448	-182448	0		16884	3546	25	106	3415	174	5535	5559	4284	1867	2239	6365	55204	546	119
8 BOILERS, LPG)																					0			
9 CHEMICAL ENERGY																								
10 PETROCHEMICAL LPG										-1548							-742	-713	-29	-765				
11 PUBLIC UTILITY	0		XA														-748	-658	-284	0				
12 PGMP-BP BSE										-914							-20	-6	-14	0				
13 AUTO GENERATION	-61802		-61802							-20						0								
14 TOWN GAS	0	0	XA																					
15 COKE	0	0																						
16 BRIQUET	0		0																					
17 TRANSFORMATION(TOTAL)	-61802	0	-61802			-182448	-182448	0		14372	3546	25	106	3415	174	5535	3645	2937	238	1472	6365	55204	546	119
18 CRUDE OIL FIELD						-1300	-1300			-126							-120	-110	-11	-6				
19 NATURAL GAS FIELD						-3598	-3598			-718							-184	-70	-24	-572	0	-9	0	0
20 REFINERY																					0			
21 NGL PLANT																	0	0	0	0				
22 CHEMICAL ENERGY PLANT										0							0	0	0					
23 PUBLIC UTILITY										0														
24 TOWN GAS																								
25 COKE PLANT																								
26 BRIQUET																								
27 COAL MINE	-369		-369	XA																				
28 FLARE AND LOSSES	-16310	0	-16310	NA	XA	-364	-364	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 ENERGY SECTOR USE LOSSES	-16670	0	-16670	0	0	-5262	-5262	0		-843	0	0	0	0	0	0	-245	-179	-65	-578	0	-9	0	0
30 STATIS TICAL DIFFERENCE	57388	0	8790	48510	0	-20634	-19725	-909		2277	49	3	-16	53	348	984	334	71	283	528	4989	-2429	989	0
31 FINAL CONSUMPTION	138388		104883	25877	0					17925	3672	22	93	3551	823	7244	5654	4146	908	1331	0		1492	119
32 FINAL ENERGY USE	104883		104883	0	0					17925	3672	22	93	3551	823	7244	5654	4146	908	1331	0			
33 INDUSTRY	78558		78558	0	0					3489							2013	1251	782	1076	0			
34 AGRICULTURE FORESTRY										359							342	318	28	0				
35 FISHERY										0							0	0						
36 NONENERGY USE	12550		12550	0						197							137	85	53	59				
37 CONSTRUCTION										72							72	65	7	0				
38 MANUFACTURING	66008		66008	0	0					2479							1461	748	673	1049	0			
39 FOODS										424							263	155	107	161				
40 TEXTILE										447							392	242	150	55				
41 RUBBER										55							85	67	18	11				
42 PAPER,PULP										144							54	26	28	54				
43 CHEMISTRY(FUEL USE)										231							186	78	28	133	NA			
44 CERAMICS,CEMENTS	56898		56898		NA					655							239	38	200	417				
45 IRON,STEEL										171							78	33	39	93				
46 NON-FERROUS METALS	0			0						6							6	6		0				
47 METAL FABR.,MACHINERY										23							22	20	2	1				
48 SMALL WARES,OTHERS	9512		9512							223							215	116	59	58				
49 RESIDENT.,COMMER.(TOTAL)										7244						2244								
50 RESIDENTIAL																								
51 COMMERCIAL																								
52 TRANSPORTATION(TOTAL)	26125		26125							2682	3454	15	58	3341	593		2819	2691	129	215				
53 AIR TRANSPORTATION										453	13	13			448		2	2						
54 ROAD TRANSPORTATION										5767	3439		58	3341			2328	2316	11	0				
55 RAILWAYS	26125		26125							105							69	65	4	36				
56 INTERNAL NAVIGATION										393	0			0			374	269	24	19				
57 INTERNATIONAL BUNKERS										354	1	1			146		47	8	31	169				
58 OTHERS(SERVER.,FORCES E)										510	219	7	6	209	29		222	201	18	43				
59 RAW MATERI. USE IN CHEM.																					4	NA		
60 OTHER NON-ENERGY USE	25677			25677																			1492	119
61 TOTAL USE IN CHEMISTRY										239							186	78	28	133	0			

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
OTHERS (GREASE, ASPH., ETC) MBBL	PETROLEUM COKE MBBL	REFINERY GAS BCF	LPG MBBL	NATURAL GAS BMCF	MSL (CONDENSATES) MBBL	LNG BBTU	METHANOL TBTU	TOWN GAS BBTU	COKE TBTU	COKE OVEN GAS BBTU	BLAST FURNACE GAS BBTU	BRIQUET TBTU	WOOD BBTU	CHARCOAL TBTU	FUEL ETHANOL FROM BIOMASS TBTU	AGRICULTURAL WASTES BBTU	HYDRO GENERATION: PUBLIC UTILITY GWH	HYDRO GENERATION: AUTO GENERAT. GWH	NUCLEAR GENERATION GWH	GEOTHERM. GENERAT.: PUBLIC UTILITY GWH	GEOTHERM. GENERAT.: AUTO GENERAT. GWH	OTHER GENERATION: PUBLIC UTILITY GWH	OTHER GENERATION: AUTO GENERAT. GWH	TOTAL OF ELECTRICITY GWH	PUBLIC UTILITY GWH	AUTO GENERATION GWH	GRAND TOTAL
				999674					0				61937	NA	0	78227	3928	412	0	0	0	0	0				
NA			0		-16399	-13650	0								0												( )
-208									0			0	NA	NA	0												
-4	NA		-4																								
-212	0		-4883	993674	-16399	-13650	0		0			0	61937	0	0	78227	3928	412	0	0	0	0	0				
1530	191	10749	859	-392336	28848	13922																5881	5881				
			4517	0	0		0										-3928		0	0				0			
				NA														-412			0		0	3445	0	3445	
				0				25185	0	0																	
				0					0	0																	
												0															
1530	191	10749	5377	-392336	28848	13922	0	25185	0	0		0					-3928	-412	0	0	0	0	0	9325	5881	3445	
				-253908																				-166	0	-166	
				-8920																				0	0	0	
0	-191	-9856	0	0																				-176	0	-176	
				0																				0	0	0	
				0																				-154	-154	0	
				-403				0		0														0	NA	0	
																								0	NA		
																								-331		-331	
									-337															-647	-647	0	
0	0	-869	0	-223370					-928	0																	
0	-191	-10335	0	-885701																				-1274	-801	-473	
218	0	-418	-226	-54848	-11853	-22	0	-7443	0	0		0	0	0	0	0								8651	5879	2972	
1527	0		348	66992			0	68744	0			0	61937	0	0	78227								8651	5879	2972	
	0		348	31819			0	68744	0			0	61937	0	0	78227								6765	3793	2972	
	0		0	31819				0	0			0	5368			12511								473	NA	473	
			NA									0				5731								587	NA	587	
																								99	NA	99	
	0		0	31819				0	0			0	5368			6779								1813	0	1813	
																								332	NA	332	
																								498	NA	498	
																								113	NA	113	
																								66	NA	66	
																								139	NA	139	
				26736																				242	NA	242	
				5074				0				0	5368			6779								95	NA	95	
	NA																							10	NA	10	
																								30	NA	30	
			NA	0																				267	0	267	
			348	0				68744				0	56377	NA		65716								2928	2928	NA	
													93		0									0	0		
			0					0							0												
			0					0					93											0	0		
																								-345	345	NA	
			0	35183				0							0												
1527	0																							139	0	139	
			0	61918				0							0												

3. List of Concice Energy Balance Table (1969-1978)

ENERGY BALANCES IN INDONESIA CA 1969

Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 BBM	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERATION	21 GEOTHERMAL GENERATION	22 NUCLEAR GENERATION	23 OTHER GENERATION	24 ELECTRICITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	0	58299												3975						513	0	0	0		58788	32836	91622
2 IMPORT	0	49	0	0	0	0	0	0	0	0		0	0												49		49
3 EXPORT	0	-37839	-2168	-2453	-368	-366		-204	-3	-1333	0	-17	-4999		0	0	0								-45607	0	-45607
4 BUNKER			(-278)	(-278)	(0)	(0)		(-55)	(-241)	(-2631)															(-2783)		(-2783)
5 STOCK CHANGE	0	0	0	0	0	0	0	0	0	0	0	0	0												0	0	0
6 PRIM. ENERGY REQUIREMENT	0	16509	-2168	-2453	-368	-366	0	-204	-3	-1333	0	-17	-4999	3975	0	0	0			513	0	0	0		13928	32836	46664
7 OIL REFINING		-15220	14859	14074	2069	373	2987	6356	498	2811	0	17	6595												-1120		-1120
8 LNG,LPG,COK,BBM PRODUCT			0								0	0		0	0	0	0								0		0
9 ELECTRIC GENERATION	0		-456	-456				-278	-91	-92				0						-513	0	0	0	274	-705		-705
10 TOWN GAS PRODUCTION	0		-8	-8			0	-1	-8	0				0				19	0						11		11
11 ENERGY SECTOR OWN USE	0	0	0	0				0	0	0	0		0	-22				0	0					0	-27		-27
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-1939				-5						-49	-1993		-1993
13 STATISTICAL DIFFERENCES	0	-9269	1018	-46	7	32	595	-128	-63	-549	0	-2	1886	-1929	0	0	0	0	0						-2269	0	-2269
14 FINAL CONSUMPTION	0		7475	7383	1788	100	3504	615	324	972	0	0	92	89			0	14						225	7793	32836	40629
15 FINAL ENERGY USE	0		7383	7383	1788	100	3504	615	324	972	0	0	0	43			0	14						225	7692	32836	40428
16 INDUSTRY SECTOR	0		722	722				214	195	314	0	0	0	43				0						29	811	26582	27428
17 RESIDENT AND COMMERC	0		3501	3501			3501					0		0				14						192	3635	12165	15821
18 TRANSPORTATION SECTOR	0		2852	2852	1788	100		248	120	595		0					0			0				28	2852	64	2916
19 GOVERNMENT SECTOR			305	305	0	0		234	9	62															333		333
20 NON-ENERGY USE	0		92								0	0	92	43			0								135	0	135

ENERGY BALANCES IN INDONESIA CA 1970

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 BBM	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERATION	21 GEOTHERMAL GENERATION	22 NUCLEAR GENERATION	23 OTHER GENERATION	24 ELECTRICITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	0	62928												4114						537	0	0	0		67660	35369	103029
2 IMPORT	0	532	0	0	0	0	0	0	0	0		0	0												532		532
3 EXPORT	0	-45745	-7865	-2459	-434	-32		-44	0	-1919	0	-11	-5335		0	0	0								-53550	0	-53550
4 BUNKER			(-669)	(-669)	(0)	(0)		(-14)	(-393)	(-1977)															(-4693)		(-4693)
5 STOCK CHANGE	0	-455	0	0	0	0	0	0	0	0	0	0	0												-455	0	-455
6 PRIM. ENERGY REQUIREMENT	0	16760	-7865	-2459	-434	-32	0	-44	0	-1941	0	-11	-5335	4114	0	0	0			537	0	0	0		13407	35369	48917
7 OIL REFINING		-16288	14819	14084	2343	193	3652	1298	637	3452	0	16	5624												413		413
8 LPG,LPG,COK,BBM PRODUCT			1								0	0		-30	0	0	0								-89		-89
9 ELECTRIC GENERATION	0		-812	-812				-375	-116	-321				0						-537	0	0	0	333	-816		-816
10 TOWN GAS PRODUCTION	0		-9	-8			0	-1	-8	0				0				17	0						8		8
11 ENERGY SECTOR OWN USE	0	0	0	0				0	0	0	0		0	-1410				0	0					-6	-1416		-1416
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-2431				-3						-65	-2499		-2499
13 STATISTICAL DIFFERENCES	0	-555	-165	18	-16	-17	472	-48	-123	-254	0	0	-128	-1	0	0	0	0	0						-661	0	-661
14 FINAL CONSUMPTION	0		8889	7923	1893	143	3523	834	391	1139	0	1	166	882			0	14						263	8548	35369	43857
15 FINAL ENERGY USE	0		7924	7923	1893	143	3523	834	391	1139	0	1	0	91			0	14						263	8293	35369	43609
16 INDUSTRY SECTOR	0		983	983				326	270	387	0	0	0	91				0						103	1378	21307	22685
17 RESIDENT AND COMMERC	0		3524	3523			3523					1		0				14						125	3663	13916	17669
18 TRANSPORTATION SECTOR	0		3192	3192	1893	143		319	112	721		0					0			0				0	3192	56	3249
19 GOVERNMENT SECTOR			224	224	0	0		189	8	31														34	258		258
20 NON-ENERGY USE	0		166								0	0	166	91			0								257	-0	257

ENERGY BALANCES IN INDONESIA CA 1976

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 TOTAL	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERATION	21 GEOTHERMAL GENERATION	22 NUCLEAR GENERATION	23 OTHER GENERATION	24 ELECTRICITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	886	65260												4592						619	0	0	0		70455	37577	108231
2 IMPORT	0	570	1329	1329	1	0	1062	10	0	255		0	0												1658		1658
3 EXPORT	0	-16013	-7539	-1245	-51	0		0	0	-1165	0	-8	-6286		0	0	0								-55552	0	-55552
4 BUNKER			(-3371)	(-3371)	(0)	(0)		(-5)	(-709)	(-2629)															(-3371)		(-3371)
5 STOCK CHANGE	-18	69	0	0	0	0	0	0	0	0	0	0	0												22	0	22
6 PRIM. ENERGY REQUIREMENT	136	17886	-8210	84	-50	0	1062	10	0	-938	0	-8	-6286	4592	0	0	0			619	0	0	0		17023	37577	54599
7 OIL REFINERY		-18710	17380	11889	2426	216	3959	1556	666	3175	0	12	4277												-1330		-1330
8 LNG,LPG,COM,NGH PRODUCT			0								0	0		-164	0	0	0								-164		-164
9 ELECTRIC GENERATION	-66		-706	-706				-114	-138	-354				0						-619	0	0	0	358	-1004		-1004
10 TOWN GAS PRODUCTION	0		-13	-13			0	-1	-12	0				0				18	0						6		6
11 ENERGY SECTOR OWN USE	-23	0	0	0				0	0	0	0		0	-1361				0	0					-26	-1410		-1410
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-2589				-3	0					-60	-2972		-2972
13 STATISTICAL DIFFERENCES	47	824	-1688	-1748	-366	-24	-268	-83	-90	-1058	0	-1	161	-1	0	0	0	0	0						-737	0	-737
14 FINAL CONSUMPTION	94		8842	8686	2062	192	3905	1867	827	1832	0	3	154	159			0	15						361	9412	37577	46988
15 FINAL ENERGY USE	94		8189	8686	2062	192	3905	1867	827	1832	0	3	0	29			0	15						361	9129	37577	46755
16 INDUSTRY SECTOR	50		1153	1153				420	293	441	0	0	0	29				0						119	1402	21510	22912
17 RESIDENT AND COMMERC	0		3908	3905			3905					3		0				15						141	4064	16025	20087
18 TRANSPORTATION SECTOR	45		3389	3389	2062	192		450	128	547		0					0							0	3425	41	3466
19 GOVERNMENT SECTOR			247	247	0	0		197	6	44														41	288		288
20 NON-ENERGY USE	0		154								0	0	154	29			0								233	0	233

ENERGY BALANCES IN INDONESIA CA 1972

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 TOTAL	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERATION	21 GEOTHERMAL GENERATION	22 NUCLEAR GENERATION	23 OTHER GENERATION	24 ELECTRICITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	167	79270												5714						567	0	0	0		85719	37991	123710
2 IMPORT	12	162	1961	1922	0	15	518	0	0	1318		0	42												2138		2138
3 EXPORT	0	-58347	-9295	-295	0	0		0	0	-291	0	-4	-8996		0	0	0								-68738	0	-68738
4 BUNKER			(-2201)	(-2201)	(0)	(0)		(0)	(0)	(-2201)															(-2201)		(-2201)
5 STOCK CHANGE	17	100	0	0	0	0	0	0	0	0	0	0	0												117	0	117
6 PRIM. ENERGY REQUIREMENT	196	20585	-7834	1131	0	15	518	0	0	697	0	-4	-8953	5714	0	0	0			567	0	0	0		19226	37991	57217
7 OIL REFINING		-20365	19957	10368	2183	248	3147	1720	1041	2927	343	10	9218												-428		-428
8 LPG,LPG,CCM,NGH PRODUCT			0								0	0		-253	0	0	0								-253		-253
9 ELECTRIC GENERATION	-69		-879	-879				-419	-159	-302				0						-567	0	0	0	420	-876		-876
10 TOWN GAS PRODUCTION	-12		-17	-17			0	-1	-17	0				0				21	0						-8		-8
11 ENERGY SECTOR OWN USE	-126	0	0	0				0	0	0	0		0	-1298				0	0					-28	-1363		-1363
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-3981				-5	0					-68	-3973		-3973
13 STATISTICAL DIFFERENCES	93	-288	-1549	-1352	-69	-11	593	216	-467	-1422	-343	0	-34	-58	0	0	0	0	0						-1674	0	-1674
14 FINAL CONSUMPTION	81		9884	9447	2122	252	4249	1515	399	1110	0	6	231	331			0	16						323	18639	37991	48630
15 FINAL ENERGY USE	29		9651	9447	2122	252	4249	1515	399	1110	0	6	0	167			0	16						323	18249	37991	48231
16 INDUSTRY SECTOR	51		1453	1453				420	310	655	0	0	0	167				0						129	1801	19869	21669
17 RESIDENT AND COMMERC	0		4256	4249			4249					6		0				16						151	4423	18104	22527
18 TRANSPORTATION SECTOR	28		3589	3469	2122	252		867	66	382		0					0							0	3717	19	3736
19 GOVERNMENT SECTOR			254	256	0	0		178	23	83														43	219		219
20 NON-ENERGY USE	2		233								0	0	231	167			0								399	0	399

ENERGY BALANCES IN INDONESIA CA 1973

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 GAS	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERAT -ION	21 GEOTHERMAL GENERAT -ION	22 NUCLEAR GENERAT -ION	23 OTHER GENERAT -ION	24 ELECTRI -CITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	141	92703												7055						658	0	0	0		185706	43185	148891
2 IMPORT	3	220	2565	2539	0	161	459	331	0	9647		0	24												2788		2788
3 EXPORT	0	-24656	-12310	-70	0	0		0	0	-70	0	-1	-12240		0	0	0								-88357	0	-88357
4 BUNKER			(-2483)	(-2483)	(0)	(0)		(0)	(0)	(-2483)															(-2483)		(-2483)
5 STOCK CHANGE	32	241	0	0	0	0	0	0	0	0	0	0	0												236	0	236
6 PRIM. ENERGY REQUIREMENT	175	24271	-9755	2469	0	161	459	331	0	1577	0	-1	-12214	7055	0	0	0			658	0	0	0		22358	43185	65538
7 OIL REFINERY		-24203	23209	18826	2462	202	1063	2324	871	764	203	35	82365												-934		-934
8 LNG,LPG,CCP,NGH PRODUCT			0								0	0		-273	0	0	0								-273		-273
9 ELECTRIC GENERATION	-45		-848	-848				-561	-193	-615				0						-608	0	0	0	434	-1027		-1027
10 TOWN GAS PRODUCTION	-3		-21	-21			0	-3	-20	0				0				22	0						-2		-2
11 ENERGY SECTOR OWN USE	-13	0	0	0				0	0	0	0		0	-1556				0	0					-23	-1592		-1592
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-5035				-8						-86	-5126		-5126
13 STATISTICAL DIFFERENCES	-32	-68	-1107	-938	-117	-14	357	-65	-174	-975	-203	0	65	183	0	0	0	0	0						-1068	0	-1068
14 FINAL CONSUMPTION	83		11457	11218	2345	348	4759	2028	484	1252	0	14	235	338			0	16						385	12265	43185	55470
15 FINAL ENERGY USE	88		11232	11218	2345	348	4759	2028	484	1252	0	14	0	167			0	16						385	11880	43185	55065
16 INDUSTRY SECTOR	43		1767	1767				640	376	750	0	0	0	167				0						184	2160	23184	25344
17 RESIDENT AND COMMERC	0		4774	4759			4759					14		0				16						165	4155	19995	24150
18 TRANSPORTATION SECTOR	37		4665	4665	2046	348		1169	89	131		0					0							0	4102	5	4108
19 GOVERNMENT SECTOR			827	827	300	0		228	28	71														36	663		663
20 NON-ENERGY USE	3		235								0	0	235	167			0								495	0	495

ENERGY BALANCES IN INDONESIA CA 1974

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 GAS	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERAT -ION	21 GEOTHERMAL GENERAT -ION	22 NUCLEAR GENERAT -ION	23 OTHER GENERAT -ION	24 ELECTRI -CITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	148	144568												7276						892	0	0	0		148795	44488	193283
2 IMPORT	1	195	2840	2769	0	212	1154	458	0	913		0	71												3035		3035
3 EXPORT	0	-75933	-9972	-522	-522	0		0	0	0	0	-5	-9446		0	0	0								-65905	0	-65905
4 BUNKER			(-4593)	(-4593)	(-21)	(-1114)		(-3)	(-327)	(-3665)															(-4593)		(-4593)
5 STOCK CHANGE	-7	-1559	0	0	0	0	0	0	0	0	0	0	0												-1558	0	-1558
6 PRIM. ENERGY REQUIREMENT	142	23289	-7849	2246	-522	212	1154	458	0	193	0	-5	-9375	7276	0	0	0			892	0	0	0		24351	44488	69839
7 OIL REFINERY		-21887	23885	12775	2410	265	4335	2674	971	1819	848	32	18233												-292		-292
8 LPG,LPG,CCG,NGH PRODUCT			1								0	1		-269	0	0	0								-265		-265
9 ELECTRIC GENERATION	-57		-786	-784				-491	-219	-95				0						-892	0	0	0	510	-1135		-1135
10 TOWN GAS PRODUCTION	-1		-23	-23			0	-1	-22	0				0				22	0						-2		-2
11 ENERGY SECTOR OWN USE	-10	-545	0	0				0	0	0	0		0	-2107				0	0					-27	-2689		-2689
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-4542				-6						-104	-4648		-4648
13 STATISTICAL DIFFERENCES	8	8312	-2492	-2229	704	-48	8	-391	-118	-1307	-846	0	-567	0	0	0	0	0	0						-1322	0	-1322
14 FINAL CONSUMPTION	82		13385	12103	2650	451	5499	2490	543	1359	0	32	291	358			0	15						383	14143	44488	58631
15 FINAL ENERGY USE	75		13016	12103	2650	451	5499	2490	543	1359	0	32	0	191			0	15						383	13678	44488	58166
16 INDUSTRY SECTOR	43		1468	1468				453	410	956	0	0	0	199				0						179	2489	21877	23957
17 RESIDENT AND COMMERC	0		5531	5499			5499					32		1				15						174	5722	22660	28322
18 TRANSPORTATION SECTOR	32		5234	5234	2365	419		1690	128	843		0					0							0	5266	11	5277
19 GOVERNMENT SECTOR			582	582	285	32		192	12	55														28	610		610
20 NON-ENERGY USE	7		291								0	0	291	167			0								465	0	465

ENERGY BALANCES IN INDONESIA CA 1975

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 DSB	5 GASOLENE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERATION	21 GEOTHERMAL GENERATION	22 NUCLEAR GENERATION	23 OTHER GENERATION	24 ELECTRICITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	892	95562												8917						871	0	0	0		106641	36016	142657
2 IMPORT	4	122	2795	2728	0	467	1278	945	0	36		0	78												2923		2923
3 EXPORT	0	-72759	-8843	-227	-727	0		0	0	0	-727	-8	-7382		0	0	0								-81692	0	-81692
4 BUNKER			(-4173)	(-4173)	(-31)	(-1353)		(-73)	(-38)	(-2343)															(-4173)		(-4173)
5 STOCK CHANGE	-3	-356	0	0	0	0	0	0	0	0	0	0	0												-359	0	-359
6 PRIM. ENERGY REQUIREMENT	894	22569	-6892	1998	-727	467	1278	945	0	36	-727	-8	-7382	8917	0	0	0			871	0	0	0		25569	36016	61585
7 OIL REFINING		-21713	21352	12893	2604	100	4350	3089	1026	1615	926	50	2581												-360		-360
8 LNG,LPG,CGR,NGH PRODUCT			3								0	3		-191	0	0	0								-190		-190
9 ELECTRIC GENERATION	-22		-1210	-1210				-824	-249	-316				0						-871	0	0	0	599	-1559		-1559
10 TOWN GAS PRODUCTION	-6		-20	-21			0	-1	-19	0				0				28	0						-6		-6
11 ENERGY SECTOR OWN USE	-2	-585	0	0				0	0	0	0		0	-2398				0	0					-35	-2345		-2345
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-1882				-6						-107	-1996		-1996
13 STATISTICAL DIFFERENCES	-5	-350	147	1872	842	-25	591	-193	-69	-56	-93	0	-33	0	0	0	0	0	0						591	0	591
14 FINAL CONSUMPTION	93		15925	14733	2915	542	6222	3135	879	1239	0	48	248	544			0	13						157	16337	36016	54153
15 FINAL ENERGY USE	92		14781	14733	2915	542	6222	3135	879	1239	0	48	0	265			0	13						457	15638	36016	53453
16 INDUSTRY SECTOR	45		1831	1831				474	514	823	0	0	0	294				0						220	2398	14923	16413
17 RESIDENT AND COMMERC	0		6278	6222			4222					48		1				13						284	6489	23349	30138
18 TRANSPORTATION SECTOR	47		6906	6906	2601	515		2398	150	345		0					0							0	6053	44	6097
19 GOVERNMENT SECTOR			673	673	314	27		245	16	72														32	765		765
20 NON-ENERGY USE	2		244								0	0	244	248			0								500	0	500

