

Drawing 12-b Results of Coal Analysis and Testing (in Swaziland)

Sample Number	Coal Seam	Depth (m)	RAW COAL (AIR DRY BASIS)													WASHED COAL (AIR-DRY BASIS)											
			Cal. Val. (cal/g)	Proximate Analysis (%)				Cal. Val. (MJ/kg)	Total Sul. (%)	H.G.I.	Ultimate Analysis (%)					Ash Fusion Point			Size of Coal Washed	S.G.	Float Yield (%)	Cal. Val. (cal/g)	H ₂ O (%)	Ash (%)	Vol. Mat. (%)	Fix. Carbo. (%)	Cal. Val. (MJ/kg)
				H ₂ O	Ash	Vol. Mat.	Fix. Carbo.				C	H	N	S	O	DT(°C)	HT(°C)	FT(°C)									
LD8-1	Intermediate Marker	296.87 - 298.20	5067	5.2	25.4	6.7	62.7	21.2	0.03	42	62.87	0.58	0.42	0.03	5.43	1190	1210	1230	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	0.0 0.0 8.7 0.0 8.7 91.3	5975 4971	6.7 5.1	13.4 26.3	5.8 6.8	74.1 61.6	25.0 20.8
LD8-2	Main Seam	319.57 - 321.25	4684	5.7	28.9	8.0	57.4	19.6	0.05	41	59.09	0.57	0.40	0.05	5.29	1200	1220	1260	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	0.0 0.0 19.0 0.0 19.0 81.0	5784 4422	6.7 5.4	14.6 32.3	8.0 8.0	70.7 54.3	24.2 18.5
LD8-3	Footwall 3	350.74 - 352.55	-	1.1	45.1	7.1	46.7	-	0.51	54	46.98	2.14	0.93	0.51	3.24	+1400	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	31.1 17.6 5.6 48.7 54.3 45.7	7290 6286 5473 6931 6788	1.0 1.0 1.0 1.0 1.0 1.1	12.7 23.1 32.0 16.5 18.1 77.1	7.8 6.9 7.5 7.5 7.5 6.6	78.5 69.0 59.5 75.0 73.4 15.2	30.5 26.3 22.9 29.0 28.4 -
LD9-1	Intermediate Marker	349.55 - 350.62	-	2.3	27.3	6.8	63.6	-	0.63	62	63.32	1.70	0.96	0.62	3.74	1250	1270	1350	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	0.8 27.2 59.6 28.0 87.6 12.6	5808 6586 6071 2984	2.4 2.3 2.4 1.5	25.6 15.7 22.4 61.7	6.2 6.1 6.2 11.6	65.8 75.9 69.0 25.2	24.3 27.6 25.4 12.4
LD11-1	Intermediate Marker	133.91 - 135.50	-	1.7	17.5	7.9	72.9	-	0.71	44	78.31	3.03	1.69	0.60	2.37	1150	1220	1260	-25mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	53.5 33.2 10.1 88.7 98.8 1.2	7170 6477 5378 6907 6764	1.6 1.8 1.5 1.7 1.7 1.3	12.4 20.4 32.4 15.4 17.1 44.8	8.2 7.4 6.8 7.9 7.8 15.8	77.8 70.4 59.3 75.0 73.4 38.1	30.0 27.1 22.5 28.9 28.3 -
LD11-2A	Main Seam	171.37 - 172.70	-	1.5	21.6	7.1	69.8	-	0.60	49	75.22	2.95	1.54	0.42	2.17	1180	1350	+1400	-25mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	36.1 56.7 5.3 92.8 98.1 1.9	6907 6334 5640 6549 6501	1.4 1.6 1.5 1.5 1.5	16.3 22.8 30.4 20.3 20.8	7.4 6.9 6.6 7.1 7.1	74.9 68.7 61.5 71.1 70.6	28.9 26.5 23.6 27.4 27.2
LD11-2B	Main Seam	172.70 - 174.39	2438	2.2	45.3	3.7	48.8	10.2	0.01	-	-	-	-	-	-	-	-	-	-25mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	0.0 0.0 0.0 0.0 0.0 100.0	-	-	-	-	-	-
LD11-3	Footwall 3	200.26 - 201.63	-	1.4	20.8	8.1	69.7	-	0.85	48	79.21	3.37	1.79	0.67	1.56	1340	+1400	+1400	-25mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	60.9 14.5 17.9 75.4 93.3 6.7	7337 6310 5354 7146 6788	1.4 1.4 1.3 1.4 1.4 1.3	12.0 23.2 33.6 14.2 17.9 62.1	8.4 7.6 7.4 8.2 8.1 7.9	78.2 67.8 57.7 76.2 72.6 28.7	30.7 26.4 22.4 29.9 28.4 -
LD12-1	Intermediate Marker	208.27 - 209.97	6788	1.5	17.1	8.9	72.5	28.4	0.50	50	7379	2.94	1.55	0.50	2.62	1210	1270	1350	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	75.9 20.6 3.3 96.5 99.8 0.2 3.5	7003 6310	1.5 1.6	14.8 22.8	9.1 8.1	74.6 67.5	29.3 26.4
LD12-2A	Main Seam	234.90 - 235.51	5234	3.9	27.7	2.7	65.7	21.9	0.10	68	61.34	0.98	0.55	0.10	2.43	1290	1390	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	0.0 0.0 9.1 0.0 9.1 90.9	6166 5139	4.7 3.8	18.4 28.6	2.4 2.7	74.5 64.9	25.8 21.5
LD12-2B	Main Seam	236.26 - 236.74	4469	4.8	35.2	3.9	56.1	18.7	0.09	42	56.85	0.48	0.32	0.09	2.26	1190	1220	1270	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	0.0 0.0 15.1 0.0 15.1 84.9	4278	4.4	38.0	4.0	53.6	17.9
LD12-2C	Main Seam	239.14 - 241.12	4278	4.1	37.6	6.6	51.7	17.9	0.04	45	53.78	0.67	0.32	0.04	3.49	1180	1200	1230	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	0.0 0.0 0.0 0.0 0.0 100.0	-	-	-	-	-	-

