

CHAPTER A9

ECONOMIC AND FINANCIAL EVALUATIONS

CHAPTER A9

ECONOMIC AND FINANCIAL EVALUATION

A9.1 1995 Standard Costs of Substation Facilities

(Reference to Clause 9.2.2)

Substation costs of 132 kV and 33 kV facilities were estimated based on the contract prices of the Transmission System Augmentation and Development Project, signed in February 1993.

As for 220 kV facilities, CEB's costs are not arranged well and examples of other countries and cost comparison of 220/132 kV equipment was referred to.

As for GIS equipment, information available in Sri Lanka is limited and examples of other countries were referred to.

The contract prices of the TSADP project is considered to be somewhat low side compared with the recent examples and 10 to 15% higher rates are used for the cost estimation.

A9.1.1 220 / 132 kV Substations

(1-1) Normal Outdoor Substations

(a) Substation Common Facilities

This item includes land preparation, substation building, fencing around substation, switchyard earthing, station service transformers and low tension switchgear, DC power supply equipment, ancillary equipment, etc.

<u>Cost Items</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. Substation building	1 lot	88	182
2. Common civil works	1 lot	870	555
3. Station service transformer	1 lot	100	4
4. LT switchgear and DC supplies	1 lot	206	20
5. Ancillary equipment	1 lot	77	4
6. Earthing system	1 lot	360	18
7. SCADA, etc.	1 lot	50	2
Total		1,751	785

Notes:

1. About 30,000 m² land space which is smaller than the Biyagama SS was assumed. If there is large difference in land size cost adjustment is necessary.
2. For 33 kV switchgear, the outdoor layout was selected. By adoption of cubicle type switchgear, land space become smaller but the building becomes larger. There will not be much difference in total cost.

(b) Transformers

This item includes transformers and their foundations only.

(Unit: 1000 US\$)

Cost Item		250 MVA Tr.		150 MVA Tr.	
		FC Cost	LC Cost	FC Cost	LC Cost
1. Main transformer	1 set	3,000	125	1,950	85
2. Neutral equipment	1 lot	5	--	5	--
3. Civil Works	1 lot	--	60	--	40
Total		3,005	185	1,955	125

(c) Line Circuit

This item includes a set of switchgear, control and protection panels, miscellaneous materials including steel structures, conductors, insulators, etc., equipment foundations and cable trenches.

(Unit: 1000 US\$)

Cost Item		Foreign Cost	Local Cost
1. CB	1 set	110	6
2. DS / E	1 set	25	1.2
3. DS	2 sets	38	2
4. CVT	3 no	32	1.6
5. CT	3 no	60	2.5
6. LA	3 no	25	2.5
7. Control panel	1 set	15	1.5
8. Protection panel	1 set	70	7
9. Miscellaneous materials	1 lot	110	9
10. Foundations	1 lot	13	27
Total		498	60

Notes: Double bus arrangement was assumed. In case of single bus, about 10% can be deducted as only one DS is required for each circuit and some decrease in prices for miscellaneous materials and foundations.

(d) Transformer Primary Circuit

Cost items are similar to those for the line circuit.

(Unit: 1000 US\$)

Cost Item		Foreign Cost	Local Cost
1. CB	1 set	110	6
2. DS	2 sets	38	2
3. CT	3 no	60	2.5
4. LA	3 no	25	2.5
5. Control panel	1 set	24	1.2
6. Protection panel	1 set	30	1.2
7. Miscellaneous materials	1 lot	110	9
8. Foundations	1 lot	13	27
Total		410	51

Note: Double bus arrangement was assumed. In case of single bus, about 10% can be deducted as quantity of DS becomes one and some decrease in prices for miscellaneous materials and foundations.

(e) Bus Coupler Circuit

Cost items are similar to those for the line circuit.

		(Unit: 1000 US\$)	
<u>Cost Item</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. CB	1 set	110	6
2. DS	2 sets	38	2
3. CVT	6 no	64	3.2
4. CT	3 no	60	2.5
5. Control panel	1 set	24	1.2
6. Protection panel	1 set	30	1.2
7. Miscellaneous materials	1 lot	110	9
8. Foundations	1 lot	13	27
Total		449	52

Note: Double bus arrangement was assumed.

(1.2) GIS Substations

Indoor type substation to install GIS indoors and main transformers outside the building was assumed.

(a) Substation Common Facilities

		(Unit: 1000 US\$)	
<u>Cost Items</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. Substation building	1 lot	320	800
2. Station service transformer	1 lot	100	4
3. LT switchgear and DC supplies	1 lot	206	20
4. Ancillary equipment	1 lot	110	6
5. Earthing system	1 lot	120	6
6. SCADA, etc.	1 lot	50	2
Total		796	838

(b) Transformers

Costs of transformers are assumed to be 10% higher than those for outdoor substations as special design is applied to cooling system.

(c) Line and Transformer Circuits

The following costs are based on double bus arrangement of GIS:

<u>Cost Items</u>		<u>(Unit: 1000 US\$)</u>	
		<u>Foreign Cost</u>	<u>Local Cost</u>
1. Switchgear GIS	1 set	770	30
2. Control panel	1 set	15	1.5
3. Protection panel	1 set	70	7
4. Cables, etc.	1 lot	12	1
5. Civil works	1 lot	--	7
Total		867	46.5

Note: In case of single bus arrangement of GIS, the foreign portion of the above cost can be decreased by US\$ 150,000.

A9.1.2 132 kV Grid Substations and 132 kV Circuit Bays

(2.1) Normal Outdoor Substations

A substation with normal grid substation design with around 5000 m² land space was assumed.

(a) Substation Common Facilities

This item includes land preparation, substation building, fencing around substation, switchyard earthing, station service transformers and low tension switchgear, DC supply facilities, auxiliary supplies, etc.

<u>Cost Items</u>		<u>(Unit: 1000 US\$)</u>	
		<u>Foreign Cost</u>	<u>Local Cost</u>
1. Substation building	1 lot	68	140
2. Common civil works	1 lot	290	185
3. Station service transformer	1 lot	74	3
4. LT switchgear and DC supplies	1 lot	103	10
5. Ancillary equipment	1 lot	55	3
6. Earthing system	1 lot	120	6
7. SCADA, etc.	1 lot	17	1
Total		727	348

Notes:

- In case that the double bus arrangement is adopted, the land space becomes considerably larger and the above Items 2 and 6 will become higher with increase in land space.
- For 33 kV switchgear, the outdoor layout was selected. By adoption of cubicle type switchgear, land space become smaller but the building becomes larger. Necessary cost is assumed to be no change.

(b) Transformers

This item includes transformers and their foundations only.

<u>Cost Item</u>		<u>31.5 MVA Tr.</u>		<u>63 MVA Tr.</u>	
		<u>FC Cost</u>	<u>LC Cost</u>	<u>FC Cost</u>	<u>LC Cost</u>
1. Main transformer	1 set	550	25	1,050	45
2. Neutral equipment	1 lot	5	-	5	-
3. Civil Works	1 lot	-	13	-	20
Total		555	38	1,055	65

(c) Line Circuit

This item includes a set of switchgear, control and protection panels, miscellaneous materials including steel structures, conductors, insulators, etc., equipment foundations and cable trenches.

<u>Cost Item</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. CB	1 set	80	4
2. DS / E	1 set	10	0.5
3. DS	1 set	9	0.4
4. CVT	3 no	24	1.2
5. CT	3 no	27	1.6
6. LA	3 no	14	1.5
7. Control panel	1 set	12	1
8. Protection panel	1 set	45	4
9. Miscellaneous materials	1 lot	65	5
10. Foundations	1 lot	8	17
Total		294	36

Notes:

1. In case that a circuit breaker and others are omitted for initial installation, the initial installation cost will be assumed to be 35% of the above. The remaining will be allocated to additional installation.
2. In case of the double bus arrangement, one additional disconnecting switch is required and there is some increase in miscellaneous materials and foundations. The total cost is estimated to be 110% of the above.

(d) Transformer Primary Circuit

Cost items are similar to those for the line circuit.

<u>Cost Item</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. CB	1 set	80	4
2. DS	1 set	9	0.4
3. CT	3 no	27	1.2
4. LA	3 no	14	1.5
5. Control panel	1 set	28	1.2
6. Protection panel	1 set	22	1.2
7. Miscellaneous materials	1 lot	65	5
8. Foundations	1 lot	8	17
Total		253	32

Note:

1. In case of double bus arrangement, 10% shall be added to the above total cost.

(c) Coupler Circuit

Cost items are similar to those for the line circuit.

<u>Cost Item</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. CB	1 set	80	4
2. DS	2 sets	18	0.8
3. CVT	6 sets	48	2.4
4. CT	3 no	27	1.2
5. Control panel	1 set	28	1.2
6. Protection panel	1 set	22	1.2
7. Miscellaneous materials	1 lot	65	5
8. Foundations	1 lot	8	17
Total		296	33

Note:

1. In case that one disconnecting switch only is provided as has been seen in many cases, the cost is assumed to be 25% of the above total cost.

(2.2) GIS Substations

For 132 kV GIS, only one recently estimated prices for one each GIS addition to the Fort and Kollupitiya substations are available.

For GIS installation both indoor and outdoor types are conceived. However, in this Study the indoor installation was considered based on the current application in CEB.

(a) Substation Common Facilities

<u>Cost Items</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. Substation building	1 lot	160	400
2. Station service transformer	1 lot	74	3
3. LT switchgear and DC supplies	1 lot	103	10
4. Ancillary equipment	1 lot	55	3
5. Earthing system	1 lot	80	4
6. SCADA, etc.	1 lot	50	2
Total		522	422

(b) Transformers

Cost of transformer is assumed to be 10% higher than the cost for outdoor substations as special design is required for the cooling system.

(c) Line and Transformer Circuits

The following costs are for double bus arrangement of 132 kV circuits regardless of what kind of circuit, line, transformer, or bus coupler.

<u>Cost Items</u>		<u>Foreign Cost</u>	<u>Local Cost</u>
1. Switchgear GIS	1 set	520	20
2. Control panel	1 set	12	1
3. Protection panel	1 set	45	4
4. Miscellaneous materials	1 lot	10	1
5. Civil works	1 lot	-	5
Total		587	31

Note: In case of single bus arrangement of GIS, the foreign cost become lower by around US\$ 100,000.

A9.1.3 33 kV Facilities

(a) 33 kV Switchgear

Costs are assumed to be same for the transformer secondary, line feeder and bus coupler circuits. Cost items are same as those for the 132 kV circuits.

<u>Cost Item</u>		<u>Foreign Cost</u>	<u>Local cost</u>
1. CB	1 set	32	1.5
2. DS / E	1 set	6	0.3
3. DS	1 set	6	0.3
4. CT	3 no	5	0.3
5. LA	3 no	5	0.3
6. PT	1 lot	2	0.1
7. Control panel	1 lot	12	0.5
8. Protection panel	1 lot	12	0.6
9. Miscellaneous material	1 lot	22	1.7
10. Foundation	1 lot	2	6.5
Total		104	12

Notes:

1. Cost of 33 kV switchgear in cubicle (SF6 type) will be almost same as those in outdoor switchyard.

(b) Static Capacitor

The unit capacity of static capacitors are 5 to 20 MVA, and the cost include not only equipment but also switchgear, control, protection, miscellaneous materials and foundations. Estimated costs per kVA are as follows:

	<u>FC Portion</u>	<u>LC Portion</u>
Large unit (33 kV, 20 MVA)	10	1
Small unit (33 kV, 5 MVA)	12	1.2

A9.1.4 General Expenses

- (a) The engineering cost is estimated to be 8% of the construction cost and all cost is assumed to be foreign cost.
- (b) As to general expenses on the CEB side, the following expenses are required in local currency:
1. Custom charge of 40% of CIF cost.
 2. Other general expenses for one project consisting of 2 or 3 sub-projects of transmission lines and substations are roughly estimated as follows:

Bank charge	Rs 75 x 10 ⁶
Salaries	15
Vehicle and maintenance	10
Land	20
Total	Rs 120 x 10⁶

For budgetary purpose, this item is assumed to be 10% of the net construction cost in local currency.