ENERGY BALANCES IN INDONESIA CA 1976

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 DSB	5 GASOLENE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 CONDENSATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERATION	21 GEOTHERMAL GENERATION	22 NUCLEAR GENERATION	23 OTHER GENERATION	24 ELECTRICITY	25 COMMERCIAL ENERGY TOTAL	26 NON-COMMERCIAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	173	110284												11534						898	0	0	0		122791	38923	161715
2 IMPORT	1	1619	6659	6617	361	550	3095	2593	198	0		0	52												8279		8279
3 EXPORT	-8	-98074	-8148	-79	0	0		0	0	-29	-85	0	-2984		0	0	0								-99231	0	-99231
4 BUNKER			(-4373)	(-4373)	(-2)	(-1411)		(-143)	(-781)	(-2023)															(-4373)		(-4373)
5 STOCK CHANGE	-6	-299	-524	-150	50	-6	30	-92	2	-134	-227	-1	-145												-817	0	-817
6 PRIM. ENERGY REQUIREMENT	162	21529	-2812	6387	411	543	3834	2411	201	-218	-312	-1	-8927	11534	0	0	0			898	0	0	0		32814	38923	70937
7 OIL REFINING		-22020	21630	13337	2732	22	4699	2728	1856	2649	287	61	8225												-131		-131
8 LNG,LPG,CGR,NGH PRODUCT			19								0	19		-1337	0	0	0								-1318		-1318
9 ELECTRIC GENERATION	-21		-1826	-1826				-1928	-261	-833				0						-850	0	0	0	214	-1983		-1983
10 TOWN GAS PRODUCTION	-1		-21	-21			0	-2	-19	0				0				28	0						-2		-2
11 ENERGY SECTOR OWN USE	-3	-648	0	0				0	0	0	0		0	-2862				0	0					-34	-3542		-3542
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-6742				-8						-118	-6869		-6869
13 STATISTICAL DIFFERENCES	-1	1835	-1160	-1233	1	-47	-347	-111	-174	-584	25	0	48	0	0	0	0	0	0						-26	0	-26
14 FINAL CONSUMPTION	84		14859	14645	3145	567	6826	3890	800	1417	0	59	136	593			0	12						562	18152	38923	57075
15 FINAL ENERGY USE	74		14703	14645	3145	567	6926	3890	800	1417	0	59	0	322			0	12						562	17674	38923	56597
16 INDUSTRY SECTOR	34		2589	2589				968	511	1869	0	0	0	326				0						303	3248	11769	15017
17 RESIDENT AND COMMERC	0		4885	4826			6926					59		2				12						224	7122	27118	34240
18 TRANSPORTATION SECTOR	40		6265	6265	2840	539		2379	188	339		0					0							0	6325	36	6361
19 GOVERNMENT SECTOR			944	944	304	28		523	20	68														35	929		929
20 NON-ENERGY USE	12		156								0	0	136	270			0								478	0	478

ENERGY BALANCES IN INDONESIA CA 1977

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 BBM	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 COKERY-GATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERAT -ION	21 GEOTHER -MAL GENERAT -ION	22 NUCLEAR GENERAT -ION	23 OTHER GENERAT -ION	24 ELECTRI -CITY	25 COMMERC- IAL ENERGY TOTAL	26 NON- COMMERC- IAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	222	123270												17613											143922	39208	183130
2 IMPORT	0	5766	3920	3876	29	630	1020	1981	246	0		11	61							817	0	0	0		9884		9884
3 EXPORT	-7	-97251	-11849	-933	0	0		0	0	-933	-939	-477	-3569		-220	-1233	0								-118561	0	-118561
4 BUNKER			(-578)	(-578)	(-2)	(-158)		(-153)	(-68)	(-339)															(-578)		(-578)
5 STOCK CHANGE	-14	2615	395	-184	-48	-29	-195	-16	69	847	936	0	273												2306	0	2306
6 PRIM. ENERGY REQUIREMENT	201	31900	-7623	2830	30	601	825	1855	314	-787	-798	-465	-3195	17613	-220	-1233	0			817	0	0	0		45556	39208	84762
7 OIL REFINERY		-39387	29745	18948	3501	12	6235	4263	1176	3749	1818	53	9734														
8 LNG,LPG,COK,BOK PRODUCT			476								0	876		-5915	220	1569	0								-692		-692
9 ELECTRIC GENERATION	-77		-2223	-2223				-1428	-326	-419				0											-2730		-2730
10 TOWN GAS PRODUCTION	0		-23	-23			0	-5	-16	-2				0				29	0	-817	0	0	0	837	-2229		-2229
11 ENERGY SECTOR OWN USE	-5	-424	0	0				0	0	0	0		0	-4295				0	0						-3		-3
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-8893				-7							-4763		-4763
																								-38	-5042		-5042
13 STATISTICAL DIFFERENCES	-8	-3189	-1385	-791	-25	-5	517	-318	-137	-839	-216	0	-258	0	0	-356	0	0	0					-188	-5859	0	-5859
14 FINAL CONSUMPTION	188		19953	18749	3506	693	7572	6370	1011	1872	0	64	241	1452			0	12									
15 FINAL ENERGY USE	81		18813	18749	3506	693	7577	6370	1011	1872	0	64	0	734			0	12						655	21246	39208	60452
16 INDUSTRY SECTOR	51		3898	3898				1148	790	1149	0	0	0	733			0	0						655	20386	39208	59514
17 RESIDENT AND COMMERC	0		7419	7577			7577					64		2				12						346	4248	9163	13411
18 TRANSPORTATION SECTOR	40		7120	7120	3197	569		2691	181	482		0					0							251	2906	30409	32915
19 GOVERNMENT SECTOR			554	554	309	44		511	49	59														0	2159	36	2196
20 NON-ENERGY USE	29		241								0	0	241	677			0							39	993		993
																									938	0	938

ENERGY BALANCES IN INDONESIA CA 1978

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 BBM	5 GASOLINE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPTHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 COKERY-GATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERAT -ION	21 GEOTHER -MAL GENERAT -ION	22 NUCLEAR GENERAT -ION	23 OTHER GENERAT -ION	24 ELECTRI -CITY	25 COMMERC- IAL ENERGY TOTAL	26 NON- COMMERC- IAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	258	119578												30327											151484	39492	190976
2 IMPORT	0	6224	3659	3527	3	652	978	2924	0	0		4	77							9241	0	0	0		9883		9883
3 EXPORT	-38	-92568	-9575	-418	0	0		0	0	-411	-289	-657	-8217		-1938	-7519	0								-111629	0	-111629
4 BUNKER			(-4699)	(-4599)	(-12)	(-2483)		(-121)	(-541)	(-3373)															(-6693)		(-6693)
5 STOCK CHANGE	-42	-552	-569	-542	-122	16	-85	-138	38	-193	49	0	-7												-1183	0	-1183
6 PRIM. ENERGY REQUIREMENT	185	32682	-4836	2423	-119	658	813	1825	38	-603	-240	-652	-8147	30327	-1938	-7519	0			9241	0	0	0		48545	39492	88037
7 OIL REFINERY		-32025	31671	21187	3703	25	8136	4883	1538	4352	1188	58	9328														
8 LNG,LPG,COK,BOK PRODUCT			474								0	874		-11888	1938	7553	0								-354		-354
9 ELECTRIC GENERATION	-76		-2754	-2754				-1722	-344	-638				0											-1724		-1724
10 TOWN GAS PRODUCTION	0		-25	-25			0	-7	-18	0				0				29	0	-9248	0	0	0	1023	-3048		-3048
11 ENERGY SECTOR OWN USE	-9	-252	-1	0				0	0	0	0		-1	-8439				0	0						-8		-8
12 LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	-2714				-7							-8608		-8608
																								-154	-7875		-7875
13 STATISTICAL DIFFERENCES	3	-165	-1589	25	349	38	1525	37	-189	-1771	-857	0	-738	0	0	-31	0	0	0						-2665	0	-2665
14 FINAL CONSUMPTION	165		21574	21058	3928	731	8475	6767	1186	1851	0	69	434	2225			0	14									
15 FINAL ENERGY USE	78		21138	21058	3928	731	8475	6767	1186	1851	0	69	0	1141			0	14						829	24748	39492	64238
16 INDUSTRY SECTOR	54		3667	3667				1134	973	1360	0	0	0	1139			0	14						829	23199	39492	62691
17 RESIDENT AND COMMERC	0		8555	8475			8475					69		2			0							489	5334	6288	11624
18 TRANSPORTATION SECTOR	28		7943	7943	3644	672		3948	179	436		0					0	14						302	8872	33168	42040
19 GOVERNMENT SECTOR			923	923	285	54		525	54	55														0	2971	36	8047
20 NON-ENERGY USE	27		836								0	0	436	1084			0							47	1020		1020
																									1547	0	1547

ENERGY BALANCES IN INDONESIA CA 1979

(Unit : 10^3 TCE)

	1 SOLID FUEL	2 CRUDE OIL	3 PETROLEUM PRODUCTS	4 BBM	5 GASOLENE	6 JET FUEL	7 KEROSENE	8 AUTOMOT. DIESEL OIL	9 INDUSTRY DIESEL OIL	10 HEAVY FUEL OIL	11 NAPHA	12 LPG	13 OTHER PETR. PRODUCTS	14 NATURAL GAS	15 COKEN-GATES	16 LNG	17 METHANOL	18 TOWN GAS	19 OTHER GAS	20 HYDRO GENERAT-ION	21 GEOTHER-MAL GENERAT-ION	22 NUCLEAR GENERAT-ION	23 OTHER GENERAT-ION	24 ELECTRI-CITY	25 COMMERC-IAL ENERGY TOTAL	26 NON-COMMERC-IAL ENERGY	27 GRAND TOTAL
1 INDIGENOUS PRODUCTION	276	112079												37888						1529	0	0	0		151752	60062	191814
2 IMPORT	0	6313	3164	3164	0	356	1166	1587	55	0		0	0												9477		9477
3 EXPORT	-52	-79934	-16613	-651	-8	-192		-92	-53	-302	-2228	-489	-11046		-3136	-12747	0								-169582	0	-169582
4 BUNKER			(-484)	(-484)	(-2)	(-193)		(-30)	(-53)	(-2279)															(-484)		(-484)
5 STOCK CHANGE	-58	2416	586	278	112	-21	-243	327	-55	114	53	-1	255							1					2912	0	2912
6 PRIM. ENERGY REQUIREMENT	166	41728	-10863	2791	105	143	923	1817	-50	-188	-2174	-489	-10791	37888	-3136	-12747	0			1530	0	0	0		54559	60062	94621
7 OIL REFINING	.	-36562	35245	22030	4266	239	7118	5727	1838	3171	1222	46	12927												-317		-317
8 LNG,LPG,COM,NON PRODUCT			285								0	298		-10870	5365	12813	0								4014		4014
9 ELECTRIC GENERATION	-52		-3359	-3359				-1843	-425	-1088				0						-1509	0	0	0	1146	-3760		-3760
10 TOWN GAS PRODUCTION	0		-27	-27			0	-8	-18	0				0				42	0						16		16
11 ENERGY SECTOR OWN USE	0	-962	-1231	-1176				-242	-115	-819	0		-55	-9312				0	0					-22	-12232		-12232
12 LOSS	-15	-73	0	0	0	0	0	0	0	0	0	0	0	-8448				-1						-80	-8636		-8636
13 STATISTICAL DIFFERENCES	47	-4158	2520	3037	48	449	1283	98	354	897	553	-32	-1437	-2071	-2229	-48	0	-4	0						-5541	0	-5541
14 FINAL CONSUMPTION	128		23991	23297	4419	823	9355	5559	1225	1848	0	50	616	2539			0	37						989	27655	60062	87747
15 FINAL ENERGY USE	97		23347	23292	4419	823	9355	5550	1225	1848	0	50	0	9208			0	37						989	25427	48062	65739
16 INDUSTRY SECTOR	73		4239	4239				1887	1027	1525	0	0	0	1246				0						585	6183	4639	10741
17 RESIDENT AND COMMERC	0		9465	9355			9355					50		0				37						359	9808	35387	45189
18 TRANSPORTATION SECTOR	24		9946	9946	4156	784		3628	174	365		0					0							0	9074	36	9107
19 GOVERNMENT SECTOR			657	657	263	39		275	24	56														65	702		702
20 NON-ENERGY USE	31		444								0	0	444	1333			0								2408	0	2408

USER'S MANUAL OF ENERGY BALANCE TABLE

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USER'S MANUAL OF ENERGY BALANCE TABLE

1. Energy Balance System Not Connected with Sub-Data Bank

(1) Configuration of input data

Explained in this manual is configuration of input data read out from paper cards to make calculation of the energy balance table.

Input Instruction

① FREQ, IY, IQ (A4, 2I4) (MAIN)

FREQ: Period, either of CA (calendar year), FA (fiscal year) or Q (quarter) is to be input.

IY : Year is to be input.

IQ : Quarter number is to be input using one of numerical characters of 1-4.

② IFMA, IFOU, IFAUT (3I4) (MAIN)

IFMA: When IFMA=0, this should be prepared in the form of a file of basic energy statistics by using the energy supply-demand data bank energy system, from which basic energy statistics are to be read out.

When IFMA = 1, all the basic energy statistics are to be read out from paper cards.

IFOU: When IFOU=0, the energy balance table is to be output using a common unit.

When IFOU=1, the energy balance table is to be output using units peculiar to individual energy resources.

IFAUT: When IFAUT=0, data on fuel consumption for private electric power generation in individual industries are to be read out from paper cards.

When IFAUT=1, fuel consumption for private electric power generation and final consumption for transport in individual industries are to be automatically calculated based on total of final consumption by type of industry.

③ NEXOA, NEXOB, VEXOV (2A4, 2X, F15.0) (DATSET)

NEXOA, NEXOB: Variable names of basic energy statistics.

VEXOV : Variable values of basic energy statistics.

Of information contained in basic energy statistics, a piece of information is to be input into a paper card. When characters of 'END' are referred to by NEXOA,

input operations should be completed taking the next step.

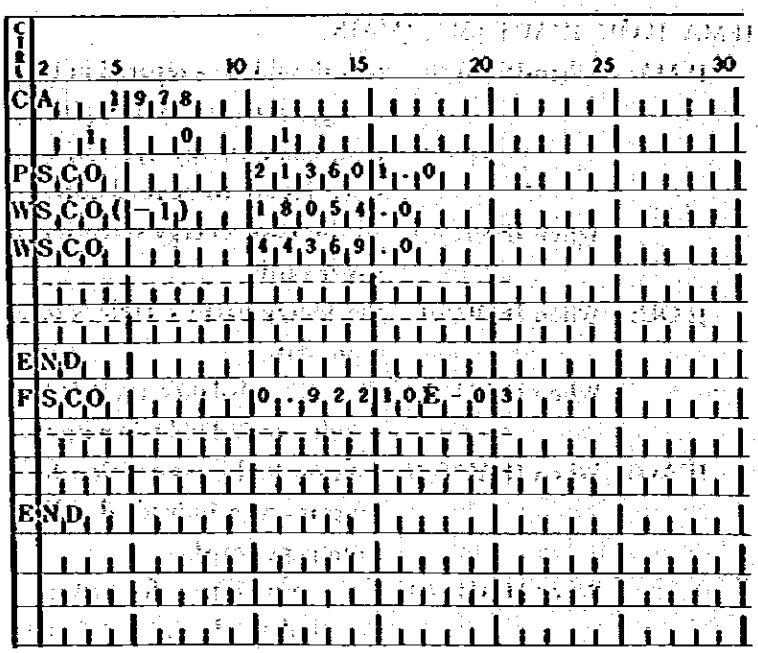
⑥ NEXOA, NEXOB, VEXOV (2A4, 2X, E11, 3) (DATSET)

NEXOA, NEXOB: Names of thermal quantity scale factors.

VEXOV : Values of thermal quantity scale factors.

A thermal quantity scale factor is to be input into a paper card. When characters of 'END' is retrieved, input operations should be completed taking the next step.

When preparation of the energy supply-demand data bank is completed and it becomes possible to input all the basic energy statistics from the energy supply-demand data bank, operations mentioned in item 3 above, input of basic energy statistics from paper cards, become unnecessary. In that case, it is required to delete the route completely from the program or design to input information of 'END' only in this step so that the route should be virtually skipped. Also, as to output of energy balance table using units peculiar to individual energy resources, it is needless to say that thermal quantity scale factors should be changed. Shown below is an example of configuration of input data.



Now, to make calculations of energy balance table using input data as shown above, following procedures should be taken beforehand; retrieving the energy supply-demand data bank, a file into which basic energy statistics were output should be prepared. Shown below are examples of retrieved data. As to configuration of input data of the energy supply-demand data bank system, detailed explanation was made in ALL MANUALS OF ENERGY SUPPLY-DEMAND DATA BANK SYSTEM in which the energy supply-demand data bank system was fully discussed.

Q	STATEMENT	CONT	ID	SEQ
	2 5 10 15 20 25 30 35 40 45 50 55 60 65 70		73 75	76 80
	① When period is Q			0 1
				0 1
R	E T			0 2
0	4 S C O			0 3
1	2 P			0 4
1	5 1 9 7 8			0 5
1	6 0 1 0 2 0 3			0 6
9	9 T 0 4 = 1 2 = 1 5 = 1 6		P S C O	0 7
				0 8
				0 9
				1 0
				1 1
E	O F			1 2
				1 3
	This example shows a case of the first quarter. To prepare one for other quarters, month			1 5
	numbers in row items are to be changed as follows: 04, 05, 06 (the 2nd quarter), 07, 08, 09			1 6
	(the 3rd quarter) and 10, 11, 12 (the 4th quarter).			1 7
				1 8
				1 9
	② When period is CA:			2 0
				0 1
R	E T			0 2
0	4 S C O			0 3
1	2 P			0 4
1	5 1 9 7 8			0 5
9	9 T 0 4 = 1 2 = 1 5		P S C O	0 6
				0 7
				0 8
				0 9
				1 0
E	O F			1 1
				1 2

STMT	STATEMENT (2 5 10 15 20 25 30 35 40 45 50 55 60 65 70)	CONT	ID (73 75)	SEQ (76 80)
	③ When period is "FA":			01
				02
				03
RET				
04	S,C,O			04
12	P			05
25	1,9,7,8			06
16	0,4 0,5 0,6 0,7 0,8 0,9 1,0 1,1			07
16	,2			08
99	T 0,4 = 1,2 = 1,5 = 1,6		P,S,C,O,	09
04	S,C,O			10
12	P			11
25	1,9,7,8			12
16	0,1 0,2 0,3			13
99	T 0,4 = 1,2 = 1,5 = T 6		P,S,C,O,	14
				15
				16
				17
				18
EOF				19
				20

(2) Error message and Countermeasures

As listed below, error messages are to be output in an energy balance calculation program. Table 1 describes output program, significance and countermeasures of error message.

Table 1 Error Message and Countermeasures

Error Message	Output Program	Significance	Countermeasure
E001 VAR. NAME****** IS NOT FOUND	DATSET	A variable name read out as basic energy statistics is not found in the table of variable names prepared based on energy balance equations	Input data on energy balance equations and basis energy statistics should be checked.
E002 VALUE OF****** IS NOT AVAILABLE	DATSET	Value of basic energy statistics required for calculation of energy balance is not yet prepared.	Input data on basic energy statistics should be checked.
E003 VALUE OF****** IS NOT FOUND, ASSUMED ZERO	EBCALC	During calculation of energy balance, it is found that data required for the calculation are missing and, as a result, assumed as zero.	Input data on energy balance equations and basic energy statistics should be checked.
E004 STORED POSITION OF EQ********** IS NOT FOUND	EBCALC	Position where calculation result of energy balance equation is not found.	Energy balance equations and program should be checked.

When an error message as shown above is output, it is necessary to check carefully input data on energy balance equations and basic energy statistics. Even if such an error message is output, calculation itself is continued in almost all the cases by assuming unknown data as zero.

2. Energy Balance System Connected with Sub-Data Bank

2-1 Program to Register Balance Data in Sub-Data Bank

(1) Configuration of input data

With this program, all the calculations required can be made only by inputting a single card which contains data listed below.

① SYEAR, SQUAR, EYEAR, EQUAR, IFQ, IFAUT, IFNEW
(2(I4, I2), 3I2) (MAIN)
SYEAR: The year when calculations start
SQUAR: The quarter when calculations start
EYEAR: The year when calculations end

(6)

EQUAR: The quarter when calculations end

IFQ: Option of the basic energy statistics by frequency

When IFQ = 1, the basic energy statistics are prepared on a quarterly basis, and calculation results are also obtained on a quarterly basis.

When IFQ = 0, the basic energy statistics are prepared on a calendar year basis, and calculation results are also obtained on a calendar year basis.

IFAUT: Option of processing of private electric power generation

When IFAUT=1, the fuel consumption for private electric power generation and final consumption in the field of transport of individual industries are calculated based on final consumption by type of industry.

When IFAUT=0, data on fuel consumption for private electric power generation of individual industries are read out from sub-data bank.

IFNEW: Option of registration in the sub-data bank

When IFNEW=1, given data for calculations are not yet registered in the sub-data bank.

When IFNEW=0, the data to be registered have been already registered in the sub-data bank.

Ex.

```
 1    67     12   14   16   18
 1969 01979  0    0    1    1
```

Information contained in the above example should be read as follows: the basic energy statistics are prepared on a calendar year basis and balance data covering the calendar 1969--1979 period are to be calculated based on IFAUT = 1; calculation results are not yet registered in the sub-data bank.

(2) JCL to make program work out

Shown below in JCL which causes the program making calculations of data to be registered in the sub-data bank to work out.

```
//EPAA10D JOB A10,SANTOSO,CLASS=G,MSGCLASS=X,NOTIFY=EPAA10
//STEP0 EXEC PGM=IEFBR14
//DD1 DD UNIT=DISK,DSN=EB.DATA,VOL=SER=TEST05,
// DISP=(OLD,DELETE,DELETE)
//FOR1 EXEC PAN1
//PAN1.PANDD2 DD DSN=&&EQ,DISP=(NEW,PASS),
//   SPACE=(TRK,(12,10)),
//   UNIT=DISK,DCB=(RECFM=FB,LRECL=80,BLKSIZE=7280)
++WRITE WORK,EDBTAB03
```

```
//STEP2 EXEC PAN1
//PAN1.PANDD2 DD DSN=&&EXO,DISP=(NEW,PASS),
//  SPACE=(TRK,(12,10)),
//  UNIT=DISK,DCB=(RECFM=FB,LRECL=80,BLKSIZE=7280)
++WRITE WORK,EBTSUB01
//STEP3 EXEC FORXPCLG,TIME.GO=10,
// SOUTA=X,FXTERM="SYSOUT=X",GOF6DD="SYSOUT=X'
//PAN1.SYSIN DD *
++WRITE WORK,EDBTABX5
//FORT.SYSIN DD DSN=&&SANSET,DISP=(MOD,PASS),UNIT=SCRTCH,
//     ,       SPACE=(CYL,(5,5),RLSE),DCB=BLKSIZE=80
//LKED.SYSLIB DD DSN=SYS1.FORTLIB,DISP=SHR
//            DD DSN=TEST.LINKLIB,DISP=SHR
//LKED.SYSLIN DD DSNAME=&&SANSET,DISP=(OLD,DELETE)
//            DD *
  INCLUDE SYSLIB(SHIFT)
  INCLUDE SYSLIB(MASKF)
//GO.FT01F001 DD DSN=NO288.SUBDB,
          DISP=SHR,UNIT=DISK,VOL=SER=TEST05
//FT12F001 DD DSN=NO289.NETOS,
//          DISP=SHR,UNIT=DISK,VOL=SER=TEST05
//FT16F001 DD DSN=&&EQ,UNIT=DISK,DISP=(OLD,DELETE)
//FT15F001 DD DSN=&&EXO,UNIT=DISK,DISP=(OLD,DELETE)
//FT17F001 DD DSN=EB.DATA,DISP=(NEW,KEEP),UNIT=DISK,
//         SPACE=(TRK,(12,10)),DCB=(RECFM=FB,BLKSIZE=3200,LRECL=80),
//         VOL=SER=TEST05
//SYSIN DD *
```

DATA CARDS

EB-DATA:	File to store calculated balance data in the sub-data bank in accordance with the input format 2.
EDBTAB03:	File storing the energy balance, commodity balance and concise energy balance equations.
EBTSUB01:	File storing the table containing names of exogenous variables.
EDBTABX5:	Source file of the program to calculate balance data registered in the sub-data bank.
NO288.SUBDB:	Sub-data bank

(8)

NO299·NETOS: File of variable names in the sub-data bank

Shown below is JCL to call out calculation results from EB.DATA, which are stored in the sub data bank.

```
//EPAA10C  JOB  A10,SANTOSO,CLASS=G,MSGCLASS=X,NOTIFY=EPAA10
//STEP3 EXEC PGM=EDBSDB01
//STEPLIB DD DSN=TEST.LINKLIB,DISP=SHR
//FT01F001 DD UNIT=DISK,DSN=N0288.SUBDB,VOL=SER=TEST05,DISP=OLD
//FT12F001 DD UNIT=DISK,DSN=N0289.NETOS,VOL=SER=TEST05,DISP=OLD
//FT06F001 DD SYSOUT=X
//FT13F001 DD DUMMY
//GO.FT05F001 DD UNIT=DISK,DSN=EB.DATA,VOL=SER=TEST05,DISP=OLD
//
```

EDBSDB01: Object program to maintain the sub-data bank

NO288·SUBDB: Sub-data bank

NO289·NETOS: File of variable names in the sub-data bank.