Drawing 12-d Results of Coal Analysis and Testing (in Swaziland)

Sample Number	Coal Seam	Depth (m)	RAW COAL (AIR DRY BASIS)															WASHED COAL (AIR-DRY BASIS)									
			Analysis (%)			Cal. Val. (MJ/kg)	Total Sul. (%)	H.G.I.	Ultimate Analysis (%)					Ash Fusion Point			Size of Coal Washed	S.G.	Float Yield (%)	Cal. Val. (cal/g)	H ₂ O (%)	Ash (%)	Vol. Mat. (%)	Fix. Carbo (%)	Cal. Val. (MJ/kg)		
			Cal. Val. (cal/g)	H ₂ O	Ash				Vol. Mat.	Fix. Carbo.	C	H	N	S	O	DT(°C)										HT(°C)	FT(°C)
LD18-1	Intermediate Marker	318.61 - 318.47	-	1.0	27.9	8.4	62.7	-	0.69	54	65.30	2.72	1.15	0.37	1.56	1330	1360	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	41.6 31.0 10.3 72.6 82.9 17.1	7266 6453 5354 6931 6716 -	1.0 1.0 1.0 1.0 1.0 1.1	12.5 21.7 32.8 16.4 18.5 73.8	8.5 8.2 9.8 8.4 8.6 7.4	78.0 69.1 56.4 74.2 71.9 17.7	30.4 27.0 22.4 29.0 28.1 -
LD18-2A	Main Seam	341.89 - 342.35	-	1.2	24.9	8.1	65.8	-	0.42	52	66.74	2.91	1.36	0.42	2.47	+1400	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	45.5 24.1 13.2 69.6 82.8 17.2	7505 6214 5139 7051 6764 -	1.2 1.2 1.2 1.2 1.2 1.3	10.0 23.7 34.0 14.7 17.8 58.7	7.8 8.1 8.8 7.9 8.1 8.4	81.0 67.0 56.0 76.2 72.9 31.6	31.4 26.0 21.5 29.5 28.3 -
LD18-2B	Main Seam	342.81 - 346.58	-	1.3	18.6	8.6	71.5	-	0.39	55	72.90	2.99	1.59	0.38	2.24	1310	1390	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	67.1 17.0 9.4 84.1 93.5 6.5	7481 6262 4923 7242 7003 -	1.3 1.3 1.3 1.3 1.3 1.0	10.6 22.8 37.1 13.1 15.5 63.5	8.3 8.4 7.8 8.3 8.3 12.7	79.8 67.5 53.8 77.3 74.9 22.8	31.3 26.2 20.6 30.3 29.3 -
LD18-3	Footwall 3	368.34 - 369.79	-	1.0	30.2	7.5	61.3	-	1.25	55	61.99	2.80	1.16	1.23	1.82	1320	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	44.5 26.0 9.7 70.5 80.2 19.8	7361 6186 5664 6931 6764 -	1.2 1.0 1.1 1.1 1.1 0.7	12.3 24.3 28.0 16.7 18.2 79.0	8.1 6.7 7.8 7.6 7.6 7.1	78.4 68.0 62.5 74.6 73.1 13.2	30.8 25.8 23.7 29.0 28.3 -
LD19-1	Intermediate Marker	352.50 - 353.85	6692	1.0	19.2	7.3	72.5	28.0	0.57	51	73.75	2.92	1.15	0.57	1.41	1250	1310	1370	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8 S1.6	47.7 40.9 10.0 88.6 98.6 1.4 11.4	7290 6477 6907 -	1.1 1.0 1.0 1.0 1.0 0.9	13.3 21.7 17.2 -	6.9 6.8 6.9 10.5	79.7 70.5 74.9 53.3	30.5 27.1 28.8 20.7
LD19-2A	Main Seam	378.91 - 379.34	-	1.2	23.4	6.7	68.7	-	0.52	50	69.12	2.78	1.23	0.50	1.77	+1400	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	58.4 11.8 20.1 70.2 90.3 9.7	7218 6238 4947 7051 6596 -	1.2 1.2 1.2 1.2 1.2 1.3	12.2 23.0 36.6 14.0 19.0 63.9	6.9 7.2 6.4 7.0 6.8 5.7	79.7 68.6 55.8 77.8 73.0 29.1	30.2 26.1 20.7 29.5 27.6 -
LD19-2B	Main Seam	381.03 - 384.74	-	1.1	26.9	7.7	64.3	-	0.40	50	66.12	2.67	1.43	0.38	1.40	+1400	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	58.9 13.2 8.8 72.1 80.9 19.1	7552 6334 5186 7337 7098 -	1.2 1.1 1.0 1.2 1.2 0.8	10.3 22.2 33.7 12.5 14.8 78.3	7.6 8.2 8.0 7.7 7.7 7.4	80.9 68.5 57.3 76.3 76.3 13.5	31.6 26.5 21.7 30.7 29.7 -
LD19-3	Footwall 3	407.11 - 408.55	-	1.1	25.5	7.3	66.1	-	0.90	53	66.44	2.67	1.33	0.88	2.08	+1400	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	55.1 6.1 24.9 61.2 86.1 13.9	7242 6310 5521 7146 6668 -	1.1 1.1 1.0 1.1 1.1 0.9	12.6 22.3 31.3 13.6 18.7 67.6	7.4 7.2 6.8 7.4 7.2 7.6	78.9 69.4 60.9 77.9 73.0 23.9	30.3 25.4 23.1 29.9 27.9 -
LD20-1	Intermediate Marker	391.59 - 393.04	-	1.4	27.2	6.7	64.7	-	0.59	43	65.50	2.45	1.11	0.58	1.76	1260	1290	1350	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	15.7 56.0 13.6 71.7 85.3 14.7	7122 6453 5354 6596 6405 -	1.4 1.5 1.3 1.5 1.5 1.3	13.5 21.0 32.7 19.4 21.5 60.0	7.3 6.6 6.4 6.8 6.7 7.0	77.8 70.9 59.6 72.3 70.3 31.7	29.8 27.0 22.4 27.6 26.3 -
LD20-2A	Main Seam	415.86 - 416.50	-	1.4	24.0	6.4	68.2	-	0.35	44	68.51	2.56	1.14	0.34	2.05	1360	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	35.2 42.0 14.0 77.2 91.2 8.8	7074 6334 5330 6658 6477 -	1.3 1.5 1.4 1.4 1.4 1.5	14.4 21.6 33.2 18.3 20.6 58.9	6.4 6.5 6.3 6.5 6.4 6.4	77.9 70.4 59.1 73.8 71.6 33.2	29.6 26.5 22.3 27.9 27.1 -
LD20-2B	Main Seam	421.56 - 423.77	-	1.7	20.1	7.1	71.1	-	0.40	45	72.22	2.59	1.20	0.40	1.79	1310	1340	1390	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	65.3 15.2 6.3 80.5 86.8 13.2	7361 6381 5354 7170 7051 -	1.6 1.9 1.6 1.7 1.7 1.7	11.0 20.0 30.6 12.7 14.0 60.3	6.7 7.3 7.3 8.8 6.9 8.6	80.7 70.8 60.5 78.8 77.4 29.4	30.8 26.7 22.4 30.0 29.5 -
LD20-3	Footwall 3	447.88 - 449.26	-	1.2	25.3	6.6	66.9	-	0.77	47	67.49	2.62	1.30	0.73	1.36	+1400	+1400	+1400	-25mm +0.5mm	F1.5 1.5-1.6 1.6-1.8 F1.6 F1.8 S1.8	46.7 22.5 19.6 69.2 88.8 11.2	7242 6286 5449 6931 6596 -	1.3 1.2 1.3 1.3 1.3 0.9	12.6 22.1 31.7 15.7 19.2 73.0	6.7 6.8 6.4 6.7 6.7 6.5	79.4 69.9 60.6 76.3 72.8 19.6	30.3 26.3 22.8 29.0 27.6 -

