2.4 Coal Beds in Ngao Basin

The coal seam in the Ngao coal basin contains many shale partings and varies its thickness quickly. Coal is classified as “lignite” and consists mainly of dull coal. There are rarely massive dull beds without any shale partings in the coal bed, however coal beds usually include thin layers of coaly-shale or shale. The Ngao coal was formed at peat swamps in an intermontane basin as other coal basins in Thailand. Type of peat swamp in Ngao is interpreted as “planar peat” mentioned by Cecil et al in 1985. Characteristics of peat types are shown in Table 2-4. It is presumed that frequent rising of water level had caused inflow of mud into a swamp and interruption of peat deposition.

The following two reasons make correlation of coal seam difficult throughout the area. One reason is that previous core logging works have been carried out on the base of different standards on coal and carbonaceous shale. Another is that a marker or key bed has not been identified yet. However, it becomes clear that boreholes in a same block divided by faults have a similar pattern of coal and partings.

Top part of the coal seams, which is relatively correlatable, is designated as “Zone I“ according to the DMR’s report. Lower part of the coal seams, designated ”Zone II”, has not been interpreted enough, because only a small number of boreholes penetrated the lower part. Judging from the available borehole data, coal seams in Zone II are present more sparsely than those in Zone I so that the potential for open cut mining seems to be low.

The exploration area is divided into ten (10) blocks by faults based on the interpretation of the data of previous boreholes, seismic survey and new boreholes. The characteristics of each block are shown in Table 2-5. Correlation chart are

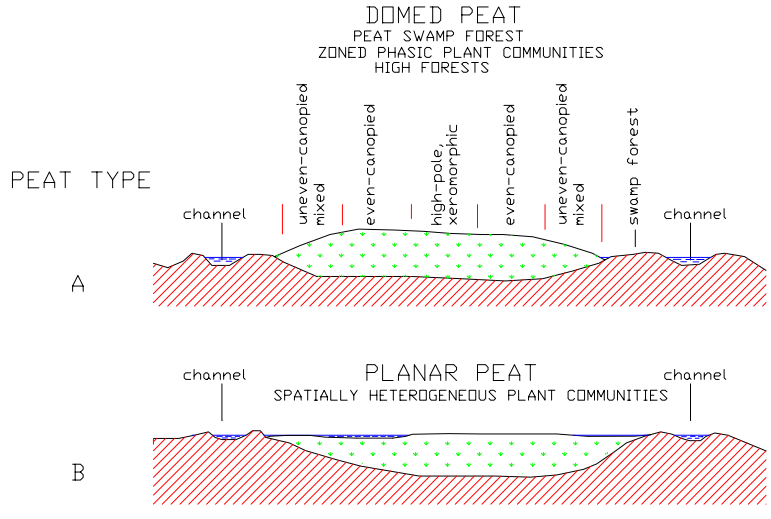
shown in Figure 2-8, Structure contour map of the top of Zone I in Figure 2-9, and Cross section in Figure 2-10.

Average dip of each block is not more than 18 degrees. Because difference between apparent thickness and true thickness is small at this angle, apparent thickness is used for calculation of coal resources. (for example: True thickness(2.85m) = apparent thickness(3m) x Cos 18° (0.95))

Table２－４ Characteristics of Generalized Types of Peat-forming Environments

Characteristic(ﾋﾟｰﾄｽﾜﾝﾌﾟの型)	**Type A　(Domed Type)**	**Type B　(Planar Type)**
climate	ever-wet tropical	seasonal tropical
water source	ombrogenous	topogenous
nutrient content	oligotrophic	mesotrophic to eutropical
surface morphology	**domed**	**planar**
pH	< 4	4 to 7
Eh	?	?
floral communities	low diversity zoned;xeromorphic	high diversity random;luxuriant
microbial activity	low (cellulose preserved)	low (cellulose degraded)
mechanism of degradation	primarily chemical	primarily microbial
ash content	low, uniform	high, variable
sulfur content	low, uniform	low, variable
nitrogen content	low, uniform	low, variable
cation exchange capacity	high	low
specific conductivity	low	high
base saturation	low	high
[Ca^{2+}]	low	high
fiber content	fibric	hemic to sapric
biogenic sulfide	low	high
biogenic methane	low	high

Cecil,C.B., Santon,R.W., Neuzil,S.G., Dulong,F.T., Ruppert,L.F. and Pierce,B.C., 1985. Paleoclimate controls on the Paleozoic sedimentation and peat formation in the central Appalachian basin(USA). Inter. J. of Coal Geology, 5: 195-230.



Generalized cross-sections of domed and planar peat deposits

Table 2-5 Characteristic of Blocks

Block	Item	Characteristic
A	Drill holes	2
	Zone I	Shale partings interbeded at the middle, become as thick as 5m.
	Zone II	No drill hole has penetrated the zone.
	Dip	15°
	Remarks	
B	Drill holes	4
	Zone I	Relatively thick, while there are partings at the middle area.
	Zone II	becoming toward the south-west. Thickness at NG13/31 is more than zone I
	Dip	5° ～13°
	Remarks	
C	Drill holes	1
	Zone I	Indistinct due to only one drill hole
	Zone II	Indistinct due to only one drill hole
	Dip	8° ～12°
	Remarks	Contacting the west and the east with faults, whose throw is 200m
D	Drill holes	7
	Zone I	Well-developed, however there are many partings.
	Zone II	No drill hole has penetrated the zone.
	Dip	8° ～18°
	Remarks	
E	Drill holes	7
	Zone I	Thick at the middle and thinning toward the north and the south.
	Zone II	thick at the middle area.
	Dip	10° ～14°
	Remarks	
F	Drill holes	12
	Zone I	Becoming thick only at the middle area.
	Zone II	Becoming thick at the middle and the south areas, while there are few drill holes.
	Dip	4° ～13°
	Remarks	Coal zones become deeper toward the center of the block.
G	Drill holes	10
	Zone I	well-developed throughout the block. 5m-thick parting is observed at the middle part of the zone in the north area
	Zone II	well-developed at the middle and south areas.
	Dip	3° ～8°
	Remarks	Basement rock tends to be shallower than periphery.
H	Drill holes	2
	Zone I	Very thick coal more than 30m is observed.
	Zone II	Inferior coal
	Dip	Ggentle dipping
	Remarks	This block is limited with the high basement rock (monadonock).
I	Drill holes	1
	Zone I	same as Block H
	Zone II	One drill hole shows the good coal zone.
	Dip	Ggentle dipping
	Remarks	The coal is correlated with zone II's coal, however the block is isolated with the high basement (monadonock) and a fault.
J	Drill holes	4
	Zone I	same as Blocks H and I at the north area.
	Zone II	This zone is observed at the north area, while no data at the south area.
	Dip	8° ～14°
	Remarks	Exploration work for this block is not enough.