Example of Grid Substation Cost of Standard Design

		(Unit: 1000 US Dollar)	
		<u>FC portion</u>	<u>LC portion</u>
1.	Common cost	607	342
2.	Main Tr., 31.5 MVA	2, 1,110	76
3.	132 kV line	2, 588	72
4.	Tr. primary	2, 506	64
5.	Coupler	1, 296	33
6.	33 kV circuit	9, 936	108
Total		4,043	695

CHAPTER A11

DATA BASE

11/21/1912

11/21/1912

A11.1 Database Information for Overhead Lines

Ref.	Section	Voltage (kV)	Ref.	Section	Voltage (kV)
2L1.	Biyagama - Kotugoda	220	1L38.	Habarana - Valaichchenai	132
2L2.	Biyagama - Kotmale	220	1L39.	Anuradhapura - Trincomalee	132
2L3.	Kotmale - Victoria	220	1L40.	New Laxapana - Balangoda	132
2L4.	Victoria - Randenigala	220	1L41.	Balangoda - Samanalawewa	132
2L5.	Randenigala - Rantembe	220	1L42.	Samanalawewa - Embilipitiya	132
2L6.	Kotmale New Anuradhapura	220	1L43.	Balangoda - Deniyaya (T)	132
1L1.	Biyagama - Pannipitiya	132	1L44.	Deniyaya (T) - Galle	132
1L2.	Biyagama - Kefanitissa	132	1L45.	Rantembe - Badulla	132
1L3.	Biyagama - Sapugaskanda PS	132	1L46.	Badulla - Inginiyagala	132
1L4.	Kolonnawa - Kelanitissa	132	1L47.	Anuradhapura - Kilinochchi(T)	132
1L5.	Kolonnawa - Pannipitiya	132	1L48.	Kilinochchi (T) - Chunnakam	132
1L6.	Kolonnawa -Sapugaskanda(T)	132	1L49.	Laxapana - Nuwara Eliya	132
1L7.	Sapugaskanda (T) - Kotugoda	132	1L50.	Nuwara Eliya - Badulla	132
1L8.A,B	Sapugaskanda (T) - SS	132	1L51.	Puttalam - Anuradhapura	132
1L9.	Kotugoda - Bolawatta	132	1L52.	Embilipitiya - Matara	132
1L10.	Bolawatta - Chilaw (T)	132	1L53.	Ukuwela Spur	132
1L11.	Chilaw (T) - Puttalam	132	1L54.	Kotugoda - Bolawatta	132
1L12.	Chilaw (T) - SS	132	1L55.	Kotmale Spure - SS	132
1L13.	Kolonnawa - Oruwala (T)	132	1L56.	Kilibathkumbura Spur - SS	132
1L14.	Oruwala (T) - SS	132	1L57.	Rantembe - Badulla	132
1L15.	Oruwala (T) - Thulhiriya (T)	132			
1L16.	Thulhiriya (T) - SS	132			
1L17.	Thulhiriya (T) - Polpitiya	132			
1L18.	Kolonnawa - Avissawella (T)	132			
1L19.	Avissawella (T) - SS	132			
1L20.	Avissawella (T) - Polpitiya	132			
1L21.	Pannipitiya - Ratmalana	132			
1L22.	Pannipitiya - Panadura (T)	132			
1L23.	Panadura (T) - Matugama	132			
1L24.	Panadura (T) - SS	132			
1L25.	Polpitiya - Laxapana	132			
1L26.	Laxapana - Wimalasurendra	132			
1L27.	Laxapana - New Laxapana	132			
1L28.	New Laxapana - Polpitiya	132			
1L29.	New Laxapana - Canyon	132			
1L30.	Polpitiya - Kotmale	132			
1L31.	Kotmale - Kiribatkumbura	132			
1L32.A,B	Kiribatkumbura - Anuradhapura	132			
1L33.	Polpitiya - Ukuwela	132			
1L34.	Ukuwela - Habarana	132			
1L35.	Habarana - Anuradhapura	132			
1L36.	Ukuwela - Bowatenna	132			
1L37.	Kiribathkumbura - Kurunegala	132			

Database Information for Overhead Lines

Reference No. 2LI

Title : BIYAGAMA - KOTUGODA

No.	Item	Unit	Data
1	Voltage	kV	220
2	Line Length	km	19.6
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	335
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	9.56
14	Earthwire Sag at EDT	m	6.41
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292 suspension / tension 370
21	Disc Spacing	mm	146 178
22	No. of Discs - Suspension		17
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.880
25	Mechanical Rating - Suspension	kN	120
26	Mechanical Rating - Tension	kN	160
27	Specific Creepage of Set	mm / kV	20
28	Insulator Manufacturer		ITALISOLATORI, ITALY
29	Tower Manufacturer		KAMANI, INDIA
30	Conductor Manufacturer		ECHEVARRIA, SPAIN
31	Main Contractor		KAMANI, INDIA
32	Date of Completion		1985

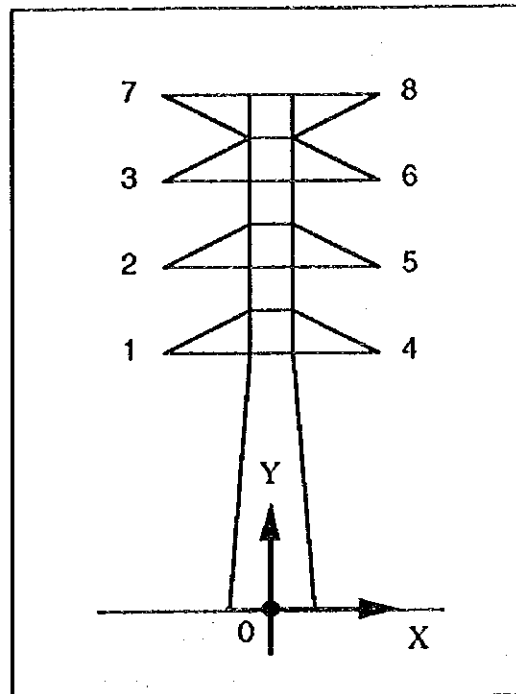
TOWER CONFIGURATION 1

Ref No.	2L1
Title	BIYAGAMA - KOTUGODA
Voltage	220 kV

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE IDL (1 x Zebra)

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Insulator length + 2/3 sag 9.25

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 5.57	19.95	10.70
	2	- 4.95	25.65	16.40
	3	- 4.75	31.23	21.98
	4	5.57	19.95	10.70
	5	4.95	25.65	16.40
	6	4.75	31.23	21.98
Earthwire Attachment Point	7	- 4.75	34.18	29.91
	8	4.75	34.18	29.91

Database Information for Overhead Lines

Reference No. 2L2

Title: BIYAGAMA - KOTMALE

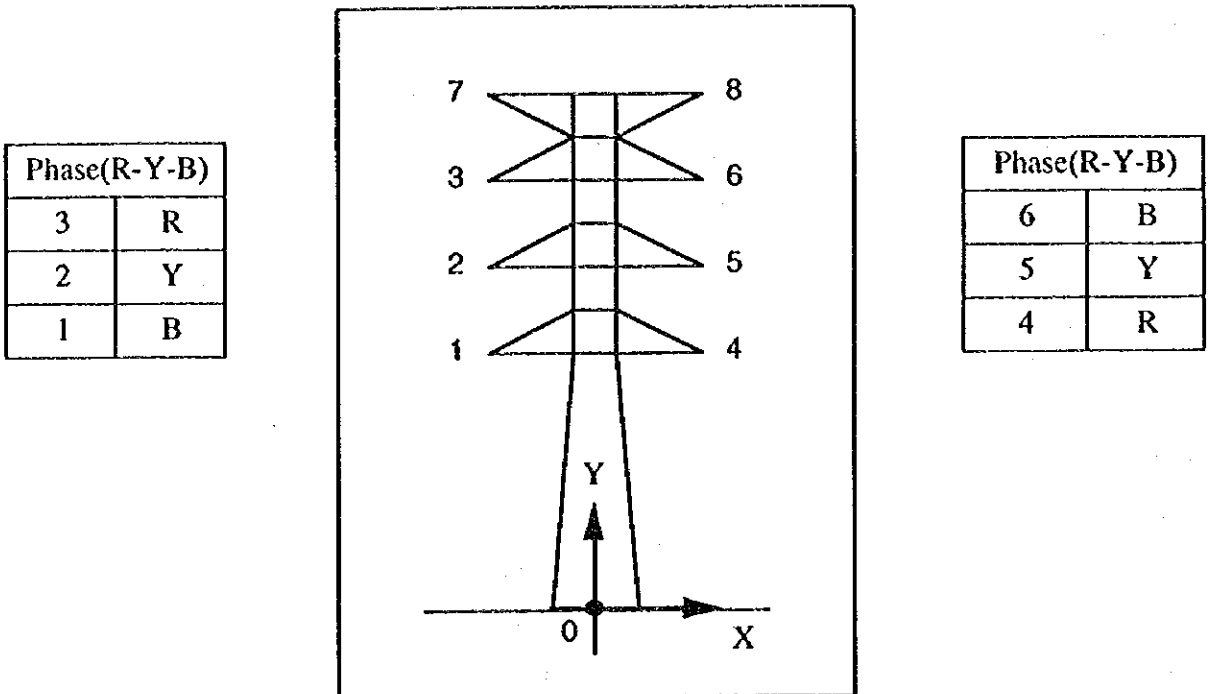
No.	Item	Unit	Data
1	Voltage	kV	220
2	Line Length	km	70.5
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		2
7	Subconductor Spacing	mm	400
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	335
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	9.56
14	Earthwire Sag at EDT	m	6.41
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292 suspension / tension 370
21	Disc Spacing	mm	146 178
22	No. of Discs - Suspension		17
23	No. of Discs - Tension		13×2
24	Suspension Insulator Set Length	m	3.034
25	Mechanical Rating - Suspension	kN	120
26	Mechanical Rating - Tension	kN	160×2
27	Specific Creepage of Set	mm / kV	20
28	Insulator Manufacturer		ITALISOLATORI, ITALY
29	Tower Manufacturer		KAMANI, INDIA
30	Conductor Manufacturer		ECHEVARRIA, SPAIN
31	Main Contractor		KAMANI, INDIA
32	Date of Completion		1985

TOWER CONFIGURATION 1

Ref No.	2L2
Title	BIYAGAMA - KOTMALE
Voltage	220 kV

Double Circuit, Vertical Formation, 2 Earthwires

Tower Type 1DL (2 x Zebra)



Insulator length + 2/3 sag 9.34

Suspension Tower Dimensions (m)	X	Y	Y _{av}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	- 6.23	20.30	10.96
2	- 5.70	26.56	17.22
3	- 5.43	32.74	23.40
4	6.23	20.30	10.96
5	5.70	26.56	17.22
6	5.43	32.74	23.40
Earthwire Attachment Point			
7	- 5.43	35.74	31.47
8	5.43	35.74	31.47

Database Information for Overhead Lines

Reference No. 2L3

Title : KOTMALE - VICTORIA

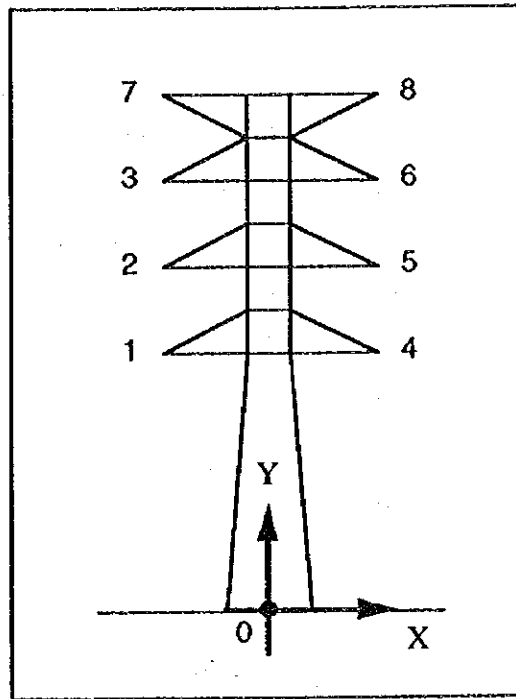
No.	Item	Unit	Data
1	Voltage	kV	220
2	Line Length	km	30.1
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		2
7	Subconductor Spacing	mm	400
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	335
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	9.56
14	Earthwire Sag at EDT	m	6.41
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292 suspension / tension 370
21	Disc Spacing	mm	146 178
22	No. of Discs - Suspension		17
23	No. of Discs - Tension		14×2
24	Suspension Insulator Set Length	m	3.06
25	Mechanical Rating - Suspension	kN	120
26	Mechanical Rating - Tension	kN	160×2
27	Specific Creepage of Set	mm / kV	20
28	Insulator Manufacturer		DOULTON INSULATORS, UK
29	Tower Manufacturer		
30	Conductor Manufacturer		
31	Main Contractor		EVE CONSTRUCTION, UK
32	Date of Completion		1984

TOWER CONFIGURATION 1

Ref No.	2L3
Title	KOTMALE - VICTORIA
Voltage	220 kV

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	B
2	Y
1	R



Phase(R-Y-B)	
6	R
5	Y
4	B

Insulator length + 2/3 sag 9.43

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 6.00	21.72	12.29
	2	- 5.70	28.27	18.84
	3	- 5.60	34.82	25.39
	4	6.00	21.72	12.29
	5	5.70	28.27	18.84
	6	5.60	34.82	25.39
Earthwire Attachment Point	7	- 5.60	37.20	32.93
	8	5.60	37.20	32.93

Database Information for Overhead Lines

Reference No. 21A

Title : VICTORIA - RANDENIGALA

No.	Item	Unit	Data
1	Voltage	kV	220
2	Line Length	km	16.4
3	No. of Circuits		1
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		2
7	Subconductor Spacing	mm	400
8	Earthwire Type / Name		AS 7/4.62 7/5 AWG alumaweld
9	Earthwire Size	mm ²	117.4
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	8.06
14	Earthwire Sag at EDT	m	4.98
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		5
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	370
21	Disc Spacing	mm	170
22	No. of Discs - Suspension		15
23	No. of Discs - Tension		16×2
24	Suspension Insulator Set Length	m	3.41
25	Mechanical Rating - Suspension	kN	210
26	Mechanical Rating - Tension	kN	210×2
27	Specific Creepage of Set	mm / kV	22.6
28	Insulator Manufacturer		ESA
29	Tower Manufacturer		BROWN BOVERI , GERMANY
30	Conductor Manufacturer		
31	Main Contractor		BROWN BOVERI , GERMANY
32	Date of Completion		1985