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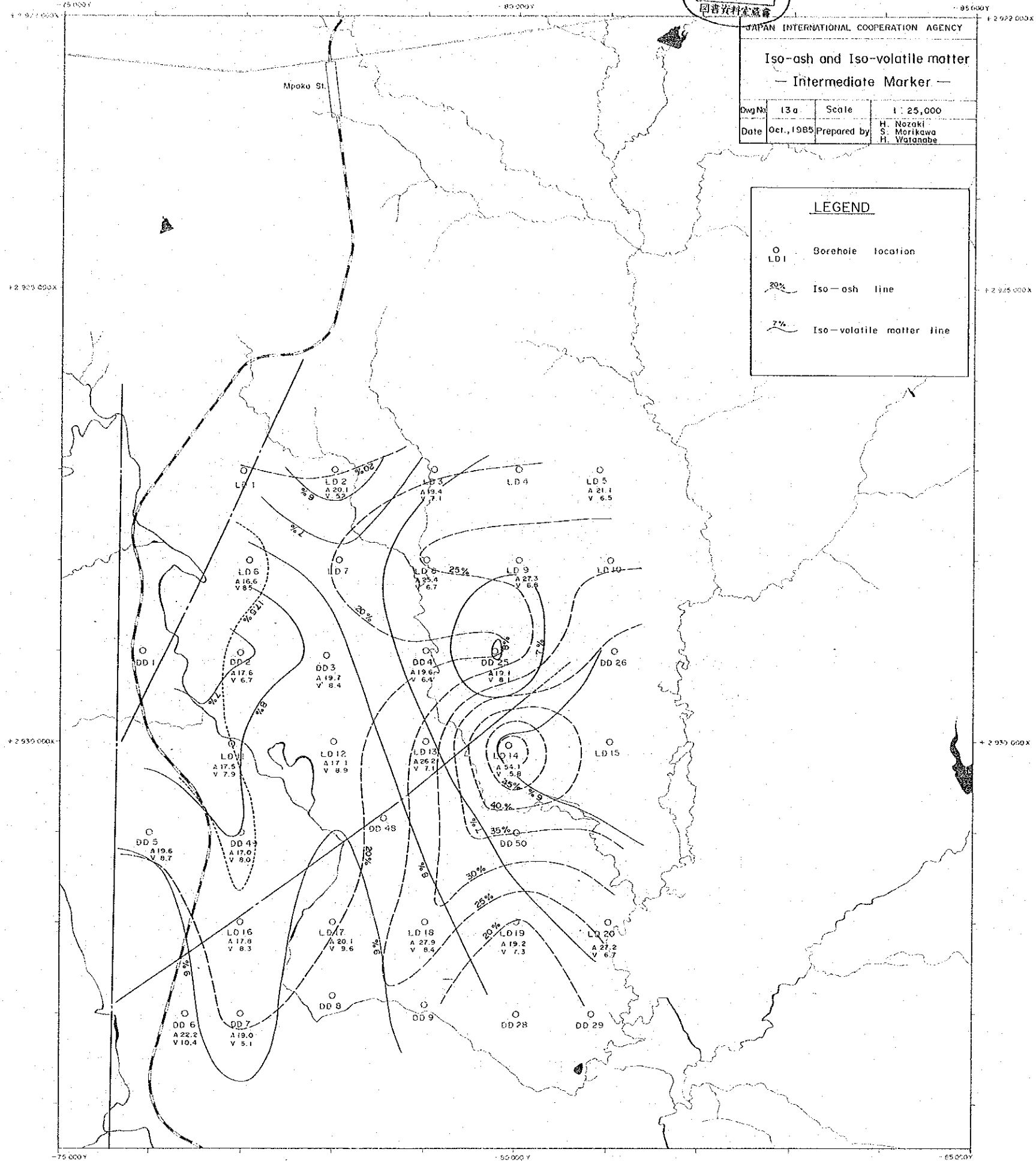
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Iso-ash and Iso-volatile matter
— Intermediate Marker —

Dwg No.	13a	Scale	1:25,000
Date	Oct., 1985	Prepared by	H. Nozaki S. Morikawa H. Watanabe