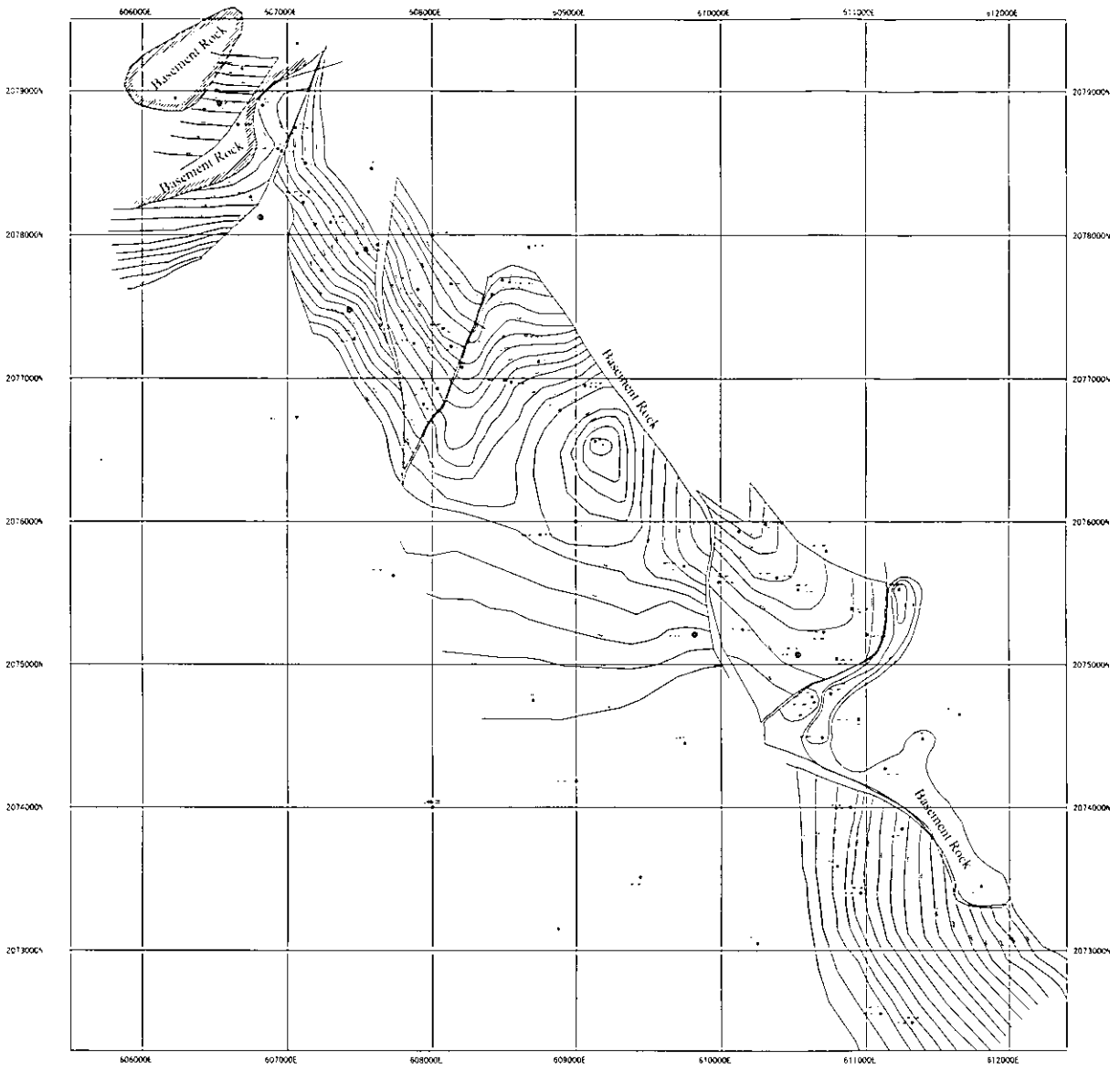
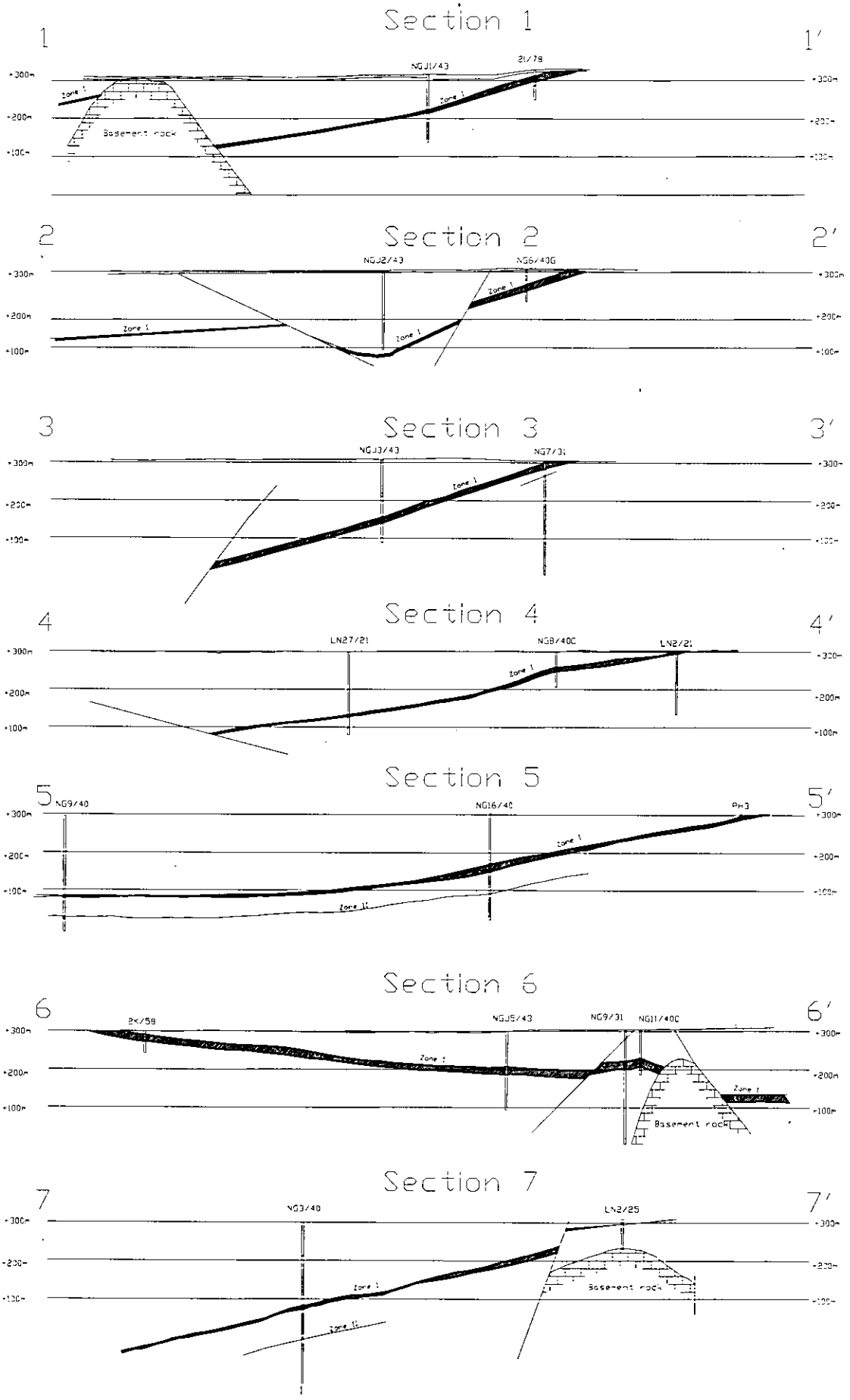


Figure2-9 Structure Contour Map(Bottom of Mining Section)

Fig2-10 Cross section



2.5 Coal Resources and Reserves

Estimation of coal resources depends on a category of the resources. Table 2-6 shows a classification system made by United Nation, "United Nation International Framework Classification for Reserves and Resources on Solid Fuels and Mineral commodities". DMR follows basically the classification.

Table 2-6 UN International Framework Classification for Reserves/Resources Solid Fuels and Mineral Commodities

<table>
<tr><td>UN International Framework</td><td>Detailed Exploration</td><td>General Exploration</td><td>Prospecting</td><td>Reconnaissance</td></tr>
<tr><td rowspan="2">Feasibility Study and/or Mining Report</td><td>Proved Mineral Reserve(111)</td><td rowspan="2">Usually</td><td rowspan="3" colspan="2">Not Relevant</td></tr>
<tr><td>Feasibility Mineral Reserve(211)</td></tr>
<tr><td rowspan="2">Pre-feasibility Study</td><td colspan="2">Probable Mineral Reserve (121) (122)</td></tr>
<tr><td colspan="2">Pre-feasibility Mineral Resource (221) (222)</td></tr>
<tr><td>Geological Study</td><td>Measured Mineral Resource (331)</td><td>Indicated Mineral Resource (332)</td><td>Inferred Mineral Resource (333)</td><td>Reconnaissance Resource (334)</td></tr>
</table>

"Coal Resources", estimated at the present exploration, is classified as "Measured Mineral Resources (331)" and "Indicated Mineral Resources (332)". "Coal Reserves for Mining" comes under "Pre-feasibility Mineral Resources (221) (222)".

2.5.1 Coal Resources

This quantity shows the magnitude of coal potential in the exploration area. The estimation was made basically in accordance with the DMR's standard. The following are the criteria adopted for coal resources estimation in the present study.