Database Information for Overhead Lines

Reference No. 2L5

Title : RANDENIGALA - RANTEMBE

No.	Item	Unit	Data
1	Voltage	kV	220
2	Line Length	km	3.1
3	No. of Circuits		1
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		2
7	Subconductor Spacing	mm	400
8	Earthwire Type / Name		AS 7/4.62
9	Earthwire Size	mm ²	117.4
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	8.06
14	Earthwire Sag at EDT	m	4.98
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		5
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	370
21	Disc Spacing	mm	170
22	No. of Discs - Suspension		15
23	No. of Discs - Tension		16×2
24	Suspension Insulator Set Length	m	3.410
25	Mechanical Rating - Suspension	kN	210
26	Mechanical Rating - Tension	kN	210×2
27	Specific Creepage of Set	mm / kV	22.6
28	Insulator Manufacturer		ESA
29	Tower Manufacturer		BROWN BOVERI , GERMANY
30	Conductor Manufacturer		
31	Main Contractor		BROWN BOVERI , GERMANY
32	Date of Completion		1985

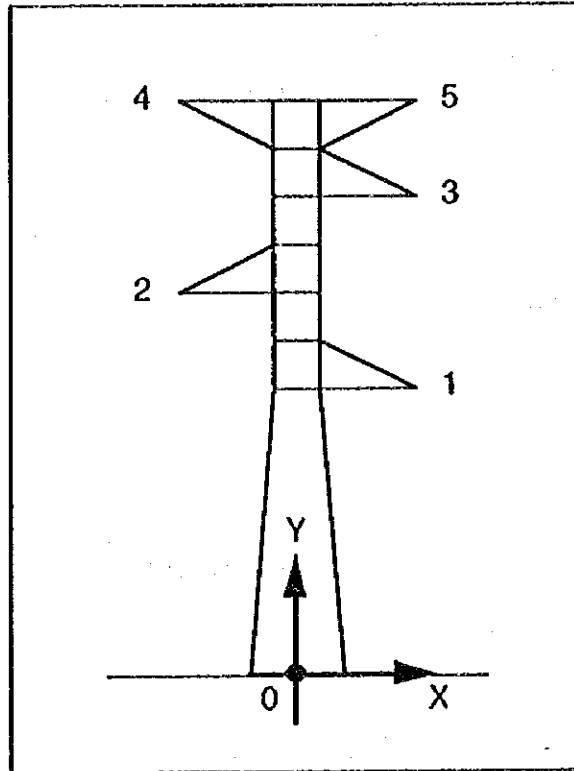
TOWER CONFIGURATION 5

Ref No.	2L5	(same as 2L4)
Title	RANDENIGALA - RANTEMBE	
Voltage	220 kV	

Single Circuit, Semi Delta Formation, 2 Earthwires

TOWER TYPE SIM6

Phase(R-Y-B)	
3	Y
2	R
1	B



Insulator length + 2/3 sag 8.78

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	5.40	18.65	9.87
	2	- 5.10	22.70	13.92
	3	5.00	26.75	17.97
	4	- 6.40	29.15	25.83
Earthwire Attachment Point	5	6.40	29.15	25.83

2/3 E/W sag 3.32

Database Information for Overhead Lines

Reference No. 2L6

Title : KOTMALE - NEW ANURADHAPURA

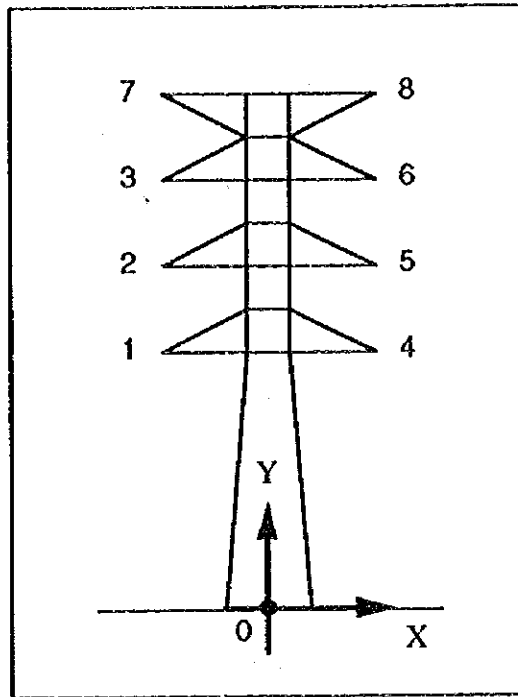
No.	Item	Unit	Data
1	Voltage	kV	220
2	Line Length	km	163 *
3	No. of Circuits		1 (Double circuit tower)
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	-
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	350
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	
14	Earthwire Sag at EDT	m	
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		
19	Insulator Design		
20	Creepage / Disc	mm	
21	Disc Spacing	mm	
22	No. of Discs - Suspension		
23	No. of Discs - Tension		
24	Suspension Insulator Set Length	m	2.9 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	20
28	Insulator Manufacturer		
29	Tower Manufacturer		
30	Conductor Manufacturer		
31	Main Contractor		KEC, India
32	Date of Completion		anticipated 1998

TOWER CONFIGURATION 1

Ref No.	2L6
Title	KOTMALE - NEW ANURADHAPURA
Voltage	220 kV

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	
2	
1	



Phase(R-Y-B)	
6	
5	
4	

Insulator length + 2/3 sag

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1			
2			
3			
4			
5			
6			
Earthwire Attachment Point			
7			
8			

Database Information for Overhead Lines

Reference No. 1L1

Title: BIYAGAMA - PANNIPITIYA

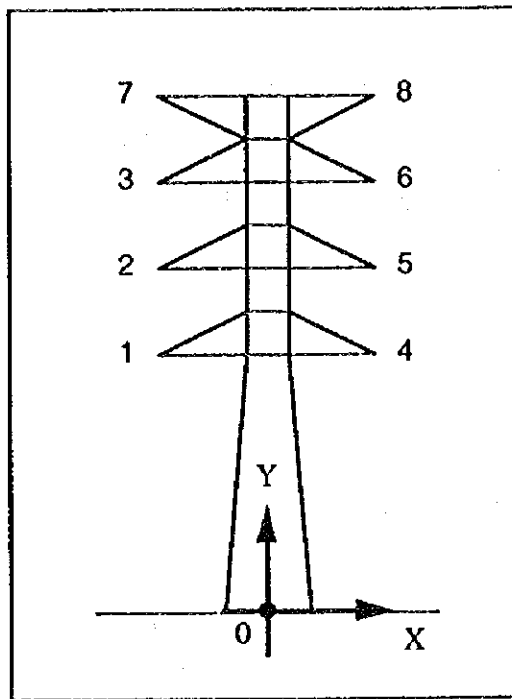
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	15.5
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	335
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	9.56
14	Earthwire Sag at EDT	m	6.41
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292 suspension / tension 370
21	Disc Spacing	mm	146 178
22	No. of Discs - Suspension		17
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.880
25	Mechanical Rating - Suspension	kN	120
26	Mechanical Rating - Tension	kN	160
27	Specific Creepage of Set	mm / kV	22
28	Insulator Manufacturer		ITALISOLATORI, ITALY
29	Tower Manufacturer		KAMANI, INDIA
30	Conductor Manufacturer		ECHEVARRIA, SPAIN
31	Main Contractor		KAMANI, INDIA
32	Date of Completion		1986

TOWER CONFIGURATION 1

Ref No.	1L1	(same as 2L1)
Title	BIYAGAMA - PANNIPITIYA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires
TOWER TYPE IDL (1 x Zebra)

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

220kV Tower operating at 132kV

Insulator length + 2/3 sag 9.25

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	- 5.57	19.95	10.70
2	- 4.95	25.65	16.40
3	- 4.75	31.23	21.98
4	5.57	19.95	10.70
5	4.95	25.65	16.40
6	4.75	31.23	21.98
Earthwire Attachment Point			
7	- 4.75	34.18	29.91
8	4.75	31.18	29.91

Database Information for Overhead Lines

Reference No. 1L2

Title : BIYAGAMA - KELANITISSA

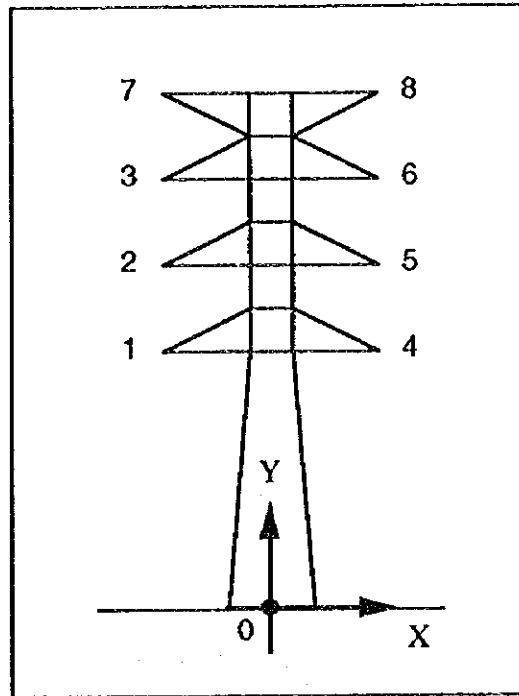
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	12.5
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "GOAT"
5	Conductor Size	mm ²	324.3
6	No. of Subconductors / Phase		2
7	Subconductor Spacing	mm	400
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	335
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	8.35
14	Earthwire Sag at EDT	m	5.22
15	Minimum Ground Clearance	m	7.31
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292 suspension / tension 370
21	Disc Spacing	mm	146 178
22	No. of Discs - Suspension		11
23	No. of Discs - Tension		13×2
24	Suspension Insulator Set Length	m	2.158
25	Mechanical Rating - Suspension	kN	120
26	Mechanical Rating - Tension	kN	160×2
27	Specific Creepage of Set	mm / kV	22
28	Insulator Manufacturer		ITALISOLATORI, ITALY
29	Tower Manufacturer		KAMANI, INDIA
30	Conductor Manufacturer		ECHEVARRIA, SPAIN
31	Main Contractor		KAMANI, INDIA
32	Date of Completion		1985

TOWER CONFIGURATION 1

Ref No.	1L2	(same as 2L2)
Title	BIYAGAMA - KELANITISSA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires
TOWER TYPE IDL (2 x Goat)

Phase(R-Y-B)	
3	B
2	Y
1	R



Phase(R-Y-B)	
6	R
5	Y
4	B

220kV Tower operating at 132kV

Insulator length + 2/3 sag 7.73

Suspension Tower Dimensions (m)		X	Y	Y_{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 6.23	20.30	12.57
	2	- 5.70	26.56	18.83
	3	- 5.43	32.74	25.01
	4	6.23	20.30	12.57
	5	5.70	26.56	18.83
	6	5.43	32.74	25.01
Earthwire Attachment Point	7	- 5.43	35.74	32.26
	8	5.43	35.74	32.26

Database Information for Overhead Lines

Reference No. 1L3

Title : BIYAGAMA - SAPUGASKANDA P/S

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	2.1
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX" (Note)
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		
30	Conductor Manufacturer		
31	Main Contractor		
32	Date of Completion		1985

Note : Conductor change to "Zebra" 1997, 75°C, reduced spans.

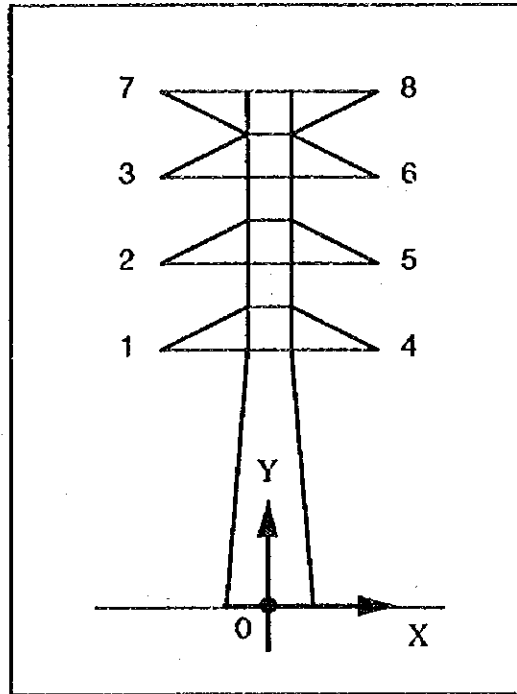
TOWER CONFIGURATION 1

Ref No.	1L3
Title	BIYAGAMA - SAPUGASKANDA P/S
Voltage	132 kV

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE NNDAL

Phase(R-Y-B)	
3	B
2	R
1	Y



Phase(R-Y-B)	
6	B
5	Y
4	R

Insulator length + 2/3 sag

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1			
2			
3			
4			
5			
6			
Earthwire Attachment Point			
7			
8			

Database Information for Overhead Lines

Reference No. 11A

Title: KOLONNAWA - KELANITISSA

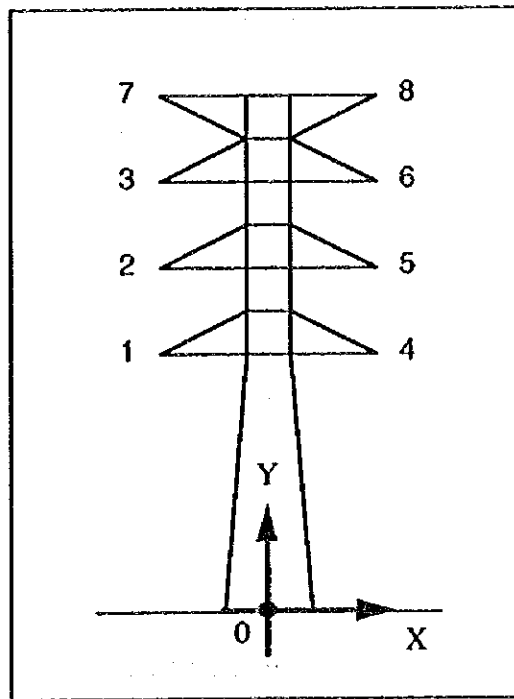
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	2.2 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "ZEBRA"
5	Conductor Size	mm ²	428.9
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	7.3
14	Earthwire Sag at EDT	m	4.98
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	286
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		11
24	Suspension Insulator Set Length	m	2.49
25	Mechanical Rating - Suspension	kN	80
26	Mechanical Rating - Tension	kN	160
27	Specific Creepage of Set	mm / kV	23.7
28	Insulator Manufacturer		SEDIVER, FRANCE
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		LAMITREF, BELGIUM
31	Main Contractor		SAE, ITALY
32	Date of Completion		1963