LEGEND

- Borehole location
- LD1 Iso-ash line
- 7% Iso-volatile matter line



75 000 Y

85 000 Y

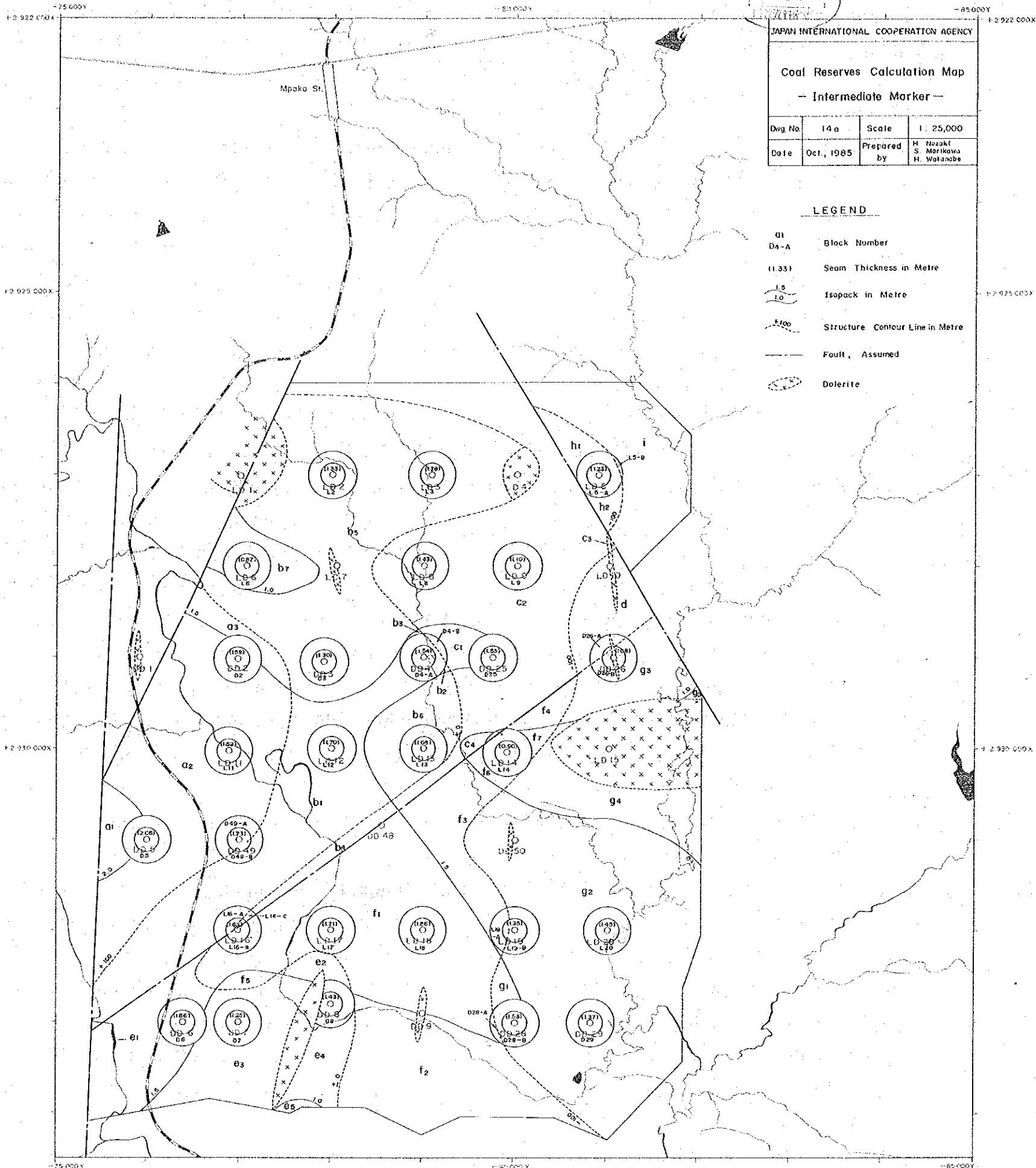
95 000 Y

+2 927 000 X

+2 927 000 X

+2 930 000 X

+2 930 000 X



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Coal Reserves Calculation Map
- Intermediate Marker -

Dwg No.	14 a	Scale	1: 25,000
Date	Oct., 1985	Prepared by	H. Nozaki S. Morikawa H. Watanabe

LEGEND

- a1
Ds-A Block Number
- (1.33) Seam Thickness in Metre
- 1.5
1.0 Isopack in Metre
- 1.00 Structure Contour Line in Metre
- Fault, Assumed
- Dolerite