- Mining coal thickness: ≥ 20cm
- Specific gravity: 1.50 (estimated from results of Float – Sink Test)

Table 2-7 Coal Resources

S.G.= 1.50

	Total coal thickness	Measured		Indicated		Demonstrated
		Area(1,000m2)	(1,000t)	Total (1,000m2)	(1,000t)	(1,000t)
NG11/40	11.46	125.6	2,159.1	315.4	5,421.7	7,580.8
NG10/31	10.85	125.6	2,044.1	315.4	5,133.1	7,177.2
NGJ1/43	2.69	125.6	506.8	303.9	1,226.2	1,733.0
NG1/31	7.60	90.8	1,035.1	156.9	1,788.7	2,823.8
NG5/40G	13.24	83.0	1,648.4	31.4	623.6	2,272.0
LN28/21	6.68	71.7	718.4	56.7	568.2	1,286.6
NG13/31	41.17	124.5	7,688.5	213.0	13,153.8	20,842.3
NG6/40G	3.05	86.6	396.2	29.2	133.6	529.8
NG7/40G	13.99	98.5	2,067.0	102.6	2,153.1	4,220.1
LN26/21	11.11	64.8	1,079.9	25.7	428.3	1,508.2
NG7/31	12.31	75.4	1,392.3	90.4	1,669.2	3,061.5
LN11/21	0.93	99.3	138.5	46.4	64.7	203.2
LN2/21	0.30	90.3	40.6	81.6	36.7	77.3
NGJ3/43	18.07	125.6	3,404.4	200.2	5,426.4	8,830.8
NG2/31	14.31	98.3	2,110.0	70.4	1,511.1	3,621.1
NG8/40C	4.58	64.4	442.4	2.6	17.9	460.3
LN1/21	6.00	114.9	1,034.1	194.7	1,752.3	2,786.4
LN3/21	15.09	81.0	1,833.4	38.6	873.7	2,707.1
LN27/21	2.11	125.6	397.5	241.6	764.7	1,162.2
NG16/40	12.97	125.7	2,445.5	216.7	4,215.9	6,661.4
NG10/40	9.95	125.5	1,873.1	219.6	3,277.5	5,150.6
NG8/31	5.20	125.5	978.9	267.2	2,084.2	3,063.1
NG8/40	0.24	125.6	45.2	376.8	135.6	180.8
NG9/40	0.80	125.6	150.7	371.5	445.8	596.5
NGG4/40	8.55	112.4	1,441.5	235.8	3,024.1	4,465.6
NG5/31	4.05	122.7	745.4	239.9	1,457.4	2,202.8
NG4/40C	8.35	109.7	1,374.0	52.6	658.8	2,032.8
NG3/40C	3.48	93.4	487.5	21.0	109.6	597.1
NGG1/40	8.45	92.1	1,167.4	58.0	735.2	1,902.6
NG3/31	9.12	122.9	1,681.3	140.4	1,920.7	3,602.0
NGJ5/43	7.46	93.0	1,040.7	40.4	452.1	1,492.8
NG13/40	1.72	107.9	278.4	172.6	445.3	723.7
NG1/40G	3.72	69.0	385.0	0.9	5.0	390.0
NGG2/40	2.05	88.6	272.4	57.4	176.5	448.9
NG9/31	39.37	56.9	3,360.2	42.6	2,515.7	5,875.9
NG11/40C	25.67	64.6	2,487.4	87.2	3,357.6	5,845.0
NGG3/40	19.68	120.5	3,557.2	195.6	5,774.1	9,331.3
NG5/40	19.92	125.6	3,752.9	307.4	9,185.1	12,938.0
NG3/40	3.23	125.6	608.5	337.7	1,636.2	2,244.7
NG11/31	12.31	106.2	1,961.0	232.2	4,287.6	6,248.6
NG12/40	6.17	106.2	982.9	232.2	2,149.0	3,131.9
Total		4,216.7	61,213.8	6,422.4	90,796.0	152,009.8

・ Area: divided by Polygon method

・ Area by geologic assurance

Measured area: Radius≤ 200m from observation point

Indicated area: Between the radius of 200m and 400m

Demonstrated area = Measured area + Indicated area

Coal Resources = Area x accumulated coal thickness of each borehole ×Specific gravity (1.50)

Figure 2-11 shows the conception of the coal resources calculation. The calculation result is summarized in Table 2-7. Figure 2-12 shows the influence area of individual boreholes. This coal resource was not divided by depth. The quantity by elevations is considered in the coal reserves for mining.

Table 2-8 shows the comparison of the coal resources in this study and those in previous reports. It indicates that increase in exploration works made coal potential area and tonnage of coal resources large

Table 2－8 Comparison of Coal Resources in Ngao Coal Basin

	Demonstrated		Measured		Indicated	
	Area	Tonnage	Area	Tonnage	Area	Tonnage
DMR(1988)	5,28	99,096	2,627	48,399	2,611	50,697
DMR(1998)#			3,044	124,571		
This Report	10,639	136,809	4,217	55,092	6,422	81,717

DMR(1988)：The Master Plan for Coal Resources Management of Thailand, DMR

DMR(1998)：DMR report 98/2540

The tonnage of DMR(1998) was calculated with the thickness including carbonaceous shale and interburden.