TOWER CONFIGURATION 1

Ref No.	1L4
Title	KOLONNAWA - KELANITISSA
Voltage	132 kV

Double Circuit, Vertical Formation, 2 Earthwires
TOWER TYPE GGAL

Phase(R-Y-B)	
3	B
2	Y
1	R



Phase(R-Y-B)	
6	R
5	Y
4	B

Insulator length + 2/3 sag 7.36

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	-3.96	16.93	9.57
2	-3.20	21.05	13.69
3	-3.20	25.16	17.80
4	3.96	16.93	9.57
5	3.20	21.05	13.69
6	3.20	25.16	17.80
Earthwire Attachment Point			
7	-3.20	27.85	24.53
8	3.20	27.85	24.53

Database Information for Overhead Lines

Reference No. IL5

Title : KOLONNAWA - PANNIPITIYA

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	12.9
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.086
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	125
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SUMITOMO, JAPAN
30	Conductor Manufacturer		SUMITOMO, JAPAN
31	Main Contractor		SUMITOMO, JAPAN
32	Date of Completion		1971

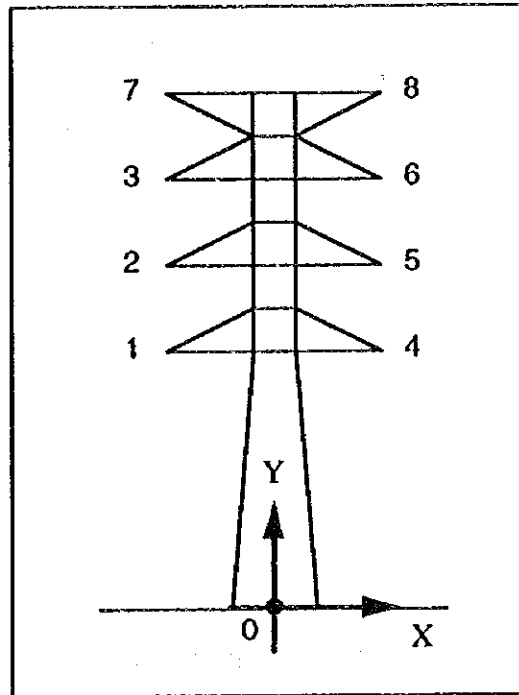
TOWER CONFIGURATION 1

Ref No.	IL5
Title	KOLONNAWA - PANNIPITIYA
Voltage	132 kV

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE XXAL

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	R
5	Y
4	B

Insulator length + 2/3 sag 6.29

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.66	15.65	9.36
	2	- 3.66	19.49	13.20
	3	- 3.66	23.32	17.03
	4	3.66	15.65	9.36
	5	3.66	19.49	13.20
	6	3.66	23.32	17.03
Earthwire Attachment Point	7	- 3.66	26.37	23.71
	8	3.66	26.37	23.71

Database Information for Overhead Lines

Reference No. 1L6

Title: KOLONNAWA - SAPUGASKANDA(T)

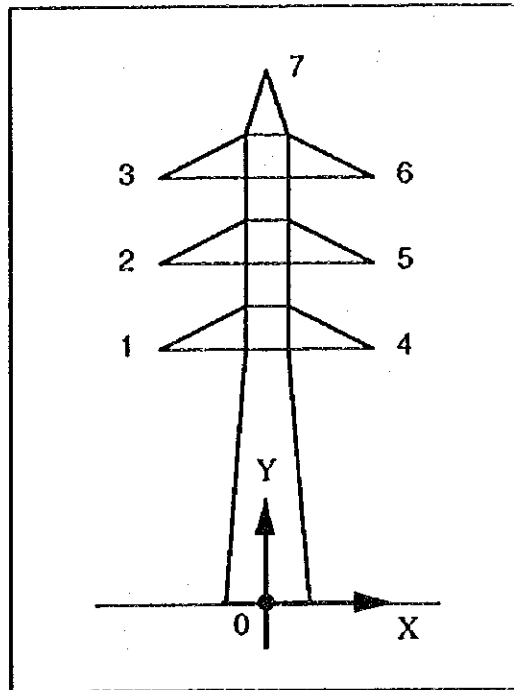
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	6.6 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "COYOTE"
5	Conductor Size	mm ²	132.1
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	8.91
14	Earthwire Sag at EDT	m	6.66
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	146
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1960

TOWER CONFIGURATION 2

Ref No.	1L6
Title	KOLONNAWA - SAPUGASKANDA(T)
Voltage	132 kV

Double Circuit, Vertical Formation, 1 Earthwire

Phase(R-Y-B)	
3	B
2	R
1	Y



Phase(R-Y-B)	
6	B
5	Y
4	R

Phase
Transposition
Occurs

Insulator length + 2/3 sag 8.14

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	- 3.95	17.24	9.10
2	- 3.95	21.39	13.25
3	- 3.95	25.54	17.40
4	3.95	17.24	9.10
5	3.95	21.39	13.25
6	3.95	25.54	17.40
Earthwire Attachment Point			
7	0	29.02	24.58

2/3 E/W sag 4.44

Database Information for Overhead Lines

Reference No. IL7

Title : SAPUGASKANDA(T) - KOTUGODA

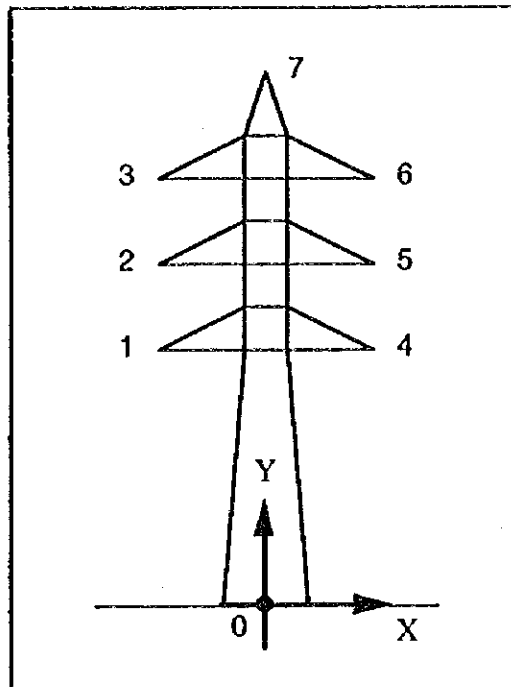
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	16.7 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "COYOTE"
5	Conductor Size	mm ²	132.1
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	8.91
14	Earthwire Sag at EDT	m	6.66
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	146
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1960

TOWER CONFIGURATION 2

Ref No.	1L7	(same as 1L6)
Title	SAPUGASKANDA(T) - KOTUGODA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 1 Earthwire

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Phase
Transposition
Occurs

Insulator length + 2/3 sag 8.14

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.95	17.24	9.10
	2	- 3.95	21.39	13.25
	3	- 3.95	25.54	17.40
	4	3.95	17.24	9.10
	5	3.95	21.39	13.25
	6	3.95	25.54	17.40
Earthwire Attachment Point	7	0	29.02	24.58

2/3 E/W sag 4.44

Database Information for Overhead Lines

Reference No. 1L8A

Title : SAPUGASKANDA(T) - SS

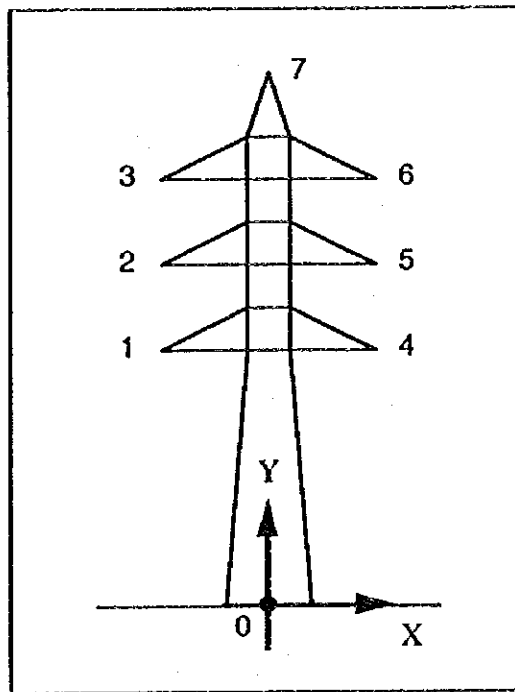
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	2.3 (TOTAL 4.6)
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.086
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	125
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SUMITOMO, JAPAN
30	Conductor Manufacturer		SUMITOMO, JAPAN
31	Main Contractor		SUMITOMO, JAPAN
32	Date of Completion		1971

TOWER CONFIGURATION 2

Ref No.	1L8A
Title	SAPUGASKANDA(T) - SS
Voltage	132 kV

Double Circuit, Vertical Formation, 1 Earthwire
TOWER TYPE XAL

Phase(R-Y-B)	
3	Y
2	B
1	R



Phase(R-Y-B)	
6	Y
5	B
4	R

Suspension Tower Dimensions (m)		Insulator length + 2/3 sag		
		X	Y	Y _{av}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.66	15.65	9.36
	2	- 3.66	19.49	13.20
	3	- 3.66	23.32	17.03
	4	3.66	15.65	9.36
	5	3.66	19.49	13.20
	6	3.66	23.32	17.03
Earthwire Attachment Point	7	0	27.28	24.62

2/3 E/W sag 2.66

Database Information for Overhead Lines

Reference No. IL8B

Title : SAPUGASKANDA(T) - SS

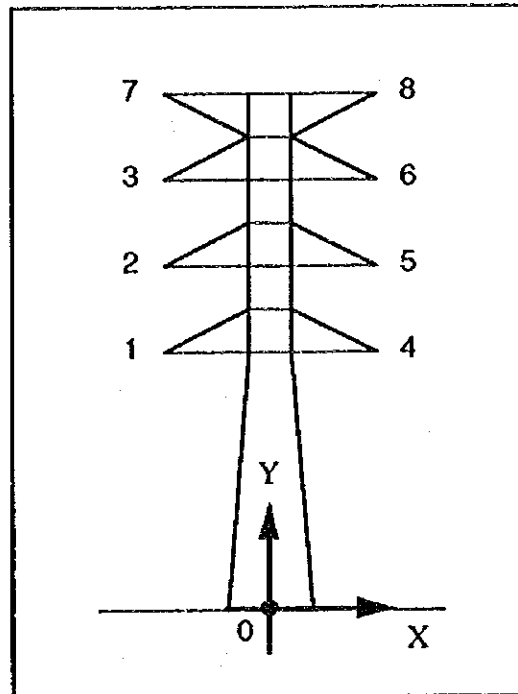
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	2.3 (Total A + B = 4.6)
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.3
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.086
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	125
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK , JAPAN
29	Tower Manufacturer		SUMITOMO , JAPAN
30	Conductor Manufacturer		SUMITOMO , JAPAN
31	Main Contractor		SUMITOMO, JAPAN
32	Date of Completion		1971

TOWER CONFIGURATION 1

Ref No.	1L8B	(same as 1L5)
Title	SAPUGASKANDA(T) - SS	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE XXAL



Phase(R-Y-B)	
3	Y
2	B
1	R

Phase(R-Y-B)	
6	Y
5	B
4	R

Insulator length + 2/3 sag 6.29

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.66	15.65	9.36
	2	- 3.66	19.49	13.20
	3	- 3.66	23.32	17.03
	4	3.66	15.65	9.36
	5	3.66	19.49	13.20
	6	3.66	23.32	17.03
Earthwire Attachment Point	7	- 3.66	26.37	23.71
	8	3.66	26.37	23.71

Database Information for Overhead Lines

Reference No. 1L9

Title : KOTUGODA - BOLAWATTA

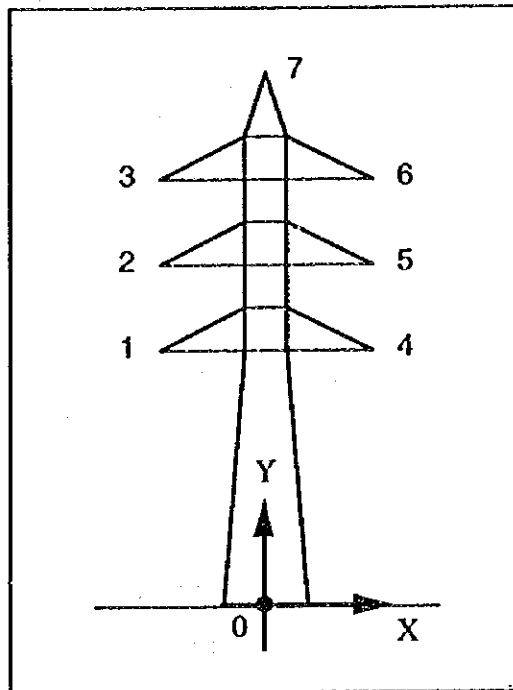
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	21.0 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "COYOTE"
5	Conductor Size	mm ²	132.1
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		19 / 2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	8.91
14	Earthwire Sag at EDT	m	6.66
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1960