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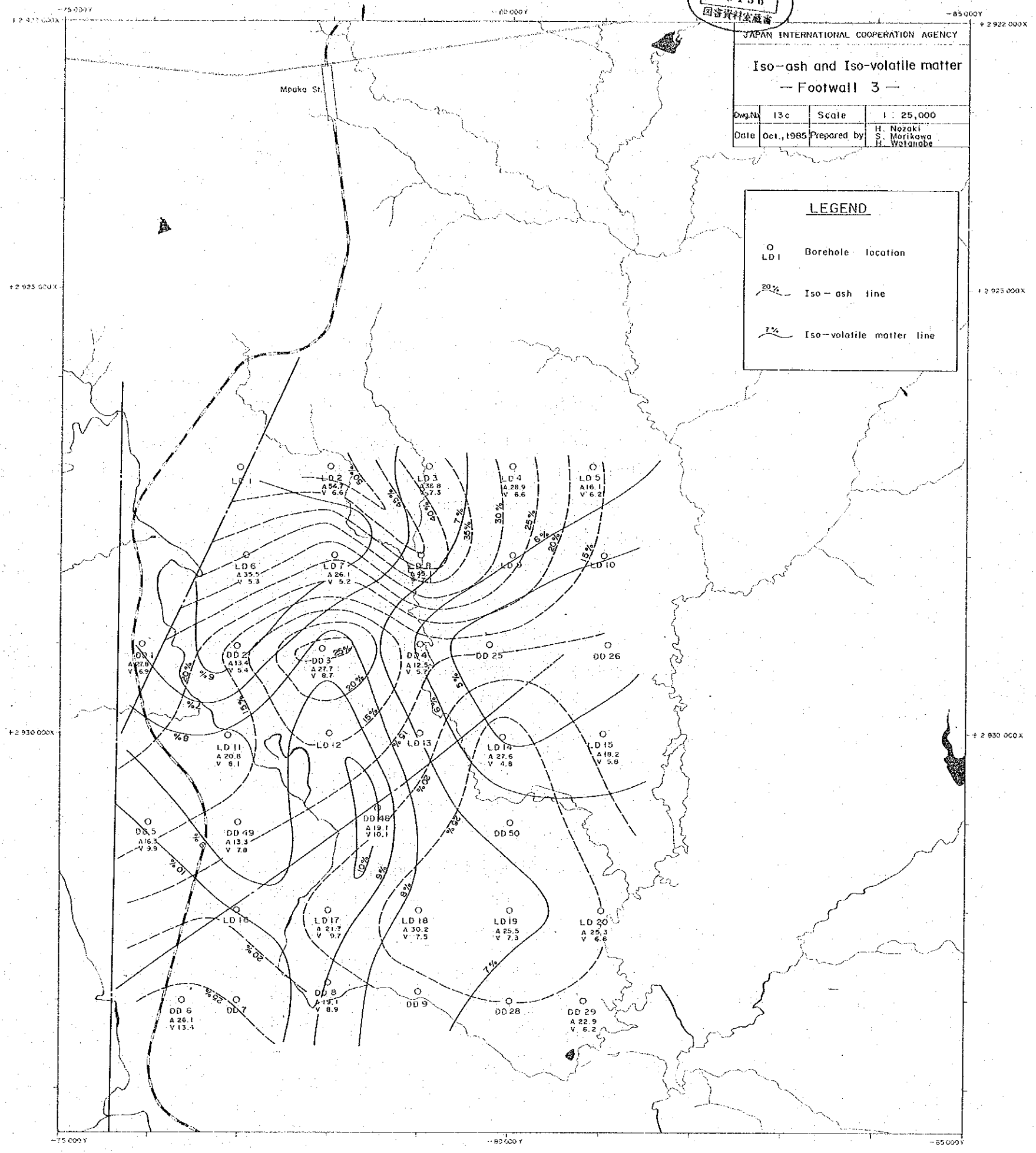
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Iso-ash and Iso-volatile matter
— Footwall 3 —

Dwg. No.	13c	Scale	1 : 25,000
Date	Oct., 1985	Prepared by	H. Nozaki S. Morikawa H. Watanabe

LEGEND

- LD 1 Borehole location
- Iso-ash line
- Iso-volatile matter line



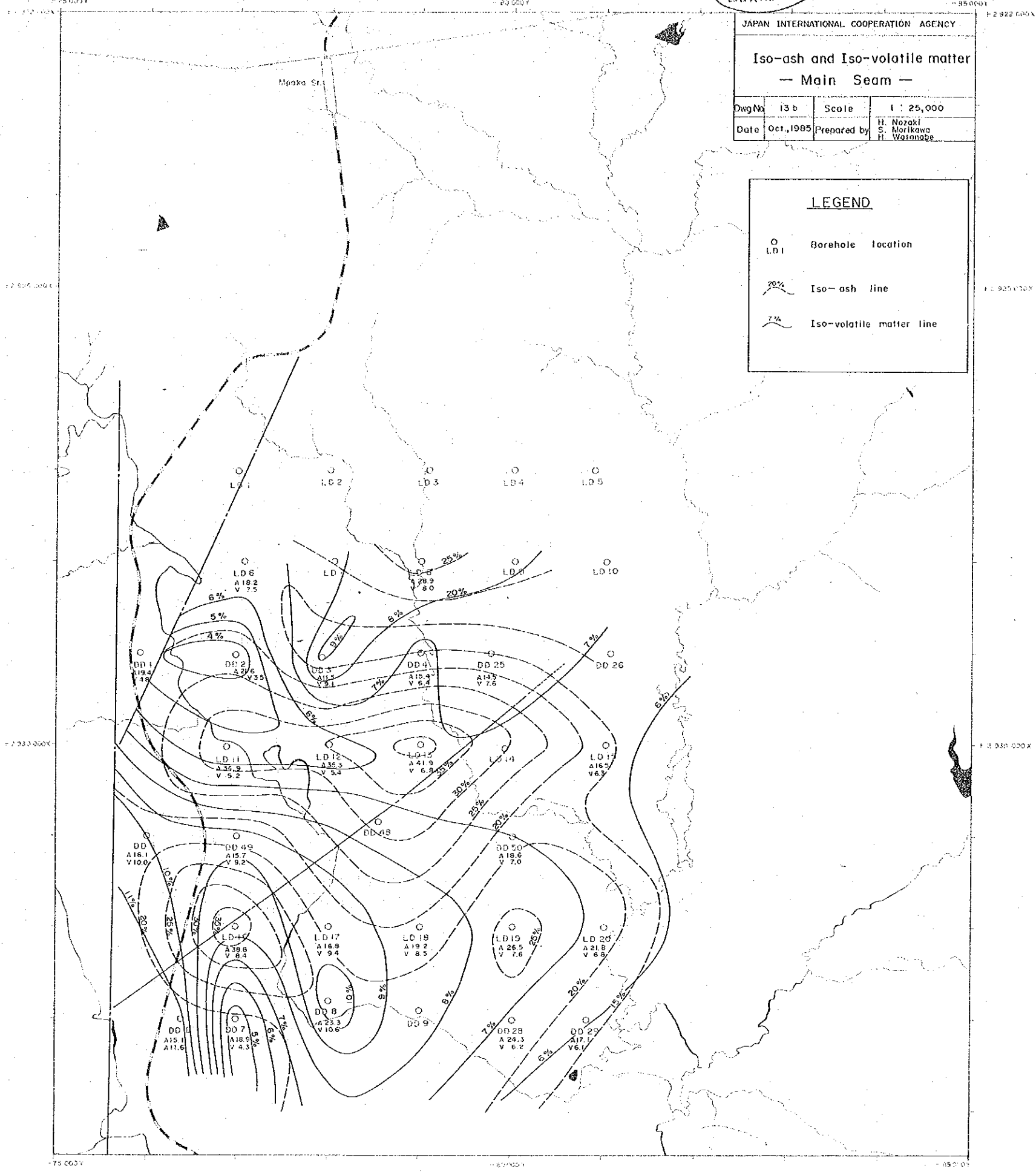
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Iso-ash and Iso-volatile matter
— Main Seam —