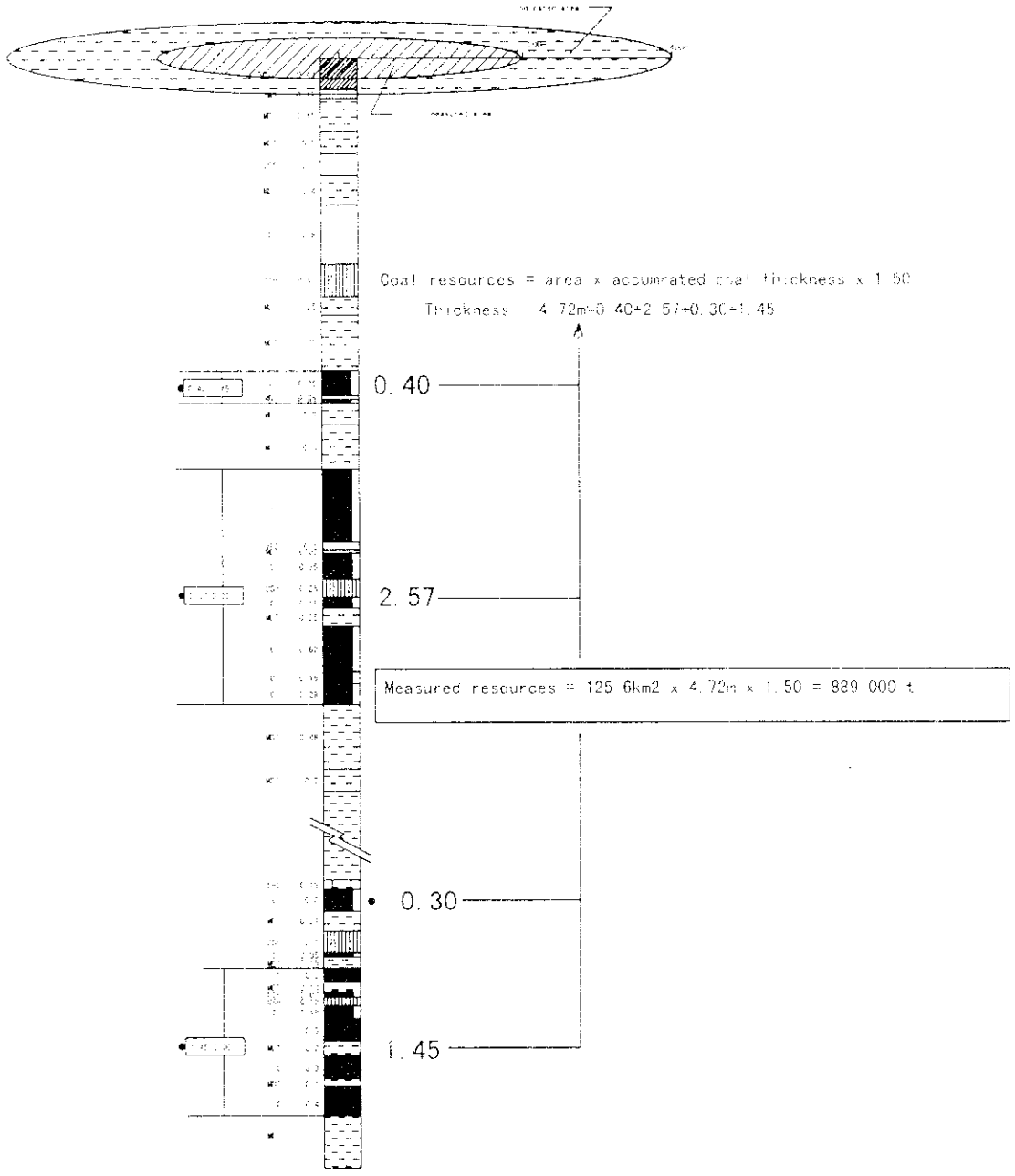


Figure2-11 General Idea of Coal Resources Calculation

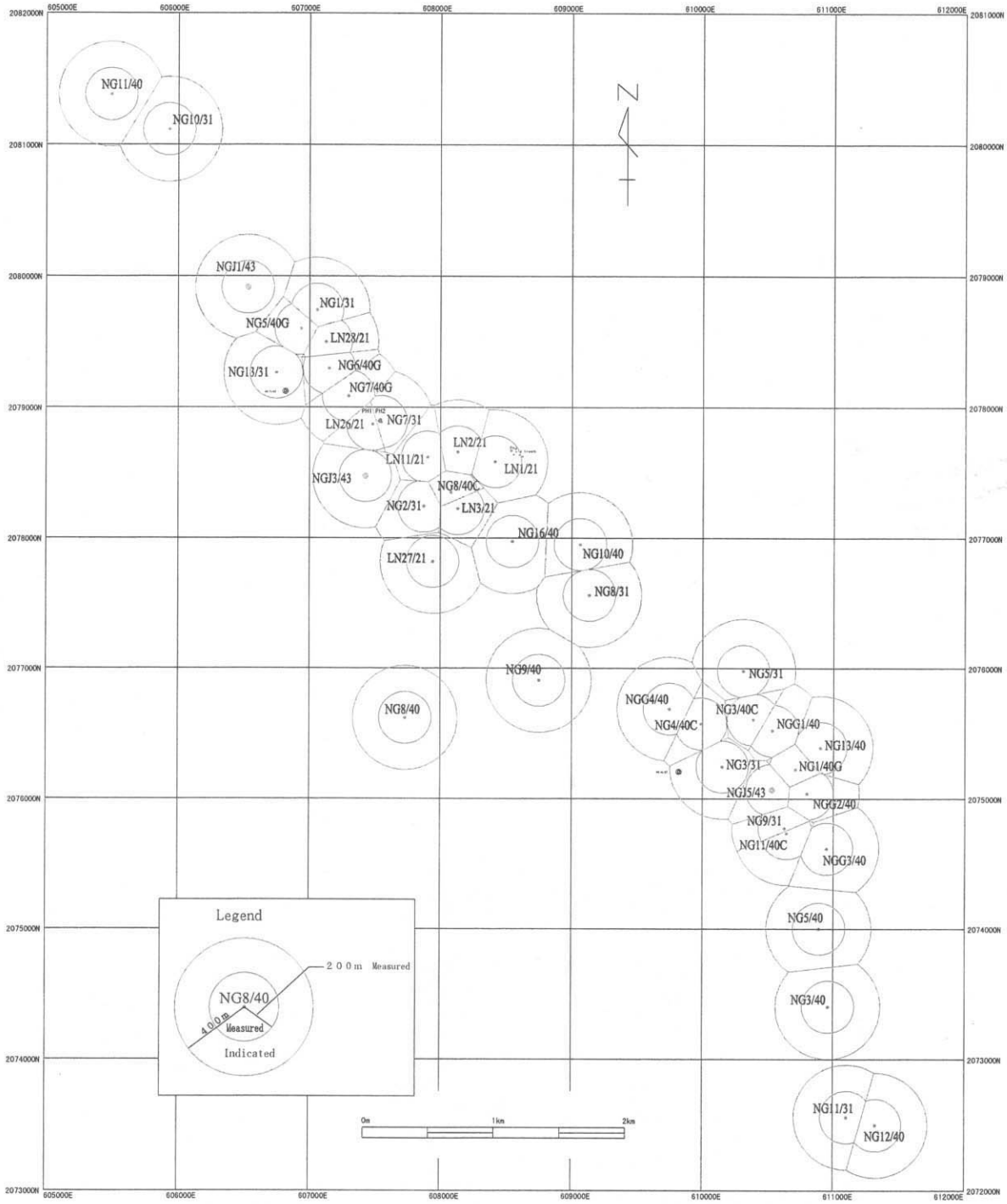


Figure2-12 Calculation Map of Coal Resources

2.5.2 Coal Reserves for Mining

Coal Reserves for Mining were estimated with a geologic structure contour map of the bottom of mining sections and an isopach map of accumulated coal thickness of the individual coal sections. Figure 2-13 shows the conception of the coal reserves calculation. Table 2-9 summarizes depth, thickness of mining section and accumulated coal thickness in the mining section at individual boreholes. Figure 2-9 shows a structure contour map of the bottom of mining sections (Zone I). Figure 2-14 shows isothickness map of mining section and Figure 2-15 shows isothickness map of accumulated coal thickness in the mining section.

The following are the criteria adopted for coal reserves estimation.

- Reserves for open pit mining are calculated down to the depth of 250m from the surface. The surface elevation in the potential area is 300m above sea level, so that the depth 250m means 50m above sea level
- Coal seam in Zone I, having 30cm or more in thickness, are the target part for mining.
- Specific gravity: 1.50 (estimated from results of Float – Sink Test)
- Coal thickness: the average thickness between the two neighboring isopach lines.(for example: average coal thickness is 3m in a area between 2m and 4m lines)
- Area: each area was divided with the line of 50m-vertical-interval and isopach lines at 2m-interval of accumulated coal thickness in the mining section.

Coal Reserves = Area × Coal thickness × Specific gravity (1.50)