EB·DATA: File of balance data stored in the sub-data bank in accordance with the input format 2.

(3) Error message and countermeasure

The program is designed to output, if necessary, error messages indicated in the table below.

Error message	Output program	Meaning	Handling
VARIABLE NAME -** ****** – IS NOT IN TABLE	CLSVAR	A given variable name extracted from given balance equation is not registered in the table containing exogenous variables.	Check the exogenous variable table, and input the given variable name into the table when it is found to be new.
VARIABLE NAME -** ****** – IS NOT FOUND IN SDB PLEASE CHECK	DTCALL	A given variable name is not found in the variables referred to from the sub-data bank.	Check if the given variable name is one not registered due to the absence of corresponsing data in the sub-data bank.

2-2 Program to Print Out Balance Tables from Sub-Data Bank

(1) Configuration of input data

This program requires input data listed below.

① NJOB, IFQ (212) (MAIN)

NJOB: The number of printing out balance tables of different types and/or those employing different frequency based on the results of a single calculation.

IFQ: Option of the sub-data bank by frequency
When IFQ = 1, balance data on a quarterly basis are to be called out.

When IFQ = 0, balance data on a calendar year basis are to be called out.

② TABLE, FREQ, SYEAR, SQUAR, EYEAR, EQUAR, NOUT,
NPRD (A4, A2, 2 (I4, I2), 2I2) (MAIN)

TABLE: Option to indicate types of balance tables
When TABLE = 'EBT ', a given table is an energy balance table.
When TABLE = 'CBT ', a given table is a commodity balance table.
When TABLE = 'CT ', a given table is a concise energy balance table.

FREQ: Option to designate frequency of balance tables
When FREQ = 'C', employed is a calendar year basis.
When FREQ = 'F', employed is a fiscal year basis.
When FREQ = 'Q'. employed is a quarterly basis.

SYEAR: The year when calling out of data starts

SQUAR: The quarter when calling out of data starts
When FREQ = 'C' or 'F', this should be set at 0.

EYEAR: The year when calling out of data ends

EQUAR: The quarter when calling out of data ends
When FREQ = 'C' or 'F', this should be set at 0.

NOUT: The number of sheets to be printed out of a type of balance table

NPRD: Designed to set the function of a given period.
When the whole period from SYEAR to EYEAR is to be printed out, this should be set at 0.

③ (YEAR (I), QUAR (I), I = 1, NPRD) (10 (I4, I2, IX)) (MAIN)

Setting of the aforementioned data, of which NPRD is not 0, results in printing out of discontinuous periods. Accordingly, it is required to designate as many numbers of calendar years and quarters to be printed out as set in NPRD.
When FREQ = 'C' or 'F', QUAR should be set at 0.
YEAR should always represent a number found between SYEAR and EYEAR.

Data of 2 and 3 should be repeatedly processed as many numbers as set in NJOB.

Ex. 1 When continuous printing is to be made

```
1       5   7       13      18  20  22
 3  0
EBT     C   1978    01979   0   2   0
CBT     C   1978    01979   0   1   0
CT      C   1978    01979   0   1   0
```

In this case, the energy balance, commodity balance and concise energy balance tables covering the years of 1978 and 1979 on a calendar year basis are continuously printed out. The numbers of sheets to be printed out of individual types of

(10) balance tables, each containing the same contents as others, are two for the energy balance table, one for the commodity balance table and one for the concise energy balance table.

Ex. 2 When discontinuous printing is to be made

```
1    5   7     13     18   20  22
 3  0
EBT  C  1969  01979   0    1   3
1969    01975 01979   0
CBT  C  1969  01979   0    1   4
1971 C 01973  01976   0  1979  0
CT   C  1969  01979   0    1   1
1977    0
```

In this case, a total of three sheets of the energy balance table, each covering the years of 1969, 1975 or 1979 on a calendar year basis, are to be printed out. Also to be printed out are a total of four sheets of the commodity balance tables, each covering the years of 1971, 1973, 1976 or 1979, and sheet of the concise energy balance table covering the year of 1977. Meanwhile, the period to be referred to the sub-data bank for the preparation of the above is the 1969–79 period without an exception.

(2) JCL to make program work out

Shown below is JCL which causes the program to print out balance tables based on the data contained in the sub-data bank to work out.

```
//EPAA10S JOB (A10),SANTOSO,CLASS=B,MSGCLASS=X,NOTIFY=EPAA10
//ST1   EXEC FORXPCLG,
//    SOUTA=X,FXTERM='SYSOUT=X',GOF6DD='SYSOUT=X'
//PAN1.SYSIN  DD *
++WRITE WORK,EDBTABX6
//FORT.SYSLIN DD DSN=&&ARAB,DISP=(MOD,PASS),UNIT=SCRTCH,
//       SPACE=(CYL,(5,5),RISE),DCB=BLKSIZE=80
//LKED.SYSLIB DD DSN=SYS1.FORTLIB,DISP=SHR
//       DD DSN=TEST.LINKLIB,DISP=SHR
//LKED.SYSLIN DD DSNAME=&&ARAB,DISP=(OLD,DELETE)
//       DD *
  INCLUDE SYSLIB(SHIFT)
  INCLUDE SYSLIB(MASKP)
//GO.FT01F001 DD DSN=N0288.SUBDB,
//           DISP=SHR,UNIT=DISK,VOL=SHR=TEST05
//FT12F001   DD DSN=N0289.NETOS,
//           DISP=SHR,UNIT=DISK,VOL=SHR=TEST05
//SYSIN DD *
```

```
DATA CARDS
```

EDBTABX6: Source file of the program to print out balance tables
N0288·SUBDB: Sub-data bank
N0299·NETOS: File of variable names in the sub-data bank

SYSTEM MANUAL OF ENERGY BALANCE TABLE

SOFTWARE FOR PEEPARATION OF ENERGY BALANCE TABLE

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SYSTEM MANUAL OF ENERGY BALANCE TABLE
– SOFTWARE FOR PREPARATION OF ENERGY BALANCE TABLE –

As mentioned in GENERAL MANUAL OF ENERGY BALANCE TABLE II and III, we collected basic energy statistics and built up equations of calculation required for preparing an energy balance table. Needless to say, it is possible to prepare an energy balance table by making manual calculation based on basic energy statistics and equations of calculation. However, it is more desirable to develop computer software so as to realize faster data processing. A energy supply-demand data bank system was developed in this project which was capable of storing micro data, aggregating them into basic energy statistics and generating such statistics as an output. Accordingly, if the energy supply-demand data bank system could be linked with preparation of an energy balance table, it would become possible for us to grasp the flow of energy much faster.

Discussed in this manual is software for preparing an energy balance table, which was developed based on the aforementioned requirement.

1. Basic Policies for Developing Software

For developing software for preparation of an energy balance table, we set up the following three points as basic policies.

The first point is to link the energy supply-demand data bank system of which development has already completed as mentioned before with our preparation of the energy balance table by some means, in other words, to receive basis energy statistics from the data bank which can aggregate micro data and output the results and make the best use of them in our preparing the energy balance table. However, data scheduled to be stored in the energy data bank system this year are primarily those on oil and gas and data on electric power, coal and other types of energy are not scheduled to. Accordingly, it is required to acquire a function to read out data on the latter types of energy from descriptions contained in cards. As a method to link the energy supply-demand data bank with our preparation of the table, the following is considered; to set an intermediate file and, using the energy supply-demand data bank system, to output basic energy statistics into the file first. The basic energy statistics are then input into a program of energy balance table.

The second point is related to configuration of the energy balance table, that is, to write numbers and titles of rows and columns directly in the program without giving them codes. When configuration should be changed, we can complete such operations only when we change statements and numbers of data contained in the program. Changes in configuration of the table are required only when a number of items of energy should be newly added or a comprehensive change in structure of industries is needed. It is considered that processes to change the program in accordance with such new requirements are not so troublesome.

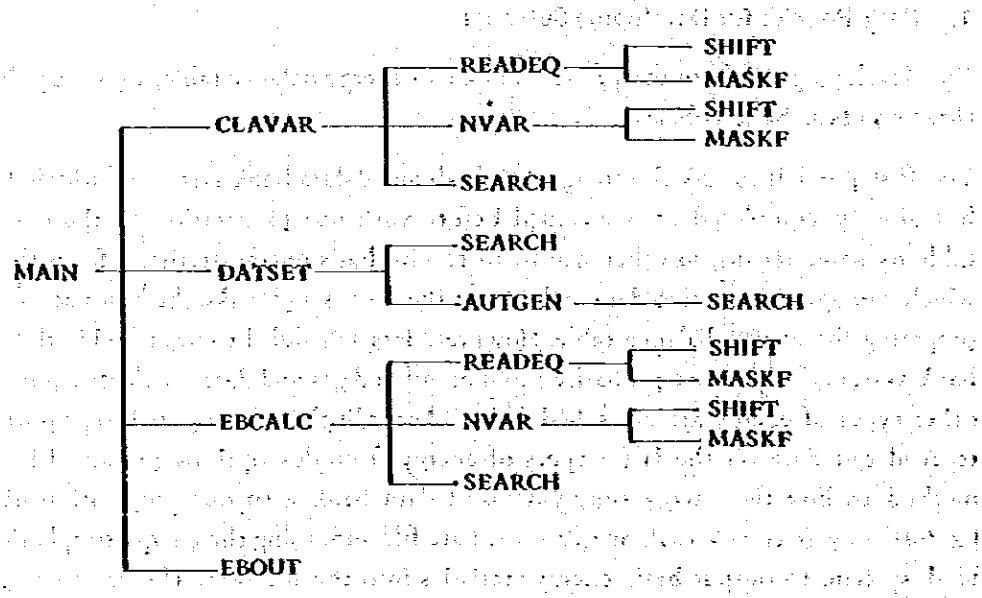
The third point is to give codes to equations of energy balance without writing them directly in the program. Because Indonesia is still on the way in establishing a system of basic energy statistics and it is quite probable that methods to collect statistics will be changed substantially, which means that equations of calculation of the energy balance table should also be changed frequently. Such being the situation, it will be extremely troublesome to change the program every time such a need arises and to compile a program newly. To avoid such a trouble, it is necessary to attach a function to the program to read equations of calculation as data and make calculations by decoding them.

While we were engaged in preparation of software in accordance with the aforementioned three points established as basic policies, the third point, in particular, is considered to form a special feature of softwear discussed in this manual.

2. Configuration of Program

Fig. 1 shows configuration of the program in which correlation between a main program and subroutines is indicated.

Fig. 1 Configuration of Program



Explained below are the main program and subroutines indicated in Fig. 1.

(1) Main Program – MAIN

To read equations of energy balance as data, recall basic energy statistics stored in the energy supply-demand data bank, make calculations in accordance with equations of energy balance and output an energy table, the following four steps are required.

1. To read out equations of energy balance from a permanent file, extract variables

other than those indicated in each column of the energy balance table, that is, variables representing basic energy statistics and variable names of intermediate variables from the equations, and prepare a position where values of these variables are to be stored (subroutine CLSVAR).

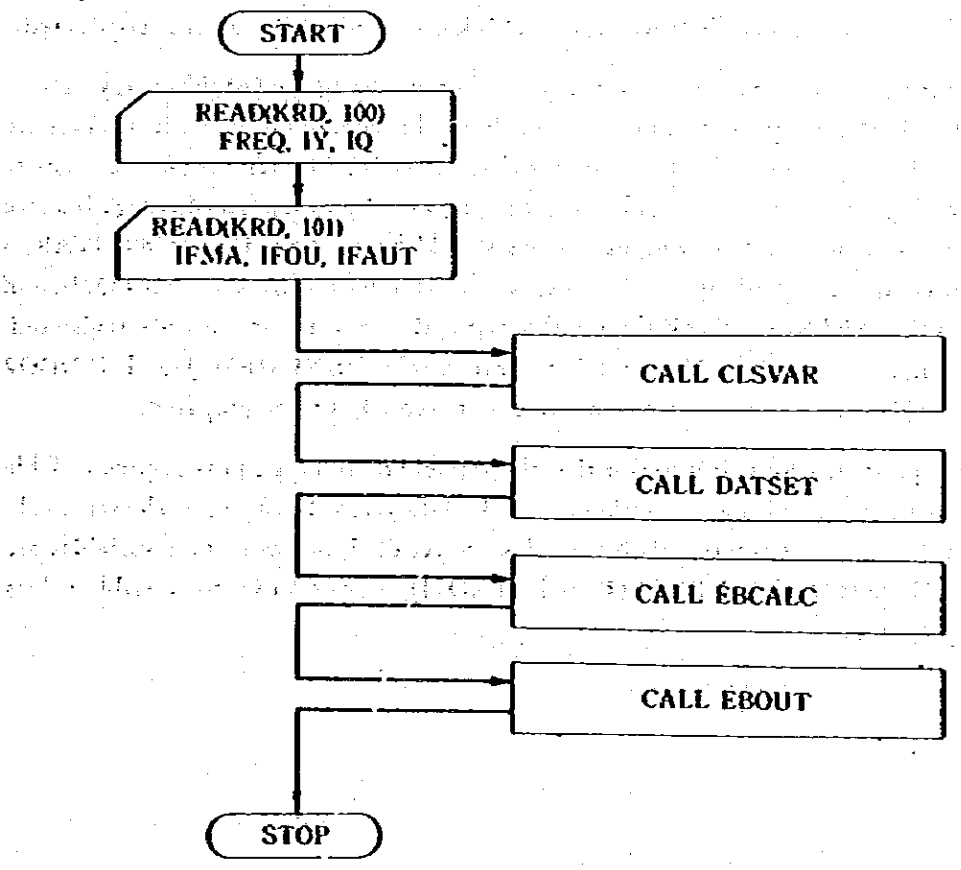
2. To read variable values extracted in a manner mentioned above from a file prepared using an energy supply-demand data bank system or paper cards, and prepare variable values required for calculations (subroutine DATSET).

3. To read equations of energy balance again from the permanent file and calculate values of individual columns of the energy balance table in accordance with the equations (subroutine EBCALC).

4. Based on the results of calculations, to output the energy balance table (subroutine EBOUT).

In the main program, optional data to indicate year, frequency and quarter (when data collection is conducted on a quarterly basis) and those required for calculations are read out from paper cards, which is followed by a process to recall four subroutine programs to conduct operations required for the four steps mentioned above. Fig. 2 shows flow chart of the main program.

Fig. 2 Flow Chart of Main Program MAIN



(2) Subroutine CLSVAR

Purposes of this subroutine are to extract variable names of basic energy statistics and intermediate variables required from equations of energy balance which are stored in the permanent file and secure a position where variable values are to be stored. Fig. 3 shows flow chart of this subroutine.

In this subroutine, a subroutine REAEQ is recalled first to cause MEQ(I) (I = 1, 80) to memorize equations of energy balance by replacing a word consisting of an equation with a character and NEQ(I) (I = 1, 80), indicators to classify operators and variable names, is calculated. Data format for equations of energy balance contained in the permanent file and principle of calculations for the indicators will be explained later in section of Subroutine READEQ. Secondly, characters from 1 to 80 of NEQ(I) are checked one by one in that order to identify if a character indicates an operator or a variable name.

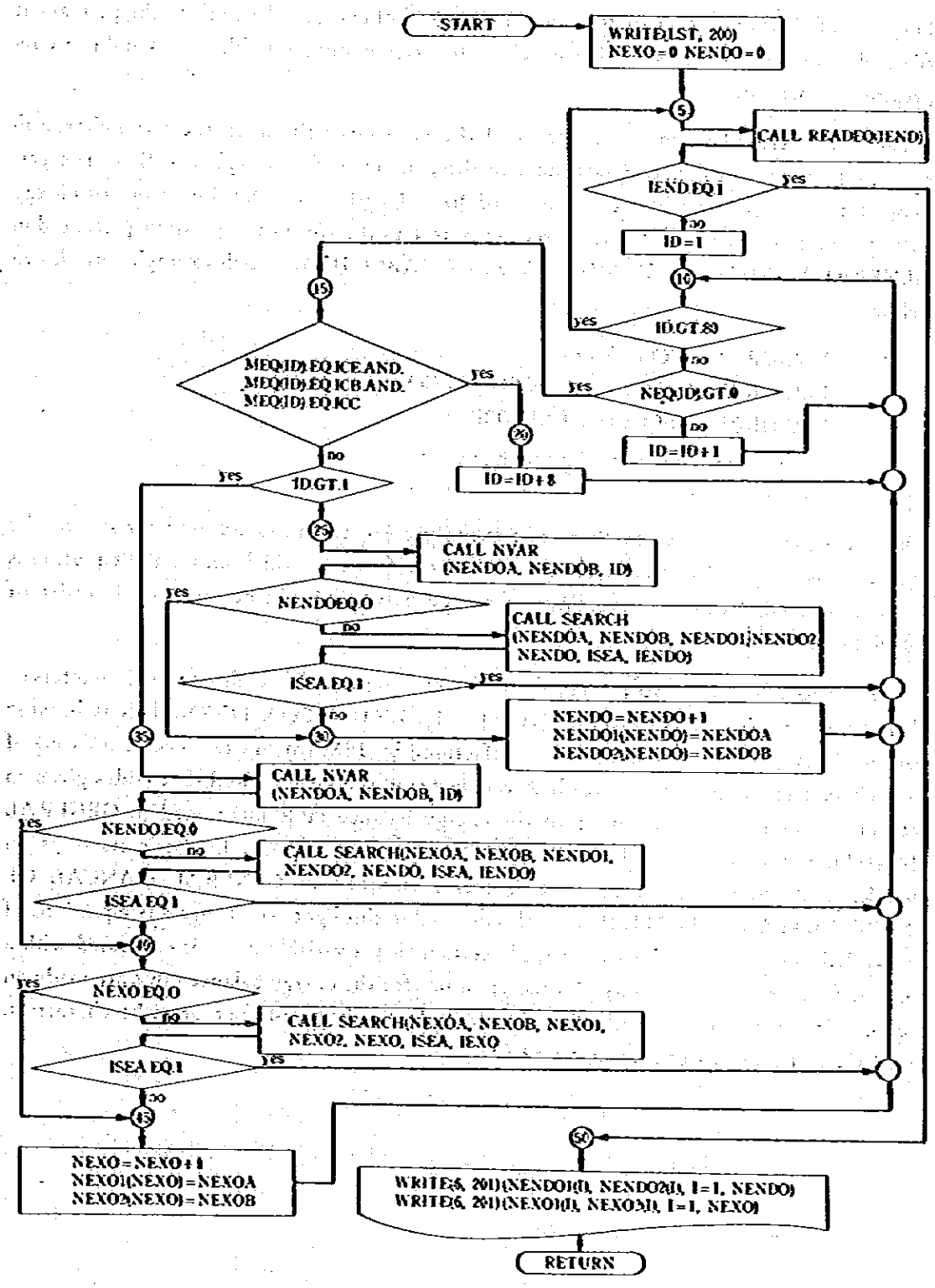
When it is identified that a character indicate an operator, the next character is brought up for a check of same nature.

As to identification of characters in respect to variable names which is carried out when identification of characters indicating operators is over, the first three characters are checked if they consists of EBC because characters consisting of EBC**R** show they represent a numerical figure of the energy balance table. When it is identified that characters represent a numerical figure of the energy balance table, a check on the ninth character is conducted.

When it is identified that characters do not represent a numerical figure of the energy balance table, the figure in the position of I of characters checked is checked if or not it is represented by 1. When I is represented by 1, it is meant that the variable represents an intermediate variable (an endogenous variable) calculated in the process of preparation of energy balance equations. In that case, the following operations should be conducted; to recall NVAR, a subroutine to compose variable names based on each character memorized by MEQ(I), and using a subroutine SEARCH, check the variable name if or not is one already registered. Whenever it is not, the new variable name is to be memorized in NENDO1(J) and NENDO2 (J) and VENDO(J), a position where variable values are stored, is to be prepared.

When I is not represented by 1, it is meant that the variable represents an exogenous variable which does not permit a calculation without outside data given. In this case, the same subroutines as in the cases of intermediate variables are recalled, names of new variables are memorized in NEXO1(J) and NEXO2(J) and VEXO(J), a position where variable values are stored, is prepared.

Fig. 3 Flow Chart of Subroutine CLSVAR



(6)

(3) Subroutine READEQ

Purposes of this subroutine are to read out equations of energy balance from the permanent file and calculate indicators to identify characters representing variable names and those representing operators.

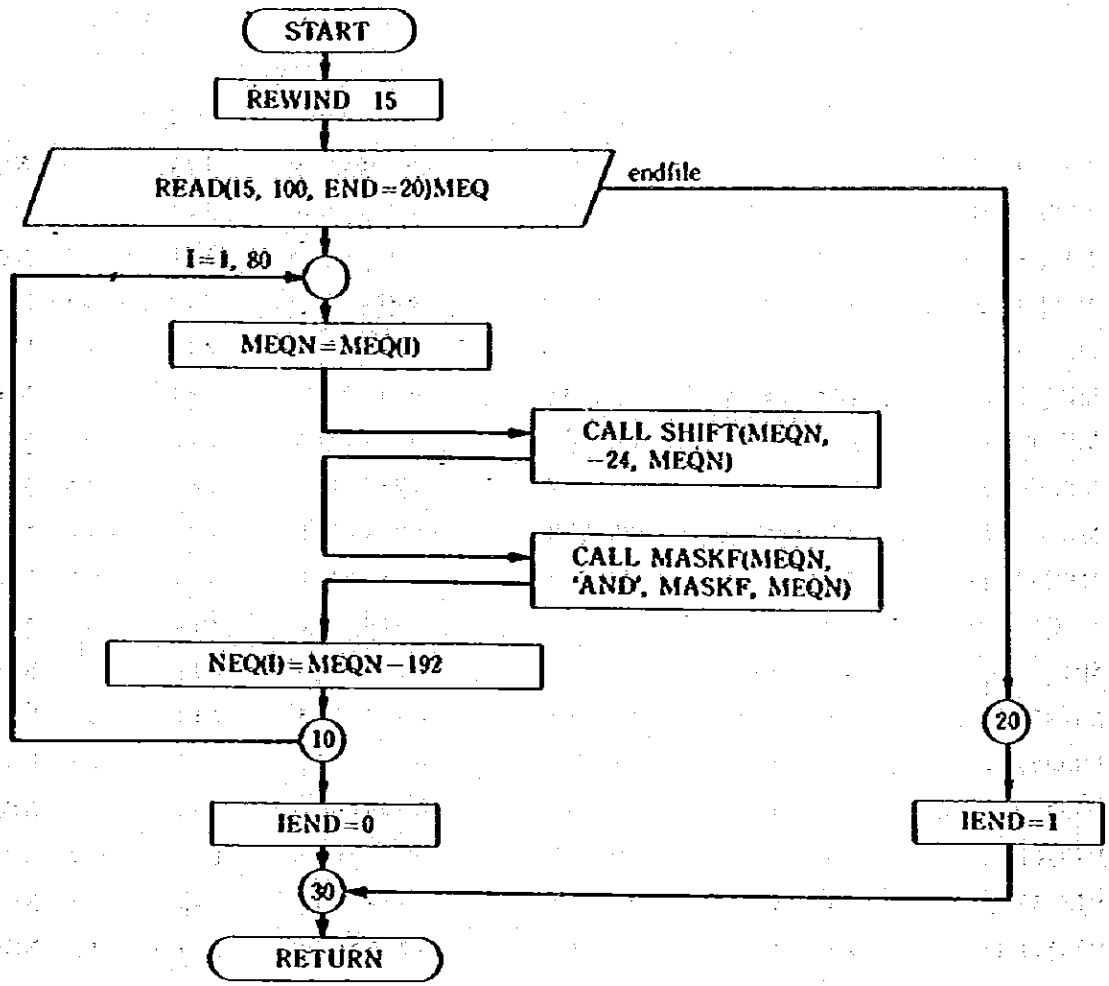
Because it is needed to change contents of the permanent file when there is a change in equations of energy balance, data format of the permanent file is explained first. The permanent file consists of paper card image of fixed length record 80. Equations of energy balance, given a row for each, are stored separately in the form of expression presented in GENERAL MANUAL OF ENERGY BALANCE TABLE III, of which examples are shown below.

```
EBC02R02 = ICCO*FCCO
EBC02R05 = (WCCO (-1)-WCCO)*FCCO
EBC02R06 = EBC02R02 + EBC02R05
.....
.....
```

When an equation consists of characters exceeding 80, two rows are used for storing the equation inserting a character of ; at the end of the first row which means the equation is to be continued. Meantime, equations of energy balance should be arranged in order of calculation rank.

According to a rule, a variable name should be expressed with a code of four characters or eight characters (ex. EBC02R02, WCCO (-1), ICCO, WCCO, FCCO). This is because pertamina has introduced computers manufactured by IBM which use a code consisting of four characters to represent a word. Accordingly, it should be noted that codes given to categories and rows and columns of the energy balance table mentioned in GENERAL MANUAL OF ENERGY BALANCE TABLE I and codes representing basic statistics on energies and thermal quantity scale factors mentioned in GENERAL MANUAL OF ENERGY BALANCE TABLE II were also decided in this light. To change any equations of energy balance, it should be always made certain that a variable name is expressed with a code of four or eight characters. All the programs for the energy balance table are made on the promise that a variable name is given a code consisting of four or eight characters. Fig. 4 shows flow chart of subroutine READEQ.

Fig. 4 Flow Chart of Subroutine READEQ



First of all, a row of an energy balance equation stored in the permanent file is recalled character by character per word according to a format of 80A1 into MEQ(I) (I = 1, 80), an interger-type array. Secondly, without an interruption, NEQ(I) (I = 1, 80) indicator to identify characters representing operators and those representing variable names is calculated. Fig. 5 shows a principle of such a calculation taking an equation of EBC0202 = ICCO+ FCCO as an example.