Dwg No.	I3 b	Scale	1 : 25,000
Date	Oct., 1985	Prepared by	H. Nozaki S. Morikawa H. Watanabe

LEGEND

- LD 1 Borehole location
- Iso-ash line
- Iso-volatile matter line



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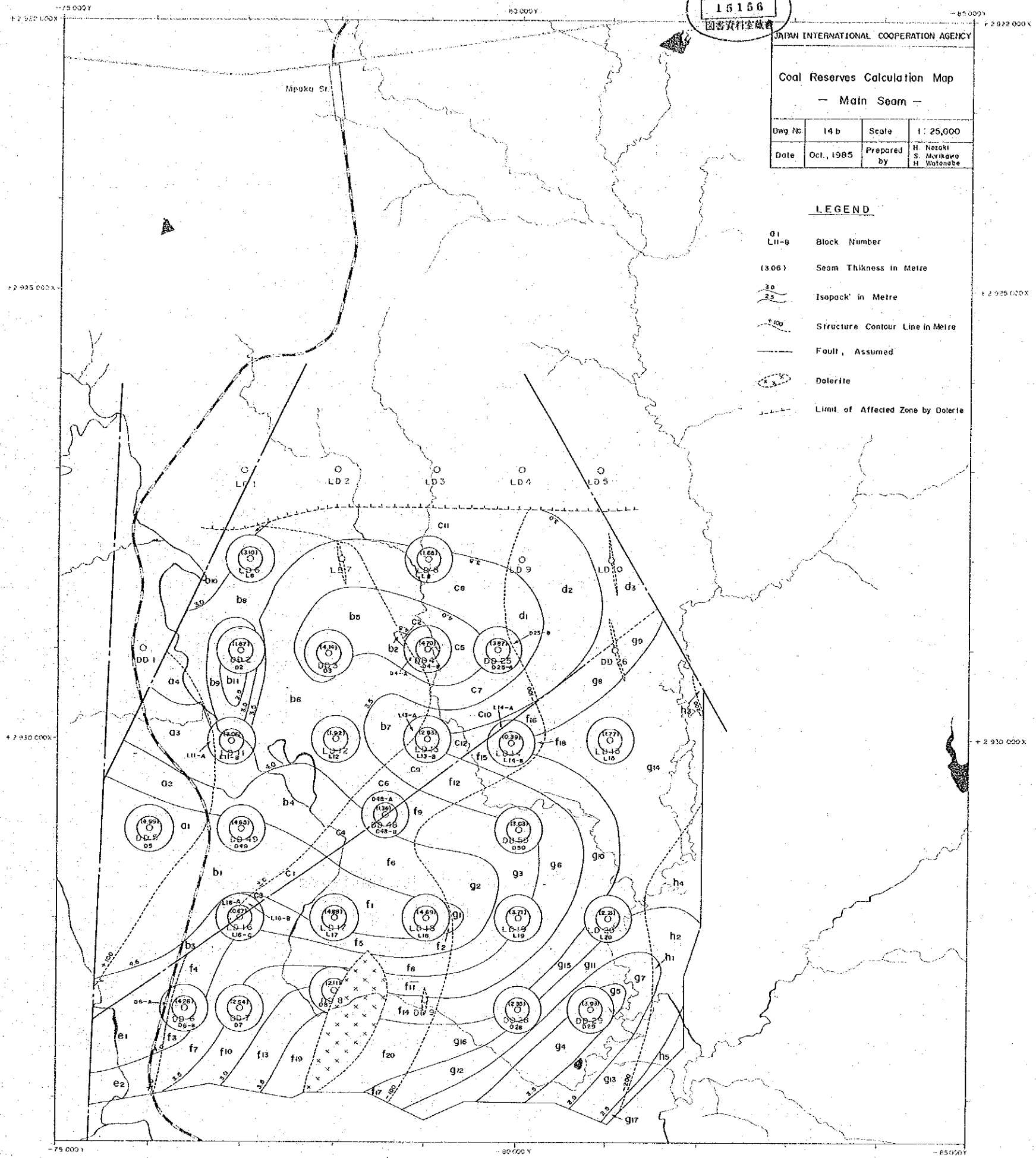
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Coal Reserves Calculation Map
- Main Seam -

Dwg No	14 b	Scale	1 : 25,000
Date	Oct., 1985	Prepared by	H. Nozaki S. Morikawa H. Watanabe

LEGEND

- Q1
L11-9 Block Number
- (3.06) Seam Thickness in Metre
- 3.0
2.0 Isopack' in Metre
- 200 Structure Contour Line in Metre
- Fault, Assumed
- Dolerite
- Limit of Affected Zone by Dolerite