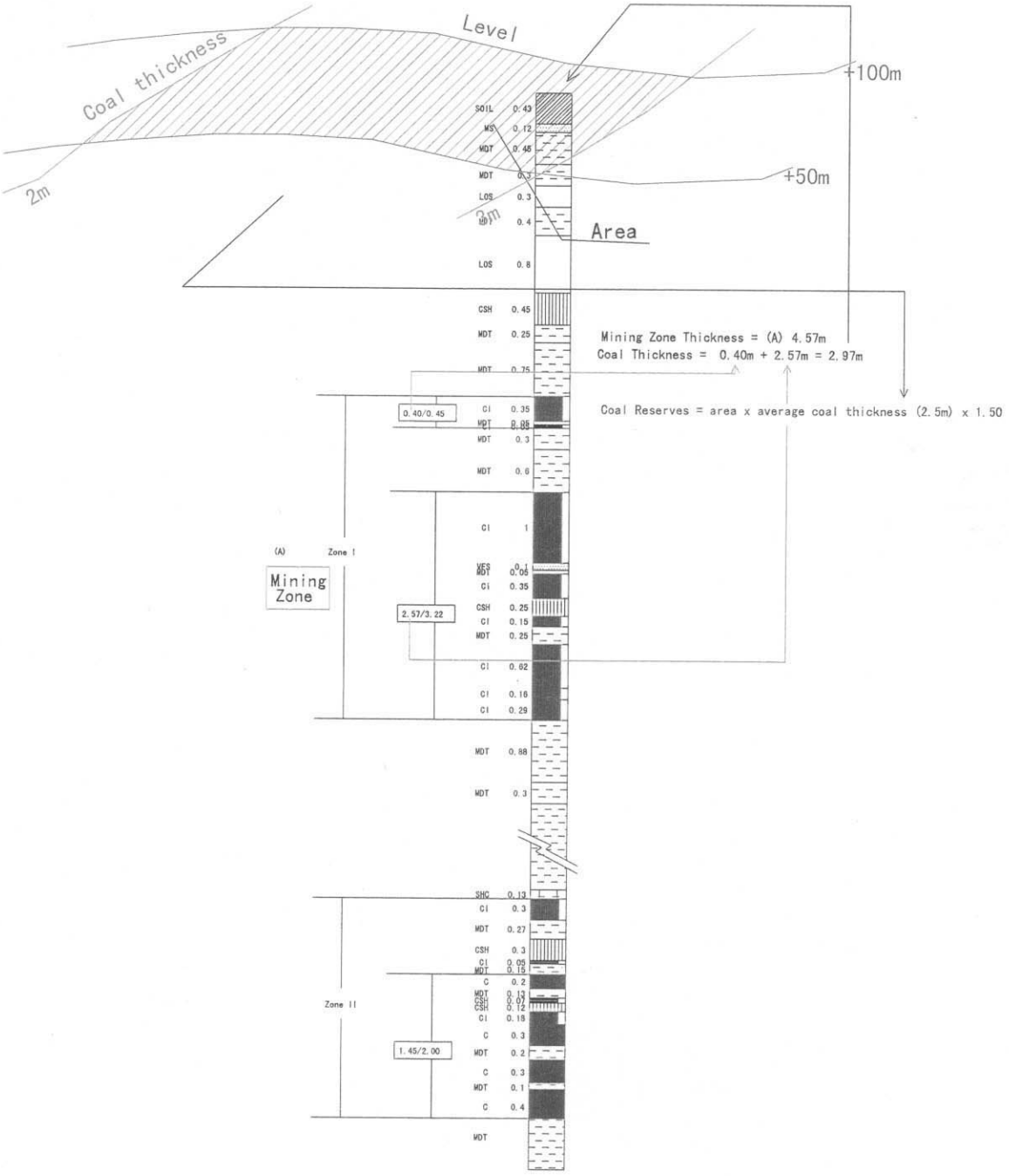


Figure2-13 General Idea of Coal Reserves Calculation for Mining

Table 2-9 Factors for Coal Reserves for Mining

	Northing	Easting	Elevation	Zone I				Zone II *		
				Overburden I	稼行丈 (m)	炭丈累計 (m)	Zone I 下盤標高	稼行丈 (m)	炭丈累計 (m)	Zone II 下盤標高
NG11/40	2080384.7	605490.8	317.40	109.90						
NG10/31	2080118.2	605933.4	313.42	8.40						
NGJ1/43	2078914.9	606531.3	316.50	91.85	2.80	2.22	214.50			
NG5/40G	2078601.0	606934.1	316.60	6.18	9.10	7.49	291.60			
NG13/31	2078265.8	606746.6	312.08	9.30	15.75	13.57	274.08			
NG1/31	2078743.6	607057.2	305.58	23.80	8.90	7.60	266.40			
LN28/21	2078500.0	607125.0	301.47	3.96	10.64	6.68	281.40			
NG6/40G	2078297.5	607148.2	307.40	39.85	3.25	3.05	250.90			
NG7/40G	2078086.5	607295.9	303.20	8.00	15.53	13.99	252.20			
LN26/21	2077870.0	607480.0	不明	3.58	14.75	8.69				
NG7/31Ne	2077889.4	607545.3	304.50	4.45	13.30	11.05	282.00	1.99	1.26	261.35 *
NGJ3/43	2077475.5	607425.0	306.30	149.75	10.84	7.10	138.75	10.95	8.89	118.70
LN11/21	2077620.0	607900.0	301.33	52.78	thin					
LN2/21	2077660.0	608130.0	303.27	3.83	thin					
NG2/31	2077243.9	607871.5	298.19	114.90	14.63	11.11	164.26	4.90	3.20	145.09
NG8/40C	2077349.8	608076.7	300.80	41.00	5.48	4.20	247.54	thin		
LN3/21	2077225.0	608130.0	298.80	36.97	2.17	1.26	230.21			
LN27/21	2076820.0	607940.0	298.51	164.10	2.11	2.11	127.10			
LN1/21	2077585.0	608415.0	300.90	2.64	9.50 *	6.00	281.81			
NG16/40	2076973.8	608546.5	302.50	131.55	17.22	11.87	149.50	1.10	1.10	88.65
NG10/40	2076951.0	609063.6	303.90	179.75	18.75	8.45	98.88	0.90	0.90	48.60
NG8/31	2076561.6	609133.1	300.39	289.50	1.40	0.90	9.49	4.30	4.30	-45.11
NG8/40	2075621.0	607730.6	291.10	271.71	thin					
NG9/40	2075909.2	608749.5	294.70	211.50	0.80	0.80	82.40			
NGG4/40	2075688.9	609746.1	297.20	156.30	4.10	1.80	136.80	6.05	3.50	71.60
NG5/31	2075979.6	610310.2	304.55	24.80	4.60	4.05	276.05			
NG4/40C	2075576.1	609984.9	300.30	91.70	14.02	8.35	192.50			
NG3/40C	2075607.2	610384.9	311.70	57.36	4.27	3.48	242.40			
NGG1/40	2075522.6	610531.7	312.60	74.30	7.10	4.90	229.25	4.05	3.55	174.25
NG3/31	2075245.1	610148.6	296.42	106.63	9.32	8.15	177.47	1.80	1.30	125.37
NGJ5/43	2075068.2	610528.8	299.30	93.20	7.30	4.99	188.05	2.90	2.47	130.20
NG13/40	2075389.7	610899.8	306.50	99.25	0.35	0.00	206.90	2.25	1.52	158.60
NG1/40G	2075226.1	610707.8	304.40	74.50	4.68	3.72	219.00			
NGG2/40	2075039.6	610796.8	303.60	96.80	10.60	1.60	196.20	0.70	0.45	121.60
NG9/31	2074772.7	610624.9	304.79	56.90	42.00	35.62	201.29			
NG11/40C	2074734.9	610640.8	305.70	50.00	25.67	31.45	206.70			
NGG3/40	2074615.5	610946.9	300.10	156.60	23.35	17.58	112.95	2.60	2.10	34.60
NG5/40	2074001.3	610888.6	298.80	236.53	23.15	16.93	35.25	2.67	2.52	-32.92
NG3/40	2073402.2	610959.5	301.30	215.20	9.35	3.23	74.20			
NG11/31	2072559.4	611101.0	305.21	272.35	19.30	12.10	10.56			
NG12/40	2072497.3	611319.5	310.00	247.14	7.69	6.17	46.72			