TOWER CONFIGURATION 2

Ref No.	1L9	(same as 1L6)
Title	KOTUGODA - BOLAWATTA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 1 Earthwire

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Phase
Transposition
Occurs

Insulator length + 2/3 sag 8.14

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.95	17.24	9.10
	2	- 3.95	21.39	13.25
	3	- 3.95	25.54	17.40
	4	3.95	17.24	9.10
	5	3.95	21.39	13.25
	6	3.95	25.54	17.40
Earthwire Attachment Point	7	0	29.02	24.58

2/3 E/W sag 4.44

Database Information for Overhead Lines

Reference No. IL10

Title : BOLAWATTA - CHILAW(T)

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	22.6
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	286
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.311
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	80
27	Specific Creepage of Set	mm / kV	23.7
28	Insulator Manufacturer		SEDIVER, FRANCE
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		LAMITREF, BELGIUM
31	Main Contractor		SAE, ITALY
32	Date of Completion		1963

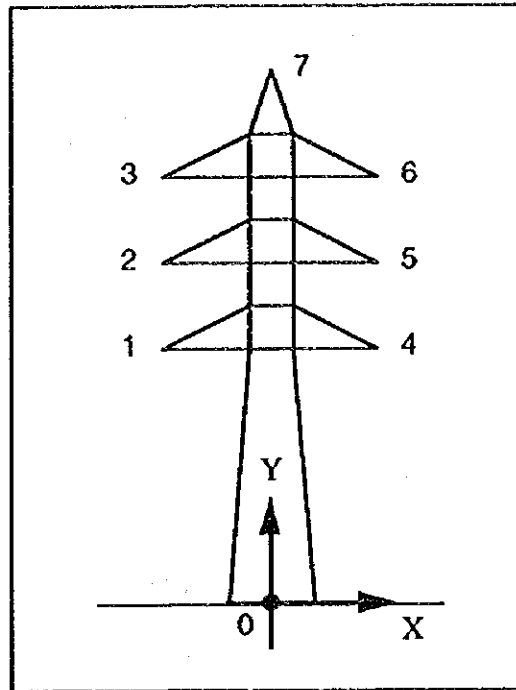
TOWER CONFIGURATION 2

Ref No.	1L10
Title	BOLAWATTA - CHILAW(T)
Voltage	132 kV

Double Circuit, Vertical Formation, 1 Earthwire

TOWER TYPE HAL

Phase(R-Y-B)	
3	R
2	B
1	Y



Phase(R-Y-B)	
6	R
5	Y
4	B

Phase
Transposition
Occurs

Insulator length + 2/3 sag 6.51

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.60	15.80	9.29
	2	- 3.50	19.90	13.39
	3	- 3.50	24.00	17.49
	4	3.60	15.80	9.29
	5	3.50	19.90	13.39
	6	3.50	24.00	17.49
Earthwire Attachment Point	7	0	27.58	24.92

2/3 E/W sag 2.66

Database Information for Overhead Lines

Reference No. IL11

Title : CHILAW(T) - PUTTALAM

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	61.4
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	286
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.311
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	80
27	Specific Creepage of Set	mm / kV	23.7
28	Insulator Manufacturer		SEDIVER, FRANCE
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		LAMITREF, BELGIUM
31	Main Contractor		SAE, ITALY
32	Date of Completion		1963

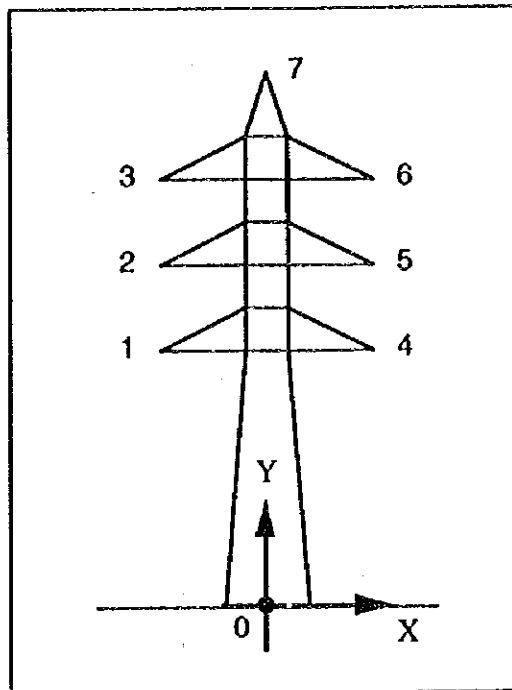
TOWER CONFIGURATION 2

Ref No.	1L11	(same as 1L10)
Title	CHILAW(T) - PUTTALAM	
Voltage	132 kV	

Double Circuit, Vertical Formation, 1 Earthwire

TOWER TYPE HAL

Phase(R-Y-B)	
3	Y
2	B
1	R



Phase(R-Y-B)	
6	Y
5	R
4	B

Phase
Transposition
Occurs

Insulator length + 2/3 sag 6.51

Suspension Tower Dimensions (m)	X	Y	Y _{av}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	- 3.60	15.80	9.29
2	- 3.50	19.90	13.39
3	- 3.50	24.00	17.49
4	3.60	15.80	9.29
5	3.50	19.90	13.39
6	3.50	24.00	17.49
Earthwire Attachment Point			
7	0	27.58	24.92

2/3 E/W sag 2.66

Database Information for Overhead Lines

Reference No. IL12

Title: CHILAW(T) - SS

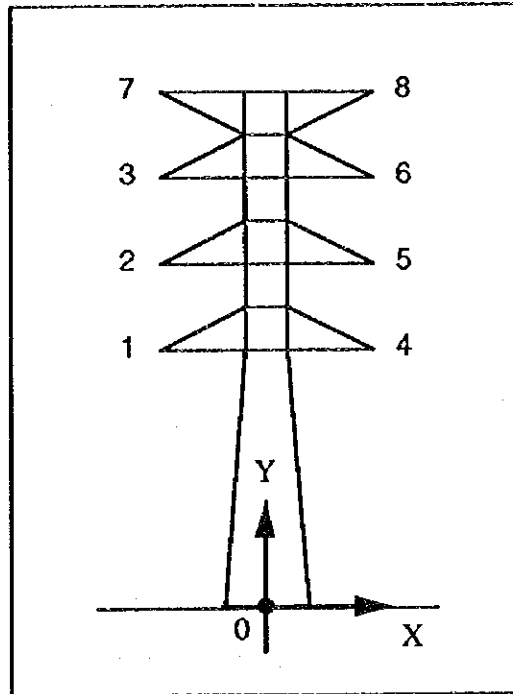
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	6.8
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	7.88
14	Earthwire Sag at EDT	m	4.89
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	70
26	Mechanical Rating - Tension	kN	120
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SAE, INDIA
30	Conductor Manufacturer		ALUMINIUM INDUSTRIES, INDIA
31	Main Contractor		CEB - Transmission Construction
32	Date of Completion		1995

TOWER CONFIGURATION 1

Ref No.	IL12
Title	CHILAW(T) - SS
Voltage	132 kV

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	B
2	Y
1	R



Phase(R-Y-B)	
6	B
5	R
4	Y

Insulator length + 2/3 sag 7.45

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.90	17.25	9.80
	2	- 3.70	21.44	13.99
	3	- 3.70	25.58	18.13
	4	3.90	17.25	9.80
	5	3.70	21.44	13.99
	6	3.70	25.58	18.13
Earthwire Attachment Point	7	- 3.70	27.48	24.22
	8	3.70	27.48	24.22

Database Information for Overhead Lines

Reference No. 1L13

Title : KOLONNAWA - ORUWALA(T)

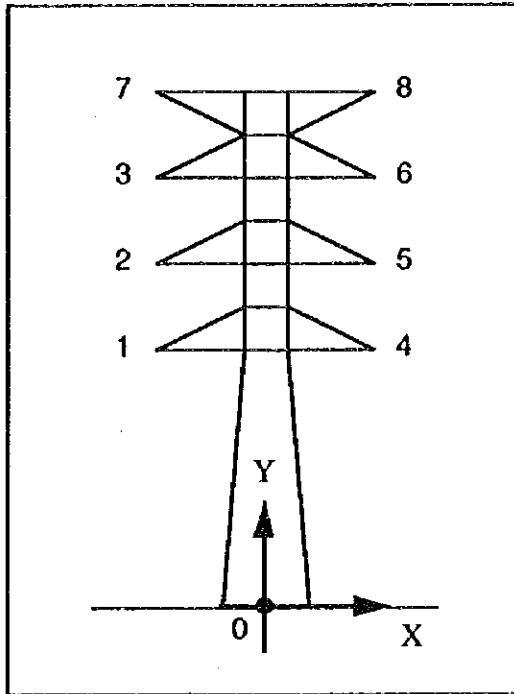
No.	Item	Unit	Data
1	Voltage	kV	132 (Kolonnawa -Polpitiya No. 1 & 2)
2	Line Length	km	14.0 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19 / 2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1959

TOWER CONFIGURATION 1

Ref No.	IL13
Title	KOLONNAWA - ORUWALA(T)
Voltage	132 kV

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Phase
Transposition
Occurs

Insulator length + 2/3 sag 6.4

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	- 3.95	17.24	10.84
2	- 3.95	21.39	14.99
3	- 3.95	25.54	19.14
4	3.95	17.24	10.84
5	3.95	21.39	14.99
6	3.95	25.54	19.14
Earthwire Attachment Point			
7	- 3.95	28.11	25.45
8	3.95	28.11	25.45

Database Information for Overhead Lines

Reference No. 1L14

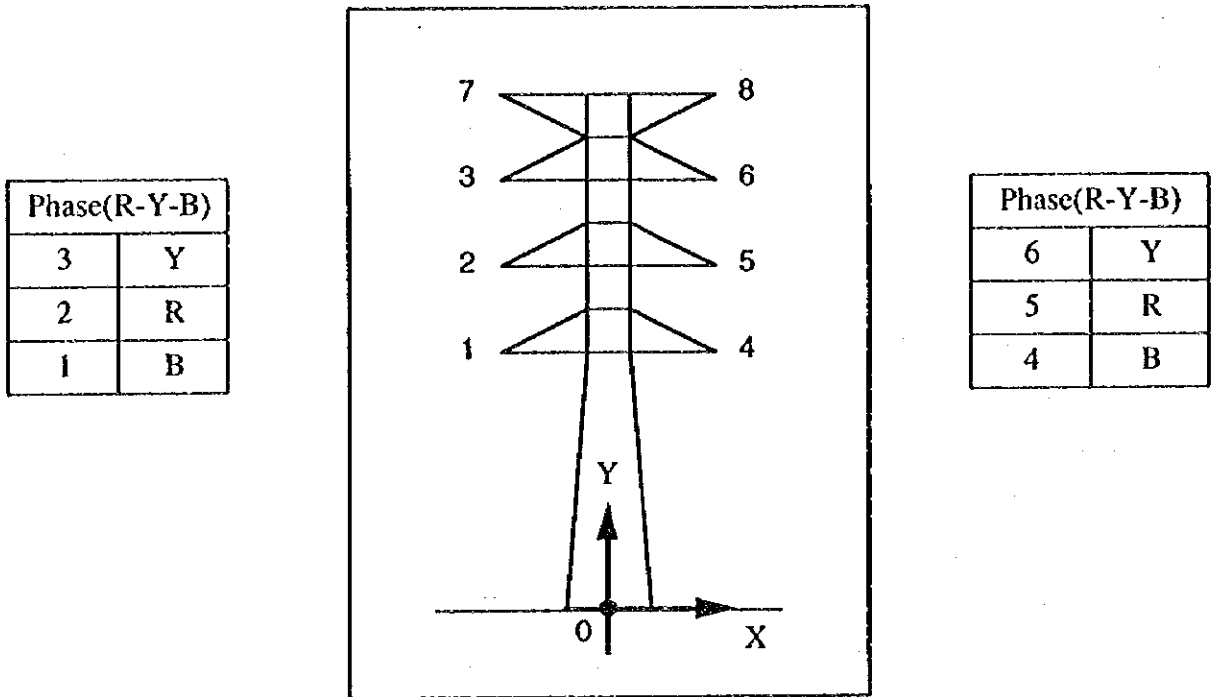
Title : ORUWALA(T) - SS

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	3.4 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19 / 2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	286
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.311
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	80
27	Specific Creepage of Set	mm / kV	23.7
28	Insulator Manufacturer		SEDIVER, FRANCE
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		LAMITREF, BELGIUM
31	Main Contractor		SAE, ITALY
32	Date of Completion		1963

TOWER CONFIGURATION 1

Ref No.	IL14	(same as IL13)
Title	ORUWALA(T) - SS	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires



Insulator length + 2/3 sag 6.51

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.95	17.24	10.73
	2	- 3.95	21.39	14.88
	3	- 3.95	25.54	19.03
	4	3.95	17.24	10.73
	5	3.95	21.39	14.88
	6	3.95	25.54	19.03
Earthwire Attachment Point	7	- 3.95	28.11	25.45
	8	3.95	28.11	25.45

Database Information for Overhead Lines

Reference No. IL15

Title : ORUWALA(T) - THULHIRIYA(T)

No.	Item	Unit	Data
1	Voltage	kV	132 (Kolonnawa -Polpitiya No. 1 & 2)
2	Line Length	km	36.0 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	---
8	Earthwire Type / Name		GS 19 / 2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1959