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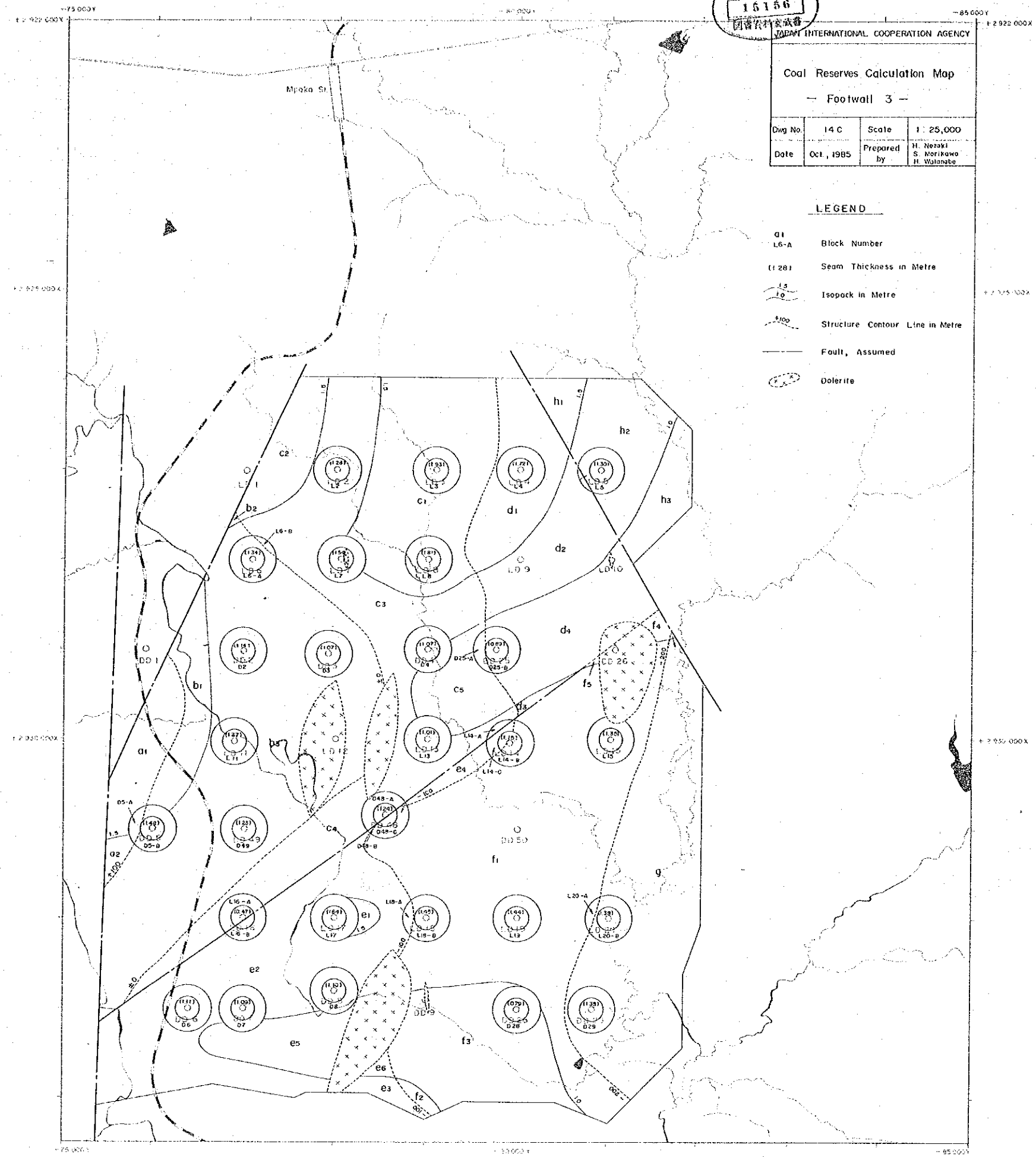
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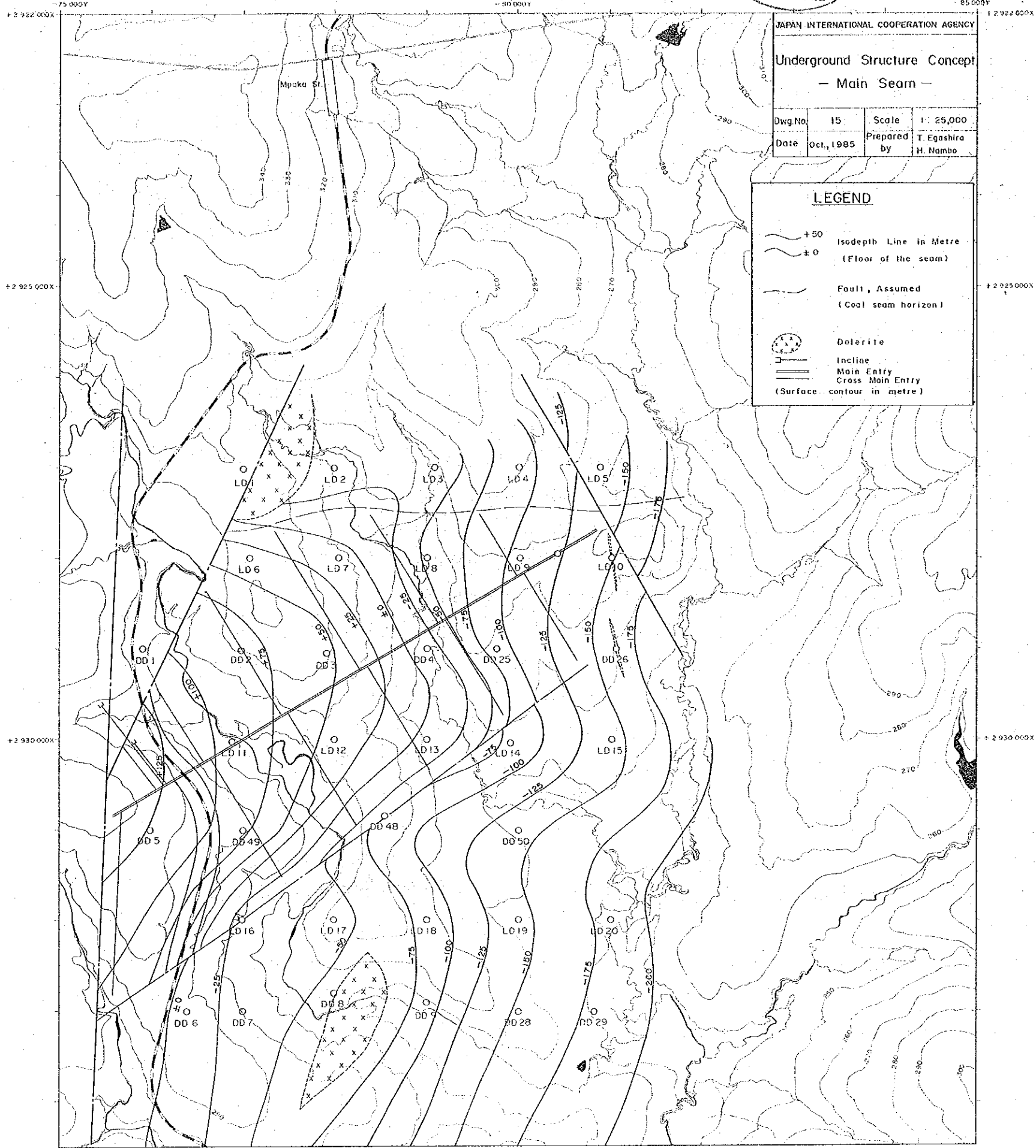
Coal Reserves Calculation Map
- Footwall 3 -