* : Zone II was not calculated

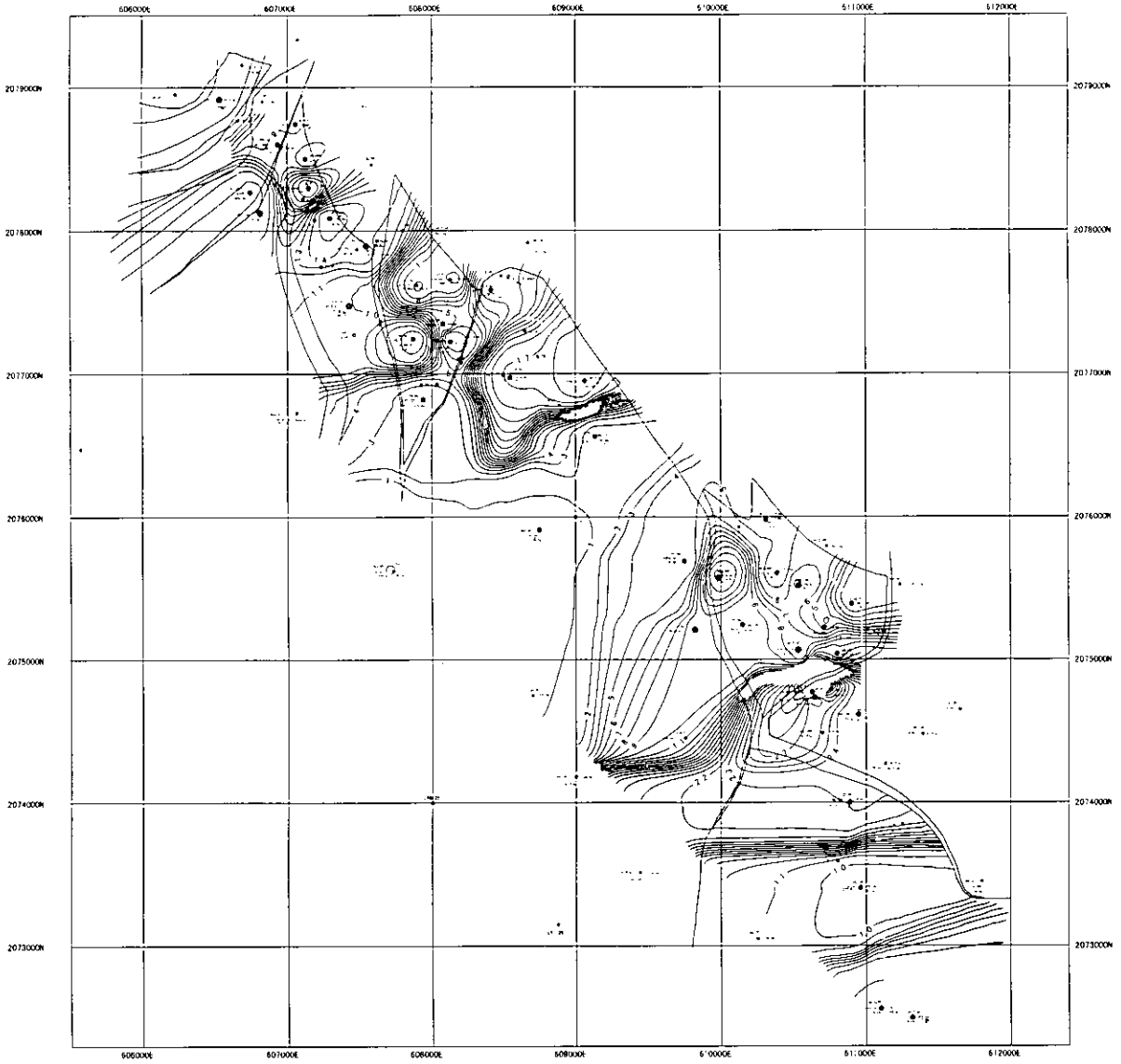


Figure2-14 Iso-thickness Contour Map on Mining Section

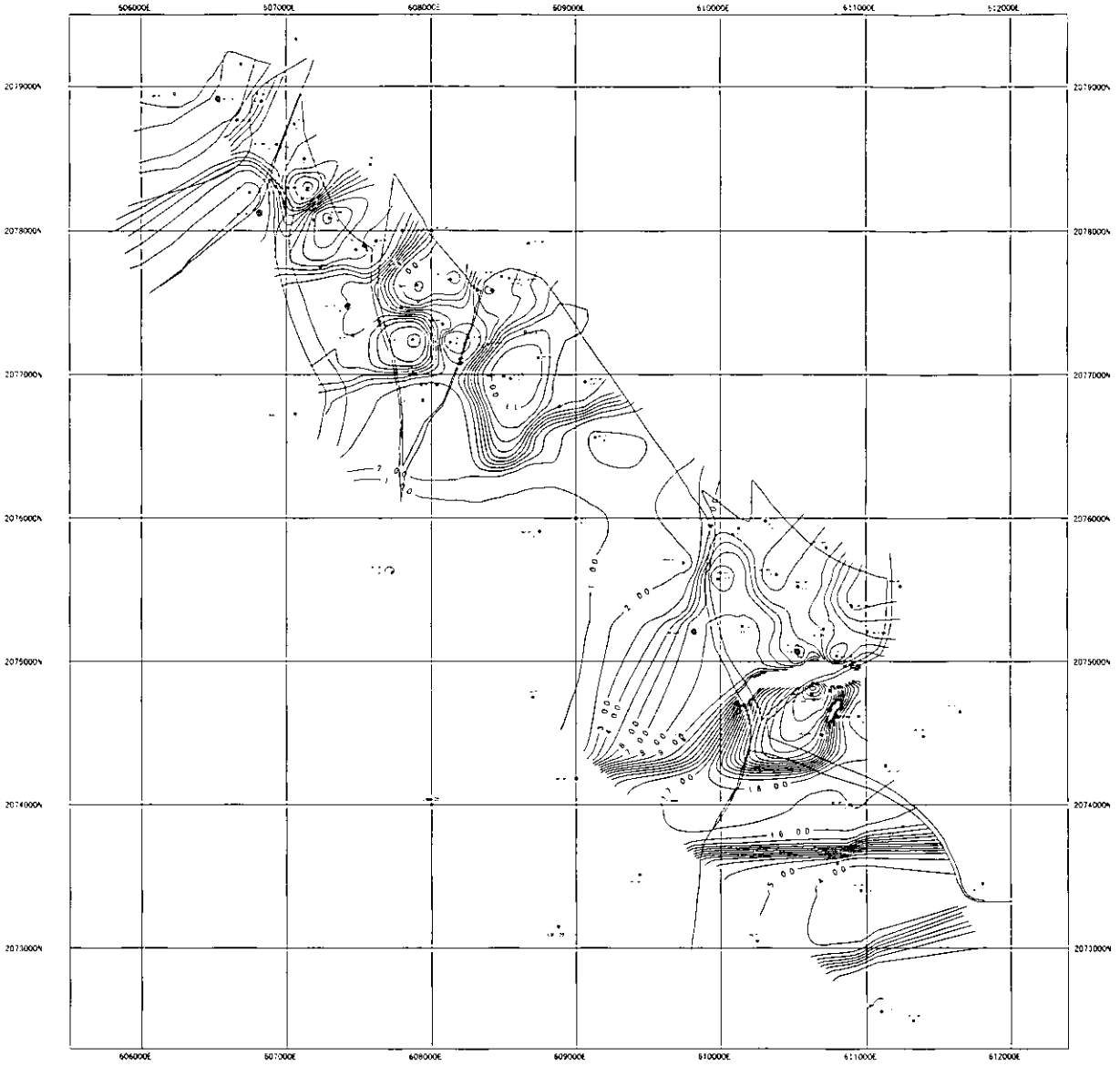


Figure2-15 Iso-thickness Map of Accumlated Coal Thickness

Reserves calculation map is shown in Figure 2-16. Summary of the reserves and the details of each block are shown in Table 2-10 and Table 2-11 respectively.

Table 2－10 Coal Reserves for Mining

	Area	Average coal	S.G	Tonnage
～＋２５０	1,499. 3	6. 2	1.50	13,992
＋250m～＋200m	1,326. 2	6. 8	1.50	13,400
＋200m～＋150m	1,910. 7	7. 2	1.50	23,156
＋150m～＋100m	1,554. 7	7. 1	1.50	13,904
＋100m～＋50m	2,627. 9	3. 3	1.50	13,013
Total	8,918. 8	5. 8	1.50	77,465