Fig. 5 Principle of Calculation of Indicator NEQ(I)

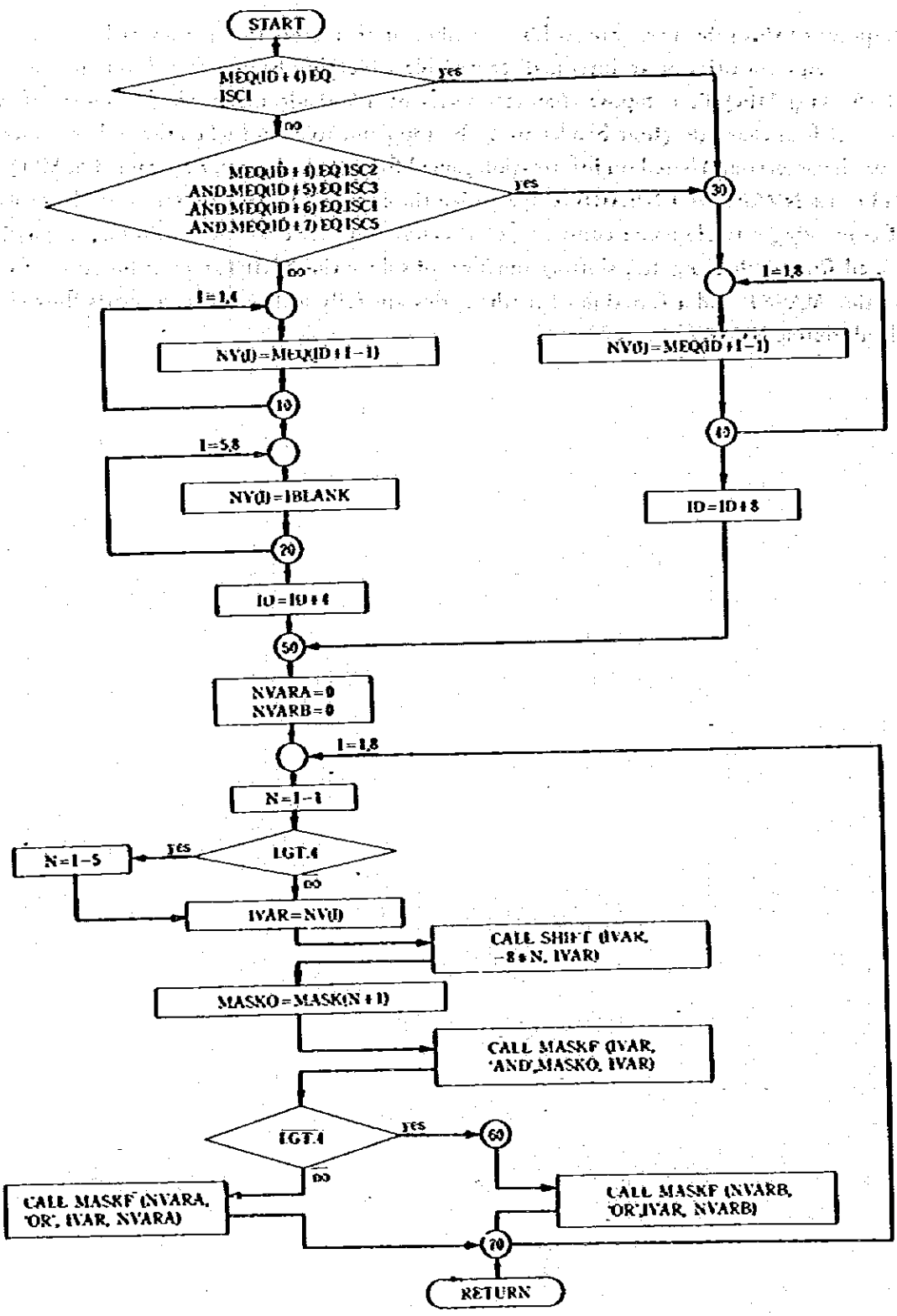
		Subroutine SHIFT	Subroutine MASKF		MEQN −192	
	Character mode	Hexadecimal	MEQN Hexadecimal	MEQN Hexadecimal	Decimal	Code
MEQ(1)	E␣␣␣	C5404040	— C5	000000C5	197 5	NEQ(1) +
MEQ(2)	B␣␣␣	C2404040	— C2	000000C2	194 2	NEQ(2) +
MEQ(3)	C␣␣␣	C3404040	— C3	000000C3	195 3	NEQ(3) +
MEQ(4)	0␣␣␣	F0404040	— F0	000000F0	240 48	NEQ(4) +
MEQ(5)	2␣␣␣	F2404040	— F2	000000F2	242 50	NEQ(5) +
MEQ(6)	R␣␣␣	D9404040	— D9	000000D9	217 15	NEQ(6) +
MEQ(7)	0␣␣␣	F0404040	— F0	000000F0	240 48	NEQ(7) +
MEQ(8)	2␣␣␣	F2404040	— F2	000000F2	242 50	NEQ(8) +
MEQ(9)	=␣␣␣	7E404040	— 7E	0000007E	126 −66	NEQ(9) −
MEQ00	I␣␣␣	C9404040	— C9	000000C9	201 9	NEQ00 +
MEQ01	C␣␣␣	C3404040	— C3	000000C3	195 3	NEQ01 +
MEQ02	C␣␣␣	C3404040	— C3	000000C3	195 3	NEQ02 +
MEQ03	O␣␣␣	D6404040	— D6	000000D6	214 12	NEQ03 +
MEQ04	*␣␣␣	5C404040	— 5C	0000005C	60 −132	NEQ04 −
MEQ05	F␣␣␣	C6404040	— C6	000000C6	198 6	NEQ05 +
MEQ06	C␣␣␣	C3404040	— C3	000000C3	195 3	NEQ06 +
MEQ07	C␣␣␣	C3404040	— C3	000000C3	195 3	NEQ07 +
MEQ08	O␣␣␣	D6404040	— D6	000000D6	214 12	NEQ08 +

When displayed in the mode of character, characters of energy balance equations appear in MEQ(I). However, when hexadecimal display is introduced taking it into a consideration that they are integer-type variables, integers as shown in the second column from left are obtained. While hexadecimal codes representing individual characters of energy balance equations are inclining toward left, they are shifted toward right using a subroutine SHIFT. Part other than hexadecimal codes is cleared to 0 using a subroutine MASKF and turned to integers hexadecimal display as shown in the fifth column from left. When presented in decimal display, they turn to integers as shown in the sixth column from left. Finally, NEQ(I) is obtained by substracting 192 (hexadecimal code C0) from these integers. As known form codes given to NEQ(I), codes of − are used for operator and special character while codes of + are used for alphanumeric. Accordingly, it is possible to identify either of a variable name or an operator is represented by the characters by judging codes, plus or minus, of NEQ (I). While names of variables of equations of energy balance, which consist of & and (−1), are expressed as special character, they can be specifically processed in a subroutine CLSVAR.

(4) Subroutine NVAR

Purposes of this subroutine are to learn number of characters forming a variable name of a basic energy statistics or an intermediate variable which has been referred to in the process of checking MEQ(I), compose character series of a variable name which consists of two units of four-character (four blanks are to be supplemented later when the code consists of four characters only) based on information gained from each character contained in MEQ(I), and cause NVARA and NVARB to memorize the composed character series. In the process of composing variable name consisting of two units of four-character based on information gained from each character, shifting function of subroutine SHIFT, 0 clear function of subroutine MASKF and a function of mathematics are fully utilized. Fig. 6 shows flow chart of subroutine NVAR.

Fig. 6 Flow Chart of Subroutine NVAR



Composition of variable names is explained below by taking an eight-character code, CADO &AGR, as an example. According to DO loop shown in the first half of the flow chart, information gained from each character is first transmitted to NV(J) (J = 1, 8). That is;

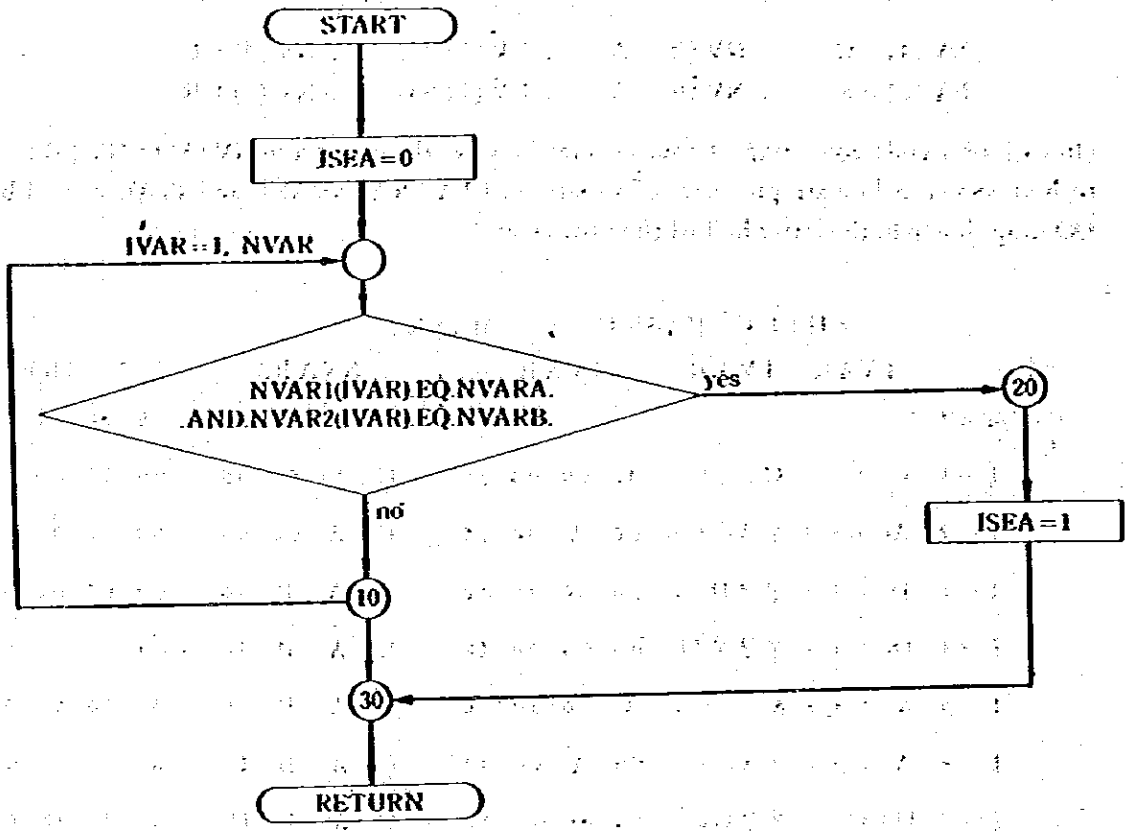
NV (1) = C , NV (2) = A , NV (3) = D , NV (4) = O ,
NV (5) = & , NV (6) = A , NV (7) = G , NV (8) = R

(In case of a code consisting of four characters only, the parts from NV (5) to NV (8) turn to be.) Shown below are processes of variation of NVARA, NVARB and IVAR caused by DO loop shown in the latter half of the flow chart.

		SHIFT IVAR	MASKF IVAR	MASKF IVAR	NVARA	NVARB
Do loop not started					00 00 00 00	00 00 00 00
I = 1	C␣␣␣	C␣␣␣	C 00 00 00	C 00 00 00	00 00 00 00
I = 2	A␣␣␣	?A␣␣	00 A 00 00	C A 00 00	00 00 00 00
I = 3	D␣␣␣	??D␣	00 00 D 00	C A D 00	00 00 00 00
I = 4	O␣␣␣	???O	00 00 00 O	C A D O	00 00 00 00
I = 5	&␣␣␣	&␣␣␣	& 00 00 00	C A D O	& 00 00 00
I = 6	A␣␣␣	?A␣␣	00 A 00 00	C A D O	& A 00 00
I = 7	G␣␣␣	??G␣	00 00 G 00	C A D O	& A G 00
I = 8	R␣␣␣	???R	00 00 00 R	C A D O	& A G R

Thus, four characters of 'CADO' are memorized in NVARA and another four characters of '&AGR' in NVARB. Meantime, 00 is an expression attributable to hexadecimal codes. '?' does not represent definite character but means that definite character is unknown, which, in turn, requires an operation of 0 clear using subroutine MASKF.

Fig. 7 Flow Chart of Subroutine SEARCH



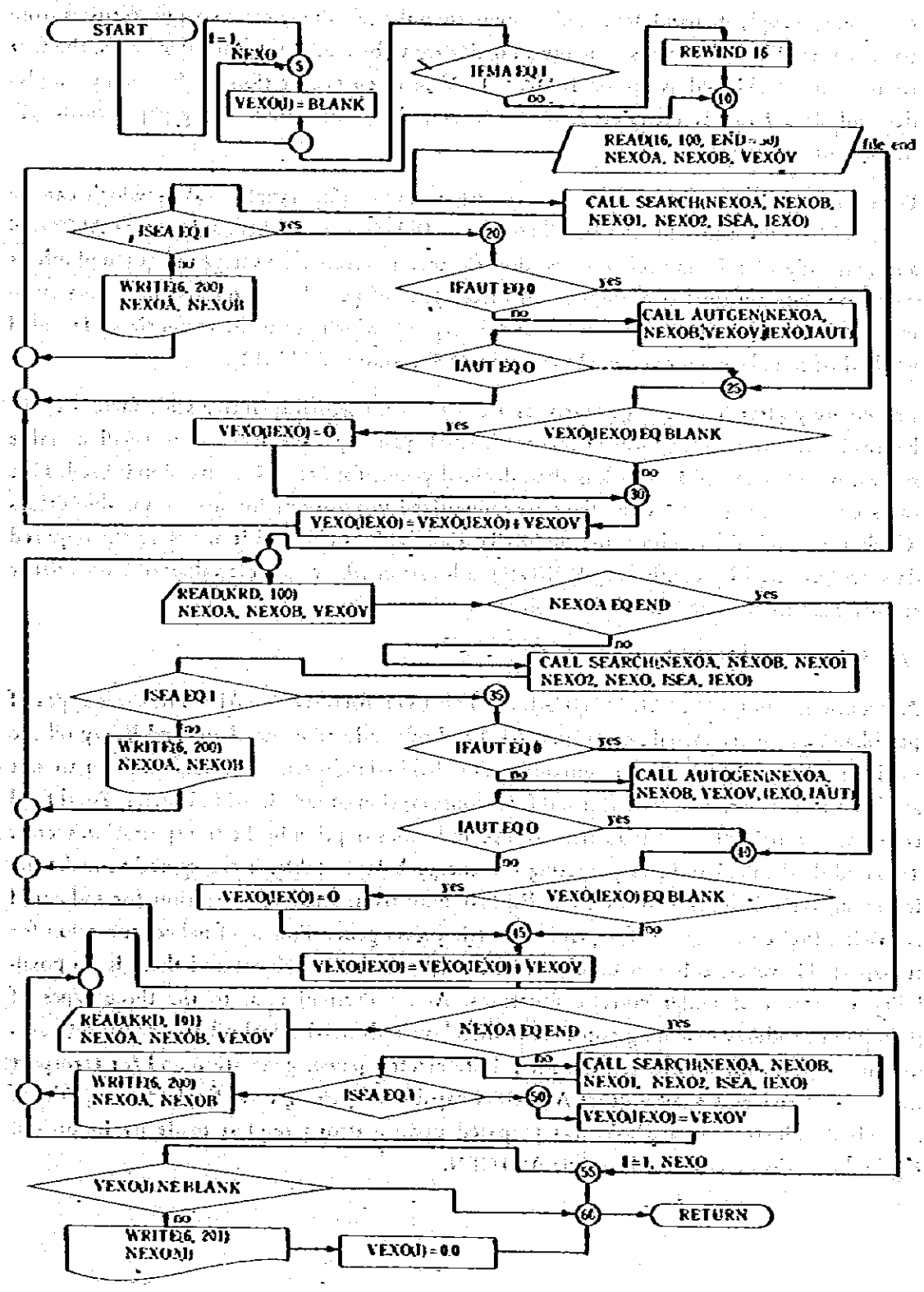
(5) Subroutine SEARCH

Purposes of this subroutine are to check a list of variable names form the beginning when variable names representing basic energy statistics or intermediate variables are retrieved search positions where variable values are to be memorized, and check if or not variable names retrieved have already registered. Fig. 7 shows flow chart of this subroutine. Whether registered or not can be judged from ISEA, 0 or 1, and positions where variable values are to be memorized can be searched based on values of IVAR.

(6) Subroutine DATSET

Purposes of this subroutine are to read out data contained in basic energy statistics from the file prepared by using the energy supply-demand data bank system or paper cards, and cause them to be memorized in positions where variable values corresponding to individual variable names are stored. Fig. 8 shows flow chart of subroutine DATSET.

Fig. 8 Flow Chart of Subroutine DATSET



To start with, basic energy statistics are to be read out from the file prepared by using the energy supply-demand data bank system, then the remaining basic energy statistics from paper cards. When all the basic energy statistics are to be read out from paper cards, the first route is to be skipped as option IFMA = 1. Also, when preparation of the energy supply-demand data bank is completed in the future, the second route using paper cards will become unnecessary.

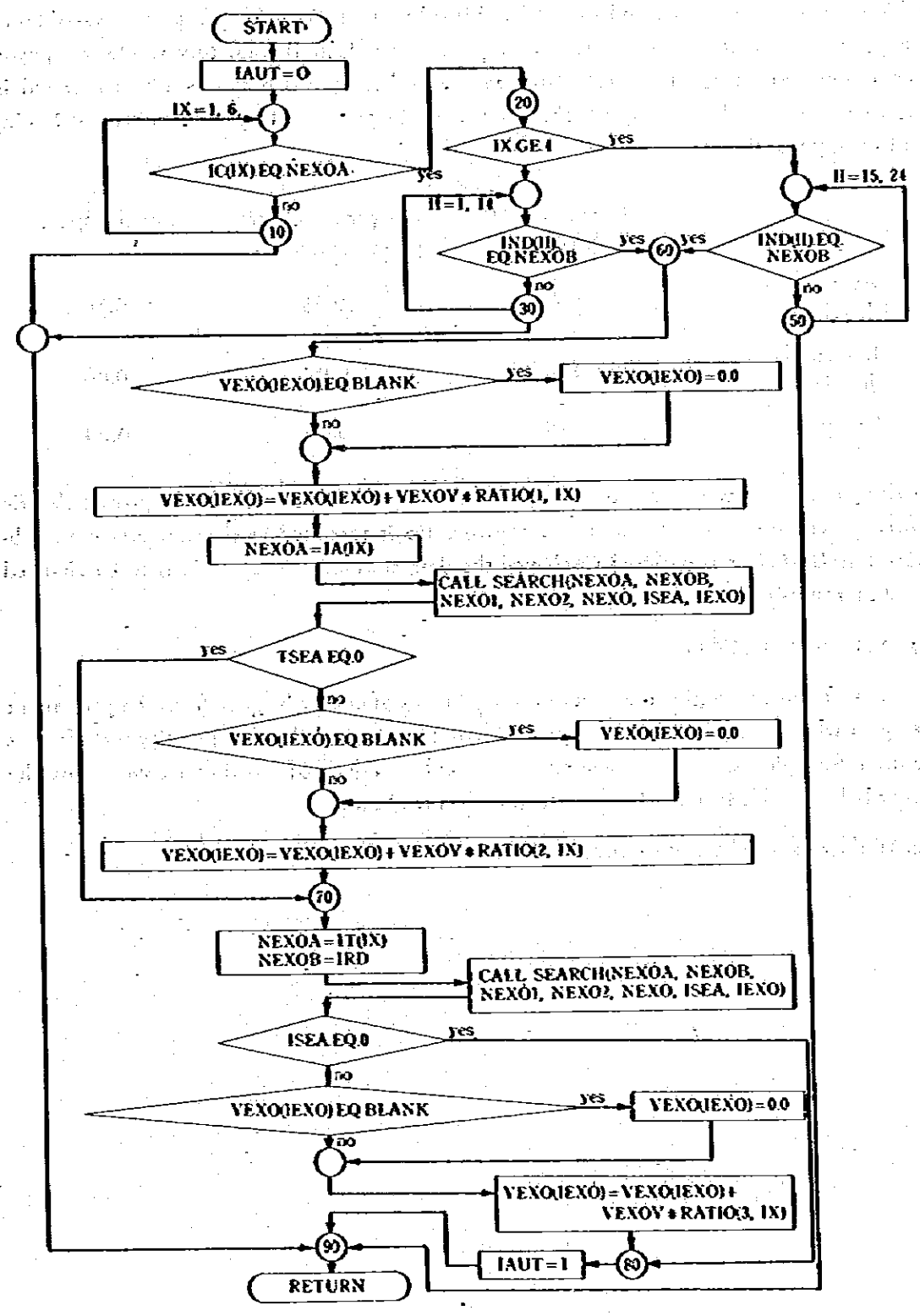
Data thus read out are memorized in positions for storing variable values which can be searched by subroutine SEARCH. When option IFAUT = 1 is taken, subroutine AUTGEN automatically calculated fuel consumption for private electric power generation and others based on data on final consumption of three types of petroleum products including automotive diesel oil, industrial diesel oil and heavy oil, which are to be memorized. Detailed method of calculation is explained in section of Subroutine AUTGEN.

Immediately after basic energy statistics are read out, thermal quantity scale factors are to be read out from paper cards. Because thermal quantity scale factors are small in value representing numerical figures less than decimal point, format of E conversion is used. Like cases of basic energy statistics, they are memorized in positions for storing variable values which are searched by subroutine SEARCH. Finally, it is checked if or not all the required data are prepared by confirming VEXO(I), a location where variable values of basic energy statistics are to be stored, from the beginning.

(7) Subroutine AUTGEN

As mentioned in GENERAL MANUAL OF ENERGY BALANCE TABLE II, three types of petroleum products including automotive diesel oil, industrial diesel oil and heavy oil are used for private electric power generation in individual industries, but data on them are not available as they are included in total final consumption of individual industries. Total final consumption of individual industries also include consumption in the transportation sector. To avoid dual calculations in preparing the energy balance table, it is required to make the following data independent as to individual industries; final consumption for industrial activities, fuel consumption for private electric power generation and final consumption for transport. However, this can be considered only as a future subject and there is no possibility to realize it under current situations. As an alternative, as to the three types of petroleum products including automotive diesel oil, industrial diesel oil and heavy oil, ratio of consumption for industrial uses, for private electric power generation and for transport were postulated and a subroutine AUTGEN capable of parting total final consumption of individual industries as a whole was prepared upon a strong request made by Indonesia. Fig. 9 shows flow chart of subroutine AUTGEN.

Fig. 9 Flow Chart of Subroutine AUTGEN



(16)

First of all, variable names are checked to learn if or not basic energy statistics are those which are to be processed and parted by this subroutine. When they represent variables to be processed by this subroutine, consumption for industrial uses, private electric power generation and transport are calculated in this order, of which results are memorized in separate positions for storing variable values. Ratio postulated by the Ministry of Mining and Energy this time are as follows;

	For industrial activities	For private electric power generation	For transport
Automotive diesel oil	0.45	0.45	0.10
Industrial diesel oil	1.00	0.00	0.00
Heavy oil	1.00	0.00	0.00

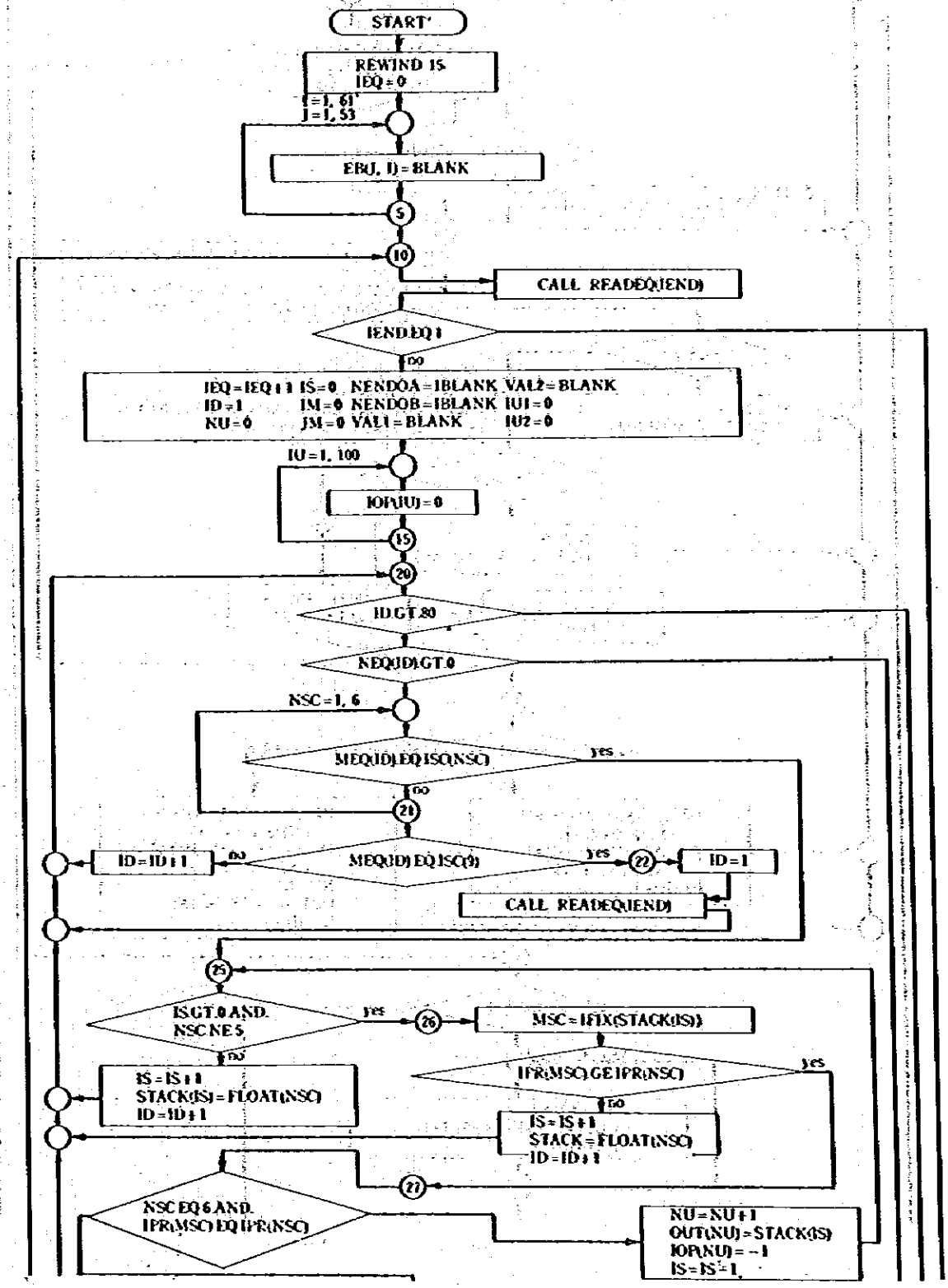
As shown above, it was assumed that only automotive diesel oil was used for private electric power generation. Because the above shown ratio is recorded as data statement in subroutine AUTGEN, it is required to change the data statement when ratio is to be changed based on results of future survey.