Dwg No.	I 4 C	Scale	1 : 25,000
Date	Oct, 1985	Prepared by	H. Nozaki S. Morikawa H. Watanabe

LEGEND

- Q1 Block Number
- (128) Seam Thickness in Metre
- 1.5 Isopack in Metre
- 100 Structure Contour Line in Metre
- Fault, Assumed
- Dolerite





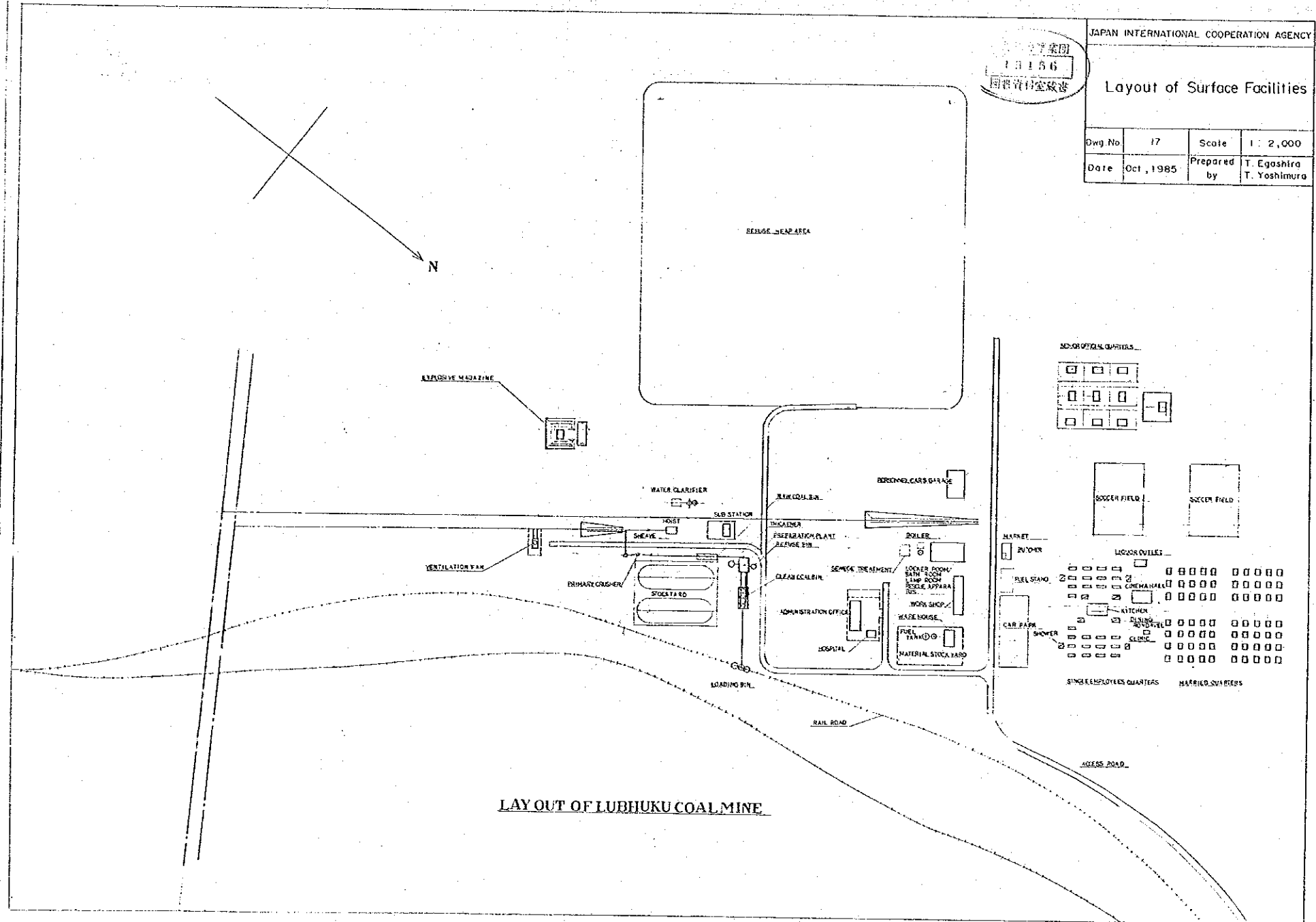
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Underground Structure Concept
— Main Seam —

Dwg No.	15	Scale	1: 25,000
Date	Oct, 1985	Prepared by	T. Egashira H. Nambo

LEGEND

- +50 Isodepth Line in Metre
- ±0 (Floor of the seam)
- Fault, Assumed (Coal seam horizon)
- Dolerite
- Incline
- Main Entry
- Cross Main Entry
- (Surface contour in metre)



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Layout of Surface Facilities

Dwg. No.	17	Scale	1 : 2,000
Date	Oct, 1985	Prepared by	T. Egashira T. Yoshimuro

LAY OUT OF LUBHUKU COAL MINE

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Mining Panel Plan - Main Seam -

Dwg No.	16	Scale	1:25,000
Date	Oct, 1985	Prepared by	T. Egashira H. Nambo

LEGEND

- +50 Isodepth Line in Metre
- ±0 (Floor of the seam)
- Fault, Assumed (Coal seam horizon)
- Dolerite
- Year-wise Coal Extraction
- (Surface contour in metre)