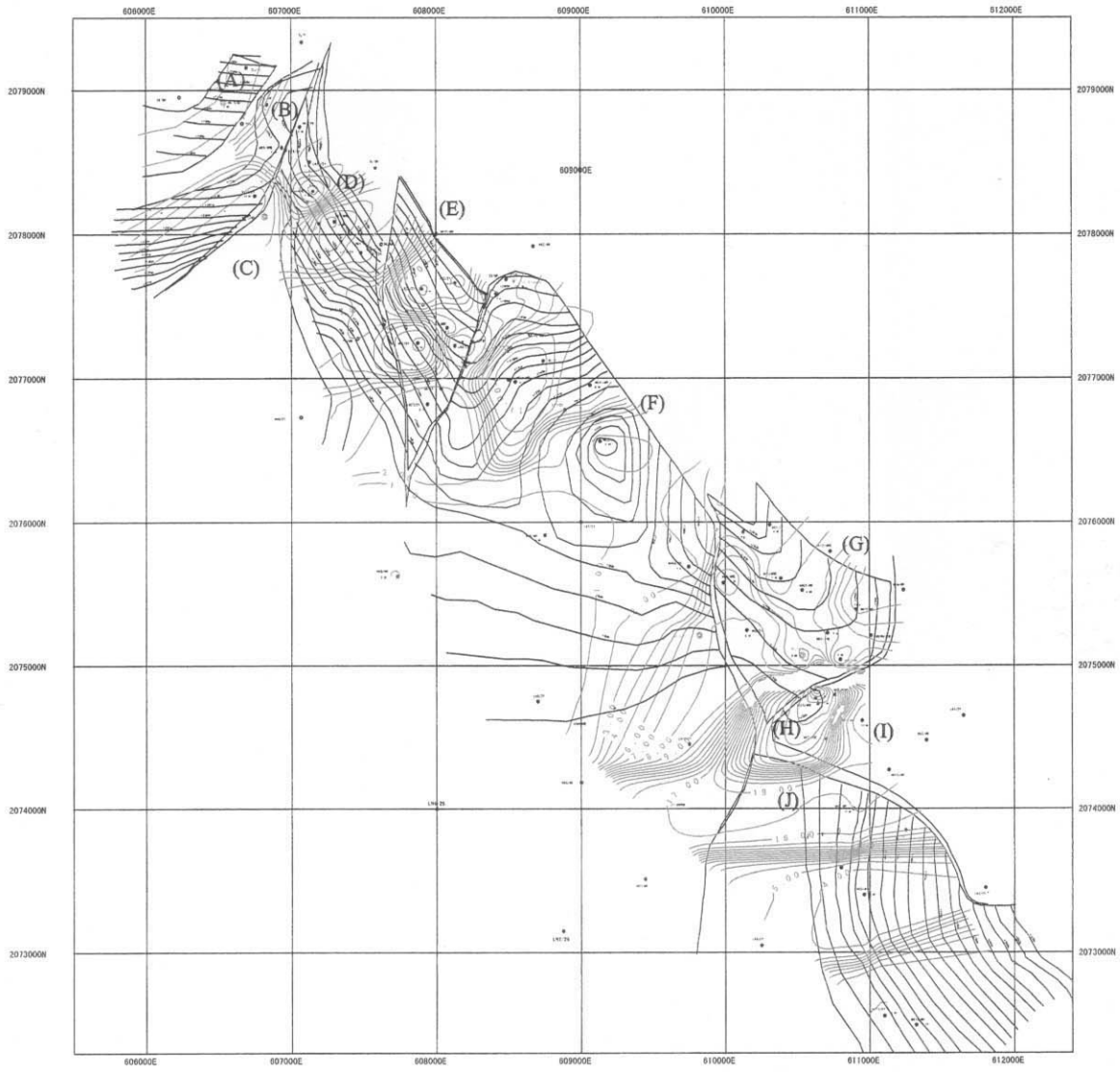


Figure2-16 Calculation Map on Coal Reserves for Mining

Table 2-11 Datails of Coal Resources for Mining

		Area (1000m2)	Thickness (m)	SG	Reserves (1000t)
A	-250m	81.7	2.8	1.50	346.1
	250m - 200m	56.5	2.6	1.50	220.1
	200m - 150m	197.3	2.3	1.50	692.6
	Sub-total	335.5	2.5	1.50	1,258.8
B	-250m	336.2	8.9	1.50	4,506.4
	250m - 200m	149.1	11.0	1.50	2,461.8
	200m - 150m	88.5	12.6	1.50	1,667.9
	150m - 100m	79.9	13.0	1.50	1,558.1
	100m -50m	0.0			0.0
	Sub-total	653.7	10.4	1.50	10,194.2
D	-250m	311.6	8.6	1.50	4,030.7
	250m - 200m	191.8	9.0	1.50	2,599.8
	200m - 150m	140.8	9.0	1.50	1,911.0
	150m - 100m	166.9	7.3	1.50	1,818.5
	100m -50m	486.9	3.3	1.50	2,391.7
	Sub-total	1,298.0	6.5	1.50	12,751.7
E	-250m	246.1	4.0	1.50	1,475.4
	250m - 200m	120.2	3.8	1.50	677.1
	200m - 150m	198.7	6.1	1.50	1,819.5
	150m - 100m	129.4	5.7	1.50	1,099.9
	100m -50m	20.9	3.0	1.50	94.1
	Sub-total	715.3	4.8	1.50	5,166.0
F	-250m	162	5.9	1.50	1,442.2
	250m - 200m	179	7.4	1.50	2,004.1
	200m - 150m	341	6.6	1.50	3,395.0
	150m - 100m	710	4.9	1.50	5,228.1
	100m -50m	1,712	2.3	1.50	5,796.4
	Sub-total	3,104	3.8	1.50	17,865.8
G	-250m	161	4.8	1.50	1,149.0
	250m - 200m	400	4.3	1.50	2,602.0
	200m - 150m	602	7.8	1.50	7,030.6
	150m - 100m	0			0.0
	Sub-total	1,163	6.2	1.50	10,781.6
H	-250m	0			0.0
	250m - 200m	31	31.3	1.50	1,463.4
	200m - 150m	87	28.6	1.50	3,739.4
	Sub-total	118	29.3	1.50	5,202.8
J	-250m	201	3.5	1.50	1,042.1
	250m - 200m	194	4.7	1.50	1,372.2
	200m - 150m	331	5.8	1.50	2,900.3
	150m - 100m	393	7.1	1.50	4,199.1
	100m -50m	408	7.7	1.50	4,730.7
	Sub-total	1,527	6.2	1.50	14,244.4

Total	-250m	1,499.3	6.2	1.50	13,991.9
	250m - 200m	1,322.8	6.8	1.50	13,400.5
	200m - 150m	1,986.2	7.8	1.50	23,156.3
	150m - 100m	1,479.2	6.3	1.50	13,903.7
	100m -50m	2,627.9	3.3	1.50	13,012.9
	Total	8,915.4	5.8	1.50	77,465.3

AT: Calculation was not carried out on Block C and I due to out of mine planning.

3. Coal Quality

3.1 Tests on Bulk Sample

3.1.1 Crushing and Screening

Coal with bigger size than 100 mm in the bulk sample was crushed into smaller pieces by the use of Jaw Crusher. After weighing the whole sample, it was screened with the size of 50 mm, 25 mm, 10 mm, 3 mm and 0.5 mm.

The channel sample taken from the face of the trench was crushed to less than 25 mm.

The procedure of crushing, screening and float-sink test on the bulk sample and the laboratories are shown diagrammatically in Figure 3-1. Test results are in Appendix 5 and those works are seen in Ph-7, 8.

3.1.2 Float-Sink Test

Float-sink test was conducted on the channel sample at the specific gravity of 1.3, 1.35, 1.40, 1.45, 1.50, 1.55, 1.60, 1.70 and 1.80. Coal with bigger size than 100mm in the bulk sample was crushed into smaller pieces

Regarding the bulk sample, about 20 kg of samples were taken from each screened product of +50 mm, 25-50 mm, 10-25 mm, 3-10 mm and 5 kg from 0.5-3 mm after reduction with dividing apparatus. Those samples are provided for float-sink test in Thailand. The screened sample smaller than 0.5 mm was brought to Japan because there is no equipment of float-sink test on such fine coal in Thailand.

The following specific gravity was used for separation in float-sink test based on

the result of the preparatory test; 1.30, 1.35, 1.40, 1.50, 1.60, 1.70 and 1.80. The results of float-sink test of each screened sizes are shown in Appendix 5. The works are seen in Ph-9.

3.1.3 Analysis of Coal Quality

Ash and total sulfur was analyzed on each product of float and sink test. The result is shown in Appendix 5. Twenty-nine (29) samples from the product of 25-50mm in size and less than 1.3 in specific gravity were sent to the laboratory at EGAT's Mae Moh mine. They were analyzed on forms of sulfur. The result is shown in Appendix 8.

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3.2 Coal Analysis and Tests on Drill Core Samples

Analysis and tests of coal sample from boreholes were conducted at the laboratories of Lanna Lignite Public Company and EGAT depending on the analytical items. The treatments and procedures are shown in a flow chart of Figure 3-2. Coal analysis items in EGAT were decided according to the amount of sample and the necessity as shown in Table 3-1 and Table 3-2.