(8) Subroutine EBCALC

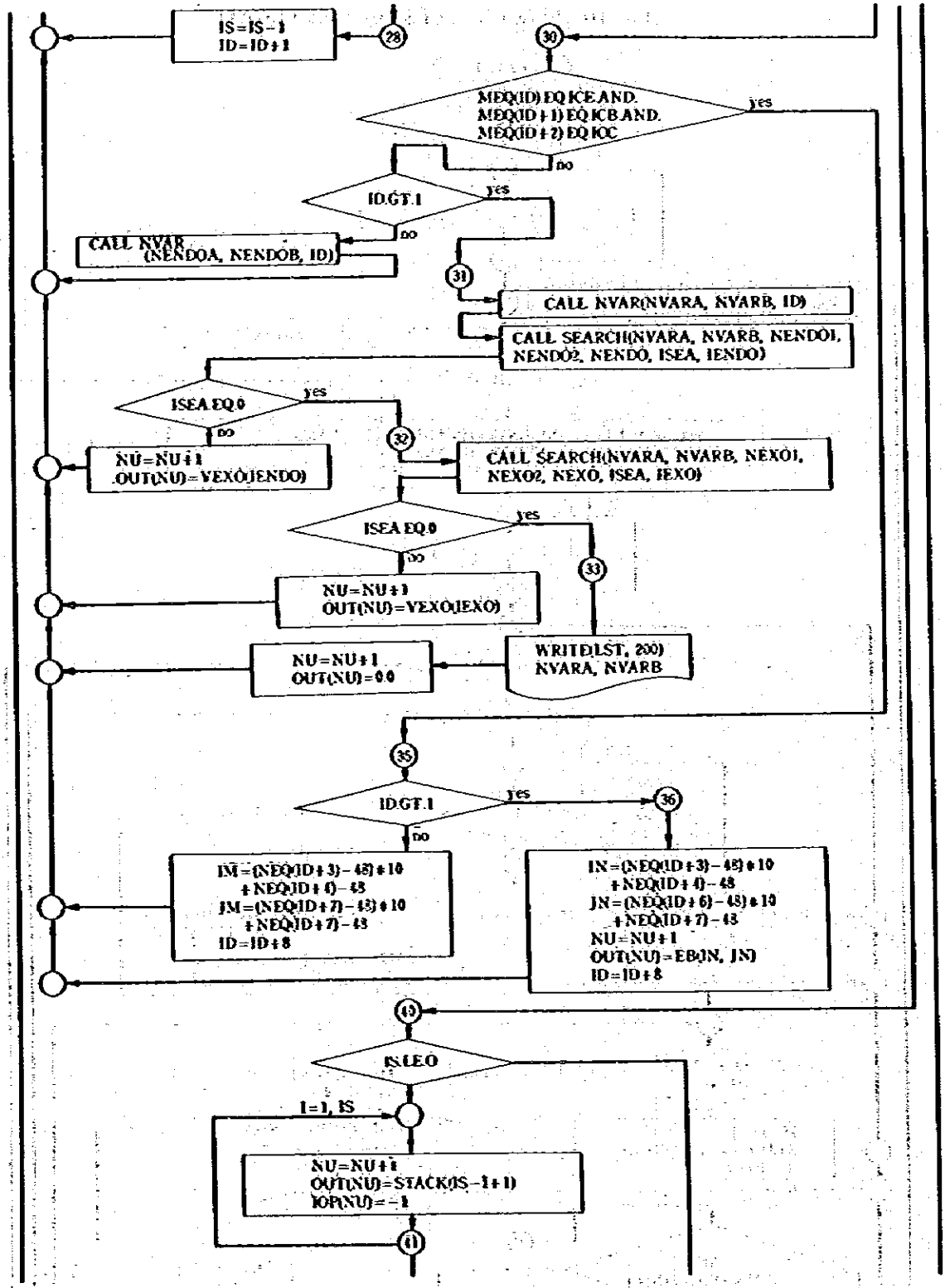
Purposes of this subroutine are to read out equations of energy balance from the permanent file again when preparation of basic statistics on energies and thermal quantity scale factors required for calculation is completed, and calculate values of individual columns of the energy balance table in accordance with equations read out.

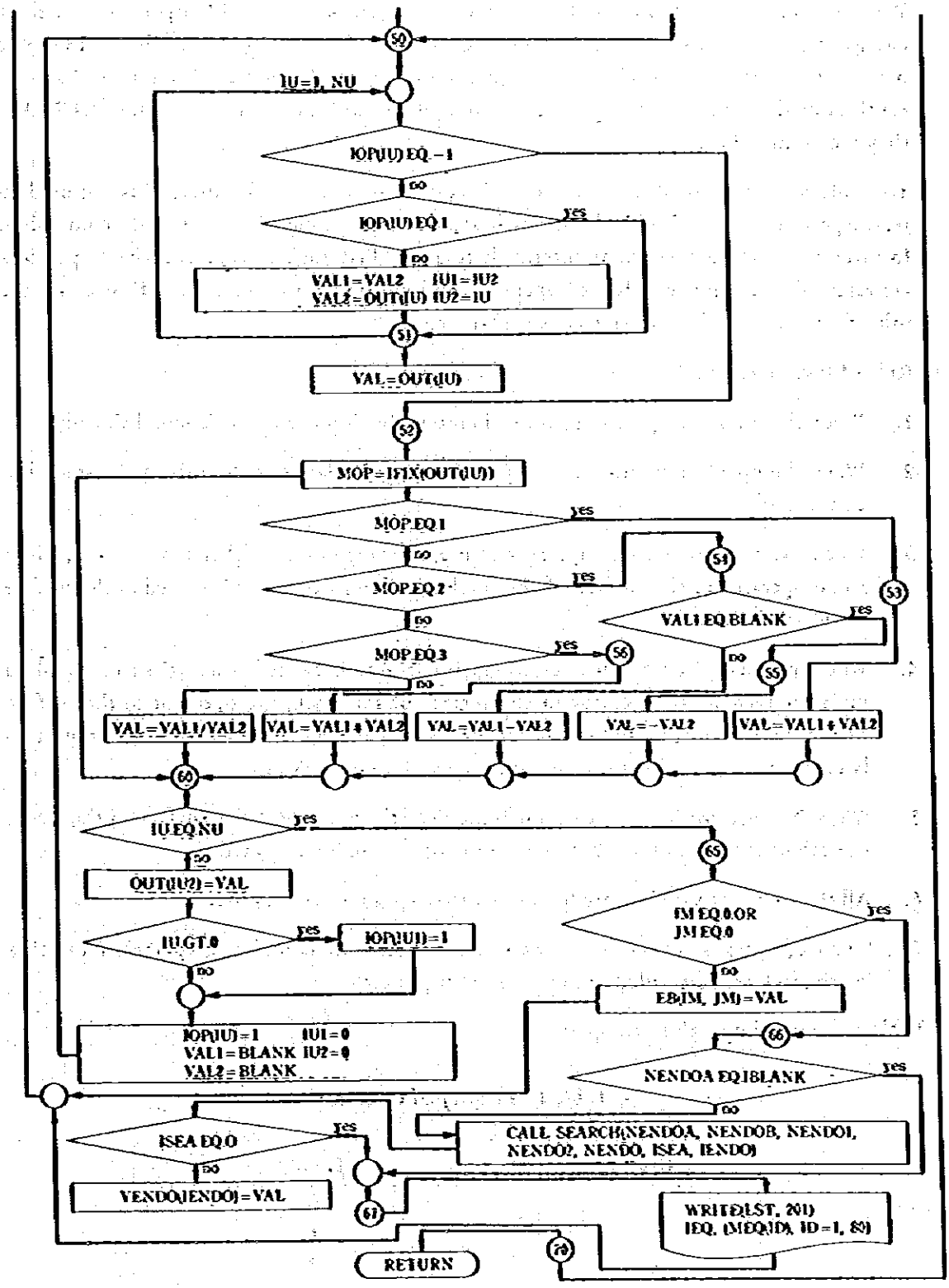
Fig. 10 shows flow chart of subroutine EBCALC.

Fig. 10 Flow Chart of Subroutine EBCALC



(18)


IS=IS-1
ID=ID+1
28
30
MEQ(ID) EQ ICE AND.
MEQ(ID+1) EQ ICB AND.
MEQ(ID+2) EQ ICC
yes
no
ID.GT.1
yes
no
CALL NVAR
(NENDOA, NENDOB, ID)
31
CALL NVAR(NVARA, NVARB, ID)
CALL SEARCH(NVARA, NVARB, NENDO1,
NENDO2, NENDO, ISEA, IENDO)
ISEA.EQ.0
yes
no
NU=NU+1
OUT(NU)=VEXO(IENDO)
32
CALL SEARCH(NVARA, NVARB, NEXO1,
NEXO2, NEXO, ISEA, IEXO)
ISEA.EQ.0
yes
no
33
NU=NU+1
OUT(NU)=VEXO(IEXO)
NU=NU+1
OUT(NU)=0.0
WRITE(LST, 200)
NVARA, NVARB
35
ID.GT.1
yes
no
36
IM=(NEQ(ID+3)-48)*10
+NEQ(ID+4)-48
JM=(NEQ(ID+7)-48)*10
+NEQ(ID+7)-48
ID=ID+8
IN=(NEQ(ID+3)-48)*10
+NEQ(ID+4)-48
JN=(NEQ(ID+6)-48)*10
+NEQ(ID+7)-48
NU=NU+1
OUT(NU)=EB(IN, JN)
ID=ID+8
49
IS.LE.0
I=1, IS
NU=NU+1
OUT(NU)=STACK(IS-I+1)
IOP(NU)=-1
41


50
IU=1, NU
IOP(IU) EQ -1
no
IOP(IU) EQ 1
yes
no
VAL1=VAL2 IU1=IU2
VAL2=OUT(IU) IU2=IU
51
VAL=OUT(IU)
52
MOP=IFIX(OUT(IU))
MOP EQ 1
yes
no
MOP EQ 2
yes
no
MOP EQ 3
yes
no
54
53
VAL1 EQ BLANK
yes
no
55
56
VAL=VAL1/VAL2
VAL=VAL1*VAL2
VAL=VAL1-VAL2
VAL=-VAL2
VAL=VAL1+VAL2
60
IU EQ NU
yes
no
OUT(IU2)=VAL
IU GT 0
yes
IOP(IU1)=1
no
IOP(IU)=1 IU1=0
VAL1=BLANK IU2=0
VAL2=BLANK
65
IM EQ 0 OR
JM EQ 0
yes
no
EB(IM, JM)=VAL
66
NENDOA EQ BLANK
yes
no
ISEA EQ 0
yes
no
CALL SEARCH(NENDOA, NENDOB, NENDO1,
NENDO2, NENDO, ISEA, IENDO)
VENDO(IENDO)=VAL
61
WRITE(LST, 201)
IEQ, (MEQ(ID), ID=1, 8)
RETURN

Because methods to decode and classify variable names representing operator and basic energy statistics, variable names representing values of the energy balance table and variable names of intermediate variables from equations of energy balance read out as well as subroutines used for the aforementioned decoding were explained in the section of CLSVAR, they are omitted here.

To made a calculation in accordance with equations of energy balance, it is required to rearrange operators and variable names based on a rule called inverse poland conversion. In inverse poland conversion, an intermediate area called stack is prepared, where operators are reserved to rearrange orders of operators and individual variable names. First of all, the rule of inverse poland conversion is explained below.

Rule of Inverse Poland Conversion

1. When the stack is empty, an operator in input area is moved there unconditionally.
2. When the operator in input area represents (, it is placed at the top of the stack unconditionally.
3. When priority given to an operator in input area is ranked higher than priority given to an operator in the surface of the stack, the former operator is placed in the surface of the stack.
4. When priority given to an operator in input area is ranked lower than or equal to priority given to an operator in the surface of the stack, the operator in the surface of the stack is transmitted to output area. Comparison mentioned above are repeatedly made among operators forwarded to the surface of the stack.
5. When the operator in input area represent) and the operator in the surface of the stack, (, both of them are erased before the next operation is conducted.
6. All the names of variables are forwarded to output area as they are.
7. When operations concerning numerical expression are completed, symbols remaining in the stack are forwarded one by one to output area.

Table 1 shows priority given to operators.

Table 1 Priority of Operators

Operator	Priority
=	0
( )	1
+ -	2
* /	3
↑	4

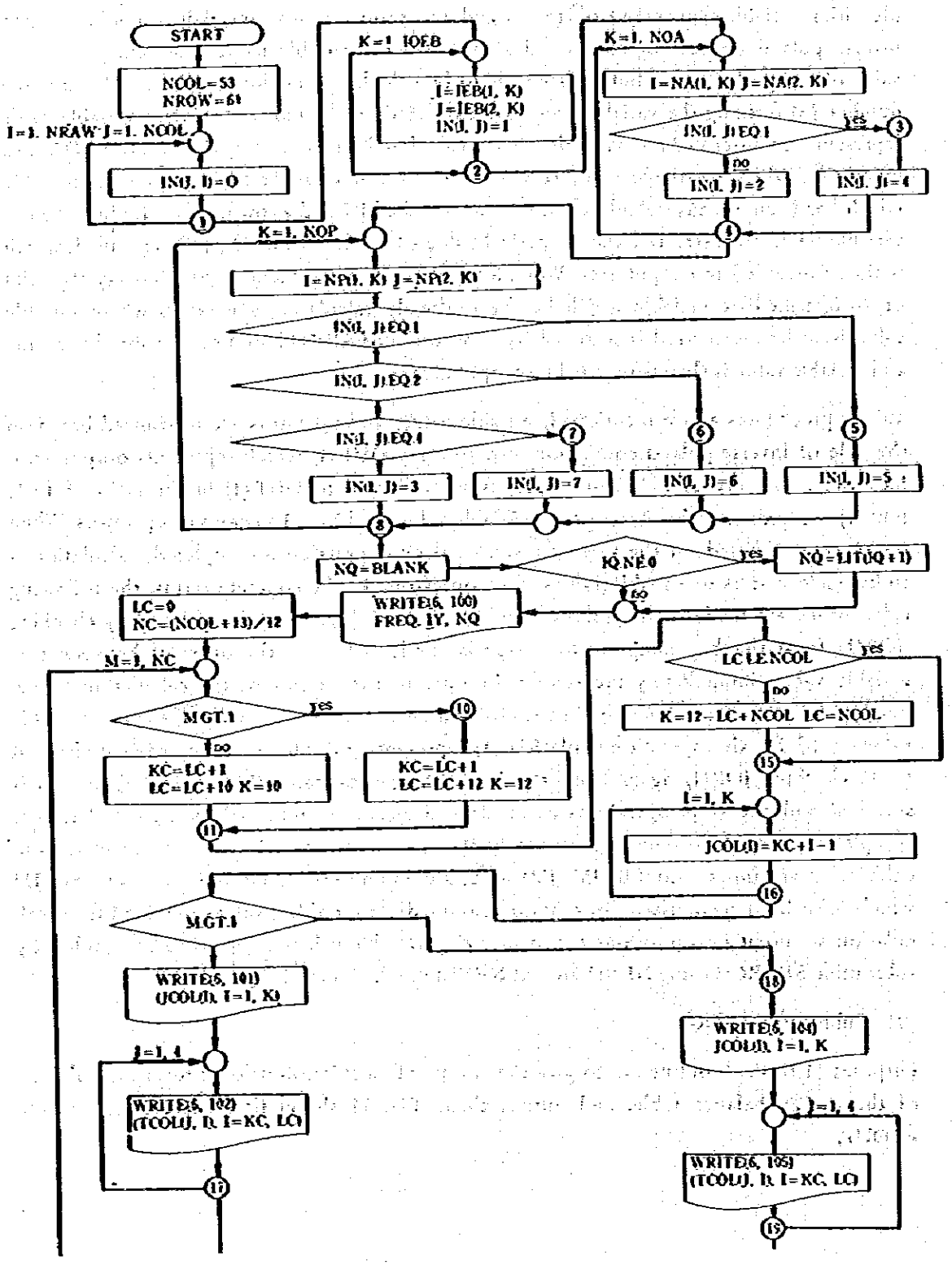
After energy balance equations are read out by subroutine READEQ, subroutine EBCALC identifies variable names and operators and the former is rearranged in accordance with inverse poland conversion mentioned above. When a variable name represents numerical value of energy balance tabular statement to be calculated, a column number IM and a row number JM forming the variable name are extracted and memorized. When a variable name represents an intermediate variable to be calculated, it is memorized in NENDOA and NENDOB. When a variable name represents numerical value of the energy balance table which has been already calculated, a column number IN and a row number JN forming the variable name are extracted and numerical value of a column EB (IN, JN) is recalled, which is then forwarded to output area. When a variable name represents a basic energy statistics or an intermediate variable which has been already calculated, a position where variable value is to be memorized is searched by subroutine SEARCH based on the variable name, and variable value is then forwarded to output area.

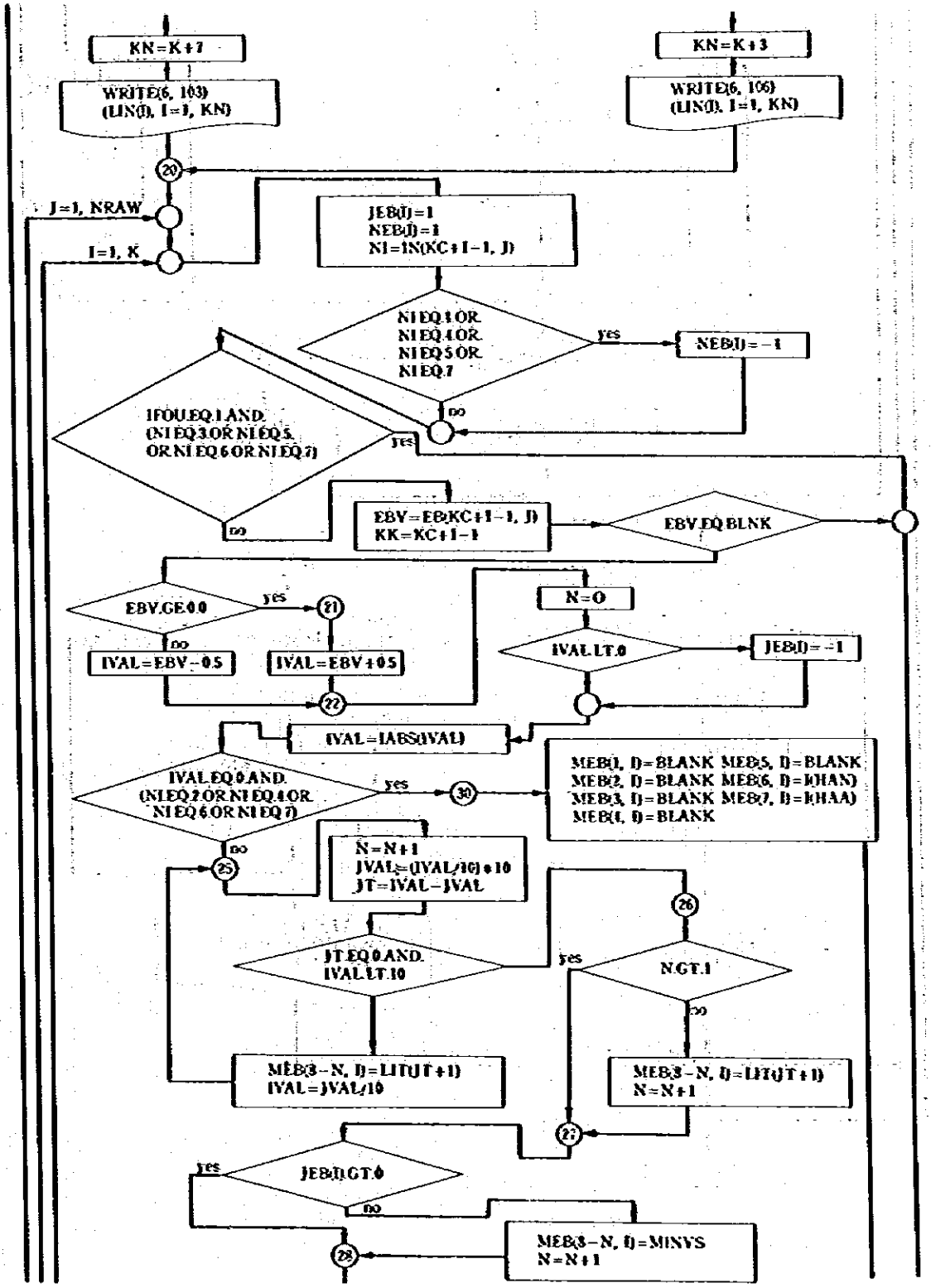
Taking procedures above mentioned, variable values and operators are rearranged based on the rule of inverse poland conversion into an array OUT (I) which represents output area. Meantime, an array of indicator IOP (I) is subordinated to OUT (I) in the ratio of 1 : 1. IOP (I) is represented by 0 in cases of variable values and by −1 in cases of operators. When rearrangement based on the rule of inverse poland conversion is completed, calculation is to be made first as to variable values, then operators. In the concrete terms, the following calculations are made in the subroutine: the first −1 (operator) is retrieved by checking IOP (I) from the beginning; an operation is conducted using the operator between two variable values immediately preceeding the operator; the result of the calculation is memorized in the position storing the variable value close to operator of the two variable values used for the operation while IOP (I) representing distant variable value is changed to 1; checking IOP (I) again from the beginning, an operator (having IOP (I) of −1) is searched and the same operations as mentioned above are repeated; when calculation is completed, in cases of numerical values of the energy balance table, values obtained from calculation are input into EB (IM, JM) using a column number IM and a row number JM which have been memorized. In cases of intermediate variables, values obtained from calculation are input into positions for memorizing variable values where is to be searched by subroutine SEARCH using NENDOA and NENDOB which have been memorized.

(9) Subroutine EBOUT

Purposes of this subroutine are to give the results of calculation titles of rows and columns of the energy balance table, and output them. Fig. 11 shows flow chart of subroutine EBOUT.