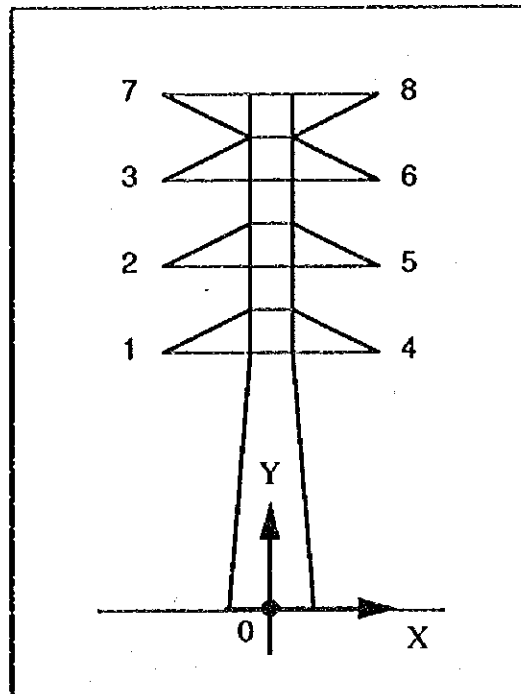
TOWER CONFIGURATION 1

Ref No.	1L15	(same as 1L13)
Title	ORUWALA(T) - THULHIRIYA(T)	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	R
2	B
1	Y

Phase
Transposition
Occurs



Phase(R-Y-B)	
6	R
5	B
4	Y

Insulator length + 2/3 sag 6.40

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	- 3.95	17.24	10.84
2	- 3.95	21.39	14.99
3	- 3.95	25.54	19.14
4	3.95	17.24	10.84
5	3.95	21.39	14.99
6	3.95	25.54	19.14
Earthwire Attachment Point			
7	- 3.95	28.11	25.45
8	3.95	28.11	25.45

Database Information for Overhead Lines

Reference No. 1L16

Title: THULHIRIYA(T) - SS

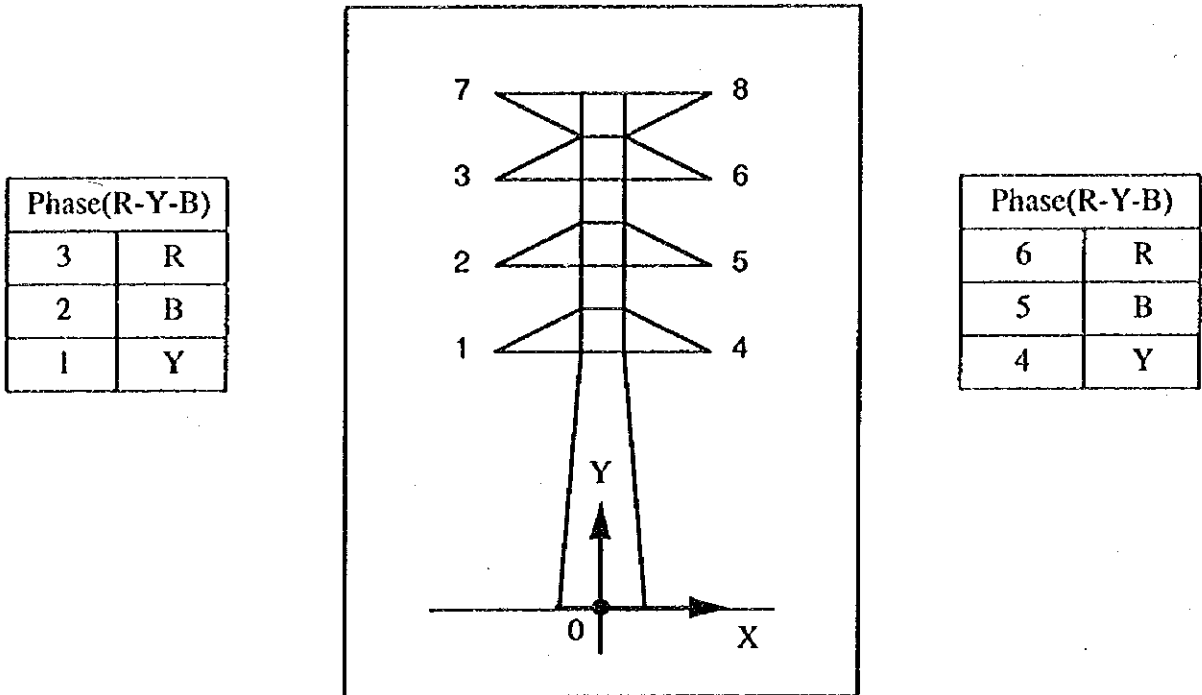
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	23.9
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.086
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	125
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SUMITOMO, JAPAN
30	Conductor Manufacturer		SUMITOMO, JAPAN
31	Main Contractor		SUMITOMO, JAPAN
32	Date of Completion		1971

TOWER CONFIGURATION 1

Ref No.	IL16	(same as IL5)
Title	THULHIRIYA(T) - SS	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE XXAL



Phase(R-Y-B)	
3	R
2	B
1	Y

Phase(R-Y-B)	
6	R
5	B
4	Y

Insulator length + 2/3 sag 6.29

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.66	15.65	9.36
	2	- 3.66	19.49	13.20
	3	- 3.66	23.32	17.03
	4	3.66	15.65	9.36
	5	3.66	19.49	13.20
	6	3.66	23.32	17.03
Earthwire Attachment Point	7	- 3.66	26.37	23.71
	8	3.66	26.37	23.71

Database Information for Overhead Lines

Reference No. 1L17

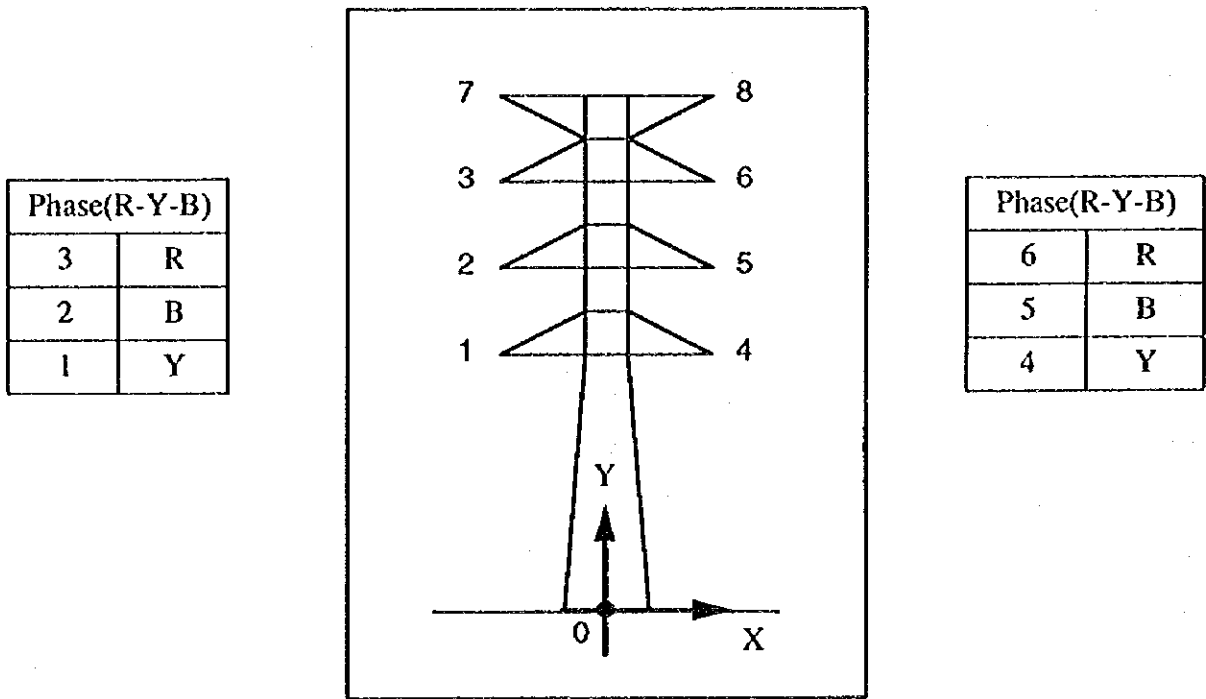
Title: THULHIRIYA(T) - POLPITIYA

No.	Item	Unit	Data
1	Voltage	kV	132 (KOLONNAWA - POLPITIYA No. 1 & 2)
2	Line Length	km	28.0 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1959

TOWER CONFIGURATION 1

Ref No.	IL17	(same as IL13)
Title	THULHIRIYA(T) - POLPITIYA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires



Insulator length + 2/3 sag 6.40

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.95	17.24	10.84
	2	- 3.95	21.39	14.99
	3	- 3.95	25.54	19.14
	4	3.95	17.24	10.84
	5	3.95	21.39	14.99
	6	3.95	25.54	19.14
Earthwire Attachment Point	7	- 3.95	28.11	25.45
	8	3.95	28.11	25.45

Database Information for Overhead Lines

Reference No. IL18

Title : KOLONNAWA - AVISSAWELLA(T)

No.	Item	Unit	Data
1	Voltage	kV	132 (KOLONNAWA - POLPITIYA No. 3 & 4)
2	Line Length	km	31.9
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.086
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	125
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SUMITOMO, JAPAN
30	Conductor Manufacturer		SUMITOMO, JAPAN
31	Main Contractor		SUMITOMO, JAPAN
32	Date of Completion		1971

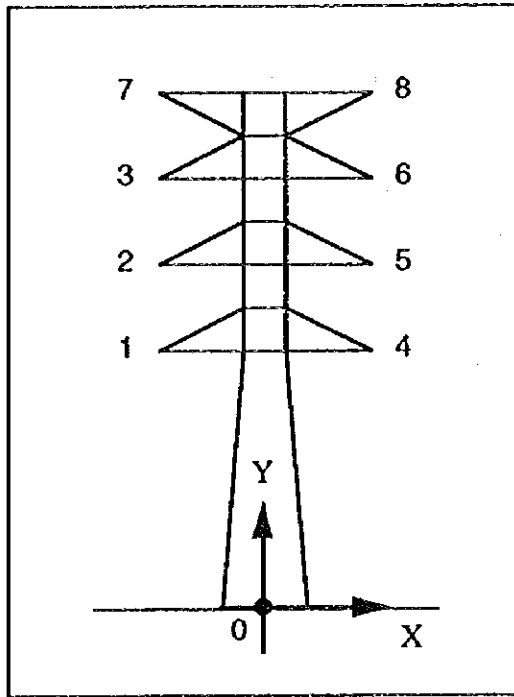
TOWER CONFIGURATION 1

Ref No.	IL18	(same as IL5)
Title	KOLONNAWA - AVISSAWELLA(T)	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE XXAL

Phase(R-Y-B)	
3	R
2	B
1	Y



Phase(R-Y-B)	
6	Y
5	B
4	R

Phase
Transposition
Occurs

Insulator length + 2/3 sag 6.29

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.66	15.65	9.36
	2	- 3.66	19.49	13.20
	3	- 3.66	23.32	17.03
	4	3.66	15.65	9.36
	5	3.66	19.49	13.20
	6	3.66	23.32	17.03
Earthwire Attachment Point	7	- 3.66	26.37	23.71
	8	3.66	26.37	23.71

Database Information for Overhead Lines

Reference No. 1L19

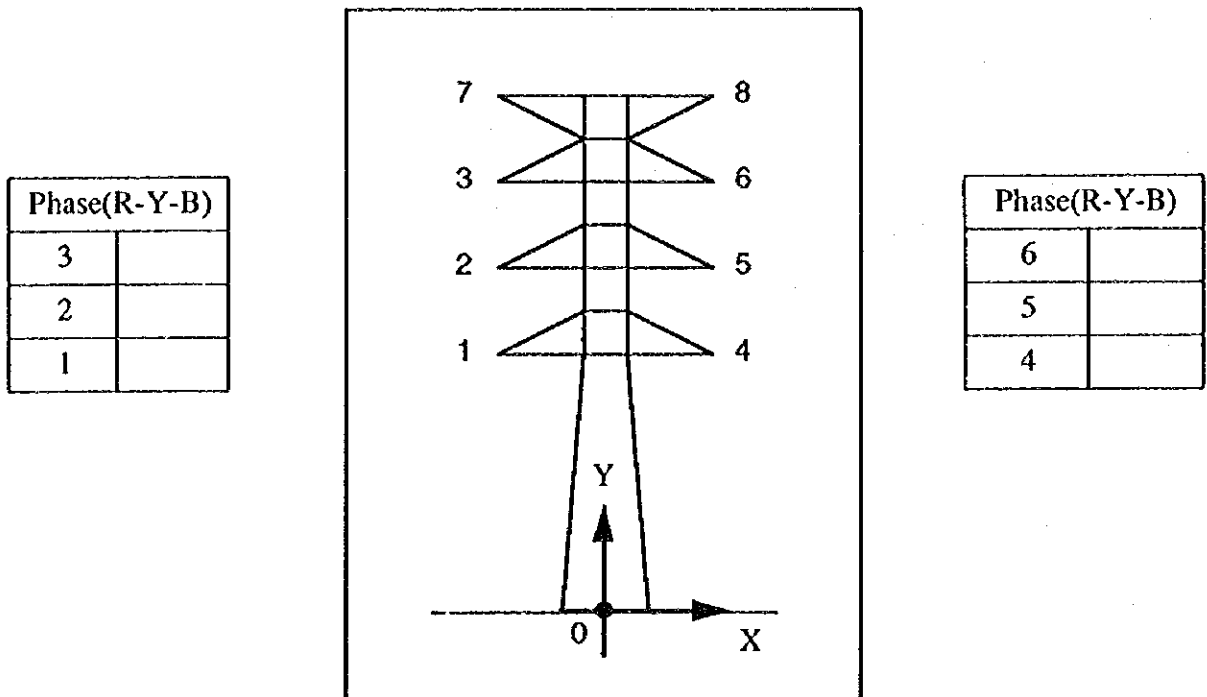
Title : AVISSAWELLA (T) - SS

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	0.5 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	7.88
14	Earthwire Sag at EDT	m	4.89
15	Minimum Ground Clearance	m	7.01
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	146
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		12
24	Suspension Insulator Set Length	m	2.27
25	Mechanical Rating - Suspension	kN	70
26	Mechanical Rating - Tension	kN	120
27	Specific Creepage of Set	mm / kV	22
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SAE, INDIA
30	Conductor Manufacturer		ALUMINIUM INDUSTRIES, INDIA
31	Main Contractor		SRI U-THONG, THAILAND
32	Date of Completion		anticipated 1996