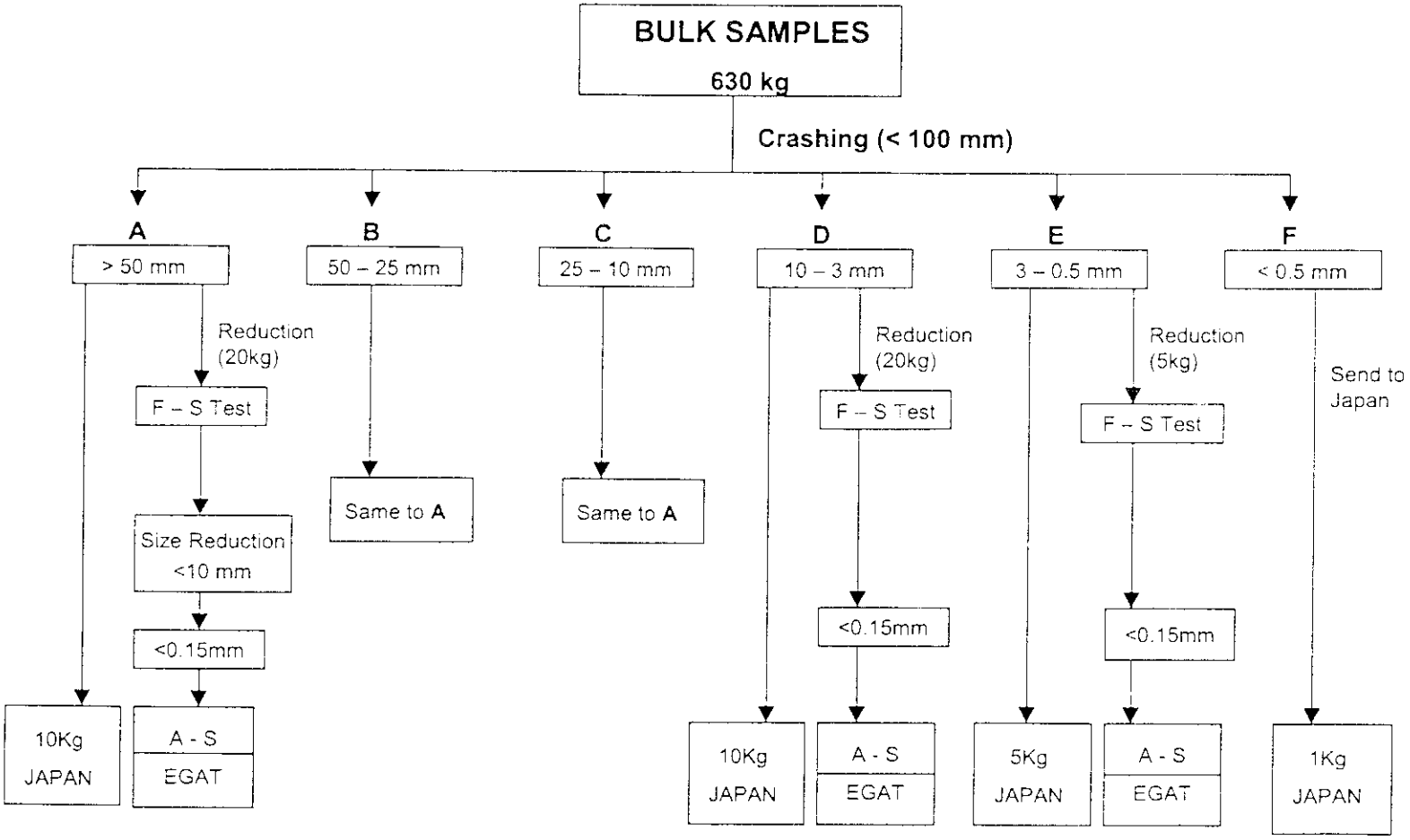

Figure3-1 Flow of Bulk Sample Preparation and Float-sink Test

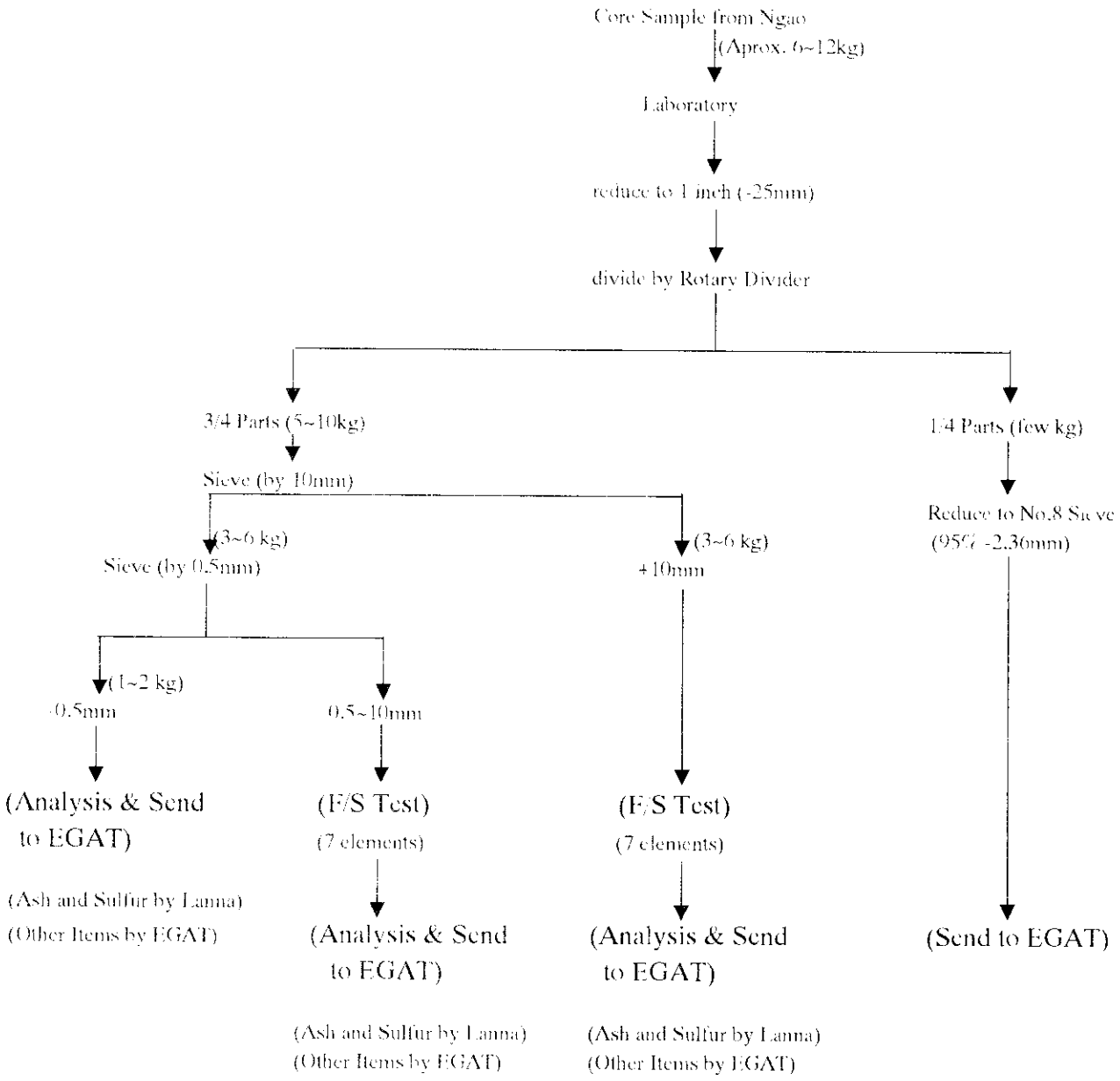

Figure3-2 Flow of Core sample Preparation

Table 3-1 COAL QUALITY ANALYSIS
(By EGAT)

NGAO P/J Team
Jan.22, 2001

Name of Sample	Number of Sample	Item of Analysis								Condition of Sample
		Proximate Analysis	Cal	T.S.	S.G.	Ultimate Analysis	H G I	Ash Analysis	Form of Sulfer	
Example:										Bulk Sample (Each 25g)
B: +50mm~-25mm, 1.30F	29								○	Sent to EGAT on 10th Dec.
P3S	1	○	○	○	○	○	○	○	○	Standard: Few(2-3) Kg Sent to EGAT
Example: P3S Series										Each 25g, Sent to EGAT
P3: +10mm, 1.30F	1	○	○			○		○	○	
P3: +10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
P3: 0.5~10mm, 1.30F	1	○	○			○		○	○	
P3: 0.5~10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
P3: -0.5mm	1	○	○			○				
N3-4S	1	○	○	○	○	○	○	○	○	Standard: Few(2-3) Kg Sent to EGAT
Example: N3-4 Series										Each 25g, Sent to EGAT
N3-4: +10mm, 1.30F	1	○	○			○		○	○	
N3-4: +10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N3-4: 0.5~10mm, 1.30F	1	○	○			○		○	○	
N3-4: 0.5~10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N3-4: -0.5mm	1	○	○			○				
N3-6S	1	○	○	○	○	○	○	○	○	Standard: Few(2-3) Kg Sent to EGAT
Example: N3-6 Series										Each 25g, Sent to EGAT
N3-6: +10mm, 1.30F	1	○	○			○		○	○	
N3-6: +10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N3-6: 0.5~10mm, 1.30F	1	○	○			○		○	○	
N3-6: 0.5~10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N3-6: -0.5mm	1	○	○			○				
N3-1, N3-2, N3-3, N3-5, N3-7, N3-8, N3-9, N3-10, N3-11, N3-12, N3-13	11	○	○	○	○	○	○			Standard: Each Few(2-3) Kg Sent to EGAT
N3: Coaly Shale Samples N3-14, N3-15, N3-16, N3-17, N3-18	5	○	○	○	○					Standard: Few(2-3) Kg Sent to EGAT
Total Number of Samples	93	64	64	19	19	59	14	9	38	

Notes: Cal: Calorific Value、 T.S.: Total Sulfur、 S.G.: Specific Gravity、 S.: Sulfur
○ : Execution of Analysis
HGI: No need to analysis in case that the volume of sample is not enough.

Table 3-2 COAL QUALITY ANALYSIS
(By EGAT)

NGAO P/J Team
Jan. 26, 2001

Name of Sample	Number of Sample	Item of Analysis								Condition of Sample
		Proximate Analysis	Cal	T.S.	S.G.	Ultimate Analysis	H G I	Ash Analysis	Form of Sulfur	
N5-1S	1	○	○	○	○	○	○	○	○	Standard: Few(2-3) Kg From Lanna to EGAT
Example: N5-1 Series										Each 25g, From Lanna to EGAT
N5-1: +10mm, 1.30F	1	○	○			○		○	○	
N5-1: +10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N5-1: 0.5~10mm, 1.30F	1	○	○			○		○	○	
N5-1: 0.5~10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N5-1: -0.5mm	1	○	○			○				
N5-13S	1	○	○	○	○	○	○	○	○	Standard: Few(2-3) Kg From Lanna to EGAT
Example: N5-13 Series										Each 25g, From Lanna to EGAT
N5-13: +10mm, 1.30F	1	○	○			○		○	○	
N5-13: +10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N5-13: 0.5~10mm, 1.30F	1	○	○			○		○	○	
N5-13: 0.5~10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N5-13: -0.5mm	1	○	○			○				
N5-3, N5-5, N5-6, N5-8, N5-12, N5-14	6	○	○	○	○	○	○			Standard: Each Few(2-3) Kg Sent to EGAT on Jan.22
N5: Coaly Shale Samples N5-2, N5-4, N5-7, N5-9, N5-10, N5-11	6	○	○	○	○					Standard: Each Few(2-3) Kg Sent to EGAT on Jan.22
N1-3S	1	○	○	○	○	○	○	○	○	Standard: Few(2-3) Kg From Lanna to EGAT
Example: N1-3 Series										Each 25g, From Lanna to EGAT
N1-3: +10mm, 1.30F	1	○	○			○		○	○	
N1-3: +10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N1-3: 0.5~10mm, 1.30F	1	○	○			○		○	○	
N1-3: 0.5~10mm, (1.35F,1.40F,1.50F,1.60F,1.80F,1.80S)	6	○	○			○				
N1-3: -0.5mm	1	○	○			○				
N1-1, N1-4, N1-5, N1-6	4	○	○	○	○	○	○			Standard: Each Few(2-3) Kg Will be sent to EGAT on Jan.30
N1: Coaly Shale Samples N1-2, N1-7	2	○	○	○	○					Standard: Each Few(2-3) Kg Will be sent to EGAT on Jan.30
Total Number of Samples	66	66	66	21	21	58	13	9	9	

Notes: Cal: Calorific Value、 T.S.: Total Sulfur、 S.G.: Specific Gravity、 S.: Sulfur
○ : Execution of Analysis
HGI: No need to analysis in case that the volume of sample is not enough.