Fig. 11 Flow Chart of Subroutine EBOUT




KN=K+7
WRITE(6, 103)
(LIN(I), I=1, KN)
KN=K+3
WRITE(6, 106)
(LIN(I), I=1, KN)
20
J=1, NRAW
I=1, K
JEB(I)=1
NEB(I)=1
N1=IN(KC+I-1, J)
N1EQ.1.OR.
N1EQ.4.OR.
N1EQ.5.OR.
N1EQ.7
yes
NEB(I)=-1
no
IFOU.EQ.1.AND.
(N1EQ.3.OR.N1EQ.5.
OR.N1EQ.6.OR.N1EQ.7)
yes
no
EBV=EB(KC+I-1, J)
KK=KC+I-1
EBV.EQ.BLNK
EBV.GE.0.0
yes
21
no
IVAL=EBV-0.5
IVAL=EBV+0.5
22
N=0
IVAL.LT.0
JEB(I)=-1
IVAL=IABS(IVAL)
IVAL.EQ.0.AND.
(N1EQ.2.OR.N1EQ.4.OR.
N1EQ.6.OR.N1EQ.7)
yes
30
MEB(1, I)=BLANK MEB(5, I)=BLANK
MEB(2, I)=BLANK MEB(6, I)=KHAN)
MEB(3, I)=BLANK MEB(7, I)=KHAA)
MEB(4, I)=BLANK
no
25
N=N+1
JVAL=(IVAL/10)*10
JT=IVAL-JVAL
26
JT.EQ.0.AND.
IVAL.LT.10
yes
N.GT.1
no
MEB(3-N, I)=LITU(JT+1)
IVAL=JVAL/10
MEB(3-N, I)=LITU(JT+1)
N=N+1
27
yes
JEB(I).GT.0
no
28
MEB(3-N, I)=MINVS
N=N+1

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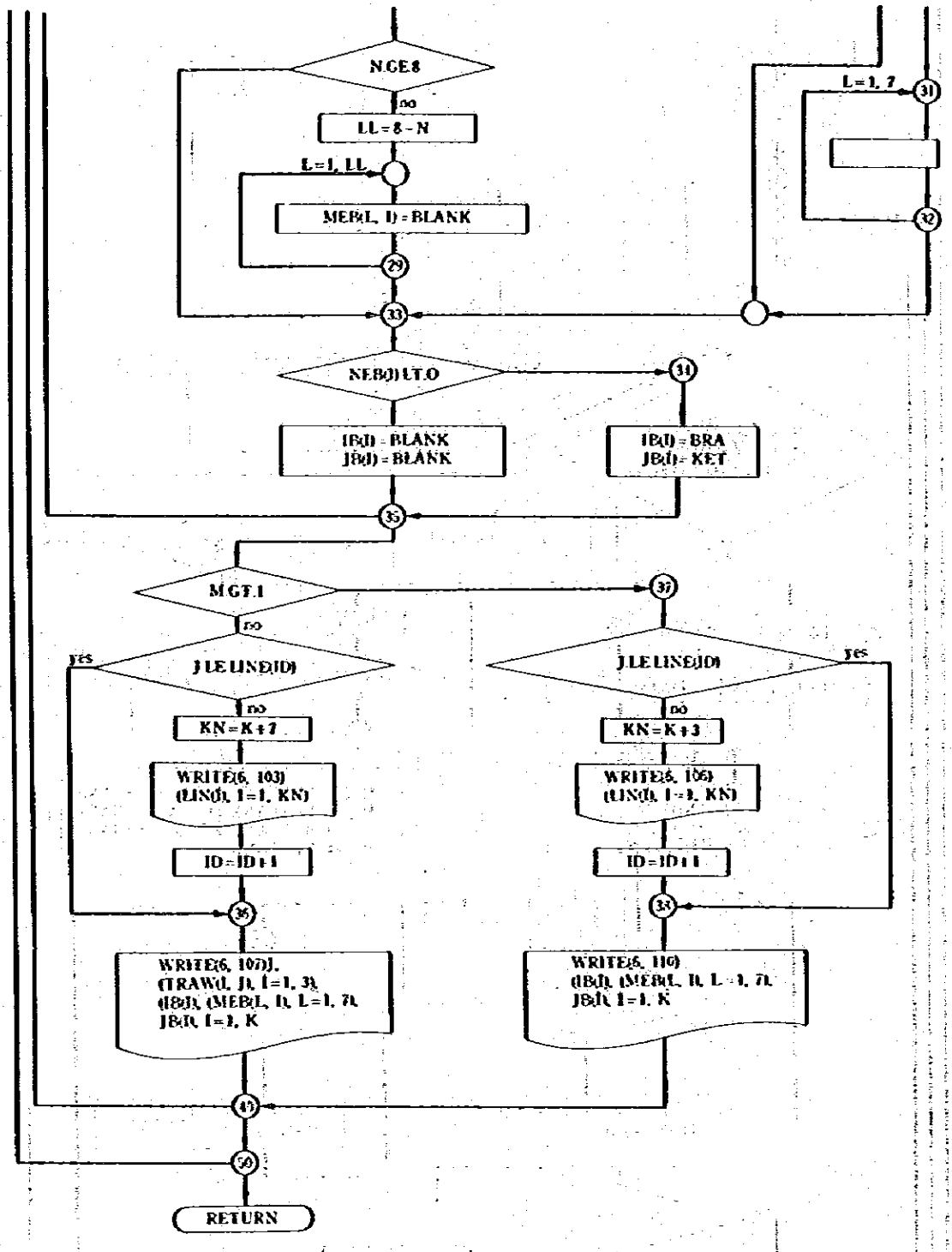
N.GE.8
no
LL = 8 - N
L = 1, LL
MEB(L, I) = BLANK
29
33
L = 1, 7
31
32
NEB(I).LT.0
34
IB(I) = BLANK
JB(I) = BLANK
IB(I) = BRA
JB(I) = KET
35
M.GT.1
37
no
yes
J.LE.LIND(ID)
J.LE.LIND(ID)
yes
no
KN = K + 7
KN = K + 3
WRITE(6, 103)
(LIN(I), I = 1, KN)
WRITE(6, 106)
(LIN(I), I = 1, KN)
ID = ID + 1
ID = ID + 1
36
33
WRITE(6, 107)J,
(TRAW(I, J), I = 1, 3),
(IB(I), (MEB(L, I), L = 1, 7),
JB(I), I = 1, K
WRITE(6, 110)
(IB(I), (MEB(L, I), L = 1, 7),
JB(I), I = 1, K
41
50
RETURN

Maximum number of characters printed in a line by Line Printer of a computer is 132. Accordingly, an energy balance table to be output consists of five pieces of sheet which are classified based on columns. To prepare an energy balance table, it is necessary to leave columns where calculation of energy balance is not to be made blank, and to output a numerical value of 0 into a column of which calculation results in 0. When output is made based on numerical value conversion using I conversion or F conversion, the energy balance table becomes unsatisfactory because numerical value of 0 is shown in columns where should be left blank. In this light, subroutine EBOUT, using A conversion which features character mode for output, is able to distinguish columns of 0 from those where should be left bank. Meantime, this requires an establishment of a route in the subroutine to process values of calculation and convert them into information of character mode of decimal display.

In addition, special processing as mentioned below are carried out in preparing the energy balance table. The first special processing is to state NA in the columns where no calculation is made due to absence of basic energy statistics. The second is to state numerical values in parentheses in several columns as reference values which are not to be included in lengthwise and crosswise addition. The third is related to units.

That is, while there are two types of output tables of an energy balance table, one using a unified unit and the other using units peculiar to individual types of energy resources, several columns have to be left blank in case of the latter because it is not possible to make an addition between heterogenous items like an apple and an orange. Columns of energy balance table for which special processing aforementioned should be made are given column numbers and row numbers beforehand in the form of data statements.

In subroutine EBOUT, IEB(I, J) are calculated first as indicator of columns for which special processing should be made based on column numbers and row numbers aforementioned. While one of values ranging from 0 to 7 is applied for IEB (I, J), processing to be made for each value are as follows.

(26)

IEB (I, J)	Processing
0	Special processing not needed.
1	Parentheses are required.
2	Output should be NA when calculation value is 0.
3	Column is to be left blank when units peculiar to individual energy resources are used in the table.
4	Parentheses are required and output should be NA when calculation value is 0.
5	Parentheses are required and column should be left blank when units are not unified.
6	Output should be NA when calculation value is 0 and column should be left blank when unit are not unified.
7	Parentheses are required, output should be NA when calculation value is 0 and column should be left blank when units are not unified.

Secondly, output of titles of rows are generated, which is followed by conversion into output information of character mode to be made based on calculation value of each row, which are then generated as output. As to titles of rows, it is decided to print out them at the beginning of output only. When configuration of rows and columns of the energy balance table as well as titles are to be changed, data statements within this subroutine are also to be modified.

3. List of Energy Balance Calculation Program

```
C                                                                       MAIN0010
C       MAIN PROGRAM FOR ENERGY BALANCES                                MAIN0020
C                                                                       MAIN0030
      COMMON /OPT/ FREQ,IY,IQ,IFMA,IFOU,IFAUT                           MAIN0040
C                                                                       MAIN0050
C                                                                       MAIN0060
      DATA KRD/5/                                                       MAIN0070
C                                                                       MAIN0080
C                                                                       MAIN0090
  100 FORMAT(A4,2I4)                                                    MAIN0100
  101 FORMAT(3I4)                                                       MAIN0110
C                                                                       MAIN0120
C       READ FREQUENCY,YEAR,QUARTER                                     MAIN0130
C                                                                       MAIN0140
      READ(KRD,100) FREQ,IY,IQ                                          MAIN0150
C                                                                       MAIN0160
C       READ OPTIONS                                                    MAIN0170
C                                                                       MAIN0180
C        IFMA=1:  ALL DATA ARE READ MANUALLY, IFMA=0: MOST OF DATA      MAIN0190
C                 ARE CALLED FROM E.D.B.                                MAIN0200
C        IFOU=1:  ORIGINAL UNIT TABLE, IFOU=0: COMMON UNIT TABLE;       MAIN0210
C        IFAUT=1: AUTO-GENERATION DATA ARE CALCULATED, IFAUT=0:         MAIN0220
C                 AUTO-GENERATION DATA ARE READ MANUALLY                MAIN0230
C                                                                       MAIN0240
      READ(KRD,101) IFMA,IFOU,IFAUT                                     MAIN0250
C                                                                       MAIN0260
C       READ EQUATIONS AND CLASSIFY VAR. NAMES                          MAIN0270
C                                                                       MAIN0280
      CALL CLSVAR                                                       MAIN0290
C                                                                       MAIN0300
C       SET ORIGINAL RAW DATA                                           MAIN0310
C                                                                       MAIN0320
      CALL DATSET                                                       MAIN0330
C                                                                       MAIN0340
C       CALC. ENERGY BALANCES TABLE                                     MAIN0350
C                                                                       MAIN0360
      CALL EBCALC                                                       MAIN0370
C                                                                       MAIN0380
C       PRINT OUT ENERGY BALANCES TABLE                                 MAIN0390
C                                                                       MAIN0400
      CALL EBOUT                                                        MAIN0410
C                                                                       MAIN0420
C                                                                       MAIN0430
      STOP                                                              MAIN0440
      END                                                               MAIN0450
```

```
      SUBROUTINE CLSVAR                                                 CLVR0010
C                                                                       CLVR0020
C                                                                       CLVR0030
      COMMON /VAR/ NENDO1(100),NENDO2(100),VENDO(100),NEXO1(600),       CLVR0040
     *             NEXSO2(600),VEXO(600),NEXO,NENDO                     CLVR0050
      COMMON /EQT/ NEQ(80),NEQ(80)                                      CLVR0060
```

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```
C                                                                       CLVR0070
C                                                                       CLVR0080
      DATA KRD/5/,LST/6/                                                CLVR0090
      DATA ICE/'E   '/,ICB/'B   '/,ICC/'C   '/                          CLVR0100
C                                                                       CLVR0110
C                                                                       CLVR0120
  200 FORMAT(1H1)                                                       CLVR0130
  201 FORMAT((1H ,12(2A4,2X)))                                          CLVR0140
C                                                                       CLVR0150
C         READ EQUATIONS                                                CLVR0160
C                                                                       CLVR0170
      WRITE(LST,200)                                                    CLVR0180
      NEXO=0                                                            CLVR0190
      NENDO=0                                                           CLVR0200
    5 CALL READEQ(IEND)                                                 CLVR0210
      IF(IEND.EQ.1) GO TO 50                                            CLVR0220
C                                                                       CLVR0230
C                                                                       CLVR0240
      ID=1                                                              CLVR0250
   10 IF(ID.GT.80) GO TO 5                                              CLVR0260
      IF(NEQ(ID).GT.0) GO TO 15                                         CLVR0270
      ID=ID+1                                                           CLVR0280
      GO TO 10                                                          CLVR0290
C                                                                       CLVR0300
C                                                                       CLVR0310
   15 IF(MEQ(ID).EQ.ICE.AND.MEQ(ID).EQ.ICB.AND.MEQ(ID).EQ.ICC) GO TO 20 CLVR0320
      IF(ID.GT.1) GO TO 35                                              CLVR0330
      GO TO 25                                                          CLVR0340
C                                                                       CLVR0350
C         VAR. NAME EBC**R** CASE                                       CLVR0360
C                                                                       CLVR0370
   20 ID=ID+8                                                           CLVR0380
      GO TO 10                                                          CLVR0390
C                                                                       CLVR0400
C         ENDOGRESSIVE VAR. NAME CASE                                   CLVR0410
C                                                                       CLVR0420
   25 CALL NVAR(NENDOA,NENDOB,ID)                                       CLVR0430
      IF(NENDO.EQ.0) GO TO 30                                           CLVR0440
      CALL SEARCH(NENDOA,NENDOB,NENDO1,NENDO2,NENDO,ISEA,IENDO)         CLVR0450
      IF(ISEA.EQ.1) GO TO 10                                            CLVR0460
   30 NENDO=NENDO+1                                                     CLVR0470
      NENDO1(NENDO)=NENDOA                                              CLVR0480
      NENDO2(NENDO)=NENDOB                                              CLVR0490
      GO TO 10                                                          CLVR0500
C                                                                       CLVR0510
C         EXOGRESSIVE VAR. NAME CASE                                    CLVR0520
C                                                                       CLVR0530
   35 CALL NVAR(NEXOA,NEXOB,ID)                                         CLVR0540
      IF(NENDO.EQ.0) GO TO 40                                           CLVR0550
      CALL SEARCH(NEXOA,NEXOB,NENDO1,NENDO2,NENDO,ISEA,IENDO)           CLVR0560
      IF(ISEA.EQ.1) GO TO 10                                            CLVR0570
   40 IF(NEXO.EQ.0) GO TO 45                                            CLVR0580
      CALL SEARCH(NEXOA,NEXOB,NEXO1,NEXO2,NEXO,ISEA,IEXO)               CLVR0590
      IF(ISEA.EQ.1) GO TO 10                                            CLVR0600
   45 NEXO=NEXO+1                                                       CLVR0610
      NEXO1(NEXO)=NEXOA                                                 CLVR0620
      NEXO2(NEXO)=NEXOB                                                 CLVR0630
      GO TO 10                                                          CLVR0640
C                                                                       CLVR0650
C                                                                       CLVR0660
   50 WRITE(6,201) (NENDO1(I),NENDO2(I),I=1,NENDO)                      CLVR0670
      WRITE(6,201) (NEXO1(I),NEXO2(I),I=1,NEXO)                         CLVR0680
      RETURN                                                            CLVR0690
      END                                                               CLVR0700
```

```
      SUBROUTINE READEQ(IEND)                                          RDEQ0010
C                                                                      RDEQ0020
C                                                                      RDEQ0030
      COMMON /EQT/ MEQ(80),NEQ(80)                                     RDEQ0040
C                                                                      RDEQ0050
C                                                                      RDEQ0060
      DATA MASK/Z000000FF/                                             RDEQ0070
C                                                                      RDEQ0080
C                                                                      RDEQ0090
  100 FORMAT(80A1)                                                     RDEQ0100
C                                                                      RDEQ0110
C         READ EQUATIONS                                               RDEQ0120
C                                                                      RDEQ0130
      REWIND 15                                                        RDEQ0140
      READ(15,100,END=20) MEQ                                          RDEQ0150
C                                                                      RDEQ0160
C     CALC. OF CLASSIFICATION INDICATOR NEQ                            RDEQ0170
C                                                                      RDEQ0180
      DO 10 I=1,80                                                     RDEQ0190
      MEQN=MEQ(I)                                                      RDEQ0200
      CALL SHIFT(MEQN,-24,MEQN)                                        RDEQ0210
      CALL MASKF(MEQN,'AND',MASK,MEQN)                                 RDEQ0220
      NEQ(I)=MEQN-192                                                  RDEQ0230
   10 CONTINUE                                                         RDEQ0240
      IEND=0                                                           RDEQ0250
      GO TO 30                                                         RDEQ0260
   20 IEND=1                                                           RDEQ0270
   30 RETURN                                                           RDEQ0280
      END                                                              RDEQ0290
```

```
      SUBROUTINE NVAR(NVARA,NVARB,ID)                                  NVAR0010
C                                                                      NVAR0020
C                                                                      NVAR0030
      DIMENSION MASK(4),NV(8)                                          NVAR0040
      COMMON /EQT/ MEQ(80),NEQ(80)                                     NVAR0050
C                                                                      NVAR0060
C                                                                      NVAR0070
      DATA MASK/ZFF000000,Z00FF0000,Z0000FF00,Z000000FF/               NVAR0080
      DATA IBLANK/'    '/                                              NVAR0090
      DATA ISC1/'&   '/,ISC2/'(   '/,ISC3/'-   '/,ISC4/'1   '/,       NVAR0100
     *     ISC5/')   '/,                                               NVAR0110
                                                                       NVAR0120
C                                                                      NVAR0130
C                                                                      NVAR0140
      IF(MEQ(ID+4).EQ.ISC1) GO TO 30                                   NVAR0150
      IF(MEQ(ID+4).EQ.ISC2.AND.MEQ(ID+5).EQ.ISC3.AND.                  NVAR0160
     *   MEQ(ID+6).EQ.ISC4.AND.MEQ(ID+7).EQ.ISC5) GO TO 30             NVAR0170
C                                                                      NVAR0180
C         4 CHARACTERS CASE                                            NVAR0190
C                                                                      NVAR0200
      DO 10 I=1,4                                                      NVAR0210
      NV(I)=NEQ(ID+I-1)                                                NVAR0220
   10 CONTINUE                                                         NVAR0230
      DO 20 I=5,8                                                      NVAR0240
      NV(I)=IBLANK                                                     NVAR0250
   20 CONTINUE                                                         NVAR0260
      ID=ID+4                                                          NVAR0270
      GO TO 50                                                         NVAR0280
C                                                                      NVAR0290
```

(30)

```
C          8 CHARACTERS CASE                                          NVAR0300
C                                                                     NVAR0310
   30 DO 40 I=1,8                                                     NVAR0320
      NV(I)=MEQ(ID+I-1)                                               NVAR0330
   40 CONTINUE                                                        NVAR0340
      ID=ID+8                                                         NVAR0350
C                                                                     NVAR0360
C        EXTRACTION OF VAR. NAME                                      NVAR0370
C                                                                     NVAR0380
   50 NVARA=0                                                         NVAR0390
      NVARB=0                                                         NVAR0400
      DO 70 I=1,8                                                     NVAR0410
      N=I-1                                                           NVAR0420
      IF(I.GT.4) N=I-5                                                NVAR0430
      IVAR=NV(I)                                                      NVAR0440
      CALL SHIFT(IVAR,-8*N,IVAR)                                      NVAR0450
      MASKO=MASK(N+1)                                                 NVAR0460
      CALL MASKF(IVAR,'AND',MASKO,IVAR)                               NVAR0470
      IF(I.GT.4) GO TO 60                                             NVAR0480
      CALL MASKF(NVARA,'OR',IVAR,NVARA)                               NVAR0490
      GO TO 70                                                        NVAR0500
   60 CALL MASKF(NVARB,'OR',IVAR,NVARB)                               NVAR0510
   70 CONTINUE                                                        NVAR0520
      RETURN                                                          NVAR0530
      END                                                             NVAR0540
```

```
      SUBROUTINE SEARCH(NVARA,NVARB,NVAR1,NVAR2,NVAR,ISEA,IVAR)       SEAR0010
C                                                                     SEAR0020
C                                                                     SEAR0030
      DIMENSION NVAR1(NVAR),NVAR2(NVAR)                               SEAR0040
C                                                                     SEAR0050
C        SEARCH THE SAME VAR. NAME                                    SEAR0060
C                                                                     SEAR0070
      ISEA=0                                                          SEAR0080
      IF(NVAR.EQ.0) GO TO 30                                          SEAR0090
      DO 10 IVAR=1,NVAR                                               SEAR0100
      IF(NVAR1(IVAR).EQ.NVARA.AND.NVAR2(IVAR).EQ.NVARB) GO TO 20      SEAR0110
   10 CONTINUE                                                        SEAR0120
      GO TO 30                                                        SEAR0130
   20 ISEA=1                                                          SEAR0140
   30 RETURN                                                          SEAR0150
      END                                                             SEAR0160
```

```
      SUBROUTINE DATSET                                               DSET0010
C                                                                     DSET0020
C                                                                     DSET0030
      INTEGER END                                                     DSET0040
      COMMON /VAR/ NENDO1(100),NENDO2(100),VENDO(100),NEXO1(600),     DSET0050
     *             NEXO2(600),VEXO(600),NEXO,NENDO                    DSET0060
      COMMON /OPT/ FREQ,IY,IO,IFMA,IFOU,IFAUT                         DSET0070
C                                                                     DSET0080
```