TOWER CONFIGURATION 1

Ref No.	1L19	(same as 1L24)
Title	AVISSAWELLA (T) - SS	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires



Insulator length + 2/3 sag 7.52

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.90	17.25	9.73
	2	- 3.67	21.44	13.92
	3	- 3.67	25.58	18.06
	4	3.90	17.25	9.73
	5	3.67	21.44	13.92
	6	3.67	25.58	18.06
Earthwire Attachment Point	7	- 3.67	27.25	23.99
	8	3.67	27.25	23.99

Database Information for Overhead Lines

Reference No. 1L20

Title : AVISSAWELLA(T) - POLPITIYA

No.	Item	Unit	Data
1	Voltage	kV	132 (KOLONNAWA - POLPITIYA No. 3 & 4)
2	Line Length	km	34.4
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.086
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	125
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SUMITOMO, JAPAN
30	Conductor Manufacturer		SUMITOMO, JAPAN
31	Main Contractor		SUMITOMO, JAPAN
32	Date of Completion		1971

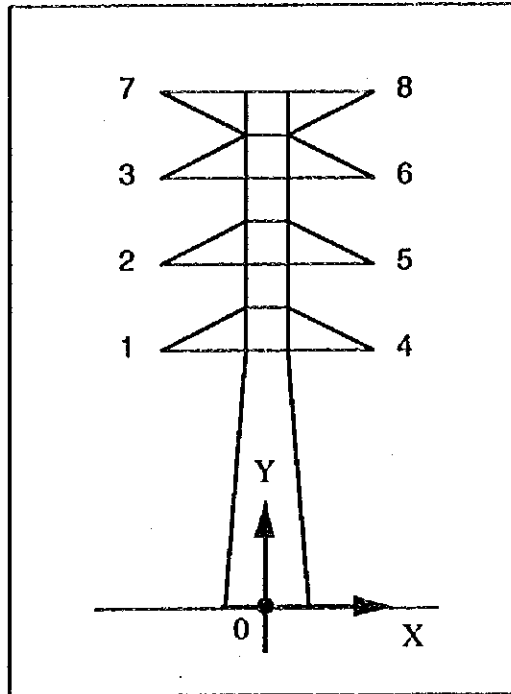
TOWER CONFIGURATION 1

Ref No.	11.20	(same as 11.5)
Title	AVISSAWELLA(T) - POLPITIYA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE XXAL

Phase(R-Y-B)	
3	Y
2	R
1	B



Phase(R-Y-B)	
6	B
5	R
4	Y

Insulator length + 2/3 sag 6.29

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.66	15.65	9.36
	2	- 3.66	19.49	13.20
	3	- 3.66	23.32	17.03
	4	3.66	15.65	9.36
	5	3.66	19.49	13.20
	6	3.66	23.32	17.03
Earthwire Attachment Point	7	- 3.66	26.37	23.71
	8	3.66	26.37	23.71

Database Information for Overhead Lines

Reference No. IL21

Title : PANNIPITIYA - RATMALANA

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	6.9
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.086
25	Mechanical Rating - Suspension	kN	67
26	Mechanical Rating - Tension	kN	125
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SUMITOMO, JAPAN
30	Conductor Manufacturer		SUMITOMO, JAPAN
31	Main Contractor		SUMITOMO, JAPAN
32	Date of Completion		1971 (2nd cct 1984)

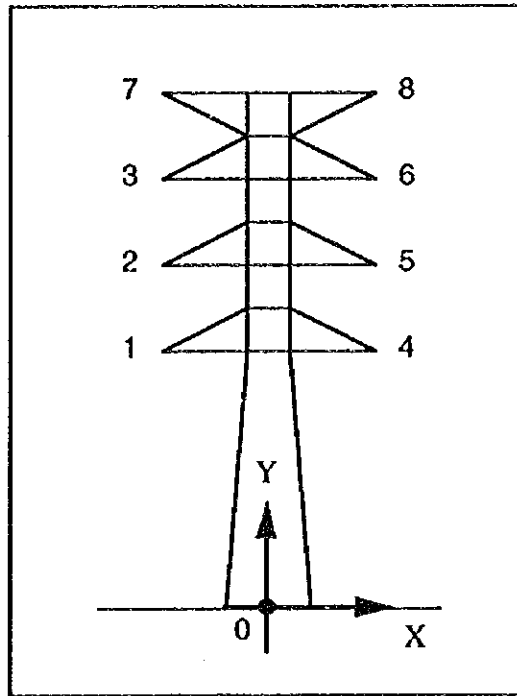
TOWER CONFIGURATION 1

Ref No.	1L21	(same as 1L5)
Title	PANNIPITIYA - RATMALANA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

TOWER TYPE XXAL

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Insulator length + 2/3 sag 6.29

Suspension Tower Dimensions (m)		X	Y	Y _{av}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.66	15.65	9.36
	2	- 3.66	19.49	13.20
	3	- 3.66	23.32	17.03
	4	3.66	15.65	9.36
	5	3.66	19.49	13.20
	6	3.66	23.32	17.03
Earthwire Attachment Point	7	- 3.66	26.37	23.71
	8	3.66	26.37	23.71

Database Information for Overhead Lines

Reference No. IL22

Title: PANNIPITIYA - PANADURA(T)

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	12.3
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "GOAT"
5	Conductor Size	mm ²	324.3
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 7/3.5
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	7.02
14	Earthwire Sag at EDT	m	3.97
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	146
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		HIND GALVANIZING INDIA
30	Conductor Manufacturer		
31	Main Contractor		CEB
32	Date of Completion		1985

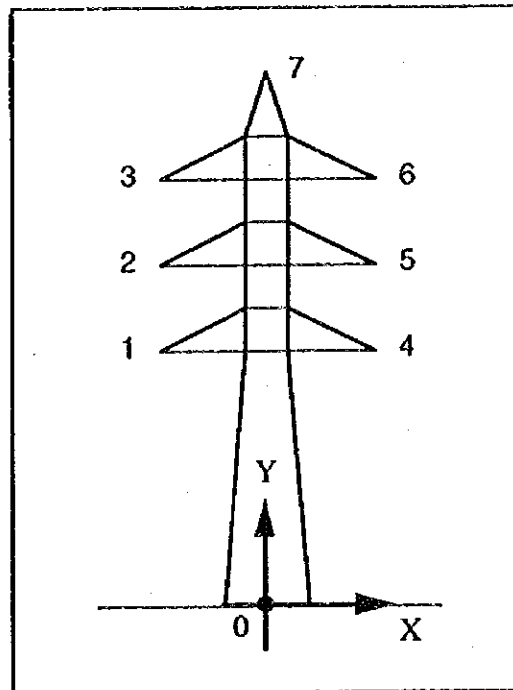
TOWER CONFIGURATION 2

Ref No.	1L22
Title	PANNIPITIYA - PANADURA(T)
Voltage	132 kV

Double Circuit, Vertical Formation, 1 Earthwire

TOWER TYPE NDAL

Phase(R-Y-B)	
3	B
2	Y
1	R



Phase(R-Y-B)	
6	R
5	Y
4	B

Insulator length + 2/3 sag 6.88

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.70	15.21	8.33
	2	- 3.55	19.26	12.38
	3	- 3.55	23.31	16.43
	4	3.70	15.21	8.33
	5	3.55	19.26	12.38
	6	3.55	23.31	16.43
Earthwire Attachment Point	7	0	27.31	24.66

2/3 E/W sag 2.65

Database Information for Overhead Lines

Reference No. 1L23

Title: PANADURA(T) - MATUGAMA

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	29.1
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "GOAT"
5	Conductor Size	mm ²	324.3
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 7/3.5
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		1
11	Basic Span	m	305
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	7.02
14	Earthwire Sag at EDT	m	3.97
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		2
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	146
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		HIND GALVANIZING INDIA
30	Conductor Manufacturer		
31	Main Contractor		CEB
32	Date of Completion		1985

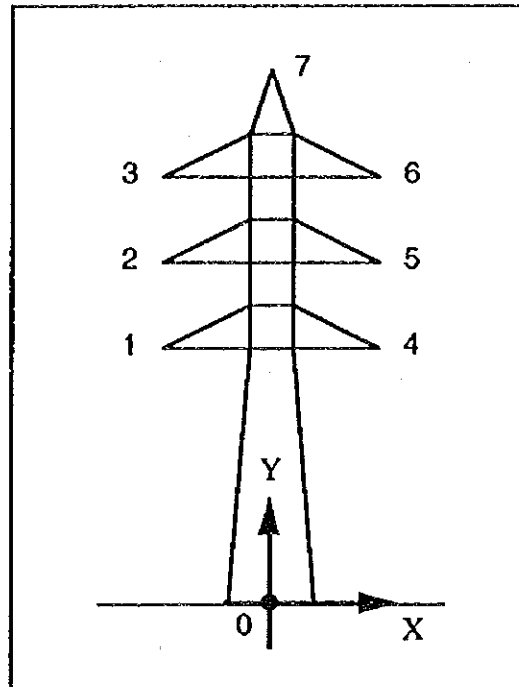
TOWER CONFIGURATION 2

Ref No.	IL23	(same as IL22)
Title	PANADURA(T) - MATUGAMA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 1 Earthwire

TOWER TYPE NDAL

Phase(R-Y-B)	
3	B
2	Y
1	R



Phase(R-Y-B)	
6	R
5	Y
4	B

Insulator length + 2/3 sag 6.88

Suspension Tower Dimensions (m)		X	Y	Y _{av}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	-3.70	15.21	8.33
	2	-3.55	19.26	12.38
	3	-3.55	23.31	16.43
	4	3.70	15.21	8.33
	5	3.55	19.26	12.38
	6	3.55	23.31	16.43
Earthwire Attachment Point	7	0	27.31	24.66

2/3 E/W sag 2.65

Database Information for Overhead Lines

Reference No. 1L24

Title : PANADURA(T) - SS

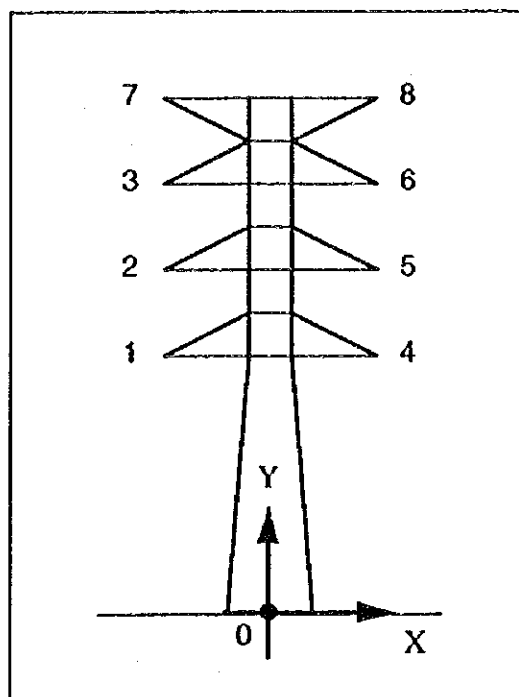
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	4.7
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 7/3.25
9	Earthwire Size	mm ²	58.07
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	75
13	Basic Span Sag at max Temp.	m	7.88
14	Earthwire Sag at EDT	m	4.89
15	Minimum Ground Clearance	m	7.01
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	146
22	No. of Discs - Suspension		11
23	No. of Discs - Tension		12
24	Suspension Insulator Set Length	m	2.27
25	Mechanical Rating - Suspension	kN	70
26	Mechanical Rating - Tension	kN	120
27	Specific Creepage of Set	mm / kV	22
28	Insulator Manufacturer		NGK, JAPAN
29	Tower Manufacturer		SAE, INDIA
30	Conductor Manufacturer		ALUMINIUM INDUSTRIES, INDIA
31	Main Contractor		SRI U-THONG, THAILAND
32	Date of Completion		1995

TOWER CONFIGURATION 1

Ref No.	1L24
Title	PANADURA(T) - SS
Voltage	132 kV

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	B
2	Y
1	R



Phase(R-Y-B)	
6	B
5	Y
4	R

Insulator length + 2/3 sag 7.52

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.90	17.25	9.73
	2	- 3.67	21.44	13.92
	3	- 3.67	25.58	18.06
	4	3.90	17.25	9.73
	5	3.67	21.44	13.92
	6	3.67	25.58	18.06
Earthwire Attachment Point	7	- 3.67	27.25	23.99
	8	3.67	27.25	23.99