```
C                                                                       DSET0090
      DATA END/'END '/,BLANK/'    '/                                    DSET0100
      DATA KRD/5/,LST/6/                                                DSET0110
C                                                                       DSET0120
C                                                                       DSET0130
  100 FORMAT(2A4,2X,F15.0)                                              DSET0140
  101 FORMAT(2A4,2X,E11.3)                                              DSET0150
  200 FORMAT(1H ,'E001  VAR. NAME ',2A4,' IS NOT FOUND')                DSET0160
  201 FORMAT(1H ,'E002  VARLUE OF ',2A4,' IS NOT AVAILABLE')            DSET0170
C                                                                       DSET0180
C                                                                       DSET0190
      DO 5 I=1,NEXO                                                     DSET0200
      VEXO(I)=BLANK                                                     DSET0210
    5 CONTINUE                                                          DSET0220
C                                                                       DSET0230
C         CALL ORIGINAL DATA FROM TEMP. FILE MADE BY E.D.B. SYSTEM      DSET0240
C                                                                       DSET0250
      IF(IFKA.EQ.1) GO TO 30                                            DSET0260
      REWIND 16                                                         DSET0270
   10 READ(16,100,END=30) NEXOA,NEXOB,VEXOV                             DSET0280
   15 CALL SEARCH(NEXOB,NEXOB,NEXO1,NEXO2,ISEA,IEXO)                    DSET0290
      IF(ISEA.EQ.1) GO TO 20                                            DSET0300
      WRITE(6,200) NEXOA,NEXOB                                          DSET0310
      GO TO 10                                                          DSET0320
C                                                                       DSET0330
C                                                                       DSET0340
   20 IF(IFAUT.EQ.0) GO TO 25                                           DSET0350
      CALL AUTGEN(NEXOA,NEXOB,VEXOV,IEXO,IAUT)                          DSET0360
      IF(IAUT.EQ.0) GO TO 25                                            DSET0370
      GO TO 10                                                          DSET0380
C                                                                       DSET0390
C                                                                       DSET0400
   25 IF(VEXO(IEXO).EQ.BLANK) VEXO(IEXO)=0.0                            DSET0410
      VEXO(IEXO)=VEXO(IEXO)+VEXOV                                       DSET0420
      GO TO 10                                                          DSET0430
C                                                                       DSET0440
C         READ MANUAL DATA FROM CARDS                                   DSET0450
C                                                                       DSET0460
   30 READ(KRD,100) NEXOA,NEXOB,VEXOV                                   DSET0470
      IF(NEXOA.EQ.END) GO TO 45                                         DSET0480
      CALL SEARCH(NEXOA,NEXOB,NEXO1,NEXO2,NEXO,ISEA,IEXO)               DSET0490
      IF(ISEA.EQ.1) GO TO 35                                            DSET0500
      WRITE(6,200) NEXOA,NEXOB                                          DSET0510
      GO TO 30                                                          DSET0520
C                                                                       DSET0530
C                                                                       DSET0540
   35 IF(IFAUT.EQ.0) GO TO 40                                           DSET0550
      CALL AUTOGEN(NEXOA,NEXOB,VEXOV,IEXO,IAUT)                         DSET0560
      IF(IAUT.EQ.0) GO TO 40                                            DSET0570
      GO TO 30                                                          DSET0580
C                                                                       DSET0590
C                                                                       DSET0600
   40 IF(VEXO(IEXO).EQ.BLANK) VEXO(IEXO)=0.0                            DSET0610
      VEXO(IEXO)=VEXO(IEXO)+VEXOV                                       DSET0620
      GO TO 30                                                          DSET0630
C                                                                       DSET0640
C         READ CONVERSION FACTORS FROM CARDS                            DSET0650
C                                                                       DSET0660
   45 READ(KRD,101) NEXOA,NEXOB,VEXOV                                   DSET0670
      IF(NEXOA.EQ.END) GO TO 55                                         DSET0680
      CALL SEARCH(NEXOA,NEXOB,NEXO1,NEXO2,NEXO,ISEA,IEXO)               DSET0690
      IF(ISEA.EQ.1) GO TO 50                                            DSET0700
      WRITE(6,200) NEXOA,NEXOB                                          DSET0710
      GO TO 45                                                          DSET0720
C                                                                       DSET0730
C                                                                       DSET0740
   50 VEXO(IEXO)=VEXOV                                                  DSET0750
```

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```
      GO TO 45                                                          DSET0760
C                                                                       DSET0770
C     CHECK DATA AVAILABILITY                                           DSET0780
C                                                                       DSET0790
   55 DO 60 I=1,NEXO                                                    DSET0800
      IF(VEXO(I).NE.BLANK) GO TO 60                                     DSET0810
      WRITE(6,201) NEXO1(I),NEXO2(I)                                    DSET0820
      VEXO(I)=0.0                                                       DSET0830
   60 CONTINUE                                                          DSET0840
      RETURN                                                            DSET0850
      END                                                               DSET0860
```

```
      SUBROUTINE AUTGEN(NEXOA,NEXOB,VEXOV,IEXO,IAUT)                    AGEN0010
C                                                                       AGEN0020
C                                                                       AGEN0030
      DIMENSION IA(6),IC(6),IT(6),IND(24),RATIO(3,6)                    AGEN0040
      COMMON /VAR/ NENDO1(100),NENDO2(100),VENDO(100),NEXO1(600),       AGEN0050
     *             NEXO2(600),VEXO(600),NEXO,NENDO                      AGEN0060
C                                                                       AGEN0070
C                                                                       AGEN0080
      DATA IC /'CADO','CIDO','CHFO','HADO','HIDO','HHFO'/,              AGEN0090
     *     IA /'AADO','AIDO','AHFO','AADO','AIDO','AHFO'/,              AGEN0100
     *     IT /'CADO','CIDO','CHFO','CADO','CIDO','CHFO'/               AGEN0110
      DATA IND/'&AGR','&FRT','&MIN','&CON','&FOD','&TXT','&RUB','&PAP', AGEN0120
     *         '&FCH','&CAC','&IAS','&NFM','&MAC','&SWO',               AGEN0130
     *         '&CRF','&NGF','&REF','&NGL','&EMP','&PUB','&TMG','&COK', AGEN0140
     *         '&BRQ','&CMN'/                                           AGEN0150
     *                                                                  AGEN0160
      DATA IRD/'&ROD',BLANK/'    '/                                     AGEN0170
      DATA RATIO/ 0.45,  0.45,  0.10,                                   AGEN0180
     *            1.00,  0.00,  0.00,                                   AGEN0190
     *            1.00,  0.00,  0.00,                                   AGEN0200
     *            0.45,  0.45,  0.10,                                   AGEN0210
     *            1.00,  0.00,  0.00,                                   AGEN0220
     *            1.00,  0.00,  0.00,                                   AGEN0230
C                                                                       AGEN0240
C     CLASSIFY INTO CONSUMPTION, AUTO-GENERATION,                       AGEN0250
C     AND TRANSPORTATION                                                AGEN0260
C       *** AUTOMOTIVE AND INDUSTRIAL DIESEL OIL ***                    AGEN0270
C       *** AND HEAVY FUEL OIL CASES             ***                    AGEN0280
C                                                                       AGEN0290
      IAUT=0                                                            AGEN0300
      DO 10 IX=1,6                                                      AGEN0310
      IF(IC(IX).EQ.NEXOA) GO TO 20                                      AGEN0320
   10 CONTINUE                                                          AGEN0330
      GO TO 90                                                          AGEN0340
C                                                                       AGEN0350
C     FINAL CONSUMPTION CASE                                            AGEN0360
C                                                                       AGEN0370
   20 IF(IX.GE.4) GO TO 40                                              AGEN0380
      DO 30 II=1,14                                                     AGEN0390
      IF(IND(II).EQ.NEXOB) GO TO 60                                     AGEN0400
   30 CONTINUE                                                          AGEN0410
      GO TO 90                                                          AGEN0420
C                                                                       AGEN0430
C     OWN-USE CASE                                                      AGEN0440
C                                                                       AGEN0450
   40 DO 50 II=15,24                                                    AGEN0460
      IF(IND(II).EQ.NEXOB) GO TO 60                                     AGEN0470
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   50 CONTINUE                                                          AGEN0480
      GO TO 90                                                          AGEN0490
C                                                                       AGEN0500
C        CONSUMPTION IN INDUSTRY                                        AGEN0510
C                                                                       AGEN0520
   60 IF(VEXO(IEXO).EQ.BLANK) VEXO(IEXO)=0.0                            AGEN0530
      VEXO(IEXO)=VEXO(IEXO)+VEXOV*RATIO(1,IX)                           AGEN0540
C                                                                       AGEN0550
C        AUTO-GENERATION                                                AGEN0560
C                                                                       AGEN0570
      NEXOA=IA(IX)                                                      AGEN0580
      CALL SEARCH(NEXOA,NEXOB,NEXO1,NEXO2,NEXO,ISEA,IEXO)               AGEN0590
      IF(ISEA.EQ.0) GO TO 70                                            AGEN0600
      IF(VEXO(IEXO).EQ.BLANK) VEXO(IEXO)=0.0                            AGEN0610
      VEXO(IEXO)=VEXO(IEXO)+VEXOV*RATIO(2,IX)                           AGEN0620
C                                                                       AGEN0630
C        TRANSPORTATION                                                 AGEN0640
C                                                                       AGEN0650
   70 NEXOA=IT(IX)                                                      AGEN0660
      NEXOB=IRD                                                         AGEN0670
      CALL SEARCH(NEXOA,NEXOB,NEXO1,NEXO2,NEXO,ISEA,IEXO)               AGEN0680
      IF(ISEA.EQ.0) GO TO 80                                            AGEN0690
      IF(VEXO(IEXO).EQ.BLANK) VEXO(IEXO)=0.0                            AGEN0700
      VEXO(IEXO)=VEXO(IEXO)+VEXOV*RATIO(3,IX)                           AGEN0710
   80 IAUT=1                                                            AGEN0720
   90 RETURN                                                            AGEN0730
      END                                                               AGEN0740
```

```
      SUBROUTINE EBCALC                                                 ECAL0010
C                                                                       ECAL0020
C                                                                       ECAL0030
      DIMENSION ISC(9),IPR(7),STACK(30),OUT(100),IOP(100)               ECAL0040
      COMMON /VAR/ NENDO1(100),NENDO2(100),VENDO(100),NEXO1(600),       ECAL0050
     *             NEXO2(600),VEXO(600),NEXO,NENDO                    ECAL0060
      COMMON /EBV/ EB(53,61)                                            ECAL0070
      COMMON /EQT/ NEQ(80),NEQ(80)                                      ECAL0080
C                                                                       ECAL0090
C                                                                       ECAL0100
      DATA IBLANK/'    '/,BLANK/'    '/,ICE/'E   '/,ICB/'B   '/,      ECAL0110
     *     ICC/'    '/                                                 ECAL0120
      DATA ISC/'+   ','-   ','*   ','/   ','(   ',')   ','=   ',       ECAL0130
     *         '   ',',',   '/                                         ECAL0140
      DATA IPR/2,2,3,3,1,1,0/                                           ECAL0150
      DATA KRD/5/,LST/6/                                                ECAL0160
C                                                                       ECAL0170
C                                                                       ECAL0180
  200 FORMAT(1H ,'E003  VALUE OF ',2A4,' IS NOT FOUND, ASSUMED ZERO')   ECAL0190
  201 FORMAT(1H ,'E004  STORED POSITION OF EQ ',I4,2X,80A1/             ECAL0200
     *       1H ,' IS NOT FOUND')                                       ECAL0210
C                                                                       ECAL0220
C                                                                       ECAL0230
      REWIND 15                                                         ECAL0240
      IEQ=0                                                             ECAL0250
      DO 5 I=1,61                                                       ECAL0260
      DO 5 J=1,53                                                       ECAL0270
      EB(J,I)=BLANK                                                     ECAL0280
    5 CONTINUE                                                          ECAL0290
C                                                                       ECAL0300
C        READ EQUATIONS FROM PARMANENT FILE                             ECAL0310
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C                                                                       ECAL0320
   10 CALL READEQ(IEND)                                                 ECAL0330
      IF(IEND.EQ.1) GO TO 70                                            ECAL0340
      IEQ=IEQ+1                                                         ECAL0350
C                                                                       ECAL0360
C         SET INITIAL VALUE                                             ECAL0370
C                                                                       ECAL0380
      ID=1                                                              ECAL0390
      NU=0                                                              ECAL0400
      IS=0                                                              ECAL0410
      IM=0                                                              ECAL0420
      JM=0                                                              ECAL0430
      NENDOA=IBLANK                                                     ECAL0440
      NENDOB=IBLANK                                                     ECAL0450
      VAL1=BLANK                                                        ECAL0460
      VAL2=BLANK                                                        ECAL0470
      IU1=0                                                             ECAL0480
      IU2=0                                                             ECAL0490
      DO 15 IU=1,100                                                    ECAL0500
      IOP(IU)=0                                                         ECAL0510
   15 CONTINUE                                                          ECAL0520
C                                                                       ECAL0530
C         INVERSE POLAND TRANSFORMATION                                 ECAL0540
C                                                                       ECAL0550
   20 IF(ID.GT.80) GO TO 40                                             ECAL0560
      IF(NEQ(ID).GT.0) GO TO 30                                         ECAL0570
      DO 21 NSC=1,6                                                     ECAL0580
      IF(NEQ(ID).EQ.ISC(NSC)) GO TO 25                                  ECAL0590
   21 CONTINUE                                                          ECAL0600
      IF(NEQ(ID).EQ.ISC(9)) GO TO 22                                    ECAL0610
      ID=ID+1                                                           ECAL0620
      GO TO 20                                                          ECAL0630
C                                                                       ECAL0640
C         EQUATION IS CONTINUED TO NEXT CARD                            ECAL0650
C                                                                       ECAL0660
   22 ID=1                                                              ECAL0670
      CALL READEQ(IEND)                                                 ECAL0680
      GO TO 20                                                          ECAL0690
C                                                                       ECAL0700
C         OPERATOR CASE                                                 ECAL0710
C                                                                       ECAL0720
C          RULE 1: IF THE STACK AREA IS EMPTY, THE OPERATOR IS STORED   ECAL0730
C                  IN THIS AREA WITHOUT RESTRICTIONS.                   ECAL0740
C          RULE 2: THE OPERATOR ( IS STORED IN THE MOST UPPER POSITION  ECAL0750
C                  OF STACK AREA WITHOUT RESTRICITIONS.                 ECAL0760
C                                                                       ECAL0770
   25 IF(IS.GT.0.AND.NSC.NE.5) GO TO 26                                 ECAL0780
      IS=IS+1                                                           ECAL0790
      STACK(IS)=FLOAT(NSC)                                              ECAL0800
      ID=ID+1                                                           ECAL0810
      GO TO 20                                                          ECAL0820
C                                                                       ECAL0830
C          RULE 3: IF THE PRIORITY OF OPERATOR IS HIGHER THAN THE       ECAL0840
C                  PRIORITY OF OPERATOR STORED IN THE SURFACE OF STACK  ECAL0850
C                  AREA, IT IS STORED IN THE MOST UPPER POSITION OF     ECAL0860
C                  STACK AREA.                                          ECAL0870
C                                                                       ECAL0880
   26 MSC=IFIX(STACK(IS))                                               ECAL0890
      IF(IPR(MSC).GE.IPR(NSC)) GO TO 27                                 ECAL0900
      IS=IS+1                                                           ECAL0910
      STACK(IS)=FLOAT(NSC)                                              ECAL0920
      ID=ID+1                                                           ECAL0930
      GO TO 20                                                          ECAL0940
C                                                                       ECAL0950
C          RULE 4: IF THE PRIORITY OF OPERATOR IS LOWER THAN OR EQUAL   ECAL0960
C                  TO THE PRIORITY OF OPERATOR STORED IN THE SURFACE    ECAL0970
C                  OF STACK AREA, THE LATTER IS TRANSFERRED TO THE      ECAL0980
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      ID=ID+8                                                          ECAL1660
      GO TO 20                                                         ECAL1670
C                                                                      ECAL1680
C          RULE 7: THE OPERATORS REMAINING IN THE STACK AREA ARE       ECAL1690
C                  TRANSFERRED TO THE OUT-PUT AREA IN ORDER.           ECAL1700
C                                                                      ECAL1710
   40 IF(IS.LE.0) GO TO 50                                             ECAL1720
      DO 41 I=1,IS                                                     ECAL1730
      NU=NU+1                                                          ECAL1740
      OUT(NU)=STACK(IS-I+1)                                            ECAL1750
      IOP(NU)=-1                                                       ECAL1760
   41 CONTINUE                                                         ECAL1770
C                                                                      ECAL1780
C          CALC. OF EBC**R** OR ENDOGRESSIVE VARIABLES                 ECAL1790
C                                                                      ECAL1800
   50 DO 51 IU=1,NU                                                    ECAL1810
      IF(IOP(IU).EQ.-1) GO TO 52                                       ECAL1820
      IF(IOP(IU).EQ.1) GO TO 51                                        ECAL1830
      VAL1=VAL2                                                        ECAL1840
      VAL2=OUT(IU)                                                     ECAL1850
      IU1=IU2                                                          ECAL1860
      IU2=IU                                                           ECAL1870
   51 CONTINUE                                                         ECAL1880
      VAL=OUT(IU)                                                      ECAL1890
      GO TO 60                                                         ECAL1900
C                                                                      ECAL1910
C                                                                      ECAL1920
   52 MOP=IFIX(OUT(IU))                                                ECAL1930
      IF(MOP.EQ.1) GO TO 53                                            ECAL1940
      IF(MOP.EQ.2) GO TO 54                                            ECAL1950
      IF(MOP.EQ.3) GO TO 56                                            ECAL1960
C                                                                      ECAL1970
C                / CALCULATION                                         ECAL1980
C                                                                      ECAL1990
      VAL=VAL1/VAL2                                                    ECAL2000
      GO TO 60                                                         ECAL2010
C                                                                      ECAL2020
C                + CALCULATION                                         ECAL2030
C                                                                      ECAL2040
   53 VAL=VAL1+VAL2                                                    ECAL2050
      GO TO 60                                                         ECAL2060
C                                                                      ECAL2070
C                - CALCULATION                                         ECAL2080
C                                                                      ECAL2090
   54 IF(VAL1.EQ.BLANK) GO TO 55                                       ECAL2100
      VAL=VAL1-VAL2                                                    ECAL2110
      GO TO 60                                                         ECAL2120
C                                                                      ECAL2130
C                CHANGE OF SIGN                                        ECAL2140
C                                                                      ECAL2150
   55 VAL=-VAL2                                                        ECAL2160
      GO TO 60                                                         ECAL2170
C                                                                      ECAL2180
C                * CALCULATION                                         ECAL2190
C                                                                      ECAL2200
   56 VAL=VAL1*VAL2                                                    ECAL2210
C                                                                      ECAL2220
C                                                                      ECAL2230
   60 IF(IU.EQ.NU) GO TO 65                                            ECAL2240
      OUT(IU2)=VAL                                                     ECAL2250
      IF(IU1.GT.0) IOP(IU1)=1                                          ECAL2260
      IOP(IU)=1                                                        ECAL2270
      VAL1=BLANK                                                       ECAL2280
      VAL2=BLANK                                                       ECAL2290
      IU1=0                                                            ECAL2300
      IU2=0                                                            ECAL2310
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C                 OUT-PUT AREA.  THE SAME COMPARIZON OF PRIORITY IS      ECAL0990
C                 MADE FOR THE NEXT SURFACE OPERATOR OF STACK AREA.      ECAL1000
C                                                                        ECAL1010
   27 IF(NSC.EQ.6.AND.IPR(HSC).EQ.IPR(NSC)) GO TO 28                     ECAL1020
      NU=NU+1                                                           ECAL1030
      OUT(NU)=STACK(IS)                                                 ECAL1040
      IOP(NU)=-1                                                        ECAL1050
      IS=IS-1                                                           ECAL1060
      GO TO 25                                                          ECAL1070
C                                                                       ECAL1080
C          RULE 5: IF THE OPERATOR IS ) AND THE SURFACE OPERATOR OF     ECAL1090
C                  STACK IS ( , BOTH OPERATORS ARE DELETED.             ECAL1100
C                                                                       ECAL1110
   28 IS=IS-1                                                           ECAL1120
      ID=ID+1                                                           ECAL1130
      GO TO 20                                                          ECAL1140
C                                                                       ECAL1150
C         VARIABLE NAME CASE                                            ECAL1160
C                                                                       ECAL1170
C          RULE 6: ALL VARIABLE ARE TRANSFERRED TO THE OUT-PUT AREA     ECAL1180
C                  DIRECTLY.                                            ECAL1190
C                                                                       ECAL1200
   30 IF(NEQ(ID).EQ.ICE.AND.NEQ(ID+1).EQ.ICB.AND.NEQ(ID+2).EQ.ICC)      ECAL1210
     *  GO TO 35                                                       ECAL1220
C                                                                       ECAL1230
C              ENDOGRESSIVE VARIABLE (LEFT SIDE OF = )                  ECAL1240
C                                                                       ECAL1250
      IF(ID.GT.1) GO TO 31                                              ECAL1260
      CALL NVAR(NENDOA,NENDOB,ID)                                       ECAL1270
      GO TO 20                                                          ECAL1280
C                                                                       ECAL1290
C              SET VALUES OF VARIABLE (RIGHT SIDE OF = )                ECAL1300
C               ENDOGRESSIVE VARIABLE                                   ECAL1310
C                                                                       ECAL1320
   31 CALL NVAR(NVARA,NVARB,ID)                                         ECAL1330
      CALL SEARCH(NVARA,NVARB,NENDO1,NENDO2,NENDO,ISEA,IENDO)           ECAL1340
      IF(ISEA.EQ.0) GO TO 32                                            ECAL1350
      NU=NU+1                                                           ECAL1360
      OUT(NU)=VENDO(IENDO)                                              ECAL1370
      GO TO 20                                                          ECAL1380
C                                                                       ECAL1390
C               EXOGRESSIVE VARIABLE                                    ECAL1400
C                                                                       ECAL1410
   32 CALL SEARCH(NVARA,NVARB,NEXO1,NEXO2,ISEA,IEXO)                    ECAL1420
      IF(ISEA.EQ.0) GO TO 33                                            ECAL1430
      NU=NU+1                                                           ECAL1440
      OUT(NU)=VEXO(IEXO)                                                ECAL1450
      GO TO 20                                                          ECAL1460
   33 WRITE(LST,200) NVARA,NVARB                                        ECAL1470
      NU=NU+1                                                           ECAL1480
      OUT(NU)=0.0                                                       ECAL1490
      GO TO 20                                                          ECAL1500
C                                                                       ECAL1510
C              EBC**R** (LEFT SIDE OF = )                               ECAL1520
C                                                                       ECAL1530
   35 IF(ID.GT.1) GO TO 36                                              ECAL1540
      IN=(NEQ(ID+3)-48)*10+NEQ(ID+4)-48                                 ECAL1550
      JN=(NEQ(ID+6)-48)*10+NEQ(ID+7)-48                                 ECAL1560
      ID=ID+8                                                           ECAL1570
      GO TO 20                                                          ECAL1580
C                                                                       ECAL1590
C              SET VALUES OF EBC**R** (RIGHT SIDE OF = )                ECAL1600
C                                                                       ECAL1610
   36 IN=(NEQ(ID+3)-48)*10+NEQ(ID+4)-48                                 ECAL1620
      JN=(NEQ(ID+6)-48)*10+NEQ(ID+7)-48                                 ECAL1630
      NU=NU+1                                                           ECAL1640
      OUT(NU)=EB(IN,JN)                                                 ECAL1650
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      GO TO 50                                                          ECAL2320
C                                                                       ECAL2330
C         STORE CALC. RESULTS                                           ECAL2340
C                                                                       ECAL2350
   65 IF(IM.EQ.0.OR.JM.EQ.0) GO TO 66                                   ECAL2360
      EB(IM,JM)=VAL                                                     ECAL2370
      GO TO 10                                                          ECAL2380
C                                                                       ECAL2390
C                                                                       ECAL2400
   66 IF(NENDOA.EQ.IBLANK) GO TO 67                                     ECAL2410
      CALL SEARCH(NENDOA,NENDOB,NENDO1,NENDO2,NENDO,ISEA,IENDO)         ECAL2420
      IF(ISEA.EQ.0) GO TO 67                                            ECAL2430
      VENDO(IENDO)=VAL                                                  ECAL2440
      GO TO 10                                                          ECAL2450
C                                                                       ECAL2460
C                                                                       ECAL2470
   67 WRITE(LST,201) IEQ,(NEQ(ID),ID=1,80)                              ECAL2480
      GO TO 10                                                          ECAL2490
C                                                                       ECAL2500
C                                                                       ECAL2510
   70 RETURN                                                            ECAL2520
      END                                                               ECAL2530
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      SOUBROUTINE EBOUT                                                 EOUT0010
C                                                                       EOUT0020
C                                                                       EOUT0030
      INTEGER BLANK,BRA                                                 EOUT0040
      DIMENSION IEB(2,20),JEB(12),MEB(7,12),NEB(12),IB(12),JB(12),      EOUT0050
     *          LIT(10),JCOL(12),LINE(20),NA(2,80),NP(2,144),IN(53,61), EOUT0060
     *          NP1(2,72),NP2(2,72)                                     EOUT0070
      REAL*8 TRAW(3,61),TCOL(4,53),LIN(20),R1(3,19),R2(3,19),R3(3,19),  EOUT0080
     *       R4(3,4),C1(4,19),C2(4,19),C3(4,15)                       EOUT0090
C                                                                       EOUT0100
C                                                                       EOUT0110
      EQUIVALENCE (TRAW(1, 1),R1(1,1)), (TRAW(1,20),R2(1,1)),           EOUT0120
     *            (TRAW(1,39),R3(1,1)), (TRAW(1,58),R4(1,1))            EOUT0130
      EQUIVALENCE (TCOL(1, 1),C1(1,1)), (TCOL(1,20),C2(1,1)),           EOUT0140
     *            (TCOL(1,39),C3(1,1))                                  EOUT0150
      EQUIVALENCE (NP(1, 1),NP1(1,1)),  (NP(1,73),NP2(1,1))             EOUT0160
C                                                                       EOUT0170
C                                                                       EOUT0180
      COMMON /EBV/ EB(53,61)                                            EOUT0190
      COMMON /OPT/ FREQ, IY, IQ, IFMA, IFOU, IFAUT                      EOUT0200
C                                                                       EOUT0210
C         TITLE OF ROW                                                  EOUT0220
C                                                                       EOUT0230
      DATA R1 /'DOMESTIC',' PRODUCT','ION     ',                        EOUT0240
     *         'IMPORT  ',' '       ,'        ',                        EOUT0250
     *         'EXPORT  ',' '       ,'        ',                        EOUT0260
     *         '(INTERNA','TIONAL U','PLIFT)  ',                        EOUT0270
     *         'STOCK CH','ANGE    ',' '       ,'        ',            EOUT0280
     *         'PRIMARY ','ENERGY S','UPPLY   ',                        EOUT0290
     *         'REFINARY',' '       ,'        ',                        EOUT0300
     *         'NGL(LNG',' LPG)    ',' '       ,'        ',            EOUT0310
     *         'CHEMICAL',' ENERGY ',' '       ,'        ',            EOUT0320
     *         'PETROCHE','MICAL LP','G        ',                      EOUT0330
     *         'PUBLIC U','TILITY  ',' '       ,'        ',            EOUT0340
     *         'PUMP-UP ','USE     ',' '       ,'        ',            EOUT0350
     *         'AUTO GEN','ERATION ',' '       ,'        ',            EOUT0360
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     *          'TOWN GAS','        ','        ',                    EOUT0370
     *          'COKE    ','        ','        ',                    EOUT0380
     *          'BRIQUET ','        ','        ',                    EOUT0390
     *          'TRANSFOR','MATION(T','OTAL    ',                    EOUT0400
     *          'CRUDE OI','L FIELD ','        ',                    EOUT0410
     *          'NATURAL ','GAS FIEL','D       '/                    EOUT0420
      DATA R2 /'REFINARY','        ','        ',                    EOUT0430
     *          'NGL PLAN','T       ','        ',                    EOUT0440
     *          'CHEMICAL',' ENERTY ','PLANT   ',                    EOUT0450
     *          'PUBLIC U','TILITY  ','        ',                    EOUT0460
     *          'TOWN GAS','        ','        ',                    EOUT0470
     *          'COKE PLA','NT      ','        ',                    EOUT0480
     *          'BRIQUET ','        ','        ',                    EOUT0490
     *          'COAL MIN','E       ','        ',                    EOUT0500
     *          'FLARE AN','D LOSSES','        ',                    EOUT0510
     *          'ENERGY S','ECT. USE','  LOSSES',                    EOUT0520
     *          'STATISTI','CAL DIFE','RENCE   ',                    EOUT0530
     *          'FINAL CO','NSUMPTIO','N       ',                    EOUT0540
     *          'FINAL EN','ERGY USE','        ',                    EOUT0550
     *          'INDUSTRY','        ','        ',                    EOUT0560
     *          ' AGRICUL','TURE, FO','RESTRY  ',                    EOUT0570
     *          ' FISHERY','        ','        ',                    EOUT0580
     *          ' MINING(','EX.ENERG','Y SECT.)',                    EOUT0590
     *          ' CONSTRU','CTION   ','        ',                    EOUT0600
     *          ' MANUFAC','TURING  ','        '/                    EOUT0610
      DATA R3 /'  FOODS ','        ','        ',                    EOUT0620
     *          '  TEXTIL','E       ','        ',                    EOUT0630
     *          '  RUBBER','        ','        ',                    EOUT0640
     *          '  PAPER,',' PULP   ','        ',                    EOUT0650
     *          '  CHEMIS','TRY(FUEL',' USE)  ',                    EOUT0660
     *          '  CERAMI','CS, CEME','NTS    ',                    EOUT0670
     *          '  IRON, ',' STEEL  ','        ',                    EOUT0680
     *          '  NON-FE','RROUS ME','TALS   ',                    EOUT0690
     *          '  MACHIN','ERY, MET','AL FAB.',                    EOUT0700
     *          '  SMALL ','WARES, O','THERS  ',                    EOUT0710
     *          'RESIDENT','.,COMMER','.(TOTAL)',                    EOUT0720
     *          ' RESIDEN','TIAL    ','        ',                    EOUT0730
     *          ' COMMERC','IAL     ','        ',                    EOUT0740
     *          'TRANSPOR','TATION(T','OTAL)   ',                    EOUT0750
     *          ' AIR TRA','NSPORTAT','ION     ',                    EOUT0760
     *          ' ROAD TR','ANSPORTA','TION    ',                    EOUT0770
     *          ' RAILWAY','S       ','        ',                    EOUT0780
     *          ' INTERNA','L NAVEGA','TION    ',                    EOUT0790
     *          ' INTERNA','TIONAL U','PLIFT   '/                    EOUT0800
      DATA R4 /'OTHERS(G','OVERN.,F','ORCES &)',                    EOUT0810
     *          'RAW MATE','RI. USE ','IN CHEM.',                    EOUT0820
     *          'OTHER NO','N-ENERGY','  USE   ',                    EOUT0830
     *          'TOTAL US','E IN CHE','MISTRY  '/                    EOUT0840
C                                                                     EOUT0850
C          TITLE OF COLUMN                                            EOUT0860
C                                                                     EOUT0870
      DATA C1 /'TOTAL OF','COAL    ','        ','C01-C05 ',          EOUT0880
     *         '        ','COAKING ','COAL    ','        ',          EOUT0890
     *         '        ','STEAM   ','COAL    ','        ',          EOUT0900
     *         '        ','ANTHRA- ',' CITE   ','        ',          EOUT0910
     *         '        ','LIGNITE ','        ','        ',          EOUT0920
     *         'TOTAL OF','CRUDE   ','OIL     ','C06-C08 ',          EOUT0930
     *         '        ','ORIGINAL','CRUDE   ','OIL     ',          EOUT0940
     *         '        ','REDUCED ','CRUDE   ','OIL     ',          EOUT0950
     *         'PETROLE-',' UM     ','PRODUCTS','C09-C28 ',          EOUT0960
     *         '        ','DOMESTIC','FUEL OIL','C10-C20 ',          EOUT0970
     *         '        ','        ','GASOLINE','C11-C14 ',          EOUT0980
     *         '        ','        ','        ','AVIATION',          EOUT0990
     *         '        ','        ','        ','SUPER   ',          EOUT1000
     *         '        ','        ','        ','PREMIUM ',          EOUT1010
     *         '        ','        ','JET FUEL','        ',          EOUT1020
     *         '        ','        ','KEROSENE','        ',          EOUT1030
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     *          '         ','         ','DIESEL   ','C17-C19 ',          EOUT1040
     *          '         ','         ','         ','AUTOMOT.',          EOUT1050
     *          '         ','         ','         ','INDUSTR.'/          EOUT1060
     DATA C2 /  '         ','         ','HEAVY    ','FUEL OIL',          EOUT1070
     *          '         ','NAPTHA   ','         ','         ',          EOUT1080
     *          '         ','LOW SUL. ','WAXY     ','RESIDUE ',          EOUT1090
     *          '         ','LUBRI-   ',' CANTS   ','         ',          EOUT1100
     *          '         ','SOLVENTS ','         ','         ',          EOUT1110
     *          '         ','OTHERS   ','(GREASE, ','ASPH.,&)',          EOUT1120
     *          '         ','PETROLE- ',' UM      ','COKE    ',          EOUT1130
     *          '         ','REFINARY ','GAS      ','         ',          EOUT1140
     *          '         ','LPG      ','         ','         ',          EOUT1150
     *          'NATURAL  ','GAS      ','         ','         ',          EOUT1160
     *          'NGL      ','(CONDEN- ',' SATES)  ','         ',          EOUT1170
     *          'LNG      ','         ','         ','         ',          EOUT1180
     *          'METHANOL ','         ','         ','         ',          EOUT1190
     *          'TOWN GAS ','         ','         ','         ',          EOUT1200
     *          'COKE     ','         ','         ','         ',          EOUT1210
     *          'COKE     ','OVEN     ','GAS      ','         ',          EOUT1220
     *          'BLAST    ','FURNACE  ','GAS      ','         ',          EOUT1230
     *          'BRIQUET  ','         ','         ','         ',          EOUT1240
     *          'WOOD     ','         ','         ','         '/          EOUT1250
     DATA C3 /'CHARCOAL  ','         ','         ','         ',          EOUT1260
     *          'FUEL     ','ETHANOL  ','FROM     ','BIOMASS ',          EOUT1270
     *          'AGRI-    ','CULTURAL ','WASTES   ','         ',          EOUT1280
     *          'TOTAL OF ','ELEC-    ',' TRICITY ','C42-C52 ',          EOUT1290
     *          '         ','PUBLIC   ','UTILITY  ','C43-C48 ',          EOUT1300
     *          '         ','         ','THERMAL  ','GENERAT.',          EOUT1310
     *          '         ','         ','HYDRO-   ','GENERAT.',          EOUT1320
     *          '         ','         ','PUMP-UP  ','USE     ',          EOUT1330
     *          '         ','         ','NUCLEAR  ','GENERAT.',          EOUT1340
     *          '         ','         ','GEOTHERM','  -AL &  ',          EOUT1350
     *          '         ','AUTO-    ','GENERAT.','C49-C52 ',          EOUT1360
     *          '         ','         ','THERMAL  ','GENERAT.',          EOUT1370
     *          '         ','         ','HYDRO-   ','GENERAT.',          EOUT1380
     *          '         ','         ','OTHER    ','GENERAT.',          EOUT1390
     *          'TOTAL    ','         ','         ','         '/          EOUT1400
C                                                                         EOUT1410
CC       TABLE LINE DATA                                                  EOUT1420
C                                                                         EOUT1430
      DATA LIN /'--------','--------','--------','--------',             EOUT1440
               '--------','--------','--------','--------',             EOUT1450
               '--------','--------','--------','--------',             EOUT1460
               '--------','--------','--------','--------',             EOUT1470
               '--------','--------','--------','--------',             EOUT1480
      DATA LINE/5,6,16,17,28,29,30,31,32,48,51,57,58,59,60,61,0,0,0,0,0/ EOUT1490
C                                                                         EOUT1500
CC       SPECIAL POSITION INDICATOR                                       EOUT1510
CC           PARENTHESES                                                  EOUT1520
C                                                                         EOUT1530
      DATA IOEB/17/,NOA/67/,NOP/130/                                      EOUT1540
      DATA IEB / 9, 4,   10, 4,   11, 4,   12, 4,   15, 4,   17, 4,      EOUT1550
     *          18,4,    19, 4,   20, 4,   53, 4,   42, 6,   43, 6,      EOUT1560
     *          44, 6,   49, 6,   50, 6,    0, 0,    0, 0,    0, 0,      EOUT1570
     *           0, 0,    0, 0/                                           EOUT1580
C                                                                         EOUT1590
CC       DATA AVAILABILITY                                                EOUT1600
C                                                                         EOUT1610
      DATA NA  / 3, 5,    3,11,    3,14,    3,23,    3,24,    3,27,      EOUT1620
     *           3,28,    4, 5,    4,27,    4,28,    5, 1,    5, 5,      EOUT1630
     *           5,28,    5,44,    7,18,   21,43,   21,59,   25, 2,      EOUT1640
     *          26, 5,   26,46,   28,49,   29,11,   38, 1,   38, 5,      EOUT1650
     *          38,44,   38,49,   38,55,   39, 1,   39, 5,   39,49,      EOUT1660
     *          41, 1,   41,34,   41,44,   41,49,   43,24,   43,26,      EOUT1670
     *          43,34,   43,36,   43,37,   43,39,   43,40,   43,41,      EOUT1680
     *          43,42,   43,43,   43,44,   43,45,   43,46,   43,47,      EOUT1690
```

(40)

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     *          43,48,   43,55,   49,34,   49,37,   49,39,   49,40,     EOUT1700
     *          49,41,   49,42,   49,43,   49,44,   49,45,   49,46,     EOUT1710
     *          49,47,   49,48,   49,49,   49,58,   18,46,   28,35,     EOUT1720
     *          28,48,    0, 0,    0, 0,    0, 0,    0, 0,    0, 0,     EOUT1730
     *           0, 0,    0, 0,    0, 0,    0, 0,    0, 0,    0, 0,     EOUT1740
     *           0, 0,    0, 0/                                         EOUT1750
C                                                                       EOUT1760
CC                BLANK POSITION OF ORIGINAL UNIT TABLE                 EOUT1770
C                                                                       EOUT1780
      DATA NP1 /42, 6,   42,11,   42,13,   42,17,   42,18,   42,20,     EOUT1790
     *          42,23,   42,24,   42,26,   42,27,   42,28,   42,29,     EOUT1800
     *          42,31,   42,32,   42,33,   42,34,   42,36,   42,37,     EOUT1810
     *          42,38,   42,39,   42,40,   42,41,   42,42,   42,43,     EOUT1820
     *          42,44,   42,45,   42,46,   42,47,   42,48,   42,49,     EOUT1830
     *          42,52,   42,55,   42,58,   42,61,   43, 6,   44, 6,     EOUT1840
     *          44,28,   44,29,   49, 6,   49,13,   49,17,   49,18,     EOUT1850
     *          49,20,   49,23,   49,24,   49,27,   49,28,   49,29,     EOUT1860
     *          49,31,   49,32,   49,33,   49,34,   49,36,   49,37,     EOUT1870
     *          49,38,   49,39,   49,40,   49,41,   49,42,   49,43,     EOUT1880
     *          49,44,   49,45,   49,46,   49,47,   49,48,   49,49,     EOUT1890
     *          49,58,   49,61,   50, 6,   50,13,   50,17,   50,28/     EOUT1900
      DATA NP2 /50,29,   53, 1,   53, 2,   53, 3,   53, 4,   53, 5,     EOUT1910
     *          53, 6,   53, 7,   53, 8,   53, 9,   53,11,   53,13,     EOUT1920
     *          53,14,   53,15,   53,16,   53,17,   53,18,   53,19,     EOUT1930
     *          53,20,   53,21,   53,22,   53,23,   53,24,   53,25,     EOUT1940
     *          53,26,   53,27,   53,28,   53,29,   53,30,   53,31,     EOUT1950
     *          53,32,   53,33,   53,34,   53,35,   53,36,   53,37,     EOUT1960
     *          53,38,   53,39,   53,40,   53,41,   53,42,   53,43,     EOUT1970
     *          53,44,   53,45,   53,46,   53,47,   53,48,   53,49,     EOUT1980
     *          53,52,   53,53,   53,54,   53,55,   53,56,   53,57,     EOUT1990
     *          53,58,   53,59,   53,60,   53,61,    0, 0     0, 0,     EOUT2000
     *           0, 0,    0, 0,    0, 0,    0, 0,    0, 0,    0, 0,     EOUT2010
     *           0, 0,    0, 0,    0, 0,    0, 0,    0, 0,    0, 0/     EOUT2020
C                                                                       EOUT2030
C                                                                       EOUT2040
      DATA BLANK/'   '/,BRA/' (  '/,KET/')   '/,MINUS/'-   '/,          EOUT2050
     *     ICHN/'N   '/,ICHAA/'A   '/,BLNK/'    '/                     EOUT2060
      DATA LIT /'0   ','1   ','2   ','3   ','4   ',                    EOUT2070
     *          '5   ','6   ','7   ','8   ','9   '/                    EOUT2080
  100 FORMAT(1H1//1H ,5X,'ENERGY BALANCES IN INDONESIA',                EOUT2090
     *       5X,A2,2X,I4,2X,A1//)                                       EOUT2100
  101 FORMAT(1H ,30X,10(5X,I2,3X))                                      EOUT2110
  102 FORMAT(1H ,32X,10(A8,2X))                                         EOUT2120
  103 FORMAT(1H ,16A8,A2)                                               EOUT2130
  104 FORMAT(1H1/////1H ,12(5X,I2,3X))                                  EOUT2140
  105 FORMAT(1H ,2X,12(A8,2X))                                          EOUT2150
  106 FORMAT(1H ,15A8)                                                  EOUT2160
  107 FORMAT(1H ,I2,1X,3A8,3X,10(A2,8A1))                               EOUT2170
  108 FORMAT(1H ,12(A2,8A1))                                            EOUT2180
C                                                                       EOUT2190
CC          SET INDICATORS OF SPECIAL POSITIONS                         EOUT2200
C                                                                       EOUT2210
      NCOL=53                                                           EOUT2220
      NROW=61                                                           EOUT2230
      DO 1 I=1,NROW                                                     EOUT2240
      DO 1 J=1,NCOL                                                     EOUT2250
      IN(J,I)=0                                                         EOUT2260
    1 CONTINUE                                                          EOUT2270
      DO 2 K=1,IOEB                                                     EOUT2280
      I=IEB(1,K)                                                        EOUT2290
      J=IEB(2,K)                                                        EOUT2300
      IN(I,J)=1                                                         EOUT2310
    2 CONTINUE                                                          EOUT2320
C                                                                       EOUT2330
C                                                                       EOUT2340
      DO 4 K=1,NOA                                                      EOUT2350
      I=NA(1,K)                                                         EOUT2360
```

```
      J=NA(2,K)                                                         EOUT2370
      IF(IN(I,J).EQ.1) GO TO 3                                          EOUT2380
      IN(I,J)=2                                                         EOUT2390
      GO TO 4                                                           EOUT2400
    3 IN(I,J)=4                                                         EOUT2410
    4 CONTINUE                                                          EOUT2420
C                                                                       EOUT2430
C                                                                       EOUT2440
      DO 8 K=1,NOP                                                      EOUT2450
      I=NP(1,K)                                                         EOUT2460
      J=NP(2,K)                                                         EOUT2470
      IF(IN(I,J).EQ.1) GO TO 5                                          EOUT2480
      IF(IN(I,J).EQ.2) GO TO 6                                          EOUT2590
      IF(IN(I,J).EQ.4) GO TO 7                                          EOUT2600
      IN(I,J)=3                                                         EOUT2510
      GO TO 8                                                           EOUT2520
    5 IN(I,J)=5                                                         EOUT2530
      GO TO 8                                                           EOUT2540
    6 IN(I,J)=6                                                         EOUT2550
      GO TO 8                                                           EOUT2560
    7 IN(I,J)=7                                                         EOUT2570
    8 CONTINUE                                                          EOUT2580
C                                                                       EOUT2590
C         WRITE TITLE                                                   EOUT2600
C                                                                       EOUT2610
      NO=BLANK                                                          EOUT2620
      IF(IO.NE.0) NO=LIT(IO+1)                                          EOUT2630
      WRITE(6,100) FREQ,IY,NO                                           EOUT2640
C                                                                       EOUT2650
C         PRINT OUT ENERGY BALANCES TABLE                               EOUT2660
C                                                                       EOUT2670
      LC=0                                                              EOUT2680
      NC=(NCOL+13)/12                                                   EOUT2690
      DO 50 M=1,NC                                                      EOUT2700
      IF(M.GT.1) GO TO 10                                               EOUT2710
      KC=LC+1                                                           EOUT2720
      LC=LC+10                                                          EOUT2730
      K=10                                                              EOUT2740
      GO TO 11                                                          EOUT2750
   10 KC=LC+1                                                           EOUT2760
      LC=LC+12                                                          EOUT2770
      K=12                                                              EOUT2780
   11 IF(LC.LE.NCOL) GO TO 15                                           EOUT2790
      K=12-LC+NCOL                                                      EOUT2800
      LC=NCOL                                                           EOUT2810
C                                                                       EOUT2820
C         PRINT OUT COLUMN TITLE                                        EOUT2830
C                                                                       EOUT2840
   15 DO 16 I=1,K                                                       EOUT2850
      JCOL(I)=KC+I-1                                                    EOUT2860
   16 CONTINUE                                                          EOUT2870
      IF(M.GT.1) GO TO 18                                               EOUT2880
      WRITE(6,101) (JCOL(I),I=1,K)                                      EOUT2890
      DO 17 J=1,4                                                       EOUT2900
      WRITE(6,102) (TCOL(J,I),I=KC,LC)                                  EOUT2910
   17 CONTINUE                                                          EOUT2920
      KN=K+7                                                            EOUT2930
      WRITE(6,103) (LIN(I),I=1,KN)                                      EOUT2940
      GO TO 20                                                          EOUT2950
C                                                                       EOUT2960
C                                                                       EOUT2970
   18 WRITE(6,104) (JCOL(I),I=1,K)                                      EOUT2980
      DO 19 J=1,4                                                       EOUT2990
      WRITE(6,105) (TCOL(J,I),I=KC,LC)                                  EOUT3000
   19 CONTINUE                                                          EOUT3010
      KN=K+3                                                            EOUT3020
      WRITE(6,106) (LIN(I),I=1,KN)                                      EOUT3030
```

```
C                                                                       EOUT3040
C                PRINT OUT VALUES OF ENERGY BALANCES                    EOUT3050
C                                                                       EOUT3060
   20 ID=1                                                              EOUT3070
      DO 40 J=1,NRAW                                                    EOUT3080
      DO 35 I=1,K                                                       EOUT3090
      JEB(I)=1                                                          EOUT3100
      NEB(I)=1                                                          EOUT3110
      NI=IN(KC+I-1,J),                                                  EOUT3120
      IF(NI.EQ.1.OR.NI.EQ.4.OR.NI.EQ.5.OR.NI.EQ.7) NEB(I)=-1            EOUT3130
      IF(IFOU.EQ.1.AND.(NI.EQ.3.OR.NI.EQ.5.OR.NI.EQ.6.OR.NI.EQ.7))     EOUT3140
     *   GO TO 31                                                       EOUT3150
C                                                                       EOUT3160
C                     ROUNDING OF VALUES                                EOUT3170
C                                                                       EOUT3180
      EBV=EB(KC+I-1,J)                                                  EOUT3190
      KK=KC+I-1                                                         EOUT3200
      IF(EBV.EQ.BLNK) GO TO 31                                          EOUT3210
      IF(EBV.GE.0.0) GO TO 21                                           EOUT3220
      IVAL=EBV-0.5                                                      EOUT3230
      GO TO 22                                                          EOUT3240
   21 IVAL=EBV+0.5                                                      EOUT3250
   22 N=0                                                               EOUT3260
      IF(IVAL.LT.0) JEB(I)=-1                                           EOUT3270
      IVAL=IABS(IVAL)                                                   EOUT3280
      IF(IVAL.EQ.0.AND.(NI.EQ.2.OR.NI.EQ.4.OR.NI.EQ.6.OR.NI.EQ.7))      EOUT3290
     *   GO TO 30                                                       EOUT3300
C                                                                       EOUT3310
C                TRANSFORMATION FROM INTEGER TYPE TO LITERAL TYPE       EOUT3320
C                                                                       EOUT3330
   25 N=N+1                                                             EOUT3340
      JVAL=(IVAL/10)*10                                                 EOUT3350
      JT=IVAL-JVAL                                                      EOUT3360
      IF(JT.EQ.0.AND.IVAL.LT.10) GO TO 26                               EOUT3370
      MEB(8-N,I)=LIT(JT+1)                                              EOUT3380
      IVAL=JVAL/10                                                      EOUT3390
      GO TO 25                                                          EOUT3400
   26 IF(N.GT.1) GO TO 27                                               EOUT3410
      MEB(8-N,I)=LIT(JT+1)                                              EOUT3420
      N=N+1                                                             EOUT3430
C                                                                       EOUT3440
C                   NEGATIVE VALUE CASE                                 EOUT3450
C                                                                       EOUT3460
   27 IF(JEB(I).GT.0) GO TO 28                                          EOUT3470
      MEB(8-N,I)=MINUS                                                  EOUT3480
      N=N+1                                                             EOUT3490
C                                                                       EOUT3500
C                   POSITIVE VALUE CASE                                 EOUT3510
C                                                                       EOUT3520
   28 IF(N.GE.8) GO TO 33                                               EOUT3530
      LL=8-N                                                            EOUT3540
      DO 29 L=1,LL                                                      EOUT3550
      MEB(L,I)=BLANK                                                    EOUT3560
   29 CONTINUE                                                          EOUT3570
      GO TO 33                                                          EOUT3580
C                                                                       EOUT3590
C                   NON-AVAILABILITY OF DATA                            EOUT3600
C                                                                       EOUT3610
   30 MEB(1,I)=BLANK                                                    EOUT3620
      MEB(2,I)=BLANK                                                    EOUT3630
      MEB(3,I)=BLANK                                                    EOUT3640
      MEB(4,I)=BLANK                                                    EOUT3650
      MEB(5,I)=BLANK                                                    EOUT3660
      MEB(6,I)=BLANK                                                    EOUT3670
      MEB(7,I)=BLANK                                                    EOUT3680
      GO TO 33                                                          EOUT3690
C                                                                       EOUT3700
```

```
C                    BLANK POSITION                                    EOUT3710
C                                                                      EOUT3720
   31 DO 32 L=1,7                                                      EOUT3730
      MEB(L,I)=BLANK                                                   EOUT3740
   32 CONTINUE                                                         EOUT3750
C                                                                      EOUT3760
C                    PARENTHESIS                                       EOUT3770
C                                                                      EOUT3780
   33 IF(NEB(I).LT.0) GO TO 34                                         EOUT3790
      IB(I)=BLANK                                                      EOUT3800
      JB(I)=BLANK                                                      EOUT3810
      GO TO 35                                                         EOUT3820
   34 IB(I)=BRA                                                        EOUT3830
      JB(I)=KET                                                        EOUT3840
   35 CONTINUE                                                         EOUT3850
C                                                                      EOUT3860
C                    PRINT OUT TABLE                                   EOUT3870
C                                                                      EOUT3880
      IF(M.GT.1) GO TO 37                                              EOUT3890
      IF(J.LE.LINE(ID)) GO TO 36                                       EOUT3900
      KN=K+7                                                           EOUT3910
      WRITE(6,103) (LIN(I),I=1,KN)                                     EOUT3920
      ID=ID+1                                                          EOUT3930
   36 WRITE(6,107) J,(TRAN(I,J),I=1,3),(IB(I),(MEB(L,I),L=1,7),        EOUT3940
     *              JB(I),I=1,K)                                      EOUT3950
      GO TO 40                                                         EOUT3960
C                                                                      EOUT3970
C                                                                      EOUT3980
   37 IF(J.LE.LINE(ID)) GO TO 38                                       EOUT3990
      KN=K+3                                                           EOUT4000
      WRITE(6,106) (LIN(I),I=1,KN)                                     EOUT4010
      ID=ID+1                                                          EOUT4020
   38 WRITE(6,110) (IB(I),(MEB(L,I),L=1,7),JB(I),I=1,K)                EOUT4030
   40 CONTINUE                                                         EOUT4040
   50 CONTINUE                                                         EOUT4050
      RETURN                                                           EOUT4060
      END                                                              EOUT4070
```

4. Modifications of Program to Prepare Commodity Balance and Concise Energy Balance Tables

Developed in fiscal 1979 was a program capable of printing out an energy balance table in which data were shown in a common unit. In fiscal 1980, the same program was modified in several points to be empowered to print out the commodity balance and concise energy balance tables in addition to the energy balance table featuring a common unit.

(1) Modification of subroutine CLSVAR

To classify variable names of energy balance equations read out, the subroutine CLSVAR prepared in fiscal 1979 was designed to store in NEXO1 and NEXO2 names of exogenous variables of which calculations could not be made without given additional data, and store in NENDO1 and NENDO2 names of intermediate variables which represent intermediate results of calculations. It was not, however, designed to memorize variable names which represent values stated in the energy balance table, that is, results of completed calculations.

For the preparation of the commodity balance and concise energy balance tables, results of completed calculations stated in the energy balance table are used as intermediate variables. Hence, in fiscal 1980, the subroutine CLSVAR was modified to be able to classify variable names into two; exogenous variables of which calculations can not be made without given additional data, and endogenous variables of which calculations can be made based on balance equations. The former is stored in NEXO1 and NEXO2, and the latter in NENDO1 and NENDO2. Variable names related to the energy balance table (EBC**R**). those to the commodity balance table (CBC**R**) and those to concise energy balance table (CTC**R**) are handled as endogenous variables without an exception.

(2) Modification of subroutine EBCALC

As mentioned in the preceding section "subroutine CLSVAR," the original program prepared in fiscal 1979 discriminates variable names representing values stated in the energy balance table from others. The function of the subroutine EBCALC is to calculate data stated in the energy balance table based on balance equations. Under the original program, the subroutine is designed to memorize names of exogenous variables and, simultaneously, store their numerical values in VEXO. It is also designed to store intermediate variables in VENDO and results of calculations stated in the energy balance table in a two-dimensional matrix EB which is as large as the energy balance table in size.

In accordance with the modification of the subroutine CLSVAR, the subroutine EBCALC was also modified to store results of calculations made based on the data stated in the energy balance, commodity balance and concise energy balance tables in VENDO which is linked with NENDO1 and NENDO2, the area dealing with names of endogenous variables.

(3) Addition of subroutine TVALUE

Under the original program, numerical figures stated in the energy balance table are separated from those related to the commodity balance and concise energy balance tables and

stored in an array of EB independently. On the contrary, under the new program whereby the subroutines CLSVAR and EBCALC were modified, a wide variety of items, including intermediate variables and numerical values related to the energy balance, commodity balance and concise energy balance tables, are stored in a single area of VENDO designed to deal with numerical values of endogenous variables.

To eliminate the complication, a new subroutine TVALUE was incorporated with the modified program. The new subroutine TVALUE is designed to take out variable names by type of code (i.e. EBC . . . . , CBC . . . . , and CTC . . . .) from the area VENDO to deal with endogenous variables, then store their values in three different one-dimensional arrays depending on the type of their codes. The positions of individual values stored in the one-dimensional arrays are stored in two-dimensional matrices corresponding to easy type of balance table. Specific numbers of columns and rows of the two-dimensional matrices are taken out based on variable names with the use of subroutines MASKF and SHIFT.

(4) Addition of subroutine CTOUT

A new subroutine CTOUT was prepared to print out the concise energy balance table. The logic of the new subroutine is exactly the same as that of a subroutine EBOUT. The only difference between these two subroutines is titles of rows and columns of balance tables.

(5) Addition of subroutine TRFMI

As mentioned before, the subroutines CTOUT and EBOUT are built up based on an exactly same logic, which includes a function to convert numerical values into literal values. The function common to CTOUT and EBOUT, therefore, was set up as an independent subroutine TRFMI.

Meanwhile, as values related to individual balance tables are transferred to the subroutines EBOUT or CTOUT via the subroutine TVALUE in a form of one-dimensional arrays instead of two-dimensional matrix, the ways allowing the subroutines EBOUT and CTOUT to call out values were given minor modifications.

The aforementioned modifications of subroutines are not always necessary so long as data of individual balance tables which are to be calculated cover a single year only. It should be noted that these modifications were made to prepare for the connection of the energy balance calculation system with a sub-data bank, which is discussed in the subsequent section. Connection with a sub-data bank allow simultaneous calculations of data covering multiple years, which then requires under the original program to keep as many two-dimensional arrays as required for the calculations including those left blank. To eliminate such a wasteful use of areas, the new program was designed to make the best use of areas belonging to one-dimensional arrays, by which further expansion of the program became possible.