Database Information for Overhead Lines

Reference No. 1L25

Title: POLPITIYA - LAXAPANA

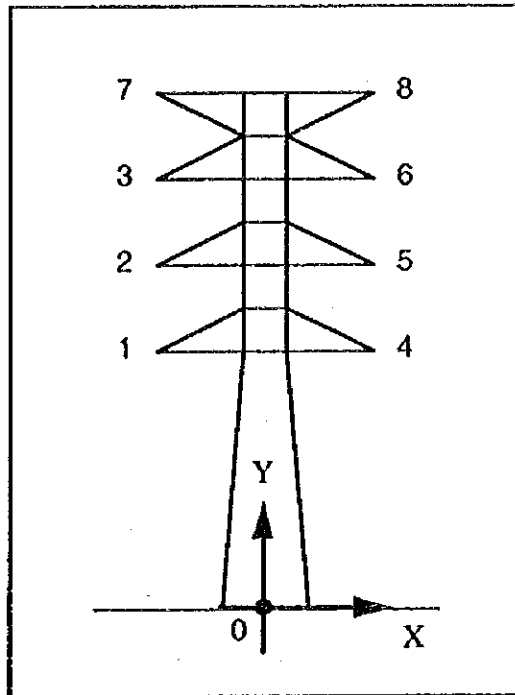
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	8.3
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		I
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1960

TOWER CONFIGURATION 1

Ref No.	1L25	(same as 1L13)
Title	POLPITIYA - LAXAPANA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Insulator length + 2/3 sag 6.40

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.95	17.24	10.84
	2	- 3.95	21.39	14.99
	3	- 3.95	25.54	19.14
	4	3.95	17.24	10.84
	5	3.95	21.39	14.99
	6	3.95	25.54	19.14
Earthwire Attachment Point	7	- 3.95	28.11	25.45
	8	3.95	28.11	25.45

Database Information for Overhead Lines

Reference No. 1L26

Title : LAXAPANA - WIMALASURENDRA

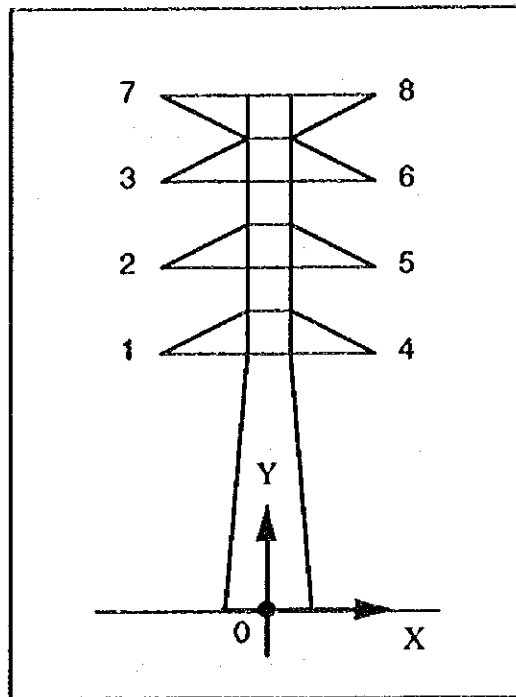
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	5.1 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		GLASS
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	286
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		11
24	Suspension Insulator Set Length	m	2.49
25	Mechanical Rating - Suspension	kN	80
26	Mechanical Rating - Tension	kN	160
27	Specific Creepage of Set	mm / kV	23.7
28	Insulator Manufacturer		SEDIVER, FRANCE
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		LAMITREF, BELGIUM
31	Main Contractor		SAE, ITALY
32	Date of Completion		1963

TOWER CONFIGURATION 1

Ref No.	1L26	(same as 1L4)
Title	LAXAPANA - WIMALASURENDRA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires
TOWER TYPE GGAL

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Insulator length + 2/3 sag 6.69

Suspension Tower Dimensions (m)		X	Y	Y _{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	-3.96	16.93	10.24
	2	-3.20	21.05	14.36
	3	-3.20	25.16	18.47
	4	3.96	16.93	10.24
	5	3.20	21.05	14.36
	6	3.20	25.16	18.47
Earthwire Attachment Point	7	-3.20	27.85	25.19
	8	3.20	27.85	25.19

Database Information for Overhead Lines

Reference No. 1L27

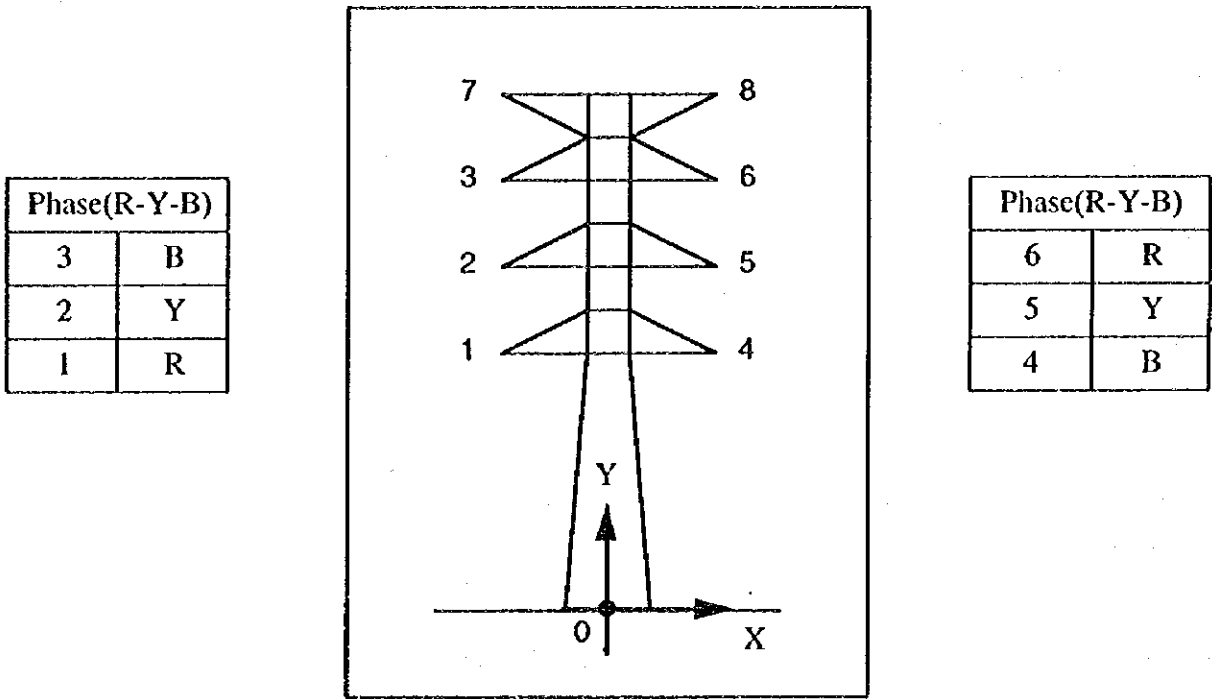
Title : LAXAPANA - NEW LAXAPANA

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	0.6 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		SAE, ITALY
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1960

TOWER CONFIGURATION 1

Ref No.	1L27	(same as 1L13)
Title	LAXAPANA - NEW LAXAPANA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires



Insulator length + 2/3 sag 6.40

Suspension Tower Dimensions (m)	X	Y	Y _{AV}
Centre Point of Tower Base	0	0	0
Conductor Attachment Point			
1	- 3.95	17.24	10.84
2	- 3.95	21.39	14.99
3	- 3.95	25.54	19.14
4	3.95	17.24	10.84
5	3.95	21.39	14.99
6	3.95	25.54	19.14
Earthwire Attachment Point			
7	- 3.95	28.11	25.45
8	3.95	28.11	25.45

Database Information for Overhead Lines

Reference No. 1L28

Title: NEW LAXAPANA - POLPITIYA

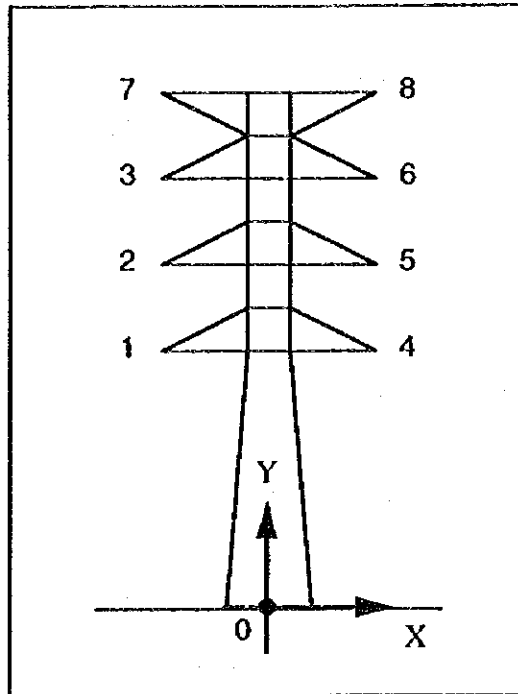
No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	8.0 *
3	No. of Circuits		2
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.11
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.30
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		1
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.2 *
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		
30	Conductor Manufacturer		
31	Main Contractor		SAE, ITALY
32	Date of Completion		1960

TOWER CONFIGURATION 1

Ref No.	1L28	(same as 1L13)
Title	NEW LAXAPANA - POLPITIYA	
Voltage	132 kV	

Double Circuit, Vertical Formation, 2 Earthwires

Phase(R-Y-B)	
3	R
2	Y
1	B



Phase(R-Y-B)	
6	B
5	Y
4	R

Insulator length + 2/3 sag 6.40

Suspension Tower Dimensions (m)		X	Y	Y_{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	- 3.95	17.24	10.84
	2	- 3.95	21.39	14.99
	3	- 3.95	25.54	19.14
	4	3.95	17.24	10.84
	5	3.95	21.39	14.99
	6	3.95	25.54	19.14
Earthwire Attachment Point	7	- 3.95	28.11	25.45
	8	3.95	28.11	25.45

Database Information for Overhead Lines

Reference No. 1L29

Title : NEW LAXAPANA - CANYON

No.	Item	Unit	Data
1	Voltage	kV	132
2	Line Length	km	10.0 *
3	No. of Circuits		1
4	Conductor Type / Name		ACSR "LYNX"
5	Conductor Size	mm ²	183.4
6	No. of Subconductors / Phase		1
7	Subconductor Spacing	mm	—
8	Earthwire Type / Name		GS 19/2.36
9	Earthwire Size	mm ²	83.1
10	No. of Earthwires		2
11	Basic Span	m	305
12	Max Operating Temperature	deg C	54
13	Basic Span Sag at max Temp.	m	6.3
14	Earthwire Sag at EDT	m	3.99
15	Minimum Ground Clearance	m	6.71
16	Tower Configuration		5
17	Insulator Type		CAP & PIN
18	Insulator Material		PORCELAIN
19	Insulator Design		STANDARD
20	Creepage / Disc	mm	292
21	Disc Spacing	mm	140
22	No. of Discs - Suspension		12
23	No. of Discs - Tension		13
24	Suspension Insulator Set Length	m	2.134
25	Mechanical Rating - Suspension	kN	
26	Mechanical Rating - Tension	kN	
27	Specific Creepage of Set	mm / kV	24
28	Insulator Manufacturer		
29	Tower Manufacturer		HIND GALVANIZING, INDIA
30	Conductor Manufacturer		
31	Main Contractor		CEB
32	Date of Completion		1983

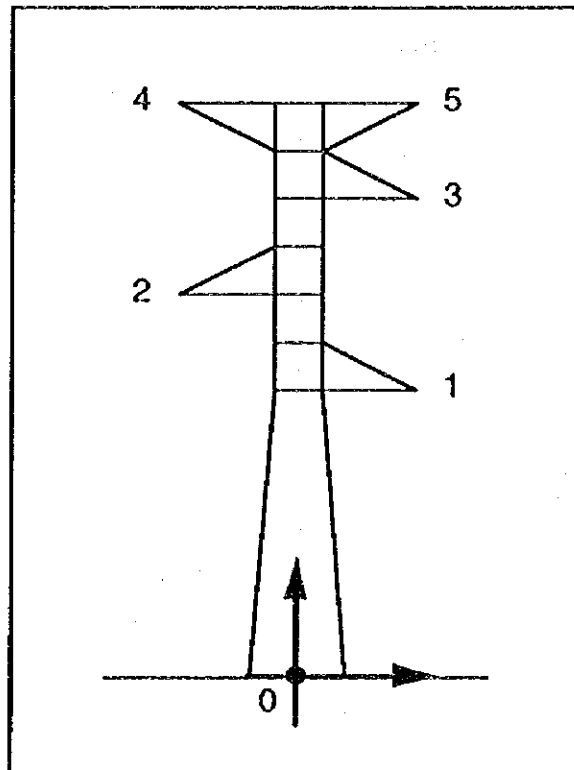
TOWER CONFIGURATION 5

Ref No.	1L29
Title	NEW LAXAPANA - CANYON
Voltage	132 kV

Single Circuit, Semi Delta Formation, 2 Earthwires

TOWER TYPE CCSAL

Phase(R-Y-B)	
3	B
2	R
1	Y



Suspension Tower Dimensions (m)		Insulator length + 2/3 sag		6.33
		X	Y	Y_{AV}
Centre Point of Tower Base		0	0	0
Conductor Attachment Point	1	3.50	15.35	9.02
	2	-3.35	17.35	11.02
	3	3.35	19.35	13.02
Earthwire Attachment Point	4	-3.35	22.20	19.54
	5	3.35	22.20	19.54